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PATENTS

December 2, 1975

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DEPARTMENT
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OFFICIAL GAZETTE of the
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PATENT AND TRADEMARK OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of October 1975

Examiner affirmed	225
Examiner affirmed in part	47
Examiner reversed	87
Total	359

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,893,419, A. L. Coulter, HAND-CHOKE CONVERSION UNIT, **filed** Aug. 13, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c2715, *MJR Industries* v. *Auto Craft, Inc.*

3,017,323, Gordon, Stephens, Noseworthy and Teare, THERAPEUTIC COMPOSITIONS COMPRISING POLYHYDRIC ALCOHOL SOLUTIONS OF TETRACYCLINE-TYPE ANTIBIOTICS, **filed** Feb. 11, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74–353–RJK, *Pfizer, Inc.* v. *International Rectifier Corp. and Rachelle Laboratories.* Pursuant to 28 U.S.C. Section 1407, action is transferred to the USDC for the District of Minnesota, entered Nov. 22, 1974.

3,051,822, Bernard and Bernard, WELDING WITH BLANKET AND GAS ARC-SHIELD, **filed** May 16, 1975, D.C. Conn. (New Haven), Doc. N–75–130, *Chemetron Corporation* v. *Unicore, Inc.* Stipulation for dismissal filed and so ordered, July 28, 1975.

3,215,072, Kooch and Fennimore, ADDRESS CARD; **3,526,262,** H. Yoshida, ADDRESS MASTER CARD, **filed** Apr. 3, 1975, D.C., S.D.N.Y., Doc. 75–C–1639, *Scriptomatic Inc.* v. *Mailers Equipment Co. Inc.* **Same, filed** Apr. 28, 1975, D.C. Minn. (Minneapolis), Doc. 4–75–C–194, *Speedaddress, Inc.* v. *Scriptomatic, Inc.*

3,215,072(*a*), Kooch and Fennimore, ADDRESS CARD; **3,526,262,** H. Yoshida, ADDRESS MASTER CARD; **Reg. No. 764,325** (SCRIPTMASTER), Scriptomatic, Inc.; **Reg. No. 785,470** (SCRIPTOMATIC), same; **Reg. No. 785,623,** same, **filed** May 27, 1975, D.C., C.D. Calif. (Los Angeles), Doc. CV–75–1773–IH, *Scriptomatic, Inc.* v. *Speedaddress, Inc. et al.*

3,218,588, J. G. Badger, TELEVISION TUNER, **filed** July 14, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c2303, *Sarkes Tarzian, Inc.* v. *Alps Electric Co., Ltd. et al.* Filed plaintiff's notice of dismissal pursuant to Rule 41(a)(1)(1) of the FRCP, Aug. 4, 1975.

3,221,309, R. Benghiat, PRIORITY INTERRUPT MONITORING SYSTEM; **Re. 28,221,** same, **filed** Feb. 11, 1975, D.C. Del. (Wilmington), Doc. C.A. 75–39, *Western Electric Company, Inc. and American Telephone & Telegraph Co.* v. *The Riley Company.*

3,230,675, Frommelt and Frommelt, DOCK PADS WITH ADJUSTABLE HEAD PAD; **3,352,314,** same, LOADING DOCK SHELTER; **3,538,655,** same, LOADING DOCK SHELTERS; **3,557,508,** same; **3,638,667,** same, **filed** May 12, 1975, D.C., W.D.N.Y. (Buffalo), Doc. 75–178, *Dubuque Awning & Tent Company* v. *Weather-Shield Corporation.*

3,293,811, E. K. Rice, ANCHORAGE FOR CONCRETE STRESSING TENDONS, **filed** July 29, 1975, D.C., C.D. Calif. (Los Angeles), Doc. 75–2544–DWW, *Atlas Prestressing Corp. and Harold D. Long* v. *Edward K. Rice.*

3,328,588, S. B. Steinberg, APPARATUS FOR MEASURING THE EFFICACY OF AN AIR FILTER; **3,473,876,** same, PORTABLE FILTER EVALUATION DEVICE; **3,810,697,** same, **filed** Mar. 22, 1973, D.C. N. Mex. (Albuquerque), Doc. 10022, *Samuel B. Steinbert and Air Techniques, Inc.* v. *Frontier Enterprises.* Order entered Feb. 28, 1975 that U.S. patents numbered 3,810,697, 3,328,588 and 3,473,876 are declared to be invalid, Apr. 7, 1975.

3,352,314. (See 3,230,675.)

3,399,834, R. C. Bradley, APPARATUS AND METHOD FOR FORMING PLASTIC ARTICLES, **filed** Aug. 4, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c2586, *Ransburg Corporation* v. *Great Lakes Terminal & Transport Corp. et al.*

3,473,876. (See 3,328,588.)

3,514,028, A. V. Kowalczyk, APPARATUS FOR MANUFACTURING PIN BOARDS; **3,643,852,** same, NAIL CHUCK, **filed** July 29, 1975, D.C., E.D. Pa. (Philadelphia), Doc. C.A. 75–2154, *Adam V. Kowalczyk* v. *Continental Tackless Corp.*

3,526,262. (See 3,215,072.)

3,538,655. (See 3,230,675.)

3,557,508. (See 3,230,675.)

3,620,367, O. G. Stembel, CASSETTE STORAGE CONTAINER, **filed** Feb. 19, 1975, D.C., S.D.N.Y., Doc. 75–C–0820, *Reliance Folding Carton Corp.* v. *A. Dudley Oslen and Associates.* It is hereby stipulated that the above entitled action be discontinued without prejudice, Aug. 8, 1975.

3,638,667. (See 3,230,675.)

3,643,852. (See 3,514,028.)

3,671,934, R. M. Teich, AUTOMOBILE THEFT ALARM FOR DETECTING UNAUTHORIZED ENERGIZATION OF RESISTIVE LOAD, **filed** Aug. 12, 1975, D.C.N.J. (Newark), Doc. 75–1380, *General Automotive Specialty Co., Inc.* v. *On-Guard Corporation of America et al.*

3,740,839, Otte and Fischer, CRYOGENIC CONNECTION METHOD AND MEANS; **3,832,603,** Cray and Roush, INTERCONNECT TECHNIQUE FOR STACKED CIRCUIT BOARDS, **filed** Aug. 25, 1975, D.C. Minn. (Minneapolis), Doc. 4–75–C–433, *Raychem Corporation* v. *Control Data Corporation.*

3,758,051, D. D. Williams, VELOCITY CONTROL AND ORIENTATION OF A SPIN-STABILIZED BODY; **Re. 26,887,** W. B. McLean, PROPORTIONAL NAVIGATION SYSTEM FOR A SPINNING BODY IN FREE SPACE, **filed** Jan. 17, 1974, D.C Del. (Wilmington), Doc. 74–10, *Hughes Aircraft Company, William B. McLean and Walter G. Finch* v. *Philco-Ford Corporation.* Pursuant to Rule 41(a)(2) of the Federal Rules of Civil Procedure the above-captioned action is hereby dismissed without prejudice, such dismissal being, however, with prejudice to plaintiffs again filing in this court an action against defendant, Apr. 17, 1975.

3,810,697. (See 3,328,588.)

3,832,603. (See 3,740,839.)

3,851,814, L. J. Stage, GUSSETED ARTICLE, **filed** Aug. 22, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c829, *Arvey Corporation* v. *Harris Hospital Supply, Inc. and Dominic P. Vecchione.*

3,866,658, L. L. Smith, PIVOTAL SUPPORT AND GUIDE HARDWARE FOR FOLDING DOORS, **filed** Aug. 15, 1975, D.C., N.D. Ohio (Cleveland), Doc. C75–713, *Lester L. Smith* v. *Acme General Corporation.*

3,867,806, Lancaster III and Lancaster, PROCESS OF MAKING A STRETCHED-WRAPPED PACKAGE, **filed** Aug. 21, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c2817, *Lantech Inc.* v. *Interlake Inc.*

D. 220,644, L. D. Robinson, MONEY BOX, **filed** Aug. 18, 1975, D.C., W.D. Okla. (Oklahoma City), Doc. C–75–0700, *L. Elsworth Robinson and Leva Delores Robinson, individually and doing business as Cash Caddy Corporation* v. *Continental Plastics of Oklahoma, Incorporated.*

Re. 26,887. (See 3,758,051.)

Re. 28,221. (See 3,221,309.)

Reg. No. 764,325. (See 3,215,072(*a*).)

Reg. No. 785,470. (See 3,215,072(*a*).)

Reg. No. 785,623. (See 3,215,072(*a*).)

Certificates of Correction for the Week of Dec. 2, 1975

P.P. 3,733	3,871,684	3,889,596	3,899,924
Re. 28,224	3,871,836	3,889,900	3,899,961
Re. 28,253	3,871,839	3,890,026	3,899,981
Re. 28,500	3,871,933	3,890,377	3,900,003
Re. 28,504	3,872,149	3,891,507	3,900,207
D. 234,940	3,872,439	3,891,657	3,900,498
3,418,247	3,873,624	3,891,682	3,900,678
3,714,191	3,875,028	3,892,117	3,901,052
3,715,511	3,875,343	3,892,254	3,901,114
3,728,895	3,876,566	3,892,756	3,901,326
3,742,201	3,876,672	3,892,773	3,901,405
3,746,608	3,877,295	3,892,782	3,901,578
3,763,054	3,877,695	3,893,423	3,901,602
3,790,044	3,878,091	3,893,556	3,901,695
3,796,994	3,878,145	3,893,641	3,901,781
3,799,977	3,878,429	3,893,658	3,901,883
3,803,483	3,878,469	3,893,917	3,902,070
3,813,527	3,878,833	3,894,151	3,902,393
3,817,942	3,879,179	3,894,190	3,902,464
3,825,431	3,879,200	3,894,250	3,902,610
3,825,514	3,879,442	3,894,516	3,902,855
3,828,620	3,880,651	3,894,666	3,903,165
3,829,769	3,880,853	3,894,780	3,903,532
3,835,691	3,880,860	3,894,811	3,903,816
3,843,686	3,880,982	3,894,956	3,903,888
3,844,805	3,881,001	3,895,144	3,903,993
3,845,371	3,881,025	3,895,178	3,904,100
3,849,479	3,881,916	3,895,277	3,904,233
3,851,528	3,881,965	3,896,073	3,904,303
3,852,335	3,882,077	3,896,099	3,904,421
3,855,863	3,882,250	3,896,205	3,904,491
3,856,800	3,882,657	3,896,379	3,904,574
3,856,958	3,882,830	3,896,547	3,904,627
3,857,339	3,882,930	3,897,204	3,904,777
3,858,930	3,884,101	3,897,335	3,904,791
3,859,074	3,884,156	3,897,465	3,904,803
3,859,075	3,884,335	3,897,490	3,904,936
3,859,898	3,884,521	3,897,506	3,905,130
3,860,521	3,884,745	3,898,002	3,905,302
3,860,844	3,884,976	3,898,035	3,905,326
3,860,881	3,885,660	3,898,279	3,905,339
3,862,019	3,885,891	3,898,540	3,905,816
3,863,160	3,886,025	3,898,564	3,905,884
3,865,819	3,886,236	3,898,627	3,905,897
3,866,411	3,886,696	3,898,924	3,905,969
3,867,179	3,886,834	3,899,329	3,906,458
3,867,685	3,887,195	3,899,343	3,906,466
3,868,204	3,887,548	3,899,383	3,907,420
3,868,951	3,887,608	3,899,435	3,907,640
3,869,414	3,887,914	3,899,484	3,907,911
3,869,763	3,888,385	3,899,547	3,908,189
3,870,653	3,888,753	3,899,553	3,908,881
3,871,303	3,888,891	3,899,671	3,914,330
3,871,323	3,889,485	3,899,831	
3,871,597	3,889,592	3,899,868	

Dedication

3,771,972.—*Glenn R. Schaer* and *William H. Safranek,* Columbus, Ohio. COATED ARTICLE. Patent dated Nov. 13, 1973. Dedication filed Sept. 11, 1975, by the assignee, *Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

Disclaimer and Dedication

3,291,177.—*Kakuji Naito,* Kawasaki-shi, Japan. METHOD AND STRUCTURE FOR RECLOSABLE CONTAINERS. Patent dated Dec. 13, 1966. Disclaimer and dedication filed Sept. 30, 1975, by the assignee, *Kabushiki Kaisha Seisan Nihon Sha.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

Disclaimers

Re. No. 28,079.—*Harry N. Andrews,* Murrysville, and *Herbert W. Keller,* Monroeville, Pa. MEANS FOR SUPPORTING FUEL ELEMENTS IN A NUCLEAR REACTOR. Patent dated July 23, 1974. Disclaimer filed Sept. 4, 1975, by the assignee, *Westinghouse Electric Corporation.*

Hereby enters this disclaimer to claims 1 to 7, inclusive, 14 to 25, inclusive, and 27 and 28 of said patent.

2,933,692.—*Stanley T. Meyers,* East Orange, N.J. TRANSISTOR SWITCHING AND REGENERATIVE PULSE AMPLIFIER CIRCUIT. Patent dated Apr. 19, 1960. Disclaimer filed Sept. 25, 1975, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to claims 1, 2, 6 and 7 of said patent.

3,500,114.—*Masahide Sawai,* Tokyo, Japan. CONVERGENCE SYSTEM FOR A COLOR PICTURE TUBE. Patent dated Mar. 10, 1970. Disclaimer filed Oct. 2, 1975, by the assignee, *Sony Corporation.*

Hereby enters this disclaimer to claims 5 and 6 of said patent.

3,642,314.—*Vernon O. Smith,* Ashley, and *John W. Binns,* Marion, Ohio. GRAVITY-ACTUATED LOCK. Patent dated Feb. 15, 1972. Disclaimer filed Oct. 22, 1975, by the assignee, *Overhead Door Corporation.*

The term of this patent subsequent to May 5, 1987, has been disclaimed.

3,658,858.—*Ian T. Harrison,* Palo Alto, Calif. DI-(6-METHOXY-2-NAPHTHYL)CADMIUM. Patent dated Apr. 25, 1972. Disclaimer filed Sept. 29, 1975, by the assignee, *Syntex Corporation.*

Hereby disclaims the entire remaining term of said patent.

3,694,476.—*Francisco Alvarez,* Sunnyvale, Calif. (6-METHOXY-2-NAPHTHYL) CADMIUM HALIDE. Patent dated Sept. 26, 1972. Disclaimer filed Sept. 29, 1975, by the assignee, *Syntex Corporation.*

Hereby disclaims the entire remaining term of said patent.

3,703,997.—*August P. Epina,* Boulder, and *Paul O. Pearson,* Longmont, Colo. DOOR CONSTRUCTION IN A MAGNETIC TAPE DRIVE SYSTEM. Patent dated Nov. 28, 1972. Disclaimer filed Oct. 28, 1975, by the assignee, *Storage Technology Corporation.*

Hereby enters this disclaimer to claims 12–14 of said patent.

3,775,775.—*Anthony Mazzenga,* Commack, N.Y. DESIGN CODING FOR COORDINATED GARMENT SETS. Patent dated Dec. 4, 1973. Disclaimer filed Sept. 3, 1975, by the assignee, *Garan, Incorporated.*

Hereby enters this disclaimer to claims 1–5 of said patent.

3,786,251.—*Donald H. Kylin* and *Thomas E. Reim,* Cleveland Heights, Ohio. BULK MATERIAL NUCLEAR MOISTURE GAUGING SYSTEM. Patent dated Jan. 15, 1974. Disclaimer filed Oct. 2, 1975, by the assignee, *Republic Steel Corporation.*

Hereby enters this disclaimer to all claims of said patent.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 8, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	2-3-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-3-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-13-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-6-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods: Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-7-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-9-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	10-22-74
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-3-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	4-16-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring;	12-13-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	7-10-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-25-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-6-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-18-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-6-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	4-14-75

Expiration of patents: The patents within the range of numbers indicated below expire during December 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,862,205 to 2,866,972 inclusive
Plant Patents..... Numbers 1,775 to 1,791 inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED DECEMBER 2, 1975

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T941,001

COATING COMPOSITIONS

Charles Lee Corpening, Rte. 16, 5912 Sue St. 37663, and Theron Edward Parsons III, 4145 Skyland Drive 37664, both of Kingsport, Tenn.

Filed June 17, 1974, Ser. No. 480,444

Int. Cl. C08b *21/32*
U.S. Cl. 260—17 R

No Drawing. 6 Pages Specification

Nonaqueous dispersions of acrylic thermosetting resins are modified with a compatible cellulose acetate butyrate to provide coating compositions having improved flow out and pigment control. The cellulose acetate butyrate has a butyryl content of from about 35 to 55% by weight, a hydroxyl content of from about 0.2 to about 5% by weight, an acetyl content of less than 3% and a viscosity of from about 0.001 to about 0.015 seconds. The cellulose acetate butyrate is dissolved in a solvent and mixed with the nonaqueous dispersion so that the cellulose acetate butyrate is present in an amount of from about 0.1 to about 20% by weight, based on the weight of the solids in the nonaqueous dispersion.

T941,002

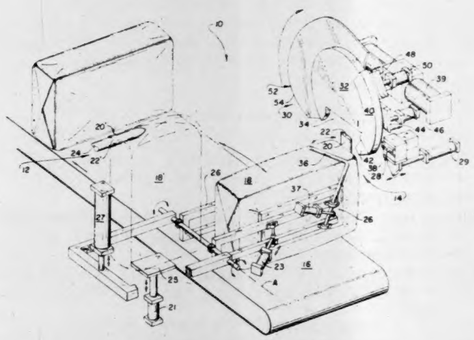
APPARATUS FOR AUTOMATICALLY SEALING VALVE BAGS

Merton L. Dibble, Rte. 13, Kingsport, Tenn. 37664

Filed June 28, 1974, Ser. No. 484,363

Int. Cl. B65b *51/24, 63/00*
U.S. Cl. 53—124 A

1 Sheet Drawing. 11 Pages Specification



The apparatus automatically seals a valve bag that is enclosed at the top, bottom and on all sides except for a flexible valve sleeve that extends parallel to and along the bag top and into which a filling spout is inserted. The apparatus includes a lifting member for lifting a filled valve bag to a predetermined extent to take the weight of the bag off the filling spout; clamping arms for clamping and supporting the filled valve bag in its vertical upright filling position and then for pivoting the bag to a horizontal position; a wiper device for wiping across the uppermost side of the valve bag in its horizontal position and to move against the flexible valve sleeve to flatten both; an adhesive applicator for applying adhesive to a portion of the bag top adjacent the valve sleeve; a rotary turret; a heating device on the rotary turret for heating the adhesive impregnated interior portions of the valve sleeve; a clamping arrangement on the rotary turret for sealing the valve sleeve together; a folding member on the turret for folding the valve sleeve back over itself and against the adhesived portion of the bag top; and a holding portion on the folding member for holding the valve sleeve against the bag top until sealed thereto.

T941,003

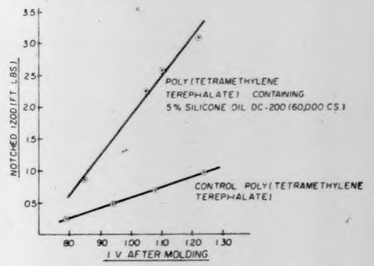
POLYESTER THERMOPLASTIC MOLDABLE COMPOSITIONS CAPABLE OF BEING MOLDED INTO OBJECTS HAVING IMPROVED PHYSICAL PROPERTIES

Thomas G. Davis, 1620 Pineola Ave. 37664, and John G. Thompson, 614 Lazy Lane 37663, both of Kingsport, Tenn.

Filed July 30, 1974, Ser. No. 493,008

Int. Cl. C08g *17/14*
U.S. Cl. 260—75 SB

1 Sheet Drawing. 7 Pages Specification

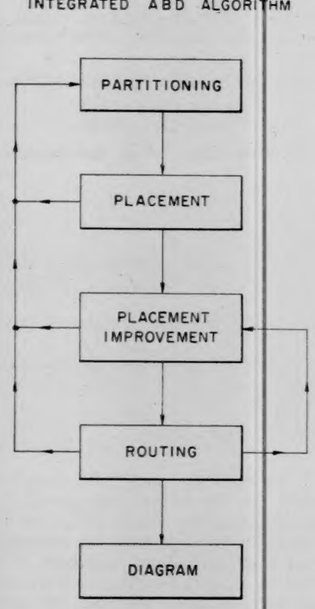


Polyester thermoplastic moldable compositions are provided which can be molded into objects having improved physical properties. The polyester moldable compositions contain at least one polyester thermoplastic material and at least one silicon compound. The silicon compound can be added to the polyester thermoplastic material during preparation of the polyester thermoplastic material or the silicon compound can be added by melt blending to the prepared thermoplastic material. The silicon compound containing polyester thermoplastic composition can be molded into objects which exhibit improved physical properties. One such improved property exhibited by the molded object is an improved Izod impack strength.

T941,004
REACTIVE FILLERS FOR UNSATURATED RESINS
Clarence C. Dannelly, Rte. 8, Cochise Trail, Kingsport, Tenn. 37664
Filed Aug. 1, 1974, Ser. No. 494,020
Int. Cl. C08f *43/08*
U.S. Cl. 260—862
No Drawing. 9 Pages Specification

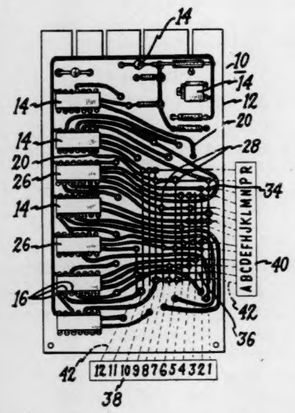
Particulate substances containing polymerizable olefinic unsaturation useful as reactive fillers for resins which achieve final form and useful properties by polymerization of olefinic unsaturation. The reactive fillers are particularly useful as modifiers for unsaturated polyester resins. In this application, the reactive fillers can be used during formation of a shaped article, impart special physical properties such as improved impact resistance, impart improved dimensional stability, and impart improved appearance. The reactive fillers are made by polymerizing substances or mixtures which contain more than one type of olefinic unsaturation, at least one of which can form copolymers but will not form homopolymers under the reaction conditions used to make the filler and wherein a part of this type of unsaturation remains in the reactive filler material and is available for subsequent polymerization reactions.

T941,005
AUTOMATED BLOCK DIAGRAMMING SYSTEM
Jean Davies Lesser, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 20, 1974, Ser. No. 499,109
Int. Cl. G06f *9/12*
U.S. Cl. 444—1
21 Sheets Drawing. 37 Pages Specification



This is a system for accepting the specification of the elements of a block graph which are introduced as input to a computer system and automatically producing paginated block diagrams as output. A set of heuristic procedures are used in this system, which results in an integrated, interactive relationship between the partitioning, placement and line routing functions.

T941,006
ELECTRICAL IMPULSE DIVIDER MODULE WITH PRINTED CIRCUIT INTERCONNECT MATRIX
Richard G. Farnsworth, York, Maine, assignor to General Electric Company
Continuation of application Ser. No. 366,555, June 4, 1973. This application Aug. 23, 1974, Ser. No. 500,157
Int. Cl. H05k *5/00*
U.S. Cl. 317—101 R
2 Sheets Drawing. 9 Pages Specification



A divider circuit module for an electrical impulse totalizer is provided with an interconnect matrix including removable pins which may be rearranged to change the particular division operation of the module. The module comprises a first set of conducting strips on one side of the circuit board, the strips of the first set being connected at one end to one or more terminals of the components and having unconnected terminal locations arranged in a matrix configuration, and a second set of conducting strips on the other side of the circuit board, the strips of the second set having unconnected terminal locations arranged adjacent to, but insulated from, certain of the terminal locations of the strips of the first set. The terminal locations of the strips of the first set are disposed at a location directly opposite the terminal locations of the strips of the second set and an aperture is provided through the circuit board and through the directly opposite such terminal locations. Conductive pins extend through the apertures and are soldered on each side of the circuit board to the terminal locations of the strips of the first set and second set, respectively, as removable interconnect members which may be relocated to change the division operation of the module.

T941,007
PREPARATION OF FLOWABLE, TABLETABLE ANTIOXIDANT MIXTURE CONTAINING SILICONES
Emma Jean Freeman, 1849 Fairoaks Road 37664, and Richard R. Crawford, 512 Brandonwood Road 37660, both of Kingsport, Tenn.
Continuation of abandoned application Ser. No. 270,425, July 10, 1972. This application June 15, 1973, Ser. No. 370,492
Int. Cl. A23l *3/34;* **B01j** *1/16*
U.S. Cl. 252—400 R
No Drawing. 11 Pages Specification

A flowable, tabletable mixture containing a silicone, an antioxidant, and an organic acid is prepared by forming a blend of the materials in a molten state, allowing the blend to cool and recrystallize while it is being vigorously stirred resulting in a crystalline particulate material which can be formed into tablets. These antioxidant tablets are available for addition to cooking oils and the like and especially oil utilized in deep-fat frying to inhibit the development of rancidity.

T941,008
PROCESS FOR PREPARING A POLYESTER FABRIC HAVING DESIRABLE STAIN-RELEASE, ANTI-SOIL-REDEPOSITION, ANTISTATIC AND HYDROPHILIC PROPERTIES
Robert B. Barbee, Rte. 3, Tinker Lane, Kingsport, Tenn. 37664
Filed Aug. 27, 1973, Ser. No. 391,729
Int. Cl. D06m *15/14, 15/36*
U.S. Cl. 8—115.5
No Drawing. 3 Pages Specification

Disclosed is a process for preparing fabrics which exhibit desirable stain-release, antisoil-redeposition, antistatic and hydrophilic properties. According to this process, a fabric comprised of poly(1,4-cyclohexylenedimethylene terephthalate) fiber is contacted with acrylic acid and a free radical initiator under grafting reaction conditions.

T941,009
FORMATION OF MICRODISCONTINUOUS CHROMIUM
Donald L. Snyder, Solon, and Arthur H. Du Rose, Richmond Heights, Ohio, assignors to Kewanee Oil Company, Bryn Mawr, Pa.
Filed Dec. 20, 1973, Ser. No. 426,765
Int. Cl. B32b *15/00;* **C23b** *5/50*
U.S. Cl. 29—194
No Drawing. 20 Pages Specification

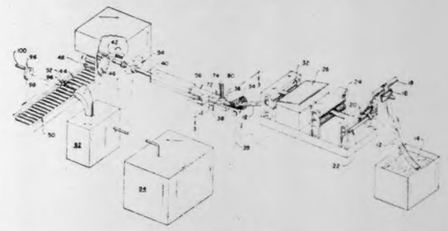
A method is described for producing a microporous chromium electrodeposit on a basis metal of nickel, cobalt, or an alloy containing one or both, by depositing electrically conductive metallic particles on the basis metal. The fine particles may be grown directly on the surface of the basis metal by plating from an electroplating bath, by immersion coating from an aqueous solution, or by the reduction from an electroless bath. In each case, the ions of the metallic particles to be deposited are present in the bath. Alternatively, the metal particles are deposited on the basis metal in a strike layer from an electroplating bath containing the particles in finely divided form. The basis metal, containing the discrete fine particles, is then plated with a thin layer of chromium in a conventional manner to yield a microporous chromium deposit.

T941,010
ANTHELMINTIC METHOD OF TREATMENT
Jack Blodinger, 16 Bell Drive, Westfield, N.J. 07090
Filed Feb. 15, 1974, Ser. No. 443,064
Int. Cl. A61k *27/00*
U.S. Cl. 424—217
No Drawing. 4 Pages Specification

A method for the treatment of helminths in mammals is disclosed whereby substantially concurrent administration 5-isopropoxycarbonylamino - 2 - thiazolyl benzimidazole and O,O-dimethyl-2,2,2-trichloro-1-hydroxy ethylphosphonate is effected.

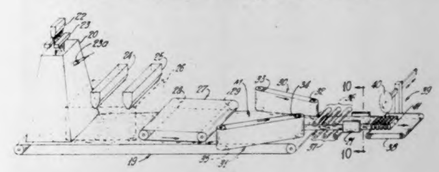
T941,011
AUTOMATIC CONTROLLED APPARATUS FOR PRODUCING TOBACCO SMOKE FILTER RODS
Kyle E. Morrison, Rte. 15, 936 Chadwick, Apt. 3 37660; Richard E. Bevington, Jr., 2112 Tallwood Lane 37660; and Robert E. Duram, Rte. 9, Mere Vista 37663, all of Kingsport, Tenn.
Filed May 6, 1974, Ser. No. 467,524
Int. Cl. B29d *23/00*
U.S. Cl. 93—1 C
2 Sheets Drawing. 20 Pages Specification

In apparatus for producing tobacco smoke filter rods from a continuous length of banded filter tow and having a set of tension rolls, a set of feed rolls, a plasticizer application device for applying plasticizer to the banded filter tow, a set of delivery rolls, a collecting trumpet for initiating condensing of the banded filter tow toward a rod-like configuration, a folder tongue immediately adjacent the collecting trumpet for further condensing the banded filter tow to the rod-like configuration, a garniture device in which the filter tow is moved and wrapped, a severing device, and conveyors for conveying the severed filter rods away from the apparatus, the improvement comprising an air sensing device connected to the folder tongue for sensing resistance to flow of air through the



filter tow passing through the folder tongue and for generating a signal proportional to the density of the tow passing through the folder tongue. The signal generated is compared with a voltage set-point which represents a predetermined pressure drop, hence predetermined density of filter tow, and should the generated signals compared differ from the voltage setpoint, the delivery rolls, feed rolls and tension rolls are either slowed or speeded up relative to the speed of the filter tow moving through the garniture device so as to cause either a greater or less amount of filter tow to be fed into the folder tongue.

T941,012
FRICTION MATERIAL INCLUDING GLASS FIBERS AND METHOD OF MANUFACTURE
Alfred Marzocchi, 35 Thomas Leighton Blvd., Cumberland, R.I. 02864
Filed July 26, 1974, Ser. No. 483,193
Int. Cl. C03b *37/02;* **F16d** *69/02*
U.S. Cl. 65—3
2 Sheets Drawing. 27 Pages Specification



A brake lining or friction material comprised of glass fibers secured within a rigid binder and having a substantial number of ends of convolutions intersecting with the braking surface of the material. The material preferably comprises a plurality of bonded fibers generally extending in a common direction and intersecting with said braking surface. The fiber alignment may be positioned relative to the direction of relative movement of the braking members for optimum braking efficiency in one direction. Such aligned fiber materials may be produced in a continuous process in the form of uncured blocks of aligned fibers and binder which are subsequently formed under elevated pressure and temperature into brake pads or shoes or other friction components. Brake pads having aligned or oriented fibers may be produced in a continuous process, starting with the forming of glass fibers from a molten batch, depositing a ribbon of aligned fibers upon a moving conveyor, applying liquid or powdered binder to the fibers, reducing the lateral and vertical

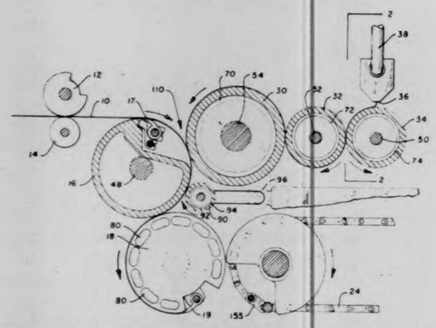
volume of the ribbon to increase the density of the fiber-binder mix and finally separating the ribbon into shapes having a surface which intersects the aligned fibers.

T941,013
COATING MACHINE AND METHOD

James E. Huffaker, 1117 Radcliffe Drive 37664, and Ted L. Douglas, Rte. 11 37663, both of Kingsport, Tenn.

Continuation of abandoned application Ser. No. 265,071, June 21, 1972. This application Sept. 3. 1974, Ser. No. 502,574

Int. Cl. B05c *1/02*
U.S. Cl. 118—60
3 Sheets Drawing. 10 Pages Specification



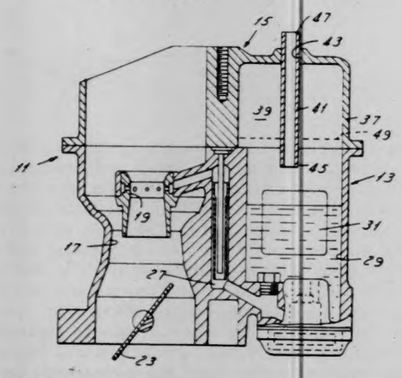
Improved apparatus and method for the application of thin coatings of thermoplastic material to sheets of material being advanced in succession. Sheets are carried by impression roll **16** post applicator roll **30**, heated smoothing means **90**, to cooling roll **18**. Molten material is supplied from nozzle **36** to roll **34** which feeds the material to applicator **30**.

T941,014
SPILL-PROOF VENTED ENCLOSURE

William W. Charron, 3830 McDivitt, Orchard Lake, Mich. 48033, and Max W. Lunsford, 23125 Berg Road, Southfield, Mich. 48075

Continuation-in-part of abandoned application Ser. No. 345,167, Mar. 26, 1973. This application Sept. 5, 1974, Ser. No. 503,533

Int. Cl. F02m *5/02*
U.S. Cl. 261—72 R
1 Sheet Drawing. 5 Pages Specification



A spill-proof vented enclosure suitable for use as a fuel bowl of an internal combustion engine carburetor. The bowl or enclosure includes an enlarged vapor dome having a depending vent tube. The inlet to the vent tube within the bowl is centrally located within the enclosure and remains above the fuel level irrespective of the position of the carburetor relative to the horizontal.

T941,015
WOVEN FABRIC HAVING UNIFORM AIR PERMEABILITY AND FORMING PROCESS

Clifford Hoyle and Lewis Charles Huskilson, Kingston, Ontario, Canada, assignors to Du Pont of Canada Limited, Montreal, Quebec, Canada

Continuation of abandoned application Ser. No. 347,550, Apr. 4, 1973. This application Sept. 30, 1974, Ser. No. 511,027

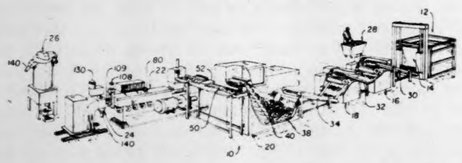
Int. Cl. D03d *15/00*
U.S. Cl. 139—420
No Drawing. 9 Pages Specification

An uncoated woven fabric of heat-shrinkable synthetic thermoplastic yarn having a very low air permeability is disclosed. The process for making the fabric comprises weaving as tightly as practical, on a commercial basis the synthetic thermoplastic yarn (preferably a multifilament interlaced nylon yarn having substantially zero bundle twist) into a fabric; and heating the fabric under substantially no tension (preferably on a tenter frame) to a temperature approaching the melting point of the yarn.

T941,016
WASTE RECOVERY OF THERMOPLASTIC CONTINUOUS FILAMENTARY MATERIAL

Robert Hester, 2100 Montrose Ave. 37664, and Howard Paul Pierson, 120 Tall Oaks Court 37663, both of Kingsport, Tenn.

Continuation of abandoned application Ser. No. 285,974, Sept. 5, 1972, which is a division of application Ser. No. 67,324, Aug. 27, 1970, now Patent No. 3,703,347. This application Oct. 15, 1974, Ser. No. 514,528
Int. Cl. B29b *1/00;* **B29c** *29/00;* **B29f** *3/00*
U.S. Cl. 264—142
8 Sheets Drawing. 20 Pages Specification



Method for recovering waste thermoplastic fiber of continuous length filamentary material and converting it into reuseable feed stock and particularly a large, otherwise unmanageable, entangled mass of continuous length filamentary material, some or all of which being either drafted or undrafted, wherein the continuous length filamentary material is converted into random length staple fiber by compressing the entangled mass of waste thermoplastic fiber into a mass of predetermined size, converting the compressed mass into staple fiber by cutting the compressed mass into predetermined sections and then cutting the sections into the staple fiber of random length, the random length staple fiber is then mechanically compacted and melted into a melt flow, and the melt flow is finally extruded as the reuseable feed stock.

T941,017
BENZAZOCINES AS LOCAL ANESTHETICS

John Edgar Giering, West Bloomfield, N.Y., John Alan Beech, Talahassee, Fla., and George Camougis, Worcester, Mass., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation of application Ser. No. 427,271, Dec. 21, 1973, which is a continuation of application Ser. No. 14,211, Feb. 24, 1970, both now abandoned. This application Nov. 6, 1974, Ser. No. 521,325
Int. Cls. A61k *31/135, 31/445*
U.S. Cl. 424—267
No Drawing. 19 Pages Specification

The use of pentazocine, cyclazocine and similar 1,2,3,4, 5,6 - hexahydro - 2,6 - methano - 3 - benzazocine derivatives as local anesthetics, and compositions containing said compounds and epinephrine.

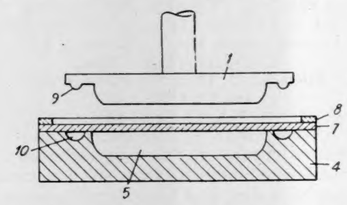
T941,018
PROCESS FOR THE PRODUCTION OF SHAPED ARTICLES

Kenneth Clarke, Knebworth, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sept. 16, 1974, Ser. No. 506,543

Claims priority, application Great Britain, Sept. 20, 1973, 44,132/73; Nov. 23, 1973, 54,386/73

Int. Cl. B29c *27/06*
U.S. Cl. 156—69
5 Sheets Drawing. 22 Pages Specification



Shaped articles, such as food trays and the like, are produced by cold-forming polyester, especially oriented polyethylene terephthalate, films below the polyester glass transition temperature, heat setting and quenching. Slight relaxation at the heat setting temperature may be effected to improve dimensional stability. Short cycling times can be achieved by using a cold-forming punch of low thermal capacity, for instance a shaped copper sheet, through which the shaped film is heated while held in the deformed condition. Lids may be applied to the shaped articles by melt adhesives. Food containers so formed are suitable for heating in both conventional and microwave ovens.

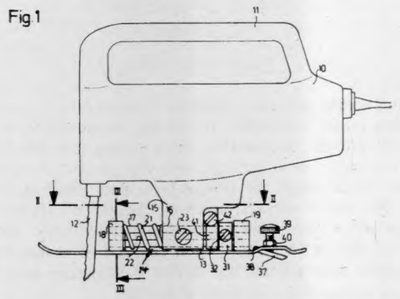
T941,019
POWER TOOL

Ernst Kränzler, Stetten, Filder, and Gerhard Kuhlmann, Suttgart, Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Oct. 17, 1974, Ser. No. 515,711

Claims priority, application Germany, Oct. 27, 1973, G 73 38 651.3

Int. Cl. B27b *11/02*
U.S. Cl. 30—376
3 Sheets Drawing. 16 Pages Specification



A power tool, e.g., a saber saw, has a base plate which is to be placed onto a workpiece. The tool body, including a housing, a drive, a tool and other components, is mounted on the base plate for arrestable displacement relative to the base plate to a limited extent so that, even though it may not be possible to move the base relative to the workpiece, e.g., because an edge or surface of the workpiece prevents this, the tool body can be moved relative to the base plate. The tool body may be mounted for relative movement in the longitudinal direction of the base plate and/or for swiveling movement in transverse direction. Further, the tool body may also be mounted to be arrestably pivotable relative to the base plate about a horizontal axis, to permit the angle included between the tool (e.g., a sawblade) and the workpiece surface to be varied. The base plate may be releasably connected with the tool body and a narrow base plate may additionally be furnished which can be connected with the tool body when it is desired to be able to insert the base plate in its entirety into a groove.

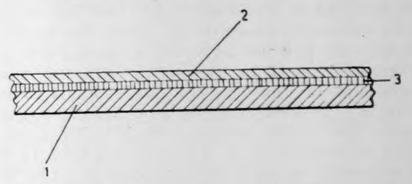
T941,020
POLYOLEFIN FILMS AND METHODS FOR MAKING SAME

Roger Neville Young, Chesham, England, assignor to Imperial Chemical Industry Limited, London, England

Filed Nov. 13, 1974, Ser. No. 523,530

Claims priority, application Great Britain, Dec. 21, 1973, 59,338/73

Int. Cl. B32b *27/30, 27/32*
U.S. Cl. 428—349
1 Sheet Drawing. 21 Pages Specification



A heat sealable film for use in packaging comprising a polyolefin film substrate at least one surface of which is coated with a layer of a heat sealable material, wherein the film substrate is formed from a composition comprising a blend of from 87.5 to 60 parts by weight of polypropylene and from 12.5 to 40 parts by weight of a block copolymer of ethylene and propylene, the copolymer containing from 0.5 to 40% by weight of ethylene, based on the weight of the copolymer, and the blend containing from 0.2 to 5% by weight of ethylene, based on the weight of the blend.

T941,021
VOIDED FILMS

Carl Fraser Mathews and Christopher Deverell, Hitchin, Gordon Edmund Alfred Pears, Harpenden, Alan Duffield, Kimpton, and Peter George Knowles, Luton, England, assignors to Imperial Chemical Industries Limited, London, England

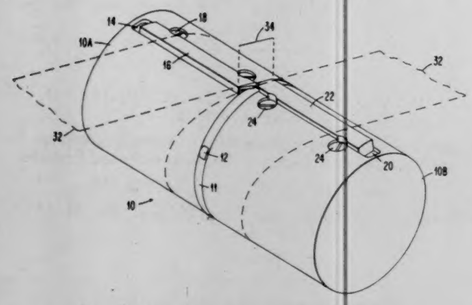
Continuation of abandoned application Ser. No. 407,950, Oct. 19, 1973. This application Dec. 9, 1974, Ser. No. 531,000

Claims priority, application Great Britain, Feb. 9, 1973, 6,396/73

Int. Cl. G03c *1/78, 1/96*
U.S. Cl. 96—87 R
No Drawing. 18 Pages Specification

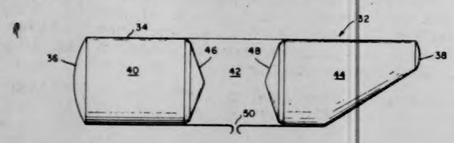
Opaque voided films having a total luminous transmission not exceeding 25% are made from blends of a polyester preferably polyethylene terephthalate, with 3 to 27% of an ethylene or propylene polymer, prepared by dry blending. The films are prepared by blending particles of the polyester and polymer, and then extruding the blend as a film, quenching, biaxially orienting the film and heat setting. The opacity is the result of voiding which occurs during the stretching operation. The voided film may be used as a base for photographic prints.

T941,022
APPARATUS FOR LIFTING TAPE EDGES ABOVE PATH OF ROTATING HEAD
Frederic F. Freeman, Boulder County, and Ernest P. Kollar, Weld County, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 23, 1974, Ser. No. 535,407
Int. Cl. G11b *15/60*
U.S. Cl. 360—130
2 Sheets Drawing. 6 Pages Specification



Disclosed herein is a mandrel **10A** and **10B** on which tape **32** is helically wrapped 360° about the mandrel. A rotor **11** in the longitudinal center of the mandrel carries a magnetic head **12** to transversely scan the helically wrapped tape **32**. Entry and exit ramps **16** and **22** on the mandrel are provided where the tape enters and exits the mandrel. The function of these ramps is to lift the edge of the tape adjacent the path of the rotating head **12** as the head crosses the edges of the tape **32**. This lifting by the ramps prevents the head from striking the edges of the tape and thus damaging the head and the tape. Both the ramps and the mandrel are made from porous material so as to be air bearing.

T941,023
BULKHEAD ARRANGEMENT FOR INFLATABLE APPARATUS AND FABRICATION METHOD
Randall F. White, Bricktown, N.J., assignor to The Garrett Corporation, Los Angeles, Calif.
Filed Dec. 23, 1974, Ser. No. 535,894
Int. Cl. B63b *35/34*
U.S. Cl. 114—5 F
2 Sheets Drawing. 17 Pages Specification

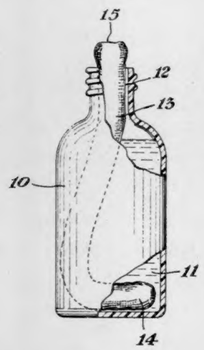


A bulkhead is disclosed for use in multi-celled inflatable apparatus such as helicopter floats and the like. The bulkhead is fabricated of a thin walled limp impervious material so that it may be easily folded, and is constructed to assure integrity of seal of the bulkhead edge to the inflatable wall. Also, when an individual compartment is breached, the bulkhead is designed to assure minimum change of fluid pressure and volume in those unbreached compartments remaining on either side of the breached compartment. The bulkhead is fabricated in a substantially dish-shaped configuration having a shallow bowl portion rimmed by a substantially steep sided edge portion of relatively short length compared to the span of the bowl portion. The bowl portion is configured as a frustum of a cone with an acute vertex angle.

T941,024
NON-CRATERING FUSIBLE POLYESTER CELLULOSE ESTER COATING COMPOSITION
Peter M. Grant, Rte. 16, Hemlock Park, Kingsport, Tenn. 37663
Filed Jan. 7, 1975, Ser. No. 539,192
Int. Cl. C08l *1/14*
U.S. Cl. 260—16
No Drawing. 9 Pages Specification

A polyester coating composition including a linear polyester, cellulose acetate butyrate, and a plasticizer. The coating can be applied to a heatable substrate in powder form and caused to fuse by application of heat to produce a smooth, non-cratered surface.

T941,025
INSECTICIDAL DEVICE
Frank H. Dowell, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jan. 17, 1975, Ser. No. 541,817
Int. Cl. A24f *25/00;* **A61l** *9/04*
U.S. Cl. 239—44
1 Sheet Drawing. 15 Pages Specification



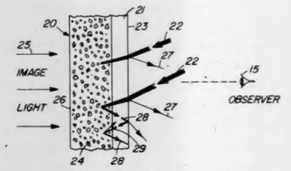
Insecticidal devices comprise a container, capable of holding liquid accessible to insects, composed of or containing plastic composition comprising an insecticidal agent capable of diffusing from the plastic composition to the liquid when the device is in use. Illustratively, at least the inside surface layer of the polyethylene bottle comprises a halopyridyl phosphate insecticide such as chlorpyrifos or fospirate; when charged with sugar water and fitted with a wick, the device is attractive and lethal to flies, mosquitos, roaches and the like.

REISSUES

DECEMBER 2, 1975

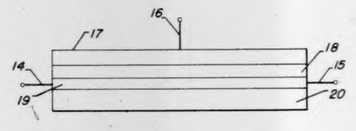
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,634
REAR PROJECTION SCREEN
James J. DePalma, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Original No. 3,655,262, dated Apr. 11, 1972, Ser. No. 69,863, Sept. 4, 1970. Application for reissue Mar. 25, 1974, Ser. No. 454,514
Int. Cl. G03b *21/60*
U.S. Cl. 350—126 **14 Claims**



1. A screen material for transmission type projection screens having color quality and ambient light control comprising a dispersion of a generally clear carrier medium, fine particles of chlorinated diphenyl resin and a plurality of light absorbing dyes of [different] *blue, light red, yellow and orange* color.

Re. 28,635
PYROPOLYMERIC SEMICONDUCTING ORGANIC-REFRACTORY OXIDE MATERIAL
Karl J. Youtsey, Chicago; William C. Holt, Jr., Prospect Heights; Robert D. Carnahan, Barrington, and David H. Spielberg, Schaumburg, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Original No. 3,651,386, dated Mar. 21, 1972, Ser. No. 66,521, Aug. 24, 1970. Application for reissue Aug. 16, 1973, Ser. No. 389,051
Int. Cl.² H01C *17/20;* **H01L** *29/28*
U.S. Cl. 428—409 **17 Claims**



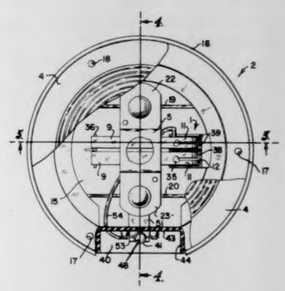
[**1.** In a semiconducting device, a semiconducting material therefor comprising a refractory oxide having a surface area of from about 1 to about 500 square meters per gram and a carbonaceous pyropolymer forming at least a monolayer on said refractory oxide, said semiconducting material having a conductivity at room temperature of from about 10^{-8} to about 10^{0} inverse ohm-centimeters.]

8. The semiconducting material of claim **7** wherein said metals are platinum and rhenium.

Re. 28,636
ANTIBACTERIAL COMPOSITION CONTAINING 5-METHYL-3-SULFANILAMIDOISOXAZOLE AND TRIMETHOXYBENYL PYRIMIDINE
Emanuel Grunberg, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Original No. 3,515,783, dated June 2, 1970, Ser. No. 676,700, Oct. 20, 1967. Application for reissue Jan. 28, 1974, Ser. No. 437,577
Int. Cl.² A61K *31/505*
U.S. Cl. 424—229 **2 Claims**

[**1.** A therapeutic antibacterial composition effective in the treatment of sulfamethoxazole resistant bacterial infections comprising from about 1 to about 30 parts of a sulfonamide selected from the group consisting of 5-methyl-3-sulfanilamidoisoxazole and alkali metal salts thereof with pharmaceutically acceptable bases and one part of a pyrimidine selected from the group consisting of 2,4-diamino-5-(3,4,5-trimethoxybenzyl) pryimidine and salts thereof with pharmaceutically acceptable acids.]

Re. 28,637
VEHICLE LAMP AND TERMINAL THEREFOR
Kenneth C. Ploeger, 705 S. 10th St., Blue Springs, Mo. 64015
Original No. 3,739,168, dated June 12, 1973, Ser. No. 250,876, May 8, 1972. Application for reissue May 6, 1974, Ser. No. 467,193
Int. Cl.² B60Q *1/00, 1/30*
U.S. Cl. 240—7.1 R **7 Claims**



10. A vehicle lamp structure comprising:
(a) a housing with a base wall and a side wall defining an open end compartment closed by a lens;
(b) a lamp support mounted in said housing, said lamp support having a socket member with a socket for receiving a lamp base in electrical contact and having an open end through which an end contact of the lamp base extends, said lamp support having at least one leg extending from the socket member to adjacent said base wall of the housing;
(c) means securing said leg of said lamp support to said base wall of the housing to position a lamp in the socket for directing light through the lens;
(d) wall members upstanding on the base wall toward said socket member and positioned on opposite sides of said socket member, said wall members terminating in ends;
(e) a terminal member mounted on said ends of the upstanding wall members and having a resilient portion extending therebetween and under portions of said socket member for electrical engagement with a lamp contact of a lamp therein, said terminal member having one end thereof

secured to one of said upstanding wall members and the other end engaging the other said upstanding wall member, and said terminal member being deflected by engagement of the lamp contact whereby said terminal member resiliently maintains said engagement; and

(f) means for effecting electrical connection of said terminal member and said socket member to a source of electrical power.

Re. 28,638

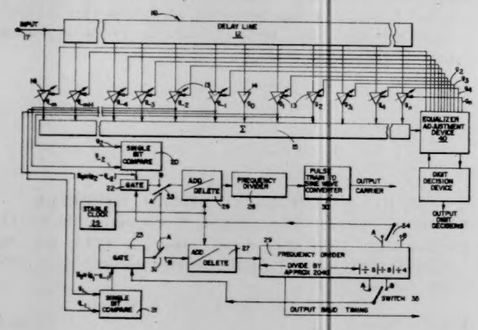
HIGH SPEED TRANSMISSION RECEIVER UTILIZING FINE RECEIVER TIMING AND CARRIER PHASE RECOVERY

Earl D. Gibson, Huntington Beach, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Original No. 3,694,752, dated Sept. 26, 1972, Ser. No. 125,660, Mar. 18, 1971. Application for reissue Sept. 25, 1974, Ser. No. 508,927

Int. Cl.[2] H04B *1/10*

U.S. Cl. 325—323 **5 Claims**



1. In combination with a high speed digital data receiver having a transversal equalizer with multiple adjustable attenuators, the improvement comprising:

a first comparator connected to the output of at least two adjustable attenuators of said equalizer, said first comparator providing an output signal corresponding to the sign of the difference between the gains at said two adjustable attenuators of said equalizer [, said first comparator providing an output signal corresponding to the sign of the difference between the gains at said two adjustable attenuators];

a second comparator connected to the output of at least two other of the adjustable attenuators of said equalizer, said second comparator providing an output signal corresponding to the sign of the difference between the gains at said other two adjustable attenuators;

a clock means for providing a train of clock pulses;

a first and a second ADD/DELETE means receiving as an input said train of clock pulses;

first and second gate means connected to receive the output signal from said first and said second comparators, respectively;

a fixed rate alternating switch means for connecting the output of said second gate means alternately to the input of said first and said second ADD/DELETE means;

a first switch means for connecting the input of said first ADD/DELETE means in one position to the output of said first gate means and in the other position to said fixed rate alternating switch means;

first and second frequency divider means connected to receive the output from said first and said second ADD-/DELETE means, respectively, the output of said first frequency divider means being a train of pulses that are proportional to the output carrier with the output of said second frequency divider being a train of pulses proportional to the output baud timing; and

two feedback means for connecting selected outputs from said second frequency divider means back to said first and said second gate means so as to control the time intervals at which said first and said second ADD-/DELETE means add or delete pulses to the pulse trains entering said first and said second frequency dividers, thereby controlling the time intervals between consecutive incremental adjustments of the output carrier phase and the output baud timing.

PLANT PATENTS

GRANTED DECEMBER 2, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,812

CHRYSANTHEMUM (INDEPENDENCE)

Leonard H. Shoesmith, Westfield, Woking, Surrey, England, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Nov. 4, 1974, Ser. No. 520,427

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct variety of chrysanthemum, substantially as herein shown and described, characterized by the very large size and pure white color of its blooms, its semi-incurve flower form with many broadly spooned ray florets, and its resistance to pinking.

3,813

CHRYSANTHEMUM PLANT (SPIRIT)

Leonard H. Shoesmith, Westfield, Woking, Surrey, England, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Nov. 4, 1974, Ser. No. 520,428

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct variety of chrysanthemum plant, substantially as herein shown and described, characterized by the pure white of its relatively large flowers of the decorative type, by the soft golden glow that appears from the base of the immature florets at and around the center of the bloom until the bloom reaches full maturity, and by its many tubular and spooned ray florets.

PATENTS

GRANTED DECEMBER 2, 1975

ERRATA

For CLASS	See PATENT NO.
101-382 MV	3,922,772
254-135 R	3,923,171
280-124 F	3,923,240
274-023 R	3,923,309
259-099	3,923,679
264-005	3,923,933
427-084	3,923,975
424-258	3,924,042
178-022	3,924,074
343-006 R	3,924,232
343-006 R	3,924,233
343-007 PF	3,924,234
343-007.4	3,924,235
343-016 R	3,924,236
343-786	3,924,237
343-807	3,924,238
343-909	3,924,239
346-172.5	3,924,270

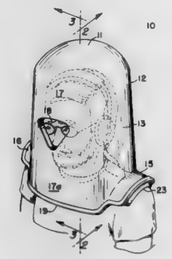
PATENTS

GRANTED DECEMBER 2, 1975

NOTE—A cross reference listing of applications published under Trial Voluntary Protest Program on January 28, 1975 is located in the back of this Issue. These entries will be in numerical order by document publication number.

GENERAL AND MECHANICAL

3,922,721
WEARABLE SOUND ATTENUATING ENCLOSURE
Robert S. Gales, San Diego, and Robert S. Harrah, La Jolla, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sept. 20, 1974, Ser. No. 507,825
Int. Cl.² G10K *11/04*
U.S. Cl. 2—2 R **3 Claims**



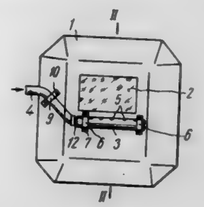
1. An apparatus for ensuring a high degree of acoustic isolation from impinging noise in a high noise environment comprising:

a rigid shell having a dome-shaped top portion, downwardly reaching front, back and side portions and a pair of shoulder portions each outwardly extending from a separate one of the side portions, all the portions are integrally formed, shaped with rounded contours which are dimensioned to define a cavity for enclosing the head, neck and upper thorax in a spaced relationship; and the front portion is provided with an opening for permitting visual and oral communication, yet being of a small enough size so as not to overly compromise ambient noise attenuation; at least one layer of a sound absorbing material mounted on the inner surfaces of the aforestated portions; and

means carried on the mouth of the cavity between the shell and the shoulders, the chest and the back for sealing the cavity shut except for the small opening in the front portion for sealing out impinging noise when said apparatus is placed to enclose the head, neck and upper thorax, the rigid shell, sound absorbing layer and sealing means are selected from materials which are sufficiently lightweight to permit portability and which acoustically cooperate to provide a ten db ambient noise attenuation.

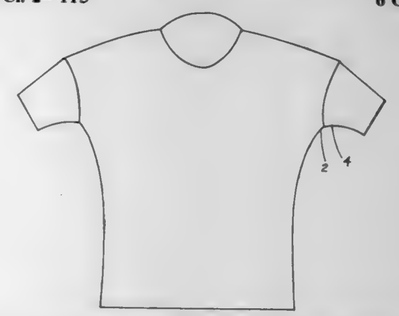
3,922,722
DEVICE FOR PROTECTIVE OPERATOR'S RESPIRATORY ORGANS AGAINST AEROSOLS
Igor Konstantinovich Pokʲodnya, Mechnikova, 3, kv. 21; Igor Mikhailovich Naumenko, ulitsa Sosninykh, 6, kv. 54, and Vladimir Nikolaevich Golovko, ulitsa Vladimirskaya, 9, kv. 29, all of Kiev, U.S.S.R.
Continuation of Ser. No. 423,305, Dec. 10, 1973, abandoned. This application Dec. 19, 1974, Ser. No. 534,308
Int. Cl.² A42B *1/00*
U.S. Cl. 2—8 **2 Claims**

1. A device for protecting the operator's respiratory organs against detrimental aerosols while breathing ambient air, comprising, in combination: a protective housing provided with a light filter and a perforated pipe having an end connected to a compressed air duct, characterised in that the perforated pipe is located on the outside of the housing under the light filter, has a length equal, at least, to that of the light filter, and is closed at another end thereof so as to blow the



aerosols up and away from the housing to prevent inhalation thereof.

3,922,723
METHODS AND ARTICLES FOR DEODORIZING USING ION EXCHANGE MANUFACTURE
Karel Popper, 95 Paraiso Court, Danville, Calif. 94526
Continuation-in-part of Ser. No. 106,610, Jan. 14, 1971, abandoned. This application July 24, 1973, Ser. No. 382,208
Int. Cl.² A41B *9/06*; A61K *7/32*
U.S. Cl. 2—113 **6 Claims**



1. A deodorant manufacture configured into a shaped article constituting a garment comprising anion exchange material, said garment being so fabricated and customarily so worn that its anion exchange material contacts odorant from a region of the body that commonly exudes an odor relatively strongly noticeable to humans;

said anion exchange material comprising weak base anion exchange fabric;

said anion exchange material being in non-fluid and essentially nondispersible, substantially extended form and having anion exchange sites capable of substantially sorbing anions from said odorant at the pH existing in the region of contact between said material and said odorant; any components of said material that are endowed with anion exchange sites and are grossly discernible as distinct from one another being, when considered as a group, constrained against any significant flowing so that these components as a group exhibit the characteristic of being non-fluid and essentially non-dispersible;

said garment having a body portion provided with armholes sufficiently high on said body portion so that the part of said garment adjacent to the armholes, including that region of the body portion adjacent to, and in part forming the boundary of, said armholes normally contacts the axilla of the wearer of the garment when said garment is worn by a wearer of the size of which the garment is

intended, the configuration of the garment being such that material of the garment is in contact with a substantial portion of the axilla;

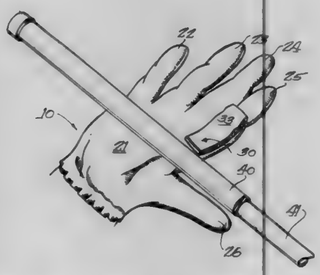
the effective surface area of that portion of the garment material which contacts the axilla being sufficiently large to contact a substantial portion of the area of the axilla which exudes odorant; and

those portions of the garment which contact the axilla including anion exchange sites.

3,922,724
GOLF GLOVE

Michael Joseph Shockovsky, 3901 N. Ridge West, Ashtabula, Ohio 44004

Filed Dec. 3, 1974, Ser. No. 529,065
Int. Cl.² A41D *19/00*
U.S. Cl. 2—161 A **3 Claims**



1. A golf club comprising, in combination:

a body portion having four finger stalls formed integrally therewith and extending outwardly therefrom, and having a thumb stall formed integrally therewith and extending outwardly therefrom, said body portion including a palm portion;

a rectangularly shaped elongated pad member fabricated of a soft and supple resilient flexible compressible material having a flat top surface, a flat bottom surface, opposed flat side edges, and opposed flat top and bottom end edges extending parallel to each other;

a cover member completely surrounding said pad member fabricated of a flexible material, said cover member having a flat top surface, a flat bottom surface, opposed flat parallel side edges, and opposed parallel flat top and bottom end edges;

said pad member and its said cover member being permanently affixed along said bottom surface to the palmar side of said index finger stall with said top end edge of said pad member positioned on said index finger stall at the approximate point at which the first joint of an individual's index finger would fall when an individual was wearing said glove on his hand, said pad being of a length extending downwardly from said top edge and terminating at said bottom edge at a position adjacent the base of said index finger stall with said pad member overlapping a point of joining of an individual's index finger to an individual's palm when an individual's hand is inserted into the glove so that the pad member cushions the first metacarpus and phalanges of the individual's hand when the individual grips a hand grip portion of a golf club;

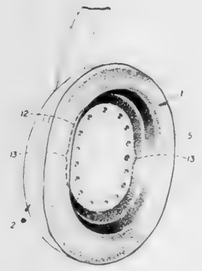
said pad member and said cover member being permanently affixed to said index finger stall by adhesive; and

said glove with said pad member providing a positive fit between an individual's gloved hand and the golf club hand grip with said pad member filling in the natural gaps which are otherwise created as a result of the contrasting soft fleshy parts of a golfer's fingers and the hard ridges of the finger knuckle joints when a hand grips the smooth rounded surface of a golf club hand grip, thus providing a greater contact area between the critical elements of the golf club hand grip and the thumb, index finger and palm portions of an individual's hand.

3,922,725
COMFORT CUSHION FOR EAR MUFFS, IN PARTICULAR SOUND SHELLS

Kalman Csiki, Landskrona, and Rune Lundin, Billesholm, both of Sweden, assignors to Gullfiber AB, Billesholm, Sweden

Filed Nov. 26, 1974, Ser. No. 527,192
Claims priority, application Sweden, Dec. 21, 1973, 73174021
Int. Cl.² A42B *1/06*
U.S. Cl. 2—209 **6 Claims**



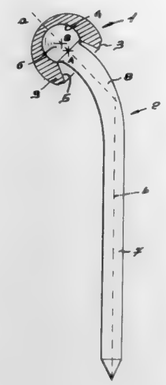
1. A comfort collar adapted to be mounted on an ear muff, and in particular on a muff of the sound shell type having a generally cup-shaped, rigid holder part supporting on its periphery the contact part of the shell which surrounds an ear of the user, said collar mainly comprising a soft, moisture absorbing material having thereon a first part disposed to cover the contact part of the shell surrounding the ear, and having a generally cup-shaped central part formed to fit into said cup-shaped portion of the shell and intended to receive the ear of the user, and means on the bottom of the cup-shaped part of said collar for resiliently and releasably securing said collar to the shell, the collar, when mounted on the shell during utilization thereof, preventing direct contact between the shell and the head of the user.

3,922,726
JOINT PROSTHESIS

Claudio Trentani, Via Tessitori, 5, and Sergio Sandrolini Cortesi, Via Guglielmini, 6, both of Bologna, Italy

Filed Aug. 20, 1974, Ser. No. 498,883
Claims priority, application Italy, Aug. 27, 1973, 3477/73
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1.912 **4 Claims**

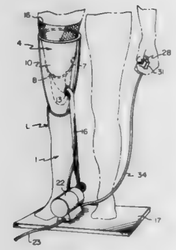
1. Hip-joint prosthesis comprising a cup member for placement in an articulating relation in an acetabulum of the pelvis, said cup member having a continuously smooth outer spherical surface and an inner spherical cavity which communicates with the outside through an opening, a femoral insert including a stem for insertion into the femoral bone after removal of the epiphysis thereof and a spheroidal head engaging said spherical cavity through said opening and articulated therein, wherein according to the improvement said spherical cavity is eccentrically located with respect to the outer surface of the cup member so as to be displaced in a direction diametrically opposite to said opening.



3,922,727
APPARATUS TO ASSIST FASTENING OF AN ARTIFICIAL LIMB

Frank Bianco, 30-75 14th St., Long Island City, N.Y. 11102

Filed July 17, 1974, Ser. No. 489,235
Int. Cl.² A61F *1/00, 1/02*
U.S. Cl. 3—1 **4 Claims**



1. Apparatus for assisting an amputee in fitting to a stump of his amputated limb an artificial limb of the type having a cavity therein with a hole through the limb providing access to the cavity comprising:

an elongated stocking having one end passing through the hole into said cavity and adapted to fit over the end of the stump,

a reversible electric motor having an output shaft,

means on said output shaft for holding the part of the stocking extending outside of the artificial limb, said stocking being wound or unwound as said output shaft is rotated in one direction or the other,

control switch means electrically connected to said motor to control the operation and the direction of rotation of its output shaft to control the tension on the stocking to draw the stocking off the limb and through said hole of the artificial limb as the stump is fit into the cavity of the artificial limb, and

an elongated control cable electrically connected between said motor and said control switch means so that said control switch means can be held by the hand of the amputee fitting the artificial limb.

3,922,728
ARTIFICIAL CRYSTALLINE LENS

Mikhail Mikhailovich Krasnov, ulitsa Vesnina 30, kv. 12, Moscow, U.S.S.R.

Filed Aug. 15, 1974, Ser. No. 497,638
Int. Cl.² A61F *1/16, 1/24*
U.S. Cl. 3—13 **1 Claim**

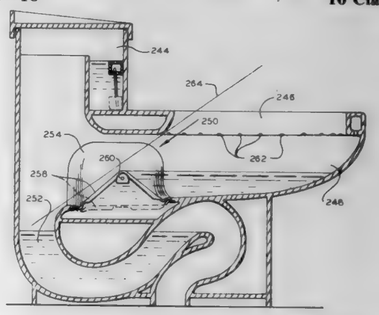


1. An artificial crystalline lens intended to be attached to the ciliary border area in the anterior chamber, outside the pupil area, said artificial crystalline lens comprising: an optical lens; a supporting leg having one end attached adjacent a peripheral edge of said lens and extending radially outwardly to a terminal free opposite end, said supporting leg having a stepped bend portion intermediate said ends which is spaced outwardly from said peripheral edge, which leg serves for the attachment of said optical lens and is intended to be introduced into a hole made in the iris outside the pupil area; and a seam receiving means for the attachment of said optical lens to the iris, said means being located at the edge of said optical lens which is opposite to the location of said supporting leg.

3,922,729
TOILET FLUSH SYSTEM

David C. Ashley, 108 DeWitt Road, Syracuse, N.Y. 13214

Filed Sept. 13, 1973, Ser. No. 396,755
Int. Cl.² A47K *17/00*; E03D *11/00*
U.S. Cl. 4—10 **10 Claims**



1. A toilet of the type wherein flushing water is provided to carry the bowl contents through a liquid sealed trap, said toilet comprising:

a. a bowl having an open top and a laterally disposed outlet;

b. a trap having inlet and outlet sides defined by a pipe having two vertical changes of direction, with liquid being retained to seal the trap between said inlet and outlet sides;

c. dam means between said bowl outlet and trap inlet movable between a first portion, wherein said dam means obstructs flow between said bowl outlet and trap inlet to mutually isolate the liquids in said bowl and trap, and a second position, wherein liquid may flow by gravity from said bowl outlet to said trap inlet;

d. a passageway connecting said bowl outlet and trap inlet, said dam means being disposed in said passageway and

said trap being laterally disposed with respect to said bowl outlet to permit direct visibility of the liquid at said trap inlet through said bowl outlet and passageway when said dam means is in said first position;

e. first means for effecting movement of said dam means between said first and second positions;

f. second means for providing a flow of flushing liquid into said bowl; and

g. actuating means manually movable to effect cooperative actuation of both said first and second means.

3,922,730

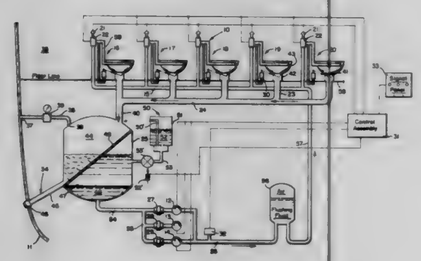
RECIRCULATING TOILET SYSTEM FOR USE IN AIRCRAFT OR THE LIKE

James M. Kemper, Sherman Oaks, Calif., assignor to Monogram Industries, Inc., Santa Monica, Calif.

Filed Mar. 11, 1974, Ser. No. 449,619

Int. Cl.² E03D *5/016*

U.S. Cl. 4—10 **11 Claims**



1. A recirculating toilet system for use in a pressurized cabin of an aircraft or the like comprising:

at least one toilet assembly disposed in said cabin having a valve-controlled drain line;

a waste tank under vacuum operatively connected to said drain line having a pressure in its interior at a lesser pressure than the exterior pressure at the toilet assembly; vacuum controlling means associated with said tank for controlling the vacuum within the interior of the tank;

a valve-controlled flushing line communicating with both the interior of said tank and said toilet assembly; and

at least one pump disposed in said flushing line having an inlet in fluid communication with the interior of said tank and an outlet in fluid communication with said toilet assembly; and

at least one pump disposed in said flushing line having an inlet in fluid communication with the interior of said tank and an outlet in fluid communication with said toilet assembly.

3,922,731

FLUSH VALVE HANDLE ARRANGEMENT

Stanley F. Korol, Mansfield, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 22, 1974, Ser. No. 463,006

Int. Cl.² E03D *5/02*

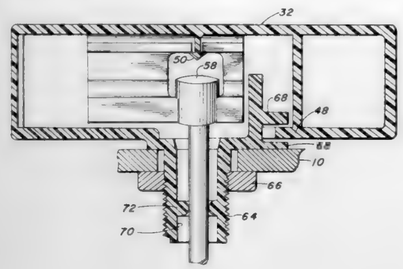
U.S. Cl. 4—67 R **12 Claims**

1. A one piece handle assembly for operating the flush mechanism of a water closet tank by means of an operating rod, comprising

a first part adapted to be fixedly positioned with respect to the tank and having an opening for said operating rod to pass;

means forming a fulcrum of said rod associated with said first part; and

a handle body directly connected to the first part by an integral hinge and having one end of said rod connected thereto, said handle body being movable about said hinge



to pivot said rod about said fulcrum, and thereby operate said flush mechanism.

3,922,732

METHOD OF AND SYSTEM FOR HEATING SWIMMING POOLS

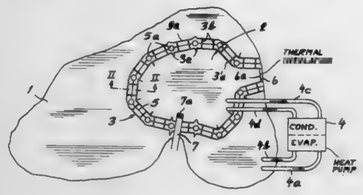
Wolfgang Friedel, Danziger Strasse 2, 6944 Hemsbach am der Bergstrasse, Germany

Filed May 13, 1974, Ser. No. 469,303

Claims priority, application Germany, May 12, 1973, 2324208

Int. Cl.² E04H *3/16*

U.S. Cl. 4—172 **10 Claims**



1. A method of providing a heated swimming pool in a colder environment, comprising the steps of thermally insulating a limited water volume within a larger body of water against the surrounding water along a substantially closed boundary terminating short of the bottom of said body of water to delimit a downwardly open enclosure, circulating a first flow from said surrounding water through a heat pump for abstracting heat therefrom, and circulating a second flow from said limited water volume through said heat pump for elevating the temperature thereof by the heat abstracted from said first flow, with direct contact between the heated water within said boundary and an underlying mass of colder water from said larger body.

3,922,733

PORTABLE SINK OVER-FLOW DEVICE

Halsey H. Lyon, 110 Van Winkle, San Anselmo, Calif. 94960, and Frank H. Delmel, 1450 31st Avenue, San Francisco, Calif. 94122

Filed July 25, 1974, Ser. No. 491,744

Int. Cl.² E03C *1/24*

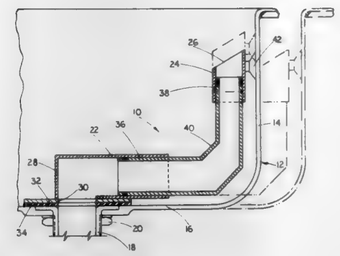
U.S. Cl. 4—191 **6 Claims**

1. A portable, temporary sink over-flow device comprising: an elbow duct;

means sealing off the end of one leg of said elbow duct;

a bottom opening adjacent said one end adapted for registry with a sink drain;

a plate of relatively large area secured to said one leg so that water pressure may be asserted over the area thereof to anchor said elbow duct against flotation without firm attachment thereof to a sink; and



means on the bottom of said one leg adapted to seal around said bottom opening and around a sink drain.

3,922,734

NEW SLIDING SYSTEM APPLIED TO FOLDAWAY FURNITURE

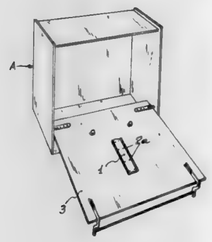
Jose Pardo Herrera, Carretera de Logrono, Km. 1,7, Zaragoza, Spain

Filed Feb. 4, 1974, Ser. No. 439,587

Claims priority, application Spain, Feb. 3, 1973, 411250

Int. Cl.² A47C *13/38*

U.S. Cl. 5—2 B **3 Claims**



1. An article of furniture in the form of a combination cabinet and folding bed comprising a cabinet having a bottom wall, spaced apart vertical side walls, a top wall, a vertical rear wall and an open front, a front panel having a lower end portion hingedly attached to the cabinet so as to be movable from a closed vertical position wherein it closes off the open front and forms a front wall for the cabinet into an open horizontal position, a channel strip fixedly superimposed on the inside face of the front panel and disposed at right angles to the hinged horizontal axis of the front panel, an articulated mattress bed unit composed of hingedly attached sections and adapted to be folded into a collapsed condition with the sections vesting on one another and to be stored in such collapsed condition within the cabinet, a strip member slidable in said channel strip for longitudinal movement normal to the hinged axis of the open front panel, a pivot member carried by the slidable strip member and arranged perpendicular thereto, a guide strip affixed to one of the bed unit sections and rotatably mounted on the pivot member whereby the bed unit can be slid out from the cabinet and the sections opened and then the open bed unit can be rotated about the pivot member to place the open bed in selected angular positions on the open front panel relative to the cabinet.

3,922,735

BED FOR PATIENT

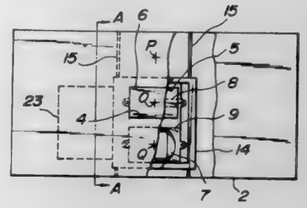
Hisao Kato, No. 37, 2-Chome, Showa, Nemuro, Hokkaido, Japan

Filed May 6, 1974, Ser. No. 467,535

Claims priority, application Japan, May 7, 1973, 48-49690

Int. Cl.² A61G *7/04*

U.S. Cl. 5—91 **5 Claims**



1. A bed for a patient, comprising a base frame, and a thick first mat on the base frame, the first mat and the base frame being formed with a hole, and the bed further comprising:

a cover plate with a second mat arranged below said first mat and vertically movable upwardly into said hole formed in said first mat and said base frame to snugly close said hole and downwardly away from said hole to open the same, the upper surfaces of said two mats being substantially flush with each other to provide a comfortable support for the patient when said second mat is in said hole of said first mat; a flush pot for the patient's excretion arranged below said first mat and vertically movable upwardly into said hole of said mat and said base frame in place of said second mat to such a level that the rim of said pot is flush with the upper surface of the first mat and downwardly away from said hole;

a support frame for supporting said cover plate with said second mat and said flush pot side by side; lifting guides arranged in said support frame for vertically guiding said cover plate with said second mat and said flush pot, respectively;

lifting mechanisms for separately lifting said cover plate and said pot along said guides, respectively;

rails fixed with respect to said base frame and on which said support frame is movably mounted; and

a driving mechanism for horizontally reciprocatingly moving said support frame along said rails to move said cover plate from a first position corresponding to the center of said hole to a second position spaced from said first position and simultaneously to move said pot from a first position to a second position corresponding to the center of said hole and vice versa.

3,922,736

MACHINE AND METHOD FOR SPACE DYEING

Emery M. Mand, Los Angeles, Calif.; Joyce C. Amley, deceased, late of La Mirada, Calif., and by Loretta Amley, executrix, La Mirada, Calif., assignors to Mand Carpet Mills, Los Angeles, Calif.

Continuation of Ser. No. 200,738, Nov. 22, 1971, abandoned. This application Nov. 2, 1973, Ser. No. 412,294

Int. Cl.² D06P *1/00*

U.S. Cl. 8—149 **37 Claims**

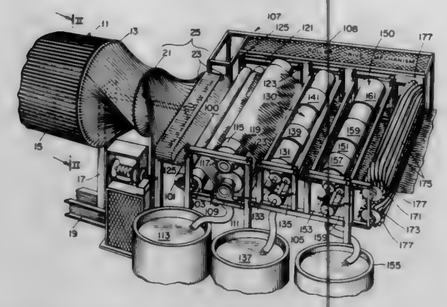
1. A machine for dyeing each of a plurality of strands of yarn with a random coloration along the length thereof comprising

means for arranging said plurality of strands in substantially a single plane defining a center line axis,

means for moving said plurality of strands longitudinally through the single plane,

means for constantly varying the position of each strand of said plurality of strands relative to the axis of the plurality

thereof and the point of entry of each strand of said plurality into the machine, and



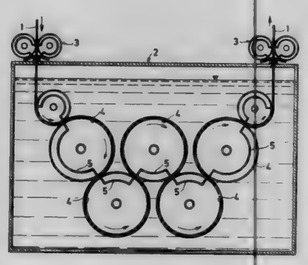
means for applying a dye only to the strands of said plurality which traverse a predetermined location relative to the lateral and longitudinal limits of the plane.

3,922,737

PROCESS FOR THE CONTINUOUS WET-TREATMENT UNDER PRESSURE

Hans-Ulrich von der Eltz, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 26, 1973, Ser. No. 344,987
Claims priority, application Germany, Mar. 29, 1972, 2215280
Int. Cl.² D06B *3/02*
U.S. Cl. 8—151 **3 Claims**



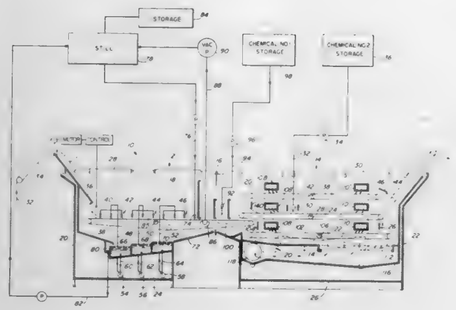
1. In a process for the continuous fixation of heat-fixable dyestuff on a textile material using a hot liquid as the fixation medium, the improvement which comprises: fixing said dyestuff upon said textile material under superatmospheric pressure conditions and at a temperature of from 105°C to 145°C, by passing the said textile material impregnated or printed with said dyestuff through a dyestuff-free fixation liquid at a temperature of 105°C to 145°C, said fixation liquid being contained within a pressure-sealed fixation zone, the pressure throughout said zone being maintained above atmospheric pressure, and over the surface of a rotating perforated drum within said pressure-sealed fixation zone, while maintaining a pressure differential between the liquid and the interior of the said drum, such that liquid is caused to pass through the material and into the drum.

3,922,738

METHOD FOR TREATING A RUNNING FABRIC WEB

William J. Holm, Springfield, Vt., assignor to Riggs & Lombard, Inc., Lowell, Mass.

Division of Ser. No. 207,430, Dec. 13, 1971, Pat. No. 3,803,879. This application Apr. 15, 1974, Ser. No. 460,926
Int. Cl.² D06B *1/02, 15/04, 21/00*
U.S. Cl. 8—151 **1 Claim**



1. The method of treating a running fabric web, comprising the steps of,
a. transporting said web in a flat relaxed condition longitudinally along a horizontal path,
b. directing separate flows of a treatment liquid transversely across the upper surface of said web at different longitudinally spaced positions along said path while agitating said web,
c. collecting the drains from one flow and recycling at least a portion of the drains in another flow,
d. directing a flow of fresh liquid onto said web after said separate flows and collecting the drains thereof for recycling in said separate flows,
e. applying a vacuum to a portion of said web to remove at least some of said liquid therefrom after said web has received a flow of fresh liquid, and,
f. transporting said web in a flat relaxed condition along a second predetermined path and directing a flow of a heated gas including vaporized treatment liquid over said web while agitating said web.

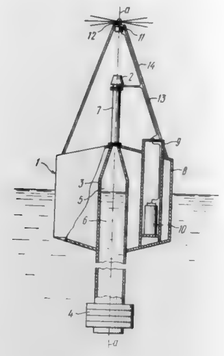
3,922,739

APPARATUS FOR CONVERTING SEA WAVE ENERGY INTO ELECTRICAL ENERGY

Ivan Andreevich Babintsev, Bulvar Yana Rainisa, 20, korpus 2, kv. 152, Moscow, U.S.S.R.

Filed Apr. 18, 1974, Ser. No. 462,090
Int. Cl.² B63B *21/52*
U.S. Cl. 9—8 R **1 Claim**

1. An apparatus for converting sea wave energy into electrical energy, comprising: a buoy which executes periodic forced vibrations with a natural frequency approximating the wave frequency along the vertical axis thereof in a manner that the buoy moves with respect to the wave surface; an air chamber in said buoy; a hydraulic piston in said buoy; a turbogenerator for converting the airflow kinetic energy into electrical energy; a turbine stage including rigidly fixed blades in said turbogenerator; a stator including rigidly fixed blades of said turbine stage; a rotor of said turbine stage, disposed downstream of said stator with respect to the direction of said airflow; a supplementary stator including rigidly fixed blades of said turbine stage, disposed downstream of said rotor with respect to the direction of said airflow and made symmetrical with said stator with respect to the plane of rotation of said rotor; a generator of said turbogenerator; a shaft of said generator; also mounted whereon is said rotor of said turbine stage;



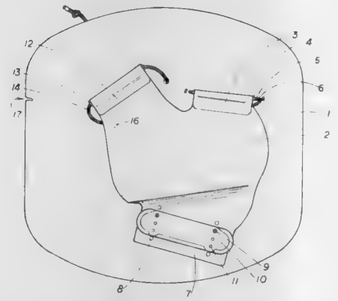
an air duct for said air chamber to communicate with said turbogenerator.

3,922,740

HAND SWIM FINS

Glenn J. Potter, 1332 South Hope Street, Los Angeles, Calif. 90015

Filed Feb. 26, 1975, Ser. No. 553,219
Int. Cl.² A63B *31/02*
U.S. Cl. 9—307 **8 Claims**



1. Paired swim fins fitting left and right hands of the user comprising in the case of each hand the combination of an essentially rigid thin planar plate of appropriate size and generally rounded shape, and a hand cover, releasable at one or more of its attachments to said plate, of such construction as to hold the hand, palmar surface against the plate, said combination obtaining for the power stroke a dynamic balance centered at about the center of the palm and presenting with the hand when moved through the water on the back stroke, ulnar edge leading, low resistance because of the thinness and flatness of the plate, the streamlining of the hand cover, and the alignment of the digits behind one another; said combination being non-buoyant and of low mass; said combination fastening only to the body of the hand and not to the digits or wrist so as not to hamper movement of anatomical parts especially pronation of the hand, nor style particularly swimming on the back; said combination further being of graded sizes to fit various hand sizes and muscular powers, or otherwise said combination being of graded sizes to fit various hand sizes and muscular powers and also with structure offering adjustment means for fitting a variety of shapes and sizes of hands.

3,922,741

COMPOSITE SWIM FINS

Roberto Semeia, Rapallo, Italy, assignor to AMF Mares Sub S.p.A., Rapallo, Italy

Filed Jan. 9, 1974, Ser. No. 431,693
Claims priority, application Italy, Jan. 9, 1973, 12405/73
Int. Cl.² A63B *31/10*
U.S. Cl. 9—309 **2 Claims**



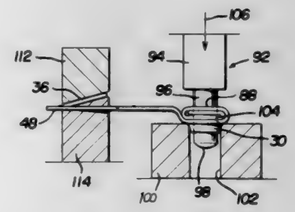
1. A swim fin comprising a scoop member made from a relatively stiff plastic material molded to a shoe member made from a relatively soft synthetic elastomer, said scoop member having two side webs laterally surrounding at least the fore end of the shoe member, the upper edge of each side web having an inwardly extending rim, said side webs having at least one side opening and at least one vertical bore passing through the side webs' upper rim through which the molded shoe material on the outer surface of the shoe side wall penetrates, said scoop member having a planar portion coextensive with and extending substantially longitudinally of the front sole portion of the shoe member and extending laterally between the side webs to thereby form a half-sole portion for the shoe member, said planar portion of the scoop member having recesses and projections in its upper surface engaging the lower surface of the shoe sole, whereby the molded shoe material on the lower surface of the shoe sole penetrates the recesses on the sole portion of the scoop member, and the projections thereon are embedded into said lower surface of the shoe sole, thereby providing an additional mechanical bond between the scoop member and the shoe member.

3,922,742

METHOD OF MAKING A LAMINATED NUT AND CLIP

Robert Harvey Markey, Warren, Mich., assignor to Multifastener Corporation, Detroit, Mich.

Filed Aug. 15, 1974, Ser. No. 497,814
Int. Cl.² B21D *53/24*
U.S. Cl. 10—86 R **11 Claims**



1. A method of forming a nut, comprising the steps of:
a. piercing a circular hole through a plurality of generally flat laminae retained in face-to-face contact, with a piercing tool disposed from one side face of said laminae forming generally ragged edges on the opposite face of said laminae,
b. extruding an integral barrel portion in said laminae by disposing a cylindrical punch through said pierced hole from opposite said one laminae side face, thereby extruding the ragged pierced laminae edges into said barrel portion, said punch having a diameter greater than the diameter of said pierced circular hole and forming a barrel end extending from said one side face of the lami-

nae with each lamina having a conical portion nested within said barrel portion; and

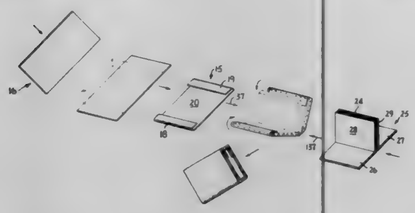
c. forming a continuous female spiral thread in said pierced laminae hole on the edges of said laminae surrounding said hole through said opposite side face of said laminae.

3,922,743

METHOD AND APPARATUS FOR APPLYING JACKETS TO COVERS OF BOOKS OR THE LIKE

Emil H. Schuler, Riverdale; Robert C. Schuler, Woodcliff Lake, and Howard N. Lathey, Tappan, all of N.J., assignors to Schuler Brothers Inc., Bergenfeld, N.J.

Filed June 28, 1974, Ser. No. 484,323
Int. Cl.² B42C *15/00*
U.S. Cl. 11—1 R **36 Claims**



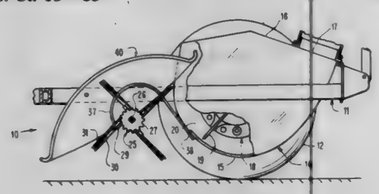
1. A method of applying jackets to the covers of books, comprising the steps of converting successive sheet-like blanks into jackets each of which includes a central panel and two flaps flanking the panel; moving successive jackets to an assembly station along a first path; opening successive books so that their covers are spaced apart from the leaves; moving the thus opened books to said assembly station along a second path so that portions of the covers of a book enter between the panel and the flaps of a jacket at said station; and closing the book so that the flaps of the respective jacket are located between the covers and leaves of the thus jacketed book.

3,922,744

PICK-UP APPARATUS FOR DEBRIS COLLECTOR

Charles W. Doering, Clarksville, Ind., assignor to Brinly-Hardy Co., Inc., Louisville, Ky.

Filed Nov. 18, 1974, Ser. No. 525,013
Int. Cl.² A01G *1/12*
U.S. Cl. 15—83 **10 Claims**



1. An apparatus for collecting debris including:

a frame having wheels to support said frame;

a housing supported by said frame;

said housing having compression means to compress debris received by said housing;

and debris pick-up means rotatably supported by said frame to pick up debris for supply to said housing for compression;

said debris pick-up means including:

support means for rotation about a substantially horizontal axis;

means to rotate said support means;

said support means having a plurality of brushes supported thereon and angularly spaced from each other about the axis of rotation;

each of said brushes being formed in a helix;

stripping means supported by said frame for cooperation with each of said brushes separately to strip debris therefrom just prior to the debris entering said compression means;

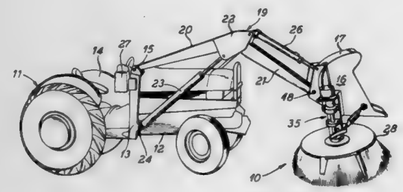
and said stripping means having a plurality of spaced stripper bars, each of said stripper bars having its end engaged by one of said brushes separately, and each of said brushes engaging the ends of all of said stripper bars during rotation of said brushes prior to the next of said brushes engaging the end of any of said stripper bars.

3,922,745

BROOM DEVICE

Gerhard H. Lehman, Chicago, Ill., assignor to Elgin Sweeping Services, Inc., Chicago, Ill.

Filed Feb. 14, 1974, Ser. No. 442,499
Int. Cl.² E01H *1/05*
U.S. Cl. 15—87 **8 Claims**



1. A broom device for use on a vehicle for sweeping surfaces which are located at different elevations relative to the surface on which the vehicle is supported, the vehicle having a frame, a boom structure mounted for pivotal movement on the frame of the vehicle and having a first member pivotably mounted on a free end thereof, said boom structure including means to pivot the boom structure relative to the vehicle to raise and lower the first member and means for pivoting the first member about a pivot axis relative to the boom structure, said broom device comprising a broom mounted on an end of a drive shaft, said broom comprising a plurality of bristles terminating in a plane forming a sweeping surface extending substantially perpendicular to the drive shaft, means for rotating the drive shaft and broom and means attached to the first member for mounting the shaft for rotation, said means for mounting including a base attached to the first member and means for adjusting the orientation of the drive shaft relative to said base, said means for adjusting including an element supporting the means for rotating the drive shaft and having bearings for rotatably supporting said drive shaft, a second member supported on said base, a first arm extending from the second member and pivotably connected to the element, and an adjustable arm pivotably connected to the second member and attached to said element so that the raising and lowering of said first member by said boom structure enables sweeping surfaces located at different elevations relative to the surface on which the vehicle is supported and pivoting of said first member relative to said boom structure enables changing the angle of the sweeping surface of the broom relative to the surface being swept.

3,922,746

BLEEDER VALVE CLEANER

Fred E. Strunk, 205 Landana St., Vallejo, Calif. 94590

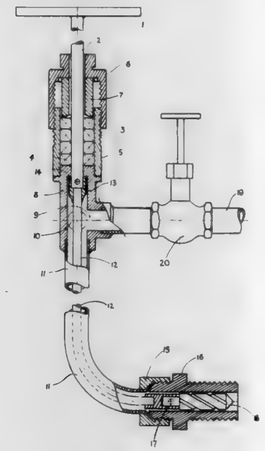
Filed May 8, 1974, Ser. No. 467,954
Int. Cl.² B08B *9/02*
U.S. Cl. 15—104.1 R **3 Claims**

1. In a cleaner suitable for cleaning a bleeder valve in a high pressure line without reducing the pressure in the line, said cleaner including a casing, coupling means mounted to one

end of said casing and adapted for fluid-tight coupling of said cleaner to said valve, shaft means rotatably and reciprocally mounted in said casing and extending from proximate the coupling end of said casing to a position outwardly of the opposite end of said casing, a drill connected to said shaft means proximate the coupling end of said casing, said shaft means outwardly of said casing being adapted for engagement to effect rotation and reciprocation thereof, and a valve connected to said casing and adapted for selective venting of the interior of said casing, the improvement comprising:

said shaft means being formed with an inflexible, smooth surfaced section;

a packing gland mounted to said casing in fluid-tight relation thereto and surrounding and engaging said shaft means over a portion of said smooth surfaced section, said gland being adapted to provide a high pressure,



fluid-tight seal between said smooth surfaced section and said gland while permitting reciprocation and rotation of said shaft with respect thereto;

said smooth surfaced section having an overall length at least about equal to the length of said gland plus the length that said shaft means is to be reciprocated;

said shaft means and said casing being provided with oppositely facing shoulders formed for interengagement to limit the displacement of said shaft means in said casing away from the coupling end thereof to prevent said smooth surfaced section from reciprocation to a position out of sealed engagement with said gland; and

said shoulders being formed and said shaft means having a length causing said drill to be positioned substantially inside said casing upon interengagement of said shoulders.

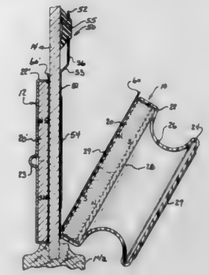
3,922,747

MAGNETIC WINDOW CLEANING APPARATUS WITH IMPROVED CLEANING MATERIAL

John A. Kaftan, 324 N. Roosevelt, Green Bay, Wis. 54301

Division of Ser. No. 90,900, Nov. 19, 1970, Pat. No. 3,751,750, which is a continuation-in-part of Ser. No. 807,524, March 17, 1969, Pat. No. 3,609,793. This application July 23, 1973, Ser. No. 381,539
Int. Cl.² A47L *1/08*
U.S. Cl. 15—220 A **6 Claims**

1. A magnetic window cleaning apparatus of the type having a pair of units adapted to be positioned on either side of a window opposite each other, each unit having a window-facing side and magnet means for attracting the opposite unit, one unit being a master unit adapted to be moved over one side of the window, and the other unit being a slave unit adapted to follow the master unit, wherein the improvement comprises: the window-facing side of each unit being substantially flat over its entire area; a sheet of cleaning material overlying the window-facing side of each unit and comprising a layer of absorbent paper of preselected thickness having polyethylene chips of 35 mesh size on only the window-facing side of the paper; the polyethylene being about 0.005 inch thick and in a discontinuous layer so that about 50% of the



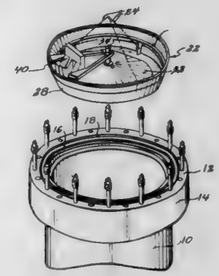
area of the paper is exposed for its absorption function; the polyethylene providing a reduced friction between the cleaning material and the window; and the window-facing side of each unit being formed at least partly of rubber to provide a high-friction surface for engaging the paper at the back side of the cleaning material so that the cleaning material will adhere to the rubber surface without additional fastening means as the unit is moved over the window.

3,922,748

REACTOR VESSEL SEAL SERVICE FIXTURE

William C. Ritz, Greensburg, Pa., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed May 9, 1974, Ser. No. 468,322
Int. Cl.² F22B *37/48*
U.S. Cl. 15—246.5 **6 Claims**



1. Apparatus for the removal of a surface coating on a circularly arranged surface located in the upper edge of an open cylindrical vessel comprising:

a. stationary pan means having a frustoconical side wall adapted to be supported on a vessel;

b. truck means for riding on the top edge of said side wall;

c. means pivoted on the center axis of said pan for guiding said truck means in its circular movement along the top edge of said side wall;

d. said truck means including means to propel itself and said pivoted means; and

e. means including cleaning means supported by said pivoted means, said cleaning means being adapted for riding on the upper edge surface of a cylindrical vessel for clean-

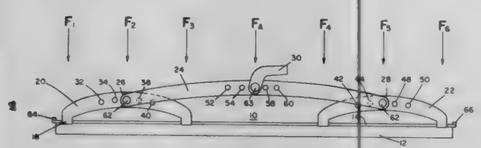
ing a cylindrical surface as said truck means rotates along said side wall top surface about said axis.

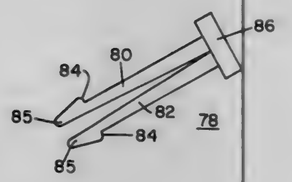
3,922,749

ADJUSTABLE WINDSHIELD WIPER BLADE

Curtis H. Castleman, Jr., Evergreen, and Irwin C. Cone, Littleton, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Mar. 20, 1974, Ser. No. 452,855
Int. Cl.² B60S 1/04, 1/40
U.S. Cl. 15—250.42 11 Claims





1. In a windshield wiper blade having a wiping element and a flexible backing member associated therewith, a pressure distributing superstructure attached to the backing member comprising a primary yoke and a pair of secondary yokes attached intermediate their ends to the primary yoke, said primary yoke having intermediate its ends means pivotally engageable with a pressure transmitting wiper arm at a pivot point, and said secondary yokes having a plurality of means attaching the flexible backing member at discrete spaced longitudinal points therealong thereby transmitting forces to the backing member at each of the spaced points, the improvement comprising:

both of said attachments between the primary yoke and secondary yokes, and the pivotal attachment between the means of the primary yoke and of the wiper arm, respectively, being adjustable between a plurality of longitudinal points to form a plurality of selectable discrete attachment positions so that at least in one of the attachment positions the forces transmitted to the backing member on either side of a transverse plane passing through the pivot point are unbalanced with respect to one another.

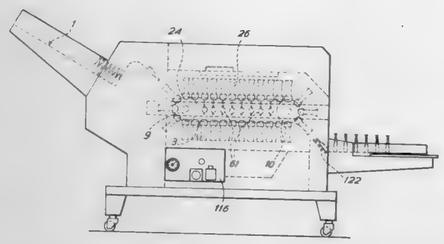
7. In combination, a wiper arm connector having a through bore and a windshield wiper having a through bore coupled together with the wiper arm connector by a connecting pin joining in side-by-side alignment the respective bores, said connecting pin comprising a head portion at one end of the bores and located outside the bores, a bilobed resilient body contained within the bores and normally split apart, the bilobed body terminating at the outside of the bores opposite the head portion in a pair of shoulder stop portions for retention of the pin in assembled connecting relationship, whereby the arm connector and windshield wiper may be disconnected by depressing together the shoulder portions of the pin and sliding the pin out through the aligned bores.

3,922,750

MACHINE FOR CONTINUOUSLY WASHING OPEN VIALS

Elisabetta Cioni; Lucia Cioni, and Rovena Anichini, widow Cioni, all of 22, Via di Marciano, Siena, Italy (I-53100)

Filed Mar. 8, 1974, Ser. No. 449,443
Claims priority, application Italy, Mar. 12, 1973, 9374/73
Int. Cl.² B67C 1/06
U.S. Cl. 15—302 7 Claims



2. In a vial washing machine, means for feeding individual vials down an inclined path with the openings of the vials directed downwardly, an endless indexing conveyor including means defining a plurality of rows of spaced seats, each seat being capable of receiving from the feed means one said vial with the opening thereof facing downwardly, an assembly of upwardly-directed hollow needles complementary to the downwardly-directed vials when stationary at a station to which they have been carried by the indexing conveyor, means for raising the needles so that they penetrate into the vials to effect the required washing when the vials are stationary, and means for discharging the washed vials along an arc which inclines the vials so that they slide from said seats, said feed device comprising slide channels for arranging the vials in side-by-side configuration, and means for raising said vials in said channels, said channels defining an arcuate track which extends upwardly and then downwardly toward said seats in the path of said vials, to cause said vials to be tilted as they are raised over the arcuate track to introduce the vials into the seats at a reception station.

3,922,751

AIR ETCHING OF POLYMERIC PRINTING PLATES

Forrest A. Wessells, Baltimore, and John E. Pickard, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

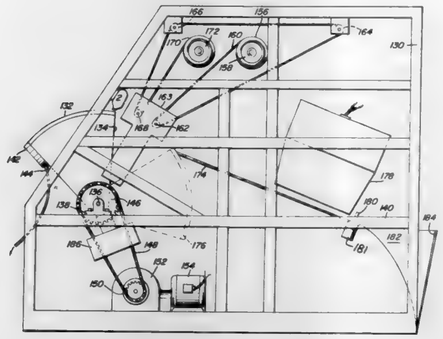
Continuation-in-part of Ser. No. 351,415, April 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 316,253, Dec. 18, 1972, abandoned, which is a continuation-n-part of Ser. No. 178,723, Sept. 8, 1971, abandoned. This application Aug. 14, 1973, Ser. No. 388,234
Int. Cl.² A47L 5/38
U.S. Cl. 15—306 R 22 Claims

1. Apparatus comprising in combination,
a. a frame;
b. an air knife affixed in said frame and comprising a chamber with air inlet means and air exit means; said air exit means consisting of a spaced gap in the said chamber adapted to shape air exiting therefrom as a sheet; and
c. a wedge shape frame, arcuate at its wide area and pivoting at its apex, and carrying a convex platen, said platen being adapted to move under said air knife.

2. Apparatus according to claim 1 including means to pivot the platen under the air knife and to return the platen to its starting position.

7. The apparatus of claim 2 in which the air knife assembly contains a blotting assembly adapted to blot the letter-press plate after it has passed under the air knife, comprising at least one blotting system comprising elements:

1. a supply roll of blotting web;
2. a pressure roll adapted to press said blotting web against the letter-press plate; and



3. a take-up roll adapted to roll up used blotting web.

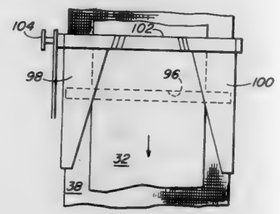
8. The apparatus of claim 2 in which the air knife assembly comprises two blotting systems comprising said elements (1), (2), and (3).

3,922,752

FABRIC TREATMENT APPARATUS

William J. Holm, Springfield, Vt., assignor to Riggs & Lombard, Inc., Lowell, Mass.

Division of Ser. No. 240,602, April 3, 1972, Pat. No. 3,828,587. This application Aug. 12, 1974, Ser. No. 496,876
Int. Cl.² A47L 5/38
U.S. Cl. 15—307 3 Claims



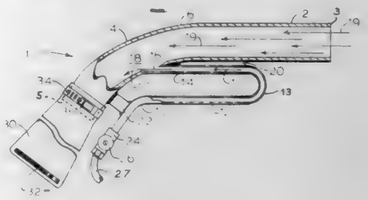
1. Apparatus for selectively closing the ends of suction slot extending transversely with respect to a longitudinally moving web passing thereover, comprising,
a. a reefing roller mounted above said web in advance of said slot and parallel thereto,
b. a pair of tapered flexible and substantially imperforate curtains attached at their wider ends to the opposite ends of said roller and having their free ends trailing over opposite ends of said slot,
c. said curtains having their outer edges parallel to said web and their inner edges converging towards said roller, and,
d. means for rotating said roller to selectively lengthen or shorten said curtains whereby the ends of said slots may be effectively opened and closed according to the width of said web.

3,922,753

COMPRESSED AIR CLEANING TOOL

William F. Aberilla, 45-111 E. Waikapoki Road, Kaneohe, Hawaii 96744

Filed May 29, 1973, Ser. No. 364,872
Int. Cl.² A47L 5/18
U.S. Cl. 15—409 10 Claims



1. A vacuum cleaning tool apparatus for attachment to a compressed air supply comprising a curved tube having an open distal end, a relatively straight and relatively long axially extending portion leading inward from the distal end, a curved portion extending downward from the straight portion remote from the distal end, the curved portion terminating in a proximal end, an air supply line connected to the tube at an inside of the curved portion near an intersection with the straight portion for directing compressed air from a supply into the tube toward the outside of the curved portion in a direction away from the distal end and toward the proximal end for forcing the compressed air from the supply through the proximal end of the tube, entraining fluid within the tube and carrying entrained fluid out through the proximal end, thereby creating a reduced pressure near an intersection of the curved and straight tube portions for causing fluid to flow into the straight tube through the open distal end, thereby entraining materials and flowing materials into the curved portion and out of the proximal end.

5. The apparatus of claim 2 wherein the air supply tube comprises a rigid tube extending generally parallel to the straight portion and opening into the distal end curved portion beneath the straight portion for directing air into the curved portion, parallel to the straight portion and impinging air on the opposite wall of the curved portion, thereby forming a cone which draws air through the straight portion down into the curved portion and out through the proximal end.

6. The apparatus of claim 5 wherein the rigid tube further has a curved portion, curving downward beneath the straight portion and a lower portion spaced further downward from the straight portion, and wherein the tube is anchored to the straight portion and to the curved portion of the main tube, thereby forming a loop for inserting fingers when holding the tool.

7. The apparatus of claim 6 further comprising a downward extending portion of the supply tube extending generally parallel to the main curved tube and control valve means connected to the downward extending portion for controlling supply air to the air supply tube.

3,922,754

TWO-WHEEL CASTOR FOR A CHAIR OR THE LIKE

Jens Peter Andersen, Jernbanealle 35, 3060, Espergaerde, Denmark

Filed Feb. 4, 1974, Ser. No. 439,187
Claims priority, application Denmark, Feb. 13, 1973, 777/73
Int. Cl.² B60B 33/00
U.S. Cl. 16—18 5 Claims

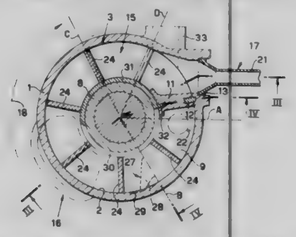
1. An improved two-wheel castor for a chair or the like having shaft means extending downwardly therefrom, comprising casing means having a hole therein through which said shaft means can be downwardly inserted, and wheel supporting means within said casing means, said wheel supporting

means having a hole therein for receiving said downwardly inserted shaft means and having a central bore, pin means inserted into said bore and two opposed wheels mounted on said pin means, at opposite sides of the wheel supporting means,

wherein the improvement comprises the combination of the following further features:

i. the casing means is a hollow casing adapted to enclose the major portion of said two wheels, the interior of which is shaped to correspond with the curved surface of a segment of a solid of revolution about an axis extending parallel to the chordal plane of said segment, said casing having an opening at the bottom thereof corresponding to said chordal plane;

ii. the wheel supporting means is a separate member in the form of a segment of a disc, the radius of the curved



portion of the periphery of the disc corresponding to the maximum radius of said solid of revolution and the perpendicular height from the center of the chord of the disc segment to said curved portion of the periphery of the disc being greater than the radius of said curved portion but smaller than the maximum dimension of said opening at the bottom of the casing;

whereby to assemble the castor said separate wheel supporting member having the two wheels mounted thereon are inserted through the opening at the bottom of the casing and then turned until the holes in the casing and the wheel supporting means are in registration to permit downward insertion of said shaft means extending from the chair or the like, the castor being disassembled by retracting said shaft means and turning the wheel supporting member until it is removable through said opening.

3,922,755

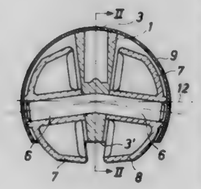
ROTARY PUMP FOR FEEDING A CONTINUOUS SAUSAGE-MAKING MACHINE

Giovanni Battista Righele, Via Levà, Piovene Rocchette (Vicenza), and Giuseppe Scorzato, Via Prole 22, Marano Vincentino (Vicenza), both of Italy

Filed Dec. 3, 1974, Ser. No. 529,246

Int. Cl.² A22C *11/00*

U.S. Cl. 17—33 **6 Claims**



1. A rotary pump for a continuous sausage-stuffing machine, comprising a stator having a cylindrical cavity, in whose interior there is coaxially arranged a rotor rotatable about its own axis, said rotor being composed by a central cylindrical portion lifted up to a closing lid for the stator cavity and by a peripheral lowered portion so that between said lid and said rotor there is defined a top annular chamber equipped with a filling mouth formed by a hole drilled through the lid, a delivery mouth with an axis which is substantially tangent to the median circumference of said annular chamber in the direction of rotation of the rotor and a partition diaphragm arranged immediately downstream of said delivery mouth in the direction of rotation of the rotor, in said peripheral portion of the rotor there being slidably arranged radial paddles driven to slide along the rotor axis according to a preselected programme, which provides their projection from the contour of the peripheral portion of the rotor and to said lid of the stator space in an area downstream of said partition diaphragm and upstream of said filling mouth and their complete re-entering in the contour of said peripheral portion of the rotor in an area downstream of said filling mouth and upstream of said delivery mouth, said preselected programme being defined by a bottom annular cam arranged integrally with the stator beneath said peripheral portion of the rotor, with the shaped top surface of which there are engaged the bottom ends of said paddles, characterized in that said bottom annular cam has a width equal to that of the peripheral portion of the rotor and is positioned at such a level that said peripheral portion of the rotor is tangent to said cam at the point of maximum cam elevation, so that between said cam, said rotor and said stator a bottom annular chamber is defined having a variable height and into which project the lower ends of the rotor paddles, said bottom annular chamber being in communication with said top annular chamber by means of a tiny duct which is extended partly transversally of the bottom annular cam along the top surface of said cam and partly along the internal cylindrical wall of the stator.

3,922,756

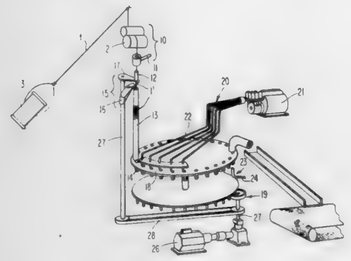
APPARATUS FOR MAKING FILLER MATERIALS

Masafumi Ogasawara; Keio Hirai, both of Otsu; Nobu Yamaguthi, Shiga; Akio Tsunekawa, Otsu; Tosiyuki Mizoguchi, Takatsuki, and Shiro Nishiumi, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Aug. 26, 1974, Ser. No. 500,699

Int. Cl.² D01G *25/00*

U.S. Cl. 19—148 **14 Claims**



1. An apparatus for making a filler material comprising

a. a yarn feeding and cutting device,

b. a tubular guide,

c. yarn transfer means arranged for taking up the cut yarn filaments and forwarding them along said tubular guide,

d. a plurality of movable containers each of which has a curved inner surface and is adapted to be moved in a manner to be disposed in a position facing the outlet of said tubular guide, means for moving said containers in succession to and from said position,

e. gas jet means for forming the cut yarn filaments into a shperical shape of each of said containers, and

f. means for taking the spherically shaped products out of said containers.

3,922,757

COMBING CYLINDER FOR COMBING MACHINE

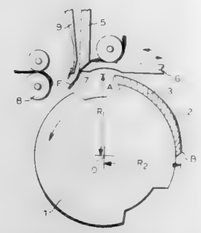
Tatsuo Horiuchi, Wakayama, and Akira Moriwaki, Ikeda, both of Japan, assignors to Nitto Shoji Kabushiki Kaisha, Osaka, Japan

Filed Feb. 25, 1974, Ser. No. 445,336

Claims priority, application Japan, Feb. 28, 1973, 48-24569

Int. Cl.² D01G *19/04*

U.S. Cl. 19—234 **1 Claim**



1. A combing cylinder for a combing machine and comprising:

a base cylinder having central rotational axis;

a combing segment having a combing starting point and a combing ending point and including a combing segment base sector and a plurality of saw teeth wire pieces of the same radial length mounted on said base sector in side by side relation in a circumferential direction of said combing segment;

means for mounting said base sector on the outer surface of said base cylinder;

each of said saw teeth wire pieces having a series of saw teeth of the same height;

said combing segment base sector having an inner surface formed by an arcuate surface the center of curvature of which is located on said central rotational axis of said base cylinder;

said combing segment base sector having an outer surface formed by an arcuate surface the center of curvature of which is located substantially on an extension of a radial line which interconnects said rotational axis and said combing ending point of said combing segment; and

the distance between said combing starting point of said combing segment and said rotational axis being greater than the distance between said combing ending point and said rotational axis.

3,922,758

CLAMPING RING HAVING A CLOSURE MEMBER MADE OF SYNTHETIC PLASTICS MATERIAL

Hans Wünnenberg, Argenstrasse 27, 7993 Kressbronn, Bds., and Alfred Schobel, Bruhlstr. 324, 7212 Deisslingen-Lauffen, both of Germany

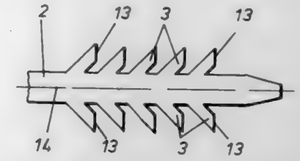
Filed Aug. 6, 1974, Ser. No. 495,289

Claims priority, application Germany, Aug. 9, 1973, 2340360

Int. Cl.² B65D *63/00*

U.S. Cl. 24—16 PB **12 Claims**

1. A clamping ring fastener made of plastic with a one piece fastener head molded to one end of the clamping ring, said one end having a passage, the other end of the clamping ring having a tongue-shape, said passage permitting the tongue-shaped end to be pushed therein, saw teeth respectively disposed on the lateral edges of the tongue-shaped end and on the lateral walls of the passage for interengaging with each other; characterized in that the fastener head (4) has lateral walls (5) that are interconnected on the upper side and at the level of the base of the clamping ring (1) by spacing bars (6,7) that do not overlap, so that the saw teeth (8,9) are disposed on two lateral walls always opposite each other on the places of departure of the spacing bars, and wherein stop latches (3) are disposed on the tongue-shaped end (2) so that they are



positioned at an acute angle in relation to the longitudinal axis of the clamping ring and so that they are disposed approximately at a right angle to said longitudinal axis.

3,922,759

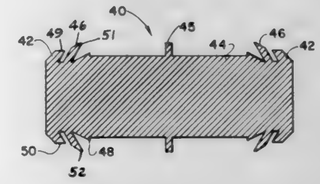
BELT CONNECTOR WITH FLEXIBLE BITE FEATURE

Norman H. Mabie, Claremont, N.H., assignor to L. M. & L Corporation, Claremont, N.H.

Filed Feb. 18, 1975, Ser. No. 550,530

Int. Cl.² F16G *3/07*

U.S. Cl. 24—31 B **11 Claims**



1. In a coupling insert for joining the opposite ends of an endless belt of polymeric material to form a closed loop, said insert comprising an elongate body adapted for insertion into opposite ends, the improvement wherein said coupling comprises proximate each end thereof, a flexible outwardly projecting annular gripping ring having a sharp edge thereon adapted to engage said polymer, said ring being so fastened to said body that it is adapted to flex in a direction away from said end to which it is adjacent, and wherein said coupling includes means to restrict flexing of said gripping ring toward said end of said body.

3,922,760

CONCEALED ZIP FASTENER

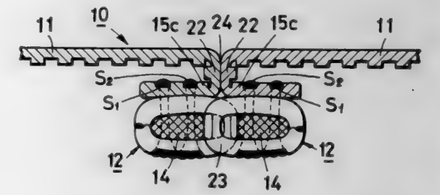
Yoshio Matsuda, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 5, 1972, Ser. No. 312,292

Claims priority, application Japan, Dec. 21, 1971, 46-103885

Int. Cl.² A44B *19/12*

U.S. Cl. 24—205.1 C **4 Claims**



1. A concealed zip fastener comprising a pair of opposed stringer tapes each carrying a corresponding row of fastener

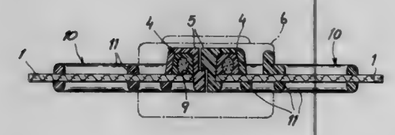
elements with coupling heads, each tape having on one side longitudinally extending alternate ridges and grooves, said row of fastener elements being secured to the tape along a longitudinal edge portion thereof by threads which run through and fill up certain grooves in said longitudinal edge portion, each tape being folded on itself about a fold axis defined by the groove which does not receive therein the threads and is positioned contiguously to that ridge which is one of the ridges fixedly placed on the fastener elements by the threads filing up the adjacent groove remote from the last-mentioned groove and is located in most closely intimate relation to the coupling heads of the fastener elements, the folded edge areas of said tapes being disposed in abutting contact when said rows of fastener elements are in coupled engagement.

3,922,761

SEPARABLE SLIDE-FASTENER STRINGER

Otto Schwendt, Wuppertal-Barmen, Germany, assignor to Opti-Holding AG, Glarus, Switzerland

Filed Aug. 31, 1973, Ser. No. 393,580
Claims priority, application Germany, Sept. 1, 1972, 2242978
Int. Cl. A44b *19/36*
U.S. Cl. 24—205.11 F **5 Claims**



1. A separable slide-fastener stringer comprises a pair of textile tapes, synthetic-resin monofilament coupling elements disposed along respective edges of said tapes and interdigitating upon movement of a slider therealong, respective straight securing bars of thermoplastic material monolithically merging with said coupling elements along edges of said tapes at one end of said stringer and anchored to said tapes while running to said end of the tapes, said bars being of substantially constant thickness, and respective mutingly engageable and disengageable connectors in addition to said bars molded onto each of said tapes ahead of said ends and on opposite sides thereof substantially all around portions of the respective securing bars while leaving the respective securing bar free over a portion of the length thereof beyond the respective connector and up to the ends of the tapes, said bars being melted into and monolithically unitary with the respective coupling elements, said bars being adapted to sealingly engage the mold during molding of said connectors.

3,922,762

AUTOMATIC POWER ADAPTER FOR MANUAL QUICK-ELEASE CONNECTORS

James W. Turner, and Ray E. Spinks, both of El Centro, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 4, 1974, Ser. No. 512,823
Int. Cl.² A44B *19/00*
U.S. Cl. 24—230 R **9 Claims**

1. A power adapter for attachment to a conventional, manually operable, quick-release connector having interconnectible male and female fittings, and a movable means extending transverse to said fittings for releasably locking said fittings together, said female fitting having an opening to which said movable means is accessible, and said adaptor comprising:

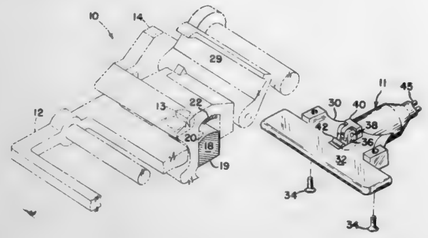
a housing;

means for mounting said housing to the female fitting adjacent said opening;

said housing having a cylinder;

a piston slidably mounted in the cylinder in a direction normal to said releasable locking means;

a self contained power source supported by said housing for actuating said piston;



an anvil pivotally mounted on said housing, said anvil having a cam surface for engaging said movable member, and a surface for engagement by said piston;

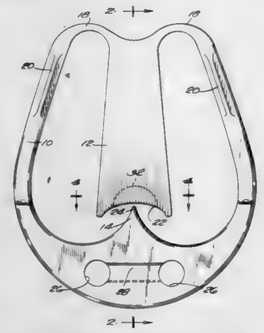
whereby activation of said power source will drive the piston to pivot said anvil, which in turn will actuate the movable member to unlock said fittings.

3,922,763

FABRIC FASTENER

Douglas Jay Buerger, 4880 S. 72nd St., Apt. 141, Greenfield, Wis. 53220

Filed Dec. 26, 1974, Ser. No. 536,503
Int. Cl.² A44B *21/00*
U.S. Cl. 24—246 **10 Claims**



1. A fastener for locking together two pieces of fabric comprising a ring having a tongue extending downwardly from the top of said ring and having a locking tab extending upwardly from the bottom of said ring under said tongue, said tongue being movable to a position at an acute angle to the plane of said ring to fit over the top edges of said fabric, and the material forming the junction of said tongue and said ring being flexible enough to permit the tongue to be displaced toward the plane of said ring past said locking tab to pinch a portion of said fabric between the bottom of said tongue and the top of said locking tab to lock the two pieces of fabric together.

3,922,764

PANEL CLIP

Lucien R. Downing, Jr., Westlake, Ohio, assignor to Donn Products, Inc., Westlake, Ohio

Continuation-in-part of Ser. No. 360,404, May 14, 1973, abandoned, which is a continuation of Ser. No. 168,675, Aug. 3, 1971, abandoned. This application Apr. 8, 1974, Ser. No. 458,767
Int. Cl.² A44B *21/00*; **E04B** *5/52*
U.S. Cl. 24—259 **11 Claims**

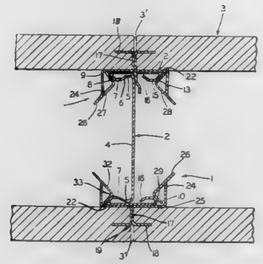
1. A wall stud for supporting the edges of panel boards in

adjacent relationship thereon by means of clip members comprising:

a. an elongated support base adapted to extend from floor to ceiling, and having opposed marginal edges;

b. said support base being adapted to support panel boards in back-to-back relation with an intermediate plenum therebetween by means of opposed panel board supporting portions carried on said marginal edges of said support base;

c. each of said panel board supporting portions comprising an outward extension attached to said support base on the marginal edge thereof, and disposed at an angle to said support base;



d. a panel board support flange carried by said outward extension on a reversely bent portion on said outward extension to extend inwardly toward said support base marginal edges;

e. said panel board support flange terminating in another reversely bent portion having an inwardly extension extending toward said support base; and,

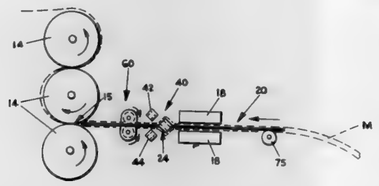
f. said panel board support portions being adapted to support the marginal edges of adjacent panel boards by means of the clip members coacting with said panel board marginal edges and the reversely bent portions of said wall stud.

3,922,765

TUBULAR FABRIC SPREADER AND FEEDING APPARATUS

Warren Hogendyk, 4017 Bell, N.E., Grand Rapids, Mich. 49505

Filed Oct. 29, 1974, Ser. No. 518,490
Int. Cl.² D06C *5/00*
U.S. Cl. 26—55 R **14 Claims**



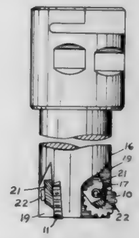
1. Calender apparatus for processing textiles comprising a plurality of elongated calender rolls; means for supporting said rolls with their longitudinal axes parallel to one another and for rotating said rolls to pull a length of tubular textile material therethrough generally transverse to said longitudinal axes of said rolls, the length of tubular material having a predetermined, unstretched, lateral width; means for laterally stretching the said continuous length of tubular material prior to insertion of the material between said calender rolls, said stretching means including a stretching frame adapted to be inserted within and entirely surrounded by the tubular material and having a width greater than said width of said unstretched material, said material exerting a force against said frame when stretched thereover which pulls said frame toward said calender rolls, and magnetic repulsion means providing a magnetic repulsion force for magnetically biasing said frame in a direction away from said calender rolls whereby said force of the tubular material against said frame is counterbalanced by said magnetic repulsion force to prevent pinching and tearing said material between said calender rolls and frame.

3,922,766

INSERTS FOR METAL CUTTERS

Paul Malinchak, 5247 W. 51st St., Fairview, Pa. 16415

Division of Ser. No. 280,777, Aug. 15, 1972, abandoned. This application Aug. 12, 1974, Ser. No. 496,703
Int. Cl.² B26D *1/00, 1/12*
U.S. Cl. 29—105 R **19 Claims**



1. A rotary cutting tool comprising;

an annular body having a plurality of insert pockets spaced around the periphery of said body,

a plurality of identical inserts indexable about an axis extending transversely of the axis of said body located in said pockets,

each of said inserts having a plurality of identical evenly spaced peripheral cutting teeth,

locating means differently positioned in successive pockets in said body adapted to engage and locate any one of the teeth of respective inserts in successive phased relation to provide a progressive fractional distribution of cutting action,

and the cutting teeth of each insert being indexable in any one of said pockets to present alternate identical cutting teeth in identical cutting position of any one of said pockets.

3,922,767

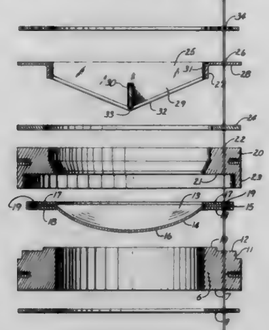
METHOD FOR PRODUCING PRE-MOUNTED RUPTURE DISCS

Robert L. Solter, Blue Springs, and Franklin A. Hansen, Raytown, both of Mo., assignors to Continental Disc Corporation, Riverside, Mo.

Continuation-in-part of Ser. No. 189,567, Oct. 15, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 398,223
Int. Cl.² B23P *15/00*
U.S. Cl. 29—157 R **4 Claims**

1. The method of producing a safety pressure relief device disc unit having a reverse buckling rupture member including an annular flange portion and a central bulged portion, said disc unit having a metallic inlet seating ring positioned on said disc flange portion and secured with respect thereto, said seating ring having an inner ring diameter many times greater than the thickness thereof and including an inner edge radius supporting said rupture member between said flange portion and said bulged portion, said method including the steps of producing said inner ring diameter and inner edge radius together with the producing of said ring from a blank through stretching and deforming the metal thereof by shear punching through a square corner die a portion therefrom to form said ring diameter and inner edge radius without material bending adjacent thereto, said inner edge radius being caused by metal flow during said punching operation without causing any

deformation at the lower inner edge, engaging the rupture member with said punched ring adjacent said inner edge



radius, and bulging a portion of said disc through said ring against said radius.

3,922,768

METHOD OF MANUFACTURING A HEAT EXCHANGER

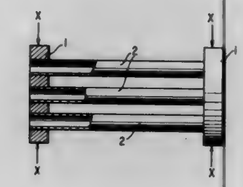
Kiyotelu Takayasu, C8-108, Nakatomigaokadanchi, 4162-1, 1-chome, Nakatomigaoka, Nara, Japan

Filed June 26, 1974, Ser. No. 483,299

Claims priority, application Japan, June 26, 1973, 48-72498; Dec. 10, 1973, 48-137990; Dec. 10, 1973, 48-137992; Dec. 10, 1973, 48-137993; Dec. 10, 1973, 48-137994; Aug. 16, 1973, 48-91854; Oct. 1, 1973, 48-110828

Int. Cl.² B21D *53/02*; B23P *15/26*

U.S. Cl. 29—157.3 R **8 Claims**



1. A method for manufacturing heat exchangers having a plurality of pipes as the heat exchanging component and opposing end plates to which the pipes are connected, comprising the steps of:

inserting each tip portion of each of said pipes into holes bored in said end plates; and

subjecting the end plates to plastic deformation by pressing inwardly and uniformly on the peripheries of the end plates so that the pipes are thereby secured therein in tightly sealed relationship without welding or brazing.

3,922,769

METHOD FOR MAKING COMPOSITE WIRE

Robert Brenan, Warren, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed June 7, 1974, Ser. No. 477,405

Int. Cl.² B22F *3/24*

U.S. Cl. 29—420.5 **9 Claims**

1. A method for making a composite wire having an external layer consisting essentially of an established percentage by weight of copper and an internal core portion consisting of essentially of an alloyed metallic material dissimilar to copper, said method comprising:

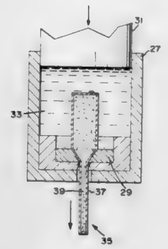
providing a substantially elongated tubular sheath member consisting essentially of copper, said sheath member having a sealed end and an open end;

filling said tubular sheath to an established level with a powdered metallic material dissimilar to copper, said filling being accomplished through said open end;

compacting said powdered metallic material within said tubular sheath;

substantially sealing said open end of said tubular sheath member to form a substantially elongated composite billet member having an established outside diameter substantially similar to the outside diameter of said tubular sheath member;

subjecting said composite billet member to a gas evacuation process to substantially evacuate said billet member of any gaseous medium located therein;



heating said composite billet member to a predetermined temperature for an established time period; and

hot hydrostatically extruding said composite billet member to reduce said established outside diameter of said composite billet member to form a composite wire having an external layer consisting essentially of an established percentage by weight copper and an internal core portion of approximately 100% densification consisting essentially of an alloyed metallic material dissimilar to copper, said alloyed metallic material in a simulated wrought condition.

3,922,770

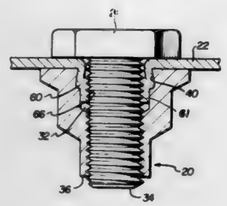
METHOD OF FORMING A PANEL ASSEMBLY

Harold A. Ladouceur, Livonia, Mich., assignor to Multifastener Corporation, Detroit, Mich.

Division of Ser. No. 353,049, April 20, 1973, which is a continuation-in-part of Ser. No. 149,517, June 3, 1971, abandoned. This application Dec. 19, 1973, Ser. No. 426,277

Int. Cl.² B23P *9/00*

U.S. Cl. 29—445 **17 Claims**



1. In a method of forming a nut, bolt and panel assembly, said nut having a substantially flat end face, a recess opening onto said end face and a bore generally coaxially aligned and communicating with said recess, said nut bore having a smaller radius than the maximum radius of said recess, said panel being metal and having a predetermined thickness, including the steps of: abutting said end face of the nut against a face of the panel, piercing the panel in alignment with said nut bore from the face of the panel opposite said nut, extruding a portion of the panel axially into said nut recess, deforming said panel portion radially outwardly into contact with the nut recess wall to define an opening having an internal diameter generally equal to the internal diameter of said nut bore, and threading a self-tapping bolt into said panel opening and nut bore thereby forming a continuous thread with said panel and said nut bore.

3,922,771

METHOD FOR THE MANUFACTURE OF DRIVING BELT PACKAGES

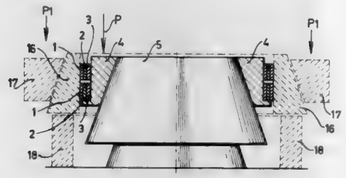
Bernard Joseph Beusink, deceased, late of Velhoven-Derle, Netherlands (by Johanna Magaretha Maria Beusink nee Overkamp, administratrix); Marinus Hubertus Cuypers, and Alexandre Horowitz, both of Eindhoven, Netherlands, assignors to Varitrac A.G., Zug, Switzerland

Filed Dec. 10, 1974, Ser. No. 531,348

Claims priority, application Netherlands, Dec. 11, 1973, 7316956

Int. Cl.² B21D *31/04*, *53/14*

U.S. Cl. 29—445 **14 Claims**



1. Method for manufacturing a package of endless metal bands, particularly for use as a driving belt, comprising the steps of arranging a plurality of bands approximately fitting around each other on a template adapted to the inner side of the innermost belt, tensioning the whole by means of the template and preserving the caused deformations by tempering, wherein the template is expanded to an extent at which each of the bands of the package is elongated and any play between the bands is removed.

3,922,772

METHOD FOR MANUFACTURING A HOLLOW-CYLINDRICAL BODY AND A HOLLOW-CYLINDRICAL BODY PRODUCED BY SAID METHOD

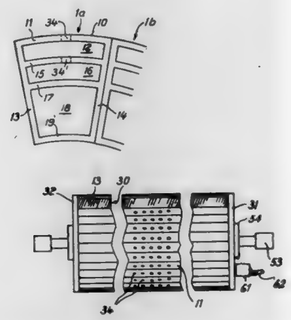
Sylve Jack Donald Ericsson, Fittja Industriomrade, 154 53 Norsborg, Sweden

Filed Jan. 15, 1974, Ser. No. 433,577

Claims priority, application Sweden, Jan. 17, 1973, 73006397

Int. Cl.² D21F *3/10*

U.S. Cl. 101—382 MV **16 Claims**



1. A method of producing a low-weight, rigid, hollow-cylindrical drum, which comprises

a. extruding a number of units each having the form of frusto-circular sectors, each of said sectors having at least two radially separated chambers extending the length of said sectors;

b. joining said sectors together in side-by-side relationship to form a cylindrical circus of said drum, each unit being joined to an adjacent unit by an adhesive agent; and

c. adhering an end wall at each end of said joined sectors to form a closed cylindrical drum having a plurality of closed radially separated chambers and an internal hollow cylindrical chamber, at least one of said radially separated chambers being arranged to communicate with a vacuum-generating means via holes disposed in at least one wall defining said chamber.

3,922,773

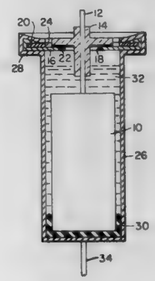
METHOD OF FORMING A HERMETIC ENCLOSURE

Jan A. Marien, Raleigh, N.C., and David R. Steinberg, Medfield, Mass., assignors to Corning Glass Works, Corning, N.Y.

Filed July 17, 1974, Ser. No. 489,460

Int. Cl.² B01J *17/00*

U.S. Cl. 29—570 **12 Claims**



1. The method of forming an enclosure comprising the steps of

providing a silver container open at one end,

forming from said container material a unitary outwardly protruding flange at the open end of said container,

providing a lead,

sealing to said lead a quantity of sealing glass to form a bead about said lead intermediate the ends thereof,

providing a metallic member having an aperture therein,

sealing to the surface of the aperture bordering portion of said metallic member a coating of sealing glass,

fusing said glass bead to said glass coating, said lead being disposed within said aperture and extending therethrough and being spaced from said member,

disposing a silver ring on said surface of said metallic member intermediate said coating of sealing glass and the peripheral portion thereof,

folding said peripheral portion of said metallic member so that it engages a portion of said silver ring,

pressing said peripheral portion into said silver ring to form a compression seal therebetween, the inner portion of said silver ring remaining exposed after said pressing,

providing a device,

connecting said lead to said device,

disposing the assembly so formed in a manner so that said metallic member is adjacent said outwardly protruding flange of said container and said device is within said container, said lead extending from said device within said container to the exterior thereof,

folding said outwardly protruding flange over said metallic member so that said flange is in contact with said exposed inner portion of said silver ring, and

hermetically sealing said flange to said silver ring.

3,922,774

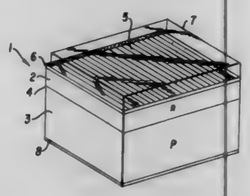
TANTALUM PENTOXIDE ANTI-REFLECTIVE COATING

Joseph Lindmayer, Bethesda, and James Frederick Allison, Silver Springs, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Continuation of Ser. No. 249,024, May 1, 1972, abandoned. This application Feb. 1, 1974, Ser. No. 438,840

Int. Cl.² B01J *17/00*

U.S. Cl. 29—572 **13 Claims**



1. A method of placing an electrode and an anti-reflective non-crystalline tantalum pentoxide coating on a surface of a solar cell which is responsive to light, inclusively, in the blue-violet region of the spectrum, said method comprising the steps of:

a. forming a metallic collector electrode in contact with a first patterned part of said top surface,

b. depositing elemental tantalum on at least the part of said top surface other than said first patterned part, and

c. oxidizing said elemental tantalum under conditions to provide substantially non-crystalline tantalum pentoxide on at least the part of said top surface other than said first patterned part.

3,922,775

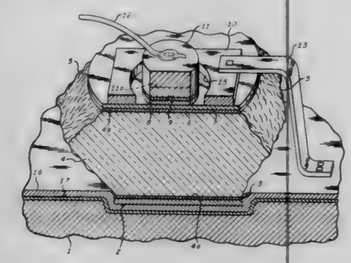
HIGH FREQUENCY DIODE AND MANUFACTURE THEREOF

Curtis N. Potter, Holliston, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Division of Ser. No. 396,960, Sept. 13, 1973, Pat. No. 3,872,496. This application Nov. 22, 1974, Ser. No. 526,095

Int. Cl.² B01J *17/00*

U.S. Cl. 29—589 **5 Claims**



1. The method of making an active high frequency semiconductor device including the steps of:

forming first and second opposed substantially flat polished surfaces on diamond heat conducting means,

coating said first and second polished surfaces, after cleaning, with respective first and second thin layers of metal having high electrical and thermal conductivities,

placing said first thin layer of metal against massive heat sink means,

placing preformed apertured plate means against said second thin layer of metal, and

simultaneously bonding under heat and pressure said first thin layer of metal to said massive heat sink means and said second thin layer of metal to said preformed apertured plate means substantially without disturbing said second thin layer of metal left exposed by the aperture in said preformed apertured plate means.

3,922,776

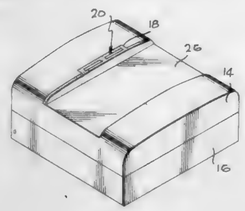
METHOD FOR MAKING NARROW TRACK FERRITE CORE FLYING PADS

James A. Alger, Torrance, and John J. Miyata, Monterey Park, both of Calif., assignors to VRC California, Inc., El Segundo, Calif.

Filed May 13, 1974, Ser. No. 469,309

Int. Cl.² G11B *5/42*

U.S. Cl. 29—603 **8 Claims**



1. A high yield method for manufacturing a narrow track width flying pad of the type comprising a ferrite core having a frontal portion of smaller width then a rearward portion, the core being ceramically bonded to a support piece, and the combined core and support piece having a finished surface for protectively approaching a moving magnetic record surface, comprising the steps of:

forming a groove adjacent to a core receiving opening in a support piece for providing a machining tool approach region;

bonding a generally planar ferrite core substantially perpendicular to a frontal surface of the support piece;

removing a portion of the ferrite generally parallel to the plane of the core and at an end of the core adjacent the frontal surface to form an effectively narrow track pole piece;

lapping the core generally parallel to the frontal surface to define a desired gap depth;

finishing the groove to define an air-bearing float level; and,

contouring the frontal surface of the support piece to provide a magnetic medium protective air bearing surface.

3,922,777

PROCESS FOR THE PRODUCTION OF LAYER CIRCUITS WITH CONDUCTIVE LAYERS ON BOTH SIDES OF A CERAMIC SUBSTRATE

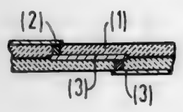
Artur Weitze, Pullach, and Peter Leskovar, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Feb. 1, 1974, Ser. No. 438,865

Claims priority, application Germany, Feb. 8, 1973, 2306236

Int. Cl.² H01R *43/00*

U.S. Cl. 29—628 **5 Claims**



1. A process for the production of layer-type printed circuits having conductive layers on both sides of a ceramic substrate which comprises providing an aperture in a green ceramic substrate, inserting into said aperture, a high melting metal pin having incorporated therewith metal silicate, and thereafter sintering the green substrate under conditions to produce a solid state reaction between the ceramic and the silicate, the dimensions of said pin being such that the ends of said pin, upon shrinkage of said green substrate due to sintering, are flush with said sides.

3,922,778

DEVICE FOR CUTTING THE SIDEWALLS OF A BOX FOR SEPARATING WHOLLY OR PARTLY THE LID FROM THE BOX PROPER

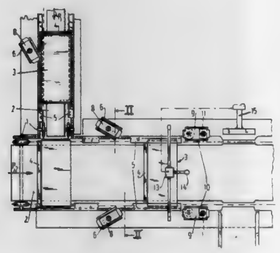
Marten Geert Aalpoel, Nuenen, Netherlands, assignor to Arenco-P.M.B. B.V., Best, Netherlands

Filed Apr. 10, 1074, Ser. No. 459,650

Claims priority, application Netherlands, Apr. 13, 1973, 7305176

Int. Cl.² B67B *7/38*

U.S. Cl. 30—2 **11 Claims**



1. A device for cutting the sidewalls of a box for separating wholly or partly the lid from the box proper, said device comprising a conveyor passing the boxes past cutting members arranged at the side of said conveyor and detecting means for detecting the presence of complete cuts along a sufficient number of said sidewalls as to allow said separating of the lid, and an expelling member for expelling boxes whose lids cannot be separated, characterized in that the detecting means are formed by at least one blade spring having a feeler edge which can be inserted into a cut and clamped tight near one end of the edge, in that a member engages the blade spring at a distance from said edge and from the clamping area for bending the blade spring and in that a control element responding to a predetermined movement of the lid away from the box as effected bending of said blade by said member puts the expelling member out of operation.

3,922,779

CABLE STRIPPER

Joseph T. Cormier, 1130 Main St., Tewksbury, Mass. 01876

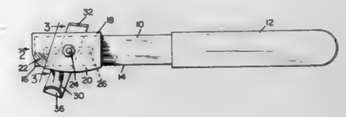
Filed Oct. 29, 1974, Ser. No. 518,459

Int. Cl.² B21F *13/00;* **B26B** *27/02*

U.S. Cl. 30—90.8 **5 Claims**

1. A cable stripper comprising a generally straight blade having a sharp edge, said blade having a cable slitting point at an end of the blade for slitting a cable longitudinally, a handle on the other end of the blade, a cable guide mounted on the blade in close association with the slitting point for guiding the cable as it moves longitudinally relatively with respect to said point, wherein the guide comprises a flared member at each side of the blade, said flared members extending away from the slitting point at each side thereof,

and a cable holder mounted on said blade, said cable holder being pivotable in a plane parallel to said blade thereon and including an offset end facing the slitting point and the cable guide, said offset end being adapted to engage the cable holding it in position in said guide and in stripping position with respect to said slitting point as the





latter and cable guide move longitudinally, relatively with respect to the cable.

3,922,780

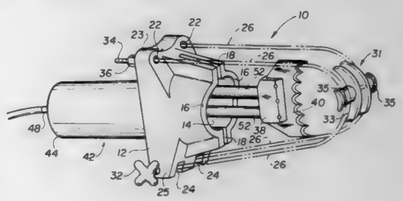
CABLE SPEARING AND CUTTING APPARATUS

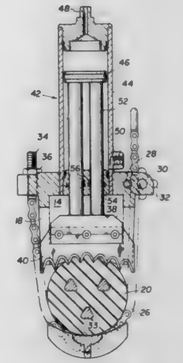
Cyril Robert Green, Woodside Park, Honesdale, Pa. 18431

Filed Nov. 4, 1974, Ser. No. 520,376

Int. Cl.² B23D *21/06;* **B26B** *27/00;* **B26D** *3/16*

U.S. Cl. 30—92 **13 Claims**





1. An apparatus for spearing and cutting cables comprising a housing,

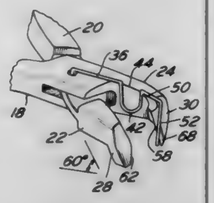
clamping means demountably secured to said housing and adapted for engaging the cable periphery,

prime mover means attached to said housing,

cutting means operable for relative movement with respect to said housing,

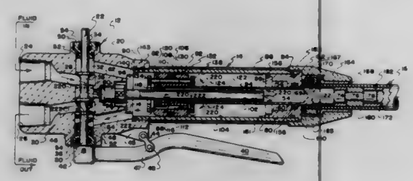
and a plurality of drive rod means on one end attached to said cutting means, and on the other end driven by said prime mover means so that as the cable is cut said plurality of drive rods serve to counteract torsional forces acting on and to limit twisting and flexing movements of said cutting means.

3,922,781
CUT AND HOLD PLIERS
William Tippy, 10131 Jeans St., Philadelphia, Pa. 19116
Filed Aug. 7, 1974, Ser. No. 495,508
Int. Cl.² B26B *17/04*
U.S. Cl. 30—124 **13 Claims**



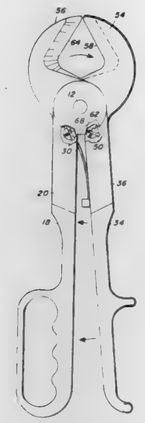
1. In a dental pliers of the type comprising two arms which are connected to each other by a pivot member to define two handles and two jaws, the improvement comprising, an anvil on one of said jaws and a cutting edge on said other jaw, said anvil and said cutting edge being cooperable to cut a wire, said cutting edge being defined by a face and camming surface, said camming surface being angularly disposed with respect to said anvil when said jaws are closed so that said camming surface and said anvil define a generally V-shaped opening, a resilient elongated member, said member including a means for coupling it to said pliers and a leg, said leg lying along said camming surface and extending into the opening between said cutting edge and said anvil when said jaws are open so that when said jaws are closed on a wire said camming surface urges said leg toward said anvil to engage the wire between said leg and said anvil before being cut to enable said pliers to be moved along the wire while it is so engaged, and said leg is operative to retain the distal end of the wire on said anvil after it is cut.

3,922,782
OPEN SYSTEM FLUID DRIVEN PRUNER
Michael A. Lind, Salt Lake City, Utah, assignor to New Draulics, Inc., Salt Lake City, Utah
Filed Nov. 29, 1974, Ser. No. 528,071
Int. Cl.² B26B *15/00*
U.S. Cl. 30—228 **1 Claim**



1. A pruner mechanism comprising:
elongated support means;
anvil means carried by and exposed at the distal end of the elongated support means;
elongated reciprocable drive means substantially co-extensive with said elongated support means;
cutting blade means carried by and exposed at the distal end of the elongated reciprocable drive means, the cutting blade means being pivotable in respect to the anvil means whereby a cutting edge of the blade means engages the anvil means upon displacement of the drive means in one direction, the proximal end of the elongated reciprocable drive means being hollow for a length greater than the distance through which said reciprocation occurs and having port means therethrough;
a cylinder-piston assembly comprising hollow cylinder means anchored to the proximal end of the elongated support means and further comprising annular piston means reciprocable within the cylinder means and anchored to and reciprocable with the hollow proximal end of the elongated drive means, the piston means being located rearwardly of the port means, displacement of the piston means causing a corresponding displacement of the drive means;
manually operable control valve means carried adjacent the cylinder-piston assembly and having displaceable means for selectively communicating fluid under pressure along two of three flow paths at any point in time to and from either side of said piston means within the cylinder means;
hollow conduit means spanning between the displaceable means of the manually operable control valve means and the interior of the hollow proximal end of the elongated reciprocable drive means, the hollow conduit means being concentric within said proximal end and communicating fluid in respect to said hollow proximal end;
first annular seal means being interposed between the interior of the annular piston means and the exterior of the hollow conduit means;
second annular seal means interposed between the interior of the cylinder means and the piston means;
first passageway means disposed between the displaceable means of the control valve means and the hollow interior of the cylinder means at the trailing end thereof;
second passageway means disposed between the displaceable means of the control valve means and the hollow interior of the cylinder means at the trailing end thereof; whereby (*a*) when the displaceable means of the control valve means are located in a first position fluid under pressure is simultaneously though oppositely displaced between the piston means and said displaceable means through (1) one of said passageway means and (2) the hollow conduit means, and (*b*) when the displaceable means of the control valve means are located in a second position fluid under pressure is simultaneously though oppositely displaced between the piston means and said displaceable means through (3) the other of said passageway means and (4) the hollow conduit means;
said annular piston means carrying unbiased pressure responsive fluid valve means which reciprocate in respect to the annular piston means and then abut the ends of the cylinder means and thereby open at each extreme position along the path of reciprocation of the piston means between the ends of the cylinder means and close under force of fluid pressure exerting upon one side or the other of the piston means intermediate said extreme positions, the annular piston means comprising at least two bores through the annulus thereof defining front and back openings thereto each at opposite end faces of the piston means, one of said bores selectively communicating fluid across the piston means between a leading chamber of the cylinder means and a trailing chamber of the cylinder means, the bores being radially offset from the axial center line of the piston means about the same radial distance, the unbiased pressure responsive reciprocable fluid valve means comprising (*a*) at least one axially directed rod means reciprocably extending through one said bore and having ends exposed beyond the front and back openings thereof and (*b*) unbiased annular plate valve means respectively mounted to the opposed ends of the rod means in substantially parallel planes each substantially normal to the axes of the piston means and the two bores, the distance between the two unbiased annular plate valve means being substantially greater than the length of the two bores, the size, shape and dimensions of each unbiased annular plate valve means causing the plate valve means to cover and close the adjacent opening of the fluid communicating bore when said plate valve means is contiguous with the adjacent end of the piston means whereby the fluid communicating bore is always closed by one of the plate valve means during displacement of the piston means between the ends of the cylinder means and opened upon butting either end of the cylinder means.

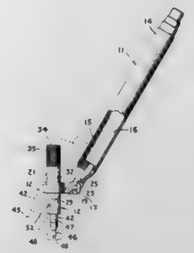
3,922,783
CUTTER EMPLOYING DUAL PAWL ACTION AND AUTOMATIC STOP AND RETURN MEANS
William H. Hayes, Helena, Ala., assignor to Efficiency Tool Company, Pelham, Ala.
Filed Aug. 22, 1974, Ser. No. 499,473
Int. Cl.² B26B *13/26*
U.S. Cl. 30—250 **13 Claims**



1. Cutting apparatus comprising:
a first handle assembly;
a first cutting blade carried by said first handle assembly;
a second cutting blade adjacent to, and having a common pivot axis with said first cutting blade;
a second handle assembly having a common pivot axis with said first and second blades;
first means carried by said second handle assembly for rotating said second cutting blade in one direction when said first and second handles are moved together; and
second means carried by said first handle assembly for preventing rotation of said cutting blade in a direction opposite to said one direction when said first and second handles are moved apart.

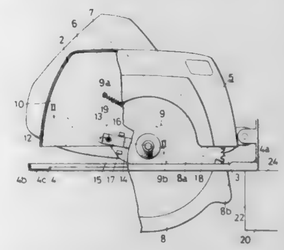
3,922,784
SWIVEL KNIFE FOR MANUAL OPERATION WITH BLADE HOLDER OFFSET SKEWABLY FROM HANDLE
Michael J. Prince, New York, and Donald Marsden, Garden City South, both of N.Y., assignors to Diagravure Film Manufacturing Corporation, Brooklyn, N.Y.
Filed Mar. 3, 1975, Ser. No. 554,678
Int. Cl.² B26B *1/04*
U.S. Cl. 30—317 **3 Claims**

1. A cutting instrument for manual operation and comprising:
an elongated handle having a handle axis and a front end,
a blade holder mounted skewably on the front end of the handle about a lateral axis that is normal to the handle axis,
means for fixing the holder in skewable relationship to the handle,
a blade with a shank for reception in the holder,
the holder being elongated and hollow and having a holder axis,
a rod mounted along the holder axis and rotatable about said holder axis,
an upper end of the rod being threaded and a lower end being slitted and the rod being provided near its lower slitted end with a cylindrical enlargement,
a thimble connected to the upper end of the rod with the thimble serving to retain the rod in the holder,



the lower end of the rod being threaded and tapered,
a bushing connectable screwably to the lower end of the rod,
the lower end of the rod and the bushing serving as a collet to hold the blade,
a cap engageable with the bushing whereby the cap is retained in place and whereby the cap serves for turning the bushing.

3,922,785
SAFETY DEVICES FOR ELECTRIC CIRCULAR SAWS
Fusao Fushiya, Nagoya, Japan, assignor to Makita Electric Works Limited, Aichi, Japan
Filed Nov. 12, 1974, Ser. No. 523,100
Claims priority, application Japan, Nov. 15, 1973, 48-128533
Int. Cl.² B27G *19/04*
U.S. Cl. 30—391 **10 Claims**

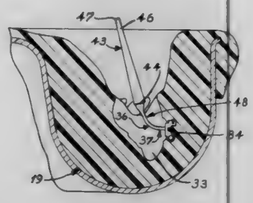


1. In combination with a safety device for an electrically driven hand operated circular saw, wherein a safety cover for a circular saw blade is provided rotatably in one direction to expose said saw blade and in the opposite direction to conceal said saw blade, and wherein means is provided for urging said safety cover in said opposite direction, the improvement which comprises:
an auxiliary switch connected in series to a main switch in an electric circuit between a power source and a motor for driving said saw blade; and
means operationally associated with said safety cover and said auxiliary switch for maintaining said auxiliary switch in its operative position during rotation of said safety cover in said one direction, but turning said auxiliary

switch into its inoperative position upon rotation of said safety cover in said opposite direction

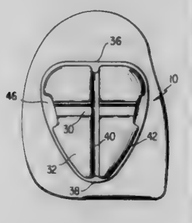
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3,922,786
METHOD AND APPARATUS FOR FORMING AND FITTING ORTHODONTIC APPLIANCES
Joseph L. Lavin, S. 525 Bernard St., Spokane, Wash. 99204
Filed Jan. 30, 1974, Ser. No. 437,810
Int. Cl.² A61C *13/00*
U.S. Cl. 32—11 **16 Claims**



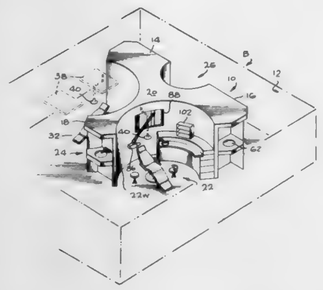
13. An orthodontic apparatus for connecting with an orthodontic bracket for use in the formation of orthodontic archwires, comprising:
a root stem; and
a bendable interconnecting member affixed to one end of the root stem and extending outward therefrom terminating in a remote end for operatively interconnecting an orthodontic bracket to the root stem to enable the root stem to be angularly positional with respect to the orthodontic bracket to position the root stem along the axis of a tooth in the preparation of a working model; and said interconnecting member having an enlarged attachment fixture at the remote end for facilitating attachmet of the interconnecting member to the orthodontic bracket.

3,922,787
PLASTIC ORTHODONTIC BRACKET
Kenneth J. Fischer, 18925 Vose St., Reseda, Calif. 91335, and Jan A. Orlowski, 1304 Rubio St., Altadena, Calif. 91001
Filed May 7, 1974, Ser. No. 467,675
Int. Cl.² A61C *7/00*
U.S. Cl. 32—14 A **14 Claims**



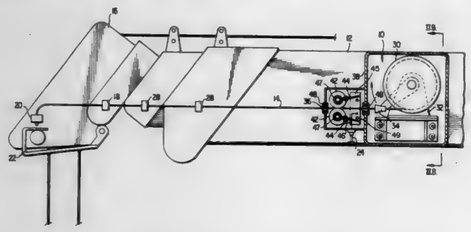
7. A plastic orthodontic bracket comprising a base portion which is adapted to be attached to the labial surface of a tooth between the gingival and incisal sections and a body which is joined to said base, said body having a front surface which is quasi-triangular shaped for minimizing the forces exerted on said bracket during mastication and occlusion when said bracket is attached to said tooth so that the apex of said quasi-triangular shaped front surface is positioned closest to the incisal section of a tooth and the base of said quasi-triangular shaped front surface is positioned closest to the gingival section of the tooth.

3,922,788
WORKSPACE STRUCTURE
James E. Rota, Los Angeles, Calif., assignor to Ergonamic Environments, Inc., Los Angeles, Calif.
Filed July 13, 1973, Ser. No. 379,051
Int. Cl.² A61C *19/02*
U.S. Cl. 32—22 **8 Claims**



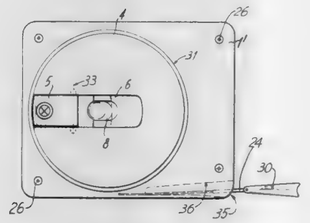
1. In a building having a room, the improvement of a dental operatory structure comprising:
a partition structure of a height of at least 5½ feet for dividing the room into a plurality of major workspaces, the wall of each workspace extending in a small radius of curvature extending approximately **180°** so that about one-half of the workspace is open, the opposite ends of each workspace wall being spaced from the side walls of the room to create an open effect to a patient positioned between the opposite ends of the workspace wall and to provide a corridor for the dentist in moving between the workspaces, a first and second of said workspaces having walls whose ends lie adjacent to one another so that as a dentist passes by one of said wall ends into the corridor, he enters the other workspace within a few steps; and
a patient-holding chair mounted between the opposite ends of the workspace to provide an open effect to a patient in the chair.

3,922,789
BOOM LENGTH SENSING SYSTEM WITH TWO-BLOCK CONDITION SENSING
Ivan D. Sarrell, Rising Fawn, Ga., assignor to Koehring Company, Milwaukee, Wis.
Filed Dec. 11, 1974, Ser. No. 531,707
Int. Cl.² G08B *21/00*
U.S. Cl. 33—125 R **17 Claims**



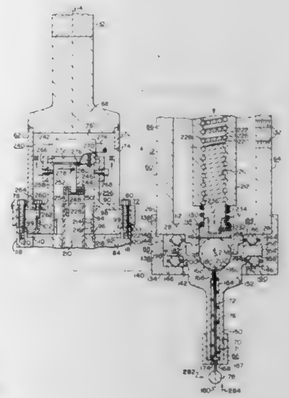
1. Apparatus for sensing the length of an extendible boom of a crane comprising:
a reel mounted for rotation on a nonextending portion of the crane boom, said reel being electrically insulated from said boom;
an electrically conductive cable having a substantially uniform resistance per unit length thereof, one end of said cable being secured to and electrically connected to the uppermost movable section of the crane boom and the other end of said cable being wound on said reel;
biasing means for biasing said reel in a direction of rotation tending to wind said cable onto said reel;
means mounted on said nonextending portion of the crane boom adjacent said cable for electrically contacting said cable and providing a moving electrical contact with said cable;
means for applying current to said contacting means to thereby apply said current through a length of said cable between said contacting means and said one end of said cable; and,
circuit means for sensing a resistance value for said length of said cable between said contacting means and said one end of said cable in response to said current flowing therethrough, and for providing a manifestation of the length of the crane boom as a function of the sensed resistance of said length of said cable between said contacting means and said one end of said cable.

3,922,790
LINEAR MEASURING INSTRUMENT
Michel Quenot, Besancon, France, assignor to Stanley-Mabo, Besancon, France
Filed Apr. 18, 1974, Ser. No. 461,849
Claims priority, application France, Apr. 20, 1973, 73.14643
Int. Cl.² G01B *3/10;* **G05G** *1/12*
U.S. Cl. 33—138 **17 Claims**



1. A tape measure assembly comprising
a. a casing
b. a winding drum mounted within the casing for rotation about a pivot axis and constituted by a side plate having a slot on one face and a central boss on the other face, the slot being defined by a base and opposed lateral walls provided with housings and adjacent recesses extending along said walls
c. a graduated tape secured at one end to the central boss for winding thereon.
d. means for effecting a braking action on the drum
e. means for rotating the drum about its pivot axis and constituted by
i. a crank
ii. two lugs integral with the crank and extending in opposite directions to engage in the housings to define a pivot about which the crank can be moved between operative and inoperative positions
f. means for removably retaining the lugs in their housings and constituted by a resilient part of the slot base in the form of a tongue having a free end portion adjacent the housings and the recesses and adapted to resiliently yield to permit mounting of the lugs along the recess and into the housings, the free end portion of the tongue being directed towards the centre of the side-plate, the tongue being defined by an apertured slit passing through the base of the slot adjacent said recesses, the recesses communicating with the housings to permit passage of the lugs therebetween and the free end of the tongue bearing against the inner face of the crank to retain the lugs in the housings and permit removal therefrom.

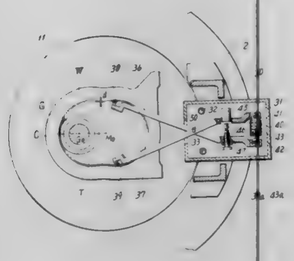
3,922,791
PROFILE INDICATING APPARATUS DISPLACEABLE EITHER ALONG AN AXIS OR IN A PLANE PERPENDICULAR THERETO
Robert E. L. Maxey, Sr., North Huntingdon, and John Bernard, Jr., Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 16, 1974, Ser. No. 506,650
Int. Cl.² G01B *5/20, 7/28*
U.S. Cl. 33—172 R **6 Claims**



1. An apparatus having an axis extending therethrough for indicating the contour of a member having a surface disposed perpendicular to the axis and a surface disposed parallel to the axis, said apparatus comprising:
a housing having an opening therein,
sensing means for interrogating both the perpendicular and the parallel surfaces of the member, said sensing means comprising,
a probe member coaxially mounted within said housing and extending through the opening therein,
means disposed within said housing for permitting movement of said probe member relative to said housing in a plane perpendicular to the apparatus axis,
a pin member mounted for movement within said probe member along the apparatus axis, said pin member terminating in a probe tip,
said pin member being displaced along the apparatus axis in response to a force exerted on said probe tip by a deviation on the perpendicular surface of the member as said probe tip is moved thereover,
said probe member being displaced relative to said housing the plane perpendicular to the apparatus axis in response to a force exerted on said probe tip by a deviation on the parallel surface of the member as said probe tip is moved thereover,
a shaft member mounted coaxially within said housing and displaceable along the apparatus axis,
force transmission means for transmitting forces imposed upon said sensing means to said shaft member to displace said shaft member from a first to a second position along the apparatus aixs, said shaft member being mounted for simultaneous rectilinear and rotational displacement relative to the apparatus axis in response to a force transmitted thereto by said force transmission means, and,
means for indicating the magnitude of the displacement of said shaft member to indicate the magnitude of the devia-

tion encountered by said sensing means on the surface of the member.

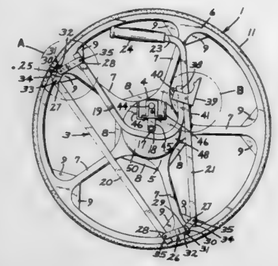
3,922,792
GAUGING APPARATUS FOR WORKPIECE WITH TROCHOIDAL CROSS SECTION
Teruyuki Ito, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Japan
Filed Feb. 5, 1974, Ser. No. 439,694
Claims priority, application Japan, Feb. 21, 1973, 48-21038
Int. Cl.² G01B *5/20*
U.S. Cl. 33—174 R **8 Claims**



1. In an apparatus for machining a trochoidal bore of a workpiece having inner and outer envelopes and supported on a work spindle and a tool supported on a tool spindle being disposed so as to contact said workpiece at a first point of a plurality of predetermined boundary points disposed between said inner and outer envelopes, the improvements comprising:
a basic member;
a rotating member rotatably mounted within said basic member;
said work spindle being rotatably mounted within said rotating member with a predetermined eccentricity with respect thereto for supporting said workpiece in axial alignment with said work spindle;
trochoid generating drive means operatively connected with said rotating member and said work spindle for rotating said rotating member and said work spindle about their own axes with a predetermined rotational ratio therebetween and for revolving said work spindle about the axis of said rotating member, whereby a trochoidal motion is imparted to said work spindle and said workpiece supported thereon and draws the inner and outer envelopes of a trochoidal bore upon rotation of said work spindle by said trochoid generating drive means; and
sizing means fixedly disposed on said basic member and being provided with feeler means for detecting the dimensions of said trochoidal bore of said workpiece by engaging said feeler means with said bore at at least a second point of said boundary points disposed between said inner and outer envelopes of said trochoidal bore while said workpiece is being rotated.

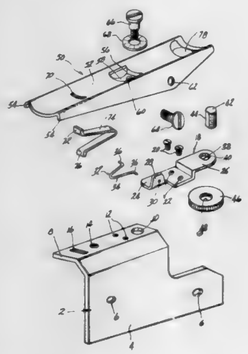
3,922,793
LAND MEASURING INSTRUMENT
Ebenhard S. Gandrud, P.O. Box 528, Owatonna, Minn. 55060
Filed Oct. 29, 1974, Ser. No. 518,238
Int. Cl.² G01B *3/12*
U.S. Cl. 33—141 E **7 Claims**

1. A land measuring instrument comprising:
a. a wheel supported body;
b. a ground engaging wheel of given diameter;
c. spindle means journalling the wheel on said body for rotation on a normally generally horizontal axis;
d. a counter carried by said body;
e. actuator means operatively connected to said wheel for operating said counter responsive to rotation of the wheel;
f. wheel guiding and impelling means connected to said body and comprising an elongated shank having a handle at one end, said shank including a least a pair of shank sections in end to end relationship;
g. means connecting said shank sections at adjacent ends thereof for movements relative to each other between inoperative collapsed positions and operative positions in aligned end to end relationship, and comprising toggle



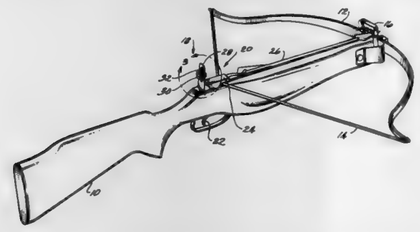
links having inner ends pivotally secured together on an axis extending transversely of the shank, and outer ends each pivotally connected to the adjacent end of a different shank section on an axis parallel to said transversely extending axis;
h. and means for releasably locking said shank sections rigidly in said operative positions;
i. each of said shank sections having a length and shape to be confined within a circle defined by the outer circumference of the wheel when said sections are in said inoperative collapsed positions thereof.

3,922,794
ADJUSTABLE BASE FOR MOUNTING AN OPTICAL FIREARM SIGHT
William R. Ackerman, Jr., El Paso, Tex., assignor to W. R. Weaver Company, El Paso, Tex.
Filed Oct. 4, 1974, Ser. No. 512,833
Int. Cl.² F41G *1/38*
U.S. Cl. 33—248 **3 Claims**



1. A gunsight mount of the type having windage and elevation adjustment capabilities, said mount comprising:
a. a fixed member adapted to be fixed to a firearm;
b. a pivotable cradle providing a surface upon which a sight can be mounted;
c. means forming a single pivot for said pivotable cradle, said pivot enabling said pivotable cradle to be pivoted both in a horizontal and a vertical direction with respect to said fixed member;
d. first spring means engaging said pivotable cradle for biasing the latter vertically about said pivot;
e. first drive means engaging said pivotable cradle for imparting vertical pivoting movement to said pivotable cradle about said pivot against the bias of said first spring means;
f. second spring means engaging said pivotable cradle for biasing the latter horizontally about said pivot; and
g. second drive means engaging said pivotable cradle for imparting horizontal pivoting movement to said pivotable cradle about said pivot against the bias of said second spring means.

3,922,795
PEEPSIGHT
Pierre Andre Bettencourt, Duarte, Calif., assignor to Wham-O Mfg. Co., San Gabriel, Calif.
Filed Aug. 12, 1974, Ser. No. 496,475
Int. Cl.² F41G *1/08, 1/22, 1/46*
U.S. Cl. 33—254 **8 Claims**

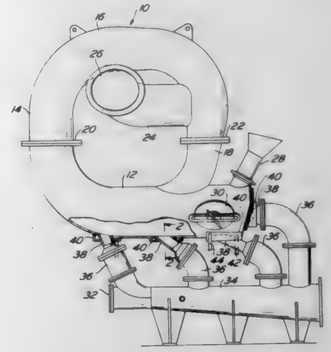


1. In a sighting and aiming device having a sight bracket, an elongated slot in the sight bracket, and means for mounting the bracket on the implement with which the device is used, the improvement comprising
a peepsight having a cone portion;
An integrally formed neck portion extending from the apex of the cone portion and generally axially thereof;
a pair of wing members integrally formed with the neck portion at the end thereof opposite the cone portion, each of the wing members extending in diametrically opposite directions transversely of the axis of the cone portion, and a sighting aperture concentric with the axis of the cone portion extending through the wing members, neck portion and opening into the cone portion.

3,922,796
DRYING MILL FOR WET GRANULAR MATERIAL
Nicholas N. Stephanoff, Haverford, Pa., assignor to Fluid Energy Processing & Equipment Co., Hatfield, Pa.
Filed Oct. 25, 1974, Ser. No. 517,849
Int. Cl.² F26B *3/08*
U.S. Cl. 34—10 **11 Claims**

1. A method of drying wet solid particles which comprises propelling a hot gaseous fluid from at least one gaseous fluid inlet thereof into a circulating path, passing said wet solid particles into said circulating gaseous fluid from a separate particle feed means, said gaseous fluid being initially at a temperature at least approximately the deterioration temperature of said particles, said gaseous fluid acting to simultaneously disperse said particles and apply drying heat to their exposed surfaces upon contact therewith, the particles being thereafter centrifugally separated in accordance with their state of dryness while being moved by said gaseous fluid through said circulating path, and maintaining the area surrounding said fluid inlet at a temperature that is lower than the temperature of said gaseous fluid.

9. A drying mill comprising an inlet section, an upstack, section, a classification section and a downstack section, said sections forming a substantially annular path, said inlet section having particle feed means for heat sensitive wet, granular particles and at least one gaseous fluid inlet separate from said feed means and arranged tangentially to the axis of said inlet



section, means to pass hot gaseous fluid through said fluid inlet into said inlet section, and cooling means for cooling the area around said fluid inlet to a temperature below the melting point of the material being treated while said hot gaseous fluid is being propelled therethrough, whereby clogging of the fluid inlet is prevented.

3,922,797
METHOD FOR COOLING HOT PARTICULATE MATERIAL
Charles J. Dick, Bethlehem, Pa., assignor to Fuller Company, Catasauqua, Pa.
Division of Ser. No. 327,967, Jan. 30, 1973, Pat. No. 3,839,803. This application July 18, 1974, Ser. No. 489,689
Int. Cl.² F26B *7/00;* **F27D** *15/02*
U.S. Cl. 34—20 **6 Claims**

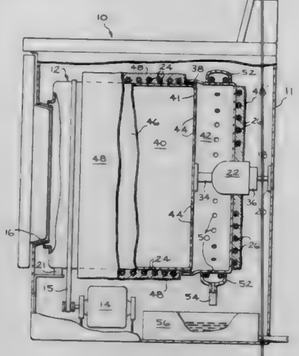


4. The method of cooling hot particulate material comprising the steps of:
passing a cooling gas through the material to be cooled;
further cooling said material by directly contacting said material with a liquid while substantially preventing the passage of a cooling gas therethrough; and
passing a cooling gas through said material.

3,922,798
CLOTHES DRYER
Stephen L. McMillan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Aug. 19, 1974, Ser. No. 498,267
Int. Cl.² F26B *21/06*
U.S. Cl. 34—73 **5 Claims**

1. In an improved clothes dryer, a rotatable drying drum, power means for rotating the drum, a compressor, a con-

denser connected to the compressor and associated with the drying drum for supplying heat thereto, and an evaporator connected to the compressor and the condenser forming a refrigeration cycle, the improvement comprising:



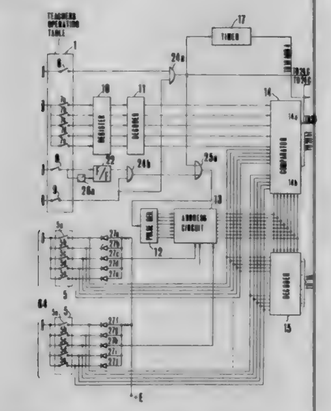
said compressor, condenser and evaporator each having means for being fixedly connected to the drying drum and rotatable therewith and including means for operating the compressor.

3,922,799

EDUCATIONAL EXERCISING APPARATUS

Mikiharu Tanji, Mie, Japan, assignor to Ise Electronics Corporation, Ise, Japan

Filed Oct. 31, 1973, Ser. No. 411,288
Claims priority, application Japan, Nov. 8, 1972, 47-111805; Nov. 8, 1972, 47-111806; Nov. 8, 1972, 47-111807
Int. Cl.² G09B *5/00*
U.S. Cl. 35—48 R **5 Claims**



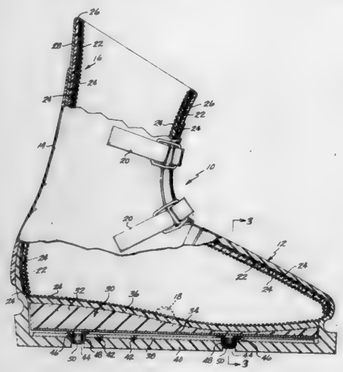
1. An educational exercising apparatus for use in conjunction with some means for presenting a problem, said apparatus comprising a teacher's station including a plurality of correct answer switches for producing answer signals corresponding to the correct answers of the presented problems, a recorder including recording paper and recording means, a plurality of student answerer units each including a plurality of select buttons operated by each answerer for producing difference select numbers, a comparator for sequentially comparing the select numbers of the answer units operated by respective answerers with an answer signal produced by one of said correct answer switches to produce different binary signals according to whether the answers provided by respective answerers are correct or not, means responsive to the output from said comparator for recording on said recording paper individual correct and erroneous answers for each answerer with different colours, a timing pulse generator for producing a plurality of timing pulses of the number equal to the number of the answerers, an address circuit responsive to said timing pulses for selecting the answer units operated by respective answerers to produce address pulses of said selected answer units, a first decoder responsive to said address pulses for decoding the select numbers produced by said answer units into different data signals, means for supplying said data signals to said recording means for recording on said recording paper the select numbers of the answers produced by said student answerer units, a selectively operable group select switch provided in said teacher's station, a second timer operated by said group select switch for producing a pulse at each unit time, percentage counter means responsive to the pulses from said second timer and said comparator for deriving a percentage count output signal indicative of the number of the binary signals produced by said comparator representing correct answers, an address setter responsive to the output signal from said percentage counter means for designating an address on said recording paper, a second decoder responsive to the output from said percentage counter means for printing a predetermined symbol on said recording paper at said designated address, whereby the percentage of the correct answers in each unit time is printed on said recording paper.

3,922,800

SIZE ADJUSTABLE SKI BOOT

Forrest A. Miller; Michael T. Wirsching, both of Vashon, and Frank A. Hosick, Burton, all of Wash., assignors to K-2 Corporation, Vashon Island, Wash.

Filed July 1, 1974, Ser. No. 484,618
Int. Cl.² A43B *00/00*
U.S. Cl. 36—2.5 AL **13 Claims**



1. A ski boot having a molded plastic outer shell including:
a first member having an ankle portion, a heel portion, a sole portion and instep and toe portions of fixed external size;
a cuff member affixed to said first member and including fastener means holding said cuff member in surrounding relation to said ankle portion;
an insole sized to fit within said first member and substantially cover the bottom thereof including metal plate means on the bottom of said insole;
opening means in said plastic shell;
means for moving said insole vertically with respect to the sole portion of said first member to change the foot size of said ski boot, said means being accessible for actuation from without said plastic shell through said opening means while said boot is being worn;
slow memory expanded foam padding positioned adjacent the top and side surfaces of the instep portion of said first member, said padding adapted to be compressed by movement of said insole or the wearer's foot thereagainst with small resilient resistance; and
said slow memory expanded foam padding being of the closed cell vinyl type having a compression set value C_f of between 15 and 45% and a compression set value C_d of between 45 and 75%.

3,922,801

LIQUID FILLED ORTHOPEDIC APPARATUS

Patrick Thomas Zente, 34 Nance Road, West Orange, N.J. 07052

Filed July 16, 1973, Ser. No. 379,726
Int. Cl.² A43B *13/40*
U.S. Cl. 36—44 **7 Claims**



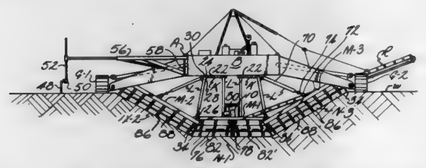
1. An apparatus for treating foot defects and for promoting foot comfort which comprises:
flexible, liquid-filled ampules, at least one separate ampule being provided and positioned to support each of (a) the toes, (b) the metatarsal, (c) the arch, and (d) the heel; and
a flexible upper lamina and a flexible lower lamina, the laminae containing the ampules, and the laminae being sealed at their periphery and around the perimeter of each of the ampules, thereby permanently positioning the ampules and forming the apparatus.

3,922,802

EARTH SURFACING APPARATUS

Robert G. James, 3509 Janene Way, Bakersfield, Calif. 93306

Filed Nov. 25, 1974, Ser. No. 526,849
Int. Cl.² E02F *5/04*, *5/08*
U.S. Cl. 37—97 **9 Claims**



1. An earth surfacing apparatus capable of excavating a flat longitudinally extending swath in the earth or a swath that includes a flat section that has at least one side section extending upwardly at an angle from one end of said flat section, said apparatus including:
a. a platform having a forward and rearward end;
b. first means on said platform that is power operated for supplying hydraulic fluid under pressure;
c. control means for supplying said hydraulic fluid from said first means;
d. first and second laterally spaced parallel crawler track assemblies disposed on opposite sides of said platform that are actuated by said hydraulic fluid supplied thereto from said control means;
e. first and second pairs of parallel, longitudinally spaced arms that are pivotally connected to said first and second crawler track assemblies and to said platform;
f. second means operated by said hydraulic fluid from said control means for pivoting said first and second pairs of arms relative to said platform;
g. third means operated by said hydraulic fluid from said control means for pivoting said first and second crawler track assemblies relative to said first and second pairs of arms to permit lower reaches of said crawler track assemblies to fully engage the earth surface on which they are supported;
h. a transverse frame assembly that depends from said platform intermediate said forward and rearward ends thereof;
i. a plurality of struts that are longitudinally adjustable as to length, said struts having first and second ends;
j. fourth means for removably connecting said first ends of said struts in desired transverse spacing to said frame assembly;
k. first and second frames supported from said second ends of said strut, said first frame being disposed under said platform in a substantially horizontal position, and said second frame disposed outwardly from said first frame and extending upwardly at an angle relative thereto;
a. first rotary earth cutting and lateral earth cutting moving means rotatably supported from said first frame, said first rotary cutting and lateral earth moving means when rotated delivering said cutting rearwardly substantially the center thereof;
m. second rotary earth cutting and lateral earth cutting moving means rotatably supported from said second frame and when rotated delivering cuttings cut thereby to a first end of said first rotary earth cutting and lateral earth cutting moving means to be moved by the latter rearwardly from substantially the center thereof;
n. fifth means actuated by said hydraulic fluid from said control means for rotating said first and second rotary earth cutting and lateral earth cutting moving means;
o. a longitudinally disposed upwardly and rearwardly extending first conveyor for receiving said cutting from said first rotary earth cutting and lateral earth cutting moving means on a first end thereof and discharging said cutting from a second end thereof;
p. sixth means for supporting said first conveyor from said frame assembly;
q. a transversely positioned angularly disposed second conveyor having first and second ends, said cuttings being delivered from said second end of said first conveyor onto said first end of said second conveyor, and said cuttings when said second conveyor is operating being conveyed thereon to said second end thereof from which they drop by gravity;
r. swivel means for movably supporting said second conveyor adjacent said first end thereof from said platform;
s. movable cable means supported from said platform and secured to said second conveyor adjacent said second end thereof for angularly adjusting said second conveyor relative to said platform; and
t. seventh means for driving said first and second conveyors, with said device as it moves forwardly on said first and second crawler track assemblies cutting said swath in the earth and delivering said cuttings to one side thereof from said second end of said second conveyor.

3,922,803

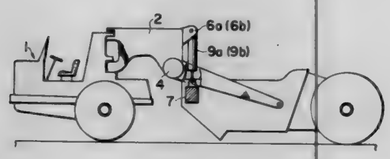
SUSPENSION DEVICE FOR THE BOWL OF A SCRAPER

Haruhiko Umeda, Yokohama; Michio Suga, and Akio Iida, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jan. 30, 1975, Ser. No. 545,497
Claims priority, application Japan, Apr. 8, 1974, 49-39063
Int. Cl.² E02F *3/86*
U.S. Cl. 37—126 R **3 Claims**

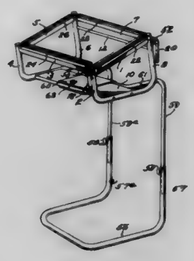
1. In a suspension device for the bowl of a scraper having a goose neck horizontally swingably mounted on the scraper,

draft arms vertically swingably supported by said goose neck at their proximal ends, said draft arms swingably supporting said bowl at their distal ends, and a pair of lift cylinder assemblies arranged at the left and the right side with respect to the center of the scraper body and connected to said goose neck and said bowl, respectively, for controlling the operation of said bowl, the improvement wherein one ends of said pair of



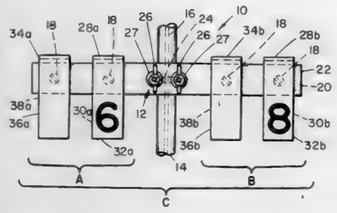
lift cylinder assemblies are connected through spherical bushes to the upper rear portion of said goose neck at positions relatively close each other and the other ends of said lift cylinder assemblies are connected through spherical bushes to a cross member spanning laterally said bowl at positions adjacent to the opposite ends of said cross member whereby said lift cylinder assemblies extend obliquely.

3,922,804
RUG HOOKING FRAME CONSTRUCTION FOR SUPPORTING AND STRETCHING A HOOKED RUG FABRIC
Thomas E. Batey, Weston, Mass., assignor to Mayflower Textiles Co., Inc., Franklin, Mass.
Filed Oct. 10, 1974, Ser. No. 513,557
Int. Cl.² D06C 3/08
U.S. Cl. 38—102.91 **7 Claims**



1. Apparatus for supporting and stretching a hooked rug fabric, said apparatus comprising a rug hooking frame, post means arranged in the underside of the frame for locating corner portions thereof in a raised position, said rug hooking frame including four fabric retaining bars positioned at right angles to one another and having secured at the upper sides thereof respective card clothing holders, card clothing strips detachably received in the holders for engaging and stretching a rug fabric, two of the retaining bars being secured to the post means in fixed relation therewith, the remaining two retaining bars being mounted in the post means for rotative movement independently of one another in clockwise directions, handle means for turning the rotatable bars separately of one another and locking means responsive to movement of the handles to resist counterclockwise movement of respective rotatable bars in any position of adjustment.

3,922,805
VOLLEYBALL SCORE DISPLAY DEVICE
Gloria A. Krug, R.D. No. 5, Hanover, Pa. 17331
Filed July 10, 1974, Ser. No. 486,971
Int. Cl.² G09F 7/18
U.S. Cl. 40—102 **2 Claims**



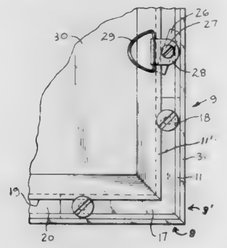
1. A score display device for volleyball games comprising in combination, two sets of pairs of multiple flexible score indicia panel members substantially longer than the width thereof, each set comprising a left-hand group of limited number of such members displaying the ten digits of the score of one team and a right-hand group of ten panel members bearing in succession numerical digits from one to nine and zero, said panel members being thin and flexible and formed from durable sheet material of synthetic resin, a pair of rigid clamping bars adapted to be mounted horizontally, bolt-like members extending through said bars and the upper ends of said groups of flexible score indicia panel members to clamp the same securely between said clamping bars with said sets of panel members respectively being positioned at opposite sides of the midpoint of said bars and the left-hand group of each set being located to the left of the right-hand group of each set when positioned in use, said sets of panel members initially extending upward, across and hanging downward in use from one side of said bars to display the indicia thereon in depending manner and each group of panel members initially having a blank panel member outermost, the flexibility of said members permitting the same readily to be flipped backward in use over the top of said bars and the length thereof being sufficient to enable the weight of said members to insure that said members will hang downward on the opposite side thereof to reveal on the next adjacent member the next indicia corresponding to the score of the teams, a U-bolt having legs extending through holes in the midpórtion of said bars and adapted to be mounted upon a vertical pole at one end of the net of a volleyball court, and nuts threaded upon said legs to secure said bars and depending panel members to said pole.

3,922,806
PICTURE FRAME
Michel H. Saad, c/o Dana Electronic Computer Co., Bldg. 105, Spokane Ind. Park, Spokane, Wash. 99216
Filed Feb. 25, 1974, Ser. No. 445,130
Int. Cl.² G09F 1/12
U.S. Cl. 40—152 **3 Claims**



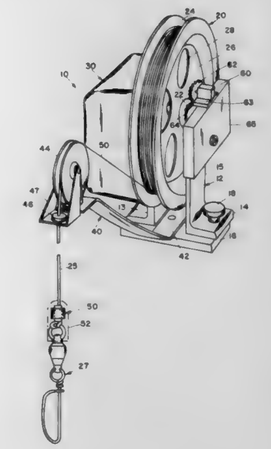
1. A picture frame assembly for canvas pictures comprising: a plurality of mitered ends to define an opening between the members;
said frame members having outside peripheral edges;
said frame members having inside edges spaced inwardly from the outside edges bordering the opening and substantially parallel to the outside edges along respective frame members;
said frame members having a rear face extending between the inside and outside edges intended to face a wall;
said frame member having a front face extending between the inside and outside edges intended to face outward from the wall;
a canvas fastening groove formed in the rear face intermediate the inside and outside edges, extending substantially parallel to the inside edges for receiving the boundary of a canvas picture;
a beveled canvas tightening groove formed in the rear face intermediate the fastening groove and the inside edges extending substantially parallel to the fastening groove forming a friction ridge intermediate the fastening groove and the canvas tightening groove.
said beveled canvas tightening groove forming a groove base surface and a beveled groove side surface extending at shallow inclined angle from the groove base toward the inside edges terminating at an inside back surface of the rear face;
said inside back surface extending from the canvas tightening groove to the inside edges;
a fastening means for fastening the boundary of the canvas picture to the frame members within the fastening groove with the canvas spaning the opening and covering the friction ridge and the canvas tightening groove; and
canvas tightening means for pressing the canvas sheet adjacent the tightening groove into the beveled tightening groove to wrap the canvas sheet over against the friction ridge to minimize stress of the canvas in the fastening groove and to uniformly stretch the canvas outward over the inside back surface and into the beveled tightening groove and for securing the canvas sheet to the base surface of the tightening groove with the canvas sheet taut over the opening and firmly engaging the inside back surface.

3,922,807
MULTI-UTILITY DURABLE MITERED PICTURE FRAME
Frank Shore, 305 W. 28 St., New York, N.Y. 10001
Filed Jan. 31, 1974, Ser. No. 438,238
Int. Cl.² G09F 1/12
U.S. Cl. 40—152.1 **11 Claims**



1. A picture frame device comprising in combination: outer frame pieces mitered at opposite corner-ends thereof and thereby joinable to one-another at the ends thereof to form a corner frame assembly, each outer frame piece defining an outer side wall and a front wall, a cross-section through the outer frame and the outer side wall and the front wall thereof being in a shape of an inverted "L" with the front wall extending inwardly defining a base flange as a base to the inverted L at a front of the outer frame piece; and each outer frame piece further including additional second laterally inwardly-extending flange and third laterally inwardly-extending flange, the second and third laterally inwardly-extending flanges extending from said outer front wall, the second and third laterally inwardly-extending flanges being substantially parallel to each other and to the base flange, and the second and third laterally inwardlyextending flanges being spaced behind the base flange, the third laterally inwardly-extending flange being spaced behind the second flange and being short relative to each of the base flange and the second flange, the second flange continuing in structure and shape to form in conjunction with the third flange a T-shaped slot as viewed in said cross-sectional view, the second and third flanges both extending from about a mid-point along the upright portion of the inverted L shape of said outer side wall structure whereby joined metered ends of a corner frame assembly when joined have opposite portions on opposite positions from the mid-point braced against the corresponding portions of a joined other outer frame, with the mid-point of each joined piece serving as a pivot point, each outer frame piece being sturdy and rigid.

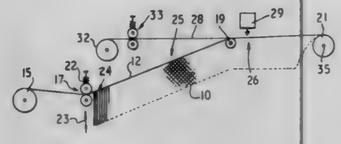
3,922,808
CONTROLLED TROLLING APPARATUS
James E. Rieth, Grand Rapids, and William M. Booth, Grand Haven, both of Mich., assignors to James E. Rieth, Grand Rapids, Mich.
Filed Jan. 11, 1974, Ser. No. 432,599
Int. Cl.² A01K 89/00
U.S. Cl. 43—4 **13 Claims**



1. A powered trolling apparatus for use on a vessel comprising:
a frame member;
a reel mounted to said frame member and including a control line coupled thereto;
a reversible electric motor coupled to said reel for paying out and retrieving said control line from said reel such that an end of said control line can be immersed in the water;
means for detecting the temperature of water at a reference point on said control line; and
a temperature control circuit coupled to said detecting means and to said drive means for actuating said drive means to pay out or retrieve said control line wherein said temperature control circuit includes means for providing selectable electrical reference signals representative of upper and lower temperature limits, and comparator means coupled to said detecting means, to said providing means and to said drive means for developing electrical signals applied to said drive means to actuate said drive means when the detected water temperature is above or below said upper or lower limits, respectively, to raise or lower said reference point on said control line in the

water to maintain said reference point on said control line within said temperature limits.

3,922,809
PROCESS FOR PRODUCING NET DEVICES
Jan H. Platou, Birkelundsbakken 76, 5040 Paradis, Norway
Filed Jan. 21, 1975, Ser. No. 542,768
Int. Cl.² A01K *73/00*
U.S. Cl. 43—7 **6 Claims**



1. A process for producing net devices by mechanically mounting floating line means for the reception of floating material and sinking line means for the reception of weight-increasing material at local fastening points along opposite side edges of a line of netting by way of fastening lines associated with the latter which comprises the steps of:

a. drawing the line of netting intermittently in a path through a mesh-diverging zone and a subsequent fastening zone controlled by said fastening lines each of which passes through its respective one of opposite rows of meshes at the opposite edges of said line of netting,

b. maintaining said fastening lines constantly stretched out in both said mesh-diverging and fastening zone,

c. causing said edge meshes in said mesh-diverging zone to be drawn freely in an upwardly and obliquely rising movement along said fastening lines whereby the weight of said netting has the effect of both ensuring a desired degree of spreading of said edge meshes on said lines and maintaining said meshes undisplaceably in position thereon in said fastening zone, and

d. separately fastening said fastening lines to said floating and sinking lines respectively at said fastening points in said fastening zone, the edge meshes thus being anchored between said fastening points and by way of the latter being drawn forward in said intermittent movement between each fastening operation.

3,922,810
FISHING GEAR RETRIEVER
Ellsworth A. Kelly, 614 Baker St., Longmont, Colo. 80501
Filed Jan. 16, 1975, Ser. No. 541,509
Int. Cl.² A01K *97/00*
U.S. Cl. 43—17.2 **5 Claims**



1. A fishing gear retriever adapted to move down a fishing line to which said fishing gear is connected, comprising:

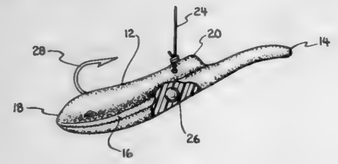
generally coaxial, spaced, generally circular members;

a slot in each member which permits a fishing line to be moved to a position inside said member, the lower of said members being cylindrical and provided with an inclined slot;

means connecting said members, including a first upright rod attached to each of said members and a second upright rod spaced from the upper circular member and spaced from said lower cylindrical member downwardly to a point below said slot; and

clamping means carried by one of said members for engaging said fishing gear.

3,922,811
FISHING LURE
Elmer M. Ellingson, Buford, N. Dak. 58837
Filed Apr. 19, 1974, Ser. No. 462,377
Int. Cl.² A01K *85/00*
U.S. Cl. 43—42.39 **5 Claims**



1. A fishing lure having a heavier-than-water body including an upstanding dorsal fin, two side fins protruding outwardly from either side of the body, and a tail fin extending laterally outwardly from the body and rearwardly thereof;

means on an upper rearward portion of the dorsal fin to receive and retain a fishing line;

a fish hook permanently mounted in the body; and

said lure having a center of gravity in the bottom half of the body and slightly forward of the point of connection of the fishing line to the dorsal fin.

2. A fishing lure having a heavier-than-water body including an upstanding dorsal fin, two side fins protruding outwardly from either side of the body, and a tail fin extending rearwardly thereof;

means on an upper rearward portion of the dorsal fin to receive and retain a fishing line;

a balancing weight of substantially higher specific gravity than that of the lure body, said weight being embedded in a bottom portion of the body adjacent to the point of connection of the fishing line to the dorsal fin, but on the side of the fishing line toward the head of the lure; and

a fish hook permanently mounted in the body.

3,922,812
PORPOISE STRANDING DEVICE
Joseph W. Steele, Kailua, Hawaii, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 3, 1975, Ser. No. 546,370
Int. Cl.² A01K *69/00*
U.S. Cl. 43—100 **6 Claims**

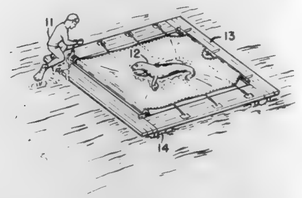
1. A catching and stranding tool in combination with an open ended animal husbandry confine comprising:

flexible canvas sheet means attached at one edge to one side of the open end of said animal husbandry confine of a width to extend substantially thereacross and being of an extent to have a slack portion flexibly conforming to the inner circumferential extent of said animal husbandry confine with an opposite edge emerging adjacent the opposite side of the open end of said animal husbandry confine for providing noninjurous engagement with an animal confined therein;

reinforcement strips attached to said canvas sheet and extending thereacross;

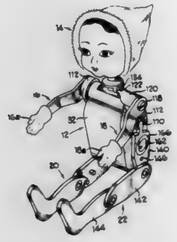
attachment means connected to the ends of said reinforcement for supportive connection thereto;

reel means connected to said opposiste edge of said flexible sheet means for spoolably winding said sheet means thereon; and



winding means attached at the opposite side of the open end of said animal husbandry confine and constructed to rotatably engage said reel means for selectively spooling and unspooling the slack portion of said flexible sheet means to stretch said flexible sheet means tautly across the open end and to permit it to conform to the inner circumferential extent of said animal husbandry confine.

3,922,813
DOLL WITH MOTORIZED LEGS DRIVEN IN UNISON AND ARMS DRIVEN IN UNISON THEREBY
Rouben T. Terzian, and Marvin I. Glass, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed June 22, 1972, Ser. No. 265,220
Int. Cl.² A63H *13/18*
U.S. Cl. 46—119 **7 Claims**



1. An articulated movable doll having normally forwardly facing directional features, comprising:

means defining a doll torso having an interior;

a pair of simulated legs pivotally connected to said torso for rotation about a first axis extending generally side-to-side of said torso generally transverse to said forward direction;

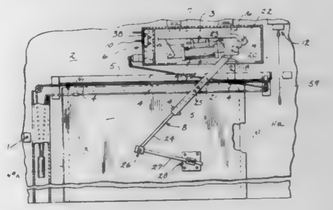
a pair of simulated arms pivotally connected to said torso for rotation about a second axis extending side-to-side generally through the shoulder areas of the doll;

means connecting said arms to said legs so as to be driven thereby together in unison in a front-to-rear to-and-fro articulated motion relative to said torso generally transverse to said second axis;

motorized continuously operably drive means in said torso interior including an output shaft connected to said legs for driving said legs in unison in a front-to-rear to-and-fro plural cyclical articulated motion relative to said torso generally transverse to said first axis in response to actuation of said drive means so as to provide a continuous rocking motion between the doll torso and the arms and legs of the doll; and

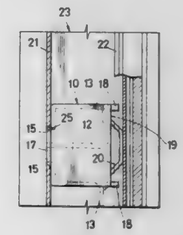
manually operable actuating means to initiate operation of said motorized drive means to rockingly move said arms and legs relative to the torso continuously during operation of the motorized drive means.

3,922,814
CONTROL SWITCHING FOR AUTOMATIC LOAD OPERATORS
Arthur J. Runft, Mequon, Wis., assignor to Kelley Company, Inc., Milwaukee, Wis.
Filed Dec. 27, 1973, Ser. No. 428,923
Int. Cl.² E05F *15/20*
U.S. Cl. 49—28 **12 Claims**



1. In an automatic door operator for a door, a motor means, a mechanical linkage coupling being connected to the output of said motor means and transferring the driving force to said door wherein said linkage includes a force transmitting arm including an essentially rigid portion and a flexible resilient elongated portion having an unstressed extended position, said arm being pivotally mounted and said flexible elongated portion having minimal deflection from said unstressed extended position with respect to the rigid portion in response to normal movement of said door and said flexible portion having increasing deflection from said unstressed extended position in accordance with interferences with said movement of said door, and a force responsive safety switch means coupled to the motor means being secured to said linkage and to said rigid portion with an operating means spaced from said flexible portion and in the deflection path of said flexible portion and actuated by selected deflection of said arm in response to the establishment of an opposing force of a selected level to activate said motor means.

3,922,815
WINDTIGHT SEALING MEANS FOR A WINDOW OR THE LIKE HAVING A PAIR OF HORIZONTALLY MOVABLE PANEL ASSEMBLIES
Shuichi Hosooka, Namerikawa, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Dec. 27, 1974, Ser. No. 536,824
Claims priority, application Japan, Dec. 28, 1973, 49-5002[U]
Int. Cl.² E06B *7/14*
U.S. Cl. 49—408 **3 Claims**



1. In a supporting frame of a window or the like, wherein said supporting frame includes a sill having front and rear rails

arranged in parallel spaced relationship thereon, said front rail having a first groove extending longitudinally along its bottom edge and an aperture formed in a prescribed position of said groove therethrough, said rear rail having a second groove extending longitudinally along its bottom edge, said first and second grooves being open toward each other, windtight sealing means comprising, in combination, an openbottom boxlike member adapted to be mounted between said front and rear rails, said boxlike member having a pair of opposed side walls through which there are formed a pair of water inlet openings, respectively, and a front wall through which there are formed a pair of water outlet openings in side-by-side arrangement, a transverse partition within said boxlike member dividing the interior thereof into a pair of opposed chambers, each of said chambers being open through one of said water inlet openings and one of said water outlet openings, rim means projecting forwardly of said front wall of said boxlike member to at least partly surround said water outlet openings, said rim means being slidable through said first groove and being capable of projecting into said aperture to hold said water outlet openings in registered relationship thereto, a pair of ears projecting rearwardly of said boxlike member and slidable through said second groove, and spring means biasing said boxlike member toward said front rail.

3,922,816

SWINGABLE GARAGE DOOR

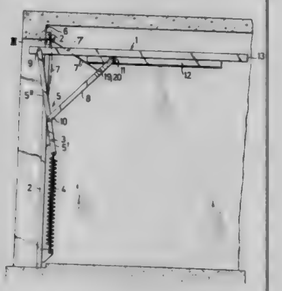
Hermann Hormann, Steinhagen, Germany, assignor to Hormann KG, Germany

Filed Jan. 10, 1974, Ser. No. 432,427

Claims priority, application Germany, Jan. 12, 1973, 2301539

Int. Cl.² E05D *15/40*

U.S. Cl. 49—205 **3 Claims**



1. In a swingable door for garages in which the door panel is held for swinging movement by two-armed levers with respectively one short and one long lever arm and the levers being spring biased, a supporting lever for each two-armed lever and having one end articulated to the associated two-armed lever between a first bearing point of the two-armed lever at the edge frame for the door and an associated second bearing point at the door panel at a point proximate to the first bearing point at the edge frame, the supporting lever having the other end thereof provided with runner means for guided movement with respect to the door panel, and a holding means for each supporting lever connected between an upper end of the edge frame or an inner wall surface and the supporting lever, the improvement comprising the holding means including flexible spring band means having the broad surface portions thereof extending in planes transverse to the planes of movement of the supporting levers, means rigidly mounting one end of said flexible spring band means on said upper end of the edge frame or inner wall surface, and means pivotally mounting the other end of said flexible spring band means on the supporting levers, said flexible spring band means being angularly disposed with respect to the edge frame or inner wall surface so that it is tensioned when the door is closed and untensioned when the door is open, whereby said flexible spring band means constantly exerts a force on said supporting levers during said swinging movement to prevent wobbling of said running means.

3,922,817

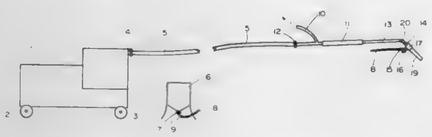
COMBINED STEAM AND ABRASIVE MATERIAL CLEANING DEVICE

Otto Wemmer, Columbia, S.C.

Filed Oct. 21, 1974, Ser. No. 516,385

Int. Cl.² B24C *7/00*, *3/06*

U.S. Cl. 51—12 **17 Claims**



1. A cleaning device for removing various substances from various surfaces comprising:

a. a mobile steam cleaner comprising a water system, a heating system, and a discharge system including an outlet steam hose;

b. a nozzle to which said outlet steam hose is connected;

c. a source of abrasive material including an abrasive material supply hose which is also connected to said nozzle;

d. a manually-adjustable air supply valve operative to vary the flow of said abrasive material through said abrasive material supply hose;

whereby steam is passed through said nozzle, under high pressure, by said steam cleaner, drawing said abrasive material into said nozzle, wherefrom a combination of said steam and said abrasive material is blasted onto said various surfaces to remove said various substances.

3,922,818

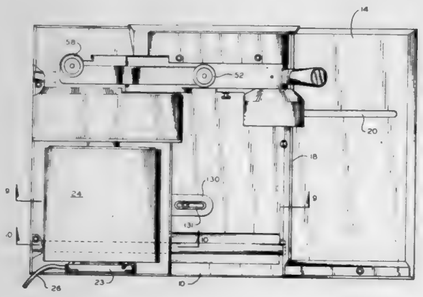
METHOD AND APPARATUS FOR STRIPPING INSULATION FROM ELECTRICAL CONDUCTORS

Louis M. Carpenter, and Kenneth L. Dunn, both of Fayetteville, N.Y., assignors to Carpenter Mfg. Co. Inc., Manlius, N.Y.

Filed July 22, 1974, Ser. No. 490,738

Int. Cl.² B24B *1/00*, *19/00*

U.S. Cl. 51—40 **7 Claims**



1. Apparatus for stripping insulation from an elongated electrical cable comprising, in combination:

a. a first support member;

b. a fixed base upon which said first support member is mounted for reciprocal, linear movement;

c. a second support member pivotally attached to said first support member for movement relative thereto about a first horizontal axis;

d. a first arm formed integrally with and extending forwardly from the pivotal connection of said second to said first support member;

e. a second arm pivotally attached to said second support member for movement relative thereto about a second horizontal axis, parallel to said first axis, and extending generally parallel to said first arm;

f. a pair of stripper wheels respectively mounted at the forward ends of said arms for rotation about spaced, parallel, third horizontal axes, perpendicular to said first and second axes;

g. a workpiece support having a horizontally disposed surface fixed with respect to said base and having a cut-out area for passage of said stripping wheels upon movement of said first support member relative thereto; and

h. means for imparting rotation to said stripper wheels.

3,922,819

DEVICE FOR MACHINING MANTLE SURFACES

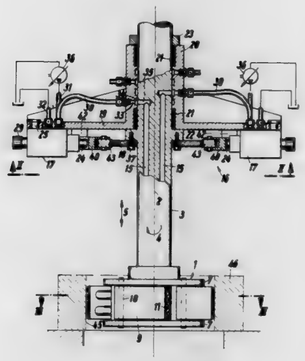
Albert Bender, Nellingen, and Hans Grimm, Berkheim, both of Germany, assignors to Maschinenfabrik Gehring KG, Nellingen, Germany

Continuation of Ser. No. 355,862, April 30, 1973, abandoned. This application Nov. 8, 1974, Ser. No. 522,105

Claims priority, application Germany, Apr. 29, 1972, 2221207

Int. Cl.² B24B *7/04*, *17/00*

U.S. Cl. 51—101 R **7 Claims**



1. An apparatus for machining an internal peripheral surface of varying radius comprising in combination a rotatable tool body, at least one machining element mounted on said tool body for movement radially outwardly, a pressure fluid device on said tool body engaging said machining element for moving said element outwardly into contact with said internal surface, a source of pressure fluid means connected to said pressure fluid device to press said machining element outwardly, a pressure regulating device controlling the pressure to said pressure fluid device, both said source of pressure fluid means and said pressure regulating device being connected positively to said pressure fluid device, a transmission drive operating said pressure regulating device to control the pressure exerted on the machining element, and a program device engaging said transmission drive to compensate and adjust said pressure regulating device according to rotational angle position, said transmission drive and program device being mounted for relative rotary movement in synchronism with the rotation of said tool body.

3,922,820

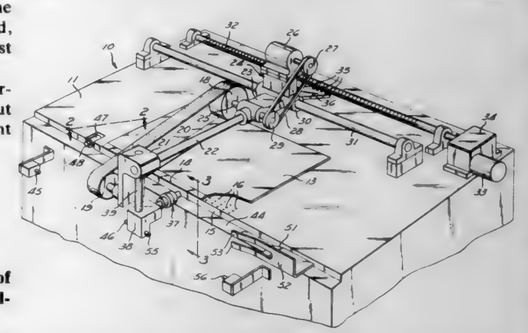
MEANS FOR FEATHERING RUBBER STOCK

Arthur J. Wiltshire, Richmond Heights, Ohio, assignor to Structural Fibers, Inc., Chardon, Ohio

Filed Jan. 9, 1974, Ser. No. 431,919

Int. Cl.² B24B *21/04*

U.S. Cl. 51—142 **4 Claims**



1. Apparatus for skiving edge portions of sheet stock, comprising a flat table having a surface adapted to support sheet stock, said table having means to retain an edge of said stock in coplanar relationship with an edge of said table, an endless abrasive belt mounted between a drive roller and an idler roller and having a flat reach extending at an acute angle with respect to the plane of said table, at least a portion of said flat reach overlying and being intersected by a plane normal to said table and passing through said table edge, one of said rollers having at least a portion thereof located below the plane of said table, said roller adjacent said portion of said flat reach being supported relative to the table by a roller which is adapted to roll along a shelf portion of said table adjacent said edge.

3,922,821

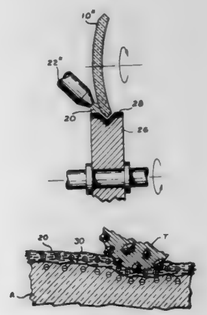
GRINDING METHOD AND COOLANT THEREFOR

Bradford Canterbury, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 397,480, Sept. 14, 1973, abandoned. This application Apr. 18, 1975, Ser. No. 569,245

Int. Cl.² B24B *1/00*

U.S. Cl. 51—284 R **9 Claims**



1. The method of grinding a workpiece of vitreous material with a grinding tool comprising the steps of:

bringing the workpiece and tool into grinding relationship with each other;

producing relative movement between said workpiece and tool to introduce a grinding action upon said workpiece at points of contact between said tool and said workpiece along a surface thereof to be ground, said surface being anionically charged when ground; and

applying to said surface of said workpiece a coolant comprising the mixture of a large proportion of a free flowing liquid in which polyethylenimine is soluble and a relatively small proportion of polyethylenimine rendering the mixture cationic and lubricative; and workpiece and heating thereof is minimized with enhancement of the grinding action and its result.

3,922,822

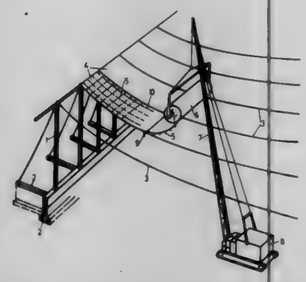
ROOFING ASSEMBLY OF FLEXIBLE MATERIAL

Sebastian Mollinger, 17 Irving Place, Montreal, Quebec, Canada

Continuation of Ser. No. 320,483, Jan. 2, 1973, abandoned, which is a continuation of Ser. No. 113,379, Feb. 8, 1971, abandoned. This application Aug. 2, 1974, Ser. No. 494,684

Int. Cl.² E04B *1/12*

U.S. Cl. 52—63 **8 Claims**



1. A roofing assembly comprising a substantially rectangular roof membrane made of one or more layers of flexible material, said membrane being superimposed on spaced apart load transfer members having a flat support surface connected to said membrane, said load transfer members being superimposed on and connected to a respective flexible load carrying tension member, said tension members being connected at their ends to a respective roof supporting main cable, said load transfer members and tension members extending transversely to the longitudinal axis of said membrane and between adjacent main cables.

3,922,823

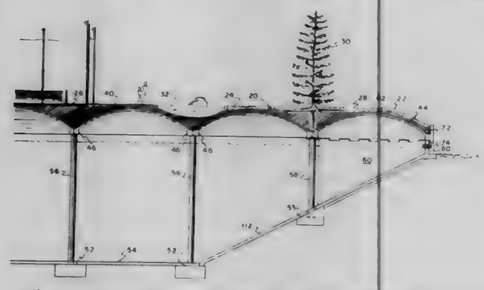
ENCLOSED CONCRETE WATER RESERVOIR SUPPORTING EARTHFILL FOR MULTIPLE LAND USES

Jimmie D. King, 8316 Stone Ave. North, Seattle, Wash. 98103, and Harry R. Powell, 102 Maiden Lane East, Seattle, Wash. 98112

Filed Nov. 1, 1973, Ser. No. 411,744

Int. Cl.² E02D *29/00*

U.S. Cl. 52—80 **12 Claims**



1. An enclosed concrete water reservoir, utilizing a comparative minimum amount of materials, designed to be substantially completely surrounded by earth, the earth above being of sufficient depth for the creation of scenic and recreational park facilities, inclusive of soil supporting tree growth, comprising:

a. a continuous floor inclusive of footings;

b. surrounding side walls;

c. spaced columns positioned over the footings;

d. post-tensioned valley beams integrally made in molules with integral domes and supported on the spaced columns;

e. horizontal cable tendons used in the post-tensioning of the overall arrangement of the integral valley beam and dome molules; and

f. selectively spaced interior shear walls arranged perpendicular to the surrounding side walls having components of shear key structures along their tops, and wherein the post-tensioned valley beams integrally made in modules with the integral domes, where such valley beams are located over the interior shear walls, have components of shear key structures along their bottoms which complementary, with slight spacing, otherwise interfit with the shear key structures of the interior shear walls;

g. compressible sealing materials installed between adjacent concrete components of the reservoir to accommodate expansion and contraction of the enclosed concrete reservoir during both temperature changes and surrounding earth movements, to thereby seal and keep sealed the interfaces between adjacent concrete components.

3,922,824

WATER-TIGHT ROOF VERGE EDGE TRIMMING

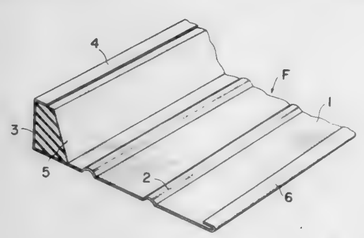
Hisao Izawa, Hoya, and Hiroshi Takemori, Musashino, both of Japan, assignors to Sanko Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1974, Ser. No. 519,977

Claims priority, application Japan, June 11, 1974, 49-67722[U]

Int. Cl.² E04B *7/00;* **E04D** *13/15*

U.S. Cl. 52—94 **1 Claim**



1. A watertight trimming structure for a sloping verge edge of a sloping roof supported at a part thereof near said verge edge above a correspondingly sloping top of a vertical gable wall, said trimming structure comprising a flashing of integral construction having the following combination of features:

a. an elongated main planar part secured to the sloping top of said wall along the entire length thereof and below said part of the roof, and having spaced apart ridges extending longitudinally of said planar part for arresting transverse flow of water;

b. said planar part at one longitudinal side thereof extends beyond the outer surface of said wall to form an overhang extension serving as eaves and having a bent-back portion formed along the other longitudinal side thereof for arresting water which might enter between the roof and the flashing;

c. an upstanding wall formed along the outer longitudinal side, with respect to said wall, of said planar part and having a top flange bent inwardly with respect to said wall substantially in parallel with said planar part, said planar part, upstanding wall, and top flange defining a space extending longitudinally of the flashing and opening inwardly; and

d. an elongated elastic sealing member fitted in said space to sealingly engage the verge edge of said roof.

3,922,825

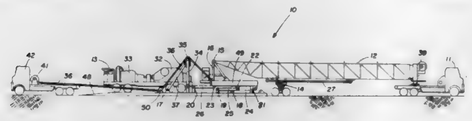
SYSTEM FOR ERECTING AN OIL WELL DERRICK

Kenneth Harmon Eddy, and Kenneth Harmon McGill, both of Beaumont, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 353,033, April 20, 1973, abandoned. This application Dec. 30, 1974, Ser. No. 537,226

Int. Cl.² E04H *12/34;* **B66C** *23/60*

U.S. Cl. 52—116 **4 Claims**



1. A method of erecting an oil well derrick from a reclining position to an upright position, comprising the steps of:

positioning a stationary base at a well site,

connecting a movable base to said stationary base by means that will allow the movable base to be elevated relative to said stationary base,

connecting a reclining derrick mast to the movable base by a rotatable connection,

elevating said movable base relative said stationary base, and

rotating said mast on the rotatable connection until the mast is in its erect position.

3,922,826

BUILDING CONSTRUCTION

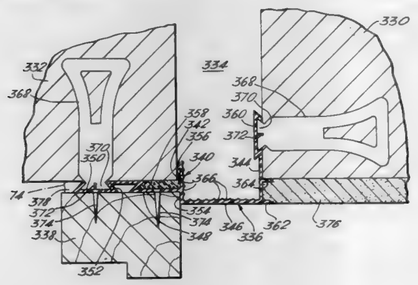
George Molyneux, 1, Halstead Lane, Barrowford, Nelson, County of Lancaster, England

Division of Ser. No. 120,990, March 4, 1971, abandoned. This application Aug. 13, 1973, Ser. No. 387,634

Claims priority, application United Kingdom, Mar. 24, 1970, 14151/70

Int. Cl.² E06B *1/26*

U.S. Cl. 52—204 **13 Claims**



1. A structural assembly comprising a pair of walls, each wall having inner and outer leaves, each of said leaves being built-up from a plurality of building blocks bonded together by cementitious material, and said leaves being laterally spaced from each other to provide a cavity therebetween; a frame having sides and being positioned with its sides in close juxtaposition to ends of said walls, and damp proof course elements positioned at least between said frame sides and said ends of said walls, each of said damp proof course elements comprising an integral strip of plastics material along its frame side with corrosion-resistant, liquid-impermeable properties, each strip being of constant cross-section throughout its length, each strip having a first longitudinal part and a second longitudinal part, said first part of said each strip engaging between its frame side and at least one of said leaves of its wall end, said second part of said each strip bridging the end of said cavity between said leaves of its wall end, said each strip further having a cavity entering part comprising a pair of laterally spaced walls extending into said cavity, and keying means securing said elements to said walls.

3,922,827

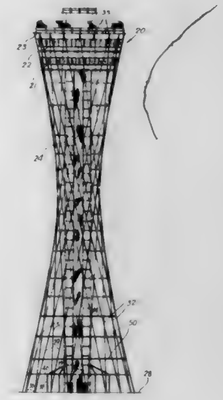
HYPERBOLIC TOWER STRUCTURE

Joel H. Rosenblatt, 12607 Meadowood Drive, Silver Spring, Md. 20904

Filed June 1, 1973, Ser. No. 366,117

Int. Cl. E04h *5/12*

U.S. Cl. 52—245 **15 Claims**



1. A tower structure comprising:

a. the base;

b. two sets of oppositely inclined intersecting circularly arranged linear structural elements on said base extending upwardly therefrom to define a vertical hyperboloid of revolution of one sheet;

c. central vertical shaft means within said hyperboloid of revolution;

d. brace means interconnecting said linear elements to resist buckling thereof including radial horizontal tie rod members connecting intersections of said linear members to said central vertical shaft means;

e. said linear structural elements being defined by successively connected segments, said segments having aligned bar elements projecting from the intermediate portions of said segments on opposite sides thereof oriented to interlock with adjacent oppositely inclined segments and defining intersections on the linear structural elements therebetween;

f. means fastening said bar elements to said adjacent segments; and

g. means connecting said radial horizontal tie rod members to said intersections.

3,922,828

STRUCTURAL MEMBER

David B. Patton, Orange, Calif., assignor to Tri-International Corporation, Orange, Calif.

Filed Nov. 15, 1973, Ser. No. 416,046

Int. Cl.² E04C *3/29*

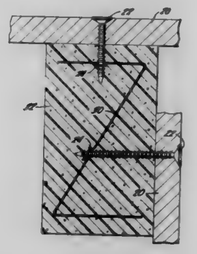
U.S. Cl. 52—368 **2 Claims**

1. A structural element for incorporation into structures

such as private and public buildings and for retaining wall components and the like which comprises:

an elongate molded body having at least two generally flat surfaces disposed in parallel planes and formed of an expanded synthetic polymer composition; and

a sheet metal member encased in the molded body generally coextensive with the molded body longitudinally thereof and said sheet metal body having a Z-shaped cross-sectional configuration and being formed of a metal having sufficient stiffness to provide self maintenance of the Z-shaped cross-section yet having a penetrability to accommodate the driving of nails therethrough and so disposed in said molded body as to have the portions representing



the arms of the Z-shape occupying planes generally parallel to and spaced inwardly from the aforementioned flat faces of the molded body and the intermediate portion of the Z-shape extending obliquely of the arms between opposite ends of the said arms of the Z-shape to accommodate penetration of the embedded sheet metal member by nails of appropriate length driven into the molded body from either of the aforementioned flat faces and also nails driven into the molded body between and generally parallel to arms of said Z-shape with resultant deformity of the sheet metal into the portion of the molded body that is backing the sheet metal on the side opposite the side of penetrative entry of the nail.

3,922,829

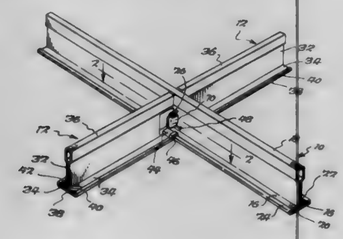
LOCKING CONNECTION FOR SUPPORTING GRID SYSTEMS

Gale E. Sauer, Williamsville, N.Y., assignor to Roblin Hope's Industries, Inc., Buffalo, N.Y.

Filed Sept. 14, 1973, Ser. No. 397,432

Int. Cl.² F16B *7/22*

U.S. Cl. 52—667 **10 Claims**



1. A locking connection for supporting grid systems and the like comprising a first support member having a flange and a web upstanding therefrom; said web being provided with a slot; a second support member having a flange and web upstanding therefrom; said second member web being provided with a locking connector extending axially therefrom and insertable through said slot; said locking connector having a first portion engaging one side of said first support member web and a resiliently yieldable second portion having a terminal edge inclined at an angle relative to the plane of said first support member web in the fully assembled relation therewith; said terminal edge having at least a portion thereof engaging against the side of said first support member web opposite said first locking connector portion whereby said first portion and said edge portion simultaneously engage the opposite sides of said first support member web in the fully assembled relation therewith.

3,922,830

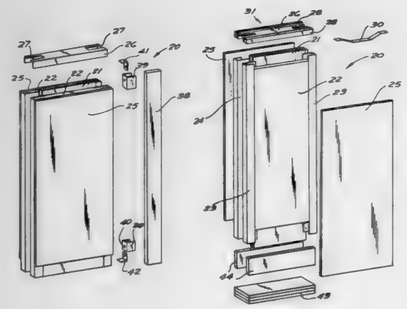
ADJUSTABLE MODULAR PARTITION

Michael C. Guarino, Rumson, and Frank Cacossa, Livingston, both of N.J., assignors to M. C. Guarino Associates, Inc., Belleville, N.J.

Division of Ser. No. 327,609, Jan. 26, 1973, Pat. No. 3,866,370. This application Aug. 29, 1974, Ser. No. 501,472

Int. Cl.² E04C *2/32*

U.S. Cl. 52—623 **2 Claims**



2. An adjustable partition module comprising:

an inner layer of a first fire resistant and sound deadening material having opposing sides;

a second layer of a second fire resistant and sound deadening material on each side of said first material so that said first material is located therebetween;

a third layer of a third fire resistant and sound deadening material on the sides of said second material distal from said first material so that said first and second material are located therebetween;

means for fastening said three layers together to form a partition module with high sound deadening and fire resistive qualities;

each of the opposed vertical sides of the partition module containing a vertical recess adapted to receive a portion of a vertical spline member therein; and

at least the surfaces forming the vertical recess being covered by a rigid supporting channel for stiffening predetermined portions of the module and which is adapted to be resiliently deformed sufficiently for accommodation of dimensional differences in spline members and to frictionally engage with an appropriate spline member so as to facilitate interengagement therewith.

3,922,831

EXPANSION ANCHOR FOR MOUNTING OBJECTS AT AN ADJUSTABLE DISTANCE FROM A SUPPORT STRUCTURE

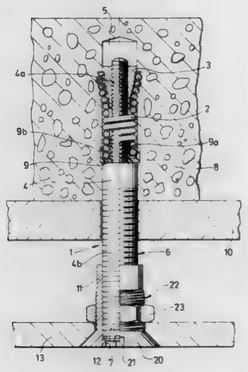
Artur Fischer, Altheimer Str. 219 D-7241, Tumlingen, Germany

Filed Mar. 22, 1974, Ser. No. 453,835

Claims priority, application Germany, Apr. 16, 1973, 2319226; May 2, 1973, 2321967

Int. Cl.² E04B *1/38*

U.S. Cl. 52—704 **1 Claim**



1. An expansion anchor for mounting objects at an adjustable distance from a support structure comprising an expansion anchor sleeve adapted for insertion into an expansion anchor hole and having a leading end and a trailing end; an expansion member at said leading end and adapted to be drawn into said sleeve for expanding the same; an externally threaded rod-shapped member having a front portion extending through said sleeve from said trailing to leading end thereof and adapted to draw said expanded member into said leading end when turned in requisite direction, and a rear portion projecting outwardly beyond said trailing end and said expansion anchor hole; a tapped sleeve threaded onto said rear portion and having an end which faces away from said expansion anchor sleeve and is formed with a head; and an abutment on said tapped sleeve and adapted to clamp between itself and said head an object through which said rear portion extends so that said abutment and head are located at opposite sides of the object and further comprising a tubular cap of synthetic plastic material at said trailing end of said sleeve and including an inner tubular collar extending into said sleeve, an outer tubular collar exteriorly surrounding said sleeve, and an annular portion connecting said collars and overlaying an axial end face of said trailing end.

3,922,832

CONSTRUCTION METHOD OF ASSEMBLING BAGGED, SETTABLE MODULES

Edward T. Dicker, 2600 Fairmont St., Dallas, Tex. 75201

Continuation of Ser. No. 162,490, July 14, 1971, abandoned, which is a continuation-in-part of Ser. No. 767,071, Aug. 26, 1968, abandoned, which is a continuation-in-part of Ser. No. 736,538, April 5, 1968, abandoned, which is a continuation-in-part of Ser. No. 668,575, Sept. 18, 1967, abandoned. This application July 23, 1973, Ser. No. 381,727

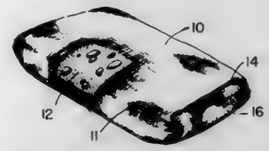
Int. Cl.² E04B *1/04, 1/48, 2/06*

U.S. Cl. 52—742 **22 Claims**

9. A method of constructing a monolithic wall suitable for housing structures using discrete construction units comprising a dry mixture contained within porous containers which, when wetted, are activated to set up as hardened structural members, comprising the steps of:

a. arranging said construction units in superimposed courses;

b. wetting each of said units to activate said mixture to set up and form an integrated structure; and



c. applying a skin of finishing material onto the side of the superimposed courses under substantial pressure so that said finishing material is bonded directly to said mixture through the pores in said containers and said skin and said superimposed courses form an integral monolithic structure.

3,922,833

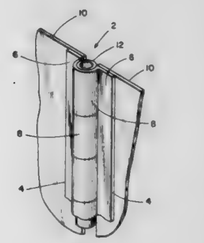
FASTENER

Robert F. Eaton, Riverside, Ill., assignor to Service Master Industries Inc., Downers Grove, Ill.

Filed Aug. 5, 1974, Ser. No. 494,621

Int. Cl.² F16B *5/07, 2/20*

U.S. Cl. 52—753 C **4 Claims**



1. A fastener for hingedly and detachably securing a panel to a rod-shaped structure having a substantially round cross-sectional periphery comprising:

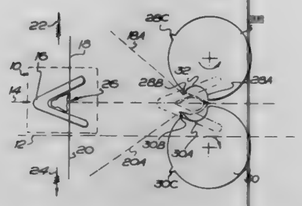
a strip section secured to said panel; and

a series of flexible, resilient fastening sections having a partially circular cross-section shape, said fastening sections being spaced along said strip member, said circularity extending more than **180°**, said partially circular section defining a first arc-ending longitudinal edge unitarily joining said section, a second free longitudinal edge, and a substantially round inner periphery substantially corresponding to said cross-sectional periphery of said rod-shaped structure, said fastening sections being adapted to engagingly receive said rod-shaped structure, said fastening sections, strip section, and rod-shaped structure cooperating to define hinge means for rotating said panel, said first and second longitudinal edges defining a transverse gap therebetween, said shape and flexibility of said fastening sections cooperating to define means for flexing said free longitudinal edge away from said strip section to increase the distance across said transverse gap, whereby said fastener is secured to and detached from said rod-shaped structure by urging said longitudinal edges in opposite directions against said rod-shaped structure.

3,922,834
APPARATUS FOR CLOSING OF WRAPPING BAGS OR SLEEVES

John Michael Clayton, Menston, Nr. Ilkey, England, assignor to Norpak Machines Limited, England

Filed Apr. 3, 1974, Ser. No. 457,552
Int. Cl.² B65B *61/00*
U.S. Cl. 53—138 A **7 Claims**



6. Apparatus for applying ties to the gathered ends of wrapping bags and sleeves comprising

1. means for supporting two supplies of strip material which can be joined by heating,
2. wrapping and strip joining means adapted to receive the joined ends of the two strips of material, wrap the strips around the gathered end of the wrapping bag or sleeve adjacent said joined ends, and join the strips at the other side of the gathered end, said wrapping and strip joining means including a pair of rollers between which the strips and gathered end are received, the rollers each having a peripheral cut-out which come together to form a cavity in which the gathered end locates as it passes between the rollers, each of the rollers having a pair of spaced apart heat sealing bars for joining the two strips by cooperating with the corresponding bars on the other roll to press the strips together while applying heat thereto, whereby as the rollers rotate a first pair of sealing bars joins the strips wrapped around the gathered end and then a second pair of sealing bars again joins the strips and causes the tie to be severed from the strips while leaving the strips joined together at their ends.

3,922,835
APPARATUS FOR PACKAGING UNDER STERILE CONDITIONS

Wilhelm Reil, Bensheim-Auerbach, Germany, assignor to Altstadter Verpackungs Vertriebs GmbH, Pfungstadt, Germany

Filed Oct. 11, 1973, Ser. No. 405,512
Int. Cl.² B65B *55/10*
U.S. Cl. 53—167 **6 Claims**

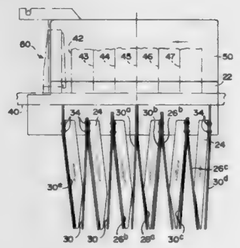


1. In a fluid container filling apparatus having a fluid supply system, a tube formed from a ribbon, the tube being filled with a fluid and then intermittently compressed to form discrete filled containers, the apparatus having means for filling sterile liquids into the tube and comprising a constant pressure fluid storage means, conduit means to feed fluid during the filling procedure from said storage means into said tube, feed pipe means between the fluid supply and said constant pressure fluid storage means, valve means between said feed pipe supply and storage means, the valve being responsive to the level of fluid in said storage means to control the feeding of fluid to said constant pressure fluid storage means, constantly open air flow sterilizing means for continuously supplying a stream of hot, sterile air under a pressure above atmospheric pressure, said sterilizing means including air directing means to direct said air stream to flow against the inside of said tube and throughout said conduit, valve and storage means before said storage means is filled and into said tube and the fluid filled therein and over the fluid in the storage means during the tube filling and compressing procedure whereby a pre-sterilization procedure and a continuously operative sterile filling condition can be maintained throughout the fluid flow passages of the filling and storage apparatus by the use solely of the air flow sterilizing and directing means.

3,922,836
GRID FOR ARTICLE CASER APPARATUS

Robert W. McGill, Munroe Falls, Ohio, assignor to A-T-O Inc., Willoughby, Ohio

Filed Dec. 26, 1974, Ser. No. 536,426
Int. Cl.² B65B *39/02*
U.S. Cl. 53—248 **7 Claims**



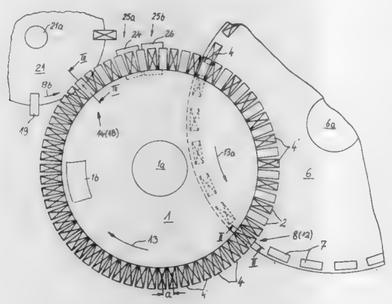
1. In a grid for an article caser supplying rows of abutted articles for deposit into a case, the grid including longitudinally extending partition means, retractible longitudinally extending article slide support members, and spring drop fingers defining individual drop areas for individual articles, a plurality of individual drop areas being formed in longitudinally aligned relation between each adjacent pair of said partition means, and characterized by a pair of drop fingers for each drop area extending perpendicularly to said partition means, said drop fingers of said pairs being operatively positioned on said partition members with the upper ends of such drop fingers at progressively lower levels in at least one direction from one part of the grid except for the drop fingers at at least one end of the grid.

3,922,837
PACKING MACHINE FOR CIGARETTES OR THE LIKE

Harry David, Hamburg, Germany, assignor to Hauni-Werke Korber & Co., KG, Hamburg, Germany

Filed Mar. 13, 1974, Ser. No. 450,618
Claims priority, application Germany, Mar. 28, 1973, 2315338
Int. Cl.² B65B *11/32*
U.S. Cl. 53—234 **10 Claims**

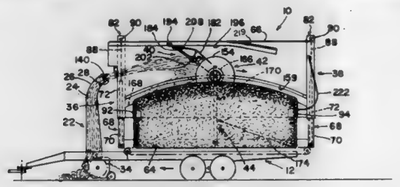
1. In a machine for manipulating cigarettes, cigarette packs and/or analogous commodities forming part of or constituting smokers' products, particularly in a packing machine, a combination comprising conveyor means having an annulus of equally spaced receiving means for commodities, the neighboring receiving means of said annulus being spaced apart from each other by a predetermined distance; drive means for moving said conveyor means stepwise in a predetermined direction through second distances each of which is a whole multiple of said first distance whereby the receiving means travel along an endless path past spaced-apart first and second transfer stations; means for feeding commodities to receiving means at said first transfer station during intervals between successive movements of said conveyor means; and means for accepting commodities from receiving means at said second transfer station during intervals between successive movements of said conveyor means, the distance between said second and first stations, as considered in said direction, being equal to at least one full second distance and the distance between said first and second stations, as considered in said direction, being equal to *m* first distances wherein *m* is a whole number including one and unequal to *n* second distancees wherein *n* is a whole number including one, whereby each commodity which is fed to a receiving means at said first transfer station bypasses said second and first stations at least once prior to coming to a halt at said second transfer station and each receiving means which is relieved of a commodity at said second transfer station thereupon comes to a halt at said first transfer station to receive a fresh commodity.



3,922,838
MACHINE FOR FORMING A COMPACT STACK OF CROP MATERIAL

Charles M. Kline, Reinholds; Edward H. Priepke, Stevens; Thomas W. Waldrop, New Holland; Raymond E. Fisher, Lancaster; James G. Greiner, Leola, and Horace G. McCarty, Lancaster, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Apr. 5, 1974, Ser. No. 458,266
Int. Cl.² A01D *87/10*
U.S. Cl. 56—344 **20 Claims**



1. In a machine for forming a stack of crop material such as hay or the like, the combination comprising:

a mobile stack forming chamber adapted to move across a field;

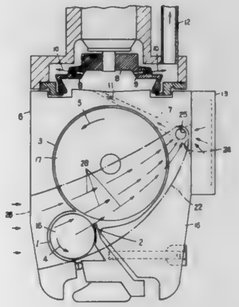
means coupled with said chamber for continuously delivering crop material from the field into said chamber through a first end of said chamber to adjacent an opposite second end of said chamber; and

a baffle member mounted to said chamber for movement back and forth between said ends of said chamber so as to at least partially obstruct said delivery of crop material to adjacent said opposite second end of said chamber from time to time and distribute said crop material within said chamber between said ends thereof and thereby progressively form a stack of said crop material in said chamber.

3,922,839
DEVICE FOR PREVENTING ACCUMULATION OF FIBERS IN A SPINNING MACHINE

Waichi Sakurai, and Sadanobu Yoshie, both of Fukui, Japan, assignors to Daiwa Boseki Kabushiki Kaisha, Osaka and Kabushiki Kaisha Toyota Jidoshokki Seisakusho, Kariya, both of, Japan

Filed May 20, 1974, Ser. No. 471,776
Claims priority, application Japan, May 25, 1973, 48-59029
Int. Cl.² D01H *1/12, 11/00*
U.S. Cl. 57—58.95 **10 Claims**



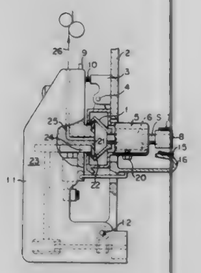
1. In a fiber spinning machine of the type including a body having rotatably mounted therein a fiber feed roller and a combing roller; said feed roller and combing roller having free lateral surfaces; a closure plate attached to said body and having an inner surface forming a space with said free lateral surfaces of said feed roller and combing roller; a rotary spinning chamber; a duct connected to said spinning chamber for exhausting air therefrom; and a channel extending through said body to a doffing area adjacent the periphery of said combing roller and to said spinning chamber for feeding fibers doffed from said combing roller at said doffing area to said spinning chamber; the improvement comprising:

means for preventing accumulation of fibers in said space between said free lateral surfaces of said feed roller and combing roller and said inner surfaces of said closure plate; said means comprising a groove formed in said inner surface of said closure plate, said groove extending in opposition to at least portions of said free lateral surfaces of said feed roller and combing roller, said groove having a first end communicating with said channel at a position thereof upstream from said doffing area, and said groove having a second end communicating with ambient atmosphere, whereby upon operation of said machine an air current is formed in said groove from said second end thereof to said first end thereof.

3,922,840
ROTOR SPINDLE DRIVING PART IN A SPINNING MACHINE

Etsuji Watanabe; Tsutomu Miyazaki, both of Kariya; Takashi Kato, Toyota, and Noriaki Miyamoto, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya and Daiwa Boseki Kabushiki Kaisha, Osaka, both of, Japan, part interest to each

Filed Oct. 23, 1974, Ser. No. 517,435
Claims priority, application Japan, Oct. 31, 1973, 48-126022[U]
Int. Cl.² D01H *1/12*
U.S. Cl. 57—58.89 **5 Claims**

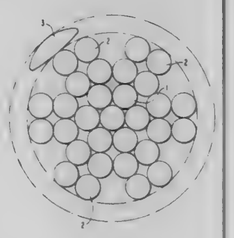


1. In a spinning machine comprising at least one spinning unit each having a rotor, which defines a spinning chamber, a spindle connected at one end to said rotor, bearing means for supporting said spindle for rotation, a member connected to the other end of said spindle, said member being made of a material having a heat conductivity lower than that of said spindle, a belt travelling in frictional engagement with said member to thereby rotate the spinning chamber of said rotor to perform spinning operation.

3,922,841
STEEL CORD

Tomoaki Katsumata, and Norihisa Matsushima, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed July 17, 1974, Ser. No. 489,325
Claims priority, application Japan, July 17, 1973, 48-81957
Int. Cl.² D07B *1/06*
U.S. Cl. 57—145 **3 Claims**

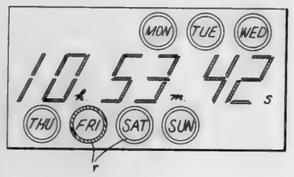


1. In a reinforcing steel cord including a core strand consisting of a plurality of wire filaments, a plurality of outer strands cabled together around said core strand, each outer strand consisting of a plurality of wire filaments, the improvement wherein; said core strand comprises a core filament and an outer layer of filaments, the lay direction of the outer layer of the core strand filaments and the lay direction of the outer strand filaments are opposite to each other, the lay direction of the cabling of the said outer strands is the same as that of the outer layer of said core strand filaments, the number of said filaments constituting said outer layer of said core strand is the same as the number of said outer strands, and the lay length of the core strand, the lay length of the outer strands and the cabling of the outer strands are so selected that the filaments in the outer layer of the core strand and the corresponding filaments in the outer strands contact each other linearly over their whole length.

3,922,842
DISPLAY MEANS FOR SOLID STATE ELECTRONIC TIMEPIECE

Kinji Fujita, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 193,404, Oct. 28, 1971, Pat. No. 3,796,037. This application Dec. 26, 1973, Ser. No. 428,283
Int. Cl.² G04B *19/24, 19/30, 19/06*; G09D *3/00*
U.S. Cl. 58—4 A **2 Claims**



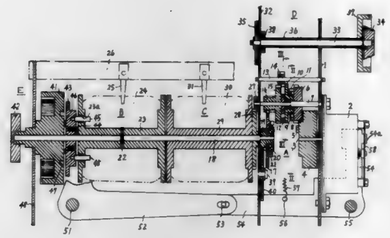
1. In a solid state electronic timepiece having a time keeping mechanism and a time display mechanism responsive to said time keeping mechanism, the improvement which comprises a plurality of separate, normally visible indicia other than numerical characters on said timepiece, said indicia being representative of days of the week, and means in the region of each indicia but not including said indicia for selectively visually identifying a selected one or more of said indicia in response to said time keeping mechanism of said timepiece, said visual identifying means including a plurality of liquid crystal display segment means each in the form of a predetermined pattern and adapted to be rendered visible when energized, one of said display segment means being associated with and positioned in the region of each of said indicia, each of said display segment means being positioned so as to neither overlie nor be overlied by the associated indicia, each of the display segment means being in the form of a ring surrounding the associated day of the week indicia, said time keeping mechanism including circuit means for producing an output signal for the sequential energization of each of said display segment means during the day of the week of the associated indicia.

3,922,843
CYCLOMETER CLOCK

Masanori Kobayashi, Yachiyo, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Japan

Filed June 14, 1974, Ser. No. 479,566
Claims priority, application Japan, June 16, 1973, 48-68871; June 16, 1973, 48-68872; June 16, 1973, 48-68873
Int. Cl.² G04C *21/18*
U.S. Cl. 58—16 D **4 Claims**

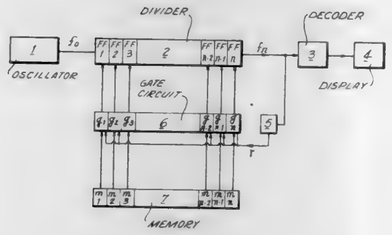
1. A leaf-type cyclometer clock comprising a seconds-indicating unit rotated at a constant speed, a constant speed motor rotatably driving said seconds-indicating unit, an intermittent motion-transmitting and speed-reducing unit driven by said seconds-indicating unit, a minutes-indicating unit intermittently driven by said intermittent motion-transmitting and speed-reducing unit at the rate of 6° each minute, an hour-indicating unit intermittently driven stepwise by said intermittent motion-transmitting and speed-reducing unit upon lapse of a predetermined number of minutes, means to correct the time indications of said seconds-indicating unit and said hour-indicating unit independently of each other, an alarm unit actuated by said hour-indicating unit, and the alarm time being set in intervals of said lapse of a predetermined number of minutes in which said hour-indicating unit performs one stepwise rotation.



3,922,844
ELECTRONIC TIMEPIECE

Motoyoshi Sakamoto, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Apr. 25, 1974, Ser. No. 464,082
Claims priority, application Japan, Apr. 25, 1973, 48-47041
Int. Cl.² G04C *3/00*; G04B *27/08*
U.S. Cl. 58—23 R **10 Claims**

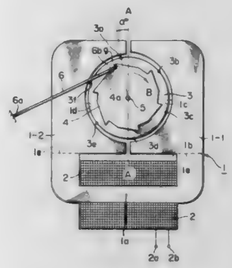


1. In an electronic timepiece including an oscillator circuit producing a high frequency time standard signal, divider means including a plurality of series-connected divider stage counters for receiving said high frequency time standard signal and dividing same to produce a low frequency timekeeping signal of a frequency having a period which is different than the actual time sought to be counted thereby, the improvement comprising timekeeping signal adjusting means coupled by output means to each divider stage counter, said adjusting means including memory means, said adjusting means being responsive to said timekeeping signal for supplying setting signals to predetermined divider stage counters through said output means selected by said memory means at the beginning of each period of said timekeeping signal to reset the count of each of said divider stage counters having setting signals applied thereto to adjust the period of said timekeeping signal to the actual time sought to be counted.

3,922,845
WATCH DRIVE PULSE MOTOR

Kenzi Miyasaka, Tokyo; Mikio Takemoto, Sayama; Yoshiaki Kato, Higashimurayama; Hiroyuki Uematu, Narashino; Munetaka Tamaru, Tokyo; Kazunari Kume, Tokorozawa; Hideshi Ohno, Sayama, and Mitsuo Onda, Fuchu, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed May 14, 1974, Ser. No. 469,904
Claims priority, application Japan, May 15, 1973, 48-56827
Int. Cl.² G04C *3/00*; H02K *7/06*
U.S. Cl. 58—23 D **8 Claims**

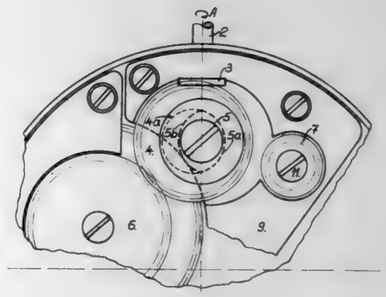


1. In a pulse drive electric motor for use in a small timepiece, especially watch, comprising a pulse generator adapted for supply of a series of periodically and alternatively polarity-reversing pulse series, a stator, a drive coil wound thereon and electrically connected with said pulse generator, a radially magnetized rotor rotatable relative to said stator, a ratchet wheel having a plurality of teeth, each having a leading surface and a trailing surface, said ratchet wheel being concentrically rigid with said rotor and an elongated reverse stop pawl cooperating with said ratchet wheel, the improvement comprising: wherein said pawl is positioned so as to positively and intentionally provide a special gap at the working tip end of said pawl and relative to the trailing surface of the nearest, tooth on said ratchet wheel when said drive coil is deenergized between said pulses in said series.

3,922,846
DATE SETTING DEVICE OF A CALENDAR WATCH

Jean-Pierre Gerber, La Chaux de Fonds, and Jean-Daniel Leimgruber, Le Locle, both of Switzerland, assignors to Zenith Time S.A., Switzerland

Filed Nov. 13, 1974, Ser. No. 523,520
Claims priority, application Switzerland, Dec. 7, 1973, 17182/73
Int. Cl.² G04B *19/24*
U.S. Cl. 58—58 **2 Claims**



1. A date-indicating watch comprising;

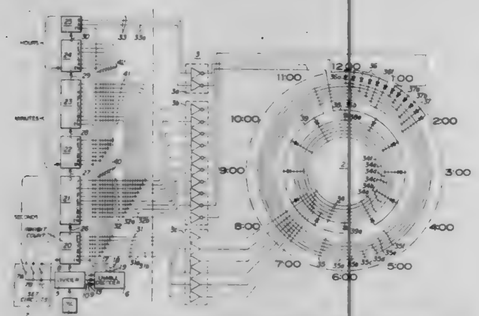
a rotatable winding and setting stem having at least two distinct axial positions including a pushed-in position and a pulled-out position;
a winding train;
a date ring; a date-setting wheel connected with the date ring to set the same;
a rotatable crown wheel operatively connected with the stem for rotation in a direction corresponding to the direction of rotation of the stem; and
means for operatively connecting the stem by the crown wheel, in said pushed-in position of the stem, to the winding train in response to rotation of the stem in said one direction and to the date-setting wheel in response to rotation of the stem in the opposite direction, comprising means for mounting the crown wheel for lateral displacement to a first position meshing with the winding train in response to rotation of the crown wheel in said one direction and to a second position meshing with the date-setting wheel in response to rotation of the crown wheel in the opposite direction, said mounting means including a hub having two opposite like circular segments defined by intersecting circles of given radius, and said crown wheel having an inner circular bearing surface whose radius is equal to said given radius, said bearing surface selectively bearing against said segments according to the direction of rotation of the crown wheel.

3,922,847

VLED SOLID STATE WATCH

Bobby Gene Culley, Plano, and Engelbert Wolfgang Kehren, University Park, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 6, 1974, Ser. No. 467,350
Int. Cl.² G04B *19/34*
U.S. Cl. 58—50 R **14 Claims**



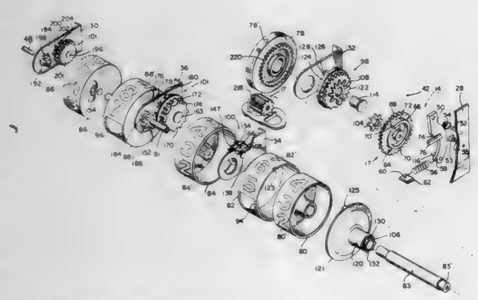
1. An electronic timepiece in which display elements are energized to display time which is comprised of:
a. oscillator means for generating electrical time base pulses of a predetermined frequency;
b. means coupled to said oscillator means including a plurality of counter means driven by said time base pulses for counting said time base pulses and for producing counter outputs indicative of the second, minute and hour, each of said counter means including a pair of counters with one counter in each pair being a base-six counter serially connected to a second counter with the second counters for seconds and minutes being base-ten counters and with the second counter for hours being a base-two counter;
c. means including sequential enabling means coupled to said counter means for multiplexing said counter outputs;
d. a plurality of display elements each having first and second terminals arranged in predetermined patterns with twelve display elements in a first of said patterns for individually indicating one of 12 hours and 60 display elements in a second of said patterns for individually indicating one of 60 minutes and alternately one of 60 seconds, groups of said display elements of said second pattern being interconnected at one terminal thereof by common interconnects to form ten groups of six elements and the other terminal of each of said display elements of said second pattern being connected to one of six conductors in the order of each Nth element of each group connected to the Nth conductor; and
e. a plurality of sets of drivers with a first of said sets selectively coupling said counter outputs to said common interconnects and a second set selectively coupling said counter outputs to said six conductors to selectively display hours, minutes and seconds in accordance with the multiplexing of said counter outputs.

3,922,848

DIGITAL DISPLAY MECHANISM

Richard H. Weber, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Mar. 11, 1974, Ser. No. 449,696
Int. Cl.² G04B *19/02*
U.S. Cl. 58—125 C **13 Claims**



5. A digital clock comprising:
a. a case having a front face and a display window provided in said front plate,
b. a shaft rotatably journalled in said case,
c. constant speed drive means carried by said case and coupled to said shaft to rotate same,
d. a minutes display means rotatably carried on said shaft comprising a first wheel rotatably carried on said shaft having a first window through its outer periphery and indicia around said outer periphery to be displayed in said display window, and a second wheel rotatably carried by said shaft within said first wheel and having indicia around its outer periphery to be displayed through said first window and said display window,
e. intermittent advance means responsive to the rotation of said shaft,
f. first drive and synchronizing means coupled to said intermittent advance means and to each of said first and second wheels to intermittently advance each of said first and second wheels and to synchronize their advancement with respect to each other,
g. a tens-of-minutes display means rotatably carried by said shaft having indicia to be displayed in said display window,
h. a second drive and synchronizing means coupled between said minutes display means and tens-of-minutes display means to advance said tens-of-minutes display means and synchronize their advancement with respect to each other,
i. an hours display means comprising a third wheel rotatably carried on said shaft having a second window through its outer periphery and indicia around said outer periphery to be displayed through said display window, and a fourth wheel rotatably carried on said shaft within said first wheel having indicia around its outer periphery to be displayed through said second window and said display window, and

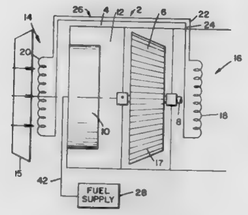
j. third drive and synchronizing means coupled to said tens-of-minutes display means and to each of said third and fourth wheels to intermittently advance each of said third and fourth wheels and to synchronize their advancement with respect to each other and said tens-of-minutes display means.

3,922,849

INJECTOR FOR GAS TURBINE COMBUSTOR

David L. Kors, El Dorado Hills, Calif., and Donald W. Culver, Richland, Wash., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed Oct. 9, 1973, Ser. No. 404,445
Int. Cl.² F02C *7/10*; **F02G** *3/00*; **B05B** *1/24*
U.S. Cl. 60—39.51 R **10 Claims**



9. Fuel combustion apparatus for use with heat engines using liquid fuel comprising in combination: an air duct for flowing air, an engine rotor downstream of and in flow communication with the duct, heat exchange means for heating air flowing towards the rotor to a temperature greater than the vapor temperature of the liquid fuel, and a fuel injection disposed a short distance upstream of the rotor in the flow of air heated by the heat exchange means such that a relatively short combustion chamber exists between the injector and the rotor, the fuel injector having a multiplicity of thin vanes, means for mounting the vanes within the conduit, each vane including a fuel passage, means for connecting first ends of the passages with a source of liquid fuel, each passage terminating in at least one second fuel discharge opening, the passage having an extent in the direction of the air flow which is many times greater than its thickness in a direction perpendicular to the air flow, and a length which is sufficient to evaporate the fuel within the passage when the air flow is at said temperature, whereby vaporized fuel is discharged from the openings for an efficient, substantially instantaneous combustion of the fuel in the combustion chamber and prior to its entry into the rotor.

3,922,850

TURBINE ENGINE FUEL CONTROL

Ralph Patrick McCabe, Troy, Mich., assignor to Colt Industries Operating Corporation, New York, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,819
Int. Cl.² F02C *9/10*
U.S. Cl. 60—39.28 R **1 Claim**

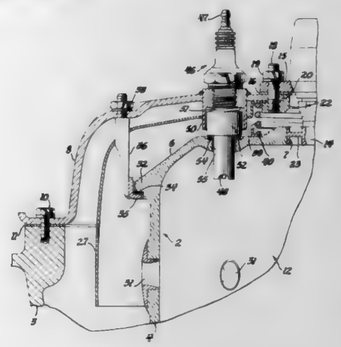
1. A control system for a gas turbine engine having an air inlet, a compressor, a turbine, a burner chamber, a power output shaft adapted for connection to a load, and a variable loading device capable of varying torque transmitted to the load at a given load speed, said system comprising, a control portion for providing efficient engine steady state operation and a control portion for providing compressor surge and over-temperature protection during transient engine operation such as starting, acceleration, and deceleration, said steady state control portion of said system comprising first operator — controlled means including engine speed governor means effective to maintain selected engine speed by varying fuel flow to the engine and second means to varying engine load to maintain a first desired predetermined relationship between compressor discharge pressure and a signal that is a function of air flow to the engine, said second means engine load control means, first pressure responsive means for sensing compressor discharge pressure, second separate pressure responsive means for sensing said engine airflow signal, control means for utilizing the said sensed compressor discharge pressure and said engine air flow signal to produce a pressure signal indicative of a first desired engine airflow signal and then comparing said first desired airflow pressure signal with said actual airflow signal, and first further means responsive to any difference between said first desired and said actual airflow signals to control said engine load control means, whereby actual engine airflow and compressor discharge pressure are changed to produce said first desired predetermined relationship, said transient state control portion of said system comprising said second means of said steady state control portion effective during starting and acceleration to reduce engine load and third means for simultaneously varying fuel flow to the engine to maintain a second at times different desired predetermined relationship between compressor discharge pressure and a signal that is a function of airflow to the engine so as to protect the engine from compressor surge and turbine over-temperature, said third means including engine fuel control means, said first pressure responsive means for sensing compressor discharge pressure, said second separate pressure responsive means for sensing said engine airflow signal, control means for utilizing said sensed compressor discharge pressure and said engine airflow signal to produce a pressure are indicative of a second desired airflow and then comparing said second desired airflow pressure signal pressure with said actual airflow signal and second further means responsive to any difference between said second desired and said actual airflow signals to control said engine fuel control means, whereby actual engine airflow and compressor discharge pressures are changed to produce said second at times different desired predetermined relationship, said second and third means being effective during engine deceleration to increase engine load and to vary fuel flow to the engine as a function of conpressor discharge pressure, respectively.

3,922,851

COMBUSTOR LINER SUPPORT

John A. Irwin, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 5, 1974, Ser. No. 458,074
Int. Cl.² F02C *7/20*, *7/00*
U.S. Cl. 60—39.32 **3 Claims**



1. A combustion apparatus for a gas turbine engine having a housing including a wall; a combustion liner of ceramic material mounted within the housing and spaced from the housing to define a passage between the housing and liner for flow of combustion air into the liner, the liner having a side wall and a dome portion at the upstream end of the side wall both exposed to the said air flow; abutment means extending

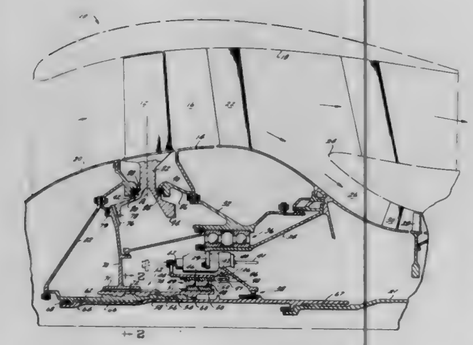
from the housing wall and abutment means on the exterior of the upstream end of the side wall adjacent the dome bearing against the first-recited abutment means; and resiliently-biased means reacting against the housing wall and bearing against the central portion of the dome portion to press the liner against the first-recited abutment means and support the liner from the wall with freedom for relative expansion of the liner and the liner supporting means including the abutment means and the resiliently-biased means.

3,922,852

VARIABLE PITCH FAN FOR GAS TURBINE ENGINE

Stephen Drabek, Boxford, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Oct. 17, 1973, Ser. No. 407,222
Int. Cl.² F02C 3/06; F02K 3/06; F01D 7/00; B63H 3/04
U.S. Cl. 60—226 R 11 Claims



1. A variable pitch fan and actuation apparatus for a gas turbine engine of the bypass type having a bypass duct and a fan drive shaft,

a static frame structure,

a fan frame structure mounted in driven engagement with the fan drive shaft for rotation about the static frame structure,

a plurality of circumferentially spaced apart variable pitch fan blades extending into the bypass duct and fixedly attached to the fan frame structure for rotation therewith, linear actuator means fixedly connected to the static frame structure,

angular actuator means fixedly connected to the fan frame structure for rotating the fan blades in unison about their respective center axes to thereby vary the pitch of the fan blades,

means for interconnecting the linear actuator means and the angular actuator means so as to permit relative rotation therebetween, and

helical cam means for converting linear movement of the linear actuator means into angular movement of the angular actuator means to thereby permit the pitch of the fan blades to be varied by linear movement of the linear actuator means in accordance with differing engine operating requirements,

limit stop means connected to the linear actuator means for restricting the linear movement of the linear actuator means to predefined travel distances in order to provide limit stops beyond which the pitch of the fan blades cannot be varied,

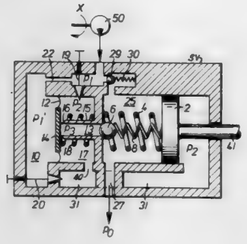
inactivating means for inactivating the limit stop means so that the pitch of the fan blades may be fully varied.

3,922,853

SPEED CONTROL DEVICE

Hans Kalb, Nuremberg, Germany, assignor to AEG-Kanis Turbinenfabrik GmbH, Nurnberg, Germany

Filed June 13, 1974, Ser. No. 479,181
Claims priority, application Germany, June 15, 1973, 2331282
Int. Cl.² F15B 15/18
U.S. Cl. 60—325 6 Claims



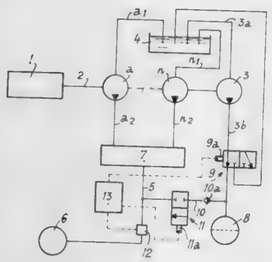
1. A speed control device working with hydraulic fluid and including a displacement type pump, comprising an adjustable orifice being the inlet of a valve chamber that communicates through said orifice with the high pressure side of said pump, and a differential pressure controller including a valve forming a first outlet of said valve chamber, said valve including a nozzle member and a throttle plate carried by a diaphragm and cooperating with the mouth of said nozzle member opening into said valve chamber, the said diaphragm being charged from within the valve chamber by a spring force, the said diaphragm and throttle plate being one wall of said valve chamber separating it from an additional chamber, the additional chamber communicating with the high pressure side of said displacement type pump and with a second, main outlet of said valve chamber through a throttling device, the said main outlet of said valve chamber delivering the control pressure actuating a piston of a servo-motor.

3,922,854

HYDRAULIC INSTALLATION WITH ENERGY STORING MEANS

Yves G. Coeurderoy, Lagny-le-Sec, France, assignor to Societe Anonyme: Poclain, Le Plessis-Belleville, France

Filed Dec. 23, 1974, Ser. No. 535,820
Claims priority, application France, Jan. 14, 1974, 74.01175
Int. Cl.² F15B 1/02
U.S. Cl. 60—413 2 Claims



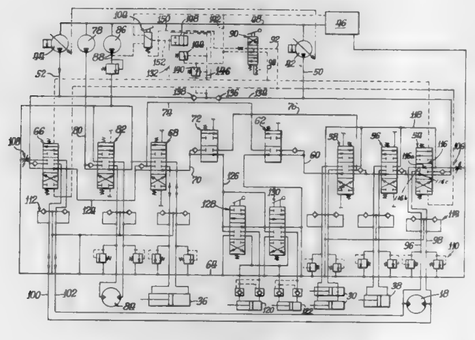
1. A hydraulic installation comprising a motor driving at least one so-called main pump and at least one so-called auxiliary pump, the main pump discharging into at least one receiver and the delivery conduit of the auxiliary pump being connected to a pressure accumulator, wherein a first two-way distributor disposed in the delivery conduit of the auxiliary pump ensures communication of said auxiliary pump, in its first position, with the accumulator, and in its second position with a tank, and wherein between said first distributor and the accumulator there is tapped a pipe connected to the feed conduit of the receiver and provided with a second two-way distributor ensuring, in its first position, the closure of said pipe and, in its second position, the opening thereof, whilst a fluid pressure sensor is disposed in the feed conduit of the receiver and controls, via a logic device, the selection of the positions of the first and second distributors.

3,922,855

HYDRAULIC CIRCUITRY FOR AN EXCAVATOR

John W. Bridwell, Peoria; Donald L. Hopkins, and Kenneth R. Lohbauer, both of Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 207,027, Dec. 13, 1971. This application Sept. 3, 1974, Ser. No. 502,829
Int. Cl.² F15B 13/06, 13/09
U.S. Cl. 60—421 16 Claims



1. A hydraulic circuit for a hydraulic excavator comprising: a first and a second variable displacement pump for supplying pressurized fluid to said circuit;

a first series of series-connected distributor valves operatively connected for directing fluid from said first pump to a translation motor and to a first pair of implement control motors;

a second series of series-connected distributor valves operatively connected for directing fluid from said second pump to said translation motor and at least another implement control motor;

pilot control means for shifting said distributor valves for said translation motor in sequence;

said pilot control means including a source of pressurized pilot control fluid;

drive control means including pilot valve means operative to direct said pilot fluid for shifting said distributor valves controlling said translation motor and operative to vary the pressure of said pilot pressure over a wide range of pressures; and,

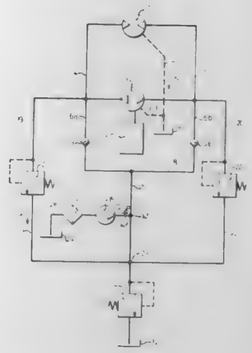
the first of said distributor valves being operative to shift progressively over a first range of pilot fluid pressures and the second of said distributor valves being operative to progressively shift over a second range of pilot fluid pressures so that the first pump is operative to supply fluid for low speed operation and fluid from said second pump is added to said first pump fluid for high speed operation.

3,922,856

CLOSED-CIRCUIT HYDROSTATIC AGGREGATE

Paul Bosch, Ludwigsburg, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed July 1, 1974, Ser. No. 485,030
Claims priority, application Germany, July 24, 1973, 2337482
Int. Cl.² F15B 15/18
U.S. Cl. 60—464 1 Claim



1. A closed-circuit hydrostatic aggregate, comprising a hydrostatic drive; a hydrostatic user; a reservoir for hydraulic fluid; a closed hydraulic circuit, including a circuit loop connecting said drive and said user and having a pressure-side branch and a suction-side branch each including a main branch portion connecting said drive and user and an auxiliary branch portion connecting the respective main branch portion with a loop portion, a one-way valve in each of said branches to prevent fluid flow towards said loop portion, said circuit further including a main conduit connecting said loop portion with said reservoir and having a first pressure-relief valve interposed in it for relieving pressure to said reservoir, and a pair of relief conduits each communicating with one of said branches and both communicating with said main conduit at a common junction point located intermediate said first pressure-relief valve and said loop portion, each of said relief conduits having a second pressure-relief valve interposed in it for relieving pressure in direction towards said junction point; and a fluid pump having a suction side communicating with said reservoir and a pressure side which communicates with said main conduit intermediate said loop portion and said junction point where said relief conduits communicate with said main conduit.

3,922,857

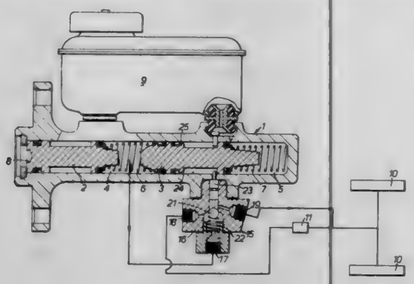
VEHICLE DUAL BRAKING SYSTEMS

Michael Albert Carey, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed Nov. 2, 1973, Ser. No. 412,122
Claims priority, application United Kingdom, Nov. 17, 1972, 53322/72; Feb. 8, 1973, 6317/73
Int. Cl.² F15B 7/00
U.S. Cl. 60—562 7 Claims

1. In a vehicle braking system comprising a master cylinder having primary and secondary pressure chambers and primary and secondary pistons slidable in said chambers, mechanical actuating means for effecting movement of said primary and secondary pistons to generate pressure in the respective chambers, first and second fluid pressure operated brakes operatively connected to the respective primary and secondary pressure chambers, a fluid pressure proportioning valve between said primary pressure chamber and the brake operatively connected thereto, disabling means for disabling the

proportioning effects of said proportioning valve, and means in said master cylinder for directly and positively operating said disabling means by the secondary piston upon predetermined excess movement thereof in response to loss of fluid pressure in the secondary pressure chamber following operation of said pistons to apply said brakes.



3,922,858

TANDEM MASTER CYLINDERS FOR HYDRAULIC BRAKING SYSTEMS

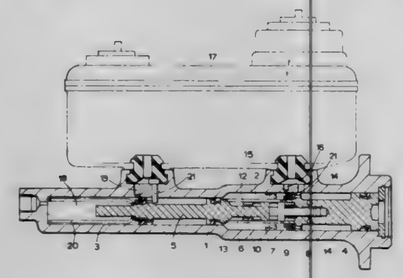
Francis Antony Dawson Sadler, Bromsgrove, England, assignor to Girling Limited, Birmingham, England

Filed Feb. 12, 1974, Ser. No. 441,873

Claims priority, application United Kingdom, Feb. 20, 1973, 8179/73

Int. Cl.² F15B *7/08*

U.S. Cl. 60—562 **3 Claims**



1. A tandem master cylinder for hydraulic braking systems for vehicles in which a pedal-operated main piston working in a part of the cylinder bore is coupled to a secondary piston working in another part of the bore by means limiting relative axial movement between the pistons in both directions and the pistons are urged apart by a spring, wherein the main and secondary pistons are interconnected by a split collet embracing heads on aligned axial stems on the pistons, said collet including axially spaced abutment means engageable by said heads; and serving to limit axial separation of the pistons.

3,922,859

CONTROL SYSTEM FOR A POWER PRODUCING UNIT

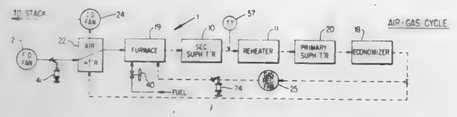
Oliver W. Durrant, Bath Township, and Robert R. Walker, Euclid, both of Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed Apr. 30, 1974, Ser. No. 465,705

Int. Cl.² F01K *13/02*

U.S. Cl. 60—665 **14 Claims**

1. In a control system for a power producing unit comprising a vapor generator and a turbine-generator supplied with vapor from said vapor generating unit, the combination comprising; a first means generating a first feed forward signal corresponding to the desired power output of the power producing unit, a second means responsive to said first feed forward signal generating a second feed forward signal proportional in value to said first feed forward signal modified by the difference between desired and actual power output of the power producing unit, a third means responsive to said second feed forward signal maintaining the rate of flow of vapor to the turbine proportional to said second feed forward signal, a fourth means responsive to said first feed forward signal maintaining the pressure of the vapor admitted to said turbine at a set point value varying in a first functional relationship to said first feed forward signal and a fifth means responsive to said first feed forward signal maintaining the pressure in said vapor generator at a set point value varying in a second functional relationship to said first feed forward signal.



3,922,860

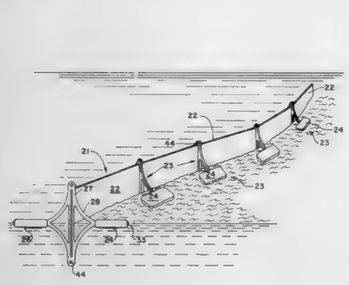
FLOATING BOOM HAVING ROTATABLE FLOAT ELEMENTS

Neeld D. Tanksley, Walnut Creek, Calif., assignor to Pacific Pollution Control, Emeryville, Calif.

Filed Sept. 30, 1974, Ser. No. 510,290

Int. Cl.² E02B *15/04*

U.S. Cl. 61—1 F **10 Claims**



1. In a floating boom having an elongated sheet-like partition, and a plurality of float means mounted to said partition at periodic intervals over the length thereof and formed to support said partition in a substantially vertical orientation, each said float means including at least one float element disposed on one side of said partition, the improvement comprising:

each said float element being mounted to the remainder of said float means and said float means being formed to permit angular displacement of said float element with respect to said float means to and from a deployed position and a relatively rotated stored position about a substantially horizontal axis extending in said deployed position substantially perpendicularly to said partition and passing substantially through the center of buoyancy of said float element to permit rotation thereof under dynamic fluid forces, said float element being further formed as a plate-like member oriented in a horizontal plane in said deployed position to provide a reduction of the overall bulk of said boom when said float element is in said stored position.

3,922,861

FLOATING MARINE BARRAGE

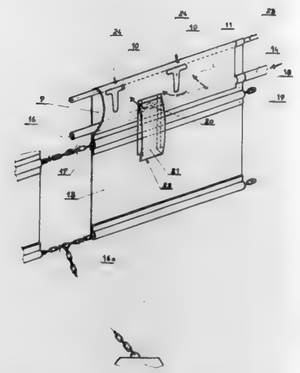
Andre Grihangne, 186, Avenue Victor Hugo, 75016 Paris, France

Filed June 19, 1974, Ser. No. 480,868

Claims priority, application France, June 21, 1973, 73.22756; May 2, 1974, 74.15287

Int. Cl.² E02B *15/04*

U.S. Cl. 61—1 F **7 Claims**



1. A floatable marine barrage including an elongate buoyancy chamber, and vent means comprising means defining a succession of orifices in the upper portion of said buoyancy chamber for expelling air from the buoyancy chamber when the vent means is open, a flexible inflatable pipe for closing the orifices when inflated and for opening the orifices when deflated, and means for positioning said pipe adjacent said succession of orifices.

3,922,862

FLOATING CONTAINING VESSELS OR DAMS FOR TRAPPING LIQUID POLLUTANTS

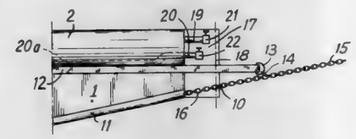
Jacques Vidilles, 24 boulevard Maillot, 92000 Neuilly, France

Filed July 10, 1974, Ser. No. 487,288

Claims priority, application France, Aug. 16, 1973, 73.29908

Int. Cl.² E02B *15/04*

U.S. Cl. 61—1 F **8 Claims**



1. Floating boom apparatus for collecting liquid floating on the surface of a body of water, said apparatus comprising elongate float means with an elongate strap member located along the length of said float means at the underside thereof, depending skirt means suspended from said float means, said skirt being constructed and arranged to be of substantially greater depth in the region between its ends than at each of its opposed ends, ballast means connected to the lower edge of the length of said skirt said ballast means comprising means extending beyond each end of said skirt for towing each end of said apparatus through said body of water, means connected to each end of said elongate strap member for adjustable connection of each end of said strap member to an adjacent portion of said towing member extending beyond each end of said float whereby said adjustable connection of each end of said strap to its adjacent towing member is effective to control the inclination of said downwardly depending skirt.

3,922,863

METHOD OF STORING HEAVY HYDROCARBON MATERIALS IN SUBTERRANEAN FACILITIES

D'Arcy A. Shock, and Fred J. Radd, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Feb. 18, 1975, Ser. No. 550,891

Int. Cl.² B65G *5/00;* **F17D** *1/16*

U.S. Cl. 61—.5 **5 Claims**

1. A method of storing in subterranean storage facilities a hydrocarbon material having a viscosity sufficiently high to resist free-flow which comprises:

a. purging said storage facilities with a fluid comprising carbon dioxide to provide a carbon dioxide atmosphere;

b. admixing an effective amount of carbon dioxide with said hydrocarbon material to saturate same and reduce the viscosity of same to below 2500 centipoise.

c. injecting said carbon dioxide-saturated hydrocarbon material into said storage facilities; and,

d. maintaining said carbon dioxide atmosphere in said facilities while same contains said carbon dioxide-saturated hydrocarbon material.

3,922,864

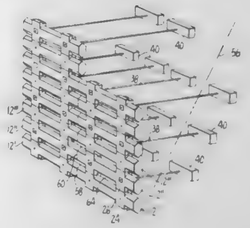
STRINGER FOR RETAINING WALL CONSTRUCTION

William K. Hilfiker, Eureka, Calif., assignor to Hilfiker Pipe Co., Eureka, Calif.

Filed Feb. 25, 1974, Ser. No. 445,233

Int. Cl.² E02D *17/00*

U.S. Cl. 61—35 **13 Claims**



1. A stringer for a retaining wall comprising an elongate body having first and second spaced-apart stacking pads thereon, each said pad having an upper and a lower bearing surface thereon, one of said bearing surfaces having a concavity and the other said bearing surface having a convexity complemental to said concavity so that superposed stringers engage one another by engagement of the concavity and convexity in respective said bearing surfaces, said pads having a vertical extent exceeding the vertical extent of said bodies so that a space is defined between the bodies of adjacent stringers when vertically stacked with the pads thereon in engagement with one another.

3,922,865

MATTRESS, METHOD OF SINKING A MATTRESS AND VESSEL SUITABLE FOR USE IN SAID METHOD

Ate Nijdam, Schelluinen, Netherlands, assignor to Aannemers, Combinatie Zinkwerken B.V., Gorinchem, Netherlands

Filed Sept. 10, 1973, Ser. No. 395,575

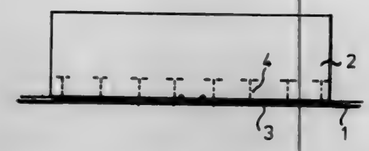
Claims priority, application Netherlands, Oct. 6, 1972, 7213540

Int. Cl.² E02B *3/12*

U.S. Cl. 61—38 **20 Claims**

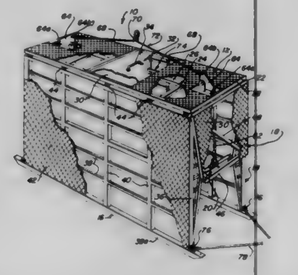
1. A mattress comprising a filter cloth, bars of metal, plastic or the like being woven in said filter cloth at regular intervals,

anchoring members being arranged so as to be linked to said bars woven in said cloth and extending from one face of said



cloth, and concrete blocks cast on said filter cloth about said anchoring members.

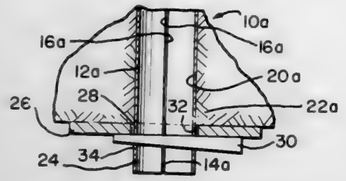
3,922,866
WORKMEN'S CAGE FOR EXCAVATION WORK
Charles W. Benning, 200 Garfield, Denver, Colo. 80206
Filed July 8, 1974, Ser. No. 486,692
Int. Cl.² E21D *5/00*
U.S. Cl. 61—41 A **11 Claims**



1. A workmen's cage for excavation work comprising combination:
- a top wall,
- a pair of side walls depending from opposite side edges of the top wall,
- pivot means connecting the top portion of one of said side walls to the top wall for pivotal movement of said one side wall selectively between a first position spaced from the other side wall and a second position wherein said one wall, below said pivot means, is pivoted inward convergent to said other wall,
- means fixing the angular relationship of said other side wall to the top wall,
- brace means extending between and interconnecting the side walls in downwardly spaced relation to said top wall, said brace means being selectively movable between an extended condition maintaining said one wall in the first position thereof and a collapsed condition whereby the brace means allows pivotal movement of said one side wall relative to the top wall, and
- release means connected to said brace means and operable from above said top wall for releasing said brace means from said extended condition and allowing pivotal movement of the lower portion of the one side wall toward the other while a fixed spacing is retained between the top edges of the side walls.

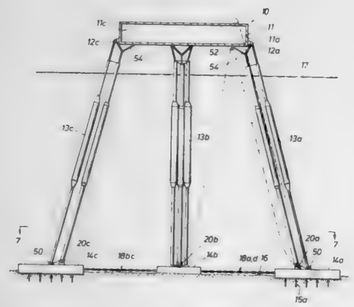
3,922,867
FRICTION ROCK STABILIZERS
James J. Scott, Lecoma Star Rte., Rolla, Mo. 65401
Continuation-in-part of Ser. No. 430,695, Jan. 4, 1974, which is a continuation-in-part of Ser. No. 330,954, Feb. 9, 1973, abandoned. This application Nov. 4, 1974, Ser. No. 520,310
Int. Cl.² E21D *21/00, 20/00*
U.S. Cl. 61—45 B **7 Claims**

1. A friction stabilizer for insertion in a bore in a structure such as a roof or side wall of a mine shaft or other underground opening for anchoring the structure, said stabilizer comprising a generally annular body from end-to-end having a slot through its thickness, said body including edge portions extending along opposite sides of said slot and relatively arranged to permit substantial circumferential compression of said body, said body being of outer diameter predetermined to be substantially larger than the diameter of the bore in which it is to be inserted such that insertion of said body in such bore causes substantial circumferential compression of said body, said body being dimensioned to be plastically deformed during its insertion in such bore, the stabilizer being free of structure



precluding said substantial compression and plastic deformation of said body during its said insertion, said body being of material permitting its said substantial compression and plastic deformation during its said insertion and, after such insertion, causing the body outer periphery to frictionally engage the surrounding wall of the bore for frictionally anchoring the structure, the ratio of the length of said body to the outer diameter thereof being at least about 16 to 1, the ratio of the radial thickness of said body to the outer diameter thereof being at a maximum about 1 to 5 and at a minimum about 1 to 50, and the outer circumferential dimension of said body being at least two inches.

3,922,868
DEEP WATER PLATFORM CONSTRUCTION
Reagan W. McDonald, and Walter B. Joseph, both of Houston, Tex., assignors to Reagan W. McDonald, Houston, Tex.
Filed Aug. 27, 1974, Ser. No. 500,913
Int. Cl.² E02D *21/00*
U.S. Cl. 61—46.5 **13 Claims**



1. A method for erecting a marine platform at a deep water offshore location site where the platform consists of a surface platform module and at least three supporting leg modules, the method comprising the steps of
- floating each of platform and supporting leg modules independently to an offshore site,
- at a given offshore site, pivotally interconnecting the leg modules at one of their ends to the platform module,
- increasing the density of said leg modules at their other ends so as to pivot said leg modules about the pivotal interconnection until said other ends of said leg modules are in engagement with the ocean floor,

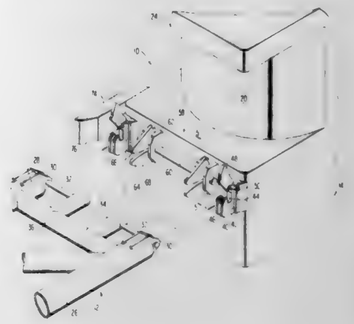
after said other ends of said leg modules are in engagement with the ocean floor, decreasing the density of the upper ends of said leg modules and pivoting said leg modules further about the pivotal interconnection to raise said platform member above the surface of the water.

3,922,869
PUMPED EVACUATED TUBE WATER HAMMER PILE DRIVER METHOD
Serge S. Wisotsky, Sharon, Mass., assignor to Orb, Inc., Marion, Ohio
Division of Ser. No. 267,741, June 30, 1972, which is a continuation-in-part of Ser. No. 163,422, July 16, 1971. This application July 31, 1974, Ser. No. 493,421
Int. Cl.² E02D *7/00*
U.S. Cl. 61—53.5 **4 Claims**



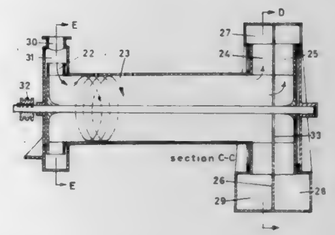
1. In the driving of a pile in an ambient fluid, including water or air, said pile having its tip embedded in the ground, a closed evacuatable enclosure with side walls and a barrier at one end being effectively coupled with the tip of the pile for transmitting driving forces exerted upon said barrier to said tip, the method which comprises: pumping out of said enclosure liquid, and at least a portion of any gases and vapors which may be present therein, for evacuating said enclosure sufficiently to provide space for acceleration and deceleration of a mass of liquid adequate to produce the necessary force and energy for driving said pile; maintaining said enclosure closed to said ambient fluid at least during said evacuation;
- opening valve means through the wall of said enclosure; accelerating through said opening a substantially load-velocity independent flow of liquid into the evacuated portion of the enclosure; causing said flow to move toward said barrier with its principal component of energy and motion along the longitudinal axis of the enclosure toward the barrier for impacting against same directly or indirectly; suddenly decelerating said mass against said barrier with the liquid substantially at its theoretical bulk modulus, and thereby converting hydraulic kinetic energy to a liquid hammer driving pulse for driving said pile deeper into said subsoil; and repetitively evacuating, accelerating, decelerating and driving as aforesaid.

3,922,870
STINGER LATCHING APPARATUS
Carlos Eduardo Recalde, Garden Grove, Calif., assignor to Santa Fe International Corporation, Orange, Calif.
Filed Oct. 24, 1974, Ser. No. 517,757
Int. Cl.² B63B *35/04;* **E05D** *1/06*
U.S. Cl. 61—72.3 **37 Claims**



1. Apparatus for connecting a pipeline support to a pipelaying barge comprising:
- support structure forming part of the barge;
- a latch carried by said support structure and having a slot for receiving a connecting element carried by the pipeline support;
- a guide pivotally carried by said support structure and having a slot for receiving the pipeline support connecting element;
- said guide being pivotal from a first position with the guide slot in misalignment with said latch slot into a second position with said guide slot and said latch slot in registration one with the other thereby enabling guided movement of the connecting element, when received in the guide slot, into said latch slot; and
- means carried by said support structure for releasably retaining the connecting element in said latch slot.

3,922,871
HEATING AND COOLING BY SEPARATION OF FASTER FROM SLOWER MOLECULES OF A GAS
Dmytro Bolesta, 9 Jessie St., Sunshine, 3020, Victoria, Australia
Filed Apr. 15, 1974, Ser. No. 461,118
Int. Cl.² F25B *9/02*
U.S. Cl. 62—5 **6 Claims**



1. An apparatus for changing the temperature of a gas which comprises; a cylinder, a vaned inlet for gas formed in such a way that a gas enters through it into said cylinder performing whirling vortex like motion, means for dividing whirling gas into desired number of portions formed by strata of vortex, means for bringing the pressure of each portion of said gas to desired pressure at which portion of gas collected

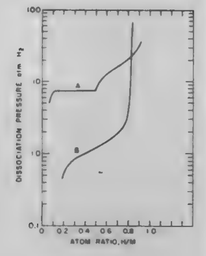
from stratum of vortex located more distant from centre of vortex becomes cooler and portion of gas collected from stratum of vortex located nearer the centre of vortex becomes warmer than original gas, and means for exhausting said portions of gas separately from the apparatus.

3,922,872

IRON TITANIUM MANGANASE ALLOY HYDROGEN STORAGE

James J. Reilly, Bellport, and Richard H. Wiswall, Jr., Brookhaven, both of N.Y., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Feb. 4, 1975, Ser. No. 547,073
Int. Cl.² F17C 11/00
U.S. Cl. 62—48 4 Claims



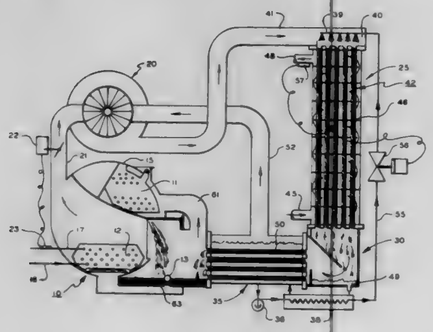
2. The method of storing hydrogen comprising contacting a solid alloy of $TiFe_{1-x}Mn_x$ where x is in the range of about 0.02 to 0.5 with gaseous H_2 at a pressure above the dissociation pressure of the hydride.

3,922,873

HIGH TEMPERATURE HEAT RECOVERY IN REFRIGERATION

Louis H. Leonard, Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 14, 1974, Ser. No. 523,639
Int. Cl.² F25B 43/02
U.S. Cl. 62—84 24 Claims



1. The method of developing a high temperature lift at the discharge of a compressor as employed in a vapor compression refrigeration system including

exposing refrigerant vapors discharged from the compressor to a concentrated absorbent solution to develop temperatures in the mixture above the saturation temperature of the refrigerant, and

transferring the high temperature heat energy to a substance for recovery thereof.

8. The method of developing a high temperature lift in a refrigeration system employing a vapor compressor including exposing a strong absorbent solution to the refrigerant vapors discharged from the vapor compressor to develop a high temperature mixture which is at a temperature level above that of the discharge vapors,

transferring the heat energy in the high temperature mixture to a heat reclaiming substance whereby the temperature of the reclaiming substance is raised to about that of the high temperature mixture,

separating the diluted solution from the unabsorbed vapors after heat transfer,

flash cooling the separated dilute solution by exposing the solution to the low pressure inlet to the compressor,

placing the unabsorbed refrigerant vapors in thermal communication with the flash cooled solution to condense the vapors whereby refrigerant is boiled from the solution thus reconcentrating the solution, and

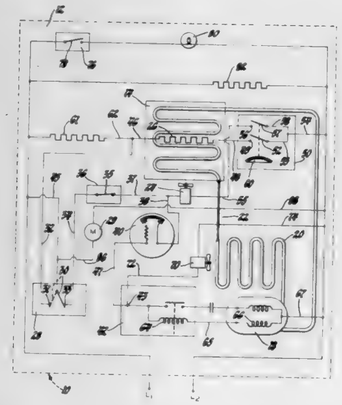
recirculating the reconcentrated solution to the compressor discharge for reuse.

3,922,874

EVAPORATOR FAN DELAY CIRCUIT

James A. Canter, Englewood, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 27, 1974, Ser. No. 527,692
Int. Cl.² F25D 21/08
U.S. Cl. 62—155 3 Claims



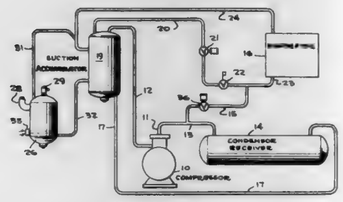
1. In combination, a refrigerator cabinet having an insulated above-freezing food storage compartment and a freezer food storage compartment therein, a source of electrical power, an evaporator positioned in the freezer compartment, means including a freezer fan for circulating air through the compartments in thermal exchange relationship with said evaporator, a compressor for supplying liquid refrigerant to said evaporator, temperature responsive cold control switch means connecting said compressor to said power source, defrost timer means for periodically defrosting said evaporator including an electric defrost heater arranged in thermal exchange relationship with said evaporator, said timer means including a single pole double throw switch for selectively energizing either said compressor or said electric defrost heater, a single throw double pole defrost limiter thermostatic switch having a first set of contacts connecting one side of said power source in series circuit with said defrost heater to the other side of said power source, said defrost limiter switch having a second set of contacts connecting one side of the power source in series circuit with said freezer fan, said cold control switch means, and said defrost timer means to the other side of the power source during a cooling cycle; whereby upon the said defrost limiter thermostatic switch sensing a predetermined evaporator temperature above freezing, said defrost limiter switch first and second set of contacts simultaneously opening deenergizing said defrost heater and disconnecting said freezer fan from said one side of said power source, respectively; and said defrost limiter switch first and second set of contacts simultaneously closing at a predetermined temperature below freezing, whereby said freezer fan is energized by virtue of the said closed second set of contacts completing a circuit from said one side of said power source through said fan, said cold control switch means and said defrost timer switch means to the other side of said power source while said defrost heater is removed from the one side of said power source by said defrost limiter switch until the next defrost cycle initiated by said defrost timer switch means.

3,922,875

REFRIGERATION SYSTEM WITH AUXILIARY DEFROST HEAT TANK

William F. Morris, Jr., 801 Fayetteville St., Raleigh, N.C. 27601

Filed Sept. 12, 1974, Ser. No. 505,347
Int. Cl.² F25D 21/06
U.S. Cl. 62—156 20 Claims



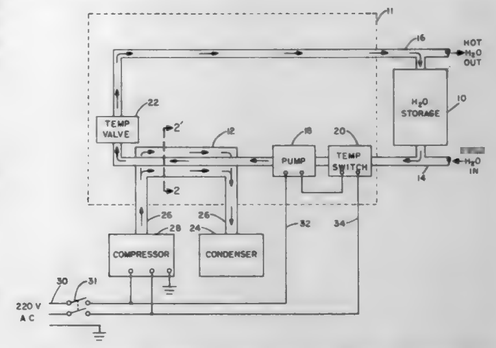
1. A refrigeration system adapted to cycle alternately through a refrigeration cycle and a defrost cycle, comprising a compressor having discharge and suction ports, a condenser connected to the discharge port to receive refrigerant gas from the compressor during the refrigerant cycle and condense the same, an evaporator having an inlet connected to the condenser to receive condensed liquid refrigerant therefrom during the refrigeration cycle and having an outlet, hot gas conduit means for conveying gaseous refrigerant from the compressor to the evaporator during the defrost cycle, a suction accumulator tank connected by an outlet suction line to the suction port of the compressor and by an inlet suction line to the evaporator outlet for receiving any liquid refrigerant discharged from the evaporator outlet toward the compressor and having means for conveying warm liquid refrigerant coursing from the condenser to the evaporator therethrough in heat exchange relation with liquid refrigerant in the accumulator tank received from the evaporator outlet to vaporize the latter, an auxiliary defrost heat tank connected to said suction accumulator tank substantially filled with a heat storage liquid and having a conduit coil immersed therein connected by a feed line to said accumulator tank at a location slightly above a reference liquid level therein normally reached by the liquid refrigerant during the refrigeration cycle to convey liquid refrigerant during the defrost cycle to the heat tank only when the liquid refrigerant level in the accumulator tank exceeds said reference level, means for heating said heat storage liquid in said heat tank to a sufficient temperature for promptly vaporizing any liquid refrigerant conveyed into said conduit coil therein, and a heat tank outlet conduit for return of the vaporized refrigerant from the conduit coil in the heat tank to the suction port of said compressor.

3,922,876

ENERGY CONSERVATION UNIT

Thomas I. Wetherington, Jr., St. Petersburg; McKay Goode, Longwood, and Colin D. Burgess, Maitland, all of Fla., assignors to Energy Conservation Unlimited, Inc., Longwood, Fla.

Filed Nov. 21, 1974, Ser. No. 525,962
Int. Cl.² F25D 17/00
U.S. Cl. 62—180 12 Claims



1. An energy transfer system for use with refrigeration means and a water reservoir, said refrigeration means of the type having a compressor and a compressible refrigerant flowing through an output from said compressor, said energy transfer system comprising:

heat exchange means coupled in said output of said compressor and to said water reservoir for receiving water from said reservoir and transferring heat from said refrigerant thereto;

a pump interposed between said reservoir and said heat exchange means for pumping water therebetween;

temperature sensing means thermally coupled to water passing through said pump and electrically coupled to said pump for rendering said pump inoperative when the temperature of said water is at or above a preselected temperature;

a return water line coupled between said heat exchange means and said water reservoir;

a temperature sensing valve interposed in said return line between said heat exchange means and said water reservoir, and in close proximity to said heat exchange means for preventing water from exiting said heat exchange means until said water is at, or above a predetermined temperature; and wherein

said heat exchange means effects a reduction in the temperature of said refrigerant from said compressor and an increase in the temperature of water passing back into said reservoir.

3,922,877

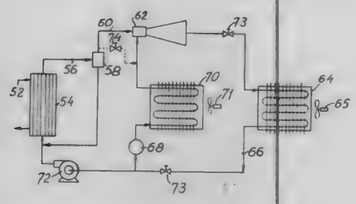
AIR CONDITIONING SYSTEM FOR AUTOMOTIVE VEHICLES

Abraham Ophir, 34, Neve Oved St., Herzlia Pituah, and Joseph Weinberg, 29 Brodetsky St., Tel Aviv, both of Israel

Filed July 22, 1974, Ser. No. 490,693
Claims priority, application Israel, Oct. 3, 1972, 40492
Int. Cl.² F25B 27/02
U.S. Cl. 62—238 2 Claims

1. In an air conditioner for cooling a motor vehicle passenger compartment, said vehicle having an engine with means emitting hot exhaust gases therefrom, a closed refrigerant fluid system containing a refrigerant fluid and utilizing the heat of said exhaust gases for powering said air conditioner comprising condenser means for liquifying said refrigerant fluid, evaporator means for vaporizing said refrigerant fluid and for effecting cooling of air passed therethrough by heat transfer from said air to said fluid, means for passing cooling

air through said evaporator means and to said passenger compartment, generator means receiving said fluid in liquified form for effecting heat transfer from said engine exhaust gases to said liquified fluid to effect evaporation thereof, means for passing said exhaust gases through said generator means, ejector means located within said closed refrigerant system receiving evaporated fluid from said generator means and passing said fluid to said condensor means, recirculation means for passing liquified fluid from said condensor means



partially to said evaporator means and partially to said generator means, and means for introducing evaporated fluid from said evaporator means into said ejector means to effect entrainment of said introduced fluid into the evaporated fluid passed by said ejector means from said generator means to said condensor means, said ejector means comprising means defining a low pressure side thereof at which said evaporated fluid from said evaporator means is introduced into said ejector means, and means defining an acceleration zone in which the velocity of entrained fluid is accelerated.

3,922,878

PORTABLE COOLING UNIT

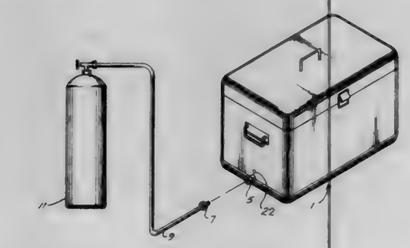
Javid Jalali (Karchay), 309 N. Maidson, Monrovia, Calif. 91016

Filed Jan. 10, 1975, Ser. No. 540,071

Claims priority, application Australia, Jan. 11, 1974, 6221/74

Int. Cl.² F25D *3/12*

U.S. Cl. 62—384 **5 Claims**



1. A portable cooling unit comprising:

an insulated container having first and second compartments therein and means defining a wall between the compartments; the first compartment for storing material to be cooled; the second compartment having at least one hollow block concealed therein for containing dry ice formed in situ, and further having a conduit therein for carrying liquid carbon dioxide under pressure;

an exhaust port exposing the second compartment to atmospheric pressure;

a fitting on the container and communication with one end of the conduit for releasable connection to external tubing through which the liquid carbon dioxide is supplied; and

each hollow block having an inlet port connected to the conduit for the liquid carbon dioxide to flow through into the hollow block, and having a plurality of apertures each for exposing liquid carbon dioxide in the hollow block to the pressure existing in the second compartment so as to provide for the formation of dry ice inside the hollow block.

3,922,879

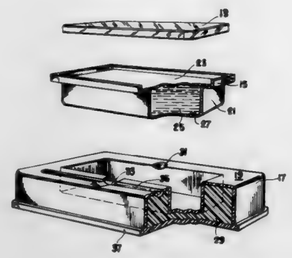
PORTABLE REFRIGERATED WORK HOLDER

George R. Arnold, Napa, Calif., assignor to Silverado Industries, Inc., Napa, Calif.

Filed May 9, 1974, Ser. No. 468,253

Int. Cl.² F25D *13/00*

U.S. Cl. 62—458 **9 Claims**



1. A refrigerated work holder comprising,

an insulated tub,

a closed container nestable within said tub, said container having an upper surface which closes said tub and further having a refrigerant substance therein which substantially fills said container, said refrigerant substance having a heat of fusion at least as great as that of ice, said upper surface having an area greater than the lateral cross-section of said container.

3,922,880

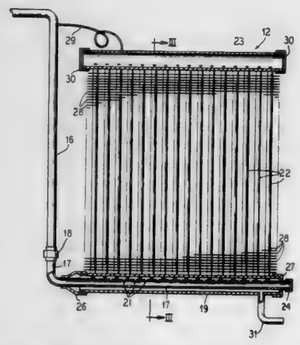
FLOODER REFRIGERANT CONDENSER SYSTEMS

Herman H. Morris, P.O. Box 3129, Chattanooga, Tenn. 37404

Filed Mar. 11, 1974, Ser. No. 449,734

Int. Cl.² F25B *1/00*

U.S. Cl. 62—498 **11 Claims**



1. A condenser assembly adapted for use in a mechanical refrigeration system of the vapor compression type comprising:

a fluid tight housing means having defined therein

an interior chamber portion adapted to be located in a gravitationally bottom region of said housing,

input port means and output port means located in said bottom region in laterally spaced relationship,

wall member portions adapted to be located above said interior chamber portion, said wall members being adapted for heat transfer therethrough when a heat exchange fluid contacts outer surfaces thereof relative to interior portions of said housing means;

an input conduit associated with said input port means and adapted to extend thereto from a position located above a predetermined fluid level in said housing when said condenser assembly is functioning; and

pressure equalization means extending between a gravitationally top region of said housing and said input conduit at said position,

said pressure equalization means comprising a capillary tube.

3,922,881

HELIUM 3-HELIUM 4 DILUTION REFRIGERATOR

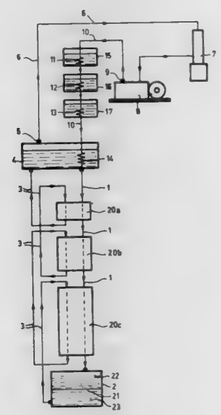
Frans Adrianus Staas, and Adrianus Petrus Severijns, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 6, 1974, Ser. No. 521,278

Claims priority, application Netherlands, Nov. 13, 1973, 7315487

Int. Cl.² F25B *1/00*

U.S. Cl. 62—502 **7 Claims**



1. In a ^3He — ^4He dilution refrigerator for temperatures below the λ point of helium, including first means for condensing and cooling gaseous helium into concentrated liquid ^3He, a mixing chamber containing concentrated ^3He and superfluid dilute ^3He, a distillation chamber for separating dilute ^3He into ^3He and ^4He, and a supply duct for flowing concentrated liquid ^3He from said first means to said mixing chamber, and a return duct for flowing dilute ^3He from said mixing chamber to said distillation chamber, the improvement in combination therewith of a continuous heat exchanger comprising adjacent and parallel, concurrent oriented portions of said supply and return duct in heat-exchange relationship.

3,922,882

POWER TRANSMISSION ASSEMBLY FOR USE IN MOTOR VEHICLES

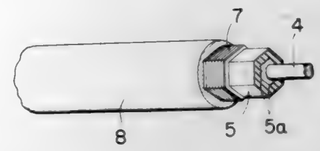
Isao Kimata, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Oct. 2, 1973, Ser. No. 402,764

Int. Cl.² F16C *1/02*

U.S. Cl. 64—2 R **2 Claims**

1. A power transmission assembly for use in motor vehicles, comprising a tubular member having an inner face with a hexagonal cross section to form six corner sections to contain a lubricant, and a flexible shaft of circular cross section which



is entirely supported with only the aid of the lubricant in coaxial alignment with the tubular member.

3,922,883

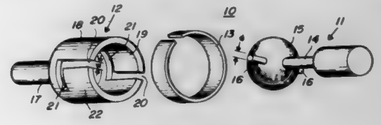
ANTI-BACKLASH UNIVERSAL COUPLING

Louis Albert Bevacqua, Des Plaines, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Oct. 3, 1974, Ser. No. 511,838

Int. Cl.² F16D *3/02*

U.S. Cl. 64—7 **8 Claims**



1. A universal coupling having

a male member,

a female member,

the male member having a head with a plurality of pins extending therefrom,

and the female member provided with a cavity and engaging slots,

each pin being received within a respective one of the slots, the head being substantially enclosed within the cavity,

wherein the improvement comprises

the pins being oversize relative to the slots to provide an interference fit therebetween,

the female member being provided with a plurality of relief slots such that the portions of the female member adjoining the engaging slots can independently flex upon engagement of the pins within the slots, and

the relief slots being circumferential slots formed in a plane perpendicular to the longitudinal axis of the cavity and extending a predetermined distance from the innermost extent of the engaging slots,

whereby the members are substantially constrained to move about their longitudinal axis in unison but are substantially free to move angularly relative to each other.

3,922,884

COUPLINGS

Charles Wallace Chapman, Winchelsea, England, assignor to Charles W. Chapman (Consultants) Limited, Horley, England

Filed Nov. 30, 1973, Ser. No. 420,540

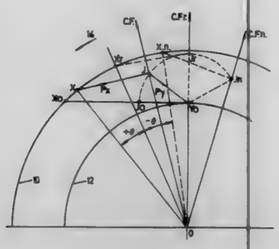
Claims priority, application United Kingdom, Dec. 1, 1972, 55595/72; Feb. 1, 1973, 5096/73; July 26, 1973, 35546/73

Int. Cl.² F16D *3/51*

U.S. Cl. 64—19 **13 Claims**

1. A rotatable coupling comprising a driving and a driven member rotatable about a common axis and between which is connected one or more coupling elements for transmitting torque from the driving to the driven member, the or each coupling element being arranged so that rotational deflection of the driving member relative to the driven member cannot take place in the direction of drive when the coupling is rotat-

ing below a predetermined speed, and to allow rotational deflection of the driving member relative to the driven mem-



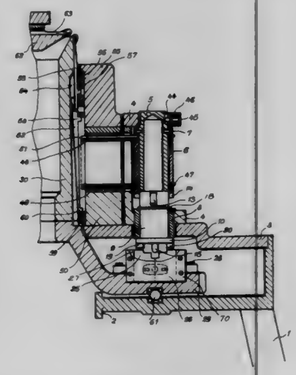
ber in either direction of rotation when the coupling rotates at a speed above the predetermined speed.

3,922,885

APPARATUS FOR CONTROLLING PATTERN DRUMS PARTICULARLY IN CIRCULAR KNITTING MACHINES

Miroslav Brandstatter, Brno, Czechoslovakia, assignor to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Filed Aug. 13, 1973, Ser. No. 388,243
Int. Cl.² D04B 15/74; F16D 11/04, 19/00
U.S. Cl. 66—50 B **4 Claims**



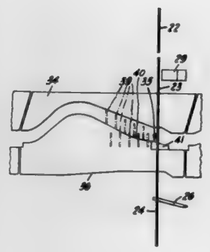
1. A program control device for a knitting machine having a frame, said control device comprising a program drum arranged rotatably on the frame of the machine, a cylindrical body supported coaxially on said program drum at one end thereof, the end of the cylindrical body confronting the program drum being provided with a transverse recess, a coupling pawl pivotally supported in said recess, a plurality of slots provided on the end face of the program drum which confronts the cylindrical body, the coupling pawl being adapted temporarily to connect the cylindrical body with the program drum by engagement of one end of the coupling pawl in one of said slots in the program drum, a sliding guide on the other end of the cylindrical body remote from the program drum, a plurality of extensions arranged on said sliding guide, a plurality of control wedges with lateral surfaces arranged on a machine part adjustably as to their axial height opposite to the sliding guide, a plurality of return wedges arranged on said machine part, the control wedges performing a relative movement with respect to the program drum for engagement with said extensions of the sliding guide, and means for controlling the position of the coupling pawl in said cylindrical body for selectively connecting the cylindrical body with the program drum and disconnecting it therefrom.

3,922,886

JACK MECHANISM FOR CIRCULAR KNITTING MACHINES

James D. Moyer, Winchester, Va., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sept. 10, 1973, Ser. No. 396,065
Int. Cl.² D04B 9/00, 15/32
U.S. Cl. 66—50 R **1 Claim**



1. An improved jack actuating device for circular knitting machines having at least one feed and a rotatable cylinder with slots for slidably mounting a circular series of needles adapted to knit courses at each of said feeds in forming tubular fabric, needle actuating jacks slidably mounted in each of said slots including a lifter jack and a slider jack, said slider jack having selector butts at a plurality of levels thereon which are selectively movable by corresponding pattern controlled selector slide cams in an upward direction to select said needles for knitting courses at said each feed, the improvement comprising:

a. a rocker jack member in said each slot intermediate said lifter jack and said slider jack having an operating butt adjacent one end thereof and being movable in a radial direction to a radial position relative to the axis of said cylinder by presser means and selectively upward to a predetermined height by said slider jack;

b. cam means having a first cam surface for engaging said operating butt of said rocker jack member when selectively raised said predetermined height by said slider jack to move said rocker jack member to an actuation height to position its corresponding said lifter jack and said needle for said knitting; and

c. a second cam surface of said cam means for directing said rocker jack member when not selectively raised said predetermined height by its said slider jack inwardly from said radial position effected by said presser means to an inactive position to pass below and in front of said first cam surface.

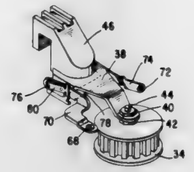
3,922,887

POSITIVE YARN FEEDING SYSTEM FOR CIRCULAR KNITTING MACHINE

Lester Misbcon, Miami Beach, Fla., assignor to The Singer Company, New York, N.Y.

Filed Sept. 13, 1974, Ser. No. 505,828
Int. Cl.² D04B 15/48
U.S. Cl. 66—132 T **1 Claim**

1. In a yarn feeding system for a knitting machine, the combination comprising an endless belt to be driven by the knitting machine, the belt having trapezoidly shaped teeth, a plurality of gear-like wheels over which the belt extends and which are driven by the belt, the wheels having spaced cogs which mesh with teeth on the belt, and means at each wheel for guiding a yarn between the belt and the wheel where the yarn is gripped between the meshing parts of the belt and the



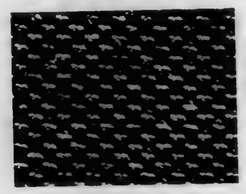
wheel and moved at a speed determined by the speed of the belt.

3,922,888

WARP KNIT TWILL, SHARKSKIN AND PIQUE FABRICS

Thomas E. Patterson, Pickens, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Sept. 11, 1974, Ser. No. 505,037
Int. Cl.² D04B 21/00
U.S. Cl. 66—192 **34 Claims**



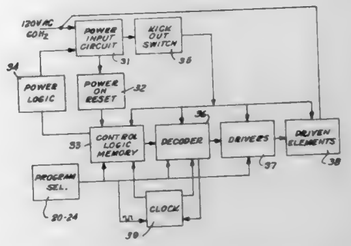
1. A warp knit fabric comprising a first set of yarns forming a knit ground structure containing stitch loops in every course and wale, and second and third sets of yarns laid into the ground structure; each respective yarns of said second set primarily lying in one respective wale of the ground structure and periodically extending toward an adjacent wale, passing around at least two lap portions of one of the yarns of the ground structure, which lap portions otherwise extend in directions away fromthe portion of the yarn of the second set which extends toward the adjacent wale, and displacing those laps toward the wale in which the yarn of said second set is primarily lying; each respective yarn of said third set primarily lying in a respective wale of the ground structure and periodically extending toward an adjacent wale, passing around at least two lap portions of one of the yarns of the ground structure, which lap portions otherwise extend in directions away from the portion of the yarn of the third set which extends toward the adjacent wale, and displacing those laps toward the wale in which the yarn of said third set is primarily lying; the yarns of the second and third sets making all their periodic extensions in the same direction, but with the yarns of the third set making their periodic extensions in different courses from the courses in which the yarns of the second set make their periodic extensions; said second and third sets of yarns being substantially covered by the yarns of the ground structure, and said fabric having a surface effect on at least one face thereof which appears to extend along line oblique to the course and wale directions in the fabric.

3,922,889

DIGITAL LOGIC CONTROL FOR AUTOMATIC WASHER

Joseph Karklys, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 211,885, Dec. 27, 1971, Pat. No. 3,783,651. This application May 11, 1973, Ser. No. 359,548
Int. Cl.² D06F 33/02
U.S. Cl. 68—12 R **6 Claims**



1. A control circuit for an automatic clothes washer having a rotatable receptacle adapted to receive material, a drive motor coupled to the receptacle and operable to impart rotary motion thereto and material treatment means operatively associated with the receptacle, said control circuit comprising:

a clock for connection to a supply of alternating voltage, said clock operable to provide clock pulses indicative of elapsed time in response to the alternating wave of the supply;

a memory operable to provide a sequence of unique binary states representing the sequence of operations of a laundry program; and

a logic control circuit connected between said clock and memory having outputs connected to and the drive motor and material treatment means to control the operation of the drive motor and treatment means in accordance with the laundry program, said logic control circuit including indexing means connected to said memory and operable in accordance with unique combinations of elapsed time and memory state to index said memory; and

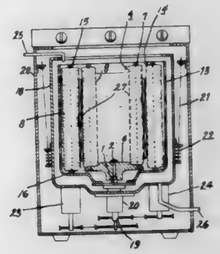
selectively operable switch means connected between said clock and said indexing means for establishing selected times for indexing said memory.

3,922,890

INNER BASKET FOR DEHYDRATING WASHING MACHINE

Masaji Shibata, 23, No. 30, Kamishima-cho, Kadoma, Osaka, Japan

Filed Oct. 23, 1973, Ser. No. 409,021
Claims priority, application Japan, Oct. 21, 1972, 47-105699
Int. Cl.² D06F 9/00, 23/04
U.S. Cl. 68—23 **3 Claims**



1. A washing machine having an independently driven oscillating shaft and an independently driven perforated basket for

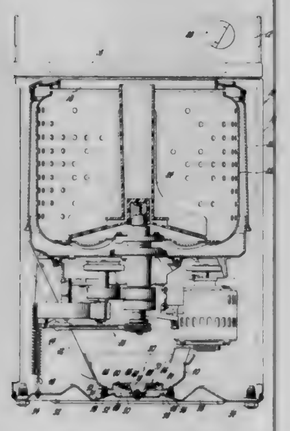
centrifuging the articles washed, a first hollow cylindrical member having a relatively thick wall of soft water-permeable material mounted on the shaft and located coaxially within the perforated basket, a second hollow cylindrical member having a relatively thick wall of soft water-permeable material and having a diameter larger than said first cylindrical member and smaller than the perforated basket freely interposed between said first member and the perforated basket and spaced outwardly from said first member sufficiently to define an annular space for insertion therein of articles to be washed.

3,922,891

CLOTHES WASHER SUSPENSION SYSTEM

John A. Sundstrom, Jr., Springboro, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 28, 1974, Ser. No. 483,962
Int. Cl.² D06F 35/00
U.S. Cl. 68—23.3 5 Claims



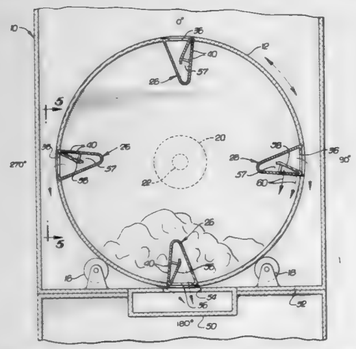
1. In combination with a washing machine having a movable mass including a rotatable spin tub adapted to contain clothes or the like in a washing fluid, an oscillatable agitator in said tub and a mechanism operable to horizontally oscillate said agitator for agitating said clothes or the like in said washing fluid and to rotate said spin tub for centrifugally removing the washing fluid from said clothes or the like durinng operation of said washing machine, a suspension system comprising: a fixed support member having an upwardly facing annular convex portion, a movable support member having a downwardly facing annular convex portion, said movable mass being secured in fixed relationship to said movable support member, an annular shuttle member located between said upwardly facing convex portion and said downwardly facing convex portion and having an internal wall defining a cavity between said support members, at least a portion of each of said convex portions located within said cavity, said shuttle member having an upper bearing portion in mating engagement with said downwardly facing convex portion to form a first interface, said shuttle member having a lower bearing portion in mating engagement with said upwardly facing convex portion to form a second interface, both of said interfaces being located below the center of gravity of said movable mass, said shuttle member being controlled in its movement relative to said fixed support member and said movable support member by forces applied through the interfaces by the pinching effect of said fixed support member and said movable support member, said movement of said shuttle member facilitating the closest possible proximity of said movable support member to said fixed support member within said cavity, and biasing means tending to center and vertically orient said movable mass and resist the twisting thereof, said biasing means including first spring means between said fixed support member and said movable support member outboard of said shuttle member and a second spring means in said cavity between said fixed support member and said movable support member, said second spring means being formed as a hat-shaped rubber cup interconnecting said support members inboard of said shuttle member, the crown of said hat-shaped rubber cup having means for fastening to one of said support members while the brim of said hat-shaped cup has means in combination with the other of said support member to fasten to the other of said support members, whereby during operation of said washing machine both of said spring means tend to center said movable support member with respect to said fixed support member to vertically orient said movable mass while said second spring means tends to counteract the twisting of said movable mass in response to the horizontal oscillations of said agitator, and whereby during shipment of said washing machine said second spring means delimits the sidewise excursions of said movable support member with respect to said fixed support member.

3,922,892

SUSPENSION SYSTEM FOR A WASHING MACHINE

John Bochan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed June 20, 1974, Ser. No. 481,210
Int. Cl.² D06F 23/04, 37/24
U.S. Cl. 68—23.3 3 Claims



1. In a vertical axis washing machine having a cabinet including a base and further having a movable mass including a rotatable basket and means for imparting oscillation and rotation to the movable mass, a damped, gyratory suspension system of the shifting nodal type for supporting the movable mass on the base, comprising:

a pair of relatively movable engaging planar surfaces, one of the planar surfaces being rigidly secured substantially horizontally to the washing machine base;

a pair of relatively movable engaging spherical surfaces, one of the sperical surfaces being secured coaxially concentric with the movable mass through the vertical axis thereof such that the center of gravity of the movable mass is above the engaging spherical surfaces;

means concentrically interconnecting the two pairs of relatively movable surfaces for allowing controlled horizontal translation of the movable mass while maintaining the normally vertical axis thereof substantially vertical and for allowing pivotal movement of the movable mass about the center of the spherical surface as a node; and

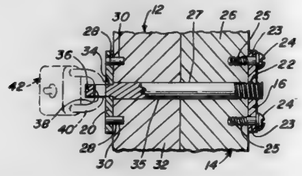
means for resiliently biasing the spherical surface coupled with the movable mass for maintaining the two pairs of relatively movable surfaces normally concentric and coaxial with respect to one another including a first set of tension springs secured on one end to the spherical surface coupled with the movable mass and on the other end to the interconnecting means and a second set of tension springs secured on one end to the juncture of the first set of springs with the interconnecting means and on the other end to the washing machine base, said first and second sets of tension springs being equally spaced and at least at three points around the periphery of the spherical surfaces, and for maintaining the vertical axis of the movable mass in a normally substantially vertical position, the resiliently biasing means also serving as a means for varying damping of vibration induced by rotation and oscillation of the movable mass.

3,922,893

SLIDING DOOR LOCKING DEVICE

Harold Roy Berg, 82 Plus 4 Pemberton St., Revere, Mass. 02151

Filed Sept. 17, 1974, Ser. No. 506,900
Int. Cl.² E05B 65/48
U.S. Cl. 70—13 8 Claims



1. A sliding door locking device, comprising, in combination:

a. a latch plate;

b. a bolt member arrangeable in aligned apertures in sliding doors to be locked for engaging the latch plate, the latter arranged adjacent one of the doors; and

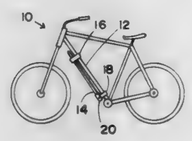
c. a keeper plate arrangeable adjacent the other of the doors for restraining the bolt member and maintaining same in engagement with the latch plate, the latch plate being provided with a threaded hole, and the bolt member being a headed, threaded bolt which threadingly engages in the threaded hole of the latch plate, the latter being mounted on the one of the doors with the threaded hole being aligned with the one of the apertures associated with the one of the doors, the keeper plate being provided with at least one pin selectively arrangeable in a recess provided in the other of the doors, and with a slot arranged for receiving the head of a bolt.

3,922,894

STORABLE CABLE LOCK

Robert W. Johnson, 5409 Fremont Ave., Minneapolis, Minn. 55430

Filed July 26, 1974, Ser. No. 492,177
Int. Cl.² E05B 73/00
U.S. Cl. 70—18 5 Claims



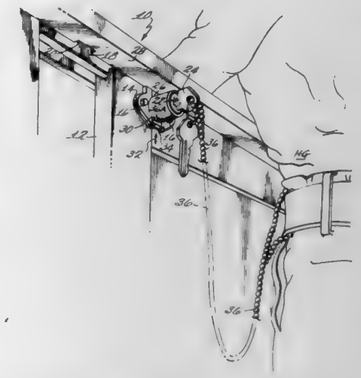
1. A storable cable lock comprising bracket means adatped to mount to an object to be secured with pivotable chain anchoring means pivoted on said bracket means, said anchoring means connected to a flexible chain which chain is constructed from a plurality of tubes and cables connected together in an end to end relationship in such a way that the cables can slide into said tubes so as to provide a compact storage unit.

3,922,895

SHOWCASE SECURITY SYSTEM

Howard M. Greenebaum, Pasadena, Md., assignor to Chain-Lock Co., Inc., Baltimore, Md.

Filed Feb. 6, 1974, Ser. No. 440,276
Int. Cl.² F05B 65/00
U.S. Cl. 70—100 2 Claims



1. For a showcase including a case portion having a door slides open and closed, a showcase security system, comprising:

a lock housing mounted on said door adjacent one side edge thereof;

a bar bolt slidably mounted on said housing for sliding toward and away from the case portion;

a key operable tumbler cylinder coupled to the bar bolt for thrusting and retracting the bar bolt toward and away from the case portion;

key means removably insertable into the tumbler cylinder for operating the tumbler cylinder;

the tumbler cylinder permitting removal of the key when the key is in a predetermined angular alignment with the lock housing corresponding to the bar bolt being in a thrust condition;

a bolt catch provided on the case portion, where it is in alignment with the bar bolt only when the door is slid fully shut;

boss means on said housing and positioned to be engaged by the bar bolt, upon retraction thereof, upon rotation of the key in a sense to retract the bar bolt, by less than an angular amount such as will again bring the key to said predetermined angular alignment, whereby the key is prevented from being withdrawn unless the door is closed and the showcase is locked.

3,922,896

DOOR LOCKING DEVICE

Tetsuro Kagoura, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Feb. 19, 1975, Ser. No. 550,961
Claims priority, application Japan, Feb. 20, 1974, 49-21316[U]
Int. Cl.² E05B 13/10, 55/10, 63/18
U.S. Cl. 70—223 4 Claims

1. In a door locking device, the combination of:

a. an inside and an outside knob rotatably supported on the inside and the outside, respectively, of a door, said inside and outside knobs having respective axes which are aligned with each other;

b. an actuator rod extending along said aligned axes of said inside and outside knobs, said actuator rod being rotat-

able simultaneously with at least said inside knob and being movable longitudinally between a first and a second position relative to said inside and outside knobs;

c. a push button arranged at one end of said actuator rod and projecting out of said inside knob, said push button being depressible to move said actuator rod from said first to said second position;

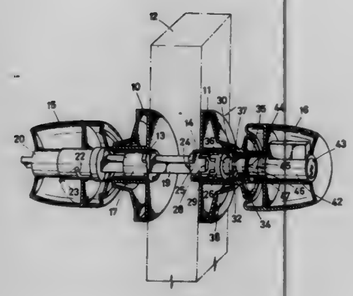
d. means for releasably holding said push button in a depressed position and hence for retaining said actuator rod in said second position;

e. a first clutch including:

1. a driving member fixedly supported by said outside knob for simultaneous rotation therewith, said actuator rod projecting into said outside knob by rotatably and longitudinally movably extending through said driving member; and

2. a driven member fixedly mounted on the other end of said actuator rod projecting into said outside knob, said driving and driven members of said first clutch being interengageable only when said actuator rod is in said first position to permit said actuator rod to be rotated by said outside knob;

f. a lock assembly within said outside knob adapted to be operated by a key, said lock assembly including a rotor rotatable relative to said outside knob by said key;



g. a slide within said outside knob constrained to linear movement between a third and a fourth position along said axis of said outside knob relative to the same, said slide being rotatable simultaneously with said outside knob;

h. spring means biasing said slide from said third toward said fourth position;

i. cam means within said outside knob effective to permit said slide to be moved from said third to said fourth position by said spring means when said rotor is rotated in a predetermined direction by said key, said cam means being also effective to move said slide from said fourth to said third position against the bias of said spring means when said rotor is rotated in the opposite direction to said predetermined direction by said key; and

j. a second clutch including:

1. a driving member fixedly mounted on said slide for simultaneous rotation therewith; and

2. a driven member formed at said other end of said actuator rod, said driving and driven members of said second clutch being interengageable only when said actuator rod is in said second position and said slide in said fourth position to permit said actuator rod to be rotated by said outside knob.

3,922,897

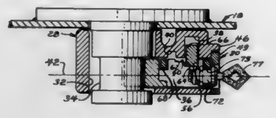
SEMITRAILER KING PIN SECURING DEVICE

Thorwald J. Mickelson, 5550 Shorewood Lane, Excelsior, Minn. 55331

Filed Dec. 5, 1974, Ser. No. 529,797

Int. Cl.² B60R *25/00*; F16B *41/00*

U.S. Cl. 70—232 **9 Claims**



1. A locking mechanism adapted for being releasably secured to a generally elongated member comprising a member have an opening therethrough for receiving said elongated member, a cut-out area in open communication with said opening, first and second pair of spaced notch means formed in said member and disposed above said cut-out area, a movable element slidably received by said cut-out area having spaced leg members joined by a contact member with an engagement surface, and first and second pairs of spaced slots formed intermediately on said leg members, said movable member being longitudinally movable within said member between an outward unlocked position and an inward locked position whereby, whenever in the locked position said engagement surface interlocks with said elongated member received within said opening and whenever in the unlocked position said engagement surface is out of interlocking relationship with said elongated member, a tumbler normally received within said first notch means for vertical movement relative thereto for selective interlocking engagement with said first pair of slots when said movable element is in the locked position, a gravity responsive locking detent means normally received within said second pair of slots for vertical movement relative thereto and into said second notch means whenever said locking mechanism is in an inverted position and said movable element is in the unlocked position thereby preventing said movable element from moving to the locked position, whereby an operator is automatically alerted to an improper locking mechanism position, and a locking device connected to said movable element being selectively operable for vertically raising said tumbler from said first pair of slots and out of interlocking engagement therewith, thereby permitting movement of said movable member to the unlocked position.

3,922,898

EXTRUSION PROCESS

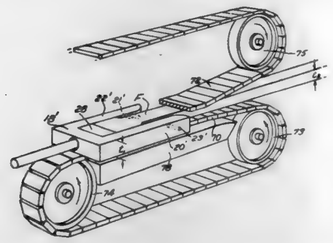
William G. Voorhes, East Greenwich, R.I., assignor to Wanskuck Company, Providence, R.I.

Continuation-in-part of Ser. No. 456,354, March 29, 1974, abandoned. This application Mar. 20, 1975, Ser. No. 560,182

Int. Cl.² B21C *33/00*

U.S. Cl. 72—43 **6 Claims**

1. A process of continuously forming feedstock comprising the steps of providing a gripping means, gripping two opposed sides of feedstock material whereby the two opposing sides of the material are compressed to a pressure greater than the yield strength of the material, lubricating the ungripped surfaces of the feedstock, providing a fork-shaped element having opposed constraining walls, locating a die means in the vicinity of the base of the fork, moving the feedstock toward the die means by the gripping means, maintaining the gripping force greater than the yield strength of the material throughout the fork-shaped element, whereby as the feedstock is urged against the base of the fork the feedstock upsets against the constraining wall surfaces and passes out through the die means, the gripping means advancing the feedstock into the fork, said gripping means and constraining wall surfaces of said fork forming a passageway.



3,922,899

METHOD OF FORMING SANDWICH MATERIALS

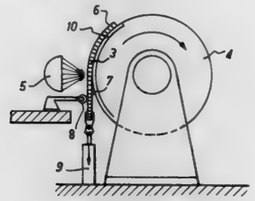
Maurice, Henri, Louis Fremont, Massy; Jean-Francois Denis, Lesigny, and Serve, Yvan Dzalba-Lyndis, Villejuif, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed July 8, 1974, Ser. No. 486,428

Claims priority, application France, July 10, 1973, 73.25292

Int. Cl.² B21D *47/00*

U.S. Cl. 72—128 **4 Claims**



1. A method of forming a metallic panel sandwich comprising two thin metal sheets maintained in mutually spaced relationship by a spacer element of honeycomb structure, corrugated elements, or the like, wherein the said method includes:

a. placing one sheet of a metallic panel sandwich against a rotating former of rounded surface;

b. applying radiant heat to the immediate proximity of points where said metallic panel sandwich is tangential to said rotating former whereby a localized and differential heating effect is provided in the two thin sheets passing thereby; and

c. simultaneously rotating said former to thereby effect formation of said metallic panel sandwich.

3,922,900

METHOD OF AND APPARATUS FOR ROLLING UNSYMMETRICAL SHAPE ELEMENT HAVING THE FLANGE

Kanichi Kishikawa, and Koe Nakajima, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 431,604, Jan. 8, 1974, abandoned. This application Apr. 2, 1975, Ser. No. 564,630

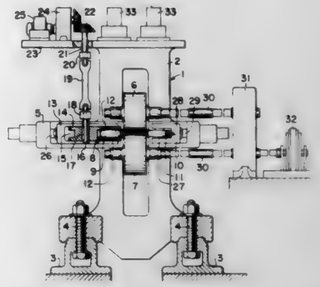
Claims priority, application Japan, Jan. 12, 1973, 48-6353; Jan. 12, 1973, 48-6354

Int. Cl.² B21B *13/10*

U.S. Cl. 72—225 **4 Claims**

1. In a method of rolling an unsymmetrical material having at least one flange through a rolling operation performed on the material, including the steps of roughing rolling, intermediate rolling, and finishing rolling the material, the finishing rolling step being performed by a pair of horizontal and a pair of vertical rollers, at least one of said vertical rolls contacting said at least one flange, the improvement which comprises:

aligning the axes of the vertical rolls to intersect the axes of the horizontal rolls; and



shaping the material by driving only the vertical roller contacting the flange by a driving means, when one flange is provided, and driving only the vertical roll contacting the flange portion of greater thickness when two flanges are provided.

3,922,901

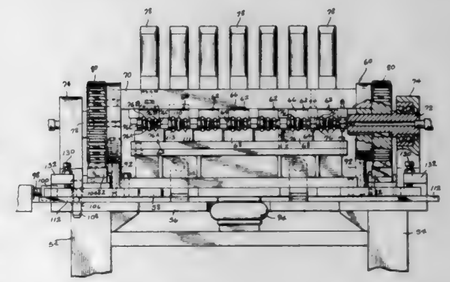
APPARATUS FOR BENDING TUBING

Danny H. Hillegas, Stevensville; Douglas D. Miller, Galien, and John F. Varga, Harbert, all of Mich., assignors to Weldun Tool & Engineering Co., Bridgman, Mich.

Filed Nov. 29, 1973, Ser. No. 420,304

Int. Cl.² B21D *7/02*; B21F *1/00*

U.S. Cl. 72—298 **5 Claims**



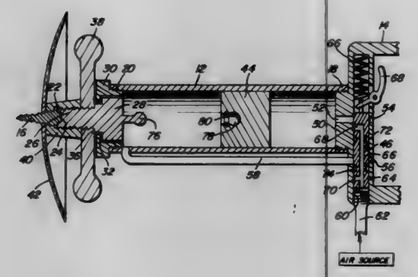
1. Apparatus for bending lengths of tubular material, said apparatus comprising a frame, a table supported upon said frame for lateral movement relative to said frame and to the path of endwise advancement of said tubular material into said apparatus, a bend head carried by said table and including a component thereof pivotal relative to the table about a horizontal pivot axis extending transversely to said path of material advancement, said bend head including a plurality of bend stations located side by side and extending across said table, each bend station including a bend block and a clamp block and a drag block, the bend and clamp blocks of said bend stations forming a part of said bend head component, each of said bend station blocks having at least two tube conforming grooves therein paralleling said path of material advancement, for each bend station the clamp block thereof is located at one end of the drag block and under the bend block wherein each groove in the clamp block is in an opposed relationship with a groove in the bend block and is aligned with a groove in the drag block, means for shifting said clamp block of each station relative to the bend block thereof to clamp said material between the bend and clamp blocks within a selected pair of

said opposed grooves, each pair of opposed clamp and bend block grooves and aligned drag block groove in a bend station constituting a groove set and being sized to accommodate tubular material having a specific outer diameter, means for pivoting said bend head component about its pivot axis with said tubular material clamped between the clamp and bend blocks of each bend station within a selected groove set thereof to cause the clamp and bend blocks to be positioned over the drag block and to bend said material, and means for shifting said table vertically and horizontally relative to said frame wherein a selected groove set of each bend station is unitarially shifted into alignment with said path of material advancement to accommodate tubular material of a given outer diametrical size.

3,922,902
DENT REMOVAL DEVICE

Davis R. Jarman, Brunswick, Ga., assignor to Virgil Hinson, Brunswick, Ga., a part interest

Filed Dec. 6, 1973, Ser. No. 422,187
Int. Cl.² B21D *1/12*
U.S. Cl. 72—453 **4 Claims**

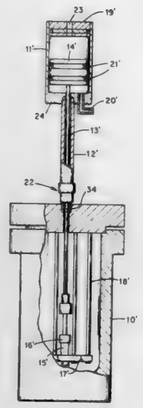


1. A fluid actuated hand tool for dent removal and the like comprising an elongated cylinder including forward and rear ends, a workpiece engaging element mounted on and projecting forwardly from the forward end of the cylinder, a longitudinally slidable hammer positioned within said cylinder, a first fluid port through the cylinder at the rear end thereof, a second fluid port through the forward end of said cylinder, a source of pressurized fluid, valve means selectively communicating the source of pressurized fluid with said first fluid port for a forward positioning of said hammer within the cylinder and with said second fluid port for a rearward driving of said hammer, abutment means at the rear of said cylinder receiving the impact of the rearwardly driven hammer, and lock means at the forward end of the cylinder for automatically engaging and releasably securing said hammer upon a forward positioning of the hammer, said second fluid port being located forward of said lock means with release of said lock means being effected in response to communication of the source of pressurized fluid with the second fluid port and a small buildup of pressure forward of the hammer, said workpiece engaging element comprising a threaded member for rotational driving into a workpiece aperture, and means for rotatably driving said threaded member independently of the remainder of the tool, the means for rotatably driving said threaded member comprising mounting means rotatably locking the threaded member to the forward end of the cylinder for rotation of the threaded member relative to the cylinder, and an enlarged handwheel locked to the mounting means for a rotational manipulation thereof.

3,922,903
HIGH TEMPERATURE AQUEOUS STRESS CORROSION TESTING DEVICE

Arthur N. Bornstein, San Jose, and Maurice E. Indig, Fremont, both of Calif., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Sept. 27, 1974, Ser. No. 509,990
Int. Cl.² G01N *3/18*
U.S. Cl. 73—15.6 **1 Claim**



1. A device for stressing tensile specimens contained within a high temperature, high pressure system comprising: means for securing a specimen to be tested within a pressure vessel, means for connecting a specimen to be tested to a pressure actuated means located externally of said pressure vessel, said connecting means including a pull rod connected at one end thereof to means for gripping a specimen to be tested and at the opposite end to said pressure actuated means, said pressure actuated means comprising a piston accumulator having a piston movable therein and secured to said pull rod and having means for directing fluid pressure to said piston for moving same thereby stressing a specimen to be tested, and means mounted with respect to said connecting means external of each said pressure vessel and said pressure actuated means for preventing hydraulic and thermal interaction between pressure and temperature within said pressure vessel and said pressure actuated means comprising a fitting-seal assembly secured intermediate said pressure vessel and said pressure actuated means, said pull rod extending through said fitting-seal assembly, said fitting-seal assembly including a Teflon seal positioned about said pull rod preventing leakage of fluid therethrough while allowing free movement of said pull rod, said fitting-seal assembly additionally including a fitting having a body member defining a passageway therethrough for passage of said pull rod with said passageway having an enlarged end section defining a cavity, and a cap member removably secured to said body member and having an aperture therein through which said pull rod passes, said Teflon seal being located within said cavity of said body member, said fitting also including a thrust collar fixedly secured to said cap member and positioned in said cavity of said body member about said pull rod and adjacent said Teflon seal, said body member additionally including a threaded end portion secured in a threaded opening in said pressure vessel, and said cap member being provided with a nipple aligned with said aperture therein and having a threaded end portion removably secured to a nipple-like member surrounding said pull rod and secured to said pressure actuated means.

3,922,904
METHOD AND APPARATUS FOR DETECTING DISSOLVED GASES IN LIQUIDS

Dale D. Williams, Mc Lean, Va., and Roman R. Miller, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

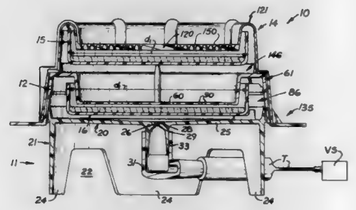
Filed Oct. 2, 1962, Ser. No. 227,959
Int. Cl.² G01N *7/00*
U.S. Cl. 73—19 **8 Claims**

1. A method of detecting and measuring the quantity of a gas dissolved in a liquid which comprises, flowing a carrier gas for displacing the dissolved gas from the liquid over a flowing body of the liquid in a confined cylindrical zone at carrier gs-to-liquid ratios of from 10 to 1 through 1 to 2 and flow rates therefor of up to about 100 cc per minute, continuously lifting films of the liquid into and across the flowing carrier gas to effect displacement of the dissolved gas from the liquid and formation of a mixture of the carrier gas and displaced dissolved gas and flowing said mixed gas through an operating thermal conductivity cell to relate the thermal conductivity of said mixed gas to that of the carrier gas.

3,922,905
DISPOSABLE SAMPLER

Thomas P. Roth, 5025 Hillsboro Road, Apt. 9E, Nashville, Tenn. 32715

Filed May 13, 1974, Ser. No. 469,325
Int. Cl.² G01N *5/04, 15/02*
U.S. Cl. 73—28 **12 Claims**



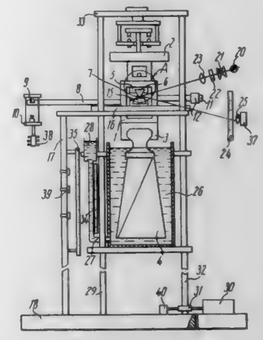
1. A disposable multi-stage sampling device for separating particles from a gaseous medium by jet impaction comprising: a plurality of stages serially connected to define a sealed passage between said stages for the passage of the gaseous medium between stages, each of said stages defining a plurality of jet impaction passages therein through which the gaseous medium passes, each of said stages including a collection member operatively associated with said jet impaction passages of said stage to cause certain size particles in the gaseous medium to be impacted onto said collection member as the gaseous medium passes through said jet impaction passages; and

frangible means operatively connecting said stages together, said frangible means constructed and arranged to be destroyed as an incident to the separation of said stages to prevent reassembly thereof, said frangible means including first locking means and second locking means adapted to engage each other to maintain said stages in a sealed relation with each other, said frangible means further including a frangible member connecting said first locking means to one of said stages so that said frangible member prevents disengagement of said first locking means from said second locking means without fracture of said frangible member to separate said first locking means from said one of said stages.

3,922,906
METHOD OF LOCATING THE CENTER OF GRAVITY ETC.

Nikolai Konstantinovich Snitko, ulitsa Tavricheskaya, 2, kv. 78; Nikolai Ivanovich Ryndin, ulitsa Chaikovskogo, 77, kv. 22; Alexei Alexeevich Yanson, ulitsa Parkhomenko, 37, kv. 80; Inna Ivanovna Vovk, Nevsky prospekt, 114, kv. 31; Samuil Noevich Shvarts, ulitsa Dybenko, 23 korpus 1, kv. 88, and Arseny Mikhailovich Pavlov, ulitsa Plekhanova, 44, kv. 27, all of Leningrad, U.S.S.R.

Continuation of Ser. No. 352,303, April 18, 1973, abandoned. This application Mar. 1, 1974, Ser. No. 447,389
Claims priority, application U.S.S.R., Jan. 26, 1971, 1615561
Int. Cl.² G01M *1/12*
U.S. Cl. 73—65 **5 Claims**



1. A method of calculating the center of gravity of a homogeneous object, based on a known relationship in which the coordinates of the center of gravity in each given plane depends on the weight of said object and on the moment of said weight in said plane, comprising the steps of: balancing said object with respect to two orthogonal horizontal axes; immersing the inseparable measured part of said object into a fluid in order to locate the coordinates of the center of gravity of said part; measuring the buoyant force which appears as a result of said immersion step; and measuring the moment of said buoyant force in two given vertical orthogonal planes, whereby the sourght coordinates of the center of gravity of said part of said object may be calculated.

3,922,907
IN-BORE TURBINE INSPECTION DEVICE

Michael J. Hurwitz, Wilkinsburg, and James W. Wonn, Irwin, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 12, 1974, Ser. No. 478,808
Int. Cl.² G01N *29/04*
U.S. Cl. 73—67.7 **14 Claims**

1. A device for detecting cracks existing within the body of a test member, the member having an axis extending longitudinally therethrough, said device comprising:

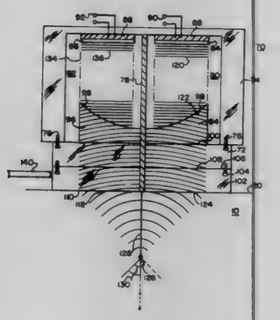
a base member having a casing attached thereon,

a partition dividing said casing into a transmit compartment and a receive compartment,

transducer means for producing high frequency acoustic energy, said transducer means including a transmit element for transmitting high frequency acoustic energy and a receive element for receiving high frequency acoustic energy, said transmit element being disposed within said transmit compartment within said casing, said receive element being disposed within said receive compartment within said casing, and,

focus means for focusing said high frequency acoustic energy produced by said transducer means at a focus within

said test member and in a plane containing said longitudinal axis, said focus means including a transmit lens element and a receive lens element, said transmit lens being mounted on said base member within said transmit compartment opposite said transmit element of said transducer means, said receive lens being mounted on said base member within said receive compartment opposite said receive element of said transducer means,



said transmit compartment and said receive compartment each having a material disposed therein, said material being disposed between said elements of said transducer means and said lens elements of said focus means disposed in said transmit compartment and said receive compartments, said material exhibiting a characteristic such that the speed at which said acoustic energy travels through said material is less than the speed at which said acoustic energy travels through said focus means and said base member

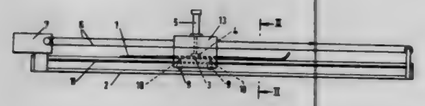
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3,922,908

METHOD AND APPARATUS FOR MEASURING AND RECORDING THE TENSION AND RIGIDITY OF A SKI UNDER STRESS

Finn Stemsrud, As; Reidar Otto Ullevålseter, Oslo, and Oystein Mengkrog, As, all of Norway, assignors to Norges Landbrukshøgskole, As, Norway

Filed Aug. 5, 1974, Ser. No. 494,859
Int. Cl.² G01N *3/20*
U.S. Cl. 73—100 **5 Claims**



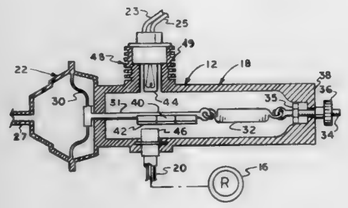
1. A method for determining and recording the tension and rigidity of a ski under stress, comprising applying pressure against a ski at the location where and in the direction that a skier's foot applies pressure to the ski thereby to depress the ski against a rigid base, measuring and recording the pressure exerted by the ski at one point on said base, moving said ski lengthwise of the ski while maintaining on the ski the same said pressure whereby the ski progressively passes and presses against said point, and recording various pressures exerted by said ski against said point as a curve on a graph one of whose coordinates corresponds to the length of the ski and the other of whose coordinates corresponds to pressure.

3,922,909

FUEL ECONOMY MONITORING SYSTEM FOR ENGINES OF VEHICLES

Bruce E. Dixson; John E. Gayton; Dennis J. Lowery, and William F. Burke, all of Grand Junction, Colo., assignors to Dixson, Inc., Grand Junction, Colo.

Filed Aug. 26, 1974, Ser. No. 500,400
Int. Cl.² G01M *15/00*
U.S. Cl. 73—115 **1 Claim**



1. A fuel economy monitoring system for engines, particularly of vehicles, to monitor intake manifold vacuum of a vehicle engine being subjected to speed and load changes to obtain the most economical fuel consumption rate in keeping with the operator or driver's operating objectives, comprising, in respect to a vehicle:

a. housing to contain many of the components and to be secured to the vehicle structure at any location;

b. an enclosed relative pressure or vacuum diaphragm sub-assembly secured to or within the housing having a movement indicator rod projecting into the housing for translating movement therein and having a receiving structure to receive a vacuum hose coming from an intake manifold of an engine;

c. a light filter sub-assembly within the housing secured to the diaphragm movement indicator rod of the diaphragm sub-assembly, for direct movement therewith and having multiple colored filter sections such as green, amber and red respectively, adjacent one another and in line, green indicating higher vacuum and excellent fuel economy, amber indicating lower vacuum and somewhat reasonable fuel economy, and red indicating little or no vacuum and poor fuel economy, and the transitional blended colors indicating the changeovers in status;

d. a light sub-assembly attached to the housing and positioned to shine light through a portion at a time of the light filter sub-assembly;

e. a light pickup sub-assembly to scan the lighted portion of the light filter sub-assembly, attached to the housing, having a fibre optic bundle sub-assembly extending from within and beyond the housing to convey the image of the scanned lighted portion of the light pickup sub-assembly to a remote location, as the extending end of the fibre optic bundle is secured to the vehicle within the peripheral field of vision of the vehicle operator, and

f. a calibration sub-assembly, comprising in turn:

a. an adjustment screw with an anti-rotation member mounted for translation through the end of the housing;

b. an adjustment nut threaded on the adjustment screw externally of the housing to regulate the translation movement of the adjustment screw; and

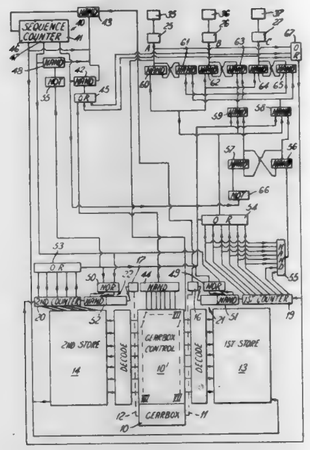
c. a coiled tension spring secured inside the housing between the end of the adjustment screw and the end of the diaphragm movement indicator rod, this calibration sub-assembly being utilized to match both a vehicle's engine general operating characteristics and in addition the driver's personal desires of engine fuel economy versus overall vehicle performance.

3,922,910

MEANS FOR DETERMINING THE RELATIVE SPEEDS OF THE INPUT AND OUTPUT SHAFTS OF A GEARBOX

Harvey Frank Dickinson, Bramhall, England, assignor to Ferranti Limited, Hollinwood, England

Continuation-in-part of Ser. No. 312,730, Dec. 6, 1972, abandoned. This application May 21, 1974, Ser. No. 471,903
Claims priority, application United Kingdom, Dec. 7, 1971, 56661/71
Int. Cl.² G01M *13/02*
U.S. Cl. 73—118 **11 Claims**



1.
Means for determining the relative speeds of the input and output shafts of a gearbox comprising means having a first transducer and a second transducer arranged to produce signals representative of the rotational speeds of both the input shaft and the output shaft of the gearbox, compactor means including a first counter connected to the first transducer and a second counter connected to the second transducer, number generating means for setting magnitudes in the counters, the ratio of the magnitude set in the first counter to the magnitude set in the second counter being representative of the desired gear ratio for the gearbox, the magnitudes stores in the counters then being changed by signals from the transducer means, the arrangement being such that the comparator means provides an output representative of the proportion of any difference between the desired gear ratio and the ratio of the rotational speeds of the input and output shafts of the gearbox in relation to the desired gear ratio.

3,922,911

APPARATUS AND METHOD OF DETERMINING FLOW

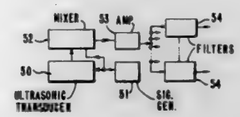
Henry William Groves, London, and John Yarnell, St. Albans, both of England, assignors to Hawker Siddeley Dynamics Limited, England

Filed Nov. 27, 1972, Ser. No. 309,749
Claims priority, application United Kingdom, Dec. 9, 1971, 57168/71; Feb. 10, 1972, 6313/72; Apr. 28, 1972, 19820/72
Int. Cl.² G01F *1/66*
U.S. Cl. 73—194 A **17 Claims**

14. Apparatus for processing measurement signals obtained by the Doppler flow sensing technique, wherein said measurement signals are of different nominal frequencies from which the signals are shifted as a function of the instantaneous velocity of respective fluid particles in the sensed flow, said apparatus comprising:

clocking means for generating a train of pulses defining repetitive sequences of operating cycles of said apparatus;

a multiplexer controlled by said clocking means and arranged to receive a plurality of input signals to which individual members are assigned, each number corresponding to a respective operating cycle defined by said train of pulses, and to provide as a single output signal the



input signal having an assigned number corresponding to the current operative cycle defined by said train of pulses; and

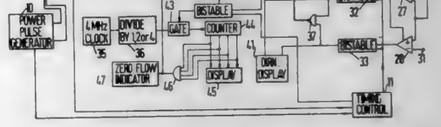
means for applying said measurement signals of different nominal frequency to said multiplexer as said plurality of input signals.

3,922,912

ANEMOMETERS

Leslie John Stanley Bradbury, Farnham, England, and Nicholas Liptay Wagner, Windsor, Canada, assignors to National Research Development Corporation, London, England

Filed Feb. 25, 1974, Ser. No. 445,549
Claims priority, application United Kingdom, Feb. 27, 1973, 9536/73
Int. Cl.² G01F *1/68*
U.S. Cl. 73—204 **15 Claims**



1. Apparatus for measuring the velocity of fluids, including electrical heating means for locally heating a flowing fluid for short intervals in response to current pulses passed through the heating means,

a temperature sensitive element for providing an electrical signal dependent on the temperature of the fluid, the temperature sensitive element being in operation positioned, at least partially, in the path of heated fluid from the heating means,

means for detecting changes in the said electrical signal,

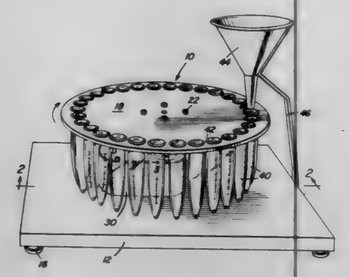
timing means for providing an indication of the duration of the intervals between each current pulse and each consequent change in the said electrical signal, and

an inhibit circuit comprising means for combining, in opposition, signals along two substantially electrically equivalent paths each of which is coupled to receive the said electrical signal, one of the said paths including switch means having continuity means for providing continuity in the said one path and control means for controlling the continuity means to provide continuity when each of the current pulses occurs for an interval which terminates before the heated fluid is expected to reach the temperature sensitive element, the means for combining signals being coupled to pass its output signal to the means for detecting changes.

3,922,913
FLOWMETER

Norman D. Scott, Route 2, Box 409, Daytona Beach, Fla. 32019

Filed Apr. 10, 1974, Ser. No. 459,902
Int. Cl.² G01F 3/24
U.S. Cl. 73—219 6 Claims

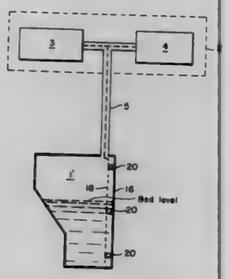


1. A flowmeter for measuring the rate of urine discharge during discrete increments of a urine elimination cycle of approximately 21 seconds by measuring the quantity of urine discharged during each such increment and providing a separate specimen for each such increment for analysis comprising a turntable, means rotatably supporting said turntable for rotation about a vertical axis, means driving said turntable at a predetermined constant slow speed whereby the turntable will turn less than one revolution during a complete cycle of urine elimination, a plurality of receptacles carried by said turntable circumferentially about the center of rotation, and urine guide means disposed above the receptacles for discharging urine into the receptacle, each receptacle having graduations thereon to indicate the quantity of urine discharged therein during the predetermined time increment that it is aligned with the guide means, said means driving the turntable including a motor and reduction gear unit disposed under said turntable and connected to the turntable for rotating the turntable at 2 r.p.m., said turntable including 30 receptacles mounted thereon for alignment with the guide means for a period of one second.

3,922,914
BED LEVEL MONITOR

Walter Fuchs, Pittsburgh, Pa., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Sept. 18, 1974, Ser. No. 507,099
Int. Cl.² G01F 23/28
U.S. Cl. 73—290 R 2 Claims



1. A system for sensing the fluid level of a fluid bed reactor, said reactor including a reactor vessel in which the fluid bed is contained comprising an electrically conducting wall of an irregular shape including at least one substantially straight, vertical side wall, said system comprising:

an elongate electrode which is mounted within said vessel in contact with the fluid therein, and which cooperates with the wall of said vessel to form an electrical transmission line,

means for applying electrical pulses to one end of said electrode so that an applied pulse is reflected at various levels of the fluid within the vessel,

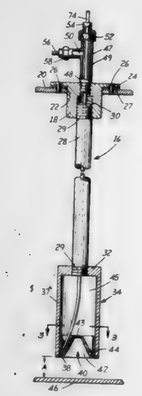
means for measuring the time period between an applied pulse and a reflected pulse,

and means for mounting said electrode in close proximity to the substantially straight side wall of the vessel along the length thereof so as to concentrate the electric field between the electrode and the said side wall, said mounting means including a plurality of non-conduting spacers located along the length of said electrode for spacing said electrode from said side wall of said vessel.

3,922,915
LIQUID LEVEL INDICATOR

Ottie H. Andrews, 3129 Olinda Lane, Anaheim, Calif. 92804

Filed July 29, 1974, Ser. No. 492,439
Int. Cl.² G01F 23/14
U.S. Cl. 73—302 9 Claims



1. An apparatus for indicating an accurate level of liquid disposed within a tank, said tank being of the type for storage of liquid fuel and adapted to be mounted to a motor vehicle, wherein said apparatus comprises:

a bell housing being in operable communicating relationship with the interior of said tank;

a pressure chamber defined by said bell housing;

a pressure-control means positioned adjacent the lower end of said bell housing, whereby air and liquid can pass between said chamber and said tank,

said pressure-control means including:

a first orifice;

a second orifice, said first orifice having a reduced diameter relative to that of said second orifice, and wherein said first orifice is positioned above said second orifice;

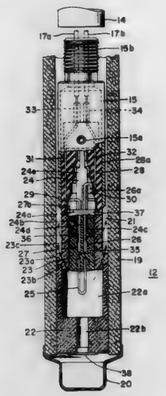
a pressure-gauge means operably interconnected to said pressure chamber, whereby a constant reading of the liquid contents of said tank can be obtained; and

a conduit system disposed between said pressure-gauge means and said pressure chamber, whereby said pressure-gauge means is remotely disposed with respect to said tank.

3,922,916
SAMPLER FOR MOLTEN MATERIALS

Charles J. Wickert, Willow Grove, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed July 15, 1974, Ser. No. 488,367
Int. Cl.² G01N 1/10
U.S. Cl. 73—354 14 Claims

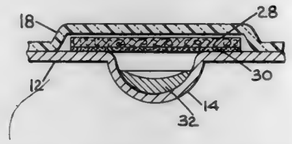


3. A sampler device for molten material said device including a body having wall structure defining a cavity and an entrance thereto for receiving and retaining a sample of molten material, said body supporting one or more sensing means having an electrical output the magnitude of which is a function of a characteristic of the molten material, said body being supported in an end of a tubular member, said body supporting electromechanical connector structure at an end thereof in said tubular member with electrical contacts thereof in electrical connection with said sensing means, the improvement comprising a vent passage between a portion of said body and said tubular member at the end of said body supporting said connector, means providing a passage for the flow of gas from said cavity to said vent passage, and means to seal the connector structure against the ingress of gases vented from said cavity.

3,922,917
DISPOSABLE THERMOMETER

Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Aug. 31, 1973, Ser. No. 393,557
Int. Cl.² G01K 11/20, 11/08
U.S. Cl. 73—356 5 Claims

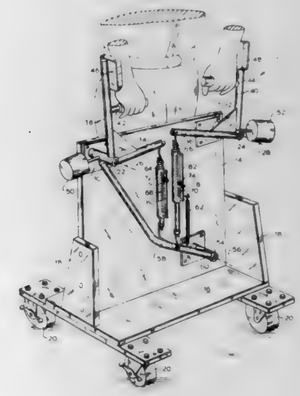


1. A disposable, irreversible, clinical thermometer comprising: a base member provided with at least one cup therein; a temperature sensitive material disposed within said cup, said material being meltable at a predetermined temperature; a covering member overlying said portions of the base member; said cup extending away from said covering member and being so dimensioned that when melted, the surface tension of the material is sufficient to maintain the material within the cup regardless of the orientation of the cup; dye means carried by said covering member and spaced apart from said material, said dye means being soluble in said material when in melted form; at least one of said members being deformable with respect to the other of said members whereby to enable said dye means to come into contact with said material; means to maintain said temperature sensitive material and dye means in spaced apart relationship until said one member is deformed; and, means adapted to indicate if said dye means goes into solution in said material in meltable form.

3,922,918
ORTHOPEDIC MUSCLE TESTING APPARATUS

Edward L. Farrar, Jr., 117 E. Copeland, Orlando, Fla. 32806

Filed Aug. 22, 1974, Ser. No. 499,472
Int. Cl.² G01L 5/02
U.S. Cl. 73—379 12 Claims



1. Muscle testing apparatus comprising:

a frame;

first means for measuring the strength of one muscle, having a first shaft rotatable about a first pivot axis, and first strain measuring means coupled to said shaft;

second means for measuring the strength of another muscle, having a second shaft rotatable about a second pivot axis, and second strain measuring means coupled to said second shaft;

means for operating said first and second means;

a pivotal lever coupled to said frame; and wherein

said first and second strain measuring means are coupled between said lever and said respective first and second shafts.

11. Muscle testing apparatus for simultaneously measuring the strength of different muscles, comprising:

a frame;

a first shaft rotatably pinned to said frame on a first pivot axis substantially normal to said frame;

a second shaft rotatably pinned to said frame on a second pivot axis substantially normal to said frame, said second pivot axis spaced from said first pivot axis;

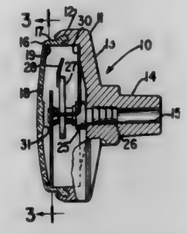
a lever rotatably pinned to said frame on a third pivot axis substantially normal thereto, said third pivot axis spaced from said first and second pivot axes;

first strain measuring means coupled to said first shaft and said lever;

second strain measuring means coupled to said second shaft and lever; and

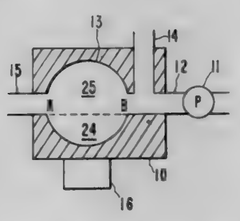
means for simultaneously rotating said first and second shafts in opposite directions to thereby effect a strain measurement on the corresponding one of said frame measuring means.

3,922,919
PRESSURE GAUGE
William Carl Schulze, Hatboro, and Ralph D. Waite, Sellersville, both of Pa., assignors to Ametek, Inc., New York, N.Y.
Continuation of Ser. No. 208,647, Dec. 16, 1971, abandoned.
This application Feb. 14, 1974, Ser. No. 442,469
Int. Cl.² G01L 7/04
U.S. Cl. 73—418 4 Claims



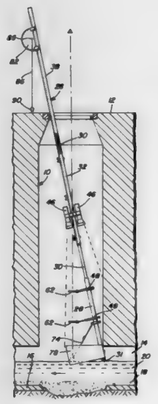
1. A pressure gauge for connection to an aluminum pressure vessel, said gauge including a pressure responsive indicator movement operably arranged therein, said gauge having an aluminum housing comprising a one-piece casing of aluminum having a cylindrical side wall connected at its inner end to a back plate, a tubular projection extending outwardly from the outer face of said back plate and integral therewith, a transparent window having a peripheral side wall and a front viewing face, said window side wall being mounted and held in the outer end of said casing side wall, there being a bore through said back plate and projection to provide a passage from the interior of the casing and window, a socket of a metal, said metal being one which is capable of corrosion when in galvanic association with aluminum, said socket having one end serrated and coated with adhesive and snugly and intimately received and retained within said bore and the other end projecting into the casing and window assembly, said metal being such that a Bourdon tube can be readily soldered thereto, and a Bourdon tube soldered to said socket, whereby the aluminum casing can be connected to an aluminum pressure vessel without corrosion occurring between the tubular projection and pressure vessel, the socket being exposed to the interior of the pressure vessel only through said bore.

3,922,920
FLUID SAMPLING DEVICE
Stephen Chandler, 10571 Magdalena, Los Altos, Calif. 94022
Filed June 11, 1973, Ser. No. 368,830
Int. Cl.² G01N 1/10
U.S. Cl. 73—422 TC 12 Claims



1. A fluid sampling apparatus comprising
a fluid sample holder comprising a body member defining a hollow chamber with inlet conduit means for communicating between said chamber and a fluid source;
an outlet conduit means for said chamber;
each of said inlet and outlet conduit means having the lowest portion thereof in the same horizontal plane when the sampling apparatus is positioned for taking a sample;
said inlet and outlet conduit means defining a fluid metering portion of said chamber below said horizontal plane, said body member providing continuous free air communication between said fluid metering portion, said inlet conduit means and said outlet conduit means whereby fluid passing through said inlet means flows through the fluid metering portion of said chamber to said outlet means, and
a conduit means communicating with said metering portion of said chamber for removing the fluid sample.

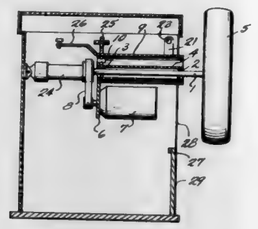
3,922,921
METHOD AND APPARATUS FOR MEASURING SEWER SEDIMENTATION INFILTRATION AND FLOW
Enrique Woo, 216 Vista Bonita, El Paso, Tex. 79912
Filed July 22, 1974, Ser. No. 490,868
Int. Cl.² G01F 23/06
U.S. Cl. 73—432 R 11 Claims



1. An elongated upstanding probe, an elongated tether member having one end portion attached to a lower portion of said probe at a point spaced a distance above the lower terminal end thereof less than the effective length of said tether member, a water buoyant float member anchored to the other end portion of said tether member, and vertically spaced sighting structures supported from said probe and spaced outwardly from one side of said probe, said sighting structures being spaced along a sight path at least generally paralleling said probe and into which said float will be floated when the lower terminal end of said probe is touched against the upper surface of a body of water flowing in a direction outwardly from said one side of said probe.

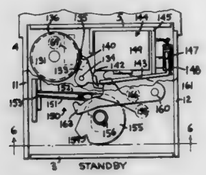
11. The method of determining the cross-sectional area of the fluid flow through a sewer or like line of a known diameter disposed an indeterminate distance below ground level at the lower end of a manhole, said method comprising the steps of lowering an upstanding probe down into said manhole until the lower end of the probe touches the surface of water in the bottom of the manhole and noting the elevation of the probe at the upper end of the manhole, further lowering the probe until the lower end thereof touches the sedimentation in the line and noting the elevation of the probe at the upper end of the manhole, and thereafter lowering the probe until the lower end thereof engages the bottom of the line and noting the elevation of the probe at the upper end of the manhole, and thereafter mathematically computing the effective cross-sectional area of the fluid flow through the line.

3,922,922
DEVICE FOR BALANCING UNBALANCED ROTORS IN WHICH THE ROTOR CAN SWING BETWEEN HORIZONTAL AND VERTICAL POSITIONS
Eickhart Goebel, Pfungstadt, Germany, assignor to Gebr. Hofmann KG, Darmstadt, Germany
Filed Apr. 29, 1974, Ser. No. 465,440
Claims priority, application Germany, Apr. 27, 1973, 2321437
Int. Cl.² G01M 1/22
U.S. Cl. 73—462 15 Claims



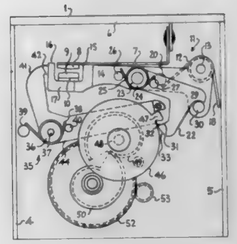
1. In an apparatus for balancing imbalanced rotors, having a rotatable shaft, the unbalance being determined and compensated in two planes, the improvement wherein said shaft is mounted for rotation in an inner housing, an outer housing supporting said inner housing, transducer means disposed between said housings for detecting the vibrations on said rotating shaft, means for swinging said shaft and housings between a horizontal and a vertical position and means mounted on said inner housing for rotating said shaft.

3,922,923
AUTOMATIC CONTROL OPERATING MECHANISM
John L. Harris, Clearwater, Fla., assignor to Deltrol Corporation, Bellwood, Ill.
Division of Ser. No. 321,715, Jan. 8, 1973, Pat. No. 3,833,818, which is a division of Ser. No. 179,422, Sept. 10, 1971, Pat. No. 3,745,273. This application Mar. 18, 1974, Ser. No. 451,896
Int. Cl.² F16H 5/74
U.S. Cl. 74—2 7 Claims



1. In a control mechanism, a control device, cam means arranged to operate said control device, an operator, means for supporting said operator and providing a limited range of movement therefore, said operator being arranged to operate said control device conjointly with the cam means, said cam means having two separate camming portions at different levels for operating the control device, the camming portion at one level being within the range of movement of the operator providing conjoint operation of the control device and the camming portion at the other level being beyond the range of movement of the operator to exclude operation of the control device by the operator.

3,922,924
MANUAL PRESET TIMER
John L. Harris, Clearwater, Fla., assignor to Deltrol Corporation, Bellwood, Ill.
Filed Dec. 19, 1974, Ser. No. 534,222
Int. Cl.² G05G 17/00
U.S. Cl. 74—3.5 10 Claims

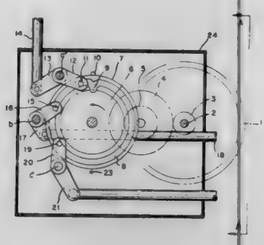


1. In a timing device, controller operating means movable through a predetermined stroke between a timing position and a timed-out position, timing means having a timed-out position and being movable in one direction from its timed-out position to a timing position, said timing means being constructed and arranged to run in the opposite direction back to its timed-out position, means including latch means for holding the operating means in timing position when the latch means is engaged and for returning the operating means to timed-out position when the latch means is disengaged, one way drive means between the timing means and operating means and arranged to move the operating means through a driven stroke from timed-out position to timing position for engagement of the latch means as said timing means is moved in said one direction from its timed-out position, said one way drive means including a pawl bodily carried by one of said two first mentioned means and engaging the other, said pawl and its engaging means being constructed and arranged to provide a component of force holding the pawl in driving position while the operating means is being moved through its driven stroke and to reduce said component of force at the end of said driven stroke so that the pawl is ineffective to hold the operating means in timing position, and means actuated by the timing means on reaching its timed-out position for releasing the latch means.

3,922,925
DEVICES FOR CONTROLLING OPENING AND CLOSING OF PRESSURE DOORS AND PRESSURE DOOR EQUIPMENTS INCORPORATING SAID CONTROL DEVICES
Kiyomi Takei; Katsumi Takahashi, and Kazuo Kanazawa, all of Yokohama, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 21, 1973, Ser. No. 427,049
Int. Cl.² F16H 25/08; E05C 9/12, 9/14
U.S. Cl. 74—53 4 Claims

1. A device for controlling a plurality of operation steps in a predetermined sequential order comprising;
a. a handlewheel,
b. a cam disk operatively coupled to said handlewheel through reduction gear means and provided with a cam surface having one cam follower displacing protion,
c. a plurality of cam followers located around said cam disk and spaced apart from each other by a predetermined distance in such a way that said plurality of cam followers may be displaced sequentially in a predetermined order as said cam disk is rotated by said handlewheel in one direction through a predetermined angle, and
d. lever means operatively coupling each of said plurality of cam followers to an operating rod,

whereby when said plurality of cam followers engage with said cam follower displacing portion of said cam disk as said cam

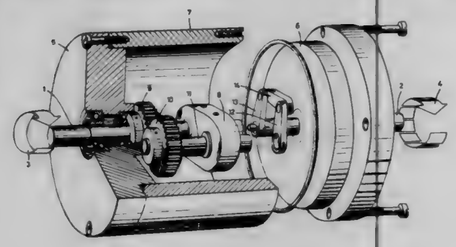


disk rotates in said one direction, said operating rods coupled to said plurality of cam followers may be sequentially displaced in a predetermined direction.

3,922,926
STEPPING DRIVE

Herbert Bernardi, Munich, Germany, assignor to G.A.O. Gesellschaft fur Automation und Organisation m.b.H., Germany

Filed Apr. 12, 1974, Ser. No. 460,452
Claims priority, application Austria, Apr. 13, 1973, 3312/73
Int. Cl.² F16H *21/12*
U.S. Cl. 74—63 **7 Claims**



1. A stepping drive for high step frequencies which, at constant input angular velocity, generates a sinelike response of the output angular velocity, i.e., permits, for example, one or more stops of the output shaft per revolution of the input shaft, characterized in that a crank motion is superimposed on a uniform rotary motion, so that the desired sine-like output angular velocity is obtained.

3,922,927
TENSIONER FOR A BELT TRANSMISSION

Kazuhiro Shiki, and Masaru Hibino, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

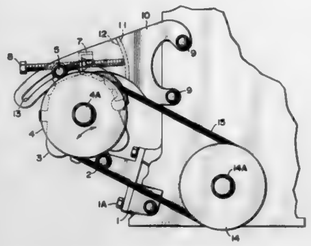
Filed Aug. 16, 1974, Ser. No. 498,096
Claims priority, application Japan, Jan. 17, 1974, 49-8393[U]
Int. Cl.² F16H *7/10*
U.S. Cl. 74—242.13 R **5 Claims**

1. A tensioner for a belt transmission supporting an accessory which is adjunct to the engine of an automobile and equipped with a driven pulley connected via belting to a drive pulley of the engine, at a fulcrum spaced from the rotational center of the driven pulley, in such a manner that the accessory can be swung and shifted in angular position relative to the fulcrum, the tensioner comprising:

a threaded hole part secured to said accessory;

an adjusting bolt in threadable engagement with said hole part and projecting beyond the latter;

a tension-bearing wall adapted to receive the projecting end of said adjusting bolt in contact at substantially right angles thereto so as to bear the tension of the belt transmitted through said adjusting bolt;



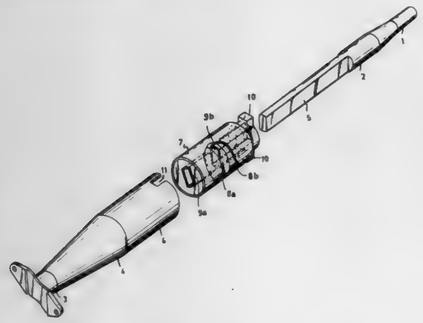
an adjusting plate formed with a slot arcuately shaped relative to said fulcrum for swinging movement of said accessory; and

a bolt extended across the slot for threadable engagement with a threaded hole in said accessory and for fastening said accessory to said adjusting plate.

3,922,928
STEERING COLUMN FOR A MOTORVEHICLE

Wilhelmus Leonardus Maria Kester, Eersel, Netherlands, assignor to Van Doorne's Personenautofabriek Daf B.V., Eindhoven, Netherlands

Filed June 7, 1974, Ser. No. 477,501
Claims priority, application Netherlands, July 12, 1973, 7309715
Int. Cl.² R62D *1/16*
U.S. Cl. 74—492 **3 Claims**



1. A steering column for a motor vehicle, said steering column comprising:

first and second steering shaft portions, said first shaft portion being partially positioned within said second shaft portion; and

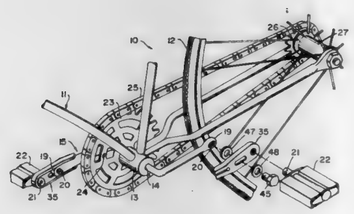
means, positioned between said first and second shaft portions, for transmitting rotation of one of said shaft portions to the other of said shaft portions and for allowing axial movement of one of said shaft portions with respect to the other of said shaft portions, said means comprising: first and second tubular members each fixed to an elastic element fixedly positioned within said second shaft portion, said first and second tubular members being axially positioned one behind the other within said second shaft portion, said first shaft portion extending through said first and second tubular members;

said first and second tubular members each having means on the internal surfaces thereof cooperating with means on the external surface of said first shaft portion for allowing relative axial movement between said first shaft portion and said first and second tubular members and for preventing relative rotation therebetween; and said first and second tubular members being circumferentially positioned such that said means on said internal surfaces therof are circumferentially offset with respect to each other when said first shaft portion is not assembled therein, thereby providing means for exerting torsional pressure on said first shaft portion when said first shaft portion is assembled in said first and second tubular members and for thus retarding axial movement between said first shaft portion and said first and second tubular members.

3,922,929
BICYCLE PEDAL CRANK EXTENDER

John L. Marchello, 57751 Grand River Ave., New Hudson, Mich. 48165

Filed Dec. 12, 1973, Ser. No. 426,685
Int. Cl.² G05G *1/14*
U.S. Cl. 74—562 **5 Claims**



1. An extender for removable attachment to the lower end of and for adjustably extending the length of a conventional bicycle pedal crank having a shaft portion terminating in an end portion having an opening for receiving and mounting a conventional bicycle pedal mounting stud, comprising:

an elongated, stamped metal channel formed to include a base and integral legs and having an upper end and a lower end, said upper end receiving the crank shaft, and the channel being of a size to receive said crank shaft portion and end portion, with the portions of the legs at the extender upper end converging toward each other and being spaced apart a sufficient distance to resiliently frictionally grip the shaft portion between them, and said base being longitudinally slit at its upper end in the region where the legs converge and grip the shaft to permit resilient movement of the converging leg portions for receiving and gripping the shaft;

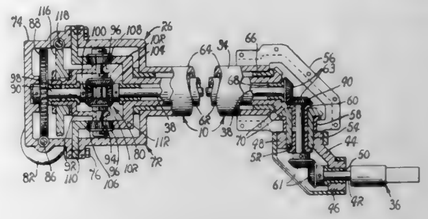
a longitudinally elongated slot formed in said base for overlapping the crank end portion opening, and for receiving a bolt engaged with said end portion opening for thereby fastening the crank to the extender, wherein the extender may be adjusted lengthwise of the crank within the limits of the length of said slot;

and a threaded socket rigidly connected to the lower end of the extender for receiving and securing said pedal mounting stud for thereby mounting a bicycle pedal upon the extender rather than upon the crank directly, said socket having a thickness several times greater than the thickness of the stamped metal channel base.

3,922,930
REMOTELY OPERABLE ARTICULATED MANIPULATOR

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Ray E. Marlow, Wellsboro, Pa.

Filed Dec. 23, 1974, Ser. No. 535,410
Int. Cl.² F16H *37/06, 35/00;* B25J *3/00*
U.S. Cl. 74—665 B **8 Claims**



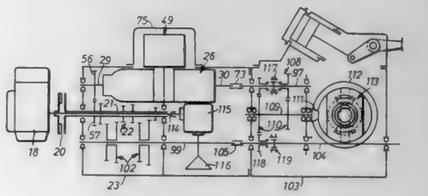
1. In a remotely operable, articulated manipulator including a plurality of serially connected drive shafts and a grasping device mounted at the distal end of the ultimate drive shaft of said plurality, the improvement comprising:

drive means for selectively imparting to said grasping device angular displacement about a pair of normally related axes, one of which comprises a projection of the longitudinal axis of said ultimate drive shaft.

3,922,931
SPEED CHANGE DEVICE FOR TRACTOR TRANSMISSIONS

Masahide Osujyo, Sakai; Naoya Tuda, Fujiidera, and Yoshimi Ota, Sakai, all of Japan, assignors to Kubota Tekko Kabushiki Kaisha, Japan

Filed Jan. 4, 1974, Ser. No. 430,717
Int. Cl.² F16H *3/02, 47/04, 37/00, 37/06*
U.S. Cl. 74—745 **11 Claims**



1. A transmission comprising the three systems of an input system including a main input shaft operable to transmit power when a clutch is engaged and provided with a plurality of gears; a driving speed change system comprising a hydraulic pump and a hydraulic motor hydraulically connected to the hydraulic pump, the hydraulic pump including a pump gear meshing with one of the gears of the input system; and a power takeoff speed change system including a power takeoff speed change shaft having a suitable number of gears meshable with the gears of the input system; the driving speed change systme and the power takeoff speed change system being supported in parallel to each other in the input system interposed therebetween, characterized by a hydraulic transmission unit comprising a capacity-variable hydraulic pump unit including a pump shaft and a hydraulic motor unit of constant capacity including a motor shaft, the pump shaft being fixedly provided with a pump gear meshing with the gear of the input system, the pump shaft and the motor shaft being coaxially aligned with each other, a center section being provided between and held by the units in a readily detachable manner and incorporating a charge pump mounted on the pump shaft, the pump unit, charge pump and motor unit being arranged in series, the

hydraulic transmission unit serving as the driving speed change system and being housed in a transmission case and thereby supported removably, the transmission further being characterized by a valve unit removably mounted on the center section of the hydraulic transmission unit.

3,922,932

CRENELLATION DRUM; AND EPICYCLIC TRANSMISSION INCORPORATING THE SAME

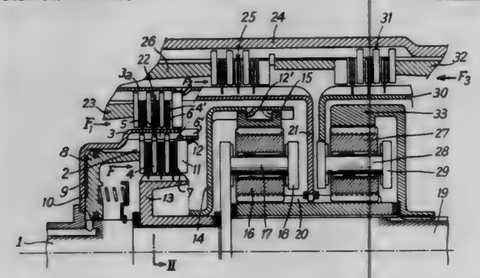
Jean Maurice, St-Germain-la-Granche, and Andre Mouttet, Boulogne, both of France, assignors to Regie Nationale des Usines Renault, St-German-la-Granche and Automobiles Peugeot, Boulogne, both of, France

Filed Nov. 21, 1973, Ser. No. 417,902

Claims priority, application France, Nov. 24, 1972, 72.41917

Int. Cl.² F16H *1/32, 55/12, 57/08*

U.S. Cl. 74—763 **4 Claims**



1. An epicyclic transmission including a ring gear having a toothed inner face and a splined outer face, a sun gear coaxially within said ring gear; a plurality of planet gears in nesting contact with and between said sun gear and said ring gear; a crenellated drum whose crenellations define grooves to receive the splined outer face of said ring gear; two sets of abutment members formed on said crenellated drum, each set of abutment members being arranged on a respective plane transverse to the drum axis and the abutment member of the sets being oppositely disposed, abutment faces of said ring gear arranged in respective abutment planes transverse to the axis of said ring gear for abutment with the abutment faces of said abutment members; and apertures in said grooves of the crenellated drum adjacent said abutment members, said abutment members each comprising an upset portion of a groove of said crenellated drum, said upset portion having a profile when viewed as a cross-section on an axial plane of the drum which extends continuously from said aperture through a first zone of a given curvature and then a second zone of a reversely directed curvature to merge with the groove of the crenellated drum, said aperture having a smaller extent than the upset portion when viewed as a development of the drum, and the abutment edge being at the edge of said abutment member closest to said aperture and shaped to lie in the respective abutment plane.

3,922,933

CONTROLS FOR AUTOMATIC TRANSMISSIONS

Toshimitsu Sakai, and Mitsuo Kawai, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Feb. 25, 1974, Ser. No. 445,248

Claims priority, application Japan, Apr. 14, 1973, 48-41832

Int. Cl.² B60K *41/18, 20/00*; F16H *5/60*

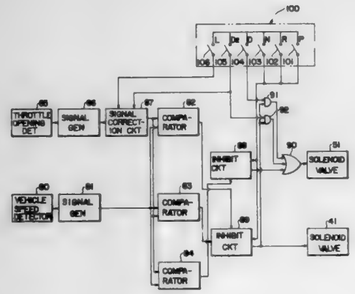
U.S. Cl. 74—866 **3 Claims**

1. A control system for an automotive vehicle with an automatic transmission having shiftable gear means for effecting a plurality of transmission gear ratios including a forward drive range consisting of a plurality of different forward drive gear ratios, and a hydraulic control circuit including a plurality of hydraulic servo mechanisms for shifting said gear means, said control system comprising:

a manually operable valve for controlling the flow of hydraulic fluid within said hydraulic circuit, said manually operable valve being structured to effect a position for each of said transmission gear ratios other than said forward drive range gear ratios, and one position only for all of said forward drive gear ratios;

manual shift lever means movable to a plurality of shift range control positions including at least one position for each of said plurality of transmission gear ratios to be effected by said transmission including each of said forward drive range gear ratios;

means interconnecting said manual shift lever means with said manually operable valve to effect actuation of said valve by said shift lever means only in said one forward drive range position and in all positions other than forward drive range positions, said interconnecting means being structured to permit movement of said shift lever means to all of said forward drive range positions without displacing said manually operable valve from said one forward drive range position;



shift valves for supplying fluid pressure to and exhausting fluid pressure from said hydraulic servo mechanisms to control said transmission gear ratios;

an electric control circuit including signal generating means responsive to the operating conditions of said vehicle for generating electrical signals representative of said operating conditions;

logic circuit means responsive to said signal generating means for emitting electrical signals corresponding to the shift ranges of said transmission upon receipt of signals from said signal generating means; and

drive means operative in response to receipt of signals from said logic circuit means to control operation of said shift valves;

said electrical circuit operating to effect shifting of said transmission gear ratios in accordance with the operating conditions of said vehicle for all of said gear ratios of said forward drive range in accordance with the position of said manual shift lever means when said shift lever means is in any of said forward drive range positions.

3,922,934

MACHINE FOR PREPARING CABLE

Robert Cooper Hiatt, Hillsboro, Oreg., assignor to Tektronix Inc., Beaverton, Oreg.

Filed Apr. 15, 1974, Ser. No. 461,043

Int. Cl.² H02G *1/12*

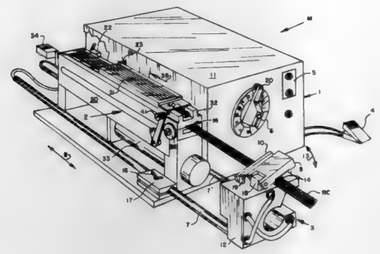
U.S. Cl. 81—9.51 **11 Claims**

1. A machine for preparing cable, comprising:

cable receiving means for receiving a length of cable to be prepared;

control means to control the amount of cable received by said receiving means;

movable cable length determining means carried by said cable receiving means; and



operating means connected to said control means for operating same.

3,922,935

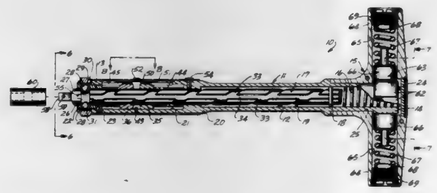
AUTOMATIC TORQUING TOOL

Walter E. Dahlem, 700 Ocean, Seal Beach, Calif. 90740

Filed Jan. 30, 1975, Ser. No. 545,491

Int. Cl.² B25B *17/00*

U.S. Cl. 81—52.4 R **10 Claims**



1. A thrust-type torque wrench comprising an axially hollow body, a shaft disposed in the body for rotation therein about an axis of the shaft and for axial movement relatively into and out of one end of the body, one end of the shaft extending from the one end of the body and defining means adapting the shaft for torque transmitting engagement with the head of a threaded fastener and the like, means cooperating between the body and the shaft for converting axial motion of the body along the shaft toward the one end of the shaft into angular motion of the shaft in one direction about its axis and for preventing angular motion of the body relative to the shaft in the same direction essentially irrespective of the axial position of the shaft in the body, and means associated with the body operable essentially irrespective of the axial position of the shaft in the body for preventing effective application to the shaft of torque in excess of a selected torque value.

3,922,936

DRIVING A SINGLE SPINDLE LATHE

Helmut Link, Schanbach, Germany, assignor to Index-Werke KG Kahn & Tessky, Esslingen, Germany

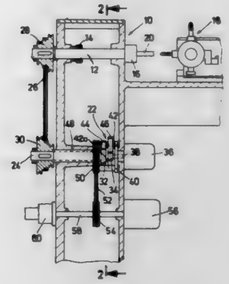
Filed Apr. 8, 1974, Ser. No. 458,587

Claims priority, application Germany, Apr. 27, 1973, 2321542

Int. Cl.² B23B *19/02*

U.S. Cl. 82—28 **9 Claims**

1. Apparatus for driving the spindle of a single-spindle lathe, comprising a drive shaft, means connecting said drive shaft to said spindle, a pair of drive motors for driving said drive shaft at selected rotational speeds, a planetary gear system operatively connecting said motors to said drive shaft and including said drive shaft as the output shaft thereof, the motor shaft of a first of said motors as the input shaft thereof, said output and input shafts being coaxially arranged, a first sun gear carried fixedly by said output shaft and a second sun gear carried fixedly by said input shaft, a bridge means rotatable about said input shaft having axle means associated therewith, said axle means mounting first and second planet gears engageable



respectively with said first and second sun gears, and a second of said motors being operatively connected to said bridge means to rotate same, at least one of said motors having a variable speed, at least one of said motors being reversible.

3,922,937

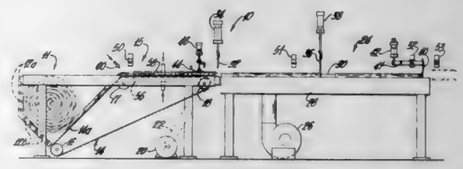
MACHINE FOR UNROLLING CHOPPING, AND FEEDING MATTED MATERIAL

Robert L. Maddox, Nashport, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 11, 1974, Ser. No. 522,406

Int. Cl.² B26D *7/18, 7/06, 5/20*

U.S. Cl. 83—99 **28 Claims**

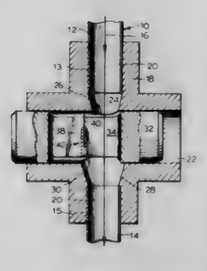


1. A machine for unrolling a roll of matted fibrous material, chopping the material successively into mats of predetermined length, and feeding the chopped-off mats out in a controlled manner, the maching comprising a receptacle for loosely receiving a roll of matted fibrous material in a position for the feeding of the material from the bottom of the roll as the roll is rotated, an endless belt conveyor system including an endless movable belt, an upper portion of the belt defining an upwardly and forwardly inclined movable front portion of the receptacle, whereby movement of the belt rotates the roll and unwinds and feeds the matted fibrous material upwardly and forwardly from the bottom of the roll, a reciprocable chopping blade disposed forwardly of the endless belt and operable to chop the matted fibrous material successively into mats of predetermined length, an air conveyor system disposed forwardly of the chopping blade and including a plate for receiving the matted fibrous material after it passes the chopping blade and before it is chopped thereby, the air conveyor system being operable for feeding the chopped-off mats forwardly off the plate, and a movable gate associated with the plate for controlling the flow of the chopped-off mats.

3,922,938
APPARATUS FOR THE CUTTING OF A YARN TRAVELLING IN A TUBE BY MEANS OF A FLUID

Jean-Claude Hautemont, Gif-sur-Yvette, and Rolland Sartopi, Roanne, both of France, assignors to Rhone-Poulenc-Textile, Paris, France

Division of Ser. No. 476,276, June 4, 1974, Pat. No. 3,864,998, which is a division of Ser. No. 375,068, June 29, 1973, abandoned. This application Dec. 13, 1974, Ser. No. 532,615
Int. Cl.² B26D *5/04, 7/06*
U.S. Cl. 83—100 **8 Claims**



1. Apparatus for cutting yarn transported continuously at high speeds by fluid under pressure through a conduit, the axis of which coincides with the normal path of travel of said yarn, comprising

a yarn delivery tube and a yarn exit tube;

a sleeve having a central opening extending therethrough and a transverse opening perpendicular to said central opening, the end portions of said yarn delivery tube and said yarn exit tube coaxially aligned and carried in the upper and lower portions of said central opening, respectively;

cutting means carried within said transverse opening of said sleeve and adapted for transverse movement with respect to said normal path of said yarn, said cutting means including a cutting blade located in a plane parallel to said normal path of yarn; and

means to move said cutting means transversely between two positions located on either side of said normal path of said yarn whereby said cutting blade will be forced against and cut said yarn each time it crosses the path of said yarn.

3,922,939
FLYING SHEARS OR STAMP FOR TRAVELING MATERIAL

Walter Schlueter, Geesthacht, and Harald Dechow, Schwarzenbek, both of Germany, assignors to Hinrichs Gesellschaft m.b.H., Geesthacht, Germany

Filed Mar. 13, 1974, Ser. No. 450,786
Claims priority, application Germany, Apr. 14, 1973, 2318970
Int. Cl.² B26D *1/56*
U.S. Cl. 83—299 **7 Claims**

1. An apparatus for processing a continuously traveling web comprising, in combination,

a drive means to continuously feed said web, and

a means positioned downstream of said drive means for receiving said web from said drive means and processing said web into a plurality of pieces, said means comprising, an upper tool carrier,

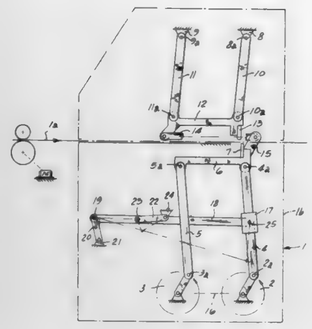
a lower tool carrier,

said tool carriers having tools held in parallel and acting in concert to operate on incident material,

rocker arms hingedly connected to said tool carrier,

adjustable means motively connected to a rocker arm for matching the horizontal velocity of the tools with the velocity of the material to be processed,

two crank gears of similar eccentricity arranged in parallel, acting in concert, rotatably connected to a pair of lower rocker arms communicating with the lower tool carrier, and

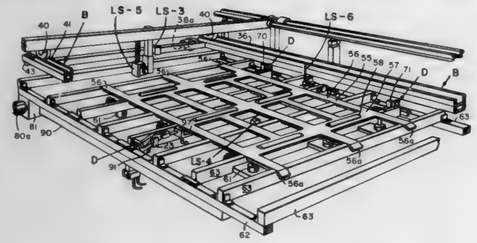


a connecting rod, tensionally and hingedly connecting and synchronizing the horizontal velocities of said tool carriers.

3,922,940
MACHINE FOR TRIMMING THE EDGES OF PANELS

Donald B. Morse, and Bernard A. Pribish, both of Joliet, Ill., assignors to Kemlite Corporation, Joliet, Ill.

Filed Oct. 5, 1973, Ser. No. 404,105
Int. Cl.² B27B *5/04*
U.S. Cl. 83—364 **9 Claims**



1. A machine for trimming the edges of panels comprising a pair of spaced saws, means for passing a panel past said saws to trim the side edges thereof, a second pair of spaced saws, a carriage having a bed thereon, clamping means for holding a panel which has been trimmed at its side edges on said carriage, said means including a pair of stop members mounted on said carriage in longitudinally spaced relation adjacent to one side edge of a panel disposed on said carriage, a clamping device mounted on said carriage adjacent the other side edge of said panel and longitudinally between said stop members, means for activating said device to clamp said panel against said stop members, and means for moving said carriage to pass the panel while clamped thereon past said second pair of saws to trim the end edges of said panel.

3,922,941
CAB STACKER AND MOBILE WORK STATION

Victor E. Carew, 610 W. Taylor Run Parkway, Alexandria, Va. 22314

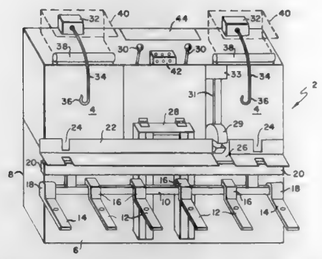
Continuation-in-part of Ser. No. 364,388, May 29, 1973, abandoned. This application Aug. 13, 1974, Ser. No. 497,012
Int. Cl.² B23Q *7/04;* **B26D** *7/06;* **B23D** *47/04*
U.S. Cl. 83—417 **36 Claims**

1. A twin cab comprising:

a housing structure;

at least two compartments within the housing structure;

a fork carriage mounted on the housing;



a cutting support mounted on the housing; and

cutting means mounted on said housing cooperating with said cutting support for cutting material placed on said support.

3,922,942
APPARATUS FOR CUTTING UP TIRE CASINGS

William E. Fawcett, Latrobe, and Alan L. Echtenkamp, Greensburg, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Sept. 6, 1974, Ser. No. 503,644
Int. Cl.² B26D *15/02*
U.S. Cl. 83—620 **8 Claims**

1. In a machine for cutting tire casings into circumferential segments; a pair of spaced support plates adapted for receiving a tire casing to be cut therebetween, knife members upstanding from the sides of the plates which face each other disposed in circumferentially spaced relation about a tire casing between the plates and substantially radial to the tire casing, each knife member on one plate adapted for cooperation with a knife member on the other plate to make a substantially radial cut through a tire casing placed between said plates when the plates are moved toward each other.

3,922,943
ELECTRONIC MUSICAL INSTRUMENT PROVIDED WITH A VOLTAGE-CONTROLLED MONOPHONIC PLAYING SECTION OPERATED BY A MANUAL OR PEDAL TONE-PLAYING SECTION

Naoyuki Niinomi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 1, 1974, Ser. No. 520,129
Claims priority, application Japan, Nov. 5, 1973, 48-127143[U]
Int. Cl.² G10H *1/00, 5/02*
U.S. Cl. 84—1.17 **6 Claims**

1. An electronic musical instrument comprising:

a manual keyboard having a plurality of keys;

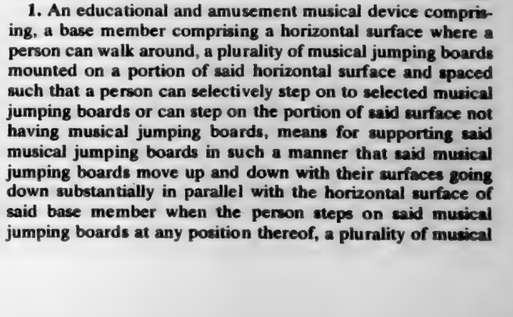
a pedal keyboard having a plurality of keys;

a manual tone playing section including tone generators, first keyer means coupled to said tone generators and operatively coupled with said manual keyboard, and first tone coloring filter means coupled to said first keyer means;

a pedal tone playing section including tone generators, second keyer means coupled to said tone generators and operatively coupled with said pedal keyboard, and second tone coloring filter means coupled to said second keyer means;

first key controlled variable voltage source means operatively coupled with said manual keyboard for developing at a single output terminal thereof a first pitch determining voltage signal the amplitude of which is a function of the note of an operated key on said manual keyboard;

second key controlled variable voltage source means operatively coupled with said pedal keyboard for developing at a single output terminal thereof a second pitch determining voltage signal the amplitude of which is a function of the note of an operated key on said pedal keyboard;



a voltage controlled playing section including a voltage controlled oscillating means responsive to a pitch determining voltage signal for generating a tone signal the pitch of which is a function of the amplitude of the pitch determining voltage signal;

switch means coupled between said first and second key controlled voltage source means and said voltage controlled playing section and including a first switch for selectively coupling outputs of said first and second key controlled voltage source means to said voltage controlled oscillating means; and

sound reproducing means coupled to the outputs of said tone coloring filter means of said manual and pedal playing sections and to a tone signal output of said voltage controlled playing section.

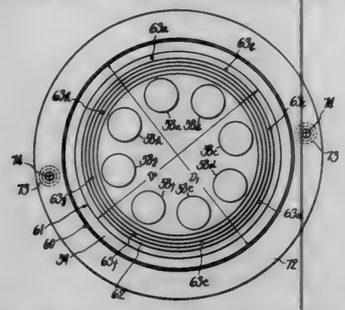
3,922,944
STEPPING MUSICAL MACHINE

Minoru Kurosaki; Tsutomu Nakamura; Akira Matuki; Okikazu Mogami; Yoshitomo Tsugu, and Masatoshi Morikawa, all of Kawasaki, Japan, assignors to Nippon Columbia Kabushiki Kaisha, Japan

Continuation of Ser. No. 275,694, July 27, 1972, abandoned. This application Aug. 12, 1974, Ser. No. 496,557
Claims priority, application Japan, Feb. 12, 1972, 47-17539[U]; Feb. 18, 1972, 47-20245[U]; Apr. 4, 1972, 47-39726[U]
Int. Cl.² A63J *17/00;* **G09B** *15/04;* **G10C** *3/14;* **G10H** *5/00*
U.S. Cl. 84—1.01 **1 Claim**

1. An educational and amusement musical device comprising, a base member comprising a horizontal surface where a person can walk around, a plurality of musical jumping boards mounted on a portion of said horizontal surface and spaced such that a person can selectively step on to selected musical jumping boards or can step on the portion of said surface not having musical jumping boards, means for supporting said musical jumping boards in such a manner that said musical jumping boards move up and down with their surfaces going down substantially in parallel with the horizontal surface of said base member when the person steps on said musical jumping boards at any position thereof, a plurality of musical

tone producing means individually connected to individual jumping boards and respectively mounted in proximity to its respective jumping boards and the spatial arrangement of said plurality of jumping boards being spaced such that a person can selectively step on said horizontal surface during the selection of the next desired musical note, further including light means connected to and energized by said jumping boards as they are stepped upon, and wherein said light means



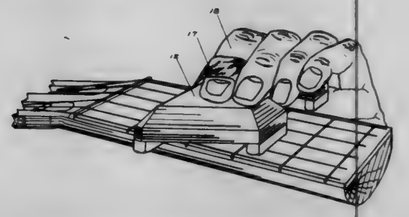
comprises a plurality of light bulbs corresponding to the number of jumping boards which are respectively illuminated as a particular jumping board is stepped upon, a musical score formed on the upper surface of said base member and said plurality of light bulbs mounted on said musical score with each light bulb adjacent a respective jump board such that when it is illuminated it indicates on the musical score the note corresponding to its particular jumping board.

3,922,945

HAND HELD CHORD FINGERING DEVICE FOR GUITAR

Robert Pettijohn, Sierra Vista, Ariz., assignor to Robert Pettijohn, Sierra Vista, Ariz.

Filed Sept. 6, 1974, Ser. No. 503,756
Int. Cl. G10d *3/00*
U.S. Cl. 84—319 **6 Claims**



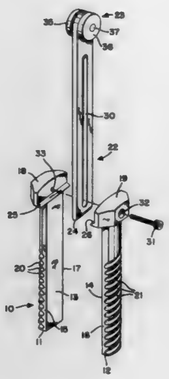
1. A completely unattached and hand held chord fingering device for the conventionally tuned six and twelve string six course guitars, comprising a rigid and generally palm sized body, hereinafter called a bracket, having incorporated therewith in fixed relationship to one another on its operative side multiple oblong string bearing surfaces, hereinafter collectively called fingering pads and individually referred to as first pad, second pad third pad, and remaining operative pad, wherein said fingering pads are of such peculiar dimensions and fixedly incorporated with said bracket in such unique placement and arrangement with respect to one another on said operative side of said bracket that, when said fingering pads as supported by said bracket are appropriately applied to the strings of said six course guitar at some given fret position below the twelfth fret, said fingering pads will stop said strings of said guitar at the individual string lengths required for the evocation of any one of four possible common musical chords, unaided by conjunctional manual fingering, at said fret position, whereas the remaining three said unaided chords can be formed by appropriately manipulating said device to appropriate locations at said fret position and reapplying.

3,922,946

SPLIT BOLT

Boyd H. Grayson, Miamisburg, Ohio, assignor to The Dayton Sure-Grip & Shore Co., Miamisburg, Ohio

Filed Dec. 26, 1973, Ser. No. 427,781
Int. Cl.² F16B *13/10, 35/02*
U.S. Cl. 85—1 S **5 Claims**



1. A bolt of the character described, comprising bolt segments which when brought together render said bolt readily insertable into a complementary threaded recess, which have outer surfaces threadably engageable with such recess when said segments are spaced apart and which have head portions, and an elongated wedge member insertable between said segments to space said segments into such threadable relation, said wedge member having a generally elongated rectangular shape and substantially flat major faces and having a head end, means limiting insertion of said wedge member between said segments to a position wherein said wedge head end extends a predetermined longitudinal distance from the outer ends of said bolt segments and said bolt head portions, and boss means on said head end of said wedge member and located on said flat major faces a predetermined longitudinal distance from said bolt head portions for grasping and removing said wedge member from between said segments, said boss means and said head portions of said bolt segments being arranged so that a lever means can be used to apply a force between said boss means and said head portions to remove said wedge member.

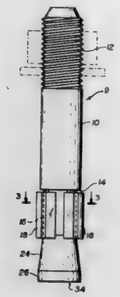
3,922,947

DROP IN ANCHOR STUD

Ignazio Leonardo, Mountainside, and Eugene Coll, Cranford, both of N.J., assignors to General Cable Corporation, Greenwich, Conn.

Continuation-in-part of Ser. No. 338,622, March 6, 1973, abandoned. This application Mar. 12, 1974, Ser. No. 450,392
Int. Cl.² F16B *13/06*
U.S. Cl. 85—77 **6 Claims**

1. An anchor stud assembly including in combination a stud comprising a mid-portion, a threaded upper end above the mid-portion, a lower portion that has a maximum diameter substantially equal to the diameter of the mid-portion and that has a frusto conical surface that tapers to a smaller diameter towards said mid-portion, a reduced diameter portion between the mid-portion and said frusto conical surface, a unitary collar of malleable metal extrudant extending circumferentially around the reduced diameter portion, a shoulder at the juncture of the mid-portion and the reduced diameter portion for holding the collar on the stud and for transmitting force to the collar when the stud is being tapped into a hole, the collar having a length as great as most of the length of the reduced diameter portion, and the collar having its outside surface formed with a plurality of longitudinally-extending ridges and grooves, all of which extend for the full length of the collar and each of which is of uniform cross-section for its full length, the portions of the collar at the bottoms of the grooves being thinner, in a radial direction, than the portions of the collar adjacent to the sides of the grooves and the grooves including one groove where the collar is thinner than



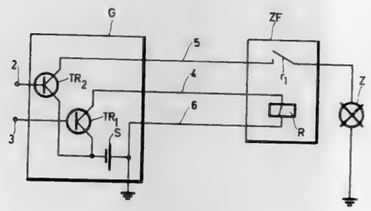
at the other grooves and along which the collar breaks into two generally semi circular pieces as the collar is expanded by upward movement of the frusto conical portion with respect to the collar, and the thin portions at the bottoms of the other grooves providing areas of circumferential extent at which the malleable metal of the collar stretches as the collar is expanded by the frusto conical surface to increase the pressure of the collar against the side of a hole into which the stud is inserted.

3,922,948

DETONATING SYSTEM

Friedrich Wilhelm Krehan, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm G.m.b.H., Munich, Germany

Filed Mar. 25, 1974, Ser. No. 454,548
Claims priority, application Germany, Mar. 29, 1973, 2315704
Int. Cl.² F42C *15/12*
U.S. Cl. 89—1.5 F **6 Claims**



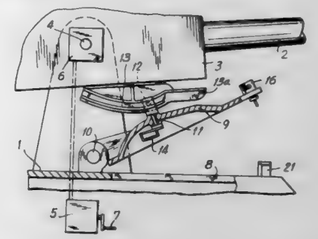
1. A circuit arrangement for releasing a bomb lock of an aircraft, comprising an electrically ignitable primer cartridge for opening the bomb lock, said cartridge having a housing grounded to the aircraft structure, an ignition line connected to the cartridge, a pair of floating leads, a command switch for generating a detonating pulse and a relay switching pulse, a relay having a winding and a contact said contact being connected to the ignition line, said winding being connected via the floating leads with the command switch, said command switch actuating said winding through said floating leads and passing an ignition current through said ignition line.

3,922,949

GUN TURRET WITH AN OBSERVATION OPENING CLOSABLE BY A HATCH COVER

André Mechulam, Tarbes; Bruno M. Saintours-Payerne, St. Etienne; Guillaume A. Gay-Chatain, St. Etienne, and Paul R. Montjallard, St. Etienne, all of France, assignors to Etat Francais, Paris, France

Filed Mar. 5, 1974, Ser. No. 448,419
Claims priority, application France, Mar. 8, 1973, 73.08235
Int. Cl.² F41H *5/22*
U.S. Cl. 89—36 L **10 Claims**



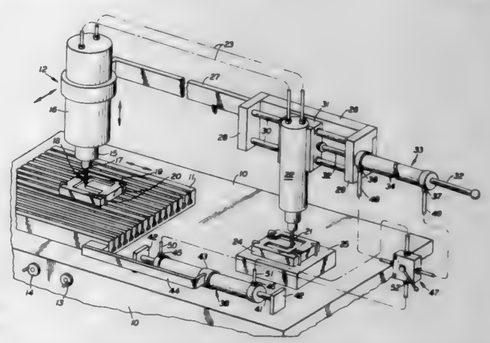
1. Military equipment comprising a turret, at least one gun mounted for pivotal movement in elevation, means controlled from within the turret to adjust the angle of elevation of said gun, said turret including an upper wall with an observation opening therein, a hatch cover pivotably mounted on said upper wall adjacent said observation opening to controllably open and close the same, the hatch cover being so pivotably mounted on said upper wall to provide a field of view through the observation opening corresponding to the direction of aim of the gun, and means outside said turret for coupling said cover and gun to cause the cover to follow the pivotal movement of the gun, said coupling means comprising means for providing a coupling connection between said cover and gun only for angles of elevation of the gun greater than a threshold level.

3,922,950

REVERSIBLE PATTERN-TRACING CONTROL FOR A DUPLICATING MILLING MACHINE

James E. Walter, c/o Columbus Impression Die Co., Inc., 6211 Shamrock Lane, Amlin, Ohio 43002

Filed Mar. 1, 1974, Ser. No. 447,147
Int. Cl.² B23C *1/16*
U.S. Cl. 90—13.2 **1 Claim**



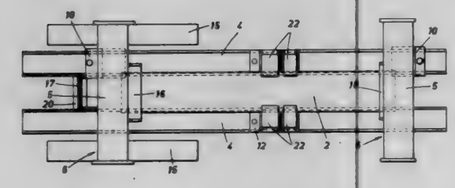
1. In combination with a duplicating milling machine which includes a work-supporting table arranged for transverse movement beneath a longitudinally and vertically movable, rotary cutting tool and a pattern-tracing unit disposed in laterally spaced relation to said cutting tool but coupled for vertical and longitudinal movement with said cutting tool; that improvement which comprises: means for stationarily supporting a three dimensional pattern beneath the pattern-trac-

ing unit of said machine; a reciprocative hydraulic motor connected with the pattern-tracing unit of said machine and operable to reciprocate said unit in a direction transverse to the longitudinal direction of movement of said cutting tool; pump means connected with the work-supporting table of said machine and hydraulically connected to transfer fluid under pressure to and from said motor in response to movement of said work-supporting table, said motor and pump means comprising cylinder-piston units of equal volumetric displacement connected in a closed hydraulic circuit; and a selector valve connected in the hydraulic circuit between said motor and pump means and operable selectively to reverse the direction of flow of fluid to and from said motor and pump means, and thereby to cause said milling machine to produce either a direct image or a mirror image of a pattern stationarily supported beneath the tracing unit of said machine.

3,922,951
APPARATUS FOR TRIMMING AND EDGE-CUTTING A PLATE-LIKE METALLIC WORKPIECE

Ernst Linsinger, Steyrermuhl, Austria

Filed Sept. 24, 1973, Ser. No. 400,266
Int. Cl.² B23C *1/08*
U.S. Cl. 90—15 R 6 Claims



1. Apparatus for trimming and edge-cutting a plate-like metallic workpiece having a major face and a plurality of edges narrower than said major face and bounding the same, comprising:

a. a base having two parallel length sides and two parallel width sides perpendicular to said length sides;

b. supporting means on said base for supporting said workpiece in a position in which said face extends in a predetermined plane;

c. at least one milling cutter unit;

d. guide means for guiding said at least one unit laterally of and parallel to said edges,

1. said guide means including first, second, third, and fourth straight guide tracks parallel to said plane,

2. said guide tracks jointly surrounding said workpiece in said position of said workpiece,

3. said first and second guide tracks extending in a first plane parallel to said predetermined plane along said length sides;

e. two portals spanning the width of said base between said length sides and supporting said third and fourth guide tracks respectively in a second plane,

1. said third and fourth guide tracks being elongated at right angles to said first and second guide tracks,

2. said second plane extending above said first plane and said predetermined plane when said predetermined plane is horizontal;

f. engagement means on said at least one unit engageable with at least one of said tracks for longitudinal guiding movement of said at least one unit on the engaged track,

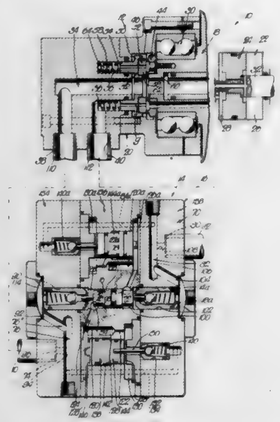
1. said at least one unit including a milling cutter rotatable about an axis perpendicular to said planes in cutting engagement with one of said edges when said at least one unit moves on said tracks,

2. said milling cutter projecting downwardly from said second plane when said at least one unit is guided by said third and fourth tracks.

3,922,952
HYDRAULIC OPERATING MECHANISM FOR A ROTARY CHUCK

John J. Roddy, Meriden, and Alfred G. Higley, Enfield, both of Conn., assignors to Cushman Industries, Incorporated, Hartford, Conn.

Filed Apr. 4, 1973, Ser. No. 347,922
Int. Cl.² F15B *11/08*, *13/042*; B23B *31/30*
U.S. Cl. 91—29 5 Claims



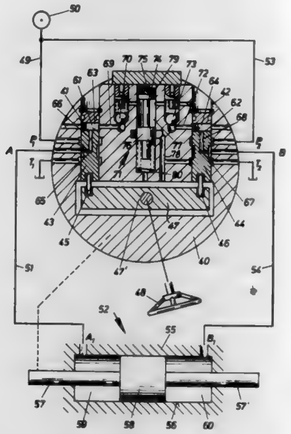
1. In hydraulic chuck operating mechanism, the combination of a swivel coupling with stationary and operationally turning companion parts, of which the turning part provides a cylinder with a piston defining therein a chuck-closing cylinder side; a conduit, including a port in said coupling leading to said cylinder side, for passing hydraulic fluid under pressure to said cylinder side, with said port crossing said coupling parts; port sealing means in said coupling at the port crossing; a check valve in said conduit dividing the same into first and second conduit sections of which said second section extends from said valve to said cylinder side, with said valve being normally closed to block fluid flow from said cylinder side, and being opened by fluid in said first conduit section under a pressure in excess of that of fluid in said cylinder side to introduce fluid into said cylinder side and opened by piston means to release fluid from said cylinder side; and a fluid pressure control for said cylinder side, providing a bypass in said conduit around said check valve, a second valve in said bypass forming part of the latter when open, a constriction in said bypass, and fluid pressure responsive means operatively associated with said second valve and having opposite faces exposed to fluid in said bypass on opposite sides, respectively, of said constriction to open and close said second valve when the pressure of hydraulic fluid in said second conduit section is within a certain range and is above said range, respectively, with said range being from a pressure at least equal to, to a pressure of predetermined excess over, the pressure of hydraulic fluid in said first conduit section.

3,922,953
SYSTEM FOR LIMITING THE FORCE OF REACTION IN HYDRAULIC SERVO-CONTROL DEVICES

Gunther Strauff, Ksarst, Germany, assignor to Langen & Co., Duesseldorf, Germany

Filed Nov. 12, 1973, Ser. No. 415,168
Claims priority, application Germany, Nov. 16, 1972, 2256072
Int. Cl.² F15B *9/10*
U.S. Cl. 91—371 2 Claims

1. A system for limiting the force of reaction in hydraulic servo-control devices, comprising in combination an actuating member, a servo-motor provided with working chambers defined by movable members including a piston and a cylinder, a power output member movable relative to the actuating member and connected to one of the movable members of the servo-motor, a valve mechanism connecting the working chambers of the servo-motor interchangeably with a fluid pressure source and a drain, means for actuating said valve mechanism upon relative movement between the actuating member and the power output member drain and reaction members operatively connected to the actuating member for reacting upon the actuating member and defining reaction



chambers, the reaction members being subject to pressure developed in the reaction chambers, each reaction chamber being connected with a respective working chamber, the pressure in the reaction chambers being limited to a predetermined value, whereby said reaction members are subjected to a pressure-limitation of a substantially constant value, the improvement comprising means connecting each reaction chamber with a respective working chamber via throttle means and a single pressure-limiting valve means connected to each reaction chamber via one-way valve means.

3,922,954
LOAD-SENSING AND PRESSURE-LIMITING DEVICE WITH ACCELERATED TRIPPING

Karl Paul Gustafsson, and Lars-Olov Frisk, both of Gavle, Sweden, assignors to AB Tico, Gavle, Sweden

Filed Aug. 3, 1973, Ser. No. 385,269
Claims priority, application Sweden, Oct. 5, 1972, 12892/72
Int. Cl.² F15B *13/06*
U.S. Cl. 91—412 5 Claims

1. A load sensing and pressure limiting device for a fluid-powered appliance having at least two fluid driven working motors, supplied from a common hydraulic supply line, in which the load on a first working motor is variable by operation of at least one other working motor, wherein a pressure which is proportional to the load on the first working motor is to be sensed and used to avoid overloading the first working motor by the other working motors, comprising:

a. a housing (28) having a first cylindrical recess, a second cylindrical recess, a second hydraulic inlet port (10) communicating with said first cylindrical recess, a second hydraulic inlet port, at least a third hydraulic inlet port, and an hydraulic outlet port, each communicating with said second cylindrical recess,

b. a primary piston slidably retained in said first cylindrical recess,

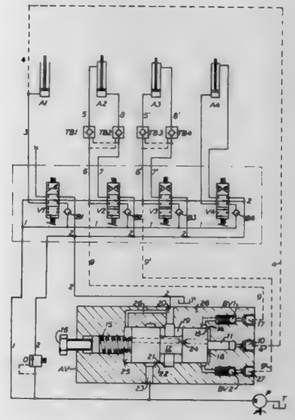
c. a secondary piston rigidly connected to said primary piston and slidably retained in said second cylindrical recess, said secondary piston having a larger cross-sectional area than said primary piston,

d. spring means interposed between said secondary piston and said housing to normally bias said primary and said secondary pistons in one direction, such that said secondary piston closes said second and third hydraulic inlet ports,

e. first conduit means connecting the hydraulic supply line to said second hydraulic inlet port,

f. at least a second conduit means connecting the at least one other working motor to said at least third hydraulic inlet port such that hydraulic pressure acting on said at least one other working motor is transmitted thereto,

g. third conduit means connecting said hydraulic outlet port to a hydraulic return line, and



h. fourth conduit means connecting said first working motor with said first hydraulic inlet port to transmit the hydraulic pressure acting on said first working motor to said primary piston causing the primary and secondary pistons to move against the spring biasing means to uncover the second and third hydraulic inlet ports thereby causing said hydraulic pressure acting on said at least one other working motor to act on said second piston to increase its movement against the spring biasing means and allowing the second hydraulic inlet port to communicate with the hydraulic outlet port to reduce the supply line hydraulic pressure.

3,922,955
FAIL-FIXED SERVOVALVE

Howard Berdolt Kast, Fairfield, Ohio, assignor to General Electric Company, Lynn, Mass.

Filed Jan. 29, 1974, Ser. No. 437,667
Int. Cl.² F15B *11/08*, *13/043*
U.S. Cl. 91—461 7 Claims

1. A servovalve comprising:

a jet pipe for discharging a jet of pressurized liquid;

deflecting means responsive to an input signal for deflecting the jet pipe in a direction determined by the input signal;

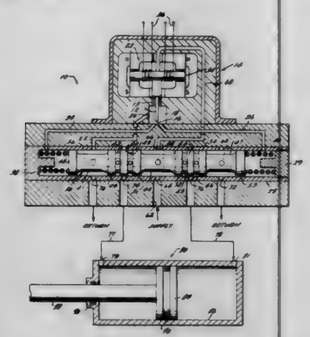
a sleeve having a plurality of ports therethrough one of which receives an inlet flow of pressurized liquid;

a spool translatably disposed within the sleeve and centered therein by resilient means at opposing ends thereof wherein the spool includes a plurality of circumferentially relieved areas interspaced between a plurality of circumferential lands and wherein selected relieved areas may be placed in flow communication with selected ports in the sleeve by translation of the spool;

a pair of receiver passages in flow communication with opposite ends of the sleeve and disposed to accept an equal amount of liquid from the jet pipe when the jet pipe is in the non-deflected position and an unequal amount of liquid when the jet pipe is in the deflected position

whereby an input signal to the deflecting means operates to deflect the jet pipe causing the receiver passages to receive unequal amounts of liquid and thereby unbalance the pressure at opposing ends of the spool to cause the spool to translate in the direction of lower pressure;

a servopiston having a piston translatably disposed within a bore each side of which communicates with separate ports in the sleeve;



passage means internal to the spool and interconnecting selected relieved areas for delivering a pulse of pressurized liquid to a first side of the piston and porting away pressurized liquid from the opposite side of the piston when the spool is translated in one direction and delivering a pulse of pressurized liquid to the opposite side of the piston and porting away pressurized liquid from the first side of the piston when the spool is translated in the opposite direction such that there is no fluid flow to the servopiston when the spool is fully translated in either direction.

3,922,956

HYDRAULIC MOTORS

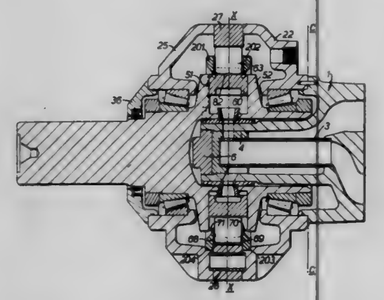
Kenneth William Samuel Foster, Prestbury, England, assignor to Renold Limited, Manchester, England

Continuation-in-part of Ser. No. 304,748, Nov. 8, 1972, abandoned. This application Sept. 9, 1974, Ser. No. 504,117

Claims priority, application United Kingdom, Nov. 9, 1971, 52039/71

Int. Cl.² F01B *1/06*

U.S. Cl. 91—491 **2 Claims**



1. An hydraulic motor comprising:

an annular cam track,

an assemblage of pistons and cylinders rotatable therewithin, said pistons being mounted on a rotatable member to form a rotor;

roller followers mounted to respective pistons so that the roller followers are disposed at least in part within the cylinders, the roller followers, at least during operation of the motor, running in engagement with and making substantially line contact with the cam track, and the roller followers having an axial length which is about equal to their diameters and which is less than the diameter of the piston to which they are mounted;

restraining means on the motor casing and making sliding contact with the roller followers for locating and restraining the roller followers axially with their axes of rotation parallel with the axis of rotation of the assemblage of pistons and cylinders, said restraining means comprising two stationary retaining rings between which said rotor rotates, said rings being retained axially in the motor casing and slidably engaging opposite circular end faces of the roller followers respectively,

said rotatable member having cut away portions on opposite sides thereof to provide a clearance between said rotor and said rings, and

valve means for alternately supplying fluid under pressure into and for allowing it to exhaust from each cylinder of the assemblage of pistons and cylinders as the assemblage rotates, to thereby drive the followers on the outstroke of the pistons so as to cause the assemblage to rotate, the pistons being driven on the instroke by the followers to exhaust the working fluid from the cylinders.

3,922,957

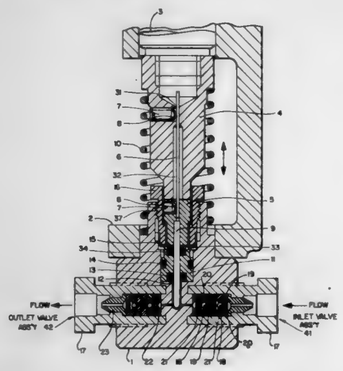
MICROFLOW METERING PUMP

David G. Ogle, Sunnyvale, and John T. Taylor, Santa Clara, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 8, 1974, Ser. No. 459,111

Int. Cl.² F01B *9/00*

U.S. Cl. 92—137 **12 Claims**



1. In a pump having a reciprocating plunger with forward and return strokes, piston means axially movable with respect to a sealed bore and a coupling between the plunger and the piston means, connected thereto, the improvement which comprises that:

the piston means includes a piston of smaller diameter extending in the sealed bore and a piston holer of greater diameter having a bore and an end surface,

the plunger has a bore and an end surface,

the coupling is in the form of a wire composed of a material having the properties of steel with a high modulus of elasticity, and being secured at the ends in the bores of said piston holder and said plunger,

the end surfaces of the plunger and the piston holder are adapted to abut each other whereby upon a forward stroke of the plunger it presses against the piston holder axially, and

the diameter of the bore of the plunger from the end surface bearing against the abutting surface of the piston holder to a point spaced from such end surface is of greater diameter than the remaining portion of the coupling-receiving bore, whereby the coupling wire has lateral freedom of movement adjacent the piston means enabling the piston means to float laterally.

3,922,958

PACKAGING

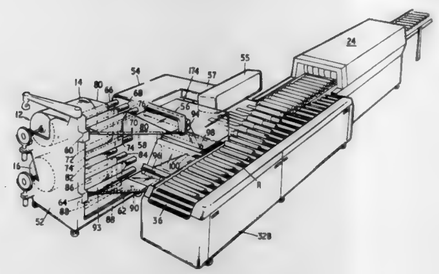
Frederick Douglas Clavell Bate, 155 Barkerhouse Road, Nelson, Lancashire, England

Continuation-in-part of Ser. No. 341,526, March 15, 1973, Pat. No. 3,881,296. This application Mar. 1, 1974, Ser. No. 447,268

Claims priority, application United Kingdom, Mar. 15, 1973, 12542/73; June 29, 1972, 30399/72

Int. Cl.² B31B *1/66, 1/16*

U.S. Cl. 93—33 H **22 Claims**



1. A method of forming a package, which includes the steps of: continuously feeding two layers of wrapping film through a sealing station at a preselected velocity; selecting the cycle frequency of a reciprocable sealing device having a path parallel to that of the film feed to determine the distance between transverse seals formed by said sealing device on said two layers of wrapping film; selecting the stroke length of said sealing device so that it travels in a forward direction at the same linear speed as the film, and bringing the sealing device into operative relationship with the layers of film during at least part of its forward travel in each cycle to produce a transverse sealing together of the two film layers.

3,922,959

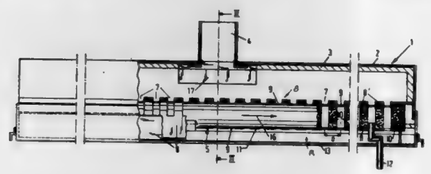
AIR OUTLET CASING

Willem Marinus Treffers, Baarn, Netherlands, assignor to Technisch Adviesbureau Treffers B.V., Baarn, Netherlands

Filed Dec. 20, 1973, Ser. No. 426,558

Int. Cl.² F24F *13/08*

U.S. Cl. 98—40 A **15 Claims**



1. An air outlet device comprising, in combination:

an oblong casing having at least one inlet opening to be connected to an air supply and having a wall portion defining a recess along the length of the casing through which air is discharged from the casing, and said wall portion being provided with spaced apart solid portions defining therebetween outlet openings spaced along the length of the recess; and

an elongate regulating member rotatably and axially slidably received in said recess, said regulating member having a plurality of spaced flow channels therethrough whereby axial sliding of said regulating member effects greater and lesser blocking of said flow channels by said solid portions while rotation of said regulating member controls the direction of air discharge from said recess.

3,922,960

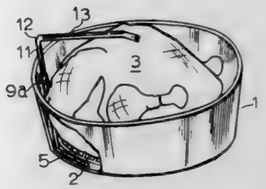
AUTOMATIC BASTING DEVICE

Bob Lewis, Louisville, Ky., assignor to T. M. Sullivan and Joseph A. Manners, Sr., both of Clarksville, Ind.

Filed Nov. 12, 1973, Ser. No. 414,977

Int. Cl.² A47J *37/10*

U.S. Cl. 99—346 **2 Claims**



1. An automatic basting device, comprising in combination:

A. a base support and an immersion plate for installation on the bottom of a baking pan and a baking rack carried in said pan above said plate for supporting meat to be cooked;

1. said plate having a down-turned peripheral rim portion and a raised planar portion which forms a collection space between the bottom of said pan and the bottom surface of said raised planar portion, and,

2. openings in said rim of said plate for admission of meat drippings and broth from said meat as it is being cooked into said collection space,

B. a delivery and dispensing tube in open communication with said collection space of said plate for receiving boiling meat drippings and broth from said collection space and for delivering and dispensing same to baste meat in said pan, which comprises:

1. a tubular vertical delivery arm;

2. an open ended tubular horizontal delivery and dispensing arm, and;

3. a tubular elbow joining said tubular vertical and horizontal arms together;

the improvement in said automatic basting device, which comprises:

C. openings in the bottom of said horizontal delivery and dispensing arm for dispensing the boiling hot drippings and broth over the meat, and,

D. a down-turned portion at the open distal end of said horizontal tubular arm for directing the boiling hot meat drippings and broth downwardly through said open distal end over the meat and thus prevent discharge of said boiling hot meat drippings and broth out of the pan.

3,922,961

ROTARY COOKING DEVICE

Arol L. Case, 5311 Zadell Ave., Temple City, Calif. 91780

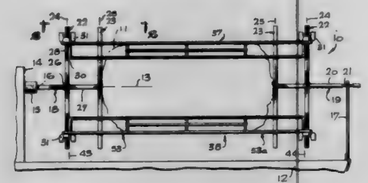
Filed Feb. 4, 1974, Ser. No. 439,297

Int. Cl.² A47J *37/04, 37/07*

U.S. Cl. 99—427 **10 Claims**

1. A rotary cooking device comprising two opposite end hub structures adapted to be mounted at spaced locations for rotation about a common axis, and two grills to be located at opposite sides of said axis for engaging opposite sides of a piece of meat and connectible near opposite ends of said grills to said hub structures respectively and for generally radial adjustment relative thereto, each of said hub structures having

a first pair of elongated members projecting radially outwardly from said axis in essentially diametrically opposite directions and slidably received in guideways formed in said two grills respectively to mount the grills for guided radial movement, fasteners connected to said two elongated members radially outwardly beyond said grills respectively and adjustable longitudinally of said members to clamp said grills against opposite sides of the meat in any of various different settings of the



grills, and each of said hub structures including a second pair of elongated members projecting outwardly away from said axis in diametrically opposite directions and essentially parallel to but spaced axially from said first members respectively and slidably received within guideways in the grills to coact with the first pair of elongated members in maintaining a predetermined orientation of the grills with respect to the hub structures in different radial settings of the grills.

3,922,962

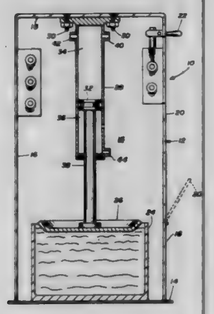
COMPACTION SYSTEM

Werner P. Goldkuhle, 1405 Cedar Ridge, Euless, Tex. 76039

Division of Ser. No. 222,598, Feb. 1, 1972, Pat. No. 3,805,690. This application Jan. 18, 1974, Ser. No. 434,830

Int. Cl.² B30B *15/16*

U.S. Cl. 100—53 **7 Claims**



1. A compaction system comprising:
a bin for receiving material to be compacted;
a ram mounted for reciprocation into the bin;
a piston operatively connected to the ram;
means for applying low pressure operating fluid to the piston and thereby advancing the ram into the bin and into engagement with material therein;
pressure multiplier means driven by low pressure operating fluid for producing high pressure operating fluid; and
means driven by the high pressure operating fluid for applying a relatively large force to the ram subsequent to the advance thereof and thereby actuating the ram to compact the material in the bin.

3,922,963

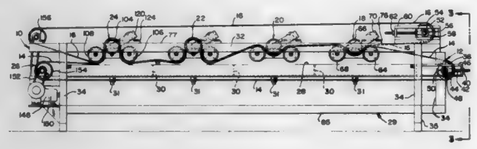
FRUIT PRESS

Martin I. Sanderson, 132 Grove St., Salinas, Calif. 93901

Filed June 11, 1974, Ser. No. 478,297

Int. Cl.² B30B *9/24*

U.S. Cl. 100—118 **8 Claims**



4. A fruit press comprising a conveyor apparatus having two endless conveyor webs arranged superimposed, in part, for compressing fruit therebetween; a plurality of compressing stations having three rollers, each station arranged in pyramidal juxtaposition with two spaced rollers and a third pressure roller positioned substantially therebetween; drive means for transporting said webs through said compressing stations; and means for biasing said pressure roller against said webs, wherein said rollers in said compressing stations are arranged to permit said webs to be selectively transported through said station in one of two paths; a first path being over one of said spaced rollers, under said pressure roller, and over the other of said spaced rollers; and a second path being under one of said spaced rollers, over said pressure roller, and under the other of said spaced rollers.

3,922,964

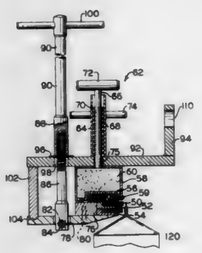
DEVICE FOR MARKING CARTONS BY BRANDING

Homer J. Fisher, deceased, late of Cuyahoga Falls, Ohio, and by Helen I. Fisher, executrix, 413 Archdale Ave., Cuyahoga Falls, Ohio 44221

Filed May 23, 1974, Ser. No. 472,881

Int. Cl.² B41F *17/24*; B44B *5/02*

U.S. Cl. 101—9 **8 Claims**



1. Apparatus for branding data onto an article, comprising:
a reciprocating hammer assembly including a hammer head movably attached to reciprocation actuation means; and
a stationary heater and die assembly including:
a frame for containing the structure of the heater and die assembly and having a slot therein;
an insulated box;
a push rod removably received within the slot and having a biasing spring thereabout on one side of the frame and being connected to the insulated box on the other side of the frame, the spring urging the insulated box into frictional securing engagement with the frame;
a heating element secured to the insulated box;
at least one die in contacting engagement with the heating element and positioned opposite the hammer head;
means for retainingly engaging the die with the heating element.

3,922,965

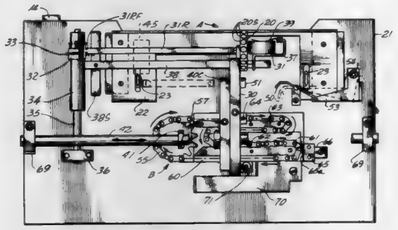
DOCUMENT PRINTER

John D. Platt, South Laguna, Calif., assignor to MSI Data Corporation, Costa Mesa, Calif.

Filed Dec. 26, 1973, Ser. No. 428,182

Int. Cl.² B41J *3/04, 3/10, 29/40*

U.S. Cl. 101—93.04 **8 Claims**



1. A printer for printing on documents such as checks and the like comprising
a housing having an aperture for receiving a document and inserting the document completely within the housing for printing thereon,
means for receiving and holding the document to be printed in a stationary position to be printed on,
means for signalling the receipt and correct positioning of the document in the receiving means for printing thereon,
means for defining and traversing a preselected serpentine path of travel corresponding to a plurality of lines on a document to be printed, said path defining means comprising a power driven chain, means for guiding the chain over the preselected, serpentine path whereby a point on the chain traces said path from a starting point, around the path and comes to rest at the starting point to trace a path corresponding to the traversing of the lines on the document to be printed,
means for actuating the path defining means,
printing means,
means for mounting said printing means to said latter-mentioned means to cause the printing means to duplicate the preselected path of travel upon actuation thereof and thereby traverse across the face of the document to be printed in a plurality of lines,
means for signalling the positioning of the printing means at each line for initiating the printing in a line upon the operation of the signalling means,
a plurality of means carried by the path defining means for sequentially operating said signalling means at a plurality of points in the path corresponding to the plurality of lines on the document to be printed,
means for ejecting a printed document through the housing aperture, and
means carried by the path defining means for operating the ejection means at a preselected point in the path corresponding to the complete traversal of the document by the printing means.

3,922,966

INK FOUNTAIN IN PRINTING PRESSES

Janko Despot, Offenbach, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Germany

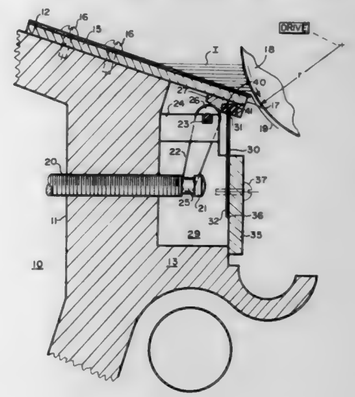
Filed Mar. 4, 1974, Ser. No. 447,752

Claims priority, application Germany, Mar. 7, 1973, 7308585[U]

Int. Cl.² B41F *31/06*; B41L *27/08*

U.S. Cl. 101—350 **1 Claim**

1. In an ink fountain, the combination comprising a frame, a fountain roller mounted in the frame and extending parallel to it, the frame including a vertically extending wall portion providing an upwardly facing supporting surface as well as a base portion, a fountain blade secured to the supporting surface and having a projecting portion terminating in a tip extending into operative engagement with the under surface of the roller to define an ink film thereon said blade having on its bottom side a cam follower portion spaced inwardly of said tip, the base portion projecting laterally from the wall in the same direction as the blade, the projecting portion of the blade and base portion of the frame vertically opposed thereto being of approximately equal dimension and together defining a longitudinal chamber under the blade, a body of ink above the blade, means for rotating the roller so that its surface rotates downwardly through the body of ink, adjusting mechanism in the chamber engaging the underside of the blade and including a series of adjusting screws which penetrate the wall portion and which are sealed with respect to it, the screws having individual cams engaging the blade along said cam follower portion so that as the screws are operated the tip of the blade undergoes localized adjusting movement toward and away from the surface of the fountain roller, a closure plate



which extends generally vertically so as to make an obtuse angle with the blade as well as extending longitudinally of the frame to enclose the chamber, said closure plate having an upper edge extending to within a short distance of the underside of the blade adjacent said tip and having a lower edge which is stationarily secured to the laterally extending base portion of the frame for making a leakage tight joint with the latter, and a resilient strip extending continuously along the upper edge of the closure plate to seal the joint between the closure plate and the underside of the fountain blade so that the chamber is substantially sealed against paper dust and ink either in liquid form or in the form of airborne ink mist, the strip being formed of elastomeric material continuously joined to the upper edge of the closure plate and continuously joined to the underside of the blade at the tip thereof so as to enclose within the chamber, the screws, cams, and cam follower region, the strip being sufficiently resilient so that localized adjusting movements of the blade are accommodated by elastic deformation of the resilient strip while preserving the integrity of the seal.

3,922,967

CLOSED-BREECH-GUN-FIRED ROCKET-ASSISTED PROJECTILE

William J. Mertens, Cambridge City, Ind., assignor to Avco Corporation, Cincinnati, Ohio

Filed Mar. 29, 1974, Ser. No. 455,988

Int. Cl.² F42B *13/10, 9/10*; F42C *1/04*

U.S. Cl. 102—38 **11 Claims**

1. A closed-breech gun-fired rocket assisted projectile comprising the following, in combination:
a cartridge comprising a base formed with a forwardly extending central portion having a bore therein, said

cartridge being further formed with an annular shoulder and a forwardly extending hollow cylindrical wall;

an igniter disposed in said bore and adapted to initiate the firing of said projectile from a gun;

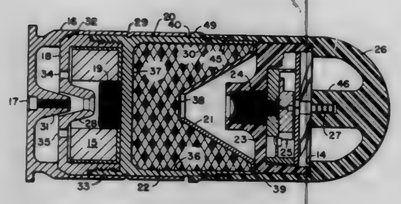
a warhead housing of generally cylindrical configuration adapted to be frictionally fitted to said cartridge in such manner that sufficient gas pressure separates said warhead housing and cartridge, said warhead housing comprising a forwardly extending hollow wall and an intermediate partition and a rearwardly extending hollow wall;

a rocket propellant housing formed to be secured to the rearwardly extending wall of the warhead housing and positioned by said annular shoulder in spaced relation to the base of said cartridge, said rocket propellant housing having a rear wall formed to define a forwardly extending main nozzle, said propellant housing being further formed with a frontal recess and a rear wall having auxiliary nozzles oriented so that gases flowing therethrough produce rotation;

a booster centrally disposed within said recess and opposite said main nozzle;

a propellant disposed in concentric relation to said booster and in such manner that burning of said propellant opens said auxiliary nozzles;

an explosive contained within the forwardly extending wall of said warhead housing;



means for confining said explosive comprising a generally frusto-conically shaped liner positioned to be convex relative to the explosive and having an annular forward rim;

a plastic ogive formed with a rearwardly extending hollow cylindrical wall and an intermediate shoulder and a blunt face and a rearwardly extending central post;

a firing pin mounted on said post;

said forwardly extending wall of the warhead housing being formed with annular step-shoulders and teeth adapted to have the rearwardly extending wall of the ogive slid thereover in order to accomplish a forced fit, said rearwardly extending ogive wall being formed so that said fit provides an annular band at the margin of said rearwardly extending ogive wall;

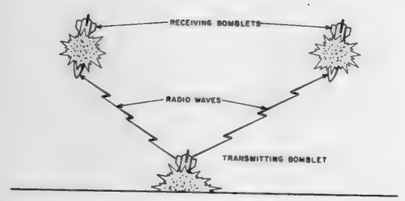
a plastic spitback housing interposed between said annular rim and said intermediate shoulder of said ogive, said spitback housing comprising a rearwardly extending central bore and a forwardly disposed recess adapted to contain a fuze;

a spitback charge within the last-mentioned bore and a fuze within the last-mentioned recess, said fuze being adapted to be armed to locate said firing pin and said spitback charge in a firing train, said fuze being further adapted, on impact with a target, to impact said firing pin and to explode the projectile.

3,922,968
BOMBLET FUZE SYSTEM

Robert L. Conger, Riverside; John A. Parks, Corona, and Leslie T. Long, Orange, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 9, 1970, Ser. No. 56,033
Int. Cl.² F42C 13/04
U.S. Cl. 102—70.2 P 6 Claims



1. A fuze system for bomblets dropped in a cluster to detonate a majority of the bomblets above the ground for greater effectiveness, comprising:

a. a greater majority of the bomblets in said cluster, each containing an RF receiver means;

b. a transmitter means in at least one bomblet of said cluster;

c. said RF receiver means comprising an antenna connected to an RF receiver, which in turn is connected to a detonator;

d. said transmitter means comprising a high explosive electric pulse generating means connected to an RF transmission circuit which in turn is connected to a transmitting antenna;

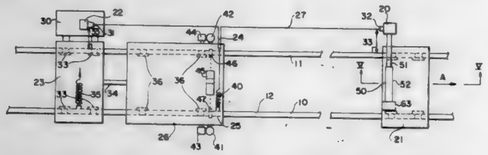
e. said high explosive electric pulse generating means being detonated by a contact fuze connected thereto;

f. said high explosive electric pulse generating means comprising an explosive magnetic flux compressor which produces high current pulses.

3,922,969
MOVING PROJECTOR SYSTEM

William J. Tyler, Valois, Canada, and Helmut Von Beckmann, Columbia, S.C., assignors to Canron, Inc., Phillipsburg, N.J.

Filed Feb. 21, 1974, Ser. No. 444,349
Int. Cl.² E01B 27/17, 29/16, 33/00
U.S. Cl. 104—8 11 Claims



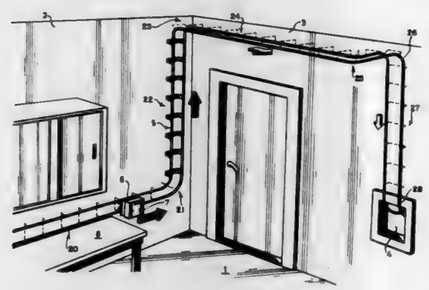
1. A lining system for aligning a length of railroad track extending between two locations along a correct line, the amount of error relative to said correct line in the alignment of the track at said two locations having been determined, comprising a reference beam projector mounted on first support means for travel over track, a reference beam receiver mounted on second support means for travel over track, a shadowboard mounted on further support means to indicate the position of a piece of track being aligned to said receiver, said shadowboard being located between said projector and said receiver along the intended line of projection of the reference beam, track aligning means for moving said piece of track in a direction indicated by said receiver, means for continually adjusting the location of said projector in the transverse direction of the track relative to the adjacent track

on which said projector is located as said projector moves between said two locations according to said amount of error at each location and the existing location of said projector along the length of track, said adjusting means including first recording means for recording while said projector moves along the track between said two locations the amounts of error at each of said two locations and for indicating at a given moment in time the location of said projector along said length of railroad track, said first means for recording the amounts of error comprising two positive and negative voltage sources and voltage control means for controlling the amount of voltage from each source, each of said amounts corresponding to the amount of error at one of said two locations, said first means for indicating the location of said projector comprising a movable electrical take-off arm contacting a resistance member of a potentiometer and means for moving said take-off arm along said resistance a distance depending on the distance travelled by said projector from one of said two locations, and means for interpolating the error in alignment of the track at the location of the projector on the basis of the recorded amounts of error and the recorded location of said projector, wherein, when said projector travels over track yet to be aligned, said projector traces a path of movement generally parallel to said correct line, whereby in operation said projector is moved over track yet to be aligned and projects a reference beam to said receiver, the position of said piece of track is indicated to said receiver by the position of said shadowboard relative to said reference beam, said receiver indicates to said track aligning means the direction in which said track is to be moved in order that said track is correctly aligned, and said track aligning means moves said track in said direction to correctly align said track.

3,922,970
RAILWAY TRANSPORTATION SYSTEM

Hendrik Glastra, Enschede, Netherlands, assignor to N.V. Maatschappij voor Industriele Research en Ontwikkeling, Enschede, Netherlands

Filed Apr. 14, 1972, Ser. No. 244,265
Claims priority, application Netherlands, Apr. 15, 1971, 7105013
Int. Cl.² B61B 3/02, 13/02; B61C 11/04, 13/04
U.S. Cl. 104—91 8 Claims

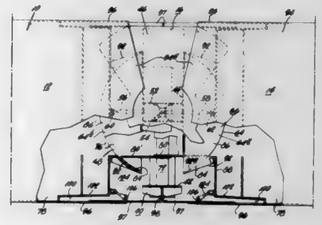


1. A transportation apparatus comprising at least one pair of spaced apart, cylindrical, elongated elements defining at least one track, clips interconnecting said elements together in spaced-apart relationship, a carriage guided on said elements and being located therebetween, travelling pulley-type wheels on said carriage also lying between said elements and being in rolling contact with the opposing and inwardly facing portions of said elements, a driving wheel resiliently supported on said carriage and lying in the plane of said travelling wheels, said driving wheel having spaced friction means thereon in rolling contact with one of said elements, and a motor operatively connected to said carriage through reduction gearing for driving said drive wheel.

3,922,971
ARTICULATED RAILWAY VEHICLE CONNECTING PASSAGE

Max Maroshick, Glen Mills, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed May 9, 1974, Ser. No. 447,718
Int. Cl.² B61D 17/14, 17/20; B61F 3/12, 5/16
U.S. Cl. 105—4 R 20 Claims

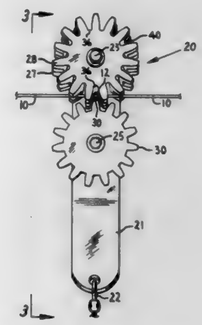


1. An articulated rail vehicle comprising a pair of cars, a common truck supporting the juxtaposed ends of said cars, a joint on said truck connecting said cars, said joint comprising a tunnel assembly defining an enclosed passage between said car ends, said tunnel assembly including telescoping inner and outer hollow tunnel shell members, connecting means for connecting said tunnel shell members to said truck and including means to enable said tunnel shell members to pivot with respect to said truck about a horizontal transverse axis, and arcuate sealing surfaces on said tunnel shell members engaging arcuate sealing surfaces on said car ends in sliding relation to accommodate transverse angular movement of said cars with respect to said truck and joint.

3,922,972
TROLLEY DEVICE

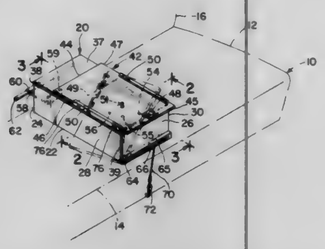
Norman E. Junes, Rte. Box 148, Astoria, Oreg. 97103

Filed Aug. 26, 1974, Ser. No. 500,596
Int. Cl.² B61B 3/00
U.S. Cl. 105—153 8 Claims



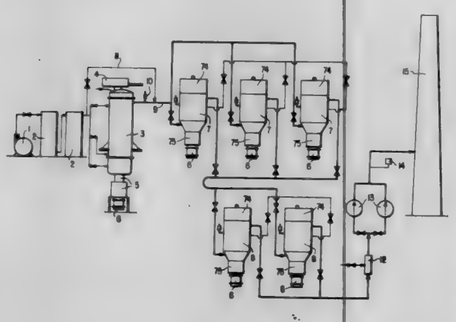
6. A trolley for use on an overhead trolley wire comprising a body member, and a pair of bevel gears on opposite sides of said body member having teeth arranged to mesh together above the trolley wire and roll on the trolley wire to support the trolley, said teeth having spaces therebetween to receive guy wires supporting said trolley wire.

3,922,973
AUTO DESK
Hulan D. Sturgeon, Indianapolis, Ind., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Mar. 11, 1974, Ser. No. 450,099
Int. Cl.² A47B *23/00, 85/00*
U.S. Cl. 108—26 8 Claims



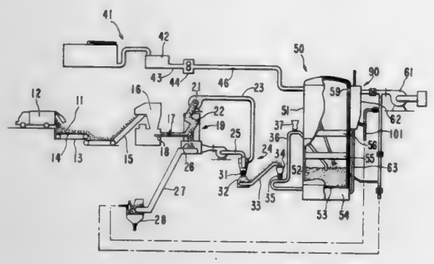
1. A desk device for use in vehicles, which comprises:
a. a main housing having a chamber formed therein;
b. a cover lid hingably mounted onto said main housing;
c. a support plate having channel edges mounted on said cover lid;
d. a clipboard slidably engaged in said channel edges of said support plate allowing said clipboard to be affixed in any desired longitudinal position on said support plate;
e. a pivot swivel carried by said support plate and extending through an opening in said cover lid for angular rotation of said support plate and said clipboard therewith, about said pivot swivel for rotation of said clipboard from any position to any other desired position;
f. angle locking pins carried by said support plate for extending through any one of a plurality of locating holes formed through said cover lid, for releasably retaining said clipboard and said support plate in any desired angular rotated position; and
g. means for securing said desk device to a vehicle seat portion.

3,922,974
METHOD AND DEVICE FOR INCINERATING RADIOACTIVE WASTES AND PREPARING BURNABLE WASTES FOR NON-POLLUTING STORAGE
Wilhelm Hempelmann, Nordring, Germany, assignor to Gesellschaft fur Kernforschung m.b.H., Karlsruhe, Germany
Filed Oct. 18, 1973, Ser. No. 407,670
Claims priority, application Germany, Oct. 18, 1972, 2251007
Int. Cl. F23g *7/00*
U.S. Cl. 110—8 R 18 Claims



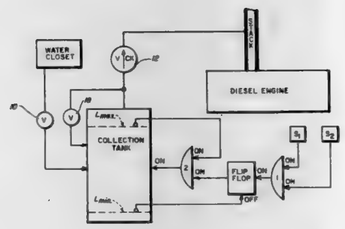
1. An apparatus for incinerating radioactive wastes and preparing combustible radioactive wastes for non-polluting storage, comprising in combination:
a. a grateless furnace being formed of vertically adjoining top, center and bottom sections each defining an inner space, said furnace having a charging end in said top section and a discharge end in said bottom section;
b. a movable damper means positioned in said bottom section for closing said discharge end during incineration;
c. a first air inlet conduit communicating with the inner space defined by said center section;
d. a second air inlet conduit merging tangentially with the inner space defined by said bottom section, in the zone of said discharge end; said second air inlet conduit being oriented towards said damper means in a direction opposite to the orientation of said first air inlet conduit;
e. means disposed externally of said furnace for dividing the space surrounding said furnace into an upper external space surrounding said top and center sections and into a lower external space surrounding said bottom section;
f. a flue gas outlet conduit communicating with the inner space defined by center section;
g. a removable solid waste feeding device communicating with said charging end and being supported by said top section;
h. a liquid waste feeding device communicating with said charging end and being supported by said top section;
i. a flue gas filter having an input connected to said flue gas outlet conduit; filter candles; means for replacing the filter candles; a flue gas surge chamber; means for removing ashes from the flue gas surge chamber; and an outlet; and
j. a removable glove box attached to said discharge end of said furnace; said glove box having an inlet provided with a two-part gate for controlling the outflow of solid material from said furnace and an outlet provided with a coarse grate.

3,922,975
METHOD AND APPARATUS FOR FEEDING SOLID WASTE TO A FLUID BED DISPOSAL APPARATUS
Richard G. Reese, Woodside, Calif., assignor to Combustion Power Company, Inc., Menlo Park, Calif.
Continuation-in-part of Ser. No. 247,829, April 26, 1972, Pat. No. 3,818,846. This application June 24, 1974, Ser. No. 482,617
Int. Cl.² F23G *7/00;* F23K *3/02*
U.S. Cl. 110—8 F 4 Claims



1. In a waste disposal apparatus for consuming solid waste with minimal residue including a combustion housing, a bed of granular material, means for supporting the bed of granular material within the housing, means for providing combustion air to the bottom of the bed for maintaining the granular material in a fluidized state, and means for separating heavy particles out from a stream of solid waste material and feeding the remaining light particle fraction in a conveying gas stream to the combustion chamber, the improvement comprising:
fluid conduit means for carrying solid waste into the combustion housing,
air-lock feed valve means connected to said conduit means for introducing solid waste into said conduit means,
storage means for receiving and storing the separated light particle fraction of solid waste material,
conveyor means for conveying solid waste from said storage means to said air lock feed valve means,
inertial separator means for separating the light particle fraction of the solid waste from the conveying gas stream for delivery to said storage means, and
means for returning the conveying gas separated from said particle fraction to the separation means.

3,922,976
SEWAGE TREATMENT SYSTEM
Robert B. Davis, New Britain, and Alan H. Cornish, Newington, both of Conn., assignors to Koehler-Dayton, Inc., New Britain, Conn.
Filed Nov. 20, 1974, Ser. No. 525,360
Int. Cl.² F23G *5/00;* F01N *3/02*
U.S. Cl. 110—9 R 5 Claims

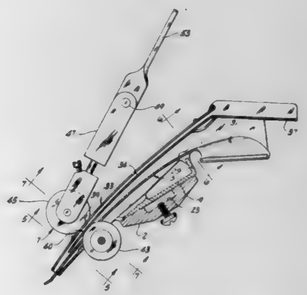


1. A sewage treatment system comprising
a collection tank assembly for collecting sewage including means for macerating the collected sewage, and means for pumping the macerated sewage therefrom,
means for delivering sewage to said collection tank assembly,
sewage combustion means operable at temperatures below and above a predetermined temperature,
means for directing a selected minor portion of the macerated sewage pumped from said collection tank assembly to said sewage combustion means,
means for delivering the remaining major portion of the macerated sewage pumped from said collection tank assembly back into said collection tank assembly, and
means for energizing said pumping means only when the operating temperature exceeds the predetermined temperature.

3,922,977
PLANT HUSBANDRY
Harry F. Lavo, Stamford, Conn., and Charles J. Cante, Bayside, N.Y., assignors to General Foods Corporation, White Plains, N.Y.
Continuation of Ser. No. 385,005, Aug. 2, 1973, abandoned, Division of Ser. No. 298,752, Oct. 18, 1972, abandoned. This application Apr. 19, 1974, Ser. No. 462,281
Int. Cl.² A01C *23/02*
U.S. Cl. 111—1 2 Claims

1. A method of treating plant life and soil comprising:
1. providing foam concentrates, containing a concentrated aqueous solution or mixture of foam generating constituents and a plant agent packaged in convenient form for handleability,
2. diluting said solution or mixture with water, and
3. generating foam from the dilute solution or mixture using a foam generator connected to a water supply having a static pressure above 15 psi wherein said concentrate solution or mixture consists essentially of:
a. a foaming agent selected from the group consisting of water soluble salts of lauryl ether sulfate, water soluble salts of lauryl sulfonates, fatty acid esters of sodium isetheonate, and mixtures thereof,
b. a foam enchancer selected from the group consisting of blended alkyl sulfonates, alkylol ether sulfonates, lauric acid monoethanolamide, stearic acid monoethanolamide, lauric acid isopropinolamide, mixtures of lauric acid and myristic acid monoethanolamide, and mixtures thereof,
c. a foam stabilizer selected from the group consisting of glycerol, propylene glycol, ethylene glycol, lauryl alcohol, myristyl alcohol, stearyl alcohol and mixtures thereof,
d. a foam-providing composition fluidity modifier selected from the group consisting of isopropyl alcohol, methanol, ethanol and mixtures thereof, and
e. a plant agent selected from the group consisting of organic fertilizer, inorganic fertilizer, herbicide, insecticide, sterilant, seed, and mixtures thereof.

3,922,978
FOLDING APPARATUS FOR A SEWING MACHINE
John Joseph Smith, North Little Rock, Ark., assignor to Stahl-Urban Company, Brookhaven, Miss.
Filed Oct. 24, 1974, Ser. No. 517,411
Int. Cl.² D05B *35/06*
U.S. Cl. 112—147 3 Claims



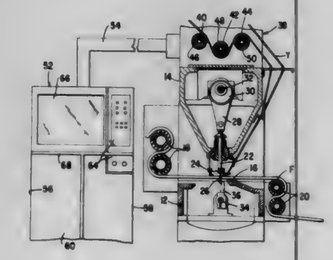
1. Folding apparatus for a sewing machine comprising guide means for guiding a first strip and a second and wider strip to the two needles of a doubleneedle sewing machine, said guide means comprising a base, a tongue over which the strips are fed with the second strip overlying the first and around the side edges of which the margins of the second strip may be folded to underlie the margins of the first strip, said tongue extending over the base and forward from the base, a top plate extending over the tongue and having side edges formed to extend inwardly under the side margins of the tongue for folding the margins of the second strip around the side edges of the tongue, and means on the base for mounting the guide means in position to direct the strips to said needles, wherein the improvement comprises means for feeding the strips forward to the needles, said tongue and top plate having registering openings adjacent their forward end, said feeding means comprising a lower roll mounted below said tongue at said registering openings, an upper roll mounted above the lower roll engageable with the strips at said registering openings, said lower roll extending up between the inwardly extending side edges of the top plate, and means for driving the upper roll said driving means having independent adjustment means for adjusting the speed of the upper roll relative to the speed of feed of the sewing machine so as to relieve the material of

tension which would otherwise be caused by drag of the material in travelling through the guide means, means mounting said upper roll for movement toward and away from said lower roll, and said driving means comprising a speed changer mounted at the rear end of the sewing machine having an input and an output, a drive from the main shaft of the sewing machine to said input, and a universally jointed drive from said output to said movable upper roll.

3,922,979
PATTERN CONTROL FOR TUFTING MACHINE ATTACHMENTS

David Ingham, Blackburn, and Edward C. Lear, Lancaster, both of England, assignors to The Singer Company, New York, N.Y.

Filed Dec. 18, 1974, Ser. No. 534,013
Int. Cl.² D05C 15/26
U.S. Cl. 112—79 A 4 Claims

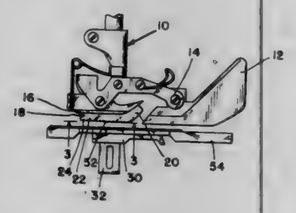


1. A pattern control for tufting machine pattern attachments comprising, a console remote from the tufting machine, an open ended hollow drum having a light transmitting surface mounted in the console, a pattern element having light transmitting and opaque areas mounted on the surface of the drum, a light source positioned within the drum, a plurality of photocells mounted in the console adjacent to the surface of the drum and electrically connected to the pattern attachment, a cradle for supporting the drum, said cradle comprising aa plurality of members drivingly connected to the periphery of the drum at each end, and means for rotating said members in timed relation with the tufting machine so that said pattern element moves between the light source and the photocells.

3,922,980
CHAIN STITCH SEWING MACHINE

James B. Fulp, Summerfield, N.C., assignor to Blue Bell, Inc., Greensboro, N.C.

Filed Dec. 3, 1974, Ser. No. 529,238
Int. Cl.² D05B 27/02
U.S. Cl. 112—197 5 Claims

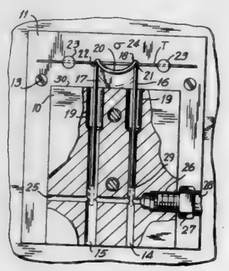


1. Apparatus for sewing machines to form a chain stitch continuously comprising: a presser foot, means on said presser foot for gripping a fabric being sewn traveling along a directed path of travel to prevent thread feedback, a feed dog cooperatively aligned with said presser foot and presser foot gripping means for advancing a fabric being sewn in a directed path of travel, a throat plate positioned between said presser foot and said feed dog, said feed dog having laterally spaced-apart fabric-engaging and upwardly projecting rows, each of said rows having a plurality of serrated teeth, at least one row having a trailing edge foreshortened in length relative to adjacent rows for cooperative alignment with said presser foot fabric gripping means, and said throat plate having means for cooperative alignment and covering the foreshortened row of serrated teeth whereby a continuous chain may be formed during sewing without seam stretching or tensioning.

3,922,981
FLUIDIC THREAD BREAK DETECTION DEVICE AND SYSTEM

Francis H. Hughes, North Troy, N.Y., assignor to Cluett, Peabody & Co., Inc., New York, N.Y.

Filed Mar. 8, 1974, Ser. No. 449,383
Int. Cl.² D05B 69/36; B65H 63/02
U.S. Cl. 112—218 R 6 Claims

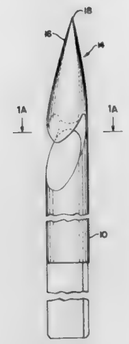


1. A fluidic system for sensing thread break in a sewing system, which comprises
a. a source of fluid under pressure,
b. a position sensor fluidic device connected to said source and having a fluid-discharging sensing port,
c. said position sensor fluidic device having a first operative condition when its sensing port is exposed to relatively low fluid pressure and a second operative condition when said sensing port is exposed to relatively higher fluid pressure,
d. a fluidic thread break detector body connected to said fluidic device,
e. said detector body having a control port connected to the sensing port of said position sensor fluidic device,
f. said detector body having therein a relatively free flow fluid passage connected to the control port,
g. said detector body having a vertical guide passage therein having a preselected bore dimension intersecting with said fluid flow passage,
h. means, including a pair of spaced thread guides located above and on opposite sides of said vertical guide passage, for guiding a thread under sewing tension along a predetermined path above said guide passage,
i. a vertically disposed thread detecting wire loosely and slideably received in said vertical guide passage and movable from a first position, supported by a thread under sewing tension and fully retracted from said free flow passage, to a second position, resulting from a thread break, in which at least a portion of the wire is projected through said free flow passage,
j. the presence of said wire in said free flow passage in said second position, resulting in a low efficiency restriction therein and thus in a relatively increased pressure at the sensing port of said position sensor fluidic device, to cause said device to be changed to its second operative condition.

3,922,982
ECCENTRIC-TIP HOOKED NEEDLE FOR HOSIERY LINKING MACHINES

Cesare L. Conti, Via Varese 18, 20121 Milan, Italy

Filed Feb. 4, 1974, Ser. No. 435,887
Int. Cl.² D05B 85/02
U.S. Cl. 112—222 1 Claim

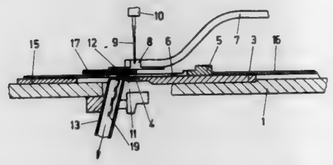


1. A needle for hosiery linking machines and the like comprising a needle shank having a longitudinal axis of symmetry, a tip end portion on said shank defined by tip walls converging to a tip at the longitudinal end of the needle, a hook formed on said tip end portion, said hook being formed by generally U-shaped wall portions having an entrance hook surface and a return hook surface extending generally transversely of said shank whereby said hook is thereby defined as having a hook axis extending generally transversely of said shank, said tip of said tip end portion being eccentrically disposed relative to said axis of symmetry of said shank, said hook being constructed and arranged such that said hook axis makes an angle of from 0° to 45° with the plane containing said axis of symmetry of said shank and said tip.

3,922,983
DEVICE FOR AUTOMATIC CUTTING OF THREAD IN SEWING MACHINES

Helmut Schips, Rorschach, and Rolf Kernbichler, Urnasch, both of Switzerland, assignors to Helmut Schips, Rorschach, Switzerland

Filed May 9, 1974, Ser. No. 467,739
Int. Cl.² D05B 65/02
U.S. Cl. 112—252 7 Claims

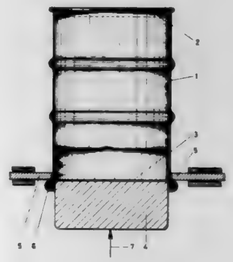


1. A device for automatic cutting of thread structures of an article in sewing machines having a sole plate, a stitch plate fastened to said sole plate, a feed plate mounted on said stitch plate having a cutting edge, a needle positioned above said feed plate and a pressure foot fastened to said feed plate, said device comprising:
pneumatic means positioned under said feed plate for automatically sucking in the thread structure, and for automatically looping the thread around said article;
a cutter element mounted at one end of said stitch plate; and
cooperative cutting means mounted on said feed plate for cooperating with said cutter element for cutting the thread structures.

3,922,984
METHOD FOR RECONDITIONING A CONTAINER

Reinder Zuideveld, Farnham, England, and Mattheus Johannes Martinus Coppens, Heide-Kalmthout, Belgium, assignors to Koninklije Emballage Industrie Van Leer B.V., Netherlands

Filed July 3, 1973, Ser. No. 376,192
Claims priority, application Netherlands, July 5, 1972, 7209391
Int. Cl.² B21D 51/00
U.S. Cl. 113—120 BB 2 Claims



1. A method of reconditioning a container having end walls connected to a body wall, one of said end walls and said body wall having cylindrical end wall portions with flanged edges which are coiled about each other to form an outwardly directed seam, said seam, in cross-section, being in the form of a spiral, comprising:
a. placing the container with said one end wall on a support means for supporting said one end wall in an axial direction and for supporting the interior of the cylindrical end portion of said one end wall in a radial direction with respect to the axis of the container;
b. moving a tool towards an outer surface of said body wall to completely surround said body wall;
c. relatively moving said tool and support means in opposite directions with respect to each other to completely unroll said seam; and
d. connecting again said body wall and said one end wall with each other to form a seam after reshaping and cleaning of said body wall and said one end wall.

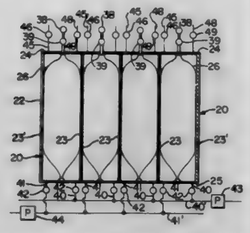
3,922,985
SUBMARINE TANKER FOR TRANSPORTATION OF LIQUID CARGO

Ferris F. Hamilton, 320 High St., Denver, Colo. 80218

Continuation-in-part of Ser. No. 3,307, Jan. 16, 1970, abandoned. This application Oct. 14, 1971, Ser. No. 189,302
Int. Cl. B63b 25/08
U.S. Cl. 114—74 R 23 Claims

1. In a cargo vessel, a plurality of storage cells for liquid cargo arranged in mutually reinforcing relation constituting a structural part of the vessel, each cell comprising an outer rigid enclosure at least partially filled with ballast, an inner expansible container secured within each outer enclosure including means for introducing and removing liquid cargo into and from said container, each said storage cell including

means for introducing and removing a gaseous fluid into and from the upper end of each said enclosure and means for



admitting and removing sea water into and from the lower end of each said enclosure.

3,922,986

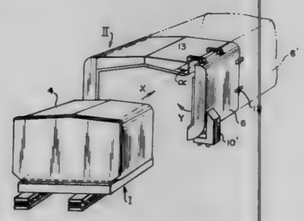
METHOD FOR BUILDING LIQUEFIED-GAS-CARRIER

Kunio Minamizaki; Yasuhiko Yagi, both of Yokohama; Kensuke Murakami, Kamakura, and Hisayuki Kurose, Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 2, 1974, Ser. No. 485,082

Int. Cl.² B63B *3/02, 25/16*

U.S. Cl. 114—74 A **3 Claims**



1. A method for building a liquefied-gas-carrier wherein assemblying an upper hull subassembly including a side plating block at a predetermined place on a shipway, inserting a lower hull subassembly having a tank mounted thereupon into said upper hull subassembly, joining said lower hull subassembly to said upper hull subassembly, thereby assemblying a unit tank section, and joining a plurality of unit tank sections to thereby build a ship, wherein said side plating block of said upper hull subassembly is temporarily held in position displaced outwardly from its normal position and is returned to its normal position after said lower hull subassembly is inserted into said upper hull subassembly.

3,922,987

LIQUEFIED GAS TANKER CONSTRUCTION USING STIFFENER MEMBERS

Edmund George Tornay, New York, N.Y., assignor to Conch International Methane Limited, Nassau, Bahamas

Continuation of Ser. No. 384,123, July 30, 1973, abandoned. This application Nov. 14, 1974, Ser. No. 523,685

Claims priority, application United Kingdom, Aug. 2, 1972, 36011/72

Int. Cl.² B63B *25/16*

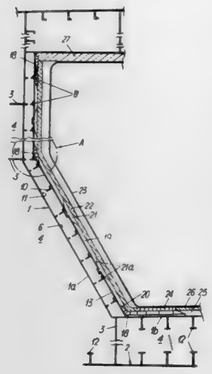
U.S. Cl. 114—74 A **4 Claims**

1. a. In a tanker ship for over-water transportation of cold liquids having a metallic double hull,

b. the inner hull of said double hull defining at least one prismatic cargo hold lined with a thermal insulation material, for housing a tank for the cold liquid cargo,

c. the improvement comprising longitudinally extending horizontal metal plate stiffener members integrally fixed at one edge of the plate to the entire length of the vertically extending walls of the cargo hold at those faces facing inwardly of the cargo hold and of sufficient strength to substantially stiffen and strengthen said walls along their entire length, said stiffener members comprising metal strips extending inwardly toward said tank,

d. said lining of thermal insulation being supported at the other edges of the stiffener members so as to be spaced from and generally parallel to said faces of the cargo hold,



e. said stiffener members having spaced-apart apertures in said metal strips whereby, in operation of the tanker, any water leaking into the space between said vertically extending wall and the thermal insulating lining drains freely through said apertures to the bottom of the cargo hold for removal.

3,922,988

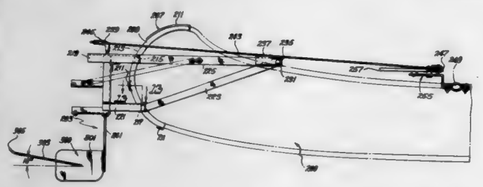
STEERING SYSTEM FOR CANOES AND THE LIKE

Dolphus D. Caton, 149 Beebe Ave., and John R. Ralph, 180 College Park Drive, Apt. B-9, both of Elyria, Ohio 44035

Division of Ser. No. 332,674, Feb. 15, 1973, Pat. No. 3,844,243. This application Jan. 24, 1974, Ser. No. 436,157

Int. Cl.² B63H *25/02*

U.S. Cl. 114—165 **4 Claims**



1. A steering system for a boat such as a canoe or the like having an end edge, a thwart and gunwales, which system comprises, in combination:

a. a substantially rectangular frame supported across the gunwales of the canoe;

b. an arcuate channel-shaped sling for detachably securing the frame to the end edge of the canoe;

c. a rudder assembly including at least one sleeve;

d. a horizontal bar supported at its ends by the frame and journaled within the sleeve for pivotally supporting the rudder assembly between a downward operative position and an upward inoperative position;

e. latching means associated with the frame for detachably securing the horizontal bar thereto and preventing accidental removal of the bar;

f. resilient means for biasing the rudder assembly in the downward operative position; and

g. control means operatively connected to the rudder assembly for steering the canoe.

3,922,989

HYDROPHONE DROGUE

James F. McEachern, Hatboro, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 4, 1974, Ser. No. 520,703

Int. Cl.² B63B *21/48*

U.S. Cl. 114—209 **2 Claims**



1. A non-fouling deployable sonobuoy drogue system suitable for placement in a cannister, comprising, in combination:

a float;

a hydrophone;

a flexible rectangular sheet having two linear springs contiguously attached along their lengths to respective ones of opposed edges of said sheet;

said sheet being folded in half between said opposed edges to form an intermediate edge with said springs coinciding with each other, and being furled about said intermediate edge to form an elongated spiral roll with the opposed edges exposed and operatively connected to said float and said hydrophone, respectively; and

said roll being folded in half along its length against the force of said springs to form distal sides slidably receivable within the cannister;

whereby said roll unfolds under the force of said springs when deployed from the cannister, and then unfurls under tension of said hydrophone.

3,922,990

METHOD AND APPARATUS FOR RAISING AND RETRIEVING A BOAT ANCHOR

Emile Menard, Jr., 5647 SE. Drefshill, Milwaukie, Oreg. 97123

Filed Aug. 15, 1974, Ser. No. 497,574

Int. Cl.² B63B *21/24*

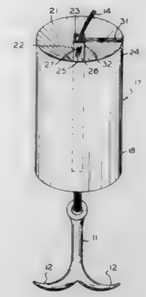
U.S. Cl. 114—221 R **7 Claims**

1. An anchor raising device, comprising

a generally cylindrical watertight container, said container having a closed bottom and a dished top;

tubular sleeve means disposed generally axially within said container and extending through said container from said bottom to said top, said sleeve means being adapted to pass an anchor line therethrough; and

releasable anchor line restraining means disposed within said sleeve means, said restraining means being adapted to restrain movement of said anchor line with respect to said sleeve means in the direction of said container bottom, said restraining means being adapted to permit



movement of said line with respect to said sleeve means in the direction of said container top.

3,922,991

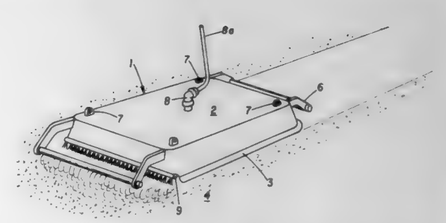
APPARATUS FOR CLEANING METALLIC SURFACES

John W. Woods, 2108 Country Club Road, Duncan, Okla. 73533

Filed June 25, 1973, Ser. No. 373,492

Int. Cl.² B60S *3/02*

U.S. Cl. 114—222 **18 Claims**



17. Apparatus for cleaning a metallic surface, which comprises:

a. body means;

b. magnetic surface gripping means, attached to said body means and arranged in close proximity to the metallic surface, for magnetically holding said body means adjacent the metallic surface;

c. a plurality of drive means interposed between said body means and the metallic surface for propelling said body means along said metallic surface; and

d. water jetting means, attached to said body means, for emitting a flat, angular high pressure spray of fluid against the metallic surface, wherein said water jetting means includes at least one diverter-lip nozzle.

3,922,992

SINGLE POINT VESSEL MOORING SYSTEM

James P. Wilbourn, New Orleans, La., assignor to Texaco Inc., New York, N.Y.

Filed May 29, 1974, Ser. No. 474,281

Int. Cl.² B63B *21/00*

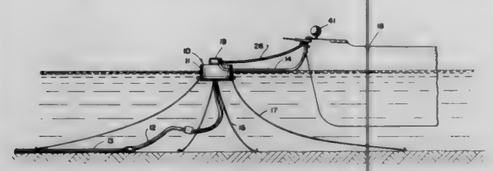
U.S. Cl. 114—230 **10 Claims**

1. System for engaging a vessel floating at the water's surface to a mooring positioned in a body of water, said mooring including a connecting hawser having one end thereof depending from the mooring, and being of sufficient length to position the hawser other end a distance from the mooring,

a messenger line depending from said hawser other end and being supportably elevated to a substantially upright position above the water's surface,

a catch mechanism depending from said vessel to engage and retain said messenger line as the vessel moves into contact therewith,

said catch mechanism including at least two outstanding arms operably carried on the vessel emanating from a



common point on said vessel and positioned outwardly of the point to define an area between said arms which converges toward the vessel,

whereby said hawser other end can be drawn onto and connected to said vessel for restraining further movement of the latter.

3,922,993

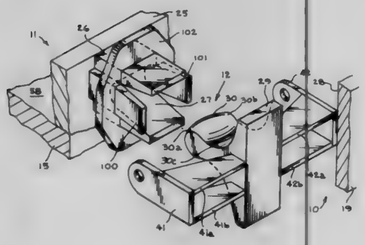
FLEXIBLE COUPLED ARTICULATED VESSEL

Robert A. Bludworth, P.O. Box 12424, Houston, Tex. 77017

Filed Oct. 31, 1973, Ser. No. 411,232

Int. Cl.² B63B *21/00*

U.S. Cl. 114—235 R **19 Claims**



1. A marine transportation combination comprising a first vessel having a bow portion and sides, and a second vessel having a notch at one end, said notch having a pair of oppositely disposed wings, coupling means coupling said bow portion of said first vessel to said second vessel at generally the apex of said notch when said first vessel is received in the notch of said second vessel between said wings, said coupling means preventing substantial relative bobbing of said first and second vessels while permitting vertical pivoting of said first and second vessels about said coupling means, said coupling means defining interengaging formations respectively projecting as to one and receiving as to the other of said first and second vessels in a direction generally parallel to the longitudinal axes of said first and second vessels, said formations being engaged by relative forward movement of said first vessel to said second vessel and disengaged by relative rearward movement of said first vessel to said second vessel, and means disposed between opposite sides of said first vessel and the wings of said notch and closely adjacent the rearwardmost portion of said wings for preventing substantial relative yawing and rolling of said first and second vessels while permitting said vertical pivoting.

3,922,994

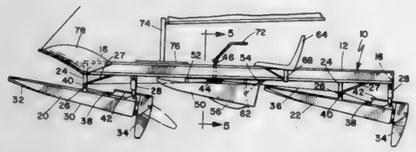
TWIN-HULLED OUTRIGGER SAILBOAT

Ellis R. De Long, 8050 El Capitan, La Mesa, Calif. 92041

Filed May 31, 1974, Ser. No. 475,206

Int. Cl.² B63B *1/22*

U.S. Cl. 114—66.5 R **6 Claims**



1. A twin hulled outrigger sailboat comprising:

a. an elongated body;

b. a forward water-contacting laterally centralized substantially longitudinally extended hull member mounted in substantial vertical alignment with and beneath a forward portion of said body;

c. an after water-contacting substantially longitudinally extended hull member mounted in substantial vertical alignment with and beneath a rear portion of said body and being substantially longitudinally aligned with and located in substantially the same horizontal plane as said forward hull member;

d. a pair of outrigger pontoons mounted independently of said forward and after hull members and mounted to opposite sides of said body in spaced relation thereto.

3,922,995

DUAL STATION ROTARY CABLE STEERING SYSTEM

Raymond A. Kroll, Kenosha, Wis., and Donald K. Sullivan, Lake Zurich, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 15, 1974, Ser. No. 460,793

Int. Cl.² B63H *21/26*

U.S. Cl. 115—18 R **12 Claims**



1. A steering system comprising a marine propulsion device including a steerable part and a rotatable member connected to said steerable part and effective to cause steering movement of said part upon rotation of said member, a helm housing including a rotatable steering shaft, a first flexible cable including an outer sheath and a rotatable inner core, a first gear box including a housing connected to said outer sheath and to said marine propulsion device, said housing including therein a rotatably mounted gear coupled to said rotatable member for common rotation therewith, said housing also including therein a rotatably mounted pinion coupled to said inner core for common rotation therewith and in mesh with said gear, and a second gear box connected to said outer sheath and to said helm housing and including a rotatably mounted gear coupled to said steering shaft for common rotation therewith and a rotatably mounted pinion coupled to said inner core for common rotation therewith and in mesh with said gear in said second gear box.

3,922,996

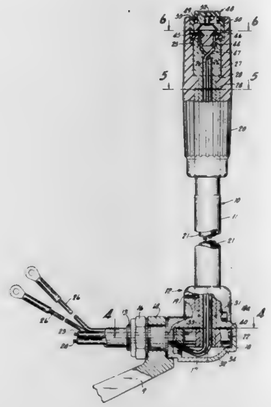
STEERING APPARATUS FOR OUTBOARD MOTORS

James A. Meyer, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Aug. 29, 1974, Ser. No. 501,498

Int. Cl.² B63H *21/26*; G05G *11/00*, *1/08*; F02B *77/00*

U.S. Cl. 115—18 R **14 Claims**



1. A steering handle assembly for outboard motors, comprising an angled tubular mounting means having offset leg portions joined by a common portion, one of said leg portions including a bearing means for rotatable mounting thereof, a tubular shaft means adapted to be rotatively mounted in the second of the offset leg portions of the mounting means, a throttle control having a throttle positioning means extended through said first offset leg portion and a coupler affixed to the inner end of said tubular shaft within said tubular mounting means, an outer handle grip portion secured to the shaft portion, a switch means located within said handle grip portion, leads extended through said tubular shaft and the first and second leg portions of the mounting means for connection to said motor, an operator in said grip portion for operation of said switch means.

3,922,997

MARINE POWER TRANSMISSION SYSTEM

James J. Jameson, Coffeyville, Kans., assignor to Gardner-Denver Company, Dallas, Tex.

Filed Apr. 17, 1974, Ser. No. 461,674

Int. Cl.² B63H *5/08*; F16H *37/06*

U.S. Cl. 115—37 **15 Claims**

1. In a power transmission system for a boat including a main propulsion engine, a pair of spaced apart propeller shafts, and a propeller mounted on each of said propeller shafts, a transmission unit comprising:

a housing;

an input shaft mounted on said housing, said input shaft including means for drivingly coupling said engine to said input shaft;

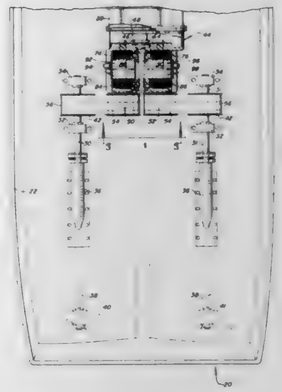
first and second input gears connected to said input shaft to be driven thereby;

idler gear means meshed with said second input gear;

a pair of output shafts mounted on said housing and means drivingly connecting said output shafts to respective ones of said propeller shafts; and,

a forward drive gear rotatably mounted on one of said output shafts and meshed with said first input gear, and a forward drive gear rotatably mounted on said other output shaft and meshed with said idler gear means; and,

forward and reverse clutches associated with each of said output shafts for drivingly connecting said input shaft to said output shafts, said forward clutches being disposed



for connecting said forward drive gears to said output shafts, respectively, said forward and reverse clutches being selectively fully engageable whereby said propeller shafts may be driven at the same speed, said forward and reverse clutches being operable at a controlled slip condition for changing the speed of one propeller shaft with respect to the other propeller shaft to effect turning movements of said boat.

3,922,998

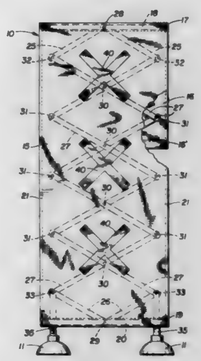
WARNING DEVICE FOR STALLED VEHICLES

Sam H. May, 8888 W. Jewell Ave., Lakewood, Colo. 80226

Filed June 24, 1974, Ser. No. 482,276

Int. Cl.² B60Q *1/52*

U.S. Cl. 116—40 **5 Claims**



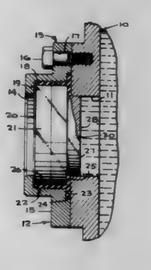
1. A warning device for stalled vehicles comprising

a. a lazy-tongs type frame expansible for use as a signal material support,

b. signal means made of flexible material attached to the upper and lower ends of the frame, and overlying one face of the frame,

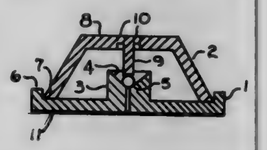
c. an extra length of said flexible material depending from the upper edge of said signal means material on the other face of the frame, and
d. mounting means connected to the lower end of the frame for mounting the warning device on the roof of a vehicle.

3,922,999
SIGHT GLASS WITH WEAR INDICATING DEVICE
Charles E. Meginnis, 529 1/2 Nancy St., Charleston, W. Va. 25302
Filed Nov. 2, 1973, Ser. No. 412,255
Int. Cl.² G01D *13/00, 11/26;* **G01N** *31/00*
U.S. Cl. 116—114 Q **10 Claims**



1. In an enclosure containing a fluid and having an opening therein, a structure for viewing the interior of said enclosure conprising a sight glass mounted on said enclosure across such opening therein providing a surface exposed to the interior of said enclosure, said sight glass including means for detecting wear of said exposed surface consisting of nontransparent means preselected dimemsions inserted in said exposed surface of said sight glass on a line of sight therethrough, said sight glass, which when worn away either by physical or chemical action of said fluid, will cause said wear detecting means to indicate that the exposed surface of said sight glass has worn away a predetermined amount.

3,923,000
OMNI DIRECTIONAL TELL TALE TILT INDICATOR
Harold S. Cloyd, Erie, Pa., assignor to Nosco Plastics, Inc., Erie, Pa.
Filed July 15, 1974, Ser. No. 488,654
Int. Cl.² G01C *9/10*
U.S. Cl. 116—124 R **11 Claims**



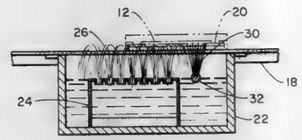
1. An indicator for providing a positive indication that an object has been tilted beyond a predetermined angle, comprising a hollow body for attachment in fixed relation to said object, said body having a top wall and an upright recess having a vertical axis and side walls inclined to the horizontal around said axis flaring outwardly and upwardly and terminating in a rim spaced below and presented to said top wall, indicating means held by gravity in said recess, the depth of the recess being sufficient to prevent bouncing of said indicating means out of the recess by vibration and shock during shipment, said indicating means moving out of said recess when the device is tilted from the vertical through an angle exceeding the inclination to the horizontal of said side walls, and said body having a space around said side walls and below said rim for receiving said indicating means and for preventing movement of the indicating means into the recess upon return of the recess to the upright or vertical position, and a pin connected to said top wall for holding the indicating means in the recess until the pin in removed.

3,923,001
FLAG POLE
Robert M. Murdock, 711 Adelaide Place, Santa Monica, Calif. 90402
Filed Dec. 30, 1974, Ser. No. 537,360
Int. Cl.² G09F *17/00*
U.S. Cl. 116—173 **6 Claims**



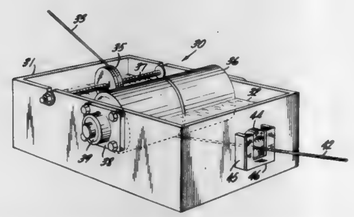
1. A flag comprising, in combination:
a. lower and upper tubes;
b. means for coupling said tubes together to provide a flag pole, said means permitting disassembly of the tubes for easy transportation;
c. a reversible motor in the lower tube;
d. a drum secured adjacent to the upper end of the lower tube so as to be accessible when the tubes are separated;
e. a lower endless cable running within said lower tube coupling said motor to said drum to rotate the same when the motor is energized;
f. a central pulley secured coaxially to said drum;
g. an upper pulley secured adjacent to the upper end of said upper tube, the upper tube having openings at its lower and upper ends juxtaposed respectively to said central and upper pulleys;
h. an upper endless cable passing from said central pulley up through said upper tube and out the upper opening and down adjacent to the exterior of the upper tube and thence into the lower opening to the central pulley so that rotation of the central pulley by the drum moves said upper endless cable; and,
i. a flag secured to the exterior portion of said upper endless cable whereby energization of said motor in one direction rotates the drum and central pulley to thereby retract said flag into said lower opening and up completely within said upper tube whereby said flag is protected from the elements, energization of said motor in an opposite direction causing said upper endless cable to move in an opposite direction to thereby pull said flag out through said lower opening and up along the exterior of said upper tube to an extended flying position.

3,923,002
SOLDERING MACHINE ACCESSORY
Louis Vanyi, 246 Crestwood Ave., Ventura, Calif. 93003
Filed Aug. 24, 1973, Ser. No. 391,192
Int. Cl.² B05C *11/105*
U.S. Cl. 118—110 **5 Claims**



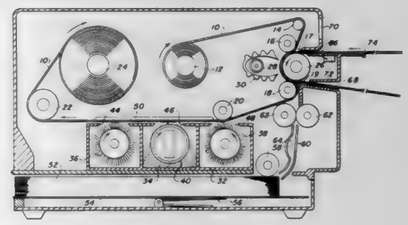
1. In a soldering machine for applying a coating of solder to the conductive portions of a printed circuit board by passing the board through a bath of molten solder, the improvement comprising:
a wire metal brush capable of removing solder from a surface by capillary action mounted on the soldering machine adjacent to the bath of molten solder;
means for removing said brush from an idle position to a ready position in which the brush contacts the liquid solder on the printed circuit board immediately after it passes through the molten solder bath; in said ready position said brush being disposed to withdraw excess solder from said printed circuit board solely by capillary action and return the excess solder to the bath of molten solder.

3,923,003
PRODUCTION OF FLOODED MULTISTRAND CABLE
Danny P. Carden, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.
Filed May 6, 1974, Ser. No. 466,926
Int. Cl.² B05C *11/115, 11/10, 11/02*
U.S. Cl. 118—405 **5 Claims**



1. Apparatus for applying a viscous coating of predetermined thickness on an advancing flexible strand comprising a housing for containing a viscous coating compound, said housing having side walls, end walls and a bottom, means for supplying a flexible strand for entry into said housing, means for taking up the strand after exiting said housing, means for guiding the strand downwardly beneath the surface of the coating compound in said housing, through the coating compound and outwardly through an exit opening in one wall of said housing disposed beneath the surface of the compound, forming means mounted concentrically with said exit opening for forming the coating compound into a strand coating as the advancing strand exits from said housing, and means facilitating ready removal and replacement of said forming means from its mounting whereby said forming means is selectively interchangeable with alternate ones of said forming means consonant with the diameter of the strand, the viscosity of the coating compound and the predetermined thickness of the coating.

3,923,004
DEVELOPMENT AND CLEANING APPARATUS FOR REVERSE PATH MACHINE
Roger H. Eichorn, deceased, late of Webster, N.Y., and Lincoln First Bank of Rochester, executor, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 27, 1973, Ser. No. 428,975
Int. Cl.² G03G *13/00*
U.S. Cl. 118—637 **6 Claims**



1. A copier comprising the combination of
a member having an imaging surface for carrying latent images;
reversible means for moving said member first in one direction and then in the opposite direction along a predetermined path;
development means positioned adjacent said path for applying image developing toner particles to said imaging surface as said member is moving in said one direction and in said opposite direction;
first cleaning means positioned adjacent said path on one side of said development means for removing toner particles from background areas of said imaging surface as said member is moving in said one direction; and
second cleaning means positioned adjacent said path on the other side of said development means for removing toner particles from background areas of said imaging surface as said member is moving in said opposite direction.

3,923,005
ALFALFA-BASED ANIMAL LITTER, INCLUDING STARCH
Raymond J. Fry, Concord, and Michael W. Andreasen, Oakland, both of Calif., assignors to The Clorox Company, Oakland, Calif.
Filed Jan. 25, 1974, Ser. No. 436,740
Int. Cl.² A01K *1/015*
U.S. Cl. 119—1 **13 Claims**

1. A homogeneous composition useful as an animal litter comprising an admixture of cooked alfalfa and gelatinized starch uniformly distributed one throughout the other to form said homogeneous composition in an expanded form.

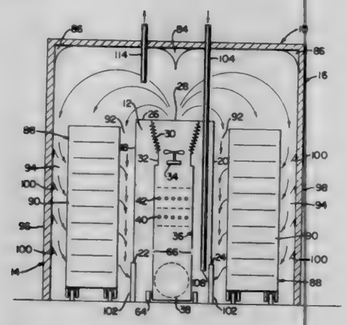
3,923,006
METHOD AND APPARATUS FOR INCUBATING EGGS

James G. Dugan, Littleton, Colo.; Albert S. Hancock, Jr., Orange City, Iowa; Kenneth G. Huston; Bernard L. Rosenberg, both of Denver, Colo.; Shirley M. Smith, Littleton, Colo., and Gene W. Hausske, deceased, late of Palmer Lake, Colo. (by Martha J. Hausske, executrix), assignors to Robbins Incubator Co., Denver, Colo.

Continuation of Ser. No. 219,783, Jan. 21, 1972, Pat. No. 3,829,507. This application Mar. 25, 1974, Ser. No. 454,587

Int. Cl.[2] A01K *41/00*

U.S. Cl. 119—37 19 Claims



4. Incubation apparatus comprising:

a substantially closed chamber defining an air conditioning bay;

chamber means adjacent to the air conditioning bay and defining at least one incubation bay;

an air discharge port at one end of the air conditioning bay and a return air inlet port at the opposite end of the air conditioning bay;

the two ports communicating with opposite ends of the incubation bay to provide a closed circuit repetitive air circulation path through the bays;

an egg rack located in the incubation bay to support a plurality of layers of eggs in position to be enveloped by a current of air flowing through the bay;

and a self-contained air conditioning unit comprising a casing provided with heating means, cooling means, humidifying means, and a blower, all housed completely within the casing;

the casing being located entirely within the air conditioning bay and free standing on the floor thereof and having an air inlet to receive return air from the incubation bay through the return air inlet port and having an air outlet directly connected to the discharge port to force all of the air to pass through the air conditioning unit;

the air outlet having a quick detachable connection to the discharge port, and the air conditioning unit being movably mounted on the floor for rapid total removal and replacement in the air conditioning bay.

3,923,007
EMERGENCY WATER-COOLING SYSTEM FOR A STEAM GENERATOR FOR A PRESSURIZED-WATER COOLANT NUCLEAR REACTOR

Heinz-Jürgen Schröder, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

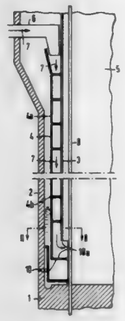
Filed Dec. 14, 1973, Ser. No. 424,652

Claims priority, application Germany, Dec. 19, 1972, 2262152

Int. Cl. F22b *1/06*

U.S. Cl. 122—32 7 Claims

1. A pressurized-water reactor steam generator comprising an upstanding housing having an inside and a lower portion and an upper portion, a tube sheet having a top and a bottom and closing said lower portion, inverted U-shaped tube bundle inside of said housing and having legs with lower ends mounted in said tube sheet via its top, said tube sheet having means for flowing reactor pressurized-water coolant via the tube sheet's bottom through said tube bundle, a shroud radially enclosing said tube bundle, said housing normally receiving a supply of feed water and said shroud being radially spaced from said housing to form a descent space inside of the housing, said shroud and tube bundle having upper portions and lower portions, and an emergency cold water inlet for said housing for introducing a flow of emergency cold water to said housing in the event said supply of feed water fails, said upper



portions of said shroud and tube bundle normally operating at lower temperatures than their said lower portions and said tube sheet; wherein the improvement comprises said emergency cold water inlet being positioned in said upper portion of said housing and said generator having means for directing cold water flowing into said housing through said inlet, so that the cold water initially contacts substantially extended portions of at least one of said upper portions of said shroud and tube bundle before flowing into contact with said lower portions and said tube sheet.

3,923,008
STEAM GENERATORS

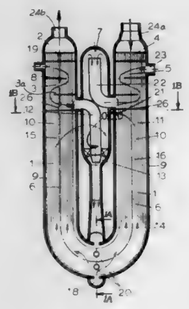
Georg Beckmann, Vienna; Paul Viktor Gilli, Graz; Kurt Fritz, Klosterneuburg, and Josef Lippitsch, Graz, all of Austria, assignors to Waagner-Biro Aktiengesellschaft, Austria

Filed Nov. 15, 1973, Ser. No. 416,272

Claims priority, application Austria, Nov. 16, 1972, 9733/72

Int. Cl. F22b *1/06*

U.S. Cl. 122—34 18 Claims



1. In a steam generator, particularly adapted for nuclear power plants, casing means having an inlet end region and an outlet end region respectively having an inlet and outlet for respectively receiving and discharging a primary heating fluid from which heat is to be extracted, said end regions being separate and spaced from each other, inlet and outlet tube plates extending across the interior of said casing means in said inlet and outlet end regions thereof, respectively, and a plurality of tubes extending along the interior of said casing means, said tubes being connected in parallel between said tube plates and all of said tubes having open ends communicating with said inlet and outlet of said casing means so that the primary heating fluid flows along the interior of said tubes from said inlet end region to said outlet end region of said casing means while a fluid at the exterior of said tubes in said casing means extracts heat from the primary fluid, said casing means having between said tube plates in said inlet end region a superheating chamber one end of which is formed only by said inlet tube plate and in said outlet end region a preheating chamber one end of which is formed only by said outlet tube plate and chambers an evaporating chamber in series with said preheating chamber, said preheating chamber being spaced from and out of communication with said inlet end region and said inlet tube plate as well as the portions of said tubes connected to said inlet tube plate, and said casing means having between said tube plates at said outlet end region an inlet means for introducing water to be received in said preheating chamber and at said inlet end region an outlet means for discharging superheated steam from said superheating chamber, and separator means communicating with said evaporating chamber for receiving a mixture of steam and water therefrom and for separating the steam from the water, said separator means having a steam discharge communicating directly with said superheating chamber for delivering to the latter the steam separated from the water to be superheated only while flowing in said superheating chamber to said outlet means.

3,923,009
MOISTURE SEPARATING AND STEAM REHEATING APPARATUS

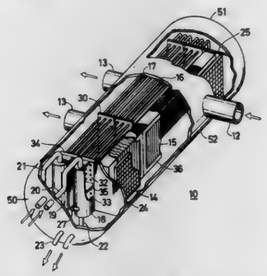
Akio Sohma, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 12, 1974, Ser. No. 441,798

Claims priority, application Japan, Feb. 12, 1973, 48-16638

Int. Cl. F22b *1/06*

U.S. Cl. 122—34 12 Claims



1. A unitary moisture separating and steam reheating apparatus, comprising: an axially elongated tubular shell structure having a pair of oppositely disposed end closure members; a plurality of steam inlets formed on a side wall of the shell structure; a plurality of steam outlets formed on another horizontally opposite side wall of the shell structure; flow rectifying means axially extending substantially from one of said end closure members to the other of said end closure members and being disposed vertically in the vicinity of the inlets for distributing the inlet steam along the length of said shell structure; moisture separator means extending vertically and in parallel to said flow rectifying means along a major portion of the length thereof for removing moisture from the steam; steam reheater means extending vertically and in parallel to said moisture separator means along a major portion of the length therefor for heating the steam; said steam reheater means being disposed between said moisture separator means and said steam outlets, and including a plurality of longitudinally elongated heat exchange tubes; said steam inlets, rectifying means, moisture separator means, steam reheater means, and steam outlets being serially mounted horizontally across a diameter of said tubular shell structure so that the steam flows substantially horizontally and straight from said steam inlets toward said steam outlets to pass through said vertically disposed flow rectifying means, said vertically disposed moisture separator means and said vertically disposed steam reheater means at substantially right angles.

3,923,010
INDUSTRIAL TECHNIQUE

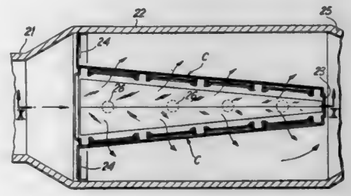
Bernard G. Chlique, Sceaux, France, assignor to Babcock & Wilcox, Limited, London, England

Filed Aug. 20, 1973, Ser. No. 389,771

Claims priority, application France, Aug. 21, 1972, 72.29771

Int. Cl. F22g *5/16*

U.S. Cl. 122—483 9 Claims



1. Steam drying device forming a screen retaining water droplets for a steam power plant, characterized by several grates placed side by side so that they can be successively crossed by a flow of wet steam, each grate being composed of a network of parallel bars, the bars of one grate being spaced from the interstices of an adjacent grate, said grates each having two parallel bars spaced from each other, said bars having respective longitudinal axes forming a common plane and a metal wire wound on those two bars to form on both sides of the plane common to the longitudinal axes of the two bars two grates of parallel wire strands, the strands of one of the grates being shifted by half a pitch in relation to those of the other, and a discharge spout for supporting at least some of said bars and for discharging water retained by said device.

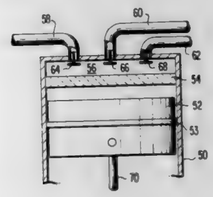
3,923,011
APPARATUS AND METHOD

William C. Pfefferle, Middletown, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

Filed May 31, 1972, Ser. No. 256,432

Int. Cl.[2] F02B *75/12*

U.S. Cl. 123—1 R 14 Claims



1. In an internal combustion engine including a cylinder, piston means arranged for reciprocation within the cylinder and cooperating therewith to define a compression zone which is compressed as the piston means moves in a compression stroke from a minimum compression position to a maximum compression position, inlet means for supplying combustion-oxygen-bearing air and carbonaceous fuel to the cylinder, and exhaust means for exhausting combustion product gas from the cylinder, the improvement comprising:

oxidation catalyst means disposed in said cylinder at a location which is within the compression zone when said piston mens is in said maximum compression position,

said catalyst means having gas flow paths therethrough to permit flow therethrough of gases within said cylinder, and

said catalyst means being effective during operation to initiate combustion of a fuel-lean mixture of carbonaceous fuel and air passing in contact therewith at a temperature below 3500°F; with resultant substantially complete combustion to carbon dioxide of said fuel

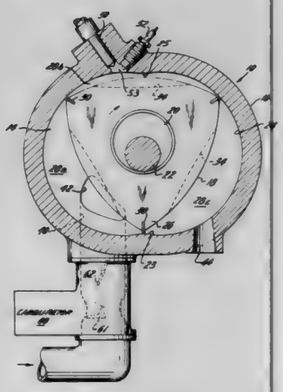
and control means associated with said inlet means for supplying air to said compression zone for compression during each piston compression stroke, and for supplying carbonaceous fuel to the compression zone during each compression stroke at a predetermined time, cooperating with the disposition of the portion of said inlet means carrying said fuel to the cylinder, to effect contact of said fuel with said oxidation catalyst means at a time commencing with the latter portion of each compression stroke,

said control means being adjustable to supply a sufficient total quantity of air, relative to the quantity of said carbonaceous fuel, to give an air:fuel weight ratio of at least about 20:1 and to provide for passage in contact with said oxidation catalyst means of a fuel-lean combustible air-fuel mixture with a theoretical adiabatic flame temperature in the range of from about 1800°F to about 3500°F.

3,923,012
STRATIFIED CHARGE ROTARY ENGINE WITH HIGH AND LOW PRESSURE FUEL SUPPLY

Charles Jones, Hillsdale; Harold D. Lamping, Oakland, and David M. Myers, Upper Saddle River, all of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Dec. 12, 1973, Ser. No. 423,920
Int. Cl.² F02B 53/10
U.S. Cl. 123—8.09 **3 Claims**



1. A rotary combustion engine comprising:

a. an outer body having an internal cavity, the peripheral surface of which has a multi-lobe profile and also having an air intake passage and a combustion gas exhaust passage;

b. an inner body of generally polygonal profile, mounted for relative rotation within said outer body, the apex portions of said inner body having sealing cooperation with said peripheral surface to define a plurality of working chambers between said peripheral surface which vary in volume in response to said relative rotation;

c. means for supplying fuel to each working chamber as said chamber is expanding in its intake phase for mixture with air entering through said intake passage to form an initial fuel-air mixture having a fuel-air ratio less than that of a stoichiometric mixture, said fuel supplying means including means operative over substantially the entire operating range of the engine for varying the quantity of fuel supplied to each engine working chamber during its intake phase so as to regulate the engine power output;

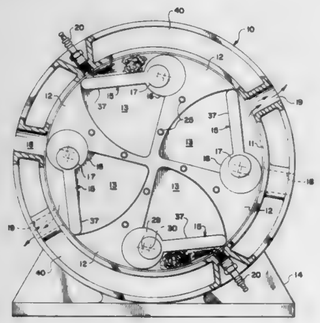
d. a fuel nozzle mounted on said outer body adjacent to a lobe junction of said multi-lobe peripheral surface with its discharge end disposed close to said peripheral surface for discharging a substantially constant quantity of additional fuel directly into each working chamber through a recess in said peripheral surface of the outer body having unrestricted communication with each working chamber, said additional fuel being discharged into each working chamber after the initial fuel-air mixture in said chamber has been substantially compressed and is ready for combustion; and

e. spark plug type ignition means mounted on said outer body with its electrodes disposed in said recess adjacent to the discharge end of said fuel nozzle and operative to ignite fuel as it discharges from said nozzle into the adjacent working chamber whereby the burning of said additional fuel is effective to ignite the initial fuel-air mixture in said working chamber.

3,923,013
ROTARY ENGINE

Herman A. Myers, Masontown, Pa., assignor to Innovate, Inc., Masontown, Pa.

Filed Dec. 14, 1973, Ser. No. 424,757
Int. Cl.² F02B 53/00
U.S. Cl. 123—8.47 **11 Claims**



1. A rotary engine comprising:

A. a main housing having an inner chamber therein, said housing also having fuel intake means, exhaust means, and ignition means communicating with the chamber;

B. a rotor member, rotatable about its longitudinal axis and mounted in the chamber of the main housing, said rotor member having a plurality of combustion chambers formed therein communicating with the chamber of the main housing;

C. a plurality of vane members, each having a cylindrically shaped mounting section for pivotal movement radially inward and outward within a combustion chamber, the pivotal axes of the cylindrical mounting sections aligned in substantially parallel relationships with the longitudinal axis of the rotor member;

D. crank means extending outwardly from opposed ends of each of said cylindrical mounting sections and positioned in parallel, spaced apart relationship to the pivotal axis of each of said mounting sections;

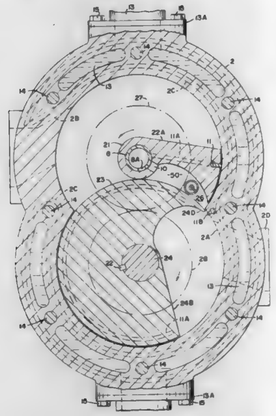
E. track means associated with the main housing adjacent opposed ends of the housing chamber, said means including a trackway having a modified annular shape, varying radially inwardly and outwardly a uniform distance with respect to the longitudinal axis of the rotor, said uniform radial variation occuring at a fixed interval around said trackway, said track means having a shape to operably engage and guide the crank means causing simultaneous pivotal movement and identical positioning of all of the vane members within their respective combustion chambers to effect two combustion cycles in each combustion chamber during one revolution of said rotor member, whereby, opposed pairs of vane members perform identical functions in the cycle operation of the engine at the same time; and

F. means associated with the rotor member for transfer of output power therefrom.

3,923,014
INTERNAL COMBUSTION ROTARY ENGINE

Karl Knickerbocker, 400 Baycrest Drive, Venice, Fla. 33595

Filed Apr. 24, 1974, Ser. No. 463,819
Int. Cl.² F02B 53/06
U.S. Cl. 123—8.49 **5 Claims**

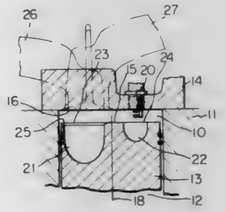


1. In an internal combustion rotary engine, a housing having an internal chamber formed therein, a first and second shaft mounted on said housing, an upper rotor formed on said first shaft and a lower rotor affixed to said second shaft, said first shaft comprising a substantially cylindrical member and said upper rotor comprising an enlarged portion extending outwardly from said substantially cylindrical member, interconnecting means coupled to each one of said shafts to operatively interconnect said rotors for simultaneous rotation in opposite directions, said upper and lower rotors each including convex perimetal sections for sealing engagement with the interior wall of said chamber, said convex perimetal section of said upper rotor being formed on the outer end of said enlarged portion, portions of the perimetal surfaces of said rotors being shaped to permit nesting thereof during rotation and to form a sealed explosion chamber between portions of the perimetals of said rotors at predetermined intervals of rotation, means for injecting compressed fuel into said explosion chamber, means for igniting fuel in said explosion chamber at a predetermined position of said rotors, said housing having an exhaust passage formed therein to permit exhaust of burned fuel from said housing as said rotors rotate to open said explosion chamber following combustion, said first shaft having an axial bore including a rotor fuel flow opening, said rotor fuel flow opening extending between said axial bore and said outer periphery of said cylinder member adjacent the inner portion of said upper rotor, a hollow fuel inlet tube extending into said axial bore and having at least one manifold fuel flow opening formed radially therethrough and in axial alignment with said rotor fuel flow opening, said manifold fuel flow opening and said rotor fuel flow opening disposed to selectively communicate in axial alignment relative to one another during predetermined position of said rotor during each rotation of said rotors, said convex perimetal of said lower rotor engaging said first shaft adjacent said rotor fuel flow opening to close said rotor fuel flow opening and said manifold fuel flow opening from said explosion chamber upon initial forming of said explosion chamber during each rotation of said rotors when said rotor fuel flow opening and said manifold fuel flow opening are partially aligned, said manifold fuel flow opening being oriented relative to said means for igniting the fuel such that fuel flows from said fuel inlet tube through said manifold fuel flow opening and said rotor fuel flow opening to said explosion chamber after said explosion chamber is initially formed and prior to ignition during each rotation of said rotors when said rotor fuel flow opening and said manifold fuel flow opening are axially aligned, said manifold fuel flow opening being oriented relative to said means for igniting the fuel that such that said manifold fuel opening is closed from said explosion chamber by said first shaft means during combustion during each rotation of each said rotors.

3,923,015
COMBUSTION CHAMBER OF SPARK IGNITION INTERNAL COMBUSTION ENGINE

Kosaburo Mukai, Tokyo; Yasufumi Oguri; Yasuo Tatano, both of Yokosuka, and Yoshikazu Kasahara, Yokohama, all of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed May 3, 1974, Ser. No. 466,905
Claims priority, application Japan, May 4, 1973, 48-50057
Int. Cl.² F02B 19/16
U.S. Cl. 123—32 B **20 Claims**

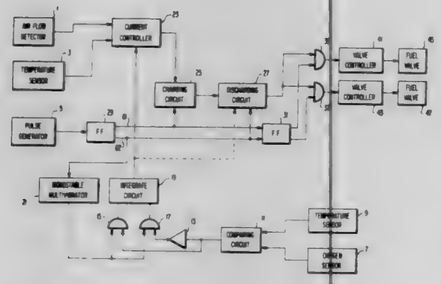


1. In an engine cylinder assembly for a spark ignition internal combustion engine having (a) a cylinder, (b) a piston reciprocatingly slidable in said cylinder and having a flat top surface, (c) a cylinder head sealing an end of said cylinder to define a cylindrical variable volume chamber between a flat surface thereof and said flat piston top surface, (d) a first domeshaped recess to serve as a main combustion chamber having an opening area smaller than 50% of the area of said piston top surface, the location thereof being off center with respect to the longitudinal axis of said cylinder, and (e) a spark plug, said cylindrical chamber being reduced in volume so as to establish a squish causing area when said piston nears the top dead center (f) a second dome-shaped recess smaller in volume than said first recess to serve as an ignition chamber, the location thereof being separate from said first recess, off center with respect to said axis and faced to the spark gap of said spark plug when said piston nears the top dead center, (g) means to supply a combustible airfuel mixture to the cylinder chamber, the improvement comprising the provision of (h) means defining a concavity shallower than said first recess and arranged substantially around the opening of said first recess, the cross-section thereof being varied to be largest at the opening thereof exposed to said cylindrical chamber and smallest at the bottom thereof so that the influence of squish on said first recess is lessened, and (i) said second domeshaped recess having a sharp-edged mouth periphery.

3,923,016
ELECTRONIC FUEL INJECTION APPARATUS FOR A FUEL INJECTION

Yoshikazu Hoshi, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed May 9, 1974, Ser. No. 468,527
Claims priority, application Japan, May 9, 1973, 48-50731
Int. Cl.² F02D 5/02
U.S. Cl. 123—32 EA 10 Claims



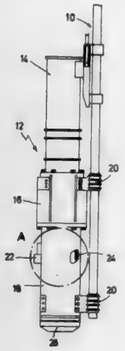
1. An electronic control apparatus for a fuel injection system comprising:
- first means for generating a first signal representative of the flow of air supplied to an engine cylinder;
- second means for generating pulses in response to the engine rotation;
- third means for generating a second signal representative of the level of the quantity of oxygen in the engine exhaust gas;
- fourth means, responsive to said second signal, for generating a third signal representative of the integration of said second signal;
- fifth means, coupled to said first means and said fourth means, for generating a charging current in response to said first and third signals;
- sixth means, coupled to said second means and said fifth means, for discharging said charging current in response to said pulses generated by said second means;
- seventh means, coupled to said sixth means, for generating a fuel injection valve opening signal in accordance with the time required for said charging current to discharge by said sixth means; and
- eighth means, responsive to the pulses generated by said second means, for generating a pulse having a predetermined duration, for controlling the operation of said fourth means.

3,923,017
ARRANGEMENT FOR INJECTION NOZZLE AND EXHAUST OPENINGS IN A DIESEL ASSISTED RAM

Rudolf Hennecke, Buoch; Fritz Kommel, Esslingen (Neckar), and Albert Haussmann, Oberboihingen, all of Germany, assignors to Deimag-Maschinenfabrik Reinhold Dornfeld, Esslingen (Neckar), Germany

Continuation of Ser. No. 303,394, Nov. 3, 1972, abandoned.
This application Sept. 5, 1974, Ser. No. 503,351
Claims priority, application Germany, Nov. 6, 1971, 2155306
Int. Cl.² F02D 3/00
U.S. Cl. 123—32 R 4 Claims

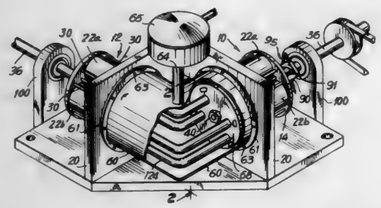
1. A diesel-assisted ram, pile driver or the like having a cylinder in which a percussion piece and a piston adapted to impact thereon are arranged, a metering pump having a fuel injector nozzle for delivery of a stream of fuel on the surface of the percussion piece, said fuel atomizing on impact of said piston on said percussion piece, said cylinder having a plurality of openings for exhaust of gas and for the intake of air being closed and opened by movement of the piston, and being open at least during part of the fuel delivery, said openings lying entirely in that half of the cylinder wall opposite to that in which the fuel injector nozzle lies.



3,923,018
COMPACT ROTATING INTERNAL COMBUSTION ENGINE

Isral J. Markowitz, Closter, N.J., assignor to Stem Industries, Inc., Atlanta, Ga.

Filed Dec. 28, 1973, Ser. No. 429,043
Int. Cl.² F02B 57/06
U.S. Cl. 123—43 A 20 Claims

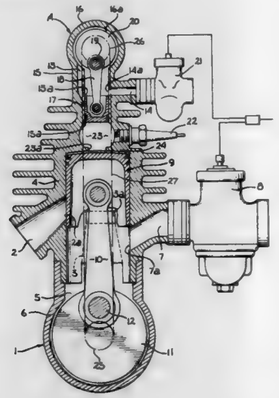


1. A rotating internal combustion engine operating as a two-stroke cycle engine comprising:
- first and second cylinder block supports and blocks, the latter being rotatably connected to the first and second supports, respectively, each cylinder block having cylinder openings, sealably covered by sealing means, extending into the block from the end nearest the other block, the axes of rotation of the two cylinder blocks being transversely aligned at an angle of at least about 90°;
- first and second pistons withing the cylinder openings of the first and second cylinder blocks, respectively, and dividing each cylinder opening into forward and rearward chambers; the pistons being slidably and rotatably engaged with their respective cylinder blocks and the central axis of each piston and of each cylinder opening being substantially parallel to each other and to the axis of rotation of its respective cylinder block;
- angled crank pins slidably and sealably journaled to the sealing means, each angled crank pin having two ends, one end of each crank pin being secured to one piston in the first cylinder block, and the second end of each crank pin being secured to one piston in the second cylinder block, the angles formed by each of the crank pins being equal to the angle between the axes of rotation of the cylinder blocks;
- a driving shaft attached to the far end of the first cylinder block and substantially concentric therewith;
- means for feeding a combustible charge into each cylinder opening at predetermined intervals comprising a carburetor; a plenum chamber defined by walls sealably connected to the cylinder block support means surrounding the angled crank pins, and the one-way valve means; and fluid flow conduit means between the carburetor and plenum chamber;
- means for igniting the combustible charge within the cylinder openings at predetermined intervals, openings which are fed substantially simultaneously being ignited substantially simultaneously, whereby the ignition of a charge causes reciprocating movement of the piston within each cylinder opening, and the reciprocating movement of each piston is converted into rotating motion of the cylinder block by the action of the angled crank pins interconnecting the two cylinder blocks;
- means for discharging combusted combustible charge from each cylinder at pre-determined intervals;
- the sealing means comprises a one-way valve for permitting the passage of fluid into the forward chamber, but preventing passage of fluid outwardly from said chamber; the cylinder openings in each of the first and second cylinder blocks containing pistons connected to the same angled crank pin being fed substantially simultaneously; the forward chamber being in fluid flow connection with the combustible charge feeding means via the one-way valve; and the engine comprising in addition transfer port means connecting the rearward chamber with the forward chamber when the piston is in a predetermined position; and an exhaust orifice through the exterior of the cylinder, the exhaust orifice being open to the rearward portion of the cylinder opening when the piston is in a predetermined position; and the ignition means being so juxtaposed within the cylinder opening as to ignite the combustible charge within the rearward chamber.

3,923,019
TWO-CYCLE ENGINE SYSTEM

Seiichiro Yamada, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Shizuoka, Japan

Filed Mar. 18, 1974, Ser. No. 452,400
Claims priority, application Japan, Mar. 19, 1973, 48-33635[U]
Int. Cl.² F02B 25/12
U.S. Cl. 123—53 BA 10 Claims

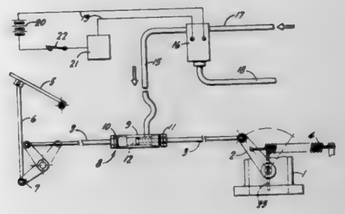


1. A stratified charge, two cycle internal combustion engine assembly having a first and second two cycle engine, each of said two cycle engines having a cylinder, a closed crankcase at one end of said cylinder, a crankshaft rotatably mounted in said crankcase, a piston coupled to said crankshaft for reciprocation along the longitudinal axis of said corresponding cylinder, an inlet port means for admitting an air-fuel mixture into said crankcase when said piston is at a position with said cylinder distal from said crankcase, and a delivery port means controlled by said corresponding piston for delivering said corresponding air-fuel mixture from said corresponding crankcase to each corresponding cylinder when said corresponding piston is disposed in the portion of said corresponding cylinder adjacent to said crankcase, the improvement comprising:
- a closed common combustion chamber formed at the ends of said first and second cylinders distal from said first and second crankcases, said common combustion chamber formed to centrifugally segregate said air-fuel mixtures delivered to said common combustion chamber from said first and second two cycle engines;
- an ignition means for igniting said air-fuel mixtures delivered to said common combustion chamber to produce an exhaust gas;
- an exhaust port means opening within said cylinder of said first two cycle engine for exhausting said exhaust gas from said common combustion chamber and from said cylinder of said first two cycle engine;
- wherein said second two cycle engine is adjusted to deliver a fuel rich air-fuel mixture, and said first two cycle engine is adjusted to deliver a fuel lean air-fuel to said common combustion chamber and to a portion of said cylinder of said first two cycle engine wherein said fuel rich and fuel lean air-fuel mixtures are thoroughly combusted and said exhaust gas is substantially free of combustible gas and partially combusted gas.

3,923,020
THROTTLE CONTROL DEVICE FOR MOTOR VEHICLES

John E. Gilligan, Stockton, Calif., assignor to Alert Control Company, Stockton, Calif.

Filed Feb. 11, 1974, Ser. No. 441,561
Int. Cl.² F02D 11/08
U.S. Cl. 123—103 C 1 Claim



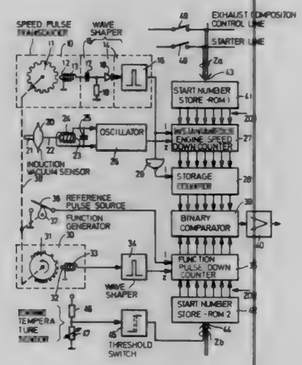
1. A throttle control device for a motor vehicle having a throttle lever, a spring connected with the throttle lever and yieldably urging the same in a throttle-closing direction, and an operator-actuated throttle rod connected to the throttle lever to move the same in the opposite and throttle-opening direction against the action of the spring; said device comprising a hydraulic pressure-actuated power cylinder interposed in series in the throttle rod, valve-controlled hydraulic pressure conduit means connected to the power cylinder, said conduit means normally delivering, during vehicle operation, hydraulic pressure to the power cylinder to cause contraction thereof to its minimum length whereby to provide undiminished throttle capacity of said rod, and means responsive to the vehicle attaining a predetermined road speed operative in association with said valve-controlled hydraulic pressure conduit means, to cause the latter to relieve the hydraulic pressure from the power cylinder to permit expansion thereof by the spring to its maximum length whereby to diminish the throttle capacity of said rod.

3,923,021

DIGITAL CIRCUIT PROVIDING A TRIGGER SIGNAL TO TRIGGER AN EVENT BASED ON OPERATING FUNCTIONS OF MOVING APPARATUS ELEMENTS, PARTICULARLY TO TRIGGER AN IGNITION PULSE IN AN INTERNAL COMBUSTION ENGINE

Eberhard Stark, Korntal, Germany, assignor to Robert Bosch G.m.b.H., Gerlingen-Schillerhoehe, Germany

Filed Aug. 12, 1974, Ser. No. 496,651
Claims priority, application Germany, Sept. 14, 1973, 2346333
Int. Cl.² F02P 3/02
U.S. Cl. 123—117 R 27 Claims



1. Digital system to provide a trigger signal to trigger an operating event in an operated device at a time subsequent to a datum instant, which time depends on operating conditions of the device,

characterized by

a. first transducer means (10) coupled to the device and providing a sequence of first pulses representative of an operating condition thereof;

first counter means (27, 28) having said first pulses applied thereto, determining the time gap between pulses, and providing a representation of said time gap in form of a digital number;

b. a function generator (30) providing a second sequence of second pulses, having a time distribution which is representative of the function of variation of an operating condition with respect to the operating condition of said device subsequent to operation with respect to said datum;

second counter means (35) providing a representation of the number of second pulses, derived from said function generator, in the form of a second digital number, arising subsequent to said datum;

c. a digital comparator (39) connected to and comparing the numbers in both said first counter means (27, 28) and said second counter means (35) and providing said trigger signal upon determination of equality of said first and second digital number;

d. a start number storage means (41) connected to at least one of said counter means (27, 28; 35), and providing a predetermined start number to the respective counter means representative of an operating condition of the device; and

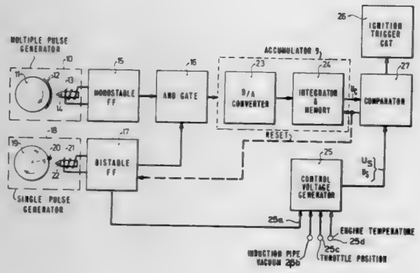
e. means (36, 37) coupled to said operated device, providing a datum reference pulse, and providing said pulse at a predetermined operating position of an operating element of said device to form said datum, the load input terminal (a) of said second counter means (35) being controlled by the datum reference pulse from said reference pulse source means.

3,923,022

COMBUSTION ENGINE IGNITION TIMING SYSTEM

Hermann Scholl, Korntal, Germany, assignor to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Filed Apr. 17, 1974, Ser. No. 461,527
Claims priority, application Germany, Apr. 23, 1973, 2326187
Int. Cl.² F02P 1/00, 5/04
U.S. Cl. 123—117 R 4 Claims



1. Ignition timing control system for internal combustion engines, comprising:

shaft position transducer means (18) providing a position signal representative of a predetermined angular position of the crankshaft of the engine;

pulse transducer means (10) providing a train of sequential signals upon rotation of the shaft;

a wave-shaping circuit (15) triggered by the pulse transducer means (10) and providing sequential similar pulses;

a gate (16) energized by the position signal connected to pass the sequential signals upon energization by the position signal;

an accumulator (9) having a pulse conversion stage (23) providing an output voltage representative of the number of pulses after energization of the gate (16), and

an integrator and memory stage (24) storing the instantaneous accumulated voltage representative of the instantaneous angle of rotation of the crankshaft after energization of the gate (16) to provide a progressively increasing output voltage representative, at any instant of time, of the instantaneous position of the shaft after occurrence of said position signal;

a control voltage generator (25) connected to the position transducer means (18) and, upon being triggered by said position signal, generating a time-varying command voltage having a nonlinear time-voltage relationship, and depending on at least one operating parameter of the engine, representative of a commanded ignition instant with respect to said predetermined angular crankshaft position;

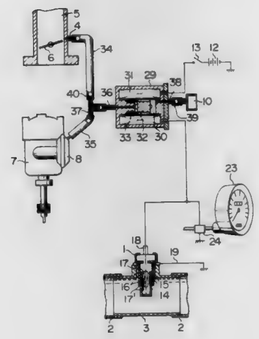
and a comparator (27) comparing the output voltage of the control voltage generator (25) and of the accumulated votage of the accumulator (9) and providing an output indicative of the ignition instant, as commanded by the control voltage generator (25) upon rotation of the crankshaft to the commanded position, as represented by the accumulated signal.

3,923,023

IGNITION TIMING CONTROL DEVICES FOR AUTOMOTIVE VEHICLES

Mikiji Ito, Nagoya; Yoshi Suzuki, Kariya; Kiyohiku Mizuno, Nagoya, and Susumu Urano, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sept. 28, 1973, Ser. No. 401,715
Claims priority, application Japan, Sept. 29, 1972, 47-98455; Oct. 11, 1972, 47-118086[U]
Int. Cl.² F02P 5/08
U.S. Cl. 123—117 A 2 Claims



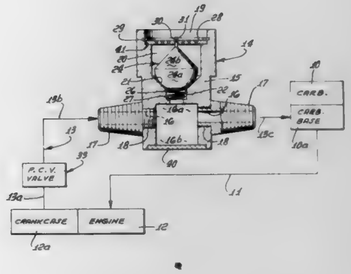
1. In an automotive engine including a hose through which cooling water flows from the engine to a radiator and a vacuum advance mechanism having a carburetor and a distributor including a diaphragm chamber, an ignition control device comprising a thermosensitive switch which is fixed to said hose through which cooling water flows from the engine to said radiator and being adapted to detect the temperature of said cooling water, said thermosensitive switch including two permanent magnets disposed in series, two thermal ferrites of which Curie points are about 60°C and about 100°C, respectively, which are interposed between said permanent magnets, and a reed switch at least partially surrounded by said permanent magnets and thermal ferrites, an electromagnetic valve including a chamber formed therein having an atmospheric port through which said chamber is communicated with the surrounding air and an outlet port; a T-shaped conduit communicating said carburetor and said diaphragm chamber with said outlet port of said electromagnetic valve, said electromagnetic valve further including an electromagnetic coil, a spring mounted in said chamber and a moving core contained in said chamber and biased by said spring; a source of electric power, the terminals of said electromagnetic coil being connected between said source of electric power and said switch wherein when said coil is energized said moving core is displaced to close said atmospheric port; and said device further comprising at least one orifice which is inserted into said T-shaped conduit wherein when said temperature of said water is below about 60°C and above about 100°C said switch is closed to energize said electromagnetic coil to close said atmospheric port and thereby advance said distributor by the air pressure of said carburetor and wherein when the temperature of said water is between about 60°C and 100°C said switch is opened to thereby deenergize said electromagnetic coil so that atmospheric pressure and the pressure of said carburetor are both transmitted to said diaphragm chamber.

3,923,024

AIR METERING VALVE FOR ENGINE AIR INLET SYSTEM

John W. Dabrio, 14533 San Cristobal Drive, La Mirada, Calif. 90638

Filed Mar. 28, 1974, Ser. No. 455,554
Int. Cl.² F02M 25/06
U.S. Cl. 123—119 B 2 Claims



1. In a system for metering gas delivery to the air-fuel mixture stream supplied to an internal combustion engine, said system including a duct to deliver engine crankcase gas flow to said stream, an air metering valve unit comprising

a. a body operatively connectible in series with said duct and providing a through passage to pass the crankcase gas flow through the body,

b. the body also having an air inlet, and

c. control means including a valve element movable in the body in response to relatively decreased suction communicated to the valve unit via said stream to increase air delivery via said inlet to said crankcase gaseous flow, and also movable in response to relatively increased suction communicated to the valve unit from said stream to decrease air delivery via said inlet to said crankcase gaseous flow,

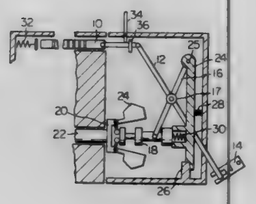
d. said body defining an air flow chamber, there being an annular seat in said chamber, the valve element comprising a stopper movable in the chamber to annularly engage said seat in response to said increased suction communication to said stopper, said chamber including a flow port communicating between said through passage and said stopper, there being a compression spring in said flow port for urging the stopper in a direction away from the seat in response to said relatively decreased suction communication to the stopper via said flow port, the stopper having an annularly convex lower portion to engage the seat, and an upwardly tapering, cone shaped upper portion to be swept by air entering the chamber via said inlet, the chamber extending upright above the level of said through passage, and

e. a perforated plate extending across said inlet and removably carried by said body, there being interfitting guide means on the plate and stopper to guide stopper movement in a vertical direction toward and away form said seat so that said stopper remains substantially centered relative to said seat but is also free to seat in slightly differing horizontal positions, said guide means including a pin projecting upwardly from the apex of said cone shaped upper portion of the stopper and a central bore in the plate slidably receiving the pin.

3,923,025
FUEL INJECTION PUMP GOVERNOR ASSEMBLY FOR AN INTERNAL COMBUSTION ENGINE

Hiroi Isobe, and Iwao Maruyama, both of Higashimatsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1974, Ser. No. 442,468
Claims priority, application Japan, Apr. 20, 1973, 48-44146
Int. Cl.² F02D *1/04*
U.S. Cl. 123—140 R 6 Claims



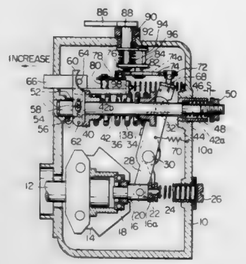
1. A fuel injection pump governor assembly, comprising:
a fuel injection pump control rod movable from a position to provide substantially zero fuel injection volume in a direction to increase the fuel injection volume;
an engine driven centrifugal governor operatively connected to said control rod to urge said control rod toward said position of substantially zero fuel injection volume as a predetermined function of engine speed;
a stopper member manually actuable to move said control rod to said position of substantially zero fuel injection volume;
yieldable means disposed between said centrifugal governor and said control rod and arranged to yield only when said control rod is moved by said stopper member to said position of substantially zero fuel injection volume to prevent breakage of said governor assembly; and
biasing means engagable with said yieldable means when said control rod has moved to a predetermined position in said direction to increase the fuel injection volume;
the stiffness of said biasing means being selected so that further movement of said control in said direction is possible only if the engine speed is below a first predetermined value; and
said yieldable means and said biasing means being arranged so that said yieldable means yields only when said stopper member is actuated to move said control rod to said position of substantially zero fuel injection volume even if said biasing means is in engagement therewith.

3,923,026
DIESEL ENGINE FUEL INJECTION PUMP GOVERNOR

Hachiro Aoki, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed May 22, 1974, Ser. No. 472,331
Claims priority, application Japan, June 1, 1973, 48-60781
Int. Cl.² F02D *1/04*, *1/06*
U.S. Cl. 123—140 J 13 Claims

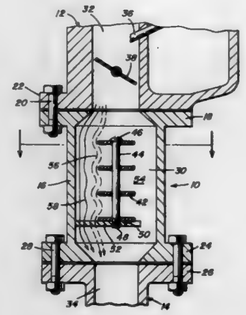
1. A fuel injection pump governor comprising a fuel control rod, flyweights displaceable upon rotation thereof, first linkage means operably connecting said flyweights to said control rod, governor spring means and an idling spring connected to said first linkage means and operable to biasingly oppose displacement of said flyweights upon rotational speed increase of the latter, said first linkage means comprising linkage elements operable to disengage said idling spring from said flyweights when the flyweight rotational speed is below a predetermined value.



3,923,027
FUEL ATOMIZING DEVICE AND VAPORIZER

Henry L. Daniels, Box 223, Munfordville, Ky. 42765

Filed Aug. 21, 1973, Ser. No. 389,643
Int. Cl.² F02M *29/00*
U.S. Cl. 123—141 3 Claims

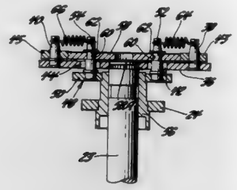


1. In combination with a carburetor supplying a mixture of liquid fuel and air to an intake manifold of an internal combustion engine, a fuel atomizing device comprising a conduit conducting the fuel-air mixture in one direction therethrough from the carburetor to the intake manifold and defining an atomizing zone intermediate the opposite ends of said conduit, said zone including a central longitudinal area bounded by an outer peripheral area extending about said central area and along said zone, and stationary flow deflecting means mounted within said central area and operative to impart lateral inward and outward oscillations to at least portions of the fuel and air in the mixture moving through said outer peripheral area at respectively different amplitudes in response to pressure differential induced flow of said mixture in said one direction, said flow deflecting means including a fixed central mounting stem, and a plurality of axially spaced generally flat discs secured to said stem defining low pressure pockets therebetween within the flow stream of said fuel-air mixture and disposed wholly within said central area.

3,923,028
IGNITION DISTRIBUTOR CENTRIFUGAL ADVANCE MECHANISM

Robert W. Campbell, and Robert E. Young, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 23, 1974, Ser. No. 435,863
Int. Cl.² F02P *1/00*
U.S. Cl. 123—146.5 A 8 Claims

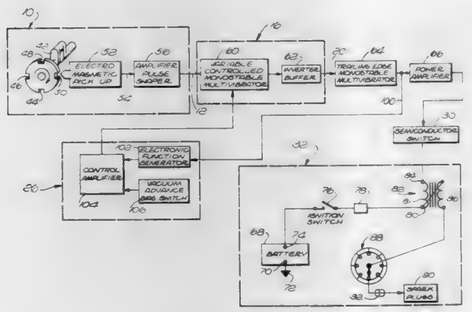


7. A centrifugal advance mechanism for adjusting a timing member of an ignition distributor relative to a driving shaft comprising, a distributor having a base, a shaft rotatably supported by said base, a timing member disposed about said shaft and rotatably adjustable relative thereto, a weight plate secured to said shaft having a pair of pivot pins secured thereto, said weight plate having a pair of openings, a flyweight pivotally supported by each pivot pin, a cam plate having outer contoured wall sections respectively engaging inner surfaces of said flyweights whereby said cam plate is rotatably adjusted relative to said shaft by movement of said flyweights, first and second posts connected to said timing member, means removably connecting said cam plate to said posts, said posts passing respectively through said openings in said weight plate, said posts connected to said cam plate and said timing member at points located on opposite sides of said weight plate whereby said cam plate and timing member are rotatably adjustable together relative to said shaft, and a spring interposed between each post and each pivot pin.

3,923,029
ELECTRONIC IGNITION SYSTEM

Benito Polo, 9446 Borson St., Downey, Calif. 90241

Continuation-in-part of Ser. No. 361,652, May 18, 1973, which is a continuation of Ser. No. 167,900, Aug. 2, 1971. This application Apr. 17, 1974, Ser. No. 461,773
Int. Cl.² F02P *5/04*
U.S. Cl. 123—148 E 8 Claims

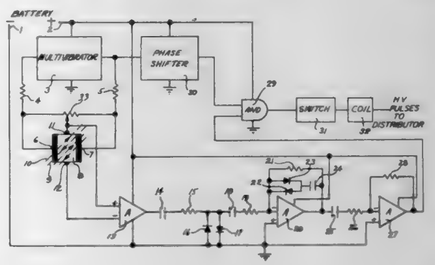


1. An electronic ignition system for internal combustion engines comprising:
A. electromagnetic means for generating a plurality of pulses,
1. said means generating one pulse for each spark plug which will fire during each revolution of a crankshaft in said engine, and
2. the repetition rate of said pulses being directly proportional to engine speed;
B. control means having first and second input terminals and an output terminal for providing a control signal having a duration variable with engine speed thereby to advance the firing of the spark plugs in said engine, said control signal upon termination thereof initiating the firing of a spark plug;
C. an electronic function generator means for automatically generating an electronic signal of predetermined but constant wave form having a characteristic matching the desired spark advance profile of said engine, said electronic signal commencing responsive to termination of said control signal;
D. means connecting said pulses from said electromagnetic means to said first terminal of said control means, said control signal being initiated by each of said pulses;
E. capacitive feedback means connected between said output terminal and said second input terminal for terminating said control signal a predetermined fixed time after initiation thereof in the absence of an electronic signal; and
F. means connecting said electronic signal to said second terminal for automatically advancing termination of said control signal as engine speed increases.

3,923,030
PHASE SENSITIVE IGNITION TIMING SYSTEM

Frank Kenneth Luteran, 10 Charles St., Auburn, N.Y. 13021

Filed Sept. 19, 1974, Ser. No. 507,567
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 E 10 Claims



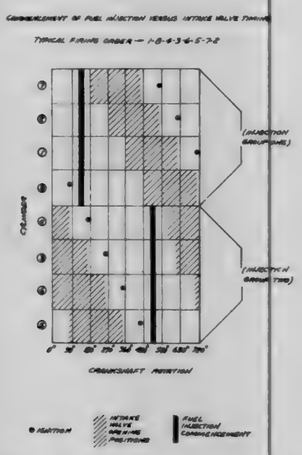
1. An ignition timing system for an internal combustion engine comprising:
a. an engine having a distributor shaft;
b. a magnetic permeable rotor with a plurality of lobes affixed to the distributor shaft;
c. a magnetic permeable stator with a plurality of poles concentrically positioned about the rotor;
d. energization coils wound on the stator and producing a magnetic field upon energization thereof;
e. electrical current sources means providing energization of the coils in accordance with the ignition timing requirements of the engine;
f. a Hall element attached to a pole piece of said stator and disposed in said magnetic field, said element having control input leads and output signals leads, generating an output signal of the same frequency as the control input signal, phase and amplitude modulated in accordance with the amplitude and direction of the instantaneous value of said magnetic field;
g. signal generator means producing a high frequency signal and connected to the control leads of the Hall element;
h. differential amplifier means connected to the output signal of the Hall element and producing an output signal;

i. amplifier means connected to the output of the differential amplifier and producing an amplitude limited output signal;
j. phase shifter means connected to the signal generator means and producing a high frequency output signal that is phase shifted an amount equal to the phase shift occurring in the differential amplifier and the amplifier;
k. an AND gate combining the amplifier output signal and the phase shifter output signal and producing a timing signal when the amplifier and phase shifter signals are in phase;
l. H.V. pulse generating means for producing an ignition pulse when the timing signal is generated.

3,923,031
SYSTEM FOR REORDERING THE FUEL INJECTION SEQUENCE TO FACILITATE STARTING OF AN INTERNAL COMBUSTION ENGINE

Theodore W. Keranen, Pontiac, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 25, 1974, Ser. No. 526,863
Int. Cl.² F02M 51/00, 39/00
U.S. Cl. 123—179 L 23 Claims

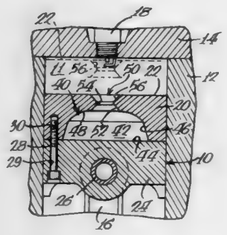


1. A system for enhancing the start of a fuel injection equipped internal combustion engine, said engine having a plurality of cylinders and an electronic control unit generating in synchronization with the rotation of the engine at least two sequential injection signals indicative of the engine's fuel requirements, each cylinder having an associated intake valve and fuel injector valve, said intake valves periodically opening in synchronization with the rotation of the engine to admit a mixture of fuel and air into the cylinders and each injector valve sequentially injecting fuel for each cylinder in response to one of said sequential injection signals wherein said injection signals are generated at a time relative to the opening of the associated intake valves to commence fuel injection for each cylinder prior to the opening of the associated intake valve, and wherein said engine further includes an electrically actuated starter to crank the engine to effect a start thereof comprising:
means for generating a start attempt signal indicative of an attempt to start the engine in response to the actuation of the starter; and
means electrically disposed between the electronic control unit and the fuel injector valves, for reordering, in response to said start attempt signal, the sequence in which the injector valves are actuated by the generated injection signals to commence fuel injection for each cylinder when the associated intake valve is open.

3,923,032
CHAMBERED PISTON FOR AN INTERNAL COMBUSTION ENGINE

Karl E. Studenroth, 1609 Euclid Ave., Chicago Heights, Ill. 60411

Filed Apr. 22, 1974, Ser. No. 462,642
Int. Cl.² F02F 3/00, 3/26
U.S. Cl. 123—193 P 9 Claims

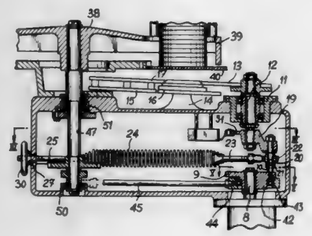


1. In a piston for a four cycle spark ignition internal combustion engine having a spark plug, the piston cooperating with the engine walls to define a combustion chamber of variable volume, the improvement comprising a piston member with a fixed piston area and having a piston chamber formed within said piston member, said piston chamber having a nozzle of an area of generally five or less percent of the piston area exiting through an outer surface of the piston member into said combustion chamber, said piston chamber having an interior of a cross-sectional area at least five times larger than the cross-sectional area of said nozzle, said piston chamber containing substantially all of a combustible mixture introduced into the combustion chamber of the engine and being in communication with said spark plug near the completion of the compression cycle, whereby upon ignition of the combustible mixture in said piston chamber by said spark plug, the gases generated by combustion are discharged from said piston chamber out said nozzle to drive said piston member by jet reaction and after being discharged into said combustion chamber act on said outer surface of said piston to further drive said piston member.

3,923,033
ELECTRICALLY CONTROLLED TARGET THROWING DEVICE

Jean-Michel Laporte, and Jean-Claude Laporte, both of Pont de la Brague, 06600 Antibes, France

Filed July 16, 1974, Ser. No. 489,066
Claims priority, application France, July 17, 1973, 73.26111
Int. Cl.² F41B 3/04
U.S. Cl. 124—8 10 Claims



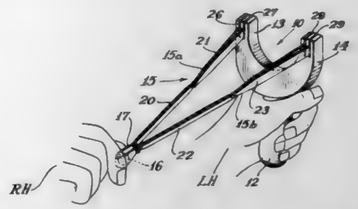
1. In a device for the throwing of plate-type frangible targets, said device comprising a body which supports a first rotatable shaft having a throwing arm affixed to a first end thereof and a crank mechanism affixed to the second end thereof, a traction spring, the crank mechanism being coupled to the extendable end of the traction spring and including a crank which extends radially outwardly with respect to the first rotatable shaft, the crank mechanism crank supporting a first crank pin which is driven to extend the spring to store energy for the throwing stroke of the arm, an improved mechanism for controlling the cocking of the throwing arm against the tension of the traction spring comprising:
drive motor means for providing power for the movement of the crank mechanism against the force of the traction spring to place the spring in tension, said motor means including an electric motor and having a rotatable output shaft arranged coaxially with the first rotatable shaft of the throwing device;
means for coupling movement of said drive motor means output shaft to the crank mechanism, said coupling means including a second crank pin connected to and radially offset from said drive motor means output shaft axis by the same radial distance as the first crank pin is offset from the axis of the first rotatable shaft, the first and said second crank pins extending through a common plane so as to be in driving relationship; and
means for controlling the energization of said drive motor means, said energization controlling means interrupting the supply of current of said electric motor when the throwing arm has been moved to the cocked position, said energization controlling means including:
a relay, said relay having a solenoid and including normally open contacts in series with said electric motor;
first relay energization circuit means for completing a current path between said relay solenoid and a current source, said first circuit means including a normally open switch, the closing of said normally open switch permitting current flow through said relay solenoid to energize said relay to close said normally open contacts to thereby energize said electric motor;
second relay energization circuit means for completing a current path between said relay solenoid and a current source, said second circuit means being connected in parallel with said first circuit means and including a normally closed switch, the opening of said normally closed switch when said first circuit means normally open switch is in the open condition de-energizing said relay and said electric motor;
finger means, said finger means extending generally outwardly with respect to the first rotatable shaft of the throwing device and being rotatable therewith so as to engage an actuator means to open said normally closed switch and permit the deenergization of the solenoid; and
actuator means for causing opening of said normally closed switch, said switch actuator means being supported on the throwing device body in a position so as to be contacted by said finger means, said finger means and actuator means being relatively positioned such that said normally closed switch of said second circuit means will be opened when the first and said second crank pins are in contact under the effect of the traction spring and the traction spring is under tension.

3,923,034
SLINGSHOT

Rodney A. Wolf, 2148 Magnolia Lane, Highland Park, Ill. 60035

Continuation of Ser. No. 269,588, July 7, 1972, abandoned.
This application Sept. 9, 1974, Ser. No. 504,721
Int. Cl.² F41B 7/00
U.S. Cl. 124—20 R 16 Claims

1. In a slingshot comprising a frame and resilient band means secured thereto, the band means comprising resilient side means and an intermediate missilereceiving portion adapted to retain a missile, the resilient side means being tensioned and then released to fling the missile, the improvement characterized in that the resilient side means are tapered lengthwise substantially along its full length in cross section when untensioned from the connection of the side means to

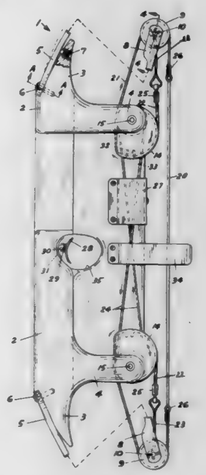


the frame to the connection to the missile-receiving portion to materially increase the velocity of a missile and the efficiency of the slingshot.

3,923,035
COMPOUND BOW

George H. Trotter, 7107 Janey St., Shreveport, La. 71108

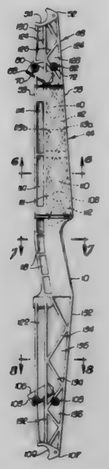
Filed Aug. 20, 1974, Ser. No. 498,970
Int. Cl.² F41B 5/00
U.S. Cl. 124—24 R 1 Claim



1. A compound bow comprising:
a. a frame;
b. a pair of limbs carried by said frame and adapted to bend when said bow is drawn;
c. a single pulley carried by each of said limbs and positioned at the free end of each of said limbs at the extremities of said limbs;
d. a pair of cams carried by said frame;
e. a first forward tension cable, one end of which is carried by one of said cams while the other end of which extends uninterrupted to said pulley on one of said limbs, and a second forward tension cable, one end of which is carried by the other of said cams while the other end of which extends uninterrupted to the other of said pulleys;
f. a bowstring, each end of which is reapectively attached to the ends of said forward tension cables, whereby when said bowstring is drawn said cams are caused to rotate and said pair of forward tension cables causes rotation of said pair of pulleys;
g. a pair of rear tension cables in cooperation with said pair of limbs and said pair of cams, whereby when said bowstring is drawn, said pair of cams rotate, and said forward tension cable unwinds from said pair of cams, and said rear tension cables wind on said pair of cams, respectively;

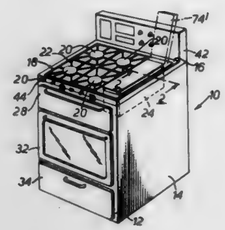
h. synchronizing cable means in cooperation with said pair of cams to synchronize the rotation of said pair of cams when said bowstring is drawn;
i. synchronizing pulleys carried by said pair of cams and positioned on the frame with said synchronizing cable means reeved there about;
j. adjusting means in cooperation with said rear tension cable and said bowstring to permit adjusting the length of draw of said bow;
k. a frame aperture in said frame and a pivoting hand grip in said frame aperture to permit steady aiming of said bow;
l. a fletching slide means affixed to said frame between said cams and spaced from the frame toward a user to protect the feathers of an arrow being projected from engaging the synchronizing pulley means;
m. an arm guard positioned below said fletching slide on said frame; and
n. cam stop means mounted on cam seats in the rotational path of said cam to prevent further rotation of said cams at full draw of said bow.

3,923,036
BOW STRUCTURE
Thomas Paul Jennings, Sun Valley; John Monroe Williamson, Hollywood, and Carl Sumida, Los Angeles, all of Calif., assignors to Jennings Compound Bow, Inc., North Hollywood, Calif.
Filed Nov. 12, 1973, Ser. No. 415,011
Int. Cl.² F41B *5/00*
U.S. Cl. 124—30 R **20 Claims**



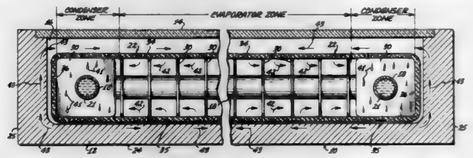
1. In a handle section for a compound bow,
said handle section having a front surface, a back surface, a longitudinal axis and a plane of bending passing through said longitudinal axis and being generally perpendicular to said front surface, said back surface and passing through a taut bow string when the handle section is connected to bow limbs;
said handle section having upper and lower ends for connection to an upper limb and a lower limb;
said handle section being formed of a lightweight metal and including an offset portion which is offset from said longitudinal axis and which portion lies in a plane that is offset from and generally parallel to the plane of bending of the handle section with the offset portion defining a window for the discharge of an arrow;
said offset portion having a ribbed surface which is generally parallel to said plane of bending with the ribbed surface including cross ribs positioned in planes that are transverse to the plane of bending of the handle section;
said ribbed surface including side ribs positioned in planes transverse to the plane of bending of the handle section with the side ribs being positioned adjacent to the front and rear surfaces of the handle section;
said side ribs being joined to said cross ribs with the cross ribs extending from the side ribs in a diagonal direction with respect to the longitudinal axis of said handle section;
said cross ribs and said side ribs forming recessed regions in said ribbed surface with the recessed regions being bounded by the rigid connection of the cross ribs and the side ribs,
whereby the weight of the handle section is reduced by the empty volume of the recessed regions, the handle section being resistant to shear and bending forces applied in the plane of bending of the handle section and in the plane of the offset portion with the diagonal cross ribs tending to translate shear forces in the handle section into compressive forces in the cross ribs and the rigid structure of the joined cross ribs and side ribs providing the handle section with resistance to bending in the bending plane of the handle section and in the plane of the offset portion.

3,923,037
COOKER
Joseph Donato, North Balwyn, Australia, assignor to Modern Maid (Vic.) Pty. Ltd., Footscray, Australia
Filed Oct. 1, 1974, Ser. No. 511,005
Claims priority, application Australia, Oct. 2, 1973, 5066/73
Int. Cl.² F24C *3/00*
U.S. Cl. 126—39 C **7 Claims**



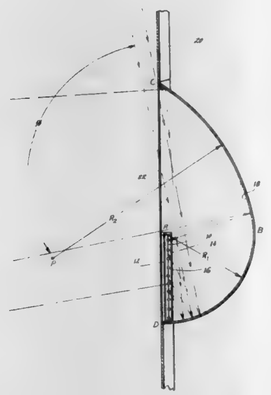
1. A cooker comprising, an oven compartment extending substantially across the width thereof, side-by-side grilling and warming compartments above the oven compartment, the grilling and oven compartments opening to the front of the cooker and the warming compartment opening to the top thereof, a cooking range on the top of the cooker adjacent the said warming compartment and above said grilling compartment, the cooking range including at least one heating device arranged for heating of the under-side of a cooking receptacle placed thereon, said warming compartment including a flat topped cover movable to a closed position at which the warming compartment is substantially closed with the top of the cover providing a surface for standing of cooking receptacles thereon and to an open position providing access to the warming compartment, thermal insulation between the grilling compartment, warming compartment and oven compartment, an internal electric heating element in the warming compartment for warming of articles placed therein, said warming compartment extending to a depth below the top of the cooker which is greater than the depth of the grilling compartment.

3,923,038
SOLAR ENERGY COLLECTOR PANEL
John M. Cutchaw, 7333 E. Virginia, Scottsdale, Ariz. 85257
Filed July 18, 1974, Ser. No. 489,529
Int. Cl.² F24J *3/02*
U.S. Cl. 126—271 **15 Claims**



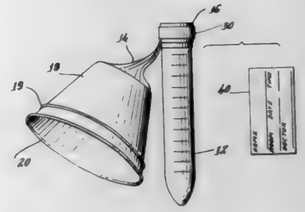
1. A solar energy collector panel for collecting solar heat energy and transmitting that heat to a heat absorbing fluid, said solar energy collector panel comprising:
a. a wicking membrane of planar configuration;
b. passage means having an inlet and an outlet, said passage means configured for positioning adjacent the periphery of said wicking membrane and shaped to substantially conform therewith, said passage means adapted to allow movement of a heat absorbing fluid therethrough;
c. a vaporizable working liquid in said wicking membrane, said working fluid adapted to be vaporized upon impingement of solar heat energy on said wicking membrane with the resulting vapor movable toward said passage means for condensation proximate said passage means; and
d. means for enclosing said passage means and said wicking membrane for hermetic sealing thereof, said means adapted to expose at least the central portion of said wicking membrane for impingement of solar heat energy thereon.

3,923,039
SOLAR ENERGY HEATING SYSTEM
Gerald Falbel, 472 Westover Road, Stamford, Conn. 06902
Filed Feb. 7, 1975, Ser. No. 547,917
Int. Cl.² F24J *3/02*
U.S. Cl. 126—271 **10 Claims**



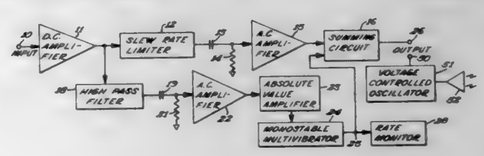
1. A focused solar heating system for collecting both off- and on-axis direct and diffuse solar radiation and applying such radiation to a solar collector, comprising in combination
a. focusing reflector having an entrance aperture and a concave reflecting surface positioned behind said entrance aperture,
b. a solar collector plate mounted on said focusing reflector generally in the plane of said entrance aperture and substantially covering a lower portion of said entrance aperture when the curvature axes of said focusing reflector are in a horizontal orientation,
c. said solar collector plate being blackened or selectively absorbing on both front and rear surfaces thereof and forming a direct entrance aperture with the remainder of said entrance aperture forming a reflective entrance aperture,
d. said concave reflective surface being a continuous, substantially curved surface of first and second merging curves formed by first and second radii of curvature, the first radius being substantially equal to the height of said solar collector plate and projecting from the uppermost point on said collector plate to form said first curve having a cylindrical shape behind said solar collector plate, said second radius being greater than said first radius and projecting from a point in front of and below said uppermost point of said first radius to form said second curve behind said reflecting entrance aperture such that solar radiation entering said reflecting entrance aperture is reflectively applied to the rear side of said solar collector plate.

3,923,040
BIOLOGICAL SPECIMEN COLLECTORS AND METHOD
Janet Beach, P.O. Box 904, Camden, Maine 04843
Filed June 24, 1974, Ser. No. 482,161
Int. Cl.² A61B *10/00*
U.S. Cl. 128—2 F **6 Claims**



1. A container for collecting and storing specimens of material having an access opening with a peripheral rim on which is positioned one end of a tube for guiding specimens of material into said container, which tube is made from supple elastic material which is impervious to the specimens to be gathered, and a closure member comprising a closed elastic loop whose inside circumference in the unstretched state is smaller than the outside circumference of said tube positioned on said rim with a portion of the wall of said tube stretched over said opening in drumhead fashion and with parts of said wall of said tube adjacent said portion retainably enclosed about said rim by the positioning of said closure member thereon.

3,923,041
CARDIAC SIGNAL AUGMENTATION APPARATUS
Peter Stasz, Minneapolis, and Louis C. Cosentino, Wayzata, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Mar. 19, 1973, Ser. No. 342,701
Int. Cl.² A61B *5/04*
U.S. Cl. 128—2.06 R **9 Claims**



1. In cardiac instrumentation apparatus including electrode means adapted to be connected to a body to receive cardiac

pacer pulses and EKG pulses, the improvement comprising: input means for connection to the electrode means to receive the pulses; output means; EKG channel circuit means; cardiac pacer pulse channel circuit means; the EKG channel means including first means for substantially blocking pacer pulses; the pacer pulse channel means including second means for substantially blocking EKG pulses; means connecting the first and second means to the input means; third means for providing uniform pacer pulses in response to pacer pulses; means connecting the third means to the second means; summing means connecting the first and third means to the output means for summing the EKG pulses with the uniform pacer pulses prior to output; and the output means connected to means for receiving and displaying pulse information representative of the input signal.

3,923,042

ELECTRICAL DETECTOR/TRANSDUCER/APPLICABLE ON THE SKIN SURFACE FOR BIOMETRICAL OBSERVATIONS

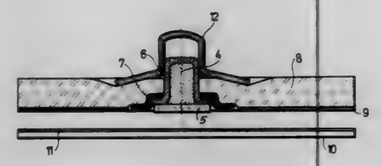
László Hajdu; György Hegyessy; József Balla, and Gábor Vitán, all of Budapest, Hungary, assignors to Medicor Muvek, Budapest, Hungary

Filed Sept. 30, 1974, Ser. No. 510,708

Claims priority, application Hungary, Oct. 15, 1973, ME 1674

Int. Cl.² A61B 5/04

U.S. Cl. 128—2.06 E 8 Claims



1. An electrical detector to fix to the skin for biometrical observations, comprising an electrically conductive housing defining a cavity having an open side and having a silver inner surface, a coherent porous body of silver grains compressed in said housing substantially filling the cavity and having cohesive bonds between contacting silver surfaces of said grains and between said grains and said housing surface, and a coating of silver chloride on the surfaces of substantially all of said grains other than said contacting surfaces.

3,923,043

METHOD FOR ACQUISITION OF EXHALATION TIDAL VOLUME AND MINUTE VENTILATION DATA

Roman L. Yanda, 15423 Vanowen St., Van Nuys, Calif. 91405

Continuation of Ser. No. 401,577, Sept. 28, 1973, abandoned, which is a continuation of Ser. No. 120,980, March 4, 1971, abandoned. This application Aug. 12, 1974, Ser. No. 496,410

Int. Cl.² A61B 5/08

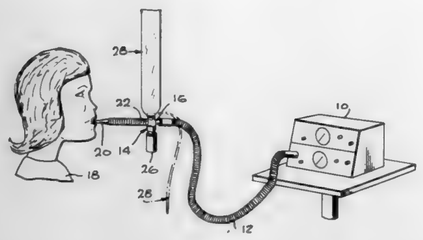
U.S. Cl. 128—2.08 2 Claims

1. The method of measuring the exhalation tidal volume of a patient comprising the steps of:

selectively connecting a fully collapsed flexible inelastic bag to a respirator to receive substantially all the exhaled breaths of a patient, said bag having a volume of substantially zero when fully collapsed and a selected known volume when fully inflated;

accumulating all the exhaled breaths of said patient in said bag until said bag is fully inflated; and

providing on said bag a table of tidal volumes with respect to numbers of exhaled breaths necessary to fully inflate the bag whereby tidal volume can be read from the table



based on the number of exhaled breaths necessary to inflate the bag.

3,923,044

EYE LID BLINKER

David Miller, 5 Bridge St., Watertown, Mass. 02172

Continuation-in-part of Ser. No. 490,301, July 22, 1974, abandoned. This application Jan. 24, 1975, Ser. No. 544,001

Int. Cl.² A61H 1/02, 5/00

U.S. Cl. 128—25 A 13 Claims



1. An apparatus for blinking or closing the eye lid comprising:

arm means attachable to the eye lid,

means for holding said arm means for movement at least downwardly to cause closure of said eye lid,

means for supporting and positioning said arm means and holding means for said arm means adjacent the eye,

and electromechanical means including an oscillator and means responsive to the frequency of operation of said oscillator for operating said arm to close the eye lid at a predetermined frequency in the range of normal blinking rates.

3,923,045

AMBULATION DEVICE

Percy B. Talati, 6334 Salisbury Drive, Fort Wayne, Ind. 46816, and Daniel T. Dwyer, 4334 McMillen Park Drive, Fort Wayne, Ind. 46806

Filed Oct. 10, 1974, Ser. No. 513,640

Int. Cl.² A61H 1/02

U.S. Cl. 128—25 R 7 Claims

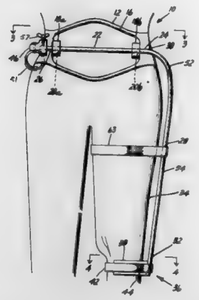
1. An ambulation device for hemiplegics and the like which comprises:

a torso-encircling band;

torsion shaft means being mounted on said band for horizontally positioning a torsion shaft across the small of a hemiplegic's back and for torsional rotation of said shaft about the longitudinal axis thereof;

a vertically extending leg-engaging arm extending alongside the paralyzed leg and having the upper end thereof attached to one end of said torsion shaft and the lower end disposed therebelow;

means for attaching said lower end of said arm to the paralyzed leg of said hemiplegic near the ankle; and



a swing lever having a first end thereof secured to the other end of said torsion shaft and a second end extending forwardly therefrom.

3,923,046

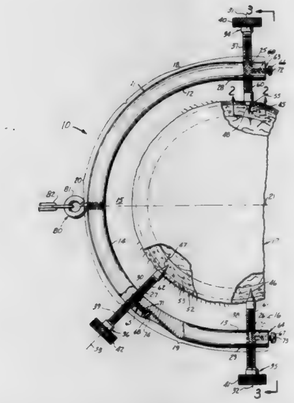
SKULL TONG

Milton D. Helfetz, 704 N. Bedford Drive, Beverly Hills, Calif. 90210

Continuation of Ser. No. 334,701, Feb. 22, 1973, abandoned. This application Sept. 4, 1974, Ser. No. 502,917

Int. Cl.² A61H 1/02

U.S. Cl. 128—75 11 Claims



1. A skull tong for rigid engagement with a skull, comprising: a rigid frame comprising a first and a second arm member, and a transverse member joining the arms together, the members lying in substantially the same plane, and the arm members extending in the same general direction away from the transverse member and being spaced apart from one another so as to form a region between the members which is open at one end to receive a skull; a first and a second passage in the respective first and second arm members, and a third passage in one of said members, which third passage is spaced from the other passages, all of said passages opening into said region and each having a respective central axis; a thread in each of said passages; a first, second and third engagement rod, each rod having a respective central axis of rotation coaxial with the central axis of the respective passage; a thread on each of said engagement rods coaxial with the central axis of the rod, said engagement rods being threadedly engaged to the thread in the respective first, second and third passages, whereby rotating said rods moves the rods along their respective central axes into and out of said region, the threads of the respective passages and of the engagement rods which are threadedly engaged thereto having a dimension of pitch; a first, second and third lock means carried by the first and second arm members and by the transverse member, respectively, for engaging the respective engagement rods to hold them in a respective selected angular position; a drill on the end of each engagement rod concentrically with the respective central axis said drill comprising cutter means and a non-cutting portion which is axially aligned with the cutter means, said non-cutting portion providing a surface for engagement with the wall of a hole in the skull which is cut by the respective cutter means, the cutter means comprising an intersection with the said portion, and said portion comprising a fragment of a surface of revolution, whereby the frame may be placed over a skull with the engagement rods retracted sufficiently to clear the skull, and then the engagement rods may be rotated so as to advance them into the region and against the skull, further turning of the engagement rods causing the cutter means to drill respective holes in the skull to receive them, the pitch of the threads and the cutting capacity of the cutter means being so inter-related that the cutter means will cut a hole in the skull at a rate sufficient to enable the drill to enter the skull without substantial compression of the skull adjacent thereto, and engagement of the engagement rods by the respective lock means holding them in a selected position in the respective hole, thereby to keep the skull tong engaged to the skull.

3,923,047

JOINTS FOR ORTHOPAEDIC APPLIANCES

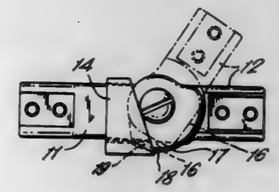
John Bernard Chant, Alton, England, assignor to Vessa Limited, England

Filed Nov. 18, 1974, Ser. No. 524,935

Claims priority, application United Kingdom, Mar. 8, 1974, 10514/74

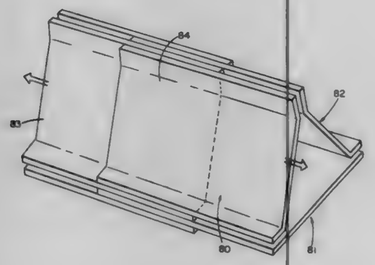
Int. Cl.² A61F 3/00, 5/00

U.S. Cl. 128—80 F 3 Claims



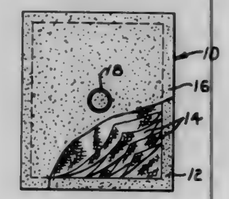
1. An orthopaedic caliper joint comprising interpivoted male and female members wherein a flat surface formed on the periphery of the male member is located between leaves of the female member throughout pivotal movement of the joint and is engageable by a key formed on the interior of a ring catch slidable over an extension of the female member when the joint is fully extended.

3,923,048
EXPANDABLE SPLINT
Charles H. Schaar, Lake Zurich, Ill., assignor to The Kendall Company, Boston, Mass.
Division of Ser. No. 378,405, July 12, 1973, which is a division of Ser. No. 128,267, March 26, 1971, which is a continuation-in-part of Ser. No. 41,377, May 28, 1970, abandoned. This application June 6, 1974, Ser. No. 476,951The portion of the term of this patent subsequent to May 27, 1992, has been disclaimed.
Int. Cl.² A61F *5/04*
U.S. Cl. 128—87 R **1 Claim**



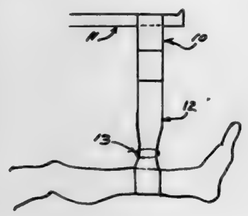
1. A splint comprising a plurality of bulkable products, each of said bulkable products comprising bendable sheet material superposed together in flat planar relation and presenting more layers of said sheet material in a central region of said product than in other regions thereof, means retaining portions of said layers in said central region in said superposed planar relation and remaining portions of said sheet material being movable independently of each other in a predetermined direction into irregularly bent non-planar layers patulously bulking said product and retaining said product in bulked configuration, said bulkable products being secured together so as to form a tubular article.

3,923,049
ORTHOPEDIC CAST AND METHOD OF CONSTRUCTING SAME
Leo E. Lauber, 101 W. 10th St., Eudora, Kans. 66025, and Ernest A. Cowden, 871 New Brotherhood Bldg., Kansas City, Kans. 66101
Filed June 28, 1974, Ser. No. 483,970
Int. Cl.² A61F *5/04*
U.S. Cl. 128—91 R **7 Claims**



1. A method of constructing a casting blank from which a plaster cast for a portion of the body may be formed, said method comprising:
providing first and second sheets of deformable water absorptive material,
at least one of said sheets being fibrous material characterized by an affinity for moistened plaster,
the other of said sheets comprising a cellular material characterized by a non-affinity for moistened plaster;
placing a quantity of plaster between said first and second sheets; and
joining said first and second sheets together to enclose said plaster material therebetween.

3,923,050
MEDICAL LIMB HARNESS
Michael S. Zelde, and Spencer N. Shaps, both of 2000 Linwood Ave., Fort Lee, N.J. 07024
Filed Dec. 13, 1974, Ser. No. 532,504
Int. Cl.² A61F *5/40*
U.S. Cl. 128—94 **1 Claim**



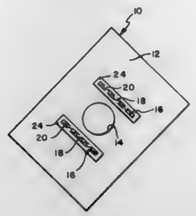
1. In a medical limb harness the combination comprising of two loops connected together, made out of fabric or materials with fabric like properties, and a sliding tightening device designed in any geometrical shape, with said sliding tightening device capable of traversing the lengths of said loops while encompassing the width of said loops.

3,923,051
INFLATABLE INTRAUTERINE CONTRACEPTIVE DEVICE FOR POSTPARTUM USE
Samuel Soichet, 1088 Park Ave., New York, N.Y. 10028
Filed Mar. 18, 1974, Ser. No. 451,831
Int. Cl.² A61F *5/46*
U.S. Cl. 128—130 **21 Claims**



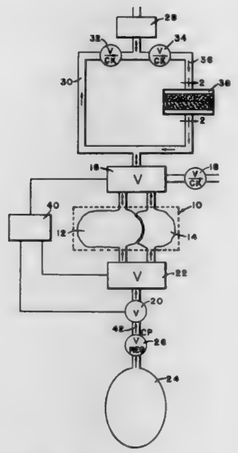
1. An intrauterine contraceptive device, comprising:
a hollow inflatable member defining a chamber therein, said member being of a size sufficiently small when it is deflated to permit insertion of said member through the cervix and of a size sufficiently large to prevent passage through the cervix when such member is substantially inflated;
outlet means communicating with said chamber for permitting exit of inflation fluid from such chamber; pressure responsive means in said outlet means, said pressure responsive means including means normally sealing said outlet means against fluid exit therethrough and being responsive to pressure in said chamber that is above a predetermined level to open said outlet means until pressure in said chamber decreases below said predetermined level and said pressure responsive means then reclosing said outlet means at pressure below said predetermined level.

3,923,052
CONFORMABLE SURGICAL DRAPE
Richard L. Zoephel, Lake Villa, Ill., assignor to The Kendall Company, Boston, Mass.
Continuation of Ser. No. 260,173, June 6, 1972, abandoned. This application Dec. 3, 1973, Ser. No. 420,930
Int. Cl.² A61F *13/00*
U.S. Cl. 128—132 D **3 Claims**



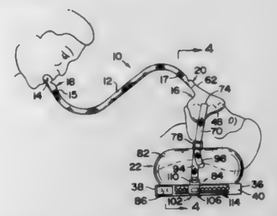
1. A fenestrated surgical drape comprising at least one sheet, said sheet having a fenestration, and a plurality of strips of non-elastic, non-resilient conformable deformable material, provided around the periphery of the fenestration and secured to said sheet, said strips being deformable to conform closely to irregular body contours in the region of a surgical site to provide close fitting of the drape therearound.

3,923,053
RESPIRATORY PROTECTIVE DEVICE
David Guild Jansson, 85 Pond St., Natick, Mass. 01760
Filed July 29, 1974, Ser. No. 492,740
Int. Cl.² A61M *16/00*
U.S. Cl. 128—142 **13 Claims**



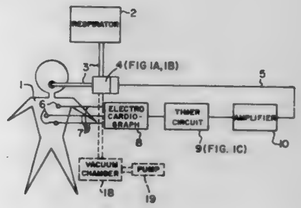
1. A respirator comprising:
a source of oxygen-rich gas;
a chamber having a substantially fixed volume, said chamber being vented;
first and second compliant breathing bags within said chamber, each of said bags having a filled volume within said chamber substantially equal to the volume of the chamber;
means to alternately activate one of said bags for breathing;
means to open said source to fill said activated bag with a quantity of said gas; and
means to vent the other bag as said activated bag is filled, said other bag being contracted by expansion of said activated bag during filling.

3,923,054
RESUSCITATION DEVICE
George H. Bauer, Jr., 5616 Ruth St., Metairie, La. 70003
Filed May 13, 1974, Ser. No. 469,410
Int. Cl.² A61M *16/00*
U.S. Cl. 128—145.5 **19 Claims**



1. A resuscitation device of the type designed and constructed for use by a single individual in rendering artificial respiration to a victim, said device comprising: airway means; operator mouthpiece means attached in fluid communicating relationship with said airway means; patient mask means attached in fluid communicating relationship with said airway means; flow-direction regulating means disposed in operative position between said operator mouthpiece means and said patient mask means providing a one-way flow from said mouthpiece means to said patient mask means during insufflation of the lungs of the victim and a one-way flow from said patient mask means to the atmosphere during deflation of the lungs of the victim; and head support means attached to said patient mask means, said head support means comprising a base means for supporting the head of the victim including longitudinal adjustment means mounted thereon in parallel relation to a longitudinal axis of said base means; and securing means attaching said patient mask means to said adjustment means, whereby said patient mask means may be removable and longitudinally adjustable to said head support means.

3,923,055
PROCESS AND DEVICE FOR CONTROLLING THE PRESSURE COURSE OF A RESPIRATOR
Konrad Hammacher, Kaiseraugst, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Nov. 15, 1974, Ser. No. 524,172
Claims priority, application Switzerland, Nov. 21, 1973, 16429/73
Int. Cl.² A61M *16/00*
U.S. Cl. 128—145.8 **14 Claims**

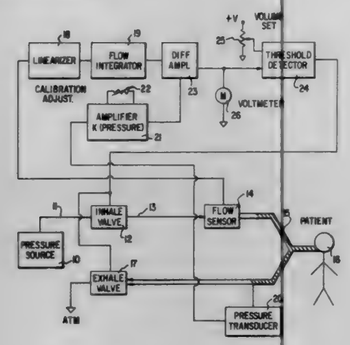


1. A process for controlling the pressure course of a respirator comprising momentarily decreasing the pressure of the respiration gas under the control of a pulse-synchronized signal derived from a measurement of impulses produced by the heart of the patient associated with the respirator in each case during the propagation time of the pulse wave in the pulmonary alveolar blood vessel flow paths of the patient and immediately thereafter causing substantially a re-establishment of the pressure of the respiration gas.

3,923,056
COMPLIANCE COMPENSATION FOR ELECTRONICALLY CONTROLLED VOLUME RESPIRATOR SYSTEMS

Richard Blagmann, Audobon; Frank J. Desiderio, West Chester, and Donald O'Neal Edwards, Philadelphia, all of Pa., assignors to General Electric Company, New York, N.Y.

Filed June 19, 1974, Ser. No. 480,799
Int. Cl.² A61M *16/00*
U.S. Cl. 128—145.8 **3 Claims**



1. In a respirator including

an interconnecting hose assembly adapted to be connected to a patient and connected to an inhalation passageway and to an exhalation passageway and further including a pressurized gas source connected to said inhalation passageway and a flow control valve and flow rate sensor connected in said inhalation passageway intermediate said source and said interconnecting hose, a flow control valve in said exhalation passageway and control means responsive to said flow rate sensor to control operation of said flow control valves, the improvement comprising:

pressure responsive means connected to said interconnecting hose assembly for developing a first signal representative of a (the) gas pressure in said interconnecting hose assembly, means for supplying said first signal to said control means for modifying the operation of said control means in porportion to gas pressure in said interconnecting hose assembly; and

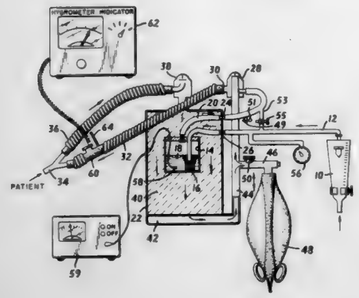
an integrating circuit means connected to said flow rate sensor for developing a second signal proportional to a volume of gas passing through said flow sensor, means for supplying said second signal to said control means for controlling the operation of said control means in response to said volume of gas flowing through said flow sensor, wherein said control means responds to said second signal by controlling the operation of said flow control valves.

3,923,057
ANESTHESIA DELIVERY SYSTEM

Jack Chalon, Tarrytown, N.Y., assignor to Albert Einstein College of Medicine-Division of Yeshiva University, New York, N.Y.

Filed June 20, 1974, Ser. No. 481,167
Int. Cl.² A61M *16/00*
U.S. Cl. 128—188 **13 Claims**

1. In an anesthesia delivery system for a patient said system having a first canister with a gas diffusion stone and water contained therein for humidifying anesthetic laden gas to be fed to the patient, means for feeding anesthetic laden gas to said first canister via said diffusion stone, said water covering at least part of said gas diffusion stone whereby said dry anesthetic laden gas becomes humidified upon passage through said water, said anesthetic laden gas passing through said diffusion stone and said water, and means for removing humidified, anesthetic laden gas from said first canister and feeding it to said patient, the improvement comprising: a second canister surrounding said first canister, reactive material means in said second canister for reacting with carbon dioxide laden gases in an exothermic reaction, said reactive

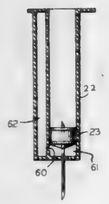


material means at least partly surrounding said first canister, means for feeding said carbon dioxide laden gases to said second canister whereby the reaction of carbon dioxide with said reactive material means liberates heat which heats the water in said first canister for humidifying the anesthetic laden gas passing through the water in said first canister.

3,923,058
MULTI-CHAMBER SYRINGE

Charles Z. Weingarten, Wilmette, Ill., assignor to The Kendall Company, Walpole, Mass.

Continuation of Ser. No. 255,099, May 19, 1972, abandoned. This application June 28, 1974, Ser. No. 484,104The portion of the term of this patent subsequent to July 29, 1992, has been disclaimed.
Int. Cl.² A61M *5/00*
U.S. Cl. 128—218 R **6 Claims**

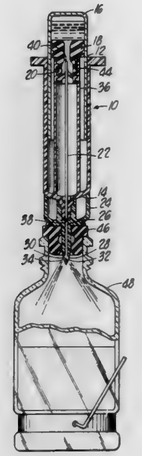


1. A multi-chamber syringe comprising a cylinder having at least one floating barrier means therein forming at least two separate chambers, with each of said chambers containing a liquid, a plunger received in said cylinder, hollow needle means attached to one end of said cylinger and having an unbroken cylindrical shell initially communicating with the chamber intermediate the barrier means and said one end of the cylinder, said shell projecting into said cylinder far enough to puncture and seal said barrier around the periphery of said unbroken cylindrical needle shell to prevent the liquids in the two chambers from mixing when said barrier nears the en of its travel as said syringe is emptied responsive to movement of said plunger, and means associated with said cylinder between said one end and said barrier means for relieving back pressure on said barrier after said needle punctures said barrier whereby said barrier may continue to settle after having been punctured and whereby said continued settling occurs without introduction of the contents of one of said chambers into the other of said chambers.

3,923,059
MEDICAMENT INJECTOR

Robert W. Ogle, Newport Beach, Calif., assignor to IMS Limited, South El Monte, Calif.

Continuation-in-part of Ser. No. 158,770, July 1, 1971, abandoned. This application Oct. 11, 1973, Ser. No. 405,583
Int. Cl.² A61M *1/00*
U.S. Cl. 128—237 **6 Claims**

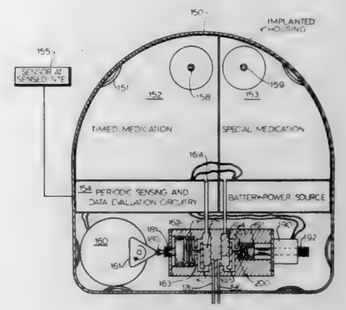


1. A novel medicament injector device for the addition of concentrated medication to rubber stoppered solution containers comprising: a cylindrical vial having an open end and a closed end, a resilient plug adapted to be inserted at least partially through said open end of said vial; said plug forming a sealing engagement with the walls of said vial with a press fit; a cylindrical member having one closed end, said cylindrical member holding a needle extending inwardly into said cylindrical member and having a sharpened inner end; said cylindrical member having a tip extending outwardly from said closed end, said tip surrounding and extending from the lower end of said needle portion said tip being an elongated member of generally uniform circular cross-section and having a central fluid passage extending substantially the length of the tip, said tip terminating in a pointed end in a zone of reduced cross-section, said zone having at least one fluid passage which communicates with said central fluid passage and forms an oblique angle with respect thereto; interlocking means on said cylindrical member and cooperating interlocking means on said plug, whereby upon interlocking of said plug with said cylindrical member said vial is first held in an assembled but non-operating position and upon further interlocking of said plug with said cylindrical member, said plug is adapted to be pierced by said needle and said needle communicated with said vial without the application of substantial axial pressure on said plug and said plug is locked securely to said cylindrical member to permit aspiration upon withdrawal of said vial or to permit expulsion of the contents of said vial into said solution container upon exertion of pressure on said vial, said pointed tip being adapted to pierce the stopper of said container without cutting loose pieces from the stopper and without the loss of any vacuum within said container.

3,923,060
APPARATUS AND METHOD FOR IMPLANTED SELF-POWERED MEDICATION DISPENSING HAVING TIMING AND EVALUATOR MEANS

Everett H. Ellinwood, Jr., 3519 Tonbridge Way, Durham, N.C. 27707

Filed Apr. 23, 1974, Ser. No. 463,262
Int. Cl.² A61M *5/00, 7/00*
U.S. Cl. 128—260 **20 Claims**



1. A self-contained and powered apparatus adapted to be totally implanted within a selected animal body, including human, for periodically evaluating selected internal physiological states of such body and for periodically dispensing selected medication therein according to such states while leaving the body ambulatory at all times, comprising:

a. a unitary housing adapted to be completely implanted and secured within and to the body at a selected site and having therein various compartments enclosed by said housing and adapted for mounting a medication storage member, a micro size power source, miniaturized driving and dispensing means adapted to being powered by such source for dispensing medication from such storage member, miniaturized electrical data evaluation and timing circuit means adapted to being powered by such source and to processing physiological data including data obtained from sensor means external of the housing to control the operation of said driving and dispensing means and said housing being further adapted to receive connections from external sensor means through the wall of the housing;

b. a storage member mounted within the implanted housing and adapted to store selected medication to be dispensed in selected quantities;

c. a micro size power source mounted within the implanted housing and secured proximate said storage member and having a useful working life in terms of at least several days;

d. miniaturized electro-mechanical driving means mounted within the implanted housing and adapted for being connected to and powered by said source;

e. miniaturized dispensing means mounted within the implanted housing and connected to receive said medication from said storage member and adapted to be powered by said driving means at selected times and being adapted when so powered to withdraw from said storage member successive measured quantities of selected said medication and to discharge such medication from the implanted housing into said body;

f. sensing means selectively placed within said body externally of the implanted housing and adapted to produce sensed signals convertible to electrical data corresponding to a sensed condition within said body;

g. connector means connected to said sensing means and passing through the wall of said housing and adapted to transfer such signals to the housing to be processed therein;

h. miniaturized electrical data evaluation and timing means mounted within the implanted housing and connected to be energized by said power source and comprising:

1. miniaturized electrical circuit means connected through said connector means to said sensing means and adapted to receive selected data from said sensing means and convert such data into an electrically processable form and adapted for electrically evaluating such sensed data at selected times; and

2. timing means operatively connected to said circuit means and providing electrical time base information thereto whereby said driving means is energized and actuates said dispensing means in coordination with selected evaluations.

3,923,061

TOOL FOR HYGIENE AND CARE OF THE CAVITIES OF THE BODY

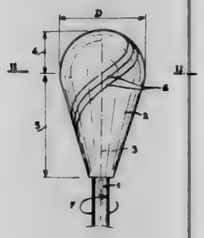
Jacques Rossignol, 12, rue H. Durre, 59230 - St. Amand les Eaux, France

Filed Nov. 4, 1974, Ser. No. 520,954

Claims priority, application France, Nov. 6, 1973, 73.40377

Int. Cl.² A61B *10/00*; A61M *35/00*

U.S. Cl. 128—269 **10 Claims**



1. An instrument for hygiene and care of cavities of the human body comprising a body portion, a stick for said body portion, padding on at least one end of said stick forming said body portion, said padding having a circumscribed shape of a body of revolution around the long axis of said stick, one end of said padding being a hemispherical cap and the other end of said padding being a base in the shape of an inverted truncated cone merging into said cap, and said padding being a plurality of normally contiguous flexible radial laminations around and extending from the axis of said stick forming said cap and said truncated cone into said body portion.

3,923,062

THREADED CLOSURE SYSTEM FOR MEDICAL LIQUID CONTAINER

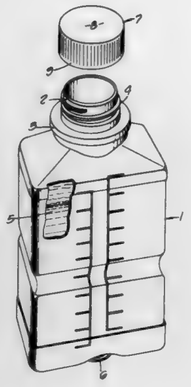
Elmer F. St. Amand, North Hollywood, and Thomas R. Thornbury, La Crescenta, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Mar. 7, 1973, Ser. No. 338,684

Int. Cl. A61j *1/00*

U.S. Cl. 128—272 **4 Claims**

1. A container with a threaded closure screwed onto a threaded neck forming a unit with inner and outer members, wherein the improvement is that the neck and closure are of different thermoplastic materials formed with substantially different internal stresses, said threaded closure and threaded neck being in a state of post-assembly stress relief with substantially greater amounts of shrink in the outer member causing the threaded neck and threaded closure to grippingly engage each other with increased tightness at a thermoplastic-to-thermoplastic bacteria-tight hermetic seal, and there is a deformable thermoplastic rib at the hermetic seal, which



closure is openable with a manually applied unscrewing torque despite the tight hermetic seal.

3,923,063

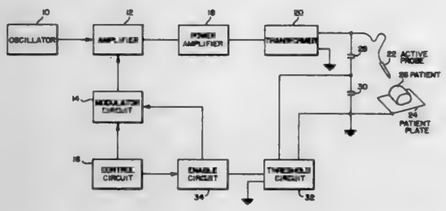
PULSE CONTROL CIRCUIT FOR ELECTROSURGICAL UNITS

Stephen William Andrews, and Stanley Woltosz, both of Rochester, N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed July 15, 1974, Ser. No. 488,281

Int. Cl.² A61N *3/00*

U.S. Cl. 128—303.14 **5 Claims**



1. In combination with an electrosurgical unit having a plurality of patient electrodes and RF generating means for providing an output voltage across said electrodes, a pulse control circuit connected to said electrosurgical unit for pulse modulating said output signal and controlling the duty cycle of said pulse modulated output signal applied to said plurality of patient electrodes, said pulse control circuit comprising:

voltage circuit means for sampling the magnitude voltage between said patient electrodes;

threshold circuit means for generating a threshold signal when the magnitude of said voltage between said patient electrodes exceeds a predetermined level, and

modulator circuit means for pulse modulating said output signal at a first duty cycle in the absence of said threshold signal and at a second duty cycle in response to said threshold signal.

3,923,064

DEVICE FOR ACUPUNCTURE

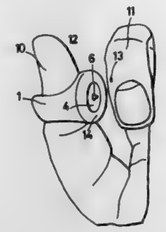
Karl Heinz Leupold, Gudrunstrasse 41, 85 Nurnberg, Germany

Filed July 24, 1974, Ser. No. 491,185

Claims priority, application Germany, May 17, 1974, 2424219

Int. Cl.² A61B *17/34*

U.S. Cl. 128—329 A **5 Claims**



1. An acupuncture device comprising a ring-shaped holder adapted to be placed on a user's finger, said holder having means defining a rigid pressure plate disposed in a plane extending generally transversely of said ring-shaped holder, said holder further having a rim portion surrounding said pressure plate such that said pressure plate is located within a depression in said holder, said rim having an outer terminating edge, a pressure element located generally in the center of said pressure plate and projecting generally perpendicularly therefrom, said pressure element having a dull or rounded point which protrudes beyond said plane defined by the terminating edge of said rim, said device being adapted to effect self-applied acupuncture by placing said ring-shaped holder on one finger and applying said pressure element to the user's body such that said dull or rounded point engages the user's body to apply pressure thereto while said rim serves to prevent undesired penetration by limiting the extent to which said dull or rounded point engages the user's body.

3,923,065

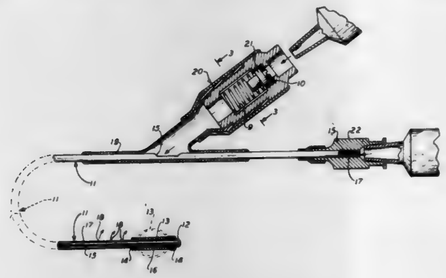
EMBOLECTOMY CATHETER

Jerome Nozick, 47 Correy Lane, Watchung, N.J. 07060, and Alvin Barr, 42 Malvern Drive, Clark, N.J. 07066

Filed Sept. 9, 1974, Ser. No. 504,116

Int. Cl.² A61M *25/00*

U.S. Cl. 128—348 **3 Claims**



1. An embolectomy catheter comprising:

a. a thin, elongated flexible body insertable in a blood vessel, and dimensioned to fit therein,

b. separate, discrete first and second passages in the body,

c. a generally tubular expandable sleeve sealed at both ends around the distal portion of the body, the sleeve normally lying close to the body and concentric therewith along its enitre length,

d. a passage communicating from the inside of the sleeve through the wall of the body to the first passage in the body, whereby the tubular sleeve may be expanded by fluid applied to the first passage, and may be contracted by relieving fluid pressure applied to the first passage,

e. the second passage having a discharge orifice adjacent to the distal end of the body before the sleeve, whereby fluid injected into the second passage may be discharged therefrom,

f. a first fitting connected to the first passage, for introducing fluid into the first discrete passage,

g. valve means at the first fitting for retaining and releasing a fluid inserted into the first passage, whereby the sleeve may be inflated and deflated,

h. a fitting connected to the second passage for receiving a fluid, whereby such fluid so received may pass through the second passage and be discharged from a discharge orifice,

i. the discharge orifice in the second passage being positioned immediately adjacent to the inflatable sleeve and thereby to release fluid to drive an embolism away from the sleeve when it is inflated.

3,923,066

DEVICE FOR HOLDING A CATHETER IN AN EXTENDED CONDITION

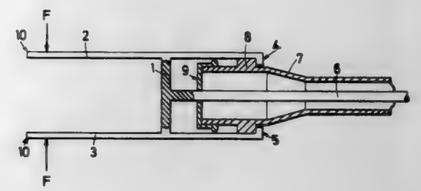
Jacques Francisoud, Oullins, and André Sausse, Sceaux, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Dec. 27, 1974, Ser. No. 536,796

Claims priority, application France, Jan. 3, 1974, 74.00145

Int. Cl.² A61M *25/00*

U.S. Cl. 128—348 **15 Claims**



1. A device for holding, in a longitudinally extended state, a catheter having an open proximal end, a closed distal end and an elastic bulge adjacent the distal end, the said device comprising a mandrel having a distal end and a proximal end insertable into the catheter, to move the distal end of the catheter away from its proximal end, a bearing component for the mandrel connected to the proximal end of the mandrel and at least one latching member mounted on the bearing component and releasably connectable to the proximal end of the catheter.

3,923,067

BABY SOOTHER

Eric Kenneth Hurst, London, England, assignor to Lewis Woolf Griptight Limited, Birmingham, England

Filed Jan. 11, 1974, Ser. No. 432,506

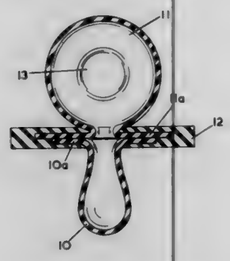
Claims priority, application United Kingdom, Jan. 13, 1973, 1893/73

Int. Cl.² A61J *17/00*

U.S. Cl. 128—360 **2 Claims**

1. A baby soother comprising a flexible teat, a flexible handle portion separate from the teat, and a shield serving to secure the teat and handle permanently together at their junction, wherein the teat and handle portions have respective integral flanges which are arranged in juxtaposition, said shield being defined over and around said flanges to secure the

teat and handle portion permanently together, said flanges and said shield being chemically and mechanically bonded



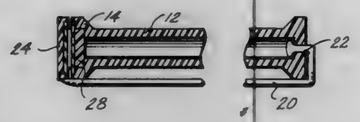
together whereby said flanges and said shield form an integral mass.

3,923,068

MAGNETIC PERMANENT WAVE FASTENER

Edwin Gilman, 29319 TreeHollow Glen, Agoura, Calif. 91301

Filed Aug. 30, 1974, Ser. No. 502,102
Int. Cl.² A45D *2/14*
U.S. Cl. 132—9 **4 Claims**



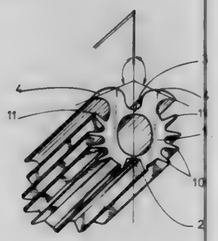
1. A permanent wave rod for waving hair comprising a cylindrical member on which the hair is wound, an elongated flexible member secured at one end to one end of the cylindrical member, cap means including a magnetic material connected to the other end of the flexible member, and magnetic means mounted in the cylindrical member at the opposite end from the flexible member, the cap means being locked to the end of the cylindrical member by bringing it into proximity with the magnetic means, whereby the flexible member is connected at opposite ends to opposite ends of the cylindrical member.

3,923,069

HEATING SLEEVE FOR A HAIR CURLER

Jacques Leclabart, Paris, France, assignor to Perma, Paris, France

Filed Apr. 8, 1974, Ser. No. 459,168
Claims priority, application France, Feb. 8, 1974, 74.04333
Int. Cl.² A45D *2/36*
U.S. Cl. 132—36 CC **3 Claims**



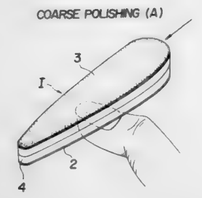
1. A heating sleeve for hair curlers, comprising an elongate cylindrical body forming a pincer, a split along a generatrix of said body, two extensions on said body spaced on either side of the portion of said body diametrically opposed to the split and forming a hinge, said extensions forming organs for opening the pincer, a plurality of longitudinal vanes on said body in planes extending radially about the axis of the cylindrical body, said extensions having, in cross section, the form of horns forming an acute angle at their bases with the axial plane of symmetry of said body and curving towards the split and forming an obtuse angle with said plane at their points.

3,923,070

SYSTEMATIC FINGERNAIL POLISHING METHOD

Sakichi Tsukamoto, 2-3-chome, Toyotama, Nerima, Tokyo, Japan

Filed Dec. 23, 1974, Ser. No. 535,653
Int. Cl.² A45D *29/00*
U.S. Cl. 132—73 **2 Claims**



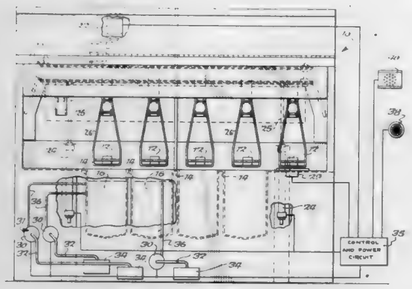
1. A systematic fingernail polishing method comprising the steps of coarse and fine polishing of a fingernail by a nail file having coarse and fine meshed surfaces on both sides thereof, and finish polishing said fingernail by coarse and fine buff members together with the use of a paste and a powder in repetition of unidirectional motions by hand, said paste comprising a mixture of diatomaceous earth, glycerin, propylene glycol, stearic acid, food dye and refined water.

3,923,071

AUTOMATIC LIQUID FEED INTERLOCK WITH WORKLOAD

George J. Lada, Newport Beach, Calif., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 25, 1974, Ser. No. 436,767
Int. Cl.² B08B *3/02*, *11/02*
U.S. Cl. 134—47 **8 Claims**



1. An apparatus for processing an article comprising:
at least one process tank containing processing liquid;
a conveyor for transporting the article to the tank, for immersing the article in the processing liquid, for removing the article from the processing liquid and for transporting the article away from the process tank;
a sensing device for determining when processing of the article through the process tank has been completed;
means for adding liquid to the process tank to replace liquid removed from the tank by the processed article;

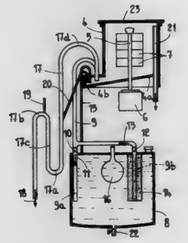
a conveyor travel power circuit for providing power for operating the conveyor;
a metered filling power circuit for providing power to the adding means and for controlling the amount of liquid added to the process tank by the adding means; and
a control circuit connected to the sensing device for activating the metered filling power circuit when the sensing device signals that processing of the article through the process tank has been completed thus causing the adding means to replace liquid removed from the process tank by the article;
wherein the control circuit comprises a fast acting relay activated by the sensing device, and a metering relay connected with and activated by the fast acting relay which metering relay activates the metered filling power circuit.

3,923,072

APPARATUS FOR THE TREATMENT OF PARTS BY SUCCESSIVE IMMERSIONS IN AT LEAST TWO BATHS

Jean-Louis Beaud, Rue de la Dime 9, Neuchatel, Switzerland

Filed Sept. 5, 1974, Ser. No. 503,349
Claims priority, application Switzerland, Sept. 11, 1973, 13390/73
Int. Cl.² B08B *3/04*
U.S. Cl. 134—99 **9 Claims**



1. Apparatus for successively immersing parts in at least two baths comprising
a treatment vessel in which the parts are immersed,
a plurality of separate bath reservoirs disposed below said vessel such that a bath in said vessel can flow by gravity into said reservoirs,
a plurality of siphon conduits each connecting one of said reservoirs with said vessel for siphoning a bath in said vessel to said one reservoir, and
means for pressurizing each of said reservoirs in order to force the bath therein into said vessel through the corresponding one of said siphon conduits.

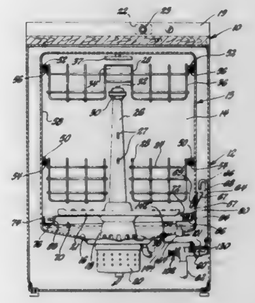
3,923,073

MEANS FOR HEATING INCOMING WATER IN A DISHWASHER

James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 27, 1974, Ser. No. 527,540
Int. Cl.² B08B *3/02*
U.S. Cl. 134—57 D **4 Claims**

1. A water fill system for a dishwasher having a washing compartment and a water collecting sump, a fill valve and drainage means for said compartment, electrical operating means for effecting the operation of the inlet of said fill valve, a motor-pump unit for selectively pumping water to spray means or to said drainage means, an elongated sloped trough positioned between said washing compartment and said sump, said trough having outlet means adjacent its low end communicating with said sump, electrically energizable heating means disposed coextensive with said trough, conduit means for conducting water from said valve to the high end of said trough, cycle control means for energizing said fill valve inlet to permit water from a domestic supply to flow into said valve, said valve having first orifice means adapted to be opened and closed by valve flow restrictor means, said valve having second orifice means permitting a predetermined amount of bypass water to flow therethrough into said trough high end upon energization of said fill valve electrical operating means, thermostatic means biasing said restrictor means to an open



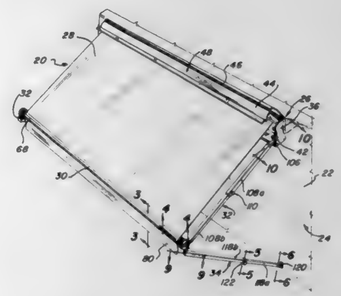
position upon said thermostatic means sensing a predetermined trough water temperature, said thermostatic means operative for moving said restrictor means toward a closed position in response to sensing the trough water temperature below said predetermined temperature, whereby incoming fill water flows in said trough in a heat exchange manner therewith at a temperature-responsive rate such that fill water enters said sump through said trough outlet at or above said predetermined temperature.

3,923,074

ENCLOSABLE RETRACTABLE AWNING

Donald S. McKee, Louisville, Colo., assignor to The Scott & Fetzer Company, Lakewood, Ohio

Filed Nov. 11, 1974, Ser. No. 522,640
Int. Cl.² E04F *10/06*
U.S. Cl. 135—5 AT **14 Claims**



14. A retractable awning assembly adapted to extend outwardly from a generally vertical surface comprising in combination:
a housing adapted to be mounted adjacent to said generally vertical surface,
a flexible awning sheet having an inner edge mounted in said housing,
a roll bar movable from a position within the housing to a position spaced from the generally vertical surface, means securing an outer edge of the awning sheet to the roll bar so that the sheet can be wrapped around the roll bar when the bar is positioned within the housing and extended between the housing and the roll bar when the

roll bar is positioned at a spaced location from the generally vertical surface, and

a first pair of brace members, means interconnecting said housing and said roll bar and swingably mounting said first pair of brace members for pivotal movement into said housing regardless of the position of said roll bar, and,

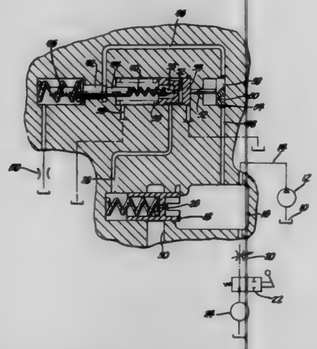
a second pair of brace members adapted to interconnect said roll bar and said generally vertical surface at a location which is spaced beneath said housing and means swingably mounting said second pair of brace members with said roll bar for pivotal movement into parallel relationship with said roll bar while said roll bar is positioned at a location spaced from the generally vertical surface so that both said second pair of brace members and roll bar can be moved as a unit into said housing.

3,923,075

POWER TRANSMISSION

Robert G. Farrell, Royal Oak, Mich., assignor to Sperry Rand Corporation, Troy, Mich.

Filed May 16, 1974, Ser. No. 470,472
Int. Cl.² G05D *16/10*; F16K *17/00*
U.S. Cl. 137—491 **7 Claims**



1. A fluid pressure relief system responsive to the rate of pressure rise in a fluid power transmission comprisng a body having a bore with an inlet and an outlet connected by a valving passage, a valve movable in the bore and urged by inlet pressure to open the passage to the outlet, mainspring means for urging the valve and passage into closing relation, a first spring force modifier comprising a piston exposed to inlet pressure and a biasing spring opposing that pressure and arranged to decrease the force of the mainspring as the inlet pressure increases, a second spring force modifier exposed to inlet pressure and arranged to increase the force of the mainspring as the inlet pressure increases, and dashpot means for delaying the action of the second modifier.

3,923,076

TRANSMISSION CONTROL SYSTEM WITH DUAL PURPOSE MODULATING VALVE

William Wayne Blake, Wyoming, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

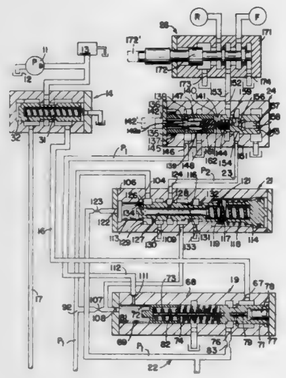
Division of Ser. No. 355,191, April 27, 1973, Pat. No. 3,882,980. This application Jan. 8, 1975, Ser. No. 539,273
Int. Cl.² F16K *31/12*, *31/43*
U.S. Cl. 137—495 **4 Claims**

1. A manual modulating valve for a hydraulic control circuit of the type having a first conduit with first modulating means for establishing the first fluid pressure within the first conduit, a second fluid conduit and differential means for establishing a second fluid pressure within the second conduit differentially related to the first fluid pressure, the manual modulating valve comprising,

a valve body defining a bore, an inlet passage communicating the second conduit with the bore and an outlet passage also in communication with the bore,

a modulating spool movably arranged within the bore to regulate fluid communication between the inlet and outlet passages of the valve body, and

a manually adjustable metering spool movably arranged within the bore for interaction with the modulating spool through resilient means, the valve body forming an addi-



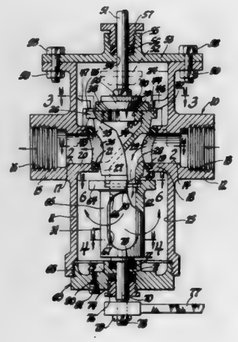
tional inlet passage for communicating the first conduit with the bore adjacent the manually adjustable metering spool, the manually adjustable metering spool being movable for causing the modulating spool to regulate fluid communication between the inlet and outlet passages, the manually adjustable metering spool simultaneously communicating the additional inlet to a fluid drain in order to selectively reduce the first fluid pressure within the first conduit during operation of the modulating spool.

3,923,077

FLUID FLOW CONTROL VALVE

Paul J. Scaglione, 30180 Richmond Hill Drive, Farmington, Mich. 48024

Division of Ser. No. 283,574, Aug. 24, 1972, Pat. No. 3,826,466. This application Apr. 22, 1974, Ser. No. 462,883
Int. Cl.² B01D *35/02*
U.S. Cl. 137—546 **4 Claims**



1. A fluid flow control valve comprising:

a. a valve body having a chamber therein;

b. an inlet passage communicating with said valve body chamber and an outlet passage communicating with said valve body chamber at a point diametrically opposite to the inlet passage;

c. an annular seal around each of said passages and being disposed at the point where each of said passages communicates with said valve body chamber;

d. a rotatable valve in said chamber and being operatively seated between and against said annular seals;

e. said rotatable valve having a pair of chambers formed therein with one of said chambers comprising an inlet chamber having an inlet port communicating with said inlet passage and an outlet port communicating with said valve body chamber, and the other of said pair of chambers comprising an outlet chamber having an inlet port communicating with said valve body chamber and an outlet port communicating with said outlet passage whereby fluid entering said inlet passage will pass through said rotatable valve inlet chamber and into said valve body chamber and thence into said rotatable valve outlet chamber and into said outlet passage;

f. means releasably connected to said rotatable valve for rotating said rotatable valve to a first position to permit said flow of fluid from said inlet passage and through said rotatable valve to said outlet passage, and to a second position whereby the flow of fluid between the inlet passage and outlet passage is blocked by said rotatable valve;

g. said rotatable valve including inner surfaces which are arranged to form said inlet and outlet chambers and direct fluid flow through the rotatable valve between said inlet passage and said outlet passage when the rotatable valve is rotated to said first position;

h. each of said annular seals comprising stationary seals;

i. said annular seals comprising wedge shaped seals; and,

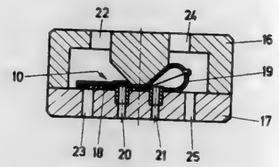
j. a strainer means mounted in said valve body chamber and operatively connected to the outer port of said rotatable valve inlet chamber for straining the fluid passing through said last mentioned inlet chamber and into said valve body member.

3,923,078

VALVE ASSEMBLY

Georg Hirmann, Zurich, Switzerland, assignor to Rudolf Felix Homberger, Schaffhausen and Kurt Mayer, Olten, both of, Switzerland

Division of Ser. No. 389,137, Aug. 17, 1973, Pat. No. 3,881,686. This application Oct. 24, 1974, Ser. No. 517,615
Claims priority, application Switzerland, Aug. 24, 1972, 12046/72; Aug. 24, 1972, 12047/72
Int. Cl.² F16K *31/12*
U.S. Cl. 137—597 **2 Claims**



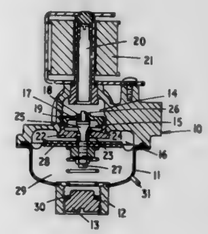
1. A valve assembly comprising a casing having a a plurality of valve seats therein, inlet and outlet connections communicating through said seats, a like plurality of valves within said casing each disposed for engagement with and displacement from one of said seats, between the inlet and outlet connection, each of said valves comprising a pair of leaf members peripherally joined together, at least one of said leaf members being flexibly deformable and defining with the other leaf member an inflatable chamber, each of said valves in its relaxed state with said chamber deflated engaging its valve seat and thus closing the valve seat, a control conduit communicating through one of said leaf members with said inflatable chamber of each valve, a source of inflating fluid, and means for introducing an inflating fluid under pressure from said source through said conduit into said chamber, whereby the chamber is inflated and the flexible leaf is thereby deformed to displace the valve from and thus open the valve seat.

3,923,079

FLUID CONTROL VALVE

John Malcolm Kyffin Hughes, Solihull; Graham Albert John Lake, and Stephen John Ford, both of Birmingham, all of England, assignors to Parkinson Cowan Appliances Limited, Birmingham, England

Filed Dec. 12, 1973, Ser. No. 426,623
Int. Cl.² F16K *17/168*
U.S. Cl. 137—614.14 **2 Claims**



1. A fluid control valve comprising a body, first, second and third chambers within said body, a first valve member operable between a first position in which in use it precludes fluid flow between said first and second chambers and a second position in which it permits fluid flow between said first and second chambers, and a second valve member operable in use to control the quantity of fluid flow between said second and third chambers, said second valve member being operatively connected to a diaphragm which extends between said third chamber and a compensating chamber which is connected to an external source of pressure, said second valve member including an abutment engageable by said first valve member when the latter is in its first position to urge said second valve member into a position in which it precludes fluid flow between said second and third chambers, said second valve member being movable with said diaphragm when the first valve member is in its second position.

3,923,080

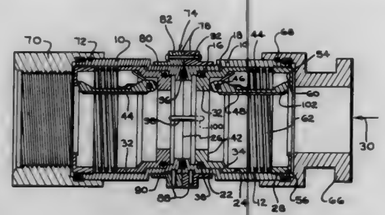
FRANGIBLE VALVED FITTING

Alan R. Allread, Jackson, and Kenneth A. Levering, Jerome, both of Mich., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Feb. 11, 1974, Ser. No. 441,242
Int. Cl.² F16K *17/36*, *17/40*
U.S. Cl. 137—68 **16 Claims**

1. A frangible valved fitting comprising, in combination, a valve body having a passage defined therein defining a flow path and having an inlet and an outlet, frangible means connecting said valved body to conduit means, a flapper valve within said passage pivotally mounted within said body upon a pivot axis transversely disposed to said passage for movement between open and closed positions, valve seat means defined within said passage cooperating with said flapper valve when in said closed position to close said passage, valve retaining means within said passage releaseably retaining said flapper valve in said open position, and flapper valve operat-

ing means sensing connection of said body to said conduit means and controlling operation of said retaining means per-



mitting said retaining means to release said flapper valve to close said passage upon fracturing of said frangible means.

3,923,081

AIR VALVE HAVING AN ANNULAR MOVABLE VALVE ELEMENT OF ELASTOMERIC MATERIAL

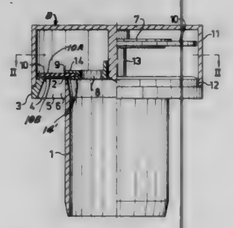
Bengt Arne Persson, Djursholm, Sweden, assignor to B. A. Installationsutveckling AB, Djursholm, Sweden

Filed Oct. 9, 1974, Ser. No. 513,312

Claims priority, application Sweden, Oct. 15, 1973, 73139842

Int. Cl.² F16K *24/02*

U.S. Cl. 137—217 **4 Claims**



1. An air valve connectable to a pipe to relieve a vacuum in said pipe while preventing the escape of fluid therefrom, said valve comprising:

a body having:

an inner chamber,

air inlet means for communicating said inner chamber with the ambient atmosphere;

said air inlet means including inner and outer concentrically spaced valve seats,

opening means for communicating said chamber with a pipe, and

a stationary guide element;

a valve element displaceably mounted in said chamber, said valve element being normally urged to a valve-closed position and being shiftable to a valve-open position in response to a vacuum in said pipe, said valve element comprising:

an annular disc formed of elastomeric material, said disc including an outer side facing said valve seats and an inner side facing said chamber,

a hub mounted for axial movement along said guide element and having hole means communicating said opening means with said chamber and with said inner side of said disc, when said valve element is in both said valve-open position and said valve-closed position, so that a vacuum at said opening means is transmitted through said hole means to the inner side of said disc to urge said disc away from said inner and outer valve seats to said valve-open position and the absence of a vacuum at said opening means casues said disc to be urged toward said inner and outer valve seats to said valve-closed position;

said hub including a flange upon which an inner edge of said outer side of said disc sits such that said disc is cantilevered outwadly from said hub, said outer flange terminating short of said inner valve seat such that in said valve-closed position said outer side of said disc sealingly engages said inner and outer valve seats to prevent fluid flow between said air inlet means and said opening means to prevent escape of fluid from said opening means.

3,923,082

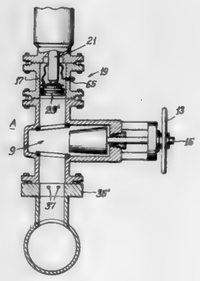
PIPELINE CLOSURE AND METHOD

George A. Blazek, Hinsdale, Ill., assignor to Advance Valve Installations Inc., Hinsdale, Ill.

Continuation-in-part of Ser. No. 242,728, April 10, 1972, abandoned. This application Sept. 12, 1973, Ser. No. 396,509

Int. Cl.² F16L *55/10*

U.S. Cl. 138—89 **15 Claims**



1. Apparatus for forming a fluid-tight closure within a pressure conduit while it is under pressure, said apparatus comprising a conduit section member having a fluid-flow passageway therethrough, a closure plug member slidable in the section member in a direction lengthwise of the passageway into a position for later closing the section, said closure member being of the same peripheral shape as, but smaller than, the peripheral shape of the passageway, characterized by the fact that there is an annular channel formed at the interface of one of said members with the open end of the channel facing radially of the passageway towards the other member, and sealing gasketing means in the channel, said gasketing means having (a) an intermediate position that it occupies during the positioning of the plug into the conduit section, and (b) a final pressure sealing position; said gasket means being movable from the intermediate position towards the open face of the channel to its final position and means for making connection to a source of pressure for pressurizing the channel to force the gasketing means into said final position, said last means including a check valve for retaining the pressure in the channel when said last means is disconnected from said source of pressure.

3,923,083

APPARATUS FOR STOPPING A TRAVELLING WAVE LOOM UPON ITS WEFT THREAD CARRIERS HAVING ENCOUNTERED AN OBSTACLE IN THE SHED

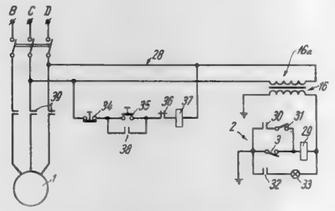
Anatoly Andreevich Bulantsev, Nagornaya ulitsa, 15-a, korpus 11, kv. 45; Alexandr Lvovich Galperin, ulitsa Moldagulovoi, 10, korpus 2, kv. 166; Alexandr Alexandrovich Zabotin, ulitsa Profsojuznaya, 96, kv. 85, all of Moscow; Evgeny Dmitrievich Loschilin, Kashirskoe shosse, 36, kv. 87, Domodedovo Moskovskoi oblasti, and Boris Alexandrovich Sakharov, ulitsa Krzhizhanovskogo, 24/35, korpus 6, kv. 404, Moscow, all of U.S.S.R.

Filed Oct. 22, 1974, Ser. No. 517,009

Claims priority, application U.S.S.R., Oct. 23, 1973, 1966187

Int. Cl.² D03D *47/24, 51/18*

U.S. Cl. 139—12 **6 Claims**



1. An apparatus for stopping a travelling-wave loom when its weft thread carriers encounter an obstacle in the shed, comprising: a loom drive; an electric control circuit of said drive, provided with a power supply; a guideway for guiding and orienting the weft thread carriers in the shed, located in said shed and electrically connected to one of the poles of the power supply of said control circuit; movable contacts mounted in the weft thread carriers and protruding therefrom when these carriers encounter an obstacle in the shed to come in electrical contact with said guideway; a lining made of a conductive pile material arranged outside the shed along said guideway so that its piles pass between the warp threads inside the shed, said lining being connected to the opposite pole of the power supply of said control circuit and to the carriers moving in the shed, the piles of the lining being in permanent electric connection with the contacts of the carriers, as a result of which the very moment the carrier engages an obstacle in the shed, its contacts, while touching the guideway, cause the control circuit for the loom to be stopped.

3,923,084

APPARATUS FOR PACKAGING FLUID MATERIALS IN PACKETS

Ernest L. Matthews, and Ralph E. Matthews, both of Decatur, Ala., assignors to Matthews Machine Company, Inc., Decatur, Ala.

Filed May 29, 1974, Ser. No. 474,164

Int. Cl.² B65B *43/42, 9/06*

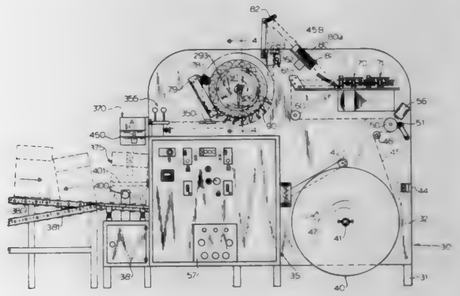
U.S. Cl. 141—144 **5 Claims**

1. An apparatus for dividing fluid material into uniform units and for packing the units, comprising:

a. a hollow cylindrical filling drum having a peripheral body portion and containing a volume of fluid material to be dispensed in discrete units;

b. a plurality of uniformly spaced and circularly arranged metering trap chambers formed in said peripheral body portion of said drum for rotation as an integral filling structure around a central horizontal axis, each chamber having a hollow housing formed with said peripheral body portion and a helical screw member having its axis oriented parallel to said central axis and fixed within said housing, each said chamber providing an open elongated fluid material flow path formed by said screw member and extending between an inlet communicating with the interior of said drum and an outlet laterally displaced along said flow path, said screw member being dimensioned to measure said unit;

c. means for rotating said filling structure at a uniform predetermined speed and in a constant direction around said central axis, each chamber being adapted on each rotation and at said speed to communicate its respective inlet with the interior of said drum at a first rotative station, to receive a portion of said fluid material into said flow path, to discharge through said inlet as said chamber rotates away from said first station all except a quantity equal to one unit of said material, and to guide said unit along said flow path towards said outlet under the influence of the rotative forces asserted thereon as said chamber rotates at said speed towards a second rotative station



whereby said unit is discharged from said outlet during passage of said chamber past said second station;

d. a storage receptacle containing a volume of said material stored below the level of said drum axis;

e. conveyor means arranged to convey said material from said receptacle to said drum along a conveying path which conveying path at the drum receiving end includes horizontal screw conveyor means comprising a helical conveyor screw surrounding a hollow hub and adapted for rotation independent of said drum around said central axis and communicating at its discharge end with said drum interior and at its intake end with said storage receptacle and includes in addition to said horizontal screw conveyor means an operatively associated additional screw conveyor means communicating at one lower end with the material in said storage receptacle and at the other end with the intake end of said horizontal screw conveyor means; and

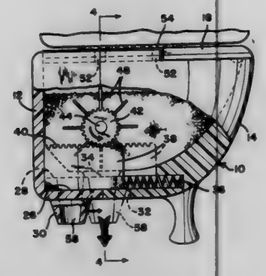
f. leveling means independently controlling said conveyor means including said horizontal screw and additional screw conveyor means whereby said conveyor means may operate independently of said drum and being effective to operate said conveyor means intermittently as required to maintain a predetermined level of material in said container, said leveling means including a shaft mounted for rotation independent of, within and extending the length of said hub, said shaft having one forward end extending into said drum interior and having mounted thereon a rotatable sensing member for contacting and sensing the level of said material and controlling the rotative position of said shaft according to such level, said shaft having a rearward end mounting switch actuating means controlled by the rotative position of said shaft, and electric drive means controlled by said switch-actuating means for simultaneously driving said screw conveyor means during those times when said sensing member rotates within some predetermined angular range corresponding to a deplenished supply of material in said drum.

3,923,085

SEMI-AUTOMATIC PIPE LOADER

Fred Nimer, 956 Terry Drive, Troy, Ohio 45373

Filed Jan. 28, 1975, Ser. No. 544,690
Int. Cl.² A24F 9/02; G01F 11/00
U.S. Cl. 141—261 10 Claims



1. A semi-automatic pipe loader comprising:
a. a housing defining a storage chamber for holding a quantity of pipe tobacco,
b. a discharge spout projecting outwardly from a lower surface of said housing and having an outer dimension such that said spout is adapted to be received within a pipe bowl,
c. means for attaching an upper surface of said housing opposite said surface from which said discharge spout projects to a suppporting surface,
d. means defining a discharge opening from a lower portion of said chamber,
e. slide means for placing selectively said chamber discharge opening in communication with said discharge spout whereby tobacco in said chamber may be discharged therefrom through said spout and into a pipe bowl in which said spout is received,
f. means disposed within said storage chamber above said discharge opening therefrom for positive displacement of tobacco from said chamber through said discharge opening, and
g. means cooperating with said slide means for actuating said tobacco displacement means simultaneously with said placing of said discharge opening in communication with said discharge spout.

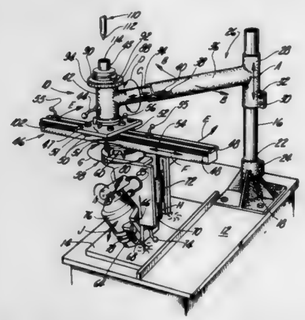
3,923,086

ADJUSTABLE RADIAL ARM APPARATUS FOR USE WITH A ROUTER OR THE LIKE

Daniel M. Spohn, Jr., 8451 Miller Road, Swartz Creek, Mich. 48473

Filed Feb. 25, 1974, Ser. No. 445,321
Int. Cl.² B27C 5/02; B23C 1/12
U.S. Cl. 144—134 B 12 Claims

1. An apparatus for selectively positioning a tool over a workpiece, comprising:
a vertically adjustable radial arm having its longitudinal axis disposed in a horizontal plane; said arm being movably secured at its proximal end for selective vertical movement and for angular rotational movement about said proximal end as an axis, and said arm comprising a sleeve member and a core member, said core member and said sleeve member being selectively linearly extendable and being selectively rotatable relative to each other about their longitudinal axis;
a cross slide pivot head secured to the distal end of said telescopic radial arm for linear vertical, linear horizontal, vertical plane rotational, and horizontal plane angular movement therewith, said pivot head having a pivot axis disposed generally perpendicular to the longitudinal axis of said core member and said sleeve member;
a rotatable head secured to said pivot head for all said linear, rotational, and angular movements therewith and for rotational movement relative to said head about an axis generally parallel to said pivot head axis;
a swivel slide block secured to said rotatable head for all the foregoing movements therewith, and wherein a first portion of said block is mounted for linear movement relative to said rotatable head in a direction generally parallel to said rotatable head axis and a second portion is mounted for pivotable movement about an axis generally perpendicular to said rotatable head axis; and wherein said second portion is adapted to hold said tool;
an elongated cross slide secured to said pivot head for linear vertical, linear horizontal, vertical plane rotational and horizontal plane angular movement therewith for rotational movement about the pivot head axis; and for slidable linear movement relative to and perpendicular to said pivot head axis;
feed means operatively associate with said swivel slide block to effect said linear movement of said swivel slide block; adjustable feed control means operatively interconnect-



ing said swivel slide block and said rotatable head to effect said linear movement of said swivel slide block relative to said rotatable head;
feed control means comprising an elongated depth gage connected to said swivel slide block such that the longitudinal axis of said gage is disposed substantially parallel to the direction of linear movement of said swivel block slide, said gage projecting from said swivel slide block next to said rotatable head;
adjustable stops operatively associated with said gage;
an abutment attached to said rotatable head; said abutment and said stops coacting to limit linear movement of said swivel slide block;
a hollow locating aperture located through said cross slide pivot head concentric with the pivotal axis of said pivot head; and
a cross slide pivot head locating rod adapted to be removably inserted through said locating aperture, and wherein said locating rod is used to properly orient the pivotal axis of said cross slide pivot head with respect to the workpiece.

3,923,087

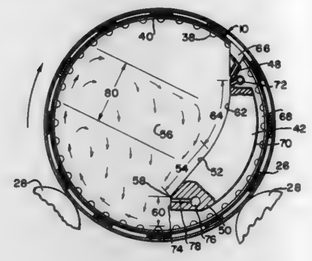
DRUM-TYPE DEBARKING APPARATUS INCLUDING LOG DEFLECTOR MEANS

Douglas L. G. Young, Lennoxville, Canada, assignor to Canadian Ingersoll-Rand Company Limited, Montreal, Canada

Filed Oct. 24, 1974, Ser. No. 517,463
Int. Cl.² B27L 1/04
U.S. Cl. 144—208 B 29 Claims

15. Debarking apparatus comprising drum means adapted to be rotatably driven in a predetermined circumferential direction, log deflector means within said drum means for controlling log movement therein during such rotation of said drum means, and means supporting said log deflector means

such that said drum means is rotatable relative to said log deflector means, said log deflector means including log deflecting face means angled between about 35° to about 45° from the vertical for downwardly directing logs towards its lower end, said log deflecting face means being generally upwardly facing and within the downturning side of said drum



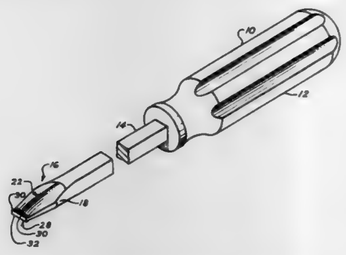
means, and the lower end of said log deflecting face means being operatively associated with said drum means for downwardly supplying logs to said drum means whereby at least substantially all of the velocity of such supplied logs is in a direction other than said predetermined circumferential direction of the rotation of said drum means.

3,923,088

BITING SCREW DRIVER

Edward T. Arnn, 406 Club Lane, St. Matthews, Ky. 40207

Continuation-in-part of Ser. No. 473,840, May 28, 1974, Pat. No. 3,897,812. This application July 24, 1974, Ser. No. 491,361
Int. Cl.² B25B 15/02
U.S. Cl. 145—50 A 2 Claims



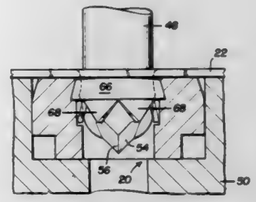
1. A screw driver comprising a shank and blade integral therewith, said blade having opposed major faces which are arcuately bowed outwardly to define a bulbous lower portion, said bulbous lower portion extending the entire width of said blade, said blade further including a smoothly radiused transition portion integral with a foot portion, said foot portion protruding outwardly away from the longitudinal axis of said shank to provide a gripping means, said foot portion further defining the lowermost portion of said blade and being generally isosceles-trapezoidal in side cross section with its base lying furthest from the shank in a substantially flat plane perpendicular to the axis of said shank at the lowest extremity of the blade, thereby being engagable with the bottom of the slot in a screw head, said foot portion further having its inwardly tapered sidewalls extending across the entire width of the blade and being engagable with the parallel sidewalls of a screw head slot, said base of said foot portion and said respective inwardly tapered sidewalls defining wedge-like bites comprising said gripping means engagable with opposed sides of a screw slot to removably hold a screw thereon and also cut a groove in the parallel sidewalls of a screw head slot upon application of a torque to said shank.

3,923,089

NUT AND PANEL ASSEMBLY

Harold A. Ladouceur, Livonia, Mich., assignor to Multifastener Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 353,049, April 20, 1973, which is a continuation-in-part of Ser. No. 149,517, June 3, 1971, abandoned. This application June 5, 1974, Ser. No. 476,747
Int. Cl.² F16B 39/282
U.S. Cl. 151—41.73 16 Claims



4. A combination nut and panel assembly, said nut having a longitudinal axis, one axial extremity of said nut defining an end face engaging the panel and being generally perpendicular to said longitudinal axis, said nut having an axial circular bore projecting through said end face concentric with said axis for accomodating a self-tapping bolt, the improvement of a counterbore in said nut concentric with said axis and adjacent said end face, said counterbore terminating away from said end face in a plurality of equally circumferentially spaced indentations being generally triangular in the axial direction, said indentations defining a plurality of pointed extensions projecting toward said end face, said extensions having an inner cylindrical surface concentric with said axis and forming a longitudinal extension of the circular nut bore surface having a substantially the same internal diameter to accomodate the self-tapping bolt, the panel portion circumscribed by said bore being apertured and the panel material from said aperture being axially displaced of the nut into said counterbore to define a generally annular projection extending from said panel, said projecting terminating a plurality of triangular points conjugate with the triangular counterbore indentations, said triangular points having an inner diameter substantially the same as the diameter of the circular bore, wherein a bolt simultaneously threads into the triangular points of said displaced panel material within the triangular counterbore indentations and into the plurality of pointed extensions defined by said indentations prior to threading into said circular bore for stabilizing said nut on the panel against rotational and axial displacement.

3,923,090

DEVICE FOR SPOKING AND ALIGNING WIRE WHEELS

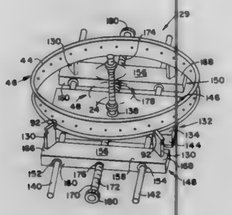
Gary W. Kinney, 2615 Scenic View Drive, Huntsville, Ala. 35810

Continuation-in-part of Ser. No. 278,629, Aug. 7, 1972. This application Oct. 10, 1974, Ser. No. 513,843
Int. Cl.² B21K 1/34
U.S. Cl. 157—1.5 2 Claims

1. A device for spoking and aligning wire wheels comprising:
hub mounting means for gripping and providing an axial reference for the center of a hub of a wheel;
rim supporting means connected to said hub mounting means including means for adjustably and rigidly positioning a rim of a wheel concentrically with respect to said hub comprising:
four rim engaging members, and
travel guide means connected to said hub mounting means, being adjustable independent of a said wheel, for orienting and adjustably positioning said rim engaging members

along parallel spaced lines in a plane, said plane being perpendicular to and intersecting the axial reference of said hub comprising:

first and second carriage means, each rigidly connecting a pair of parallel arranged said rim engaging members, and



means for supporting each of said first and second carriage means and including means for positioning and orienting each of said pair of rim engaging members for travel along like lines and including means for moving each said pair of rim engaging members an equal distance from the axial reference of said hub mounting means.

3,923,091

METHOD OF SUPERVISING SKIN THICKNESS IN A SOLIDIFYING BODY SUCH AS A CONTINUOUSLY CAST INGOT

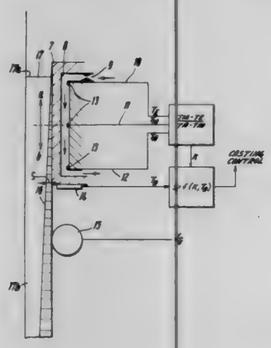
Wolfgang Dörr, Essen; Hartwig Matznor, and Tilman Noska, both of Duisburg, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Apr. 1, 1974, Ser. No. 456,899

Claims priority, application Germany, Apr. 17, 1973, 2320277

Int. Cl.² B22D *11/12*

U.S. Cl. 164—4 **12 Claims**



1. In a method for providing for an anticipating indication of weakening of the skin of a continuously cast ingot where emerging from the bottom of a liquid cooled mold, and wherein a location of the mold wall has been determined which is particularly prone to exhibit separation of the ingot skin as formed adjacently thereof during the casting, the improvement comprising the steps of:

measuring the heat transfer taking place in an upper portion of the mold at said location, well above the bottom thereof and of a width considerably smaller than the width of a mold side and providing an electrical signal representative thereof; and

detecting electrically the onset of deviation of the representation from a normal value indicative of absence of skin weakening or separation.

3,923,092

APPARATUS ARRANGED AFTER A CONTINUOUS CASTING INSTALLATION FOR RELEASING A THREAD-LIKE CASTING CONNECTION

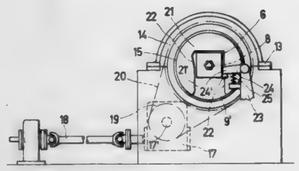
Georg Bollig, Meerbusch, and Willi Simons, Dusseldorf, both of Germany, assignors to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Germany

Filed Jan. 28, 1974, Ser. No. 437,496

Claims priority, application Germany, Feb. 2, 1973, 2305038

Int. Cl.² B22D *11/08*

U.S. Cl. 164—274 **4 Claims**



1. An apparatus arranged after a continuous casting installation for releasing a thread-like casting connection from a dummy bar head of a dummy bar, comprising a dummy bar receiver means, a rotary mechanism associated with the dummy bar receiver means, said rotary mechanism being equipped with a receiving opening for a cropped end of the casting which possesses the thread-like casting connection, said rotary mechanism incorporating means for carrying out a relative rotational movement between the cropped end of the casting and the dummy bar head of the dummy bar in order to disconnect the thread-like casting connection of the cropped end of the casting from the dummy bar head of the dummy bar, said means for carrying out said relative rotational movement of the rotary mechanism comprises a rotary head constructed as claw means, said claw means having a lateral opening defining said receiving opening, the cropped end of the casting being insertable into and retractable from said lateral opening, said claw means being provided with fall-out safety means for the cropped end of the casting, said claw means having side flanks provided with recess means corresponding to a substantially pointed edge position of the cropped end wherein diametrically opposite corners of the cropped end are located in said recess means, and further wherein the cropped end has associated therewith stop means acting opposite to the screw-out direction of the thread-like casting connection, said stop means limiting the movement of the cropped end in a substantially vertical fall-out position.

3,923,093

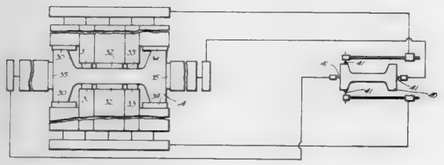
UNIVERSAL CONTINUOUS CASTING APPARATUS

Harry LaTour, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed May 16, 1974, Ser. No. 469,815

Int. Cl.² B22D *11/12*

U.S. Cl. 164—282 **11 Claims**



1. In a continuous metal casting machine having a mold through which molten metal may be poured, said mold communicating with a roller apron through which the solidifying metal passes, a roller arrangement for the rolls of about the first one-third of said roller apron comprising:

a. a plurality of cylindrical rollers arranged in tiers, the rollers of each tier being adapted to contact each side and each edge of the metal as it issues from said mold in partially solidified form,

b. each of said rollers in each tier being individually adjustable inwardly and outwardly with respect to the path of said metal whereby to determine the cross sectional configuration of the solidifying metal.

3,923,094

CASTING APPARATUS FOR CASTING LARGE-SIZED INGOTS

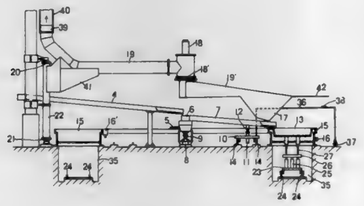
Takashi Furuse; Sachio Kamata; Kunio Sekine, and Koichi Sato, all of Akita, Japan, assignors to The Dowa Mining Co., Ltd, Tokyo, Japan

Filed Feb. 6, 1974, Ser. No. 439,858

Claims priority, application Japan, Feb. 19, 1973, 48-19178; Feb. 28, 1973, 48-23246

Int. Cl.² B22D *37/00, 39/00, 5/02*

U.S. Cl. 164—337 **6 Claims**



1. Casting apparatus comprising crucible means including heating means and pump means for supplying molten casting material, a plurality of molds arranged in an arcuate pattern about said crucible means, a longitudinal trough having a first end located to receive said molten casting material from said crucible means and a second end located to deposit said molten casting material into said molds, means mounting said trough at said first end thereof relative to said crucible means to enable both rotation of said trough about a vertical axis and tilting of said trough about a horizontal axis, means for effecting rotation of said trough about said vertical axis to direct said second end of said trough to a selected one of said plurality of molds to deposit said molten casting material therein, and means for effecting tilting of said trough about said horizontal axis to start and terminate flow of said molting casting material from said crucible means to a selected mold.

3,923,095

APPARATUS FOR SEPARATING MAGNETIZABLE CASTINGS FROM CASTING MOULDS OF SAND OR SIMILAR MATERIALS

Hemming Kristian Jorgensen, Klampenborg, and Marius Gunnergaard, Lyngby, both of Denmark, assignors to Dansk Industri Syndikat A/S, Herlev, Denmark

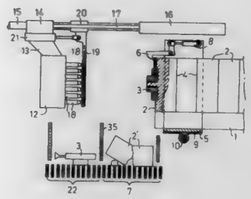
Filed June 18, 1974, Ser. No. 480,554

Claims priority, application Denmark, July 9, 1973, 3813/73

Int. Cl.² B22D *29/00;* **B25J** *3/00*

U.S. Cl. 164—404 **5 Claims**

1. An apparatus for separating magnetizable castings from a sand mold consisting of a succession of mold parts which are horizontally advanced stepwise to a mold breaking station at which each mold part is successively allowed to drop away so as to expose its respective casting comprising a carrier frame mounted in front of said mold breaking station so as to be displaceable towards and away therefrom, a plurality of magnets mounted in said carrier frame and protruding towards said mold breaking station, said magnets being individually displaceable relative to said carrier frame between an extended basic position and a retracted position, means biasing said magnets towards said basic position and permitting their individual retraction as they are brought in contact with the



exposed casting by displacement of said carrier frame towards said mold breaking station, and means for locking said magnets in their retracted positions relative to said carrier frame during the displacement thereof away from said mold breaking station whereby said casting is pulled and separated from a remaining mold part.

3,923,096

BUILDINGS

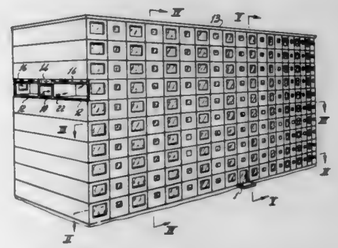
Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Filed Jan. 16, 1974, Ser. No. 433,765

Claims priority, application Netherlands, Dec. 20, 1972, 7217347

Int. Cl.² F24F *13/00*

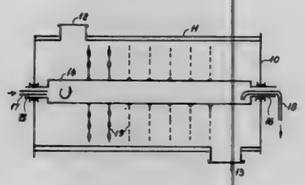
U.S. Cl. 165—48 **11 Claims**



1. A multistory building which is comprised of a plurality of superimposed elongated box-shaped prefabricated sections, each of which encloses a portion of the living space in the building, each said section comprising a floor, at least one wall and a ceiling member, said wall extending higher than the top of said ceiling member whereby an air space constituting a channel for transporting air is defined in each said section by the top of said ceiling member, air conditioning means provided in the building in passage communication with said air space of each said section whereby air conditioned by said air conditioning means is received in said air space, said wall being adjacent said air space and the bottom of the floor of the section next above being adjacent to and defining the top of said air space, each said ceiling member and said floor comprising heat exchange means between said air space and the living space in the sections adjacent each whereby with a difference in temperature between the air in said air space and the air in said living space a heat transfer occurs through said member and said floor relative to said living space each said section having an opening in said ceiling member for the passage of air between said air space and the living space defined by such section, closure means in said opening and adjustment means for selectively opening said closure means,

and thermostatic means in the living space provided by such section adapted to control said adjustment means.

3,923,097
HEAT EXCHANGER
Helge Hovad, Bagsvaerd, Denmark, assignor to A/S Atlas, Ballerup, Denmark
Filed Apr. 26, 1974, Ser. No. 464,642
Claims priority, application Denmark, May 1, 1973, 2352/73
Int. Cl.² F28G *17/00*
U.S. Cl. 165—92 **7 Claims**



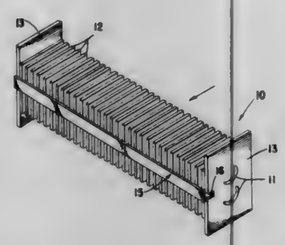
1. A heat exchanger for treating moist, tacky material, which comprises:

a. a stationary drum, having

b. an internal hollow shaft or rotor with inlet and outlet for the heat exchanging medium,

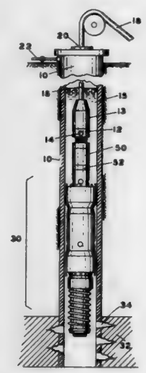
c. annular bodies in the shape of ribs encircling said rotor, each of said ribs being provided with a helical, hollow space, the inner end of which communicates with the hollow shaft, the outer end being closed, each said rib formed from a plane sheet, and the helical hollow space thereof being formed by attachment to the sheet of a helically cut strip of arcuate cross-section, and means for rotating said hollow shaft and the shaft attached annular rib shaped bodies in a direction such that the closed end of the helical space is in front whereby movement of the condensate back to the hollow space of the rotor is aided by the rotor movement.

3,923,098
FORCED AIR HEAT EXCHANGE UNIT WITH IMPROVED CONDENSATE REMOVAL CONSTRUCTION
Roland A. Ares, Wilmington, N.C., assignor to The Singer Company, New York, N.Y.
Filed Feb. 14, 1974, Ser. No. 439,505
Int. Cl.² F25D *21/14*
U.S. Cl. 165—111 **2 Claims**



1. In a forced air heat exchange unit having at least one horizontally extending coil of thermally-conductive tubing supported between end plates and carrying thermally-conductive fins thereon, the improvement comprising at least one condensate channel connected across and supported within notches formed in all of said fins and end plates adjacent the downstream edges thereof, whereby condensate formed on said fins is conducted via such channel to the area of at least one of said end plates for collection and disposal, said channel and notches being dimensioned such that one leg and substantially all of the base of said channel nests within said notches with the base of the notches being substantially coextensive in height with said one leg of the channel, the other leg of said channel being of greater dimension than said one leg and extending upwardly outside of said notches in close proximity to the downstream edges of said fins.

3,923,099
METHODS OF WELL COMPLETION OR WORKOVER OF FLUID CONTAINING SUBSURFACE FORMATIONS
Clarence W. Brandon, Nashville, Tenn., assignor to Orpha B. Brandon, Nashville, Tenn., a part interest
Continuation-in-part of Ser. No. 355,239, April 30, 1973, abandoned, which is a continuation of Ser. No. 557,273, June 13, 1966, abandoned, which is a continuation-in-part of Ser. Nos. 853,405, Nov. 16, 1959, Pat. No. 3,255,820, and Ser. No. 665,995, June 17, 1957, Pat. No. 3,302,720, which is a continuation-in-part of Ser. No. 296,038, June 27, 1952, Pat. No. 2,866,509, and Ser. No. 241,647, Aug. 31, 1951, Pat. No. 2,796,129. This application Mar. 27, 1975, Ser. No. 562,995
Int. Cl.² E21B *33/13, 43/26, 43/27*
U.S. Cl. 166—249 **39 Claims**



1. A method of well completion or workover of oil, gas or other fluid containing subsurface formations into which a well bore has been drilled, which comprises the step of

packing off said fluid containing subsurface formation from said well bore which is above said subsurface formation while providing controllable communication through tubing between said fluid containing formation and a wellhead at the surface of said well bore,

thereafter creating substantially instantaneously at least once a low pressure void or zone of rarefaction in that portion of the well bore which is in communication with said fluid containing subsurface formation but beneath said controlled communication in said tubing, and

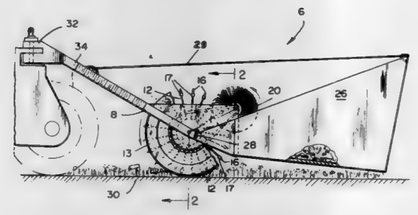
creating a negative fluid pulse or surge of fluid from said subsurface formation into said created low pressure void or zone of rarefaction in said packed off portion of said well bore that is in communication with said fluid containing formation.

3,923,100
COMPOSITIONS USEFUL IN PLUGGING FORMATIONS
Thomas J. Bellos, Kirkwood, and Donald U. Bessler, St. Louis, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.
Filed Sept. 28, 1973, Ser. No. 401,578
Int. Cl.² E21B *33/13, 43/26*
U.S. Cl. 166—281 **4 Claims**

1. A process of plugging an earth formation comprising a petroleum-containing formation and a water-bearing formation, said earth formation being in communication with a well, which comprises:

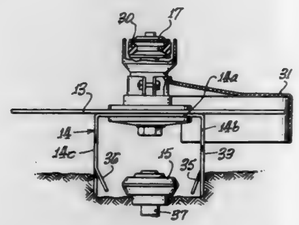
1. introducing into said well a preflush composition comprising a non-aqueous solution of a fatty amine acid salt, and
2. forcing said solution into the formation so that when said solution comes into contact with the water-bearing formation it will plug said water-bearing formation.

3,923,101
PIN CYLINDER LITTER COLLECTOR
Paul C. Donohue, 82-13 32nd Ave., Jackson Heights, N.Y. 11370
Filed Apr. 5, 1974, Ser. No. 458,281
Int. Cl.² A01B *43/00*
U.S. Cl. 171—63 **7 Claims**



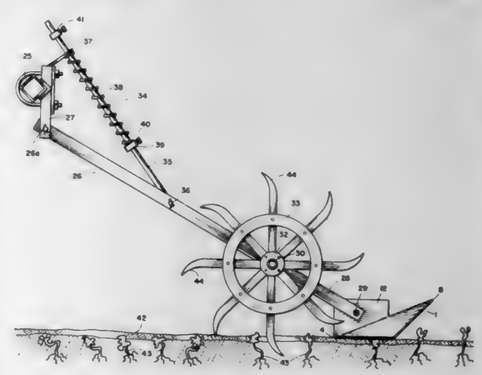
1. A litter picker comprising, in combination, a frame, a first horizontal shaft mounted in said frame, a pair of ground engaging wheels secured to the ends of said first shaft for causing said first shaft to rotate, means secured about said shaft for attaching a plurality of rods, a plurality of spaces flexible rods attached to said securing means radially of said shaft and having rod ends extending beyond the periphery of said wheels, a second shaft rotatably mounted in said frame rearwardly of said first shaft, a cylindrical brush secured to said second shaft for cooperation with said rods, means operably connecting both said shafts for driving said second shaft upon rotation of said first shaft, a bin for litter secured to said frame rearwardly thereof, said means secured about said first shaft for attaching said rods comprising a plurality of adjacent sleeves of flexible material mounted on said first shaft in frictional engagement with said shaft and a concrete cylinder enclosing said first shaft and said sleeves, said rods extending through said concrete cylinder and said plurality of adjacent sleeves respectively.

3,923,102
TOOL FOR EDGING AROUND SPRINKLER HEADS
Allen H. Morris, 3039 Glendon Ave., Los Angeles, Calif. 90034
Filed Jan. 21, 1974, Ser. No. 435,202
Int. Cl.² A01D *35/00*
U.S. Cl. 172—13 **4 Claims**



1. In a power-driven apparatus, including a carriage with wheels and a power motor on the carriage, a U-shaped edging blade for cutting a circular area in sod close around a lawn sprinkler head and means coupled to said power motor for turning said blade about a vertical axis, said blade being comprised of strap steel having a horizontal section of a length equal to the diameter of the circular area to be cut, said horizontal section being centered on said vertical axis and two end sections perpendicular to said horizontal central section, one end section extending downwardly from said horizontal section at each end thereof, and each end section having a leading edge for cutting and a trailing segment bent inwardly toward said vertical axis for breaking up sod being cut by the leading edge and for propelling sod thus cut and broken up away from the circular cut being made, whereby cut and broken up sod is propelled out and away from said circular area.

3,923,103
CULTIVATOR SKIMMER DEVICE
Jimmie L. Davis, Rte. 2 Box 126, and Alfred C. Harris, Jr., 408 C 15th St., both of Abernathy, Tex. 79311
Filed Dec. 2, 1974, Ser. No. 528,871
Int. Cl.² A01B *49/02, 39/26, 35/26*
U.S. Cl. 172—201 **10 Claims**



1. A cultivator skimmer which when viewed from directly overhead comprises:

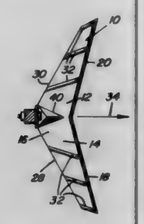
a. a front shield-plate portion in the shape of a triangle, the vertex of which is at the front tip of the shield and the sidewardly extending halves of which angle downwardly from the proximity of a median line drawn from said vertex to the base line of said triangle, thus imparting to the front shield-plate portion a transverse cross-section in the shape of an inverted "V," and

b. a rear shield-plate portion which extends rearwardly from said first portion, said rear portion being closed at the top and having sides which extend downwardly to a distance which corresponds to that to which said halves of the triangular front portion extend downwardly, said sides being spaced apart at their lower edges and to each side of the longitudinal axis of the shield, and thus providing a channel between the sides.

3,923,104
FORWARD ANGLE PLOW SWEEP
Robert C. Tibbs, Hospital Drive, Cleveland, Miss. 38732
Filed Oct. 18, 1974, Ser. No. 516,130
Int. Cl.² A01B *39/18, 39/26*
U.S. Cl. 172—730 **10 Claims**

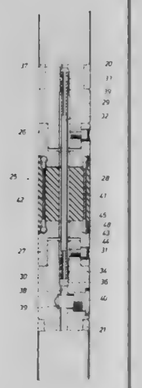
1. A plow sweep construction comprising a horizontal plate including opposite side marginal portions and front and rear marginal portions each having generally straight opposite end portions disposed on opposite sides of a center front-to-rear extending vertical plane disposed centrally intermediate the opposite side marginal portions of said plate, the central portion of the rear marginal edge portion of said plate including

means for support from the lower end portion of a dependingly supported tool shank, the opposite end portions of said



front marginal portions being slightly forwardly inclined toward their remote ends.

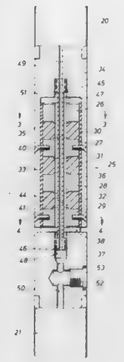
3,923,105
WELL BORE PERFORATING APPARATUS
Jack F. Lands, Jr., Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Dec. 4, 1974, Ser. No. 529,422
Int. Cl.² E21B *43/11*
U.S. Cl. 175—4.55 **11 Claims**



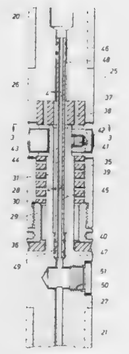
1. Perforating apparatus comprising:
first and second perforating guns cooperatively arranged to be sequentially actuated for successively perforating spaced intervals of a well bore wall; and
shock-absorbing coupling means tandemly intercoupling said perforating guns and including first and second spatially disposed rigid coupler members respectively coupled to said first and second perforating guns, and a yieldable coupler member of an elastomeric material cooperatively arranged between said rigid coupler members for attenuating shocks transmitted to one of said perforating guns upon actuation of the other of said guns.

3,923,106
WELL BORE PERFORATING APPARATUS
Michel J. Bosse-Platiere, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Dec. 4, 1974, Ser. No. 529,418
Int. Cl.² E21B *43/11*
U.S. Cl. 175—4.55 **11 Claims**

1. Perforating apparatus comprising:
first and second perforating guns cooperatively arranged to be sequentially actuated for successively perforating spaced intervals of a well bore wall; and
shock-isolating means tandemly intercoupling said perforating guns cooperatively arranged for attenuating shocks transmitted to one of said perforating guns upon actuation of the other of said guns and including at least first and second spatially-disposed rigid coupler members respectively coupled to said first and second perforating guns, and a yieldable coupler member cooperatively arranged between each of said rigid coupler members for isolating said rigid coupler members from one another.



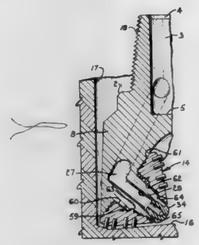
3,923,107
WELL BORE PERFORATING APPARATUS
John W. Dillard, Magnolia, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Dec. 14, 1974, Ser. No. 529,419
Int. Cl.² E21B *43/11*
U.S. Cl. 175—4.55 **11 Claims**



1. Perforating apparatus comprising:
first and second perforating guns cooperatively arranged to be sequentially actuated for successively perforating spaced intervals of a well bore wall; and
shock-isolating means tandemly intercoupling said perforating guns cooperatively arranged for attenuating shocks transmitted to one of said perforating guns upon actuation of the other of said guns and including inner and outer rigid coupler members telescoped together and

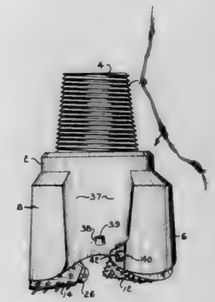
respectively coupled to said first and second perforating guns, and yieldable means cooperatively arranged between said rigid coupler members for shock isolating said rigid coupler members from one another and yieldably supporting said inner member within said outer member to accommodate relative longitudinal and bending movements therebetween.

3,923,108
DRILL TOOL
Edward B. Williams, Jr., P.O. Box 648, 103 Mullaney Road, Greenville, Tex. 75401
Filed Jan. 17, 1975, Ser. No. 541,860
Int. Cl.² E21B *9/10*
U.S. Cl. 175—227 **5 Claims**



1. A drill tool comprising:
a. a body member having a passage therein, said passage extending along a longitudinal axis of said body member and between a fluid receiving end and a closed end;
b. a plurality of circumferentially spaced arms extending from said body member adjacent the closed end of said passage in said body member, said arms each having an inwardly facing surface;
c. a plurality of axle portions each exteding from the inwardly facing surface of a respective one of said arms and along a respective axis intersecting the longitudinal axis of said body member in a manner to define a respective acute angle between the axis of the respective axle portion and the longitudinal axis of said body member;
d. a plurality of cutting cones each rotatably mounted on a respective one of said axle portions and having a base surface in facing relation with the inwardly facing surface of the respective arm, said cutting cones each having cavity defining surfaces in engagement with respective exterior surfaces of said respective axle portions;
e. means on each of said axle portions for retaining lubrication material and for circulating same to the exterior surface thereof;
f. means on the cavity defining surfaces of each of said cutting cones for circulating lubrication material within the cavity thereof and thereby lubricating engaging surfaces of said cutting cones and axle portions;
g. a plurality of annular seal members each mounted on the base surface of a respective one of said cutting cones and in engagement with the inwardly facing surface of said respective arm for retaining the lubrication material between the engaging surfaces of said respective cutting cones and axle portions; and
h. means on the base surface of each of said cutting cones defining at least one recess therein for a respective one of said seal members to be mounted thereon, said means defining each of said recesses including:
1. an abutment surface extending substantially normal to the base surface of said respective cutting cone and positioned to be engaged by said respective seal member; and
2. a ramp surface intersecting the base surface of said respective cutting cone and positioned to define a ramp for outward movement of said respective seal member and toward said abutment surface in response to movement of said base surface of said respective cutting cone toward the inwardly facing surface of said respective arm.

3,923,109
DRILL TOOL
Edward B. Williams, Jr., P.O. Box 648, 103 Mullaney Road, Greenville, Tex. 75401
Filed Feb. 24, 1975, Ser. No. 552,447
Int. Cl.² E21B *9/10*
U.S. Cl. 175—340 **10 Claims**



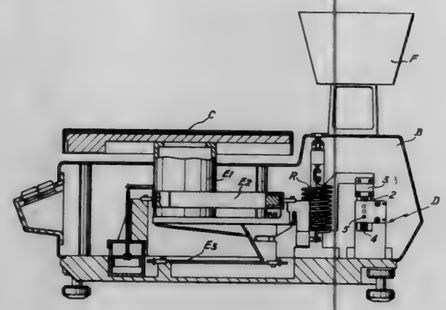
9. A drill tool comprising:
a. a body member having a passage therein, said passage extending along a longitudinal axis of said body member and between a fluid receiving end and a closed end;
b. a plurality of circumferentially spaced arms extending from said body member adjacent the closed end of said passage in said body member, each of said arms having a leading side and a trailing side;
c. a plurality of axle portions each extending from a respective one of said arms and along a respective axis intersecting the longitudinal axis of said body member in a manner to define a respective acute angle between the axis of the respective axle portion and the longitudinal axis of said body member;
d. a plurality of cutting cones each rotatably mounted on a respective one of said axle portions, said cutting cones each having surfaces in engagement with respective exterior surfaces of said respective axle portions;
e. a flow passage communicating with the passage in said body member and extending through one of said arms with an end portion of said flow passage extending along the axis of rotation of the cutting cone mounted on said axle portion of said one arm, the end portion of said flow passage through said one arm having an end positioned adjacent the bottom of the drill hole;
f. a nozzle member mounted in the end portion of said flow passage through said one arm;
g. means in said nozzle member for defining a first orifice positioned to direct the drilling fluid into a space between a first cutting cone and a second cutting cone in a manner to clear a space ahead of the second cutting cone;
h. means in said nozzle member for defining a second orifice positioned to direct the drilling fluid into a space between the second cutting cone and a third cutting cone in a manner to clear a space ahead of the third cutting cone; and
i. means in said nozzle member for defining a third orifice positioned to direct the drilling fluid into a space between the first cutting cone and the third cutting cone in a manner to clear a space ahead of the first cutting cone.

3,923,110

PRECISION DISPLACEMENT MEASURING DEVICE FOR AN ELECTRONIC READ-OUT PLATFORM SCALE

Felice Dal Dan, Rosny-sous-Bois, France, assignor to Etablissements Leonard S.A., Romainville, France

Filed Feb. 12, 1975, Ser. No. 549,439
Int. Cl.² G01G 3/14
U.S. Cl. 177—210 **3 Claims**



1. In a platform displacement scale comprising parallelogram linkage means for transmitting the scale platform displacement, a movable bridging arm arranged to be displaced by said linkage means in proportion to said scale platform displacement and read-out means, a precision displacement measuring device comprising:

flexible suspension means depending from said bridging arm, and

counting means having an electronic output connected for operating said read-out means, said counting means comprising:

a vertically movable member suspended from said bridging arm by said suspension means and including a grating of substantially horizontal lines;

a fixed member carrying a fixed grating in alignment with said grating of said movable member and provided with means for guiding said movable member, said guiding means including screw-adjustable means for minimizing the play of said movable member in its path of motion, and

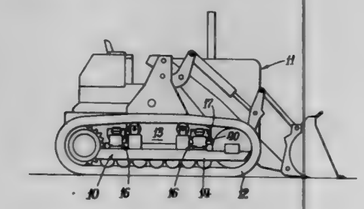
detecting means provided on said fixed member for producing electronic pulses in response to relative movement of said gratings.

3,923,111

MULTIDIRECTIONAL RESILIENT SUSPENSION FOR VEHICLES

Robert J. Purcell, Washington; David J. Balzer, East Peoria, and Rollin P. Van Zandt, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 1, 1974, Ser. No. 438,665
Int. Cl.² B62D 55/16
U.S. Cl. 180—9.54 **4 Claims**



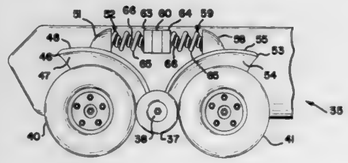
1. A resilient suspension system for a track-type vehicle having a main frame and a track roller frame including; a hollow tubular member, annular resilient means disposed around the exterior said tubular member for cushioning lateral movement between said main and roller frames, resilient pad means disposed in stacked relation within the hollow interior of said tubular member for cushioning vertical relative movement between said frames, including first coupling means for supportingly surrounding said annular resilient members and for mounting said annular resilient members and said tubular member upon said roller frame, bracket means secured to said main frame for supporting a portion of said tubular member for movement relative to said first coupling means.

3,923,112

DRIVEN WHEEL ARRANGEMENT

Muriel T. Goodgame, 305 W. Mesa, Hobbs, N. Mex. 88240

Filed Jan. 7, 1974, Ser. No. 431,547
Int. Cl.² B60G 5/06, 3/14
U.S. Cl. 180—24.11 **17 Claims**



1. A wheel suspension and driving system for a non-endless track type vehicle and comprising:

a. a generally horizontal driven axle mounted on a vehicle and supported by a frame thereof;

b. a driving member mounted on said driven axle and rotatable therewith;

c. a support member mounted for rotation substantially about the axis of said driven axle and having a hub spaced from said axis, said hub having an axis substantially parallel with said driven axis;

d. a vehicle supporting wheel rotatably mounted on said hub;

e. means operatively engaging said driving member for transmitting power from same to said vehicle supporting wheel to effect rotation thereof; and

f. resilient load support means engaging said support member, said resilient load support means being located above said support member and substantially coplanar with said vehicle supporting wheel, said load support means being in compression on a generally horizontal axis and resiliently urging said vehicle supporting wheel into ground contact.

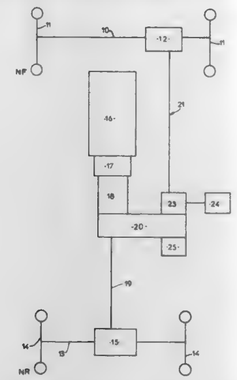
3,923,113

FOUR WHEEL DRIVE VEHICLES

Brian Colin Pagdin, Sutton Coldfield, England, assignor to GKN Transmissions Limited, Birmingham, England

Filed June 21, 1973, Ser. No. 372,450
Claims priority, application United Kingdom, June 21, 1972, 28975/72; Aug. 26, 1972, 39897/72
Int. Cl.² B60K 17/34, 23/04
U.S. Cl. 180—44 R **8 Claims**

1. A four-wheel-drive vehicle including a prime mover, front and rear wheels drivable by the prime mover, a drive connection between the front and rear wheels, a torque transmitting device having two relatively rotatable parts arranged so that the ratio of input torque to output torque of the device is not at all times equal to the ratio of output speed to input speed of the device, one of said parts of the device being connected with the front wheels and the other of said parts of the device being connected with the rear wheels so that when a speed differential arises between the front and rear wheels said parts of the device rotate relative to each other to transmit torque between the parts thus diverting part of the prime mover torque from the faster rotating wheels to the slower rotating wheels, a normally disengaged clutch connected kinematically in parallel with the torque transmitting device so as to provide an alternative torque transmitting path between the front and rear wheels, and a temperature sensitive element



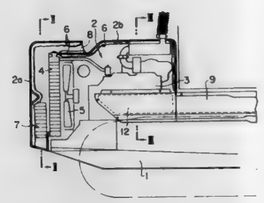
arranged, when the temperature of the torque transmitting device reaches a predetermined value resulting from relative rotation of said parts thereof in response to a speed differential between the front and rear wheels, to cause the clutch to engage, thus relieving the device of its torque transmitting duty and reducing the amount of energy converted into heat in the torque transmitting device.

3,923,114

SOUND ARRESTING DEVICE IN A VEHICLE FOR USE IN CONSTRUCTION WORK

Yasuo Suzuki, Hirakata, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Japan

Filed July 2, 1974, Ser. No. 485,229
Claims priority, application Japan, Aug. 14, 1973, 48-90539
Int. Cl.² B60K 11/04
U.S. Cl. 180—54 A **3 Claims**



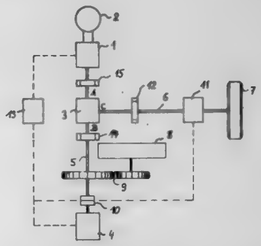
1. A sound arresting device in a vehicle for use in construction work having a chasis, an engine compartment provided at the forward end of said chasis and formed with air suction openings, an engine housed in said engine compartment for driving said vehicle, fan means provided in said engine compartment for directing cooling air sucked in said engine compartment through said suction openings toward said engine to cool the same, and fender means extending longitudinally on either side of said chasis from said engine compartment to the rear end of said chasis, wherein the improvement comprises said engine compartment being formed in a closed construction except for said suction openings, a lining of sound absorbing material applied to the inner walls of said engine compartment except for said suction openings, each of said fender means being constructed in the form of a duct opening at its forward end into said engine compartment and at its rear end into atmosphere, with a lining of sound absorbing material applied to the inner wall of each said fender means, thereby permitting sound produced in said engine compartment and contained in said cooling air to be substantially attenuated by said linings in said engine compartment and said fender means before said cooling air is discharged from said fender means, wherein one of said suction openings is provided at the top of said engine compartment while the remaining suction openings are provided at either side of said engine compartment adjacent to the forward end thereof and are in the form of louvers having a plurality of blades, each of said blades being provided thereon with a lining of sound absorbing material.

3,923,115

HYBRID DRIVE

Juergen Helling, Nizzaallee 36, 51 Aachen, Germany

Filed Oct. 26, 1972, Ser. No. 301,154
Claims priority, application Germany, Oct. 29, 1971, 2153961
Int. Cl.² B60K 9/04
U.S. Cl. 180—65 A **9 Claims**



1. A hybrid drive with at least two driving engines, among them at least one electric machine and at least one power source connected to the driving engines, a differential gearing means having three shafts, one of said three shafts being an output shaft, a brake coupled to said output shaft for restraining rotation thereof, said driving engines being coupled to said differential gearing means by the other two shafts of said three shafts, and the relationship between said other two shafts and said differential gearing means being one wherein when one of said other two shafts is driven in one direction and said output shaft is restrained by said brake against rotation the other of said two shafts is rotated in an opposite direction relative to said driven shaft, said electric machine being an electric generator-motor unit operable first as a generator with the speed of the driving thereof in said opposite direction decreasing to zero as said speed of said output shaft increases with said generator-motor unit thereafter functioning as a motor turning in said one direction and assisting in the driving of said output shaft, said differential gearing means being of the type for adding up the performance of said driving engines, a flywheel, and transmission gearing independently connecting said flywheel to at least one of said other two shafts.

3,923,116

ELECTRIC VEHICLE HAVING IMPROVED BATTERY RECONNECT

Francis T. Thompson, and James A. Bauer, both of Murrysville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

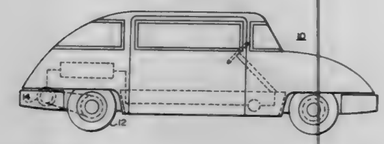
Filed Jan. 2, 1974, Ser. No. 430,107
Int. Cl.² B60L 11/18
U.S. Cl. 180—65 R **14 Claims**

1. A method for switching the power batteries connection to the armature of the drive motor in an electric vehicle driven by a separately excited direct current motor from a low voltage connection to a high voltage connection wherein the

armature time constant is relatively short and the field time constant is relatively long comprising the steps of:

preventing current flow into the batteries;

increasing the current flowing through the separately excited field windings; and



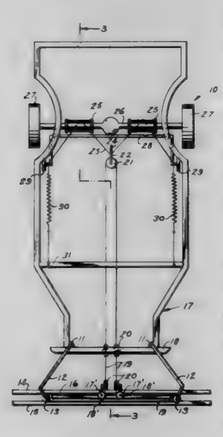
completing the series connection of the batteries when field excitation reaches a predetermined level of approximately 100% of full field current.

3,923,117

BUMPER ACTUATED GROUND ENGAGING BRAKE

Marcos E. Váldez, 1919 Fruitvale Ave., No. C, Oakland, Calif. 94601

Filed Jan. 23, 1974, Ser. No. 435,709
Int. Cl.² B60R *19/02*
U.S. Cl. 180—93 **4 Claims**



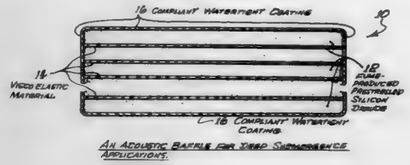
1. A bumper mechanism adapted for attachment to a vehicle having a chassis including side frames, rear wheels carried by axle means and being carried by said chassis and a front bumper, said mechanism comprising a pair of pivotable leaf members adapted to be hingeably carried upon the chassis of a vehicle, an endless cable pulley means carried by said leaf members for carrying an endless cable, a pair of front and rear guide bars extending transversely of said side frames forwardly of said bumper, providing guide means for said pulleys, a separator bar carried by and positioned between said guide bars for securing said bars together, a pair of pulleys carried by said guide bar for the horizontal mounting of said cable forwardly of said bumper, a second pair of vertical pulleys for carrying said cable, a horizontal rear pulley, a rear wheel lifting axle, spring means normally urging said axle into an inoperative position, a pair of spools carrying a second cable attached to the support of said horizontal pulley in the rear of said vehicle, said front and rear guide bars being supported by the mounting means of the pulleys attached to said leaf members, the opposite ends of said leaf members being supported hingeably between the side frames of said chassis rearwardly of said bumper, said pulleys of said leaves being guided towards the outside ends of said guide bars when impact occurs at the forward portion of said vehicle.

3,923,118

ACOUSTIC BAFFLE FOR DEEP SUBMERGENCE

Carl R. Johansen, La Verne, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 19, 1972, Ser. No. 263,893
Int. Cl.² C09K *3/00*
U.S. Cl. 181—.5 **6 Claims**



1. A multi-layered acoustic baffle, particularly useful at great depths, comprising:

at least two layers of fume-produced silicon dioxide, the particle size being between 70 to 500 angstroms, the particles being sintered together in chain-like formations and having surface areas of 50 m^2/g to 400 m^2/g;

each of the layers being prestressed to a pressure greater than the pressure at which the baffle is to be used; and

each of the layers having a thickness not greater than ¼ wavelength of the highest frequency of interest in the material;

at least one layer of high-density, viscoelastic material having a high acoustic shear loss coefficient, sandwiched in between each layer of the silicon dioxide; and

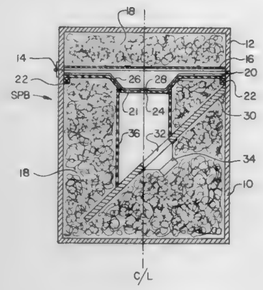
a layer of a compliant watertight coating bordering the two outer layers of silicon dioxide and the sides of the baffle, thereby completely enclosing the other layers.

3,923,119

SOUND PRESSURE BOX

George Joseph Frye, 12175 SW. Douglas, Portland, Oreg. 97225

Filed Jan. 3, 1974, Ser. No. 430,463
Int. Cl.² G01V *1/00*
U.S. Cl. 181—.5 **6 Claims**



1. A sound pressure box comprising:

a top section;

a bottom section;

means connecting said top section and said bottom section together;

sound-absorbing material disposed in said top section and said bottom section;

device-holding means mounted in said bottom section;

mounting means disposed in said bottom section extending between an upper end of said bottom section and an opposed inner end thereof; and

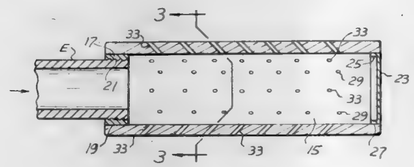
sound-generating means mounted on said mounting means so that the axis thereof is at an angle with respect to the vertical axis of said box.

3,923,120

EXHAUST SILENCER

Joseph M. Jatcko, 15555 E. 12 Mile Road, Roseville, Mich. 48066

Filed Feb. 18, 1975, Ser. No. 550,212
Int. Cl.² F01N *1/08*
U.S. Cl. 181—60 **8 Claims**



1. An exhaust silencer for gases comprising a hollow elongated cylindrical body with a uniform bore;

an inlet at one end of the body adapted to receive an exhaust pipe;

a cap anchored at and across the other end of the body;

a plurality of spaced rows of outlet holes formed through the body;

said holes inclined at an acute angle to the body axis;

the holes of one row extending forwardly and outwardly, and the holes of an adjacent rows extending rearwardly and outwardly;

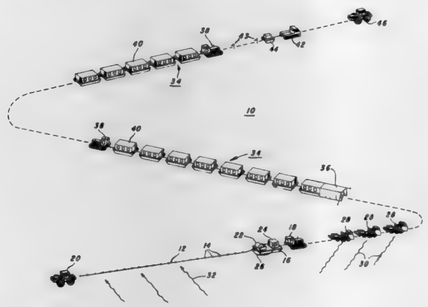
said rows of holes alternating in direction and extending around the body and substantially throughout its length, whereby exhaust gases passing said inlet move along the length of the body and escape through the rows of holes therein.

3,923,121

TOWED LAND CABLE

John A. Kruppenbach, Anchorage, Alaska, and John W. Bedenbender, Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 75,391, Sept. 25, 1970, abandoned. This application Sept. 9, 1974, Ser. No. 504,591
Int. Cl.² G01V *1/16*
U.S. Cl. 181—112 **5 Claims**



1. A method of mechanized land prospecting comprising:

a. locating a segment of a line of exploration through an exploration area;

b. surveying with a mobilized survey unit the segment of the line of exploration to mark locations for seismic sources and a sensor land cable position while scouting location of additional segments of the line of exploration;

c. positioning mobile seismic sources at their marked locations along the segment of the line of exploration while surveying further positions along the additional segments of the line of exploration;

d. towing the land cable to its marked position along the segment of the line of exploration while surveying further positions along the additional segment of the line of exploration;

e. actuating the seismic sources to operatively produce acoustic disturbances in the earth;

f. sensing along the segment of the line of exploration reflected acoustic waves for information pertaining to earth structure beneath the surface; and

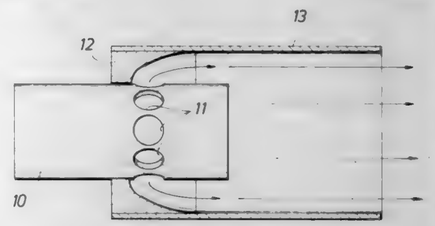
g. relocating the mobile seismic sources at additionally marked seismic source locations, while towing the sensor-land cable to additionally marked locations along an additional segment of the line of exploration.

3,923,122

SEISMIC PNEUMATIC ENERGY SOURCE WITH ATTENUATION OF BUBBLE PULSE AMPLITUDE AND REDUCTION OF PERIOD OF BUBBLE OSCILLATION

Oswald A. Itria, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 220,940, Jan. 26, 1972, abandoned. This application Nov. 1, 1973, Ser. No. 411,986
Int. Cl.² G01V *1/04, 1/38*
U.S. Cl. 181—115 **8 Claims**



3. A method for attenuating the amplitude and reducing the period of bubble pulses resulting from the rapid expansion of pressurized air exiting from a plurality of exhaust ports of an air gun when generating a primary seismic energy pulse comprising the step of,

a. deflecting the expanding air from all exhaust ports with a cylinder having a length greater than its diameter into one direction for forming the bubble into an elongated shape.

3,923,123

SOUND REPRODUCING APPARATUS

Laurence Latimer-Sayer, Greenways, 122, Strawberry Vale, Twickenham, Middlesex TW1 4SH, England

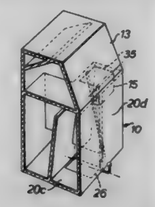
Filed Nov. 6, 1973, Ser. No. 413,290
Claims priority, application United Kingdom, Nov. 10, 1972, 51918/72; Dec. 11, 1972, 57030/72; Jan. 19, 1973, 2804/72
Int. Cl.² H05K *5/00*
U.S. Cl. 181—144 **12 Claims**

1. Sound reproducing apparatus comprising:

a cabinet (**10**) defining at least a first chamber (**13**) therein, said cabinet (**10**) having a front face (**10***a*) and a rear face (**10***b*);

a single low frequency drive unit (**11**) which is mounted in said first chamber (**13**) on said front face (**10***a*) of said

cabinet (10), said chamber (13) extending rearwardly of said low frequency drive unit (11);
at least a treble unit (12), mounted on said front (10*a*) face of said cabinet (10);
a first port (15) in said cabinet (10) for the emission of low frequency sound;
a four section transmission line (20*a*, 20*b*, 20*c*, 20*d*) formed within said cabinet (10) and extending between said chamber (13) and said first port (15);



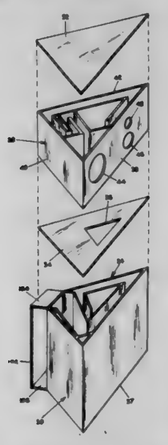
a second port (26) in said cabinet (10) in communication with the third section (20*c*) of said transmission line; and an adjustable first flap (25) in said cabinet and selectively movable between first and second positions for respectively opening and closing said second port (26) whereby in said first position said first flap (25) opens said second port (26) to isolate the last section of said transmission line (20*d*) from the previous transmission line section (20*c*) and in said second position said first flap (25) closes said second port (26).

3,923,124

BACK LOADED FOLDED CORNER HORN SPEAKER

John P. Hancock, 2374 Post, NE., Belmont, Mich. 49306

Filed Jan. 2, 1974, Ser. No. 429,514
Int. Cl.² H05K *5/00*
U.S. Cl. 181—156 **22 Claims**



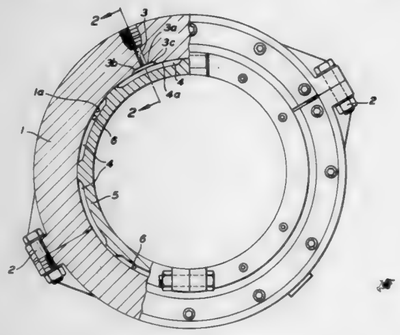
1. A back loaded, folded corner horn speaker comprising: a corner speaker enclosure having a front and a back and an open interior and including:
a front panel having at least one baffle opening therein;
a pair of side panels connected to opposite side edges of the front panel and converging inwardly therefrom to the back of the speaker enclosure, said back comprising a horn outlet therein, said side panels being formed such that when the speaker is placed in the corner of a room with the side panels facing the walls of the room, said side panels are spaced from the walls of the room such that the space between the side panels and the walls forms the final segment of a folded horn fitted in the enclosure; and
a top and a bottom enclosing open ends of the speaker enclosure;
a low frequency driver having a front and back and mounted in the baffle opening such that the front of the low frequency driver radiates directly outwardly from the speaker enclosure into the room and the back of the low frequency driver radiates into the interior of the speaker enclosure;
a folded hyperbolic-exponential horn fitted in the interior of the speaker enclosure so as to back load the back of the low frequency driver, said horn extending from a horn throat acoustically connected to the back of the low frequency driver to the horn outlet at the back of the speaker enclosure, said horn thereafter extending through a final segment of the horn formed along the outer surfaces of the side panels to a horn mouth at the front of the speaker enclosure, the length of said horn being approximately one-fourth of the wavelength of the low frequency cut-off frequency of the horn;
the interior of the speaker enclosure comprising upper and lower compartments that are separated by a horizontal divider, with a divider opening in the divider forming a passage from the upper to the lower compartment;
the upper compartment comprising the baffle opening and the driver and a first section of the horn formed by a series of interconnected partitions extending between the top and the divider, said first section of the horn extending from the throat connected to the back of the low frequency driver to the divider opening leading to the lower compartment; and
the lower compartment comprising the horn outlet and a second section of the horn formed by partitions extending between the divider and the bottom, said second section of the horn extending from the divider opening to the horn outlet of the enclosure.

3,923,125

APPARATUS FOR THE CONTROLLED FEEDING OF LUBRICANTS AND COOLANTS TO ROTATING SURFACES IN CONTACT

Erich Rosenthal, Sandheider Strasse 201, 5605 Hochdahl, Germany

Filed Aug. 28, 1973, Ser. No. 392,230
Claims priority, application Germany, Aug. 28, 1972, 2242229; Mar. 21, 1973, 2325624
Int. Cl.² F01M *1/00*
U.S. Cl. 184—6 **12 Claims**



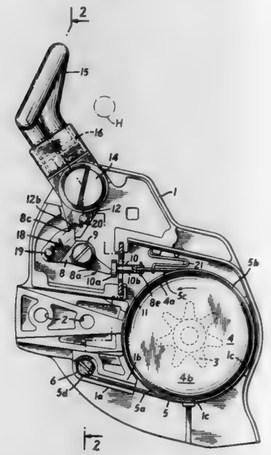
1. Apparatus for the controlled delivery of pressurized lubricating and cooling fluid to distant surfaces rotating in contact comprising: stationary ring means, rotatable ring members mounted in concentric relationship to said stationary ring means, at least two feed ducts in one of said ring means and at least one transfer duct in the other of said ring means, at least two axially spaced chamber means disposed about a portion of the periphery of one of said ring means and communicating with said feed ducts, and at least two duct means circumferentially disposed about the periphery of the other of said ring means and communicating with said transfer duct, whereby the flow of the pressurized fluid from said transfer duct to distant surfaces rotating in contact is selectively fed from said chamber means to said duct means in quantities determined by the relative areas of said chamber means and said duct means.

3,923,126

BAND TYPE BRAKE FOR A CHAIN SAW

Edward J. Bidanset, Amawalk, N.Y., assignor to Textron Inc., Providence, R.I.

Filed June 25, 1974, Ser. No. 483,034
Int. Cl.² F16D *49/04*
U.S. Cl. 188—77 W **11 Claims**



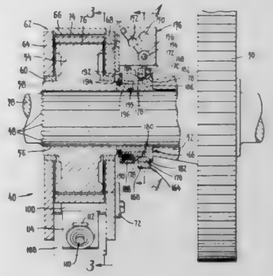
1. In a chain saw having a rotatable drum and a coaxial chain-driving sprocket rotationally fixed relative to the drum; a chain brake for stopping the cutting chain of the chain saw quickly, comprising a brake band engageable with said drum, means anchoring one end of said brake band, said band extending around said drum from said anchoring means in the direction of rotation of the drum, operating means at the other end of said brake band and movable between a brake releasing position in which said operating means acts on said band to release the drum for rotation and a brake applying position in which said brake band engages the drum and thereby applies a braking effect to the drum, and inertial means operatively associated with said operating means and responsive to predetermined acceleration of the chain saw to cause movement of said operating means from brake releasing position to brake applying position and thereby apply a braking effect to the drum, said operating means comprising a first rotatable member having an abutment and operable to act on said other end of said brake band to move it in a direction opposite to the direction of rotation of said drum to thereby disengage said brake band from said drum when said operating means is moved to brake releasing position, and said inertial means comprising a second rotatable member operatively associated with said first rotatable member to control its movement from brake releasing position to brake applying position, said second rotatable member having an abutment which is engageable with said abutment of said first rotatable member to move said first rotatable member from brake applying position to brake releasing position and to retain it in brake releasing position until operation of said inertial means to apply the brake, and a spring acting between said first rotatable member and said second rotatable member to bias said members to whichever position they are in and thereby tending to retain them in such position.

3,923,127

VEHICLE BRAKING SYSTEM

Stanley L. Radcliffe, Stow, Ohio, and Arthur E. Dornan, Ann Arbor, Mich., assignors to Massey-Ferguson, Inc., Detroit, Mich.

Division of Ser. No. 227,836, Feb. 22, 1972, Pat. No. 3,819,016. This application Mar. 21, 1974, Ser. No. 453,658
Int. Cl.² F16D *63/00*
U.S. Cl. 188—82.1 **8 Claims**



1. In a vehicle having a drive member for transmitting power to ground engaging members from an engine for driving the vehicle relative to the ground, a control system comprising:
means for interrupting movement of the drive member mounted on the drive member;
a linkage operatively associated with said interrupting means, a member of said linkage supported by the drive member so as to be rotatable over a portion of the 360° rotation of the drive member in response to reverse motion of the drive member corresponding to reverse motion of the vehicle, said linkage including a link and a pivotal arm, two ends on said pivotal arm, one end of said pivotal arm being pivotally connected to said linkage and to said link at spaced locations, said link limiting the rotational movement of said linkage member;
means for operatively engaging said linkage, having at least a portion thereof stationary for engaging said link, to cause said linkage to energize said interrupting means preventing further movement of the drive member;
means for actuating said linkage attached to the other end of said pivotal arm;
means for controlling said system; and means for positioning at least a portion of said control means, said positioning means being mounted on the drive member and responsive to reverse movement of the vehicle, said actuating means energized by said control means through reverse movement of said positioning means to cause said linkage to energize said interrupting means by engagement with said engaging means.

3,923,128

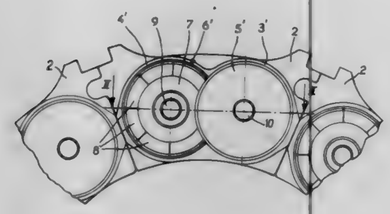
DISC BRAKE WITH GRAPHITE FRICTION SHOES

Rene Lucien, Neuilly-sur-Seine, and Jean Masclet, Paris, both of France, assignors to Messier Hispano, Paris, France

Filed Feb. 7, 1974, Ser. No. 440,575
Int. Cl.² F16D *69/02*
U.S. Cl. 188—251 A **6 Claims**

1. A disc brake comprising an alternating arrangement of rotors and stators, each including a plurality of sectors, each sector being provided with sockets with graphite friction shoes fixed in said sockets, at least one portion of each of an adjacent rotor and stator comprising roughening elements distributed in said portion such that when the rotors rotate, said roughening elements rub on the surface of the shoe in the adjacent confronting socket, said roughening elements comprising a plurality of separate elements respectively accomodated with its associated shoe in a common respective

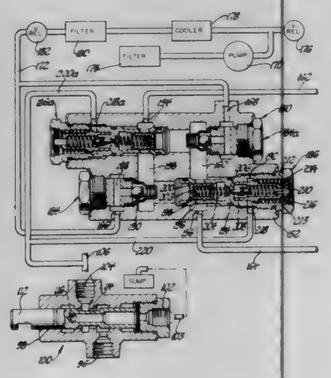
socket, said plurality of separate elements being arrayed at least as a portion of a ring which is concentric with its respective shoe and attachment means securing said plurality of separate elements and said associated shoe within said common socket in secured relation therein.



3,923,129
CONTROL FOR HYDROSTATIC TRANSMISSION AND BRAKE

Allan C. Rusch, Livonia, and John Bubak, Warren, both of Mich., assignors to Massey-Ferguson, Inc., Detroit, Mich.

Continuation of Ser. No. 194,255, Nov. 1, 1971, abandoned. This application Mar. 25, 1974, Ser. No. 454,331
Int. Cl.² B60K *29/02*; **F16D** *31/02*
U.S. Cl. 192—4 B **5 Claims**

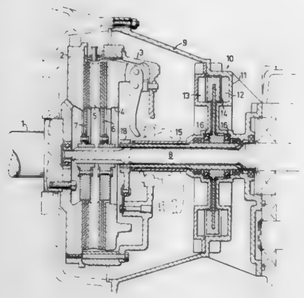


1. A speed control apparatus for controlling a hydrostatic transmission over a range of speed conditions including a zero speed condition comprising a hydrostatic drive and an output means, a braking circuit with a brake for applying braking pressure to said output means only upon said transmission attaining said zero speed condition characterized by said braking circuit having a mechanism comprising: a support, a lever pivotally mounted at one end on said support for movement between locking and unlocking positions; a recess in said lever; a follower on said drive having a position corresponding to each speed condition of said drive and being only engageable with said recess in the zero speed condition and an extendible and retractable plunger engageable with said lever and extendible for energization of said braking circuit.

3,923,130
HYDRODYNAMIC BRAKING DEVICE

Erik Per-Olof Eker, Goteborg, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed May 13, 1974, Ser. No. 469,681
Claims priority, application Sweden, May 15, 1973, 73068595
Int. Cl.² B60K *41/24*; **F16D** *57/02*
U.S. Cl. 192—12 A **2 Claims**

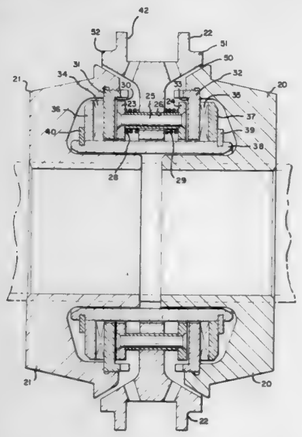


1. A hydrodynamic braking device for motor vehicles having an engine crank shaft and a clutch and a gear box driven by a drive pinion which in turn is driven by the driven member of the clutch, the driving member of the clutch being secured to the engine crank shaft, said braking device comprising a stator frame and a rotor, said rotor being rotatably mounted in the stator frame and being secured to a hollow shaft which is mounted concentrically with said drive pinion and which is secured to the driving member of the clutch, the hollow shaft securing the rotor for rotation with the driving member of the clutch.

3,923,131
SHIFT RING FOR A MARINE CLUTCH

Robert L. La Follette, Baldwinsville, N.Y., assignor to American Challenger Corporation, Fulton, N.Y.

Filed Aug. 26, 1974, Ser. No. 500,491
Int. Cl.² F16D *21/04, 11/06, 19/00*; **F16H** *3/08*
U.S. Cl. 192—21 **5 Claims**

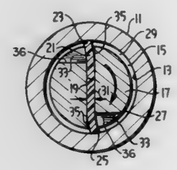


1. In a clutch mechanism of the type comprising:
an input shaft having first and second oppositely threaded driving spiral threads thereon, an output shaft, forward and reverse driving gears rotatably mounted on said input shaft, each of said gears having a clutch surface, an output gear affixed to said output shaft and engaged with said driving gears, and first and second clutch elements each having threads which respectively match said first and second driving spiral threads, each having a clutch surface respectively mating with the clutch surface of said forward and reverse driving gears, an improved shifting mechanism comprising:
a dynamic shift ring movable axially by a shift linkage, said input shaft passing axially through said ring, said ring being disposed between said first and second clutch elements,
a static shifting element carried axially by said ring into engagement with the inner radial surface of a clutch element, and
a spring between said ring and said static shift element, axial movement of said ring initially bringing said static shift element into contact with a clutch element, further axial movement of said ring bringing it into contact with an outer radial surface of a clutch element to slow the rotation of said element on said input shaft whereby the spiral threads drive said element in the axial direction into clutch engagement or disengagement.

3,923,132
FRICTION CLUTCH

J. P. L. van der Klugt, Veghel, Netherlands, assignor to Sperry Rand Corporation, Blue Bell, Pa.

Filed June 18, 1974, Ser. No. 480,429
Int. Cl.² F16D *41/06*
U.S. Cl. 192—45.1 **4 Claims**

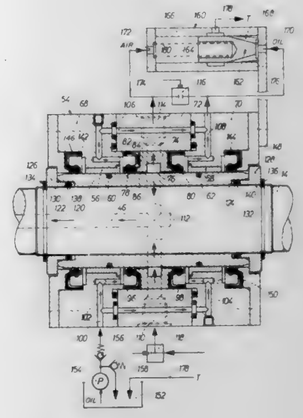


1. A one-way clutch comprising:
an outer body defining a cylindrically-shaped cavity having a cavity surface, said outer body being rotatable about an axis;
a inner body situated in said cavity, said inner body being spaced from said cavity surface so as to form a gap therebetween, said inner body being rotatable about said axis, and said inner body having a notch in the outer surface thereof, said notch being bounded by first and second surfaces, said first surface being more nearly radially disposed then said second surface; and
a resilient, flexible-strip gripping member being at least as thick as said gap, said flexible-strip gripping member being attached to said shaft and being disposed in said notch so as to extend through said notch beyond the outer surface of said inner body until an outer tip thereof contacts the cavity surface, said flexible-strip gripping member being located so that it is urged against said first surface in one mode of operation of said one-way clutch but it is free to flex away from said first surface during another mode of operation of said clutch;
whereby, when said inner and outer bodies are relatively rotated in a first direction said contact of said flexible-strip gripping member with said cavity surface urges said flexible-strip gripping member against said first surface and a tip portion thereof becomes wadded in said gap between said inner and outer bodies to tend to prevent relative rotation between them, and when said inner and outer bodies are rotated in a second direction said contact of said flexible-strip gripping member with said cavity surface urges said flexible-strip gripping member away from said first surface toward said second surface, so that the tip thereof brushes lightly along said inner surface of said cavity to allow said relative rotation.

3,923,133
ROTARY SPEED FOR SUPPLYING FLUID PRESSURE TO A CLUTCH

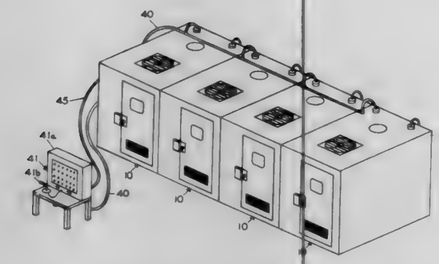
Ilie Chivari, Berliner Str. 1, 468 Wanne-Eickel, Germany

Filed June 14, 1974, Ser. No. 479,220
Claims priority, application Germany, June 16, 1973, 2330750; Sept. 1, 1973, 2344165
Int. Cl.² F16D *25/00*
U.S. Cl. 192—85 R **20 Claims**



1. In a pneumatically engageable clutch for coupling a rotating shaft with a rotatable member, comprising:
a pneumatically operated, clutch engaging actuator means, mounted to rotate with said rotating shaft,
a compressed air passage extending through said shaft, said compressed air passage having an inlet and outlet, said outlet being connected to said actuator means, and
means for supplying compressed air from a stationary external source to said inlet of said compressed air passage, the improvement
wherein said inlet of said compressed air passage forms an orifice in the cylindrical surface of said shaft
and wherein said compressed air supplying means comprises:
a stationary casing surrounding said shaft and forming an annular chamber adjacent said inlet orifice of said compressed air channel and open towards said shaft,
radially-acting substantially air-tight shaft sealing means provided between said casing and said rotating shaft on both sides of said annular chamber,
means for exposing the sides of said shaft sealing means remote from said annular chamber to hydraulic pressure exerted by a liquid,
and control means for controlling said hydraulic pressure as a function of the pressure of the compressed air inside said annular chamber to limit the pressure difference acting on said shaft sealing means.

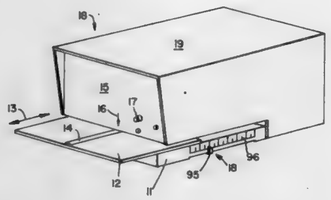
3,923,134
REST ACCOMMODATION COMPARTMENT AND COMPLEX
Reza Rezazadeh, Box 12, Rte. 4, Platteville, Wis. 53818
Filed Sept. 26, 1974, Ser. No. 509,545
Int. Cl.² G07F *5/10*
U.S. Cl. 194—9 T **2 Claims**



1. A rest accommodation compartment complex, comprising:
A. a plurality of rest accomodation compartments, each compartment comprising:
1. a generally rectangular enclosure having front, floor and ceiling panels;
2. a door in said front panel;
3. warning signal means for providing a signal to a user inside each of said compartments when supplied with electrical power;
4. occupancy control means for maintaining said door normally locked, said occupancy control means including,
a. coin operated means for receiving coins deposited by a compartment user from outside of said enclosure and unlocking said door in response to the deposit of a preselected value of coins,
b. means operable by a user from inside said enclosure for locking said door,
c. means for receiving coins deposited by a user inside each of said compartments,
d. means for metering and visually indicating the allotted time remaining to a user determinable by the value of coins received from the user inside each of said compartments, and
e. means for providing electrical power to said warning signal means when the user's allotted time has expired and said occupancy control means is itself supplied with electrical power; and
B. detection means for detecting the presence of a user in said rest accommodation compartments and for providing a signal at a central control unit remote from said compartments to indicate which of said compartments is occupied.

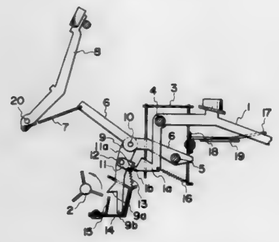
3,923,135
MULTIPLE COPY SEVEN-SEGMENT IMPACT PRINTER
Merle A. Holman; Michael B. Holman; Donald K. Stephens, and William C. Hess, all of Oakdale, Calif., assignors to Holman Industries, Inc., Oakdale, Calif.
Filed Nov. 13, 1974, Ser. No. 523,460
Int. Cl.² B41J *1/00*
U.S. Cl. 197—1 R **14 Claims**

1. An impact printer comprising:
a. a flat base plate having parallel major surfaces;
b. a plurality of solenoids having parallel axes mounted in an array on one major surface of said base plate with their axes normal thereto;
c. a plurality of generally U-shape stylus members each comprising a pair of parallel legs joined by a bight portion, one of said legs including a solenoid armature member and the other of said legs terminating at its free end in an impact printing surface; and
d. a platen member having a flat surface mounted on one side of said array of solenoids with said flat surface thereof facing said base plate member and the plane thereof parallel to said major surfaces of said base plate member, said platen member being mounted for reciprocal movement in said plane of said flat surface thereof;
e. said base plate member having a plurality of apertures therethrough spaced from each other about the center of said array of solenoids;



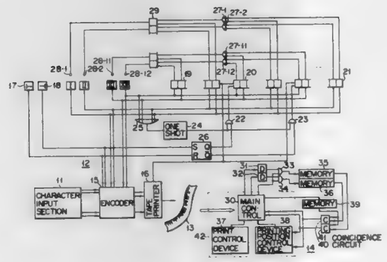
f. said plurality of generally U-shape stylus members each having said one of said legs thereof in operative relation to a different one of said plurality of solenoids and said other of said legs thereof received through a different one of said apertures through said base plate member; whereby upon energization of one of said plurality of solenoids, the impact printing surface on said free end of said other one of said legs of the associated one of said plurality of U-shape stylus members will be accelerated toward said flat surface of said platen.

3,923,136
POWER DRIVEN TYPEWRITER
Nobuyoshi Nakajima, 5, Hakozakicho 4-chome, Nihonba, Chyuoku, Tokyo 103, Japan
Filed Sept. 14, 1973, Ser. No. 397,251
Int. Cl.² B41J *23/08*
U.S. Cl. 197—17 **3 Claims**



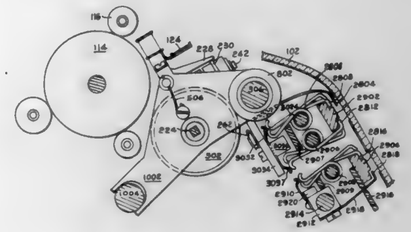
1. A power driven typewriter comprising a frame; a casing; a key lever having a downwardly bent portion at one end thereof in the form of an inverted L, said key lever being pivotally mounted to said frame and being pivotable between an actuating position and an at rest position; an actuating lever pivotally mounted to said frame adjacent said key lever; a type lever pivotally mounted to said frame and being pivotal between an at rest position and a type producing position; linkage means connecting said actuating lever and said type lever to produce pivotal movement of said type lever from said at rest position to said type producing position upon pivotal movement of said actuating lever from an at rest position to an actuating position; a third lever hanging freely from said actuating lever; a drum member mounted to said frame and having vanes carried by said drum to be rotatably movable therewith, said third lever having a jut portion movable into the path of said vanes of said drum member; means biasing said third lever to a position in which said jut member is spaced from said vanes, said third lever having an angle piece pivotally mounted thereteo intermediate said actuating lever and said jut portion in a position to be engaged by said downwardly bent portion of said key lever upon pivotal movement of said key lever from said at rest position to an actuating position, movement of said key lever to said actuating position being operable to move said jut portion of said third lever into engagement with said vanes to thereby pivot said actuating lever from said at rest position to said actuating position, said downwardly bent portion of said key lever having a recessed portion adapted to receive said angle piece after engagement of said jut portion of said third lever with the vanes of said drum member to permit said jut member to be spaced from said vanes until said key lever is returned to said at rest position.

3,923,137
INFORMATION RECORDING APPARATUS
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Mar. 29, 1974, Ser. No. 456,281
Claims priority, application Japan, Apr. 5, 1973, 48-38221; Apr. 5, 1973, 48-38222; Apr. 5, 1973, 48-38223
Int. Cl.² B41J *5/30*
U.S. Cl. 197—19 **6 Claims**



1. An automatic information recording apparatus comprising:
an input device for recording on a tape-shaped recording medium first encoded printing position designating information used to define the first and last printing positions of a single line in order to define a printing format, and then for recording on said tape-shaped recording medium encoded character information continuously regardless of the defined printing format;
means for successively reading out the printing position designating information and the character information both recorded on the tape-shaped recording medium;
first memory means coupled to said reading-out means for storing the printing position designating information read out by said reading-out means;
a printing device coupled to said reading-out means for printing on a recording paper the character information read out by said reading-out means;
second memory means for storing the last printing position of each line printed by said printing device;
a comparator coupled to said first and second memory means for comparing the content of the second memory means with that of the first memory means; and
means coupled to said comparator for automatically controlling the defined printing format in response to the output of the comparator.

3,923,138
PRINTER WITH CODE-CONTROLLED TABULATOR STRUCTURE
Frederick P. Willcox, 565 Oenoke Ridge, New Canaan, Conn. 06840
Division of Ser. No. 581,020, Sept. 21, 1966, Pat. No. 3,534,847. This application Sept. 2, 1970, Ser. No. 69,103
Int. Cl.² B41J *21/04*
U.S. Cl. 197—179 **9 Claims**



1. In a printer having means for producing printing along a writing line on a recording material supported thereat, the combination including:
A. positioning means to provide incremental relative motion between said printing means and said material;
B. format control means cooperable with said positioning means to effect tabular positioning of said material in relation to said printing means;
C. a tab-position memory having an array of position-defining means each of which can be conditioned to a set state or a cleared state such that each set position-defining means defines a tabular position;
D. code-signal responsive means to effect conditioning of said position-defining means to set and cleared states; and
E. memory readout means responsive to said relative motion for serially scanning said array to sense and provide an electrical output signal for each set position-defining means sensed as it occurs in metered relationship to said incremental relative motion, said output signal serving to effect termination of tabulation by said control means subsequent to the initiation of tabulation by an input signal to said control means.

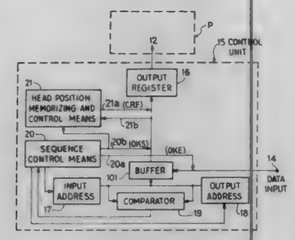
3,923,139
DEVICE FOR ACQUISITION, STORAGE AND ECHELON OF CHARACTERS IN A PRINTER OF THE SERIES TYPE
Paul Mesnil, 4 Allee des Cedres, 91 Boussy St Antoine; Jean-Pierre Talvard, 40 Avenue Paul Claudel, 91 St Germain les Corbeil, and Bernard Flaceliere, 13, Allee des Elfes, 94 Fresnes, all of France
Continuation-in-part of Ser. No. 363,737, May 24, 1973, abandoned. This application Aug. 12, 1974, Ser. No. 497,150
Claims priority, application France, May 25, 1972, 72.18601
Int. Cl.² B41J *5/00*
U.S. Cl. 197—19 **4 Claims**

1. A control unit for controlling a printer (P) of the type comprising a print logic (12) having a data input, a constant drive mechanism (11), an anvil (2) and a printing head (1), selectively driven by said mechanism through energization of a clutch (10), parallel to said anvil and automatically returned to a rest position upon deenergization of said clutch by means of a biasing device (6), said control unit being inserted between said data input and said print logic, and comprising:
a register (16,314), having an output coupled to said print logic, and an input, for storing momentarily a single data;
a buffer (101, 301) having an input line for sequentially receiving digitally coded data and an output line for sequentially transmitting digitally coded data to said register;

buffer input address means (17) permanently defining the address in the buffer of the last character entered on said input line;

buffer output address means (18) permanently defining the address in the buffer of the first character which is ready for transfer on said ouput line;

comparator means (19) permanently comparing said first mentioned address with the buffer maximum address and with said second mentioned address;



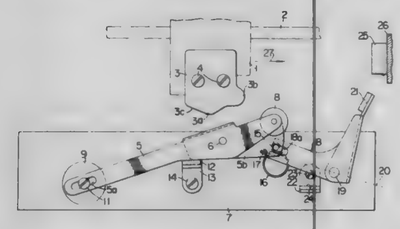
sequence control means (20) authorizing, depending on the result of said comparison, the entry of a character on the input line or the transfer of a character on the ouput line; means for memorizing the position reached by the printing head each time the said addresses coincide, for then controlling the return of the printing head at the rest position, and for controlling, when new characters are entered after such a coincidence, a rapid space motion of the printing head along the anvil until the said memorized position is passed.

3,923,140

TYPEWRITER CARRIAGE DECELERATOR

Kyuhachiro Iwasaki, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed May 8, 1974, Ser. No. 468,076
Claims priority, application Japan, May 14, 1973, 48-53325
Int. Cl.² B41J *19/02*
U.S. Cl. 197—64 **10 Claims**



1. A mechanism for decelerating a body movable in a predetermined direction, comprising:

a first member pivotal about a fixed point between a first position in which the body engages with a part of the first member and a second position in which the body clears the first member during movement of the body in the predetermined direction;

a second member pivotal about another fixed point between a first position in which the body clears the second member and a second position in which the body engages with a part of the second member during movement of the body in the predetermined direction, the first and second members being connected together so that when the first member is in its first position the second member is in its first position and when the first member is in its second position the second member is in its second position; and

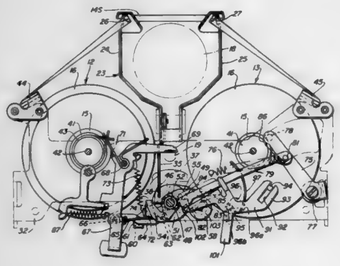
overcenter biasing means to urge the first member toward its first and second positions from an overcenter position between the first and second positions, the first and second members being initially in their respective first positions and the body engaging during its movement in the predetermined direction with the part of the first member to pivot the first member past its overcenter position to its second position and thereby move the second member to its second position, the body engaging subsequently with the part of the second member to pivot the second member to its second position and thereby the first member past its overcenter position to its second position.

3,923,141

DUAL FEED RATE RIBBON MOUNTING AND TRANSPORT ASSEMBLY

Hans-Georg Hengelhaupt, Nuremberg, Germany, assignor to Triumph Werke Nurnberg, A.G., Nuremberg, Germany

Filed July 1, 1974, Ser. No. 484,621
Claims priority, application Germany, July 21, 1973, 2337191
Int. Cl.² B41J *33/36*
U.S. Cl. 197—151 **6 Claims**



1. A ribbon support and ribbon feed assembly comprising a support plate,

vibrator means pivotally mounted on said support plate and couplable to an oscillatable drive pin when the assembly is mounted for operation in a typewriter,

a prewound ribbon supply spool and a take-up spool rotatably mounted on said support plate with ribbon extending between spools threaded through said vibrator means,

a rotatable transport roller responsive to the movement of said vibrator means for incrementally rotating said take-up spool,

means for sensing the diameter of wound ribbon on said take-up spool,

means coupled to said sensing means for decreasing the angle through which said rotatable means is rotated by said vibrator means to maintain incremental advance of ribbon through said vibrator constant,

a coiled spring clutch wrapped around said transport roller having an end extending radially therefrom,

means for initially positioning said spring end in the path of and spaced a predetermined distance from said vibrator means, said spring being operable when engaged and driven by said vibrator means to rotate said transport roller an amount determined by the spacing between said spring end and said vibrator means,

said take-up spool having a flange,

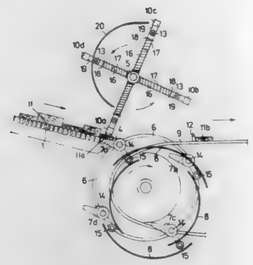
and means coupling said transport roller to peripherally drive said spool flange.

3,923,142

METHOD AND APPARATUS FOR DOSAGE OF SAWN TIMBER

Alpo Rysti, Frisansintie 22, 02240 Frisans, Finland

Filed May 29, 1974, Ser. No. 474,248
Claims priority, application Finland, June 6, 1973, 1838/73
Int. Cl.² B65G *47/00*
U.S. Cl. 198—25 **6 Claims**



1. Method for dosage of sawn, oblong pieces of timber from a feed conveyor onto a continuation conveyor to follow each other at fixed intervals, comprising feeding the timber pieces to be dosed in a direction transverse to their longitudinal direction, the timber pieces lying one after the other as a continuous mat; moving supporting arms along a closed path between the feed and continuation conveyors at a speed synchronous with the continuation conveyors; moving pressing members between the feed and continuation conveyors at a speed synchronous with the continuation conveyor, on the side of said arms which is opposite to the timber mat; guiding said supporting arms on their closed path to support the piece of timber which is first in said timber mat in its feed direction, from the underside of this piece; guiding said pressing members on their closed path to position themselves above the timber pieces resting on said supporting arms; releasing said pressing members to press down from above on the upper surface of the timber pieces resting on the supporting arms in such an area in the width direction of the timber piece that the point of action of the pressing members is located, counted from the front edge of the timber piece, within a distance equalling the width of the narrowest timber piece to be handled; and transporting the timber piece, clamped between said supporting arms and pressing members, onto the continuation conveyor to be transported further.

3,923,143

SHUFFLE FEEDER CAPABLE OF SINGLE FILE ADVANCEMENT OF ARTICLES

Chester Green, San Jose, Calif., assignor to Genevieve I. Hanscom and Genevieve I. Hanscom, Robert Magnuson & Lois J. Thomson, Trustees of Roy M. Magnuson Estate, all of San Jose, Calif., a part interest to each

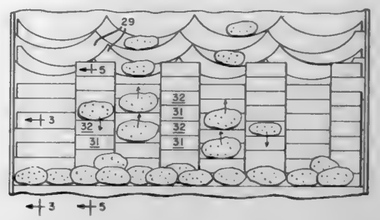
Filed June 10, 1974, Ser. No. 478,034
Int. Cl.² B65G *25/04*
U.S. Cl. 198—30 **1 Claim**

1. A shuffle feed mechanism for articles, said mechanism comprising:

a first set of elongated shuffle feed members having front faces and being positioned in spaced parallel relationship; a second set of elongated shuffle feed members having front faces and being positioned one between each adjacent pair of the first members to provide successive valleys formed by the front faces thereof;

means for supporting each of said sets for relative reciprocating motion in parallel relationship thereby to provide a valley-to-valley advancement for articles resting along the front faces of the feed members; and

wedge-shaped members fixed to the member front faces and with an elongated pointed edge extending parallel to the front faces to prevent the progression of articles aligned with the wedge-shaped members, said wedge-shaped



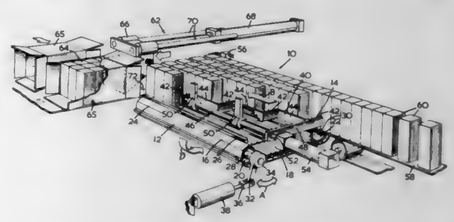
members being positioned in spaced rows whereby the articles will progress along spaced paths between the wedge-shaped members.

3,923,144

INTERMITTENT LOAD ACCUMULATOR

Marinus J. M. Langen, Rexdale, Canada, assignor to H. J. Langen & Sons Ltd., Rexdale, Canada

Filed Mar. 18, 1974, Ser. No. 451,726
Int. Cl.² B65G *47/26*
U.S. Cl. 198—31 AB **1 Claim**



1. In a carton loading machine having a loading station in which a plurality of load units arranged in a required side by side load configuration are loaded into a carton, an accumulator station in which the load units are arranged in the required load configuration and transferred to the loading station, the improvement of first conveyor means for feeding load units in a single file row;

a. a second conveyor mounted for movement of an upper face thereof at right angles to said first conveyor, said second conveyor having a back end, a front end and a pair of oppositely disposed side edges, transversely extending guide rails mounted on said second conveyor and extending transversely of said second conveyor to divide said second conveyor into a plurality of longitudinally spaced transversely extending load unit receiving slips which are open at each side edge of the conveyor, said slips being alignable with said first conveyor adjacent the back end of said second conveyor whereby a row of load units may be fed into each slip,

b. means for intermittently moving said second conveyor longitudinally of itself in the direction from said back and towards said front end to move each slip in turn into alignment with said first conveyor,

c. pusher bar means disposed above said second conveyor and mounted for movement transversely of said second conveyor, said pusher bar means having a plurality of segments extending in the longitudinal direction of said second conveyor means, each of said segments extending across a slip, each segment being spaced from its adjacent segment in the direction of the transverse extent of said second conveyor a distance equal to the width of the required load configuration,

d. means for moving said pusher bar means transversely of said second conveyor to and from a first retracted posi-

tion to receive a row of load units advanced by said longitudinal movement of said second conveyor and a second extended position in which an accumulated load is discharged from the other side edge of said conveyor, said longitudinal and transverse movements being effected in sequence whereby an assembled load is discharged transversely of said conveyor following each longitudinal advance of said conveyor,

e. a loading platform disposed in an edge-to-edge side-by-side relationship with respect to said other side edge of said second conveyor to receive the accumulated load which is discharged from said second conveyor, and

f. carton loading pusher means mounted to reciprocate above said loading platform in the direction of movement of said first conveyor means to move an accumulated load into a position filling a carton.

3,923,145

APPARATUS FOR PLACING COVER SHEETS ON STACKS OF DIFFERENT HEIGHTS

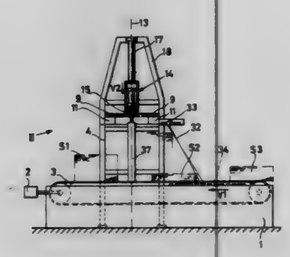
Hans Muller, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed Nov. 14, 1973, Ser. No. 415,804

Claims priority, application Switzerland, Nov. 17, 1972, 16831/72

Int. Cl.² B65G *57/00*

U.S. Cl. 198—35 **8 Claims**



1. In an apparatus for placing cover sheets on stacks of different heights, a combination comprising a conveyor having a substantially horizontal upper run on which stacks of significantly different heights are continuously advanceable at a constant rate of speed; a pusher member mounted above said upper run and movable at a constant rate of speed in a straight line between a rest position farther from, and an operated position closer to said upper run; drive means for moving said pusher member between said positions; feed means laterally of said straight line intermediate said positions for engaging a cover sheet at a margin thereof, and for feeding said cover sheet into the path of movement of said pusher member; retaining means for engaging and retaining a respective cover sheet on said pusher member as the same moves towards said operated position; and actuating means for actuating said drive means in response to the approach of a stack towards said pusher member, including sensing means which senses the upper trailing edge of the approaching stack, so that in response to said sensing of said upper trailing edge of the approaching stack said pusher member is actuated and pushes a retained cover sheet into contact with the respective stack when the latter is in precise alignment with said straight line.

3,923,146

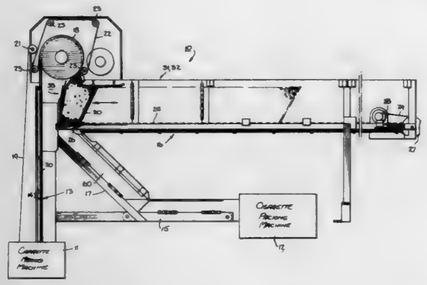
CIGARETTE TRANSFER ASSEMBLY FOR TRANSFERRING CIGARETTES FROM A CIGARETTE MAKING MACHINE TO A CIGARETTE PACKAGING MACHINE

Floyd Van Hall, Durham, N.C., assignor to Liggett & Myers Incorporated, Durham, N.C.

Filed July 25, 1974, Ser. No. 491,622

Int. Cl.² B65G *43/08*

U.S. Cl. 198—37 **1 Claim**



1. A cigarette transfer assembly comprising

a first vertical conveyor for conveying a stream of individually spaced apart cigarettes upwardly to an elevated position;

a second horizontal conveyor for receiving a flow of cigarettes from said first conveyor;

a reservoir means extending from between said elevated position of said first conveyor and said second conveyor for receiving excess cigarettes from said flow of cigarettes and for delivering the excess cigarettes into said flow at a subsequent time, said reservoir means including an elongated conveyor extending transversely from the flow of the cigarettes, said conveyor being expandable transversely of the flow of the cigarettes to said second conveyor for receiving excess cigarettes thereon and a sensing means on an opposite side of said flow of cigarettes from said elongated conveyor for sensing a change in the flow rate of cigarettes between said first and second conveyors, said sensing means including a pair of switches located in preset position and a pivotally mounted plate responsive to changes in the flow rate of cigarettes between said first and second conveyors, each said switch being operatively connected to said elongated conveyor to activate said elongated conveyor, said plate being positioned between said switches to selectively activate one of said switches in response to an accumulation of cigarettes between said first and second conveyors to activate said elongaed conveyor to receive excess cigarettes and the other of the said switches in response to a reduced accumulation of cigarettes between said first and second conveyors to activate said elongated conveyor to expel cigarettes.

3,923,147

SYNCHRONIZED STACKING SYSTEM

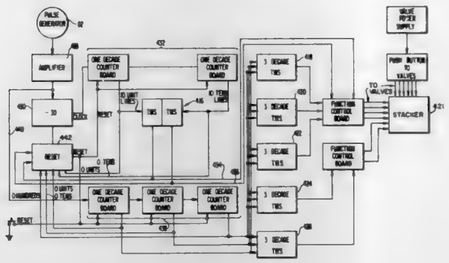
Richard M. Quinn, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Division of Ser. No. 117,586, Feb. 22, 1971, Pat. No. 3,762,907. This application Feb. 15, 1973, Ser. No. 351,404

Int. Cl. B65g *43/00*

U.S. Cl. 198—40 **5 Claims**

1, A synchronized stacking system for use with a glassware forming machine having a plurality of sections each of which repetitively performs a sequence of steps in the formation of rigid glassware articles, said synchronized stacking system comprising ware grouping means, means for providing electrical pulses indicative of the stage of operation of said machine, and means for counting said electrical pulses in timed relationship to said ware stacking means whereby a desire grouping of ware on an associated conveyor is effected.



3,923,148

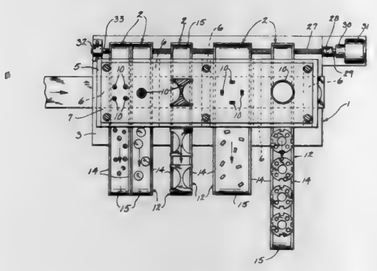
CONVEYING SYSTEM

Wolfgang C. Dorner, Hartland, Wis., assignor to Dorner Tool & Die, Inc., Milwaukee, Wis.

Division of Ser. No. 258,698, June 1, 1972, abandoned. This application Feb. 26, 1974, Ser. No. 445,988

Int. Cl.² B65G *37/00*

U.S. Cl. 198—75 **7 Claims**



1. A conveyor system, comprising a series of endless belt conveyors disposed in side-by-side relation, each conveyor having a pair of spaced side walls and including a drive spindle and an idler spindle and an endless belt trained over the drive spindle and the idler spindle, the ends of the spindles disposed inwardly of the respective side walls, each drive spindle having a non-circular bore and the bores of the spindles being disposed in axial alignment, a drive shaft disposed within the aligned bores of the spindles and having a non-circular peripheral surface to complement the bores, each end of the drive spindle being provided with an axial recess, a bushing secured within an aperture in the side wall and received within the recess in the corresponding end of the spindle, whereby the ends of the spindle are journalled on the respective bushings each bushing having a central opening to receive the shaft with the diameter of the central opening being greater than the external dimension of the shaft so that the shaft is out of contact with the bushing, and drive means operatively connected to the shaft to drive the shaft and simultaneously operate the series of conveyors.

3,923,149

MATERIAL HANDLING APPARATUS FOR HOGGED FUEL

George H. Stearns, Kalispell, Mont., assignor to Mill Supply, Inc., Missoula, Mont.

Filed June 8, 1973, Ser. No. 368,362

Int. Cl.² B65G *25/04*

U.S. Cl. 198—106 **9 Claims**



2. A material handling apparatus for advancing material comprising a base including a conveyor surface having a plurality of laterally spaced longitudinally extending guideways recessed below said conveyor surface, a plurality of conveyor sections mounted on said surface, each said section including an elongated pushbar at least partially disposed within a recessed guideway and carried thereby for longitudinal reciprocating movement relative to said conveyor surface, a plurality of crossbars secured to said pushbar at longitudinally spaced positions therealong for movement therewith and above said conveyor surface, a plurality of longitudinally spaced checker bars fixed to said surface with each checker bar located between a longitudinally adjacent pair of crossbars, each of said checker crossbars having an upwardly and forwardly inclined rear surface and a forward surface for butting material to be conveyed, means for advancing said sections in a forward direction whereby the crossbars advance the material forwardly thereof along said surface and over the inclined surfaces of said checker bars and for retracting said sections whereby the crossbars move under the advanced material with such material being retained against substantial rearward movement by the forward surfaces of said checker bars, a fixed support carried by said base, fluid actuated means engaging between said fixed support and said conveyor section for reciprocating the same, a conveyor located along the discharge end of said conveyor sections at an elevation below said conveyor surface for receiving material therefrom and discharging such material to one side of said apparatus, said advancing and retracting means being located on the side of said conveyor remote from said crossbars and bridging over said conveyor.

3,923,150

DEVICE FOR CONVEYING OBJECTS

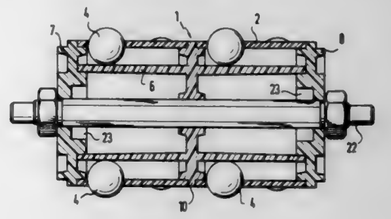
Werner Jager, Eriskirch, Germany, assignor to Firma Industrie Treuhand AG, Switzerland

Filed Apr. 8, 1974, Ser. No. 459,240

Claims priority, application Germany, Apr. 9, 1973, 2317742; June 18, 1973, 2331019

Int. Cl.² B65G *13/02*

U.S. Cl. 198—127 R **11 Claims**



1. In an article conveyor having a plurality of track sections

arranged to define a conveying track, each track section comprising:

rotary housing means mounted for rotation, said rotary housing means including:

wall means defining an inner bore, and

a plurality of circumferentially spaced recesses formed in said wall means;

each recess having an inner end opening into said bore and an outer end opening outwardly of said housing means;

a plurality of spheres rotatably mounted in said recesses for free rotation in all directions;

said spheres each having a diameter which is larger than the inner and outer recess ends such that said spheres are retained by said recesses, with an outer portion of each sphere projecting through said outer end of its respective recess to support articles being conveyed, and an inner portion of each sphere projecting through said inner end of its respective recess and into said bore for free rotary movement therein.

3,923,151

DRIVE CONTROL SYSTEM FOR AN ENDLESS CONVEYOR BELT

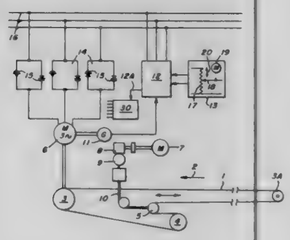
Karl-Heinz Weber, Witten-Heven, Germany, assignor to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Germany

Filed Oct. 23, 1973, Ser. No. 408,452

Claims priority, application Germany, Oct. 27, 1972, 2252709

Int. Cl.² B65G *23/00*

U.S. Cl. 198—203 **7 Claims**



1. The combination with an endless conveyor belt trained about a guide drum, said conveyor belt transporting a relatively heavy burden that changes from time-to-time whereby stresses are developed in the conveyor belt endangering it to probable tearing and similar destruction essentially only during periods of starting and stopping, a drive motor supplied with a multi-phase alternating current for rotating said guide drum to drive said conveyor belt, a tension drum contacting said conveyor belt, and position control means connected to said tension drum for developing a predetermined required tension upon said conveyor belt; of a control system to avoid tearing and similar destruction only during starting and stopping the conveyor belt while loaded with a relatively heavy burden by said drive motor, said control system comprising:

means for producing an electrical signal corresponding to a desired tensioning of said conveyor belt during starting acceleration and stopping deceleration by said drive motor,

means for producing an electrical signal to represent the actual tensioning of said conveyor belt during starting acceleration and stopping deceleration by said drive motor,

regulator means for producing an error signal corresponding to the difference between said electrical signals, said regulator means controlling said drive motor in response to said error signal during acceleration and deceleration to limit the developing conveyor belt tension not to exceed a value corresponding to said desired tension,

thyristors coupled in each phase of the multi-phase alternating current power supply lines for said drive motor, and a firing circuit responsive to the error signal produced by said regulator means for firing said thyristors.

3,923,152

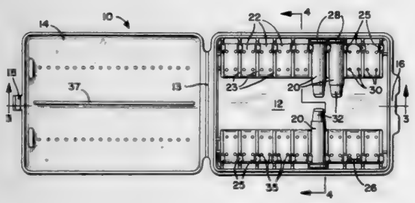
FLAT PACK FOR REVOLVER CARTRIDGES

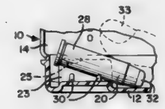
William J. Minneman, Clayton, Ohio, assignor to MTM Molded Products Company, Dayton, Ohio

Filed June 21, 1974, Ser. No. 481,786

Int. Cl.² B65D *43/16, 85/20;* **F42B** *37/00*

U.S. Cl. 206—3 **7 Claims**





1. A single piece flat pack for ammunition cartridges, comprising:

a. a base,

b. a lid,

c. integral hinge means attaching said lid and said base,

d. thin, laterally flexible and vertically stiff compartment divider walls each attached along one edge to said base and spaced apart somewhat farther than the diameters of the cartridges to form individual compartments for each cartridge,

e. engaging and holding projections integral with said walls on the wall edges opposite said base and projecting from said walls over said compartments with spacings somewhat less than the cartridge diameters to overlie and releasably engage individual cartridges to hold the cartridges individually within said base, said flexible walls and projections yielding to accept and release cartridges being inserted into and pried from said compartments, and

f. at least one fulcrum on said base for prying individual cartridges loose from said engaging and holding projections whenever a predetermined portion of such a cartridge is pressed toward said base, said fulcrum including means for supporting a cartridge intermediate the ends thereof and cooperating with said projections to hold one end elevated above the other end for rotation about said fulcrum as said one end is pressed toward said base to pry the respective cartridge loose from said engaging and holding means, said engaging and holding projections being sized and spaced to release the cartridges upon being pressed toward said base.

3,923,153

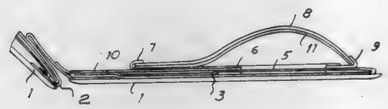
DISPLAY DEVICE FOR DISPLAYING ARTICLES IN A BULGED CONDITION

Manuel Valls Rius, Avenida Balmes, 18, Igualada, Barcelona, Spain

Filed Dec. 20, 1974, Ser. No. 534,666

Int. Cl.² B65D *23/12, 1/22, 73/00*

U.S. Cl. 206—44.11 **10 Claims**



1. In a display device, lower support means and upper cover means connected to said lower support means for turning movement with respect thereto substantially about a predetermined axis between a covering position covering said lower support means and an uncovering position uncovering said lower support means, an upper sheet situated over and adjacent said lower support means to be located between the latter and said cover means when the latter is in its covering position, said upper sheet having inner and outer side edges extending substantially parallel to said axis with said inner side edge located closer to said axis than said outer side edge, said upper sheet having a pair of portions which are spaced from each other in the direction of said axis and which are fixed to said lower support means to define between said upper sheet and said lower support means a free space extending between said pair of portions of said upper sheet, a lower sheet situated in said free space and extending between said upper sheet and said lower support means, said lower sheet also having inner and outer side edges extending substantially parallel to said axis with said inner edge of said lower sheet being situated closer to said axis than said outer edge thereof, and said inner edge of said lower sheet being situated closer to said axis than said inner edge of said upper sheet while said outer edge of said lower sheet is situated more distant from said axis than said outer edge of said upper sheet, so that said lower sheet extends beyond said upper sheet at inner and outer side edge regions of said lower sheet, connecting means connecting said inner edge of said lower sheet to said cover means at a location spaced from said axis for responding to turning of said cover means from said covering to said uncovering position thereof to displace said lower sheet with respect to said upper sheet in a direction which moves said outer edge of said lower sheet toward said outer edge of said upper sheet, and a pair of attaching means for attaching to the inner edge of said upper sheet and the outer edge of said lower sheet a pair of opposed end regions, respectively, of an article which assumes a substantially flat condition when said cover means is in its covering position and which is capable of bulging upwardly away from said upper sheet when said outer side edge of said lower sheet approaches said outer side edge of said upper sheet in response to turning of said cover means from said covering to said uncovering position thereof, whereby the latter turning of said cover means will automatically bulge the article to be displayed outwardly in an attitude which is convenient for display purposes.

3,923,154

STERILANT PACKAGE

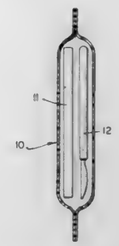
Jerry J. Tulis, Raleigh, N.C., and Robert A. Dobransky, Leominster, Mass., assignors to Litton Business Systems, Inc., Fitchburg, Mass.

Filed Apr. 5, 1973, Ser. No. 348,004

Int. Cl.² B65D *81/24*

U.S. Cl. 206—210 **8 Claims**

1. A package, said package having paper therein treated with a sterilizing amount of hexamethoxymethylmelamine, said paper containing from 0.1 to 20%, by weight, formaldehyde, provided by the hexamethoxymethylmelamine, whereby upon heating a sterilizing amount of formaldehyde is released in the package to effect sterilization.



3,923,155

BOTTLE CARRIER DEVICE

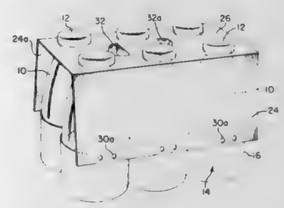
John J. Tanzer, 8501 West Higgins Road, Chicago, Ill. 60631

Division of Ser. No. 79,411, Oct. 9, 1970, Pat. No. 3,713,532.

This application Apr. 3, 1972, Ser. No. 240,566

Int. Cl.² B65D *65/10*

U.S. Cl. 206—427 **1 Claim**



1. A carrier package of two rows of bottles of the type having a thin-walled contents envelope and a cup-like protective base member on each of said envelopes separate and apart from each other, comprising sheet means including a horizontal shelf larger than the area of said two rows of bottles and two substantially rectangular attachment portions, said attachment portions connected along opposite edges of said horizontal shelf to depend therefrom over the opposite sides of said two rows of bottles and lap the side wall portions of each of the cup-like base members, said sheet means being formed of a resilient deformable plastic material and said horizontal shelf having apertures therein of a peripheral extent smaller than the peripheral extent of the necks of said bottles below the caps thereof, the apertures of said horizontal shelf being stretched and applied over said bottles with the material of said horizontal shelf circumferentially resiliently gripping the bottle necks, means directly connecting the lapped areas of said attachment portions to the side wall portions of each of said base members by separate releasable fastening means for each base member for permissive and selective removal of individual bottles from the package, and a handle grip portion formed in said horizontal shelf between the necks of said bottles.

3,923,156

WAFER BASKET

Victor C. Wallestad, Edina, Minn., assignor to Fluoroware, Inc., Chaska, Minn.

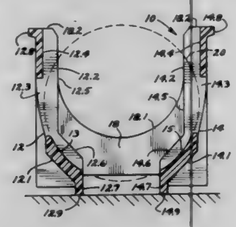
Filed Apr. 29, 1974, Ser. No. 465,337

Int. Cl.² B65D *57/00, 85/30;* **B05C** *11/14*

U.S. Cl. 206—454 **7 Claims**

1. A wafer basket having opposed side walls for carrying axially aligned wafers therebetween, an open top through which wafers may be inserted and ejected, and end walls

joining the side walls, the side walls having lower portions offset inwardly and defining wafer-support surfaces curved to the peripheral contour of the wafers to engage and support the wafers over a substantial portion of their peripheries, the side walls also having confronting ribs substantially throughout

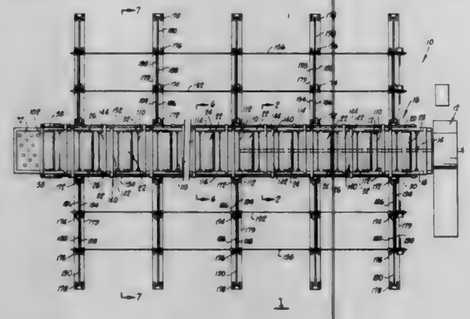


their heights separating the wafers from each other and extending inwardly on the offset portions of the walls to stabilize wafers in the basket, and the side walls having vertical slots to permit free circulation of processing liquids around the wafers and drainage of the liquids out of the basket.

3,923,157
BAR HANDLING AND LENGTH DETERMINING APPARATUS

Clarence W. Cavenar, Del City, Okla., assignor to W & Steel Co., Oklahoma City, Okla.

Filed July 17, 1974, Ser. No. 489,107
Int. Cl.² B07C *5/04*
U.S. Cl. 209—73 **5 Claims**

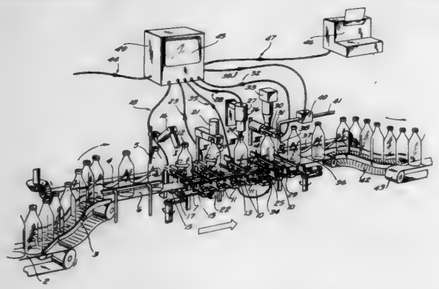


1. A bar handling and length determining apparatus, comprising:
a frame having a guide track;
a conveyor assembly comprising:
an elongated first side member having a first support track edge, and a plurality of in-line apertures;
an elongated second side member having a second track support edge, the second side member disposed in spaced-apart parallel relationship to the first side member and having a plurality of in-line apertures, each aperture matingly aligned with one of the apertures of the first side member;
a plurality of rollers disposed between the first and second side members, each roller having an axle bearingly mounted in an aperture of the first side member and the mating aperture of the second side member;
rotating means rotating the rollers for moving bars along a path in the first direction; and,
a strike plate;
roller means disposed between the guide track of the frame and the support track edges of the first and second side members rollingly supporting the conveyor for movement in a first direction and in a second direction opposite to the first direction;
a plurality of strike members reciprocatingly positionable in striking engagement with the strike plate, the strike members disposed at predetermined spaced-apart distances for selective positioning in the path of the strike plate for terminating movement of the power conveyor assembly in the first direction;
select means positioning a selected strike member in the path of the strike plate;
power means selectively moving the conveyor assembly in the first direction toward the strike members, and in the second direction away from the strike members;
bar stop means selectively terminating movement of the bar in the first direction; and,
bar removal means selectively removing the bar from the conveyor assembly.

3,923,158
ON-LINE MULTISTATION INSPECTION DEVICE FOR MACHINE MOULDED PRODUCTS

Göran Fornåå, Kungalv, Sweden, assignor to Aktiebolaget Platmanufaktur, Malmo, Sweden

Filed June 5, 1974, Ser. No. 476,602
Claims priority, application Sweden, June 21, 1973, 7308766
Int. Cl.² B07C *5/342*
U.S. Cl. 209—75 **6 Claims**



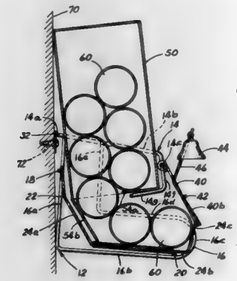
1. Apparatus for inspecting moulded containers from a plurality of moulds wherein each mould moulds in the container an identification unique to the mould comprising a first inspection station including means for reading the moulded identifications of the container and transmitting identification signals related to the read identifications, a second inspection station including means for detecting particular flaws in the moulded containers and for transmitting flaw indicating signals, means for guiding moulded containers serially through the inspection stations, and registering means receiving the flaw indicating signals and the identification signals for registering which of the moulds is producing faulty containers.

3,923,159
PRODUCT DISPLAY AND ARTICLE DISPENSING DEVICE

Robert Taylor, Evanston, and Charles Kleiman, Highland Park, both of Ill., assignors to Lake Chemical Company, Chicago, Ill.

Filed Sept. 16, 1974, Ser. No. 506,345
Int. Cl.² A47F *7/28*
U.S. Cl. 211—49 D **2 Claims**

1. A portable, self-supporting product display and article dispensing device suitable for positioning on a counter or the like, comprising a one-piece, unitary, wire framework having an article receiving portion and a carton supporting portion, said article receiving portion having side members for supporting article holding means therebetween, said side members having a forwardly extending base section which serves as a support for the device when it is placed on a counter, or the like, and an upwardly extending rear section to which the carton supporting portion of the framework is secured, said carton supporting portion having upper and lower carton engaging means for supporting an article containing carton in a substantially upright position on the framework, said lower carton engaging means including a freely supported extension positioned in transverse relation with respect to the side members of the carton supporting portion, said extension providing an elevated, rearwardly extending, downwardly inclined sur-

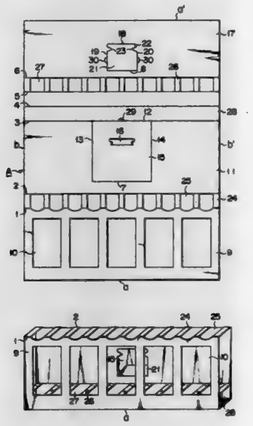


face on which a partly opened end of an article containing carton rests and which serves as the main supporting surface for said carton, said surface acting to maintain said end of the carton in vertically spaced relation with respect to the article holding means supported between the side members of the article receiving portion of the framework whereby articles in the carton can pass downwardly through an opening in said end of the carton into the article receiving portion of the device.

3,923,160
TEST TUBE SUPPORT

Tadayo Hirano, Tokyo, and Koichi Sato, Hatano, both of Japan, assignors to Jintan Terumo Co., Ltd. and Toppan Printing Co., Ltd., both of Tokyo, Japan

Filed Aug. 29, 1974, Ser. No. 501,433
Int. Cl.² A47G *29/00*
U.S. Cl. 211—73 **2 Claims**



1. A foldable test tube support formed from rectangular sheet material, said test tube support having a compartmentalized top, a bottom, a front wall, a doubled rear wall and a compartmentalized intermediate wall interposed between the top and the bottom, said sheet material having in series:
a large front wall section adapted to form said front wall and having a plurality of windows:
a narrow top section adapted to form said top and having a plurality of openings, the top section being separated from the front wall section by a first fold line;
an outer rear wall section having the same size as the front wall section, the outer rear wall section being separated from the top section by a second fold line;
a bottom section adapted to form said bottom and having the same size as the top section, the bottom section being separated from the outer rear wall section by a third fold line;
a first wall section adapted to be bonded to said front wall section to secure the same, said first wall section being so narrow that said intermediate wall is located near but spaced from said bottom when the test tube support is formed, said first wall section being separated from the bottom section by a fourth fold line;
an intermediate wall section adapted to form said intermediate wall, and having a plurality of openings corresponding in number and location to the openings of said top and the same size as the top section, the intermediate wall section being separated from the first wall section by a fifth fold line; and
an inner rear wall section adapted to be bonded to said outer rear wall section, forming therewith said doubled rear wall when the test tube support is formed, the total size of the inner rear wall section and the first narrow wall section having substantially the same size as the front wall section, the inner rear wall section being separated from the intermediate wall section by a sixth fold line;
said outer rear wall section has substantially at a center area thereof a rectangular first support wall section having a slit therein defined by a seventh fold line parallel to and adjacent to said second fold line, a first cut line provided in said third fold line and opposed second and third cut lines, and
said inner rear wall section has substantially at a center area thereof a rectangular second support wall section defined by eighth fold line parallel to and adjacent to said sixth fold line, a fourth cut line opposite said eighth fold line and opposed fifth and sixth cut lines, said second support wall section being adapted to be lockingly fitted into said slit in said first support wall section to support the test tube support when it is constructed.

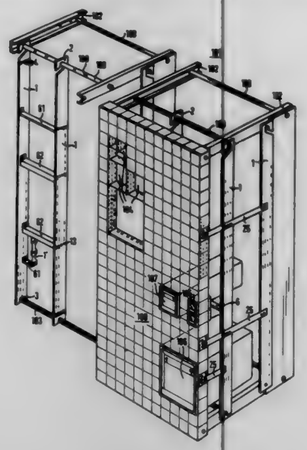
3,923,161
SYSTEM OF STRUCTURAL COMPONENTS FOR THE CONSTRUCTION OF SHELFLIKE STRUCTURES IN FRAME RACKS

Rudolf Kaiser, Karlsruhe; Werner Karcher, Kuppenheim, and Wolfgang Bringe, Wettersbach, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 1, 1974, Ser. No. 493,905
Claims priority, application Germany, Aug. 24, 1973, 2342866
Int. Cl.² A47F *5/10*
U.S. Cl. 211—117 **10 Claims**

1. A system of structural components for the construction of shelf-like structures in a frame rack which includes a rod disposed parallel to the upper edge of the frame rack and a rod running parallel to the lower edge of the frame rack, including structural components which can be arranged vertically and horizontally in the frame rack and can be assembled without the aid of tools, the essential structural components comprising:
a. vertical suspension rails provided with rows of keyhole shaped openings parallel to their short side and including suspension rails of a first type having an upper end designed in a hook shape for hooking on to the rod disposed parallel to the upper edge of the frame rack and having a recess in the lower edge for guidance along a rod running parallel to the lower edge of the frame rack; and

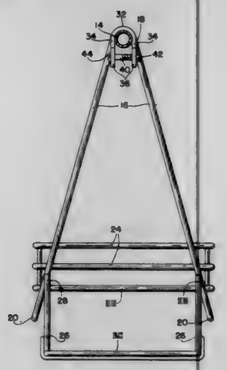
b. horizontal supporting rails of a U-profile with the lateral edges of their legs bent inward essentially parallel to their base and including upwardly extending angular extensions at their ends having at least two cutouts in the



portion perpendicular to their load carrying surface; and

c. button like-connecting elements mounted captively in the keyhole shaped openings in the suspension rails into which the cutouts of the angular extension of the supporting rails can be hung.

3,923,162
SHOWER CADDY
John J. Hussey, c/o Frohock-Stewart, Inc., 79 Beacon St., Worcester, Mass. 01608
Filed Feb. 11, 1974, Ser. No. 441,363
Int. Cl.[2] A47F *5/08*; A47H *1/16*
U.S. Cl. 211—119 **1 Claim**

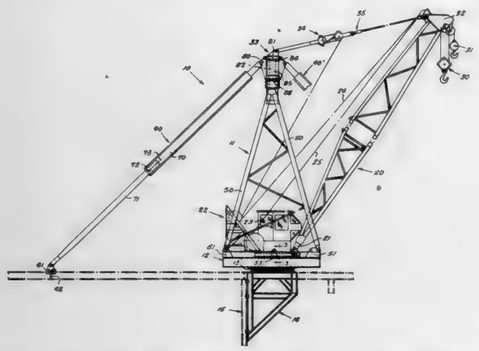


1. A shower caddy comprising a loop adapted to be hung on the shower arm for a nozzle in a shower stall, said loop including portions extending in a downward direction forming an inverted C, article holders at the lower end of the V-shaped loop, and means attached to the loop at the upper end of the caddy for securing the same to said shower arm,

said means comprising a pair of free-ended arms adapted to embrace the shower arm, and including a fastener engaging both arms to move said arms to spring them toward each other to grip the shower arm,

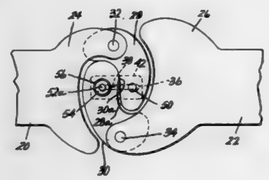
said arms forming part of a downwardly opening U-shaped member, the closed portion of the U-shaped member being in conformance with the loop at the apex of the V, the U-shaped member being secured in conformance with the loop and welded thereto in the curved portion only thereof, the arms of the U-shaped member being free of the loop for movement to grip the shower arm.

3,923,163
CRANE
Jack J. Brewer, Grapevine, Tex., assignor to Sam P. Wallace Company, Inc., Dallas TX
Continuation-in-part of Ser. No. 209,583, Dec. 20, 1971, Pat. No. 3,777,900, and a continuation-in-part of Ser. No. 356,995, May 3, 1973, abandoned. This application Dec. 10, 1973, Ser. No. 423,399
Int. Cl.[2] B66C *23/06*
U.S. Cl. 212—54 **21 Claims**



1. A crane comprising: a base platform; rotatable support means for said platform; a mast mounted on said platform having a vertical axis coincident with the axis of rotation of said platform on said rotatable support means; a boom having a boom foot; pivot means for pivotally securing said boom foot to said platform in load bearing operating relationship at a selected one of a plurality of locations along said platform; bracing means for the upper end portion of said mast securable between said mast and support structure independent of said base platform and spaced horizontally from said base platform; horizontally reciporable means for securing said pivot means on said platform for movement of said boom foot to any one of several locations ranging from alignment with said axis of rotation of said mast to outwardly of one end of said base platform.

3,923,164
DRAWHEAD LEVELING DEVICE
Everett L. Dalton, 2205 Jefferson St., Logansport, Ind. 46947
Filed Feb. 3, 1975, Ser. No. 546,682
Int. Cl.[2] B61G *3/00*
U.S. Cl. 213—75 R **9 Claims**



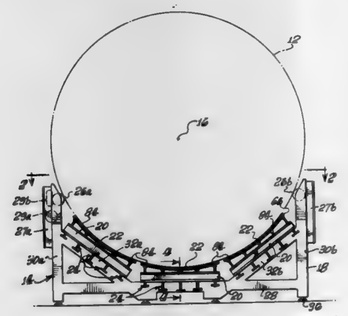
5. Apparatus for maintaining horizontal alignment between complementary drawheads for coupling rail cars comprising

a U-shaped leveler member having a substantially horizontal foot and two elongated parallel upstanding posts orthogonally extending from said horizontal foot, said upstanding posts being insertable in openings formed in the complementary drawheads,

said upstanding posts being restricted from vertical movement relative said foot and at least one of said posts being horizontally movable relative said foot, whereby on relative movement of the drawheads, said posts are horizontally movable relative one another, and

means to vertically adjust and retain at least one of said posts relative the drawheads whereby the drawheads will be vertically adjustable and supportable relative to one another.

3,923,165
DEVICE FOR TRANSLATING AND ROTATING A ROCKET MOTOR OR THE LIKE
Robert E. Burdick, Santa Barbara, Calif., assignor to Rolair Systems, Inc., Santa Barbara, Calif.
Filed Oct. 1, 1973, Ser. No. 402,316
Int. Cl. B60v *1/00*
U.S. Cl. 214—1 BE **5 Claims**



1. A device for supporting a cylindrical load for simultaneous translation and rotation, comprising:

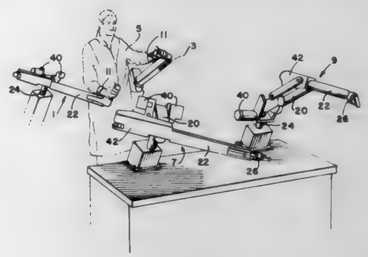
a frame for resting a horizontally extending surface and including means defining load-supporting surfaces positioned in a generally arcuate configuration relative to a horizontally extending axis located above said frame;

a plurality of air bearings carried on said frame at said surfaces, each of said air bearings having a resilient and compliant diaphragm with a restrained center portion and an annular portion inflatably responsive to pressurized air passing through openings therein, and having a curvature generally conforming to the curvature of a cylindrical load for receiving and uplifting thereagainst; and

adjustment means attached to said frame and said air bearings for changing the spacing therebetween.

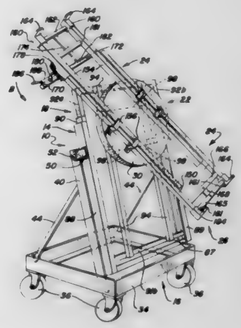
3,923,166
REMOTE MANIPULATOR SYSTEM
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Donald A. Kugath, Frazer, Pa.; Dan H. Dane, Huntsville, and Herman T. Blaise, Gunterville, both of Ala.
Filed Oct. 11, 1973, Ser. No. 405,341
Int. Cl.[2] B25J *3/04*
U.S. Cl. 214—1 CM **7 Claims**

1. A remote manipulator system comprising a master unit and a slave unit controlled by signals from said master unit, said master unit and said slave unit each separately comprising an elongated support arm mounted on a floor for rotation about its longitudinal axis, said support arm being mounted on said floor at about a 30° angle from an imaginary line perpendicular to said floor; an elongated upper arm; means mounting one end of the upper arm on the end of the support arm remote from the floor for pivotal movement of the upper arm about an axis perpendicular to the longitudinal axis of the support arm and for rotational movement of the support arm about its longitudinal axis; a lower arm having one end connected to the other end of the upper arm for pivoting the lower arm about an axis parallel to the axis about which the upper arm pivots on the support arm; servomechanism means for causing the individual arms of said slave unit to occupy the same relative position as the corresponding arms of said master unit; a gripper unit having an operable holder thereon



adapted to grasp and release items; means mounting said gripper unit on the other end of the lower arm of said slave unit for pivotal movement and rotational movement about two mutually perpendicular axes; manually manipulatable control element means positioned at the other end of said lower arm of the master unit; and communication means communicating the status of said manually manipulatable control element means to said gripper unit for controlling the pivotal movement of the gripper unit and operation of said holder.

3,923,167
DOOR HANGING DEVICE
Ranzel Blankenbeckler, 217 E. Henry St., Pontiac, Ill. 61764
Filed May 9, 1974, Ser. No. 468,518
Int. Cl.[2] B25B *1/22*
U.S. Cl. 214—1 D **8 Claims**



1. A sheet holding device comprising:

a base;

a substantially vertical frame pivotally mounted on the base, said frame being movable between a generally vertical position and a generally horizontal position;

a movable second vertical frame slidably mounted on said first vertical frame for generally vertical reciprocal movement with respect thereto;

carriage means mounted on said second movable frame for generally vertical reciprocal movement with respect thereto;

rotatable means mounted on said carriage means for rotational movement with respect to said carriage means; and

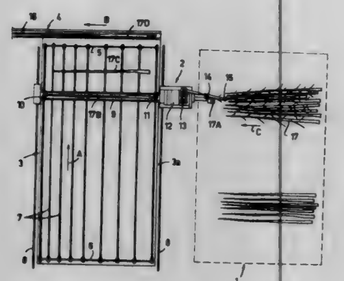
grasping means mounted on said rotatable means, said

grasping means being capable of retaining a sheet therein when the sheet is in any relative position.

3,923,168
EQUIPMENT FOR TRANSFERRING HEAPED TREE TRUNKS ONTO A TRANSPORTER FOR FURTHER PROCESSING

Antti Tapani Valo, 08100 Lohja 10, Finland

Filed Sept. 3, 1974, Ser. No. 502,587
Claims priority, application Finland, Sept. 3, 1973, 2740/73
Int. Cl.² B25J 3/00
U.S. Cl. 214—1 BB 3 Claims



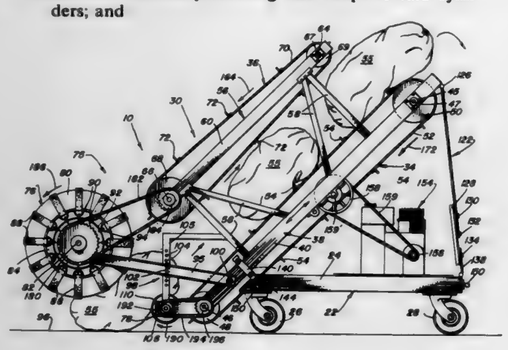
1. Equipment for transferring tree trunks one-by-one from a first region to a second region, the equipment comprising a feeding device for removing the tree trunks from the first region, a receiving table, and conveyor means on the receiving table for receiving tree trunks which have been removed from the first region by the feeding device and conveying them to the second region, the feeding device being movable with respect to the receiving table substantially parallel to the feeding direction of the conveyor means and comprising:
- a gripper for gripping a tree trunk disposed in said first region;
- a roller conveyor having its feeding direction transverse to the feeding direction of said conveyor means and positioned to receive the tree trunk from the gripper and advance it longtudinally; and
- a second conveyor having its feeding direction aligned with the feeding direction of the roller conveyor and arranged to receive the tree trunk from the roller conveyor and advance it longitudinally to discharge it onto said conveyor means.

3,923,169
APPARATUS FOR COLLECTING SOLID-WASTE MATERIAL

Gerhardt Van Drie, 724 West Pine Ave., El Segundo, Calif. 90245

Continuation-in-part of Ser. No. 359,074, May 10, 1973, abandoned. This application Jan. 9, 1975, Ser. No. 539,630
Int. Cl.² B65G 15/14
U.S. Cl. 214—42 R 13 Claims

1. A solid-waste-material-handling-and-collecting apparatus, wherein said solid waste-material is encapsulated within a plastic bag and said apparatus is adapted to be used in combination with a collection vehicle, said apparatus comprising:
- an undercarriage;
- means secured to said undercarriage for movably supporting said carriage;
- a conveyor system adjustably mounted to said undercarriage wherein the forward end of said conveyor system is inclined downwardly in close proximity to the road surfae thereon, forming a material-receiving end;
- a loading pick-up means adjustably mounted to said conveyor system and disposed adjacent said material-receiving end of said conveyor system; wherein said loading pick-up means comprises:
- a first pick-up roller adjustably mounted to said conveyor system and positioned forward therof for flexible engagement with said encapsulated waste material, wherein said first pick-up roller comprises:
  - a pair of cylinders, spaced apart;
  - a drive axle having said cylinders removably mounted adjacent each end thereof for rotation therewith;
  - a plurality of flexible straps disposed between said cylinders, thereby forming a flexible roller;
  - means for removably securing said straps to said cylinders; and

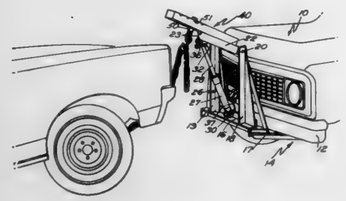


  - an adjustable mounting means for mounting said first pick-up roller to said conveyor system forward thereof; and
- a second pick-up roller mounted to the lower receiving end of said conveyor system and adjustable therewith, to provide the proper space between said second roller and the road surface when traversing thereover;
- a power drive operably connected to said conveyor system and said loading pick-up means; and
- means for removably attaching said apparatus to said collection vehicle, whereby said apparatus is towed by said vehicle.

3,923,170
LIFTING BOOM FOR TRUCK

Florian E. Marquis, 45 Olo St., Woonsocket, R.I. 02895

Filed Sept. 23, 1974, Ser. No. 508,174
Int. Cl.² B60P 3/12
U.S. Cl. 214—86 A 3 Claims



1. In a mechanism for raising loads, a vehicle, a frame extending from one end of the vehicle and having an arm-like member, means pivoting said member to said frame, a hydraulic ram connected between the frame and said member, a boom supported along the top of said member and extending therefrom, said boom having an upwardly opening hook secured to one end for engaging the pivoting means and longitudinally spaced downwardly projecting locating means for engaging the free end of said member, said boom having a lift

means adjustably positioned therealong and carrying means for affixing a cable thereto.

3,923,171
TENSION LINES

John James Muir Pragnell, Farnham, and Robert Leonard Langley, Baldock, both of England, assignors to Irvin Industries Inc., Greenwich, Conn.

Filed Nov. 7, 1974, Ser. No. 521,916
Claims priority, application United Kingdom, Nov. 8, 1973, 51946/73
Int. Cl.² B66D 3/00
U.S. Cl. 254—135 R 9 Claims

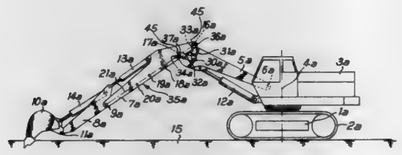


1. In a tension line system including a load supporting tension line having a high modulus of elasticity with substantial recoil rebound on dynamic unloading of a load within the elastic limit thereof, the combination with said tension line of an elongate flexible member for damping recoil rebound of said tension line on dynamic unloading thereof, said flexible member being co-extensive in close parallel relationship over at least a substantial length of said tension line, said tension line and said flexible member being capable of relative longitudinal displacement whereby said flexible member is substantially non-load bearing with respect to the load supported by said tension line, and the mass and material of said flexible member being predetermined in relation to the ratio of expected normal loading of said tension line to the load limit breaking point thereof.

3,923,172
DEVICE FOR RIGIDLY ASSEMBLYING TWO ELEMENTS OF A JIB OF A PUBLIC WORKS MACHINE

Christian S. Jankowiak, Meaux, France, assignor to Societe Anonyme: Poclain, Le Plessis Belleville, France

Filed Nov. 11, 1974, Ser. No. 522,909
Claims priority, application France, Nov. 22, 1973, 73.41664
Int. Cl.² E02F 3/38
U.S. Cl. 214—141 5 Claims

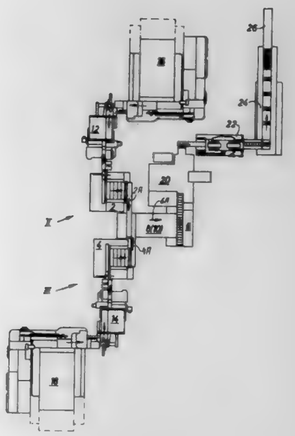


1. A device for rigidly assembling the two elements of a jib of a public works machine, in which the two elements are connected by two means of articulating them to each other, this device comprising at least one first connecting rod (or a set of parallel connecting rods), articulated on each of the elements of the jib, said device further comprising a second connecting rod (or a second set of parallel rods), also articulated on each of the elements of the jib, the first and second connecting rods (or set or rods) being articulated on one of the elements of the jib about the same axis.

3,923,173
APPARATUS FOR TRANSPORTING RECEPTACLES

Bernard Schubert, Neu Bornsen, Germany, assignor to Hauni-Werke Korber & Co., KG, Hamburg, Germany

Division of Ser. No. 292,630, Sept. 27, 1972, Pat. No. 3,820,671, said Ser. No. 292,630, is a continuation of Ser. No. 30,204, April 20, 1970, abandoned, which is a continuation of Ser. No. 631,504, April 17, 1967, abandoned, which is a continuation-in-part of Ser. No. 559,538, June 22, 1966, Pat. No. 3,444,981. This application Sept. 6, 1973, Ser. No. 394,724
Claims priority, application Germany, June 23, 1965, 56380
Int. Cl.² B65G 65/04
U.S. Cl. 214—301 7 Claims



1. Apparatus for transporting rod-shaped smokers' products in receptacles having superimposed compartments for groups of products, comprising means for supplying a stream of individual rod-shaped products which form a row to a first station along a predetermined path wherein the products move sideways tranversely to the longitudinal axis of said products; collector means operative to convert the leading end of said stream at said first station into groups of parallel products; means for transferring said groups into successive compartments of a series of receptacles to thus convert such receptacles into filled receptacles; means for conveying receptacles substantially vertically at and away from said station, thereupon substantially horizontally in the longitudingal direction of products in the filled receptacles, and thereupon substantially vertically to a second station; means for removing said groups from filled receptacles at said second station, including means for moving the products of said groups lengthwise; and means for advancing the thus removed groups from said second station in the form of a stream of articles or groups of articles along a predetermined path wherein the products move sideways transversely to the parallel longitudinal axes of the products which make up said groups.

3,923,174

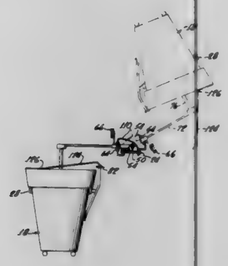
NON-STOP REFUSE COLLECTION CONTAINER

Marcel G. Stragier, 8201 Monterey Way, Scottsdale, Ariz. 85251

Division of Ser. No. 364,708, May 29, 1973, Pat. No. 3,878,953, which is a continuation of Ser. No. 199,813, Nov. 17, 1971, abandoned, which is a division of Ser. No. 15,421, March 2, 1970, abandoned. This application July 22, 1974, Ser. No. 490,515

Int. Cl.² B65F *3/02*

U.S. Cl. 214—313 **4 Claims**



1. In combination, a refuse container and a refuse collection vehicle said refuse collection vehicle comprising:
   - an arm;
   - means on said arm for engaging said container;
   - means for moving said arm toward said container to engage said container when at a standing upright position on a roadway, without manual lifting or manual moving of said container;
   - means for moving said arm from a lowered position to a raised position for lifting the container from said standing upright position, and inverting the container to dump its contents into the vehicle without manual handling of said container; and said container comprising:
   - a lower body section of tapered configuration extending for the major portion of the height of the container for storing refuse, and when in said standing upright position in a roadway having its upper, larger end at a height above the height of said arm on said refuse collection vehicle when said vehicle is positioned adjacent said container on the roadway and said arm is in its lowered position;
   - an upper body section above said lower body section, and having a substantial height, the cross-section of said upper body section being at its lower end substantially larger than the cross-section of the upper end of the lower body section;
   - a generally horizontal shoulder integrally connecting the upper end of the lower body section to the lower end of the upper body section said shoulder strengthening said container to withstand the forces of engagement with the arm; and
   - a lid hinged to said upper body section and adapted to automatically open by the force of gravity when said container is inverted.

3,923,175

HITCH FOR PORTABLE CONVEYOR

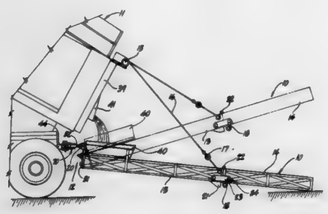
Henry W. Landvatter, 3000 Barrett Station Road, Kirkwood, Mo. 63122

Filed July 22, 1974, Ser. No. 490,683

Int. Cl.² B60P *1/36*

U.S. Cl. 214—509 **7 Claims**

1. In a dump truck and portable conveyor combination:
   - a. a portable conveyor including a hitch attachment means defining a longitudinal pivot axis,
   - b. a dump truck including a hitch attachment means defining a generally vertical pivot axis,
   - c. support means supporting the conveyor,
   - d. hitch means including:
     1. first and second hingedly connected hinge plate means,
     2. pivot means connecting said first hinge plate means to the conveyor hitch attachment means for rotational movement of the conveyor about said longitudinal pivot axis thereof,
     3. link means extending between said second hinge plate means and the truck hitch attachment means, said link means including substantially parallel first and second spaced pivot axes,



     4. first pivot means connecting said link means to said second hinge plate means for rotational movement of said second hinge plate means and said conveyor relative to the link means about the first pivot axis,
     5. second pivot means connecting said link means to said dump truck hitch attachment means for rotational movement of said link means relative to said truck hitch attachment means about said second pivot axis, and
     6. the second pivot means permitting lateral shifting of the first pivot means tending to compensate for lateral movement of points on the conveyor spaced from said first pivot means when the conveyor rotates about said first pivot axis.

3,923,176

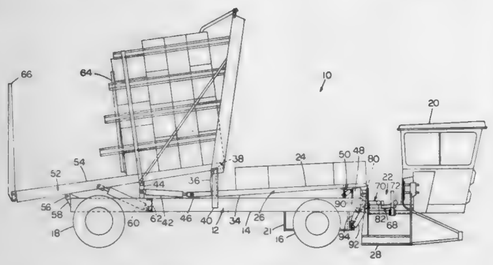
FIRST TABLE FOR A BALE WAGON

Edward J. Wynn, Fresno, and Lee D. Butler, Kingsburg, both of Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 19, 1974, Ser. No. 498,782

Int. Cl.² B60P *1/44;* **A01D** *87/12*

U.S. Cl. 214—518 **14 Claims**



1. In a bale wagon having a mobile chassis and means mounted on said chassis defining a bale-supporting area, the improvement which comprises:
   - means mounted on said chassis for receiving at least one bale on a first one of its sides adjacently along and generally below said bale-supporting area, said bale-receiving means being selectively operable in either one of two modes for moving said bale upwardly to respectively deposit said bale on said first one of its sides, or a second one of its sides adjacent to said first one side, on said bale-supporting area, said bale-receiving means being operable in a first one of said two modes to lift said bale upwardly through an arcuate path and deposit said bale on its second one side on said bale-supporting area, said bale-receiving means being operable in a second one of said two modes to initially lift said bale upwardly at its longitudinal portion located near said bale-supporting area and thereby dispose said bale in a tilted position with its first one side directed upwardly toward said bale-supporting area and then to push said tilted bale upwardly toward said bale- supporting area and deposit said bale on its first one side on said bale-supporting area.

3,923,177

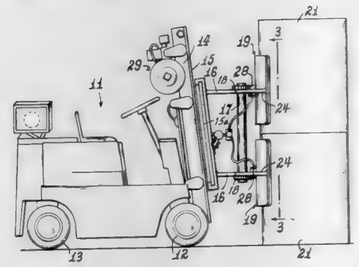
VACUUM LIFT APPARATUS WITH A CONTROL VALVE ASSEMBLY

Earl A. Horton, Philadelphia, Pa., assignor to Little Giant Products, Inc., Peoria, Ill.

Filed June 21, 1973, Ser. No. 372,393

Int. Cl. B65g *47/00;* **B66f** *9/18*

U.S. Cl. 214—650 SG **3 Claims**



1. A vacuum controlled load lifting system comprising a mast assembly including a carriage mounted on a lift truck for vertical lifting movement, a plate mounted on the carriage, a resilient vacuum pad having a load contacting surface mounted on the front face of said plate, a valve body mounted on the back face of said plate, an axial bore in said body, a closure for one end of said bore, conduit means connecting said bore with a source of negative air pressure, a passageway in said body spaced from and parallel to said bore opening at one end onto the vacuum pad load contacting surface and having its other end communicating with the bore, a valve stem in said bore, and spring means between said closure and valve stem normally holding the valve stem in position to cut off the supply of negative air pressure to the passageway and with its forward end projecting through and beyond the plane of the load contacting surface, said valve stem being depressed upon contact with a load to connect the passageway with the conduit means.

3,923,178

CONTAINER

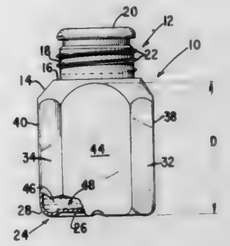
George W. Welker, III, Downington, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed July 25, 1974, Ser. No. 491,905

Int. Cl.² A61J *9/00*

U.S. Cl. 215—1 C **2 Claims**

1. A sealed plastic container for liquids at least a portion of which is capable of migrating through the plastic comprising:
   1. A relatively rigid top;
   2. A relatively rigid bottom;
   3. At least four relatively narrow, substantially planar wall portions connecting said top and bottom;
   4. At least four relatively wide, substantially planar wall portions connecting said top and bottom and connected one between each pair of relatively narrow wall portions, A. the width of said wide wall portions being about two to two and one half times the width of said narrow wall portions;
   5. A liquid disposed within the container;
   6. Said top, bottom and walls being formed from a plastic which is permeable by said liquid;



whereby the relatively wide wall portions become concaved when the liquid migrates through the plastic and the internal pressure becomes less than the ambient pressure while the relatively narrow wall portions, top and bottom, retain their initial shape.

3,923,179

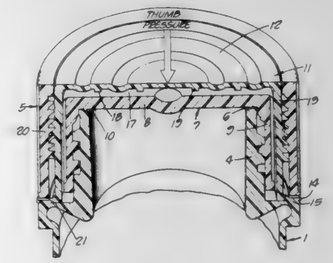
MEDICAL LIQUID CONTAINER WITH TACTILE STERILITY INDICATOR AND METHOD OF TESTING CONTAINER

Pradip V. Choksi, North Hollywood, and Roy B. Steidley, Seal Beach, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Mar. 7, 1973, Ser. No. 338,661

Int. Cl. B65d *55/02*

U.S. Cl. 215—203 **8 Claims**



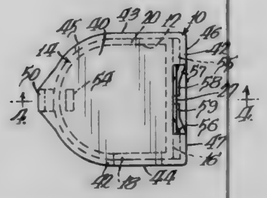
1. A container with inner and outer closure for storing and dispensing sterile liquids, which includes a blow molded thermoplastic container with a dispensing outlet, and the container and outer closure forming a unit that has a transverse abutment means surrounding the outlet wherein the improvement comprises:
   - the inner closure secured to the container to close off the outlet and form a hermetically sealed enclosure, said inner closure having at least a portion that is openable for dispensing; and a separately formed thermoplastic outer cap with a longitudinal axis, which outer cap is hermetically sealed to the enclosure with a bacteria-tight bound proximate said abutment means, said outer cap having a manually deflectable top wall physically spaced a predetermined distance from the inner closure so that said wall can be deflected a sufficient amount by thumb pressure to cause the outer cap and inner closure to contact each other for a tactile determination of the integrity of the outer cap and inner closure; and said outer cap has both a thin frangible section proximate said abutment means and externally exposed threads with the threads of the

outer cap being in a axial alignment with the abutment means, whereby said threads can receive a threaded opening member and guide it toward the abutment means for exerting a pressure against the abutment means to axially pry the outer cap apart at its frangible section.

3,923,180
SAFETY CLOSURE

Mack Robert Fields, 1624-2 Lake Drive, Clearwater, Fla. 33516

Filed Feb. 26, 1975, Ser. No. 553,136
Int. Cl.² B65D *55/02*
U.S. Cl. 215—216 **19 Claims**

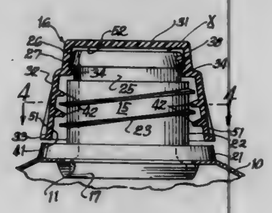


1. A safety closure for a container having an open top, said closure having a body portion and a depending skirt portion around three sides thereof which sides overlap the edge of said container surrounding said top portion, a pawl-like projection on said skirt portion projecting parallel to said body portion, a mating pawl-like element on said container projected outwardly therefrom and into alignment with said pawl-like projection on said closure, connecting means on the fourth side of said closure and on said container for connecting said closure to said container at least in the closed position of said closure, and resilient means on said closure acting on said connecting means for urging said pawl-like projection on said closure into latching engagement with said pawl-like element on said container.

3,923,181
CHILD-RESISTANT CLOSURES

Sidney M. Libit, 441 Lakeside Terrace, Glencoe, Ill. 60022

Filed Mar. 21, 1974, Ser. No. 453,481
Int. Cl.² B65D *55/02, 55/12*
U.S. Cl. 215—224 **16 Claims**

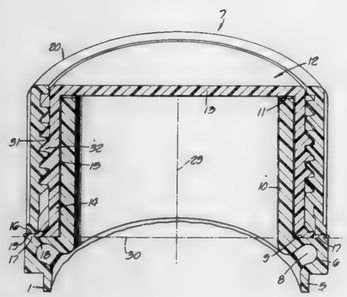


1. A closure for attachment to means defining the pouring opening of a container for a fluent substance, said closure comprising a hollow cylindrical neck extending from the periphery of said opening and a cylindrical cap adapted to be engaged with, and disengaged from, said neck to effect open and closed conditions of the container opening, at least the cap being of resilient but generally shape retaining material, said cap having a top wall and a skirt depending from the periphery of said wall, the neck and skirt having respective confronting faces, one of said faces having a helicoid outstanding therefrom and the other of said faces having a cam element outstanding therefrom, adapted to be driven by the helicoid, said helicoid and cam element being in overlapping relation in the closed condition of the closure, said cap and neck having respective bead and groove means which are engaged with a snap fit when the closure is in closed condition to restrain axial movement of the cap in response to force applied axially outwardly of the cap and said bead and groove means are disengaged upon forcible relative axial shifting of the cap and neck, to free the cap for removal, the overlap being such in relation to the tightness of said snap fit that simple rotation of the cap will displace the cam element away from overlapping relation with the helicoid by reason of the elasticity of the material and, upon application of digital, radial, squeezing force to the exterior of the skirt in the region of engagement of the element and helicoid, the displacing force is nullified and the element and helicoid are maintained in driving engagement to translate rotation of the cap into axial displacement of the cap against the bias of the snap fit.

3,923,182
FRANGIBLE CLOSURE SYSTEM FOR MEDICAL LIQUID CONTAINER

Pradip V. Choksi, North Hollywood, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Mar. 7, 1973, Ser. No. 338,685
Int. Cl. B65d *41/32*
U.S. Cl. 215—250 **16 Claims**



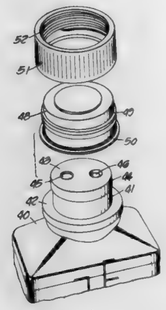
1. A container and closure system for storing and dispensing sterile liquids which includes a blow molded thermoplastic container with a dispensing outlet, a cap and a jacking ring, said container and cap forming a unit that has a transverse abutment means surrounding the outlet wherein the improvement comprises:

said cap being a separately formed injection molded thermoplastic cap with a longitudinal axis, said cap having both a thin frangible section and externally exposed threads said cap being sealed to the container proximate the abutment means with an annular bacteria-tight bond to form a hermetically sealed unit with said threads of the cap being in axial alignment with the abutment means, an internally threaded packing ring threadedly disposed on said cap and having a bottom surface engageable with said abutment means whereby said cap threads receive the threaded jacking ring and guide it toward the abutment means for exerting a pressure against the abutment means to axially pry the cap apart at its frangible section.

3,923,183
CONTAINER FOR MEDICAL LIQUID WITH SEPARABLE OUTER AND INNER CLOSURES

Pradip V. Choksi, North Hollywood, and Roy B. Steidley, Seal Beach, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Mar. 7, 1973, Ser. No. 338,662
Int. Cl. B65d *41/62, 51/18*
U.S. Cl. 215—251 **10 Claims**



1. A container and double closure system for storing and dispensing sterile liquids, which includes a blow molded thermoplastic container with a dispensing outlet, an inner closure, an outer cap, and a jacking ring, the container and outer cap forming a unit having a transverse abutment means surrounding the outlet wherein the improvement comprises:

an said inner closure being secured to the container to close off the outlet and form a hermetically sealed unit but is openable for dispensing; said outer cap being a separately formed injection molded thermoplastic outer cap with a longitudinal axis, said outer cap having both a thin frangible section and externally exposed threads, and said outer cap is sealed to the container proximate the abutment means with an annular bacteria-tight bond with the threads of the outer cap being in axial alignment with the abutment means, said jacking ring being internally threaded and threadingly disposed on the outer cap to guide it toward the abutment means for exerting a pressure against the abutment means to axially pry the outer cap apart at its frangible section.

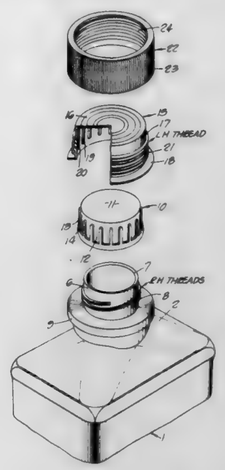
3,923,184
DOUBLE SCREW CAP SYSTEM FOR STERILE MEDICAL LIQUID CONTAINER AND METHOD OF OPENING SAME

Pradip V. Choksi, North Hollywood, and Roy B. Steidley, Seal Beach, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Mar. 7, 1973, Ser. No. 338,671
Int. Cl. B65d *55/02*
U.S. Cl. 215—251 **9 Claims**

1. A container with inner and outer closures for storing and dispensing sterile liquids, which includes a blow molded thermoplastic container with a dispensing outlet, said container and outer closure forming a unit that has a transverse abutment means surrounding the outlet, wherein the improvement comprises:

a threaded dispensing neck on the container; a threaded inner closure connected to the dispensing neck and forming a hermetic seal therewith to create a sealed unit; a separately formed injection molded outer cap with a longitudinal axis; said outer cap having both a thin frangible section and externally exposed threads, and said outer cap is sealed to the container proximate said abutment means with an annular bacteria-tight bond with the threads of the outer cap being in a predetermined alignment with the abutment means whereby said threads can receive a threaded opening member and guide it toward the abutment means for exerting a pressure against the abutment means to axially pry the outer cap apart at its

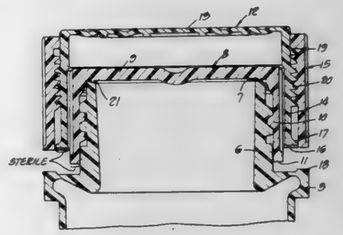


frangible section; and rotational stop means on the outer cap and inner closure to prevent rotation of the outer cap relative to the inner closure.

3,923,185
POURING CONTAINER WITH DOUBLE CAP PROTECTOR FOR STERILE DISPENSING LIP

Pradip V. Choksi, North Hollywood, and Roy B. Steidley, Seal Beach, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Mar. 7, 1973, Ser. No. 338,672
Int. Cl. B65d *41/32*
U.S. Cl. 215—253 **11 Claims**



1. A container and double closure providing a system for storing and dispensing sterile liquids, which system includes a blow molded thermoplastic container with a dispensing outlet, an inner closure, an outer cap, and a jacking ring, the container and outer cap forming a unit that has transverse abutment means surrounding the outlet, wherein the improvement comprises:

a threaded tubular container neck with a pouring lip surrounding the dispensing outlet; a manually removable inner cap being said inner closure with an internally threaded skirt that has a lower end surface, and this inner cap is threadingly disposed on the tubular neck; said outer cap being a separately formed injection molded cap with a longitudinal axis, said outer cap having both a thin frangible section and externally exposed threads, and said outer cap has a skirt and is sealed to the container proximate the abutment means with an annular bacteria-tight bond to form a hermetically sealed enclosure which encases the inner cap including the lower end surface of the inner cap skirt, and

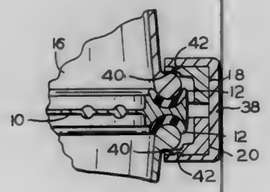
the threads of the outer cap are in axial alignment with the abutment means, whereby said outer cap threads can receive said jacking ring and guide it toward the abutment means for exerting a pressure against the abutment means to axially pry the outer cap apart at its frangible section.

3,923,186

SEALING ASSEMBLY FOR REUSABLE BARRELS

Robert D. Flanders, 18040 Lower Boones Ferry Road, Tigard, Oreg. 97223

Filed Jan. 10, 1974, Ser. No. 432,183
Int. Cl.² B65D *7/02*
U.S. Cl. 220—5 R **12 Claims**



1. In a reusable barrel assembly of the type having a pair of substantially identical shell-like barrel half sections, each having a closed end and an open end, with a sealing means for detachably joining said ends of said barrel sections together with the respective interiors of said barrel sections facing one another, the improvement wherein said sealing means comprises:

a. a pair of projecting flanges extending peripherally around the respective open ends of said barrel half sections;

b. a pair of resilient annular gaskets for insertion between said flange pair;

c. a central stiffener member in the form of a thin annular disc for insertion between said two resilient gaskets;

d. a plurality of unitary C-shaped clamp means spaced around the periphery of said flange pair of releasably holding said flange pair in non-contacting close proximity with said gaskets compressed between said central stiffener member and said flange pair; and

e. means associated with said flange pair and said clamp means for interlockingly engaging said flange pair and clamp means while permitting said clamp means to be detached from both barrel sections by the pressing of said barrel sections together momentarily to increase the compression of said resilient gaskets, thereby freeing both flanges of said flange pair from engagement with said clamp means.

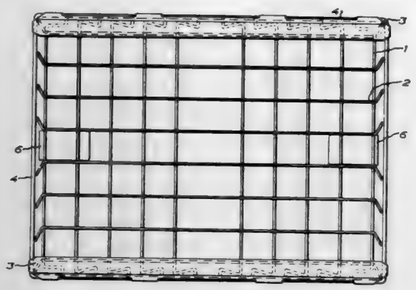
3,923,187

WIRE BASKETS

Karl Olof Johansson; Alvar Erling Nilsson, both of Falkenberg, and Hans TorBjörn Skarfelt, Habo, all of Sweden, assignors to Munksjo Aktiebolag and Pelly AB, Sweden

Filed Nov. 4, 1974, Ser. No. 520,917
Claims priority, application Sweden, June 25, 1973, 7308904; June 25, 1973, 7308905; Nov. 5, 1973, 7314969; Oct. 14, 1974, 7412887
Int. Cl.² B65D *7/20*
U.S. Cl. 220—19 **8 Claims**

1. A wire basket intended for stacking on top of and nesting in at least one other substantially identical wire basket, wherein wires forming side walls of said wire basket are bent at an angle to a bottom plane of said wire basket in order that one pair of opposite side walls shall incline toward one another while the second pair of opposite side walls shall incline away from one another, and means are arranged along each of the side walls inclined toward one another, which means are adjustable between a first position in which they permit nesting of wire baskets in each other and a second position in



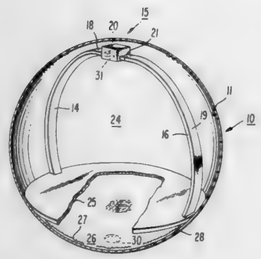
which they permit stacking of wire baskets on top of each other.

3,923,188

SATELLITE PROPELLANT MANAGEMENT SYSTEM

Ralph Jones Lake, Jr., Willingboro, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 12, 1973, Ser. No. 426,667
Int. Cl. B65d *85/00*
U.S. Cl. 220—20 **6 Claims**



1. A storage container comprising:

an input port for admitting two fluids one of said fluids being a liquid and having a preferential wetting property greater than the other of said two fluids;

an outlet port for withdrawing a selected one of said two fluids;

first partition means having opening means and disposed within said container for partitioning said container into first and second cpmpartments;

second partition means disposed within said container for partitioning said second compartment to form an inner and an outer compartment relative to said container;

tubular means arranged in communication with said opening means for providing fluid communication between said first and second compartments, said tubular means having a sidewall foraminous surface with apertures to support capillary wicking of liquid threthrough;

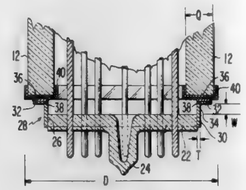
said foraminous sidewall facing the inner surface of said container and spaced therefrom a distance sufficient to support a capillary fillet of a liquid.

3,923,189

QUARTZ TO GLASS SEAL

Richard Dale Faulkner, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed July 12, 1973, Ser. No. 378,516
Int. Cl. H01j *17/18, 61/36*
U.S. Cl. 220—2.3 R **3 Claims**



1. A quartz-to-glass seal for sealing an annular open end portion of tubular quartz envelope to a glass stem in an electron tube wherein the annular open end of the envelope has an approximate outside diameter within the range of 0.5 to 2.0 inches; and wherein the seal includes an intermediate metallic stress relieving ring, between the annular open end portion of the envelope and the glass stem, of a material selected from the group consisting of: molybdenum, tungsten, and alloys of cobalt, iron, and nickle, and having:

a. a flange portion with a radial sealing surface plated with a noble metal which is sealed to the annular open end of the quartz envelope by a yieldable cement;

b. a supporting thin narrow tubular stress relieving portion having an approximate longitudinal width within the range of from 0.183 to 0.25 inches, an approximate thickness of between 5 and 15 mils; said relieving portion extending substantially perpendicular from said radial flange portion as a tubular extension of said envelope, and

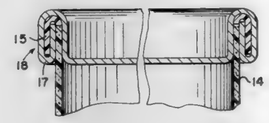
c. a stem sealing portion extending from said tubular stress relieving portion and sealed to said glass stem.

3,923,190

PLASTIC CONTAINERS HAVING IMPROVED PHYSICAL PROPERTIES FABRICATED FROM A COMPOSITE BILLET

Donald J. Roth, Chicago Heights, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed May 13, 1974, Ser. No. 469,486
Int. Cl.² B65D *7/42;* **B32B** *27/40*
U.S. Cl. 220—67 **13 Claims**



1. A container for packaging food products comprised of a hollow body closed at one end and terminating in an upper end surrounded with a peripheral flange integral with the body and adapted to receive an end closure, the flange being formed from a thermoplastic resin and the body being formed from a thermoplastic resin modified with a second material which imparts lower gas permeability to the thermoplastic resin, the flange being devoid of the second material.

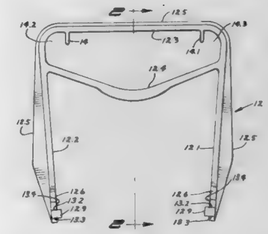
6. The container of claim 1 wherein the container body is formed of a laminate of a layer a first thermoplastic resin having high gas permeability and a layer of a second resin having low gas permeability selected from the group consisting of vinylidene chloride polymers, nylon and acrylonitrile copolymers having an acrylonitrile content of at least 60% by weight.

3,923,191

WAFER BASKET AND HANDLE

Douglas M. Johnson, Carver, Minn., assignor to Fluoroware, Inc., Chaska, Minn.

Filed Sept. 11, 1974, Ser. No. 504,903
Int. Cl.² B65D *25/28;* **B65G** *9/00*
U.S. Cl. 220—94 R **5 Claims**



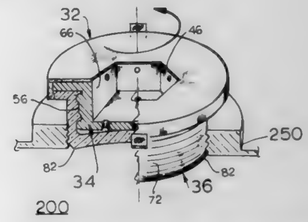
1. In combination, a wafer basket and an easily attachable and detachable handle therefor, the basket having generally upright side and end walls and an open top, the end walls having their upper surfaces centrally recessed to provide each wall with spaced, upright, opposing edges, each wall having aligned, outwardly open transverse slot closely adjacent the top of the basket and the junctures of the end and side walls; and the handle having a pair of stiff, upright legs and leg manipulating means joining upper ends of the legs and spacing the legs to span the basket end-to-end, each leg including at its lower end basket gripping means comprising a transverse bar receivable in the transverse slots of the respective end wall of the basket, the lower end of the leg including upright edges oriented with respect to the transverse bar to confront the upright edges of the basket end wall when the transverse bar is seated in the slot to restrain side-to-side movement of the handle with respect to the basket, the transverse bars of the legs engaging the slots adjacent the upper corners of the basket to stably lift and support the basket.

3,923,192

CONTAINER APERTURE ADAPTORS

Tom Walters, 2102 Mason Blvd., Point Pleasant, W. Va. 25550

Filed Sept. 23, 1974, Ser. No. 508,249
Int. Cl.² B65D *53/00, 41/32*
U.S. Cl. 220—235 **16 Claims**



1. In combination with a pair of telescoping bucket type members telescopable one within the other on a common axis, the outer member of expandable retractable material with its outer configuration providing means to aid in the subsequent closing telescoping clamping, expanding and positioning/locking action with and for the inner telescoping member while its

outer configuration provides means to aid in the subsequent clamping riveting seal feature within the aperture and about its boss, the inner member of firm material having an outer configuration providing positioning/locking, seizing and clamping means within said outer member at the subsequent closing telescoping riveting seal action while its inner configuration includes means for the subsequent unit removal as well as air passage holes functional in conjunction with a plastic type cover cap third member which is pre-affixed onto the clamping flange of said member, which has peripheral air passage channels that in conjunction with the inner member's air passage holes for the subsequent release of air from between the inner and outer members at the subsequent telescoping closure action and positioning means for affixing onto the clamping flange of said inner member and a snap-on means for the subsequent securing to the outer member's clamping flange, whereupon the telescoping closure action the inner member is seated in a selected locked position within the outer member expanding and clamping said member to effect a riveted seal within an aperture and upon the opposing faces of the boss containing the aperture of a container or the like thus the closure assembly is a complete and independent closure unit for the various types of apertures.

3,923,193

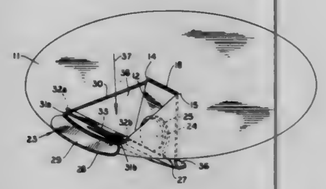
EASY-OPEN CONTAINER WITH NONDETACHABLE LOCK-IN TAB

Robert A. Wells, 4450 Harris Trail, NW., and Carl J. Strobe, 5515 Whitner Drive, NW., both of Atlanta, Ga. 30327

Continuation of Ser. No. 366,586, June 13, 1973, abandoned. This application Feb. 3, 1975, Ser. No. 546,738

Int. Cl.² B65D *41/32*

U.S. Cl. 220—269 **9 Claims**



1. Easy opening container with nondetachable opening member, comprising:

a container member;

an opening tab having a periphery defined in said member in part by a severable tearaway region of relative weakness and in part by a non-tearaway region forming a bendable interconnection between the opening tab and the remainder of the container member, so that an opening is established in the container member when the tearaway region is severed and the opening tab is displaced into the opened container by bending along the bendable interconnection;

said opening tab having a forward end which is in spaced apart relation with said bendable interconnection, and which occupies a forward end of said opening;

a handle closely overlying said opening tab and attached to said opening tab at a location thereon disposed between said bendable interconnection and said forward end;

deformably bendable means attaching said handle to said opening tab to provide a first portion of said handle which extends beyond said bendable attaching means to overlie said forward end of said opening tab;

said handle having a second portion which extends on the opposite side of said bendable means from said first portion, and which terminates in a means for grasping the handle;

said bendable attaching means being operative to deform to allow said forward end of said opening tab to be severed and then bent into the container by first handle portion in response to rotation of said handle by moving said grasping portion away from said container member to rotate the handle about a fulcrum provided by said bendable attaching means;

said handle configured to be substantially enterable into the forward end of said container opening as the remainder of said tearaway region is severed by movement of the handle into the opening; and

retaining means disposed on said handle adjacent said grasping portion to engage said container and to secure said handle at the forward end of said opening when the handle has substantially entered the opening, so that said handle and said attached opening tab are maintained within the opened container by said securement of the handle at the forward end of the opening.

3,923,194

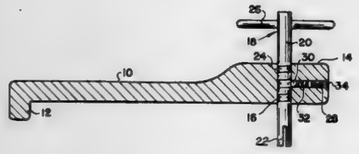
DEVICE FOR OPENING TEAR STRIP TYPE CONTAINERS

Maurice F. Carlson, 6345 Oakman Blvd., Dearborn, Mich. 48126

Filed Mar. 14, 1975, Ser. No. 558,483

Int. Cl.² B65D *41/32*

U.S. Cl. 220—275 **3 Claims**



1. A device for opening tear strip type containers comprising an elongated body, a downwardly extending foot on one end of the elongated body, a head on the other end of the elongated body with a vertically disposed cylindrical opening therethrough, a rod rotatably supported in the vertically disposed cylindrical opening, a plurality of annular grooves on the rod, a spring loaded detent for selective supportive engagement in the annular grooves on the rod, means on the lower end of the rod for holdably engaging the free end of the tear strip on the container, and means on the other end of the rod for applying thereto a turning force of sufficient magnitude to remove the tear strip from the container and coil it around the rod.

3,923,195

SEALED INDICATOR MECHANISM

John Bernard Wallace, Ickenham, England, assignor to TRW Inc., Cleveland, Ohio

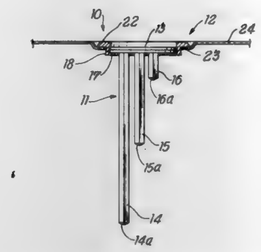
Filed Apr. 29, 1974, Ser. No. 464,946

Claims priority, application United Kingdom, May 4, 1973, 21465

Int. Cl.² G01F *23/02*

U.S. Cl. 220—309 **2 Claims**

1. An assembly sealing a circular opening in a panel aperture comprising a cup-shaped seal formed from a relatively resilient material disposed in the panel aperture and a disc-shaped plate formed from a substantially rigid material, said seal including a base, a side wall joined to the base and having a substantially cylindrical external surface to facilitate insertion into the panel aperture and cooperating with the base to define a plate-receiving cavity having a depth substantially greater than the thickness of the panel and a circumferential flange extending radially outwardly from the end of the side wall opposite the base, which flange overlies the outer surface of the panel adjacent the rim of the aperture therein, the internal portion of the side wall defining the cavity having an inwardly directed protrusion extending toward the central axis of the cavity, the plate having a thickness substantially greater than the thickness of the panel at the aperture therein and a diameter greater than the diameter of the cavity in the seal, the plate being seated in the cavity and compressing the side wall of the seal against the rim of the panel aperture and expanding portions of the wall at the protrusion outwardly beneath the inner surface of the panel adjacent the aperture therein, and said plate being seated against the base of the seal



and having a shoulder defining a retaining surface which lies substantially parallel to the inner surface of the panel and compresses the material of the wall of the seal between said surface and the inner surface of the panel adjacent the aperture therein.

3,923,196

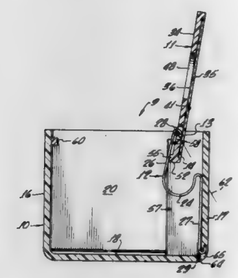
CONTAINER WITH SPRINGLOADED CLOSURE

Donald J. Miller, Costa Mesa, and Gil G. Rolle, Wilmington, both of Calif., assignors to Synergex Corporation, Santa Clara, Calif.

Filed Apr. 8, 1974, Ser. No. 458,569

Int. Cl.² B65D *43/24*

U.S. Cl. 220—335 **14 Claims**



1. A closable box, comprising:

a. a container, having at least two sides, a back, a bottom, and an open top,

b. a cover, having a hinge line,

c. hinge means for hinging said cover to said container for pivotal movement about said hinge line between a closed position at which said open top of said container is substantially covered and an open position at which there is substantially free access to the inside of said container,

said hinge means including hinge points on said hinge line at opposite sides of said container, said hinge points being spaced forwardly of the back ends of said sides to cause the portion of said cover rearward of said hinge line to project into said container when said cover is in its open position, thereby permitting opening of said cover when it is in its closed position by pressing inwardly on said portion of said cover rearward of said hinge line, and

d. spring means for urging said cover into either of said closed and open positions when said cover is close thereto and for retaining said cover in either of said positions when said positions are reached,

said spring means including an elongate spring element contained within said container and attached at one end to said cover forwardly of said hinge line and at its other end to said container, said spring element being continuously tensioned to hold said cover in position relative to said container, and spring element being shaped and connected to cause a line along the spring line of force to be rearward of said cover hinge line when said cover is in said open position, and to be forward of said hinge line when said cover is in said closed position.

3,923,197

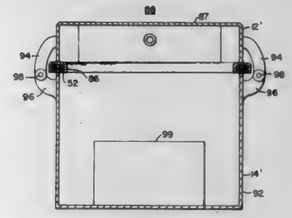
GASKET ASSEMBLY FOR ENCLOSED ELECTRICAL APPARATUS

Edmund W. Kuhn, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 30, 1974, Ser. No. 438,059

Int. Cl.² B65D *53/00*

U.S. Cl. 220—344 **5 Claims**



1. A fluid tight container, comprising:

first and second members, each of said first and second members having an edge portion;

a picture frame channel member, said pictire frame channel member when viewed in cross section having a bottom portion with inner and outer surfaces and two spaced side portions said outer surface of said bottom portion of said channel member being affixed to said edge portion of said first member in fluid tight cooperation; and

a picture frame resilient gasket member having a central opening when viewed in cross section, said picture frame resilient gasket member being disposed in said picture frame channel member between said spaced portions, a first portion of said picture frame resilient gasket member being disposed on said inner surface of said bottom portion thus providing a first seal thereat, said edge portion of said second member being disposed against another portion of said picture frame resilient gasket member within said channel member thus providing a second seal thereat, said central opening being changeable in shape to accommodate gasket shape change as the result of the presence of said first and said second seals.

3,923,198

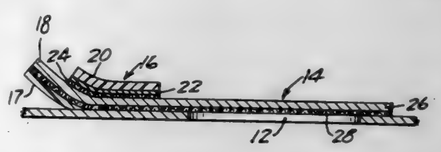
STRESS-OPACIFIABLE TAMPER INDICATOR

Wilfred R. Brochman, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 397,876, Sept. 17, 1973, abandoned. This application Aug. 21, 1974, Ser. No. 499,279

Int. Cl.² B65D *41/00*

U.S. Cl. 220—359 **8 Claims**

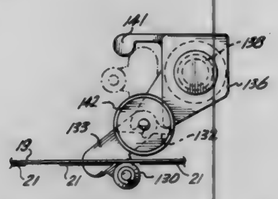


1. In a container sealed by means of a tape closure, the improvement which comprises:

at least a portion of the closure surfaced with an indicator

strip comprising a stress-opacifying colored backing;
whereby when said indicator layer is flexed to open said closure, said backing will become opaque and display a color difference between the flexed and unflexed portions indicating said flexing even if said covering is returned to its previous sealing position.

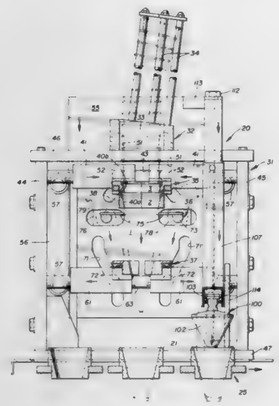
3,923,199
LABEL STRIPPING APPARATUS FOR USE WITH LABEL HANDLING APPARATUS
Kenneth A. Real, Redmond, Wash., assignor to Interface Mechanisms, Inc., Mountlake Terrace, Wash.
Filed Oct. 3, 1973, Ser. No. 403,278
Int. Cl.² B65C 9/18
U.S. Cl. 221—73 **2 Claims**



1. A label stripping apparatus for use with a label handling apparatus including a base plate and means mounted on the base plate for moving, under tension along a first path, label stock comprising a plurality of labels positioned along a strip of label stock backing, said label stripping apparatus comprising:
   a. a label stock guide means including a support member and first and second guide members, said first and second guide members being spaced apart from each other on said support member and extending in a substantially parallel direction to each other from said support member, said second guide member having a longitudinal axis aligned with said substantially parallel direction,
   b. means mounting said label stock guide means on the base plate for rotation about an axis coincident with said longitudinal axis of said second guide member between first and second positions so that said first and second guide members are transverse to the first path of the label stock, and positioning said label stock guide means with respect to the first path so that the label stock extends along said first path between said first and second guide members when said label stock guide means is in said first postion, and the label stock is moved away from said first path when said label stock guide means is rotated to said second position wherein said first guide member moves the label stock into contact with the second guide member to distort the label stock about said second guide member to separate at least a portion of a label adjacent said second guide member from the label stock backing, and,
   c. means for moving said label stock guide member between said first and said second positions.

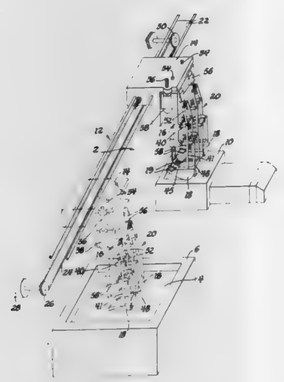
3,923,200
FEEDER FOR SLEEVE-ENCLOSED EDIBLE CONES
Joseph J. Miller, Pickerington, Ohio, assignor to Big Drum, Inc., Columbus, Ohio
Filed June 3, 1974, Ser. No. 475,980
Int. Cl.² B65G 59/10
U.S. Cl. 221—221 **12 Claims**

1. Apparatus for feeding containers of conical or frusto-conical form successively from the lower end of a stack of the nested containers comprising:
   a stacker having a guide passage receiving and positioning a stack of the nested containers;
   an upper jaw assembly at one level below the stacker guide passage and comprising opposed container-engaging jaws on opposite sides of the positioned stack;
   a lower jaw assembly at a still lower level and at a predetermined distance below the first level and comprising container-engaging jaws on opposite sides of the positioned stack;
   means for supporting the lower jaws for movement in a first common horizontal plane towards and from each other, into and out of engagement with the lowermost container at the lower end of the stack, said means including lower support bars movable in a fixed plane towards and from each other and carrying a pair of cam followers;
   means for supporting the upper jaws for movement in a second common horizontal plane parallel to the first plane towards and from each other, into and out of engagement with the next higher container of the stack, said means including upper support bars movable horizontally in a fixed plane towards and from each other and carrying a pair of cam followers;
   an intermediate stripper assembly disposed between the upper and lower jaw assemblies comprising a pair of



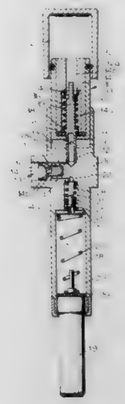
opposed stripper fingers on opposite sides of the stack extending inwards towards each other, means for supporting and guiding, the stripper fingers in a common horizontal plane for movement towards and from each other into and out of engagement with the said next higher container and for simultaneous vertical movement, said means including support rods mounted on horizontally reciporcable guides and carrying cam followers for composite movement both horizontally and vertically between said upper and lower support bars; and
   control means comprising upright fixed cam plates having pairs of cam grooves cooperatively engaging the cam followers on said stripper support rods, upright movable cam plates mounted for vertical reciprocation relative to said fixed cam plates and having respective pairs of cam grooves cooperatively engaging the cam followers of said support bars for said upper and lower jaws and carrying said horizontally reciprocable guides for said stripper support rods, and means for reciprocating said movable cam plates relative to said fixed cam plates for moving said lower jaw supporting means, said upper jaw supporting means and said stripper finger supporting means and said stripper finger supporting means to operate in the following sequence:
   1. move the lower jaws horizontally inwardly into engagement with the lowermost container of the stack to support the stack;
   2. move the upper jaws horizontally outwardly out of engagement with the next higher container of the stack to release the stack after support by the lower jaws;
   3. move the stripper fingers vertically to an upper position adjacent the upper jaws and horizontally outwardly to positions on opposite sides of the upper jaws;
   4. move the upper jaws horizontally inwardly into engagement with the next higher container of the stack to support the stack;
   5. move the lower jaws horizontally outwardly to release the said lowermost container after the next higher container is engaged by the upper jaws; and
   6. move the stripper fingers horizontally inwardly and vertically downwardly to engage the released lowermost container.

3,923,201
DIPPING LADLE WITH LEVEL RESPONSIVE FILLING OPERATION
David A. Hersh, Saginaw, Mich.; Robert L. Fye, Bedford; Kenneth W. Whitworth, Mitchell, both of Ind., and William E. Willis, Frankenmuth, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 23, 1974, Ser. No. 500,059
Int. Cl.² B22D 39/00, 41/06
U.S. Cl. 222—64 **6 Claims**



1. Ladle apparatus for transferring a measured quantity of molten metal from a holding vessel into the cavity of a mold comprising:
   a first carriage mounted for reciprocating horizontal movement between a first carriage fill position over said vessel and a first carriage pour position over said mold;
   a second carriage mounted on said first carriage for vertical reciprocating movement between an upper ladle transfer position and a lower ladle fill position, said second carriage having probe means associated therewith;
   a ladle having a pouring spout on one side thereof and a fill edge on the opposite side thereof;
   linkage means pivotally connecting said ladle to said second carriage and tiltably supporting said ladle and being operative to tilt said ladle to a rearward fill position to a level transfer position and through a plurality of forward pour positions; and
   power means operative to sequentially move said first carriage to said first carriage fill position over said vessel, to tilt said ladle to a fill position, to lower said second carriage from said upper position to said fill position so as to immerse the said rearward edge of said ladle, to raise said second carriage to said second carriage transfer position, to tilt said ladle to said ladle transfer position, to move said first carriage to said first carriage pour position and to tilt said ladle through said pour positions, said probe means being associated with said power means and operative to limit the descent of said second carriage in relation to the molten metal level so as to immerse the ladle a predetermined distance to avoid immersion of said linkage.

3,923,202
NON-SPITTING LIQUID DISPENSING DEVICE WITH PRESSURIZED PRODUCT SUPPLY
Pasquale R. Riccio, Salem, N.H., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Nov. 29, 1973, Ser. No. 419,967
Int. Cl.² B67D 5/54
U.S. Cl. 222—145 **6 Claims**



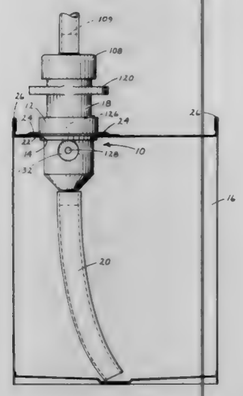
1. A device for dispensing a spray of fine droplets of liquid in gas comprising a dispenser body, said dispenser body having a nozzle means opening out of said body and having a central outlet passage closed on the end remote from the end opening out of the nozzle means and lateral passages opening into said central outlet passage, said dispenser body having an annular mixing chamber around said central outlet passage to which said lateral passages are connected, a source of liquid to be dispensed having means for mechanically pressuring said liquid and operatively associated with said dispenser body, said dispenser body having a product flow conduit therethrough from said source of pressurized liquid to said annular mixing chamber, and a source of gas under pressure operatively associated with said body and said body having a compressed gas flow conduit therethrough separate from said product flow conduit and extending from said source of gas under pressure and opening into said annular mixing chamber at a point spaced from the point at which said produce flow conduit opens into said annular mixing chamber.

3,923,203
TAP FOR AN HERMETICALLY SEALED CONTAINER
David L. Anderson, Jr., 2930 19th St., Bakersfield, Calif. 93301
Filed June 14, 1974, Ser. No. 479,355
Int. Cl.² B67D 5/02
U.S. Cl. 222—153 **18 Claims**

1. A tap particularly adapted to be seated in the discharge orifice of an hermetically sealable container and function in a first mode for hermetically sealing the orifice and in a second mode for facilitating the discharge of liquid contents from the container comprising:
   A. a valve body adapted to be inserted into the discharge orifice of an hermetically sealable container and affixed thereto including an axially extended sleeve and a collar for supporting said sleeve in said discharge orifice including a closure plate affixed to the lowermost end of said sleeve in transverse relation therewith, having a pair of spaced ports defining a first fluid passageway, and valving means displaceable between a valve-open position and a valve-close position relative to said first passageway including a ported block telescopically related to said

sleeve and supported thereby for oscillatory motion relative thereto between a closed position and an open position, and means defining a pair of spaced bores extended through said ported block in communication with said pair of ports when said ported block is in said open position;

B. a fluid delivery body having means defining therein a second fluid passageway extended therethrough including



means for connecting said valve body with a remote source of vacuum, and means for introducing atmospheric pressure into said container as contents are discharged therefrom;

C. removable coupling means for releasably connecting said fluid delivery body with said valve body; and

D. means responsive to motion imparted to said movable coupling means for displacing said valving means to a valve-open position.

3,923,204

APPARATUS FOR STORAGE AND DISCHARGE OF FLOWABLE SOLID MATERIALS

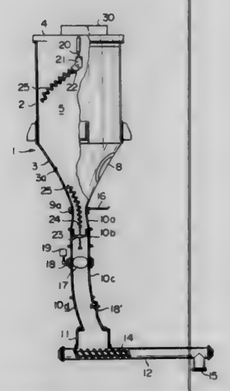
Yasuhiro Kato, 808 Shigaichi-Jutaku, 117 Jinmei-cho, Chiba, Japan

Filed Apr. 25, 1974, Ser. No. 464,115

Claims priority, application Japan, Apr. 27, 1973, 48-47206

Int. Cl.² G01F *11/00*

U.S. Cl. 222—228 **16 Claims**



1. An apparatus for storage and discharge of flowable solid materials which comprises:

a storage tank having upper and lower portions and extending in an axial direction, wherein the upper portion has a space for storing flowable solid materials and the lower portion has a zone for discharging flowable solid materials;

a discharge mechanism disposed in the interior of said storage tank, wherein said discharge mechanism includes a drive shaft disposed in the upper portion of said storage tank in the axial direction of said tank;

an end member mounted rotatably on said discharge zone of the storage tank through a bearing mechanism and a spiral spring member, one end of which is fitted to said drive shaft and the other end of which extends to said end member;

a coupling mechanism for connecting the drive shaft to the shaft of a reduction gear, said coupling mechanism having a space in which said drive shaft is fitted to move vertically and having a slot extending therein in the vertical direction, said drive shaft being engaged with said coupling mechanism by a pin inserted through said slot and a spring disposed in the interior of said space receiving said drive shaft to press the drive shaft downwardly;

said discharge mechanism being so constructed that when said drive shaft is rotated by said reduction gear, said spring member is rotated by rotation of said drive shaft and concurrently is revolved along the inner wall of the storage tank.

3,923,205

LIQUID DISPENSING DEVICE

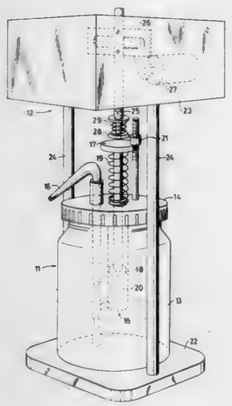
Erik Lars Öhlin, Stocksund, Sweden, assignor to Swelab Instrument AB, Sweden

Filed Mar. 18, 1974, Ser. No. 452,063

Claims priority, application Sweden, Mar. 29, 1973, 7304419

Int. Cl.² G01F *11/06*

U.S. Cl. 222—309 **4 Claims**



1. A device for repetitively dispensing a predetermined quantity of liquid, comprising:

a. a dispenser including a positive-displacement pump having an operating member, said operating member being displaceable between an advanced position defined by a stop and a retracted position defined by an adjustable stop, and means biasing said operating member toward the retracted positon; and

b. an assembly including a base for removably supporting said dispenser, a power-operating driver movably supported on said base for movement between an extended position and a withdrawn position, the distance between said positions of said driver exceeding the distance between said positions of said operating member, and a pusher member slidably carried on said driver for engaging said operating member to displace it to said advanced position of said operating means and for accommodating the difference in said distances, said pusher having a bias toward its extended position exceeding that of said biasing means.

3,923,206

SEED SEPARATOR WITH ADJUSTMENT FOR DIFFERENT SEED SIZES

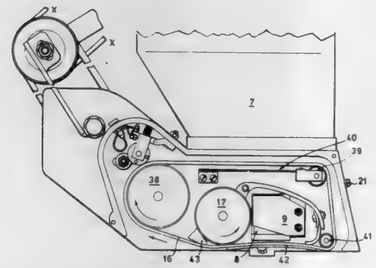
David Gillies, Lyminge, and Robert Anthony Willis, Hythe, both of England, assignors to Stanhay (Ashford) Limited, England

Filed Sept. 13, 1973, Ser. No. 396,696

Claims priority, application United Kingdom, Nov. 16, 1973, 33765/73

Int. Cl.² A01C *7/04*

U.S. Cl. 222—371 **2 Claims**



1. Seed spacing means comprising a seed container operatively connected so as to feed seed to a seed chamber, the chamber having an endless seed conveyor passing therethrough from front to rear in direction of motion, at least one row of longitudinally spaced apertures in the seed conveyor forming cavities for the retention of seed when passing over and upon a spring base means located beneath said conveyor, rotatable seed rejection means rotating in a direction opposite to that of said seed conveyor for ejection of excess seed, the space relationship between the spring base and seed conveyor being such that the seed remains within said cavities and does not project above the surface of said seed conveyor, means at the end of said spring base means through which said seed is discharged from said seed chamber, said seed spacing means being located upon an elongated support framework towably mounted on front and rear wheels.

3,923,207

MICROLITER SYRINGE FOR DISPENSING SMALL, ACCURATELY MEASURED QUANTITIES OF FLUID SPECIMENS

Tuneyoshi Kyogoku, Fujinomiya, Japan, assignor to Jintan Terumo Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1974, Ser. No. 454,838

Claims priority, application Japan, Mar. 29, 1973, 48-38040

Int. Cl.² G01F *11/00*

U.S. Cl. 222—386 **7 Claims**

1. A microliter syringe for dispensing small, arcuately measured quantities of fluid specimens, comprising:

a syringe body having a small bore therethrough;

a cannula mounted on one end of said body and communicating with the said bore;

an elongated plunger of bendable material extending slidably in said bore, the diameters of said plunger and bore being of the order of 0.5 mm whereby said plunger is readily bendable; and

a guide means mounted on the other end of said body with said plunger extending slidably therethrough, said guide means being readily bendable in response to lateral forces on said plunger outwardly of said guide whereby said



guide means prevents kinking of said plunger upon operation of said syringe with the portion of said plunger in said bore being angularly related to the portion thereof extending outwardly of said body.

3,923,208

FLUID EXPULSION SYSTEM HAVING A TAPERED TANK

Raymond A. Bergloff, Woodland Hills, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 19, 1974, Ser. No. 490,165

Int. Cl.² B67D *5/46*

U.S. Cl. 222—386 **2 Claims**



1. A fluid dispensing system comprising:

a. a tank having a forward section, an aft section, and an intermediate section between said forward section and said aft section, said forward section of said tank having a larger diameter than said aft section of said tank, said intermediate section being tapered between the two diameters, said aft section having outlet means therein for dispensing liquid from said tank;

b. a piston assembly carried in said forward section of said tank including a piston for displacement therefrom into said aft section, said piston having a hollow interior and an outer diameter greater than the internal diameter of said aft tank section, said piston assembly including aft and forward closed ends, a first fill and drain valve means carried in said aft closed end of said piston in communication with the interior of said piston assembly and said aft section of said tank, a second fill and drain valve means carried in the forward closed end of said piston assembly in communication with the interior thereof and the atmosphere;

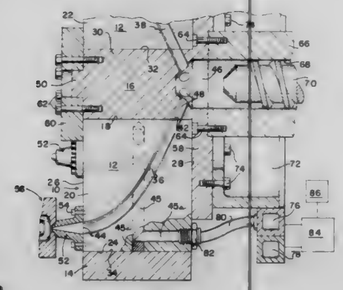
c. gas generator means carried in said hollow interior of said piston for displacing said piston from said forward section into said aft section of said tank whereby responsive to displacement of said piston, the diameter of said aft section expands as a result of increased fluid pressure therein so that the clearance between the piston and tank wall is held constant; and,

d. a shear ring secured to the inner wall of said tank and said piston for releasably securing said piston to said tank, said shear ring disposed for shearing and releasing said piston for the displacement thereof responsive to said gas exerting a force on said piston.

3,923,209
RUNNER MANIFOLD FOR INJECTION MOLDING MACHINE

Siegfried S. Roy, Darien, Conn., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Nov. 5, 1974, Ser. No. 521,092
Int. Cl.² G01F 11/00; B28B 1/24; B29F 1/06, 1/08
U.S. Cl. 222—478 17 Claims



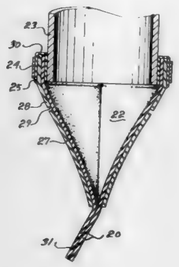
1. A runner manifold for conducting a synthetic resinous material in a flowable state from a source thereof to a plurality of injection nozzles in an injection molding machine, the manifold comprising: a hub member having an outer support surface, means defining concavity in the hub member adapted to communicate with the material source, and means defining a plurality of ports in the hub member in communication with the concavity; a plurality of sector-shaped elements surrounding the hub member and cooperating to define a radially inner surface complementary to the support surface and in engagement therewith, a radially outer surface, and a pair of opposed end surfaces extending between the radially inner and outer surfaces, each sector-shaped element having a pair of opposed lateral faces extending radially between the radially inner and outer surfaces and intersecting the end surfaces, each lateral face being in engagement with the corresponding lateral face of an adjacent sector-shaped element and having an elongate recess formed therein cooperating with the recess in said corresponding lateral face to define a runner passage having an inlet in communication with one of the ports in the hub member, and an inlet at one of the end surfaces; and a clamping ring surrounding the sector-shaped elements and having an inner surface complementary to and to engagement with the radially outer surface defined by the sector-shaped elements.

3,923,210
AUTOMATIC DISCHARGE REGULATOR

Lawrence Donald Alexander Jackson, Montreal, Canada, assignor to Lawjack Equipment Limited, Montreal, Canada

Filed Feb. 21, 1974, Ser. No. 444,508
Claims priority, application United Kingdom, Feb. 22, 1973, 8807/73
Int. Cl.² B65D 37/00
U.S. Cl. 222—494 8 Claims

1. An automatic discharge regulator for a discharge exit from a separator or a classifier comprising a sleeve comprised of two sheets of resilient flexible material in side by side relationship, abutting one another at one end and adapted to sealingly mate with the discharge exit at the other end, said two sheets being sealingly held together along the length of the two opposing edges thereof, two reinforcing pads of flexible, elastic material, respectively, centrally located on and fixedly attached only to the outer surface of each of said two sheets so that each of said two sheets longitudinally extend in the direction of said one end beyond the corresponding said reinforcing pad, said reinforcing pads aiding in resiliently retaining said sheets at said one end in abutting relationship, thereby closing said one end of said sleeve when said regulator is in mating engagement with the discharge exit, the flexible material of said two sheets and of said reinforcing pads having

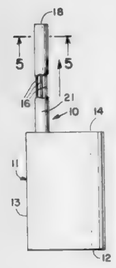


sufficient resilience to allow said one end of said sleeve to be opened by and pass solid particles therethrough.

3,923,211
RETRACTABLE POURING SPOUT

Fred John Spreen, Bayonne, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Oct. 10, 1974, Ser. No. 513,883
Int. Cl.² B67D 3/00
U.S. Cl. 222—528 1 Claim



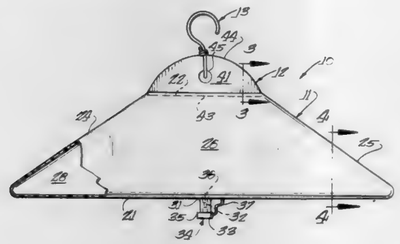
1. In combination a retractable pouring spout and a can, which comprises:
   a. said can having a base, an upwardly extending sidewall, and a top, said top having a circular aperture therethrough;
   b. a bottom annular member of a larger diameter than said circular aperture;
   c. a top annular member of a diameter equal to said circular aperture;
   d. a plurality of rod members communicating between said top and bottom annular members, said rod members and said top annular member slidably through said circular aperture;
   e. a flexible plastic cylindrically shaped sleeve affixed to a bottom surface of said top of said can and a lower surface of said top annular member, said sleeve covering the outside surfaces of said extended rod members; and
   f. a twist top engaging said top annular member protruding above said top of said can.

3,923,212
INFLATABLE HANGER

Robert E. Brunner, 2515 Burnet Ave. No. 1105, Cincinnati, Ohio 45219

Filed Nov. 4, 1974, Ser. No. 520,446
Int. Cl.² A47J 51/093
U.S. Cl. 223—88 1 Claim

1. An inflatable hanger comprising, in combination:
a hollow body member of a truncated triangular configuration having a horizontal bottom edge, a horizontal truncated apex top edge extending parallel to the bottom edge, a pair of inclined side edges joining the ends of the top edge to the ends of the bottom edge, a front triangularly shaped wall surface, and a back triangularly shaped wall surface;
said body member being manufactured of a flexible vinyl plastic material having a 6 mil minimum wall thickness; an airtight chamber defined interiorally of said wall surfaces;
a valve body member formed of a resilient hollow open ended elongated cylindrically shaped stem, one end of the stem affixed to said bottom edge portion of said body member intermediate the opposite ends thereof with the opposite end of said stem extending normal to said bottom edge and projecting vertically downwardly therefrom and terminating at a flat bottom neck end surface;

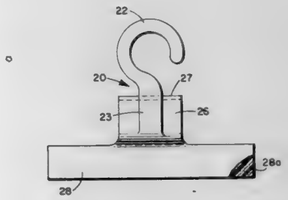


a cylindrically shaped passageway extending axially completely through said stem between said neck end and communicating with said airtight chamber at said opposite end;
a flat circular disc shaped stopper cap having a diameter greater than the exterior diameter of said stem neck end and having a flat outer surface and a flat inner surface and cylindrical side walls;
a solid flexible cylindrically shaped boss member disposed centrally on said stopper member inner surface and extending axially outwardly therefrom concentric therewith, the boss member being of a diameter slightly larger than the diameter of said stem passageway to be snugly received in the neck end portion of said passageway when said stopper cap is placed onto said flat neck end bottom surface of said stem to seal said passageway;
a flexible length of material having one end permanently affixed to a portion of said stopper cap cylindrical side wall surface with the opposite end extending outwardly therefrom and permanently affixed to said bottom edge of said body member to permanently retain said stopper cap with said body member in a manner permitting the stopper cap to be readily affixed to and removed from said stem;
a longitudinally elongated channel member of a U-shaped cross-sectional configuration having a flat bottom surface and parallel side wall surfaces, the bottom surface formed integrally with the truncated apex top edge and extending completely therealong between the opposite ends thereof with said channel opening upwardly therefrom;
a flat tab defining hanger member having a flat front surface, a flat back surface, a horizontal flat bottom edge having a length identical to the length of said channel member, and an arcuate semi-circular curved top edge extending completely between the opposite ends of said tab bottom edge;
said tab member being of a uniform thickness throughout; said tab bottom edge being completely received in said channel member channel with said tab member projecting outwardly therefrom;
adhesive means disposed intermediate said channel member and said tab member for permanently securing said tab hanger member bottom edge to said channel member;
said tab hanger member being manufactured of a rigid plastic material;
a circular aperture extending through said tab member completely between said front and back surfaces thereof;
a hook member formed of an elongated rod shaped body member having one end bent into the shape of a hook with the opposite end extending downwardly therefrom and then bent at a ninety degree angle to pass through said tab member aperture after which it is bent again at a ninety degree angle back onto itself to pass upwardly therefrom in the direction of said hook end and, when passing said curved top edge of said tab member, is bent in a spiral manner about the rod member to permanently affix said hook member to said tab member;
whereby said body member is readily inflated with said hook member utilized for suspending said body member from a closet rod, nail and the like for the hanging and support of articles of clothing thereon.

3,923,213
GARMENT HANGER

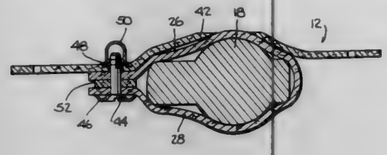
Paul J. George, P.O. Box 86, Brecksville, Ohio 44141, and M. Ted Raptes, 2111 Jefferson Davis Highway, Arlington, Va. 22202

Filed Sept. 27, 1973, Ser. No. 401,292
Int. Cl.² A47J 51/94, 51/96
U.S. Cl. 223—96 4 Claims



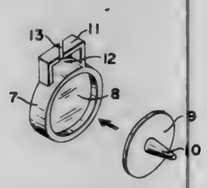
1. A one-piece hanger fabricated from a plastic material for gripping and suspending a garment permitting it to hang freely comprising gripper means, spring-biasing yoke means, and combined hook and gripper separating means:
   a. said gripper means comprising a pair of parallel horizontally-extending gripper members, each of said gripper members having an inwardly disposed vertical gripping surface, said gripping surface comprising a planar dimensional area having frictional gripping means, both of said gripping surfaces being normally spring-biased by said yoke means in a parallel closed contacting position;
   b. said spring-biasing yoke means having a spring action property and a generally arcuate form, said yoke means being above and between said gripper members and centrally disposed along a portion of the horizontal length of said gripper members, said yoke comprising a medial portion parallel to said gripper means which has a smaller thickness than the remaining thickness of said yoke means;
   c. said combined hook and gripper separating means comprising a pair of separate members each extending vertically upwardly from each respective side of said yoke means and normally disposed in parallel relationship, each of said members comprising hook means at the upper extremities thereof;
   d. said plastic material selected from the group consisting of polyvinylchloride, polystyrene, polyethylene, polypropylene, acrylonitrile-butadiene-styrene, filler reinforced plastics, and fibrous reinforced plastics;
whereby said gripper members can be easily separated by squeezing said combined hook and gripper separating means to thereby enable a garment to be inserted between said gripping surfaces and to be frictionally held therebetween upon release of said combined hook and separating means.

3,923,214
HOLSTER
Albert J. Kippen, Springfield, Mass., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.
Filed July 25, 1974, Ser. No. 491,735
Int. Cl.² F41C 33/02
U.S. Cl. 224—2 B 2 Claims



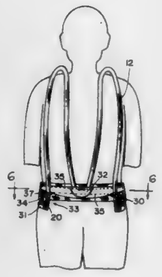
1. A holster for a revolver having a cylinder comprising a holster body having a pair of opposed side walls defining an opening at one end through which the revolver including the cylinder is received for disposition within the holster, each of said side walls having a generally concave pocket formed in the interior surface of said walls, and both concave pockets lying in spaced confronting registry for enclosing the exposed cylinder on each side of the revolver, each of said concave pockets having a distinct upper shoulder for engaging the cylinder at its exposed breech end on each side of the revolver when the revolver is disposed within the holster, the engaging shoulders for yieldably engaging the revolver cylinder to releasably retain the revolver disposed within said holster body against withdrawal forces below a predetermined magnitude of withdrawal force, said engaging shoulders being yieldable to enable withdrawal of the revolver from the holster body in response to a magnitude of withdrawal force above said predetermined magnitude thereof, means carried by said holster body and engaging each of said side walls for adjusting the bearing pressure of said engaging shoulders against the revolver cylinder whereby the predetermined magnitude of the withdrawal force is adjustable, said adjusting means including removable washers and screw means for adjusting the spacing between the opposed sides of said holster body to adjustably transversely space the opposed pockets one from the other, whereby the distance between the pockets may be varied by the number of washers used.

3,923,215
GOLF BALL POSITION MARK ASSEMBLY
Shigeo Suzuki, Tokyo, Japan, assignor to TDK Electronic Company, Tokyo, Japan
Filed June 25, 1973, Ser. No. 373,191
Claims priority, application Japan, Dec. 26, 1975, 47-000247
Int. Cl.² A45F 5/02
U.S. Cl. 224—5 C 2 Claims



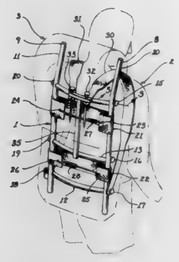
1. A golf ball position marker assembly comprising:
a golf ball position marker comprising a metallic disc with a synthetic resin pointed rod for insertion into the ground projecting from the center of the disc,
a golf ball position marker holder comprising:
a synthetic resin hollow cylinder having its top end open and its bottom end at least partially closed, the bottom end being perpendicular to the side walls of the cylinder,
a permanent magnet positioned to lie within the cylinder and flush against the bottom end of the cylinder,
the golf ball position marker being positioned to lie within the cylinder and flush against the permanent magnet to which it is attracted,
the side walls of the cylinder having a height greater than the combined thicknesses of the permanent magnet and the metallic disc but less than the height of the synthetic resin pointed rod for insertion into the ground projecting from the center of the disc,
U-shaped non-movable holding means integrally mounted to the cylinder to form an opening between the cylinder and the U-shaped holding means to permit passage of a shoe string therethrough to permit attachment of the golf ball position marker assembly to a shoe to permit convenient carrying of the golf ball position marker assembly, the holding means being rectangular shaped and formed at the bottom end of the cylinder and having a groove therein, the bottom portion of the cylinder having a similar groove therein disposed opposite thereto, the oppositely disposed grooves retaining a shoe string passed therethrough.

3,923,216
BACKPACKER'S DEVICE
Fred A. Farnbach, Phoenix, Ariz., assignor to Johnson Diversified, Inc., Racine, Wis.
Filed Nov. 25, 1974, Ser. No. 526,544
Int. Cl.² A45F 3/08
U.S. Cl. 224—8 R 10 Claims



1. A backpacker's device comprising:
a frame structure having a central weight-bearing leg terminating in a lower foot, and two substantially flexible lateral weight-bearing legs, one on either side of said central leg, said lateral legs terminating in lower ends and connected to said central leg remote from said lower foot and lower ends whereby said lower foot and lower ends have relative freedom of movement, said frame structure forming interconnected support columns extending upwardly from said lower foot and lower ends and terminating in shoulder-adjacent portions and generally conforming to the profile of the human back;
a hip-engaging belt, said lower foot secured thereto in position to be adjacent the juncture of a backpacker's spine and pelvis; and
connectors flexibly joining said belt and said lower ends of said lateral legs.

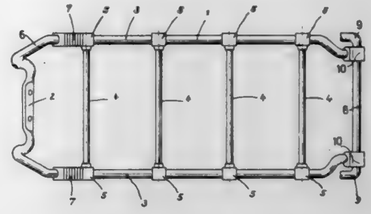
3,923,217
TAKE DOWN BACK PACK
Leslie B. Dean, II, 1412 N. 59th St., Lincoln, Nebr. 68505, and Lance L. Dean, 2852 Tippicanoe Trail, Tucson, Ariz. 85705
Filed Dec. 6, 1973, Ser. No. 422,195
Int. Cl.² A45F 3/08
U.S. Cl. 224—9 3 Claims



1. A take down back pack frame for supporting a payload including a plurality of components assembleable into a shelter structure, said frame comprising:
a. a plurality of vertical members adapted to form a first arch of the shelter structure;
b. a plurality of horizontal members adapted to form a second arch of the shelter structure;
c. means for selectively attaching and detaching said horizontal members to said vertical members to assemble and disassemble said frame, said attaching and detaching means comprising:
1. an aperture extending through each of said vertical members at the point of attachment between said vertical and horizontal members;
2. a tent stake inserted through each of said apertures;
3. an insert disposed within each end of each of said horizontal members for receiving said tent stake, said insert including a passageway for frictionally engaging said tent stake; and
4. means for biasing said vertical members toward one another;
d. a pair of detachable shoulder straps for mounting said frame upon a hiker, said shoulder straps being adapted to guy said first and second arches; whereby, said vertical and horizontal members and said shoulder straps are assembled to form a shelter structure.

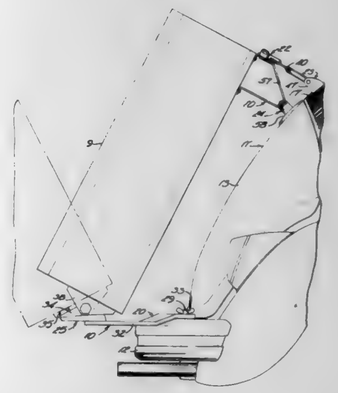
3,923,218
CYCLE LUGGAGE CARRIER CONSTRUCTION, PARTICULARLY LIGHT-WEIGHT BICYCLE LUGGAGE CARRIER
Heinz Niemann, Herford, Germany, assignor to Firma ESGEE-Marby GmbH & Co., Bielefeld, Germany
Filed May 28, 1974, Ser. No. 473,363
Claims priority, application Germany, June 29, 1973, 2333245
Int. Cl.² B62J 7/04
U.S. Cl. 224—32 A 13 Claims

1. Cycle luggage carrier construction having a grid structure defining an article carrying surface, said grid structure being formed by rod-like grid elements comprising longitudinal bar elements (3) and cross rod elements (4), characterized by
molded plastic connecting elements (5) connecting and joining together the cross rod elements and respective longitudinal bar elements (3), forming a single injection molding molded, in place, around said bar elements (3) and the terminal ends of the cross rod elements (4); and wherein the molded plastic connecting elements (5) are



formed with article carrying surfaces on at least one side thereof.

3,923,219
VEHICLE ACCESSORY CARRIER FRAME
Clinton G. Glover, 2556 Linda Vista, and Harold A. Keller, 2001 Linden, both of Clarkston, Wash. 99403
Filed Feb. 28, 1974, Ser. No. 446,598
Int. Cl.² B60R 9/06
U.S. Cl. 224—42.03 A 5 Claims

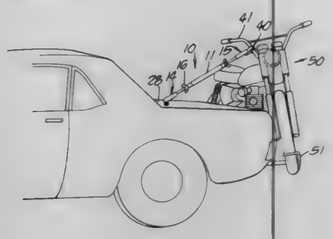


1. An exterior accessory carrier frame for vehicles of the type having a vehicle body with a ventilation grillwork including a horizontally disposed set of upright elongated slots extending through the vehicle body and a set of horizontally elongated louvers spaced inwardly within the body from the set of upright slots, said louvers being formed along a plane substantially perpendicular to the set of upright slots, said accessory including a pivot mounting at its lower end for pivotal attachment of the accessory to the bumper so that the accessory extends substantially upright during transport but may be pivoted outwardly of the vehicle to permit access to and opening of the adjacent vehicle compartment, comprising:
a bracket assembly adapted to be mounted to the accessory at a location adjacent said set of upright slots when said accessory is supported by the carrier frame;
anchor means fixedly mounted to the horizontally elongated louvers and extending outwardly through said upright slots to releasably interengage said bracket assembly to retain the accessory in the transport condition;
and impact absorbing means extending from the bracket assembly on the accessory and engaging a prescribed location on the vehicle body for preventing undesired movement of the accessory relative to the vehicle body.

3,923,220
MOTOR BIKE STABILIZER

Stanley T. Marcyan, 515 W. Windsor Road, Glendale, Calif. 91204

Filed May 24, 1974, Ser. No. 473,131
Int. Cl.² B60R 9/08
U.S. Cl. 224—42.03 B 3 Claims

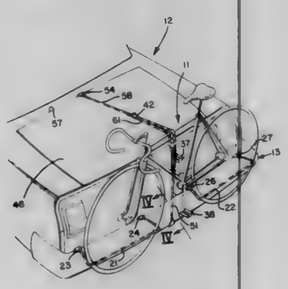


1. A stabilizer device for detachably anchoring a motor bike rigidly stabilized crosswise of the rear of a motor vehicle while being transported, said device comprising a pair of ball coupler sub-units one of which includes means for rigidly mounting the same on the rear of a motor vehicle and the other of which includes means for rigidly mounting the same on the upper part of a motor bike, an elongated rigid stabilizer member having a spherical surfaced socket at each end thereof opening laterally through one side thereof and sized to seat over the ball of a respective one of said ball coupler sub-units to hold a motor bike rigidly stabilized in an upright position crosswise of the rear of a motor vehicle, a manually operable elongated locking jaw pivotally connected to each end of said stabilizer member with the locking end thereof normally positioned to engage the ball of a respective one of said ball couplers to hold the same assembled in a respective one of said spherical sockets, a pair of U-shaped spring keepers one leg of which is insertable through aligned holes at each end of said stabilizer and an adjacent portion of each of said locking jaws to lock said jaws positively against opening so long as said stabilizer member is assembled to said ball coupler sub-units, and said stabilizer member being quickly and fully released from each of said rigidly mounted coupler sub-units by simply withdrawing said spring keepers from said aligned openings and pivoting said locking jaws outwardly away from contact with the adjacent ball of said ball coupler sub-units.

3,923,221
BICYCLE CARRIER

James E. Ballinger, 290 Princeton Drive, Costa Mesa, Calif. 92626

Continuation of Ser. No. 372,663, June 22, 1973, abandoned.
This application Oct. 7, 1974, Ser. No. 512,519
Int. Cl.² B60M 9/10
U.S. Cl. 224—42.03 B 6 Claims



1. A bicycle carrier for removable attachment to either the front hood and bumper or rear trunk lid and bumper of a vehicle, comprising in combination:

a pair of bicycle wheel retaining cable means, one for each bicycle wheel, each having bracket means at the ends thereof for removable fastening to an upper margin of the vehicle bumper and for passing around a lower portion of each bicycle wheel with the bicycle in an upright orientation adjacent the front or rear of the vehicle;

each cable having a length selected to form in conjunction with the adjacent bumper to which it is attached a wheel receiving, elongate horizontal loop bounded on one side by said cable with a width commensurate with that of the wheel and a length smaller than the diameter of the wheel, such that each wheel is supported in both lateral and vertical directions;

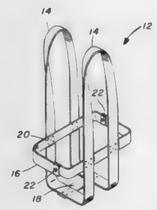
bicycle body cable means having fastening means at the end thereof for removable attachment at one end to a lower margin of said vehicle bumper and for passing upwardly therefrom around a central body portion of the bicycle to a point of attachment at the opposite end of the cable means to the hood or trunk of the vehicle; and

tensioning means associated with said body cable means for applying a constant restraining force to the bicycle for keeping the wheels of the bicycle under tension downwardly in said loops, and means for adjusting said tensioning means.

3,923,222
BAG CARRIER

Richard B. Groves, Colonial Manor Apts. 6F, Chestertown, Md. 21620

Filed Nov. 18, 1974, Ser. No. 524,711
Int. Cl.² B65D 71/00
U.S. Cl. 224—58 3 Claims

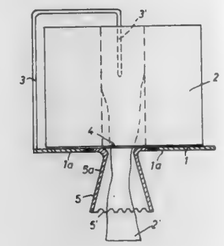


1. A flexible bag carrier in the form of a skeleton frame of flexible material strip which when unfolded can be used for carrying and reinforcing shopping bags and which can be folded to a collapsed storage position when not in use, comprising, a pair of continuous elongated flexible material loop strips, one of said flexible loop strips being longer in length than the other of said flexible loop strips, said one of said flexible loop strips having laterally spaced vertical sections with handle means at the upper ends thereof and having transversely extending lower end sections for supporting a bag, the other of said flexible loop strips being formed of a plurality of sides and joined horizontally to said laterally spaced vertical sections of said one flexible loop strip, and a flexible strip for joining said lower end sections of said one flexible loop strip together, the other of said flexible loop strips being provided with a plurality of snap fasteners to allow said bag carrier to be opened wide to place a shopping bag into the bag carrier for support and reinforcing thereof, said flexible loop strips when opened up for storage lying in substantially the same plane.

3,923,223
HOLDER WITH TEAR-OFF MECHANISM FOR WEB-LIKE MATERIAL

Karl Olof Axel Helmer Larsson, and Lars Lander, both of Industriestrasse 40, CH-6300 Zug, Switzerland

Continuation of Ser. No. 370,575, June 15, 1973, abandoned.
This application Apr. 11, 1975, Ser. No. 567,145
Claims priority, application Germany, Sept. 6, 1972, 2243761
Int. Cl.² B26F 3/02
U.S. Cl. 225—46 5 Claims

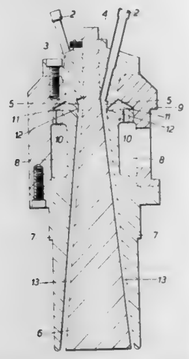


1. A holder with a tear-off mechanism for web-like material, especially for paper rolls, comprising a supporting and holding member for the material including a bearing means forming the bottom of the holder and having a central bottom opening through which the material is withdrawn, said bearing means having a substantially planar upper bearing surface and the holder also comprising a tear-off mechanism connected to the supporting and holding member and arranged following and surrounding said central opening in the bearing means, the tear-off mechanism comprising an elongated, conduit of substantially circular cross-section protruding downwardly from the opening in the bearing means and terminating with teeth at its lower end for severing the web-like material at said lower end, said conduit being dimensioned to permit a user of the holder to insert his fingers into the conduit to grip a portion of the web-like material disposed in the conduit.

3,923,224
FILAMENT HANDLING APPARATUS

James Brock, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 24, 1973, Ser. No. 363,317
Claims priority, application United Kingdom, May 26, 1972, 24950/72
Int. Cl.² B65H 17/32
U.S. Cl. 226—7 16 Claims

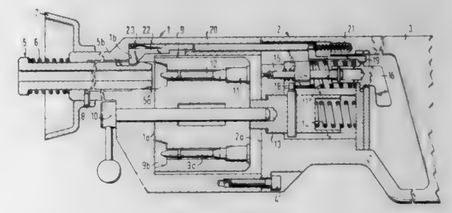


1. A pneumatic spray gun having a plurality of inlet passageways, each passageway being adapted to receive a plurality of filaments in the form of a small bundle, said inlet passageways communicating with a common chamber, a discharge passage extending from said chamber to an outlet, a driving air inlet passageway communicating with said chamber and arranged so that driving air enters said chamber via the driving air inlet and acts on the small bundles of filaments flowing from each of said inlet passageways to entrain the filaments in said discharge passage and to separate the filaments from each other and to discharge the separated filaments from said outlet.

3,923,225
EXPLOSION CHARGE DRIVEN FASTENING ELEMENT SETTING GUN

Elmar Maier, Feldkirch-Tisis, and Robert Tilg, Schaan, both of Austria, assignors to Hilti Aktiengesellschaft, Liechtenstein

Filed Dec. 10, 1974, Ser. No. 531,442
Claims priority, application Germany, Dec. 14, 1973, 2362321
Int. Cl.² B25C 1/12
U.S. Cl. 227—8 8 Claims



1. In an explosive charge driven fastening element setting gun comprising a housing having a front end facing in the firing direction and rear end facing in the opposite direction, said housing having a first bore extending from its front end toward its rear end with the rear end of said first bore spaced forwardly of the rear end of said housing and a chamber located at the rear end of said first bore and extending rearwardly therefrom, means arranged in said housing within said first bore and chamber and axially displaceable therein, said means comprising a first part and a second part disposed in a serially arranged manner one behind the other each axially displaceable relative to the other with said first part having its forward end extending forwardly of the front end of said housing, means for biasing said first and second parts in the direction of the forward end of said housing, a breech ring attached to the rearward end of said housing, said second part under the action of said biasing means having its rearward end spaced forwardly of said breech ring, a firing mechanism axially displaceably mounted in said breech ring, said firing mechanism including a firing pin and a spring biasing the firing pin in the direction of the forward end of said housing, said first and second parts forming a bore for firing fastening elements from the setting gun into a receiving material, said first and second parts being axially displaceable rearwardly through said housing by pressing the forward end of said first part against the receiving material in opposition to the action of said biasing means acting on said first and second parts until the rearward end of said second part contacts said breech ring, wherein the improvement comprises latch means for preventing said firing pin from moving in the direction of the forward end of said housing, said latch means operatively connected to said first part and arranged to prevent the movement of said firing pin in the forward direction when said first part is positioned under the action of said biasing means and said latch means releases said firing pin when said first and second parts are displaced rearwardly in opposition to the action of said biasing means.

3,923,226

BARREL AND MAGAZINE ALIGNMENT ARRANGEMENT FOR A FASTENING ELEMENT SETTING GUN

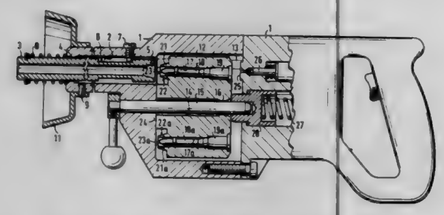
Elmar Maier, Feldkirch-Tisis, Austria, assignor to Hilti Aktiengesellschaft, Liechtenstein

Filed Dec. 10, 1974, Ser. No. 531,443

Claims priority, application Germany, Dec. 13, 1973, 2362074

Int. Cl.² B25C *1/12*

U.S. Cl. 227—8 9 Claims



1. In an explosive charge driven fastening element setting gun comprising a housing having a front end facing in the firing direction and a rear end facing in the opposite direction, said housing having a first bore extending therethrough rearwardly from the front end, a barrel axially displaceably mounted in said bore in said housing, said barrel having a second bore extending therethrough disposed in generally parallel relation with said first bore and said second bore having a forward muzzle end facing in the firing direction of the setting gun and on oppositely facing rearward end, said housing forming a chamber rearwardly of the first bore and disposed in communication with said first bore, said chamber having a central axis disposed in generally parallel relation with and disposed offset to the axis of the first bore in said housing, a drum-type magazine axially displaceably mounted in said chamber and also mounted for rotation about the central axis of said chamber, said magazine having a plurality of angularly spaced third bores therein disposed in generally parallel relation with the central axis of the chamber and each of said third bores being arranged for general alignment with the first bore in said housing, said magazine having a front face extending transversely of the central axis of said chamber and an oppositely directed rear face, said barrel being displaceable from a non-firing position with the rearward end of the second bore spaced forwardly of said magazine to a firing position with the rearward end of the second bore disposed in contact with the surface of said magazine encircling the front end face of the bore in said magazine which is disposed in general alignment with the first bore in said housing, wherein the improvement comprises that at least one of said barrel at its rearward end within said first bore and said drum-type magazine at its front end within said chamber has a radial clearance relative to said first bore and said chamber, respectively.

3,923,227

TAPERED SEAL BETWEEN THE BARREL AND DRUM TYPE MAGAZINE IN A FASTENING ELEMENT SETTING GUN

Elmar Maier, Feldkirch-Tisis, Austria, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

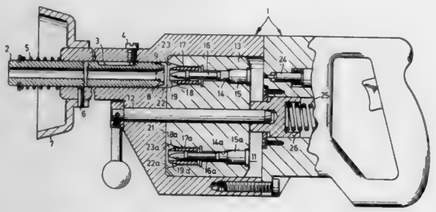
Filed Dec. 10, 1974, Ser. No. 531,444

Claims priority, application Germany, Dec. 13, 1973, 2362073

Int. Cl.² B25C *1/12*

U.S. Cl. 227—8 6 Claims

1. In an explosive charge driven fastening element setting gun comprising a housing, a barrel with a bore therethrough having a forward muzzle end and an oppositely directed rearward end, and said barrel being axially displaceably mounted in said housing and movable rearwardly through said housing into the firing position, a drum type magazine mounted in said housing rearwardly of said barrel, said magazine having a forward face extending transversely of the axis of said barrel and facing toward the forward end of said barrel and a rearward face facing in the opposite direction, said magazine having bores therethrough extending in the axial direction of said barrel and arranged to align with said barrel, the rearward end of said barrel and the ends of said bores in said drum adjacent the forward face thereof each have matching tapered surfaces, wherein the improvement comprises that said matching tapered surfaces include a first tapering surface in the rearward end of the bore in said barrel and said first tapering surface diverging toward the rearward end of the barrel, and



a second tapered surface formed within the bore in said magazine with said second tapered surface facing outwardly relative to the axis of the bore in the magazine and disposed inwardly from the surface forming the bore, said second tapered surface converging in the direction of the forward end of said barrel, said second tapered surface arranged in matching relationship with said first tapered surface so that said first and second tapered surfaces seat in substantially contacting engagement with one another when said barrel is displaced rearwardly into the firing position in one of the bores in said drum with the substantially contacting surfaces of said first and second tapered surfaces extending from the interior of the bore in said barrel in the direction away from the forward muzzle end of said barrel.

3,923,228

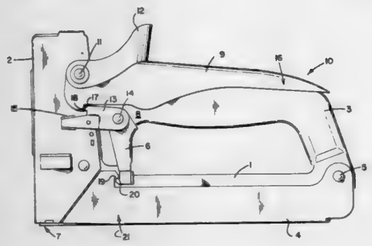
MULTIPLE SHOT FASTENING GUN

Martin Leff, New York, and Paul Olesen, Belmore, both of N.Y., assignors to Swingline, Inc., Long Island City, N.Y.

Filed July 30, 1974, Ser. No. 493,169

Int. Cl.² B25C *1/00*

U.S. Cl. 227—132 3 Claims



1. A tool for driving a fastening element into a work piece comprising:

a. a frame including a ram housing;

b. magazine means mounted on the frame for feeding sequentially a plurality of fastening elements to a driving station;

c. spring loaded ram means mounted in the housing on the frame for movement through multiple arming strokes against the force of the spring in a direction away from the driving station and through successive firing shots back toward the driving station under the force of the spring into driving contact with a waiting fastening element situated at the driving station;

d. movable means engageable with the ram means for advancing the ram means through the arming stroke;

e. release means for effecting disengagement between the ram means and the movable means upon completion of the arming stroke;

f. driving blade means having at least two fastening element driving surfaces said blade means being pivotably attached to the ram means; and

g. guide means associated with said housing engageable with the driving blade means to guide the first of said driving surfaces against the fastening element to complete a first driving shot driving the fastening element through a hole in the stapler housing and to guide the second of said blade surfaces against the fastening element in a successive driving shot to thereby drive the fastening element further into a work piece.

3,923,229

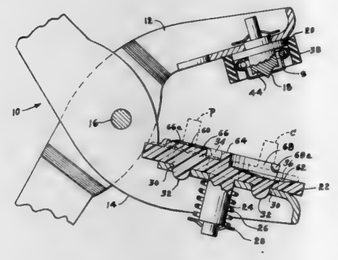
PLIER-TYPE SNAP FASTENER APPLIER

James Brompton Kruger, Oxford, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Jan. 13, 1975, Ser. No. 540,520

Int. Cl.² A41H *37/04*

U.S. Cl. 227—144 1 Claim



1. In a snap fastener applier comprising a plier-like tool having a pair of opposing jaw elements, one of the jaw elements presenting a pyramidal punch directed toward the other of the jaw elements, the said other jaw element being provided with a turntable pivotally attached thereto, the improvement wherein the turntable has on either side of the pivotal attachment to the jaw element a pair of cooperant arcuate arms extending laterally of the turntable and integrally formed with the turntable of molded plastic, the arms of each pair being concentric and each of the arms having adjacent its distal end with respect to the turntable an enlarged nib, the arms being disposed partly in a cut-out in the turntable to permit substantial resilience of the arms, the arms being adapted to yield and embrace the head portion of various sizes of eyelets, with the head of the eyelet disposed underneath the nibs to secure it firmly against the turntable.

3,923,230

METHOD OF MAKING A SWIMMING POOL GUTTER

James A. Patterson, and John F. Ogden, both of Columbus, Ohio, assignors to Lifetime Metal Products, Inc., Columbus, Ohio

Filed June 14, 1973, Ser. No. 369,894

Int. Cl.² B23K *31/02*; E04H *3/20*

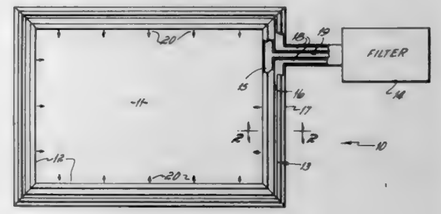
U.S. Cl. 228—141 4 Claims

2. The method of forming a recirculating system in a swimming pool comprising a tank having side and end walls, and a filter system associated with said tank, said method comprising the steps of:

bending sheet metal to form a coping which includes a gutter back wall and bottom wall,

forming an elongated conduit-enclosing member having inner and outer longitudinal edges,

welding said two longitudinal edges of said conduit-enclosing member to said sheet metal along continuous longitudinal welds to form a liquid-tight conduit between the sheet metal and the elongated member, the outer of said longitudinal edges being spaced from said back wall so that said back wall, bottom wall and conduit-enclosing member form a return gutter,



transversely welding a plurality of said sheet metal and said conduit-enclosing members in abutting relation to provide a continuous conduit and gutter around the perimeter of said tank,

connecting said gutter to the inlet side of said filter,

connecting said conduit to the discharge side of said filter for the introduction of filtered water under pressure into said pool,

pressure testing said conduit while the welds forming it are exposed for repair, and

forming inlet openings in said conduit for directing water into said tank,

whereby substantially the entire welds forming said conduit are exposed for repair after said tank is constructed.

3,923,231

DIFFUSION BONDING OF GOLD TO GOLD

Edward Catalano, Pleasanton, and Donald L. Ornellas, Livermore, both of Calif., assignors to The United States of America as represented by the Energy Research and Development Administration, Washington, D.C.

Filed Apr. 11, 1975, Ser. No. 567,230

Int. Cl.² B23K *19/00*

U.S. Cl. 228—194 5 Claims

1. A process for diffusion bonding gold to gold comprising:

1. placing a mercury interlayer between two similarly surfaced gold pieces which are to be bonded together,

2. pressing together the two gold surfaces with the mercury interlayer between them,

3. while pressing the gold-mercury-gold assembly together, heating the assemly to a temperature of about 100°C, and

4. maintaining said assembly under pressure at said temperature for a period of time exceeding two days.

3,923,232

METHOD OF BONDING $RECO_5$ MAGNETS, APPARATUS FOR EFFECTING THE METHOD AND PERMANENT MAGNETS PRODUCED BY THE METHOD

Jaroslaw Houska, Niederrohrdrof, and Jan Strejcek, Turgi, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed June 20, 1974, Ser. No. 481,185

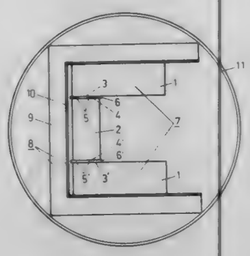
Claims priority, application Sweden, June 29, 1973, 739489

Int. Cl.² B23K *1/04*

U.S. Cl. 228—221 10 Claims

1. A method of braze bonding together at least two shaped permanent magnets wherein said shaped permanent magnets are formed of an alloy of the formula $RECo_5$ wherein RE is at

least one metal selected from the group consisting of rare-earth metals, alloys thereof and misch metal, which comprises: applying a solder foil of a thickness of 10μ to 50μ between the

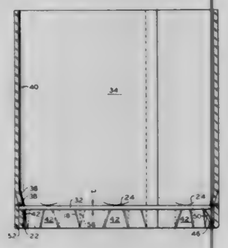


surfaces of said shaped permanent magnets intended to be joined, and heating said assembly to a temperature sufficient to cause melting of said solder, wherein said heating is effected in a non-oxidizing atmosphere.

3,923,233
CONTAINER AND PAPERBOARD BLANKS FOR FORMING SAME

Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 261,370, June 9, 1972, abandoned. This application Dec. 4, 1973, Ser. No. 421,507
Int. Cl.² B65D *3/14*
U.S. Cl. 229—5.5 **17 Claims**



1. A packaging container comprising:

a wall member having first and second overlapping end portions secured one to the other for forming a continuously curved container wall having a central axis, first and second edges, and first and second edge portions, said container wall having a plurality of spaced-apart cuts formed in said first edge portion of said container wall with a middle portion of each said cut being spaced a uniform distance from said first edge of said container wall, each said cut being of arcuate configuration with the ends of each said cut being located closer to said second edge of said container wall than said middle portion of each said cut, portions of the container wall adjacent said cuts toward said second edge of said container extending inwardly to a location spaced from said axis a distance less than the distance from said axis to the remainder of said container wall, said portions thereby forming a plurality of ledges along an inner surface of said container wall;

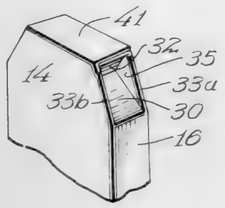
a bottom closure member having a continuously curved perimeter and being positioned at said first edge portion of said container wall in contact with said ledges for closing one end of said container, said perimeter of said bottom closure member being of substantially the same length as said first edge of said container wall; and

means for maintaining said bottom closure member in contact with said ledges.

3,923,234
DOUBLE WEB CORNER CARTON

Raymond W. Lund, Jr., N.E. Blaine, Minn., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed Apr. 11, 1975, Ser. No. 567,314
Int. Cl.² B65D *5/02*
U.S. Cl. 229—37 E **2 Claims**



1. In a blank for a carton having a pair of parallel face panels, said face panels having parallel vertical lateral edges and parallel horizontal top and bottom edges, and side walls foldably connecting adjacent lateral edges of said face panels, a corner structure, comprising:

a first fold line extending horizontally across a first of said side walls and spaced from the top end thereof;

first diagonal fold lines in each of said face panels extending upwardly from the ends of said first fold line in said first side wall and terminating along said top edges of said face panels;

a second horizontal fold line extending across said first side wall and positioned in vertical alignment with said top edges of said face panels, said first side wall extending vertically beyond said top edges of said face panels;

second diagonal fold lines extending upwardly from the ends of said second horizontal fold line;

first angular reinforcing panels positioned along each lateral edge of said first side wall and defined by the lateral edges of said side wall, said first and said second diagonal fold lines;

second angular reinforcing panels positioned along each lateral side of said first side wall and above said first angular panels, said second panels defined by the lateral edges of said first side wall and said second diagonal fold lines.

3,923,235
PROTECTIVE CARTON

Harry I. Roccaforte, Western Springs, Ill., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed Feb. 19, 1975, Ser. No. 550,948
Int. Cl.² B65D *25/14, 5/58*
U.S. Cl. 229—39 B **5 Claims**

1. In a one-piece carton for shipping and storing fragile articles, said carton made from foldable paperboard or similar sheet-like material and having four side wall panels rectangularly arranged to form an elongated tube and having top and bottom sets of closure flaps for closing the ends of said carton, improved means within said carton for holding said fragile article, said improved means comprising the following:

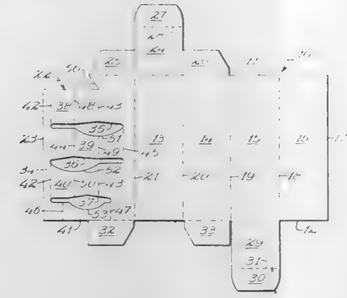
a cushioning section made from said material and extending between two opposite panels of said four side wall panels, said section extending substantially the length of said carton;

said cushioning section having an upper web member extending between said two opposite panels near one lateral side of said two panels;

said cushioning section also having a middle web member extending generally parallel to said upper web member but positioned below said upper web member and near the opposite lateral side of said two panels;

a lower web member beneath said middle web member and positioned in alignment with said upper web member;

a tube supporting fourth web positioned below said lower web member and extending between said two opposite panels near the center thereof;

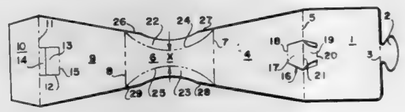


said members and said fourth web connecting in said cushioning section to elongated glue sections connected adjacent to respective opposite lateral edges of said two opposite panels.

3,923,236
ARTICLE CARRIER

Rodney K. Calvert, Dunwoody, Ga., assignor to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 397,166, Sept. 14, 1973, Pat. No. 3,861,530. This application Oct. 21, 1974, Ser. No. 516,305
Int. Cl.² B65D *85/62, 21/00*
U.S. Cl. 229—40 **3 Claims**



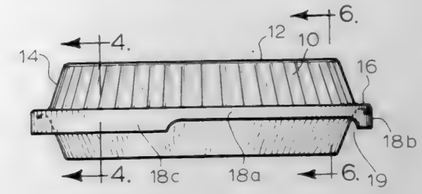
1. An article carrier blank comprising a top panel, a locking tab foldably joined to one side edge of said top panel, a first side panel foldably joined to the opposite side edge of said top panel, holding tabs struck from said top panel and said first side panel respectively adjacent the fold line therebetween, said holding tabs being foldably joined to each other, a retaining strap foldably joined to the edge of said first side panel remote from said top panel, retaining flaps foldably joined to the side edges of said retaining strap, a second side panel foldably joined to the end of said retaining strap remote from said first side panel, a retaining tab struck from said second side wall remote from said retaining strap to define a locking aperture, said retaining tab being foldably joined along an edge of said locking aperture, and a lap panel foldably joined to said second side wall along an edge thereof remote from said retaining strap.

3,923,237
PACKAGE AND METHOD OF FORMING SAME

Donald J. Bostrom, Northbrook, and Stanley Moorad, Niles, both of Ill., assignors to Ekco Products, Inc., Wheeling, Ill.

Filed Aug. 6, 1974, Ser. No. 495,197
Int. Cl.² B65D *5/64, 43/08*
U.S. Cl. 229—43 **3 Claims**

1. A reclosable package comprising a circular pan having a bottom wall, a side wall extending upwardly and outwardly from said bottom wall, and a peripheral flange extending outwardly from the upper end of said side wall; a product in said pan; and a preformed circular dome cover of biaxially oriented thermoplastic material, said cover comprising a top wall, a side wall depending downwardly from said top wall, a peripheral shoulder extending outwardly from said side wall and a peripheral skirt depending downwardly from said shoulder, said shoulder overlying said pan flange, said skirt extending below said pan flange and having the periphery thereof

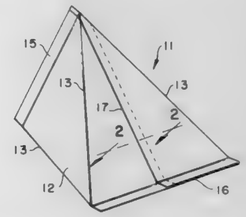


curled beneath said flange, said skirt comprising long portions and short portions whereby said long portions curl under said flange a substantial portion of the lateral dimension of the flange and said short portions curl just slightly under the flange, said short portions comprising less than one-half the total circumferential length of said skirt, and at least one long portion being liftable from securement with the pan flange.

3,923,238
NON-WICKING CONTAINER

Manuel A. Thomas, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed May 22, 1974, Ser. No. 472,411
Int. Cl.² B65D *5/42*
U.S. Cl. 229—48 T **5 Claims**



1. A container comprising a paper unit with edges sealed to each other and edges located on the inside of the container coated with the reaction product of a vinyl polymer with reactive groups and a halo-metallic Werner type complex.

3,923,239
CIGARETTE CASE

Bong Gill Lee, 732-21 Hannam-Dong, Youngsan-ku, Seoul, South Korea

Filed Apr. 18, 1974, Ser. No. 461,851
Claims priority, application South Korea, May 22, 1973, 3075
Int. Cl.² B65D *5/54, 17/00*
U.S. Cl. 229—51 C **8 Claims**

1. A cigarette package comprising:

a. a top;

b. a front;

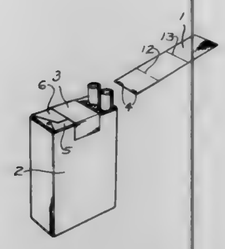
c. a back;

d. two sides;

e. folded top flaps connected to the front and back of the package having aligned intermediate transverse slots therein;

f. a tab, having a width dimension the same as the cigarette package, releasably adhering to the inside of a lateral side of the package and continuously extending below said

folded top flaps from said lateral side to the opening formed by the aligned slots in said folded top flaps and above said flaps from said opening back toward said lateral side; and



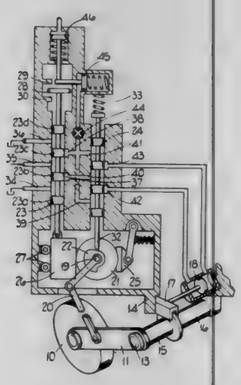
g. means for releasably attaching said tab to a cigarette; whereby pulling said tab in the direction of said lateral side opens the top of the package and draws the cigarette up through the open top.

3,923,240

LAND VEHICLE WHEEL SUSPENSION ARRANGEMENT

Stanley George Glaze, Brierley Hill, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed Aug. 26, 1974, Ser. No. 500,578
Int. Cl.² B60G *11/64*
U.S. Cl. 280—124 F **5 Claims**



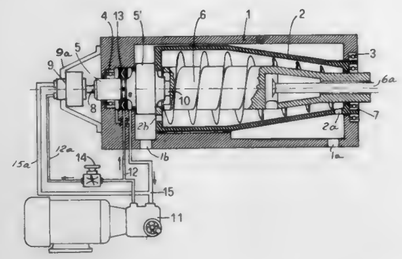
1. A land vehicle wheel suspension arrangement for a wheel carrier displaceable in opposite directions from a datum position relative to a vehicle body, including a control device comprising first means sensitive to the direction in which the wheel carrier is displaced from said datum position relative to the body, second means sensitive to the direction in which the wheel carrier is moving relative to the body, a wheel carrier suspension, clutch means movable between a position stiffening said suspension and a position softening said suspension, and means actuable by said first and second direction sensitive means for operating the clutch means to stiffen the suspension when the directions sensed by both direction sensitive means are the same and operating the clutch to soften the suspension when said directions are opposite.

3,923,241

DECANTING CENTRIFUGE

Ivan Jaroslav Cyphelly, Forchstrasse 968, Hinteregg, Switzerland (8128)

Filed July 18, 1974, Ser. No. 489,490
Claims priority, application Switzerland, July 21, 1973, 10690/73
Int. Cl.² B04B *1/20, 9/00*
U.S. Cl. 233—7 **6 Claims**



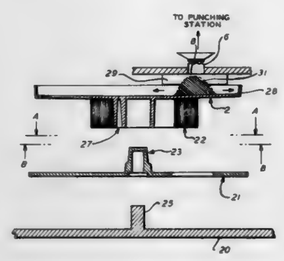
1. A decanting centrifuge for separating solids and liquids from a mixture comprising a drum supported for rotation about an axis, a worm mounted within said drum for roation about said axis, a main drive motor coupled to said drum means for driving said drum at a first rotational speed, and drive means for driving said worm at a second speed different from said first speed, said drive means comprising a hydraulic motor mounted coaxially with said drum and said worm, said hydraulic motor being connected to said main drive motor and rotated thereby and coupling said main drive motor to said drum, said hydraulic motor having a casing rigidly connected to said drum and a shaft rigidly connected to said worm so that said hydraulic motor casing rotates at the same speed as said drum and said worm rotates at a speed different from the speed of said drum by the speed differential between said casing and said shaft, and rotary transmission means engaging said casing for supplying a hydraulic drive medium to said hydraulic motor.

3,923,242

CHAD BOX

Edward Feldman, Teaneck, N.J., assignor to Litton Business Systems, Inc., Pinebrook, N.J.

Filed Mar. 31, 1975, Ser. No. 563,672
Int. Cl.² G06K *1/02*
U.S. Cl. 234—128 **9 Claims**



1. A tape punch apparatus having a punch mechanism for punching information into a tape feeding from a tape roll comprising:

a housing unit having an upper and lower section located above each other,

a drawer means located within said lower section,

said punch mechanism located in said upper section,

chad guiding means, connecting said upper section to said drawer means, for guiding chad generated by the operation of said punch mechanism into said drawer means, and

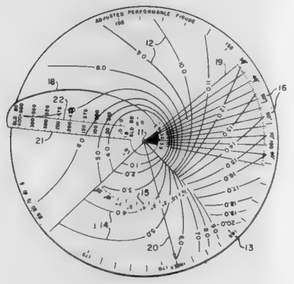
positioning means for locating a tape roll within said drawer.

3,923,243

SHIP BOARD SONAR RANGE COMPUTER

Daniel Barron, 9326 Edmonston Road, Greenbelt, Md. 20770

Filed Sept. 22, 1972, Ser. No. 290,420
Int. Cl.² G06C *3/00*
U.S. Cl. 235—88 R **2 Claims**



1. A range computer for computing the probable range of detection for a hull mounted sonar; which comprises,

a base plate,

said base plate including adjusted performance figures equally spaced about its outer edge and range curves over three guadrants thereof, with the remaining guadrant including temperature gradient values increasing in value clockwise and range curves related to said temperature gradient values,

a transparent surface layer temperature disc overlaying said base and rotatable about its center relative thereto,

said transparent temperature disc including thereon a surface water temperature scale and an index line related thereto,

a transparent, layer depth scale cursor overlaying said transparent temperature disc and rotatable about the center of said base plate

said temperature disc and said layer depth scale cursor cooperate with said adjusted performace figure scale to determine range in the first layer.

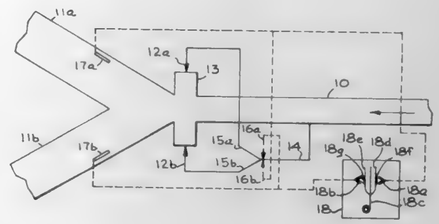
3,923,244

FLUIDIC APPARATUS FOR AIR-CONDITIONING SYSTEM

Gene W. Osheroff, 2813 Cameo Circle, Las Vegas, Nev. 89107

Continuation-in-part of Ser. No. 101,901, Dec. 28, 1970, Pat. No. 3,680,776, which is a continuation-in-part of Ser. No. 839,313, July 7, 1969, abandoned. This application July 28, 1972, Ser. No. 276,014. The portion of the term of this patent subsequent to Aug. 1, 1989, has been disclaimed.
Int. Cl.² F24F *7/00*
U.S. Cl. 236—49 **46 Claims**

1. A method of conditioning the air in an open space comprising: providing a source of continuously flowing conditioned air under pressure; directing a plurality of pulses of said conditioned air from said source to said space; and varying the duration of said pulses if the ambient air temperature of the space differs from a predetermined reference temperature.

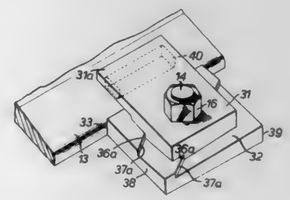


3,923,245

RAIL CLIP ASSEMBLY

Ian McGregor Marchant, Ashtead, England, assignor to Kins Development Limited, England

Filed Mar. 8, 1974, Ser. No. 449,531
Claims priority, application United Kingdom, Mar. 9, 1973, 11617/73; Dec. 3, 1973, 55841/73
Int. Cl.² E01B *9/66*
U.S. Cl. 238—347 **7 Claims**



1. A clip assembly for use in securing a rail to rail support means comprising:

a first body;

a second body;

said first body being adapted to be assembled with said second body so as to overlie a portion of the rail and to overlie said second body with a surface of said first body contacting a surface of said second body;

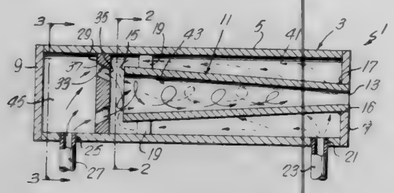
said second body defining a lateral face for abutment with a lateral face of the rail;

means defining an aperture through each body, which apertures are arranged to be in register when said bodies are assembled for use in securing said bodies to the rail support means, said aperture in said second body being elongate to permit said bodies to assume different relative positions when assembled; the direction of elongation being inclined at an acute angle to the direction of extent of the rail,

each of said contacting surfaces including a laterally directed portion, which portions are abutted for transmitting forces applied by the rail to said second body to said first body, said laterally directed surface portions extending in the direction of elongation of said aperture in said second body so that said surface portions remain in abutment in said different relative positions fo said bodies;

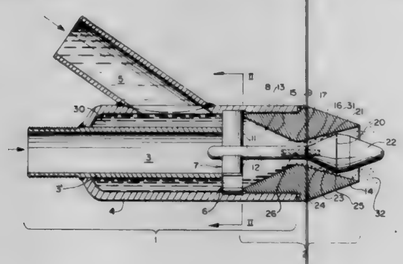
said second body increasing in thickness in the direction of approach to said inclined laterally directed surface portions to said rail.

3,923,246
METHOD AND APPARATUS FOR USE IN MAKING SNOW
Oscar F. Cloutier, 500 rue Fillion, St. Jovite, and Charles P. Duncan, Mont-Tremblant Lodge, Mont-Tremblant, both of Quebec, Canada
Filed July 11, 1974, Ser. No. 487,649
Int. Cl.² F25C 3/04; B05B 7/10, 7/04
U.S. Cl. 239—2 S 9 Claims



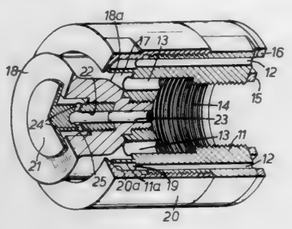
1. A method for use in making snow comprising:
forming a spiraling column of air and moving it in one direction to and through an unobstructed mixing chamber and out a nozzle,
flowing water in a direction substantially opposite to the one direction along the outside of the nozzle and chamber,
thereafter introducing said water into the spiraling column of air at a space adjacent the inlet to the mixing chamber, said space formed between said mixing chamber and the means used to form the spiraling column, said water being introduced substantially uniformly about the periphery of said spiraling column of air to thoroughly mix and disperse the water with the air in the mixing chamber.

3,923,247
SNOWMAKING DEVICE
Jeffery A. White, London, Canada, assignor to Command Engineering (International) Ltd., London, Canada
Filed July 15, 1974, Ser. No. 488,642
Int. Cl.² F25C 3/04; B05B 7/12, 1/32
U.S. Cl. 239—14 6 Claims



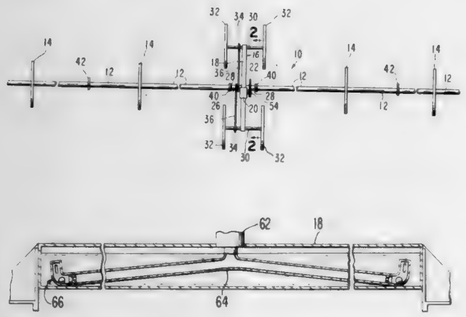
1. In a snowmaking device of the type comprising a gun section having an outer water discharge conduit, a coaxial inner air discharge conduit and a nozzle connected to the downstream end of said gun which is coaxial therewith, the improvement comprising a nozzle having an upstream conically converging collector section and a downstream conically diverging horn section, said inner air discharge conduit being larger than the smallest diameter of said conically converging collector section and directed coaxially at said collector section to effect a first acceleration and atomization of water entering said section, a circular restricter positioned internally of said horn section and coaxial therewith whereby the wall of said horn section and the radial extent of said restricter define an annular gap, the area of said annular gap being less than the area of the circular opening defined between the collector section and the horn section to effect a second acceleration and atomization of water particles.

3,923,248
LIQUID FUEL ATOMIZER
Alan Cresswell, Rochester, England, assignor to Decafix Limited, Rochester, England
Filed Oct. 25, 1974, Ser. No. 518,094
Claims priority, application United Kingdom, Oct. 26, 1973, 49871/73
Int. Cl.² B05B 15/02, 7/06, 1/26
U.S. Cl. 239—113 5 Claims



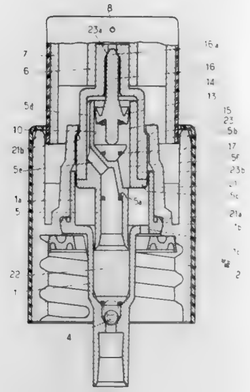
1. An atomizer comprising an outer, annular liquid nozzle chamber which converges towards an annular outlet therefrom, a coaxial, inner gas nozzle chamber which converges towards an annular outlet therefrom, a rigid annular deflector member positioned coaxially with respect to said outlet openings and extending at least from said outlet openings to a point downstream of said outlet openings, a further deflector arranged spaced apart from and coplanar with the outer end surface of the deflector member and a gas bleed duct formed in the deflector member so as to lead from a gas supply duct to the space between the deflector member and further deflector member.

3,923,249
MOBILE IRRIGATION SYSTEM
John A. Mortimer, San Jose, Calif., assignor to Shur-Rane Corporation, San Jose, Calif.
Filed Jan. 27, 1975, Ser. No. 544,171
Int. Cl.² B05B 3/02; B67D 5/08
U.S. Cl. 239—212 6 Claims



1. An improved, mobile irrigating system of the type having a plurality of wheel mounted irrigating pipes coupled in line to a central, internal combustion engine powered unit which turns the irrigating pipe wheels by turning the line of coupled pipes wherein the improvement comprises a sealed, hollow cross support structure for the central power unit, the hollow space of the cross support constituting a fuel tank for the engine, and indicator means mounted on selected ones of the wheels and aligned with each other to indicate the rotational orientations of the pipes about their longitudinal axes.

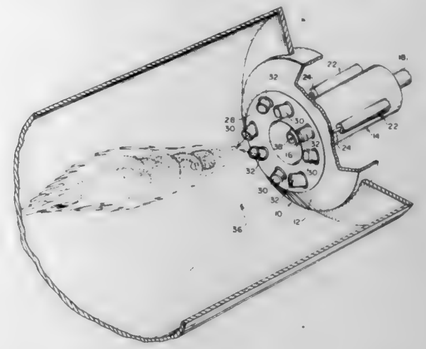
3,923,250
LIQUID PERFUME ATOMIZERS
Michel Boris, Paris, France, assignor to Societe Technique de Pulverisation, Paris, France
Filed Feb. 10, 1975, Ser. No. 548,881
Claims priority, application France, Feb. 8, 1974, 74.04939
Int. Cl.² B05B 9/04
U.S. Cl. 239—321 7 Claims



1. In an atomizer for perfumes and other liquids,
means defining a first cylinder forming a pump chamber,
a non-return valve,
a dip tube communicating with the first cylinder through the non-return valve, the dip tube being arranged to extend into the liquid to be atomized,
a hollow, first, piston slidable in the first cylinder,
an extension, of increased cross-section, to the first piston and defining a second cylinder,
a second piston slidable in the second cylinder,
an atomizing nozzle,
a valve controlling communication between the first cylinder and the atomizing nozzle, said second piston being connected to the valve, and
resilient means acting on the second piston and biasing the valve into a position in which communication from the first cylinder to the nozzle is interrupted.

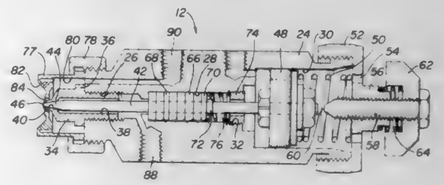
3,923,251
OIL BURNER TURBULATOR END CONE, AND METHOD FOR GENERATING COUNTER-ROTATING AIR FLOW PATTERNS
Norman E. Flournoy, Richmond, Va., assignor to Texaco Inc., New York, N.Y.
Continuation-in-part of Ser. No. 93,347, Nov. 27, 1970, abandoned. This application Dec. 1, 1972, Ser. No. 311,199
Int. Cl.² B05B 7/10; F23D 11/16
U.S. Cl. 239—402.5 7 Claims

1. In an oil burner comprising an elongated air blast tube having a central axis with opposed inlet and discharge ends, said tube being communicated with a source of pressurizing air, a fuel nozzle tip and ignition means in said tube to ignite an air-fuel mixture, the improvement in said oil burner which comprises;
a cap carried on the inlet end of said air blast tube, said cap being provided with orifice means comprising at least two pairs of closely spaced orifices, each orifice being communicated with a source of air, said at least two orifice pairs being spaced annularly from each other about said blast tube central axis,
each orifice opening in the respective orifice pairs having a longitudinal axis directed to form an angle with a plane passing normal to said blast tube central axis, the longitudinal axes of said respective orifice openings being further biased toward each other,
whereby adjacent streams of air issuing from adjacent orifice pairs are swirled in a common rotational direction to interact and mutually form a rotatably expanding, conically shaped air stream along said air blast tube, and flowing toward the discharge end of the latter,



the respective swirling air streams from each orifice pair being spaced about said blast tube central axis to define therebetween an area of high turbulence and shear along the inner margin of the conically shaped air stream into which atomized fuel is introduced.

3,923,252
SPRAYING APPARATUS
Walter B. Warning, Sr., Chicago, and Walter B. Warning, Jr., Schaumbert, both of Ill., assignors to Automation Development and Engineering Corporation, Elk Grove Village, Ill.
Filed Dec. 9, 1974, Ser. No. 530,615
Int. Cl.² B05B 7/12
U.S. Cl. 239—411 7 Claims



1. Apparatus for atomizing and spraying a liquid, comprising
a body member having a bore therein,
a tubular tip member mounted in one end of said bore and having a forewardly disposed liquid orifice defined by a conical valve seat,
a needle valve having a frusto-conical valve portion reciprocably mounted in said bore for movement of said valve portion into and out of sealing engagement with said valve seat,
spring means mounted in said bore urging said needle valve into sealing engagement with said valve seat,
fluid operated means mounted in said bore for moving said needle out of sealing engagement with said valve seat,
a plurality of sealing gaskets interposed between an intermediate portion of said needle and said bore for preventing fluid from traveling across said intermediate portion of said needle,
a plurality of bushings slidably disposed on said needle and spaced apart by a plurality of said gaskets for guiding said

needle for movement along the central longitudinal axis of said valve seat, and

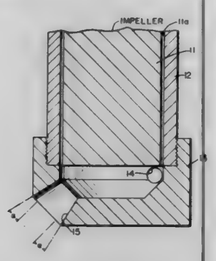
passageway means for supplying said liquid to said bore forwardly of said sealing gaskets.

3,923,253

SPRAYING NOZZLE

Sherman A. Stewart, Palos Verdes Peninsula, Calif., assignor to Grefco, Inc., Bala Cynwyd, Pa.

Filed May 21, 1974, Ser. No. 471,881
Int. Cl.² B05B *1/34, 1/00*
U.S. Cl. 239—463 **10 Claims**



1. A fluid spray nozzle comprising:

a. spray fluid inlet means;

b. pressurized gas inlet means;

c. a chamber for receiving spray fluid from said spray fluid inlet means and pressurized gas from said pressurized gas inlet means; and

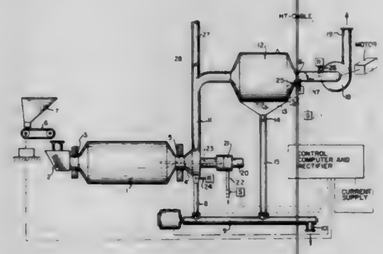
d. fluid outlet spray means having an unimpeded open channel connected to said chamber and directed at an angle away from the chamber, said spray means including an outlet orifice having a circular opening at one end thereof and an ellipsoidal opening at the other end thereof.

3,923,254

CEMENT MILL AND METHOD OF STARTING SAME

Poul Frede Carlsen, Copenhagen Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Dec. 4, 1973, Ser. No. 421,531
Claims priority, application United Kingdom, Dec. 4, 1972, 55901/72
Int. Cl.² B02C *21/00*
U.S. Cl. 241—30 **32 Claims**



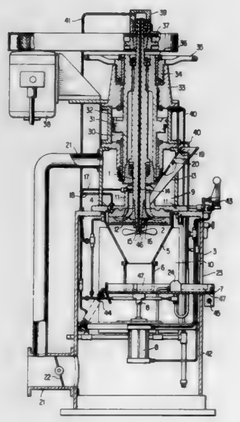
1. A method of operating a grinding plant having a grinding mill with means for introducing cooling water into the mill, means for providing a controlled ventilating air supply into the mill for ventilating the mill, an electrostatic precipitator means for removing dust from the air exiting from the mill, the improvement which comprises starting said grinding mill while simultaneously maintaining said ventilating air supply at a minimum level until the temperature of the ground product of the mill is increased to a predetermined level requiring the introduction of cooling water to maintain the temperature of the ground product at least at said predetermined level, activating the flow of cooling water into the mill when said predetermined temperature level of said ground product is reached, providing temperature sensing means to measure the temperature of the ground product of the mill, and controlling said ventilating air supply in direct dependence upon the flow of cooling water into said mill such that the temperature levels of the mill are thereby controlled by the air flow and the water introduced therein.

3,923,255

VERTICAL SPINDLE PULVERISERS

Keith W. G. Leonard, 4 Geneva St., Lakefield, Benoni, South Africa

Filed Apr. 30, 1974, Ser. No. 465,592
Claims priority, application South Africa, July 3, 1973, 73/4492
Int. Cl.² B02C *7/08*
U.S. Cl. 241—56 **7 Claims**



1. A vertical spindle pulverizer comprising a housing structure;

a spindle vertically and rotatably mounted in the structure; means for rotating the spindle;

a first grinding disc secured to the spindle near the lower end thereof;

a second complementary grinding disc fixed in the structure above said grinding disc and with the spindle passing through a central aperture therein;

a compartment in the structure about and below said discs;

a removable receptacle located in the structure below said discs and in said compartment;

a feed hopper communicating with a space between the discs;

the pulverizer being characterized in that it includes means for supplying air under pressure automatically to sweep the interior of the pulverizer, said means comprising:

an axial central bore through said spindle;

at least one radial outlet through the spindle from said bore which emerges facing said second grinding disc;

at least one radial outlet through the lower end of said spindle below said first disc;

a source of compressed air connected to said axial central bore in the spindle;

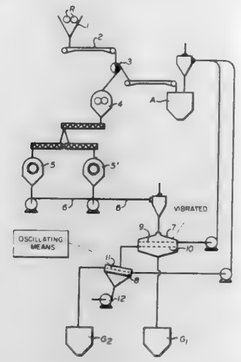
a valve controlling the supply of compressed air to said axial central bore, the valve being in cooperative relationship with said receptacle such that removal of the latter automatically opens the valve and replacement of said receptacle automatically closes the valve.

3,923,256

APPARATUS FOR TREATING OLD TIRES

Harald P. Dörner, Salach, Germany, assignor to Allgaier-Werke GmbH, Uhingen, Germany

Filed Jan. 9, 1974, Ser. No. 431,914
Claims priority, application Germany, Jan. 17, 1973, 2302120
Int. Cl.² B02C *23/14*
U.S. Cl. 241—76 **1 Claim**



1. An apparatus for treating old rubber tires having carcasses of fiber material and steel, comprising:

a first comminuting device for breaking up said tires into pieces;

magnetic separator means for removing from the pieces produced by said device, those pieces containing steel;

a first mill for comminuting the pieces passing said magnetic separator means and producing a coarse product;

an attrition mill connected to said first mill for comminuting said coarse product and producing a fine product and releasing said fibers from the rubber; and

means for separating said fine product into a first component consisting predominantly of said fibers and a second component substantially free from fibers and constituting a rubber granulate, said separating means including:

at least one horizontal vibrating-sieve screening device having at least two horizontal sieve decks lying one above another,

means for removing above the upper one of said decks at least part of said first component, means for removing a rubber granulate from below the upper one of said decks, and

a sorting device receiving the rubber granulate removed from below the upper deck, said sorting device having

a perforated surface inclined slightly to the horizontal and adapted to receive the rubber granulate removed from below said upper deck,

means for oscillating said perforated surface, and

means for passing a fluidizing gas stream upwardly through said perforated surface at a intensity related to the oscillation of said surface and sufficient to cause rubber particles to ascend on said surface and fiber particles to move in the opposite direction to said rubber particles.

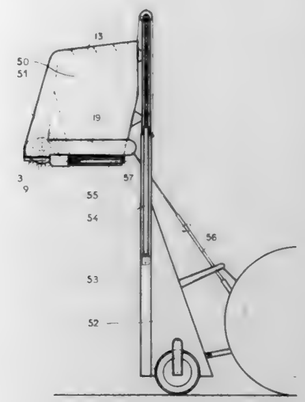
3,923,257

DEVICE FOR EXTRACTING AND SHREDDING FODDER

Walter Reber, Saverne, France, assignor to Kuhn S.A., Saverne, France

Filed Apr. 2, 1974, Ser. No. 457,242
Claims priority, application France, Apr. 6, 1973, 73.13605; Mar. 5, 1974, 74.08090
Int. Cl.² B02C *19/00*
U.S. Cl. 241—101.7 **27 Claims**

1. A device for extracting and shredding fodder stored in a silo extending along the ground, comprising a vehicle, cutting and shredding means mounted on the front of the vehicle, means for moving said cutting and shredding means bodily upwardly and downwardly together as a unit relative to the vehicle, the shredding means comprising a rotor mounted for



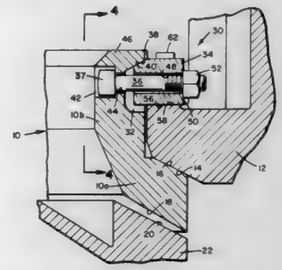
rotation about a horizontal axis transverse to the path of movement of the vehicle, at least a portion of said cutting means being downwardly directed and extending below said axis of rotation and being disposed in front of said rotor.

3,923,258

UPPER LINER SECUREMENT FOR A GYRATORY CRUSHER

Charles M. Hendrickson, Vancouver, Wash., assignor to Columbia Steel Casting Co., Portland, Oreg.

Filed May 22, 1974, Ser. No. 472,127
Int. Cl.² B02C *2/04*
U.S. Cl. 241—207 **6 Claims**



1. In a gyratory crusher of the kind in which an upper liner support has an inclined lower surface and an upper liner has an inclined outer surface shaped complementary to and engageable with said surface of the liner support, the improvement comprising,

liner securement means for pulling said liner surface up into tight engagement with said liner support surface,

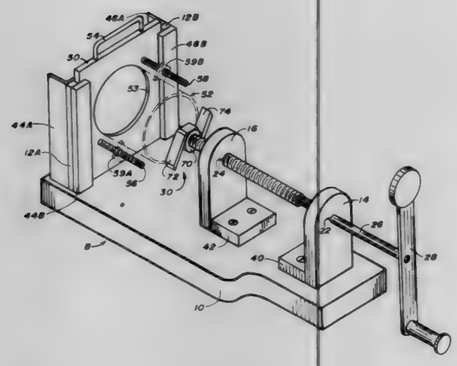
said liner securement means including pockets in the liner and coacting wedge blocks and bolts for pulling each wedge block into a related liner pocket,

each pocket having internal wall structure which includes a generally flat upper wedge surface and two parallel, laterally spaced sidewalls, and

each wedge block including a generally flat upper wedge surface shaped complementary to and engageable with the upper wedge surface in a related pocket and two flat sides engageable with the side walls in a related pocket so that each wedge block provides lift and anti-rotation

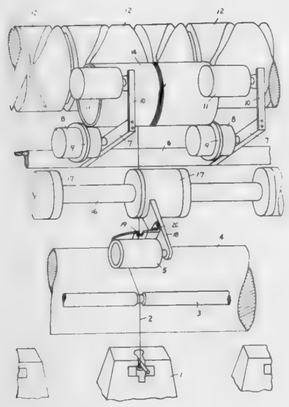
shear forces in a related pocket on two axes which are in true perpendicular to each other within the pocket.

3,923,259
SOIL EXTRACTOR FOR SOIL TESTING
Russell P. Gorsha, 4040 Fairview Drive, Toledo, Ohio 43612
Filed Mar. 28, 1974, Ser. No. 455,680
Int. Cl.² B02C *18/14*
U.S. Cl. 241—278 R 3 Claims



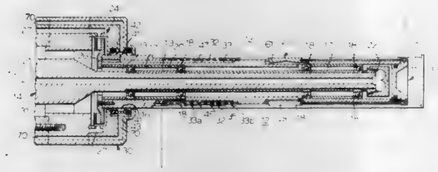
1. A soil extracting device for removing soil from a soil container comprising in combination:
a. a horizontially disposed base platform member;
b. vertical slide and support means affixed to the upper surface of said base platform member;
c. a removable rectangularly shaped tray member which is positioned on the soil extracting device between the vertical slide members in a vertically upright position;
d. fastening means on said tray member to securely hold the soil container in a horizontial position on said tray member when the tray member is vertically upright between the vertical slide and support means;
e. vertical disposed support means located on the upper surface of the said base platform member, said vertical support means adopted to carry a shaft member at some height above the upper surface the base platform member which is sufficient to reach the center of the soil container;
f. a horizontally disposed rotatable shaft member carried by said vertical support means at a height above the top surface of the base platform member such that the central longitudinal axis of the shaft member reaches the center of the soil container when disposed in a horizontal position;
g. rotatable cutting means located on the end of the rotable shaft member which is adjacent to the vertical slide members, said cutting tool, said cutting means adapted to cut into any soil in the container to remove the soil upon rotation of rotatable shaft.

3,923,260
APPARATUS FOR DOFFING WITHOUT INTERRUPTING SPINNING OPERATION IN AN OPEN END SPINNING MACHINE
Waichi Sakurai; Katsunori Sato; Tomoyuki Miyagawa, and Hisateru Takahashi, all of Fukui, Japan, assignors to Daiwa Boseki Kabushiki Kaisha, Osaka and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, both of, Japan
Filed Aug. 13, 1974, Ser. No. 497,133
Claims priority, application Japan, Sept. 14, 1973, 48-104434
Int. Cl.² B65H *67/04*
U.S. Cl. 242—18 A 2 Claims



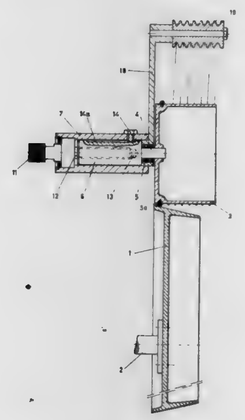
1. A device for doffing a wound bobbin without interrupting the spinning operation in an open end spinning machine of the type including a frame, a plurality of spinning units arranged in side-by-side relation at a predetermined interval, each said spinning unit having a withdrawing roller for withdrawing a spun yarn from the spinning unit, and a split drum for traversing the withdrawn spun yarn for winding it on a bobbin; said device comprising:
a plurality of arms arranged along the machine frame at said interval, each of said arms being located between said withdrawing roller and said split drum and extending forwardly of said machine frame;
an empty bobbin supporting roller rotatably mounted on an intermediate portion of each of said arms;
a plate spring secured to a free forward end of each of said arms;
an empty bobbin pressing roller rotatably mounted on each of said plate springs;
each said supporting roller and respective pressing roller being located so as to define a separate empty bobbin receiving space in cooperation with said split drum;
each said plate spring comprising means to resiliently urge said respective pressing roller in a direction in which an empty bobbin is pressed against said split drum by means of said pressing roller when such empty bobbin is placed in said respective empty bobbin receiving space;
each said empty bobbin supporting roller and said respective empty bobbin pressing roller being arranged so that they respectively straddle the adjacent end portions of two adjacent empty bobbins when such bobbins are placed in respective adjacent empty bobbin receiving spaces; and
each said empty bobbin supporting roller having a flange at an intermediate portion thereof, said flange comprising positioning means common to said adjacent end portions of said two adjacent empty bobbins.

3,923,261
SPINDLE FOR A WINDING MACHINE
Bernard Isoard, and Jacques Morf, both of Ecully, France, assignors to Rhone-Poulenc-Textile, Paris, France
Filed May 16, 1974, Ser. No. 470,447
Claims priority, application France, May 18, 1973, 73.18440
Int. Cl.² B65H *75/30, 79/00*
U.S. Cl. 242—46.2 13 Claims



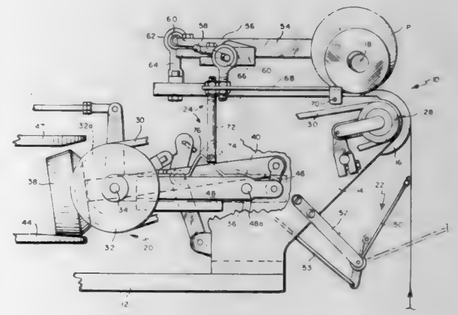
1. A spindle for supporting and rotating a tube around which strand material is wound, comprising:
a central portion extending in axial alignment with the tube, said central portion having a periphery with at least one recess therein;
a radially retractable sleeve surrounding said recess and disposed about said central portion;
a bearing surface on said radially retractable sleeve for engaging the inner surface of the tube in non-slip relationship when the sleeve is not retracted; and
means for applying a vacuum to said recess to retract said sleeve radially and thereby disengage said bearing surface from non-slip engagement with the tube so the tube may be removed from the spindle.

3,923,262
YARN PULLING DEVICE
Gerardus Hendrikus Kaalverink, Asten, Netherlands, assignor to Ruti-Te Strake B.V., Deurne, Netherlands
Filed Dec. 20, 1973, Ser. No. 426,441
Claims priority, application Netherlands, Dec. 22, 1972, 7217616
Int. Cl.² B65H *51/20*
U.S. Cl. 242—47.01 6 Claims



1. A yarn pulling device comprising a cylindrical wrapping roller which is adapted to receive the yarn from a yarn supply and which has a rim by which the roller can be frictionally driven,
a mounting on which said roller is rotatably supported in an axially adjustable position,
and a driving disc rotatable about a fixed axis and having a surface which is symmetrical about said axis, said surface being non-parallel to said axis and frictionally engaging said rim in all of the adjusted positions of said roller, whereby adjustment of the contact of said rim along said surface changes the speed at which said roller is driven by the disc.

3,923,263
END FINDING AIR FOR WINDING MACHINE
Samuel L. Abbott, Wilton, N.H., assignor to Abbott Machine Co., Inc., Wilton, N.H.
Filed Nov. 25, 1974, Ser. No. 526,959
Int. Cl.² B65H *54/22, 63/02*
U.S. Cl. 242—35.6 R 8 Claims

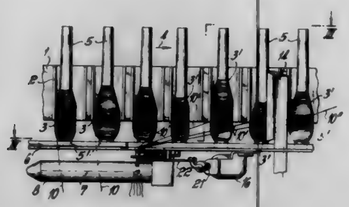


1. In a winding machine, a driving drum, a spindle, means supporting the spindle for rotation about an axis in driving engagement with the driving drum and for pivotal movement about an axis spaced from its axis of rotation to permit the spindle to be moved relative to the driving drum as the diameter of the package changes, said support means being movable relative to the driving drum to tilt the axis of the spindle relative to the axis of the driving drum and hence to move one of the package away from the driving drum without disengaging the other end therefrom, a yarn detector and means operative by the yarn detector upon detection of a broken yarn to effect movement of the support means to move said one end of the package away from the driving drum.

3,923,264
DEVICE FOR MAKING-READY THE UNWINDING OPERATION OF COPS
Willi Küpper, Rickelrath, Germany, assignor to W. Schlafhorst & Co. Maschinenfabrik, Rickelrath, Germany
Filed Nov. 12, 1973, Ser. No. 414,709
Claims priority, application Germany, Nov. 14, 1972, 2255645
Int. Cl.² B65H *54/22*
U.S. Cl. 242—35.6 E 5 Claims

1. Device for making-ready the unwinding process of cops comprising a pair of counter-rotating cylinders disposed parallel to one another along a common contact line, conveyor means for moving a series of substantially vertically disposed cops having respective previously loosened thread ends on a path parallel to said cylinders and along said contact line thereof so that the thread ends are seizable by said cylinders at said common contact line thereof and withdrawable from the cops as the latter are moved along said path by said conveyor means, a transport plate located adjacent said conveyor means and having a plurality of teeth disposed in a plane transverse to the path of movement of the cops, and means for moving said transport plate and said plurality of teeth thereof

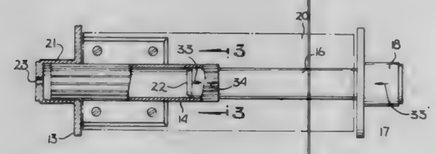
in a direction transverse to the path of movement of the cops in synchronism with said movement of the cops by said conveyor means for picking up successive thread ends of the series of cops and moving them in a step by step manner transversely to the path of movement of the cops.



3,923,265
PAPER TOWEL HOLDER

Kliffford C. Krueger, and Lucile M. Krueger, both of 20401 No. 357 Soledad Canyon Road, Canyon Country, Calif. 91351

Filed May 10, 1974, Ser. No. 468,740
Int. Cl.² B65H *19/00*
U.S. Cl. 242—55.2 1 Claim



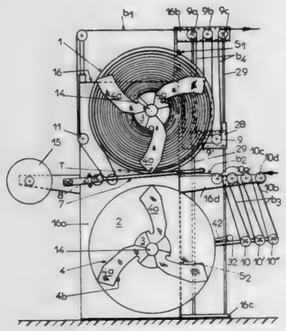
1. A holder for rolls of paper material comprising:
a mount having a disc portion cantilevered outwardly from and normal to a support plate;
an elongated, hollow spindle having one end thereof secured to said disc portion and cantilevered therefrom normal to the inner surface of said disc portion;
a closure assembly for retaining the roll on said spindle including an elongated rod slidably engageable within the hollow of said spindle;
a second disc portion carried on the end of said rod, the opposing surfaces of said disc portions defining a retaining means for holding said roll of paper therebetween;
said spindle hollow and said rod being of out-of-round so as to bind for releasably locking said roll of paper onto said spindle;
said rod having a length of greater dimension than the dimensional length of said spindle so that rolls of varying length may be accommodated between said discs;
means for storing the extended portion of said rod beyond the length of said spindle when a roll having a length shorter than said spindle is used;
including indexing means for registering said rod with spindle so as to permit axial movement therebetween; and
handle means carried on said support member and on said mounting means.

3,923,266
ENDLESS FILM WINDING OR UNWINDING DEVICE

Jean Paul Boyer, Impasse Melies, 30 Redessan, France

Filed Dec. 12, 1973, Ser. No. 423,976
Claims priority, application France, Dec. 12, 1972, 72.47176
Int. Cl.² G03B *21/00*
U.S. Cl. 242—55.16 45 Claims

1. Apparatus for the continuous winding and unwinding of an endless band through a utilization device, said apparatus comprising a first rotatable supply reel and a second rotatable take-up reel, each of said reels having a hub reversible drive means for said reels, means arraying said reels with respect to the utilization device such that two lengths of the band are wound in superposition on both reels and extend between both reels and the utilization device, one length on said second reel extending to the first reel, the other length on said second reel extending to said utilization device and traversing the same, said first reel receiving the length of the band issuing from the utilization device, said band forming a closed travel loop between said reels and the utilization device, one of said reels being external thereof; and feed means for placing against the second reel the length of band extending between the utilization device and said first reel when said second reel is empty whereby by reversing the direction of rotation of the reels the first reel can now become the take-up reel and the second reel the supply reel, said feed means including a feed arm pivotably mounted between said reels and engagement means on said feed arm for engaging the band to place the same against said second reel when the latter is empty.

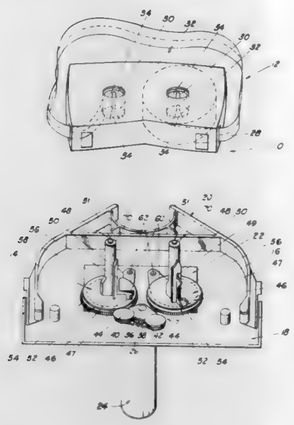


3,923,267
RIBBON FEED MECHANISM FOR FEEDING TYPE RIBBON ON TYPE RIBBON SPOOLS

Steve S. Eckerd; Ivan N. Markowitz; Anthony F. Maggio, all of Oklahoma City, and Darby A. Gray, Norman, all of Okla., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed June 3, 1974, Ser. No. 475,550
Int. Cl.² B65H *17/02*
U.S. Cl. 242—67.4 5 Claims

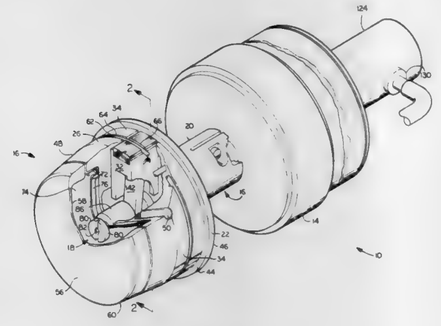
1. In a printing apparatus having a base plate, a type ribbon wound on type ribbon spools, a first drive spool and a second drive spool engaging the ribbon spools for winding the ribbon from one ribbon spool to the other ribbon spool, the improvement comprising:
drive means for engaging and rotatably driving the first drive spool, disengaging the first drive spool, engaging and rotatably driving the second drive spool;
an electric motor having a motor shaft rotatably driving said drive means; and
an electrical contact board disposed between the base plate and the first and second drive spools, and electrically connected to said motor, said electrical contact board in contact with the first drive spool and the second drive spool for producing an electrical signal when the ribbon on the ribbon spool is unwound so that the direction of rotation of the motor shaft is reversed, thereby reversing the direction of rotation of said drive means.



3,923,268
AUTOMATIC REEL HUB ASSEMBLY

James P. Urynowicz, Los Angeles, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed May 15, 1974, Ser. No. 470,127
Int. Cl.² B65H *17/02*
U.S. Cl. 242—68.3 23 Claims

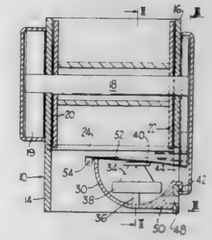


1. A reel hub assembly comprising:
an actuator shaft which is axially movable relative to a radially disposed shoe between a reel lock position and a reel release position, the actuator shaft being adapted at one axial position therealong to receive at least one drive link end in a mating relationship which prevents axial motion of the shaft relative to a mated end of a drive link while permitting radial motion of an end opposite the mated end of a drive link with respect to the shaft;
at least one drive link having opposed ends disposed to extend generally radially with respect to the actuator shaft with one end in a mating relationship with the actuator shaft at the one axial position and an opposite end in a mating relationship with a shoe, both said one and opposite end mating relationships permitting radial motion of the drive link relative to the mate while preventing axial motion of the drive link relative to the mate;
at least one shoe adapted to receive an opposite end of a drive link in a mating relationship which permits radial but not axial motion of said opposite end relative to the shoe; and
an actuator mechanism connected to cause relative axial motion of the shoe and actuator shaft between a reel lock axial position relationship and a reel release axial position relationship to move the shoe between a radially extended position and a radially retracted position respectively.

3,923,269
INERTIA REELS FOR VEHICLE SAFETY BELTS

John Kell, Carlisle, England, assignor to Kangol Magnet Limited, London, England

Division of Ser. No. 180,753, Sept. 15, 1971, abandoned. This application Apr. 15, 1974, Ser. No. 461,125
Claims priority, application United Kingdom, Nov. 6, 1970, 52966/70
Int. Cl. B65h *75/48*
U.S. Cl. 242—107.4 10 Claims

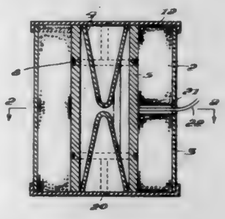


1. A reel device comprising a rotatable reel from which a belt can be unwound against the tension of a rewind spring, a pendulum, an upwardly extending mounting member for the pendulum, the mounting member terminating upwardly in an upstanding free end and the pendulum having a downwardly opening recess receiving the free end, the surface of the downwardly opening recess resting on the free end of the mounting member whereby the pendulum is pendulously mounted by the mounting member, a locking mechanism actuable to lock the reel against rotation in the belt unwinding direction, and means responsive to the tilting of the pendulum through a predetermined angle to actuate said locking mechanism.

3,923,270
PACKAGE OF FLEXIBLE MATERIAL WITH RADIAL OPENING EXTENDING INTO A CENTRAL AXIAL OPENING AND MEANS FOR PREVENTING INWARD COLLAPSE

James W. Newman, Scarsdale, N.Y.; Nicholas M. Bavaro, Hollywood, Fla., and Ronald E. Zajac, Yonkers, N.Y., assignors to Windings, Inc., Goldens Bridge, N.Y.

Continuation-in-part of Ser. No. 295,797, Oct. 10, 1972, abandoned. This application Sept. 19, 1974, Ser. No. 507,609
Int. Cl.² B65H *55/02*
U.S. Cl. 242—163 3 Claims



1. A package of flexible material of the universal type having a central axial opening and a radial opening extending into

said axial opening through which the inner end of the material is led out, and having an enclosing casing, tapering members supported by said casing and extending into the axial opening from the ends of said package, a solid material filling at least the outer area of the axial space around said tapering members, said tapering members holding the filling material against the inner surface of the flexible material to prevent collapse thereof, said solid material comprising a plurality of blocks, each block extending from end to end of the axial opening and having ends engaging between said tapering members and the inner surface of the flexible material.

3,923,271
TAPE WINDING CONTROL FOR MAGNETIC TAPE CASSETTES

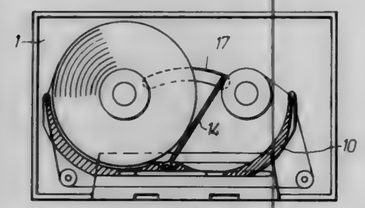
Albert Pertzsch; Jose Toral; Gottfried Lutz; Werner Wilke, and Anton Riedel, all of AGFA-Gevaert Aktiengesellschaft, Munich, Germany

Filed May 28, 1974, Ser. No. 473,390

Claims priority, application Germany, June 1, 1973, 2327844

Int. Cl.² G03B *1/04*; G11B *15/32, 23/04*

U.S. Cl. 242—199 **8 Claims**



1. A tape-winding control for a magnetic tape cassette, having a head compartment containing a pair of tape rolls and connecting guide means disposed adjacent the base of the cassette which direct a substantially straight run of tape from one of the rolls to the other adjacent the base, comprising track means within the head compartment disposed substantially parallel to the base and spaced therefrom between the largest diameter of the rolls and the base, a substantially rigid one-piece bow-shaped member having a substantially straight midportion and a pair of arcuate ends, the curvature of the arcuate ends being large enough to receive the largest diameter of the rolls within them, the tip section of the arcuate ends engaging and guiding the tape to and from the rolls, movable connecting means coupling the substantially straight midportion of the bow member to the track means whereby the bow member may be caused to longitudinally slide back and forth along the track means, and the distance between the arcuate ends of the bow member being equal to at least the sum of the axial interval between the two winding rolls and twice the average radius of the rolls of tape whereby the bow member is caused to shift longitudinally parallel relative to a line through the axis of the rolls of tape for moving the tip sections of the bow member adjacent the periphery of the rolls to smoothly guide the tape on and off the rolls as their diameters vary.

3,923,272
MAGNETIC TAPE CASSETTE

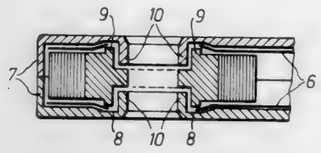
Albert Pertzsch; Jose Toral; Gottfried Lutz, all of Munich; Werner Wilke, Starnberg, and Anton Riedel, Neuried, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 31, 1974, Ser. No. 474,869

Claims priority, application Germany, June 1, 1973, 2327828

Int. Cl.² G03B *1/04*; G11B *15/32, 23/04*

U.S. Cl. 242—199 **7 Claims**



1. A pack assembly for magnetic tape cassettes, in particular compact cassettes having housing half members, centering rings in the housing half members, flangeless hubs, said flangeless hubs being mounted on the centering rings and apertured resilient support foils being concentrically arranged between the flangeless hubs and the housing half members, said assembly also comprising

a. the housing half members being annularly recessed laterally between the centering rings and an area partly covered by the flangeless hubs

b. the flangeless hubs having a ring-shaped torus on the front surface adjacent the centering ring

c. the resilient support foil being provided with an annular array of segmental cutouts and remaining fins in the area of the recesses in the housing half members, and

d. the fins of the support foil being disposed at an inclination toward the hubs whereby they exert a centering force on the hubs to prevent them from wobbling and to reduce frictional resistance between the hubs and the housing half members.

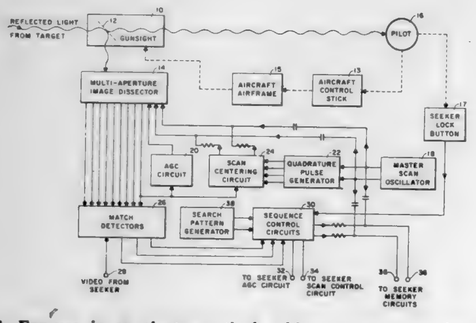
3,923,273
AIM POINT CORRELATOR

Frederick C. Alpers, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 30, 1967, Ser. No. 614,527

Int. Cl.² F41G *7/00*

U.S. Cl. 244—3.16 **2 Claims**



1. For use in an electro-optical guidance system an aim point correlator comprising:

a. a gunsight having cross-hairs for aligning a missile carrying aircraft on a target of interest,

b. a multi-aperture image dissector,

c. a partially silvered mirror positioned in said gunsight for reflecting the image viewed by said gunsight on to said multi-aperture image dissector,

d. circular scan circuit means coupled to said multi-aperture image dissector for producing a circular scan of the target image to produce output signals proportional to the light reflected from said target,

e. comparison circuit means having a first input coupled to the output of said multi-aperture image dissector and a second input adapted to receive video signals from the seeker of a missile carried by said aircraft and producing output signals proportional to a mis-match of the target viewed by the gunsight and target viewed by the missile seeker,

f. control circuit means coupled to said comparison circuit means for producing error signals which can be fed to the seeker circuits for aligning the seeker with the gunsight.

3,923,274
DEVICE FOR CENTERING AND ARRESTING AN AIRCRAFT POSITIONED ON A TAKE-OFF AND LANDING PLATFORM AND STARTING THEREFROM AND LANDING THEREON

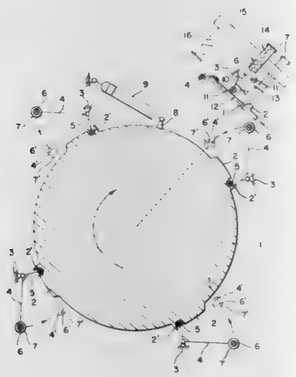
Helmut Stocklin, Markdorf, and Werner Keck, Friedrichshafen, both of Germany, assignors to Dornier GmbH, Friedrichshafen, Germany

Filed Dec. 18, 1974, Ser. No. 534,062

Claims priority, application Germany, Mar. 7, 1974, 2410818

Int. Cl.² B64F *1/12*

U.S. Cl. 244—115 **4 Claims**



1. A device for centering and arresting an aircraft positioned on a take-off and landing platform or starting therefrom and landing thereon, particularly a captive aircraft having a rotor and a landing ring, comprising platform means and rotatable displacing ring means,

means for rotating said displacing ring means,

vertically-displaceable and spring-suspended gripper means distributed at the circumference of said platform means and said displacing ring means, said gripper means being pivotal about centering and locking means,

means for running said gripper means against an aircraft landing ring after the aircraft has landed on said platform means, thereby pushing the aircraft into a centered position, at which time the aircraft is brought into the arrested position thereof by rotation about its vertical axis,

and means for vertically displacing said gripper means, whereby said aircraft is pulled against said platform means.

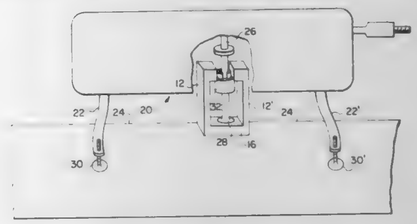
3,923,275
EJECTOR FOOT RESTRAINER FOR BOMB EJECTOR UNIT

John B. Dexter, California, and Robert C. Mann, Lexington Park, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 27, 1974, Ser. No. 527,665

Int. Cl.² B64D *1/06*

U.S. Cl. 244—137 R **3 Claims**



1. An ejector-foot restrainer, for use with an aircraft ejector-foot unit having a driving foot, a shaft connected thereto and a collar around said shaft, comprising:

a substantially U-shaped member having a shoulder extending inwardly from each of its upstanding sides, the shoulders being supportable by the collar on the shaft of the ejector-foot unit,

the base of the U-shaped member extending below the driving foot of the ejector-foot unit so the driving foot rests in contact with the upper surface of said base, and the spatial position of the U-shaped member being fixed relative to the driving foot so that they move in concert with each other.

3,923,276
LONGITUDINALLY ADJUSTABLE DRILL BOOM

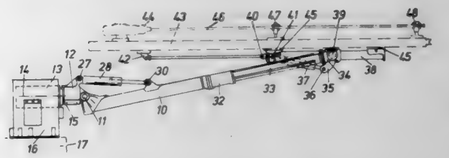
Erich Voldemar Kimber, Vendelso, Sweden, assignor to Atlas Copco AB, Nacka, Sweden

Filed June 18, 1974, Ser. No. 480,517

Claims priority, application Sweden, July 3, 1973, 73093932

Int. Cl.² E21C *11/00*; B66C *23/00*; E21C *11/00*

U.S. Cl. 248—16 **34 Claims**



1. A longitudinally adjustable drill boom adapted for positioning an elongated rock drilling apparatus to different alternative drilling positions with respect to a work surface, comprising in combination therewith:

a drill boom,

a boom support,

pivot means on said boom support for pivotally journalling one end of said drill boom to said boom support, said one end being the inner end thereof,

a journal casing arranged at the opposite outer end of said drill boom,

an adjusting head,

a boom extension member longitudinally slidable in said journal casing and carrying said adjusting head at the outer end thereof remote from said drill boom, said rock drilling apparatus being adjustably supported on said adjusting head,

a power cylinder connected to said boom extension member for adjusting the overall length of said drill boom and boom extension member between said boom support and said adjusting head,

an axial guiding groove in said journal casing, and

elongated guide means extending along said boom extension member and attached at one end to said boom extension member, the opposite end of said elongated guide means being slidably supported relative to said boom extension member in the longitudinal direction thereof, the length of said elongated guide means exceeding the length of said journal casing in the axial direction of said drill boom, said elongated guide means being non-turnably received in said guiding groove for guiding said boom extension member over substantially the whole length thereof while traversing axially through said journal casing.

3,923,277

SUPPORTING DEVICE

Frederick Perrault, 2644 W. 225th St., Torrance, Calif. 90505, and Raymond E. Perrault, 23441 Batey Ave., Harbor City, Calif. 90710

Filed Feb. 25, 1974, Ser. No. 445,537
Int. Cl.² F16L *3/00*
U.S. Cl. 248—49 **16 Claims**



1. A supporting device comprising

a bracket adapted for attachment to a structural element, said bracket including

a first portion,

a second portion at an angle to said first portion,

each of said first and second portions including a central portion and a flange at either side edge of said central portion,

said flanges extending from the same side of said central portion, and,

a third portion interconnecting said first and second portions, said third portion including rib means extending between said first and second portions,

said rib means including two spaced ribs positioned one at either side of said bracket,

a portion of said rib means forming a continuation of said flanges of said first and second portions,

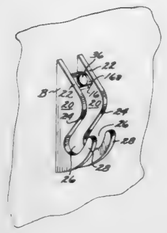
said central portions of said first and second portions having adjacent ends lying spaced from each other to define an opening through said third portion intermediate and extending to said ribs.

3,923,278

WALL HOOK STRUCTURE AND METHOD OF FORMING SAME

Paul M. Marcil, 12117 Phillips Ave., Lynwood, Calif. 90262

Filed July 15, 1974, Ser. No. 488,588
Int. Cl.² A47F *5/00*
U.S. Cl. 248—301 **1 Claim**



1. A one-piece wall hook structure that may be mounted in a non-pivoting position on a wall by a nail having a shank and head, which when so mounted will support a picture having a transverse wire affixed to the rear thereof, only when said wire is disposed in recessed portions of said wall hook structure, said wall hook structure comprising:

a. an initially flat sheet of a permanently deformable material of such shape that after deformation said sheet defines an elongate, rectangular rear wall having first and second ends and parallel, laterally spaced side edges, a rectangular tab that extends forwardly from said first end and slopes downwardly towards said second end, and two laterally spaced side walls that are parallel and extend outwardly from said side edges with said tab being disposed therebetween, said side walls defining two transversely aligned guide edges for said wire that are disposed outwardly from said tab and angularly disposed relative to said rear wall, with said guide edges in the portions thereof most adjacent said second end of said back wall merging into edges of said side walls that define recesses therein which are angularly disposed relative to said rear wall, said recesses and the portions of said side walls most adjacent said second end of said rear wall cooperatively defining a pair of transversely aligned hooks that engage said wire after the latter has been moved longitudinally over said guide edges into said recesses, with said rear wall and tab having angularly aligned openings formed therein through which said shank of said nail may pass when said shank slopes downwardly and inwardly relative to said wall, and when said nail is driven into said wall said head of said nail pressure-contacts said tab by frictional contact therewith to prevent said wall hook from pivoting when said picture is being hung and said wire guided into said recesses, with the exterior surface of said tab being disposed inwardly from the portions of said guide edges most adjacent thereto a distance greater than the thickness of said head to prevent said wire from engaging said head when said wire is being guided by said guide edges into said pair of hooks.

3,923,279

HANGER APPARATUS FOR SUPPORTING INTRAVENOUS CONTAINERS

James E. Gresley, 5510 Standish Drive, Fort Wayne, Ind. 46806, and Hugh S. Glidewell, 7130 S. Calhoun St., Fort Wayne, Ind. 46802

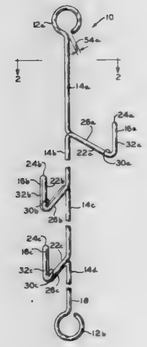
Filed Sept. 25, 1974, Ser. No. 509,243
Int. Cl.² A61G *12/00*; A47B *73/00*
U.S. Cl. 248—318 **9 Claims**

1. A hanger for intravenous containers which comprises a continuous piece of metallic bar being formed to include:

a. means on one end of said bar for supportably coupling said hanger to a support;

b. a plurality of hooks each being formed in said bar at different longitudinal locations in said bar; and

c. a stem comprising a plurality of parts of said bar, interconnecting said supporting means and one of said hooks, interconnecting and spacing each of said hooks at different longitudinal distances from said supporting means, orienting each of said hooks to open toward said supporting means, and rotationally displacing each of said hooks about said stem from the adjacent one of said hooks,



d. said hanger having a bottom end,

e. said one hook includes a radial arm portion that extends radially outwardly from said stem and downwardly toward said bottom end, a hook-shaped portion comprising a curved portion of said bar that extends outwardly and upwardly from the lowermost end of said bar portion, and a bail-retaining portion that comprises a portion of said bar that extends upwardly toward said coupling means a distance greater than the maximum size of the opening defined between the bottom of an intravenous container and a bail thereon.

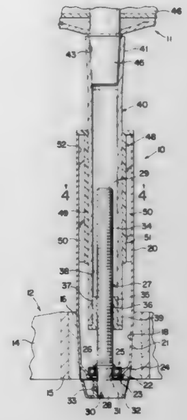
3,923,280

ADJUSTABLE SUPPORT COLUMN FOR A PIVOTAL CHAIR

Wayne W. Good, Sturgis, Mich., assignor to Harter Corporation, Sturgis, Mich.

Filed Mar. 21, 1975, Ser. No. 560,580
Int. Cl.² F16M *13/00*
U.S. Cl. 248—405 **6 Claims**

1. An adjustable support column for pivotally mounting the seat section of a chair to a base portion comprising: a sheath tube extending upwardly from the base portion; bearing means carried by said sheath tube; an adjusting screw supported by said bearing means for rotation relative to said sheath tube; knob means to control rotation of said adjusting screw; a spindle tube supporting the seat section extending downwardly therefrom; a bushing fastened to said spindle tube and threaded onto said adjusting screw to rotate with and with respect thereto; and, means to assure that the resistance to relative rotation between said bushing and said adjusting



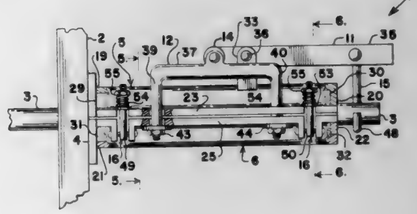
screw exceeds the resistance to relative rotation between said adjusting screw and said sheath tube.

3,923,281

CONCRETE FORM TIE CLAMP

Jesse C. Patterson, 9904 Linwood, Independence, Mo. 64052

Filed Apr. 15, 1974, Ser. No. 460,829
Int. Cl.² E04G *17/04*
U.S. Cl. 249—219 R **9 Claims**



1. A form tie clamp for retaining a form wall in a selected position during depositing concrete thereagainst, said form tie clamp comprising:

a. walls defining a first housing and a second housing each having a respective cavity therein, said first housing and said second housing being in facing relation, said first housing and said second housing each having a side wall and opposite end walls each having a passage therein to permit a rod extending outwardly from a respective form wall to extend therethrough, said first housing and said second housing each having opposite side flanges extending outwardly from said respective side wall thereof with the opposite side flanges of one of said housings being positioned in facing relation with said respective adjacent side flanges of the other of said housings;

b. a first clamping member and a second clamping member each positioned in the cavity in a respective one of said first housing and said second housing;

c. means mounted on the side wall of one of said first housing and said second housing and in engagement with the opposite side flanges of the other of said first housing and said second housing for selectively moving one of said first housing and said second housing toward the other housing and thereby moving said first clamping member and said second clamping member into clamped engagement with the rod extending outwardly from the respec-

tive form wall, said means for moving said clamping members into clamped engagement with the rod includes an elongated lever pivotally mounted on said side wall of said one housing and having the flange engaging means on one end thereof; and

d. means associated with said housings and said means for moving said clamping members into clamped engagement with the rod for retaining said clamped engagement of said clamping members with the rod, said means for retaining said clamped engagement of said clamping members with the rod includes means pivotally mounted on the other portion of said elongated lever.

3,923,282

VACUUM VALVE CONSTRUCTION

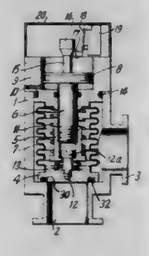
Albert Henzler, Mels, Switzerland, assignor to Balzers Patent- & Beteiligungs AG, Liechtenstein

Filed Nov. 22, 1974, Ser. No. 526,335

Claims priority, application Switzerland, Nov. 22, 1973, 016600/73

Int. Cl.² F16K *31/122*

U.S. Cl. 251—63.4 **5 Claims**



5. A vacuum valve construction, comprising a valve housing having an inlet and a discharge spaced from said inlet, means defining a valve seat between said inlet and said outlet, a valve shutter engageable on said valve seat to close said valve seat, a valve drive for driving said shutter, said valve drive including a drive plunger being movable in said housing, a second drive part connected to said shutter, and an intermediate drive member connected to said drive plunger for movement therewith and having a lost motion connection to said second drive part, said intermediate drive member comprising a part slidably engaged on said second drive part and movable between limits defined by abutment of a portion of said intermediate member with said second drive part and abutment of said intermediate member with said shutter, said drive plunger having a cam extension, an elastic member disposed between said intermediate member and said valve shutter in a position to be actuated by closing pressure of said drive plunger during the closing of said valve shutter to provide a locking force acting on said valve shutter to obtain a hermetic pressure contact of said valve shutter against said valve seat, and a switch having a switch actuating member with a roller follower disposed in the path of movement of said cam extension and being movable thereby only when said drive plunger is acting on said spring through said intermediate member to effect a hermetic pressure closing force.

3,923,283

FAUCET WITH CONTROLLED TORQUE CLOSURE

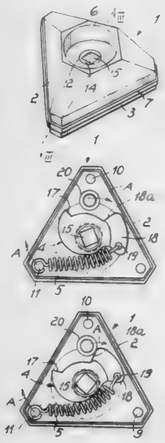
Umberto Tomiati, via dei Filippini, 19, Verona, Italy

Filed Aug. 5, 1974, Ser. No. 495,151

Int. Cl.² F16K *31/44*

U.S. Cl. 251—77 **1 Claim**

1. A faucet knob device for faucets of the type having a screw type closing member to which the faucet device is adapted to transmit a controlled torque closing action, the knob device comprising a torque member having a shaft portion adapted for rigid rotatory connection coaxial with said screw type closing member, said shaft portion having external cylindrical bearing surface portions coaxial therewith, a knob head member having means integral therewith for slidably engaging said bearing surface portions in independent coaxial rotatory relationship therewith, spring means having one end thereof connected to said torque member in a point at a distance from the axis of said shaft portion and having the other end thereof connected to said knob head member in a point offset with respect to said shaft portion thereby to drag into rotation said torque member through said spring when said knob head member is rotated in a direction against the action of said spring and to transmit through said spring a torque creating force on said torque member when said spring is tensioned, a pair of opposite axially offset abutment means on said torque member and arranged circumferentially at a distance from one another to define a free space therebetween, a finger member rigid with said knob head member and pro-



truding into said free space, said finger member being adapted to abut against one of said opposite abutment means when said knob head member is rotated by hand in the closing direction of said closing member against the action of said spring thereby to transmit first a spring controlled action to said torque member and to transmit thereafter rigidly the torque force from the hand action onto said closing member through the contact between said finger member and said one of said opposite abutment means, said finger member being further adapted to abut against the other of said opposite abutment means when the knob member is released from the hand action and the spring urges said head member to rotate idly in the opposite direction to bring said finger member in stopping engagement with said other of said opposite abutment means and to allow said closing member to be opened when an opposite hand action torque is transmitted rigidly from said knob head member to said other of said opposite abutment means through said finger member.

3,923,284

FAUCET VALVE

Ray E. Stickler, 10816 N. Lakeview, Milwaukee, Wis. 53092, and Glenn W. Hicks, 2749 N. 75th St., Wauwatosa, Wis. 53210

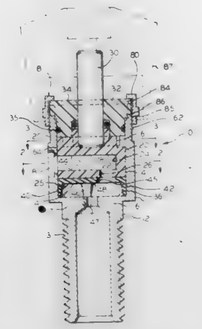
Filed Sept. 3, 1974, Ser. No. 502,542

Int. Cl.² F16K *25/00*

U.S. Cl. 251—172 **12 Claims**

1. A valve assembly including a housing defining a hollow chamber, inlet and outlet ports formed in spaced apart relation within said chamber, rotatable valve means disposed within said chamber and between said inlet and outlet ports, and a flexible sealing member disposed within said housing

and extending across said chamber, said sealing member being spaced from said inlet opening and being disposed between said inlet opening and said valve means for sealing said inlet opening from said outlet opening, a first opening formed in said valve means and offset from the rotational axis of said valve means, a second opening formed in said sealing member



and offset from the rotational axis of said valve means, said valve means and said sealing member having complimentary engageable surfaces to provide a seal therebetween under the influence of water pressure when said openings are out of registry, said valve means being rotatable to move said first opening into and out of registry with said second opening.

3,923,285

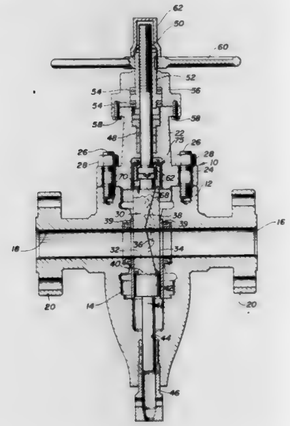
STEM CONNECTION FOR GATE VALVES

Robert J. Diehl, and Larry E. Guthrie, both of Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sept. 19, 1974, Ser. No. 507,313

Int. Cl.² F16K *3/314*; F16D *1/02*

U.S. Cl. 251—200 **6 Claims**



1. A gate valve structure comprising a valve body having a valve chamber therein and inlet and outlet flow passages communicating with the valve chamber, a gate valve mounted within the valve chamber for movement between open and closed positions and having a flow passage therein for alignment with said inlet and outlet flow passages, an extension on an end of said gate valve having an enlarged diameter end portion, an operating stem adjacent said extension having an enlarged diameter end portion in contiguous relation to said enlarged diameter end portion on the gate valve, a pair of split connector sections fitting about said enlarged diameter end portions, each split section having inner and outer semicircular openings receiving the respective stem and extension and an enlarged intermediate cavity between the inner and outer openings receiving the enlarged end portions, said connector sections when positioned over said enlarged end portions being of a generally cylindrical shape, an open ended cap fitting over the connector sections to hold the connector sections in position about the enlarged end sections of said stem and extension, and means to secure the cap over the connector sections.

3,923,286

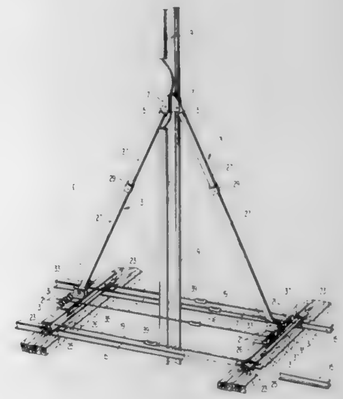
SHORING AND JACKING RIG

Donald D. Raugh, Grosse Ile, Mich., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Nov. 19, 1974, Ser. No. 525,320

Int. Cl.² B66F *3/08*

U.S. Cl. 254—84 **12 Claims**



1. A shoring and jacking rig comprising

a. a plurality of spaced, parallel rail means,

b. a pair of spaced parallel beams with their length disposed at right angles to the length of the rail means,

c. rail engaging means affixed to the beams for slideably connecting the beams and the rail means for movement of the beams along the length of the rail means,

d. means associated with the rail engaging means preventing relative movement of the beams in a direction transverse to the length of the rail means,

e. a slideable support member resting on each beam intermediate the ends of the beam, each slideable support member having depending flanges snugly embracing the upper portion of the associated beam,

f. pivotal bearing means mounted on each slideable support member, both pivotal bearing means being located in a single plane parallel to the rails and perpendicular to the beams,

g. a pair of elongated compression members, each elongated compression member having its lower end pivotally connected to a different one of the pivotal bearing means, the pivotal connection between the lower end of each elongated compression member and the pivotal bearing means constraining the elongated compression members to pivoted movement in the single plane,

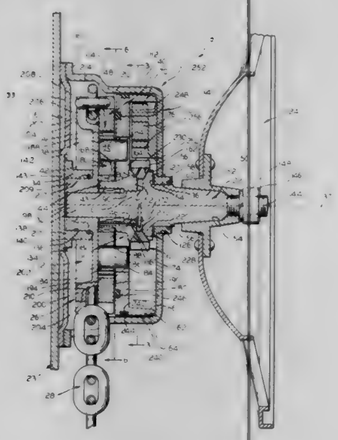
h. a pivot means at the upper end of each elongated compression member,

i. structural member engaging means pivotally connected to the pivot means at the upper end of each elongated compression member,

j. tension rod anchor means carried by each beam on each side of the single plane,

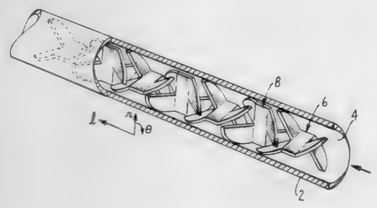
k. tension rod means connecting anchor means carried by one beam on one side of the single plane with anchor means carried by the other beam on the same side of the single plane,
l. tension rod means connecting anchor means carried by one beam on the other side of the single plane with anchor means carried by the other beam on the same side of the single plane, and
m. means associated with each tension rod means for decreasing the distance between beams and thereby raising the elevation of the structural member engaging means.

3,923,287
HAND BRAKE FOR RAILROAD CARS
Roger J. Wesolek, Glenwood, and Wajih Kanjo, Midlothian, both of Ill., assignors to Universal Railway Devices Company, Chicago, Ill.
Filed Nov. 6, 1974, Ser. No. 521,339
Int. Cl.² G05G *1/08*
U.S. Cl. 254—150 R **14 Claims**



1. A hand brake for railroad cars comprising:
a housing adapted to be mounted on a railroad car,
an operating shaft journaled in said housing for rotation about an axis extending longitudinally of said shaft,
a sleeve mounted on said shaft and coupled thereto for rotational movement therewith,
said sleeve having a cam portion that is in eccentric relation to said axis,
a winding drum journaled in said housing for rotational movement about said axis and having a brake chain coupled thereto for being wound thereby,
said winding drum including a ring gear portion,
a pinion journaled on said sleeve cam portion and meshing with said ring gear, in eccentric relation thereto, for rotating said drum about said axis,
a release wheel journaled in said housing for rotation relative to said housing about said axis,
means for releasably keying said wheel against said rotation thereof,
means for keying said pinion to said wheel for rotation therewith including means for accommodating gyration of said pinion relative to said ring gear and said wheel on rotation of said shaft and said sleeve relative thereto whereby when said wheel is keyed against said rotation of same relative to said housing rotation of said shaft and said sleeve about said axis effects rotation of said drum relative to said housing,
ratchet means acting between said shaft and said housing for accommodating rotation of said shaft in one direction to wind said chain and opposing rotation of said shaft in the opposite direction,
releasable clutch means acting between said shaft and said ratchet means for releasably clutching said shaft to said ratchet means under the tension in said chain to maintain said shaft against rotational movement in said opposite direction,
means for releasing said clutch means on hand rotation of said shaft in said opposite direction, for accommodating controlled release of the brake by limited rotation of said drum under the tension on said brake chain,
and means for releasing said release wheel keying means whereby said release wheel and said winding drum rotate relative to said shaft and sleeve to effect quick release of the brake.

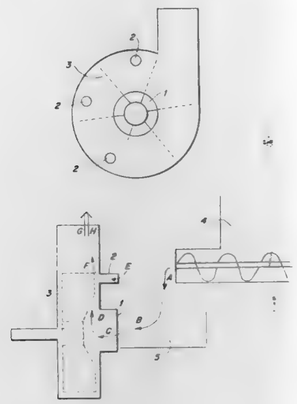
3,923,288
MATERIAL MIXING APPARATUS
Leonard Tony King, Long Beach, Calif., assignor to Komax Systems, Inc., Carson, Calif.
Filed Dec. 27, 1973, Ser. No. 428,865
Int. Cl.² B01F *5/00, 15/02*
U.S. Cl. 259—4 **10 Claims**



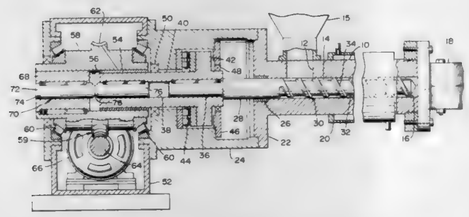
1. Stationary material mixing apparatus, comprising a conduit having a length, a longitudinal axis through said length, and a chamber extending longitudinally through said length opening on first and second ends of said conduit and including said longitudinal axis,
a plurality of abutting, self-nested elements fitted within said chamber, adjacent elements being configured as mirror images of one another, each element having lengths along the longitudinal axis where adjacent elements axially overlap defining mixing matrices inducing both counter-rotating angular velocities relative to said longitudinal axis and simultaneous inward and outward radial velocities relative to said longitudinal axis on materials moving through said mixing matrices, each element having a length along the longitudinal axis where said elements do not axially overlap, the axially non-overlapping lengths of said elements along the length of the longitudinal axis defining drift spaces for the recombination of said materials subsequent to movement through the mixing matrices.

3,923,289
METHOD OF MIXING SOLIDS AND LIQUIDS ON A CONTINUOUS BASIS
Victor Danberg, 6 Mary Ann Lane, Wallingford, Conn. 06493
Filed Dec. 13, 1971, Ser. No. 207,173
Int. Cl.² B01F *5/12*
U.S. Cl. 259—22 **8 Claims**

1. A method of mixing materials on a continuous basis, comprising the steps of feeding a larger portion of fibrous material into the center suction point of a high pressure open fan assembly, and feeding a smaller portion of materials into another inlet point located on the periphery of the same fan housing assembly and leading into the tips of the open fan rotor blades.

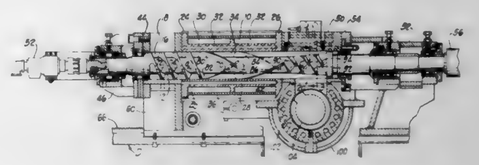


3,923,290
SHEAR CONTROL FOR EXTRUDER APPARATUS
Robert Tillis, 51 Harmon Road, Edison, N.J. 08817
Filed May 7, 1974, Ser. No. 467,807
Int. Cl.² B29B *1/06*
U.S. Cl. 259—191 **9 Claims**



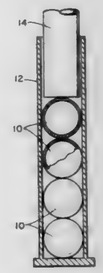
1. Apparatus for extruding plastic material comprising
barrel means having inlet means for receiving material to be extruded and outlet means for exit of the material;
screw means disposed in said barrel means and including an elongate body extending longitudinally in said barrel means and a helical rib extending around said body;
drive means including motor means and reducer means coupled with and rotatably driven by said motor means and having output means driven at a speed less than the speed of said motor means; and
shear control means coupling said output means of said reducer means with said screw means to rotate said screw means to force the material to be extruded from said inlet means to said outlet means of said barrel, said shear control means including a coupling shaft having a portion of reduced cross-sectional area to control the breaking point of said coupling shaft, said portion of reduced cross-sectional area of said coupling shaft having a cross-sectional area less than the cross-sectional area of said body of said screw means such that said coupling shaft will break at said portion of reduced cross-sectional area to interrupt rotation of said screw means when the shear force between said screw means and said output means of said reducer means exceeds a predetermined value less than the shear force required to break said screw means.

3,923,291
INTERNAL MIXER
James T. Matsuoka, Brecksville, and Armindo Cantarutti, Akron, both of Ohio, assignors to Intercole Automation, Inc., Cleveland, Ohio
Division of Ser. No. 103,537, Jan. 4, 1971, Pat. No. 3,723,039, which is a continuation-in-part of Ser. No. 841,349, July 14, 1969, Pat. No. 3,700,374, and a continuation of Ser. No. 331,271, Feb. 8, 1973, abandoned. This application Sept. 12, 1974, Ser. No. 505,305
Int. Cl.² B29B *1/10*; B01F *15/02*
U.S. Cl. 259—192 **3 Claims**



1. In a continuous internal mixer for processing plastics, and the like: a housing having two side-by-side interconnected substantially cylindrical material processing chambers having a first opening adjacent to one end through which material to be processed is charged and a second opening adjacent to the opposite end through which material is discharged; two rotors, one in each of said chambers, supported for rotation therein and each provided with material working blade portions in the mixing chamber oriented more lengthwise of the axis of the rotors than circumferentially thereof and twisting in opposite directions; an interrupted screw thread having a maximum diameter about equal to the interior diameter of said mixing chamber and lacking a full diameter thread convolution on each of said rotors at the downstream side of said material working blades; means for rotating said rotors; a cylindrical conduit offset from and extending transversely of the axes of said rotors communicating with said second opening; a rotatable screw in said conduit to convey material from said chambers; and means for rotating said screw at a controlled rate whereby the duration of the processing of material in said processing chambers is controlled.

3,923,292
ENERGY ABSORBING DEVICES
Baxter C. Madden, Jr., 680 N. Loop Drive, Camarillo, Calif. 93010
Filed Oct. 15, 1974, Ser. No. 514,532
Int. Cl.² F16F *3/07*
U.S. Cl. 267—64 R **14 Claims**



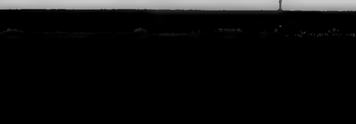
1. An energy absorbing device for controllably dissipating large amounts of impact load energy at a gradual rate without rebound or quick collapse of the device, comprising:
a. a housing means having an open end and a closed end;
b. a piston means slidably disposed in the open end of said housing means;

c. at least one hollow body of substantially spherical configuration formed of ductile material arranged within said housing between said piston means and the closed end of said housing means;
d. loading forces applied to said piston means being absorbed by non-recoverable plastic deformation of said at least one ductile hollow spherical body, said at least one spherical body operable to deform greatly as said piston means moves in the direction of the closed end of said housing means with a steep and continuously increasing load applied thereto;
e. vent means allowing escape of any gases within said housing means as said piston means moves toward the closed end thereof; and
f. the energy absorbing capacity of said device being varied by changing any of the diameter, number, wall thickness and material of the ductile hollow spheres.

3,923,293
SPRING INSULATOR FOR WIRE SPRING CUSHIONING STRUCTURES SUCH AS MATTRESSES

Donald E. Wiegand, Minneapolis, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Filed June 22, 1973, Ser. No. 372,785
Int. Cl.² F16F *3/04*
U.S. Cl. 267—94 **17 Claims**



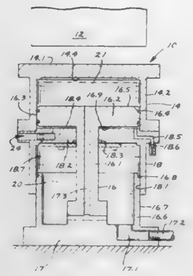
1. A spring cushion structure comprising a plurality of resilient metal wire springs which form a foundation the surface of which contains relatively large open spaces between a multiplicity of relatively small wire therein, a flexible polyethylene sheet of foam of a honeycomb type of cellular structure of less than about 1.0 inch thick with a density of less than about 6 pounds per cubic foot positioned at the top of the wire spring foundation to form a spring insulator for the wire spring foundation and a cushioning material positioned above said spring insulator, the resistance to compression of said spring insulator being greater than the resistance to compression of said cushioning material.

3,923,294
POWER PRESS DIE CUSHION WITH AIR DECELERATOR

Robert M. Gold, Minneapolis, Minn., and Robert M. Gold, Jr., Phoenix, Ariz., assignors to Dayton Rogers Manufacturing Co., Minneapolis, Minn.

Filed Oct. 21, 1974, Ser. No. 516,751
Int. Cl.² F16F *5/00*
U.S. Cl. 267—119 **11 Claims**

1. A controlled return pneumatic die cushion for a power press, the cushion having an air chamber under substantially constant pressure which respectively contracts and expands in volume as the cushion is decreased in height under the force of a power press ram and as the cushion recovers its original height when the force of the ram is removed, the cushion including a cavity which respectively expands and contracts in volume as the height of the cushion decreases and increases, the cushion including a decelerator valve for bleeding air in a controlled manner from the cavity to control the rate at which the cushion returns to its original height, the valve communicating with the air chamber and the cavity and responsive to

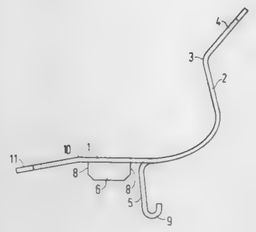


the ratio of cavity pressure to air chamber pressure to open when a given ratio has been exceeded.

3,923,295
SPRING CLAMP FIXABLE IN A CIRCULAR HOLE IN A PLATE OR PANEL

Kajetan Leitner, 817 Bad Tolz, am Winacker, Germany

Filed July 8, 1974, Ser. No. 486,660
Claims priority, application Germany, July 16, 1973, 2336184
Int. Cl.² F16F *11/26*
U.S. Cl. 267—158 **3 Claims**

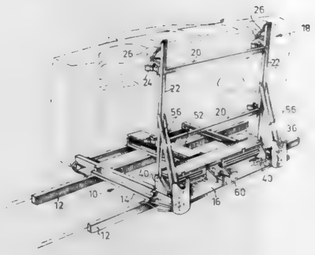


1. A spring clamp fixable in a circular hole in a plate or panel comprising an elongated strip of metal having an attaching contact fitting juxtaposed to said plate or panel over said circular hole, one end of said attaching contact fitting extending substantially at a right angle from said contact fitting away from said plate or panel, the other end of said contact fitting being curved towards said plate or panel, two oppositely-disposed guide lugs having axially extending edges whereby a centering arrangement is formed in relation to said circular hole and at least one holding lug, said guide lugs and holding lug lying intermediate the ends of said attaching contact fitting and extending into said circular hole in said plate or panel, the free end of said holding lug being bent towards said first mentioned end and engaging the inner surface of said plate or panel whereby said clamp is securely gripped by the said attaching contact fitting to secure the same to said plate or panel.

3,923,296
DEVICE FOR TILTING AUTOMOBILE BODIES ON AUTOMOBILE BODY ASSEMBLY LINES

Aake Fritiof Oksala, Alvangen; Bror Arne Vilhelm Hultberg, and Sven Erik Svensson, both of Hisings Backa, all of Sweden, assignors to AB Volvo, Goteborg, Sweden

Filed Aug. 26, 1974, Ser. No. 500,731
Int. Cl.² B23Q *3/18*; B66F *3/08*
U.S. Cl. 269—60 **5 Claims**

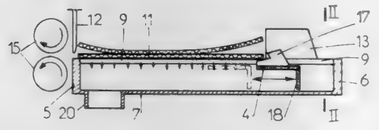


1. Device for tilting a motor vehicle body during assembly along an assembly line, comprising an underframe, a fastening frame supported by the underframe and having means for fastening the underside of the body to said fastening frame and tilting means connected to the underframe and the fastening frame for tilting the fastening frame relative to the underframe between a horizontal and vertical position, said tilting means comprising at least two trolleys which are movable horizontally in a transverse direction on the underframe by means of a horizontal driving arrangement, joint arms pivotably connected at one end to the underframe, the fastening frame being pivotably connected to the trolleys and to the other end of said joint arms, whereby when the trolleys are moved on the underframe, the fastening frame is tilted between a horizontal and vertical position.

3,923,297
APPARATUS FOR FEEDING SHEETS

Jean-Jacques Barny, Lyon, France, assignor to Martin, Saint-Priest, France

Filed May 21, 1974, Ser. No. 471,910
Claims priority, application France, July 31, 1973, 73.27945
Int. Cl.² B65H *3/24, 3/46*
U.S. Cl. 271—132 **3 Claims**

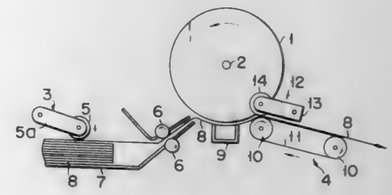


1. A device for successively feeding the bottom sheet from a stack of sheets into a treatment machine comprising a supporting table, front and rear stops on said table between which the stack is located, a casing closed at the sides and the bottom, means for coupling said casing to a suction device, spaced parallel bars extending in the direction of feed of the sheets and forming the top of the table, a reciprocating feeder, a transverse support bar for said feeder inside said casing and below the top bars of said casing, claws of the same width as the space between said top bars secured to said support bar and projecting upwards between and above said top bars to engage the bottom sheet at each reciprocation of said feeder, and a rear closure plate of the same transverse section as said casing, projecting under the support bar and forming a movable rear wall for said casing moving with said support bar.

3,923,298
COPYING PAPER FEEDING DEVICE FOR ELECTRONIC COPYING APPARATUS

Tsutomu Ishida, Musashino, Japan, assignor to Copyer Co. Ltd., Tokyo, Japan

Filed Sept. 28, 1973, Ser. No. 401,714
Claims priority, application Japan, Oct. 4, 1972, 47-115099[U]
Int. Cl.² B65H *29/56*
U.S. Cl. 271—174 **3 Claims**



1. A copying paper feeding device for electronic copying apparatus provided with a rotation drum having a photosensitive surface, said copying paper feeding device including means for applying a copying paper onto the photosensitive surface of the rotation drum with at least one side edge of the copying paper extending beyond one side edge of the rotation drum, means for separating the copying paper from the rotation drum including a separation roller provided in proximity to said drum to be contacted with said one surface of said one edge and a guide plate member having a lower surface along which the copying paper is guided from the separation roller, said guide plate being swingable about the rotation axis of said separation roller and mounted adjacent said drum for slidingly contacting with one surface of said one side edge extending beyond said one side edge of said drum of the copying paper which faces the photosensitive surface, and transporting means to which the copying paper from said separating means is supplied.

2. A copying paper feeding device for electronic copying apparatus provided with a rotation drum having a photosensitive surface, said copying paper feeding device including means for applying a copying paper onto the photosensitive surface of the rotation drum with at least one side edge of the copying paper extending beyond one side edge of the rotation drum, and means for separating the copying paper from the rotation drum including a swingable guide plate member whose one end extends toward the inside of said drum to guide the copying paper along the lower surface of the guide plate and whose base end is pivoted, said guide plate having a flat under surface and a projection extending at an obtuse angle to the flat under surface, and being mounted adjacent said drum for slidingly contacting with one surface of said one side edge extending beyond said one side edge of said drum of the copying paper which faces the photosensitive surface.

3,923,299
METHOD AND APPARATUS FOR FORMING AN EVEN EDGED PILE OF FLEXIBLE SHEETS

Ruel E. Taylor, West Buxton, and Alston R. Wormwood, Gorham, both of Maine, assignors to Ruel E. Taylor, Inc., Gorham, Maine

Filed Oct. 3, 1973, Ser. No. 403,055
Int. Cl.² B65H *31/38*
U.S. Cl. 271—221 **18 Claims**

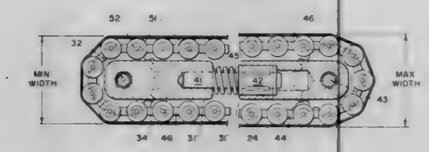
1. The method of forming an even edged pile of flexible sheets delivered in a generally horizontal direction to the top surface of said pile comprising the steps of:
confining the opposite lateral edges of sheets delivered to said pile by contact with active surface area constraints spaced nominally the width of said sheets; and

moving said active surface area constraints continuously in the direction of travel of the delivered sheets while providing incremental oscillatory variation of the spacing between said surface area constraints on said opposite lateral edges by reciprocating said active surface areas substantially normal to said direction of travel to make said contact with said lateral edges along extended portions thereof during each reciprocation.

16. A jogger mechanism comprising:

a base adapted to be supported horizontally;

spaced vertical shaft means supported on said base;



sprocket gear means on said shaft means;

endless drive chain means engaged with said sprocket gear means;

jogger surface means supported on said drive means;

means for driving said sprocket gear means to move said jogger surface means along the peripheral path of said drive chain means with a transverse oscillatory motion component; and

means for tensioning said drive chain means between said sprocket gear means to make the peripheral portion of said drive chain means extending between said sprocket gear means move as a unit with said oscillatory motion component.

3,923,300

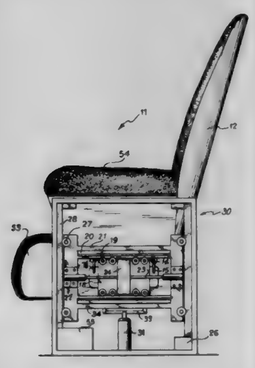
THEATER CHAIR AUTOMATICALLY MOVABLE BY REMOTE CONTROL

Antonio Tanus, Jose T. Cuellar No. 12, Col. Obrera, Mexico (8, D.F.)

Division of Ser. No. 354,065, April 24, 1973, Pat. No. 3,865,430. This application Nov. 29, 1974, Ser. No. 528,525

Int. Cl.² A47C 1/12; A63J 5/00; A63G 31/16

U.S. Cl. 272—18 **6 Claims**



1. A theater chair movable by remote control, comprising a supporting structure, a chassis with a backrest and two armrests integral therewith and installed on the supporting structure, a seat connected to the chassis so as to be rotatable with respect thereto, and vibrational means within said seat, the supporting structure comprising, at each side of the chassis:

a rigid frame;

a first fluid-actuable ram device supported by said rigid frame;

a first plate connected to be acted upon the first ram device to be displaced vertically thereby;

a second fluid-actuable ram device supported by said first plate; and

a second plate connected to be acted upon by the second ram device to be displaced horizontally thereby,

the second plate at one side of said chassis being connected to said one side of said chassis through at least one ball and socket universal joint and the second plate at the other side of said chassis being connected to said other side of said chassis by way of at least one other ball and socket universal joint so that the two sides of the chassis may be raised or lowered independently of one another by independently actuating the first ram devices and the two sides of the chassis may be moved forwards or backwards independently of one another by independently actuating the second ram devices.

3,923,301

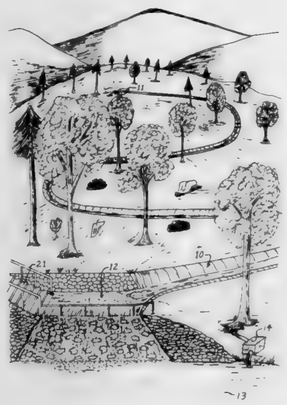
AMUSEMENT WATER SLIDE AND METHOD

Dwight L. Myers, Mocksville, N.C., assignor to Water-Boggan, Inc., Mocksville, N.C.

Filed Sept. 19, 1974, Ser. No. 507,400

Int. Cl.² A63G 21/18

U.S. Cl. 272—56.5 R **9 Claims**



1. The method of adapting the topography of a hill to a water slide amusement device, which method comprises:

a. providing a landing pool of water;

b. providing a starting point on the hill at a higher elevation than said landing pool;

c. providing a slideway dug into the hill and extending between the starting point and said landing pool;

1. conforming the slideway to the contour of the land to provide the desired rate of descent and curvature,

2. introducing water into the slideway at said starting point, and

d. providing a mat for each rider.

3,923,302

PORTABLE MOUNT FOR GYMNASTIC POLE

Robert Boggild, Graham Home Place Road, South Pittsburg, Tenn. 37380

Filed Feb. 7, 1975, Ser. No. 547,821

Int. Cl.² A63B 9/00

U.S. Cl. 272—60 A **10 Claims**

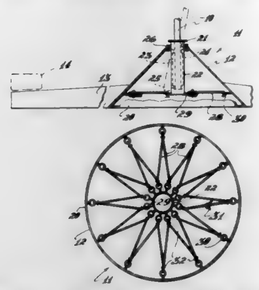
1. A mount and flexible gymnastic pole combination comprising

a body having a surface engaging base and an upper opening,

removable means for securing said base against tipping with respect to the surface which it engages,

a socket disposed within said body,

resilient means securing one end of said socket to said body, the other end of said socket being universally pivotable



with respect to said body whereby said socket, when stressed can tilt with respect to said body,

and a flexible pole mounted in said socket and being supported at its lower end by spaced upper and lower elastomeric bushings which permit said pole to flex within said socket.

3,923,303

RACKET AND STRING HOLDING ELEMENTS

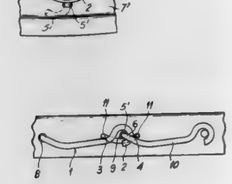
Jean Rene Lacoste, Paris, France, assignor to Patentex S.A., Fribourg, Switzerland

Filed Feb. 4, 1974, Ser. No. 439,617

Claims priority, application France, Feb. 9, 1973, 73.04680

Int. Cl.² A63B 51/00

U.S. Cl. 273—73 D **1 Claim**



1. A racket structure comprising:

a racket frame;

a plurality of holes formed along an inner wall of said frame in spaced relationship;

a plurality of interlinked attachment elements made of a wire material and arranged along said frame, each of said elements having an end portion forming an s-shaped lug, a substantially straight elongated middle portion, a bent portion bent away from said straight portion, and another end portion forming a hook substantially shaped as an open circular loop at said bent portion, the lug of each attachment element having a first bend at least partly engaged in one of the holes of said frame, a connecting portion and a second bend extending outside of the respective hole over a length greater than the cross-sectional size of the wire material by a predetermined amount, and the hook of a first attachment element being engaged around the second bend of the lug of a second attachment element adjacent to said first element;

stringing spanning said frame in a plurality of runs, said stringing consisting of a string material having a cross-sectional size not greater than said predetermined amount, and having stringing loops between said runs, each of said stringing loops passing across the bent portion of a first attachment element, then across the hook of said first element between the hook and said frame, around the connecting portion of a second attachment element adjacent to said frist element and finally within the second bend of the lug of said second element, outside of the hook of said first element engaged around the lug of said second element, whereby the space between adjacent runs of the stringing is substantially predetermined by the outer diameter of the substantially circular open hook of each attachment element, and wherein the lugs of the attachment elements and the stringing lie substantially in a common first plane, the hooks and the straight middle portions of said elements lie in a respective second plane, substantially perpendicular to said first plane.

3,923,304

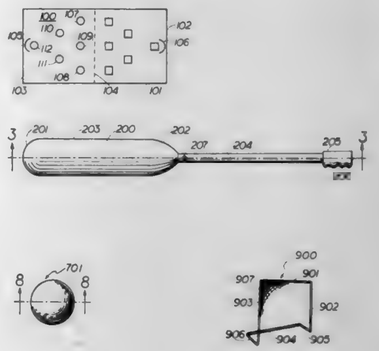
SURFACE BALL GAME AND APPARATUS

John E. C. Warren, 509 Riverside Drive, Melbourne Beach, Fla. 32951

Division of Ser. No. 407,518, Oct. 18, 1973. This application May 31, 1974, Ser. No. 475,230

Int. Cl.² A63B 59/00

U.S. Cl. 273—95 R **10 Claims**



1. A surface game on a playing field with a dividing center line involving a plurality of players on each of two sides and apparatus therefor, said apparatus comprising in combination a goal of lightweight framing supporting a net at each of longitudinal ends of said playing field, a soft lightweight playing ball of substantial diameter, and a lightweight injury-free players stick for each of said players, said players stick comprising a solid substantially cylindrical resilient foam ball striking body having a length about three times the diameter, an external protective and frictional skin means on said striking body, a central longitudinal bore about six inches deep in said striking body, and a flexible handle means in said bore and extending a substantial distance therefrom.

3,923,305

COMBINED GAME OF CHANCE AND SKILL

Lawrence L. Reiner, 1 Hickory Lane, Woodbury, L.I., N.Y. 11797, and William A. Brady, 201 Cross St., Fort Lee, N.J. 07024

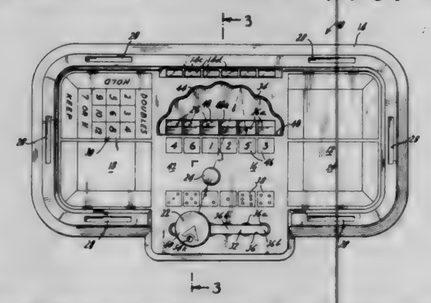
Filed Feb. 4, 1974, Ser. No. 439,212

Int. Cl.² A63F 7/10, 9/00

U.S. Cl. 273—126 R **2 Claims**

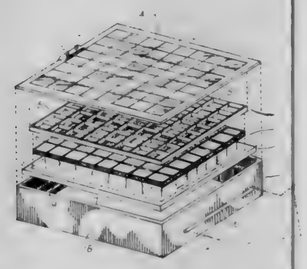
1. A combined game of chance and skill comprising a game board including a playing field having a playing position and a rebound bumper spaced from said playing position, a puck-propelling mechanism, said puck-propelling mechanism including a housing, a trigger mechanism within said housing,

said trigger mechanism including a puck-receiving seat for receiving said puck, and locking means for holding said trigger mechanism in a cocked position, said locking means including a cam formed in said housing and a cam follower attached to said puck-receiving seat for camming said trigger mechanism into its cocked position within said housing, said locking means further including an actuating hole formed in said housing and a lock formed on said trigger mechanism adapted to be inserted through said actuating hold to maintain said trigger mechanism in its cocked position, means for mounting said puck-propelling mechanism at said playing position,



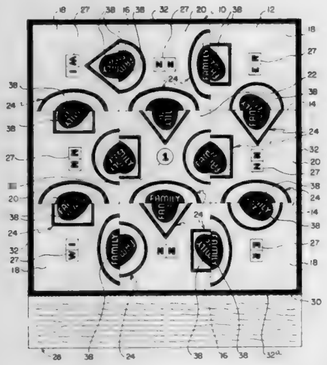
means dividing said game board into an upper playing surface and a lower playing surface, a plurality of puck-receiving members movably mounted on said lower playing surface, an indicator associated with each of said puck-receiving members and a puck adapted to be propelled by said puck-propelling mechanism from said playing position along said upper playing surface to impact with and bounce off said rebound bumper and be propelled along said lower playing surface until said puck drops into one of said puck-receiving members and actuates said puck-receiving member so that its associated indicator indicates the result of the play.

3,923,306
EDUCATIONAL GAME PLAYING DEVICE
Gerardo R. A. Cahn-Hidalgo, 5024 Allan Road, Bethesda, Md. 20016; Emilio Castanón-Pasquel, 16213 Grist Mill Drive, Rockville, Md. 20853, and Jorge Del Rio Boldan, Ricardo Palma, Miraflores, Lima, Peru
Filed Oct. 18, 1974, Ser. No. 516,086
Int. Cl.² A63F *3/02*; G09B *1/00*
U.S. Cl. 273—136 A **12 Claims**



1. A game playing device comprising a housing having a top game playing surface, said game playing surface defining a plurality of game positions, an illuminating element disposed below each of said game positions, connector plate means disposed in said housing, a plurality of sensing means disposed above said connector plate means, means for progressively introducing a sheet containing punched information bit locations into said housing between said connector plate means and said plurality of sensing means, each of said sensing means being adapted to contact said connector plate means through said bit locations, and electrical circuit means providing electrical connection between said connector plate means and said illuminating means, so that when the sensing means contact said connector plate means through the bit locations in the information sheet one or more illuminating elements is actuated.

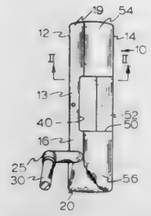
3,923,307
PUZZLE
V. John Sukys, Cleveland; Julius P. Sukys, Willowick; Harry E. Edelmann, Chagrin Falls, and Thomas E. Condon, Willowick, all of Ohio, assignors to C/M/S Marketing Corporation, Mentor, Ohio
Filed May 20, 1974, Ser. No. 471,296
Int. Cl.² A63F *9/10*
U.S. Cl. 273—157 R **13 Claims**



1. In a puzzle, a flat sheet of severable material having a peripheral edge, line means dividing said sheet into sections, indicia on said sections, said indicia on at least certain of said indicia carrying sections comprising plural indicia species including letter indicia species and plural partial geometric-like indicia species, said sheet comprising indicia carrying sections disposed in adjacent aligned equal length parallel rows, said geometric-like indicia species being disposed along said dividing line means, the central of said sections having said geometric-like indicia species disposed along all of the dividing line means defining its area, said other sections having said geometric-like indicia species disposed only along said dividing line means defining the area of each of said other sections with none disposed along said peripheral edge, said partial geometric-like indicia species generally not cooperating to form conventional geometric configurations along said dividing line means, said sections being severable from one another along said dividing line means and being adapted for attempted reassembly into matched relation to form conventional geometric configurations from said partial geometric-like indicia and at least one dictionary word from said letter indicia whereby said complete conventional geometric indicia configurations appear along all of said dividing line means associated with each of said sections with none disposed along the peripheral edge, when said sections are matched into said geometric configurations with formation of said word.

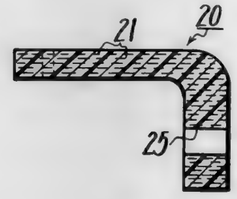
3,923,308
SLOTTED GOLF PUTTER
Truett P. Mills, 1700 Second Ave., Tuscaloosa, Ala. 35401
Filed Sept. 17, 1973, Ser. No. 397,734
Int. Cl.² A63B *69/36*, *53/04*
U.S. Cl. 273—183 D **5 Claims**

1. A golf putter comprising a putter head, said putter head having a frontal striking surface, a top surface, a bottom surface and a rear surface and toe and heel portions, said head having a vertical slot extending therethrough, said slot having sufficient width and length dimensions to permit substantial visual observation therethrough, the width of said slot being greater than the thickness of said putter head between said slot and said frontal striking surface, said top surface of said head further having a cutaway portion contiguous with said



slot along the length thereof and extending rearwardly completely through said head, said cutaway portion being further defined by side walls therealong, said side walls extending substantially along a vertical plane, and a shaft secured to said putter head and extending upwardly therefrom.

3,923,309
CARTRIDGE SHELL FOR PHONOGRAPH PICKUP
Heitaro Nakajima; Hirotake Kawakami, both of Tokyo; Shokichi Tatara, Yokohama, and Jun Kishigami, Tokorozawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed July 17, 1974, Ser. No. 489,073
Claims priority, application Japan, July 21, 1973, 48-85141
Int. Cl.² G11B *3/10*
U.S. Cl. 274—23 R **6 Claims**



1. A cartridge shell for use with a phonograph, said cartridge shell being mounted on one end of a tone arm and said shell supporting a phonograph cartridge, said shell being composed of carbon fibers bonded together by means of a synthetic resin, said shell possesses a high internal loss so that said shell effectively damps vibrations, is light in weight to provide quick response, and reduces resonance phenomena with high rigidity.

3,923,310
FLIGHTS FOR DARTS AND ARROWS
Stanley Robert Lowy, South Croydon, England, assignor to Unicorn Products Limited, London, England
Filed June 14, 1973, Ser. No. 369,877
Claims priority, application United Kingdom, Aug. 11, 1972, 37585/72
Int. Cl. A63b *65/02*; F41b *5/02*
U.S. Cl. 273—106.5 C **9 Claims**

1. A flight comprising an elongate stem having a periphery of predetermined regular shape symmetric about an axis of symmetry of the stem, a plurality of flight wings each having a stem attachment edge extending substantially the whole length thereof, and means mounting the stem attachment edge of each flight wing to said stem such that said flight wings radiate outwardly of said stem periphery with said elongate stem extending longitudinally beyond each end of the stem attachment edge of each of said flight wings, said flight being characterised in that:

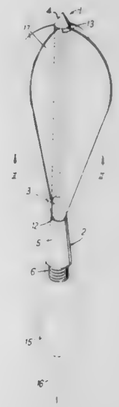
i. the elongate stem has a plurality of integral flight wing alignment and stem stiffening ribs of substantially uniform cross-section that extend longitudinally of the stem for at least the length of said attachment edges, radiate from said stem periphery about periphery locations spaced equiangularly of said axis of symmetry, and project outwardly of the stem periphery by a short distance;

ii. each of said flight wing alignment and stem stiffening ribs has two opposite side surfaces that are

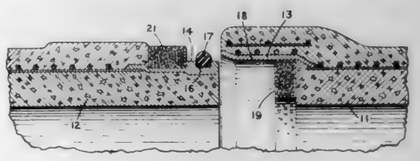
a. planar and parallel to one another and to a radius from said axis of symmetry, whereby at least one of said surfaces constitutes a planar alignment face for a radiating flight wing adjacent the entire length of the stem attachment edge thereof, and

b. spaced apart by a distance that is substantially less than the angular distance, along the stem periphery, between the ribs of neighbouring locations, whereby said ribs provide stiffening of the stem; and

iii. each flight wing laterally abuts the planar alignment face of an associated one of said ribs to be thereby aligned longitudinally of said stem and have its said attachment edge laterally protected by said rib along the entire length of said stem attachment edge extending substantially the whole length of said flight wing.



3,923,311
STRUCTURAL POLYURETHANE FOAM SYSTEM WITH AN INORGANIC ALKALINE SEALANT SUSPENDED THEREIN
Irving Tashlick, Bradley Beach, N.J., assignor to Interpace Corporation, Parsippany, N.J.
Continuation-in-part of Ser. Nos. 359,967, May 14, 1973, and Ser. No. 414,144, Nov. 9, 1973. This application Apr. 18, 1974, Ser. No. 462,041
Int. Cl.² F16J *15/10*
U.S. Cl. 277—1 **45 Claims**



1. A process for sealing a space against flow of a fluid therethrough by placing relative a structure a dry hydratable ce-

ment, which is reactive with water to hydrate, the process comprising:

introducing the hydratable cement into at least one precurser of a urethane material,

causing the urethane material to foam and polymerize so as to produce a foamed polyurethane material with the hydratable cement dispered therein,

placing the foamed polyurethane material relative the structure, and

allowing the foamed polyurethane material to be contacted with water whereby the hydration takes place.

3,923,312

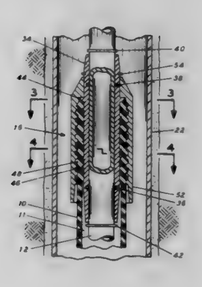
FORCE FIT INFLATABLE PACKER CLAMP

Stanley O. Hutchison, Bakersfield, and Neal L. Mitchell, Taft, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Dec. 10, 1973, Ser. No. 423,593

Int. Cl. F16J *15/40*

U.S. Cl. 277—34.6 **7 Claims**



1. An inflatable packer comprising a tubing section, an elongated resilient sleeve member slideably positioned over said tubing section, force fit clamping means engaging said sleeve member and compressing said sleeve member near the ends thereof to disconnectably connect each end of said sleeve member in fluid-tight relationship with said tubing section to form an annular chamber between said tubing section and said sleeve member and port means providing a passageway for flowing fluid into said annular chamber to inflate said resilient sleeve member.

3,923,313

SELF-ADJUSTING GREASE-SEALED ARTICULAR JOINT

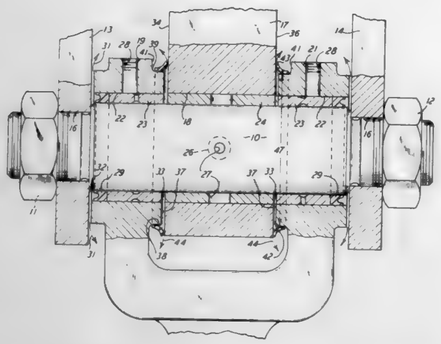
Leonard B. Bailey, Palestine, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed May 22, 1975, Ser. No. 579,798

Int. Cl.² F16J *15/34*

U.S. Cl. 277—63 **6 Claims**

1. A self-adjusting grease-sealed articular joint comprising a pin establishing an axis of articulation of the joint, two members encircling said pin and being relatively movable toward and away from each other in the direction of the axis of said pin, one of said members having a circular boss disposed adjacent the other of said members and with said other of said members having a planar surface facing said boss and being of a size larger than the diameter of said boss, said one member also having a planar surface contingous with and disposed to the side of said boss spaced from the first said planar surface, and an elastomeric grease-seal ring of an annular shape disposed on said boss and having an internal diameter less than the diameter of said boss and stretched onto said boss and be deflected into a concave shape with the outer circumference of said ring disposed against the first said planar surface, and with said ring thereby disposed in the space



between said planar surfaces and present a grease seal therebetween.

3,923,314

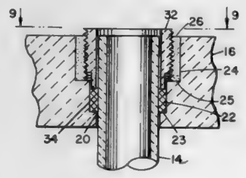
NON-RIGID SEAL FOR JOINING SILICON CARBIDE TUBES AND TUBE SHEETS IN HEAT EXCHANGERS

Harry A. Lawler, Youngstown, N.Y., and John Reys, Solon, Ohio, assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Dec. 6, 1973, Ser. No. 422,441

Int. Cl. F16l *37/00, 41/00*

U.S. Cl. 277—112 **5 Claims**



1. An impermeable non-rigid seal in a heat exchanger; said seal comprising:

a. a silicon carbide tube sheet having an inner surface and an outer surface, said sheet having at least one first circular opening therethrough, said opening having walls essentially perpendicular to said surfaces, and a silicon carbide tube inserted into said opening;

b. said silicon carbide tube sheet having a second circular opening countersunk in said outer surface, said second opening being axially concentric with said first opening and having a diameter substantially greater than that of said first opening, the sides and bottom of said second opening defining a first chamber;

c. a packing material located in said first chamber and positioned around said tube;

d. said silicon carbide tube sheet having a third opening countersunk in said outer surface, said third opening being axially concentric with said first and second openings and having a circumference substantially greater than that of said second opening, the walls and bottom of said third opening defining a second chamber;

e. a packing compression means encircling said tube, said means comprising a ring of machinable material bonded to and supported by the walls and bottom of said second chamber, said ring having the opening therein axially concentric with and having a substantially larger diameter than said tube, said ring opening having a thread machined therein; and

f. a cylindrical packing follower encircling said tube, said follower having an external thread machined thereon for engagement with the thread machined in said ring opening for compression of said packing material around said tube upon rotation of said follower.

3,923,315

FLUID SEAL

Bernard Milton Hadaway, Highett, Australia, assignor to Repco Research Propietary Limited, Australia

Filed Apr. 9, 1973, Ser. No. 349,174

Claims priority, application Australia, Apr. 10, 1972, 8545/72

Int. Cl.² F16J *15/32*

U.S. Cl. 277—134 **4 Claims**



1. A fluid seal having a generally annular body of resilient material, said body including an axially inner surface and an axially outer surface which converge to define a circular sealing edge for engagement with a machine component, an annular barrier wall located adjacent said axially outer surface and in axially spaced relationship from said sealing edge, said barrier wall projecting generally in the same direction as said sealing edge so that a fluid catchment groove is formed between said axially outer surface and the adjacent side of said barrier wall, a bi-direction pumping configuration on said axially outer surface to direct fluid towards said sealing edge during relative rotation between said seal and said machine component, said configuration comprising a series of ribs, each said rib disposed so as to extend entirely between said sealing edge and said barrier wall side at an angle relative to said sealing edge, and each alternate said rib extending substantially parallel to each other and angularly relative to the immediately adjacent said ribs whereby said barrier wall deflects fluid on to the pumping configuration so that it will be influenced towards the sealing edge.

3,923,316

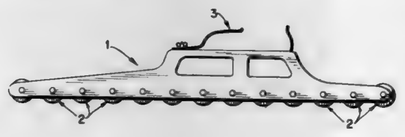
GRASS-SKI

Richard S. Birnbaum, 111 E. 64th Ave., Philadelphia, Pa. 19120, and Bruce H. Birnbaum, 13540 Youngwood Turn, Bowie, Md. 20715

Filed Dec. 27, 1973, Ser. No. 428,711

Int. Cl.² A63C *17/04*

U.S. Cl. 280—11.22 **6 Claims**



1. A ski structure comprising a frame including a pair of rigid side plates, a plurality of reinforcing strut members extending between said side plates, and a support platform extending between said side plates, and a plurality of wheel assemblies secured to and extending between said side plates and longitudinally spaced therealong, at least one of said strut members located below the axis of rotation of said wheel assemblies and adjacent the lower edge of the side plates to substantially prevent cambering of the lower edge of said side plates.

3,923,317

SKI POLE HAND/WRIST ATTACHMENT

Donald Armstrong Penney, 365 Virginia, Salt Lake City, Utah 84102

Continuation-in-part of Ser. No. 315,882, Dec. 18, 1972, Pat. No. 3,879,048. This application Aug. 5, 1974, Ser. No. 494,743

Int. Cl.² A63C *11/22*

U.S. Cl. 280—11.37 H **10 Claims**



1. In combination in a ski pole having a handle portion, an attachment comprising

a cuff member made of a band of material formed into a loop for placement about a skier's hand, said cuff member being open at a single point thereof forming a break in said loop and wherein the ends of the band formed at the break may be spread apart from a first attitude to enable slipping the hand or wrist through the opening into the cuff member and then returned to the first attitude, and

means joining the cuff member to the handle portion the ski pole.

3,923,318

PORTABLE LUGGAGE OR LOAD CARRIER

Charles J. Renard, 356 Vincent Place, and Louis L. Rifken, 344 Vincent Place, both of Elgin, Ill. 60120

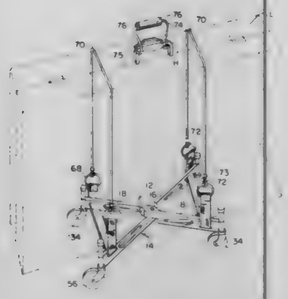
Filed Dec. 3, 1973, Ser. No. 420,958

Int. Cl.² B62B *3/04*

U.S. Cl. 280—35 **4 Claims**

1. A portable luggage or load carrier comprising, a pair of arms, namely, a first arm and a second arm both of similar shape, each said arm having a central portion and oppositely extending sections, with one of said sections parallel to but offset from the other section, said pair of arms pivotally connected together at their respective central portions so that the arms may be positioned substantially parallel to each other when collapsed and positioned to form a substantially X-configuration when in load carrying position, wheel means secured adjacent the outer end of each of said arms whereby the carrier may be rolled or wheeled on a floor or ground surface,

an opening in each of said arms adjacent the outer ends thereof, a pair of straps at each of the opposite ends of said arms, one of each pair of straps anchored to said first arm and passing through the opening in the second arm and the other of said pair of straps anchored to said second arm and passing through the opening in said first arm so that when the ends of



the opposite straps are pulled outwardly away from each other the pair of arms will pivot toward each other, and means associated with each pair of straps and extending over the luggage or load supported on said carrier to secure said luggage or load on said carrier whereby the luggage or load may be moved with the movement of said carrier.

3,923,319

STEERING APPARATUS FOR VEHICLES

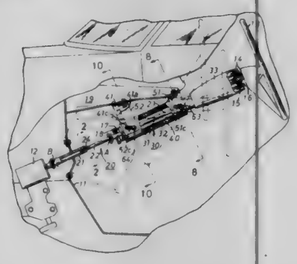
Masakatsu Nonaka, and Toshi Oniuma, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed June 24, 1974, Ser. No. 482,579

Claims priority, application Japan, July 4, 1973, 48-75359

Int. Cl.² B62D *1/18*

U.S. Cl. 280—87 R **9 Claims**



1. A steering apparatus for a vehicle comprising:

a steering shaft assembly including a first shaft of which the lower end is foldably connected to a steering gear of the vehicle by way of a first universal joint and a second shaft of which the lower end is foldably connected to the upper end of said first shaft by way of a second universal joint and the upper end is connected to a steering wheel, said first shaft being axially displaceable relative to said second shaft,

a column tube assembly including an inner column tube coaxially surrounding and journalling said second shaft therein and separated at its lower end in a predetermined distance from the front wall of the vehicle compartment, an outer column tube coaxially surrounding said inner column tube therein and separated at its lower end in a predetermined distance from the front wall of the vehicle compartment, and an impact energy absorbing means between said inner and outer column tubes for absorbing a secondary impact energy exerted on said inner column tube from the steering wheel in a secondary collision;

a front supporting means mounted on a vehicle body structure for supporting the lower portion of said outer column tube and including means permitting forward displacement and disengagement of said outer column tube relative to said front supporting means by the secondary impact energy; and

a rear supporting means mounted on the vehicle body structure for supporting the upper portion of said outer column tube and including means permitting forward displacement of said outer column tube relative to said rear supporting means and comprising a pivot for said outer column tube in a secondary collision; whereby in a vehicle collision said outer column tube is displaced forwardly by the secondary impact energy exerted thereon and swings downwardly or upwardly around said pivot of said rear supporting means to effect said impact energy absorbing means.

3,923,320

WAGON FOR TRANSPORTING AN ERECTED SCAFFOLD

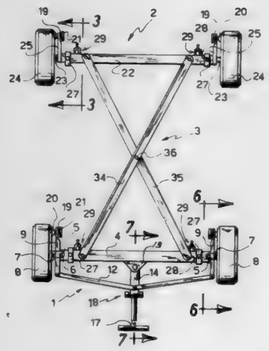
Andre Favreau, 28 Durham St., and Marcel Houle, 61 Mansfield Place, both of Dollard des Ormeaux, Quebec, Canada

Filed Nov. 26, 1974, Ser. No. 527,298

Claims priority, application Canada, Mar. 5, 1974, 194136

Int. Cl.² B60P *3/00*; B62D *21/06*

U.S. Cl. 280—103 **7 Claims**



1. An erected scaffold transporting wagon comprising a front wheel and axle assembly, a rear wheel and axle assembly, frame means disconnectably joining into a wagon configuration said front and rear assemblies in predetermined spaced parallel relationship and comprising a pair of bars pivoted intermediate their ends and detachably connected at their opposite ends to said front and said rear assemblies, allowing for tilting of either said front or said rear assembly in a plane perpendicular to an axis longitudinal to said wagon configuration, a pair of pins projecting lengthwise upwright in spaced-apart relationship on each of said front and rear assemblies and adapted to removably engage into the bottom opening of tubular legs of a scaffold section, said front wheel and axle assembly including steerable wheels and a steering mechanism connected to said steerable wheels for steering thereof, and a steering control device connected to said steering mechanism and actuating the latter to steer the wagon.

3,923,321

SAFETY BELT ARRANGEMENT

Andreas Bauer, Fallersleben, and Bernhard Ruhmann, Braunschweig, both of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Sept. 10, 1974, Ser. No. 504,830

Claims priority, application Germany, Sept. 12, 1973, 2345847

Int. Cl.² B60R *21/10*

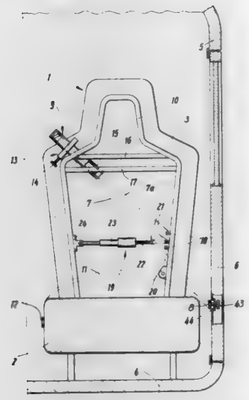
U.S. Cl. 280—150 SB **17 Claims**

1. A safety belt arrangement for a vehicle seat having a seat portion and a back portion extending upwardly from the seat portion, said arrangement comprising:

a. a safety belt for restraining the body of a passenger against the vehicle seat;

b. means for mounting the safety belt at a first point adjacent the seat portion of the vehicle seat; and

c. means for positioning the safety belt so that at least a portion of the safety belt extends from the first point in a direction transverse of the vehicle seat to a second point that is adjacent the back portion of the vehicle seat, said portion of the safety belt extending diagonally across the back portion of the vehicle seat and being adapted to extend diagonally across an upper portion of the body of



a passenger seated in the vehicle seat, the positioning means being adjustable selectively to vary the location of the second point at least in a vertical direction, wherein the positioning means includes:

i. bracket means holding the safety belt and defining the second point to which the portion of the safety belt extends;

ii. guide means mounting the bracket means so that the bracket means is movable relative to the guide means, the guide means being secured on a structural member coupled to the vehicle body; and

iii. actuating means operatively engaging the bracket means with the guide means for selectively moving the bracket means relative to the guide means.

3,923,322

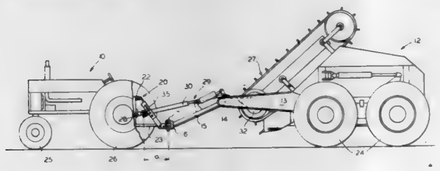
TRACTOR HITCH ADAPTER

James E. Hancock, Lubbock, Tex., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Aug. 29, 1974, Ser. No. 501,562

Int. Cl.² B60D *1/16*

U.S. Cl. 280—461 A **7 Claims**



1. A hitch adapter for a tractor vehicle having hitch means on the rear for towing an implement including an upper draft mounting and a lower draft mounting and a power take-off means between the two draft mountings adapted to drive an auxiliary unit being towed by the tractor hitch means, the hitch adapter having spaced leg portions being extendable generally downwardly and rearwardly between said upper and lower draft mountings providing a plurality of linearly adjusted positions, a draft coupling means including spaced plates adjacent the leg portions, and adjustment means including spaced, transversely aligned openings in said leg portions and plates, the one containing a pair of slots in aligned relation with openings in the other permitting the draft coupling means to be angularly adjustable on a transverse axis adjacent the lower end of said leg portions to a position corresponding to one of the linear positions of said leg portions adjusted to a position for maintaining the auxiliary unit in substantially the same relation to the power take-off means for one tractor hitch as for another whereby said hitch adapter permits said auxiliary unit to be coupled to different tractors.

3,923,323

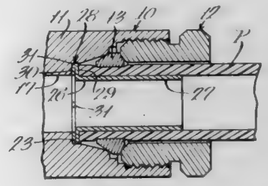
TUBE FITTING

Patrick J. Brogan, Sleepy Hollow, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Filed Jan. 2, 1974, Ser. No. 430,173

Int. Cl.² F16L *17/02, 37/08*

U.S. Cl. 285—3 **10 Claims**



1. In a tube fitting having a body provided with a through bore, and a one-piece element defining a frangibly connected nut and sleeve, said element being provided with a through bore adapted to receive coaxially the end of a tube to be connected to the fitting with the distal end of the tube projecting from the sleeve, said body bore defining a right cylindrical inner recess adapted to receive coaxially the projecting distal end of the tube for supporting and centering the tube end during make-up of the fitting, said recess having an outer diameter preselected to be slightly larger than the outside diameter of said distal end of the tube for facilitated insertion of said distal end of the tube thereinto during said make-up of the fitting, and having an inner diameter substantially equal to the inner diameter of said distal end of the tube, the inner end of said recess being defined by a radial, planar surface defining means for effectively positively fixing said distal end of the tube against longitudinal inward movement from a preselected inserted position in the body bore, said sleeve having a longitudinally inner nose portion defined by a radial inner end surface and a frustoconical outwardly widening surface, said sleeve further having a longitudinally outer portion defined by a radial outer end surface, a frustoconical outwardly narrowing surface, and a radial, annular surface at the inner, wide end of said outwardly narrowing surface, said body bore further defining a camming portion outwardly of said inner recess and tapering into said recess for causing constrictive mounting of said element sleeve to the supported, centered, and longitudinally fixed tube end and separation of said element sleeve from said element nut during said make-up of the fitting, said sleeve being frangibly connected to said nut at said outwardly narrowing surface, said nut having a longitudinally inner portion defining a longitudinally outer, outwardly narrowing frustoconical surface and a longitudinally inner radial stop surface, said radial annular surface of said sleeve abutting said radial stop surface of said nut in the made-up arrangement of the fitting to provide a preselected constriction of the longitudinally outer portion of the sleeve by engagement of said nut inner portion with said sleeve outer portion frustoconical

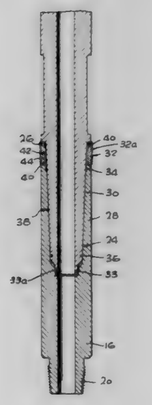
surface, said sleeve inner end surface having an unconstricted outside diameter substantially larger than the diameter of said body bore recess.

3,923,324

DRILL COLLAR WITH THREAD CONNECTIONS

James R. Cruickshank, Ras Beirut, Lebanon, and Rainer Jürgens, Westercelle, GDR, Germany, assignors to Christensen Diamond Products Company, Salt Lake City, Utah

Filed Jan. 14, 1974, Ser. No. 433,142
Claims priority, application Germany, Mar. 20, 1973, 2313664
Int. Cl.² F16L 21/02
U.S. Cl. 285—16 6 Claims



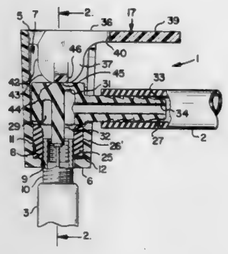
1. A drill collar for a rotary drill string, comprising a drill collar body member, a connection member at one end of said body member having a threaded end adapted for attachment to a companion threaded end of an adjacent portion of the rotary drill string, a first of said members including a pin portion having a conical outer surface, a second of said members including a box portion having a conical inner surface and adapted to receive said pin portion, said conical inner surface matching the configuration of said conical outer surface, one of said members having an external transverse shoulder near the base of the conical outer surface of said pin portion, the end of said box portion confronting said shoulder, a wear sleeve mounted on said pin portion between said shoulder and said end of said box portion, said wear sleeve being engageable by said shoulder and said end of said box portion, said sleeve having a conical inner surface corresponding to and in contact with said conical outer surface, means on one of said members for directing fluid under pressure to the region between said box portion inner surface and conical outer surface to expand said box portion, means on said sleeve for directing fluid under pressure to the region between said sleeve inner surface and conical outer surface to expand said sleeve, whereby expansion of said box portion and sleeve enables said pin portion to be moved relatively longitudinally along said box portion and sleeve to engage said end of said box portion with said sleeve and engage said sleeve with said shoulder to effect securing of said sleeve and box portion to said pin portion by shrink-fit frictional engagement between said sleeve and box portion inner surfaces and conical outer surface upon relieving of the fluid pressure in the regions between said sleeve and box portion inner surfaces and conical outer surface.

3,923,325

COMPRESSION COUPLING

Charles A. Slater, Jr., Leawood, Kans., assignor to Peterson Manufacturing Company, Grandview, Mo.

Filed Oct. 17, 1974, Ser. No. 515,687
Int. Cl.² F16L 37/18
U.S. Cl. 285—312 2 Claims



1. A compression coupling between a supply member and an elongate tubular receiving member comprising:

a. a one piece body member molded of synthetic resin and having a longitudinal bore opening at one end and a reduced aperture at the other end to receive an end portion of an elongate tubular receiving member extending therethrough into said bore, said body member having a shoulder between said aperture and bore, said body member having opposed substantially parallel walls at said one end with aligned opposed bearing recesses therein and another wall between said opposed walls with an elongate slot therein extending from said one end terminating in spaced relation to said shoulder;

b. a compressible sleeve normally fitting in said bore and having an end engaging said shoulder, said sleeve having a through bore normally of a size to movably receive said end portion of said tubular receiving member and contractable to sealingly engage same in response to longitudinal compression;

c. a depressor member molded of synthetic resin and slidably mounted in said bore and having one end engaging said sleeve whereby said sleeve is between said one end of the depressor member and said shoulder, said depressor member having an elongate portion extending outwardly through said slot for connection with a supply member and a passage communicating same with the bore in said sleeve;

d. a one piece actuating member molded of synthetic resin and having a head with a lever extending therefrom and opposed integral bearing members extending laterally outwardly of said head into said bearing recesses in the opposed body walls to pivotally mount said actuating member, a cam member on said actuating member head engaging said depressor member in a released position and operable to move said depressor member longitudinally of said body bore to compress said sleeve in response to pivoting of said actuating member to a compressing position;

e. said opposed body walls having limited resiliency permitting outward spreading movement thereof for movement of said actuating member bearing members therebetween to alignment with the respective bearing recesses and then return to position said bearing members in said bearing recesses;

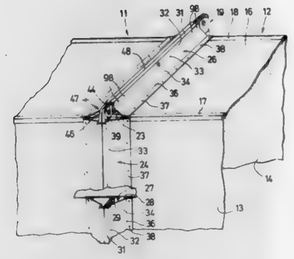
f. said bearing members having outer ends with portions bevelled inwardly therefrom forming inclined surfaces for engagement with the opposed body walls to facilitate outward spreading thereof in response to pressure on the actuating member moving same into said one end of the body bore.

3,923,326

FLANGE CONNECTION

Georg Mez, Gartenstrasse 30A, 7416 Gonningen, Germany

Filed Feb. 4, 1974, Ser. No. 439,386
Int. Cl.² F16L 17/00
U.S. Cl. 285—363 11 Claims



1. A flange connection for rectangular air-conditioning ducts comprising

flange means having four sheet metal frame members, said frame members having open hollow sections at the ends of said frame members and sealing surfaces between said open ends adapted to seal against their surface at a sealing plane,

said flange means being adapted to be pushed on the free end of a duct and to be rigidly connected therewith,

metal elbow means several millimeters in width having two legs and a central portion, with a corner area thereon, connected to said legs,

said legs being inserted into the open hollow sections on adjacent ends of said frame members,

said elbow means having spacer means in one piece therewith projecting from the corner area thereof in the direction of said sealing plane, of a material suitable to maintain an adequate effective height when subjected to contact pressures on said elbow means,

the projecting height of said spacer means being adequate to space the corner of said elbow means from the sealing plane to cause the sealing surfaces on the frame members to press towards the sealing plane and maintain them in this position, under contact pressure on said elbow means.

3,923,327

SEALING CAM INTERLOCK

Irving D. Ross, Jr., Barrington, Ill., assignor to The Youngstown Steel Door Co., Cleveland, Ohio

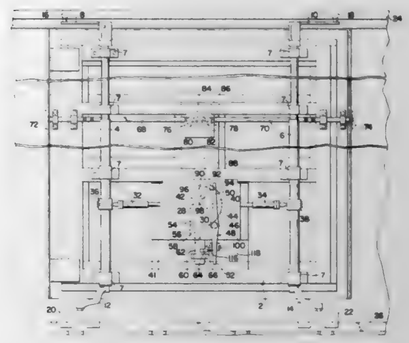
Division of Ser. No. 165,897, July 26, 1971, Pat. No. 3,776,581. This application July 23, 1973, Ser. No. 381,741
Int. Cl.² E05C 1/12
U.S. Cl. 292—39 5 Claims

1. A mechanism for indicating the point at which a handle mounted on a rotatable shaft attains a desired degree of rotation, said mechanism comprising:

a handle position indicating means in the form of an elongated member with a locking surface thereon;

a cam crank responsive to rotational movement of the handle;

a cam crank activated means in association with said position indicating means for selectively indicating the point at which the desired degree of rotation is attained.

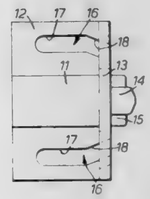


3,923,328

FIXING ARRANGEMENTS

Michael Joseph James, Charlton Kings, England, assignor to Micro & Precision Mouldings (Cheltenham) Limited, Cheltenham, England

Filed Feb. 6, 1974, Ser. No. 440,123
Int. Cl.² E05C 19/02
U.S. Cl. 292—75 2 Claims



1. A component having a fixing plate element with two elongate fixing screw slots which are parallel over portions of their length to allow positional adjustment of the component before, in use, pre-fixed screws received in said slots are fully tightened, the slots being parallel-sided and having open-ended mutually convergent end portions which allow the component to be fitted on the screws one at a time with appropriate angling of the component about the first screw to allow entry of the second screw into the corresponding slot.

3,923,329

DOOR LATCH DEVICE FOR VEHICLES

Nozomu Torii, Hekinan, and Yoshikatsu Furuya, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 6, 1974, Ser. No. 530,424
Claims priority, application Japan, Dec. 24, 1973, 49/2107
Int. Cl.² E05C 3/26
U.S. Cl. 292—216 10 Claims

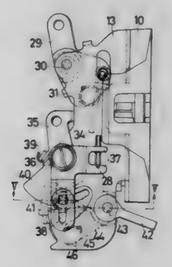
1. A door latch device for a vehicle comprising in combination:

a latch body;

a latch member rotatably mounted on said latch body;

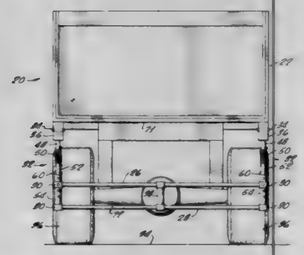
a pawl rotatably mounted on said latch body and engageable with said latch member;

an outer lever operatively connected to said pawl and movable for controlling the rotation thereof;
a locking lever mechanically connected to said outer lever for controlling the movement of said outer lever;
a first inner lever rotatably mounted on said latch body and mechanically connected to said outer lever for unitary movement therewith, said first inner lever being provided with an elongated slot;
a pin slidably fitted within said elongated slot and movable along said elongated slot;



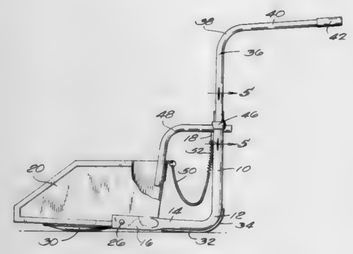
a second inner lever pivotally mounted on said latch body and operatively connected to said pin; and
a "childproof" lever pivotally mounted on said latch body and operatively connected to said pin, said "childproof" lever being movable to an unlocked position wherein said second inner lever is engageable with said pin and to a locked position wherein said second inner lever is out of engagement with said pin.

3,923,330
ARTICULATED BUMPER
Charles S. Viall, Sr., 1150D S. State College Blvd., Anaheim, Calif. 92806, and Charles S. Viall, Jr., 3401 Gaviota, Long Beach, Calif. 90008
Filed July 22, 1974, Ser. No. 490,484
Int. Cl.² B60R *19/06, 27/00;* **B60T** *7/12;* **B61F** *19/06*
U.S. Cl. 293—4 **20 Claims**



1. In combination with a vehicle having brakes and a tilting bed movable to lower the rearward portion thereof and to raise the forward portion thereof, a safety bumper, comprising:
a. obstacle encountering means for contacting obstructions,
b. at least one support member,
said support member having a resilient flexible portion intermediate first and second regions thereof,
said resilient flexible portion including a spring one end of which is connected to said first region and the other end of which is connected to said second region for allowing relative deflection of said first and second regions,
said obstacle encountering means being attached to said first region,
c. connecting means for pivotally connecting said second region of said support member to said tilting bed of said vehicle so that said support member depends therefrom, said connecting means permitting limited substantially unrestricted pivoting of said second region in one direction relative to said vehicle while precluding further pivoting thereof, and
d. signal generating means for generating a signal when movement of said obstacle encountering means causes a predetermined pivotal movement of said support member in said one direction,
said resilient flexible portion of said support member remaining substantially undeflected until said predetermined pivotal movement of said support member causes said signal to be generated.

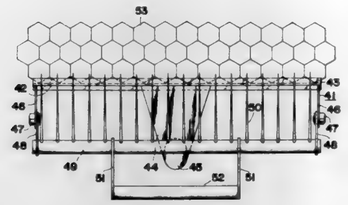
3,923,331
SNOW SCOOP
Arnold A. Hollnagel, Rte. 4, Box 396, Fort Atkinson, Wis. 53538
Filed Jan. 17, 1975, Ser. No. 541,916
Int. Cl.² E01H *5/02;* **B62B** *1/16*
U.S. Cl. 294—54 **8 Claims**



1. A snow scoop comprising a frame which includes a curved portion that can be rocked on an underlying surface, a pair of mounting arms extending forwardly from said curved portion, an open ended bucket pivotally connected between said mounting arms on a pivotal axis which lies behind the bucket's center of gravity, whereby rocking of said frame on the curved portion thereof causes said bucket to pivot between a loading position in which snow can be scooped up by said bucket and a dumping position in which snow will be dumped from said bucket, a pair of handles vertically pivotally attached to said frame and pivotable between a rear position and a frontal position, and cooperating latch means attached to said handles and said bucket for latching said bucket in its loading position when said handles are in their rear position and for unlatching said bucket for movement to its dumping position when said handles are moved to their frontal position.

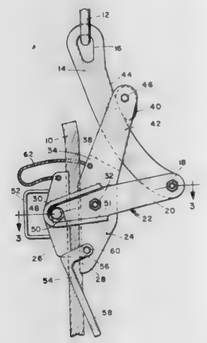
3,923,332
TRANSPLANTER
Atsushi Shirouzu, Minami No. 22, Heiwa-Dori 1-chome, Shiraishi-cho, Sapporo, Hokkaido, Japan
Division of Ser. No. 190,113, Oct. 18, 1971, abandoned. This application Mar. 1, 1973, Ser. No. 337,009
Claims priority, application Japan, Oct. 20, 1970, 45-104417; Apr. 19, 1971, 46-25554
Int. Cl.² B66C *1/00*
U.S. Cl. 294—87 R **8 Claims**

1. A seedling container separating device comprising a frame, an engaging plate provided in front of said frame so as to engage with a plurality of seedling containers, arms connected by shafts to said frame so as to rotate freely about said shafts, a support rod connected to said arms for rotation therewith and a plurality of arcuate needles provided on said support rod for piercing said containers, the arc defined by each of said needles being coincident with a portion of the circumference of an imaginary circle centered on the axis of



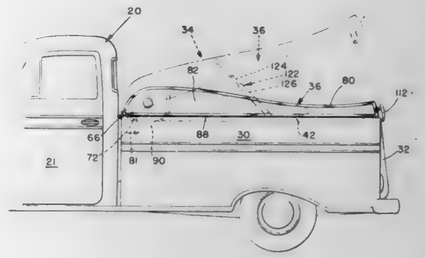
rotation of said rod so that the movement of said needles follows the circumference of said circle to pierce said containers upon said rod being rotated about said axis.

3,923,333
CABLE GRIP
Morris Lamar Whaley, 2605 Faivre, Chula Vista, Calif. 92011
Filed Aug. 16, 1974, Ser. No. 498,027
Int. Cl.² B66C *1/44*
U.S. Cl. 294—104 **3 Claims**



1. A straight line cable grip, comprising:
a pair of similar spaced confronting link bars;
a primary jaw having pivotal mounting means whereby the same is mounted on and between said link bars, and having a cablegripping face;
a secondary jaw having pivotal mounting means comprising opposed trunnion-like projections thereon and said link bars are provided with slots to accept said projections whereby said secondary jaw is releasibly mounted on and between said link bars and has a cable-gripping face in confronting relation to the first mentioned face;
said link bars having lever arms extending from the side thereof remote from said secondary jaw;
a hanger bar pivotally secured to the distal ends of said lever arms;
said primary jaw having a stablilizing arm on the side thereof remote from said secondary jaw and having a sliding connection with said hanger bar;
a grip-releasing cam element mounted on said primary jaw and manually shiftable to force said link bars and said primary jaw to move relatively to each other into a cable-releasing relationship;
said grip-releasing cam element comprises a bar pivoted on said primary jaw and having a knee portion shiftable into camming contact with one of said link bars and locking said link bar relative to said primary jaw in said cable-releasing relationship, whereby when so locked, said secondary jaw is easily removable.

3,923,334
VEHICLE BED COVER ASSEMBLY
Hugh L. Key, 181-A Broadmoor Lane, Winston-Salem, N.C. 27104
Filed Mar. 22, 1974, Ser. No. 448,915
Int. Cl.² B60P *3/42*
U.S. Cl. 296—10 **7 Claims**

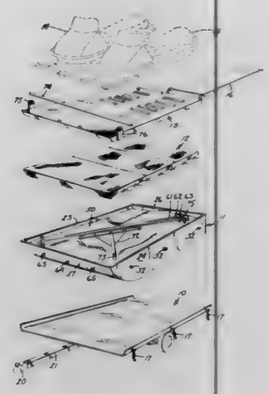


1. A low profile, lightweight cover assembly for a pickup type vehicle having a cargo bed formed by spaced side walls, a forward wall, a tailgate and standard pockets in the upper portion of the side walls, comprising; a cover corresponding substantially in size to the width and length of the vehicle cargo bed, means for permitting pivotable movement of said cover about the cover forward end between opened and closed positions, roller means extending forwardly of said cover for facilitating placement upon and detachment from a vehicle by rolling upon the vehicle side walls, a frame assembly means releasably mounted upon said vehicle without altering the vehicle, wherein said frame assembly means includes a first member supported by the vehicle front wall, spaced side members, and means adjustably positioning said side members relative to said first member for support by the vehicle side walls, and means for releasably, locking said cover to said frame assembly means to prevent access to the cargo bed said releasable locking means including a handle normally overlapping the vehicle tailgate when in locked position to prevent opening of the tailgate, said releasable locking means further including adjustable rod members displaceable into engagement with said frame assembly means to prevent pivoting of said cover, and further including resilient strap tension means for releasably attaching the forward end portion of said cover to the vehicle.

3,923,335
CAMPER UNIT FOR SNOWMOBILE TRAILERS
Jerome A. Erickson, 5816 Decatur Ave. North, New Hope, Minn. 55428
Filed Aug. 22, 1974, Ser. No. 499,439
Int. Cl.² B60P *3/34*
U.S. Cl. 296—23 R **1 Claim**

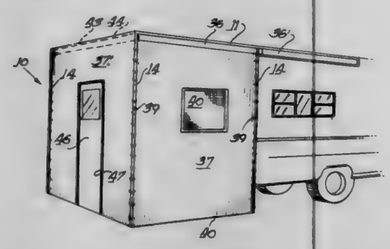
1. A travel accessory comprising in combination:
a wheeled trailer including means for coupling said trailer to be towed by a road vehicle;
a sledge type of camper casing containing a collapsed camper and having an open top, a snow engaging bottom including longitudinally extending runners, and side walls capable of supporting a load;
removable means including a rigid towbar for connecting said casing to be towed over snow by a snowmobile;
means removably securing said casing to said trailer;
a removable travel cover secured over the top of said casing to protect the content thereof;
a removable load bearing deck member carried on said side

walls and extending over said open top;
and a means for removably securing a self-powered vehicle



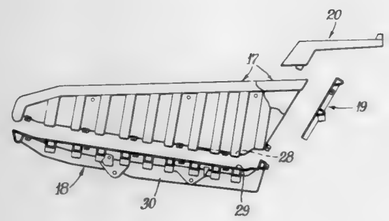
to said deck member for transportation behind the wheel vehicle, on said trailer and above said casing.

3,923,336
TOTE-A-ROOM
Blake R. Price, Sr., P.O. Box 101, Damascus, Va. 24236
Filed Nov. 13, 1974, Ser. No. 523,232
Int. Cl.² B62D *33/08*
U.S. Cl. 296—26 **6 Claims**



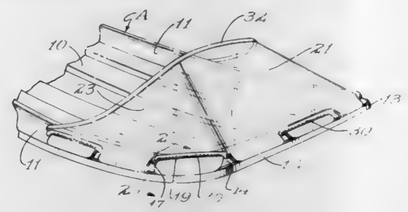
1. A tote-a-room enclosure intended for permanent mounting as an accessory item to a truck mounted camper unit, the camper unit having opposed side walls and a vertical back wall, the tote-a-room comprising, in combination:
a pair of identically constructed side roller assemblies
means adapted to mount said side roller assemblies hingedly to opposite top edges of opposite side walls of said camper unit such that each of the side roller assemblies is swingable in a horizontal plane between a storage position disposed in parallel juxtaposition to the associated side walls of the camper, and an operative position projecting rearwardly of said camper rear wall;
a length of flexible sheeting disposed in a coil in each of said side roller assemblies and adapted to be uncoiled therefrom to define side wall portions of said tote-a-room;
a back roller assembly adapted to be mounted across the top edge of said trailer back wall;
a length of flexible sheeting material coiled in said back roller assembly and adapted to be uncoiled therefrom in a manner to define a top and a back wall to said tote-a-room;
a cross-arm assembly pivotally affixed to a portion of each of said side roller assemblies and adapted to be placed in longitudinal alignment with each other interconnecting said side roller assemblies when said side roller assemblies are in said operative position, said operative position of said cross arms being substantially parallel to said trailer back wall;
said cross-arms supporting thereover said back roller sheeting to divide said back roller sheeting into a horizontal roof forming top portion and a vertical back wall forming portion;
rods disposed at each end of said side roller assemblies and extending vertically downwardly therefrom to engage the ground; and
means slidable along said rod members to affix adjacentmost edges of said sheeting material to said rods.

3,923,337
MODULAR TRUCK BODY AND METHOD FOR MAKING THE SAME
Samuel L. Kershaw, and Bernard E. Proeschl, both of Decatur, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed May 23, 1974, Ser. No. 472,709
Int. Cl.² B62D *27/00*
U.S. Cl. 296—28 M **7 Claims**



1. A modular truck body disposed on a longitudinal axis thereof comprising
a pair of upstanding and laterally spaced side modules, each having an L-shaped cross section to comprise a generally vertical side section and a generally horizontal bottom section,
a generally horizontal floor module having outer ends thereof secured to respective inner ends of said side modules,
an upstanding front module having outer ends thereof secured between forward ends of said side modules and a lower edge thereof secured to said floor module,
a plurality of longitudinally spaced L-shaped ribs having a U-shaped cross section secured exteriorly on each of said side modules, each rib terminating at an inner end short of the inner end of such side module,
a plurality of transversely disposed and longitudinally spaced beams having a U-shaped cross section secured exteriorly on said bottom module, each beam extending between the inner ends of a pair of said ribs and terminating at outer ends thereof short of the outer ends of said bottom module, and
a connecting member having a U-shaped cross section secured between each outer end of each of said beams and the inner end of a respective rib, wherein the inner end of each of said ribs and the outer end of each of said beams has a recess formed thereon along their entire edge for receiving an end of a respective connecting member therein, and wherein said side modules are further secured together by a plurality of combined alignment and releasable fastening means.

3,923,338
WINDSHIELD FOR SNOW VEHICLE
Cedric C. Sovia, 319 S. Lake St., Forest Lake, Minn. 55025, and Kenneth W. Krengel, 1800 Highland Parkway, St. Paul, Minn. 55116
Filed May 15, 1974, Ser. No. 470,072
Int. Cl.² B60J *1/02*
U.S. Cl. 296—84 K **5 Claims**



1. A snow vehicle including:
an elongated vehicle body having a rounded forward end,
a flange secured to said rounded forward end and extending downwardly therefrom,
said flange having spaced apertures therethrough,
a flexible cord laced back and forth through said apertures to provide spaced portions of said cord lying outwardly of said flange,
a windshield of flexible transparent material having a lower edge provided with notches spaced generally similarly to said apertures in said flange,
portions of said lower edge of said windshield between said notches engaging between said cord and said flange.

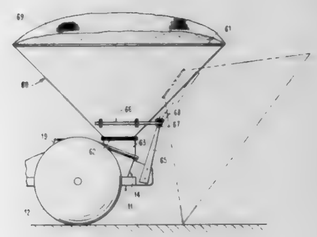
3,923,339
QUICK ATTACHED TRANSPARENT ARMOR WINDOWS
Wilson C. McDonald, Phoenix, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio
Division of Ser. No. 314,295, Dec. 12, 1972, Pat. No. 3,855,898. This application Mar. 5, 1974, Ser. No. 448,284
Int. Cl.² B60J *1/20*
U.S. Cl. 296—95 R **4 Claims**



1. A protective panel for the window of a vehicle comprising, a tough bullet residing transparent panel, said panel being positioned on the inside of the vehicle window, an upper window trim strip having a resilient sealing strip, said panel having upper and lower clips for removably securing said panel to said vehicle, said upper clip secured to the panel at its upper edge and extending therefrom and engaging said resilient sealing strip, said upper clip having a contoured portion engaging and seating within said resilient strip, the window in a closed position engaging said contoured portion of said upper clip, said vehicle having a lower window frame, said lower window frame having an upper edge and a flexible sealing strip at the window opening, said lower clip extending downwardly therefrom, said lower clip received between said upper edge of said frame and said flexible sealing strip.

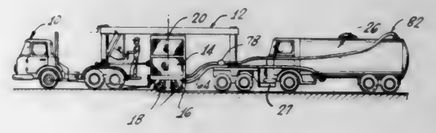
2. A protective panel for a windshield in a vehicle, comprising, a tough bullet proof residing transparent panel positioned on the inside of the windshield, said panel contoured to the windshield shape and having clips secured at the upper edges thereof, a windshield molding member, said clips having a bolt, said bolt secured to said clips by a nut, a screw secured to said bolt, and said screw engaging said molding member.

3,923,340
DEBRIS CONTAINING DEVICE
Charles W. Doering, Clarksville, Ind., assignor to Brinly-Hardy Co., Inc., Louisville, Ky.
Division of Ser. No. 342,166, March 16, 1973, Pat. No. 3,849,824. This application May 6, 1974, Ser. No. 467,395
Int. Cl.² B60N *1/28*
U.S. Cl. 298—10 **10 Claims**



1. A debris containing device for a debris collector having an outlet in a housing defined by an upwardly extending rim through which debris is pushed upwardly by accumulation of debris therebelow comprising a hopper formed of a plurality of walls, said hopper having an opening at its top defined by the upper ends of said walls, said hopper having an opening at its bottom for communication with the outlet in the housing when in a position to receive debris from the outlet in the housing into the bottom of said hopper so that the debris is pushed upwardly into said hopper, said bottom opening being defined by the lower ends of said walls, said hopper having an increasing cross sectional area from said bottom opening to said top opening, and means to pivotally mount said hopper for movement relative to the housing to move said bottom opening in said hopper away from its communication with the outlet in the housing to a position in which debris may fall from said hopper through said top opening of said hopper by gravity.

3,923,341
LIQUID PICK-UP UNIT AND METHOD FOR A PAVEMENT GROOVING MACHINE
Harold C. Miller, Chicago, Ill., assignor to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.
Filed Aug. 16, 1974, Ser. No. 498,234
Int. Cl.² E01C *23/08*
U.S. Cl. 299—18 **12 Claims**



1. A liquid pick-up unit for use with a cutting head assembly for cutting a work surface, the cutting head assembly including a mounting structure, at least one driven rotary cutter rotatably connected to the mounting structure having first and second sides rotating towards, and away from, the work surface, respectively, and a liquid supply member for directing liquid against the first side of the cutter, the liquid pick-up unit comprising:

an enclosure connected to the mounting structure enclosing the cutter, said enclosure having,

an opening facing the work surface through which the cutter projects into engagement with the work surface, a peripheral seal connected with said enclosure in sorrounding spaced relation to the cutter, said seal extending from said enclosure into sliding, sealing contact with the work surface to substantially reduce escape of liquid from said closure,

an outlet communicating with said enclosure facing towards the second side of the cutter positioned to receive liquid mixed with swarf removed from the work surface by the cutter flung centrifugally from the second side of the cutter towards said outlet;

withdrawal means connected to said enclosure for withdrawing the liquid and swarf therefrom through said outlet;

a suction port communicating with said enclosure;

vacuum means connected with said suction port for applying vacuum to the interior of the enclosure to assist said seal in preventing liquid within the enclosure from flowing outwardly thereof between said seal and the pavement the application of vacuum through said suction port causing some liquid mixed with air to be withdrawn through said suction port;

swarf separator means connected to said withdrawal means for separating the liquid from the mixed liquid and swarf withdrawn from said enclosure;

recirculation means connected with said swarf separator means for redirecting the separated liquid against the rotary cutter;

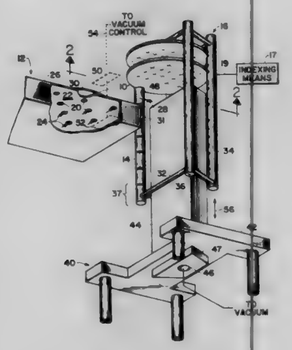
air separator means interposed between and communicating with said vacuum means and said suction port for separating the liquid drawn through said suction port from the air mixed with the liquid; and

conduit means connected with said air separator means for delivering the liquid separated thereby to said swarf separator means.

3,923,342
APPARATUS AND METHOD FOR HANDLING FRANGIBLE OBJECTS

Frank Michael Shannon, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed June 10, 1974, Ser. No. 477,572
Int. Cl.² B65G *57/11, 51/02*
U.S. Cl. 302—2 R **10 Claims**



1. Apparatus for loading frangible objects comprising:

a. conveying means having an end from which the objects are propelled,

b. a vacuum probe positioned adjacent the end of said conveying means to releasably grasp an object after it has been propelled off the end of said conveying means,

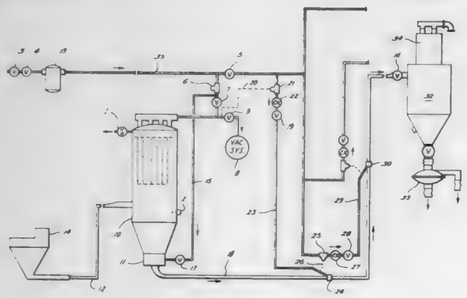
c. a carrier having a plurality of slots each having a back surface into which the objects are to be loaded, said carrier being positioned around said vacuum probe and adjacent to the end of said conveying means, said conveying means terminating prior to entering said carrier, so that said vacuum probe releasably grasps an object after it has been propelled off the end of said conveying means as it moves into one of said slots prior to impact against said back surface, and

d. means for successively indexing said carrier to move said slots successively into object receiving position adjacent to the end of said conveying means.

3,923,343
BOAST ASSISTED CONVEYING SYSTEM

Edwin Donald Bird, Houston, Tex., assignor to Keystone International, Inc., Houston, Tex.

Filed Nov. 9, 1973, Ser. No. 414,298
Int. Cl.² B65G *53/66*
U.S. Cl. 302—24 **2 Claims**



1. A conveying system for conveying a mixture of fluid and particulate matter comprising:

an upstream portion and a downstream portion,

means for causing a mixture of fluid and particulate matter to flow continuously under pressure, through said upstream portion and into and through said downstream portion, and

means for injecting additional fluid into said downstream portion, said injecting means including

sensing means for sensing the pressure in said upstream portion,

a variable opening valve for controlling the amount of fluid injected, and

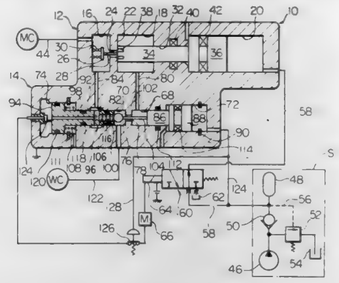
valve control means operably connected to said sensing means and to said valve, said valve control means including means for opening the valve in response to an increase in the sensed pressure, to further open the valve in response to a further increase in the sensed pressure, and to decrease the valve opening in response to a decrease in the sensed pressure.

3,923,344
SKID CONTROL ARRANGEMENT OF A AUTOMOTIVE BRAKING SYSTEM

Toshiharu Sekigawa, Atsugi; Yasuhisa Takeuchi, Yokosuka; Masanori Kouda, Atsugi, and Tomoyoshi Sekiguchi, Yokohama, all of Japan, assignors to Nissan Motor Company Limited, Yokohama and Atsugi Motor Parts Company Limited, Atsugi, both of, Japan

Filed June 11, 1974, Ser. No. 478,261
Claims priority, application Japan, June 13, 1973, 48-65772
Int. Cl.² B60T *8/04*
U.S. Cl. 303—21 AF **14 Claims**

1. A skid control arrangement for use in an automotive vehicle including a master cylinder to produce a braking fluid pressure, a wheel cylinder to receive the braking fluid pressure, a source of an operating fluid pressure having a first predetermined fixed level and a second predetermined fixed level lower than the first predetermined fixed level, which control arrangement comprises main braking fluid passage means connecting the master cylinder and the wheel cylinder and acted upon by the braking fluid pressure and the operating fluid pressure in relation to one another, the main braking fluid passage means being operative to open for feeding the braking fluid pressure produced at the master cylinder to the wheel cylinder, while being operative to reduce the braking fluid pressure to be supplied to the cylinder for providing a skid control when the operating fluid pressure is at a level which is higher than said first predetermined fixed level or which is lower than the first predetermined fixed level and

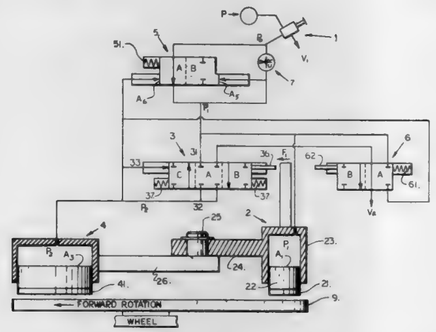


higher than a variable level which is predetermined in relation to a given braking fluid pressure, and by-pass braking fluid passage means connecting the master cylinder and wheel cylinder in parallel with the main braking fluid passage means and acted upon by the braking fluid pressure and operating fluid pressure in relation to one another, the by-pass passage means being operative to open for feeding the braking fluid pressure produced at the master cylinder to the wheel cylinder for cancelling the skid control when the operating fluid pressure is at a level which is lower than a second variable level predetermined in relation to the given braking fluid pressure and higher than the first variable level or which is lower than said second predetermined fixed level.

3,923,345
ANTI-SKID BRAKING SYSTEM WITH TORQUE SENSING MEANS

Joseph Louis Poggie, 815 Iris Lane, Vero Beach, Fla. 32960

Filed Oct. 3, 1974, Ser. No. 511,781
Int. Cl.² B60T *8/00*
U.S. Cl. 303—21 CH **16 Claims**



1. An anti-skid brake system comprising in combination:

a. brake pedal means for actuation by an operator;

b. master cylinder means operatively connected to said brake pedal means for actuation of a brake system responsive to actuation of said brake pedal means;

c. a pilot brake means operatively connected to said master cylinder means for actuation by said master cylinder means to apply frictional braking force to resist a rotating wheel, said pilot brake means having at least a portion thereof movably responsive to said rotating wheel when said pilot brake means is resisting the rotation of said wheel;

d. a force balancing main control valve in fluid connection with the master cylinder means, said force balancing main control valve being mechanically operated in one direction by the movement of said pilot brake means as the pilot brake means resists wheel rotation;

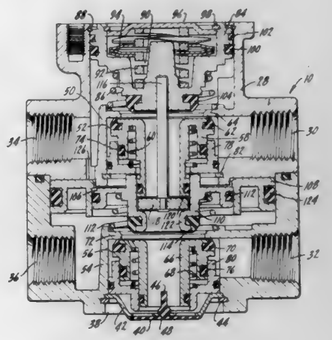
e. main brake means operatively connected to said master cylinder means through said force balancing main control valve for actuation thereby by the movement of said force balancing main control valve responsive to the actuation of said pilot brake means to resist the rotation of said wheel whereby said main brake means is responsive to force from said rotating wheel when said pilot brake is actuated to resist the rotation of said wheel, said force balancing main control valve controlling fluid pressure in the main brake means and being operated in opposition to the movement of the pilot brake means by the main brake fluid pressure;

f. a second control valve means in fluid connection with the main brake fluid circuit and the force balancing main control valve assembly being mechanically operated by the movement of the pilot brake as the pilot brake resists wheel rotation when backing up or holding on an upgrade.

3,923,346
DUAL CIRCUIT BRAKE VALVE

Boleslaw Klimek, Des Plaines, and James W. Ma, Northbrook, both of Ill., assignors to The Berg Manufacturing Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 365,123, May 30, 1973, abandoned. This application Dec. 10, 1973, Ser. No. 423,166
Int. Cl.² B60T *15/06*
U.S. Cl. 303—52 **16 Claims**



1. A brake application valve including a housing having a first inlet and a first outlet, a second inlet and a second outlet and an exhaust outlet, a first shuttle in said housing normally closing communication between said first inlet and outlet, a second shuttle in said housing normally closing communication between said second inlet and outlet, said shuttles normally maintaining communication between said outlets and said exhaust outlet,

a first piston in said housing yieldingly urged away from said first shuttle, a second piston in said housing yieldingly urged away from said second shuttle, mechanical means fixed to said first piston and positioned to cause said second piston to follow inward movement of said first piston, inward movement of both pistons moving said first and second shuttles to open communication between said inlets and outlets and close communication to said exhaust outlet,

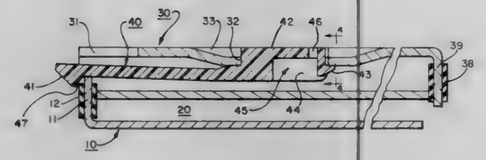
said second piston, with said mechanical means being positioned to cause movement thereof, having an outer circumferential surface exposed to fluid pressure at said first outlet to cause movement of said second piston in response to fluid pressures supplied to said first outlet;

said second piston having an inner portion and an outer portion, with said mechanical means being positioned to cause movement of said inner portion, said outer portion having the circumferential surface exposed to fluid pressure at said first outlet and being mounted in sliding engagement with said inner portion.

3,923,347
SUSPENSION LATCH

Carl J. Dean, Southbridge, Mass., assignor to Barry Wright Corporation, Watertown, Mass.

Filed Oct. 12, 1972, Ser. No. 296,899
Int. Cl.² F16C *17/00*; A47B *88/00*
U.S. Cl. 308—3.6 **8 Claims**

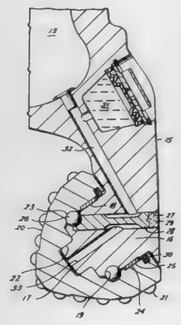


1. Suspension slide apparatus comprising in combination:
an elongated track member having front and rear ends,
an elongated slide member for sliding suspension mounting with said track member having front and rear ends,
the said track and slide members being arranged for fully nested closure and partially nested opening and forming an elongated volume therebetween,
one of said track and slide members having a latching detent mounted thereon and the other of said track and slide members having a latching key mounted thereon for engaging said latching detent to lock said track and slide members in nested closure position against inadvertent opening movement,
and wherein, the latching key has a cantilever mounted resilient key end which is movable laterally in response to and in a direction perpendicular to a longitudinal actuating force while engaging said latching detent to ride over the latching detent during locking and unlocking, and
the said latching detent and latching key are located essentially entirely within the said elongated volume.

3,923,348
FRICTION BEARING

James A. Peck, Houston, Tex., assignor to Reed Tool Company, Houston, Tex.

Filed Mar. 13, 1974, Ser. No. 450,900
Int. Cl.² F16C *19/00*
U.S. Cl. 308—8.2 **5 Claims**

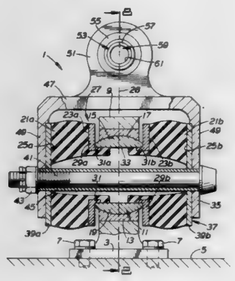


1. A friction bearing having relatively rotatable members including:
a metallic bushing having a borided inner wear surface.

3,923,349
UNIVERSAL BEARING SUPPORT

Paul T. Herbst, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed June 25, 1973, Ser. No. 373,551
Int. Cl.² F16C *27/00*
U.S. Cl. 308—26 **7 Claims**

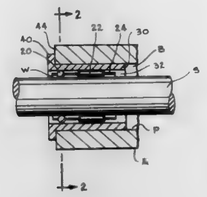


1. A bearing support for supporting one part relative to another comprising:
first and second ball-and-socket bearing assemblies,
said ball of said first assembly adapted for mounting to one of the parts,
said socket of said second assembly adapted for mounting to the other part, and
means resiliently interconnecting said socket of said first assembly and said ball of said second assembly, said interconnecting means including elastomeric means adapted to deflect in shear to permit relative movement between said balls of the first and second assemblies along an axis passing through the respective centers of both of said balls.

3,923,350
PRECISION BEARING ASSEMBLY

Samuel M. Berry, Dallas, Tex., assignor to Commercial Metals Company, Dallas, Tex.

Filed Mar. 11, 1974, Ser. No. 449,922
Int. Cl.² F16C *19/04*
U.S. Cl. 308—174 **3 Claims**

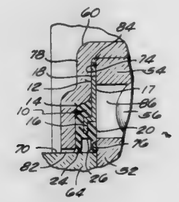


1. A precision bearing assembly comprising:
a. a steel sleeve having an opening therethrough for receiving a ball-roller bearing;
b. a ball-roller bearing having an inner race for receiving a shaft and a plurality of ball bearings and roller bearings spaced circumferentially about the inner race with such ball bearings pressed into the opening in said steel sleeve to provide radial compression on said balls and rollers so as to remove substantially all clearance from said ball-roller bearing, so that deflection under load and end-play of said bearing are substantially eliminated.

3,923,351
INTEGRAL BEARING SEAL

Charles C. Frost, Newaygo, Mich., assignor to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed Sept. 18, 1973, Ser. No. 398,374
Int. Cl.² F16C *1/24*
U.S. Cl. 308—187.1 **16 Claims**

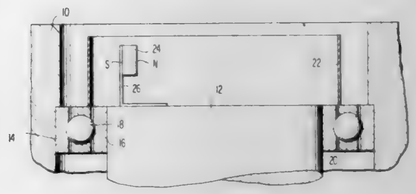


13. A bearing assembly for rotatably supporting wheels, pulleys, and the like, said assembly including a bearing unit having inner and outer races with anti-friction means disposed therebetween for rotational support of one race with respect to the other, said races each having side surfaces and predetermined inner and outer diameters; a bearing seal in sealing engagement with at least one side surface of both said outer and inner race; said bearing seal including a rigid, annular member having a diameter greater than the inner diameter of said outer race and less than the outer diameter of said outer race; clamping means for clamping said rigid member in positive sealing abutment against the one said side surface of said outer race; and an annular, flexible, resilient, wear-resistant member bonded radially inwardly to said rigid member; said flexible member extending radially inwardly from said rigid member into sealing engagement with said inner race, said clamping means, outer race and bearing seal rotating relative said inner race.

3,923,352
BEARING RETAINER STABILIZER

Chester John Pentlicki, Gaithersburg, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Dec. 6, 1973, Ser. No. 422,382
Int. Cl.² F16C *33/00*
U.S. Cl. 308—191 **4 Claims**

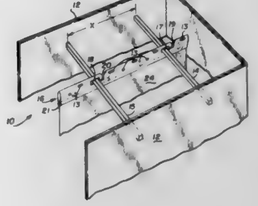


1. In a bearing arrangement between a rotating part and a stationary part wherein said bearing arrangement includes an inner race secured to one of said parts and an outer race secured to the other of said parts and a retaining ring supporting a plurality of rolling elements intermediate said inner and outer races, the improvement comprising magnetic means mounted on said retainer ring and one of said parts for eccentrically loading said retaining ring to suppress instability.

3,923,353
DOCUMENT HANGING APPARATUS

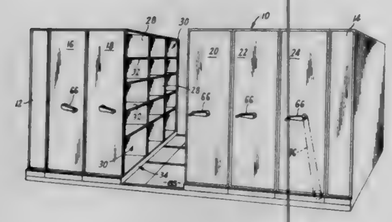
Abram G. Elias, 3300 Skyline Blvd. No. 205, Reno, Nev. 89502, and Peter G. Elias, 6 Wedgewood Drive, Winnipeg, Manitoba, Canada (R3T2J8)

Continuation-in-part of Ser. No. 374,007, June 27, 1973, abandoned. This application Oct. 15, 1974, Ser. No. 514,890
Int. Cl.² A47B *63/00*; B42F *15/00*
U.S. Cl. 312—184 **7 Claims**



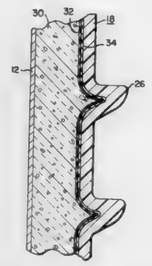
1. Document storage apparatus, comprising:
means forming a compartment for storing documents;
supporting rails disposed within said compartment in parallel relationship to each other;
document hanging means including an elongated strip of flexible material folded in half along its longitudinal centerline to form a document receiving slot, said strip having at least two pairs of elongated apertures provided therein with the apertures of each pair being symmetrically disposed about the fold and with their elongated dimensions aligned parallel to said fold, said strip also having a slit proximate each of said pairs of apertures and extending from the side of one of said apertures most remote from said fold to the most remote side of its paired aperture, said slits forming passageways by which said rails may be inserted into corresponding ones of said apertures; and
means for fastening a document to said strip whereby such document may be removably suspended from said rails by said strip.

3,923,354
ROLLING SHELF SYSTEM
Herbert Young, West Simsbury, Conn., assignor to Kidde Merchandising Equipment Group, South Windsor, Conn.
Continuation of Ser. No. 306,376, Nov. 13, 1974, abandoned.
This application Dec. 23, 1974, Ser. No. 535,802
Int. Cl.² A47B 53/00, 49/00
U.S. Cl. 312—201 8 Claims



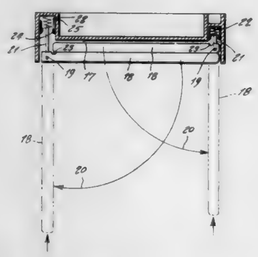
1. A rolling shelf system comprising:
a. parallel track means including at least a pair of elongated track members mounted on a surface extending in parallel spaced relationship, said track means including means for adjusting the height of said track members above said surface to dispose the upper surfaces of said track members in a common horizontal plane;
b. an elongated shelf unit overlying said parellel track means and extending transversely of said track members, said pair of elongated track members being disposed adjacent the ends of said shelf unit;
c. carriage means having a length spanning said pair of track members and underlying said shelf unit to provide rolling support for said shelf unit on said track members, said carriage means including an elongated axle having a length extending between said pair of track members adjacent the ends of said shelf unit and a pair of wheels supported on said elongated axle adjacent the ends thereof for rotation therewith on said pair of parallel spaced track members, at least one other axle and one other pair of wheels supported on said carriage means, said wheels supporting said carriage means on said track means for movement therealong;
d. a manual force applying drive means for moving said shelf unit along said track means, said manual force applying means including a manually rotatable member supported on said shelf unit, rotatable drive means supported on said carriage means for rotating simultaneously said elongated axle and both of said wheels supported thereof adjacent the ends thereof, chain means connecting said rotatable member and said rotatable drive means for transmitting rotation of said rotatable member into rotation of said rotatable drive means to rotate said elongated axle and wheels thereon to cause movement of said carriage means and said shelf unit along said track means and adjustment means operable for adjusting the tension of said chain means to maintain a predetermined amount of tension on said chain means, said adjustment means including means for varying the vertical spacing between said manually rotatable member on said shelf unit and said rotatable drive means on said carriage means; and
e. floor panel support means comprising support mounting means on the sidewalls of said track members and spaced along the length thereof, floor panel supports engaged with said support mounting means on the sidewalls of said track members and having a horizontally extending portion for seating floor panels thereon to provide a floor surface between said track members, said floor panel support means being movable vertically upon vertical adjustment of the height of said track members.

3,923,355
CABINET CONSTRUCTION FOR A REFRIGERATOR
Charles W. Dietterich, Columbus, Ohio, assignor to White-Westinghouse Corporation, Cleveland, Ohio
Filed June 14, 1974, Ser. No. 479,971
Int. Cl.² A47B 81/00; B65D 25/18
U.S. Cl. 312—214 9 Claims



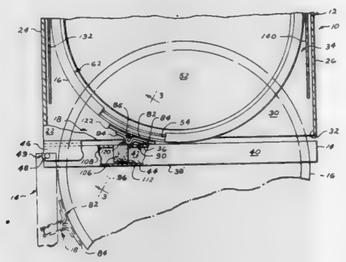
1. A refrigerator cabinet having a laminated wall construction including an outer metal layer, an inner plastic layer having predetermined areas therein susceptible to stress concentration when said plastic layer is subjected to tensioning forces, an intermediate core of foamed insulation adherent to one of said layers substantially throughout the interface between said insulation and said one of said layers,
a coating of a release agent interposed between said insulation and the other of said layers in predetermined areas generally coextensive with at least certain of said areas susceptible to stress concentration and,
a coating of an elastomeric adhesive interposed between said insulation and said other of said layers substantially throughout the extent of at least the remaining interface of said insulation and said other of said layers whereby limited movement of said other of said layers with respect to said insulation is permitted.

3,923,356
PORTABLE WORK OR DISPLAY TABLE
P. J. Washburne, 655 Valleybrook Ave., Wabash, Ind. 47591
Filed June 20, 1974, Ser. No. 481,301
Int. Cl.² A47B 3/10
U.S. Cl. 312—241 4 Claims



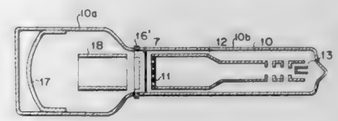
1. A portable work or display table comprising a case having a bottom wall and side walls mutually defining a generally rectangular compartment, a cover hinged to one of said side walls for closing said compartment, said bottom wall having a pair of elongated, spaced, parallel slots formed therein respectively communicating with said compartment and respectively parallel with and adjacent opposite ones of side wall, first and second pairs of leg members each having upper and lower ends, means for pivotally mounting said first pair of leg members respectively adjacent their upper ends on one of said opposite side walls, the legs of said first pair being respectively pivotally mounted adjacent opposite ends of the respective one slot, means for pivotally mounting the second pair of leg members respectively adjacent their upper ends on the other of said opposite side walls, the legs of said second pair being respectively pivotally mounted adjacent opposite ends of the other slot, the leg members of each pair being pivotally movable through the respective slot between a stored position in said compartment with one leg of the pair substantially closing the respective slot and being generally flush with said bottom wall, and an extended position for supporting said case as a table, the leg members of each pair in the stored position thereof extending in opposite directions and being in parallel, vertically overlapped relation with respect to said cover and bottom wall, said mounting means for each said leg member comprising a pin slidably received in a slot in the respective one of said opposite side walls, each of said last-named slots being generally perpendicular to said bottom wall and having lower and upper ends, each of said pins being adjacent said lower end of the respective last-named slot in the stored position and adjacent the upper end in the extended position of the respective leg member, said case having four parallel, vertical extending openings formed therein, said openings being respectively adjacent the ends of said first-named slots, the upper end of each said last-named slot extending into a respective opening, said upper ends of each of said leg members in the extended position thereof being received in a respective opening and being held thereby against collapse.

3,923,357
ALTERNATIVELY-MOUNTED COMPACTOR DOOR ARRANGEMENT
William A. Eckerle, and Lauren W. Guth, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Filed June 5, 1974, Ser. No. 476,527
Int. Cl.² A47B 77/10, 77/18, 96/16; E05D 7/02
U.S. Cl. 312—274 10 Claims



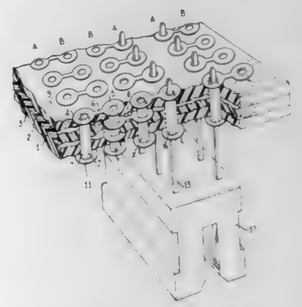
1. A domestic refuse compactor comprising:
a frame having a back, first and second spaced sides and an open front defining a refuse compacting chamber;
a door pivotally mounted to the frame for movement between a closed position and an open position;
means for alternatively pivotally mounting the door to the frame about a vertical axis adjacent either side of said first and second spaced sides of the frame;
a receptacle movable between a compacting position within said compacting chamber and a loading position at least partly outside said compacting chamber; and
receptacle mounting means mounting said receptacle on said door, said mounting means having (1) standard means pivotally mounted to said door in spaced relationship to the pivotal mounting means of said door and (2) corresponding means associated with said receptacle, said standard means being symmetrical about a horizontal midplane to receive said corresponding means of said receptacle in both its upright and inverted positions, thereby removably securing said refuse receptacle to said door irrespective of which side of the frame the door is pivoted.

3,923,358
METHOD FOR MANUFACTURING AN IMAGE PICKUP TUBE
Shoichi Miyashiro, Yokohama; Shunji Shirouzu, Ayase; Kazuo Shimizu, and Okio Yoshida, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan
Continuation-in-part of Ser. No. 329,576, Feb. 5, 1973, abandoned, which is a division of Ser. No. 105,823, Jan. 12, 1971, abandoned. This application Oct. 18, 1973, Ser. No. 407,579
Claims priority, application Japan, Jan. 16, 1970, 45-3798; July 28, 1970, 45-65546
Int. Cl.² H01J 9/18
U.S. Cl. 316—19 4 Claims



1. A method for manufacturing an image pickup tube comprising steps of:
fabricating a semiconductor target including preparing a semiconductor substrate having one conductivity type, forming a plurality of island regions of the opposite conductivity type on one side of the substrate, forming an insulating layer on said one side of the substrate exclusive of the island regions thereof, and coating a semi-insulating layer of cadmium telluride at least on the insulating layer;
mounting said semiconductor target in a glass envelope; and
then heating the envelope at a temperature of from 250° to 400°C for evacuation.

3,923,359
MULTI-LAYER PRINTED-CIRCUIT BOARDS
William Newsam, Bournemouth, England, assignor to Pressey Handel und Investments A.G., Zug, Switzerland
Filed July 10, 1972, Ser. No. 270,400
Claims priority, application United Kingdom, July 9, 1971, 32251/71
Int. Cl.² H05K 1/07
U.S. Cl. 339—17 M 3 Claims



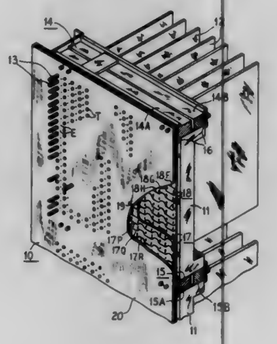
2. A back-plane for a plurality of plug-in functional units comprising, in combination, a multi-layer printed circuit board having plated-through holes and at least one plug-in functional unit provided with socket connectors mounted on a surface of said printed circuit board, each member of a first plurality of said plated-though holes being connected to at least one printed conductor element, each of said at least one printed conductor elements directly extending within said printed circuit board to another plated-through hole of said

first plurality, each member of a second plurality of said plated-through holes comprising a female socket, a terminal tag of a said socket connector being housed therein and operatively connected thereto, each plated-through hole of said second plurality being connected to an adjacent plated-through hole of said first plurality only by a severable linking track, having a straight path comprising a printed conductor element located on that surface of said printed circuit board from which respective ends of terminal tags protrude.

3,923,360
MULTILAYER ELECTRICAL CONNECTION PANEL WITH MODIFIABLE INTERNAL CIRCUITS

Maurice Pierre Constant Rougon, Bondy, and Gerald Albert Edmond Davy, Noisy-e-Roi, both of France, assignors to Compagnie Honeywell Bull, Paris, France

Filed Mar. 22, 1974, Ser. No. 453,901
Claims priority, application France, Mar. 26, 1973, 73.10766
Int. Cl.² H05K *1/04*
U.S. Cl. 339—17 R **12 Claims**



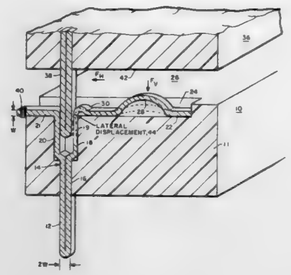
1. An electrical connection panel comprising two parallel conductive plates and a layer of conductors which is sandwiched between these plates and isolated from them by means of layers of an insulating material, the connections between the conductors of this layer, the said plates, and connectors external to the panel being produced by means of metal-lined holes extending through the panel, these metal-lined holes being arranged in regularly spaced rows and columns, each of the conductors in the said layer extending across a section of the layer situated between two consecutive rows of metal-lined holes, the said connection panel being characterised in that, the outer face of one of the conductive plates is assumed to be divided into elementary areas by the rows and columns of metal-lined holes, each of the areas situated between the columns the respective positions of which are $2n$ and $2n + 1$, when n assumes successive whole-number values, is provided with a circular depression arranged perpendicular to the section of conductor situated beneath this area in order to enable a drilling tool engaged in the depression to be correctly located and guided so as to drill through and cut the said section of conductor when the electrical connection provided by this section is to be broken.

3,923,361
ELECTRICAL CONNECTOR AND CIRCUIT BOARD MOUNTING SYSTEM

Harold Rosen, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Sept. 5, 1974, Ser. No. 503,216
Int. Cl.² H01R *13/28*
U.S. Cl. 339—47 R **30 Claims**

1. An electrical connector comprising: a housing and an electrically conductive spring member, said spring member folded on itself to provide a pin and separated from itself to form a socket, one portion of the spring member forming a laterally deflectible wall of said socket and including an extension having a bent portion, said spring member being mounted

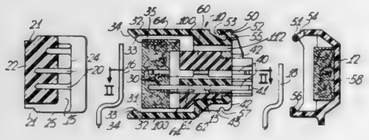


in said housing with said pin extending from one surface of said housing, said bent portion extending above a second surface of said housing and means for deflecting said one portion upon towards an opposite wall of said socket upon depression of said bent portion.

3,923,362
WIRE CONNECTING BLOCKS

Robert Brian Dunn, and James Edward Butler, both of Ottawa, Canada, assignors to Northern Electric Company Limited, Montreal, Canada

Filed Dec. 19, 1974, Ser. No. 534,194
Int. Cl.² H01R *13/38*
U.S. Cl. 339—96 **6 Claims**

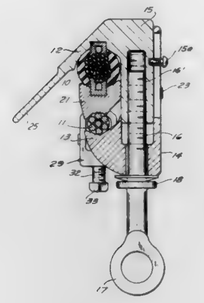


1. A wire connector block comprising:
a base, said base including a plurality of recesses for the reception of conductors, a conductor in each recess;
a module adapted to clip-on said base;
a plurality of contact clips in said module, a contact clip for each recess, a rear end of each contact clip extending from a back face of said module and positioned to enter a related recess and electrically engage with the conductor in the recess;
a front end of each contact clip extending adjacent to a front face of said module and adapted to receive a further conductor;
a clip-on cover adapted to fit on said front face of said module;
a compressible pad in a recess at said back face of said module, and a compressible pad in said cover and adapted to engage said other ends of said contact clips, said pads containing a sealant, said sealant encasing the connections between conductors and contact clips on assembly of the connector block.

3,923,363
HOT LINE CONNECTOR

Russell H. Kraft, Hopewell Junction, N.Y., assignor to Fargo Mfg. Company, Inc., Poughkeepsie, N.Y.

Filed Aug. 16, 1974, Ser. No. 497,894
Int. Cl.² H01R *13/38*
U.S. Cl. 339—97 R **1 Claim**

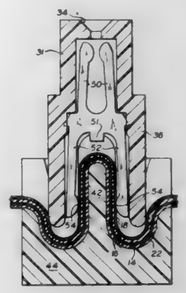


1. In a connector assembly for attaching a tap-off conductor to an insulation sheathed high voltage line of the type including upper and lower clamping jaws and first attachment means connecting said upper and lower jaws with said upper jaw shiftable toward and away from said lower jaw and first shifting means forming a part of said first attachment means for shifting said upper jaw toward and away from said lower jaw that improvement comprising:
alignment means for initially aligning said tap-off conductor with respect to said clamping jaws;
a conductor spacer bar supported between said jaws and shiftable therebetween which conductor bar is detachably affixed to the assembly and is provided with insulation piercing teeth positioned to pierce the insulation of the high voltage line;
said alignment means including a lateral extension on each side of said lower jaw, which lower jaw and said lateral extensions provide an elongated seat for the tap-off conductor extending beneath the conductor bar;
tap conductor clamps shaped to receive the said lateral extensions and the tap-off conductor and having means for fastening said tap-off conductor to said assembly with said tap-off conductor held on each side of said lower jaw and beneath said conductor bar;
whereby said assembly can be attached to said high voltage line with said high voltage line between said upper jaw and said conductor bar and said upper and lower jaws can be brought toward each other by said first shifting means with said high voltage line and said tap-off conductor engaging said conductor bar in clamped relation with the teeth of the conductor bar piercing the insulation of the high voltage line and the tap-off conductor engaging said conductor bar in clamped relation to form a full contact electrical connection between the high voltage line and tap-off conductor; and said insulation piercing teeth made of a hardness less than that of the strands of the high voltage line to allow the teeth to pierce the insulation sheath of the high voltage line and mushroom under pressure against the said strands to make a flattened, full contact, adequate electrical connection between the conductor bar and the high voltage line.

3,923,364
SHIELDED FLEXIBLE CONDUCTOR CABLE AND ASSEMBLY THEREOF

Jonas M. Shapiro, Stamford, and Maurice Zetena, Darien, both of Conn., assignors to Executone, Inc., Long Island City, N.Y.

Filed Dec. 6, 1973, Ser. No. 422,465
Int. Cl.² H01R *23/04*
U.S. Cl. 339—176 MF **19 Claims**

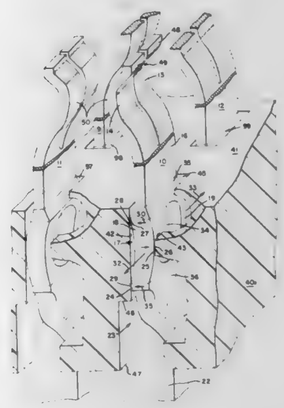


1. Flat, flexible conductor cable comprising a first conductor layer forming a ground shield having an insulating layer on one side thereof with a series of spaced-apart, individual, longitudinal conductors on the insulating layer, said one side of the layer having an exposed portion extending in the longitudinal direction between the individual conductors which is free of said insulating layer and said individual conductors.

3,923,365
PRESS FITTED TERMINAL POST

James Edward Lynch, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 5, 1974, Ser. No. 521,020
Int. Cl.² H01R *9/08*
U.S. Cl. 339—221 R **9 Claims**



1. In a terminal constructed to be frictionally secured in a securing body within an aperture defined by walls to have a rectangular cross-sectional area, and having an upper terminal portion, and a lower terminal portion, an aperture wall-engaging portion connecting said upper portion to said lower portion and positioned within said aperture, and comprising:

first and second substantially parallel beam members spaced apart and each secured at its two ends to said first and second terminal portions of said terminal;

said first and second beams each being bowed in a first direction towards a first wall of said aperture an amount to place said beams in a spring compression force between the two opposing walls of said aperture including said first wall; and

said first and second beams further being bowed outwardly in opposite directions from one another by an amount to exert a spring compression force between the two remaining walls of said aperture.

3,923,366

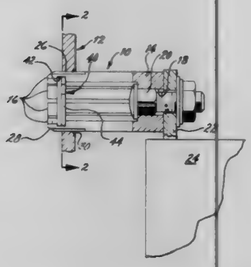
STAB ELECTRICAL CONNECTOR

William Francis Olashaw, Plainville, Conn., assignor to General Electric Company, Schenectady, N.Y.

Filed June 19, 1974, Ser. No. 480,714

Int. Cl.² H01R *13/16*

U.S. Cl. 339—252 P **5 Claims**



1. An electrical stab connector comprising, in combination:

A. a plug connector part having

1. a base,
2. a plurality of individual, elongated fingers integrally formed with said base, said fingers arranged in a circular array and extending longitudinally in angularly spaced, parallel relation, and
3. means formed in said base facilitating mounting and electrical connection of said plug connector part to a current carrying part;

B. an essentially plate-like receptacle connector part having first means forming a circular opening therein conforming to the outer diameter of said circularly arrayed fingers and second means forming a slot in said receptacle part extending from an exterior edge thereof into said opening, whereby said opening expands as said fingers are inserted en masse into said opening; and

C. a double looped coil expansion spring with one loop of larger diameter than the other, said spring disposed internally of said fingers for urging said fingers individually radially outward into electrically contacting engagement with the sidewall of said opening to complete a stab electrical connection.

3,923,367

SIMULTANEOUS DOUBLE CRIMP COAXIAL CABLE CONTACT ASSEMBLY

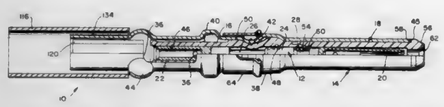
David P. Carter, Laguna Niguel, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 8, 1974, Ser. No. 468,041

Int. Cl.² H01R *11/08*

U.S. Cl. 339—276 R **22 Claims**

2. A coaxial electrical contact assembly having an axis comprising a housing of electrically conductive material having an inner surface, a contact therein having an outer surface, said inner and outer surfaces having substantially the same radial spacing therebetween along the axis, means for defining insulation of deformable plasticity between said housing and said contact, and means for imparting a plastic deformation of substantially uniform wall separation between said inner and outer surfaces, and for securing said insulation means between



said housing and said contact, thereby for providing a stable, strong and interlocked assembly of said housing, said contact and said insulation means, and for establishing a substantially uniform dielectric constant along the axis.

3,923,368

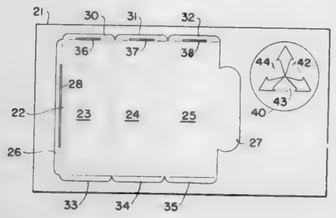
KALEIDOSCOPE

Jon M. Hassel, Apt. A-929, 463 West St., New York, N.Y. 10014

Filed June 12, 1974, Ser. No. 478,591

Int. Cl.² G02B *27/08*

U.S. Cl. 350—4 **1 Claim**



1. A kaleidoscope for viewing a graphic work, said kaleidoscope being assembled from a single blank of sheet material having a reflective surface, said kaleidoscope comprising, in combination, a center panel and two endmost panels die cut from said blank and foldably joined side by side, said panels being folded to form a prismatic body having three reflective surfaces at 60° to each other within said body, one of said endmost panels having a side tab containing a slit and the other of said endmost panels having a grip tab which passes through said slit in assembly joining said endmost panels and projects outward from the panels to form a handle for said kaleidoscope, a rounded eye piece die cut from said blank containing a triangular opening of the same size as the end of said body to which said eye piece is attached, end flaps of said panels containing slits, said end flaps being folded outward from the end of said body to which said eye piece is attached, and three eye piece tabs extending inward from the sides of said triangular opening, said eye piece tabs being folded and inserted through the slits in said end flaps securing said eye piece to said body.

3,923,369

RETROFOCUS TYPE OF OBJECTIVE LENS

Akiyoshi Nakamura, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 27, 1974, Ser. No. 446,545

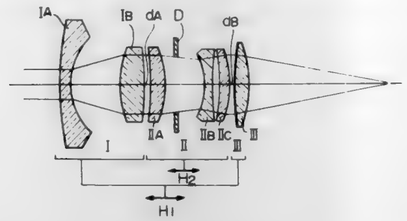
Claims priority, application Japan, Feb. 27, 1973, 48-22712

Int. Cl.² G02B *9/00, 7/02*

U.S. Cl. 350—214 **8 Claims**

1. A retrofocus objective lens comprising a front lens group including a rear positive lens, a rear lens group including a rearmost lens, an intermediate lens group disposed between and axially spaced from said front and rear lens groups including a front positive lens delineating with said front lens group rear positive lens, a first intergroup air space, and a rear positive lens delineating with said rear group rearmost positive

lens a second intergroup air space, said intermediate lens group further including a diaphragm disposed at the back of said front lens of the intermediate lens group, the distance between said front and rear lens groups being fixed, and means for concurrently axially moving said front and rear lens



groups as a unit and said intermediate lens group at a rate different from that of said front and rear lens groups to thereby vary the axial dimensions of said intergroup air spaces and compensate for the aggravation of aberration attendant to changes in the focus of said objective lens.

3,923,370

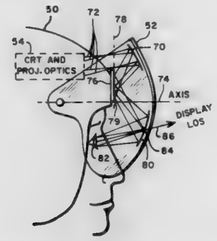
HEAD MOUNTED DISPLAYS

Richard N. Mostrom, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 15, 1974, Ser. No. 514,512

Int. Cl.² G02B *17/00*

U.S. Cl. 350—55 **8 Claims**



1. In a display apparatus for use with headgear having a visor with at least two partially reflective areas thereon which are part of a paraboloid having an axis of rotation;

means for producing an image;

optical means for projecting light from said means to a first of the two areas on the visor for reflection therefrom to a reflecting surface on the headgear and for reflection therefrom to the second of the two areas on the visor so as to form the desired image for viewing by the wearer, the improvement comprising mounting the optical means and the reflecting areas asymmetrically about the axis such that a line drawn from the eye of the wearer to the center of the aperture of the second of the two areas is at a raised angle with respect to a line drawn from the eye of the wearer parallel to the axis.

3,923,371

OPTICAL FIBRE CONNECTORS

Jack Frank Dalgleish, Ottawa, Canada, assignor to Northern Electric Company Limited, Montreal, Canada

Filed Mar. 22, 1974, Ser. No. 453,593

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96 C **3 Claims**

1. A connector for releasably connecting a plurality of independent pairs of coated optical fibres, each fibre of a pair in accurate abutting end-to-end alignment with the other fibre of a pair, comprising:

a first housing;

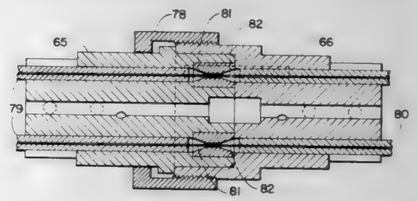
a plurality of bores extending axially through said first housing, said bores each including a small diameter portion adjacent a forward end of said housing, said small diameter portion of a diameter to fit closely on an uncoated end of a fibre, the remaining portion of each bore of a larger diameter to receive a coated portion of the fibre;

a plurality of first convergent surfaces at said forward end of said housing, a convergent surface extending from the surface of said forward end to each of said small diameter portions of said bores;

a plurality of second convergent surfaces, a convergent surface extending from said larger diameter portion of each of said bores to the related small diameter portion of the bore;

a second housing;

a plurality of bores extending axially through said second housing, each bore of a uniform diameter to receive a



coated fibre with an uncoated end extending from a forward end of said second housing;

cooperating formations in said first and second housings for aligning said housings in a predetermined relative position;

and retaining means on one of said housings in engagement with means on the other of said housing, for retaining said first and second housings in engagement with said forward end of said first housing in face to face abutting relationship with a forward end of said second housing and each bore in said first housing in axial alignment with a bore in said second housing,

whereby the uncoated ends of the fibres extending from said second housing are guided by said first convergent surfaces in said first housing into abutting end-to-end alignment with the uncoated ends of the corresponding fibre of each pair located in the small diameter portion of the first housing bores.

3,923,372

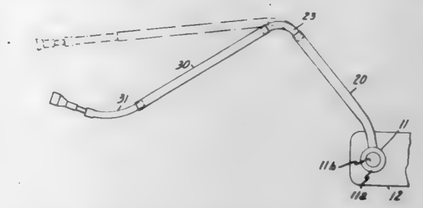
FIBER OPTIC EXTRA ORAL OPERATORY LIGHT

Max Roland, Redwood City, Calif., assignor to MDT Instrument Company, Gardena, Calif.

Continuation-in-part of Ser. No. 204,995, Dec. 6, 1971, abandoned. This application Jan. 4, 1974, Ser. No. 430,759

Int. Cl.² G02B *5/16*

U.S. Cl. 350—96 B **7 Claims**



1. An extra oral operatory light comprising:

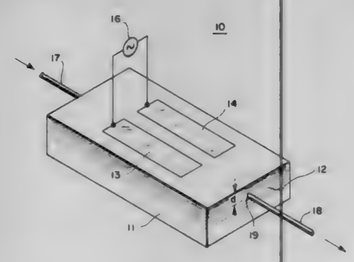
a fiber optic bundle with a proximal end connected to a housing and adapted to receive light from a light source

within said housing, and a distal end connected to a light fixture and adapted to transmit light to said light fixture; a conduit, housing said fiber optic bundle, including a first, relatively short, flexible segment with a distal end connected to said light fixture, a second relatively long, rigid segment with a proximal end connected to said housing, and alternate relatively long, rigid segments and relatively short, flexible segments between said first and second segments, each of said rigid segments being lighter in weight per unit length than said flexible segments; and a coupling constituting means for connecting the proximal end of said second segment to said housing and structured to permit movement of the proximal end of said bundle in an arc around light source without distorting the bundle.

3,923,373
COUPLING TO GRADED INDEX WAVEGUIDE

Franklin Winston Dabby, Ewing Township, Mercer County, and David Harry Smithgall, Sr., East Windsor Township, Mercer County, both of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed July 1, 1974, Ser. No. 485,048
Int. Cl.² G02B 5/14
U.S. Cl. 350—96 WG **8 Claims**



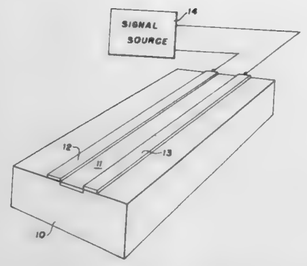
1. A mode-selective optical device, which comprises:
a planar waveguide comprising a transparent dielectric member having a graded index of refraction near one surface thereof to render said waveguide capable of supporting different propagation modes at different distances from said surface; and
means for coupling optical energy of a selected one of said propagation modes into or out of said waveguide, said coupling means being physically positioned proximate one end of said waveguide, the optical axis of said coupling means being spaced a distance from said surface such that said coupling means couples into the region of said waveguide capable of supporting essentially only said selected mode.

3,923,374
HIGH SPEED ELECTRO-OPTIC WAVEGUIDE MODULATOR

William E. Martin, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 22, 1974, Ser. No. 490,461
Int. Cl.² G02B 5/14; G02F 1/03
U.S. Cl. 350—96 WG **9 Claims**

1. A channel waveguide electro-optic modulator comprising:
a substrate material of a II–VI compound;
an optical waveguide having a predetermined uniform width defined by a channel of diffusant in a portion of said substrate material,
said diffusant being an element chosen from the groups II and VI of the periodic table of elements;
an electrical conductor of predetermined uniform width disposed proximate to and parallel with each side of said channel of diffusant, the ratio of the width of said optical waveguide to the width of each said electrical conductor being substantially of the order of 2:1; and

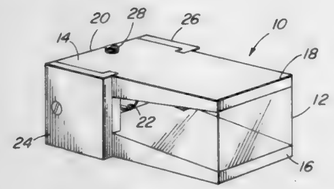


a source of electrical signals connectable to said electrical conductors and developing an electric field across said optical waveguide for modulating light energy passing therethrough by changes in refractive index commensurate with said electrical signals.

3,923,375
WEDGE REFLECTOR FOR FIBER OPTIC BUNDLE

Edwin R. Bowerman, Topsfield, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed July 24, 1974, Ser. No. 491,592
Int. Cl.² G02B 5/16
U.S. Cl. 350—96 C **4 Claims**

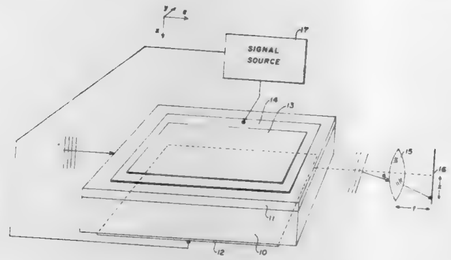


1. A wedge reflector for increasing the intensity of light in central portions of a normally truncated conical output beam of light from a fiber optic bundle, the wedge reflector comprising
a holding member having an entrance portion through which a centrally located bore extends for slidably receiving the fiber optic bundle therein; the fiber optic bundle extending throughout the length of the bore and terminating at a first face of the holding member so that a normally truncated conical beam of light from the fiber optic bundle emanates from the first face of the holding member,
means for securing the fiber optic bundle in the holding member, and
a pair of divergent, essentially planar internally reflective surfaces affixed to the holding member, the reflective surfaces intersecting the first face on the holding member on opposite sides of the bore, at approximately identical angles, and along a pair of parallel lines which are separated by the width of the bore so that the axis of the truncated conical beam of light bisects the angle between the pair of divergent, essentially planar, internally reflective surfaces, the divergence of the reflective surfaces being selected so that outer portions of the normally truncated conical beam are folded back over substantially the full width of the central portions of the beam thereby increasing the intensity of the beam in the central portions thereof.

3,923,376
ELECTRO-OPTIC WAVEGUIDE BEAM DEFLECTOR

William E. Martin, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 2, 1974, Ser. No. 494,132
Int. Cl.² G02B 5/14
U.S. Cl. 350—96 WG **7 Claims**

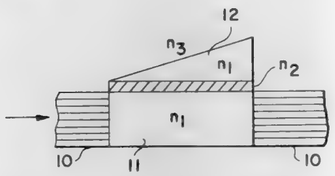


1. An optical beam deflector comprising:
an electrically conductive substrate;
a multi-mode optical waveguide of electro-optic crystal material supported by said substrate for transmitting polarized light energy along a determinable path,
said electro-optic crystal material having a gradient variation in electrical resistivity as a function of depth within its thickness;
a top and bottom electrode disposed with said electro optic crystal material therebetween; and
a source of electrical potential arranged to be connected to said top and bottom electrode for generating an electric field having a gradient variation commensurate with said gradient variation in electrical resistivity causing a gradient variation in refractive index relative to said thickness for changing the orientation of the plane wave of said light energy responsive to the instantaneous value of said electrical potential.

3,923,377
HIGH ANGLE OPTICAL RAY SEPARATOR

A. Fenner Milton, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 29, 1974, Ser. No. 528,516
Int. Cl.² G02B 5/14
U.S. Cl. 350—96 C **6 Claims**

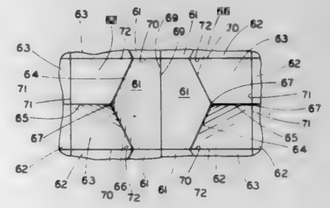


1. An optical connector for separating optical radiation traveling in a multimode fiber bundle transmission line at a large angle to the axis of said fiber bundle from the optical rays which have propagation close to the axis; which comprises:
a dielectric rod of optical radiation transparent material having an index of refraction of n_1, which is connected into a separation in a main optical fiber bundle transmission line with its input end adjacent the output end of said separated fiber bundle transmission line and with its output end adjacent the input end of said separated fiber optic transmission line and having the same cross sectional area as said main transmission line,
a thin layer of optical transparent material on one surface of said dielectric rod and having an index of refraction of n_2, where n_2 is less than n_1;
at least one tapered slab of optical material secured onto said thin layer of optical material and having an index of refraction of n_1;
said tapered slab positioned with the angle of incline increasing in the direction of radiation propagation in said main transmission line.

3,923,378
CUBE-CORNER REFLECTOR WITH NON-ALIGNED CUBE AXES AND ELEMENT AXES

Sidney A. Heenan, Park Ridge, Ill., assignor to Amerace Corporation, New York, N.Y.

Filed Apr. 24, 1973, Ser. No. 354,153
Int. Cl.² G02B 5/12
U.S. Cl. 350—103 **34 Claims**



1. A retrodirective reflector for reflecting light substantially back to the source thereof, said reflector comprising a body of transparent material having a light-receiving front face, and a plurality of retrodirective cube-corner reflector elements at the rear of said body, each of said reflector elements having an element axis and a cube axis, each of said reflector elements having an outline in the shape of a regular polygon when projected in a plane perpendicular to said element axis, each of said reflector elements having three mutually perpendicular faces symmetrically arranged with respect to said cube axis and respectively intersecting in three mutually perpendicular edges, the element axes respectively of all of said reflector elements being disposed substantially parallel to one another, the cube axes of at least some of said reflector elements being inclined with respect to the associated element axes at a predetermined angle other than zero degrees.

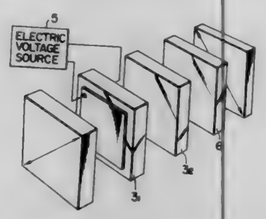
3,923,379
LIGHT CONTROL ELEMENT HAVING A WIDE VIEWING ANGLE

Akio Kumada, Kokubunji, Japan, assignor to Hitachi, Ltd., Japan

Filed July 30, 1974, Ser. No. 493,103
Claims priority, application Japan, July 30, 1973, 48-84907
Int. Cl.² G02F 1/03
U.S. Cl. 350—150 **11 Claims**

1. An optical control device comprising:
first and second biaxial electro-optic crystals, each of which has
a pair of major surfaces which are normal to a bisector of an angle defined by the two optical axes of the crystal, and
a thickness providing a retardation equal to that provided by the other biaxial crystal;
at least one pair of transparent electrodes provided respectively on the pair of major surfaces of at least one of said biaxial crystals, and a respective source of supply voltage connected to each respective pair of electrodes; and

a uniaxial crystal plate, which is conjugate to said first and second biaxial crystal plates, having a thickness corresponding to the equivalent retardation of said biaxial crystal plate;

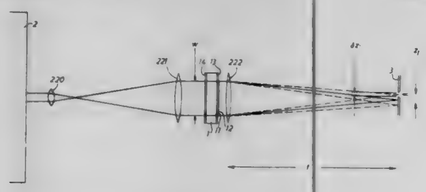


said biaxial crystal plates and said uniaxial crystal plate being disposed optically in cascade with each other.

3,923,380
ELECTROOPTIC MODULATOR UTILIZING MULTIPLE INTERFERENCE

Shuzo Hattori, and Tadao Hiramatsu, both of Nagoya, Japan, assignors to Hagiwara Denki Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 8, 1974, Ser. No. 449,522
Claims priority, application Japan, Mar. 12, 1973, 48-28875
Int. Cl.² G02F *1/32, 1/38*
U.S. Cl. 350—160 R **4 Claims**


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e. said means for defining a lip comprises a metal bar extending substantially across the width of said bridge member and protruding therefrom; and f. said means for defining a groove extending substantially across the width of said arched portion of said nose piece for mating with said metal bar.

3,923,386

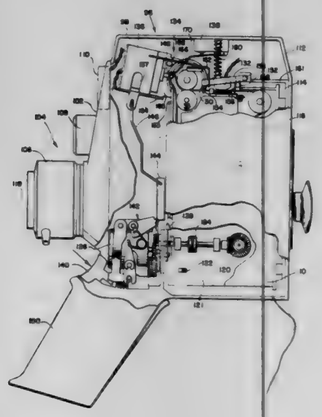
MULTIPURPOSE AUDIO-VISUAL CASSETTE SYSTEM

Donald T. Scholz, Watertown, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 374,578, June 28, 1973, Pat. No. 3,848,977. This application Aug. 5, 1974, Ser. No. 494,836

Int. Cl.² G03B *23/12*

U.S. Cl. 352—72 **4 Claims**



1. Photographic apparatus comprising:

an apparatus housing;

means for receiving a film-handling cassette having a cassette housing configured for retaining a strip of photographic film material, the cassette including opening defining means providing access to a first station configured for exposure or projection operations and a second station configured for sound operations;

image-forming means for performing a photographic program with at least a portion of the film strip located within the first station;

audio means including a sound-head for performing an audio program with a portion of the film strip located within the second station;

first selectively operative drive means for advancing the film strip through the first station when the cassette is operatively positioned in said receiving means;

second selectively operative drive means for advancing the film strip through the second station when the cassette is operatively positioned in said receiving means, said second drive means including a support member, a capstan rotatably mounted on said support member, and a motor mounted on said support member in driving engagement with said capstan, said support member being mounted in said apparatus housing for displacement between one position wherein said capstan is out of engagement with the portion of the film strip positioned within the second station and another position wherein said capstan is in pressure engagement therewith;

means for actuating both said first and said second drive means; and

means responsive to said actuating means for displacing said support member from said one position to said another position.

3,923,387

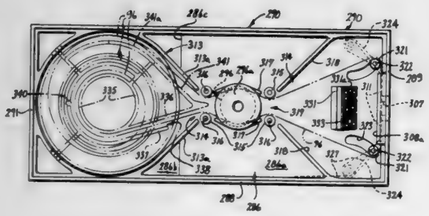
MOTION PICTURE VIEWER WITH REMOVABLE CARTRIDGE

James R. Skinner, Cupertino; Mark O. Ultz, Mountain View, and Paul W. Halt, Saratoga, all of Calif., assignors to F. J. L. Corporation, Mountain View, Calif.

Division of Ser. No. 338,893, March 7, 1973, which is a continuation of Ser. No. 78,115, Oct. 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 867,289, Oct. 17, 1969. This application Feb. 22, 1974, Ser. No. 444,978

Int. Cl.² G03B *23/04, 1/16*

U.S. Cl. 352—78 R **5 Claims**



1. A cartridge for use in apparatus of the type having a housing for receiving the cartridge, reversible driving means for the cartridge and an optical assembly, said cartridge being adapted to receive a length of perforated film, said cartridge comprising means forming a framework having indexing means, said indexing means having an aperture substantially in alignment with the optical assembly when the cartridge is disposed in the housing, means for storing said length of perforated film in said cartridge, guide means in said cartridge for guiding said film along said indexing means past said aperture, said indexing means including a pair of index members spaced from each other in the direction of film travel and adapted to engage the perforations in the film, a pair of film engaging members mounted in said cartridge in a spaced relationship with respect to each other along the direction of film travel and adjacent said index members, said film engaging members urging said film against said indexing means whereby said index members engage the perforations in the film so that the film is selectively advanced on a frame by frame basis past the aperture, said film having upper and lower runs, a single drive sprocket for engaging the upper and lower runs of the film for causing movement of the film within the cartridge, said upper run overlying the lower run at the drive sprocket, means carried by the cartridge for driving the drive sprocket and adapted to be engaged by the reversible driving means in the housing, and upper and lower pairs of film guiding rollers mounted in fixed positions in said framework on opposite sides of the drive sprocket and spaced away from and out of engagement with the drive sprocket and engaging the upper and lower runs of the film, said film guiding rollers being accessible from one side to permit the film to be inserted into engagement with the drive sprocket, said film guiding rollers being positioned so that one roller of each pair is positioned rearwardly away from the drive sprocket and the other roller of each pair is positioned forwardly away from the drive sprocket to form front and rear pairs of rollers so that there is a space between imaginary lines extending through the centers of rotation of the front and rear pairs of rollers and the outer surface of the drive sprocket, said film guiding rollers also being positioned so that imaginary lines tangent to the outer surfaces of the upper and lower pairs of rollers will extend through the drive sprocket.

3,923,388

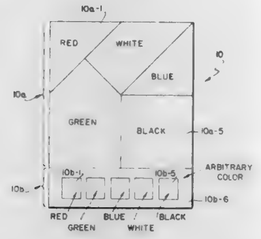
METHOD AND APPARATUS FOR THE PRODUCTION OF COLORED DESIGNS

Nathan Shenker, Brooklyn, N.Y., assignor to Tech/Ops Massachusetts, Burlington, Mass.

Filed Mar. 6, 1974, Ser. No. 448,463

Int. Cl.² G03B *21/26*

U.S. Cl. 353—30 **3 Claims**



2. A combination comprising an optical display system for use in varying and selecting a color combination for an arbitrary pattern of interest, and a set of pattern replicas consisting of first means for representing each area of the pattern which is to be of the same uniform color, and second means for representing a plurality of separate areas which are distinct from the pattern represented by said first means; said optical display system including means cooperating with said first means for forming a first display in which individual areas correspond to respective areas represented by said first means, and cooperating with said second means for forming a second display having a plurality of separate areas each corresponding to a respective area represented by said second means; and a plurality of means each for selectively controlling the color of a respective individual area in said first display, each of said color controlling means being uniquely associated with a respective one of the separate areas formed in said second display, independent of the pattern represented by said first means, and being operative to control the color of the associated area in said second display to be the same as the color of the area in said first display controlled by said each color controlling means so that the particular color controlling means responsible for each color in said first display can be determined by inspection of the separate area in said second display whose color is the same as said each color.

3,923,389

METHOD AND APPARATUS FOR PROJECTING A SCENE

Howard G. Rogers, Weston, and Kestutis Norvaisa, West Concord, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 763,490, Sept. 20, 1968, abandoned. This application June 8, 1971, Ser. No. 150,899

Int. Cl.² G03B *21/14*

U.S. Cl. 353—38 **1 Claim**



1. Apparatus for projecting a scene recorded upon an image carrier as an array of regularly spaced color components arranged in a serially repetitive fashion comprising:

means including a projection lens system for projecting said recorded scene through an optical path and providing a magnified image thereof at an image plane; and

a diffraction grating formed upon an optical surface of said lens system for diffracting the image projected therethrough to derive at least zero and first order images from said components mutually spaced at said image plane such that any color component projected as a zero order image has superimposed upon it at least one separate color component projected as a first order image, whereby geometric patterns otherwise encountered during the projection of said array of the color components are caused to blend additively.

3,923,390

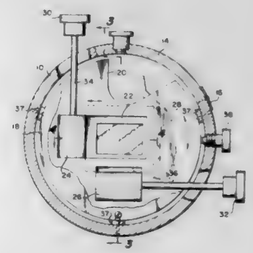
SLIDE PROJECTION APPARATUS

James Alan Susko, Findlay, Ohio, assignor to Cooper Tire & Rubber Company, Findlay, Ohio

Filed Nov. 19, 1973, Ser. No. 417,046

Int. Cl.² G03B *1/48*

U.S. Cl. 353—95 **4 Claims**



1. In a optical slide projection apparatus, a slide holder comprising:

a pair of centrally apertured plates spaced from each other in parallel relation a distance substantially equal to the thickness of a slide to be projected and the area of the apertures corresponding substantially to the area of the slide;

a pair of cams carried by said plates and rotatably mounted on mutually perpendicular axes parallel respectively to adjacent sides of said apertures;

spring biasing means carried by said plates and operative when a slide is positioned in said holder to urge the slide into engagement with said cams; and

means extending outwardly of the apparatus permitting selective rotation of said cams to adjust the position of the slide within the holder, said cams contacting elongate portions of adjacent sides of the slide so that rotation of either cam produces straight line rectilinear sliding movement of the slide along the surface of the other cam.

3,923,391

ELECTROSTATIC PHOTOGRAPHIC COPYING APPARATUS

Takaji Washio, Toyonaka; Koichi Sasaki, and Tatsuo Aizawa, both of Osaka, all of Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan

Filed Sept. 21, 1973, Ser. No. 399,516

Claims priority, application Japan, Sept. 24, 1972, 47-95460

Int. Cl.² G03G *15/00*

U.S. Cl. 355—3 R **8 Claims**

1. An electrostatic photographic copying apparatus comprising:

a frame defining a housing with a top surface having a transparent plate on which an original to be copied is placed, a rotatable photosensitive drum for rotation in one direction as the apparatus copies having an electrostatic photographic material on the periphery thereof, an image-forming zone disposed adjacent to the periphery of said photosensitive drum for forming on said photosensi-

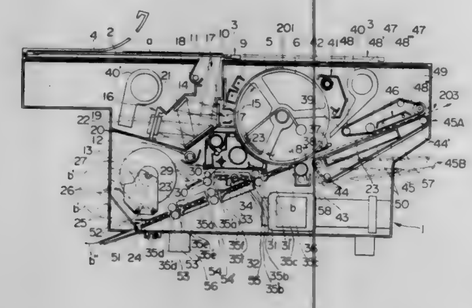
tive material an electrostatic latent image corresponding to the image of the original and a developed image corresponding to the latent image, a transfer zone for transferring said image to a transfer paper, and a transfer paper forwarding system for feeding the transfer paper on which the image has been transferred to said transfer zone and through a desired treating zone to a discharge end;

wherein said photosensitive drum is disposed within the housing with the top of the periphery thereof approaching and confronting an inner surface of the top plate of the housing adjacent a location on the inner surface;

wherein said transfer zone is positioned at an angle exceeding 180° in the direction of rotation of the photosensitive drum from the location on the inner surface of the top plate;

wherein said transfer paper forwarding system forwards a transfer paper in a substantially linear, upwardly inclined passage extending from an inlet end through the transfer zone to the discharge end;

wherein said inlet end is preceded by a nip roller adjacent thereto;



wherein said image forming zone includes at least one charging member for electrically charging said photographic material, an optical system for projecting an image of the original onto the surface of the photographic material and a developing device for developing the electrostatic latent image formed on said photographic material which are all housed within a first area defined on at least three sides of the top surface of said housing, the circumferential surface of the photosensitive drum extending from the top thereof to the transfer zone in the direction of rotation of the photosensitive drum and the transfer paper forwarding system; and

wherein a transfer paper removing member and a photosensitive drum cleaning member are housed within a second area defined on at least three sides by the top surface of the housing, the circumferential surface of the photosensitive drum which extends from the top of the photosensitive drum to the transfer zone in a direction opposite to the direction of rotation of the photosensitive drum and by the transfer paper forwarding system.

3,923,392
ELECTROPHOTOGRAPHIC COPIER

William R. Buchan, Lincoln; James E. Genthe, Chelmsford; Edward F. Mayer, Acton, all of Mass., and Robert A. Moore, Amherst, N.H., assignors to Itek Corporation, Lexington, Mass.

Filed Jan. 2, 1974, Ser. No. 429,617
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 R **9 Claims**

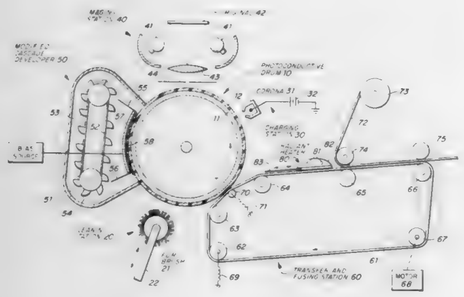
1. An electrophotographic copier comprising, in combination:

a. a rotatable drum having a photoconductive, insulating surface thereon;

b. means to apply a uniform electrostatic charge pattern to the surface of said drum;

c. means to expose said uniform electrostatic charge pattern to a light image of an original thereby forming a latent electrostatic image of the original on the surface of said drum;

d. cascade developer means for cascading electroscopic developer over said latent electrostatic image, said cascade developer means including a member closely positioned to the surface of said photoconductive drum and defining a narrow development zone therebetween, said member having a roughened surface facing the surface of said photoconductive drum, whereby the density of developer and radial velocity of developer are both increased as developer cascades through said narrow development zone;



e. an elastomeric intermediate transfer belt positioned to remove the developed toner image from the surface of said drum;

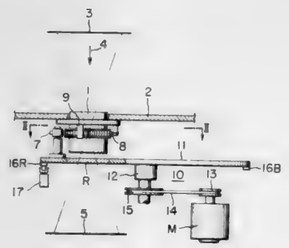
f. radiant heating means for heating the toner image on said electrostatic transfer belt; and,

g. paper transport means for bringing paper into contact with the heated toner image on said transfer belt whereby said image is transferred and fused to said paper, said paper transport means also including means for providing for an elongated zone of contact between said transfer belt and said paper after transfer of the toner image to the paper.

3,923,393
ELECTROPHOTOGRAPHIC COLOR COPYING APPARATUS OF THE COLOR RESOLVING TYPE

Shozo Inoue, Fussa, and Hajime Katayama, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1973, Ser. No. 416,453
Claims priority, application Japan, Nov. 24, 1972, 47-117784
Int. Cl.² G03B *27/76*
U.S. Cl. 355—35 **6 Claims**



1. A color copying apparatus of the color resolving type for color-resolving a color original image into monochromatic optical images and projecting such optical images upon an exposure station for exposure, said apparatus comprising:

projecting means for projecting therethrough the original image upon the exposure station;

color resolving means having a predetermined number of color resolving filters for color-resolving the light projected through said projection means, said filters being selectively positionable in the optical projection path of said projection means;

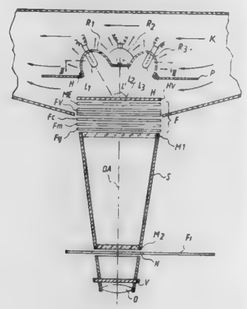
exposure regulating means provided in the optical projection path of said projection means and having an adjustable aperture mechanism and a member for setting the aperture-opening of said mechanism; and

means for operating said exposure regulating means having a plurality of members for adjusting said setting member, each of which is associated with a different filter and is mechanically coupled to said setting member in response to the setting of the corresponding filter of said color resolving means in said optical projection path to adjust the aperture mechanism to an aperture-opening corresponding to the predetermined exposure needed for that color.

3,923,394
EXPOSURE APPARATUS FOR USE IN PHOTOGRAPHIC COPIERS

Gerhard Frankiewicz, Sauerlach, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 11, 1974, Ser. No. 522,932
Claims priority, application Germany, Nov. 13, 1973, 2356573
Int. Cl.² G03B *27/54, 27/76*
U.S. Cl. 355—37 **11 Claims**



1. In a photographic copier, an exposure apparatus, comprising, in combination, a plurality of elliptical reflectors, each having a respective first focal point and a respective second focal point, with said reflectors being so arranged that said second focal points are substantially coincident and form a common focus; a plurality of light sources, each located substantially coincident with the first focal point of a respective one of said plurality of elliptical reflectors; a light duct having a mirrored inner surface and having an inlet end arranged in the vicinity of said common focus and having an outlet end; light diffusing end portions closing off said inlet end and said outlet end of said light duct; and means defining a negative plane in which a negative to be illuminated by said exposure apparatus is to be located, said negative plane lying in the vicinity of said outlet end of said light duct.

3,923,395
PROCESS FOR MEASURING THE DISTANCE OF AND THE SPEED COMPONENT OF AN OBJECT PERPENDICULAR TO A REFERENCE LINE

Viktor Bodlaj, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 15, 1974, Ser. No. 470,154
Claims priority, application Germany, May 17, 1973, 2325086
Int. Cl.² G01C *3/00, 3/08*
U.S. Cl. 356—4 **9 Claims**

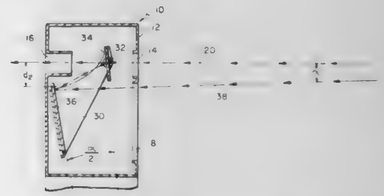


3. Apparatus for measuring the range of an object relative to a datum plane, comprising: laser beam scanning means including a beam deflector for periodically scanning a laser beam through a space in which the object is located; a laser energy detector adjacent said scanning means for detecting reflected energy from a specific direction and producing measuring pulses; generator means connected to said deflector and generating a sinusoidal signal having a linear portion and a frequency matched to the mechanical resonant frequency of said deflector; a reference circuit connected to said generator means for producing reference pulses during the linear portion of the sinusoidal voltage; and range determining means connected to said detector and to said reference circuit to measure the time between the commencement of a reference pulse and that of a measuring pulse.

3,923,396
VARIABLE BASE RANGEFINDER

William P. Ewald, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 402,421, Oct. 1, 1973, abandoned. This application July 26, 1974, Ser. No. 492,115
Int. Cl.² G01C *3/24*
U.S. Cl. 356—17 **8 Claims**



4. A coincidence rangefinder comprising:

a substantially planar beam splitter positioned to receive and transmit light rays from a scene along a first axis to provide a first image of the scene;

a substantially planar reflective means, positioned in a fixed non-parallel relative orientation with respect to said beam splitter, for receiving and reflecting light rays from the scene to said beam splitter along a second axis to provide a second image of the scene; and

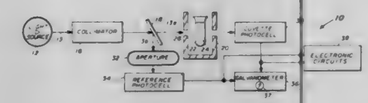
means, mounting said beam splitter and said reflective means for movement about a fixed axis, for bringing said first and second images into coincidence by movement of

said beam splitter and said reflective means about said fixed axis.

3,923,397
HEMATOCRIT MEASURING METHOD

Reginald C. Shuck, Orlando, Fla., assignor to Stephen E. Dolive, Orlando, Fla., a part interest

Filed May 29, 1974, Ser. No. 474,170
Int. Cl.² G01N *33/16*
U.S. Cl. 356—39 **12 Claims**

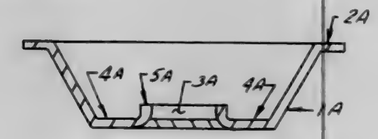


1. A method for measuring a hematocrit ratio for a diluted blood sample, comprising the steps of:
   passing electromagnetic energy through said blood sample;
   measuring a characteristic representative of the amount of said energy absorbed by said sample;
   determining a proportionality factor by dividing the hematocrit of a known blood sample by said characteristic of said known sample; and
   computing said hematocrit ratio by applying said proportionality factor to said measured characteristic of absorbed energy.

3,923,398
APPARATUS AND METHOD FOR FLAME ATOMIZATION

Leonard Adler, White Plains, N.Y., assignor to Trace Metals Instruments, Inc., New York, N.Y. and Itek Corporation, Lexington, Mass.

Filed Feb. 6, 1974, Ser. No. 440,253
Int. Cl.² G01J *3/02*; G01B *9/02*; G02B *5/23*
U.S. Cl. 356—85 **15 Claims**



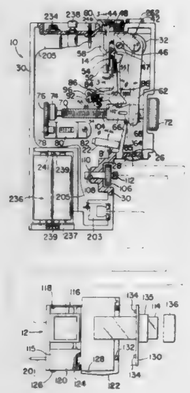
1. A method for atomization comprising placing a micro-sample containing metal compound in a cup having an axial hole therein, heating said cup with hot gases and passing said gases through said axial hole into contact with said micro-sample, thereby volatilizing said micro-sample and atomizing metal therein.

3,923,399
MINIATURIZED SPECTROPHOTOMETER

Corwin H. Brumley, Penfield, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Apr. 25, 1974, Ser. No. 464,004
Int. Cl.² G01J *3/42*
U.S. Cl. 356—96 **11 Claims**

1. A miniaturized spectrophotometer used in analyzing a liquid sample, comprising:
   a main assembly housing having an exteriorly accessible locking screw knob for attaching and detaching a separate liquid sample compartment housing;
   a monochromator carried within said main housing including a light source and a diffraction grating for emitting monochromatic electromagnetic flux at selective wavelengths;
   a separate liquid sample compartment housing detachably connected by the locking screw knob to said main housing for receiving the monochromatic flux used in analyzing a liquid sample;
   a separate removable liquid sample container disposed within said sample compartment housing for carrying a liquid sample and receiving the monochromatic flux;

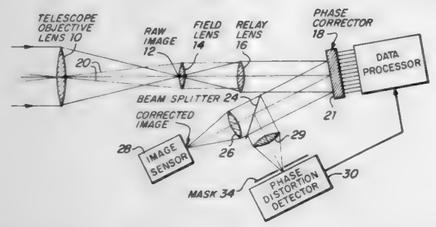


   a photosensor and an amplifier circuit carried within said sample compartment housing for receiving attenuated flux and generating an output signal as a function of the attenuated flux;
   meter means carried within said main housing and detachably electrically connected to the amplifier circuit for providing a readout as a function of the output signal; and
   a rechargeable battery power pack carried within said main housing for energizing the light source and amplifier circuit.

3,923,400
REAL-TIME WAVEFRONT CORRECTION SYSTEM

John W. Hardy, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Jan. 3, 1974, Ser. No. 430,456
Int. Cl.² G01B *9/02*; G02B *5/23*
U.S. Cl. 356—107 **12 Claims**

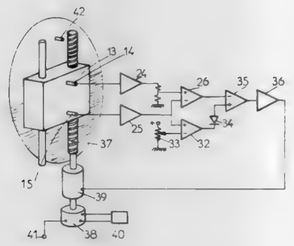


1. In an optical system for imaging objects of interest through the atmosphere, apparatus for the real-time detection and correction of phase distortions in a wavefront being imaged by said optical system, said phase distortions being at least in part produced by turbulence within the atmosphere through which said object of interest is imaged, said apparatus comprising:
   a. lateral shearing interferometer means, having said distorted wavefront incident thereon, for simultaneously determining in parallel and in real time relative phase differences between different areas of said distorted wavefront, and for generating signals indicative of said phase differences, said lateral shearing interferometer means including means for permitting said interferometer means to operate with white light;
   b. means responsive to said phase difference signals for simultaneously generating in parallel and in real time phase corrector signals indicative of phase corrections for different areas of said distorted wavefront to achieve a corrected wavefront; and,
   c. phase corrector means having said distorted wavefront incident thereon and being responsive to said phase corrector signals for changing in real time phase differences between different areas of said distorted wavefront for changing the shape of said distorted wavefront to achieve said corrected wavefront.

3,923,401
SOLUTION CONCENTRATION RESPONSIVE APPARATUS

Helenio Llop, Montreuil, and Pierre Lefort, Fontenay-sous-Bois, both of France, assignors to Societe d'Optique, Precision Electronique et Mechanique — Sopelem, Paris, France

Filed Jan. 18, 1974, Ser. No. 434,698
Claims priority, application France, Feb. 28, 1973, 73.07118
Int. Cl.² G01N *21/46*
U.S. Cl. 356—135 **5 Claims**

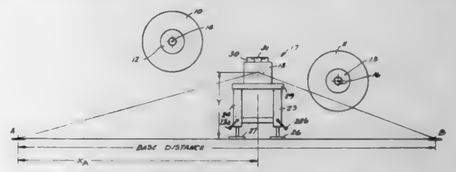


1. In solution concentration responsive apparatus including means whereby light is directed inclinedly upon a plane surface of a prism, said surface being in contact with said solution, and means whereby light reflected internally from said surface is directed towards two photoelectric cells having a separation in the direction in which the boundary formed by the limit of the totally reflected light moves as the concentration of said solution varies, the outputs of said cells being connected to means for deriving a signal related to the respective illuminations of said cells, the improvement which comprises:
   multiplier means arranged to multiply the output P_1 of one said photoelectric cell by a constant of proportionality less than unity thereby to develop a modified output signal $K.P_1$;
   a first differential amplifier;
   means applying said modified signal to one input of said differential amplifier;
   means applying the output P_2 of the other of said photoelectric cells to the other input of said differential amplifier whereby the output signal of said first differential amplifier passes through zero when $K.P_1 = P_2$, said differential amplifier output signal being applied to an input of a second differential amplifier, to the second input of which is applied the output of a third differential amplifier, said third differential amplifier receiving said other photocell signal P_2 and a reference signal and providing a negative signal when the signal P_2 is less than said reference signal.

3,923,402
METHOD AND APPARATUS FOR ALIGNING PAPER MACHINERY

Paul Turcotte, Mobile, Ala., assignor to Beloit Corporation, Beloit, Wis.

Filed Jan. 10, 1973, Ser. No. 322,414
Int. Cl.² G01B *11/26*
U.S. Cl. 356—152 **1 Claim**

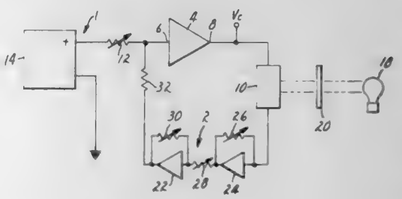


1. The method of aligning remote axes parallel to a laser bema which has a normal position which extends perpendicular to a base line through a pair of bench marks and at a determinable height and at a determinable horizontal distance from at least one of said bench marks comprising the steps of:
   reflecting said laser beam at a first angle and perpendicular to its normal position such that the reflected beam points at one fo said bench marks,
   reflecting said laser beam at a second angle at right angles to its normal position such that the reflected beam points at the other of said bench marks, determining the height of the normal position of the beam above said base line from said first and second angles and the known distance between said bench marks, determining the horizontal distance between one of said bench marks and the projection of the normal position of the beam on said base line from said height of the normal position of the beam and one of said first and second angles and, aligning remote axes parallel to the laser beams said normal position.

3,923,403
CIRCUIT FOR LIGHT MEASURING DEVICES AND METHOD

Lanny L. Harklau, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 22, 1974, Ser. No. 499,507
Int. Cl.² G01M *21/22*; G01J *1/44*
U.S. Cl. 356—201 **19 Claims**



1. A method for determining the optical density of a specimen including the steps of
   1. providing a constant level light source, an operational amplifier having an output and at least one input, a first current determining means connected to said one input, a second current determining means connected between said output and said one input as a feedback circuit, said second current determining means including a photomultiplier tube positioned to receive the light from said light source;
   2. adjusting at least one circuit parameter of one of said current determining means so the cathode voltage of said photomultiplier tube is the same for two conditions, a first condition wherein the specimen is in the light path be-

tween said light source and said photomultiplier tube and second condition wherein the specimen is not in said light path; and

3. using the magnitude of the adjusted circuit parameters of said one current determining means for said first and second condition in step (2) to calculate the optical density of said specimen.

3,923,404

PENDULUM SUPPORT FOR A MULTI-POINT WRITING INSTRUMENT

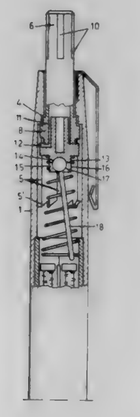
Karl Heinrich Heinz, 44, Konstanzerstrasse, CH-8280 Kreuzlingen, Switzerland

Filed Feb. 14, 1974, Ser. No. 442,577

Claims priority, application Germany, Aug. 14, 1973, 2341054

Int. Cl.² B43K *27/14*

U.S. Cl. 401—33 **1 Claim**



1. In a multi-point writing instrument having a sleeve, a plurality of point carriers projectable out of and retractable into said sleeve, a plunger-like presser, and a pendulum which effects selection and advance of the point carriers, one end of the pendulum being displacably suspended in a pendulum control and support unit which is engageable with said plunger-like presser, there being a retraction spring for urging said unit towards said presser, that improvement consisting essentially of:

a pendulum rod for selecting a point carrier and causing it to project out the sleeve;

a pendulum control and support device having mechanically separable half parts injection molded from a one-piece plastic member of generally cruciform shape in section in which one end of said pendulum rod is displacably suspended and said retraction spring is mountd for urging said support device towards said presser;

a plunger-like presser member having parts formed with grooves and radially projecting teeth segments;

means for engaging with said plunger-like presser;

an integral spring guiding collar on that side of the member presser adjacent the point carriers, said collar serving to guide the retraction spring;

a resilient, shaped cage integrally formed on said guiding-collar into which cage said one end of the pendulum rod is snap-fittable and engagable for pendulum movement;

slits being formed in spring-guiding collar and in said cage whereby the half parts of the pendulum support are elastically forced apart and separated when the said end of the pendulum rod is pressed into the cage and thus the pendulum rod is held snap-fittably in said pendulum support; and,

said resilient, shaped cage having a spherically shaped seat for locking engagement with said grooves and said radially projecting teeth segments on said presser member.

3,923,405

PUSH TYPE WRITING IMPLEMENT

Chang-Fu Kao, No. 148-1, Yung Lo Li, Taitong Town, Taitong, China /Taiwan

Filed Mar. 15, 1974, Ser. No. 451,540

Int. Cl.² B43K *21/10*

U.S. Cl. 401—82 **8 Claims**



1. Push type writing implement comprising a barrel to contain a core of writing medium, a channel disposed at the center of said barrel for the said core, another channel in parallel with the core channel, a push rod in said other channel, a seat at the rear of the barrel to retain the push rod, a V shaped spring integral with the push rod at its rear, said spring having an arm protruding outside the barrel wall to form a push button, a notch on said arm biased by said spring into engagement with a cut-out portion on the barrel wall to prevent the rod from slipping, said push rod being in contact with a core of writing medium in said barrel when said notch is engaged with said cut-out portion, and said button being movable against the spring force to disengage the notch from the cut-out portion and the push rod from the core, whereby the desired protrusion of the core from the barrel may also be effected by repeated pushing of said button.

3,923,406

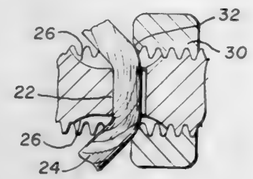
CABLE GRIP

Andrew Frank Iritz, 930 Andover Terrace, Ridgewood, N.J. 07450

Filed Mar. 17, 1975, Ser. No. 559,052

Int. Cl.² F16B *7/06*

U.S. Cl. 403—43 **12 Claims**



1. A cable grip for retaining selectively at least one length of an at least partially flexible member such as a cable, wire, rope and the like, said grip comprising (1) a longitudinally extensive, externally threaded shank member including a threaded midlength portion, said midlength portion being characterized by (i) a transaxial hole and (ii) a pair of substantially diametrically oppositely disposed longitudinal grooves, each groove longitudinally tapering from the outer diameter of the threads to at least the root of the threads and intersecting the transaxial hole at a depth at least equal to the root depth of the threads, and (2) deflecting means mounted on and movable along said threaded shank member, said means including a nut-like member in threaded engagement with and rotatable on said shank member so that said deflecting means may be moved toward and away from said transaxial hole and at least partially along said longitudinal grooves, whereby a cable or the like may be passed through the transaxial hole so that at least some length thereof extends beyond either end of that hole and be secured to said shank member by rotating said nut-like member to advance said deflecting means toward and to said transaxial hole sufficiently for a surface of said means to bear upon said cable and grip it in said hole by deflecting it at either end of that hole at least partially into said longitudinal grooves.

3,923,407

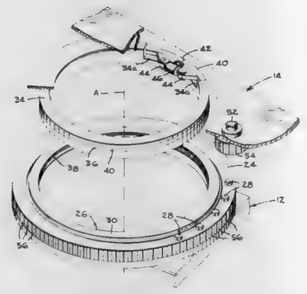
MECHANISM FOR CONNECTING AND DISCONNECTING CRANE SECTIONS

Lyle B. Jensen, and Robert E. Thune, both of Cedar Rapids, Iowa, assignors to FMC Corporation, San Jose, Calif.

Filed Feb. 6, 1974, Ser. No. 440,120

Int. Cl.² F16G *11/00*

U.S. Cl. 403—165 **8 Claims**



1. In a crane having a base section and having an upper section, said crane having a bearing with relatively rotatable inner and outer portions interposed between said sections, one of said bearing portions connected to one of said sections, the improvement comprising a locking member mounted in the other of said sections and shiftable relative thereto, and a power operated actuator connected to said locking member to shift said member into and out of locking engagement with the other of said bearing portions.

3,923,408

MECHANISM FOR FASTENING A RING ON A SHAFT

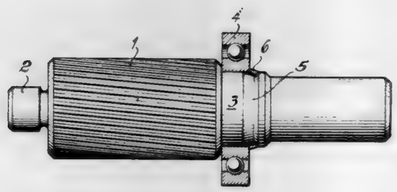
Manfred Belsdorf, Moorbusch, Germany, assignor to TRW Inc., Cleveland, Ohio

Continuation of Ser. No. 324,783, Jan. 18, 1973, abandoned. This application July 26, 1974, Ser. No. 492,216

Claims priority, application Germany, Feb. 2, 1972, 2204831

Int. Cl.² F16B *21/00*

U.S. Cl. 403—261 **1 Claim**



1. In combination,

a shaft;

a fixed collar on said shaft;

a ring on said shaft abutting with one face against said collar;

an annular groove recessed in said shaft adjacent said collar;

a closed locking ring having a permanent radial deformation and disposed in said annular groove in such a manner that one face of said locking ring rests against the ring to be secured while the other face of said locking ring is supported with a mechanical bias by the flank of the groove opposite the ring to be secured;

said annular groove having a substantially conical cross-section so that the greatest depth of said groove corresponds approximately to the thickness of said locking ring, said greatest depth being disposed at the side of the groove away from the ring to be secured, said locking ring being conically deformed in such a manner that one face bears against the flank of the groove and the other face supports the ring to be secured;

said locking ring is adapted to resist an axial load of said ring and secures said ring on said shaft.

3,923,409

ADJUSTABLE COUPLING CLAMP ASSEMBLY

Jacob G. Stoner, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 22, 1975, Ser. No. 543,125

Int. Cl.² F16B *2/02*

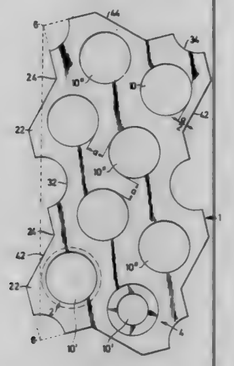
U.S. Cl. 403—290 **4 Claims**

1. An adjustable coupling clamp assembly for a cylindrical shaft having a recessed flat portion on the outer periphery thereof adjacent to one end thereof, said adjustable coupling clamp assembly including a clamp and a fastening and tightening means consisting of a split ring having ears extending from the ends thereof, said ears in the free form of said clamp being in spaced apart relation to each other, said ears being apertured to receive said fastening and tightening means which includes a bolt and a nut, one of said ears having a circular aperture therethrough and the other of said ears having an elongated slot aperture therethrough, said bolt including an annular head integral with a shank extending therefrom including, in order, a reduced diameter annular shank portion next adjacent said head to define with said head an annular shoulder on said head, a further reduced diameter shank portion extending from said annular shank portion, an intermediate portion provided with a plurality of flats thereon for cooperation with said recessed flat on said shaft and, a free end portion of a diameter less than the maximum diameter of said intermediate portion and externally threaded to receive said nut which has a corresponding internal thread diameter, said interemediate portion with said flats being positioned when said head of said bolt is in abutment against said other of said ears to engage said flat recess on the shaft whereby said bolt is secured against rotation to permit said nut to be run up on said bolt to effect tightening of said split ring relative to the shaft.

3,923,410
PERFORATED INTERLOCKING SLAB

Reinhard Jordan, Baden-Baden, and Fritz Von Langsdorff, Forch, both of Germany, assignors to F. von Langsdorff Bauverfahren GmbH, Rastaat, Germany

Filed Oct. 21, 1974, Ser. No. 516,146
Claims priority, application Germany, Oct. 31, 1973, 2354600
Int. Cl.² E01C 5/00
U.S. Cl. 404—41 16 Claims

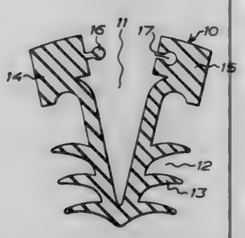


1. Perforated interlocking slab comprising in combination a face and a back bounded by an outline, said outline having portions that project and portions that are withdrawn with respect to a notional base line that forms a rectangle with opposite sides twice as long as its opposite ends are wide; said projections and withdrawn portions forming a matching pattern on said opposite ends and a matching pattern on each half length (regarded as extending from a corner) of said opposite sides of the slab whereby another like slab selectively oriented with its end abutting said half length and oriented with half the length of its side abutting said half length as may be desired interengages with said half length to prevent relative displacement longitudinally with respect to said half length; said perforations passing from said face to said back of the slab and being disposed in first rows that extend parallel to each other and in second rows that extend at right angles to said first rows and parallel to each other, said first and second rows extending obliquely with respect to said rectangular base line.

3,923,411
SEALING STRIP

Thor Johan Berghman, Tessins vag 1 A, 217 58 Malmo, Sweden

Filed Jan. 28, 1975, Ser. No. 544,775
Int. Cl.² E01C 11/10
U.S. Cl. 404—64 1 Claim

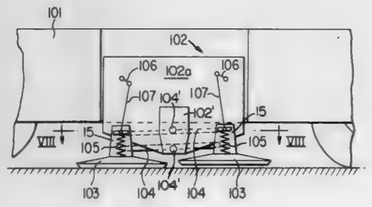


1. A sealing strip for sealing of joints between concrete slabs in pavings comprising a V-shaped body of resilient material, having formed therein a longitudinal V-shaped groove of a depth greater than half the thickness of the strip, said body having two of the outer boundary planes parallel with the side surfaces of the V-shaped groove and having flutes in its remote outer sides, a head on the free end of each of the V-limbs, the inner sides of said heads extending in alignment with the associated inner side of the V-groove, while the outer sides of said heads extend along a straight line drawn through the outer points of the portions which delimit said flutes in the outer sides of the V-limbs, said heads having on their facing inner sides snap means for securing together said heads in close proximity to each other after localization of said strip in a joint between concrete slabs.

3,923,412
DRIVE MEANS FOR VEHICLE MOUNTED VIBRATORY COMPACTOR

Albert Linz, Julweg 40, Hoffnungsthal near Cologne, Germany

Continuation of Ser. No. 178,567, Sept. 8, 1971, Pat. No. 3,834,827. This application Sept. 9, 1974, Ser. No. 504,560
Claims priority, application Germany, Sept. 23, 1970, 2046840
Int. Cl.² E01C 19/34
U.S. Cl. 404—133 15 Claims

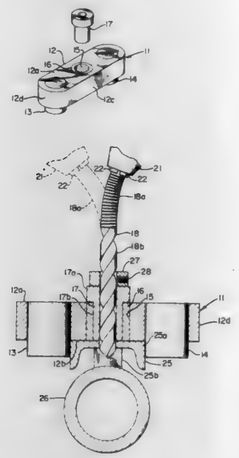


1. A compacting machine comprising in combination:
a. a vehicle with a chassis transportable to be material to be compacted;
b. a compacting unit;
c. support means for securing said compacting unit to said chassis;
d. said compacting unit including first and second vibrating elements extending parallel to one another across the chassis of said vehicle;
e. both said first and said second vibrating element having a bottom working surface for contacting the material to be compacted and an upper surface;
f. mounting means secured to the upper surface of each vibrating element;
g. spring means retained within said mounting means;
h. first vibration generator means connected to said first vibrating element and second vibration generator means connected to said second vibrating element;
i. each of said first and said second vibration generator means including a shaft, a crank secured at one of its ends to said shaft, a rod secured to the other end of said crank, said spring means being connected between said rod and said vibrating element; and
j. drive means connected to said first and to said second vibration generator means for driving said shaft to actuate said rod and said crank, thereby forcing said rod against said spring means to transmit energy from the driven shaft to said vibrating element to press same against the material to be compacted.

3,923,413
CENTERING APPARATUS

Daniel L. Giles, 455 LaFonda Ave., Santa Cruz, Calif. 95060

Continuation of Ser. No. 101,847, Dec. 28, 1970, abandoned. This application Dec. 20, 1972, Ser. No. 316,662
Int. Cl.² B23B 49/02, 47/28
U.S. Cl. 408—72 3 Claims



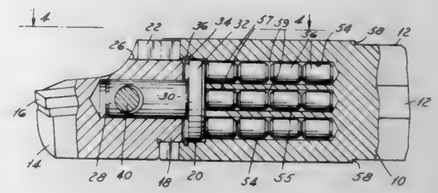
1. A hand-held gun barrel rib centering device for use in installing sights on a gun barrel rib comprising:
a base body of unitary construction having a flat bottom seating face adapted to seat on top of the gun barrel rib, said base body being sized to be held with one hand in an operative centered position on the gun barrel rib without added clamping means, said base body having a vertical hole passing vertically therethrough and arranged normal to the bottom seating face to receive and provide a guide for a tool adapted to drill, tap or ream;
two rib-engaging, hole-centering legs made as an integral part of the base body, said legs being located an equal distance on opposite sides of the center of the vertical hole extending downwardly from the bottom seating face in a parallel relation with said vertical hole, said legs having a circular transverse cross section of a corresponding dimension whereby when the base body and legs are rotated about the center of the vertical hole with the bottom seating face seated on the gun barrel rib and said legs engage the sides of the gun barrel rib, the vertical hole is centered between the sides of the gun barrel rib to center the tool relative to sides of the gun barrel rib, said base body being made of a soft metal and having a center bushing of a hard metal lining the vertical hole and press-fitted therein against the inside surfaces of the base body, said legs being formed by a solid cylindrical member made of a hard metal and press-fitted into vertical apertures adjacent the ends of the base body.

3,923,414
VIBRATION DAMPING SUPPORT

David Alan Hopkins, Detroit, Mich., assignor to The Valeron Corporation, Detroit, Mich.

Filed July 16, 1973, Ser. No. 379,438
Int. Cl.² B23B 47/00
U.S. Cl. 408—143 17 Claims

1. A machining vibration damping support, comprising;
a shank member,
a plurality of longitudinal bores in said shank member having cross sectional areas comprising a minor fraction of the cross sectional area of said shank member,
the material of said shank member surrounding said bores providing an integral structurally rigid network,
at least one mass member in each longitudinal bore having a circumference only slightly less than said bore and sized for axial as well as circumferential clearance therewithin,



said mass members being freely movable within said clearance, and
said longitudinal bores being substantially filled by said mass members with said axial clearance allowing substantially frictionless movement relative to any adjacent mass members and said shank member.

3,923,415
STEAM TURBINE EROSION REDUCTION BY ULTRASONIC ENERGY GENERATION

Robert P. Benedict, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 13, 1974, Ser. No. 479,056
Int. Cl.² F01D 5/28, 17/08
U.S. Cl. 415—1 5 Claims

1. A steam turbine having:
a rotor including at least one row of an annular array of circumferentially spaced blades;
a casing encircling said array of rotor blades, and defining a steam flow path;
at least one row of an annular array of circumferentially spaced stationary blades attached to said casing upstream of said rotor blades and extending into said steam flow path for directing steam against said rotor blades; and,
ultrasonic generator means attached to said casing exteriorly of said steam flow path for causing water droplets entrained in said steam downstream of said stationary blades to be acoustically dispersed into a fog for relatively harmless impingement upon the rotor blades.

3,923,416
TURBINE

William L. Frey, 303 Ivory Ave., Pittsburgh, Pa. 15214

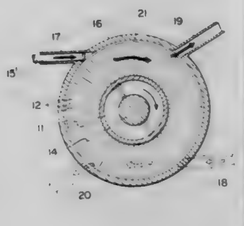
Filed Apr. 4, 1974, Ser. No. 458,026
Int. Cl.² F01D 1/34
U.S. Cl. 415—76 4 Claims

1. A turbine including:
A. a turbine wheel having a central hub and a plurality of densely spaced wire extending radially outward from the

hub substantially in a plane normal to an axis of rotation of the hub;

B. a power take-off shaft connected to the hub coaxially with the hub axis of rotation;

C. a fluid propellant means including a jet having an outlet positioned in an oblique plane to a periphery of the wheel in that said outlet has a first portion adjacent the wire and



closer to the wire than a remainder portion of the outlet, said jet directing fluid at an acute angle chordally into the wire and in the plane normal to the axis of rotation of the hub; and

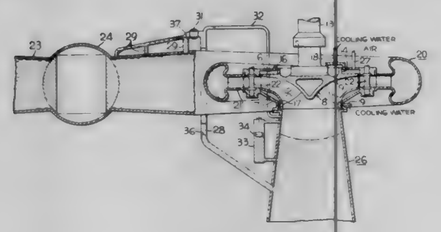
D. means associated with and positioned along opposite lateral sides of the wheel to confine the chordally entering fluid within the wheel so that said fluid is discharged at points remote from said jet outlet.

3,923,417

HYDRAULIC TURBINE SPIRAL CASE DRAIN

Ignacy Gwiecicki, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 30, 1974, Ser. No. 537,604
Int. Cl.² F03B *13/06*
U.S. Cl. 415—110 **7 Claims**



1. A hydraulic machine comprising:

a housing;

a rotor mounted for rotation in said housing;

a spirally wound water case located about and connected to said housing in water communication with said rotor;

a tube connected to said housing in water communication with said rotor, said rotor located between said spiral case and said tube in the water path of said hydraulic machine; a plurality of circumferentially spaced gate means connected to said spiral case selectively movable to permit and substantially interrupt the flow of water through said rotor;

valve means connected to said spiral case in spaced relation from said gate means operable to permit and interrupt the flow of water through said spiral case;

means for admitting air into said housing to depress the water from about said rotor to a level below the level of water in said spiral case when said gates and said valve are in the water interrupting positions such differential in water level resulting in a pressure head therebetween;

water overflow passage means connecting said spiral case between said valve and said gate means in water communication with said tube; and

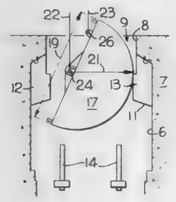
air pressure means connected to said overflow water passage means providing air thereto at a pressure sufficient to prohibit a siphoning action from said spiral case to said tube.

3,923,418

HYDRAULIC TURBINE INSTALLATION AND METHOD OF ASSEMBLING THE TURBINE HEADCOVER THEREIN

Selim A. Chacour, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 23, 1974, Ser. No. 536,031
Int. Cl.² F01D *25/24*, *15/10*
U.S. Cl. 415—219 C **3 Claims**



1. A hydraulic turbine generator installation comprising in combination:

a vertically disposed turbine pit having a first inside diameter;

an annular flange about the top of said pit defining an opening having a second inside diameter less than said first diameter;

a substantially annular headcover composed of two half sections having an assembled outside diameter only slightly less than said first diameter but greater than said second diameter, each half section having an equal radius less than said second diameter;

and a plurality of arcuately spaced flanges connected to the inside of said pit spaced downwardly from said annular flange defining an inside diameter less than the assembled outside diameter of said headcover, said flanges being arranged to define therebetween diametrically opposed openings having a span therebetween greater than the diameter of said assembled headcover, the width of said openings being greater than the thickness of said half sections whereby said half sections can be supported with their diameter dimensions disposed vertically and lowered through said opening of said second diameter into alignment with said openings and then rotated through said openings so that the diameter dimension of said half sections is disposed horizontally.

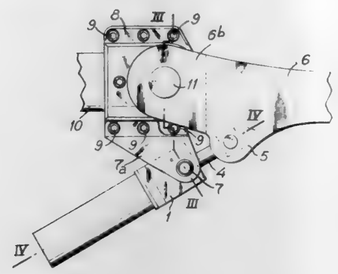
3,923,419

DAMPED ELASTIC TIE DEVICE BETWEEN ROTOR BLADE AND HUB ON ROTARY-WING AIRCRAFT

René Louis Moullle, Villa "La Pinede" Le Coton Rouge, Aix-en-Provence(Bouches-du-Rhone, France

Continuation of Ser. No. 80,630, Oct. 14, 1970. This application Nov. 6, 1972, Ser. No. 304,271
Claims priority, application France, Oct. 16, 1969, 69.35410
Int. Cl.² B64C *27/42*
U.S. Cl. 416—107 **5 Claims**

1. In a damped elastic tie device located directly between a flexible blade and rigid hub on a rotor craft rotor and forming a frequency adapter with incorporated damping, attachment means at each blade root directly and hingedly connecting the latter and said hub with a limited degree of freedom only in the plane of rotation of said blade, said attachment means comprising a portion fast with the blade and a portion fast with the hub, and interconnection means between that portion which is fast with the blade and that portion which is fast with the hub, a damping element having a high damping rate and an elastic element whose stiffness varies proportionally to the extent of movement to either side of a neutral point, said damping element and elastic elastic element being constituted by parallel plates arranged in two sets, one of which is fast with



one portion of said attachment means and the other with a second portion thereof, layers of synthetic viscoelastic material of an elastomer of great stiffness and high retentivity in respect of deformation, said plates being joined by said layers interposed therebetween.

3,923,420

BLADE PLATFORM WITH FRICTION DAMPING INTERLOCK

Paul Chifos, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Apr. 30, 1973, Ser. No. 355,772
Int. Cl.² F01D *5/10*
U.S. Cl. 416—190 **6 Claims**

1. A turbomachinery rotor blade for disposition within a fluid flow path in cooperation with a rotatable disc, the blade comprising:

an airfoil;

mounting means extending radially from the airfoil for attaching the blade to the disc; and

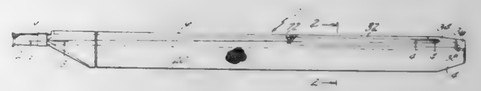
a platform disposed between the airfoil and the mounting means, the platform comprising first and second circumferential extremities and first means for abutting and interlocking said platform radially, axially and circumferentially with a similar adjacent platform to partially define the flow path and for frictionally damping radial and circumferential relative movement between said platform and said adjacent platform, said first means including first and second diagonal edges on said first extremity of said platform, said first diagonal edge being canted from the radial direction by a predetermined first angle, said second diagonal edge being canted from the radial direction by a predetermined second angle of opposite sense from said first angle, said first and second diagonal edges positioned to abut and interlock with an edge of the adjacent platform in sliding frictional engagement therewith and further positioned to effect damping of radial and circumferential relative movement between said diagonal edges and said adjacent edge during said frictional engagement.

3,923,421

LIGHTNING PROTECTED COMPOSITE HELICOPTER BLADE

Donald Richard Carter, Derby; Gerald Walter Parkinson, West Haven, and Jack Robert Cutting, Trumbull, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 19, 1974, Ser. No. 534,407
Int. Cl.² B63H *1/26*
U.S. Cl. 416—224 **13 Claims**



1. A composite helicopter blade having a tip, a leading edge, a trailing edge, and a top surface, a bottom surface, and

A. a blade root adapted to be electrically grounded to the helicopter,

B. an electrically conductive support spar electrically connected to or forming the blade root and extending to the blade tip,

C. a non-conductive blade skin member enveloping the spar and shaped to define the blade airfoil between the leading and trailing edge and extending for substantially the full blade span,

D. an electrically conductive outer leading edge anti-abrasion strip connected to the skin member at the blade leading edge at an outboard span station,

E. an electrically conductive inner leading edge abrasion strip connected to the skin member at the blade leading edge at a span station inboard of the outer anti-abrasion strip,

F. a blade tip cap enveloping the blade tip,

G. lightning grounding mechanism including;

1. means electrically connecting the blade tip cap to the spar,

2. means electrically connecting said anti-abrasion strips,

3. a light, flexible, electrically conductive member attached to the top or bottom surface of the blade and extending substantially from the blade root to the blade tip,

4. means electrically connecting said leading edge anti-abrasion strips to said flexible member, and

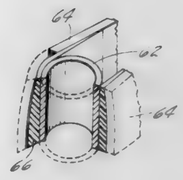
5. means for electrically connecting the root end of the flexible member to the spar.

3,923,422

TAPER LINING FOR COMPOSITE BLADE ROOT ATTACHMENT

Daniel John Ianniello, Shelton; Robert Lee Faiz, Bridgeport, and John Barry Sainsbury-Carter, Newtown, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 17, 1974, Ser. No. 515,749
Int. Cl.² B63H *1/26*
U.S. Cl. 416—226 **10 Claims**



1. In a composite rotor blade for a helicopter, at least one fiber strap constituting a spar-type member extending from

the root area of said blade a finite distance along the span of said blade,

said strap having a relatively large width to thickness ratio and generally being placed flat in the blade structure,

connecting means securing said rotor blade to a rotor hub connecting member,

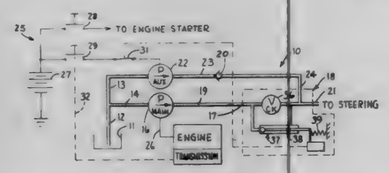
said strap being twisted 90° and looped 180° about said connecting means,

and means between said connecting means and said strap loop defining an inclined plane to provide for equal tension loading in the fibers of said strap.

3,923,423
EMERGENCY CONTROL VALVE

John A. Lauck, 1767 Commonwealth Ave., Benton Harbor, Mich. 49022

Continuation-in-part of Ser. No. 424,181, Dec. 12, 1973, abandoned. This application Nov. 26, 1974, Ser. No. 527,248
Int. Cl.² F04B *41/06*
U.S. Cl. 417—3 **10 Claims**



1. A valve for use in a system having a source of fluid, a first fluid pumping means operative by a driving mechanism and a second auxiliary fluid pumping means and switching means responsive to a change in the flow condition of said fluid caused by a lack of proper performance of said first fluid pumping means to effect an activation of said second fluid pumping means, said valve comprising:

means defining a body having an inlet port and an outlet port spaced from said inlet port;

chamber means located in said body and between and in fluid communication with said inlet port and said outlet port, said chamber means including means defining a first valve seat adjacent said inlet port;

a first elongated hollow valve member slidably disposed in said chamber means and being adapted to permit a passage of fluid therepast upon a movement of said first valve member away from the inlet of said chamber means, said first valve member including means defining a first valve face adapted to engage said first valve seat to prevent a flow of fluid therepast;

means for biasing said first valve member to the inlet end of said chamber means to effect a restriction of the flow of said fluid past said valve, said biasing means including a first spring member for urging said first valve face means into engagement with said first valve seat; and

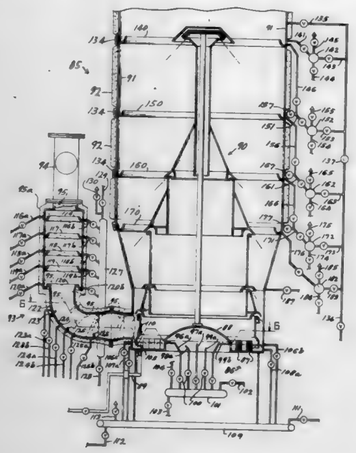
fluid flow rate sensing means mounted internally of said first valve member for sensing the flow rate of said fluid and producing a signal in response to a predetermined flow rate, said switching means being responsive to said signal for controlling the activation of said second pumping means.

3,923,424
SELF-CLEANSING DIFFUSION PUMP

Alvin E. Buggele, No. 7 Milan Manor Drive, Milan, Ohio 44846

Filed Nov. 11, 1974, Ser. No. 522,708
Int. Cl.² F04F *9/02, 9/06, 9/08*
U.S. Cl. 417—55 **8 Claims**

1. In a diffusion pump for producing high vacuum, including a boiler, a pump barrel, at least one nozzle downstream of and operatively associated with the boiler and cooperating with the barrel, a foreline operably connected to the barrel downstream of the nozzle and a roughing vacuum pump operably connected to the downstream end of the foreline, the improvement of a conduit providing communication between the interior of the pump at the level of the surface of fluid in the boiler and a low pressure source exterior of the pump, a

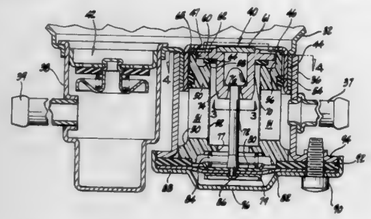


valve in said conduit, means within the foreline for collecting liquid flowing down the walls thereof, a conduit providing communication between liquid in said collecting means and a low pressure source exterior of the pump, and a valve in said last-named conduit.

3,923,425
FUEL PUMP SHUT-OFF VALVE

David L. Porter, Bethalto, and Raymond E. Williamson, Granite City, both of Ill., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed May 30, 1974, Ser. No. 474,501
Int. Cl.² F04B *49/10*
U.S. Cl. 417—298 **10 Claims**



1. In a mechanical fuel pump of the diaphragm type for use on an automotive vehicle for drawing fuel from a fuel source and delivering fuel to a point of use, said pump having a fuel inlet and a fuel outlet, said fuel outlet having an outlet check valve, the improvement comprising:

an inlet structure secured to the pumping chamber of said fuel pump and in fluid communication therewith, a cover for said structure remote from said pumping chamber,

a flexible diaphragm secured between said structure and said cover,

an inlet valve seat in said structure adjacent said pumping chamber,

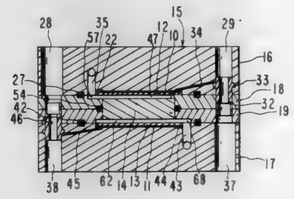
a fuel inlet fitting in a wall of said structure, said fitting being positioned between said diaphragm and said valve seat,

an inlet valve head including a sealing means between said valve seat and said pumping chamber, and valve stem means secured to said diaphragm at one end thereof and attached to said valve head at its other end said flexible diaphragm and said stem means being located upstream of said inlet valve head and in fluid communication with said fuel inlet fitting.

3,923,426
ELECTROOSMOTIC PUMP AND FLUID DISPENSER INCLUDING SAME

Felix Theeuwes, Los Altos, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Aug. 15, 1974, Ser. No. 497,685
Int. Cl.² F04B *37/02*; F04F *11/00*
U.S. Cl. 417—48 **21 Claims**



13. A dispenser for dispensing a fluid comprising:

A. an electroosmotic pump for pumping a fluid susceptible to electroosmotic transport comprising:

a. a housing having an inlet for the fluid and an outlet for the fluid;

b. a pair of spaced electrodes disposed within the housing;

c. a d.c. electrical power source connected to the electrodes;

d. a porous body interposed between the electrodes in spaced relationship thereto, the porous body having a fluid entrance surface and a fluid exit surface and being capable of carrying a surface charge of opposite polarity relative to the surface charge of the fluid;

e. a cation exchange membrane interposed between the porous body and the electrode on the fluid exit surface side of said porous body; and

f. a fluid passageway in the housing extending from the inlet of said fluid entrance surface and from said fluid exit surface to the outlet;

B. a source of the fluid to be pumped by the electroosmotic pump connected to said inlet; and

C. a vessel having

a. a first chamber for containing the fluid to be dispensed having an outlet port therefor;

b. a second chamber for receiving the fluid to be pumped by the electroosmotic pump connected to the outlet of the pump housing, and

c. a movable barrier sealingly separating the first chamber from the second chamber and adapted to move in response to an increase in the volume of fluid received in the first chamber so as to dispense a correspoding volume of fluid contained in the second chamber therefrom via the outlet port.

3,923,427
DIFFERENTIAL VOLUME PUMP

Tim M. Uyeda, South San Gabriel, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sept. 16, 1974, Ser. No. 506,030
Int. Cl.² F04B *39/10*
U.S. Cl. 417—534 **2 Claims**

1. A differential volume pump comprising:

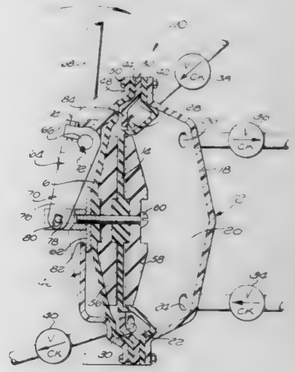
a cup-shaped front plate having a front wall and an annular outer flange behind said front wall;

a ring member behind said front plate having an outer annular flange with a peripheral configuration complementary to that of said front plate outer flange;

a front flexible diaphragm having an outer periphery disposed between said flanges;

a rear flexible diaphragm having an outer periphery engaging the rear surface of said ring member flange;

the space between said front wall and said front diaphragm providing a first chamber and the space between said diaphragms providing a second chamber, the volume of said first chamber when expanded being greater than that of said second chambere when expanded;



inlet and outlet ports opening into said first chamber;

second inlet and outlet ports opening into said second chamber;

means fastening said outer peripheries of said diaphragms and said flanges together in sealing relationship;

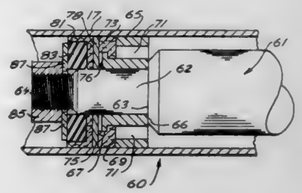
the inner periphery of said ring member extending rearwardly at an angle providing a stop for said rear diaphragm limiting forward movement thereof toward said front wall whereby during movement of the diaphragm toward said front wall the volume of said second chamber is increased; and

means coupled to said diaphragms for moving said diaphragms in unison toward and away from said front wall.

3,923,428
PUMPS

Ronald John Clark, Port Moody, and John Douglas Drummond, Burnaby, both of Canada, assignors to Western Plaster Equipment Co. Ltd., Burnaby, Canada

Continuation-in-part of Ser. No. 370,984, June 18, 1973, abandoned. This application Dec. 6, 1974, Ser. No. 530,066
Int. Cl.² F16J *1/06*; F01B *31/00*; F04B *21/02*
U.S. Cl. 417—535 **2 Claims**



1. A pump including:

a. a reservoir for receiving materials to be pumped,

b. a cylinder disposed below the reservoir,

c. intake conduits connecting each end of the cylinder and the reservoir for permitting flow of material from the reservoir to the cylinder,

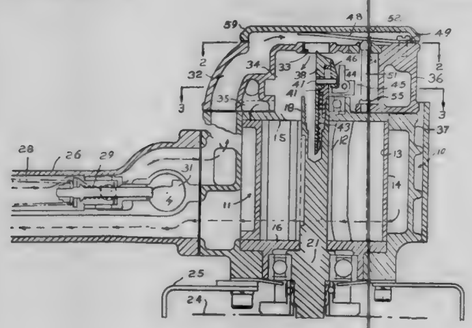
d. discharge manifold having a discharge opening disposed adjacent the cylinder,
e. discharge conduits connecting each end of the cylinder with the manifold for enabling flow of material from the cylinder to the manifold,
f. a double-headed piston assembly mounted in the cylinder for reciprocal movement, said piston assembly including:
i. a piston disposed axially of the cylinder and being of smaller diameter than the cylinder and having axially disposed cylindrical projections at each end thereof,
ii. a cylindrical guide mounted on the cylindrical projection slideably engaging the cylinder walls,
iii. oil passages extending through an opening out of opposite faces of the guide,
iv. a felt washer having slideable fit with the cylinder mounted on the projection against the outer face of the guide,
v. a pressure washer against the outer face of the felt washer,
vi. a piston cup formed of a flexible material mounted on the projection against the pressure washer,
vii. an expansion washer fitted over the projection against the cup,
viii. a nut threaded on the projection adapted to be tightened against the expansion washer so as to obtain radial expansion of the expansion washer against the cup and radial expansion of the felt washer against the cylinder,
g. means for reciprocating the piston,
h. check valve assemblies in the intake and discharge conduits for preventing return flow of material from the cylinder back to the reservoir and for preventing return flow of fluid from the manifold back to the cylinder so that material is drawn from the reservoir and pumped into the manifold at each stroke of the piston assembly.

3,923,429

OVERSPEED SAFETY DEVICE FOR ROTARY TOOLS

Raymond J. Schaedler, New Hartford, and Robert D. Roth, Utica, both of N.Y., assignors to Chicago Pneumatic Tool Company, New York, N.Y.

Filed June 3, 1974, Ser. No. 475,814
Int. Cl.² F01C *21/12*; G05D *13/10*
U.S. Cl. 418—43 **6 Claims**



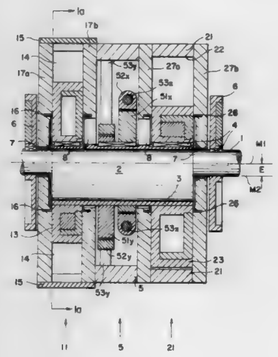
1. In a rotary tool including a housing, a rotary air motor, an inlet port for admitting operating air to the motor, and a safety valve controlling air flow through the port to the motor, a trip releasably supporting the valve in an open normal position, the valve being constantly biased against the trip in a closing direction, the trip being located at a predetermined radial distance from the axis of the motor, trip actuating means carried by the motor having response to a predetermined centrifugal force developed by the motor to move outwardly in a path of rotation in which the trip is located so as to cause the latter to be upset and as a consequence release its support from the valve, and the housing having first and second internal shoulders; wherein the safety valve is a leaf spring anchored at one end upon the first shoulder and having an opposite end resiliently movable from a position lying closed over the port to the open normal position; and wherein the trip is a pin having a bottom end releasably seated upon the second shoulder and having an upper end normally abutting an undersurface of the leaf spring between the ends of the latter and supporting the leaf spring in its open position.

3,923,430

PARALLEL -AXLE AND INNER-AXLE ROTARY PISTON ENGINE OF TROCHOIDAL CONSTRUCTION WITH A FOLLOW-UP DRIVE TRAVELING IN SLIDING BARS AND FORCING THE PISTON MOVEMENTS

Franz Huf, Konstanz, Germany, assignor to Dornier System GmbH, Friedrichshafen, Germany

Filed May 31, 1974, Ser. No. 475,025
Claims priority, application Germany, Aug. 7, 1973, 2339911
Int. Cl.² F01C *1/02*; F04C *17/02*
U.S. Cl. 418—60 **7 Claims**



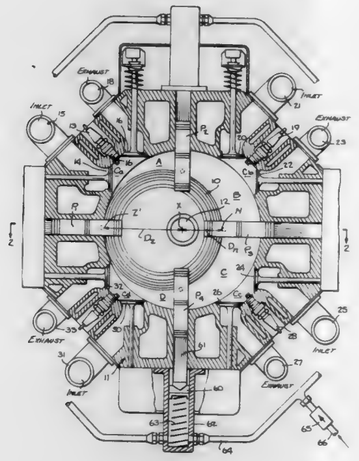
1. In a rotary piston engine of trochoidal construction having an inlet, an outlet, a drive shaft, and a piston designed as an epitrochoid 1:1, an inner housing wall conforming to the outer envelope curve of the epitrochoid, with radial seals and enclosing working chambers, and a follow-up drive effecting the planetary piston movement,
the improvement which comprises a single cylindrical body means nonrotatably mounted on the engine drive shaft and eccentrically offset with respect thereto by the extent of the trochoid eccentricity, said cylindrical body having a radius at least equal to the trochoid eccentricity plus the radius of the engine drive shaft,
sleeve means rotatably mounted on said cylindrical body means and serving as a carrier for elements of the follow-up drive non-rotatably connected thereto, and for the piston,
a plurality of pistons and coordinated working chambers mounted in tandem in the axial direction of the engine,
the axes of said working chambers being positioned in housings pivoted around the engine axis by an angular amount with respect to each other,
said pistons non-rotatably mounted on said sleeve being displaced, as compared to the central axis thereof, with respect to each other in each case by double the corresponding angular amounts,
and said follow-up drive being common to all said pistons.

3,923,431

SEALED SLIDE PLATES FOR ROTARY INTERNAL COMBUSTION ENGINE

Harold G. Abbey, 75 Prospect St., East Orange, N.J. 07017

Continuation-in-part of Ser. No. 318,664, Dec. 26, 1972, Pat. No. 3,809,024. This application Mar. 20, 1974, Ser. No. 452,966
Int. Cl.² F02B *53/00*
U.S. Cl. 418—61 R **9 Claims**



1. In an internal combustion engine, the combination comprising a circular rotor eccentrically supported on a shaft, a stator having a circular chamber, said shaft being coaxially mounted within the circular chamber of said stator, slide plates extending into said chamber and in continuous contact with the rotor surface to divide the chamber into operating zones of varying volume, the slide plates being tracked in guide slots formed in the internal side walls of the stator, each slide plate being constituted by the main body from which extends a pair of legs straddling the peripheral edges of the rotor, and a cross piece extending between the legs and formed of a bearing material engaging the surface of the rotor, the legs terminating in feet encircled with ring seals which are pressed against the related edges of the rotor and the sides of the guide slots, whereby leakage through the clearances at the rotor edges and at the guide slots is prevented.

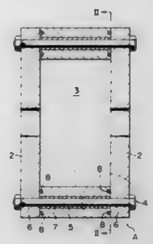
3,923,432

ROTOR HOUSING OF A ROTARY ENGINE

Takeshi Nakakobara, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 22, 1974, Ser. No. 453,936
Claims priority, application Japan, Oct. 29, 1973, 48-121437
Int. Cl.² F01C *1/02*
U.S. Cl. 418—61 A **4 Claims**

1. A rotor housing of a rotary engine, said rotor housing being formed with bolt receiving bores extending along its wall surface in the direction of the rotor axis and adapted to be closed at its opposite ends by a side housing and/or intermediate housing clamped thereto by means of bolts passing through said bores, thereby defining a rotor chamber therein wherein a sleeve is disposed in the bore to reinforce the peripheral region of said bore against compression applied in the axially direction of said bore, said sleeve being flush with the end faces of the rotor housing and being made of a material



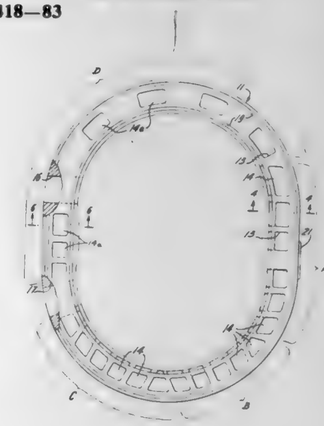
having a higher elasticity and creep limit than that of said rotor housing.

3,923,433

DIE-CAST ROTOR HOUSING FOR ROTARY COMBUSTION ENGINES

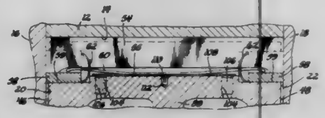
Walter Ludwig Hermes, Cedar Grove; Murray Berkowitz, Woodcliff Lake, and Charles Lombaerde, Ridgewood, all of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed July 18, 1974, Ser. No. 489,595
Int. Cl.² F01C *21/06*
U.S. Cl. 418—83 **4 Claims**



1. A generally annular die-cast rotor housing shell for rotary internal combustion engines of the trochoidal type having a longitudinal axis and parallel side faces normal to the axis, the shell having an inner wall with a trochoidal inner surface and an outer wall spaced apart radially from the inner wall and having a plurality of generally axially oriented coolant passages therethrough between the inner and outer walls open at each side face and spaced circumferentially around the shell for flow of liquid coolant therethrough across the width of the shell in the generally axial direction, wherein the improvement comprises: at least some of the coolant passges having rectilinear individual axes slanted from each side wall angularly to the inner trochoidal surface and meeting at an angle at a position radially closer to the shell axis at the mid-plane between the shell faces so that the the inner wall of the shell is thinner at the midportion than at the side faces, the coolant passages having slanted axes comprising a plurality of groups of associated passages, each group of associated passages being circumferentially disposed along an arcutate portion of the generally annular shell, the associated passages of each group having their individual axes parallel to each other and nonparallel to the individual axes of the passages of other groups.

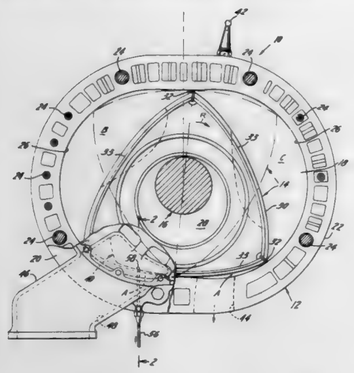
3,923,434
ROTARY COMBUSTION ENGINE APEX SEAL LUBRICATION
Leslie K. Walters, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 10, 1974, Ser. No. 487,172
Int. Cl.² F01C *19/02, 21/04;* F04C *27/00*
U.S. Cl. 418—91 **2 Claims**



1. A rotary combustion engine comprising an engine housing having an internal peripheral wall and oppositely facing end walls cooperatively defining a cavity, a shaft extending through said cavity and end walls and rotatably supported by said housing, a hollow rotor located in said cavity and rotatably mounted on said shaft and having apexes that remain close to said internal peripheral wall as said shaft and rotor rotate, said rotor having a circumferentially extending wall cooperating with said peripheral wall of said housing an oppositely facing radially extending side walls cooperating with said end walls of said housing to provide a plurality of chambers between said apexes that are spaced about and move with said rotor while varying in volume as said rotor and said shaft rotate, apex seals mounted in slots in said rotor at said apexes for engaging said peripheral wall, a spring arranged between the bottom of each said slot and the bottom of the associated apex seal for urging the apex seal outwardly against said peripheral wall, a source of oil, passage means for delivering the oil to and from the interior of said rotor, said rotor having a central rib therein extending radially inwardly from said circumferentially extending wall, and apex seal lubricant metering means mounted in said rotor at each said apex for metering oil from the interior of said rotor to the associated apex seal slot without permitting combustion pressure to backpressure the oil in said rotor whereby oil is effectively delivered directly to the wear surfaces of the apex seals, each said apex seal lubricant metering means comprising a pair of porous plugs mounted in lubricant delivery holes in said circumferentially extending wall connecting the interior of said rotor on opposite sides of said rib to the bottom of the associated apex seal slot, said porous plugs having a porosity effective to permit oil to diffuse therethrough as a result of centrifugal forces on the body of oil within said rotor and at a rate sufficient to adequately lubricate said apex seals at minimum rotor speed and load and as a result of continuing centrifugal action on the oil in the interior of said rotor providing increasing oil delivery to increase the lubrication of said apex seals with increasing rotor speed, a flat spring valve arranged between each said apex seal spring and the bottom of the associated apex seal slot and extending at opposite ends along flexible portions over the associated porous plugs for opening the porous plugs only when the oil pressure acting on the porous plug side of the flexible portions exceeds the gas pressure from said chambers acting on the opposite side by a predetermined amount.

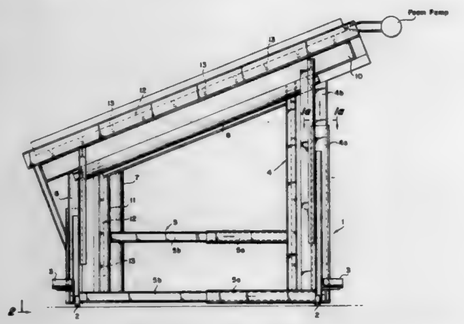
3,923,435
LUBRICANT METERING SYSTEM FOR THE WORKING CHAMBERS OF A ROTARY MECHANISM
Charles Jones, Hillsdale, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.
Filed Mar. 21, 1974, Ser. No. 453,436
Int. Cl.² F04C *29/02;* F01M *11/02*
U.S. Cl. 418—100 **6 Claims**

1. In a rotary mechanism having a rotor supported for planetation in a housing cavity and defining with the housing a plurality of working chambers which successively expand and contract in volumetric size as the rotor rotates and also having an inlet port means in the housing so that the rotor covers and uncovers the inlet port means with each of said working chambers and uncovers said port means only after each working chamber starts to expand in volume so that the initial opening of the inlet port means occurs when the pressure in said working chamber is substantially less than the pressure in the inlet port means, whereby the initial portion of the gaseous fluid entering a working chamber does so at relatively high velocity, a lubricant metering system for supplying lubricant to the rotor of the mechanism comprising:



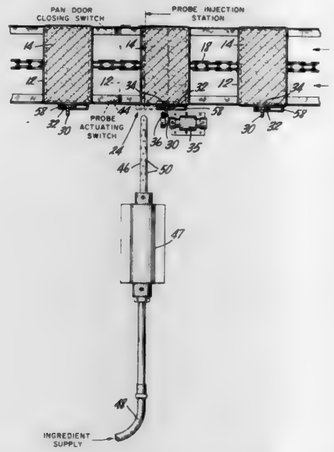
passageway means communicating at one end with a source of lubricant and at the other discharge end with said inlet port means at a point closely adjacent to and upstream, relative to the direction of gaseous fluid flow to the inlet port means, from the point of initial opening of the inlet port means to provide lubricant at said other end for entrainment by fluid passing through said inlet port means into said plurality of working chambers during initial opening of the inlet port means.

3,923,436
APPARATUS FOR FORMING INTEGRAL HOMOGENEOUS BUILDINGS
David W. Lewis, The Shadows, Rte. 2, Box 198, Charlottesville, Va. 22901
Filed Mar. 7, 1974, Ser. No. 449,010
Int. Cl.² B29D *27/04*
U.S. Cl. 425—64 **8 Claims**



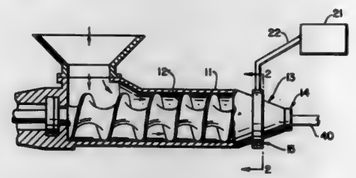
1. A machine for continuously producing homogeneous building structures from formable materials including frame member means to continuously move said frame member over the area to be occupied by said building while formable material is being fed thereto, support elements on said frame member, vertical form members attached to said supports, horizontal form members attached to said supports, supply means positioned adjacent to said form members for supplying formable material thereto, positioning means movably mounted on the foremost portions of said frame member, with arms extending therefrom into the area defined by said form members, means on said arms to hold, in their proper position, elements desired to be incorporated into said building.

3,923,437
APPARATUS FOR INSERTING FILLING IN BREAD
Frederick G. Gahagan, 255 Bayville Road, Locust Valley, N.Y. 11959
Filed Nov. 7, 1973, Ser. No. 413,527
Int. Cl.² A21D *2/00*
U.S. Cl. 425—130 **6 Claims**



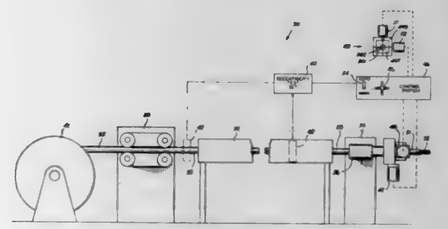
1. Apparatus for inserting filler material in bread comprising:
a. an elongated pan having a bottom and side walls, two of said side walls being shorter than the other two of said side walls, said pan being adapted to be filled with dough;
b. a port extending through a substantially central area of a short side wall of said pan;
c. means for selectively covering and uncovering said port; and
d. a filler probe positioned so as to be inserted through said port when said port is in an uncovered position.

3,923,438
APPARATUS FOR MAKING VARIEGATED SOAP BASE
Giulio Perla, Rome, Italy, assignor to Colgate-Palmolive Company, New York, N.Y.
Filed June 5, 1974, Ser. No. 476,477
Claims priority, application Italy, Sept. 5, 1973, 50733/73
Int. Cl.² B29F *3/12*
U.S. Cl. 425—131.1 **8 Claims**



1. Apparatus for the continuous production of striped soap comprising a terminal cone of a soap plodder having an internal conical passageway and a series of circumferentially spaced apertures in its surface, an extrusion nozzle mounted at the smaller end of said passageway, means for feeding a solid column of a first soap in plastic condition under pressure through said passageway in a direction toward said extrusion nozzle, depositing means in the path of said solid column providing a plurality of circumferentially spaced downstream facing openings for depositing and imbedding streams of a different soap or soaps in plastic condition within and along the periphery of said column to form a slidably moving composite soap mass within said passageway, said depositing means including an annular manifold disposed externally around said cone and having a series of substantially radial projections extending inwardly at said cone apertures, said downstream facing openings being on the inner ends of said projections, said soap mass being substantially uniformly radially compressed during movement along said passageway.

3,923,439
SYSTEM FOR CONTROLLING THE ECCENTRICITY OF AN EXTRUDED ARTICLE
Arthur Merle Isley; Robert Wayne Rake, both of Phoenix, and Albert Sanford Tingley, Glendale, all of Ariz., assignors to Western Electric Company, Incorporated, New York, N.Y.
Division of Ser. No. 296,505, Oct. 10, 1972. This application July 30, 1974, Ser. No. 493,200
Int. Cl.² B29D *23/04*
U.S. Cl. 425—150 **8 Claims**

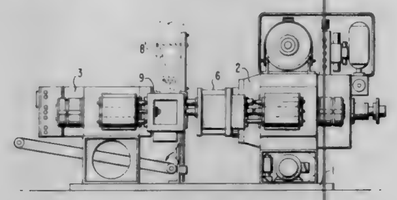


1. A system for controlling the eccentricity and uniformity of a plastic jacket being extruded onto a longitudinally moving elongated core passing through a hollow core tube positioned within a passageway formed in a die to define an annular extrusion orifice therebetween, which comprises:
means for measuring the eccentricity of the jacket along a diametric cross-sectional axis therethrough;
means for generating a polarized analog signal representative of the direction and magnitude of the eccentricity of the jacket along said axis;
level detecting means responsive to the magnitude and direction of said analog signal for generating a binary signal indicative of the direction of said eccentricity along said axis;
a motor having an output, a first input for driving said output in a first direction and a second input for driving said output in a second direction;
a motor driving oscillator;
gating means responsive to said binary signal for applying signals from said oscillator selectively to drive one of said inputs of said motor to cause said output to be driven in accordance with said binary signal;
universal means pivotally mounting said core tube for angular movement in the die passageway; and
means coupling said output of said motor to said core tube for imparting angular movement to said tube in first or second directions in a plane coincident with said measuring axis when said output is driven in said first or second direction, respectively to alter the extrusion orifice to compensate for the measured eccentricity.

3,923,440
HYDRAULIC PRESS FOR THE MOLDING OF TILES AND PLATES OF CERAMIC OR LIKE MATERIALS

Luigi Bettonica, Via Clusone, 3, Milan, Italy

Filed July 23, 1974, Ser. No. 491,150
Claims priority, application Italy, Aug. 17, 1973, 27946/73
Int. Cl.² B29F *1/00*, *1/06*
U.S. Cl. 425—167 4 Claims

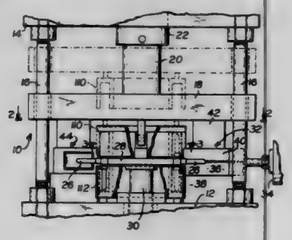


1. A press for the making of tiles and like material, comprising: a horizontal base to which a fore stationary bed, and a rear stationary bed are firmly secured; first operating punch means, die means and two horizontally extending, cylindrical guide columns parallel with the horizontal base having their both ends fastened to said stationary bed, a first cross-member with which the operating punch means is connected, a second cross-member bearing the die means, vertical duct means through which the material to be pressed is allowed to flow into the die means, a body firmly secured to the stationary rear bed, second punch means by which the bottom of the die means is formed; and programmed memory control means for the press.

3,923,441
BLOW MOLDING APPARATUS WITH DOUBLE CYCLE FOR CORE RODS

John J. Farrell, Green Brook, N.J., assignor to Farrell Patent Company, Greenbrook, N.J.

Filed June 3, 1974, Ser. No. 476,092
Int. Cl.² B29C *1/00*, *5/10*
U.S. Cl. 425—242 B 20 Claims

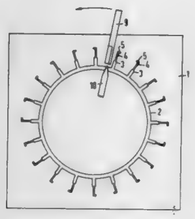


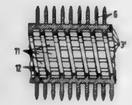
1. Blow molding apparatus including in combination two groups of core rods, an indexable support by which the core rods are carried, connections between the core rods and support, transmition means for shifting the core rods of each group between active and inactive positions, a temperature controlling chamber through which core rods that are in inactive positions pass during a cycle in which they are in their inactive positions, a coating station including means for applying a parison to successive core rods that are in active positions on the support, a blowing station for receiving successive core rods that are in active position on the table, a stripper station along the path of the active core rods, a changeover station between the coating station and the blowing station and at which a core rod can move from inactive to active position and vice versa, and wherein the support is movable to carry each core rod successively through the cycle to bring the core rods that are in active positions from one station to the next and to carry each core rod that is in inactive position past the blowing, stripper and coating stations with no interaction between the inactive core rods and these stations.

3,923,442
APPARATUS FOR THE PRODUCTION OF THERMOPLASTIC ARTICLES WITH BURDOCK-LIKE HOOKS

Arno Stöhr, Bamberger Strasse 6, 8641 Neuses, Bavaria, Germany

Filed Aug. 10, 1973, Ser. No. 387,366
Claims priority, application Germany, Aug. 11, 1972, 2239559
Int. Cl.² A01N *9/20*
U.S. Cl. 425—309 4 Claims



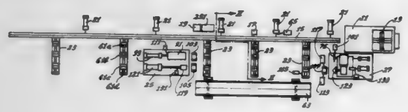


1. Apparatus for the production of thermoplastic articles with hooks, comprising means for extruding a profile form and longitudinal ribs, particularly with a rod-, tube- or ribbon-like carrier, said means including an extruder die having a circular opening for producing a tubular extruded form, a plurality of slits regularly distributed over the circumference of said circular opening, said slits tapering outwardly in cross-section and ending in thin hooked portions forming said longitudinal ribs, means for repeatedly cutting said ribs transversely to the extruding direction while still in a plastic state and means for simultaneously stretching said profile form in extruding direction so as to form separate hooks, means for cooling said extruded form, and means for cutting it into articles of desired length.

3,923,443
PIPE BELLING AND CHAMFERING MACHINE

Vernon V. Emery, Sun Valley; Charles W. Howe, Pasadena, and Joseph Marcella, Sun Valley, all of Calif., assignors to Vern Emery Company, Inc., Pacoima, Calif.

Filed Aug. 7, 1970, Ser. No. 62,100
Int. Cl.² B29C *17/00*
U.S. Cl. 425—384 17 Claims



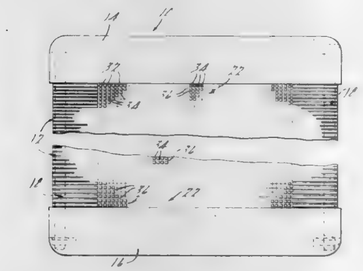
1. A machine for reforming a length of pipe comprising an indexing conveyor having

pipe carrying means thereon,
means for moving said pipe carrying means from
a first position in which a length of pipe to be reformed is received to
a second position in which the length of pipe is aligned with a reforming tool, and
a reforming tool positioned adjacent to said indexing conveyor and comprising
heater means for heating one end of a length of pipe in alignment therewith including
air heating means,
air flow means for directing air across said air heating means, and
air passage means for directing the heated air across the outer and inner surface of the one end of a length of pipe.

3,923,444
EXTRUSION DIE

Michael J. Esper, Detroit, and Louis J. Mitchell, Ypsilanti, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 3, 1974, Ser. No. 466,651
Int. Cl.² B29F *3/04*
U.S. Cl. 425—461 1 Claim

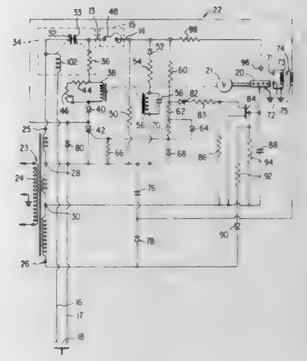


1. An extrusion die for forming an extruded article having a plurality of interconnected walls which define passageways therebetween, the extrusion die comprising:
a plurality of elongated extrusion plates stacked one upon another; and
clamping means for holding the plurality of extrusion plates in a stacked condition;
each of the extrusion plates having on both upper and lower surfaces thereof;
a. a leading edge zone and a trailing edge zone,
b. recessed areas on the trailing edge zone, which areas of juxtaposed extrusion plates define material feed channels when the extrusion plates are in a stacked condition,
c. spacing bosses located at both ends of the extrusion plate in at least the trailing edge zone, which bosses locate juxtaposed extrusion plates so that the recessed areas of the extrusion plates are spaced apart to define the feed channels,
d. finger slots on the leading edge zone the finger slots defining individual fingers therebetween, the so defined fingers of an extrusion plate having a thickness dimension less than the thickness of the spacing bosses on the upper and lower surfaces of the extrusion plate whereby a space exists between the fingers of the juxtaposed extrusion plates;
e. small spacing bosses at various locations in the trailing edge zone to divide up the recessed areas of the extrusion plate, such small spacing bosses extending generally parallel to the feed channels from the trailing edge zone of the extrusion plate to a location spaced rearwardly of the fingers; and wherein
f. the recessed areas defining the feed channels are interconnected with the finger slots and the space between juxtaposed fingers when the extrusion plates are in a stacked condition.

3,923,445
BURNER IGNITION SYSTEM HAVING SAFETY SWITCH WITH REMOTE RESET

Hugh J. Tyler, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 10, 1974, Ser. No. 459,822
Int. Cl.² F23N *5/00*
U.S. Cl. 431—71 3 Claims



1. An electric ignition system comprising
means for generating sparks,
flame sensing means for terminating operation of the spark generating means when a flame is sensed,
a safety switch having a pair of normally closed contacts and a resistance heat motor serially connected with the spark generating means,
said resistance heat motor capable of opening the closed contacts when the flame sensing means fails to sense a flame after a predetermined duration of operation of the spark generating means,
said safety switch including electromagnetic means for resetting the contacts in a closed position,
switch means disposed at a location remote from the ignition circuit for energizing the electromagnetic means,
a transformer having a secondary winding,
said spark generating means being energized by the secondary winding of the transformer, and
said electromagnetic means being in series with the switch means across the secondary winding of the transformer.

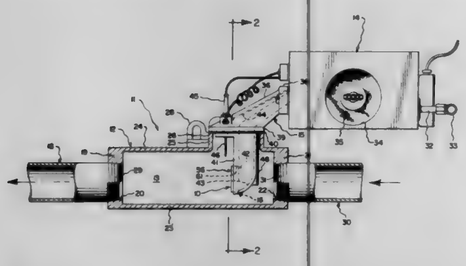
3,923,446
VIBRATION CANCELLING BURNER GRID FOR A HEATING SYSTEM

Robert G. Budden, Clarence, and Eugene W. Butlak, Buffalo, both of N.Y., assignors to Roberts-Gordon Appliance Corporation, Buffalo, N.Y.

Filed Nov. 6, 1974, Ser. No. 521,259
Int. Cl.² F23D *13/00*
U.S. Cl. 431—114 5 Claims

1. In a heating system including a housing defining a combustion chamber therewithin, a conduit adapted to supply a combustible fuel-air mixture and having at one end thereof a multi-port burner head provided with a plurality of perforations through which said mixture may pass to be ignited and burned within said combustion chamber, and an elongated flue pipe communicating with said combustion chamber to convey products of combustion therefrom, the improvement comprising:
a burner grid adapted to alter the normal vibrations generated by a dynamic flame front produced by such burning

of such supplied mixture, said burner grid being a plate-like member having one surface arranged to cover said burner head, an opposite surface arranged to face into said combustion chamber, a primary port communicating said surfaces and through which said mixture may pass to support combustion of a primary flame front generating



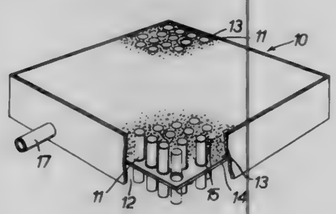
primary vibrations, and a plurality of secondary ports communicating said surfaces and through which said mixture may pass to support combustion of a corresponding plurality of secondary flame fronts generating secondary vibrations dissimilar to said primary vibrations and adpated to destructively interfere with said primary vibrations when superimposed in said flue pipe.

3,923,447

BURNER OF USE WITH FLUID FUELS

Denis Henry Desty, Walton-on-Thames, and David Montagu Whitehead, Camberley, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Oct. 8, 1968, Ser. No. 765,909
Claims priority, application United Kingdom, Oct. 10, 1967, 46172/67
Int. Cl.² F23D *3/40*
U.S. Cl. 431—326 **17 Claims**



1. A diffusion flame burner for fluid fuels, said burner comprising means forming a fuel chamber having a fluid-tight bottom portion defining an air-inlet zone, a top portion defining a combustion zone, and a fluid-tight side portion between said bottom portion and said top portion, said burner also comprising a plurality of combustion air tubes passing through said fuel chamber from said bottom portion to said top portion for conducting combustion air through said chamber from said air-inlet zone to said combustion zone in confined streams out of contact with fuel in said chamber, said fuel chamber being open to the atmosphere at its said top portion only and being divided into a sequence of fuel spaces in superposed relation to each other between said bottom portion and said top portion:

a. at least one fuel space of said sequence being an unpacked fuel space which provides a low resistance to the flow of fuel across the burner,

b. at least one other fuel space of said sequence being a packed fuel space in which the packing is of a type having capillary size channels and is adapted to control the flow of fuel towards the combustion zone, the first fuel space of said sequence being unpacked and constituting a fuel inlet space adapted to be connected to a fuel supply and the last fuel space of said sequence being packed and constituting a fuel outlet space communicating with the combustion zone, the packing being exposed to the ambient and being unobstructed across its upper surface whereby, during the use of the burner, air flows through the combustion air tubes into the combustion zone where it reacts with the fuel which flows upwardly and through said fuel outlet space into the combustion zone thereabove, said fuel and air mixing only in said combustion zone and the resulting fuel-air mixture burning as a diffusion flame in said combustion zone, and

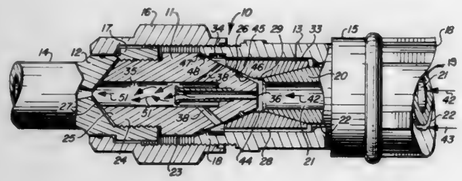
c. the bore of each combustion air tube being 0.01–1.0 cm^2 where it opens into the combustion zone and the bores of the tubes accounting for at least 25% of the surface of said fuel outlet space adjacent to the combustion zone.

3,923,448

FUEL MIXING CHAMBER FOR WELDING AND CUTTING TORCHES

Carl R. Guth, 10215 N. 38th St., Phoenix, Ariz. 85028

Filed Oct. 15, 1974, Ser. No. 514,456
Int. Cl.² F23D *13/40*
U.S. Cl. 431—354 **9 Claims**



1. A mixing chamber for a fuel burner comprising:

a control fuel mixing element,

an upstream outer shell for connection to handle means,

a downstream adaptor for connection with a nozzle means, said fuel mixing element, upstream outer shell and downstream adaptor all having an opening extending therethrough for jointly defining a first gas passageway,

coupling means for axially aligning said fuel mixing element, upstream outer shell and downstream adaptor and placing their openings in axial alignment,

nozzle means having an outer diameter smaller than the opening of said mixing element and arranged therein,

said nozzle means defining a gas expansion space between it and the inside periphery of said opening of said mixing element, and having a flared end at its downstream end for discharging a first gas therethrough, and

means defining a second gas passageway extending through said fuel mixing element and into its hollow opening laterally of said nozzle means for discharging a second gas transmitted thereby laterally of said flared end of said nozzle means in the downstream direction of the movement of the first gas through said nozzle means,

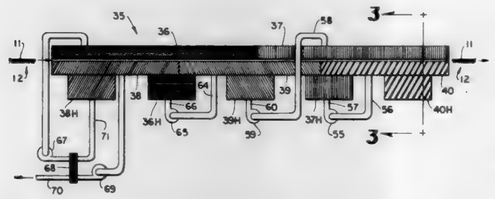
said flared end of said nozzle means retarding the movement of the second gas over the discharging end of said nozzle means into the stream of said first gas discharged by the nozzle means and creating eddies in the mixing first and second gases.

3,923,449

MULTISTAGE OVEN WITH PROGRESSIVE CIRCULATION

James Donald Brock, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Filed Mar. 22, 1974, Ser. No. 453,839
Int. Cl. F27b *9/28*
U.S. Cl. 432—59 **9 Claims**



5. Apparatus for progressively applying heat to a web of material which is moving along a predetermined path and which may contain moisture, comprising:

closure means enclosing at least a portion of said predetermined path, said closure means defining a plurality of separate web heating zones serially disposed along the enclosed portion of said path;

at least some of said heating zones including individual means for directing a stream of heated fluid onto at least one side of the web passing through the respective zone;

exhaust means directly communicating with the first one of said heating zones through which the web initially passes and operative to withdraw fluid therefrom and to discharge said withdrawn fluid from said heating apparatus;

fluid flow communication means directly connecting each of said heating zones, except for the final one of the heating zones along which the web passes, with a serially subsequent heating zone and allowing said first heating zone and each such connected heating zones to receive substantial make-up fluid only from such serially subsequent heating zone; and

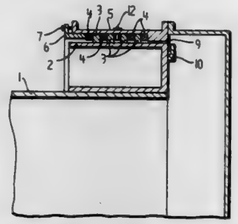
means associated with each at said heating zones, except for said final heating zones, to substantially prevent make-up fluid from entering such heating zones from any source other than said fluid flow communication means.

3,923,450

ROTARY KILN PROVIDED WITH SEAL MECHANISM

Kimio Inoue; Seiichi Hirano; Tamiharu Sakai, all of Kobe, and Yasokazu Ikuno, Osaka, all of Japan, assignors to Kobe Steel Ltd., Kobe, Japan

Filed May 28, 1974, Ser. No. 473,575
Claims priority, application Japan, May 31, 1973, 48-64399
Int. Cl.² F27B *7/024*
U.S. Cl. 432—115 **4 Claims**



1. A rotary kiln provided with a seal mechanism, comprising:

a rotary kiln proper;

a hood covering one end portion of said rotary kiln proper;

a seal mechanism providing a seal between said rotary kiln proper and said hood which has metal rings, packings, and means for lubricating the sliding faces of said metal rings and packings;

an elastic means for supporting the weight of the hood independently of said rotary kiln proper; and

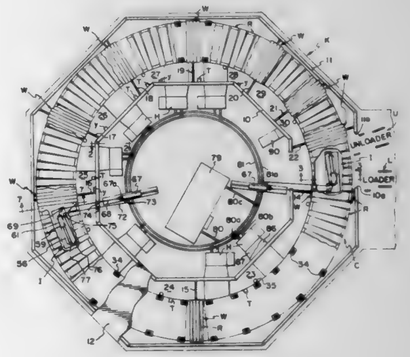
a position-adjusting means connected to said elastic means for vertically adjusting the hood supported thereby.

3,923,451

CONTINUOUS TUNNEL KILN FOR CURING MOLDED CONCRETE PRODUCTS

Robert J. Woelk, Alpena, Mich., assignor to Besser Company, Alpena, Mich.

Continuation-in-part of Ser. No. 394,470, Sept. 9, 1973, abandoned. This application Aug. 1, 1974, Ser. No. 493,928
Int. Cl.² F27B *9/16*
U.S. Cl. 432—138 **26 Claims**



1. In a system for curing molded concrete products such as green concrete blocks supported on pallets;

a circular tunnel structure having inner, outer and top walls defining an essentially closed passageway except for ends at which loading and unloading can be accomplished;

a carousel, comprising circumferentially spaced carriers, with vertically spaced, generally radially extending shelf members for supporting the products, disposed for indexing rotary travel in said passageway;

said carriers having a substantially imperforate inner and outer end wall, a substantially imperforate bottom wall, a substantially imperforate radial wall, and a substantially imperforate top wall, but being sidewisely open;

circumferentially spaced groups of circumferentially spaced resilient wiper blades mounted by said tunnel structure along the top, bottom, and inner and outer ends of the pathway of said carriers to extend into the path of said carriers and form sealed compartments between said groups as a result of carriers being stopped in indexed position at a series of circumferentially spaced locations in said tunnel structure, radially opposite said groups, said groups of blades being spaced apart a distance equal to a multiple of the distance between the radial walls of said carriers;

means for introducing curing steam into certain compartments; and

means for indexing the carousel in predetermined increments to always dispose carriers radially opposite said wiper blades at said spaced locations.

3,923,452
AMINE SALT OF A DYESTUFF IN A KETONE SOLUTION

Jacques Wegmann, Bettingen; Carl Becker, Basel; Guenther Zwahlen, Dornach, and Werner Kuster, Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 94,947, Dec. 3, 1970, abandoned. This application Apr. 5, 1973, Ser. No. 348,383
Claims priority, application Switzerland, Dec. 3, 1969, 18045/69; Jan. 8, 1970, 156/70; Jan. 30, 1970, 1297/70
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² D06P *1/10*
U.S. Cl. 8—1 XA 5 Claims

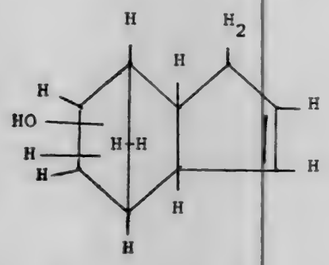
1. A dyestuff preparation consisting essentially of a dispersion or solution of 5 to 75% by weight of a water-insoluble amine salt of a dyestuff selected from the group consisting of 1:2 chromium complex of an azo dyestuff, 1:2 chromium complex of a formazane dyestuff, phthaolcyanine dyestuff, diazine dyestuff, and anthraquinone sulfonic acid dyestuff, in an aliphatic or cycloaliphatic ketone having a solubility in water at room temperature of 0.1 to 10%.

3,923,453
NEW DYE COMPOSITIONS

Remus I. Lazar, Berwyn, and Richard C. Reichel, Chicago, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Dec. 3, 1973, Ser. No. 420,998
Int. Cl.² D06P *1/20, 5/04*
U.S. Cl. 8—39 5 Claims

1. A dye composition comprising one part by weight of an acid dyestuff and from one to 20 parts by weight of a dye assist consisting of a mixture of benzyl alcohol and



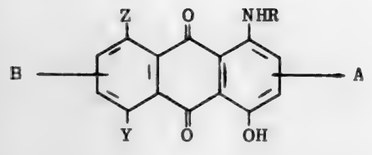
having a boiling point of about 117°C at 9 mm Hg pressure, a refractive index of about 1.5262 at 20°C and an infrared spectrum having strong bands at about 9.4, 10.1, 12.7 and 14.4 microns, in a weight ratio of from 4:1 to 1:4.

3,923,454
POLYESTER AND PLASTIC DYES

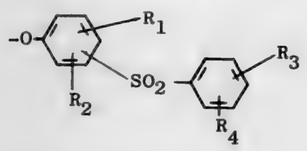
Guido R. Genta, Snyder, N.Y., assignor to American Aniline Products, Inc., Paterson, N.J.

Division of Ser. No. 299,398, Oct. 20, 1972, Pat. No. 3,840,567. This application May 7, 1974, Ser. No. 467,721
Int. Cl.² C09B *1/50*; D06P *1/20*
U.S. Cl. 8—39 6 Claims

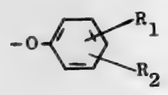
1. A polyester fabric material dyed with a halogenated mixture of a compound of the formula:



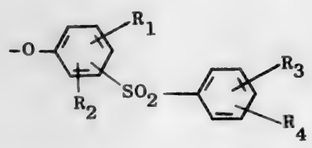
wherein
R is hydrogen or lower alkyl;
one of Y and Z is independently hydroxy, amino or lower alkylamino; and the other
of Y and Z is hydroxy;
one of A and B is an arylsulfonyl group of the formula



and the other of A and B is hydrogen,



or



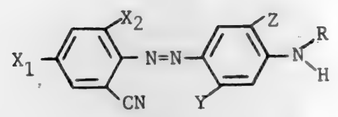
A and B each being ortho to a hydroxy group,
each of R_1 and R_2 is independently hydrogen, chlorine, bromine, lower alkyl or lower alkoxy; and
each of R_3 and R_4 is independently hydrogen, chlorine, bromine, lower alkyl, or nitro;
each aminoanthraquinone of the mixture having bonded to aromatic carbon atoms thereof between 0.001 and 4.0 chlorine or bromine atoms, wherein said chlorine or bromine is introduced at a position on said aminoanthraquinone through a Friedel Crafts reaction.

3,923,455
PROCESS OF DYEING AND PRINTING SYNTHETIC HYDROPHOBIC MATERIALS WITH WATER-INSOLUBLE MONOAZO DYES

Dieter Cornelius, Darmstadt-Arheilgen, and Hanswilli von Brachel, Leopoldshohe, both of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Germany

Continuation of Ser. No. 92,844, Nov. 25, 1970, abandoned. This application July 31, 1973, Ser. No. 384,273
Claims priority, application Germany, Apr. 24, 1970, 2020030
Int. Cl.² D06P *1/04*
U.S. Cl. 8—41 B 4 Claims

1. A process which comprises dyeing or printing a hydrophobic synthetic material selected from the group consisting of linear polyesters, acetyl cellulose, polyamides and polycarbonates with a dyestuff of the formula



wherein X_1 is nitro, cyano or alkylsulfonyl having from 1 to 4 carbon atoms; X_2 is alkylsulfonyl having 1 to 4 carbon atoms; Y is alkanoylamino having 2 to 5 carbon atoms; Z is hydrogen or alkoxy having 1 to 4 carbon atoms and R is alkyl having 1 to 4 carbon atoms or mono-substituted alkyl wherein said alkyl moiety has from 1 to 4 carbon atoms and said substituent is cyano, acetoxy, hydroxy, methoxycarbonyl, ethoxycarbonyl, phenyl, methylsulfonyl, ethylsulfonyl or nitro.

3,923,456
METHOD OF WASHING TEXTILE MATERIALS WITH SURFACE-ACTIVE AGENT AND CATALYST-CONTAINING MICELLES

John W. Willard, Sr., Rapid City, S. Dak., assignor to Caw Industries, Inc., Rapid City, S. Dak.

Continuation-in-part of Ser. No. 317,097, Dec. 20, 1972, which is a continuation of Ser. No. 108,198, Jan. 20, 1971, abandoned. This application Aug. 20, 1973, Ser. No. 389,542
Int. Cl.² D06F *11/00*
U.S. Cl. 8—137.5 18 Claims

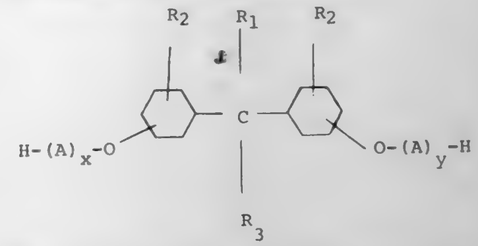
1. In a method of washing soil from soiled textile material wherein the textile material is intimately contacted with water containing a surface active agent, the improvement in combination therewith comprising
washing the soil from the soiled textile material with water containing the said surface active agent and a catalyst, the catalyst being present in a catalytically effect amount which increases the rate of removal of the soil from the textile material,
the catalyst being prepared by a process comprising
admixing a water soluble alkali metal silicate with an aqueous medium containing a dissolved substance which is a source of calcium ion and a dissolved substance which is a source of magnesium ion,
the aqueous medium containing said dissolved substances in amounts to provide between about 1×10^{-4} and 1×10^{-1} mole per liter each of calcium ion and magnesium ion,
the aqueous medium containing said dissolved substances in amounts to provide a molar ratio of calcium ion to magnesium ion between about 2.0:1.0 and 1.0:2.0,
the alkali metal silicate having an alkali metal oxide to silicon dioxide ratio between about 0.9:1.0 and less than 2.0:1.0 and being admixed with the aqueous medium in an amount of about 0.05–2 mole per liter,
reacting the alkali metal silicate with said dissolved substances providing calcium ion and magnesium ion to produce an aqueous colloidal suspension of particles of the reaction product,
admixing a micelle-forming surfactant with the aqueous medium in an amount to form catalyst micelles comprising said colloidal particles upon agitating the aqueous medium, and
agitating the aqueous medium containing the colloidal particles and surfactant to form said catalyst micelles.

3,923,457
MIXTURES OF FIXING AUXILIARIES CONTAINING NOVEL DYE CARRIER

Sienling Ong, Lorsbach, Taunus; Max Grossmann, and Ulrich Karsunky, both of Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 10, 1973, Ser. No. 405,038
Claims priority, application Germany, Oct. 12, 1972, 2250017
Int. Cl.² D06P *1/60, 5/04*; C09B *67/00*
U.S. Cl. 8—169 2 Claims

1. A mixture of fixing auxiliaries consisting of: (1) an oxalkylated bisphenol A derivative of the formula



wherein R_1 is hydrogen or methyl, R_2 is hydrogen or alkyl having 1 to 12 carbon atoms, R_3 is hydrogen or alkyl having 1 to 18 carbon atoms, A is oxyethylene and/or oxypropylene and x and y are numbers the sum of which is between 4 and 50, (2) an oxethylated fatty alcohol of the formula

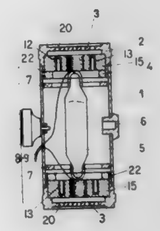
$$R-O-(C-CH_2-CH_2-O)_z-H$$

wherein R is alkyl or alkenyl having 6 to 18 carbon atoms and z is a number from 4 to 25, and (3) polyethylene glycol having 2 to 25 units of ethylene oxide.

3,923,458
AIR TREATMENT DEVICE

Gonzalo Moran, Madrid, Spain, assignor to Comercial Super-Dix, S.A., Madrid, Spain

Filed Sept. 26, 1972, Ser. No. 292,309
Int. Cl. A61l *9/02*
U.S. Cl. 21—74 R 3 Claims



1. An air treatment device for perfuming, deodorizing and purifying air comprising, a tubular casing, grate means at each end of said casing providing communication between the interior of said casing and the atmosphere, a respective holding means axially spaced from each said grate means, a cake of solid carrier material carrying thereon a heat activated gasifiable, air-treatment material mounted on each said holding means adjacent a said grate means, an electrically activated lamp within said casing adjacent said cakes of carrier material to heat said carrier material and liberate the treatment material therein which passes through the respective grate means to the area adjacent the casing, means for connecting said lamp to an electrical power source, and means in

said casing through which the lamp is viewable to determine if the device is energized.

3,923,459

PROCESS FOR THE DETERMINATION OF BILIRUBIN IN FLUIDS

Gerhard Ertingshausen, New York, and Diane F. Byrd, Tarrytown, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 14, 1972, Ser. No. 314,977

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² G01N *33/16*; **C07C** *113/00*

U.S. Cl. 23—230 B **12 Claims**

1. A process for the determination of bilirubin in a bilirubin-containing fluid which comprises the steps of:

a. forming a mixture of said bilirubin-containing fluid and a mixture of diazosulfanilic acid-1,5-naphthalene disulfonate and an accelerator selected from the group consisting of ethylene glycol and propylene glycol in an aqueous mineral acid;

b. measuring by means of a centrifugal analytical photometer an absorbance reading of the mixture at 550 nanometers after reaction between the bilirubin and the diazosulfanilic acid-1,5-naphthalene disulfonate is complete;

c. comparing the absorbance reading with the absorbance reading obtained simultaneously under the same conditions from a mixture containing a known concentration of bilirubin; and

d. determining the amount of bilirubin in said bilirubin-containing fluid.

3,923,460

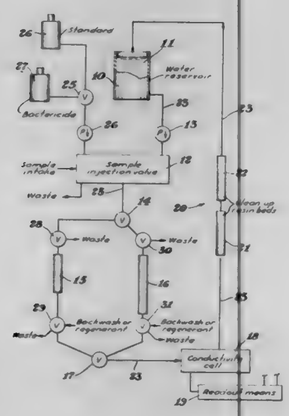
DUAL ION CHROMATOGRAPH USING PARALLEL COLUMNS FOR IONIC ANALYSIS

Albert Ross Parrott, and Donald Clarence Benefiel, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 12, 1974, Ser. No. 523,091

Int. Cl.² G01N *27/08, 31/04, 31/08*

U.S. Cl. 23—230 R **12 Claims**



1. Chromatographic apparatus for the concurrent quantitative determination of chromatographically separable cations and anions in aqueous solution from a single measured portion of sample solution which comprises:

first and second tubular columns each adapted to hold a charge of ion exchange resin;

first and second stream splitters, a sample selection valve, a pump, a water reservoir and a conductivity cell; and

liquid conduit means sequentially connecting, in series, the water reservoir, the pump, the same selection valve and the first stream splitter, then, in parallel, between the first stream splitter and the second stream splitter, the first and second tubular columns, and finally, in series, the second stream splitter and the conductivity cell.

3,923,461

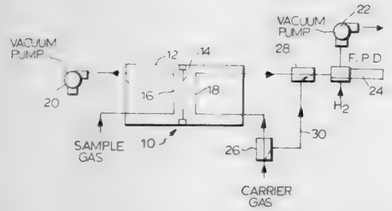
APPARATUS AND METHOD EMPLOYING GAS-PERMEABLE MEMBRANE FOR SEPARATING, DILUTING, OR CONCENTRATING MOLECULAR SPECIES

James D. Barden, Nokesville, Va., assignor to Meloy Laboratories, Inc., Springfield, Va.

Filed June 7, 1974, Ser. No. 477,463

Int. Cl.² B01D *13/00, 53/22*; **G01N** *31/12*

U.S. Cl. 23—232 R **10 Claims**



1. Apparatus for controlling the concentration of sample fluid species in a carrier fluid supplied to a device utilizing said species, which comprises means providing a fluid permeable wall separating sample fluid flow and carrier fluid flow paths at opposite sides thereof, means for connecting said carrier fluid flow path to said device downstream of said apparatus, means for supplying sample fluid to said sample fluid flow path, means for supplying a carrier fluid stream to said carrier fluid flow path and then to said device, and means for interrupting the flow of carrier fluid in the last-mentioned path from time to time and for reinstituting that flow, whereby sample species which permeate said wall during the time of carrier fluid interruption accumulate at the carrier fluid side of said wall until the carrier fluid flow from said stream to said device is reinstituted.

3,923,462

PHOTOGRAPHIC DETECTION AND INTEGRATION OF LIGHT EMITTED FROM LUMINESCENT REACTIONS

Leonard Alan Cavanagh, San Jose, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed June 17, 1974, Ser. No. 480,043

Int. Cl.² G01N *31/22, 21/12*

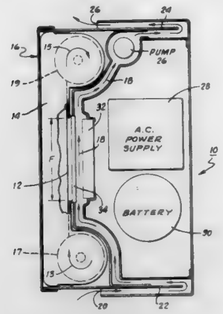
U.S. Cl. 23—232 R **15 Claims**

12. The method of detecting the presence of a given substance in a fluid and producing an indication of the amount of the given substance present over a given time period, comprising:

positioning a material which produces light in the presence of the said substance to be detected in a light-tight enclosure;

positioning a photographic film in the said enclosure in spaced-apart but exposed relation with respect to said material, whereby said film is exposed by light produced by interaction of said substance and material; and

developing said photographic film thereby to provide an observable indication of its state of exposure and, hence, an indication of the amount of the said substance present over the time interval of exposure of said film to the said material.



3,923,463

APPARATUS FOR PERFORMING CHEMICAL AND BIOLOGICAL ANALYSIS

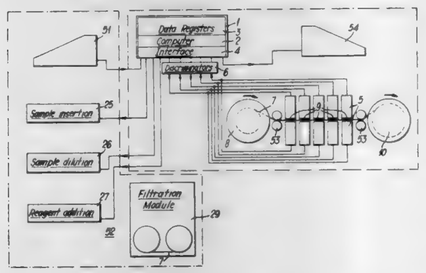
Kenneth Dawson Bagshawe, 115 George St., Marble Arch, London WC2, and James Edward Kemble, 80 Park Road, Burgess Hill, Sussex, both of England

Filed Oct. 9, 1973, Ser. No. 404,720

Claims priority, application United Kingdom, Oct. 9, 1972, 46521/72

Int. Cl.² G01N *31/00*; **G01T** *1/00*

U.S. Cl. 23—253 R **9 Claims**



1. Apparatus for analysing a plurality of liquid samples, each sample being in a tube, and comprising a cassette having a shell in which a plurality of such tubes are to be contained in sequence, said cassette having apertures in its walls through which means, operated by apparatus external to the cassette, actuate and advance the tubes sequentially and stepwise past a fixed point, said cassette being freely removable from the operating apparatus, without disturbing the contained tubes, to other locations, the initial sequence of tubes being maintained throughout.

3,923,464

COMBUSTION APPARATUS FOR ANALYTICAL INSTRUMENTS

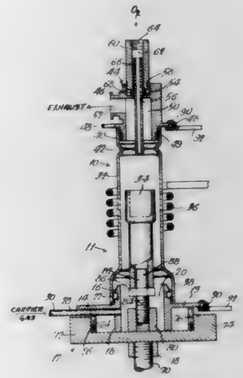
George J. Sitek, Stevensville, and Robert N. Revesz, St. Joseph, both of Mich., assignors to Leco Corporation, St. Joseph, Mich.

Filed Sept. 25, 1972, Ser. No. 291,763

Int. Cl.² G01N *31/12*; **F15D** *1/00*

U.S. Cl. 23—253 PC **10 Claims**

1. A combustion furnace for analytical apparatus comprising an induction coil with a vertically extending axis, a combustion tube mounted within said coil, an upper closure member for sealably coupling to an upper end of said combustion tube, said upper closure member including an exhaust gas passage therethrough, and a separate aperture extending through said upper closure member along the vertical axis thereof, a lower closure member for sealably engaging the lower end of said combustion tube, said lower closure member including a passageway extending therethrough to define a carrier gas inlet communicating with the interior of said combustion tube and crucible supporting means associated with said lower closure member, said lower closure member movable between a first position sealing said lower end of said combustion tube and supporting a crucible within the field of said coil and a second position displaced therefrom, a combustion gas lance, and means in said upper closure members for securing said lance in said separate aperture for optimal delivery of combustion gas into said crucible within said field.



3,923,465

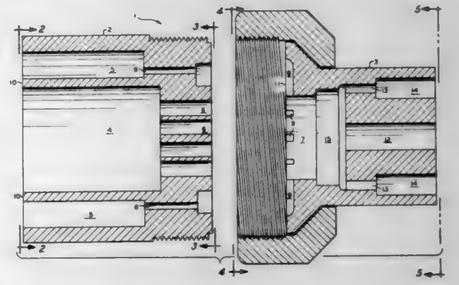
APPARATUS FOR PRODUCING CARBON BLACK

Joseph C. Krejci, Phillips, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 1,432, Jan. 8, 1970, Pat. No. 3,867,513. This application Apr. 18, 1974, Ser. No. 462,108

Int. Cl.² C09C *1/48*

U.S. Cl. 23—259.5 **1 Claim**



1. In a carbon black reactor, a nozzle comprising a surrounding first wall means forming a mixing chamber; a second wall means having a plurality of inlet conduit means opening into said mixing chamber, said inlet conduit means comprising a plurality of centrally positioned first inlet conduits and a plurality of second inlet conduits positioned peripherally to said first inlet conduits, said second inlet conduits being provided with discharge ends which enter said mixing chamber in generally radially inwardly extending directions so that fluid

introduced through said second inlet conduits converges toward fluid introduced through said first inlet conduits to provide mixing in said mixing chamber; third wall means contianing at least one central discharge conduit opening from said mixing chamber, a plurality of second discharge conduits opening from said mixing chamber and being positioned peripherally to said central discharge conduit, each of said second discharge conduits having an orifice in the inlet thereof, the total cross-sectional area of said orifices in said second discharge conduits being substantially equal to the cross-sectional area of said at least one central discharge conduit, the total of the cross-sectional areas of said second discharge conduits downstream from said orifices being from about 2 to about 6 times the cross-sectional area of said at least one central discharge conduit.

3,923,466

APPARATUS FOR THE PRODUCTION OF CRACKED GAS

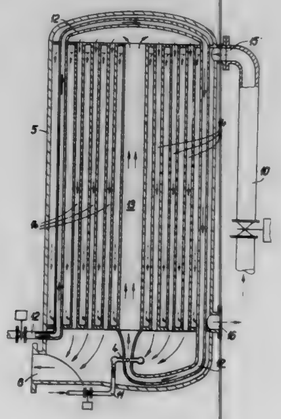
Henri F. Seelig, Essen, and Herbert von Waclawiczek, Duisburg, both of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Dec. 18, 1972, Ser. No. 316,426

Claims priority, application Germany, Dec. 16, 1971, 2162390

Int. Cl.² B01J *1/00, 8/06;* **C07C** *1/02*

U.S. Cl. 23—284 **8 Claims**



1. Apparatus for producing cracked gas from a mixture of steam and reaction materials selected from among organic carbon and hydrocarbon compounds, comprising, in combination: a feed line for supplying steam from a nuclear reactor, heating means connected to said feed line for heating said steam to produce superheated steam; a mixing and atomizing nozzle connected to a source of reaction materials and connected to said feed line for supplying steam for atomizing such reaction materials with the aid of the superheated steam and for forming a mixture of the superheated steam with finely dispersed particles of the reaction material; a vertically oriented reaction vessel having a tubular reaction chamber containing an input and heat exchange means surrounding said reaction chamber and supplying heat thereto, with said atomizing nozzle being disposed at the input of said tubular reaction chamber and connected thereto by a flaring end for feeding the resulting mixture into said tubular reaction chamber where the superheated steam and the reaction material substantially react to produce cracked gas; means associated with said vessel for conducting cracked gas and any remaining mixture out of said tubular reaction chamber and through said heat exchange means where the remaining mixture is reacted to complete production of the cracked gas; intake means connected to said heat exchange means for feeding nuclear reactor coolant into said reaction vessel for supplying heat to said vessel, said heat exchange means being arranged for passing the coolant around the tubular reaction chamber; and outlet means connected to said heat exchange means for removing the coolant.

3,923,467

PRODUCTION OF ULTRA FINE REFRACTORY PARTICLES FROM REFRACTORY MATERIAL USING PLASMA FLOWS AND A FLUIDIZED BED

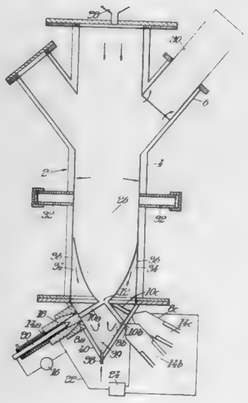
Claude Bonet, Montlouis, and Marc Foex, Paris, both of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Courbevoie, France

Filed Dec. 28, 1971, Ser. No. 213,052

Claims priority, application France, Jan. 6, 1971, 71.00184

Int. Cl.² B01D *5/00;* **C01G** *25/02;* **B01D** *7/00*

U.S. Cl. 23—293 A **9 Claims**



1. A method for the production of ultra fine refractory particles from a refractory material in the form of relatively coarse particles which comprises generating a plurality of upwardly directed plasma flows in the lower portion of a vertical enclosure, the direction of said plasma flows being oriented to converge at a point substantially at the vertical axis of said enclosure to form a principal flow of hot gases moving upwards, said gases having a temperature above the vaporization temperature of said refractory particles, causing an electric current to flow through said convergent flows in an arc across the bottom of the enclosure at an energy level of at least about 38.5 kw, introducing said refractory coarse particles by gravity into said principal flow of hot gases above said point of convergence, controlling the orientations and the flow rates of said plasma flows and the electrical energy dissipated therein to impart to said principal flow a flared shape terminating in a cross-section substantially equal to the internal diameter of said enclosure, said plasma flows having a sufficiently reduced speed so as to form a fluidized bed of said refractory particles therein, and to ensure that the hot gases have a temperature higher than the vaporization temperature of said refractory material, controlling the rate of introduction of said refractory material in said plasma flow to allow for the vaporization of at least part of said coarse refractory particles in the fluidized bed, and removing hot gases containing vaporized refractory materials and fine refractory particles entrained therein from above said fluidized bed.

3,923,468

METHOD FOR CRUCIBLE-FREE ZONE MELTING OF SEMICONDUCTOR CRYSTAL RODS

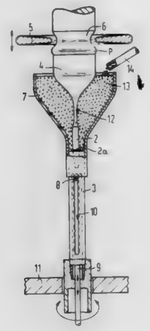
Wolfgang Keller, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 20, 1974, Ser. No. 525,641

Claims priority, application Germany, Nov. 22, 1973, 2358300

Int. Cl.² B01J *17/10*

U.S. Cl. 23—301 SP **3 Claims**



1. A method of crucible-free zone melt processing of a semiconductor crystal rod comprising:

arranging a semiconductor crystal rod within a crucible-free zone melt environment with a seed crystal attached to a lower end thereof;

generating a melt zone at the juncture of said seed crystal and said rod and controllably moving said melt zone away from said juncture through said rod to a select point thereon;

uniformly supporting said lower end of said rod so as to prevent oscillations at the juncture of said seed crystal and said rod; said uniform supporting of said lower end of the rod being accomplished by axially upwardly moving a hollow funnel-shaped support means from a position below said juncture between the between the seed crystal and the rod to a position surrounding the lower end of said rod; said support means comprising a funnel-shaped casing filled with a granular material selected from the class consisting of silicon, quartz, sand and metal spheroids, said material being self-adjusting to contact all points about the circumference of the lower end of said rod so as to dampen any oscillation between the rod and the seed crystal; and

controllably moving said melt zone from said select point through the remaining portion of said rod.

3,923,469

ONE-FOLD UNITARY STEEL SUCKER ROD STRING

Alexander Palynchuk, Edmonton, Canada, assignor to Corod Manufacturing Ltd., Edmonton, Canada

Continuation of Ser. No. 285,572, Sept. 1, 1972, abandoned, which is a division of Ser. No. 36,107, May 11, 1970, Pat. No. 3,689,326. This application Jan. 9, 1975, Ser. No. 539,826

Int. Cl.² B21C *37/00*

U.S. Cl. 29—183.5 **9 Claims**

1. A onefold unitary steel sucker rod string, several thousands of feet in length, produced from rods of circular cross section, between about three-fourths inch to about seven-eights inch in diameter to a rod having an oval cross section substantially completely throughout its length and formed into a tight coil, said string having a minor diameter of about 0.570 inch to about 0.670 inch in the coil plane, said coil being of



sufficiently large inside diameter whereby the rod string is not stressed beyond its 0.2 offset yield.

3,923,470

SOLDERED JOINT

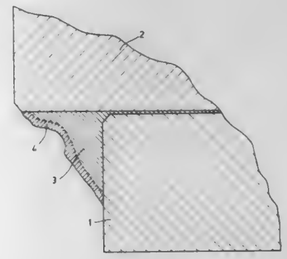
Cornelis Jan Damsteeg, Leende, and Tjepke Hendrik Ekkelboom, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 27, 1973, Ser. No. 373,943

Claims priority, application Netherlands, July 4, 1972, 7208332

Int. Cl.² B23P *3/22*

U.S. Cl. 29—191 **2 Claims**



1. A soldered joint between articles consisting mainly of at least one of the high melting point metals, high melting point metal carbides and high melting point metal oxides, which joint comprises titanium, wherein at least the external surface layer of the soldered joint consists of titanium nitride.

3,923,471

LUBRICATED METALLIC CONTAINER STOCKS AND METHOD OF PREPARING THE SAME AND APPLYING AN ORGANIC COATING THERETO

John R. Smith, Richmond, and James A. Bray, Saline ville, both of Ohio, assignors to National Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 233,748, March 10, 1972, Pat. No. 3,826,675. This application May 13, 1974, Ser. No. 469,542

Int. Cl.² B32B *15/04*

U.S. Cl. 29—195 **32 Claims**

1. A metallic container stock having a thin substantially uniform film of citric acid ester lubricant on at least one surface area thereof, the citric acid ester lubricant consisting essentially of at least one citric acid ester of an alcohol containing 1–10 carbon atoms and being present in an amount of about 0.05–1.0 gm for each 62,720 square inches of lubricated surface area, the container stock being electrolytic tinplate having thereon a chromium-containing film contiguous with the tin surface, the chromium-containing film being cathodically deposited on the electrolytic tinplate from an aqueous hexavalent chromium electrolyte.

17. In a method of applying an organic coating to electrolytic tinplate container stock which has thereon a chromium-containing film contiguous with the tin surface, the chromium-

containing film being cathodically deposited on the electrolytic tinplate container stock from an aqueous hexavalent chromium electrolyte, in which method a layer of an initially fluid organic coating material selected from the group consisting of fluid varnishes, lacquers and enamels for the electrolytic tinplate container stock is applied to at least a portion of the surface area of the electrolytic tinplate container stock, the said surface area of the electrolytic tinplate container stock having a film of a lubricant thereon, and thereafter the layer of the initially fluid organic coating material is hardened to form the said organic coating, the improvement which comprises improving the wettability of the said surface area of the electrolytic tinplate container stock by the initially fluid organic coating material by employing thereon as the lubricant a substantially uniform film of a citric acid ester, the citric acid ester consisting essentially of at least one citric acid ester of an alcohol containing 1–10 carbon atoms and being present in an amount of about 0.05– 1.0 gm for each 62,720 square inches of lubricated surface area of the container stock.

3,923,472

FUEL MADE FROM THERMOPLASTIC FIBERS AND OIL

Boni Philip Martinez, Wilmington, Del., and Millard David Zeisberg, Elkton, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 5, 1973, Ser. No. 403,863
Int. Cl.² C10L 1/00
U.S. Cl. 44—50 **8 Claims**

1. A process for removing oil from the surface of water and for converting thermoplastic synthetic fibers into a liquid suitable for fuel, said process comprising: placing said fibers on said surface and absorbing oil by said fibers until said fibers become saturated with oil and then heating the oil saturated fibers to a temperature sufficient to change said saturated fibers to a liquid state.

5. A process for filtering with and converting thermoplastic synthetic fibers into a liquid suitable for fuel, said process comprising: passing an oil-bearing liquid mixture through said fibers until said fibers become saturated with oil and then heating the oil saturated fibers to a temperature sufficient to change said saturated fibers to a liquid state.

3,923,473

CARBON RESIDUE INHIBITOR FOR DISTILLATE FUELS

Charles A. Sandy, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 16, 1973, Ser. No. 416,598
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C10L 1/20
U.S. Cl. 44—62 **10 Claims**

1. A fuel oil composition comprising a fuel oil that boils in a range from about 250°F. to 800°F., and at least one member selected from the oil-soluble polymer group
   i. halogen-containing polypropylene
   ii. halogen-containing polybutylene
   iii. halogen-containing copolymer of propylene and butylene

wherein the polymer has a molecular weight from about 400 to 3,000 and contains from about 0.1% to 25% by weight of halogen, the halogen being selected from the group chlorine and bromine, the polymer being present at a concentration from about 0.004 to 0.4 percent weight of the composition.

3,923,474

ALKYLDIAMINOAMIDS OF FATTY ACIDS AS GASOLINE ADDITIVES

Joseph B. Yount, Newark, Del., assignor to ICI United States Inc., Wilmington, Del.

Filed Nov. 11, 1974, Ser. No. 522,709
Int. Cl.² C01L 1/22
U.S. Cl. 44—66 **4 Claims**

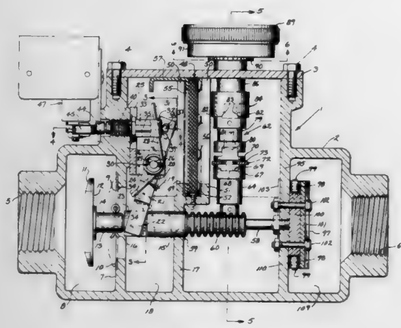
1. A gasoline fuel composition comprising from 0.003 to 0.15 percent by weight of a dual additive combination consisting of at least one compound having the general formula A: $RNHCH_2CH_2CH_2NHCOR'$ and at least one compound of the general formula B: $R''OCH_2CH_2CH_2NHCH_2CH_2CH_2—NHCOR'$, wherein R is an aliphatic hydrocarbon radical having 10–20 carbon atoms; R′ is an aliphatic hydrocarbon radical having 9–19 carbon atoms; and R″ is an aliphatic hydrocarbon radical having 10–15 carbon atoms in said formulas.

3,923,475

FIRECHECK

Wallace I. Stenzel, Thiensville; Frederick W. Kufrin, Janesville, and Donald J. Allen, Fort Atkinson, all of Wis., assignors to Waukee Engineering Co., Milwaukee, Wis.

Filed Oct. 25, 1973, Ser. No. 409,401
Int. Cl.² F16K 17/38, 31/54; F17D 3/00; F23D 13/46
U.S. Cl. 48—192 **24 Claims**



1. A firecheck adapted to be connected in a combustible fuel line, comprising a casing having an inlet and an outlet, a burner screen located within the casing between the inlet and the outlet, control valve means disposed within the casing between the inlet and the burner screen, opening means for moving the valve means to the open position, locking means for locking the valve means in the open position, biasing means for moving the valve means to the closed position on release of said locking means, means responsive to burning of the combustible gas on the downstream side of the screen to render said locking means ineffective and enable said biasing means to move the valve means to the closed position, said casing including aperture means located between the screen and the outlet, and movable check gate means for opening and closing said aperture means, said check gate means being normally in an open position and disposed to be moved to the closed position under the force of shock wave from a detonation downstream of said firecheck.

3,923,476

METHOD OF PRODUCING COATED ABRASIVE PARTICLES

Alexander Rose Roy, 16 Cecil St., Meredale, Johannesburg, Transvaal, and Johannes Daniel Van Schalkwyk, 904 Total Centre, Braamfontein, Johannesburg, Transvaal, both of South Africa

Filed Jan. 14, 1974, Ser. No. 433,242
Claims priority, application South Africa, June 5, 1973, 73/3773; Jan. 22, 1973, 73/0450
Int. Cl.² B24D 3/06, 3/28
U.S. Cl. 51—295 **8 Claims**

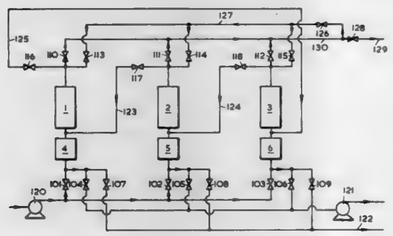
1. A method of producing coated abrasive particles for use in the manufacture of a resin-bonded abrasive tool in which the coating comprises an inner metallic layer and an outer solid resin protective layer, which method comprises the steps of providing a batch of particles coated with a metal selected from the group consisting of nickel and copper present in an amount from 20 to 80% by weight of the coated particle, removing metal oxides from the exposed surfaces of the particles, immediately thereafter depositing on the particles, before reoxidation of the exposed surfaces thereof occurs, a protective layer of a solid resin selected from the group consisting of phenolformaldehyde, epoxy, polyimide, alkyd, nonsaturated polyester and polyamide in an amount from 1 to 3% by weight of the coated particle, and recovering the particles as discrete particles having a metal/protective layer coating.

3,923,477

ADSORPTION SYSTEM

John Walter Armond, Great Bookham, and David Arthur Webber, Bishops Stortford, both of England, assignors to The British Oxygen Company Limited, London, England

Filed Oct. 22, 1974, Ser. No. 516,987
Claims priority, application United Kingdom, Oct. 23, 1973, 49567/73
Int. Cl.² B01D 53/02
U.S. Cl. 55—25 **15 Claims**



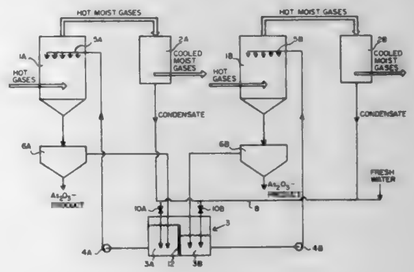
1. An adsorption process for increasing the proportion of a desired gas in a mixture of which it is a constituent which comprises the sequential step of passing the gas mixture at a pressure in the range 1.1 to 10.0 bars through an adsorption bed that preferentially adsorbs one or more other constituents of the mixture, returning the bed to atmospheric pressure by venting the absorbed gas in a direction counter to the direction of passing the gas mixture, evacuating residual gas from the bed by means of a vacuum pump in the same direction as the venting, restoring the adsorption pressure in the bed by introducing gas of the desired product quality in the same direction as the venting, introducing in the same direction as the gas mixture a partly enriched gas having a content of the desired gas less than the desired product but greater than the gas mixture and then repeating the sequence.

3,923,478

PROCESS AND AN APPARATUS FOR RECOVERING ARSENIC TRIOXIDE FROM GASES

Utz Gerhard Fiedler, Helsingborg, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed Feb. 11, 1974, Ser. No. 441,385
Claims priority, application Sweden, Feb. 14, 1973, 7302076
Int. Cl.² B01D 47/00
U.S. Cl. 55—68 **8 Claims**



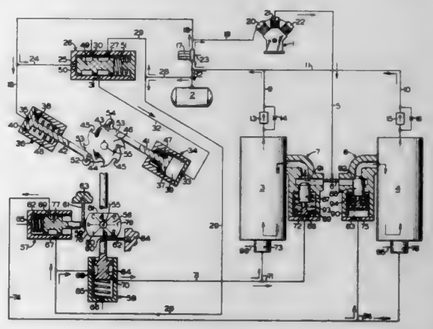
1. In a process for recovering arsenic trioxide from a gas washing out said oxide from the gas with a liquid having the ability of dissolving arsenic trioxide, said oxide being recovered from the obtained solution thereof by crystallization from a saturated solution, the improvement which comprises removing non-desirable deposits in the apparatus formed in connection with the saturated solution by dissolution with an unsaturated solution of arsenic trioxide in a closed system and under a continuous supply of gas.

3,923,479

MULTIPLE FILTER APPARATUS

William H. Glass, and Robert J. Bridigum, both of Pittsburgh, Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Sept. 21, 1973, Ser. No. 399,624
Int. Cl.² B01D 53/04
U.S. Cl. 55—163 **8 Claims**



1. In an apparatus for a compressed air system including an air compressor, a reservoir connected to filter units and to the compressor for storing compressed air therefrom, and a governor device connected to the reservoir and the compressor and operable cyclically and alternately responsively to compressed air in the reservoir at a certain high pressure to an unloading position for unloading the compressor and to compressed air in the reservoir at a certain low pressure to a loading position for loading the compressor:
   a. a plurality of conduit means arranged in parallel relation with each other and each having interposed therein re-

spective parallel choke and one-way check valve means via which compressed air may flow in one direction at an unrestricted rate from the compressor to the reservoir and in a reverse direction at a restricted rate from the reservoir;

b. a plurality of filter units interposed respectively in said plurality of conduit means between the compressor and the respective choke and check means, said filter units including means for filtering and accumulating moisture from compressed air flowing therethrough in said one direction and being purged of such accumulated moisture by compressed air flowing therethrough in said reverse direction to atmosphere, and including valve means connected to the compressor to alternately pass moisture laden air from compressor to the filter units; and wherein the improvement comprises:

c. purging means connected to the governor, reservoir and filter units for effecting filtering and purging operations of the filter units in such order of operation as to effect flow of compressed air in said reverse direction through all the filter units during each operation of the governor device to its said unloading position, and to effect flow of compressed air in said reverse direction through a selected number of said filter units and in said one direction through the others during each operation of the governor device to its said loading position.

3,923,480

OIL SEPARATOR

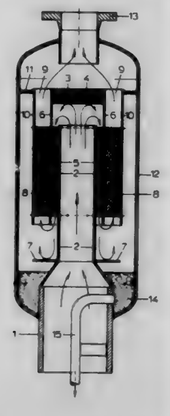
Tonny Dirk Henricus Visch, Weesp, Netherlands, assignor to James Howden Holima B.V., Amsterdam, Netherlands

Filed Apr. 18, 1973, Ser. No. 352,451

Claims priority, application Netherlands, Apr. 19, 1972, 7205226

Int. Cl.² B01D *47/00*

U.S. Cl. 55—257 **9 Claims**



1. An oil separator of the demister type comprising a tank having an inlet for flow of a gas stream containing oil to be separated and an outlet for flow of the gas stream from which oil has been separated, a conduit in said tank connected to said inlet for conveying the gas stream into the tank, said conduit having an open outlet in said tank, a baffle in said tank facing said outlet for reversing the direction of flow of the gas stream, means defining first and second passages in said tank for flow of the gas stream therethrough, a first demister pack in said first passage having an inlet facing said baffle for flow of the reversed gas stream therethrough and an outlet for exit of the gas stream, said first demister pack operating in supersaturated condition and extracting oil from said gas stream passing therethrough, a second baffle in said tank facing the outlet of said first demister pack to effect a second reversal of the gas stream, a second demister pack in said second passage having an inlet facing said second baffle for flow of the gas stream therethrough after the second reversal of said gas stream and an outlet for exit of the gas stream connected to said outlet of the tank, said second demister pack operating in unsaturated condition and extracting oil from said gas stream, and means in said tank for collecting oil extracted by said first and second demister packs.

3,923,481

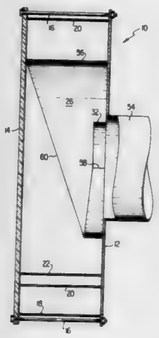
TURB-O-AIR SEPARATOR

Desmond J. Farrow, North East, Md., assignor to Turb-O-Jector, Inc., Nottingham, Pa.

Filed July 5, 1974, Ser. No. 486,228

Int. Cl.² B01D *45/12*

U.S. Cl. 55—398 **4 Claims**



1. An air separator for internal combustion engines comprising:

a first support means;

a second support means fixedly connected to said first support means;

intake means interposed between said first and second support means;

exhaust means defined within one of said support means and adapted to be connected to the intake of an internal combustion engine;

spiral baffle means secured to one of said support means and interposed between said first and second support means so as to be connected to said intake means for conducting an airstream from said intake means to said exhaust means along a spiral path;

a plurality of discharge apertures provided within the outer and inner peripheral walls of said baffle means so as to permit serial fluid communication between the inner and outer portions of said spiral path, the aperture within said outermost peripheral wall being open externally of said separator;

said baffle means comprising a plurality of serially arranged baffles arcuately spaced so as to define said apertures between said successive ones of said baffles, the axial extent of the innermost baffle of said serially arranged baffles being convergent toward said one of said support means and said exhaust means defined therein so as to permit the air to be exhausted to said engine through said exhaust means to be guided both radially inwardly and axially toward said exhaust means while simultaneously permitting dirt and dust particles to be conducted, under the influence of centrifugal force, radially outwardly over said innermost baffle and from that portion of said separator disposed radially within said innermost baffle towards the radially outer portions of said separator,

wherein dirt and dust particles will be discharged out of said separator under the influence of centrifugal force by successively migrating about said inner and outer portions of said spiral path as well as serially from said inner portions of said spiral path to said outer portions of said spiral path so as to be ultimately discharged out of said separator through said aperature within said outermost peripheral wall while clean air is conducted to said exhaust means through said spiral path.

3,923,482

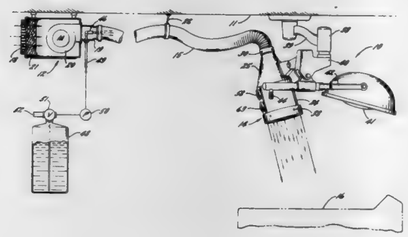
CLEAN AIR DIRECTING APPARATUS

James V. Knab, Grand Rapids; Charles Haeckler, Cannonsburg; John Bell, and Jerry Fellinger, both of Grand Rapids, all of Mich., assignors to James V. Knab, Grand Rapids, Mich.

Filed Apr. 12, 1972, Ser. No. 243,308

Int. Cl.² F24F *9/00, 13/08*

U.S. Cl. 55—412 **13 Claims**



12. Apparatus for directing clean air to a patient zone comprising a movable air discharge head having outer walls defining an air passageway, delivery tube connected at one end to said head, a blower unit connected to the other end of said delivery tube for causing a pressurized air flow through said tube and the air passage of said head, said head having a terminal outlet and means for directing and discharging said air flow from said terminal outlet into a central column of relatively low velocity laminar flow air, high efficiency filter means within said head substantially adjacent said terminal outlet, said high efficiency filter means being in direct engagement with and supported by the outer walls of said head and occupying an area completely across said air passageway for cleaning said central column of air flow to be substantially contaminant free, nozzle means within said head immediately upstream of said filter means for channeling an outer peripheral portion of said air flow and accelerating the flow thereof to create an outer sheath of relatively high velocity air surrounding said central column, said nozzle means being effective to direct said air sheath through an outer peripheral portion of said high efficiency filter means so that said central column and outer sheath both are substantially contaminant free, and said head being selectively positionable to permit direction of said contaminant free air column onto a selected operating area.

3,923,483

STEAM SEPARATOR

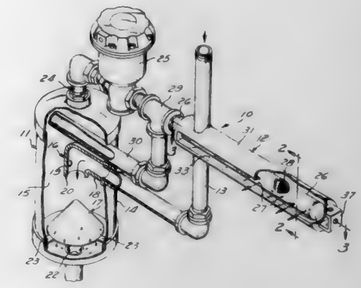
Milton Hilmer, Quakertown; John W. Ritter, Emmaus, and Niranjan Jiandani, Allentown, all of Pa., assignors to Sarco Company, Allentown, Pa.

Filed July 23, 1973, Ser. No. 381,878

Int. Cl.² B01D *45/08*

U.S. Cl. 55—463 **12 Claims**

1. A separator comprising housing means defining a chamber for separating water from wet supply steam, inlet conduit means connected to and in communication with said housing means for conducting wet supply steam to said housing means, said inlet conduit means having an outlet portion within said housing for controlling the inlet steam flow direction within the housing means, outlet conduit means connected to and in communication with said housing means for conducting dry steam from said housing means, separating means within said chamber, said separating means comprising a conical baffle having its axis in substantial alignment with the flow direction of the incoming steam and its apex pointing toward and in substantial axial alignment with said outlet portion, means defining a sealed re-evaporation chamber projecting through a wall of and into said housing means, and means providing fluid communication between said sealed chamber and said outlet conduit means operating to deliver water existing in said outlet conduit to said re-evaporation chamber and to return re-evaporated steam to said outlet conduit.



3,923,484

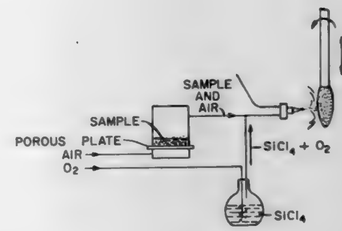
FLAME METHOD OF PRODUCING GLASS

Eric N. Randall, Bath, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 11, 1974, Ser. No. 432,572

Int. Cl.² C03B *23/20, 25/00;* **C23C** *11/00*

U.S. Cl. 65—18 **4 Claims**



1. A method for making a transparent, homogeneous glass body consisting of at least two constituent oxides comprising the steps:

a. entraining within a gas stream vapors of a compound of SiO_2, GeO_2, B_2O_3, P_2O_5, SeO_2, and mixtures thereof that will hydrolyze in a flame to produce the corresponding glass forming oxides in particulate form;

b. entraining within a gas stream finely divided solid particles that do not exceed about one micron in size of a metal oxide additive, or a metal or metal compound convertible thereto by heat treatment in a flame; and

c. combining said gas stream containing the said vapors and said gas stream containing the said finely divided solid particles and then passing the combined gas stream into the flame of a combustion burner to form and codeposit a homogeneous oxide mixture as a glass body free from visual inclusions of inhomogeneities.

3,923,485
METHOD OF FABRICATING A FLUOROCARBON-FILLED MULTIPLE GLAZED WINDOW UNIT

Helmut Franz, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 28, 1973, Ser. No. 429,442
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C03B *23/24*
U.S. Cl. 65—24 **3 Claims**

1. In a method of fabricating a welded, fluorocarbon-filled multiple glazed window which involves the steps of cleaning a pair of glass sheets, depositing a separating agent on at least one of the surfaces of the glass sheets, placing the sheets in face-to-face contact such that the separating agent is between the facing surfaces of the sheets, preheating the sheets while in face-to-face contacting relationship and then finally heating the sheets to fuse the edge portions of the sheets together, the improvement comprising:
   a. depositing a finely divided silica containing greater than about 98 percent by weight silica as the separating agent between the facing surfaces of the glass sheets; said silica being substantially free of chromium, titanium, tin, iron, vanadium and molybdenum.

3,923,486
METHOD OF PRODUCING LIGHT-CONDUCTING GLASS STRUCTURE

Ichiro Kitano, Kobe; Ken Koizumi, Itami, and Hiroyoshi Matsumura, Osaka, all of Japan, assignors to Nihon Itagarasu Kabushiki Kaisha, Japan

Division of Ser. No. 147,256, May 26, 1971, which is a continuation of Ser. No. 806,368, March 12, 1969, abandoned. This application Sept. 19, 1973, Ser. No. 398,832
Int. Cl.² C03C *15/00;* **G02B** *5/14*
U.S. Cl. 65—30 E **10 Claims**

1. A method for producing a glass fibrous structure for conducting light along the center axis thereof, characterized by having a refractive index distribution within said structure wherein a refractive index decreases continuously in a direction radially and outwardly from said center axis toward the outer surface of said structure, said method comprising: providing a glass fiber having a constant refractive index and a generally circular cross-section and containing therein a glass forming oxide and a first monovalent cation constituting a glass modifying oxide; contacting said glass fiber with a source of second monovalent cation all along the outer surface of the glass fiber at a high temperature and for a specific time to thereby cause migration of said first and second cations in the interior of said glass fiber at said temperature to thereby cause substitution of said second cation for said first cation in the glass of said glass fiber so as to decrease the refractive index of the glass fiber in a radially outward direction from said center axis; and controlling said specific time in such a manner that said second cation in said source migrates into said glass fiber through said outer surface of said glass fiber to thereby cause substitution of said second cation for said first cation so as to form concentration gradients of said first and second cations within the glass fiber, said gradients corresponding respectively to continuous increase and decrease of said first and second cations from said surface toward said center axis of said structure to thereby establish said refractive index distribution by said concentration gradients of said first and second cations.

9. A method for producing a glass fibrous structure for conducting light along the center axis thereof, characterized by having a refractive index distribution within said structure wherein the refractive index decreases continuously in a direction redially and outwardly from said center axis toward the outer surface of said structure, said method comprising: providing a glass fiber having a constant refractive index and a generally circular cross-section and containing therein a glass forming oxide and a first cation constituting a glass modifying oxide; contacting said glass fiber with a glass containing second cation all along the outer surface of the glass fiber at a high temperature and for a specific time to thereby cause migration of said first and second cations in the interior of said glass fiber at said temperature to thereby cause substitution of said second cation for said first cation contained in the glass of said glass fiber so as to decrease the refractive index of said glass fiber in a radially outward direction from said center axis, said contacting being carried out by fusing said glass onto the surface of said glass fiber; and controlling said specific time in such a manner that said second cation in said source migrates into said glass fiber through said outer surface of the glass fiber to thereby cause substitution of said second cation for said first cation so as to form concentration gradients of said first and second cations within the glass fiber, said gradients corresponding respectively to continuous increase and decrease of said first and second cations from said surface toward said center axis of said structure to thereby establish said refractive index distribution by said concentration gradients of said first and second cations.

3,923,487
METHOD OF MAKING GLASS AMPULS IN A NON-CONTAMINATING MANNER

Albert D. Lewis, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 170,555, Aug. 10, 1971, Pat. No. 3,719,463. This application Nov. 13, 1972, Ser. No. 305,881
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C03B *23/12*
U.S. Cl. 65—110 **1 Claim**

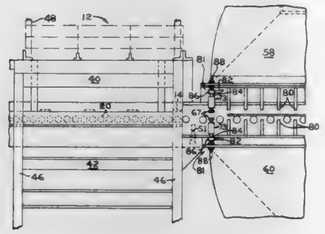


1. A method of forming two ampuls which are hermetically sealed and vacuum released from a one-piece glass tube comprising the steps of:
   heating a glass tube to a deformation temperature;
   forming two ampul bodies by sealing the ends of said tube and drawing the center section of the tube to a degree to form a constricted portion thus forming a sealed ampul body at each end of the end portion of the tube length;
   applying a small hydrogen oxygen flame about 0.005 inches in diameter to each ampul body to soften a portion of the glass, and then through the combined effort of the effect of the softened glass and a pressure difference within the ampuls due to a partial vacuum established during the forming process, forming a small hole in the glass ampul body thereby releasing the vacuum and equalizing the interior and exterior air pressure;
   removing said flame thereby causing the formed hole to close immediately while the glass of the ampul body is still softened thus hermetically sealing the ampul; and
   severing the common glass stem in the constricted section between the ampul bodies to form two sterile vacuum released ampuls from a one-piece glass tube.

3,923,488
METHOD OF TEMPERING FLAT GLASS SHEETS

Richard N. Pytel, Ford City; Fred H. Burdett, Worthington, and Steve M. Kozuch, Ford City, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 26, 1974, Ser. No. 464,405
Int. Cl.² C03B *27/00*
U.S. Cl. 65—114 **6 Claims**



1. In the art of tempering a substantially horizontally disposed glass sheet which is conveyed in a substantially horizontal direction in direct sequential contact with successive conveyor elements spaced longitudinally of and extending transversely of the path of glass movement through a hot atmosphere where said glass sheet is heated to an elevated temperature sufficient for tempering and which is thereafter conveyed through a cooling station where said hot glass sheet is exposed to cooling medium applied toward the upper and lower major surfaces of said sheet in an amount and at a rate sufficient to impart at least a partial temper to said sheet and wherein said sheet has sufficient length to develop a convexly curved deviation from flatness in its leading edge portion, the improvement comprising applying a cooling medium to a portion of the major surface of the glass sheet adjacent to said leading edge portion wherein said convexly curved deviation from flatness occurs along a longitudinally extending portion thereof spaced from said leading edge of said glass sheet as said glass sheet moves from said hot atmosphere to said cooling station, said cooling medium being applied in an amount and at a rate sufficient to minimize said convexly curved deviation from flatness.

3,923,489
PELLETIZED FERTILIZER

Ralph W. Richardson, 195 Mount Lebanon Blvd., Pittsburg, Pa. 15228

Filed May 23, 1973, Ser. No. 363,126
Int. Cl.² C05D *9/00;* **C05C** *3/00;* **C05F** *11/00*
U.S. Cl. 71—61 **1 Claim**

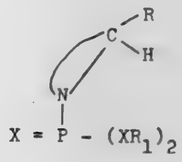
1. A method for making a pelletized nitrogen fertilizer where the nitrogen content of the final fertilizer product is regulated comprising:
   a. thoroughly mixing dry ammonium sulphate with fly ash in the proportions of at least one part ammonium sulphate to three parts fly ash by weight whereby the nitrogen content is regulated by the amount of fly ash added to the ammonium sulphate while both are being dry mixed;
   b. making a saturated solution of ammonium sulphate and water;
   c. blending the mixture of dry ammonium sulphate and fly ash with the saturated solution of ammonium sulphate and water to form a wet doughy mass;
   d. forming the said wet doughy mass into small individual particles by pelletizing the same; and
   e. drying the individual particles to form a granulated fertilizer.

3,923,490
USE OF 1,2-DIHYDRO-PYRIDINE-N-PHOSPHONATES AND THIOPHOSPHONATES AS MICROBIOCIDES

Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 210,106, Dec. 20, 1971, Pat. No. 3,821,232. This application Mar. 19, 1974, Ser. No. 453,013
Int. Cl.² A01N *9/36*
U.S. Cl. 71—67 **11 Claims**

1. A process for inhibiting bacteria, algae, fungi and protozoa in aqueous or petroleum hydrocarbon systems which comprises adding to said system a small but effective amount of a microbiocide which is a dihydro-nitrogen phosphonate of the formula



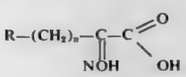
where N — C represents a 1,2-dihydropyridine group, R and R_1 are lower alkyl or phenyl and X is O or S.

3,923,491
GROWTH REGULANTS FOR PLANTS

John B. O'Brien, Watertown, Conn., and Herman Stone, Andover, Mass., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 9, 1973, Ser. No. 387,053
Int. Cl.² A01N *5/00*
U.S. Cl. 71—76 **6 Claims**

1. A method for increasing the yield of leguminous and ornamental plants via height retardation which comprises applying to said plants an effective amount of a compound having the formula:



wherein *n* is an integer from 1–12 and R is selected from the group consisting of hydrogen, alkyl of 1–12 carbon atoms, cycloalkyl of 3–12 carbon atoms, alkenyl of 3–12 carbon atoms and alkynyl of 3–12 carbon atoms.

3,923,492
REGULATING PLANT GROWTH WITH 7-METHYLINDOLE

David John Collins, Ascot, and Edwin Francis George, Eversley, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 17, 1974, Ser. No. 480,271
Claims priority, application United Kingdom, June 29, 1973, 31024/73
Int. Cl.² A01N *9/22*
U.S. Cl. 71—76 **5 Claims**

1. The method of regulating the growth of plants which comprises applying to the plants 7-methylindole in an amount sufficient to at least stunt the growth thereof.

3,923,493
HERBICIDE

Nikolai Nikolaevich Melnikov, ulitsa Dm. Ulyanova, 4, korpus A, kv. 96; Artur Felixovich Grapov, Davydkovskaya ulitsa, 10, kv. 106; Tamara Fedorovna Kozlova, Kolomensky proezd, 1, korpus 8, kv. 75, all of Moscow; Galina Borisovna Shakhova, Proletarskaya ulitsa, 8, kv. 20; Valery Pavlovich Pokatun, Tsentralnaya ulitsa 39/7, kv. 11, both of Schelkovo Moskovskoi oblasti; Leonid Dmitrievich Stonov, Lavrushensky pereulok, 17, kv. 21; Ljudmila Alexandrovna Bakumenko, ulitsa Gorkogo, 54, kv. 86, both of Moscow; Tatyana Akimovna Sergeeva, ulitsa Likhacheva 11, and Lidia Mikhailovna Titova, ulitsa Likhacheva 19, all of Dolgoprudny Moskovskoi oblasti, all of U.S.S.R.

Filed Jan. 6, 1972, Ser. No. 215,913
Int. Cl.² A01N 9/36
U.S. Cl. 71—87 2 Claims

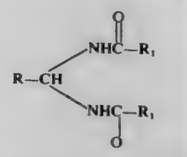
1. A herbicidal composition comprising as an active ingredient an effective amount of the compound 0-(2-chloro-4-methylphenyl)-N-sec.-butylamido chloromethylthiophos

3,923,494
GEM-BIS AMIDE HERBICIDE ANTIDOTE COMPOSITIONS AND METHODS OF USE

Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed May 24, 1973, Ser. No. 363,464
Int. Cl.² A01N 9/00
U.S. Cl. 71—88 7 Claims

1. An herbicide composition comprising a mixture of a herbicidally effective amount of a thiocarbamate herbicide and an antidote compound corresponding to the formula



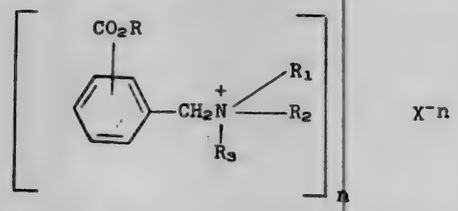
in which R is substituted phenyl wherein said substituent is 3,4-methylenedioxy; and R_1 is lower chloroalkyl containing from 1 to 4 carbon atoms, inclusive; from about 0.01 to about 15 parts by weight of antidote compound for each part by weight of the thiocarbamate herbicide.

3,923,495
(CARBOXYBENZYL) TRIALKYL AMMONIUM SALTS AS PLANT GROWTH REGULANTS

Gerhard H. Alt, Creve Coeur, and Robert K. Howe, Bridgeton, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 4, 1974, Ser. No. 529,415
Int. Cl.² A01N 9/20
U.S. Cl. 71—111 10 Claims

1. A method of regulating the growth of leguminous plants which comprises treating said leguminous plants with an effective amount of a compound of the formula



where R is a lower alkyl; R_1, R_2 and R_3 are independently lower alkyl, with the proviso that when R is propyl in the ortho position, R_1, R_2 and R_3 are not methyl; X^{-n} is an anion selected from the group consisting of Br^-, Cl^-, I^-, NO_3^-, SO_4^{-2} and CO_3^{-2}; and n is the numerical value of the valence state of the anion X^{-n}.

3,923,496
NICKEL POWDER AND A PROCESS FOR PRODUCING IT

David B. Pall, Forest Hills, N.Y., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 26, 1945, Ser. No. 590,427
Int. Cl.² B22F 9/00
U.S. Cl. 75—.5 AA 3 Claims

1. The method of producing nickel powder which comprises reacting oxalic acid with aqueous nickel nitrate to produce nickel oxalate, heating the nickel oxalate in an atmosphere of carbon dioxide at a temperature in the range of 450°C. to 850°C. in the presence of a small amount of a particle grain growth inhibitor to produce a substantially pure nickel powder of uniform particle size and thereafter heating the powder in a mildly oxidizing atmosphere at an elevated temperature of less than 100°C. to render the powder non-pyrophoric.

3,923,497
PROCESS FOR THE RECOVERY OF TANTALUM AND NIOBIUM AND OTHER METALS FROM TIN SLAG

John J. Scott, Niagara Falls, Canada, assignor to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 297,595, Oct. 16, 1972, Pat. No. 3,811,867. This application Mar. 21, 1974, Ser. No. 453,275The portion of the term of this patent subsequent to May 21, 1991, has been disclaimed.
Int. Cl.² C22B 51/00
U.S. Cl. 75—24 2 Claims

1. A process for the recovery of tantalum and niobium and other metals from commercial tin slag by the reduction of the oxides of said metals, by fusion of the tin slag in the presence of a reducing agent, wherein the improvement comprises:

adding to said tin slag a sufficient amount of a material selected from the group consisting of aluminum oxide, calcium oxide, silicon oxide-aluminum oxide, silicon oxide-calcium oxide, and aluminum oxide-calcium oxide to produce a molten bath having principally a $CaO.Al_2O_3.SiO_2$ phase that melts at a temperature 100° to 400° C. greater than the $CaO.Al_2O_3.SiO_2$ phase of said tin slag, said amount being determined by reference to a $CaO.Al_2O_3.SiO_2$ phase diagram; fusing the mixture of tin slag and additional aluminum oxide, calcium oxide, silicon oxide-aluminum oxide, silicon oxide-calcium oxide, or aluminum oxide-calcium oxide, in a tapping type arc furnace, periodically tapping off the tantalum-niobium depleted molten slag and replacing said tapped slag with a further addition of said mixture, repeating said slag tapping and mixture addition steps until a substantial amount of tantalum-niobium containing alloy has accumulated in the bottom of said furnace, and tapping said alloy from the bottom of the furnace.

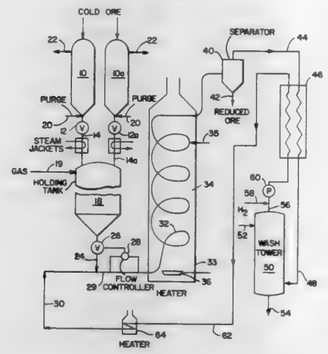
3,923,498
PROCESS FOR THE REDUCTION OF TITANIFEROUS ORES

William Volk, Princeton, N.J., assignor to Hydrocarbon Research, Inc., Morristown, N.J.

Continuation of Ser. No. 318,219, Dec. 26, 1972, abandoned. This application Aug. 19, 1974, Ser. No. 498,328
Int. Cl.² C21B 13/00
U.S. Cl. 75—35 2 Claims

1. The method of fluidized direct reduction of the iron oxide in a particulate titaniferous ore without substantial reduction of titanium oxide using a hydrogen-rich reducing gas, wherein the ore is sized to all pass 20 mesh screen (U.S. Std.) with not more than 25 percent passing 325 mesh screen and which consists essentially of:

a. pressurizing said ore and feeding it at a controlled rate upwardly through a vertical tubular heating zone together with a hydrogen-rich reducing gas at a temperature in the order of at least 1,000°F and at a pressure of at least 100 psig under conditions to establish a dilute phase loading of the ore in the range of three to 5 pounds per cubic foot gas entering the heating zone;



b. externally heating the gas-ore mixture in said heating zone to a temperature above 1350°F but not in excess of 1650°F; and

c. controlling the slip factor of the gas-ore mixture in the tubular heating zone in the order of at least 3 whereby a reduction in the range of 30 to 50 percent of the iron oxide is accomplished;

d. separating the reduced ore and gas effluent;

e. purifying the gas;

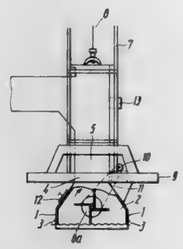
f. recycling the gas to the heating zone together with high purity make-up hydrogen; and

g. removing the reduced ore as product.

3,923,499
METHOD OF REMOVING SOLIDS (E.G. COPPER DROSS) FROM MOLTEN-LEAD BATHS

Peter Manthey, Krefeld-Bockum, and Hermann Matthies, Angermund, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sept. 21, 1973, Ser. No. 399,511
Claims priority, application Germany, Sept. 29, 1972, 2247737
Int. Cl.² C22B 13/06
U.S. Cl. 75—78 2 Claims



1. A process for removing a layer of substantially fine-grain solid material formed by refining and consisting of copper dross upon a bath of molten lead, comprising the steps of:

loosening said layer by mechanically disturbing it with a rotary beater extending into the copper dross on the surface of the bath and simultaneously sucking the loosened layer of solid material off from the bath directly upwardly in a gas stream by evacuation, and separating the solids from the gas stream in a filter device.

3,923,500
COPPER BASE ALLOY

Kunio Kitazawa, Takada, and Tatsuichi Fukusako, Tokyo, both of Japan, assignors to Toyo Valve Co., Ltd., Tokyo, Japan

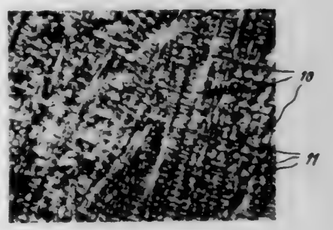
Continuation of Ser. No. 277,750, Aug. 3, 1972, abandoned. This application Sept. 4, 1974, Ser. No. 503,086
Claims priority, application Japan, Aug. 11, 1971, 46-60274; Mar. 1, 1972, 47-21375; Mar. 2, 1972, 47-21764; Mar. 3, 1972, 47-22001
Int. Cl.² C22C 9/01, 9/02
U.S. Cl. 75—156.5 8 Claims

1. A high strength copper base alloy possessing excellent corrosion resistance and machinability, consisting essentially of 0.1 – 4 percent by weight Sn, 0.1–4 percent by weight Zn, 0.1–4 percent by weight Pb, and 5.0 to 10 percent by weight Al, the balance being essentially copper.

3,923,501
FILLER SOLDER

Carl R. Di Martini, Piscataway, and Michael Myers, New Brunswick, both of N.J., assignors to Asarco Incorporated, New York, N.Y.

Filed Jan. 9, 1974, Ser. No. 432,107
Int. Cl.² C22C 11/08, 11/10
U.S. Cl. 75—166 C 6 Claims



1. A filler solder containing essentially the following constituents in proportions within the proportion ranges hereafter set forth:

	% by Weight
Antimony	1.5 to 5.3
Arsenic	0.7 to 2.5
Tin	0 to 0.20
Lead	substantially the remainder

the total arsenic plus antimony being at least 3.5% but not more than 6%, the solder being substantially free of hard tin-arsenic platelets and free of an undesirable grittiness due to elimination of the hard tin-arsenic platelets, the solder having a freezing range corresponding to a liquidus of about 285°C. and a solidus of about 245°C., and a plasticity at an application temperature within the about 245°C. to about 285°C. freezing range such as to enable the solder plastic mass to be readily applied to an automobile body.

3,923,502
NEUTRON-ABSORBING ALLOY

Kim Isaevich Portnoi, ulitsa Vavilova, 48/4, kv. 395; Lidia Borisovna Arabei, 15 Parkovaya ulitsa, 42, korpus 5, kv. 57; Georgy Mikhailovich Gryazno, ulitsa Vernads kogo, 95, korpus 2, kv. 266; Lev Izrailevich Levi, B. Cherkizovskaya ulitsa, 5, korpus 1, kv. 112; Gleb Leonidovich Lunin, ulitsa Raspletina, 17, korpus 2, kv. 17; Valery Mikhailovich Kozhukhov, ulitsa Vlasova, 11, korpus 4, kv. 73; Jury Mikhailovich Markov, Khoroshevskoe shosse, 39, korpus 1, kv. 58, and Mikhail Egorovich Fedotov, Baikalskaya ulitsa, 15, kv. 203, all of Moscow, U.S.S.R.

Filed Jan. 16, 1974, Ser. No. 433,854
Int. Cl. C22c *19/00*
U.S. Cl. 75—170 2 Claims

1. A neutron-absorbing alloy consisting essentially of the following ingredients in % by weight:
indium, between 1 and 20;
samarium, between 0.5 and 15;
hafnium, between 5 and 18;
nickel, the balance required to obtain 100.

3,923,503
ELECTROSTATIC LATENT IMAGE DEVELOPMENT EMPLOYING STEEL CARRIER PARTICLES

Robert J. Hagenbach, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

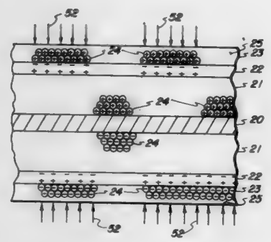
Division of Ser. No. 369,036, June 11, 1973, Pat. No. 3,849,182, which is a continuation-in-part of Ser. No. 834,862, June 19, 1969, abandoned. This application July 18, 1974, Ser. No. 489,631
Int. Cl. G03g *13/08*
U.S. Cl. 96—1 SD 9 Claims

1. A method of forming a visible toner image comprising the steps of forming an electrostatic latent image on a recording surface and contacting said electrostatic latent image with a developer mixture until at least a portion of said toner particles are attracted to and held on said surface in conformance to said electrostatic latent image, said developer mixture comprising about one part by weight of finely-divided toner particles electrostatically adhering to the surface of about 10 parts to about 200 parts by weight of highly shape-classified low carbon hypereutectoid steel carrier particles having an average particle size between about 50 microns and about 1,000 microns and a specific gravity of at least about 7 grams per cubic centimeter, said steel carrier particles having been heat treated to a tempered martensitic microstructure with an average hardness of 40-55 Rockwell C in an air or oxygen atmosphere at temperatures ranging between about 500°F and about 1,000°F to provide an oxide surface layer comprising Fe_3O_4 on said steel carrier material, said oxide surface layer having a thickness between about 0.2 and about 5.0 microns, said steel carrier particles comprising carrier cores having a composition comprising about 95.0 to about 99.0 parts iron, about 0.1 to about 2.0 parts carbon, about 0.5 to about 2.0 parts manganese, about 0.5 to about 2.0 parts silicon, about 0.03 to about 0.1 parts aluminum, about 0.01 to about 0.05 parts phosphorus, and about 0.02 to about 0.05 parts sulphur, said treated carrier particles being overcoated with a resinous coating material capable of electrostatically releasing said electrostatically adhering toner particles to said electrostatic latent image.

3,923,504
MIGRATION IMAGING MEMBER AND METHOD

Lloyd F. Bean, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 29, 1973, Ser. No. 327,363
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G03G *5/00, 13/00*
U.S. Cl. 96—1.5 66 Claims



1. A method of preparing circuit components comprising;
a. providing a member comprising a softenable dielectric layer and a migration layer, said migration layer comprising electrically conductive migration material and substantially electrically insulating softenable material, said softenable dielectric layer and electrically insulating softenable material capable of becoming softened upon exposure to a softening agent, sufficiently to allow migration of migration material in depth in said softenable dielectric layer and electrically insulating softenable material; said migration layer residing on said softenable dielectric layer;
b. applying a migration force to said migration material by selectively creating a charge pattern without optical exposure in said migration layer in at least one circuit component configuration;
c. softening the softenable dielectric layer and electrically insulating softenable material at least sufficient to allow imagewise migration of at least one portion of electrically conductive migration material from said migration layer at least in depth into said softenable dielectric layer, with at least one portion of electrically conductive migration material remaining in said softenable migration layer, at least one of said migrating and remaining portions of conductive migration material being in said circuit component configuration; and,
d. removing the electrically insulating softenable material from the migration layer so that said remaining portion of electrically conductive migration material remains atop said softenable dielectric layer.

29. A circuit member, comprising:
a. a softenable dielectric layer;
b. electrically conductive migration material within said softenable dielectric layer forming at least one electrically conductive circuit component; and
c. a dielectric substrate upon which said softenable dielectric layer resides, said dielectric substrate being provided on its free surface with a discontinuous conductive coating comprising discrete portions, at least one of which discrete portions sandwiches the dielectric substrate between said at least one discrete portion and said at least one electrically conductive circuit component.

3,923,505
RECORDING MATERIAL HAVING AN ELECTROCONDUCTIVE LAYER COMPRISING THE REACTION PRODUCT OF EPIHALOHYDRIN WITH POLYETHYLENEMINE

Daniel Maurice Timmerman, Mortsel, and Walter Frans De Winter, Berchem, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

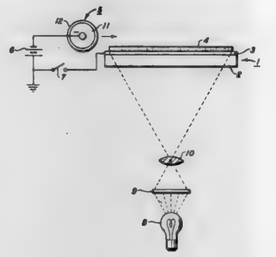
Filed June 15, 1973, Ser. No. 370,327
Claims priority, application Germany, June 16, 1972, 028432
Int. Cl.² G03G *5/04*
U.S. Cl. 96—1.5 9 Claims

1. An electroconductive substrate comprising a support of paper or synthetic polymer, an electroconductive layer coated on at least one side of said support, said electroconductive layer having a surface resistance measured at 15 % of relative humidity lower than 10^{11} ohm/sq., said electroconductive layer consisting of or including a major proportion of an aminoalkylated polyethyleneimine resulting from the reaction at 50°C of epihalohydrin with polyethyleneimine in the presence of an organic tertiary amine, said polymer being soluble in water and becoming insoluble by heating at 100°C.

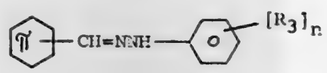
3,923,506
PHOTOELECTRIC AND ELECTROPHOTOGRAPHIC PIGMENTS COMPRISING DERIVATIVES OF CONDENSED POLYCYCLIC AROMATIC HYDROCARBON ALDEHYDES

John Alf Bergfjord, Macedon; Steven James Grammatica, Webster, and Richard William Radler, Marion, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 5, 1973, Ser. No. 337,787
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G03G *13/14, 13/01, 5/04*
U.S. Cl. 96—1.5 7 Claims



1. An electrophoretic imaging suspension comprising a electrically insulating liquid carrier medium having dispersed therein an electrically photosensitive pigment composition comprising a mixture of pigments, at least a first of said pigments selected from the group consisting of cyan, magneta, or mixtures thereof, and another of said pigments comprising a pigment having the formula:



wherein:



represents a condensed polycyclic aromatic group having from about 14 to about 20 carbon atoms:

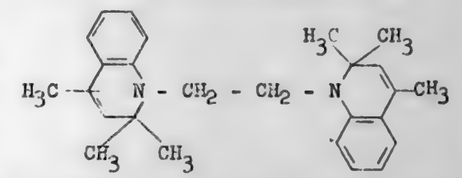
R_3 is selected from the group consisting of: H, OH, CH_3, OCH_3, C_2H_5, OC_2H_5, $COCH_3$, CO_2CH_3, COC_2H_5, $CO_2C_2H_5$, NO_2, CN, SO_2NH_2, $SO_2NHC_6H_5$, Cl, F, Br, I; and
n is a positive integer from 1–3.

3,923,507
SENSITIZED ELECTROPHOTOGRAPHIC LAYERS

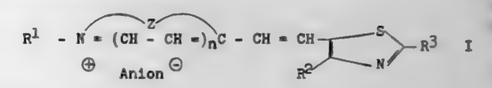
Hans Ohlschlager, Cologne; Oskar Riester, Leverkusen, both of Germany; Theofiel Hubert Ghys, Kontich, Belgium; Karel Eugeen Verhille, Hoboken, Belgium, and Johannes Josephus Vanheertum, Halle-Zand-Hoven, Belgium, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Mar. 19, 1973, Ser. No. 342,886
Claims priority, application Germany, Mar. 23, 1972, 2214054
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G03G *5/04, 5/06*
U.S. Cl. 96—1.6 1 Claim

1. An electrophotographic recording material having a layer support and at least one sensitized photoconductive layer containing a photoconductor and a sensitizing dye, wherein the improvement comprises embedded in a binder a photoconductor selected from the group consisting of zinc oxide, 1-ethyl-3-phenyl-7-diethylamino-2-(1H)-quinoline, the photoconductor compound of the following formula:

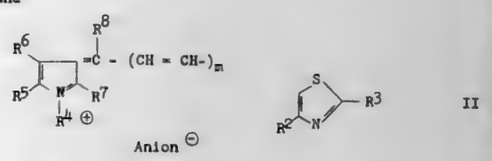


and in the photoconductor a sensitizing dye compound of one of the following formulae:



I

and



II

in which
R^1 is a saturated or unsaturated aliphatic group having up to six carbon atoms and which may be substituted, a cyclohexyl or a phenyl group;
R^2, R^4 and R^8 is a hydrogen atom or a saturated or unsaturated aliphatic group having up to six carbon atoms or a phenyl group;
R^3 is an $-SR^9$ or $NR^{10}R^{11}$ group;
R^5, R^6 is a hydrogen atom a saturated or unsaturated aliphatic group having up to three carbon atoms, or R^5 and R^6 together represent the ring members required to complete a condensed benzene or naphthalene ring;
R^7 is a hydrogen atom, a saturated or unsaturated aliphatic group having up to three carbon atoms or a phenyl group;
R^9, R^{10} and R^{11} is a saturated or unsaturated aliphatic group containing up to six carbon atoms; or R and R together denote a radical required to complete a heterocyclic ring selected from the group consisting of pyrrolidone, piperidine, morpholine, thiomorpholine, indoline and tetrahydroquinoline rings;
n is 0 or 1;

m is 0 or 1;

Anion $^-$ is an anion selected from the group consisting of a halide, perchlorate, sulfate, methyl sulfate, p-toluene-sulfonate, acetate and oxalate, this being absent in cases where R^1, R^4 or R^6 contains an acid group in the anionic form so that a betaine is present;

Z is a radical required to complete a heterocyclic group comprising a 5- or 6-membered heterocyclic ring of the type used in cyanine dyes.

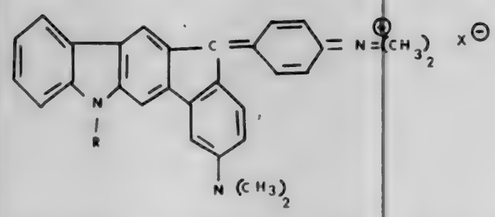
3,923,508

DYED POLYVINYL CARBAZOLE PHOTOCONDUCTIVE LAYER

Karel Kriz, Marlboro, Mass.; Susan B. Gorman, Barrington, and John J. Krajewski, Wheeling, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Jan. 10, 1974, Ser. No. 432,254
Int. Cl.² G03G *5/09*
U.S. Cl. 96—1.6 **8 Claims**

1. A photoconductive layer sensitive to visible light comprising polyvinyl carbazole and a dye having the structure:



where R is hydrogen or an alkyl group having from 1 to 10 carbon atoms, and X is a negative counterion, said dye being present in said polyvinyl carbazole in a proportion of from about 1×10^{-5} to about 1×10^{-4} mole of dye per gram of polyvinyl carbazole.

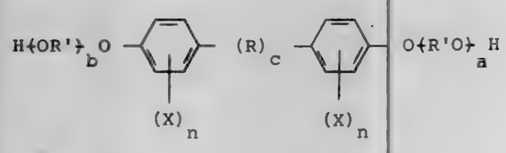
3,923,509

WATER-SOLUBLE POLYESTER RESINS AS BINDERS FOR PHOTOCONDUCTORS

Erich Kuehn, Wilmington, and John R. Wyhof, Newark, both of Del., assignors to ICI United States Inc., Wilmington, Del.

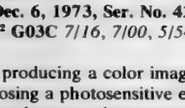
Division of Ser. No. 362,539, May 21, 1973, Pat. No. 3,865,869. This application Oct. 10, 1974, Ser. No. 513,887
Int. Cl.² G03G *5/06, 5/08*
U.S. Cl. 96—1.8 **12 Claims**

1. An electrophotographic recording element comprising a base support having coated thereon a layer comprising a photoconductive material and an amine salt of a polyester resin said resin comprising the reaction product of a dicarboxylic acid or an anhydride thereof, provided that at least 80 mol percent of said acid or anhydride is an alpha unsaturated dicarboxylic acid, an anhydride thereof, an aromatic dicarboxylic acid or an anhydride thereof, and a polyol blend comprising a first polyol having the following formula:



wherein

R is an alkylidene group containing from 1 to 4 carbon atoms, a cycloalkylidene group containing 5 or 6 carbon atoms, oxygen, sulfur, or a radical having one of the following formulas:



c is 0 or 1;

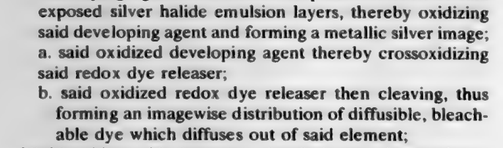
X is halogen or an alkyl radical containing from 1 to 3 carbon atoms;

n is an integer equal to from 0 to 4;

R′ is an alkylene group containing from 2 to 4 carbon atoms or the radical $CH_2CH\phi$; and

a and *b* are integers each of which is equal to at least 1 and the sum of which is equal to about 2, provided that the sum must be equal to at least 2.0;

and a second polyol having the following general formula:



wherein

R, c, X, R′, and n are as defined above and a and b are integers each of which is equal to at least 1 and the sum of which is equal to from about 9 to about 16; wherein the amount of acid or anhydride employed is sufficient to introduce from about 0.8 to about 1.2 carboxyl groups per hydroxyl group in the polyol blend and the amine has a boiling point of less than about 100°C.

2. An electrophotographic recording element, as claimed in claim **1**, wherein the photoconductive material is zinc oxide.

3,923,510

PROCESS FOR PRODUCING COLOR IMAGES BY BLEACHING REDOX DIFFUSIBLE DYE RELEASERS

Jon T. Staples, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 6, 1973, Ser. No. 422,390
Int. Cl.² G03C *7/16, 7/00, 5/54, 5/32*
U.S. Cl. 96—20 **20 Claims**

1. A process for producing a color image comprising:

I. imagewise exposing a photosensitive element comprising a support having thereon at least one photosensitive silver halide emulsion layer, said emulsion layer having associated therewith a nondiffusible redox dye releaser which will redox with oxidized developing agent to release a diffusible, bleachable dye, said redox dye releaser being a ballasted, bleachable dye wherein the ballast group is linked to the dye through a linkage which is cleavable upon oxidation;

II. treating said photosensitive element with an alkaline processing composition in the presence of a silver halide developing agent to effect development of each of said exposed silver halide emulsion layers, thereby oxidizing said developing agent and forming a metallic silver image;

a. said oxidized developing agent thereby crossoxidizing said redox dye releaser;

b. said oxidized redox dye releaser then cleaving, thus forming an imagewise distribution of diffusible, bleachable dye which diffuses out of said element;

III. bleaching said element to decolorize any imagewise-released dye which has not diffused out of said element; and

IV. removing said metallic silver and silver halide from said element by bleaching and fixing;

whereby a dye image is obtained in said element which is the reverse of said metallic silver image.

3,923,511

PHOTOGRAPHIC PROCESS AND COMPOSITION EMPLOYING CO(III) COMPLEXES AND SILVER HALIDE SOLVENTS

Vernon Leon Bissonette, Brockport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 189,289, Oct. 14, 1971, abandoned, and a continuation-in-part of Ser. No. 312,168, Dec. 4, 1972, abandoned. This application Oct. 1, 1973, Ser. No. 402,432
Int. Cl.² G03C *7/16, 7/00, 5/32, 5/38*
U.S. Cl. 96—22 **23 Claims**

4. A photographic monobath process wherein a photographic element comprising a support having thereon an imagewise-exposed photosensitive silver halide is contacted with an alkaline processing solution in the presence of a reducing agent for said metal salt to form a first image comprising silver and forming a second photographic image in the areas of said first image, and said silver image and said photosensitive silver halide are bleached and fixed with the combination of a cobalt(III) complex with a solvent for said photosensitive silver halide, said alkaline processing solution containing said solvent for said photosensitive silver halide, and said cobalt(III) complex being present in said alkaline processing solution or said photographic element, said solvent for said photosensitive silver halide and said cobalt(III) complex bleaching and fixing said silver image and said photosensitive silver halide after formation of said second photographic image.

23. In a photographic film unit comprising:

a. a photosensitive element comprising a support having thereon at least one photosensitive silver halide emulsion layer, each said silver halide emulsion layer having associated therewith a dye image-providing material;

b. a rupturable container containing an alkaline processing composition; and

c. a silver halide developing agent;

the improvement wherein said film unit contains a cobalt(III) complex and a silver halide solvent capable of bleaching and fixing said element.

3,923,512

IMAGE RECORDING PROCESS

John S. Berkes, Webster; William J. Hillegas, Fairport, and Samuel W. Ing, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 129,184, March 29, 1971, abandoned. This application Aug. 23, 1972, Ser. No. 283,124
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G03G *13/00*
U.S. Cl. 96—27 R **13 Claims**

1. A method of imaging which comprises exposing an amorphous layer of arsenic trisulfide to a pattern of light having wavelengths less than the bandgap radiation of said arsenic trisulfide, whereby the optical density of the amorphous layer is increased in the areas exposed to the light to form a visible image and heating the imaged layer to a temperature above that at which the image was formed to erase the image.

3,923,513

DIRECT POSITIVE PROCESSING OF SILVER HALIDE WITH METAL DOPANTS IN DIFFUSION TRANSFER FILMS

Francis John Evans, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 324,611, Jan. 18, 1973, abandoned, which is a division of Ser. No. 123,005, March 10, 1971, Pat. No. 3,761,276. This application Aug. 9, 1974, Ser. No. 496,433
Int. Cl.² G03C *7/00, 5/54, 5/24, 1/40*
U.S. Cl. 96—29 D **23 Claims**

1. In an image-transfer film unit which comprises an image-receiving layer, at least one layer of a photo-sensitive composition having associated therewith an image dye-providing material, a developing agent, and a processing composition which can be discharged to facilitate development of said photosensitive composition by passing said unit between a pair of juxtaposed pressure-applying members, the improvement comprising (1) said photosensitive composition in said film unit comprising unfogged silver halide grains having metal dopants occluded therein, which grains have been chemically sensitized on the surface thereof (a) to a level which will provide a density of less than 0.4 when developed in Kodak Developer DK-50 for 5 minutes at 27°C after imagewise exposure when said photosensitive composition is coated at a coverage of between about 300 to about 400 mg of silver per square foot and (b) to at least a level which would provide a density of 0.5 using undoped silver halide grains of the same grain size and halide composition when coated, exposed and developed in like manner, and (2) a fogging agent located in said film unit whereby it will be in contact with said photosensitive composition upon discharge of said processing composition.

3,923,514

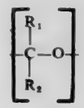
METHOD FOR THE PREPARATION OF RELIEF PRINTING MASTERS

Dana G. Marsh, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 27, 1974, Ser. No. 483,869
Int. Cl.² G03C *5/00, 1/68*
U.S. Cl. 96—35 **10 Claims**

1. A method for the preparation of a relief printing master which comprises exposing to activating radiation in an imagewise manner a printing plate which comprises a substrate having on its surface a film of a composition consisting essentially of

a. a degradable polymer containing units of the formula:



wherein R_1 is hydrogen or methyl and R_2 is hydrogen, an alkyl radical of 1 to 6 carbon atoms, a chlorinated or fluorinated aliphatic radical of 1 to 6 carbon atoms or a cyano substituted radical of 1 to 5 carbon atoms provided that when R_1 is methyl, R_2 is also methyl, and

b. a photo-oxidant which upon activation is capable of abstracting an electron from one or more of the oxygen atoms in said polymer.

3,923,515

X-RAY FILM WITH REDUCED PRINT-THROUGH

Albert L. van Stappen, Rumson, N.J., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

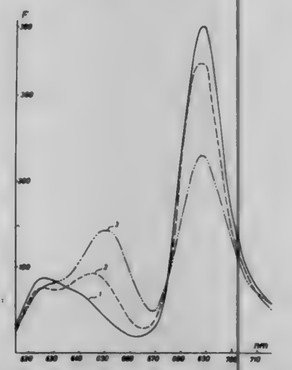
Filed June 24, 1974, Ser. No. 482,570
Int. Cl. G03c *1/92, 1/46*
U.S. Cl. 96—45.1 **10 Claims**

1. An improved X-ray film comprising a support bearing on both sides a layer of a low speed, fine grain silver halide emulsion overcoated with a layer of a high speed silver halide emulsion, the high speed emulsion having a photographic speed from 2 to 10 times that of said low speed emulsion, and said low speed emulsion having a silver halide grain size of from 0.1 to 1.4 micron.

3,923,516
RECORDING INFORMATION BY MEANS OF A PHOTOSENSITIVE MATERIAL OF BIOLOGICAL ORIGIN

Esther Dujardin, Avenue des Bois 8, B 4050, Mery-Esneux; Ysbrand Kuiper, Grammerode 21, B 3800, St. Truiden; René Cremer, Avenue des Tilleuls 2, B 4000, Liege, and Cyrille Sironval, Avenue des Bois 8, B 4050, Mery-Esneux, all of Belgium

Filed Jan. 24, 1973, Ser. No. 326,185. The portion of the term of this patent subsequent to Mar. 18, 1992 has been disclaimed.
Int. Cl. G03c *1/00, 5/24*
U.S. Cl. 96—48 R **5 Claims**



1. Photorecording material comprising a support coated with a photographic sensitive layer consisting essentially of a photographically active product formed by:

extracting from an etiolated plant material a photoactive protochlorophyll(ide)-apoprotein binary complex with a buffer solution at a pH between 7 and 10 in the presence of an agent to protect the apoprotein against denaturation at a temperature of at most 5°C;

adding to said binary complex at a temperature of at most 5°C a natural or synthetic polymeric material selected from the group consisting or polyethylene glycol, polyvinylpyrrolidone, triethanolamine, saccharose and dextran to form a precipitate;

cold-centrifuging said precipitate to form a product which is either in complex or in association with said polymeric material; and

lyophylizing said product at a temperature of at most 5°C so that the dried final product remains photoactive at room temperature, said product forming a pattern by information-wise exposure to light of information-wise differentiations in light-absorption and fluorescence emission characteristics.

3,923,517
METHOD FOR RAPIDLY FORMING PHOTOGRAPHIC IMAGES

Nobuo Yamamoto; Ikutaro Horie; Kiyotaka Hori; Shigeru Nagatomo; Hidefumi Sera, and Kenji Yokoo, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

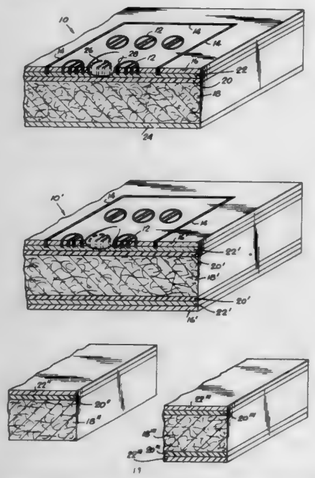
Filed Feb. 14, 1974, Ser. No. 442,556
Claims priority, application Japan, Feb. 15, 1973, 48-18624
Int. Cl.² G03C *5/26, 5/24, 1/72*
U.S. Cl. 96—50 R **19 Claims**

1. A method for rapidly forming photographic images, which comprises first image-wise exposing and then development of a photographic light-sensitive material which includes a support having thereon at least one silver halide emulsion layer and an uppermost layer containing a gelatin derivative, at a temperature of at least 30°C, said gelatin derivative being the reaction product of gelatin with a monofunctional compound selected from an isocyanate, an aziridine and a sulfonyl halide, and said gelatin derivative being present in an amount of not less than 20% by weight based on the total weight of said uppermost layer.

3,923,518
ERASABLE DIAZOTYPE MATERIAL WITH VINYL CHLORIDE AND METHYL ACRYLATE COPOLYMER INTERLAYER

Peter Muller, Port Washington, N.Y., assignor to Andrews Paper & Chemical Co., Port Washington, N.Y.

Filed Apr. 10, 1973, Ser. No. 349,727
Int. Cl.² G03C *1/76, 1/80, 1/86*
U.S. Cl. 96—75 **6 Claims**



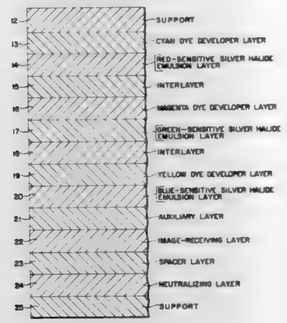
1. An erasable diazotype reproduction material comprising: a base sheet having applied thereto at least three layers coated on at least one side of said base sheet with at least one of said layers forming an interlayer containing an externally plasticized vinyl chloride-methyl acrylate copolymer wherein from 70% to 90% of the copolymer is polyvinyl chloride and the balance is made up of methyl acrylate radicals, at least one of said layers containing diazo sensitized components which comprises a photosensitive diazonium salt, an acid stabilizer and a diazo-coupler and at least one of said layers being a precoat layer positioned between said diazo components containing layer and said interlayer; whereby the diazo reproduction is easily erased by mechanical means without destroying the surface of the base sheet.

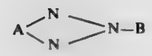
3,923,519
U.V. LIGHT ABSORBERS IN SUPPORTS OF INTEGRAL DIFFUSION TRANSFER FILM UNITS

Ronald F. Ciecluch, Boston, and Herbert N. Schlein, Beverly, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 214,600, Jan. 3, 1972. This application Oct. 24, 1972, Ser. No. 300,277
Int. Cl.² G03C *1/40, 1/48, 1/84*
U.S. Cl. 96—77 **34 Claims**

1. In a photographic comprising a diffusion transfer photosensitive system, a diffusion transfer image receiving system and a reflecting system and wherein said systems are integrated so that the product is adapted for forming a visible image by diffusion transfer of image providing material from said photosensitive system to said image receiving system which image is viewable by reflection and without separation of said receiving system and said photosensitive system, said image receiving system including an image receiving layer and a dimensionally stable layer through which said image is viewable and through which said photosensitive system is exposed; the improvement which comprises including in said dimensionally stable transparent layer an ultraviolet absorber, said ultraviolet absorber being substantially transparent to visible light and wherein said ultraviolet absorber provides an optical density of at least about 1 at substantially all of the wavelengths at least between the region of about 300 to about 375 mμ and wherein said ultraviolet absorber is a 2-aryl-4,5 arylo-1,2,3 triazole of the formula





where

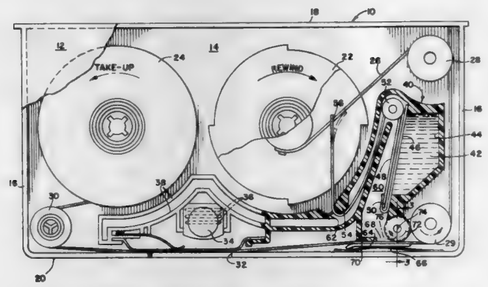
A represents a phenylene radical bounded by two neighboring carbon atoms to two nitrogen atoms of the triazole ring and,

B represents a 2-hydroxyphenyl radical which can be substituted by groups not imparting strong coloration.

3,923,520
FILM STRIP CASSETTE WITH MOVING PROCESSING FLUID DOCTORING SURFACE

Edward F. Burke, Jr., Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 26, 1974, Ser. No. 492,054
Int. Cl.² G03C *3/02, 11/00;* **G03B** *23/02;* **G03D** *5/00*
U.S. Cl. 96—78 **10 Claims**



1. In a cassette containing an elongated photographic film strip having a light sensitive emulsion on one surface thereof and also containing a processor operative to apply a processing fluid coating of predetermined thickness to substantially the entire length of said film emulsion after exposure thereof, the improvement comprising:

means responsive to an external actuator for progressively advancing said film strip within said cassette;

means for treating progressive incremental sections of said emulsion surface of said film strip with a quantity of said processing fluid having an initial thickness substantially greater than said predetermined thickness of said coating as said film strip is advanced therepast by said film strip advancing means; and

means responsive to an external actuator for establishing a moving doctoring surface operative against said initial thickness of said processing fluid applied to said film strip by said fluid treating means to reduce said initial thickness of said processing fluid and spread said processing fluid uniformly across the width of said emulsion surface, said doctoring surface when operative moving in a direction opposite to the direction of advancement of said film strip past said fluid treating means and being spaced from said emulsion surface of portions of said film strip emerging from said fluid treating means a distance substantially less than said initial thickness of processing fluid and greater than said predetermined thickness of processing fluid coating.

3,923,521
ULTRAVIOLET HOLDBACK OF NONSILVER PHOTOSENSITIVE SYSTEMS BY INCORPORATING THEREIN CERTAIN ORGANIC ADDITIVES

Andrew C. Hazy, Mentor; John E. Shirey, Bedford, and Lothar Ramins, Middlefield, all of Ohio, assignors to Horizons Incorporated a division of Horizons Research Incorporated, Cleveland, Ohio

Filed Jan. 31, 1973, Ser. No. 328,495
Int. Cl.² G03C *1/52*
U.S. Cl. 96—90 R **8 Claims**

1. In a non-silver photosensitive composition comprising:

1. at least one N-vinyl amine compound which forms a color when exposed to a dose of suitable radiation in the presence of an activator;

2. at least one such activator for said color forming N-vinyl amine compound, said activator being selected from the group consisting of (a) organic halogen compounds represented by the general formula $Q—C—X_3$ wherein Q represents a monovalent radical selected from the group consisting of Cl, Br, I, H, alkyl, aryl, aroyl and arylalkyl, and each X is a halogen atom selected from the group consisting of Cl, Br and I; (b) sulfur containing organic compounds represented by the formula RSH or RSSR in which each R represents an aryl or heterocyclic ring; and (c) sulfonyl and sulfenyl halides;

the improvement of which consists in the incorporation in said composition of

3. at least one organic compound which produces imagery having improved ultraviolet holdback said compound being selected from the group consisting of indole, quinoline, acridine, acridan, phenoxazine, quinazoline, phenazine, 2-phenylindole, 1-amino-4-hydroxy-9,10-anthraquinone, 1-amino-4-benzamido-9,10-anthraquinone, 1,4-diamino-9,10-anthraquinone, 1-amino-5-benzamido-9,10-anthraquinone, 1-5-dibenzamido-9,10-anthraquinone, 1,4-diamino-2,3-dichloro-9,10-anthraquinone and 2-amino-1,4-naphthoquinone, phenylene diamines and phenylacetates.

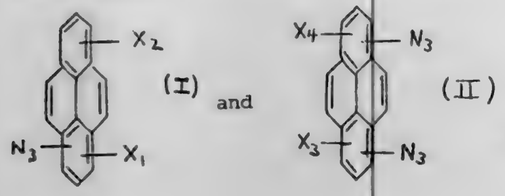
3,923,522
PHOTOSENSITIVE COMPOSITION

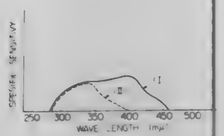
Yukinori Hata, Tokyo; Hidetoshi Komiya, Chiba; Yuzuru Osabe, Yokohama; Tutomu Watanabe, Tokyo, and Hiroyoshi Yamada, Musashino, all of Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

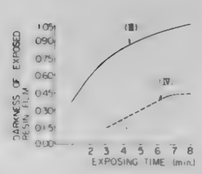
Filed July 18, 1973, Ser. No. 380,276
Int. Cl. G03f *7/08;* **G03c** *1/72*
U.S. Cl. 96—115 R **23 Claims**

1. A photosensitive composition capable of being photohardened and insolubilized in alkaline aqueous solutions upon photographic exposure, said composition comprising an alkalisoluble phenolic resin and 5 to 30%, based on the weight of said phenolic resin, of at least one photosensitive compound selected from the group consisting of monoazidopyrene

compounds of the formula (I) and diazidopyrene compounds of the formula (II):







wherein X_1, X_2, X_3 and X_4 each represents a hydrogen or halogen atom or nitro, monoalkylamino, acylalkylamino, dialkylamino, tosylamino, alkoxyl, hydroxyl, acyl, carboxyl, carboxymethyl or sulfonic acid radical.

3,923,523

PHOTOCURABLE COMPOSITION AND A METHOD OF PREPARING SAME

Tadatomi Nishikubo; Masahiko Kishida, and Masakazu Imaura, all of Fujisawa, Japan, assignors to Nippon Oil Seal Industry Co., Ltd., Tokyo, Japan

Filed Sept. 26, 1973, Ser. No. 400,814

Claims priority, application Japan, Sept. 29, 1972, 47-97203

Int. Cl.² G03C *1/68, 1/70*

U.S. Cl. 96—115 P **5 Claims**

1. A photocurable composition comprising: (a) the polyester obtained from pyromellitic acid dianhydride and a polyol selected from the group consisting of a reaction product of polyethylene glycol diglycidyl ether and acrylic acid (molar ratio 1:2), a reaction product of polypropylene glycol diglycidyl ether and acrylic acid (molar ratio 1:2), a reaction product of neopentyl glycol diglycidyl ether and acrylic acid (molar ratio 1:2), a reaction product of bisphenol-A diglycidyl ether and acrylic acid (molar ratio 1:2) and the corresponding methacrylate or crotonate derivatives, and (b) a photopolymerization initiator.

3,923,524

FOGGED DIRECT POSITIVE SILVER HALIDE EMULSIONS CONTAINING PHOTOGRAPHIC SENSITIZING DYES DERIVED FROM SUBSTITUTED SALICYLALDEHYDES

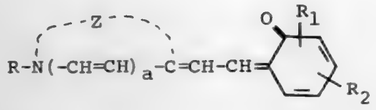
Jan Raymond Haase, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,948

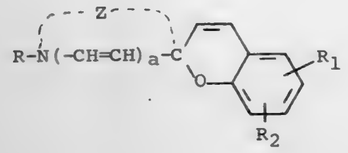
Int. Cl.² G03C *1/22*

U.S. Cl. 96—140 **12 Claims**

1. A fogged direct positive photographic silver halide emulsion containing at least one photographic silver halide sensitizing dye selected from those having the formulas:



and



wherein a is 0 or 1; Z represents a heterocyclic nucleus selected from the group consisting of thiazoles, benzothiazoles, naphthothiazoles, thieno-[1,2-a]benzothiazoles, oxazoles, benzoxazoles, naphthoxazoles, selenazoles, benzoselenazoles, naphthoselenazoles, thiazolines, 2-quinolines, 4-quinolines, 3,3-dialkylindolenines, 2-pyridines, 4-pyridines, imidazoles, benzimidazoles, naphthimidazoles, and lepidines; R represents a lower alkyl group or an aryl group; and R_1 and R_2 each represents hydrogen, a nitro group, a halo group, a lower alkoxy group or a lower alkyl group, provided that at least one of the groups R_1 and R_2 is a nitro group or a halo group.

3,923,525

FOUNDRY COMPOSITIONS

Richard H. Toeniskoetter, Worthington, and John J. Spiwak, Columbus, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Apr. 17, 1973, Ser. No. 351,903

Int. Cl.² B28B *7/34*

U.S. Cl. 106—38.3 **24 Claims**

1. Composition for the fabrication of foundry shapes having a porosity sufficient to permit escape from the shape of at least most of the volatiles formed during casting which comprises:

a. a major amount of foundry aggregate in sufficient quantity and having particle size large enough to provide sufficient porosity in the foundry shape to permit escape of volatiles from the shape during casting;

B. an effective bonding amount up to about 10% by weight based upon the weight of the aggregate of a composition comprising:

1. an aluminum phosphate containing from about 3 mole % to about 40 mole % of boron based upon the moles of aluminum, and being obtained from aluminum-containing reactant, phosphorus-containing reactant, and boron-containing reactant wherein the mole ratio of phosphorus to total moles of aluminum and boron is from about 2:1 to about 4:1;

2. an oxygen-containing alkaline earth compound capable of reacting with the aluminum phosphate and which contains an alkaline earth metal and an oxide; and wherein the alkaline earth compound includes a free alkaline earth metal oxide and/or free alkaline earth metal hydroxide, and wherein the free alkaline earth metal oxide and/or free alkaline earth metal hydroxide has a surface area of no greater than about 8.5 m²/gram; and

3. water;

C. and wherein the amount of said aluminum phosphate is from about 60 to about 95% by weight based upon the total weight of (1) and (2), the amount of said alkaline earth material is from about 5 to about 40% by weight based upon the total weight of (1) and (2); and the amount of said water is from about 15 to about 50% by weight based upon the total weight of (1) and (3).

3,923,526

HEAT-INSULATING BOARD FOR COVERING THE TOP SURFACE OF A FEEDER HEAD

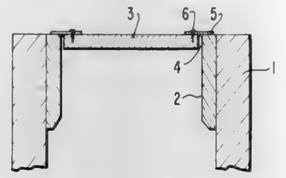
Masaru Takashima, Tokyo, Japan, assignor to Aikoh Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1973, Ser. No. 321,425

Claims priority, application Japan, July 22, 1972, 47-73538

Int. Cl.² B28B *7/36*

U.S. Cl. 106—38.22 **3 Claims**



1. A heat-insulating board for covering the top surface of a feeder head which comprises a plate-like molding and a composition attached to the outer rim of the plate-like molding; said composition comprising 5–80% by weight of a chemically treated heat-expandable material of flake-like graphite or pitch treated with an acid and/or an oxidizing agent, 0–92% by weight of a refractory material, 0–30% by weight of an easily oxidizable metal, 0–30% by weight of an oxidizing agent, 0–40% by weight of a non-metallic fibrous material, 0–20% by weight of a carbonaceous substance, 0–10% by weight of an oxidation accelerating agent and 3–20% by weight of a binder; said plate-like molding comprising 20–94% by weight of a refractory material selected from the group of silica sand, quartz, magnesia (magnesium oxide), alumina (aluminum oxide), olivine, aluminum ash, dolomite, magnesite, limestone, chamotte, corundum, diatomaceous earth, lapilli, expanded vermiculite, expanded shale, expanded obsidina, expanded perlite and expanded pitch-stone, 3–40% by weight of a fibrous material, 0–30% by weight of an easily oxidizable metal, 0–30% by weight of an oxidizing agent, 0–20% by weight of a carbonaceous substrate, 0–10% by weight of an oxidation accelerating agent and 3–20% by weight of a binder; the heat-insulating board being adapted to expand upon being heated.

3,923,527

COLORED GLASS

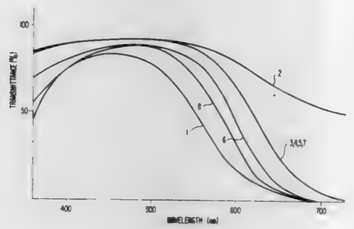
Takashi Matsuura, Fussa, and Fumio Chihara, Akishima, both of Japan, assignors to Hoya Glass Works, Ltd., Tokyo, Japan

Filed Mar. 4, 1974, Ser. No. 447,793

Claims priority, application Japan, Aug. 17, 1973, 48-92179

Int. Cl.² C03C *3/00*

U.S. Cl. 106—47 R **4 Claims**



1. A colored glass consisting of parent glass compositions consisting essentially of by weight, 75 to 88 % of P_2O_5, 6 to 15 % of Li_2O, 3 to 14 % of Al_2O_3, 0 to 5 % of Na_2O, 0 to 5 % of K_2O, 0 to 5 % of ZrO_2, 0 to 5 % of TiO_2, 0 to 5 % of La_2O_3, 0 to 5 % of MgO and 0 to 5 % of ZnO, and 0.5 to 10 parts of CuO per 100 parts of said parent glass compositions wherein said glass exhibits suppression of absorption of rays having a wavelength of 400 nm or less.

3,923,528

GLASS-CERAMIC ARTICLES

Makoto Kume, Itami, Japan, assignor to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Mar. 22, 1974, Ser. No. 453,996

Claims priority, application Japan, Mar. 22, 1973, 48-33300

Int. Cl.² C03C *3/04, 3/08*

U.S. Cl. 106—52 **4 Claims**

1. A glass-ceramic article consisting essentially of, on a weight percent basis, 54–68% SiO_2, 5–13% Al_2O_3, 0–11% MgO, 8–28% CaO, the sum of the proportions of MgO and CaO being 18–28%, 2–8% B_2O_3, 0.1–2.5% ZnO, 0.05–0.3% sulfide sulfur, and 3–10% R_2O, R_2O being a combination of at least two of Li_2O, Na_2O, and K_2O, the mol ratio of Li_2O/R_2O being 0.05–0.4, the mol ratio of Na_2O/R_2O being 0–0.4, and the mol ratio of K_2O/R_2O being 0.5–0.95, the total of these components being at least 95% by weight, said composition being devoid of fluorine therein.

3,923,529

SODALITE-RELATED GLASS COMPOSITIONS FOR PRODUCTION OF PHOTOCHROMIC AND FLUORESCENT ARTICLES

Roger J. Araujo, Corning; George H. Beall, Big Flats, and Loris G. Sawchuk, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 10, 1975, Ser. No. 540,169

Int. Cl.² C03C *3/04, 3/08, 3/12, 3/22*

U.S. Cl. 106—52 **4 Claims**

1. A glass composition useful for the production of photochromic glass and glass-ceramic articles which consists essentially of, in weight percent as calculated from the batch, about 17–34% total of alkali metal oxides, essentially including Na_2O, selected in the indicated proportion from the group consisting of 12–33% Na_2O, 0–20% K_2O, and 0–7% Cs_2O; 17–33% total of modifying oxides selected from the group consisting of Al_2O_3 and Ga_2O_3; 22–54% total of network-forming oxides selected in amounts not exceeding the indicated proportions from the group consisting of up to 41% SiO_2 and up to 54% GeO_2; 2.5–30% total of halogen selected in amounts not exceeding the indicated proportions from the group consisting of up to 9% F and up to 30% Cl; and 1–10% total of constituents selected from the group consisting of SO_3, SeO_2 and Te.

3,923,530

DIELECTRIC GLASS COMPOSITION

Thomas A. Sherk, West Hurley, and Rao R. Tummala, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 27, 1973, Ser. No. 374,189

Int. Cl.² C03C *3/10, 3/04, 3/30*

U.S. Cl. 106—53 **7 Claims**

1. A dielectric glass having a thermal coefficient of expansion (from room temperature to 300°C) in the range of approximately 81.6–86.0 × 10^{-7} per °C and a crazing temperature with respect to a magnesium oxide overcoat in the range of approximately 455° – 505°C, consisting essentially of the following ingredients in the following proportions:

hc.22 Percent by weight

Lead oxide	(PbO)	62.4 – 69.6
Boric oxide	(B_2O_3)	13.6 – 20.0
Silicon oxide	(SiO_2)	5.8 – 13.6
Alumina	(Al_2O_3)	0.2 – 1.0
Calcium oxide	(CaO)	0.0 – 6.0
Magnesium	(MgO)	0.0 – 5.0

and wherein the total amount of CaO plus MgO is 3.0 – 8.4 percent by weight.

3,923,531

CARBON COMPOSITION AND SHAPED ARTICLE MADE THEREFROM

Joseph R. Parsons, Park Forest, and Harold L. Rechter, Chicago, both of Ill., assignors to Chicago Fire Brick Company, Chicago, Ill.

Filed July 5, 1974, Ser. No. 485,964The portion of the term of this patent subsequent to Nov. 5, 1991, has been disclaimed.

Int. Cl.² C04B *7/02, 35/02, 35/52*

U.S. Cl. 106—56 **6 Claims**

1. A composition suitable for making shaped refractory articles consisting essentially of particles of carbon in from 20–80 per cent by weight, a hydraulic cement in from 5–30 per cent by weight, particles of a refractory oxide or silicate in 0–65 per cent by weight, silicon metal in at least 5 per cent by weight, and pitch from 0–20 per cent by weight.

3,923,532

ZINC LIGNOSULFONATE STABILIZING BINDER SOLUTION FOR MAGNESIUM OXIDE REFRACTORY FORMING MIXTURES AND METHOD

Frank C. Morman, Wausau, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Oct. 21, 1974, Ser. No. 516,437

Int. Cl.² C04B *35/04, 35/12*

U.S. Cl. 106—59 **12 Claims**

1. A refractory forming mixture suitable for pressure forming into refractory shapes, consisting essentially of:

a. about 90% to about 98% by weight particulate refractory material containing magnesium oxide; and

b. about 2% to about 10% by weight of densifying binder solution intermixed with said particulate refractory material, said binder solution consisting essentially of a solution of zinc lignosulfonate and water, said zinc lignosulfonate being present in an amount sufficient to stabilize the refractory forming mixture for up to about 3 hours at aging temperatures above 35°C to prevent substantial loss of density of refractory shapes pressed from the refractory forming mixture, the water being from about 1% and not exceeding about 5% by weight of the refractory material.

4. The refractory forming mixture as specified in claim 3 wherein said binder solution contains at least about 1.0% zinc on the weight of said lignosulfonate salt.

6. The refractory forming mixture as specified in claim 5 wherein said binder solution contains at least about 1.0% zinc on the weight of said lignosulfonate salt.

3,923,533

THERMALLY STABLE AND CRUSH RESISTANT MICROPOROUS GLASS CATALYST SUPPORTS

Joseph J. Hammel, and Ties Allersma, both of Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 311,191, Dec. 1, 1972, Pat. No. 3,843,341, which is a continuation-in-part of Ser. No. 231,346, March 2, 1972, abandoned, and a continuation-in-part of Ser. No. 264,081, June 19, 1972, abandoned. This application Mar. 1, 1974, Ser. No. 447,199

Int. Cl.² C03C *3/06, 3/30, 3/08*

U.S. Cl. 106—54 **13 Claims**

1. A strong, thermally stable, microporous glass article having a pore volume of at least 0.35 cubic centimeters per gram, pore sizes ranging from 50 to 200 Angstrom units, and a surface area of at least 100 square meters per gram, comprising:

a. at least 96 percent by weight SiO_2,

b. less than 4 percent by weight B_2O_3,

c. less than 0.05 percent by weight alkali metal oxide, and

d. less than 0.4 percent by weight Al_2O_3;

said microporous glass article having a crush strength of at least 20 pounds per square inch gauge, and losing less than 30 percent of its original surface area and undergoing less than 25 percent volume shrinkage when the article is subjected to a temperature of 980°C. for 24 hours.

3,923,534

COLD-SETTING REFRACTORY COMPOSITIONS

John Edward Cassidy, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 14, 1973, Ser. No. 360,186

Claims priority, application United Kingdom, May 22, 1972, 23885/72; Jan. 22, 1973, 3174/73

Int. Cl.² C04B *35/66*

U.S. Cl. 106—62 **11 Claims**

1. A cold-setting refractory composition comprising water, refractory filler, a water-soluble complex aluminum phosphate binding agent containing aluminum and phosphate in a molar ratio of Al:P of substantially 1:1 and the anion of a carboxylic acid or of a mineral acid other than an oxyphosphorus acid and, as setting agent, magnesia of low reactivity, the ratio of magnesia to complex aluminum phosphate binding agent in the composition being in the range 1:200 to 1:1 by weight and the binding agent being present in a proportion of 1 to 25% by weight of the refractory filler.

3,923,535

HEAT INSULATING MATERIAL

Leonid Borisovich Zilberman, Ekonomicheskaya ulitsa, 1a, kv. 12; Semen Borisovich Krakhmalnikov, ulitsa Korolenko, 18, kv. 17; Gennady Alexandrovich Kudinov, prospekt Gagarina, 8 mikroraion, 32, kv. 203; Dorina Borisovna Kutsykovich, prospekt Lenina, 39, kv. 54, all of Kharkov; Jury Gavrilovich Moiseev, Donetskoi oblasti, ulitsa Ilicha, 138, kv. 5, Zhdanov, and Abram Mikhailovich Shneider, ulitsa Artema, 17, kv. 16, Kharkov, all of U.S.S.R.

Continuation of Ser. No. 269,805, July 7, 1972, abandoned. This application Aug. 8, 1974, Ser. No. 495,908

Int. Cl.² C04B *35/68*

U.S. Cl. 106—84 **2 Claims**

1. A heat insulating material comprising powdery and liquid components in % by weight: the powdery component being a filler having the following composition

river sand	17–19% by weight
asbestos	8–10% by weight
ferrochrome slag	2–3% by weight

with chamotte powder making up the balance; the liquid component being a binding agent comprising liquid glass, 9–10%, in addition to 100% of the powdery components, a solvent comprising water 19–21%, in addition to 100% of the powdery components, and a foaming agent of the surface-active substance type, 0.5–1.0% in addition to 100% of the liquid components.

3,923,536

METHOD AND APPARATUS FOR BURNING RAW MATERIALS OF CEMENT CLINKER

Toshihiro Kobayashi, Tokyo, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1973, Ser. No. 416,960

Claims priority, application Japan, July 3, 1973, 48-74451

Int. Cl.² C04B *7/44*

U.S. Cl. 106—100 **1 Claim**

1. In a method for burning raw materials of cement clinker of the type comprising preheating and calcining raw materials by a suspension preheater provided with a calcining device having a burner, burning raw materials which pass through said preheater to form cement clinker in a rotary kiln, and cooling said cement clinker by a clinker cooler from which the heated air obtained by the cooling of clinker is directly induced to said device and used as its combustion air together with the exhaust gas from said rotary kiln; the improvement which comprises mixing said heated air with said exhaust gas which contains dust, and condensing volatile matters contained in said exhaust gas as gaseous phase thereby adhering said condensed volatile matters to said dust; separating said dust from the mixture of said combustion air and said exhaust gas; supplying said mixture after dust separation to said calcining device, thereby utilizing said mixture for the combustion of said calcining burners; and discharging at least a portion of said separated dust and volatile matters to which said dust is adhered.

3,923,537

COLD ASPHALT BINDER AND PAVING PROCESS

Jack E. Wood, Upland, Calif., assignor to Bray Oil Company, Los Angeles, Calif.

Filed Apr. 28, 1972, Ser. No. 248,580

Int. Cl.² C08L *95/00;* **C09D** *3/24*

U.S. Cl. 106—277 **3 Claims**

1. A stable liquid composition suitable for binding stone aggregate comprising (A) a suspension in water of powdered hard asphalt, softening point above about 250°F., having a particle size lying predominantly in the range of 10 to 200 mesh stabilized with a water soluble dispersant and (B) a flux oil of the character used in paving mixtures, the ratio of asphalt to flux oil in the composition being about 1:4 to 1:10.

3,923,538

PRIMROSE CHROME YELLOW PIGMENT AND PROCESS FOR ITS PREPARATION

Julius Jackson, Westfield, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 18, 1973, Ser. No. 324,879

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C09C *3/00*

U.S. Cl. 106—298 **4 Claims**

1. A process for the production of a primrose yellow shade pigment consisting essentially of 0.5 to 10 weight percent of one or more hydrous oxides selected from the group consisting of alumina, titania and zirconia, and 90 to 99.5 weight percent of an orthrhombic phase lead chromate-lead sulfate solid solution consisting essentially of 40 to 85 weight percent of lead chromate and 15 to 60 weight percent of lead sulfate, said solid solution containing no more than about 0.35 weight percent of CO_2, calculated as $PbCO_3$ by:

a. admixing a first aqueous solution containing a soluble lead salt and having a pH of 3.8 to 4.2 with a second aqueous solution having a pH of 6.5 to 7 and containing chromate and sulfate ions, the admixing being conducted in the presence of a combination of acetic acid, Al^{+3} ions, and $P_2O_7^{-4}$ ions to precipitate the solid solution as a stable orthorhombic crystal phase, the composition of the two solutions being selected to produce the solid solution composition in the form of a slurry having a pH of 1.4 to 2,

b. adjusting the pH of the aqueous slurry thus formed to 4 to 6 and maintaining it at an elevated temperature of 40° to 80°C. for at least 5 minutes,

c. thereafter surface-coating the precipitate with 0.5 to 10 percent, based on the final pigment weight of at least one hydrous oxide selected from the group consisting of alumina, titania and zirconia to further enhance light-fastness, and

d. filtering the surface-coated precipitate, washing it free of residual ions, drying it and then heating the pigment for a minimum of 15 minutes to a temperature of at least 110°C. to maximize lightfastness.

2. A chrome yellow pigment of the primrose type having excellent color intensity and improved thermal stability characteristics, said pigment consisting essentially of 0.5 to 10 weight percent of one or more hydrous oxides, selected from the group consisting of alumina, titania and zirconia, and 90 to 95.5 weight percent of an orthorhombic phase lead chromate-lead sulfate solid solution consisting essentially of 40 to 85 weight percent of lead chromate and 15 to 60 weight percent of lead sulfate, said solid solution containing no more than about 0.35 weight percent of CO_2, calculated as $PbCO_3$.

3,923,539

METHOD CONCENTRATE AND SOLUTION FOR SIMULTANEOUS CLEANING, DEGREASING AND REMOVAL OF THE LUBRICANT CARRIER LAYER FROM IRON AND STEEL WORKPIECES

Peter Jorns, Frankfurt am Main, Germany, assignor to Oxy Metal Industries Corporation, Warren, Mich.

Filed Feb. 13, 1973, Ser. No. 332,055

Claims priority, application Germany, Feb. 19, 1972, 2207848

Int. Cl. C23g *1/16;* **C11d** *7/16;* **C23g** *1/20*

U.S. Cl. 134—2 **4 Claims**

1. A method for the simultaneous cleaning, degreasing and removal of a cold-forming lubricant carrier layer from workpieces containing iron comprising contacting said workpiece with an aqueous alkaline solution comprising 5–80 g/l phosphate ion and at least 0.05 g/l of a metal ion selected from the group consisting of cobalt, nickel and mixtures thereof, and having a pH adjusted to a value between 8 and 13 for at least one minute.

3,923,540

METHOD FOR TREATMENT OF METALLIC SURFACE

Shoji Usami, Sayama, and Haruo Kozu, Fujisawa, both of Japan, assignors to Kansai Paint Company, Ltd., Japan

Filed Feb. 19, 1974, Ser. No. 443,487

Claims priority, application Japan, Mar. 1, 1973, 48-23749The portion of the term of this patent subsequent to Oct. 22, 1991, has been disclaimed.

Int. Cl.² C23G *1/00*

U.S. Cl. 134—2 **8 Claims**

1. A method for treating a metallic surface which comprises aerobically contacting the metallic surface with a cultured suspension of ferrobacillus micro-organism, in which said ferrobacillus is at least one member of ferrobacillus ferrooxidans and ferrobacillus sulfooxidans, at a temperature of 20°–45° C.

6. A method of cleaning the surface of a metallic article at least partially coated with objectionable foreign material comprising the steps of:

a. providing an immersion bath comprising a cultured suspension of a ferrobacillus micro-organism;

b. immersing the article to be cleaned into said bath maintained at 20°–45°C under aerobic conditions for a time sufficient to effect release of said objectionable material from the surface of said metallic article;

c. withdrawing said metal article from said bath: and

d. rinsing said metal article with a fluid to thereby remove the released objectionable material and suspension from the surface thereof to provide a clean surface.

3,923,541
VAPOR DEGREASING SYSTEM

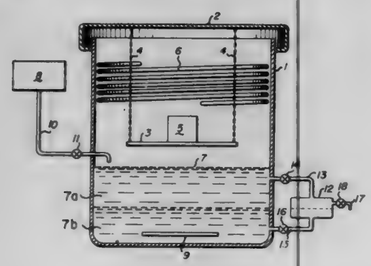
Robert Michael Healy, Warrenville, Ill., assignor to Litton Systems, Inc., Chicago, Ill.

Filed June 20, 1973, Ser. No. 371,836

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B08B *3/10, 5/00*

U.S. Cl. 134—31 **1 Claim**



1. The method of cleaning an article contaminated with organic acid materials so as to form a biodegradable waste comprising the steps of:

inserting the article to be cleaned of organic acid residues into the vapor section of a vapor degreaser, said vapor degreaser having a two-phase liquid solvent located in the sump thereof, said two-phase liquid solvent comprising a first liquid containing an organic solvent and a second liquid containing water and an inorganic base of low volatility, said inorganic base being sufficiently strong to neutralize said organic acid materials, and said first and second liquids being immiscible in one another;

heating said mixture to boil said two-phase liquid solvent wherein said solvent is in a state of turbulance and a vapor of water and organic solvent is created in said vapor section and refluxing said mixture, without vaporizing said inorganic base.

3,923,542
ELECTROLYTE FOR GALVANIC CELLS WITH HYDROGEN STORAGE ELECTRODES

Klaus von Benda, Kemnat, and Wolfgang Lohnert, Waiblingen, both of Germany, assignors to Firma Deutsche Automobilgesellschaft mbH, Germany

Filed June 27, 1973, Ser. No. 373,911

Claims priority, application Germany, June 27, 1972, 2231348

Int. Cl.² H01M *10/00*

U.S. Cl. 136—6 GC **6 Claims**

1. An electrolytic in combination with a galvanic cell employing a hydrogen storage electrode, said electrolyte being alkaline and containing, besides alkali metal ions, additional ions of at least one oxy salt of a metal selected from the group consisting of aluminum, zinc, tin, vanadium, molybdenum, tungsten, beryllium, and gallium, the deposition potential of the metal contained in the electrolyte as an oxy salt being at least 50 millivolts more negative than the reversible hydrogen potential in the same electrolyte.

3,923,543
ELECTROCHEMICAL CELL

James J. Auborn, Groton, and Sheldon I. Lieberman, Burlington, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation of Ser. No. 305,796, Nov. 13, 1972, abandoned. This application Oct. 24, 1974, Ser. No. 517,557

Int. Cl. H01m *35/00*

U.S. Cl. 136—6 LN **24 Claims**

1. An electrochemical cell comprising an alkali metal anode; a catalytic cathode material including at least in part an intercalation compound of graphite and fluorine represented by the general formula $(C_4F)_n$ wherein n refers to the presence of an indeterminately large number of recurring (C_4F) groups in the intercalation compound; and an electrolyte consisting essentially of an inorganic solvent material selected from the group consisting of phosphorus oxychloride, monofluorophosphoryl dichloride, thionyl chloride, sulfuryl chloride and mixtures thereof, and a solute dissolved in said inorganic solvent material, said solute including a Lewis acid or a material yielding a Lewis acid by dissociation in said inorganic solvent material; said cell being characterized by having a coulombic cathode utilization of at least about 142% of the theoretical which would be attained by reduction of the cathode material to elemental carbon and fluoride ions.

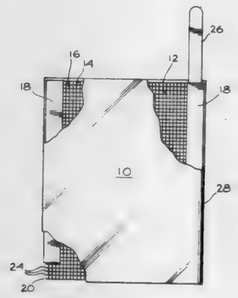
3,923,544
ZINC ELECTRODE AND METHOD OF MAKING SAME

Aldo S. Berchielli, Westerly, R.I., assignor to Electrochem, Inc., New York, N.Y.

Filed Mar. 11, 1974, Ser. No. 449,876

Int. Cl. H01m *35/00*

U.S. Cl. 136—30 **12 Claims**



1. An improved zinc electrode for electrolytic cells, said electrode comprising, in combination:

a. a porous metal grid;

b. at least one solid strip of zinc metal disposed on said grid along an edge thereof; and

c. a zinc oxide-containing shape-retaining particulate mixture including a binder and covering at least one side of said grid and overlying said strip, the portion of said mixture overlying said strip having a substantially higher density than the remainder of said mixture.

3,923,545
GRID STRUCTURE FOR HIGH RATE LEAD/ACID BATTERY

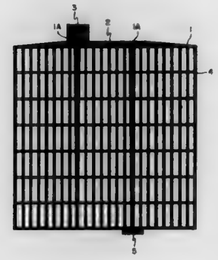
Robert S. Margulies, Redondo Beach, Calif., and Royce E. Biddick, Edina, Minn., assignors to The United States of America as represented by the United States Environmental Protection Agency, Washington, D.C.

Filed Mar. 30, 1973, Ser. No. 346,613

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² H01M *4/73*

U.S. Cl. 136—36 **6 Claims**



1. A rectangular battery grid structure comprising:

A. at least one current-collector tab on one edge of the grid structure;

B. a plurality of parallel current-carrying elements, wherein said element on one edge of said grid structure is tapered widest at the middle of said element and said tab is positioned at said thickest width;

C. a plurality of parallel current-carrying elements joined at right angle to said elements in (B) wherein at least two of which are equispaced and are tapered from one side of the grid structure to the opposite side of the grid structure with the broadest width joining said tab-carrying side element in the widest section wherein the number and size of said current-carrying elements are governed by a mathematical equation:

$$fm = I[E - I(R_g + R_p + R_e)]/W$$

wherein I is plate current, E is half-cell potential of the plate, R_g is grid resistance, R_e is electrolyte resistance, and R_p is pellet resistance, and W is weight of plate to give a figure of merit, *fm*.

4. A rectangular pasted plate for a storage battery comprising:

A. a plurality of rectangular pellets held in a grid pattern formed by

B. a plurality of parallel current-carrying elements, wherein said element on one side of said grid pattern is tapered widest at the middle of said element;

C. a plurality of parallel current-carrying elements joined at right angle with said elements in (B) wherein at least two of the elements are equispaced across the grid pattern and are tapered from one side of the grid structure to the opposite side of the grid structure with the broadest width joining said tapered element in (B) at the widest section; and

D. a current-collector tab on said tapered element of (B) at the intersection of one of said tapered elements of (C) wherein the number and size of said current-carrying elements are governed by a mathematical equation:

$$fm = I[E - I(R_g + R_p + R_e)]/W$$

wherein I is plate current, E is half-cell potential of the plate, R_g is grid resistance, R_e is electrolyte resistance, R_p is pellet resistance, and W is weight of plate to give a figure of merit, fm.

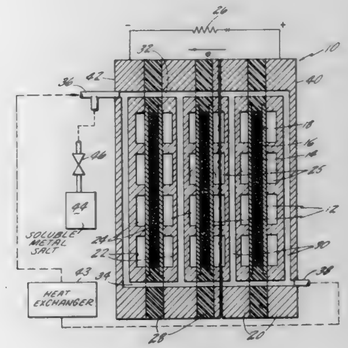
3,923,546
CORROSION PROTECTION FOR A FUEL CELL COOLANT SYSTEM

Murray Katz, Newington; Stanley W. Smith, Talcottville, both of Conn., and David Reitsma, Monroeville, Pa., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 13, 1974, Ser. No. 532,556

Int. Cl.² H01M *8/04*

U.S. Cl. 136—86 R **26 Claims**



1. The combination of:

a fuel cell stack having a positive end and a negative end and comprising a plurality of cells connected electrically in series, said stack including components defining coolant channels for carrying a coolant fluid into heat exchange relationship with said cells and a coolant manifold passage extending from the positive to the negative end of said stack for distributing a coolant fluid to said channels, said components comprising an oxidizable material and being in electrical communication with said fuel cells and connecting them in series electrically; and

an ionically conductive coolant fluid within said manifold passage providing a path for shunt current from the positive to the negative end of said stack, said fluid including a soluble salt of a metal mixed therein wherein the metal of said salt is in solution at the positive end of said stack as an ion which oxidizes at the positive end of said stack at an electrochemical potential below which said materials of said components at the positive end of said stack are oxidized for the level of shunt current through said fluid.

3,923,547
BATTERY OF PRIMARY CELLS

Hubertus Ludovicus Cornelius Nuijens, Tessenderlo, Belgium; Robert Theodorus Maria Doedee, and Adrianus Cornelis Josephus Maria Snethorst, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 15, 1974, Ser. No. 470,275

Claims priority, application Netherlands, May 15, 1973, 736715

Int. Cl.² H01M *1/02*

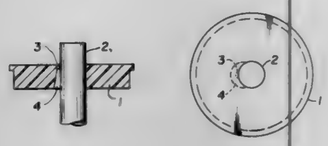
U.S. Cl. 136—107 **3 Claims**

1. A battery comprising at least one primary cell consisting of a single cell or series of parallel-arranged cells whose metal electrode is also the cell wall in an envelope, characterized in that the space between the cell wall and the envelope comprises at least one material capable of binding possible released electrolyte by increasing the viscosity of the electrolyte.

3,923,548
ELASTIC GAS VALVE FOR GALVANIC CELLS

Glaister Steward Bell, and Jakob Bauer, both of Ellwangen, Germany, assignors to Varta Batterie Aktiengesellschaft, Hannover, Germany

Filed May 18, 1973, Ser. No. 361,462
Claims priority, application Germany, May 24, 1972, 2225140
Int. Cl.² H01M 2/12
U.S. Cl. 133—133 9 Claims

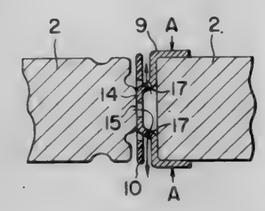


1. In a galvanic cell having a cover and a current conductor extending through the cover, said cover including a gas valve, said cover and said gas valve being fabricated as a single piece with the gas valve an integral part of the cover comprising a sealing disc located at the cell cover and surrounding the current conductor with only a portion of the inner peripheral surface of said sealing disc surrounding said current conductor in contact with the surface of said conductor, said sealing disc having an inner rim gas-tightly in contact with a smooth vertical surface portion of the current conductor, said inner rim constituting only a portion of the inner peripheral surface of said sealing disc surrounding said current conductor, at least one part of said inner rim in contact with said smooth surface portion of the current conductor being elastically yieldable under the action of a given increased gas pressure within the cell so as to vent the gas.

3,923,549
BATTERY CONNECTION DEVICE

Kenichi Mabuchi, Tokyo, and Toshihisa Tsuchimochi, Ichikawa, both of Japan, assignors to Mabuchi Motor Co. Ltd., Tokyo, Japan

Filed Oct. 24, 1974, Ser. No. 517,528
Claims priority, application Japan, Oct. 29, 1973, 48-125181[U]
Int. Cl.² H01M 13/10, 1/04
U.S. Cl. 136—134 P 3 Claims

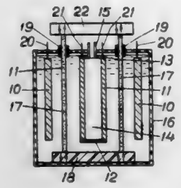


1. In a battery source cassette having a plurality of cells, the improvement comprising a cup-shaped, electrically conductive cell-connecting cap having a central projecting portion provided with apertures therein and a skirt portion, said central projecting portion being welded to an electrode portion of a first cell and said skirt portion being welded to an electrode portion of a second cell adjacent to said first cell.

3,923,550
METHOD AND APPARATUS FOR AVOIDING DENDRITE FORMATION WHEN CHARGING ACCUMULATOR BATTERIES

Otto von Krusenstierna, Vasteras, Sweden, assignor to AGA Aktiebolaget, Lidingo, Sweden

Continuation of Ser. No. 186,219, Oct. 4, 1971, abandoned. This application Dec. 6, 1973, Ser. No. 422,591
Claims priority, application Sweden, Oct. 9, 1970, 13696/70
Int. Cl.² H01M 47/00
U.S. Cl. 136—165 12 Claims

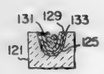


1. Method of reducing dendrite formation when repeatedly charging an accumulator battery containing cells with a zinc anode part and a cathode, and an ion-permeable separator part arranged in a liquid electrolyte between the anode part and the cathode, with each of said anode and separator parts having a large generally planar surface defining the plane of said part and a comparatively small thickness in a direction perpendicular to said plane, which comprises vibirating one of the parts in each cell in the direction of the plane of the parts with a frequency of between about 1 and 500 Hz and an amplitude of between about 0.1 and 10 mm during the charging process, whereby said vibration inhibits dendrite formation on said zinc anode part.

3,923,551
METHOD OF MAKING A THERMOPILE WITH INSULATINGLY SEPARATE JUNCTIONS ON AN ALUMINA INSULATOR

David L. Purdy, Indiana, Pa., assignor to Arco Medical Products Company, Leechburg, Pa.

Division of Ser. No. 817,271, April 14, 1969, Pat. No. 3,649,367, which is a continuation of Ser. No. 554,874, June 2, 1966, abandoned. This application Dec. 7, 1971, Ser. No. 205,591
Int. Cl. H01v 1/04
U.S. Cl. 136—201 1 Claim

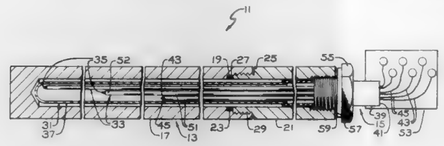


1. The method of forming a thermopile formed of hundreds of thermoelectric conductors, the said thermopile including an alumina insulator having thereon an electrical junction including a plurality of sets of said thermoelectric conductors, each set forming thermocouples of said thermopile having terminal ends at said junction, the said method including the steps of depositing on spaced regions of said insulator a first layer of titanium which adheres to said insulator, the deposit on each region being insulated from the deposit on other regions, depositing on said first layer a second layer of copper, depositing on said second layer a third layer of silver, said second and third metals when heated to a eutectic temperature forming a eutectic which wets said first metal but does not wet said insulator, disposing said terminal ends of said sets on said layers, and heating said layers to said temperature to form a junction of said first layer, said eutectic and said terminal ends, said junctions being insulated from each other.

3,923,552
HERMETICALLY SEALED THERMOCOUPLE ASSEMBLY

Joseph N. Parris, Irwin, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 21, 1972, Ser. No. 317,347
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² H01V 1/02
U.S. Cl. 136—234 14 Claims



1. A thermocouple assembly, comprising:
an outer sheath, comprising: a metal case having an open end and a closed end;
an inner support ledge adjacent the open end of said metal case;
a pressure deformable metal washer positioned on said inner support ledge of said metal case, said washer having a coefficient of expansion greater than said metal case;
a metal tube having a first end and a second end, the first end being insertable in the open end of said metal case against said metal washer, said metal tube having a coefficient of expansion at least the same as the metal case but less than said metal washer; and
means for securing the first end of said metal tube in the open end of said metal case with the first end of said tube against said washer to prevent the first end of said metal tube and of said metal case from separating when said outer sheath is heated to expand at least said metal washer to form a hermetic seal at the union of said case and said tube capable of withstanding high pressures;
a thermocouple probe mounted in said sheath; and
means for forming a hermetic seal between said thermocouple probe and the second end of said metal tube to contain an atmosphere within said outer sheath.

3,923,553
METHOD OF MANUFACTURING LATERAL OR FIELD-FFECT TRANSISTORS

Yutaka Hayashi, Hoya, and Yasuo Tarui, Tokyo, both of Japan, assignors to Kogyo Gijutsuin, Japan

Division of Ser. No. 268,004, June 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 62,838, Aug. 11, 1970, abandoned. This application Dec. 7, 1973, Ser. No. 422,881
Claims priority, application Japan, Oct. 14, 1969, 44-81743; Nov. 20, 1969, 44-92511; Nov. 20, 1969, 44-92512
Int. Cl.² H01L 21/00, 7/44
U.S. Cl. 148—1.5 6 Claims

6. A method of manufacturing a lateral transistor having a semiconductor substrate with a collector region and an emitter region of the same conductivity type formed therein and a base region of an opposite conductivity type as said emitter and collector regions and disposed therebetween, comprising the steps of:
providing a semiconductor substrate having a first layer of a first conductivity type and an adjacent underlying second layer of a second conductivity type opposite said first conductivity type;
forming on said first layer a mask layer having a window therethrough surrounding a portion of said mask layer to expose an area of said first layer defined by said window;
selectively implanting and diffusing an impurity of said second conductivity type through said window and into said first layer to a sufficient depth to impart said second conductivity type to a region of said first layer extending to said second layer to define an emitter region comprised of a region of said first layer isolated from the remainder of said first layer by said region having said second conductivity type imparted thereto; and
subsequently selectively diffusing an impurity of said first conductivity type through said window to impart said first conductivity type to a portion of said region having said second conductivity type imparted thereto to form a collector region of said first conductivity type, the remainder of said region having said second conductivity type imparted thereto defining a base region of said second conductivity type disposed between said emitter region and said collector region of said first conductivity type.

3,923,554
PHOSPHATE COATING COMPOSITION AND METHOD

Victor F. Ziemba, Detroit, Mich., assignor to Detrex Chemical Industries, Inc., Detroit, Mich.

Filed Feb. 7, 1974, Ser. No. 440,593
Int. Cl.² C23F 7/08
U.S. Cl. 148—6.15 Z 2 Claims

1. A method of preventing inhibition of effective coating action of an aqueous zinc phosphate coating bath on ferrous metal surfaces due to the presence of nitrite ions in such coating bath, said method comprising:
a. providing an aqueous zinc phosphate coating bath,
b. adding sodium nitrite to said zinc phosphate coating bath, thereby forming nitrite ions, and
c. adding to said bath a compound selected from the group consisting of urea and urea nitrate in an amount in the range from about 0.1 grams per liter to about 10 grams per liter of the total solution.

3,923,555
PROCESSING COPPER BASE ALLOYS

Stanley Shapiro, New Haven, and Ronald N. Caron, Branford, both of Conn., assignors to Olin Corporation; New Haven, Conn.

Filed Oct. 4, 1974, Ser. No. 512,259
Int. Cl.² C22F 1/04
U.S. Cl. 148—11.5 A 10 Claims

1. A process which comprises:
A. providing a copper base alloy consisting essentially of from 1.0 to 4.5% silicon, from 1.0 to 5.0% tin, balance copper, wherein the total silicon plus tin content is at least 3.5%;
B. hot rolling said alloy at a starting temperature in excess of 650°C and within 50°C of the solidus temperature of the alloy, and with a finishing temperature in excess of 400°C;
C. cold rolling the alloy at a temperature below 200°C; and D. annealing the alloy at a temperature of from 250° to 850°C for from 10 seconds to 24 hours.

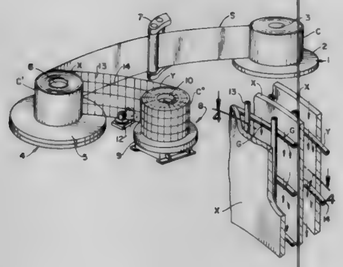
3,923,556
FORMATION OF OPEN COIL WITH SPACER BAND

Ludwig C. Iszczukiewicz, Maple Heights, Ohio, assignor to Lee Wilson Engineering Company, Inc., Cleveland, Ohio

Filed Dec. 3, 1973, Ser. No. 420,917
Int. Cl.² C21D 1/74, 9/68
U.S. Cl. 148—16 6 Claims

1. In the process of heat treating metal strip in an open coil which comprises coiling metal strip into an open coil in which the convolutions of the strip in said coil are spaced to permit passage of treating gas therebetween, said strip being of such small thickness and of such substantial width relatively to said thickness that when said treating gas is passed between said convolutions of said open coil adjacent convolutions of said strip in said coil can bend, distort, or change form sufficiently to cause said convolutions to contact sufficiently to impair

substantially the uniformity of treatment by said gas and the quality of the treated strip unless said adjacent convolutions are kept separated over a major portion of the width of said strip and thereafter during such heat treatment passing a treating gas between said spaced convolutions of said strip, the improvement which comprises winding the strip into a coil simultaneously with a longitudinal spacer so that the spacer is located between adjacent convolutions of the strip, the spacer comprising a band that is at least as wide as a major portion of the width of said strip, that longitudinally of said band is sufficiently flexible to be wound between the convolutions of said strip in said coil and transversely thereof is sufficiently wide and stiff to restrict the convolutions of the coil separated by said spacer band from bending transversely thereof substantially throughout at least a major portion of the width of the strip, said spacer band being formed of spaced substantially parallel elongated members extending transversely of said spacer band, and spaced elongated members extending generally longitudinally of said spacer band and connected to said members extending substantially transversely of said spacer band, said members being relatively laterally offset to permit adequate flow of said gas between adjacent convolutions of said coil transversely of said convolutions, and contacting and supporting said spaced convolutions at a plurality of locations sufficiently closely spaced essentially to prevent contact of adjacent convolutions with each other, and being free of sharp edges or protrusions that can harm the surfaces of said strip in said coil convolutions.



3,923,557

CORROSION RESISTANT ALUMINUM ALLOYS

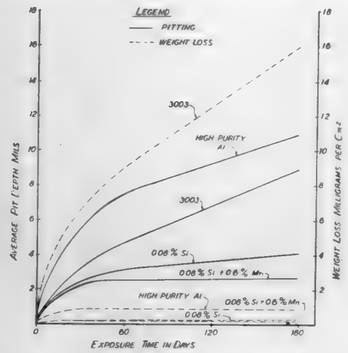
William H. Anthony, and Poppiewell, both of Guilford, Conn., assignors to Swiss Aluminum Limited, Chippis, Switzerland

Continuation-in-part of Ser. No. 414,862, Nov. 12, 1973, Pat. No. 3,878,871. This application Mar. 14, 1974, Ser. No. 451,074

Int. Cl.² C22C *21/02*

U.S. Cl. 148—32 **7 Claims**

1. A corrosion resistant aluminum base alloy resistant to pitting and corrosion in an aqueous environment consisting essentially of from 0.05 to 0.5% silicon, wherein the silicon is present in solid solution, from 0.2 to 0.8% manganese, from 0.001 to 0.2% iron, from 0.001 to 0.1% chromium, from 0.001 to 0.1% magnesium, from 0.001 to 0.1% copper, from 0.001



to 0.05% titanium, from 0.001 to 0.1% zinc, balance aluminum.

3,923,558

COPPER BASE ALLOY

Stanley Shapiro, New Haven; Michael J. Pryor, Woodbridge, and Ronald N. Caron, Branford, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 25, 1974, Ser. No. 445,447

Int. Cl.² C22C *9/02*; **C22D** *1/08*

U.S. Cl. 148—32.5 **8 Claims**

1. A copper base alloy in the wrought condition characterized by good hot rollability, good stress corrosion resistance, good strength properties and good bend characteristics consisting essentially of: tin from 2 to 11 percent; phosphorus from 0.01 to 0.3 percent; a transition metal selected from the group consisting of chromium, zirconium, titanium, vanadium and mixtures thereof in an amount from 0.2 to 0.8 percent each; and a material selected from the group consisting of iron and cobalt and mixtures thereof in an amount from 0.3 to 2.0 percent each, wherein the total of iron plus cobalt must be at least 0.8 percent; balance copper, said alloy having a grain size less than 0.010 mm, said alloy containing particulate phases uniformly dispersed throughout the matrix thereof wherein a first of said phases contains an iron and/or cobalt-transition metal intermediate phase comprising a solid solution of said iron and/or cobalt plus transition metal and wherein a second of said phases contains iron and/or cobalt-transition metal phosphides.

3,923,559

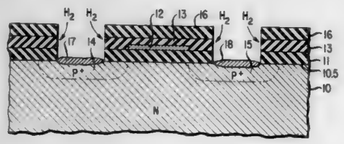
USE OF TRAPPED HYDROGEN FOR ANNEALING METAL-OXIDE-SEMICONDUCTOR DEVICES

Ashok Kumar Sinha, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 13, 1975, Ser. No. 540,643

Int. Cl.² H01L *21/324*

U.S. Cl. 148—1.5 **10 Claims**



1. In a process of manufacturing a semiconductor device, the device including a semiconductive silicon substrate a major surface of which is coated by a composite electrically insulating layer, the composite insulating layer including a layer of silicon dioxide formed upon the major surface of the substrate and a protective layer formed on the layer of silicon dioxide, the protective layer having apertures which contain electrodes deposited in the apertures, the layer of silicon dioxide being sealed by the combination of the protective layer and the electrodes against the introduction into the layer of silicon dioxide of a gas which is useful in a heat treatment for repairing damage in the silicon substrate including damage caused by the deposition of the electrodes, the step of:

introducing the gas into the layer of silicon dioxide prior to the deposition of the electrodes.

3,923,560

LOW-CARBON STEEL SHEETS TEMPER-ROLLED AFTER THE FINAL ANNEAL TO IMPROVE MAGNETIC PROPERTIES

Lester J. Regitz, Penn Township, Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 136,805, April 23, 1971, abandoned. This application Dec. 2, 1975, Ser. No. 372,432

Int. Cl.² H01F *1/00*

U.S. Cl. 148—120 **4 Claims**

1. A process for producing low-carbon sheet steel for magnetic applications consisting of; forming a steel slab consisting of 0.02 to 0.10 percent carbon, 0.40 to 0.60 percent manganese, 0.02 to 0.09 percent phosphorus, 0.025 maximum percent sulfur, 0.010 maximum percent silicon and the balance iron and residual impurities; hot rolling said slab to a thickness of 0.050 to 0.100 inch with a finishing temperature within the range 1430° to 1620°F; coiling the hot rolled steel at a temperature of 900° to 1200°F; cooling the coiled steel to ambient temperature; cleaning the steel to remove mill scale; cold rolling the cleaned steel to effect a thickness reduction of 40 to 80 percent; annealing the cold rolled steel at a temperature of 1125° to 1300°F to effect recrystallization thereof; and finally temper rolling the annealed steel sufficient to effect a plastic elongation of 6 to 10 percent to improve the steel's magnetic properties such that at 18.5 mils the steel will exhibit a permeability in excess of 6000 with core losses of less than 1.3 watts/lb. when subjected to an induction of 10 kilogauss, and exhibit a permeability in excess of 4000 with core losses of less then 3.0 when subjected to an induction of 15 kilogauss; while at 25 mils the steel will exhibit a permeability in excess of 4800 with core losses less than 1.8 when subjected to an induction of 10 kilogauss and exhibit a permeability in excess of 3000 with core losses less than 4.2 when subjected to an induction of 15 kilogauss.

3,923,561

METHOD OF HEAT TREATING SAW

Toushichi Ishizawa, and Seiya Ishizawa, both of 1-289, Kutsunoya, Shizuoka, Shizuoka, Japan

Filed May 8, 1973, Ser. No. 358,311

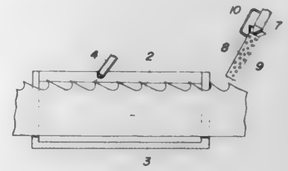
Claims priority, application Japan, Aug. 17, 1972, 47-81853; Aug. 17, 1972, 47-81852; Apr. 28, 1973, 48-48871

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C22D *9/24*

U.S. Cl. 148—147 **6 Claims**

1. A method of heat-treating saws comprising the steps of placing the saw in a cooling liquid such that the tooth ends project no more than about 2 mm above the liquid surface while keeping the other tooth portion as well as the saw body submerged in the cooling liquid, blowing gas on said said saw tooth portion so as to form a 1 to 2 mm deep depression or hollow in the liquid surface surrounding said saw tooth end portion to thereby let said tooth end portion rise up higher above the liquid surface, heating said portion to the hardening temperature while maintaining the above-said condition, then separating said heated tooth end portion away from the heating means and the depression forming means to allow the depressed liquid surface around the tooth end portion to



restore the normal planar state to thereby quench the heated tooth end portion.

3,923,562

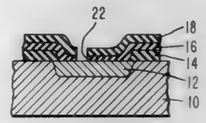
PROCESS FOR PRODUCING MONOLITHIC CIRCUITS

Vir A. Dhaka, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 765,574, Oct. 7, 1968, abandoned. This application June 24, 1971, Ser. No. 156,504

Int. Cl.² H01L *21/223*

U.S. Cl. 148—187 **7 Claims**



7. The process of claim **6** wherein the layer of second material is formed concomitantly with the diffusion of the active impurity.

3,923,563

PROCESS FOR DOPING SILICON SEMICONDUCTORS USING AN IMPREGNATED REFRACTORY DOPANT SOURCE

Doulatabad A. Venkatu, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 16, 1973, Ser. No. 351,348

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² H01I *7/36*

U.S. Cl. 148—189 **16 Claims**

1. In the process for doping a silicon semiconductor wherein a silicon semiconductor and a solid dopant source for vapor phase transport of an N-type dopant are maintained in vapor phase communication at a temperature and for a time sufficient to form a zone of N-type conductivity in said semiconductor, the improvement wherein said solid dopant source comprises a porous, inert, rigid, dimensionally stable, refractory support having a volume porosity in the range of about 30 percent to about 80 percent and an average pore size diameter of about 1 micron to about 10 microns, said support having been formed by compacting and sintering a refractory oxide powder, said support being impregnated with a dopant component comprising aluminum metaphosphate, arsenic oxide, or antimony oxide, said dopant component being present in the proportion of at least about 20 parts by weight of said support.

3,923,564
DOUBLE BASE PROPELLANT WITH THORIUM CONTAINING BALLISTIC MODIFIER

Robert Lantz, Chester, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 155,639, June 22, 1971, abandoned. This application Sept. 27, 1973, Ser. No. 398,920
Int. Cl.² C06D *5/06*
U.S. Cl. 149—19.8 **4 Claims**

1. A propellant composition consisting essentially of:

	% by weight
Nitrocellulose 12.2% to 14.6% N	40–60
Nitroglycerin	10–30
Plasticizer	10–30
Thorium ballistic modifier, based on thorium content	0.1–10
Carbon black	small amount
Heterocyclic nitramine crystalline explosive filler	0–10
Stabilizer	1–5

wherein said thorium ballistic modifier is an organic thorium compound of the group consisting of thorium malonate, thorium malate, thorium tartrate, thorium cyclopentane carboxylate, thorium stearate, thorium salicylate, thorium resorcylate, thorium succinate, thorium pimelate, thorium adipate and mixtures thereof, said propellant composition having a heat of explosion less than 900 calories per gram and exhibiting mesa or plateau ballistic properties.

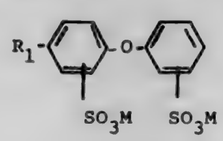
3,923,565
SENSITIZED SLURRY EXPLOSIVE COMPOSITION

Hiroshi Sakai; Fumio Takeuchi, and Tsutomu Hanake, all of Aichi, Japan, assignors to Nippon Oils and Fats Company Limited, Tokyo, Japan

Filed Dec. 9, 1974, Ser. No. 531,070
Claims priority, application Japan, Dec. 10, 1973, 48-138008; Dec. 10, 1973, 48-138009; Dec. 10, 1973, 48-138010
Int. Cl.² C06B *31/30*
U.S. Cl. 149—60 **10 Claims**

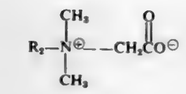
1. A slurry explosive composition comprising an inorganic oxidizing acid salt, water, a combustible material selected from the group consisting of liquid or powdered organic combustible materials and powdered inorganic combustible materials, a thickener and a sensitizer selected from the group consisting of

1. alkali metal salts of alkyldiphenyl ether disulfonic acid having the following general formula



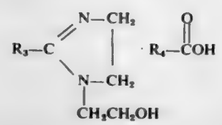
wherein R_1 represents an alkyl group having 8–24 carbon atoms and M represents an alkali metal,

2. dimethylalkylbetaines having the following general formula



wherein R_2 represents an alkyl group having 8–24 carbon atoms, and

3. fatty acid salts of 1-hydroxyethyl-2-alkylimidazoline having the following general formula



wherein R_3 represents an alkyl group having 8–24 carbon atoms and R_4 represents a hydrogen atom or an alkyl group having 1 or 2 carbon atoms.

3,923,566
METHOD OF FABRICATING AN APERTURED MASK FOR A CATHODE-RAY TUBE

Harold Bell Law, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 21, 1972, Ser. No. 264,833
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C23F *1/02*
U.S. Cl. 156—3 **14 Claims**

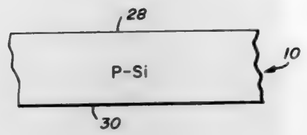
1. A method of fabricating an apertured mask for a cathode-ray tube comprising:
embossing a relief pattern on one side of a flat metal sheet with an embossing tool, said relief pattern providing regions of minimum thickness relative to the remaining regions thereof at intended aperture location and straight vertical sides perpendicular to the flat dimension of said sheet surrounding the intended aperture locations;
shaping said metal sheet into a desired mask contour;
masking the pattern side of said metal sheet with an etch-resistant material; and
etching the opposite side of said metal sheet until said regions of minimum thickness are etched through to provide apertures.

12. A method of fabricating an apertured mask for a cathode-ray tube comprising;
embossing a relief pattern on one side of a metal sheet comprising two laminated metal layers having a plurality of spaced parallel wires therebetween, said relief pattern providing regions of minimum thickness relative to the remaining regions thereof at intended aperture locations; shaping said metal sheet into a desired mask contour; and etching the opposite side of said metal sheet until said regions of minimum thickness are etched through to provide apertures.

3,923,567
METHOD OF RECLAIMING A SEMICONDUCTOR WAFER

John E. Lawrence, Cupertino, Calif., assignor to Silicon Materials, Inc., Mountain View, Calif.

Filed Aug. 9, 1974, Ser. No. 496,072
Int. Cl.² H01L *7/50*
U.S. Cl. 156—7 **11 Claims**



1. A method of reclaiming a semiconductor wafer comprising the steps of:
stripping all external layers from said wafer;
gettering said wafer so as to draw excess point defects towards the surfaces of said wafer; and
etching the surfaces of said wafer so as to effectively remove the contaminants that were drawn toward said wafer surfaces.

3,923,568
DRY PLASMA PROCESS FOR ETCHING NOBLE METAL

Richard L. Bersin, Kensington, Calif., assignor to International Plasma Corporation, Hayward, Calif.

Filed Jan. 14, 1974, Ser. No. 432,953
Int. Cl.² C23F *1/00*
U.S. Cl. 156—8 **10 Claims**

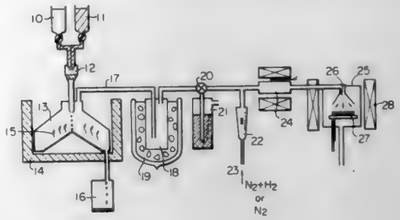
7. The process for producing an electrically conductive pattern on an electrically nonconductive substrate comprising:
a. forming a film of electrically conductive noble metal selected from the group consisting of gold, platinum, palladium, and silver on an electrically nonconductive substrate,
b. providing a film of resist over the film of noble metal with the film of resist covering those areas where the noble metal is to remain and leaving those areas where the noble metal is to be removed uncovered by resist, and
c. contacting the exposed noble metal with a plasma consisting essentially of fluorine, chlorine and not more than 25% oxygen by volume for a time sufficient to remove the exposed noble metal.

3,923,569
METHOD OF ETCHING A SEMICONDUCTOR ELEMENT

Takuhiro Ono, and Masafumi Hashimoto, both of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 17, 1973, Ser. No. 361,265
Claims priority, application Japan, May 18, 1972, 47-49612
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² H01L *5/00*
U.S. Cl. 156—17 **7 Claims**

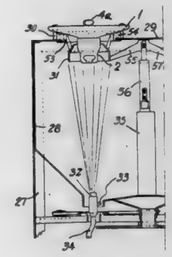
1. A method of gas-etching, which comprises applying and etching gas composed of NOCl and Cl_2, which is generated through the reaction of HCl and HNO_3, onto a semiconductor substrate while maintaining the temperature of said semiconductor substrate at a predetermined temperature above the boiling point of up to 400° C.



3,923,570
MANUFACTURE OF INSULATORS

Michel Willem, Cusset, France, assignor to Societe Europeenne d'Isolateurs en Verre (SEDIVER), France

Continuation of Ser. No. 654,567, July 19, 1967, abandoned. This application Jan. 30, 1973, Ser. No. 328,003
Claims priority, application France, Aug. 1, 1966, 71.671
Int. Cl. B32b *31/16*
U.S. Cl. 156—73.6 **4 Claims**



1. The method of assembling an insulator comprising a hollow metallic cap member, a dielectric body having a hollow crown adapted to fit within said cap member, and a stem member fitting at one end within said hollow crown, which comprises disposing said cap member, body, and stem member in telescoping relation with the body between said cap and stem members and with a quantity of cement between the cap member and body, and with a further quantity of cement between the body and stem member, and applying vibratory motion directly to the body without passage through either of said members.

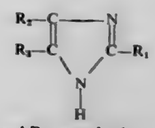
3,923,571
METHOD OF USING AN EPOXY-RESIN-IMIDAZOLE SOLDER MIXTURE

Hiroyuki Aoki, Yokosuka; Takeshi Mottate; Masao Nakajima, both of Yokohama; Kadru Ebisui, Takatsuki, and Satoshi Nishikawa, Osaka, all of Japan, assignors to Nissan Motor Company Limited, Yokohama and Sunstar Chemical Industry Co., Ltd., Takatsuki, both of, Japan

Division of Ser. No. 212,694, Dec. 27, 1971, abandoned. This application Mar. 14, 1973, Ser. No. 341,011
Claims priority, application Japan, Dec. 27, 1970, 45-127867; Dec. 27, 1970, 45-127868; Dec. 27, 1970, 45-127869
Int. Cl.² B32B *35/00;* **B44C** *1/20*
U.S. Cl. 156—94 **6 Claims**

1. A process for soldering an article, which comprises applying to the article to be soldered a fabricated article of a tacky, plastic and heat curable one-part epoxy resin soldering mate-

rial composition consisting essentially of a mixture of 100 parts by weight of an epoxy resin having at least one epoxy group per molecule and 1 to 30 parts by weight of a normally solid imidazole compound having a long-chain alkyl group with at least 15 carbon atoms expressed by the formula:



wherein R_1, R_2 and R_3 are a hydrogen atom or a hydrocarbon group, and at least one of R_1, R_2 and R_3 is a long-chain alkyl group having at least 15 carbon atoms, said fabricated article having a strippable backing film on one surface, pressing the fabricated article against the article to be soldered and bringing them into intimate adhesion to each other, extending the fabricated article, and heat-curing it with or without prior removal of the backing film.

3,923,572

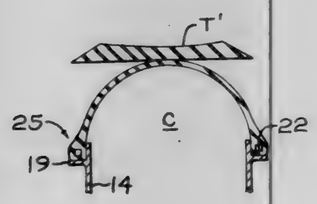
METHOD AND APPARATUS FOR BUILDING TIRES

Richard F. Garver, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 338,767, March 7, 1973, abandoned. This application Dec. 16, 1974, Ser. No. 532,883

Int. Cl.² B29H *17/16, 17/26*

U.S. Cl. 156—128 **4 Claims**



1. A tire building apparatus comprising a support, said support having a pair of laterally spaced nonyieldable rim flanges mounted thereon for movement in an axial longitudinal direction toward and away from each other with said flanges operative to support a tire carcass therebetween, drive means connected to said rim flanges for rotating said rim flanges, each of said rim flanges being recessed to provide annular outwardly extending bead seats relative to the center of the drum for supporting the annular beads of a cylindrically shaped tire carcass, said annular outwardly extending bead seat being L-shaped in cross section with the respective vertically extending portion of said spaced flanges being back to back and the respective horizontally disposed portions extending outwardly away from said vertical portion, and away from each other. Transmission means on said support operatively connected to said flanges for rotating said flanges simultaneously and for selectively moving said flanges the same longitudinal distance toward each other or away from each other, and means for pressurizing a chamber defined by said flanges and a tire carcass held by said flanges.

3,923,573

METHOD AND APPARATUS FOR CONSTRUCTION

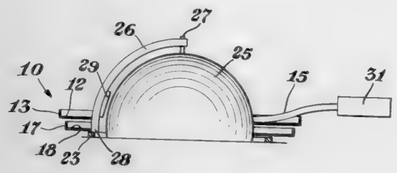
Robert A. Hay, II, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 1, 1972, Ser. No. 302,836

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B31C *13/00*; **B29C** *23/00*

U.S. Cl. 156—192 **6 Claims**



1. In a method for the fabrication of a spirally generated structure wherein a strip of structural material is deposited successively in a plurality of turns, and adjacent turns bonded to each other to form a unitary structure by means of a material depositing head moving in a generally helically spiral pattern, the improvement which comprises

providing a first generally endless conveyor disposed about at least a portion of the structure,

providing a second conveyor within said first conveyor and the second conveyor being generally co-extensive therewith,

providing to one conveyor a first strip of structural material having a length at least about one quarter the length of the conveyor,

passing the first strip to the depositing head and

supplying a second strip of structural material to the remaining conveyor, and subsequently

passing the second strip to the depositing head and

providing another strip to replace the first strip on the one conveyor.

6. An appartus suitable for handling elongate strip-like materials useful for the preparation of a spirally generated structure, the apparatus comprising

a first conveyor of generally circular closed cell configuration having an upwardly facing material receiving surface, a second conveyor disposed within the first conveyor and of generally like configuration to the first conveyor and having a generally upwardly facing material receiving surface, the material receiving surfaces of the first and second conveyors being generally composed of a plurality of rolls, the material receiving surface of the second conveyor being displaced below the surface of the first conveyor by a distance approximating the thickness of strip-like material to be handled.

3,923,574

METHOD OF BONDING AN IONOMER FILM TO A NON-IONOMER FILM USING A POLYALKYLENEIMINE

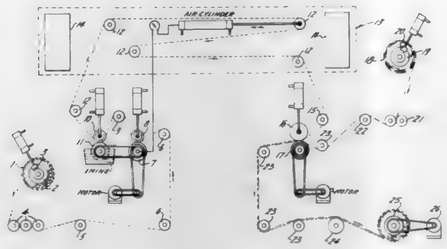
Joseph Vercauteren, New Milford, N.J., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Division of Ser. No. 835,944, June 24, 1969. This application May 21, 1974, Ser. No. 471,889

Int. Cl.² B65H *81/00*; **B32B** *31/14*; **C09J** *5/00*

U.S. Cl. 156—192 **6 Claims**

1. In a process for the production of a structured film wherein an ionomer film and a non-ionic polymer film are bonded together using a polyalkyleneimine at the interphase to promote adhesion and the structured film is wound onto a roller after bonding, the improvement wherein the polyalkyleneimine is applied to a surface of one of said films as an aqueous solution that contains about 0.01 to 2 percent by weight of said polyalkyleneimine.



3,923,575

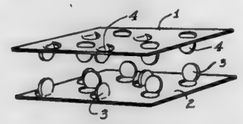
METHOD OF FORMING A BOARD STRUCTURE COMPRISING SPACED PANELS JOINED BY INTERVENING TABS

William A. Wootten, 425 Via Corta, Malayo Cove Plaza, P.O. Box 98, Palos Verdes Estates, Calif. 90274

Division of Ser. No. 170,120, Aug. 9, 1971, Pat. No. 3,846,218. This application Nov. 4, 1974, Ser. No. 521,001

Int. Cl.² B31F *3/00, 5/00*

U.S. Cl. 156—211 **13 Claims**



1. The method of forming a structural member comprising the steps of partially perforating a pair of flat panels to form a plurality of tab areas in each said panel, said perforating step, for each said tab area, leaving an unperforated portion in said panel which is adapted to act as a hinge line for said tab area and severing a further portion of said panel along a continuous line extending between the ends of said hinge line to define a tab, said perforating step producing like patterns of said tab areas in said pair of panels respectively with hinge lines in each pattern being disposed at angles to one another, positioning said pair of panels in spaced, facing relation to one another with said like patterns of tab areas being in substantially opposing relation to one another, bending the tab areas in said panels about their respective hinge lines to form a plurality of tabs which extend in a plurality of angularly disposed planes, each of which is positioned at substantially right angles to each panel, into the space between said panels, each tab extending from one of said panels being disposed in facing, closely adjacent, substantially completely overlapping, relation to a corresponding tab extending from the other of said panels, and fastening each tab extending from said one of said panels to the corresponding tab extending from the other of said panels.

3,923,576

WEATHERSEAL MANUFACTURE

Earl V. Lind, Rochester, N.Y., assignor to The Schlegel Manufacturing Company, Rochester, N.Y.

Filed Feb. 27, 1974, Ser. No. 446,301

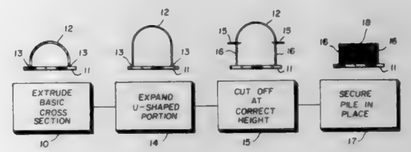
Int. Cl.² B29F *3/08*

U.S. Cl. 156—244 **4 Claims**

1. A weatherseal making method comprising:

a. extruding a resin base with a relatively thick and generally flat support portion and a relatively thin portion U-shaped in cross section and joined to opposite side edge regions of said support portion and arching over one face surface of said support portion;

b. while said resin material is still plastic, producing a substantially lower pressure outside said U-shaped portion than inside said U-shaped portion to expand said U-shaped portion away from said support portion and reduce the thickness of the wall of said U-shaped portion;



c. setting said resin material with said U-shaped portion expanded;

d. cutting off each side of said U-shaped portion at a predetermined distance from said support portion to leave a pair of thin, spaced-apart, resilient fins extending away from said one face surface of said support portion; and

e. securing a fibrous pile material to said one face surface of said support portion between said fins.

3,923,577

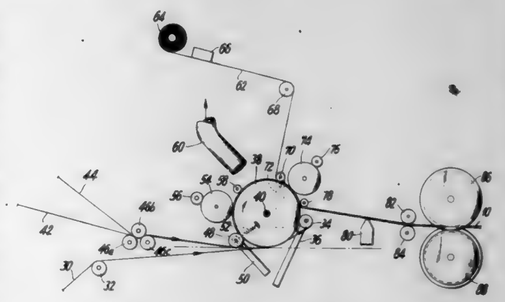
METHOD FOR MAKING A MULTI-COMPONENT ARTICLE

William E. Baab, Tulsa, Okla., assignor to Poly-Version, Inc., Tulsa, Okla.

Filed Apr. 2, 1973, Ser. No. 346,740

Int. Cl.² B32B *31/02, 31/04*; **A41D** *19/02*

U.S. Cl. 156—251 **4 Claims**



1. A method for manufacturing a unitary package containing at least two separately usuable articles of wearing apparel, said method comprising the steps of:

a. feeding a flexible support layer onto the surface of a moving carrier;

b. depositing a sufficient number of layers of a first material on the flexible support layer;

c. forming the first article in the shape of a glove from the first material while the first material is positioned on the flexible support layer such that the first article may be subsequently removed from the support layer and used independently thereof;

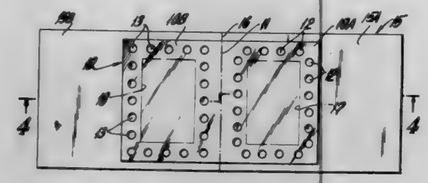
d. depositing a sufficient number of layers of a second material over the formed first article; and

e. forming the second article in the shape of a hat from the second material while the second material is positioned over the first formed article whereby the second formed article may be subsequently removed and be used independently of the first article.

3,923,578
METHOD OF HEAT SEALING SHEET-FORM LAYERS OF PERFORATED PLASTIC BETWEEN LAYERS OF PAPERBOARD

George R. Hair, 8 Kozy Lane, Clifton, N.J. 07013

Filed Sept. 14, 1972, Ser. No. 289,091
Int. Cl.² B32B 31/00
U.S. Cl. 156—252 7 Claims

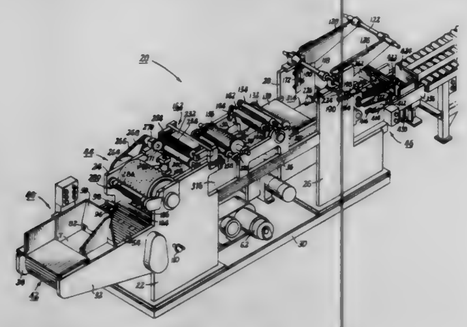


1. A method of heat sealing at least two superposed sheets of heat sealable plastic to the same layer of non-heat conducting material comprising the steps of perforating each sheet of plastic in a pattern such that, when the sheets of plastic are superposed for heat sealing, the perforations of each sheet of plastic are aligned with imperforate portions of a superposed perforated sheet of plastic; and applying sealing heat and pressure to the superposed sheets of plastic and non-heat conducting material.

3,923,579
METHOD FOR MAKING TILE PRODUCTS

Frank L. Califano, Hackensack, and Paul N. Shutak, Madison, both of N.J., assignors to The Flintkote Company, White Plaines, N.Y.

Division of Ser. No. 794,286, Jan. 27, 1969, Pat. No. 3,598,682.
This application July 16, 1970, Ser. No. 62,765
Int. Cl.² B32B 31/00
U.S. Cl. 156—263 7 Claims



1. A method of producing a pressure-sensitive adhesive tile product comprising the steps of:

conveying a succession of tiles at a uniform velocity along a straight-line path,

moving a continuous web of protective paper at said uniform velocity past an adhesive applicator,

coating said paper with an adhesive coating in a predetermined pattern,

cutting said adhesive-coated protective paper to separate predetermined lengths while said web of paper is moving at said uniform velocity,

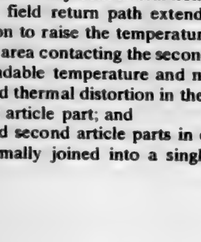
moving said separate predetermined lengths of paper to a point in line with and at the same uniform velocity as said tiles, with the adhesive-coating side of the protective paper facing the tiles, and

applying rolling contact pressure against the adhesive-coated paper to press it against the tiles while said tiles and said predetermined lengths of paper are continuously moving along at said uniform velocity.

3,923,580
FABRICATING METHOD AND ARTICLE FORMED THEREBY

Alfred F. Leatherman, Columbus, Ohio, assignor to William C. Heller, Jr., Milwaukee, Wis.

Continuation-in-part of Ser. No. 132,315, April 8, 1971, abandoned. This application May 22, 1973, Ser. No. 363,177
Int. Cl.² B29C 19/02; B23K 13/02
U.S. Cl. 156—272 17 Claims



1. A method of fabricating articles by thermally joining contiguous areas of at least first and second integral thermoplastic article parts, each of said parts having a joinder area portion and a non-joinder area portion, said method comprising the steps of:

dispersing a particulate susceptor heatable upon exposure to a high frequency field in a thermoplastic material to define a modified thermoplastic material;

forming the modified thermoplastic material into a first integral self-supporting article part having said joinder area portion completely including said susceptor and said non-joinder area portion completely including said susceptor, said self-supporting article part possessing utility in the article;

juxtapositioning the first article part and the second article part so that the joinder area portions thereof are in close contact and said non-joinder area portion of said first article part projects laterally outwardly from said joinder area and said second article part having said non-joinder area projecting laterally outwardly from said joinder area portion in spaced relation to said non-joinder area portion of said article part, said non-joinder area portions defining spaced and separate self-supporting elements of the article possessing utility;

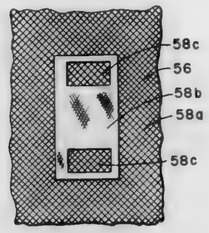
aligning of a high frequency source means essentially only with the joinder area, and briefly exposing the joinder area portion of the first article part to the localized high frequency field with the adjacent lateral non-joinder area portion forming a field return path extended from the joinder area portion to raise the temperature of the surface of the joinder area contacting the second article part to a thermally bondable temperature and minimizing of heat generation and thermal distortion in the non-joinder portion of the first article part; and

retaining the first and second article parts in contact until the parts are thermally joined into a single integrated article.

3,923,581
METHOD OF MAKING A THERMAL DISPLAY SYSTEM

Thomas R. Payne; Hubert R. Plumlee, both of Plano, and Millard M. Judy, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 156,772, June 25, 1971, Pat. No. 3,808,399. This application Jan. 9, 1974, Ser. No. 432,017
Int. Cl.² B32B 31/04, 7/14; H05B 3/02
U.S. Cl. 156—291 1 Claim



1. In the fabrication of a thermal display device including a substrate and an array member having a plurality of selectively energizable heater elements and adapted to be connected to the substrate which serves as a heat sink therefor, the method of bonding said array member to said substrate comprising:

applying a quantity of uncured adhesive material as a layer of substantially uniform thickness to a predetermined area of a surface of one of said substrate and said array member to be connected to an opposed surface of the other of said substrate and said array member,

placing said array member and said substrate together with the opposed surfaces thereof in juxtaposition and the layer of uncured adhesive material interposed therebetween,

positioning a tool having a plurality of probes disposed in a single and at least one other probe having its end positioned above the plane in which said plurality of probes are dispoed by a distance equal to the predetermined thickness of said array member and said layer of adhesive material such that said plurality of probes disposed in a single plane are located in engagement with the portion of said substrate surface bounding the layer of adhesive material and said array member and said at least one other probe is in engagement with the opposite surface of said array member,

locating the opposed surfaces of said array member and said substrate in a predetermined relation with the layer of uncured adhesive material interposed therebetween and having a predetermined uniform thickness by pressing said tool against the opposite surface of said array member and said substrate surface, and

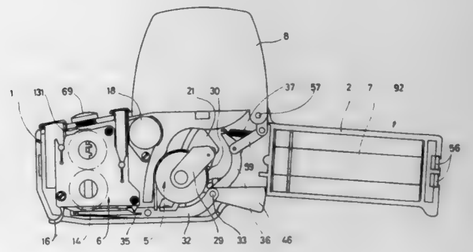
curing the adhesive material to produce a bonded connection between said array member and said substrate with a layer of cured adhesive material interposed therebetween of a uniform predetermined thickness so as to exhibit uniform thermal conductivity characteristics.

3,923,582
LABELLING APPARATUS FOR PRINTING DISPENSING AND AFFIXING OF LABELS

Carl Schroter, Rommelshausen, and Eckhard Mulfinger, Stuttgart-Uhlbach, both of Germany, assignors to Heinrich Hermann, Stuttgart, Germany

Filed Oct. 29, 1973, Ser. No. 410,317
Claims priority, application Germany, Nov. 2, 1972, 2253565; Nov. 2, 1972, 2253566; Nov. 2, 1972, 2253623
Int. Cl.² B65H 5/28
U.S. Cl. 156—368 23 Claims

1. A labelling apparatus for printing, dispensing and affixing of labels which are detachably carried on a carrier tape, comprising a housing; supply means in said housing for supplying a carrier tape with the detachable labels thereon; printing means mounted in said housing and including a plurality of turnable printing wheels past which said tape travels from said supply means; affixing means downstream of said printing means for detaching the printed labels from said tape and affixing them to an object to be labelled; and drive means downstream of said affixing means for incrementally advancing said carrier tape past said printing wheels in proximity therewith, said drive means comprising a drive wheel adapted to be driven, a lever mounted in said housing for angular displacement about a pivot axis and having an arm engaged by said drive wheel, a rotatable drum having a periphery over which said tape passes, an engaging member for intermittently

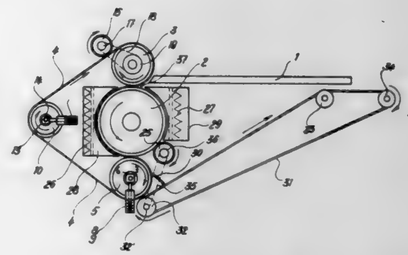


engaging said tape into frictional engagement with said periphery so that the tape is entrained by the rotating drum, and a pressure plate located adjacent said printing wheels proximal to a side of said tape which is opposite the same, and intermittently movable towards said printing wheels substantially simultaneously with said intermittent operation of said engaging member so as to urge said tape and the respective label thereon into engagement with said printing wheels for printing by the same, whereby the amount of time and the energy required to operate the labelling apparatus are substantially minimized due to the substantial simultaneity of the movement of said pressure plate with the operation of said engaging member, and due to the proximity of said pressure plate to said tape.

3,923,583
MACHINE FOR THE COUPLING OF FABRICS

Giacomo Bianchini, Via S. Bernardo 22, Cascina Nuova di Bollate (Milan), Italy

Filed Feb. 14, 1973, Ser. No. 332,386
Claims priority, application Italy, Feb. 16, 1972, 20627/72
Int. Cl.² B32B 31/04
U.S. Cl. 156—378 7 Claims



1. In a machine for the coupling of a fabric with an interlining by means of the interposition of an adhesive layer including a compressing device and a heating device, said compressing device including: upper, central and lower rollers with axes fixedly disposed in the same plane, a guide roller displaced from the plane of the said upper, central and lower rollers, a

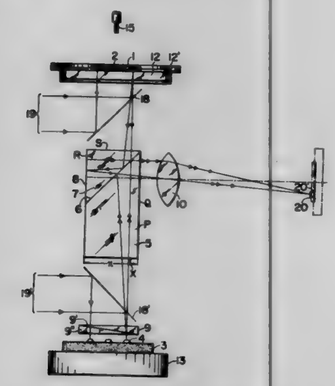
continuous belt disposed about the surfaces of said upper and lower rollers on one side of said plane and on the surface of said central roller on the remaining side of said plane, said lower roller being the drive roller for said belt, means for yieldingly urging said front roller away from said central roller whereby slack in said belt is taken up, second means for yieldingly urging said lower roller toward said central roller whereby the fabrics to be coupled having been received between said belt and said central roller is maintained in contact therewith; and said heating device including: two infra-red ray heaters disposed on opposite sides of said central roller; a probe in contact with said central roller indicating the temperature thereof and an exit conveyor which is continuous and tangential with said belt.

3,923,584

POSITIONING ARRANGEMENT AND FACE DOWN BONDER INCORPORATING THE SAME

Toku Hojo, Yokohama; Takao Matui, Setagaya, and Rikiti Kimura, Ota, all of Japan, assignors to Hitachi, Ltd., Japan

Division of Ser. No. 20,337, March 17, 1970, Pat. No. 3,684,384. This application Mar. 3, 1972, Ser. No. 231,475
Claims priority, application Japan, Mar. 17, 1973, 48-19566; Mar. 17, 1973, 48-19567
Int. Cl.² B32B *31/00, 19/02*
U.S. Cl. 156—379 **1 Claim**



1. A bonding arrangement for aligning first and second components to be mated and bonding said components together in registration, comprising:

a first holder for holding thereon the first component so as to expose upwardly an upper face of the first component;

a second holder positioned above the first holder for holding thereon the second component so as to expose downwardly a lower face of the second component, the first and second components being held apart is substantially parallel face-to-face relationship to each other;

a compound prism interposed between said two components and having a half-silvered mirror which is disposed so as to form an angle of 45° with respect to the two components, a silvered mirror which is disposed so as to form an angle of 45° with respect to the half-silvered mirror and an angle of 90° with respect to the two components, a truncated quadrilateral prism of transparent material having a 45° truncation, a rectangular transparent prism having a surface subtending the rectangle thereof and united at the surface with the truncation of the truncated prism into a parallelopiped shape, said half-silvered mirror film being formed at the interface between the truncated prism and the rectangular prism, and a totally reflective mirror film serving as the silvered mirror and provided on one of two mutually perpendicular surfaces of the rectangular prism, said one of the two surfaces being opposite to a side of the truncated prism and the other one forming a top of the compound prism which is opposite to the base of the truncated prism;

imaging means disposed in front of said silvered mirror of the compound prism in such a manner that the half-silvered mirror is interposed between the imaging means and the silvered mirror for forming images of the upper face of the first component and the lower face of the second component superposed on each other;

illumination means for illuminating said two components, respectively;

pick up means for picking up the second component from the second holder and being mounted for moving the second component thus picked up in a direction up and down perpendicular to the first component;

centering means for moving at least one of the pick up means and the second holder with respect to the other so that the center of the pick up means is aligned with the center of the second component on the second holder before it is picked up;

position adjusting means for moving said first holder vertically and horizontally with respect to the second holder under maintenance of the mutually parallel relationship therebetween;

removing means for moving the compound prism and the second holder to anout-of-the-way position between the two components, so that the second component is contacted to the first component by the downward movement of the pick up means; and

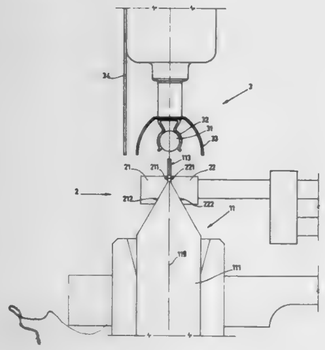
means for supplying ultrasonic oscillation power to said pick up means while the two components are mated together.

3,923,585

METHOD AND APPARATUS FOR THE CLOSING BY TRAMSVERSE WELDING OF FLEXIBLE TUBES MADE OF METAL-THERMOPLASTIC LAMINATE

Jean-Marie Vouillemin, Ste-Menehould, France, assignor to Turboplast-France, Paris, France

Division of Ser. No. 342,689, March 19, 1973, Pat. No. 3,837,961. This application June 3, 1974, Ser. No. 475,425
Claims priority, application France, Mar. 23, 1972, 72.10240
Int. Cl.² B32B *19/02, 31/00*
U.S. Cl. 156—380 **3 Claims**



1. Apparatus for closing the open end portion of flexible tubes formed with a thermoplastic interlayer by transverse welding of the flexible tube comprising

1. a pair of jaws mounted for movement into and out of gripping engagement with the opposite side of a portion of the tube adjacent the open end to flatten and to grip the flattened end portion of the tube with a free end portion extending beyond the jaws when in gripping engagement;

2. an infrared radiation means beyond the gripping jaws for directing radiations onto the free flattened end portion of the tube extending beyond the jaws to pre-heat said portion, and

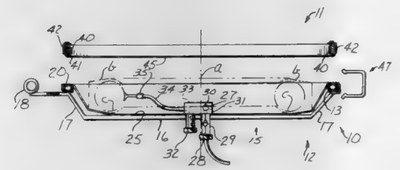
3. a pair of welding jaws mounted for movement into and out of engagement with the pre-heated flattened free end portion of the tube extending beyond the gripping jaws, at least one of said welding jaws embodying induction heating means additionally to heat the free flattened end portion of the tube extending beyond the gripping jaws and to weld the same when in position of engagement with the tube, said welding jaws also embodying cooling means for setting the weld.

3,923,586

EVACUABLE MEMBRANE APPARATUS FOR TIRE RECAPPING

Jerome A. Gross, 6304 S. Rosebury, Clayton, Mo. 63101

Continuation-in-part of Ser. No. 374,675, June 28, 1973, Pat. No. 3,847,695. This application Oct. 21, 1974, Ser. No. 516,188
Int. Cl.² B29H *17/00*
U.S. Cl. 156—394 **4 Claims**



1. For use in a pressurizable chamber for vulcanizing a pre-formed tread strip to a tire casing containing an inner tube,

evacuable membrane apparatus comprising

an upper and a lower air-impermeable casing-enveloping membrane, each having a normally planar outer margin extending beyond such tire casing, at least one of said membranes having an air evacuation outlet and a tube communicating therefrom to the outer side of such pressure chamber, and having an air inlet having a conduit between said membranes and connectable to such inner tube, together with

a rigid fixture comprising

a resilient pressure rim whose radius does not exceed that of the radially outer membrane portions, the rim having a continuous resilient face, the fixture further including

a circular pressure bar hoop narrower than the width of the resilient face of the rim and of such radius as to fit therewith,

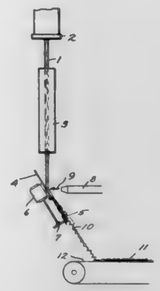
means to secure the hoop in position relative to the rim, and means to apply pressure between the pressure bar hoop and the resilient face of the rim, whereby to clamp therebetween the margins of the upper and lower membranes sealedly at a pressure in excess of the pressure of such vulcanizing chamber.

3,923,587

APPARATUS FOR THE MANUFACTURE OF CONTINUOUS FILAMENT NONWOVEN WEB

Pierre Porte, Lyon, France, assignor to Rhone-Poulenc-Textile, Paris, France

Division of Ser. No. 320,843, Jan. 4, 1973, Pat. No. 3,853,651. This application Mar. 28, 1974, Ser. No. 455,810
Claims priority, application France, Jan. 4, 1972, 72.00264
Int. Cl.² B65H *33/02*
U.S. Cl. 156—433 **10 Claims**



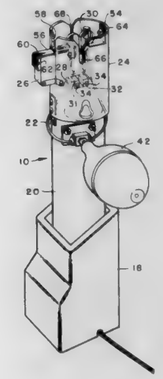
1. Apparatus for making spunbonded nonwoven fabrics, said apparatus comprising means for producing a plurality of filaments of an organic polymer, means for stretching said filaments to orient same, moving receiving means, and deflector surface means associated with said stretching means for distributing the stretched filaments on said moving receiving means by impacting said filaments on said deflector surface means, at least that portion of said deflector surface means wherein the plurality of filaments have their maximum width being vibrated in a substantially vertical plane at a frequency of 1.67 – 1000 vibrations per second at an amplitude of 5 – 30% of the length of the deflector surface means.

3,923,588

YARN SPLICER

William P. Warthen, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Aug. 1, 1974, Ser. No. 493,511
Int. Cl.² B65H *21/00, 69/06*
U.S. Cl. 156—502 **5 Claims**



1. A yarn splicing apparatus comprising: a resistance heating element having an area to accommodate at least two synthetic yarns to be spliced, a source of power, means to supply power from said source of power to said heating element and means to supply a cooling medium to said area to accommodate the synthetic yarns, said means to supply power from

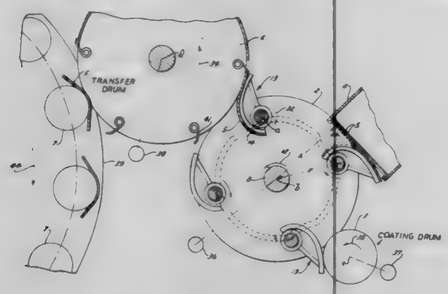
said source of power including a microswitch mounted on said apparatus in a position to be actuated by one of the yarns being spliced.

3,923,589

APPARATUS FOR COATING LABELS WITH ADHESIVE AND APPLYING THEM TO OBJECTS SUCH AS BOTTLES

Georges Antoine Tavernier, Lyon, France, assignor to Societe Anonyme Societe Nouvelle Baele Gangloff, Villeurbanne, France

Filed Feb. 13, 1974, Ser. No. 441,966
Claims priority, application France, Feb. 14, 1973, 73.05857
Int. Cl.² B65C *9/16, 9/22*; B65H *3/20*
U.S. Cl. 156—568 **9 Claims**



1. An apparatus for picking up a flat flexible sheet, said apparatus comprising:
a turntable;
means for rotating said turntable about a turntable axis;
a stationary magazine holding a stack of sheets adjacent said turntable;
at least one pickup head on said turntable rotatable about a pickup axis spaced from said turntable axis and having a pickup face engageable with said stack of sheets and formed generally as a curved surface of varying radius of curvature;
means for rotating said head on said support about said pickup axis as same passes said magazine and for rolling said face over said stack without sliding of said face on said stack; and means for adhering the top sheet of said stack to said face whereby on rolling of said face thereover said sheet adheres to said face and is picked up by said head, said surface being defined by a family of parallel lines having a radius of curvature decreasing from a leading edge to a trailing edge.

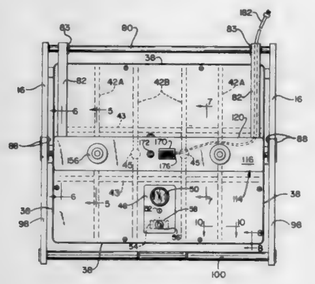
3,923,590

DRY MOUNTING PRESS

Donald N. Humphries, Oxford, Conn., assignor to Seal Incorporated, Derby, Conn.

Filed May 14, 1973, Ser. No. 359,909
Int. Cl.² B30B *15/34*
U.S. Cl. 156—580 **14 Claims**

1. A press comprising:
a bed;
a platen assembly positioned above said bed;
hinge arms pivotally connected to the bed;
a cross-beam extending transversely of said hinge arms over said platen assembly;
pivot means connecting said hinge arms to said cross-beam so as to allow relative pivotal movement between said cross-beam and said hinge arms;
height-adjusting means located between and spaced from said hinge arms for locking said platen assembly to said cross-beam;
toggle links pivotally connected to opposite sides of said bed;
lever arms pivotally connected to said toggle links;
means connecting said cross-beam to said lever arms; and
means for pivoting said lever arms relative to said toggle links so as to selectively raise and lower said platen assembly into open and closed positions, respectively relative to said bed; said height adjusting means comprising a stud affixed at one end to said platen assembly, and rotatable threaded means screwed onto said stud connecting said cross-beam to said stud, whereby the spacing between said cross-beam and said platen assembly can be varied by rotating said threaded means on said stud.



3,923,591

PREHYDROLYSIS AND DIGESTION OF FIBROUS LIGNOCELLULOSIC MATERIAL

Eduardo Joel Villavicencio, New York, N.Y., assignor to Process Evaluation & Development Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 236,589, March 21, 1972, abandoned, which is a continuation-in-part of Ser. No. 149,000, Juné 1, 1971, Pat. No. 3,738,908, and Ser. No. 220,390, Jan. 24, 1972, abandoned. This application Feb. 21, 1974, Ser. No. 444,668The portion of the term of this patent subsequent to June 12, 1990, has been disclaimed.
Int. Cl.² D21C *3/12, 3/26*
U.S. Cl. 162—86 **7 Claims**

1. A method for the production of cellulosic pulp from fibrous lignocellulosic material comprising prehydrolizing said lignocellulose material at a pH of about 4.0 to 6.0 in the presence of about 70 to 100 weight percent moisture based on the dry weight of said material, digesting the prehydrolized material with a sodium carbonate buffered aqueous digestion solution having a pH of 8.5 to 11.5 and a sodium oxide content of about 10 to 14 percent by weight, said aqueous digestion solution consisting essentially of about 1.1 to 3 moles of sodium bisulfite per mole of sodium hydroxide whereby during digestion the pH remains above about 8.5 and said sodium bisulfite and sodium hydroxide penetrate said fibrous lignocellulose material, react to form sodium sulfite, and digest said lignocellulose material.

3,923,592

PROCESS FOR MANUFACTURING A FLUSHABLE FIBROUS SHEET MATERIAL FOR USE IN SANITARY PRODUCTS

Donald K. George, Aiken, and Joseph H. Angel, Columbia, both of S.C., assignors to Riegel Textile Corporation, New York, N.Y.

Continuation of Ser. No. 95,388, Dec. 4, 1970, abandoned. This application July 31, 1974, Ser. No. 493,251
Int. Cl.² D21H *3/40, 3/00*; A61F *13/18*
U.S. Cl. 162—168 **3 Claims**

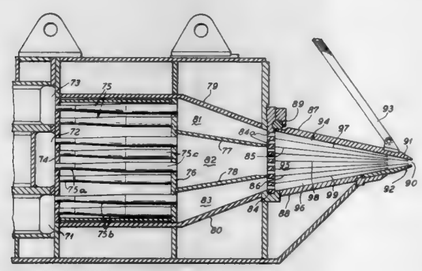
1. A process for producing a cellulosic sheet suitable for use in flushable sanitary products and being resistant to disintegration in use, and in which the sheet is formed on the machine wire of a paper machine, comprising incorporating in the white water system of the paper machine a high molecular weight water soluble polymeric material in finely ground particulate form which hydrates and swells rapidly in cold water and which has cold water soluble components, said polymeric material being sufficiently finely ground to pass through a 50 mesh screen, permitting said polymeric material to remain in the white water for about three to 90 seconds to effect hydration and swelling of the polymeric particles but avoiding an excessive residence time in the white water sufficient to dissolve the water soluble polymer components or permit loss of the hydrated particles through the paper machine wire, forming on the paper machine wire a cellulosic fiber sheet containing the swollen polymeric particles, and subsequently drying the cellulosic sheet produced on the paper machine with the water soluble polymeric particles contained therein effecting bonding together of the cellulosic fibers in a sufficiently strong manner to prevent breaking of the bond through normal use in the sanitary products, but permitting flushing of the sanitary products after use by dispersing the polymeric particles and the cellulosic fibers in the flushing water.

3,923,593

MULTIPLE PLY WEB FORMER WITH DIVIDED SLICE CHAMBER

Herman Ward Verseput, Kalamazoo, Mich., assignor to Beloit Corporation, Beloit, Wis.

Continuation-in-part of Ser. No. 204,545, Dec. 3, 1971, abandoned. This application Jan. 17, 1974, Ser. No. 434,048
Int. Cl.² D21F *1/06*
U.S. Cl. 162—301 **10 Claims**



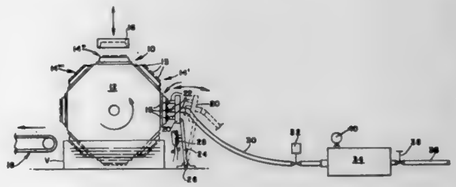
1. In a machine for making a multi-ply web such as a paper from stocks having a slurry of fibers in a liquid carrier, the combination comprising:
a headbox having a lower wall and an upper wall;
a slice chamber connected to the headbox having a lower slice wall and an upper slice wall being extensions of the headbox walls, one of said slice walls being pivoted at its upstream edge with said slice walls tapered toward each other and terminating in a slice opening;
flow divider plates in the headbox extending completely across the headbox in the direction of flow and dividing the headbox into separate stock chambers;
separate stock supply means to each of said chambers for delivering stocks of different physical characteristics;
flexible sheet members in the slice chamber secured at their upstream ends in alignment with the plates with their downstream ends being unattached and extending to the slice opening whereby the stocks of the separate chambers do not intermix and remain separate for the full travel onto the forming surface and the pressure of the stock flows on opposite sides of said sheet members remains equal for uniform velocity flow at the slice opening; and a forming surface positioned to have stock discharged thereon from the slice opening.

3,923,594

METHOD FOR FORMING MOLDED FIBER PRODUCTS WITH DECKLE-FREE WINDOWS

Henry A. Lord, Cape Elizabeth, Maine, assignor to Diamond International Corporation, New York, N.Y.

Division of Ser. No. 264,190, June 19, 1972, Pat. No. 3,871,586. This application June 12, 1974, Ser. No. 481,851
Int. Cl.² D21J *3/00*
U.S. Cl. 162—195 **4 Claims**



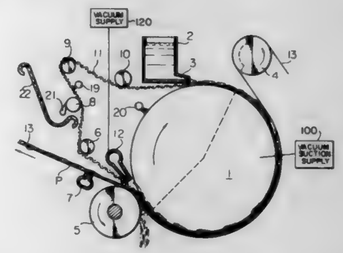
1. The method of forming deckle-free windows in molded fiber products comprising the steps of:
a. applying pulp slurry on a forming mold provided with one or more block-out patches for forming one or more windows in the finished product;
b. moving said forming mold with pulp slurry applied thereon to a deckle removing position whereby deckle formed on said one or more block-out patches may be removed therefrom; and
c. moving an air distributor manifold box with one or more jet tubes into very close proximity to said block-out patches and discharging high pressure air through each of said jet tubes against each of said block-out patches thereby blasting deckle off the top of each block-out patch, said high pressure air being discharged through said jet tubes with each of said jet tubes directed over the center of a block-out patch associated therewith whereby the air emitting from each jet tube strikes the top of the block-out patch and moves radially outwardly thereacross to sweep the deckle therefrom and over surrounding pulp portions clear of the block-out patch.

3,923,595

HIGH SPEED MULTI-CYLINDER MACHINE FOR MANUFACTURING A MULTI-PLY PAPER

Masateru Tokuno, Nishinomiya, Japan, assignor to Shizuoka-Kogyo Co., Ltd., Japan

Continuation of Ser. No. 74,302, Sept. 22, 1970, abandoned. This application Apr. 19, 1974, Ser. No. 462,260
Int. Cl.² D21F *1/60, 11/08*
U.S. Cl. 162—300 **4 Claims**



1. High speed multi-cylinder arrangement for manufacturing multi-ply papers comprising a plurality of cylinder parts, each cylinder part comprising a wire cylinder having an upper section and a lower section and rotating at a high speed, an endless wire screen first making contact with said wire cylinder at said upper section and encircling a part of said wire

cylinder and separating from contact with said wire cylinder at said lower section, an endless felt encircling said endless wire screen at said part of said wire cylinder so that said endless wire screen and said felt form a sheet forming zone therebetween, said wire screen and felt moving at the same running speed as said wire cylinder, tension means for contacting said wire screen with said wire cylinder under pressure, means for guiding said felt so that part of said wire cylinder is encircled with said felt and said felt is urged toward said wire screen under pressure, a flow box disposed above said wire screen and provided with a bottom aperture to deposit stock upon said wire screen, said flow box being located above said wire screen at a predetermined distance from an ingoing nip of said sheet forming zone, said wire screen being carried along a horizontal passage between a position below said flow box and said ingoing nip, a couch roller disposed below said wire cylinder, said couch roller being urged toward said wire cylinder to press said felt and wire screen against said wire cylinder, first and second roll means spaced from said couch roller, said screen extending from said lower section of said wire cylinder around said first roll means whereby said first roll means determines the location of separation of said screen from said wire cylinder, said felt extending from said sheet forming zone at said couch roller to said second roll means whereby said second roll means determines a location of separation of said felt and screen at said couch roller, a suction slider located adjacent said lower section of said wire cylinder between a surface of said wire cylinder and said wire screen adjacent said location of separation of said screen from said wire/cylinder, said suction slider having a suction aperture facing in the tangential direction of said wire cylinder at said location of separation of said screen from said wire cylinder to draw water from within said wire cylinder, means connected to said suction slider for applying suction thereto, and a suction box disposed adjacent said couch roller downstream of said location of separation of said felt from said screen, said suction box located below said felt and below said wire screen closely downstream of said suction slider, said suction box provided with a suction aperture closely facing the underside of said felt for holding paper formed between said felt and wire screen to said felt at said location of separation of said felt from said screen.

3,923,596

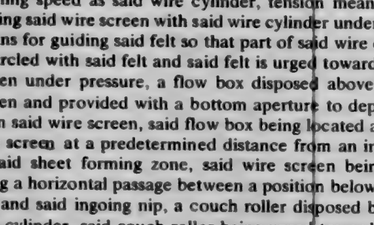
FUEL ASSEMBLIES FOR NUCLEAR REACTORS

Byron H. Leonard, Jr., 62 Linda Vista, Atherton, Calif. 94025

Filed Jan. 11, 1960, Ser. No. 1,676

Int. Cl. G21c *3/36*

U.S. Cl. 176—75 **3 Claims**



1. A fuel assembly for a nuclear reactor comprising, a plurality of elongated plate-like fuel bearing elements, of the same length and width, paired longer than they are wide and assembly spacer members having means defining opposed spaced notches for receiving the side edges of said elongated plate-like fuel bearing elements, and means for securing said plate-like fuel bearing elements to said paired assembly spacer members with the side edges of said plate-like elements engaged in opposite notches in said paired assembly spacer elements so as to secure said fuel bearing elements in side by side spaced relation in a staggered arrangement transversely so as to conform to a diamond shaped profile in which opposite sides are parallel and opposite angles are substantially 60° and substantially 120 degrees.

3,923,597

MERCURY CONCENTRATION BY THE USE OF MICROORGANISMS

Ananda M. Chakrabarty, Latham; Denise A. Friello, Schenectady, and Joan R. Mylroie, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 1, 1974, Ser. No. 493,693

Int. Cl.² C12B *1/00*

U.S. Cl. 195—2 **6 Claims**

1. A process for significantly reducing the mercury content of an aqueous liquid containing mercury contamination comprising the steps of:

a. bringing said aqueous liquid into contact with a Pseudomonas organism genetically engineered to contain transmissible MER plasmid, said MER plasmid having the property of generating mercury-binding protein, the concentration of said organism in contact with said liquid being at least about 10^9 MER-containing cells per ml of said liquid,

b. maintaining said liquid-organism contact for at least about 10 minutes whereby mercury becomes protein bound by said MER-containing cells of said organism and

c. recovering the resulting liquid from the resulting organism.

3,923,598

PROCESS FOR PRODUCING CYCLODEXTRINS

Koki Horikoshi, Fujimi, Japan, assignor to Rikagaku Kenkyusho, Japan

Filed Mar. 18, 1974, Ser. No. 452,139

Claims priority, application Japan, Mar. 19, 1973, 48-31680; Dec. 6, 1973, 48-136664

Int. Cl.² C12D *13/02*

U.S. Cl. 195—31 R **4 Claims**

1. A process for producing cyclodextrin which comprises subjecting starch to the activty of a cyclodextrin glycosyltransferase produced by cultivation of a microorganism selected from the group consisting of Bacillus sp. No. 38-2 (ATCC 21783), Bacillus sp. No. 135 (ATCC 21595), Bacillus sp. No. 169 (ATCC 21594), Bacillus sp. No. 13 (ATCC 31006) and Bacillus sp. No. 17-1 (ATCC 31007), at a pH of 6.0 – 10.5 and recovering said cyclodextrin.

3,923,599

PROCESS FOR PREPARING PLANT ENZYME PREPARATIONS OF LOW GERM CONTENT

Hans Hess, Binningen; Guenther Mueller, Arlesheim, and Xaver Buehlmann, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 26, 1972, Ser. No. 266,195

Claims priority, application Switzerland, July 5, 1971, 9831/71

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C12D *11/00;* **C07G** *7/022*

U.S. Cl. 195—66 R **13 Claims**

1. A process for the manufacture of a plant enzyme preparation of papain, ficin or bromelin of low germ content, which in comparison to unpurified corresponding enzyme displays a practically unchanged enzyme activity, wherein said contaminated plant enzyme preparation is processed with a stabilized emulsion of a halogenated hydrocarbon with a boiling point between 15°C and 100°C, with or without a cellulose derivative, to form a plastic mass which is dried in known manner. 5. A Process according to claim 5, wherein a halogenated hydrocarbon with a boiling point between 30°C and 60°C.

6. A process according to claim 5 wherein methylene chloride or chloroform is used.

8. A process according to claim 5, wherein the emulsion contains a cellulose derivative in order to stabilize or thicken it.

3,923,600

PURIFICATION OF MICROORGANISM CELLS LYTIC ENZYME

Yoshio Yoshimura, Nishinomiya; Kanae Yokogawa, Nara, and Shinzo Nishimura, Osaka, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jan. 2, 1973, Ser. No. 320,193

Claims priority, application Japan, Oct. 24, 1972, 47-106538

Int. Cl.² C07G *7/028;* **C12D** *13/10*

U.S. Cl. 195—66 R **4 Claims**

1. A method for purifying a microorganism cells lytic enzyme contaminated with proteases obtained by cultivating a microorganism of the genus Streptomyces, which comprises by regulating the pH value of an aqueous solution containing the microorganism cells lytic enzyme and proteases within a range of about 3.0 to 1.0 with an acid and filtering off the resulting precipitates of proteases.

3,923,601

PROCESS FOR THE MANUFACTURE OF CEPHALOSPHORIN C

Hans-Joerg Treichler, Buus, and Jakob Nuesch, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 106,420, Jan. 14, 1971, Pat. No. 3,776,815. This application July 16, 1973, Ser. No. 379,531

Int. Cl.² C12K *1/02*

U.S. Cl. 195—78 **2 Claims**

1. A colony of a methionine-auxotropic mutant of a Cephalosporin C-producing strain of the genera Emericellopsis-Cephalosporium.

3,923,602

COMPOSITION OF MATTER AND PROCESS

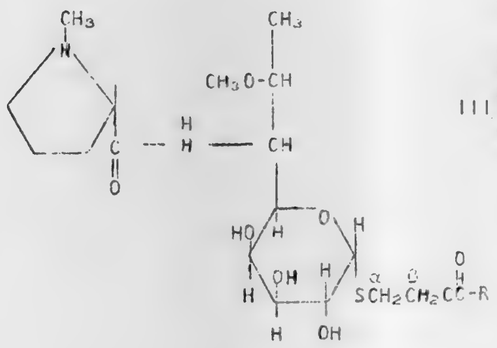
Alexander D. Argoudelis, Portage; John H. Coats, and LeRoy E. Johnson, both of Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 409,402, Oct. 25, 1973, which is a continuation-in-part of Ser. No. 370,351, June 15, 1973. This application Jan. 31, 1975, Ser. No. 545,734

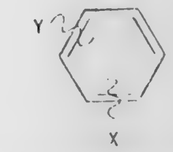
Int. Cl.² C12D *9/00*

U.S. Cl. 195—80 R **22 Claims**

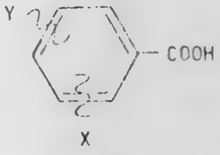
1. A process for preparing desalicetin β-acylates of the formula



wherein R is selected from the group consisting of alkyl or alkylene of up to 12 carbon atoms; substituted alkyl or alkylene wherein the alkyl or alkylene is of up to 12 carbon atoms and the substitution group is selected from the group consisting of —OH, OR′, —HN_2, —NHR′, —NO_2, —SO_3H, —SO_2NH_2, —COOH, Cl, Br, I, F, —SH, and SR′, and



wherein X and Y are selected from the group consisting of H, R′, —OH, —OCH_3, OR′, NH_2, NHR′, NO, NO_2, —CHO, —CN, —COOH, —CH_2OH, —SO_3H, —SO_2NH_2, Cl, F, Br, I, —SH, and —SR′, wherein R′ is alkyl of not more than 8 carbon atoms, and with the understanding that X and Y can be the same or different, which comprises the addition of an effective amount, ranging from about 0.5 gms. to about 5 gms. per liter of fermentation medium, of a carboxylic acid selected from the group consisting of saturated and unsaturated, substituted and unsubstituted aliphatic acids of from 2 to 12 carbon atoms, inclusive; substitutions of the aliphatic acids can be —OH, OR′, —NH_2, —NHR′, —NO_2, —SO_3H, —COOH, Cl, F, Br, I, —SH, SR′, monosubstituted and disubstituted aromatic acids of the general formula



wherein X and Y are selected from the group consisting of R′, —OH, —OCH_3, OR′, NH_2, NHR′, NO, NO_2, —CHO, —CN, —COOH, —CH_2OH, —SO_3H, —SO_2NH_2, Cl, F, Br, I, —SH, and —SR′, wherein R′ is alkyl of not more than 8 carbon atoms, to a *Streptomyces caelestis* celesticetin fermentation being conducted in an aqueous nutrient medium under aerobic conditions.

3,923,603

DISCRETE PLASMID CONSTRUCTION FROM CHROMOSOMAL GENES IN PSEUDOMONAS

Ananda M. Chakrabarty, Latham, and Denise A. Friello, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 1, 1974, Ser. No. 493,691

Int. Cl.² C12B *1/00*

U.S. Cl. 195—78 **5 Claims**

1. A process for transferring chromosomal genes specifying a hydrocarbon degradative pathway for a given substrate from a first strain of Pseudomonas and imparting said chromosomal genes as part of a plasmid aggregate into a second strain of Pseudomonas which does not contain said chromosomal genes comprising the steps of:

a. introducing factor K, a transfer plasmid, into at least one organism of said first strain of Pseudomonas which mobilizes said chromosomal genes and forms a plasmid aggregate therewith,

b. admixing the resulting first strain of Pseudomonas with said second strain of Pseudomonas transferring said plasmid aggregate by conjugation,

c. placing the mixture on minimal plates containing said given substrate as the sole source of carbon and

d. purifying the resulting conjugatants.

3,923,604
TUBULAR ARTICLES

Frank Monaghan, Glendale, Calif., assignor to M & H Plastics Inc., Burbank, Calif.

Filed Apr. 26, 1971, Ser. No. 137,148
Int. Cl.² C12K 1/10
U.S. Cl. 195—139 3 Claims

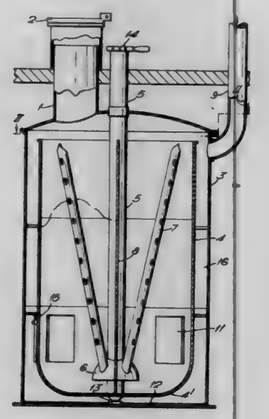


1. A disposable culture tube device comprising:
a. An upper plastic tube open at one end and sealed at the other;
b. The seal being shaped so as to frictionally hold the end of an swab;
c. a swab frictionally held in said upper plastic tube,
d. A lower plastic tube open at one end and sealed at the other, having a chamber formed by,
e. Welding closed the plastic tube between its ends;
f. A liquid medium within the chamber;
g. The upper and lower tubes adapted to fit tightly together.

3,923,605
ARRANGEMENT FOR BIOLOGICAL DECOMPOSITION OF EXCREMENTS AND KITCHEN REFUSE AND THE LIKE

Tore Gedde, 3020 Krokstadelva, Norway

Filed Oct. 18, 1973, Ser. No. 407,676
Int. Cl.² C02C 1/02
U.S. Cl. 195—142 6 Claims

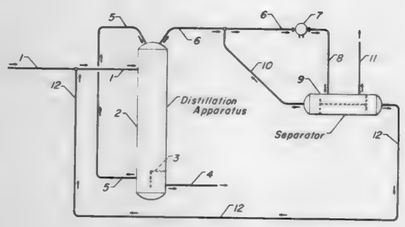


1. Apparatus for the biological decomposition of wastes comprising a first stationary container, a second container disposed within said first container to be turnable about a generally vertical axis, means for admitting air into said second container, at least one generally upright partition in said second container dividing said second container into a plurality of angularly spaced compartments, an inlet for waste material, said inlet being offset from a vertical axis about which said second container is turnable whereby a selected one of the compartments of said second container can be brought into register with said inlet, each compartment of said second container having a closable outlet and said first container having a closable outlet with which, by rotation of said second container the outlet of a selected one of the outlets of said compartments can be brought into register whereby material in said compartment of which the outlet registers with the outlet of said first container can be removed through said outlets.

3,923,606
PREVENTION OF CORROSION

Rudolf H. Hausler, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 26, 1973, Ser. No. 336,129
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B01D 3/34; C23F 14/00
U.S. Cl. 203—7 7 Claims



1. A method for the prevention of corrosion in a distillation apparatus provided with heat exchange and separation means used to strip gases from an aqueous medium consisting essentially of water containing entrained corrosion-producing gases which comprises the simultaneous circulation of two inhibitor-containing hydrocarbon streams, one of said streams entering the top portion of said apparatus, contacting the structural elements of said apparatus while in concurrent, downward flow with said aqueous medium, said aqueous medium being stripped of said entrained gases during said downward flow to produce a lean aqueous phase and an overhead vapor stream containing said gases and water, separating said hydrocarbon stream from said lean aqueous phase and recirculating said hydrocarbon stream to the top portion of said apparatus, contacting said overhead vapor stream with the other of said inhibitor-containing hydrocarbon streams, flowing said hydrocarbon stream concurrently with said vapor stream through heat exchange means to separation means, separating the gases from said hydrocarbon stream and water, and recirculating said hydrocarbon stream to contact said overhead vapor stream.

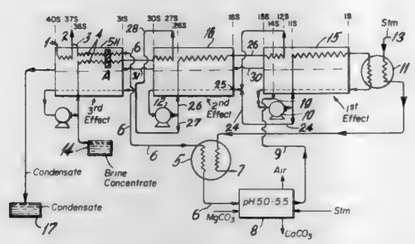
2. The method as set forth in claim 1 in which said hydrocarbon possesses a boiling point in excess of 250° C.

4. The method as set forth in claim 1 in which said inhibitor in said hydrocarbon comprises a salt of an acid and an amine.

3,923,607
PROCESS FOR PRETREATING SEA WATER BY PREHEATING SAME IN THE PREPARATION OF BRINE AND FRESH WATER

Hisanobu Tabata, and Norimasa Tabata, both of No. 968, Nou, Ohkoshi, Sakaide, Kagawa, Japan

Filed July 9, 1973, Ser. No. 377,292
Claims priority, application Japan, Aug. 10, 1972, 47-80165
Int. Cl.² B01D 3/02, 3/34; C23F 11/00; B01D 3/00
U.S. Cl. 203—7 1 Claim

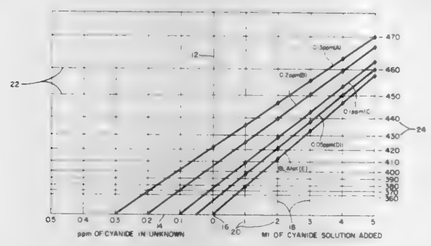


1. In a method for preparing brine and fresh water from sea water by heating the sea water in a multiple effect multi-stage flash evaporator, wherein the sea water first enters the final heat rejection stages of the flash evaporator and is passed in indirect heat exchange with vapor from the flashing sea water in said heat rejection stages to condense said vapor and preheat the sea water, the sea water being thereafter treated with magnesium carbonate to remove calcium therefrom and deaerated at a pH of 5.0 to 5.5, the sea water thereafter being introduced to the terminal flash stage of the first effect of the evaporator to be further flash evaporated, the improvement wherein the entering sea water is additionally preheated to about 50° to 65°C in a separate preheating stage prior to being subjected to the calcium removal and deaeration steps whereby after deaeration, the temperature of the thus treated sea water is about the same as it is in said terminal flash stage.

3,923,608
METHOD OF DETECTING LOW LEVELS OF CYANIDE

Martin S. Frant, Newton, Mass.; James Ross, Richmond, Va., and John H. Riseman, Cambridge, Mass., assignors to Orion Research Incorporated, Cambridge, Mass.

Filed Aug. 10, 1972, Ser. No. 279,336
Int. Cl. G01n 27/46
U.S. Cl. 204—1 T 12 Claims

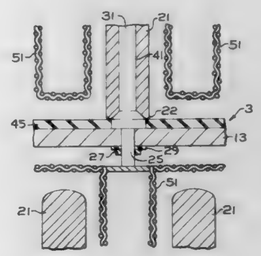


1. Method of determining with an electrode assembly sensitive to silver ions, the concentration particularly of low level concentrations of free cyanide ion in a sample liquid, said method comprising the steps of; measuring with an electrode sensitive to silver ions, in the presence of a dissociated soluble silver cyanide complex, before and after mixture of said complex with known volumes of a standard solution containing known quantities of free cyanide ion, the silver ion activity in the mixture; measuring with an electrode sensitive to silver ions, after mixture of said complex with said sample liquid, the silver ion activity of the latter mixture; and computing from said measurements the original concentration of free cyanide ions in said sample liquid.

3,923,609
METHOD OF JOINING SILICON METAL

Cletus N. Welch, Clinton, and Aleksandrs Martinsons, Wadsworth, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 19, 1973, Ser. No. 426,414
Int. Cl.² C25D 1/02; B23K 31/02
U.S. Cl. 204—16 8 Claims

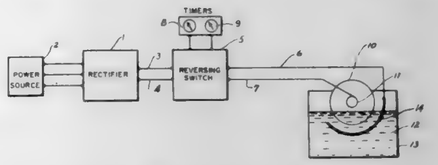


1. A method of joining an electroconductive silicon metal work piece comprising silicon and sufficient dopant to provide an electroconductivity greater than 10^2 (ohm-centimeters)$^{-1}$ to a second metallic work piece which method comprises:
a. electroplating a surface of an adherent material chosen from the group consisting of nickel, copper, tin, aluminum, zinc, silver, palladium, platinum, and gold on the surface of the silicon work piece to be joined to the second metallic work piece;
b. providing a pool of an electrically conductive epoxy resin bonding material in contact with the electroplated surface of the adherent material on the surface of the silicon work piece and with the second metallic work piece; and
c. solidifying the bonding material whereby to join the silicon work piece and the second metallic work piece.

3,923,610
METHOD OF COPPER PLATING GRAVURE CYLINDERS

Michael J. Bergin, Bayside, N.Y., and Richard Flaig, Danbury, Conn., assignors to Intaglio Service Corporation, Stamford, Conn.

Filed Aug. 27, 1974, Ser. No. 500,861
Int. Cl.² C25D 5/18, 7/04; B41N 3/00
U.S. Cl. 204—32 R 7 Claims



1. A method of reconditioning used gravure cylinders consisting of a cylindrical substrate having a layer of copper deposited thereon and having an ink carrying intaglio image consisting of a multiplicity of cells etched into the surface of said layer of copper, which said method comprises the steps of:
a. exposing the surface of said cylinder to an electrolyte,
b. passing direct current through said electrolyte and cylinder,

c. removing copper from said layer during a first stage of operation in which the direction of flow of direct current through said electrolyte is reversed repeatedly so that forward flow of current through said electrolyte is alternated with reverse flow and in which the duration of reverse flow of current exceeds the duration of forward flow, and

d. applying copper to said layer during a second stage of operation in which the direction of flow of direct current through said electrolyte is reversed repeatedly so that forward flow of current through said electrolyte is alternated with reverse flow and in which the duration of forward flow of current exceeds the duration of reverse flow.

3,923,611
DIRECT-ON CERAMIC COATING OF CARBON-RICH IRON

Clifford G. Ruderer, Brecksville, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Filed Dec. 23, 1974, Ser. No. 535,441
Int. Cl.² C25D *5/12, 5/48, 5/50*
U.S. Cl. 204—35 R **22 Claims**

1. In a process for the direct-on, ceramic coating of a carbon-rich, iron workpiece, the improvements prior to depositing the ceramic coat of:

a. electrodepositing a substantially continuous layer of substantially pure iron onto said carbon-rich iron workpiece from a liquid medium containing iron ions while using the workpiece as a cathode, and

b. then reversing the polarity of the electrodeposit to remove some of the deposited iron and produce an exposed, fissured surface in said substantially continuous layer.

14. The process for preparing an iron workpiece containing at least 0.03% by weight of carbon for a direct-on ceramic coating without the use of an intermediate ceramic ground coat, comprising:

a. electrodepositing onto said workpiece a dense, non-porous layer of substantially pure iron in an amount of about 2 grams per square foot to about 12 grams per square foot from an aqueous electroplating bath containing iron ions, while using the workpiece as a cathode,

b. electrodepositing over said dense layer a porous layer of substantially pure iron in an amount of about 2 grams per square foot to about 12 grams per square foot from an aqueous electroplating bath containing iron ions, while using the workpiece as a cathode,

c. reversing the polarity of the electrodeposit to remove some of the deposited iron in an amount of about 1 gram per square foot to about 10 grams per square foot to produce an exposed fissured, textured surface in the continuous layer, and

d. then forming a ceramic coat on said fissured, textured surface.

3,923,612
ELECTROPLATING A GOLD-PLATINUM ALLOY AND ELECTROLYTE THEREFOR

Harold J. Wiesner, Livermore, Calif., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Feb. 25, 1974, Ser. No. 445,740
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C25D *3/62, 3/56*
U.S. Cl. 204—43 G **6 Claims**

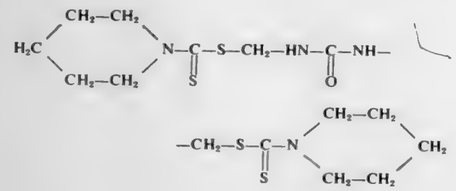
1. An aqueous electrolyte solution for the electrodeposition of gold-platinum alloys comprising an alkali metal hexahydroxyplatinate and an alkali metal aurate and wherein the pH of the solution is above substantially 11.0.

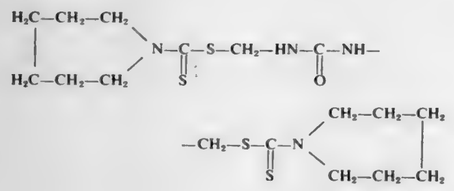
3,923,613
ACIDIC GALVANIC COPPER BATH

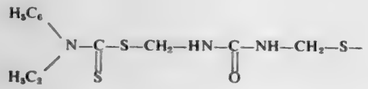
Waldemar Immel, Solingen, Germany, assignor to W. Kampschulte & Cie., Solingen, Germany

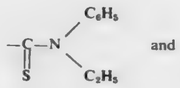
Continuation of Ser. No. 334,296, Feb. 21, 1973, abandoned. This application Sept. 27, 1974, Ser. No. 510,025
Claims priority, application Germany, Feb. 22, 1972, 2208198
Int. Cl.² C25D *3/38*
U.S. Cl. 204—52 R **3 Claims**

1. In an acidic galvanic copper bath the improvement comprising providing the bath with a substituted urea selected from the group consisting of

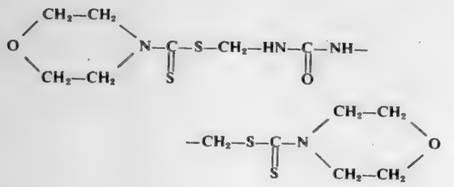
1.


2.


3.




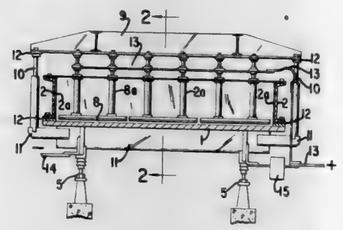
and

4.


3,923,614
METHOD OF CONVERTING MERCURY CATHODE CHLOR-ALKALI ELECTROLYSIS CELLS INTO DIAPHRAGM CELLS AND CELLS PRODUCED THEREBY

Vittorio De Nora, Nassau, Bahamas, and Oronzio De Nora, Milan, Italy, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Apr. 1, 1974, Ser. No. 456,646
Int. Cl.² C25B *1/36, 1/26, 9/00*
U.S. Cl. 204—99 **21 Claims**

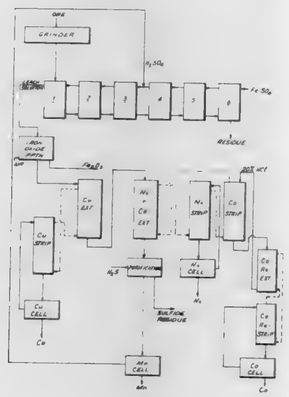


4. The cell of claim **1**, in which the length to width ratio is about 17:1.

3,923,615
WINNING OF METAL VALUES FROM ORE UTILIZING RECYCLED ACID LEACHING AGENT

William S. Kane, Wicomic, and Paul H. Cardwell, Zanoni, both of Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

Continuation-in-part of Ser. No. 272,226, July 17, 1972, Pat. No. 3,795,596, which is a continuation of Ser. No. 40,585, May 26, 1970, abandoned, Continuation-in-part of Ser. No. 247,554, April 26, 1972. This application July 16, 1973, Ser. No. 379,213
Int. Cl. C25c *1/10*
U.S. Cl. 204—105 M **29 Claims**

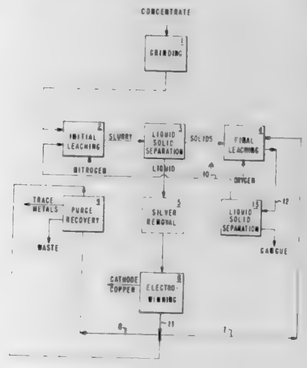


1. A process for selectively removing metal values from an ocean floor nodule ore, the ore comprising a primary proportion of manganese and iron and secondary proportions of nickel, copper and cobalt, the process comprising the steps of (*a*) leaching the ore with an aqueous solution of a mineral acid which is capable of reacting with the ore to preferentially form water-soluble salts of nickel and copper, to obtain an initial aqueous leach solution comprising dissolved iron, copper and nickel salts derived from the respective metal values present in the ore and a solid leached ore, and (*b*) releaching the solid leached ore under reducing conditions, with an aqueous solution of a reducing reagent which is capable of reducing tetravalent manganese to divalent manganese and of forming water-soluble salts of cobalt and divalent manganese, so as to form a final aqueous leach solution comprising dissolved manganese and cobalt salts, whereby the copper, cobalt, nickel and manganese values in the ore are removed therefrom in the form of dissolved salts.

3,923,616
RECOVERY OF METAL VALUES FROM ORES

Erdem M. Atadan, and Charles E. Coffey, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 1, 1973, Ser. No. 402,488
Int. Cl.² C25C *1/12;* **C01G** *3/04*
U.S. Cl. 204—107 **20 Claims**



7. A process for recovering metal values from copper and iron containing sulfide minerals which comprises (a) contacting said minerals in at least two stages with a leach solution at a pH in the range of about 2.4–6 comprising copper chlorides in the initial stage and iron chlorides in the final stage whereby the metal values in said minerals are partially leached in the initial stage and the cupric ion is reduced to the cuprous ion and substantially leached in the final stage in intimate contact with molecular oxygen-containing gas while precipitating ferric hydroxide and wherein sufficient chloride ion is provided in both of said stages to maintain the desired metal values in solution, (b) separating the liquids and solids from the initial stage and directing said solids to said final stage, (c) electrowinning a portion of the copper values in the liquid from step (b), and (d) directing the liquid from step (c) to the final stage of leaching, said leaching being conducted at a temperature of at least 80°C.

3,923,617
ELECTROLYTIC RECOVERY OF ZINC

Thomas M. Morris, Tucson, and Edward A. Bilson, Inspiration, both of Ariz., assignors to Inspiration Consolidated Copper Company, Morristown, N.J.

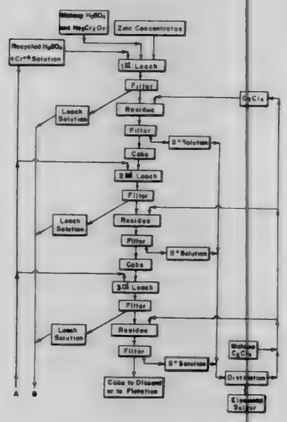
Filed Aug. 15, 1974, Ser. No. 497,669
Int. Cl.² C25C *1/16*
U.S. Cl. 204—119 **15 Claims**

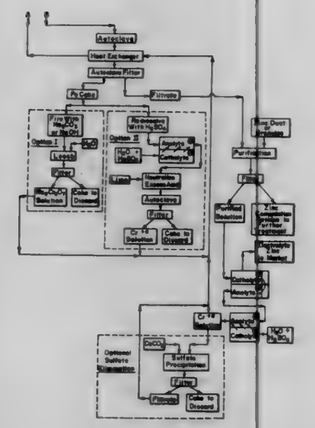
1. The method of recovering zinc from iron-bearing zinc sulfide concentrates which comprises the steps of:

a. leaching the concentrates with an aqueous sulfuric acid solution containing hexavalent chromium ions;

b. separating the leach solution depleted in acid at a pH above 0.6 and containing zinc, trivalent iron and trivalent chromium ions from the undissolved residue,

c. hydrolyzing the separated leach solution under pressure at a temperature near or above the boiling point of the solution to form a basic ferric sulfate salt precipitate,
d. separating said precipitate from the residual solution,
e. purifying the residual solution by treatment thereof with finely divided metallic zinc,
f. subjecting the purified solution to a first bifluid electrolysis to deposit metallic zinc from the catholyte and to regenerate sulfuric acid and partially reoxidize trivalent





chromium ions to hexavalent chromium ions in the anolyte,
g. subjecting anolyte from said first bifluid electrolysis to a second bifluid electrolysis to oxidize substantially all remaining trivalent chromium ions to hexavalent chromium ions in the anolyte,
h. and recycling anolyte from said second bifluid electrolysis to leach a further quantity of said zinc sulfide concentrates.

3,923,618

METHOD FOR PRODUCING HYDRAZINE

George C. Pedersen, 155 Hillside Drive, Orchard Park, N.Y. 14127

Continuation-in-part of Ser. No. 348,536, April 6, 1973. This application June 7, 1974, Ser. No. 477,439. The portion of the term of this patent subsequent to Apr. 1, 1992, has been disclaimed.

Int. Cl.[2] B01J *1/10*

U.S. Cl. 204—157.1 H 11 Claims

1. A method for producing enhanced yields of hydrazine, the steps which comprise placing a quantity of a reaction mixture comprising ammonia and a second component in a reaction zone; said second component being selected from the group consisting of a monohaloamine, a dihaloamine, a trihaloamine and mixtures of all three ammonia derivatives of a single halogen; exposing said reaction zone to a source of radiation energy under time and temperature conditions effecting decomposition of said ammonia to hydrazine product and H radical, and the reaction of said second component with said H radical to produce additional hydrazine product; and withdrawing said hydrazine product from said reaction zone.

3,923,619

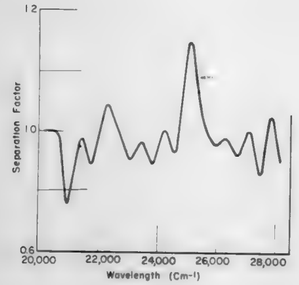
O^{18} ENRICHMENT PROCESS IN UO_2F_2 UTILIZING LASER LIGHT

Gerald L. DePoorter, and Cheryl K. Rofer-DePoorter, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Sept. 16, 1974, Ser. No. 506,479

Int. Cl.[2] B01J *1/10*

U.S. Cl. 204—157.1 R 6 Claims



1. A method of separating oxygen-16 from oxygen-18 comprising irradiating a solution containing UO_2F_2, HF, H_2O and a large excess of methanol with laser light having a wavelength within a limited range selected from within the general range of 22,250 cm^{-1} to 27,600 cm^{-1}, whereby the reaction $2\ UO_2F_2 + CH_3OH + 4HF \rightarrow 2UF_4 + HCOOH + 3\ H_2O$ proceeds preferntially with UO_2F_2 containing the oxygen 16 isotope, until about 10% of the UO_2F_2 has reacted, filtering product UF_4 from the solution and recovering UO_2F_2 enriched in the oxygen-18 isotope from the solution.

3,923,620

PREPARATION OF ALIPHATIC PHOSPHATES

Ingenuin Hechenbleikner, West Cornwall, and William Palmer Enlow, Falls Village, both of Conn., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Sept. 20, 1974, Ser. No. 507,632

Int. Cl.[2] B01J *1/10*

U.S. Cl. 204—158 R 7 Claims

1. A process for preparing aliphatic phosphates comprising introducing oxygen into a mixture of a trialkenyl or trialkyl phosphite and a source of free radicals, at a temperature

below about 80°C and in the presence of light of wavelength of 2000–4000A.

3,923,621

PROCESS FOR IRRADIATING A MIXTURE OF VINYLIDENE FLUORIDE POLYMER AND A PROPARGYL-CONTAINING CROSSLINKING AGENT AND PRODUCT THEREOF

Naohiro Murayama; Takayuki Katto, and Takao Ichii, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Filed June 21, 1973, Ser. No. 372,421

Claims priority, application Japan, June 23, 1972, 47-62496

Int. Cl. B01j *1/10, 1/12*

U.S. Cl. 204—159.17 2 Claims

1. A composition comprising a crosslinked mixture of
a. a vinylidene fluoride polymer selected from the group consisting of a vinylidene fluoride homopolymer and a vinylidene fluoride copolymer comprising a mixture of more than 50 mole % of vinylidene fluoride and a comonomer copolymerizable therewith selected from the group consisting of tetrafluoroethylene, vinyl fluoride, trifluorochloroethylene and propylene hexafluoride, and
b. a crosslinking agent, present in the range of approximately 0.05 to 20 parts per hundred of the vinylidene fluoride polymer, selected from the group consisting of tripropargyl cyanurate, dipropargylallyl cyanurate, diallylpropargyl cyanurate, tripropargyl isocynaurate, dipropargylallyl isocyanurate and diallylpropargyl isocyanurate,

said composition having been crosslinked by irradiation with high energy radiation wherein the dosage of radiation is in the range of approximately 2–8 M rad.

3,923,622

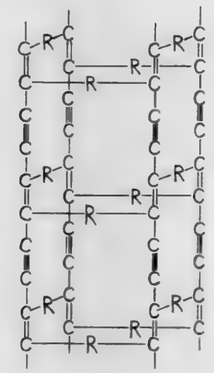
CYCLICALLY-BOUND LADDER POLYMERS OF CYCLIC DIACETYLENE TETRAMERS

Ray H. Baughman, Morris Plains, and Kwok Chun Yee, Randolph, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 13, 1974, Ser. No. 497,027

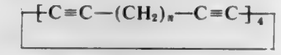
Int. Cl.[2] C08F *2/36, 2/48, 138/00*

U.S. Cl. 204—159.22 8 Claims



$R = -(CH_2)_n-$

1. Solid cyclically-bound ladder homopolymers of cyclic tetramers of terminal diacetylenes having the formula



wherein n is an integer of from 3 to 10, being substantially free of unreacted diacetylene groups as indicated by substantial absence of Raman vibration at about 2255 cm^{-1}.

3,923,623

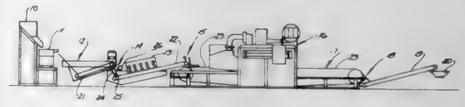
METHOD AND APPARATUS FOR USE IN CONJUNCTION WITH ELECTROPAINTING A LARGE NUMBER OF SMALL ARTICLES

Roy A. Brown, and Franklin H. Guzzetta, both of Monroe, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Continuation of Ser. No. 354,938, April 27, 1973, abandoned. This application Aug. 5, 1974, Ser. No. 494,988

Int. Cl.[2] C25D *13/06;* B65G *49/02;* B07B *4/02*

U.S. Cl. 204—181 25 Claims



1. In a method for electropainting a large number of small articles and including a moving grid for moving the articles through and out of an electropainting bath and onto a conveyor belt for moving the articles through a water rinse station whereafter the articles are deposited on an oven belt to take them through a curing oven, that method of separating the articles from one another between the electropainting bath and the curing oven which comprises the steps of: effecting a first separation of the articles by subjecting them to a water blast as they fall from said grid onto said conveyor belt; effecting a second separation of the articles by subjecting them to an air blast as they fall from said conveyor belt towards said oven belt; and effecting a third separation of the articles by passing them through a louvered grid as they continue their fall from said conveyor belt onto said oven belt; by virtue of all of which a maximum distribution of the articles on said oven belt is achieved with a minimum of paired pieces.

3,923,624

APPARATUS FOR THE MEASURING AND SUPPLYING A CONTROLLED QUANTITY OF A GAS

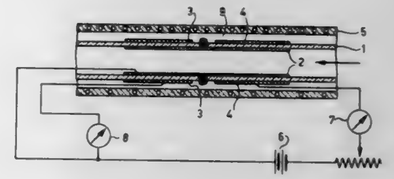
Nicholaas Marinus Beekmans, and Leopold Heijne, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 14, 1974, Ser. No. 442,472

Claims priority, application Netherlands, Mar. 28, 1973, 7304299

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 S 7 Claims



1. Apparatus for measuring and controlling the partial pressure of oxygen, comprising:
first and second axially aligned tubular conduit sections of a material capable of conducting electricity predominately by the transfer or migration of oxygen ions;
a third tubular conduit section aligned with and spacing said first and second tubular conduit sections and forming therewith a tubular conduit cell, said third tubular conduit section being of a material which is substantially not capable of conducting electricity by the transfer or migration of oxygen ions;

first and second electrode layers substantially covering the outside surface respectively of said first and second tubular sections;

a third electrode layer substantially covering the inside surface of said first, second and third tubular sections;

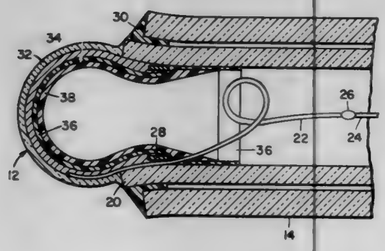
voltage measuring means electrically connected between said first and third electrode layers for measuring the difference between partial oxygen pressures inside and outside of said tubular conduit cell; and

means electrically connected between said second and third electrode layers for applying a voltage therebetween to cause oxygen to be transferred into or out of said tubular conduit cell.

3,923,625
REINFORCED GLASS ELECTRODE STRUCTURE

David J. Fischer, Corning, N.Y.; Hans J. Kunz, and Thomas E. Norby, both of Raleigh, N.C., assignors to Corning Glass Works, Corning, N.Y.

Continuation of Ser. No. 158,448, June 30, 1971, abandoned. This application May 10, 1974, Ser. No. 468,750
Int. Cl.² G01N 27/36
U.S. Cl. 204—195 G 21 Claims



1. An electrode structure for measuring activity of an ionic species in an ion containing solution, said structure comprising, in combination:

a curved membrane of glass sensitive to said ionic species, said membrane having a convex surface that is adapted to contact said solution and a concave surface opposite said convex surface, said membrane being in a state of compression,

thin film conductive electrode means disposed on at least a portion of said concave surface of said membrane for providing a strongly bonded electrical connection thereto,

a conductive lead wire,

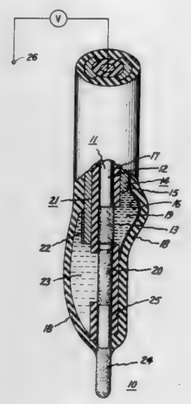
connecting means for providing an electrical connection between said lead wire and said conductive electrode, and

a mass of non-conductive backing material strongly adherent to said conductive electrode means and to any portion of said concave surface of said membrane on which said conductive electrode is not disposed, the thermal coefficient of expansion of said backing material being substantially greater than that of said glass membrane, said backing material reinforcing said electrode structure as well as providing an insulating coating therefor.

3,923,626
MINIATURE PROBE CONTAINING MULTIFUNCTIONAL ELECTROCHEMICAL SENSING ELECTRODES

Leonard W. Niedrach, and William H. Stoddard, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1974, Ser. No. 519,794
Int. Cl.² G01N 27/30, 27/46
U.S. Cl. 204—195 R 7 Claims



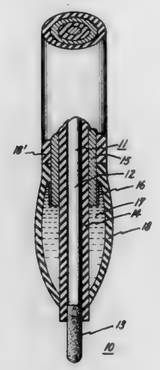
1. A miniature probe containing an oxygen sensor, a carbon dioxide sensor and a pH electrode which comprises a flexible, elongated electrode lead, the electrode lead comprising a base member, and an exterior surface of palladium on the base member, three separate and spaced apart electrochemically active regions of hydrided palladium with a surface of platinum black, palladium oxide and palladium oxide, respectively, adhering tightly to an in electrical contact with the metal surfaced base member of the electrode lead and insulated electrically from each other thereby forming an oxygen electrode, a hydrogen electrode and a hydrogen electrode, respectively, a reference electrode for the oxygen electrode surrounding at least partially and spaced from the metal surfaced base member of the electrode lead, the reference electrode containing a metal lead and an electrochemically active region of silver, a layer of electrical insulation disposed between the metal surfaced base member of the electrode lead and the metal lead of the reference electrode, and electrolyte contacting both the electrochemically active regions of hydrided palladium with a surface of platinum black, and silver, and an outer sheath of oxygen permeable, ion-impermeable diffusion barrier material encapsulating at least the electrochemically active regions and the electrolyte thereby providing an oxygen sensor; a reference electrode for the first hydrogen electrode surrounding at least partially and spaced from the metal surfaced base member of the electrode lead, the reference electrode containing an electrochemically active region of silver and a silver halide, a layer of electrical insulation disposed between the metal surface base member of the electrode lead and the reference electrode, and electrolyte contacting both the electrochemically active regions of palladium oxide and silver and silver halide, and an outer sheath of carbon dioxide permeable, ion-impermeable diffustion barrier material encapsulating at least the electrochemically active regions and the electrolyte thereby providing a carbon dioxide sensor; and a pH electrode comprising a separate portion of the metal surfaced base member of the electrode lead and an electrochemically active region of palladium oxide adhering tightly to and in electrical contact with the metal surfaced base member and exposed exteriorly of the outer sheaths.

5. An analytical apparatus comprising the miniature probe of claim 1 and a separate reference electrode connected electrically to the pH electrode of the probe.

3,923,627
MINIATURE PROBE CONTAINING MULTIFUNCTIONAL ELECTROCHEMICAL SENSING ELECTRODES

Leonard W. Niedrach, and William H. Stoddard, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1974, Ser. No. 519,797
Int. Cl.² G01N 27/30, 27/46
U.S. Cl. 204—195 M 12 Claims



1. A miniature probe containing a first specific ion electrode and a second specific ion electrode which comprises a flexible, elongated electrode lead, the electrode lead comprising a metallic base member, an electrochemically active region showing response to the first specific ion adhering tightly to and in electrical contact with one end portion of the metallic base member, and electrical insulation surrounding the metallic base member and a portion of the electrochemically active region and thereby forming a first specific ion electrode exposed at the end of the metallic base member beyond the electrical insulation; a second metallic electrode lead surrounding at least partially and spaced from the metallic base member of the first electrode lead by the electrical insulation thereon, a second electrochemically active region showing response to the second specific ion on the second electrode lead at one end thereof, electrical insulation surrounding the second metallic electrode lead, an electrolyte contacting the second electrochemically active region, and an outer sheath of a membrane permeable to the second specific ions encapsulating the second electrochemically active region and the electrolyte and forming a tight joint with the electrical insulations thereby forming a second specific ion electrode, but not encapsulating the exposed electrochemically active region of the first specific ion electrode.

3,923,628
DIAPHRAGM CELL CHLORINE PRODUCTION

Gerhard Gritzner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 361,743, May 18, 1973. This application Aug. 1, 1974, Ser. No. 493,812
Int. Cl.² C25B 9/00
U.S. Cl. 204—237 9 Claims

1. An electrolytic cell to produce chlorine and an alkali metal hydroxide comprising

an anode compartment adapted to contain an anolyte containing an alkali metal chloride;

a cathode compartment adapted to contain a catholyte containing an alkali metal hydroxide, said cathode compartment being spaced apart from said anode compartment by a diaphragm;

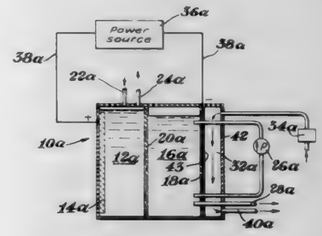
a diaphragm suited to pass at least alkali metal ions from said anode compartment to said cathode compartment, said diaphragm adapted to separate said anode compartment from said cathode compartment;

an anode positioned in said anode compartment;

a cathode positioned in said cathode compartment and spaced apart from said diaphragm, said cathode having a wall portion adapted to be in contact with the catholyte and another wall portion substantially simultaneously adapted to be in contact with an oxidizing gas;

an oxidizing gas compartment at least partially defined by a surface portion of said cathode and adapted to contain an oxidizing gas;

a means to circulate the catholyte at least within said cathode compartment in combination with said cathode compartment;



a means to control the moisture content of the oxidizing gas in combination with an oxidizing gas supply means and said cathode;

a means to remove the chlorine from said anode compartment;

a means to remove the alkali metal hydroxide from said cathode compartment; and

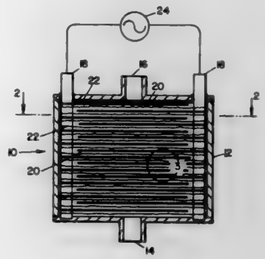
a means to supply electrical energy to said anode and said cathode.

2. The electrolytic cell of claim 1 wherein said cathode is a foraminous body having at least the surface composed of a substantially inert material selected from the group consisting of Ru, Rh, Pd, Ag, Os, Ir, Pt and Au with a coating of a mixture of particulate inert metal and an organic component selected from the group consisting of polytetrafluoroethylene and fluorinated copolymers of hexafluoropropylene and tetrafluoropropylene.

3,923,629
ELECTROLYTIC CELL FOR INACTIVATION AND DESTRUCTION OF PATHOGENIC MATERIAL

Peter T. B. Shaffer, Grand Island, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Mar. 25, 1974, Ser. No. 454,637
Int. Cl.² C02B 1/82; C02C 5/12
U.S. Cl. 204—260 6 Claims



1. An electrolytic cell for use in apparatus for inactivating and destroying fluid borne pathogenic material, said cell comprising: a tubular perforated core of electrically non-conduc-

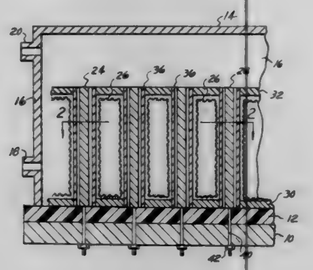
tive material, a body surrounding said core and including at least two electrode layers of fluid permeable electrically conductive material separated by fluid permeable electrically insulative material, and two end caps of electrically conductive material secured to said core and holding said body therebetween, with one end cap making electrically conductive contact with said one layer and the other end cap making electrically conductive contact with said other layer.

3,923,630

ELECTROLYTIC CELL INCLUDING DIAPHRAGM AND DIAPHRAGM-SUPPORT STRUCTURE

Shyam D. Argade, Woodhaven; Stephen M. Collins, Trenton, and James B. Armitage, Dearborn, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Aug. 16, 1974, Ser. No. 497,864
Int. Cl.² C25B *13/02*
U.S. Cl. 204—266 **8 Claims**



1. In a diaphragm cell for the production of chlorine and caustic from aqueous alkali metal chloride solutions having a plurality of anodes mounted at the bottom of said cell, cathodes between adjacent anodes and spaced between each cathode and anode a diaphragm which divides the cell into anolyte and catholyte compartments the improvement which comprises:

a diaphragm assembly composed of an upper diaphragm support, a lower diaphragm support and an endless band diaphragm extending from said upper support to said lower support, both said diaphragm supports being made of an electrically non-conductive polymeric composition, said lower support resting on or adjacent to the bottom of said cell and having openings therein which allow said anodes to extend through said lower support, said diaphragm being in connection with said upper and lower supports thereby defining a continuous barrier separating said anodes from said cathodes so that all of the flow of electrolyte from the anode to the cathode is through said diaphragm.

3,923,631

ELECTROPLATING RACK

Stephen P. Palisin, Jr., South Euclid, Ohio, assignor to The Empire Plating Company, Cleveland, Ohio

Filed June 17, 1974, Ser. No. 479,616
Int. Cl.² C25D *17/08*
U.S. Cl. 204—297 W **10 Claims**

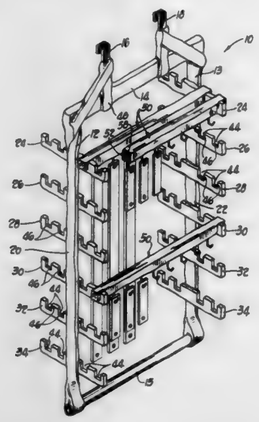
1. An electroplating rack comprising:

a. an electrically conductive framework including a pair of rack supporting hooks and a pair of rigidly connected uprights defining an elongated depending body;

b. each of said uprights centrally supporting a plurality of vertically spaced pairs of electrically conductive arms, each of said arms having end regions extending in opposite directions from its associated upright, the arms on one of said uprights being substantially horizontally paired with the arms on the other of said uprights such that each of the arm end regions carried on said one upright has a corresponding arm end region on said other upright;

c. a plurality of spaced, upwardly facing electrode surfaces defined on each of said end regions, the electrode surfaces on the arm end regions of said one upright having corresponding electrode surfaces on said corresponding arm end regions on said other upright, whereby a certain number of pairs of corresponding electrode surfaces are defined;

d. a plurality of electrically conductive elongated crossbars removably carried by said end regions;



e. each of said crossbars having a pair of downwardly facing electrode faces located near opposite ends of said crossbars and extending into electrically conductive engagement with a pair of said corresponding electrode surfaces, said crossbars being supported on said arms by virtue of said faces engaging said surfaces;

f. said crossbars each including a plurality of article support formations disposed at spaced intervals therealong; and,

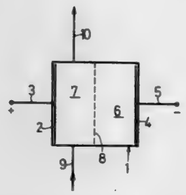
g. an electrically insulative coating covering said bodies, said arms and said crossbars except within the regions of said surfaces, said faces, and said formations.

3,923,632

METHOD OF AND APPARATUS FOR DISINFECTING LIQUIDS BY ANODIC OXIDATION WITH A SILVER ANODE

Volker Eibl, and August Reis, both of Munich, Germany, assignors to Sachs-Systemtechnik GmbH, Schweinfurt am Main, Germany

Filed May 28, 1974, Ser. No. 473,389
Claims priority, application Germany, June 9, 1973, 2329628
Int. Cl.² C02B *1/82*
U.S. Cl. 204—301 **2 Claims**



1. Apparatus for purifying water contaminated with microorganisms which comprises:

a. a container enclosing a space adapted to hold said water;

b. a diaphragm dividing said space into an anode compartment and a cathode compartment, said diaphragm being permeable to anions only;

c. an anode of conductive material in said anode compartment, said conductive material consisting at least partly of metallic silver;

d. a cathode in said cathode compartment;

e. leads connected to said anode and to said cathode respectively for passing electric current through said liquid in said space between said cathode and said anode;

f. inlet means for admitting said contaminated water to said anode compartment; and

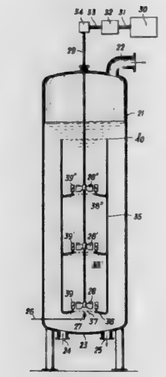
g. outlet means for withdrawing purified water from said space.

3,923,633

BITUMEN BLOWING

Hans Senolt; Heinrich Tomaschko, and Georg Palvik, all of Vienna, Austria, assignors to Osterreichische Mineralolverwaltung Aktiengesellschaft, Vienna, Austria

Continuation of Ser. No. 78,036, Oct. 5, 1970, abandoned. This application Oct. 27, 1972, Ser. No. 301,328
Claims priority, application Austria, Oct. 3, 1969, 9331/69
Int. Cl.² C01G *27/00*
U.S. Cl. 208—6 **2 Claims**



1. A bitumen blowing method comprising blowing air into the region of the bottom of a body of bitumen having agitator means immersed therein, mechanically agitating the bitumen to disperse the air therein to form a mixture of air and bitumen, maintaining the air-bitumen dispersion by regulating the agitation responsive to the amount of air in said mixture, thus accelerating the agitation when the amount of air in the air and bitumen mixture increases and decelerating the agitation when the amount of air in the air and bitumen mixture decreases.

3,923,634

LIQUEFACTION OF COAL

Anthony J. Silvestri, Morrisville, Pa., and Paul A. Naro, Trenton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 22, 1974, Ser. No. 453,916
Int. Cl.² C10G *1/06*
U.S. Cl. 208—10 **21 Claims**

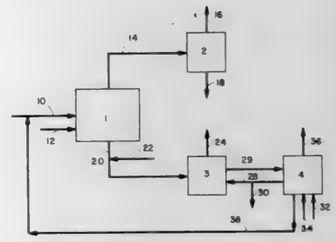
1. A process for the liquefaction of coal comprising: reacting said coal with hydrogen or with a mixture of carbon monoxide and water, said reacting step being conducted at a temperature of at least 500°F and at a pressure of at least 1000 psig, in the presence of, as a catalyst, the naturally occurring underwater deposit known as manganese nodules; and recovering hydrocarbonaceous liquid.

3,923,635

CATALYTIC UPGRADING OF HEAVY HYDROCARBONS

Bernard L. Schulman, Golden, Colo., and Clyde L. Aldridge, Baton Rouge, La., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed June 17, 1974, Ser. No. 479,745
Int. Cl.² C10G *13/02, 37/04*
U.S. Cl. 208—50 **25 Claims**



1. A process for upgrading a heavy hydrocarbon feed containing sulfur contaminants, which comprises:

a. contacting said hydrocarbon feed with hydrogen and catalyst particles comprising a solid carbon-containing material and at least 2 weight percent of an alkali metal component (calculated as the metal based on the carbon-containing material) in a reaction zone maintained at an average temperature ranging from about 700° to about 1000°F. and at a hydrogen partial pressure of about 200 to 4000 psig to produce a vaporous product comprising normally liquid light hydrocarbons of reduced sulfur content, a carbonaceous residue, at least a portion of said carbonaceous residue depositing on said catalyst particles, and heavy liquid hydrocarbons;

b. removing said vaporous product overhead from said reaction zone;

c. removing from the bottom of said reaction zone a slurry of a portion of said heavy liquid hydrocarbons and a portion of said catalyst particles;

d. separating the catalyst particles from said slurry;

e. contacting at least a portion of the separated catalyst particles with steam in a gasification zone operated at a temperature ranging from about 1000° to about 1700°F., whereby at least a portion of the carbonaceous deposition is converted to a gas comprising hydrogen and carbon monoxide, and

f. recycling a portion of the catalyst particles from the gasification zone to said reaction zone of step (a).

20. A process for upgrading a heavy hydrocarbon feed containing sulfur contaminants, which comprises:

a. contacting said hydrocarbon feed with hydrogen and catalyst particles comprising a solid carbon-containing material and at least 2 weight percent of an alkali metal component (calculated as the metal based on the carbon-containing material) in an ebullient bed reaction zone maintained at an average temperature ranging from about 700° to about 1000°F. and at a hydrogen partial pressure of about 200 to about 4000 psig, to produce a vaporous product comprising normally liquid light hydrocarbons of reduced sulfur content, a carbonaceous residue, at least a portion of said carbonaceous residue depositing on said catalyst particles, and heavy liquid hydrocarbons;

b. removing said vaporous product overhead from said ebullient bed reaction zone;

c. removing from the bottom of said ebullient bed reaction zone a slurry of a portion of said heavy liquid hydrocarbons and a portion of said catalyst particles;

d. passing said catalyst-containing slurry to a fluid coking zone operated at a temperature of about 850° to about 1200°F. and at a pressure ranging from about 0 to about 150 psig to volatilize said heavy liquid hydrocarbons and thereby separate said catalyst particles from said slurry;

e. passing at least a portion of the catalyst particles resulting from step (d) to a gasification zone operated at a higher temperature than the operating temperature of said coking zone and contacting the same with steam and an oxygen-containing gas, whereby at least a portion of the carbonaceous deposition is converted to a gas comprising hydrogen and carbon monoxide;

f. recycling a portion of the catalyst particles from the gasification zone to the ebullient bed reaction zone of step (a), and

g. passing an other portion of the catalyst particles from the gasification zone to the coking zone.

3,923,636

PRODUCTION OF LUBRICATING OILS

Theodore C. Mead, Port Arthur; Norman R. Odell, Nederland, and John P. Shillinglaw, Jr., Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed June 3, 1974, Ser. No. 475,485
Int. Cl.² C10G *37/06, 41/00*
U.S. Cl. 208—58 **9 Claims**

1. A process for the production of lubricating oils which comprises hydrocracking heavy oil charge stock of which at least a portion boils above about 950°F., recovering a lubricating oil fraction from the hydrocracked product, fractionating the lubricating oil fraction into a light lube oil cut and a heavy lube oil cut, contacting the heavy lube oil cut with a solvent having an affinity for aromatics to produce an aromatic-poor raffinate and an aromatic-rich extract, combining the extract with said light lube oil cut and hydrogenating the resulting mixture.

3,923,637

HYDRODESULFURIZATION PROCESS WITH A PORTION OF THE FEED ADDED DOWNSTREAM

Robert D. Christman, Penn Hills Township; Joel D. McKinney, Indiana Township; Thomas C. Readal, McCandless Township, and Stephen J. Yanik, Hampton Township, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 29, 1973, Ser. No. 346,175
Int. Cl.² C10G *23/00*
U.S. Cl. 208—89 **5 Claims**

1. A hydrodesulfurization process comprising passing a relatively high boiling non-asphaltic petroleum feed oil having a volume average boiling point above 750°F. together with hydrogen downflow through a fixed bed of catalyst comprising Group VI and Group VIII metals on a non-cracking alumina support, adding to said bed at a downstream position which is at least 50 percent through said bed a relatively low boiling non-asphaltic petroleum feed oil having a volume average boiling point below 750°F. to form a blend of said high and low boiling oils, said position of addition and the proportion of said low boiling oil relative to said high boiling oil being such that said blend at said position of addition has a higher sulfur content than the sulfur content of the high boiling oil alone at said position of addition and so that said blend is desulfurized in said catalyst bed downstream from said position of addition to produce an effluent blend stream having a lower sulfur content than the sulfur content of the heavy oil alone at said position of addition.

3,923,638

TWO-CATALYST HYDROCRACKING PROCESS

Ralph J. Bertolacini, Chesterton; Louis C. Gutberlet, Crown Point, both of Ind., and Allen A. Kozinski, Urbana, Ill., assignors to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 206,810, Dec. 10, 1971, which is a continuation-in-part of Ser. No. 814,997, April 10, 1969, abandoned. This application Dec. 20, 1973, Ser. No. 426,921
Int. Cl.² C10G *23/00*
U.S. Cl. 208—89 **21 Claims**

1. A process for hydrocracking a petroleum hydrocarbon feedstock which boils above about 350°F. and which contains nitrogen in an amount within the range of about 1 ppm to about 3,000 ppm, which process comprises contacting in a feed-preparation zone said feedstock in the presence of hydrogen and under hydrodenitrogenation conditions with a hydrodenitrogenation catalyst to obtain a denitrogenated effluent, and contacting at least a portion of said denitrogenated effluent in a hydrocracking zone in the presence of hydrogen and under hydrocracking conditions with a hydrocracking catalyst to obtain a hydrocracked effluent, said hydrodenitrogenation catalyst comprising as a hydrogenation component a member selected from the group consisting of (1) a metal from Group VIA of the Periodic Table of Elements and a metal from Group VIII of the Periodic Table of Elements, (2) their oxides, (3) their sulfides, and (4) mixtures thereof and a co-catalytic acidic support comprising an ultrastable, large-pore crystalline aluminosilicate material and a refractory inorganic oxide, and said hydrocracking catalyst comprising as a hydrogenation component a member selected from the group consisting of (1) a metal from Group VIA of the Periodic Table of Elements and a metal from Group VIII of the Periodic Table of Elements, (2) their oxides, (3) their sulfides, and mixtures thereof and an acidic support of an ultrastable, large-pore crystalline aluminosilicate material.

3,923,639

CONVERTING HYDROCARBONS WITH ZEOLITE ZSM-

Julius Ciric, Pitman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 722,149, April 18, 1968, which is a continuation-in-part of Ser. No. 509,568, Nov. 24, 1965, abandoned. This application May 17, 1972, Ser. No. 254,128
Int. Cl.² B01J *29/28*; C01G *11/04, 13/04*
U.S. Cl. 208—111 **9 Claims**

1. A process for converting a hydrocarbon charge which comprises contacting the same under hydrocarbon conversion conditions with a crystalline aluminosilicate zeolite catalyst having the X-ray powder diffraction pattern of Table 1 of the specification and having a composition in terms of mole ratios of oxides as follows:

$$0.9+0.2M_{2/n}OAl_2O_3: 3-20\ SiO_2: z\ H_2O$$

wherein M is a cation selected from the group consisting of alkylammonium, arylammonium, metals, ammonium and hydrogen, *n* is the valence of said cation and *z* is from 0 to 20, the hydrocarbon conversion conditions selected from those comprising a temperature of from 400°F to 1,100°F, a pressure of from 10 psig to 2,500 psig, and a liquid hourly space velocity of from 0.1 to 50.

3,923,640

LOW PRESSURE HYDROCRACKING PROCESS

Carlyle G. Wight, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed June 6, 1973, Ser. No. 367,456
Int. Cl.² C10G *13/02*
U.S. Cl. 208—111 **20 Claims**

1. A process for the hydrocracking of a mineral oil feedstock containing at least about 15 volume-percent of aromatic hydrocarbons and at least about 25 volume-percent of components boiling above 500°F, which comprises:

1. contacting said feedstock plus added hydrogen with a catalyst comprising a Group VIII metal hydrogenating component supported on a metal-cation-deficient Y zeolite base containing less than about 1 weight-percent sodium as Na_2O, said Y zeolite base having been stabilized by calcining an ammonium form thereof for a time and at a temperature sufficient to reduce the unit cell size thereof by at least about 0.2 percent, said contacting being carried out at a space velocity between about 0.75 and 10, a hydrogen pressure between about 300 and 1200 psi, and at a temperature correlated with space velocity to give a conversion per pass to products boiling below the initial boiling point of said feedstock of at least about 30 volume-percent but sufficiently low to maintain catalyst activity for the hereinafter recited run length of at least 30 days;

2. separating the effluent from step (1) into a desired low-boiling product fraction and an unconverted oil fraction comprising the highest-boiling components of said effluent; and

3. recycling to step (1) over a period of at least about 30 days a percentage of said unconverted oil which is at least equal to (P + 1,200)/24, where P is the hydrogen pressure in psi prevailing in step (1).

3,923,641

HYDROCRACKING NAPHTHAS USING ZEOLITE BETA

Roger A. Morrison, West Deptford, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 20, 1974, Ser. No. 444,221
Int. Cl.² C10G *13/04*; B01J *29/28*
U.S. Cl. 208—111 **6 Claims**

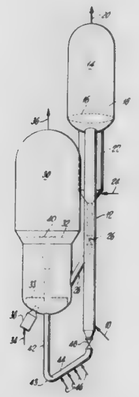
1. A process for hydrocracking a C_5^+ naphtha which comprises contacting said naphtha with a zeolite beta at a temperature of from about 400°F to about 550°F, at a space velocity of from about 0.1 to about 20 and at a hydrogen to hydrocarbon ratio of from about 1 to 1 to about 1 to 15, such that the final product has a i-C_4 to n-C_4 ratio of at least 7.

3,923,642

CATALYTIC HYDROCARBON CONVERSION PROCESS AND APPARATUS

Edward C. Luckenbach, Mountainside, and Arthur C. Worley, Morristown, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Mar. 18, 1974, Ser. No. 451,804
Int. Cl.² C10G *9/32*
U.S. Cl. 208—164 **9 Claims**



1. In a process for the catalytic conversion of hydrocarbons wherein a fluidized catalyst is circulated through a system comprising a catalyst regeneration vessel containing a fluidized bed of catalyst undergoing regeneration by passage of regeneration gas therethrough, an elongated hydrocarbon conversion zone and a gas-solids separation vessel, the improvement which comprises:

a. overflowing catalyst from the upper level of the bed in said regeneration vessel into an open upper end of a standpipe which extends into said regeneration vessel;

b. passing the catalyst downwardly through said standpipe;

c. continuing the passage of the catalyst around the bend base of said standpipe and upwardly through a vertically inclined conduit connected at one end to the bend base of said standpipe;

d. intermixing additional transporting gas with the catalyst passing through the vertically inclined conduit;

e. passing the catalyst upwardly to a straight vertical conduit connected to the other end of said vertically inclined conduit, said straight vertical conduit extending into and having an open end terminating in a gas-solids separation vessel;

f. forming a suspension of catalyst in vaporized hydrocarbons in said straight vertical conduit;

g. passing said suspension from the open end of said straight vertical conduit to said gas-solids separation vessel to effect conversion of at least a portion of said vaporized hydrocarbons;

h. separating said catalyst from said vaporized hydrocarbons;

i. passing said separated catalyst into an open end of a stripping zone positioned in the lower portion of said gas-solids separation vessel, said open end of the stripping zone being separated from the open end of the straight vertical conduit;

j. stripping hydrocarbons from the catalyst in said stripping zone, the flow of catalyst from steps (a) through (j) being effected without varying the size of any orifice through which the catalyst flows during process operation;

k. passing at least a portion of said stripped catalyst from the bottom of said stripping zone to said regeneration vessel through a conduit connected at one end to said stripping zone and at the other end to said regeneration vessel, and

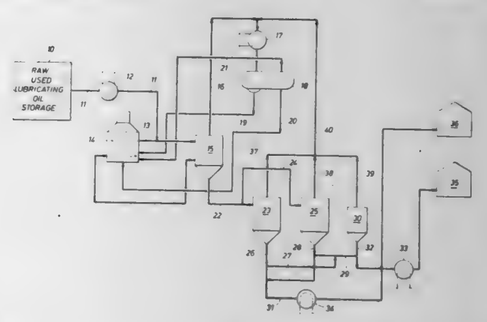
l. controlling the flow of catalyst from said stripping zone to said regeneration vessel by varying the size of an orifice, when said process is in operation, through which said stripped catalyst flows from said stripping zone to said regeneration vessel.

3,923,643

REMOVAL OF LEAD AND OTHER SUSPENDED SOLIDS FROM USED HYDROCARBON LUBRICATING OIL

Robert W. Lewis, Houston; Thomas A. Rodgers, La Porte, and Charles F. Goeking, Jr., Pasadena, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed June 14, 1974, Ser. No. 479,343
Int. Cl.² C10M *11/00*
U.S. Cl. 208—179 **5 Claims**



1. A process for removing suspended lead and other dis-

persed solids from used hydrocarbon lubricating oil which comprises:

a. heating the used hydrocarbon lubricating oil under temperature and pressure conditions at which substantially all the water and volatile hydrocarbon materials boiling below about 500°F at atmospheric pressure will volatilize out of the used oil in a devolatilization zone to afford a used hydrocarbon lubricating oil substantially free of water and said volatile hydrocarbons, said water and volatile hydrocarbons being removed as a gaseous overhead,

b. subjecting the used hydrocarbon lubricating oil substantially free of said water and volatile hydrocarbons to further heat treatment at a temperature between about 500° and 700°F for about 1 to 12 hours in a heat treatment zone thereby agglomerating the lead and other dispersed solids contained in the used oil and

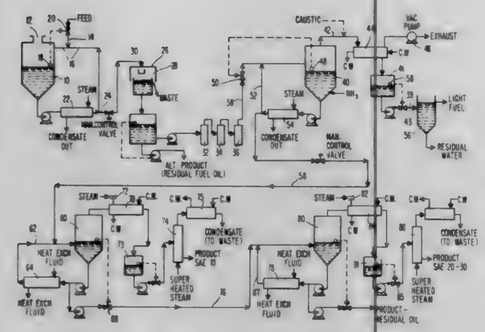
c. separating the agglomerated solids from the used hydrocarbon lubricating oil.

3,923,644

PROCESS AND APPARATUS FOR RE-REFINING USED PETROLEUM PRODUCTS

George J. Hindman, Pottstown, Pa., assignor to Petrocon Corporation, Valley Forge, Pa.

Filed Oct. 11, 1974, Ser. No. 514,176
Int. Cl.² C10M *34/00*; C10G *33/00*; C10C *1/20*
U.S. Cl. 208—186 **7 Claims**



1. In a process of refining a used hydrocarbon oil wherein a used oil is distilled and filtered for re-use, the improvement comprising flash vaporizing said used oil in an evaporator in which the internal conditions are maintained at atmospheric pressure and 210°–240° F, and continuously separating a vaporized portion from an unvaporized liquid portion and continuously removing said unvaporized liquid portion from the bottom of said evaporator, and then mechanically filtering at least a portion of the unvaporized liquid removed from said evaporator.

2. A process for re-refining a used hydrocarbon oil, as recited in claim 1, wherein at least a portion of unvaporized liquid removed from the bottom of said evaporator is passed at relatively low pressure through a vibratory filter having a horizontally disposed screen filter element having openings on the order of 40–45 microns.

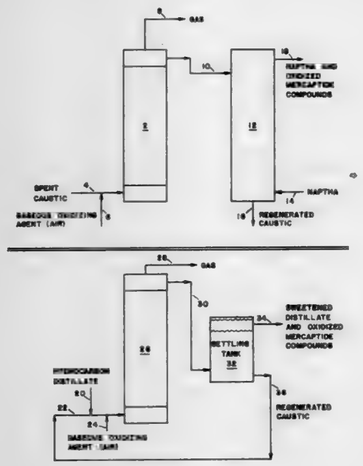
3. A process of re-refining a used hydrocarbon oil, as recited in claim 2, wherein the filtrate from said vibratory filter is further filtered to remove remaining particles having a maximum dimension larger than 3 microns.

3,923,645

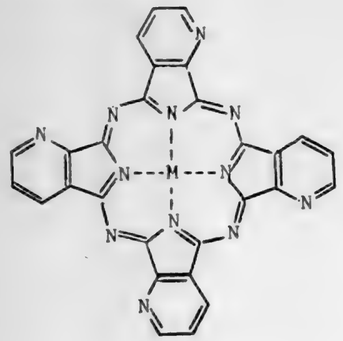
METHOD FOR OXIDIZING MERCAPTANS OCCURRING IN PETROLEUM REFINING STREAMS

Gilbert P. Anderson, Jr., Ashland, and Clifford Ward, Louisa, both of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Sept. 7, 1973, Ser. No. 395,256
Int. Cl.² C10G *19/02*
U.S. Cl. 208—206 **10 Claims**



1. A method for oxidizing mercaptans occurring in petroleum refining streams and alkali mercaptide compounds resulting from contacting aqueous caustic solutions with petroleum refining streams containing mercaptans to their corresponding disulfide compounds comprising contacting said mercaptan and mercaptide compounds in an aqueous alkaline solution with a gaseous oxidizing agent in the presence of a catalyst comprising a metal complex of tetrapyridinoporphyrazine supported on a solid granular inert carrier and having the structural formula:



Where M is a metal selected from the group consisting of iron, manganese, chromium, magnesium, copper, nickel, zinc, titanium hafnium, thorium, tin, lead, columbium, tantalum, antimony, bismuth, molybdenum, palladium, platinum, silver, mercury, vanadium and cobalt.

3,923,646

HYDRODESULFURIZATION WITH A CATALYST FORMED FROM AN ALUMINA SOL CONTAINING ALPHA-ALUMINA MONOHYDRATE

Lee Hilfman, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 347,589, April 3, 1973, abandoned. This application Dec. 13, 1974, Ser. No. 532,567
Int. Cl.² C01G *23/02*
U.S. Cl. 208—216 **13 Claims**

1. A process for desulfurizing a sulfur-containing petroleum hydrocarbon fraction which comprises passing said petroleum hydrocarbon fraction and hydrogen in contact with a catalytic composite at hydrodesulfurization reaction conditions, said catalytic composite comprising from about 5 to about 20 wt. % Group VIB metal or metal oxide and from about 0.1 to about 10 wt. % Group VIII metal or metal oxide on an alumina carrier material, said carrier material having been prepared by:

a. admixing and suspending an alpha-alumina monohydrate in a chloride anion-containing alumina sol having an aluminum chloride anion ratio of from about 1:1 to about 1.5:1, said alpha-alumina monohydrate being admixed in said sol in an amount to provide, on gelation of said sol, from about 25 to about 50 wt. % of said alumina carrier material;

b. commingling the resulting suspension with an ammonia precursor at below gelation temperature, said precursor being decomposable to ammonia with increasing temperature;

c. dispersing the suspension of step (b) as droplets in a hot oil bath effecting decomposition of said precursor and the formation of hydrogel spheres therein;

d. aging said spheres at an elevated temperature effecting decomposition of the residual ammonia precursor contained therein, and

e. washing, drying and calcining the aged alumina spheres to form said alumina carrier material.

3,923,647

FROTH FLOTATION METHOD FOR RECOVERY OF MINERALS

Vojislav Petrovich, 1925 W. Schiller St., Chicago, Ill. 60622

Continuation-in-part of Ser. No. 251,458, May 8, 1972, abandoned. This application Nov. 6, 1973, Ser. No. 409,776
Int. Cl.² B03D *1/02*
U.S. Cl. 209—166 **2 Claims**

1. An improved method of beneficiating ores selected from the group consisting of oxide ores and minerals of titanium, zirconium,, cerium, thorium, vanadium niobium, tantalum, chromium, wolfram, and uranium, by froth flotation process to produce a froth concentrate of desired metal values which improvement comprises: effecting the froth flotation of the ore by treating the comminuted ore of the mineral slurry with inorganic peroxyacids or their alkali or ammonium salts, followed by an effective amount of a collector-frother of an alkyl mono-, di-, tri-olefin adduct of a glycerol, diglycerol, hexanetriol, polyoxymethylene or a mixture thereof having no more than six hydroxyl groups per molecule, said olefin having from 5 to 10 carbon atoms, said adduct having from 10 to 22 carbon atoms; and recovering a froth concentrate relatively rich in the desired metal values to leave the tailings relatively poor in desired metal values.

3,923,648

DETOXIFICATION OF ALDEHYDES AND KETONES

Everett R. Lashley, Jr., South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 7, 1973, Ser. No. 367,739
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C02C *1/02, 5/02*
U.S. Cl. 210—12 **11 Claims**

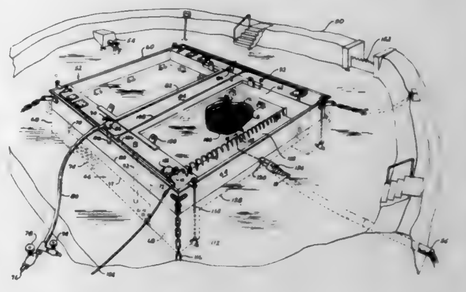
1. A method of disposal of wastewaters containing α,β-ethylenically unsaturated aldehydes selected from the class consisting of acrolein, methacrylaldehyde, crotonaldehyde, 2,4-hexadienal, and 2-ethylcrotonaldehyde or methyl vinyl ketone comprising contacting said wastewaters with sufficient base to render the pH of the wastewaters alkaline, maintaining the alkaline wastewaters at a pH of at least 8 at a temperature of about 25° to 100° C. for at least 15 minutes whereby the α,β-ethylenically unsaturated aldehydes or methyl vinyl ketone are condensed to higher molecular weight products, and then biologically degrading the waste water in a biological system containing active biomass.

3,923,649

FLOATING CLARIFIER MECHANISM AND METHOD

Vaughan R. Sparham, Bournemouth, England, and Leon C. Bixby, Clark's Green, Pa., assignors to Hendrick Manufacturing Company, Carbondale, Pa.

Filed Feb. 22, 1974, Ser. No. 444,706
Int. Cl.² B01D *35/00*
U.S. Cl. 210—20 **26 Claims**



1. A method of clarifying water which comprises: accumulating water to be clarified in a basin, floating a blanket inducing upflow clarifier means with an opening thereto submerged in the accumulated water, and decanting water from said clarifier means at a level above the induced blanket and below the level of surrounding water in the basin.

3,923,650

PROCESS FOR REDUCING THE BIOLOGICAL AND CHEMICAL OXYGEN DEMAND OF SPENT ANTIBIOTIC FERMENTATION BROTH

Robert H. L. Howe, W. Lafayette, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 1, 1974, Ser. No. 457,151
Int. Cl.² B01D *13/00*
U.S. Cl. 210—21 **9 Claims**

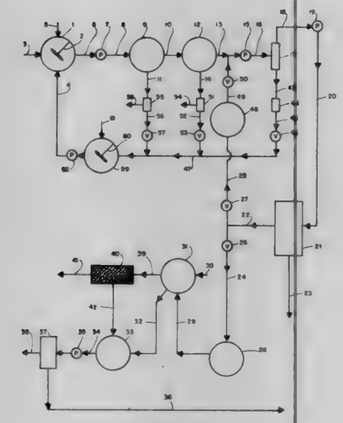
1. A process for reducing the biological and chemical oxygen demand of spent antibiotic fermentation broth comprising:

a. commingling a coagulant with an antibiotic activity containing fermentation broth;

b. passing the broth from step (a) through a solids removing means;

c. flowing the broth from step (b) through a coalescing strainer;

d. elevating the pressure on the broth from step (c) to from about 200 to about 500 psig;
e. contacting the pressurized broth from step (d) with a semi-permeable membrane adapted to restrict the flow therethrough of molecules having a molecular weight slightly below that of the molecular weight of the antibiotic activity contained in such broth;
f. maintaining the contact between said pressurized broth and said semi-permeable membrane until from about 80 to 90 percent of the volume of said broth passes through said membrane essentially free of antibiotic activity becoming permeate;



g. extracting the antibiotic activity from the concentrated fermentation broth from step (f) by commingling such broth with a water-immiscible partitioning solvent;
h. separating the antibiotic activity containing solvent from the extracted fermentation broth from step (g);
i. elevating the pressure on the broth from step (h) to from about 200 to about 500 psig;
j. contacting the pressurized broth from step (i) with a semi-permeable membrane as described in steop (e);
k. maintaining the contact between said pressurized broth and said semi-permeable membrane as in step (f); and
l. commingling the permeates from steps (f) and (k) for reuse or further treatment before discharge into the environment.

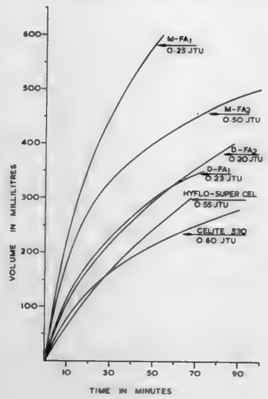
3,923,651

PROCESS FOR LIQUID/LIQUID EXTRACTION

Donald Eric Weiss, Blackburn, and Hendrik Adriaan Jacobus Battaerd, North Clayton, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation and Imperial Chemical Industries of Australia and New Zealand Limited, both of Campbell, Australia

Division of Ser. No. 138,679, April 29, 1971, Pat. No. 3,890,224. This application Nov. 20, 1974, Ser. No. 525,684
Claims priority, application Australia, May 4, 1970, 1083/70
Int. Cl.² B01D *11/04*
U.S. Cl. 210—21 **5 Claims**

1. In the process of liquid/liquid extraction comprising extracting a compound from a solution of the compound in an aqueous liquid medium with a second organic liquid medium immiscible with the first liquid medium, the improvement consisting of separating the two liquid phases by firstly adding synthetic ferromagnetic polymeric particles being characterised in that said ferromagnetic particles preferentially absorb or adsorb the second liquid medium; and secondly removing



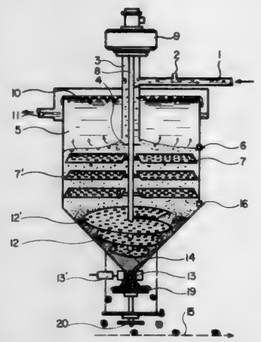
said particles together with the associated second liquid medium by magnetic means.

3,923,652

METHOD AND APPARATUS FOR COMPACTING FLUID SLUDGES

Elie Condolios, and Michel Merle, both of Grenoble, France, assignors to Societe Generale de Constructions Electriques et Mecaniques (ALSTHOM), France

Filed Nov. 28, 1973, Ser. No. 419,713
Claims priority, application France, Nov. 28, 1972, 72.42253
Int. Cl.² C02C *3/00*
U.S. Cl. 210—67 **31 Claims**



1. A method for compacting fluid sludge including flakes of sludge smaller than a few tenths of a millimeter and an interstitial liquid, said method comprising: introducing fluid sludge into a tank; separating a portion of the interstitial liquid from said fluid sludge to produce a concentrated sludge; stirring said concentrated sludge slowly so that the flakes of sludge in said concentrated sludge increase in volume and density, stirring being accomplished by means of a plurality of inclined perforated blades mounted for rotation about a vertical shaft, the stirring speed being so chosen that break up of flakes of sludge is substantially prevented; pressing the flakes of sludge which have been stirred toward a discharge point so that movement of the flakes of sludge decreases as said discharge point is approached, so that the interstitial liquid between the flakes of sludge is moved away from said discharge point, and so that the flakes of sludge are compacted, pressing being accomplished by at least one perforated conical screw

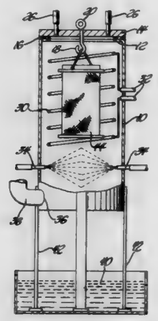
mounted for rotation about a vertical shaft and positioned below said perforated blades; and removing the compacted sludge flakes at said discharge point, said perforated blades being inclined so as to push said flakes of sludge towards said conical screw.

3,923,653

METHOD FOR CLEANING METALLIC FILTERS OF PLASTIC WASTE

Paul N. Lavins, Jr., Grosse Pointe Farms, Mich., assignor to American Induction Heating Corporation, Detroit, Mich.

Filed Sept. 27, 1972, Ser. No. 292,563
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B01D *35/18;* **B08B** *7/00*
U.S. Cl. 210—71 **5 Claims**



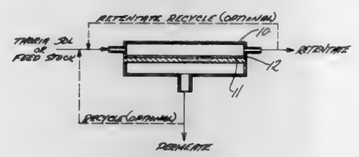
3. The method of removing plastic waste from a metallic element comprising: suspending the element in an elevated position and heating the element in an atmosphere purged of oxygen, by inductive heating, until the element reaches a temperature below the auto-ignition point but above the melting point of the plastic and until gravity pulls all of the plastic with the exception of a thin layer away from the element, wherein melting of the plastic will occur only at its interface with the element, and then heating the element at a temperature above the auto-ignition point of the plastic for a sufficient period of time to cause decomposition of the thin layer of plastic so that no plastic residues remain on the metallic element.

3,923,654

ULTRAFILTRATION MEMBRANE

Harold A. O'Hern, deceased, late of Toledo, Ohio, and by William P. Hickey, executor, Monroe County, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed May 30, 1974, Ser. No. 474,691
Int. Cl. B01d *37/02*
U.S. Cl. 210—75 **14 Claims**



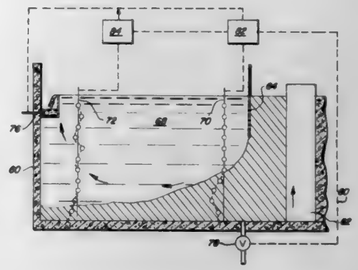
1. In the process for forming a rigid, dimensionally stable, high-flux, anisotropic, composite, ultrafiltration membrane for use in the ultrafiltration of solute from an aqueous feed stock, wherein thoria is filtration deposited from a dilute, aqueous, colloidal thoria sol on a porous, rigid, liquid-permeable support to form said composite membrane; the improvement for increasing the initial solute rejection rate of said membrane comprising incorporating sulfate ion into said thoria sol in the molar ratio (SO_4/Th) of about 0.9×10^{-2} to about 4.5×10^{-1}.

3,923,655

LEVEL DETECTION SYSTEM

Ross E. McKinney, Lawrence, Kans., assignor to Vesmat Investments, Inc., Fort Myers, Fla.

Filed Dec. 9, 1974, Ser. No. 530,705
Int. Cl.² B01D *21/24*
U.S. Cl. 210—83 **6 Claims**



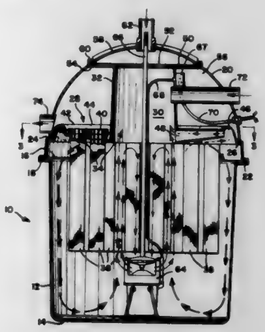
4. A method for detecting the level of activated sludge in a secondary sedimentation zone in a sewage treatment process, which method comprises measuring the temperature of the lower activated sludge layer in said sludge zone and the temperature of the supernatant liquid above such activated sludge layer, determining a sharp increase in temperature of said activated sludge over the temperature of said supernatant liquid, whereby the depth of the activated sludge layer is also determined as a result of the temperature differential, and wasting activated sludge responsive to said determination to maintain a controlled level of activated sludge in said zone.

3,923,656

PACKAGE AEROBIC WASTE TREATMENT SYSTEM

J. Robert Krebs, and Thomas G. Abele, both of Dayton, Ohio, assignors to Multi-Flo, Inc., Dayton, Ohio

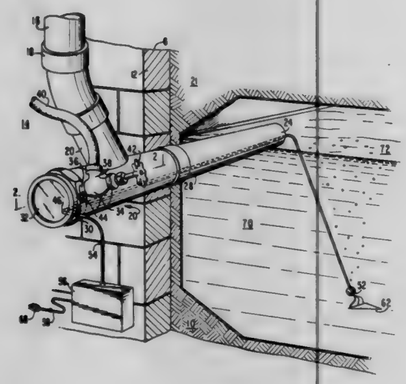
Filed Dec. 17, 1973, Ser. No. 425,556
Int. Cl.² B01D *33/00;* **C02C** *1/04*
U.S. Cl. 210—86 **20 Claims**



1. A waste treatment system comprising:
a. a holding tank adapted to receive predominantly liquid waste material,
b. a plurality of open mouth porous bags suspended in said holding tank and adapted to be submerged in waste material held therein,

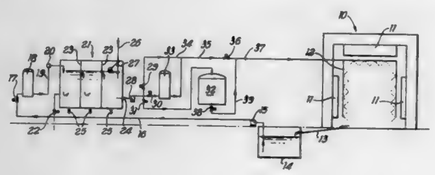
c. means defining an effluent chamber separate from said holding tank and in communication with the interior of said open mouth bags,
d. inlet means for delivering waste material into said holding tank,
e. outlet means for removing effluent from said effluent chamber,
f. aerating means for delivering oxygen to said holding tank to promote aerobic bacterial action in said holding tank and on outer surfaces of said bags, and
g. means defining a weir in said effluent chamber intermediate said open mouths of said bags and said outlet means.

3,923,657
COMBINED SEPTIC TANK INLET PIPE SIGHT GLASS END PLUG AND TANK AERATOR SYSTEM
Kenneth F. Roser, River Rd., Marcy, N.Y. 13403
Filed Dec. 31, 1974, Ser. No. 537,744
Int. Cl.² C02C *1/12*; **B01F** *3/04*
U.S. Cl. 210—95 **8 Claims**



1. A combined end plug for a building septic tank inlet pipe and tank aerator comprises: a cylindrical end plug housing for sealed attachment to the building end of a horizontal septic tank inlet pipe leading from a building basement to the upper end of an underground septic tank exterior of the building and spaced therefrom, a port opening up into the interior of the cylindrical end plug housing at an angle to the longitudinal center plane passing through the housing and the port opening to effect a vortex cleansing action when liquid under pressure enters the port and impinges against the interior of the end plug housing, the improvement comprising:
a small diameter air tube projecting through said cylindrical housing,
a coilable, flexible hose of a length in excess of said inlet pipe fluid coupled to the end of the air tube interior of the plug and terminating in an aeration member, and
piston means operably coupled to said aeration member and spanning the interior of said inlet pipe at the time of initial installation of said end plug to said septic tank inlet pipe; whereby, liquid under pressure passing through said inlet pipe upstream of said piston causes said piston, said aeration member and said coiled flexible hose to move axially through said inlet pipe to the extent that said aeration member and a portion of said flexible hose falls by gravity into said septic tank,
whereby, subsequent application of air under pressure to the end of said air tube projecting exteriorly of said cylindrical housing, permits aeration of the septic tank content.

3,923,658
VEHICLE WASHING PLANT
Peter John Lancaster, Aldershot, England, assignor to E. B. Burdon (Engineers) Limited, England
Filed Dec. 12, 1973, Ser. No. 426,642
Int. Cl.² B01D *23/24*
U.S. Cl. 210—108 **3 Claims**

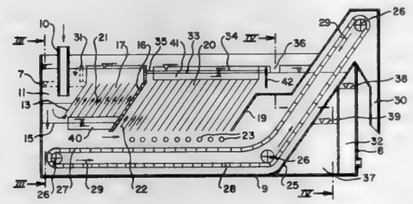


1. In a vehicle washing plant fitted with a vehicle washing chamber having an inlet and a drain, a sump connected to the washing chamber drain and a water recycling circuit providing water for a washing cycle and a rinsing cycle, the improvement wherein the recycling circuit comprises:
at least one backwash filter, said backwash filter being self-cleaning in response to the predetermined build-up of pressure at its inlet;
a first pump connected between said sump and said backwash filter inlet;
a wash water settling tank fitted with longitudinally spaced generally vertical baffles and a self-regulating make-up water inlet valve and an outlet valve adjacent a clean water end of the tank and a dirty water inlet at the opposite end, said dirty water inlet communicating with the outlet of said backwash filter;
a selector valve system having an inlet branch and at least two outlet branches;
a second pump connected between the outlet of said settling tank and said inlet branch of said selector valve system;
a main filter containing activated carbon granules, said filter comprising an inlet, an outlet, a larger downstream filter bed and a smaller replaceable upstream filter bed;
said inlet of said main filter being connected to the outlet of said settling tank through said second pump and said inlet branch and a first outlet branch of said selector valve system, and said outlet of said main filter being connected to said inlet of said washing chamber, whereby water for said rinsing cycle in said washing chamber is withdrawn from said settling tank outlet through said main filter; and
a filter by-pass conduit connected between a second outlet branch of said selctor valve system and said washing chamber inlet, whereby water for said washing cycle in said washing chamber is withdrawn directly from said settling tank outlet through said second pump and said inlet branch and said second outlet branch of said selector valve system.

3,923,659
APPARATUS FOR PROCESSING FLUSHING LIQUOR FROM A GAS MAIN OF COKE OVENS
Hansjurgen Ullrich, Schwalbach, Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Germany
Filed July 29, 1974, Ser. No. 492,500
Claims priority, application Germany, Aug. 2, 1973, 2339080
Int. Cl.² B01D *35/18*
U.S. Cl. 210—179 **9 Claims**

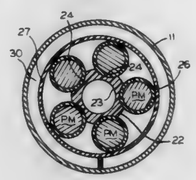
1. An apparatus for processing flushing liquor from a gas main of a coke oven to obtain a watery liquid which is substantially free from tar and solids and to obtain tar which is substantially free from watery liquid and solids, said apparatus comprising:

a substantially rectangular tank including a bottom wall and pairs of opposed side walls to receive said flushing liquor and form a tar and watery liquid phase boundary within the tank;
means forming a first group of inclined settlement surfaces in said tank and having a bottom entrance way lying above said tar and watery liquid phase boundary in the tank;
a liquid receiving chamber extending within said tank along at least one side wall thereof in a manner to utilize the heat of the watery liquid in the liquid receiving chamber for maintaining a desired elevated temperature of the liquid within said tank;
first adjustable overflow means in said tank above the first group of inclined settlement surfaces to control the flow of watery liquid which is substantially free of tar and solids, from the space above the inclined settlement surfaces into said liquid receiving chamber;
means communicating with said liquid receiving chamber for discharging watery liquid therefrom;



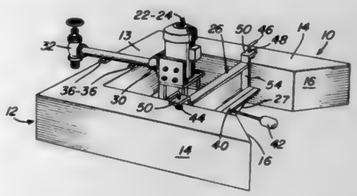
means forming a second group of inclined settlement surfaces in said tank and having a bottom entrance way lying below said tar and watery liquid phase boundary in the tank, the bottom entrance way to said second group of inclined settlement surfaces lying below the bottom entrance way to said first group of inclined settlement surfaces;
a tar-receiving chamber including second adjustable overflow means in said tank above the second group of inclined settlement surfaces to control the flow of tar from the space above the second group of inclined settlement surfaces into the tar-receiving chamber;
an inclined wall within said tank for separating and defining a consecutive arrangement of said first group of inclined settlement surfaces from said second group of inclined settlement surfaces; and
conveyor means extending into said tank below said first and second groups of settlement surfaces for discharging solids from the tank dropping out of the liquid therein.

3,923,660
MAGNETIC APPARATUS FOR TREATING LIQUIDS CONTAINING CALCAREOUS MATTER
Merrill F. Kottmeier, 6238 Lincoln Ave., Morton Grove, Ill. 60053
Continuation of Ser. No. 275,318, July 26, 1972, abandoned. This application Aug. 26, 1974, Ser. No. 500,571
Int. Cl.² B01D *35/06*
U.S. Cl. 210—222 **1 Claim**



1. In apparatus for the treatment and conditioning of calcareous water with magnetic lines of force:
a. a generally cylindrical outer jacket;
b. means closing the ends of said outer jacket to define a treating chamber;
c. a supply opening to and a discharge opening from said treating chamber;
d. means defining a helical path of movement in said treating chamber of said water;
e. a plurality of permanent magnet receiving tubes of non-ferrous material each of said tubes having the magnets therein arranged with like poles of contiguous magnets arranged adjacent each other to create lines of force extending laterally and longitudinally of said magnets;
i. each of said magnets being separated from an adjacent magnet by a non-ferrous spacer having a length approximately one and one-half times the diameter of said magnets,
f. means for arranging and supporting said tubes with the magnetic poles of the magnets in each tube being aligned laterally of each other with like poles of said magnets in alignment;
g. said means comprising a central tube having flutes in the outer surface thereof extending longitudinally thereof;
h. each of said magnet receiving tubes being supported in a correlative tube with the magnets therein arranged with like poles of a magnet in one tube in lateral alignment with the magnet of an adjacent tube;
i. said first named means defining a helical path for said water causing the same to cut said lines of force to condition the water.

3,923,661
OIL SKIMMER WITH LEAD FLOAT AND HINGED WEIR
Angelo J. Crisafulli, Box 1051, Glendive, Mont. 59330
Filed June 28, 1974, Ser. No. 485,147
Int. Cl.² E02B *15/04*
U.S. Cl. 210—242 **6 Claims**



6. In combination with a floating vessel having means incorporated therein for receiving water and pollutants, a skimmer disposed forwardly of the vessel, said skimmer including a generally U-shaped flotation unit having a horizontal bight portion extending transversely of the bow of the vessel and forwardly extending parallel legs, a collecting and pumping unit supported between the legs of the flotation unit forwardly of the bight portion, said collecting and pumping unit including a transversely extending container disposed vertically between the legs and including projecting means thereon supportingly engaging the upper surfaces of the legs in a manner to permit removal thereof, said container including a front wall having an upper edge terminating below the level of the water in which the flotation unit and collecting and pumping unit is positioned, a transversely extending weir plate having its rear edge attached to the upper edge of the front wall by a hinge structure, the forward edge of said weir plate being swingable to vary its position in relation to the surface of the water, a mounting rod extending forwardly from and rigid with the weir plate, a float rigidly connected to the mounting rod in remote relation to the forward edge of the weir plate for controlling the position of the forward edge of the weir plate in relation to the surface of the water for skimming any pollutants floating in the water at the upper surface thereof and a predetermined layer of water whereby such pollutants and

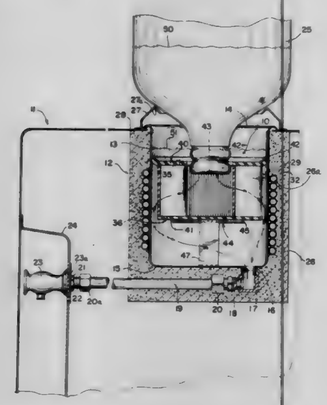
water will flow by gravity into the container, a pump and drive unit connected with the container with the pump being in communication with the bottom portion of the container and including a discharge pipe extending rearwardly beyond the bight portion of the flotation unit for discharge of water and pollutants into the floating vessel, said collecting and pumping unit being separable as a unit from the flotation unit to enable the two components to be separately transported and assembled at a site for use, and threaded members extending vertically through said lugs and having lower ends engaged adjustably with the outer surfaces of the legs of the flotation unit to vary the vertical position of the upper edge of the front wall in relation to the surface of the water, the hinge connection between the weir plate and the upper edge of the front wall of the container being provided with a flexible covering member, said upper edge of the front wall of the container and said weir plate extending substantially completely between the inner surfaces of the legs with the container being oriented rearwardly of the forward ends of the legs, said mounting rod and float being disposed centrally of the weir plate with the float being disposed forwardly of the weir plate but rearwardly of the forward ends of the legs.

3,923,662

FILTER CARTRIDGE FOR WATER COOLERS

Raymond A. O'Brien, Forest Park, Ill., assignor to Cleveland Hardware and Forging Company, Chicago, Ill.

Filed Mar. 11, 1974, Ser. No. 449,976
Int. Cl.² B01D *27/06*
U.S. Cl. 210—251 **3 Claims**



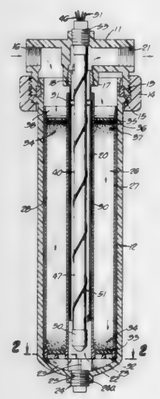
1. In combination in a water cooler: a sump means for temporarily storing and refrigerating water in said cooler, said sump means providing a generally cylindrical side wall in substantially vertical axial orientation in said cooler; a bottom wall across the lower end of said side wall, for enclosing same, an opening acorss the top of said side wall defining an inlet of said sump, an opening in/or adjacent the bottom wall defining an outlet of said sump, a water supply bottle removably disposed above said sump with its outlet located within the inlet of said sump; an improved disposable water filter cartridge removably inserted into said sump through said inlet opening for removing solid substances from flowing through said sump; and means for maintaining said water filter cartridge in vertical spatial relation to said sump bottom wall to provide a reservoir of filtered water at the bottom of said sump; said improved disposable water filter cartridge comprising a filtering media and top and bottom sealing covers which prevent water flow between said supply bottle and said outlet in said sump means without passing through said filtering media, said filtering media being in sheet form folded in double back pleats at intervals along its length and formed define an annular structure of smaller outside diameter than the inner diameter of said sump means and having substantially radially extending surfaces surrounding a hollow core, said bottom cover being a circular disc having an outer diameter smaller than the inner diameter of said sump means and a top surface sealingly engaging the bottom edges of said media, said top cover being a circular disc having a diameter larger than the inner diameter of said sump means, a bottom surface which sealingly engages the top edges of said filtering media, an elastic peripheral lip capable of forming a seal by deforming and exerting pressure on the wall of said sump in which the cartridge is inserted, and a central circular opening through said top cover adjacent and of smaller diameter than that of said core.

3,923,663

FLUID PURIFICATION DEVICE

William P. Reid, 3200 E. 29th St., Long Beach, Calif. 90806

Filed July 22, 1974, Ser. No. 490,238
Int. Cl.² B01D *35/06*
U.S. Cl. 210—251 **13 Claims**



9. A fluid purification device comprising a housing defining a chamber therein and having inlet and outlet ports communicating with said chamber;

a guide tube in said chamber, one end of said guide tube being supported by said housing in fluid flow communication with said outlet port, the other end thereof being in fluid flow communication with said inlet port;

a tubular filter element in said chamber surrounding said guide tube and in the path of fluid flow from said inlet port to said other end of said guide tube, sealing means at one end of said filter element adjacent said inlet port sealing said one end against fluid flow from said inlet port directly to the said other end of said guide tube;

said housing having threaded mounting means at opposite ends thereof aligned with said guide tube; and

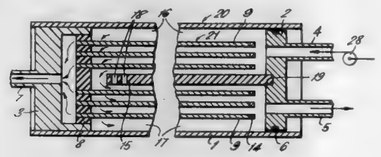
an elongate ultraviolet lamp unit having a threaded base member threadedly engaging a selected one of said mounting means and supported thereby to extend into said guide tube whereby said lamp unit may be mounted on said housing to extend into said guide tube from either end thereof.

3,923,664

REVERSE OSMOSIS APPARATUS

John Roger Grover, Reading; Ronald Gayler, Wantage, and Malcolm Hoban Delve, Wallingford, all of England, assignors to United Kingdon Atomic Energy Authority, London, England

Filed Jan. 22, 1974, Ser. No. 435,521
Claims priority, application United Kingdom, Jan. 24, 1973, 3656/73
Int. Cl.² B01D *31/00*
U.S. Cl. 210—321 **5 Claims**



1. Reverse osmosis apparatus comprising a pressure shell of cylindrical form, a removable plug-like holder for a membrane assembly at one end of the shell, a membrane assembly in the form of a bundle of rod-like reverse osmosis elements having fluid receiving grooves carried by said holder and extending towards the other end of the shell, a product outlet at the holder end of the shell in fluid communication with said grooves in said reverse osmosis elements, closure means for the other end of the shell comprising a removable plug-like member, shell partition means within said shell extending from said plug-like member in a direction toward said holder and projecting into said membrane assembly and dividing said membrane assembly into first and second groups of rod-like elements, said partition means dividing said shell into a first compartment containing said first group of rod-like elements and a second compartment containing said second group of rod-like elements, fluid communication means at the end of said partition means remote from said plug-like member allowing fluid communication between said first and said second compartments, an inlet for feed solution at the other end of the shell for introducing feed solution into said first compartment and an outlet for feed solution at the other end of the shell for removal of feed solution from said second compartment whereby the feed solution flows from said inlet, through said first compartment, through said fluid communication means, and through said second compartment exteriorly of the reverse osmosis elements to said outlet.

3,923,665

DEMAND BACTERICIDE FOR DISINFECTING WATER AND PROCESS OF PREPARATION

Jack L. Lambert, and Louis R. Fina, both of Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Continuation-in-part of Ser. No. 308,553, Nov. 21, 1972, Pat. No. 3,817,860, and a continuation-in-part of Ser. No. 86,246, Nov. 2, 1970, abandoned, and a continuation-in-part of Ser. No. 881,923, Dec. 3, 1969, abandoned. This application Apr. 3,1974, Ser. No. 457,633. The portion of the term of this patent subsequent to June 18, 1991, has been disclaimed.
Int. Cl.² C02B *3/06*
U.S. Cl. 210—501 **12 Claims**

1. The process for producing a triiodide demand bactericide, comprising preparing an aqueous solution of iodine which is present therein essentially as triiodide ions (I_3^-), contacting said triiodide solution with a porous granular strong base anion exchange resin having the strongly basic groups thereof in a salt form reactable with triiodide ions, and contacting being continued until sufficient triiodide has reacted with said strongly basic groups that bacterially contaminated water is disinfected when passed through a bed of the reacted resin, and removing water-elutable iodine from said resin, said removing being continued until the reacted resin can be washed with distilled water at a temperature of 25° to 30° C. without obtaining in the wash water a concentration of oxidizing iodine detectable by reacting said wash water with a cadmium iodide-linear starch test reagent.

2. The triiodide demand bactericide produced by the process of claim **1**.

3,923,666

METHOD AND COMPOSITION FOR ACIDIZING AND FRACTURING WELLS

Walter R. Dill, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 26, 1973, Ser. No. 336,150
Int. Cl.² C09K *3/00*
U.S. Cl. 252—8.55 C **20 Claims**

1. A method for preparing a gelled acid useful for acidizing or fracturing subterranean earth formations, which comprises: mixing a water soluble, linear polyacrylamide having a molecular weight in the range of about 1 to about 50 million, an aqueous hydrochloric acid solution containing an amount of hydrochloric acid effective to produce a substantially homogeneous gel, and an aldehyde compound soluble in aqueous solutions;

wherein the mixing ratio of said polyacrylamide to said acid solution is in the range of about 25 to about 150 pounds of said polyacrylamide per 1,000 gallons of said acid solution.

12. The method of treating a permeable, subterranean formation to enhance the productivity of hydrocarbons therefrom which comprises:

mixing from about 25 to about 150 pounds of a water soluble linear polyacrylamide having a molecular weight of from about 1 to about 50 million with each 1,000 gallons of a composition consisting essentially of an aqueous hydrochloric acid solution containing at least 25 weight percent hydrochloric acid to develop a stable, pumpable acid gel;

injecting said stable, pumpable acid gel into the interstices of said permeable, subterranean formation; then

injecting an effective amount of an aldehyde compound soluble in aqueous solutions into the interstices of the permeable formation to mix the aldehyde with the pumpable acid gel in situ, and thereby increase the viscosity of the gel present in the formation interstices by in situ reaction of the aldehyde compound with the pumpable acid gel.

15. A high viscosity acidic gel composition useful in fracturing, acidizing and propping operations in the production of hydrocarbons from subterranean formations consisting essentially of a methylol hydrochloride salt of a linear polyacrylamide having a molecular weight exceeding 1 million and produced by reacting a water soluble linear polyacrylamide having a molecular weight of from about 1 to about 50 million with hydrochloric acid in an aqueous environment to yield a hydrochloride salt of said linear polyacrylamide, then, reacting an aldehyde compound soluble in aqueous solutions with said hydrochloride salt.

3,923,667

HIGH TEMPERATURE NIO RUBBING SEAL MATERIAL CONTAINING CUO AND CAF_2

Irwin M. Lachman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 29, 1974, Ser. No. 518,598
Int. Cl.² C04B *35/02*; **C10M** *5/02*
U.S. Cl. 252—12 **8 Claims**

1. A sintered ceramic sliding seal for contacting a ceramic regenerator in a gas turbine engine analytically consisting essentially of, by weight, 8–76% NiO, 10–52% CuO and 5–40% of a metal fluoride selected from CaF_2, SrF_2 and combinations thereof.

3,923,668
GUANIDINE CARBONATE DISPERSION COMPOSITION

Thomas Emmett Johnston, West Grove, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed June 24, 1974, Ser. No. 482,571
Int. Cl.² C10M *1/32, 3/26;* **C10L** *1/32, 1/22*
U.S. Cl. 252—16 **9 Claims**

1. A stable dispersion of guanidine carbonate and ashless dispersing agent in mineral oil comprising, based on percent by total weight,

i. from 1% to 50% of guanidine carbonate having a particle size in the range of from 0.001 to 0.1 micron,

ii. from 1% to 25% of at least one oil-soluble, ashless dispersing agent selected from the group consisting of

a. an aliphatic hydrocarbylsuccinic acid and derivatives thereof wherein the hydrocarbyl group has 30 to 200 carbon atoms, said derivative being selected from the group consisting of anhydride, ester, amide and aminoimide,

b. an aliphatic hydrocarbyl-substituted polyalkylene polyamine of the formula



wherein R is selected from the group consisting of hydrogen, lower alkyl, and aliphatic hydrocarbyl containing from 30 to 200 carbon atoms, at least one R being said hydrocarbyl group, R′ is an alkylene radical having 2 to 3 carbon atoms and x is 0 to 5, and

c. a basic amino nitrogen-containing addition type copolymer containing in copolymerized form at least one polymerizable ethylenically unsaturated monomer, free of amino-nitrogen and containing an aliphatic hydrocarbyl chain of from 8 to 18 carbon atoms, and at least one polymerizable ethylenically unsaturated monomer containing basic amino nitrogen, said copolymer containing 0.1 to 3.0% by weight of said basic amino nitrogen, said copolymer having an inherent viscosity of 0.1 to 3.0 as determined at 0.1% weight volume concentration in benzene at 25°C., and

iii. from 25% to 98% of mineral oil having a 100°F. viscosity of from 30 to 1,500 SUS.

3,923,669
ANTIWEAR HYDRAULIC OIL

Thomas D. Newingham, West Chester, and Alexander D. Recchuite, Boothwyn, both of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Oct. 31, 1974, Ser. No. 519,728
Int. Cl.² C10M *1/48, 3/42, 5/24, 7/46*
U.S. Cl. 252—32.7 E **10 Claims**

1. A composition, useful as an anti-wear hydraulic oil or as a gear lubricant, comprising major amounts of a mineral lubricating oil and minor, effective and mutually compatible amounts of a secondary zinc dialkyl dithiophosphate anti-wear agent, chelating type and film forming type metal deactivators, and, as rust inhibitors, a neutral barium salt of a petroleum sulfonate and an alkyl or aryl substituted succinic acid or acid anhydride.

3. The composition of claim 1, wherein said chelating type metal deactivator is an alkyl-substituted derivative of 2,5-dimercapto-1,3,4-thiodiazole.

7. The composition of claim 5 and containing tetra phenyl succinic anhydride.

3,923,670
OVERBASED PHENATES

John Crawford, Pemberley, 15 Ashcourt Drive, Hornsea, East Yorkshire, England

Filed Feb. 27, 1974, Ser. No. 444,426
Claims priority, application United Kingdom, Feb. 22, 1973, 8629/73
Int. Cl.² C10M *1/54, 3/48, 5/28, 7/52*
U.S. Cl. 252—42.7 **6 Claims**

1. In a process for the production of an overbased sulfurized alkaline earth metal alkylphenate wherein an alkylphenol having from 8 to 30 carbons in the alkyl group and sulfur are reacted in the presence of an alkali metal hydroxide to form a sulfurized alkylphenol and wherein the sulfurized alkylphenol is contacted with at least two molar parts of an alkaline earth metal base per molar part of alkylphenol in said sulfurized alkylphenol and in the presence of ethylene glycol to form a sulfurized alkaline earth alkylphenate which is thereafter carbonated to form said overbased sulfurized alkaline earth metal alkylphenate, the improvement comprises (1) reacting said alkylphenol and sulfur in the presence of 0.2–1.3 molar parts of an alkali metal hydroxide per molar part of alkylphenol and (2) conducting said contacting and said carbonation steps in the presence of said alkali metal hydroxide.

3,923,671
METAL WORKING LUBRICANT

James E. Knepp, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 3, 1974, Ser. No. 511,776
Int. Cl.² C10M *1/06, 3/04, 5/04, 7/08*
U.S. Cl. 252—49.5 **8 Claims**

1. A metal working lubricant dispersible in an aqueous media comprising:

a. a fatty acid containing at least 12 carbon atoms including at least one carboxylic acid group;

b. an aliphatic carboxylic acid ester;

c. at least one emulsification agent; and

d. mineral oil.

8. A metal working lubricant comprising a dispersion of from 10 to 30 parts by weight neat oil and from 70 to 90 parts by weight water, said neat oil comprising in parts by weight.

1. from 2 to 8 parts of a carboxylic acid having the formula $C_mH_{2m-n}(COOH)_r$ wherein m is an integer from 13 to 17, n is 0 or an even integer from 2 to 6 and r is at least 1 and not greater than 2;

2. 10 to 20 parts of an aliphatic carboxylic acid ester comprising the condensation product of one or more 6 18 carbon monocarboxylic acids with a polyol;

3. 2 to 10 parts of at least one emulsification agent selected from the group consisting of esters or ethers of 12 to 18 carbon monocarboxylic acids; and

4. from 60 to 80 parts by weight of a mineral oil having a sufficient initial viscosity to provide a viscosity of the neat oil mixture of from 250 to 450 SSU at 100°F.

3,923,672
TURBINE OIL COMPOSITIONS

Albert M. Durr, Jr., and Robert A. Krenowicz, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 7, 1974, Ser. No. 512,765
Int. Cl.² C10M *1/10, 3/02, 5/02, 7/02*
U.S. Cl. 252—49.9 **16 Claims**

1. A turbine oil composition comprising a major amount of a mineral or synthetic hydrocarbon base lubricating oil and the following combination of materials in the amounts specified as weight percent of total composition:

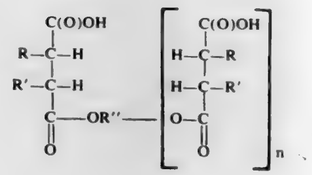
a. about 0.05 to about 1.5 -triphenyl phosphite or trialkyl-substituted phenyl phosphite having 1 or 2 alkyl substituents, each of which contains 1 to 12 carbon atoms;

b. about 0.02 to about 0.75 diphenylamine or alkylated diphenylamines containing 1 or 2 alkyl groups, on one or both phenyl moieties, containing from about 4 to about 16 carbon atoms;

c. about 0.10 to about 0.75 phenyl α-naphthylamine, phenyl β-naphthylamine, phenyl α-naphthylamine having 1 or 2 alkyl or alkaryl substituents, each of which contains 1 to about 16 carbon atoms, and phenyl β-naphthylamine having 1 or 2 alkyl or alkaryl substituents, each of which contains 1 to about 16 carbon atoms;

d. about 0.002 to about 0.10 -benzotriazole or alkyl-substituted benzotriazoles having 1 or 2 alkyl groups containing 1 or 2 alkyl groups containing 1 to 10 carbon atoms; and

e. about 0.02 to about 0.50 -partial ester of an alkyl or alkenyl succinic anhydride, which is represented by the formula



wherein of the radicals R and R′, one is hydrogen and the other is an alkyl or alkenyl group containing from 8 to 15 carbon atoms, R″ is a residue of a polydric alcohol containing from 3 to 6 carbon atoms, and n is an integer of at least one but less than five.

3. The turbine oil composition of claim 2 wherein it contains about 0.05 to about 1.50 weight percent of a copolymer of 1 mole N-vinyl-2-pyrrolidone and 0.5 to 12 moles of an α-olefin containing 8 to 30 carbon atoms.

3,923,674
THERMAL INSULATION MATERIALS AND METHODS OF MAKING SAME

Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 739,895, June 9, 1968, abandoned, which is a continuation of Ser. No. 502,570, Oct. 22, 1965, abandoned, which is a continuation of Ser. No. 285,601, June 5, 1963, abandoned. This application Jan. 2, 1970, Ser. No. 493
Int. Cl.² C23F *11/18*
U.S. Cl. 252—62 **5 Claims**

1. The method of making a structural insulation material which inhibits chloride ion stress corrosion of stainless steel and which has improved strength, comprising: preparing an aqueous slurry of an inert insulation filler, an alkaline earth metal oxide containing material from the group consisting of lime and magnesium hydroxide, and SiO_2 reactable with lime, said slurry having a water to solids ratio of at least 6:1 and a soluble chloride concentration of less than 1,000 ppm based on solids, forming a filter cake of the solids, filtering a solution of sodium silicate through the filter cake to impregnate the filter cake with an amount of sodium silicate to leave a weight ratio of sodium silicate to soluble chloride of at least 50 to one after hardening of the binder, causing the alkaline earth containing material to harden into a strong crystalline binder having from 1% to 15% by weight of said soluble sodium silicate dispersed throughout the insulation material, and drying the shaped body so produced.

5. The method of making a strong porous light weight shaped body which inhibits chloride ion stress corrosion of stainless steel and which has the strength of a structural insulation, comprising: preparing an aqueous slurry of an inert insulation filler, an alkaline earth metal oxide containing material from the group consisting of lime and magnesium hydroxide, and SiO_2 reactable with lime, said slurry having less than 1,000 ppm of soluble chloride based on the solids, mixing solid sodium silicate with the slurry while controlling the temperature and time of contact to give from 1% to approximately 15% by weight of solid sodium silicate in the slurry, shaping the solids of the slurry while retaining the solid sodium silicate therein, and causing the alkaline earth containing material to harden into a strong crystalline binder to provide a resultant insulation material having sodium silicate present in an amount at least 50 times the chloride ion.

3,923,673
METAL DEFORMING PROCESS

Klaas Van Henten, Delft; Cornelis Couvee, Rotterdam, and Dirk De Jager, Delft, all of Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 9, 1973, Ser. No. 414,488
Claims priority, application United Kingdom, Mar. 9, 1973, 11455/73
Int. Cl.² C10M *1/16*
U.S. Cl. 252—59 **6 Claims**

1. A process for deforming metal which comprises applying to the surface of said metal a composition comprising 5–50% by weight of a non-hydrogenated block copolymer having at least one homo polymer block of a monoalkenylarene selected from the group consisting of styrene, alpha-methylstyrene and tert-butyl styrene, said block having an average molecular weight between about 4000 and 100,000 and at least one homo polymer block of a conjugated diene selected from the group consisting of butadiene and isoprene, said block having an average molecular weight between about 20,000 and 1,000,000, and 50–95% by weight of a hydrocarbon lubricant, said lubricant containing no more than about 30% by weight of aromatic hydrocarbons and subjecting the metal so treated to deforming operations.

3,923,675
METHOD FOR PREPARING LEAD LANTHANUM ZIRCONATE-TITANATE POWDERS

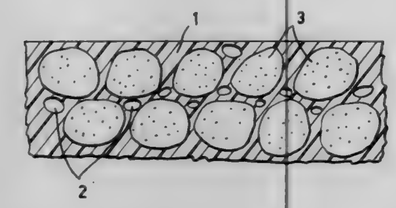
Khodabakhsh S. Mazdiyasni, Xenia, and Leanne M. Brown, Brookville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 9, 1973, Ser. No. 386,923
Int. Cl.² C04B *35/46, 35/48, 35/50*
U.S. Cl. 252—62.9 **9 Claims**

1. A method for preparing lead lanthanum zirconate titanate (PLZT) powder which comprises adding to water a mixture consisting essentially of lead isoamyloxide, a lanthanum alkoxide, a zirconium alkoxide and a titanium alkoxide in solution in isoamyl alcohol, the alkoxides corresponding to the formulae $La(OR)_3$, $Zr(OR)_4$ and $Ti(OR)_4$, wherein R is an alkyl radical containing 3 to 6, inclusive, carbon atoms; refluxing the solution at a temperature in the range of about 70° to 75°C for a period of about 2 to 5 hours to hydrolytically decompose said isoamyloxide and alkoxides into a hydroxide of lead, lanthanum, zirconium and titanium; washing the resulting hydroxide; and drying the hydroxide by heating same under a vacuum, thereby obtaining a high purity, amorphous PLZT powder.

3,923,676
INSULATIVE ADHESIVE MIXTURE RESISTANT TO STRONG ELECTRICAL FIELDS

Vilho Albert Räsänen, Tervakoski 12400, Finland
Filed May 25, 1973, Ser. No. 364,133
Claims priority, application Finland, June 9, 1972, 1648/72
Int. Cl.² H01B 3/10
U.S. Cl. 252—63.2 9 Claims

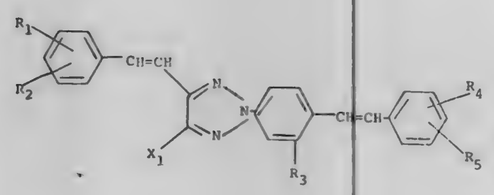


1. A glue mixture to be used in objects subject to strong electrical fields such as in glue splices of electrical capacitor tissues, comprising:
a. a glue component selected from the group consisting of methyl cellulose, starch, arabium, dextrin and plastic adhesives and
b. particles of a poorly conducting substance mixed with the adhesive component,
the particle content ranging from 50 to 5,000 per cent by weight of the adhesive material,
the particle size ranging from 0.01 μm to a few micrometers, the particles being of a substantially uniform size, the cross-sectional contours of the particles being evenly curved, and
the ratio of the maximum and the minimum dimension of the particles being less than 10 to 1.

3,923,677
2-STILBENYL-4-STYRYL-V-TRIAZOLES, THEIR USE FOR THE OPTICAL BRIGHTENING OF ORGANIC MATERIALS, AND PROCESSES FOR THEIR MANUFACTURE

Guglielmo Kabas, Binningen; Hans Schlaepfer, Basel, and Ian John Fletcher, Muenchenstein, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
Division of Ser. No. 237,204, March 22, 1972, Pat. No. 3,862,179. This application Oct. 24, 1974, Ser. No. 517,697
Claims priority, application Switzerland, Mar. 31, 1971, 4702/71
Int. Cl.² C11D 3/42
U.S. Cl. 252—89 3 Claims

1. A detergent characterized in that it contains from 0.001 to 0.5 percent by weight of an optical brightener of the formula



wherein
X_1 denotes hydrogen, halogen, methyl or optionally substituted phenyl,
R_1 denotes hydrogen, halogen, alkyl with 1 to 4 carbon atoms, optionally substituted phenyl or alkoxy with 1 to 4 carbon atoms, or together with R_2 in the o-position denotes a fused benzene ring,
R_2 denotes hydrogen, halogen, alkyl with 1 to 4 carbon atoms or alkoxy with 1 to 4 carbon atoms, or together with R_1 in the o-position denotes a fused benzene ring,
R_3 denotes hydrogen, a nitrile group, an optionally functionally modified sulpho group or an optionally functionally modified carboxyl group,
R_4 denotes hydrogen, halogen, a nitrile group, alkyl with 1 to 4 carbon atoms, optionally substituted phenyl, alkoxy with 1 to 4 carbon atoms, optionally functionally modified carboxyl or an optionally functionally modified sulpho group and
R_5 denotes hydrogen, alkyl with 1 to 4 carbon atoms or alkoxy with 1 to 4 carbon atoms.

3,923,678
LIQUID CLEANSING AGENT CONCENTRATES

Hans-Jerg Kleiner, Bad Soden; Otto Koller; Karl-Heinz Schneider, both of Kelkheim, and Gerhart Schneider, Schneidhain, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed Oct. 30, 1974, Ser. No. 519,247
Claims priority, application Germany, Oct. 30, 1973, 2354223
Int. Cl.² C11D 1/00
U.S. Cl. 252—89 3 Claims

1. Liquid aqueous cleansing agent concentrates on the basis of non-ionic, surface-active compounds, having a content of compounds of the general formula



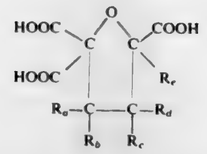
(I)

wherein R_1 is a straight-chained or branched alkyl or alkenyl radical having 4 to 16 carbon atoms, R_2 is alkyl having 1 to 4 carbon atoms and Y is hydrogen or the sodium or potassium ion wherein the content of compounds of the general formula is about 1 to 5% by weight.

3,923,679
SALTS OF TETRAHYDROFURAN POLYCARBOXYLIC ACIDS AS DETERGENT BUILDERS AND COMPLEXING AGENTS

John N. Rapko, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 385,131, Aug. 2, 1973, Pat. No. 3,835,163. This application June 6, 1974, Ser. No. 476,825
Int. Cl.² C11D 7/54
U.S. Cl. 259—99 16 Claims

1. A detergent formulation comprising (a) from 1 to 95% by weight of an alkali metal, ammonium or alkanol ammonium salt of a compound represented by the formula



wherein R_a, R_b, R_c, R_d, and R_e are selected from the group consisting of hydrogen and COOH, at least one of R_a, R_b, R_c and R_d being COOH when R_e is COOH and (b) from 0.5 to 95% by weight of a surfactant selected form the group consisting of water soluble anionic, nonionic, amphoteric and zwitterionic surfactants.

3,923,680
AGGLOMERATED RUBBER CHEMICALS

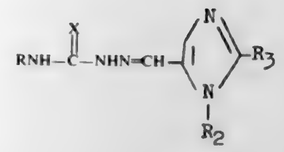
Henning Roeder; Günter P. Langner, both of Leichlingen; Bernd Scherhag, Leverkusen; Hans-Lothar Nickenig, Leverkusen-Steinbuechel, all of Germany, and René Loix, Leuven-Heverlee, Belgium, assignors to Bayer Aktiengesellschaft, Germany
Filed Aug. 31, 1972, Ser. No. 285,200
Claims priority, application Germany, Sept. 4, 1971, 2144378
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² E09K 3/00
U.S. Cl. 252—182 1 Claim

1. A free-flowing, binder-free solid rubber chemical in the form of a smooth surfaced spherical agglomerate of individual particles, said rubber chemical being at least one member selected from the group consisting of vulcanization accelerators, vulcanization retarders, antiagers, antiozonants, masticating agents, regenerating agents and mixtures thereof, said agglomerate of individual particles being produced by the agglomeration process of atomizing a binder-free suspension of at least one of said rubber chemicals having a purity of greater than 95 percent and an average diameter of less than 60 μ with a solids content of from 5 to 60 percent by weight and a viscosity of from 0.5 to 100 cP at 20° C. into a hot gas stream which has an inlet temperature of from 150° to 350° C. and an outlet temperature below 120° C., recovering and returning particles with an average diameter of less than about 60 μ to the agglomeration process and recovering resulting agglomerated particles with a moisture content of less than 1 percent by weight and an average diameter from about 60 μ to 500 μ.

3,923,681
IMIDAZOLE-THIO SEMICARBAZONE SUNSCREEN AGENTS

Paul L. Warner, Jr., Clarence, N.Y., assignor to Westwood Pharmaceuticals, Inc., Buffalo, N.Y.
Filed Apr. 22, 1974, Ser. No. 462,684
Int. Cl.² C07D 233/84; G02B 5/23; A61K 7/42
U.S. Cl. 252—300 8 Claims

1. Compounds having the formula



where R is hydrogen, alkyl, alkenyl, or aryl; X is sulfur; and R_2 and R_3 are methyl.

8. A process for protecting light-sensitive subjects against ultraviolet radiation which comprises filtering such radiation by means of a radiation-absorbing amount of a sunscreen agent as defined in claim 1.

3,923,682
PROCESS FOR MANUFACTURING PHOSPHORS

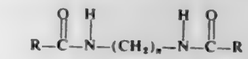
Ernest A. Dale, Hamilton; Leonard V. Dullea, Salem, and Martha J. B. Thomas, Winchester, all of Mass., assignors to Sylvania Electric Products, Inc., Danvers, Mass.
Filed Dec. 29, 1969, Ser. No. 888,876
Int. Cl.² C09K 11/10, 11/12, 11/24, 11/42, 11/44
U.S. Cl. 252—301.6 P 5 Claims

1. The process of manufacturing an antimony activated calcium halophosphate phosphor comprising the steps of:
a. preparing a solution containing calcium nitrate, antimony chloride, hydrofluoric acid, cadmium nitrate and phosphoric acid;
b. atomizing said solution into droplets;
c. drying said droplets to produce particles having a predetermined particle size range;
d. transporting said particles into a heated fluidizing bed comprising an inert granular material which is in constant motion during operation, and
e. heating said particles therein to a temperature sufficient to form a phosphor matrix.

3,923,683
AMIDES AND HYDROPHOBIC SILICA AS ANTIFOAMS

Raymond J. Michalski, Riverdale, and Roger W. Youngs, Hinsdale, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.
Continuation of Ser. No. 178,508, Sept. 7, 1971, abandoned. This application Jan. 9, 1974, Ser. No. 432,125
Int. Cl.² B01D 19/04
U.S. Cl. 252—321 6 Claims

1. An antifoam composition comprising a blend of:
A. a liquid hydrocarbon oil having concentration ranging between 70 to 98.8% by weight;
B. a finely divided hydrophobic silica having a concentration ranging between 0.1 to 5.0% by weight;
C. a bis-amide in a concentration ranging between 1 to 20% by weight having the following structure:



where:
n is an integer from 1 to 6; and
R is a saturated or unsaturated, straight or branched chain aliphatic group having from 5 to 22 carbon atoms; and
D. a silicone oil having a concentration ranging between 0.1 to 5.0% by weight.

3,923,684
MOISTURE INDICATOR FOR PHOTOFLASH LAMP

John W. Shaffer, Williamsport, Pa., assignor to GTE Sylvania Incorporated, Danvers, Mass.

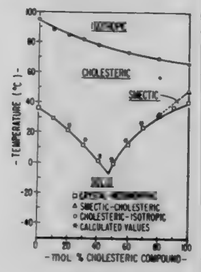
Division of Ser. No. 211,450, Dec. 23, 1971, Pat. No. 3,770,362. This application Apr. 12, 1973, Ser. No. 350,309
Int. Cl.² G01N *31/22*
U.S. Cl. 252—408 **3 Claims**

1. A moisture indicating material for disposition upon a glass surface within the sealed envelope of a lamp to indicate the presence of air therein, said indicating material consisting essentially of a mixture of cobaltous cobalticyanide and between about 1% to about 20% by weight of partially hydrolyzed polyvinyl alcohol.

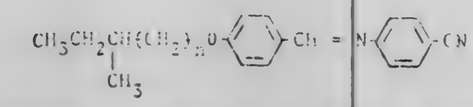
3,923,685
LIQUID CRYSTAL COMPOSITIONS

Chan Soo Oh, Fullerton, Calif., and Edward F. Pasierb, Hamilton Square, N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 298,339, Oct. 17, 1972, Pat. No. 3,792,915. This application Oct. 18, 1973, Ser. No. 407,546
Int. Cl.² C09K *3/34*
U.S. Cl. 252—408 LC **3 Claims**



1. A cholesteric mixture comprising from 5–80 percent by weight of an optically active compound of the formula



wherein *n* is an integer from 1 to 5 and a nematic liquid crystal having positive dielectric anisotropy composition.

3,923,686
FLUIDIZED CATALYST REGENERATION BY OXIDATION IN A DENSE PHASE BED AND A DILUTE PHASE TRANSPORT RISER

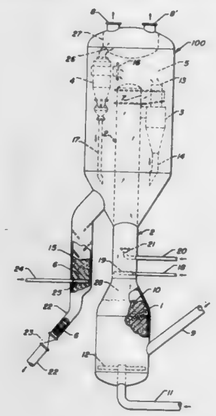
Laurence O. Stine, Western Springs, and Algie J. Conner, Downers Grove, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

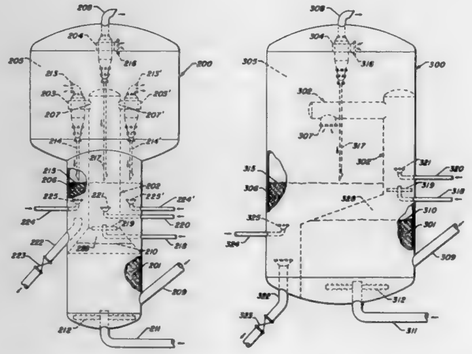
Continuation of Ser. No. 258,042, May 30, 1972, abandoned. This application Mar. 21, 1974, Ser. No. 453,455. The portion of the term of this patent subsequent to Oct. 29, 1991, has been disclaimed.
Int. Cl.² B01J *29/38*, *21/20*; C10G *11/04*
U.S. Cl. 252—417 **3 Claims**

1. A process for the regeneration of a zeolite-containing or an amorphous coke-contaminated spent hydrocarbon cracking catalyst, removed from a reaction zone, and the conversion of carbon monoxide, resulting from the oxidation of coke from said catalyst, to carbon dioxide, which process is operated within a pressure range of from about normal atmospheric to about 50 psig, said process comprising the steps of:

a. passing said catalyst and a fresh free oxygen-containing regeneration gas to a first dense bed of fluidized particulate catalyst in a regeneration zone and oxidizing coke in said first dense bed maintained at oxidizing conditions including a temperature within the range of about 1250° to about 1400°F., a superficial gas velocity within the range of about 3 to about 10 feet per second, and a catalyst residence time of less than two minutes, to produce partially spent regeneration gas, containing CO, and regenerated catalyst having residual coke thereon;

b. passing said regenerated catalyst and partially spent regeneration gas to a dilute phase transport riser communicating with and superimposed over said first dense bed; introducing into said dilute phase transport riser a fuel gas or a liquid hydrocarbon stream in an amount sufficient to heat the regenerated catalyst passing through said riser to





a predetermined temperature within the range of about 1250° to 1400°F. and also introducing into said dilute phase transport riser a second fresh free-oxygen containing regeneration gas to support burning of said fuel gas or liquid hydrocarbon stream; and, controlling the temperature within said dilute phase transport riser including controlling the temperature within the range of about 1275° to 1425°F. and the superficial gas velocity within the range of about 10 to 25 feet per second to produce regenerated catalyst as said predetermined temperature and to convert CO to CO_2 to produce spent regeneration gas;

c. separating the thus-heated catalyst from said spent regeneration gas; and,

d. introducing said regenerated catalyst to a second dense bed of particulate material, from which said regenerated catalyst is returned to said reaction zone.

3,923,687
PROCESS FOR ACTIVATING CATALYST COMPONENT USEFUL FOR POLYMERIZING PROPYLENE

Isoo Shirai; Takeshi Suzuki, and Koichi Tonooka, all of Ichihara, Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 160,341, July 7, 1971, abandoned. This application May 29, 1973, Ser. No. 364,587
Claims priority, application Japan, July 14, 1970, 45-61667
Int. Cl.² B01J *31/14*
U.S. Cl. 252—429 C **3 Claims**

1. In the method of producing a catalyst useful in the production of crystalline propylene polymer, which catalyst consists essentially of

I. $TiCl_3.0.33AlCl_3$ and

II. a dialkylaluminum monohalide having a general formula of AlR_2X, wherein R is a hydrocarbon radical and X is a halogen atom, or a combination of an alkylaluminum dihalide having a general formula of $AlR'X_2$, wherein R' is a hydrocarbon radical and X is a halogen atom, and $Si(OC_2H_5)_4$, the improvement of:

A. preparing said $TiCl_3.0.33AlCl_3$ by reacting $TiCl_4$ with Al powder in a mol ratio of $TiCl_4$ to Al greater than 3:1,

B. removing unreacted $TiCl_4$ until the $TiCl_4$ content is within the range of 0.01 to .1% by weight,

C. size-controlling the resulting powders of $TiCl_3.0.33AlCl_3$ by ball-milling in a revolving or vibrating ball-mill containing the same or substantially the same size of steel or stainless steel balls having a diameter of 25 – 50 mm, at room temperature, to give a size-controlled powder consisting of 50% or more of the particles of 325 meshes on and less than 50% of the particles of 325 meshes pass, and

D. subjecting the size-controlled powders to a heat treatment:

1. at a temperature (T) which satisfies the conditions $100° C. \leqq T \leqq 250°C.$,
2. at a pressure (P) which satisfies the conditions $0.01 \text{ mm Hg} \leqq P \leqq 760 \text{ mm Hg}$,
3. for a time (Q) which satisfies the condition $1 \text{ minute} \leqq Q \leqq 300 \text{ minutes}$

and wherein the following relationship between T, P and Q is maintained:

4. $9.52 \times 10^{-3}T - 6.26 \times 10^{-5}P + 3.98 \times 10^{-4}Q \geqq 1$
5. $3.53 \times 10^{-3}T + 2.94 \times 10^{-4}P + 3.54 \times 10^{-4}Q \geqq 1$.

3,923,688
THERMALLY STABLE AND CRUSH RESISTANT MICROPOROUS GLASS CATALYST SUPPORTS AND METHODS OF MAKING

Joseph J. Hammel, and Ties Allersma, both of Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 311,191, Dec. 1, 1972, Pat. No. 3,843,341, which is a continuation-in-part of Ser. Nos. 231,346, March 2, 1972, abandoned, and Ser. No. 264,081, June 19, 1972, abandoned. This application Mar. 1, 1974, Ser. No. 447,194
Int. Cl.² B01J *21/02*, *21/08*
U.S. Cl. 252—432 **8 Claims**

1. In a microporous glass article having a catalytic coating deposited thereon, the improvement of using as the microporous glass catalyst support, a strong, thermally stable, microporous glass article having a pore volume of at least 0.35 cubic centimeters per gram, pore sizes ranging from 50 to 200 Angstrom units, and a surface area of at least 100 square meters per gram, consisting essentially of:

a. at least 96 percent by weight SiO_2,

b. less than 4 percent by weight B_2O_3,

c. less than 0.05 percent by weight alkali metal oxide, and

d. less than 0.4 percent by weight Al_2O_3;

said microporous glass article having a crush strength of at least 20 pounds per square inch gauge, and losing less than 30 percent of its original surface area and undergoing less than 25 percent volume shrinkage when the article is subjected to a temperature of 980°C. for 24 hours.

3,923,689
REMOVAL OF IRON CONTAMINANTS FROM POROUS MATERIALS

Clifton William Broughton, Hallsville, Tex., and Joseph Tucker Truemper, Wilmington, Del., assignors to ICI United States Inc., Wilmington, Del.

Filed Nov. 29, 1972, Ser. No. 310,271
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B01J *21/18*
U.S. Cl. 252—444 **7 Claims**

1. In a method for removing iron from a porous carbonaceous material wherein the porous carbonaceous material is treated with an acidic solution, the improvement comprising including in said solution a reducing agent selected from the group consisting of hydrazine, thiosulfates, sulfites, nitrites, and hydroxyl amine, provided that the amounts of acid and reducing agent in said solution are sufficient to solubilize the iron.

3,923,690
CARRIER-SUPPORTED CATALYST

Wilhelm Vogt, Hurth-Efferen; Hermann Glaser, and Helmut Dyrschka, both of Erftstadt Lechenich, all of Germany, assignors to Hoechst Aktiengesellschaft, Cologne, Germany

Filed May 6, 1974, Ser. No. 467,054
Claims priority, application Germany, May 9, 1973, 2323262; Mar. 14, 1974, 2412162
Int. Cl.² B01J *21/18*, *23/10*, *21/04*
U.S. Cl. 252—447 **22 Claims**

1. A carrier-supported catalyst comprising a mixture of aluminates of copper, manganese and nickel as its active ingredients and aluminum oxide as its carrier, the total proportion of aluminates being within the range 10 to 45 wt. %.

3,923,691
HYDROTREATING CATALYST

David G. Braithwaite, Brookhaven, Miss.; Carl F. Cross, and Michael R. Basila, 3, both of Munster, Ind., assignors to Nalco Chemical Company, Oak Brook, Ill.

Division of Ser. No. 277,733, Aug. 3, 1972, Pat. No. 3,840,477. This application Mar. 22, 1974, Ser. No. 453,941. The portion of the term of this patent subsequent to Oct. 8, 1991, has been disclaimed.
Int. Cl.² B01J *29/06*
U.S. Cl. 252—455 R **9 Claims**

1. A process of preparing a catalyst or catalyst support which comprises mixing alumina particles in the form of spheres, pellets, or a powder with aqueous silica acid sol in an amount and for a period of time sufficient to form a surface coating of SiO_2 on said alumina which coating after removing excess liquid, drying and calcining constitutes less than 2.5% SiO_2, based on the weight of Al_2O_3, but is sufficient to enhance the hydrotreating activity of said catalyst, and thereafter removing excess liquid, drying and calcining the resultant mixture.

3,923,692
HYDROTREATING CATALYST
David G. Braithwaite, Brookhaven, Miss.; Carl F. Cross, and Michael R. Basila, both of Munster, Ind., assignors to Nalco Chemical Company, Oak Brook, Ill.
Division of Ser. No. 277,733, Aug. 3, 1972, Pat. No. 3,840,477. This application Mar. 22, 1974, Ser. No. 453,942. The portion of the term of this patent subsequent to Oct. 8, 1991, has been disclaimed.
Int. Cl.² B01J 29/06
U.S. Cl. 252—455 R 9 Claims

1. A process of preparing a catalyst or catalyst support which comprises mixing alumina particles in the form of spheres, pellets or a powder with an aqueous solution of sodium hydroxide and sodium silicate in an amount and for a period of time sufficient to form a surface coating of SiO_2 on said alumina which coating after removing excess liquid, drying and calcining constitutes less than 2.5% SiO_2, based on the weight of Al_2O_3, but is sufficient to enhance the hydrotreating activity of said catalyst, thereafter removing excess liquid, drying and calcining the resultant mixture.

3,923,693
CATALYST FOR REDUCING NITROGEN OXIDES CONTAINED IN COMBUSTION EXHAUST GAS, AND PROCESS FOR PREPARING SAME
Toshiyuki Sakai, Funabashi; Kazuhide Miyazaki, Tanashi, and Kiyomi Abe, Kokubunji, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan
Filed Jan. 28, 1974, Ser. No. 437,017
Claims priority, application Japan, Jan. 31, 1973, 48-11917
Int. Cl.² B01J 21/04, 21/06, 23/74
U.S. Cl. 252—459 11 Claims

1. A catalyst for reducing nitrogen oxides contained in combustion exhaust gas, comprising as the catalytically effective component at least one carbonyl metal which is a member selected from the group consisting of powdery carbonyl iron, carbonyl cobalt and carbonyl nickel, said powdery carbonyl metal being the metal produced by the thermal decomposition of the corresponding metal carbonyls.

3,923,694
METHANOL SYNTHESIS CATALYST
Derek Cornthwaite, Chicago, Ill., assignor to Imperial Chemical Industries Limited, London, England
Continuation of Ser. No. 227,607, Feb. 18, 1972, abandoned, which is a continuation of Ser. No. 16,600, March 4, 1970, abandoned. This application July 26, 1974, Ser. No. 492,206
Int. Cl.² B01J 21/04
U.S. Cl. 252—463 9 Claims

1. A methanol synthesis catalyst precursor comprising copper oxide in an amount such that said precursor comprises 10–80% copper with the balance essentially a spinel structure support comprising the oxides of zinc and aluminum, said precursor being characterized by the presence of spinel in crystallites not larger than 120 Angstrom units.

3,923,695
CATALYST FOR MANUFACTURING HIGHLY PURIFIED 2-HYDROXY-DIPHENYL CATALYST AND METHOD OF PREPARING CATALYST
Oskar Weissel, Krefeld-Bockum; Josef Metten, Krefeld; Hans Helmut Schwarz, Krefeld-Bockum; Horst Koller, and Peter Tacke, both of Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany
Continuation of Ser. No. 289,119, Sept. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 184,872, Sept. 29, 1971, abandoned. This application Feb. 13, 1974, Ser. No. 442,156
Claims priority, application Germany, Oct. 10, 1970, 2049809; Jan. 20, 1971, 2102476
Int. Cl. B01j 11/06, 11/22
U.S. Cl. 252—465 7 Claims

1. A process for manufacturing a catalyst which comprises the steps of
   a. preparing a catalyst base composition by
      I. treating an aqueous solution containing a nickel salt, a chromium salt, an aluminum salt and a copper salt with an aqueous solution of a precipitant selected from the group consisting of sodium hydroxide, ammonia, alkali metal carbonate and alkali metal bicarbonate or
      II. precipitating an aqueous solution containing a nickel salt, an aluminum salt and a copper salt with an alkali metal carbonate and reacting the precipitated carbonate-hydroxide mixture, after washing, with ammonium bichromate at elevated temperature,

whereby the amounts are selected to give a nickel metal to chromium metal to aluminum metal to copper metal weight ratio of 40–60 to 6.8–17.1 to 1.6–8.0 to 0.05–1.0;
   b. impregnating said catalyst base composition with at least one member selected from the group consisting of alkali metal sulfate and alkali metal carbonate to obtain an alkali metal to nickel metal weight ratio of 0.65–3.4 to 40–60;
   c. shaping said catalyst base composition either before or after said impregnation into a molding having a bulk density of 0.8–1.6 g/ml;
   d. reducing impregnated catalyst molding at a temperature between 350° and 420°C. for about 1 to 4 hours with about one-half to twice the equivalent amount of hydrogen calculated for reducing nickel compounds present to metallic nickel and any chromium VI compounds present to trivalent chromium and
   e. subsequently further reducing said moldings, at a temperature between 350° and 420°C. for about 1 to 4 hours, with with 2to 10 times the equivalent amount of hydrogen for reducing nickel compounds present to metallic nickel until the metallic nickel content of the composition is 10–45% by weight.

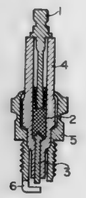
3,923,696
CATALYST STRUCTURE
John Edward Chart, Warwick, N.Y., and Burton Bower Knapp, Allendale, N.J., assignors to The International Nickel Company, Inc., New York, N.Y.
Filed Aug. 22, 1973, Ser. No. 390,424
Int. Cl.² B01J 23/16, 23/64, 23/84
U.S. Cl. 252—467 5 Claims

1. In a catalyst particularly adapted for use in abatement of noxious materials in automotive exhaust, adapted to operate at high temperatures in the range of up to about 930°C. and higher in the presence of one or more of oxygen, nitrogen, nitrogen oxides and products of combustion of hydrocarbon fuel and comprising a structure having a surface catalytically active to reduce nitrogen oxides to its elements or to oxidize carbon monoxide and unburned hydrocarbons to final oxidation products and an underlying metallic base selected from the group consisting of formable, workable steel, chromium steel, stainless steel, chromium-containing nickel base alloys and other non-ferrous metals having a melting point in excess of the temperatures encountered in automotive exhaust manifolds, the improvement comprising a layer of chromium oxide interposed between said catalytically active surface and said metallic base to inhibit reaction of said metallic base with said oxygen, nitrogen, nitrogen oxides and products of combustion of said hydrocarbon fuel at said high temperatures.

3,923,697
ELECTRICALLY CONDUCTIVE COMPOSITIONS AND THEIR USE
Harold Ellis, P.O. Box 2158, Ocean View Branch, Miami Beach, Fla. 33140
Filed Feb. 1, 1974, Ser. No. 438,824
Int. Cl.² H01B 1/06
U.S. Cl. 252—506 12 Claims

1. An electrically conductive composition comprising a particulate, homogeneous blend of:
   A. about 60 to about 98% by weight of graphite,
   B. about 1.5 to about 20% by weight of manganese dioxide, and
   C. about 0.5 to about 20% by weight of zinc oxide, each of said percentages based on the total weight of said blend.

3,923,698
RESISTORS FOR IGNITION PLUGS
Osami Kamigaito; Hideyuki Masaki; Masami Oki, all of Nagoya; Masatosi Suzuki, Kariya, and Yasuo Nakamura, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd. and Kabushi Kaisha Toyota Chuo Kenkyusho, both of, Japan
Filed Oct. 31, 1973, Ser. No. 411,403
Claims priority, application Japan, Nov. 8, 1972, 47-112363
Int. Cl.² H01B 1/08
U.S. Cl. 252—518 8 Claims



1. A resistor consisting essentially of 40 to 90% by weight of resistance material and 10 to 60% by weight of low melting glass, the resistance material comprising 1 to 16% by weight of aluminum oxide, 75.6 to 98% by weight of tin oxide and 0.84 to 9.9% by weight of antimony oxide, the components of said resistance material being adhered together and hardened into coherent solid bodies by said low melting glass.

3,923,699
CYCLOHEXADECENONE-5 PERFUME COMPOSITIONS
Akira Komatsu, Tokyo; Toshio Yoshida, Yokohama; Susumu Akutagawa, Tokyo; Fumitaka Norose, Yokohama; Takeshi Yamamoto, Yokohama, and Ikuji Kumasa, Yokohama, all of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan
Filed Dec. 29, 1971, Ser. No. 213,818
Claims priority, application Japan, Dec. 29, 1970, 45-126904
Int. Cl.² A61K 7/46; C07C 49/44
U.S. Cl. 252—522 1 Claim

1. A perfume composition having a musk-like odor comprising an olfactory amount of cyclohexadecenone-5 in combination with a conventional perfume.

3,923,700
OLIGOMERIC TITANATE OR ZIRCONATE ESTER PERFUME COMPOSITIONS
Brian George Jaggers, Hillsdale, N.J.; Keith Frederick Ufton, Ilford, and Horst Richard Wagner, Ongar, both of England, assignors to Bush Boake Allen Limited, London, England
Division of Ser. No. 158,049, June 29, 1971, Pat. No. 3,849,326. This application Feb. 5, 1974, Ser. No. 439,926
Claims priority, application United Kingdom, July 1, 1970, 31863/70
Int. Cl.² A61K 7/00; C11B 9/00
U.S. Cl. 252—522 19 Claims

1. A compounded perfumery composition comprising a plurality of odoriferous ingredients and at least one compound selected from the group consisting of oligomeric compounds of the formula

$$A_3M(OMA_2)_nA.$$

wherein n is an integer, M is titanium or zirconium and the groups A are the same or different organic groups at least one of which has the formula (—OR), wherein R is the residue of a perfumery alcohol or phenol, said compound having been prepared by hydrolysis of a monomeric titanate of zirconate ester of formula MA_4 with from 50 to 90 moles of water per 100 moles of said monomeric ester; and said perfumery alcohol or phenol is selected from the group consisting of linalol; β-phenyl ethyl alcohol; benzyl alcohol; methanol; n-hexanol; α-terpineol; eugenol; cis-hex-3-en-1-ol; n-nonanol; citronellol; n-decanol; geraniol; nerol; myrcenol; dihydrocitronellol; dihydrolinalol; isoborneol; 2,6-dimethyloctan-8-ol; farnesol; dihydrofarnesol; nerolidol; γ-phenyl-n-propyl alcohol; γ-phenyl-n-butyl alcohol; Σ-phenyl-n-amyl alcohol; cinnamyl alcohol; 2-amyl-cinnamyl alcohol phenylethylene glycol; anisyl alcohol; dimethylbenzyl carbinol; phenylethyldimethyl carbinol; methylphenyl carbinol; dimethylphenyl carbinol; trichloromethyl phenylcarbinol; ethylbenzylcarbinol; methylbenzylcarbinol; isopropylbenzyl carbinol; ethyl-n-amylcarbinol; methyl-n-amyl carbinol; ω-hydroxymethyllogifolene; 6-and 10-hydroxymethyl-1 8-p-methadiane; Σ-camphena carbinol; 2-hydroxy-γ-pinane; verbenol; carveol; 2-hydroxy-6-p-menthene; 5-hydroxy-3-p-menthene; 3-hydroxy-2,5-dimethyl-1,4,6-octatriene; 6,8-dihydroxy-1-p-menthene; 1-hydroxy-2-p-menthene; 4-hydroxy-2-p-menthene; piperitol, carvitol; 3-hydroxy-1,1,2,3-tetramethyl-4-cyclohexane; 3-hydroxy-2-methyl-6-methylene-1,7-octadiene; 1-hydroxy-2-emthyl-6-methylene-2,7-octadiene; 3-hydroxy-2-dimethyl-1,7-octadiene; 1-hydroxy-2-,6-dimethyl-2,6,octadiene; ambrettolide; exaltolide; dihydroambrettolide; vanillin; eugenol; ethylvanillin; homovanillin; isoeugenol; methyl-iso-eugenol; benzyl-iso-eugenol; thymol and p-tert-butylphenol.

3,923,701
CLEANING COMPOSITION FOR INKS, PENCILS AND VARIOUS SOILS
Kenneth G. Rutherford, Windsor, Canada, and Stanley Oriel Howick, Union Lake, Mich., assignors to Howick Chemical, Union Lake, Mich.
Filed July 12, 1972, Ser. No. 271,061
Int. Cl.² C11D 3/26, 7/32
U.S. Cl. 252—544 2 Claims

1. A cleaning composition suitable for removing markings left by inks, pencils, and the like,
consisting essentially of in parts by volume:
   100 parts of a carrier base material of ethoxylated tall oil fatty acid,
   20 parts of dimethyl formamide,
   20 parts of tertiary butyl acetate.

3,923,702
CONVERSION OF DISTILLATION RESIDUES TO USEFUL METAL WORKING LUBRICANTS

Robert J. Sturwold; Fred O. Barrett, and Walter E. Utz, all of Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Aug. 8, 1974, Ser. No. 495,620
Int. Cl.² C10M *1/24, 3/18, 5/12, 7/20*
U.S. Cl. 252—56 S **10 Claims**

1. A process for converting residues, obtained when fatty acids produced from fat-splitting processes are distilled, to useful lubricants which comprises contacting the residue with a hydroxylic compound containing at least one hydroxyl group and at least four carbon atoms at a temperature above 100°C while removing water from the reaction mixture until the acid value of the product is about 10 or below, the equivalents ratio of said hydroxylic compound to said residue being 1:1 or higher, based on the acid value of the residue.

3,923,703
PROCESS FOR PREPARING PHOTOSENSITIVE POLYMER

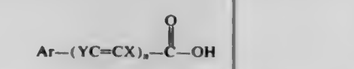
Hideo Fukutani, Tokyo; Konoe Miura, Yokohamo; Chihiro Eguchi, Yokohoma; Yoshihiro Takahashi, Yokohama, and Kazuo Torige, Yokohama; all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Feb. 8, 1974, Ser. No. 440,770
Claims priority, application Japan, Mar. 3, 1973, 48-25270
Int. Cl.² C08F *120/22, 114/06, 124/00*
U.S. Cl. 260—2 A **10 Claims**

1. A process for preparing a photosensitive polymer which comprises reacting

a. a polymer having an active halogen atom selected from the group consisting of halogen-containing polyethers, copolymers of halogen-containing polyethers with epoxy compounds, halogen-containing vinyl polymers and acryl polymers;

b. with an α,β-unsaturated carboxylic acid having the formula



wherein X and Y represent a hydrogen atom, a halogen atom, a cyano group or a nitro group; Ar represents an aryl group and n represents an integer of 1 or 2;

c. in the presence of a bicyclic amidine having the formula



wherein R_1 represents a C_{1-11} alkylene group which can be substituted by an inert group and R_2 represents a propylene group which can be substituted by an inert group;

d. in an aprotic polar solvent;

the reaction being carried out in a homogeneous reaction system.

3,923,704
PROCESS FOR MAKING POROUS POLYESTER GRANULES

Raymond Harry Gunning, Box Hill North, and Frederick John Lubbock, Beaumaris, both of Australia, assignors to Dulux Australia Ltd., Melbourne, Australia

Filed Sept. 24, 1974, Ser. No. 508,993
Claims priority, application Australia, Oct. 4, 1973, 5101/73
Int. Cl.² C08J *9/00*; **C08L** *67/06*
U.S. Cl. 260—2.5 N **2 Claims**

1. A process of preparing pigmented vesiculated polyester resin granules by

1. forming a dispersion of pigment in water containing a non-flushing pigment dispersing agent,
2. emulsifying the pigment dispersion so-prepared into a solution of a carboxylated unsaturated polyester resin in polymerisable monomer in the presence of a water-soluble polyamine which has a dissociation constant in water (pKa) value of 8.5 – 10.5 and which contains at least three amine groups selected from primary, secondary and tertiary amine groups at a concentration providing 0.3 to 1.4 amine groups per carboxyl group of the unsaturated polyester resin and with sufficient mechanical agitation to reduce the size of the disperse particles to below one micron,
3. dispersing the above emulsion in the form of discrete globules in an aqueous continuous phase comprising a solution in water of a colloidal stabiliser for the dispersion and a water-soluble thickening agent with continuous mechanical agitation, the intensity of which is limited to lie below the threshold at which growth by coalescence of the disperse globules so-formed takes place,
4. initiating and activating co-reaction of the unsaturated polyester resin and polymerisable monomer with simultaneous control of mechanical agitation to a level below the shear rate at which irreversible formation of agglomerates of two or more granules takes place, at least until a sample of the granules is cured sufficiently to be insoluble in methyl ethyl ketone, and
5. continuing agitation until curing of the granules is essentially completed as determined by a maximum free polymerisable monomer level of 0.5% by weight.

3,923,705
METHOD OF PREPARING FIRE RETARDANT SILOXANE FOAMS AND FOAMS PREPARED THEREFROM

Schuyler B. Smith, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Oct. 30, 1974, Ser. No. 519,380
Int. Cl.² C08K *3/04, 3/10*
U.S. Cl. 260—2.5 S **48 Claims**

1. A method of preparing an organosiloxane foam comprising mixing an organohydrogensiloxane having an average of at least three silicon-bonded hydrogen atoms per molecule, an average of no more than one silicon-bonded hydrogen atom per silicon atom and organic radicals selected from the group consisting of alkyl radicals having from one to six carbon atoms per radical, phenyl and 3,3,3-trifluoropropyl, a hydroxylated organosiloxane having an average of from greater than 1.0 to 2.5 silicon-bonded hydroxyl radicals per molecule and having an average of at least one organic radical per silicon atom selected from the group consisting of alkyl radicals having from one to six carbon atoms per radical, phenyl and 3,3,3-trifluoropropyl and a platinum catalyst in an amount of from 5 to 200 parts by weight platinum per one million parts by weight total composition, said organohydrogensiloxane and said hydroxylated organosiloxane being present in sufficient amounts to provide a molar ratio of silicon-bonded hydrogen atoms to silicon-bonded hydroxyl radicals of 2.5 to 40, where a mixture is obtained having a viscosity of less than 100,000 cs. at 25°C., thereafter allowing a foam to form.

3,923,706
PROCESS FOR PREPARING SELF-EXTINGUISHING EXPANDABLE POLYSTYRENE

James J. Uebelhart, Beaver; John P. Spicuzza, Jr., Pittsburgh, and Frank J. E. Mills, Beaver, all of Pa., assignors to Arco Polymers, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 377,748, July 9, 1973, abandoned. This application Nov. 18, 1974, Ser. No. 524,423
Int. Cl.² C08J *9/00*
U.S. Cl. 260—2.5 B **1 Claim**

1. A process for preparing self-extinguishing expandable polystyrene particles comprising the steps of:

a. polymerizing styrene in an aqueous suspension in the presence of a catalytic amount of a free radical initiator until the polymerization has progressed to a point between about 92 and 98% conversion of monomer to polymer;

b. adding a mixture consisting of from about 0.5 to 5.0% by weight based on styrene of pentabromochlorocyclohexane, 5 to 15% of a blowing agent, and 0.3 to 0.5% of free radical initiator;

c. chemically incorporating the pentabromochlorocyclohexane into the growing polymer chains by completing the polymerization in aqueous suspension by heating the suspension under conditions of temperature and time sufficient to completely polymerize the remaining monomer; and

d. recovering the polymer particles.

3,923,707
PROCESS FOR THE PRODUCTION OF POURABLE, PULVERULENT RUBBERS

Gerhard Berg, and Karl-Heinz Nordsiek, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed June 18, 1974, Ser. No. 480,598
Claims priority, application Germany, June 20, 1973, 2331299
Int. Cl.² C08L *1/08, 9/00, 9/08*
U.S. Cl. 260—17 R **11 Claims**

1. A process for preparing discrete, finely divided, tack-free, pourable, powdery filler-free elastomer particles from an aqueous emulsion of an elastomeric polymer having crystalline or thermoplastic block sequences and selected from the group consisting of EPM- or EPDM block sequence copolymers having an ethylene content of 65–80% and a Raman crystallinity of 0.3–1.5 R; copolymers of butadiene with a styrene or α-methylstyrene vinyl aromatic monomer having a molar ratio of butadiene to the vinyl aromatic monomer of 1 : 1 – 1 : 6, 20–100% of the vinyl aromatic monomer being in block sequence form and constituting at least about 20 mol % of the copolymer structure; and stereohomopolymers of butadiene containing 10–30% trans-1,4 double bonds in a stereo block sequence configuration, said aqueous emulsion consisting essentially of (i) a solution containing 4–25% by weight of said elastomer dissolved in a volatile, inert organic solvent having a boiling point below 100° C., (ii) an elastomer emulsifying amount of about 0.05–2% of a surfactant amine derivative and (iii) water, the weight ratio of the aqueous phase to the organic solvent phase of said emulsion being from about 0.25 to 2.5 : 1, which process comprises:

gradually introducing said admixture into an aqueous alkali silicate solution containing 0.5 – 20 moles of SiO_2 per mole of said amine surfactant while maintaining said silicate solution at a pH which destabilizes the surfactant; simultaneously evaporating said volatile organic solvent to form said elastomer particles; and

drying said particles at a temperature below the softening point thereof.

3,923,708
SIZING AGENT FOR GLASS FIBERS

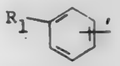
Jun-ichi Furukawa, and Yoshinao Kono, both of Wakayama, Japan, assignors to Kao Soap Co. Ltd., Tokyo, Japan

Filed June 12, 1974, Ser. No. 478,432
Claims priority, application Japan, June 27, 1973, 48-72519
Int. Cl.² C08L *67/08, 67/06*
U.S. Cl. 260—22 R **7 Claims**

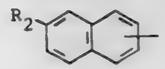
1. In a sizing agent composition for glass fibers comprising a film-forming material, a lubricant for glass fibers, a coupling agent for glass fibers and an antistatic agent, the improvement which comprises employing as the film-forming material an oil-in-water type emulsion of an unsaturated polyester obtained by the reaction of (a) 1 mole of a dibasic acid composition containing at least 50 mole percent of a material selected from the group consisting of fumaric acid, maleic anhydride and mixtures thereof, (b) 1 to 1.5 moles of a diol component containing at least 30 mole percent of an adduct of 2 to 10 moles of an alkylene oxide to bisphenol A with (c) an emulsifier selected from the group consisting of an adduct of 5 to 200 moles of an alkylene oxide to castor oil, an adduct of 5 to 200 moles of an alkylene oxide to hydrogenated castor oil and polyethyleneglycol having an average molecular weight of 1000 to 6000, the amount of said emulsifier (c) being 5 to 30 parts by weight per 100 parts by weight of the sum of the polyester starting materials (a) and (b), and incorporating the resulting unsaturated polyester into water, and employing an antistatic agent of one of the following formulae

$$RSO_3H \cdot N(CH_2CH_2OH)_3 \text{ or } ROSO_3H \cdot N(CH_2CH_2OH)_3$$

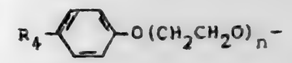
wherein R is selected from the group consisting of (1) alkyl having 8 to 20 carbon atoms, (2) alkyl benzene radical of the formula



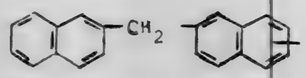
wherein R_1 is alkyl having 8 to 20 carbon atoms, (3) alkylnaphthalene radical of the formula



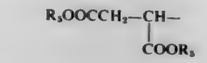
wherein R_2 is alkyl having 1 to 20 carbon atoms, (4) polyoxyethylene alkyl ether radical of the formula $R_3—O(CH_2CH_2O)_n—$,
wherein R_3 is alkyl having 8 20 carbon atoms and n is a number from 1 to 200, (5) polyoxyethylene alkyl phenyl radical of the formula



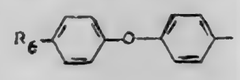
wherein R_4 is alkyl having 8 to 20 carbon atoms, (6) naphthalene-formaldehyde condensate radical of the formula



(7) dialkylsuccinate radical of the formula



wherein R_5 is alkyl having 8 to 20 carbon atoms, and (8) alkyldiphenyl oxide radical of the formula



wherein R_6 is alkyl having 8 to 20 carbon atoms, the composition containing from 1 to 15 parts by weight of said antistatic agent per 100 parts by weight of said emulsion, calculated as the solids.

3,923,709

3,4-DIHYDRO-3-OXO-2H-1,4-BENZOTHIAZINES AND BENZOXAZINES

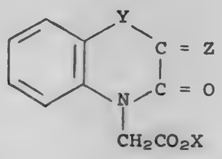
Jimmy W. Worley, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 30, 1974, Ser. No. 502,114

Int. Cl.² C07D *279/14, 265/36*

U.S. Cl. 260—240 K **12 Claims**

1. A compound of the formula



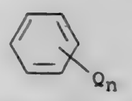
wherein X is hydrogen or alkyl of up to four carbon atoms, Y is oxygen, sulfur or sulfoxide, and Z is cyclohexylidene, or



wherein R and R′ are each independently hydrogen or lower alkyl, or



wherein R″ is phenyl, styryl, 3,4-methylenedioxyphenyl or



wherein *n* is an integer from one to three, and Q is halogen, nitro, amino, di(lower alkyl)amino, lower alkyl, lower alkoxy, lower alkylthio, hydroxy or trifluoromethyl.

3,923,710

PRODUCTION OF QUINAZOLINONE COMPOUNDS

Kikuo Ishizumi, Ikeda; Kazuo Mori, Kobe; Michihiro Yamamoto, Nishinomiya; Masao Koshiba; Shigeho Inaba, both of Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

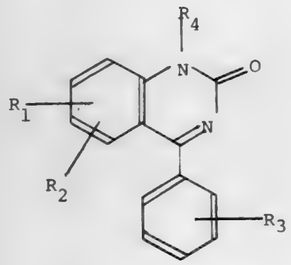
Filed Mar. 29, 1973, Ser. No. 346,037

Claims priority, application Japan, Mar. 31, 1972, 47-32966

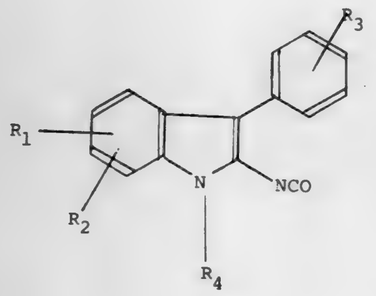
Int. Cl.² C07D *239/82*

U.S. Cl. 260—251 QB **5 Claims**

1. A process for preparing a quinazolinone of the formula,



wherein R_1, R_2 and R_3 are independently a hydrogen atom, a halogen atom, trifluoromethyl, nitro, lower alkyl or lower alkoxy; and R_4 is a hydrogen atom, lower alkyl, benzyl, chlorobenzyl, fluorobenzyl, phenethyl, C_1–C_4 alkoxy-C_1–C_4 alkyl, polyhalo C_1–C_3 alkyl or C_3–C_6 cycloalkyl-C_1–C_4 alkyl, which comprises the step of reacting an indole-2-isocyanate of the formula,



wherein R_1, R_2, R_3 and R_4 are as defined above, in acetic acid with an oxidizing agent selected from the group consisting of ozone-oxygen and chromic acid.

3,923,711

WAX COATING COMPOSITIONS

Edward A. Pullen, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 82,088, Oct. 19, 1970, abandoned. This application Apr. 5, 1972, Ser. No. 241,433

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C08L *91/08*

U.S. Cl. 260—28.5 AV **8 Claims**

1. A method for preparing a wax coating blend having reduced moisture vapor permeability which comprises: dissolving and blending an ethylene-vinyl acetate copolymer and about 0–200 ppm of an antioxidant in molten petroleum wax, and agitating and mixing the molten wax-polymer blend with an oxygen-containing gas for a time insufficient to significantly degrade said wax but sufficient to partially oxidize said polymer, whereby the moisture vapor permeability of the blend is substantially reduced and thereafter adding to the oxidized blend an increment of anti-oxidant.

3,923,712

METAL OXIDE PASTE DISPERSIONS AND USE AS CURING AGENTS

Glenn C. Vickery, Barberton, Ohio, assignor to Basic Incorporated, Cleveland, Ohio

Division of Ser. No. 354,339, April 25, 1973. This application Aug. 15, 1973, Ser. No. 388,580

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C08K *3/22*

U.S. Cl. 260—28.5 B **21 Claims**

1. The process for curing haloprene polymers which comprises incorporating into the polymer stock up to about 12 parts by weight based on 100 parts by weight of polymer, of a paste co-dispersion consisting essentially of from about 50% to about 80% by weight of a mixture of from about 30 to about 80 parts by weight of magnesium oxide and from about 10 to about 60 parts by weight of zinc oxide, the oxides having an average particle size of up to about 10 microns, a non-aqueous liquid vehicle and an oil-soluble or oil-dispersible surface active agent, and heating the mixture to effect curing of the polymer.

3,923,713

NON-YELLOWING TEXTILE ADHESIVE

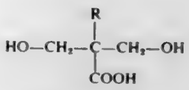
David Trimble Hermann, Montgomery Township, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 275,393, July 26, 1972, abandoned. This application Mar. 8, 1974, Ser. No. 449,314

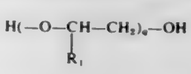
Int. Cl.² C08G *18/12, 18/71*

U.S. Cl. 260—29.2 TN **6 Claims**

1. In a process for preparing a polyurethane adhesive composition in the form of an aqueous dispersion comprising the steps of: forming an isocyanate-terminated prepolymer by reacting tolylene diisocyanate with a mixture of two glycols at a ratio of from 1.6 to 3.0 moles of diisocyanate per mole of total glycol, one of said glycols being a non-polymeric glycol of the formula:



wherein R is hydrogen or lower alkyl, the other of said glycols being a polyalkylene ether glycol of the formula:



wherein R_1 is lower alkyl and *q* is an integer sufficiently large to provide an average molecular weight of from 750 to 5000, the molar ratio of glycols being 0.25:1 to 2:1 respectively; forming a latex by reacting the isocyanate-terminated prepolymer in aqueous medium containing a tertiary lower alkylamine (C_1–C_3) and allowing chain extension with water to proceed until substantially all of the isocyanate groups have been reacted; and adding a thickening agent to said latex to produce an adhesive of viscosity in the range of from 200 to 150,000 cps, the improvement which comprises:

adding an organic monoisocyanate of an alkyl isocyanate having 10 to 22 carbon atoms in the alkyl chain or a phenyl isocyanate to the latex in an amount effective of prevent yellowing.

3,923,714

GRAFT COPOLYMERS OF POLY (N-VINYL LACTAM) HAVING DIACETONE ACRYLAMIDE AND ACRYLIC ACID ESTERS GRAFTED THEREON

Eugene S. Barabas, Watchung, and Marvin M. Fein, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Dec. 6, 1972, Ser. No. 312,477

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C08L *35/00, 39/04*

U.S. Cl. 260—29.6 WB **11 Claims**

1. A graft copolymer of a monomer mixture comprising approximately by weight 5 to 90 percent diacetoneacrylamide and 0 to 85 percent of an ester of acrylic or methacrylic acid graft polymerized on 10 to 95 percent of polymeric N-vinyl lactam as substrate.

3,923,715

AQUEOUS DISPERSIONS OF PERFLUOROALKYL ESTERS AND VINYL POLYMERS FOR TREATING TEXTILES

Robert Harold Dettre, Wilmington, and Edward James Greenwood, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed July 26, 1973, Ser. No. 382,843

Int. Cl.² C08L *25/06, 31/02*

U.S. Cl. 260—29.6 R **7 Claims**

1. An aqueous dispersion of a composition consisting essentially of more than 0 and up to 95 percent of a nonfluorinated vinyl polymer having an adjusted Vickers Hardness of about 10 to 20, and 5% to less than 100% of a perfluoroalkyl ester of a carboxylic acid of from 3 to 30 carbon atoms, the ester being volatile at about 200°C. to 300°C., the composition forming up to about 60% of the total weight of the dispersion, the nonfluorinated vinyl polymer and the perfluoroalkyl ester amounting to 100% of the composition.

3,923,716

CONTROL OF FUNGAL GROWTH UTILIZING ALUMINUM SALTS OF ACRYLIC ACID

Thomas W. Powanda, Middlesex, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jan. 21, 1974, Ser. No. 435,360
Int. Cl.² C08L 23/00
U.S. Cl. 260—29.6 MM 7 Claims

1. A method for the control of fungi in an emulsion-type latex paint exposed to conditions which promote fungal growth formation which method comprises utilizing in said paint an amount effective to control fungi of an aluminum salt of acrylic acid.

3,923,717

A KILN FEED SLURRY FOR MAKING PORTLAND CEMENT CONTAINING AN INORGANIC SLAT OF A STYRENE-MALEIC ANHYDRIDE COPOLYMER

Robert H. Lalk, and Syamalarao Evani, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 19, 1974, Ser. No. 498,482
Int. Cl.² C08K 3/00; C04B 7/02, 7/35
U.S. Cl. 260—29.6 S 12 Claims

1. A kiln feed slurry useful in a wet process to produce portland cement, having a water content of between 25% and 35% by weight and sufficient to render the slurry pumpable, said slurry containing from about .01 to about 0.1 weight % of a monovalent inorganic salt of a copolymer containing from about 33 to about 50 mole % of maleic anhydride and from about 67 to about 50 mol % styrene and a molecular weight of from about 1000 to about 5000.

3,923,718

STYRENE-BUTADIENE ADHESIVE COMPOSITION IN THE FORM OF AN AQUEOUS DISPERSION

Rene Arpin, Lyon, France, assignor to Rhone-Progil, Courbevoie, France

Filed Sept. 17, 1973, Ser. No. 398,094
Claims priority, application France, Sept. 21, 1972, 72.33439
Int. Cl.² C08L 25/10
U.S. Cl. 260—29.7 UA 5 Claims

1. An adhesive composition in the form of a 20–85% by weight aqueous dispersion containing, on the solids basis, 90–10% by weight mineral particles having a dimension within the range of 0.1–120 microns and selected from the group consisting of calcium, magnesium and barium sulphates and carbonates, 10–90% by weight of a mixture of styrene and butadiene copolymer in the form of particles dimensioned within the range of 0.05–10 microns and of at least one hydrosoluble water retainer selected from the group consisting of alkaline metal polyacrylates, hydroxy alkyl cellulose, carboxymethyl ethyl cellulose, polyvinyl alcohol and an alginate, in which the hydrosoluble water retainer is present in the ratio of 1–10 parts by weight of the hydrosoluble water retainer to 15 parts by weight of the copolymer.

3,923,719

RUBBER FORMULATIONS

Marion J. Gattuso, Hoffman Estates, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 197,938, Nov. 11, 1971, abandoned. This application Sept. 24, 1973, Ser. No. 400,293
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C08K 5/36
U.S. Cl. 260—30.8 R 6 Claims

1. A rubber formulation containing, as an oil extender therein, a styrene distillation column bottoms product obtained by distillation of styrene in the presence of a sulfur polymerization inhibitor, said bottoms product containing as a major portion thereof an organo-sulfur compound.

3,923,720

LUBRICATED THERMOPLASTIC RESIN

Antony W. M. Coaker, and Elmer E. Cowell, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 107,526, Jan. 18, 1971. This application Dec. 6, 1973, Ser. No. 422,380
Int. Cl.² C08K 5/10
U.S. Cl. 260—31.2 R 14 Claims

1. A composition of matter comprising a thermoplastic polycondensation resin and a liquid copolymer of (1) from about 5 to about 95% by weight of an alkylacrylate wherein the alkylradical contains from 1 to about 12 carbon atoms and (2) from about 95 to about 5% by weight of a dissimilar alkylacrylate wherein the alkylradical contains from about 3 to about 24 carbon atoms, wherein the acrylic copolymer is present in amounts of from about 0.001 to 8.0 parts by weight per 100 parts by weight of polycondensation resin.

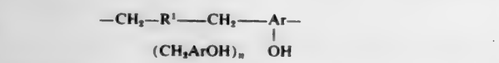
3,923,721

RESIN COMPOSITIONS

Alfred Gerald Edwards, Stourport-on-Severn, and Glyn Islwyn Harris, Hagley, both of England, assignors to Albright & Wilson Limited, Oldbury, England

Filed Jan. 9, 1974, Ser. No. 431,828
Claims priority, application United Kingdom, Jan. 16, 1973, 2311/73; Aug. 14, 1973, 38415/73
Int. Cl.² C08K 3/34, 3/36; C08L 61/14
U.S. Cl. 260—32.8 R 13 Claims

1. A resin composition which comprises (a) a resin having repeating units of the formula



Wherein R^1 is a divalent or trivalent aromatic hydrocarbyl or divalent or trivalent aromatic hydrocarbyloxy-aromatic hydrocarbyl, or inertly substituted derivatives thereof, and Ar is a residue formed by removal of 2 nuclear hydrogen atoms from a phenolic compound having a 1–3 hydroxyl groups and at least 2 nuclear hydrogen atoms and n is 0 to 1, and (b) 0.5–100% by weight (based on the weight of the resin) of an inorganic dispersing agent having at least 1 dimension less than 100 mμ and all dimensions less than 15μ and stable to at least 150°C; said inorganic dispersing agent being selected from the group consisting of

i. silica of particle size 3–80 mμ,
ii. asbestos of diameter about 25 mμ and length 5–10 μ,
iii. a mixture of asbestos of diameter about 25 mμ and length 5–10 μ and fumed silica; and
iv. hydrous aluminum silicate of plate-like structure of thickness 2–4 mμ and a maximum dimension of 0.5–1 μ; and

which does not contain a particulate material of particular size 0.2 μ – 20 mm.

3,923,722

ADHESIVE COMPOSITION

Pallavoor R. Lakshmanan, Allison Park, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 29, 1974, Ser. No. 456,165
Int. Cl.² C08K 5/07, 5/01, 3/26
U.S. Cl. 260—32.8 A 7 Claims

1. An adhesive composition consisting essentially of a styrene-butadiene block copolymer, a tackifier, calcium carbonate and a solvent wherein the components thereof are present in the following ranges, assuming the presence of 100 parts by weight of the styrene-butadiene component in the final composition:

Component	Weight Per Cent
[Styrene-Butadiene Block Copolymer]	[100]
Tackifier	20–125
Calcium Carbonate	60–500
Solvent	85–1500

, with the styrene-butadiene block copolymer having the following general configuration:

A–B–A,

wherein A is a styrene polymer block having an average molecular weight of about 5,000 to about 125,000 and B is a butadiene polymer block having an average molecular weight of about 15,000 to about 250,000, the calcium carbonate having an average diameter of about 0.2×10^4 A. to about 50×10^4 A., and the solvent being selected from the group consisting of aromatic hydrocarbons having from six to eight carbon atoms, aliphatic hydrocarbons having from six to eight carbon atoms and ketones having from two to four carbon atoms boiling between about 60° to about 145°C.

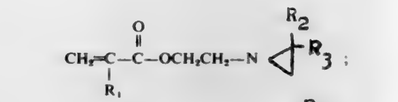
3,923,723

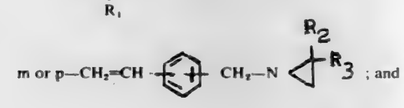
PROCESS FOR ENHANCING THE DISPERSION STABILITY OF NONAQUEOUS DISPERSIONS

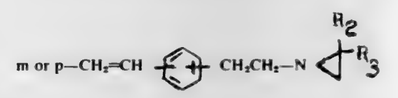
Dieter Heinrich Klein, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 24, 1972, Ser. No. 246,875
Int. Cl.² C08J 3/08; C08K 5/01; C08L 23/00, 25/00
U.S. Cl. 260—33.6 UA 2 Claims

1. A process for enhancing the dispersion stability of nonaqueous dispersions, said process comprising dispersing in a nonpolar hydrocarbon diluent a polymeric composition consisting essentially of (I) a side chain, insoluble in said diluent, which side chain is a polymer of a mixture of at least one ethylenically unsaturated monomer which contains a proton donor or proton acceptor group with minor amounts of a monomer selected from the group consisting of trimethylamine methacrylamide; 1,1-dimethyl-1-(2-hydroxypropyl) amine methacrylimide; 1,1-dimethyl-1-(2,3-dihydroxypropyl) amine methacrylimide; methylol acrylamide, and methylol methacrylamide said side chain being present in an amount equal to about 10 to 65 percent of total dispersion volume and (II) a backbone soluble in organic media, comprising a stabilizer which is the product of the reaction of (IIA) a poly-12-hydroxy stearic acid having a molecular weight up to about 3000 and (IIB) a compound selected from the group consisting of compounds of the formula







where

R_1 is hydrogen or CH_3,
R_2 is hydrogen or lower alkyl, and
R_3 is hydrogen or lower alkyl; and wherein the mass ratio of (IIA) to (IIB) is from about 90:10 to about 80:20 said stabilizer being present in an amount of from about 1 to 10 percent by weight of (I).

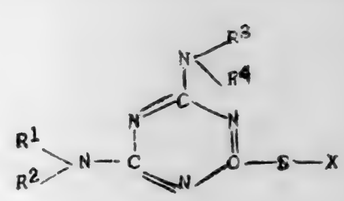
3,923,724

PROCESSES FOR IMPROVING THE PROCESSING CHARACTERISTICS OF VULCANIZED ELASTOMERS

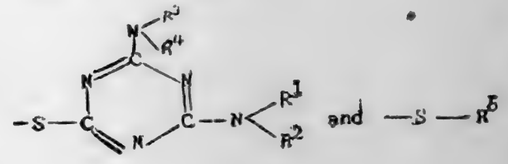
Hermann Westlinning, Kleinostheim; Siegfried Wolff, Bruehl-Cologne, and Werner Schwarze, Frankfurt, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 122,190, March 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 715,541, March 25, 1968, abandoned. This application May 15, 1974, Ser. No. 470,032
Claims priority, application Germany, Mar. 23, 1967, 1669954
Int. Cl.² C08K 3/04, 3/20, 5/01, 5/34
U.S. Cl. 260—33.6 AQ 13 Claims

1. A process for producing a vulcanized elastomeric composition which includes a filler and has improved processing characteristics which process comprises vulcanizing a vulcanizable composition containing, (a) at least one halogen-free elastomer of the group consisting of natural rubber, polyisoprenes, polybutadienes, copolymers of butadiene and styrene, copolymers of butadiene and acrylonitrile, copolymers of isoprene and isobutene, copolymers of butadiene and isobutene, terpolymers of ethylene, propylene and dienes, mixtures of the said elastomers with each other, and oil-extended elastomers of the said elastomers, (b) at least one reinforcing filler, (c) sulfur, and (d) at least one vulcanizing agent consisting of a substituted sym-triazinyl disulfide having the formula



in which formula R^1, R^2, R^3 and R^4 are each a radical of the group consisting of hydrogen, phenyl, alkyl radicals containing up to 18 carbon atoms, alkenyl radicals containing up to 6 carbon atoms, cycloalkyl radicals containing at least 5 and at most 7 carbon atoms, aralkyl radicals containing at least 7 and at most 9 carbon atoms, and the said alkyl, alkenyl, cycloalkyl, phenyl and alkyl radicals that are further substituted with a radical of the group consisting of hydroxyl, cyano and alkoxy radicals containing up to 18 carbon atoms, and X is a radical of the group consisting of



in which formulae R^1, R^2, R^3 and R^4 each have the same significance as hereinbefore and R^5 is a radical of the group consisting of phenyl, benzothiazolyl, carbazolyl, phenothiazinyl, alkyl radicals containing up to 18 carbon atoms, and aralkyl radicals containing at least 7 and at most 9 carbon atoms, or a mixture of one or more of the said substituted sym-triazinyl disulfides in an amount between 0.1 and 50 millimols per 100 grams of the elastomer.

3,923,725

METHOD FOR FORMING EPOXY RESIN PRODUCTS

Kenzo Kadotani; Tatuo Honda, and Tokio Isogai, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

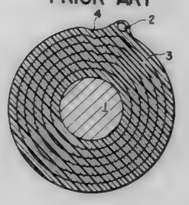
Filed Sept. 29, 1972, Ser. No. 293,378

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

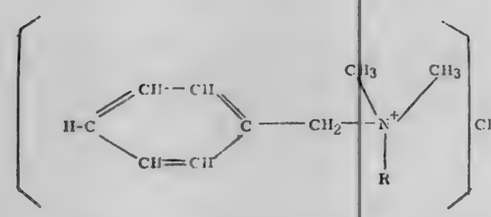
Int. Cl.² C08K *9/04*

U.S. Cl. 260—37 EP **19 Claims**

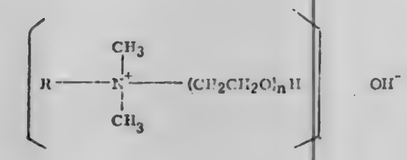
PRIOR ART



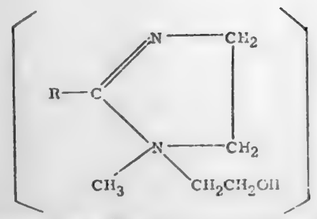
1. A method for manufacturing a formed epoxy resin article comprising inorganic or organic filler materials or structural elements by using an acid anhydride as a hardener which comprises arranging said filler materials or structural elements in a desired configuration treating said filler materials or structural elements so arranged with a quaternary ammonium salt selected from the group consisting of an alkyldimethylbenzyl ammonium chloride represented by the formula:



wherein R is alkyl having 8 to 18 carbon atoms, an alkylaminoethanol represented by the formula:

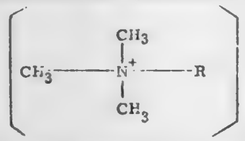


wherein R is alkyl having 9 to 18 carbon atoms and *n* is an integer of from 1 to 3, an alkylaminosulfonate represented by the formula:



$CH_3SO_4^-$

wherein R is alkyl having 2 to 11 carbon atoms, and an alkyltrimethyl ammonium salt represented by the formula:



X^-

wherein R is alkyl having 8 to 18 carbon atoms and X is chloine or bromine, impregnating the treated filler materials or structural elements with a liquid epoxy resin containing two or more epoxy groups in each molecule said liquid epoxy resin including said acid anhydride, and curing said epoxy resin by heating.

3,923,726

PROCESS OF MAKING COLORED HIGH TEMPERATURE POLYMERS

Gerhard Benz, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 9, 1969, Ser. No. 831,751

Int. Cl.² B28B *3/20;* **C08J** *3/22;* **C08L** *67/00, 77/00*

U.S. Cl. 260—40 R **1 Claim**

1. A process of forming an oriented film having a visually uniform coloring by coextruding a film consisting essentially of a normally uncolored, relatively high melting, difficulty colorable, thermoplastic polymer selected from the group consisting of polyesters, polysulfones and polyamides with a minor amount of a uniformly colored, lower softening easily colorable thermoplastic additive polymer selected from the group consisting of polyethylene, polypropylene, polystyrene, and acrylonitrile-butadiene-styrene copolymers, whereby the colored additive polymer is uniformly dispersed throughout the difficultly colorable polymer, and thereafter orienting said film.

3,923,727

PROCESS FOR DYEING THERMOPLASTICS IN THE MELT

Max Jost, Oberwil, and Arnold Wick, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

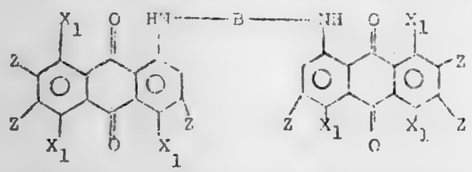
Filed Aug. 20, 1973, Ser. No. 389,909

Claims priority, application Switzerland, Aug. 29, 1972, 12753/72

Int. Cl.² C08K *5/08*

U.S. Cl. 260—40 P **10 Claims**

1. A process for dyeing a thermoplastic in the melt characterised by the use of a dyestuff of the formula



wherein B is a carbocyclic or heterocyclic aromatic radical in which the imino groups are directed bonded to a benzene ring, one X_1 denotes H hydroxyl, alkoxy, arylmercapto, arylamino, benzthiazolylmercapto or acylamino and the other X_1 denotes H, one Z denotes H or chlorine and the other Z denotes H.

3,923,728

FLAME-RETARDANT AND SELF-EXTINGUISHING MOLDING COMPOSITIONS

Wolfgang Seydl, Frankenthal, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Sept. 24, 1973, Ser. No. 400,177

Claims priority, application Germany, Sept. 28, 1972, 2,247,652

Int. Cl.² C08K *3/22, 5/02, 7/12*

U.S. Cl. 260—40 R **6 Claims**

1. Molding compositions based on polybutylene terephthalate which are flame-retardant and self-extinquishing and do not drip during and after flaming, and which comprise

A. 5 to 30% by weight of a Diels-Alder adduct of 2 moles of hexachlorocyclopentadiene and either 1 mole of cyclopentadiene, furan, dicycopentadiene, 1,5-cyclooctadiene or dicyclo-(2,2,1)-heptadiene,

B. 1 to 15% by weight of a metal compound having synergistic action and,

C. 1 to 10% by weight of a natural silicate, the percentages by weight of components A, B and C being relative to the amount of polyester used.

3,923,729

BIODEGRADABLE TRANSPLANTER CONTAINERS

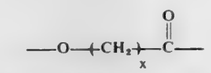
Robert A. Clendinning, New Providence; James E. Potts, Millington, and Walter D. Niegisch, Watchung, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 275,975, July 28, 1972, abandoned. This application July 15, 1974, Ser. No. 488,470

Int. Cl.² A01C *1/02;* **C08G** *63/02*

U.S. Cl. 260—40 R **22 Claims**

1. An article of manufacture which comprises: (a) a biodegradable container fabricated from a mixture of substances comprising (i) from about 5 to about 95 weight percent of biodegradable thermoplastic oxyalkanoyl polymer, said polymer having a reduced viscosity value of at least about 0.1 and upwards to about 12 and being further characterized in that at least about 10 weight percent of said thermoplastic oxyalkanoyl polymer is attributable to recurring oxyalkanoyl units of the formula



wherein *x* is an integer having a value of 2 to 7, with the proviso that *x* does not equal 3; (ii) from about 5 to about 95 weight percent of naturally occurring biodegradable product, based on the weight of said container; and (iii) >0 to about 75 weight percent of ingredients of the group consisting of plastic additives, fillers, and mixtures thereof and (b) a medium to germinate and grow seeds or seedlings in said container.

3,923,730

WEATHER-RESISTANT PIGMENTED METALLIC ACRYLIC RESIN LACQUER

Andre Pugin, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 19, 1974, Ser. No. 443,267

Claims priority, application Switzerland, Feb. 28, 1973, 2918/73

Int. Cl.² C08K *3/08, 5/34*

U.S. Cl. 260—42.21 **2 Claims**

1. Weather-resistant pigmented metallic acrylic resin lacquer containing a phthalocyanine pigment, aluminium and an acrylic resin, characterised in that it contains nickel-phthalocyanine as the phthalocyanine pigment wherein the ratio of nickel-phthalocyanine to aluminum is between 5:95 and 95:5% by weight.

3,923,731

PRESSURELESS CURING OF FILLED ETHYLENE CONTAINING POLYMERIC COMPOSITIONS

Burton Thornley MacKenzie, Jr., Monroe, Conn., assignor to General Electric Company, New York, N.Y.

Filed June 21, 1973, Ser. No. 372,084

Int. Cl.² C08K *3/34, 5/14*

U.S. Cl. 260—42.42 **17 Claims**

1. A method of curing a polymeric composition comprising polymerized ethylene and mineral filler, to a relatively dense and substantially nonporous cured product without the application of high pressure during curing, comprising the steps of:

a. preparing a curable polymeric composition by mixing the ingredients thereof comprising: an ethylene-containing polymer, mineral filler in an amount of at least about 15 parts by weight per 100 parts of the polymer, peroxide curing agent, and at least one organic titanate selected from the group consisting of tetrakis (2-ethylhexyl) titanate, tetrabutyl titanate, and a mixed alkyl titanate comprising about 85 parts isopropyl C_3 by weight and about 15 parts stearyl C_{18} by weight in an amount of about 2 to 10 parts by weight per 100 parts of mineral filler; and,

b. heating the prepared curable polymeric composition under substantially ambient atmospheric pressure conditions and thereby curing said polymeric composition to a relatively dense and substantially non-porous cured product.

3,923,732

PREPARATION OF A MIXTURE OF POLYISOCYANATES BY PHOSGENATING A SLURRY OF A MIXTURE OF POLYAMINES

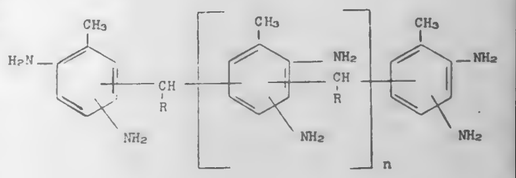
Ehrenfried H. Kober, Hamden; George Rozsa, New Haven, and Wilhelm J. Schnabel, Branford, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 492, 865, Oct. 4, 1965, Pat. No. 3,488,374. This application July 18, 1969, Ser. No. 855,440

Int. Cl.² C07C *118/02*

U.S. Cl. 260—453 PH **1 Claim**

1. A method for preparing a mixture of polyisocyanates which comprises reacting phosgene with a slurry comprising a mixture of polyamines of the formula:



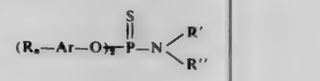
wherein *n* is an integer of from 0 to about 10 and R is selected from the group consisting of hydrogen and alkyl of from 1 to 5 inclusive carbon atoms, and o-dichlorobenzene and recovering the polyisocyanate product formed, the said reaction being conducted at a temperature of from about 100° to 200°C., the amount of phosgene employed being at least 50 percent in excess of the theoretical amount required to convert each $-NH_2$ group in the starting polyamines into an —NCO group, and the slurry containing from about 4 to about 20 weight percent of said polyamines based on the total weight of the slurry.

3,923,733
POLYOLEFIN LIGHT STABILIZERS

Richard Spector, Kendall Park, and Joseph Anthony Stretanski, Clinton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 13, 1973, Ser. No. 351,043
Int. Cl.² C08K *5/49, 5/51*
U.S. Cl. 260—45.8 NE **21 Claims**

1. A polyolefin stabilized against the deteriorating effects of light having incorporated therein an effective amount of a stabilizer of the formula:



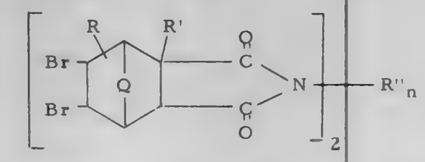
wherein:
R is hydrogen, alkyl of 1-12 carbons, or halogen;
Ar is phenyl or naphthyl;
n is 1 or 2; and
R′ and R″ are each selected from the group consisting of hydrogen, alkyl of 1-18 carbons, 2,2,6,6-tetramethyl-4-piperidyl, cycloalkyl of 5–6 carbons, or both, together with the N, form a heterocyclic ring selected from morpholino or piperidino.

3,923,734
FLAME-RETARDANT COMPOSITIONS

Anderson O. Dotson, Jr., Somerset; Jack Newcombe, and Lionel T. Wolford, both of Freehold, all of N.J., assignors to Cities Service Oil Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 200,615, Nov. 19, 1971, abandoned. This application May 11, 1973, Ser. No. 359,282The portion of the term of this patent subsequent to Jan. 15, 1991, has been disclaimed.
Int. Cl.² C08K *3/22, 5/34, 5/35*
U.S. Cl. 260—45.75 B **9 Claims**

1. A composition comprising (A) a normally flammable organic polymer, (B) antimony trioxide, and (C) a flame retardant having a bromine content of at least about 35% and corresponding to the formula:



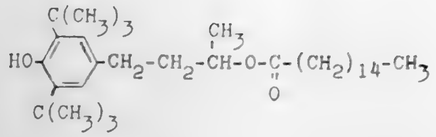
wherein Q is methylene or oxygen, R is hydrogen or an alkyl group containing 1–5 carbon atoms, R′ is hydrogen or methyl, R″ is a halogenated or unhalogenated (cyclo)aliphatic or aromatic hydrocarbon group of 1–15 carbon atoms, and *n* is 0 or 1.

3,923,735
PROCESS FOR STABILIZING POLYAMIDES

Karl Schlichting, Bobenheim-Roxheim; Peter Horn; Johannes Schlag, both of Ludwigshafen, and Wolfgang Koernig, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Division of Ser. No. 444,414, Feb. 21, 1974. This application Sept. 11, 1972, Ser. No. 504,872
Claims priority, application Germany, Feb. 24, 1973, 2309435
Int. Cl.² C08K *9/02*
U.S. Cl. 260—45.85 R **2 Claims**

1. A process for stabilizing polyamides against oxidation and thermal degradation which comprises adding thereto 0.01 to 2% by weight, based on the polyamide, of the compound



3,923,736
ROOM TEMPERATURE VULCANIZABLE ORGANOPOLYSILOXANES

Siegfried Nitzsche; Paul Hittmair; Ernst Wohlfarth, and Eckhart Louis, all of Burghausen, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

Continuation of Ser. No. 234,367, March 13, 1972, abandoned. This application Sept. 13, 1973, Ser. No. 397,027
Claims priority, application Germany, Mar. 16, 1971, 2112522
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C08G *77/04*
U.S. Cl. 260—46.5 G **20 Claims**

1. A room temperature vulcanizable composition which is obtained by admixing in the substantial absence of moisture an essentially linear diorganopolysiloxane having terminal groups which are capable of condensing with an amino-substituted silicon compound selected from the class consisting of silanes, silazanes and siloxanes having at least three silicon-bonded amino groups of the formula $=NCH(CH_3)C_2H_5$ per molecule, said amino-substituted silicon compound is present in an amount of at least 1 mol per gram equivalent of the terminal groups capable of condensation present in the diorganopolysiloxane.

3,923,737
ANAEROBIC ADHESIVES

Harold M. George, Leeds; Keith Hargreaves, Huby, and Paul Wainwright, Horsforth, all of England, assignors to Rocol Limited, England

Filed Mar. 15, 1973, Ser. No. 341,740
Int. Cl.² C08F *7/02*
U.S. Cl. 260—47 UA **6 Claims**

1. A liquid anaerobically curable composition comprising: a polymerizable acrylate ester monomer selected from the group consisting of di-acrylate and di-methacrylate esters of an alkoxylated member selected from the group consisting of ethoxylated bisphenol A, propoxylated bisphenol A, ethoxylated bisphenol C and propoxylated bisphenol C; p-menthane hydroperoxide in an amount sufficient to initiate polymerization of said monomer; 2-amino pyridine in an amount sufficient to accelerate polymerization of said monomer, the amounts of said initiator and accelerator being such that the composition is stable in air but sets when excluded from air.

3,923,738
PROCESS FOR THE FORMATION OF POLYPHENYLENE ETHERS OF CONTROLLED PARTICLE SIZE

Bernardus J. Van Sorge, Ravena, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed July 23, 1974, Ser. No. 490,940
Int. Cl.² C08G *65/46*
U.S. Cl. 260—47 ET **20 Claims**

1. In a process for receiving a polyphenylene ether from a solution thereof in an aromatic solvent by mixing said solution with a non-solvent for said polyphenylene ether in an amount sufficient to cause separation of the polyphenylene ether therefrom, the improvement which comprises using as said non-solvent a medium selected from the group consisting of (i) water and a (lower) alkyl alcohol, (ii) water and a (lower) alkyl ketone, and (iii) water and a mixture of a (lower) alkyl alcohol and a (lower) alkyl ketone which is also capable of forming a two-phase system with the aromatic solvent and an aromatic solvent selected from the group consisting of benzene, toluene, the xylenes, ethyltoluene, chlorobenzene, dichlorobenzene, nitrobenzene and bromobenzene.

3,923,739
LINEAR β-HYDROXY-ESTER, β-HYDROXY-ETHER AND β-HYDROXY-AMINE POLYMERS

Kurt A. Kurka, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 802,264, Feb. 25, 1969, abandoned. This application July 21, 1971, Ser. No. 164,956
Int. Cl.² C08G *63/20, 63/46, 65/00, 73/00*
U.S. Cl. 260—47 EP **7 Claims**

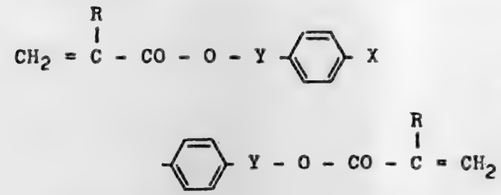
1. A flexible, soluble, fusible, primarily aliphatic linear polymer containing recurring β-hydroxy-ester, β-hydroxy-ether and/or β-hydroxy-amine linkages in its skeletal chain, some segments of which include at least 20 members between adjacent hydroxyl groups, counting as one member each ring and each atom of any linear chain in the segment and excluding the carbons to which the hydroxyls are attached, said polymer having an inherent viscosity of at least 0.2, a hydroxyl number of about 25–250, and being substantially free from ethylenic unsaturation in the skeletal chain and from oxirane oxygen and active hydrogen other than in its hydroxyl groups through which it can be crosslinked to an insoluble, infusible, still flexible, heat-resistant, state, and any ether oxygens in the skeletal chain are substantially all attached to cyclic carbon.

3,923,740
NOVEL COMPOSITIONS FOR USE IN PROSTHODONTIA

Werner Schmitt; Robert Purrmann, both of Starnberg; Peter Jochum, and Wolf Dieter Zahler, both of Hechendorf, all of Germany, assignors to ESPE Fabrik Pharamzeutischer Praparate GmbH, Germany

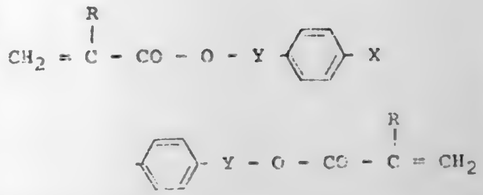
Continuation of Ser. No. 824,702, May 14, 1969, abandoned. This application July 31, 1972, Ser. No. 276,334
Int. Cl.² C08F *3/62;* **A61K** *5/00;* **C08F** *29/50*
U.S. Cl. 260—47 UA **23 Claims**

1. A method of preparing an artificial denture which comprises disposing in the configuration of said artificial denture and then polymerizing at least one essentially pure compound of the formula



wherein R is hydrogen or methyl, X is an alkylidene or the $-SO_2-$ group, Y is an oxyalklene group of 2–5 carbon atoms or an alkylidene group of 1–5 carbon atoms.

14. A method of preparing a dental filling which comprises depositing in a cavity in a tooth and then polymerizing at least one essentially pure compound of the formula



wherein R is hydrogen or methyl, X is an alkylidene or the $-SO_2-$ group, Y is an oxyalkylene group of 2–5 carbon atoms or an alkylidene group of 1–5 carbon atoms or an alkylidene group of 1–5 carbon atoms.

3,923,741
ACRYLAMID AQUEOUS SOLUTION REFINING PROCESS

Shiro Asano, Yokohama; Kiyotaka Yoshimura, Mobara; Ryoji Tsuchiya, Kamakura, and Tadatoshi Honda, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Dec. 5, 1972, Ser. No. 312,337
Claims priority, application Japan, Dec. 6, 1971, 46-97891; Dec. 6, 1971, 46-97892; Dec. 6, 1971, 46-97893
Int. Cl.² C07C *103/08*
U.S. Cl. 260—561 N **5 Claims**

1. A process for refining an acrylamide aqueous solution comprising treating said acrylamide aqueous solution with active carbon, said active carbon having been treated previously so as to have at least 0.05 parts by weight of cupric ion per 100 parts by weight of said active carbon.

3,923,742
PROCESS FOR THE PRODUCTION OF POLYCARBOXYLATES HAVING IMPROVED BIOLOGICAL DEGRADABILITY

Heinz Haschke, Grunaustrasse 17, and Gerhard Morlock, Wildaustrasse 3, both of 6454 Grossauheim, Germany

Filed Nov. 11, 1974, Ser. No. 522,979
Claims priority, application Germany, Nov. 15, 1973, 2357036
Int. Cl.² C08G *20/06, 16/34;* **C02C** *1/40*
U.S. Cl. 260—67 UA **26 Claims**

1. An improved process for the preparation of a polycarboxylate by the oxidative polymerization of acrolein or acrolein and acrylic acid, said polycarboxylate having improved biological degradability, said process comprising slowly adding acrolein monomer or an acrolein-acrylic acid monomer mixture to a heated, moving aqueous hydrogen peroxide solution, wherein the improvement comprises conducting said polymerization in the presence of about 0.1 to about 10% by weight of thioethylene glycol, related to the weight of monomer or monomer mixture.

3,923,743
PROCESS FOR CROSS-LINKABLE PULVERULENT COATING COMPOSITIONS BASED ON URETDIONE POLYISOCYANATES

Bernd Quiring, Leverkusen; Kuno Wagner, Leverkusen-Steinbuechel; Richard Müller, Bergisch-Neukirchen, and Peter Müller, Schildgen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Germany

Filed Feb. 28, 1974, Ser. No. 446,857
Claims priority, application Germany, Mar. 13, 1973, 2312391
Int. Cl.² C08G *18/06;* **B05B** *5/02*
U.S. Cl. 260—75 NT **5 Claims**

1. A process for the production of a branched polyurethane or polyurethane urea polyaddition product having free OH groups and a molecular weight in the range of 1100 to 3000 which is stable in storage and suitable for use as a binder for

lacquer powders which set at temperatures above 110°C , can be converted into powders below 50°C and have a softening or melting point between about 50°C and about 180°C, which comprises reacting an organic polyisocyanate containing uretdione groups or a mixture of uretdione group-containing and uretdione group-free organic polyisocyanates with compounds containing free OH groups wherein

a. the functionality of the reactants which take part in the polyaddition reaction and their proportions are so chosen that the average functionality of the products of the process, based on the reactive end groups in the products, is between about 3.8 and 4.5,

b. the components which take part in the reaction are used in quantities corresponding to an equivalent ratio of hydroxyl groups:isocyanate groups of between about 1.07:1 and about 2.5:1, and

c. the quantity of polyisocyanate which contains a uretdione group in the reaction mixture is sufficient to provide about 0.6% to 25% by weight of uretdione groups.

3,923,744

POLYOLS CONTAINING KETAL GROUPS AND POLYURETHANES PREPARED THEREFROM

Marius Walter Sorenson, Lake Jackson; Ross Clinton Whiteside, Jr., Angleton, and Richard Allan Hickner, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 23, 1973, Ser. No. 363,205

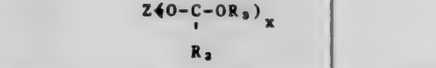
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C08G 18/32

U.S. Cl. 260—77.5 AP **12 Claims**

1. Curable compositions which comprise

A. a capped polyol represented by the formula



wherein Z is the polyvalent residue which would result from the removal of the hydroxyl groups from an uncapped polyol having from 2 to about 8 hydroxyl groups, an average molecular weight of from about 260 to about 3,000;

wherein R_3 is a hydrocarbon group having from 1 to about 6 carbon atoms and each R_1 and R_2 is independently hydrogen, a hydrocarbon group having from 1 to about 6 carbon atoms and R_1 and R_2 can collectively be the group $—CH_2—CH_2—CH_2—CH_2-$, x has a value of from 2 to about 8, and

B. an organic polyisocyanate in proportions so as to provide an NCO:hydroxyl group ratio contained in the uncapped polyol of from about 0.7:1 to about 1.4:1.

3,923,745

WATER-DISPERSIBLE THERMOSETTABLE CATIONIC RESINS AND PAPER SIZED THEREWITH

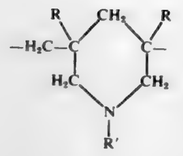
David H. Dumas, Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 31, 1973, Ser. No. 393,689

Int. Cl.² C08F 8/08; C08G 18/04, 69/48; C08F 126/04

U.S. Cl. 260—77.5 CR **6 Claims**

1. A water-insoluble, water-dispersible thermosettable cationic resin derived by reacting (I) an epihalohydrin and (II) a water-insoluble modified diallylamine polymer derived by reaction of (a) a diallylamine polymer consisting essentially of units of the formula



where R is hydrogen or a C_1–C_4 alkyl and R′ is hydrogen, methyl, or ethyl and of the number of R′s present in the polymer from 100% to 5% thereof are hydrogen and from 95% to 0% thereof are methyl or ethyl, and (b) a hydrophobizing compound selected from the group consisting of acyl halides, acid anhydrides, ketene dimers, and organic isocyanates, said hydrophobizing compound having a total of from about 12 to about 40 carbon atoms, the said modified diallylamine polymer having at least about 50% amine functionality, said reaction of (a) and (b) being carried out under a nitrogen blanket at a reaction temperature of from about 0°C. to about 100°C. and a pH of about 6 to 8, the amount of epihalohydrin employed being that amount sufficient to react with substantially all the amine functionalities of the water-insoluble modified diallylamine polymer.

3,923,746

ONE-PACKAGE POLYURETHANE COATINGS

Benny Gene Barron, and Russell Henry Cramm, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 16, 1973, Ser. No. 416,710

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C08G 18/32

U.S. Cl. 260—77.5 AP **10 Claims**

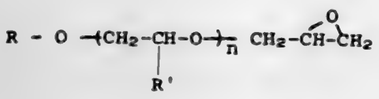
1. A one-package polyurethane coating comprising

A. an NCO-containing prepolymer which is the reaction product of

1. A polyol resulting from the reaction of

a. a polyhydroxyl-containing initiator compound containing from 2 to about 4 hydroxyl groups or a mixture of such compounds, with

b. from about 1 to about 3 moles per hydroxyl group contained in (A–1–a) of a glycidyl ether selected from glycidyl ethers represented by the general formula



wherein R is an aliphatic hydrocarbon radical having from about 4 to about 10 carbon atoms, R′ is hydrogen or a methyl or ethyl group and n has a value of 0 to 2 provided that when n is zero, R contains at least 6 carbon atoms, and mixtures of such glycidyl ethers; with

2. an organic diisocyanate in quantities so as to provide an NCO:OH ratio of from about 1.5:1 to about 2:1;

B. optionally, as a viscosity reducing component, from 0 to about 50 percent by weight of an organic hydrocarbon solvent, and

C. a catalytic quantity of a catalyst for urethane formation.

3,923,747

POLY(CAPROLACTONE)BASED POLYURETHANES HAVING IMPROVED BLOCKING CHARACTERISTICS

Edmond G. Kolycheck, Lorain, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Nov. 23, 1973, Ser. No. 418,551

Int. Cl.² C08G 18/42, 18/61

U.S. Cl. 260—77.5 AN **5 Claims**

1. A polyurethane comprising the reaction product of a hydroxy-terminated polyester of a dicarboxylic acid and a glycol, said polyester having a molecular weight in the range of about 600 to 1200, a poly(epsilon-caprolacetone)diol having a molecular weight from about 400 to 600, an aliphatic diol containing about 5 to 10 carbon atoms, all when mixed together having a blend average molecular weight of between about 350 to 500, from about 0.005 to about 0.5 mol of hydroxyl-terminated dimethylpolysiloxane having a molecular weight in the range of about 500 to about 3000, a $D_{20/4}$ of about 1 and containing about 2 to 4 weight percent hydroxyl groups per mol of polyester and an acyclic or alicyclic diisocyanate containing greater than 6 carbon atoms present in amounts substantially equivalent to the hydroxyl-terminated materials.

3,923,748

MERCAPTAN TERMINATED POLYMERS AND METHOD THEREFOR

Jack W. Hutt, Encino, and Hakam Singh, Newhall, both of Calif., assignors to Products Research & Chemical Corporation, Burbank, Calif.

Continuation-in-part of Ser. No. 414,653, Nov. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 239,730, March 30, 1972, abandoned. This application July 22, 1974, Ser. No. 490,244

Int. Cl.² C08G 18/04

U.S. Cl. 260—77.5 CR **12 Claims**

1. A method of producing mercaptan terminated liquid polymers curable to solid polysulfides, said liquid polymers having from two to four terminal mercaptan groups which comprises:

forming a reaction admixture consisting essentially of (1) a liquid polymer reactant having two to four terminal reactive olefinic double bonds, (2) an initiating effective amount of alkaline initiator having a pK_b value of 6.0 or less and no aryl groups, and (3) a sulfur containing reactant selected from the group consisting of an organic compound having from two to three terminal mercaptan groups, a liquid polymer having from two to three terminal mercaptan groups, and hydrogen sulfide, the ratio of sulfur containing reactant to liquid polymer reactant being about 1 mole of sulfur containing compound for each olefin equivalent of liquid polymer; heating at a temperature between room temperature and the boiling point of the reactants substantially in the absence of nitrogen until reaction is complete as indicated by the disappearance of the olefinic double bonds.

3,923,749

POLYMERIZATION OF CAPROLACTAM

Thomas J. Howell, Cornwells Heights, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Aug. 10, 1972, Ser. No. 279,583

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C08G 69/14

U.S. Cl. 260—78 L **4 Claims**

1. The method of producing a fiber-forming polymer which comprises melt polymerizing caprolactam with a dilithium salt of unsubstituted 3,5-disulfobenzoic acid moiety in a reactor in the ratio of 20 to 45 millimoles of salt per kilogram of caprolactam.

3,923,750

PROCESS FOR PREPARING WHOLLY AROMATIC POLYAMIDES IN THE PRESENCE OF AN ARYL SULFONE

Rufus S. Jones, Dover, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed May 14, 1973, Ser. No. 360,208

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C08G 69/28

U.S. Cl. 260—78 R **10 Claims**

1. A method for preparing high molecular weight wholly carbocyclic aromatic polyamides comprising heating in the substantial absence of oxygen a carbocyclic aromatic dicarboxylic acid and a carbocyclic aromatic diamine in about a mole to mole ratio in the presence of an aryl sulfone to a temperature above the melting point of said sulfone to just below the decomposition temperature of the reactants, and continuing said heating with the removal of condensation by-products for a time sufficient to form a polymer having an inherent viscosity of at least 0.4 as measured using a solution of 0.4 grams of product per 100 milliliters of concentrated aqueous sulfuric acid, 97–99 percent by weight, at 25°C., said aryl sulfone being present in an amount corresponding to 100 to 2500 weight percent of the polymer.

3,923,751

PROCESS FOR PREPARING POLYAMINO ACID IN A NON-POLAR SOLVENT

Yuji Iwashita, Kawasaki, and Mitsuru Sakuraba, Tokyo, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Dec. 26, 1973, Ser. No. 427,695

Claims priority, application Japan, Dec. 26, 1972, 48-3170; Aug. 23, 1973, 48-94583

Int. Cl.² C08G 69/10

U.S. Cl. 260—78 A **5 Claims**

1. In a process for preparing a polyamino acid by polymerizing an α-amino acid halide salt selected from the group consisting of an α-amino acid chloride hydrochloride and an α-amino acid bromide hydrobromide, the improvement which comprises:

polymerizing said α-amino acid halide salt in a non-polar organic solvent which contains no active hydrogen atoms in the absence of a base at elevated temperatures such that said polyamino acid is obtained having an intrinsic viscosity above 0.4.

3,923,752

PRESSURE SENSITIVE ADHESIVES FROM DIESTERS OF FUMARIC ACID AND VINYL COMPOUNDS COPOLYMERIZABLE THEREWITH

Gunter Güse, and Hanns Georg Pietsch, both of Hamburg, Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Germany

Division of Ser. No. 276,927, Aug. 1, 1972, Pat. No. 3,880,873, which is a division of Ser. No. 60,629, Aug. 3, 1970, Pat. No. 3,690,937. This application Oct. 9, 1974, Ser. No. 513,237

Claims priority, application Germany, Aug. 8, 1969, 1940549

Int. Cl.² C08F 22/06, 218/14

U.S. Cl. 260—78.5 E **1 Claim**

1. A pressure-sensitive adhesive material of an adhesive composition adhering on contact which comprises a copolymer formed from the polymerization of a monomer mixture of (A) 50–80% by weight, based on the total weight of the monomers, of at least one diester of fumaric acid and a saturated monovalent aliphatic alcohol containing from 3 to 12 carbon atoms; (B) 18–40% by weight, based on the total weight of the monomers, of at least one vinyl ester of a saturated aliphatic monocarboxylic acid copolymerizable with (A); (C) from 0.5 to 15% by weight, based on the total weight of the monomers, of maleic acid anhydride having a polar group copolymerizable with (A) and (B), and (D) from 0.1 to 10% by weight,

based on the total weight of the monomers, of N-methylolacrylamide copolymerizable with (A), (B) and (C), said compound having a self cross-linkable N-methylolamide group, said group of (D) being at least partially cross-linked.

3,923,753
1,4-DIHYDRONAPHTHALENE DERIVATIVES
David J. Fenoglio, Carol Stream, Ill., assignor to Standard Oil Company, Chicago, Ill.
Filed Jan. 14, 1973, Ser. No. 432,996
Int. Cl.² C07D *327/00*; **C08G** *75/00*
U.S. Cl. 260—79 **3 Claims**

1. 2,3-thioepoxytetralin.
2. Poly (2,3-thioepoxytetralin).

3,923,754
CURING OF LIQUID POLYTHIOPOLYMERCAPTAN POLYMERS
Michael A. Pellico, Los Angeles, Calif., assignor to Denton Industries, Inc., Los Angeles, Calif.
Continuation-in-part of Ser. No. 414,893, Nov. 12, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 518,378
Int. Cl.² C08G *75/00*
U.S. Cl. 260—79 **12 Claims**

1. A method of curing a liquid organic polythiopolymercaptan polymer at ambient temperature within a time span not exceeding about 15 minutes which comprises interacting the polymer at ambient temperature with

a. at least 20 parts by weight of a zinc constituent selected from the class of zinc oxide, zinc peroxide and mixtures thereof, and

b. at least 20 parts by weight of a polysulfide constituent selected from the class of alkyl thiuram polysulfide, benzothiazyl disulfide and mixtures thereof,

with the amount of each of the zinc and polysulfide constituents being based upon about 100 parts, by weight, of the polymer.

3,923,755
AMINE SULFONATES AS DYE SITES IN SUSPENSION POLYMERS
Robert Albert Piloni, Pottstown, Pa., assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Continuation of Ser. No. 230,966, March 1, 1972, abandoned. This application Mar. 20, 1974, Ser. No. 452,892
Intt. Cl.² C08F *15/40*, *15/02*
U.S. Cl. 260—79.3 MU **6 Claims**

1. Process of Copolymerizing

in an aqueous suspension system in which the monomers are suspended as globules in an aqueous medium

in the presence of a free-radical initiator which is soluble in the mixture (I) specified hereinbelow

said aqueous medium containing a colloidal-type suspending agent

		Parts by Weight
(I)	A mixture of 90–10 parts of acrylonitrile with 10–90 parts of vinyl chloride	100
with		
(II)	an amine sulfonate salt monomer which is a salt of	0.1 – 10.0

II-a. an anionic moiety which is 2-acrylamido-2-methylpropane sulfonic acid

with

II-b. a cationic moiety which is a higher-alkyl-group-containing primary, secondary or tertiary amino compound, wherein the alkyl group or groups contain a total of 12–30 carbon atoms

whereby to produce a cationic-dye-receptive polymeric product.

3,923,756
THIN FILM CATALYTIC POLYMERIZATION OF WATER-IN-OIL EMULSIONS OF WATER-SOLUBLE ETHYLENICALLY UNSATURATED AMIDE MONOMERS
Jerry J. Svarz, La Grange, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.
Filed Dec. 23, 1974, Ser. No. 535,988
Int. Cl.² C08F *2/32*, *120/56*, *220/06*
U.S. Cl. 260—80.3 N **9 Claims**

1. In the continuous catalytic emulsion polymerization or co-polymerization of water-soluble ethylenically unsaturated amide monomers alone or in the presence of acrylic acid or alkyl-substituted acrylic acid while flowing in a thin layer, the steps which comprise: feeding a mixture of water-in-oil emulsion of water-soluble ethylenically unsaturated amide monomer and polymerization catalyst therefor into a heat exchanger having a reaction chamber of uniformly narrow cross section formed between opposing surfaces at least one of which provides a heat transfer surface of substantial area; flowing said mixture through said reaction chamber while said heat transfer surface area thereof is maintained within plus or minus 3°C. of a predetermined polymerization or co-polymerization temperature; and, maintaining said reaction chamber and said mixture flowing therethrough, substantially free of oxygen.

3,923,757
TRANSPARENT ADHESIVE
Ival O. Salyer; Philip H. Wilken, both of Dayton, and George L. Ball, III, West Carrollton, all of Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.
Continuation of Ser. No. 211,642, Dec. 23, 1971, abandoned. This application Oct. 18, 1973, Ser. No. 407,714
Int. Cl.² B32B *27/36*, *17/06*; **C08F** *15/10*, *15/40*
U.S. Cl. 260—80.75 **2 Claims**

1. An optically clear adhesive for glass-glass, glass-polycarbonate and polycarbonate-polycarbonate laminates which comprises an ethylene/vinyl acetate copolymer having from about 40 to about 65 weight percent vinyl acetate, said copolymer being partially hydrolyzed in a mineral acid medium to form a terpolymer having a vinyl alcohol content from about 3 to about 30 weight percent, said terpolymer being compounded and partially cross-linked with from about 0.5 to about 3.0 weight percent of a diacyl peroxide.

3,923,758
SUBSTANTIALLY HEXANE SOLUBLE PROPYLENE/BUTENE-1 COPOLYMER CONTAINING 30 TO 75 WEIGHT PERCENT BUTENE-1
Edward H. Carter, Jr., Kingsport, Tenn., and Robert E. Holliday, Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed July 2, 1973, Ser. No. 376,077
Int. Cl.² C08F *10/06*, *10/08*, *4/64*
U.S. Cl. 260—88.2 **8 Claims**

2. A solution process according to claim 1 wherein said trialkyl aluminum is triethyl aluminum.

3,923,759
PROCESS FOR THE PREPARATION OF ISOBUTYLENE/BETA-PINENE COPOLYMERS
Joseph P. Kennedy, Akron, Ohio, and Tom M. Chou, Los Angeles, Calif., assignors to The University of Akron, Akron, Ohio
Filed Nov. 9, 1973, Ser. No. 414,337
Int. Cl.² C08F *210/00*
U.S. Cl. 260—88.2 **7 Claims**

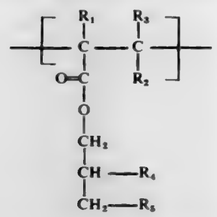
2. A process for the azeotropic copolymerization of isobutylene and beta-pinene as in claim 1, wherein said solvent is selected from the class consisting of methyl chloride, ethyl chloride, methylene chloride, chlorobenzene, 1,2-dichloroethane, propane, pentane, hexane, toluene, cyclohexane, carbon disulfide and mixtures thereof.

3,923,760
COLOR IMPROVEMENT PROCESS FOR POLYOLEFINS
Richard V. Mullikin, Texas City, and Morris R. Ort, Seabrook, both of Tex., assignors to Monsanto Company, St. Louis, Mo.
Filed Dec. 3, 1973, Ser. No. 421,455
Int. Cl.² C08F *6/00*
U.S. Cl. 260—88.2 R **8 Claims**

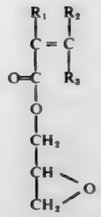
1. The method of improving the color of an olefin polymer or copolymer having a vanadium content from about 3 to about 25 parts per million parts by weight of polymer and prepared by polymerization of an alpha-olefin alone or in combination with other olefins in contact with a Ziegler catalyst comprising a vanadium compound which consists of intimately contacting said polymer in the molten state with an alkanol having 2 to 4 carbon atoms in an amount from about 0.05 to about 5.0% by weight of the polymer and from about 10 to about 500 parts by weight per million parts by weight based on the polymer of a weak base selected from the group consisting of the oxides, hydroxides and carbonates of metals of Group II of the Periodic Table and thereafter removing all of said alkanol as a vapor from said polymer.

3,923,761
PHOTOPOLYMERS
Edward H. Parker, Ballwin; Edward M. Harris, Webster Groves, and Jim D. Meador, Bridgeton, all of Mo., assignors to Western Litho Plate & Supply Co., St. Louis, Mo.
Division of Ser. No. 272,796, July 18, 1972, Pat. No. 3,852,256. This application Feb. 1, 1974, Ser. No. 438,599
Int. Cl.² C08F *124/00*, *126/06*, *128/06*, *134/00*
U.S. Cl. 260—88.3 A **6 Claims**

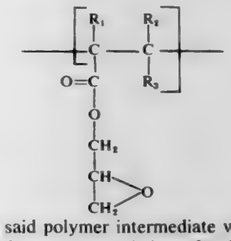
1. A process for producing a light-sensitive polymer susceptible to crosslinking on exposure to actinic light, containing at least about 10% by weight of the light-sensitive recurring unit:



wherein R_1, R_2, and R_3 are each selected from the group consisting of hydrogen, halogen, and lower alkyl and at least one of R_4 and R_5 is selected from the group consisting of azidobenzoyloxy and azidonaphthoyloxy, the other of R_4 and R_5 being selected from the group consisting of hydroxy, halogen, alkoxy, aryloxy, aralkoxy, alkoxyalkoxy, aryloxyalkoxy, alkoxyaryloxy, aryloxyaryloxy, alkylacyloxy, arylacyloxy, alkenylacyloxy, aralkenylacyloxy, heterocyclic substituted acyloxy, azidobenzoyloxy and azidonaphthoyloxy, the process comprising: preparing a mixture containing a monomer having the structure:



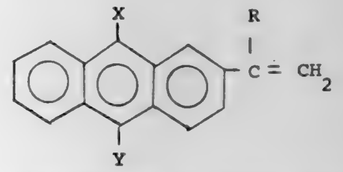
wherein R_1, R_2, and R_3 are as defined above, and a polymerization initiator under an inert atmosphere; polymerizing said monomer to produce a polymer intermediate containing the precursor recurring unit:



and esterifying said polymer intermediate with a compound selected from the group consisting of azidobenzoic acid, azidonaphthoic acid, azidobenzoyl halide and azidonaphthoyl halide, in the presence of a catalyst for the esterification, the proportion of said precursor recurring unit in said polymer intermediate and the extent of esterification being sufficient that the product of the esterification contains at least about 10% by weight of said light-sensitive recurring unit.

3,923,762
PROCESS FOR PREPARATION OF 2-ANTHRYL AND SUBSTITUTED 2-ANTHRYL FUNCTIONAL MONOMERS AND POLYMERS
Milan Stolka, Fairport; James M. Pearson, Webster, and John F. Yanus, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 417,317, Nov. 19, 1974. This application Feb. 25, 1974, Ser. No. 445,705
Int. Cl.² C07C *67/00*, *25/26*; **C08F** *112/00*
U.S. Cl. 260—89.5 **6 Claims**

1. An anthracenic polymer segment consisting essentially of the addition product of at least one monomer of the formula



wherein R is hydrogen or alkyl of 1 to about 3 carbon atoms; and X and Y are independently selected from chlorine, bromine, alkyl of 1 – 4 carbon atoms, or phenyl said segment having a degree of polymerization of about 40 or greater.

3,923,763
NOVEL SULFUR COMPOUND MODIFIERS FOR CHLOROPRENE POLYMERIZATION

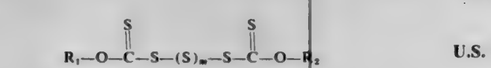
Morris S. Edmondson, Alvin, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 289,521, Sept. 15, 1972, abandoned. This application Jan. 15, 1975, Ser. No. 541,237

Int. Cl.² C08F *136/16, 4/00*

U.S. Cl. 260—92.3 **4 Claims**

1. A process for the emulsion polymerization of chloroprene which comprises polymerizing chloroprene in the presence of from about 0.05 to 5 parts by weight per 100 parts of polymerizable monomer of a modifier having the formula



wherein R_1 is a hydrocarbon radical having from 1 to 8 carbon atoms, R_2 is a hydrocarbon radical having 1 to 8 carbon atoms and m is 1 to 4.

3,923,764
ADJUVANT FOR IMPROVING THE POLYMERISATION OF ETHYLENE-HYDROCARBONS

Henri Fassy, Jurancon; Philippe Lalet, Orthez, and Andre Miletto, Pau, all of France, assignors to Societe Anonyme Ato Chimie, Paris, France

Filed Dec. 11, 1972, Ser. No. 314,255

Claims priority, application France, Dec. 9, 1971, 71.44175

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C08F *2/02, 4/40, 14/06*

U.S. Cl. 260—92.8 R **12 Claims**

1. In a process of polymerizing an ethylene hydrocarbon or vinyl chloride employing a redox catalyst, wherein one component of said redox catalyst is a hydroperoxide, organic peracid or mixture thereof and the other component is SO_2 or an SO_2 liberating compound, the improvement which comprises additionally employing an adjuvant selected from the group consisting of alkali metal amide, alkaline earth metal amide, alkali metal amido-sulfinate, alkaline earth metal amido-sulfinate, ammonium sulfite, and mixtures thereof.

3,923,765
PROCESS FOR SUSPENSION POLYMERIZATION OF VINYL HALIDES WITH LOW POLYMER DEPOSITION

Ulrich Goetze, Cologne Bocklemund; Axel Wole, Cologne-Longerich; Gottfried Nettesheim, Pulheim; Thomas Balwe, Burghausen; Johann Bauer, Burghausen; Kurt Fendel, Burghausen; Dieter Kurz, Burghausen, and Alex Sabel, Burghausen, all of Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

Filed Mar. 7, 1973, Ser. No. 338,840

Claims priority, application Germany, Oct. 4, 1972, 2248607

Int. Cl.² C08F *114/02, 114/16*

U.S. Cl. 260—92.8 W **6 Claims**

1. In the suspension polymerization process for the production of polymerizates containing at least 70 percent of polyvinyl halides, with low polymer deposits, which comprises the steps of mixing (1) monomers selected from the group consisting of vinyl halides and mixtures of vinyl halides with up to 30 percent by weight of olefinically unsaturated compounds copolymerizable with vinyl halides, (2) an oil-soluble free-radical-forming polymerization catalyst, (3) suspension stabilizers including protective colloids, and (4) water, heating said mixture under agitation to a polymerization temperature of between 30°C and 80°C, and recovering said polymerizate, of the improvement which consists of conducting said polymerization in the presence of from 10 to 300 ppm, based on the water content, of water-soluble reducing agents, in a reactor whose inner surface has a mean peak-to-valley height of at most 1 μ and where the flow velocity adjacent said inner surface is at least 0.3 m/sec., whereby a polymerizate is recovered substantially without polymer deposits.

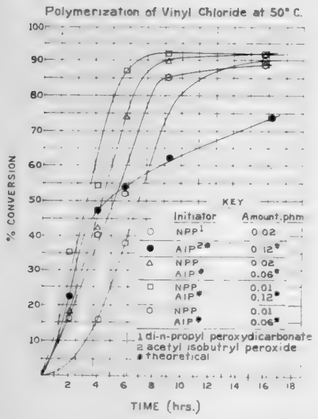
3,923,766
POLYMERIZATION OF ETHYLENICALLY UNSATURATED MONOMER

James A. Barter, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

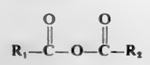
Continuation-in-part of Ser. No. 284,025, Aug. 28, 1972, abandoned, and Ser. No. 385,787, Aug. 6, 1973, abandoned, which is a continuation-in-part of Ser. No. 284,024, Aug. 28, 1972, abandoned. This application June 3, 1974, Ser. No. 476,117

Int. Cl.² C08F *2/02, 2/16, 4/30, 4/32*

U.S. Cl. 260—92.8 R **62 Claims**



1. In the process for polymerizing ethylenically unsaturated material susceptible to polymerization with free-radical type initiators in an aqueous or bulk polymerization medium, the improvement which comprises conducting said polymerization in the presence of an initiator system comprising, in combination, alkaline buffering reagent, organic acid anhydride represented by the general formula,



wherein R_1 and R_2 are each selected from the group consisting of substituted and unsubstituted C_1–C_{20} alkyl, C_6–C_{10} cycloalkyl and C_6–C_{10} aryl radicals, and peroxygen compound selected from the group consisting of organic peroxy acid and hydrogen peroxide, said alkaline buffering reagent, acid anhydride and peroxygen compound being present in amounts sufficient to polymerize the ethylenically unsaturated material.

3,923,767
ETHYLENE POLYMERIZATION PROCESS IN THE PRESENCE OF QUINONE ALKIDES

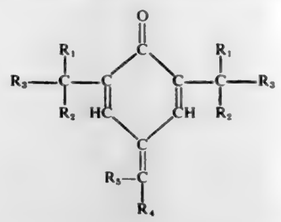
Gene E. Kellum, and Ronald E. Gilbert, both of Orange, Tex., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 22, 1974, Ser. No. 499,398

Int. Cl.² C08F *110/02;* **C07C** *49/62, 97/18*

U.S. Cl. 260—94.9 R **3 Claims**

1. In a continuous high pressure, free-radical initiated, mass process for preparing ethylene polymers; the improvement which consists essentially of feeding a quinone alkide to the polymerization zone in a minor amount sufficient to improve the optical properties of the ethylene polymer being produced, said quinone alkide having the formula:



where R_1 and R_2 are alkyl groups, R_3 is an alkyl group or an aryl group, and R_4 and R_5 are hydrogen or an alkyl group.

3,923,768
TREATMENT OF TALL OIL FATTY ACIDS

John R. Powers, and Frances M. Miller, both of Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Nov. 18, 1974, Ser. No. 524,664

Int. Cl.² C09F *1/00*

U.S. Cl. 260—97.5 **2 Claims**

1. A process for disproportionating tall oil fatty acids containing less than 5 percent rosin acids which comprises,

heating said tall oil fatty acids at a temperature between 250°F. and 430°F. in the presence of from at least 0.2 to about 1.0 percent by weight of said tall oil fatty acids of iodine for from 30 minutes to 2.5 hours to convert the linoleic acid present in the fatty acids to oleic acid.

3,923,769
[N-ME-ILE′,ILE⁸]-ANGIOTENSIN II AS AN ANGIOTENSIN ANTAGONIST

Francis Merlin Bumpus, 75 Winterberry Lane, Chagrin Falls, Ohio 44022; Mahesh Chandra Khosla, 7415 Warwick Lane, Chesterland, Ohio 44026, and Robert Rudolph Smeby, 36801 Riviera Road, Willoughby, Ohio 44094

Filed May 10, 1974, Ser. No. 468,831

Int. Cl.² C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 **1 Claim**

1. The octapeptide L-(N-methyl)Ile-L-Arg-L-Val-L-Tyr-L-Ile-L-His-L-Pro-L-Ile.

3,923,770
[ME₂GLY¹, ILE⁸]-ANZIOTENSIN II AS AN ANGIOTENSIN ANTAGONIST

Francis Merlin Bumpus, 75 Winterberry Lane, Chagrin Falls, Ohio 44022; Mahesh Chandra Khosla, 7415 Warwick Lane, Chesterland, Ohio 44026, and Robert Rudolph Smeby, 36801 Riviera Road, Willoughby, Ohio 44094

Filed May 10, 1974, Ser. No. 468,832

Int. Cl.² C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 **1 Claim**

1. The octapeptide dimethylglycyl-L-Arg-L-Val-L-Tyr-L-Ile-L-His-L-Pro-L-Ile.

3,923,771
N-GUANIDYLACETYL-[DES-ASP¹-ILE⁸] ANGIOTENSIN II AS AN ANGIOTENSIN ANTAGONIST

Francis Merlin Bumpus, 75 Winterberry Lane, Chagrin Falls, Ohio 44022; Mahesh Chandra Khosla, 7415 Warwick Lane, Chesterland, Ohio 44026, and Robert Rudolph Smeby, 36801 Riviera Road, Willoughby, Ohio 44094

Filed May 10, 1974, Ser. No. 468,854

Int. Cl.² C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 R **1 Claim**

1. The octapeptide quanidylacetyl-L-Arg-L-Val-L-Tyr-L-Ile-L-His-L-Pro-L-Ile.

3,923,772
(1-α-AMINOISOBUTYRIC ACID)-CORTICOTROPIN PEPTIDES

Hideo Otsuka, Mino, and Ken Inouye, Kobe, both of Japan, assignors to Shionogi & Company, Ltd., Japan

Continuation-in-part of Ser. No. 124,549, March 15, 1971, Pat. No. 3,873,511. This application May 14, 1974, Ser. No. 469,890

Claims priority, application Japan, Mar. 16, 1970, 45-22190; May 7, 1970, 45-38878

Int. Cl.² C07C *103/52;* **A61K** *37/40*

U.S. Cl. 260—112.5 **2 Claims**

1. The compound α-aminoisobutyryl-L-tyrosyl-L-seryl-L-methionyl-L-glutamyl-L-histidyl-L-phenylalanyl-L-arginyl-L-tryptophyl-glycyl-L-lysyl-L-prolyl-L-valylglycyl-L-lysyl-L-lysyl-L-lysyl-L-lysine amide.

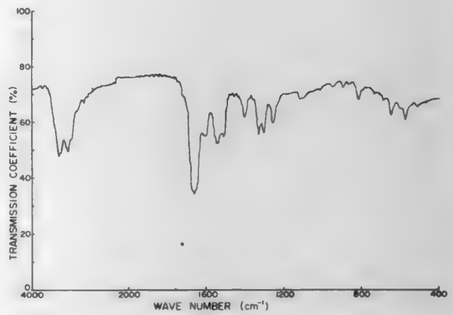
3,923,773
METHOD FOR PREPARING ISOINDOLENONE PIGMENTS

Hirohito Ando, Urawa, and Kunihiko Takagi, Tokyo, both of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo, Japan

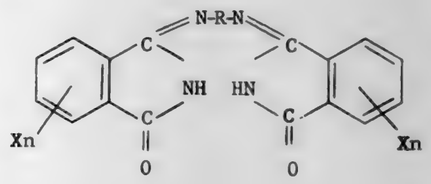
Filed Apr. 25, 1973, Ser. No. 354,194

Int. Cl.² C07D *209/50;* **C09B** *57/00;* **C07C** *103/76*

U.S. Cl. 260—152 **8 Claims**

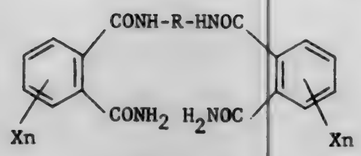


1. A method of preparing an isoindolenone pigment of the formula



wherein X is a halogen atom, n is a number from 0 to 4, and R is a direct bond, or divalent residue of one of the group consisting of o-, m-, p-phenylenediamines, benzidine, o-dianisidine, o-, m-tolidines, 3,3′-dichlorobenzidine, 4,4′-diaminodiphenyl methane, 3,3′-dichloro-4,4′-diaminodiphenyl methane, 4,4′-diaminodiphenyl ether, 1,5-diaminonaphthalene, 2,2′-diaminodiphenyl, 2,6-diaminotoluene, 2,6-diaminopyridine, 2,6-diaminobenzothiazole, diaminoazobenzene, N-(p′-aminophenyl)p-aminobenzamide, or 2,2′-dichlorobenzidine;

comprising the step of condensing a compound of the formula



wherein X, *n*, and R are as defined above, at a temperature of from 60° to 130°C. and in the presence of both an inert organic solvent and at least 2 mols per mol of the above compound of a condensing agent.

3,923,774

QUINAZOLONE CONTAINING PHENYL-AZO-PYRIDINE COMPOUNDS

Peter Dimroth, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Apr. 4, 1973, Ser. No. 348,083

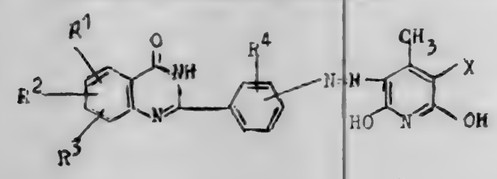
Claims priority, application Germany, Apr. 20, 1972, 2219169

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C09B *29/36*

U.S. Cl. 260—154 **4 Claims**

1. A quinazolone azo pigment of the formula



in which:
R^1 is hydrogen, chloro, bromo or nitro;
R^2 is hydrogen or chloro;
R^3 is hydrogen or chloro;
R^4 is hydrogen, chloro or methyl; and
X is cyano or carbamoyl.

3,923,775

8,8-DIOXO-6,6-AZOPURINE AND METHOD FOR PREPARING THE SAME

Joseph R. Davis, Chicago, Ill., assignor to Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 333,043, Feb. 16, 1973, abandoned. This application Nov. 26, 1973, Ser. No. 418,877

Int. Cl.² C07C *107/00*

U.S. Cl. 260—154 **3 Claims**

1. 8,8′-dioxo-6,6′-azopurine.

3,923,776

MONOAZO DYE FROM AN AMINOBENZENE CARBOXYLIC ESTER DIAZO COMPONENT AND A PYRIDONE COUPLING COMPONENT

Gerhard Gaad, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

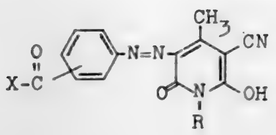
Division of Ser. No. 25,253, April 2, 1970, abandoned. This application Sept. 20, 1972, Ser. No. 290,708

Claims priority, application Germany, Apr. 3, 1969, 1917278

Int. Cl.² C09B *29/36*

U.S. Cl. 260—156 **3 Claims**

1. An azo dye of the formula



where
X is $(OCH_2CH_2)_nOZ$,
R is alkyl of one to four carbon atoms, or alkyl of two to four carbon atoms substituted by —OH, $—OCH_3$ or $—OC_2H_5$,
n is 2 or 3 and
Z is alkyl of one to four carbon atoms.

3,923,777

AZO DYE FROM AN ORTHO-OXYDIAZOLYLANILINE DIAZO COMPONENT

Peter Dimroth, and Ernst Schaffner, both of Ludwigshafen, Germany, assignors to Badische-Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

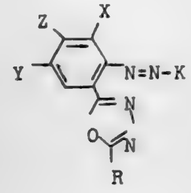
Filed July 5, 1973, Ser. No. 376,565

Claims priority, application Germany, July 10, 1972, 2233871

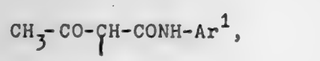
Int. Cl.² C09B *29/20*

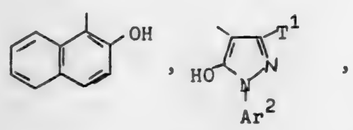
U.S. Cl. 260—157 **5 Claims**

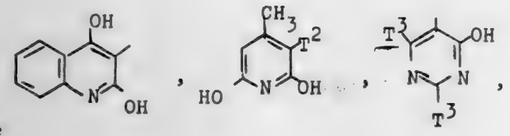
1. An azo dye of the formula

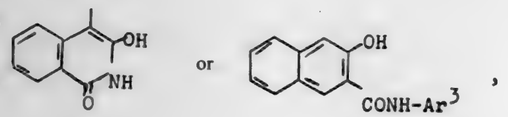


in which K is

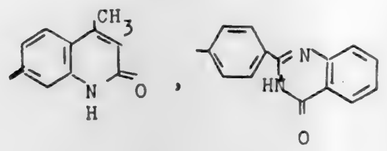




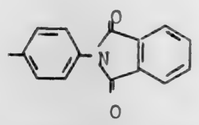




Ar^1 is phenyl or phenyl substituted by chloro, methoxy, ethoxy, methyl,



or



Ar^2 is phenyl or phenyl substituted by chloro or methyl, Ar^3 is phenyl, phenyl substituted by chloro, methoxy, methyl, phenylaminocarbonyl, chlorophenyl-aminocarbonyl, dichlorophenylaminocarbonyl, phthaloylaminophenylaminocarbonyl, anthraquinonylaminocarbonyl, benzoylaminophenylaminocarbonyl, sulfonylphenylaminocarbonyl, N-(phenylsulfamoyl- or N-chlorophenylsulfamoyl)-phenylaminocarbonyl, phthaloylaminobenzoylamino, chlorobenzoylamino, phenylaminooxalylamino, anthraquinonylcarbonylamino or ethylphenylaminocarbonyl or naphthyl,
T^1 is methyl or carbamoyl,
T^2 is cyano or carbamoyl,
R is phenyl, phenyl substituted by chloro, bromo, methyl, methoxy, cyano, nitro, phenyl, sulfamoyl, N-phenylsulfamoyl, phenylsulfonyl, acetylamino, benzoylamino or dichlorobenzoylamino, naphthyl or anthraquinonyl,
X is hydrogen or chloro
Y is hydrogen, chloro or nitro and
Z is hydrogen or nitro.

3,923,778

DISAZO DYESTUFFS CONTAINING THE α:β-DICHLORO- OR α:β-DIBROMOPROPIONYLAMINO GROUP

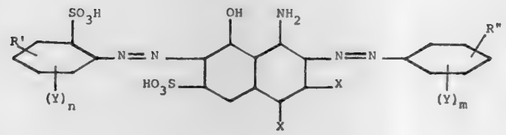
Rene de Montmollin, Riehen, and Henri Riat, Arlesheim, both of Switzerland, assignors to Ciba-Geigy AG, Basle, Switzerland

Division of Ser. No. 876,069, Nov. 12, 1969, Pat. No. 3,755,290, which is a continuation-in-part of Ser. No. 753,829, July 22, 1968, abandoned, which is a continuation of Ser. No. 608,710, Nov. 1, 1966, abandoned, which is a division of Ser. No. 305,539, Aug. 29, 1963, abandoned, which is a continuation-in-part of Ser. No. 731,097, April 28, 1958, abandoned. This application June 1, 1972, Ser. No. 258,773

Int. Cl.² C09B *62/00, 62/04;* **D06P** *3/66*

U.S. Cl. 260—174 **5 Claims**

1. A disazo dyestuff of the formula



wherein R′ represents hydrogen, lower alkyl, lower alkoxy, trifuloromethyl, chlorine or bromine,
One X is hydrogen and the other X is the sulphonic acid group,
R″ is hydrogen, lower alkyl, lower alkoxy, trifluoromethyl, chlorine, bromine, sulfo or nitro,
Y is α:β-dichloropropionylamino or α:β-dibromopropionylamino,
n is 0 or 1
m is 0 or 1
the total of $n + m$ being at least 1.

3,923,779

PROCESSES FOR SYNTHESIZING AZO COMPOUNDS

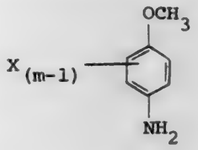
Harris L. Curtis, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 655,304, July 24, 1967, abandoned. This application Mar. 26, 1970, Ser. No. 20,482

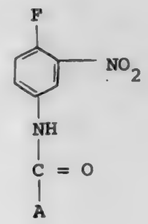
Int. Cl.² C07C *107/04*

U.S. Cl. 260—202 **5 Claims**

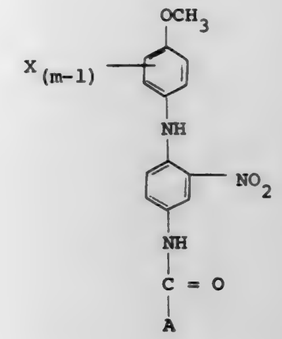
1. A process which comprises the steps of:
a. reacting a compound of the formula:



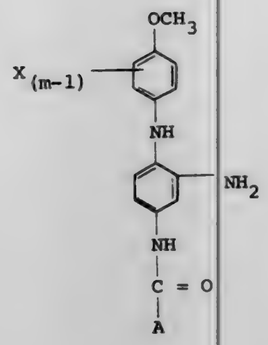
with a compound of the formula:



to form a compound of the formula:

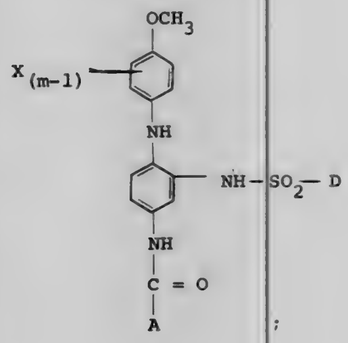


b. reducing the nitro group of said last-named compound to form a compound of the formula:



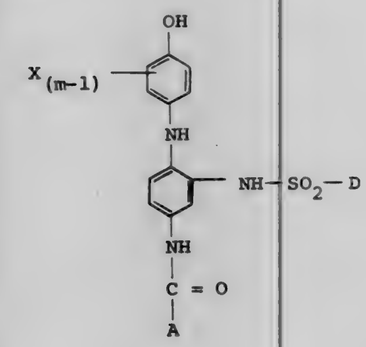
c. reacting said last-named compound with a dye salt of the formula:

to form a compound of the formula:



and

d. removing said CH_3 moiety to form a compound of the formula:



wherein:

X is methyl, methoxy, hydroxy, amino, chloro, or carboxy; *m* is a positive integer from 1 to 2;

A is an alkyl radical having from 9–17 carbon atoms and which can render the compound non-diffusible; and

D is an azo dye moiety.

3,923,780

4-(SUBSTITUTED AZOBENZENESULFONAMIDES AS FASCIOLICIDES

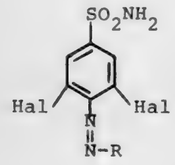
Robert E. Harmon, Kalamazoo, Mich., and Helmut H. Mrozik, Matawan, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 23, 1973, Ser. No. 408,693

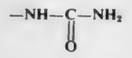
Int. Cl.² A01N *23/00;* **A61K** *3/655;* **C07C** *107/06, 107/08*

U.S. Cl. 260—207 **2 Claims**

1. A compound having the formula:



wherein Hal is fluorine, chlorine, bromine or iodine; and R is phenyl or naphthyl substituted with hydroxy and



3,923,781

GALACTOGLUCOMANNAN BORIC ACID COMPLEX

John K. Rogers, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 22, 1972, Ser. No. 255,756

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07H *23/00;* **C08B** *37/00*

U.S. Cl. 260—209 R **1 Claim**

1. Galactoglucomannan-boric acid complex stable to alkaline hydrolysis.

3,923,782

PRODUCTION OF HETEROPOLYSACCHARIDE BY FERMENTATION OF METHANOL

Robert K. Finn; Alex L. Tannahill, both of Ithaca, N.Y., and Joseph E. Laptewicz, Jr., Groton, Conn., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed May 29, 1973, Ser. No. 364,559

Int. Cl.² C12D *13/04*

U.S. Cl. 260—209 R **1 Claim**

1. A heteropolysaccharide of bacterial origin having an intrinsic viscosity in the range of about 10 to 20 deciliters per gram and comprising the following constituents on a weight per cent basis:

1. Organic matter of 60 to 90 percent comprising
   a. 10 to 30% glucose;
   b. 3 to 15% mannose;
   c. 3 to 15% galactose; and
   d. 5 to 35% pyruvic acid.
2. Inorganic matter of 10 to 40% comprising
   a. 5 to 25% phosphates; and
   b. 5 to 25% cations.

3,923,783

5''-AMINO-4',5''-DIDEOXYAMBUTYROSIN

Takayuki Naito; Susumu Nakagawa, both of Tokyo, and Soichiro Toda, Koshigaya, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

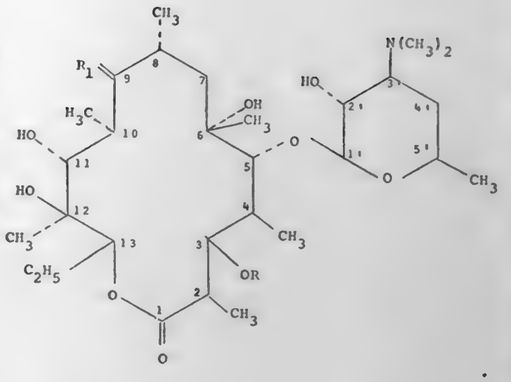
Filed June 15, 1973, Ser. No. 371,085

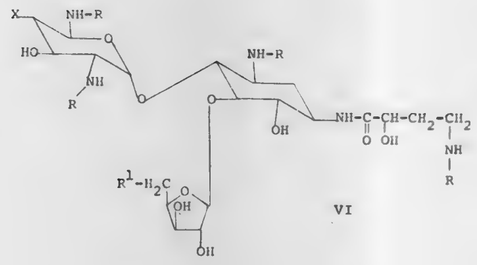
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07H *15/22*

U.S. Cl. 260—210 AB **5 Claims**

1. A compound having the formula





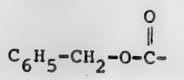
VI

wherein

R signifies acyl and

R_1 signifies O or NOH.

in which X is H, R is H or



and R^1 is N_3 or NH_2; or a pharmaceutically acceptable acid addition salt thereof.

3,923,784

ERYTHROMYCIN A DERIVATIVES

Richard W. Kierstead, and Ronald A. LeMahieu, both of North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 395,465, Sept. 10, 1973, abandoned. This application Feb. 19, 1974, Ser. No. 443,561

Int. Cl.² C07G *3/00*

U.S. Cl. 260—210 E **10 Claims**

1. A compound of the formula

3,923,785

(R)-3-(2-DEOXY-β-D-ERYTHRO-PENTOFURANOSYL)-3,6,7,8-TETRAHYDROIMIDAZO[4,5-D][1,3]DIAZEPIN-8-L

Albert Ryder; Henry W. Dion, both of Detroit; Peter W. Woo, Ann Arbor, and John D. Howells, Grosse Pointe Woods, all of Mich., assignors to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed Apr. 22, 1974, Ser. No. 462,826

Int. Cl.² C07H *19/16*

U.S. Cl. 260—211.5 R **3 Claims**

1. An essentially pure compound having the name (R)-3-(2-deoxy-β-D-erythro-pentofuranosyl)-3,6,7,8-tetrahydroimidazo[4,5-d][1,3]diazepin-8-ol.

3,923,786

1-HETEROCYCLIC CARBAMOYL-N-CARBAMOYLOXY FORMIMIDATES

Russell F. Bellina, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

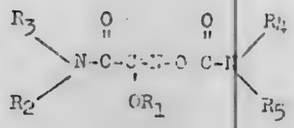
Division of Ser. No. 55,290, July 15, 1970, Pat. No. 3,755,403. This application June 13, 1973, Ser. No. 369,607

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07D *295/18*

U.S. Cl. 260—239 BF **3 Claims**

1. A compound of the formula



where:

R_1 is glycidyl; alkyl of 1 through 4 carbon atoms; alkenyl of 3 through 4 carbon atoms; alkynyl of 3 through 4 carbon atoms; cycloalkyl of 3 through 6 carbon atoms; or alkyl of 1 through 4 carbon atoms substituted with 1 through 3 halogen atoms or with a methoxy, ethoxy, nitro, cyano, hydroxy, methylthio, carboxy, carbomethoxy, carboethoxy, amino, methylamino, ethylamino, dimethylamino, methylethylamino, methylpropylamino, or diethylamino group;

R_2 and R_3 are taken together and are alkylene of 4 through 6 carbon atoms;

R_4 is hydrogen, alkyl of 1 through 3 carbon atoms, allyl, or propargyl; and

R_5 is hydrogen or methyl.

3,923,787

α-PHOSPHINIMINE PENICILLINS AND THEIR PREPARATION

John Peter Clayton, Horsham, and Ronald Hubbard, Dorking, both of England, assignors to Beecham Group Limited, England

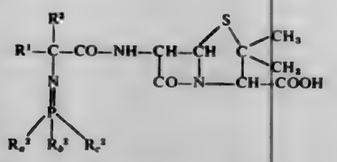
Filed July 5, 1973, Ser. No. 376,271

Claims priority, application United Kingdom, July 13, 1972, 32919/72

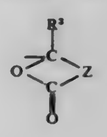
Int. Cl.[2] C07D *499/02*

U.S. Cl. 260—239.1 **9 Claims**

1. A process for the preparation of a penicillin of formula (I):



or a pharmaceutically acceptable salt or ester thereof, said ester being selected from the group consisting of lower alkanoyloxy-(lower alkyl), lower alkanoyloxy(lower alkyl)(-lower alkyl) and lactone esters of the formula (II):



(II),

wherein

R^3 is hydrogen, and

Z is lower alkylene, lower alkynyl or 1,2-phenylene, unsubstituted or substituted in the phenyl ring by halo, lower alkoxy or lower alkyl,

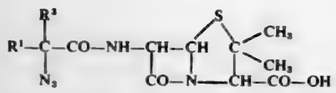
said esters being readily hydrolyzable in vivo, wherein

R^1 is hydrogen, lower alkyl, cyclohexyl, phenyl, p-hydroxyphenyl, 1,4-cyclohexadienyl, 3-thienyl or 3-pyridyl;

R^3 is as above defined, or

R^1 and R^3 together with the carbon atom to which they are joined form a cyclohexyl ring; and

R_a^2, R_b^2 and R_c^2 are the same or different and each is methyl, ethyl, isopropyl, n-butyl, n-octyl, 2-cyanoethyl, ethoxy, dimethylamino, phenyl, p-methoxyphenyl, p-tolyl or m-tolyl, which comprises reacting a compound of formula (III):

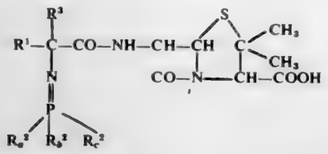


wherein R^1 and R^3 have the above meaning, or a salt or ester thereof as above defined, with a phosphine compound of the formula (IV):

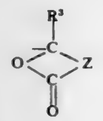


in which R_a^2, R_b^2 and R_c^2 have the above meaning.

4. A penicillin of the formula (I):



or a pharmaceutically acceptable salt or ester thereof, said ester being selected from the group consisting of lower alkanoyloxy(lower alkyl), lower alkanoyloxy(lower alkyl)(-lower alkyl) and lactone esters of the formula (II):



(II),

wherein

R^3 is hydrogen, and

Z is lower alkylene, lower alkynyl or 1,2-phenylene, unsubstituted or substituted in the phenyl ring by halo, lower alkoxy or lower alkyl,

said esters being readily hydrolyzable in vivo, wherein

R^1 is hydrogen, lower alkyl, cyclohexyl, phenyl, p-hydroxyphenyl, 1,4-cyclohexadienyl, 3-thienyl or 3-pyridyl;

R^3 is as above defined, or

R^1 and R^3 together with the carbon atom to which they are joined form a cyclohexyl ring; and

R_a^2, R_b^2 and R_c^2 are the same or different and each is methyl, ethyl, isopropyl, n-butyl, n-octyl, 2-cyanoethyl, ethoxy, dimethylamino, phenyl, p-methoxyphenyl, p-tolyl or m-tolyl.

3,923,788

PENICILLINS

Harry Ferres, Horsham; Adrian Victor Kemmenoe, Westcott, and Desmond John Best, Sutton, all of England, assignors to Bayer Aktiengesellschaft, Germany

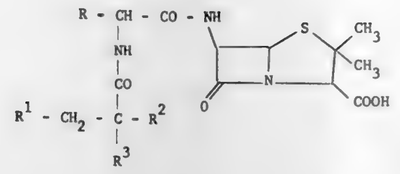
Filed May 3, 1974, Ser. No. 466,814

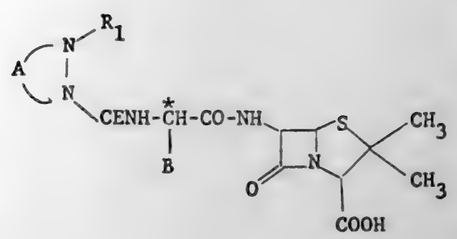
Claims priority, application United Kingdom, May 4, 1973, 21203/73

Int. Cl.[2] C07D *499/44*

U.S. Cl. 260—239.1 **15 Claims**

1. A penicillin of formula (I):





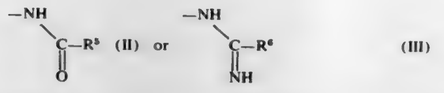
(I)

wherein

R is phenyl, hydroxyphenyl, halophenyl, nitrophenyl, alkoxyphenyl having 1–3 carbon atoms in the alkoxy part, aminophenyl, 2- or 3-thienyl, cycloalkyl having 3-7 carbon atoms in the cyclo part, cycloalkenyl having 5–7 carbon atoms in the cyclo part, or alkyl having 1–4 carbon atoms;

R^1 is 2- or 3-thienyl, indol-3-yl or 1H-imidazol-5-yl;

R^2 is



(II) or (III)

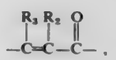
in which R^5 is amino, mono- or di-alkylamino having 1–4 carbon atoms in the alkyl part, cyclohexylamino, hydrogen, alkyl or 1–4 carbon atoms or phenyl, and R^6 is amino, mono- or di-alkylamino having 1–4 carbon atoms in the alkyl part or cyclohexylamino;

R^3 is hydrogen or alkyl of 1–3 carbon atoms; or a pharmaceutically acceptable salt or a pharmaceutically acceptable hydrolyzable ester which converts to the free acid form in vivo.

or a pharmaceutically acceptable nontoxic salt thereof wherein

R_1 is hydrogen, straight or branched chain alkyl of one to five carbon atoms, monoaralkyl of up to eight carbon atoms, monoaryl, or thienyl; E is oxygen or sulfur; and C* is a carbon atom constituting a center of chirality;

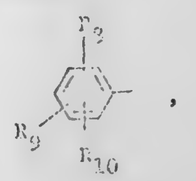
A is a moiety of the formula:



wherein

R_2 and R_3 are the same or different and each is hydrogen, straight or branched chain alkyl of one to five carbon atoms, monoaralkyl of up to eight carbon atoms, monoaryl, or thienyl;

B is a moiety of the formula:









3,923,789

PENICILLINS

Wilfried Schrock; Karl-Georg Metzger, and Hans-Bodo Konig, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Apr. 15, 1974, Ser. No. 461,227

Claims priority, application Germany, Apr. 19, 1973, 2320039

Int. Cl.[2] C07D *499/46*

U.S. Cl. 260—239.1 **67 Claims**

1. A compound of the formula



wherein

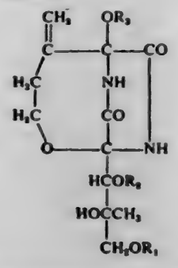
R_8, R_9 and R_{10} are the same or different and each is hydrogen, fluorine, chlorine, bromine, iodine, lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulphonyl, sulphamyl, nitro, cyano, di(lower alkyl)amino, lower alkanoylamino, lower alkanoyloxy, lower alkylsulphonylamino, trifluoromethyl or hydroxy.

3,923,790
DIAZA-OXA-BICYCLODECANE DERIVATIVES AND ACYL DERIVATIVES THEREOF

Hiroshi Imanaka, Ikeda; Takashi Kamiya, Suita; Shizuo Maeno, Osaka; Toshio Miyoshi, Ibaraki; Norimasa Miyairi, Suita; Hatsuo Aoki, Ikeda; Masanobu Kohsaka, Suita; Tadaaki Komori, Takatsuki, and Heiichi Sakai, Ikeda, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 188,554, Oct. 12, 1971, abandoned. This application Apr. 23, 1974, Ser. No. 463,382
Claims priority, application Japan, Oct. 12, 1970, 45-89840
Int. Cl.² C07D *498/08*
U.S. Cl. 260—239.3 B **10 Claims**

1. A compound selected from the group of compounds represented by the formula



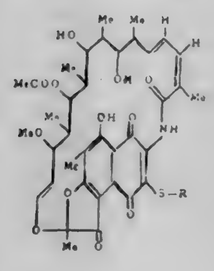
wherein R_1, R_2 and R_3 are selected from the group consisting of hydrogen and acyl and may be the same or different, the acyl group being selected from the group consisting of alkanoyl having from 2 to 20 carbon atoms; alkanoyl interrupted by a sulfur atom having 2 to 10 carbon atoms; alkenoyl having from 2 to 10 carbon atoms; benzoyl which may be substituted by one or more substituents selected from the group consisting of halogen, nitro, lower alkyl having from 1 to 4 carbon atoms, lower alkoxy having from 1 to 2 carbon atoms, and alkanoyloxy having from 1 to 4 carbon atoms; lower alkanoyl and lower alkenoyl each substituted by phenyl which may be substituted by halogen or alkoxy having from 1 to 3 carbon atoms, wherein said alkane or alkene moiety may be interrupted by an oxygen atom; lower alkanoyl substituted by thienyl; cyclohexylcarbonyl; 3-methoxycarbonyl-propionyl; and heterocyclic ring carbonyl and benzenefused heterocyclic ring carbonyl, said heterocyclic ring and benzenefused heterocyclic ring being selected from the group consisting of pyridyl, furyl, thienyl, tetrahydrothienyl and benzothiazolinyl.

3,923,791
PREPARATION OF THIOETHERS OF RIFAMYCIN S AND RIFAMYCIN SV

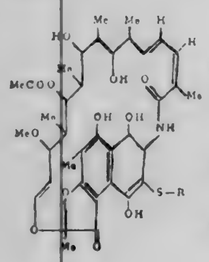
Walter D. Celmer, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 1, 1974, Ser. No. 456,721
Int. Cl.² C07D *498/02*
U.S. Cl. 260—239.3 **6 Claims**

1. A 3-thioether of rifamycin S and rifamycin SV having the formulae selected from the group consisting of



and



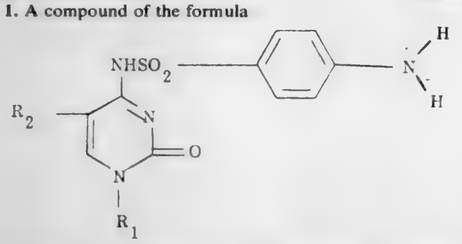
wherein R is alkyl containing from 2 to 5 carbon atoms, allyl, phenyl and cyclohexyl.

3,923,792
SULFACYTOSINE DERIVATIVES

Harry Allen Albrecht, Towaco, and John Thomas Plati, Rutherford, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed June 19, 1974, Ser. No. 480,784
Int. Cl.² C07D *239/44*
U.S. Cl. 260—239.75 **5 Claims**

1. A compound of the formula



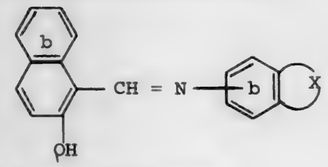
wherein R_1 is cyclo-lower alkyl or cyclo-lower alkyl-lower alkyl and R_2 is hydrogen; or a pharmaceutically acceptable salt thereof.

3,923,793
HETEROCYCLIC AMINE DYESTUFFS

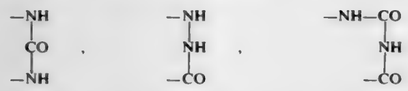
Eberhard Mundlos, Heusenstamm, and Theodor Papenfuhs, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Feb. 11, 1974, Ser. No. 441,354
Claims priority, application Germany, Feb. 15, 1973, 2307341
Int. Cl.² C07D *235/04, 239/72*; **C07C** *39/14*
U.S. Cl. 260—240 F **4 Claims**

1. A water-insoluble dyestuff of the formula



in which X is a radical of the formula



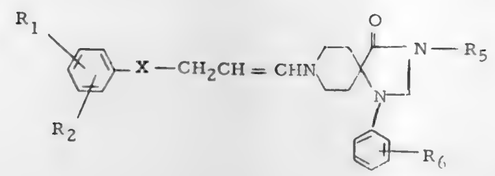
or of the formula —NH — CO — CO — NH — and the nuclei *b* may contain identical or different substituents and the substituents are chlorine, bromine, alkyl groups having 1 to 4 carbon atoms, alkoxy groups having 1 to 4 carbon atoms, nitro, cyano, hydroxy, carbonamide, sulfonamide and laked sulfonic acid groups.

3,923,794
NOVEL PROPENYLAMINE DERIVATIVES AND PROCESS FOR THE PRODUCTION THEREOF

Isamu Maruyama; Masaru Nakao; Kikuo Sasajima; Izumi Yanagihara, all of Osaka; Shigeho Inaba, and Hisao Yamamoto, both of Hyogo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 283,025, Aug. 23, 1972, Pat. No. 3,840,529. This application July 10, 1974, Ser. No. 487,401
Claims priority, application Japan, Aug. 26, 1971, 46-65641
Int. Cl.² C07D *471/10*
U.S. Cl. 260—240 A **1 Claim**

1. A propenylamine derivative of the formula



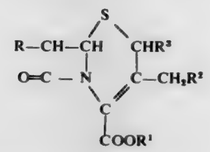
wherein R_1 is a hydrogen atom, a halogen atom, a lower alkyl, lower alkoxy, nitro, lower alkanoylamino or trifluoromethyl group; R_2 is a hydrogen or halogen atom; X is an oxygen atom, a sulfur atom, a sulfinyl or sulfonyl group; R_5 is a hydrogen atom or a lower alkanoyl group and R_6 is a hydro atom, a halogen atom or a lower alkyl group and the pharmaceutically acceptable addition salts thereof.

3,923,795
2-ALKOXYCEPHALOSPORINS

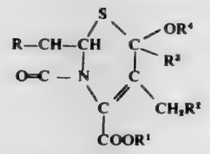
Douglas O. Spry, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed June 19, 1972, Ser. No. 263,907
Int. Cl.² C07D *501/20*
U.S. Cl. 260—243 C **16 Claims**

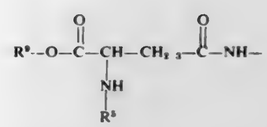
1. A process for converting a cephalosporin or a 2-methylcephalosporin of the formula



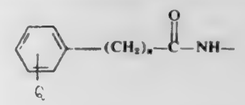
to its corresponding 2-alkoxycephalosporin of the formula



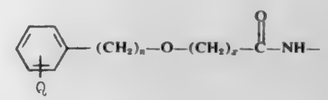
in which, in the above formulae,
R is H_2N-; phthalimido;



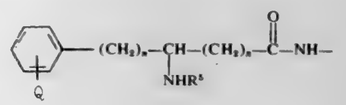
in which R^9 is hydrogen or any of the groups of R^1 as hereinbelow defined and R^5 is hydrogen, t-butyloxycarbonyl, benzyloxycarbonyl cyclopentyloxycarbonyl, or adamantyloxycarbonyl;



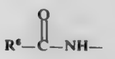
in which Q is hydrogen, C_1-C_3 alkyl, C_1-C_3 alkoxy, nitro, hydrogen, or trifluoromethyl, and *n* is 0 or an integer from 1 to 3;



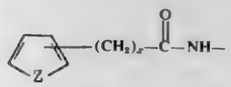
in which *x* is an integer from 1 to 3 and Q and *n* are as defined above;



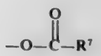
in which Q, *n* and R^5 are as defined above;



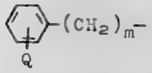
in which R^6 is hydrogen or C_1-C_6 alkyl; or



in which Z is oxygen or sulfur and *x* is as defined above;
R^1 is hydrogen or the residue of an ester group which is removable by saponification, hydrogenation or acid treatment;
R^2 is hydrogen;



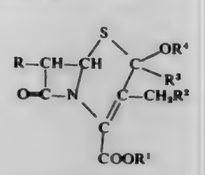
in which R^7 is hydrogen, C_1-C_6 alkyl, C_3-C_7 cycloalkyl, or



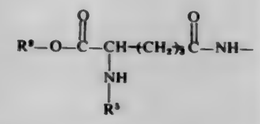
in which Q is hydrogen, C_1-C_3 alkyl, C_1-C_3 alkoxy, nitro, halogen, or trifluoromethyl, and *m* is 0 or 1, or —O—R^7 in which R^7 is as defined above;
R^3 is hydrogen or methyl; and
R_4 is C_1-C_4 alkyl,
which comprises reacting said cephalosporin or 2-methylcephalosporin in the presence of a C_1-C_4 alcohol with a source of positive halogen selected from the group con-

sisting of chlorine, bromine, sulfuryl chloride, sulfuryl bromide, and N-halogeno amide or imide, and an organic hypohalide.

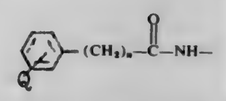
6. A compound of the formula



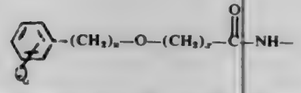
in which R is H_2N-; phthalimido;



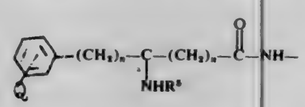
in which R^8 is hydrogen or any of the groups of R^1 as hereinbelow defined, and R^5 is hydrogen, t-butyloxycarbonyl, benzyloxycarbonyl, cyclopentyloxycarbonyl, or adamantyloxycarbonyl;



in which Q is hydrogen, C_1-C_3 alkyl, C_1-C_3 alkoxy, nitro, hydrogen, or trifluoromethyl, and n is 0 or an integer from 1 to 3;



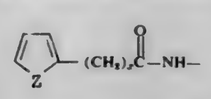
in which *x* is an integer from 1 to 3 and Q and n are as defined above;



in which Q, *n* and R^5 are as defined above;



in which R^6 is hydrogen or C_1-C_6 alkyl; or



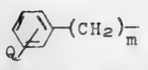
in which Z is oxygen or sulfur and x is as defined above;

R^1 is hydrogen, C_1-C_4 alkyl, 2,2,2-trichloroethyl, benzyl, benzhydryl, p-methoxybenzyl, p-nitrobenzyl, or phthalimidomethyl;

R^2 is hydrogen;



in which R^7 is hydrogen, C_1-C_6 alkyl, C_5-C_7 cycloalkyl,



in which Q is hydrogen, C_1-C_3 alkyl, C_1-C_3 alkoxy, nitro, halogen, or trifluoromethyl; and m is 0 or 1; or -O-R^7 in which R^7 is as defined above;

R^3 is hydrogen or methyl; and

R^4 is C_1-C_4 alkyl.

3,923,796

CERTAIN 6,7-DIOXO-2H-PYRROLO-[2,1-B]THIAZINES

Henry Rapoport, Berkeley, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

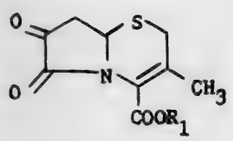
Division of Ser. No. 289,382, Sept. 15, 1972, Pat. No. 3,809,700, which is a division of Ser. No. 48,550, June 22, 1970, Pat. No. 3,714,156. This application Dec. 17, 1973, Ser. No. 425,470

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07D *499/00, 501/04, 209/00, 221/04*

U.S. Cl. 260—243 R **3 Claims**

1. A compound of the formula:



where R_1 is hydrogen, lower alkyl of from one to four carbon atoms, benzyl, p-methoxybenzyl or trichloroethyl.

3,923,797

SUBSTITUTED CARBOXIMIDIC ACID ESTERS OF 7-(2-ERCAPTOACETAMIDO) CEPHALOSPORANIC ACID DERIVATIVES

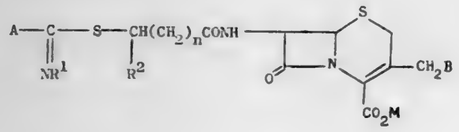
Peter H. L. Wei, Springfield, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Mar. 18, 1974, Ser. No. 452,014

Int. Cl.² C07D *501/28, 501/40;* **A61K** *31/545*

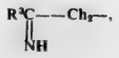
U.S. Cl. 260—243 C **23 Claims**

1. A compound of the formula:

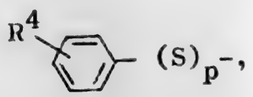


wherein

A is a member selected from the group consisting of alkyl of 1 to 6 carbon atoms;



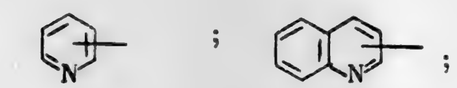
in which R^3 is alkyl of 1 to 6 carbon atoms;
arylcarboxamidomethyl of 8 to 12 carbon atoms;
alkanoylamidomethyl of 3 to 8 carbon atoms;
α-cyanobenzyl;

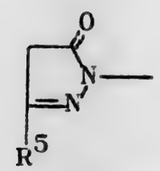


in which R^4 is hydrogen, dialkylamino of 2 to 6 carbon atoms or halo and *p* is 0 or 1;

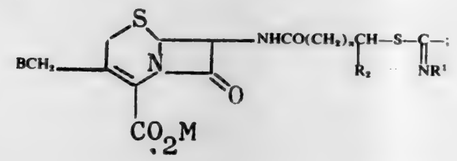


in which X is O, S or NH;

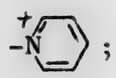




where R^5 is hydrogen, alkyl of 1 to 6 carbon atoms and phenyl; and



B is a member selected from the group consisting of —H, alkanoyloxy of 2 to 6 carbon atoms, or when taken with the 3-carboxy group,



M is a member selected from the group consisting of —H, an alkali metal and —NH_4;

R^1 is a member selected from the group consisting of —H, alkyl of 1 to 6 carbon atoms and aryl of 6 to 10 carbon atoms;

R^2 is a member selected from the group consisting of —H, alkyl of 1 to 6 carbon atoms and aryl of 6 to 8 carbon atoms;

n is one of the integers 0, 1 or 2; and

the pharmaceutically acceptable acid addition salts thereof.

3,923,798

PROCESS FOR RECOVERING CEPHALOSPORIN C FROM AQUEOUS SOLUTIONS THEREOF

Satoshi Horii; Nariakira Mizokami, both of Osaka; Masahiko Fujino, Hyogo; Susumu Shinagawa, Osaka; Michihiko Ochiai, Osaka, and Tetsuya Okutani, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 229,169, Feb. 24, 1972, Pat. No. 3,819,619. This application Dec. 12, 1973, Ser. No. 424,153

Claims priority, application Japan, Feb. 26, 1971, 46-10063; Feb. 26, 1971, 46-10137; Aug. 17, 1971, 46-62417

Int. Cl.² C07D *501/12, 501/26*

U.S. Cl. 260—243 C **7 Claims**

1. A process for recovering cephalosporin C from an aqueous solution thereof, which comprises reacting said solution with isobornyloxycarbonyl chloride or an isobornyloxycarbonylpyridinium chloride compound to produce the corresponding N-isobornyloxycarbonylcephalosporin C, recovering said N-isobornyloxycarbonylcephalosporin C by extraction or precipitation, and removing the protective isobornyloxycarbonyl group by adding an acid to give a pH of less than about 2.5 to yield said cephalosporin C.

3,923,799

SUBSTITUTED SULFONYLACETAMIDO CEPHALOSPORINS

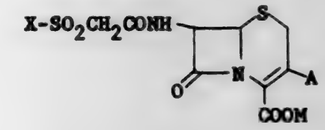
Robert M. DeMarinis, King of Prussia, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 249,858, May 3, 1972, Pat. No. 3,865,819. This application Dec. 3, 1974, Ser. No. 529,164

Int. Cl.² C07D *501/28*

U.S. Cl. 260—243 C **5 Claims**

1. A compound of the structure:



where:

X is CF_3;

A is hydrogen, methyl, acetoxymethyl, or pyridiniummethyl;

and M is hydrogen, alkali metal cation, nontoxic ammonium cation, or when A is pyridiniummethyl an anionic charge.

3,923,800

NOVEL PHENOTHIAZINES

Pierre Henri Derible, Le Perreux; Jean-Paul Lavaux, Paris, and Jacques Laurent, Chilly-Mazarin, all of France, assignors to Roussel-UCLAF, Paris, France

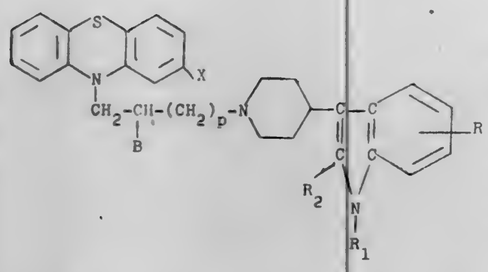
Filed Jan. 9, 1975, Ser. No. 539,639

Claims priority, application France, Jan. 21, 1974, 74.01880

Int. Cl.² C07D *209/14*

U.S. Cl. 260—243 A **11 Claims**

1. A compound selected from the group consisting of a compound of the formula



wherein X is selected from the group consisting of hydrogen, chlorine, trifluoromethyl, methylthio and methoxy, B is selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, p is 0 or 1, R is selected from the group consisting of hydrogen and alkoxy of 1 to 3 carbon atoms and R_1 and R_2 are individually selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts.

3,923,801

OXAZINOBENZOTHIAZINE 6,6-DIOXIDES

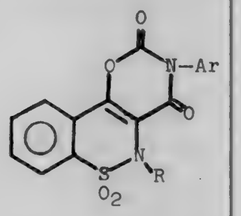
Chris Royce Rasmussen, Ambler, Pa., assignor to McNeil Laboratories, Incorporated, Ft. Washington, Pa.

Filed Sept. 23, 1974, Ser. No. 508,115

Int. Cl.² C07D *279/02*

U.S. Cl. 260—243 R **5 Claims**

1. A compound represented by the formula



wherein R is lower alkyl and Ar is an aryl radical selected from the group consisting of phenyl and substituted phenyl, wherein the substituent in said substituted phenyl is selected from the group consisting of lower alkyl, lower alkoxy, halo and trifluoromethyl.

3,923,802

PROCESS FOR PREPARING METAL SALTS OF DICHLOROISOCYANURIC ACID

Howard W. Hill, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 5, 1974, Ser. No. 485,873

Int. Cl.² C07D *251/28*

U.S. Cl. 260—248 C **3 Claims**

1. A process for preparing an alkali metal salt of dichloroisocyanuric acid comprising reacting an aqueous solution of the corresponding trialkali metal salt of cyanuric acid with a solution of trichloroisocyanuric acid in a water immiscible solvent which is relatively resistant to chlorination, said reaction to be carried out so that the reactants are maintained in the liquid phase, and said trichloroisocyanuric acid to be used at a ratio in excess of 2 mols per mol of trialkali metal salt of cyanuric acid.

3,923,803

2(1H)-QUINOZALINONES AND PROCESS THEREFOR

Shigeho Inaba, Takarazuka; Kei Takahashi, Takatsuki; Michihiro Yamamoto, Takarazuka; Kazuo Mori, Kobe; Kikuo Ishizumi, Minoo, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 840,856, July 10, 1969, abandoned. This application May 12, 1972, Ser. No. 252,947

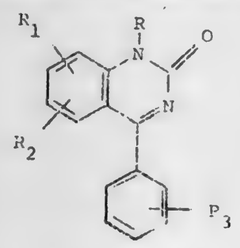
Claims priority, application Japan, July 18, 1968, 43-50982; July 18, 1968, 43-50983; Oct. 18, 1968, 43-76377

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

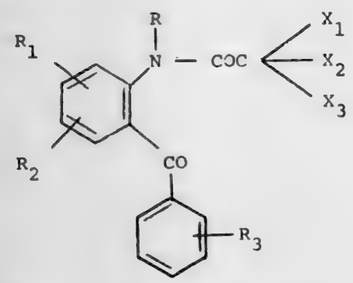
Int. Cl.² C07D *239/82*

U.S. Cl. 260—251 QB **3 Claims**

1. A process for producing a quinazoline of the formula



wherein R is hydrogen, C_{1-4} alkyl, C_2–C_4 alkenyl, benzyl, (C_{1-4} alkoxy) C_{1-4} alkyl or di(C_{1-4} alkyl) amino (C_{1-4} alkyl); R_1, R_2 and R_3 are each selected from the group consisting of hydrogen, halogen, C_{1-4} alkyl, C_{1-4} alkoxy, nitro, C_{1-4} alkylthio, C_{1-4} alkylsulfonyl and a trifluoromethyl group, which comprises contacting with ammonia a trihaloacetamidobenzophenone of the formula



wherein each of X_1, X_2 and X_3 is independently a halogen atom; and R, R_1, R_2 and R_3 are as defined above.

3,923,804

NITRO-PYRIMIDINES

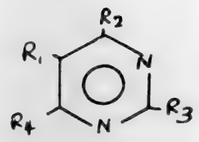
Michael E. Sitzmann, Chevy Chase, Md., and Joseph C. Dacons, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 4, 1972, Ser. No. 298,088

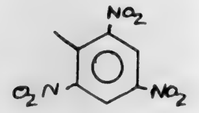
Int. Cl.² C07D *239/50*

U.S. Cl. 260—251 R **5 Claims**

1. Pyrimidines of the formula



wherein R_1 is selected from the group consisting of H and NO_2 and R_2, R_3 and R_4 are selected from the group consisting of H and



3,923,805

PROPOXYPHENE DERIVATIVE

Davide Della Bella; Arnaldo Gandini, both of Milan; Dario Chiarino, Monza, and Vittorio Ferrari, Milan, all of Italy, assignors to Whitefin Holding S.A., Lugano, Switzerland

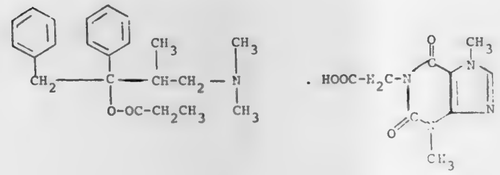
Filed Dec. 27, 1972, Ser. No. 318,766

Claims priority, application Italy, Dec. 30, 1971, 3312/71

Int. Cl.² C07D *473/10*

U.S. Cl. 260—253 **1 Claim**

1. The compound of the formula,



3,923,806

DISPERSE DYES BASED ON ISOINDOLENE DERIVATIVES

Gustav Bock, Neustadt, and Wolfgang Elser, Frankenthal, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

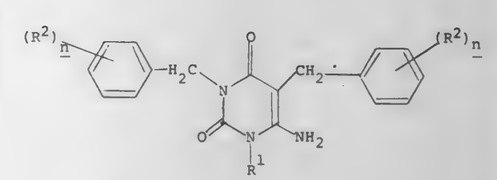
Continuation-in-part of Ser. No. 247,820, April 26, 1972, abandoned. This application Mar. 7, 1974, Ser. No. 448,947

Claims priority, application Germany, May 3, 1971, 2121524

Int. Cl.² C07D *239/62*

U.S. Cl. 260—256.4 C **5 Claims**

1. A disperse dye of the formula



in which R′ and R″ are alkyl or 1 to 5 carbon atoms, 2-chloroethyl, 2-cyanoethyl, 2-ethoxyethyl, 2-methoxyethyl, 3-methoxypropyl, 3-ethoxypropyl, 3-isopropoxypropyl, 2-phenylethyl, benzyl or phenyl, and wherein R′ and R″ may be identical or different.

3,923,807

6-AMINOURACIL DERIVATIVES

Yoshiyasu Furukawa; Masahiro Suno, and Sawami Nose, all of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sept. 10, 1973, Ser. No. 395,448

Int. Cl.² C07D *239/06*

U.S. Cl. 260—256.4 C **13 Claims**

1. A 6-aminouracil of the formula

wherein R^1 is lower alkyl having up to 4 carbon atoms which may be substituted with hydroxy or lower alkoxy, having up to 4 carbon atoms, R^2 is halogen, nitro or lower alkyl having up to 4 carbon atoms and *n* is 0, 1 or 2.

3,923,808

BICYCLIC IMIDAZOLES AND PYRIMIDINES

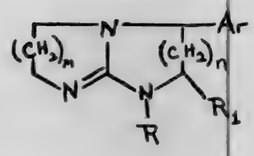
Josephus Ludovicus Hubertus Van Gelder; Alfons Herman Margaretha Raeymaekers, both of Beerse; Leopold Frans Corneel Roevens, Rijkevorsel, and Willy Joannes Van Laerhoven, Ravels, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 313,285, Dec. 8, 1972, Pat. No. 3,865,836. This application Aug. 13, 1974, Ser. No. 499,744

Int. Cl.² C07D *239/00*

U.S. Cl. 260—256.4 F **3 Claims**

1. A member selected from the group of compounds having the formula:



and the therapeutically active acid addition salts thereof, wherein:

either of *m* or *n* is the integer 1, the other being zero;

R is a member selected from the group consisting of hydrogen and benzyl;

R_1 is a member selected from the group consisting of hydrogen and loweralkyl, provided that, when said R_1 is loweralkyl, then said *m* is 1 and said *n* is zero; and

Ar is a member selected from the group consisting of phenyl, loweralkylphenyl, halophenyl and di-halophenyl.

3,923,809

5-ALKOXY-5-HETEROCYCLIC-1,2,3,6-TETRAHYDRO-4(5H)-PYRIMIDINETHIONES

Bernard Loev, Broomall, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

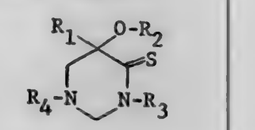
Filed Aug. 27, 1973, Ser. No. 392,154

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07D *239/06*

U.S. Cl. 260—256.5 R **6 Claims**

1. A compound of the formula



in which:

R_1 is 2-pyridyl, 2-pyrimidyl, 4-pyrimidyl, 2-pyrazinyl, 2-pyrrolyl, 2-quinolyl, 2-thiazolyl or 4-thiazolyl;

R_2 is lower alkyl, allyl or cyclopropanemethyl and

R_3 and R_4 are hydrogen or lower alkyl or a pharmaceutically acceptable acid addition salt thereof.

3,923,810

PERFLUOROALKANESULFONAMIDES N-SUBSTITUTED BY HETEROCYCLIC GROUPS

Joseph Kenneth Harrington, Edina; Donald C. Kvam, North Oaks; Arthur Mendel, Vadnais Heights, and Jerry E. Robertson, North Oaks, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 142,381, May 11, 1971, Pat. No. 3,801,588, which is a continuation-in-part of Ser. No. 837,932, June 30, 1969, Pat. No. 3,637,729, which is a continuation-in-part of Ser. No. 588,338, Oct. 21, 1966, abandoned. This application Jan. 28, 1974, Ser. No. 437,502

Int. Cl. C07d *239/00, 211/00*

U.S. Cl. 260—256.5 R **6 Claims**

1. A compound of the formula:

R_fSO_2NHHet

and metal, ammonium and organic amine salts thereof wherein R_f is a perfluoroalkyl group containing one to four carbon atoms, and Het is imidazo[1,2a]pyridinylphenyl or imidazo[1,2a]pyrimidylphenyl.

3,923,811

PERFLUOROALKANESULFONAMIDES N-SUBSTITUTED BY HETEROCYCLIC GROUPS

Joseph Kenneth Harrington, Edina; Donald C. Kvam, North Oaks; Arthur Mendel, Vadnais Heights, and Jerry E. Robertson, North Oaks, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 142,381, May 11, 1971, Pat. No. 3,801,588, and a continuation-in-part of Ser. No. 837,932, June 30, 1969, Pat. No. 3,637,729, which is a continuation-in-part of Ser. No. 588,338, Oct. 21, 1966, abandoned. This application Jan. 28, 1974, Ser. No. 437,499

Int. Cl.² C07D *215/40*

U.S. Cl. 260—270 D **5 Claims**

1. A compound of the formula:

$R_fSO_2NHHet - Y_n$

wherein R_f is a perfluoroalkyl group containing one to four carbon atoms, *Het* is quinolinyl, *Y* is lower alkyl, halogen, cyano, lower alkoxy, nitro, amino and lower alkanoylamido and *n* is 0–3, or an alkali metal, alkaline earth metal, zinc, alkyl amine or ammonium salt thereof.

3,923,812

SYNTHESIS OF ELYMOCLAVINE

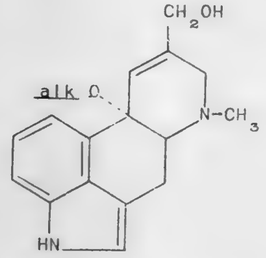
Nicholas J. Bach, and Edmund C. Kornfeld, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 2, 1974, Ser. No. 494,149

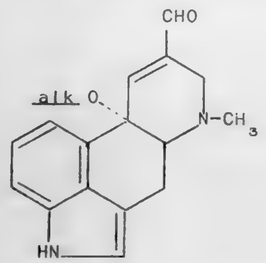
Int. Cl.² C07D *457/02*

U.S. Cl. 260—285.5 **4 Claims**

1. A two-step process for producing elymoclavine which comprises the steps of (1) oxidizing a D-6-methyl-8-hydroxymethyl-10α-alkoxy-8-ergolene of the formula



wherein alk is (C_1-C_3) alkyl to yield a D-6-methyl-8-formyl-10α-alkoxy-8-ergolene of the formula



wherein alk has the same meaning as hereinabove, and (2) reducing said 8-formyl-8-ergolene with a metal-aqueous acid reducing system to form elymoclavine.

3,923,813

DERIVATIVES OF 2-AMINOINDANES

Pierre M. Vanhoof, and Pierre M. Clarebout, both of Brussels, Belgium, assignors to A. Christiaens Societe Anonyme, Brussels, Belgium

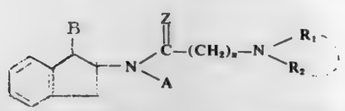
Continuation-in-part of Ser. No. 99,643, Dec. 12, 1970, abandoned. This application Mar. 8, 1973, Ser. No. 339,454

Claims priority, application United Kingdom, Dec. 19, 1969, 6200/69

Int. Cl.² C07D *295/14*

U.S. Cl. 260—293.62 **12 Claims**

1. A new derivative of 2-aminoindane of the formula:



(I)

wherein *n* is equal to 1, 2 or 3, Z represents two hydrogen atoms or an oxygen atom, the $(CH_2)_n$ group having a straight or branched chain, R_1 represents hydrogen, a lower alkyl or hydroxyalkyl radical containing 1 to 3 carbon atoms or a lower alkenyl or alkynyl radical containing 2 or 3 carbon atoms, R_2 represents a lower alkyl or hydroxyalkyl radical containing 1 to 3 carbon atoms or a lower alkenyl or alkynyl radical containing 2 or 3 carbon atoms, whereby R_1 and R_2 may be identical or different and may also form together with the adjacent nitrogen atom a nitrogenous heterocyclic ring selected among the piperidino, pyrrolidino, morpholino and piperazino rings, A is a 2-pyridyl radical, an unsubstituted phenyl radical or a phenyl radical substituted by at least one substituent selected among the lower alkyl, lower alkoxy, hydroxy, trifluoromethyl, halo and nitro groups in the ortho, meta and/or para position, and B represents hydrogen, an alkoxy radical containing 1 to 3 carbon atoms or a group of the formula



in which R_3 and R_4 which may be identical or different represent a lower alkyl or hydroxyalkyl radical containing 1 to 3 carbon atoms, whereby R_3 may also represent hydrogen as well as the pharmaceutically acceptable acid addition salts of said derivative of Formula (I).

3,923,814

6,7-DIHYDROPYRIDO[1,2-A]INDOL-9(8H)ONES

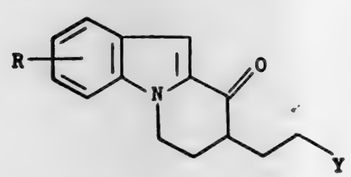
David Llewellyn Coffen, Glen Ridge, and David Allen Katonak, Bloomfield, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 368,430, June 8, 1973, Pat. No. 3,850,934. This application Aug. 28, 1974, Ser. No. 501,315

Int. Cl.² C07D *221/04*

U.S. Cl. 260—293.53 **9 Claims**

1. A compound of the formula



wherein R is hydrogen, amino, nitro, halogen, hydroxy, lower alkyl or lower alkoxy, and Y is halo, lower alkoxy or acyloxy.

3,923,815

DERIVATIVES OF 2-AMINOINDANE THEREOF

Pierre Marie Vanhoof, and Pierre M. Clarebout, both of Brussels, Belgium, assignors to A. Christiaens Societe Anonyme, Brussels, Belgium

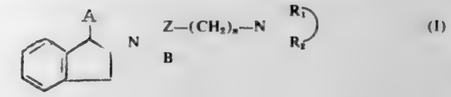
Filed Nov. 6, 1973, Ser. No. 413,304

Claims priority, application United Kingdom, Nov. 6, 1972, 51094/72

Int. Cl.² C07D *295/14*

U.S. Cl. 260—293.62 **13 Claims**

1. A new 2-aminoindane derivative of the formula



(I)

in which *n* is equal to 1, 2, or 3, Z represents a CH_2 or CO group, R_1 and R_2 represent each a lower alkyl or hydroxyalkyl group containing 1 to 3 carbon atoms, and R_1 may also represent hydrogen, R_1 and R_2 also may form with the attached nitrogen atom a nitrogenous heterocyclic ring selected from the group consisting of piperidino, pyrrolidino, morpholino and methylpiperazino, B represents an unsubstituted phenyl group, A represents a methoxy or ethoxy group or a group of the formula



wherein R_3 and R_4 each represent a methyl or ethyl group or may form with the attached nitrogen atom a nitrogeneous heterocyclic ring selected from the group consisting of piperidino, pyrrolidino, morpholino and methylpiperazino, as well as the pharmaceutically acceptable acid addition salts of said compounds of formula I.

3,923,816

2H-PYRAZOLO[4,3-C]PYRIDINES

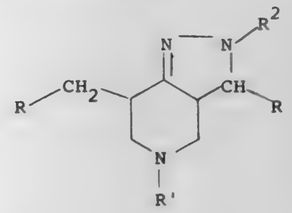
John Krapcho, Somerset, and Chester Frank Turk, Kendall Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed July 22, 1974, Ser. No. 490,176

Int. Cl.² C07D *401/02*

U.S. Cl. 260—293.55 **7 Claims**

1. A compound of the formula



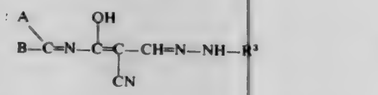
wherein R is



wherein X is H, Cl, F, CF_3, alkyl of from 1 to 4 carbon atoms, or alkoxy of from 1 to 4 carbon atoms, provided each R may be the same or different;
R^1 and R^2 are H, alkyl of from 1 to 4 carbon atoms, hydroxy lower alkyl wherein the alkyl group has from 1 to 4 carbon atoms, alkanoyl of from 1 to 4 carbon atoms or X-substituted phenyl alkyl wherein X and alkyl have the same meaning as above,
and the N-oxides and pharmaceutically acceptable acid addition salts thereof.

3,923,817
2-HYDRAZONOMETHYL-3-HYDROXY-4-AZA-2,4-PENTADIENENITRILES
Kurt Klemm, Allensbach, and Erhard Langenscheid, Konstanz, both of Germany, assignors to Byk Gulden Lomberg Chemische Fabrik Gesellschaft, Konstanz, Germany
Filed Sept. 4, 1973, Ser. No. 393,813
Claims priority, application Luxemburg, Sept. 8, 1972, 66036; Sept. 8, 1972, 66037; Sept. 8, 1972, 66038
Int. Cl.² C07D *295/14*
U.S. Cl. 260—293.87 **19 Claims**

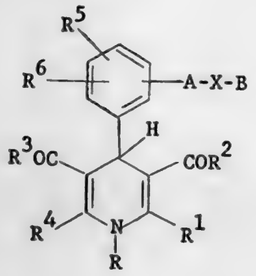
1. A 2-acylhydrazonomethyl-3-hydroxy-5-A-5-B-4-aza-2,4-pentadienenitrile of the formula



wherein
A is a member selected from the group consisting of —H, —OH, $—N(R^8)R^9$ and $—N(R^8)—CO—R^9$;
B is one of the meanings of, but different from, A;
R^3 is $—C(X)—R^4$, $—C(X)—Y—R^4$ or $—C(X)—N(R^5)R^6$;
R^4 is —H, substituted or unsubstituted alkyl having from 1 to 14 carbon atoms, substituted or unsubstituted alkenyl having from 2 to 14 carbon atoms, substituted or unsubstituted alkynyl having from 2 to 14 carbon atoms, substituted or unsubstituted alkoxyalkyl having from 2 to 13 carbon atoms, substituted or unsubstituted alkenyloxyalkyl having up to 13 carbon atoms, substituted or unsubstituted cycloalkyl having from 3 to 6 ring carbon atoms, substituted or unsubstituted phenyl, nuclearly-substituted or unsubstituted phen(lower)alkyl; any substituent of substituted alkyl, substituted alkenyl, substituted alkynyl, substituted alkoxyalkyl and substituted alkenyloxyalkyl being a salt-forming basic group $—N(R^5)R^6$; any substituent of substituted cycloalkyl being methyl or a salt-forming basic group $—N(R^5)R^6$; and any substituent of substituted phenyl or substituted phenalkyl being lower alkyl, lower alkoxy, lower alkylmercapto, alkoxycarbonyl with from 2 to 5 carbon atoms, halo, trifluoromethyl, nitro or cyano;
R^5 is —H, lower alkyl, lower alkoxyalkyl, cycloalkyl with from 3 to 6 ring carbon atoms or, together with R^6, alkylene having from 2 to 5 carbon atoms or a divalent aliphatic chain having from three to five chain members, each of at least two of which is methylene or another lower alkylidene and at least one remaining chain member is, independently, —O—, —S— or $—N(R^7)—$;
R^6 is -H, lower alkyl, lower alkoxyalkyl, cycloalkyl with from 3 to 6 ring carbon atoms or, together with R^5, alkylene having from 2 to 5 carbon atoms or a divalent aliphatic chain having from three to five chain members, each of at least two of which is methylene or another lower alkylidene and at least one remaining chain member is, independently, —O—, —S— or $—N(R^7)—$;
R^7 is -H or lower alkyl;
R^8 is a member selected from the group consisting of —H, lower alkyl, lower alkoxyalkyl, cycloalkyl having from 3 to 6 ring carbon atoms, methyl-substituted cycloalkyl with from 3 to 6 ring carbon atoms and, together with R^9, alkylene having from 2 to 5 carbon atoms or a divalent aliphatic chain having from 3 to 5 chain members, each of at least two of which is methylene or another lower alkylidene and at least one remaining chain member is, independently, —O—, —S— or $—N(R^7)—$;
R^9 is a member selected from the group consisting of —H, lower alkyl, lower alkoxyalkyl, cycloalkyl having from 3 to 6 ring carbon atoms, methyl-substituted cycloalkyl with from 3 to 6 ring carbon atoms and, together with R^8, alkylene having from 2 to 5 carbon atoms or a divalent aliphatic chain having from 3 to 5 chain members, each of at least two of which is methylene or another lower alkylidene and at least one remaining chain member is independently, —O—, —S— or $—N(R^7)—$;
X is =O, =S or $=NR^7$; and
Y is —O— or —S—.

3,923,818
1,4-DIHYDROPYRIDINES
Friedrich Bossert; Horst Meyer, both of Wuppertal-Elberfeld, and Wulf Vater, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany
Filed June 4, 1973, Ser. No. 366,578
Claims priority, application Germany, Dec. 22, 1972, 2228363
Int. Cl.² C07D *213/32*
U.S. Cl. 260—294.8 G **25 Claims**

1. A compound of the formula:



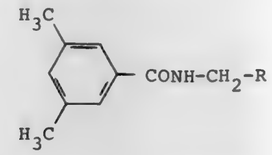
wherein
R is hydrogen, lower alkyl or alkenyl of 2 to 4 carbon atoms; each of R^1 and R^4 is hydrogen or lower alkyl;
each of R^2 and R^3 is lower alkyl, alkenyl of 2 to 4 carbon atoms, furfuryl or a member selected from the group consisting of lower alkoxy, alkenyloxy of 2 to 4 carbon atoms and alkynyloxy of 2 to 4 carbon atoms which is unsubstituted, or substituted by hydroxy or lower alkoxy;
A is oxygen or sulphur;
B is carbo-(lower alkoxy);
X is lower alkylene or hydroxy-(lower alkylene); each of R^5 and R^6 is hydrogen, lower alkyl, lower alkoxy, nitro, halogeno, cyano, amino, lower alkylamino, di-(lower alkyl)amino or acetylamino,
or a nontoxic pharmaceutically acceptable acid addition salt thereof.

3,923,819
CATALYST FOR THE PRODUCTION OF AROMATIC OR HETERO-AROMATIC NITRILES
Theodor Lussling; Hans Schaefer, both of Grossauheim, and Wolfgang Weigert, Offenbach, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany
Division of Ser. No. 74,829, Sept. 23, 1970, abandoned. This application June 22, 1973, Ser. No. 372,673
Claims priority, application Germany, Sept. 26, 1969, 1948715
Int. Cl.² C07D *213/57*
U.S. Cl. 260—294.9 **19 Claims**

1. A process for the production of an aromatic or heterocyclic nitrile from a mixture of an alkyl substituted aromatic or heteroaromatic hydrocarbon selected from the group consisting of lower alkylbenzene, lower alkyl naphthalene, lower alkyl cyanobenzene lower alkyl chlorobenzene, lower alkyl pyridine and lower alkyl quinoline ammonia and oxygen consisting essentially of contacting said mixture in gaseous form with a catalyst consisting essentially of the product prepared by heating to from 650° to 1100°C. a member of the group consisting of (a) a mixture consisting of antimony oxide and tungsten oxide wherein the atomic ratio of antimony to tungsten is from 1.1 to 1 up to 50 to 1, (b) a mixture consisting of antimony oxide, tungsten oxide and vanadium oxide wherein the atomic ratio of antimony to tungsten and vanadium combined is from 1.1 to 1 up to 50 to 1 and the atomic ratio of tungsten to vanadium is from 0.25 to 1 up to 20 to 1, (c) a mixture consisting of antimony oxide, tungsten oxide and at least one other element of the group consisting of manganese, chromium, iron, cobalt, nickel and copper wherein the atomic ratio of antimony to tungsten is from 1.1 to 1 up to 50 to 1 and the atomic ratio of antimony to the total of manganese, chromium, iron, cobalt, nickel and copper is from 4 to 1 up to 20 to 1 with the atomic portion of the total of said manganese, chromium, iron, cobalt, nickel and copper not exceeding the atomic portion of tungsten and (d) a mixture consisting of antimony oxide, tungsten oxide, vanadium oxide and at least one element of the group consisting of manganese, chromium, iron, cobalt, nickel and copper wherein the atomic ratio of antimony to tungsten and vanadium combined is from 1.1 to 1 up to 50 to 1, the atomic ratio of tungsten to vanadium is from 0.25 to 1 up to 20 to 1 and the atomic ratio of antimony to the total of manganese, chromium, iron, cobalt, nickel and copper is from 4 to 1 up to 20 to 1 with the atomic portion of the total of said manganese, chromium, iron, cobalt, nickel and copper not exceeding the combined atomic portion of tungsten and vanadium.

3,923,820
METHOD OF OBTAINING 3,5 DI-METHYLBENZAMID SUBSTITUTES
Cristobal Martinez Roldan; Miguel Fernandez Brana, and Jose Maria Castellano Berlanga, all of Madrid, Spain, assignors to Laboratorios Made, S.A., Madrid, Spain
Filed Apr. 8, 1974, Ser. No. 458,893
Int. Cl.² C07D *213/06*
U.S. Cl. 260—295 AM **4 Claims**

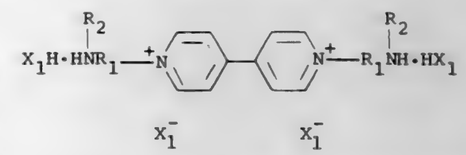
1. A compound having the formula



wherein R is 2-pyridyl, 3-pyridyl or 4-pyridyl.

3,923,821
NOVEL 4,4'-BIPYRIDINIUM SALTS
Phylis T. Moore, Morgantown, W. Va., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Sept. 7, 1973, Ser. No. 395,254
Int. Cl.² C07D *213/22*
U.S. Cl. 260—296 D **8 Claims**

1. A water-soluble viologen salt of the formula:



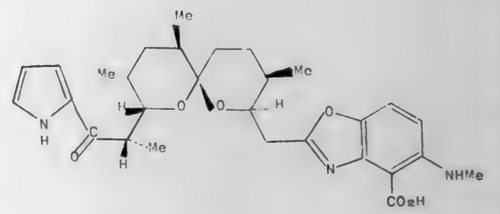
wherein R_1 is propylene or a straight-chain alkylene group having from 6 to 12 carbon atoms in the chain; R_2 is —H or a hydrocarbon group having from 1 to 6 carbon atoms; and X_1 is halide.

3,923,822
6-FLUORO-3,5-DIHALO-2-PYRIDINOLS
Penelope B. Domenico, Fairfax, Va., assignor to The Dow Chemical Company, Midland, Mich.
Filed Dec. 17, 1973, Ser. No. 425,572
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C07D *213/64*
U.S. Cl. 260—297 R **2 Claims**

1. 6-Fluoro-3,5-dibromo-2-pyridinol.
2. 6-Fluoro-3,5-dichloro-2-pyridinol.

3,923,823
ANTIBIOTIC A23187 AND PROCESS FOR PREPARATION THEREOF
Richard M. Gale; Calvin E. Higgens, and Marvin M. Hoehn, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Continuation-in-part of Ser. No. 237,532, March 23, 1972, abandoned. This application Jan. 17, 1974, Ser. No. 434,312
Int. Cl.² C07D *263/56*
U.S. Cl. 260—299 **1 Claim**

1. The antibiotic compound of the formula



or an alkali metal, alkaline earth metal, cadmium or manganese salt thereof.

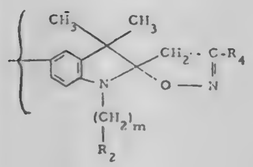
3,923,824

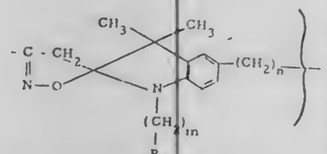
SPIRO (INDOLINE-2,5-ISOXAZOLINE) COMPOUNDS

Hisatake Ono; Harumi Katsuyama, and Shu Watarai, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 185,818, Oct. 1, 1971, abandoned. This application Jan. 21, 1974, Ser. No. 436,394
Claims priority, application Japan, Oct. 1, 1970, 45-86238
Int. Cl.² C07D *263/14*
U.S. Cl. 260—307 F 1 Claim

1. A polymer having the repeating unit represented by the Formula (IV):





wherein/R_2 is hydrogen, hydroxyl, alkoxycarbonyl having alkyl which has 1 to 4 carbon atoms, cyan or phenyl; R_4 is either a direct bond of carbon atoms, an alkylene chain having 1 to 3 carbon atoms or phenylene, m is an integer from 1 to 4; n is either zero, the integer 1 or the integer 2; said polymer having a reduced viscosity of from 0.03 to 0.6 in a one weight percent concentration of tetrahydrofuran at 30.0°C.

3,923,825

PRODUCTION OF ISOOXAZOLE

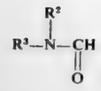
Hans-Juergen Quadbeck-Seeger, Ludwigshafen; Willibald Schoenleben, Heidelberg, and Dieter Schneider, Edingen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed Feb. 27, 1974, Ser. No. 446,330
Claims priority, application Germany, Mar. 1, 1973, 2310185
Int. Cl.² C07D *261/08*
U.S. Cl. 260—307 H 19 Claims

1. A process for the production of isooxazole wherein in a first stage a vinyl ether of the formula (I):

$$R^1-O-CH=CH_2 \qquad (I)$$

in which R^1 is alkyl of 1 to 8 carbon atoms, or said alkyl group substituted by alkoxy of 1–4 carbon atoms or by chlorine, is reacted at a temperature of −10° to +75°C. with an acid halide of phosphorous acid, phosphoric acid, carbonic acid, oxalic acid, sulfurous acid or sulfuric acid and a formamide of the formula (II):



(II)

in which R^2 and R^3 individually are alkyl of 1 to 4 carbon atoms or phenyl; or

R^2 and R^3 together with the adjacent nitrogen atom form heterocyclic ring selected from the group consisting of pyrrolidino, piperidino, morpholino, or pyrrolidone, which may contain another nitrogen atom or an oxygen atom, or in which said alkyl group, said phenyl group or said heterocyclic ring of R^2 and R^3 is substituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or chlorine; and in a second stage the reaction mixture thus formed is reacted at a temperature of 75°–150°C. with hyroxylamine.

3,923,826

SYNTHESIS OF 5-(BETA-METHYLMERCAPTOETHYL)-YDANTOIN

Yoshio Namito; Masahiro Kobayashi, and Takeshi Kojima, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 17, 1974, Ser. No. 480,277
Claims priority, application Japan, June 20, 1973, 48-70168
Int. Cl.² C07D *49/34*
U.S. Cl. 260—309.5 10 Claims

1. A method of synthesizing 5-(β-methylmercaptoethyl) hydantoin which comprises reacting β-methylmercaptopropionaldehyde with reactants consisting essentially of, per mole of β-methylmercaptopropionaldehyde, 1–2 moles of hydrogen cyanide and 1–3 moles of a CO_2 and NH_3 source selected from the group consisting of ammonium bicarbonate, ammonium carbonate and and a mixture of carbon dioxide and ammonia in the presence of 0.1–2 moles of a caustic alkali.

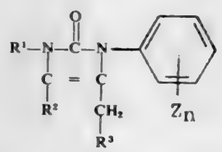
3,923,827

PREPARATION OF 4-IMIDAZOLIN-2-ONES

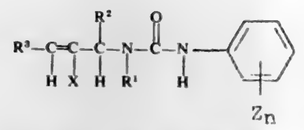
William D. Dixon, Kirkwood, and Bracey R. Dangerfield, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 376,494, July 5, 1973, abandoned. This application Nov. 19, 1974, Ser. No. 525,257
Int. Cl.² C07D *49/34*
U.S. Cl. 260—309.6 5 Claims

1. A process for preparing a compound of the formula



wherein R^1 is lower alkyl, R^2 is lower alkyl or hydrogen, R^3 is lower alkyl or hydrogen, Z is independently fluoro, chloro, bromo, lower alkyl, halo lower alkyl or lower alkoxy and n is an integer zero through 2 which comprises cyclizing a solution of a compound of the formula



wherein R^1, R^2, R^3, Z and n are the same as hereinabove defined and X is halo in the presence of a base at a temperature in the range of about 20°C. to the reflux temperature of the system.

3,923,828

PROCESS FOR SEPARATING N-METHYL-NITROPHTHALIMIDES

Frank J. Williams, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 8, 1974, Ser. No. 468,000
Int. Cl.² C07D *209/40*
U.S. Cl. 260—326 N 7 Claims

1. In the process for isolating N-methyl-4-nitrophthalimide from a mixture of the latter and N-methyl-3-nitrophthalimide, the improvement which comprises contacting the mixture with a lower alkanol of from 1 to 2 carbon atoms, separating the alkanol solution rich in the N-methyl-3-nitrophthalimide thereby isolating the N-methyl-4-nitrophthalimide.

3,923,829

PREPARATION OF N-(1-ETHYL-α-PYRROLIDYLMETHYL)-2-METHOXY-5-ULFONAMIDOBENZAMIDE

Eric Alain Denzler, Zurich, Switzerland, assignor to Fratmann AG, Switzerland

Continuation-in-part of Ser. No. 286,881, Sept. 7, 1972, abandoned. This application Nov. 19, 1974, Ser. No. 525,153
Claims priority, application Switzerland, June 13, 1972, 8813/72
Int. Cl.² C07D *207/14*
U.S. Cl. 260—326.47 2 Claims

1. A process for preparing N-(1-ethyl-α-pyrrolidylmethyl)-2-methoxy-5-sulfonamidobenzamide, comprising the steps of mixing N-ethyl-α-aminomethyl-pyrrolidine with phosphorus oxychloride in a solvent selected from pyridine and dioxane to form N,N′, N″-(1-ethyl-α-pyrrolidylmethyl)-phosphoramide, removing the dioxane, if present, and then heating at 75° to 150°C. the N,N′,N″-(1-ethyl-α-pyrrolidyl-methyl)-phosphoramide with 2-methoxy-5-sulfonamidobenzoic acid in pyridine in the presence or absence of autogenous pressure.

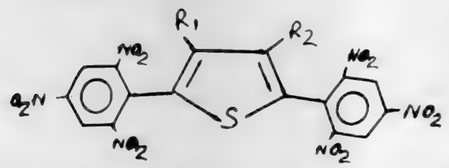
3,923,830

2,5-DIPICRYL THIOPHENES

Michael E. Sitzmann, Chevy Chase, Md., and Joseph C. Dacons, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 4, 1972, Ser. No. 298,089
Int. Cl.² C07D *333/12*
U.S. Cl. 260—329 R 4 Claims

1. Compounds of the formula



wherein R_1 and R_2 are selected from the group consisting of H and NO_2.

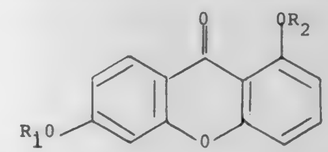
3,923,831

(8-SUBSTITUTED-9-OXOXANTHEN-3-YLOXY) ACETAMIDOXIMES AND NITRILES FOR THEIR PREPARATION

Arthur A. Santilli, Havertown, and Anthony C. Scotese, King of Prussia, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed May 8, 1974, Ser. No. 468,051
Int. Cl.² C07D *311/84*
U.S. Cl. 260—335 2 Claims

1. A compound selected from those having the formula



where R_1 is acetamidoxime; and R_2 is lower alkyl; and the pharmacologically active addition salts thereof.

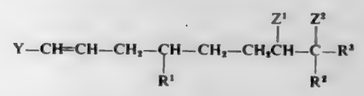
3,923,832

INSECTICIDAL SUBSTITUTED ALKENES

Eric Jan Leopold, Palo Alto, Calif., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 27, 1973, Ser. No. 354,970
Int. Cl.² C07D *317/50, 319/18*
U.S. Cl. 260—340.5 2 Claims

1. A compound having the formula



wherein each of R^1, R^2 and R^3 is independently methyl or ethyl; Z^1 and Z^2 together are a carbon to carbon bond; and Y represents 3,4-methylenedioxyphenyl or 3,4-ethylenedioxyphenyl.

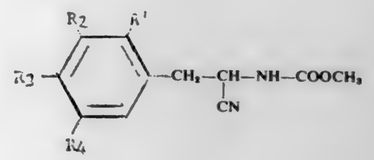
3,923,833

N-[(1-CYANO-2-PHENYL)ETHYL]CARBAMATES

Vsevolod Gruenman, Montclair, and Max Hoffer, Nutley, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 184,950, Sept. 29, 1971, abandoned, which is a division of Ser. No. 13,769, Feb. 24, 1970, Pat. No. 3,636,039, which is a continuation-in-part of Ser. No. 725,946, May 1, 1968, abandoned. This application Feb. 7, 1974, Ser. No. 440,638
Int. Cl.² C07C *121/66*; C07D *317/60*
U.S. Cl. 260—340.5 1 Claim

1. A compound of the formula



VI

where

R′ is hydrogen, lower alkyl and lower alkoxy;

R_3, R_3 and R_4 taken independently of each other are hydrogen, hydroxy and lower alkoxy and

R′, R_2, R_3 and R_4 taken as an adjacent pair is methylenedioxy.

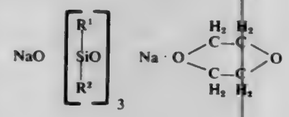
3,923,834

SILOXANEDIOLATE COMPLEXES AND PREPARATION THEREOF

Terry G. Selin, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Dec. 19, 1966, Ser. No. 602,490
Int. Cl.² C07D 319/12
U.S. Cl. 260—340.6 5 Claims

1. A siloxanediolate complex having the general formula



wherein R^1 and R^2 are aryl radicals.

3,923,835

PROCESS FOR MAKING 4-BUTYROLACTONE

William E. Smith, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 29, 1974, Ser. No. 464,802
Int. Cl.² C07D 307/32
U.S. Cl. 260—343.6 7 Claims

1. The process for making 4-butyrolactone which comprises reacting, in the presence of hydrogen at a temperature in excess of 150°C., an acetate of butanediol with methanol in the vapor phase in the presence of a catalyst mixture consisting essentially of magnesia and a copper dehydrogenating catalyst.

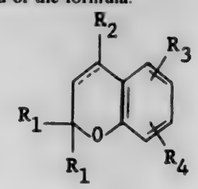
3,923,836

CHROMAN AND CHROMENE COMPOUNDS

Paul E. Bender, Willingboro, N.J., and Bernard Loev, Broomall, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed July 18, 1973, Ser. No. 380,446
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C07D 311/16, 311/70, 311/58
U.S. Cl. 260—345.2 5 Claims

1. A compound of the formula:



in which
- is a single or a double bond;
- R_1 is lower alkyl;
- R_2 is cycloalkyl or cycloalkenyl, said cycloalkyl and cycloalkenyl having 5–6 carbon atoms;
- R_3 is hydroxy or an alkali metal salt thereof, lower alkoxy or lower alkanoyloxy and
- R_4 is a straight or branched alkyl or alkoxy group having 5 to 12 carbon atoms.

3,923,837

EXTRACTION AND RECOVERY OF CINEOLE

Curry Beach Davis, Panama City, Fla., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 15, 1974, Ser. No. 514,725
Int. Cl.² C07D 311/02
U.S. Cl. 260—345.2 2 Claims

1. The method of extracting cineole from a cineole-containing terpene fraction which comprises the steps of: adding to said cineole-containing fraction concentrated sulfuric acid ranging from about 60% to about 70% at a temperature between about −20°C and about 0°C and wherein the ratio of said acid added to cineole ranges between about 1.25 and 2.5, by weight, based on the amount of cineole in the terpene fraction so as to form (a) an acid fraction comprising stable oxonium salt of said cineole and (b) a hydrocarbon terpene fraction, separating resultant oxonium salt fraction from the terpene fraction, treating so-recovered oxonium salt fraction with water to convert said salt to cineole, and thereafter recovering cineole therefrom.

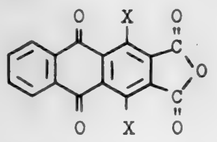
3,923,838

PRODUCTION OF CHLOROANTHRAQUINONE-2,3-DICARBOXYLIC ACID ANHYDRIDES

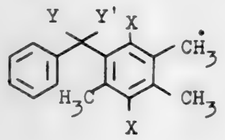
Heinz Ellingsfeld, Frankenthal; Wolfgang Eisfeld, Ludwigshafen; Manfred Patsch, Ludwigshafen, and Ernst Schaffner, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Nov. 19, 1973, Ser. No. 417,122
Claims priority, application Germany, Nov. 18, 1972, 2256663
Int. Cl.² C07D 307/89; C07C 66/02
U.S. Cl. 260—346.3 10 Claims

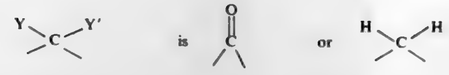
1. A process for the production of a chloroanthraquinone-2,3-dicarboxylic acid anhydride of the formula:



in which one X is chlorine and the other X is hydrogen or both X's are chlorine wherein a trimethyl compound of the formula:



in which the group



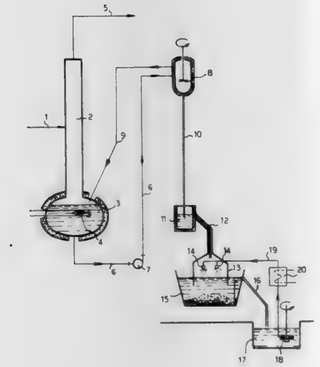
and X have the above meanings is oxidized into the tricarboxylic acid by oxidation with air, oxygen or a mixture of the same or with 10 to 30% by weight nitric acid and the oxidation product is cyclized by means of a water-eliminating agent at 120° to 280°C.

3,923,839

METHOD OF TREATING THE RESIDUES FROM THE DISTILLATION OF PHTHALIC ANHYDRIDE

Rene Dumont, Autreville; Maurice Goharel, and Jean-Claude Lafont, both of Sinceny, all of France, assignors to Rhone-Progil, Courbevoie, France

Filed Apr. 2, 1974, Ser. No. 457,190
Claims priority, application France, Apr. 5, 1973, 73.12301
Int. Cl.² C07D 307/89
U.S. Cl. 260—346.7 4 Claims



1. A method of treating the residues from the distillation of phthalic anhydride from the oxidation product of ortho xylene or naphthalene, characterized in that it comprises drawing off from the boiler of the distillation column for distilling said anhydride, an amount of product such that the volume of the bottoms product remains substantially constant, subjecting the product drawn off to a thin-layer evaporation operation at a temperature within the range of 230°–280°C and a pressure within the range of 60–300 mm of mercury, recyling to the boiler the lightest fraction which essentially comprises phthalic anhydride vapors, passing the heavy fraction into the column of small cross-section, spraying water at a temperature of 0–100°C onto the liquid stream flowing from the lower part of the column, isolating from the atmosphere the zone in which the water spraying action is effected and through which the residues flow before being cooled, by a chamber the lower open portion of which is immersed in a volume of water at the bottom of which are deposited and residues which are cooled to solidification temperature and granulated by the water spray.

3,923,840

N-(FURANYLMETHYL) FLUOROALKANESULFONAMIDES

Joseph Kenneth Harrington, Edina, and Robert D. Trepka, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 150,789, June 7, 1971, Pat. No. 3,766,193, Continuation-in-part of Ser. No. 795,050, Jan. 29, 1969, Pat. No. 3,629,332. This application July 12, 1973, Ser. No. 378,621
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C07D 307/52
U.S. Cl. 260—347.2 3 Claims

1. A compound of the formula

$$R_fSO_2NH\text{-}R\text{-}Ar$$

wherein R_f is a fluoroalkyl group of one or two carbon atoms, R is methylene and Ar is furanyl, and horticulturally acceptable salts thereof.

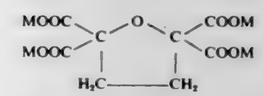
3,923,841

METHOD OF MAKING TETRA SODIUM AND TETRA POTASSIUM 2,2,5,5-TETRAHYDROFURANTETRACARBOXYLATE

Marvin M. Crutchfield, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 282,991, Aug. 23, 1972, abandoned. This application Nov. 6, 1974, Ser. No. 521,330
Int. Cl.² C07D 307/24
U.S. Cl. 260—347.3 5 Claims

1. A process for preparing compounds represented by the formula



wherein M is selected from the group consisting of sodium and potassium, said process comprising adding 2,2,5,5-tetracyanotetrahydrofuran to an aqueous solution of sodium hydroxide or potassium hydroxide maintained during the addition at a concentration such that the sodium hydroxide or potassium hydroxide is present in an amount in excess of that stoichiometrically required to hydrolyze the 2,2,5,5-tetracyanotetrahydrofuran in the reaction medium and hydrolyzing the 2,2,5,5-tetracyanotetrahydrofuran.

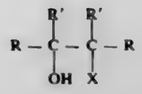
3,923,842

PREPARATION OF OXIRANE COMPOUND FROM THE CORRESPONDING OLEFIN VIA THE CYCLIC CARBONATE ESTER

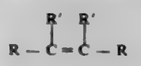
Yulin Wu, Bartlesville, OK, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 28, 1974, Ser. No. 484,262
Int. Cl.² C07D 301/02
U.S. Cl. 260—348 R 9 Claims

1. A process for the preparation of an oxirane compound from the corresponding olefin which comprises the steps of:
a. forming a vicinal halohydrin having from 2 to 30 carbon atoms per molecule of the formula



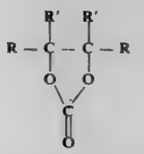
wherein each R and R′ is individually selected from the group consisting of hydrogen and hydrocarbyl radical groups having from 1 to 10 carbon atoms and wherein both R′ groups in said halohydrin can represent a divalent aliphatic hydrocarbon radical which together with the carbon atoms to which the —X and the —OH groups are attached can form a cycloaliphatic ring, and X is selected from the group consisting of chlorine, bromine and iodine, by reacting the corresponding olefin of the formula



wherein R and R′ are as defined above, with oxygen in the presence of an iron halide and a copper halide, under reaction conditions, wherein there is formed as a coproduct, an iron oxide;

b. separately recovering from step (a), said vicinal halohydrin and said iron oxide;

c. reacting said vicinal halohydrin, an amine and carbon dioxide, under reaction conditions, to form a cyclic carbonate ester having from 3 to 31 carbon atoms per molecule of the formula



wherein R and R′ are as defined above, wherein there is formed as a coproduct an amine hydrohalide;

d. separately recovering from step (c) said ester and said amine hydrohalide;

e. decomposing said ester to form the corresponding oxirane compound and carbon dioxide; and

f. separately recovering from step (e) said carbon dioxide and said oxirane compound as a product of the process.

3,923,843

EPOXIDATION PROCESS WITH IMPROVED HETEROGENEOUS CATALYST

Harald P. Wulff, Alameda, Calif., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 234,301, March 13, 1972, Pat. No. 3,829,392, which is a continuation-in-part of Ser. No. 77,385, Oct. 1, 1970, abandoned. This application Dec. 7, 1973, Ser. No. 422,950

Int. Cl.² C07D *301/20*

U.S. Cl. 260—348.5 L **18 Claims**

1. A process for the epoxidation of an olefinically unsaturated compound which comprises reacting the olefinically unsaturated compound in the liquid phase with an organic hydroperoxide at a temperature of from about 25°C to about 200°C in the presence of a catalyst prepared by reacting an olefin epoxidation catalyst comprising an inorganic siliceous solid in chemical combination with an oxide or hydroxide of titanium with an organic silylating agent at an elevated silylation temperature in the range from about 100° to about 450°C for from about 0.1 to 48 hours.

3,923,844

PROCESS FOR THE PREPARATION OF 4,4,4-TRICHLORO-1,2-EPOXYBUTANE

Philip M. Pivawer, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed July 29, 1974, Ser. No. 492,576

Int. Cl.² C07D *301/26*

U.S. Cl. 260—348.6 **13 Claims**

1. In a process for preparing 4,4,4-trichloro-1,2-epoxybutane which comprises reacting 2,4,4,4-tetrachlorobutanol or 2-bromo-4,4,4-trichlorobutanol with an aqueous solution of basic dehydrohalogenating agent selected from the group consisting of an alkali metal hydroxide and an alkaline earth metal hydroxide, the improvement wherein said reaction is carried out in the presence of an emulsion-inhibiting proportion of an anti-oxidant selected from the group consisting of an alkali metal bisulfite, catechol and 4-alkyl catechol in which said alkyl group contains from 1 to 8 carbon atoms.

3,923,845

RECOVERY OF PURIFIED 1-NITROANTHRAQUINONE

Karl-Heinz Bantel, Ludwigshafen; Heinz Eilingsfeld, Frankenthal, and Guenter Stoeckelmann, Frankenthal-Moersch, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Aug. 2, 1973, Ser. No. 384,834

Claims priority, application Germany, Aug. 2, 1972, 2237904

Int. Cl.² C07C *79/37*

U.S. Cl. 260—369 **6 Claims**

1. A process for the recovery of 1-nitroanthraquinone in a purified state from a crude nitroanthraquinone mixture containing dinitroanthraquinones and at least 60% by weight of said 1-nitroanthraquinone, which process comprises:

heating said crude mixture at 70° to 150°C. in one-half to 10 times its weight of an organic solvent which may contain up to 10% by weight of water and is selected from the group consisting of halogenated aliphatic or aromatic hydrocarbons, anisole, nitrobenzene, N,N-dimethylpropionamide, N,N-dimethylformamide, N-methylpyrrolidone, dimethylsulfoxide, hexamethylphosphoric triamide and benzonitrile, with a base consisting essentially of 0.3 to 3 moles per mole of dinitroanthraquinone of a tertiary amine selected from the group consisting of trimethylamine, triethylamine, tripropylamine, tributylamine, triethanolamine, pyridine, N,N-dimethylaniline, N,N-diethylaniline, N-methylmorpholine, N-ethylpiperidine, N-methyldiisopropylamine, N-methyl-diisobutylamine and tetramethylhexamethylendiamine in the presence of 0.1 to 10% by weight, with reference to the crude mixture, of an initiator selected from the group consisting of alkali metal nitrite, alkaline earth metal nitrite, alkali metal thiocyanate, alkali metal halides and alkaline earth metal halides;

cooling the reaction mixture after completion of the reaction; and

separating the pure 1-nitroanthraquinone from the reaction mixture.

3,923,846

MICHAEL-TYPE ADDITION PRODUCTS OF NITROPARAFFINS

Wheller C. Crawford, Fishkill; William P. Doyle, Lagrangeville, and John A. Patterson, Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 836,940, June 26, 1969, abandoned. This application June 29, 1972, Ser. No. 267,320

Int. Cl.² C07C *69/00*; C08K *5/09*

U.S. Cl. 260—404 **1 Claim**

1. β-(2-carbonylmethoxyethyl) secondary C_{10}–C_{14} nitroparaffins.

3,923,847

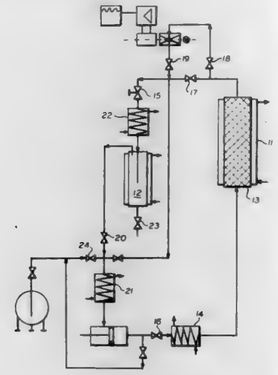
METHODS OF PRODUCING COCOA BUTTER

Wilhelm Roselius, Bremen-St. Magnus; Otto Vitzthum, Bremen, and Peter Hubert, Bremen-Lesum, all of Germany, assignors to Studiengesellschaft Kohle m.b.H., Mulheim (Ruhr), Germany

Filed May 23, 1973, Ser. No. 363,098

Int. Cl.² C11B *1/10*

U.S. Cl. 260—412.8 **9 Claims**



1. A method for the production of cocoa butter from cocoa mass or from roasted or unroasted cocoa nibs comprising the step of contacting said cocoa product with a food-acceptable solvent gas which is supercritical in respect of temperature and pressure for extraction of said cocoa butter by the solvent gas, and removing the solvent gas bearing the cocoa butter from the residue of said cocoa product.

3,923,848

PROCESS FOR PREPARING HIGH MOLECULAR WEIGHT ALIPHATIC CARBOXYLIC ACIDS BY CHROMOSULFURIC ACID OXIDATION OF α-OLEFINS

Hans Schmidt, and Werner Strabberger, both of Gersthofen, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 19, 1974, Ser. No. 498,567

Claims priority, application Germany, Aug. 24, 1973, 2342823

Int. Cl.² C11C *1/00*

U.S. Cl. 260—413 **2 Claims**

1. A process for preparing saturated, high molecular weight, aliphatic monocarboxylic acids by oxidizing in the molten state α-olefins having from 16 to 70 carbon atoms in the molecule or mixtures of such olefins by means of aqueous chromo-sulfuric acid, which comprises adding to the molten olefins or mixtures of olefins prior to oxidizing from 2 to 15 % by weight, calculated on the olefins, of saturated aliphatic mono- or dialcohols having from 10 to 40 carbon atoms in the molecule, or their fatty acid esters, and then oxidizing with the aqueous chromosulfuric acid at a temperature of 60° to 180°C.

3,923,849

ALUMINUM SALTS OF 2-METHOXY-3,6-DICHLOROBENZOIC ACID

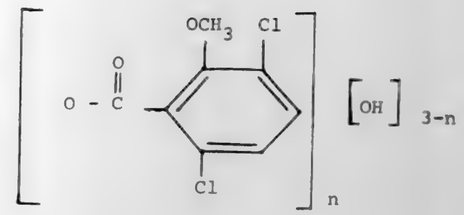
Takeo Hokama, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Oct. 29, 1973, Ser. No. 410,750

Int. Cl.² C07F *5/06*

U.S. Cl. 260—448 R **3 Claims**

1. A compound of the formula



wherein *n* is the integer 1 or 2.

3,923,850

PREPARATION OF AROMATIC ISOCYANATES

Ehrenfried H. Kober, Aschau near Krailburg, Upper Bavaria, and Wilhelm J. Schnabel, Branford, Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 12, 1969, Ser. No. 806,728

Int. Cl.² C07C *118/06*

U.S. Cl. 260—453 PC **19 Claims**

1. In the process for preparing an aromatic isocyanate by reacting an aromatic nitro compound containing up to about 20 carbon atoms with carbon monoxide at an elevated temperature and an elevated pressure, the improvement which comprises carrying out the reaction in the presence of a mixture of

I. a hydroxyl-substituted hydrocarbon selected from the groups consisting of

a. aliphatic alcohols containing from 1 to 12 carbon atoms

b. phenols containing from 6 to 10 carbon atoms in the ring

c. alkyl-substituted phenols containing from 7 to 14 carbon atoms and

d. aliphatic diols containing from 1 to 4 carbon atoms,

II. a catalyst system selected from the group consisting of

a. a noble metal compound selected from the group consisting of noble metal halides or noble metal oxides, wherein the noble metal is selected from the group consisting of palladium, rhodium, iridium, ruthenium or mixtures thereof,

b. a mixture of

1. a noble metal compound of IIa and

2. a heteroaromatic nitrogen compound having a ring containing

a. 5 or 6 members in the ring,

b. only nitrogen and carbon in the ring,

c. no more than 2 nitrogen atoms in the ring, and

d. at least 2 double bonds in the ring,

c. a complex of a noble metal compound of IIa with a heteroaromatic nitrogen compound of IIb(2) and

d. a mixture of

1. a noble metal compound of IIa, and

2. an oxide of an element selected from the group consisting of

a. molybdenum,

b. vanadium,

c. chromium and

d. iron,

III. wherein the proportion of said hydroxyl substituted hydrocarbon is between about 0.001 and about 20 mole equivalents per mole of said aromatic nitro compound.

3,923,851
PREPARATION OF SUBSTITUTED ISOTHIOCYANATES

Andrew G. Zeiler, Muskegon, Mich., assignor to Story Chemical Corporation, Muskegon, Mich.

Filed Jan. 14, 1974, Ser. No. 433,048
Int. Cl.² C07C *161/04*
U.S. Cl. 260—454 8 Claims

1. A method for the preparation of a substituted isothiocyanate which comprises contacting a reaction admixture formed from and consisting essentially of a C_1–C_{30} alkyl or cycloalkyl primary amine, carbon disulfide and a non-aqueous, low molecular weight, waterimmiscible halogenated hydrocarbon or an aromatic hydrocarbon as a solvent for the substituted isothiocyanate with gaseous oxygen in the presence of activated carbon as an oxidation catalyst and at a temperature in the range 5°–30°C. and recovering from the resulting reaction admixture a substituted isothiocyanate.

3,923,852
PREPARATION OF SUBSTITUTED ISOTHIOCYANATES

Andrew G. Zeiler, Muskegon, and Harry Babad, North Muskegon, both of Mich., assignors to Story Chemical Corporation, Muskegon, Mich.

Filed Jan. 14, 1974, Ser. No. 433,046
Int. Cl.² C07C *161/04*
U.S. Cl. 260—454 10 Claims

1. A method for the preparation of a substituted isothiocyanate which comprises contacting a reaction admixture formed from and consisting essentially of a C_1–C_{30} alkyl or cycloalkyl primary amine, a normally liquid water-immiscible halogenated hydrocarbon or an aromatic hydrocarbon as a solvent for said substituted isothiocyanate and carbon disulfide with gaseous oxygen, the reaction admixture during contact with the gaseous oxygen having incorporated therein a catalytic amount of a metal oxidation catalyst selected from the group consisting of manganese, iron, copper, zinc, nickel and cobalt compounds, the contacting of said admixture being carried out at a temperature in the range 5°–30°C. and recovering from the resulting reaction admixture the substituted isothiocyanate.

3,923,853
PREPARATION OF SUBSTITUTED ISOTHIOCYANATES

Andrew G. Zeiler, Muskegon, Mich., assignor to Story Chemical Corporation, Muskegon, Mich.

Filed Jan. 14, 1974, Ser. No. 433,049
Int. Cl.² C07C *161/04*
U.S. Cl. 260—454 7 Claims

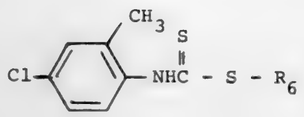
1. A method for the preparation of a substituted isothiocyanate which comprises contacting a reaction admixture formed from and consisting essentially of a C_1–C_{30} alkyl or cycloalkyl primary amine, carbon disulfide and an aqueous alkali metal hydroxide solution with gaseous oxygen in the presence of an oxidation catalyst and at a temperature in the range 5°–30°C. and recovering from the resulting admixture a substituted isothiocyanate.

3,923,854
DERIVATIVES OF THIOCARBAMIC ACID, THEIR MANUFACTURE AND THEIR USE FOR COMBATING INSECTS AND REPRESENTATIVES OF THE ORDER ACARINA

Dieter Duerr, Bottmingen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed May 4, 1970, Ser. No. 34,561
Claims priority, application Switzerland, May 8, 1969, 7084/69
Int. Cl.² C07C *153/11*
U.S. Cl. 260—455 A 9 Claims

1. A compound of the formula



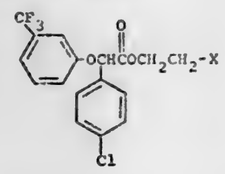
in which R_6 is alkyl of from 1 to 4 carbon atoms, alkenyl of 3 or 4 carbon atoms or a chloroalkenyl of 3 or 4 carbon atoms.

3,923,855
2-SULFONYLOXYETHYL 3-TRIFLUOROMETHYLPHENOXY-4'-CHLOROPHENYL ACETATE

Richard F. Shuman, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 271,446, July 13, 1972, abandoned. This application Oct. 26, 1973, Ser. No. 410,062
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C07C *143/68*
U.S. Cl. 260—456 R 3 Claims

1. A compound of the formula:



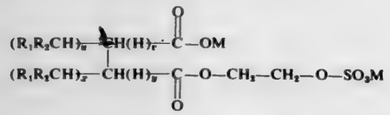
wherein X is lower alkylsulfonyloxy or lower alkyl substituted phenylsulfonyloxy.

3,923,856
PHOSPHATE-FREE CARBOXYLATE-SULFATE DETERGENTS

Mitchell Danzik, Pinole, and Ralph House, El Sobrante, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 259,924, June 5, 1972, Pat. No. 3,843,707. This application July 11, 1974, Ser. No. 483,261
Int. Cl.² C07C *141/02*
U.S. Cl. 260—458 4 Claims

1. A surface active compound of the formula:



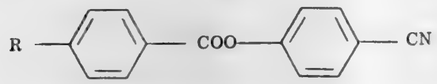
in which R_1 and R_2 are substantially linear alkyl groups of 3 to 19 carbon atoms, u, v, x and y are 0 or 1, M is H or an alkali metal, alkaline earth metal, or ammonium cation, the sum of the carbon atoms in R_1 and R_2 is 13 to 21, the sum of u and v is 1, the sum of x and y is 1, and the sum of u and x is 1.

3,923,857
LIQUID CRYSTAL ESTERS

Arthur Boller, Binningen, and Hanspeter Scherrer, Therwil, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 21, 1973, Ser. No. 334,291
Claims priority, application Switzerland, Feb. 23, 1972, 2586/72; Jan. 23, 1973, 920/73
Int. Cl.² C07C *121/64*
U.S. Cl. 260—465 D 6 Claims

1. A compound of the formula



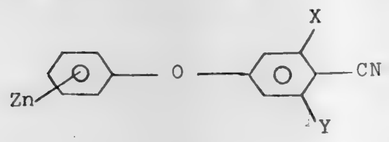
wherein R is straight-chain lower alkyl of 4 to 8 carbon atoms.

3,923,858
PHENOXYBENZONITRILES

Robert James Theissen, Union County, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 69,959, Sept. 4, 1970, abandoned. This application Feb. 23, 1973, Ser. No. 335,408
Int. Cl.² C07C *121/75*
U.S. Cl. 260—465 F 5 Claims

1. A compound having the formula:



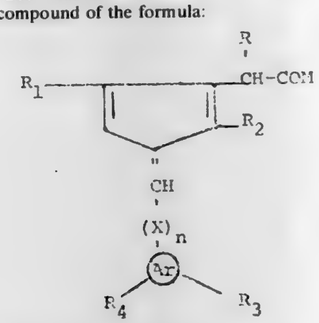
wherein X is hydrogen, Y is halogen or lower alkyl, Z is halogen and n is an integer of from 1 to 3.

3,923,859
SUBSTITUTED FULVENE ACETIC ACIDS AND DERIVATIVES

Tsung-Ying Shen, Westfield, and Howard Jones, Holmdel, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 31, 1973, Ser. No. 393,513
Int. Cl.² C07C *121/48*
U.S. Cl. 260—465 D 4 Claims

1. A compound of the formula:



wherein:
R and R_2 are each hydrogen or alkyl;
R_1, R_3 and R_4 are each hydrogen, halogen, alkyl, alkoxy, amino, alkenyloxy, alkylamino, dialkylamino, alkylthio, alkylsulfinyl, alkylsulfonyl, trihaloalkyl, dialkylaminoalkyl, dialkylaminoalkoxy, cyano, alkanoyl, nitro, hydroxy, alkanoyloxy, alkanoylamino, aminoalkyl, alkylaminoalkyl, hydroxyalkyl, alkoxyalkyl, alkylthioalkyl, aryl, aryloxy, aralkyl, $-SO_3H$ or sulfonamido; at least one of R_1, R_3 or R_4 being cyano;
AR is phenyl; and
M is hydroxy, alkoxy or NR'R'' wherein R' and R'' are each hydrogen or C_{1-5} alkyl;
X is alkylene, alkenylene, alkynylene, O, S, carbonyl, sulfinyl, sulfonyl, or NR_5 wherein R_5 is hydrogen or alkyl; and
n is 0 or 1.

3,923,860
VAPOR PHASE CHLORINATION OF ACETONITRILE IN THE PRESENCE OF WATER

Sven H. Ruetman, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 8, 1974, Ser. No. 495,711
Int. Cl.² C07C *120/00*
U.S. Cl. 260—465.7 4 Claims

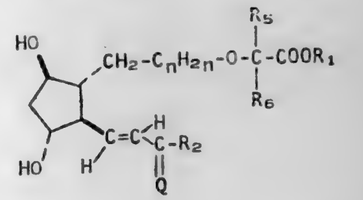
1. A vapor phase chlorination process for the production of dichloro- and trichloroacetonitrile, comprising introducing into a reaction zone one molecular proportion of acetonitrile vapors, from about 6 to about 100 molecular proportions of chlorine gas and from about one to about 50 molecular proportions of steam, under conditions of flow such that rapid mixing results and the Reynolds number at the point of mixing is at least 800, and maintaining the resultant mixture in said zone at a temperature within the range of from about 350° to about 500°C. for a period of from about 2 to about 50 seconds.

3,923,861
3-OXA PROSTAGLANDIN F β-TYPE COMPOUNDS

Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 332,067, Feb. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 47,169, June 17, 1970, abandoned. This application Apr. 17, 1974, Ser. No. 461,508
Claims priority, application United Kingdom, July 29, 1969, 38073/69
Int. Cl.² C07C *61/38, 69/74*
U.S. Cl. 260—468 D 70 Claims

1. An optically active compound of the formula:



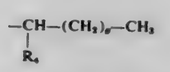
or a racemic compound of that formula and the mirror image thereof, wherein C_nH_{2n} is alkylene of one to 10 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, between —CH_2— and —O—; wherein Q is



or



wherein R_3 is hydrogen or methyl; wherein R_1 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3 chloro; wherein R_2 is



wherein R_4 is hydrogen or fluoro and g is one, 2, 3, 4, or 5; wherein R_5 and R_6 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,923,862

4-OXA PROSTAGLANDIN B-TYPE COMPOUNDS

Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

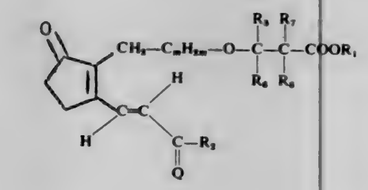
Continuation of Ser. No. 332,079, Feb. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 47,169, June 17, 1970, abandoned. This application Apr. 17, 1974, Ser. No. 461,489

Claims priority, application United Kingdom, July 29, 1969, 38073/69

Int. Cl.[2] C07C *61/38, 69/74*

U.S. Cl. 260—468 D **38 Claims**

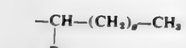
1. An optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof, wherein C_mH_{2m} is alkylene of one to 9 carbon atoms, inclusive, with one to 4 carbon atoms, inclusive, between —CH_3— and —O—; wherein Q is



wherein R_3 is hydrogen or methyl; wherein R_1 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3 chloro; wherein R_2 is



wherein R_4 is hydrogen or fluoro and g is one, 2, 3, 4, or 5; and wherein R_5, R_6, R_7, and R_8 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,923,863

4-OXA PROSTAGLANDIN A-TYPE COMPOUNDS

Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

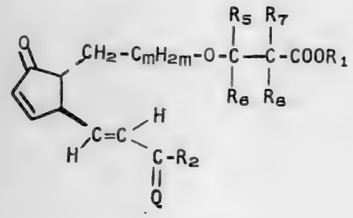
Continuation of Ser. No. 332,279, Feb. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 47,169, June 17, 1970, abandoned. This application Apr. 17, 1974, Ser. No. 461,496

Claims priority, application United Kingdom, July 29, 1969, 38073/69

Int. Cl.[2] C07C *61/38, 69/74*

U.S. Cl. 260—468 D **38 Claims**

1. An optically active compound of the formula:



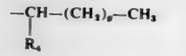
or a racemic compound of that formula and the mirror image thereof, wherein C_mH_{2m} is alkylene of one to 9 carbon atoms, inclusive, with one to 4 carbon atoms, inclusive, between —CH_2— and —O—; wherein



or



wherein R_3 is hydrogen or methyl; wherein R_1 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3 chloro; wherein R_2 is



wherein R_4 is hydrogen or fluoro and g is one, 2, 3, 4, or 5; wherein R_5, R_6, R_7, and R_8 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof, wherein R_1 is hydrogen.

3,923,864

3-OXA PROSTAGLANDIN A-TYPE COMPOUNDS

Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

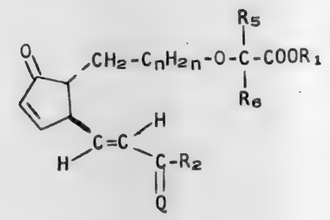
Continuation of Ser. No. 332,279, Feb. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 47,169, June 17, 1970, abandoned. This application Apr. 17, 1974, Ser. No. 461,498

Claims priority, application United Kingdom, July 29, 1969, 38073/69

Int. Cl.[2] C07C *61/38, 69/74*

U.S. Cl. 260—468 D **38 Claims**

1. An optically active compound of the formula:



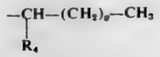
or a racemic compound of that formula and the mirror image thereof, wherein C_nH_{2n} is alkylene of 1 to 10 carbon atoms, inclusive, with 1 to 5 carbon atoms, inclusive, between —CH_2— and —O—; wherein



or



wherein R_3 is hydrogen or methyl; wherein R_1 is hydrogen, alkyl of 1 to 4 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with 1, 2, or 3chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3 chloro; wherein R_2 is



wherein R_4 is hydrogen or fluoro and g is 1, 2, 3, 4, or 5; and wherein R_5 and R_6 are hydrogen or alkyl of 1 to 4 carbon atoms, inclusive; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,923,865

4-OXA PROSTAGLANDIN Fβ-TYPE COMPOUNDS

Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

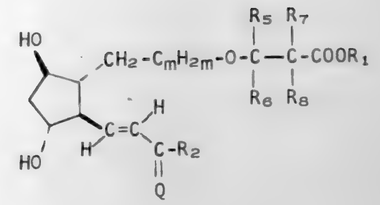
Continuation of Ser. No. 332,067, Feb. 13, 1973, abandoned, and a continuation-in-part of Ser. No. 47,169, June 17, 1970, abandoned. This application Apr. 17, 1974, Ser. No. 461,597

Claims priority, application United Kingdom, July 29, 1969, 38073/69

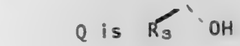
Int. Cl.[2] C07C *11/78, 64/94*

U.S. Cl. 260—468 D **70 Claims**

1. An optically active compound of the formula:



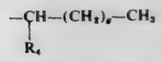
or a racemic compound of that formula and the mirror image thereof, wherein C_mH_{2m} is alkylene of 1 to 9 carbon atoms, inclusive, with 1 to 4 carbon atoms, inclusive, between —CH_2— and —O—; wherein



or



wherein R_3 is hydrogen or methyl; wherein R_1 is hydrogen, alkyl of 1 to 4 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of 1 to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3 chloro; wherein R_2 is



wherein R_4 is hydrogen or fluoro and g is 1, 2, 3, 4, or 5; wherein R_5, R_6, R_7, and R_8 are hydrogen or alkyl of 1 to 4 carbon atoms, inclusive; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,923,866

PROCESS FOR PRODUCING INDAN DERIVATIVES

Yoichi Sawa, Osaka; Toshinori Hattori, Suita; Susumu Katsube, and Akitoshio Goto, both of Osaka, all of Japan, assignors to Takeda Chemical Industries, Japan

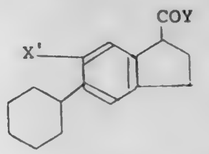
Filed June 19, 1973, Ser. No. 371,525

Claims priority, application Japan, June 19, 1972, 47-61140; Nov. 21, 1972, 47-117021

Int. Cl.[2] C07C *63/595*

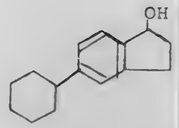
U.S. Cl. 260—469 **4 Claims**

1. A process for producing a compound of the formula:



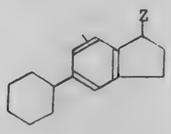
(VIII)

wherein X′ stands for a halogen atom and Y stands for a hydroxyl group, an amino group or an alkoxy group having 1 to 6 carbon atoms, which comprises reacting:



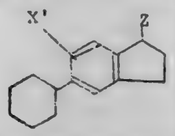
(II)

with an aromatic sulfonylating agent in the presence of a solvent to produce



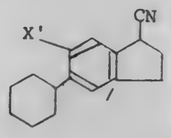
(III)

wherein Z stands for an aryl sulfonyloxy group, which is then reacted with a halogen, sulfuryl halide, N-bromosuccinimide or N-chlorosuccinimide in the presence of a solvent at a temperature not exceeding 100°C to produce



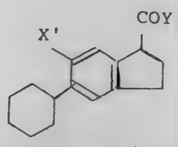
(IV)

wherein X′ and Z have the same meaning as above, which is then reacted with an alkali metal cyanide in the presence of a solvent to produce



(VI)

wherein X′ has the same meaning as above, which is then subjected to hydrolysis or to alcohol addition with subsequent hydrolysis to produce



(VIII)

wherein X′ and Y have the same meaning as above.

3,923,867

METHOD FOR PRODUCING MONOMETHYL TEREPHTHALATE

Manfred Baerns; Bruno Beck; Karl Ludwig Schmid; Hubert Machacek; Gunther Beige, and Heinz Nogge, all of Essen, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed June 5, 1972, Ser. No. 259,979

Int. Cl.² C07C *69/82*

U.S. Cl. 260—475 R **4 Claims**

1. Method for producing high-purity monomethyl terephthalate suitable directly as a starting product for the production of polyester fibers, comprising the following process steps:

a. oxidizing p-xylene to p-toluic acid by reacting said p-xylene with an oxygen containing gas in a gas-liquid contact system at a temperature between 90° and 130°C, a pressure between 3 and 15 atmospheres, in the presence of a polyvalent heavy metal salt as the oxidation catalyst, and for a time such that the conversion of said p-xylene to said p-toluic acid is between 15 and 60 percent;

b. reacting the p-toluic acid from step (a) with methanol in a first esterification stage at a temperature between 150° and 230°C and a pressure between 15 and 60 atmospheres and then reacting the residual p-toluic acid substantially completely to p-toluic acid methyl ester by countercurrent contact with gaseous methanol at temperatures between 220° and 260°C and pressures at which said methanol is substantially in vapor form;

c. oxidizing p-toluic acid methyl ester from step (b) with an oxygen containing gas in a gas-liquid system at a temperature between 140° and 170°C, pressures from 1 up to 6 atmospheres, in the presence of a polyvalent heavy metal salt as the oxidation catalyst, and for a time such that between 20 and 45 percent of said methyl ester is converted to monomethyl terephthalate;

d. separating the crystalline monomethyl terephthalate reaction product from the reaction mixture following step (c);

e. dissolving said monomethyl terephthalate in a solvent which exhibits a strong temperature dependence for the solubility of monomethyl terephthalate, and contacting the resulting solution with activated carbon to remove color impurities therefrom;

f. cooling the thus-treated solution to recrystallize the monomethyl terephthalate therefrom; and

g. recovering the resulting high-purity monomethyl terephthalate product.

3,923,868

SUBSTITUTED ALKYLTHIO BUTENOIC ACIDS AND ESTERS

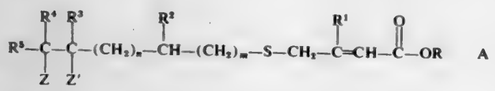
Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed June 6, 1973, Ser. No. 367,613

Int. Cl. C07c *149/20*

U.S. Cl. 260—481 R **11 Claims**

1. A compound selected from those of the following formula A:



A

wherein,

R is hydrogen, lower alkyl, lower alkenyl or lower alkynyl; each of R^1, R^2, R^4 and R^5 is lower alkyl;

R^3 is hydrogen or methyl;

n is one or two;

m is zero, one, or two;

Z is OR^6 in which R^6 is hydrogen, lower alkyl or acetyl; and Z′ is hydrogen.

3,923,869

4-ALKYL-2,6-DIMETHYL-3-HYDROXYBENZYL ESTERS OF 3,3′-DIPROPIONIC ACID

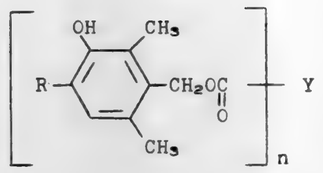
John Song, Bound Brook, and Henry Richmond, Whitehouse Station, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 123,001, March 10, 1971, Pat. No. 3,795,700. This application May 24, 1973, Ser. No. 363,439

Int. Cl.² C07C *149/20*

U.S. Cl. 260—481 R **2 Claims**

1. A compound of the formula:



wherein R is a branched chain alkyl group containing 3 to about 12 carbon atoms; Y is the residue of the carboxylic acid $Y(COOH)_n$ which is 3,3′-thiodipropionic acid; and *n* is 2.

3,923,870

URETHANES OF 1-HALOGEN SUBSTITUTED ALKYNES

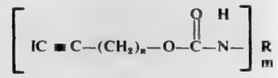
William Singer, Teaneck, N.J., assignor to Troy Chemical Corporation, Newark, N.J.

Filed July 11, 1973, Ser. No. 378,089

Int. Cl.² C07C *125/06*

U.S. Cl. 260—482 C **11 Claims**

1. Compounds of the formula



in which R is an alkyl group having one to not more than 20 carbon atoms and having from one to three linkages corresponding to *m* and *n* and *m* are whole number integers between 1 and 3 and may be the same or different.

3,923,871

CYCLOPROPYLMETHYL ESTERS

Clive A. Henrick, and Gerardus B. Staal, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

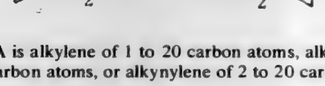
Continuation-in-part of Ser. No. 263,902, June 19, 1972, abandoned, which is a continuation-in-part of Ser. No. 255,368, May 22, 1972, abandoned. This application Apr. 13, 1973, Ser. No. 350,708

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07C *69/34, 69/52*

U.S. Cl. 260—485 L **9 Claims**

1. A compound of the formula



wherein A is alkylene of 1 to 20 carbon atoms, alkenylene of 2 to 20 carbon atoms, or alkynylene of 2 to 20 carbon atoms.

3,923,872

NEW CYCLOPENTANE DERIVATIVES

Michael Peter Lear Caton, Upminster, and Trevor Parker, Romford, both of England, assignors to May & Baker Limited, Essex, England

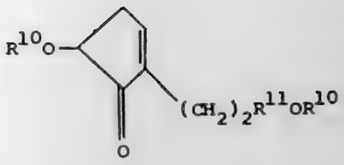
Filed Feb. 15, 1973, Ser. No. 332,660

Claims priority, application United Kingdom, Feb. 18, 1972, 7640/72

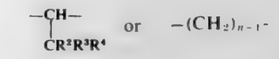
Int. Cl.² C07C *49/58, 69/08, 69/16, 69/28*

U.S. Cl. 260—488 R **9 Claims**

1. A cyclopentenone of the formula:



wherein both symbols R^{10} represent hydrogen or identical alkanoyl groups of 1 through 5 carbon atoms, and R^{11} represents a divalent group of the formula:



wherein R^2 and R^3 represent hydrogen or alkyl of 1 through 4 carbon atoms, R^4 represents hydrogen or alkyl of 1 through 10 carbon atoms and *n* represents 4 or 6.

3,923,873

BICYCLIC COMPOUNDS, THEIR USE AND PROCESS FOR PREPARING SAME

Bruno Maurer, Collonge-Bellerive; Michel G. Fracheboud, and Gunther Ohloff, both of Bernex-Geneva, all of Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

Filed May 23, 1973, Ser. No. 363,187

Claims priority, application Luxembourg, July 17, 1972, 65737; May 29, 1972, 65431

Int. Cl.² C07C *35/21, 69/14, 69/145*

U.S. Cl. 260—488 R **8 Claims**

1. Bicyclic compounds of the formula:



wherein one of the X symbols in either position 2 or position 8 represents a single hydroxyl or O-acetyl group and the remaining three X symbols represent hydrogen atoms and wherein the linkage between position 6 and position 7 is a single or double bond relationship, the index *n* represents the integers zero or 1 and wherein:

i. one of the symbols R^1 and R^2 represents a lower alkyl group and the other is a hydrogen atom and R^3 represents a lower alkyl group when the index n is zero; or

ii. each of the symbols R^1, R^2, R^3, and R^4 represents a lower alkyl group or a hydrogen atom provided however that the pairs R^1 and R^2 and R^3 and R^4, respectively, cannot simultaneously have more than one alkyl group.

3,923,874

CONTINUOUS PRODUCTION OF ESTERS OF GLYCOLS OR THEIR MONOETHERS WITH LOWER FATTY ACIDS

Heinz Hohenschutz, Mannheim; Paul Hornberger; Josef Gnad, both of Ludwigshafen, and Guenter Dinkhauser, Limburgerhof, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed June 6, 1973, Ser. No. 367,327

Claims priority, application Germany, June 10, 1972, 2228335

Int. Cl.² C07C 67/08

U.S. Cl. 260—496 10 Claims

1. A process for the continuous production of wholly or substantially water-soluble esters of glycols or of their monoethers with lower fatty acids, which process comprises:

reacting in a first zone a glycol of the formula

$$HO-A-X \quad (I)$$

in which A is ethylene, propylene or butylene, and X is OH, OR, OAOH or OAOR wherein R is alkyl of one to four carbon atoms and A has the above meaning, with a lower saturated fatty acid at an elevated temperature and in the presence of a catalytic amount of a strong acid while the water formed in the reaction is simultaneously distilled off azeotropically over the top by means of an entrainer which forms an azeotrope with water selected from the group consisting of hydrocarbons and lower fatty acid esters of alkanols of 1 to 5 carbon atoms, said entrainer being continuously introduced into said first zone and the crude glycol ester mixed with entrainer being continuously withdrawn from the bottom of said first zone;

continuously adding aqueous alkali to the crude glycol ester withdrawn from said first zone;

then continuously extracting the crude glycol ester in a second zone to which there is continuously supplied water and additional entrainer as the extractant with phase separation into an aqueous phase and an organic phase;

continuously separating said organic phase from said aqueous phase; and

continuously recovering the pure glycol ester from said organic phase by rectification in a third zone.

3,923,875

PROCESS FOR PRODUCING ALKADIENOL ESTERS

David Rose, Dusseldorf-Holthausen, and Herbert Lepper, Cologne-Mulheim, both of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

Filed July 10, 1972, Ser. No. 270,089

Claims priority, application Germany, July 26, 1971, 2137291

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07C 67/04

U.S. Cl. 260—497 A 15 Claims

3. A process for producing alkadienol esters compriaing the steps for reacting a 1,3-conjugated acyclic diolefin of 4 to 10 carbon atoms with a carboxylic acid selected from the group consisting of alkanoic acids of 2 to 12 carbon atoms, benzene dicarboxylic acids, cycloalkyl carboxylic acids of 5 to 8 carbon atoms, benzoic acid, alkanedioic acids of 2 to 12 carbon atoms by mixed oligomerization, in the presence of from 0.1 to 6 parts by weight, based on the weight of said diolefin, of a catalyst combination consisting essentially of (1) a member selected from the group consisting of (a) palladium, (b) palladium (II) compounds and (c) the mixtures thereof and (2) a triphenylphosphite containing at least 3 ortho substituents selected from the group consisting of amino, nitro, alkyl of 1 to 12 carbon atoms, haloalkyl of 1 to 12 carbon atoms, cycloalkyl of 5 to 7 carbon atoms, phenyl, alkylphenyl of 7 to 12 carbon atoms, phenylalkyl of 7 to 12 carbon atoms, lower alkenyl, and halophenyl; and recovering said alkadienol esters.

3,923,876

COMPLEX FORMERS FOR POLYVALENT METAL IONS

Arnold Heins, Hilden; Helmut Blum, and Karl-Heinz Worms, both of Duesseldorf-Holthausen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

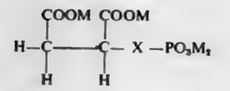
Filed Apr. 9, 1973, Ser. No. 349,347

Claims priority, application Germany, Apr. 13, 1972, 2217692

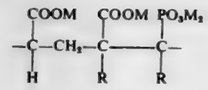
Int. Cl.² C07F 9/38

U.S. Cl. 260—502.4 R 10 Claims

1. A compound of the formula



wherein X is selected from the group consisting of



wherein M is selected from the group consisting of hydrogen, alkali metal and ammonium and R is selected from the group consisting of hydrogen, or alkyl radical with 1 to 4 carbon atoms and a phenyl radical and complexes thereof with alkaline earth metal ions.

3,923,877

PREPARATION OF N-PHOSPHONOMETHYL GLYCINE

John Edward Duncan Barton, Wokingham, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 11, 1973, Ser. No. 405,258

Claims priority, application United Kingdom, Nov. 8, 1972, 51442/72

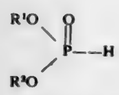
Int. Cl.² C07F 9/38

U.S. Cl. 260—502.5 4 Claims

1. A process of preparing the compound N-phosphonomethyl glycine, having the formula:



which comprises (a) reacting 1,3,5-tricyanomethylhexahydro-1,3,5-triazine with an ester of phosphorous acid having the formula:



wherein R^1 and R^2 are hydrocarbyl or substituted hydrocarbyl radicals in which the substituent is inert to the reaction, at a temperature in the range from 15° to 100°C and in the presence of a catalyst selected from the group consisting of hydrogen halides, Lewis acids, alkanoic acid halides, and alkanoic acid anhydrides, to form an ester of N-phosphonomethylglycinonitrile, (b) recovering the ester of N-phosphonomethylglycinonitrile from the reaction mixture, (c) hydrolysing the ester of the N-phosphonomethylglycinonitrile and (d) recovering N-phosphonomethylglycine.

3,923,878

DISTYRYLBENZENE DERIVATIVES

Hans Rudolf Meyer, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed May 18, 1972, Ser. No. 254,708

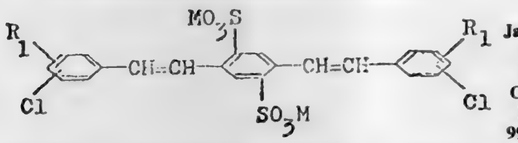
Claims priority, application Switzerland, June 7, 1971, 8327/71

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07C 143/24

U.S. Cl. 260—505 C 4 Claims

1. New distyrylbenzene derivatives of the formula



wherein R_1 represents hydrogen or chlorine and, if R_1 represents chlorine, the chlorine atoms assume the positions 2, 4 or 3, 4, and M denotes a hydrogen atom, an alkali metal ion or an ammonium ion.

3,923,879

PROCESS FOR PREPARING 4-AMINOMETHYL CYCLOHEXANE CARBOXYLIC ACID-1

Hirataka Itoh; Yutaka Usubuchi; Chisei Shibuya, and Koryo Itoh, all of Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 19, 1973, Ser. No. 416,793

Claims priority, application Japan, Nov. 29, 1972, 47-119039

Int. Cl.² C07C 99/100

U.S. Cl. 260—514 J 9 Claims

1. A method for producing 4-aminomethyl cyclohexane carboxylic acid-1 which is characterized in that a low alkyl ester of p-cyanobenzoic acid is reduced at a temperature of from about 10°C to 250°C in a hydrogen atmosphere at a pressure of from about 10 to 200 atmospheres in the presence of a nickel catalyst in an aqueous medium containing ammonia together with at least one alkali metal or alkaline earth metal hydroxide, and from 0.1 to 50 mol per mol of p-cyanobenzoic acid of at least one straight chain, branched chain or cyclic alcohol or ether.

3,923,880

CATALYSTS AND CATALYTIC PROCESSES

David Jack Westlake, Ewell, Epsom, and Michael John Wriglesworth, Horsham, both of England, assignors to BP Chemicals International Limited, London, England

Filed Oct. 10, 1972, Ser. No. 295,860

Claims priority, application United Kingdom, Oct. 20, 1971, 48777/71; Dec. 20, 1971, 58991/71

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07C 51/12, 51/10, 67/00

U.S. Cl. 260—532 14 Claims

1. A process for the carbonylation of an alcohol or an alcohol derivative chosen from the group consisting of esters, symmetrical ethers and alkyl halogens containing from 1 to 20 carbon atoms per molecule in the alcohol moiety to produce a carboxylic acid having one more carbon atom per molecule than that in the alcohol moiety of the alcohol or alcohol derivative comprising reacting said alcohol or said alcohol derivative with carbon monoxide at a temperature between 50° and 300°C in the presence of a cationic complex catalyst selected from the group consisting of cationic complex of univalent rhodium, univalent iridium, trivalent rhodium and trivalent iridium, containing a stabilizing ligand selected from the group consisting of acetonitrile, benzonitrile, n-butyl isocyanate, benzene, toluene, hexamethyl benzene, an aryl phosphite or an aryl phosphine, and wherein the anionic moiety in the cationic complex catalyst is a radical selected from the group consisting of phosphates, sulphates, perchlorates, borates, iodates, and bromates, and optionally, a promoter selected from the group consisting of bromine, iodine, a hydrogen halide, an alkyl halide, an aryl halide, and a metal halide.

3,923,881

PROCESS FOR THE PREPARATION OF C_4 DICARBOXYLIC ACIDS FROM 2-BUTENE

Jawad H. Murib, and Charles E. Frank, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 197,495, Nov. 10, 1971, Pat. No. 3,792,086, which is a continuation-in-part of Ser. No. 99,283, Dec. 17, 1970, abandoned. This application Dec. 28, 1973, Ser. No. 429,407The portion of the term of this patent subsequent to Feb. 12, 1991, has been disclaimed.

Int. Cl.² C07C 51/32, 55/10, 57/14

U.S. Cl. 260—533 R 6 Claims

1. A process for the preparation of C_4 dicarboxylic organic acids which comprises oxidizing 2-butene in the vapor phase with molecular oxygen in the presence of a catalyst composition consisting essentially of phosphoric acid and a catalytically effective amount of at least one metal selected from the group consisting of palladium, platinum, rhodium, ruthenium, iridium, copper, silver, gold, cobalt, nickel, chromium and mixtures thereof.

3,923,882

PRODUCTION OF ACETIC ACID

Ben Wilton Kiff, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Apr. 17, 1974, Ser. No. 461,731

Int. Cl.² C07C 51/16, 51/32

U.S. Cl. 260—533 R 3 Claims

1. A continuous process for the liquid phase oxidation of butane to provide acetic acid comprising

a. admixing butane; a molecular oxygen-containing gas; initially a solvent comprising a carboxylic acid having 2 to 4 carbon atoms or a mixture of liquid products formed by the process; a cobalt catalyst; and ethanol in a reaction zone

wherein, at the beginning of each cycle, the amount of butane is in the range of about 5 percent by weight to about 150 percent by weight provided that there is a molar excess of hydrocarbon over oxygen; the amount of cobalt is in the range of about 0.03 percent by weight to about 3 percent by weight provided that the cobalt is in the form of a salt soluble in the solvent; and the amount of ethanol is about 1 percent by weight to about 20 percent by weight, said percentages based on the weight of the solvent, and

wherein the temperature is in the range of about 80°C to about 150°C; and the total reaction pressure and partial pressure of oxygen are sufficient to maintain the reaction in the liquid phase

to form a mixture of liquid products including acetic acid; and

b. passing the mixture of liquid products, the cobalt catalyst, and unreacted butane from step (a) into a separation zone

wherein a portion of the acetic acid is separated and recovered, and

wherein a portion of the mixture of liquid products in sufficient amount to provide solvent for step (a), the cobalt catalyst, and the unreacted butane are separated and recycled to the reaction zone.

3,923,883

METHOD FOR THE OXYCARBONYLATION OF OLEFINS

Wolfgang Gaenzler, Darmstadt-Eberstadt; Klaus Kabs, Seeheim, and Guenter Schroeder, Ober-Ramstadt, all of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Continuation-in-part of Ser. No. 437,201, Jan. 28, 1974, abandoned, which is a continuation-in-part of Ser. No. 382,378, July 25, 1973, abandoned. This application May 8, 1974, Ser. No. 468,064

Claims priority, application Germany, May 12, 1973, 2324132

Int. Cl.² C07C *51/14, 57/04*

U.S. Cl. 260—533 A 18 Claims

1. In the method for preparing α,β-unsaturated carboxylic acids by the oxidative carbonylation of an α-olefin with oxygen and carbon monoxide, in a substantially non-aqueous reaction medium in the presence of a catalytic amount of a catalyst soluble in said non-aqueous medium, the improvement wherein said catalyst consists essentially of a mixture of:

A. at least one compound of aluminum, silicon, phosphorus, or gallium, or of an alkaline earth metal, and

B. at least one compound of iron, copper, or of a metal of Groups IV B to VII B having an atomic weight up to 184.

3,923,884

PROCESS FOR PRODUCING DL-TARTARIC ACID

Eiichi Yonemitsu; Hiroshi Miyamori; Mutsuhiko Takeda, all of Chiba, and Yukio Sasaki, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Apr. 17, 1974, Ser. No. 461,656

Claims priority, application Japan, Apr. 17, 1973, 46-43429

Int. Cl.² C07C *59/14*

U.S. Cl. 260—536 10 Claims

1. A process for producing dl-tartaric acid by hydrolysis of epoxysuccinic acid, comprising contacting an aqueous epoxysuccinic acid solution with a catalyst consisting essentially of activated charcoal, aluminum oxide or ferric oxide, and mixtures thereof said catalyst being substantially insoluble in said aqueous epoxysuccinic acid solution.

3,923,885

POLYFLUOROALKOXY-SUBSTITUTED AROMATIC CARBOXYLIC ACIDS

Arthur Mendel, Vadnais Heights, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Division of Ser. No. 57,350, July 22, 1970, Pat. No. 3,766,247. This application Apr. 9, 1973, Ser. No. 349,237

Int. Cl.² C07C *65/08, 63/02, 65/14*

U.S. Cl. 260—544 M 7 Claims

1. A compound of the formula



wherein X is halogen selected from fluorine, chlorine and bromine, Ar is a naphthalene nucleus, each R_f is a fluorocarbon group containing from 1 to 3 carbon atoms and n is 1 to 3.

3,923,886

SULFAMIDES

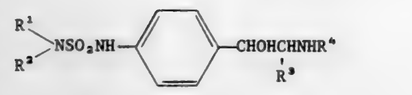
William T. Comer, and John D. Catt, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Sept. 20, 1973, Ser. No. 399,024

Int. Cl.² C07C *143/76*

U.S. Cl. 260—556 N 11 Claims

1. A compound selected from the group consisting of substances having the formula



wherein

R^1 is hydrogen, lower alkyl having from 1 to 4 carbon atoms, cyclopropyl, phenyl, or tolyl;

R^2 is hydrogen, lower alkyl having from 1 to 4 carbon atoms, cyclopropyl, or benzyl; or

R^1 and R^2 are joined to form with the nitrogen atom to which they are attached the 1-piperidyl group;

R^3 is hydrogen, methyl, or ethyl; and

R^4 is hydrogen, cyclopropyl, or lower alkyl having from 1 to 4 carbon atoms

and the pharmaceutically acceptable acid addition and metal salts thereof.

3,923,887

DERIVATIVES OF 2-AMINOINDANE, THE PREPARATION AND USE THEREOF

Pierre M. Vanhoof, and Pierre M. Clarebout, both of Brussels, Belgium, assignors to A. Christiaens Societe Anonyme, Brussels, Belgium

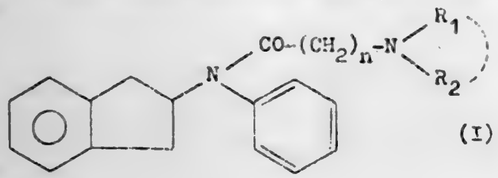
Filed Feb. 5, 1974, Ser. No. 439,773

Claims priority, application United Kingdom, Mar. 2, 1973, 10302/73; Feb. 5, 1973, 5631/73

Int. Cl.² C07C *103/38*

U.S. Cl. 260—562 N 5 Claims

1. New derivatives of 2-aminoindane of the general formula:



(I)

in which $n = 1$ or 2, R_1 represents hydrogen or a lower alkyl or hydroxyalkyl group containing 1 to 3 carbon atoms, R_2 represents a lower alkyl or hydroxyalkyl group containing 1 to 3 carbon atoms, whereby R_1 and R_2 may represent identical or different groups, as well as the acid addition salts of said new derivatives of 2-aminoindane.

3,923,888

AMINOPHENYLAMIDINES, THEIR PRODUCTION AND THEIR MEDICINAL USE

Hartmund Wollweber, Wuppertal, Germany, and Winfried Flucke, Beenleigh, Australia, assignors to Bayer Aktiengesellschaft, Germany

Division of Ser. No. 151,575, June 9, 1971, Pat. No. 3,855,292. This application Sept. 24, 1973, Ser. No. 399,813

Claims priority, application Germany, June 13, 1970, 2029299The portion of the term of this patent subsequent to Dec. 17, 1991, has been disclaimed.

Int. Cl.² C07C *123/00*

U.S. Cl. 260—564 RF 4 Claims

1. A compound of the formula:



wherein

R^1 is hydrogen, alkyl of 1 to 5 carbon atoms, alkoxyalkyl of 2 to 5 carbon atoms or alkenyl of 2 to 5 carbon atoms;

each of R^3 and R^4, independently of the other, is alkyl of 1 to 6 carbon atoms, or one is hydrogen and the other is alkyl of 1 to 6 carbon atoms;

R is alkyl of 1 to 5 carbon atoms;

R^5 is alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, alkynyl of 2 to 4 carbon atoms, or cycloalkyl of 3 to 6 carbon atoms; and

R^6 is hydrogen, alkyl of 1 to 5 carbon atoms or alkenyl of 2 to 5 carbon atoms;

or a salt thereof of a pharmaceutically acceptable acid.

3,923,889

ALCOHOL-SOLUBLE ETHYL AURAMINE SALTS

Karl Schmeidl, Frankenthal; Manfred Eisert, Ludwigshafen, and Guenther Riefel, Heidelberg, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Jan. 8, 1973, Ser. No. 321,938

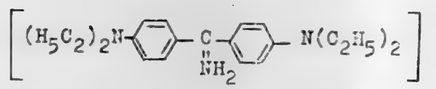
Claims priority, application Germany, Mar. 22, 1972, 2213848; Jan. 11, 1972, 2201162; Feb. 18, 1972, 2207609

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07C *119/00*

U.S. Cl. 260—566 R 1 Claim

1. The dye of the formula:



(+) $SCN^{(-)}$

3,923,890

AMINOALKOXY-TETRAHYDRO-CYCLOPROPA [B]NAPHTHALENES

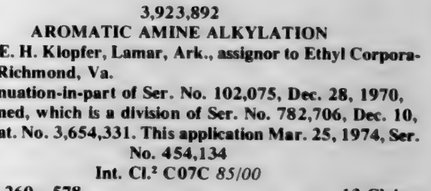
Venkatachala L. Narayanan, Hightstown, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 252,814, May 12, 1972, Pat. No. 3,796,760, which is a division of Ser. No. 73,668, Sept. 18, 1970, Pat. No. 3,694,512. This application Dec. 17, 1973, Ser. No. 425,413

Int. Cl.² C07C *93/06*

U.S. Cl. 260—570.7 2 Claims

1. Compounds of the structure



wherein R is hydrogen, lower alkyl, lower alkoxy or cycloalkyl; R^1 and R^2 are the same or different and are hydrogen, lower alkyl or lower alkoxy; R^3 and R^4 are the same or different and are hydrogen, chlorine or bromine, at least one of R^3 and R^4 being other than hydrogen; R^7 and R^8 are the same or different and are hydrogen, lower alkyl, benzyl, monocyclic cycloalkyl, monocyclic aryl or hydroxy-lower alkyl; n is 2 to 6; and acid addition salts thereof, wherein lower alkyl and lower alkoxy refer to groups having up to 8 carbon atoms; wherein cycloalkyl refers to cycloalkyl groups having 3 to 6 carbon atoms; and wherein monocyclic aryl is phenyl, lower alkylphenyl, di-lower alkylphenyl, chlorophenyl, bromophenyl, nitrophenyl or 2,4,6-trichlorophenyl.

3,923,891

HYDROGENATION OF BENZONITRILE TO DIBENZYLAMINE

Harold Greenfield, Watertown, and Ronald S. Sekellick, Naugatuck, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Jan. 18, 1973, Ser. No. 324,684

Int. Cl.² C07C *87/29*

U.S. Cl. 260—570.9 6 Claims

1. In a process for the hydrogenation of benzonitrile to dibenzylamine, the improvement of carrying out the reaction in the presence of a platinum catalyst and from 3 to 50 parts of water per 100 parts of benzonitrile.

3,923,892

AROMATIC AMINE ALKYLATION

Osakar E. H. Klopfer, Lamar, Ark., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 102,075, Dec. 28, 1970, abandoned, which is a division of Ser. No. 782,706, Dec. 10, 1968, Pat. No. 3,654,331. This application Mar. 25, 1974, Ser. No. 454,134

Int. Cl.² C07C *85/00*

U.S. Cl. 260—578 13 Claims

1. In a process for alkylating an aromatic amine selectively in a nuclear position ortho to the amine group, said aromatic amine having at least one hydrogen atom bonded to said amine group and having at least one nuclear position ortho to said amine group unsubstituted except for hydrogen, said process comprising reacting said aromatic amine with an olefin hydrocarbon at a temperature of about 200°–400°C in the presence of an aluminum anilide catalyst, the improvement of forming said aluminum anilide catalyst by adding an alkyl aluminum halide to said aromatic amine, said improvement resulting in an alkylation rate in excess of that obtained under the same conditions using a non-halogen aluminum anilide catalyst.

3,923,893
PRODUCTION OF SECONDARY ALKYL PRIMARY AMINES

Walter C. Gates, Jr., Newburgh; Robert M. Suggitt, Wappingers Falls, and Ralph B. Hudson, Jr., Beacon, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,639
Int. Cl.² C07C *85/11, 85/00, 87/04*
U.S. Cl. 260—583 M **10 Claims**

1. In a process for producing secondary alkyl primary amines from n-paraffins having from 6 to 30 carbon atoms wherein a portion of said n-paraffin is nitrated to form a nitroparaffin along with nitrated and oxygenated by-products, wherein said nitroparaffin is essentially completely hydrogenated to said amine and where said amine is separated and recovered from a mixture of unreacted paraffin and by-products, the improvement which comprises:
   a. catalytically hydrogenating said mixture of unreacted paraffin and by-products containing from about 10 to 5000 parts per million of nitrogen present as aminated by-products at a temperature of from about 650 to 710°F. under a hydrogen pressure of about 100 to 1500 p.s.i.g. in the presence of a catalyst composed of alumina and a Group VIII metal and
   b. recycling said hydrogenated product of (a) for nitration with said n-paraffin.

3,923,894
PROCESS FOR SEPARATING ETHYLENE DIAMINE FROM CAUSTIC AND SODIUM CHLORIDE

Harry W. Andrewsen, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 16, 1972, Ser. No. 235,184
Int. Cl.² C07C *85/26*
U.S. Cl. 260—583 N **6 Claims**

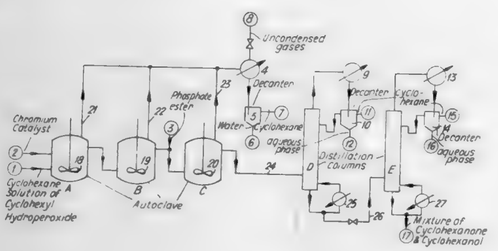
1. The process of: (1) separating sodium chloride, and (2) quantitatively separating ethylene diamine from a mixture comprising water, caustic, ethylene diamine and sodium chloride, which comprises:
   a. evaporating ethylene diamine and water from said mixture at a temperature in the range of from about 150° to 300°F. and a pressure in the range of from about 1 to 12 psia, said evaporation of diamine being substantially quantitative until
      i. the concentration of caustic in the remaining portion of said mixture is 40 to 75 weight percent based on the caustic and water content of said remaining portion, and
      ii. a portion of said sodium chloride crystallizes in said remaining portion of said mixture; and
   b. separating crystallized sodium chloride from said remaining portion.

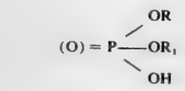
3,923,895
PREPARATION OF CYCLOALKANONES AND CYCLOALKANOLS

Michel Costantini; Noel Crenne, both of Lyon; Michel Jouffret, Francheville-Le-Bas, and Jacques Nouvel, Lyon, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed May 14, 1971, Ser. No. 143,472
Claims priority, application France, May 15, 1970, 70.17837
Int. Cl.² C07C *49/30, 35/08*
U.S. Cl. 260—586 P **3 Claims**

1. In a process for the continuous preparation of a mixture of cyclohexanone and cyclohexanol by oxidation of cyclohexane in the liquid phase by means of a gas containing molecular oxygen, followed by heating the resulting solution of cyclohexyl hydroperoxide in cyclohexane, at 80°–150° C. in the presence of a soluble chromium catalyst, the improvement which comprises carrying out at least a part of the heating of the hydroperoxide solution in the presence of a monoester of diester of orthophosphoric acid which is soluble in the reaction medium and which has the formula:





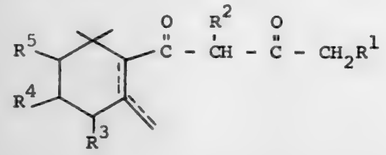
in which R represents a hydrocarbon selected from the group consisting of alkyl, cycloalkyl, aryl and aralkyl having up to 18 carbon atoms and R_1 represents a hydrogen atom or a hydrocarbon selected from the group consisting of alkyl, cycloalkyl, aryl and aralkyl having up to 18 carbon atoms, R and R_1 being the same or different, at least one of R and R_1 having more than three carbon atoms, and wherein the amount of orthophosphate ester used is such that it introduces 0.5 to 2.5 gram atoms of phosphorus per gram atom of chromium introduced in the form of a catalyst.

3,923,896
SUBSTITUTED-3-OXO-BUTANOYL-CYCLOHEXENES

Karl-Heinrich Schulte-Elte, Onex, Geneva, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

Filed Mar. 30, 1973, Ser. No. 346,296
Claims priority, application Switzerland, Mar. 30, 1972, 4770/72
Int. Cl.² C07C *49/61*
U.S. Cl. 260—586 R **4 Claims**

1. Compounds of the formula



wherein the ring contains one double bond in position 1 or an exocyclic bond at position 2, R^1 and R^2 both represent hydrogen or one of them represents a lower alkyl containing from 1 to 6 carbon atoms and the other hydrogen, R^3, R^4 and R^5 all represent hydrogen or one of them represents a lower alkyl containing from 1 to 6 carbon atoms and the others hydrogen.

3,923,897
PRODUCTION OF HOPLIKE BEVERAGE BITTERING MATERIALS

Leonard R. Worden, Kalamazoo, Mich., assignor to Kalamazoo Spice Extraction Company, Kalamazoo, Mich.

Filed Apr. 2, 1973, Ser. No. 346,741
Int. Cl.² C07C *45/16, 45/00*
U.S. Cl. 260—586 D **15 Claims**

1. The process for the oxidation of a 3′,5′-dialkyl-2′,4′,6′-trihydroxyalkanoylphenone to a 6-alkanoyl-2,4-dialkyl-2-hydroxycyclohexane-1,3,5-trione, an alpha acid, said alkanoyl and alkyl groups containing a maximum of 8 carbon atoms, comprising the step of contacting an organic peracid oxidizing agent with the starting 3′,5′-dialkyl-2′,4′,6′-trihydroxyalkanoylphenone in the liquid phase to produce said 6-alkanoyl-2,4-dialkyl-2-hydroxycyclohexane-1,3,5-trione.

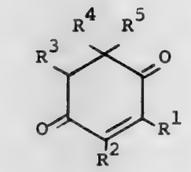
7. A process of claim 1 which further includes the production of a 2,4-dialkanoyl-5-alkyl-4-hydroxycyclopentane-1,3-dione as iso-alpha acid, by carrying out said oxidation of said phenone with a peracid in the presence of a water-immiscible organic solvent, and isomerizing the said thus-formed trione, an alpha acid, into an iso-alpha acid without isolation of the trione by adding sufficient salt of a metal, selected from the group consisting of sodium, potassium, manganese, nickel, cerium, and Group IIA and Group IIB elements of the Periodic Table, to maintain the alpha acid in the water-immiscible organic solvent, the pH being maintained at 13 or below.

3,923,898
PROCESS FOR THE OXIDATION OF ALKYL-SUBSTITTUTED 2-CYCLOHEXEN-1-ONES

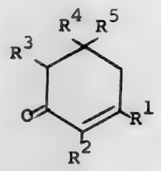
Karl-Heinrich Schulte-Elte, Geneva, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

Filed Nov. 8, 1973, Ser. No. 414,083
Claims priority, application Switzerland, Nov. 16, 1972, 16737/72
Int. Cl.² C07C *45/00*
U.S. Cl. 260—586 P **3 Claims**

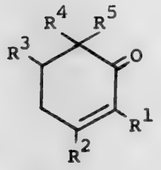
1. A process for the preparation of a diketone compound of the formula



wherein (a) one of the symbols R^1, R^2, and R^3 represents a lower alkyl radical and each of the two others represents a hydrogen atom, or (b) two of the symbols R^1, R^2 and R^3 represent each a lower alkyl radical and the other a hydrogen atom and wherein each of the symbols R^4 and R^5 represents a lower alkyl radical, which comprises contacting a ketone compound of the formula:



or



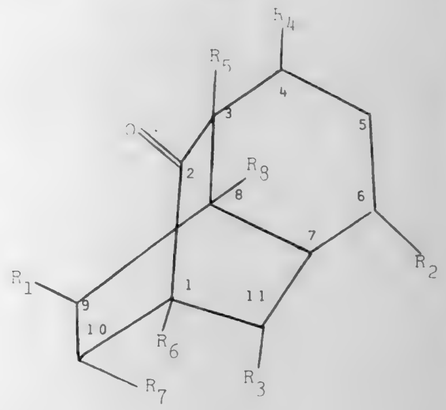
wherein R^1, R^2, R^3, R^4 and R^5 are the same as defined in Formula I above with at least three equivalents, per equivalent of ketone, of an oxidation agent selected from alkali metal chromate, alkali metal bichromate and chromium trioxide and a mixture of acetic acid and acetic anhydride to directly oxidize the ketone to the diketone; said contacting being carried out at a temperature of between about 5° and 50°C.

3,923,899
TRICYCLO(5,3,1,$0^{3,8}$)UNDECA-5,9-DIEN-2-ONES

Georg Frater, Greifensee; Hans Greuter, Horgen, and Hans Schmid, Schwerzenbach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 300,603, Oct. 25, 1972, Pat. No. 3,836,584. This application Apr. 12, 1974, Ser. No. 460,631
Claims priority, application Switzerland, Nov. 21, 1971, 16517/71
Int. Cl.² C07C *49/45*
U.S. Cl. 260—586 G **7 Claims**

1. A compound of the formula:



wherein R_1, R_7 and R_8 are independently selected from the group consisting of lower alkyl, hydrogen and lower alkoxy; R_2 is a hydrogen atom, lower alkyl or lower alkenyl; R_3 and R_4 are independently selected from the group consisting of hydrogen or lower alkyl; R_5 and R_6 are independently lower alkyl.

3,923,900
1-(6-METHOXY-2-NAPHTHYL)ETHYL HYDROXYMETHYLKETONE

Francis J. Petracek, Bloomington, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Filed May 3, 1972, Ser. No. 250,039
Int. Cl.² C07C *49/76, 49/82*
U.S. Cl. 260—590 **2 Claims**

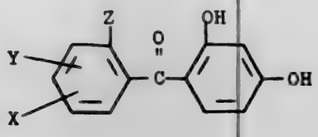
1. The compound 1-(6-methoxy-2-naphthyl)ethyl hydroxymethylketone.

3,923,901
PARTIAL ALKYLATION OF POLYHYDROXYBENZOPHENONES

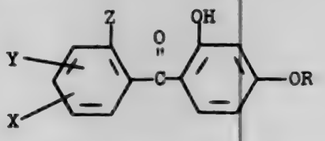
Dale Edward Battin, Parkersburg, W. Va., and Harold Godfred Thompson, Somerville, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 66,882, Aug. 25, 1970, abandoned. This application Aug. 31, 1973, Ser. No. 393,375
Int. Cl.² C07C *49/80, 49/84*
U.S. Cl. 260—591 **7 Claims**

1. In the process for alkylating a polyhydroxybenzophenone of the formula:



where Z is hydrogen, alkyl, alkoxy, halogen or hydroxy and where X and Y individually are hydrogen, alkyl, alkoxy or halogen to produce an ortho hydroxy, para alkoxybenzophenone of the formula



where R is alkyl and Z and X and Y are as defined above; said process involving refluxing the polyhydroxyphenone in a solvent containing an alkyl halide selected from the group consisting of alkyl chlorides, alkyl bromides and alkyl iodides and an acid acceptor for a time sufficient to effect alkylation, and recovering the alkylated product, the improvement which comprises conducting said alkylation in a solvent selected from the group consisting of the mono lower alkyl ethers of ethylene glycol or diethylene glycol.

3,923,902
ALIPHATIC COMPOUNDS CONTAINING OXYGEN ATOMS

Harold Crosbie Fielding, Northwich, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 699,049, Jan. 19, 1968, Pat. No. 3,632,641. This application Dec. 30, 1970, Ser. No. 102,918
Claims priority, application United Kingdom, Jan. 23, 1967, 3361/67
Int. Cl. C07c *49/04*
U.S. Cl. 260—593 H **3 Claims**

1. A process for making the perfluoroalkylmethyl trifluoromethyl ketone, $(C_2F_5)_2(CF_3)C.CH_2COCF_3$, comprising reacting at 25° to 100°C. tetrafluoroethylene pentamer which is internally unsaturated and branched chain and has the emperical formula $(C_2F_4)_5$ with an aqueous solution of an alkali metal hydroxide selected from sodium hydroxide and potassium hydroxide containing from 5 to 15% by weight of the alkali metal hydroxide.

3,923,903
OXIDATION OF CYCLIC MONO-OLEFINS TO α,ω-DIALDEYDES

Laszlo Imre, Cologne; Alfons Klein, Dusseldorf, and Karlfried Wedemeyer, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 28, 1973, Ser. No. 419,852
Claims priority, application Germany, Dec. 16, 1972, 2261657; June 9, 1973, 2329586
Int. Cl.² C07C *45/02*
U.S. Cl. 260—598 **9 Claims**

1. A process for the production of an alpha,omega-dialdehyde, comprising reacting a cyclic mono-olefin having about five 12 carbon atoms in the gaseous phase with about 0.005 to 200 times the molar amount of oxygen without a catalyst at a temperature of about 200° to 500°C and a pressure of about 0.05 to 100 atmospheres.

3,923,904
METHOD FOR PREPARING DIETHYLKETONE WITH GOOD SELECTIVITY

Hajime Hara, Fujisawa, Japan, assignor to Nippon Oil Company Ltd., Tokyo, Japan

Filed Apr. 23, 1973, Ser. No. 353,529
Claims priority, application Japan, Apr. 26, 1972, 47-41862
Int. Cl.² C07C *45/02*
U.S. Cl. 260—597 A **9 Claims**

1. A method for producing diethylketone with increased formation velocity for reacting ethylene with carbon monoxide at a temperature of 100° – 300°C., a pressure of 10 – 300 Kg/cm², and in a alcohol-water solvent system, said alcohol selected from the group consisting of lower saturated aliphatic monohydric alcohols and ethyleneglycol, in the presence of a combined catalyst system of a rhodium compound selected from the group consisting of rhodium oxide, rhodium halogenide, rhodium carbonyl, rhodium complexes having ligands selected from the group consisting of triphenyl phosphine, triphenyl arsine and mixtures thereof, and an organophosphorous compound having an infrared A_1 carbonyl stretching frequency of $Ni(CO)_3L$ (L represents the organophosphorous compound) in methylene chloride in accordance with the definition by Tolman in the range of from 2,066 cm^{-1} to 2,072 cm^{-1}, thereby inhibiting the formation of high boiling substances as by-products.

3,923,905
METHOD OF PREPARING 2,3,5,6-TETRACHLOROBENZENETHIOL

Christian T. Goralski, Midland; George A. Burk, Bay City, and R. Garth Pews, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 19, 1974, Ser. No. 480,659
Int. Cl.² C07C *149/34*
U.S. Cl. 260—609 D **5 Claims**

1. A process for preparing 2,3,5,6-tetrachlorobenzenethiol which comprises reacting an alkali metal sulfhydrate or sulfide with 2,3,5,6-tetrachloronitrobenzene in a mole ratio of from 1:1 to about 2:1 at a temperature of from about 0°C to about 150°C in an inert organic solvent in which both reactants are soluble at the temperature employed.

3,923,906
PROCESS FOR THE MANUFACTURE OF 3-ALOGENO-5-HYDROXY-TRICYCLO[2.2.1.0^{2,6}]HEPTANES

Roger K. Huff, Wokingham, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 11, 1973, Ser. No. 359,585
Claims priority, application Switzerland, July 3, 1972, 9921/72
Int. Cl.² C07C *35/22*
U.S. Cl. 260—617 F **2 Claims**

1. An improved process for the manufacture of 3-halogen-5-hydroxy-tricyclo[2.2.1.0^{2,6}]heptanes of the formula.



where Hal represents chlorine or bromine wherein bicyclo[2.2.1]hepta-2,5-diene is reacted with hypohalous acid or a reagent forming a hypohalous acid in an aqueous organic medium at 0° to 30°C temperature and the product is isolated by extraction and distillation wherein the improvement comprises

employing, based on bicyclo[2.2.1]hepta-2,5-diene, essentially an equimolar amount of N-chlorosuccinimide or N-bromosuccinimide as said reagent forming a hypohalous acid, and

carrying out the reaction in said aqueous organic medium consisting of a 50:50 by volume of mixture of water: dioxane or water: acetone.

3,923,907
PROCESS FOR THE PREPARATION OF METHYLATED PHENOLS

Takeshi Kotanigawa; Mitsuyoshi Yamamoto, and Katsuyoshi Shimokawa, all of Sapporo, Japan, assignors to Director-General, Agency of Industrial Science and Technology, Japan

Filed July 19, 1972, Ser. No. 273,049
Claims priority, application Japan, July 21, 1971, 46-54429
Int. Cl.² C07C *37/16*
U.S. Cl. 260—621 R **6 Claims**

1. A process for methylating a phenol in an ortho position which comprises reacting a phenol having at least one unsubstituted ortho position and a methanol in the vapor phase in the presence of a catalyst consisting essentially of a sintered mixture of ferric oxide, zinc oxide, and a small amount of manganese oxide up to about 1.0%, calculated in terms of manganese, by weight of said ferric and zinc oxides, said phenol being of the group consisting of phenol; o-, m-, or p-cresol; 2, 3-, 2, 4-, 2, 5-, 3, 4-, or 3, 5-xylenol; or a trimethylphenol having at least one unsubstituted ortho position, said ferric oxide and zinc oxide being present in proportions giving an approximate ratio of ferric iron to zinc on an atomic weight basis of 2:1 to 2:3.

3,923,908
PROCESS FOR THE PREPARATION OF HYDROQUINONE AND/OR RESORCINOL BY THE CLEAVAGE OF DIHYDROPEROXIDES

Hideaki Suda, Takaishi; Iwao Dohgane, Nishinomiya; Takashi Chinuki, Toyonaka; Kenji Tanimoto; Hirokazu Hosaka, both of Minoo; Yukimichi Nakao, Kobe; Yuji Ueda, Izumi-otsu; Seiya Imada, Sakai; Hideki Yanagihara, Toyonaka, and Kunihiko Tanaka, Ibaragi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 31, 1973, Ser. No. 411,362
Claims priority, application Japan, Nov. 21, 1972, 47-117446
Int. Cl.² C07C *37/08*
U.S. Cl. 260—621 C **2 Claims**

1. In a process for cleaving diisopropylbenzene dihydroperoxides by contacting a cleavage feed solution of the dihydroperoxides referred to as DHPO containing as impurities isopropylphenyldimethylcarbinol referred to as MCA, (2-hydroxy-2-propyl) cumene hydroperoxide referred to as CHPO and di-(2-hydroxy-2-propyl)benzene referred to as DCA, with an acid catalyst to obtain resorcinol and/or hydroquinone, the improvement which comprises carrying out the cleavage reaction of the dihydroperoxides by controlling the content of the impurities in the said feed solution to keep the ratio of the number of 2-hydroxy-2-propyl groups to the number of molecules of the dihydroperoxides as expressed by the equation the ratio = moles of MCA + moles of CHPO + 2 × moles of DCA/moles of DHPO
to a value of not more than about 0.16.

3,923,909
OXIDATION OF DIETHYLBENZENES

Philippe Jean Andre Camerman, Wezembeek-Oppem, Belgium, assignor to Labofina S.A., Brussels, Belgium

Filed Feb. 20, 1973, Ser. No. 334,084
Claims priority, application Belgium, Oct. 4, 1972, 122730
Int. Cl.² C07C *39/02*
U.S. Cl. 260—624 R **14 Claims**

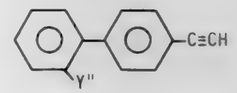
1. A process for producing ethylphenols which comprises (1) the oxidation of diethylbenzene by passing a molecular oxygen containing gas into contact with said diethylbenzene at a temperature between 125° and 160°C. to convert 5 to 30 percent of said diethylbenzene into diethylbenzene mono-hydroperoxide, (2) withdrawing the reaction mixture, separating the unconverted diethylbenzene therefrom to obtain a mono-hydroperoxide concentrate containing at least 40 percent of diethylbenzene mono-hydroperoxide, (3) mixing the diethylbenzene mono-hydroperoxide concentrate with a solvent selected from the group consisting of lower alkanols, lower alkanones and mixtures thereof, (4) decomposing said mono-hydroperoxide by intimately contacting said mixture of diethylbenzene mono-hydroperoxide and solvent with between 0.05 and 5 percent by weight of total reaction mixture of a strong acid, which does not interfere with the reaction, in concentrated form at a temperature between about 55° and 75°C., and neutralizing the resulting mixture, and (5) distilling the neutralized mixture to recover a bottom fraction containing ethylphenol and a top fraction containing acetaldehyde.

3,923,910
ETHYNYLBENZENE COMPOUNDS AND DERIVATIVES THEREOF

Julius Diamond, Lafayette Hill, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 268,419, July 3, 1972, Pat. No. 3,852,364. This application Jan. 7, 1974, Ser. No. 431,254
Int. Cl.² C07C *25/26*
U.S. Cl. 260—649 DP **4 Claims**

1. A compound of the formula



where:
Y'' is halo.

3,923,911
AR-VINYLBENZYL IODIDE

Suzanne V. McKinley, Wellesley, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 9, 1973, Ser. No. 377,480
Int. Cl.² C07C *25/14*
U.S. Cl. 260—651 R **2 Claims**

1. Meta- or para- ar-vinylbenzyl iodide.

3,923,912
METHYLENE CHLORIDE STABILIZED WITH KETONES

Norman L. Beckers, Chardon, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Feb. 23, 1973, Ser. No. 334,985
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C07C *17/40*
U.S. Cl. 260—652.5 R **2 Claims**

1. A stabilized methylene chloride composition consisting essentially of methylene chloride and stabilizing amounts of from about 0.05 to about 2.0 percent by weight of the methy-

lene chloride of a compound selected from the group consisting of methyl ethyl ketone and acetone.

3,923,913

PROCESS FOR OBTAINING CHLORINATED DERIVATIVES OF ETHYLENE

Albert Antonini, Paris; Maurice Goharel, Saint-Auban; Claude Kaziz, La Courneuve, and Georges Wetroff, Le Thillay, all of France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Courbevoie, France

Continuation of Ser. No. 731,690, May 20, 1968, abandoned, which is a continuation of Ser. No. 453,818, May 6, 1965, abandoned. This application Aug. 2, 1973, Ser. No. 385,099

Claims priority, application France, May 12, 1964, 64.974079

Int. Cl.² C07C *21/00*

U.S. Cl. 260—654 H **6 Claims**

1. A continuous process for obtaining chlorinated ethylene derivatives wherein there are provided two successive reaction zones, one zone comprising a thermal zone for thermal chlorination and dehydrochlorination, and the other zone comprising an oxychlorination zone for catalytic oxychlorination, providing a regulating balance of C_2 compounds from one zone to the other, said process comprising the steps of introducing into said thermal zone three groups of reactants, the first of said groups consisting essentially of chlorine introduced at the rate of x moles/hour and ethane introduced at the rate of y moles/hour, the second of said groups consisting essentially of chloroethanes introduced at the rate of u moles/-hour as the regulating blanace from the oxychlorination to the thermal zone, and the third of said groups consisting essentially of a member selected from the group consisting of ethylene and at least one compound selected from the group consisting of vinyl chloride, vinylidene chloride, cis and trans dichloroethylenes, trichloroethylene and tetrachloroethylene introduced at the rate of v moles/hours, maintaining said thermal zone at a temperature between 400° to 650°C, the feeding of said groups of reactants being conducted whereby the ratio

$$\frac{u}{x+y}$$

is between 0.5 and 1.5, (v/u) is lower than 4, and

$$\frac{x}{y+v}$$

is lower than 3.5, maintaining the contact time in the thermal zone to provide a space velocity higher than 40 h^{-1} but not over 1200 h^{-1}, the effluent from said thermal zone comprising a mixture of hydrochloric acid, ethylene and at least one compound selected from the group consisting of vinyl chloride, vinylidene chloride, cis and trans dichloroethylenes, trichloroethylene and tetrachloroethylene, dividing the effluent from the thermal zone into two portions in which a first portion, forming 5 to 90 molar percent of the effluent, is introduced directly into the oxychlorination zone and a second portion comprising 10 to 95 molar percent of the effluent, treating the second portion for separation into one fraction free of hydrochloric acid and ethylene and thereby comprising the product of the process of one other fraction containing hydrochloric acid and ethylene, introducing said other fraction into the oxychlorination zone along with the first portion with the total hydrochloric acid introduced into the oxychlorination zone comprising 60 to 78 molar percent, based on the moles of compounds in the first portion and said other fraction and from which the hydrochloric acid is derived, and then introducing an oxygen containing gas into said oxychlorination zone with the oxygen representing 5 to 20 percent of the volume of said first portion and said other fraction taken in the vapor state, maintaining the reactants in said oxychlorination zone for a period of time between 1 and 25 seconds at a temperature ranging between 200° and 400°C, collecting at the outlet of the oxychlorination zone a mixture comprising an organic phase containing chloroethanes, and introducing said organic phase into said thermal zone to thereby adjust to u moles said second reactant group and to v moles of said third reactant group.

3,923,914

CHEMICAL PROCESS

Paul Kobetz, and Kenneth L. Lindsay, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed July 2, 1973, Ser. No. 375,871

Int. Cl.² C07C *17/20*

U.S. Cl. 260—658 R **10 Claims**

1. A catalyst free process for the production of dibromomethane and by-product alkali metal chloride comprising reacting, at a temperature within the range of from about 100° to about 175°C and in the presence of an inert solvent, alkali metal bromide and dihalomethane wherein at least one of the halogen constituents of the dihalomethane is chlorine and the remaining halogen is either chlorine or bromine, and the alkali metal constituent of the alkali metal bromide has an atomic number greater than 3 and wherein the dibromomethane and reactants are soluble in the solvent but in which solvent the alkali metal by-product is substantially insoluble and the solvent consists essentially of a mixture of monoalkyl ether of alkylene glycol and water in a volume ratio within the range of from about 1:1 to about 3:1 of the monoalkyl ether of alkylene glycol to water.

3,923,915

ISOMERIZATION OF SATURATED ALIPHATIC AND NAPHTHENIC HYDROCARBONS WITH A CATALYST CONTAINING A HYDROCARBYL-AROMATIC COMPOUND

Jean-Pierre Franck, Bougival; Bernard Torck, Boulogne-sur-Seine, and Jean-Francois Le Page, Rueil-Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Aug. 29, 1974, Ser. No. 501,698

Claims priority, application France, Aug. 30, 1973, 73.31480

Int. Cl.² C07C *3/56*

U.S. Cl. 260—666 P **10 Claims**

1. A process for the isomerization of a member selected from the group consisting of saturated aliphatic hydrocarbons, naphthenic hydrocarbons and mixtures thereof, said process comprising contacting said member at a temperature of 25°–400°C with a catalyst consisting essentially of an alumina carrier having incorporated therewith, at least one hydrogenating metal from Group VI-B, or compound thereof, and/or Group VIII, or compound thereof compound, at least one aluminum halide or hydrocarbylaluminum halide, and at least one hydrocarbylaromatic compound substituted by at least two substituents, said substituents being the same or different and selected from the group consisting of hydroxy, oxo and hydrocarbyloxy.

3,923,916

OXYDEHYDROGENATION OF ETHYL BENZENE

G. Edwin Vrieland, Midland, Mich., and Hans R. Friedli, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 28, 1974, Ser. No. 474,125

Int. Cl.² C07C *5/48*

U.S. Cl. 260—669 R **3 Claims**

1. A method of dehydrogenating ethyl benzene to form styrene comprising passing an oxygen containing gas and vapors of said ethyl benzene in a mole ratio of from about 0.5 to about 4 moles of oxygen per mole of ethyl benzene over a nickel pyrophosphate catalyst at a temperature of from about

450° to about 650°C. at a space velocity of from about 55 to about 2500.

3,923,917

PRODUCTION OF MONOVINYLACETYLENE

Alexander Ohorodnik, Erftstadt Liblar; Klaus Gehrmann, Erftstadt Lechenich; Günter Legutke, Bruhl, and Hermann Vierling, Hurth, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Dec. 10, 1974, Ser. No. 531,213

Claims priority, application Germany, Dec. 17, 1973, 2362602

Int. Cl.² C07C *11/22, 21/20*

U.S. Cl. 260—678 **4 Claims**

1. In a process for making monovinylacetylene, wherein acetylene is introduced at temperatures within the range 40° and 100°C and under acetylene gas pressures within the range 0.01 and 10 atmospheres (gauge) into a Nieuwland catalyst type solution being an aqueous copper(I) chloride solution in hydrochloric acid, which is used in admixture with between 0.1 and 10 weight% of an alkali metal salt of an aminocarboxylic acid or of an aminosulfonic acid and in further admixture with an organic monovinylacetylene solvent boiling at temperatures higher than about 150°C, immiscible with the solution and containing at least 40 weight% of indan together with further mononuclear aromates; wherein the catalyst solution and the solvent are mechanically dispersed by introducing acetylene thereinto with the resultant formation of a homogeneous catalyst liquid having between 25 and 85 % by volume of the solvent therein; wherein monovinylacetylene is continually stripped off from the dispersed solvent, which is saturated with monovinylacetylene, by introducing an excess of acetylene gas thereinto and wherein pure monovinylacetylene is recovered from the issuing gas mixture the improvement which comprises, concentrating the catalyst solution by evaporating water therefrom and dissolving additional copper(I) chloride in the catalyst solution so concentrated thereby establishing a molar ratio of Copper(I) Chloride to Alkali metal chloride or ammonium chloride complex former within the range 1.1 : 1.0 and 1.5 : 1.0 in the catalyst solution.

3,923,918

DIACETYLENE DIOL DERIVATIVES AND PROCESS FOR PREPARING THE SAME

Takashi Nishida; Yoichi Ninagawa, both of Kurashiki; Yoshiaki Omura, Okayama; Fumio Mori; Yoshim Tamai, both of Kurashiki; Takeo Hosogai, Kiyonemura; Yoshiji Fujita, and Kazno Itori, both of Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Japan

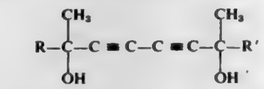
Filed Mar. 6, 1974, Ser. No. 448,700

Claims priority, application Japan, Mar. 19, 1973, 48-32274

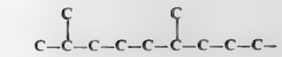
Int. Cl.² C07C *9/00, 5/02*

U.S. Cl. 260—676 **13 Claims**

1. A process for preparing squalane which comprises submitting a compound having the general formula:



wherein R and R'are the same or different and represent saturated or unsaturated hydrocarbon residues having 11 carbon atoms represented by the following carbon atom skeleton:



and may be substituted by a radical capable of being replaced by a hydrogen atom upon hydrogenolysis in the presence of an acidic substance.

3,923,919

ETHYLENE-PROPYLENE COPOLYMER OIL

Richard S. Stearns, Malvern; Irl N. Duling, West Chester, and David S. Gates, Swarthmore, all of Pa., assignors to Sun Ventures, Inc., St. Davids, Pa.

Division of Ser. No. 269,625, July 7, 1972, Pat. No. 3,851,011, which is a continuation-in-part of Ser. Nos. 78,190, Oct. 5, 1970, Pat. No. 3,737,477, and Ser. No. 78,191, Oct. 5, 1970, Pat. No. 3,676,521, and Ser. No. 220,362, Jan. 24, 1972, which is a continuation-in-part of Ser. No. 78,190, , and Ser. No. 78,191, , said Ser. No. 78,190, and Ser. No. 78,191, each is a continuation-in-part of Ser. No. 621,443, March 8, 1967, abandoned. This application Mar. 19, 1974, Ser. No. 452,582. The portion of the term of this patent subsequent to July 11, 1989, has been disclaimed.

Int. Cl.² C07C *3/21, 3/26;* C10M *3/12*

U.S. Cl. 260—683.1 **8 Claims**

1. An ethylene-propylene copolymer oil having a KV_{210} in the range of 2–10 cs., a minimum ASTM D-2270 viscosity index of 110, a maximum pour point of 0°F., an ultraviolet absorptivity no greater than 0.2 at 197 millimicrons and which contains in the range of 40–71 mole percent ethylene as determined by infrared analysis, said oil having a maximum decrease in KV_{100} of 25% when subjected to the thermal stability test set forth in military specification MIL-H-27601A (USAF).

3,923,920

OLEFIN DISPROPORTIONATION CATALYST AND PROCESS FOR USING SAME

Robert B. Regier, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 129,201, March 29, 1971, Pat. No. 3,761,427. This application May 24, 1973, Ser. No. 363,481

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **11 Claims**

1. The process of disproportionating a disproportionatable feed material selected from the group consisting of disproportionatable cyclic and acyclic, branched and unbranched monoolefins and polyenes or mixtures of these monoolefins or polyenes with ethylene by contacting said material with a catalyst consisting essentially of about 0.1 to about 25 weight percent of tungsten oxide, molybdenum oxide, or mixtures thereof, about 0.01 to about 1.0 weight percent of fluorine, the remainder of said composition being substantially silica, the amount of fluorine being based on the weight of silica, and the amount of promoter material being based on the total weight of the composition.

3,923,921

NAPHTHA STEAM-CRACKING QUENCH PROCESS

Walter C. Kohfeldt, Madison, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Continuation of Ser. No. 119,485, March 1, 1971, abandoned. This application May 30, 1973, Ser. No. 365,052

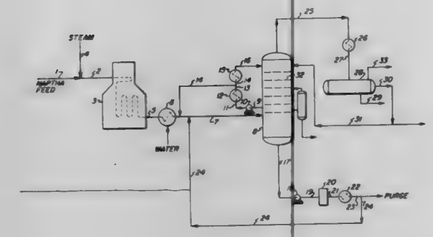
Int. Cl. C07c *3/30;* C10g *9/36*

U.S. Cl. 260—683 R **3 Claims**

1. In a process of treating a hydrocarbon feed stock in a steam-cracking furnace at elevated temperatures and low hydrocarbon partial pressures to form unsaturated hydrocarbon products wherein a quenching medium is introduced into the effluent from the furnace and thereafter passing said effluent through a transfer line heat exchanger to the quench tower, the improvement which comprises passing said effluent

from the furnace through a transfer line heat exchanger zone to lower the temperature of said products below about 850°F. and thereafter contacting said products passing to the quenching and fractionation zone with:

a. from about 0.3 to about 0.8 parts by weight of a steam-cracked oil fraction recovered from the quench tower per one part by weight of the effluent from the furnace, said steam-cracked oil fraction having been withdrawn from the quench tower at a temperature in the range of from about 450° to about 550°F. and thereafter passed through a heat exchanging zone in order to recover high level heat



in an amount in order to generate steam in the range of from about 100 to about 150 psig; and

b. from about 0.01 to about 0.03 parts by weight of a bottom fraction recovered from said quenching tower per one part by weight of the sum of the effluent and the steam-cracked oil fraction, said fraction boiling in the range of from about 500° to about 800°F. to lower the temperature of the products passing through the transfer line to the quench tower to a range of from about 525° to about 600°F. in order to maintain a liquid phase on the wall of said transfer line.

3,923,922

EPOXY-CROSSLINKED, FOAMED NITRILE CONTAINING POLYMERS AND METHOD OF PREPARING SAME

Thomas S. Grant, Vienna, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 301,386, Oct. 27, 1972, abandoned, which is a continuation of Ser. No. 104,520, Jan. 7, 1971, abandoned, and Ser. No. 301,387, Oct. 27, 1972, abandoned, which is a continuation of Ser. No. 104,521, Jan. 7, 1971, abandoned. This application Aug. 19, 1974, Ser. No. 498,784

Int. Cl.² C08J *9/00*; **C08L** *63/00*

U.S. Cl. 260—2.5 EP **9 Claims**

4. A method of making a crosslinked, thermally processable and foamable thermoplastic composition comprising the steps of (1) melt mixing a blend comprising a thermoplastic copolymer selected from the group styrene-acrylonitrile copolymers, graft copolymers of styrene and acrylonitrile on rubbery diene substrates and mixtures thereof, an epoxy resin in the amount of from 0.1 to about 1.0% by weight of the said composition, and an acidic curing agent for the epoxy resin in the amount of from about 0.1 to about 1.0% by weight of the said composition at a temperature greater than 350°F. to thereby cure and crosslink said blend, (2) cooling and pelletizing said crosslinked blend, and (3) mixing said pelletized blend with a foaming agent in the amount of from 0.1 to 5% by weight of said composition.

3,923,923

TOUGHENED POLYSTYRENE

Lawrence D. Fiedler, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Mar. 11, 1974, Ser. No. 449,863

Int. Cl.² C08L *51/08*, *83/10*; **C08F** *283/12*

U.S. Cl. 260—827 **3 Claims**

1. A method for the mass polymerization of styrene comprising

A. heating at a temperature from 80° to 150°C. a mixture of 70 to 99.75 weight percent styrene and 0.25 to 30 weight percent of a benzene soluble polydiorganosiloxane gum, said mixture being heated and agitated until from 10 to 40 weight percent of the styrene has polymerized producing a partially polymerized styrene mixture having particles dispersed therein containing the polydiorganosiloxane gum, said agitation being at a sufficient rate to provide an average particle size of from 0.5 to 10 microns,

B. continuing to heat the partially polymerized styrene mixture at a temperature higher than in step (A) until the styrene is substantially polymerized to polystyrene, during step (B) the agitation rate being reduced below the rate of step (A), thereafter

C. heating the product obtained from step (B) above 200°C. for at least 10 minutes and until the polymerized mass is substantially free of volatile ingredients but at temperatures and times insufficient to degrade the polystyrene, and thereafter a toughened polystyrene is obtained which consists essentially of a continuous polystyrene matrix having dispersed therein gelled particles consisting essentially of polystyrene grafted to a polydiorganosiloxane gum with inclusions of free polystyrene, having a range of diameters from 0.05 to 100 microns inclusive where the geometric mean diameter is from 0.5 to 10 microns, and which has values for room temperature notched Izod impact strengths in foot pounds per inch of notch wherein the notch is 45 degrees and 0.1 inch deep, of at least 0.40 for compression molded and unorientated samples,

said polydiorganosiloxane gum having a Williams plasticity greater than 0.020 inch and consisting essentially of from 50 to 99.9 mol percent dimethylsiloxane units, from 0 to 50 mol percent methylphenylsiloxane units, from 0 to 25 mol percent diphenylsiloxane units and from 0.1 to 30 mol percent methylvinylsiloxane units, said polydiorganosiloxane gum being endblocked with silicon-bonded hydroxyl radicals or triorganosiloxy units wherein the organic radicals are selected from methyl, phenyl and vinyl.

3,923,924

ANTISTATIC FIBER CONTAINING CHAIN-EXTENDED TETROLS BASED ON DIAMINES

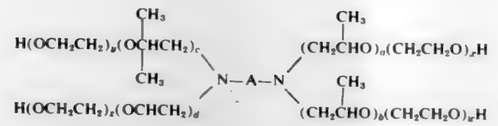
Rodney Lee Wells, and Lamberto Crescentini, both of Chester, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 468,771, May 10, 1974, Pat. No. 3,876,725, which is a continuation-in-part of Ser. No. 341,194, March 14, 1973, abandoned. This application Nov. 29, 1974, Ser. No. 527,995

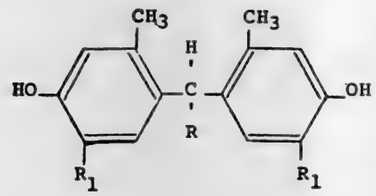
Int. Cl.² C08L *63/00*, *77/00*

U.S. Cl. 260—830 P **10 Claims**

1. In a process for the formation of an antistatic polyamide fiber from a fiber-forming polyamide polymer containing about 1% to 12% by weight of an antistatic compound which is a chain-extended reaction product of a tetrol compound represented by the formula:



where *a*, *b*, *c*, *w*, *x*, *y* and *z* are each a whole number and A is a difunctional radical from a hydrocarbon containing 1 to 13 carbon atoms, said tetrol compound having a molecular weight between about 4,000 and about 50,000, with an organic polyepoxy compound having two epoxy groups as the sole reactive groups under the conditions of the reaction, by extruding the molten polymer through an orifice into a quenching medium and thereafter stretching the resulting filaments, the improvements comprising dissolving in the extrudate prior to extrusion about 0.5 to 12% by weight, based on the weight of the antistatic compound, of a phenol compound of the formula:



where R is an alkyl hydrocarbon group containing less than nine carbon atoms and R_1 is a tertiary alkyl group containing at least four but not more than 12 carbon atoms.

3,923,925

PROCESS FOR THE PREPARATION OF POLYAMIDES WITH INCREASE IMPACT STRENGTH

Kurt Schneider; Friedrich Fahnler; Rolf Dhein, all of Krefeld, and Frieder Heydenreich, Lintorf, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Continuation of Ser. No. 369,505, June 13, 1973, abandoned. This application Dec. 13, 1974, Ser. No. 532,695

Claims priority, application Germany, Oct. 4, 1975, 2248664

Int. Cl.² C08G *69/18*

U.S. Cl. 260—857 PG **1 Claim**

1. A process for the production of polyamides with improved impact strength by activated anionic polymerization of a mixture comprising at least one lactam having at least 5 ring members, 0.1 to 1 mol %, based on the quantity of lactams of an activator selected from the group consisting of mono and polyisocyanates, and corresponding masked isocyanates, and an alkaline catalyst wherein said mixture is polymerized after the addition of 0.4–3% by weight of a high molecular weight polyalkylene glycol having unmodified end groups and a molecular weight of between 20,000 and 35,000 and an OH number below 6.

3,923,926

THIXOTROPIC POLYURETHANE COMPOSITION

Hideo Harada; Akinobu Ichihara, and Yasuro Ohmori, all of Kyoto, Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Jan. 29, 1974, Ser. No. 437,686

Int. Cl.² C08G *18/32*

U.S. Cl. 260—77.5 AP **11 Claims**

1. A thixotropic polyurethane composition comprising:

a. a liquid polyurethane prepolymer having at least two terminal free isocyanate groups and an average molecular weight within the range of 50 to 10,000, said polyurethane prepolymer being obtained by the addition polymerization of a polyisocyanate with an active hydrogen compound, and

b. a block polyether compound having both primary alcohol groups and secondary alcohol groups as terminal groups thereof, with the secondary alcohol number content being 40% to 85% with respect to the total number of terminal alcohol groups, said block polyether compound being a reaction product obtained by addition polymerization of ethylene oxide and propylene oxide in a block form to a starting material having two or three terminal active hydrogen groups in such a polymerization degree that said block polyester compound includes 30 to 409 moles of ethylene oxide and 3 to 172 moles of propylene oxide per molecule and the molar ratio is within the range of 1 : 0.05 to 1 : 0.5.

3,923,927

POLYESTER COMPOSITION CONTAINING SATURATED POLYESTER UNSATURATED TEREPHTHALATE POLYESTER AND VINYL MONOMER

Hideo Miyake, and Toshiaki Fuzimura, both of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Feb. 20, 1974, Ser. No. 444,069

Claims priority, application Japan, Feb. 23, 1973, 48-22522

Int. Cl.² C08L *67/00*

U.S. Cl. 260—861 **12 Claims**

1. An unsaturated polyester resin composition comprising

A. 70 to 97 parts by weight of at least one unsaturated polyester resin comprising

I. an unsaturated polyester comprising an α, β - unsaturated dicarboxylic acid component, a saturated dicarboxylic acid component in a ratio of 75/25 to 35/65 by mol, wherein the saturated dicarboxylic acid component contains 90 or more % by mol of terephthalic acid (on the basis of the saturated dicarboxylic acid component), and a glycol component, and

II. a vinyl monomer and/or allyl monomer which are copolymerizable with the unsaturated polyester, wherein the ratio of (I)/(II) is in a range of 80/20 to 30/70 parts by weight, and

B. 3 to 30 parts by weight of at least one saturated polyester comprising a saturated dicarboxylic acid component which contains 50 to 90% by mol of terephthalic acid (on the basis of the saturated dicarboxylic acid component) and a glycol component.

3,923,928

UNSATURATED POLYESTERS AND COMPOSITIONS BASED THEREON

Kenneth E. Atkins, South Charleston; Michael A. Harpold, St. Albans, and Percy L. Smith, Dunbar, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jan. 31, 1973, Ser. No. 328,189

Int. Cl.² C08L *67/06*

U.S. Cl. 260—865 **13 Claims**

1. A composition comprising an unsaturated polyester which is the condensation product of a reaction mixture consisting essentially of ethylene glycol, diethylene glycol and an unsaturated dicarboxylic acid or anhydride thereof or mixtures of said acid and anhydride wherein the ethylene glycol is present in an amount of about 10 to about 90 percent by weight based on the combined weight of ethylene glycol and diethylene glycol, a polymerizable ethylenically unsaturated monomer in an amount of about 10 to about 60 percent by weight based on the combined weight of said monomer and said polyester, a Group II metal oxide or hydroxide thickener in an amount of about 0.5 to about 75 percent by weight based on the weight of said polyester.

3,923,929

COMPOSITION COMPRISING A DIALLYLIC PHTHALATE POLYMER AND A POLYPHENYLENE ETHER

Carl Leonard Wright, Pasadena, and Harry Hoyt Beacham, Severna Park, both of Md., assignors to FMC Corporation, Philadelphia, Pa.

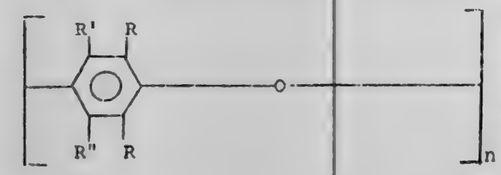
Division of Ser. No. 257,439, May 26, 1972, Pat. No. 3,826,786, which is a continuation-in-part of Ser. No. 101,004, Dec. 23, 1970, abandoned. This application Nov. 30, 1973, Ser. No. 420,514

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C08F *29/12, 3/58, 29/50*

U.S. Cl. 260—874 **2 Claims**

1. A thermosetting resin composition comprising (a) 5 to 95 percent by weight of a diallylic phthalate prepolymer selected from the group consisting of diallyl orthophthalate prepolymers and diallyl isophthalate prepolymers, at least 5 of the 5 to 95 percent being a liquid monomer; (b) 5 to 95 percent by weight of a polyphenylene ether having a repeating structural unit of the formula



wherein the oxygen atom of one unit is connected to the benzene nucleus of the adjoining unit, *n* is a positive integer and is at least 10, *R* is a monovalent substituent selected from the group consisting of hydrogen, hydrocarbon radicals free of tertiary α-carbon atom, halohydrocarbon radicals having at least two carbon atoms between the halogen atoms and the phenol nucleus and being free of a tertiary α-carbon atom, hydrocarbonoxy radicals being free of a tertiary α-carbon atom, and halohydrocarbonoxy carbon atoms having at least two carbon atoms between the halogen atom and phenol nucleus and being free of a tertiary α-carbon atom, R′ and R″ are both monovalent substituents which are the same as R and in addition, halogen, (c) a free radical catalyst in sufficient amount to convert the polymerizable material-polyphenylene ether mixture to the thermoset state at elevated temperatures, and (d) 0.1 to 1.5 percent anthracene, by weight based on the weight of the polymerizable materials as polymerization controller.

3,923,930

GRAFT POLYMERS AND LUBRICANT COMPOSITIONS THEREOF

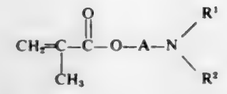
James O. Waldbillig, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 351,914, April 18, 1973, Pat. No. 3,879,304. This application Oct. 30, 1974, Ser. No. 519,381

Int. Cl.² C08L *47/00*; **C08F** *210/18, 255/06*

U.S. Cl. 260—878 R **3 Claims**

1. A graft polymer consisting of a linear terpolymer backbone component of between about 15 and 75 wt. % ethylene, between about 25 and 85 wt. % terminally unsaturated alkene of 3 to 10 carbons and between about 0.1 and 15 wt. %, terminally unsaturated non conjugated alkadiene of from 5 to 8 carbons having grafts thereon of a polymethacrylate composed of monomer selected from the group consisting of (1) a mixture of first alkyl methacrylate of 14 to 19 carbons and a second alkyl methacrylate of 20 to 24 carbons in a respective weight ratio of between about 10:1 and 1:10, (2) dialkylaminoalkyl methacrylate characterized by the formula:



where R^1 and R^2 are alkyl of from 1 to 2 carbons and A is alkadiyl of from 1 to 5 carbons, and (3) a mixture of (1) and (2), said backbone component to said graft component being present in a weight ratio in said graft polymer of between about 1000:1 and 1:10, said linear terpolymer backbone component having a carbon chain length of between about 700 and 7,000 carbons.

3,923,931

SYNTHETIC RESIN BINDER COMPOSITIONS COMPRISING A CROSS-LINKED ACRYLIC RESIN

Michael R. Fechillas, New Brunswick, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. Nos. 311,036, Nov. 30, 1972, Pat. No. 3,836,514, and Ser. No. 195,373, Nov. 3, 1921, Pat. No. 3,732,139. This application Mar. 11, 1974, Ser. No. 450,278

Int. Cl.² C08L *31/02*

U.S. Cl. 260—885 **3 Claims**

1. A synthetic resin binder composition for bonding porous, absorbent, fibrous nonwoven fabrics comprising from about 10 to about 50% by weight of a polymodal synthetic N-methylol acrylamide cross-linked copolymeric alkyl ester of acrylic acid resin in which from about 10 to about 40% by weight has a molecular weight in the range of from about 300 to about 2000 and in which from about 90 to about 60% by weight has a molecular weight in the range of from about 4000 to about 600,000, said polymodal synthetic N-methylol acrylamide cross-linked copolymeric acrylic acid ester resin having a swell index in tetrahydrofuran of from about 50 to about 200 and containing from about 50 to about 90% by weight of insolubles in tetrahydrofuran.

3,923,932

3-HYDROXYMETHACRYLIC ACID METHYL ESTER DIMETHYL THIONOSPHOSPHATE

Ernest Beriger, Neuallschwil, and Ladislaus Pinter, Basel, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

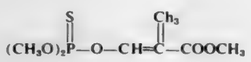
Continuation of Ser. No. 136,193, April 21, 1971, abandoned. This application Apr. 5, 1973, Ser. No. 348,426

Claims priority, application Switzerland, Apr. 21, 1970, 6028/70

Int. Cl.² A01N *9/36*; **C07F** *9/173*

U.S. Cl. 260—941 **1 Claim**

1. The compound of formula



3,923,933

PROCESS FOR PREPARING SINTERED URANIUM DIOXIDE GRAINS

Kenneth W. Lay, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 172,291, Aug. 16, 1971, which is a continuation of Ser. No. 771,642, Oct. 29, 1968, abandoned. This application Oct. 9, 1973, Ser. No. 404,436

Int. Cl. G21c *21/00*

U.S. Cl. 264—.5 **9 Claims**

1. A process of preparing free-flowing substantially equiaxed uranium dioxide nuclear fuel grains of controlled size which comprises pressing powder consisting essentially of uranium dioxide or ammonium diuranate into compacts, sintering said compacts at a temperature of at least about 1900°C until grains of uranium dioxide of the desired size are formed therein, said sintering being carried out in an atmosphere of dry hydrogen having a dewpoint sufficient to produce substoichiometric uranium dioxide, and cooling said sintered compacts in an atmosphere of hydrogen at a rate of about 100 to 300 Centigrade degree per minute to precipitate metallic uranium substantially at the boundaries of the grains, and reacting said precipitated metallic uranium with hydrogen during said cooling at temperatures below about 400°C to form uranium hydride and thereby causing said sintered compacts to disintegrate substantially along the grain boundaries forming substantially equiaxial grains of uranium dioxide of substantially the same size.

7. A nuclear fuel comprised of sintered uranium dioxide having an oxygen to uranium ratio of about 2.00 and being in the form of whole, sinter-grown grains which are free-flowing and substantially equiaxed.

3,923,934

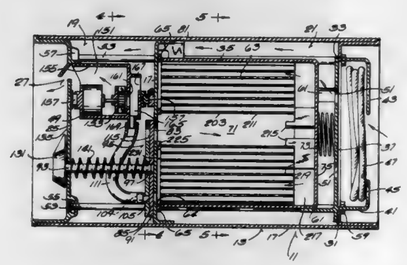
DISPENSING DEVICE

Lucius D. Watkins, Hartland, Wis., assignor to Permtek Incorporated, Hartland, Wis.

Continuation-in-part of Ser. No. 169,439, Aug. 5, 1971, Pat. No. 3,785,556. This application Nov. 2, 1973, Ser. No. 412,117

Int. Cl.² B01F *3/04*

U.S. Cl. 261—24 **17 Claims**



6. A device for controllably dispensing a liquid substance, said device comprising a housing including means defining an airtight chamber, a sealed envelope located in said chamber and containing the liquid substance to be dispensed, said envelope including wall means through which the liquid substance is permeable, outlet means communicating between said airtight chamber and the atmosphere, first valve means controlling air flow through said outlet means and operable between open and closed positions, inlet means communicating between the atmosphere and said airtight chamber, second valve means controlling air flow through said inlet means and operable between open and closed positions, motorized means for causing air flow through said chamber, and means for coordinated opening and closing of said first and second valve means and for controlling operation of said motorized means in coordination with the opening and closing of said valve means.

3,923,935

PARALLEL AIR PATH WET-DRY WATER COOLING TOWER

Robert E. Cates, Shawnee Mission, Kans., assignor to The Marley Company, Mission, Kans.

Filed Jan. 25, 1971, Ser. No. 109,489

Int. Cl.² B01F *3/04*

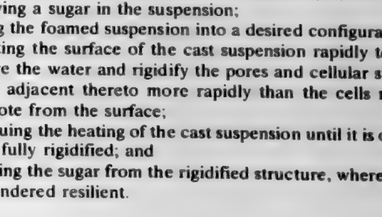
U.S. Cl. 261—159 **2 Claims**

1. In a water cooling tower, the combination of:

means for moving ambient air from the atmosphere along two separate, spaced paths of travel;

first heat exchange structure comprising a series of finned tubes adapted to receive hot water to be cooled and located in a pattern to bring such hot water into indirect heat exchange with an ambient derived airstream moving along one of said paths of travel thereof past the finned tubes to partially cool the water;

second heat exchange structure below said first heat exchange structure and including a horizontal water distribution basin located to receive partially cooled water from the finned tubes, and a fill assembly below said basin for receiving water therefrom to bring the partially cooled



water into direct, evaporative heat exchange relationship with an ambient derived airstream moving along the other of said paths of travel through the fill assembly to further cool the water,

said finned tubes being arranged in disposition causing the lower ends thereof to be submerged in partially cooled water which collects in the water distribution basin; and

means for bringing the separate airstreams emerging from said first and second heat exchange structures into combined relationship before return thereof as a common stream to the ambient atmosphere.

3,923,936

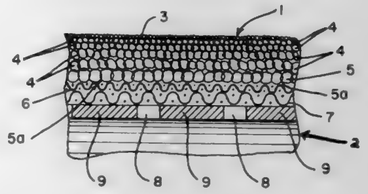
METHOD OF FORMING AN OPEN-CELLED RESILIENT CAPILLARY DEVICE

William J. Davis, Wyomissing; Anthony J. Izbicki, Reading, and Johne Parsley, Kempton, all of Pa., assignors to MaTek Corporation, Reading, Pa.

Filed June 12, 1972, Ser. No. 262,085

Int. Cl.² B29D *27/04*

U.S. Cl. 264—25 **9 Claims**



1. A method for forming a resilient capillary device including the steps of:

foaming an aqueous suspension of a resilient polymer;

dissolving a sugar in the suspension;

casting the foamed suspension into a desired configuration;

heating the surface of the cast suspension rapidly to remove the water and rigidify the pores and cellular structure adjacent thereto more rapidly than the cells more remote from the surface;

continuing the heating of the cast suspension until it is dried and fully rigidified; and

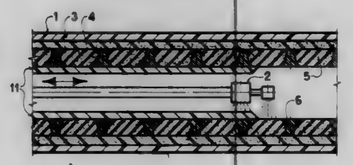
removing the sugar from the rigidified structure, whereby it is rendered resilient.

3,923,937

METHOD OF CENTRIFUGALLY CASTING PLURAL LAYERED CYLINDERS AND FORMING LONGITUDINALLY SPACED ANNULAR REINFORCEMENTS AND HELICAL REINFORCEMENTS THEREIN

Dino Piccioli, and Christian Schmid, both of Milan, Italy, assignors to Soffra Etablissement, Liechtenstein

Filed Aug. 29, 1973, Ser. No. 392,553
Claims priority, application Italy, Sept. 13, 1972, 29127/72
Int. Cl.² B29C *5/04*; **B32B** *3/10, 3/26*
U.S. Cl. 264—45.7 **7 Claims**



1. A process for obtaining a hollow cylindrical body having a support structure of reinforced thermosetting resin, using a mold having a horizontal axis and kept rotating at a speed which creates a centrifugal acceleration greater than the acceleration due to gravity, said process comprising the following stages:

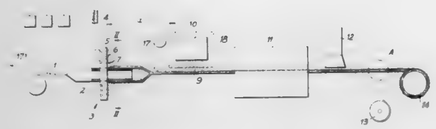
a. simultaneously feeding into said mold, and with progression in the axial direction of the mold a resin and a fibrous material and particulate fillers to form at least a first cylindrical wall coaxial with said mold and which will constitute the outer wall of a final hollow cylindrical body;
b. polymerizing said resin in the rotating mold;
c. feeding into said mold, and with progression in the axial direction of the mold, an expandable resinous material compatible with the resin of said first mold, and bonding same to said first wall to form a layer of substantially constant thickness;
d. forming, in said layer of substantially constant thickness, circumferential grooves through substantially the entire thickness of said layer, so as to expose portions of the inner surface of said first wall;
e. giving said grooves a cross section substantially of isosceles trapezium form with its major base emerging at the inner surface of said layer;
f. uniformly filling said grooves with a fibrous material, particulate fillers and a thermosetting resin compatible with the resins of said first wall and in said layer for improving its mechanical properties;
g. feeding into said mold, and progressively in the axial direction of said mold, a resin and simultaneously a fibrous material and particulate fillers to form at least a second cylindrical wall coaxial to said mold, bonded to said layer and bonded to said first wall by the resin, fibrous material and particulate fillers which fill said circumferential grooves, said second wall constituting an inner supporting wall of the final hollow cylindrical body, and, polymerizing said resin in said grooves, and the resin of said second wall in the rotating mold;
h. then halting said mold and extracting the hollow cylindrical body so obtained.

3,923,938

PROCESS FOR MANUFACTURING A PILE COVERING

Willy Poppe, Sint-Niklaas, Belgium, assignor to SERPO, naamloze vennootschap, Industriepark, Belgium

Filed Nov. 8, 1972, Ser. No. 304,719
Claims priority, application Belgium, Nov. 12, 1971, 51447; Nov. 3, 1972, 52296
Int. Cl.² B29D *27/00*
U.S. Cl. 264—45.8 **4 Claims**



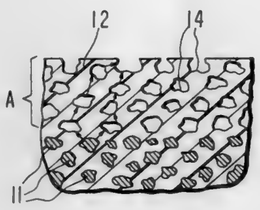
1. A process for manufacturing a pile covering which comprises shaping a support into a cylinder, applying to said cylindrically-shaped support from outside said cylindrical support and onto said cylindrical support along the full circumference of said support, a layer of a foam-forming polyurethane reaction mixture, converting said coated cylindrically shaped supporting layer into a flat surface, implanting pile fibers into the coated foamed layer before said layer has completely hardened, said fibers being implanted by electrostatic flocking, allowing said flocked layer to cure, applying suction thereto to remove any loose fibers therefrom, and separating said foamed fiber flocked layer from said support.

3,923,939

PROCESS FOR IMPROVING RELEASE KINETICS OF A MONOLITHIC DRUG DELIVERY DEVICE

Richard W. Baker, Mountain View; Alan S. Michaels, Atherton, and Felix Theeuwes, Los Altos, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed June 7, 1974, Ser. No. 477,297
Int. Cl.² B29D *27/00*
U.S. Cl. 264—49 **14 Claims**



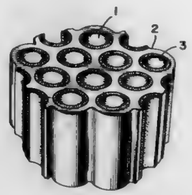
1. Method for substantially reducing the initial burst of active agent release from a monolithic active agent delivery device when said device is placed in its environment of use, said device comprising a shaped body of a dispersion of particulate active agent within a polymer matrix comprising prior to placing said shaped body in said environment, removing the particulate agent from the exterior surface of said body to form an agent depleted layer of polymer matrix voided by such removal of particulate active agent, the thickness of said layer being at least about 5% of the overall thickness of the body.

3,923,940

PROCESS FOR THE MANUFACTURE OF CERAMIC HONEYCOMB STRUCTURES

Tooru Hujii, Yokkaichi, and Eiichi Hisada, Nagoya, both of Japan, assignors to Nippon Toki Kabushiki Kaisha, Nagoya, Japan

Continuation-in-part of Ser. No. 234,914, March 15, 1972, abandoned. This application Mar. 28, 1973, Ser. No. 345,727
Claims priority, application Japan, Apr. 12, 1971, 46-22911
Int. Cl.² C04B *33/32*
U.S. Cl. 264—59 **12 Claims**



1. A process for the manufacture of a ceramic honey comb structure which comprises the steps of:

a. providing combustible rods or tubes of difficult to get wetted material selected from the group consisting of plastics, wood and paper,
b. applying water-absorbent paper to said combustible rods or tubes having a desired cross sectional shape,
c. coating said paper applied, combustible rods or tubes individually with at least one kind of a ceramics-forming material in slurry from having a water content from about 25% to about 60% by weight to form at least one layer thereof on the paper-applied rods or tubes,
(I) said ceramics-forming material consisting essentially of at least one member selected from the group consisting of aluminosilicate, alkaline earth metalsilicates, sillimanite, magnesium silicate, magnesia, zircon, zirconia, petalite, spodumene, cordierite, corundum, mullite, aluminum phosphate, spinel, carborundum and glass-ceramics;
d. said paper on said rods or tubes being effective to form a uniform coating of ceramic material on said paper-applied, combustible rods or tubes,
e. arranging at least two of the coated, paper-applied rods or tubes so that they contact with each other and together form a desired honeycomb structure blank;
f. drying the blank; and then
g. heating the dried blank to its sintering temperature in an oxidizing atmosphere to make it sintered and simultaneously burn away the base combustible rods or tubes and the base, water-absorbent paper thereby manufacturing the ceramic honeycomb structure.

3,923,941

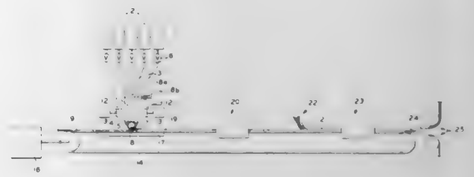
PROCESS FOR PRODUCING A MARBLEIZED PLASTIC SHEET

John B. Weaver, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 87,068, Nov. 5, 1970, abandoned. This application Oct. 10, 1972, Ser. No. 296,110
Int. Cl. B05c *5/02*
U.S. Cl. 264—73 **5 Claims**

1. A method for producing a marbleized plastic sheet having a controlled and substantially reproducible pattern extending through the thickness of the sheet which comprises:

1. forming a heterogeneous vari-colored plastisol mixture by feeding separate streams of plastisol having differing colors and/or transparencies to a receptacle having rotatable fluid-applicating means positioned in an opening in the bottom thereof, said opening in the bottom thereof being formed with a rim which is serrated to minimize contact of the fluid-applicating means therewith and to facilitate flow of the plastisol therefrom,
2. positioning said rotatable, ball-shaped, fluid-applicating means in contact with a substrate,
3. moving said substrate thereby causing rotation of said fluid-applicating means and feeding thereby of the plastisol mixture from said receptacle onto the surface of said moving substrate,



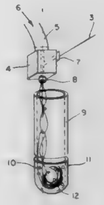
4. moving said fluid-applicating means in an irregular pattern while it is in contact with said moving substrate to form a marbleized pattern thereon,
5. gelling the marbleized coating,
6. Applying a clear plastisol coating onto the marbleized coating, and
7. fusing the coatings to form a composite sheet consisting of the marbleized and clear plastisol coatings,
8. and finally, the step of stripping the composite sheet from the substrate.

3,923,942

FILLER MATERIAL AND METHOD OF MANUFACTURING SAME

Shiro Nishiumi; Shoichi Hasegawa, both of Otsu; Toshiyuki Mizoguchi, Takatsuki, and Sachiko Furuta, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 324,142, Jan. 16, 1973. This application Jan. 16, 1974, Ser. No. 434,907
Int. Cl.² D04H *1/62, 1/74*
U.S. Cl. 264—89 **9 Claims**

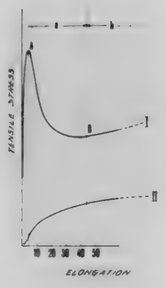


1. In a method of manufacturing a spherical body useful as a filler material, from a plurality of individual, discontinuous filaments which are at least 0.2 meters in length, the steps which comprise jetting a stream of said discontinuous filaments to open and separate said filaments, directing said filaments into a vessel having vent openings therethrough, causing said filaments to pile up therein, and then causing the piled filaments to bend three-dimensionally by subjecting them to entrainment in a rotating stream of gas which is directed eccentrically with respect to said vessel, said eccentric stream of gas also being directed to force said filaments to be condensed and rotated inside said vessel by centrifugal force into a generally spherical configuration with said filaments contacting each other and concentrated in the area of the surface of the sphere, and thereby transformed into a spherical body, and then adhering said filaments to each other at their contact points.

3,923,943
METHOD FOR MOLDING SYNTHETIC RESIN HOLLOW ARTICLES

Fumio Iriko, Tokyo; Yoshihiko Yuzawa, Yokohama; Setsuyuki Takeuchi, and Nobukuni Ibe, both of Sakaki, all of Japan, assignors to Nissei Plastics Industrial Co., Ltd. and Showa Denko Kabushiki Kaisha, both of Tokyo, Japan

Filed July 31, 1973, Ser. No. 384,372
Claims priority, application Japan, Aug. 9, 1972, 47-79088
Int. Cl.² B29C *17/07*
U.S. Cl. 264—97 6 Claims



1. A molding method for producing a biaxially oriented hollow article from a parison made of a thermoplastic synthetic resin by blowing at a temperature below the melting point of said synthetic resin, which is characterized in mechanically stretching the parison in an axial direction and initiating blow-molding with a pressurized gas during the course of mechanical stretching and before the completion of the axial unidirectional orientation wherein the mechanical stretching is effected at a temperature below said melting point at which the synthetic resin exhibits a yield point and a yield limit, said blow molding is initiated when the parison has been stretched to a length between the yield point and yield limit, and wherein said blow-molding is effected at a higher temperature than the mechanical stretching, whereby an article of improved transparency is obtained.

3,923,944
BRIQUETTING CALCIUM CHLORIDE PARTICULATE

Michael J. Clark, Ludington, Mich., assignor to The Dow Chemical Company, Midland, Mich.

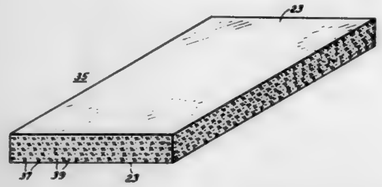
Filed Jan. 28, 1974, Ser. No. 437,267
Int. Cl. C01f *11/24*; B01j *2/22*; B01d *53/26*
U.S. Cl. 264—109 17 Claims

9. A method of producing a calcium chloride briquette from substantially anhydrous calcium chloride particulate by briquetting the particulate, the improvement comprising applying from about ⅛ to about 5 weight per cent water to substantially only the exterior surface of the briquette to thereby form a fracture resistant briquette which apart from a hydrated surface portion contains only substantially anhydrous calcium chloride.

3,923,945
METHOD OF MAKING CORROSION RESISTANT METAL FIBER REINFORCED PLASTIC COMPOSITES

Darral V. Humphries, Allentown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 254,328, May 17, 1972, abandoned, which is a division of Ser. No. 132,017, April 7, 1971, Pat. No. 3,687,798, which is a continuation-in-part of Ser. No. 853,071, Aug. 26, 1969, abandoned. This application Jan. 22, 1974, Ser. No. 435,560
Int. Cl.² B22F *9/00*
U.S. Cl. 264—111 10 Claims



1. A method of making corrosion resistant metal reinforced plastic composites comprising:
a. severing ferrous metal wires into discrete segments of ferrous metal fibers,
b. severing sacrificial metal wires having a greater electronegativity than iron into discrete segments of sacrificial metal fibers,
c. uniformly blending for a time in a blending apparatus predetermined proportions of the segmented ferrous metal fibers, the segmented sacrificial metal fibers and dry granules of a resin selected from the group consisting of thermoplastic and thermosetting resins together into a uniform mix of ferrous metal fibers, sacrificial metal fibers and resin in a ratio in a uniform dry mix such that upon subsequent fusion and solidification of the resin the relative percentages and distribution of the ferrous fibers and sacrificial metal fibers in the solidified resin are such that substantially no ferrous fiber is spaced from a sacrificial metal fiber along a cut surface of the solidified composite more than the distance effective to form a galvanic corrosion couple between substantially each ferrous fiber and the nearest sacrificial metal fiber and the ferrous fibers are in at least occasional electrical contact with the sacrificial metal fibers throughout the solidified resin,
d. directing said blend of ferrous metal fibers, sacrificial metal fibers and resin granules into a molding device,
e. heating and pressurizing the resin granules in said molding device to fuse and coalesce said resin into a plastic matrix throughout which said ferrous and sacrificial metal fibers are uniformly distributed in the relationship described in step (c) above, and
f. cooling said plastic matrix to cause solidification of said plastic matrix about said ferrous and sacrificial metal fibers to form a metal reinforced plastic composite.

3,923,946
COMPOSITE MATERIALS

Rene Meyer, Grenoble, France, assignor to Ugine Carbone, Grenoble, France

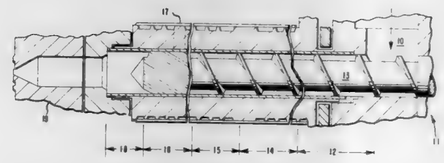
Filed May 20, 1974, Ser. No. 471,475
Claims priority, application France, May 17, 1973, 73.17847
Int. Cl.² B22F *3/00*
U.S. Cl. 264—111 6 Claims

1. A process for manufacturing a rigid composite material, comprising preparing an intimate mixture of particles of nonporous metal of high mechanical strength and high ductility and an organic thermosetting or thermoplastic resinous plastics material which has high mechanical strength and strong adhesion to the metal particles in a proportion by volume corresponding to 5 to 20%, molding the resulting mixture in a closed mold under a pressure of at least twice the elastic limit of the metal, opening the mold, heating the compact thus obtained to a sufficiently high temperature to melt and, optionally, polymerize the plastic binder, followed by cooling.

3,923,947
PROCESS FOR CONTINUOUSLY PREPARING EXTRUDABLE, CROSSLINKABLE POLYETHYLENE COMPOSITIONS

Homer Johnnie Cook, Seabrook, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 84,668, Oct. 28, 1970, abandoned. This application Feb. 5, 1973, Ser. No. 329,816
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B01J *2/20*
U.S. Cl. 264—141 3 Claims

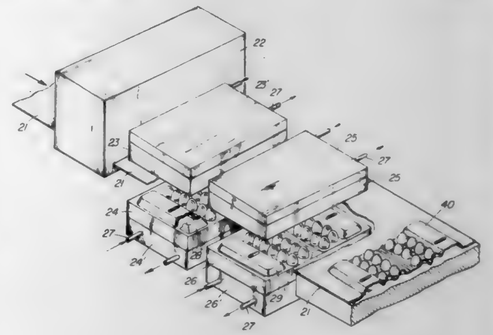


1. In a continuous process for producing a crosslinkable polyethylene composition in the form of molding granules in which a polyethylene composition is continuously fed into the feed zone of a screw extruder, therein compacted, melted and passed through a metering zone to a discharge die, and in which a solution of a peroxy compound is injected into the molten polyethylene composition inside the extruder prior to extrusion of the molten polyethylene composition through the die, and in which the extrudate is cut into molding granules, the improvement which comprises:
a. selecting as the peroxy compound one which has a flash point of at least 70°C. and an equivalent half-life of more than 1 hour;
b. moderating the peroxy compound prior to injection by forming a moderated peroxy composition by dissolution or dispersion of the peroxy compound in an inert liquid carrier which is compatible with the polyethylene composition, said liquid carrier being selected from the group consisting of light oil and melted wax;
c. continuously injecting the moderated peroxy composition through injection ports into a mixing zone near the discharge end of the extruder at a rate sufficient to produce a concentration of from 0.1 to 5.0 percent by weight of said peroxy compound in the molten polyethylene composition in said mixing zone;
d. maintaining the temperature in said mixing zone at between 130° and 160°C.; and
e. operating the extruder screw at a rate such that the metering zone presses the molten polyethylene composition through the mixing zone and extrusion die at a rate such that the average hold-up time in the mixing zone is less than 12 minutes.

3,923,948
THERMOFORMING PLASTIC ARTICLES

William B. Jackson, Canandaigua, and Nicholas D. Commisso, Victor, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 182,334, Sept. 21, 1971, abandoned. This application Aug. 17, 1973, Ser. No. 389,398
Int. Cl.² B29D *27/00*
U.S. Cl. 264—161 4 Claims

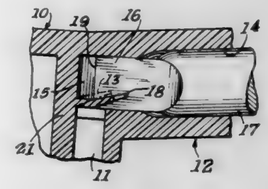


1. A process for the production of a thermoformed thermoplastic article which comprises providing a relatively flat oriented sheet of polystyrene foam, preheating said sheet to at least its forming temperature, thermoforming said preheated sheet by impressing it against the surface of a first mold element removing said thermoformed article from said first mold element while said thermoformed article is still at an elevated and deformable temperature; directly impressing post mold cooling mold elements against at least portions of both sides of said thermoformed article thereby restraining at least said portions of said article against deformation and simultaneously cooling said portions below deformation temperature to avoid substantial distortion of said article upon removal from said post mold cooling mold elements.

3,923,949
METHOD OF FORMING A SUCH-BACK-PREVENTING CHECK VALVE IN A LIQUID DISPENSER

Neil G. Kane, deceased, late of Hacienda Heights, Calif., and by Virginia L. Kane, administrator, 15411 Rojas St., Hacienda Heights, Calif. 91745

Division of Ser. No. 426,942, Dec. 20, 1973, abandoned. This application Oct. 15, 1974, Ser. No. 514,846
Int. Cl.² B28B *7/28*
U.S. Cl. 264—163 2 Claims



1. The method of molding a check valve in the form of a flap to control liquid flow between a chamber in the manually telescopically movable head of a liquid dispenser that consists in the steps of:
molding said head of an elastomeric plastic to provide the same with concentric coaxial walls that define said chamber,
simultaneously molding a laterally directed spout around a core pin to form a flow passage within said spout, with

said spout extending from said coaxial chamber walls and the passage being open to the upper end of said chamber, the end of the core pin being formed to simultaneously mold a bridge portion of said elastomeric material, the bridge portion extending outwardly from the inner of said coaxial walls on an upward and forward angle, transversely across the passage, and integrally united with the side walls of the spout, and

finally withdrawing the core pin from the passage to cause vertical relative movement between the bridge portion and the end of the core pin which causes the end thereof to shear the opposite ends of the bridge portion from the side walls of the spout to convert said bridge portion into a flap so the same is free to flap up and down according to changes in pressure in said chamber and said flow passage.

3,923,950

PRODUCTION OF STABILIZED ACRYLIC FIBERS AND FILMS

Klaus Hannes Gump, Gillette, and Dagobert Englebert Stuetz, Westfield, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Nov. 18, 1971, Ser. No. 200,184
Int. Cl.² C01B *31/02*
U.S. Cl. 264—182 **12 Claims**

1. An improved process for the production of stabilized acrylic fibers and films which are capable of undergoing carbonization comprising:

a. providing a solution of (1) an acrylic polymer selected from the group consisting of an acrylonitrile homopolymer and acrylonitrile copolymers containing at least about 85 mol percent of acrylonitrile units and up to about 15 mol percent of one or more monovinyl units copolymerized therewith, (2) about 1 to 20 percent by weight based upon the weight of said acrylic polymer of an organic antioxidant having a melting point of at least 200°C. capable of moderating the oxidative cross-linking reaction of adjoining acrylic molecules selected from the group consisting of a nitrogen-free phenolic antioxidant, an aminophenol antioxidant, a non-phenolic aromatic amine antioxidant, a quinone antioxidant, a sulfur-containing antioxidant, and mixtures of the foregoing, and (3) a solvent for said acrylic polymer and said organic antioxidant selected from the group consisting of N,N-dimethylformamide, N,N-dimethylacetamide, dimethyl sulfoxide, butyrolactone, and N-methyl-2-pyrrolidinone, with said solution prior to step (b) being heated for insufficient duration to accomplish a substantial degree of cyclization of pendant nitrile groups within said acrylic polymer while dissolved in said solvent,

b. forming from said solution by extrusion through a shaped orifice an acrylic fibrous material or film having incorporated therein about 1 to 10 percent by weight based upon the weight of said acrylic polymer of said organic antioxidant, and

c. heating said resulting acrylic fibrous material or film in an oxygen-containing atmosphere at a temperature of about 200° to 360°C. until a stabilized fibrous material or film is formed which retains its original configuration substantially intact and which is non-burning when subjected to an ordinary match flame.

3,923,951

METHOD OF MAKING A MOLDED FIBER GLASS AND RESIN STRUCTURE WITH INTERLOCKED AND BONDED WALLS

Peter Pukszta, Jr., 1001 E. Congress St., Sturgis, Mich. 49091

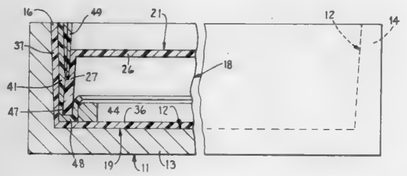
Filed Mar. 15, 1974, Ser. No. 451,524
Int. Cl.² B29D *3/02*; **B29G** *7/00*
U.S. Cl. 264—250 **8 Claims**

1. A method of molding a fiberglass reinforced structure having plural sidewalls interconnected by at least two spaced apart layers, comprising:

depositing a layer of curable fiberglass resin mixture over inside surfaces of a mold cavity and partially curing the resin of said mixture to form a first preform;

providing a preformed reinforcing member having a base with integral sidewalls connected to said base and forming an angled edge therewith, said sidewalls each having a further edge remote from said angled edge and also having an external recess adjacent said angled edge;

positioning a resin soaked fiberglass mat adjacent the sidewalls of said first preform;



disposing said reinforcing member within the mold with said sidewalls adjacent said mat and said base remote from the corresponding base of said first preform so as to cause a portion of said mat adjacent an edge thereof to be at least partially wrapped about said further edge of said sidewalls;

inserting resin soaked fiberglass in said recess; and

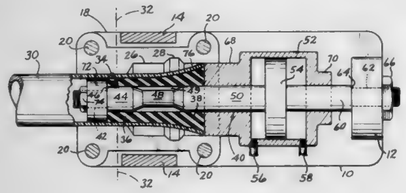
curing the resin of said first preform, said mat and said fiberglass in said recess to cause them to bond together, the resin of said first preform, said mat and said fiber glass in said recess being chemically integrated and said reinforcing member being mechanically interlocked thereto by reason of said recess and material inserted therein and the mat portion wrapped about said edge.

3,923,952

METHOD FOR SHAPING A NORMALLY RIGID PLASTIC PIPE

Harvey W. La Branche, Olympia, and John C. Dimmer, Tacoma, both of Wash., assignors to Western Plastics Corporation, Tacoma, Wash.

Filed May 23, 1973, Ser. No. 363,081
Int. Cl.² B29C *1/12*
U.S. Cl. 264—313 **8 Claims**



1. The method of shaping a normally rigid plastic tube comprising:

a. softening a selected zone of the tube adjacent a rigid zone,

b. surrounding the softened zone with a die,

c. inserting a resiliently deformable mandrel into the softened zone and the adjacent rigid zone,

d. pressing axially and simultaneously on the opposite sides of the mandrel sufficiently to expand the mandrel radially into frictional engagement with the softened zone and with the adjacent rigid zone and, while in such engagement to shorten the mandrel axially to radially expand the softened zone into forming contact with the die, thereby correspondingly expanding radially and shortening axially said softened zone while proportionately thickening its side walls,

e. rigidifying said softened zone while in its dimension-altered condition, and

f. relaxing the mandrel and extracting it from the tube.

3,923,953

METHOD OF MOLDING POLYMERS

Harvey Scott, Blackwood, and Peter E. D. Morgan, Cherry Hill, both of N.J., assignors to The Franklin Institute Research Laboratories, Philadelphia, Pa.

Continuation of Ser. No. 855,754, Sept. 5, 1969, abandoned. This application June 23, 1972, Ser. No. 265,661
Int. Cl. C08g *20/32*
U.S. Cl. 264—325 **11 Claims**

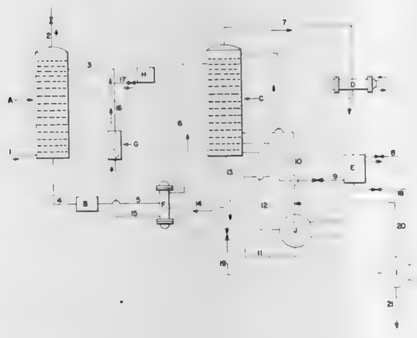
1. A method for producing shaped articles composed of intractable polymer by the simultaneous molding and substantially solid state polymerization of monomeric material which comprises introducing into a molding zone, solid, finely particulate, solvent-free monomeric material capable of being polymerized to intractable polymer by heat with the evolution of gas and being selected from the group consisting of (a) single self-polymerizable monomers, (b) mixtures of different copolymerizable monomers, and (c) salt adducts composed of different polymerizable monomers, heating said monomeric material in the absence of solvent in said zone from a temperature below the melting point up to and through the polymerization temperature of said monomeric material while holding the non-gaseous contents of said molding zone under mechanical pressure and permitting escape of evolved gasses from said zone, the pressure and rate of heating being sufficient to densify said polymer but insufficient to cause exudation of solid and liquid material from said molding zone.

3,923,954

METHOD FOR, AND COMPOSITION USED IN, FLUID TREATMENT

Ernest Quentin Petrey, Jr., 44 Center Grove Road, Randolph Township, N.J. 07801, and Clinton Dale Breland, 2914 Peach Lane, Pasadena, Tex. 77502

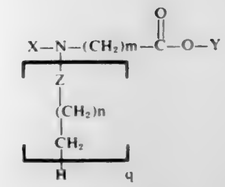
Filed Dec. 4, 1970, Ser. No. 95,065
Int. Cl.² B01D *53/34*
U.S. Cl. 423—210 **40 Claims**



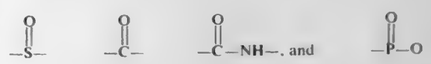
1. In a process for removing acid gases from an acid gas containing fluid by contacting the fluid with an acid gas absorption solution, the improvement comprising:

adding to the acid gas absorption solution a composition comprising:

a. at least one compound selected from the group consisting of N-paratoluenesulfonyl glycine, paraaminobenzoyl glycine and the alkali metal and ammonium salts thereof and a compound having the following structural formula:



wherein X is a member of the group consisting of hydrogen and an alkyl group containing from 1 to 6 carbon atoms, inclusive, Y is selected from the group consisting of hydrogen, an alkali metal, and an ammonium radical, Z is selected from the group consisting of:



m is an integer of from 1 to 6 inclusive, *n* is a number of from 0 to 6 inclusive and *q* is 1 or 0;

b. at least one ester which is selected from the group consisting of phosphoric and boric acid esters of a compound which contains at least one available hydroxyl group;

c. at least one water soluble chelating agent; and

d. at least one water soluble salt of metal selected from the group consisting of zinc, cadmium, copper, nickel and strontium;

said component (a) being present in an amount from about 50 to about 89.5 parts, component (b) in an amount from about 7.5 to about 30 parts, component (c) in an amount from about 2.5 to about 15 parts and component (d) in an amount from about 0.5 to about 5 parts, all by weight, based on 100 parts of the composition, said composition being added to the acid gas absorption solution to provide a corrosion inhibiting amount of said combination of components (a), (b), (c), and (d).

3,923,955

PROCESS FOR DEODORISING WASTE OR EXHAUST GASES

Volker Fattinger, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 29, 1974, Ser. No. 492,366
Claims priority, application Switzerland, Aug. 2, 1973, 11225/73; May 15, 1974, 6645/74
Int. Cl.² B01D *53/34*
U.S. Cl. 423—210 **22 Claims**

1. In a process for deodorising waste or exhaust gases in at least two washing stages with introduction of active chlorine, wherein a stream of the waste gas to be deodorised is subjected in an initial chlorine washing stage to the action of a washing liquid containing active chlorine, and in a subsequent chlorine washing operation to the action of a washing liquid, likewise containing active chlorine, of alkaline pH, the improvement comprising

a. the supplied active chlorine is practically free from chlorine dioxide;

b. a content of at least 0.02 g of active chlorine per liter of washing liquid is maintained in at least one of the washing stages;

c. the pH-value of the washing liquid in the first washing stage, through which the waste gas to be purified, is flowing, is kept to between 4 and 9, and

d. the pH-value of the washing liquid in the subsequent washing stage is kept between 7 and 11, with the pH-value in the said subsequent washing stage being adjusted to remain higher by 0.3 to 4 than the pH-value in the first stage;

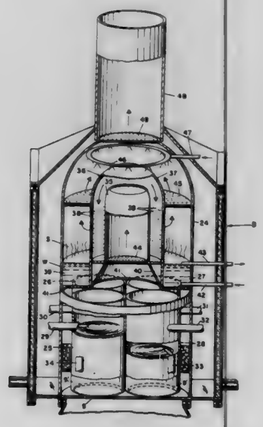
e. active alkali is added in an approximately stoichiometric amount, calculated on the total active chlorine supplied, in a subsequent washing stage.

3,923,956

SMOKELESS ANTI-TOXIC BURNER METHOD

Vernon D. Bowman, Washington, Md., assignor to Bowman Enterprises, Incorporated, Hagerstown, Md.

Filed Nov. 13, 1972, Ser. No. 305,885
Int. Cl.[2] B01D *47/00*
U.S. Cl. 423—210 1 Claim



1. The method of cleaning exhaust gases of minute solid particles comprising the steps of moving separate streams of the gases at high turbulence into and through a plurality of burning chambers, elevating the temperature of the streams of gases to not less than 1,400°F. in the burning chambers to burn any combustible and unburned material, collecting and mixing the combusted streams of gases into a single gas stream, forcing the single stream of the mixed gases upwardly at high velocity, reversing the direction of the gas stream and passing the combusted streams of gases into an expanding area and through a bath of moisture laden steam to cause said minute particles to be surrounded by the moisture carried by the steam to form a mixture, and thereafter cooling said mixture with a fine spray of water to condense the steam and form water droplets about the minute solid particles of a heavier mass than the steam-surrounded solid particles thereby removing the solid particles by gravity from the exhaust gas stream.

3,923,957

CONVERSION OF HYDROGEN CYANIDE IN FOUL GAS STREAMS TO CARBON DISULFIDE

Otto A. Homberg, Easton; Charles W. Sheldrake, and James B. Lynn, both of Bethlehem, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Oct. 3, 1973, Ser. No. 403,247
Int. Cl.[2] C01C *3/00*
U.S. Cl. 423—236 19 Claims

14. A low temperature method of removing hydrogen cyanide from a foul gas stream derived from a fuel gas desulfurization system comprising

a. providing sufficient oxygen and hydrogen sulfide in said gas stream to react in stoichimetric ratio with the amount of hydrogen cyanide which is to be removed from said gas stream in accordance with with the equation:

$$HCN + 2H_2S + \tfrac{1}{2}O_2 \quad CS_2 + NH_3 + H_2O \longrightarrow$$

b. contacting said gas stream with a surface active catalyst at a temperature of about 70°C to 500°C to convert the hydrogen cyanide content of the gas stream to carbon disulfide, ammonia and water in accordance with said equation.

3,923,958

METHOD OF REMOVING AROMATIC COMPOUNDS OLEFINS, ACETYLENES AND CARBON MONOXIDE FROM FEED STREAMS

Roy G. Turnbo, Deer Park, and Donald A. Keyworth, Houston, both of Tex., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Mar. 27, 1973, Ser. No. 345,316
Int. Cl.[2] B01D *53/34*; C07C *11/00*
U.S. Cl. 423—245 10 Claims

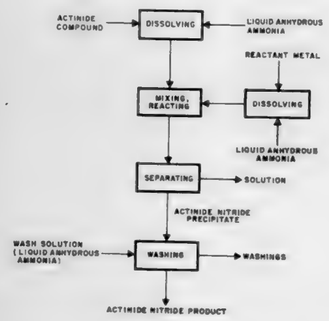
1. In a process for separating at least one complexible ligand selected from the group consisting of aromatic compounds, olefins, acetylenes, carbon monoxide, and mixtures thereof from a feed steam containing said ligand which comprises contacting the feed stream with a liquid sorbent having the formula $M_IM_{II}X_n$.Aromatic, wherein M_I represents a Group I-B metal, M_{II} represents a Group III-A metal, X represents halogen, n is the sum of the valences of M_I and M_{II}, and Aromatic represents a monocyclic aromatic compound having 6 to 12 carbon atoms, thereby forming a complex of the sorbent and the complexible ligand and separating said complexible ligand from said complex, the improvement that comprises incorporating in the liquid sorbent about 0.2 to 2 percent, based on the weight of the sorbent, of an antifoam agent that is a paraffinic hydrocarbon having from 5 to 25 carbon atoms.

3,923,959

METHOD FOR PREPARING ACTINIDE NITRIDES

Garry H. Bryan, Arvada; Jesse M. Cleveland, Boulder, and Clinton R. Heiple, Boulder, all of Colo., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Nov. 28, 1973, Ser. No. 419,833
Int. Cl.[2] C01G *56/00*, *43/00*; C01F *15/00*
U.S. Cl. 423—251 12 Claims



1. A method for forming actinide nitride precipitate selected from the group consisting of plutonium nitride, uranium nitride and thorium nitride, comprising providing a substantially dry, non-oxidizing and non-acidic atmosphere, dissolving an actinide compound wherein the actinide is selected from the group consisting of plutonium, uranium and thorium and a reactant metal in liquid anhydrous ammonia effecting a reaction and formation of said actinide nitride precipitate of a crystal size of between greater than zero and about 25 Angstroms.

3,923,960

COMPOSITIONS CONTAINING DITHIONITES

Roland Albert Leigh, 2 Lynwood Drive, Blakedown, Kidderminster, England

Filed Sept. 10, 1973, Ser. No. 395,544
Claims priority, application United Kingdom, Sept. 8, 1972, 41846/72
Int. Cl. B01d *17/66*
U.S. Cl. 423—265 22 Claims

1. A stabilised substantially anhydrous dithionite composition comprising a major proportion of a metallic dithionite and as a stabiliser a carboxylic acid salt of a primary, secondary or tertiary amine, which amine has at least one hydrocarbon group of at least 5 carbon atoms.

3,923,961

PRODUCTION OF PHOSPHORUS

William B. Dancy, Lakeland, Fla., assignor to International Minerals & Chemical Corporation, Libertyville, Ill.

Filed Oct. 5, 1970, Ser. No. 78,271
Int. Cl.[2] C01B *25/01*, *25/02*, *25/04*, *15/16*
U.S. Cl. 423—323 19 Claims

1. Method for the production of elemental phosphorus and tricalcium orthophosphate by the thermal reduction of monocalcium phosphate comprising the steps of:

a. forming an intimate mixture of monocalcium phosphate and a carbonaceous reducing agent, the amount of carbon being sufficient to provide from about 20% to about 50% molar excess of that equivalent for reaction with the elemental phosphorus to be liberated in step (*c*);

b. rapidly heating the mixture prepared in step (*a*) to a temperature between about 2100° F. and about 2400° F. within a period of time not exceeding about 15 minutes to substantially avoid the formation of calcium metaphosphate and calcium pyrophosphate as intermediates;

c. continuing heating the mixture at said temperature range in a neutral or reducing atmosphere to convert the monocalcium phosphate to elemental phosphorus and tricalcium ortho-phosphate; and

d. recovering the elemental phosphorus and the tricalcium orthophosphate.

3,923,962

PROCESS FOR EFFECTING CHEMICAL REACTIONS UNDER PRESSURE

Kurt Schaupp, Cologne, and Manfred Schulze, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 27, 1972, Ser. No. 292,580
Claims priority, application Germany, Oct. 2, 1971, 2149313
Int. Cl. C01c *1/16*; C01b *33/12*; C01g *1/00*
U.S. Cl. 423—339 3 Claims

1. A process for continuously carrying out a chemical reaction in a U-shaped reaction zone under pressure but in the absence of externally applied pressure, said reaction requiring an increase in boiling point during reaction and involving at least one gaseous or readily volatile reactant, which comprises establishing a column of liquid in one of the legs of said U-shaped reaction zone, the height of said column of liquid establishing the pressure for said reaction, introducing the reactants into said column of liquid, at least one of the reactants being introduced into said column of liquid below its top, continuously adding liquid to said one leg, advancing it past the point of introduction of said one reactant along the connection with the other leg of said U-shaped reaction zone, and withdrawing liquid together with reaction product contained



therein from adjacent the top of the other leg of said U-shaped reaction zone.

3,923,963

METHOD FOR PURIFICATION OF HYDROGEN CHLORIDE

Walker H. Rideout, and Palmer S. Glenn, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 15, 1972, Ser. No. 315,397
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.[2] C01B *7/08*
U.S. Cl. 423—481 9 Claims

1. A method of purifying by-product hydrogen chloride obtained in the process of thermally cracking ethylene dichloride to form vinyl chloride, said by-product hydrogen chloride containing more than 50 ppm of organic impurities selected from the group consisting of ethylene, acetylene, vinyl chloride, ethyl chloride and vinylidene chloride; wherein the improvement comprises reducing by absorption and removal the said selected organic impurities in by-product hydrogen chloride to a level of less than 50 ppm by combining in a reaction zone (a) the impure by-product hydrogen chloride; (b) Cl_2, in at least a stoichiometric mole ratio to said organic impurities; and (c) activated carbon, at a temperature of at least 80°C., and a nominal residence time of at least 1 second.

3,923,964

PROCESS FOR THE PRODUCTION OF CALCIUM FLUORIDE FROM FLUOSILICATES AND BY-PRODUCT GYPSUM

Gustave E. Kidde, 294 California Terrace, Pasadena, Calif. 91105

Filed June 11, 1973, Ser. No. 368,670
Int. Cl.[2] C01F *11/22*
U.S. Cl. 423—490 6 Claims

1. A process for producing high quality calcium fluoride comprising:

a first reaction step wherein a fluoride containing fluosilicate solution is reacted with ammonia to an ending pH of at least about 8.8 to quantitatively precipitate silica from a fluoride solution;

separating the precipitated silica from the fluoride solution;

subjecting said fluoride, solution to a concurrent stripping and heating step whereby free ammonia is removed from the fluoride solution and ammonium fluoride is converted to ammonium bifluoride;

a second reaction step wherein $CaSO_4.2H_2O$ is reacted with the ammonium bifluoride to produce a high quality calcium fluoride product; and

recovering a calcium fluoride product containing at least about 97 percent calcium fluoride by weight.

3,923,965

PROCESS FOR ELIMINATING WASTE LIQUORS ACCUMULATED IN THE DESULFURIZATION OF COKE OVEN GAS

Peter Diemer; Gerhard Preusser, and Paul Radusch, all of Essen, Germany, assignors to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Oct. 31, 1974, Ser. No. 519,563

Claims priority, application Germany, Dec. 13, 1973, 2361910

Int. Cl.² C01B *17/02*

U.S. Cl. 423—567 **5 Claims**

1. A process for the elimination of waste liquors accumulated in the desulfurization of coke oven gas with a washing solution containing an organic oxygen carrier comprising,

evaporating between about 30 and 70% of water from the waste liquor to form a concentrated waste liquor,

introducing said concentrated waste liquor into a combustion chamber,

introducing air into said combustion chamber,

introducing a sufficient amount of coke oven gas to provide a reducing atmosphere in said combustion chamber,

thermally decomposing said concentrated waste liquor in said combustion chamber and forming a lean gas and sulfur,

separating the sulfur from the lean gas,

admixing the lean gas with coke oven gas evolved during a coking process.

3,923,966

DIRECT MANUFACTURE OF HYDROGEN PEROXIDE FROM HYDROGEN SULFIDE

Lawrence G. Vaughan, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Nov. 21, 1973, Ser. No. 417,805

Int. Cl.² C01B *17/02, 15/02*

U.S. Cl. 423—573 **10 Claims**

1. In a method for preparing hydrogen peroxide by reducing and oxidizing an alkyl anthraquinone, or a tetrahydroalkyl anthraquinone, the improvement which comprises reducing said anthraquinone with hydrogen sulfide in an organic solvent solution in the presence of a concentration of from 0.5 to 35 percent by weight of the working solution of an organic base catalyst soluble in the organic solvent which does not decompose hydrogen peroxide, separating the elemental sulfur thus formed, oxidizing the resulting anthrahydroquinone and extracting the hydrogen peroxide with water.

3,923,967

PRODUCTION OF HYDROGEN PEROXIDE USING THE ANTHRAQUINONE PROCESS

Jack R. Kirchner, and Lawrence G. Vaughan, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

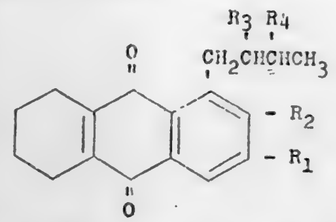
Continuation of Ser. No. 79,643, Oct. 9, 1970, abandoned. This application Jan. 12, 1973, Ser. No. 323,127

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C01B *15/02*

U.S. Cl. 423—588 **4 Claims**

1. In a cyclic process for producing hydrogen peroxide in which a working solution of an anthraquinone working intermediate in a water-immiscible solvent is hydrogenated in a reduction stage and the resulting solution of the anthrahydroquinone form of said intermediate is oxidized in an oxidation stage to regenerate said solution of the anthraquinone working intermediate for recycling to said reduction stage after the hydrogen peroxide simultaneously formed in said oxidation stage is removed from said working solution, the improvement comprising employing as said anthraquinone working intermediate a 5,6,7,8-tetrahydro-1-alkyl-9,10-anthraquinone of the formula



in which each of R_1, R_2, R_3 and R_4 is hydrogen or a 1 to 8 carbon straight chain alkyl hydrocarbon group.

3,923,968

METHOD OF PREPARING TITANIUM DIOXIDE PIGMENT

Max G. Basque, Pittsburgh; James E. Magner, Antioch; Joseph P. Surls, Walnut Creek, and Ben F. West, Orinda, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 189,827, Oct. 18, 1971, Pat. No. 3,749,764. This application Mar. 1, 1973, Ser. No. 336,978

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C01G *23/04*

U.S. Cl. 423—611 **5 Claims**

1. A process for the preparation of composite titanium dioxide pigment particles, each consisting of one or more elongate rutile monocrystals having lengths within the range of from 0.15 to 15 microns, diameters within the range of 0.01 to 0.1 microns and aspect ratios of from 5 to 200, surrounded by similarly elongated rutile crystallites having lengths within the range of 0.005 to 0.05 microns, diameters within the range of 0.01 to 0.1 microns and aspect ratios of from 5 to 50 and from 1 to 10 volume percent of interstitial non-rutile titanium dioxide, which comprises:

contacting said rutile monocrystals for at least 3 minutes with an acidic aqueous titanium chloride solution under at least autogenous pressure and at a temperature of from 80° to 150°C., thereby causing cross-sectional particle growth by deposition on said monocrystals of titanium dioxide hydrolysate in the form of said crystallities disposed with said interstitial titanium dioxide around said monocrystals in a configuration generally parallel thereto and continuing said contact until a growth ratio of up to about 18 has been achieved;

said solution containing from 0.1 to 60 grams of dissolved titanium per liter, from 0.004 to 9 gram ions of chloride per liter, not more than 0.001 gram ions of phosphate per liter and not more than 0.01 gram ions of sulphate and/or bisulphate per liter; and

the weight of titanium present in said monocrystals being from 1 to 50 percentof the weight of dissolved titanium in said solution

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3,923,969

CARRIER SYSTEM FOR A DRUG WITH SUSTAINED RELEASE

Werner Baukal, Kronberg, Taunus; Heinz-Joachim Kinkel, Schwalbach, Taunus; Erich Robens, Friedrichsdorf, and Gerhard Walter, Steinbach, all of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Germany

Filed June 12, 1973, Ser. No. 369,404

Int. Cl.² A61K *27/12*

U.S. Cl. 424—19 **1 Claim**

1. A carrier system for a drug which allows the sustained and prolonged release of the drug which consists of

i. a porous carrier aluminium oxide material which is insoluble or only slightly soluble in the body which is in dried jelly lump form which disintegrates into small particles and which contains inkwell pore cavities which are connected to the outer surface by narrow pore necks, the mean diameters of the inkwell pore cavities in section being over twice as large as the mean internal widths of the necks of the inkwell pores, and the internal width of the necks of the inkwell pores being preponderantly less than 0.1 μm and

ii. a drug or pharmaceutically active substance which is embedded or contained only in said inkwell pore cavities, and which jelly has been formed by stirring together dropwise a mixture of aluminum isoproponate dissolved in benzene and a mixture of water and isopropanol, both mixtures containing the drug almost to the point of saturation, and drying the jelly which formed, to a lump which disintegrates into small particles.

3,923,970

STABLE AEROSOL SHAVING FOAMS CONTAINING MINERAL OIL

Hans Breuer, Somerville, N.J., assignor to Carter-Wallace, Inc., New York, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,236

Int. Cl.² A61K *7/06, 7/15*

U.S. Cl. 424—47 **9 Claims**

1. An aqueous soap emulsion suitable for aerosolization comprising about 4 to about 16% by weight of a water-soluble soap selected from the group consisting of sodium, potassium, ammonium, an alkylolamine soap of a fatty acid and mixtures thereof, from 3 to 6% by weight of an emulsifier selected from the group consisting of a sorbitan ester of a fatty acid and a polyoxyethylene oleyl ether having an HLB of 1–9 and from 5 to about 25% by weight mineral oil.

5. An aerosol shave cream package comprising a valve-controlled pressure-tight container containing from 1 to 15% of a liquefied propellant gas and the balance being the soap emulsion of claim 1.

3,923,971

ANTIPERSPIRANT AND DEODORANT COMPOSITION CONTAINING LAMELLAR SUBSTANCES

Alexandre Seilinger, 8, Rue des Beaux Arts, Paris, France

Filed Sept. 13, 1973, Ser. No. 396,771

Int. Cl.² A61K *7/32*

U.S. Cl. 424—65 **5 Claims**

1. An antiperspirant and deodorant composition which consists of a glycerine paste composed of glycerine, water and gum tragacanth and an active ingredient constituted by natural or synthetic mica particles combined with said paste in an amount of about 30 percent, said mica particles being finely pulverized and having a lamellar structure with peripheral ridges of different granular size.

3,923,972

METHOD OF LOWERING BLOOD CHOLESTEROL LEVEL

Joseph E. Fields, Ballwin, and John H. Johnson, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 188,577, Oct. 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 789,081, Jan. 2, 1969, abandoned. This application Apr. 23, 1973, Ser. No. 353,832

Int. Cl.² A61K *27/00*

U.S. Cl. 424—78 **9 Claims**

1. A method for lowering the blood cholesterol level in a living animal in need thereof comprising orally administering to said animal an effective blood cholesterol lowering amount of a copolymer of (1) an alpha alkene of about 8 to about 22 carbon atoms and (2) maleic acid or anhydride, or a pharmaceutically acceptable amide, ester, imide, salt thereof or mixtures thereof, said copolymer having a molecular weight in the range of from about 1000 to 1,000,000.

3,923,973

FUNGICIDAL POLYMERIC QUATERNARY AMMONIUM COMPOUNDS

Harold A. Green, Havertown, Pa.; John J. Merianos, Jersey City, and Alfonso N. Petrocci, Glen Rock, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 425,931, Dec. 18, 1973, Pat. No. 3,874,870. This application Sept. 30, 1974, Ser. No. 510,617. The portion of the term of this patent subsequent to Apr. 1, 1992, has been disclaimed.

Int. Cl.² A61K *31/74;* **A01N** *9/20, 9/24*

U.S. Cl. 424—78 **5 Claims**

1. A method of controlling the proliferation of fungi in an aqueous system, which comprises applying to said fungi a fungicidally effective amount of a condensation product formed by mixing 1,4-bis-dimethylamino-2-butene dissolved in a solvent with 1,4-dihalo-2-butene at room temperature whereby an exothermic reaction is obtained causing the temperature of the mixture to rise, then maintaining the mixture at no higher than reflux temperature until the reaction is complete, wherein these reactants are present in a molar proportion of between about 1:3 and about 3:1 relative to each other.

3,923,974

SOLID FINE CRYSTALLINE PARACETAMOL POLYMER COMPLEX COMPOSITION

Roderic Stafford Andrews; Christoper George Barlow, and John Lewis Livingstone, all of Newcastle-upon-Tyne, England, assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 353,631, April 23, 1973, Pat. No. 3,851,032. This application Apr. 29, 1974, Ser. No. 465,159

Int. Cl.² A61K *31/79*

U.S. Cl. 424—80 **4 Claims**

1. A composition which is suitable for direct tablet compression and which comprises a solid fine crystalline paracetamol polymer complex, said polymer selected from homopolymers and copolymers of vinyl acetate and vinyl pyrrolidone, the polymer being present in an amount of from 1 to 15%, by weight on the weight of the paracetamol, and being distributed throughout each crystal associated as said complex.

3,923,975

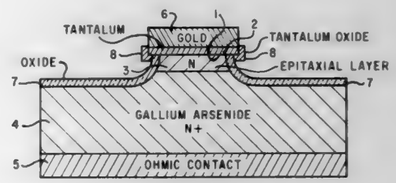
TANTALUM-GALLIUM ARSENIDE SCHOTTKY BARRIER SEMICONDUCTOR DEVICE

Joseph A. Calviello, Kings Park, N.Y., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Division of Ser. No. 404,303, Oct. 9, 1973, Pat. No. 3,886,580. This application Jan. 23, 1975, Ser. No. 543,633

Int. Cl.² H01C *7/00;* **H01G** *9/00*

U.S. Cl. 427—84 **3 Claims**



1. A method of fabricating a Schottky barrier electrode structure on a body of gallium arsenide, comprising the steps of

a. cleaning the surface of said body,

b. depositing a film of tantalum on a region of said surface by evaporation in vacuum in the absence of water, while maintaining the pressure below about 10^{-5} mm Hg, to a film thickness of about 2000A.

c. depositing a gold film upon said tantalum film,
d. etching the exposed surface of said gallium arsenide body to define the periphery of the Schottky barrier, and
e. oxidizing the exposed surfaces of said gallium arsenide body and said tantalum film.

3,923,976

PROCESS FOR RECOVERY OF ZINC FROM SOLUTIONS THAT CONTAIN IT AS A RESULT OF EXTRACTION WITH SOLVENTS FOR THEIR ADAPTATION TO ELECTROLYSIS

Jose Manuel Regife Vega, San Ernesto 12, and Eduardo Diaz Nogueira, Av. Mediterraneo 47, both of Madrid, Spain

Filed May 31, 1973, Ser. No. 365,718
Claims priority, application Spain, Aug. 10, 1972, 405759; June 3, 1972, 403506
Int. Cl.² C01G 9/06; C25C 1/16
U.S. Cl. 423—99 **11 Claims**

1. Process for preparation of zinc for electrolytic deposition from solutions containing zinc and chloride ions by a two-cycle extraction, the first cycle of which includes;

adjusting the chloride solution to at least 1.3M; extracting zinc from said solution by means of an organic solution including at least one member of a class of extracting agents selected from an amine or a quaternary ammonium compound of minimal solubility in water, said agents used in combination with a compatible organic diluent to serve as a carrier and viscosity reducer for said extracting agent; and

re-extracting with an aqueous solution to obtain a zinc enriched solution;

and a second cycle including;

extracting the zinc enriched aqueous solution of the first cycle from which more reactive metal cations have been removed, with a high molecular weight organic acid in admixture with a diluent carrier said diluent present to reduce viscosity;

re-extracting with an aqueous solution containing sulphate ions to prepare an electrolytic solution for zinc deposition.

3,923,977

ANTIBIOTIC FR-1923 SUBSTANCE

Hatsuo Aoki; Junji Hosoda, both of Ikeda; Tadaaki Komori, Takatsuki; Manabu Izeki; Yoshiaki Kubochi, both of Takarazuka; Takashi Kamiya, Suita, and Hiroshi Imanaka, Ikeda, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 284,634, Aug. 29, 1972, abandoned. This application Apr. 5, 1974, Ser. No. 458,211
Int. Cl.² A61K 35/00
U.S. Cl. 424—118 **8 Claims**

1. An antibiotic substance, FR-1923, effective in inhibiting the growth of bacteria, said FR-1923 substance:

a. being amphoteric;
b. being in the form of white crystalline needles;
c. being very soluble in alkaline solution or dimethylsulfoxide, sparingly soluble in water or methanol, and insoluble in chloroform, ethyl acetate or ethyl ether;
d. having the following elementary analysis:
carbon = 54.31, hydrogen = 4.90
nitrogen = 10.71, oxygen = (by difference) 30.08:
e. having the following molecular formula:

$C_{23}H_{24}N_4O_9$

f. gradually changing on heating to brown at 187°C. and decomposing at 214–216°C;
g. having an ultra-violet absorption spectrum, when measured in 0.5 M phosphate buffer (pH 8.0), with a shoulder at 220 mμ and a maximum at 272 mμ ($E_{1cm}^{1\%}$ = 310) as shown in FIG. 1;
h. having an infra-red absorption spectrum, when suspended in a Nujol mull, giving the following frequency (cm^{-1}) as shown in FIG. 2:
3450, 3250, 3200, 2700-2550, 1725, 1655, 1605, 1590, 1560, 1510, 1395, 1260, 1240, 1220, 1175, 1045, 930, 840, 810, 720; and
i. showing the following color reactions: positive in ninhydrin, Dragendorff's and ferric chloride-potassium ferricyanide tests, and negative in Ehrlich's, Molisch's, Fehling and Tollen's tests.

3,923,978

GATAVALIN AND PROCESS FOR PRODUCING SAME

Nobuhiro Nakajima, Fujimi; Shiro Nakatsugawa, Tokyo; Yasuo Koyama, Tokyo, and Shiro Chihara, Tokyo, all of Japan, assignors to Kayaku Antibiotic Research Co., Ltd., Tokyo, Japan

Filed Oct. 17, 1972, Ser. No. 298,377
Int. Cl.² A61K 35/00
U.S. Cl. 424—118 **2 Claims**

1. Gatavalin having the following characteristic properties:
Molecular weight: about 2,000
Melting point: 245°~248°C.
Elementary analysis: C 51.19 percent, H 8.19 percent, N 14.16 percent Amino acids composition: glutamic acid (1 mol), aspartic acid (1 mol), alanine (2 mol), valine (3 mol), threonine (3 mol)
Infrared absorption spectrum: 3300, 2900, 1740, 1620 **1520,** 1220, 1150 cm^{-1}
Specific rotation: $[\alpha]_D^{23}$ + 22.4° (C : 6.5 percent in 50 percent methanol)
Bioautography: Rf = 0.9~0.95 (n-butanol: acetic acid: water = 3 : 1 : 1)
Ultraviolet: end absorption
Color reaction: Positive to biuret and tert-butyl hypochlorite, negative to ninhydrin, Fehling's solution and Molisch.

3,923,979

ANTIBIOTIC 60-6 AND PRODUCTION THEREOF

Jun'ichi Shoji, Hirakota; Mikao Mayama, Ikeda; Shinzo Matsuura, Itami; Kouichi Matsumoto, Toyonaka, and Yoshiharu Wakisaka, Takarazuka, all of Japan, assignors to Shionogi & Company, Ltd., Japan

Filed Apr. 15, 1974, Ser. No. 461,433
Claims priority, application Japan, Apr. 25, 1973, 48-47413
Int. Cl.² A61K 35/00
U.S. Cl. 424—118 **3 Claims**

1. An antibiotic, 60-6, effective in inhibiting the growth of gram-positive microorganism, the said antibiotic being colorless amphoteric powder which shows no definite melting point but progressively decomposes at over 190°C; contains the elements carbon, hydrogen, nitrogen and oxygen in substantially the following proportions by weight:

Carbon	53.91 %,	54.33 %
Hydrogen	7.72 %,	7.61 %
Nitrogen	14.27 %,	14.76 %;

has an optical rotation of $[\alpha]_D^{23.6}$ + 19.5 ± 3.5° (c=0.172 %, in dimethylformamide); has a molecular weight of 1600 and a neutralization equivalent of 1517; shows the formation of aspartic acid, threonine, serine, valine, alloisoleucine, tryptophane, γ-hydroxylysine, ammonia and a variety of fatty acids containing 12–16 carbon atoms on acid hydrolysis; and shows ultraviolet absorption (in methanol) at 275, 282 and 290.5 μ and an infrared absorption spectrum as in the attached drawing, FIG. 1.

3,923,980

ANTIBIOTIC A-2315 AND PROCESS FOR PREPARATION THEREOF

Robert L. Hamill, New Ross, and William Max Stark, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 276,546, July 31, 1972, abandoned. This application May 2, 1974, Ser. No. 466,327
Int. Cl.² A61K 35/00
U.S. Cl. 424—118 **9 Claims**

1. Antibiotic A-2315 Factor A, said factor being a white amorphous solid having a specific rotation $[\alpha]^{27}D$ of −132 (c = 0.375 in methanol); having an approximate elemental composition of 61.51 percent carbon, 7.51 percent hydrogen, 8.69 percent nitrogen, and 21.53 percent oxygen; having an approximate molecular weight of 503 as determined by mass spectrometry; having in chloroform the following distinguishable bands in its infrared absorption spectrum: 2.81, 2.99, **3.38,** 5.82, 6.02, 6.20, 6.30, 6.40, 6.66, 6.82, 6.94, 7.05, 7.30, 7.71, 8.88, 9.11, 10.41, 10.89 and 11.14 microns; having in 95% ethanol solution an ultraviolet absorption maximum at 214 mμ with an absorptivity value ($E_{1\,cm}^{1\%}$) of approximately 799; being soluble in methanol, ethanol, and chloroform, but being only slightly soluble in water; releasing alanine upon amino-acid analysis; and containing hydroxyl groups which are capable of esterification.

3,923,981

ANTIBIOTIC MYC 8003

Cornelis Vos, Pijnacker, and Jacobus den Admirant, Delft, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Division of Ser. No. 344,610, March 26, 1973, which is a continuation-in-part of Ser. No. 170,516, Aug. 10, 1971, abandoned. This application Sept. 11, 1974, Ser. No. 501,863
Claims priority, application United Kingdom, Aug. 14, 1970, 39367/70
Int. Cl.² A61K 35/00
U.S. Cl. 424—122 **8 Claims**

1. A growth-promoting composition for warmblooded animals comprising an animal feed containing a growthpromoting amount of a member of the group consisting of the antibiotic MYC 8003, which is a yellow, saltforming weak acid solid having the analysis: carbon, 63.8%; hydrogen, 7.6%; nitrogen, 3.5%; and oxygen, 25.1%; consisting of equilibrium-forming components, with an optical rotation $[\alpha]_D^{22}$ of −60° (1% methanolic solution), poorly soluble in carbon tetrachloride and benzene, soluble in chloroform, methyl isobutyl ketone, butyl acetate, ethyl acetate, methanol and alkaline solutions, insoluble in diethyl ether, petroleum ether, water and acid solutions, showing a slightly positive reaction in the aromate test, forming a red color with concentrated sulfuric acid, a dark brown color in the Pauly reaction, a dark red color and turbidity with ferric chloride, and precipitation with bromine water, showing gas production at 135°C, showing further gas production at about 152°C and showing a decomposition at 164°–174°C, showing in the ultraviolet region of the spectrum absorption maxima at 233, 276, 286 and 327 nm as in FIG. **1,** and in the infrared region, in KBr, absorption bands at 812, about 860, 940, 985, 1092, 1215, 1340–1380, 1460, 1540, **1640,** 2933, 2969 and about 3370 cm^{-1} as in FIG. **3** and an R_f-value of 0.10 of the chief component, when chromatographed with a mixture of benzene, ethanol and 33% ammonia in the ratio of 65:40:9 and having the PMR spectrum of FIG. **4,** and its non-toxic, pharmaceutically acceptable salts.

3,923,982

PROCESS FOR PREVENTING TRACE ELEMENT DEFICIENCY IN ANIMALS AND COMPOSITIONS FOR CARRYING OUT SAID PROCESS

Michel Lamand; Claudine Lab nee Astier; Remy Roux, and Paul Chagnaud, all of Beaumont, France, assignors to Etablissement Public Dit: Institut National de la Recherche Agronomique, Paris, France

Filed Sept. 19, 1973, Ser. No. 398,626
Claims priority, application France, Sept. 20, 1972, 72.33282
Int. Cl.² A61K 27/00
U.S. Cl. 424—140 **11 Claims**

1. A method for controlling trace-metal deficiency in bovine and ovine animals, comprising the step of injecting, by intramuscular or subcutaneous route, to such animals having such deficiency an effective amount of a composition in the form of a suspension containing said trace-metals in a viscous and apyrogenous excipient, the suspended trace-metal being present as the free metal or an oxide thereof, being non-soluble in aqueous media, non-ionizable and capable of slow release after intramuscular or subcutaneous injection.

3,923,983

MEDICATED POULTRY COMPOSITION AND METHOD EMPLOYING CERTAIN SULFATE COMPOUNDS

Joseph Michael Pensack, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 561,053, June 28, 1966, Pat. No. 3,531,568, which is a continuation-in-part of Ser. No. 313,171, Oct. 2, 1963, abandoned. This application Aug. 3, 1970, Ser. No. 60,627. The portion of the term of this patent subsequent to Sept. 29, 1987, has been disclaimed.
Int. Cl.² A61K 33/04
U.S. Cl. 424—164 **2 Claims**

1. A medicated poultry drinking water composition comprising water and a medicament selected from the group consisting of tylosin, 2-amino-5-nitrothiazole and 2-acetylamino-5-nitrothiazole and a sulfate of a cation carrying a single positive charge selected from the group consisting of sodium sulfate, sodium bisulfate, potassium sulfate, potassium bisulfate, ammonium sulfate, ammonium acid sulfate and sulfuric acid in an amount sufficient to provide from about 0.1 to about 1.0 percent by weight of sulfate ion in the water.

3,923,984

SHELF STABLE MULTI-USE COMPOSITION, PREPARATION AND USE

Carl J. Zuercher, deceased, late of Pinellas Park, Fla. (by Ernestine Zuercher, executrix), assignor to Beatrice Z. Atha, Richmond, Va.

Filed Feb. 11, 1974, Ser. No. 441,631
Int. Cl.² A61K 35/78
U.S. Cl. 424—195 **7 Claims**

1. A process for the preparation of a shelf-stable multi-use pain relieving and burn healing composition which comprises:
a. preparing a solution of camphor and distilled water in a ratio of from about 20 to 30 grams of camphor per 128 ounces of distilled water;
b. preparing a healing agent solution of oil of sage, Dalmation and oil of thyme in a co-solvent mixture of water and a glycol containing a surfactant, said oil of sage, Dalmation and oil of thyme being present in an amount by volume of about 40 cc per 245 cc of the said healing agent-containing solution;
c. preparing a sweetener solution of ammoniated glycyrrhizin in a co-solvent mixture of water and a glycol, said sweetener being present in an amount of about 50 grams per 450 cc of the said co-solvent mixture;
d. preparing a pain-reliever solution of eugenol and a surfactant in a glycol solvent, said eugenol being present in an amount by volume of about 10 cc per 130 cc of the said pain reliever-containing solution;

e. preparing a flavoring agent solution of maltol in a co-solvent mixture of water and a glycol, the maltol being present in an amount of about 1 gram per 1001 cc of the said flavoring agent-containing solution;
f. mixing from about 5 to about 10 ounces of sorbitol and from about 3 to about 10 grams of tannic acid to the said camphor solution; and
g. mixing in thereafter from about 1 to about 4 ounces of the said healing agent and said antiseptic solution, from about ½ to about 2 ounces of the sweetener solution, from about 1 to about 4 ounces of the flavoring agent-containing solution, from about 1 to about 4 ounces of a humectant, from about ½ to about 3 ounces of the pain reliever solution.

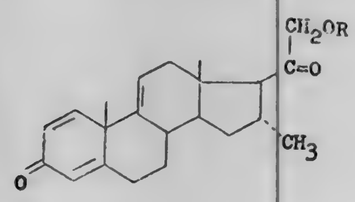
3,923,985

PROCESS FOR THE PREPARATION OF 16α-METHYL-$\Delta^{1,4,9(11)}$-PREGNATRIEN-3,20-DIONES AND USE OF THE SAME IN TREATMENT OF ALLERGIES

Jacques Prost Marechal, Paris, and Georges Tomasik, Rosny-sous-Bois, both of France, assignors to Roussel-UCLAF, Paris, France

Filed July 24, 1974, Ser. No. 491,339
Claims priority, application France, July 27, 1973, 73.27578
Int. Cl.² A61K *31/56*
U.S. Cl. 424—243 **4 Claims**

1. Pharmaceutical compositions for the treatment of allergic reactions of seasonal or aperiodic rhinitis, spasmodic coughing, asthma and skin disturbances in warm-blooded animals comprising a minor amount of 16α-methyl-$\Delta^{1,4,9(11)}$-pregnatrien-3,20-dione having the formula



wherein R is a member selected from the group consisting of hydrogen and the acyl of an organic carboxylic acid having from 1 to 18 carbon atoms, and a major amount of a pharmaceutical excipient.

3,923,986

NITROGEN CONTAINING ACYCLIC ISOPRENOID COMPOUNDS IN PHARMACEUTICAL COMPOSITIONS

Silvia Tricerri Zumin, Como; Mario Riva, Monza, Milan, and Giuseppe Iafolla, Milan, all of Italy, assignors to Pierrel S.p.A., Milan, Italy

Division of Ser. No. 345,256, March 27, 1973, Pat. No. 3,875,163, which is a continuation-in-part of Ser. No. 271,067, July 12, 1972, abandoned. This application Sept. 18, 1974, Ser. No. 507,230
Claims priority, application United Kingdom, Feb. 21, 1973, 9348/73; Feb. 29, 1973, 9348/73
Int. Cl.² A61K *31/495*
U.S. Cl. 424—250 **13 Claims**

1. A pharmaceutical composition in dosage unit form containing an effective gastric antisecretory, anti-ulcer, analgesic of anti-inflammatory amount of a compound selected from the group consisting of N^1-piperonyl-N^4-3,7,11-trimethyl-2,6,10-dodecatrienylpiperazine and a therapeutically acceptable non-toxic salt thereof and a non-toxic pharmaceutically acceptable carrier therefor.

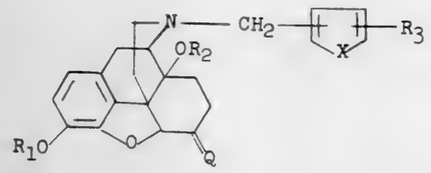
3,923,987

PHARMACEUTICAL COMPOSITIONS CONTAINING AN N-FURYL-OR THIENYL-METHYL)- -OXY-7,8 -DIHYDRO-NORMORPHINONE OR NORCODEINONE AND METHOD OF USE

Herbert Merz; Adolf Langbein; Gerhard Walther, and Klaus Stockhaus, all of Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Division of Ser. No. 386,065, Aug. 6, 1973, Pat. No. 3,872,127. This application Jan. 16, 1975, Ser. No. 541,431
Claims priority, application Germany, Aug. 7, 1972, 2238839
Int. Cl.² A61K *31/485*
U.S. Cl. 424—260 **20 Claims**

1. An opiate antagonist composition in dosage unit form consisting essentially of an inert pharmaceutical carrier and an effective opiate-antagonistic amount of a compound of the formula



wherein
R_1 is hydrogen, methyl or acetyl,
R_2 is hydrogen or acetyl,
R_3 is hydrogen or methyl,
Q is oxygen, dimethoxy, diethoxy, ethylenedioxy or propylene(1,3)dioxy, and
X is oxygen or sulfur,
or a non-toxic, pharamacologically acceptable acid addition salt thereof.

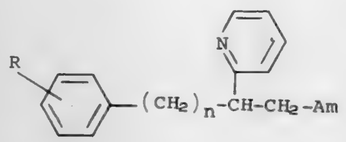
3,923,988

2-(2-PYRIDYL)-ω-PHENYLALKYLAMINES

William John Welstead, Jr., and Burt Trosey Merriman, Jr., both of Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Division of Ser. No. 293,863, Oct. 2, 1972, Pat. No. 3,814,641. This application Mar. 15, 1974, Ser. No. 451,569
Int. Cl.² A61K *31/44*
U.S. Cl. 424—263 **18 Claims**

1. A composition suitable for its gastric anti-secretory effect comprising (1) an effective amount of between 5.0 and 100 milligrams of a compound selected from those having the formula:



wherein;
Am is an amino radical selected from the group consisting of amino (-NH_2), di-lower-alkylamino, pyrrolidino, piperidino, and morpholino,
R is selected from the group consisting of hydrogen, fluorine, chlorine, bromine, methoxy and trifluoromethyl,
n is a positive integer from 1 to 2 inclusive, and the pharmaceutically acceptable acid addition salts thereof, and
2. a pharmaceutical carrier.

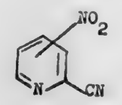
3,923,989

NITRO SUBSTITUTED PICOLINONITRILES AS ANTI-BACTERIAL AND ANTI-FUNGAL AGENTS

Paul L. Anderson, Dover, N.J., assignor to Sandoz Inc., East Hanover, N.J.

Continuation-in-part of Ser. No. 379,008, July 13, 1973, abandoned, which is a division of Ser. No. 207,558, Dec. 13, 1971, Pat. No. 3,770,751. This application Aug. 20, 1974, Ser. No. 498,955
Int. Cl.² A61K *31/44*
U.S. Cl. 424—263 **21 Claims**

1. A method of treating bacteria and fungi, which comprises internally or topically administering to a mammal in need of said treatment an anti-bacterial or anti-fungal effective amount of a compound of the formula:



or a non-toxic pharmaceutically acceptable acid addition salt thereof.

3,923,990

PHENYCYCLIDINE FOR INDUCING MYDRIASIS IN HUMANS

Mordechai Sokolovsky, 10 Rav Ashi St., Tel Aviv, and Saul Maayani, 7 Hahistadruth St., Givatayim, both of Israel

Filed July 30, 1973, Ser. No. 383,905
Claims priority, application Israel, Aug. 7, 1972, 40064
Int. Cl.² A61K *31/445*
U.S. Cl. 424—267 **4 Claims**

1. A method of inducing mydriasis in humans for examination purposes, which comprises applying phencyclidine to an eye in an amount effective to dilate the pupil of the eye treated therewith.

3,923,991

1,6-BIS(2-PIPERIDINOETHOXY)XANTHENE-9-ONE HCL, HYDRATE IN THE TREATMENT OF INFLAMMATION

Arthur A. Santilli, Havertown; Anthony C. Scotese, King of Prussia; Stanley C. Bell, Penn Valley, and Marvin E. Rosenthale, Havertown, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 256,034, May 23, 1972. This application Oct. 16, 1973, Ser. No. 406,996
Int. Cl.² A61K *31/33, 31/35, 31/445*
U.S. Cl. 424—267 **1 Claim**

1. A method of reducing inflammation in a mammalian host comprising orally administering to the host an effective amount of 1,6-bis(2-piperidinoethoxy)xanthen-9-one, dihydrochloride, hydrate.

3,923,992

ANALGETIC COMPOSITION AND METHOD OF USE

Thomas N. Riley, Oxford, Miss., and Danny B. Hale, Laverne, Tenn., assignors to The University of Mississippi, University, Miss.

Filed May 23, 1974, Ser. No. 472,528
Int. Cl.² A61K *31/445*
U.S. Cl. 424—267 **2 Claims**

2. A process for raising the threshold of pain in mammal which consists essentially of administering to said mammal a composition consisting of the compound 1-(2-phenylethyl)-3-methyl-4-(N-propananilido)piperidine in admixture with a non-toxic pharmaceutically acceptable carrier, said compound being in a therapeutically effective concentration.

3,923,993

PROCESS FOR TREATING NEUROENDOCRINOPATHIC DISEASES EMPLOYING FLUSPIRILENE

Alan Corbin, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 374,454, June 28, 1973, Pat. No. 3,863,011. This application June 19, 1974, Ser. No. 480,777
Int. Cl.² A61K *31/44*
U.S. Cl. 424—267 **6 Claims**

1. A process for alleviating the clinical characteristics of an endocrinopathy induced by hypothalamic hyperfunction, which comprises chronically administering to a patient suffering from said endocrinopathy, orally or parenterally, the compound 8-[4,4-bis(p-fluorophenyl)butyl]-1-phenyl-1,3,8-triazaspiro(4.5)decan-4-one, in an amount sufficient to cause regression of the manifestations of said endocrinopathy as determined by physical observation and blood chemistry measurement.

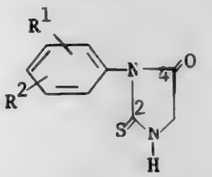
3,923,994

ANTI-ARTHRITIC COMPOSITIONS COMPRISING A 3-ARYL 2-THIOHYDANTOIN AND METHODS OF PRODUCING ANTI-ARTHRITIC ACTIVITY

Arthur Magnani, Wynnewood, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed July 13, 1973, Ser. No. 379,038
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² A61K *31/415*
U.S. Cl. 424—273 **11 Claims**

1. A tablet or capsule pharmaceutical composition having anti-arthritic activity, in dosage unit form, comprising a non-toxic pharmaceutical carrier and an effective but nontoxic amount of a 3-aryl-2-thiohydantoin of the formula:



in which R^1 and R^2 are hydrogen, chloro, bromo, fluoro or alkyl of one or two carbon atoms, at least one of R^1 and R^2 being other than hydrogen.

3,923,995
ANTICONVULSANT COMPOSITIONS CONTAINING DIPHENYLHYDANTOIN COMPOUNDS AND METHOD OF USING SAME

Carlos M. Samour, Wellesley, Mass., assignor to The Kendall Company, Walpole, Mass.

Division of Ser. No. 125,813, March 18, 1971, which is a division of Ser. No. 888,943, Dec. 29, 1969, which is a continuation-in-part of Ser. No. 749,972, Aug. 5, 1968, abandoned. This application May 24, 1974, Ser. No. 472,983

Int. Cl.² A61K *31/415*

U.S. Cl. 424—273 **10 Claims**

1. A therapeutic composition for treatment of convulsions in warm-blooded animals comprising a physiologically acceptable carrier and an amount sufficient to produce an anticonvulsant effect of a compound selected from the group consisting of 3-alkoxymethyl-5,5-diphenylhydantoin, 1,3-dialkoxymethyl-5,5-diphenylhydantoin and 3-benzyloxymethyl-5,5-diphenylhydantoin in which each alkoxy contains 1 to 12 carbon atoms.

3,923,996
3-SUBSTITUTED-OXINDOLES IN COMPOSITIONS AND METHODS OF TREATING OBESITY

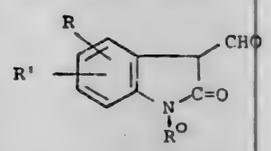
Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 276,795, July 31, 1972, abandoned. This application Nov. 12, 1973, Ser. No. 414,969

Int. Cl.² A61K *31/40*

U.S. Cl. 424—274 **12 Claims**

1. The method of treating obesity in obese animals comprising administering to said animal an anti-obesity• effective amount of a compound of the formula:



wherein

R• is hydrogen or alkyl of 1 to 4 carbon atoms,

R is halo of atomic weight of from 18 to 36 or alkoxy of 1 to 4 carbon atoms, and

R′ is hydrogen, halo of atomic weight of from 18 to 36 or alkoxy of 1 to 4 carbon atoms, or

R and R′ together form methylenedioxy,

or a pharmaceutically acceptable salt thereof.

3,923,997
PROCESS FOR REPELLING DOGS AND CATS FROM A SELECTED AREA OR FROM EACH OTHER USING γ-N-LKYL-γ-BUTYROLACTONES AND δ-N-ALKYL-δ-VALEROLACTONES

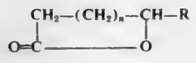
Walter C. Meuly, Piscataway Township, Middlesex County, N.J., assignor to Rhodia Inc., New York, N.Y.

Continuation of Ser. No. 142,395, May 11, 1971, abandoned. This application Oct. 23, 1973, Ser. No. 408,332

Int. Cl.² A01N *9/28*

U.S. Cl. 424—279 **12 Claims**

1. A process for repelling dogs and cats from a selected area or from each other, which comprises applying to the surface of a selected area, dog or cat to be made repellent an amount sufficient to repel said dog or cat of a compound selected from the group consisting of γ-n-alkyl-γ-butyrolactone and δ-n-alkyl-δ-valerolactone having the formula:



wherein *n* is a number from 1 to 2, and R is a straight-chain alkyl group having from about two to eight carbon atoms.

3,923,998
CERTAIN TRIORGANOTIN COMPOUNDS USED TO COMBAT PLANT FUNGI

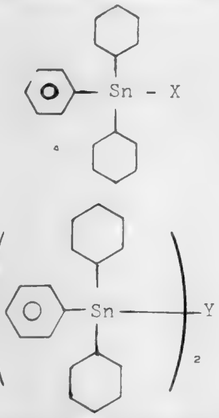
Melvin H. Gitlitz, Edison, N.J., assignor to M & T Chemicals Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 311,509, Dec. 4, 1972, abandoned. This application July 10, 1974, Ser. No. 487,053

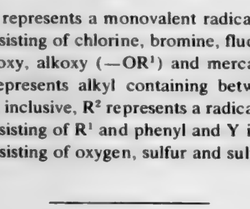
Int. Cl.² A01N *9/00*

U.S. Cl. 424—288 **3 Claims**

1. A method for controlling plant fungi comprising contacting said fungi or their plant habitat with a fungicidally effective amount of a compound of the formula



or



wherein X represents a monovalent radical selected from the group consisting of chlorine, bromine, fluorine, hydroxyl, acetate, phenoxy, alkoxy (—OR^1) and mercaptide (—SR^2), wherein R^1 represents alkyl containing between 1 and 12 carbon atoms, inclusive, R^2 represents a radical selected from the group consisting of R^1 and phenyl and Y is selected from the group consisting of oxygen, sulfur and sulfate.

3,923,999
INSECTICIDAL COMPOSITIONS

Gotthard Synnatschke; Walter Gueckel, and Falk Rittig, all of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Aug. 1, 1973, Ser. No. 384,627

Claims priority, application Germany, Aug. 14, 1972, 2239898

Int. Cl.² A01N *9/12, 9/20, 9/24*

U.S. Cl. 424—300 **2 Claims**

1. A storage-stable insecticide powder composition comprising 1-naphthyl-N-methyl carbamate dispersed in a solid carrier and, as a dispersant therefor, 1 to 10% by weight, with reference to the solids content of said powder, of the water soluble sodium salt of the condensation product of 1 mole of o-cresol-sulfonic acid, 2 moles of urea and 10.6 moles of formaldehyde, subsequently condensed with 1 mole of o-cresol and 2 moles of formaldehyde.

3,924,000
INJECTABLE SOLUTION

Geraldine H. Thiele, Glen-Haven Farms, Rte. 1, Box 12, Windber, Pa. 15963

Continuation-in-part of Ser. No. 113,362, Feb. 8, 1971, Pat. No. 3,741,204, and Ser. No. 123,830, March 12, 1971, Pat. No. 3,767,812, and Ser. No. 283,663, Aug. 25, 1972, and Ser. No. 283,662, Aug. 25, 1972, Pat. No. 3,805,776, said Ser. No. 123,830, and Ser. No. 283,663, and Ser. No. 283,662, each is a continuation-in-part of Ser. No. 113,362, said Ser. No. 283,662, and Ser. No. 283,663, each is a continuation-in-part of Ser. No. 123,830,. This application June 12, 1973, Ser. No. 369,236The portion of the term of this patent subsequent to June 26, 1990, has been disclaimed.

Int. Cl. A61k *31/20*

U.S. Cl. 424—318 **20 Claims**

1. The process of treating a mosaic fracture of the bone and periosteum of man or animal which comprises injecting at least one dosage in an effective amount of a liquefied composition comprised of (a) a non-necrotic fatty acid compound, sclerosing agent and (b) a liquid carrier into the site of the fracture of the periosteum until there is a substantially complete bone union.

3,924,001
HYPOLIPIDEMIC 4-(MONOALKYLAMINO)BENZOIC ACID DERIVATIVES

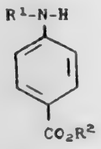
Jay Donald Albright, Nanuet; Stephen Joseph Riggi, Suffern, and Robert Gordon Shepherd, South Nyack, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 402,212, Oct. 1, 1973, Pat. No. 3,868,416. This application Oct. 25, 1974, Ser. No. 518,022

Int. Cl.² A61K *31/44, 31/195, 31/245, 31/445*

U.S. Cl. 424—319 **7 Claims**

1. A method of treating hyperlipidemia in a mammal comprising administering to said mammal an effective serum lipid-lowering amount of a 4-(monoalkylamino) benzoic acid derivative of the formula:



wherein R^1 is an unbranched or branched alkyl group, C_nH_{2n+1} wherein *n* is 4 to 19; and R^2 is hydrogen, lower alkyl, benzyl, dilower akylaminoethyl or lower alkoxymethyl or a pharmaceutically acceptable salt thereof.

3,924,002
METHOD FOR COMBATTING HARMFUL MICROORGANISMS

Max Duennenberger, Frenkendorf, and Max Schellenbaum, Muttenz, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

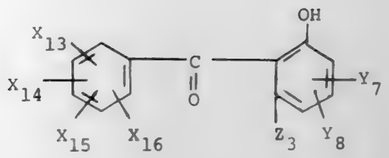
Division of Ser. No. 53,026, July 7, 1970, abandoned. This application Apr. 16, 1973, Ser. No. 352,379

Claims priority, application Switzerland, July 17, 1969, 10936/69

Int. Cl.² A61L *13/00;* **D06M** *13/12*

U.S. Cl. 424—331 **6 Claims**

1. A composition for combatting fungi and bacteria which comprises solid or liquid carrier and an inhibitory amount of a 2-hydroxybenzophenone of the formula



where Z_3 denotes an alkyl group with at most 2 carbon atoms or a chlorine or bromine atom, X_{13}, X_{14}, X_{15}, Y_7 and Y_8 each denote an an alkyl group with at most 2 carbon atoms or a hydrogen, chlorine or bromine atom, and X_{16} denotes a hydrogen, chlorine or bromine atom, with the number of the alkyl groups being at most 3.

3,924,003
SUBSTITUTED OR UNSUBSTITUTED P-ALKANOYL TOLUENES AS ANTI-OBESITY AND ANTI-DIABETIC AGENTS

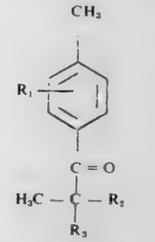
Robert S. Ho, Denville; William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, all of N.J., assignors to Sandoz Inc., East Hanover, N.J.

Continuation-in-part of Ser. No. 445,265, Feb. 25, 1974, abandoned. This application Feb. 3, 1975, Ser. No. 546,756

Int. Cl.² A61K *31/12*

U.S. Cl. 424—331 **8 Claims**

1. A method for treating obesity which comprises administering to a mammal in need of said treatment an anti-obesity effective amount of a compound of the formula:



where

R_1 represents hydrogen, halo having an atomic weight of about 19 to 36, or straight chain lower alkoxy, and

R_2 and R_3 each independently represent alkyl having 1 to 2 carbon atoms.

3,924,004
FATTY ALCOHOL-PROPYLENE CARBONATE-GLYCOL SOLVENT CREAM VEHICLE

Kuang Y. Chang, Palo Alto, Calif., and Bonnie Ferrell, Clinton, N.Y., assignors to Syntex Corporation, Palo Alto, Calif.

Filed Nov. 24, 1971, Ser. No. 201,997

Int. Cl.² A61K *9/06*

U.S. Cl. 424—358 **5 Claims**

1. A substantially anhydrous vehicle composition consisting essentially of

a. from 5 to 40 weight percent of saturated fatty alcohol having from 16 to 24 carbons;

b. from 1 to 40 weight percent of propylene carbonate;

c. from 25 to 85 weight percent of glycol cosolvent, weight ratio of the glycol solvent to propylene carbonate being at least 1:2;

d. a stabilizing amount of surfactant;

e. from 0 to 15 weight percent of compatible plasticizer; and

f. from 0 to 3 weight percent water; said vehicle composition being particularly suitable for providing an occlusive

film, for releasing topically active cortico-steroids which are soluble in propylene carbonate, and for distributing medication over the skin surface and maintaining it there until beneficial action occurs.

3,924,005
SOLUBLE PROTEIN

Sven Ingmar Walton Bosund, Halsingborg, and Bengt Lennart Bengtsson, Bjuv, both of Sweden, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Canada

Filed May 21, 1973, Ser. No. 362,358
Claims priority, application United Kingdom, May 22, 1972, 23934/72
Int. Cl.² A23J *1/04*
U.S. Cl. 426—7 **7 Claims**

1. A process for preparing a fish protein isolate containing less than 0.5% by weight of lipids and which is water-soluble at all pH values comprising subjecting an aqueous slurry of comminuted fish material to enzymatic solubilization until less than 20% but greater than 0% by weight of the protein of said fish material is precipitatable at a pH of 4.5, precipitating undegraded proteins from the slurry by a step selected from the group consisting of acidifying said slurry to a pH of 4.0 to 5.0 and heating said slurry to a temperature above 70°C and separating the precipitated insoluble matter comprising undegraded proteins, lipo-proteins and lipids from the slurry to provide a solution of fish protein isolate.

3,924,006
ACTIVE DRIED YEAST

Frederick S. M. Grylls, Morden, England, assignor to The Distillers Company (Yeast) Limited, Surrey, England

Filed July 22, 1974, Ser. No. 490,445
Claims priority, application United Kingdom, July 23, 1973, 34950/73
Int. Cl.² A21D *2/02, 2/16;* **C12C** *11/18*
U.S. Cl. 426—24 **11 Claims**

1. A yeast composition comprising active dried yeast having admixed with it 0.5 to 2% by weight hydrophobic silicic acid, based on the dry weight of the yeast, and a minor amount of a wetting agent.

3,924,007
CONTINUOUS PREPARATION OF FERMENTED MILK PRODUCTS

Fransiscus M. Driessen, Ede; Jacobus J. Stadhouders, Bennekom, and Jacob Ubbels, Ede, all of Netherlands, assignors to Stichting Bedrijven Van Het Nederlands Instituut Voor Zuivelonderzoek, Ede, Netherlands

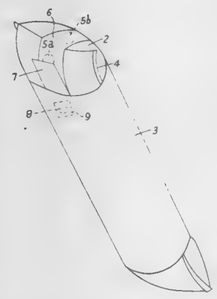
Filed Apr. 9, 1973, Ser. No. 349,196
Claims priority, application Netherlands, Apr. 7, 1972, 7204690
Int. Cl. A23c *9/12, 17/00*
U.S. Cl. 426—43 **23 Claims**

1. A process for the continuous preparation of yoghurt comprising adding a continuous stream of milk to a fermenting mixture consisting of milk and starter in a prefermenting tank while maintaining the temperature of the mixture at 42°–48°C, transferring a similar quantity of the fermenting mixture which has a pH not below about 5.3 into a coagulating tank in which further fermentation and coagulation take place, cooling the fermenting mixture during passage into the coagulating tank, spraying the fermenting mixture into the coagulating tank, allowing the fermenting mixture to flow downward through the coagulating tank and coagulate and form a gel structure, and near the bottom of the tank where the acidity is sufficient to produce a pH of the gel structure of about 4.7 or below and the acidity is sufficiently high to prevent syneresis by stirring, stirring the gel structure near the bottom of the tank to form a smooth consistency without disturbing that part of the gel structure upstream in the coagulating tank in which sufficient acidity has not been produced, and subsequently filling containers with the resulting product through a discharge pipe in the bottom of the coagulating tank.

3,924,008
FLEXIBLE POUCHES FOR CARBONATED BEVERAGES

Andrew George Ford, Hitchin, and Dennis Ridley, Welwyn Garden City, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 21, 1972, Ser. No. 264,873
Claims priority, application United Kingdom, June 25, 1971, 29904/71; June 25, 1971, 29905/71; Dec. 30, 1971, 60732/71
Int. Cl.² B65B *31/02*
U.S. Cl. 426—123 **5 Claims**

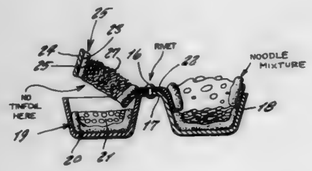


1. A pouch for forming a pressurized package comprising a length of flattened tubular plastics film sealed at each end by a transverse linear seal, such that the pouch on inflation assumes a substantially cylindrical shape over the major part of its length with approximately saddle-shaped ends, and having an emptying port in each wall in an end part of the pouch, each port comprising a plurality of small holes in the wall of the pouch and each port being sealed by a removably-adhered strip of gas-tight flexible material extending across the end of the pouch, adhered across and around each emptying port to seal the holes but remaining substantially unattached to the pouch across the end thereof and the pouch having a filling aperture in its wall, in the part thereof that assumes a substantially cylindrical shape when the pouch is inflated.

3,924,009
MINI KUGELET

Libby M. Goldberg, c/o George Spector, 3615 Woolworth Building, 233 Broadway, and George Spector, 3615 Woolworth Building, 233 Broadway, both of New York, N.Y. 10007

Filed Aug. 27, 1973, Ser. No. 391,745
Int. Cl.² A23L *1/16*
U.S. Cl. 426—132 **2 Claims**



1. An adjustable food container in combinations with a plurality of food components adapted to combine interchangeably, comprising a pair of upper and lower metal foils,

wherein each of said foils include spaced circular cuplike depressions and central overlapping portions pivotally secured at the center thereof with a rivet, whereby the foils are relatively rotatable and the depressions on each foil are circularly arranged at the same radial distance from the rivet, said depressions having complimentary dimensions wherein each depression in the upper foil will nest and be supported in each opposing depression in the lower foil, said food components comprising edible shell enclosed units mounted in the depressions wherein the units in the upper and lower depressions are jointed when the depressions are in a nesting position to form contiguous shell enclosing food units of varying combination depending upon the relative rotational position of the foils, wherein the shells are formed from a noodle mixture.

3,924,010
METHOD FOR RIPENING FRUIT IN ATMOSPHERE OF ETHYLENE AND CARBON DIOXIDE

Ezra Erb, Edison, N.J., assignor to Union Carbide Corporation, New York, N.Y.

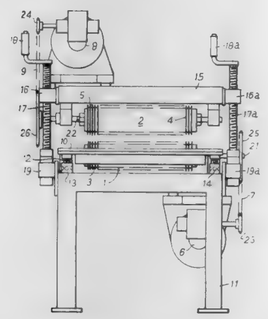
Filed July 27, 1973, Ser. No. 383,063
Int. Cl.² A23L *1/20*
U.S. Cl. 426—312 **2 Claims**

1. A process for ripening fruit comprising the steps of:
1. placing the fruit to be ripened into an enclosed chamber,
2. introducing into said chamber a gas mixture containing from about 1 to 7.3 wt.-% ethylene, and from about 92.7 to 99 wt.-% carbon dioxide, at a flow rate sufficient to maintain a concentration of at least 2.5 ppm of ethylene in the atmosphere within said chamber, and
3. maintaining said fruit in said chamber for a period of time sufficient to achieve the desired degree of ripening.

3,924,011
PROCESS OF TEXTURIZING MEAT MATERIAL

Jean-Paul Kern, Pfulgriesheim; Jacques Lemarechal, La Source, and Malcolm Desforges, Dingsheim, all of France, assignors to Unisabi S.A., Strasbourg-Neudorf am Rhine, France

Filed Aug. 23, 1973, Ser. No. 390,795
Claims priority, application France, Aug. 24, 1972, 72.30191
Int. Cl.² A23L *1/31*
U.S. Cl. 426—518 **5 Claims**

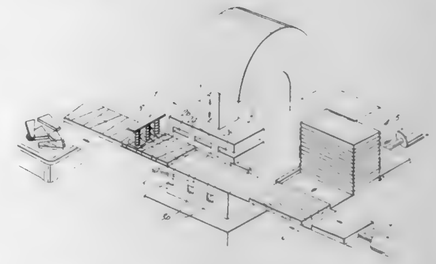


1. A process of imparting a fibrous meat textured appearance to the surface of shaped pieces about 1.5 to 2.5 cm thick of protein material selected from the group consisting of meat, offal, spleen, udder, lung and mixtures thereof having relatively smooth surfaces and no natural fibrous meat texture, comprising applying surface texturizing incisions to the surfaces of said pieces by cutting at least one series of parallel superficial incisions thereon conferring on the shaped protein pieces the appearance and structure of muscular tissue.

3,924,012
METHODS FOR FORMING UNIT PORTIONS OF FROZEN FOOD MATERIALS

Robert Swinburn Marshall, Lowestoft, England; Karl Hartmann, Bremerhaven-Speckenbuttel, and Erich Kraffert, Langen, both of Germany, assignors to Lever Brothers Company, New York, N.Y.

Filed Sept. 18, 1973, Ser. No. 398,524
Claims priority, application United Kingdom, Sept. 21, 1972, 43751/72; Apr. 6, 1973, 16736/73
Int. Cl.² B26D *5/00;* **A23P** *1/00*
U.S. Cl. 426—518 **8 Claims**

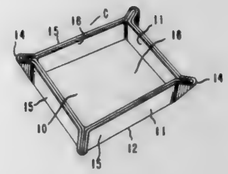


1. A method of forming unit portions from slabs of frozen food material, comprising the steps of bringing each slab in turn between opposing castellated jaws of a press having in each jaw alternate protruding and receding sections in which each protruding section has a substantial flat jaw face, a width corresponding to the required width of the unit portions and is shaped to closely intermesh with a receding section of the opposing jaw, bring the jaws together so that the protruding sections evenly contact the slab, and moving the jaws towards an intermeshing position so as to shear and thereby subdivide the slab into unit portions, said shearing resulting in a high shear stress developing along the plane between said unit portions and causing yield along said plane.

3,924,013
METHOD OF COOKING FOOD IN A POLYETHYLENE TEREPHTHALATE/PAPERBOARD LAMINATED CONTAINER

William Paul Kane, Bon Air, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 18, 1972, Ser. No. 281,943
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² A21B *3/15;* **B65D** *5/24*
U.S. Cl. 426—523 **2 Claims**



1. A method of cooking food including the steps of: providing a container formed from a blank formed from a laminate including paperboard having a layer of substantially amorphous polyethylene terephthalate extruded onto an uncoated surface thereof and wherein such surface is heated to a temperature of at least about 285°F. prior to such extrusion, said paperboad capable of being heated to a cooking temperature of up to about 400°F without browning, and said container being formed by folding the blank to bring surface portions of

the amorphous polyethylene terephthalate layer thereof into abutting contact with other surface portions of such layer and by heat-sealing these abutting surface portions together;

placing food in said container in contact with said layer of polyethylene terephthalate; and

cooking the food in said container at a temperature of up to about 400°F.

3,924,014

PROVOLONE CHEESE FLAVOR

Karl Heinz Ney, Hamburg-Rissen; I. Poetoe Gde Wirotama, Rellingen, and Wolfram Gustav Freytag, Halstenbek, all of Germany, assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 345,058, , abandoned. This application Jan. 24, 1975, Ser. No. 543,838

Claims priority, application Luxembourg, Mar. 24, 1972, 65039

Int. Cl.² A23L *1/226*

U.S. Cl. 426—534 **10 Claims**

1. A process for imparting an improved ripe Provolone cheese flavor to a food composition selected from the group consisting of processed cheese, processed cheese preparations, fresh cheese, margarine cheese, creamed cheese, cheese fondu, and cheese powder, which comprises:

a. preparing a Provolone cheese flavoring composition by admixing

i. from 75 to 99 parts by weight of alkanoic acids having from 2 to 10 carbon atoms and consisting of from 35 to 70 percent by weight of butyric acid, from 15 to 35 percent by weight of hexanoic acid, from 15 to 30 percent by weight of an alkanoic acid selected from the group consisting of octanoic acid, decanoic acid and mixtures thereof, and the balance being other alkanoic acids having from 2 to 10 carbon atoms;

ii. from 0.01 to 0.2 parts by weight of alkyl alkanoates having an alkyl group with from 1 to 4 carbon atoms and an alkanoyl group with from 4 to 8 carbon atoms;

iii. from 0.05 to 0.5 parts by weight of alkyl amines and dialkyl amines having from 2 to 8 carbon atoms; and

iv. from 0 to 20 parts by weight of other cheese flavoring ingredients selected from the group consisting of 2-alkanones having from 4 to 11 carbon atoms, aldehydes having from 2 to 5 carbon atoms, primary and secondary aliphatic alcohols having from 2 to 10 carbon atoms, diacetyl, phenylacetaldehyde, methional, dimethylsulfide, indole, skatole, and 5-alkanolides having from 8 to 16 carbon atoms; and

b. admixing the mixture obtained by step (a) with said food composition in an amount of from 100 to 30,000 mg of cheese flavoring composition per kg of foodstuff.

3,924,015

FLAVORING AGENT

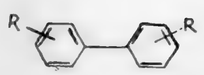
Max Winter, Geneva; Fritz Gautschi, Vaud; Ivon Flament; Max Stoll, both of Geneva, all of Switzerland, and Irving M. Goldman, Niantic, Conn., assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 243,866, April 13, 1972, which is a division of Ser. No. 70,560, Sept. 8, 1970, Pat. No. 3,702,253, which is a continuation of Ser. No. 543,069, April 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, April 30, 1965, abandoned. This application June 24, 1974, Ser. No. 482,821

Int. Cl.² A23L *1/226, 1/234*

U.S. Cl. 426—538 **24 Claims**

1. As a new composition of matter a soluble coffee material having added thereto a minor, but flavor modifying amount of a compound selected from the group of compounds having the general formula:



wherein R is hydrogen or an methyl group.

3,924,016

COLORED AND FLAVORED COCONUT COMPOSITIONS

Larry A. Walters, Parma, Ohio, and George V. Daravingas, Edina, Minn., assignors to SCM Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 359,484, May 11, 1973, abandoned, which is a continuation-in-part of Ser. No. 285,494, Aug. 31, 1972, abandoned. This application July 29, 1974, Ser. No. 492,471

Int. Cl.² A23L *1/275*

U.S. Cl. 426—540 **2 Claims**

1. In a colored and flavored coconut composition having a core of coconut meat, a water content of about 3 to about 25 percent by weight, a humectant selected from C_{3-6} polyhydric alcohols, and a flavorant, the improvement for retaining the effectiveness of said flavorant which comprises: a colorant layer of aluminum lake, calcium lake, or a mixture thereof overlaying said core, said colorant constituting from about 0.01 to about 4.0 percent by weight of said composition.

3,924,017

SWEETNESS INDUCER

Chi-Hang Lee, Spring Valley, N.Y.; Richard John Scarpellino, Ramsey, N.J., and Marjorie Mary Murtagh, Bronx, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 276,271, July 28, 1972, abandoned. This application Feb. 14, 1973, Ser. No. 332,527

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² A23L *1/22*

U.S. Cl. 426—548 **9 Claims**

1. A sweetness inducing composition comprising a salt selected from the group consisting of the alkaline earth, sodium, ammonium-based and ferric-based salts of cynarin and combinations thereof.

3. A food having induced sweetness comprising a foodstuff having incorporated therein an effective amount of a sweetness inducer selected from the group consisting of the alkaline earth, alkali metal, ammonium-based and ferric-based salts of chlorogenic acid, caffeic acid, cynarine, isochlorogenic acid, neochlorogenic acid and combinations thereof.

3,924,018

WHIPPED TOPPINGS

Rex J. Sims, Pleasantville, and Harold D. Stahl, Hartsdale, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed June 14, 1974, Ser. No. 479,325

Int. Cl.² A23L *1/00*

U.S. Cl. 426—564 **25 Claims**

1. A dry, low-pH whipped topping mix capable of being whipped at a pH below about 5 comprising: a fat encapsulated in a matrix of a carbohydrate and including an emulsifier system comprising a major amount of a first, strongly-hydrophilic, pH-sensitive emulsifier and a minor amount of a second, pH-insensitive emulsifier.

3,924,019

METHOD OF RAISED XEROGRAPHIC PRINTING AND PRODUCT

Ezekiel J. Jacob, 25 Monroe Place, Brooklyn, N.Y. 11201

Continuation-in-part of Ser. No. 100,516, Dec. 21, 1970, abandoned. This application July 16, 1973, Ser. No. 379,467

Int. Cl.² G03G *13/08, 13/22*

U.S. Cl. 427—14 **7 Claims**

1. A method of producing raised images by xerographic means comprising the steps of (a) producing an electrostatic latent image on a xerographic member, (b) contacting said member with a dry, free-flowing, self-contained intumescent electroscopic toner mixture to develop said electrostatic latent image, (c) transferring the distributed toner from said member to a transfer surface and (d) subjecting said transferred toner to heat sufficient to cause intumescence thereof and thereby provide a permanent raised image on said surface.

3,924,020

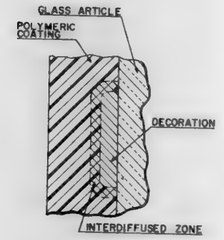
METHOD OF MAKING AN OPTICAL WAVEGUIDE

Michael Thomas Duffy, Princeton Junction; Donald Jones Channin, East Windsor; and Jacob Meyer Hammer, Trenton, all of New Jersey, assignors to RCA Corporation, New York, N.Y.

Filed Dec. 13, 1973, Ser. No. 424,318

Int. Cl. C23C *13/02*

U.S. Cl. 427—162 **11Claims**



1. A method of making an optical waveguide comprising the steps of:

depositing a layer of single-crystal ZnO epitaxially on a flat surface of a substrate of sapphire,

polishing a surface of said ZnO layer,

providing a vapor source of lithium by melting lithium hydroxide at about 450°C, dehydrating the molten lithium hydroxide at about 600°C to form a white powder, and heating the white powder to about 1100°C for about fifteen minutes,

diffusing lithium from said vapor source into said ZnO layer in an oxygen ambient by heating said white powder adjacent said ZnO layer to a temperature of about 850°C while maintaining said ZnO layer at a temperature of between about 600°C and 800°C for between about one and five hours, and

applying a passivating film of aluminum oxide over said ZnO layer.

3,924,021

METHOD OF ELECTRON BEAM CURING OF COATED UNSATURATED SUBSTRATES CONTAINING SILICON CARBIDE

Tsutomu Maruyama, and Kazuo Yamashita, both of Hiratsuka, Japan, assignors to Kansai Paint Company, Ltd., Amagasaki, Japan

Continuation of Ser. No. 331,702, Feb. 12, 1973, abandoned. This application Feb. 14, 1974, Ser. No. 442,602

Claims priority, application Japan, Feb. 18, 1972, 47-16409

Int. Cl.² C08F *8/00*; **C08G** *18/00, 63/00*

U.S. Cl. 427—35 **6 Claims**

4. In a method for curing a coated substrate comprising the steps of applying a curable coating composition to a substrate, said coating composition comprising a radiation curable, film forming component having alpha, beta-olefinically unsaturated bonds, and irradiating said coated substrate using an electron beam, the improvement comprising employing from about 5 to about 30% by weight of silicon carbide in admixture with said film forming component which is effective in reducing the curing time and/or dosage requirements for curing said coating composition.

3,924,022

METHOD OF APPLYING AN ORGANIC COATING ONTO AN INORGANIC COATED STEEL SHEET FOR A MAGNETIC LAMINATE APPLICATION

Siegfried H. Schroeter, Schenectady, N.Y.; Jon Van Winkle, Dalton, and Carroll B. French, Lenox, both of Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 22, 1974, Ser. No. 444,859

Int. Cl.² B05D *3/06*; **H01F** *27/24*

U.S. Cl. 427—54 **3 Claims**

1. A continuous, substantially pollution-free method for uniformly improving the surface resistivity of oriented steel strip having an inorganic material as a surface insulating coating to produce an oriented steel strip-inorganic coating-organic resin composite capable of providing an average Franklin test reading of from 0.1 to 0 amperes at a pressure of up to 300 psi, which comprises,

1. treating the oriented steel strip with an irradiation curable solventless organic resin to a thickness of up to 0.2 mil, and

2. passing the treated oriented steel strip through an irradiation curing zone at a rate of from 100 to 600 feet per minute, using an irradiation flux sufficient to effect the cure of the solventless resin to an organic resin hardness capable of being tested by the above-described Franklin test,

where said resin is characterized by having a viscosity of up to 3,000 centipoises at 25°C, and is a mixture consisting essentially of by weight from

A. 20 to 40% of a vinyl aromatic material selected from styrene, vinyl toluene, tert-butylstyrene and mixtures thereof,

B. 80 to 60% of an unsaturated polyester reaction product of (i) a glycol and (ii) an aliphatically unsaturated organic dicarboxylic acid, where

i. is a glycol selected from the class consisting of

a. a mixture of 20–60 mole percent of neopentyl glycol and 40–80 mole percent of a member selected from propylene glycol, ethylene glycol and mixtures thereof, and

b. a mixture of (a) 1 to 40% by weight thereof of trimethylolpropane monoallyl ether, and

ii. is an aliphatically unsaturated organic dicarboxylic acid consisting essentially of a mixture of 50 to 65 mole percent of fumaric acid and 35 to 50 mole percent of a member selected from tetrahydrophthalic anhydride, endomethylene tetrahydrophthalic anhydride and mixtures thereof

where there is utilized in making the unsaturated polyester reaction product of (B), up to at least about 10 mole

percent excess of the glycol of (i) over the aliphatically unsaturated organic dicarboxylic acid of (ii)

C. 1% to 5% based on the weight of (A) and (B) of a UV sensitizer, and

D. 0.05% to 1% based on the weight of (A), (B) and (C) of paraffin wax.

3,924,023

FLOOR TILE PRODUCTION AND PRODUCTS

Armen G. Boranian, Beacon, and Bruce Terwilliger, Newburgh, both of N.Y., assignors to GAF Corporation, New York, N.Y.

Filed Apr. 3, 1973, Ser. No. 347,439

Int. Cl.² B05D *3/06*

U.S. Cl. 427—54 **32 Claims**

1. A process for producing an improved vinyl asbestos or asphalt floor tile product comprising:

a. calendering a uniform mix of vinyl asbestos or asphalt floor tile ingredients to form a continuous sheet discharged from the calendering zone at a temperature of from about 110°F to about 180°F and at a travel rate of from about 80 ft./min. to about 200 ft./min.

b. printing a predetermined image on the exterior planar surface of the sheet during passage of said sheet through a printing zone essentially at the indicated travel rate;

c. coating the continuous sheet having the desired image printed thereon and traveling essentially at said travel rate with a fluid coating composition containing essentially 100% active ingredients and comprising at least one organic compound having at least two photo-polymerizable ethylenically unsaturated groups per molecule, said coating having a thickness of from about 0.001 inch to about 0.005 inch and being capable of curing upon exposure to ultraviolet light to form a hard, clear layer adhering to said sheet;

d. exposing the thus-coated sheet traveling essentially at said rate immediately to ultraviolet light having wavelengths within the range of from about 2500 A to about 4000 A in a non-oxidizing atmosphere at a temperature of from about 110°F to about 220°F, the radiation intensity level being sufficient to initiate the desired curing of the coating within an ultraviolet exposure time of from about 0.2 sec. to about 15 sec.; and

e. passing the thus-treated sheet traveling essentially at said rate to a cutting zone and therein cutting the thus printed, coated and treated sheet at a temperature of not less than about 120°F to form individual printed tiles having a clear wear layer thereon, the abrasion and scratch resistance properties of said coated tile both being significantly enhanced over said properties of the untreated base tile, the dimensional stability characteristics and resistance to curling of said coated tile being comparable to those of the untreated base tile, whereby the printed tile is produced with enhanced wear properties obviating the need for frequent waxing and protecting the printed exterior planar surface of the tile.

3,924,024

PROCESS FOR FABRICATING MNOS NON-VOLATILE MEMORIES

Charles T. Naber, Centerville, and William F. Blust, Middletown, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 2, 1973, Ser. No. 347,155

Int. Cl.² B05D *5/12, 3/04*

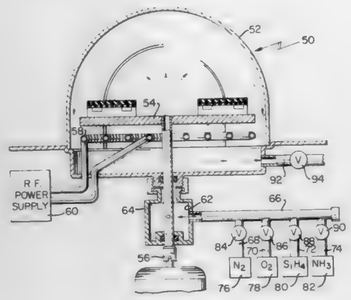
U.S. Cl. 427—95 **14 Claims**

1. In a process for fabricating a silicon oxide-silicon nitride semiconductor memory device comprising:

thermally growing a layer of relatively thin silicon oxide at a temperature below approximately 1100° C in a dilute oxygen atmosphere on a selected surface area of a body of semiconductor material;

heating the layer of silicon oxide to a given temperature;

subjecting the layer of silicon oxide to an ammonia enriched atmosphere for a period of time only sufficient to remove substantially all the oxygen absorbed on the surface of the silicon oxide layer; and



depositing a layer of silicon nitride on the oxygen free surface of the heat treated silicon oxide layer immediately thereafter.

3,924,025

METHOD OF MAKING AN ELECTRODE HAVING A COATING OF COBALT METATITANATE THEREON

James M. Kolb, Mentor, and Kevin J. O'Leary, Cleveland Heights, both of Ohio, assignors to Electronor Corporation, Panama City, Panama

Division of Ser. No. 222,995, Feb. 2, 1972, Pat. No. 3,778,363, which is a continuation-in-part of Ser. No. 104,743, Jan. 7, 1971, abandoned. This application July 31, 1973, Ser. No. 384,210

Int. Cl.² B44D *1/18*

U.S. Cl. 427—126 **8 Claims**

1. A method of preparing an electrode which comprises:

a. applying a solution of salts of titanium, ruthenium and cobalt to an electrically-conductive substrate;

b. rapidly heating the substrate with applied solution to a temperature within the range of 425°–475°C and in the presence of oxygen;

c. maintaining the substrate at the said temperature for a period of time sufficient to thermochemically convert the salts to a coherent mixture of crystalline cobalt metatitanate with a valve metal oxide-precious metal oxide solid solution;

d. cooling the substrate;

e. applying any desired number of coatings of said solution in the manner of steps (*a*) to (*d*) and,

f. after thermochemical conversion of the last solution application, heating the substrate to a temperature of 525°–575°C for from 5 to 10 minutes,

whereby there is obtained an electrode bearing on at least a portion of its surface an electrically-conductive, electrocatalytically-active coating consisting essentially of a coherent mixture of crystalline cobalt metatitanate and a titanium dioxide-ruthenium dioxide solid solution.

3,924,026

IMAGE PRESERVATION AND TRANSFER PROCESS

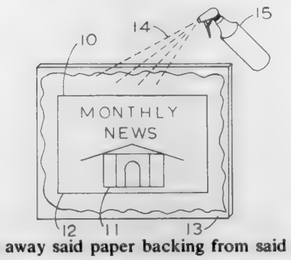
Henry S. Penfield, 1807 Delmar Drive, Garland, Tex. 75040

Filed Jan. 28, 1974, Ser. No. 437,192

Int. Cl.² B44C *1/16;* **B41M** *3/12;* **D44C** *1/00*

U.S. Cl. 427—146 **13 Claims**

1. A process of preserving a paper backed image comprising the steps of: saturating the paper backing with a barrier fluid that is a barrier to material penetration by a resin fluid, coating said image with a polymeric resin dissovled in an organic solvent, evaporating the organic solvent to leave a polymeric resin film over said image and paper backing until said image adheres substantially completely to said resin film, and then



stripping away said paper backing from said image and said resin film.

3,924,027

PROCESS FOR THE PRODUCTION OF SENSITIZED SHEET MATERIAL

Toranosuke Saito, Kobe; Jujiro Kohno, Tokatsuki; Daiichiro Tanaka, Arao, and Shinichi Oda, Amagasaki, all of Japan, assignors to Sanko Chemical Company Ltd. and Kanzaki Paper Manufacturing Company Ltd., both of, Japan

Filed Sept. 27, 1973, Ser. No. 401,552

Claims priority, application Japan, Sept. 17, 1972, 47-97430

Int. Cl.² B41M *5/00*

U.S. Cl. 427—147 **12 Claims**

1. A process for the production of a sheet material for use in a pressure-sensitive copy system which comprises applying on a support sheet a suspension of a particulate mixture comprising (a) 100 parts by weight of an acidic organic substance selected from the group consisting of aromatic carboxylic acids and polyvalent metal salts thereof, and (b) from 5 –300 parts by weight of an organic high molecular compound selected from the group consisting of polystyrene, styrene copolymers, α-methylstyrene polymer, α-methylstyrene copolymers, polyvinyl chloride, vinylchloride copolymers, vinylidenechloride copolymers, polychloroprene, cyclopentadiene polymers, cyclopentadiene copolymers, acrylic ester polymers, acrylic ester copolymers, acrylic acid copolymers, methacrylic ester polymers, methacrylic ester copolymers, methacrylic acid copolymers, vinylacetate polymers, vinylacetate copolymers such as ethylene-vinylacetate copolymer, acrylonitrile copolymers, acrylamide copolymers, allylalcohol copolymers, benzylchloride polycondensation products, benzylchloride copolycondensation products, meta-xylene-formaldehyde condensates, diphenyl-formaldehyde condensates, and diphenyl-metal-xylene-formaldehyde copolycondensation products, said organic high molecular compound having a molecular weight of at least 400 and a non-fluidic property at normal temperature and being compatible with said acidic organic substance, and thereafter drying.

3,924,028

METHOD FOR IMPREGNATING AND COATING FIBROUS STRANDS

Gustav E. Benson, Edgewood, and Paul D. Yakuboff, Woonsocket, both of R.I., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 171,252, Aug. 12, 1971, Pat. No. 3,779,207. This application Apr. 20, 1973, Ser. No. 353,150

Int. Cl.² B65G *49/04*

U.S. Cl. 427—175 **4 Claims**

1. The method of combining a coating material with filaments of a strand comprising:

moving said strand through a path at a predetermined tension;

applying coating material to said strand; and

passing said strand into contacting relationship with a member of resiliently compressible and absorptive material so that the member is compressed by the tensioned strand such that the strand passes below the uncompressed



surface regions on either side of said strand of the member to remove excess coating material.

3,924,029

METHOD OF MODIFYING THE SURFACE PROPERTIES OF FINELY DIVIDED METAL OXIDES

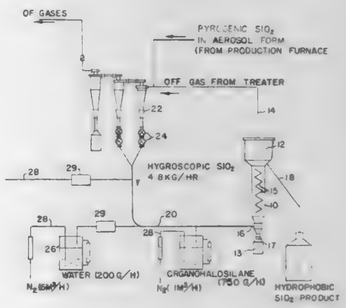
Dieter Schutte; Jean Diether, both of Rheinfelden, Germany, and Helmut Brunner, Princeton, N.J., assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Continuation of Ser. No. 840,496, July 9, 1969, abandoned, which is a continuation of Ser. No. 633,307, April 24, 1967, abandoned, which is a continuation of Ser. No. 268,302, March 27, 1963, abandoned. This application Mar. 27, 1972, Ser. No. 238,518

Claims priority, application Germany, Mar. 30, 1962, 38532

Int. Cl. B44d *1/02*

U.S. Cl. 427—213 **5 Claims**



1. A process for producing hydrophobic finely divided fume silica which comprises the following steps in the specified sequence:

a. forming, in a first reaction zone, particles of a fume silica having a size of less than approximately 150 millimicrons by thermal decomposition and hydrolysis in the vapor phase of a volatile silicon halide, the said fume silica particles having an acidity corresponding to a pH of approximately 2.0, and including a hydrogen halide and water adsorbed on their surfaces,

b. passing the thus-produced fume silica particles out of the said first reaction zone and subjecting them to a deacidification and dehydration pretreatment to reduce their acidity to a value corresponding to a pH of approximately 4.0 by removing substantially all of the adsorbed hydrogen halide and water therefrom,

c. passing the thus-pretreated particles of fume silica together with water vapor into a second reaction zone into contact with a stream of hot gases containing substantial proportions of an organohalosilane while the second reaction zone is maintained at a temperature between approximately 400° and approximately 800°C and the particles therein are maintained in a fluidized state and maintained therein for a period sufficient to convert them to hydrophobic fume silica particles,

the foregoing step (c) of the process being performed in the absence of molecular oxygen, and

d. separating and recovering the hydrophobic fume silica particles thus produced from the hot gases and hydrogen halide formed from the organohalogenosilane while still continuing to exclude molecular oxygen from contact with the particles until the particles have cooled to a temperature below 400°C.

3,924,030

METHOD FOR PRODUCTION OF GLASS-FORMING MATERIALS

Seiji Tatara, Tokyo; Shozo Iwasa, Takaoka, and Shuichi Komura, Bandai, all of Japan, assignors to Nippon Soda Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 208,169, Dec. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 58,739, Feb. 27, 1970, abandoned. This application Aug. 16, 1973, Ser. No. 388,828

Int. Cl.² C03C *1/02*

U.S. Cl. 427—213 **6 Claims**

1. A method of preparing dustless glass-forming materials having a silica core surrounded by a sodium carbonate layer, which comprises:

a. fluidizing silica sand having less than 2 – 3 mm average grain size in a fluid bed reaction zone by passing gas containing from about 4% to about 15% by volume CO_2 through a tuyere plate inclined at 1° to 7° downwards from one end to the other end of said zone to form a fluidized bed of silica sand over said tuyere plate, maintaining said fluidized bed at a temperature from 300°C to 700°C by introducing said gas at a temperature of about 700°C to about 1,200°C into said fluid bed reaction zone through said tuyere plate at 60 cm/sec to 150 cm/sec;

b. simultaneously and uniformly spraying an aqueous sodium hydroxide solution in a ratio of silica sand to sodium hydroxide of 0.5 to 6 mole ratio of SiO_2/Na_2O from the upper portion of the reaction zone into the fluidized bed of silica sand;

c. continuously feeding silica sand into the lower portion of said fluidized bed and onto the top surface of the inclined tuyere plate from said one end of said zone and removing said glass-forming materials from the lower portion of said fluidized bed from the other end of said zone while the hot gases passing through the fluidized bed from the tuyere plate and escaping from the upper portion of said zone are passed through a collection zone and the grain and dust in the escaping gas collected therein; and,

d. recycling back into said fluidized bed said grain and dust collected in said collection zone.

3,924,031

METHOD FOR METAL COATING DIAMONDS SO AS TO IMPROVE THE INTERFACIAL BOND STRENGTH

Michael G. Nicholas, Wantage; Peter M. Scott, Newbury, both of England, and Bruce I. Dewar, Johannesburg, South Africa, assignors to De Beers Industrial Diamond Division Limited, Johannesburg, South Africa

Filed Mar. 22, 1973, Ser. No. 343,806

Claims priority, application United Kingdom, Mar. 22, 1972, 13426/72; Mar. 22, 1972, 13427/72

Int. Cl.² B05D *7/00*

U.S. Cl. 427—217 **1 Claim**

1. A method of producing a metal coated diamond particle including the steps of applying to an uncoated diamond particle a layer which in the as-applied condition is an alloy comprising a major proportion of a metal selected from copper, nickel and iron and a minor proportion of a carbide-forming metal selected from titanium, chromium and vanadium sufficient to form a continuous carbide layer around the diamond particle, and heat treating the particle to a temperature in the range of from 500°C. to a temperature just below the melting point of the alloy for a time sufficient to produce a continuous bonding carbide layer at the alloy/diamond interface and an interface bond strength in excess of 10 kg/mm², the steps being carried out in a non-oxidizing atmosphere.

3,924,032

SURFACE MODIFICATION OF SILICA PARTICLES

William Hertl, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 28, 1974, Ser. No. 437,007

Int. Cl.² B05D *7/00*

U.S. Cl. 427—220 **7 Claims**

1. A method of modifying the surface of a high surface area silica material having available surface silanol groups which comprises the steps of reacting the material at an elevated temperature in an essentially inert atmosphere with carbon tetrachloride vapors to form surface chloride groups and then reacting the chlorinated surface of the material with vapors of a low molecular weight alcohol, the chlorination step and the subsequent reaction with the alcohol vapors being carried out in a sealed furnace capable of receiving vapors of the carbon tetrachloride and alcohol under reduced pressure and without the introduction of air or moisture.

3,924,033

PROCESS FOR THE PRODUCTION OF SHEET MATERIALS WITH REVERSIBLE ABSORPTIVITY FOR MOISTURE VAPOR

Rudolf Gaeth, Limburgerhof; Friedrich Hoelscher, Ludwigshafen; Bernard Schmitt, Kirchzarten, and Dieter Blum, Limburgerhof, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Continuation of Ser. No. 100,779, Dec. 22, 1970, abandoned. This application Jan. 2, 1973, Ser. No. 320,261

Claims priority, application Germany, Dec. 30, 1969, 1965587

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B05D *3/02*

U.S. Cl. 427—226 **13 Claims**

1. A process for the production of sheet materials which absorb moisture vapor reversibly, which comprises applying an aqueous dispersion of a polymer, which contains polymerized units of at least 5% by weight of a tert-butyl ester of an ethylenically unsaturated carboxylic acid at a pH of 1.5 or less to gas permeable sheet materials and heating at the decomposition temperature of the polymer to thereby eliminate an olefin and form free carboxylic groups in the polymer.

7. A process as set forth in claim 1 wherein some or all of the carboxyl groups exposed by said thermal decomposition are neutralized by salt formation.

10. A process as set forth in claim 1 wherein the carboxyl groups exposed by said thermal decomposition are reacted with a reactive polyfunctional compound.

3,924,034

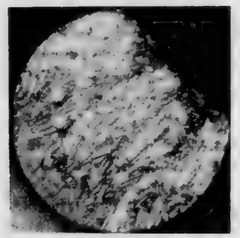
PROCESS OF MAKING PYROLYTIC GRAPHITE-SILICON CARBIDE MICROCOMPOSITES

Eugene L. Olcott, Falls Church, Va., assignor to Atlantic Research Corporation, Alexandria, Va.

Division of Ser. No. 65,899, Aug. 21, 1970, Pat. No. 3,738,906. This application Nov. 27, 1972, Ser. No. 309,640

Int. Cl. B29h *17/28;* **C23c** *11/00*

U.S. Cl. 427—228 **6 Claims**



3. The process of claim 1 in which the hydrocarbon gas is methane.

3,924,035

TREATING METAL WITH A CLEANING AGENT IN A COMBUSTIBLE SOLVENT BEFORE COATING

Russell C. Miller, Chicago, Ill., assignor to J. M. Eltzroth & Associates, Inc., Schaumburg, Ill.

Filed Nov. 19, 1973, Ser. No. 417,259

Int. Cl.² C23F *17/00;* **B08B** *7/00*

U.S. Cl. 427—327 **6 Claims**

1. A process of cleaning a metal in the form of wires, rods, tubes, flat sheets and coiled sheets, which comprises bringing said metal into contact with a flame produced by the combustion of a gaseous fuel under superatmospheric pressure in the presence of a metal cleaning agent dissolved in a combustible liquid solvent at controlled temperatures and for periods of time and under conditions sufficient to cause combustion of said solvent and to clean said metal simultaneously with the combustion of the solvent and provide a surface adapted to receive a protective coating, without destroying the physical properties of the metal, and thereafter removing said metal from said flame.

3,924,036

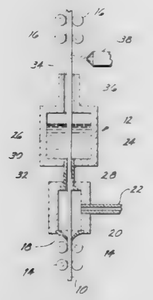
METHOD OF CONTINUOUS CASTING

Marcel V. Carrara, Seymour, Conn., assignor to General Electric Company, New York, N.Y.

Filed June 28, 1973, Ser. No. 374,760

Int. Cl.² C23C *1/00*

U.S. Cl. 427—431 **3 Claims**



1. A method of continuously casting copper, comprising the steps of: passing a metal core member comprising copper upwardly into and through a crucible containing molten metal comprising copper, said core member entering the crucible containing molten metal comprising copper through a bushing member consisting essentially of a molybdenum alloy of at least about 99 percent by weight of molybdenum and about 0.25 to about 1.0 percent by weight of titanium and about 0.04 to about 0.2 percent by weight of zirconium, and thereby accreting and solidifying molten metal comprising copper on the core member, and removing the metal core member with the accreted and solidified molten metal comprising copper thereon from the crucible and cooling it.

3,924,037

METHOD FOR MAKING ARTIFICIAL STONE

Wayne S. Sullivan, 509 S. Gilbert St., Iowa City, Iowa 52240

Filed Apr. 15, 1974, Ser. No. 460,912

Int. Cl.² A47G *33/08*

U.S. Cl. 428—15 **11 Claims**

1. A method for making artificial stone using pieces of gypsum or cement board, said method comprising: breaking said board into random sized pieces within a size-range of approximately the desired size of the finished stones; applying to each of said pieces a semi-liquid mixture of cement, a binder, water and a low density fine aggregate; and allowing said mixture to dry to form the stones.

3,924,038

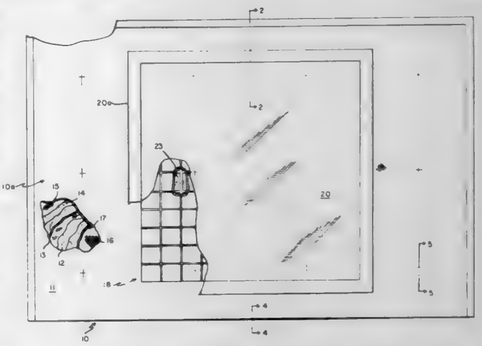
FRAGMENT SUPPRESSION CONFIGURATION

Edward H. McArdle, Media, Pa., and Ralph John Millidge, Florissant, Mo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 12, 1974, Ser. No. 478,810

Int. Cl.² B32B *7/02*

U.S. Cl. 428—49 **6 Claims**



1. A lightweight projectile suppression/ ballistic shield for protecting personnel and equipment, and parked aircraft and other vehicles from exploding fragments and other projectiles being fired, comprising; a first, relatively soft and base-supporting, secondary protective element composed of a ballistic blanket having at least two relatively enlarged and unbonded layers of a ballistic nylon felt material providing a primary resilient, and auxiliary kinetic energy-absorbing and principal cushioning support means, a relatively narrow, lamination nylon cloth layer interposed between, and thereby providing a partial supporting and separating surface between the said ballistic nylon felt layers, and ballistic nylon cloth back and face side portions constituting an integral part of said ballistic blanket and being in respective contacting relation to and thereby providing for the complete and total support to said nylon felt layers, when taken in concert with the partial support being given thereto by said interposing nylon cloth lamination layer, to thus positively enable and ensure the unbonded configuration of said nylon felt layers; and a second, relatively hard and brittle, primary protective and kinetic energy-absorbing element incorporating a principal fragmen-

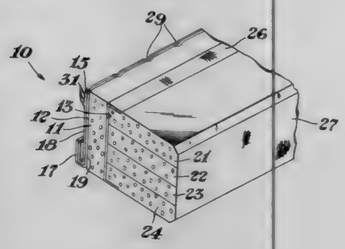
tation and other projectile-penetration resistant surface means comprised of a plurality of relatively small and regularly-spaced ceramic or tile elements adhesive bonded to the central portion of the face said portion of said blanket and being shatterable on the impact therewith with a certain predetermined force of fragments and other projectiles of exploding devices for thus absorbing a significant portion, if not all, of the kinetic energy being produced thereby.

3,924,039

CRYOGENIC CONSTRUCTION AND ARTICLE THEREFOR

Hubert Stacy Smith, Jr., Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 1, 1972, Ser. No. 302,839
Int. Cl. E04b *1/62*; **F16l** *59/12*
U.S. Cl. 428—119 **7 Claims**



1. An elongate insulating member having
a generally rectangular cross-sectional configuration, the elongate member comprising
a first or facing body of an insulating material comprising synthetic resinous closed cell thermoplastic foam, the facing body having
an external surface and
an internal surface extending across at least one surface of the cross-sectional configuration and the length of the body, the external surface and the internal surface being generally oppositely disposed to each other,
a plurality of internal members, the internal members being affixed to the internal surface and extending generally the entire width thereof, each of the internal members having a length generally commensurate with the length of the body, the internal members being affixed to the internal face of the facing member and in adjacent relationship to at least one other internal member and a fiber reinforcement affixed to the inner members at a location remote from and generally parallel to the internal surface of the facing body.

3,924,040

EMBOSSED NEEDLE-BONDED FABRIC WALL COVERINGS

Lee W. Addie, Millersville, and Harold W. Nikolaus, Columbia, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed May 31, 1974, Ser. No. 475,326
Int. Cl.² B32B *5/06, 3/00*
U.S. Cl. 428—141 **1 Claim**



1. A fabric consisting of:
a. a scrim which has a first melt temperature and a generally open weave configuration of approximately 8–10 yarns per square inch,
b. on the upper surface thereof a felted non-woven fabric of randomly laid synthetic fibers needle-bonded to the scrim and of a melt temperature approximately 50°F below the melt temperature of the scrim; and
c. the upper surface of the felted fabric being provided with a definite embossed pattern on a part thereof, said pattern extending substantially through the felted fabric to the scrim surface, and non-embossed areas having a textured surface effect which is the result of a softening and partially melting of the felted fabric to allow it to assume the general surface contour of the underlying scrim.

3,924,041

HEAT-SENSITIVE RECORDING MATERIAL AND PROCESS FOR PRODUCING SAME

Masuo Miyayama; Mineyuki Murase, and Harumi Shiraiwa, all of Shizuoka, Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1974, Ser. No. 454,534
Claims priority, application Japan, Mar. 23, 1973, 48-32704
Int. Cl.² B41M *5/26*
U.S. Cl. 428—212 **14 Claims**



1. A heat-sensitive recording material comprising a support (A) having thereon a transfer layer (B) and a support (C) in turn, said supports having the property that before heating the adhesion strength between the transfer layer (B) and the support (C) is smaller than the adhesion strength between the transfer layer (B) and support (A) and larger than 0.1 g/cm but, after heating to a temperature higher than the heat-sensitive temperature of the transfer layer (B), the adhesion strength between the transfer layer (B) and support (C) becomes greater than the adhesion strength between support (A) and transfer layer (B), and said transfer layer (B) comprising, at least on the side thereof in contact with support (C), a heat-sensitive composition containing as a major component a mixture of a heat-sensitive substance which becomes fluid at the heat-sensitive temperature of the heat-sensitive substance and an adhesiveness-imparting agent which can adhere to support (C) at a temperature not higher than the heat-sensitive temperature of said heat-sensitive substance.

10. A process for producing a heat-sensitive recording material, which comprises applying support (A) and support (C) onto opposite sides of transfer layer (B) at a temperature, for support (C), not higher than the heat-sensitive temperature of said heat-sensitive composition of layer (B) and not lower than the adhesiveness-generating temperature of layer (B), said support (A), transfer layer (B) and support (C) having the property that before heating the adhesion strength between layer (B) and support (C) is less than the adhesion strength between support (A) and layer (B) and greater than 0.1 g/cm but, after heating to a temperature higher than the heat-sensitive temperature of the transfer layer (B), the adhesion strength between layer (B) and support (C) becomes greater than the adhesion strength between support (A) and layer (B), and said transfer layer (B) comprising at least at the side thereof in contact with support (C) a heat-sensitive composition containing as a major component a mixture of a heat-sensitive substance which becomes fluid at the heat-sensitive temperature of the heat-sensitive sheet and an adhesiveness-imparting agent which can impart sufficient adhesiveness to adhere to support (C) at a temperature lower than the heat-sensitive temperature of said heat-sensitive substance.

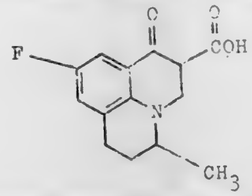
3,924,042

METHOD FOR TREATMENT OF BACTERIAL PLANT DISEASE

John F. Gerster, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 26, 1973, Ser. No. 344,479
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² A01N *9/00, 9/22*
U.S. Cl. 424—258 **2 Claims**

1. A method for controlling plant disease caused by *Erwinia amylovora*, *Xanthomonas pruni* or *Pseudomonas glycinea* which comprises contacting the foliage of a plant or drenching the soil surrounding a plant with at least an effective, non-phytotoxic controlling amount of a carboxylic acid of the formula



or horticulturally acceptable metal, amine or ammonium salt thereof.

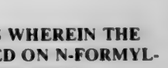
3,924,043

PRESSURE SENSITIVE ADHESIVES OF POLYMERS OF CYCLOALIPHATIC AND PHENYLALKYL ACRYLATES AND VINYL ESTERS

Ramsis Gobran, Roseville; Hanspeter Knoepfel, and Spencer F. Silver, both of White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 836,946, June 26, 1969, Pat. No. 3,751,449. This application Apr. 19, 1973, Ser. No. 352,568
Int. Cl. C09j *7/02*
U.S. Cl. 428—261 **7 Claims**

1. A pressure sensitive adhesive sheet material comprising a flexible backing sheet having applied thereto a pressure sensitive layer of a polymer of a compound of the formula



where A is acryloxy or methacryloxy, R_1 is cyclohexyl, cyclopentyl, or cyclopentenyl, R_2 is a hydrogen atom or lower alkyl, and R_3 is an alkylene having at least 4 carbon atoms extending in a chain.

3,924,044

SHEET MATERIAL COATED WITH ADHESIVES FROM CYCLOALIPHATIC AND PHENYLALKYL ACRYLATES AND VINYL ESTERS

Ramsis Gobran, Roseville Village; Hanspeter Knoepfel, and Spencer F. Silver, both of White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 352,567, April 19, 1973, abandoned. This application Dec. 20, 1974, Ser. No. 534,781
Int. Cl.² C09J *7/02*
U.S. Cl. 428—355 **6 Claims**

1. A pressure sensitive adhesive sheet material comprising a flexible backing sheet having applied thereto a pressure sensitive layer of a polymer of a compound of the formula

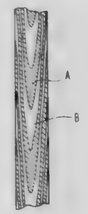
where A is carbovinyloxy, R_1 is a cycloaliphatic group having 5 or 6 ring member atoms, R_2 is a hydrogen atom or lower alkyl, and R_3 is an alkylene having 4 to 9 carbon atoms extending in a straight chain.

3,924,045

MULTI-LAYER CONJUGATE FIBER AND PROCESS AND APPARATUS FOR THE PREPARATION THEREOF

Masafumi Ogasawara; Masanori Akita, both of Otsu; Kazuhiko Saito, Kusatsu; Yoshikazu Kikuchi, and Mitsuhiro Shiokawa, both of Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Feb. 19, 1974, Ser. No. 443,506
Claims priority, application Japan, Feb. 26, 1973, 48-22246; Mar. 31, 1973, 48-37155; Apr. 6, 1973, 48-38765
Int. Cl.² B29F *3/10*; **D02G** *3/00*
U.S. Cl. 428—373 **15 Claims**



1. A multiple layer conjugate fiber comprising at least two different fiber forming synthetic polymers, wherein the synthetic polymers are successively arranged along the length of the fiber and each has an annular ring-like shape in cross section and a substantially parabolic interface in longitudinal side section, wherein the distance between tips of central components having parabolic curved surfaces is at least about 0.1m, and wherein two different synthetic polymers are used and the relative weight percentages of the two is within the range of about 20/80 to 80/20.

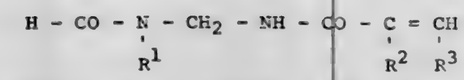
3,924,046

DYES AND PIGMENTED ARTICLES WHEREIN THE FIXING AGENT IS A POLYMER BASED ON N-FORMYL--ACRYLOYL-METHYLENEDIAMINES

Joachim Ribka, Offenbach am Main-Burgel; Steffen Piesch, Oberursel, Taunus; Friedrich Engelhardt, Frankfurt am Main; Gerhard Pfeiffer, Kelkheim, Taunus; Peter Klinke, Oberurse, Taunus, and Wolfram Schidlo, Diedenbergen, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Germany

Filed Oct. 23, 1973, Ser. No. 408,487
Claims priority, application Germany, Oct. 23, 1972, 2251923
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C08F *16/34*; **C09B** *65/00*; **D06P** *1/52*
U.S. Cl. 428—375 **6 Claims**

1. A dyed or pigmented fiber or film having the dye or pigment fixed thereto by a fixing agent, said fixing agent being a thermally crosslinked polymer of a linear addition polymer, said linear additional polymer being selected from the group consisting of (1) a linear additional homopolymer of a monomer of the formula



wherein R^1, R^2 and R^3 are hydrogen or alkyl having 1 to 5 carbon atoms and (2) a linear addition copolymer containing from about 0.2 to 50 percent by weight of said monomer of said formula and at least one copolymerizable olefinically unsaturated monomer.

3,924,047

ORGANIC RESIN COATED GLASS FIBERS COATED WITH UNSATURATED FATTY ACID ESTER

John E. Ward, Jr., Granville, and Bordie B. Garick, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 129,194, March 29, 1971, abandoned. This application Feb. 27, 1973, Ser. No. 336,390

Int. Cl.[2] D02G *3/00*

U.S. Cl. 428—378 **10 Claims**

9. In glass fiber reinforcements of the type to be used for reinforcing thermoplastic and/or thermosetting resin matrix forming materials, and wherein the glass fiber reinforcements have a coating of a resinous material from the group consisting of polyvinyl acetate, polyvinyl chlorides, polyesters having acid or alcohol groups, polyamides, and aldehyde condensates, the improvement comprising: a second coating over the organic resinous coating, said second coating consisting essentially of a hydrolyzable unsaturated fatty acid ester of a polyglycol having water molecules hydrogen bonded thereto to act as a fugitive processing aid which prevents clumping of the glass fiber reinforcements and is hydrolyzed when the resin matrix is subsequently heat bonded thereto at a pressure above approximately 35 psi and a temperature corresponding to the saturated steam temperature at this pressure.

3,924,048

ROADSTONE

John William Carson, North Rigton, England, assignor to Albright & Wilson Limited, Oldbury, near Birmingham, England

Filed Aug. 2, 1972, Ser. No. 277,449

Claims priority, application United Kingdom, Aug. 4, 1971, 36551/71; Apr. 20, 1972, 18318/72

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975

Int. Cl.[2] B32B *19/00*

U.S. Cl. 428—404 **10 Claims**

1. A roadstone consisting essentially of:

a. a granular substrate having a particle size of at least 1mm of refractory metamorphic and igneous rocks, slags, shales, pit residues, concrete, devitrified soda glass, coarse crushed refractory brick, chrome ore, iron ore, bauxite or ceramics; and

b. from 1 to 50 percent by weight of the total stone of a sintered coating upon the said substrate, said coating consisting essentially of hard particles having a diameter of less than 1mm of spinels, bauxite or finely crushed refractory brick.

9. A method for the production of roadstone which comprises mixing together a granular substrate having a particle size of at least 1 mm of refractory metamorphic and igneous rocks, slags, shales, pit residues, concrete, devitrified soda glass, coarse crushed refractory brick, chrome ore, iron ore, bauxite or ceramics with from 1 to 50 percent by weight of a coating composition consisting essentially of hard particles having a particle size of between 5 and 300 microns of spinels, bauxite or finely crushed refractory brick, and heating the mixture to a sintering temperature between 1,000°C and 1,600°C.

3,924,049

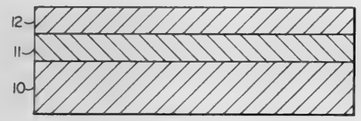
MULTICOLOR THERMOSENSITIVE PAPER

James K. Truitt, Dallas, and Robert C. Goodman, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed July 30, 1973, Ser. No. 383,922

Int. Cl.[2] B41M *5/18*

U.S. Cl. 428—411 **10 Claims**



1. A heat sensitive, sheet material, comprising:

a. a supporting substrate;

b. a first layer of a first color of heat actuable material, responsive to a first quantity of heat to change to a second color; and

c. a second layer of a normally substantially opaque coat overlaying the first layer, responsive to a second quantity of heat less than the first quantity of heat to be transparentized.

3,924,050

DIELECTRIC LAYER COMPOSITION

Carolyn J. Camp, Livermore, and Robert O. Lindblom, Walnut Creek, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 173,299, Aug. 19, 1971, Pat. No. 3,779,982. This application June 29, 1973, Ser. No. 374,847

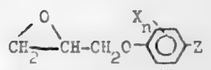
Int. Cl. B32b *27/38*

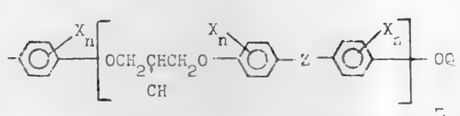
U.S. Cl. 428—413 **1 Claim**

1. A paper suitable for use in electrostatic printing processes comprising an electrographic paper coated on at least one side with an effective amount of a dielectric coating composition consisting essentially of

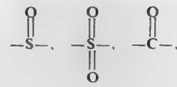
A. 15 to 85 volume % of a copolymer of 70 to 96 weight % vinylidene chloride, the remainder being at least one other olefinically unsaturated comonomer polymerizable therewith, said copolymer having a molecular weight described by a relative viscosity of between about 1.2 and 3.5 for a 1% tetrahydrofuran solution at 25°C.;

B. 8 to 77 volume % of an epoxy resin having an epoxy equivalent weight of about 400 to 60,000, said epoxy resin being of the formula





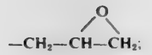
wherein each —Z— is a chemical bond, —O—, —S—, —S—S—,



—CH_2— or



Q is H or



each X is Cl or Br; each *n* is 0 to 2; and *m* is about 1 to 210; and

C. 0 to 42 volume % of a pigment.

3,924,051

ORIENTED SARAN COEXTRUDATE

Glenn C. Wiggins, Midland; Marvin J. Kreh, Essexville; Fred Stevenson, Beaverton, all of Mich., and Davis, Robert S., Lewiston, N.Y., assignors to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 70,524, Sept. 8, 1970, abandoned, which is a continuation of Ser. No. 630,889, April 14, 1967, abandoned. This application Mar. 24, 1972, Ser. No. 237,953The portion of the term of this patent subsequent to Dec. 26, 1989, has been disclaimed.

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.[2] B32B *27/08*

U.S. Cl. 428—520 **3 Claims**

1. A bilaterally oriented plastic laminate consisting essentially of (1) a first layer of a vinylidene chloride-vinyl chloride copolymer containing a predominant amount of vinylidene chloride in the copolymer molecule and (2) a second layer of an ethylene-unsaturated ester type copolymer containing a predominant amount of ethylene in the copolymer molecule and wherein said unsaturated ester is selected from the group consisting of vinyl acetate and isobutyl acrylate, said first layer and said second layer being non-separable with tape and said laminate being prepared by coextruding said first layer and said second layer as a plural layered tube, chilling said tube at a temperature of about 5°C to about 25°C and then tempering said tube at a temperature of about 20°C to about 50°C immediately prior to blowing said tube into a bubble with a fluid whereby the molecules of said copolymer are bilaterally oriented and wherein the total area of said bubble is at least about 16 times the area of said tube.

3. The laminate of claim **1** with a further layer of said ethylene-unsaturated ester type copolymer.

3,924,052

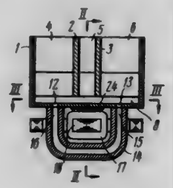
INDUCTION FURNACE

Viktor Konstantinovich Pogorsky, ulitsa Poligraficheskaya, 24 a, kv. 247, and Vitaly Petrovich Polischuk, ulitsa Vernadskogo, 85, kv. 122, both of Kiev, U.S.S.R.

Filed June 7, 1974, Ser. No. 477,273

Int. Cl.[2] H05B 5/14

U.S. Cl. 13—29 4 Claims



1. An induction furnace comprising a crucible whose walls and bottom define a space for molten metal; vertical partitions subdividing said space into at least three chambers, two of which flank at least one intermediate chamber; a tray for discharging the molten metal from said at least one intermediate chamber, fixed on an upper section of its wall; said bottom of the crucible being made as at least one chute section, open from above and intercommunicating said chambers; a detachable metal conduit with a substantially U-shaped duct communicating with the flanking chambers of said crucible space; a closed magnetic circuit having a winding encompassed by said conduit; and at least one open magnetic circuit having windings wound on respective pole pieces encompassing said at least one chute section, disposed under said at least one intermediate chamber.

3,924,053

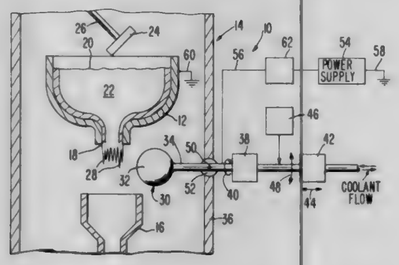
APPARATUS AND METHOD FOR CLEANING AND SEALING OF BOTTOM POUR CRUCIBLE

Max P. Schlienger, San Rafael, Calif., assignor to Schlienger, Inc., San Rafael, Calif.

Filed Nov. 25, 1974, Ser. No. 526,658

Int. Cl.[2] F27D 3/14, 15/00

U.S. Cl. 13—33 15 Claims



1. Apparatus for cleaning the opening at the bottom of a bottom pour crucible comprising: a rotary arc electrode; means coupled with the electrode for mounting the same for rotation and for movement along a path across and adjacent to said opening of the crucible; means coupled with said electrode for rotating the same and for moving it along said path; and means coupled with said electrode and adapted to be coupled with said crucible for establishing an electric arc therebetween, whereby the heat from the arc will clean the opening as the electrode rotates and moves along said path.

3,924,054

CURRENT CONDUCTING SYSTEM HAVING ADJUSTABLE HEAT DISSIPATION CAPABILITY

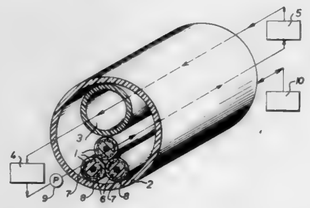
Henning Falke, Angermund, Germany, assignor to AEG-Telefunken Kabelwerke Aktiengesellschaft, Rheydt, Germany

Filed Nov. 19, 1973, Ser. No. 416,815

Claims priority, application Germany, Nov. 18, 1972, 2257133

Int. Cl.[2] H01B 7/34

U.S. Cl. 174—15 C 13 Claims



1. A system for transmitting electrical energy by means of power cables installed in pipelines and capable of efficiently conducting a plurality of current amplitude ranges, comprising, in combination:

at least one single conductor power cable having plastic insulation and at least one closed metal sheath; a pipeline in which said cable is installed and normally filled with air when said cable is to conduct current in the lowest amplitude range; first means for selectively introducing a hygroscopic water-containing medium into said pipeline when said cable is to conduct current in an intermediate one of such plurality of amplitude ranges; and second means for selectively circulating a coolant through said pipeline when said cable is to conduct current in the highest of such plurality of amplitude ranges.

10. A method for controlling the current-carrying capacity of a cable disposed in a pipeline for permitting the cable to conduct current efficiently in any one of a plurality of amplitude ranges, the cable being constituted by at least one single conductor power cable having plastic insulation and covered by at least one closed metal sheath; said method comprising, selectively: filling the pipeline with air when the cable is to conduct current in the lowest of such plurality of amplitude ranges; introducing a hygroscopic water-containing medium into the pipeline when the cable is to conduct current in an intermediate one of such plurality of amplitude ranges; and removing any water-containing medium present in the pipeline and circulating a coolant through the pipeline when the cable is to conduct current in the highest of such plurality of amplitude ranges.

3,924,055

CABLE SPACER FOR OVERHEAD POWER TRANSMISSION LINES

Edwin Barclay Moore; Bernard Oliver Crossley, both of Leicester, England, and Roy Leonard Gladwell, Crofton, Md., assignors to Dunlop Limited, England

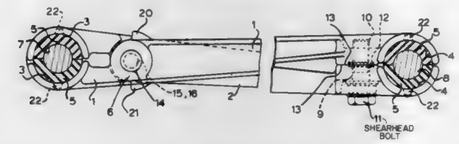
Filed Oct. 21, 1974, Ser. No. 516,678

Claims priority, application United Kingdom, Oct. 27, 1973, 50120/73

Int. Cl.[2] H02G 7/12

U.S. Cl. 174—40 R 6 Claims

1. A cable spacer for use between pairs of sub-conductors in overhead power transmission lines comprising a pair of similar lever arms, each lever arm having two semi-circular section grooves with a resilient lining, one groove being provided at either end of the lever arm, a pivotal connection between the lever arms, said pivotal connection being located between the semi-circular section grooves on each arm and adjacent one of the grooves, the axis of the pivotal connection being parallel to the groove axis and arranged such that relative pivotal movement of the lever arms causes the grooves at the ends adjacent to the pivot to come together and form a first circular aperture for engaging a first sub-conductor and



the grooves at the other end to form a second circular aperture for a second sub-conductor, a fixing means extending between the arms for locking the arms in engagement with each other, and mechanical stops adjacent to the conductor grooves at the ends of the lever arms remote from the pivotal connection so that in the closed position the relative positions of the lever arms are independent of the fixing means tension.

3,924,056

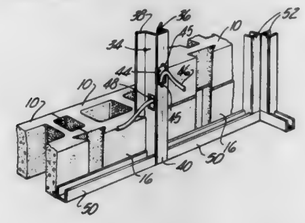
SLOTTED MASONRY WALL STRUCTURE AND METAL STUD THEREFOR

James T. LoCicero, 1836 Millard Drive, Madison Heights, Mich. 48071

Filed Dec. 13, 1973, Ser. No. 424,353

Int. Cl.[2] H02G 3/28; E04B 2/00

U.S. Cl. 174—48 13 Claims



1. Building apparatus comprising: a building block adapted to be assembled with similar blocks to form a substantially continuous structure, said block being constructed of substantially rigid material and having bearing surfaces and exterior surfaces, at least one of the exterior surfaces having formed therein a slot extending between the bearing surfaces; a relatively thin-wall, open channel stud adapted to be snapped into the slot, said stud being of a substantially three-sided configuration to define an exposed box portion and contiguous oppositely flared non-parallel manually deformable resilient flanges which are urged toward one another for installation of the stud into the slot and which are dimensioned to fit resiliently and snugly against the walls of the slot when inserted therein, the box portion and flanges being of such depth as to cause the exposed portion to be spaced from the interior surface of the slot in the block when the stud is fully inserted therein such that the exposed portion of the stud may receive elongated fastener devices therein after installation; and means for spreading the sides of the studs contiguous with the flanges to rigidify the stud within the block.

3,924,057

BUTT-TYPE COMPRESSION CONNECTOR

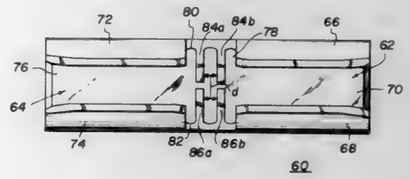
Charles W. Sosinski, Linden, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Nov. 29, 1974, Ser. No. 528,360

Int. Cl.[2] H02G 15/08

U.S. Cl. 174—94 R 2 Claims

1. A butt type compression connector comprising: a first conductor receiving portion at least partially defined by a first edge; a second conductor receiving portion at least partially defined by a second edge; said first and second conductor receiving portions arranged to be crimped to at least one electrical conductor placed in each of said first and second conductor receiving portions; web means coupled to at least a portion of said first edge of said first conductor receiving portion and to at least a portion of said second edge of said second conductor receiving portion to hold said first and



second conductor receiving portions in spaced apart linear alignment; and wire stop means extending transversely across said web means to prevent the engagement of the ends of conductors crimped within each of said first and second conductor receiving portions; said wire stop means comprising two pairs of fingers, one pair of fingers extending inwardly from each of the two marginal edges of said web means; one pair of fingers providing a wire stop for its adjacent one of said first and second conductor receiving portions.

3,924,058

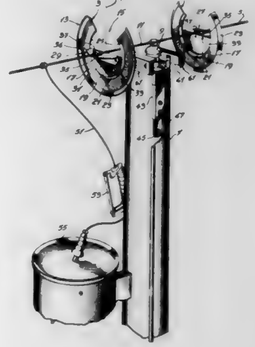
DEIONIZING DEVICE FOR AERIAL ELECTRIC LINES

Rosario Dube, 85 Lac Dube Ste. Ursule, cte, Maskinonge, Quebec, Canada (J0K3M0)

Filed June 26, 1974, Ser. No. 483,448

Int. Cl.[2] H01B 17/42

U.S. Cl. 174—140 R 7 Claims



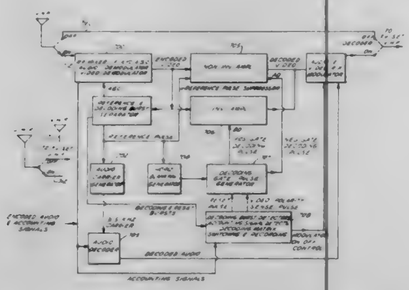
1. A deionizing device comprising:

- at least one first, plate-like, electrode member,
- means on said first member for detachably mounting said member on an electrical power line with said member being substantially perpendicular to the line when mounted thereon, the mounting means being located on the member in a position such that when the member is mounted on the electrical line, a substantial portion of the area of the member is on one side of a plane containing the electrical line,
- a second, plate-like, electrode member adapted to be mounted in parallel spaced relation to the substantial portion of the area of the first member, and means for grounding the second electrode member.

3,924,059
PAY TELEVISION SYSTEMS

Irving Horowitz, Eatontown, N.J., assignor to Teleglobe Pay TV System Inc., Rego Park, New York, N.Y.

Division of Ser. No. 227,582, Feb. 18, 1972, Pat. No. 3,824,332. This application Dec. 28, 1973, Ser. No. 429,216The portion of the term of this patent subsequent to July 16, 1991, has been disclaimed.
Int. Cl.² H04N *1/44*
U.S. Cl. 178—5.1 **6 Claims**



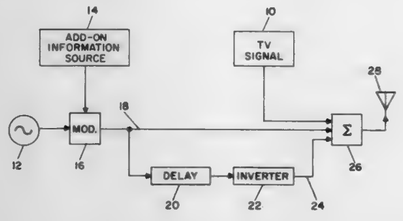
1. Apparatus for encoding a standard composite television signal having video signals for conveying the picture to be televised, said video signals having amplitudes varying between a first and second reference level respectively signifying picture black and white, said standard composite television signal further having horizontal and vertical synchronizing signals occurring during horizontal and vertical blanking intervals for synchronizing the television receiver to the television transmitter, said synchronizing signals having determined synchronizing levels and polarities relative to a determined one of said first and second reference levels, comprising, in combination, first transmitter circuit means having a signal input for receiving said composite television signal, an output, and a control input for receiving a control signal, for transmitting said composite television signal from said input to said output in such a manner that the polarity of said video signals relative to said selected one of said reference levels remains unchanged or is reversed throughout at least the subsequent field in dependence upon a control signal; controls means connected to said circuit means for furnishing a plurality of control signals, each during a randomly selected one of said vertical blanking intervals and applying said control signal to said control input of said first circuit means; and additional transmitter circuit means connected to said first transmitter circuit means and said control means for applying a coding signal to said composite television signal at a determined time instant in each of said randomly selected vertical blanking intervals in response to each of said control signals, thereby creating a coded composite television signal.

3,924,060
CONTINUOUS INFORMATION ADD-ON SYSTEM

Alan D. Bedford, St. Paul, Minn., assignor to Hazeltine Research, Inc., Chicago, Ill.

Filed June 24, 1974, Ser. No. 482,381
Int. Cl.² H04N *7/00*
U.S. Cl. 178—5.6 **17 Claims**

1. A system for compatibly transmitting and receiving both a TV signal and an add-on signal within the frequency band occupied by the TV signal, comprising:
means for supplying a TV signal occupying a predetermined frequency band and containing video information during time successive line intervals;
means for supplying a signal representative of selected add-on information;
means, responsive to said add-on information representative signal, for generating first and second modulated add-on signal components in phase quadrature at a common carrier frequency lying within a selected portion of said frequency band, wherein the modulation of said first add-on signal component is representative of said selected add-on information during time successive line intervals and wherein during each line interval the modulation of said section add-on signal component is representative of identical but opposite polarity add-on information as that represented by the modulation of said first

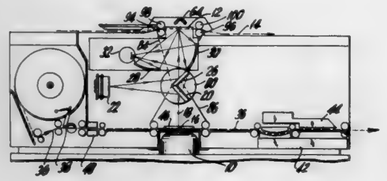


add-on signal component during corresponding portions of the preceding line interval;
means for combining said TV signal and said first and second add-on signal components to develop a combined TV and add-on signal suitable for transmission in a common frequency band to a remote receiver;
means for receiving said combined signal;
and means for processing said received combined signal to develop an output signal primarily representative of said selected add-on information.

3,924,061
FACSIMILE TRANSCEIVER UTILIZING SINGLE LIGHT SOURCE

John L. Tregay, Weston, Conn., and Paul Z. Boros, New York, N.Y., assignors to Comfax Communications, Inc., New York, N.Y.

Filed June 11, 1974, Ser. No. 478,259
Int. Cl.² H04N *1/22, 1/42*
U.S. Cl. 178—6 **24 Claims**

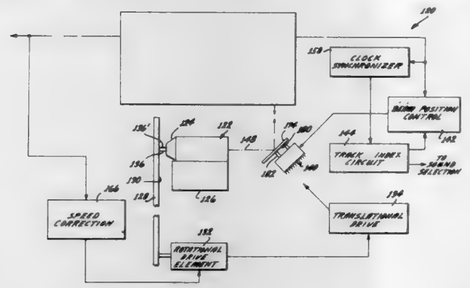


1. A facsimile transceiver capable of operating in a transmission mode in which information contained on a document or the like is transmitted to a remote receiver, and a reception mode in which information received from a remote transmitter is reproduced on a print paper, said transceiver comprising a source of a scanning beam directed along a scan axis, means for moving during said transmission mode the document along a first path substantially perpendicular to said axis and remote from said source to a scanning location at which said scanning beam is incident on the surface of said document, and for moving during the reception mode the print paper along a second path spaced along said axis from said first path, and substantially perpendicular to said axis, and into substantial contact with said beam source, and means positioned intermediate said first and second paths for directing said beam onto the document at said scanning location during said transmission mode, whereby said scanning beam is caused to scan over the document during said transmission mode and over the print paper during said reception mode.

3,924,062
DISC RECORD WITH SKIPPED STANDARD VIDEO INCREMENTS AND CONTINUOUS AUDIO INCREMENTS AND A METHOD AND APPARATUS FOR REPRODUCTION

Kent D. Broadbent, San Pedro, Calif., assignor to MCA DiscoVision, Inc., Universal City, Calif.

Filed Oct. 24, 1972, Ser. No. 299,892
Int. Cl.² H04N *5/76*
U.S. Cl. 178—6.6 R **11 Claims**



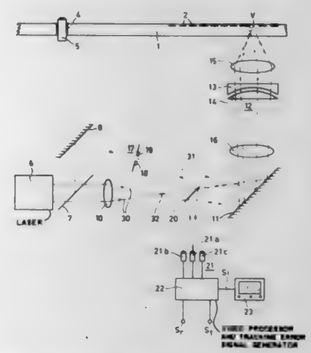
1. An extended play video disc record comprising:
a disc member having a substantially planar disc surface with variable characteristics portions representing a standard increment of video information recorded thereon, and including more than one standard increment of audio information recorded simultaneously therewith, said variable characteristics portions being discontinuities out of the plane of the surface corresponding to information, said discontinuities being generally disposed in a substantially circular path, each discontinuity having a constant dimension in the radial direction and a constant maximum dimension in the direction perpendicular to said surface, the length of each discontinuity in the circumferential direction and the distance between adjacent discontinuities in the circumferential direction representing the stored information and collectively forming a plurality of mutually spaced information tracks extending circumferentially around the disc, representing an ordered, segmented video program, whereby each standard increment of video information is adapted to be read more than once, each time with a different audio information standard increment to provide a continuous program presentation.

3,924,063
VARIABLE OPTICAL WEDGE FOR SCANNING A LIGHT BEAM IN AN APPARATUS FOR READING AN OPTICALLY ENCODED DISC

Carel Arthur Jan Simons, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 29, 1974, Ser. No. 464,732
Claims priority, application Netherlands, Feb. 13, 1974, 7401937
Int. Cl.² H04N *5/76;* **G11B** *7/12*
U.S. Cl. 178—6.6 R **3 Claims**

1. An apparatus for reading a record carrier on which information is stored in an optically readable structure of areas and intermediate regions which are arranged along tracks, of the type wherein the apparatus includes a radiation source which supplies a read beam, an objective system for focussing the read beam to a read spot on the optical structure of the record carrier, a beam deflecting element for moving the read spot with respect to the record carrier, and a radiation-sensitive detection system for converting the read beam which is modulated by the areas and intermediate regions into an electrical signal, the improvement wherein the beam-deflecting element comprises an assembly of a plano-concave lens and a plano-convex lens, the concave surface of the first lens facing the convex surface of the second lens, said plano-convex and plano-concave lens surfaces having substantially the same radius of curvature and are disposed at a distance which is substantially smaller than said radius of curvature, a first axis associated with said plano-convex lens and being defined as a line perpendicular to the optical axis of the objective system and passing therethrough, a second axis associated with said plano-convex lens and being defined as a line passing through the first axis and through the optical axis of the objective system and perpendicular to both the first axis and the optical axis of the objective system, a third axis associated with said

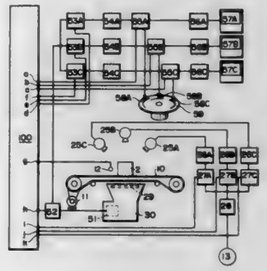


plano-concave lens and being defined as a line parallel to the first axis and passing through the optical axis of the objective system, a fourth axis associated with said plano-concave lens and passing through the optical axis of the objective system parallel to said second axis, two of said first through fourth axes that are perpendicularly oriented being pivotal axes, the lens associated with the particular pivotal axis being pivotally mounted to angularly move about said associated axis, one of the pivotal axes being parallel to the section of track on which the objective system is focussed, said lens assembly being in the vicinity of a pupil of said objective lens.

3,924,064
X-RAY INSPECTION EQUIPMENT FOR BAGGAGE

Yasuji Nomura; Koichi Koike, and Kazuo Yamamoto, all of Kashiwa, Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

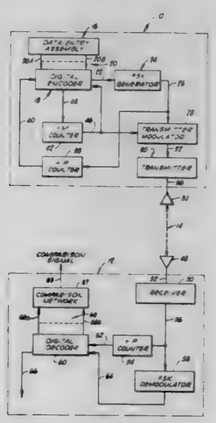
Filed Mar. 26, 1974, Ser. No. 454,920
Claims priority, application Japan, Mar. 27, 1973, 48-34785; Mar. 27, 1973, 48-24786
Int. Cl.² H04N *7/18*
U.S. Cl. 178—6.8 **6 Claims**



1. A low X-ray level baggage inspection apparatus comprising:
conveyor means for continuously conveying articles of baggage to be inspected in a path along a longitudinal direction;

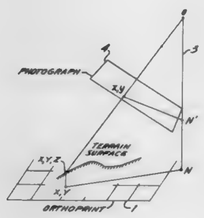
plural X-ray tubes positioned along said path;
separate generating means coupled to each of said X-ray tubes for generating plural X-rays toward different portions of each article of baggage from plural directions;
a single image regenerating means, positioned adjacent said path to receive said plural X-rays after having passed through said each article of baggage, for producing plural X-ray images of the contents of said each article of baggage;
video signal means connected to said image regenerating means for converting said X-ray images into corresponding primary video signals;
at least one recording-reproducing means coupled to said video signal means for recording said primary video signals and for subsequently reproducing the thus recorded signals as corresponding secondary video signals;
at least one display means coupled to said recording-reproducing means for displaying said secondary video signals as corresponding visual images of said X-ray images;
at least one controlling means coupled to said recording-reproducing means for controlling the recording and reproducing functions thereof;
position detecting means for detecting when said each article of baggage is carried by said conveyor means to a predetermined position; and
control device means, coupled to and operable by said position detecting means, and coupled to said generating means for activating said X-ray tubes to emit pulsed X-rays to irradiate said each article of baggage from said plural directions in a predetermined order at said predetermined position, and coupled to said controlling means for activating said controlling means when said generating means is activated to cause said recording-reproducing means to record one field primary video signal and to thereafter repeatedly reproduce said one field signal until a subsequent primary video signal is produced.

3,924,065
COHERENT, FIXED BAUD RATE FSK COMMUNICATION METHOD AND APPARATUS
Charles C. Freeny, Jr., Forth Worth, Tex., assignor to Information Identification, Inc., Fort Worth, Tex.
Filed Apr. 5, 1974, Ser. No. 458,330
Int. Cl.² H04L 27/10
U.S. Cl. 178—66 R **43 Claims**



25. A frequency shift key (FSK) communication apparatus for communicating time division binary message codes comprising a predetermined number of message bits, having logic levels representing logical "ones" and logical "zeros," from a transmitter station to a receiver station, the apparatus comprising:
a digital encoder, having a predetermined message code comprising a predetermined number (N) message bits, generating at least two output signal levels for each message bit of the N-bit message code at a digital encoder output signal;
an FSK generator receiving the digital encoder output signal and providing an output signal having a distinct frequency in response to each received digital encoder output signal level, the FSK generator output signal having a fixed transmission time for the (N) bit message code independent of the number of logical "ones" and logical "zeros" comprising the (N) bit message code; and
means receiving the FSK generator output signal and providing a transmitter master clock signal derived from the received FSK generator output signal and having a frequency coherently related to the FSK generator output signal frequency, the transmitter master clock signal being connected to the digital encoder and operating the digital encoder to provide the digital encoder output signal in one condition of the digital encoder.

3,924,066
ORTHOPRINTER USING NADIR LINE SCANNING
Walter E. Chapelle, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.
Filed Feb. 15, 1974, Ser. No. 442,701
Int. Cl.² H04N 1/04, 1/10
U.S. Cl. 178—6.7 R **9 Claims**

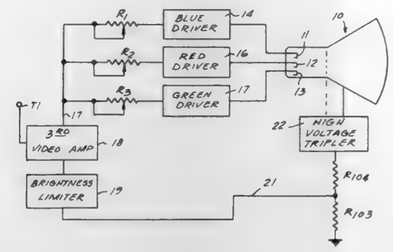


1. In a device for printing an orthophoto from a photograph, the device having means for scanning the photograph and means for printing the orthophoto, the improvement comprising means for controlling the scanning and printing means to scan the photograph and print the orthophoto along nadir lines.

3,924,067
AUTOMATIC BEAM CURRENT LIMITER WITH VIDEO HOLD-OFF
Blayne E. Arneson, Evergreen Park, Ill., assignor to Admiral Corporation, Chicago, Ill.
Filed Aug. 16, 1974, Ser. No. 497,879
Int. Cl.² H04N 3/16, 9/16
U.S. Cl. 178—7.5 DC **6 Claims**

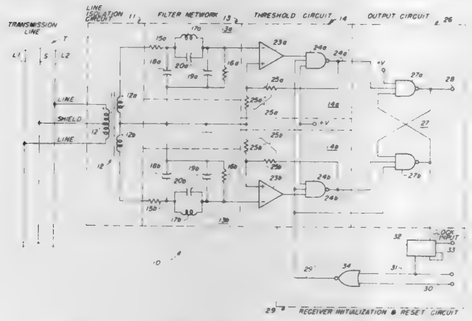
1. A circuit for automatic beam current limiting and video hold off for a television receiver including a cathode ray tube whose cathodes are unheated prior to turn on comprising, a power source, a video amplifier connected to supply drive to the cathode ray tube of said receiver, a brightness limiter means connected to said video amplifier to control its output, means for sensing the beam current in said cathode ray tube

connected to said brightness limiter means to control its output, and time delay means connected to said brightness limiter



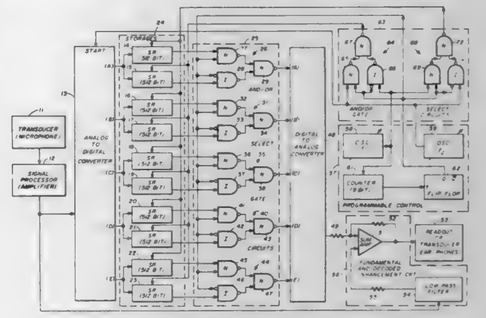
means and said power source and delaying the application of power to said brightness limiter means at turn on.

3,924,068
LOW DISTORTION RECEIVER FOR BI-LEVEL BASEBAND PCM WAVEFORMS
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of George E. Proch, Houston, Tex.
Continuation-in-part of Ser. No. 428,994, Dec. 27, 1973. This application Apr. 26, 1974, Ser. No. 464,720
Int. Cl.² H04L 13/18
U.S. Cl. 178—88 **11 Claims**



1. A receiver for a zero direct current input signal transmitted as the output signal from a remotely located transmitter comprising:
a. duplicating and inverting means for providing an inverted signal which has the same amplitude as that of the receiver input signal but is 180° out-of-phase with said receiver input signal;
b. processing means in said receiver for processing said receiver input signal and said inverted signal for symmetrically processing positive and negative going transitions of said receiver input signal;
c. filter means including frequency responsive circuit means in said processing means fr symmetrically filtering and band limiting said receiver input and said inverted signal;
d. threshold detector means for providing first and second detector signals wherein said first detector signal is representative of the occurrence of one or more signal parameters in said filtered receiver input signal and in said filtered inverted signal which reach predetermined values and wherein said second detector signal is representative of the absence of the occurrence thereof;
e. hysteresis means included with said threshold detector means for causing said threshold detector means to maintain said first detector or said second detector output once formed until the one or more parameters of said filtered receiver input signal and said filtered inverted signal reach predetermined values which are different from those causing the formation of said detector signals;
f. output circuit means selectively responsive to at least one of said first and second detector signals for reproducing an undistorted signal directly corresponding to the input signal supplied to said transmitter, said output circuit means including pulse duration restoring means for providing pulse durations in one or more of said first and second detector signals corresponding to those durations of the pulses in said receiver input signal and said inverted signal which produced said detector signals, said pulse duration restoring means including latch means responsive to the transition from said second to said first detector signal to produce said undistorted signal.

3,924,069
HELIUM SPEECH DECODER
Clell A. Dildy, Jr., Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Continuation of Ser. No. 388,713, Aug. 15, 1973. This application Oct. 15, 1974, Ser. No. 514,729The portion of the term of this patent subsequent to Jan. 28, 1992, has been disclaimed.
Int. Cl.² G10L 1/00
U.S. Cl. 179—1 SH **15 Claims**



1. A data signal decoder, comprising in combination:
means for receiving and transducing a predetermined data signal into an electrical analog signal that is proportional thereto;
means having a data signal input, a start signal input, and a plurality of outputs, with the data signal input thereof effectively connected to the output of said receiving and transducing means for converting said electrical analog signal into a digital word signal represented by a plurality of bits respectively available at the aforesaid plurality of outputs thereof in response to a predetermined start signal supplied to the start signal input thereof;
a plurality of pairs of shift registers, each pair of shift registers of which include an odd numbered shift register and an even numbered shift register, each shift register of which has a data signal input, a shift signal input, and a data signal output, with the odd and even numbered shift registers of each pair of shift registers of said plurality of pairs of shift registers having their data signal inputs interconnected and respectively connected to the plurality of outputs of said analog-to-digital signal converting means in such manner as to timely receive and store said plurality of bits therein in response to a predetermined pair of shift signals respectively supplied to the shift signal inputs thereof, with the shift signal inputs of said odd numbered shift registers being interconnected for simultaneous response to one of the aforesaid predetermined pair of shift signals, and with the shift signal inputs of said even numbered shift registers being interconnected for simultaneous response to the other of the aforesaid predetermined pair of shift signals;

a plurality of And/Or select gates, each of which has a pair of data signal inputs, a pair of interconnected gating control signal inputs, and a data signal output, with the pairs of data signal inputs of each And/Or select gate thereof respectively connected to the outputs of the odd and even numbered shift registers of each pair of shift registers of said plurality of pairs of shift registers for timely passing therethrough the bits stored in said odd and even numbered shift registers in response to a predetermined programmed gating control signal supplied to the interconnected gating control signal inputs thereof;

means having a plurality of inputs responsive to a digital word signal that contains the same number of bits as the number of inputs thereof respectively connected to the data signal outputs of said plurality of And/Or select gates for converting the digital word signal received therefrom into an electrical analog signal that is proportional thereto;

a read clock oscillator for producing a first clock signal having a predetermined first frequency at the output thereof;

a write clock oscillator for producing a second clock signal having a predetermined second frequency at the output thereof, with the output thereof connected to the start signal input of the aforesaid electrical analog signal to digital word signal converting means;

a counter connected to the output of said read clock oscillator;

a flip-flop having a toggle input, a Q output, and a Q output, with the toggle input thereof connected to the output of said counter, and with the Q output thereof connected to the interconnected gating inputs of the aforesaid plurality of And/Or select gates;

another And/Or select gate having a pair of data signal inputs, a pair of interconnected gating control signal inputs, and an output, with one of the data signal inputs thereof connected to the output of said write clock oscillator, with the other data signal input thereof connected to the output of said read clock oscillator, with the interconnected gating control signal inputs thereof connected to the Q output of said flip-flop, and with the output thereof connected to the interconnected shift signal inputs of the aforesaid odd numbered shift registers;

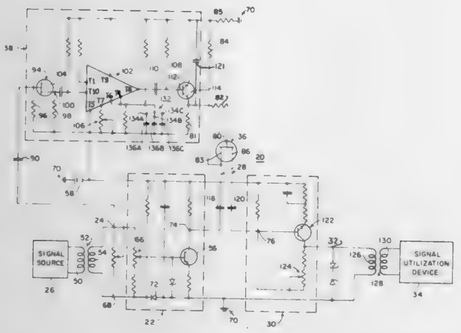
still another And/Or select gate having a pair of data signal inputs, a pair of interconnected gating control signal inputs, and an output, with one of the data signal control inputs thereof connected to the output of said read clock oscillator, with the other data signal input thereof connected to the output of said write clock oscillator, with the interconnected gating control signal inputs thereof connected to the Q output of said flip-flop, and with the output thereof connected to the interconnected shift signal inputs of the aforesaid even numbered shift registers; and

means effectively connected to the output of the aforesaid receiving and transducing means and to the output of said digital word signal to electrical analog signal converting means for adding substantially the electrical analog fundamental of the aforesaid predetermined data signal to the electrical analog signal from the output of the aforesaid digital word signal to electrical analog signal converting means.

3,924,070
VOICE GATED AMPLIFIER
F. Harmon Seaver, Walworth, Wis., assignor to Webster Electric Company, Inc., Racine, Wis.
Filed Mar. 16, 1970, Ser. No. 19,651
Int. Cl.² H03F *3/72*
U.S. Cl. 179—1 VC **5 Claims**

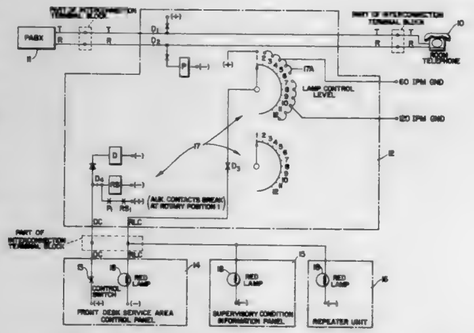
1. A voice gated, multi-stage amplifier having an input terminal to receive input signals and a signal path coupling the successive stages of the amplifier, said amplifier comprising:

a normally nonconductive field effect transistor having a gate electrode, drain and source electrodes, and an interrupt circuit between said drain and source electrodes, said drain and source electrodes being coupled in series relation with the signal path so that said interrupt circuit normally interrupts the signal path and so that said interrupt circuit provides a variable impedance circuit between said drain and source electrodes.



and a gating circuit coupling the gate electrode of said field effect transistor to the input terminal and rendering the field effect transistor conductive in response to an increase of the input signals above a predetermined amplitude so that said interrupt circuit does not interrupt the signal path.

3,924,071
AREA UNIT STATUS SYSTEM
Robert M. Pirnie, III, Montgomery, Ala., assignor to Communication Equipment and Contracting Company, Inc., Union Springs, Ala.
Continuation-in-part of Ser. No. 334,980, Feb. 23, 1973, Pat. No. 3,854,009. This application Oct. 16, 1973, Ser. No. 403,256
Int. Cl.² H04M *11/02*
U.S. Cl. 179—2 A **2 Claims**



1. For use with a plurality of dial telephones serving a plurality of service area units, which telephones are connectible to and disconnectible from a PABX with at least one telephone being in each service area unit; an area unit status system comprising:

a. a service area control means comprising a switch and visual status indicating lamps for each of the service area units;

b. at least one remote panel with corresponding status indicating lamps;

c. dial responsive means connected for actuation by dial pulses from said telephones when the telephones are disconnected from said PABX, and also actuated upon energization via said switch;

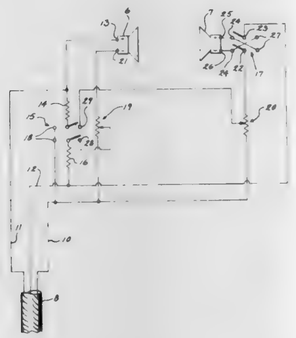
d. means for disconnecting the telephones from the PABX and energizing the dial responsive means;

e. said means for disconnecting being in circuit with and operated under control of said switch in a first position;

f. lamp operating means comprising a single level stepping switch connected between said lamps and sources of energy therefor and selectively responsive to energization of the dial responsive means to establish a first lamp indicating condition among said lamps, and selectively responsive to the dialing of a first digit to establish a second lamp indicating condition among said lamps, and selectively responsive to the dialing of a second digit to establish a third lamp indicating condition among said lamps; one of said conditions comprising flashing said lamps and a second of said conditions comprising winking said lamps at a rate detectably different from the flashing by human vision, and

g. said means for disconnecting being operated by said switch in a second position to connect the telephones to said PABX and de-energize the dial responsive means.

3,924,072
HEADPHONE WITH CROSS FEEDING AMBIENCE CONTROL
Jacob C. Turner, and Douglas M. Elliott, both of Milwaukee, Wis., assignors to Koss Corporation, Milwaukee, Wis.
Filed July 10, 1974, Ser. No. 487,031
Int. Cl.² H04R *5/02*
U.S. Cl. 179—1 GP **3 Claims**



1. In a stereophonic headphone having a first audio transducer mounted in a first cup for positioning over one ear of a listener and having a pair of input terminals, a second audio transducer mounted in a second cup for positioning over the other ear of the listener and having a pair of input terminals, and cable means for coupling separate audio signals to each of said audio transducers, the improvement therein comprising:

a left channel lead in said cable means connected to one input terminal on said first audio transducer;

a right channel lead in said cable means connected to one input terminal on said second audio transducer;

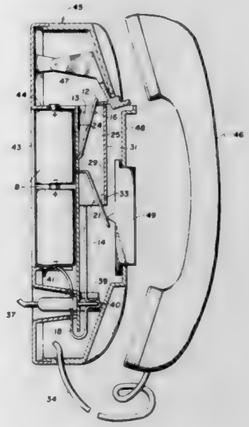
first ambience resistor means mounted in one of said cups and connected between the other terminal on said first audio transducer and a ground lead in said cable means, said first ambience resistor means being operable to voltage divide an audio signal applied across said left channel lead and said ground lead with said first audio transducer;

a first coupling resistor mounted within one of said cups and connected to the right channel lead and coupled to said first ambience resistor means, said first coupling resistor being operable to couple a portion of said left channel signal generated across said first ambience resistor means to said one input terminal on said second audio transducer;

a second ambience resistor means mounted within one of said cups and connected between the other terminal on said second audio transducer and said ground lead, said second ambience resistor means being operable to voltage divide an audio signal applied across said right channel lead and said ground lead with said second audio transducer; and

a second coupling resistor mounted within one of said cups and connected to the left channel lead and coupled to said second ambience resistor means, said second coupling resistor being operable to couple a portion of said right channel signal generated across said second ambience resistor means to said one input terminal on said first audio transducer.

3,924,073
HOME INTERCOM TELEPHONE SET
Horst Brandstatter, Vestner Str. 7, Zirndorf, Germany
Filed Sept. 26, 1974, Ser. No. 509,540
Int. Cl.² H04M *1/02, 1/08*
U.S. Cl. 179—1 H **6 Claims**



1. A telephone for use in an intercom system having a similar second telephone, the telephone comprising:

a prefabricated unit comprising a supporting plate having upright web plates and further comprising electrical connecting lines including dimensionally stable wire stirrups having bent-in ends extending through bores in said web plates to form a first, second and third pair of opposing contact pins;

a case enclosing said electrical connecting lines and detachably secured to said supporting plate;

a ringing unit electrically connected to said electrical connecting lines;

a receiver having assembled therein a speaking unit comprising a microphone and a loudspeaker electrically connected to said electrical connecting lines, wherein said receiver is removably held by said case;

means for connecting a current source to said electrical connecting lines;

means for electrically connecting the second telephone to said electrical connecting lines;

an electrically conductive selector device selectively movable into and out of contact with said first pair of opposing contact pins to establish or break electrical connection therebetween, wherein said selector device comprises a first spring element normally biased out of contact with said first pair of opposing contact pins;

a ringing key for energizing the ringing unit of the second telephone when said ringing key is actuated, wherein said ringing key cooperates with said selector device to move said selector device against its normal spring bias and into contact with said first pair of opposing contact pins when said ringing key is actuated;

an electrically conductive switching device selectively movable into contact with said second and third pairs of opposing contact pins to selectively establish electrical connection between contact pins of each said pair, wherein said switching device comprises a second spring element normally biased into contact with said third pair of opposing contact pins; and

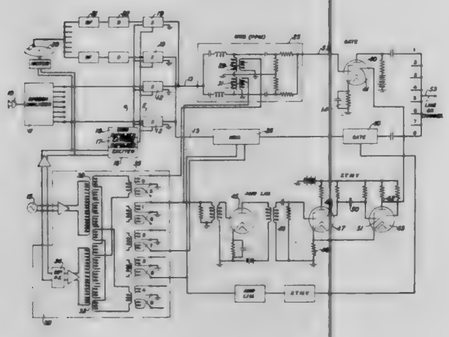
a reversing key having a first position for connecting said ringing unit into an electrical circuit including the selector device of the second telephone and a second position for connecting said speaking unit into an electrical circuit including the speaking unit of the second telephone when its reversing key is in the second position and for connecting said selector device into an electrical circuit including the ringing unit of the second telephone when its reversing key is in its first position, wherein said switching device and said receiver cooperate with said reversing key to move said reversing key into its first position when said receiver is held by said case and establish electrical connection between said second pair of opposing contact pins by moving said switching device against its normal bias and to move said reversing key into its second position when said receiver is removed from said case and establish electrical connection between said third pair of opposing contact pins by permitting said switching device to move according to its normal bias.

3,924,074

PULSE POSITION MODULATION KEY SIGNALING SYSTEM

Eugene Peterson, New York, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 19, 1945, Ser. No. 592,966
Int. Cl.[2] H04L *9/00*
U.S. Cl. 178—22 **6 Claims**



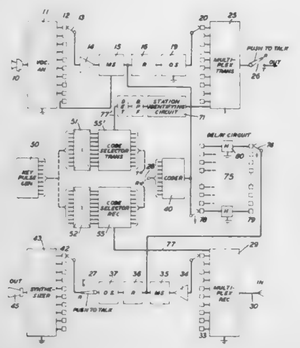
1. In a signaling system, a source of signal waves, a source of key waves, a transmission line or channel, means to allot periodic time intervals on said line to the transmission of signal indications thereover derived from said signals, means to produce signal indications for transmission and to encipher them comprising means to produce a pair of pulses of energy separated in time, and means to vary the absolute time positions of said pulses together under the conjoint control of said signal and key waves, one or the other of said two pulses always occurring within said time interval and the other always occurring outside said time interval, and means to transmit the former pulse over said line.

3,924,075

TWO-WAY PRIVACY SYSTEM TERMINAL WITH SINGLE KEY PULSE GENERATOR MEANS

Danforth K. Gannett, Mountain Lakes, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 20, 1947, Ser. No. 735,942
Int. Cl.[2] H04L *9/02*
U.S. Cl. 179—1.5 R **8 Claims**



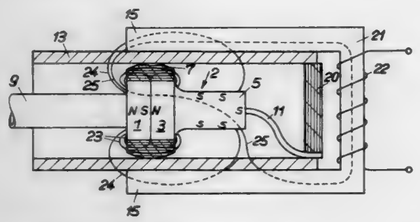
7. In a privacy system, a terminal comprising a transmitter of enciphered message signals and a terminal-identifying signal, means for supplying coded key pulses to said transmitter for enciphering outgoing message signals, means for selectively generating a plurality of different terminal-identifying signals for transmission one at a time with enciphered message signals, so that for successive selected intervals the identifying signal assigned to the terminal may be changed, and means responsive to said last-mentioned means for correspondingly selectively coding the pulses supplied to the transmitter to a respective one of a like number of different codes upon selective generation of a different identifying signal for the terminal.

3,924,076

ELECTROMAGNETIC PHONO CARTRIDGE

Roger Dubois, Colombier, Switzerland, assignor to Huber & Co., Hauterive, Switzerland

Filed Dec. 18, 1973, Ser. No. 425,852
Claims priority, application Switzerland, May 29, 1973, 7753/73
Int. Cl.[2] H04R *11/12*
U.S. Cl. 179—100.41 M **10 Claims**



1. An electromagnetic phono cartridge comprising:

a lamellar axially magnetized permanent magnet said permanent magnet having a flat side, an outer circumferential narrow side and an end face;

a non-magnetic cantilever provided with a stylus tip connected to said permanent magnet;

a ferromagnetic armature tube directly mounted on the end face of said permanent magnet, said armature extending coaxially from the permanent magnet to the cantilever in the opposite direction, and wherein said armature tube includes a first segment connected to the end face of said permanent magnet, said first segment having transverse dimensions approximately equal to those of said permanent magnet;

flexible sleeve means for covering the entire circumference of the outer narrow side of said permanent magnet;

nonmagnetizable shell means having an inner surface and housing said permanent magnet, said armature and a portion of said cantilever adjacent said permanent magnet; said flexible sleeve means being in contact with said inner surface of said shell means at a plurality of points for supporting said permanent magnet, armature and cantilever; and

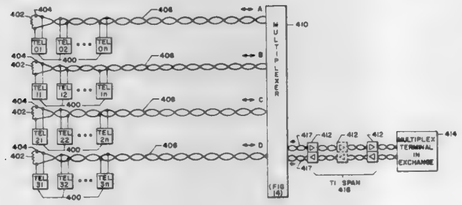
a pair of pole pieces substantially enclosing said shell means, said pole pieces including coils in the phono cartridge.

3,924,077

PULSE CODE MODULATION TIME DIVISION MULTIPLEX TELEPHONE SYSTEM

Thomas R. Blakeslee, 172 Otis Ave., Woodside, Calif. 94062

Filed July 5, 1973, Ser. No. 376,843
Int. Cl.[2] H04J *3/08*
U.S. Cl. 179—15 AL **24 Claims**



1. A time division multiplex telephone system comprising: terminal means for transmitting and receiving a plurality of telephonic signals from one end only of a single bidirectional wire pair in a repetitive time frame format having a plurality of sequential E time slots transmitted from said terminal means in one time interval and a corresponding plurality of M time slots received at said terminal means in a different time interval, each of said telephonic signals occupying a pair of E and M time slots; and a plurality of telephones connected across said wire pair in parallel to said terminal means, each of said telephones including logic circuitry means for conditioning said telephones to receive and transmit bidirectional telephonic signals in an assigned corresponding pair of E and M time slots, said terminal means including means for receiving M sample transmissions at times which are delayed by round trip delays existing between said terminal means and respective telephones.

3,924,078

APPARATUS FOR DISPLAYING AN EXTREME VALUE AMONG A SUCCESSION OF DIGITAL VALUES

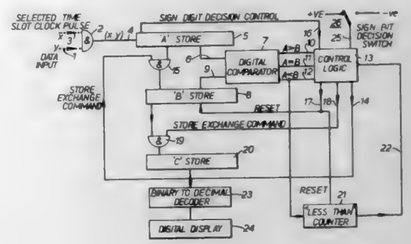
Christopher John Bussey, High Wycombe, England, assignor to The Post Office, London, England

Filed Apr. 10, 1974, Ser. No. 459,562
Claims priority, application United Kingdom, Apr. 19, 1973, 19143/73
Int. Cl.[2] H04J *3/14*
U.S. Cl. 179—15 BF **6 Claims**

1. A method of testing a pulse code modulation equipment in which a signal to be encoded is sampled at a fixed sampling frequency and the samples are encoded in digital form to produce a desired pulse code signal, the method including

a. applying as the signal to be encoded an oscillation of known steady amplitude and of frequency bearing no simple relationship to the sampling frequency of the equipment,

b. comparing the digitally encoded samples of the pulse code signals with a previously occurring maximum encoded sample and up-dating the maximum sample whenever it is exceeded by a subsequent sample, and



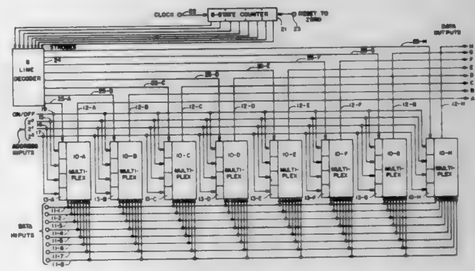
c. displaying the value of the maximum sample, thereby indicating the encoded value of the known amplitude.

3,924,079

LATCHING MULTIPLEXER CIRCUIT

Lane S. Garrett, Scottsdale, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Jan. 2, 1974, Ser. No. 429,965
Int. Cl.[2] H04J *3/00*
U.S. Cl. 179—15 A **8 Claims**



1. A system for selectively transferring data appearing on any one of N input terminals to any one of M output terminals, where N and M are positive integers, including in combination:

M decoding gate means each having an output coupled to one of said M output terminals and having N inputs coupled to said N input terminals, respectively;

M address memory means, each comprising a binary register having a predetermined number of output terminals capable of producing at least N different binary number output combinations, the output terminals of each of said address memory means coupled to a different one of said M decoding gate means for causing such decoding gate to interconnect a predetermined one of said N inputs thereof with the output thereof in accordance with the binary number appearing on the output terminals of said address memory means;

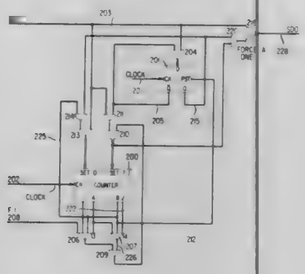
means for supplying a binary address input in common to all of said M address memory means;

ring counter circuit means having at least M output terminals each coupled with a different respective one of said M address memory means for enabling said address memory means sequentially to store in said binary register of each of said address memory means the binary address input supplied thereto only when said binary registers are enabled by an output from said ring counter circuit means.

3,924,080
ZERO SUPPRESSION IN PULSE TRANSMISSION SYSTEMS

James Lewis Caldwell, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 2, 1974, Ser. No. 528,728
Int. Cl.² H04J *3/06*
U.S. Cl. 179—15 BS **9 Claims**



2. A zero suppression circuit for serial pulse data comprising:

a pulse position counter,

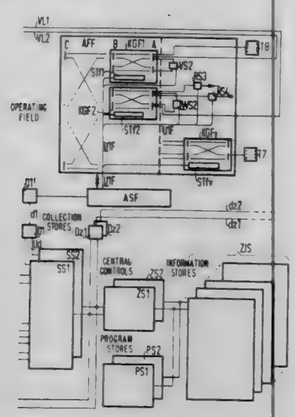
means for forcing a pulse into said serial pulse data to provide at least one pulse in each group of N or less pulse positions for at least one possible division of said pulse stream into such groups, and

means for delaying said pulse forcing means to the end of a group of 2N pulse positions whenever consistent with the above-stated forcing criteria.

3,924,081
CENTRALLY CONTROLLED TELECOMMUNICATION EXCHANGE CONNECTION ARRANGEMENT

Josef Rohrig; Justus Konig, and Gunther Seidel, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation of Ser. No. 196,929, Nov. 9, 1971, abandoned. This application Jan. 2, 1974, Ser. No. 429,813
Claims priority, application Germany, Nov. 12, 1970, 2055745
Int. Cl.² H04Q *3/54*
U.S. Cl. 179—18 EB **2 Claims**



1. Apparatus for centrally controlled telecommunication exchange installations wherein groups are formed from a plurality of individual apparatuses, each said group being connected to the central control over an individual buffer memory, comprising:

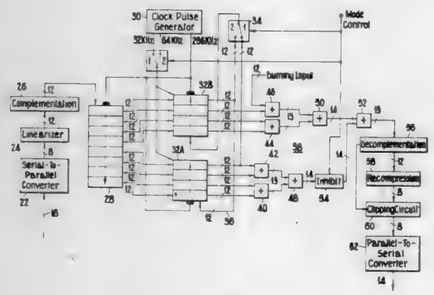
common circuit means connecting the individual apparatuses of a group to the said individual buffer memory associated with the group, said common circuit means including connection means for connecting each said individual apparatus separately to said common circuit means and thereby to said buffer memory, said individual apparatuses constituting a group being arranged with respect to the said buffer memory associated therewith as to be in sufficiently close spatial proximity thereto to facilitate direct communication therewith in a manner as to substantially avoid customary transmission line disturbances associated with line length and

individual and separate transmission line means connecting each said buffer memory to said central control for direct data communication therebetween, whereby each said individual transmission line means can be matched for optimal transmission characteristics.

3,924,082
CONFERENCE CIRCUITS FOR USE IN TELECOMMUNICATIONS SYSTEMS

Stephen Edward Oliver, Rugby, and Nicholas Richard Winch, Coventry, both of England, assignors to The General Electric Company Limited, London, England

Filed Feb. 4, 1974, Ser. No. 439,627
Claims priority, application United Kingdom, Feb. 5, 1973, 5575/73
Int. Cl.² H04M *3/56*
U.S. Cl. 179—18 BC **6 Claims**

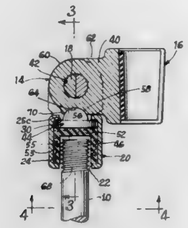


1. A conference circuit for use in a telecommunication system, said circuit comprising: a cyclic shift register having more than two stages each of which stages can hold a digital data word; means for clocking said shift register at a predetermined clock rate; means for writing digital data words from more than two input channels into respective stages of said shift register, at one point in each cycle of said register; digital adding means coupled to all but one of said stages of said register, for adding together the contents of the stages coupled thereto so as to produce a digital output word each time the shift register is clocked, said digital output word thus being a conference word for transmission to a conferee associated with the data word temporarily occupying said one of said stages at the particular said time, which data word was not included in the adding process at the particular said time; and a plurality of output channels for respective conferees, and corresponding to the successive states of said shift register in a said cycle, each said output channel receiving a respective said digital output word in the corresponding state of said shift register, whereby each output channel receives the sum of the data words from all but a corresponding one of the input channels.

3,924,083
QUICK MOUNT ISOLATOR STAND ADAPTOR

Lee Hagey, Buchanan, Mich., assignor to Electro-Voice, Incorporated, Buchanan, Mich.

Filed Oct. 23, 1974, Ser. No. 517,079
Int. Cl.² H04M *1/14*
U.S. Cl. 179—149 **10 Claims**

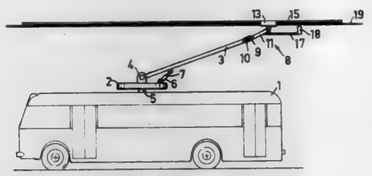


1. An adaptor for removably mounting a hand held type microphone on the end of a shaft comprising a housing having a first portion and a second portion disposed adjacent thereto, said first portion having a cavity therein with a wall between the first and second portion of the housing and an orifice in the wall between the first and the second portion of the housing, said first portion of the housing also having an opening in the wall thereof communicating with the cavity and adapted to receive the end of the shaft, a cam, means operatively associated with the second portion of the housing for rotatably mounting the cam directly confronting the orifice in the wall of the first portion of the housing, a plunger disposed within the cavity of the first portion of the housing and having a protuberance extending outwardly from the cavity into slidable abutment with the cam, said cam having a first segment of greater diameter and a second segment of lesser diameter in slidable engagement with the protrusion on the plunger, a block of compliant material disposed within the cavity between the plunger and the opening, said block having a recess aligned with and confronting the opening adapted to receive the end of the shaft, a lever mounted on the cam for positioning the cam with the first or second segment thereof in abutment with the plunger, said block being compressed by the plunger when the first segment of the cam engages the plunger and being released from compression when the second segment of the cam engages the plunger, and means mounted on the housing for mounting a hand held type microphone to the housing.

3,924,084
ARRANGEMENT FOR POWER TRANSMISSION FROM A STATIONARY ELECTRIC CONDUCTOR TO A VEHICLE

Olov Halvar Lindfors, Goteborg, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed Dec. 4, 1974, Ser. No. 529,588
Claims priority, application Sweden, Dec. 4, 1973, 7316361
Int. Cl.² B60L *5/00*
U.S. Cl. 191—45 **6 Claims**

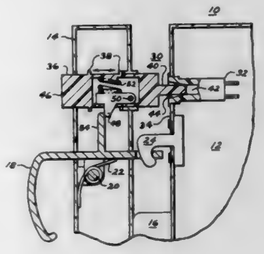


1. An arrangement for the transmission of electric power from a stationary electric conductor to a vehicle, whereby the vehicle, when driven along a contact wire, is supplied with current from the same by means of a current collector which is connected to the vehicle and lies in contact with the contact wire, said current collector being movable in a restricted manner in the transverse direction of the vehicle and to and from the contact wire, said vehicle being provided with alternative means of driving the vehicle without current supply from the contact wire, characterized in that a signal transmitter extends along the longitudinal direction of the contact wire and that the vehicle is provided with a signal receiver for receiving signals emitted from the signal transmitter, positioning means for moving the current collector at least in the transverse direction of the vehicle and a control device for controlling, in dependance of signals received by the signal receiver, the positioning means so that the current collector can, from a position in which it is not in contact with the contact wire, be brought into contact with said contact wire.

3,924,085
SAFETY-START DEVICE AND CIRCUIT CONTROLLER FOR DOMESTIC APPLIANCE

Aidan M. Stone, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 18, 1974, Ser. No. 451,973
Int. Cl.² H01H *3/16, 27/00*
U.S. Cl. 200—61.62 **6 Claims**



1. In an appliance having a body including an access opening and a closure therefor, a safety-start device comprising:

a switch having an opening and supported within the appliance body for preventing operation of the appliance unless the switch is intentionally actuated;

an actuating member supported on the closure and free to move back and forth normal to the closure and relative thereto, said actuating member being in co-axial alignment with an inserted into the switch opening when the closure is in its closed position such that auxiliary movement of the actuating member axially inward toward the switch and relative to the closure actuates the switch to allow operation of the appliance and completely removable from the switch when the closure is in its open position; and

means in the safety-start device for latching the actuating member with the switch and retaining it therein when in its axially inward position thereby maintaining the switch in its actuated state until the closure is opened whereupon the actuating member is moved relative to the closure and separated from the switch and the switch unactuated.

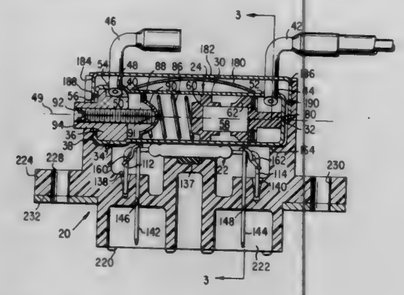
3,924,086
PRESSURE RESPONSIVE MAGNETIC SWITCH

Rolf H. Ochsner, Milford, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Mar. 27, 1974, Ser. No. 455,451
Int. Cl.² H01H *35/38*
U.S. Cl. 200—82 R **12 Claims**

1. A pressure responsive magnetic switch comprising

a non-magnetic housing having a plurality of wall portions forming a cavity;
a magnetically operated switch contact unit;
a plurality of first projections extending into the cavity from the wall portions and supporting the switch contact unit in a first location in the cavity;
a switch operator including a tubular non-magnetic cylinder, a permanent-magnetic piston slidable in the cylinder,



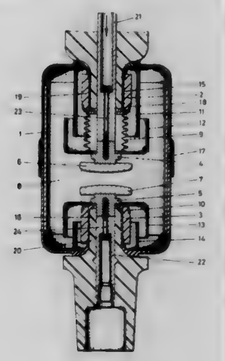
and first and second conduits communicating with respective ends of the tubular cylinder;
a plurality of second projections extending into the cavity and retaining the tubular cylinder in a second location in the cavity adjacent the switch contact unit;
terminal means mounted in the housing and extending outside the housing from the cavity; and
means in the cavity electrically connecting the switch contact unit to the terminal means.

3,924,087

VACUUM CIRCUIT INTERRUPTOR

Jan Christiaan Clason, Hengelo, Netherlands, assignor to Hazemeijer B.V., Netherlands

Filed Oct. 1, 1973, Ser. No. 402,129
Claims priority, application Netherlands, Oct. 2, 1972, 72/3302
Int. Cl.² H01H *33/66*
U.S. Cl. 200—144 B **2 Claims**



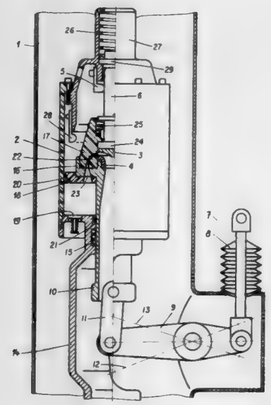
1. A vacuum circuit interruptor comprising: a cylindrical metallic envelope; two cylindrical insulators secured to said envelope on both ends thereof in a vacuum tight fashion, said two insulators from the ends which are secured to said envelope being directed towards one another and disposed within said envelope; contact rods supported by free ends of said cylindrical insulators in a vacuum tight fashion; two contact members secured to said contact rods, said contact members being arranged in said envelope; one of said contact members being movable and the associated said contact rod being secured to the associated said insulator by a bellows; the outer cylindrical surface of each said insulator being provided with a sleeve of elastic insulating material, a stub of non-elastic insulating material, pressed into said sleeve, in such a manner as to be free of voids in the interface between said insulator and the associated said sleeve and in the interface between said sleeve and said insulating stub, and each stub having an axial passage, in which the respective contact rod of the respective contact member is disposed.

3,924,088

GAS-BLAST POWER SWITCH FOR HIGH VOLTAGE

Hans Heutschi, Kappel near Olten, Switzerland, and Peter Krebs, Harleysville, Pa., assignors to Sprecher & Schuch AG, Aarau, Switzerland

Filed Sept. 18, 1874, Ser. No. 507,254
Claims priority, application Switzerland, Oct. 11, 1973, 14467/73
Int. Cl.² H01H *33/88*
U.S. Cl. 200—148 A **6 Claims**



1. A gas-blast power switch for high voltage comprising a gas filled housing, a power interrupter and disconnector switch connected in series and arranged in said housing, a pump device equipped with a pump cylinder and a pump piston and positively connected with a switch drive, said pump device during cut-off conveying gas into the power interrupter and during cut-on sucking-up gas, the improvement comprising a wall for partitioning the housing into two compartments, the power interrupter being arranged in one compartment and the disconnecting switch in the other compartment, said power interrupter comprising a ring contact pair surrounded by a ring gap nozzle arranged in said wall, said ring contact pair receiving in the open state of its pair of contacts at least 2.5-fold phase voltage of a high voltage network, said ring gap nozzle having a gap bounded at least at one side by electrically insulating material, said disconnecting switch being provided with contacts and having disconnecting path which is designed at least for the test voltage of the power switch, the contacts of the power interrupter during cut-off separating between 20 and 50 percent of the pump piston stroke and the contacts of the disconnecting switch separating no earlier than at 80 percent of the pump piston stroke.

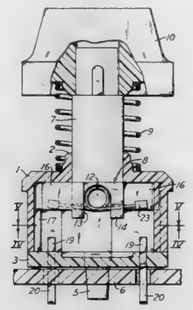
3,924,089

KEYBOARD SWITCH

Lynn W. Abernethy, Raleigh, N.C., assignor to Stackpole Components Company, Raleigh, N.C.

Filed Aug. 28, 1974, Ser. No. 501,141
Int. Cl.² H01H *13/52, 1/02, 1/24, 1/32*
U.S. Cl. 200—159 R **5 Claims**

1. A keyboard switch comprising a case having a top with an opening therethrough, a plunger having a foot in the case and a stem extending upwardly through said opening and above the case, a spring normally holding the plunger in its upper position with its foot adjacent the top of the case, a bridging contact member in the case carried by the plunger, said contact member being formed from a spring wire coil attached to said foot and having free end portions extending away from opposite sides of the foot, electrically conductive



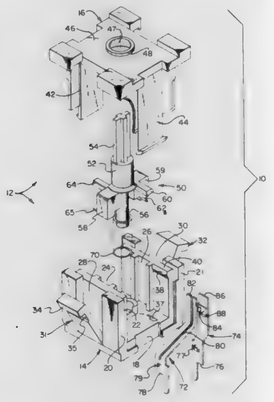
elastic members rigidly mounted on the ends of said free portions, a pair of stationary electric contacts mounted in the case beneath said movable contacts and normally spaced therefrom, said movable contacts being engageable with the stationary contacts when the plunger is depressed, and terminals connected with the stationary contacts and extending out of the case.

3,924,090

SWITCH ASSEMBLY WITH RECIPROCATING CAMS

Stanley K. Chao, Lexington, and Albert Eng, Chestnut Hill, both of Mass., assignors to Data Electronics Corporation, Burlington, Mass.

Filed Sept. 16, 1974, Ser. No. 506,400
Int. Cl.² H01H *13/52, 3/42*
U.S. Cl. 200—159 A **8 Claims**



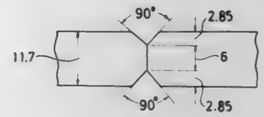
1. A switch assembly comprising in combination:
first and second interlockable housing members which when interlocked form a substantially hollow enclosure having an aperture at one end thereof, and a pair of parallel keyways disposed along the interior walls thereof;
a switch plunger having a portion thereof extending through said aperture, and being mounted for substantially unidirectional motion along said keyways;
spring means for resiliently biasing said plunger outwardly from said aperture to a first position;
a first electrically conductive contact strip mounted on one of said housing members with a portion thereof extending through said one of said housing members, and being supported within said enclosure in a substantially stationary position;
a second electrically conductive flexible strip having a bifurcated portion mounted on one of said housing members so as to extend therethrough and being spaced from said first strip when said plunger is in said first position;
said plunger including first and second cam portions, said first cam portion being disposed between said conductive strips so as to positively maintain said two strips in spaced apart relation when said plunger is in said first position, and being moved out of contact with said second strip when said plunger is moved against the bias of said spring to a second position;
said second cam portion being disposed so that when said plunger is moved toward said second position said second cam portion engages the bifurcations of said second strip and forces the latter into electrical contact with said first strip.

3,924,091

WELDING METHOD AND MATERIALS

Haruyoshi Suzuki, Seki; Thuyoshi Takino, Yachio; Naomichi Mori, Machida; Isao Sugioka, Funabashi; Osamu Matsuda, Narashino; Shozo Sekino, Kitakyushu, and Hiroyuki Honma, Utsunomiya, all of Japan, assignors to Nippon Steel Corporation and Nippon Steel Welding Products Engineering Co., Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 169,915, Aug. 9, 1971, abandoned. This application Sept. 14, 1973, Ser. No. 397,329
Claims priority, application Japan, Sept. 29, 1970, 45-84613; Aug. 14, 1970, 45-75575; Dec. 10, 1970, 45-109847
Int. Cl. B23K *9/18*
U.S. Cl. 219—73 **3 Claims**



1. In a method of submerged arc welding to obtain a welded metal with high toughness, the improvement which comprises using in combination:
a. a submerged arc flux having a nearly neutral composition and having a basicity b as expressed by formula (1) herein in the range from about 0.90 to 1.30, wherein

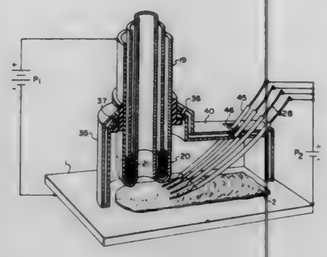
$$b = \frac{CaO+MgO+BaO+Na_2O+K_2O+Li_2O+CaF_2+\frac{1}{2}(MgO+FeO)}{SiO+\frac{1}{2}(Al_2O_3+TiO_2+ZrO_2)}$$

the amounts of the compounds being expressed in weight per cent based on the weight of the flux; and
b. a wire composed of a hollow-core mild steel sheath, said core being packed with a powdered mixture of about 0.04 to 1.0% by weight titanium, about 0.002 to 0.05% by weight boron, and about 4 to 25% by weight of a fluoride compound selected from the group consisting of CaF_2, NaF_2, KF, LiF, M_gF_2, MnF_2, and combinations thereof, all weights being based on the weight of the wire and the balance of the weight of the wire being the steel sheath.

3,924,092
METHOD AND APPARATUS FOR CLADDING A BASE METAL

Gerald G. Lessmann, Pittsburgh, and Albert R. Vaia, Delmont, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 14, 1974, Ser. No. 479,388
Int. Cl.² B23K 9/04
U.S. Cl. 219—76 4 Claims

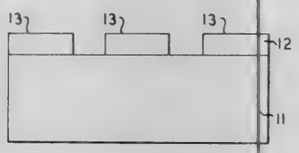


1. Apparatus for overlaying a base metal with overlapping bands of cladding material which are integrally bonded thereto, said apparatus comprising an electrode having a non-consumable tip; cooling means and means for generating a magnetic field disposed within said non-consumable tip; means for positioning said electrode with respect to said base metal to produce a gap between the base metal and the tip of the electrode; means for producing an arc between the tip and said base metal to form a molten surface adjacent said tip; means for supplying cladding metal to the vicinity of said arc and said molten surface at a controlled rate; means for providing a blanket of a suitable gas covering said pool and arc; and means for relatively moving said electrode with respect to said metal in such a manner as to produce overlapping bands of cladding metal which overlays the base metal and are integrally bonded thereto.

3,924,093
PATTERN DELINEATION METHOD AND PRODUCT SO PRODUCED

Martin Feldman, Murray Hill; Denis Lawrence Rousseau; William Robert Sinclair, both of Summit, and Walter Werner Weick, Somerville, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 9, 1973, Ser. No. 358,730
Int. Cl.² B23K 9/00
U.S. Cl. 219—121 LM 6 Claims

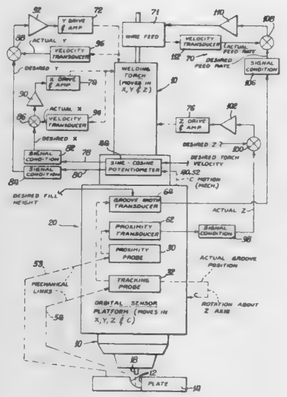


1. Procedure for the fabrication of a substrate-supported pattern-delineated film, in which delineation comprises selectively removing film thereby resulting in exposed substrate, comprising irradiating portions of said film with electromagnetic radiation to remove film within said portions by volatilization thereby baring underlying substrate, characterized in that the said film comprises oxidized iron with said film being sufficiently soluble such that a film thickness of 10,000 Angstrom units is removed by dissolution in an aqueous solution of 6N HCl (6 normal HCl) in one hour at room temperature—e.g., about 20°C)—in which the said electromagnetic radiation is the coherent output of a laser and in which the laser output is pulsed with pulse duration of a maximum of approximately 1 microsecond.

3,924,094
WELDING CONTROL ARRANGEMENT WITH ORBITAL TORCH-MOUNTED TRANSDUCING ASSEMBLY

Howard A. Hansen, Mossville, both of Ill.; Clyde E. Fulton, deceased, late of Tazewell, Ill.; by Minnie L. Fulton, heir, Tazewell, Ill., and by Brenda G. McCann, heir, Boise, Idaho, assignors to John W. Crayton, Washington and Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 15, 1973, Ser. No. 415,939
Int. Cl.² B23K 9/10
U.S. Cl. 219—125 PL 7 Claims

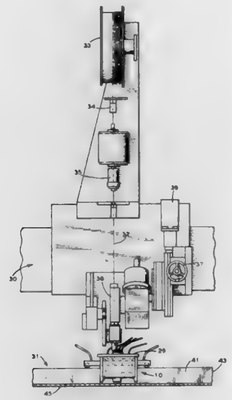


1. Apparatus for welding fixed workpiece means along a groove defined thereby comprising: a mounting body movable along any variable path; welding means connected to the mounting body and generally movable therewith; sensing means associated with the mounting body and generally movable therewith; the sensing means having a portion which may extend into and contact a portion of the groove; the welding means being positioned adjacent the sensing means and positionable adjacent the groove; means for providing movement of the mounting body in any direction to enable the mounting body to be moved thereby along any variable path; the sensing means, upon actuation of the means for providing movement of the mounting body, being movable generally along the groove; and means operatively connecting the sensing means and means for providing movement of the mounting body so that the welding means are movable generally along the groove in response to movement of the sensing means along the groove, so that weld material may be deposited in said groove in a continuous manner, and further comprising means associated with the sensing means for sensing the width of the groove as said sensing means follows the groove, and means operatively connecting the means associated with the sensing means and the welding means for increasing and decreasing the amount of weld material deposited in said groove, in proportion to the sensed increase and decrease in width of said groove, wherein the sensing means comprise a first sensing member having an extended portion thereof which may extend into and contact a portion of the groove, and a second sensing means positioned adjacent the first sensing member and having an extended portion thereof, which may contact the workpiece means adjacent said groove, wherein the welding means comprise an elongated welding electrode, and further comprising a support member pivotally associated with the mounting body so as to be pivotable relative thereto about the longitudinal axis of the welding electrode, and first and second lever arms pivotally fixed to the support member so as to be pivotable about a common axis transverse of the pivoting axis of the support member, the first and second sensing members being fixed to the first and second lever arms respectively.

3,924,095
NARROW-GROOVE WELDING

Matthew J. Lucas, Jr., Fairfield, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed May 29, 1974, Ser. No. 474,478
Int. Cl.² B23K 9/12
U.S. Cl. 219—125 R 9 Claims



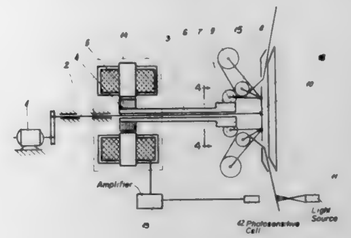
1. In narrow groove welding the combination comprising a work piece having a narrow groove therein with substantially parallel walls and a groove width substantially less than the depth thereof, an electric welding machine positioned exteriorly of the work piece and having a welding head projecting into the groove, means for positioning the welding head in a direction parallel to the depth of the groove, means for controlled relative movement of the work piece and the electric welding machine parallel to the narrow groove, means for feeding a consumable electrode wire through the welding head into the groove,, means for applying electric power through the consumable electrode wire to form an arc between the end of the wire and the work piece to weld join walls of the groove whereby the weld metal fuses both sides of the groove equally in a single pass, control means for regulating the rate of electrode wire feed to the arc, means for maintaining the tip of the electrode wire centered in the groove by transverse movement of the welding head relative to the walls of the groove, means for passing a protecting gas through the welding head to surround the welding arc in the groove, a shield loosely enclosing the welding head and resting on the surface of the work piece, and means for passing a stream of protective gas through the shield to flood the upper portion of the gap in the work piece.

3,924,096
DEVICE FOR AUTOMATICALLY MAINTAINING A ROTARY ELECTRODE COMPOSED OF SINGLE WIRES OF A PREDETERMINED DIAMETER

Nadejda Stefanova Yanakieva, and Dragomirov Papazov, both of Sofia, Bulgaria, assignors to DSO "E L P R O M", Sofia, Bulgaria

Filed Mar. 25, 1974, Ser. No. 454,662
Claims priority, application Burma, Mar. 23, 1973, 23073
Int. Cl.² B23K 9/04
U.S. Cl. 219—130 6 Claims

1. In a mechanism for creating and maintaining a composite rotating electrode, said electrode being formed of a plurality of single wires which emerge from a rotating depositing head mounted upon a driven shaft, the improvement which comprises a holder mounted upon said shaft coaxial thereof adjacent the depositing head of the electrode, a plurality of systems each carrying a supply of individual electrode wires on the holder, each system including means for feeding the wires thereof outwardly mounted upon the holder in equally angularly spaced relationship about the common axis of the shaft and the holder, each of said systems comprising a drum means adapted to carry a coil of electrode forming wire thereon, a pair of pinch rolls for selectively feeding such wire from the

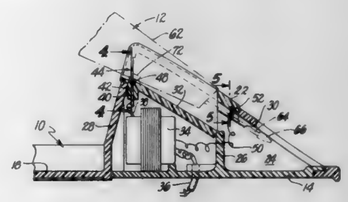


drum, a sleeve mounted telescopically about the shaft coaxial thereof, said sleeve having a worm on the end thereof adjacent the electrode head, a worm affixed to one of the pinch rolls of each of said systems and constantly in mesh with said worm, the worm end and worm gears being so constructed and arranged that the worm gear can be driven by the worm but the worm cannot be driven by the worm gear, whereby the sleeve normally rotates in the same direction and at the same speed as the shaft and the holder, and means for selectively changing the speed of rotation of the sleeve with respect to the shaft so that the pinch rolls feed individual wires outwardly of the electrode head.

3,924,097
STAND FOR CHARGING AN ELECTRIC TOOL AND THE COMBINATION OF THIS STAND WITH SUCH A TOOL

Alvis R. Knowles, Carson, and Harold S. Foster, Huntington Beach, both of Calif., assignors to Eldon Industries, Inc., Hawthorne, Calif.

Filed Dec. 17, 1973, Ser. No. 425,240
Int. Cl.² H05B 1/00; H01M 10/46
U.S. Cl. 219—242 9 Claims



1. In a stand for supporting an electric tool having a contact member on the upper part thereof and a contact member on the lower part thereof, said tool including electrical utilization means connected to said contact members, and for supplying electricity to contact members on said tool the improvement which comprises:

first and second spaced electrical contact elements located on said stand, said contact elements being spaced apart, said first contact element facing upwardly, said second contact element facing downwardly, so that when said tool is supported on said stand said contact member on the lower part of said tool engages said first electrical contact element and so that said contact member on the upper part of said tool engages said contact element, and

cradle means on said stand for regulating the position of said tool on said stand and so positioned with respect to said contact elements that said tool can only be supported on said stand with said contact elements so engaged with said contact members so that a portion of said tool projects outwardly of said cradle means, away from the side of said first contact element remote from said second contact element, said portion being sufficiently heavy and said contact members being so positioned relative to the center of gravity of said tool so that the contact members of said tool are held in engagement with said contact elements by the force of gravity, and

means for connecting said contact elements on said stand to an external source of power.

3,924,098

HEATING ELEMENT, METHOD AND COMPOSITION

Stanley Austin Dunn, Madison, Wis., assignor to Bjorksten Research Laboratories, Inc., Madison, Wis.

Continuation-in-part of Ser. No. 242,436, April 10, 1972, abandoned. This application Dec. 3, 1973, Ser. No. 421,073

Int. Cl.[2] F24H *9/02*

U.S. Cl. 219—345 **4 Claims**

1. A method of making an electrical heating element which comprises the combination of the steps of:

providing a tailings mud comprising by weight on a dry basis 40 to 70 percent of silica, 10 to 20 percent of alumina and 10 to 20 percent of calcia, and

mixing said tailings mud with from 4 to 30 percent by volume of particles selected from iron and steel,

forming said mixture into a pre-selected shape,

firing said pre-selected shape at from about 940° C. to about 1,200° C. to cause said mixture to coalesce,

cooling and resultant article,

abrading portions of the article to which electrodes are to be attached, and

attaching electrodes to said abraded areas to provide said electrical heating element.

3,924,099

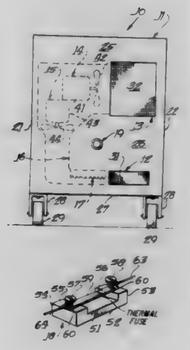
FORCED CIRCULATION ELECTRIC HEATER

William W. Housel, 2423 Brady St., Davenport, Iowa 52803

Filed Nov. 4, 1974, Ser. No. 520,419

Int. Cl.[2] H05B *1/00*; **F24H** *3/04*; **H01H** *37/76*

U.S. Cl. 219—371 **1 Claim**



1. A forced circulation electric heater comprising, in combination:

a housing having opposed side wall surfaces, opposed front and back wall surfaces, a top surface, and a horizontal flat bottom surface;

wheels mounted on said bottom surface for ease of transportation of said housing between locations of usage;

an inlet port disposed in said front surface closely adjacent the bottom edge thereof;

an outlet port disposed in said front surface at the top portion thereof;

an airflow passageway disposed interiorly of said housing and interconnecting said inlet port and said outlet port;

a first electric motor mounted in said passageway and having a motor shaft projecting horizontally outwardly therefrom in the direction of said outlet port and having a fan blade mounted on said shaft for rotation therewith in said passageway;

a second electric motor separate from said first motor and identical to said first motor and mounted in said passageway adjacent said first motor, the second motor having its motor shaft disposed along a vertical axis normal to said shaft of said first motor and projecting vertically downwardly therefrom and having a fan blade mounted thereon for rotation therewith in said passageway;

a pair of identical electrically energized heating coils electrically connected in parallel and mounted in spaced tandem relationship in said passageway downstream of said inlet port and upstream of said second motor and fan blade for heating the air flowing in said passageway from said inlet port to said outlet port;

a U-shaped fuse block disposed in said passageway intermediate said heating coils and said second motor, the fuse block having a bight portion and upright leg portions terminating in a flat top surface, each flat top surface having a threaded aperture extending vertically thereinto; a terminal screw having a threaded shank adapted to be threadedly received in each associated aperture;

a heat sensitive fuse link of a flat elongated rectangular configuration having apertures in opposite ends thereof adapted to be received beneath said terminal screws, said fuse link spanning said bight portion between said leg portions of said fuse block and rest on said flat top surfaces of said leg portions; and said fuse link being electrically connected in series with said heating coils and being selected to melt at a predetermined temperature within said passageway to break the electrical circuit between said terminal screws and de-energize said electrical heating coils to which said fuse link is electrically series connected; and

means for selectively connecting the heating coils and first and second motors to a source of electric power.

3,924,100

MOBILE FOOD SERVING SYSTEM

Anthony C. Mack, 13 Hillview Road, North Reading, Mass. 01864, and George K. Shumrak, 17 Fox Hill Drive, Natick, Mass. 01760

Filed May 9, 1974, Ser. No. 468,404

Int. Cl.[2] F27D *11/02*

U.S. Cl. 219—386 **23 Claims**

1. A mobile food serving system for maintaining food at a desirable serving temperature, said system comprising

a mobile cart having at least one tray supporting rack,

a self-contained electrical energy source carried by and movable with the cart,

a tray removably supported on the rack and having a supporting surface for food containers,

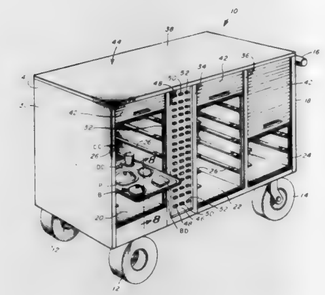
at least one localized contact heat transfer device in said surface with a substantial portion of the surface free of such devices,

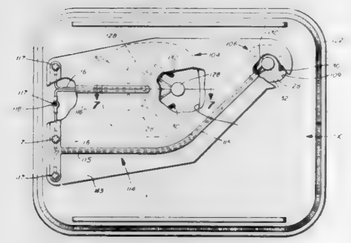
said tray carrying electrical contacts,

each localized heat transfer device comprising an electrical heater in thermal contact with a localized surface area of the tray for good heat transfer thereto,

each tray heat transfer device being electrically insulated and thermally insulated from other portions of said tray so that food can be maintained heated at said localized surface area while other areas of said tray surface can carry food without heating said last-mentioned food,

electrical connecting means including mating electrical contacts on said rack and a switch for supplying energy from the source on the cart to the heat transfer device on the tray surface through said tray contacts to energize said device when the tray is on the rack on the cart,





and a food container arranged in direct contact heat exchange relationship with the localized heat transfer device so as to transmit heat between the device and the food contained therein.

3,924,101

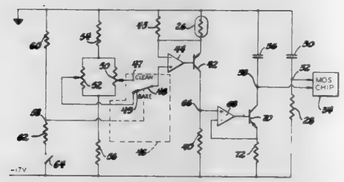
OVEN TEMPERATURE SENSING CIRCUITRY

Dale A. Beard, New Carlisle, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 27, 1974, Ser. No. 527,585

Int. Cl.[2] H05B *1/02*

U.S. Cl. 219—490 **3 Claims**



1. A temperature sensing circuit for an oven operable in either a BAKE or CLEAN mode, said circuit supplying an input to an MOS integrated circuit and comprising temperature sensitive resistor means, first and second potentiometer means for establishing first and second calibration voltages, first switch means having a first position when said oven is in said BAKE mode and a second position when said oven is in said CLEAN mode, means responsive to the position of said first switch means for applying said first calibration voltage across said temperature sensitive resistor means when said first switch means is in said first position and for applying said second calibration voltage across said temperature sensitive resistor means when said first switch means is in said second position, current-to-voltage converter means for developing a voltage proportional to the current flowing in said temperature sensitive resistor means, a capacitor, means for supplying a charging current to said capacitor proportional to the voltage developed by said converter means, means connecting said capacitor with said MOS integrated circuit to provide a discharge path for said capacitor.

3,924,102

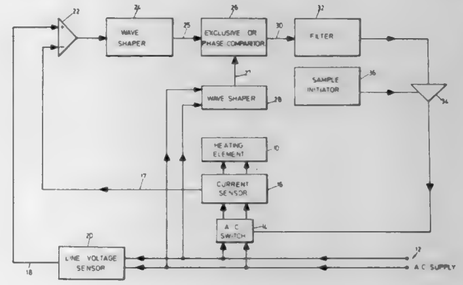
APPARATUS FOR CONTROLLING TEMPERATURE

Nicolaas W. Hanekom, Unic, Bosman St., Paarl, Cape Province, South Africa

Filed May 22, 1974, Ser. No. 472,122

Int. Cl.[2] H05B *1/02*

U.S. Cl. 219—497 **2 Claims**



1. Apparatus for controlling the temperature of an electrical heating element comprising means to connect the full voltage of an alternating electric power source to the heating element, means to derive a first voltage signal proportional to the current being drawn by the heating element, means to derive a second voltage signal proportional to the desired temperature of the heating element, means to compare the two voltage signals, means to disconnect the heating element from the power source when the magnitude of the first voltage signal is less than that of the second voltage signal, sampling means for then briefly connecting the full voltage of the power source to the heating element at periodic intervals for sampling purposes, and means to reconnect the full voltage of the power source to the heating element when the magnitude of the first voltage signal is greater than that of the second voltage signal.

3,924,103

ELECTRICALLY HEATED ALIGNMENT PAD

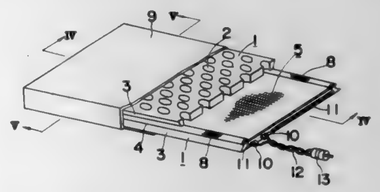
Haruhisa Furuishi, Suita; Yoshihiro Murata, Katano; Hidenori Suzaki, Hirakata; Misao Sumoto, and Hiroshi Imanaka, both of Otsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd. and Toyo Boseki Kabushiki Kaisha, Japan

Filed Oct. 1, 1974, Ser. No. 511,471

Claims priority, application Japan, Oct. 1, 1973, 48-110851

Int. Cl.[2] H05B *3/34*

U.S. Cl. 219—528 **16 Claims**



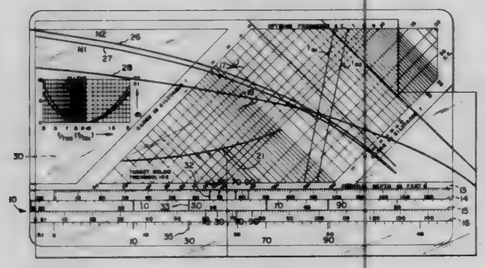
1. An electrically heated alignment pad which comprises at least one flat plate member of thermoplastic resin, and at least

one thin flat electric heater having one surface laying against substantially the whole flat surface of said plate member for heating said plate member to soften said plate member, the other surface of said heater adapted to be held in electrically insulated relationship to the surface supporting it, and to an article to be aligned, said plate member and heater having a structure the thickness of which is reduced when an external compressive force is applied thereto when said plate member is in the heat softened condition, whereby an object through which the compressive force is applied can be moved by the reduction of thickness of the alignment pad for adjusting the position thereof in the direction of the force being applied to the alignment pad; said plate member having a plurality of apertures therein into which portions of said plate member around said apertures flow laterally upon the softening of said plate member when said compressive force is applied thereto; said thermoplastic resin being a block copolymer which comprises a crystalline polyester segment in an amount of 99 to 15 wt% relative to the total weight of said block copolymer and a non-crystalline polymer segment in an amount of 1 to 85 wt% relative to the total weight of said block copolymer, said crystalline polyester segment being a polyester having a melting point not less than 150° C., and being selected from the group consisting of a polyester, polylactone and aromatic polyesterether, said polyester having an acidic component in the form of an aromatic dicarboxylic residue and a glycol component in the form of at least one compound selected from the group consisting of an aliphatic diol residue having 3 to 10 carbon atoms, an aromatic diol residue and an alicyclic diol residue, said non-crystalline polymer segment having a melting or softening point not more than 80°C. in itself and a molecular weight of not less than 400, said block copolymer having a minimum fluidizing temperature of from 130° to 220°C., a brittle point temperature of below −40°C., a compressive stress of from 5 to 350 kg/cm² at 5% deformation thereof, a compressive modulus of from 300 to 7,000 kg/cm², an impact strength of not less than 10 kg.cm/cm and a D-type Shore hardness of not less than 20.

3,924,104
NOISE AND REVERBERATION SONAR RANGE COMPUTER

Daniel Barron, 9326 Edmonston Road, Greenbelt, Md. 20770

Filed June 18, 1971, Ser. No. 154,616
Int. Cl.² G06C *3/00*
U.S. Cl. 235—61 B **4 Claims**



1. A device for determining noise and reverberation that limits sonar performance, which includes,

a base,

a plurality of rows of different scale values extending in parallel across the bottom of said base,

said base including thereon a portion of a logarithmic scale extending across said base at 45° angle above said scale values,

said logarithmic scale lines extending to the right and upwardly representing depth in feet,

said depth values indicated along the bottom of said logarithmic scale,

said logarithmic scale lines extending upwardly and to the left representing range values in kiloyards,

said range values aligned along the sides of said logarithmic scale,

a cursor positioned over said base for linear movement relative to said base,

said cursor including thereon three curved lines and a plurality of vertical parallel lines,

said vertical lines relating said curved lines to depth and range in accordance with probability of detection,

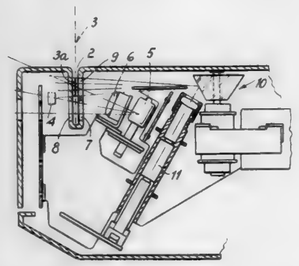
said vertical lines aligning with different rows of said plurality of rows of different scale values on said base, and

a single probability line on said cursor that extends across the total number of rows of said plurality of rows of different scale values on said base.

3,924,105
DEVICE FOR OPTICALLY READING CODED IDENTITY CARDS AND THE LIKE

Teresio Gassino, Ivrea, and Gianni Colombo, Sesto Calende, both of Italy, assignors to Tesalon Anstalt, Vaduz, Liechtenstein

Filed May 17, 1974, Ser. No. 471,078
Claims priority, application Switzerland, May 18, 1973, 7099/73
Int. Cl.² G06K *7/10, 9/13*
U.S. Cl. 235—61.11 E **3 Claims**



1. A device for optically reading coded identity cards and the like, comprising a slot into which an identity card can be inserted sideways, an element for detecting the presence of said identity card in said slot, a window in said slot arranged to face at least the coded zone of said identity card, a light source for illuminating said coded zone, a rotating mirror arranged to read said zone, a photodiode for collecting the images fed to it by said rotating mirror and to emit a signal which represents said images in a seriliazed configuration, and a unit for visualizing said signal, wherein said mirror is a pyramidal mirror having lateral faces arranged differently inclined to the axis of rotation of said pyramidal mirror so as to make readings of coded zones disposed at different levels on said identity card.

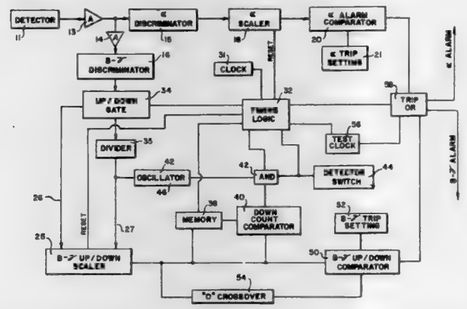
3,924,106
BACKGROUND COMPENSATION FOR A RADIATION LEVEL MONITOR

Donald J. Keefe, Lemont, Ill., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Oct. 31, 1974, Ser. No. 519,491
Int. Cl.² G06M *3/14;* **G01T** *1/00*
U.S. Cl. 235—92 PC **5 Claims**

1. In a radiation level testing device including a radiation detector for producing radiation pulses in response to radiation detected thereby and a switch which develops a switch signal when activated to initiate a radiation level test, an apparatus for developing background compensation, comprising:

an up-down counter having first and second input terminals, said up-down counter being responsive to signals applied to said first input terminal to count in a negative direction and signals applied to said second input terminal to count in a positive direction, a signal gate coupling the radiation detector to said first and second input terminals, a timing circuit coupled to said signal gate, said up-down counter and the switch, in the absence of the switch signal said timing circuit acting to develop periodically a first timing signal having a period T_1 and causing said up-down counter to reset to zero at the beginning of the period T_1, said signal gate being responsive to said first time signal to couple said radiation pulses to said first input terminal, a memory circuit coupled to the switch, said timing circuit and said up-down counter, and being capable of



generating pulses, said memory circuit being responsive to the switch signal occurring during the period T_1 of said first timing signal to apply pulses to said first input terminal until the count of said up-down counter is equal to the lowest value of the count of said up-down counter during the period T_1 of the previous first timing signal, said timing circuit being responsive to the switch signal to cause said signal gate to couple the radiation pulses to said second input terminal after said up-down counter has ceased down-counting, and a first comparator circuit coupled to said up-down counter and said switch and being responsive to a count in said up-down counter greater than a predetermined value within a period T_2 after said signal gate circuit couples the radiation pulses to said second input terminal to generate an alarm signal.

3,924,107
THE PATH OF A VEHICLE METHOD AND APPARATUS FOR RECORDING

Hideo Sakai, No. 625, Ikemodai, Takatsu-cho, Tsuchiura, Tbaragi, Japan

Continuation-in-part of Ser. No. 279,357, Aug. 10, 1972, abandoned. This application Mar. 1, 1974, Ser. No. 447,415
Claims priority, application Japan, Aug. 11, 1971, 46-60266
Int. Cl.² G01S *5/16;* **G06G** *7/22*
U.S. Cl. 235—150.2 **2 Claims**

2. An apparatus, for determining the path of travel of a vehicle in relation to a base line bounding a test zone, comprising:

a. two rotatable mirros each having its axis of rotation normal to said test zone, said mirros having their respective axes of rotation at spaced points on said base line,

b. two light-beam producing means disposed at spaced positions adjacent to said base line and each adapted to cast its beam onto a respective one of said rotatable mirros,

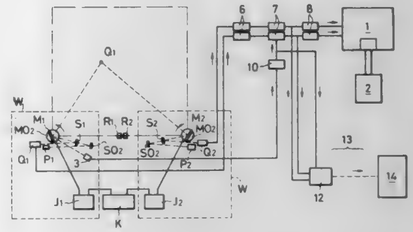
c. two stationary reflectors disposed on said base line and each positioned to reflect a beam received from a respective one of said rotatable mirros,

d. light beam reflecting means mounted on a test vehicle to be moved over said test zone,

e. motor means for rotating said rotatable mirrors in synchronism,

f. light-beam-receiving means disposed adjacent to said base line to receive light beams from said rotating mirrors,

g. a pair of digital timers responsive to said respective light beam receiving means for measuring time intervals between the mount when a light beam from each rotating mirror strikes the respective stationary reflector, and the



moment when said light beam strikes said vehicle mounted reflecting means,

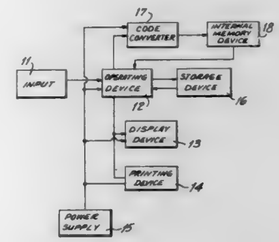
h. an electronic computer means connected to said digital timers for processing said time intervals to produce *x*- and *y*-coordinate information, and

i. means connected to said computer responsive to said *x*- and *y*-coordinate information for plotting functions of movement of the vehicle on the test zone.

3,924,108
CASH REGISTER

Koichi Nakamura, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 16, 1974, Ser. No. 533,425
Int. Cl.² G06F *13/00*
U.S. Cl. 235—152 **5 Claims**

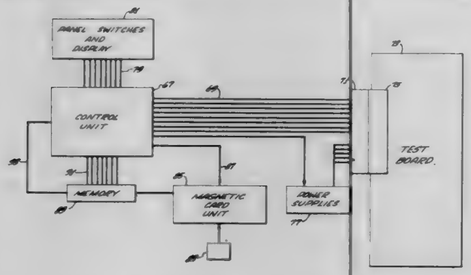


1. An electronic cash register having a limited internal storage memory adapted to store a predetermined number of classification code storage locations, the improvement comprising input means adapted to produce classification code signals representative of a plurality of classification codes in excess of the predetermined number of storage locations in said memory, and conversion means adapted to receive said classification code signals and selectively apply certain of said classification code signals to said memory for storage in said memory locations.

3,924,109
AUTOMATIC CIRCUIT CARD TESTING SYSTEM

Jai Hun Jhu, Huntington Beach; George H. Wells, Santa Ana; Thomas J. Mulder, Costa Mesa, and Don E. McDonald, Huntington Beach, all of Calif., assignors to Technology Marketing Incorporated, Santa Ana, Calif.

Filed July 22, 1974, Ser. No. 490,672
Int. Cl.² G05B *23/00;* **H03K** *5/18*
U.S. Cl. 235—153 AC **17 Claims**



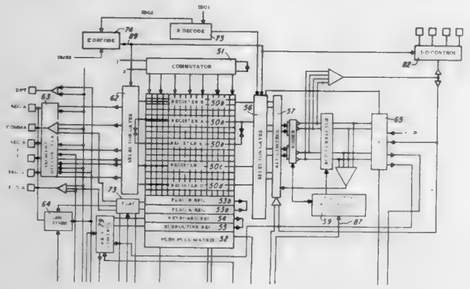
1. Apparatus for automatically testing a variety of different digital electronic logic circuits, comprising:
a master clock;
a pulse generator responsive to said master clock for producing synchronized input signals for said logic circuits;
a connector having multiple independent electrical contacts for connecting said apparatus to said circuits;
comparator means responsive to said master clock for comparing output signals from said logic circuits with signals representing proper operation of said logic circuits;
a plurality of switching means connected to said connector contacts, said comparataor means and said pulse generators;
a control unit for sequencing said pulse generators, switching means and comparator means to produce input signals on selected ones of said connector contacts and compare output signals from selected ones of said connector contacts;
a first plurality of manually actuated switches each labeled in correspondence with one of said multiple connector contacts;
a second plurality of manually actuated switches for designating input pins, output pins, and sequences of input data signals for a specific one of said variety of different circuits; and
means responsive to said first and second plurality of manually actuated switches for storing data and for inputting data into said control unit, said data defining:
a. a sequence of operation of said switching means;
b. a sequence of operation of said pulse generator; and
c. a sequence of operation of said comparator means.

3,924,110
CALCULATOR SYSTEM FEATURING A SUBROUTINE REGISTER

Michael J. Cochran, Richardson, and Charles P. Grant, Jr., Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 13, 1973, Ser. No. 397,056
Int. Cl.² G06F *9/20*
U.S. Cl. 235—156 **6 Claims**

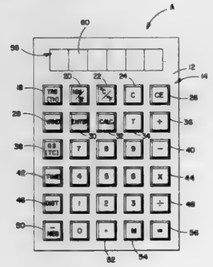
1. In an electronic calculator system implemented on at least one semiconductor chip, having a clock system for providing cycle and sub-cycle timing, instruction memory means for storing instructions, address register means for addressing the instruction memory means, and input means for receiving external commands, ultimately as addresses of the instruction memory means, the improvement comprising:
a. keyboard storage means, operatively connected to the input means for storing multi-bit instruction memory addresses and selectively connected to the address register means for transmitting the memory addresses;
b. sub-routine storage means, selectively connectable only to the keyboard storage means, for receiving and storing memory addresses, and for selectively transmitting memory addresses back to the keyboard storage means; and
c. control means, operatively connected to the address register means, the keyboard storage means, the sub-routine storage means, and to the instruction memory means, responsive to a selected instruction word from the instruction memory means for causing the transfer of the contents of the keyboard storage means to the address register means and to the subroutine storage means and, under the control of a selected instruction word, from the sub-routine storage means to the keyboard storage means.



3,924,111
ELECTRONIC CALCULATORS FOR NAVIGATIONAL PURPOSES

Charles R. Farris, 235 E. Hazel St., Inglewood, Calif. 90302

Filed Sept. 25, 1974, Ser. No. 509,072
Int. Cl.² G06F *15/50, 9/18*
U.S. Cl. 235—156 **17 Claims**

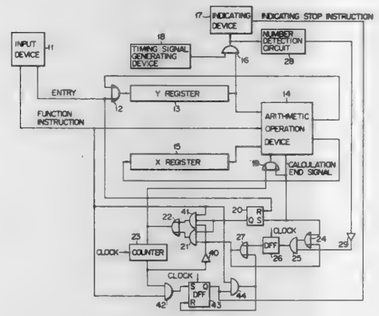


1. An electronic hand-held pocket-sized portable calculator for aiding the solution of navigational-type problems encountered in the navigation of airborne equipment, said calculator comprising:
a. first manually operable input means having a plurality of manually operable data input elements for introducing navigational-type data,
b. second manually operable input means for introducing a first instructional command to enable a computation based on any of time, speed or distance functions based on said introduced nagivational-type data,
c. third manually operable input means for introducing a second instructional command to enable a ground speed, air speed or wind vector function computation based on said introduced navigational-type data,
d. a fourth manually operable input means for introducing a third instructional command to enable a conversion function computation based on said introduced navigational-type data,
e. first programmed memory means operatively connected to said first, second, third, and fourth input means to receive navigational-type data and said instructional commands,
f. arithmetic control means operatively connected to said first memory means to perform mathematical computations on the data pursuant to the instructional commands,
g. second programmed memory means operatively connected to said arithmetic control means and input means, and
h. display means operatively connected to said second memory means for displaying computational results of the mathematical computations on the navigational-type data to provide a navigational-type solution based on the data input and the introduced instructional commands.

3,924,112
ELECTRONIC CALCULATOR

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Higashiyamato, Japan

Filed July 29, 1974, Ser. No. 492,857
Claims priority, application Japan, July 30, 1973, 48-84967
Int. Cl.² G06F *3/14;* **G06K** *15/18*
U.S. Cl. 235—156 **13 Claims**

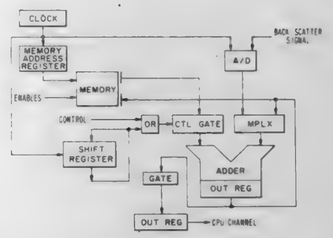


1. An electronic calculator having input means for supplying numerical input information and function instruction, arithmetic operation means for effecting an arithmetic operation on the numerical input information in response to the function instruction, and register means coupled between said input means and said arithmetic operation means and adapted to store the numerical input information and the results of the arithmetic operation, the electronic calculator further including:
indicating means coupled to said register means and adapted to display one of digits of the numerical input information stored in said register means;
first control means coupled to said register means for feeding to said indicating means one of the numerical input information stored in said register means;
second control means coupled to said register means for starting the shift of the numerical input information in said register means when said arithmetic operation means finishes an arithmetic operation, for detecting the arrival of a terminal digit of the numerical input information at a feed-out position of said register means from which the digits of the numerical input information are to be fed successively to said indicating means, and for stopping the shift of the numerical input information when said detection is made;
third control means coupled to said register means for reading out the numerical input information digit by digit from said register means after the terminal digit of the numerical input information reaches said feed-out position of the register means and for shifting succeeding numerical input information digit by digit to said feed-out position of said register means; and
detecting means for detecting the display of the terminal significant digit of said numerical information, to thereby ascertain that all the digits thereof have been displayed.

3,924,113
ELECTRON BEAM REGISTRATION SYSTEM

Charles D. Gill, Pleasant Valley, and Philip M. Ryan, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 8, 1973, Ser. No. 368,384
Int. Cl.² G06F *15/34;* **H01J** *37/28*
U.S. Cl. 235—181 **14 Claims**



8. Apparatus for providing the true position of a noise corrupted signal comprising:
means for sampling said noise corrupted signal and providing a binary value representative of the amplitude of the sampled noise corrupted signal;
adder means operatively associated with and responsive to said means for sampling, said adding means also being operatively associated with and responsive to binary signals provided by an electronic memory;
said adder means adding the data contained in a selected address of memory to the sampled noise corrupted signal and providing said result to the said same selected address of electronic memory;
a second electronic memory storing a predetermined binary pattern;
gating means electrically connected between said first electronic memory and said adding means for transferring data from said first electronic memory to said adding means under the control of said second electronic memory, and
output means for providing the output of said adding means to a computing means for determining the center of a waveform representative of the binary output of said adding means.

3,924,114
ILLUMINATED YO-YO

Gil C. Sanchez, 2915 Miles Ave., Bronx, N.Y. 10465

Filed July 14, 1972, Ser. No. 271,676
Int. Cl.² F21V *33/00;* **A63H** *27/12, 33/26*
U.S. Cl. 240—6.4 R **1 Claim**

1. An illuminated yo-yo comprising a pair of hollow shell sections each having a removable cover and formed of translucent material and joined together by an axle to define a groove for receiving a coil of string, and a light system disposed in each shell section to produce a blinking light when the yo-yo is caused to rotate, each light system comprising:
A. a cylindrical battery disposed in said shell along the diameter thereof, said battery having a positive pole at one end and a negative pole at the other end,
B. a light bulb fixedly disposed adjacent one side of the battery in parallel relationship therewith to define a nar-

row space therebetween, said bulb having an envelope containing a filament, base contact and a tip contact, said shell having integral tabs and other means integral with the shell to maintain the position of the battery and of the bulb while exposing the base contact of said bulb in said narrow space,

C. a first conductive strip of resilient material, one end portion of which engages one pole of said battery, the other end portion engaging the tip contact of the bulb, and

D. a second conductive strip of resilient material, one end portion of which engages the other pole of said battery, the other end portion extending into the space between the battery and the exposed base contact and being normally out of engagement with said base contact, said other end portion being caused by centrifugal force intermittently to engage said contact in the course of yo-yo rotation.

3,924,115

ELECTROMAGNETIC PICK UP TOOL WITH BUILT-IN LIGHT

Harold E. Hampton, and Leonard D. Ellard, both of Ogallala, Nebr., assignors to 3 B & D Products, Incorporated, Ogallala, Nebr.

Filed June 14, 1974, Ser. No. 479,576
Int. Cl.² F21L *7/00*
U.S. Cl. 240—6.4 R **15 Claims**

1. Portable apparatus for locating and retrieving magnetically attractable objects from otherwise inaccessible locations comprising:

a hand-held unit;

at least one battery internally carried by said unit to provide a source of electrical current;

an incandescent light bulb carried internally by said unit;

a first switch means carried by said unit for selectively applying electrical current from said at least one battery to said light bulb;

a flexible member having two ends, one end being connected to said unit adjacent said light bulb;

a flexible light conduit carried internally of said flexible member for conveying light from said light bulb through the length of said flexible member to exit the second end of said flexible member;

an electromagnet carried by the second end of said flexible member radially outward of said conduit, said electromagnet having a cross-sectional configuration which approximates the cross-sectional configuration of said flexible member and a sharply curtailed lateral magnetic flux field whereby the electromagnet is not attracted laterally to magnetically attractable objects; and

a second switch means carried by said unit for selectively applying electrical current from said at least one battery to said electromagnet.

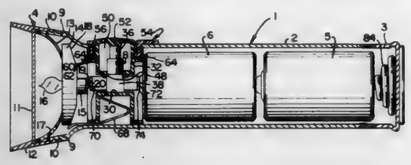
3,924,116

FLASHLIGHT HAVING A PUSH BUTTON SWITCH MEANS

Robert E. Brindley, New York, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sept. 4, 1974, Ser. No. 503,094
Int. Cl.² F21L *7/00, 15/00*
U.S. Cl. 240—10.6 R **10 Claims**

1. A flashlight comprising a lens and reflector unit having a front open end adapted to be detachably mounted to a battery casing and having a lens, a lens ring, a lamp holder adapted for accommodating a lamp and containing a first contact means therein; a battery casing provided with a first open end adapted to receive battery means and adapted to be detachably mounted to an end cap for securing said battery means therein, a second open end at the opposite end thereof adapted to be detachably mounted to the front open end of the lens and reflector unit, and wherein second contact means are provided for electrically connecting the interior vicinity of the end cap to said first contact means; a push button switch fixedly secured on a mounting bracket disposed within the second open end of the battery casing with the button member of the switch disposed within an opening in the wall of the battery casing at the vicinity of the second open end thereof and having a flexible boot member disposed and secured over



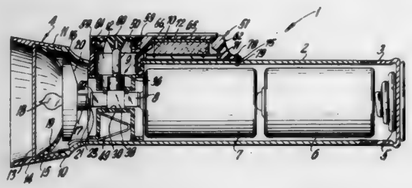
said opening so that upon being depressed, the boot will in turn depress the button member of the switch; and third contact means adapted through activation of the push button switch in the presence of a lamp bulb and battery means assembled in the flashlight to complete or interrupt the continuity of an electrical circuit between the lamp bulb and the battery means.

3,924,117

FLASHLIGHT HAVING A MAGNET-SWITCH COMBINATION

Robert E. Brindley, New York, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sept. 26, 1974, Ser. No. 509,722
Int. Cl.² F21L *7/00, 15/00*
U.S. Cl. 240—10.6 R **8 Claims**



1. A flashlight comprising a lens and reflector unit having a front open end adapted to be detachably mounted to a battery casing and having a lens, a lens ring, a lamp holder adapted to accommodate a lamp and containing a first contact means therein; a battery casing provided with a first open end adapted to receive a battery means and adapted to be detachably mounted to an end cap for securing battery means therein, a second open end at the opposite end thereof adapted to be detachably mounted to the front open end of the lens and reflector unit, and wherein second contact means are provided for electrically connecting the interior vicinity of the end cap to said first contact means; a push button switch fixedly secured on a mounting bracket disposed within the second open end of the battery casing with the button member of the switch disposed within an opening in the wall of the battery casing adjacent the second open end thereof; a housing member substantially disposed on the outer surface of the battery casing and having an opening disposed therein with magnetic means disposed in the surface of said housing member adjacent said opening, said housing member aligned and secured to the battery casing such that the opening in said housing member is aligned with the opening in the wall of the casing so as to accommodate the button member of the switch disposed in the opening in the wall of the casing; a flexible boot member disposed and secured over the opening in the housing member so that upon being depressed, the boot will in turn depress the button member of the switch; and third contact means adapted through actuation of the push button switch in the presence of a lamp and battery means assembled

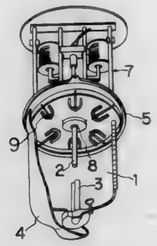
in the flashlight to complete or interrupt the continuity of an electrical circuit between the lamp and the battery means.

3,924,118

ARC LAMP FOR A WEATHERMETER AND PROVIDED WITH MAGNET MEANS

Shigeru Suga, Yoyogi 5-20-2, Shibuya, Tokyo, Japan

Filed Jan. 14, 1975, Ser. No. 540,974
Claims priority, application Japan, Oct. 3, 1974, 49-113354
Int. Cl.² F21K *5/00*
U.S. Cl. 240—11.2 A **3 Claims**



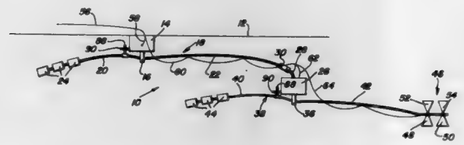
1. In an arc lamp, particularly for use in a weathermeter, and having a radiation portion which includes a glass globe, carbon electrodes within the globe one of which is movable, an electrode support plate covering the globe and having a gas-tight bushing therein through which the movable electrode extends, the improvement comprising magnet means disposed on the inner surface of said support plate within said globe for collecting in the vicinities of the magnetic poles of said magnet means ashes being produced by the combustion of said carbon electrodes during the carbon arc discharge radiation to prevent diffusion of said ashes and preventing adhesion of said ashes to light transmitting portions of said glass globe, thereby obtaining undimmed transmitted light.

3,924,119

ROTATIONAL LIGHTING SYSTEM

Murray Tovi, 585 West End Ave., New York, N.Y. 10024

Filed Aug. 9, 1974, Ser. No. 496,191
Int. Cl.² F21V *21/00*
U.S. Cl. 240—52 R **14 Claims**



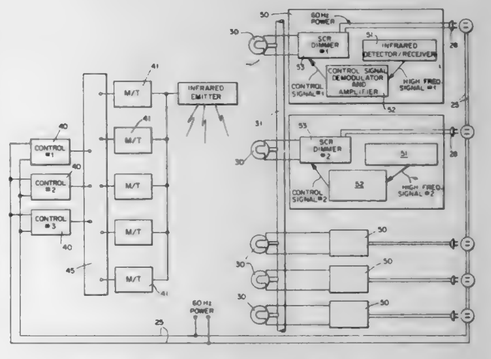
1. A horizontal, remotely controlled lighting system in which a source of illumination can hover over substantially any given region of an area to be illuminated, the lighting system comprising: a first motor element adapted to be fixedly mounted relative to the area to be illuminated, said first motor element having a first rotable motor shaft; a first elongated support arm having first and second ends, said first support arm being mounted on said first motor shaft intermediate its first and second ends, for rotation with said first motor shaft, and in a substantially horizontal plane; a second motor element suspended from the first end of said first support arm, said second motor element having a second rotatable motor shaft; a second elongated support arm having first and second ends, said second support arm being mounted on said second motor shaft intermediate its first and second ends, for rotation with said second motor shaft, and in a substantially horizontal plane; lighting means mounted at the first end of said second support shaft; counterweight means mounted at the second end of said second support arm, weighted and positioned so that said second support arm, said counterweight means and said lighting means are in substantial horizontal balance about said second motor shaft; second counterweight means mounted at the second end of said first support arm, weighted and positioned so that said first support arm, carrying the associated second motor element, second support arm, second counterweight means and lighting means, is in substantial horizontal balance about said first motor shaft; and control means for independently controlling the operation of said first and second motor elements and thereby the respective rotatable motor shafts, and said lighting means; and wherein the distance between the first end of said first support arm and the first motor shaft is substantially equal to the distance between the first end of said second support arm and said second motor shaft.

3,924,120

HEATER REMOTE CONTROL SYSTEM

Charles H. Cox, III, 38 Lakehill Ave., Arlington, Mass. 02174

Continuation-in-part of Ser. No. 230,378, Feb. 29, 1972, abandoned. This application Sept. 14, 1973, Ser. No. 397,219
Int. Cl.² H04B *9/00*
U.S. Cl. 250—199 **11 Claims**



1. In a theatre system having a plurality of theatre instruments, an optimal control system for simultaneously operating select ones of said instruments at any level in the operational range thereof while maintaining optimal flexibility in location of said instruments, said control system comprising:

a. a plurality of instruments located at respective positions in the theatre, each having a different identification code and each including a photosensitive detector, a digital signal decoder, and an actuation control means;

b. a source of signals, said signals representing specified variations in the operation of select ones of said instruments;

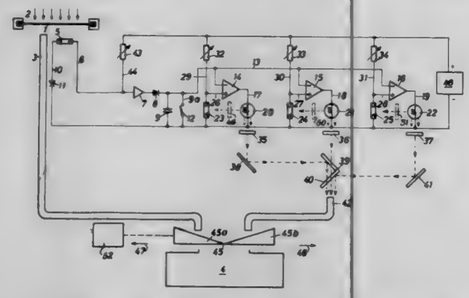
c. means for converting said signals from said source to a predetermined digitally coded signal, said code being conditioned to energize actuation control means to bring said instruments selectively to desired operating levels, said means for converting including means for multiplexing signals for a plurality of instruments into an aggregate digital signal of predetermined format to associate control information for a given one of said instruments with the corresponding identification code;

d. optical transmission means including means for translating said aggregate signal into infrared energy, and at least one continuous optical transmission path between said means for translating and each of said photosensitive detectors, whereby transmitted aggregate signals from said optical transmission means contain all actuation control level change information for said theatre, and individual ones of said instruments are conditioned to extract corresponding infrared control signals and to reject infrared control signals which correspond to other ones of said instruments.

3,924,121
PROCESS AND APPARATUS FOR UNDERCOMPENSATING PHOTOGRAPHIC COLOR PRINTING

Siegfried Barbieri, Brixen, Italy, assignor to Durst AG. Fabrik Fototechnischer Apparate, Bolzano, Italy

Filed Jan. 21, 1974, Ser. No. 435,249
Claims priority, application Italy, Jan. 26, 1973, 4807/73
Int. Cl.[2] G03B *27/78*; **G01J** *3/34*
U.S. Cl. 250—226 **26 Claims**

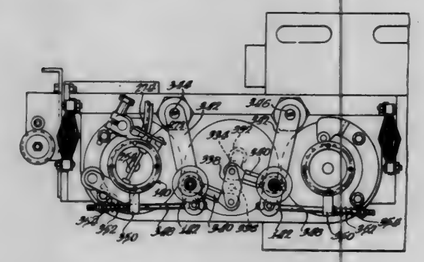


1. A process for undercompensating the color balance obtained in making colored prints from colored photographic transparencies by a photographic color printing apparatus having a measuring head which terminates the exposures of the printing material to the light of the primary color components in the printing light when predetermined amounts of the printing light of the primary color components transmitted through the transparency are detected by the measuring head, comprising the steps of transmitting the printing light through the transparency onto the measuring head, and impinging supplemental light outside of the printing light on the measuring head together with the printing light transmitted through the transparency, and the supplemental light having primary color components in a predetermined ratio which is independent of the color content of any particular transparency, whereby the balance of the primary color components in the colored prints is undercompensated relative to the predetermined amounts of the primary color components in the printing light which are detected by the measuring head.

3,924,122
ROTARY DRIVE ELEMENT WITH OPTICAL SENSOR

Jack A. Russell, Spring Lake; Goodrich B. Pratt, Grand Haven, and Anthony J. Gretzky, Muskegon, all of Mich., assignors to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 69,768, Sept. 4, 1970. This application Dec. 20, 1973, Ser. No. 426,505
Int. Cl.[2] H01J *3/14*
U.S. Cl. 250—236 **4 Claims**

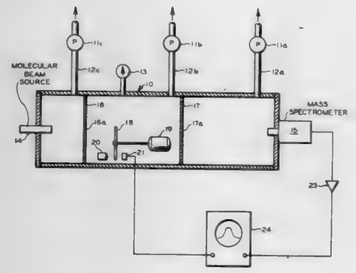


1. In a random access information retrieval system wherein information bits are stored at a plurality of different locations on a strip like medium, the combination comprising: means, including a medium engaging rotary drive element, for positively engaging and driving the medium through an information retrieval station; means for selectively controlling said drive means for causing the same to dispose a selected bit of information on the medium at the retrievel station; and means including a portion of said medium engaging rotary drive element and rotatable therewith, for optically sensing code information on the medium disposed between the bits of information thereon for continuously providing information identifying the bit of information then in the retrieval station.

3,924,123
MEASUREMENT OF SECOND VIRIAL COEFFICIENTS

Thomas W. Schmidt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 6, 1974, Ser. No. 467,251
Int. Cl.[2] G01N *11/02*
U.S. Cl. 250—251 **9 Claims**

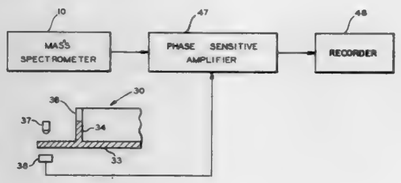


1. The method of obtaining data from which the second virial coefficient of a gaseous mixture of first and second constituents can be calculated, which method comprises the steps of passing a molecular beam of a gaseous mixture of said first and second constituents to be analyzed through a time of flight zone from a source to a detector spaced from the source, separately measuring the velocity distribution of each of said first and second constituents of the beam, and measuring the temperature of the constituents forming the beam, such temperature measurement being conducted independently of the measured velocity distribution step.

3,924,124
ISOTOPE ANALYSIS

John A. Favre, and Thomas W. Schmidt, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 3, 1974, Ser. No. 475,774
Int. Cl. H01j *39/34*
U.S. Cl. 250—281 **6 Claims**



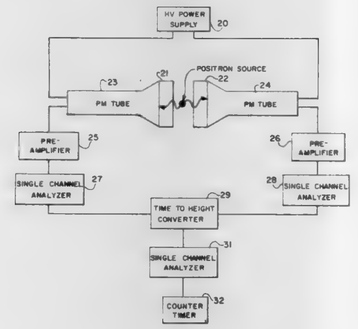
1. Analysis apparatus comprising:
a mass spectrometer having an inlet to receive samples of gas to be analyzed, said mass spectrometer being capable of providing an output signal representative of a selected isotope in a gas sample introduced into the mass spectrometer;

means to direct a beam of a first gas toward said inlet;
means to direct a beam of a second gas toward said inlet;
shutter means positioned in the two beams;
means to actuate said shutter means so that the two beams are passed to said inlet alternately;
a phase sensitive detector;
means to apply said output signal from said mass spectrometer to said detector;
means responsive to said means to actuate to establish a reference signal of a frequency corresponding to the frequency at which the two beams are alternately passed to said inlet; and
means to apply said reference signal to said detector.

3,924,125
ACTIVATED ALUMINUM TRACER TAG

Kenneth M. Murray, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 20, 1974, Ser. No. 481,289
Int. Cl.[2] G01T *1/16*; **G21H** *5/02*
U.S. Cl. 250—303 **3 Claims**



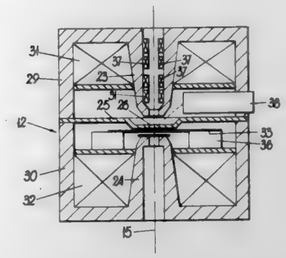
1. A method of treating an aluminum element for the purpose of detecting said treated aluminum in an assembly in the presence of other masking materials; which comprises,
irradiating said aluminum part with X-rays with an energy of at least 23 MeV to produce the reaction $^{27}Al(\gamma,\alpha n)^{2}$-$^{2}Na$.

3,924,126
ELECTRON MICROSCOPES

Kenneth Anderson, Bramhall, and Kenneth Arthur Brookes, Bolton, both of England, assignors to Associated Electrical Industries Limited, London, England

Filed June 26, 1974, Ser. No. 483,126
Claims priority, application United Kingdom, June 28, 1973, 30764/73
Int. Cl.[2] H01J *37/26*
U.S. Cl. 250—311 **13 Claims**

1. A combined condenser and objective lens for an electron microscope comprising:
a. first and second pole pieces, said pole pieces defining, respectively, first and second apertures, said first and second apertures being aligned on a common axis;
b. a third, relatively thin pole piece disposd intermediate of and spaced from said first and second pole pieces for defining respective condenser and objective lens gaps between the first, third, and second pole pieces, said third pole piece defining a third aperture aligned with said common axis;
c. a magnetic yoke coupling said first and second pole pieces and said third pole piece;
d. first and second electrical windings connected to said first and second pole pieces, respectively;



e. power supply means for inducing, in operation of said combined lens, magnetic flux through said magnetic yoke and across said first and second gaps, respectively, and
f. mounting means for mounting a specimen within said second gap.

3,924,127
METAL SCREENS USED FOR INDUSTRIAL RADIOGRAPHY

Jacques Chéret, 64, Avenue Marguerite Renaudin, 92 Clamart; André Nouvet, 13, rue Jules Simon, 75 Paris, and Noël Cocoual, 8, bis Avenue Guillemin, 92 asnieres, all of France

Continuation of Ser. No. 205,567, Dec. 7, 1971, abandoned. This application Nov. 16, 1973, Ser. No. 416,628
Claims priority, application France, Dec. 8, 1970, 70.44141
Int. Cl. H01j *1/54*
U.S. Cl. 250—323 **10 Claims**

1. A cassette for use in radiographic investigation of a specimen, in order to improve the image quality, the specimen being located between a radiation source of X or γ rays, said cassette comprising inside a body, a radiographic film, a front screen in contact with the front surface of the film facing said specimen, a back screen in contact with the rear surface of the film, said back screen being constituted of lead, said front screen being constituted of elemental nickel or an base copper alloy containing nickel, the elemental nickel screen or alloy containing not more than a total of 4% of any other element.

3,924,128
APPARATUS FOR HANDLING FLEXIBLE CONTAINERS FOR LIQUID SAMPLE SPECTROMETRY

Edmund Frank, Chicago, Ill., assignor to Packard Instrument Company, Inc., Downers Grove, Ill.

Division of Ser. No. 259,767, June 5, 1972. This application Dec. 28, 1973, Ser. No. 429,074
Int. Cl. G01t *7/08*
U.S. Cl. 250—328 **9 Claims**



1. In an apparatus for spectrally analyzing test samples containing one or more radioactive isotopes disposed in a liquid scintillator and adapted to handle flexible sample containers formed by joining layered, flexible light-transmissive, polyester film to define a bag portion therein, light tight housing means including a counting station, at least one photomul-

tiplier detection device in said housing and means, for axially shifting said photomultiplier detection device toward and away from said counting station, the improvement comprising, a resilient member surrounding the end of said photomultiplier detection device adjacent said counting station, said resilient member being disposed to contact the flexible sample container disposed in the counting station and surround the entire periphery of the bag portions thereof when said photomultiplier detection device is axially shifted toward the sample container to its preselected position for counting.

3,924,129

METHOD AND APPARATUS FOR CONSTRUCTING A REPRESENTATION OF A PLANAR'S SLICE OF BODY EXPOSED TO PENETRATING RADIATION

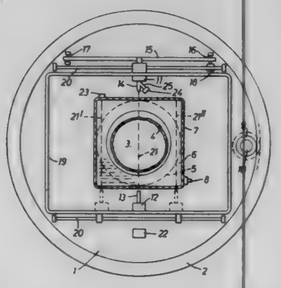
Christopher Archibald Gordon LeMay, Osterley, England, assignor to E M I Limited, Hayes, England

Filed Apr. 18, 1974, Ser. No. 462,104

Claims priority, application United Kingdom, Apr. 25, 1973, 19528/73; Aug. 21, 1973, 39420/73; Oct. 11, 1973, 47507/73

Int. Cl. G01t *1/16*

U.S. Cl. 250—336 **21 Claims**



1. A method of constructing a representation of the variation of absorption of a planar slice of a body with respect to penetrating radiation which comprises the steps of:

a. providing a plurality of sets of *m* beam data signals where *m* is of the order of 50 or greater, the signals of each set being related to the logarithm of the absorption of a corresponding set of substantially parallel beams of said radiation in the plane of said slice, and the sets of signals corresponding effectively to sets of parallel beams, orientated at different angles in said plane,

b. providing a series of factor signals of which the number of terms is of the order of the number *m* of effective beams per parallel set, said factor signals at least after the factor signal of order 5 conforming to a substantially monotonic function,

c. deriving for a particular beam data signal a summation signal by forming the sum of said beam data signal multiplied by the zero order factor signal, the next adjacent beam data signals of the same set multiplied by the first order factor signal, the second adjacent beam data signals of the same set multiplied by the second order factor signal and so on over a desired range,

d. deriving for other beam data signals, some in every set, respective summation signals by repeating method step (c) in respect of each said other beam data signals,

e. forming the sum of summation signals corresponding to beams of different sets intersecting a particular elementary area of the planar slice to produce a signal representing the absorption of said elementary area,

f. repeating method step (e) in respect of other elementary areas of said planar slice, thereby to construct said representation,

g. said substantially monotonic function being such that the signal representing the absorption of any elementary area is successively more accurately compensated for absorption suffered outside the respective elementary area by the beams intersecting the respective elementary area, as successively higher order factor signals multiplied by respective beam data signals are utilised in the formation of said summation signals.

3,924,130

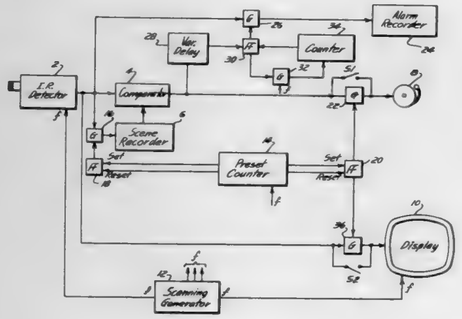
BODY EXPOSURE INDICATOR

Allen Cohen, Orlando, Fla., and Hugo J. Caligiuri, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 12, 1968, Ser. No. 706,750

Int. Cl.² G01J *1/00*

U.S. Cl. 250—342 **8 Claims**



1. In a detector system for detecting the presence of warm bodies in a selected area, the improvement comprising:

detector means for periodically scanning said selected area to detect warm bodies therein, recorder means for periodically recording the signals developed by said detector means, comparator means for comparing the output signals from said detector means with previous signals from said detector means stored in said recorder means, alarm means for generating an alarm signal responsive to a difference signal from said comparator means when said detector output signal differs from said previous detector output signal recorded in said recorder means, and first gating means for selectively gating said difference signal from said comparator means to said alarm means.

3,924,131

METHOD OF AND APPARATUS FOR EXAMINING A BODY BY RADIATION SUCH AS X OR GAMMA RADIATION

Godfrey Newbold Hounsfield, Newark, England, assignor to EMI Limited, Hayes, England

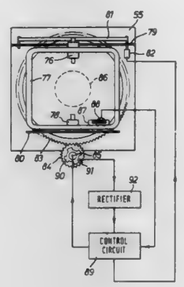
Division of Ser. No. 349,242, April 9, 1973, which is a continuation-in-part of Ser. No. 212,778, Dec. 27, 1971, Pat. No. 3,778,614, which is a continuation of Ser. No. 861,538, Aug. 21, 1969, abandoned. This application May 9, 1974, Ser. No. 468,551

Claims priority, application United Kingdom, Aug. 23, 1968, 40317/68

Int. Cl.² G01N *23/00, 23/02, 23/04*

U.S. Cl. 250—360 **5 Claims**

1. Apparatus utilizing penetrating radiation such as X- or γ-radiation to evaluate a variable absorption coefficient with respect to said radiation in a plane within a body, including a source of said radiation and detecting means for detecting a beam, radiated from said source, after passage through said body in said plane, said detecting means and said source on the one hand and said body on the other hand being relatively movable so that output signals can be obtained representing the absorption by said body of beams at a plurality of angularly and laterally spaced positions, and means for utilizing said output signals to effect said evaluation, said apparatus further comprising a scanning frame on which said source and said detecting means are mounted, facing each other across an aperture in which said body can be positioned so that said beams of radiation pass through said body in said plane, said source and said detecting means being mounted for orbital scanning movement about an axis normal to said plane and also for lateral scanning movement to cause said detecting means to pick up radiation successively from respective beam



paths through the body which are disposed across the lateral extent of said body in said plane, and means for producing interrelated orbital and lateral scanning movements of said source and said detecting means in such a way that for each of a series of successive increments of said orbital movement a lateral scanning movement occurs from which there is derived a set of output signals corresponding to the absorption suffered by said radiation on traversing said beam paths, successive sets of such output signals being derived after said successive increments of orbital movement.

3,924,132

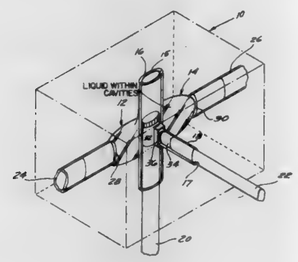
ELEMENT ANALYZER UTILIZING NEUTRON ACTIVATION

Evan E. Koslow, 5 Town Crier Lane, Westport, Conn. 06880

Filed May 30, 1974, Ser. No. 474,395

Int. Cl.² G01T *1/20*

U.S. Cl. 250—361 **38 Claims**



1. Apparatus for the analysis of a specimen wherein a sample is prepared from the specimen and a dielectric medium, said apparatus comprising a base having a portion defining a substantially eliptical cavity therein, means for placing the sample in said cavity, a neutron source positioned to irradiate the sample to emit particles, detector means for detecting photons emitted during the passage of these particles through the medium and for generating a signal in accordance with the occurrence thereof and means operably connected to said detector means for processing said signals.

3,924,133

DEVICE FOR MEASURING DENSITY OF SUBSTANCES BY PENETRATING RAYS

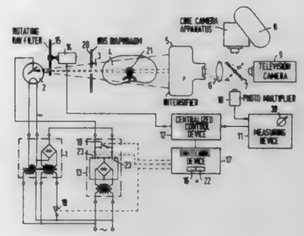
Karl-Hanz Reiss, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 10, 1971, Ser. No. 170,497

Claims priority, application Germany, Aug. 27, 1970, 2042009

Int. Cl.² H05G *1/30*

U.S. Cl. 250—408 **6 Claims**



1. A device for measuring density of substances of living objects, comprising an X-ray tube device adapted to project X-rays upon an object, a ray measuring device adapted to be located behind the object and producing electrical values corresponding to ray intensity values, a generator supplying the X-ray tube with high voltage, a switching device connected with said X-ray tube device and with said ray measuring device and switching a low value of the high voltage which, however, is clearly above the K-absorption edge of the object body, in rhythmical sequence to a higher value, and an actuating device connected with said X-ray tube device and with said ray measuring device and synchronized by the switching frequency to lower the ray intensity during the application of the high voltage value in such manner that for two voltage values behind an average object intensity values are present corresponding to the linear measuring range of said ray measuring device, said ray measuring device integrating for a certain constant time period the crest range of electrical values measured during each time period when the X-ray tube was switched on and forming a quotient from the two values.

3,924,134

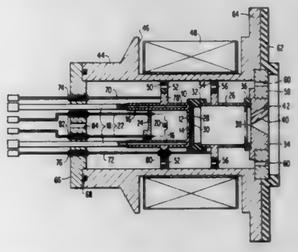
DOUBLE CHAMBER ION SOURCE

Myron F. Uman, Silver Springs, Md.; James R. Winnard, Poughkeepsie, N.Y., and Harold F. Winters, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1974, Ser. No. 528,312

Int. Cl.² G01T *1/20*

U.S. Cl. 250—423 **3 Claims**



1. An ion source comprising a first cylindrical chamber, filament means disposed in said first chamber, a second cylindrical chamber axially aligned with said first cylindrical chamber, wall means separating said first and second chambers and

having aperture means therein, end closure wall means disposed at the opposite end of said second chamber and having extraction orifice means therein, said filament means, said aperture means and said orifice means being axially aligned with each other, voltage supply means connected to said filament means and said first and second cylindrical chambers to maintain a separate arc discharge in each of said chambers and magnetic field generating means surrounding said chambers to provide an axially directed magnetic field.

3,924,135

DIRECT-RESPONSE ULTRAVIOLET DOSIMETER UTILIZING THERMOLUMINESCENT MAGNESIUM OXIDE

Ashok K. Dhar, Niles, Ill.; Larry A. DeWerd, and Thomas G. Stoebe, both of Seattle, Wash., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed Nov. 26, 1974, Ser. No. 527,280
Int. Cl.² G01T 1/11
U.S. Cl. 250—484 6 Claims

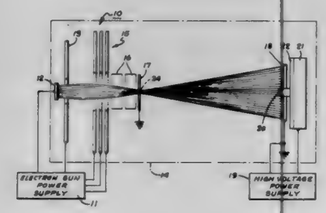
1. A direct response thermoluminescent dosimeter responsive to ultraviolet radiation consisting essentially of nominally pure magnesium oxide.

3,924,136

CHARGED PARTICLE APODIZED PATTERN IMAGING AND EXPOSURE SYSTEM

Louis N. Heynick; Eugene R. Westerberg, both of Palo Alto; Alfred J. Bahr, Mountain View, and Robert E. Lee, Los Altos, all of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Feb. 18, 1975, Ser. No. 550,642
Int. Cl.² H01J 37/12
U.S. Cl. 250—492 A 15 Claims



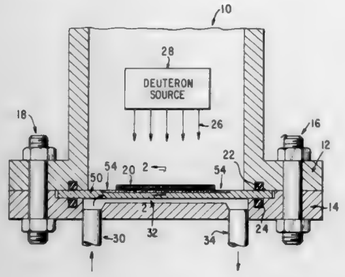
1. A beam forming and imaging system comprising:
charged particle source means of directing charged particles along a path;
a source mask disposed in said path and having at least one aperture therein, whereby charged particles directed along said path pass through the said aperture in said source mask;
a target disposed in said path;
an imaging plate disposed in said path between said target and said source mask, comprising a member opaque to said charged particles and having at least one slit therein, said slit being substantially long in length and relatively narrow in width;
a voltage source connected between said imaging plate and said target and adapted to produce an electrical field therebetween, said electrical field convergent only in a direction parallel to said relatively narrow width, said convergent electrical field present along the substantially long length of said slit, whereby the charged particles in said path are focused by the convergent electrical field to form a one dimensionally converged image of said slit on said target for each aperture in said source mask; and an apodizing mask comprising a member opaque to said charged particles and extending transversely across the said slit in said imaging plate, thereby to divide the said converged image of said slit on said target into at least two segments.

3,924,137

DEUTERIUM PASS THROUGH TARGET

Donald L. Alger, Cleveland, Ohio, assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Aug. 27, 1974, Ser. No. 500,980
Int. Cl.² G21G 4/02
U.S. Cl. 250—499 13 Claims



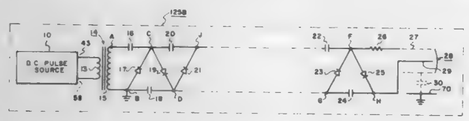
1. For use in neutron generating apparatus including a deuteron source and an accelerator vacuum chamber, an improved neutron emitting target comprising a target layer containing tritium for reaction with deuterons from the deuteron source; an accumulation layer for accumulating deuterons which have passed through said target layer, the thickness of said accumulation layer being such that deuterons which have passed through the target layer come to rest therein; and a nonhydrogenizeable metal support on which said target and accumulation layers are supported, said support having at least one portion of one surface thereof exposed to the accelerator vacuum chamber and said support including means for communicating the accumulation layer with said at least one exposed portion of the surface of said support such that deuterons which are accumulated by said accumulation layer are returned to the accelerator vacuum chamber.

3,924,138

PULSED POWER SUPPLY SYSTEM FOR NEUTRON WELL LOGGING

Eric C. Hopkinson, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 166,791, July 28, 1971, Pat. No. 3,714,468. This application June 30, 1972, Ser. No. 267,780
Int. Cl.² G21G 4/02; H05H 5/00
U.S. Cl. 250—502 9 Claims



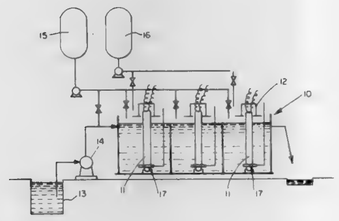
1. In a circuit for pulsing an ion source in an accelerator tube having an anode and a cathode, the improvement comprising:
a voltage multiplier circuit having one output at a first voltage potential and a second output at a second voltage potential, said second output being connected to the anode of said accelerator tube; and
a resistor connected between said first output and the cathode of said accelerator tube.

3,924,139

APPARATUS FOR PHOTO-OXIDATION OF WATER

Michio Hirose; Mitsunobu Otani; Kiyoshi Yamada; Naoyuki Mitani, all of Otsu, and Kiyotugu Tanaka, Shiga, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 321,974, Jan. 8, 1973, abandoned. This application Aug. 12, 1974, Ser. No. 496,584
Claims priority, application Japan, Jan. 7, 1972, 47-4329; Feb. 5, 1972, 47-12953; Apr. 1, 1972, 47-32982; May 26, 1972, 47-51679; May 30, 1972, 47-52938
Int. Cl.² A61L 3/00; B01K 1/00
U.S. Cl. 250—527 7 Claims



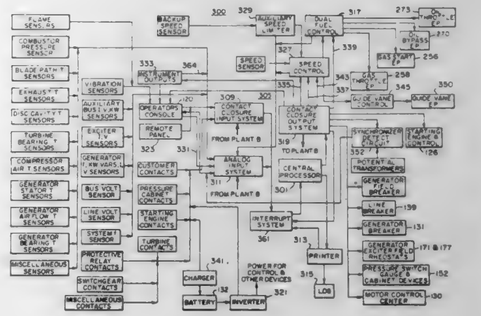
1. Apparatus for purifying waste water by photooxidation reaction which comprises:
a. plural reaction chambers, each reaction chamber having at least one inlet and at least one outlet for water,
b. at least one water passageway connecting the outlet of one reaction chamber with the inlet of a second reaction chamber in order to connect said chambers for sequential treatment of waste water wherein the inlet of the first reaction chamber in said sequence is adapted to be connected to a supply of waste water to be treated, and the outlet of the last chamber in said sequence is adapted to discharge purified water from the apparatus.
c. ultraviolet light sources vertically suspended in said each reaction chamber from the top of said reaction chamber near the center thereof, and having outer surfaces adapted to be immersed in and in contact with the water to be treated,
d. inlets for chemicals or/and oxidizing agent arranged in at least two of said reaction chambers, and
e. gas supply devices disposed in each of said chambers near the bottom of said ultraviolet light source therein, at a distance not further than 10 cm. from the wall of the light source, and arranged to provide a gas flow against those surfaces of said ultraviolet light sources which are adapted to be in contact with the water to be treated, and further adapted to agitate waste water near said light source, so that waste water supplied from the inlet of the first reaction chamber is oxidized and purified in said chambers by ultraviolet light together with suitable oxidizing agent as said water flows from the first reaction chamber to the final reaction chamber through said sequentially arranged chambers and the passageways therebetween, and purified water is discharged from the outlet of the final reaction chamber.

3,924,140

SYSTEM FOR MONITORING AND CONTROLLING INDUSTRIAL GAS TURBINE POWER PLANTS INCLUDING FACILITY FOR DYNAMIC CALIBRATION CONTROL INSTRUMENTATION

Robert A. Yannone, Aldan, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 14, 1972, Ser. No. 234,580
Int. Cl.² H02P 9/04
U.S. Cl. 290—40 9 Claims



1. A gas turbine electric power plant comprising:
a. a gas turbine including compressor, combustion and turbine elements;
b. a generator drivably coupled to said turbine for generating electric power;
c. means for supplying fuel to said gas turbine combustion element;
d. means for selectively coupling said generator to an external power system;
e. means for controlling the operation of said plant including a computer and means for operating said computer to effect control action by said control means in a predetermined manner, said control means also including means for actuating said coupling means when a particular selected parameter of said actuating means reaches a predetermined value to effect coupling of said generator to the external power system;
f. means, responsively coupled to said control means, for operating said fuel supply means to cause fuel to be supplied to said combustion element in controlled quantities, and
g. detection means responsively connected to said actuating means, said coupling means and said control means for monitoring the actual value of said selected parameter at the time said coupling means is actuated and for generating one or more dynamic calibration signals representative of the difference between the predetermined and actual values of said selected parameter for use by said control means.

3,924,141

GAS TURBINE POWER PLANT CONTROL APPARATUS INCLUDING A TWO-SHOT SHUTDOWN SYSTEM

Robert A. Yannone, Aldan, and James J. Shields, Philadelphia, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

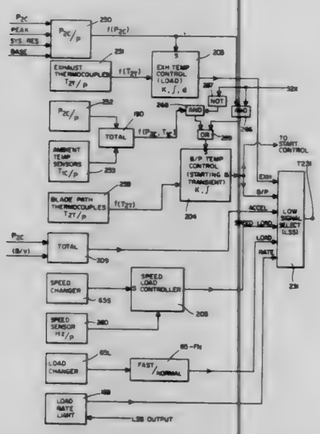
Filed June 20, 1973, Ser. No. 371,627
Int. Cl.² H02P 9/04
U.S. Cl. 290—40 5 Claims

1. A gas turbine electric power plant including a gas turbine having a compressor, combustion and turbine elements, a generator coupled to said gas turbine for drive power, a generator breaker for coupling said generator to a power system, a fuel system for supplying fuel to said gas turbine combustion

element, and a shutdown system for shutting down the operation of said gas turbine, said shutdown system comprising:

a. a plurality of monitoring circuits, each having means for signaling the occurrence of a specified condition in the operation of said turbine requiring shutdown of same;

b. means for shutting down said turbine upon receiving a signal from one of said monitoring circuits;



c. means for enabling automatic restart of said turbine after such a shutdown, when the condition causing shutdown is removed;

d. a count-down counter connected to each of said monitoring circuits such that it is counted down upon each occurrence which causes a shutdown;

e. a timer connected to said counter and adapted to reset said counter after a predetermined time period; and

f. means for disenabling said enabling means when said counter has counted down to a predetermined level.

3,924,142

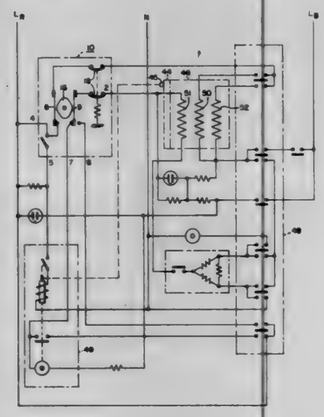
FAIL-SAFE CONTROL

Calvin J. Holtkamp, Mansfield, Ohio, assignor to White-Westinghouse Corporation, Cleveland, Ohio

Filed Apr. 11, 1974, Ser. No. 460,253

Int. Cl.² H05B *1/02*

U.S. Cl. 307—116 **12 Claims**



1. An oven control comprising:

a snap-action switch means adapted to be series connected to an oven heating means for directly controlling the energization of said oven heating means;

a bistable mechanism for controlling said snap-action switch means;

oven temperature responsive means acting upon said bistable mechanism to effect opening and closing of said snap-action switch means in accordance with oven temperature variations;

means for fail-safe operation of said control which are non-operative during normal operation of said temperature responsive means and upon failure of said oven temperature responsive means moves said snap-action switch means to an open position deenergizing said oven heating means.

3,924,143

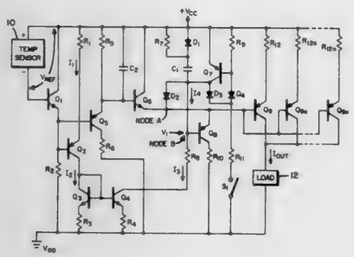
CONSTANT RISE TIME CONTROLLER FOR CURRENT PULSE

James M. Cunningham, St. Paul; Kenneth A. Dorn, Eagan; James A. Howe, Burnsville, and Charles L. Mortenson, Inver Grove Heights, all of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 29, 1974, Ser. No. 527,978

Int. Cl.² H03K *5/12*

U.S. Cl. 307—263 **6 Claims**



1. In a controller for maintaining the rise time of the leading edge of an output pulse independently of the amplitude thereof, the combination comprising:

a first source of a constant amplitude first reference signal; a second source of a varying amplitude second reference signal coupled to said first reference signal for controlling said second reference signal to vary its amplitude with respect to said first reference signal;

a plurality of load transistors, each having a control electrode and a pair of output electrodes, having directly intercoupled control electrodes forming a first node, means coupling each separate first output electrode to said first reference signal and having directly intercoupled second output electrodes;

load means coupled to the directly intercoupled second output electrodes of said load transistors;

a current-mirror circuit including first and second transistors, each having a control electrode and a pair of output electrodes, with their control electrodes directly intercoupled, and the first output electrode of said first transistor directly coupled to said directly intercoupled control electrodes;

a rise time control circuit including first and second branches:

said first branch including a third transistor, having a control electrode and a pair of output electrodes for coupling said second reference signal to the first output electrode of said first transistor and generating an amplified first current signal whose amplitude varies as the amplitude of said second reference signal;

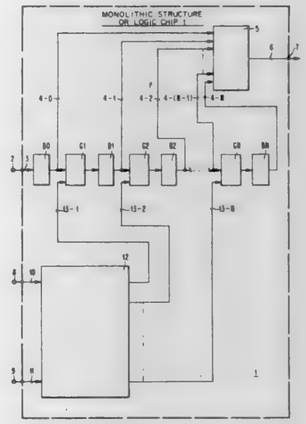
said second branch including serial coupled first capacitor means and first resistor means coupling said first reference signal to the first output electrode of said second transistor and a second node formed intermediate said first capacitor means and said first resistor means;

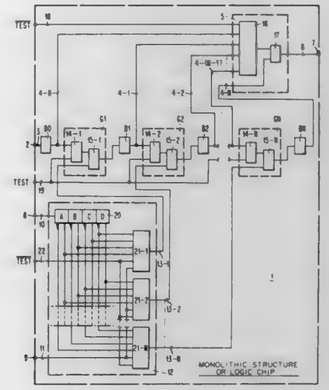
a fourth transistor, having a control electrode and a pair of output electrodes, means for directly coupling its first output electrode to said first reference signal, means for directly coupling its second output electrode to said second node and means including a first diode means for coupling its second output electrode to said first node;

switch means coupled to the control electrode of said fourth transistor and normally keeping said fourth transistor in its conducting state for substantially shorting said second node to said first reference signal as a second current signal flows through the junction of its first and second output electrodes when said fourth transistor is in its normally conducting state or for alternatively charging said first capacitor means at a constant rise time irrespective of the amplitude of said second current signal when said fourth transistor is switched into its non-conducting state.

a single output pin; and

gating means for transmitting to said single output pin the





3,924,144

METHOD FOR TESTING LOGIC CHIPS AND LOGIC CHIPS ADAPTED THEREFOR

Gilbert Hadamard, Saint Jeannet, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 3, 1974, Ser. No. 457,333

Claims priority, application France, May 11, 1973, 73.17606

Int. Cl.² G01R *15/12*

U.S. Cl. 307—303 **8 Claims**

1. A logic chip having high circuit density and wherein said circuitry is arranged and adapted to facilitate testing, said logic chip including:

several functional logic blocks exhibiting a high degree of testability;

a logic block selection input pin;

decoding means responsive to the application thereto via said logic block selection input pin of the address of a given logic block to select said logic block;

a test pattern input pin;

connection means for applying an input test pattern entered via said test pattern input pin to said selected logic block;

output pattern provided by said selected logic block in response to the input test pattern applied thereto.

3,924,145

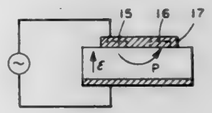
SURFACE WAVE DEVICE HAVING A FERROELECTRIC SUBSTRATE WITH A SINUSOIDAL POLE REGION

Robert Kansy, Fort Wayne, Ind., assignor to University of Illinois Foundation, Champaigne, Ill.

Filed Jan. 2, 1974, Ser. No. 430,030

Int. Cl.² H01L *41/04*

U.S. Cl. 310—9.5 **3 Claims**



1. A surface wave transducer device comprising:

an unpoled ferroelectric substrate having a substantially sinusoidal poled region at a surface thereof;

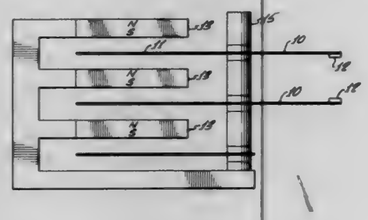
a metal plate electrode disposed over said poled region; and a second metal electrode disposed on the opposing surface of said substrate.

3,924,146

MULTIPLE LINEAR MOTOR POSITIONING SYSTEM

David J. George, Irvine, Calif., assignor to California Computer Products, Inc., Anaheim, Calif.

Filed Jan. 27, 1975, Ser. No. 544,300
Int. Cl.² H02K *33/18*
U.S. Cl. 310—36 **1 Claim**



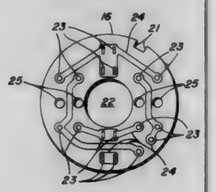
1. A magnetic head positioning system comprising:
a column comprised of a plurality of permanent magnetic slabs, each of said slabs to be positioned to have the plane of its surfaces parallel to the plane of the surfaces of each of said other permanent magnetic slabs;
means for separating each of said permanent magnetic slabs from each adjacent slab so as to form a comb;
at least one conductor positioned in the gap between two adjacent slabs of said comb;
a head arm assembly attached to said conductor; and
journal means for mounting said head arm assembly to permit a circular motion of said head arm assembly.

3,924,147

BRUSHHOLDERS AND ANCILLARY COMPONENTS MOUNTED ON A PRINTED CIRCUIT BOARD

Virgil K. Tarnow, and Kenneth E. Doshier, both of Rockford, Ill., assignors to Barber-Colman Company, Rockford, Ill.

Filed Jan. 2, 1974, Ser. No. 429,751
Int. Cl.² H02K *11/00*
U.S. Cl. 310—68 **7 Claims**



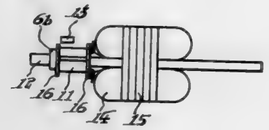
1. A motor sub-assembly comprising an insulating plate, a current conducting metal surface on a first side of said plate, a current conducting brushholder adjacent a second side of said plate and adapted to receive and guide a brush, a projection integral with said brushholder and extending through the insulating plate to said current conducting surface, a noise suppressor adjacent said second side, a conductor from the noise suppressor to said current conducting surface, and soldered connections rigidly joining the projection and said conductor to the conducting surface, said soldered connections retaining the brushholder and said noise suppressor on said plate and conducting current between the conducting surface and the respective projection and conductor.

3,924,148

SMALL SIZE DC MOTORS

Kan-ichi Tachibana; Michihiro Nishioka, and Mikiya Ono, all of Kitakyushu, Japan, assignors to Mitsubishi Mining & Cement Company Ltd., Tokyo, Japan

Filed Nov. 1, 1973, Ser. No. 411,715
Claims priority, application Japan, Nov. 15, 1972, 47-113840
Int. Cl.² H02H *7/08;* **H02K** *13/06;* **H01R** *39/46*
U.S. Cl. 310—220 **1 Claim**



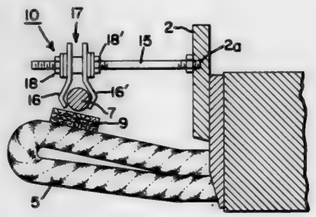
1. A small size DC motor comprising a commutator composed of a cylinder-shaped oxide sintered body having a barrier resistance at its surface, said oxide sintered body having negative resistance and also possessing the resistivity $R_0K\Omega$cm at 273°K and the thermistor constant $B°K$ that satisfy the relation $R_0 X B$ 10,000 $K\Omega$cm.°K, and metal or alloy pieces attached to the plural points of the surface of said cylinder-shaped oxide sintered body respectively, said metal or alloy pieces being highly anticorrosive and having a high electric conductivity.

3,924,149

TIELESS BRACING AND METHOD FOR SUPPORTING END TURNS OF A DYNAMOELECTRIC MACHINE

Luis Alberto Estrada, and Warren Pierce Wielt, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 1, 1974, Ser. No. 493,687
Int. Cl.² H02K *3/46*
U.S. Cl. 310—260 **5 Claims**



1. Tieless bracing means for winding end turns of a dynamoelectric machine comprising a radially expandable and contractable split metal annulus, adjustable take-up means mounted on said annulus, said take-up means being manually adjustable to move the ends of said annulus toward one another, an elongated tongue member mounted on the inner side of one end of the split annulus and disposed to engage and underlie the inner side of the other end of the annulus when said ends are moved within one inch of one another by the take-up means, a ring of compressible felt positioned in engagement with the inner side of said annulus around substantially the entire circumference thereof, in combination with a dynamoelectric machine frame having a stator mounted therein with insulated winding end turns extending beyond the stator ends, and a plurality of axially adjustable annulus positioning means mounted on said frame at arcuately spaced-apart points radially outward from the end turns, each of said annulus positioning means comprising:
a. a threaded stud mounted on the frame with its longitudinal axis generally parallel to the stator axis,

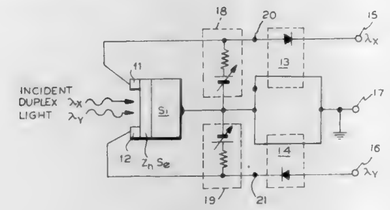
b. a pair of arms mounted in movable relation to one another on each stud adjacent the outer end thereof, said arms being operable to hold the annulus in a variety of pre-determined positions,
c. clamping means mounted on each stud, said clamping means being operable to move the arms in either direction along the stud thereby to locate the annulus in a desired one of said pre-determined positions with respect to the end turns, said clamping means being further operable to force the arms associated therewith together to secure the annulus held between them in said desired position while allowing the annulus to move radially relative to the elongated studs, and
dielectric means mounted on all but one of said threaded studs to insulate them respectively from the clamping means associated therewith, said one of the studs that does not mount one of the dielectric means being operable as an electrical grounding circuit between the annulus and the machine frame.

3,924,150

TURNABLE PHOTOTRANSDUCERS

Kiyotaka Wasa, Nara; Fumio Hosomi, Higashiosaka, and Shigeru Hayakawa, Hirakota, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 315,825, Dec. 18, 1972, abandoned. This application June 20, 1974, Ser. No. 481,452
Claims priority, application Japan, Dec. 28, 1971, 47-134; Dec. 28, 1971, 47-135; June 14, 1972, 47-59921
Int. Cl.² H01L *31/10*
U.S. Cl. 307—311 **3 Claims**



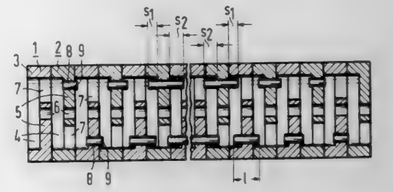
1. A tunable phototransducer, comprising:
a heterojunction photodiode constituted by two layers of semiconductor material of the same type (p or n), one which has a small bandgap energy and is a base material, and the other of which has a large bandgap energy and is positioned on said base as a window material, said heterojunction photodiode generating a first voltage of one polarity in response to an incident light in a lower wavelength range of the photoresponse range thereof and also generating a second voltage of the opposite polarity in response to an incident light in an upper wavelength range of the photoresponse range thereof, wherein the generated first and second voltages have magnitudes in accordance with the relative intensities of the incident light;
a first metal electrode provided on said window material
a first high impedance variable bias source connected at one terminal thereof to said first metal electrode and at a base terminal thereof to said base material;
a first rectifier connected at a first terminal thereof to said one terminal of said first variable bias source, a second terminal of said first rectifier comprising a first output terminal of said phototransducer;
a second metal electrode provided on said window material and spaced apart from said first metal electrode, the area of said window material between said first metal electrode and said second metal electrode comprising means for receiving incident light;
a second high impedance variable bias source connected at one terminal thereof to said second metal electrode and at at base terminal thereof to said base material, said second variable bias source providing a bias voltage the same as that of said first variable bias source;
and a second rectifier connected at a first terminal thereof to said one terminal of said second variable bias source, a second terminal of said second rectifier comprising a second output terminal of said phototransducer, the rectifying property of said second rectifier as seen from said second output terminal being opposite to that of said first rectifier as seen from said first output terminal, whereby the output voltage between said first output terminal and said base material shows the existence and relative intensity of the incident light in the lower range of said photoresponse range, and the output voltage between said second output terminal and said base material shows the existence and relative intensity of the incident light in the upper range of said photoresponse range.

3,924,151

DELAY LINE WITH LOW REFLECTION ATTENUATION FOR TRANSIT-TIME TUBES

Franz Gross, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sept. 6, 1974, Ser. No. 503,664
Claims priority, application Germany, Sept. 19, 1973, 2347209
Int. Cl.² H01J *25/34*
U.S. Cl. 315—3.5 **2 Claims**



1. A delay line with low reflection attenuation for transit time tubes, particularly for amplification of millimeter waves, comprising a wave-guide having a plurality of successive transverse walls which form line cells, each of which have, in addition to a central opening for the passage of the electron beam, a coupling slot arranged alternately on opposite sides of the delay line, and a plurality of cylindrical attenuating bodies which project into the line cells with a penetration depth which varies uniformly along the course of the delay line for effecting a reflection-free attenuation, said transverse walls having recesses therein in which said attenutating bodies are respectively disposed in mechanically stable operative positions diametrically opposite to the cooperable coupling slots, the longitudinal axes of the cylindrical attenuating bodies and of the delay line being at least approximately parallel to one another.

3,924,152

ELECTRON BEAM AMPLIFIER TUBE WITH MISMATCHED CIRCUIT SEVER

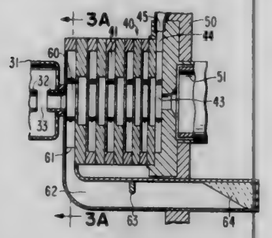
Robert J. Butwell, Cupertino, and Gordon T. Hunter, Mountain View, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Nov. 4, 1974, Ser. No. 520,524
Int. Cl.² H01J *25/34*
U.S. Cl. 315—3.6 **13 Claims**

1. An electron beam amplifier tube comprising; a vacuum envelope, means for forming and directing a beam of electrons, means for collecting said electrons, first circuit means for modulating said beam at a high frequency, second circuit means downstream of said first circuit means and isolated therefrom to prevent propagation of electromagnetic energy

therebetween, said second circuit means comprising, a slow-wave circuit capable of propagating a traveling wave in energy-exchanging relationship with said beam and having an upstream end adjacent said first circuit means and a downstream end removed from said upstream end in the direction of flow of said electrons,

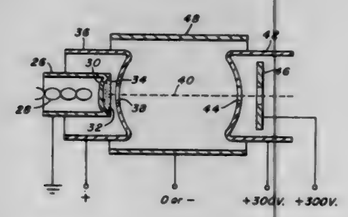
an output transmission line matched to said downstream end of said slow-wave circuit to couple into said transmission line a greater part of the wave energy flowing in said



slow-wave circuit toward said downstream end, and terminating means at said upstream end of said slow-wave circuit, the improvement wherein,

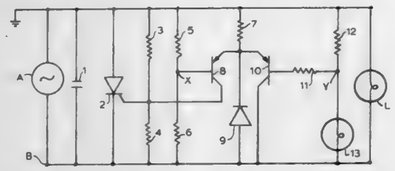
said terminating means comprises means for reflecting into a downstream flowing wave a selected substantial portion of wave energy flowing upstream in said slow wave circuit toward said upstream end, the reflected wave having a phase with respect to said upstream wave selected to increase the efficiency of said tube over a wide operational frequency range.

3,924,153
ELECTRON GUN
James L. McIntyre, deceased, late of Big Flats, N.Y. (by Betty J. McIntyre, administrator), assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 11, 1974, Ser. No. 450,275
Int. Cl.² H01J *29/46, 29/56*
U.S. Cl. 315—14 **7 Claims**



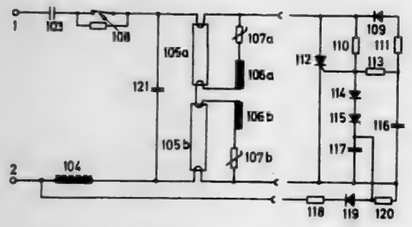
1. In a cathode ray tube, an electron gun structure comprising a cathode for emitting an electron beam, said cathode comprising a layer of an oxide having a smooth shaved surface from which electrons are emitted, a dish-shaped control grid having a central aperture through which electrons from said cathode can pass and in which the convex side of the dish-shaped grid faces said cathode, a dish-shaped accelerating anode spaced ahead of said control grid in the path of travel of said electrons from said cathode and having a central aperture at the bottom of its dish-shaped configuration through which electrons can pass, the concave side of the dish-shaped accelerating anode facing said control grid, a generally annular focus electrode surrounding said electron beam between the control grid and said accelerating anode, means connecting said cathode to ground potential, means for applying a positive potential to said control grid and said accelerating anode, and means for applying to said focusing electrode a potential ranging from zero to a negative potential.

3,924,154
VOLTAGE REGULATOR FOR ALTERNATING CURRENT LIGHTING SYSTEM
Floyd M. Minks, Rte. No. 1, Box 66, Kissimmee, Fla. 32741
Filed Nov. 21, 1973, Ser. No. 417,773
Int. Cl.² B60Q *1/08;* **G05F** *1/44*
U.S. Cl. 315—78 **9 Claims**



1. In a lighting system for use with an AC power producing source the frequency voltage, amplitude and waveform of which vary from time to time and having lighting means connected to be energized by the AC power supplied from said source: a voltage sensitive network having terminals connected to be energized by the waveform of said source and having output terminals producing a signal dependent upon the true RMS voltage value of said source; control means connected to control the flow of AC power from said source to said lighting means and having an input means; two amplifying means each having an input terminal, an output terminal, and a common input-output terminal, the common input-output terminals of said amplifying means being connected together, the output terminal of one amplifying means supplying power to said input terminal of said control means; said input terminals of said two amplifying means being connected to said output terminals of said true RMS voltage sensitive network to regulate the AC power supplied by said source to said lighting means; impedance means for preventing destructive voltages and currents from appearing between said input terminals and said common input-output terminals of said amplifying means for either polarity of the waveform applied to said network to prevent the true RMS voltage supplied from said source to said lighting means from rising above a preselected value; and means to make said network slightly more sensitive to one polarity portion of the waveform of said source than to the other polarity portion.

3,924,155
BALLAST UNIT FOR GAS DISCHARGE LAMPS
Ernest Jakob Vogeli, Friesenbergstrasse 40, 8055 Zurich, Switzerland
Filed May 24, 1972, Ser. No. 256,452
Claims priority, application Austria, May 24, 1971, 4476/71; Switzerland, May 16, 1972, 7220/72
Int. Cl.² H05B *41/14*
U.S. Cl. 315—97 **21 Claims**



1. A ballast unit for gas discharge lamps having a pair of electrodes, comprising:

a choke means, exclusively for limiting the current to the lamp after lamp firing, connected in series with the lamp electrodes;

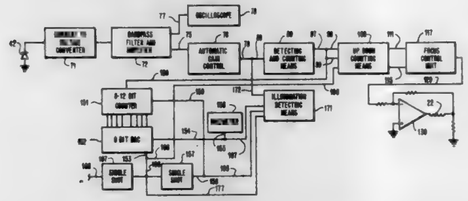
at least one semiconductor switching means, having a control electrode, for brief preheating of the filaments of the lamp at increased rated current, said switching means being connected in parallel with said lamp electrodes; and a control circuit means operating in response to an AC voltage supplied to said lamp electrodes and also connected to said control electrode for initially triggering said semiconductor means for a predetermined switch-on time during each half cycle of said AC voltage, to heat the filaments of the lamp with an effective current greater than normal rated current, as well as reducing the switch-on time during each half cycle until the lamp fires, and further increasing voltage peaks across the lamp for a predetermined preheating period prior to reaching ignition voltage, thereby avoiding cold-starting of the lamp; said control circuit means including:

a storage device capable of storing a charge corresponding to the voltage applied to the lamp;

a discharge resistor connected to said charge storage device; and

overvoltage peak means to cut off any overvoltage peaks.

3,924,156
METHOD AND SYSTEM FOR CORRECTING AN ABERRATION OF A BEAM OF CHARGED PARTICLES
Samuel K. Doran, Wappingers Falls, and Merlyn H. Perkins, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 26, 1974, Ser. No. 483,266
Int. Cl.² H01J *29/70*
U.S. Cl. 315—382 **28 Claims**



1. A method for correcting an aberration of a beam of charged particles including:

directing the beam at a constant velocity in a predetermined path across a target during each cycle;

ascertaining the lengths of time for the beam to enter and leave at least one portion of the target;

and adjusting the aberration of the beam in accordance with the lengths of time for the beam to enter and leave the portion of the target in comparison with the lengths of time for the beam to enter and leave the portion of the target during the prior cycle of movement of the beam in its predetermined path.

3,924,157
COMPOSITION AND METHOD FOR ELECTRIFYING A GASEOUS ATMOSPHERE
John P. Peters, Marietta, and Larry H. McAmish, East Point, both of Ga., assignors to Lester Laboratories, Inc., East Point, Ga.
Filed Jan. 16, 1974, Ser. No. 433,985
Int. Cl.² B05B *5/00*
U.S. Cl. 317—3 **8 Claims**

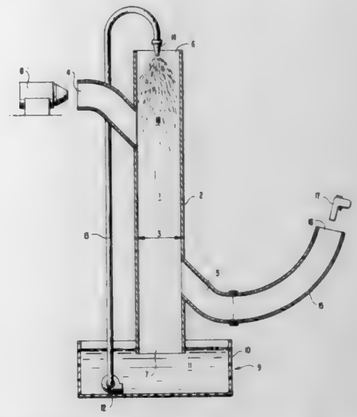
1. A process for imparting a positive electrical charge to a gaseous stream, said process comprising contacting said gaseous stream with an aqueous solution by spraying said aqueous solution into said gaseous stream, wherein said solution comprises about 500 – 3000 ppm of a composition consisting essentially of borax and a nonionic surfactant selected from the group consisting of:

a. a nonionic surfactant having an HLB number of 6.6,

b. a nonionic surfactant having an HLB number of 3.0,

c. a liquid, nonionic, fatty acid alkylolamide,

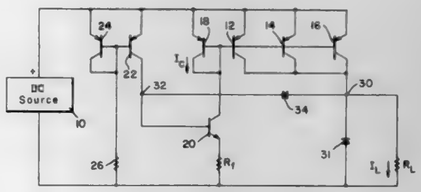
d. a nonionic polyethyleneoxide based, terminated alkyl aryl ether, and



e. a liquid, anionic, biodegradable, modified ethoxylate

for about 0.1 – 10 sec. at a temperature between about 15°C and the boiling point of said solution, the weight ratio of borax to surfactant in said solution being about 1.2:1 to about 15:1.

3,924,158
ELECTRONIC OVERLOAD PROTECTION DEVICE
Robert P. Farnsworth, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Oct. 24, 1974, Ser. No. 517,558
Int. Cl.² 323 *9;* **H02H** *3/24*
U.S. Cl. 317—31 **4 Claims**



1. An overload protection device adapted for coupling a direct current voltage source to a load so that load current is provided whenever the impedance of the load is greater than a preselected value and the load current is substantially interrupted whenever the impedance of the load is less than the preselected value, said device comprising:

a first current amplifier having an input signal terminal, and an output current path coupled between the voltage source and the load, said first current amplifier being responsive to signals applied to its input signal terminal for controlling the impedance of its output path from a minimum value to a maximum value, and including a plurality of transistors having their respective collector, emitter and base terminals interconnected and with the parallel combination of their collector-emitter current paths comprising said output current path, and another transistor which has its collector and base terminals connected to the interconnected base terminals of said plurality of transistors and to the input signal terminal of said first current amplifier, and its emitter terminal connected to the interconnected emitter terminals of said plurality of transistors; and

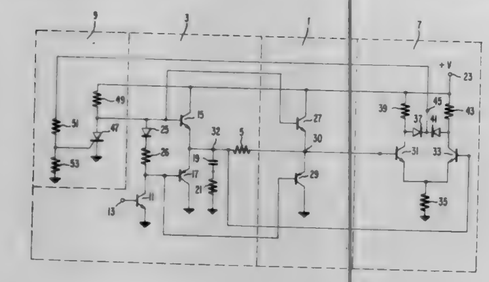
a second current amplifier having an input terminal coupled to said load such that its current gain is a function of the impedance of the load and having an output terminal coupled to the input signal terminal of said first current amplifier, and including means for controlling the collector current in said another transistor such that said plurality of transistors are biased into their saturated on condition when said load impedance is greater than said preselected value and are biased off when said load impedance is less than said preselected value.

3,924,159

AMPLIFIER PROTECTION SYSTEM

Merle Vincent Hoover, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 4, 1974, Ser. No. 512,225
Int. Cl.² H02H *3/08, 7/20*
U.S. Cl. 317—33 R **17 Claims**



14. A circuit for protecting the output stage of an amplifier from an overload condition comprising, in combination:

a protective amplifier stage having substantially the same operating characteristics for an identical input signal as said output stage forming a bridge with said output stage and connected to receive the same input signals as said output stage, said bridge having two nodes at opposite points of the bridge which, in normal operation, in view of the balanced condition of the bridge, operate at the same voltage levels;

current sensing means connected to said nodes for sensing an imbalance in the bridge, and

means responsive to said current sensing means for effectively removing said input signals from said output stage when said bridge becomes imbalanced.

3,924,160

CIRCUIT BREAKER WITH DETACHABLY CONNECTED FAULT SIMULATOR

Alfred E. Maier, Beaver Falls, and Alan B. Shimp, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 401,932, Sept. 28, 1973. This application July 25, 1974, Ser. No. 491,728
Int. Cl.² G01R *31/02*
U.S. Cl. 317—36 TD **9 Claims**

1. Circuit breaker apparatus, comprising;

A. separable main contacts operable to open and close on an electrical conductor to be protected thereby;

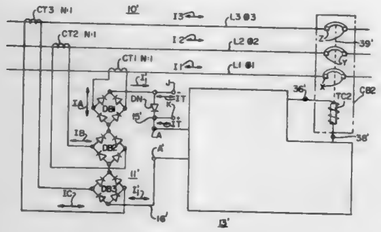
B. opening means operable for actuating said contacts to the open position;

C. a trip circuit interconnected with said opening means for causing operation thereof;

D. sensor means interconnected with said trip circuit and disposed to monitor the electrical current in said electrical conductor, said sensor means providing a signal to said trip circuit when said current in said conductor attains a predetermined value, said trip circuit causing the opening of said main contacts after a predetermined period of time which time is related to the amount of said electrical current in said conductor as monitored by said sensor;

E. an insulating housing; and

F. terminals disposed on said insulating housing and connected to said trip circuit, said terminals being detachably connected to an external fault simulator for providing a first simulating signal to said trip circuit at any desired time and regardless of the value of the current flowing



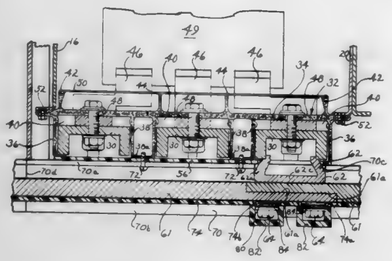
through said conductor, said latter signal simulating said signal from said sensor when said value of current flowing in said conductor is substantially larger than said predetermined value, and for providing a second simulating signal to said trip circuit at any desired time and regardless of the value of current flowing in said conductor, said latter signal simulating said signal from said sensor when said value of current flowing in said conductor is larger but not substantially larger than said predetermined value.

3,924,161

ELECTRICAL SWITCHBOARD WITH INSULATED, ISOLATED BUS

William Francis Olashaw, Plainville, and Roger Thomas Wilbur, Bristol, both of Conn., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 26, 1974, Ser. No. 500,526
Int. Cl.² H02B *1/20*
U.S. Cl. 317—120 **4 Claims**



1. An electrical switchboard having a plurality of compartments for accommodating electrical devices, said switchboard comprising, in combination:

A. a plurality of vertical busbars located just rearwardly of the switchboard compartments;

B. a plurality of horizontal busbars located rearwardly of said vertical busbars;

C. joints respectively electrically interconnecting each horizontal busbar to each vertical bus bar at intersections thereof, each joint secured by at least one bolt having a rearwardly accessible head;

D. individual, insulative caps removable mounted about said head of each said bolt to shield said bolt head;

E. insulative panels mounted fore and aft of said vertical busbars along their entire lengths to electrically and physically isolate said vertical busbars; and

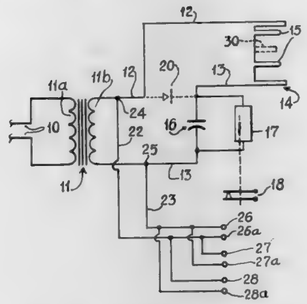
F. insulative means including elongated insulative members forming individual channels shielding the upper and lower edges of said horizontal busbars accommodated therein, and insulative strips overlying the rearward surfaces of said horizontal busbars, thereby to electrically and physically isolate said horizontal busbars, wherein said insulative members are each L-shaped in cross-section and physically arranged in pairs to form said channels.

3,924,162

DEVICE FOR INTERRUPTING OR COMPLETING AN ELECTRIC CIRCUIT

Anthony J. Nocerino, 15 Bartow St., Staten Island, N.Y. 10308

Filed Aug. 12, 1974, Ser. No. 496,339
Int. Cl.² H01H *47/00*
U.S. Cl. 317—134 **10 Claims**



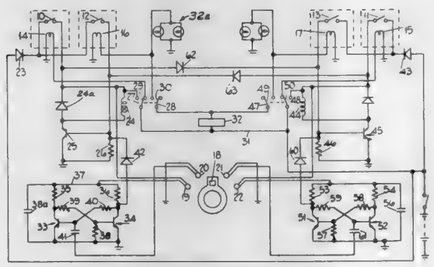
1. A device for interrupting or completing an electric circuit comprising a male plug and a disc shaped female socket, said socket having a diode for rectifying the voltage from said electric circuit after said voltage has been reduced, said plug being incorporated in said electric circuit and having a step-down transformer to reduce said electric current, a condenser for storing said reduced voltage after it has been rectified by said diode, and a relay coil for transmitting said reduced and rectified voltage to energize at least one contact therein such that said electric circuit is opened or closed.

3,924,163

DIRECTION INDICATOR CONTROL CIRCUIT

William David Holt, Colne, England, assignor to Lucas Electrical Co. Ltd., Birmingham, England

Filed Mar. 11, 1974, Ser. No. 450,005
Claims priority, application United Kingdom, Mar. 22, 1973, 13785/73
Int. Cl.² B60Q *1/42*
U.S. Cl. 317—148.5 R **5 Claims**



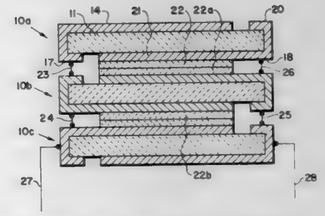
1. A direction indicator control circuit for use in a road vehicle having a steering mechanism, comprising first and second indicator means, first and second relays electrically associated with said first and second indicator means, respectively, for controlling the energization of said first and second indicator means, manually operable switch means associated with each relay for causing energization of the coil of the associated relay, first semi-conductor switch means connected to said first relay for controlling the energization of said first relay, means connected to said first semi-conductor switching means and responsive to movement of the vehicle steering mechanism in one angular direction towards its central position for controlling the conductive condition of said first semi-conductor switching means, second semi-conductor switching means connected to said second relay for controlling the energization of said second relay, and means connected to said second semi-conductor switching means and responsive to movement of the vehicle steering mechanism in the opposite angular direction towards said central position for controlling the conductive condition of said second semi-conductor switching means.

3,924,164

HIGH TEMPERATURE BERYLLIUM OXIDE CAPACITOR

Russell A. Lindberg, Westlake, Ohio, assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Jan. 28, 1975, Ser. No. 544,611
Int. Cl.² H01G *4/12, 1/01*
U.S. Cl. 317—258 **9 Claims**



1. A high temperature capacitor comprising

a platelet of BeO;

a first electrode sputter bonded to one side of said platelet, which side has a surface texture ratio of from about 5 to 7 produced by off-sputtering, said electrode being of Iridium; and

a second electrode sputter bonded to the other side of said platelet, which other side has a surface texture ratio of from about 5 to 7 produced by off-sputtering, said second electrode being of Iridium.

3,924,165

CONTROL CIRCUIT FOR SEQUENTIAL ENERGIZATION OF PLURAL LOADS FROM AN AC POWER SOURCE

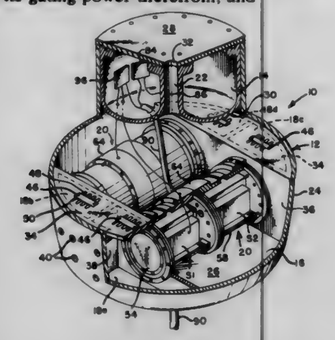
Carl L. Otto, Jr., deceased, late of Lummi Island, Wash., by Phyllis Lockwood, executrix, Lummi Island, Wash. 98262

Continuation-in-part of Ser. No. 227,075, Feb. 17, 1972, Pat. No. 3,824,852. This application May 10, 1974, Ser. No. 468,906
Int. Cl.² H02K *33/00*
U.S. Cl. 318—132 **11 Claims**

1. A circuit for distributing successive half waves of an alternating current power source to a plurality of loads, said circuit comprising:

a. a plurality of electronic check valve means, each being connected in series with a respective load and connected to a source of alternating current power so that each check valve means passes current only during one set of either positive or negative half cycles of the alternating current,

b. a plurality of gating means, each being connected to gate a respective check valve of one load and being operatively connected with another of said loads so as to receive its gating power therefrom, and



c. a plurality of gating delay means, each operatively connected to a respective gating means and arranged to block operation thereof at least during the half cycle of power of like polarity following the half cycle on which the respective gating means operates to pass power to its associated load.

3,924,166

SPEED CONTROL SYSTEM FOR LOW SPEED BRUSHLESS D-C MOTORS

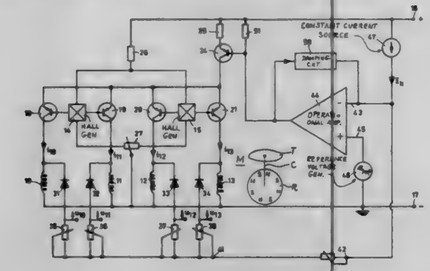
Benno Doemen, St. Georgen, Germany, assignor to Papst-Motoren KG, St. Georgen, Germany

Filed Oct. 1, 1973, Ser. No. 402,259

Claims priority, application Germany, Oct. 19, 1972, 2251292

Int. Cl.² H02K *29/02*; H02P *5/06*

U.S. Cl. 318—138 **21 Claims**



1. Brushless d-c motor (M) and speed control combination system in which the motor (M) has a permanent magnet rotor (R) and stator armature windings (10–13), comprising

controlled commutating switches (18–21) connected in a supply circuit to respective armature windings of the motor;

diodes (31–34) having one terminal each coupled to respective armature windings (10–13) and deriving sensed undulating d-c signals representative of voltages (FIGS. 2: u_{10}, u_{11}, u_{12}, u_{13}) induced in the stator armature windings (10–13) upon passage of the permanent magnetic rotor (R) past said windings during the interval when said armature windings carry no current due to blocking of supply power to respective windings by respective ones of said switches;

the other terminals of the diodes (31–34) being connected to a common junction (41), said common junction having applied thereto a d-c voltage having an amplitude which is dependent on motor speed and a superimposed first a-c voltage (u_ϵ) of non-sinusoidal wave shape, the frequency of which is likewise dependent on motor speed;

a first adder circuit (35–38; 47) connected to said diodes (31–34) and adding at least a portion of each of the instantaneous values of the sensed undulating d-c signal to thus obtain a second a-c voltage of non-sinusoidal wave shape, and of a phase which is opposite that of said first a-c voltage;

a second adder circuit (42) connected to said common junction (41) and having said second voltage connected thereto to superimpose or instantaneously, algebraically add said first and second voltages so that superimposed, or algebraically added output voltages will appear as an output signal (u_D) at the output (43) thereof;

and a speed control circuit (24, 25; 44) connected to said output (43), controlled by the superimposed added first and second a-c voltages forming the output signal (u_D) thereat, and having its control output connected to control energization of the controlled commutation switches (18–21).

3,924,167

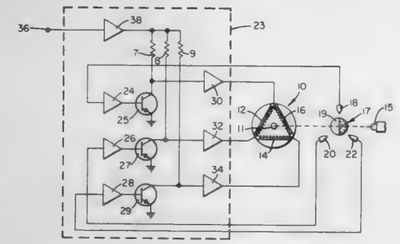
THREE PHASE BRUSHLESS DC MOTOR

Harold V. Clark, Palo Alto; Peter Skalon, Redwood City, and Lawrence D. Emmons, Grass Valley, all of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Sept. 17, 1973, Ser. No. 398,155

Int. Cl.² H02P *5/06*; H02K *29/02*

U.S. Cl. 318—254 **4 Claims**



1. A three phase brushless DC motor for precision servo applications, comprising,

a stationary armature having three sets of windings symmetrically positioned thereon;

a two pole permanent magnet rotor mounted for rotation relative to said armature;

photoelectric self commutation means including a square wave generation circuit connected to said sets of windings, half cone reflector means axially mounted to rotate with said rotor for reflecting light projected thereon by a source, a light source for projecting light on said half cone reflector means, three photodetectors connected to said circuit positioned symmetrically about said rotor so as to receive the reflected light, said reflector means and said photodetectors being relatively positioned and said reflector means having a 180° arc of reflection to produce signals in said sets of windings without odd harmonic distortion.

3,924,168

SOLID STATE BRIDGE CIRCUIT FOR D.C. SERVO SYSTEMS

Morton P. Woodward, Vestal, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.

Filed Nov. 10, 1970, Ser. No. 88,407

Int. Cl.² H02P *7/28*

U.S. Cl. 318—257 **2 Claims**

1. In a solid state bridge circuit for a servo motor having a permanent magnet DC motor in the center of said bridge, four

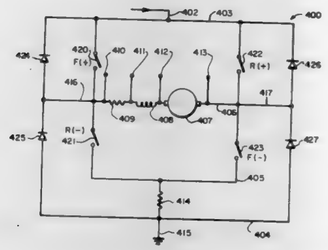
switching means as the arms of said bridge, and a ground and a power input connected to the other two ends of said bridge respectively, for controlling the direction and velocity of said motor, the improvement comprising:

a first resistor and an inductance in series with said motor in the center of said bridge;

a second resistor connected between said bridge and said ground;

first feedback means connected across said first resistor for motor current feedback;

second feedback means connected across said motor for motor velocity feedback;



third feedback means connected across said second resistor for motor current feedback; and

each of said switching means includes a switch and a diode, the switch and diode are connected in parallel for the two arms of said bridge between said input and said motor and the diode is in parallel with said switch and said second resistor for the two arms of said bridge between said ground and said motor, said diodes being connected so as to provide a current path to allow said inductor to continue current flow when only one of said switching means is closed and to allow current to flow from ground through the bridge into said power input when all of said switching means are open.

3,924,169

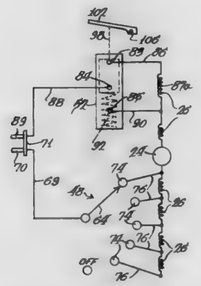
MIXER WITH SPEED CONTROL

Lewis John Craft, Villa Park; Leon M. Roszyk, Downers Grove; John M. Stipanuk, and Eugene B. Szymczak, both of Glen Ellyn, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Jan. 14, 1974, Ser. No. 433,164

Int. Cl.² H02P *7/08*

U.S. Cl. 318—354 **10 Claims**



1. A food mixer with speed control comprising a housing, an electric motor mounted in said housing and adapted for driving food mixing means carried by said housing, and housing being provided with a handle portion, an electrical power and control circuit for said motor, a first multi-speed rotary switch for said motor connected in said circuit and having a plurality of speed positions, a second normally-open momentary switch connected in said circuit, said power and control circuit being characterized by a field coil assembly of said motor having a primary coil, a portion of which coil is adapted to be shorted out upon actuation of said second switch whereby to instantaneously increase the speed of said motor when said first rotary switch is in any one of said speed positions, a switch lever for said momentary switch pivotally mounted on said handle portion for downward actuating movement relative to said handle portion, vertically aligned longitudinally extending slots formed in the top surface of said handle portion and in said momentary switch lever, and a pivotally mounted control lever for said rotary switch which projects upwardly through said aligned slots for actuating movement forwardly and rearwardly therein.

3,924,170

BANG-BANG SERVO SYSTEM

Alan Foster, Hitchin, England, assignor to International Computers Ltd., Hertfordshire, England

Filed July 31, 1973, Ser. No. 384,311

Int. Cl.² G05B *13/00*

U.S. Cl. 318—561 **1 Claim**



1. Servo control apparatus for a drive motor operable to drive a paper tractor, including:

a counter settable to register an initial digital count corresponding to a required paper tractor advance expressed as increments of movement distance;

means for progressively decrementing the count registered by the counter in response to accomplishment of increments of actual movement;

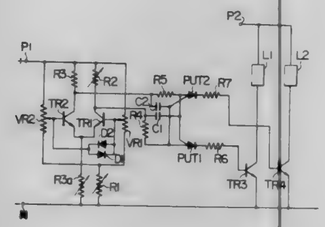
a motor drive current supply arranged to provide acceleration and deceleration drive current to the motor including a network of parallel current paths respectively arranged to provide current having a mutual binary power relationship and of opposite polarities, the polarities corresponding to acceleration and deceleration drive conditions respectively; and

control means including means arranged to respond to the count registered during the movement to produce control signals; a comparator responsive to the initial digital count and to the previously decremented registered count to produce, if the required advance is less than a predetermined magnitude, a first changeover signal when the registered count indicates that half the required advance has been completed; and a gating control arrangement effective, if the required advance is equal to said predetermined magnitude and if the required advance is greater than said predetermined magnitude, to disable the comparator and to produce a second changeover signal when the registered count indicates that a predetermined distance before completion of the advance has been reached, said control signals being operative to select the current paths in the network to be energized singly and in combination to provide a drive current of required magnitude and said first and second changeover signals being operative to alter the polarities of the drive current from an acceleration drive condition to a deceleration drive condition.

3,924,171
SERVO MOTOR CONTROL CIRCUIT

Takeshi Ukai, Tokyo; Masao Yaeshima, Sendai, and Kimio Watanabe, Iwanuma, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Sept. 7, 1973, Ser. No. 395,175
Claims priority, application Japan, Sept. 13, 1972, 47-92056
Int. Cl.² G05B *1/06*; G05F *1/00*
U.S. Cl. 318—663 **4 Claims**

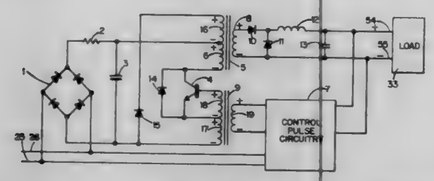


1. A servo motor control circuit comprising a bridge circuit including a first potentiometer having a slider which moves with a servo motor and a second potentiometer having a slider settable to select an angle of roatation of the servo motor, said first and second potentiometers being connected in parallel, a D.C. power supply having two terminals connected across the parallel combination of the potentiometers, means connected to said sliders for providing a pair of outputs representing together the difference between the voltage levels at the sliders, and a high sensitivity switching circuit including a pair of programmable unijunction transistors each having its anode and gate connected to one and the other of said outputs, respectively, in symmetrical relation with each other, said switching circuit causing rotation of the servo motor in a selected one of a forward and a reverse direction depending on the firing of selected one of the pair of programmable unijunction transistors, wherein said high sensitivity switching circuit further includes capacitor means for moderating oversensitivity thereof.

3,924,172
POWER SUPPLY

James M. Gregorich, Merrimack, N.H., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed July 11, 1974, Ser. No. 487,530
Int. Cl.² H02M *3/335*
U.S. Cl. 321—2 **9 Claims**



5. A circuit for converting voltage for driving a plurality of attached loads, said circuit comprising in combination:

first means for transforming voltage, said first means having two phases of operation, a first phase comprising simultaneously storing magnetic energy while directly driving said loads and a second phase comprising releasing said stored magnetic energy while indirectly driving said loads; and

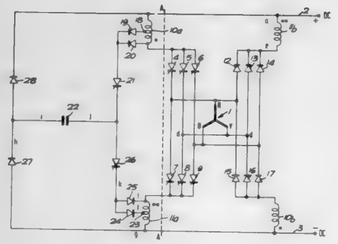
second means connected in series to a primary winding of said first means for establishing the sequential, timed application of voltage to said first means, said timed application providing a period for the release of said stored magnetic energy; and

third means including a diode connected in series with a secondary winding of said first means providing a controlled path for the release of said stored magnetic energy.

3,924,173
COMMUTATION CIRCUITS IN INVERTER CIRCUITS

Sushil Kumar Goswami, 100 Ramton Road, Willingham, Cambridgeshire, CB4 5JO, England

Filed June 17, 1974, Ser. No. 480,253
Claims priority, application United Kingdom, June 28, 1973, 30781/73; June 28, 1973, 30782/73; July 10, 1973, 32773/73
Int. Cl.² H02M *7/515*
U.S. Cl. 321—5 **23 Claims**

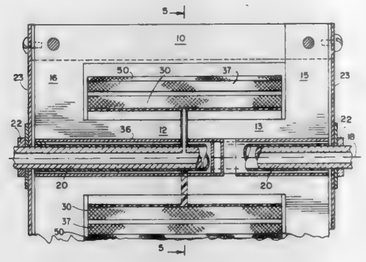


1. An inverter for supplying alternating current to a load from a direct current supply, including a controlled rectifier bridge which comprises a respective pair of first and second controlled rectifiers for connecting each A.C. supply terminal of the load to the positive and negative terminals of the direct current supply, the first controlled rectifier of each pair being connected to the positive supply terminal through at least part of a first inductor, and the second controlled rectifier of each pair being connected to the negative supply terminal through at least part of a second inductor, a flywheel diode bridge comprising a respective pair of flywheel diodes also for connecting each A.C. supply terminal of the load to the direct current supply terminals and a commutation circuit including a selectively dischargeable commutation capacitor for causing current to flow in one or other of said inductors and thereby to reverse bias so as to turn off a conducting one of the rectifiers connected thereto, wherein each inductor is provided with a second winding, which is magnetically coupled with the first winding of the inductor, the second winding of the first inductor being connected between the negative direct current supply terminal and the respective end of the flywheel diode bridge, and the second winding of the second inductor being connected between the positive direct current supply terminal and the respective end of the flywheel diode bridge, the polarity of the first and second windings of each inductor being such that when the first winding of the second inductor makes the thyristor bridge end connected thereto more positive than the negative supply potential, the second winding thereof makes the flywheel diode bridge end connected thereto less positive than the positive supply potential, and such that when the first winding of the first inductor makes the thyristor bridge end connected thereto less positive than the positive supply potential the second winding thereof makes the flywheel diode bridge end connected thereto more positive than the negative supply potential.

3,924,174
ROTARY POWER TRANSFORMER

Charles J. Fahrner, Park Ridge, Ill., assignor to Johnson Electric Coil Co., Elmhurst, Ill.

Filed Mar. 26, 1975, Ser. No. 562,029
Int. Cl.² H01F *39/00*
U.S. Cl. 323—53 **6 Claims**



1. A transformer having a ferro-magnetic laminated core including a leg having two aligned leg portions with an air gap therebetween, a cylindrical secondary winding structure positioned over said two leg portions and air gap so that it is rotatable about the same, a shaft within passages through said aligned leg portions and through said air gap and extending through passages in said magnetic core and beyond the core, means in said air gap securing said secondary winding structure to said shaft, said secondary winding having leads extending therefrom and passing radially in said air gap to said shaft, at least part of said shaft being hollow from said air gap region to an end of said shaft, said shaft at the region of said air gap having at least one opening through its wall to the interior thereof, said secondary winding leads extending through the shaft wall to the interior thereof and thence to the end of the hollow shaft portion for connection to a rotatable electric load, a stationary primary winding having a cylindrical interior surface disposed about said secondary winding and clearing the same to permit relative rotation thereof, both of said windings lying over the leg portions and air gap, means for retaining said core structure and primary winding rigidly in stationary position, bearing means supported by said stationary structure for rotatably supporting the shaft, said bearing means and support therefor having means for adjusting said shaft means to center the rotatable portions of the transformer for free rotation, whereby a relatively stationary electric power source may be metallically connected to the primary winding for energizing the same and the electric power in said secondary winding may be directly connected to a rotatable electric load without interposition of sliding contacts between relatively rotatable parts.

3,924,175
D.C. SYSTEM FOR CONDUCTIVITY MEASUREMENTS

Homer M. Wilson, Houston, Tex., assignor to Petrolite Corporation

Filed Feb. 28, 1974, Ser. No. 446,993
Int. Cl.² G01N *27/42*
U.S. Cl. 324—30 R **9 Claims**

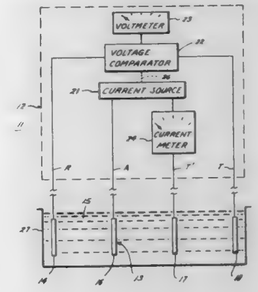
1. A d.c. system for measurement of conductivity of an electrolyte comprising:

a. four metallic electrodes immersible in the electrolyte, said electrodes disposed in a side-by-side alignment forming exterior and interior electrode pairs, one of the exterior or interior electrodes serving as reference electrodes for monitoring said electrodes' polarization potential, and respectively, the other of the interior or exterior electrodes providing auxiliary electrodes for passing current through the electrolyte for creating the polarization potential;

b. conductor means forming separate electrical circuits with said electrodes;

c. current source means for passing a measurable amount of direct current between said auxiliary electrodes for inducing an incremental change of predetermined magnitude in electrode potential between said reference electrodes;

d. potential measurement means connected to said reference electrodes for measurement of the incremental change in polarization potential therebetween;



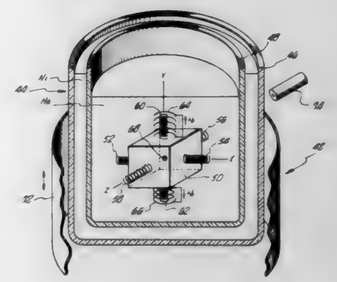
e. comparator means associated with said potential measurement means for controlling the current source means whereby a certain measurable amount of direct current passed between the auxiliary electrodes induces an incremental change of a predetermined magnitude between about 5 and 50 millivolts in electrode potential between said reference electrodes; and

f. readout means sensing the direct current passed between said auxiliary electrodes whereby the certain measurable amount of direct current is proportional to the conductivity of the electrolyte.

3,924,176
MAGNETOMETER USING SUPERCONDUCTING ROTATING BODY

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Melvin M. Saffren, Altadena, and Daniel D. Elleman, La Canada, both of Calif.

Filed Nov. 11, 1974, Ser. No. 522,552
Int. Cl.² G01R *33/02*
U.S. Cl. 324—43 R **22 Claims**



1. A magnetometer for measuring the strength of a magnetic field comprising:

a body capable of becoming superconducting at a critical temperature;

means for maintaining the body at a temperature below the critical temperature;

means for supporting the body to permit free rotation of the body in response to the induced flow of superconducting current on the body by the magnetic field; and

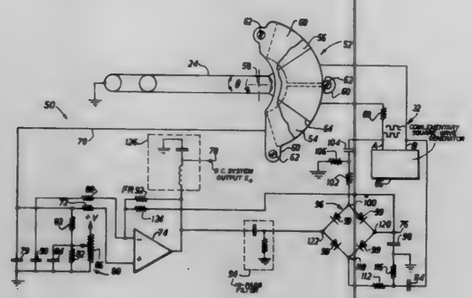
sensing means for determining the strength of the magnetic field as a function of the rate of rotation of the mass of the body.

3,924,177

TAPE LOOP TENSION ARM POSITION INDICATOR SYSTEM

Joseph Lemineur, Mons, and Rene Arys, Genappe, both of Belgium, assignors to Ampex Corporation, Redwood City, Calif.

Filed Feb. 25, 1974, Ser. No. 445,257
Claims priority, application Belgium, May 7, 1973, 130845
Int. Cl.² G01R *27/26*
U.S. Cl. 324—61 R **3 Claims**



1. For use in a tape transport, a tension arm position indicator system comprising:

a waveform generator generating first and second complementary square-wave signals;

a printed circuit board having a surface;

a tape loop tension arm disposed for rotation about an axis which is perpendicular to the surface, the tension arm having a conductive plate disposed for rotation therewith which is maintained at a fixed potential, the conductive plate being maintained parallel to and spaced a short distance apart from the surface of the printed circuit board as the tension arm rotates about the axis;

a pair of first capacitor plates, the first capacitor plates being coupled to receive the first and second complementary square-wave signals respectively and being formed as printed circuits on the surface of the printed circuit board in opposing relationship to the path of the tension arm conductive plate as the tension arm rotates about the axis;

a second capacitor plate disposed in opposing, parallel spaced relationship to the first pair of capacitor plates with the tension arm conductive plate being movable within a space between the first and second capacitor plates, the second capacitor plate providing a first output signal;

a single amplifier which is AC coupled to receive the first output signal and generate an amplified first output signal and which is DC coupled to receive a tension arm position signal and generate an amplified tension arm position signal as a system output in response thereto; and

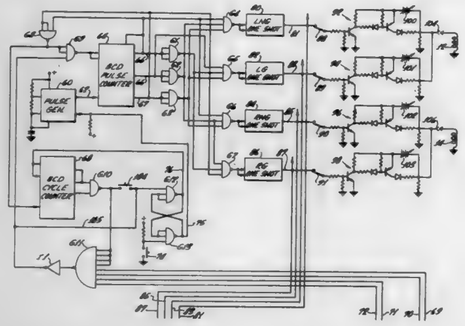
a phase detector coupled to compare the phase relationship of the amplified first output signal and the complementary square-wave signals and provide a tension arm position signal having a DC component with a magnitude dependent upon the magnitude of the amplified first output signal and a polarity dependent upon the relative phase relationships of the amplified first output signal and the complementary square-wave signals.

3,924,178

RELAY TESTER

John Lockyer, Smithtown, and Thomas C. Cleary, Northport, both of N.Y., assignors to Deutsch Relays, Inc., E. Northport, N.Y.

Filed July 3, 1974, Ser. No. 485,332
Int. Cl.² G01R *31/02*
U.S. Cl. 324—28 R **12 Claims**



1. The method of testing a relay of the type having a latch coil that is energized to drive the relay to a latching state and a reset coil that is energized to drive the relay to a reset state and having means for retaining the relay in either of said states upon de-energization of the coils, said method comprising the steps of

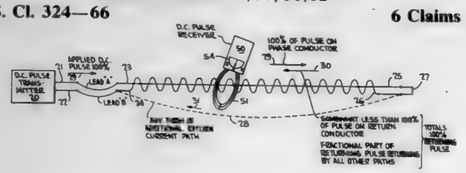
sequentially energizing each of said coils with a pattern of energizing pulses, said pulse pattern for energizing each of said coils comprising at least one pulse having a relatively small magnitude that is less than the magnitude nominally required to drive the relay from one of said states to the other and another pulse having a relatively large magnitude that is at least equal to the magnitude nominally required to drive the relay from one of said states to the other, and monitoring the state achieved by the relay in response to application of said relatively small pulse and in response to application of said relatively large pulse.

3,924,179

METHOD FOR CERTIFYING DEAD CABLES OR CONDUCTORS BY DETERMINING CURRENT PULSE POLARITY

William A. Dozier, c/o Georgia Power Company, P.O. Box 1220, Columbus, Ga. 31902

Filed Apr. 24, 1974, Ser. No. 463,683
Int. Cl.² G01R *19/14, 31/02*
U.S. Cl. 324—66 **6 Claims**



1. A method for certifying that an insulated electrical conductor is dead at a point remote from the two ends at which end points it is known to be dead and wherein at least one energized and/or AC current carrying conductor is present at the remote point comprising the steps of:

electrically connecting a conductor to be certified to an electrical return path at one of said end points;

supplying a periodic DC current pulse at the other of said end points between said conductor to be certified and said return path to generate therein a net DC current pulse of the same polarity at said remote point along said conductor to be certified, a portion of said current pulse being returned along said electrical return path and the remaining portion of the current pulse being returned through an additional return path;

measuring the vector summation of all the currents in said electrical conductor to be certified and said electrical return path and thereby determining the polarity of the net DC pulse in the conductor to be certified at said remote point; and

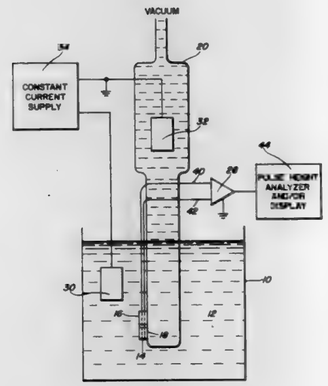
determining that said electrical conductor is dead by ensuring that said measured polarity is the same as said same polarity.

3,924,180

POTENTIAL SENSING CELL ANALYZER

Gary C. Salzman; James R. Coulter; Paul F. Mullaney, and Richard D. Hiebert, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Oct. 12, 1973, Ser. No. 406,053
Int. Cl.² G01N *27/00*; **G01R** *27/14*
U.S. Cl. 324—71 CP **6 Claims**



1. A cell sensing apparatus comprising:

first container means for retaining a volume of liquid solution in which cells are suspended;

second container means partially disposed within said first container means;

means comprising a walled orifice through which said cell suspending liquid may be drawn from said first container means into said second container means, said walled orifice comprising a first layer of insulating material, a first electrode, a second layer of insulating material, a second electrode, and a third layer of insulating material, each of said layers and electrodes having a concentrically aligned aperture, said aperture being of sufficient diameter to allow passage therethrough of said cells;

a constant current supply;

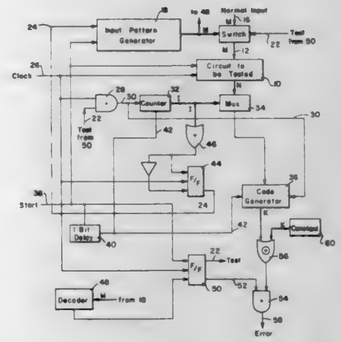
a third and fourth electrode means connected to said supply means for sensing a change in the potential difference between said first and second electrodes caused by at least one cell passing through the orifice, indicating the presence of said cell within said orifice.

3,924,181

TEST CIRCUITRY EMPLOYING A CYCLIC CODE GENERATOR

Gary E. Alderson, Play del Rey Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 16, 1973, Ser. No. 406,985
Int. Cl.² G01R *15/12*
U.S. Cl. 324—73 R **1 Claim**



1. Test circuitry adaptable for integration with a circuit having a M-bit input and N-bit output to be tested, said test circuitry and said circuit forming a single replaceable unit within a larger hardware system and comprising:

means for providing a predetermined sequence of T-Test patterns, each of M-bits for application to said M-bit input;

a parallel to serial multiplexer for converting the M-bits of circuit output to a single serial bit stream;

a cyclic code generator responsive to the serial output of said multiplexer for encoding a single K-bit number representative of T successive N-bit output patterns from said circuit, K being equal to or greater than 4 and less than T times N;

a hardwired constant representative of the output from a good circuit; and

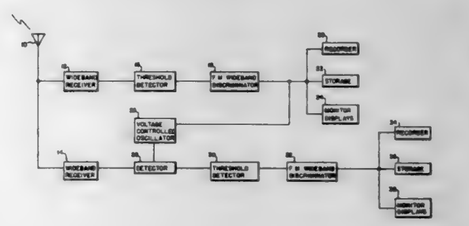
a comparator for comparing said K-bit number with said hardwired constant.

3,924,182

SIGNAL ANALYZER

Garold K. Jensen, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 30, 1967, Ser. No. 614,528
Int. Cl.² G01R *23/02, 23/18*
U.S. Cl. 324—77 R **4 Claims**



1. An signal analyzer comprising:

a signal source producing a signal to be analyzed;

first analyzing means connected to said signal source and including a first FM wideband discriminator for analyzing said signal to be analyzed;

a voltage controlled oscillator connected to be controlled by said first FM wideband discriminator and producing an oscillator signal and

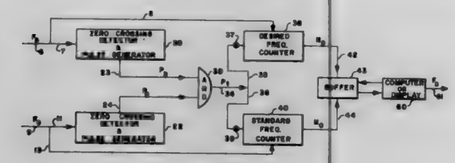
second analyzing means connected to said signal source and to said voltage controlled oscillator and including a second FM wideband discriminator for combining and for analyzing the combination of said oscillator signal and said signal to be analyzed

whereby said first analyzing means produces analytic data related to said signal to be analyzed and said second analyzing means produces analytic data related to the sideband components, if any, of said signal to be analyzed.

3,924,183
FREQUENCY MEASUREMENT BY COINCIDENCE DETECTION WITH STANDARD FREQUENCY

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Edward J. Nossen, Cherry Hill, N.J., and Eugene R. Starner, Bethlehem, Pa.

Filed Sept. 13, 1974, Ser. No. 505,819
Int. Cl.² G01R *23/00*
U.S. Cl. 324—79 D **2 Claims**



1. A method of measuring a desired frequency F_D by comparing it to a standard frequency F_o, comprising:

detecting each zero-crossing of the desired frequency and generating a narrow pulse at each such zero-crossing,

detecting each zero-crossing of the standard frequency and generating a narrow pulse at each such zero-crossing,

gating the train of narrow pulses obtained from the desired frequency with the train of narrow pulses obtained from the standard frequency,

generating a coincidence pulse whenever said two trains of pulses are coincident,

applying consecutive pairs of coincidence pulses to start and stop a pair of counters, one to counter providing a count N_d of the desired frequency and the other counter providing a count N_o of the standard frequency, and obtaining F_D from $F_D = (N_d/N_o)F_o$.

3,924,184
VIBRATING FIBER ELECTROMETER

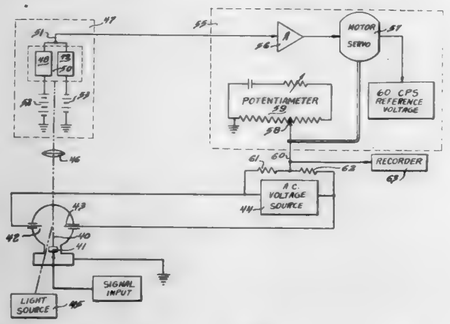
John J. Spokas, Lisle, Ill., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Division of Ser. No. 389,288, Aug. 17, 1973, Pat. No. 3,851,248. This application Sept. 16, 1974, Ser. No. 506,478
Int. Cl.² G01R *17/06, 5/28*
U.S. Cl. 324—99 R **4 Claims**

1. In a vibrating fiber electrometer including a pair of deflecting electrodes, a flexible fiber capable of carrying an electric charge positioned between said deflecting electrodes and free to vibrate therebetween, means coupled to said deflecting electrodes for applying a first alternating voltage thereacross, and means coupled to said fiber for applying a charge thereto, with said fiber having a charge thereon not equal to zero, said fiber being responsive to said first alternating voltage applied to said deflecting electrodes to vibrate therebetween, the improvement in said electrometer comprising:

a pair of oppositely biased photosensitive elements in spaced apart relationship and having a common electrode,

projection means responsive to the position of said fiber to project the image of said fiber so that with said fiber at rest said projected image is projected between said pair of photosensitive elements and with said fiber vibrating

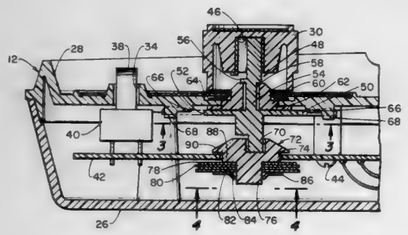


said projected image moves alternately across each of said photosensitive elements, said photosensitive elements in response to said motion of said image developing a second alternating voltage at said common electrode, and control means coupled to said common electrode, said deflecting electrodes and said fiber, said control means being responsive to said second alternating voltage to minimize vibration of said fiber.

3,924,185
ELECTRICAL METER CONSTRUCTION

Edwin L. Schwartz, Los Angeles, Calif., assignor to Rite Autotronics Corporation, Los Angeles, Calif.

Filed Aug. 30, 1973, Ser. No. 392,946
Int. Cl.² G01R *15/08;* **H01H** *19/58*
U.S. Cl. 324—115 **4 Claims**



1. In combination with an electrical meter apparatus, said electrical meter apparatus being mounted within a housing, said housing being connected with visual observation means for denoting various electrical readings, electronic circuitry mounted upon a printed circuit board, said printed circuit board located within said housing, said electrical circuitry connected to operate said visual observation means, said electronic circuitry including a plurality of separate circuit paths, the improvement comprising:

selector means connected to said housing and being movable to select an individual said circuit path of said plurality of separate circuit paths, said selector means including a plug rotatably mounted within an oversize opening within said printed circuit board, said plug capable of a limited amount of canting movement relative to said printed circuit board, an electrical contact element attached to said plug with a portion of said contact element to be in physical contact with said printed circuit board,

said portion comprising a spring, the force of said spring tending to maintain said plug axially aligned within said oversized opening;

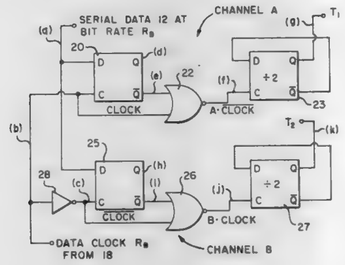
there being two in number of said electrical contact elements, said electrical contact elements being fixedly connected together so as to move together relative to said printed circuit board, said portions of said contact elements being aligned 180° apart; and

said selector means including a manually operatable knob located exteriorly of said housing, said knob being connected with a switch rotor, said switch rotor extending through an opening in said housing, a portion of said switch rotor cooperating in a loose fitting manner with a socket formed within said plug, a panel bushing located upon said switch rotor, said panel bushing being fixedly connected to said housing, said switch rotor being rotatable with respect to said panel bushing, the interconnection between said panel bushing and said switch rotor permitting a limited amount of canting movement of said switch rotor relative to said panel bushing.

3,924,186
STAGGERED QUADRIPHASE DIFFERENTIAL ENCODER AND DECODER

Robert S. Gordy, Largo; David E. Sanders, and Alfred T. Anderson, both of St. Petersburg, all of Fla., assignors to NCR Corporation, Dayton, Ohio

Filed Feb. 7, 1974, Ser. No. 548,133
Int. Cl.² H04B *1/00*
U.S. Cl. 325—30 **17 Claims**



1. An encoder and decoder for use in a digital data transmission system for the encoding and decoding of a digital data signal wherein said encoder comprises:

a first and a second encoder channel wherein said digital data signal is alternately clocked thru said first and said second channel at staggered times by a clock signal and an inverted clock signal, respectively;

means in each of said channels for providing the complement signal of the digital signal present at a channel input upon the occurrence of a transition in a channel associated clock signal;

means in each of said channels for logically AND'ing the provided complement signal with the channel associated clock signal to provide an AND'ed signal;

means in each of said channels for dividing said AND'ed signal by a common factor to provide a channel encoded signal; and

wherein said decoder comprises:

a first and a second decoder channel wherein the one channel encoded signal is applied to said first decoder channel and the other channel encoded signal is applied to said second decoder channel;

means in each of said channels for delaying the respective channel encoded signal for a predetermined time interval;

means in each of said decoder channels for combining the delayed channel encoded signal with the undelayed channel encoded signal to provide a partially decoded signal;

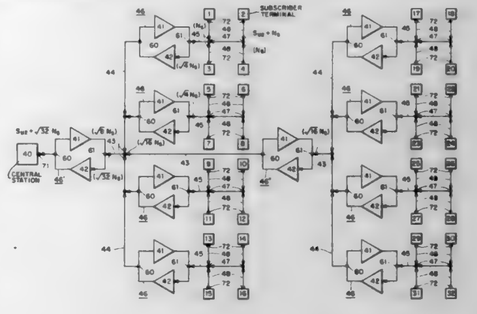
means in each of said decoder channels for gating said partially decoded signal as a function of a channel associated clock signal to provide a channel data signal; and

means for combining the channel data signal from each of said decoder channel gating means to provide a decoded digital data signal.

3,924,187
TWO-WAY CABLE TELEVISION SYSTEM WITH ENHANCED SIGNAL-TO-NOISE RATIO FOR UPSTREAM SIGNALS

Paul M. Dormans, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed May 14, 1974, Ser. No. 469,713
Int. Cl.² H04B *3/04*
U.S. Cl. 325—52 **3 Claims**



1. A two-way cable television system for providing an enhanced signal-to-noise ratio for upstream signals comprising: a bidirectional signal transmission network for providing simultaneous downstream and upstream signal paths and having a single downstream source node in common with a single upstream sink node and a plurality of downstream sink nodes in common with a plurality of upstream source nodes; first signal generating and receiving means connected to the common downstream source node and upstream sink node for providing transmission of downstream signals and a master reference signal and for reception of upstream signals; second signal generating and receiving means connected to each one of the common downstream sink nodes and upstream source nodes for providing transmission of upstream signals and reception of downstream signals, each one of said second signal generating means having a predetermined and different time period for the transmission of the upstream signals which time period is commenced by said master reference signal; and gating means associated with one or more of the second signal generating and receiving means and inserted in series into the signal path of the signal transmission network and controlled by the signals therein for gating the last mentioned one or more second signal generating and receiving means to the upstream signal path during said time period of each one of said one or more second signal generating means whereby there is a selective reduction of the number of second signal generating and receiving means connected to the upstream signal path and the first signal receiving means.

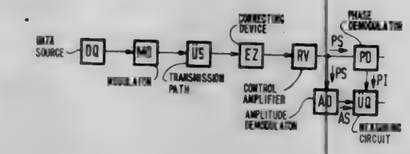
3,924,188
MEASURING THE TRANSMISSION QUALITY OF A PHASE DIFFERENCE MODULATED CARRIER

Rudolf Hofbauer, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 6, 1974, Ser. No. 467,122
Claims priority, application Germany, May 4, 1973, 2322548
Int. Cl.² H04B *17/00;* **H04L** *27/18*
U.S. Cl. 325—67 **6 Claims**

1. In a data transmission system wherein message signals are transmitted using phase difference modulation in a pulse-con-

trolled manner and in consecutive modulation sections, said phase difference modulated carrier being subject to amplitude modulation by band limitation, wherein phase scanning pulses, occurring in the centers of consecutive modulation sections, are produced and wherein an amplitude demodulator produces an amplitude signal, modulation sections of said phase difference modulated carrier being assigned to modulation section of said amplitude signal, a method for measuring the quality of the transmitted signals, comprising:



deriving scanning pulses from said phase scanning pulses, occurring in the centers of the modulation sections of the amplitude signal,

sampling and measuring instantaneous values of said amplitude signal using said scanning pulses,

storing measured values corresponding to maximum and minimum instantaneous values of said amplitude signal occurring during an observation period and

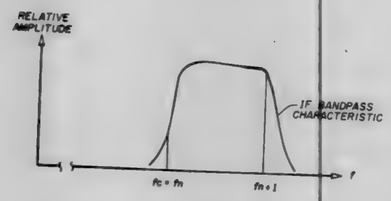
forming the difference between said maximum and minimum values, which difference serves as a measure of the transmission quality.

3,924,189

SYSTEM FOR DETERMINATION OF SMALL TUNING ERRORS IN RECEIVERS

Kenneth J. Campbell, 632 N. Granados St., Solana Beach, Calif. 92075

Filed Nov. 1, 1973, Ser. No. 411,963
Int. Cl.² H04B *17/00*
U.S. Cl. 325—363 **4 Claims**



1. A system for the determination of small tuning errors of SSB and CW receivers, comprising:

a receiver under test tunable to a plurality of discrete frequencies differing by an identical frequency separation between adjacent discrete frequencies, and having an IF bandpass at least equal to said frequency separation which is operative to produce an output at the separation frequency when the receiver is accurately tuned to any one of said plurality of discrete frequencies;

a source for producing signals of a frequency equal to said frequency separation;

a pulse generator connected to receive said signals and responsive thereto for developing pulses at the same frequency,

said pulses being impressed upon said receiver as its input signals;

frequency discriminating means connected to receive the output of said receiver for producing a signal as a function of the frequency deviation of the instantaneous output of said receiver relative to said predetermined frequency; and

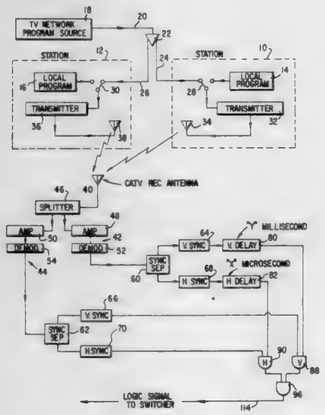
means for indicating the amplitude of the signal produced by said frequency discriminating means, whereby to determine the degree of tuning error of said receiver under test.

3,924,190

METHOD AND APPARATUS FOR AUTOMATIC PROGRAM CONTROL FOR CATV CHANNELS

William E. Roach, Banning, Calif., assignor to Storer Broadcasting Company, Miami Beach, Fla.

Filed Jan. 6, 1975, Ser. No. 539,020
Int. Cl.² H04H *1/04;* **H04N** *7/10*
U.S. Cl. 325—395 **19 Claims**



1. A method for controlling the distribution of signals for a cable television system which receives television signals from at least two signal sources wherein the signals from said respective sources received by the cable television system have a unique relative time differential only when the signal sources are simultaneously transmitting the same program which includes, sensing the presence of said unique relative time differential and preventing the distribution to the cable television system of signals from one of said signal sources when the presence of said unique time differential is sensed.

3,924,191

TOUCH-TUNING SYSTEM FOR A TELEVISION RECEIVER

Johnny Collins, Oak Park, and Melvin C. Hendrickson, Elmhurst, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

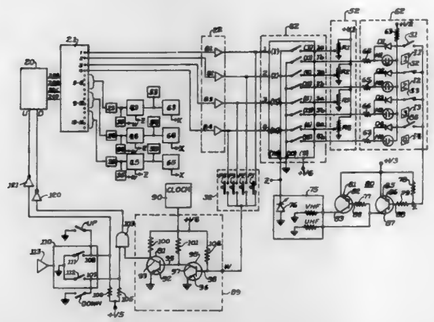
Filed Apr. 1, 1974, Ser. No. 457,021
Int. Cl.² H04B *1/16*
U.S. Cl. 325—464 **7 Claims**

1. An electronic touch-tuning system for a television receiver having a varactor tuner and a plurality of position switches individually associated with a corresponding plurality of tuning positions, comprising:

pulse driven switching means including a cyclical counter for sequentially transferring control of said varactor tuner among said tuning positions;

a pulse source; and

position seeking means coupling said switching means to said pulse source for transferring control of said tuner to



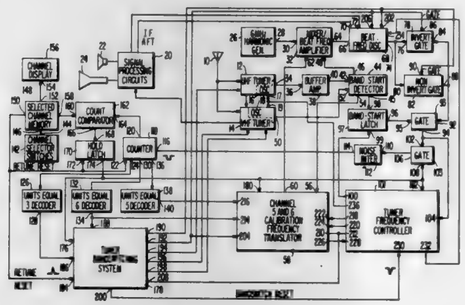
the tuning position associated with the actuated one of said position switches.

3,924,192

MULTIBAND RANDOM CHANNEL ADDRESS CRYSTAL-OCK TUNING SYSTEM

John Barrett George, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed June 3, 1974, Ser. No. 476,081
Int. Cl.² H04B *1/32*
U.S. Cl. 325—470 **44 Claims**



1. A television tuning system comprising:

tuning means for receiving radio frequency signals corresponding to any one of a plurality of television channels in at least first and second bands of frequencies and having tunable local oscillator means for producing a corresponding oscillator signal in at least fourth and fifth bands of frequencies;

sweep generator means coupled to said oscillator means for varying the tuning thereof in a predetermined manner through at least said fourth and fifth bands of frequencies; signal generating means for producing reference signals at frequencies corresponding to television channel oscillator frequencies in said fourth and fifth bands;

frequency discriminator means having first and second inputs coupled to said oscillator means and to said signal generating means, respectively, for producing an output signal representative of frequency differences between said oscillator signal and each of said reference signals as said tuning is varied;

counting means coupled to said discriminator means for producing an output count representative of said oscillator signal passing through a predetermined frequency relationship with respect to each of said reference signals;

channel selector means having an output terminal for producing at said output terminal a stored count representative of a selected television channel;

comparator means coupled to said counting means and to said channel selector means for providing a hold signal to said sweep generator means in response to a match between said output count and said stored count;

decoder means coupled to said counting means for identifying the presence of a particular output count;

bandswitch means for producing a band selection signal to condition said tuning means for reception of said first band of radio frequencies when said output count is less than or equal to said particular count and to condition said tuning means for reception of said second band of radio frequencies when said output count is greater than said particular count; and

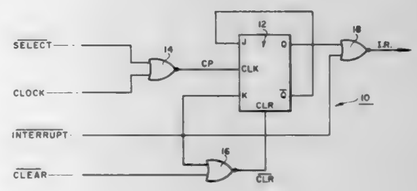
means for resetting said sweep generator means, in response to a match between said output count and said particular count and the absence of said hold signal, to a condition suitable for initiating variation of the tuning of said oscillator means through said fifth band of frequencies.

3,924,193

LOGIC CIRCUIT INCLUDING J-K FLIP FLOP PROVIDING OUTPUT PULSE IN RESPOSE TO LONGER DURATION INPUT PULSE

Sverre Wolff, Sunnyvale, Calif., assignor to Hycel, Inc., Houston, Tex.

Filed Oct. 29, 1974, Ser. No. 518,372
Int. Cl.² H03K *5/20, 19/12*
U.S. Cl. 328—109 **8 Claims**



1. A logic circuit for providing a request for service signal to servicing means in response to the occurrence of an event manifested by the occurrence of an event signal, said request signal being provided from the time said event occurs until the time said servicing means provides a signal indicating service is to occur, said circuit comprising:

bistable means having a true data input, a false data input, a clock input, a clear input, a true output and a false output, the signals provided by said true output and said false output being opposite in state, said false output being coupled to said true data input, the signal provided by said true output becoming a true state whenever a switching signal is applied to said clock input at the time a signal having a true state is applied to said true data input and a signal having a false state is applied to said false data input;

first means for applying said event signal as a false state signal to said false data input;

second means for applying said event signal to said clear input so that the trailing edge of said event signal causes said true output to provide a signal having a false state;

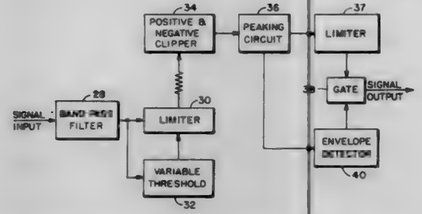
third means for providing said switching signal to said clock input in response to said servicing means providing said signal indicating service; and

gating means for providing said request signal whenever said event signal is provided and said true output provides a true state signal.

3,924,194
SIGNAL REGENERATOR

Charles W. Cook, Huntsville, Ala., assignor to Avco Corporation, Huntsville, Ala.

Division of Ser. No. 358,863, May 10, 1973, Pat. No. 3,863,031. This application Oct. 31, 1974, Ser. No. 519,733
Int. Cl.² H04B *1/04*
U.S. Cl. 328—164 **2 Claims**



1. A signal regenerator for a signal having a predetermined frequency and duration, the combination comprising:

a resonant circuit tuned to said frequency, said signal being applied to said resonant circuit;

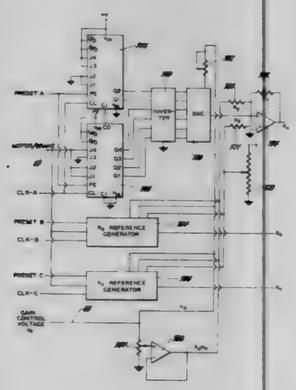
an AND gate having an output terminal and first and second input terminals, the signal output from said resonant circuit being applied to said first input terminal, said AND gate being enabled by an enabling pulse applied to said second input terminal; and

means for generating said enabling pulse, said enabling pulse having said predetermined duration, said means comprising an envelope detector, said signal output from said resonant circuit being applied to said envelope detector, said envelope detector developing a square wave having a duration equal to the applied signal, and said envelope detector further comprising a pulse shortener for shortening said duration by a small fixed amount to eliminate a fixed error in said duration.

3,924,195
DIGITAL SAWTOOTH GENERATOR

Michael F. Matouka, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 8, 1974, Ser. No. 458,562
Int. Cl. H03k *4/10, 3/37*
U.S. Cl. 328—181 **3 Claims**

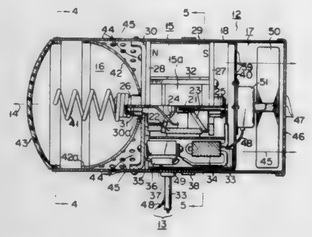


1. A digital sawtooth waveform generator comprising: means for generating a series of clock pulses; means for generating a series of recurring preset pulses; counting means for receiving said series of clock pulses and recurring preset pulses and counting said clock pulses between preset pulses to provide a digital signal representing the number of clock pulses counted thereby between preset pulses; means for generating a gain control signal having a magnitude V_G; a variable gain digital-to-analog converter for receiving the digital signal and the gain control signal and supplying a first signal having a magnitude equal to the product of V_G, N and a first constant where N is the count represented by the digital signal; means for generating a second signal having a magnitude equal to the product of V_G and a second constant, the second signal having a polarity opposite to the polarity of the first signal; and means for summing the first and second signals, whereby the summation is a digital sawtooth waveform which is compressed or expanded about a particular count N equal to the second constant divided by the first constant as the magnitude V_G of the gain control signal is varied.

3,924,196
HIGH FREQUENCY THERAPEUTIC APPARATUS

Hirokazu Takahashi, Tokyo, and Masao Kato, Komae, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 4, 1974, Ser. No. 448,013
Claims priority, application Japan, Mar. 7, 1973, 48-26189
Int. Cl.² H01J *21/18*
U.S. Cl. 328—253 **7 Claims**



1. A magnetron apparatus including a microwave oscillator comprising:

a magnetron device having an output portion and a cathode stem projecting in opposite directions;

an antenna assembly composed of a helical antenna directly connected to said output portion of the magnetron device and a microwave reflector reflecting in the form of a beam in a predetermined direction the microwave energy radiated from said antenna;

a shield case enclosing the magnetron device and the antenna assembly;

said microwave oscillator being connected electrically to a power supply with low frequency cord means;

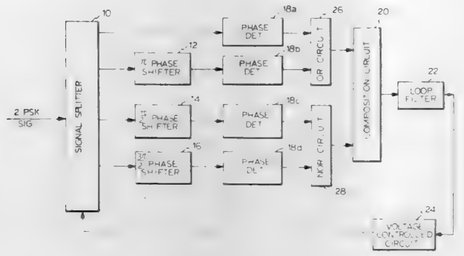
the antenna assembly having a dielectric cover formed of dielectric material permeable to microwaves and fitted to the forward end of the shield case.

3,924,197
CIRCUIT FOR REPRODUCING REFERENCE CARRIER WAVE

Akira Okano; Yoichi Moritani, and Masahiro Murakami, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 427,099, Dec. 21, 1973, Pat. No. 3,886,462. This application Dec. 19, 1974, Ser. No. 534,343
Claims priority, application Japan, Dec. 27, 1972, 47-2506
Int. Cl.² H04L *27/22;* **H03B** *3/06*
U.S. Cl. 329—104 **4 Claims**

1. A circuit for reproducing a reference carrier wave for a 2-differential phase shift keyed signal, comprising, in combination, a signal splitter circuit for splitting a 2-differential phase shift keyed signal applied thereto into four signal portions, phase shifter means for relatively shifting phases of said four signal portions so that, with respect to a selected one of said signal portions, the remaining three signal portions have phase shifts of π, $\pi/2$, and 3 $\pi/2$ radians, respectively, one phase detector for phase detecting each of the relative phase shifted signal portions, a pair of logic circuits each connected

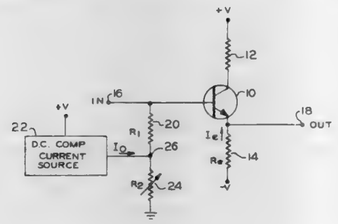


to one pair of the phase detectors producing detected outputs having a phase difference of π radians to switch said detected outputs with a predetermined threshold magnitude, a composition circuit for adding the outputs from said pair of logic circuits, a loop filter coupled to said composition circuit, and a voltage controlled oscillator coupled to said loop filter and to said signal splitter circuit to form a phase locked loop.

3,924,198
TRANSISTOR AMPLIFIER HAVING SINGLE CONTROL TO SIMULTANEOUSLY ADJUST INPUT RESISTANCE AND INPUT VOLTAGE LEVEL

Thor Oscar Hallen, Aloha, Oreg., assignor to Tektronix Inc., Beaverton, Oreg.

Filed Aug. 12, 1971, Ser. No. 171,244
Int. Cl.² H03F *3/04*
U.S. Cl. 330—32 **12 Claims**



1. A transistor amplifier in which the improvement comprises:

a transistor having emitter, base and collector electrodes;

bias means for applying a D.C. emitter bias current to said emitter and causing a D.C. base current flow in said base;

an emitter resistance connected to said emitter;

an input signal terminal directly connected to said base to provide a D.C. input signal path to said base;

a first base resistor connected at one terminal to said base; and

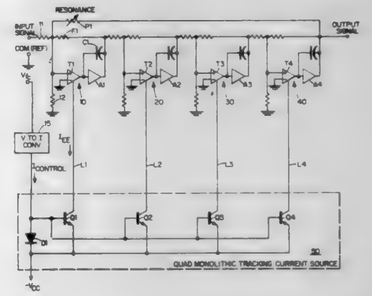
compensation means including resistance means connected between the other terminal of said first base resistor and a reference voltage for applying a D.C. compensation voltage to the other terminal of said first base resistor to compensate for the voltage drop produced across said first resistor by said base current;

said compensation means including a single control means for adjusting said compensation voltage in order to maintain the D.C. voltage level of said input terminal at predetermined value, and for simultaneously varying the resistance in series between said first resistor and ground in order to maintain the input resistance of said amplifier at a predetermined value, in spite of different current gains for said transistor.

3,924,199
N-POLE FILTER CIRCUIT HAVING CASCADED FILTER SECTIONS

Alan R. Pearlman, Newton Highlands, Mass., assignor to ARP Instruments, Inc., Newton, Mass.

Filed Feb. 4, 1974, Ser. No. 439,353
Int. Cl.² H03F *1/36*
U.S. Cl. 330—107 **5 Claims**



1. An active low-pass filter having a selectable cutoff frequency and providing a controllable resonance peak in the vicinity thereof, comprising

A. n low-pass series-connected filter sections, each having an input and an output and characterized by a cutoff frequency selected by a control current applied thereto, each contributing a phrase shaft of $180/n$ degrees at resonance,

B. a current source responsive to control input applied thereto to provide a substantially identical control current to each filter section for selecting the cutoff frequency thereof, in accordance with said control input, and

C. a resistor interconnecting the output of a last of said filter with the input of a first thereof and adjustable to vary the resonance peak of the filter.

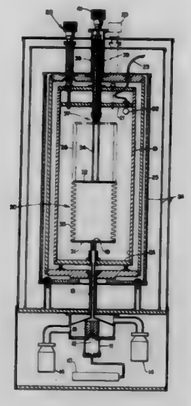
3,924,200
ATOMIC STANDARD WITH VARIABLE STORAGE VOLUME

Harry E. Peters, Seabrook, Md., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Oct. 3, 1974, Ser. No. 511,887
Int. Cl.² H01S *1/00*
U.S. Cl. 331—94 **2 Claims**

2. In an atomic or molecular frequency standard of the type including a vacuum chamber enclosing a storage bulb, an arrangement comprising a storage bulb which has a constant surface area and a continuously adjustable volume, the volume of said bulb being adjustable by varying the length of said bulb along one axis; screw means extending through said vacuum chamber, one end of said screw means being attached to one end of said bulb, a rotary seal being formed between said screw means and said vacuum chamber, rotation of said

screw means from outside said vacuum chamber causing longitudinal movement of said one end of said bulb relative to the other end thereof, whereby accurate adjustment of the volume of said bulb is provided.



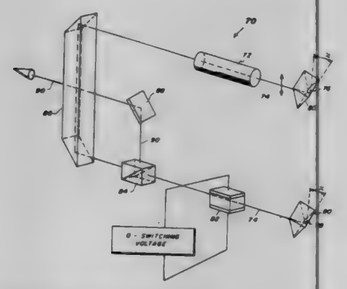
3,924,201
LASER APPARATUS EMPLOYING MECHANICAL STABILIZATION MEANS

Thomas G. Crow, Orlando, Fla., assignor to International Laser Systems, Inc., Orlando, Fla.

Continuation-in-part of Ser. No. 293,842, Oct. 2, 1972, abandoned. This application July 10, 1974, Ser. No. 487,121

Int. Cl.² H01S *3/08, 3/081*

U.S. Cl. 331—94.5 C **13 Claims**



1. Laser apparatus comprising:
an active laser medium;
means for producing a population inversion in said laser medium;
first and second roofline prisms disposed along said beam for stimulating and supporting the emission of a coherent beam of radiant energy from said laser medium;
a beam splitter for polarizing radiant energy along said beam into a plane of polarization and for directing a portion of said radiant energy along an output axis out of said beam splitter;
means for maintaining the rooflines of said prisms perpendicular to each other to render said laser apparatus relatively insensitive to mechanical tolerances, shock and vibrations;
means for positioning the rooflines fo said prisms at an angle with respect to said plane of polarization, which angle is substantially other than normal to or parallel with said plane of polarization and lying in a plane normal to the axis of said beam; and wherein
said angle is selected to provide a desired output from said beam splitter.

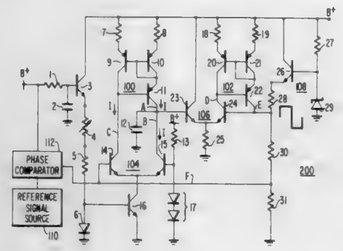
3,924,202
ELECTRONIC OSCILLATOR

Jack Craft, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 21, 1974, Ser. No. 499,290

Int. Cl.² H03K *4/06*

U.S. Cl. 331—111 **13 Claims**



1. An oscillator circuit comprising:
a current source;
current steering means coupled to said current source and responsive thereto for providing first and second current paths;
a charge storage device coupled to one of said current paths;
current repeater means coupled to the other of said current paths and to said charge storage device, said current repeater means and said current steering means providing alternate charge and discharge paths for said charge storage device; and
regenerative switching means coupled to said charge storage device and responsive to the charge condition thereof for providing rapid transition of said current steering means from conduction in said one path to said other path.

3,924,203
MODULATOR CIRCUITS FOR TRANSLATING D.C. SIGNALS INTO SYNCHRONOUS A.C. SIGNALS

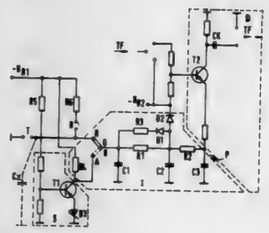
Hans Robert Schemmel, Nurnberg, Germany, assignor to Tekade Felten & Guilleaume Fernmeldeanlagen GmbH, Nurnberg, Germany

Filed May 16, 1974, Ser. No. 470,553

Claims priority, application Germany, May 18, 1973, 2325191

Int. Cl.² H03K *7/00, 5/02*

U.S. Cl. 332—9 R **7 Claims**



1. A modulator for modulating an a.c. signal with a d.c. signal from a d.c. line, the modulator comprising a pulse shaping circuit having an input and an output; a modulating means having an input for a modulating signal, an input for the a.c. signal, and an output for a modulated a.c. signal, an inverter having an input and an output, and a switch means having two alternatively selectable contacts and a wiper contact, the d.c. line being connected to one of the alternatively selectable contacts and to the inverter input, the inverter output being connected to the other alternatively selectable contact, the wiper contact being connected to the pulse-shaping circuit input, the output of which is connected to the modulating signal input of the modulating means; wherein the pulse shaping circuit comprises a low pass filter having an input which is arranged to cooperate with the d.c. line for closed-circuit feed, when the switch means connects the d.c. line to the pulse shaper circuit input, and with the inverter output for open-circuit feed, when the switch means connects the inverter output to the pulse shaper input, to provide independently adjustable time constants for open-and closed-circuit feed.

3,924,204
WAVEGUIDE TO MICROSTRIP COUPLER

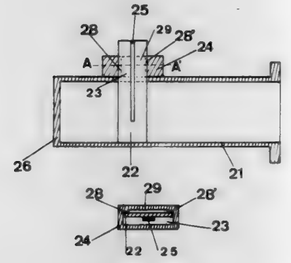
Michel Fache; Jacques Blondel, and Jean-Rene Mahieu, all of Paris, France, assignors to Societe Lignes Telegraphiques et Telephoniques, Paris, France

Filed May 6, 1974, Ser. No. 467,235

Claims priority, application France, May 7, 1973, 73.16269

Int. Cl.² H01P *1/16, 5/08*

U.S. Cl. 333—21 R **3 Claims**



1. A broadband coupler between a rectangular waveguide and a microstrip line comprising a rectangular channel formed in a metal body fixed on a first large wall of said waveguide and perpendicular thereto with the largest dimension of said channel parallel to the axis of said waveguide, a rectangular dielectric substrate plate within said channel extending into said waveguide through a slot in said first wall up to the second large wall, a conductor printed on a first face of said dielectric plate extending into said waveguide, in which packing means are provided on one inner wall of said channel to support the second face of said dielectric plate so that the distance "e" between the inner wall and said second face of said plate has a range of values defined by

$$3\times10^{8}/f > e \geq 1.5\times10^{8}/f$$

where:
f is the midband frequency in hertz of the operating frequency band and
e is measured in meters.

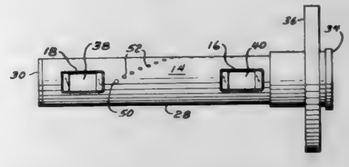
3,924,205
CROSS-POLARIZED PARABOLIC ANTENNA

Laurence H. Hansen, Oak Lawn; Robert E. Massey, Oak Forest, and Aloysius Wojnowski, Worth, all of Ill., assignors to Andrew Corporation, Orland Park, Ill.

Division of Ser. No. 454,814, March 26, 1974, Pat. No. 3,864,688, which is a continuation of Ser. No. 331,172, Feb. 9, 1973, abandoned, which is a continuation of Ser. No. 237,727, March 24, 1972, abandoned. This application Sept. 3, 1974, Ser. No. 502,528

Int. Cl.² H01P *1/16, 5/12*

U.S. Cl. 333—21 A **5 Claims**



1. In a waveguide system for propagating crosspolarized high-frequency radiation comprising a circular waveguide and a pair of rectangular waveguides connected thereto and extending radially therefrom, means for supplying a first linearly polarized high frequency radiation signal to one of the rectangular waveguides, and means for supplying a second linearly polarized high frequency radiation signal to the other rectangular waveguide, the first and second signals being polarized in the same direction, the improvement characterized by the longer transverse H-plane dimension of both rectangular waveguides being aligned in a common plane at their points of connection to the circular waveguide, the circular waveguide having therein a 90° polarization rotator between the points of connection thereto of the respective rectangular waveguides for producing orthogonality of the first and second signals supplied to the circular waveguide through the rectangular waveguides, said polarization rotator comprising stationary passive conductor means.

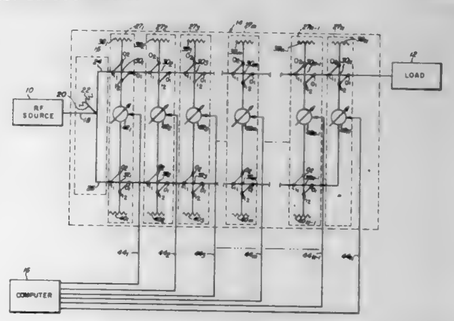
3,924,206
RADIO FREQUENCY ATTENUATOR COMPRISING A PLURALITY OF VARIABLE PHASE SHIFTERS AND SERIALLY COUPLED DIRECTIONAL COUPLERS

Matthew Fassett, Billerica, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Aug. 21, 1974, Ser. No. 499,390

Int. Cl.² H01P *1/22*

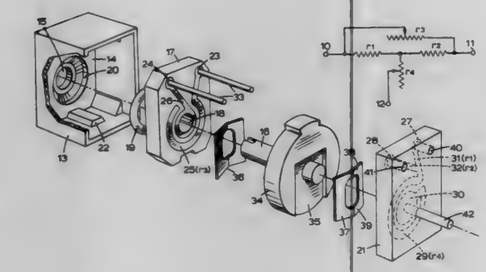
U.S. Cl. 333—81 R **2 Claims**



1. A radio frequency attentuator for coupling a source of radio frequency energy to an output load with an amount of attenuation selected in accordance with signals provided by a control signal source, comprising:
a. a first plurality of serially coupled directional couplers, the last one thereof being adapted for coupling to the output load;

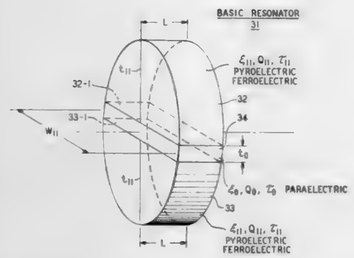
b. a plurality of loads, each one thereof being coupled to a different one of the directional couplers;
c. a plurality of variable phase shifters, each one thereof being coupled to a different one of the directional couplers and to the control signal source;
d. a second plurality of directional couplers, each one thereof being coupled to a different one of the first plurality of directional couplers through a different one of the variable phase shifters; and
e. a power divider having an input terminal adapted for coupling to the source of radio frequency energy, and a pair of output terminals, one of such output terminals being coupled to the first one of the first plurality of serially coupled directional couplers and the other one of the pair of output terminals being coupled to the first one of the second plurality of serially coupled directional couplers.

3,924,207
VARIABLE ATTENUATOR APPARATUS
Arnold Simoni, Don Mills, Canada, assignor to Precision Electronics Components Ltd., Toronto, Canada
Filed Dec. 11, 1974, Ser. No. 531,517
Int. Cl.² H03H *7/26*
U.S. Cl. 333—81 R **6 Claims**



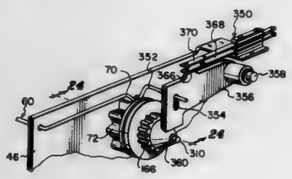
1. A variable attenuator apparatus comprising:
a housing;
a rotatable shaft extending inwardly of the housing;
first and second spaced-apart, stationary insulating substrate elements supported within the housing, one of said elements including a shaft-receiving aperture through which the rotatable shaft extends, each substrate element supporting a pair of first and second terminals, the first and second terminals of one pair being connected respectively to the first and second terminals of the other pair;
a contact brush carrier disposed between the substrate elements and mounted on the rotatable shaft for rotation therewith;
first and second arcuate resistance tracks and first and second collector tracks supported respectively by the first and second substrate elements;
a pair of fixed resistors supported by the second substrate element and connected respectively between one end of the second arcuate resistance track and the first and second terminals of the second substrate element;
the terminals of the first substrate element being directly connected to one end of the first arcuate resistance track and to the collector track, respectively;
a pair of spring-loaded contact brushes mounted on opposite faces of the contact brush carrier for rotation therewith, each contact brush being spring-biased into sliding bridging engagement with the arcuate resistance track and collector track of the respective substrate element to define therewith a variable resistor, said variable resistors varying in opposite senses upon rotation of the shaft;
a first terminal connection to said interconnected first terminals of the substrate elements;
a second terminal connection to said interconnected second terminals of the substrate elements; and
a third terminal connection to said second collector track.

3,924,208
TEMPERATURE COMPENSATED DIELECTRIC RESONATORS
James Kevin Plourde, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Division of Ser. No. 317,385, Dec. 22, 1972. This application Apr. 28, 1975, Ser. No. 572,277
Int. Cl.² H01P *1/30, 7/06*
U.S. Cl. 333—82 BT **13 Claims**



1. A microwave device comprising a first member, and a second member of pyroelectric ferroelectric material disposed on said first member, said second member having an optical axis and abutting said first member in a configuration that allows charge separation to occur between two separate surfaces intercepting said optical axis, and resistive means contacting and providing coupling between said two surfaces of said second member and having a resistance less than that of said pyroelectric ferroelectric material for counteracting said charge separation.

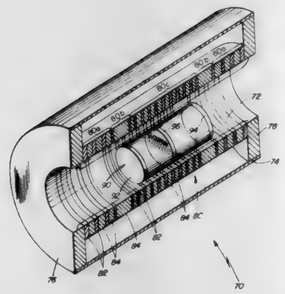
3,924,209
UHF TUNER HAVING A SIMPLIFIED AFC DEFEAT MECHANISM
Alarico A. Valdettaro, Bloomington, Ind., assignor to Sarkes Tarzian, Inc., Bloomington, Ind.
Division of Ser. No. 350,742, April 13, 1973, Pat. No. 3,842,683, which is a continuation of Ser. No. 174,722, Aug. 25, 1971, abandoned. This application Oct. 16, 1974, Ser. No. 515,209
Int. Cl.² H03J *5/00*
U.S. Cl. 334—39 **4 Claims**



1. The combination of, a UHF tuner having a continuously variable main tuning shaft rotation of which is effective selectively to receive signals from all stations in the UHF television band, a station selector shaft, gear means interconnecting said selector shaft and said main tuning shaft, a star wheel disposed concentrically about said selector shaft for rotation therewith, a spring member engageable by said star wheel to establish a stop position of said main tuning shaft for each of the seventy television stations in the UHF band, a fine tuning shaft positioned inside of said selector shaft, said fine tuning shaft being

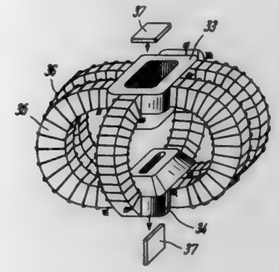
normally biased to a forward position and being movable to a rear position, means responsive to the rotation of said fine tuning shaft while it is in said rear position for effecting a fine tuning operation at each of said stop positions of said main tuning shaft, said fine tuning shaft being disengaged from said selector shaft when said fine tuning shaft is in said forward position and wherein said UHF tuner is provided with automatic frequency control means normally responsive to a control signal, switching means affixed to said television tuner and electrically coupled to said automatic frequency control circuit, actuation of said switching means being effective to defeat the operation of said automatic frequency control circuit, means mechanically interconnecting said selector shaft and said switching means, said interconnecting means including a pivotable lever engageable by said spring member upon rotation of said selector shaft, said lever being effective to actuate said switching means in response to engagement thereof by said spring member, means responsive to the longitudinal movement of said fine tuning shaft for engaging said lever and actuating said switching means upon movement of said fine tuning shaft to said rear position, said longitudinal movement responsive means including a camming member having a nonuniform circular cross section along a central axis thereof, said camming member being mounted coaxially with said fine tuning shaft and said star wheel and movable along said central axis in response to the longitudinal movement of said fine tuning shaft, said lever being engageable by said camming member for actuating said switching means upon longitudinal movement of said fine tuning shaft to said rear position.

3,924,210
FIELD SHAPING MAGNET STRUCTURE
Norman J. Dionne, Arlington Heights, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Nov. 1, 1974, Ser. No. 520,074
Int. Cl.² H01F *7/02*
U.S. Cl. 335—211 **10 Claims**



1. A magnet structure comprising:
a pair of spaced magnetic pole pieces operatively disposed in alignment with one another and oppositely polarized in a direction substantially perpendicular to the direction of alignment; and
reluctor circuit means interconnecting the pole pieces for providing a desired magnetic scalar potential profile, the reluctant circuit means including a linear array of alternate nonmagnetic layers and interposed magnetic members disposed between the pole pieces, the magnetic members being spaced progressively varying distances from one another.

3,924,211
METHOD OF ORIENTING ELECTRICALLY CONDUCTIVE BODIES, PREFERABLY NON-MAGNETIC ONES, IN A MAGNETIC FIELD AND APPARATUS FOR PERFORMING SAME
Benyamin Alexandrovich Ioffe, ulitsa Raunas, 45/2, kv. 81; Robert Karlovich Kalnin, ulitsa Gorkogo, 53, kv. 19; Vyacheslav Semenovich Dorofeev, ulitsa Frunzes, II, kv. 5; Viktor Georgievich Sirotenko, ulitsa Strelnieku, 19, kv. 3, all of Riga; Vladimir Borisovich Larin, ulitsa Lomonosova, 2/72, kv. 30, Smolensk; Gunar Yanovich Sermons, ulitsa Skolas, 22, kv. 17, and Alexandr Alexandrovich Shevchenko, ulitsa Suvorova, 23, kv. 4, both of Riga, all of U.S.S.R.
Filed Dec. 15, 1969, Ser. No. 885,190
Claims priority, application U.S.S.R., Dec. 25, 1968, 1289054; Dec. 25, 1968, 1289056
Int. Cl. H01f *13/00*
U.S. Cl. 335—284 **3 Claims**

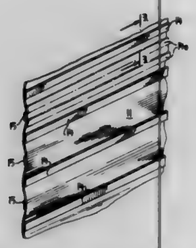


1. An apparatus for orienting electrically conductive bodies, said apparatus comprising an electromagnetic including magnetic core means including a plurality of generally C-shaped magnetic core members cooperatively defining an orientation zone, said electromagnet also comprising winding means adapted to be connected to an alternating electric current source, a pair of pole pieces, all of said plurality of magnetic core members being associated with said pair of pole pieces, a first one of said pole pieces being disposed above a second one of said pole pieces, said first pole piece provided with at least one passage extending therethrough, through which a body can be introduced into said orientation zone to be oriented therein, said second pole piece being provided with at least one passage extending therethrough, through which said body can leave said orientation zone after the orientation operation.

3,924,212
FENDER PROTECTOR CLOTH WITH FLEXIBLE MAGNETIC STRIPS
Fred C. Brown, 3462 - 79th Ave. North, St. Petersburg, Fla. 33702
Filed Aug. 21, 1974, Ser. No. 499,544
Int. Cl.² H01F *7/02*
U.S. Cl. 335—303 **9 Claims**

1. A mechanic's protective fender cloth which comprises a pliant cloth-like member and elongated flexible magnetic

strips affixed at predetermined intervals along said cloth-like member, a portion of said strips being on one side of said



cloth-like member and a further portion of said strips being on the other side of said cloth-like member.

3,924,213

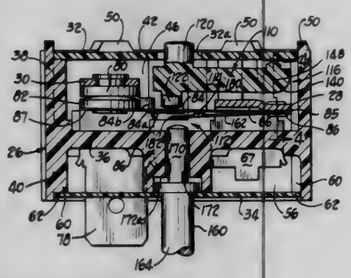
THERMOSTAT

Alexander MacGregor Semple, Oakville, Canada, assignor to Ranco Incorporated, Columbus, Ohio

Filed Sept. 30, 1974, Ser. No. 510,700

Int. Cl.² H01H *61/00*

U.S. Cl. 337—130 **9 Claims**



1. A thermostat comprising:

a. a housing assembly;

b. switch means disposed in said housing and comprising a first contact supported by said housing assembly, a second contact, snd switch blade means having a first end region supported by said housing assembly and a second projecting end region supporting said second contact for movement into and away from engagement with said first switch contact;

c. thermally responsive actuator means connected to said housing assembly and including a surface movable relative to said housing assembly toward and away from said switch blade means in response to sensed changes in temperature, said surface movable in a direction transverse to the extent of said blade means;

d. a switch operating arrangement comprising a switch operator lever structure disposed between said thermally responsive means and said blade means for transmitting motion of said surface of said thermally responsive means to said blade means, said lever structure having a first lever portion for engaging said surface of said thermally responsive means, a second lever portion for engaging said blade means between said first and second end regions, and a heat insulative lever body rigidly interconnecting said first and second lever portions and extending from said lever portions generally transversely of the direction of movement of said surface; and,

e. hinge means interconnecting said lever body and said housing assembly for constraining movement of said first and second lever portions about a hinge axis disposed in a plane which is transverse to the direction of movement of said surface, said hinge means located remote from said first and second contacts.

3,924,214

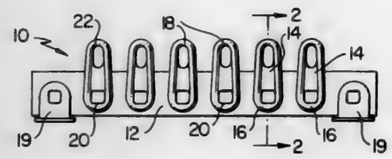
THERMAL LIMITER CONSTRUCTION FOR ONE OR MORE ELECTRICAL CIRCUITS AND METHOD OF MAKING THE SAME

Emil Robert Plasko, Washington Township, Ohio, assignor to Micro Devices Corporation, Dayton, Ohio

Division of Ser. No. 321,753, Jan. 8, 1973, which is a continuation-in-part of Ser. No. 217,927, Jan. 14, 1972, Pat. No. 3,764,948, which is a continuation-in-part of Ser. No. 101,848, Dec. 28, 1970, Pat. No. 3,649,942, which is a continuation-in-part of Ser. No. 62,369, Aug. 10, 1970, abandoned. This application July 22, 1974, Ser. No. 490,732

Int. Cl.² H01H *85/02*

U.S. Cl. 337—163 **3 Claims**



1. A terminal assembly for a thermal limiter comprising:

a wire wound heating rod,

a pair of blade-like electrical terminals arranged in line and connected physically and electrically to the ends of said heating rod for supplying electrical heating current thereto.

a substantially cylindrical temperature sensitive fuse having connecting wires extending from each end thereof, one of said wires being connected to one of said terminals and said fuse being disposed adjacent said rod in substantially parallel relation thereto, and

a third electrical terminal connected physically and electrically to the other one of said fuse connecting wires and having its axis parallel to the axes of the other two terminals.

3,924,215

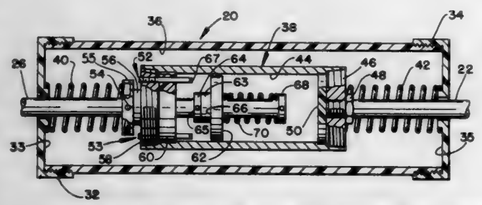
HI-LINE VOLTAGE BREAKER AND FUSE

Danny R. Allison, 1205 S. Moran, Midland, Tex. 79701

Filed Dec. 12, 1974, Ser. No. 531,930

Int. Cl.² H01H *85/36*

U.S. Cl. 337—190 **11 Claims**



1. A hi-line voltage breaker and fuse assembly for being series connected in a high voltage conduit, comprising:

an elongated outer housing having opposed ends axially aligned respective to each other; first and second current carrying link members, an elongated inner housing reciprocatingly received within said outer housing and having opposed end portions axially aligned respective to each other, said outer and inner housings and said first and second link members being axially aligned with respect to one another;

said first link member having opposed end portions with a fixed end thereof affixed to said inner housing and an opposed free end thereof is adapted to be affixed to a current carrying conductor; a marginal length of said first link member being slidably received in a reciprocating manner within one end of said outer housing, a marginal length of said second link member being slidably received in a reciprocating manner within said outer housing;

biasing means by which opposed ends of said outer housing are urged away from opposed ends of said inner housing so that said inner housing is urged towards a position intermediate said opposed ends of said outer housing;

means by which a marginal end of said second link member is reciprocatingly received within said inner housing, a fuse means connected to said inner housing and extending into the interior thereof, electrical contact means on said second link member movable into engagement with said fuse means when said first and second link members are moved away from one another; means forming a current flow path through said first link member to said fuse means; means forming a current flow path through said second link member to said electrical contact means; so that:

connection of the free ends of said first and second link members in series relationship into a current carrying hi-voltage conduit of a hi-line under tension will move said electrical contact into engagement with said fuse and thereby provide a voltage breaker and fuse which will assume a current carrying configuration, and upon parting of the hi-line or upon excessive current flow through said fuse, said assembly will assume a non-conductive configuration.

3,924,216

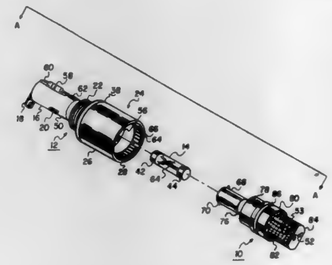
SHIELDED INDICATING LAMP FUSEHOLDER

Burton L. Martin, and Peter E. Tilly, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 24, 1975, Ser. No. 543,839

Int. Cl.² H01H *85/30*

U.S. Cl. 337—206 **9 Claims**



1. A shielded indicating lamp fuseholder for housing a tubular fuse while mounted in a metal panel comprising:

a female member for mounting in the panel having terminals for connection to the circuit to be protected by the fuse and an annular terminal at its front end in contact with the panel through which the fuse is received from the front of the panel;

a male member having a housing at one end for receiving one end of the fuse and a lamp at the other end which illuminates when the fuse is blown, said housing being engageably insertable in said female member through said annular terminal to complete the assembly of the fuseholder, whereupon parallel electrical paths via the protected circuit are established through the fuse and said lamp;

a metal ring encircling the outer wall of said lamp located so that when said male member engages said female member, said ring comes into contact with said annular terminal, and

a wire mesh jacket which completely enshrouds the surfaces of said lamp above said ring and is connected thereto.

3,924,217

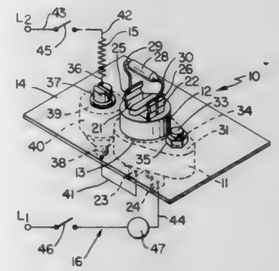
THERMAL LIMITER CONSTRUCTIONS

Emil Robert Plasko, Washington Township, Montgomery County; James Allen Kohl, Kettering, and Michael Raymond Hutchison, Wayne Township, Montgomery County, all of Ohio, assignors to Micro Devices Corporation, Dayton, Ohio

Division of Ser. No. 335,911, Feb. 26, 1973, Pat. No. 3,839,693, which is a division of Ser. No. 179,688, Sept. 13, 1971, Pat. No. 3,731,248. This application July 22, 1974, Ser. No. 490,871

Int. Cl.² H01H *84/48*

U.S. Cl. 337—208 **10 Claims**



1. A thermal limiter construction for at least one electrical circuit comprising a body member formed of electrical insulating material and having a relatively long reduced portion projecting therefrom adapted for insertion in an opening of a frame while said body member is adapted to abut one side of said frame outboard of said frame opening, said long reduced projecting portion having a longitudinal axis, a pair of lead means carried by said construction for lead attachment thereto, and a thermally responsive device carried by said reduced portion and being interconnected in series with said lead means, one of said lead means of said construction having a single fastening opening passing therethrough and being adapted to fasten said body member to said frame by a single fastening member passing through said fastening opening when said projecting portion of said body member is fully inserted in said frame opening, said fastening opening passing through said one lead means in offset relation to said projecting portion thereof and being substantially parallel to said longitudinal axis of said projecting portion whereby said fastening member and said reduced projecting portion are adapted to cooperate to prevent pivoting of said projecting portion out of said frame opening.

3,924,218

THERMAL LIMITER CONSTRUCTION

Emil Robert Plasko, Washington Township, Ohio, assignor to Micro Devices Corporation, Dayton, Ohio

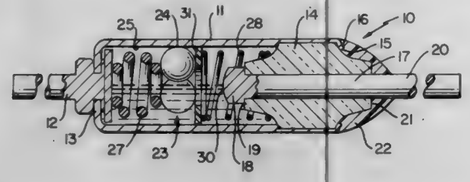
Filed May 22, 1974, Ser. No. 472,413

Int. Cl.² H01H *37/76*

U.S. Cl. 337—407 **5 Claims**

1. In a thermal limiter construction having a casing provided with an end plug carrying a conductor with an enlarged contact head inside said casing and against which spring controlled sliding contact means in said casing normally engages to conductively interconnect said casing and said conductor together, the improvement comprising a washer-like member telescopically disposed about said contact head and disposed between said sliding contact means and a spring that acts

between said sliding contact means and said end plug to tend to move said sliding contact means away from said contact



head whereby said washer-like member separates said spring from said sliding contact means.

3,924,219

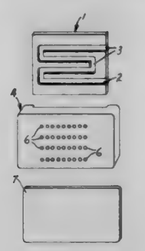
GAS DETECTION DEVICE

David L. Braun, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 210,672, Dec. 22, 1971. This application Apr. 19, 1974, Ser. No. 462,415

Int. Cl.² H01C *13/00*

U.S. Cl. 338—34 **10 Claims**



1. A device useful for measuring the amounts of at least one selected gas in an ambient gas mixture comprising:

a shallow chamber having one open end comprised of a side of said chamber;

a detector substance adapted to interact with the gas to be measured located within said chamber;

a porous gas flow attenuating sheet which allows passage of ambient atmosphere closing the open end of said chamber distally to and spaced apart from said detector substance to form a relatively placid layer of gas between said ambient gas mixture and said detector substance;

whereby the amount of said selected gas available to react with said detector substance is caused to be a function of diffusion through the placid layer of gas and is substantially independent of velocity of the gas mixture at the interface of the device with the ambient surroundings.

3,924,220

ELECTRIC SWITCH COMBINED WITH VARIABLE RESISTOR

Hiroshi Matsui, Neyagawa; Hisao Kitahara, Takatsuki, and Shozo Watanabe, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 3, 1974, Ser. No. 475,597

Claims priority, application Japan, June 13, 1973, 48-70473

Int. Cl.² H01C *9/08*

U.S. Cl. 338—172 **1 Claim**

1. An electrical switch combined with a variable resistor, comprising:

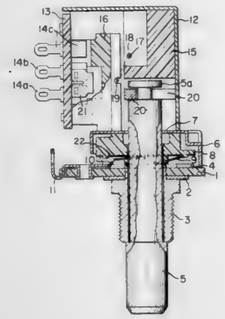
a. a dielectric base,

b. an operating shaft axially slidable and rotatably mounted in the base,

c. a variable resistor mounted in said base and provided with a wiper arm rotatably coupled to the shaft and fixed in the axial direction,

d. a switch cover housing fixed to the base and being provided with at least two internal walls substantially parallel to the shaft axis, one of the two parallel walls of the switch cover housing being provided with stationary switch contacts,

e. a dielectric movable contact holder provided with switch contacts and slideably arranged in the switch cover housing abutting said one of said two parallel walls for motion in a direction parallel to said one of said walls, a switch actuating member slideably arranged in said switch cover housing abutting another of said two parallel walls for motion in a direction parallel to said other of said two parallel walls, an end of the operating shaft being rotatably coupled to said switch actuating member and translationally fixed to the switch actuating member for moving said switch actuating member in said switch covered housing in a direction parallel to the operating shaft axis, and



f. spring means interconnecting said movable contact holder and said switch actuating member for biasing said movable contact holder in a direction opposite to the direction of said axial motion of the shaft and actuating member and for biasing said switch actuating member and said movable contact holder against said walls abutting said switch actuating member and movable contact holder, whereby said movable contact holder and said switch actuating member move in opposite directions and whereby said switch contacts of said movable contact holder are urged against said fixed switch contacts in a position of said movable contact holder by said spring means, said spring means operatively interconnecting said actuating member and said movable contact holder being a U-shaped spring which is adapted to force said actuating member and said movable contact holder to move away from each other.

3,924,221

FILM RESISTOR AND METHOD

Ernel R. Winkler, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 16, 1974, Ser. No. 533,081

Int. Cl.² H01C *1/02*

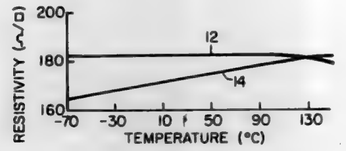
U.S. Cl. 338—308 **6 Claims**

1. A method of making an electrical resistance element comprising the steps of

forming a paste containing a temporary binder and a mixture of inorganic particulate matter, said mixture including 30–70 wt. percent glass frit, the remainder consisting essentially of finely divided particles of MoO_3 and an elemental reducing agent, said glass frit containing lead oxide in an amount effective for yielding $PbMoO_4$, the amount of said reducing agent in said mixture being sufficient to permit the formation of MoO_3 in an amount sufficient to form a continuous conductive path and of $PbMoO_4$ in an amount effective to modify the temperature coefficient of resistance of said conductive path,

applying a film of said paste to a refractory nonconductive substrate, and

heating said substrate and film in an inert atmosphere to a temperature of at least 650°C and which is sufficiently



high to cause a reaction between the PbO in the glass frit and the MoO_3 to form $PbMoO_4$ and between MoO_3 and said reducing agent to form MoO_2 and an oxide of said reducing agent, said temperature also being sufficiently high to fuse said finely divided particles of glass frit and produce a continuous glassy phase having particles of MoO_2 and $PbMoO_4$ uniformily dispersed throughout.

3,924,222

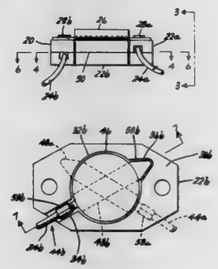
RESISTANCE DEVICES FOR USE IN ENERGIZING THE STARTING WINDING OF A SPLIT PHASE INDUCTION MOTOR

Charles W. Slocum, Spring Lake Heights, N.J., assignor to Thermo-Electronics, Inc., Allenwood, N.J.

Filed Oct. 9, 1974, Ser. No. 513,256

Int. Cl.² H01C *1/02*

U.S. Cl. 338—220 **1 Claim**



1. For use in selectively energizing the starting field winding of a split phase induction motor, a positive temperature coefficient resistance device being adapted to be series-connected with said starting field winding, said device comprising:

a. a multiple piece housing having matching surfaces between two of said pieces, and having a cavity which opens into said matching surfaces and which includes both a first receiving surface in spaced parallel relationship to said matching surfaces and a second receiving surface in spaced parallel relationship to said first receiving surface;

b. notch means comprising oppositely-disposed notches in said housing which open into said cavity and into said matching surfaces, for positioning each of a pair of strip contacts in said housing in rectilinear relationship to respective ones of said receiving surfaces and for providing access from the outside of said housing to said cavity for a pair of electrical conductors;

c. a pair of elongated metallic strip contacts being inserted into said cavity, each being positioned proximal to one of said receiving surfaces, each having one end thereof positionally engaged with one of said notches, and each having terminal means on the other end thereof positionally engaged with an oppositely disposed one of said notches;

d. a positive temperature coefficient resistor having parallel-disposed contact surfaces, and being inserted into said cavity intermediate of said contacts; and

e. means for securing said housing pieces into fixed engagement,

said housing being formed of dielectric material in two identical pieces, said notch means includes a pair of said oppositely-disposed notches in each of said pieces, each pair of said notches including a terminal receiving notch which extends from said cavity to the outside of said housing and which is rotationally displaced about said matching surfaces from the other of said terminal receiving notches when said housing is assembled, said electrical contacts are each of electrical conductor spring metal, are each of an elongated and generally rectangular shape, are each wider than said terminal receiving notches, are each formed with a bow intermediate the ends thereof to provide spring-loaded contact with said contact surfaces, and each include a swagable lug portion on one end thereof to provide said terminal means and to fit one of said terminal notches; a pair of insulated electrical conductors each being swaged to one of said lugs in electrical conducting contact therewith; said positive temperature coefficient resistor includes a layer of silver on each of said parallel-disposed contact surfaces, said securing means comprises a pair of holes which receive a pair of tubular rivets, respectively, and each including a head portion on each end thereof to secure said rivets to said pieces, and spring clip means having two holes therethrough spaced to match said holes in said housing pieces and being inserted between one of said housing pieces and a pair of said head portions for attaching said device to any thin and substantially flat element by sliding said spring clip thereover.

3,924,223

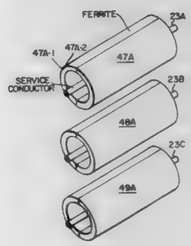
POWER LINE COMMUNICATION SYSTEM HAVING A PROTECTIVE TERMINATING IMPEDANCE ARRANGEMENT

Ian A. Whyte, Pittsburgh, and Leonard C. Vercellotti, Verona, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 21, 1974, Ser. No. 444,587

Int. Cl.² H04M *11/04*

U.S. Cl. 340—310 R **9 Claims**



1. A power line communication system transmitting high frequency carrier communication signals through power line conductors of a distribution network supplying power to electric loads at the premises of an electric utility customer with the customer electric loads characterized by varying impedance values and at least periodically being at very low impedance values, wherein the system comprises:

a plurality of service conductors including line and grounded conductors at the customer premises connecting the power line conductors of said distribution network to the customer electric loads so as to supply electric power to the loads while concurrently having said high frequency carrier communication signals transmitted thereon;

a communication terminal coupled to a pair of said service conductors including at least one line conductor for

transmitting and receiving said high frequency carrier communication signals through said service conductors; and

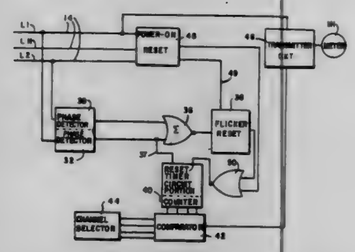
means forming a terminating impedance in the service conductors at the premises of the utility customer including tubular magnetic core means, said at least one line conductor passing through said tubular magnetic core means at a location intermediate said communication terminal and said customer electric loads, and said magnetic core means effecting a predetermined inductance having a substantially increased value of impedance at the frequencies of the communication signal relative to the very low impedance values of said customer electric loads.

3,924,224

METER READING SYSTEM

Robert E. Dyer, Springfield, Ill., assignor to Sangamo Electric Company, Springfield, Ill.

Filed May 15, 1974, Ser. No. 470,267
Int. Cl.² H04M 11/04
U.S. Cl. 340—310 A **22 Claims**



1. In a remote meter system which uses alternating current power line conductors for data transmission purposes, a group of transmitter means coupled to said power line conductors, each of which transmitter means has a different meter associated therewith, each transmitter means comprising channel means including counter means for effecting a count of a predetermined plurality of cycles of the power on said line conductor to define a channel, each successive count of a predetermined series in a cycle defining a correspondingly different channel of a group of channels, encoding means for providing encoded signals which represent data provided by its associated meter, and enabling means in each transmitter means controlled by said counter means to enable its associated encoding means during a preselected one of said channels, the enabling means for different transmitter means being operative to enable its transmitter means in a different one of said channels, receiver means coupled to said power line conductors including means for detecting the encoded signals applied to said power line conductor in said different channels by each of said plurality of transmitter means, and means for effecting storage of the data represented by said encoded signals from each of said transmitter means in correspondingly different storage means.

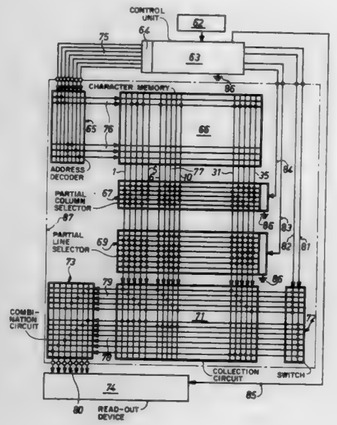
3,924,225

CHARACTER DISPLAY DOT RASTER SIGNAL GENERATOR PROVIDED WITH CHARACTER MEMORY

Wolfgang Langnickel, Braunschweig, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

Filed May 30, 1974, Ser. No. 474,863
Claims priority, application Germany, May 30, 1973, 2327474
Int. Cl.² G06F 3/14
U.S. Cl. 340—324 AD **8 Claims**

1. In a character signal generator for selecting the dot raster elements to be produced in a data read-out dot raster display device having a plurality of signal inputs in which signals representing, selectively, partial horizontal or vertical rows of an entire dot raster are emitted in succession, the generator including a character memory composed of a plurality of memory locations each containing a representation of a respective character available for read-out and arranged to receive address signals identifying the memory location corresponding to the character to be read out, said memory having a plurality of outputs for presenting signals containing the complete dot raster information of the addressed character, row selector means connected to the memory outputs and arranged to be switched from row to row for selecting, from the complete dot raster information, successive rows to be read out, and a collection circuit having output lines and



arranged to collect the information relating to the selected rows at its output lines, the improvement wherein: said selector means comprise first and second row selectors both connected to said selector means output lines, said first row selector being constructed to operate as a vertical row selector when a succession of vertical dot raster rows are to be read out and said second row selector being constructed to operate as a horizontal row selector when a succession of horizontal dot raster rows are to be read out; said generator further comprises means connected for rendering one of said selectors ineffective during any read-out operation; and said collection circuit comprises means connected to link the output signals of a selected one of said row selectors to conduct such signals to corresponding output lines of said collection circuit.

3,924,226

DISPLAY DEVICE HAVING AN ARRAY OF MOVABLE DISPLAY ELEMENTS

Robert H. Lacy, and James E. Russell, both of Dallas, Tex., assignors to F&M Systems Co., Dallas, Tex.

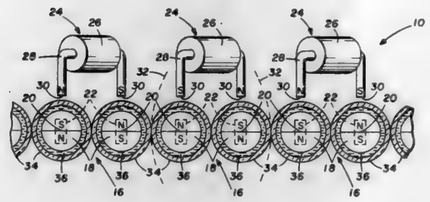
Filed May 28, 1974, Ser. No. 473,559
Int. Cl.² G09F 9/32
U.S. Cl. 340—336 **18 Claims**

1. In a matrix display device of the type in which a plurality of display elements are individually positioned in a selected one of two display orientations to form alphanumeric characters or symbols, wherein the improvement comprises:

each of said display elements including two display members mounted for rotation about spaced, parallel axes;

each of said display members having magnet means which are oppositely poled with respect to corresponding display surfaces of said display members; and

electromagnetic means having pole pieces positioned to cooperate with said magnet means, whereby corresponding display surfaces of each display member of each



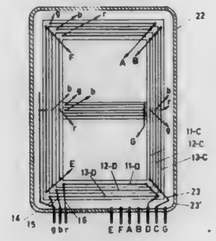
display element are simultaneously positioned in a display orientation.

3,924,227

DIGITAL DISPLAY DEVICE

Michael Stolov, 25 Hapoel St., Nof-Yam, Herzliya, Israel

Filed Nov. 7, 1973, Ser. No. 413,529
Claims priority, application Israel, Nov. 13, 1972, 40825
Int. Cl.² G08B 5/36
U.S. Cl. 340—336 **10 Claims**



1. A digital display device for displaying a numeric desired figure in any desired color, comprising in combination:

an electronic digital display device including an arrangement of seven segments in the conventional pattern of digital display devices, comprising in combination seven groups of wires, each group comprising three parallel wires spaced apart at a small distance from each other;

a color filter having three color sections being provided so that in front of each of the three wires of each group there is located a color section of a different color;

a frosted screen being provided in front of said color filter;

a mask defining narrow transparent strips coinciding with the arrangement of said seven segments, on or in the vicinity of said frosted screen;

actuating means being provided for actuating any desired combination of the seven groups and for actuating at least one of the three parallel wires in each group.

3,924,228

ELECTROSTATICALLY ACTUATED DISPLAY PANEL

George W. Goodrich, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 6, 1975, Ser. No. 538,990
Int. Cl.² G08B 5/36
U.S. Cl. 340—336 **38 Claims**

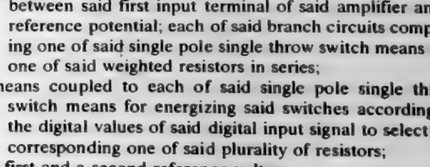
1. An electrostatically actuated display panel comprising:

a composite base having at least one electrically conductive planar surface and a thin surface layer of insulating material disposed over said conductive surface,

at least one electrically isolated, electrically conductive, flexible membrane section having a predetermined color, said membrane section having at one end a predetermined contact region fixedly attached to said composite base on the side having said layer of insulating material and electrically isolated from said conductive surface, the opposite end of said at least one membrane section being free to move under the influence of electrostatic forces;

means for conducting an electrical charge to said at least one membrane section;

a composite planar window disposed parallel to said composite base and separated therefrom by a predetermined distance slightly greater than the thickness of said membrane section, said composite window having a thin layer of transparent electrically conductive material disposed along the surface of said window adjacent to said composite base;



means rigidly supporting said composite window from said composite base and forming a peripherial fluid seal between said composite base and said composite window; and

a low conductivity high dielectric constant fluid, having a color contrasting to the color of said at least one membrane section, filling in the space between said composite window, and said composite base, said fluid having an opacity sufficient to occlude viewing of said at least one membrane section when said membrane section is disposed against the surface of said composite base.

3,924,229

BIPOLAR DIGITAL TO ANALOG CONVERTER UTILIZING TWO REFERENCE VOLTAGES OF THE SAME POLARITY

Chung C. Liu, San Jose, Calif., assignor to International Business Machines Corporation, New York, N.Y.

Continuation of Ser. No. 790,224, Jan. 10, 1969, abandoned. This application Mar. 9, 1971, Ser. No. 122,504
Int. Cl.² H03K 13/04
U.S. Cl. 340—347 DA **3 Claims**

1. A digital to analog converter for producing an analog signal proportional to the magnitude of a digital input signal comprising:

an amplifier having a first and a second input terminal and an output terminal;

a load impedance means coupled from said output terminal to said first input terminal of said amplifier;

a reference impedance means connected directly to said first input terminal of said amplifier;

first switch means including a plurality of single pole single throw switch means;

a plurality of weighted resistors;

means for coupling a plurality of branch circuits in parallel between said first input terminal of said amplifier and a reference potential; each of said branch circuits comprising one of said single pole single throw switch means and one of said weighted resistors in series;

means coupled to each of said single pole single throw switch means for energizing said switches according to the digital values of said digital input signal to select the corresponding one of said plurality of resistors;

a first and a second reference voltage;

means for coupling said first reference voltage to the second input terminal of said amplifier;

a second reference voltage of the same polarity as said first reference voltage wherein the magnitude of said reference voltages differs by a constant factor;

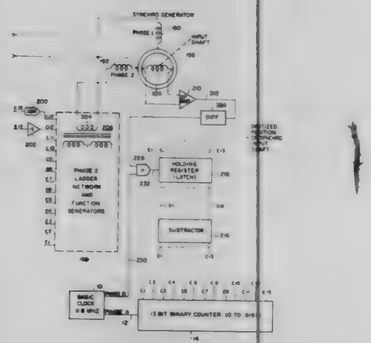
second switch means for selectively coupling said second reference voltage directly through said reference impedance means to said first input terminal of said amplifier; and

means for selectively operating said second switch means according to the sign of said digital input signal so that an analog current signal proportional to the magnitude of said digital input signal is produced at said output terminal of said amplifier.

3,924,230
SYNCHRO-TO-DIGITAL CONVERTER ARRANGEMENT FOR MANIPULATOR APPARATUS

Maurice J. Dunne, Newtown, Conn., assignor to Unimation, Inc., Danbury, Conn.

Filed Feb. 15, 1974, Ser. No. 442,862
Int. Cl.² H03K *13/00*
U.S. Cl. 340—347 SY **6 Claims**



1. In an analog-to-digital converter, the combination of, a counter having a plurality of output conductors on which the respective digits of the count thereof appear, pulse generating means connected to said counter for continuously varying the count thereof, a ladder network successive levels of which are connected to different ones of said output conductors and arranged simultaneously to develop linearly increasing signals at said successive levels of said ladder network as the count of said counter changes in a predetermined direction, summing means for said linearly increasing signals and arranged to develop an output waveform comprising a series of straight line segments corresponding to said successive levels of said ladder network and simulating a sinusoidal wave, said output waveform having zero crossover points in exact coincidence with predetermined digital outputs of said counter, synchro means having an input shaft whose position is to be indicated digitally, means for connecting said output waveform to said synchro means to energize the same, means for deriving from said synchro means an output signal corresponding to said output waveform and displaced therefrom by an amount corresponding to the position of said input shaft, means for developing a control pulse coincident with a predetermined point on said output signal, and register means controlled jointly by the output of said counter and said control pulse for developing a digital output corresponding to the occurrence of said control pulse.

3,924,231
AUDIO RESPONSIVE COLOR DISPLAY SYSTEM

Robert Bruce McClure, R.D. 2, Box 290, Malvern, Pa. 19355

Continuation-in-part of Ser. No. 188,339, Oct. 12, 1971, Pat. No. 3,815,128. This application June 4, 1974, Ser. No. 476,324
Int. Cl.² G08B *5/36*
U.S. Cl. 340—366 B **10 Claims**

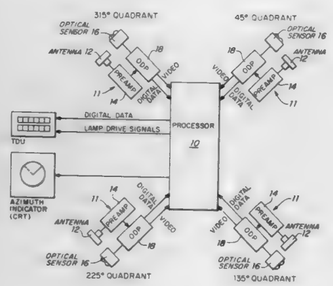


1. In an electronically controlled audio-responsive color display system, wherein audio signals of various frequencies are utilized to effect illumination in various colors, including the steps of amplifying the signals and limiting the total audio signal strength to a desired level while substantially maintaining relative signal strength, segregating the signals into a plurality of frequency bands, then for each band detecting the signals therein, producing periodic pulses of substantially constant amplitude whose duration is dependent upon the detected signal magnitude for such band, and applying the pulses from the respective bands to effect illumination in corresponding colors, the improvement comprising: producing momentary triggering pulses of uniform duration whose position relative to an AC reference signal determines the duration of such pulses.

3,924,232
OPTICAL WARNING SYSTEM

Aldo J. Burdi, Sunnyvale, and Robert S. Congleton, Newark, both of Calif., assignors to Itek Corporation, Lexington, Mass.

Filed Aug. 26, 1974, Ser. No. 500,222
Int. Cl.² G01S *7/36*
U.S. Cl. 343—6 R **4 Claims**



1. In an aircraft which has a radar antenna for receiving radar signals illuminating the aircraft and in which the received radar signals are directed to a radar processor, remote from the radar antenna, having a plurality of filtering circuits, each of which has predetermined characteristics to filter out particular radar signals having those characteristics, and in which the filtered signals are directed to a display unit for the pilot to inform the pilot as to the type of radar signals illuminating the aircraft, the improvement comprising a system for enabling optical signals, such as laser beams, which are illuminating the aircraft to be processed and displayed to the pilot to inform the pilot that the aircraft is being illuminated by such optical signals, and wherein the system may be implemented with a small number of additional components and without adding additional wiring to the aircraft running from the optical detector to the equipment for processing the optical signals and displaying them to the pilot, and comprising:

a. an optical detector means for detecting optical radiation of interest illuminating the aircraft and for producing a signal indicative of the received radiation;

b. means, responsive to the signal from said optical detector means, for analyzing the signal to determine selected parameters of the illuminating optical beam;

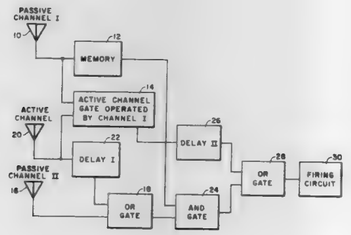
c. generator means, responsive to said analyzing means, for generating electrical signals having predetermined characteristics of radar signals such that the electrical signals will be passed by a particular filtering circuit within said radar processor; and

d. said display unit being responsive to the passage of electrical signals by said particular filtering circuit to indicate to the pilot that the aircraft is being illuminated by an optical signal.

3,924,233
ACTIVE-PASSIVE TARGET DETECTION SYSTEM

John J. Nastronero, Corona, and John C. Billings, Riverside, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 10, 1969, Ser. No. 817,256
Int. Cl.² F42C *13/02, 13/04*; **G01S** *9/02*
U.S. Cl. 343—6 R **4 Claims**



1. In an active-passive target detection system, the combination comprising:

a. A first passive target detecting means for generating a first passive signal in response to a first predetermined geometrical encounter with the target,

b. a second passive target detecting means for generating a second passive signal in response to a second predetermined geometrical encounter with the target,

c. an active target detecting means for generating an active signal in response to said first predetermined geometrical encounter with the target,

d. logic circuit means coupled to said first and second passive and active target detecting means and having an output.

e. firing circuit means coupled to the output of said logic circuit means for generating a firing pulse in response to a signal received from said logic circuit means,

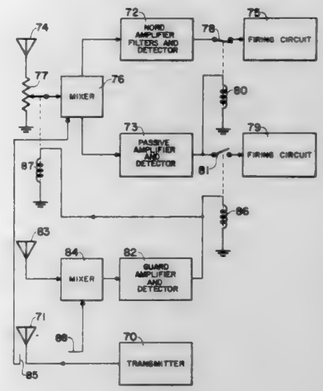
f. said logic circuit means being responsive to the appearance and disappearance of a target signal in said second passive target detecting means during the persistence of a target signal from said first passive target detecting means to pass a signal to said firing circuit means,

g. said logic circuit means being responsive to a signal appearing in said active target detecting means prior to the appearance of a signal in said first passive target detecting means to pass a signal to said firing circuit.

3,924,234
AUTOMATIC ACTIVE/PASSIVE FUZE SYSTEM

Carlton H. Cash, Norco; Robert A. Boot, Riverside; Ralph L. Bauer, Riverside, and Benjamin F. Husten, Riverside, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 27, 1960, Ser. No. 78,767
Int. Cl.² F42C *13/04*; **G01S** *7/36, 9/02*; **H04K** *3/00*
U.S. Cl. 343—7 PF **8 Claims**



1. A radio fuze system comprising means for transmitting a radio frequency signal in the direction of a target, first antenna means for receiving only the reflected signals transmitted by said transmitting means, a firing circuit, circuit means coupling said first antenna means to said firing circuit for providing an initiating signal thereto when said received signal has a magnitude of a predetermined value, second antenna means for receiving countermeasures signals, and means coupled to said second antenna means for causing said fuze system to respond to said countermeasures signals to prevent dudding past the target.

3,924,235
DIGITAL ANTENNA POSITIONING SYSTEM AND METHOD

Robert I. Heller; Francis T. Annulis, both of Baltimore, and Walter Jachimski, Lutherville, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 276,534, July 31, 1972, Pat. No. 3,793,634. This application Oct. 23, 1973, Ser. No. 408,963
Int. Cl. G01s *9/02*
U.S. Cl. 343—7.4 **6 Claims**

5. In a radar antenna positioning system, apparatus for normalizing data signals comprising:

means for sampling electrical data signals representative of a constant multiplied by the sines and cosines of twice the azimuth and the elevation angles of the reflector;

means for simultaneously sampling electrical data signals representative of a constant multiplied by the sines and cosines of the angular deviation of the aircraft axes from the axes in a predetermined coordinate system;

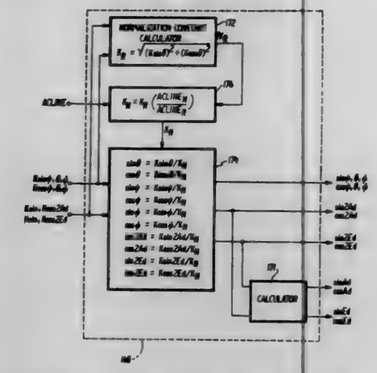
means for simultaneously sampling the AC line voltage;

means for calculating and subsequently re-calculating on a relatively low frequency basis a reference constant in response to the data signals representative of each of the angles;

means responsive to said calculating means for generating normalized data signals representing the data signals with all constants removed;

means for updating the sampling of the data signals and the AC line voltage;

means for comparing the initial AC line voltage sample with the updated sample and for modifying the reference constant in response thereto; and,



means responsive to said sample updating means and to said reference constant modifying means for calculating updated normalized signals.

3,924,236

SURVEILLANCE RADAR WITH SYNTHETIC ARRAY SCAN FOR IMPROVED ANGLE DETERMINATION

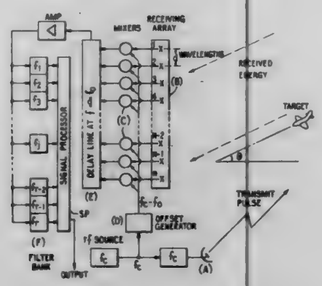
Charles William Earp, London; Carl Peter Sandbank, Bishop's Stortford; Frances Giles Overbury, Cuffley; Paul Barton, Bishop's Stortford, and Peter Kenneth Blair, Harlow, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 25, 1974, Ser. No. 526,853

Claims priority, application United Kingdom, Nov. 27, 1973, 54971/73

Int. Cl.² G01S *9/02, 3/50*

U.S. Cl. 343—16 R **9 Claims**



1. Radio direction finding equipment for deriving angle information in respect to the position of a mobile craft from radio frequency pulses received from the craft, comprising:

receiving antenna means responsive to each of said radio frequency pulses to produce a series of *n* simultaneous signals each of the same duration and frequency as the received pulse but with a phase differential between successive signals of said series which is a function of the angle subtended by the craft with respect to said antenna means;

means for transferring said phase differential to a series of n simultaneous beat signals each of the same duration as said received pulse and at a frequency which is integrally related to the reciprocal of the duration of each received pulse; means responsive to said series of n beat signals to deliver an output signal of duration *n* times the duration of said received pulse and having a peak spectral content at a frequency which is shifted from said beat frequency by an amount indicative of said angle;

and means responsive to said output signal to discretely determine said angle.

3,924,237

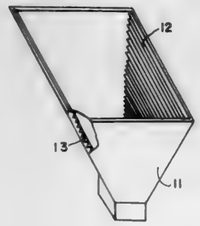
HORN ANTENNA HAVING V-SHAPED CORRUGATED SLOTS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Leon Peters, Jr., Columbus, and Carl A. Mentzer, Dayton, both of Ohio

Filed July 24, 1974, Ser. No. 491,419

Int. Cl.² H01Q *13/02*

U.S. Cl. 343—786 **1 Claim**



1. A horn antenna for directing electromagnetic energy in a given direction wherein energy diffracted from certain of the edges of the surfaces of said antenna is reduced, the improvement comprising means for controlling the illumination of said edges, said means including machined V-shaped corrugated slots formed in said surfaces, the density of said slots being of the order of ten per wavelength and the depth of the slots being between 0.3125 and 0.625 of the operating wavelength.

3,924,238

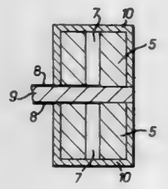
DIPOLE ANTENNA WITH DIELECTRIC CASING

James Roderick James, Swindon, England, assignor to The Plessey Company Limited, Essex, England

Filed June 12, 1974, Ser. No. 478,622

Int. Cl.² H01Q *1/40*

U.S. Cl. 343—807 **1 Claim**



1. A radio antenna comprising a slab of insulating material having two opposed faces; two aligned conductive rods each perpendicular to one of said faces to form a dipole, a transmission line on opposite faces of the slab connected to the dipole; dielectric material surrounding each rod, and comprising a mixture of barium titanate and strontium titanate in powder form; and a housing whereby said powder is constrained in position around said rods.

3,924,239

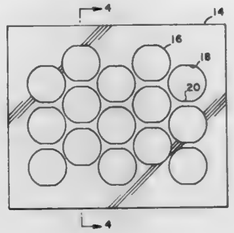
DICHROIC PLATE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Philip D. Potter, Altadena, Calif.

Filed June 27, 1974, Ser. No. 483,851

Int. Cl.² H01Q *15/04*

U.S. Cl. 343—909 **6 Claims**



1. A dichroic reflector plate of the type which reflects signals having a first frequency and passes signals therethrough having a second frequency, said reflector plate comprising

a conductive plate having a pattern of holes therethrough, said conductive plate having a thickness which provides a resonant band pass response to signals including signals having said second frequency,

said conductive plate having a thickness which is substantially equal to one-half the wave length which said second signal would have within a wave guide which has the same shaped aperture therethrough as the shape of an aperture through said dichroic reflector plate.

3,924,240

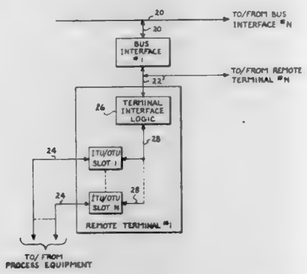
SYSTEM FOR CONTROLLING PROCESSING EQUIPMENT

Arthur P. Given, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Apr. 9, 1973, Ser. No. 349,016

Int. Cl.² G06F *9/18*

U.S. Cl. 340—172.5 **13 Claims**



1. In a data processing system including a data processor and remote processing equipment, a control system comprising:

a. a controller in communication with the data processor and responsive to commands generated by the data processor for,

1. generating system address signals,
2. generating functions signals, and
3. conveying data between the data processor and the remote processing equipment;

b. a bus connected to said controller for conveying the system address signals, the function signals and data; and,

c. a plurality of simultaneously addressable terminal devices connected in parallel to said bus and further connected to the processing equipment for selectively directing the transfer of data via said bus between the processing equipment and the data processor, each of said terminal devices comprising,

1. at least one data transfer unit for directing the transfer of data between the data processor and processing equipment,
2. decoding means responsive to prescribed system address signals to generate selection signals, each of said selection signals identifiying an individual data transfer unit, and
3. routing logic interconnecting said bus and said data transfer unit, said routing logic responsive to said selection signals from said decoding means for routing a selection signal to each individually identified data transfer unit during a first time period as defined by a first one of said function signals to thereby address each identified data transfer unit and further responsive to additional function signals during time periods subsequent to said first time period for routing data over said bus between the data processor and the processing equipment, via an identified data transfer unit.

3,924,241

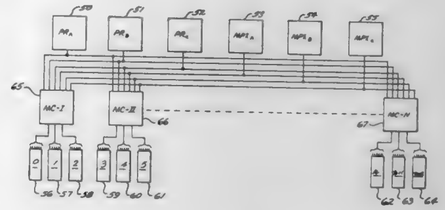
MEMORY CYCLE INITIATION IN RESPONSE TO THE PRESENCE OF THE MEMORY ADDRESS

Reinhard Kurt Kronies, Glendora, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 123,959, March 15, 1971, Pat. No. 3,742,253. This application May 7, 1973, Ser. No. 357,956

Int. Cl.² G06F *13/00*

U.S. Cl. 340—172.5 **9 Claims**



1. In a computer system having a plurality of requestor units made up of processors and/or multiplexors, a plurality of randomly accessible memories and a memory control unit between each requestor and a group of memories to control access to each memory in the group of memories;

means for selectively coupling a requestor unit to a selected memory;

said coupling means including circuit means for cross routing the address data from a requestor unit to a selected memory;

the address cross-routing means including

a controllable gate for each bit of memory address data for each requestor unit, with this group of gates forming a first group of controllable gates; a controllable gate for the complement of each bit of memory address data for each requestor unit, with this group of gates forming a second group of controllable gates;

means for connecting in common the output of the controllable gates in the first group for the corresponding individual bits of address data from a requestor;

means for connecting in common the output of the controllable gates in the second group for the complement of the individual corresponding bits of address data from a requestor;

an electronic device for each bit of address data, each electronic device operating as an RS flip-flop

for a first and a second combination of binary input signals, said electronic device having two input terminals and two output terminals, with one input terminal being connected to the commonly connected output of the first group of controllable gates, and the other input terminal being connected to the commonly connected output of the second group of controllable gates;

circuit means for identifying the memory requested by a requestor;

circuit means for granting access to a requested memory to the highest priority requestor only by generation of an access granted signal;

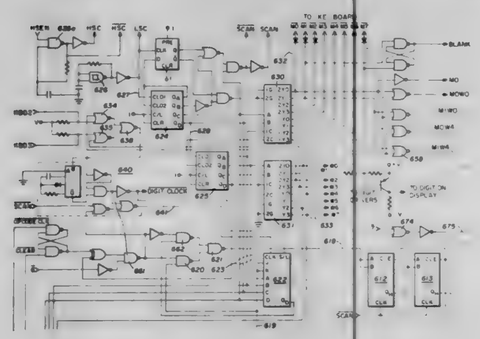
circuit means for enabling the gates in the address cross-routing means in response to the presence of an access granted signal; circuit means for cross routing the information data from the requestor unit that is granted access to the requested memory module; and means responsive to the presence of all bits of address data at the outputs of all electronic devices to automatically start the memory cycle.

3,924,242

SYSTEM FOR BUILDING OP CODES

Royce E. Naud, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 7, 1974, Ser. No. 431,590
Int. Cl.² G06F *3/02*
U.S. Cl. 340—172.5 **9 Claims**



1. In a computing system which operates according to complex n bit OP codes, a system for building such complex OP codes from sequential inputs of less complex n bit OP codes comprising:

a. an n bit parallel-in, parallel-out storage register means having an n bit input and an n bit output;

b. an input source for generating the n bits of said less complex OP codes in parallel;

c. *n* EXCLUSIVE OR gates each having first and second inputs and an output;

d. first connection means separately coupling each bit of said input source of OP codes to the first input of a respective one of said EXCLUSIVE OR gates;

e. second connection means separately coupling the outputs of said EXCLUSIVE OR gates to respective bits at the input of said storage register means;

f. third connection means separately coupling each output of said storage register means to the second input of a respective one of said EXCLUSIVE OR gates; and

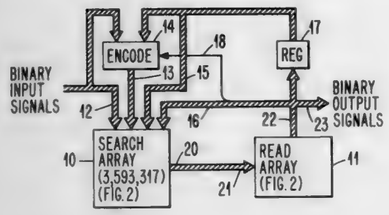
g. means coupled to said input source and operable upon generation of each of said less complex n bit OP codes for clocking said storage register means to load the output of said EXCLUSIVE OR gates into said storage register means.

3,924,243

CROSS-FIELD-PARTITIONING IN ARRAY LOGIC MODULES

Johannes C. Vermeulen, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 6, 1974, Ser. No. 495,165
Int. Cl.² G11C *15/00*
U.S. Cl. 340—172.5 **6 Claims**



1. An array digital signal processor having an array of logic elements with a plurality of columnar input lines logically associatable by predetermined electrical connections in array form with a plurality of columnar output lines, said electrical connections each including electrical switching elements, the improvement including in combination:

an encoder circuit having a plurality of output connections to predetermined ones of said columnar input lines and having first and second input portions,

said encoder circuit supplying output signals at said output connections dependent upon both said input portions,

input means for receiving a plurality of binary signals and means for supplying one of said binary signals to said first input portion, and

means connecting at least one of said columnar output lines to said second input portion.

3,924,244

SYSTEM FOR THE ELECTRONIC CONTROL OF TEXTILE MACHINES OR FOR THE MANUFACTURE OF CONTROL STRIPS FOR TEXTILE MACHINES

Helmut Seitz, Kaufbeuren, Germany, assignor to Firma Franz Morat GmbH, Stuttgart-Vaihingen, Germany

Continuation of Ser. No. 211,513, Dec. 23, 1971, abandoned.
This application Oct. 15, 1973, Ser. No. 406,661
Int. Cl.² G06F *15/46*
U.S. Cl. 340—172.5 **54 Claims**

1. A system for generating control signals for the electronic control of a multisystem color pattern reproducing machine having a plurality of electronically controllable working systems, wherein each system reproduces one predetermined color of said pattern and wherein said systems are divided into groups such that the systems of a group jointly reproduce a line of said pattern and said groups jointly and successively reproduce said pattern, comprising in combination:

a. an information storage means for storing color information according to the color pattern;

b. a color line deriving means for reading out said information from said information storage means and for converting said information to color lines, each color line containing in series form all information of a predetermined color in a predetermined line of said pattern;

c. a working storage means coupled to said color line deriving means to receive said color lines, the number of color lines stored in said working storage corresponding at least to the number of systems;

d. read-out means controlled by a first clock generator producing first clock pulses corresponding to the working speed of said color reproducing machine, said read-out means being coupled to said working storage means and said working systems for reading out said color lines and for converting said color lines to control signals, the control signals of each color line being fed to an associated working system; and

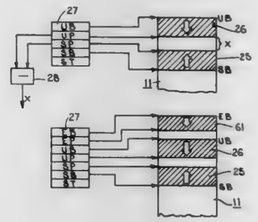
e. a control circuit including color line exchanging means coupled to said color line deriving means and said working storage means for controlling exchanges of said color lines in said working storage means in a predetermined sequence, so that each system of said color pattern reproducing machine is controlled in accordance with said pattern.

3,924,245

STACK MECHANISM FOR A DATA PROCESSOR

John Richard Eaton, Haslingden, England, and Philip Ronald Brady, Swansea, Wales, assignors to International Computers Ltd., England

Filed July 16, 1974, Ser. No. 488,907
Claims priority, application United Kingdom, July 18, 1973, 34215/73
Int. Cl.² G06F *13/00*
U.S. Cl. 340—172.5 **6 Claims**



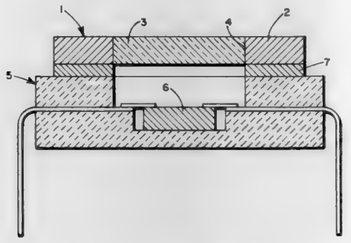
1. A data processing system comprising: an information store; means for writing information of a first category into the store, in a first stack advancing, as information is added to it, in a first predetermined direction from a first base address; and means for writing information of a second category into the store, in a second stack advancing, as information is added to it, in a second predetermined direction opposite to said first direction from a second base address spaced from said first base address in said first direction.

3,924,246

ULTRAVIOLET-TRANSMITTING WINDOW

Jeremy D. Scherer, Dartmouth, Mass., assignor to Isotronics, Inc., New Bedford, Mass.

Filed May 15, 1974, Ser. No. 470,123
Int. Cl.² G11C *17/00, 11/34, 13/04*
U.S. Cl. 340—173 SP **11 Claims**



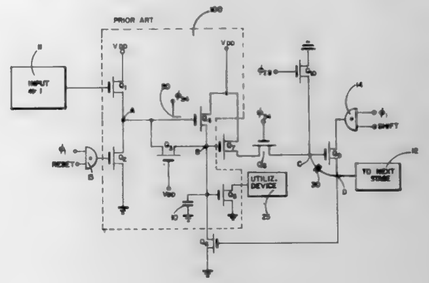
1. An erasable programable read only memory device comprising a semi-conductor package having a cavity extending inwardly from one surface thereof, an erasable programmable memory chip disposed within said cavity, a metallic mounting member disposed about the periphery of said cavity on said one surface, said metallic mounting member having an aperture therethrough, and an ultraviolet-transmitting glass member sealed within said aperture, said metallic mounting member having a higher coefficient of thermal expansion than said glass member, and said glass member being sealed within the aperture of said metallic mounting member by the compressive forces between said glass member and metallic mounting member.

3,924,247

DRIVER CELL WITH MEMORY AND SHIFT CAPABILITY

John R. Spence, Villa Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 21, 1974, Ser. No. 499,252
Int. Cl.² G11C *11/24, 19/18*
U.S. Cl. 340—173 CA **11 Claims**



1. In combination,

memory cell means,

source means for supplying at least one reference potential,

input means connected to said memory cell means to supply input signals thereto,

first output means connected to said memory cell means to drive a utilization device,

second output means connected to said memory cell means, and

feedback means connected from said memory cell to said source means to selectively supply said at least one reference potential to said memory cell to thereby clear said memory cell,

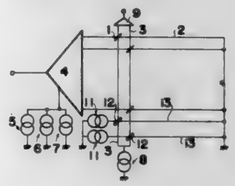
said second output means connected to said feedback means to control the conductivity thereof.

3,924,248

NON DESTRUCTIVE READ OUT MAGNETIC CORE MEMORY APPARATUS HAVING LINEAR HYSTERESIS LOOP NOISE CANCELLING CORE

Seihin Kobayashi, and Michihiro Torii, both of Shizuoka, Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan

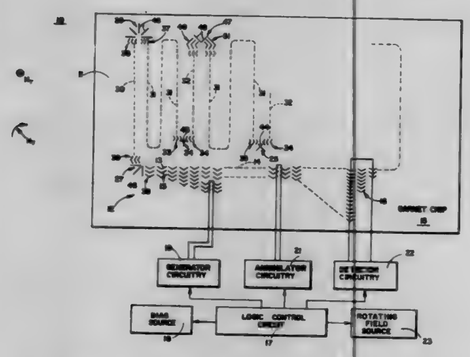
Filed Jan. 2, 1974, Ser. No. 429,740
Int. Cl.² G11C *7/02, 1/67*
U.S. Cl. 340—174 DC **3 Claims**



1. A non-destructive read-out magnetic core memory apparatus comprising:

a plurality of toroidal magnetic cores having a square-loop magnetic characteristic arranged in a matrix;
a plurality of digit-sense lines;
a plurality of word lines crossing said digit-sense lines;
said digit-sense lines and word lines being threaded through said toroidal magnetic cores;;
a read driver connected to said word lines to supply a read current to cause reversible magnetization change to a selected core among said toroidal cores;
a plurality of digit drivers connected to said digit-sense lines; and
a plurality of cancelling means comprising a cancelling conductor parallel to said word lines, a cancelling driver connected to said cancelling conductor, and a cancelling toroidal core having a magnetic linear hysteresis loop characteristic;
said cancelling core being penetrated with said digit-sense line and said cancelling conductor in a crossing manner.

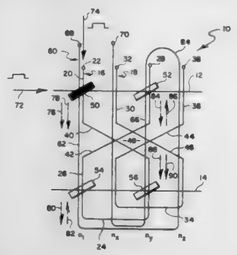
3,924,249
COMPLEMENTARY CORNER STRUCTURES FOR MAGNETIC DOMAIN PROPAGATION
Peter K. George, Placentia, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Mar. 27, 1974, Ser. No. 455,177
Int. Cl.² G11C *11/14, 19/08*
U.S. Cl. 340—174 TF **8 Claims**



1. A magnetic domain device comprising:
a layer of magnetic material in which single wall magnetic domains can be moved;
a patterned arrangement comprising a plurality of magnetically soft elements in juxtaposition to and supported by said layer, said magnetically soft elements responsive to a cyclically varying magnetic field in the plane of said layer for moving domains in said layer along a channel defined by said patterned arrangement,
at least one portion of said channel comprising an array of cooperating elements operative within one period of said cyclically varying magnetic field to enlarge, contract, and enlarge a domain propagated thereby in order to change the continuing direction of said domain.

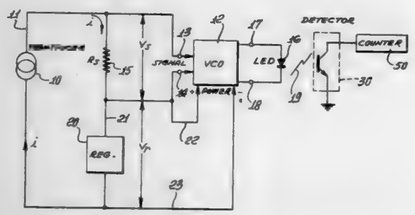
3,924,250
MAGNETIC CORE MATRIX AND WINDING PATTERN FOR MASS CORE MEMORY
Charles C. M. Ngo, Woodland Hills, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Apr. 19, 1974, Ser. No. 462,267
Int. Cl.² G11C *5/06, 11/06*
U.S. Cl. 340—174 CR **7 Claims**

1. A core memory matrix comprising:
a. a plurality of word wires positioned in adjacent rows and developing a row pattern.
b. a plurality of interwoven first and second digit wire loops including
1. respective first and second digit wire bights,
2. first and second legs of each of said first and second wire bights developing a columnar pattern transverse to said row pattern,
3. said legs positioned as adjacent pairs of said first legs and of said second legs,
4. a periodic double cross-over of said adjacent first legs and said adjacent second legs which flip-flops the positions of said legs of said first and second digit wire loops in said columnar pattern,
c. a plurality of magnetic memory core having a magnetic memory core at each selected intersection of said word wires and said digit wire legs, said core threaded by one of said word wires and one of said digit wire legs,



d. respective ones of said plurality of magnetic memory cores positioned on adjacent sides of each of said periodic double cross-over said respective ones of said cores on said adjacent sides being equal in number, and
e. a continuous sense wire loop threaded through each magnetic core, said sense wire loop having a sense wire bight and first and second sense wire legs, said first sense wire leg threaded in alternate first and second directions along selected first ones of said digit wire columns developing a plurality of adjacent first sense wire leg pairs with one leg of each of said first sense wire leg pairs oriented in said first direction, said second sense wire leg threaded in said alternate first and second directions along selected second ones of siad digit wire columns developing a plurality of adjacent second sense wire leg pairs with one leg each of said second sense wire leg pairs oriented in said first direction, each of said first sense wire legs spaced apart from a paired first sense wire leg by an interjacent second sense wire leg pair.

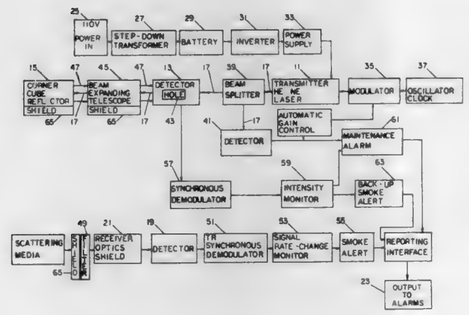
3,924,251
INPUT SIGNAL POWERED CONVERTER
Geoffrey J. Crask, Santa Ana, Calif., assignor to Hydril Company, Los Angeles, Calif.
Filed Mar. 25, 1974, Ser. No. 454,370
Int. Cl.² G08C *19/02*
U.S. Cl. 340—190 **4 Claims**



1. In convertor apparatus,
a. current generating transducer means to produce an analog output current,

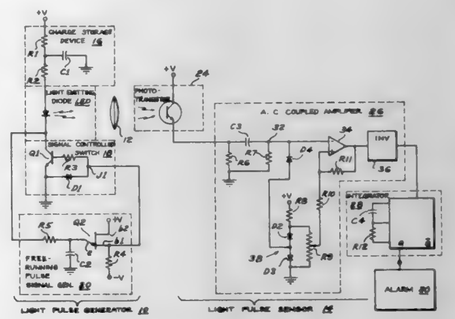
b. Converter means responsive to said transducer means output current to produce an oscillatory output signal which varies as a linear function of said transducer means output current,
c. a current measuring resistor,
d. A voltage regulator,
e. a series circuit of said transducer means, said resitor, and said voltage regulator,
f. said converter means having its input coupled to said resistor to be controlled by said analog output current,
g. said voltage regulator energizing said converter means, and
h. sensing means responsive to said output signal for yielding an analog output corresponding to said transducer means input.

3,924,252
LASER SMOKE DETECTION
David Kenneth Duston, Schenectady, N.Y., assignor to Espey Mfg. & Electronics Corporation, Saratoga Springs, N.Y.
Continuation-in-part of Ser. No. 341,533, March 15, 1973, abandoned. This application Aug. 29, 1974, Ser. No. 501,793
Int. Cl.² G08B *17/10*
U.S. Cl. 340—237 S **6 Claims**



1. A smoke detecting system for detecting smoke in a building having two opposing walls comprising in combination:
a. an amplitude modulated laser beam transmitter including means for directing the beam along a predetermined path;
b. first mounting means connected to said laser beam transmitted for mounting said laser beam transmitter and directing means on one opposing wall of said building to direct a laser beam transmitted thereby toward the opposing wall of said building;
c. a retroreflector including means for mounting the same on the other opposing wall of said building in the path of said laser beam thereby causing said laser beam to be returned upon itself to the transmitter;
d. a detector responsive to forward and backward scattered light to provide a signal having a level which is proportional to the quantity of scattered light caused by any formed aerosol in the laser beam path, including second mounting means mounting the detector so as to be disposed to read scattered light in said laser beam;
e. logic means coupled to said detector for measuring the signal from the detector and for differentiating the signal to determine a rate of change in the quantity of scattered light;
f. an alarm system, coupled to said logic means; and
g. alarm operating means responsive to a predetermined rate of change in said logic means to operate said alarm system.

3,924,253
INDICATING SYSTEM USING PULSED OPTICAL TECHNIQUES
Francis C. Marino, Dix Hills, N.Y., assignor to Redactron Corporation, Hauppauge, N.Y.
Filed Jan. 16, 1974, Ser. No. 433,846
Int. Cl.² G08B *13/18*
U.S. Cl. 340—258 B **5 Claims**

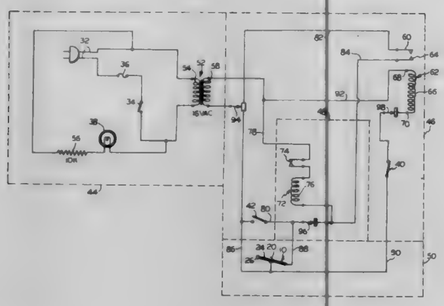


1. A light pulse generator comprising a reference potential means, a power supply, first and second serially connected current limiting resistors, the free end on said first current limiting resistor being connected to said power supply, a storage capacitor connected between the junction of said resistors and said reference potential means, a light emitting diode having one terminal thereof connected to the free end of said second current limiting resistor and a second terminal, a signal controlled switch for controllably connecting the other terminal of said light emitting diode to the reference potential means and having a control input, a uni-junction transistor having an emitter, and first and second bases, a load resistor having one end connected to the first of said bases, means for applying an operating potential between the second of said bases and the other end of siad load resistor, a timing resistor and a timing capacitor connected in that order between the other terminal of said light emitting diode and said reference potential means, means for connecting the junction of said timing resistor and timing capacitor to the emitter of said uni-junction transistor, and means for connecting the first base of said uni-junction transistor to the control input of said signal controlled switch.

3,924,254
ANTI-INTRUSION ALARM SYSTEM
Franklin R. Klebold, 4103 E. Belknap, and Robert L. Bruce, 1604, both of Fort Worth, Tex. 76111
Filed Oct. 6, 1972, Ser. No. 295,436
Int. Cl. G08b *13/02*
U.S. Cl. 340—261 **15 Claims**

1. An anti-intrusion alarm system, consisting of; a power and anti-tampering unit, including a source of power, alarm means and a normally-closed switch means including holding means for holding said normally-closed switch means open when said holding means is energized; a remotely located detector unit including a motion-sensitive switch means; and cable means connecting said power and anti-tampering unit to said detector unit, including a first conductor leading from one contact of said motion-sensitive switch to a series combination of said alarm means and a first terminal of said power source in said power and anti-tampering unit, a second conductor leading from a second terminal of said power source to a second contact of said motion-sensitive switch, to complete a first circuit through said power source and said alarm means when said motion-sensitive switch is closed, and a third conductor leading from said second contact of said motion-sensitive switch to a series combination of said holding means and said first terminal of said power source, to complete a second

circuit to energize said holding means and hold said normally-closed switch open when said first conductor and said third conductor are intact and to deenergize said holding means and permit said normally-closed switch to close when said first or said third conductor are cut; and a third circuit within said



power and anti-intrusion unit including said power source, said alarm means and the contacts of said normally-closed switch, whereby said alarm means is energized when said holding means is deenergized and said normally-closed switch is closed.

3,924,255

EXPLOSION-PROOF TYPE SWITCH BOX WITH ALARM DEVICE

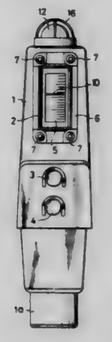
Shinjiro Mori, Tokyo, Japan, assignor to Mori Denki Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1973, Ser. No. 421,639

Claims priority, application Japan, July 13, 1973, 48-82339[U]

Int. Cl.² G08B *21/00*

U.S. Cl. 340—267 **2 Claims**



1. An explosion-proof switch box with an alarm device for indicating an operating condition of a machine, and comprising:

an explosion-proof body having a front surface with a window opening therein, a botton surface with a guide tube therein providing means for passage therethrough of an electrical connection between said body and a machine, and an upper surface having a hole therein;

a transparent plate positioned in said window opening;

an ampere meter positioned within said body adjacent said window opening and having a pointer visible through said transparent plate, said ampere meter being connectable to said machine;

first and second pushbuttons mounted in said front surface of said body;

first and second switch means, positioned in said body and connectable to said machine and connected respectively to said first and second pushbuttons, for respectively establishing and breaking electrical connection with said machine;

a relay circuit positioned in said body and connectable to said machine;

first light source means extending through said hole in said upper body surface for exhibiting light of a first color;

second light source means extending through said hole in said upper body surface for exhibiting light of a second color;

third light source means positioned behind said transparent plate for exhibiting light of said first color through said entire transparent plate;

fourth light source means positioned behind said transparent plate for exhibiting light of said second color through said entire transparent plate;

said first and third light source means being electrically connected in parallel to said relay circuit;

said second and fourth light source means being electrically connected in parallel to said relay circuit; and

detection means, operatively connected to said ampere meter and said relay circuit, for detecting first positions of said pointer indicative of a first range of operating conditions of said machine and generating a signal to cause said relay circuit to energize said first and third light source means and to deenergize said second and fourth light source means, and for detecting second positions of said pointer indicative of a second range of operating conditions of said machine and generating a signal to cause said relay circuit to energize said second and fourth light source means and to deenergize said first and third light source means.

3,924,256

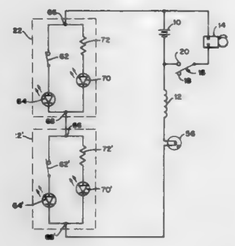
BURGLAR ALARM SWITCH

Morton H. Cohen, 4127 Westmoreland St., Little Neck, N.Y. 11363

Filed Jan. 8, 1974, Ser. No. 431,728

Int. Cl.² G08B *13/08*

U.S. Cl. 340—274 R **10 Claims**



1. A switch for a burglar alarm system which protects a closing member supported on a frame, said switch comprising:

a. a first housing adapted to be mounted on the frame and including: terminal means adapted to be interconnected within the burglar alarm circuit, and a series circuit combination of electrical contact means having a guarding position and an active position in series with a first light emitting means, said series circuit combination being inerconnected between said terminal means, and a circuit arrangement of impedance means and second light emitting means electrically connected to said impedance means for illuminating only when current passes through said impedance means, said series circuit combination and said circuit arrangement being connected in parallel circuit relationship; and

b. a second housing adapted to be mounted on the closing member and including control means for switching said contact means for one of its positions to the other of its positions.

3,924,257

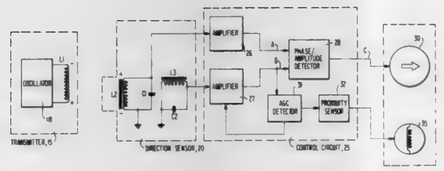
TRAILER HITCH GUIDE

Jack E. Roberts, La Grande, Oreg., assignor to Elmer B. Fatzer, Sun City, Ariz.

Filed June 21, 1973, Ser. No. 372,068

Int. Cl.² G08B *21/00*

U.S. Cl. 340—282 **6 Claims**



1. A guidance system for indicating the direction of relative movement and proximity of a towing vehicle to a towed vehicle comprising

coupling means for connecting the rearmost end of a towing vehicle to the forwardmost end of a towed vehicle, including a first coupling element on said towing vehicle and a second coupling element on said towed vehicle, whereby the position of said first coupling element with respect to said second coupling element changes with relative movement of said vehicles,

transmitter means positioned on said towed vehicle for transmitting a signal forwardly from said forwardmost end of said towed vehicle with a prescribed directional orientation with respect to said towed vehicle,

receiver means positioned on said towing vehicle for detecting the angular relationship and proximity of said receiver means to said transmitter means from the directional orientation of said transmitted signal, said receiver means including a direction sensor comprising first and second coils arranged transversely and in parallel to the longitudinal axis of said towing vehicle, respectively, first and second capacitors connected across said first and second coils, respectively, to form circuits therewith which are tuned to the frequency of the signal transmitted by said transmitter means, first and second amplifiers connected to said first and second coils, respectively, a phase-amplitude detector having first and second inputs connected to the outputs of said first and second amplifiers, respectively, and providing a first output signal having an amplitude and polarity indicative of the magnitude and direction of misalignment between the longitudinal axes of said towing and towed vehicles, an automatic gain control circuit connected to the output of said second amplifier for controlling the gain thereof, and a proximity detector connected to said automatic gain control circuit for providing a second signal indicating the proximity of said receiver means to said transmitter means by detecting the amplitude of the current derived from said second coil, and

indicator means connected to said receiver means for indicating the angular relationship between said vehicles and the proximity of said towing vehicle to said towed vehicle in response to the first and second signals derived from the output of said receiver means.

3,924,258

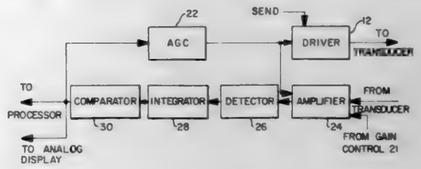
DIGITAL DEPTH SOUNDER

John T. Fowler, Winthrop, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Mar. 21, 1974, Ser. No. 453,553

Int. Cl.² G01S *9/68*

U.S. Cl. 340—3 R **10 Claims**



1. A depth sounder comprising:

counter means for providing successive counts during a predetermined timing cycle;

means for receiving echo pulses;

intermediate storage means coupled to said counter means;

display storage means coupled to said intermediate storage means;

first transfer means operative in response to each received echo pulse during a single sounding interval to cause storage of the then count of said counter means in said intermediate storage means;

second transfer means operative in response to a signal representative of the end of a timing cycle to cause transfer of the then count in said intermediate storage means to said display storage means; and

display means operative to provide an output indication of the count stored in said display storage means and representative of bottom depth.

3,924,259

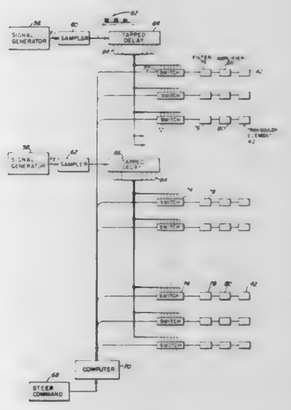
ARRAY OF MULTICELLULAR TRANSDUCERS

John L. Butler, Marshfield, and William M. Pozzo, North Easton, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed May 15, 1974, Ser. No. 469,996

Int. Cl. H04b *11/00*; H04r *17/00*

U.S. Cl. 340—5 R **12 Claims**



1. A multiple frequency sound system comprising:

an array of transducer elements, each of said transducer elements having a substantially triangular shape, each of said transducer elements having a vertex formed by two sides of its radiating aperture, said transducer elements

being arranged in subgroupings within said array, the transducer elements in any one of said subgroupings being positioned with their respective vertices substantially contiguous, and each of said subgroupings being oriented within said array such that said subgroupings are contiguous to each other and each of said subgroupings is oriented such that corresponding transducer elements in each of said subgroupings are oriented in the same direction;

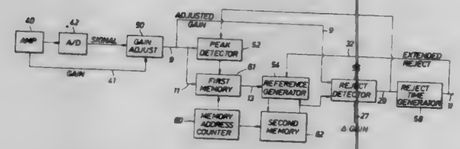
means coupled to each of said subgroupings for energizing oppositely positioned transducer elements in each of said subgroupings with signals at a first frequency; and

means coupled to each of said subgroupings for energizing the remaining transducer elements with signals at a second frequency.

3,924,260
METHOD AND APPARATUS FOR SUPPRESSION OF NOISE IN SEISMIC DATA

Robert M. Braham, and John W. Keowski, both of Houston, Tex., assignors to Petty-Ray Geophysical, Inc., Houston, Tex.

Filed June 27, 1974, Ser. No. 483,784
Int. Cl.² G01V 1/28
U.S. Cl. 340—15.5 GC **11 Claims**



1. A method of suppressing noise in seismic data wherein received seismic signals are amplified by sample normalizing amplifier means which outputs corresponding data and gain factor signals for recording to generate a seismic record, comprising the steps of:

receiving the gain factor output signals from the amplifier means a plurality of times during each discrete time increment of a seismic record time interval;

generating a reference gain factor for each of the discrete time increments responsive to each of the sampled gain factors;

comparing each sampled gain factor during subsequent time intervals to its corresponding reference gain factor; and blocking the recording of the data and gain factor signals output from the amplifier means for a sample time and a predetermined time thereafter whenever the corresponding reference gain factor exceeds the sampled gain factor by more than a predetermined amount.

3,924,261
DISPLACEMENT DETECTOR USING MAGNETOMETER SENSOR

Vahram S. Kardashian, Plymouth Village, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 3, 1971, Ser. No. 139,335
Int. Cl.² G01V 1/16; G01D 7/00; G01N 9/18
U.S. Cl. 340—17 **5 Claims**

1. A displacement detector utilizing a magnetometer operating in an inhomogeneous magnetic field created within the detector for providing an electrical output from the magnetometer which is a measure of displacement at the detector, comprising:

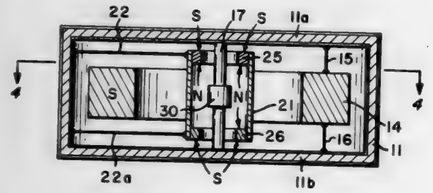
magnetic field generating means for generating an inhomogeneous magnetic field;

magnetic field shielding enclosure means comprising high permeability material for excluding the external magnetic field surrounding said magnetic field generating means;

magnetometer sensor means in said enclosure, said magnetometer sensor means including a driver coil energized by a high frequency current;

means rigidly positioning one of said magnetometer means and magnetic field generating means with respect to said enclosure;

suspension means fastened to said enclosure and non-rigidly suspending the other of said magnetometer means and

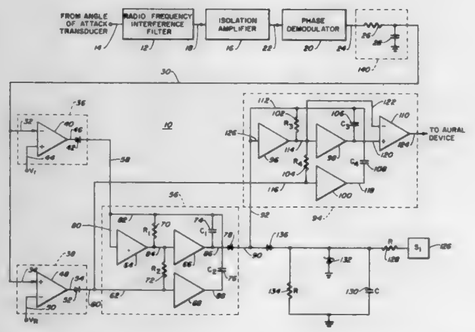


magnetic field generating means within said enclosure such that there can be relative movement between said magnetometer means and said magnetic field generating means whereby displacement causing motion of said enclosure causes relative motion of magnetometer sensor means with respect to said magnetic field generating means and results in an electrical output from said magnetometer indicative of said displacement.

3,924,262
AURAL WARNING APPARATUS

Lionel P. Melancon, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 2, 1974, Ser. No. 528,595
Int. Cl.² G08G 5/00
U.S. Cl. 340—27 AT **13 Claims**



1. An aural angle-of-attack warning circuit utilizing an a-c signal from an angle-of-attack transducer on an aircraft, the amplitude of said a-c transducer signal being proportional to the angle-of-attack of said aircraft, comprising:

a. first circuit means connected to receive said a-c signal for converting said a-c signal into a d-c signal proportional to said a-c signal's amplitude;

b. means for providing a first d-c reference voltage;

c. first switch means having a first and second input and an output, said second input being connected to receive said first d-c reference voltage, said first input being connected to receive said d-c signal, said first switch means being "on" when the voltage level of said first d-c reference voltage exceeds the voltage level of said d-c signal, said first switch means being "off" when the voltage level of said d-c signal exceeds the voltage level of said first d-c reference voltage;

d. means for providing a second d-c reference voltage, said second d-c voltage being greater in value than said first d-c voltage;

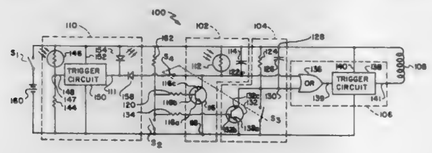
e. second switch means having a first and second input and an output, said second input being connected to receive said second d-c reference voltage, said first input being connected to receive said d-c signal, said second switch means being "on" when the voltage level of said d-c signal exceeds the voltage level of said second d-c reference voltage, said second switch means being "off" when the voltage level of said second d-c reference signal exceeds the voltage level of said d-c signal; and

f. second circuit means connected to said first and second switch means for generating a first tone burst aural driver signal when said first switch means is "off" and said second switch means is "off", for generating a second tone burst aural driver signal when said first switch means is "off" and said second switch means is "on," and for generating no first or second tone burst aural driver signal when said first switch means is "on," said first and second tone burst aural driver signals having a frequency of tone bursts as well as a tone frequency, said second tone burst aural driver signal having a greater frequency of tone bursts as well as a greater tone frequency than said first tone burst aural driver signal.

3,924,263
SHUTTER CONTROL CIRCUIT FOR A PHOTOGRAPHIC CAMERA

Robert V. Alessi, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 409,228, Nov. 24, 1973, Pat. No. 922,009. This application May 22, 1974, Ser. No. 472,405
Int. Cl.² G03B 7/08
U.S. Cl. 354—50 **7 Claims**



5. In a camera having an aperture for exposing photographic film to scene light and actuatable means movable relative to the aperture between a light unblocking position and a light blocking position to regulate the amount of scene light impinging on such film, the improvement comprising exposure control apparatus for controlling the light regulating means comprising:

a. energizable means operably associated with said actuatable means for regulating movement of said actuatable means from its light unblocking position to its light blocking position to terminate a film exposure interval;

b. first timer means responsive to scene light for de-energizing said energizable means after an interval of time related to the intensity of scene light;

c. second timer means for de-energizing said energizable means after a predetermined interval of time that is independent of scene light intensity;

d. means associated with the initiation of the exposure interval for actuating said first timer means and said second timer means substantially simultaneously;

e. means for indicating the adequacy of scene light to effect a particular film exposure value within said predetermined interval of time;

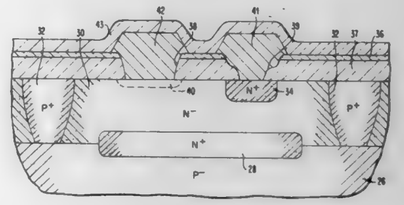
f. means responsive to said scene light indicating means for rendering said first timer means ineffective to de-energize said energizable means when said particular exposure value cannot be effected within said predetermined time interval; and

g. operatable switch means for overriding said scene light indicating means and said second timer means to permit said first timer means to operate said energizable means exclusively in accordance with the intensity of scene light.

3,924,264
SCHOTTKY BARRIER DEVICE AND CIRCUIT APPLICATION

Jack A. Dorler, Wappingers Falls; John L. Forneris, Peekskill, and Donald J. Swietek, La Grange, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 361,100, May 17, 1973, abandoned, which is a continuation of Ser. No. 209,958, Dec. 20, 1971, abandoned. This application July 15, 1974, Ser. No. 488,388
Int. Cl.² H01L 29/48, 23/48
U.S. Cl. 357—15 **1 Claim**



1. In a high circuit density device fabricated by large scale integration techniques on a planar surface of a silicon semiconductor substrate,

said device having a plurality of circuit elements, said circuit elements including transistors, resistors, and Schottky Barrier diodes,

said substrate having a substantially planar surface, a thin layer of insulating material on said planar surface of said semiconductor substrate,

said thin layer of insulating material having a plurality of discrete windows, each of said windows of said thin insulating layer exposing a portion of said planar surface of said semiconductor substrate, each of said windows providing access to said circuit elements,

a first one of said plurality of windows exposing a first small surface area of said planar surface of said semiconductor substrate having N− type conductivity,

a second one of said plurality of windows exposing a second small surface area of said planar surface of said semiconductor substrate having N+ type conductivity,

said first and said second windows being closely displaced in space on said surface of said semiconductor substrate, wherein the improvement comprises:

interconnection metallurgy means for interconnecting said circuit elements, said interconnection means consisting essentially of an alloy of 95% by weight aluminum and 5% by weight copper,

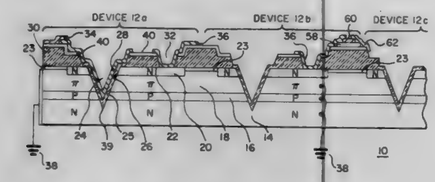
said interconnection means being superimposed on said thin insulating layer and integrally connected through each of said windows to said planar surface of said semiconductor substrate, whereby said first and second small surface areas of said planar surface of said semiconductor substrate respectively comprise the anode and cathode area of a Schottky Barrier diode, and

said Schottky Barrier diode is integrally connected to said circuit elements by said interconnections means consisting essentially of said alloy of aluminum and copper.

3,924,265
LOW CAPACITANCE V GROOVE MOS NOR GATE AND METHOD OF MANUFACTURE

Thurman John Rodgers, Palo Alto, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.

Filed Aug. 29, 1973, Ser. No. 392,668
Int. Cl.² H01L *27/04, 29/78, 21/467*
U.S. Cl. 357—23 **15 Claims**

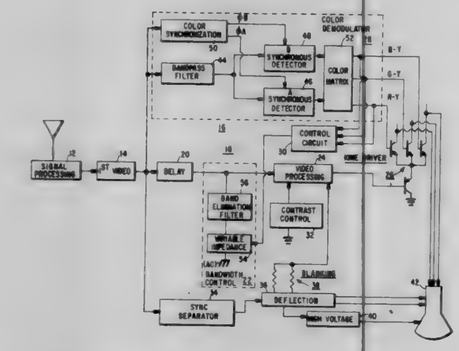


1. A field effect transistor device, comprising:
an n-type source having a donor dopant concentration of from about 10^{17} to about 5×10^{19} atoms per cubic cm and having a lower acceptor dopant concentration;
p-type base means overlying the source having an acceptor dopant concentration less than than the donor dopant concentration of the source and an acceptor dopant concentration profile which decreases with distance from the source;
a drift region overlying the base means having a dopant concentration less than the dopant concentration in the base means;
n-type drain means selectively located in the drift region;
at least one V groove extending into the device exposing a portion of the base means and the drift region;
an insulative layer overlying the exposed portions;
at least one conductor overlying at least a portion of the insulative layer; and
conductor means in electrical communication with the drain means.

3,924,266
AUTOMATIC LUMINANCE CHANNEL BANDWIDTH CONTROL APPARATUS RESPONSIVE TO THE AMPLITUDE OF COLOR IMAGE INFORMATION

Leopold Albert Harwood, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 30, 1974, Ser. No. 501,963
Int. Cl. H04n *9/02*
U.S. Cl. 358—38 **9 Claims**

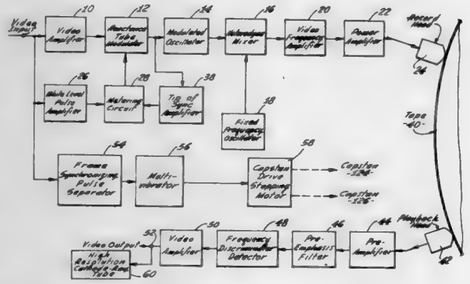


1. Apparatus for processing television video signals representing an image, said signals having at least a relatively wide bandwidth luminance signal portion, a relatively narrow bandwidth chrominance signal portion interleaved with said luminance signal portions, and color synchronization signal portions, comprising:
a source of video signals;
means coupled to said source of video signals for separating said chrominance signal portions from said luminance and synchronization signal portions and for generating from said chrominance signal portions a color information signal representing the amplitude of color information present in said image; and
a luminance signal channel coupled to said source of video signals for processing said luminance signal portions, said luminance signal channel including means responsive to said color information signal for varying the bandwidth of said luminance signal channel in inverse relationship to said amplitude of color information in said image.

3,924,267
SCAN CONVERTING VIDEO TAPE RECORDER

Norman I. Holt, East Pasadena, Calif., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Continuation of Ser. No. 668,116, Sept. 15, 1967, abandoned. This application Oct. 27, 1971, Ser. No. 192,803
Int. Cl.² H04N *5/79*
U.S. Cl. 360—9 **11 Claims**

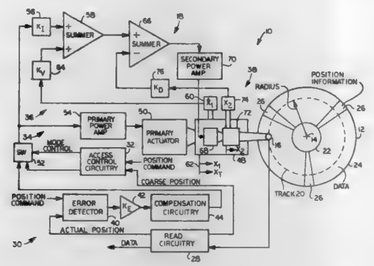


1. A magnetic tape recording apparatus for recording signals at a first scanning rate in a series of diagonal tracks extending across a magnetic tape and for playing back the recorded signals at a second scanning rate, said apparatus including:
means for guiding said tape in a helical path about a predetermined axis,
means for moving said tape in stepping increments through said helical path to provide successive intervals when said tape is stopped,
means for recording a line of signals diagonally across said tape when said tape is stopped including:
an electro-magnetic transducer record head, and
means for rotating said record head at a first rotational speed about said predetermined axis while in magnetically coupled relation with said tape as said tape is guided through said helical path; and
means for reproducing a previously recorded line of signals while said tape is stopped for recording icluding,
an electromagnetic transducer read head; and
means for rotating said read head at a second rotational speed higher than said first rotational speed about said predetermined axis while in magnetically coupled relation with said tape as said tape is guided through said helical path.

3,924,268
HIGH DENSITY TRACK FOLLOWER CONTROL SYSTEM FOR MAGNETIC DISK FILE

Robert P. McIntosh, Saratoga, Calif., and Hussein I. Shahein, Cairo, Egypt, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 5, 1974, Ser. No. 494,612
Int. Cl.² G11B *21/08, 5/56*
U.S. Cl. 360—78 **18 Claims**

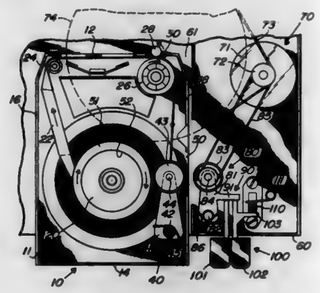


1. In a magnetic disk recording system having a radially positionable transducer head mounted on a secondary carriage which is radially movable with respect to a primary carriage which is in turn radially movable with respect to a magnetic disk, a transducer head position control system coupled to receive head position command information and actual head position information and control the movement of the primary and secondary carriages to position the head at a commanded position, the position control system being operable to simultaneously position both the primary and secondary carriages in response to a difference between actual and commanded head positions with the secondary carriage having a predetermined bias toward a zero displacement position with respect to the first carriage.

3,924,269
UNITARY POSITIONING ARM FOR SIDE DRIVE OF A CARTRIDGE TAPE PLAYER SYSTEM HAVING A REVERSE AND FAST FORWARD CAPABILITY

Edwin Stanley Bara, Chicago, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Aug. 5, 1974, Ser. No. 494,576
Int. Cl.² G11B *15/00;* **B65H** *17/48*
U.S. Cl. 360—93 **13 Claims**

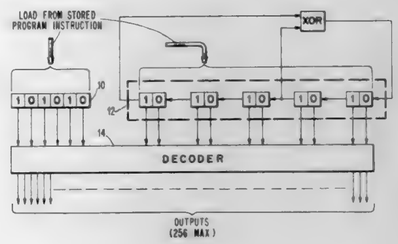


1. A cartridge tape player for a continuous loop cartridge having
a casing having a first wall and a second wall and having an access opening in each of the walls,
a hub means rotatably mounted in the casing, and
a continuous loop tape wound on the hub means and adapted for being driven through the cartridge in a forward direction by being removed from the hub means at the inner convolution and returned to the hub means at the outer convolution,
wherein the tape player comprises
a housing having a cartridge receiving cavity therein dimensioned to receive the casing,
tape playing and driving instrumentalities including a capstan drive shaft mounted on the housing in communication with the cavity and adapted for coupling to the tape through the access opening in the first wall of the casing to drive the tape through the cartridge when the tape cartridge is fully inserted in the cavity during a first mode of operation of the player,
drive means mounted in the housing,
means mounted in the housing for coupling the drive means to the cartridge hub means through the access opening in the second wall of the casing for driving the tape through the cartridge during a second mode of operation during which the capstan drive shaft is uncoupled from the tape,
means mounted in the housing for actuating the coupling means,
the coupling means including
a unitary positioning arm having one end pivotably mounted in the housing,
a coupling member rotatably mounted to the other end of the positioning arm,
the positioning arm being movable between a first position in which the coupling member is disengaged from the hub means and a second position in which the coupling member is coupled to the hub means, and
means on the positioning arm cooperable with the actuating means for moving the positioning arm from the first to the second position,
whereby when the positioning arm is moved to the second position the tape is driven through the cartridge through the access opening in the casing side wall.

3,924,270
RECURSIVE SHIFT REGISTER FOR CONTROLLING A DATA PROCESSOR

Jerome Marvin Kurtzberg, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 6, 1974, Ser. No. 467,039
Int. Cl.² G06F *13/02*
U.S. Cl. 340—172.5 **8 Claims**

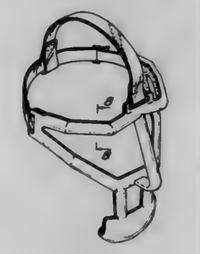


1. A digital data processor for executing a sequence of computer instructions comprising:
storage means for maintaining digital information that can be accessed by said data processor;
a recursive shift register means for providing as output a recursive digital word, which word is directly decodable as a machine executable instruction;
means for incrementing said recursive shift register to produce a sequence of such recursive digital words;
decoder means connected to said recursive shift register for decoding the digital word currently stored therein and providing signals to said data processor for controlling the execution of operations within said data processor.

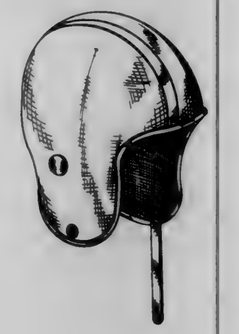
DESIGNS

DECEMBER 2, 1975

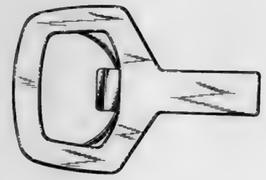
237,843
FACE GUARD
Hugh T. Peterson, 1906 Kohl St. 19115, and Thomas M. Fallon, 4642 Kendrick St. 19136, both of Philadelphia, Pa.
Filed Apr. 22, 1974, Ser. No. 462,830
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233



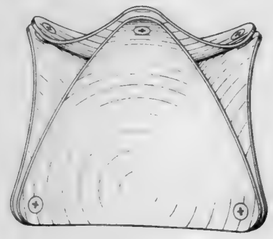
237,844
KNIT HELMET
Roy E. Stock, 6373 Teller St., Arvada, Colo. 80003
Filed Sept. 6, 1974, Ser. No. 503,973
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—249



237,845
TIE CLIP
Keizo Saji, 14–6 Terabata 2-chome, Kawanishi-shi, Hyogo-ken, Japan
Filed Jan. 17, 1974, Ser. No. 434,279
Claims priority, application Japan Oct. 17, 1973
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—428



237,846
STOOL
Walter Zeischegg, Ulm, Germany, assignor to Hans-Friedrich Hefendehl, Kierspe, Germany
Filed Nov. 21, 1973, Ser. No. 417,748
Claims priority, application Germany May 24, 1973
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—32



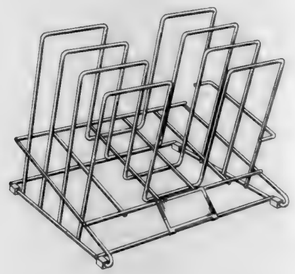
237,847
ARMCHAIR
William B. Sklaroff, Narberth, Pa., assignor to Tiffany Industries, Inc., St. Louis, Mo.
Filed Mar. 20, 1974, Ser. No. 452,793
Term of patent 14 years
Int Cl. D6—*01*
U.S. Cl. D6—69



237,848
CHAIR
William B. Sklaroff, Narberth, Pa., assignor to Tiffany Industries, Inc., St. Louis, Mo.
Filed Mar. 20, 1974, Ser. No. 452,794
Term of patent 14 years
Int Cl. D6—*01*
U.S. Cl. D6—66



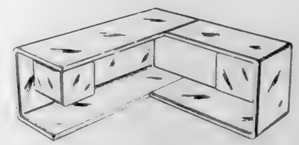
237,849
COOLING RACK
James M. Hale, Chicago, Ill., assignor to Xerox Corporation, Stamford, Conn.
Filed Apr. 29, 1974, Ser. No. 465,392
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—142



237,850
BOMBE CHEST CABINET
Donald J. Booty, Frankfort, Ill., assignor to Amico, Inc., Philadelphia, Pa.
Filed Apr. 17, 1974, Ser. No. 461,677
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—149



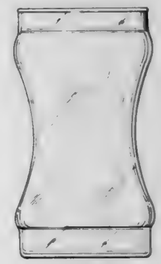
237,851
L-SHAPED DESK
William B. Sklaroff, Narberth, Pa., assignor to Tiffany Industries, Inc., St. Louis, Mo.
Filed Mar. 20, 1974, Ser. No. 452,812
Term of patent 14 years
Int Cl. D6—*04*
U.S. Cl. D6—162



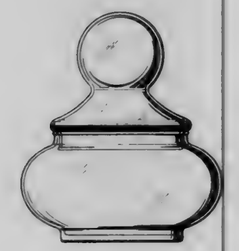
237,852
SUPPORT FOR NECKTIES, BELTS OR THE LIKE
Richard M. Aron, Stamford, Conn., assignor to M. Aron Corporation, New York, N.Y.
Filed Nov. 15, 1974, Ser. No. 524,139
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—251



237,853
TUMBLER OR SIMILAR ARTICLE
Barbara E. Katz, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 20, 1973, Ser. No. 399,345
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—15



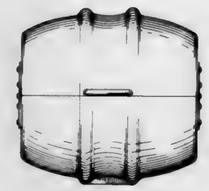
237,854
CANISTER WITH LID OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 27, 1973, Ser. No. 391,615
Term of patent 14 years
The term of this patent subsequent to May 13, 1989, has been disclaimed
Int. Cl. D9—*02;* D7—*07*
U.S. Cl. D7—79



237,855
CANISTER WITH LID OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Oct. 9, 1973, Ser. No. 404,770
Term of patent 14 years
The term of this patent subsequent to May 13, 1989, has been disclaimed
Int. Cl. D9—*02;* D7—*07*
U.S. Cl. D7—79

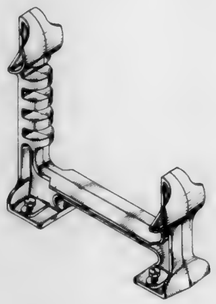


237,856
BARBEQUE GRILL
John R. Madson, 2064 S. 98th St. 53227, and Donald Habermehl, 5136 W. Plainfield Ave. 53220, both of Milwaukee, Wis.
Filed June 4, 1973, Ser. No. 367, 074
Term of patent 14 years
Int. Cl. D7—*02*; D7—*05*
U.S. Cl. D7—107

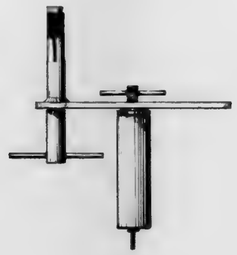




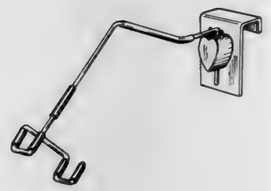
237,857
ANDIRON
James W. Welch, P.O. Box 455, Lake Stevens, Wash. 98258
Filed May 15, 1974, Ser. No. 470,178
Term of patent 7 years
Int. Cl. D7—*08*
U.S. Cl. D7—211



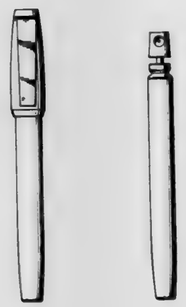
237,858
VALVE PULLING TOOL
Ezekiel Seminario, 15500 Tustin Village Way, Tustin, Calif. 92680
Filed Sept. 20, 1974, Ser. No. 507,820
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—59



237,859
BABY BOTTLE HOLDER
Anthony J. Ventimiglia, 24901 E. Jefferson, Apt. 202, St. Clair Shores, Mich. 48080
Filed July 30, 1973, Ser. No. 383,796
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D8—247



237,860
DISPENSING CONTAINER
Robert Shrier, 205 Northwest Terrace, Silver Spring, Md. 20901
Filed Sept. 21, 1973, Ser. No. 399,494
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—23



237,861
GLASS BOTTLE
Anthony T. Rossi, Bradenton, Fla., assignor to Tropicana Products, Inc., Bradenton, Fla.
Filed Aug. 14, 1974, Ser. No. 497,400
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—44



237,862
BOTTLE OR THE LIKE
James L. Westrich, Algoma, Wis., assignor to Algoma Net Company, Milwaukee, Wis.
Filed May 24, 1973, Ser. No. 363,760
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—63

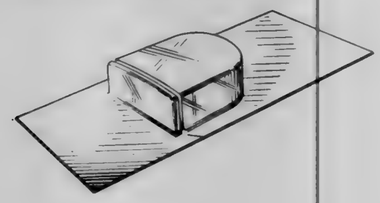


237,863
COMBINED BOTTLE AND CAP THEREFOR
Bernd Peters, Jesteburg, and Hermann G. Quack, Hamburg, Germany, assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Mar. 8, 1973, Ser. No. 339,031
Claims priority, application Great Britain Sept. 14, 1972
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—168

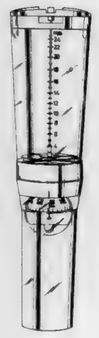


237,864
TEARABLE BLISTER PACKAGE
Eugene J. Meierhoefer, 48 Bald Eagle Road, Panther Valley, Hackettstown, N.J. 07840
Filed Sept. 28, 1973, Ser. No. 401,753
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—192

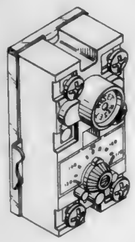
237,865
TEARABLE BLISTER PACKAGE
Eugene J. Meierhoefer, 48 Bald Eagle Road, Panther Valley, Hackettstown, N.J. 07840
Filed Sept. 28, 1973, Ser. No. 401,754
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—192



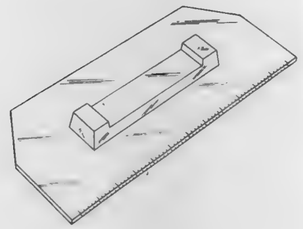
237,866
GAUGE FOR MEASURING WIND VELOCITY AND DIRECTION
Bo Gunnar Lonnstedt, Kvarnbergsvagen 23, S–141 45 Huddinge, Sweden
Filed Dec. 26, 1973, Ser. No. 427,445
Claims priority, application Sweden June 26, 1973
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—53



237,867
THERMOSTATIC CONTROL UNIT
Siegfried E. Manecke, Indiana, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Aug. 21, 1974, Ser. No. 499,133
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—50



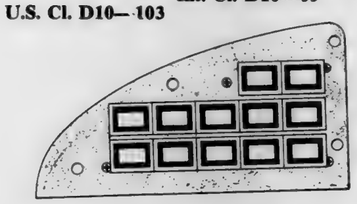
237,868
DRAFTING INSTRUMENT
Peter S. Hoagland, 18769 Saratoga, Lathrup Village, Mich. 48076
Original design application Dec. 15, 1971, Ser. No. 208,511, now Patent No. 232,051, which is a continuation-in-part of design application Ser. No. 160,234, July 6, 1971, now Patent No. 226,226. Divided and this application Jan. 2, 1974, Ser. No. 429,848
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—62



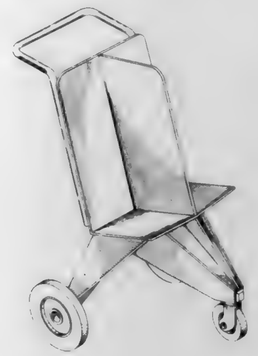
237,869
IMPACT MEASURING UNIT FOR KARATE TRAINING
Andrew S. Siroki, 428 S. 8th Ave., Highland Park, N.J. 08904
Filed Jan. 16, 1974, Ser. No. 433,810
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—83



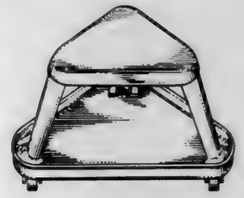
237,870
COMBINED AIRCRAFT ANNUNCIATOR WARNING LIGHT AND TEST PANEL
Louis D. Belloisy, Waterbury, and Donald P. Gover, Woodbury, Conn., assignors to James Di Rienzo and Louis D. Belloisy, fractional part interest to each
Filed Jan. 24, 1974, Ser. No. 436,143
Term of patent 7 years
Int. Cl. D10—*05*
U.S. Cl. D10—103



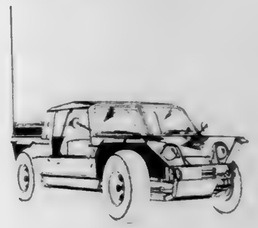
237,871
REPRODUCTION MACHINE STACKING CART
Jacob W. Patla, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 27, 1973, Ser. No. 428,936
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—26



237,872
MECHANIC'S ROLLER SEAT
Jack V. Miller, Sierra Madre, Calif., assignor to Orion Industries, Inc., Torrance, Calif.
Filed Oct. 23, 1974, Ser. No. 517,191
Term of patent 14 years
Int. Cl. D6—*01*; D12—*02*
U.S. Cl. D12—26



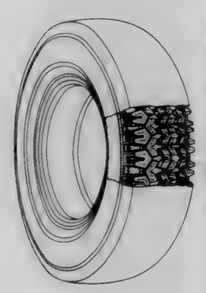
237,873
ALL-TERRAIN VEHICLE
Norman B. Johnson, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed July 2, 1973, Ser. No. 376,040
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—87



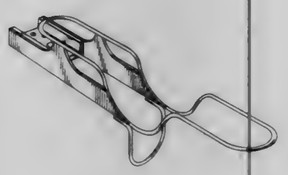
237,874
BICYCLE HOLDER
Robert E. Sill, 429 15th Ave. SW., Rochester, Minn. 55901
Continuation-in-part of abandoned design application Ser. No. 409,953, Oct. 26, 1973. This application Aug. 12, 1974, Ser. No. 496,822
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D12—115



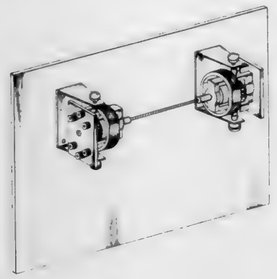
237,875
TIRE
Jean Bernard Montagne, Cebazat, France, assignor to Compagnie Generale des Etablissements Michelin, Raison Sociale Michelin & Cie
Filed Oct. 26, 1973, Ser. No. 410,081
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



237,876
MOTORCYCLE HITCH
Eddie R. McCrary, Rte. 1, Box 295A–7, Wylie, Tex. 75098
Filed Nov. 4, 1974, Ser. No. 520,570
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—162



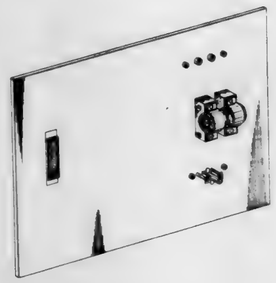
237,877
MOTOR AND GENERATOR EDUCATIONAL BOARD
Charles G. Valentine, Stamford, Conn., assignor to Xerox Corporation, Stamford, Conn.
Filed Apr. 19, 1973, Ser. No. 352,799
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62



237,878
MULTI-METER EDUCATIONAL BOARD
Charles G. Valentine, Stamford, Conn., assignor to Xerox Corporation, Stamford, Conn.
Filed Apr. 27, 1973, Ser. No. 355,140
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62



237,879
MAGNETISM AND INDUCTION EDUCATIONAL BOARD
Charles G. Valentine, Stamford, Conn., assignor to Xerox Corporation, Stamford, Conn.
Filed Apr. 19, 1973, Ser. No. 352,794
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62



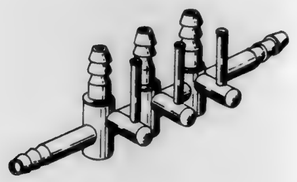
237,880
BASIC HAND TOOL EDUCATIONAL BOARD
Charles G. Valentine, Stamford, Conn., assignor to Xerox Corporation, Stamford, Conn.
Filed Apr. 19, 1973, Ser. No. 352,797
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62



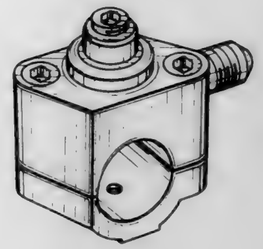
237,881
MINNOW NET
Rufus P. Steadman, 5726 Quince Road, Suite 16, Memphis, Tenn. 38117
Filed May 1, 1974, Ser. No. 465,886
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22



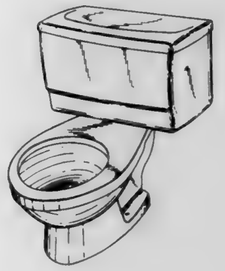
237,882
GANG VALVE
Tetsumi Yamasaki, 12–8 Sakae-Honmachi, Ikeda, Osaka, Japan
Filed May 6, 1974, Ser. No. 467,571
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



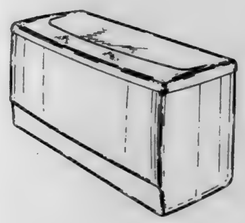
237,883
LINE TAP VALVE
Niklas F. Zetterberg, Topanga, Calif., assignor to Eugene T. McKinnon and Alvin S. Drutz, fractional part interest to each
Filed Apr. 10, 1974, Ser. No. 459,677
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



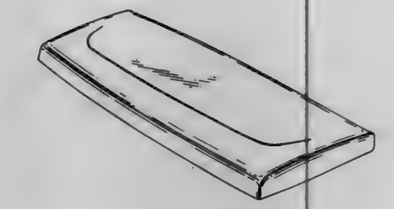
237,884
WATER CLOSET
Stanley F. Korol, Mansfield, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Sept. 26, 1974, Ser. No. 509,620
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—65



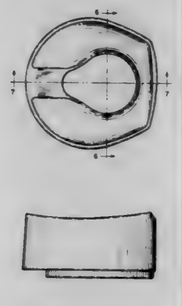
237,885
COMBINED WATER TANK AND COVER
Stanley F. Korol, Mansfield, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Sept. 26, 1974, Ser. No. 509,619
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—66



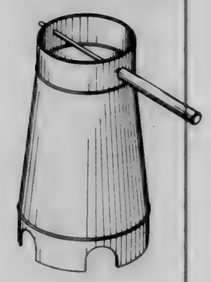
237,886
WATER TANK TOP
Stanley F. Korol, Mansfield, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Sept. 26, 1974, Ser. No. 509,621
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—66



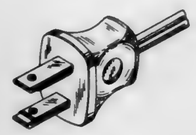
237,887
RAISED SUPERIMPOSED TOILET SEAT OR THE LIKE
Kurt Landsberger, 103 Harrison St., Verona, N.J. 07044
Filed July 15, 1974, Ser. No. 488,522
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71



237,888
CHARCOAL FIRE STARTER
Charles J. Weidenborner, 130 Dobson Road, and Gerald M. Kryk, 137 Sheraton Drive, both of Rochester, N.Y. 14616
Filed Apr. 24, 1974, Ser. No. 463,743
Term of patent 14 years
Int. Cl. D23—*05*
U.S. Cl. D23—90.1

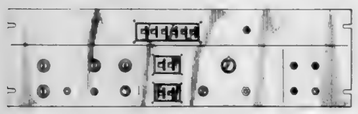


237,889
PLUG
George J. Lawrence, North Kingstown, and Lawrence P. Mellyn, Glocester, R.I., assignors to General Electric Company, New York, N.Y.
Filed Feb. 28, 1974, Ser. No. 447,121
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 B

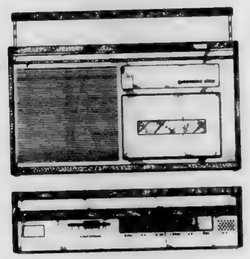


237,890
ELECTRICAL SWITCH
Nelson Frederick John Godfrey, Leighton Buzzard, England, assignor to ERG Industrial Corporation Limited, Dunstable, England
Filed May 4, 1973, Ser. No. 357,149
Claims priority, application Great Britain Feb. 23, 1973
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R

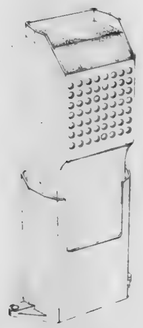
237,891
CONTROL PANEL FOR AN ELECTRONIC INVENTORY CONTROL SYSTEM
John Gault, Marlton, N.J., assignor to Video Systems Corp., Pennsauken, N.J.
Filed Nov. 28, 1973, Ser. No. 419,553
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 C



237,892
CASSETTE TAPE RECORDER
Peter Emmer, Buchenbronn, Germany, assignor to International Standard Electric Corporation
Filed Oct. 12, 1973, Ser. No. 405,968
Claims priority, application Germany Apr. 14, 1973
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



237,893
COMBINED WIRELESS TRANSMITTER-RECEIVER AND RECHARGER THEREFOR
Stig Wennerström, Villa Stig Inn, S–430 40 Saro, Sweden
Filed Mar. 7, 1974, Ser. No. 449,061
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 K



237,894
BEE FEEDER
Daniel A. Aten, Madera, Calif., assignor to Aten's Apiaries, Madera, Calif.
Filed June 6, 1974, Ser. No. 476,867
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



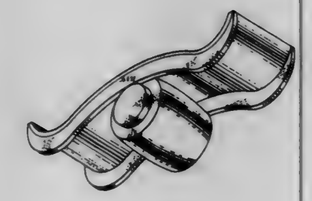
237,895
FIRE EXTINGUISHER
Louis F. Allen and Joseph B. Ott, Erie, Pa., assignors to Conwed Corporation, St. Paul, Minn.
Filed Aug. 22, 1973, Ser. No. 390,367
Term of patent 14 years
Int. Cl. D29—*01*
U.S. Cl. D32—2



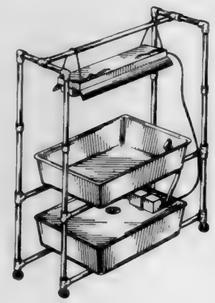
237,896
CHESS SET
David Swartwout, 8333 Niles Center Road, Skokie, Ill. 60076
Filed Sept. 27, 1972, Ser. No. 292,624
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 CH



237,897
ROLLER BOARD
Will Clarke England, 7310 Eastcrest, Austin, Tex. 78752
Filed May 24, 1974, Ser. No. 473,937
Term of patent 14 years
The term of this patent subsequent to Nov. 25, 1989, has been disclaimed
Int. Cl. D21—*01*
U.S. Cl. D34—5 K



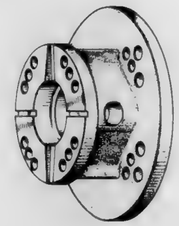
237,898
RACK MOUNTED HYDROPONIC TRAYS
Robert E. Austin, 2255 W. Wagon Wheel Drive 85021, and Greg W. Parks, 12634 N. 28th Way 85032, both of Phoenix, Ariz.
Filed June 3, 1974, Ser. No. 475,569
Term of patent 14 years
Int. Cl. D11—*02;* D15—*99*
U.S. Cl. D35—3 A



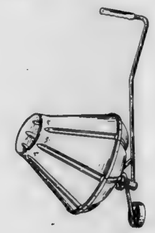
237,899
GUIDE LIGHT
Paul E. Rochford, East Greenwich, and Lawrence P. Mellyn, Glocester, R.I., assignors to General Electric Company, New York, N.Y.
Filed June 23, 1972, Ser. No. 265,816
Term of patent 14 years
Int. Cl. D11—*02;* D26—*05*
U.S. Cl. D48—20 E



237,900
ADAPTER FOR MOUNTING SPEED REDUCERS ON CONVEYORS
Richard B. Stroup, South Bend, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.
Filed Nov. 7, 1974, Ser. No. 521,647
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 G



237,901
MIXING MACHINE
Keith Moran, 61 Guildford Road, Colchester, Essex, England, and Douglas Alan Michael Elston, 22 Desenfans Road, London SE. 21, England
Filed Sept. 21, 1973, Ser. No. 399,518
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D55—1 D



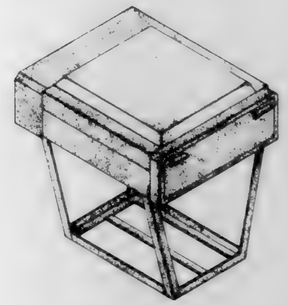
237,902
PAIR OF SPECTACLES
F. Forrest Eaton, Rochester, N.Y., and Richard R. Malese, Sturbridge, Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed Apr. 25, 1972, Ser. No. 250,115
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F



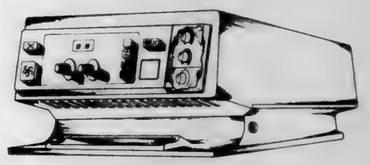
237,903
COMBINED SPECTACLE TEMPLE AND HEARING AID OR SIMILAR ARTICLE
Vittorio Giannetti, Rome Via Deruta 63, Rome, Italy
Filed Mar. 11, 1974, Ser. No. 449,853
Term of patent 14 years
Int. Cl. D16—*06;* D24—*99*
U.S. Cl. D57—1 A



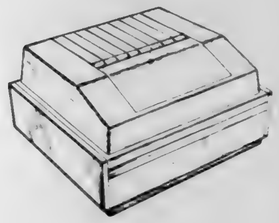
237,904
LITHOGRAPHIC PLATE DEVELOPER
Joseph J. Montefusco, Agawam, and Ferdinand Lukasik, South Hadley, Mass., assignors to City Machine Company, Inc., Holyoke, Mass.
Filed June 13, 1974, Ser. No. 479,249
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1 Q



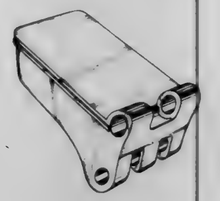
237,905
CONTROL PANEL FOR A COPIER
Ruediger W. Knodt, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Mar. 16, 1973, Ser. No. 342,242
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



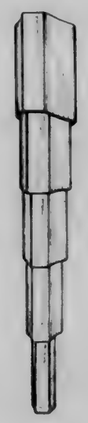
237,906
PRINTER CABINET
Arthur A. Hagstrom, Hoffman Estates, and Hans K. Keipert, Glenview, Ill., assignors to Teletype Corporation, Skokie, Ill.
Filed Oct. 4, 1974, Ser. No. 512,289
Term of patent 14 years
Int. Cl. D14—*02;* D18—*02*
U.S. Cl. D64—11 R

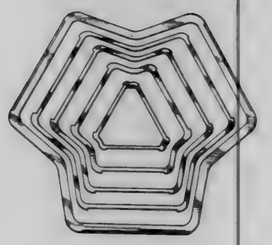


237,907
PISTON FOR ENGINE
Darrell V. Gilliland, 1068 Bell St., Reno, Nev. 89503
Filed Dec. 10, 1973, Ser. No. 423,497
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1 A



237,908
TELESCOPIC COLUMN FOR X-RAY APPARATUS
William H. Amor, Jr., Auburn Township, Robert J. Steffek, Wickliffe, and Kenneth E. Wagner, Richmond Heights, Ohio, assignors to Picker Corporation, Cleveland, Ohio
Filed Nov. 21, 1973, Ser. No. 418,054
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 H

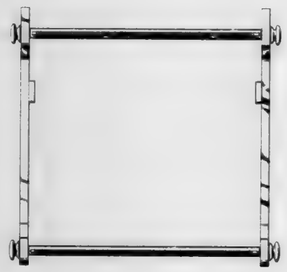




237,909
INFANT NURSING BOTTLE
Tony Apilado, 28 W. 89th St., New York, N.Y. 10024
Filed Jan. 23, 1975, Ser. No. 543,503
Term of patent 14 years
Int. Cl. D9—*01*; D24—*04*
U.S. Cl. D83—8 A



237,910
HAND LOOM
Nickson R. Brubaker, 2232 Draper Ave. 55113; Peter J. Kreisman, 751 Goodrich Ave. 55105; and James C. Ingebretsen, 1761 Summit Ave. 55105, all of St. Paul, Minn.
Filed Dec. 3, 1973, Ser. No. 421,076
Term of patent 14 years
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U.S. Cl. D92—15



237,911
DRY SHAVER OR SIMILAR ARTICLE
Maarten Willem van Lelyveld, Drachten, and Knut Otto Yran, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 31, 1973, Ser. No. 393,473
Claims priority, application Switzerland Mar. 1, 1973
Term of patent 14 years
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U.S. Cl. D95—3 A



237,912
ELECTRIC SHAVER
Takeshi Takagi, Neyagawa-shi, Osaka, Japan, assignor to Matsushita Electric Works, Ltd., Kadoma-shi, Osaka, Japan
Filed July 30, 1974, Ser. No. 493,012
Claims priority, application Japan Feb. 8, 1974
Term of patent 14 years
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U.S. Cl. D95—3 A



237,913
DRY SHAVER OR SIMILAR ARTICLE
Aloysius Jacobus Maria Beeren, Nuenen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 27, 1973, Ser. No. 391,798
Claims priority, application Switzerland Mar. 1, 1973
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



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Kippen, Albert J., 3,923,214.

Bantel, Karl-Heinz; Eilingsfeld, Heinz; and Stoeckelmann, Guenter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Recovery of purified 1-nitroanthraquinone. 3,923,845, Cl. 260-369.000.

Bara, Edwin Stanley, to Motorola, Inc. Unitary positioning arm for side drive of a cartridge tape player system having a reverse and fast forward capability. 3,924,269, Cl. 360-93.000.

Barabas, Eugene S.; and Fein, Marvin M., to GAF Corporation. Graft copolymers of poly (N-vinyl lactam) having diacetone acrylamide and acrylic acid esters grafted thereon. 3,923,714, Cl. 260-29.6WB.

Barber-Colman Company: *See—*
Tarnow, Virgil K.; and Doshier, Kenneth E., 3,924,147.

Barbieri, Siegfried, to Durst AG. Fabrik Fototechnischer Apparate. Process and apparatus for undercompensating photographic color printing. 3,924,121, Cl. 250-226.000.

Barden, James D., to Meloy Laboratories, Inc. Apparatus and method employing gas-permeable membrane for separating, diluting, or concentrating molecular species. 3,923,461, Cl. 23-232.00R.

Barlow, Christoper George: *See—*
Andrews, Roderic Stafford; Barlow, Christoper George; and Livingstone, John Lewis, 3,923,974.

Barny, Jean-Jacques, to Martin. Apparatus for feeding sheets. 3,923,297, Cl. 271-132.000.

Barr, Alvin: *See—*
Nozick, Jerome; and Barr, Alvin, 3,923,065.

Barrett, Fred O.: *See—*
Sturwold, Robert J.; Barrett, Fred O.; and Utz, Walter E., 3,923,702.

Barron, Benny Gene; and Cramm, Russell Henry, to Dow Chemical Company, The. One-package polyurethane coatings. 3,923,746, Cl. 260-77.5AP.

Barron, Daniel. Ship board sonar range computer. 3,923,243, Cl. 235-88.00R.

Barron, Daniel. Noise and reverberation sonar range computer. 3,924,104, Cl. 235-61.00B.

Barry Wright Corporation: *See—*
Dean, Carl J., 3,923,347.

Barter, James A., to PPG Industries, Inc. Polymerization of ethylenically unsaturated monomer. 3,923,766, Cl. 260-92.80R.

Barton, John Edward Duncan, to Imperial Chemical Industries Limited. Preparation of N-phosphonomethyl glycine. 3,923,877, Cl. 260-502.500.

Barton, Paul: *See—*
Earp, Charles William; Sandbank, Carl Peter; Overbury, Frances Giles; Barton, Paul; and Blair, Peter Kenneth, 3,924,236.

BASF Aktiengesellschaft: *See—*
Bock, Gustav; and Elser, Wolfgang, 3,923,806.
Quadbeck-Seeger, Hans-Juergen; Schoenleben, Willibald; and Schneider, Dieter, 3,923,825.
Schlichting, Karl; Horn, Peter; Schlag, Johannes; and Koernig, Wolfgang, 3,923,735.
Seydl, Wolfgang, 3,923,728.

BASF Wyandotte Corporation: *See—*
Argade, Shyam D.; Collins, Stephen M.; and Armitage, James B., 3,923,630.

Basic Incorporated: *See—*
Vickery, Glenn C., 3,923,712.

Basila, Michael R.: *See—*
Braithwaite, David G.; Cross, Carl F.; and Basila, Michael R., 3,923,691.
Braithwaite, David G.; Cross, Carl F.; and Basila, Michael R., 3,923,692.

Basque, Max G.; Magner, James E.; Surls, Joseph P.; and West, Ben F., to Dow Chemical Company, The. Method of preparing titanium dioxide pigment. 3,923,968, Cl. 423-611.000.

Bate, Frederick Douglas Clavell. Packaging. 3,922,958, Cl. 93-33.00H.

Batey, Thomas E., to Mayflower Textiles Co., Inc. Rug hooking frame construction for supporting and stretching a hooked rug fabric. 3,922,804, Cl. 38-102.910.

Battaerd, Hendrik Adriaan Jacobus: *See—*
Weiss, Donald Eric; and Battaerd, Hendrik Adriaan Jacobus, 3,923,651.

Battelle-Institut e.V.: *See—*
Baukal, Werner; Kinkel, Heinz-Joachim; Robens, Erich; and Walter, Gerhard, 3,923,969.

Battin, Dale Edward; and Thompson, Harold Godfred, to American Cyanamid Company. Partial alkylation of polyhydroxybenzophenones. 3,923,901, Cl. 260-591.000.

Bauer, Andreas; and Ruhmann, Bernhard, to Volkswagenwerk Aktiengesellschaft. Safety belt arrangement. 3,923,321, Cl. 280-150.0SB.

Bauer, George H., Jr. Resuscitation device. 3,923,054, Cl. 128-145.500.

Bauer, Jakob: *See—*
Bell, Glaister Steward; and Bauer, Jakob, 3,923,548.

Bauer, James A.: *See—*
Thomspon, Francis T.; and Bauer, James A., 3,923,116.

Bauer, Johann: *See—*
Goetze, Ulrich; Wole, Axel; Nettesheim, Gottfried; Balwe, Thomas; Bauer, Johann; Fendel, Kurt; Kurz, Dieter; and Sabel, Alex, 3,923,765.

Bauer, Ralph L.: *See—*
Cash, Carlton H.; Boot, Robert A.; Bauer, Ralph L.; and Husten, Benjamin F., 3,924,234.

Baughman, Ray H.; and Yee, Kwok Chun, to Allied Chemical Corporation. Cyclically-bound ladder polymers of cyclic diacetylene tetramers. 3,923,622, Cl. 204-159.220.

Baukal, Werner; Kinkel, Heinz-Joachim; Robens, Erich; and Walter, Gerhard, to Battelle-Institut e.V. Carrier system for a drug with sustained release. 3,923,969, Cl. 424-19.000.

Bausch & Lomb Incorporated: *See—*
Brumley, Corwin H., 3,923,399.

Bavaro, Nicholas M.: *See—*
Newman, James W.; Bavaro, Nicholas M.; and Zajac, Ronald E., 3,923,270.

Bayer Aktiengesellschaft: *See—*
Bossert, Friedrich; Meyer, Horst; and Vater, Wulf, 3,923,818.
Ferres, Harry; Kemmenoe, Adrian Victor; and Best, Desmond John, 3,923,788.
Heins, Arnold; Blum, Helmut; and Worms, Karl-Heinz, 3,923,876.
Imre, Laszlo; Klein, Alfons; and Wedemeyer, Karlfried, 3,923,903.
Quiring, Bernd; Wagner, Kuno; Muller, Richard; and Muller, Peter, 3,923,743.
Roeder, Henning; Langner, Gunter P.; Scherhag, Bernd; Nickenig, Hans-Lothar; and Loix, Rene, 3,923,680.

Schaupp, Kurt; and Schulze, Manfred, 3,923,962.
Schneider, Kurt; Fahnler, Friedrich; Dhein, Rolf; and Heydenreich, Frieder, 3,923,925.
Schrock, Wilfried; Metzger, Karl-Georg; and Konig, Hans-Bodo, 3,923,789.
Weissel, Oskar; Metten, Josef; Schwarz, Hans Helmut; Koller, Horst; and Tacke, Peter, 3,923,695.
Wollweber, Hartmund; and Flucke, Winfried, 3,923,888.

BBC Brown Boveri & Company Limited: *See—*
Houska, Jaroslaw; and Strejcek, Jan, 3,923,232.

Beach, Janet. Biological specimen collectors and method. 3,923,040, Cl. 128-2.00F.

Beacham, Harry Hoyt: *See—*
Wright, Carl Leonard; and Beacham, Harry Hoyt, 3,923,929.

Beall, George H.: *See—*
Araujo, Roger J.; Beall, George H.; and Sawchuk, Loris G., 3,923,529.

Bean, Lloyd F., to Xerox Corporation. Migration imaging member and method. 3,923,504, Cl. 96-1.500.

Beard, Dale A., to General Motors Corporation. Oven temperature sensing circuitry. 3,924,101, Cl. 219-490.000.

Beaud, Jean-Louis. Apparatus for the treatment of parts by successive immersions in at least two baths. 3,923,072, Cl. 134-99.000.

Beck, Bruno: *See—*
Baerns, Manfred; Beck, Bruno; Schmid, Karl Ludwig; Machacek, Hubert; Beige, Gunther; and Nogge, Heinz, 3,923,867.

Becker, Carl: *See—*
Wegmann, Jacques; Becker, Carl; Zwahlen, Guenther; and Kuster, Werner, 3,923,452.

Beckers, Norman L., to Diamond Shamrock Corporation. Methylene chloride stabilized with ketones. 3,923,912, Cl. 260-652.50R.

Beckman Instruments, Inc.: *See—*
Ogle, David G.; and Taylor, John T., 3,922,957.

Beckmann, Georg; Gilli, Paul Viktor; Fritz, Kurt; and Lippitsch, Josef, to Waagner-Biro Aktiengesellschaft. Steam generators. 3,923,008, Cl. 122-34.000.

Becton, Dickinson and Company: *See—*
Ayres, Waldemar A., 3,922,917.

Bedenbender, John W.: *See—*
Kruppenbach, John A.; and Bedenbender, John W., 3,923,121.

Bedford, Alan D., to Hazeltine Research, Inc. Continuous information add-on system. 3,924,060, Cl. 178-5.600.

Beecham Group Limited: *See—*
Clayton, John Peter; and Hubbard, Ronald, 3,923,787.

Beekmans, Nicholaas Marinus; and Heijne, Leopold, to U.S. Philips Corporation. Apparatus for the measuring and supplying a controlled quantity of a gas. 3,923,624, Cl. 204-195.00S.

Beiersdorf Aktiengesellschaft: *See—*
Guse, Gunter; and Pietsch, Hanns Georg, 3,923,752.

Beige, Gunther: *See—*
Baerns, Manfred; Beck, Bruno; Schmid, Karl Ludwig; Machacek, Hubert; Beige, Gunther; and Nogge, Heinz, 3,923,867.

Bell, Glaister Steward; and Bauer, Jakob, to Varta Batterie Aktiengesellschaft. Elastic gas valve for galvanic cells. 3,923,548, Cl. 133-133.000.

Bell, John: *See—*
Knab, James V.; Haeckler, Charles; Bell, John; and Fellinger, Jerry, 3,923,482.

Bell, Stanley C.: *See—*
Santilli, Arthur A.; Scotese, Anthony C.; Bell, Stanley C.; and Rosenthale, Marvin E., 3,923,991.

Bell Telephone Laboratories, Incorporated: *See—*
Caldwell, James Lewis, 3,924,080.
Feldman, Martin; Rousseau, Denis Lawrence; Sinclair, William Robert; and Weick, Walter Werner, 3,924,093.
Gannett, Danforth K., 3,924,075.
Peterson, Eugene, 3,924,074.
Plourde, James Kevin, 3,924,208.
Sinha, Ashok Kumar, 3,923,559.

Bellina, Russell F., to Du Pont de Nemours, E. I., and Company. 1-Heterocyclic carbamoyl-N-carbamoyloxy formimidates. 3,923,786, Cl. 260-239.0BF.

Bellos, Thomas J.; and Bessler, Donald U., to Petrolite Corporation. Compositions useful in plugging formations. 3,923,100, Cl. 166-281.000.

Beloit Corporation: *See—*
Turcotte, Paul, 3,923,402.
Verseput, Herman Ward, 3,923,593.

Belsdorf, Manfred, to TRW Inc. Mechanism for fastening a ring on a shaft. 3,923,408, Cl. 403-261.000.

Bender, Albert; and Grimm, Hans, to Maschinenfabrik Gehring KG. Device for machining mantle surfaces. 3,922,819, Cl. 51-101.00R.

Bender, Paul E.; and Loev, Bernard, to SmithKline Corporation. Chroman and chromene compounds. 3,923,836, Cl. 260-345.200.

Bendix Corporation, The: *See—*
Chapelle, Walter E., 3,924,066.
Goodrich, George W., 3,924,228.
Keranen, Theodore W., 3,923,031.

Benedict, Robert P., to Westinghouse Electric Corporation. Steam turbine erosion reduction by ultrasonic energy generation. 3,923,415, Cl. 415-1.000.

Benefiel, Donald Clarence: *See—*
Parrott, Albert Ross; and Benefiel, Donald Clarence, 3,923,460.

Bengtsson, Bengt Lennart: *See—*
Bosund, Sven Ingmar Walton; and Bengtsson, Bengt Lennart, 3,924,005.

Benning, Charles W. Workmen's cage for excavation work. 3,922,866, Cl. 61-41.00A.

Benson, Gustav E.; and Yakuboff, Paul D., to Owens-Corning Fiberglas Corporation. Method for impregnating and coating fibrous strands. 3,924,028, Cl. 427-175.000.

Benz, Gerhard, to Minnesota Mining and Manufacturing Company. Process of making colored high temperature polymers. 3,923,726, Cl. 260-40.00R.

Berchielli, Aldo S., to Electrochem, Inc. Zinc electrode and method of making same. 3,923,544, Cl. 136-30.000.

Berg, Gerhard; and Nordsiek, Karl-Heinz, to Chemische Werke Huls Aktiengesellschaft. Process for the production of pourable, pulverulent rubbers. 3,923,707, Cl. 260-17.00R.

Berg, Harold Roy. Sliding door locking device. 3,922,893, Cl. 70-13.000.

Berg Manufacturing Company, The: *See—*
Klimek, Boleslaw; and Ma, James W., 3,923,346.

Bergfjord, John Alf; Grammatica, Steven James; and Radler, Richard William, to Xerox Corporation. Photoelectric and electrophotographic pigments comprising derivatives of condensed polycyclic aromatic hydrocarbon aldehydes. 3,923,506, Cl. 96-1.500.

Berghman, Thor Johan. Sealing strip. 3,923,411, Cl. 404-64.000.

Bergin, Michael J.; and Flaig, Richard, to Intaglio Service Corporation. Method of copper plating gravure cylinders. 3,923,610, Cl. 204-32.00R.

Bergloff, Raymond A., to United States of America, Army. Fluid expulsion system having a tapered tank. 3,923,208, Cl. 222-386.000.

Beriger, Ernest; and Pinter, Ladislaus, to Ciba-Geigy AG. 3-Hydroxymethacrylic acid methyl ester dimethyl thionosphosphate. 3,923,932, Cl. 260-941.000.

Berkes, John S.; Hillegas, William J.; and Ing, Samuel W., to Xerox Corporation. Image recording process. 3,923,512, Cl. 96-27.00R.

Berkowitz, Murray: *See—*
Hermes, Walter Ludwig; Berkowitz, Murray; and Lombaerde, Charles, 3,923,433.

Berlanga, Jose Maria Castellano: *See—*
Roldan, Cristobal Martinez; Brana, Miguel Fernandez; and Berlanga, Jose Maria Castellano, 3,923,820.

Bernard, John, Jr.: *See—*
Maxey, Robert E. L., Sr.; and Bernard, John, Jr., 3,922,791.

Bernardi, Herbert, to G.A.O. Gesellschaft fur Automation und Organisation m.b.H. Stepping drive. 3,922,926, Cl. 74-63.000.

Berry, Samuel M., to Commercial Metals Company. Precision bearing assembly. 3,923,350, Cl. 308-174.000.

Bersin, Richard L., to International Plasma Corporation. Dry plasma process for etching noble metal. 3,923,568, Cl. 156-8.000.

Bertolacini, Ralph J.; Gutberlet, Louis C.; and Kozinski, Allen A., to Standard Oil Company. Two-catalyst hydrocracking process. 3,923,638, Cl. 208-89.000.

Besser Company: *See—*
Woelk, Robert J., 3,923,451.

Bessler, Donald U.: *See—*
Bellos, Thomas J.; and Bessler, Donald U., 3,923,100.

Best, Desmond John: *See—*
Ferres, Harry; Kemmenoe, Adrian Victor; and Best, Desmond John, 3,923,788.

Bethlehem Steel Corporation: *See—*
Homberg, Otto A.; Sheldrake, Charles W.; and Lynn, James B., 3,923,957.
Humphries, Darral V., 3,923,945.

Bettencourt, Pierre Andre, to Wham-O Mfg. Co. Peepsight. 3,922,795, Cl. 33-254.000.

Bettonica, Luigi. Hydraulic press for the molding of tiles and plates of ceramic or like materials. 3,923,440, Cl. 425-167.000.

Beusink, Bernard Joseph, deceased (by Overkamp, Johanna Magaretha Maria Beusink nee, administratrix); Cuypers, Marinus Hubertus; and Horowitz, Alexandre, to Varitrac A.G. Method for the manufacture of driving belt packages. 3,922,771, Cl. 29-445.000.

Bevacqua, Louis Albert, to Motorola, Inc. Anti-backlash universal coupling. 3,922,883, Cl. 64-7.000.

Bianchini, Giacomo. Machine for the coupling of fabrics. 3,923,583, Cl. 156-378.000.

Bianco, Frank. Apparatus to assist fastening of an artificial limb. 3,922,727, Cl. 3-1.000.

Bidanset, Edward J., to Textron Inc. Band type brake for a chain saw. 3,923,126, Cl. 188-77.00W.

Biddick, Royce E.: *See—*
Margulies, Robert S.; and Biddick, Royce E., 3,923,545.

Big Drum, Inc.: *See—*
Miller, Joseph J., 3,923,200.

Billings, John C.: *See—*
Nastronero, John J.; and Billings, John C., 3,924,233.

Bilson, Edward A.: *See—*
Morris, Thomas M.; and Bilson, Edward A., 3,923,617.

Bingmann, Richard; Desiderio, Frank J.; and Edwards, Donald O'Neal, to General Electric Company. Compliance compensation for electronically controlled volume respirator systems. 3,923,056, Cl. 128-145.800.

Bird, Edwin Donald, to Keystone International, Inc. Boast assisted conveying system. 3,923,343, Cl. 302-24.000.

Birnbaum, Bruce H.: *See—*
Birnbaum, Richard S.; and Birnbaum, Bruce H., 3,923,316.

Birnbaum, Richard S.; and Birnbaum, Bruce H. Grass-ski. 3,923,316, Cl. 280-11.220.

Bissonette, Vernon Leon, to Eastman Kodak Company. Photographic process and composition employing CO(III) complexes and silver halide solvents. 3,923,511, Cl. 96-22.000.

Bixby, Leon C.: *See—*
Sparham, Vaughan R.; and Bixby, Leon C., 3,923,649.

Bjorksten Research Laboratories, Inc.: *See—*
Dunn, Stanley Austin, 3,924,098.

Blair, Peter Kenneth: *See—*
Earp, Charles William; Sandbank, Carl Peter; Overbury, Frances Giles; Barton, Paul; and Blair, Peter Kenneth, 3,924,236.

Blaise, Herman T.: *See—*
United States of America, National Aeronautics and Space Administration; Kugath, Donald A.; Dane, Dan H.; and Blaise, Herman T., 3,923,166.

Blake, William Wayne, to Caterpillar Tractor Co. Transmission control system with dual purpose modulating valve. 3,923,076, Cl. 137-495.000.

Blakeslee, Thomas R. Pulse code modulation time division multiplex telephone system. 3,924,077, Cl. 179-15.0AL.

Blankenbeckler, Ranzel. Door hanging device. 3,923,167, Cl. 214-1.00D.

Blazek, George A., to Advance Valve Installations Inc. Pipeline closure and method. 3,923,082, Cl. 138-89.000.

Blondel, Jacques: *See—*
Fache, Michel; Blondel, Jacques; and Mahieu, Jean-Rene, 3,924,204.

Bludworth, Robert A. Flexible coupled articulated vessel. 3,922,993, Cl. 114-235.00R.

Blue Bell, Inc.: *See—*
Fulp, James B., 3,922,980.

Blum, Dieter: *See—*
Gaeth, Rudolf; Hoelscher, Friedrich; Schmitt, Bernard; and Blum, Dieter, 3,924,033.

Blum, Helmut: *See—*
Heins, Arnold; Blum, Helmut; and Worms, Karl-Heinz, 3,923,876.

Blust, William F.: *See—*
Naber, Charles T.; and Blust, William F., 3,924,024.

Bochan, John; to General Electric Company. Suspension system for a washing machine. 3,922,892, Cl. 68-23.3.

Bock, Gustav; and Elser, Wolfgang, to BASF Aktiengesellschaft. Disperse dyes based on isoindolene derivatives. 3,923,806, Cl. 260-256.40C.

Bodlaj, Viktor, to Siemens Aktiengesellschaft. Process for measuring the distance of and the speed component of an object perpendicular to a reference line. 3,923,395, Cl. 356-4.000.

Boehringer Ingelheim GmbH: *See—*
Merz, Herbert; Langbein, Adolf; Walther, Gerhard; and Stockhaus, Klaus, 3,923,987.

Boeing Company, The: *See—*
Maroshick, Max, 3,922,971.

Boggild, Robert. Portable mount for gymnastic pole. 3,923,302, Cl. 272-60.00A.

Bolesta, Dmytro. Heating and cooling by separation of faster from slower molecules of a gas. 3,922,871, Cl. 62-5.000.

Boliden Aktiebolag: *See—*
Fiedler, Utz Gerhard, 3,923,478.

Boller, Arthur; and Scherrer, Hanspeter, to Hoffmann-La Roche Inc. Liquid crystal esters. 3,923,857, Cl. 260-465.00D.

Bollig, Georg; and Simons, Willi, to Schloemann-Siemag Aktiengesellschaft. Apparatus arranged after a continuous casting installation for releasing a thread-like casting connection. 3,923,092, Cl. 164-274.000.

Bonet, Claude; and Foex, Marc, to Agence Nationale de Valorisation de la Recherche (ANVAR). Production of ultra fine refractory particles from refractory material using plasma flows and a fluidized bed. 3,923,467, Cl. 23-293.00A.

Boot, Robert A.: *See—*
Cash, Carlton H.; Boot, Robert A.; Bauer, Ralph L.; and Husten, Benjamin F., 3,924,234.

Booth, William M.: *See—*
Rieth, James E.; and Booth, William M., 3,922,808.

Boranian, Armen G.; and Terwilliger, Bruce, to GAF Corporation. Floor tile production and products. 3,924,023, Cl. 427-54.000.

Borg-Warner Corporation: *See—*
Grant, Thomas S., 3,923,922.
Hechenbleikner, Ingenuin; and Enlow, William Palmer, 3,923,620.
Korol, Stanley F., 3,922,731.

Boris, Michel, to Societe Technique de Pulverisation. Liquid perfume atomizers. 3,923,250, Cl. 239-321.000.

Bornstein, Arthur N.; and Indig, Maurice E., to United States of America, Energy Research and Development Administration. High temperature aqueous stress corrosion testing device. 3,922,903, Cl. 73-15.600.

Boros, Paul Z.: *See—*
Tregay, John L.; and Boros, Paul Z., 3,924,061.

Bosch, Paul, to Robert Bosch G.m.b.H. Closed-circuit hydrostatic aggregate. 3,922,856, Cl. 60-464.000.

Bosse-Platiere, Michel J., to Schlumberger Technology Corporation. Well bore perforating apparatus. 3,923,106, Cl. 175-4.550.

Bossert, Friedrich; Meyer, Horst; and Vater, Wulf, to Bayer Aktiengesellschaft. 1,4-Dihydropyridines. 3,923,818, Cl. 260-294.80G.

Bostrom, Donald J.; and Moorad, Stanley, to Ekco Products, Inc. Package and method of forming same. 3,923,237, Cl. 229-43.000.

Bosund, Sven Ingmar Walton; and Bengtsson, Bengt Lennart, to Societe d'Assistance Technique pour Produits Nestle S.A. Soluble protein. 3,924,005, Cl. 426-7.000.

Bowerman, Edwin R., to GTE Laboratories Incorporated. Wedge reflector for fiber optic bundle. 3,923,375, Cl. 350-96.00C.

Bowman Enterprises, Incorporated: *See—*
Bowman, Vernon D., 3,923,956.

Bowman, Vernon D., to Bowman Enterprises, Incorporated. Smokeless anti-toxic burner method. 3,923,956, Cl. 423-210.000.

Boyer, Jean Paul. Endless film winding or unwinding device. 3,923,266, Cl. 242-55.160.

BP Chemicals International Limited: *See—*
Westlake, David Jack; and Wriglesworth, Michael John, 3,923,880.

Bradbury, Leslie John Stanley; and Wagner, Nicholas Liptay, to National Research Development Corporation. Anemometers. 3,922,912, Cl. 73-204.000.

Brady, Philip Ronald: *See—*
Eaton, John Richard; and Brady, Philip Ronald, 3,924,245.

Brady, William A.: *See—*
Reiner, Lawrence L.; and Brady, William A., 3,923,305.

Braham, Robert M.; and Keowski, John W., to Petty-Ray Geophysical, Inc. Method and apparatus for suppression of noise in seismic data. 3,924,260, Cl. 340-15.5GC.

Braithwaite, David G.; Cross, Carl F.; and Basila, Michael R., to Nalco Chemical Company. Hydrotreating catalyst. 3,923,691, Cl. 252-455.00R.

Braithwaite, David G.; Cross, Carl F.; and Basila, Michael R., to Nalco Chemical Company. Hydrotreating catalyst. 3,923,692, Cl. 252-455.00R.

Brana, Miguel Fernandez: *See—*
Roldan, Cristobal Martinez; Brana, Miguel Fernandez; and Berlanga, Jose Maria Castellano, 3,923,820.

Brandon, Clarence W., to Brandon, Orpha B., a part interest. Methods of well completion or workover of fluid containing subsurface formations. 3,923,099, Cl. 166-249.000.

Brandon, Orpha B.: *See—*
Brandon, Clarence W., 3,923,099.

Brandstatter, Horst. Home intercom telephone set. 3,924,073, Cl. 179-1.00H.

Brandstatter, Miroslav, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Apparatus for controlling pattern drums particularly in circular knitting machines. 3,922,885, Cl. 66-50.00B.

Braun, David L., to Minnesota Mining and Manufacturing Company. Gas detection device. 3,924,219, Cl. 338-34.000.

Bray, James A.: *See—*
Smith, John R.; and Bray, James A., 3,923,471.

Bray Oil Company: *See—*
Wood, Jack E., 3,923,537.

Breland, Clinton Dale: *See—*
Petrey, Ernest Quentin, Jr.; and Breland, Clinton Dale, 3,923,954.

Brenan, Robert, to GTE Sylvania Incorporated. Method for making composite wire. 3,922,769, Cl. 29-420.500.

Breuer, Hans, to Carter-Wallace, Inc. Stable aerosol shaving foams containing mineral oil. 3,923,970, Cl. 424-47.000.

Brewer, Jack J., to Sam P. Wallace Company, Inc. Crane. 3,923,163, Cl. 212-54.000.

Bridigum, Robert J.: *See—*
Glass, William H.; and Bridigum, Robert J., 3,923,479.

Bridwell, John W.; Hopkins, Donald L.; and Lohbauer, Kenneth R., to Caterpillar Tractor Co. Hydraulic circuitry for an excavator. 3,922,855, Cl. 60-421.000.

Brindley, Robert E., to Union Carbide Corporation. Flashlight having a push button switch means. 3,924,116, Cl. 240-10.60R.

Brindley, Robert E., to Union Carbide Corporation. Flashlight having a magnet-switch combination. 3,924,117, Cl. 240-10.60R.

Bringe, Wolfgang: *See—*
Kaiser, Rudolf; Karcher, Werner; and Bringe, Wolfgang, 3,923,161.

Brinly-Hardy Co., Inc.: *See—*
Doering, Charles W., 3,922,744.
Doering, Charles W., 3,923,340.

Bristol-Myers Company: *See—*
Naito, Takayuki; Nakagawa, Susumu; and Toda, Soichiro, 3,923,783.

British Oxygen Company Limited, The: *See—*
Armond, John Walter; and Webber, David Arthur, 3,923,477.

British Petroleum Company Limited, The: *See—*
Desty, Denis Henry; and Whitehead, David Montagu, 3,923,447.

Broadbent, Kent D., to MCA Disco-Vision, Inc. Disc record with skipped standard video increments and continuous audio increments and a method and apparatus for reproduction. 3,924,062, Cl. 178-6.60R.

Brochman, Wilfred R., to Minnesota Mining and Manufacturing Company. Stress-opacifiable tamper indicator. 3,923,198, Cl. 220-359.000.

Brock, James, to Imperial Chemical Industries Limited. Filament handling apparatus. 3,923,224, Cl. 226-7.000.

Brock, James Donald, to Astec Industries, Inc. Multistage oven with progressive circulation. 3,923,449, Cl. 432-59.000.

Brogan, Patrick J., to Imperial-Eastman Corporation. Tube fitting. 3,923,323, Cl. 285-3.000.

Brookes, Kenneth Arthur: *See—*
Anderson, Kenneth; and Brookes, Kenneth Arthur, 3,924,126.

Broughton, Clifton William; and Truemper, Joseph Tucker, to ICI United States Inc. Removal of iron contaminants from porous materials. 3,923,689, Cl. 252-444.000.

Brown, Fred C. Fender protector cloth with flexible magnetic strips. 3,924,212, Cl. 335-303.000.

Brown, Leanne M.: *See—*
Mazdiyasni, Khodabakhsh S.; and Brown, Leanne M., 3,923,675.

Brown, Roy A.; and Guzzetta, Franklin H., to Armco Steel Corporation. Method and apparatus for use in conjunction with electropainting a large number of small articles. 3,923,623, Cl. 204-181.000.

Bruce, Robert L.: *See—*
Klebold, Franklin R.; and Bruce, Robert L., 3,924,254.

Brumley, Corwin H., to Bausch & Lomb Incorporated. Miniaturized spectrophotometer. 3,923,399, Cl. 356-96.000.

Brunner, Helmut: *See—*
Schutte, Dieter; Diether, Jean; and Brunner, Helmut, 3,924,029.

Brunner, Robert E. Inflatable hanger. 3,923,212, Cl. 223-88.000.

Brunswick Corporation: *See—*
Meyer, James A., 3,922,996.
Russell, Jack A.; Pratt, Goodrich B.; and Gretzky, Anthony J., 3,924,122.

Bryan, Garry H.; Cleveland, Jesse M.; and Heiple, Clinton R., to United States of America, Energy Research and Development Administration. Method for preparing actinide nitrides. 3,923,959, Cl. 423-251.000.

Bubak, John: *See—*
Rusch, Allan C.; and Bubak, John, 3,923,129.

Buchan, William R.; Genthe, James E.; Mayer, Edward F.; and Moore, Robert A., to Itek Corporation. Electrophotographic copier. 3,923,392, Cl. 355-3.00R.

Budden, Robert G.; and Butlak, Eugene W., to Roberts-Gordon Appliance Corporation. Vibration cancelling burner grid for a heating system. 3,923,446, Cl. 431-114.000.

Buehlmann, Xaver: *See—*
Hess, Hans; Mueller, Guenther; and Buehlmann, Xaver, 3,923,599.

Buerger, Douglas Jay. Fabric fastener. 3,922,763, Cl. 24-246.000.

Buggele, Alvin E. Self-cleansing diffusion pump. 3,923,424, Cl. 417-55.000.

Bulantsev, Anatoly Andreevich; Galperin, Alexandr Lvovich; Zabotin, Alexandr Alexandrovich; Loschilin, Evgeny Dmitrievich; and Sakharov, Boris Alexandrovich. Apparatus for stopping a travelling wave loom upon its weft thread carriers having encountered an obstacle in the shed. 3,923,083, Cl. 139-12.000.

Bumpus, Francis Merlin; Khosla, Mahesh Chandra; and Smeby, Robert Rudolph. [N-Me-Ile^1,Ile^8]-Angiotensin II as an angiotensin antagonist. 3,923,769, Cl. 260-112.500.

Bumpus, Francis Merlin; Khosla, Mahesh Chandra; and Smeby, Robert Rudolph. [Me$_2$Gly^1, Ile^8]-Anziotensin II as an angiotensin antagonist. 3,923,770, Cl. 260-112.500.

Bumpus, Francis Merlin; Khosla, Mahesh Chandra; and Smeby, Robert Rudolph. N-Guanidylacetyl-[des-asp^1-Ile^8] angiotensin II as an angiotensin antagonist. 3,923,771, Cl. 260-112.50R.

Burdett, Fred H.: *See—*
Pytel, Richard N.; Burdett, Fred H.; and Kozuch, Steve M., 3,923,488.

Burdi, Aldo J.; and Congleton, Robert S., to Itek Corporation. Optical warning system. 3,924,232, Cl. 343-6.00R.

Burdick, Robert E., to Rolair Systems, Inc. Device for translating and rotating a rocket motor or the like. 3,923,165, Cl. 214-1.0BE.

Burgess, Colin D.: *See—*
Wetherington, Thomas I., Jr.; Goode, McKay; and Burgess, Colin D., 3,922,876.

Burk, George A.: *See—*
Goralski, Christian T.; Burk, George A.; and Pews, R. Garth, 3,923,905.

Burke, Edward F., Jr., to Polaroid Corporation. Film strip cassette with moving processing fluid doctoring surface. 3,923,520, Cl. 96-78.000.

Burke, William F.: *See—*
Dixson, Bruce E.; Gayton, John E.; Lowery, Dennis J.; and Burke, William F., 3,922,909.

Burroughs Corporation: *See—*
Kronies, Reinhard Kurt, 3,924,241.

Bush Boake Allen Limited: *See—*
Jaggers, Brian George; Ufton, Keith Frederick; and Wagner, Horst Richard, 3,923,700.

Bussey, Christopher John, to Post Office, The. Apparatus for displaying an extreme value among a succession of digital values. 3,924,078, Cl. 179-15.0BF.

Butlak, Eugene W.: *See—*
Budden, Robert G.; and Butlak, Eugene W., 3,923,446.

Butler, James Edward: *See—*
Dunn, Robert Brian; and Butler, James Edward, 3,923,362.

Butler, John L.; and Pozzo, William M., to Raytheon Company. Array of multicellular transducers. 3,924,259, Cl. 340-5.00R.

Butler, Lee D.: *See—*
Wynn, Edward J.; and Butler, Lee D., 3,923,176.

Butwell, Robert J.; and Hunter, Gordon T., to Varian Associates. Electron beam amplifier tube with mismatched circuit sever. 3,924,152, Cl. 315-3.600.

Byk Gulden Lomberg Chemische Fabrik Gesellschaft: *See—*
Klemm, Kurt; and Langenscheid, Erhard, 3,923,817.

Byrd, Diane F.: *See—*
Ertingshausen, Gerhard; and Byrd, Diane F., 3,923,459.

C. L. Frost & Son, Inc.: *See—*
Frost, Charles C., 3,923,351.

C/M/S Marketing Corporation: *See—*
Sukys, V. John; Sukys, Julius P.; Edelmann, Harry E.; and Condon, Thomas E., 3,923,307.

Cacossa, Frank: *See—*
Guarino, Michael C.; and Cacossa, Frank, 3,922,830.

Cahn-Hidalgo, Gerardo R. A.; Castanon-Pasquel, Emilio; and Roldan, Jorge Del Rio. Educational game playing device. 3,923,306, Cl. 273-136.00A.

Caldwell, James Lewis, to Bell Telephone Laboratories, Incorporated. Zero suppression in pulse transmission systems. 3,924,080, Cl. 179-15.0BS.

Califano, Frank L.; and Shutak, Paul N., to Flintkote Company, The. Method for making tile products. 3,923,579, Cl. 156-263.000.

California Computer Products, Inc.: *See—*
George, David J., 3,924,146.

Caligiuri, Hugo J.: *See—*
Cohen, Allen; and Caligiuri, Hugo J., 3,924,130.

Calvert, Rodney K., to Mead Corporation, The. Article carrier. 3,923,236, Cl. 229-40.000.

Calviello, Joseph A., to Cutler-Hammer, Inc. Tantalum-gallium arsenide schottky barrier semiconductor device. 3,923,975, Cl. 427-84.000.

Camerman, Philippe Jean Andre, to Labofina S.A. Oxidation of diethylbenzenes. 3,923,909, Cl. 260-624.00R.

Camp, Carolyn J.; and Lindblom, Robert O., to Dow Chemical Company, The. Dielectric layer composition. 3,924,050, Cl. 428-413.000.

Campbell, Kenneth J. System for determination of small tuning errors in receivers. 3,924,189, Cl. 325-363.000.

Campbell, Robert W.; and Young, Robert E., to General Motors Corporation. Ignition distributor centrifugal advance mechanism. 3,923,028, Cl. 123-146.50A.

Canadian Ingersoll-Rand Company Limited: *See—*
Young, Douglas L. G., 3,923,087.

Canon Kabushiki Kaisha: *See—*
Inoue, Shozo; and Katayama, Hajime, 3,923,393.

Canron, Inc.: *See—*
Tyler, William J.; and Von Beckmann, Helmut, 3,922,969.

Cantarutti, Armindo: *See—*
Matsuoka, James T.; and Cantarutti, Armindo, 3,923,291.

Cante, Charles J.: *See—*
Lavo, Harry F.; and Cante, Charles J., 3,922,977.

Canter, James A., to General Motors Corporation. Evaporator fan delay circuit. 3,922,874, Cl. 62-155.000.

Canterbury, Bradford, to American Optical Corporation. Grinding method and coolant therefor. 3,922,821, Cl. 51-284.00R.

Carborundum Company, The: *See—*
Lawler, Harry A.; and Reys, John, 3,923,314.
Shaffer, Peter T. B., 3,923,629.

Carden, Danny P., to Southwire Company. Production of flooded multistrand cable. 3,923,003, Cl. 118-405.000.

Cardwell, Paul H.: *See—*
Kane, William S.; and Cardwell, Paul H., 3,923,615.

Carew, Victor E. Cab stacker and mobile work station. 3,922,941, Cl. 83-417.000.

Carey, Michael Albert, to Girling Limited. Vehicle dual braking systems. 3,922,857, Cl. 60-562.000.

Carlsen, Poul Frede, to F. L. Smidth & Co. Cement mill and method of starting same. 3,923,254, Cl. 241-30.000.

Carlson, Maurice F. Device for opening tear strip type containers. 3,923,194, Cl. 220-275.000.

Caron, Ronald N.: *See—*
Shapiro, Stanley; and Caron, Ronald N., 3,923,555.
Shapiro, Stanley; Pryor, Michael J.; and Caron, Ronald N., 3,923,558.

Carpenter, Louis M.; and Dunn, Kenneth L., to Carpenter Mfg. Co. Inc. Method and apparatus for stripping insulation from electrical conductors. 3,922,818, Cl. 51-40.000.

Carpenter Mfg. Co. Inc.: *See—*
Carpenter, Louis M.; and Dunn, Kenneth L., 3,922,818.

Carrara, Marcel V., to General Electric Company. Method of continuous casting. 3,924,036, Cl. 427-431.000.

Carrier Corporation: *See—*
Leonard, Louis H., 3,922,873.

Carson, John William, to Albright & Wilson Limited. Roadstone. 3,924,048, Cl. 428-404.000.

Carter, David P., to Hughes Aircraft Company. Simultaneous double crimp coaxial cable contact assembly. 3,923,367, Cl. 339-276.00R.

Carter, Donald Richard; Parkinson, Gerald Walter; and Cutting, Jack Robert, to United Technologies Corporation. Lightning protected composite helicopter blade. 3,923,421, Cl. 416-224.000.

Carter, Edward H., Jr.; and Holliday, Robert E., to Eastman Kodak Company. Substantially hexane soluble propylene/butene-1 copolymer containing 30 to 75 weight percent butene-1. 3,923,758, Cl. 260-88.200.

Carter-Wallace, Inc.: *See—*
Breuer, Hans, 3,923,970.

Case, Arol L. Rotary cooking device. 3,922,961, Cl. 99-427.000.

Cash, Carlton H.; Boot, Robert A.; Bauer, Ralph L.; and Husten, Benjamin F., to United States of America, Navy. Automatic active/passive fuze system. 3,924,234, Cl. 343-7.0PF.

Casio Computer Co., Ltd.: *See—*
Kashio, Toshio, 3,923,137.
Kashio, Toshio, 3,924,112.

Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
Cornelius, Dieter; and von Brachel, Hanswilli, 3,923,455.
Ribka, Joachim; Piesch, Steffen; Engelhardt, Friedrich; Pfeiffer, Gerhard; Klinke, Peter; and Schidlo, Wolfram, 3,924,046.

Cassidy, John Edward, to Imperial Chemical Industries Limited. Cold-setting refractory compositions. 3,923,534, Cl. 106-62.000.

Castanon-Pasquel, Emilio: *See—*
Cahn-Hidalgo, Gerardo R. A.; Castanon-Pasquel, Emilio; and Roldan, Jorge Del Rio, 3,923,306.

Castleman, Curtis H., Jr.; and Cone, Irwin C., to Gates Rubber Company, The. Adjustable windshield wiper blade. 3,922,749, Cl. 15-250.420.

Catalano, Edward; and Ornellas, Donald L., to United States of America, Energy Research and Development Administration. Diffusion bonding of gold to gold. 3,923,231, Cl. 228-194.000.

Caterpillar Tractor Co.: *See—*
Blake, William Wayne, 3,923,076.
Bridwell, John W.; Hopkins, Donald L.; and Lohbauer, Kenneth R., 3,922,855.
Engel, Simon L.; and McFall, Robert A., 3,923,383.
Hansen, Howard A.; Fulton, Clyde E., deceased; Fulton, Minnie L., heir; and McCann, Brenda G., heir, 3,924,094.
Kershaw, Samuel L.; and Proeschl, Bernard E., 3,923,337.
Purcell, Robert J.; Balzer, David J.; and Van Zandt, Rollin P., 3,923,111.

Cates, Robert E., to Marley Company, The. Parallel air path wet-dry water cooling tower. 3,923,935, Cl. 261-159.000.

Caton, Dolphus D.; and Ralph, John R. Steering system for canoes and the like. 3,922,988, Cl. 114-165.000.

Caton, Michael Peter Lear; and Parker, Trevor, to May & Baker Limited. New cyclopentane derivatives. 3,923,872, Cl. 260-488.00R.

Catt, John D.: *See—*
Comer, William T.; and Catt, John D., 3,923,886.

Cavanagh, Leonard Alan, to Stanford Research Institute. Photographic detection and integration of light emitted from luminescent reactions. 3,923,462, Cl. 23-232.00R.

Cavenar, Clarence W., to W & Steel Co. Bar handling and length determining apparatus. 3,923,157, Cl. 209-73.000.

Caw Industries, Inc.: *See—*
Willard, John W., Sr., 3,923,456.

Celanese Corporation: *See—*
Gump, Klaus Hannes; and Stuetz, Dagobert Englebert, 3,923,950.
Jones, Rufus S., 3,923,750.
Powanda, Thomas W., 3,923,716.

Celmer, Walter D., to Pfizer Inc. Preparation of thioethers of rifamycin S and rifamycin SV. 3,923,791, Cl. 260-239.300.

Chacour, Selim A., to Allis-Chalmers Corporation. Hydraulic turbine installation and method of assembling the turbine headcover therein. 3,923,418, Cl. 415-219.00C.

Chagnaud, Paul: *See—*
Lamand, Michel; Lab nee Astier, Claudine; Roux, Remy; and Chagnaud, Paul, 3,923,982.

Chain-Lock Co., Inc.: *See—*
Greenebaum, Howard M., 3,922,895.

Chakrabarty, Ananda M.; Friello, Denise A.; and Mylroie, Joan R., to General Electric Company. Mercury concentration by the use of microorganisms. 3,923,597, Cl. 195-2.000.

Chakrabarty, Ananda M.; and Friello, Denise A., to General Electric Company. Discrete plasmid construction from chromosomal genes in pseudomonas. 3,923,603, Cl. 195-78.000.

Chalon, Jack, to Albert Einstein College of Medicine-Division of Yeshiva University. Anesthesia delivery system. 3,923,057, Cl. 128-188.000.

Chandler, Stephen. Fluid sampling device. 3,922,920, Cl. 73-422.0TC.

Chang, Kuang Y.; and Ferrell, Bonnie, to Syntex Corporation. Fatty alcohol-propylene carbonate-glycol solvent cream vehicle. 3,924,004, Cl. 424-358.000.

Channin, Donald Jones: *See—*
Duffy, Michael Thomas; Channin, Donald Jones; and Hammer, Jacob Meyer, 3,924,020.

Chant, John Bernard, to Vessa Limited. Joints for orthopaedic appliances. 3,923,047, Cl. 128-80.00F.

Chao, Stanley K.; and Eng, Albert, to Data Electronics Corporation. Switch assembly with reciprocating cams. 3,924,090, Cl. 200-159.00A.

Chapelle, Walter E., to Bendix Corporation, The. Orthoprinter using nadir line scanning. 3,924,066, Cl. 178-6.70R.

Chapman, Charles Wallace, to Charles W. Chapman (Consultants) Limited. Couplings. 3,922,884, Cl. 64-19.000.

Charles W. Chapman (Consultants) Limited: *See—*
Chapman, Charles Wallace, 3,922,884.

Chart, John Edward; and Knapp, Burton Bower, to International Nickel Company, Inc., The. Catalyst structure. 3,923,696, Cl. 252-467.000.

Chemische Werke Huls Aktiengesellschaft: *See—*
Berg, Gerhard; and Nordsiek, Karl-Heinz, 3,923,707.

Cheret, Jacques; Nouvet, Andre; and Cocoual, Noel. Metal screens used for industrial radiography. 3,924,127, Cl. 250-323.000.

Chevron Research Company: *See—*
Andrewsen, Harry W., 3,923,894.
Danzik, Mitchell; and House, Ralph, 3,923,856.
Hutchison, Stanley O.; and Mitchell, Neal L., 3,923,312.

Chiarino, Dario: *See—*
Della Bella, Davide; Gandini, Arnaldo; Chiarino, Dario; and Ferrari, Vittorio, 3,923,805.

Chicago Fire Brick Company: *See—*
Parsons, Joseph R.; and Rechter, Harold L., 3,923,531.

Chicago Pneumatic Tool Company: *See—*
Schaedler, Raymond J.; and Roth, Robert D., 3,923,429.

Chifos, Paul, to General Electric Company. Blade platform with friction damping interlock. 3,923,420, Cl. 416-190.000.

Chihara, Fumio: *See—*
Matsuura, Takashi; and Chihara, Fumio, 3,923,527.

Chihara, Shiro: *See—*
Nakajima, Nobuhiro; Nakatsugawa, Shiro; Koyama, Yasuo; and Chihara, Shiro, 3,923,978.

Chinuki, Takashi: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,923,908.

Chisso Corporation: *See—*
Shirai, Isoo; Suzuki, Takeshi; and Tonooka, Koichi, 3,923,687.

Chivari, Ilie. Rotary speed for supplying fluid pressure to a clutch. 3,923,133, Cl. 192-85.00R.

Chlique, Bernard G., to Babcock & Wilcox, Limited. Industrial technique. 3,923,010, Cl. 122-483.000.

Choksi, Pradip V.; and Steidley, Roy B., to American Hospital Supply Corporation. Medical liquid container with tactile sterility indicator and method of testing container. 3,923,179, Cl. 215-203.000.

Choksi, Pradip V., to American Hospital Supply Corporation. Frangible closure system for medical liquid container. 3,923,182, Cl. 215-250.000.

Choksi, Pradip V.; and Steidley, Roy B., to American Hospital Supply Corporation. Container for medical liquid with separable outer and inner closures. 3,923,183, Cl. 215-251.000.

Choksi, Pradip V.; and Steidley, Roy B., to American Hospital Supply Corporation. Double screw cap system for sterile medical liquid container and method of opening same. 3,923,184, Cl. 215-251.000.

Choksi, Pradip V.; and Steidley, Roy B., to American Hospital Supply Corporation. Pouring container with double cap protector for sterile dispensing lip. 3,923,185, Cl. 215-253.000.

Chou, Tom M.: *See—*
Kennedy, Joseph P.; and Chou, Tom M., 3,923,759.

Christensen Diamond Products Company: *See—*
Cruickshank, James R.; and Jurgens, Rainer, 3,923,324.

Christman, Robert D.; McKinney, Joel D.; Readal, Thomas C.; and Yanik, Stephen J., to Gulf Research & Development Company. Hydrodesulfurization process with a portion of the feed added downstream. 3,923,637, Cl. 208-89.000.

Ciba-Geigy AG: *See—*
Beriger, Ernest; and Pinter, Ladislaus, 3,923,932.
de Montmollin, Rene; and Riat, Henri, 3,923,778.
Duennenberger, Max; and Schellenbaum, Max, 3,924,002.
Duerr, Dieter, 3,923,854.
Kabas, Guglielmo; Schlaepfer, Hans; and Fletcher, Ian John, 3,923,677.
Meyer, Hans Rudolf, 3,923,878.
Wegmann, Jacques; Becker, Carl; Zwahlen, Guenther; and Kuster, Werner, 3,923,452.

Ciba-Geigy Corporation: *See—*
Fattinger, Volker, 3,923,955.
Hess, Hans; Mueller, Guenther; and Buehlmann, Xaver, 3,923,599.
Huff, Roger K., 3,923,906.
Jost, Max; and Wick, Arnold, 3,923,727.
Pugin, Andre, 3,923,730.
Riccio, Pasquale R., 3,923,202.
Treichler, Hans-Joerg; and Nuesch, Jakob, 3,923,601.

Ciecluch, Ronald F.; and Schlein, Herbert N., to Polaroid Corporation. U.V. light absorbers in supports of integral diffusion transfer film units. 3,923,519, Cl. 96-77.000.

Cioni, Elisabetta; Cioni, Lucia; and Anichini, Rovena, widow Cioni. Machine for continuously washing open vials. 3,922,750, Cl. 15-302.000.

Cioni, Lucia: *See—*
Cioni, Elisabetta; Cioni, Lucia; and Anichini, Rovena, widow Cioni, 3,922,750.

Ciric, Julius, to Mobil Oil Corporation. Converting hydrocarbons with zeolite ZSM-4. 3,923,639, Cl. 208-111.000.

Cities Service Oil Company: *See—*
Dotson, Anderson O., Jr.; Newcombe, Jack; and Wolford, Lionel T., 3,923,734.

Citizen Watch Co., Ltd.: *See—*
Miyasaka, Kenzi; Takemoto, Mikio; Kato, Yoshiaki; Uematu, Hiroyuki; Tamaru, Munetaka; Kume, Kazunari; Ohno, Hideshi; and Onda, Mitsuo, 3,922,845.

Clarebout, Pierre M.: *See—*
Vanhoof, Pierre M.; and Clarebout, Pierre M., 3,923,813.
Vanhoof, Pierre M.; and Clarebout, Pierre M., 3,923,887.
Vanhoof, Pierre Marie; and Clarebout, Pierre M., 3,923,815.

Clark Equipment Company: *See—*
Hancock, James E., 3,923,322.

Clark, Harold V.; Skalon, Peter; and Emmons, Lawrence D., to Ampex Corporation. Three Phase brushless DC motor. 3,924,167, Cl. 318-254.000.

Clark, Michael J., to Dow Chemical Company, The. Briquetting calcium chloride particulate. 3,923,944, Cl. 264-109.000.

Clark, Ronald John; and Drummond, John Douglas, to Western Plaster Equipment Co. Ltd. Pumps. 3,923,428, Cl. 417-535.000.

Clason, Jan Christiaan, to Hazemeijer B.V. Vacuum circuit interruptor. 3,924,087, Cl. 200-144.00B.

Clayton, John Michael, to Norpak Machines Limited. Apparatus for closing of wrapping bags or sleeves. 3,922,834, Cl. 53-138.00A.

Clayton, John Peter; and Hubbard, Ronald, to Beecham Group Limited. α-Phosphinimine penicillins and their preparation. 3,923,787, Cl. 260-239.100.

Cleary, Thomas C.: *See—*
Lockyer, John; and Cleary, Thomas C., 3,924,178.

Clendinning, Robert A.; Potts, James E.; and Niegisch, Walter D., to Union Carbide Corporation. Biodegradable transplanter containers. 3,923,729, Cl. 260-40.00R.
Cleveland Hardware and Forging Company: *See—*
O'Brien, Raymond A., 3,923,662.
Cleveland, Jesse M.: *See—*
Bryan, Garry H.; Cleveland, Jesse M.; and Heiple, Clinton R., 3,923,959.
Clorox Company, The: *See—*
Fry, Raymond J.; and Andreasen, Michael W., 3,923,005.
Cloutier, Oscar F.; and Duncan, Charles P. Method and apparatus for use in making snow. 3,923,246, Cl. 239-2.00S.
Cloyd, Harold S., to Nosco Plastics, Inc. Omni directional tell tale tilt indicator. 3,923,000, Cl. 116-124.00R.
Cluett, Peabody & Co., Inc.: *See—*
Hughes, Francis H., 3,922,981.
Coaker, Antony W. M.; and Cowell, Elmer E., to Monsanto Company. Lubricated thermoplastic resin. 3,923,720, Cl. 260-31.20R.
Coats, John H.: *See—*
Argoudelis, Alexander D.; Coats, John H.; and Johnson, LeRoy E., 3,923,602.
Cochran, Michael J.; and Grant, Charles P., Jr., to Texas Instruments Incorporated. Calculator system featuring a subroutine register. 3,924,110, Cl. 235-156.000.
Cocoual, Noel: *See—*
Cheret, Jacques; Nouvet, Andre; and Cocoual, Noel, 3,924,127.
Coeurderoy, Yves G., to Societe Anonyme: Poclain. Hydraulic installation with energy storing means. 3,922,854, Cl. 60-413.000.
Coffen, David Llewellyn; and Katonak, David Allen, to Hoffmann-La Roche Inc. 6,7-Dihydropyrido[1,2-a]indol-9(8H)ones. 3,923,814, Cl. 260-293.530.
Coffey, Charles E.: *See—*
Atadan, Erdem M.; and Coffey, Charles E., 3,923,616.
Cohen, Allen; and Caligiuri, Hugo J., to United States of America, Navy. Body exposure indicator. 3,924,130, Cl. 250-342.000.
Cohen, Morton H. Burglar alarm switch. 3,924,256, Cl. 340-274.00R.
Colgate-Palmolive Company: *See—*
Perla, Giulio, 3,923,438.
Coll, Eugene: *See—*
Leonardo, Ignazio; and Coll, Eugene, 3,922,947.
Collins, David John; and George, Edwin Francis, to Imperial Chemical Industries Limited. Regulating plant growth with 7-methylindole. 3,923,492, Cl. 71-76.000.
Collins, Johnny; and Hendrickson, Melvin C., to Zenith Radio Corporation. Touch-tuning system for a television receiver. 3,924,191, Cl. 325-464.000.
Collins, Stephen M.: *See—*
Argade, Shyam D.; Collins, Stephen M.; and Armitage, James B., 3,923,630.
Colombo, Gianni: *See—*
Gassino, Teresio; and Colombo, Gianni, 3,924,105.
Colt Industries Operating Corporation: *See—*
McCabe, Ralph Patrick, 3,922,850.
Columbia Steel Casting Co.: *See—*
Hendrickson, Charles M., 3,923,258.
Combustion Power Company, Inc.: *See—*
Reese, Richard G., 3,922,975.
Comer, William T.; and Catt, John D., to Mead Johnson & Company. Sulfamides. 3,923,886, Cl. 260-556.00N.
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Condolios, Elie; and Merle, Michel, to Societe Generale de Constructions Electriques et Mecaniques (ALSTHOM). Method and apparatus for compacting fluid sludges. 3,923,652, Cl. 210-67.000.
Condon, Thomas E.: *See—*
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Cook, Homer Johnnie, to Du Pont de Nemours, E. I., and Company. Process for continuously preparing extrudable, crosslinkable polyethylene compositions. 3,923,947, Cl. 264-141.000.
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Cormier, Joseph T. Cable stripper. 3,922,779, Cl. 30-90.800.
Cornelius, Dieter; and von Brachel, Hanswilli, to Cassella Farbwerke Mainkur Aktiengesellschaft. Process of dyeing and printing synthetic hydrophobic materials with water-insoluble monoazo dyes. 3,923,455, Cl. 8-41.00B.
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Craft, Lewis John; Roszyk, Leon M.; Stipanuk, John M.; and Szymczak, Eugene B., to Sunbeam Corporation. Mixer with speed control. 3,924,169, Cl. 318-354.000.
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Crutchfield, Marvin M., to Monsanto Company. Method of making tetra sodium and tetra potassium 2,2,5,5-tetrahydrofurantetracarboxylate. 3,923,841, Cl. 260-347.300.
Csiki, Kalman; and Lundin, Rune, to Gullfiber AB. Comfort cushion for ear muffs, in particular sound shells. 3,922,725, Cl. 2-209.000.
Culley, Bobby Gene; and Kehren, Engelbert Wolfgang, to Texas Instruments Incorporated. VLED solid state watch. 3,922,847, Cl. 58-50.00R.
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Dabrio, John W. Air metering valve for engine air inlet system. 3,923,024, Cl. 123-119.00B.
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Watanabe, Etsuji; Miyazaki, Tsutomu; Kato, Takashi; and Miyamoto, Noriaki, 3,922,840.
Dal Dan, Felice, to Etablissements Leonard S.A. Precision displacement measuring device for an electronic read-out platform scale. 3,923,110, Cl. 177-210.000.
Dale, Ernest A.; Dullea, Leonard V.; and Thomas, Martha J. B., to Sylvania Electric Products, Inc. Process for manufacturing phosphors. 3,923,682, Cl. 252-301.60P.
Dalgleish, Jack Frank, to Northern Electric Company Limited. Optical fibre connectors. 3,923,371, Cl. 350-96.00C.
Dalton, Everett L. Drawhead leveling device. 3,923,164, Cl. 213-75.00R.
Damsteeg, Cornelis Jan; and Ekkelboom, Tjepke Hendrik, to U.S. Philips Corporation. Soldered joint. 3,923,470, Cl. 29-191.000.
Danberg, Victor. Method of mixing solids and liquids on a continuous basis. 3,923,289, Cl. 259-22.000.
Dancy, William B., to International Minerals & Chemical Corporation. Production of phosphorus. 3,923,961, Cl. 423-323.000.
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David, Harry, to Hauni-Werke Korber & Co., KG. Packing machine for cigarettes or the like. 3,922,837, Cl. 53-234.000.
Davis, Curry Beach, to American Cyanamid Company. Extraction and recovery of cineole. 3,923,837, Cl. 260-345.200.
Davis, Jimmie L.; and Harris, Alfred C., Jr. Cultivator skimmer device. 3,923,103, Cl. 172-201.000.
Davis, Joseph R., to Research Corporation. 8,8-Dioxo-6,6-azopurine and method for preparing the same. 3,923,775, Cl. 260-154.000.
Davis, Robert B.; and Cornish, Alan H., to Koehler-Dayton, Inc. Sewage treatment system. 3,922,976, Cl. 110-9.00R.
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De Beers Industrial Diamond Division Limited: *See—*
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Delmag-Maschinenfabrik Reinhold Dornfeld: *See—*
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De Long, Ellis R. Twin-hulled outrigger sailboat. 3,922,994, Cl. 114-66.50R.
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DeMarinis, Robert M.; and Hoover, John R. E., to SmithKline Corporation. Substituted sulfonylacetamido cephalosporins. 3,923,799, Cl. 260-243.00C.
de Montmollin, Rene; and Riat, Henri, to Ciba-Geigy AG. Disazo dyestuffs containing the α,β-dichloro- or α,β-dibromopropionylamino group. 3,923,778, Cl. 260-174.000.
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DePoorter, Gerald L.; and Rofer-DePoorter, Cheryl K., to United States of America, Energy Research and Development Administration. O^{18} Enrichment process in UO_2F_2 utilizing laser light. 3,923,619, Cl. 204-157.10R.

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Detrex Chemical Industries, Inc.: *See*—
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Dettre, Robert Harold; and Greenwood, Edward James, to Du Pont de Nemours, E. I., and Company. Aqueous dispersions of perfluoroalkyl esters and vinyl polymers for treating textiles. 3,923,715, Cl. 260-29.60R.

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Dexter, John B.; and Mann, Robert C., to United States of America, Navy. Ejector foot restrainer for bomb ejector unit. 3,923,275, Cl. 244-137.00R.

Dhaka, Vir A., to International Business Machines Corporation. Process for producing monolithic circuits. 3,923,562, Cl. 148-187.000.

Dhar, Ashok K.; DeWerd, Larry A.; and Stoebe, Thomas G., to United States of America, Health, Education and Welfare. Direct-response ultraviolet dosimeter utilizing thermoluminescent magnesium oxide. 3,924,135, Cl. 250-484.000.

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Diamond Shamrock Corporation: *See*—
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Dick, Charles J., to Fuller Company. Method for cooling hot particulate material. 3,922,797, Cl. 34-20.000.

Dicker, Edward T. Construction method of assembling bagged, settable modules. 3,922,832, Cl. 52-742.000.

Dickinson, Harvey Frank, to Ferranti Limited. Means for determining the relative speeds of the input and output shafts of a gearbox. 3,922,910, Cl. 73-118.000.

Diehl, Robert J.; and Guthrie, Larry E., to ACF Industries, Incorporated. Stem connection for gate valves. 3,923,285, Cl. 251-200.000.

Diemer, Peter; Preusser, Gerhard; and Radusch, Paul, to Heinrich Koppers Gesellschaft mit beschrankter Haftung. Process for eliminating waste liquors accumulated in the desulfurization of coke oven gas. 3,923,965, Cl. 423-567.000.

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Dildy, Clell A., Jr., to United States of America, Navy. Helium speech decoder. 3,924,069, Cl. 179-1.0SH.

Dill, Walter R., to Halliburton Company. Method and composition for acidizing and fracturing wells. 3,923,666, Cl. 252-8.55C.

Dillard, John W., to Schlumberger Technology Corporation. Well bore perforating apparatus. 3,923,107, Cl. 175-4.550.

Di Martini, Carl R.; and Myers, Michael, to Asarco Incorporated. Filler solder. 3,923,501, Cl. 75-166.00C.

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Dimroth, Peter; and Schaffner, Ernst, to Badische-Anilin & Soda-Fabrik Aktiengesellschaft. Azo dye from an ortho-oxydiazolylaniline diazo component. 3,923,777, Cl. 260-157.000.

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Dixson, Bruce E.; Gayton, John E.; Lowery, Dennis J.; and Burke, William F., to Dixson, Inc. Fuel economy monitoring system for engines of vehicles. 3,922,909, Cl. 73-115.000.

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Doemen, Benno, to Papst-Motoren KG. Speed control system for low speed brushless d-c motors. 3,924,166, Cl. 318-138.000.

Doering, Charles W., to Brinly-Hardy Co., Inc. Pick-up apparatus for debris collector. 3,922,744, Cl. 15-83.000.

Doering, Charles W., to Brinly-Hardy Co., Inc. Debris containing device. 3,923,340, Cl. 298-10.000.

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Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,923,908.

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Donato, Joseph, to Modern Maid (Vic.) Pty. Ltd. Cooker. 3,923,037, Cl. 126-39.00C.

Donn Products, Inc.: *See*—
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Donohue, Paul C. Pin cylinder litter collector. 3,923,101, Cl. 171-63.000.

Doran, Samuel K.; and Perkins, Merlyn H., to International Business Machines Corporation. Method and system for correcting an aberration of a beam of charged particles. 3,924,156, Cl. 315-382.000.

Dorler, Jack A.; Forneris, John L.; and Swietek, Donald J., to International Business Machines Corporation. Schottky barrier device and circuit application. 3,924,264, Cl. 357-15.000.

Dormans, Paul M., to Magnavox Company, The. Two-way cable television system with enhanced signal-to-noise ratio for upstream signals. 3,924,187, Cl. 325-52.000.

Dorn, Kenneth A.: *See*—
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Dornan, Arthur E.: *See*—
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Dornier System GmbH: *See*—
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Dorofeev, Vyacheslav Semenovich: *See*—
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Dorr, Wolfgang; Matzner, Hartwig; and Noska, Tilman, to Mannesmann Aktiengesellschaft. Method of supervising skin thickness in a solidifying body such as a continuously cast ingot. 3,923,091, Cl. 164-4.000.

Doshier, Kenneth E.: *See*—
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Dotson, Anderson O., Jr.; Newcombe, Jack; and Wolford, Lionel T., to Cities Service Oil Company. Flame-retardant compositions. 3,923,734, Cl. 260-45.75B.

Dow Chemical Company, The: *See*—
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Dow Corning Corporation: *See*—
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Duennenberger, Max; and Schellenbaum, Max, to Ciba-Geigy AG. Method for combatting harmful microorganisms. 3,924,002, Cl. 424-331.000.

Duerr, Dieter, to Ciba-Geigy AG. Derivatives of thiocarbamic acid, their manufacture and their use for combating insects and representatives of the order acarina. 3,923,854, Cl. 260-455.00A.

Duffy, Michael Thomas; Channin, Donald Jones; and Hammer, Jacob Meyer, to RCA Corporation. Method of making an optical waveguide. 3,924,020, Cl. 424-162.

Dugan, James G.; Hancock, Albert S., Jr.; Huston, Kenneth G.; Rosenberg, Bernard L.; Smith, Shirley M.; and Hausske, Gene W., deceased (by Hausske, Martha J., executrix), to Robbins Incubator Co. Method and apparatus for incubating eggs. 3,923,006, Cl. 119-37.000.

Dujardin, Esther; Kuiper, Ysbrand; Cremer, Rene; and Sironval, Cyrille. Recording information by means of a photosensitive material of biological origin. 3,923,516, Cl. 96-48.00R.

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Dumas, David H., to Hercules Incorporated. Water-dispersible thermosettable cationic resins and paper sized therewith. 3,923,745, Cl. 260-77.5CR.

Dumont, Rene; Goharel, Maurice; and Lafont, Jean-Claude, to Rhone-Progil. Method of treating the residues from the distillation of phthalic anhydride. 3,923,839, Cl. 260-346.700.

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Dunn, Stanley Austin, to Bjorksten Research Laboratories, Inc. Heating element, method and composition. 3,924,098, Cl. 219-345.000.

Dunne, Maurice J., to Unimation, Inc. Synchro-to-digital converter arrangement for manipulator apparatus. 3,924,230, Cl. 340-347.0SY.

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Durr, Albert M., Jr.; and Krenowicz, Robert A., to Continental Oil Company. Turbine oil compositions. 3,923,672, Cl. 252-49.900.

Durrant, Oliver W.; and Walker, Robert R., to Babcock & Wilcox Company, The. Control system for a power producing unit. 3,922,859, Cl. 60-665.000.

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Eckerle, William A.; and Guth, Lauren W., to General Electric Company. Alternatively-mounted compactor door arrangement. 3,923,357, Cl. 312-274.000.

Eddy, Kenneth Harmon; and McGill, Kenneth Harmon, to Dresser Industries, Inc. System for erecting an oil well derrick. 3,922,825, Cl. 52-116.000.

Edelmann, Harry E.: *See*—
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Eibl, Volker; and Reis, August, to Sachs-Systemtechnik GmbH. Method of and apparatus for disinfecting liquids by anodic oxidation with a silver anode. 3,923,632, Cl. 204-301.000.

Eichorn, Roger H., deceased; and Lincoln First Bank of Rochester, executor, to Xerox Corporation. Development and cleaning apparatus for reverse path machine. 3,923,004, Cl. 118-637.000.

Eilingsfeld, Heinz; Eisfeld, Wolfgang; Patsch, Manfred; and Schaffner, Ernst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of chloroanthraquinone-2,3-dicarboxylic acid anhydrides. 3,923,838, Cl. 260-346.300.

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Ellinwood, Everett H., Jr. Apparatus and method for implanted self-powered medication dispensing having timing and evaluator means. 3,923,060, Cl. 128-260.000.

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Ericsson, Sylve Jack Donald. Method for manufacturing a hollow-cylindrical body and a hollow-cylindrical body produced by said method. 3,922,772, Cl. 101-382.0MV.

Ertingshausen, Gerhard; and Byrd, Diane F., to Union Carbide Corporation. Process for the determination of bilirubin in fluids. 3,923,459, Cl. 23-230.00B.

ESGEE-Marby GmbH & Co., Firma: *See*—
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Estrada, Luis Alberto; and Wielt, Warren Pierce, to General Electric Company. Tieless bracing and method for supporting end turns of a dynamoelectric machine. 3,924,149, Cl. 310-260.000.

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Falke, Henning, to AEG-Telefunken Kabelwerke Aktiengesellschaft. Current conducting system having adjustable heat dissipation capability. 3,924,054, Cl. 174-15.00C.

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Farnsworth, Robert P., to Hughes Aircraft Company. Electronic overload protection device. 3,924,158, Cl. 317-31.000.

Farrar, Edward L., Jr. Orthopedic muscle testing apparatus. 3,922,918, Cl. 73-379.000.

Farrell, John J., to Farrell Patent Company. Blow molding apparatus with double cycle for core rods. 3,923,441, Cl. 425-242.00B.

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Farris, Charles R. Electronic calculators for navigational purposes. 3,924,111, Cl. 235-156.000.

Farrow, Desmond J., to Turb-O-Jector, Inc. Turb-o-air separator. 3,923,481, Cl. 55-398.000.

Fassett, Matthew, to Raytheon Company. Radio frequency attenuator comprising a plurality of variable phase shifters and serially coupled directional couplers. 3,924,206, Cl. 333-81.00R.

Fassy, Henri; Lalet, Philippe; and Miletto, Andre, to Societe Anonyme Ato Chimie. Adjuvant for improving the polymerisation of ethylene-hydrocarbons. 3,923,764, Cl. 260-92.80R.

Fattinger, Volker, to Ciba-Geigy Corporation. Process for deodorising waste or exhaust gases. 3,923,955, Cl. 423-210.000.

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Favre, John A.; and Schmidt, Thomas W., to Phillips Petroleum Company. Isotope analysis. 3,924,124, Cl. 250-281.000.

Favreau, Andre; and Houle, Marcel. Wagon for transporting an erected scaffold. 3,923,320, Cl. 280-103.000.

Fawcett, William E.; and Echtenkamp, Alan L., to Kennametal Inc. Apparatus for cutting up tire casings. 3,922,942, Cl. 83-620.000.

Fechillas, Michael R., to Johnson & Johnson. Synthetic resin binder compositions comprising a cross-linked acrylic resin. 3,923,931, Cl. 260-885.000.

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Ferranti Limited: *See*—
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Fiedler, Utz Gerhard, to Boliden Aktiebolag. Process and an apparatus for recovering arsenic trioxide from gases. 3,923,478, Cl. 55-68.000.

Fielding, Harold Crosbie, to Imperial Chemical Industries Limited. Aliphatic compounds containing oxygen atoms. 3,923,902, Cl. 260-593.00H.

Fields, Joseph E.; and Johnson, John H., to Monsanto Company. Method of lowering blood cholesterol level. 3,923,972, Cl. 424-78.000.

Fields, Mack Robert. Safety closure. 3,923,180, Cl. 215-216.000.

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Fischer, David J.; Kunz, Hans J.; and Norby, Thomas E., to Corning Glass Works. Reinforced glass electrode structure. 3,923,625, Cl. 204-195.00G.

Fischer, Kenneth J.; and Orlowski, Jan A. Plastic orthodontic bracket. 3,922,787, Cl. 32-14.00A.

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Frye, George Joseph. Sound pressure box. 3,923,119, Cl. 181-.500.
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Glastra, Hendrik, to N.V. Maatschappij voor Industriele Research en Ontwikkeling. Railway transportation system. 3,922,970, Cl. 104-91.000.
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Gobran, Ramsis; Knoepfel, Hanspeter; and Silver, Spencer F., to Minnesota Mining and Manufacturing Company. Sheet material coated with adhesives from cycloaliphatic and phenylalkyl acrylates and vinyl esters. 3,924,044, Cl. 428-355.000.
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Goetze, Ulrich; Wole, Axel; Nettesheim, Gottfried; Balwe, Thomas; Bauer, Johann; Fendel, Kurt; Kurz, Dieter; and Sabel, Alex, to Wacker-Chemie G.m.b.H. Process for suspension polymerization of vinyl halides with low polymer deposition. 3,923,765, Cl. 260-92.80W.
Goharel, Maurice: *See—*
Antonini, Albert; Goharel, Maurice; Kaziz, Claude; and Wetroff, Georges, 3,923,913.
Dumont, Rene; Goharel, Maurice; and Lafont, Jean-Claude, 3,923,839.
Gold, Robert M.; and Gold, Robert M., Jr., to Dayton Rogers Manufacturing Co. Power press die cushion with air decelerator. 3,923,294, Cl. 267-119.000.
Gold, Robert M., Jr.: *See—*
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Goldberg, Libby M.; and Spector, George. Mini kugelet. 3,924,009, Cl. 426-132.000.
Goldkuhle, Werner P. Compaction system. 3,922,962, Cl. 100-53.000.
Goldman, Irving M.: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 3,924,015.
Golovko, Vladimir Nikolaevich: *See—*
Pokhodnya, Igor Konstantinovich; Naumenko, Igor Mikhailovich; and Golovko, Vladimir Nikolaevich, 3,922,722.
Good, Wayne W., to Harter Corporation. Adjustable support column for a pivotal chair. 3,923,280, Cl. 248-405.000.
Goode, McKay: *See—*
Wetherington, Thomas I., Jr.; Goode, McKay; and Burgess, Colin D., 3,922,876.
Goodgame, Muriel T. Driven wheel arrangement. 3,923,112, Cl. 180-24.110.
Goodman, Robert C.: *See—*
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Goodrich, George W., to Bendix Corporation, The. Electrostatically actuated display panel. 3,924,228, Cl. 340-336.000.
Goodyear Aerospace Corporation: *See—*
McDonald, Wilson C., 3,923,339.
Goralski, Christian T.; Burk, George A.; and Pews, R. Garth, to Dow Chemical Company, The. Method of preparing 2,3,5,6-tetrachlorobenzenethiol. 3,923,905, Cl. 260-609.00D.
Gordy, Robert S.; Sanders, David E.; and Anderson, Alfred T., to NCR Corporation. Staggered quadriphase differential encoder and decoder. 3,924,186, Cl. 325-30.000.
Gorman, Susan B.: *See—*
Kriz, Karel; Gorman, Susan B.; and Krajewski, John J., 3,923,508.
Gorsha, Russell P. Soil extractor for soil testing. 3,923,259, Cl. 241-278.00R.
Goswami, Sushil Kumar. Commutation circuits in inverter circuits. 3,924,173, Cl. 321-5.000.
Goto, Akitoshio: *See—*
Sawa, Yoichi; Hattori, Toshinori; Katsube, Susumu; and Goto, Akitoshio, 3,923,866.
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Grant, Thomas S., to Borg-Warner Corporation. Epoxy-crosslinked, foamed nitrile containing polymers and method of preparing same. 3,923,922, Cl. 260-2.5EP.
Grapha-Holding AG: *See—*
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Grapov, Artur Felixovich: *See—*
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Gray, Darby A.: *See—*
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Grayson, Boyd H., to Dayton Sure-Grip & Shore Co., The. Split bolt. 3,922,946, Cl. 85-1.00S.

Green, Chester, to Hanscom, Genevieve I.; and Genevieve I. Hanscom, Robert Magnuson & Lois J. Thomson, Trustees of Roy M. Magnuson Estate, part interest to each. Shuffle feeder capable of single file advancement of articles. 3,923,143, Cl. 198-30.000.

Green, Cyril Robert. Cable spearing and cutting apparatus. 3,922,780, Cl. 30-92.000.

Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., to Millmaster Onyx Corporation. Fungicidal polymeric quaternary ammonium compounds. 3,923,973, Cl. 424-78.000.

Greenebaum, Howard M., to Chain-Lock Co., Inc. Showcase security system. 3,922,895, Cl. 70-100.000.

Greenfield, Harold; and Sekellick, Ronald S., to Uniroyal, Inc. Hydrogenation of benzonitrile to dibenzylamine. 3,923,891, Cl. 260-570.900.

Greenwood, Edward James: *See—*
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Grefco, Inc.: *See—*
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Kline, Charles M.; Priepke, Edward H.; Waldrop, Thomas W.; Fisher, Raymond E.; Greiner, James G.; and McCarty, Horace G., 3,922,838.

Gresley, James E.; and Glidewell, Hugh S. Hanger apparatus for supporting intravenous containers. 3,923,279, Cl. 248-318.000.

Gretzky, Anthony J.: *See—*
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Grihangne, Andre. Floating marine barrage. 3,922,861, Cl. 61-1.00F.

Grimm, Hans: *See—*
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Gritzner, Gerhard, to Dow Chemical Company, The. Diaphragm cell chlorine production. 3,923,628, Cl. 204-237.000.

Gross, Franz, to Siemens Aktiengesellschaft. Delay line with low reflection attenuation for transit-time tubes. 3,924,151, Cl. 315-3.500.

Gross, Jerome A. Evacuable membrane apparatus for tire recapping. 3,923,586, Cl. 156-394.000.

Grossmann, Max. *See—*
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Grover, John Roger; Gayler, Ronald; and Delve, Malcolm Hoban, to United Kingdon Atomic Energy Authority. Reverse osmosis apparatus. 3,923,664, Cl. 210-321.000.

Groves, Henry William; and Yarnell, John, to Hawker Siddeley Dynamics Limited. Apparatus and method of determining flow. 3,922,911, Cl. 73-194.00A

Groves, Richard B. Bag carrier. 3,923,222, Cl. 224-58.000.

Gruenman, Vsevolod; and Hoffer, Max, to Hoffmann-La Roche Inc. N-[(1-cyano-2-phenyl)ethyl]carbamates. 3,923,833, Cl. 260-340.500.

Gryazno, Georgy Mikhailovich: *See—*
Portnoi, Kim Isaevich; Arabei, Lidia Borisovna; Gryazno, Georgy Mikhailovich; Levi, Lev Izrailevich; Lunin, Gleb Leonidovich; Kozhukhov, Valery Mikhailovich; Markov, Jury Mikhailovich; and Fedotov, Mikhail Egorovich, 3,923,502.

Grylls, Frederick S. M., to Distillers Company (Yeast) Limited, The. Active dried yeast. 3,924,006, Cl. 426-24.000.

GTE Laboratories Incorporated: *See—*
Auborn, James J.; and Lieberman, Sheldon I., 3,923,543.
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GTE Sylvania Incorporated: *See—*
Brenan, Robert, 3,922,769.
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Guarino, Michael C.; and Cacossa, Frank, to M. C. Guarino Associates, Inc. Adjustable modular partition. 3,922,830, Cl. 52-623.000.

Gueckel, Walter: *See—*
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Gulf Research & Development Company: *See—*
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Gump, Klaus Hannes; and Stuetz, Dagobert Englebert, to Celanese Corporation. Production of stabilized acrylic fibers and films. 3,923,950, Cl. 264-182.000.

Gunnergaard, Marius: *See—*
Jorgensen, Hemming Kristian; and Gunnergaard, Marius, 3,923,095.

Gunning, Raymond Harry; and Lubbock, Frederick John, to Dulux Australia Ltd. Process for making porous polyester granules. 3,923,704, Cl. 260-2.50N.

Guse, Gunter; and Pietsch, Hanns Georg, to Beiersdorf Aktiengesellschaft. Pressure sensitive adhesives from diesters of fumaric acid and vinyl compounds copolymerizable therewith. 3,923,752, Cl. 260-78.50E.

Gustafsson, Karl Paul; and Frisk, Lars-Olov, to AB Tico. Load-sensing and pressure-limiting device with accelerated tripping. 3,922,954, Cl. 91-412.000.

Gutberlet, Louis C.: *See—*
Bertolacini, Ralph J.; Gutberlet, Louis C.; and Kozinski, Allen A., 3,923,638.

Guth, Carl R. Fuel mixing chamber for welding and cutting torches. 3,923,448, Cl. 431-354.000.

Guth, Lauren W.: *See—*
Eckerle, William A.; and Guth, Lauren W., 3,923,357.

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H. J. Langen & Sons Ltd.: *See—*
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Haase, Jan Raymond, to Eastman Kodak Company. Fogged direct positive silver halide emulsions containing photographic sensitizing dyes derived from substituted salicylaldehydes. 3,923,524, Cl. 96-140.000.

Hadamard, Gilbert, to International Business Machines Corporation. Method for testing logic chips and logic chips adapted therefor. 3,924,144, Cl. 307-303.000.

Hadaway, Bernard Milton, to Repco Research Propietary Limited. Fluid seal. 3,923,315, Cl. 277-134.000.

Haeckler, Charles: *See—*
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Hagenbach, Robert J., to Xerox Corporation. Electrostatic latent image development employing steel carrier particles. 3,923,503, Cl. 96-1.0SD.

Hagey, Lee, to Electro-Voice, Incorporated. Quick mount isolator stand adaptor. 3,924,083, Cl. 179-149.000.

Hagiwara Denki Kabushiki Kaisha: *See—*
Hattori, Shuzo; and Hiramatsu, Tadao, 3,923,380.

Hair, George R. Method of heat sealing sheet-form layers of perforated plastic between layers of paperboard. 3,923,578, Cl. 156-252.000.

Hait, Paul W.: *See—*
Skinner, James R.; Uitz, Mark O.; and Hait, Paul W., 3,923,387.

Hajdu, Laszlo; Hegyessy, Gyorgy; Balla, Jozsef; and Vitan, Gabor, to Medicor Muvek. Electrical detector/transducer/applicable on the skin surface for biometrical observations. 3,923,042, Cl. 128-2.06E.

Hale, Danny B.: *See—*
Riley, Thomas N.; and Hale, Danny B., 3,923,992.

Hallen, Thor Oscar, to Tektronix Inc. Transistor amplifier having single control to simultaneously adjust level input resistance and input voltage. 3,924,198, Cl. 330-32.000.

Halliburton Company: *See—*
Dill, Walter R., 3,923,666.

Hamill, Robert L.; and Stark, William Max, to Eli Lilly and Company. Antibiotic A-2315 and process for preparation thereof. 3,923,980, Cl. 424-118.000.

Hamilton, Ferris F. Submarine tanker for transportation of liquid cargo. 3,922,985, Cl. 114-74.00R.

Hammacher, Konrad, to Hoffmann-La Roche Inc. Process and device for controlling the pressure course of a respirator. 3,923,055, Cl. 128-145.800.

Hammel, Joseph J.; and Allersma, Ties, to PPG Industries, Inc. Thermally stable and crush resistant microporous glass catalyst supports. 3,923,533, Cl. 106-54.000.

Hammel, Joseph J.; and Allersma, Ties, to PPG Industries, Inc. Thermally stable and crush resistant microporous glass catalyst supports and methods of making. 3,923,688, Cl. 252-432.000.

Hammer, Jacob Meyer: *See—*
Duffy, Michael Thomas; Channin, Donald Jones; and Hammer, Jacob Meyer, 3,924,020.

Hampton, Harold E.; and Ellard, Leonard D., to 3 B & D Products, Incorporated. Electromagnetic pick up tool with built-in light. 3,924,115, Cl. 240-6.40R.

Hanake, Tsutomu: *See—*
Sakai, Hiroshi; Takeuchi, Fumio; and Hanake, Tsutomu, 3,923,565.

Hancock, Albert S., Jr.: *See—*
Dugan, James G.; Hancock, Albert S., Jr.; Huston, Kenneth G.; Rosenberg, Bernard L.; Smith, Shirley M.; and Hausske, Gene W., deceased, 3,923,006.

Hancock, James E., to Clark Equipment Company. Tractor hitch adapter. 3,923,322, Cl. 280-461.00A.

Hancock, John P. Back loaded folded corner horn speaker. 3,923,124, Cl. 181-156.000.

Hanekom, Nicolaas W. Apparatus for controlling temperature. 3,924,102, Cl. 219-497.000.

Hanscom, Genevieve I.: *See—*
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Hansen, Howard A.; Fulton, Clyde E., deceased; by Fulton, Minnie L., heir; and by McCann, Brenda G., heir, to Crayton, John W.; and Caterpillar Tractor Co. Welding control arrangement with orbital torch-mounted transducing assembly. 3,924,094, Cl. 219-125.0PL.

Hansen, Laurence H.; Massey, Robert E.; and Wojnowski, Aloysius, to Andrew Corporation. Cross-polarized parabolic antenna. 3,924,205, Cl. 333-21.00A.

Hara, Hajime, to Nippon Oil Company Ltd. Method for preparing diethylketone with good selectivity. 3,923,904, Cl. 260-597.00A.

Harada, Hideo; Ichihara, Akinobu; and Ohmori, Yasuro, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Thixotropic polyurethane composition. 3,923,926, Cl. 260-77.5AP.

Harding, William R., to Leco Corporation. Multifaceted mirror structure for infrared radiation detector. 3,923,382, Cl. 350-296.000.

Hardtmann, Goetz E., to Sandoz, Inc. 3-Substituted-oxindoles in compositions and methods of treating obesity. 3,923,996, Cl. 424-274.000.

Hardy, John W., to Itek Corporation. Real-time wavefront correction system. 3,923,400, Cl. 356-107.000.

Hargreaves, Keith: *See—*
George, Harold M.; Hargreaves, Keith; and Wainwright, Paul, 3,923,737.

Harklau, Lanny L., to Minnesota Mining and Manufacturing Company. Circuit for light measuring devices and method. 3,923,403, Cl. 356-201.000.

Harmon, Robert E.; and Mrozik, Helmut H., to Merck & Co., Inc. 4-(Substituted azobenzenesulfonamides as fasciolicides. 3,923,780, Cl. 260-207.000.

Harpold, Michael A.: *See—*
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Harrah, Robert S.: *See—*
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Harrington, Joseph Kenneth; Kvam, Donald C.; Mendel, Arthur; and Robertson, Jerry E., to Minnesota Mining and Manufacturing Company. Perfluoroalkanesulfonamides N-substituted by heterocyclic groups. 3,923,810, Cl. 260-256.50R.

Harrington, Joseph Kenneth; Kvam, Donald C.; Mendel, Arthur; and Robertson, Jerry E., to Minnesota Mining and Manufacturing Company. Perfluoroalkanesulfonamides N-substituted by heterocyclic groups. 3,923,811, Cl. 260-270.00D.

Harrington, Joseph Kenneth; and Trepka, Robert D., to Minnesota Mining and Manufacturing Company. N-(furanylmethyl) fluoroalkanesulfonamides. 3,923,840, Cl. 260-347.200.

Harris, Alfred C., Jr.: *See—*
Davis, Jimmie L.; and Harris, Alfred C., Jr., 3,923,103.

Harris, Edward M.: *See—*
Parker, Edward H.; Harris, Edward M.; and Meador, Jim D., 3,923,761.

Harris, Glyn Islwyn: *See—*
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Harris, John L., to Deltrol Corporation. Automatic control operating mechanism. 3,922,923, Cl. 74-2.000.

Harris, John L., to Deltrol Corporation. Manual preset timer. 3,922,924, Cl. 74-3.500.

Harter Corporation: *See—*
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Hartmann, Karl: *See—*
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Harwood, Leopold Albert, to RCA Corporation. Automatic luminance channel bandwidth control apparatus responsive to the amplitude of color image information. 3,924,266, Cl. 358-38.000.

Haschke, Heinz; and Morlock, Gerhard. Process for the production of polycarboxylates having improved biological degradability. 3,923,742, Cl. 260-67.0UA.

Hasegawa, Shoichi: *See—*
Nishiumi, Shiro; Hasegawa, Shoichi; Mizoguchi, Toshiyuki; and Furuta, Sachiko, 3,923,942.

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Hassel, Jon M. Kaleidoscope. 3,923,368, Cl. 350-4.000.

Hata, Yukinori; Komiya, Hidetoshi; Osabe, Yuzuru; Watanabe, Tutomu; and Yamada, Hiroyoshi, to Oji Paper Co., Ltd. Photosensitive composition. 3,923,522, Cl. 96-115.00R.

Hattori, Shuzo; and Hiramatsu, Tadao, to Hagiwara Denki Kabushiki Kaisha. Electrooptic modulator utilizing multiple interference. 3,923,380, Cl. 350-160.00R.

Hattori, Toshinori: *See—*
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Hauni-Werke Korber & Co., KG: *See—*
David, Harry, 3,922,837.
Schubert, Bernard, 3,923,173.

Hausler, Rudolf H., to Universal Oil Products Company. Prevention of corrosion. 3,923,606, Cl. 203-7.000.

Hausske, Gene W., deceased: *See—*
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Hausske, Martha J., executrix: *See—*
Dugan, James G.; Hancock, Albert S., Jr.; Huston, Kenneth G.; Rosenberg, Bernard L.; Smith, Shirley M.; and Hausske, Gene W., deceased, 3,923,006.

Haussmann, Albert: *See—*
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Hautemont, Jean-Claude; and Sartopi, Rolland, to Rhone-Poulenc-Textile. Apparatus for the cutting of a yarn travelling in a tube by means of a fluid. 3,922,938, Cl. 83-100.000.

Hawker Siddeley Dynamics Limited: *See—*
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Hay, Robert A., II, to Dow Chemical Company, The. Method and apparatus for construction. 3,923,573, Cl. 156-192.000.

Hayakawa, Shigeru: *See—*
Wasa, Kiyotaka; Hosomi, Fumio; and Hayakawa, Shigeru, 3,924,150.

Hayashi, Yutaka; and Tarui, Yasuo, to Kogyo Gijutsuin. Method of manufacturing lateral or field-effect transistors. 3,923,553, Cl. 148-1.500.

Hayes, William H., to Efficiency Tool Company. Cutter employing dual pawl action and automatic stop and return means. 3,922,783, Cl. 30-250.000.

Hazeltine Research, Inc.: *See—*
Bedford, Alan D., 3,924,060.

Hazemeijer B.V.: *See—*
Clason, Jan Christiaan, 3,924,087.

Hazy, Andrew C.; Shirey, John E.; and Ramins, Lothar, to Horizons Incorporated a division of Horizons Research Incorporated. Ultraviolet holdback of nonsilver photosensitive systems by incorporating therein certain organic additives. 3,923,521, Cl. 96-90.00R.

Healy, Robert Michael, to Litton Systems, Inc. Vapor degreasing system. 3,923,541, Cl. 134-31.000.

Hechenbleikner, Ingenuin; and Enlow, William Palmer, to Borg-Warner Corporation. Preparation of aliphatic phosphates. 3,923,620, Cl. 204-158.00R.

Heenan, Sidney A., to Amerace Corporation. Cube-corner reflector with non-aligned cube axes and element axes. 3,923,378, Cl. 350-103.000.

Hegyessy, Gyorgy: *See—*
Hajdu, Laszlo; Hegyessy, Gyorgy; Balla, Jozsef; and Vitan, Gabor, 3,923,042.

Heifetz, Milton D. Skull tong. 3,923,046, Cl. 128-75.000.

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Beekmans, Nicholaas Marinus; and Heijne, Leopold, 3,923,624.

Heinrich Koppers Gesellschaft mit beschrankter Haftung: *See—*
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Heins, Arnold; Blum, Helmut; and Worms, Karl-Heinz, to Bayer Aktiengesellschaft. Complex formers for polyvalent metal ions. 3,923,876, Cl. 260-502.40R.

Heinz, Karl Heinrich. Pendulum support for a multi-point writing instrument. 3,923,404, Cl. 401-33.000.

Heiple, Clinton R.: *See—*
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Heller, Robert I.; Annulis, Francis T.; and Jachimski, Walter, to Westinghouse Electric Corporation. Digital antenna positioning system and method. 3,924,235, Cl. 343-7.400.

Heller, William C., Jr.: *See—*
Leatherman, Alfred F., 3,923,580.

Helling, Juergen. Hybrid drive. 3,923,115, Cl. 180-65.00A.

Hempelmann, Wilhelm, to Gesellschaft fur Kernforschung m.b.H. Method and device for incinerating radioactive wastes and preparing burnable wastes for non-polluting storage. 3,922,974, Cl. 110-8.00R.

Hendrick Manufacturing Company: *See—*
Sparham, Vaughan R.; and Bixby, Leon C., 3,923,649.

Hendrickson, Charles M., to Columbia Steel Casting Co. Upper liner securement for a gyratory crusher. 3,923,258, Cl. 241-207.000.

Hendrickson, Melvin C.: *See—*
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Hengelhaupt, Hans-Georg, to Triumph Werke Nurnberg, A.G. Dual feed rate ribbon mounting and transport assembly. 3,923,141, Cl. 197-151.000.

Henkel & Cie G.m.b.H.: *See—*
Rose, David; and Lepper, Herbert, 3,923,875.

Hennecke, Rudolf; Kommel, Fritz; and Haussmann, Albert, to Delmag-Maschinenfabrik Reinhold Dornfeld. Arrangement for injection nozzle and exhaust openings in a diesel assisted ram. 3,923,017, Cl. 123-32.00R.

Henrick, Clive A., to Zoecon Corporation. Substituted alkylthio butenoic acids and esters. 3,923,868, Cl. 260-481.00R.

Henrick, Clive A.; and Staal, Gerardus B., to Zoecon Corporation. Cyclopropylmethyl esters. 3,923,871, Cl. 260-485.00L.

Henzler, Albert, to Balzers Patent- & Beteiligungs AG. Vacuum valve construction. 3,923,282, Cl. 251-63.400.

Herbst, Paul T., to Lord Corporation. Universal bearing support. 3,923,349, Cl. 308-26.000.

Hercules Incorporated: *See—*
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Hermann, David Trimble, to American Cyanamid Company. Non-yellowing textile adhesive. 3,923,713, Cl. 260-29.2TN.

Hermann, Heinrich: *See—*
Schroter, Carl; and Mulfinger, Eckhard, 3,923,582.

Hermes, Walter Ludwig; Berkowitz, Murray; and Lombaerde, Charles, to Curtiss-Wright Corporation. Die-cast rotor housing for rotary combustion engines. 3,923,433, Cl. 418-83.000.

Herrera, Jose Pardo. New sliding system applied to foldaway furniture. 3,922,734, Cl. 5-2.00B.

Hersh, David A.; Fye, Robert L.; Whitworth, Kenneth W.; and Willis, William E., to General Motors Corporation. Dipping ladle with level responsive filling operation. 3,923,201, Cl. 222-64.000.

Hertl, William, to Corning Glass Works. Surface modification of silica particles. 3,924,032, Cl. 427-220.000.

Hess, Hans; Mueller, Guenther; and Buehlmann, Xaver, to Ciba-Geigy Corporation. Process for preparing plant enzyme preparations of low germ content. 3,923,599, Cl. 195-66.00R.

Hess, William C.: *See—*
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Heutschi, Hans; and Krebs, Peter, to Sprecher & Schuch AG. Gas-blast power switch for high voltage. 3,924,088, Cl. 200-148.00A.

Heydenreich, Frieder: *See—*
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Heynick, Louis N.; Westerberg, Eugene R.; Bahr, Alfred J.; and Lee, Robert E., to Stanford Research Institute. Charged particle apodized pattern imaging and exposure system. 3,924,136, Cl. 250-492.00A.

Hiatt, Robert Cooper, to Tektronix Inc. Machine for preparing cable. 3,922,934, Cl. 81-9.510.

Hibino, Masaru: *See—*
Shiki, Kazuhiro; and Hibino, Masaru, 3,922,927.

Hickey, William P., executor: *See—*
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Hickner, Richard Allan: *See—*
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International Plasma Corporation: *See—*
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Ioffe, Benyamin Alexandrovich; Kalnin, Robert Karlovich; Dorofeev, Vyacheslav Semenovich; Sirotenko, Viktor Georgievich; Larin, Vladimir Borisovich; Sermons, Gunar Yanovich; and Shevchenko, Alexandr Alexandrovich. Method of orienting electrically conductive bodies, preferably non-magnetic ones, in a magnetic field and apparatus for performing same. 3,924,211, Cl. 335-284.000.

Iriko, Fumio; Yuzawa, Yoshihiko; Takeuchi, Setsuyuki; and Ibe, Nobukuni, to Nissei Plastics Industrial Co., Ltd.; and Showa Denko Kabushiki Kaisha. Method for molding synthetic resin hollow articles. 3,923,943, Cl. 264-97.000.

Iritz, Andrew Frank. Cable grip. 3,923,406, Cl. 403-43.000.

Irvin Industries Inc.: *See—*
Pragnell, John James Muir; and Langley, Robert Leonard, 3,923,171.

Irwin, John A., to General Motors Corporation. Combustor liner support. 3,922,851, Cl. 60-39.320.

Ise Electronics Corporation: *See—*
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Ishida, Tsutomu, to Copyer Co. Ltd. Copying paper feeding device for electronic copying apparatus. 3,923,298, Cl. 271-174.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
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Ishizawa, Toushichi; and Ishizawa, Seiya. Method of heat treating saw. 3,923,561, Cl. 148-147.000.

Ishizumi, Kikuo; Mori, Kazuo; Yamamoto, Michihiro; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Production of quinazolinone compounds. 3,923,710, Cl. 260-251.0QB.

Ishizumi, Kikuo: *See—*
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Isley, Arthur Merle; Rake, Robert Wayne; and Tingley, Albert Sanford, to Western Electric Company, Incorporated. System for controlling the eccentricity of an extruded article. 3,923,439, Cl. 425-150.000.

Isoard, Bernard; and Morf, Jacques, to Rhone-Poulenc-Textile. Spindle for a winding machine. 3,923,261, Cl. 242-46.200.

Isobe, Hirosi; and Maruyama, Iwao, to Diesel Kiki Co., Ltd. Fuel injection pump governor assembly for an internal combustion engine. 3,923,025, Cl. 123-140.00R.

Isogai, Tokio: *See—*
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Isotronics, Inc.: *See—*
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Itek Corporation: *See—*
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Ito, Mikiji; Suzuki, Yoshi; Mizuno, Kiyohiku; and Urano, Susumu, to Nippondenso Co., Ltd. Ignition timing control devices for automotive vehicles. 3,923,023, Cl. 123-117.00A.

Ito, Teruyuki, to Toyoda Koki Kabushiki Kaisha. Gauging apparatus for workpiece with trochoidal cross section. 3,922,792, Cl. 33-174.00R.

Itoh, Hirataka; Usubuchi, Yutaka; Shibuya, Chisei; and Itoh, Koryo, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for preparing 4-aminomethyl cyclohexane carboxylic acid-1. 3,923,879, Cl. 260-514.00J.

Itoh, Koryo: *See—*
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Itria, Oswald A., to Texaco Inc. Seismic pneumatic energy source with attenuation of bubble pulse amplitude and reduction of period of bubble oscillation. 3,923,122, Cl. 181-115.000.

Iwasa, Shozo: *See—*
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Iwasaki, Kyuhachiro, to Ricoh Co., Ltd. Typewriter carriage decelerator. 3,923,140, Cl. 197-64.000.

Iwashita, Yuji; and Sakuraba, Mitsuru, to Ajinomoto Co., Inc. Process for preparing polyamino acid in a non-polar solvent. 3,923,751, Cl. 260-78.00A.

Izawa, Hisao; and Takemori, Hiroshi, to Sanko Kinzoku Kogyo Kabushiki Kaisha. Water-tight roof verge edge trimming. 3,922,824, Cl. 52-94.000.

Izbicki, Anthony J.: *See—*
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Izeki, Manabu: *See—*
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Jachimski, Walter: *See—*
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Jackson, Julius, to Du Pont de Nemours, E. I., and Company. Primrose chrome yellow pigment and process for its preparation. 3,923,538, Cl. 106-298.000.

Jackson, Lawrence Donald Alexander, to Lawjack Equipment Limited. Automatic discharge regulator. 3,923,210, Cl. 222-494.000.

Jackson, William B.; and Commisso, Nicholas D., to Mobil Oil Corporation. Thermoforming plastic articles. 3,923,948, Cl. 264-161.000.

Jacob, Ezekiel J. Method of raised xerographic printing and product. 3,924,019, Cl. 427-14.000.

Jacobs, James W., to General Motors Corporation. Means for heating incoming water in a dishwasher. 3,923,073, Cl. 134-57.00D.

Jager, Werner, to Industrie Treuhand AG, Firma. Device for conveying objects. 3,923,150, Cl. 198-127.00R.

Jaggers, Brian George; Ufton, Keith Frederick; and Wagner, Horst Richard, to Bush Boake Allen Limited. Oligomeric titanate or zirconate ester perfume compositions. 3,923,700, Cl. 252-522.000.

Jalali (Karchay), Javid. Portable cooling unit. 3,922,878, Cl. 62-384.000.

James Howden Holima B.V.: *See—*
Visch, Tonny Dirk Henricus, 3,923,480.

James, James Roderick, to Plessey Company Limited, The. Dipole antenna with dielectric casing. 3,924,238, Cl. 343-807.000.

James, Michael Joseph, to Micro & Precision Mouldings (Cheltenham) Limited. Fixing arrangements. 3,923,328, Cl. 292-75.000.

James, Robert G. Earth surfacing apparatus. 3,922,802, Cl. 37-97.000.

Jameson, James J., to Gardner-Denver Company. Marine power transmission system. 3,922,997, Cl. 115-37.000.

Jankowiak, Christian S., to Societe Anonyme: Poclain. Device for rigidly assemblying two elements of a jib of a public works machine. 3,923,172, Cl. 214-141.000.

Janssen Pharmaceutica N.V.: *See—*
Van Gelder, Josephus Ludovicus Hubertus; Raeymaekers, Alfons Herman Margaretha; Roevens, Leopold Frans Corneel; and Van Laerhoven, Willy Joannes, 3,923,808.

Jansson, David Guild. Respiratory protective device. 3,923,053, Cl. 128-142.000.

Jarman, Davis R., to Hinson, Virgil, a part interest. Dent removal device. 3,922,902, Cl. 72-453.000.

Jatcko, Joseph M. Exhaust silencer. 3,923,120, Cl. 181-60.000.

Jennings Compound Bow, Inc.: *See—*
Jennings, Thomas Paul; Williamson, John Monroe; and Sumida, Carl, 3,923,036.

Jennings, Thomas Paul; Williamson, John Monroe; and Sumida, Carl, to Jennings Compound Bow, Inc. Bow structure. 3,923,036, Cl. 124-30.00R.

Jensen, Garold K., to United States of America, Navy. Signal analyzer. 3,924,182, Cl. 324-77.00R.

Jensen, Lyle B.; and Thune, Robert E., to FMC Corporation. Mechanism for connecting and disconnecting crane sections. 3,923,407, Cl. 403-165.000.

Jhu, Jai Hun; Wells, George H.; Mulder, Thomas J.; and McDonald, Don E., to Technology Marketing Incorporated. Automatic circuit card testing system. 3,924,109, Cl. 235-153.0AC.

Jiandani, Niranjan: *See—*
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Jochum, Peter: *See—*
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Johansen, Carl R., to United States of America, Navy. Acoustic baffle for deep submergence. 3,923,118, Cl. 181-.500.

Johansson, Karl Olof; Nilsson, Alvar Erling; and Skarfelt, Hans TorBjorn, to Munksjo Aktiebolag and Pelly AB. Wire baskets. 3,923,187, Cl. 220-19.000.

Johnson Diversified, Inc.: *See—*
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Johnson, Douglas M., to Fluoroware, Inc. Wafer basket and handle. 3,923,191, Cl. 220-94.00R.

Johnson Electric Coil Co.: *See—*
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Johnson, John H.: *See—*
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Johnson & Johnson: *See—*
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Johnson, LeRoy E.: *See—*
Argoudelis, Alexander D.; Coats, John H.; and Johnson, LeRoy E., 3,923,602.

Johnson, Robert W. Storable cable lock. 3,922,894, Cl. 70-18.000.

Johnston, Thomas Emmett, to Du Pont de Nemours, E. I., and Company. Guanidine carbonate dispersion composition. 3,923,668, Cl. 252-16.000.

Jones, Charles; Lamping, Harold D.; and Myers, David M., to Curtiss-Wright Corporation. Stratified charge rotary engine with high and low pressure fuel supply. 3,923,012, Cl. 123-8.090.

Jones, Charles, to Curtiss-Wright Corporation. Lubricant metering system for the working chambers of a rotary mechanism. 3,923,435, Cl. 418-100.000.

Jones, Howard: *See—*
Shen, Tsung-Ying; and Jones, Howard, 3,923,859.

Jones, Rufus S., to Celanese Corporation. Process for preparing wholly aromatic polyamides in the presence of an aryl sulfone. 3,923,750, Cl. 260-78.00R.

Jordan, Reinhard; and Von Langsdorff, Fritz, to F. von Langsdorff Bauverfahren GmbH. Perforated interlocking slab. 3,923,410, Cl. 404-41.000.

Jorgensen, Hemming Kristian; and Gunnergaard, Marius, to Dansk Industri Syndikat A/S. Apparatus for separating magnetizable castings from casting moulds of sand or similar materials. 3,923,095, Cl. 164-404.000.

Jorns, Peter, to Oxy Metal Industries Corporation. Method concentrate and solution for simultaneous cleaning, degreasing and removal of the lubricant carrier layer from iron and steel workpieces. 3,923,539, Cl. 134-2.000.

Joseph, Walter B.: *See—*
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Jost, Max; and Wick, Arnold, to Ciba-Geigy Corporation. Process for dyeing thermoplastics in the melt. 3,923,727, Cl. 260-40.00P.

Jouffret, Michel: *See—*
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Judy, Millard M.: *See—*
Payne, Thomas R.; Plumlee, Hubert R.; and Judy, Millard M., 3,923,581.

Junes, Norman E. Trolley device. 3,922,972, Cl. 105-153.000.

Jurgens, Rainer: *See—*
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K-2 Corporation: *See—*
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Kaalverink, Gerardus Hendrikus, to Ruti-Te Strake B.V. Yarn pulling device. 3,923,262, Cl. 242-47.010.

Kabas, Guglielmo; Schlaepfer, Hans; and Fletcher, Ian John, to Ciba-Geigy AG. 2-Stilbenyl-4-styryl-v-triazoles, their use for the optical brightening of organic materials, and processes for their manufacture. 3,923,677, Cl. 252-89.000.

Kabs, Klaus: *See—*
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Kabushi Kaisha Toyota Chuo Kenkyusho: *See—*
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Kabushiki Kaisha Komatsu Seisakusho: *See—*
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Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
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Kabushiki Kaisha Toyota Jidoshokki Seisakusho: *See—*
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Kadotani, Kenzo; Honda, Tatuo; and Isogai, Tokio, to Hitachi, Ltd. Method for forming epoxy resin products. 3,923,725, Cl. 260-37.0EP.

Kaftan, John A. Magnetic window cleaning apparatus with improved cleaning material. 3,922,747, Cl. 15-220.00A.

Kagoura, Tetsuro, to Yoshida Kogyo K.K. Door locking device. 3,922,896, Cl. 70-223.000.

Kaiser, Rudolf; Karcher, Werner; and Bringe, Wolfgang, to Siemens Aktiengesellschaft. System of structural components for the construction of shelflike structures in frame racks. 3,923,161, Cl. 211-117.000.

Kalamazoo Spice Extraction Company: *See—*
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Kalb, Hans, to AEG-Kanis Turbinenfabrik GmbH. Speed control device. 3,922,853, Cl. 60-325.000.

Kalnin, Robert Karlovich: *See—*
Ioffe, Benyamin Alexandrovich; Kalnin, Robert Karlovich; Dorofeev, Vyacheslav Semenovich; Sirotenko, Viktor Georgievich; Larin, Vladimir Borisovich; Sermons, Gunar Yanovich; and Shevchenko, Alexandr Alexandrovich, 3,924,211.

Kamata, Sachio: *See—*
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Kamigaito, Osami; Masaki, Hideyuki; Oki, Masami; Suzuki, Masatosi; and Nakamura, Yasuo, to Nippondenso Co., Ltd.; and Kabushi Kaisha Toyota Chuo Kenkyusho. Resistors for ignition plugs. 3,923,698, Cl. 252-518.000.

Kamiya, Takashi: *See—*
Aoki, Hatsuo; Hosoda, Junji; Komori, Tadaaki; Izeki, Manabu; Kubochi, Yoshiaki; Kamiya, Takashi; and Imanaka, Hiroshi, 3,923,977.
Imanaka, Hiroshi; Kamiya, Takashi; Maeno, Shizuo; Miyoshi, Toshio; Miyairi, Norimasa; Aoki, Hatsuo; Kohsaka, Masanobu; Komori, Tadaaki; and Sakai, Heiichi, 3,923,790.

Kanazawa, Kazuo: *See—*
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Kane, Neil G., deceased; and by Kane, Virginia L., administrator. Method of forming a such-back-preventing check valve in a liquid dispenser. 3,923,949, Cl. 264-163.000.

Kane, Virginia L., administrator: *See—*
Kane, Neil G., deceased; and Kane, Virginia L., administrator, 3,923,949.

Kane, William Paul, to Du Pont de Nemours, E. I., and Company. Method of cooking food in a polythylene terephthalate/paperboard laminated container. 3,924,013, Cl. 426-523.000.

Kane, William S.; and Cardwell, Paul H., to Deepsea Ventures, Inc. Winning of metal values from ore utilizing recycled acid leaching agent. 3,923,615, Cl. 204-105.00M.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
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Kansas State University Research Foundation: *See—*
Lambert, Jack L.; and Fina, Louis R., 3,923,665.

Kansy, Robert, to University of Illinois Foundation. Surface wave device having a ferroelectric substrate with a sinusoidal pole region. 3,924,145, Cl. 310-9.500.

Kanzaki Paper Manufacturing Company Ltd.: *See—*
Saito, Toranosuke; Kohno, Jujiro; Tanaka, Daiichiro; and Oda, Shinichi, 3,924,027.

Kao, Chang-Fu. Push type writing implement. 3,923,405, Cl. 401-82.000.

Kao Soap Co. Ltd.: *See—*
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Karcher, Werner: *See—*
Kaiser, Rudolf; Karcher, Werner; and Bringe, Wolfgang, 3,923,161.

Kardashian, Vahram S., to Honeywell Inc. Displacement detector using magnetometer sensor. 3,924,261, Cl. 340-17.000.

Karklys, Joseph, to Whirlpool Corporation. Digital logic control for automatic washer. 3,922,889, Cl. 68-12.00R.

Karsunky, Ulrich: *See—*
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Kasahara, Yoshikazu: *See—*
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Kashio, Toshio, to Casio Computer Co., Ltd. Information recording apparatus. 3,923,137, Cl. 197-19.000.

Kashio, Toshio, to Casio Computer Co., Ltd. Electronic calculator. 3,924,112, Cl. 235-156.000.

Kast, Howard Berdolt, to General Electric Company. Fail-fixed servovalve. 3,922,955, Cl. 91-461.000.

Katayama, Hajime: *See—*
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Kato, Hisao. Bed for patient. 3,922,735, Cl. 5-91.000.

Kato, Masao: *See—*
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Kato, Takashi: *See—*
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Kato, Yasuhiro. Apparatus for storage and discharge of flowable solid materials. 3,923,204, Cl. 222-228.000.

Kato, Yoshiaki: *See—*
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Katsumata, Tomoaki; and Matsushima, Norihisa, to Sumitomo Electric Industries, Ltd. Steel cord. 3,922,841, Cl. 57-145.000.

Katsuyama, Harumi: *See—*
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Katto, Takayuki: *See—*
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Katz, Murray; Smith, Stanley W.; and Reitsma, David, to United Technologies Corporation. Corrosion protection for a fuel cell coolant system. 3,923,546, Cl. 136-86.00R.

Kawai, Mitsuo: *See—*
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Kawakami, Hirotake: *See—*
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Kayaku Antibiotic Research Co., Ltd.: *See—*
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Kaziz, Claude: *See—*
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Keck, Werner: *See—*
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Keefe, Donald J., to United States of America, Energy Research and Development Administration. Background compensation for a radiation level monitor. 3,924,106, Cl. 235-92.0PC.

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Kell, John, to Kangol Magnet Limited. Inertia reels for vehicle safety belts. 3,923,269, Cl. 242-107.400.

Keller, Harold A.: *See—*
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Keller, Wolfgang, to Siemens Aktiengesellschaft. Method for crucible-free zone melting of semiconductor crystal rods. 3,923,468, Cl. 23-301.0SP.

Kelley Company, Inc.: *See—*
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Kellum, Gene E.; and Gilbert, Ronald E., to Gulf Research & Development Company. Ethylene polymerization process in the presence of quinone alkides. 3,923,767, Cl. 260-94.90R.

Kelly, Ellsworth A. Fishing gear retriever. 3,922,810, Cl. 43-17.200.

Kemble, James Edward: *See—*
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Kemlite Corporation: *See—*
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Kemmenoe, Adrian Victor: *See—*
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Kemper, James M., to Monogram Industries, Inc. Recirculating toilet system for use in aircraft or the like. 3,922,730, Cl. 4-10.000.

Kendall Company, The: *See—*
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Schaar, Charles H., 3,923,048.
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Kennedy, Joseph P.; and Chou, Tom M., to University of Akron, The. Process for the preparation of isobutylene/beta-pinene copolymers. 3,923,759, Cl. 260-88.200.

Keowski, John W.: *See—*
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Keranen, Theodore W., to Bendix Corporation, The. System for reordering the fuel injection sequence to facilitate starting of an internal combustion engine. 3,923,031, Cl. 123-179.00L.

Kern, Jean-Paul; Lemarechal, Jacques; and Desforges, Malcolm, to Unisabi S.A. Process of texturizing meat material. 3,924,011, Cl. 426-518.000.

Kernbichler, Rolf: *See—*
Schips, Helmut; and Kernbichler, Rolf, 3,922,983.

Kershaw, Samuel L.; and Proeschl, Bernard E., to Caterpillar Tractor Co. Modular truck body and method for making the same. 3,923,337, Cl. 296-28.00M.

Kester, Wilhelmus Leonardus Maria, to Van Doorne's Personenautofabriek Daf B.V. Steering column for a motorvehicle. 3,922,928, Cl. 74-492.000.

Key, Hugh L. Vehicle bed cover assembly. 3,923,334, Cl. 296-10.000.

Keystone International, Inc.: *See—*
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Khosla, Mahesh Chandra: *See—*
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Bumpus, Francis Merlin; Khosla, Mahesh Chandra; and Smeby, Robert Rudolph, 3,923,770.
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Kidde, Gustave E. Process for the production of calcium fluoride from fluosilicates and by-product gypsum. 3,923,964, Cl. 423-490.000.

Kidde Merchandising Equipment Group: *See—*
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Kierstead, Richard W.; and LeMahieu, Ronald A., to Hoffmann-La Roche Inc. Erythromycin a derivatives. 3,923,784, Cl. 260-210.00E.

Kiff, Ben Wilton, to Union Carbide Corporation. Production of acetic acid. 3,923,882, Cl. 260-533.00R.

Kikuchi, Yoshikazu: *See—*
Ogasawara, Masafumi; Akita, Masanori; Saito, Kazuhiko; Kikuchi, Yoshikazu; and Shiokawa, Mitsuhiro, 3,924,045.

Kimata, Isao, to Yazaki Corporation. Power transmission assembly for use in motor vehicles. 3,922,882, Cl. 64-2.00R.

Kimber, Erich Voldemar, to Atlas Copco AB. Longitudinally adjustable drill boom. 3,923,276, Cl. 248-16.000.

Kimura, Rikiti: *See—*
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King, Jimmie D.; and Powell, Harry R. Enclosed concrete water reservoir supporting earthfill for multiple land uses. 3,922,823, Cl. 52-80.000.

King, Leonard Tony, to Komax Systems, Inc. Material mixing apparatus. 3,923,288, Cl. 259-4.000.

Kinkel, Heinz-Joachim: *See—*
Baukal, Werner; Kinkel, Heinz-Joachim; Robens, Erich; and Walter, Gerhard, 3,923,969.

Kinney, Gary W. Device for spoking and aligning wire wheels. 3,923,090, Cl. 157-1.500.

Kins Development Limited: *See—*
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Kippen, Albert J., to Bangor Punta Operations, Inc. Holster. 3,923,214, Cl. 224-2.00B.

Kirchner, Jack R.; and Vaughan, Lawrence G., to Du Pont de Nemours, E. I., and Company. Production of hydrogen peroxide using the anthraquinone process. 3,923,967, Cl. 423-588.000.

Kishida, Masahiko: *See—*
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Kishigami, Jun: *See—*
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Kishikawa, Kanichi; and Nakajima, Koe, to Nippon Steel Corporation. Method of and apparatus for rolling unsymmetrical shape element having the flange. 3,922,900, Cl. 72-225.000.

Kitahara, Hisao: *See—*
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Kitano, Ichiro; Koizumi, Ken; and Matsumura, Hiroyoshi, to Nihon Itagarasu Kabushiki Kaisha. Method of producing light-conducting glass structure. 3,923,486, Cl. 65-30.00E.

Kitazawa, Kunio; and Fukusako, Tatsuichi, to Toyo Valve Co., Ltd. Copper base alloy. 3,923,500, Cl. 75-156.500.

Klebold, Franklin R.; and Bruce, Robert L. Anti-intrusion alarm system. 3,924,254, Cl. 340-261.000.

Kleiman, Charles: *See—*
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Klein, Alfons: *See—*
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Klein, Dieter Heinrich, to Dow Chemical Company, The. Process for enhancing the dispersion stability of nonaqueous dispersions. 3,923,723, Cl. 260-33.6UA.

Kleiner, Hans-Jerg; Koller, Otto; Schneider, Karl-Heinz; and Schneider, Gerhart, to Hoechst Aktiengesellschaft. Liquid cleansing agent concentrates. 3,923,678, Cl. 252-89.000.

Klemm, Kurt; and Langenscheid, Erhard, to Byk Gulden Lomberg Chemische Fabrik Gesellschaft. 2-Hydrazonomethyl-3-hydroxy-4-aza-2,4-pentadienenitriles. 3,923,817, Cl. 260-293.870.

Klimek, Boleslaw; and Ma, James W., to Berg Manufacturing Company, The. Dual circuit brake valve. 3,923,346, Cl. 303-52.000.

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Klinke, Peter: *See—*
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Klopfer, Osakar E. H., to Ethyl Corporation. Aromatic amine alkylation. 3,923,892, Cl. 260-578.000.

Knab, James V.; Haeckler, Charles; Bell, John; and Fellinger, Jerry, to Knab, James V. Clean air directing apparatus. 3,923,482, Cl. 55-412.000.

Knapp, Burton Bower: *See—*
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Knepp, James E., to Aluminum Company of America. Metal working lubricant. 3,923,671, Cl. 252-49.500.

Knickerbocker, Karl. Internal combustion rotary engine. 3,923,014, Cl. 123-8.490.

Knoepfel, Hanspeter: *See—*
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Knowles, Alvis R.; and Foster, Harold S., to Eldon Industries, Inc. Stand for charging an electric tool and the combination of this stand with such a tool. 3,924,097, Cl. 219-242.000.

Kobayashi, Masahiro: *See—*
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Kobayashi, Masanori, to Kabushiki Kaisha Suwa Seikosha. Cyclometer clock. 3,922,843, Cl. 58-16.00D.

Kobayashi, Seihin; and Torii, Michihiro, to Fuji Electrochemical Co., Ltd. Non destructive read out magnetic core memory apparatus having linear hysteresis loop noise cancelling core. 3,924,248, Cl. 340-174.0DC.

Kobayashi, Toshihiro, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Method and apparatus for burning raw materials of cement clinker. 3,923,536, Cl. 106-100.000.

Kobe Steel Ltd.: *See—*
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Kober, Ehrenfried H.; Rozsa, George; and Schnabel, Wilhelm J., to Olin Corporation. Preparation of a mixture of polyisocyanates by phosgenating a slurry of a mixture of polyamines. 3,923,732, Cl. 260-453.0PH.

Kober, Ehrenfried H.; and Schnabel, Wilhelm J., to Olin Corporation. Preparation of aromatic isocyanates. 3,923,850, Cl. 260-453.0PC.

Kobetz, Paul; and Lindsay, Kenneth L., to Ethyl Corporation. Chemical process. 3,923,914, Cl. 260-658.00R.

Koehler-Dayton, Inc.: *See—*
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Koehring Company: *See—*
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Kogyo Gijutsuin: *See—*
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Kohjin Co., Ltd.: *See—*
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Kolb, James M.; and O'Leary, Kevin J., to Electronor Corporation. Method of making an electrode having a coating of cobalt metatitanate thereon. 3,924,025, Cl. 427-126.000.

Koller, Horst: *See—*
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Koller, Otto: *See—*
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Komatsu, Akira; Yoshida, Toshio; Akutagawa, Susumu; Norose, Fumitaka; Yamamoto, Takeshi; and Kumasa, Ikuji, to Takasago Perfumery Co., Ltd. Cyclohexadecenone-5 perfume compositions. 3,923,699, Cl. 252-522.000.

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Komiya, Hidetoshi: *See—*
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Komura, Shuichi: *See—*
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Konig, Justus: *See—*
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Kono, Yoshinao: *See—*
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Kors, David L.; and Culver, Donald W., to Aerojet-General Corporation. Injector for gas turbine combustor. 3,922,849, Cl. 60-39.51R.

Koshiba, Masao: *See—*
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Koss Corporation: *See—*
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Kotanigawa, Takeshi; Yamamoto, Mitsuyoshi; and Shimokawa, Katsuyoshi, to Director-General, Agency of Industrial Science and Technology. Process for the preparation of methylated phenols. 3,923,907, Cl. 260-621.00R.

Kottmeier, Merrill F. Magnetic apparatus for treating liquids containing calcareous matter. 3,923,660, Cl. 210-222.000.

Kouda, Masanori: *See—*
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Krapcho, John; and Turk, Chester Frank, to E. R. Squibb & Sons, Inc. 2H-pyrazolo[4,3-c]pyridines. 3,923,816, Cl. 260-293.550.

Krasnov, Mikhail Mikhailovich. Artificial crystalline lens. 3,922,728, Cl. 3-13.000.

Krebs, J. Robert; and Abele, Thomas G., to Multi-Flo, Inc. Package aerobic waste treatment system. 3,923,656, Cl. 210-86.000.

Krebs, Peter: *See—*
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Krehan, Friedrich Wilhelm, to Messerschmitt-Bolkow-Blohm G.m.b.H. Detonating system. 3,922,948, Cl. 89-1.50F.

Krejci, Joseph C., to Phillips Petroleum Company. Apparatus for producing carbon black. 3,923,465, Cl. 23-259.500.

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Kriz, Karel; Gorman, Susan B.; and Krajewski, John J., to DeSoto, Inc. Dyed polyvinyl carbazole photoconductive layer. 3,923,508, Cl. 96-1.600.

Kroll, Raymond A.; and Sullivan, Donald K., to Outboard Marine Corporation. Dual station rotary cable steering system. 3,922,995, Cl. 115-18.00R.

Kronies, Reinhard Kurt, to Burroughs Corporation. Memory cycle initiation in response to the presence of the memory address. 3,924,241, Cl. 340-172.500.

Krueger, Klifford C.; and Krueger, Lucile M. Paper towel holder. 3,923,265, Cl. 242-55.200.

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Krug, Gloria A. Volleyball score display device. 3,922,805, Cl. 40-102.000.

Kruger, James Brompton, to Scovill Manufacturing Company. Plier-type snap fastener applier. 3,923,229, Cl. 227-144.000.

Kruppenbach, John A.; and Bedenbender, John W., to Texas Instruments Incorporated. Towed land cable. 3,923,121, Cl. 181-112.000.

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Kuehn, Erich; and Wyhof, John R., to ICI United States Inc. Water-soluble polyester resins as binders for photoconductors. 3,923,509, Cl. 96-1.800.

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Kuhn, Edmund W., to Westinghouse Electric Corporation. Gasket assembly for enclosed electrical apparatus. 3,923,197, Cl. 220-344.000.

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Kumada, Akio, to Hitachi, Ltd. Light control element having a wide viewing angle. 3,923,379, Cl. 350-150.000.

Kumasa, Ikuji: *See—*
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Kume, Makoto, to Nippon Sheet Glass Co., Ltd. Glass-ceramic articles. 3,923,528, Cl. 106-52.000.

Kunz, Hans J.: *See—*
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Kupper, Willi, to W. Schlafhorst & Co. Maschinenfabrik. Device for making-ready the unwinding operation of cops. 3,923,264, Cl. 242-35.60E.

Kuraray Co., Ltd.: *See—*
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Kurka, Kurt A., to Minnesota Mining and Manufacturing Company. Linear β-hydroxy-ester, β-hydroxy-ether and β-hydroxy-amine polymers. 3,923,739, Cl. 260-47.0EP.

Kurosaki, Minoru; Nakamura, Tsutomu; Matuki, Akira; Mogami, Okikazu; Tsugu, Yoshitomo; and Morikawa, Masatoshi, to Nippon Columbia Kabushiki Kaisha. Stepping musical machine. 3,922,944, Cl. 84-1.010.

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Kurtzberg, Jerome Marvin, to International Business Machines Corporation. Recursive shift register for controlling a data processor. 3,924,270, Cl. 340-172.500.

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L. M. & L Corporation: *See—*
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Labofina S.A.: *See—*
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Laboratorios Made, S.A.: *See—*
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La Branche, Harvey W.; and Dimmer, John C., to Western Plastics Corporation. Method for shaping a normally rigid plastic pipe. 3,923,952, Cl. 264-313.000.

Lachman, Irwin M., to Corning Glass Works. High temperature NiO rubbing seal material containing CuO and CaF_2. 3,923,667, Cl. 252-12.000.

Lacoste, Jean Rene, to Patentex S.A. Racket and string holding elements. 3,923,303, Cl. 273-73.00D.

Lacy, Robert H.; and Russell, James E., to F&M Systems Co. Display device having an array of movable display elements. 3,924,226, Cl. 340-336.000.

Lada, George J., to Allied Chemical Corporation. Automatic liquid feed interlock with workload. 3,923,071, Cl. 134-47.000.

Ladouceur, Harold A., to Multifastener Corporation. Method of forming a panel assembly. 3,922,770, Cl. 29-445.000.

Ladouceur, Harold A., to Multifastener Corporation. Nut and panel assembly. 3,923,089, Cl. 151-41.730.

La Follette, Robert L., to American Challenger Corporation. Shift ring for a marine clutch. 3,923,131, Cl. 192-21.000.

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Lake, Ralph Jones, Jr., to RCA Corporation. Satellite propellant management system. 3,923,188, Cl. 220-20.000.

Lakshmanan, Pallavoor R., to Gulf Research & Development Company. Adhesive composition. 3,923,722, Cl. 260-32.80A.

Lalet, Philippe: *See—*
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Lalk, Robert H.; and Evani, Syamalarao, to Dow Chemical Company, The. A kiln feed slurry for making portland cement containing an inorganic slat of a styrene-maleic anhydride copolymer. 3,923,717, Cl. 260-29.60S.

Lamand, Michel; Lab nee Astier, Claudine; Roux, Remy; and Chagnaud, Paul, to Etablissement Public Dit: Institut National de la Recherche Agronomique. Process for preventing trace element deficiency in animals and compositions for carrying out said process. 3,923,982, Cl. 424-140.000.

Lambert, Jack L.; and Fina, Louis R., to Kansas State University Research Foundation. Demand bactericide for disinfecting water and process of preparation. 3,923,665, Cl. 210-501.000.

Lamping, Harold D.: *See—*
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Lancaster, Peter John, to E. B. Burdon (Engineers) Limited. Vehicle washing plant. 3,923,658, Cl. 210-108.000.

Lander, Lars: *See—*
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Landvatter, Henry W. Hitch for portable conveyor. 3,923,175, Cl. 214-509.000.

Langbein, Adolf: *See—*
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Langen & Co.: *See—*
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Langen, Marinus J. M., to H. J. Langen & Sons Ltd. Intermittent load accumulator. 3,923,144, Cl. 198-31.0AB.

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Langley, Robert Leonard: *See—*
Pragnell, John James Muir; and Langley, Robert Leonard, 3,923,171.

Langner, Gunter P.: *See—*
Roeder, Henning; Langner, Gunter P.; Scherhag, Bernd; Nickenig, Hans-Lothar; and Loix, Rene, 3,923,680.

Langnickel, Wolfgang, to Olympia Werke AG. Character display dot raster signal generator provided with character memory. 3,924,225, Cl. 340-324.0AD.

Lantz, Robert, to United States of America, Army. Double base propellant with thorium containing ballistic modifier. 3,923,564, Cl. 149-19.800.

Laporte, Jean-Claude: *See—*
Laporte, Jean-Michel; and Laporte, Jean-Claude, 3,923,033.

Laporte, Jean-Michel; and Laporte, Jean-Claude. Electrically controlled target throwing device. 3,923,033, Cl. 124-8.000.

Laptewicz, Joseph E., Jr.: *See—*
Finn, Robert K.; Tannahill, Alex L.; and Laptewicz, Joseph E., Jr., 3,923,782.

Larin, Vladimir Borisovich: *See—*
Ioffe, Benyamin Alexandrovich; Kalnin, Robert Karlovich; Dorofeev, Vyacheslav Semenovich; Sirotenko, Viktor Georgievich; Larin, Vladimir Borisovich; Sermons, Gunar Yanovich; and Shevchenko, Alexandr Alexandrovich, 3,924,211.

Larsson, Karl Olof Axel Helmer; and Lander, Lars. Holder with tear-off mechanism for web-like material. 3,923,223, Cl. 225-46.000.

Lashley, Everett R., Jr., to Union Carbide Corporation. Detoxification of aldehydes and ketones. 3,923,648, Cl. 210-12.000.

Lathey, Howard N.: *See—*
Schuler, Emil H.; Schuler, Robert C.; and Lathey, Howard N., 3,922,743.

Latimer-Sayer, Laurence. Sound reproducing apparatus. 3,923,123, Cl. 181-144.000.

LaTour, Harry, to Armco Steel Corporation. Universal continuous casting apparatus. 3,923,093, Cl. 164-282.000.

Lauber, Leo E.; and Cowden, Ernest A. Orthopedic cast and method of constructing same. 3,923,049, Cl. 128-91.00R.

Lauck, John A. Emergency control valve. 3,923,423, Cl. 417-3.000.

Laurent, Jacques: *See—*
Derible, Pierre Henri; Lavaux, Jean-Paul; and Laurent, Jacques, 3,923,800.

Lavaux, Jean-Paul: *See—*
Derible, Pierre Henri; Lavaux, Jean-Paul; and Laurent, Jacques, 3,923,800.

Lavin, Joseph L. Method and apparatus for forming and fitting orthodontic appliances. 3,922,786, Cl. 32-11.000.

Lavins, Paul N., Jr., to American Induction Heating Corporation. Method for cleaning metallic filters of plastic waste. 3,923,653, Cl. 210-71.000.

Lavo, Harry F.; and Cante, Charles J., to General Foods Corporation. Plant husbandry. 3,922,977, Cl. 111-1.000.

Law, Harold Bell, to RCA Corporation. Method of fabricating an apertured mask for a cathode-ray tube. 3,923,566, Cl. 156-3.000.

Lawjack Equipment Limited: *See—*
Jackson, Lawrence Donald Alexander, 3,923,210.

Lawler, Harry A.; and Reys, John, to Carborundum Company, The. Non-rigid seal for joining silicon carbide tubes and tube sheets in heat exchangers. 3,923,314, Cl. 277-112.000.

Lawrence, John E., to Silicon Materials, Inc. Method of reclaiming a semiconductor wafer. 3,923,567, Cl. 156-7.000.

Lawrence Peska Associates, Inc.: *See—*
Spreen, Fred John; 3,923,211.
Sturgeon, Hulan D., 3,922,973.

Lay, Kenneth W., to General Electric Company. Process for preparing sintered uranium dioxide grains. 3,923,933, Cl. 264-.500.

Lazar, Remus I.; and Reichel, Richard C., to Velsicol Chemical Corporation. New dye compositions. 3,923,453, Cl. 8-39.000.

Lear, Edward C.: *See—*
Ingham, David; and Lear, Edward C., 3,922,979.

Leatherman, Alfred F., to Heller, William C., Jr. Fabricating method and article formed thereby. 3,923,580, Cl. 156-272.000.

Leblanc, Conrad L., to Foster Grant Co., Inc. Self adjusting spectacle frame assembly. 3,923,384, Cl. 351-113.000.

Leclabart, Jacques, to Perma. Heating sleeve for a hair curler. 3,923,069, Cl. 132-36.0CC.

Leco Corporation: *See—*
Harding, William R., 3,923,382.
Sitek, George J.; and Revesz, Robert N., 3,923,464.

Lee, Bong Gill. Cigarette case. 3,923,239, Cl. 229-51.00C.

Lee, Chi-Hang; Scarpellino, Richard John; and Murtagh, Marjorie Mary, to General Foods Corporation. Sweetness inducer. 3,924,017, Cl. 426-548.000.

Lee, Robert E.: *See—*
Heynick, Louis N.; Westerberg, Eugene R.; Bahr, Alfred J.; and Lee, Robert E., 3,924,136.

Lee Wilson Engineering Company, Inc.: *See—*
Iszczukiewicz, Ludwig C., 3,923,556.

Leeds & Northrup Company: *See—*
Wickert, Charles J., 3,922,916.

Leff, Martin; and Olesen, Paul, to Swingline, Inc. Multiple shot fastening gun. 3,923,228, Cl. 227-132.000.

Lefort, Pierre: *See—*
Llop, Helenio; and Lefort, Pierre, 3,923,401.

Legutke, Gunter: *See—*
Ohorodnik, Alexander; Gehrmann, Klaus; Legutke, Gunter; and Vierling, Hermann, 3,923,917.

Lehman, Gerhard H., to Elgin Sweeping Services, Inc. Broom device. 3,922,745, Cl. 15-87.000.

Leigh, Roland Albert. Compositions containing dithionites. 3,923,960, Cl. 423-265.000.

Leimgruber, Jean-Daniel: *See—*
Gerber, Jean-Pierre; and Leimgruber, Jean-Daniel, 3,922,846.

Leitner, Kajetan. Spring clamp fixable in a circular hole in a plate or panel. 3,923,295, Cl. 267-158.000.

LeMahieu, Ronald A.: *See—*
Kierstead, Richard W.; and LeMahieu, Ronald A., 3,923,784.

Lemarechal, Jacques: *See—*
Kern, Jean-Paul; Lemarechal, Jacques; and Desforges, Malcolm, 3,924,011.

LeMay, Christopher Archibald Gordon, to E M I Limited. Method and apparatus for constructing a representation of a planar's slice of body exposed to penetrating radiation. 3,924,129, Cl. 250-336.000.

Lemineur, Joseph; and Arys, Rene, to Ampex Corporation. Tape loop tension arm position indicator system. 3,924,177, Cl. 324-61.00R.

Leonard, Byron H., Jr. Fuel assemblies for nuclear reactors. 3,923,596, Cl. 176-75.000.

Leonard, Keith W. G. Vertical spindle pulverisers. 3,923,255, Cl. 241-56.000.

Leonard, Louis H., to Carrier Corporation. High temperature heat recovery in refrigeration. 3,922,873, Cl. 62-84.000.

Leonardo, Ignazio; and Coll, Eugene, to General Cable Corporation. Drop in anchor stud. 3,922,947, Cl. 85-77.000.

Leopold, Eric Jan, to Eli Lilly and Company. Insecticidal substituted alkenes. 3,923,832, Cl. 260-340.500.

Le Page, Jean-Francois: *See—*
Franck, Jean-Pierre; Torck, Bernard; and Le Page, Jean-Francois, 3,923,915.

Lepper, Herbert: *See—*
Rose, David; and Lepper, Herbert, 3,923,875.

Leskovar, Peter: *See—*
Weitze, Artur; and Leskovar, Peter, 3,922,777.

Lessmann, Gerald G.; and Vaia, Albert R., to Westinghouse Electric Corporation. Method and apparatus for cladding a base metal. 3,924,092, Cl. 219-76.000.

Lester Laboratories, Inc.: *See—*
Peters, John P.; and McAmish, Larry H., 3,924,157.

Leupold, Karl Heinz. Device for acupuncture. 3,923,064, Cl. 128-329.00A.

Lever Brothers Company: *See—*
Marshall, Robert Swinburn; Hartmann, Karl; and Kraffert, Erich, 3,924,012.
Ney, Karl Heinz; Wirotama, I. Poetoe Gde; and Freytag, Wolfram Gustav, 3,924,014.

Levering, Kenneth A.: *See—*
Allread, Alan R.; and Levering, Kenneth A., 3,923,080.

Levi, Lev Izrailevich: *See—*
Portnoi, Kim Isaevich; Arabei, Lidia Borisovna; Gryazno, Georgy Mikhailovich; Levi, Lev Izrailevich; Lunin, Gleb Leonidovich; Kozhukhov, Valery Mikhailovich; Markov, Jury Mikhailovich; and Fedotov, Mikhail Egorovich, 3,923,502.

Lewis, Albert D., to Owens-Illinois, Inc. Method of making glass ampuls in a non-contaminating manner. 3,923,487, Cl. 65-110.000.

Lewis, Bob, to Sullivan, T. M.; and Manners, Joseph A., Sr. Automatic basting device. 3,922,960, Cl. 99-346.000.

Lewis, David W. Apparatus for forming integral homogeneous buildings. 3,923,436, Cl. 425-64.000.

Lewis, Robert W.; Rodgers, Thomas A.; and Goeking, Charles F., Jr., to Shell Oil Company. Removal of lead and other suspended solids from used hydrocarbon lubricating oil. 3,923,643, Cl. 208-179.000.

Lewis Woolf Griptight Limited: *See—*
Hurst, Eric Kenneth, 3,923,067.

Libit, Sidney M. Child-resistant closures. 3,923,181, Cl. 215-224.000.

Lieberman, Sheldon I.: *See—*
Auborn, James J.; and Lieberman, Sheldon I., 3,923,543.

Lifetime Metal Products, Inc.: *See—*
Patterson, James A.; and Ogden, John F., 3,923,230.

Liggett & Myers Incorporated: *See—*
Van Hall, Floyd, 3,923,146.

Lincoln First Bank of Rochester, executor: *See—*
Eichorn, Roger H., deceased; and Lincoln First Bank of Rochester, executor, 3,923,004.

Lind, Earl V., to Schlegel Manufacturing Company, The. Weatherseal manufacture. 3,923,576, Cl. 156-244.000.

Lind, Michael A., to New Draulics, Inc. Open system fluid driven pruner. 3,922,782, Cl. 30-228.000.

Lindberg, Russell A., to United States of America, General Counsel-Code GP. High temperature beryllium oxide capacitor. 3,924,164, Cl. 317-258.000.

Lindblom, Robert O.: *See—*
Camp, Carolyn J.; and Lindblom, Robert O., 3,924,050.

Lindfors, Olov Halvar, to AB Volvo. Arrangement for power transmission from a stationary electric conductor to a vehicle. 3,924,084, Cl. 191-45.000.

Lindmayer, Joseph; and Allison, James Frederick, to Communications Satellite Corporation. Tantalum pentoxide anti-reflective coating. 3,922,774, Cl. 29-572.000.

Lindsay, Kenneth L.: *See—*
Kobetz, Paul; and Lindsay, Kenneth L., 3,923,914.

Link, Helmut, to Index-Werke KG Kahn & Tessky. Driving a single spindle lathe. 3,922,936, Cl. 82-28.000.

Linsinger, Ernst. Apparatus for trimming and edge-cutting a plate-like metallic workpiece. 3,922,951, Cl. 90-15.00R.

Linz, Albert. Drive means for vehicle mounted vibratory compactor. 3,923,412, Cl. 404-133.000.

Lippitsch, Josef: *See—*
Beckmann, Georg; Gilli, Paul Viktor; Fritz, Kurt; and Lippitsch, Josef, 3,923,008.

Little Giant Products, Inc.: *See—*
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Litton Systems, Inc.: *See—*
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Ngo, Charles C. M., 3,924,250.

Liu, Chung C., to International Business Machines Corporation. Bipolar digital to analog converter utilizing two reference voltages of the same polarity. 3,924,229, Cl. 340-347.0DA.

Livingstone, John Lewis: *See—*
Andrews, Roderic Stafford; Barlow, Christoper George; and Livingstone, John Lewis, 3,923,974.

Llop, Helenio; and Lefort, Pierre, to Societe d'Optique, Precision Electronique et Mechanique — Sopelem. Solution concentration responsive apparatus. 3,923,401, Cl. 356-135.000.

LoCicero, James T. Slotted masonry wall structure and metal stud therefor. 3,924,056, Cl. 174-48.000.

Lockwood, Phyllis, executrix: *See—*
Otto, Carl L., Jr., deceased; and Lockwood, Phyllis, executrix, 3,924,165.

Lockyer, John; and Cleary, Thomas C., to Deutsch Relays, Inc. Relay tester. 3,924,178, Cl. 324-28.00R.

Loev, Bernard, to SmithKline Corporation. 5-Alkoxy-5-heterocyclic-1,2,3,6-tetrahydro-4(5H)-pyrimidinethiones. 3,923,809, Cl. 260-256.50R.

Loev, Bernard: *See—*
Bender, Paul E.; and Loev, Bernard, 3,923,836.

Lohbauer, Kenneth R.: *See—*
Bridwell, John W.; Hopkins, Donald L.; and Lohbauer, Kenneth R., 3,922,855.

Lohnert, Wolfgang: *See—*
von Benda, Klaus; and Lohnert, Wolfgang, 3,923,542.

Loix, Rene: *See—*
Roeder, Henning; Langner, Gunter P.; Scherhag, Bernd; Nickenig, Hans-Lothar; and Loix, Rene, 3,923,680.

Lombaerde, Charles: *See—*
Hermes, Walter Ludwig; Berkowitz, Murray; and Lombaerde, Charles, 3,923,433.

Long, Leslie T.: *See—*
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Lord Corporation: *See—*
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Lord, Henry A., to Diamond International Corporation. Method for forming molded fiber products with deckle-free windows. 3,923,594, Cl. 162-195.000.

Loschilin, Evgeny Dmitrievich: *See—*
Bulantsev, Anatoly Andreevich; Galperin, Alexandr Lvovich; Zabotin, Alexandr Alexandrovich; Loschilin, Evgeny Dmitrievich; and Sakharov, Boris Alexandrovich, 3,923,083.

Louis, Eckhart: *See—*
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Lowery, Dennis J.: *See—*
Dixson, Bruce E.; Gayton, John E.; Lowery, Dennis J.; and Burke, William F., 3,922,909.

Lowy, Stanley Robert, to Unicorn Products Limited. Flights for darts and arrows. 3,923,310, Cl. 273-106.50C.

Lubbock, Frederick John: *See—*
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Lucas Aerospace Limited: *See—*
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Lucas Electrical Co. Ltd.: *See—*
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Lucas, Matthew J., Jr., to Babcock & Wilcox Company, The. Narrow-groove welding. 3,924,095, Cl. 219-125.00R.

Lucien, Rene; and Masclet, Jean, to Messier Hispano. Disc brake with graphite friction shoes. 3,923,128, Cl. 188-251.00A.

Luckenbach, Edward C.; and Worley, Arthur C., to Exxon Research & Engineering Co. Catalytic hydrocarbon conversion process and apparatus. 3,923,642, Cl. 208-164.000.

Lund, Raymond W., Jr., to Hoerner Waldorf Corporation. Double web corner carton. 3,923,234, Cl. 229-37.00E.

Lundin, Rune: *See—*
Csiki, Kalman; and Lundin, Rune, 3,922,725.

Lunin, Gleb Leonidovich: *See—*
Portnoi, Kim Isaevich; Arabei, Lidia Borisovna; Gryazno, Georgy Mikhailovich; Levi, Lev Izrailevich; Lunin, Gleb Leonidovich; Kozhukhov, Valery Mikhailovich; Markov, Jury Mikhailovich; and Fedotov, Mikhail Egorovich, 3,923,502.

Lussling, Theodor; Schaefer, Hans; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Catalyst for the production of aromatic or hetero-aromatic nitriles. 3,923,819, Cl. 260-294.900.

Luteran, Frank Kenneth. Phase sensitive ignition timing system. 3,923,030, Cl. 123-148.00E.

Lutz, Gottfried: *See—*
Pertzsch, Albert; Toral, Jose; Lutz, Gottfried; Wilke, Werner; and Riedel, Anton, 3,923,271.
Pertzsch, Albert; Toral, Jose; Lutz, Gottfried; Wilke, Werner; and Riedel, Anton, 3,923,272.

Lynch, James Edward, to AMP Incorporated. Press fitted terminal post. 3,923,365, Cl. 339-221.00R.

Lynn, James B.: *See—*
Homberg, Otto A.; Sheldrake, Charles W.; and Lynn, James B., 3,923,957.

Lyon, Halsey H.; and Deimel, Frank H. Portable sink over-flow device. 3,922,733, Cl. 4-191.000.

M. C. Guarino Associates, Inc.: *See—*
Guarino, Michael C.; and Cacossa, Frank, 3,922,830.

M & H Plastics Inc.: *See—*
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M & T Chemicals Inc.: *See—*
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Ma, James W.: *See—*
Klimek, Boleslaw; and Ma, James W., 3,923,346.

Maayani, Saul: *See—*
Sokolovsky, Mordechai; and Maayani, Saul, 3,923,990.

Mabie, Norman H., to L. M. & L. Corporation. Belt connector with flexible bite feature. 3,922,759, Cl. 24-31.00B.

Mabuchi, Kenichi; and Tsuchimochi, Toshihisa, to Mabuchi Motor Co. Ltd. Battery connection device. 3,923,549, Cl. 136-134.00P.

Mabuchi Motor Co. Ltd.: *See—*
Mabuchi, Kenichi; and Tsuchimochi, Toshihisa, 3,923,549.

Machacek, Hubert: *See—*
Baerns, Manfred; Beck, Bruno; Schmid, Karl Ludwig; Machacek, Hubert; Beige, Gunther; and Nogge, Heinz, 3,923,867.

Mack, Anthony C.; and Shumrak, George K., Mobile food serving system. 3,924,100, Cl. 219-386.000.

MacKenzie, Burton Thornley, Jr., to General Electric Company. Pressureless curing of filled ethylene containing polymeric compositions. 3,923,731, Cl. 260-42.420.

Madden, Baxter C., Jr. Energy absorbing devices. 3,923,292, Cl. 267-64.00R.

Maddox, Robert L., to Owens-Corning Fiberglas Corporation. Machine for unrolling chopping, and feeding matted material. 3,922,937, Cl. 83-99.000.

Maeno, Shizuo: *See—*
Imanaka, Hiroshi; Kamiya, Takashi; Maeno, Shizuo; Miyoshi, Toshio; Miyairi, Norimasa; Aoki, Hatsuo; Kohsaka, Masanobu; Komori, Tadaaki; and Sakai, Heiichi, 3,923,790.

Maggio, Anthony F.: *See—*
Eckerd, Steve S.; Markowitz, Ivan N.; Maggio, Anthony F.; and Gray, Darby A., 3,923,267.

Magnani, Arthur, to SmithKline Corporation. Anti-arthritic compositions comprising a 3-aryl 2-thiohydantoin and methods of producing anti-arthritic acitvity. 3,923,994, Cl. 424-273.000.

Magnavox Company, The: *See—*
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Magner, James E.: *See—*
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Mahieu, Jean-Rene: *See—*
Fache, Michel; Blondel, Jacques; and Mahieu, Jean-Rene, 3,924,204.

Maier, Alfred E.; and Shimp, Alan B., to Westinghouse Electric Corporation. Circuit breaker with detachably connected fault simulator. 3,924,160, Cl. 317-36.0TD.

Maier, Elmar; and Tilg, Robert, to Hilti Aktiengesellschaft. Explosion charge driven fastening element setting gun. 3,923,225, Cl. 227-8.000.

Maier, Elmar, to Hilti Aktiengesellschaft. Barrel and magazine alignment arrangement for a fastening element setting gun. 3,923,226, Cl. 227-8.000.

Maier, Elmar, to Hilti Aktiengesellschaft. Tapered seal between the barrel and drum type magazine in a fastening element setting gun. 3,923,227, Cl. 227-8.000.

Makita Electric Works Limited: *See—*
Fushiya, Fusao, 3,922,785.

Malinchak, Paul. Inserts for metal cutters. 3,922,766, Cl. 29-105.00R.

Mand Carpet Mills: *See—*
Mand, Emery M.; Amley, Joyce C., deceased; and Amley, Loretta, executrix, 3,922,736.

Mand, Emery M.; Amley, Joyce C., deceased; and by Amley, Loretta, executrix, to Mand Carpet Mills. Machine and method for space dyeing. 3,922,736, Cl. 8-149.000.

Mann, Robert C.: *See—*
Dexter, John B.; and Mann, Robert C., 3,923,275.

Manners, Joseph A., Sr.: *See—*
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Mannesmann Aktiengesellschaft: *See—*
Dorr, Wolfgang; Matzner, Hartwig; and Noska, Tilman, 3,923,091.

Manthey, Peter; and Matthies, Hermann, to Metallgesellschaft Aktiengesellschaft. Method of removing solids (e.g. copper dross) from molten-lead baths. 3,923,499, Cl. 75-78.000.

Marcella, Joseph: *See—*
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Marchant, Ian McGregor, to Kins Development Limited. Rail clip assembly. 3,923,245, Cl. 238-347.000.

Marchello, John L. Bicycle pedal crank extender. 3,922,929, Cl. 74-562.000.

Marcil, Paul M. Wall hook structure and method of forming same. 3,923,278, Cl. 248-301.000.

Marcyan, Stanley T. Motor bike stabilizer. 3,923,220, Cl. 224-42.03B.

Marechal, Jacques Prost; and Tomasik, Georges, to Roussel-UCLAF. Process for the preparation of 16α-methyl-$\Delta^{1,4,9(11)}$-pregnatrien-3,20-diones and use of the same in treatment of allergies. 3,923,985, Cl. 424-243.000.

Margulies, Robert S.; and Biddick, Royce E., to United States of America, Environmental Protection Agency. Grid structure for high rate lead/acid battery. 3,923,545, Cl. 136-36.000.

Marien, Jan A.; and Steinberg, David R., to Corning Glass Works. Method of forming a hermetic enclosure. 3,922,773, Cl. 29-570.000.

Marino, Francis C., to Redactron Corporation. Indicating system using pulsed optical techniques. 3,924,253, Cl. 340-258.00B.

Markey, Robert Harvey, to Multifastener Corporation. Method of making a laminated nut and clip. 3,922,742, Cl. 10-86.00R.

Markov, Jury Mikhailovich: *See—*
Portnoi, Kim Isaevich; Arabei, Lidia Borisovna; Gryazno, Georgy Mikhailovich; Levi, Lev Izrailevich; Lunin, Gleb Leonidovich; Kozhukhov, Valery Mikhailovich; Markov, Jury Mikhailovich; and Fedotov, Mikhail Egorovich, 3,923,502.

Markowitz, Isral J., to Stem Industries, Inc. Compact rotating internal combustion engine. 3,923,018, Cl. 123-43.00A.

Markowitz, Ivan N.: *See—*
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Marley Company, The: *See—*
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Marlow, Ray E.: *See—*
United States of America, National Aeronautics and Space Administration; and Marlow, Ray E., 3,922,930.

Maroshick, Max, to Boeing Company, The. Articulated railway vehicle connecting passage. 3,922,971, Cl. 105-4.00R.

Marquis, Florian E. Lifting boom for truck. 3,923,170, Cl. 214-86.00A.

Marsden, Donald: *See—*
Prince, Michael J.; and Marsden, Donald, 3,922,784.

Marsh, Dana G., to Xerox Corporation. Method for the preparation of relief printing masters. 3,923,514, Cl. 96-35.000.

Marshall, Robert Swinburn; Hartmann, Karl; and Kraffert, Erich, to Lever Brothers Company. Methods for forming unit portions of frozen food materials. 3,924,012, Cl. 426-518.000.

Martin: *See—*
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Martin, Burton L.; and Tilly, Peter E., to Rockwell International Corporation. Shielded indicating lamp fuseholder. 3,924,216, Cl. 337-206.000.

Martin, William E., to United States of America, Navy. High speed electro-optic waveguide modulator. 3,923,374, Cl. 350-96.0WG.

Martin, William E., to United States of America, Navy. Electro-optic waveguide beam deflector. 3,923,376, Cl. 350-96.0WG.

Martinez, Boni Philip; and Zeisberg, Millard David, to Du Pont de Nemours, E. I., and Company. Fuel made from thermoplastic fibers and oil. 3,923,472, Cl. 44-50.000.

Martinsons, Aleksandrs: *See—*
Welch, Cletus N.; and Martinsons, Aleksandrs, 3,923,609.

Maruyama, Isamu; Nakao, Masaru; Sasajima, Kikuo; Yanagihara, Izumi; Inaba, Shigeho; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Novel propenylamine derivatives and process for the production thereof. 3,923,794, Cl. 260-240.00A.

Maruyama, Iwao: *See—*
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Maruyama, Tsutomu; and Yamashita, Kazuo, to Kansai Paint Company, Ltd. Method of electron beam curing of coated unsaturated substrates containing silicon carbide. 3,924,021, Cl. 427-35.000.

Marvin Glass & Associates: *See—*
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Masaki, Hideyuki: *See—*
Kamigaito, Osami; Masaki, Hideyuki; Oki, Masami; Suzuki, Masatosi; and Nakamura, Yasuo, 3,923,698.

Maschinenfabrik Gehring KG: *See—*
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Massey-Ferguson, Inc.: *See—*
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Massey, Robert E.: *See—*
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MaTek Corporation: *See—*
Davis, William J.; Izbicki, Anthony J.; and Parsley, Johne, 3,923,936.

Matouka, Michael F., to General Motors Corporation. Digital sawtooth generator. 3,924,195, Cl. 328-181.000.

Matsuda, Osamu: *See—*
Suzuki, Haruyoshi; Takino, Thuyoshi; Mori, Naomichi; Sugioka, Isao; Matsuda, Osamu; Sekino, Shozo; and Honma, Hiroyuki, 3,924,091.

Matsuda, Yoshio, to Yoshida Kogyo K.K. Concealed zip fastener. 3,922,760, Cl. 24-205.10C.

Matsui, Hiroshi; Kitahara, Hisao; and Watanabe, Shozo, to Matsushita Electric Industrial Co., Ltd. Electric switch combined with variable resistor. 3,924,220, Cl. 338-172.000.

Matsumoto, Kouichi: *See—*
Shoji, Jun'ichi; Mayama, Mikao; Matsuura, Shinzo; Matsumoto, Kouichi; and Wakisaka, Yoshiharu, 3,923,979.

Matsumura, Hiroyoshi: *See—*
Kitano, Ichiro; Koizumi, Ken; and Matsumura, Hiroyoshi, 3,923,486.

Matsuoka, James T.; and Cantarutti, Armindo, to Intercole Automation, Inc. Internal mixer. 3,923,291, Cl. 259-192.000.

Matsushima, Norihisa: *See—*
Katsumata, Tomoaki; and Matsushima, Norihisa, 3,922,841.

Matsushita Electric Industrial Co., Ltd.: *See—*
Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Sumoto, Misao; and Imanaka, Hiroshi, 3,924,103.
Matsui, Hiroshi; Kitahara, Hisao; and Watanabe, Shozo, 3,924,220.
Ono, Takuhiro; and Hashimoto, Masafumi, 3,923,569.
Wasa, Kiyotaka; Hosomi, Fumio; and Hayakawa, Shigeru, 3,924,150.

Matsuura, Shinzo: *See—*
Shoji, Jun'ichi; Mayama, Mikao; Matsuura, Shinzo; Matsumoto, Kouichi; and Wakisaka, Yoshiharu, 3,923,979.

Matsuura, Takashi; and Chihara, Fumio, to Hoya Glass Works, Ltd. Colored glass. 3,923,527, Cl. 106-47.00R.

Matthews, Ernest L.; and Matthews, Ralph E., to Matthews Machine Company, Inc. Apparatus for packaging fluid materials in packets. 3,923,084, Cl. 141-144.000.

Matthews Machine Company, Inc.: *See—*
Matthews, Ernest L.; and Matthews, Ralph E., 3,923,084.

Matthews, Ralph E.: *See—*
Matthews, Ernest L.; and Matthews, Ralph E., 3,923,084.

Matthies, Hermann: *See—*
Manthey, Peter; and Matthies, Hermann, 3,923,499.

Matui, Takao: *See—*
Hojo, Toku; Matui, Takao; and Kimura, Rikiti, 3,923,584.

Matuki, Akira: *See—*
Kurosaki, Minoru; Nakamura, Tsutomu; Matuki, Akira; Mogami, Okikazu; Tsugu, Yoshitomo; and Morikawa, Masatoshi, 3,922,944.

Matzner, Hartwig: *See—*
Dorr, Wolfgang; Matzner, Hartwig; and Noska, Tilman, 3,923,091.

Maurer, Bruno; Fracheboud, Michel G.; and Ohloff, Gunther, to Firmenich S.A. Bicyclic compounds, their use and process for preparing same. 3,923,873, Cl. 260-488.00R.

Maurice, Jean; and Mouttet, Andre, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Crenellation drum; and epicyclic transmission incorporating the same. 3,922,932, Cl. 74-763.000.

Maxey, Robert E. L., Sr.; and Bernard, John, Jr., to Westinghouse Electric Corporation. Profile indicating apparatus displaceable either along an axis or in a plane perpendicular thereto. 3,922,791, Cl. 33-172.00R.

May & Baker Limited: *See—*
Caton, Michael Peter Lear; and Parker, Trevor. 3,923,872.

May, Sam H. Warning device for stalled vehicles. 3,922,998, Cl. 116-40.000.

Mayama, Mikao: *See—*
Shoji, Jun'ichi; Mayama, Mikao; Matsuura, Shinzo; Matsumoto, Kouichi; and Wakisaka, Yoshiharu. 3,923,979.

Mayer, Edward F.: *See—*
Buchan, William R.; Genthe, James E.; Mayer, Edward F.; and Moore, Robert A., 3,923,392.

Mayer, Kurt: *See—*
Hirmann, Georg. 3,923,078.

Mayflower Textiles Co., Inc.: *See—*
Batey, Thomas E., 3,922,804.

Mazdiyasni, Khodabakhsh S.; and Brown, Leanne M., to United States of America, Air Force. Method for preparing lead lanthanum zirconate-titanate powders. 3,923,675, Cl. 252-62.900.

MCA Disco-Vision, Inc.: *See—*
Broadbent, Kent D., 3,924,062.

McAmish, Larry H.: *See—*
Peters, John P., and McAmish, Larry H., 3,924,157.

McArdle, Edward H.; and Millidge, Ralph John, to United States of America, Air Force. Fragment suppression configuration. 3,924,038, Cl. 428-49.000.

McCabe, Ralph Patrick, to Colt Industries Operating Corporation. Turbine engine fuel control. 3,922,850, Cl. 60-39.28R.

McCann, Brenda G., heir: *See—*
Hansen, Howard A.; Fulton, Clyde E., deceased; Fulton, Minnie L., heir; and McCann, Brenda G., heir, 3,924,094.

McCarty, Horace G.: *See—*
Kline, Charles M.; Priepke, Edward H.; Waldrop, Thomas W.; Fisher, Raymond E.; Greiner, James G.; and McCarty, Horace G., 3,922,838.

McClure, Robert Bruce. Audio responsive color display system. 3,924,231, Cl. 340-366.00B.

McDonald, Don E.: *See—*
Jhu, Jai Hun; Wells, George H.; Mulder, Thomas J.; and McDonald, Don E., 3,924,109.

McDonald, Reagan W.; and Joseph, Walter B., to McDonald, Reagan W. Deep water platform construction. 3,922,868, Cl. 61-46.500.

McDonald, Wilson C., to Goodyear Aerospace Corporation. Quick attached transparent armor windows. 3,923,339, Cl. 296-95.00R.

McEachern, James F., to United States of America, Navy. Hydrophone drogue. 3,922,989, Cl. 114-209.000.

McFall, Robert A.: *See—*
Engel, Simon L.; and McFall, Robert A., 3,923,383.

McGill, Kenneth Harmon: *See—*
Eddy, Kenneth Harmon; and McGill, Kenneth Harmon, 3,922,825.

McGill, Robert W., to A-T-O Inc. Grid for article caser apparatus. 3,922,836, Cl. 53-248.000.

McIntosh, Robert P., and Shahein, Hussein I., to International Business Machines Corporation. High density track follower control system for magnetic disk file. 3,924,268, Cl. 360-78.000.

McIntyre, Betty J., administrator: *See—*
McIntyre, James L., deceased, 3,924,153.

McIntyre, James L., deceased (by McIntyre, Betty J., administrator), to Westinghouse Electric Corporation. Electron gun. 3,924,153, Cl. 315-14.000.

McKee, Donald S., to Scott & Fetzer Company, The. Enclosable retractable awning. 3,923,074, Cl. 135-5.0AT.

McKinley, Suzanne V., to Dow Chemical Company, The. Arvinylbenzyl iodide. 3,923,911, Cl. 260-651.00R.

McKinney, Joel D.: *See—*
Christman, Robert D.; McKinney, Joel D.; Readal, Thomas C.; and Yanik, Stephen J., 3,923,637.

McKinney, Ross E., to Vesmat Investments, Inc. Level detection system. 3,923,655, Cl. 210-83.000.

McMillan, Stephen L., to General Electric Company. Clothes dryer. 3,922,798, Cl. 34-73.000.

McNeil Laboratories, Incorporated: *See—*
Rasmussen, Chris Royce, 3,923,801.

MDT Instrument Company: *See—*
Roland, Max, 3,923,372.

Mead Corporation, The: *See—*
Calvert, Rodney K., 3,923,236.

Mead Johnson & Company: *See—*
Comer, William T.; and Catt, John D., 3,923,886.

Mead, Theodore C.; Odell, Norman R.; and Shillinglaw, John P., Jr., to Texaco Inc. Production of lubricating oils. 3,923,636, Cl. 208-58.000.

Meador, Jim D.: *See—*
Parker, Edward H.; Harris, Edward M.; and Meador, Jim D., 3,923,761.

Mechulam, Andre; Saintours-Payerne, Bruno M.; Gay-Chatain, Guillaume A.; and Montjallard, Paul R., to Etat Francais. Gun turret with an observation opening closable by a hatch cover. 3,922,949, Cl. 89-36.00L.

Medicor Muvek: *See—*
Hajdu, Laszlo; Hegyessy, Gyorgy; Balla, Jozsef; and Vitan, Gabor, 3,923,042.

Medtronic, Inc.: *See—*
Stasz, Peter; and Cosentino, Louis C., 3,923,041.

Meginnis, Charles E. Sight glass with wear indicating device. 3,922,999, Cl. 116-114.00Q.

Melancon, Lionel P., to United States of America, Navy. Aural warning apparatus. 3,924,262, Cl. 340-27.0AT.

Melnikov, Nikolai Nikolaevich; Grapov, Artur Felixovich; Kozlova, Tamara Fedorovna; Shakhova, Galina Borisovna; Pokatun, Valery Pavlovich; Stonov, Leonid Dmitrievich; Bakumenko, Ljudmila Alexandrovna; Sergeeva, Tatyana Akimovna; and Titova, Lidia Mikhailovna. Herbicide. 3,923,493, Cl. 71-87.000.

Meloy Laboratories, Inc.: *See—*
Barden, James D., 3,923,461.

Menard, Emile, Jr. Method and apparatus for raising and retrieving a boat anchor. 3,922,990, Cl. 114-221.00R.

Mendel, Arthur, to Riker Laboratories, Inc. Polyfluoroalkoxy-substituted aromatic carboxylic acids. 3,923,885, Cl. 260-544.00M.

Mendel, Arthur: *See—*
Harrington, Joseph Kenneth; Kvam, Donald C.; Mendel, Arthur; and Robertsoh, Jerry E., 3,923,810.
Harrington, Joseph Kenneth; Kvam, Donald C.; Mendel, Arthur; and Robertson, Jerry E., 3,923,811.

Mengkrog, Oystein: *See—*
Stemsrud, Finn; Ullevalseter, Reidar Otto; and Mengkrog, Oystein, 3,922,908.

Mentzer, Carl A.: *See—*
United States of America, National Aeronautics and Space Administration; Peters, Leon, Jr.; and Mentzer, Carl A., 3,924,237.

Merck & Co., Inc.: *See—*
Harmon, Robert E.; and Mrozik, Helmut H., 3,923,780.
Shen, Tsung-Ying; and Jones, Howard, 3,923,859.
Shuman, Richard F., 3,923,855.

Merianos, John J.: *See—*
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 3,923,973.

Merle, Michel: *See—*
Condolios, Elie; and Merle, Michel, 3,923,652.

Merriman, Burt Trosey, Jr.: *See—*
Welstead, William John, Jr.; and Merriman, Burt Trosey, Jr., 3,923,988.

Mertens, William J., to Avco Corporation. Closed-breech-gun-fired rocket-assisted projectile. 3,922,967, Cl. 102-38.000.

Merz, Herbert; Langbein, Adolf; Walther, Gerhard; and Stockhaus, Klaus, to Boehringer Ingelheim GmbH. Pharmaceutical compositions containing an n-furyl-or thienyl-methyl)- -oxy-7,8 -dihydronormorphinone or norcodeinone and method of use. 3,923,987, Cl. 424-260.000.

Mesnil, Paul; Talvard, Jean-Pierre; and Flaceliere, Bernard. Device for acquisition, storage and echelon of characters in a printer of the series type. 3,923,139, Cl. 197-19.000.

Messerschmitt-Bolkow-Blohm G.m.b.H.: *See—*
Krehan, Friedrich Wilhelm, 3,922,948.

Messier Hispano: *See—*
Lucien, Rene; and Masclet, Jean, 3,923,128.

Metallgesellschaft Aktiengesellschaft: *See—*
Manthey, Peter; and Matthies, Hermann, 3,923,499.

Metten, Josef: *See—*
Weissel, Oskar; Metten, Josef; Schwarz, Hans Helmut; Koller, Horst; and Tacke, Peter, 3,923,695.

Metzger, Karl-Georg: *See—*
Schrock, Wilfried; Metzger, Karl-Georg; and Konig, Hans-Bodo, 3,923,789.

Meuly, Walter C., to Rhodia Inc. Process for repelling dogs and cats from a selected area or from each other using γ-n-alkyl-γ-butyrolactones and δ-n-alkyl-δ-valerolactones. 3,923,997, Cl. 424-279.000.

Meyer, Hans Rudolf, to Ciba-Geigy AG. Distyrylbenzene derivatives. 3,923,878, Cl. 260-505.00C.

Meyer, Horst: *See—*
Bossert, Friedrich; Meyer, Horst; and Vater, Wulf, 3,923,818.

Meyer, James A., to Brunswick Corporation. Steering apparatus for outboard motors. 3,922,996, Cl. 115-18.00R.

Meyer, Rene, to Ugine Carbone. Composite materials. 3,923,946, Cl. 264-111.000.

Mez, Georg. Flange connection. 3,923,326, Cl. 285-363.000.

Michaels, Alan S.: *See—*
Baker, Richard W.; Michaels, Alan S.; and Theeuwes, Felix, 3,923,939.

Michalski, Raymond J.; and Youngs, Roger W., to Nalco Chemical Company. Amides and hydrophobic silica as antifoams. 3,923,683, Cl. 252-321.000.

Mickelson, Thorwald J. Semitrailer king pin securing device. 3,922,897, Cl. 70-232.000.

Micro Devices Corporation: *See—*
Plasko, Emil Robert, 3,924,214.
Plasko, Emil Robert; Kohl, James Allen; and Hutchison, Michael Raymond, 3,924,217.
Plasko, Emil Robert, 3,924,218.

Micro & Precision Mouldings (Cheltenham) Limited: *See—*
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Miletto, Andre: *See—*
Fassy, Henri; Lalet, Philippe; and Miletto, Andre, 3,923,764.

Mill Supply, Inc.: *See—*
Stearns, George H., 3,923,149.

Miller, David. Eye lid blinker. 3,923,044, Cl. 128-25.00A.

Miller, Donald J.; and Rolie, Gil G., to Synergex Corporation. Container with springloaded closure. 3,923,196, Cl. 220-335.000.

Miller, Douglas D.: *See—*
Hillegas, Danny H.; Miller, Douglas D.; and Varga, John F., 3,922,901.

Miller, Forrest A.; Wirsching, Michael T.; and Hosick, Frank A., to K-2 Corporation. Size adjustable ski boot. 3,922,800, Cl. 36-2.5AL.

Miller, Frances M.: *See—*
Powers, John R.; and Miller, Frances M., 3,923,768.

Miller, Harold C., to Engelhard Minerals & Chemicals Corporation. Liquid pick-up unit and method for a pavement grooving machine. 3,923,341, Cl. 299-18.000.

Miller, Joseph J., to Big Drum, Inc. Feeder for sleeve-enclosed edible cones. 3,923,200, Cl. 221-221.000.

Miller, Roman R.: *See—*
Williams, Dale D.; and Miller, Roman R., 3,922,904.

Miller, Russell C., to J. M. Eltzroth & Associates, Inc. Treating metal with a cleaning agent in a combustible solvent before coating. 3,924,035, Cl. 427-327.000.

Millidge, Ralph John: *See—*
McArdle, Edward H.; and Millidge, Ralph John, 3,924,038.

Millmaster Onyx Corporation: *See—*
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 3,923,973.

Mills, Frank J. E.: *See—*
Uebelhart, James J.; Spicuzza, John P., Jr.; and Mills, Frank J. E., 3,923,706.

Mills, Truett P. Slotted golf putter. 3,923,308, Cl. 273-183.00D.

Milton, A. Fenner, to United States of America, Navy. High angle optical ray separator. 3,923,377, Cl. 350-96.00C.

Minamizaki, Kunio; Yagi, Yasuhiko; Murakami, Kensuke; and Kurose, Hisayuki, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Method for building liquefied-gas-carrier. 3,922,986, Cl. 114-74.00A.

Minks, Floyd M. Voltage regulator for alternating current lighting system. 3,924,154, Cl. 315-78.000.

Minneman, William J., to MTM Molded Products Company. Flat pack for revolver cartridges. 3,923,152, Cl. 206-3.000.

Minnesota Mining and Manufacturing Company: *See—*
Benz, Gerhard, 3,923,726.
Braun, David L., 3,924,219.
Brochman, Wilfred R., 3,923,198.
Gerster, John F., 3,924,042.
Gobran, Ramsis; Knoepfel, Hanspeter; and Silver, Spencer F., 3,924,043.
Gobran, Ramsis; Knoepfel, Hanspeter; and Silver, Spencer F., 3,924,044.
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Harrington, Joseph Kenneth; Kvam, Donald C.; Mendel, Arthur; and Robertson, Jerry E., 3,923,810.
Harrington, Joseph Kenneth; Kvam, Donald C.; Mendel, Arthur; and Robertson, Jerry E., 3,923,811.
Harrington, Joseph Kenneth; and Trepka, Robert D., 3,923,840.
Kurka, Kurt A., 3,923,739.

Minolta Camera Kabushiki Kaisha: *See—*
Nakamura, Akiyoshi, 3,923,369.

Mishcon, Lester, to Singer Company, The. Positive yarn feeding system for circular knitting machine. 3,922,887, Cl. 66-132.00T.

Mita Industrial Company, Ltd.: *See—*
Washio, Takaji; Sasaki, Koichi; and Aizawa, Tatsuo, 3,923,391.

Mitani, Naoyuki: *See—*
Hirose, Michio; Otani, Mitsunobu; Yamada, Kiyoshi; Mitani, Naoyuki; and Tanaka, Kiyotugu, 3,924,139.

Mitchell, Louis J.: *See—*
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Mitsubishi Chemical Industries Ltd.: *See—*
Fukutani, Hideo; Miura, Konoe; Eguchi, Chihiro; Takahashi, Yoshihiro; and Torige, Kazuo, 3,923,703.

Mitsubishi Denki Kabushiki Kaisha: *See—*
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Mitsubishi Gas Chemical Company, Inc.: *See—*
Yonemitsu, Eiichi; Miyamori, Hiroshi; Takeda, Mutsuhiko; and Sasaki, Yukio, 3,923,884.

Mitsubishi Mining & Cement Company Ltd.: *See—*
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Mitsui Mining & Smelting Co., Ltd.: *See—*
Sakai, Toshiyuki; Miyazaki, Kazuhide; and Abe, Kiyomi, 3,923,693.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Asano, Shiro; Yoshimura, Kiyotaka; Tsuchiya, Ryoji; and Honda, Tadatoshi, 3,923,741.

Miura, Konoe: *See—*
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Miyagawa, Tomoyuki: *See—*
Sakurai, Waichi; Sato, Katsunori; Miyagawa, Tomoyuki; and Takahashi, Hisateru, 3,923,260.

Miyairi, Norimasa: *See—*
Imanaka, Hiroshi; Kamiya, Takashi; Maeno, Shizuo; Miyoshi, Toshio; Miyairi, Norimasa; Aoki, Hatsuo; Kohsaka, Masanobu; Komori, Tadaaki; and Sakai, Heiichi, 3,923,790.

Miyake, Hideo; and Fuzimura, Toshiaki, to Toyo Boseki Kabushiki Kaisha. Polyester composition containing saturated polyester unsaturated terephthalate polyester and vinyl monomer. 3,923,927, Cl. 260-861.000.

Miyamori, Hiroshi: *See—*
Yonemitsu, Eiichi; Miyamori, Hiroshi; Takeda, Mutsuhiko; and Sasaki, Yukio, 3,923,884.

Miyamoto, Noriaki: *See—*
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Miyasaka, Kenzi; Takemoto, Mikio; Kato, Yoshiaki; Uematu, Hiroyuki; Tamaru, Munetaka; Kume, Kazunari; Ohno, Hideshi; and Onda, Mitsuo, to Citizen Watch Co., Ltd. Watch drive pulse motor. 3,922,845, Cl. 58-23.00D.

Miyashiro, Shoichi; Shirouzu, Shunji; Shimizu, Kazuo; and Yoshida, Okio, to Tokyo Shibaura Electric Co., Ltd. Method for manufacturing an image pickup tube. 3,923,358, Cl. 316-19.000.

Miyata, John J.: *See—*
Alger, James A.; and Miyata, John J., 3,922,776.

Miyayama, Masuo; Murase, Mineyuki; and Shiraiwa, Harumi, to Kohjin Co., Ltd. Heat-sensitive recording material and process for producing same. 3,924,041, Cl. 428-212.000.

Miyazaki, Kazuhide: *See—*
Sakai, Toshiyuki; Miyazaki, Kazuhide; and Abe, Kiyomi, 3,923,693.

Miyazaki, Tsutomu: *See—*
Watanabe, Etsuji; Miyazaki, Tsutomu; Kato, Takashi; and Miyamoto, Noriaki, 3,922,840.

Miyoshi, Toshio: *See—*
Imanaka, Hiroshi; Kamiya, Takashi; Maeno, Shizuo; Miyoshi, Toshio; Miyairi, Norimasa; Aoki, Hatsuo; Kohsaka, Masanobu; Komori, Tadaaki; and Sakai, Heiichi, 3,923,790.

Mizoguchi, Toshiyuki: *See—*
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Mobil Oil Corporation: *See—*
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Morrison, Roger A., 3,923,641.
Silvestri, Anthony J.; and Naro, Paul A., 3,923,634.
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Modern Maid (Vic.) Pty. Ltd.: *See—*
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Mogami, Okikazu: *See—*
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Zilberman, Leonid Borisovich; Krakhmalnikov, Semen Borisovich; Kudinov, Gennady Alexandrovich; Kutsykovich, Dorina Borisovna; Moiseev, Jury Gavrilovich; and Shneider, Abram Mikhailovich, 3,923,535.

Mollinger, Sebastian. Roofing assembly of flexible material. 3,922,822, Cl. 52-63.000.

Molyneux, George. Building construction. 3,922,826, Cl. 52-204.000.

Monaghan, Frank, to M & H Plastics Inc. Tubular articles. 3,923,604, Cl. 195-139.000.

Monogram Industries, Inc.: *See—*
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Monsanto Company: *See—*
Alt, Gerhard H.; and Howe, Robert K., 3,923,495.
Coaker, Antony W. M.; and Cowell, Elmer E., 3,923,720.
Crutchfield, Marvin M., 3,923,841.
Dixon, William D.; and Dangerfield, Bracey R., 3,923,827.
Fields, Joseph E.; and Johnson, John H., 3,923,972.
Mullikin, Richard V.; and Ort, Morris R., 3,923,760.
Rapko, John N., 3,923,679.
Worley, Jimmy W., 3,923,709.

Monsanto Research Corporation: *See—*
Salyer, Ival O.; Wilken, Philip H.; and Ball, George L., III, 3,923,757.

Montjallard, Paul R.: *See—*
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Moorad, Stanley: *See—*
Bostrom, Donald J.; and Moorad, Stanley, 3,923,237.

Moore, Edwin Barclay; Crossley, Bernard Oliver; and Gladwell, Roy Leonard, to Dunlop Limited. Cable spacer for overhead power transmission lines. 3,924,055, Cl. 174-40.00R.

Moore, Phylis T., to Polaroid Corporation. Novel 4,4'-bipyridinium salts. 3,923,821, Cl. 260-296.00D.

Moore, Robert A.: *See—*
Buchan, William R.; Genthe, James E.; Mayer, Edward F.; and Moore, Robert A., 3,923,392.

Moran, Gonzalo, to Comercial Super-Dix, S.A. Air treatment device. 3,923,458, Cl. 21-74.00R.

Morf, Jacques: *See—*
Isoard, Bernard; and Morf, Jacques, 3,923,261.
Morgan, Peter E. D.: *See—*
Scott, Harvey; and Morgan, Peter E. D., 3,923,953.
Mori Denki Manufacturing Co., Ltd.: *See—*
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Mori, Fumio: *See—*
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Ishizumi, Kikuo; Mori, Kazuo; Yamamoto, Michihiro; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 3,923,710.
Mori, Naomichi: *See—*
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Morikawa, Masatoshi: *See—*
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Morman, Frank C., to American Can Company. Zinc lignosulfonate stabilizing binder solution for magnesium oxide refractory forming mixtures and method. 3,923,532, Cl. 106-59.000.
Morris, Allen H. Tool for edging around sprinkler heads. 3,923,102, Cl. 172-13.000.
Morris, Herman H. Flooder refrigerant condenser systems. 3,922,880, Cl. 62-498.000.
Morris, Thomas M.; and Bilson, Edward A., to Inspiration Consolidated Copper Company. Electrolytic recovery of zinc. 3,923,617, Cl. 204-119.000.
Morris, William F., Jr. Refrigeration system with auxiliary defrost heat tank. 3,922,875, Cl. 62-156.000.
Morrison, Roger A., to Mobil Oil Corporation. Hydrocracking naphthas using zeolite beta. 3,923,641, Cl. 208-111.000.
Morse, Donald B.; and Pribish, Bernard A., to Kemlite Corporation. Machine for trimming the edges of panels. 3,922,940, Cl. 83-364.000.
Mortenson, Charles L.: *See—*
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Mortimer, John A., to Shur-Rane Corporation. Mobile irrigation system. 3,923,249, Cl. 239-212.000.
Mostrom, Richard N., to Honeywell Inc. Head mounted displays. 3,923,370, Cl. 350-55.000.
Motorola, Inc.: *See—*
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Bevacqua, Louis Albert, 3,922,883.
Garrett, Lane S., 3,924,079.
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Mouille, Rene Louis. Damped elastic tie device between rotor blade and hub on rotary-wing aircraft. 3,923,419, Cl. 416-107.000.
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Moyer, James D., to Rockwell International Corporation. Jack mechanism for circular knitting machines. 3,922,886, Cl. 66-50.00R.
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Mukai, Kosaburo; Oguri, Yasufumi; Tatano, Yasuo; and Kasahara, Yoshikazu, to Nissan Motor Company Limited. Combustion chamber of spark ignition internal combustion engine. 3,923,015, Cl. 123-32.00B.
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Muller, Hans, to Grapha-Holding AG. Apparatus for placing cover sheets on stacks of different heights. 3,923,145, Cl. 198-35.000.
Muller, Peter, to Andrews Paper & Chemical Co. Erasable diazotype material with vinyl chloride and methyl acrylate copolymer interlayer. 3,923,518, Cl. 96-75.000.
Muller, Peter: *See—*
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Muller, Richard: *See—*
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Mundlos, Eberhard; and Papenfuhs, Theodor, to Hoechst Aktiengesellschaft. Hydroxynaphtholdehide monoazomethine amine dyestuffs. 3,923,793, Cl. 260-240.00F.
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Murdock, Robert M. Flag pole. 3,923,001, Cl. 116-173.000.
Murib, Jawad H.; and Frank, Charles E., to National Distillers and Chemical Corporation. Process for the preparation of C_5 dicarboxylic acids from 2-butene. 3,923,881, Cl. 260-533.00R.
Murray, Kenneth M., to United States of America, Navy. Activated aluminum tracer tag. 3,924,125, Cl. 250-303.000.
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Myers, Herman A., to Innovate, Inc. Rotary engine. 3,923,013, Cl. 123-8.470.
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Naber, Charles T.; and Blust, William F., to NCR Corporation. Process for fabricating MNOS non-volatile memories. 3,924,024, Cl. 427-95.000.
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Nakagawa, Susumu: *See—*
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Nakajima, Heitaro; Kawakami, Hirotake; Tatara, Shokichi; and Kishigami, Jun, to Sony Corporation. Cartridge shell for phonograph pickup. 3,923,309, Cl. 274-23.00R.
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Nakajima, Nobuhiro; Nakatsugawa, Shiro; Koyama, Yasuo; and Chihara, Shiro, to Kayaku Antibiotic Research Co., Ltd. Gatavalin and process for producing same. 3,923,978, Cl. 424-118.000.
Nakajima, Nobuyoshi. Power driven typewriter. 3,923,136, Cl. 197-17.000.
Nakakobara, Takeshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotor housing of a rotary engine. 3,923,432, Cl. 418-61.00A.
Nakamura, Akiyoshi, to Minolta Camera Kabushiki Kaisha. Retrofocus type of objective lens. 3,923,369, Cl. 350-214.000.
Nakamura, Koichi, to Kabushiki Kaisha Suwa Seikosha. Cash register. 3,924,108, Cl. 235-152.000.

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Namito, Yoshio; Kobayashi, Masahiro; and Kojima, Takeshi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Synthesis of 5-(beta-methylmercaptoethyl)-hydantoin. 3,923,826, Cl. 260-309.500.
Narayanan, Venkatachala L., to E. R. Squibb & Sons, Inc. Aminoalkoxy-tetrahydro-cyclopropa [b]naphthalenes. 3,923,890, Cl. 260-570.700.
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Nastronero, John J.; and Billings, John C., to United States of America, Navy. Active-passive target detection system. 3,924,233, Cl. 343-6.00R.
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Nelson, Norman A., to Upjohn Company, The. 4-Oxa prostaglandin β-type compounds. 3,923,862, Cl. 260-468.00D.
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Newman, James W.; Bavaro, Nicholas M.; and Zajac, Ronald E., to Windings, Inc. Package of flexible material with radial opening extending into a central axial opening and means for preventing inward collapse. 3,923,270, Cl. 242-163.000.
Newsam, William, to Pressey Handel und Investments A.G. Multi-layer printed-circuit boards. 3,923,359, Cl. 339-17.00M.
Ney, Karl Heinz; Wirotama, I. Poetoe Gde; and Freytag, Wolfram Gustav, to Lever Brothers Company. Provolone cheese flavor. 3,924,014, Cl. 426-534.000.
Ngo, Charles C. M., to Litton Systems, Inc. Magnetic core matrix and winding pattern for mass core memory. 3,924,250, Cl. 340-174.0CR.
Nicholas, Michael G.; Scott, Peter M.; and Dewar, Bruce I., to De Beers Industrial Diamond Division Limited. Method for metal coating diamonds so as to improve the interfacial bond strength. 3,924,031, Cl. 427-217.000.
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Niedrach, Leonard W.; and Stoddard, William H., Jr., to General Electric Company. Miniature probe containing multifunctional electrochemical sensing electrodes. 3,923,626, Cl. 204-195.00R.
Niedrach, Leonard W.; and Stoddard, William H., Jr., to General Electric Company. Miniature probe containing multifunctional electrochemical sensing electrodes. 3,923,627, Cl. 204-195.00M.
Niegisch, Walter D.: *See—*
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Niemann, Heinz, to ESGEE-Marby GmbH & Co., Firma. Cycle luggage carrier construction, particularly light-weight bicycle luggage carrier. 3,923,218, Cl. 224-32.00A.
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Niinomi, Naoyuki, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument provided with a voltage-controlled monophonic playing section operated by a manual or pedal tone-playing section. 3,922,943, Cl. 84-1.170.
Nijdam, Ate, to Aannemers, Combinatie Zinkwerken B.V. Mattress, method of sinking a mattress and vessel suitable for use in said method. 3,922,865, Cl. 61-38.000.
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Nimer, Fred. Semi-automatic pipe loader. 3,923,085, Cl. 141-261.000.
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N.V. Maatschappij voor Industriele Research en Ontwikkeling: *See—*
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O'Brien, John B.; and Stone, Herman, to Allied Chemical Corporation. Growth regulants for plants. 3,923,491, Cl. 71-76.000.
O'Brien, Raymond A., to Cleveland Hardware and Forging Company. Filter cartridge for water coolers. 3,923,662, Cl. 210-251.000.
Ochiai, Michihiko: *See—*
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Ogasawara, Masafumi; Akita, Masanori; Saito, Kazuhiko; Kikuchi, Yoshikazu; and Shiokawa, Mitsuhiro, to Toray Industries, Inc. Multilayer conjugate fiber and process and apparatus for the preparation thereof. 3,924,045, Cl. 428-373.000.
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Pukszta, Peter, Jr. Method of making a molded fiber glass and resin structure with interlocked and bonded walls. 3,923,951, Cl. 264-250.000.
Pullen, Edward A., to Union Oil Company of California. Wax coating compositions. 3,923,711, Cl. 260-28.5AV.

Purcell, Robert J.; Balzer, David J.; and Van Zandt, Rollin P., to Caterpillar Tractor Co. Multidirectional resilient suspension for vehicles. 3,923,111, Cl. 180-9.540.
Purdy, David L., to Arco Medical Products Company. Method of making a thermopile with insulatingly separate junctions on an alumina insulator. 3,923,551, Cl. 136-201.000.
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Pytel, Richard N.; Burdett, Fred H.; and Kozuch, Steve M., to PPG Industries, Inc. Method of tempering flat glass sheets. 3,923,488, Cl. 65-114.000.
Quadbeck-Seeger, Hans-Juergen; Schoenleben, Willibald; and Schneider, Dieter, to BASF Aktiengesellschaft. Production of isooxazole. 3,923,825, Cl. 260-307.00H.
Quenot, Michel, to Stanley-Mabo. Linear measuring instrument. 3,922,790, Cl. 33-138.000.
Quinn, Richard M., to Ball Corporation. Synchronized stacking system. 3,923,147, Cl. 198-40.000.
Quiring, Bernd; Wagner, Kuno; Muller, Richard; and Muller, Peter, to Bayer Aktiengesellschaft. Process for cross-linkable pulverulent coating compositions based on uretdione polyisocyanates. 3,923,743, Cl. 260-75.0NT.
Radcliffe, Stanley L.; and Dornan, Arthur E., to Massey-Ferguson, Inc. Vehicle braking system. 3,923,127, Cl. 188-82.100.
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Rapko, John N., to Monsanto Company. Salts of tetrahydrofuran polycarboxylic acids as detergent builders and complexing agents. 3,923,679, Cl. 259-99.000.
Rapoport, Henry, to University of California, The Regents of the. Certain 6,7-dioxo-2H-pyrrolo-[2,1-b]thiazines. 3,923,796, Cl. 260-243.00R.
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Regitz, Lester J., to United States Steel Corporation. Low-carbon steel sheets temper-rolled after the final anneal to improve magnetic properties. 3,923,560, Cl. 148-120.000.
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Reilly, James J.; and Wiswall, Richard H., Jr., to United States of America, Energy Research and Development Administration. Iron titanium manganese alloy hydrogen storage. 3,922,872, Cl. 62-48.000.
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Riccio, Pasquale R., to Ciba-Geigy Corporation. Non-spitting liquid dispensing device with pressurized product supply. 3,923,202, Cl. 222-145.000.
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Sakai, Toshimitsu; and Kawai, Mitsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Controls for automatic transmissions. 3,922,933, Cl. 74-866.000.
Sakai, Toshiyuki; Miyazaki, Kazuhide; and Abe, Kiyomi, to Mitsui Mining & Smelting Co., Ltd. Catalyst for reducing nitrogen oxides contained in combustion exhaust gas, and process for preparing same. 3,923,693, Cl. 252-459.000.
Sakamoto, Motoyoshi, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece. 3,922,844, Cl. 58-23.00R.
Sakharov, Boris Alexandrovich: *See—*
Bulantsev, Anatoly Andreevich; Galperin, Alexandr Lvovich; Zabotin, Alexandr Alexandrovich; Loschilin, Evgeny Dmitrievich; and Sakharov, Boris Alexandrovich, 3,923,083.
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Sakurai, Waichi; and Yoshie, Sadanobu, to Daiwa Boseki Kabushiki Kaisha; and Kabushiki Kaisha Toyota Jidoshokki Seisakusho. Device for preventing accumulation of fibers in a spinning machine. 3,922,839, Cl. 57-58.950.
Sakurai, Waichi; Sato, Katsunori; Miyagawa, Tomoyuki; and Takahashi, Hisateru, to Daiwa Boseki Kabushiki Kaisha; and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for doffing without interrupting spinning operation in an open end spinning machine. 3,923,260, Cl. 242-18.00A.
Salyer, Ival O.; Wilken, Philip H.; and Ball, George L., III, to Monsanto Research Corporation. Transparent adhesive. 3,923,757, Cl. 260-80.750.
Salzman, Gary C.; Coulter, James R.; Mullaney, Paul F.; and Hiebert, Richard D., to United States of America, Energy Research and Development Administration. Potential sensing cell analyzer. 3,924,180, Cl. 324-71.0CP.
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Sanchez, Gil C. Illuminated yo-yo. 3,924,114, Cl. 240-6.40R.
Sandbank, Carl Peter: *See—*
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Sandy, Charles A., to Du Pont de Nemours, E. I., and Company. Carbon residue inhibitor for distillate fuels. 3,923,473, Cl. 44-62.000.
Sangamo Electric Company: *See—*
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Santilli, Arthur A.; and Scotese, Anthony C., to American Home Products Corporation. (8-Substituted-9-oxoxanthen-3-yloxy) acetamidoximes and nitriles for their preparation. 3,923,831, Cl. 260-335.000.
Santilli, Arthur A.; Scotese, Anthony C.; Bell, Stanley C.; and Rosenthale, Marvin E., to American Home Products Corporation. 1,6-Bis(2-piperidinoethoxy)xanthene-9-one HCl, hydrate in the treatment of inflammation. 3,923,991, Cl. 424-267.000.
Sarco Company: *See—*
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Sartopi, Rolland: *See—*
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Sasajima, Kikuo: *See—*
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Scaglione, Paul J. Fluid flow control valve. 3,923,077, Cl 137-546.000.
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Schlichting, Karl; Horn, Peter; Schlag, Johannes; and Koernig, Wolfgang, to BASF Aktiengesellschaft. Process for stabilizing polyamides. 3,923,735, Cl. 260-45.85R.

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Schmeidl, Karl; Eisert, Manfred; and Riefel, Guenther, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Alcohol-soluble ethyl auramine salts. 3,923,889, Cl. 260-566.00R.

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Schmidt, Hans; and Strabberger, Werner, to Hoechst Aktiengesellschaft. Process for preparing high molecular weight aliphatic carboxylic acids by chromosulfuric acid oxidation of α-olefins. 3,923,848, Cl. 260-413.000.

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Schneider, Kurt; Fahnler, Friedrich; Dhein, Rolf; and Heydenreich, Frieder, to Bayer Aktiengesellschaft. Process for the preparation of polyamides with increase impact strength. 3,923,925, Cl. 260-857.0PG.

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Scholl, Hermann, to Robert Bosch G.m.b.H. Combustion engine ignition timing system. 3,923,022, Cl. 123-117.00R.

Scholz, Donald T., to Polaroid Corporation. Multipurpose audio-visual cassette system. 3,923,386, Cl. 352-72.000.

Schrock, Wilfried; Metzger, Karl-Georg; and Konig, Hans-Bodo, to Bayer Aktiengesellschaft. Penicillins. 3,923,789, Cl. 260-239.100.

Schroder, Heinz-Jurgen, to Siemens Aktiengesellschaft. Emergency water-cooling system for a steam generator for a pressurized-water coolant nuclear reactor. 3,923,007, Cl. 122-32.000.

Schroeder, Guenter: *See—*
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Schroeter, Siegfried H.; Van Winkle, Jon; and French, Carroll B., to General Electric Company. Method of applying an organic coating onto an inorganic coated steel sheet for a magnetic laminate application. 3,924,022, Cl. 427-54.000.

Schroter, Carl; and Mulfinger, Eckhard, to Hermann, Heinrich. Labelling apparatus for printing dispensing and affixing of labels. 3,923,582, Cl. 156-368.000.

Schubert, Bernard, to Hauni-Werke Korber & Co., KG. Apparatus for transporting receptacles. 3,923,173, Cl. 214-301.000.

Schuler Brothers Inc.: *See—*
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Schuler, Emil H.; Schuler, Robert C.; and Lathey, Howard N., to Schuler Brothers Inc. Method and apparatus for applying jackets to covers of books or the like. 3,922,743, Cl. 11-1.00R.

Schuler, Robert C.: *See—*
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Schulman, Bernard L.; and Aldridge, Clyde L., to Exxon Research & Engineering Co. Catalytic upgrading of heavy hydrocarbons. 3,923,635, Cl. 208-50.000.

Schulte-Elte, Karl-Heinrich, to Firmenich S.A. Substituted-3-oxobutanoyl-cyclohexenes. 3,923,896, Cl. 260-586.00R.

Schulte-Elte, Karl-Heinrich, to Firmenich S.A. Process for the oxidation of alkyl-substituted 2-cyclohexen-1-ones. 3,923,898, Cl. 260-586.00P.

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Schutte, Dieter; Diether, Jean; and Brunner, Helmut, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Method of modifying the surface properties of finely divided metal oxides. 3,924,029, Cl. 427-213.000.

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Scott, Harvey; and Morgan, Peter E. D., to Franklin Institute Research Laboratories, The. Method of molding polymers. 3,923,953, Cl. 264-325.000.

Scott, James J. Friction rock stabilizers. 3,922,867, Cl. 61-45.00B.

Scott, John J., to Norton Company. Process for the recovery of tantalum and niobium and other metals from tin slag. 3,923,497, Cl. 75-24.000.

Scott, Norman D. Flowmeter. 3,922,913, Cl. 73-219.000.

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Seelig, Henri F.; and von Waclawiczek, Herbert, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Apparatus for the production of cracked gas. 3,923,466, Cl. 23-284.000.

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Seilinger, Alexandre. Antiperspirant and deodorant composition containing lamellar substances. 3,923,971, Cl. 424-65.000.

Seitz, Helmut, to Franz Morat GmbH, Firma. System for the electronic control of textile machines or for the manufacture of control strips for textile machines. 3,924,244, Cl. 340-172.500.

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Semeia, Roberto, to AMF Mares Sub S.p.A. Composite swim fins. 3,922,741, Cl. 9-309.000.

Semple, Alexander MacGregor, to Ranco Incorporated. Thermostat. 3,924,213, Cl. 337-130.000.

Senolt, Hans; Tomaschko, Heinrich; and Palvik, Georg, to Osterreichische Mineralolverwaltung Aktiengesellschaft. Bitumen blowing. 3,923,633, Cl. 208-6.000.

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Seydl, Wolfgang, to BASF Aktiengesellschaft. Flame-retardant and self-extinguishing molding compositions. 3,923,728, Cl. 260-40.00R.

Shaffer, John W., to GTE Sylvania Incorporated. Moisture indicator for photoflash lamp. 3,923,684, Cl. 252-408.000.

Shaffer, Peter T. B., to Carborundum Company, The. Electrolytic cell for inactivation and destruction of pathogenic material. 3,923,629, Cl. 204-260.000.

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Shapiro, Jonas M.; and Zetena, Maurice, to Executone, Inc. Shielded flexible conductor cable and assembly thereof. 3,923,364, Cl. 339-176.0MF.

Shapiro, Stanley; and Caron, Ronald N., to Olin Corporation. Processing copper base alloys. 3,923,555, Cl. 148-11.50A.

Shapiro, Stanley; Pryor, Michael J.; and Caron, Ronald N., to Olin Corporation. Copper base alloy. 3,923,558, Cl. 148-32.500.

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Shirai, Isoo; Suzuki, Takeshi; and Tonooka, Koichi, to Chisso Corporation. Process for activating catalyst component useful for polymerizing propylene. 3,923,687, Cl. 252-429.00C.

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Zilberman, Leonid Borisovich; Krakhmalnikov, Semen Borisovich; Kudinov, Gennady Alexandrovich; Kutsykovich, Dorina Borisovna; Moiseev, Jury Gavrilovich; and Shneider, Abram Mikhailovich, 3,923,535.

Shock, D'Arcy A.; and Radd, Fred J., to Continental Oil Company. Method of storing heavy hydrocarbon materials in subterranean facilities. 3,922,863, Cl. 61-.500.

Shockovsky, Michael Joseph. Golf glove. 3,922,724, Cl. 2-161.00A.

Shoji, Jun'ichi; Mayama, Mikao; Matsuura, Shinzo; Matsumoto, Kouichi; and Wakisaka, Yoshiharu, to Shionogi & Company, Ltd. Antibiotic 60-6 and production thereof. 3,923,979, Cl. 424-118.000.

Shore, Frank. Multi-utility durable mitered picture frame. 3,922,807, Cl. 40-152.100.

Showa Denko Kabushiki Kaisha: *See—*
Iriko, Fumio; Yuzawa, Yoshihiko; Takeuchi, Setsuyuki; and Ibe, Nobukuni, 3,923,943.

Shuck, Reginald C., to Dolive, Stephen E., a part interest. Hematocrit measuring method. 3,923,397, Cl. 356-39.000.

Shuman, Richard F., to Merck & Co., Inc. 2-Sulfonyloxyethyl 3-trifluoromethylphenoxy-4'-chlorophenyl acetate. 3,923,855, Cl. 260-456.00R.

Shumrak, George K.: *See—*
Mack, Anthony C.; and Shumrak, George K., 3,924,100.

Shur-Rane Corporation: *See—*
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Shutak, Paul N.: *See—*
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Shvarts, Samuil Noevich: *See—*
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Siemens Aktiengesellschaft: *See—*
Bodlaj, Viktor, 3,923,395.
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Silicon Materials, Inc.: *See—*
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Silver, Spencer F.: *See—*
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Gobran, Ramsis; Knoepfel, Hanspeter; and Silver, Spencer F., 3,924,044.

Silverado Industries, Inc.: *See—*
Arnold, George R., 3,922,879.

Silvestri, Anthony J.; and Naro, Paul A., to Mobil Oil Corporation. Liquefaction of coal. 3,923,634, Cl. 208-10.000.

Simoni, Arnold, to Precision Electronics Components Ltd. Variable attenuator apparatus. 3,924,207, Cl. 333-81.00H.

Simons, Carel Arthur Jan, to U.S. Philips Corporation. Variable optical wedge for scanning a light beam in an apparatus for reading an optically encoded disc. 3,924,063, Cl. 178-6.60R.

Simons, Willi: *See—*
Bollig, Georg; and Simons, Willi, 3,923,092.

Sims, Rex J.; and Stahl, Harold D., to General Foods Corporation. Whipped toppings. 3,924,018, Cl. 426-564.000.

Sinclair, William Robert: *See—*
Feldman, Martin; Rousseau, Denis Lawrence; Sinclair, William Robert; and Weick, Walter Werner, 3,924,093.

Singer Company, The: *See—*
Ares, Roland A., 3,923,098.
Ingham, David; and Lear, Edward C., 3,922,979.
Mishcon, Lester, 3,922,887.

Singer, William, to Troy Chemical Corporation. Urethanes of 1-halogen substituted alkynes. 3,923,870, Cl. 260-482.00C.

Singh, Hakam: *See—*
Hutt, Jack W.; and Singh, Hakam, 3,923,748.

Sinha, Ashok Kumar, to Bell Telephone Laboratories, Incorporated. Use of trapped hydrogen for annealing metal-oxide-semiconductor devices. 3,923,559, Cl. 148-1.500.

Sironval, Cyrille: *See—*
Dujardin, Esther; Kuiper, Ysbrand; Cremer, Rene; and Sironval, Cyrille, 3,923,516.

Sirotenko, Viktor Georgievich: *See—*
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Sitek, George J.; and Revesz, Robert N., to Leco Corporation. Combustion apparatus for analytical instruments. 3,923,464, Cl. 23-253.0PC.

Sitzmann, Michael E.; and Dacons, Joseph C., to United States of America, Navy. Nitro-pyrimidines. 3,923,804, Cl. 260-251.00R.

Sitzmann, Michael E.; and Dacons, Joseph C., to United States of America, Navy. 2,5-Dipicryl thiophenes. 3,923,830, Cl. 260-329.00R.

Skalon, Peter: *See—*
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Skarfelt, Hans TorBjorn: *See—*
Johansson, Karl Olof; Nilsson, Alvar Erling; and Skarfelt, Hans TorBjorn, 3,923,187.

Skinner, James R.; Uitz, Mark O.; and Hait, Paul W., to F. J. L. Corporation. Motion picture viewer with removable cartridge. 3,923,387, Cl. 352-78.00R.

Slater, Charles A., Jr., to Peterson Manufacturing Company. Compression coupling. 3,923,325, Cl. 285-312.000.

Slocum, Charles W., to Thermo-Electronics, Inc. Resistance devices for use in energizing the starting winding of a split phase induction motor. 3,924,222, Cl. 338-220.000.

Smeby, Robert Rudolph: *See—*
Bumpus, Francis Merlin; Khosla, Mahesh Chandra; and Smeby, Robert Rudolph, 3,923,769.
Bumpus, Francis Merlin; Khosla, Mahesh Chandra; and Smeby, Robert Rudolph, 3,923,770.
Bumpus, Francis Merlin; Khosla, Mahesh Chandra; and Smeby, Robert Rudolph, 3,923,771.

Smith, Ernest L., to Phillips Petroleum Company. Container and paperboard blanks for forming same. 3,923,233, Cl. 229-5.500.

Smith, Hubert Stacy, Jr., to Dow Chemical Company, The. Cryogenic construction and article therefor. 3,924,039, Cl. 428-119.000.

Smith, John Joseph, to Stahl-Urban Company. Folding apparatus for a sewing machine. 3,922,978, Cl. 112-147.000.

Smith, John R.; and Bray, James A., to National Steel Corporation. Lubricated metallic container stocks and method of preparing the same and applying an organic coating thereto. 3,923,471, Cl. 29-195.000.

Smith, Percy L.: *See—*
Atkins, Kenneth E.; Harpold, Michael A.; and Smith, Percy L., 3,923,928.

Smith, Schuyler B., to Dow Corning Corporation. Method of preparing fire retardant siloxane foams and foams prepared therefrom. 3,923,705, Cl. 260-2.50S.

Smith, Shirley M.: *See—*
Dugan, James G.; Hancock, Albert S., Jr.; Huston, Kenneth G.; Rosenberg, Bernard L.; Smith, Shirley M.; and Hausske, Gene W., deceased, 3,923,006.

Smith, Stanley W.: *See—*
Katz, Murray; Smith, Stanley W.; and Reitsma, David, 3,923,546.

Smith, William E., to General Electric Company. Process for making 4-butyrolactone. 3,923,835, Cl. 260-343.600.

Smithgall, David Harry, Sr.: *See—*
Dabby, Franklin Winston; and Smithgall, David Harry, Sr., 3,923,373.

SmithKline Corporation: *See—*
Bender, Paul E.; and Loev, Bernard, 3,923,816.
DeMarinis, Robert M.; and Hoover, John R. E., 3,923,799.
Loev, Bernard, 3,923,809.
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Snitko, Nikolai Konstantinovich; Ryndin, Nikolai Ivanovich; Yanson, Alexei Alexeevich; Vovk, Inna Ivanovna; Shvarts, Samuil Noevich; and Pavlov, Arseny Mikhailovich. Method of locating the center of gravity etc. 3,922,906, Cl. 73-65.000.

Societe Anonyme Ato Chimie: *See—*
Fassy, Henri; Lalet, Philippe; and Miletto, Andre, 3,923,764.

Societe Anonyme: Poclain: *See—*
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Societe Anonyme Societe Nouvelle Baele Gangloff: *See—*
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Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Bosund, Sven Ingmar Walton; and Bengtsson, Bengt Lennart, 3,924,005.

Societe d'Optique, Precision Electronique et Mechanique — Sopelem: *See—*
Llop, Helenio; and Lefort, Pierre, 3,923,401.

Societe Europeenne d'Isolateurs en Verre (SEDIVER): *See—*
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Societe Generale de Constructions Electriques et Mecaniques (ALSTHOM): *See—*
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Societe Lignes Telegraphiques et Telephoniques: *See—*
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Societe Nationale Industrielle Aerospatiale: *See—*
Fremont, Maurice, Henri, Louis; Denis, Jean-Francois; and Dzalba-Lyndis, Serve, Yvan, 3,922,899.

Societe Technique de Pulverisation: *See—*
Boris, Michel, 3,923,250.

Soffra Etablissement: *See—*
Piccioli, Dino; and Schmid, Christian, 3,923,937.

Sohma, Akio, to Hitachi, Ltd. Moisture separating and steam reheating apparatus. 3,923,009, Cl. 122-34.000.

Soichet, Samuel. Inflatable intrauterine contraceptive device for postpartum use. 3,923,051, Cl. 128-130.000.

Sokolovsky, Mordechai; and Maayani, Saul. Phenycyclidine for inducing mydriasis in humans. 3,923,990, Cl. 424-267.000.

Solter, Robert L.; and Hansen, Franklin A., to Continental Disc Corporation. Method for producing pre-mounted rupture discs. 3,922,767, Cl. 29-157.00R.

Song, John; and Richmond, Henry, to American Cyanamid Company. 4-Alkyl-2,6-dimethyl-3-hydroxybenzyl esters of 3,3'-dipropionic acid. 3,923,869, Cl. 260-481.00R.

Sony Corporation: *See—*
Nakajima, Heitaro; Kawakami, Hirotake; Tatara, Shokichi; and Kishigami, Jun, 3,923,309.

Sorenson, Marius Walter; Whiteside, Ross Clinton, Jr.; and Hickner, Richard Allan, to Dow Chemical Company, The. Polyols containing ketal groups and polyurethanes prepared therefrom. 3,923,744, Cl. 260-77.5AP.

Sosinski, Charles W., to Thomas & Betts Corporation. Butt-type compression connector. 3,924,057, Cl. 174-94.00R.

Southwire Company: *See—*
Carden, Danny P., 3,923,003.

Sovia, Cedric C.; and Krengel, Kenneth W. Windshield for snow vehicle. 3,923,338, Cl. 296-84.00K.

Sparham, Vaughan R.; and Bixby, Leon C., to Hendrick Manufacturing Company. Floating clarifier mechanism and method. 3,923,649, Cl. 210-20.000.

Spector, George: *See—*
Goldberg, Libby M.; and Spector, George, 3,924,009.

Spector, Richard; and Stretanski, Joseph Anthony, to American Cyanamid Company. Polyolefin light stabilizers. 3,923,733, Cl. 260-45.8NE.

Spence, John R., to Rockwell International Corporation. Driver cell with memory and shift capability. 3,924,247, Cl. 340-173.0CA.

Sperry Rand Corporation: *See—*
Cunningham, James M.; Dorn, Kenneth A.; Howe, James A.; and Mortenson, Charles L., 3,924,143.
Farrell, Robert G., 3,923,075.
Kline, Charles M.; Priepke, Edward H.; Waldrop, Thomas W.; Fisher, Raymond E.; Greiner, James G.; and McCarty, Horace G., 3,922,838.
Potter, Curtis N., 3,922,775.
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Spinks, Ray E.: *See—*
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Spiwak, John J.: *See—*
Toeniskoetter, Richard H.; and Spiwak, John J., 3,923,525.

Spohn, Daniel M., Jr. Adjustable radial arm apparatus for use with a router or the like. 3,923,086, Cl. 144-134.00B.

Spokas, John J., to United States of America, Energy Research and Development Administration. Vibrating fiber electrometer. 3,924,184, Cl. 324-99.00R.

Sprecher & Schuch AG: *See—*
Heutschi, Hans; and Krebs, Peter, 3,924,088.

Spreen, Fred John, to Lawrence Peska Associates, Inc., a part interest. Retractable pouring spout. 3,923,211, Cl. 222-528.000.

Spry, Douglas O., to Eli Lilly and Company. 2-Alkoxycephalosporins. 3,923,795, Cl. 260-243.00C.

Staal, Gerardus B.: *See—*
Henrick, Clive A.; and Staal, Gerardus B., 3,923,871.

Staas, Frans Adrianus; and Severijns, Adrianus Petrus, to U.S. Philips Corporation. Helium 3-helium 4 dilution refrigerator. 3,922,881, Cl. 62-502.000.

Stackpole Components Company: *See—*
Abernethy, Lynn W., 3,924,089.

Stadhouders, Jacobus J.: *See—*
Driessen, Fransiscus M.; Stadhouders, Jacobus J.; and Ubbels, Jacob, 3,924,007.

Stahl, Harold D.: *See—*
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Stahl-Urban Company: *See—*
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Standard Oil Company: *See—*
Bertolacini, Ralph J.; Gutberlet, Louis C.; and Kozinski, Allen A., 3,923,638.
Fenoglio, David J., 3,923,753.

Stanford Research Institute: *See—*
Cavanagh, Leonard Alan, 3,923,462.
Heynick, Louis N.; Westerberg, Eugene R.; Bahr, Alfred J.; and Lee, Robert E., 3,924,136.

Stanhay (Ashford) Limited: *See—*
Gillies, David; and Willis, Robert Anthony, 3,923,206.

Stanley-Mabo: *See—*
Quenot, Michel, 3,922,790.

Staples, Jon T., to Eastman Kodak Company. Process for producing color images by bleaching redox diffusible dye releasers. 3,923,510, Cl. 96-20.000.

Stark, Eberhard, to Robert Bosch G.m.b.H. Digital circuit providing a trigger signal to trigger an event based on operating functions of moving apparatus elements, particularly to trigger an ignition pulse in an internal combustion engine. 3,923,021, Cl. 123-117.00R.

Stark, William Max: *See—*
Hamill, Robert L.; and Stark, William Max, 3,923,980.

Starner, Eugene R.: *See—*
United States of America, National Aeronautics and Space Administration; Nossen, Edward J.; and Starner, Eugene R., 3,924,183.

Stasz, Peter; and Cosentino, Louis C., to Medtronic, Inc. Cardiac signal augmentation apparatus. 3,923,041, Cl. 128-2.06R.

Stauffer Chemical Company: *See—*
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Stearns, George H., to Mill Supply, Inc. Material handling apparatus for hogged fuel. 3,923,149, Cl. 198-106.000.

Stearns, Richard S.; Duling, Irl N.; and Gates, David S., to Sun Ventures, Inc. Ethylene-propylene copolymer oil. 3,923,919, Cl. 260-683.100.

Steele, Joseph W., to United States of America, Navy. Porpoise stranding device. 3,922,812, Cl. 43-100.000.

Steidley, Roy B.: *See—*
Choksi, Pradip V.; and Steidley, Roy B., 3,923,179.
Choksi, Pradip V.; and Steidley, Roy B., 3,923,183.
Choksi, Pradip V.; and Steidley, Roy B., 3,923,184.
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Steinberg, David R.: *See—*
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Stem Industries, Inc.: *See—*
Markowitz, Isral J., 3,923,018.

Stemsrud, Finn; Ullevalseter, Reidar Otto; and Mengkrog, Oystein, to Norges Landbrukshogskole. Method and apparatus for measuring and recording the tension and rigidity of a ski under stress. 3,922,908, Cl. 73-100.000.

Stenzel, Wallace I.; Kufrin, Frederick W.; and Allen, Donald J., to Waukee Engineering Co. Firecheck. 3,923,475, Cl. 48-192.000.

Stephanoff, Nicholas N., to Fluid Energy Processing & Equipment Co. Drying mill for wet granular material. 3,922,796, Cl. 34-10.000.

Stephens, Donald K.: *See—*
Holman, Merle A.; Holman, Michael B.; Stephens, Donald K.; and Hess, William C., 3,923,135.

Sterling Drug Inc.: *See—*
Andrews, Roderic Stafford; Barlow, Christoper George; and Livingstone, John Lewis, 3,923,974.

Stevenson, Fred: *See—*
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Stewart, Sherman A., to Grefco, Inc. Spraying nozzle. 3,923,253, Cl. 239-463.000.

Stichting Bedrijven Van Het Nederlands Instituut Voor Zuivelonderzoek: *See—*
Driessen, Fransiscus M.; Stadhouders, Jacobus J.; and Ubbels, Jacob, 3,924,007.

Stickler, Ray E.; and Hicks, Glenn W. Faucet valve. 3,923,284, Cl. 251-172.000.

Stine, Laurence O.; and Conner, Algie J., to Universal Oil Products Company. Fluidized catalyst regeneration by oxidation in a dense phase bed and a dilute phase transport riser. 3,923,686, Cl. 252-417.000.

Stipanuk, John M.: *See—*
Craft, Lewis John; Roszyk, Leon M.; Stipanuk, John M.; and Szymczak, Eugene B., 3,924,169.

Stockhaus, Klaus: *See—*
Merz, Herbert; Langbein, Adolf; Walther, Gerhard; and Stockhaus, Klaus, 3,923,987.

Stocklin, Helmut; and Keck, Werner, to Dornier GmbH. Device for centering and arresting an aircraft positioned on a take-off and landing platform and starting therefrom and landing thereon. 3,923,274, Cl. 244-115.000.

Stoddard, William H., Jr.: *See—*
Niedrach, Leonard W.; and Stoddard, William H., Jr., 3,923,626.
Niedrach, Leonard W.; and Stoddard, William H., Jr., 3,923,627.

Stoebe, Thomas G.: *See—*
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Stoeckelmann, Guenter: *See—*
Bantel, Karl-Heinz; Eilingsfeld, Heinz; and Stoeckelmann, Guenter, 3,923,845.

Stohr, Arno. Apparatus for the production of thermoplastic articles with burdock-like hooks. 3,923,442, Cl. 425-309.000.

Stolka, Milan; Pearson, James M.; and Yanus, John F., to Xerox Corporation. Process for preparation of 2-anthryl and substituted 2-anthryl functional monomers and polymers. 3,923,762, Cl. 260-89.500.

Stoll, Max: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 3,924,015.

Stolov, Michael. Digital display device. 3,924,227, Cl. 340-336.000.

Stone, Aidan M., to General Electric Company. Safety-start device and circuit controller for domestic appliance. 3,924,085, Cl. 200-61.620.

Stone, Herman: *See—*
O'Brien, John B.; and Stone, Herman, 3,923,491.

Stoner, Jacob G., to General Motors Corporation. Adjustable coupling clamp assembly. 3,923,409, Cl. 403-290.000.

Stonov, Leonid Dmitrievich: *See—*
Melnikov, Nikolai Nikolaevich; Grapov, Artur Felixovich; Kozlova, Tamara Fedorovna; Shakhova, Galina Borisovna; Pokatun, Valery Pavlovich; Stonov, Leonid Dmitrievich; Bakumenko, Ljudmila Alexandrovna; Sergeeva, Tatyana Akimovna; and Titova, Lidia Mikhailovna, 3,923,493.

Storer Broadcasting Company: *See—*
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Story Chemical Corporation: *See—*
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Stragier, Marcel G. Non-stop refuse collection container. 3,923,174, Cl. 214-313.000.

Strauff, Gunther, to Langen & Co. System for limiting the force of reaction in hydraulic servo-control devices. 3,922,953, Cl. 91-371.000.

Strejcek, Jan: *See—*
Houska, Jaroslaw; and Strejcek, Jan, 3,923,232.

Stretanski, Joseph Anthony: *See—*
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Strobe, Carl J.: *See—*
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Structural Fibers, Inc.: *See—*
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Strunk, Fred E. Bleeder valve cleaner. 3,922,746, Cl. 15-104.10R.

Studenroth, Karl E. Chambered piston for an internal combustion engine. 3,923,032, Cl. 123-193.00P.

Studiengesellschaft Kohle m.b.H.: *See—*
Roselius, Wilhelm; Vitzthum, Otto; and Hubert, Peter, 3,923,847.

Stuetz, Dagobert Englebert: *See—*
Gump, Klaus Hannes; and Stuetz, Dagobert Englebert, 3,923,950.

Sturgeon, Hulan D., to Lawrence Peska Associates, Inc., a part interest. Auto desk. 3,922,973, Cl. 108-26.000.

Sturwold, Robert J.; Barrett, Fred O.; and Utz, Walter E., to Emery Industries, Inc. Conversion of distillation residues to useful metal working lubricants. 3,923,702, Cl. 252-56.00S.

Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, to Sumitomo Chemical Company, Limited. Process for the preparation of hydroquinone and/or resorcinol by the cleavage of dihydroperoxides. 3,923,908, Cl. 260-621.00C.

Suga, Michio: *See—*
Umeda, Haruhiko; Suga, Michio; and Iida, Akio, 3,922,803.

Suga, Shigeru. Arc lamp for a weathermeter and provided with magnet means. 3,924,118, Cl. 240-11.20A.

Suggitt, Robert M.: *See—*
Gates, Walter C., Jr.; Suggitt, Robert M.; and Hudson, Ralph B., Jr., 3,923,893.

Sugioka, Isao: *See—*
Suzuki, Haruyoshi; Takino, Thuyoshi; Mori, Naomichi; Sugioka, Isao; Matsuda, Osamu; Sekino, Shozo; and Honma, Hiroyuki, 3,924,091.

Sukys, Julius P.: *See—*
Sukys, V. John; Sukys, Julius P.; Edelmann, Harry E.; and Condon, Thomas E., 3,923,307.

Sukys, V. John; Sukys, Julius P.; Edelmann, Harry E.; and Condon, Thomas E., to C/M/S Marketing Corporation. Puzzle. 3,923,307, Cl. 273-157.00R.

Sullivan, Donald K.: *See—*
Kroll, Raymond A.; and Sullivan, Donald K., 3,922,995.

Sullivan, T. M.: *See—*
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Sullivan, Wayne S. Method for making artificial stone. 3,924,037, Cl. 428-15.000.

Sumida, Carl: *See—*
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Sumitomo Chemical Company, Limited: *See—*
Inaba, Shigeho; Takahashi, Kei; Yamamoto, Michihiro; Mori, Kazuo; Ishizumi, Kikuo; and Yamamoto, Hisao, 3,923,803.
Ishizumi, Kikuo; Mori, Kazuo; Yamamoto, Michihiro; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 3,923,710.
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Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,923,908.

Sumitomo Electric Industries, Ltd.: *See—*
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Sumoto, Misao: *See—*
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Sun Oil Company of Pennsylvania: *See—*
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Sun Ventures, Inc.: *See—*
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Sunbeam Corporation: *See—*
Craft, Lewis John; Roszyk, Leon M.; Stipanuk, John M.; and Szymczak, Eugene B., 3,924,169.

Sundstrom, John A., Jr., to General Motors Corporation. Clothes washer suspension system. 3,922,891, Cl. 68-23.300.

Suno, Masahiro: *See—*
Furukawa, Yoshiyasu; Suno, Masahiro; and Nose, Sawami, 3,923,807.

Sunstar Chemical Industry Co., Ltd.: *See—*
Aoki, Hiroyuki; Mottate, Takeshi; Nakajima, Masao; Ebisui, Kadru; and Nishikawa, Satoshi, 3,923,571.

Surls, Joseph P.: *See—*
Basque, Max G.; Magner, James E.; Surls, Joseph P.; and West, Ben F., 3,923,968.

Susko, James Alan, to Cooper Tire & Rubber Company. Slide projection apparatus. 3,923,390, Cl. 353-95.000.

Suzaki, Hidenori: *See—*
Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Sumoto, Misao; and Imanaka, Hiroshi, 3,924,103.

Suzuki, Haruyoshi; Takino, Thuyoshi; Mori, Naomichi; Sugioka, Isao; Matsuda, Osamu; Sekino, Shozo; and Honma, Hiroyuki, to Nippon Steel Corporation; and Nippon Steel Welding Products Engineering Co., Ltd. Welding method and materials. 3,924,091, Cl. 219-73.000.

Suzuki, Masatosi: *See—*
Kamigaito, Osami; Masaki, Hideyuki; Oki, Masami; Suzuki, Masatosi; and Nakamura, Yasuo, 3,923,698.

Suzuki, Shigeo, to TDK Electronic Company. Golf ball position mark assembly. 3,923,215, Cl. 224-5.00C.

Suzuki, Takeshi: *See—*
Shirai, Isoo; Suzuki, Takeshi; and Tonooka, Koichi, 3,923,687.

Suzuki, Yasuo, to Kabushiki Kaisha Komatsu Seisakusho. Sound arresting device in a vehicle for use in construction work. 3,923,114, Cl. 180-54.00A.

Suzuki, Yoshi: *See—*
Ito, Mikiji; Suzuki, Yoshi; Mizuno, Kiyohiku; and Urano, Susumu, 3,923,023.

Svarz, Jerry J., to Nalco Chemical Company. Thin film catalytic polymerization of water-in-oil emulsions of water-soluble ethylenically unsaturated amide monomers. 3,923,756, Cl. 260-80.30N.

Svensson, Sven Erik: *See—*
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Swelab Instrument AB: *See—*
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Swiecicki, Ignacy, to Allis-Chalmers Corporation. Hydraulic turbine spiral case drain. 3,923,417, Cl. 415-110.000.

Swietek, Donald J.: *See—*
Dorler, Jack A.; Forneris, John L.; and Swietek, Donald J., 3,924,264.

Swingline, Inc.: *See—*
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Swiss Aluminum Limited: *See—*
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Sybron Corporation: *See—*
Andrews, Stephen William; and Woltosz, Stanley, 3,923,063.

Sylvania Electric Products, Inc.: *See—*
Dale, Ernest A.; Dullea, Leonard V.; and Thomas, Martha J. B., 3,923,682.

Synergex Corporation: *See—*
Miller, Donald J.; and Rolie, Gil G., 3,923,196.

Synnatschke, Gotthard; Gueckel, Walter; and Rittig, Falk, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Insecticidal compositions. 3,923,999, Cl. 424-300.000.

Syntex Corporation: *See—*
Chang, Kuang Y.; and Ferrell, Bonnie, 3,924,004.

Szymczak, Eugene B.: *See—*
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Tabata, Hisanobu; and Tabata, Norimasa. Process for pretreating sea water by preheating same in the preparation of brine and fresh water. 3,923,607, Cl. 203-7.000.

Tabata, Norimasa: *See—*
Tabata, Hisanobu; and Tabata, Norimasa, 3,923,607.

Tachibana, Kan-ichi; Nishioka, Michihiro; and Ono, Mikiya, to Mitsubishi Mining & Cement Company Ltd. Small size DC motors. 3,924,148, Cl. 310-220.000.

Tacke, Peter: *See—*
Weissel, Oskar; Metten, Josef; Schwarz, Hans Helmut; Koller, Horst; and Tacke, Peter, 3,923,695.

Takagi, Kunihiko: *See—*
Ando, Hirohito; and Takagi, Kunihiko, 3,923,773.

Takahashi, Hirokazu; and Kato, Masao, to Tokyo Shibaura Electric Co., Ltd. High frequency therapeutic apparatus. 3,924,196, Cl. 328-253.000.

Takahashi, Hisateru: *See—*
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Takahashi, Katsumi: *See—*
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Takahashi, Kei: *See—*
Inaba, Shigeho; Takahashi, Kei; Yamamoto, Michihiro; Mori, Kazuo; Ishizumi, Kikuo; and Yamamoto, Hisao, 3,923,803.

Takahashi, Yoshihiro: *See—*
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Takasago Perfumery Co., Ltd.: *See—*
Komatsu, Akira; Yoshida, Toshio; Akutagawa, Susumu; Norose, Fumitaka; Yamamoto, Takeshi; and Kumasa, Ikuji, 3,923,699.

Takashima, Masaru, to Aikoh Co., Ltd. Heat-insulating board for covering the top surface of a feeder head. 3,923,526, Cl. 106-38.220.

Takayasu, Kiyotelu. Method of manufacturing a heat exchanger. 3,922,768, Cl. 29-157.30R.

Takeda Chemical Industries: *See—*
Sawa, Yoichi; Hattori, Toshinori; Katsube, Susumu; and Goto, Akitoshio, 3,923,866.

Takeda Chemical Industries, Ltd.: *See—*
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Horii, Satoshi; Mizokami, Nariakira; Fujino, Masahiko; Shinagawa, Susumu; Ochiai, Michihiko; and Okutani, Tetsuya, 3,923,798.

Takeda, Mutsuhiko: *See—*
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Takei, Kiyomi; Takahashi, Katsumi; and Kanazawa, Kazuo, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Devices for controlling opening and closing of pressure doors and pressure door equipments incorporating said control devices. 3,922,925, Cl. 74-53.000.

Takemori, Hiroshi: *See—*
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Takemoto, Mikio: *See—*
Miyasaka, Kenzi; Takemoto, Mikio; Kato, Yoshiaki; Uematu, Hiroyuki; Tamaru, Munetaka; Kume, Kazunari; Ohno, Hideshi; and Onda, Mitsuo, 3,922,845.

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Talati, Percy B.; and Dwyer, Daniel T. Ambulation device. 3,923,045, Cl. 128-25.00R.

Talvard, Jean-Pierre: *See—*
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Tamai, Yoshim: *See—*
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Tamaru, Munetaka: *See—*
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Tanaka, Daiichiro: *See—*
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Tanaka, Kiyotugu: *See—*
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Tanaka, Kunihiko: *See—*
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Tanimoto, Kenji: *See—*
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Tanji, Mikiharu, to Ise Electronics Corporation. Educational exercising apparatus. 3,922,799, Cl. 35-48.00R.

Tanksley, Neeld D., to Pacific Pollution Control. Floating boom having rotatable float elements. 3,922,860, Cl. 61-1.00F.

Tannahill, Alex L.: *See—*
Finn, Robert K.; Tannahill, Alex L.; and Laptewicz, Joseph E., Jr., 3,923,782.

Tanus, Antonio. Theater chair automatically movable by remote control. 3,923,300, Cl. 272-18.000.

Tanzer, John J. Bottle carrier device. 3,923,155, Cl. 206-427.000.

Tarnow, Virgil K.; and Doshier, Kenneth E., to Barber-Colman Company. Brushholders and ancillary components mounted on a printed circuit board. 3,924,147, Cl. 310-68.000.

Tarui, Yasuo: *See—*
Hayashi, Yutaka; and Tarui, Yasuo, 3,923,553.

Tashlick, Irving, to Interpace Corporation. Structural polyurethane foam system with an inorganic alkaline sealant suspended therein. 3,923,311, Cl. 277-1.000.

Tatano, Yasuo: *See—*
Mukai, Kosaburo; Oguri, Yasufumi; Tatano, Yasuo; and Kasahara, Yoshikazu, 3,923,015.

Tatara, Seiji; Iwasa, Shozo; and Komura, Shuichi, to Nippon Soda Company, Ltd. Method for production of glass-forming materials. 3,924,030, Cl. 427-213.000.

Tatara, Shokichi: *See—*
Nakajima, Heitaro; Kawakami, Hirotake; Tatara, Shokichi; and Kishigami, Jun, 3,923,309.

Tavernier, Georges Antoine, to Societe Anonyme Societe Nouvelle Baele Gangloff. Apparatus for coating labels with adhesive and applying them to objects such as bottles. 3,923,589, Cl. 156-568.000.

Taylor, John T.: *See—*
Ogle, David G.; and Taylor, John T., 3,922,957.

Taylor, Robert; and Kleiman, Charles, to Lake Chemical Company. Product display and article dispensing device. 3,923,159, Cl. 211-49.00D.

Taylor, Ruel E.; and Wormwood, Alston R., to Ruel E. Taylor, Inc. Method and apparatus for forming an even edged pile of flexible sheets. 3,923,299, Cl. 271-221.000.

TDK Electronic Company: *See—*
Suzuki, Shigeo, 3,923,215.

Teach, Eugene G., to Stauffer Chemical Company. Gem-bis amide herbicide antidote compositions and methods of use. 3,923,494, Cl. 71-88.000.

Tech/Ops Massachusetts: *See—*
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Technology Marketing Incorporated: *See—*
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Tenneco Chemicals, Inc.: *See—*
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Terwilliger, Bruce: *See—*
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Terzian, Rouben T.; and Glass, Marvin I., to Marvin Glass & Associates. Doll with motorized legs driven in unison and arms driven in unison thereby. 3,922,813, Cl. 46-119.000.

Tesalon Anstalt: *See—*
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Texaco Inc.: *See—*
Crawford, Wheller C.; Doyle, William P.; and Patterson, John A., 3,923,846.
Flournoy, Norman E., 3,923,251.
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Texas Instruments Incorporated: *See—*
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Culley, Bobby Gene; and Kehren, Engelbert Wolfgang, 3,922,847.
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Textron Inc.: *See—*
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Theeuwes, Felix, to Alza Corporation. Electroosmotic pump and fluid dispenser including same. 3,923,426, Cl. 417-48.000.

Theeuwes, Felix: *See—*
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Theissen, Robert James, to Mobil Oil Corporation. Phenoxybenzonitriles. 3,923,858, Cl. 260-465.00F.

Thermo-Electronics, Inc.: *See—*
Slocum, Charles W., 3,924,222.

Thiele, Geraldine H. Injectable solution. 3,924,000, Cl. 424-318.000.

Thomas & Betts Corporation: *See—*
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Thomas, Manuel A., to Deering Milliken Research Corporation. Nonwicking container. 3,923,238, Cl. 229-48.00T.

Thomas, Martha J. B.: *See—*
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Thompson, Harold Godfred: *See—*
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Thomspon, Francis T.; and Bauer, James A., to Westinghouse Electric Corporation. Electric vehicle having improved battery reconnect. 3,923,116, Cl. 180-65.00R.

Thornbury, Thomas R.: *See—*
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Thune, Robert E.: *See—*
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Tibbs, Robert C. Forward angle plow sweep. 3,923,104, Cl. 172-730.000.

Tilg, Robert: *See—*
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Tillis, Robert. Shear control for extruder apparatus. 3,923,290, Cl. 259-191.000.

Tilly, Peter E.: *See—*
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Timmerman, Daniel Maurice; and De Winter, Walter Frans, to Agfa-Gevaert N.V. Recording material having an electroconductive layer comprising the reaction product of epihalohydrin with polyethylenemine. 3,923,505, Cl. 96-1.500.

Tingley, Albert Sanford: *See—*
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Tippy, William. Cut and hold pliers. 3,922,781, Cl. 30-124.000.

Titova, Lidia Mikhailovna: *See—*
Melnikov, Nikolai Nikolaevich; Grapov, Artur Felixovich; Kozlova, Tamara Fedorovna; Shakhova, Galina Borisovna; Pokatun, Valery Pavlovich; Stonov, Leonid Dmitrievich; Bakumenko, Ljudmila Alexandrovna; Sergeeva, Tatyana Akimovna; and Titova, Lidia Mikhailovna, 3,923,493.

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Toeniskoetter, Richard H.; and Spiwak, John J., to Ashland Oil, Inc. Foundry compositions. 3,923,525, Cl. 106-38.300.

Tokuno, Masateru, to Shizuoka-Kogyo Co., Ltd. High speed multicylinder machine for manufacturing a multi-ply paper. 3,923,595, Cl. 162-300.000.

Tokyo Shibaura Electric Co., Ltd.: *See—*
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Tomasik, Georges: *See—*
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Tomiati, Umberto. Faucet with controlled torque closure. 3,923,283, Cl. 251-77.000.

Tonooka, Koichi: *See—*
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Toppan Printing Co., Ltd.: *See—*
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Torige, Kazuo: *See—*
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Torii, Nozomu; and Furuya, Yoshikatsu, to Aisin Seiki Kabushiki Kaisha. Door latch device for vehicles. 3,923,329, Cl. 292-216.000.

Tornay, Edmund George, to Conch International Methane Limited. Liquefied gas tanker construction using stiffener members. 3,922,987, Cl. 114-74.00A.

Tovi, Murray. Rotational lighting system. 3,924,119, Cl. 240-52.00R.

Toyo Boseki Kabushiki Kaisha: *See—*
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Treffers, Willem Marinus, to Technisch Adviesbureau Treffers B.V. Air outlet casing. 3,922,959, Cl. 98-40.00A.
Tregay, John L.; and Boros, Paul Z., to Comfax Communications, Inc. Facsimile transceiver utilizing single light source. 3,924,061, Cl. 178-6.000.
Treichler, Hans-Joerg; and Nuesch, Jakob, to Ciba-Geigy Corporation. Process for the manufacture of cephalosporin C. 3,923,601, Cl. 195-78.000.
Trentani, Claudio; and Cortesi, Sergio Sandrolini. Joint prosthesis. 3,922,726, Cl. 3-1.912.
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Tsukamoto, Sakichi. Systematic fingernail polishing method. 3,923,070, Cl. 132-73.000.
Tsunekawa, Akio: *See—*
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Turboplast-France: *See—*
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Turcotte, Paul, to Beloit Corporation. Method and apparatus for aligning paper machinery. 3,923,402, Cl. 356-152.000.
Turk, Chester Frank: *See—*
Krapcho, John; and Turk, Chester Frank, 3,923,816.
Turnbo, Roy G.; and Keyworth, Donald A., to Tenneco Chemicals, Inc. Method of removing aromatic compounds olefins, acetylenes and carbon monoxide from feed streams. 3,923,958, Cl. 423-245.000.
Turner, Jacob C.; and Elliott, Douglas M., to Koss Corporation. Headphone with cross feeding ambience control. 3,924,072, Cl. 179-1.0GP.
Turner, James W.; and Spinks, Ray E., to United States of America, Navy. Automatic power adapter for manual quick-release connectors. 3,922,762, Cl. 24-230.00R.
Tyler, Hugh J., to Robertshaw Controls Company. Burner ignition system having safety switch with remote reset. 3,923,445, Cl. 431-71.000.
Tyler, William J.; and Von Beckmann, Helmut, to Canron, Inc. Moving projector system. 3,922,969, Cl. 104-8.000.
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Uebelhart, James J.; Spicuzza, John P., Jr.; and Mills, Frank J. E., to Arco Polymers, Inc. Process for preparing self-extinguishing expandable polystyrene. 3,923,706, Cl. 260-2.50B.
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Wei, Peter H. L., to American Home Products Corporation. Substituted carboximidic acid esters of 7-(2-mercaptoacetamido) cephalosporanic acid derivatives. 3,923,797, Cl. 260-243.00C.
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Weingarten, Charles Z., to Kendall Company, The. Multi-chamber syringe. 3,923,058, Cl. 128-218.00R.
Weiss, Donald Eric; and Battaerd, Hendrik Adriaan Jacobus, to Commonwealth Scientific and Industrial Research Organisation; and Imperial Chemical Industries of Australia and New Zealand Limited. Process for liquid/liquid extraction. 3,923,651, Cl. 210-21.000.
Weissel, Oskar; Metten, Josef; Schwarz, Hans Helmut; Koller, Horst; and Tacke, Peter, to Bayer Aktiengesellschaft. Catalyst for manufacturing highly purified 2-hydroxy-diphenyl catalyst and method of preparing catalyst. 3,923,695, Cl. 252-465.000.
Weitze, Artur; and Leskovar, Peter, to Siemens Aktiengesellschaft. Process for the production of layer circuits with conductive layers on both sides of a ceramic substrate. 3,922,777, Cl. 29-628.000.
Welch, Cletus N.; and Martinsons, Aleksandrs, to PPG Industries, Inc. Method of joining silicon metal. 3,923,609, Cl. 204-16.000.
Weldun Tool & Engineering Co.: *See—*
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Welker, George W., III, to American Home Products Corporation. Container. 3,923,178, Cl. 215-1.00C.
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Wells, Rodney Lee; and Crescentini, Lamberto, to Allied Chemical Corporation. Antistatic fiber containing chain-extended tetrols based on diamines. 3,923,924, Cl. 260-830.00P.
Welstead, William John, Jr.; and Merriman, Burt Trosey, Jr., to A. H. Robins Company, Incorporated. 2-(2-pyridyl)-ω-phenylalkylamines. 3,923,988, Cl. 424-263.000.
Wemmer, Otto. Combined steam and abrasive material cleaning device. 3,922,817, Cl. 51-12.000.
Weseloh, Roger J.; and Kanjo, Wajih, to Universal Railway Devices Company. Hand brake for railroad cars. 3,923,287, Cl. 254-150.00R.
Wessells, Forrest A.; and Pickard, John E., to W. R. Grace & Co. Air etching of polymeric printing plates. 3,922,751, Cl. 15-306.00R.
West, Ben F.: *See—*
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Westlinning, Hermann; Wolff, Siegfried; and Schwarze, Werner, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Processes for improving the processing characteristics of vulcanized elastomers. 3,923,724, Cl. 260-33.6AQ.
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Willcox, Frederick P. Printer with code-controlled tabulator structure. 3,923,138, Cl. 197-179.000.
Willem, Michel, to Societe Europeenne d'Isolateurs en Verre (SEDIVER). Manufacture of insulators. 3,923,570, Cl. 156-73.600.
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Williams, Dale D.; and Miller, Roman R., to United States of America, Navy. Method and apparatus for detecting dissolved gases in liquids. 3,922,904, Cl. 73-19.000.
Williams, Edward B., Jr. Drill tool. 3,923,108, Cl. 175-227.000.
Williams, Edward B., Jr. Drill tool. 3,923,109, Cl. 175-340.000.
Williams, Frank J., to General Electric Company. Process for separating N-methyl-nitrophthalimides. 3,923,828, Cl. 260-326.00N.
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Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., to Firmenich & Cie. Flavoring agent. 3,924,015, Cl. 426-538.000.

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Woods, John W. Apparatus for cleaning metallic surfaces. 3,922,991, Cl. 114-222.000.

Woodward, Morton P., to Universal Instruments Corporation. Solid state bridge circuit for D.C. servo systems. 3,924,168, Cl. 318-257.000.

Wootten, William A. Method of forming a board structure comprising spaced panels joined by intervening tabs. 3,923,575, Cl. 156-211.000.

Worden, Leonard R., to Kalamazoo Spice Extraction Company. Production of hoplike beverage bittering materials. 3,923,897, Cl. 260-586.00D.

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Wulff, Harald P., to Shell Oil Company. Epoxidation process with improved heterogeneous catalyst. 3,923,843, Cl. 260-348.50L.

Wunnenberg, Hans; and Schobel, Alfred. Clamping ring having a closure member made of synthetic plastics material. 3,922,758, Cl. 24-16.0PB.

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Yanda, Roman L. Method for acquisition of exhalation tidal volume and minute ventilation data. 3,923,043, Cl. 128-2.080.

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Yannone, Robert A.; and Shields, James J., to Westinghouse Electric Corporation. Gas turbine power plant control apparatus including a two-shot shutdown system. 3,924,141, Cl. 290-40.000.

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Yoshimura, Yoshio; Yokogawa, Kanae; and Nishimura, Shinzo, to Dainippon Pharmaceutical Co., Ltd. Purification of microorganism cells lytic enzyme. 3,923,600, Cl. 195-66.00R.

Young, Douglas L. G., to Canadian Ingersoll-Rand Company Limited. Drum-type debarking apparatus including log deflector means. 3,923,087, Cl. 144-208.00B.

Young, Herbert, to Kidde Merchandising Equipment Group. Rolling shelf system. 3,923,354, Cl. 312-201.000.

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Zeide, Michael S.; and Shaps, Spencer N. Medical limb harness. 3,923,050, Cl. 128-94.000.

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Zeiler, Andrew G.; and Babad, Harry, to Story Chemical Corporation. Preparation of substituted isothiocyanates. 3,923,852, Cl. 260-454.000.

Zeiler, Andrew G., to Story Chemical Corporation. Preparation of substituted isothiocyanates. 3,923,853, Cl. 260-454.000.

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Shapiro, Jonas M.; and Zetena, Maurice, 3,923,364.

Ziemba, Victor F., to Detrex Chemical Industries, Inc. Phosphate coating composition and method. 3,923,554, Cl. 148-6.15Z.

Zilberman, Leonid Borisovich; Krakhmalnikov, Semen Borisovich; Kudinov, Gennady Alexandrovich; Kutsykovich, Dorina Borisovna; Moiseev, Jury Gavrilovich; and Shneider, Abram Mikhailovich. Heat insulating material. 3,923,535, Cl. 106-84.000.

Zoecon Corporation: *See—*
Henrick, Clive A., 3,923,868.
Henrick, Clive A.; and Staal, Gerardus B., 3,923,871.

Zoephel, Richard L., to Kendall Company, The. Conformable surgical drape. 3,923,052, Cl. 128-132.00D.

Zuercher, Carl J., deceased (by Zuercher, Ernestine, executrix), to Atha, Beatrice Z. Shelf stable multi-use composition, preparation and use. 3,923,984, Cl. 424-195.000.

Zuercher, Ernestine, executrix: *See—*
Zuercher, Carl J., deceased, 3,923,984.

Zuideveld, Reinder; and Coppens, Mattheus Johannes Martinus, to Koninklije Emballage Industrie Van Leer B.V. Method for reconditioning a container. 3,922,984, Cl. 113-120.0BB.

Zumin, Silvia Tricerri; Riva, Mario; and Iafolla, Giuseppe, to Pierrel S.p.A. Nitrogen containing acyclic isoprenoid compounds in pharmaceutical compositions. 3,923,986, Cl. 424-250.000.

Zwahlen, Guenther: *See—*
Wegmann, Jacques; Becker, Carl; Zwahlen, Guenther; and Kuster, Werner, 3,923,452.

3 B & D Products, Incorporated: *See—*
Hampton, Harold E.; and Ellard, Leonard D., 3,924,115.

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER TRIAL VOLUNTARY PROTEST PROGRAM

JANUARY 28, 1975 NOW ISSUED AS PATENTS

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 24,017	3,914,140	Oct. 21, 1975	B 314,977	3,923,459	Dec. 2, 1975
B 24,018	3,914,206	Oct. 21, 1975	B 315,363	3,920,673	Nov. 18, 1975
B 64,868	3,914,141	Oct. 21, 1975	B 315,397	3,923,963	Dec. 2, 1975
B 78,331	3,914,142	Oct. 21, 1975	B 315,731	3,914,108	Oct. 21, 1975
B 112,422	3,913,484	Oct. 21, 1975	B 316,014	3,920,861	Nov. 18, 1975
B 150,560	3,913,654	Oct. 21, 1975	B 316,239	3,913,546	Oct. 21, 1975
B 176,995	3,915,773	Oct. 28, 1975	B 317,347	3,923,552	Dec. 2, 1975
B 198,810	3,916,043	Oct. 28, 1975	B 318,195	3,915,699	Oct. 28, 1975
B 207,272	3,914,123	Oct. 21, 1975	B 318,618	3,915,365	Oct. 28, 1975
B 211,786	3,914,300	Oct. 21, 1975	B 318,745	3,916,571	Nov. 4, 1975
B 220,683	3,914,471	Oct. 21, 1975	B 319,339	3,916,056	Oct. 28, 1975
B 222,188	3,914,739	Oct. 21, 1975	B 319,402	3,919,568	Nov. 11, 1975
B 237,953	3,924,051	Dec. 2, 1975	B 320,261	3,924,033	Dec. 2, 1975
B 239,289	3,922,711	Nov. 25, 1975	B 320,603	3,915,571	Oct. 28, 1975
B 241,433	3,923,711	Dec. 2, 1975	B 321,018	3,921,623	Nov. 25, 1975
B 245,194	3,919,179	Nov. 11, 1975	B 321,101	3,917,163	Nov. 4, 1975
B 248,916	3,920,862	Nov. 18, 1975	B 321,938	3,923,889	Dec. 2, 1975
B 251,109	3,914,148	Oct. 21, 1975	B 322,239	3,920,973	Nov. 18, 1975
B 251,635	3,914,149	Oct. 21, 1975	B 322,564	3,914,373	Oct. 21, 1975
B 252,947	3,923,803	Dec. 2, 1975	B 322,611	3,920,863	Nov. 18, 1975
B 254,211	3,917,677	Nov. 4, 1975	B 323,127	3,923,967	Dec. 2, 1975
B 254,708	3,923,878	Dec. 2, 1975	B 323,191	3,914,566	Oct. 21, 1975
B 255,756	3,923,781	Dec. 2, 1975	B 323,203	3,916,165	Oct. 28, 1975
B 258,687	3,914,221	Oct. 21, 1975	B 323,568	3,920,536	Nov. 18, 1975
B 261,378	3,913,468	Oct. 21, 1975	B 324,879	3,923,538	Dec. 2, 1975
B 262,287	3,921,209	Nov. 18, 1975	B 325,262	3,921,304	Nov. 25, 1975
B 262,378	3,914,410	Oct. 21, 1975	B 327,363	3,923,504	Dec. 2, 1975
B 264,833	3,923,566	Dec. 2, 1975	B 327,674	3,918,540	Nov. 11, 1975
B 265,727	3,914,479	Oct. 21, 1975	B 328,164	3,914,703	Oct. 21, 1975
B 265,862	3,915,915	Oct. 28, 1975	B 328,200	3,916,031	Oct. 28, 1975
B 266,195	3,923,599	Dec. 2, 1975	B 328,205	3,914,106	Oct. 21, 1975
B 269,673	3,914,377	Oct. 21, 1975	B 328,210	3,914,275	Oct. 21, 1975
B 270,089	3,923,875	Dec. 2, 1975	B 328,870	3,916,486	Nov. 4, 1975
B 276,271	3,916,028	Oct. 28, 1975	B 329,476	3,920,562	Nov. 18, 1975
B 276,560	3,916,030	Oct. 28, 1975	B 329,787	3,920,688	Nov. 18, 1975
B 277,449	3,924,048	Dec. 2, 1975	B 329,816	3,923,947	Dec. 2, 1975
B 278,491	3,921,170	Nov. 18, 1975	B 330,828	3,913,589	Oct. 21, 1975
B 278,991	3,914,469	Oct. 21, 1975	B 331,417	3,914,157	Oct. 21, 1975
B 279,583	3,923,749	Dec. 2, 1975	B 331,557	3,916,577	Nov. 4, 1975
B 280,395	3,919,604	Nov. 11, 1975	B 331,895	3,916,403	Oct. 28, 1975
B 281,341	3,920,643	Nov. 18, 1975	B 332,527	3,924,017	Dec. 2, 1975
B 281,943	3,924,013	Dec. 2, 1975	B 333,876	3,921,208	Nov. 18, 1975
B 282,081	3,913,483	Oct. 21, 1975	B 334,868	3,919,469	Nov. 11, 1975
B 283,124	3,923,512	Dec. 2, 1975	B 334,985	3,923,912	Dec. 2, 1975
B 284,297	3,913,722	Oct. 21, 1975	B 335,773	3,920,953	Nov. 18, 1975
B 285,200	3,923,680	Dec. 2, 1975	B 336,129	3,923,606	Dec. 2, 1975
B 285,796	3,914,303	Oct. 21, 1975	B 336,652	3,914,211	Oct. 21, 1975
B 286,499	3,914,129	Oct. 21, 1975	B 336,902	3,918,897	Nov. 11, 1975
B 287,164	3,914,139	Oct. 21, 1975	B 336,946	3,919,425	Nov. 11, 1975
B 287,373	3,918,568	Nov. 11, 1975	B 336,978	3,923,968	Dec. 2, 1975
B 288,627	3,916,179	Oct. 28, 1975	B 337,235	3,919,386	Nov. 11, 1975
B 289,471	3,917,184	Nov. 4, 1975	B 337,442	3,913,658	Oct. 21, 1975
B 289,523	3,921,166	Nov. 18, 1975	B 337,703	3,914,690	Oct. 21, 1975
B 292,054	3,915,877	Oct. 28, 1975	B 337,787	3,923,506	Dec. 2, 1975
B 292,126	3,914,465	Oct. 21, 1975	B 340,212	3,922,645	Nov. 25, 1975
B 292,140	3,914,340	Oct. 21, 1975	B 341,579	3,913,363	Oct. 21, 1975
B 292,563	3,923,653	Dec. 2, 1975	B 342,886	3,923,507	Dec. 2, 1975
B 293,378	3,923,725	Dec. 2, 1975	B 343,136	3,919,453	Nov. 11, 1975
B 293,437	3,913,414	Oct. 21, 1975	B 343,506	3,916,021	Oct. 28, 1975
B 294,579	3,916,737	Nov. 4, 1975	B 343,577	3,921,165	Nov. 18, 1975
B 294,673	3,916,023	Oct. 28, 1975	B 344,479	3,924,042	Dec. 2, 1975
B 295,481	3,921,593	Nov. 25, 1975	B 345,060	3,916,018	Oct. 28, 1975
B 295,674	3,916,107	Oct. 28, 1975	B 345,384	3,916,146	Oct. 28, 1975
B 295,860	3,923,880	Dec. 2, 1975	B 345,422	3,914,392	Oct. 21, 1975
B 299,267	3,917,106	Nov. 4, 1975	B 345,567	3,913,985	Oct. 21, 1975
B 300,353	3,921,734	Nov. 25, 1975	B 346,165	3,913,293	Oct. 21, 1975
B 302,836	3,923,573	Dec. 2, 1975	B 346,210	3,916,142	Oct. 28, 1975
B 303,702	3,914,131	Oct. 21, 1975	B 346,350	3,915,824	Oct. 28, 1975
B 305,417	3,915,882	Oct. 28, 1975	B 346,585	3,913,820	Oct. 21, 1975
B 305,868	3,921,463	Nov. 25, 1975	B 346,613	3,923,545	Dec. 2, 1975
B 305,881	3,923,478	Dec. 2, 1975	B 346,901	3,915,583	Oct. 28, 1975
B 306,938	3,916,050	Oct. 28, 1975	B 348,083	3,923,774	Dec. 2, 1975
B 307,677	3,915,276	Oct. 28, 1975	B 348,383	3,923,452	Dec. 2, 1975
B 308,892	3,919,624	Nov. 11, 1975	B 348,495	3,914,654	Oct. 21, 1975
B 309,207	3,914,743	Oct. 21, 1975	B 348,558	3,914,109	Oct. 21, 1975
B 309,499	3,922,002	Nov. 25, 1975	B 349,141	3,915,363	Oct. 28, 1975
B 309,755	3,919,468	Nov. 11, 1975	B 349,177	3,914,033	Oct. 21, 1975
B 309,756	3,914,136	Oct. 21, 1975	B 349,231	3,915,831	Oct. 28, 1975
B 309,860	3,922,485	Nov. 25, 1975	B 349,321	3,916,103	Oct. 28, 1975
B 310,271	3,923,689	Dec. 2, 1975	B 349,948	3,914,557	Oct. 21, 1975
B 311,317	3,918,975	Nov. 11, 1975	B 350,219	3,917,802	Nov. 4, 1975
B 312,477	3,923,714	Dec. 2, 1975	B 350,245	3,914,331	Oct. 21, 1975
B 313,900	3,915,932	Oct. 28, 1975	B 350,708	3,923,871	Dec. 2, 1975
B 314,049	3,920,588	Nov. 18, 1975	B 350,843	3,915,461	Oct. 28, 1975
B 314,255	3,923,764	Dec. 2, 1975	B 351,055	3,914,074	Oct. 21, 1975
B 314,271	3,921,845	Nov. 25, 1975	B 351,218	3,914,186	Oct. 21, 1975

JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 351,222	3,921,179	Nov. 18, 1975	B 382,021	3,913,212	Oct. 21, 1975
B 351,348	3,923,563	Dec. 2, 1975	B 382,261	3,914,991	Oct. 28, 1975
B 351,421	3,914,733	Oct. 21, 1975	B 382,783	3,919,527	Nov. 11, 1975
B 351,493	3,914,758	Oct. 21, 1975	B 382,840	3,922,007	Nov. 25, 1975
B 351,535	3,915,239	Oct. 28, 1975	B 383 532	3,914,246	Oct. 21, 1975
B 351,665	3,919,701	Nov. 11, 1975	B 384,658	3,913,452	Oct. 21, 1975
B 351,672	3,914,000	Oct. 21, 1975	B 384,773	3,915,416	Oct. 28, 1975
B 351,735	3,913,385	Oct. 21, 1975	B 385,210	3,913,406	Oct. 21, 1975
B 351,863	3,914,700	Oct. 21, 1975	B 387,331	3,913,701	Oct. 21, 1975
B 351,926	3,914,133	Oct. 21, 1975	B 387,687	3,918,151	Nov. 11, 1975
B 351,939	3,913,480	Oct. 21, 1975	B 387,761	3,914,245	Oct. 21, 1975
B 352,934	3,913,692	Oct. 21, 1975	B 387,818	3,918,935	Nov. 11, 1975
B 352,950	3,922,590	Nov. 25, 1975	B 388,580	3,923,712	Dec. 2, 1975
B 352,965	3,921,926	Nov. 25, 1975	B 389,070	3,914,171	Oct. 21, 1975
B 353,317	3,916,446	Nov. 4, 1975	B 389,285	3,914,631	Oct. 21, 1975
B 353,546	3,913,273	Oct. 21, 1975	B 389,639	3,914,626	Oct. 21, 1975
B 354,296	3,914,580	Oct. 21, 1975	B 389,726	3,921,010	Nov. 18, 1975
B 354,889	3,913,204	Oct. 21, 1975	B 389,807	3,922,623	Nov. 25, 1975
B 354,979	3,914,251	Oct. 21, 1975	B 389,932	3,913,268	Oct. 21, 1975
B 355,269	3,914,561	Oct. 21, 1975	B 389,933	3,913,267	Oct. 21, 1975
B 355,510	3,913,704	Oct. 21, 1975	B 390,679	3,913,668	Oct. 21, 1975
B 357,057	3,913,738	Oct. 21, 1975	B 390,732	3,913,878	Oct. 21, 1975
B 357,402	3,914,180	Oct. 21, 1975	B 391,184	3,914,214	Oct. 21, 1975
B 357,803	3,919,470	Nov. 11, 1975	B 391,210	3,914,220	Oct. 21, 1975
B 358,244	3,913,411	Oct. 21, 1975	B 391,437	3,915,416	Oct. 28, 1975
B 358,311	3,923,561	Dec. 2, 1975	B 391,675	3,916,017	Oct. 28, 1975
B 359,174	3,914,117	Oct. 21, 1975	B 392,154	3,923,809	Dec. 2, 1975
B 359,540	3,915,235	Oct. 28, 1975	B 392,696	3,916,175	Oct. 28, 1975
B 359,825	3,921,344	Nov. 25, 1975	B 392,732	3,914,903	Oct. 21, 1975
B 359,946	3,914,132	Oct. 21, 1975	B 392,753	3,916,341	Oct. 28, 1975
B 359,947	3,914,653	Oct. 21, 1975	B 392,894	3,914,763	Oct. 21, 1975
B 360,208	3,923,750	Dec. 2, 1975	B 393,163	3,914,535	Oct. 21, 1975
B 360,296	3,916,720	Nov. 4, 1975	B 393,970	3,914,638	Oct. 21, 1975
B 360,719	3,915,715	Oct. 28, 1975	B 394,088	3,914,740	Oct. 21, 1975
B 361,265	3,923,569	Dec. 2, 1975	B 394,300	3,914,159	Oct. 21, 1975
B 361,569	3,914,554	Oct. 21, 1975	B 394,712	3,916,306	Oct. 28, 1975
B 361,604	3,922,702	Nov. 25, 1975	B 395,478	3,922,577	Nov. 25, 1975
B 361,734	3,915,764	Oct. 28, 1975	B 395,496	3,919,435	Nov. 11, 1975
B 362,589	3,914,012	Oct. 21, 1975	B 395,671	3,920,418	Nov. 18, 1975
B 363,205	3,923,744	Dec. 2, 1975	B 395,889	3,913,190	Oct. 21, 1975
B 363,457	3,922,595	Nov. 25, 1975	B 396,025	3,913,869	Oct. 21, 1975
B 363,892	3,913,395	Oct. 21, 1975	B 396,551	3,921,929	Nov. 25, 1975
B 363,962	3,921,826	Nov. 25, 1975	B 397,027	3,923,736	Dec. 2, 1975
B 364,022	3,913,499	Oct. 21, 1975	B 397,527	3,913,488	Oct. 21, 1975
B 364,163	3,916,092	Oct. 28, 1975	B 397,990	3,914,848	Oct. 28, 1975
B 364,241	3,916,668	Nov. 4, 1975	B 398,262	3,913,481	Oct. 21, 1975
B 364,528	3,919,510	Nov. 11, 1975	B 398,597	3,913,743	Oct. 21, 1975
B 364,786	3,921,673	Nov. 25, 1975	B 398,625	3,920,996	Nov. 18, 1975
B 365,490	3,918,527	Nov. 11, 1975	B 399,292	3,914,810	Oct. 28, 1975
B 365,834	3,914,702	Oct. 21, 1975	B 399,304	3,919,567	Nov. 11, 1975
B 365,855	3,917,258	Nov. 4, 1975	B 399,766	3,915,667	Oct. 28, 1975
B 366,589	3,914,719	Oct. 21, 1975	B 400,293	3,923,719	Dec. 2, 1975
B 367,021	3,914,752	Oct. 21, 1975	B 400,310	3,915,507	Oct. 28, 1975
B 367,661	3,914,158	Oct. 21, 1975	B 402,555	3,914,688	Oct. 21, 1975
B 367,739	3,923,648	Dec. 2, 1975	B 403,140	3,913,486	Oct. 21, 1975
B 368,392	3,913,812	Oct. 21, 1975	B 403,355	3,913,352	Oct. 21, 1975
B 368,397	3,914,677	Oct. 21, 1975	B 403,990	3,914,684	Oct. 21, 1975
B 369,607	3,923,786	Dec. 2, 1975	B 403,996	3,916,016	Oct. 28, 1975
B 369,997	3,913,533	Oct. 21, 1975	B 404,437	3,915,200	Oct. 28, 1975
B 371,085	3,923,783	Dec. 2, 1975	B 405,136	3,915,565	Oct. 28, 1975
B 371,787	3,921,217	Nov. 18, 1975	B 405,137	3,915,566	Oct. 28, 1975
B 371,805	3,914,433	Oct. 21, 1975	B 405,305	3,922,111	Nov. 25, 1975
B 371,836	3,923,541	Dec. 2, 1975	B 405,360	3,913,403	Oct. 21, 1975
B 373,326	3,920,433	Nov. 18, 1975	B 405,938	3,920,109	Nov. 18, 1975
B 373,428	3,915,511	Oct. 28, 1975	B 406,065	3,914,199	Oct. 21, 1975
B 375,220	3,920,417	Nov. 18, 1975	B 408,487	3,924,046	Dec. 2, 1975
B 375,652	3,921,303	Nov. 25, 1975	B 408,749	3,914,116	Oct. 21, 1975
B 376,504	3,914,570	Oct. 21, 1975	B 409,220	3,915,648	Oct. 28, 1975
B 376,654	3,922,513	Nov. 25, 1975	B 409,251	3,922,620	Nov. 25, 1975
B 376,799	3,913,955	Oct. 21, 1975	B 409,816	3,921,317	Nov. 25, 1975
B 377,172	3,918,255	Nov. 11, 1975	B 410,062	3,923,855	Dec. 2, 1975
B 377,833	3,913,884	Oct. 21, 1975	B 410,168	3,914,717	Oct. 21, 1975
B 377,869	3,917,002	Nov. 4, 1975	B 411,145	3,914,168	Oct. 21, 1975
B 378,621	3,923,840	Dec. 2, 1975	B 411,356	3,919,649	Nov. 11, 1975
B 379,038	3,923,994	Dec. 2, 1975	B 411,633	3,914,741	Oct. 21, 1975
B 379,172	3,914,379	Oct. 21, 1975	B 413,006	3,914,850	Oct. 28, 1975
B 379,282	3,913,462	Oct. 21, 1975	B 415,113	3,915,717	Oct. 28, 1975
B 379,955	3,913,157	Oct. 21, 1975	B 415,124	3,915,944	Oct. 28, 1975
B 380,014	3,921,915	Nov. 25, 1975	B 415,847	3,914,208	Oct. 21, 1975
B 380,310	3,921,048	Nov. 18, 1975	B 416,598	3,923,473	Dec. 2, 1975
B 380,312	3,913,953	Oct. 21, 1975	B 416,710	3,923,746	Dec. 2, 1975
B 380,446	3,923,836	Dec. 2, 1975	B 417,299	3,918,235	Nov. 11, 1975
B 380,900	3,913,307	Oct. 21, 1975	B 418,302	3,913,252	Oct. 21, 1975
B 381,074	3,919,583	Nov. 11, 1975	B 419,327	3,921,197	Nov. 18, 1975
B 381,632	3,914,732	Oct. 21, 1975	B 420,016	3,914,572	Oct. 21, 1975
B 381,847	3,921,152	Nov. 18, 1975	B 420,514	3,923,929	Dec. 2, 1975

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER TRIAL VOLUNTARY PROTEST PROGRAM

JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 421,026	3,914,785	Oct. 21, 1975	B 437,172	3,913,251	Oct. 21, 1975
B 421,797	3,914,023	Oct. 21, 1975	B 437,195	3,914,618	Oct. 21, 1975
B 422,949	3,921,873	Nov. 25, 1975	B 437,450	3,922,479	Nov. 25, 1975
B 424,415	3,919,458	Nov. 11, 1975	B 438,053	3,916,013	Oct. 28, 1975
B 424,462	3,920,522	Nov. 18, 1975	B 439,168	3,919,676	Nov. 11, 1975
B 425,035	3,914,025	Oct. 21, 1975	B 439,669	3,921,499	Nov. 25, 1975
B 425,345	3,922,015	Nov. 25, 1975	B 440,898	3,921,789	Nov. 25, 1975
B 425,470	3,923,796	Dec. 2, 1975	B 441,024	3,913,629	Oct. 21, 1975
B 425,539	3,916,742	Nov. 4, 1975	B 441,416	3,913,851	Oct. 21, 1975
B 425,541	3,914,051	Oct. 21, 1975	B 442,280	3,914,054	Oct. 21, 1975
B 425,572	3,923,822	Dec. 2, 1975	B 442,859	3,918,570	Nov. 11, 1975
B 427,631	3,921,433	Nov. 25, 1975	B 445,471	3,914,711	Oct. 21, 1975
B 428,177	3,914,624	Oct. 21, 1975	B 445,740	3,923,612	Dec. 2, 1975
B 428,795	3,921,056	Nov. 18, 1975	B 449,647	3,916,797	Nov. 4, 1975
B 429,442	3,923,485	Dec. 2, 1975	B 450,499	3,920,526	Nov. 18, 1975
B 430,106	3,918,941	Nov. 11, 1975	B 450,927	3,913,844	Oct. 21, 1975
B 430,140	3,922,084	Nov. 25, 1975	B 455,520	3,922,543	Nov. 25, 1975
B 430,798	3,918,204	Nov. 11, 1975	B 455,775	3,914,356	Oct. 21, 1975
B 430,944	3,922,096	Nov. 25, 1975	B 456,346	3,914,531	Oct. 21, 1975
B 432,373	3,919,670	Nov. 11, 1975	B 461,872	3,919,586	Nov. 11, 1975
B 433,587	3,914,567	Oct. 21, 1975	B 467,684	3,915,119	Oct. 28, 1975
B 435,343	3,919,244	Nov. 11, 1975			

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 2ND DAY OF DECEMBER, 1975

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Barbee, Robert B. Process for preparing a polyester fabric having desirable stain-release, antisoil-redeposition, antistatic and hydrophilic properties. T941,008, 12–2–75, Cl. 8—115.5.

Beech, John A.: *See*—
Giering, John E., Beech, and Camougis. T941,017.

Bevington, Richard E., Jr.: *See*—
Morrison, Kyle E., Bevington, Jr. and Duram. T941,011.

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152.1 3,922,807

CLASS 43
4 3,922,808
7 3,922,809
17.2 3,922,810
42.39 3,922,811
100 3,922,812

CLASS 44
50 3,923,472
62 3,923,473
66 3,923,474

CLASS 46
119 3,922,813

CLASS 48
192 3,923,475

CLASS 49
28 3,922,814
205 3,922,815
408 3,922,816

CLASS 51
12 3,922,817
40 3,922,818
101R 3,922,819
142 3,922,820
284R 3,922,821
295 3,923,476

CLASS 52
63 3,922,822
80 3,922,823
94 3,922,824
116 3,922,825
204 3,922,826
245 3,922,827
368 3,922,828
623 3,922,830
667 3,922,829
704 3,922,831
742 3,922,832
753C 3,922,833

CLASS 53
138A 3,922,834
167 3,922,835
234 3,922,837
248 3,922,836

CLASS 55
25 3,923,477
68 3,923,478
163 3,923,479
257 3,923,480
398 3,923,481
412 3,923,482
463 3,923,483

CLASS 56
344 3,922,838

CLASS 57
58.89 3,922,840
58.95 3,922,839
145 3,922,841

CLASS 58
4A 3,922,842
16D 3,922,843
23D 3,922,845
23R 3,922,844
50R 3,922,847
58 3,922,846
125C 3,922,848

CLASS 60
39.28R 3,922,850
39.32 3,922,851
39.51R 3,922,849
226R 3,922,852
325 3,922,853
413 3,922,854
421 3,922,855
464 3,922,856
562 3,922,857
3,922,858
665 3,922,859

CLASS 61
5 3,922,863
1F 3,922,860
3,922,861
3,922,862
35 3,922,864
38 3,922,865
41A 3,922,866
45B 3,922,867
46.5 3,922,868
53.5 3,922,869
72.3 3,922,870

CLASS 62
5 3,922,871
48 3,922,872
84 3,922,873
155 3,922,874
156 3,922,875
180 3,922,876
238 3,922,877
384 3,922,878
458 3,922,879
498 3,922,880
502 3,922,881

CLASS 64
2R 3,922,882
7 3,922,883
19 3,922,884

CLASS 65
18 3,923,484
24 3,923,485
30E 3,923,486
110 3,923,487
114 3,923,488

CLASS 66
50B 3,922,885
50R 3,922,886
132T 3,922,887
192 3,922,888

CLASS 68
12R 3,922,889
23 3,922,890
23.3 3,922,891
3,922,892

CLASS 70
13 3,922,893
18 3,922,894
100 3,922,895
223 3,922,896
232 3,922,897

CLASS 71
61 3,923,489
67 3,923,490
76 3,923,491
3,923,492
87 3,923,493
88 3,923,494
111 3,923,495

CLASS 72
43 3,922,898
128 3,922,899
225 3,922,900
298 3,922,901
453 3,922,902

CLASS 73
15.6 3,922,903
19 3,922,904
28 3,922,905
65 3,922,906
67.7 3,922,907
100 3,922,908
115 3,922,909
118 3,922,910
194A 3,922,911
204 3,922,912
219 3,922,913
290R 3,922,914
302 3,922,915
354 3,922,916
356 3,922,917
379 3,922,918
418 3,922,919
422TC 3,922,920
432R 3,922,921
462 3,922,922

CLASS 74
2 3,922,923
3.5 3,922,924
53 3,922,925
63 3,922,926
242.13R 3,922,927
492 3,922,928
562 3,922,929
665B 3,922,930
745 3,922,931
763 3,922,932
866 3,922,933

CLASS 75
.5AA 3,923,496
24 3,923,497
35 3,923,498
78 3,923,499
156.5 3,923,500
166C 3,923,501
170 3,923,502

CLASS 81
9.51 3,922,934
52.4R 3,922,935

CLASS 82
28 3,922,936

CLASS 83
99 3,922,937
100 3,922,938
299 3,922,939
364 3,922,940
417 3,922,941
620 3,922,942

CLASS 84
1.01 3,922,944
1.17 3,922,943
319 3,922,945

CLASS 85
1S 3,922,946
77 3,922,947

CLASS 89
1.5F 3,922,948
36L 3,922,949

CLASS 90
13.2 3,922,950
15R 3,922,951

CLASS 91
29 3,922,952
371 3,922,953
412 3,922,954
461 3,922,955
491 3,922,956

CLASS 92
137 3,922,957

CLASS 93
33H 3,922,958

CLASS 96
1SD 3,923,503
1.5 3,923,504
3,923,505
3,923,506
1.6 3,923,507
3,923,508
1.8 3,923,509
20 3,923,510
22 3,923,511
27R 3,923,512
29D 3,923,513
35 3,923,514
45.1 3,923,515
48R 3,923,516
50R 3,923,517
75 3,923,518
77 3,923,519
78 3,923,520
90R 3,923,521
115P 3,923,523
115R 3,923,522
140 3,923,524

CLASS 98
40A 3,922,959

CLASS 99
346 3,922,960
427 3,922,961

CLASS 100
53 3,922,962
118 3,922,963

CLASS 101
9 3,922,964
93.04 3,922,965
350 3,922,966
382MV 3,922,772

CLASS 102
38 3,922,967
70.2P 3,922,968

CLASS 104
8 3,922,969
91 3,922,970

CLASS 105
4R 3,922,971
153 3,922,972

CLASS 106
38.22 3,923,526
38.3 3,923,525
47R 3,923,527
52 3,923,528
3,923,529
53 3,923,530
54 3,923,533
56 3,923,531
59 3,923,532
62 3,923,534
84 3,923,535
100 3,923,536
277 3,923,537
298 3,923,538

CLASS 108
26 3,922,973

CLASS 110
8F 3,922,975
8R 3,922,974
9R 3,922,976

CLASS 111
1 3,922,977

CLASS 112
79A 3,922,979
147 3,922,978
197 3,922,980
218R 3,922,981
222 3,922,982
252 3,922,983

CLASS 113
120BB 3,922,984

CLASS 114
66.5R 3,922,994
74A 3,922,986
3,922,987
74R 3,922,985
165 3,922,988
209 3,922,989
221R 3,922,990
222 3,922,991
230 3,922,992
235R 3,922,993

CLASS 115
18R 3,922,995
3,922,996
37 3,922,997

CLASS 116
40 3,922,998
114Q 3,922,999
124R 3,923,000
173 3,923,001

CLASS 118
110 3,923,002
405 3,923,003
637 3,923,004

CLASS 119
1 3,923,005
37 3,923,006

CLASS 122
32 3,923,007
34 3,923,008
3,923,009
483 3,923,010

CLASS 123
1R 3,923,011
8.09 3,923,012
8.47 3,923,013
8.49 3,923,014
32EA 3,923,016
32B 3,923,015
32R 3,923,017
43A 3,923,018
53BA 3,923,019
103C 3,923,020
117A 3,923,023
117R 3,923,021
3,923,022
119B 3,923,024
140J 3,923,026
140R 3,923,025
141 3,923,027
146.5A 3,923,028
148E 3,923,029
3,923,030
179L 3,923,031
193P 3,923,032

CLASS 124
8 3,923,033
20R 3,923,034
24R 3,923,035
30R 3,923,036

CLASS 126
39C 3,923,037
271 3,923,038
3,923,039

CLASS 128
2F 3,923,040
2.06E 3,923,042
2.06R 3,923,041
2.08 3,923,043
25A 3,923,044
25R 3,923,045
75 3,923,046
80F 3,923,047
87R 3,923,048
91R 3,923,049
94 3,923,050
130 3,923,051
132D 3,923,052
142 3,923,053
145.5 3,923,054

145.8 3,923,055
3,923,056
188 3,923,057
218R 3,923,058
237 3,923,059
260 3,923,060
269 3,923,061
272 3,923,062
303.14 3,923,063
329A 3,923,064
348 3,923,065
3,923,066
360 3,923,067

CLASS 132

9 3,923,068
36CC 3,923,069
73 3,923,070

CLASS 134

2 3,923,539
3,923,540
31 3,923,541
47 3,923,071
57D 3,923,073
99 3,923,072

CLASS 135

5AT 3,923,074

CLASS 136

6GC 3,923,542
6LN 3,923,543
30 3,923,544
36 3,923,545
86R 3,923,546
107 3,923,547
133 3,923,548
134P 3,923,549
165 3,923,550
201 3,923,551
234 3,923,552

CLASS 137

68 3,923,080
217 3,923,081
491 3,923,075
495 3,923,076
546 3,923,077
597 3,923,078
614.14 3,923,079

CLASS 138

89 3,923,082

CLASS 139

12 3,923,083

CLASS 141

144 3,923,084
261 3,923,085

CLASS 144

134B 3,923,086
208B 3,923,087

CLASS 145

50A 3,923,088

CLASS 148

1.5 3,923,553
3,923,559
6.15Z 3,923,554
11.5A 3,923,555
16 3,923,556
32 3,923,557
32.5 3,923,558
120 3,923,560
147 3,923,561
187 3,923,562
189 3,923,563

CLASS 149

19.8 3,923,564
60 3,923,565

CLASS 151

41.73 3,923,089

CLASS 156

3 3,923,566
7 3,923,567
8 3,923,568
17 3,923,569
73.6 3,923,570
94 3,923,571
128 3,923,572
192 3,923,573
3,923,574
211 3,923,575
244 3,923,576
251 3,923,577
252 3,923,578
263 3,923,579
272 3,923,580
291 3,923,581
368 3,923,582
378 3,923,583
379 3,923,584
380 3,923,585
394 3,923,586
433 3,923,587
502 3,923,588
568 3,923,589
580 3,923,590

CLASS 157

1.5 3,923,090

CLASS 162

86 3,923,591
168 3,923,592
195 3,923,594
300 3,923,595
301 3,923,593

CLASS 164

4 3,923,091
274 3,923,092
282 3,923,093
337 3,923,094
404 3,923,095

CLASS 165

48 3,923,096
92 3,923,097
111 3,923,098

CLASS 166

249 3,923,099
281 3,923,100

CLASS 171

63 3,923,101

CLASS 172

13 3,923,102
201 3,923,103
730 3,923,104

CLASS 174

15C 3,924,054
40R 3,924,055
48 3,924,056
94R 3,924,057
140R 3,924,058

CLASS 175

4.55 3,923,105
3,923,106
3,923,107
227 3,923,108
340 3,923,109

CLASS 176

75 3,923,596

CLASS 177

210 3,923,110

CLASS 178

5.1 3,924,059
5.6 3,924,060
6 3,924,061
6.6R 3,924,062
3,924,063
6.7R 3,924,066
6.8 3,924,064
7.5DC 3,924,067
22 3,924,074
66R 3,924,065
88 3,924,068

CLASS 179

1GP 3,924,072
1SH 3,924,069
1VC 3,924,070
1H 3,924,073
1.5R 3,924,075
2A 3,924,071
15AL 3,924,077
15BF 3,924,078
15BS 3,924,080
15A 3,924,079
18BC 3,924,082
18EB 3,924,081
100.41M 3,924,076
149 3,924,083

CLASS 180

9.54 3,923,111
24.11 3,923,112
44R 3,923,113
54A 3,923,114
65A 3,923,115
65R 3,923,116
93 3,923,117

CLASS 181

.5 3,923,118
3,923,119
60 3,923,120
112 3,923,121
115 3,923,122
144 3,923,123
156 3,923,124

CLASS 184

6 3,923,125

CLASS 188

77W 3,923,126
82.1 3,923,127
251A 3,923,128

CLASS 191

45 3,924,084

CLASS 192

4B 3,923,129
12A 3,923,130
21 3,923,131
45.1 3,923,132
85R 3,923,133

CLASS 194

9T 3,923,134

CLASS 195

2 3,923,597
31R 3,923,598
66R 3,923,599
3,923,600
78 3,923,601
3,923,603
108 3,923,602
139 3,923,604
142 3,923,605

CLASS 197

1R 3,923,135
87 3,923,136
99 3,923,137
3,923,139
64 3,923,140
151 3,923,141
179 3,923,138

CLASS 198

25 3,923,142
30 3,923,143
30AB 3,923,144
36 3,923,145
37 3,923,146
40 3,923,147
75 3,923,148
106 3,923,149
127R 3,923,150
203 3,923,151

CLASS 200

61.62 3,924,085
82R 3,924,086
144B 3,924,087
148A 3,924,088
159A 3,924,090
159R 3,924,089

CLASS 203

7 3,923,606
3,923,607

CLASS 204

1T 3,923,608
16 3,923,609
32R 3,923,610
35R 3,923,611
43G 3,923,612
53R 3,923,613
99 3,923,614
105M 3,923,615
107 3,923,616
119 3,923,617
157.1H 3,923,618
157.1R 3,923,619
159R 3,923,620
159.17 3,923,621
159.22 3,923,622
181 3,923,623
195G 3,923,625
195M 3,923,627
195R 3,923,626
195S 3,923,624
237 3,923,628
261 3,923,629
266 3,923,630
297W 3,923,631
301 3,923,632

CLASS 206

3 3,923,152
44.11 3,923,153
210 3,923,154
427 3,923,155
454 3,923,156

CLASS 208

6 3,923,633
10 3,923,634
50 3,923,635
58 3,923,636
89 3,923,637
3,923,638
111 3,923,639
3,923,640
3,923,641
164 3,923,642
179 3,923,643
186 3,923,644
206 3,923,645
216 3,923,646

CLASS 209

73 3,923,157
75 3,923,158
166 3,923,647

CLASS 210

12 3,923,648
20 3,923,649
21 3,923,650
3,923,651
67 3,923,652
71 3,923,653
75 3,923,654
83 3,923,655
86 3,923,656
95 3,923,657
108 3,923,658
179 3,923,659
222 3,923,660
242 3,923,661
251 3,923,662
3,923,663
321 3,923,664
501 3,923,665

CLASS 211

49D 3,923,159
73 3,923,160
117 3,923,161
119 3,923,162

CLASS 212

54 3,923,163

CLASS 213

75R 3,923,164

CLASS 214

1BB 3,923,168
1BE 3,923,165
1CM 3,923,166
1D 3,923,167
42R 3,923,169
86A 3,923,170
141 3,923,172
301 3,923,173
313 3,923,174
509 3,923,175
518 3,923,176
650SG 3,923,177

CLASS 215

1C 3,923,178
203 3,923,179
216 3,923,180
224 3,923,181
250 3,923,182
251 3,923,183
3,923,184
253 3,923,185

CLASS 219

73 3,924,091
76 3,924,092
121LM 3,924,093
125PL 3,924,094
125R 3,924,095
130 3,924,096
242 3,924,097
345 3,924,098
371 3,924,099
386 3,924,100
490 3,924,101
497 3,924,102
528 3,924,103

CLASS 220

2.3R 3,923,189
5R 3,923,186
19 3,923,187
20 3,923,188
67 3,923,190
94R 3,923,191
235 3,923,192
269 3,923,193
275 3,923,194
335 3,923,196
344 3,923,197
359 3,923,198

CLASS 221

73 3,923,199
221 3,923,200

CLASS 222

3,923,201
145 3,923,202
153 3,923,203
228 3,923,204
309 3,923,205
371 3,923,206
386 3,923,207
3,923,208
478 3,923,209
494 3,923,210
528 3,923,211

CLASS 223

88 3,923,212
96 3,923,213

CLASS 224

2B 3,923,214
5C 3,923,215
8R 3,923,216
9 3,923,217
32A 3,923,218
42.03A 3,923,219
42.03B 3,923,220
3,923,221
58 3,923,222

CLASS 225

46 3,923,223

CLASS 226

7 3,923,224

CLASS 227

8 3,923,225
3,923,226
3,923,227
132 3,923,228
144 3,923,229

CLASS 228

141 3,923,230
194 3,923,231
221 3,923,232

CLASS 229

5.5 3,923,233
37E 3,923,234
39B 3,923,235
40 3,923,236
43 3,923,237
48T 3,923,238
51C 3,923,239

CLASS 233

7 3,923,241

CLASS 234

128 3,923,242

CLASS 235

61B 3,924,104
61.11E 3,924,105
88R 3,923,243
92PC 3,924,106
150.2 3,924,107
152 3,924,108
153AC 3,924,109
156 3,924,110
3,924,111
3,924,112
181 3,924,113

CLASS 236

49 3,923,244

CLASS 238

347 3,923,245

CLASS 239

2S 3,923,246
14 3,923,247
113 3,923,248
212 3,923,249
321 3,923,250
402.5 3,923,251
411 3,923,252
463 3,923,253

CLASS 240

6.4R 3,924,114
3,924,115
7.1R Re.28,637
10.6R 3,924,116
3,924,117
11.2A 3,924,118
52R 3,924,119

CLASS 241

30 3,923,254
56 3,923,255
76 3,923,256
101.7 3,923,257
207 3,923,258
278R 3,923,259

CLASS 242

18A 3,923,260
35.6E 3,923,264
35.6R 3,923,263
46.2 3,923,261
47.01 3,923,262
55.16 3,923,266
55.2 3,923,265
67.4 3,923,267
68.3 3,923,268
107.4 3,923,269
163 3,923,270
199 3,923,271
3,923,272

CLASS 244

3.16 3,923,273
115 3,923,274
137R 3,923,275

CLASS 248

16 3,923,276
49 3,923,277
301 3,923,278
318 3,923,279
405 3,923,280

CLASS 249

219R 3,923,281

CLASS 250

199 3,924,120
226 3,924,121
236 3,924,122
251 3,924,123
281 3,924,124
303 3,924,125
311 3,924,126
323 3,924,127
328 3,924,128
336 3,924,129
342 3,924,130
360 3,924,131
361 3,924,132
408 3,924,133
423 3,924,134
484 3,924,135
492A 3,924,136
499 3,924,137
502 3,924,138
527 3,924,139

CLASS 251

63.4 3,923,282
77 3,923,283
172 3,923,284
200 3,923,285

CLASS 252

8.55C 3,923,666
12 3,923,667
16 3,923,668
32.7E 3,923,669
42.7 3,923,670
49.5 3,923,671
49.9 3,923,672
56S 3,923,702
59 3,923,673
62 3,923,674
62.9 3,923,675
63.2 3,923,676
89 3,923,677
3,923,678
182 3,923,680
300 3,923,681
301.6P 3,923,682
321 3,923,683
408LC 3,923,685
408 3,923,684
417 3,923,686
429C 3,923,687
432 3,923,688
444 3,923,689
447 3,923,690
455R 3,923,691
3,923,692
459 3,923,693
463 3,923,694
465 3,923,695
467 3,923,696
506 3,923,697
518 3,923,698
522 3,923,699
3,923,700
544 3,923,701

CLASS 254

84 3,923,286
135R 3,923,171
150R 3,923,287

CLASS 259

4 3,923,288
22 3,923,289
99 3,923,679
191 3,923,290
192 3,923,291

CLASS 260

2A 3,923,703
2.5EP 3,923,922
2.5B 3,923,706
2.5N 3,923,704
2.5S 3,923,705
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22R 3,923,708
28.5AV 3,923,711
28.5B 3,923,712
29.2TN 3,923,713
29.6MM 3,923,716
29.6WB 3,923,714
29.6R 3,923,715
29.6S 3,923,717
29.7UA 3,923,718
30.8R 3,923,719
31.2R 3,923,720
32.8A 3,923,722
32.8R 3,923,721
33.6AQ 3,923,724
33.6UA 3,923,723
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45.75B 3,923,734
45.8NE 3,923,733
45.85R 3,923,735
46.5G 3,923,736
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3,923,740
67UA 3,923,742
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77.5AN 3,923,747
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77.5CR 3,923,745
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78A 3,923,751
78L 3,923,749
78R 3,923,750

78.5E 3,923,752
79 3,923,753
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80.75 3,923,757
88.2R 3,923,760
88.2 3,923,758
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88.3A 3,923,761
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92.3 3,923,763
92.8R 3,923,764
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92.8W 3,923,765
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239.75 3,923,792
240A 3,923,794
240F 3,923,793
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248C 3,923,802
251QB 3,923,710
3,923,803
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293.62 3,923,813
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339 3,923,962
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274 3,923,996
279 3,923,997
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300 3,923,999
318 3,924,000
319 3,924,001
331 3,924,002
3,924,003
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	3,924,012	35	3,924,021	175	3,924,028	**CLASS 428**		375	3,924,046	114	3,923,446
523	3,924,013	54	3,924,022	213	3,924,029	15	3,924,037	378	3,924,047	326	3,923,447
534	3,924,014		3,924,023		3,924,030	49	3,924,038	404	3,924,048	354	3,923,448
538	3,924,015	84	3,923,975	217	3,924,031	119	3,924,039	409	Re.28,635	**CLASS 432**	
540	3,924,016	95	3,924,024	220	3,924,032	141	3,924,040	411	3,924,049	59	3,923,449
548	3,924,017	126	3,924,025	226	3,924,033	212	3,924,041	413	3,924,050	115	3,923,450
564	3,924,018	146	3,924,026	228	3,924,034	261	3,924,043	520	3,924,051	138	3,923,451

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	249	237,844		107	237,856		62	237,868			237,880		14B	237,892	D61—	O	237,904
	428	237,845		211	237,857		83	237,869	D22—	22	237,881		K	237,893			237,905
D6—	32	237,846	D8—	59	237,858		103	237,870	D23—	19	237,882	D30—	13	237,894	D64—	11R	237,906
	66	237,848		247	237,859	D13—	26	237,871			237,883	D32—	2	237,895	D77—	1A	237,907
	69	237,847	D9—	23	237,860			237,872		65	237,884	D34—	5CH	237,896	D83—	H	237,908
	142	237,849		44	237,861		87	237,873		66	237,885		K	237,897		8A	237,909
	149	237,850		63	237,862		115	237,874			237,886	D35—	3A	237,898	D92—	15	237,910
	162	237,851		168	237,863		146	237,875		71	237,887	D48—	20E	237,899	D95—	3A	237,911
	251	237,852		192	237,864		162	237,876		901	237,888	D55—	1D	237,901			237,912
D7—	15	237,853			237,865	D19—	62	237,877	D26—	1B	237,889		G	237,900			237,913
	79	237,854	D10—	50	237,867			237,878		13C	237,891	D57—	A	237,903			

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DEFENSIVE PUBLICATIONS APPLICATIONS

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65—	3 T941,012										

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

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	3,923,528		3,922,904		3,923,292		3,924,152		3,923,557		3,923,193
	3,923,887		3,922,915		3,923,312		3,924,158		3,923,558		3,923,236
	3,923,889		3,922,920		3,923,330		3,924,167		3,923,590		3,924,157
	3,923,902		3,922,935		3,923,333		3,924,176		3,923,620		3,924,179
1	3,922,783		3,922,957		3,923,367		3,924,181		3,923,731		3,924,235
	3,923,084		3,922,961		3,923,372		3,924,185		3,923,732	15 :	3,922,753
	3,923,090		3,922,963		3,923,374		3,924,189		3,923,791		3,922,812
	3,923,308		3,922,965		3,923,376		3,924,190		3,923,844	17 :	Re 28,635
	3,923,383		3,922,968		3,923,387		3,924,193		3,923,891		3,922,745
	3,923,402		3,922,975		3,923,413		3,924,229		3,924,036		3,922,813
	3,924,071		3,922,994		3,923,426		3,924,232		3,924,061		3,922,833
	3,924,194		3,923,001		3,923,427		3,924,233		3,924,132		3,922,855
2	3,922,992		3,923,002		3,923,445		3,924,234		3,924,139		3,922,883
	3,923,121		3,923,005		3,923,462		3,924,239		3,924,161		3,922,940
	3,923,443		3,923,020		3,923,494		3,924,241		3,924,230		3,923,032
4	3,922,945		3,923,024		3,923,537		3,924,247	10 :	3,923,472		3,923,034
	3,923,038		3,923,029		3,923,545		3,924,249		3,923,473		3,923,048
	3,923,174		3,923,036		3,923,567		3,924,250		3,923,474		3,923,052
	3,923,216		3,923,043		3,923,568		3,924,251		3,923,509		3,923,058
	3,923,217		3,923,046		3,923,575		3,924,262		3,923,616		3,923,076
	3,923,339		3,923,059		3,923,604		3,924,265		3,923,715		3,923,082
	3,923,342		3,923,062		3,923,612		3,924,267		3,923,745		3,923,111
	3,923,439		3,923,068		3,923,640		3,924,268		3,923,786		3,923,159
	3,923,448		3,923,071		3,923,663	8 :	3,922,749		3,923,966		3,923,167
	3,923,617		3,923,102		3,923,674		3,922,810		3,923,967		3,923,181
	3,924,079		3,923,117		3,923,685		3,922,866		3,924,014		3,923,190
5	3,922,978		3,923,118		3,923,711		3,922,909	11 :	3,923,377		3,923,235
	3,923,892		3,923,135		3,923,748		3,922,985	12 :	3,922,876		3,923,237
6	Re 28,638		3,923,143		3,923,754		3,922,998		3,922,887		3,923,252
	3,922,721		3,923,165		3,923,796		3,923,006		3,922,913		3,923,287
	3,922,723		3,923,169		3,923,802		3,923,074		3,922,918		3,923,313
	3,922,730		3,923,176		3,923,832		3,923,245		3,922,923		3,923,318
	3,922,733		3,923,179		3,923,843		3,923,635		3,922,924		3,923,323
	3,922,736		3,923,182		3,923,856		3,923,959		3,923,014		3,923,327
	3,922,740		3,923,183		3,923,860		3,924,243		3,923,180		3,923,337
	3,922,746		3,923,184		3,923,868	9 :	3,922,952		3,923,304		3,923,341
	3,922,762		3,923,185		3,923,871		3,922,976		3,923,345		3,923,346
	3,922,776		3,923,196		3,923,894		3,922,977		3,923,397		3,923,378
	3,922,787		3,923,203		3,923,939		3,923,039		3,923,697		3,923,381
	3,922,788		3,923,208		3,923,949		3,923,138		3,923,837		3,923,425
	3,922,795		3,923,220		3,923,964		3,923,209		3,923,961		3,923,453
	3,922,802		3,923,221		3,923,968		3,923,229		3,923,984		3,923,531
	3,922,828		3,923,231		3,924,050		3,923,289		3,924,069		3,923,541
	3,922,849		3,923,249		3,924,053		3,923,354		3,924,130		3,923,606
	3,922,860		3,923,253		3,924,062		3,923,364		3,924,154		3,923,646
	3,922,864		3,923,265		3,924,077		3,923,366		3,924,186		3,923,647
	3,922,870		3,923,268		3,924,097		3,923,421		3,924,201		3,923,660
	3,922,878		3,923,273		3,924,109		3,923,422		3,924,212		3,923,662
	3,922,879		3,923,277		3,924,111		3,923,491	13 :	3,922,789		3,923,683
	3,922,892		3,923,278		3,924,136		3,923,546		3,922,902		3,923,694

	3,923,719		3,923,779		3,923,691		3,924,075		3,924,253		3,922,766
	3,923,753		3,923,911		3,923,692		3,924,080		3,924,256		3,922,769
	3,923,756		3,923,995		3,923,992		3,924,093		3,924,263		3,922,780
	3,923,775		3,924,090	29 :	Re 28,637		3,924,159		3,924,264		3,922,781
	3,923,849		3,924,100		3,922,767		3,924,183		3,924,270		3,922,791
	3,924,035		3,924,120		3,922,867		3,924,202	37 :	3,922,773		3,922,796
	3,924,067		3,924,199		3,923,100		3,924,222		3,922,875		3,922,797
	3,924,094		3,924,206		3,923,175		3,924,266		3,922,980		3,922,805
	3,924,106		3,924,210		3,923,233	35 :	3,923,112		3,923,060		3,922,838
	3,924,128		3,924,246		3,923,281		3,923,619		3,923,098		3,922,907
	3,924,135		3,924,258		3,923,490		3,924,180		3,923,146		3,922,914
	3,924,147		3,924,259		3,923,495	36 :	Re 28,634		3,923,154		3,922,916
	3,924,169	26 :	3,922,742		3,923,586		3,922,727		3,923,301		3,922,919
	3,924,174		3,922,765		3,923,679		3,922,729		3,923,334		3,922,930
	3,924,184		3,922,770		3,923,709		3,922,784		3,924,089		3,922,942
	3,924,191		3,922,808		3,923,720		3,922,807	38 :	3,922,811		3,922,971
	3,924,205		3,922,850		3,923,761		3,922,818	39 :	3,922,724		3,922,989
	3,924,224		3,922,889		3,923,827		3,922,829		3,922,731		3,923,000
	3,924,269		3,922,901		3,923,841		3,922,872		3,922,764		3,923,013
18	3,922,744		3,922,929		3,923,972		3,922,873		3,922,820		3,923,056
	3,922,848		3,923,031	31 :	3,923,149		3,922,981		3,922,836		3,923,116
	3,922,851		3,923,075		3,923,596		3,922,987		3,922,859		3,923,166
	3,922,967		3,923,077		3,923,661		3,923,004		3,922,874		3,923,177
	3,922,973		3,923,080	33 :	3,924,115		3,923,030		3,922,891		3,923,178
	3,923,028		3,923,086	32 :	3,923,244		3,923,051		3,922,937		3,923,189
	3,923,045		3,923,089		3,923,353		3,923,057		3,922,946		3,923,197
	3,923,147		3,923,120	30 :	3,922,759		3,923,063		3,922,950		3,923,316
	3,923,164		3,923,124		3,923,202		3,923,101		3,922,955		3,923,349
	3,923,279		3,923,129		3,923,263		3,923,126		3,922,964		3,923,365
	3,923,340		3,923,194		3,923,361		3,923,131		3,922,988		3,923,382
	3,923,356		3,923,201		3,924,172		3,923,228		3,923,073		3,923,415
	3,923,638		3,923,280	34 :	Re 28,636		3,923,270		3,923,085		3,923,416
	3,923,650		3,923,286		3,922,743		3,923,305		3,923,093		3,923,417
	3,923,795		3,923,294		3,922,801		3,923,314		3,923,127		3,923,418
	3,923,812		3,923,351		3,922,830		3,923,363		3,923,152		3,923,479
	3,923,823		3,923,409		3,922,917		3,923,368		3,923,200		3,923,483
	3,923,886		3,923,414		3,922,947		3,923,388		3,923,212		3,923,485
	3,923,980		3,923,423		3,923,011		3,923,396		3,923,213		3,923,488
	3,924,145		3,923,434		3,923,012		3,923,398		3,923,230		3,923,489
	3,924,187		3,923,444		3,923,018		3,923,399		3,923,259		3,923,533
	3,924,192		3,923,451		3,923,050		3,923,429		3,923,291		3,923,551
	3,924,209		3,923,464		3,923,065		3,923,437		3,923,307		3,923,552
19	3,923,407		3,923,482		3,923,188		3,923,446		3,923,355		3,923,560
	3,924,037		3,923,554		3,923,211		3,923,454		3,923,390		3,923,634
	3,924,099		3,923,573		3,923,242		3,923,459		3,923,420		3,923,637
	3,924,216		3,923,593		3,923,290		3,923,484		3,923,424		3,923,644
20	3,922,997		3,923,602		3,923,311		3,923,496		3,923,471		3,923,668
	3,923,049		3,923,628		3,923,373		3,923,503		3,923,487		3,923,669
	3,923,325		3,923,630		3,923,406		3,923,504		3,923,521		3,923,671
	3,923,655		3,923,653		3,923,431		3,923,506		3,923,525		3,923,684
	3,923,665		3,923,654		3,923,433		3,923,510		3,923,556		3,923,688
	3,923,935		3,923,705		3,923,435		3,923,511		3,923,563		3,923,706
21	3,922,798		3,923,717		3,923,441		3,923,512		3,923,572		3,923,722
	3,922,960		3,923,723		3,923,498		3,923,513		3,923,580		3,923,749
	3,923,027		3,923,780		3,923,501		3,923,514		3,923,609		3,923,755
	3,923,088		3,923,785		3,923,515		3,923,518		3,923,611		3,923,797
	3,923,357		3,923,851		3,923,538		3,923,524		3,923,623		3,923,799
	3,923,645		3,923,852		3,923,559		3,923,529		3,923,631		3,923,801
	3,924,085		3,923,853		3,923,564		3,923,530		3,923,656		3,923,809
22	3,923,035		3,923,861		3,923,566		3,923,562		3,923,675		3,923,831
	3,923,054		3,923,862		3,923,574		3,923,576		3,923,702		3,923,910
	3,923,914		3,923,863		3,923,578		3,923,591		3,923,712		3,923,919
23	3,923,040		3,923,864		3,923,579		3,923,597		3,923,747		3,923,936
	3,923,299		3,923,865		3,923,622		3,923,603		3,923,757		3,923,941
	3,923,594		3,923,885		3,923,639		3,923,610		3,923,759		3,923,945
24	3,922,751		3,923,897		3,923,641		3,923,618		3,923,766		3,923,957
	3,922,774		3,923,905		3,923,642		3,923,625		3,923,769		3,923,973
	3,922,827		3,923,916		3,923,700		3,923,626		3,923,770		3,923,991
	3,922,895		3,923,923		3,923,713		3,923,627		3,923,771		3,923,993
	3,923,222		3,923,944		3,923,714		3,923,629		3,923,781		3,923,994
	3,923,243		3,923,951		3,923,716		3,923,657		3,923,881		3,924,000
	3,923,275		3,924,039		3,923,729		3,923,667		3,923,912		3,924,038
	3,923,306		3,924,051		3,923,733		3,923,681		3,923,933		3,924,040
	3,923,352		3,924,056		3,923,734		3,923,696		3,924,016		3,924,092
	3,923,481		3,924,066		3,923,750		3,923,762		3,924,020		3,924,140
	3,923,804		3,924,083		3,923,784		3,923,782		3,924,024		3,924,141
	3,923,830		3,924,122		3,923,792		3,923,828		3,924,025		3,924,160
	3,923,929		3,924,195		3,923,814		3,923,834		3,924,047		3,924,208
	3,923,956		3,924,228		3,923,816		3,923,835		3,924,095		3,924,223
	3,924,104	27 :	3,922,793		3,923,833		3,923,846		3,924,101		3,924,231
	3,924,134		3,922,894		3,923,836		3,923,893		3,924,137	44 :	3,922,898
	3,924,200		3,922,897		3,923,855		3,923,930		3,924,142		3,923,170
25	3,922,775		3,923,041		3,923,858		3,923,948		3,924,164		3,923,385
	3,922,779		3,923,156		3,923,859		3,923,975		3,924,214		3,923,544
	3,922,804		3,923,191		3,923,869		3,924,001		3,924,217		3,924,028
	3,922,821		3,923,198		3,923,870		3,924,009		3,924,218	45 :	3,922,817
	3,922,852		3,923,234		3,923,890		3,924,017		3,924,237		3,922,888
	3,922,869		3,923,293		3,923,901		3,924,018	40 :	3,922,863		3,923,238
	3,922,893		3,923,335		3,923,921		3,924,019		3,922,991		3,923,588
	3,923,044		3,923,338		3,923,931		3,924,022		3,923,157		3,923,592
	3,923,162		3,923,370		3,923,950		3,924,023		3,923,267		3,923,768
	3,923,214		3,923,403		3,923,953		3,924,032		3,923,577	46 :	3,923,456
	3,923,347		3,923,726		3,923,954		3,924,074		3,923,666	47 :	3,922,880
	3,923,375		3,923,739		3,923,962		3,924,113		3,923,672		3,922,905
	3,923,384		3,923,810		3,923,970		3,924,114		3,923,842		3,923,099
	3,923,386		3,923,811		3,923,983		3,924,116		3,923,920		3,923,302
	3,923,389		3,923,840		3,923,989		3,924,117		3,924,123		3,923,449
	3,923,392		3,923,900		3,923,996		3,924,119		3,924,124		3,923,758
	3,923,400		3,924,042		3,923,997		3,924,149	41 :	3,922,934	48 :	3,922,794
	3,923,508		3,924,043		3,923,998		3,924,153		3,922,972		3,922,825
	3,923,519		3,924,044		3,924,003		3,924,156		3,922,990		3,922,832
	3,923,520		3,924,060		3,924,004		3,924,162		3,923,119		3,922,847
	3,923,543		3,924,143		3,924,010		3,924,168		3,923,186		3,922,868
	3,923,608		3,924,219		3,924,057		3,924,178		3,924,198		3,922,921
	3,923,682		3,924,261		3,924,059		3,924,221		3,924,257		3,922,993
	3,923,686	28 :	3,923,104		3,924,068		3,924,252	42 :	3,922,748		3,923,103

	3,923,105		3,923,636		3,924,138		3,923,336		3,922,823		3,922,814
	3,923,106		3,923,643		3,924,175		3,923,436		3,923,199		3,922,995
	3,923,107		3,923,689		3,924,215		3,923,461		3,923,219		3,922,996
	3,923,108		3,923,744		3,924,226		3,923,615		3,923,258		3,923,134
	3,923,109		3,923,746		3,924,242		3,923,822		3,923,952		3,923,148
	3,923,122		3,923,760		3,924,254		3,923,924		3,924,165		3,923,155
	3,923,163		3,923,763		3,924,260		3,923,988	54 :	3,922,999		3,923,284
	3,923,285		3,923,767	49 :	3,922,782		3,924,013		3,923,192		3,923,331
	3,923,322		3,923,947		3,923,317		3,924,034		3,923,648		3,923,475
	3,923,343		3,923,958	50 :	3,922,738		3,924,125		3,923,821		3,923,532
	3,923,348		3,923,963		3,922,752		3,924,182		3,923,882		3,923,934
	3,923,350		3,924,026	51 :	3,922,886		3,924,240		3,923,922		3,924,070
	3,923,460		3,924,049		3,922,941	53 :	3,922,786		3,923,928		3,924,072
	3,923,465		3,924,065		3,923,053		3,922,800	55 :	3,922,747		3,924,098
	3,923,581		3,924,110		3,923,251		3,922,806		3,922,763		

DESIGN PATENTS

4 :	237,898		237,878	25 :	237,904		237,891		237,884		237,895
6 :	237,858		237,879	26 :	237,859	36 :	237,871		237,885	44 :	237,889
	237,872		237,880		237,868		237,888		237,886		237,899
	237,873	12 :	237,861	27 :	237,874		237,902		237,908	47 :	237,881
	237,883	17 :	237,849		237,910		237,905	42 :	237,843	48 :	237,876
	237,894		237,850	32 :	237,907		237,909		237,847		237,897
8 :	237,844		237,896	34 :	237,864	39 :	237,853		237,848	53 :	237,857
9 :	237,852		237,906		237,865		237,854		237,851	55 :	237,856
	237,870	18 :	237,900		237,869		237,855		237,867		237,862
	237,877	24 :	237,860		237,887						

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

6 :	T941,025	34 :	T941,010	39 :	T941,009	T941,002	T941,007		T941,013
8 :	T941,022		T941,023	44 :	T941,012	T941,003	T941,008		T941,016
23 :	T941,006	36 :	T941,005	47 :	T941,001	T941,004	T941,011		T941,024
26 :	T941,014		T941,017						

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Vol. 941 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

December 9, 1975

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DEPARTMENT
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PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

December 9, 1975 Volume 941 Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,142,367, Brown and Downing, CONTROLLED EXPANSION STRUCTURAL BEAM AND GRID STRUCTURE INCLUDING SAME; **3,175,655,** same; **3,297,345,** L. R. Downing, INTERLOCKING BEAM CONNECTORS; **3,388,519,** same, CONTROLLED EXPANSION STRUCTURAL BEAM AND GRID, **filed** Oct. 3, 1975, D.C., W.D.N.Y. (Buffalo), Doc. 75–412, *Roblin Hope's Industries, Inc.* v. *Donn Products, Inc. and Donn Corporation.*

3,175,655. (See 3,142,367.)

3,297,345. (See 3,142,367.)

3,388,519. (See 3,142,367.)

3,206,806, Chavannes and Fielding, APPARATUS FOR EMBOSSING AND LAMINATING MATERIALS; **3,416,984,** same, METHOD AND APPARATUS FOR MAKING CELLULAR MATERIAL FROM THERMOPLASTIC SHEETS; **Reg. No. 922,998** (BUBBLE WRAP), Sealer Air Corporation, **filed** Mar. 28, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–662–RJK, *Sealed Air Corporation* v. *Richard Mossoff, an individual, doing business as Richard's Premiums and Bubble Pak, Inc.* Filed consent judgment and order thereon that court has jurisdiction, plaintiff is owner of patents, defendant has infringed on said patents, defendants' counterclaim is dismissed with prejudice and defendants are enjoined from further infringement of plaintiff's patents, entered June 6, 1975.

3,416,984. (See 3,208,898.)

3,476,232, Merwin and Weiss, PERMANENT MAGNETIC CONVEYOR AND ELEVATOR, **filed** Oct. 7, 1975, D.C., E.D. Mich. (Detroit), Doc. 75–71933, *Eriez Manufacturing Company* v. *Livonia Magnetics, Inc.*

3,481,129, Shepherd, Copple and Tattersall, OPEN END SPINNING APPARATUS, **filed** Oct. 10, 1975, D.C., N.D. Ill. (Freeport), Doc. 75–0051, *Platt Saco Lowell Ltd. et al.* v. *Spindelfabrik Suessen-Schurr, Stahlecker & Grill GmbH et al.*

3,553,737, J. Bauman, METHOD OF APPLYING HAIR, **filed** Sept. 29, 1975, D.C., C.D. Calif. (Los Angeles), Doc. 75–3296–WPG, *Dura-Hair International, Inc.* v. *Plus Hair Center of Beverly Hills, Inc.*

3,677,451, O. J. Burland, SUPPORTING BAR ASSEMBLY FOR VEHICLE, **filed** Aug. 29, 1974, D.C., N.D. Ill (Chicago), Doc. 74c2487, *Oliver J. Burland* v. *Trippe Manufacturing Company.* Enter judgment order in favor of plaintiff, Oct. 8, 1975.

3,731,442, N. T. McFarland, ELEMENTS HAVING ALTERNATING MUTUALLY PERPENDICULAR FORMATIONS PERMITTING INTERFITTING, **filed** Oct. 6, 1975, D.C.N.J. (Newark), Doc. 75–1743, *Plasteco, Inc.* v. *RCA Corporation.* Action transferred from the Southern District of Texas, Oct. 14, 1975.

3,742,908, D. H. Merino, ANIMAL HABITAT; **3,791,346,** Willinger and Dinnerstein, RODENT HABITAT; **3,859,961,** Gilbreath and Yeh, MULTIPLE SCENE LIGHTING CONTROLLER, **filed** Oct. 14, 1975, D.C. Colo. (Denver), Doc. 75–1080, *Mattel, Inc. and Metaframe Corporation* v. *Hartz Mountain Corporation.*

3,745,085, Bertrand and Moltzheim, TIRE BUILDING DRUM FOR POSITIONING A BEAD RING, **filed** Oct. 10, 1975, D.C., S.D.N.Y., Doc. 75–C–5042, *General Foods Corporation* v. *Harry Gorman.*

3,776,832, Oswin and Blurton, ELECTROCHEMICAL DETECTION CELL; **3,824,167,** same, GAS DETECTING AND MEASURING DEVICE, **filed** Oct. 6, 1975, D.C., S.D.N.Y., Doc. 75–C–4925, *Mine Safety Appliance Company and Catalyst Research Corporation* v. *Energetics Science, Inc.*

3,791,346. (See 3,742,908.)

3,802,945, B. G. James, HEAT SENSITIVE NOVELTY DEVICE, **filed** Oct. 2, 1975, D.C., S.D.N.Y., Doc. 75–C–4844, *Bill G. James* v. *Gimbel Brothers, Inc.*

3,831,017, W. F. Auer, SELECTOR TURRET FOR FIBER OPTIC, **filed** Oct. 10, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c3417, *Willmark Products, Co.* v. *American Hospital Supply Corp.*

3,824,167. (See 3,776,832.)

3,841,231, E. J. Hlinsky, SIDE FRAME KEY FOR RETAINING AN AXLE BEARING ASSEMBLY IN A RAILWAY TRUCK, **filed** Mar. 12, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c0790, *MacLean-Fogg Lock Nut Company* v. *R. W. Mac Co. and Robert W. MacDonnell.* Consent judgment, patent is valid and plaintiff is owner. Defendants are permanently enjoined from further infringment, Oct. 10, 1975.

3,859,961. (See 3,742,908.)

3,908,904, Kerner, Mahler and Peters, ULTRASONIC ATOMIZER FOR WASTE SULFURIC ACID AND USE THEREOF IN ACID CRACKING FURNACES, **filed** Oct. 14, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c3442, *Penntube Plastics Co. and National Soda Straw Co.* v. *Union Carbide Corporation.* **Same, filed** Oct. 14, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c3443, *Penntube Plastics Co. et al.* v. *Flexible Plastic Straw Corp.*

3,911,524, C. Parise, STEAM CLEANER DUMP BUCKET, **filed** Oct. 14, 1975, D.C. Colo. (Denver), Doc. 75–1073, *Parise & Sons, Inc.* v. *Magi-Clean, Inc.*

D. 230,658, W. R. Powell, MATERIAL HANDLING BOX; **D. 233,181,** same, STACKABLE MATERIAL HANDLING BOX, **filed** Oct. 14, 1975, D.C., E.D. Wis. (Milwaukee), Doc. 75–587, *Powell Pressed Steel Company* v. *Triple E Corporation.*

D. 233,181. (See D. 230,658.)

Reg. No. 922,998. (See 3,208,898.)

Certificates of Correction for the Week of Dec. 9, 1975

Re. 28,480	3,868,453	3,887,229	3,900,426
Re. 28,507	3,868,576	3,887,383	3,900,789
3,622,542	3,869,107	3,887,458	3,900,898
3,646,262	3,869,502	3,887,569	3,900,933
3,738,236	3,869,671	3,887,752	3,900,988
3,773,146	3,869,774	3,887,811	3,901,037
3,792,988	3,870,026	3,888,105	3,901,489
3,799,721	3,870,709	3,888,995	3,901,647
3,800,203	3,870,767	3,889,451	3,901,823
3,804,068	3,871,262	3,890,387	3,902,055
3,805,532	3,873,521	3,890,460	3,902,729
3,806,215	3,874,339	3,891,456	3,903,146
3,810,982	3,874,349	3,891,561	3,903,223
3,819,528	3,874,886	3,891,805	3,903,363
3,819,560	3,875,112	3,892,057	3,904,007
3,819,611	3,875,304	3,892,216	3,904,099
3,826,113	3,876,236	3,892,219	3,904,155
3,827,721	3,876,827	3,893,062	3,904,305
3,829,482	3,876,837	3,893,461	3,904,405
3,829,770	3,877,299	3,894,685	3,904,482
3,832,389	3,877,446	3,894,699	3,904,511
3,839,476	3,879,135	3,895,114	3,904,534
3,840,589	3,879,489	3,895,722	3,904,700
3,843,520	3,879,794	3,895,729	3,904,795
3,846,136	3,880,584	3,895,952	3,905,066
3,846,138	3,881,105	3,895,953	3,905,537
3,846,475	3,881,423	3,896,659	3,905,613
3,848,876	3,881,496	3,896,666	3,905,911
3,849,391	3,881,535	3,896,685	3,906,129
3,852,323	3,881,634	3,896,764	3,906,131
3,852,630	3,882,087	3,896,963	3,906,150
3,853,643	3,882,753	3,897,225	3,906,309
3,855,144	3,883,507	3,897,321	3,906,410
3,856,552	3,883,600	3,897,559	3,906,453
3,859,042	3,883,613	3,897,911	3,906,473
3,859,078	3,883,853	3,899,328	3,906,941
3,862,032	3,884,015	3,899,391	3,907,097
3,862,260	3,884,533	3,899,672	3,907,366
3,864,573	3,885,543	3,899,768	3,907,631
3,865,867	3,886,068	3,900,024	3,907,953
3,866,490	3,886,194	3,900,138	3,907,960
3,867,608	3,886,334	3,900,210	3,909,342
3,867,642	3,886,569	3,900,256	3,909,641
3,867,656	3,886,871	3,900,380	3,909,839

Service by Publication

Walter Zeitler

In accordance with 37 C.F.R. 1.47(a) (Rules of Practice in Patent Cases), notice is hereby given of the filing on November 25, 1974, of an application for patent entitled "Call Queue Release Control Circuit," on behalf of Walter Zeitler, whose last known address is 773 John Glenn Boulevard, Webster, New York 14580. The application was made in compliance with 37 C.F.R. 1.47(a) and 35 U.S.C. 116 by Siegfried Voise and Thomas M. Wagner without execution by the said Walter Zeitler. Notice of the filing directed to the above noted adress has been returned undelivered.

Any action to be taken by the said Walter Zeitler in connection with the said application must be taken within thirty days of the publication of this notice.

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

Patents Available for Licensing or Sale

3,624,952. HUMANE ANIMAL TRAP. Arthur E. Gordon, 711 Austin Street, Sands Motel, Truth or Consequences, N. Mex. 87901.

3,826,717. QUANTITATIVE ANTIBIOTIC TEST CONTAINER. Dr. Verne E. Gilbert, 301 Blount Professional Building, Knoxville, Tennessee 37920.

The following 3 patents are offered by R. Douglas Rumsey, 148 Summer Street, Buffalo, New York 14222.

3,694,101. REENTRY CENTRIFUGAL PUMP/MIXERS.

3,833,317. ROTARY GEAR MOTOR/PUMP HAVING HYDROSTATIC BEARING MEANS.

3,860,982. CONVERTIBLE TRAILER/BOATS.

3,842,511. INTEGRAL HAND HELD TAILGATING DEVICE. Garth L. Young, Jr., 25441 Via Piedra Blanca Laguna Niguel, California 92677.

3,871,526. TOWEL RACK FOR USE ON BEACHES. Warren Marsack, 5075 Nottingham, Detroit, Mich. 48224.

3,873,119. BOWLING BALL CART. Clyde M. Koch, 3907 Bennington Street, Philadelphia, Pa. 19124.

3,873,152. ADJUSTABLE ORTHOPEDIC LOUNGER. John Garas, 6706 Jefferson, Merriville, Ind. 46410.

3,883,906. ARM PROTECTOR SLEEPING PILLOW. Alray Sumpter, P.O. Box 2657, Monrovia, Liberia, West Africa.

3,885,348. PROTECTIVE STORM DOOR. Edith Swearingen, 750 Shaker Drive, Apt. 305, Lexington, Kentucky 40504.

3,890,915. ANCHOR. Margarete L. Stinnes, New York, N.Y. Correspondence to: Michael J. Striker, 360 Lexington Avenue, New York, N.Y. 10017.

3,899,157. TACK FASTENER AND STRIPPER. Robert Thomas, 30 W. Chicago Ave., Chicago, Ill. 60610.

The following 2 patents are offered by Russell Jones, 6059 Bradshaw Road, Sacramento, Calif. 95826.

3,903,760. CIRCULAR SAW SHARPENING DEVICE.

3,904,198. EXERCISE BAR.

3,916,566. FIRE DOOR STRUCTURE AND FIRE SAFETY INSTALLATION INCLUDING SAID DOOR STRUCTURE. Jeane-Pierre Charles Lacombe, France. Correspondence to: Holman & Stern, 2401 Fifteenth Street NW., Washington, D.C. 20009.

3,916,854. FUEL-FLOW LIMITING APPARATUS. Richard E. Barton and Margaret M. Barton, 3627 Lauristen Place, Fairfax, Va. 22030.

General Electric Company is prepared to grant non-exclusive licenses under the following 44 patents upon reasonable terms to domestic manufacturers.

Application for license under the following 2 patents may be addressed to: General Electric Co., Transportation System Business Division, 2901 East Lake Road, Erie, Pa. 16531.

3,894,279. APPARATUS FOR SYNCHRONOUS SMOOTHING OF CURRENT RIPPLE.

3,897,843. ELECTRIC MOTORIZED WHEEL.

Application for license under the following 5 patents may be addressed to: General Electric Co., Division Patent Counsel, Transformer & Distribution Equip. Business Div., 100 Woodlawn Ave., Pittsfield, Mass. 01201.

3,388,320. VOLTAGE REGULATORS COARSE CONTROL DEVICE UTILIZING CURRENT LIMITING MEANS.

3,542,986. QUICK-MAKE, QUICK-BREAK ACTUATION FOR HIGH VOLTAGE ELECTRICAL CONTACTS.

3,586,802. LOAD BREAK DEVICE WITH ARC EXTINGUISHING MATERIAL.

3,691,291. SPLICE FOR JOINING HIGH VOLTAGE CABLES.

3,763,461. ELECTRIC CABLE TERMINATION MODULE HAVING A GAS-TRAP VALVE.

Application for license under the following 1 patent may be addressed to: General Electric Co., Division Patent Counsel, Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn. 06602.

D. 236,763. DESIGN FOR HAND-HELD DRYER OR SIMILAR ARTICLE.

Application for license under the following 4 patents may be addressed to: General Electric Co., Appliance Components Business Division, 1635 Broadway, Fort Wayne, Ind. 46804.

3,507,765. METHOD FOR ELECTROCATING A POLYAMIDE ACID.

3,588,561. DYNAMOELECTRIC MACHINE STATOR AND LAMINATIONS FOR USE IN SAME.

3,605,466. APPARATUS FOR DRAWING METAL WIRE AND THE LIKE AND THE METHOD THEREOF.

3,650,167. METHOD OF MANUFACTURING MAGNETIC LAMINATIONS FOR DYNAMOELECTRIC MACHINE.

Application for license under the following 1 patent may be addressed to: General Electric Co., Division Patent Counsel, Space Division, P.O. Box 8555, Philadelphia, Pa. 19101.

3,906,367. METHOD AND APPARATUS FOR ERROR CORRECTION IN A DIGITAL DATA TRANSMISSION SYSTEM.

Application for license under the following 13 patents may be addressed to: General Electric Company, Patent Counsel, Silicone Products Department, Chemical and Metallurgical Division, Waterford, N.Y. 12188.

2,916,461. NOVEL ORGANOSILICON COMPOSITIONS.

2,924,601. BETA - (2 - PYRIDYL)ETHYLTRICHLOROSILANE AND PROCESS.

2,970,122. MIXED CATALYSTS FOR CURING SILICONE RESINS.

3,337,597. METHOD FOR MAKING ORGANOSILICON HYDRIDES.

3,378,575. PROCESS FOR MAKING CYCLOTETRASILOXANETETROL.

3,390,162. ORGANOSILICON COMPOUNDS AND METHOD OF MANUFACTURE.

3,391,109. ARYL KETONE CONTAINING ORGANOSILICON MATERIALS.

3,424,656. METHOD FOR RECOVERING ORGANOSILKOXYSILANES BY DISTILLATION WITH A BASE CATALYST.

3,435,001. METHOD FOR HYDROLYZING ORGANOCHLOROSILANES.

3,439,008. METHOD FOR MAKING ORGANOMETALLIC HYDRIDES.

3,466,270. HYDROPYRIDINES, TRIORGANOSILYL HYDROPYRIDINES AND PROCESS FOR THEIR PREPARATION.

3,506,674. CERTAIN PYRIDYL THIOETHER SILANES.

3,523,056. STRETCHABLE SILICONE BONDED, COMPACTED GLASS FABRIC-POLYAMIDE LAMINATE TAPE AND METHOD FOR MAKING THE SAME.

Application for license under the following 18 patents may be addressed to: Patent Counsel, General Electric Company, Building #3, Room 216, Electronics Park, Syracuse, N.Y. 13201.

3,675,153. LASER OPTICAL CONFIGURATION.

3,679,906. FACE-PUMPED LASER DEVICE WITH LATERALLY POSITIONED PUMPING MEANS.

3,679,999. LASER COOLING METHOD AND APPARATUS.

3,703,390. CAPACITOR ENCAPSULANT AND METHOD OF FORMING.

3,708,739. REGULATED ELECTRICAL INVERTER SYSTEM.

3,719,424. RADIANT ENERGY SENSOR.

3,720,941. AUTOMATIC MONOPULSE CLUTTER CANCELLATION CIRCUIT.

3,728,725. TARGET DISPLAY FOR PULSE-ECHO RETURN SYSTEM.

3,744,120. DIRECT BONDING OF METALS WITH A METAL-GAS EUTECTIC.

3,746,081. HEAT TRANSFER DEVICE.

3,750,152. PULSE-ECHO PHASE DISCRIMINATOR USING DELTIC PROCESSING.

3,763,490. ADAPTIVE BEAMFORMER WITH TIME CONSTANT CONTROL.

3,766,634. METHOD OF DIRECT BONDING METALS TO NON-METALLIC SUBSTRATES.

3,769,541. LINE WIDTH MODULATED DISPLAY SYSTEM.

3,774,216. DIRECTION FINDER.

3,778,822. SUM-RANK NORMALIZED DETECTION APPARATUS.

3,778,825. ADAPTIVE QUANTIZING AND INTEGRATING DETECTOR FOR PULSE-ECHO SYSTEMS.

3,854,892. DIRECT BONDING OF METALS WITH A METAL-GAS EUTECTIC.

General Motors Corporation is prepared to grant non-exclusive licenses under the following 12 patents upon reasonable terms.

Application for license may be addressed to the Director, Patent Section, General Motors Building, 3044 West Grand Blvd., Detroit, Mich. 48202.

3,670,854. BRAKE PUMP AIR VALVE AND COOLING MEANS.

3,671,751. PHOTON ENERGY DETECTOR GENERATING SIGNAL IN WHICH DURATIONS OF 1ST AND 2ND HALF CYCLES ARE RESPONSIVE TO PHOTON ENERGY AND DIODE CONTINUITY RESPECTIVELY.

3,689,813. CYCLOCONVERTER SILICON CONTROLLED RECTIFIER GATE SIGNAL DELAY CIRCUIT.

3,702,429. CYCLOCONVERTER SILICON CONTROLLED RECTIFIER GATE-CATHODE CIRCUIT SIGNAL AND POWER SYSTEM.

3,705,642. TRANSMISSION CONTROL SYSTEM.

3,670,624. RAMMER HEAD.

3,681,676. CYCLOCONVERTER SILICON CONTROLLED RECTIFIER INHIBIT CIRCUIT.

3,685,528. TANK VENT.

3,686,895. DAMPED SHAFT COUPLING.

3,688,639. AMMUNITION CANISTER.

3,693,424. RING TESTING MACHINE.

3,699,850. FLUID ACTUATOR WITH LOCK AND CUSHION.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 48 patents.

Inquiries respecting licenses under RCA patents should be addressed to RCA Corporation, Staff Vice President, Domestic Licensing, 30 Rockefeller Plaza, New York, N.Y. 10036.

D. 236,780. CHECK-OUT COUNTER OR SIMILAR ARTICLE.

Re. 28,546. ADJUSTABLE POLARIZATION ANTENNA SYSTEM.

3,903,344. ADHERENT SOLDERABLE CERMET CONDUCTOR.

3,903,479. TRANSISTOR BASE BIASING USING SEMICONDUCTOR JUNCTIONS.

3,903,506. QUASI-CONSTANT RATE VECTOR GENERATOR.

3,903,656. GRINDING MACHINE FOR GENERATING A SURFACE OF REVOLUTION ON A HOLLOW WORKPIECE.

3,904,065. VACUUM SEAL FOR ENVELOPE PORTIONS.

3,904,488. TRUE REPLICATION OF SOFT SUBSTRATES.

3,904,818. REMOVAL OF DARK CURRENT SPIKES FROM IMAGE SENSOR OUTPUT SIGNALS.

3,904,888. CIRCUITS EXHIBITING HYSTERESIS USING TRANSISTORS OF COMPLEMENTARY CONDUCTIVITY TYPE.

3,904,927. VOLTAGE REDUCTION CIRCUIT FOR DEFLECTION YOKE.

3,904,931. OVERVOLTAGE PROTECTION CIRCUIT.

3,904,973. COMBINED AMPLIFIERS WHICH CONSUME SUBSTANTIALLY CONSTANT CURRENT.

3,904,976. CURRENT AMPLIFIER.

3,904,986. GAS LASER TUBE.

3,905,000. ELECTRONIC COMPONENT ASSEMBLY.

3,905,682. LIQUID CRYSTAL DEVICES OF IMPROVED CONTRAST.

3,905,683. DEFORMABLE MIRROR LIGHT VALVE FOR REAL TIME OPERATION.

3,905,691. FILM PROJECTOR APPARATUS.

3,906,258. FAILURE DETECTING AND INHIBITING CIRCUIT.

3,906,277. ELECTRON TUBE HAVING A SEMICONDUCTOR COATED METAL ANODE ELECTRODE TO PREVENT ELECTRON BOMBARDMENT STIMULATED DESORPTION OF CONTAMINANTS THEREFROM.

3,906,304. HIGH VOLTAGE PROTECTION CIRCUIT.

3,906,351. DIGITAL TUNING OF VOLTAGE CONTROL TELEVISION TUNERS.

3,906,408. FREQUENCY TRANSLATOR USING GYROMAGNETIC MATERIAL.

3,906,448. FAULT DETECTION FACILITATING MEANS FOR CARD READER OF IDENTIFICATION CARD READING SYSTEM.

3,906,501. APPARATUS FOR COPYING AN ELECTROSTATIC CHARGE PATTERN IN INTENSIFIED FORM.

3,906,508. MULTIMODE HORN ANTENNA.

3,907,290. ELECTRONIC SCORING SYSTEM FOR BOWLING ESTABLISHMENTS.

3,907,407. ELASTIC LIGHT-SCATTERING MODULAR DEVICE.

3,908,167. EXHAUST-RESPONSIVE ENGINE SPEED AND CONDITION INDICATOR.

3,908,185. HIGH FREQUENCY SEMICONDUCTOR DEVICE HAVING IMPROVED METALLIZED PATTERNS.

3,908,262. SEPARATE INTERDIGITAL ELECTRODES WITHOUT USING ANY SPECIAL PHOTOLITHOGRAPHIC TECHNIQUES.

3,908,981. SHEET WRAPPING AND UNWRAPPING APPARATUS.

3,909,111. CONTROLLED ANGLE VIEWING SCREENS BY INTERFERENCE TECHNIQUES.

3,909,123. INDEXING SYSTEM FOR MICROFICHE VIEWER.

3,909,225. CRYOGENIC DEWAR.

3,909,308. PRODUCTION OF LEAD MONOXIDE COATED VIDICON TARGET.

3,909,517. DISC RECORDS WITH GROOVE BOTTOM DEPTH VARIATIONS.

3,909,518. SIGNAL SWITCHING APPARATUS FOR COMPENSATING RECORD DEFECTS.

3,909,691. DIRECTION INDICATING DISPLAY SYSTEM.

3,909,727. DATA SIGNALING NOISE SUPPRESSION SYSTEM.

3,909,740. LUMPED ELEMENT, BROAD-BAND MICROWAVE APPARATUS USING SEMICONDUCTOR DIODES OPERATING IN THE TRAPATT MODE.

3,909,748. DIGITALLY CONTROLLED OSCILLATOR USING SEMICONDUCTOR CAPACITANCE ELEMENTS.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 8, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	2-3-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-3-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-13-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-6-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-7-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-9-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	10-22-74
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-3-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	4-16-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-13-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	7-10-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-25-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-6-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-18-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-6-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	4-14-75

Expiration of patents: The patents within the range of numbers indicated below expire during December 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,862,205 to 2,866,972 inclusive
Plant Patents..... Numbers 1,775 to 1,791 inclusive

REISSUES

DECEMBER 9, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

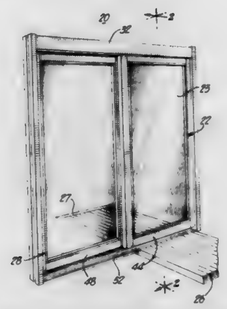
Re. 28,639
AUTOMATIC DOOR OPERATOR

Thomas H. Crocker, Howard Township, Cass County, Mich., assignor to Kawneer Company, Inc., Niles, Mich.

Original No. 3,619,946, dated Nov. 16, 1971, Ser. No. 93,093, Nov. 27, 1970. Application for reissue Nov. 9, 1973, Ser. No. 414,358

Int. Cl. E05f *13/04*

U.S. Cl. 49—264 **9 Claims**



1. An automatic door operator used in opening and closing a door which is mounted upon a door frame for sliding movement in a vertical plane between open and closed positions in response to movement of traffic adjacent the door, said door operator comprising:

a drive cylinder mounted in said door frame and having first and second air inlets;

a piston slidably movable within said drive cylinder between said first and second air inlets;

a cable drive means *extending through said cylinder and secured to said piston for* connecting said piston to said door;

a controlled source of compressed air connected to said first and second air inlets and operable to supply the compressed air to either of said first and second air inlets;

a control means coupled to said controlled source of compressed air and rendering said controlled source effective to supply compressed air to said first air inlet to move said piston toward said second air inlet in response to said traffic; and

cushioning assist means coupled to said control means and operable to render said controlled source effective to supply said air to said second air inlet to retard the movement of said drive piston for a short period of time.

Re. 28,640
METER HOUSING

John T. Sauriol, Dallas, Tex., assignor to Intercontinental Plastics Manufacturing, Dallas, Tex.

Original No. 3,717,963, dated Feb. 27, 1973, Ser. No. 121,480, Mar. 5, 1971. Application for reissue Jan. 15, 1975, Ser. No. 541,214

Int. Cl.² E02D *29/08*

U.S. Cl. 52—19 **7 Claims**

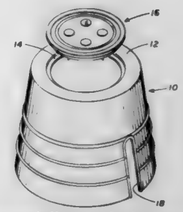
1. A water meter housing assembly comprising:

an upstanding wall defining a frustoconical housing having a cavity open to the bottom and top thereof,

an annular top member integral with said wall at the upper peripheral portion thereof,

an annular flange integrally formed about the inner periphery of said top member and recessed toward the interior cavity of said frustoconical housing, said annular flange defining an opening in the top of said housing,

a cover for said housing including a circular plate dimensioned to fit within the inner periphery of said annular top member and to abut against the upper portion of said annular flange, said cover further including an annular downwardly extending ring of a diameter to fit through said opening defined by said annular flange,



at least one substantially vertical opening to said cavity extending from the bottom portion of said wall to a predetermined location less than the height of said wall, and

a plurality of stabilizer rings extending about the circumference of said wall and vertically spaced along said wall to tend to prevent sinking of said housing.

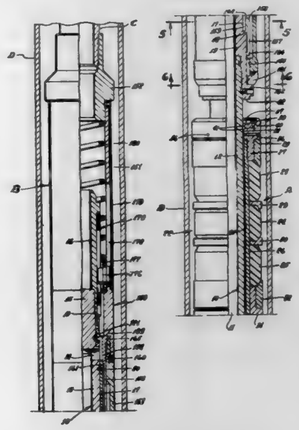
Re. 28,641
RETRIEVABLE SUBSURFACE WELL TOOLS

David V. Chenoweth, Maui, Hawaii, assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Original No. 3,361,207, dated Jan. 2, 1968, Ser. No. 394,402, Sept. 4, 1964. Application for reissue Aug. 7, 1974, Ser. No. 495,545

Int. Cl.² E21B *23/00, 33/12*

U.S. Cl. 166—120 **27 Claims**



17. In a well tool adapted to be set in a well bore: a body; normally retracted packing means on said body; means for expanding said packing means laterally outwardly, comprising abutment means for exerting an expanding force on said packing means; and chamber means surrounding said body and containing a gas under pressure charged into said chamber means at the top of the well bore for exerting a continuous spring-like force on said abutment means to hold said packing means expanded outwardly.

Re. 28,642

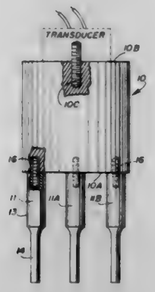
ULTRASONIC RIGID HORN ASSEMBLY

Paul H. Davis, St. Charles, Ill., assignor to Dukane Corporation, St. Charles, Ill.

Original No. 3,780,926, dated Dec. 25, 1973, Ser. No. 259,023, June 2, 1972. Application for reissue Oct. 17, 1974, Ser. No. 515,504

Int. Cl.² B23K *1/06, 5/20*

U.S. Cl. 228—1 **6 Claims**



6. An ultra-sonic tool system for industrial processing with acoustic energy, said system comprising an elongated, straight, rigid, unitary tool holder of rigid material having a longitudinal axis and a length of an intergral number of half-wave lengths at the operating frequency, the transverse dimensions being so proportioned to the length thereof as to minimize undesired modes of transmission other than along the tool holder length, said tool holder having only two ends shaped to provide finished flat sonic energy input and output areas, the tool holder providing a common transmission path for all sonic energy from the input to the output thereof, threaded means at the input end for coupling at least one source of sonic energy thereto; at least two, elongated, rigid tool members laterally spaced from each other each rigidly secured directly to a sonic output area of the tool holder, each tool member having at one end a sonic input area conforming to a sonic tool holder output area in the secured positions of the tool holder and tool members, each tool member having a sonic energy working output tip at its other end, the tool holder output area being great enough to accommodate a plurality of laterally offset secured tool members arranged to create a desired pattern of work areas, each tool member having a length of an integral number of half-wave lengths, said tool holder and tool members being each resonant to the acoustic energy so that efficient transmissions of sonic energy to the work areas result, each tool member being susceptible to individual design with regard to tool member contours, amplitude of sonic energy at a work area and physical length of a tool member, said tool system being sufficiently rigid so that it may be pressed against work without accessories for guiding tool members, at least one of said tool members having at least part of its length of a substantially different transverse dimension than corresponding parts of other tool members so that vibration amplitude differs from other tool members at the work areas.

Re. 28,643

ORNAMENTAL RAILING

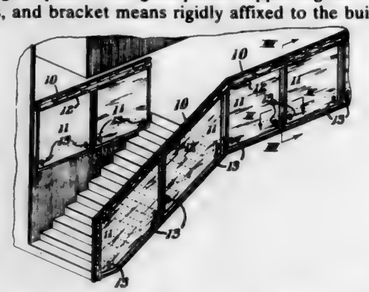
Harry P. Blum, Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh

Original No. 3,358,969, dated Dec. 19, 1967, Ser. No. 513,261, Dec. 13, 1965. Application for reissue Dec. 6, 1974, Ser. No. 530,215

Int. Cl.² E04H *17/14*

U.S. Cl. 256—24 **9 Claims**

1. An ornamental railing comprising a continuous handrail, railing mounting means for connecting said handrail to a building structure and handrail supporting means connecting said mounting means and said handrails comprising a plurality of aligned glass panels, said glass panels supporting said handrail means, and bracket means rigidly affixed to the building



structure retaining said glass panels in substantially rigid spaced relation to said building structure.

Re. 28,644

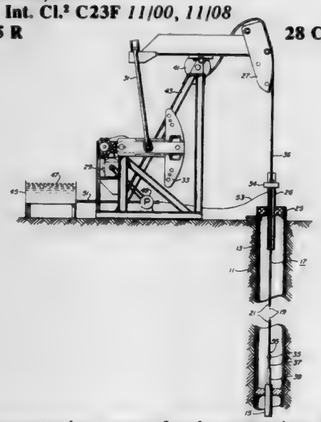
METHOD AND MEANS FOR CORROSION PROTECTION OF CABLES EXPOSED TO UNDERGROUND ENVIRONMENTS

James B. Horton, Bethlehem, and Herbert E. Townsend, Jr., Upper Saucon Township, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Original No. 3,637,341, dated Jan. 25, 1972, Ser. No. 888,551, Dec. 29, 1969. Application for reissue Jan. 22, 1974, Ser. No. 435,559

Int. Cl.² C23F *11/00, 11/08*

U.S. Cl. 21—2.5 R **28 Claims**



1. A corrosion protection system for the protection of cables in subatmospheric corrosive environments comprising:

a. a cable composed of a collection of individual wires,

b. a flexible outer jacket surrounding said cable and partially permeable to corrosion inhibiting liquid at least at the terminal end,

c. a supply of a liquid having a specific gravity substantially similar to the specific gravity of the [fluid constituents] *surrounding fluid medium* of the corrosive environment and being corrosion inhibiting with respect to said environment, and

d. means to introduce said liquid into one end of said cable within said outer jacket at a rate sufficient to maintain a small positive pressure in said cable with respect to said corrosive environment and to replace portions of said liquid passing from within said jacketed cable at least at the opposite terminal end of said cable.

17. A method for protecting plastic-jacketed cables from corrosive subatmospheric environments *where the cables are to be disposed with portions of the cable at substantially different subatmospheric levels in said corrosive environments* comprising *regularly* introducing a corrosion-inhibiting liquid having a specific gravity *selected to be substantially similar to the specific gravity of the surrounding fluid medium of the corrosive environment in which the cable is used and* substantially at least as great as the [principal fluid ingredient] *surrounding fluid medium* of said corrosive environment into a portion of said cable at a rate sufficient to maintain a small positive pressure in said cable with respect to said corrosive environment *and continuously bathe the component wires of said cable in said corrosion inhibiting liquid* and to replace portions of said corrosion-inhibiting liquid passing from within said jacketed cable at least *through an opening extending through the plastic jacket* at an opposite terminal end of said cable.

Re. 28,645

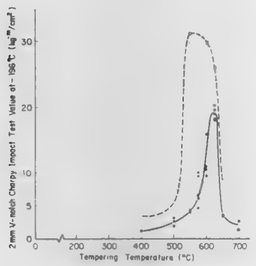
METHOD OF HEAT-TREATING LOW TEMPERATURE TOUGH STEEL

Koichi Aoki, Yokohama; Seinosuke Yano, Kamakura; Hiroshi Mimura; Tohru Inoue, both of Tokyo, and Hiroshi Sakurai, Kawasaki, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Original No. 3,619,302, dated Nov. 9, 1971, Ser. No. 776,421, Nov. 18, 1968. Application for reissue Nov. 5, 1973, Ser. No. 412,625

Int. Cl. C21d *1/26, 7/14*

U.S. Cl. 148—12 F **8 Claims**



1. A heat-treating method for producing a steel having an excellent toughness at an extremely low temperature and a high strength and good workability, from a steel consisting essentially of less than 0.20 wt.% C [.] , 0.05 to 0.40 wt.% Si, 0.10 to 5.0 wt.% Mn, 1.50 to 10.0 wt.% Ni as basic *alloying* component, *with the balance being Fe and the usual impurities*, comprising subjecting a hot-rolled steel plate having the said composition to a heat-treatment comprising heating to a temperature between the Ac_1 transformation point and the Ac_3 transformation point and a subsequent cooling from the said temperature at least at an air cooling rate and thereupon tempering the steel plate at a temperature below the Ac_1 transformation point [.] *but sufficiently high so as to cause precipitation or formation of fine austenite.*

Re. 28,646

REINFORCED POLYAMIDES AND PROCESS OF PREPARATION THEREOF

Ross Melvin Hedrick, Creve Coeur, and William R. Richard, Jr., St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Original No. 3,419,517, dated Dec. 31, 1968, Ser. No. 560,247, June 24, 1966. Continuation of Ser. No. 154,451, June 18, 1971, abandoned. Application for reissue June 20, 1973, Ser. No. 372,880

Int. Cl.² C08L *77/02*

U.S. Cl. 260—37 N **45 Claims**

1. A reinforced polymeric composition comprising a polyamide and at least about 25% by volume of an inorganic filler material having a length to diameter ratio of up to about 25 to 1, said material having been treated with an organosilane coupling agent of the formula

$$X_a\text{—}Si\text{—}[R_n\text{—}Z]_c$$
$$\quad\;\; | \quad\quad\quad\

PLANT PATENTS

GRANTED DECEMBER 9, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,814
STRAWBERRY PLANT
Christian Olson, Rte. 1, Box 61, Aurora Township, Waushara County, Berlin, Wis. 54923
Filed Jan. 6, 1975, Ser. No. 538,961
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—49 **1 Claim**

1. The new and distinct variety of strawberry plant herein described and identified by the characteristics enumerated above.

PATENTS

GRANTED DECEMBER 9, 1975

ERRATA

For CLASS	See PATENT NO.
214–016.4	3,924,300
053–380	3,924,375
164–304	3,924,422
096–033	3,924,520
328–051	3,924,614
172–413	3,924,694
074–242.4	3,924,833
285–340	3,924,877
021–105	3,925,014
156–618	3,925,108
210–038	3,925,192
250–372	3,925,244
204–159.15	3,925,349
423–394	3,925,428

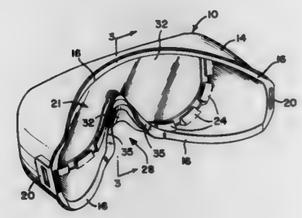
PATENTS

GRANTED DECEMBER 9, 1975

NOTE—A cross reference listing of applications published under Trial Voluntary Protest Program on January 28, 1975 is located in the back of this Issue. These entries will be in numerical order by document publication number.

GENERAL AND MECHANICAL

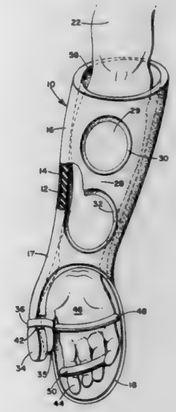
3,924,271
GOGGLES
Jack B. Hirschmann, Jr., Buzzards Bay, Mass., assignor to H. L. Bouton, Company, Buzzards Bay, Mass.
Filed Sept. 9, 1974, Ser. No. 504,051
Int. Cl.² A61F *9/02*
U.S. Cl. 2—14 D **6 Claims**



1. A goggle frame including a front rim and rearwardly extending, peripheral wall substantially completely surrounding said front rim and defining an eye chamber having a reduced portion above and adapted to receive the nose of the wearer, a lens received within said rim, and head strap means attached to said wall for supporting said frame on the head of the wearer, and further characterized by bridge structure for receiving the nose of the wearer composed of a first means comprising saddle portions of said rim and wall defining a recess for receiving the nose of the wearer, a second means comprising a pad means connecting the upper ends of the forward edges of said saddle portions and adapted to seat on the bridge of the wearer's nose, and a third means comprising skirt members integral with and extending toward each other into said recess in substantially the same plane from the rearward edges of said saddle portions, said skirt members being relatively thin and flexible for outward deflection into yieldable overlying engagement with the sides of the wearer's nose to seal the spaces between the nose and said saddle portions.

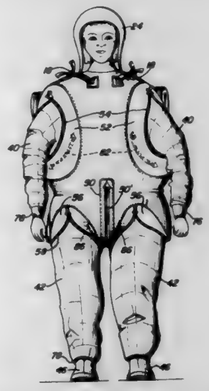
3,924,272
PROTECTIVE DEVICE FOR USE BY FOOTBALL ATHLETES
George H. Allen, 1055 Leigh Mill Road, Great Falls, Va. 22066, and Jhoon Goo Rhee, 2525 N. Ridgeview Road, Arlington, Va. 22207
Filed May 3, 1974, Ser. No. 466,821
Int. Cl.² A41D *13/08*
U.S. Cl. 2—16 **19 Claims**

1. A protective device for use in athletic contests such as football and the like comprising molded casing means having resilient foam means disposed therein; said casing means having portions shaped to conform and to be worn on an athlete's thumb, hand, wrist, arm and elbow; said arm and wrist portions having a generally cylindrical configuration; said hand and thumb portions adapted to cover at least the backs of the palm, fingers, and thumb; said elbow portion adapted to extend beyond the back of the elbow and the upper inner part of said arm portion extending to a point below the inner part of said elbow, whereby an opening for inserting the hand and arm is defined; the planes of said elbow portion and said hand portion being suitably disposed in conjunction with said opening to accommodate bending of the elbow; and



securing means for retaining said device on the hand, wrist and arm.

3,924,273
SLEEP-WALKER BAG
Betty J. Donovan, P.O. Box 1003, Hamilton, Mont. 59840
Filed Jan. 22, 1974, Ser. No. 435,503
Int. Cl.² A41D *15/04*; A47G *9/00*
U.S. Cl. 2—69.5 **20 Claims**



1. In combination with an elongated sleeping bag of the type including head and foot ends and a central entrance and exit portal at least adjacent the terminal end of the head end of said bag, a pair of transversely spaced opposite side closed periphery arm openings formed in said head end portion of said bag and a pair of opposite side closed periphery leg openings formed in said bag spaced longitudinally of said bag from said arm openings toward said foot end and disposed generally centrally intermediate the opposite head and foot ends of said bag, first and second pairs of flexible tubular arm and leg receiving components, respectively, having at least one set of corresponding ends which are open, said one set of open ends

of said tubular components being secured to said bag about said arm and leg openings whereby said bag is adapted to be used as a walker, and supporting means on said bag for supporting the foot end of the bag below said leg opening behind the back of the wearer of the bag when the latter is used as a walker

14. In combination with an elongated sleeping bag of the type including head and foot ends and a central entrance and exit portal at least adjacent the terminal end of the head of said bag, a pair of transversely spaced opposite side arm openings formed in said head end portion of said bag and a pair of opposite side leg openings formed in said bag spaced longitudinally of said bag from said arm openings toward said foot end, first and second pairs of flexible tubular arm and leg receiving components, respectively, having at least one set of corresponding ends which are open, said one set of open ends of said tubular components being secured to said bag about said arm and leg openings, whereby said bag is adapted to be used as a walker said bag comprising a full length mummy bag, said arm and leg openings being formed in the opposite side portions of the head and foot ends thereof, said bag including a bag encircling drawstring assembly spaced slightly above the leg openings and adapted to be utilized to draw the adjacent portion of said bag about the waist of the wearer when the bag is being used as a walker, a major portion of said bag disposed between said drawstring assembly and said arm openings being foldable downwardly and over the exterior of said drawstring assembly.

3,924,274

ADJUNCT AND METHOD FOR FACILITATING IMPLANTATION OF JOINT PROSTHESES

Gunther Heimke, Mannheim; Peter Griss, Plankstadt, and Hanns Frhr. von Andrian-Werburg, Ilvesheim, all of Germany, assignors to Friedrichsfeld GmbH Steinzeug-und Kunststoffwerke, Mannheim, Germany

Filed July 3, 1974, Ser. No. 485,617

Claims priority, application Germany, July 7, 1973, 2334643

Int. Cl.² A61F 1/24

U.S. Cl. 3—1.91 **7 Claims**



1. An aid for use in the process of implanting of a prosthesis in a bone cavity which has been prepared to receive said prosthesis and which includes the application of a mineral cement to the surface of a prosthesis capable of hardening only in a biologically fluid-free environment, comprising a hollow pouch closed at one end and open at the other composed of a barrier film of biologically compatible impermeable material to be disposed between said applied cement and the entire surface of the prepared cavity within which the prosthesis is to be implanted, said impermeable material being resorbable in a biological environment.

3,924,275

ARTIFICIAL JOINT PROSTHESIS USING Al_2O_3 MATERIAL

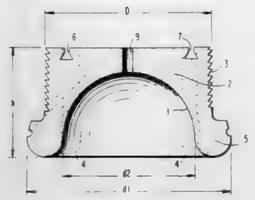
Gunther Heimke, Mannheim; Peter Griss, Plankstadt, and Hanns Frhr. von Andrian-Werburg, Ilvesheim, all of Germany, assignors to Friedrichsfeld GmbH Steinzeug-und Kunststoffwerke, Mannheim, Germany

Filed May 3, 1974, Ser. No. 466,640

Claims priority, application Germany, May 17, 1973, 2324865; May 19, 1973, 2325585

Int. Cl.² A61F 1/24

U.S. Cl. 3—1.912 **14 Claims**



1. A socket for hip joint prostheses for cement-free implantation in bone tissue, comprising a biologically compatible material such as compacted Al_2O_3 ceramic, said socket being provided with an internal hemispherical cavity, an exterior upper load bearing surface portion of the socket being provided with at least one elongated groove to provide a direct physical connection with bone tissue grown after implantation and an exterior surface portion including means to prevent rotation of the socket directly after implantation, the overall height of the socket being less than the diameter of the hemispherical cavity, the transverse dimensions of the upper portions of the socket being less than the largest diameter of the socket but, larger than the diameter of the hemispherical cavity.

3,924,276

SURGICALLY IMPLANTABLE TRAPEZIUM PROSTHESIS AND METHOD OF RECONSTRUCTING THE THUMB CARPOMETACARPAL JOINT

Richard E. Eaton, 640 Ely Ave., Pelham Manor, N.Y.

Filed Feb. 18, 1975, Ser. No. 550,173

Int. Cl.² A61F 1/24

U.S. Cl. 3—1.91 **5 Claims**



1. A prosthesis for the trapezium of the thumb metacarpal joint comprising an integral, elastomeric member configured to include a generally cylindrical portion, having extending from one end thereof an elongated, longitudinally extending tapered portion, and wherein said cylindrical portion includes a transverse aperture extending through the longitudinal axis of said prosthesis.

3,924,277

KNEE JOINT PROSTHESIS

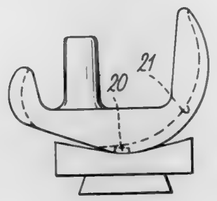
Michael Alexander Reykers Freeman, London, and Sydney Alan Vasey Swanson, Carshalton, both of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 247,873, April 26, 1972, abandoned. This application Mar. 4, 1974, Ser. No. 447,993

Claims priority, application United Kingdom, May 4, 1971, 12919/71

Int. Cl.² A61F 1/24

U.S. Cl. 3—1.911 **25 Claims**



14. A prosthetic knee joint device comprising: a femoral bearing member of generally U-shaped form having a first side wall, a base, and a second side wall, defining relative to said U-shape a major outer surface and a major inner surface, said outer surface having a convex first profile extending in a circumferential direction around said U-shape and including a convexly curved first profile part extending over said first wall and partway across said base, a relatively flat second profile part continuing across said base from said first profile part, and a convexly curved third profile part continuing across said second wall from said second profile part;

and a tibial bearing member in the form of a platform having a major upper surface and a major lower surface, said upper surface being dished in one direction thereacross to provide a concave second profile generally complementary to said convex first profile, said concave second profile including a concavely curved central profile part of the same order of curvature as and in mutual articulatory bearing engagement with said first profile part, and a relatively flat outer profile part continuing from said central profile part in similar angular relationship therewith to that between said femoral first and second profile parts, said femoral second and tibial outer profile parts engaging to limit said articulatory engagement.

3,924,278

BATHTUB

Lars Gustaf Ekman, Helsingborg, Sweden, assignor to Olle Blomqvist Rehab-Produkter AB, Stockholm, Sweden

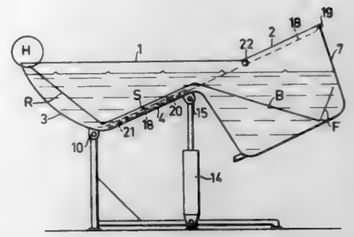
Filed Sept. 21, 1973, Ser. No. 399,285

Claims priority, application Sweden, Sept. 28, 1972, 12522/72

Int. Cl.² A47K 3/02

U.S. Cl. 4—176 **7 Claims**

1. Bathtub means comprising a bathtub, a substantially horizontal pivot for said bathtub extending transversely of the longitudinal axis thereof for pivotally mounting said bathtub for pivotal movement between a lower entering position and a higher bathing position, said bathtub comprising two distinct and individual portions and a convex surface discontinuity therebetween, one of said portions being a seat and back portion and the other of said portions being a foot portion, said foot portion having at its top a substantially U-shaped edge as seen in plan view for defining said convex surface discontinuity, the seat portion of said bathtub being at least as high as said U-shaped edge when said tub is in said entering position and being lower than said U-shaped edge in said bathing position, said convex discontinuity being out of flow block relationship between said seat portion and said foot portion when said bathtub is in said bathing position, whereby



bath water can flow from the foot portion to the seat and back portions when the bathtub is pivoted to the bathing position.

3,924,279

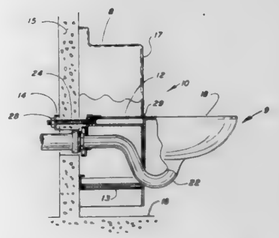
HANGER AND SUPPORT STRUCTURE FOR TOILET BOWLS AND THE LIKE

Earl L. Morris, and Theodore J. Sally, both of Whittier, Calif., assignors to Acorr Engineering Company, Industry, Calif.

Filed Dec. 18, 1974, Ser. No. 533,849

Int. Cl.² F16L 21/02

U.S. Cl. 4—252 R **12 Claims**



1. A structure for hanging and supporting a wall hung combination toilet and housing on a mounting wall, wherein said toilet bowl is mounted to the front sidewall of said housing, comprising:

a. a tension member having two ends, one end of which is attached to said toilet bowl at a point which lies substantially in the same plane where the major portion of the loading occurs and the opposite end of which is sufficiently long so as to project beyond the opposite surface of said mounting wall;

b. a structural member with an opening therein for receiving said opposite end of said tension member projecting beyond the opposite surface of said mounting wall;

c. means for securing said tension member to said structural member after said tension member has been disposed through said opening in said structural member;

d. means for adjusting the tension of said tension member so as to place said structural member in an intimate abutting relationship to said mounting wall; and

e. means for maintaining a fixed spatial relationship between the lower portion of said toilet bowl where it joins the front sidewall of said housing and said mounting wall.

3,924,280

PORTABLE PLAY PEN

Vincent Vaiano, South Ozone Park, NY

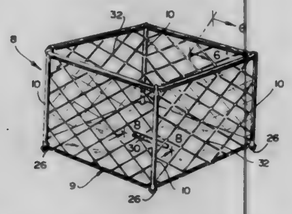
Filed June 7, 1974, Ser. No. 477,196

Int. Cl.² A47D 9/00, 7/00

U.S. Cl. 5—98 R **6 Claims**

1. A portable, foldable play pen comprising a floor made of a plurality of flat triangular sections having a base and inter-

secting sides, a plurality of flat quandrangular sections arranged alternately of said triangular sections, a plurality of flat spacers disposed adjacent intermediate one of the sides of said triangular and said quadrangular sections, means permanently hingedly securing said sections to one another, a plurality of vertically erectable spaced posts hingedly secured to said quadrangular sections, hinge means for said posts, means for rigidly securing said posts in erected position, a netting secured to said posts and to the outer edges of said sections, said

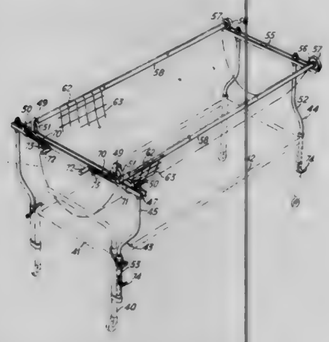


netting forming walls of said play pen and bumpers attached to the top portions of said posts and top edges of said netting, said triangular, said quadrangular sections, when folded in accordion-like fashion, forming chambers with spacers for receiving said posts, said hinge means being a pair of angularly disposed plates terminating as hinge pins opposed to one another said plates being secured to said foldable sections, posts having lower end portions provided with a first pair of aligned holes for receiving said hinge pins.

3,924,281
BED

John Reynell Gibbs, Stone Cross House, Wadhurst, Sussex, England

Filed Sept. 12, 1974, Ser. No. 505,577
Claims priority, application United Kingdom, Mar. 13, 1974, 11223/74
Int. Cl.² A61G 7/10
U.S. Cl. 5—81 R **5 Claims**

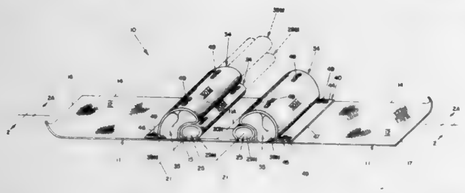


1. A bed comprising, in combination:
a. a pair of elongate members;
b. means for mounting said members so that their axes are substantially parallel;
c. on each elongate member, a plurality of radially outwardly projecting pins arranged in a line parallel to the axis of the elongate member;
d. at least one wide mesh web of net material extending between said members and secured thereto, by hooking over said radially outwardly projecting pins;
e. hoop portions connected to said elongate members and extending radially outwardly therefrom along the line of said pins;
f. curved cross section locking bars securable under said hoops effective to retain the net material in position on said pins;
g. means for rotating said members about their axes; and
h. means for locking said members against rotation.

3,924,282
THERAPEUTIC PROP-LIKE SUPPORT FOR HEMISIDE RECLINING PERSONS

Helen Inez Bond, 709 Olson Road, Longview, Wash. 98632

Continuation of Ser. No. 481,557, June 21, 1974, abandoned.
This application June 2, 1975, Ser. No. 583,108
Int. Cl.² A47C 21/00
U.S. Cl. 5—327 R **11 Claims**

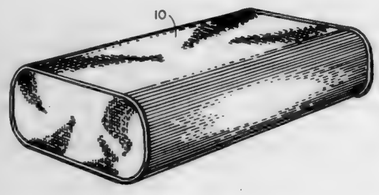


1. A therapeutic prop-like support for maintaining a sleeping or otherwise reclining person in a hemiside position, said prop-like support comprising:
A. An elongated and relatively narrow flexible web-like drawsheet that is superimposeable upon a bed horizontal surface at a selectable angle to the lengthwise central-axis of a bed having two parallel lengthwise-terminii, said drawsheet including a pair of lengthwise longitudinal-edges including a leadward first-edge and a trailward second-edge, said drawsheet having a pair of opposed elongate broad surfaces including a topside and also a bottomside that is directly superimposeably abuttable against the bed horizontal surface; and
B. A pair of longitudinally separated and substantially parallel primary-sleeves attached to the web-like drawsheet and extending laterally along the topside thereof, the primary-sleeves being sufficiently longitudinally separated so as to be respectively located on opposite outboardsides of and substantially parallel to an ascertainable central lateral-reference for the prop-like support, each of said primary-sleeves being adapted to removably accommodate therewithin a fairly firm bolster type cushion, said bolster extending along a bolster-axis and having a fixed axial-length said cushion being of lofty thickness as compared to the underlying drawsheet.

3,924,283
CUSHION CONSTRUCTION

Robert C. Shave, 33 Sutton SW., Grand Rapids, Mich. 49507

Filed Aug. 5, 1974, Ser. No. 494,713
Int. Cl.² A47G 9/00; A47C 27/00
U.S. Cl. 5—338 **4 Claims**

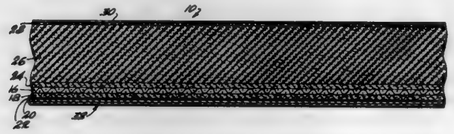


1. A pillow having both foamed resilient material and a padding within a cover, wherein the improvement comprises: a configuration of said foamed resilient material including a central slab and portions of substantially increased thickness along at least two opposite edges of said slab, said padding surrounding said foamed resilient material and filling the space between the portions and adjacent said slab to form a faired contour around the periphery of said pillow, wherein said portions of increased thickness extend from the planes of the opposite sides of said slab, wherein the said portions extend from said planes a distance of substantially twice the thickness of said slab.

3,924,284
THERMO-CLOUD ELECTRIC MATTRESS

Alvin M. Nelson, 198 W. 15th St., Holland, Mich. 49423

Filed June 17, 1974, Ser. No. 479,645
Int. Cl.² A47C 27/08
U.S. Cl. 5—347 **1 Claim**

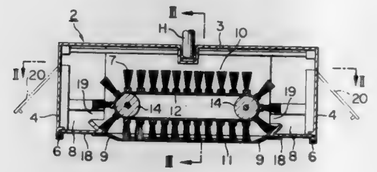


1. An electric bed mattress comprising:
a thermostatically controlled heating element interposed between upper and lower protective pads, fabricated of cotton;
insulating means disposed beneath said lower protective pad;
a relatively thick resilient pad formed of foam rubber positioned above said upper protective pad;
a fabric cover of a material such as rayon-damask fixed about the entire exterior of the mattress assembly;
a relatively thin wool pad interposed between the top surface of said resilient pad and the underside of the top portion of said fabric cover;
said insulating means comprising an insulated paper structure covered with foil on its top side to radiate the heat from said heating element upwardly through the mattress.

3,924,285
FLOOR SWEEPER

Hiroshi Hukuba, Nagareyama, Japan, assignor to Kabushiki Kaisha Hukuba Future Research, Nagareyama, Japan

Filed Jan. 23, 1974, Ser. No. 435,680
Claims priority, application Japan, Jan. 29, 1973, 48-11685
Int. Cl.² A47L 11/22
U.S. Cl. 15—49 R **14 Claims**

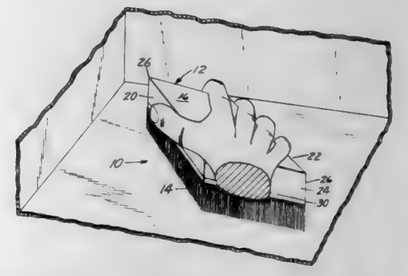


1. A floor sweeper, comprising:
box-shaped hollow housing means having an opening in the bottom thereof;
wheel means rotatably supported on said housing means for movably supporting said housing means on a support surface so that said housing means can be moved along said support surface in a sweeping direction which is substantially perpendicular to the rotational axis of said wheel means;
endless beltlike brush means disposed within said housing means and having a lower reach positioned adjacent said opening for engagement with the support surface, said beltlike brush means being provided with a plurality of bristles which have outer end portions, the outer end portions of the bristles associated with the lower reach projecting outwardly of said opening for engaging the support surface;
means supporting said endless beltlike brush means for rotation within a plane which is substantially perpendicular to said sweeping direction;
driving means interconnected between said wheel means and said brush means for causing rotation of said brush means responsive to rotation of said wheel means;
dust receiver means positioned within said housing means adjacent said brush means for receiving therein the dust swept up by said brush means; and
elongated handle means connected to said housing means and projecting outwardly therefrom for permitting manual displacement of said housing means in said sweeping direction.

3,924,286
CLEANING BRUSH

Douglas E. Miller, Burnsville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 24, 1974, Ser. No. 436,054
Int. Cl.² A46B 3/04; A47L 13/12, 13/16
U.S. Cl. 15—114 **1 Claim**



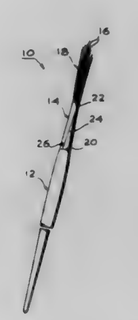
1. A brush including:
a back having opposite first and second parallel major surfaces, opposite first and second side surfaces extending between said major surfaces, and end surfaces joining said major and side surfaces, said back comprising a layer of a stiff resilient polyurethane about one-eighth inch thick defining said second major surface, and a layer of a flexible resilient open cell polyester foam about 1 inch thick adhered to the side of said polyurethane layer opposite said second major surface; and
a multiplicity of generally parallel polypropylene bristles about 0.01 inch in diameter individually embedded in said back and projecting about seven-eighths inch from the second major surface of said back, the bristles being distributed between and to the edges of said second major surface with the distal ends of said bristles defining a common plane having about the same shape and size as the major surfaces;
wherein said major surfaces are rhomboidal in shape, the height of said brush from said common plane to said first major surface is about 2 inches, the width of said back between said side surfaces is about 3 inches, and said side surfaces have a length of about 4½ inches and when one of said side surfaces is oriented north and the other south and the brush is viewed from the first major surface said side and end surfaces are disposed at an included angle of about 60° with said end surfaces at the northeast and southwest corners of the first major surface to form projecting corners of the brush, said brush being peculiarly adapted to fit a right human hand with one of said projecting corners extending between the thumb and index

finger of the hand and having bristles to its edges to provide particular utility for cleaning in corners.

3,924,287
ARTIST'S PAINTBRUSH

Anna P. Brown, Hawthorne, Calif., assignor to Anna P. Brown; Joseph S. Brown, both of Hawthorne and Richard A. R. J. Brown, San Diego, all of, Calif., part interest to each

Filed Aug. 5, 1974, Ser. No. 494,495
Int. Cl.² A46B *3/04*; **A46D** *1/00*
U.S. Cl. 15—192 **6 Claims**

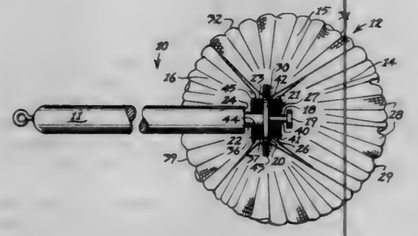


1. An artist's paintbrush comprising:
a handle;
a ferrule joined to the handle, the ferrule being slightly tapered and having a larger end and a smaller end, the handle extending into the ferrule at the larger end; and
a brush portion mounted in the ferrule and extending outwardly from the smaller end thereof, which brush portion comprises bristles of chinchilla hair from a selected region of the tail of a chinchilla.

3,924,288
BRUSH HAVING A HEAD OF GATHERED NET MATERIAL

Dorothy S. Breland, 1209 McCullough Ave., Huntsville, Ala. 35801

Filed Jan. 14, 1975, Ser. No. 541,422
Int. Cl.² A47L *17/04*
U.S. Cl. 15—225 **4 Claims**

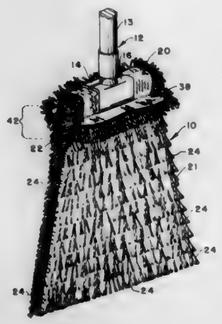


1. A brush device comprising:
a. a handle including an end portion having a longitudinal axis and a free end,
b. said end portion comprising a distal annular groove coaxial of said longitudinal axis and adjacent said free end,
c. an attachment surface extending circumferentially and coaxially of said end portion adjacent the proximal end of said distal groove opposite said free end,
d. a first elongated strip of synthetic, loose-weave, net material, having first and second side edge portions,
e. a first strand sewn the length of and along said first side edge portion of said first strip, gathering said strip at spaced points along said strip, thereby shortening the effective length of said strip and creating an effective thickness normal to the ungathered surface of said strip,
f. said first strip being lap-wound around said end portion of said handle, said first strand being wound circumferentially in said distal groove, and said second side edge portion projecting distally from said attachment surface,
g. means securing said first strip wound around said end portion,
h. a second elongated strip of synthetic, loose-weave, net material, having first and second side edge portions,
i. a second strand sewn along the length of and medially of said first and second side edge portions of said second strip, gathering said second strip at spaced points along said strip, thereby shortening the effective length of said second strip and creating an effective thickness normal to the ungathered surface of said second strip,
j. said second strip being lap-wound around said end portion of said handle, said second strand being wound circumferentially around said attachment surface so that the first side edge portion of said second strip projects distally toward and against said first wound strip, and the second side edge portion of said second strip projects generally in the opposite direction of said first side edge portion of said second strip,
k. second means securing said second strip wound around said attachment surface.

3,924,289
WET MOP HEAD CONSTRUCTION

Ernest Levon Richards, LaGrange, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Nov. 14, 1974, Ser. No. 523,884
Int. Cl.² A47L *13/20*
U.S. Cl. 15—229 AC **6 Claims**

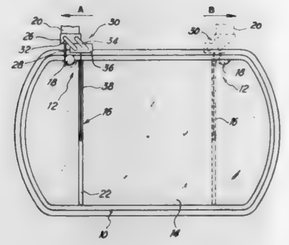


1. In a wet mop head construction comprising a main body of pile fabric having a generally trapezoidal shape with pile on the outer faces thereof and a headband attached to the shorter parallel side of the fabric for engagement by the gripping elements of a mop tool to position the fabric in free-hanging relation from the tool; the improvement wherein said headband comprises a generally rectangular shaped fabric secured in overlying relation about said shorter parallel side edge of the main body pile fabric and having free end portions extending from its points of securement outwardly from opposite faces of the main body fabric adjacent its shorter parallel side to a point beyond the pile of the main body to aid in preventing the gripping elements of a mop tool engaging the headband from contacting a surface to be treated by the mop head construction.

3,924,290
CLEANING DEVICE E.G. FOR VEHICLE HEADLIGHT LENS

Olivier Puyplat, Paris, France, assignor to Cibie Projecteurs, Bobigny, France

Filed Jan. 25, 1974, Ser. No. 436,430
Claims priority, application France, Mar. 2, 1973, 73.07481
Int. Cl.² B60S *1/46*
U.S. Cl. 15—250.04 **2 Claims**

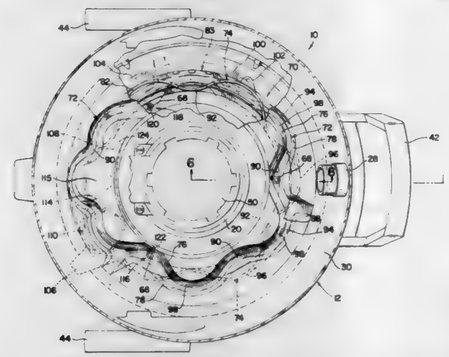


1. A cleaning device for the lens of a headlight, comprising:
a drive element reciprocable translationally in a plane parallel to the plane of the lens,
a nozzle, fixed to and movable with said drive element, for spraying washing liquid on the lens,
a support,
a wiper carried by said support for frictional engagement with the lens,
a pair of parallel links pivotally joining said support to said drive element, and
abutment means defining two extreme positions of said support with respect to said drive element, said nozzle being located between said extreme positions,
whereby during the initial movement of said drive element in either direction said support moves from one of its extreme positions to the other so that said wiper is arranged behind said nozzle with respect to the direction of movement of said drive element.

3,924,291
BLOWER CONNECTION AND EXHAUST VALVE CONFIGURATION FOR A CLEANER OR THE LIKE

Donald B. Tschudy, Canton, and John L. Fawcett, North Canton, both of Ohio, assignors to The Hoover Company, North Canton, Ohio

Filed Sept. 17, 1973, Ser. No. 397,614
Int. Cl.² A47L *9/08*
U.S. Cl. 15—330 **11 Claims**

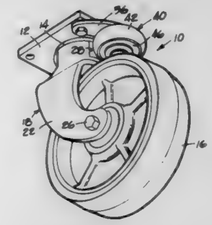


1. An exhaust valve and blower conversion arrangement for use with a floor care appliance having a fan for inducing a flow of discharge air and an apertured housing section having a first aperture therein for providing an exit, at least part of the time, for said discharge air and including;
a. a first relatively flat, laterally extending portion having a first dike transversely extending therefrom,
b. a second relatively flat, laterally extending portion having a second dike transversely extending therefrom, said first and second portions being relatively movable,
c. said second relatively flat, laterally extending portion having a second aperture extending therethrough, and
d. said first and second transversely extending dikes having substantially closed configurations, in plan view, and being undulating in their closed, configured extent whereby, when abutting conformance of said undulations is effected alignment of said first and second apertures is also effected said first and second apertures providing a passageway whereby said blower conversion is effectable.
2. The exhaust valve and blower conversion arrangement of claim 1 wherein;
a. said undulations, upon assuming a non-abutting conformance, permit exit of discharge air therebetween in a substantially unimpeded manner.

3,924,292
ANTI-FLUTTER CASTER

Carl O. Christensen, Alamo, Calif., assignor to Roll-Rite Corporation, Oakland, Calif.

Filed Dec. 9, 1974, Ser. No. 530,745
Int. Cl.² B60B *33/00*
U.S. Cl. 16—35 D **5 Claims**



1. A flutter-resistant caster, comprising:
a. mounting means;
b. caster wheel means including a generally cylindrical shank having a cylindrical portion and being pivotally movable with respect to said mounting means and having at least one surface of lesser curvature than said cylindrical portion formed thereon; and
c. anti-flutter means including biasing means for resiliently engaging said shank in such a manner as to bear alternately against said at least one surface or against said cylindrical portion of said shank, depending upon the pivotal position of said shank with respect to said mounting means.

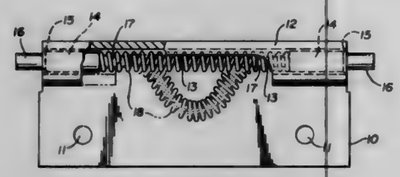
3,924,293
HINGE STRUCTURE

James F. Cain, Youngstown, Ohio, assignor to Marlboro Manufacturing Inc., Alliance, Ohio

Continuation-in-part of Ser. No. 454,013, March 22, 1974. This application Feb. 12, 1975, Ser. No. 549,312
Int. Cl.² E05D *3/00*
U.S. Cl. 16—169 **3 Claims**

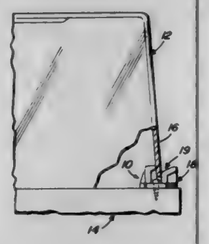
1. A hinge structure for mounting a closure in an opening comprising a mounting frame secured in said opening, an elongated knuckle configuration on said mounting frame, a plurality of cutaway sections in said knuckle configuration, a hinge leaf for each of said cutaway sections, an elongated secondary knuckle on said hinge leaf of substantially the same cross sectional configuration as said first mentioned knuckle configuration, a cut-out section in said secondary knuckle

inwardly of the ends thereof, a pair of pintles movable longitudinally within said secondary knuckle on either side of said cut-out section therein, a spring positioned in said secondary knuckle between said pintles normally urging said pintles outwardly of the ends of said secondary knuckle, at least a portion of said spring being manually movable through and



outwardly of said cut-out section of said secondary knuckle and distorted areas in the opposite ends of said secondary knuckle engaging said pintles to hold the same partially within said secondary knuckle and wherein said cut-out section in said secondary knuckle is large enough to permit a major portion of said spring to be moved outwardly of the secondary knuckle therethrough.

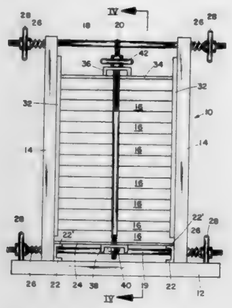
3,924,294
HINGE
Arnold Thaler, and Dan Platt, both of Miami, Fla., assignors to Topp Electronics, Inc., Miami, Fla.
Filed June 27, 1974, Ser. No. 483,904
Int. Cl.² E05D *1/06*
U.S. Cl. 16—174 **6 Claims**



1. A hinge, comprising, in combination:
a. a first member; and
b. a second member provided with holder means for receiving the first member and permitting same to pivot with respect to the second member, the second member including a substantially planar base, and the holder means including:
i. first and second spaced, parallel, planar projections extending perpendicularly and codirectionally from the base; and
ii. first and second flanges extending in parallel, codirectional relationship obliquely from the free ends of the first and second projections, respectively, the first flange extending toward the second projection.

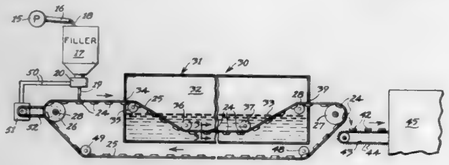
3,924,295
APPARATUS FOR FREEZE FORMING MEAT PRODUCTS
David L. VerBurg, 4069 Lila Ave., Grandville, Mich. 49418
Filed Jan. 9, 1974, Ser. No. 431,678
Int. Cl.² A22C *7/00*
U.S. Cl. 17—32 **12 Claims**

1. A mold for forming a meat product having the shape and appearance of a high priced cut of animal meat and capable of withstanding subsequent cooking without loss of geometric integrity, said mold comprising:
an elongated base having a shaped cavity therein, at least one end of which is open;
a cover, said mold and cover being of a thermally conductive material;
means to detachably secure said cover to said base, said base and cover being constructed to withstand high internal pressures;



an element slidably closing said open end, said element being movable lengthwise of said cavity; and
resilient means for resistantly holding said element against movement in response to internal pressures generated by expansion of a material contained in said shaped cavity with freezing thereof within said mold, said means permitting movement of said element when internal pressures exceed a predetermined amount.

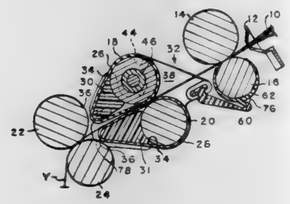
3,924,296
METHOD OF PREPARING MOLDED MEAT PRODUCTS
James E. Wilkerson, Adairville, Ky., assignor to Odom Sausage Co. Inc. of Kentucky, Adairville, Ky.
Filed Dec. 9, 1974, Ser. No. 530,839
Int. Cl.² A22B *3/00*
U.S. Cl. 17—45 **10 Claims**



1. A method of preparing a meat product comprising the steps of:
a. hot boning a freshly slaughtered animal carcass to obtain warm, fluent meat pieces, at a temperature range of approximately 90°–100° F.,
b. comminuting said meat pieces while in said temperature range,
c. transferring said warm, fluent, comminuted meat to a filler station, the temperature of said meat being greater than 80° F. at said filler station,
d. relatively moving a plurality of open, rigid receptacles of fixed uniform volume through said filler station,
e. dispensing said warm, fluent, comminuted meat at a temperature greater than 75° F. from said filler station in substantially uniform portions into each of said receptacles,
f. relatively moving said receptacles containing said warm, fluent, meat portions through a temperature processing station,
g. rapidly changing the temperature of said meat portions in said receptacles at said processing station to congeal said meat portions into meat products molded into the shape of said receptacles, and

h. removing said molded meat products from said receptacles.

3,924,297
DRAFTING APPARATUS
Robert M. Ingham, Jr., Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Continuation of Ser. No. 809,867, March 24, 1969, abandoned. This application July 11, 1973, Ser. No. 378,091
Int. Cl. D01h *5/88*; D01g *31/00*
U.S. Cl. 19—255 **1 Claim**



1. A drafting system comprising: a first pair of drafting rolls in nip forming relationship, a second pair of drafting rolls in nip forming relationship spaced from said first pair of rolls, a third pair of drafting rolls in nip forming relationship spaced from said second and first pairs of rolls, an arcuate roving stop means partially encircling one roll of said third pair of rolls, means mounted on one roll of said second pair of rolls having a portion thereof engaging said roving stop means to prevent said roving stop means from rotating with the roll around which it partially encircles and to allow said roving stop means to rotate into the nip of said third pair of rolls upon the detection of a lap build-up on one of said first pair of rolls, said means mounted on one roll of said second pair of rolls including a drafting cradle and a hook member connected thereto which engages said roving stop means, said drafting cradle being rotably mounted on said one roll of said second pair of rolls whereby a lap build-up on one roll of said first pair of rolls will cause said cradle to rotate thereby rotating said hook member out of engagement with said roving stop means to allow said roving stop means to rotate into the nip of said third pair of rolls.

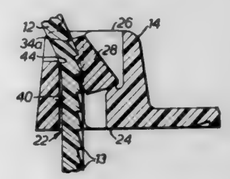
3,924,298
ATTACHMENT AND MOUNTING CONSTRUCTION
Francis Gerard Merser, Framingham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.
Continuation-in-part of Ser. No. 322,712, Jan. 11, 1973. This application Sept. 30, 1974, Ser. No. 510,768
Int. Cl.² B65D *63/00*; A44B *21/00*
U.S. Cl. 24—16 PB **10 Claims**

1. An attachment device comprising
a filament having a body member at one end and a bar at the other end,
said body member having a passage therethrough defining an expansive socket through which said filament is passable,
said bar having a length which exceeds that of the passage through said body member and being normally disposed in an orthogonal position relative to said filament,
said device being fabricated of a material which permits said bar to be folded against said filament and has sufficient resiliency that the bar springs back spontaneously into its



orthogonal position after being passed through said passage.

3,924,299
CABLE TIES
Mathew McCormick, Didsbury, England, assignor to Bowthorpe Hellermann Limited, Sussex, England
Filed June 7, 1974, Ser. No. 477,537
Claims priority, application United Kingdom, June 7, 1973, 27290/73
Int. Cl.² B65D *63/00*
U.S. Cl. 24—16 PB **2 Claims**



1. A one piece molded tie of plastics material comprising:
a. a flexible elongate strap;
b. a head at one end of said strap;
c. there being an aperture extending through said head in a direction transverse to the plane of said strap;
d. a pivotally mounted pawl disposed within said aperture;
e. at least one first transverse tooth formed on said pawl;
f. at least one second transverse tooth formed on said pawl;
g. all said first and second teeth having their crests in a common flat plane;
h. a wall on said head defining an abutment surface on one side of said aperture opposite said pawl and parallel to said common plane of pawl teeth crests while the top of said wall defines a surface substantially perpendicular to said abutment surface;
i. a transverse ridge formed by a junction between said abutment surface and said substantially perpendicular surface;
j. the projection of the crest of said at least one first pawl tooth onto the plane of said abutment surface lying, over at least substantially the whole pivotal movement of said pawl, further than said ridge from the projection of the pivot of the pawl onto said abutment surface;

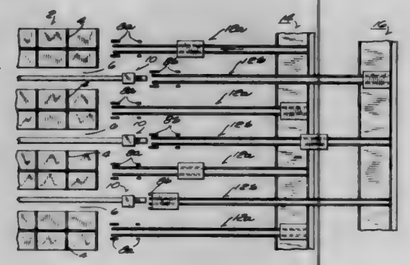
k. the projection of the crest of said at least one second pawl tooth onto the plane of said abutment surface lying closer than said ridge to the projection of the pivot of the pawl onto said abutment surface;
l. said pawl, in the manufactured condition of the tie, being spaced from the plane of said abutment surface;
m. a series of transverse ratchet serrations formed on one side of said strap; and
n. said ratchet serrations and pawl teeth being complementarily profiled to cooperate and permit passage of the free end of the strap through said aperture from the pivoted end of said pawl but to prevent subsequent withdrawal of said strap in the opposite direction; and tension applied to said strap in said opposite direction serving to pivot said pawl for said at least one second pawl tooth to firmly grip said strap flat against said abutment surface and said at least one first pawl tooth to bend said strap over said transverse ridge.

3,924,300

SHUTTEL CAR MECHANISM FOR TRANSFERRING LOADS BETWEEN TWO STATIONS

Edwin T. Hilger, and James S. Miller, both of Louisville, Ky., assignors to A-T-O, Inc., Willoughby, Ohio

Division of Ser. No. 232,755, March 8, 1972, Pat. No. 3,746,148. This application June 4, 1973, Ser. No. 366,743
Int. Cl.² B65G 1/06
U.S. Cl. 214—16.4 A **2 Claims**



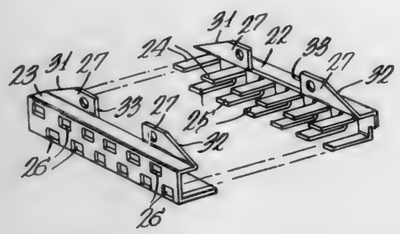
1. In a storage system of the multiple aisle rack type and which includes motorized load carrier devices operating in and along the aisles to effect the movement of incoming articles into the racks from individual of a first series of transfer stations located adjacent the ends of the racks and to also effect the movement of outgoing articles from the racks to individual of a second series of transfer stations located also adjacent the ends of the racks in positions intermediate the first series of transfer stations, a load transfer device operatively associated with each of the transfer stations of the first and second series for initially delivering articles to the first series of transfer stations and for picking up articles from the second series of transfer stations, means for supporting said transfer device for movement in a fixed, lineal travel path which includes a corresponding one of said transfer stations and having a frame portion and a bed portion supported in said frame portion for vertical swing movement between a raised article pick-up positon in the transfer device and a lowered article deposit position therein, a drive means for powering said transfer device along said fixed travel paths and relatively toward and away from said transfer stations, said drive means including a lineal member extending longitudinally of the fixed travel paths of such devices and operatively coupled intermediate its ends to said devices, and means for translating lineal movement of said transfer devices through a predetermined portion of its travel path in a direction toward or away from said transfer stations into vertical swing movement of the bed portion of said devices whereby to automatically effect a selective article pick-up and deposit action at such stations, said means including first and second rotatable shafts carried in the frame portion of each of said devices, a cam follower means keyed to said first shaft, a fixed cam mounted adjacent said transfer stations in the path of travel of said devices and disposed to engage with and cause a predetermined angular displacement of said cam follower means and said first rotatable shaft upon the transfer device moving through said predetermined portion of its travel path, sprocket means keyed to each of said first and second rotatable shafts, linkage means for transmitting rotational movement of the sprocket means keyed to said first shaft to the sprocket means of said second shaft, and radius arm means connected between said second shaft and the bed portion of said load transfer device for translating rotational movement of said second shaft into vertical swing movement of said bed portion.

3,924,301

CONTROL ACTUATOR FOR GEAR BELTS AND THE LIKE

Edward I. Fox, Chicago, Ill., assignor to H. W. Crane Company, Maywood, Ill.

Filed July 15, 1974, Ser. No. 488,293
Int. Cl.² F16G 3/02
U.S. Cl. 24—31 L **1 Claim**



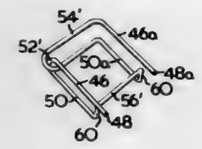
1. A belt connector adapted for application to a belt having transverse alternating ribs and groves, comprising a member shaped to provide fingers adapted to be inserted into grooves of the belt to locate said member at an operative position on the belt, and means for clamping the finger member to the belt to hold the finger member in said operative position, in which the connector member comprises opposed side parts positioned at opposite sides of the belt, and screw means for clamping said side parts to the interposed belt.

3,924,302

STRAP CONNECTOR BUCKLE

Gert P. Somann, Box 34, Algonquin Drive, Huron Park, Ontario, Canada (NOM-1Y0)

Filed July 29, 1974, Ser. No. 492,848
Claims priority, application Canada, Jan. 8, 1974, 189673
Int. Cl.² A44B 11/00
U.S. Cl. 24—74 A **6 Claims**



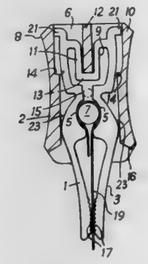
1. A strap connector buckle formed of a single piece of wire, said connector buckle being approximately rectangular in outline and comprising a first pair and a second pair of strap engaging arms on the first and second opposing marginal sides respectively of the connector buckle, the arms of each pair being approximately parallel to one another and to the arms of the opposing pair and being spaced apart sufficiently to permit, in use, a strap with which the connector buckle is to be used to be passed therebetween, a first arm of each of said pairs being a terminal portion of the wire and having a free end and the second arm of each pair being an intermediate wire segment, the arms of each pair being further arranged such that both of said first arms are located on one face of the buckle while both of said second arms are located on the opposing face of the buckle, a first generally U-shaped bight of the wire connecting the first arm of the first pair to one end of the second arm of the first pair and a second generally U-shaped bight of the wire connecting the first arm of the second pair to one end of the second arm of the second pair, said first and second U-shaped bights of wire being interlooped together so that they can transmit tension loads whereby to resist any tendency for the second arms of the firsst and second pairs to be spread apart under the influence of strap tension forces thereon, and a further run of the wire connecting the other ends of said second arms together.

3,924,303

LINE GRIPPING PEGS

Anthony Elliott, Southwell, England, assignor to Judge International Limited, Brierley Hill, England

Filed Feb. 28, 1974, Ser. No. 446,901
Claims priority, application United Kingdom, Mar. 9, 1973, 11564/73
Int. Cl.² A44B 21/00
U.S. Cl. 24—137 R **9 Claims**



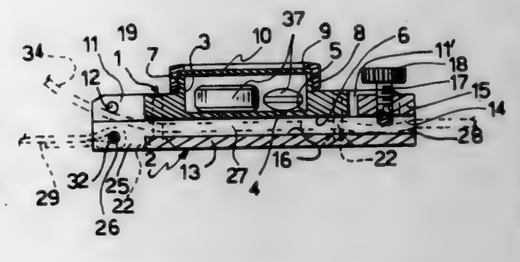
1. A line gripping peg, comprising:
a peg member having a pair of clamping arms, respective opposed clamping surfaces provided on the clamping arms and a connecting member on opposite ends of which the clamping arms are formed at locations thereon so spaced from said clamping surfaces as to permit resilient relative movement of the opposed clamping surfaces;
a peg housing from one end only of which the clamping arms extend and within which said peg member is permanently retained and is reciprocably movable between a projected position and a retracted position in which said clamping surfaces are disposed entirely within the housing, said housing comprising opposed mutually rigid end walls and parallel opposed side walls extending between the end walls and containing registering slots through which a line can pass when engaged by said clamping surfaces, each slot having a closed end and an open end located at the end of said peg housing from which the clamping arms extend and having a width greater than the diameter of a line to be gripped; and
cooperating surfaces formed on the housing and on at least one of the clamping arms, the cooperating surface on the or each clamping arm having a first part adjacent the clamping surface of the respective arm and substantially inclined relatively to the longitudinal axis of the peg member and a second part extending from said first part, and in the projected position of the peg member located substantially parallel to said longitudinal axis of the peg member, whereby during movement of the peg member from its projected to its retracted position effected with a line disposed between the clamping surfaces, said first part engages the housing thereby to effect relative transverse movement of the clamping surfaces into clamping engagement with the line and thereafter parallel movement of the peg member takes place relatively to the housing without transverse movement of the clamping surfaces, the length of the registering slots being adequate to prevent engagement of the closed ends of the slots with the line during movement to the retracted position of the peg member.

3,924,304

BOX BUCKLE FOR WRIST-WATCH BAND

Joseph L. Grandmont, 6976 deNormanville St., Montreal, Quebec, Canada

Filed Jan. 21, 1975, Ser. No. 542,882
Int. Cl.² A44B 11/06, 21/00
U.S. Cl. 24—163 K **4 Claims**



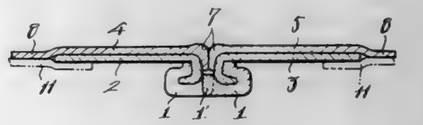
1. A combination buckle and receptacle for wrist-watch band comprising a casing part having a pair of spaced lugs projecting from opposite ends thereof, said lugs having pin receiving holes for attaching the ends of an expansion wrist-watch band to said casing part, and a buckle part comprising an elongated plate member having two spaced substantially parallel elongated ridges protruding from one face thereof, means to removably secure said buckle part to the underface of said casing part with said ridges contacting the underface of said casing part, thereby to define an elongated passage between said casing part underface and said plate member, said buckle part having a pair of lugs protruding from one end thereof, each having a pin receiving hole facing each other for fastening thereto the end of a non-expansible wrist-watch band section, a transverse bridge member secured to said ridges at the opposite ends thereof and extending in spaced relation over said plate member to define with said plate member an extension of said passage, and means carried by said bridge member and engageable with a non-expansible wrist-watch half-band section extending within said passage to adjustably lock said last-named half-band section to said buckle part.

3,924,305

WATER-TIGHT FASTENER

Yoshitaro Hamamura, Otaru, Japan, assignor to Daiichi Rubber Co., Ltd., Japan

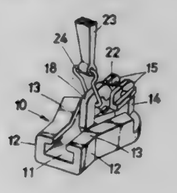
Filed Jan. 26, 1973, Ser. No. 326,746
Claims priority, application Japan, June 5, 1972, 47-55760
Int. Cl.² A44B 19/32
U.S. Cl. 24—205.1 R **9 Claims**



1. A water-impervious fastening assembly for preventing the passage of water therepast, comprising, in combination:

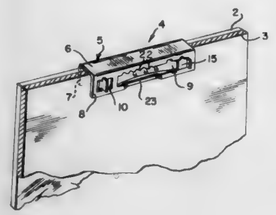
engageable teeth;
cloth tape members connected to selectively engageable teeth, said cloth tape members having their inner side edges bent downwardly and outwardly forming a bent around portion and tightly received within said teeth;
a slider secured to said selectively engageable teeth for movement between a fastener open position and a fastener closed position;
water-impervious members made of a material different than said cloth tape members and substantially impervious to water, each water-impervious member being secured to the exposed surface of an associated one of said cloth tape members, said waterimpervious members having their inner side edges bent entirely around and overlying said bent around portion of said inner side edges of said cloth tape members and also tightly received within said teeth, said water-impervious members having their outer side edges extending beyond the outer side edges of said cloth tape members, the bent downwardly around portion of the water-impervious members having a smoothly rounded thickened portion extending substantially along the entire extent of the bent downwardly around portion of the last-mentioned member; and
wherein, when said slider moves said selectively engageable teeth into said fastener closed position, said cloth tape members are sandwiched between said edges of said water-impervious members and said selectively engageable teeth in said fastener closed position and at least a portion of said waterimpervious members are urged to firmly abut against each other to provide a water-impervious seal therebetween.

3,924,306
LOCK SLIDER
Kiyoshi Oda, Kurobe, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 10, 1974, Ser. No. 531,327
Claims priority, application Japan, Dec. 18, 1973, 48-145326[U]
Int. Cl.² A44B *19/30*
U.S. Cl. 24—205.14 R **2 Claims**



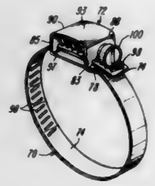
1. In a slider for a concealed slide fastener including a body having a flared front end and a contracted rear end, and a separator positioned centrally at said front end of said body to cooperate therewith to define a substantially Y-shaped guide channel therethrough, a releasable locking mechanism comprising, in combination, a pair of ears projecting upwardly from said separator and extending in the longitudinal direction of said slider substantially in spaced parallelism, a locking pawl arranged longitudinally between said ears of said separator and having a rear end projecting beyond said separator and an upwardly opening recess formed adjacent the front end thereof, a retainer pin supported by and extending transversely between said ears of said separator over said locking pawl, said retainer pin being arranged in registered relationship to said recess in said locking pawl, spring means normally biasing said locking pawl in such a manner that said recess in said locking pawl releasably engages said retainer pin and that said rear end of said locking pawl projects into said guide channel of said body, and a pull tab pivotally connected to said locking pawl and, when exerted with a pull, effective to move said rear end of said locking pawl away from said guide channel of said body against the bias of said spring means.

3,924,307
PICTURE FRAMING CLIP
Raymond F. Tate, 21423 Pacific Coast Highway, Malibu, Calif. 90265
Filed Apr. 29, 1974, Ser. No. 465,083
Int. Cl.² A44B *21/00*; G09F *1/12*
U.S. Cl. 24—243 P **9 Claims**



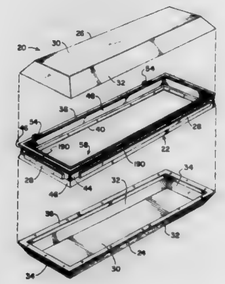
1. A picture framing clip adapted to mount over the edges and secure together a plurality of planar sheets to form a picture frame, said clip comprising:
a. a generally U-shaped channel member having opposing front and rear wall portions, said front wall portion being adapted to engage one side of said plurality of sheets;
b. resilient clamp means slidably mounted on the rear wall portion of said channel member and configured, dimensioned, and positioned to engage the opposite side of said plurality of sheets and to be put into spring-biased relation to said plurality of sheets; and
c. locking means for securing said resilient clamp means in spring-biased relation to the opposite side of said plurality of sheets when the clamp means is slidably displaced to a first position with respect to said channel member and for releasing the clamp means when the resilient clamp means is slidably displaced to a second position with respect to the channel member.

3,924,308
HOSE CLAMP COMPRISING A ONE-PIECE BAND AND HOUSING
Wayne R. Duprez, West Newton, Mass., assignor to Standard-Thomson Corporation, Waltham, Mass.
Filed May 8, 1974, Ser. No. 467,869
Int. Cl.² B65D *63/02*
U.S. Cl. 24—274 R **30 Claims**



1. A hose clamp comprising a strip of material having a housing portion and an integral band portion, the housing portion having a pair of spaced-apart openings therein providing an opening adjacent each end of the housing, a floor portion integral with the housing portion and extending from one opening through the other opening, a screw having a threaded portion within the housing, the band portion having a series of slots, with a part of the band portion within the housing and with parts of the threads of the screw within some of the slots, so that rotative movement of the screw causes movement of the threads within the slots and causes movement of the band portion within the housing portion.

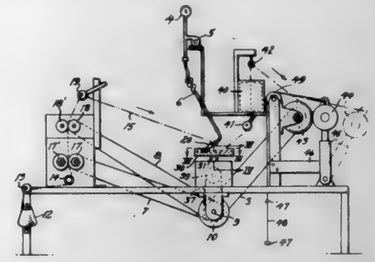
3,924,309
BURIAL CASKET
Edward R. Andrus, Jr., Mount Prospect; Dale E. Fahnstrom, Riverside; James G. Hansen, La Grange, and Charles E. Nichols, Chicago, all of Ill., assignors to Elder Wilbert Corporation, Broadview, Ill.
Filed Sept. 14, 1972, Ser. No. 289,175
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² A61G *17/00*
U.S. Cl. 27—2 **14 Claims**



1. A burial casket having a generally rectangular horizontal periphery, said casket comprising a centrally open band member in the shape of the horizontal periphery of the casket, a concavo-convex lower shell member discrete from said band member, means for fastening said lower shell member to the lower edge of said band member, a concavo-convex upper shell member discrete from said band member, and hinge means connecting said upper shell member to the upper edge of said band member, said upper and lower shell members being sugstantially identical in shape, said band member having a substantially uniform cross section throughout its length, said band member cross section having a substantial vertical dimension less than half the vertical dimension of the casket and having a horizontal dimension substantially smaller than the vertical dimension of the band member cross section, and the upper and lower edges of the band member comprising flat, parallel uniplanar edge surfaces, and said upper and lower shell members having similar flat, uniplanar rim surfaces complementary in shape to said upper and lower edges.

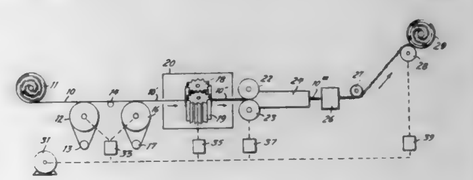
3,924,310
STRAND TREATMENT APPARATUS
Robert K. Stanley, Media, Pa., assignor to Textured Yarn Co., Inc., Kennett Square, Pa.
Division of Ser. No. 109,204, Jan. 25, 1971, abandoned, which is a continuation-in-part of Ser. No. 58,917, July 28, 1970, abandoned. This application May 31, 1972, Ser. No. 258,328
Int. Cl.² D02G *1/12*
U.S. Cl. 28—1.6 **5 Claims**

1. In apparatus for treating textile strands, the improvement comprising a strand-propelling jet device having a bore for passage of textile strand therethrough, having an inlet end for admitting fluid to propel the strand, and having a curved outlet end for both strand and fluid and thereby deviating from a straight-through bore configuration, in combination with a cylindrical chamber for receiving and supporting textile strand, the chamber having a foraminous cylindrical wall and having end walls, one end wall being open centrally along the axis of the cylinder and thereby accommodating the jet device



positioned with its outlet end between the end walls and fixed substantially parallel thereto and to the cylindrical wall.

3,924,311
STRAND DRAWING AND CRIMPING TREATMENT
Robert K. Stanley, Media, Pa.
Continuation-in-part of Ser. No. 815,425, April 11, 1969, Pat. No. 3,570,084, and a continuation-in-part of Ser. No. 822,429, May 7, 1969, Pat. No. 3,570,083, and a continuation-in-part of Ser. No. 835,883, June 9, 1969, Pat. No. 3,559,254. This application Sept. 2, 1970, Ser. No. 68,960
Int. Cl. D02g *1/20*
U.S. Cl. 28—72.11 **6 Claims**

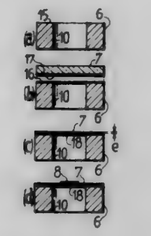


1. Treatment of drawable textile strands, comprising first drawing a textile strand to increased length, thereafter imparting a regular sawtooth crimp to the drawn strand by gear-crimping it, and then imparting a less regular sawtooth crimp to the strand by compressively crimping it, including the step of heating the strand before the gear-crimping step and maintaining it hot until the compressive crimping step, wherein the strand is maintained at substantially constant temperature from drawing to compressive crimping.

3,924,312
METHOD OF MANUFACTURING AN ELECTROMECHANICAL SYSTEM HAVING A HIGH RESONANCE FREQUENCY
Gerard Coussot, and Eugene Dieulesaint, both of Paris, France, assignors to Thomson-CSF, Paris, France
Division of Ser. No. 352,985, April 20, 1973, abandoned. This application Feb. 26, 1974, Ser. No. 445,900
Claims priority, application France, Apr. 25, 1972, 72.14638
Int. Cl.³ H01L *41/22*
U.S. Cl. 29—25.35 **4 Claims**

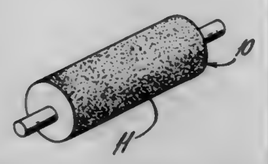
1. A method of manufacturing an electromechanical system having a high resonance frequency, the system comprising at least one wafer of piezoelectric material having at least one pair of electrodes secured to opposite faces of the wafer, said wafer being attached to a rigid substrate at the periphery of a recess therein, said recess overlapping a vibrational zone in the wafer delimited by said electrodes, the method comprising the steps of:

flattening a face of said substrate containing the recess;
depositing a first film of metal on said face;
flattening a face of said wafer;
depositing a conductive layer of gold on the flattened face of the wafer;
depositing a second film of metal onto the gold layer, said second film overlying an annular region of said wafer said region, corresponding to the periphery of said recess;



assembling said substrate and said wafer such that the first and second films contact each other and said annular region overlies the periphery of said recess;
securing together the substrate and the wafer by surface bonding the metals of the first and second films;
reducing by erosion the thickness of the wafer at a face thereof opposite that to which said conductive layer is deposited; and
depositing an electrode on the erosion reduced face of the wafer.

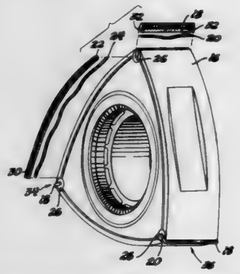
3,924,313
METAL APPLICATOR ROLL
Frank William Broderick, New Providence, N.J., assignor to Standex International Corporation, Andover, Mass.
Filed May 24, 1974, Ser. No. 473,019
Int. Cl.² F16G *11/00*
U.S. Cl. 29—121 R **3 Claims**



1. A hardened metal applicator roll having a precise randomly etched surface for carrying material to be applied to other material, said surface having a random pattern of cells of varying size and depth and irregular shape.

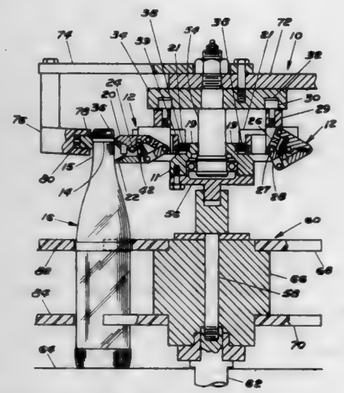
3,924,314
ASSEMBLY METHOD FOR ROTARY ENGINE
Harold W. Ferchland, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 7, 1973, Ser. No. 413,546
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B23P *15/00*
U.S. Cl. 29—156.4 R **3 Claims**

1. A method of assembling components of a rotary engine of the type having an outer housing body including a cavity, a rotor disposed in said cavity for relative rotation with said outer body, said rotor having a plurality of grooves with at least one groove containing a spring-biased seal member such that in the operation of said mechanism said seal member is urged into sealing engagement with a surface of said housing body, said method comprising
providing a said rotor, and a said seal member and spring in substantially finished manufactured condition ready for assembly,
applying a film of adherent lubricant composition to a surface of said seal which lies adjacent a wall of a said rotor groove in the operation of said engine,



inserting said spring and seal in said groove and pushing said seal against said spring so that said seal is depressed in said groove below the normal operating position of said seal, said composition adhering to said groove wall and holding said seal in said depressed position while said rotor is placed in said housing,
and then placing said rotor including said spring-biased seal in said housing, said seal subsequently being returned to its operating position by said spring, said composition being removable from said engine by vaporization and combustion during the operation of said engine.

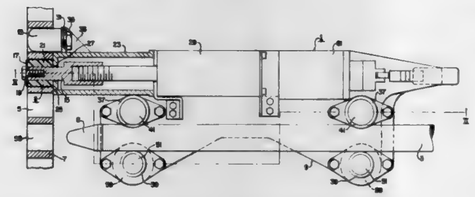
3,924,315
APPARATUS FOR REMOVING PILFERPROOF CLOSURE BANDS FROM RETURNABLE BOTTLES
Edward W. Cady, Richmond, and George R. Parsons, Hagerstown, both of Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Mar. 7, 1974, Ser. No. 448,979
Int. Cl.² B23P *19/00*
U.S. Cl. 29—200 D **14 Claims**



9. Apparatus for removing pilferproof closure bands from the necks of returnable bottles comprising:
a rotary table with a plurality of cutter assemblies mounted in it including a pair of pivotable jaws having mating sharp edges for cutting a pilferproof band and mating dull edges for clamping the band to strip it from the container;
means for guiding bottles with pilferproof closure bands on the neck thereof into the apparatus and around the rotary table with the cutter assemblies;

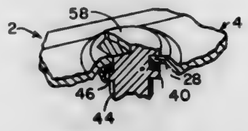
and means for actuating each cutter assembly to sever the pilferproof band on each bottle neck and strip the severed band from the bottle neck as the bottle is guided around the table.

3,924,316
TUBE PUSHING APPARATUS
Thomas D. Matlock, Morton, Pa., and Kenneth R. Smith, Alexandria, La., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 20, 1975, Ser. No. 551,808
Int. Cl.² B23P *15/26*
U.S. Cl. 29—202 R **11 Claims**



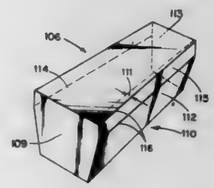
1. An apparatus for pushing tubes through holes in a tube sheet of a heat exchanger, said apparatus comprising
a base portion,
a plurality of guide pins which register with holes in the tube sheet to position the base plate relative to a specific hole through which a tube is to be pushed,
at least one idler roller disposed on said base portion,
at least one drive roller disposed on said base portion, said rollers being cooperatively associated to align said tube with said specific hole,
means for driving said drive rollers to push said tube through said specific hole and into said heat exchanger.

3,924,317
METHOD OF COUPLING THE COMPONENTS OF A MOLDING RETAINER
Charles Henry Becker, Braintree, Mass., assignor to TRW Inc., Cleveland, Ohio
Division of Ser. No. 281,697, Aug. 18, 1972, Pat. No. 3,863,300. This application Nov. 7, 1974, Ser. No. 521,823
Int. Cl.² B21D *39/00*; B23P *11/00*
U.S. Cl. 29—509 **2 Claims**



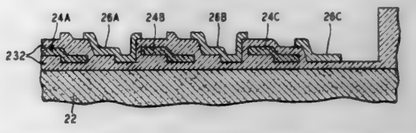
1. A method of joining the molding engaging cross plate and fastener member of a molding retainer combination in an assembly wherein the cross plate and fastener member are non-rotatably coupled to one another comprising the steps of: providing the cross plate with a through opening defined by a polygonal peripheral wall; providing one end of the fastener member with a solid, cylindriform, rivetlike shank extending along a limited axial extent of the length of said fastener member and having a diameter less than the width of said opening in said cross plate; providing said fastener member with a radially protruding shoulder means disposed adjacent the axially inner end of said rivetlike shank and having a width greater than the width of said opening in said cross plate; seating said rivetlike shank generally centrally in said cross plate opening such that said shank protrudes outwardly beyond one side of said cross plate and said shoulder means overlies the other side of said cross plate; displacing material of the protruding end of said rivetlike shank by a process commonly known as orbital heading to cause a portion of the material of said protruding end to flow both radially outwardly and axially inwardly whereby certain portions of said displaced material flow toward said shoulder means and into the space between the outer wall of the remainder of said rivetlike shank and the wall of said cross plate defining said opening therein to nonrotatably lock the fastener member to the cross plate, and other portions of said material flow radially outwardly to overlie the side of said cross plate remote from said shoulder means to provide a fastener member head which, cooperatively with said shoulder means, inhibits relative axial movement of said fastener member and said cross plate.

3,924,318
SAW FOR PRECISION CUTTING TOOL
John W. Baker, 4 Wachusetts Drive, West Acton, Mass. 01720
Division of Ser. No. 273,385, July 20, 1972, Pat. No. 3,820,233. This application Apr. 26, 1974, Ser. No. 464,475
Int. Cl.² B26D *1/28*
U.S. Cl. 29—567 **6 Claims**



1. In a saw of the type having roughing teeth and finishing teeth arranged to form a cutting edge, each said finishing tooth having a front face, a rear face and side faces and being generally tapered downwardly from near the top to the bottom of said finishing teeth, the improvement wherein, along the top of each said side face of said finishing teeth, there is a relatively narrow band, the narrow bands being vertical and converging from the front face to the back face:

3,924,319
METHOD OF FABRICATING STEPPED ELECTRODES
Amr Mohamed Mohsen, North Plainfield, N.J., assignor to Bell Telephone Labratories, Incorporated, Murray Hill, N.J.
Filed Aug. 12, 1974, Ser. No. 496,697
Int. Cl.² B01J *17/00*
U.S. Cl. 29—578 **13 Claims**



1. A method of forming a solid state device having multiple level electrodes over a substrate comprising the steps of:
forming a first insulating layer disposed on the substrate, the layer having thicker and thinner portions forming a stepped upper surface of a first array of steps,
forming a first conducting layer overlying the first insulating layer,
selectively etching through the first conducting layer and the first insulating layer to form stepped islands of insulating material overlaid by conducting material having upper and lower levels, and laterally centered about the original location of every other step of the first array in the insulating layer,
forming a second insulating layer including forming zones of insulating material on the islands of conducting material and forming stepped zones of insulating material having

a second array of steps each located in the area between successive conducting material islands so lower levels of the stepped zones are adjacent to upper levels of the conducting material islands and upper levels of the stepped zones are adjacent to lower levels of the conducting material islands, and

depositing a conducting material on the stepped zones of insulating material between the conducting material islands.

3,924,320

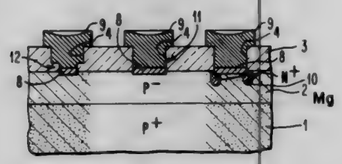
METHOD TO IMPROVE THE REVERSE LEAKAGE CHARACTERISTICS IN METAL SEMICONDUCTOR CONTACTS

Carl Altman, La Grangeville; Sydney G. Chapman, Poughkeepsie, and Akella V. S. Satya, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 244,157, April 14, 1972, abandoned. This application Oct. 18, 1974, Ser. No. 516,236

Int. Cl.² B01J *17/00*

U.S. Cl. 29—578 **1 Claim**



1. In a method for producing a metal P-type semiconductor contact diode wherein said metal has a work function higher than the electron affinity of the P-type substrate, said method including the following steps:

a. providing a P-type semiconductor substrate having an epitaxial layer thereon and covered by a suitable insulating or oxide film;

b. opening a contact hole through said layer;

c. chemically pre-cleaning the contact area on said substrate;

d. sputter cleaning the contact area on said substrate by subjecting said area to low energy ionic bombardment;

e. depositing metal in said contact hole and in contact with said contact area of said semiconductor substrate, whereby the metal P-type semiconductor diode has an improved reverse current characteristic.

3,924,321

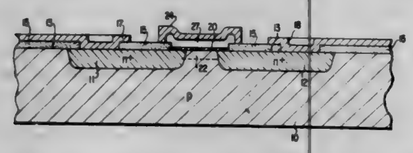
RADIATION HARDENED MIS DEVICES

Koy B. Cook, Jr., Satellite Beach; Jimmy L. Davidson; Joseph D. Gibson, both of Melbourne Beach, and Raymond B. Patterson, III, Eau Gallie,, Fla., assignors to Harris Corporation, Cleveland, Ohio

Division of Ser. No. 92,074, Nov. 23, 1970, abandoned. This application Jan. 30, 1973, Ser. No. 328,033

Int. Cl. B01j *17/00*

U.S. Cl. 29—580 **8 Claims**



1. The process of producing a field-effect device on a silicon body having a flat surface, said process comprising the steps of

forming a thin insulative passivating layer on a portion of said surface of said silicon body,

depositing a layer of spacer material much thicker than said thin passivating layer atop said thin passivating layer,

depositing a metal electrode layer on said spacer material with added support of said metal layer by other than said spacer material and said thin passivating layer;

removing said spacer material to leave a gap between said thin passivating layer and said metal layer, and

evacuating said gap.

3,924,322

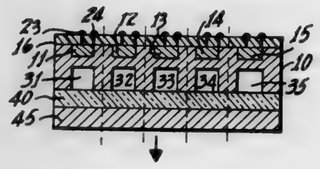
ECONOMICAL PRESSURE TRANSDUCER ASSEMBLIES, METHODS OF FABRICATING AND MOUNTING THE SAME

Anthony D. Kurtz, Englewood; Amnon Brosh, Demarest; Charles L. Gravel, River Edge, and Joseph R. Mallon, Alpine, all of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Division of Ser. No. 423,713, Dec. 11, 1973, Pat. No. 3,900,811. This application Jan. 27, 1975, Ser. No. 542,026

Int. Cl.² B01J *17/00*

U.S. Cl. 29—580 **6 Claims**



1. A method of fabricating a pressure transducer comprising the steps of:

a. diffusing a plurality of piezoresistive bridge patterns on a given surface of a first wafer of semiconductor material,

b. coating said diffused surface with a layer of semiconductor oxide material,

c. forming apertures in said layer to contact each of said patterns,

d. metalizing said apertures to form a series of metal contact areas on said surface of said layer,

e. forming a series of apertures on the opposite side of said wafer and beneath each of said patterns to define an active diaphragm area,

f. bonding said wafer at said opposite side to a layer of an insulator material to close each of said apertures formed on the opposite side of said wafer,

g. bonding said opposite side of said glass layer to a thicker wafer of semiconductor material to act as an attenuator for said transducer, and

h. separating each of said patterns together with all bonded members to provide a given number of separate pressure transducers structures equal to said plurality.

3,924,323

METHOD OF MAKING A MULTIPLICITY OF MULTIPLE-DEVICE SEMICONDUCTOR CHIPS AND ARTICLE SO PRODUCED

Lewis Herbert Trevail, Indianapolis, and Brian Anthony Hegarty, Martinsville, both of, assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 355,718, April 30, 1973, abandoned. This application Aug. 23, 1974, Ser. No. 500,164

Int. Cl.² B01J *17/00*

U.S. Cl. 29—583 **7 Claims**

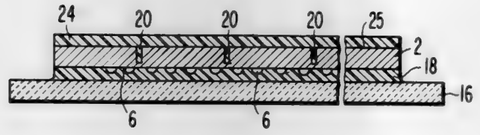
1. A method of fabricating a multiplicity of semiconductor unit chips each of which contains a plurality of substantially completely electrically isolated semiconductor devices, comprising:

forming an array of devices within a single wafer of semiconducting material, each of said devices having one face on which circuit contacts are adapted to be formed and another face opposite thereto,

mounting said wafer on a temporary substrate with said contact face facing said substrate,

forming grooves in said opposite wafer face between some but not all of said devices,

filling said grooves with and coating said opposite surface with, a resin,



removing said wafer from said substrate,

remounting said wafer on a substrate with said opposite face facing said last mentioned substrate,

dividing said wafer between devices which do not have grooves therebetween such that said wafer is divided into said unit chips, and

separating said unit chips with said devices in each unit chip being electrically isolated from one another by the resin in the grooves from the substrate.

3,924,324

METHOD OF MAKING ELECTRET

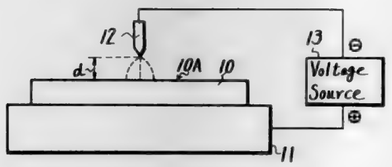
Yoichi Kodera, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed July 2, 1974, Ser. No. 485,112

Claims priority, application Japan, July 5, 1973, 48-76027

Int. Cl.² H01S *4/00*

U.S. Cl. 29—592 **8 Claims**



1. A method of making a mono-charge electret, comprising the steps of charging a dielectric film which is mounted on a metal electrode by subjecting said film to a corona discharge; and then, after said corona discharge is completed and while said film is still mounted on said electrode, heating said charged dielectric film.

3,924,325

METHOD AND APPARATUS FOR MOUNTING TERMINAL PINS FROM A SINGLE SIDE OF A DOUBLE SIDED TERMINAL BOARD

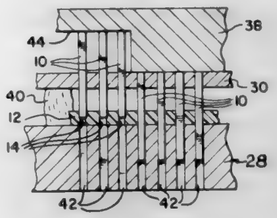
Kenneth L. Kufner, Hickory Hills, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed July 2, 1974, Ser. No. 485,116

Int. Cl.² H05K *13/04*

U.S. Cl. 29—626 **14 Claims**

1. A terminal pin mounting method comprising the steps of aligning a plurality of terminal pins with holes in a major surface of a circuit member, and simultaneously forcing the terminal pins into said holes to various depths with a stepped platen so that the major portion of some of said terminal pins extends outwardly from said major surface and the major



portion of other ones of said terminal pins extends outwardly from an opposing major surface of said circuit member.

3,924,326

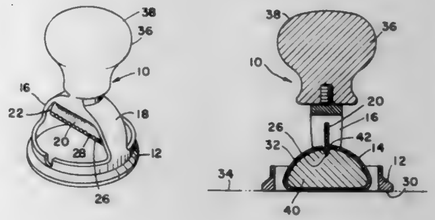
NUT SHELL CUTTER

Dante Di Gaetano, 1021 Old Lane St., Drexel Hill, Pa. 19026

Filed Aug. 29, 1974, Ser. No. 501,476

Int. Cl.² A47J *43/26*

U.S. Cl. 30—120.2 **3 Claims**



1. In a nut shell cutter for partially cutting the shell of nut as it rests upon a surface, the combination of

A. positioning means to hold a nut in association with the nut shell cutter,

1. said positioning means comprising a bottom holding ring having a diameter sufficiently large to encompass the nut,

2. the said ring having an annular flat bottom for engaging the surface supporting the nut;

B. a pair of arms rising upwardly from the bottom holding ring and terminating upwardly in a handle receiving junction; and

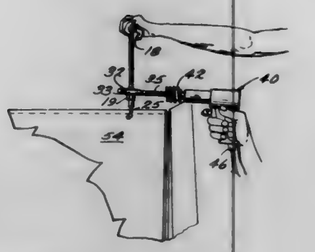
C. a cutting blade spaced above the bottom of the bottom holding ring a distance less than the thickness of a nut,

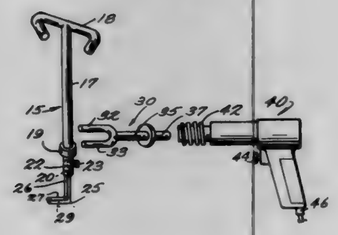
1. the said blade being a straight blade and being fixedly connected at each end to a respective arm,

2. the cutting blade having a downwardly directed cutting edge,

3. the entirety of the cutting edge being spaced from the bottom of the bottom holding ring a distance which is less than the thickness of the nut.

3,924,327
POWERED WINDSHIELD TRACK CUTTER
Jerry Clyde Edwards, Rt. 3, Box 58A, Philadelphia, Miss. 39350
Filed Sept. 25, 1974, Ser. No. 509,347
Int. Cl.² B26B 3/04, 7/00
U.S. Cl. 30—277 7 Claims





1. An assembly for cutting windshield tracks and the like comprising

a. cutting means for simultaneously cutting two portions of a windshield track or the like, said cutting means comprising a generally L-shaped cutting blade having first and second legs of said L sharpened, said legs for cutting different portions of a windshield track simultaneously,

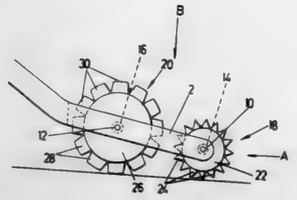
b. means for mounting said cutting means and for providing positive direction therefor, said means including an elongated frame member having a portion thereof for grasping by an operator and an end portion for mounting the first of the legs of said L-shaped blade,

c. power means for supplying a mechanical force to said frame member in a direction substantially perpendicular to the direction of elongation thereof, and

d. means for transferring a mechanical force from said power means to said cutting means through said frame member, said transferring means comprising (i) means for abutting said elongated frame member at a point thereof between the portion thereof for grasping by an operator and the general area of mounting of said cutting means to said frame member, and (ii) means for operatively connecting said force transferring to said power means.

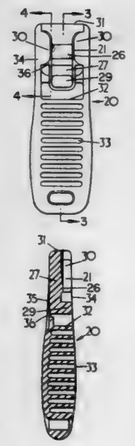
3,924,328
CUTTING TOOL FOR WALLPAPER
Frank Mould, Rowlands Gill, England, assignor to Contexo Limited, Burslem, England
Filed Jan. 16, 1975, Ser. No. 541,582
Int. Cl.² B26B 3/08
U.S. Cl. 30—307 6 Claims

1. A cutting tool including a body member, first and second wheels mounted on said body member and rotatable in a common plane, a plurality of radial teeth projecting from the periphery of the first wheel, and the periphery of the second wheel comprising at least one cutting element, the arrangement being such that, on pressurised rotation of said wheels over a sheet of material, the teeth of the first wheel perforate said sheet and the at least one cutting element of the second



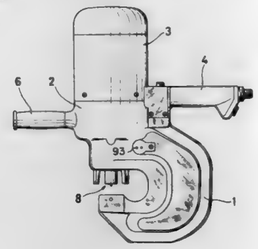
wheel scores along the line of said perforations formed by the first wheel.

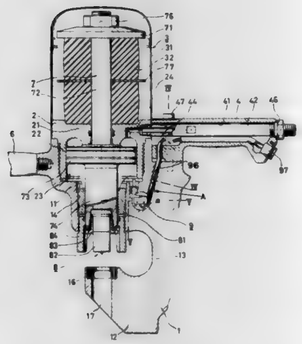
3,924,329
HAND TOOL COMPRISING A HANDLE AND REMOVABLE BLADE
Ronald David Carter, Leamington Spa, England, assignor to Stanley Tools Ltd., Sheffield, England
Continuation-in-part of Ser. No. 373,496, June 25, 1973, abandoned. This application Jan. 31, 1975, Ser. No. 546,133
Int. Cl.² B26B 5/00
U.S. Cl. 30—339 5 Claims



1. A hand tool comprising a handle and a removable blade, the handle being in one piece of moulded material and having firstly a channel extending part-way along the handle from one end thereof to receive the blade and secondly a part which is adapted to interlock positively with the blade so as to retain the blade and which is at least partly resilient so that it can be forced out of interlock with the blade for removal of the blade, the said part of the handle comprising a spigot and a resilient cantilever from which the spigot extends, the blade having a cut-out therein through which the spigot extends, the cantilever extending part-way along the handle from near said one end thereof, where the cantilever is joined to the body of the handle, toward the other end of the handle.

3,924,330
HYDRAULICALLY OPERATED WORKING MACHINE
Shigeru Mitsuhashi; Kyoichi Hirokawa; Noboru Saito; Minoru Kaneko; Michihiro Shoji; Masunari Kowada, and Yasuo Kazama, all of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan
Filed July 1, 1974, Ser. No. 484,552
Claims priority, application Japan, Aug. 4, 1973, 48-91668
Int. Cl.² B26F 1/02, 1/34
U.S. Cl. 30—362 7 Claims





1. A hydraulically operated working machine usable for punching and cutting operations and the like comprising, in combination:

a main frame having an interior piston chamber reducing to a narrow opening suited for guiding piston reciprocation; a cap mounted upon the side of said main frame opposite said opening and arranged so as to close one end of said piston chamber;

a main operating handle joined to said main frame and aligned transverse to the longitudinal axis of the piston chamber, said handle being provided with an internal conduit for connecting said piston chamber to a supply source of pressured fluid for moving the piston assembly in a first direction;

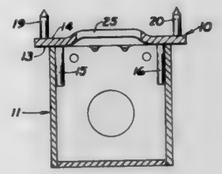
a piston mechanism comprising a piston member mounted for reciprocal movement within said piston chamber and provided on one side with a first extension which extends in said first direction through said main frame and into said opening;

a work head mounted at the free end of said first extension for reciprocating engagement with the workpiece adjacent said opening, said piston member being further provided with a second extension which extends in a second direction opposite said first direction through said piston chamber and said cap;

a holding member mounted upon the free end of said second extension; and

resilient piston retracting means arranged on the exterior side of said cap and positioned between said holding member and said cap for urging said piston mechanism in said second direction.

3,924,331
MARKING TEMPLATE
Richard H. Goosen, 1705 Lake Ave., R.R. No. 1, Holton, Mich. 49425
Filed Dec. 9, 1974, Ser. No. 530,715
Int. Cl.² B26F 1/24
U.S. Cl. 30—366 5 Claims

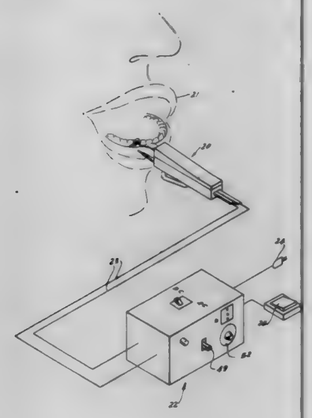


1. In a device for facilitating accurate cutting of openings in rigid wall covering sheets for access to a conventional electrical outlet box, a plate having rearward and forward faces, locating means projecting from said rearward face for engagement with said outlet box to accurately position said plate on said box, and marking means projecting from said forward face and arranged to make the mark on the rearward face of a wall covering sheet pressed thereagainst, said plate being generally rectangular, said marking means comprising four rigid marking pins and means for securely fastening said marking pins to said plate to project forwardly in parallel relation from four corner portions of said forward face of said plate, said rigid marking pins having sharply pointed ends in a plane parallel to said plate for making marking indentations on the rearward face of a wall covering sheet pressed thereagainst, and said locating means comprising four generally cylindrical rigid locating pins and means for securely fastening said marking pins to said plate to project rearwardly in parallel relation from said rearward face of said plate, said locating pins being arranged to engage inside four corner portions of said outlet box.

3,924,332
INTRA-ORAL FUSION PROCESS
Marvin A. Rauch, 1223 Cornaga Ave., Far Rockaway, N.Y. 11691; Raymond L. Boni, 369 Barr Ave., Woodmere, N.Y. 11598, and Thomas D. Hadnagy, 17 Briar Lane, Roslyn Heights, N.Y. 11577
Filed Aug. 29, 1973, Ser. No. 392,544
Int. Cl.² A61C 7/00
U.S. Cl. 32—14 R 4 Claims

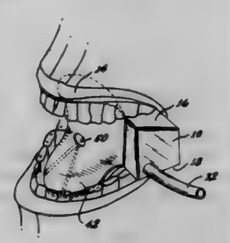
1. An intra-oral process for preventing spaced first and second teeth from moving together in the mouth including the steps of selecting first and second bands each of which has a projecting shelf formed thereon and placing said bands on said first and second teeth respectively with said shelves projecting outwarly from the mouth, selecting a spacer member having a body and extensions thereon and placing said body in the space between said first and second teeth with respective extension thereof on respective shelves of said first and second

bands, fusing the ends of said spacer member to said respective shelves while in the mouth, and thereafter cementing said



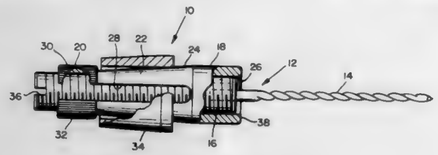
first and second bands respectively to said first and second teeth.

3,924,333
DENTAL APPLIANCE
Norman Erickson, Rte. 3, Box 551, Escondido, Calif. 92025
Filed Sept. 9, 1974, Ser. No. 504,435
Int. Cl.² A61C *17/04*
U.S. Cl. 32—33 **13 Claims**



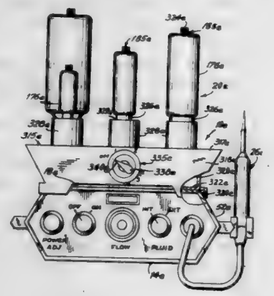
1. A dental appliance for evacuating debris and liquid from the mouth during dental operations, which comprises, a semi-rigid bite block adapted to be gripped by the molars of the patient on one or the other side of the mouth, said bite block deforming upon the initial bite of the patient so as to form a mold thereof for secure placement within the patient's mouth and which bite block resists further deformation permitting the patient to exert substantial pressure on said block, a combination anchoring and evacuating member connected to said bite block and captured within the patient's mouth, said evacuating member and said bite block have formed therein channels for the removal of fluid generated in the forward compartment and said bite block having formed therein channels for the removal of fluid generated in the back compartment, said member bearing against the linqual gingiva, a resilient collector removably connected to said evacuating member which collector extends from the evacuating member through the retro-molar space into the vestibule and rests on tissue overlying the ascending ramus and extends over the palate where it conforms to and lies on maxillary gingiva tissue and conforming to the shape of the mouth and separates the mouth into a forward compartment that is being worked on and a rear compartment, said collector collects fluid and saliva generated during said operation and diverts the same to said evacuating member for removal from the mouth.

3,924,334
ROOT CANAL IMPLEMENT
Frank Nickolis Lentine, Taylor, Mich., and William Francis Keller, Leawood, Kans., assignors to Sybron Corporation, Rochester, N.Y.
Filed June 21, 1974, Ser. No. 481,524
Int. Cl.² A61C *5/02*
U.S. Cl. 32—57 **3 Claims**



1. A root canal instrument comprising:
a. a wire to be used in filing the root canal of a tooth;
b. an externally threaded knob on one end of said wire;
c. a generally cylindrical handle having a threaded bore extending therethrough for receiving said threaded knob with said wire projecting outward from a forward end surface of said handle;
d. said handle having a forward portion, a rear portion and an intermediate portion tapering outwardly from said rear portion to said forward portion, the smaller diameter of said tapered intermediate portion being less than the diameter of said rear portion, and said handle having a longitudinal slot extending from a rearward end surface thereof through said rear portion and into said tapered intermediate portion, said slot allowing said handle to function as a split chuck; and
e. a lock ring positionable on said handle and about said intermediate portion, the inner diameter of said ring being smaller than the diameter of either said forward or rear portions so that said ring will interfere with said tapered surface upon axial movement forward for constricting and locking the rear and intermediate portions of said handle about said knob and will abut said rear portion when moved axially rearward.

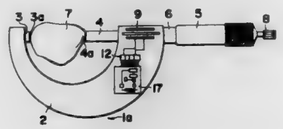
3,924,335
ULTRASONIC DENTAL AND OTHER INSTRUMENT MEANS AND METHODS
Lewis Balamuth, New York; Arthur Kuris, Riverdale, and Manuel Karatjas, Glen Oaks, all of N.Y., assignors to Ultrasonic Systems, Inc., Farmingdale, N.Y.
Continuation-in-part of Ser. No. 119,298, Feb. 26, 1971, Pat. No. 3,809,977. This application Dec. 20, 1971, Ser. No. 209,971
Int. Cl.² A61C *3/06;* **A61H** *1/00;* **H01V** *7/00*
U.S. Cl. 32—58 **31 Claims**



1. An ultrasonic dental system including
A. a converter for providing electrical current at an ultrasonic rate,

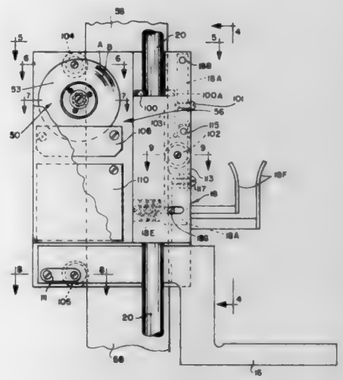
B. an accessory having a tip for use in the oral cavity when ultrasonically vibrated, said accessory including
1. housing means,
2. a transmission member having a rear section and a front section, said front section extending beyond said housing and having said tip secured thereto,
3. transducer means connected to said section for driving said transmission member, and
4. means to suply a fluid to said tip,
C. means electrically connecting said converter to said transducer means in said accessory,
D. fluid regulating means communicating with said accessory means to supply a fluid to said tip,
E. internal fluid supply means including dispensing means adapted to be coupled with a liquid reservoir communicating with said fluid regulating means to provide an internal supply of liquid to the accessory,
F. external fluid supply means communicating with said fluid regulating means to provide an external supply of liquid to the accessory,
G. control means communicating with said fluid regulating means for permitting selection of fluid from said internal fluid supply means or said external fluid supply means,
H. liquid reservoir means adapted to be readily engaged with said dispensing means to permit the utilization of a variety of fluids within the oral hygienic procedures to be conducted with the dental system, and
I. means for flushing said internal supply means with fluid from said external supply means.

3,924,336
MEASURING INSTRUMENT
Kiyoshi Inoue, Tokyo, Japan, assignor to Inque-Japax Research (Ijr) Inc., Yokohamashi, Japan
Filed Mar. 21, 1974, Ser. No. 453,548
Claims priority, application Japan, Mar. 22, 1973, 48-32915
Int. Cl. G01b *3/18*
U.S. Cl. 33—164 R **3 Claims**



1. A measuring instrument comprising:
a frame having a first surface;
a second surface movably mounted in said frame and juxtaposed with said first surface and defining an adjustable gap therewith;
a transducer mounted on said frame and connected to said second surface, said transducer producing an output representing the position of said second surface;
a detector on said frame connected to said transducer for producing an analog signal of said output therefrom;
an amplifier on said frame connected to said detector for amplifying said analog signal;
an analog-to-digital converter on said frame connected to said amplifier for transforming said amplified analog signal into a digital pulse train;
a reversible counter on said frame connected to said analog-to-digital converter for counting the pulses of said pulse train;
a decoder on said frame connected to said reversible counter for generating a display signal; and
an optical display on said frame coupled to said decoder for displaying numerical values corresponding to said display signal and representing the position of said second surface.

3,924,337
HEIGHT GAGE
James L. Taylor, 928 Juanita Ave., LaVerne, Calif. 91750
Continuation-in-part of Ser. No. 313,699, Dec. 11, 1972, abandoned. This application July 17, 1974, Ser. No. 489,176
Int. Cl.² G01B *7/00*
U.S. Cl. 33—169 R **8 Claims**

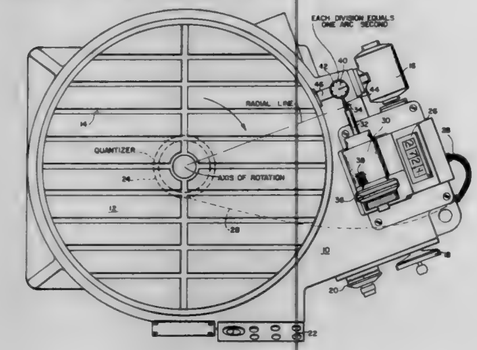


1. A height gage including: a base; an elongated upright guide column of rectangular cross-section mounted on said base; a carriage; first, second and third bearing assemblies rotatably mounted on said carriage to enable said carriage to be movable up and down said column; an upright rod rotatably mounted on said base adjacent to said column; a rotatably mounted fine adjustment knob; means coupling said knob to said rod to cause rotation of said rod upon rotation of said knob; means coupling said carriage to said rod to cause said carriage to move up and down said column as said rod is rotated by rotation of said fine adjustment knob; spring loaded trigger means connected to said last-named coupling means for selectively decoupling said last-named coupling means from said rod to permit said carriage to be freely moved up and down said column; an encoder mounted on said carriage and including a drift shaft engageing the edge of said column in frictional line contact therewith for rotation of said drive shaft as said carriage is moved up and down said column to cause said encoder to generate electric signals, the first and second of said bearing assemblies and said encoder drive shaft engaging opposite edges of said column for supporting the carriage on the column, and the third of said bearing assemblies being spaced from the edge of said column and having guide flanges engaging the column; and an electronic display unit electrically coupled to said encoder.

3,924,338
ROTARY POSITIONING APPARATUS AND METHOD
George F. Kindl, Newington, Conn., assignor to Colt Industries Operating Corporation, West Hartford, Conn.
Filed Apr. 24, 1974, Ser. No. 463,508
Int. Cl.² G01B *5/24;* **B23Q** *17/02, 17/18*
U.S. Cl. 33—174 TC **6 Claims**

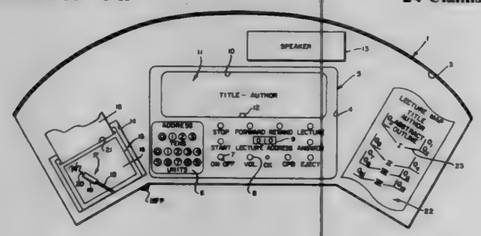
6. Apparatus for setting an angular position comprising;
a support;
a rotating member mounted for rotation upon the support;
means for indicating a plurality of discrete angular index positions of the rotating member;
means for providing a fixed reference location on the support which lies along a radial line from the axis of rotation of the rotating member and is adjacent the rotating member;
means for displacing the reference location by an amount which corresponds to the desired angular increment be-

tween two adjacent index positions in a direction perpendicular to the radial line; and



means for sensing the displacement of the reference location relative to a fixed location on the rotating member.

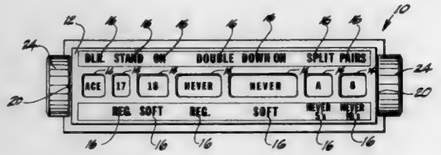
3,924,339
INTERACTIVE TEACHING SYSTEM
Stewart W. Wilson, Concord, and John W. Ericson, Marblehead, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Oct. 2, 1972, Ser. No. 294,475
Int. Cl.² G09B *7/00*
U.S. Cl. 35—8 R **24 Claims**



1. In an interactive communication system, the combination comprising a lecture tape on which a lecture is recorded, a series of lecture address signals recorded on said lecture tape at locations identifying selected portions of said lecture, an answer tape on which a series of answers to questions that may be raised by said lecture are recorded in spaced sequential locations, a series of answer address signals recorded on said answer tape at locations identifying the beginning of each recorded answer, a tape recorder comprising switching means for selectively reproducing signals recorded on two tapes and adapted to receive said lecture and answer tapes, and means controlled by said address signals and said switching means for moving said answer tape to a location correlated with the position of said lecture tape while said tape recorder is reproducing said lecture.

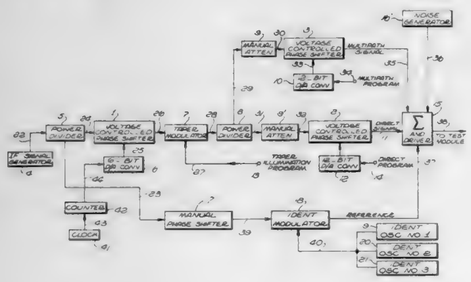
3,924,340
BLACKJACK TEACHING DEVICE
John M. Tammone, 14282 Utrillo, Irvine, Calif. 92705
Filed July 26, 1974, Ser. No. 492,051
Int. Cl.² G09B *19/22*
U.S. Cl. 35—8 B **2 Claims**

1. A device for teaching the playing of blackjack according to logic which comprises:
a. an outer housing having a plurality of apertures spaced therealong;
b. a plurality of labels on the outer housing, each being associated with an aperture thereon, one aperture being identified by its respective label as relating to the dealer's face card, and each of the other apertures being identified by its respective label or labels with a possible play by a blackjack player; and
c. a data bearing inner member movably positioned within the outer housing, the data thereon being arranged in straight columns, each column being in alignment with an aperture in the outer housing, the column in alignment with the aperture labeled as relating to the dealer's face card containing indicia corresponding to the various possible face cards of the dealer in blackjack, one of such indicia being visible at a time through the aperture, each



of the other columns containing indicia indicating by blackjack point count and the like when a player should make the particular play by which the aperture through which the column is visible is labeled, based upon the indicia corresponding to the dealer's face card showing through the aperture labeled as relating to the dealer's face card,
and wherein the apertures other than that labeled as relating to the dealer's face card are grouped in pairs, each pair having a main label for the pair and sublabels for each of the individual apertures in the pair.

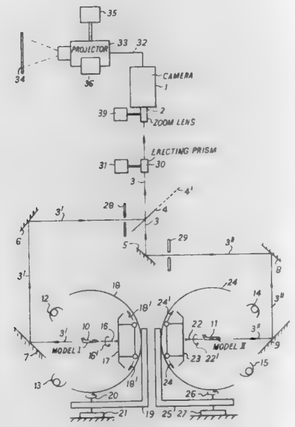
3,924,341
DOPPLER MICROWAVE LANDING SYSTEM SIGNAL SIMULATOR
Henry Edelsohn, Woodland Hills, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed June 17, 1974, Ser. No. 480,006
Int. Cl.² G01S *7/40*
U.S. Cl. 35—10.4 **10 Claims**



1. A device for simulating the signal from a Doppler type, commutated antenna array ground beacon as received at a predetermined remote receiving point, comprising:
a signal source operating at a predetermined radio frequency;
digital clock means for producing a continuous succession of timing pulses;
a first controllable radio frequency phase shifter responsive to said signal source and having a control input;
first means including a digital counter and a first D/A converter responsive to said counter, said counter being responsive to said clock means, to generate and apply to said first controllable phase shifter control input, a periodic sawtooth signal, thereby to produce a radio frequency sideband spaced a predetermined amount in frequency from said signal source;

second and third controllable radio frequency phase shifters each responsive to said sideband at the output of said first controllable phase shifter, and each having a control input;
programmer means for generating and applying to said second and third controllable phase shifter control inputs, signals representative of phase shift programs corresponding to the direct and multipath signal phase variations during commutation of a ground beacon antenna simulated, respectively;
and a summer circuit responsive to the outputs of said second and third controlled phase shifters and to said signal source to produce a composite signal including said direct and multipath signals and a reference signal, respectively.

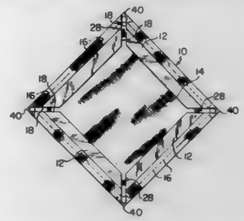
3,924,342
GROUND-BASED FLIGHT SIMULATORS
Roy Pedlar, Lindfield, and Brian Malcolm Boustred, Hookwood, nr. Horley, both of England, assignors to Redifon Limited, London, England
Filed Apr. 19, 1974, Ser. No. 462,524
Claims priority, application United Kingdom, May 23, 1973, 24713/73
Int. Cl.² G09B *9/08*
U.S. Cl. 35—12 N **12 Claims**



1. For use in a ground-based flight simulator for simulating flight of a first craft, apparatus for producing an image of a second craft comprising first and second model means of said second craft, the first model means for providing a generally rear view and the second model means for providing a generally front view of said second craft, both model means being correspondingly movable according to the desired aspect angle of the second craft from the first craft, camera means and means for enabling the said camera means selectively to view alternately the first and the second of the two said model means.

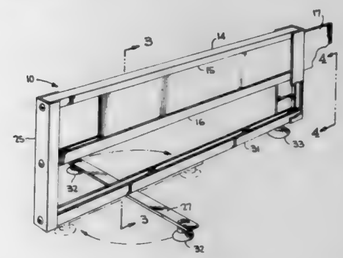
3,924,343
EXPANSIBLE DEVICE FOR STRETCHING MATERIAL AND METHOD
Robert C. Johnson, Pittsburgh, Pa., assignor to Metalogic, Inc., Chagrin Falls, Ohio
Filed Nov. 7, 1974, Ser. No. 521,589
Int. Cl.² D06C *3/08*
U.S. Cl. 38—102.1 **9 Claims**

1. A frame for stretching material secured thereto, said frame comprising elongated defining frame elements movable relative to one another, and rotatable means coacting between adjacent of said frame elements coupling the latter together, predetermined adjustment of said rotatable means causing expansion of said frame, for causing stretching of the material, and wherein said frame elements have mitered end faces adapted for juxtapositioning with the confronting mitered face of an adjacent element, each of said frame elements having an aperture therethrough disposed substantially at right angles to



the respective mitered face and receiving therein in rotatable relation said rotatable means, each of said elements comprising a slot therein at the distal end thereof and receiving therein relatively movable corner means forming a corner for the frame irrespective of the expansion of the frame elements relative to one another during stretching of the material, said corner means imparting strength and stability to the frame regardless of the degree of expansion and retraction and the frame elements relative to one another.

3,924,344
EMERGENCY SIGN DEVICE
Charles H. Davis, 302 Rollins Ave., Dothan, Ala. 36301
Filed Aug. 13, 1974, Ser. No. 497,110
Int. Cl.² G09F *21/04*
U.S. Cl. 40—129 C **1 Claim**



1. A device capable of being mounted on a horizontal surface of a motor vehicle for exhibiting emergency signs, comprising a flat and elongated upstanding support member for the signs, said support member including at least one pair of elongated open channels facing inwardly toward one another along which the signs may be slid into place, said member further including an imperforate end plate at one end thereof extending across said channels, said member also including an end plate at the opposite end thereof extending across said channels and covering an end of a lower one of said channels for preventing the signs from inadvertently sliding outwardly of said channels, said opposite end plate having an opening therein through which the signs may be inserted, said member further including an elongated screw trough disposed along a lower edge thereof, and an elongated leg member mounted between its opposite ends to said lower edge for pivotal movement about an axis perpendicular thereto by means of a threaded fastener extending through said leg member and threadedly engaging said screw trough, said leg member being pivotable between a position of non-use lying in the plane of said support member and a position of use extending outwardly of opposite sides of said support member, said leg

member having a length not greater than the length of said support member, and said fastener being so disposed relative to said leg member opposite ends and relative to said ends of said support member as to permit said leg member to be pivoted into its position of non-use without extending outwardly of said end plates of said support member, and suction cups being mounted to said support member at said lower edge thereof and to said leg member at said opposite ends thereof.

3,924,345

FISHING ROD WITH STORABLE STAKE

Maurice Sapp, 1425 S. Harrison Road, Grand Island, Nebr. 68801

Filed Feb. 20, 1974, Ser. No. 444,253
Int. Cl.² A01K *97/10*
U.S. Cl. 43—21.2 **1 Claim**



1. A fishing rod with a storable rod stake formed and arranged to constitute a continuation of the rod handle, comprising a fishing rod having a rod section and an elongate handle, said handle being coupled to said rod section at one end and having a free end, a hollow bore formed in said handle and extending from said free end toward said one end, a one-piece unit comprising an elongate rod stake having a pointed end and a base end and mounting means coupled to said base end and formed with axially opposite coupling means for detachable coupling with the free end of said elongate handle, such that said mounting means can be coupled to the free end of said handle to constitute an integral part of the handle with said stake extending into and stored in said hollow bore, or with said stake extending from the free end of said handle so as to be insertable into the ground, said free end of said handle including a screw threaded portion on its periphery, and said axially opposite coupling means comprising threaded portions on said mounting means for screw engagement with said threaded portion of said handle, said threaded portions of said mounting means comprising interiorly threaded, axially opposite bores opening from opposite ends of said mounting means, said stake passing into one of said threaded bores and being fixed at its base end to the inner end of said one bore, but being spaced radially inwardly of the threads of said one bore, said stake including a pivot joint between its pointed end and said mounting means to permit selective pivoting of the pointed end to a desired angle relative to the stake portion on the other side of said pivot joint so as to permit ready variation of the angle between the pointed end portion and the stake portion on the other side of said pivot joint, and hence between the pointed end portion and the fishing rod.

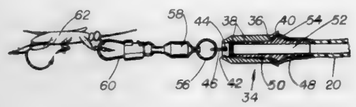
3,924,346

FISHING EQUIPMENT

Albert Leo Evers, St. Louis, Mo., assignor to Frank Apostol, East St. Louis, Ill.

Filed July 29, 1974, Ser. No. 492,427
Int. Cl.² A01K *85/06, 91/00*
U.S. Cl. 43—26.2 **10 Claims**

1. Fishing equipment which comprises an elongated, flexible, tubular line which can be cast or thrown onto the surface of a body of water, an air-moving device which is connected to one end of said line to permit fluid to be moved within and relative to said line, said air-moving device being manipulable to enable jets of fluid to be ejected from the other end of said line, said air-moving device being manipulable to cause fluid to move inwardly relative to and also to move outwardly relative to said other end of said line, said air-moving device being manipulable to draw water into said other end of said



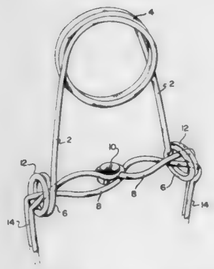
line, and said air-moving device being manipulable to eject jets of water from said other end of said line.

3,924,347

ACTUATOR FOR ANIMAL TRAP

Frank R. Conibear, 2170 Evergreen Place, Victoria, British Columbia, Canada

Filed Aug. 16, 1974, Ser. No. 498,239
Int. Cl.² A01M *23/26*
U.S. Cl. 43—90 **8 Claims**



1. In an animal trap of the type having similar first and second frames, each having sides serving as jaws and ends extending therebetween, and which are pivotally connected through adjacent ends for relative rotation between set and closed positions about a common axis, a trigger means for releasably maintaining the trap in set position and an actuator capable of rapidly and forcefully effecting such rotation, having two arms spring biased at one end so that the other end, if unobstructed, would move to a distance substantially greater than the length of said frame ends, each arm terminatng in an actuator ring respectively adapted to encircle adjacent ends of both frames on opposite sides of said axis, an improved actuator wherein an additional ring is fixed along an edge of each of the actuator rings of the actuator to form effectively thicker ring structures at the arm ends whereby when the actuator is expanded onthe closed trap, the outer ones of the actuator rings and additional rings on the arms abut against the inner sides of the jaws of the trap to prevent the actuator rings from sliding over the corners of the frames onto the jaws of the trap.

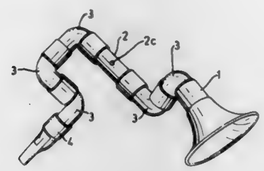
3,924,348

MUSICAL TOY WITH REARRANGEABLE PARTS

Christine Taylor, London, and David William Chisnall, Lingfield, both of England, assignors to Hilary Page "Sensible" Toys Limited, Kenley, England

Filed Aug. 6, 1974, Ser. No. 495,236
Int. Cl.² A63H *5/00*
U.S. Cl. 46—17 **1 Claim**

1. A child's musical toy comprising a blow-into sound-producing mouthpiece component, a trumpet end component and a resonance tube assembly detachably connecting said mouthpiece component and end component, said assembly including at least one straight tube component and at least two elbow components, means for serially detachably connecting all said components, said means comprising spigot and socket connections at the ends thereof, said mouthpiece component having a said socket, said trumpet end component having a said spigot, and assembly components each having a said



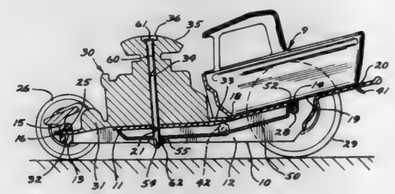
socket and spigot at respective ends, each said spigots being adapted to mate with any of said sockets.

3,924,349

TOY VEHICLE KIT HAVING LOCKING PIN THROUGH ENGINE, CHASSIS AND PAN

Vernon R. Wamsley, Wayzata, and Gerald A. Cuhel, Glencoe, both of Minn., assignors to Tonka Corporation, Minneapolis, Minn.

Filed Nov. 22, 1972, Ser. No. 308,661
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² A63H *17/00*
U.S. Cl. 46—17 **1 Claim**



1. In a toy vehicle kit comprising various components adapted to be selectively assembled and disassembled,

a. a chassis having transversely extending front and rear recesses for receiving front and rear axles, one of said recesses opening upwardly and one opening downwardly with respect to said chassis,

b. front and rear wheel carrying axles adapted to be seated in said recesses,

c. an engine adapted to be seated on the chassis upwardly thereof and including means to lock the front axle in said front recess,

d. a body adapted to be seated on the chassis upwardly thereof adjacent said engine and including means to lock the rear axle in said rear recess,

e. a pan adapted to extend along the underside of the chassis and lock the body to the chassis, and

f. means coacting with said pan for locking the engine and pan to the chassis including a pin for extending through the engine, chassis, and pan and being rotatable between locking and unlocking positions.

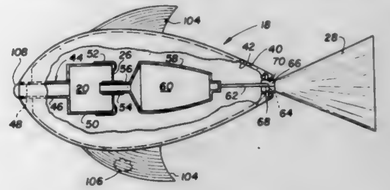
3,924,350

CARTESIAN TOY

John P. T. Hsu, 8 Park Drive, Old Bethpage, N.Y. 11714

Continuation-in-part of Ser. No. 360,119, May 14, 1973, abandoned. This application Aug. 5, 1974, Ser. No. 494,401
Int. Cl.² A63H *23/08, 23/14*
U.S. Cl. 46—92 **1 Claim**

1. A Cartesian toy including, in combination, a main incompressible fluid-filled container, at least one toy object swimmingly disposed in said main container having an internal air chamber, a flexible member in covering relation over said toy object air chamber, a pump operatively connected to said main container so as to alter the air pressure and volume of said air chamber by transmitting pressure through said incompressible fluid to said flexible member, and improved means for propelling said toy object through swimming maneuvers in said volume of fluid within said main container comprising a pivotally movable fin operatively arranged in propelling relation on said toy object, a drive member operatively connected to transmit flexuring in said flexible member so as to cause pivotal movements in said fin, means at an interposed location between said flexible member and said fin bounding an additional air chamber in communication with said toy object air



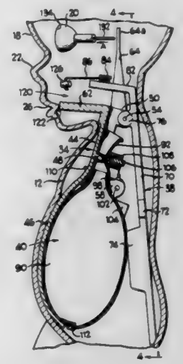
chamber which contributes to the floatability and maneuverability of said toy object within the fluid volume of said main container, and control means on said pump including flexible walls bounding an internal chamber for said pump and each having a hand grip to facilitate the movement of said walls toward and away from each other for controlling the extent and rate of pressure and volume change of said toy object air chamber, whereby movements corresponding in said extent and rate to that of said pressure and volume change are also exhibited in said fin to thereby contribute to achieving said swimming maneuvers in said toy object.

3,924,351

KISSING DOLL HAVING AIR ACTUATED SOUNDER WHICH SOUNDS AFTER BUILDING PREDETERMINED PRESSURE

Rouben T. Terzian, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 20, 1973, Ser. No. 426,439
Int. Cl.² A63H *3/31*
U.S. Cl. 46—118 **8 Claims**



1. In a doll including a torso and a head mounted thereon and sound producing means mounted in said torso for simulating the sound of a kiss, the improvement in said sound producing means comprising:

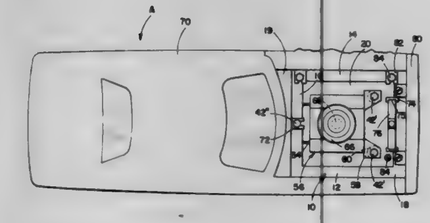
bellows means for receiving and expelling air, said bellows means including a resilient squeezable body portion connected to a closeable, flexible neck portion defining a passageway between the interior and exterior of said body portion, whereby the air in said body portion is pressurized when said body portion is squeezed and said neck portion is closed; and

stop cock means associated with the neck portion and the body portion, said stop cock means being movable from a normally closed position closing said neck portion to an open position allowing opening of said neck portion in response to and after continued squeezing of the body portion, whereby pressurized air is expelled from said bellows means when said stop cock means moves from its closed to its open position producing a simulated kissing sound after a predetermined pressure is built up in said body portion.

3,924,352
TOY VEHICLE

Adolph E. Goldfarb, Tarzana; Erwin Benkoe, Encino; Delmar K. Everitt, Woodland Hills; Ronald F. Chesley, La Crescenta, and Richard D. Frierdich, Canoga Park, all of Calif., assignors to Adolph E. Goldfarb and Erwin Benkoe, both of Northridge, Calif.

Filed Feb. 10, 1975, Ser. No. 548,830
Int. Cl.² A63H *11/10*
U.S. Cl. 46—202 **12 Claims**

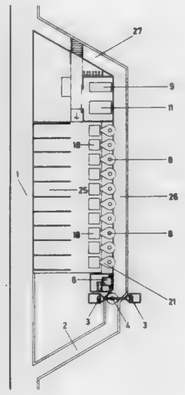


1. A disassemblable toy automotive type vehicle set including a toy automotive type vehicle, and a powered wrenching means operable with said vehicle, said vehicle comprising a frame means, a plurality of cylindrically shaped hubs extending outwardly from said frame means, a cylindrically shaped vehicle wheel provided for each of said hubs and each wheel being sized to be removably and rotatably disposed over each associated hub, each said hub and wheel having apertures capable of being aligned when the wheel is disposed on the hub, a wheel bolt provided for each wheel and capable of being inserted in the aligned apertures for securing the wheels to the associated hubs, said wheel bolts each having an enlarged head, the enlarged head of said bolts having a size relative to the size of the wheel which is at least three times greater than the size of a conventional automobile wheel bolt or lug with respect to a conventional automobile wheel, a drive train component also mountable on said frame means, said drive train component having at least one tab and said tab and frame means having apertures capable of being aligned, a drive component bolt capable of being inserted into said last named aligned apertures to removably secure said component to said frame means, said drive component bolt also having an enlarged bolt head and being of substantially the same size and shape as the wheel bolt, said wrenching means comprising a portable power means, and engageable means sized and shaped to conform to the bolt heads to engage the bolt heads and remove the bolts from the apertures upon actuation of the source of power.

3,924,353
METHOD AND APPARATUS FOR ENRICHING IRRIGATION WATER

Jorge Galvez Figari, Capitan Haya, 3 - 5, Madrid, Spain

Continuation-in-part of Ser. No. 298,179, Oct. 16, 1972, abandoned, and a continuation-in-part of Ser. No. 298,180, Oct. 16, 1972, abandoned. This application Nov. 14, 1974, Ser. No. 523,939
Claims priority, application Spain, Nov. 18, 1971, 397151
Int. Cl.² A01C *23/04*
U.S. Cl. 47—1 **7 Claims**



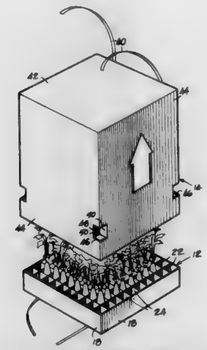
6. A process of irrigating land and crops, comprising:
a. diverting a portion of the flow of water from an irrigation channel to a divergent channel,
b. withdrawing a portion of the water from said divergent channel,
c. charging said withdrawn portion with vegetable resins,
d. introducing pressure-injected air into said withdrawn portion to cause bubbles in at least a portion of said vegetable resins,
e. introducing nutrients to said bubbles which adhere thereon, forming a fertilizer carrier, and
f. returning said carrier to irrigation waters to irrigate land.

3,924,354
SHIPPING AND DISPLAY CARTON FOR CUT FLOWERS

Gerald L. Gregoire, San Rafael, Calif., assignor to Gregoire Flowers, Inc., San Francisco, Calif.

Filed July 30, 1974, Ser. No. 493,037
Int. Cl.² B65D *85/50*
U.S. Cl. 47—34.11 **5 Claims**

1. A shipping and display carton for shipping and displaying in a vertically upright condition a plurality of separate, prebunched, cut flower bunches of the kind in which each bunch has a liquid containing pouch tied around the lower stem end of the bunch, said shipping and display carton comprising,
an internally compartmented tray for holding separate flower bunches upright in compartments in the tray,
said tray being rectangularly shaped with a bottom wall and four side walls,
a rectangular shaped base and enclosure unit for positioning the tray at a desired height in the display position of the unit,
said base and enclosure unit having four side walls dimensioned to fit closely over the sides of the tray, an end wall closing one end of the unit and an open end at the other end of the unit,
tray retainer means for holding the tray in a fixed vertical position in the upper part of the unit in said display position, said tray retainer means including tray supports which project inwardly from the side walls and engage the bottom wall of the tray in said display position and are so located in the side walls as to engage the top edge of the tray in the shipping position to thereby retain the tray in a fixed position within the base and enclosure unit in the shipping position as well as in the display position,
wherein the base and enclosure unit has a vertical height and an open interior which enables the unit to form the top enclosure for a shipping carton for the cut flower bunches when the unit is inverted from the display position and slipped over the flowers and tray to a shipping position in

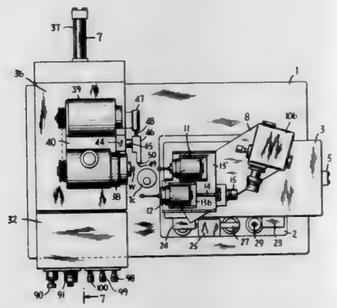


which the end wall extends over the top of the flowers and the side walls extend down around the stems of the flowers and the sides of the tray, a plurality of liquid retaining pouches with each pouch having a liquid therein and adapted to contain the lower ends of the stems of an individual cut flower bunch, and
said tray having a plurality of internal compartments with each compartment having internal dimensions and a shape so related to the size and shape of a liquid retaining pouch placed in the compartment as to hold the pouch and related cut flower bunch vertically upright during both the shipping and display modes of operation of the carton.

3,924,355
INTERNAL GRINDER

Youji Tatsumi, 1-18, 1-chome, Higashinakayama-cho, Funabashi, Chiba; Shohei Ito, 6-19, 2-chome, Sekibara-cho, Adachi-ku, Tokyo, and Katsutoshi Ishii, 11-1, 3-chome, Kounodai,, Ichikawa, Chiba, all of Japan

Filed Jan. 19, 1973, Ser. No. 325,102
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B24B *5/06*
U.S. Cl. 51—3 **5 Claims**

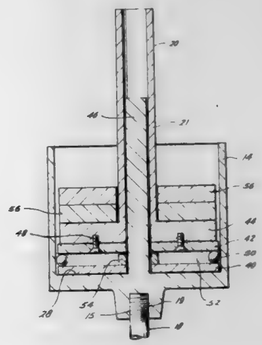


1. A grinding machine comprising, support means, a first grinding wheel head table mounted movably on said support means, a second grinding wheel head table transported on said first grinding wheel table and mounted for oblique movement relative to a direction of travel of the first grinding wheel head table, means mounting a plurality of driven grinding wheel spindles for driving a plurality of grinders for grinding a workpiece, a feed-in table mounted movably on said support means for movement relative to said first grinding wheel head table to feed in operation a workpiece to the grinders individually, a shift table mounted on said feed-in table for movement therewith and relative thereto, means mounting a workpiece-holding means for supporting a workpiece thereon, and means for moving said tables individually and including means moving them jointly for relatively positioning a work-piece on said shift table accurately relatively with said grinders individually in registry with said workpiece for grinding thereon and means to relatively feed at a progressively decreasing rate the grinders and workpiece for executing accurate and controlled grinding of the workpiece.

3,924,356
MACHINE AND METHOD FOR GRINDING AND POLISHING BEADS AND MARBLES

George B. Kitchel, 5514 Tupper Lake, Houston, Tex. 77027

Filed Dec. 9, 1974, Ser. No. 530,740
Int. Cl.² B24B *5/18, 1/00*
U.S. Cl. 51—7 **14 Claims**



1. A machine for grinding balls comprising:
bowl means for containing the balls having a bottom surface and being adaptable for rotation;
a guideshaft concentrically disposed on said bottom surface of said bowl means;
a non-rotating member slidably engaging said guideshaft, said guideshaft aligning said non-rotating member within said bowl means; and
said non-rotating member having a non-rotating surface oppositely disposed to said bottom surface, said non-rotating surface being perpendicular to the axis of rotation of said bowl means.

12. A method for grinding balls comprising:
insertion of pre-formed roughly spherical balls into a pot adapted for rotation:
adding a slurry of grinding grit and water to the balls;
placing an upper wear plate disposed opposite the bottom of the pot and on a guideshaft concentrically disposed from the bottom of the pot;
grinding the balls by rotating the pot while preventing the upper wear plate from rotating; and
maintaining the balls and the slurry at the periphery of the pot by placing a centrifugal force created by the rotation of the pot on both the balls and the slurry causing them to collect at the periphery of the pot.

3,924,357

DEVICE FOR DEBURRING WORK PIECES

Jürgen Schmidt, Herborn, and Jürgen Hesse, Dusseldorf, both of Germany, assignors to Messer Griesheim G.m.b.H., Germany

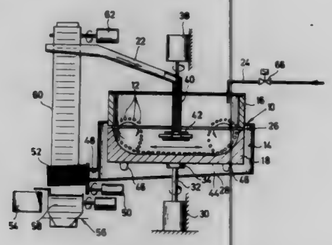
Filed Dec. 4, 1972, Ser. No. 311,910

Claims priority, application Germany, Dec. 2, 1971, 2159838

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B24C *3/30*

U.S. Cl. 51—13 **4 Claims**



1. A device for deburring work pieces of rubber or similar material comprising an essentially closed container for receiving the work pieces, supplies of a low temperature medium and a blasting agent and conduit means for introducing them into the container, the container including a bottom trough section rotatable about its vertical axis and a fixed upper section forming a vertical extension of the bottom trough section, means for rotating the bottom trough section, a centrifugal wheel in the container associated with the conduit means for the blasting agent for introducing the blasting agent into the container, and means for rotating the centrifugal wheel.

3,924,358

MACHINE FOR PROCESSING BILLET OR BAR STOCK

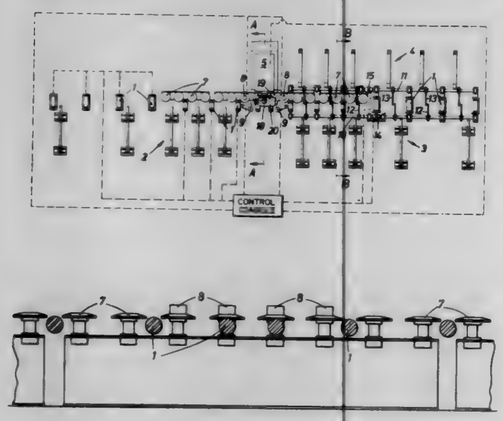
Robert Crownshaw, and Ronald Jubb, both of Sheffield, England, assignors to British Steel Corporation, London, England

Filed Sept. 24, 1974, Ser. No. 508,730

Claims priority, application United Kingdom, Oct. 17, 1973, 48349/73

Int. Cl.² B24B *7/12, 49/00*

U.S. Cl. 51—34 C **9 Claims**



1. A machine for processing billet or bar stock, comprising:
a machine head,
a roller mechanism including a plurality of driven, horizontally disposed table rollers for driving said stock into and out of engagement with the head, and
co-operating sets of rolls on each side of the head for laterally gripping the stock, at least one roll in each set and a plurality of other rolls in the roller mechanism aligned therewith having surfaces inclined to the horizontal plane to provide edge support for the stock on its leading and trailing ends in dependence on the stock shape, and
control means for controlling both the rate of drive of the stock along the roller mechanism and the operation of the machine head.

3,924,359

CENTERLESS GRINDER WITH HYDRAULIC DRIVE

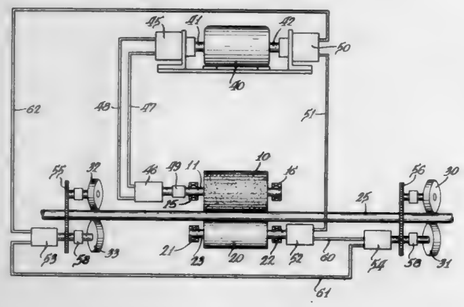
Robert L. Schaller, Camilius, N.Y., assignor to Sundstrand Syracuse, Inc., Syracuse, N.Y.

Filed Feb. 16, 1973, Ser. No. 332,811

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B24B *5/22*

U.S. Cl. 51—103 TF **7 Claims**



1. In a centerless grinder, a grinding wheel and a coacting regulating wheel, a first hydrostatic transmission for driving said grinding wheel, a second hydrostatic transmission for driving the regulating wheel, each of said transmissions including a pump and a motor, and a main motor having output shaft means connected to the pumps of both of said hydrostatic transmissions whereby the regulating wheel functions to assist said main motor when the regulating wheel is functioning as a brake.

3,924,360

KNIFE SHARPENER

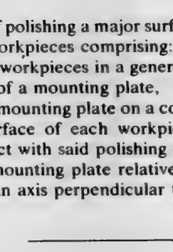
Paul C. Haile, 3441 Ruffin Road, 2-E, San Diego, Calif. 92123, and Arthur O. Sellgren, 8750 Mel Manor Drive, La Mesa, Calif. 92041

Continuation-in-part of Ser. No. 195,598, Nov. 4, 1971, abandoned. This application June 8, 1973, Ser. No. 368,336

Int. Cl.² B24B *19/00;* **B21K** *5/12*

U.S. Cl. 51—221 BS **2 Claims**

1. A knife sharpener for holding a knife at a predetermined angle on a whetstone, comprising:
first and second members hingedly attached at their central portions by pivotally connected opposed extensions on said members;
first and second opposite surfaces at one end of said first and second members, said surfaces being of a dimension for carrying a knife therebetween;
adjustment means at another end of said first and second members operable for adjusting the distance between said first and second surfaces;
first and second shoulders on said first and second members, respectively, and extending outwardly therefrom, said first and second shoulders being dimensioned for defining a predetermined angle between a knife carried by said first and second surfaces and a whetstone;



and said adjustment means comprises a single thumb wheel positioned between said first and second members that is threadably coupled to said first and second members.

3,924,361

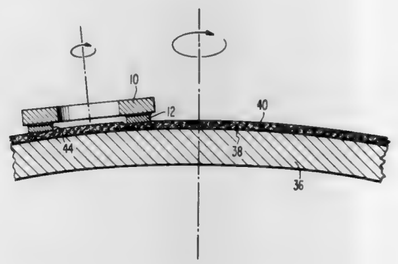
METHOD OF SHAPING SEMICONDUCTOR WORKPIECES

Joseph Paul White, and Paul Joseph Del Priore, both of Somerville, N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 364,660, May 29, 1973, Pat. No. 3,888,053. This application Nov. 29, 1974, Ser. No. 528,404

Int. Cl.² B24B *1/00, 13/01*

U.S. Cl. 51—283 **3 Claims**



1. A method of polishing a major surface of each of a plurality of disc-like workpieces comprising:
mounting said workpieces in a generally annular array on a flat surface of a mounting plate,
disposing said mounting plate on a convex polishing surface with the surface of each workpiece to be polished in direct contact with said polishing surface, and
rotating said mounting plate relative to said polishing surface about an axis perpendicular to said mounting plate flat surface.

3,924,362

SANDING PAD ASSEMBLY

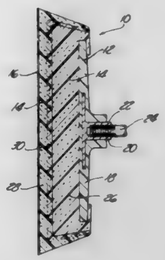
Howard J. McAleer, Marine City, Mich., assignor to Formax Manufacturing Corporation, Detroit, Mich.

Filed Oct. 25, 1974, Ser. No. 518,056

Int. Cl.² B24D *17/00;* **B24B** *1/00;* **B24D** *3/00*

U.S. Cl. 51—358 **31 Claims**

22. A sanding pad assembly comprising: a pad member, back up means secured to said pad member for supporting said pad member for rotation, said pad member comprising a core and an outer layer, one of said core and said outer layer being made of soft flexible foam material, the other of said core and said outer layer being made of a semi-rigid foam material, said outer layer extending over the work surfaces of said pad member.



3,924,363

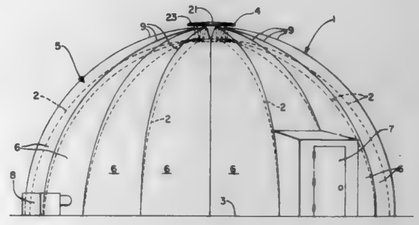
INFLATABLE SHELTER

Richard D. Candle, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 22, 1974, Ser. No. 472,315

Int. Cl.² E04B *1/345*

U.S. Cl. 52—2 **19 Claims**

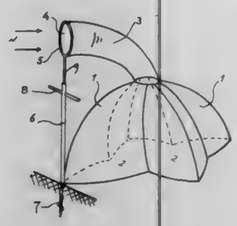


1. An inflatable enclosure having its lower peripheral edges attached to a base, the enclosure comprising:
A. a plurality of flexible non-parallel reinforcing members, each having a first end attached along the periphery of the base in spaced relationship from each other;
B. a second end of each of the members being fastened at a location radially inwardly of the first ends, in closer spaced relationship to each other than the first ends, thereby causing the members to converge toward each other from the first to the second ends thereof; and
C. a cover envelope comprising elongated strips of flexible sheet material of substantially uniform width throughout their length attached between the reinforcing members;
D. the width of each strip of sheet material being substantially the same as the distance between the reinforcing members at the first ends but becoming progressively greater than the distance between the reinforcing members radially inwardly toward the second ends as the members converge toward each other;
E. the excess width of material between the members being forced outwardly by internal pressure in the enclosure when inflated whereby the sheet material extends a greater distance outwardly of the reinforcing members near the radially inwardly positioned second ends than it does near the radially outwardly positioned first ends.

3,924,364
WIND-INFLATABLE TENT

Cornelis Eerkens, van Lawick van Pabst Straat 32, Arnhem, Netherlands

Filed June 2, 1972, Ser. No. 259,294
Claims priority, application Netherlands, July 15, 1971, 7109798
Int. Cl.² E04B 1/345
U.S. Cl. 52—2 5 Claims



1. A habitable wind-inflatable tent, comprising flexible walls forming the sides and top thereof, a wind-catch member integral with said walls and adapted to receive wind pressure and direct same to the interior of said tent through an opening in said walls, means for providing access and egress to and from said tent, and means integral and cooperable with said wind-catch member adapted to be secured to the ground and to support said wind-catch member in spaced substantially fixed relation thereto, said wind-catch member support means also serving to maintain said tent in an erected state, said tent being sufficiently light-weight so as to be manually transportable as a unitary assembly from one location to another.

3,924,365
SEAL AND CURTAIN SUPPORT MEANS

Robert Elliott Orberg, 1410 NE. 56th Court, Fort Lauderdale, Fla. 33308

Filed Dec. 10, 1973, Ser. No. 423,207
Int. Cl.² E04B 1/12
U.S. Cl. 52—63 7 Claims



1. In a portable compartment for use on vehicles, a seal and curtain support means in combination with confronting peripheral lip portions of upper and lower shells of a portable car top compartment which are hinged together along one end, the shells being movable between closed and open positions and include curtain means, fixed relative thereto, to form an enclosed compartment therein when the shells are in an open position, said seal and curtain support means comprising:

A. a first elongated extrusion extending around the upwardly projecting peripheral lip of the lower shell including

1. a downwardly opening channel portion in fixed engagement over the peripheral lip portion thereof,
2. a shelf portion at the top of said channel portion,
3. a first means formed integral with and inwardly of said channel and shelf portions carrying the lower peripheral edge of the curtain,

B. a second elongated extrusion extending around the downwardly projecting peripheral lip of the upper shell including,

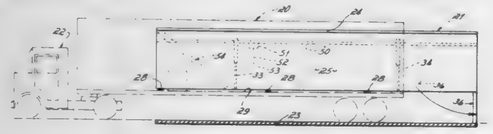
1. an upwardly opening channel portion in fixed engagement over the peripheral lip portion thereof,
2. a second means formed integral with and inwardly of said upwardly opening channel carrying the upper peripheral edge of the curtain,
3. a seal bead fixed relative to the bottom of said upwardly opening channel providing a weather-tight sealing engagement against said shelf portion when said shells are closed;

C. means to hold the shells in an open position, said downwardly opening channel including a relatively short, depending outer flange engaging against the outer surface of said lower lip portion, a relatively long, depending flange engaged against the inner surface of said lower lip portion and providing a reinforcement therebehind and a top web connecting between said flanges defining said shelf, said upwardly opening channel including a relatively short upwardly extending flange engaging against the outer surface of said upper lip portion, a relatively long upwardly extending flange engaged against and reinforcing the inner surface of said upper lip portion and a bottom web connecting between said flanges.

3,924,366
EASILY ERECTED ROOF STRUCTURE FOR MODULAR BUILDINGS

Louis L. Gibbs, 1547 Silverglade Court, Cincinnati, Ohio 45240

Filed Aug. 26, 1974, Ser. No. 500,572
Int. Cl.² E04B 1/343, 1/344
U.S. Cl. 52—69 9 Claims



1. An easily transported, easily erected roof structure for a building comprising, in combination:

a central roof section having at least two opposed edges;

a plurality of legs connected to said central roof section and constructed to depend downwardly from said central roof section for supporting said central roof section spaced above a base, each said legs including at least two sections with one of each said leg section telescopically interfitting with at least one other leg section;

releasable means connected to the leg sections of each said leg to selectively lock said legs against telescopic movement when said releasable means are unreleased, and permit telescoping of each said support leg to enable said central roof section to move closer to said base under the force of gravity when said releasable means are released;

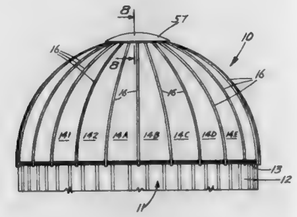
a pair of side roof sections each pivotally attached along an inner edge thereof to a different said opposed edge of said central roof section, each said side roof section having an outer edge and being pivotal between a downwardly folded position wherein said side roof section is disposed vertically in a generally perpendicular relation to said central roof section to facilitate compact storage and an erect position whereat said side roof section is pivoted upwardly relative to said folded position to form a continuous roof surface with said central roof section; said releasable means when unreleased maintaining the length of said legs longer than the distance between the inner and outer edges of said side roof sections to permit said legs to support said central roof assembly at a predetermined height above said base with said outer edges of said side roof sections spaced above said base when said side roof sections are folded: and

side roof section pivoting means directly connected to said side roof sections, operative in response to gravity-induced downward movement of said central roof section toward said base below said specified height accompanied by telescoping shortening movement of said support legs, to react against said downward movement on said side roof section in a direction to pivot said side roof section outwardly and upwardly relative to said central roof section from said folded position toward said erect position, whereby the energy required to move said side roof sections to said erect position from said stored position is obtained by a gravity-induced decrease in height of said central roof section upon selective release of said releasable means and consequent shortening of said telescoping legs.

3,924,367
ROOF STRUCTURE

Richard P. Stewart, Wayzata, Minn., assignor to American Farm Systems, Inc., Tripoli, Iowa

Filed Feb. 27, 1974, Ser. No. 446,211
Int. Cl.² E04B 1/32, 7/00
U.S. Cl. 52—80 14 Claims



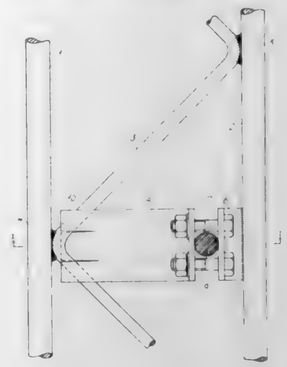
1. A structure comprising: a plurality of panels and elongated rib means connecting adjacent panels, each of said panels having outwardly directed side flanges, said flanges having continuous reversing S-curved shapes extending the length of said panels, said rib means having pockets to accommodate said flanges whereby the panels are connected to the elongated rib means, each rib means comprising an inside channel member and an outside channel member, said inside and outside channel members having side portions in engagement with each other to center the channel members relative to each other, one of said channel members having sides with offset portions forming said pockets for receipt of said continuous reversing S-curved flanges.

3,924,368
BUILDING CONSTRUCTION HAVING THREE-HINGED ARCHED LATTICE GIRDERS

Kristen Hald Pedersen, Hvidovre, Denmark, assignor to Aktieselskabet Jens Villadsens Fabriker, Herlev, Denmark

Filed Feb. 1, 1974, Ser. No. 438,535
Claims priority, application Denmark, Feb. 2, 1973, 566/73
Int. Cl.² E04B 1/32
U.S. Cl. 52—86 3 Claims

1. A building comprising a bearing construction consisting of a number of parallel 3-hinged arched lattice girders which are interconnected by stays, each arched lattice girder comprising at its outer side a flange of a circular cross-sectional shape, and a roof covering comprising plate elements of a plastics material, said plate elements being mounted parallel to one another and to the flanges at the outer sides of said arched lattice girders, each plate element comprising at its longitudinal edges arched edge portions having a periphery extending over at least 180°, the arched edge portions of one plate element partially overlapping the arched edge portion of an adjacent plate element so as to interconnect said plates, the flanges at the outer sides of the arched lattice girders being mounted within said overlapping arched edge portions of two adjacent plate elements so as to attach the roof covering to said girders, characterized in that the head and foot of each

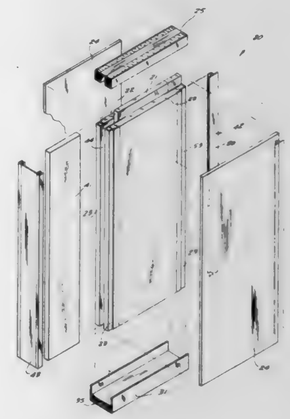


arched lattice girder are interconnected by zigzag shaped struts and that the stays are connected to the arched lattice girders by stay-connecting means which are firmly attached to the feet of the girders and are releasably attached to the heads of the girders.

3,924,369
ADJUSTABLE MODULAR PARTITION SYSTEM

Michael C. Guarino, Rumson, and Frank Cacossa, Livingston, both of N.J., assignors to M. C. Guarino Associates, Inc., Belleville, N.J.

Continuation-in-part of Ser. No. 327,609, Jan. 26, 1973, Pat. No. 3,866,370. This application Aug. 24, 1973, Ser. No. 391,307
Int. Cl.² E04B 2/82
U.S. Cl. 52—122 10 Claims



1. An adjustable modular partition comprising:

an inner layer of a first fire-resistant and sound-deadening material having opposing sides;

a second layer of a second fire-resistant and sound-deadening material on each side of said first material so that said first material is located therebetween;

a third layer of a third fire-reistant and sound-deadening material on the sides of said second material distal from said first material so that said first and second material are located therebetween;

a fourth layer of a fourth fire-resistant and sound-deadening material on the sides of said third material distal from said second material so that said first, second and third material are located therebetween;

means for fastening said four layers together to form a partition module with high sound-deadening and fire-resistive qualities;

adjustable means on said partition module positioned so that when said partition module is substantially vertically located between a floor and ceiling, the adjustable means can be shifted to provide engagement between the top and bottom of the partition module and the ceiling and floor respectively;

said adjustable means including a U-shaped channel adapted to be mounted to the floor and to receive the bottom of said four layers therein a W-shaped channel adapted to be fastened to a ceiling and to receive the top of said four layers therein, and vertical variation means in at least one of said U-shaped channel and W-shaped channel so as to cooperate therewith in retaining the four layers in fixed position with respect to the floor and ceiling; and

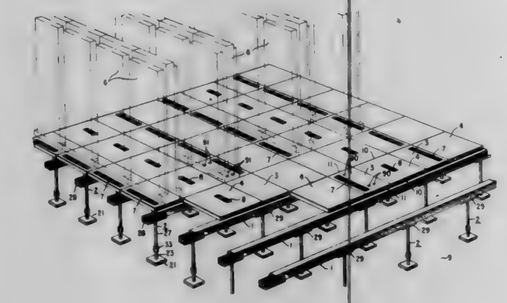
glass fiber insulation material being in said U-shaped channel.

3,924,370

RAISED FLOOR WITH CLAMPED PANEL SUPPORT

Walter Bartholomew Cauceglia, Wayne; Charles Gerlt, Livingston, and Luis Arturo Peralta, Mendham, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 24, 1974, Ser. No. 491,343
Int. Cl.² E04F *13/08*
U.S. Cl. 52—126 **11 Claims**



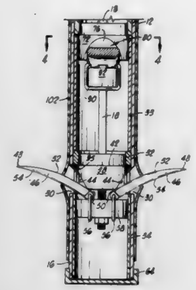
1. A raised floor for supporting equipment above a subfloor and providing space underneath said equipment for cabling and ancillary apparatus comprising a plurality of beams in spaced parallel relation to each other running along one direction, a plurality of vertically adjustable pedestals for supporting each beam, a plurality of freely insertable and removable first rectangular floor panels each having planar edges and each spanning between a pair of adjacent beams and having opposite ends resting on portions of said adjacent beams, a plurality of second individually insertable and removable rectangular floor panels having planar edges underlying said equipment, each second panel spanning between a pair of adjacent beams and having opposite ends resting on portions of said adjacent beams, and means for fixedly supporting said beams in said spaced parallel relation comprising means for rigidly attaching each pair of adjacent second panels to the common beam on which said pair of adjacent second panels rest.

3,924,371

GROUND ANCHOR APPARATUS

Raymond A. Kidwell, 114 N. Fifteenth St., Frederick, Okla. 73542

Filed Nov. 6, 1974, Ser. No. 521,287
Int. Cl.² E02D *5/80*
U.S. Cl. 52—161 **23 Claims**



1. A ground anchor apparatus which comprises:

an elongated tubular housing having a first pair of oppositely facing slots disposed in the opposite sides thereof, and having an upper end and a lower end;

an elongated rigid shaft positioned axially within said housing;

a first cam block positioned within, and bearing slidably against, said housing adjacent said first pair of slots, said first cam block including an axial opening through which said shaft is slidably disposed, and a pair of oppositely facing cam surfaces on the lower portion thereof;

a first pair of oppositely facing flukes disposed within said housing below said cam block and on diametrically opposite sides of said elongated rigid shaft, said flukes being positioned to contact said cam surfaces of said cam block and to extend through said first pair of slots in said housing upon the upward movement of said flukes; and

means movably connecting said flukes to said shaft so that when said shaft is moved axially upward within said housing, said flukes are moved upwardly into sliding contact with said cam surfaces of said cam block thereby extending said flukes upwardly and outwardly from said housing through said first pair of slots, said means for movably connecting said flukes to said shaft including peripheral portions bearing against the inside of said housing and a central portion receiving and connected to said shaft, whereby said shaft is supported in a central position in said housing by said connecting means.

3,924,372

DROP-OUT FIRE VENT

Joseph R. Anghinetti, Kennebunkport; Paul A. Couture, Emery Mills, and Arthur P. Jentoft, Kennebunkport, all of Maine, assignors to Wasco Products, Inc., Sanford, Maine

Continuation of Ser. No. 291,978, Sept. 25, 1972, abandoned. This application Mar. 18, 1974, Ser. No. 452,066
Int. Cl.² E04B *7/18*
U.S. Cl. 52—232 **15 Claims**

1. A drop-out fire vent for a building comprising;

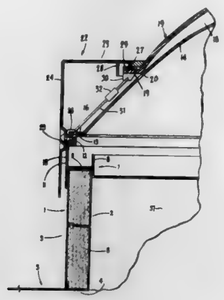
a pair of heat softenable plastic domes arranged one above the other,

means supporting the lower dome at its periphery over a skylight opening in the building and defined by vertical extending enclosing well walls,

said lower dome having a periphery extending outwardly of the inner periphery of said supporting means,

said upper dome being smaller than said lower dome and having its periphery terminating inwardly of the inner periphery of said supporting means to thereby expose a peripheral area of the lower dome that is not covered by the upper dome and that extends between the spaced peripheries of the domes,

and retainer means secured to said supporting means and including a flange extending to the periphery of the upper dome holding said upper dome in vertically spaced stationary relation over the periphery of the lower dome and in contact with the upper dome, said flange providing an enclosure covering the exposed peripheral area of the lower dome and extending between said periphery of said upper dome and said periphery of said lower dome.

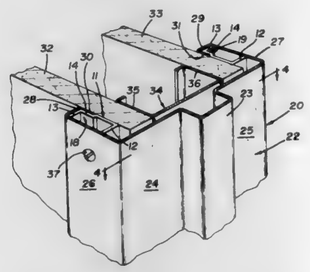


3,924,373

COMBINATION SCREW ALIGNING AND FRAME REINFORCING BRACE

Thomas E. Lizdas, and Bulow A. Peterson, both of Kewanee, Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed May 22, 1974, Ser. No. 472,248
Int. Cl.² E06B *1/12*
U.S. Cl. 52—213 **11 Claims**



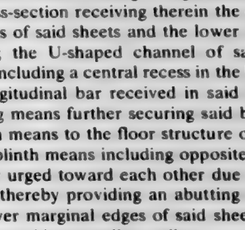
1. An integral combination fastener alignment and frame reinforcing brace adapted to be utilized with a quickly assembled door frame formed of a plurality of members each generally channel-shaped in cross-section and having a flange defining a channel-form recess therewith provided for receiving said brace, said brace being generally U-shaped and comprising a main web formed solely of two planar portions consisting of a first portion and an offset portion offset at a line substantially transverse with respect to said main web and lying in a plane substantially parallel to that of said first portion, a pair of spaced-apart substantially parallel planar flanges connected one to the end of and substantially perpendicular to said first portion and the other to the end of and substantially perperpendicular to said offset portion, said main web having a fastener-aligning aperture provided therein and said offset portion having detent means provided therein, whereby said offset portion of said main web is adapted to be inserted into the channel form recess of said door frame and retained therein by said detent means, and the outer surface of said first main web portion is adapted to be positioned substantially flush with the outer surface of the flange of said door frame defining said recess.

3,924,374

WALL STRUCTURE FOR HOSPITAL ROOMS

Jean Volper, Chomedey, Canada, assignor to Millet Roux & Cie., Ltee., Laval, Canada

Filed June 7, 1974, Ser. No. 477,518
Int. Cl.² E04H *3/08*; **E04B** *2/76*
U.S. Cl. 52—243 **9 Claims**



1. A wall structure especially adapted for hospital operating rooms comprising:

a. a plurality of adjacent panel units, each unit including:

i. a pair of sheets of rigid material arranged in spaced relationship so as to form a chamber therebetween;

ii. top, bottom and side spacing elements disposed between the inner marginal edges of the sheets and extending completely around the periphery thereof to maintain the sheets in spaced relationship; each said side spacing element defining a U-shaped opened channel having centrally therein a longitudinal groove defined by a pair of spaced flange walls extending lengthwise of said channel, the opposing faces of said flange walls having thereon lengthwise corrugations;

iii. a hardened foam plastic material received in said chamber;

b. a series of vertical posts disposed between successive panel units for securing said units thereto, each said post defining a U-shaped opened channel with the opposite side walls thereof in covering arrangements over the respective open sides of the U-shaped channels of the side spacing elements of two adjacent panel units, said side walls having a series of holes vertically spaced therealong;

c. fastening means extending through said holes and engagedly received in said groove for securing said panel units to said vertical posts;

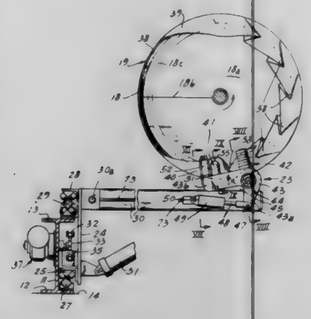
d. first anchoring means for securing said posts to the floor structure of said rooms and second anchoring means for securing said posts to the ceiling structure of said rooms;

e. resilient plinth means defining a longitudinal channel of U-shaped cross-section receiving therein the outer lower marginal edges of said sheets and the lower part of said vertical posts; the U-shaped channel of said resilient plinth means including a central recess in the bottom wall thereof; a longitudinal bar received in said recess; said first anchoring means further securing said bar and said resilient plinth means to the floor structure of the room; said resilient plinth means including opposite upstanding walls inwardly urged toward each other due to the resiliency therein thereby providing an abutting pressure on said outer lower marginal edges of said sheets when received between said upstanding walls.

3,924,375
AUTOMATIC CRIMPER

Lawrence A. Brenner, Brookfield, Wis., and Charles H. Scholl, Vermilion, Ohio, assignors to Beloit Corporation, Beloit, Wis.

Filed May 23, 1974, Ser. No. 472,523
Int. Cl.² B65B 11/04
U.S. Cl. 53—380 24 Claims

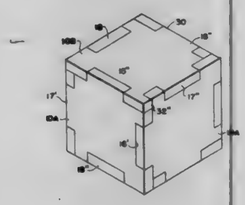


4. apparatus for crimping the projecting end of roll wrapper onto the end of a paper roll, comprising:
a first member for starting displacement of the projecting wrapper end from cylindrical relation to the roll end toward the roll end;
a second member which operates after the first member to tuck the displaced end toward the roll end;
a third member following the tucking member for rolling the tucks into flat successive crimps against the roll end; and
said second member comprising a fixed tucking finger having a semicylindrical tucking tip.

3,924,376
CUBOIDAL STRUCTURE

Sukeo Tsurumi, P.O. Box 669-11, Siyoze, Nisinomiya, Hiyogo, Japan

Continuation-in-part of Ser. No. 200,081, Nov. 18, 1971, Pat. No. 3,813,841. This application Mar. 22, 1974, Ser. No. 454,022
Claims priority, application Japan, June 25, 1971, 46-45692; June 25, 1971, 46-45693
Int. Cl.² E04C 1/10; A63H 33/08
U.S. Cl. 52—593 2 Claims

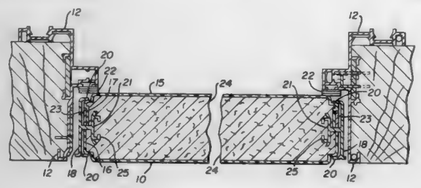


1. A cube structure comprising, in combination, six square face plates each having two pairs of opposite sides, one side of each pair containing a central recess and the other side having a central projection, said projection and said recess being substantially the same length, and the depth of said recesses being the same as the height of said projections, said face plates being the same thickness as the depth of said recesses and the height of said projections, and two of said square face plates each having a square extension forming a corner between two of said sides of each of said two face plates, one of said two sides containing a recess and the other having a projection, said square extensions having sides equal to the depth of said recesses and the height of said projections, said face plates being assembled into a perfect cube structure having edges with each edge having a projection of one face plate fitted into the recess of another face plate.

3,924,377
DOOR

Clyde E. Gill, Lennon, Mich., assignor to Lennon Manufacturing Inc., Lennon, Mich.

Filed Apr. 12, 1974, Ser. No. 460,501
Int. Cl.² E04B 2/20
U.S. Cl. 52—620 1 Claim



1. A door comprising spaced, substantially parallel front and back plastic panels each having peripheral, distortable, inturned flanges thereon extending at a right angle to the plane of the panel, elongate, rigid, metallic casing members secured on the peripheral edges of said door, said casing members each comprising a substantially flat strip parallel to the plane of the inturned flanges and having a width less than the thickness of the door and having an inner surface and an outer surface, said strips having continuously extending inturned right angular flanges on their longitudinal edges, a web integral with the strip on the inner surface thereof intermediate the longitudinal edges and extending axially along the strip and disposed substantially perpendicular to the plane of the strip, a pair of laterally outwardly extending flanges on the web extending parallel to and spaced from the inner surface of the strip, the distortable flanges on the edge portions of said front and back plastic panels extending into juxtaposition with said web on opposite sides thereof and positioned between the inner surface of said strips and said outwardly extending flanges on said web, said distortable flanges including an offset portion defining a shoulder behind the flanges on the longitudinal edges of the strip, and a foamed in place core between said front and back plastic panels extending into contact with said distortable flanges, distorting said distortable flanges of said front and back panels outwardly into proximity with the strips between the inturned flanges on the edges thereof so as to secure the front and back plastic panels to the casing members.

3,924,378
INTERLOCKING JOINT FOR OVERLYING SHEET MATERIAL

Otto P. Hafner, 1321 Paddock Way, Cherry Hill, N.J. 08034

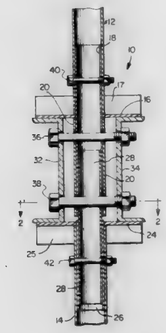
Division of Ser. No. 384,494, Aug. 1, 1973, Pat. No. 3,862,485. This application Aug. 16, 1974, Ser. No. 497,883
Int. Cl.² F16B 5/07
U.S. Cl. 52—758 D 1 Claim

1. An interlocking joint fastening together overlying sheets of metal or other material having permanently deformable properties, said sheets including at least a first sheet and an overlying second sheet, said sheets having interior and opposed exterior surfaces, said overlying sheets having been pierced discontinuously along a boundary line defining a minor area, the material of said first and second sheets within said minor area having been displaced out of the respective planes of the major-area material of said first and second sheets forming first and second overlying bridge portions, material of said first bridge portion being spread laterally over the exterior surface of the major-area material of said second sheet beyond the piercings therein, the improvement characterized by the material of said second bridge portion being confined within the limits defined by said piercings during the application of compressive force to the exterior surface of said second bridge portion, whereby said first bridge portion is spread laterally beyond the limits of said second bridge portion.

3,924,379
TELESCOPIC CONNECTOR FOR COAXIALLY SUPERPOSED FRAME MEMBERS

Leigh Hutchinson, Wilton, Conn., assignor to Harsco Corporation, Camp Hill, Pa.

Filed Dec. 9, 1974, Ser. No. 531,051
Int. Cl.² E04H 12/00
U.S. Cl. 52—637 6 Claims



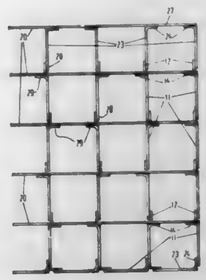
1. A modular support and scaffolding structure, including,
a. a first joint section, said section including first and second tubular sections in partial telescoping relation,
b. a first plate surrounding said first tubular section and abutted by the upper end of said second tubular section, said first plate lying in a plane orthogonal to the common axis of said first and second tubular sections,
c. said plate, first and second tubular sections being joined together to form a rigid joint section,
d. a second joint section, said section including third and fourth tubular sections in partial telescoping relation,
e. the innermost of said third and fourth tubular members telescopingly engaging the interior of the innermost one of said first and second tubular members,
f. a second plate, attached to the upper exterior end of said fourth tubular member.

3,924,380
LATTICE FOR SUPPORTING A BUNCH OF BAR-SHAPED MEMBERS

Hendricus Johannes Adrianus Quaadvliet, Groet, Netherlands, assignor to Stichting Reactor Centrum Nederland, The Hague, Netherlands

Filed June 6, 1973, Ser. No. 367,408
Claims priority, application Netherlands, June 12, 1972, 7207937
Int. Cl. E04c 2/44
U.S. Cl. 52—664 6 Claims

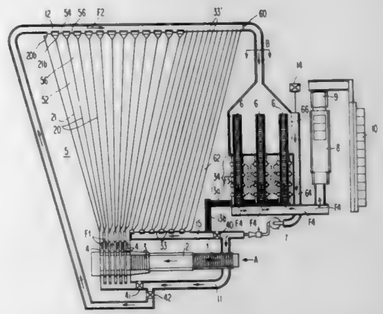
1. A lattice for supporting a plurality of elongated members taking part in a process of heat exchange, such as nuclear fissile fuel rods, said lattice comprising
a plurality of partitions, each of said partitions having a spaced lip portion extending therefrom in the general plane of said strap, and a spaced tab portion disposed in a plane generally perpendicular to said lip portion, a plurality of partitions being disposed in generally the same plane in each of a plurality of columns forming the lattice,
a plurality of straps disposed in planes generally perpendicular to the planes of said partitions whereby each strap forms a row of the lattice, each of said straps having a plurality of apertures formed therein receiving said lip portions of said partitions,
said partitions being disposed so that a lip portion of one partition passes through the aperture of a strap and is attached to a side face of the next consecutive partition so that the partitions in each column are dipsosed in generally the same plane, and a tab portion of the one partition abuts a face of the strap through which a lip portion of the one partition is passed.



3,924,381
SYSTEM FOR THE HANDLING OF FRUITS AND VEGETABLES

Alberto Carmelo Sardo, Sceaux, France, assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Apr. 11, 1975, Ser. No. 567,211
Claims priority, application Italy, Apr. 18, 1974, 50471/74
Int. Cl.² B65B 35/00; B65C 1/00
U.S. Cl. 53—3 8 Claims



8. A method for the accumulation and processing of produce comprising the steps of:
a. feeding a batch of produce into a produce cleaning, sorting, accumulating, labelling and sanitizing apparatus;
b. cleaning the batch of produce;
c. sorting the batch of produce into a plurality of groups of produce such that each group of produce consists of produce of substantially the same size produce items;
d. accumulating said produce comprising each of said group of produce items separately, in a water solution chemical treatment bath;
e. feeding said plurality of groups of produce, seriatum, to a selection area via a chaneled water solution chemical treatment bath;
f. separating each group of said produce into subgroups of first quality produce and second quality produce;
g. conveying said subgroup of first quality produce to a labelling apparatus;

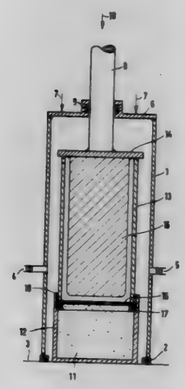
h. labelling each item in said subgroup of first quality of produce using said labelling apparatus;
i. waxing each item in said subgroup of first quality produce with wax using a waxing apparatus;
j. packing said items in said subgroup of first quality product for shipment;
k. feeding said subgroup of second quality produce into an accumulation basin;
l. accumulating each said subgroup of said second quality produce in such a manner that each said subgroup of produce which is accumulated consists of second quality produce of a size according to the sizes into which said batch of produce was originally sorted;
m. feeding said plurality of subgroups of second quality produce, seriatum, into a selection area via a chaneled water solution chemical treatment bath;
n. labelling each item in each said subgroup of second quality produce using said labelling apparatus;
o. waxing each item in each said subgroup of second quality produce with wax using a waxing apparatus;
p. packing said items of second quality produce for shipment.

3,924,382

METHOD FOR MAKING CARTRIDGES CONTAINING PRESSURE GAS AND MEANS FOR CARRYING OUT THIS METHOD

Franz Josef Overkott, Gevelsberg, Germany, assignor to Dr. Carl Ullrich Peddinghaus, Wuppertal, Germany

Filed Jan. 11, 1973, Ser. No. 322,777
Claims priority, application Germany, Jan. 11, 1972, 2201177; Dec. 14, 1972, 2261277
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B65B *31/02*
U.S. Cl. 53—7 **5 Claims**



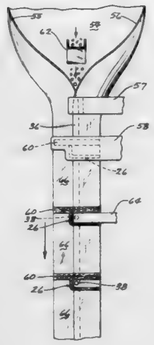
1. A method of making cartridges containing a pressurised gas, particularly for use in hydro-pneumatic oscillation dampers, comprising fitting the cartridge with a loosely fitted sealing cap lying on a sealing ring surrounding an opening of the cartridge, subjecting the cartridge to a pressurised gas until it has filled with the pressurised gas, pressing the sealing cap against the sealing ring of the cartridge with a pressure exceeding the pressure inside the cartridge, subjecting the cartridge and sealing cap to normal ambient atmospheric pressure and firmly securing the sealing cap to the outer wall of the cartridge.

3,924,383

METHOD FOR MAKING A PLASTIC BAG

Donald A. Heger, 3844 E. Tiffin Ave., Des Moines, Iowa 50317

Filed June 5, 1974, Ser. No. 476,563
Int. Cl.² B65B *9/08, 61/18*
U.S. Cl. 53—14 **5 Claims**



1. A method for making a plurality of plastic bags comprising:
forming a plurality spaced apart straight line seals across the width of an elongated continuous plastic tube member, said tube member being flattened, and having opposite lateral edges which combine with said straight line seals to form a plurality of rectangles in end to end relationship;
forming a reinforcing seal adjacent each of said straight line seals, each of said reinforcing seals commencing at one lateral edge of said tube member in a point spaced below said straight line seal and continuing partially across the width of said tube member in a direction parallel to said straight line seal and thence upwardly to join said straight line seal at a point spaced inwardly from the other lateral edge of said tube member;
placing a grommet in said tube members in the space between said reinforcing seal and said straight line seal; and severing said tube member transversely into a plurality of containers with said straight line seals forming upper sealed edges of each of said containers.

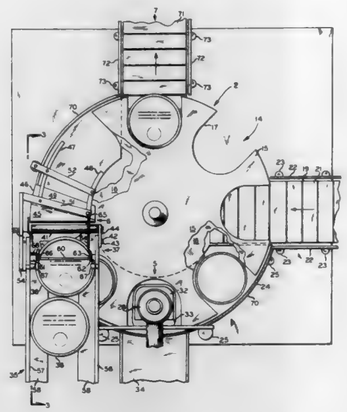
3,924,384

METHOD AND APPARATUS FOR CAPPING CONTAINERS

Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 30, 1975, Ser. No. 545,357
Int. Cl.² B65B *7/28;* **B67B** *3/00, 3/22*
U.S. Cl. 53—38 **20 Claims**

12. In a method comprising conveying upstanding containers through an arcuate path having an inner concave side and an outer convex side, sequentially dispensing individual closures having a depending peripheral flange at a closure dispensing station immediately above a closure engaging station of said arcuate path by having the leading upper edge portion of a container being moved through said closure engaging station engage the bottom segment of the leading portion of the depending peripheral flange of the closure in said closure dispensing station, with the general line of movement of a closure through said closure dispensing station being in a plane at least approximately tangential to said arcuate path at said closure engaging station, the improvement comprising coercing a closure entering said closure dispensing station to cause the thus engaged closure to be positioned for proper alignment for the initial engagement of the closure in said closure dispensing station by the container entering the closure engaging station, and laterally moving the closure outwardly toward said outer convex side of said arcuate path as the closure is being withdrawn from said closure dispensing station by the continued arcuate motion of the respective container, to thereby maintain the alignment of the closure being dispensed with the respective container as said closure being dispensed is united with the respective container.

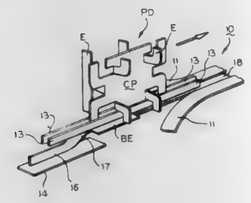


3,924,385

APPARATUS FOR ENCLOSING CONTAINER GROUPS

Richard T. Walter, Norristown, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Apr. 7, 1975, Ser. No. 565,574
Int. Cl.² B65B *21/24*
U.S. Cl. 53—48 **4 Claims**



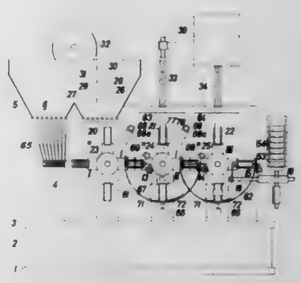
1. Apparatus for enclosing a group of articles, such as cans or bottles, arranged in side-by-side rows within a carton which has bottom and side panels and an internal partition which includes a longitudinal member located between the rows of articles, transverse elements extending from the longitudinal member between the articles of each row, and a base element hingedly attached to a lower portion of the longitudinal member, said apparatus comprising:
a. conveying means for said articles;
b. means for moving said partition toward said articles;
c. means for folding said base element to a position normal to said longitudinal member;
d. means for bringing said partition and said articles into juxtaposition with a longitudinal member extending between the rows of the articles, the transverse members extending between the articles of each row, and the base element underlying at least one of the articles;
e. means for enclosing said article group in said carton after said partition is in place.

3,924,386

MACHINE FOR PACKAGING ROD-SHAPED ARTICLES

Alfred Schmermund, 62 Kornerstrasse, 5820 Gevelsberg, Germany

Filed Oct. 5, 1973, Ser. No. 403,732
Claims priority, application United Kingdom, Oct. 19, 1972, 48186/72
Int. Cl.² B65B *19/30, 11/28*
U.S. Cl. 53—60 **15 Claims**



1. A high speed multi-stage machine for monitoring and wrapping blocks of rod-shaped articles, the machine comprising, in combination:
input means to receive a plurality of rod-shaped articles;
a first rotatable translator member;
at least one further rotatable translator member;
mounting means supporting said first and said further translator members to be each rotatably displaceable about a respective one of substantially horizontal and mutually parallel axes of rotation, to be mutually spaced apart in a direction parallel to said axes of rotation, and to locate next adjacent ones of said translator members in at least partially mutually overlapping relationship;
a plurality of pairs of substantially parallel axially extending side wall members and an equal plurality of base wall members each interconnecting radially lower portions of a respective pair of said side wall members in each translator member to define therein a corresponding plurality of compartments each extending generally radially to said respective axis of rotation and each being adapted to receive a block of said articles;
insertion means to transfer a block of rod-shaped articles from said input means into a compartment in said first translator member on said compartment being disposed with said side walls thereof substantially horizontal;
drive means coupled to each said translator member to angularly displace said first translator member stepwise in a first direction of rotation to cause each said compartment thereof to pass through an uppermost position with said side walls thereof substantially vertical before said compartment passes through a lowermost position with said side walls thereof substantially vertical, to angularly displace said at least one further translator member stepwise in a direction of rotation opposite to said first direction, and to locate any of said compartments in any one of said translator members in a selective axial end-to-end relationship with one of said compartments in a translator member next adjacent said one translator member;
monitoring means to monitor said block of articles in said compartment in said first translator member on said compartment being disposed in said uppermost position;
at least one reciprocatable pusher means co-ordinated with said drive means to pushably transfer a block of said articles between said mutually end-to-end aligned compartments of next adjacent said translator members during a forward stroke displacement of said pusher means when said aligned compartments are each disposed with said side walls thereof substantially horizontal;

at least one wrapper feeder means synchronized with said angular displacement of a respective one of said translator members to feed a wrapper into an empty compartment in said at least one further translator member on said empty compartment being disposed in an uppermost position with said side walls thereof substantially vertical;

at least one wrapper folder means to fold a projecting wrapper portion over said block of said articles in one said compartment;

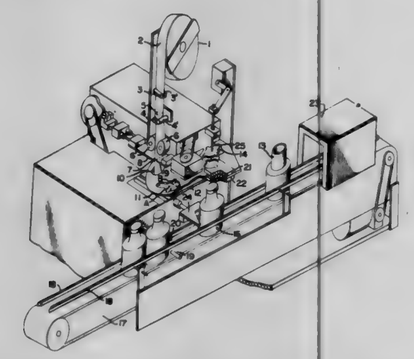
extractor means to extract a wrapped block of said articles from one of said compartments when said compartment is in operative juxtaposition with said extractor means and when said side walls of said compartment are substantially horizontal; and

output means to receive said wrapped block of said articles from said extractor means.

3,924,387
BANDING MACHINE

Anatole E. Konstantin, 10 Live Oak Road, Norwalk, Conn. 06851

Filed Apr. 3, 1975, Ser. No. 564,692
Int. Cl.² B65B 7/28; B67B 5/00; B65C 3/18
U.S. Cl. 53—291 **10 Claims**



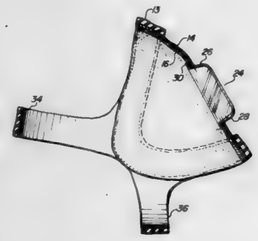
1. Apparatus for accurately placing a band of shrinkable plastic film over an article, comprising in combination:

1. means for dispensing shrinkable plastic tubing, flattened in a first plane and having crimped edges,
2. means for opening a section of said flattened tubing and for reflattening the opening tubing in a plane perpendicular to said first plane without crimping its new edges.
3. means for feeding a preselected length of said reflattened tubing into position for being cut,
4. means for cutting said preselected length of reflattened tubing into bands,
5. means for moving said bands into vertical alignment with an article banding station, said moving means comprising a rotatable horizontally disposed plate having at least one elongated slot, extending through said plate, said slot having perpendicular major and minor axes, the rearward portion of said slot being shaped such that its sides support the rear hemispherical half of the band in a vertical position, said minor axis being approximately equal in length to the outside diameter of said tubing whereby when the reflattened tubing — which extends through said slot and lies in the plane parallel to major axis — is cut, the band will spring open in said slot with the edges of the band being slightly compressed by the sides of the slot,
6. band stopping means, located in vertical alignment with said article banding station, said means being shaped such that its concave inner surface supports the front hemispherical half of the band in a vertical position, whereby on mating with the rearward portion of said slot, a collar surrounding said band is formed which holds the band in an open position, in vertical alignment with the article banding station, and
7. means vertically aligned with said article banding station for pushing the opened band through said collar and over said article.

3,924,388
EYE PROTECTION DEVICE FOR AMINALS

Anna Mae Elsie Morrison, 901 W. McDowell Road, Phoenix, Ariz. 95007

Filed June 19, 1974, Ser. No. 480,718
Int. Cl.² B68C 5/00
U.S. Cl. 54—80 **1 Claim**



1. An eye protection device adapted to protect an animal during the external application of sprays, dusts and similar substances, comprising:

a. a substantially moisture impervious flexible mask portion having a general triangular configuration having first, second and third sides, and adapted to snugly engage a portion of the animal's face in the area of the animal's eyes, said mask being constructed of a layered material having an outer fabric layer and an inner substantially waterproof layer having frictional characteristics to engage the animal's face to prevent slipping;

b. a substantially moisture impervious transparent goggle member in said mask at a location permitting the animal relatively unobstructed vision;

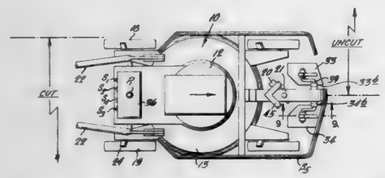
c. a head strap extending between said first and second sides at a location adjacent said goggle member; and

d. a jaw strap extending generally parallel to said third side whereby said straps can be respectively engaged about the animal's head and jaws to secure said device in place.

3,924,389
AUTOMATIC LAWN MOWER

Stanley B. Kita, 30 Valley Green Road, Doylestown, Pa. 18901

Filed Mar. 27, 1973, Ser. No. 345,307
Int. Cl.² A01D 35/262
U.S. Cl. 56—10.2 **43 Claims**

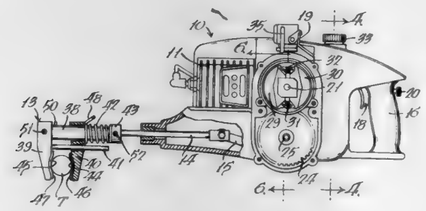


1. In combination with a self-propelled vehicle having a power source; means connected to said power source for cutting a swath of vegetation projecting upwardly from the ground; means for steering the vehicle in response to a signal; and means for guiding a vehicle automatically along the swath in the absence of an operator, including sensor means carried on the vehicle for detecting the edge of the swath, circuit means connecting said sensor means and said steering means, a source of electrical energy connected in said circuit means and to said sensor means for passing electrical current through uncut vegetation, and amplifier means associated with said circuit means for producing the steering signal in response to said current, the improvement wherein said sensor means includes a plurality of electrical conductors having edges defining their peripheries with a portion of the periphery of one conductor being located adjacent a portion of the periphery of the other conductor and means mounting said conductors to said vehicle with an air gap surrounding their edges and disposed between said adjacent portions to insulate said conductors from said vehicle and from one another.

3,924,390
PORTABLE POWER-DRIVEN HARVESTING IMPLEMENT

Carl J. Alexander, Moore Park, Mich., assignor to Wells Manufacturing Corporation, Three Rivers, Mich.

Filed June 7, 1974, Ser. No. 477,432
Int. Cl.² A01D 46/00
U.S. Cl. 56—328 TS **11 Claims**



11. A portable harvesting implement which comprises in combination

a housing;

a lightweight internal combustion engine situated in said housing and provided with a power output shaft;

a reduction gear means mounted in said housing and provided with an output shaft;

a centrifugal clutch means connecting said engine with said reduction gear means and adapted to engage the power output shaft of said engine with said reduction gear means when the engine has attained a predetermined number of revolutions per minute;

a rigid, elongated link member, having an inner end and an outer end, slidably mounted in said housing and projecting the outer end therefrom;

translational means for converting rotary motion of said reduction gear means output shaft to reciprocating motion connected between the inner end of said link member and said reduction gear means output shaft; and

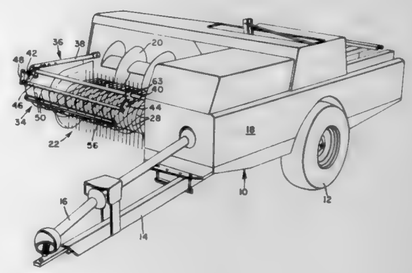
spring-biased clamp means, adapted to engage a fruit-bearing tree or limb on the outer end of said link member and comprising an elongated stem affixed to said link member, a fixed jaw member fixedly mounted on the distal end of the stem substantially normal to the longitudinal axis thereof, a complementary movable jaw member slidably mounted on said stem, stop means positioned between said fixed jaw member and said movable jaw member for limiting forward movement of movable jaw member short of abutment with fixed jaw member, retainer means fixedly mounted on said stem for limiting the sliding movement of said movable jaw member, compression spring means slidably received on said stem between said movable jaw member and said retainer means and urging said movable jaw member toward said fixed jaw member, and a rearwardly-extending jaw alignment means mounted on said fixed jaw member spaced from said stem but substantially parallel thereto and slidably engaging said movable jaw member;

said jaw members being provided in opposing faces thereof with concave surfaces for receiving the tree or limb therebetween, and said surfaces being laterally spaced from said stem for a distance sufficient to cause binding between said movable jaw member and said stem when the tree or limb is held therebetween.

3,924,391
ADJUSTABLE CROP COMPRESSOR FOR A PICKUP MECHANISM

Leo George Cheatum, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Mar. 3, 1975, Ser. No. 554,636
Int. Cl.² A01D 89/00
U.S. Cl. 56—364 **6 Claims**



1. In a harvesting machine having a rotary pickup mechanism with a plurality of pickup elements adapted to raise crop material from a field as the machine advances and deliver it rearwardly onto a generally horizontal deck, the combination therewith of an improved crop compressor device for restraining the upward movement of the crop material as it is raised by the pickup mechanism and comprising; a supporting structure mounted on the harvesting machine and including a support member above the pickup mechanism; a pair of parallel support arms swingably mounted on the support member for swinging about a transverse axis; a transverse bar extending between and journaled in the support arms parallel to the pivot axis of the arms; a plurality of compressor tines mounted on and depending from the bar and including cantilevered, generally horizontal rearward portions disposed above the deck and resiliently deflectable upwardly to permit the rearward passage of crop material between the deck and the compressor tines, the tines engaging the crop material from above to compress the crop material downwardly toward the deck; means for adjustably positioning the arms in different angular positions about the transverse support member to selectively vary the position of the bar relative to the pickup mechanism; crank arm means connected to the bar; and linkage means interconnecting the crank arm means and the supporting structure to control the angular position of the bar in the support arms and thereby control the attitude of the compressor tines relative to the pickup mechanism.

3,924,392

APPARATUS FOR MOUNTING PORTABLE MANUALLY OPERATED YARN KNOTTER MECHANISMS ON YARN PROCESSING MACHINES

Gustav Franzen, Neersen Bezirk Dusseldorf, and Helmut Veltges, Krefeld, both of Germany, assignors to Palitex Project-Company G.m.b.H., Germany

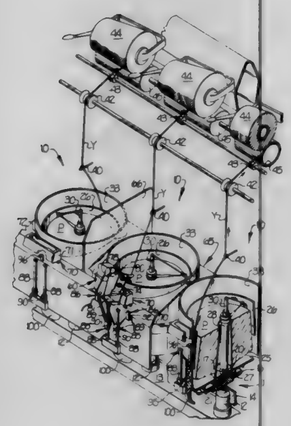
Filed July 5, 1973, Ser. No. 376,742

Claims priority, application Germany, July 12, 1972, 2234211

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² D01H *15/00*

U.S. Cl. 57—34 R **10 Claims**



1. In the combination of a textile yarn processing machine, such as a twister, spinning frame or the like, having a plurality of spindle assembly means positioned in side-by-side relationship for the processing of yarn, control means operatively connected with each of said spindle assembly means for selectively stopping and starting operation of said respective spindle assembly means, and a manually operated, portable yarn knotter mechanism for knotting together two ends of broken or otherwise separated yarn at selected spindle assembly locations; the improvement of

holder means mounted stationary on said yarn processing machine in front of each said spindle assembly means and including means for releasably receiving and mounting said yarn knotter mechanism at the desired knotting location in front of selected spindle assembly means for a yarn knotting operation at the selected spindle assembly means eliminating the necessity of the operator holding said portable yarn knotter mechanism and actuating means operatively connected with the respective control means and responsive to reception and mounting of said yarn knotter mechanism in said respective holder means for actuating said control means to stop operation of said respective spindle assembly means for a yarn knotting operation.

3,924,393

APPARATUS FOR PIECING A THREAD IN AN OPEN-END SPINNING UNIT

Fritz Stahlecker, Josef-Neidhart-Str. 18, D 7341 Bad Ueberkingen, and Hans Stahlecker, Haldenstrasse 20, D 7334 Suessen, both of Germany

Filed Oct. 10, 1974, Ser. No. 513,776

Claims priority, application Germany, Oct. 10, 1973, 2350842

Int. Cl.² D01H *7/00, 1/12, 15/00*

U.S. Cl. 57—34 R **25 Claims**

1. Apparatus for piecing a thread end in an open-end spinning unit having a spinning rotor with a ring of opened-up fibers comprising:

opening means including comb means for combing out the thread end,

and a device for returning the thread end into the spinning rotor after combing thereof by said comb means.

3,924,394

APPARATUS FOR PIECING A THREAD IN AN OPEN-END SPINNING UNIT

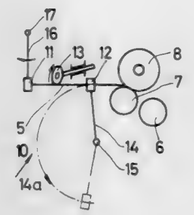
Fritz Stahlecker, Josef-Neidhart-Strasse 18, D 7341 Bad Ueberkingen, Germany, and Hans Stahlecker, Haldenstrasse 20, D 7334 Suessen, Germany

Filed Oct. 10, 1974, Ser. No. 513,849

Claims priority, application Germany, Oct. 10, 1973, 2350843

Int. Cl.² D01H *7/00, 1/12, 15/00*

U.S. Cl. 57—34 R **29 Claims**



1. Apparatus for piecing a thread end in an open-end spinning unit having a spinning rotor with a ring of opened-up fibers comprising:

opening means including friction tool means for fraying the thread end at a predetermined location,

and a device for returning the thread end into the spinning rotor after fraying thereof by the friction tool means.

3,924,395

THREAD SUCTION TUBE CONNECTION

Oscar Grossi, Bologna, Italy, assignor to Cogne Macchine Tessili-Cognetex S.p.A., Imola, Italy

Filed Dec. 14, 1973, Ser. No. 424,748

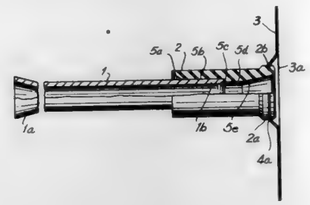
Claims priority, application Italy, Jan. 17, 1973, 47751/73

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² D01h *5/68*

U.S. Cl. 57—34.5 **2 Claims**

1. A thread suction tube and a tube carrier adapted for communicating with a suction channel of a spinning machine comprising in combination: a suction tube having an axial smooth bore with a flared inlet orifice and which is made of an antistatic rigid material, and a tube carrier shaped in the form of a sleeve and made of an elastically deformable material; said sleeve having an axial conduit comprising a flared end adapted to facilitate the insertion of the rear end of the suction tube and which has a radius forming a conical section, the diameter of the more restricted cross-sectional area is less than the outer diameter of the suction tube; said conical section ending with an annular shoulder, the inner edge of which defines the entrance of a cylindrical section of said conduit, having a diameter substantially equal to the inner diameter of



the suction tube and having a flared end; and means being provided to sealingly connect the said tube carrier to an entrance orifice provided in the side wall of the suction channel.

3,924,396

COMPOSITE YARN FORMING METHOD AND APPARATUS

Emilian Bobkowicz; Andrew John Bobkowicz, and Margaret Mary Lefebvre, nee Bobkowicz, all of 1435 St. Alexander St., Room 310, Montreal, Quebec, Canada

Filed Oct. 2, 1972, Ser. No. 294,103

Claims priority, application Canada, July 6, 1972, 146543

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² D01H *13/30, 1/12*

U.S. Cl. 57—35 **14 Claims**

5. Apparatus for producing composite spun yarn which comprises: a rotatable circumferentially grooved roll; means for simultaneously introducing into the groove of said roll three components, namely a carrier strand, a tacky polymer and staple fibers; tension control means through which said carrier filament passes before being directed into the groove of said roll; a spindle following said grooved roll through which the yarn coming out of the groove is passed, said spindle imparting a twist to said yarn which is transmitted back into the groove where the three components are thus twisted into spun yarn, said spindle being positioned at an angle with respect to said grooved roll such as to impart tension and force the strand in the groove against the bottom of said groove; at least one pulling device following said spindle to maintain the yarn under positive pull; and a wind-up arrangement for linearly winding the obtained composite spun yarn on a collecting roll.

3,924,397

APPARATUS FOR REMOVING IMPURITIES FROM FIBROUS MATERIAL

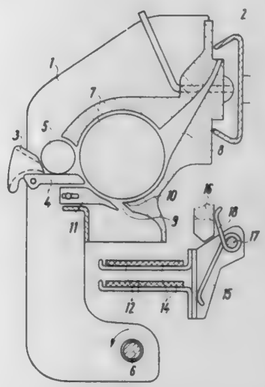
Fritz Stahlecker, Josef-Neidhart-Str. 18, D-7341 Bad Uberkingen, and Hans Stahlecker, Haldenstrasse 20, D-7334 Sussex, both of Germany

Filed Oct. 29, 1974, Ser. No. 518,900

Claims priority, application Germany, Nov. 9, 1973, 2356180

Int. Cl.² D01H *11/00, 1/12*

U.S. Cl. 57—56 **13 Claims**



1. An apparatus for separating fibrous material which is supplied to a spinning rotor of an open-end spinning unit, containing a path of travel for said separated fibres, in which there is an opening for removing impurities contained in said fibrous material, whereby conveying means which travel past said removal opening and take along said impurities are arranged beneath said removal opening at a distance therefrom, and whereby guide surfaces for the removed impurities are arranged between said removal opening and said conveying means.

3,924,398

METHOD OF AND APPARATUS FOR OPEN END SPINNING FROM STAPLE FIBERS

Miroslav Esser, Ceska Trebova; Zdenek Ledr; Frantisek Ferkl, both of Usti nad Orlici; Miloslav Kubovy, Dolni Dobrouc; Josef Ripka; Frantisek Hortlik, both of Usti nad Orlici, and Jiri Elias, Brandys nad Orlici, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed Oct. 24, 1974, Ser. No. 517,522

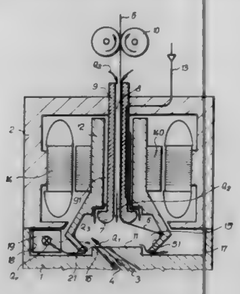
Claims priority, application Czechoslovakia, Oct. 24, 1973, 7307-73

Int. Cl.² D01H *1/12*

U.S. Cl. 57—58.89 **9 Claims**

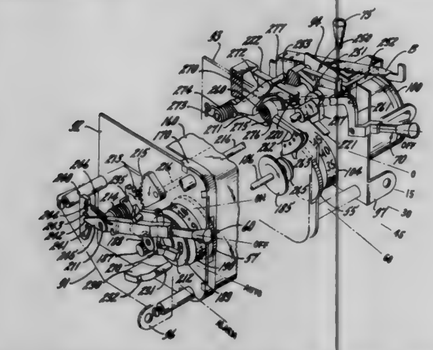
3. In an apparatus for the open end spinning of yarn from staple fibers in a rotary underpressure spinning chamber mounted in an air lubricated bearing, said apparatus having a feeding channel for feeding fibers from a fiber opening mechanism merging into said spinning chamber through a stationary lid, and a yarn withdrawing element, in the form of a hollow pin passing through the hollow shaft of the spinning chamber with a predetermined clearance disposed opposite the lid of the spinning chamber engaging its front opening, and means for blowing lubricating air into said clearance, the improvement which comprises means joining with the inner space of the rotary underpressure spinning chamber three air flows, of which a first one is an air flow passing together with the fibers through the feeding channel, a second air flow is fed from the ambient atmosphere through the hollow pin for withdrawing yarn and the third air flow is fed through the clearance be-

tween the hollow pin and the hollow shaft of the spinning chamber, said air flows forming a resulting air flow inside the spinning chamber preventing fiber losses and the wrapping of



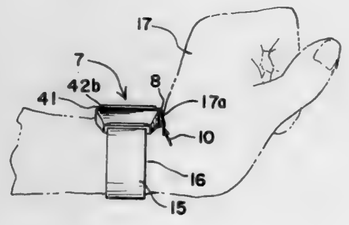
fibers about the yarn being formed therein and an outlet slot for said resulting air from said resulting air flow, said outlet slot being disposed between the stationary lid and the front margin of the spinning chamber and collecting space.

3,924,399
DIGITAL ALARM CLOCK
Ralph C. Robinson, Morresville, N.C., assignor to General Time Corporation, Thomaston, Conn.
Continuation of Ser. No. 100,836, Dec. 22, 1970, abandoned, which is a division of Ser. No. 863,886, Oct. 6, 1969, Pat. No. 3,597,918. This application Dec. 2, 1974, Ser. No. 528,659
Int. Cl.² G04B *23/02*; **G04C** *21/28*
U.S. Cl. 58—16 D **6 Claims**



1. In a digitally indicating clock, the combination comprising a plurality of endless loops of tape arranged side by side carrying cycles of numerals respectively representative of minutes, tens-of-minutes and hours in successive orders, means including a front panel having a viewing area for viewing said cycles of numerals, the tapes having respective drums for driving the same, geneva mechanisms interposed between the adjacent drums, a seconds drum having seconds indicia on the periphery thereof, a motor and first drive train for driving the seconds drum, a geneva mechanism interposed between the seconds drum and minutes drum for periodic stepped advancement of the latter, an hour wheel, an hour wheel drive train, an alarm set wheel adjacent the hour wheel, said hour wheel and said alarm set wheel having cooperating cams for producing relative endwise movement when the wheels come into a predetermined condition of register, said hour wheel drive train being coupled to the minutes drum for periodic advancement of the hour wheel, and means responsive to the relative endwise movement of the wheels for controlling the operation of apparatus from an "off" condition selectively and sequentially to conditions of "auto-on" and "alarm," said means including a trip lever, said trip lever being pivotally mounted adjacent the wheels for cooperable endwise movement with the wheels, means biasing said trip lever in one direction about said pivot point, means in the path of said trip lever for limiting biased pivotal movement of said trip lever in response to the relative endwise movement of the wheels, a circular rack on said trip lever, a second circular rack gear cooperable with said trip lever rack gear and rotatable through an angular displacement representative of pivotal movement of said trip lever, means interconnecting said second circular rack gear and controlled apparatus, and a function lever for selectively disabling movement of said trip lever.

3,924,400
WRIST-ACTUATABLE SWITCH
Eugene R. Carlone, 150 W. 82 St., New York, N.Y. 10024
Filed Jan. 22, 1975, Ser. No. 543,080
Int. Cl.² G04B *19/30*
U.S. Cl. 58—50 R **3 Claims**

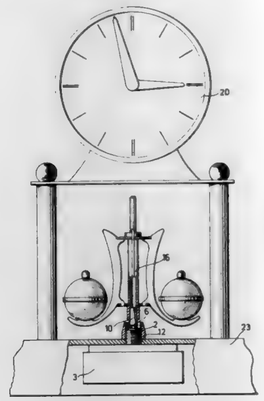


1. A wristwatch switch device comprising in combination: a wristwatch support structure, wristwatch means for keeping time mounted on the wristwatch support structure, and electrical time-display circuit means for facilitating the observing and reading of time-indicating indicia when the electrical time-display circuit means is actuated, the electrical time-display circuit means including a switch means for making and breaking electrical circuit, the switch means including a switch lever arm mounted on said wrist-watch support structure adjacent a lateral edge of the wristwatch support structure and projecting laterally from the lateral edge a first predetermined distance sufficiently for actuation thereof by contact with a person's hand or wrist upon intentional flexing of a person's hand having the support structure mounted on the wrist adjacent the hand such that the hand or wrist is thereby pressable against the switch lever arm, said switch lever arm projecting also a second predetermined distance downwardly at at-least a distal portion thereof such that early contact therewith upon a flexing of the wrist is facilitated.

3,924,401
TORSION PENDULUM CLOCK
Egon Heim, Sagedobel, 774 Triberg, Black Forest, Germany
Filed Mar. 21, 1974, Ser. No. 453,358
Claims priority, application Germany, Mar. 28, 1973, 2315431
Int. Cl. G04b *37/12*
U.S. Cl. 58—152 R **4 Claims**

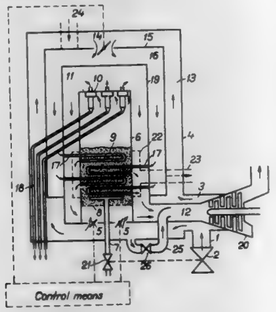
1. A torsion pendulum clock comprising
a. a base portion,
b. a housing on said base portion,
c. a support pin having journaled engagement in said housing in vertical relation with an upper portion thereof projecting above said housing,
d. drive means in said housing driving said pin rotatably in alternate directions in a torsion pendulum movement,
e. an ornamental pendulum seated on the projecting end of said pin and being rotatable with said pin in said torsion pendulum movement,

f. and a clockwork mounted on said base portion above said pendulum for displaying time,



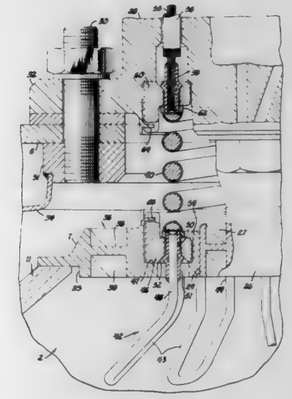
g. said clockwork having drive means therefor independent of said drive means for said pin.

3,924,402
COMBUSTION CHAMBER FOR GAS TURBINES AND THE LIKE HAVING A FLUIDIZED BURNER BED
Henrik Harboe, Kingston, England, assignor to Stal Laval Turbin AB, Finspong, Sweden
Filed July 2, 1973, Ser. No. 375,781
Claims priority, application Sweden, July 7, 1972, 8983/72
Int. Cl. F02c *1/00*
U.S. Cl. 60—39.18 C **9 Claims**



1. A combustion chamber for operating gas turbines and the like; comprising:
a. a burner housing;
b. a fluidized bed of particulate material within said burner housing;
c. means for purging the combustion gas from said burner housing;
d. a chamber surrounding said burner housing for receiving purged combustion gas from said burner;
e. means for injecting fuel into said burner;
f. means for introducing combustion air into said burner;
g. a cooling chamber for receiving a cooling medium surrounding the purged combustion gas chamber;
h. means for introducing a cooling medium into said cooling chamber;
i. means for passing said cooling medium in a confined path through said fluidized bed in heat relationship therewith;
j. means for passing said cooling medium and said purged combustion gas to a power out-put station, and
k. means for maintaining a predetermined proportional relationship between combustion air and said cooling medium constant regardless of varying power out-put demands and to maintain the fluidized bed temperature within a predetermined range.

3,924,403
COMBUSTION LINER SPRING SUPPORT USED FOR HOT WIRE IGNITER CIRCUIT
John A. Irwin, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 24, 1974, Ser. No. 517,806
Int. Cl.² F02C *7/20*; **F02G** *3/00*; **F02C** *7/26*
U.S. Cl. 60—39.32 **3 Claims**



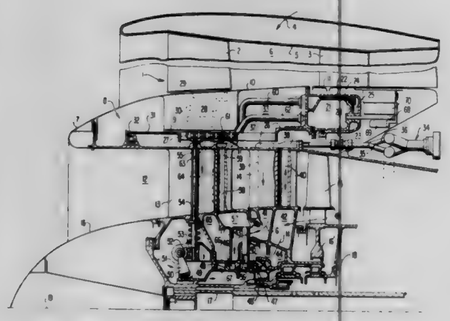
1. A combustion apparatus for a gas turbine engine or the like comprising, in combination, a casing adapted to receive air under pressure; a combustion liner mounted within the casing defining a reaction zone; a fuel nozzle extending from the casing into the liner; the liner including a conductive support ing disposed about the nozzle and grounded to the casing through the nozzle; means for mounting the liner within the casing including a compression spring extending from the casing to the liner around the fuel nozzle; an ignition current lead extending through the casing into contact with the spring, the lead and spring being insulated from the casing and the support ring; hot wire means for fuel ignition disposed adjacent to the fuel nozzle, the hot wire means having one end grounded to the support ring and one end insulated from the support ring and connected to the spring.

3,924,404
APPARATUS FOR ADJUSTING FAN BLADES IN A TURBOJET ENGINE
Wolfgang Pollert, Herbertshausen, Germany, assignor to Motoren- und Turbinen-Union Munchen GmbH, Germany
Filed Apr. 19, 1973, Ser. No. 353,387
Claims priority, application Germany, Apr. 19, 1972, 2218874
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² F02C *3/06*; **F01D** *7/00*
U.S. Cl. 60—226 R **16 Claims**

1. Apparatus for adjusting fan blades in a turbojet engine of ducted-fan construction of the type which has primary and secondary ducts; said apparatus comprising:
drive system and actuating mechanism means positioned substantially inside of an annulus arranged between said primary and secondary ducts and including a piston con-

nected to toothed rack means mounted for movement within said annulus, said fan blades including blade teeth which matingly engage corresponding rack teeth of said toothed rack means,

selectively engageable arresting means engageable with said toothed rack means to prevent movement of said toothed rack means,



and supporting blade means extending across said primary duct for supporting said annulus, wherein said arresting means includes resiliently biased plunger means extending through cavity means in said supporting blade means, said plunger means being engageable with respective spaced slots in said toothed rack means for arresting said toothed rack means in positions corresponding to predetermined adjusted positions of said fan blades.

3,924,405

SOLID PROPELLANTS WITH STABILITY ENHANCED ADDITIVES OF PARTICULATE REFRACTORY CARBIDES OR OXIDES

Joseph Cohen, and Gilbert A. Zimmerman, both of Sacramento, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed June 7, 1973, Ser. No. 360,867

Int. Cl.² C06D *5/06*

U.S. Cl. 60—219 **14 Claims**

1. A stable burning, solid propellant composition absent visible smoke on burning comprising a cured, intimate mixture of:

a major amount of solid inorganic oxidizing salt;

a minor amount of a combustible synthetic, organic elastomeric hydrocarbon resin formed by the chain extension and cross-linking of functionally-terminated, liquid butadiene polymers; and

0.2 to 5% by weight of the composition of a stability enhancing additive consisting essentially of the combination of:

1. an oxide or carbide having a melting point of at least about 2000°C selected from the group consisting of thorium, tungsten, silicon, molybdenum, aluminum, hafnium, zirconium and vanadium oxides and carbides; and

2. particulate carbon.

12. A method for producing thrust in the absence of visible smoke comprising the steps of:

burning a solid propellant composition defined according to claim **1** at a burning rate above about 0.4 in/sec without combustion instability at pressures of at least 1000 psia so as to produce non-smoking combustion gases; and

exhausting said gases through an orifice to produce thrust.

3,924,406

EMBEDDED POROUS ELEMENT ROCKET MOTOR

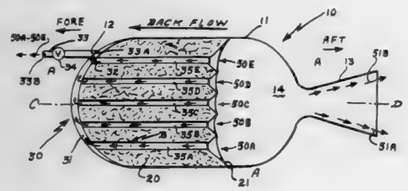
Leonard H. Caveny, Trenton, N.J., and Martin Summerfield, Princeton, N.J., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 3, 1973, Ser. No. 357,039

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² F02K *9/04*

U.S. Cl. 60—254 **3 Claims**



1. An apparatus for controlling the rate of burning of an end-burning solid propellant of a solid propellant rocket motor, wherein said rocket motor is in an atmospheric environment and wherein the rocket motor includes a casing having a fore end and an aft end, and also wherein the rocket motor has an end-burning solid propellant in the casing, a combustion chamber which is disposed aft of the end-burning solid propellant, and a nozzle which is disposed aft of the combustion chamber, and further wherein the end-burning solid propellant has a longitudinal axis, comprising:

a. a plenum chamber disposed in the fore end of the rocket motor casing and forward of the solid propellant, with said plenum chamber having an outlet;

b. a hollow conduit having two ends, with one end connected to the outlet of said plenum chamber, and with the other end exposed to, and within, the atmospheric environment;

c. a valve interposed between the outlet of said plenum chamber and the atmospheric environment, and with said valve connected to said hollow conduit;

d. and, a plurality of high-resistance gas flow paths within the solid propellant, with said gas flow paths connecting the combustion chamber to the plenum chamber, wherein each of the plurality of high-resistance gas flow paths is parallel to the longitudinal axis of the solid propellant, and wherein each of the plurality of high-resistance gas flow paths is also equally spaced from each other, and also wherein each of the plurality of high-resistance gas flow paths includes a porous element which is embedded in the solid propellant, with each said porous element comprising a hollow, thin-walled, cylindrical plastic sheath of small diameter which contains therein a suitable gas flow-restricting, porous, filler material, said filler material being an active packing of reactive material.

3,924,407

EXHAUST EMISSION CONTROL DEVICE

Yukio Hosho, Katsuta; Yoshishige Oyama, Hitachi, and Kimiji Karino, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 16, 1973, Ser. No. 406,956

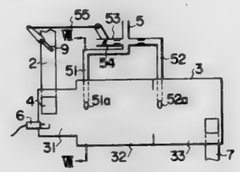
Claims priority, application Japan, Oct. 20, 1972, 47-104474

Int. Cl.² F01N *3/10*

U.S. Cl. 60—284 **1 Claim**

1. An exhaust emission control device for rendering noxious exhaust gases from an engine clean by supplying air thereto and subjecting them to recombustion, comprising an exhaust emission pulsation reducing means disposed mediately in a passage of an exhaust emission introduced from the engine to

recombustion means for throttling the exhaust gases flowing through said passage when the engine is started and while it is being warmed up, and for enlarging the cross-sectional area of the passage when the engine operates at higher speeds, wherein recombustion is effected in an afterburner comprising a precombustion chamber, a first combustion chamber downstream of said precombustion chamber, and a second combustion chamber downstream of said first combustion chamber with passage means connected with said first and second



combustion chambers for tangentially introducing secondary air thereinto, said secondary air passage means being provided with valve means for controlling the supply of air to said first and second combustion chambers operatively connected with said throttling means such that when the emission gases to the afterburner are being throttled when the engine is started and being warmed up the secondary air valve means is closed so as to supply a relatively large volume of secondary air to said first and second combustion chambers.

3,924,408

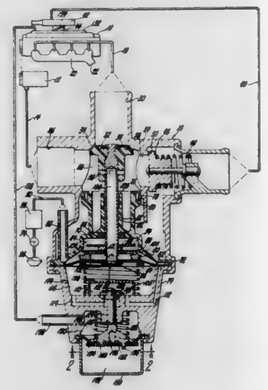
DIVERTER VALVE AND PRESSURE REGULATOR ASSEMBLY

David W. Beiswenger; Gordon R. Paddock, both of Rochester, N.Y., and Ernst L. Ranft, Rochester, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 31, 1974, Ser. No. 519,530

Int. Cl.² F02B *75/10*

U.S. Cl. 60—290 **2 Claims**



1. A diverter valve and pressure regulator assembly for use on an internal combustion engine having an exhaust system, an air pump, and an auxiliary pneumatic device, said assembly comprising a housing having an inlet adapted to receive air from said pump, an outlet adapted to discharge air to said exhaust system, and a valve seat intermediate said inlet and said outlet, a diverter valve member associated with said valve seat, a spring biasing said diverter valve member toward said valve seat to restrict air flow from said inlet to said outlet, and a diaphragm secured to said housing to define a regulated pressure chamber therebetween, a passage extending from said inlet to said chamber to supply air thereto, said chamber being adapted for connection to said device to supply air thereto, said diaphragm being connected to said diverter valve member and responsive to the pressure in said regulated pressure chamber to shift said diverter valve member away from said valve seat against the bias of said spring when the pressure in said chamber exceeds a predetermined minimum and to permit said spring to shift said diverter valve member toward said valve seat when the pressure in said chamber drops below said minimum whereby air flow through said outlet is restricted to charge said regulated pressure chamber and said device to said minimum pressure, and which further comprises means responsive to engine operating conditions for equalizing the pressures across said actuating diaphragm to permit said spring to shift said diverter valve member toward said valve seat whereby air flow through said outlet to said exhaust system is restricted.

3,924,409

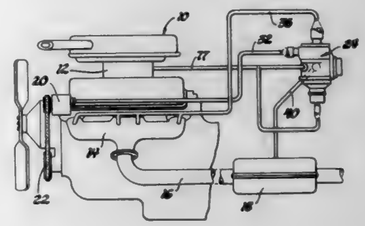
ENGINE SECONDARY AIR FLOW CONTROL VALVE

Gerald D. Heilman; Gordon R. Paddock, both of Rochester, N.Y., and Ernst L. Ranft, Rochester, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 22, 1974, Ser. No. 526,380

Int. Cl.² F02B *75/10*

U.S. Cl. 60—290 **3 Claims**



1. An air control valve for use with an internal combustion engine having an air induction system for supplying air to the engine and generating an engine induction vacuum signal, an exhaust system for exhaust gas flow from the engine, a catalytic converter in the exhaust system for promoting oxidation of exhaust gas constituents and an air supply system including an air pump and having a first branch for delivering air to the exhaust system at a point upstream and remote from the catalytic converter and a second branch for delivering air to the catalytic converter, the air control valve comprising, in combination:

a valve body defining a valve chamber having an inlet connected to the air pump, a first outlet connected to the first branch, a second outlet connected to the second branch and a third outlet openable to the atmosphere by a pressure relief valve, the valve body further including a pair of axially opposed valve seats in the valve chamber surrounding the first and second outlets; a stem projecting coaxially through the valve seats and valve chamber; first and second valve members slidably disposed on the stem; a spring compressed between the first and second valve members to normally bias the first valve member against the first valve seat to close the first outlet and bias the second valve member against the second valve seat to close the second outlet; an expansible chamber motor comprising a movable wall defining first and second motor chambers in the valve body, the movable wall being responsive to the pressure difference thereacross to assume a central position when the pressure difference is zero and move in one or the other direction from the central position when air pressure in the first motor chamber exceeds that in the second motor chamber or the air pressure in the second motor chamber exceeds

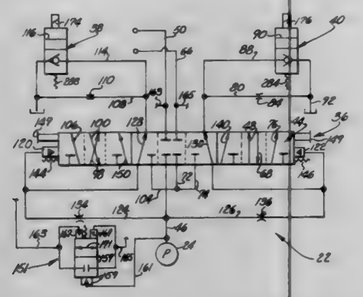
that in the first motor chamber, respectively, the movable wall further having the stem attached thereto for co-movement, the stem having a first stop effective to engage the first valve member and open the first outlet with movement of the movable wall in the one direction from its central position and a second stop effective to engage the second valve member and open the second outlet with movement of the movable wall in the other direction from its central position; a restricted flow orifice in the valve body opening the first motor chamber to the atmosphere; a valved conduit in the valve body opening the first motor chamber to the valve chamber; a conduit in the stem opening the second motor chamber to the valve chamber; a valved opening in the valve body opening the second motor chamber to the atmosphere; a first actuator responsive to a first signal to close the valved conduit and responsive to a second signal to open the valved conduit; and a second actuator responsive to the engine induction vacuum signal to open the valved opening below a high vacuum signal level and close the valved opening above the high level.

3,924,410

HYDROSTATIC TRANSMISSION CONTROL SYSTEM

Charles R. Cornell; Dennis D. Simpson, and Kenneth K. Knapp, all of Battle Creek, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 2, 1974, Ser. No. 511,212
Int. Cl.² F15B *20/00*; F16H *39/46*
U.S. Cl. 60—403 **32 Claims**



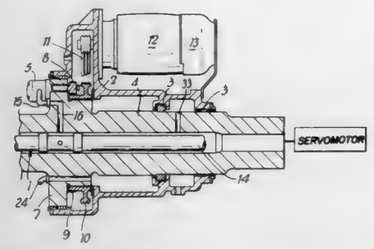
1. An apparatus comprising a hydrostatic transmission including a pump unit connected in fluid communication with a motor unit, actuator means for varying the displacement of one of said units, main control valve means for porting fluid to effect operation of said actuator means to vary the displacement of said one unit of said hydrostatic transmission, said main control valve means being operable from a neutral condition to a first condition to effect operation of said actuator means to increase the displacement of said one unit of said hydrostatic transmission and being operable from the neutral condition to a second condition to effect operation of said actuator means to decrease the displacement of said one unit of said hydrostatic transmission, first pilot valve means for effecting operation of said main control valve means from the neutral condition to the first condition and for effecting a variation in the rate at which fluid is ported by said main control valve means independently of said main control valve means when said main control valve means is in the second condition to thereby effect a variation in the rate at which said actuator means decreases the displacement of said one unit of said hydrostatic transmission, and second pilot valve means for effecting operation of said main control valve means from the neutral condition to the second condition and for effecting a variation in the rate at which fluid is ported by said main control valve means independently of said main control valve means when said main control valve means is in the first condition to thereby effect a variation in the rate at which said actuator means increases the displacement of said one unit of said hydrostatic transmission.

3,924,411

OIL-SUPPLY MEANS FOR RUNNER HUBS WITH CONTROLLABLE PITCH BLADES

Eric R. May, Kent, England, assignor to Stone Manganese Marine Limited, London, England

Filed Mar. 21, 1973, Ser. No. 343,311
Int. Cl.² F16D *31/00*
U.S. Cl. 60—486 **6 Claims**



1. An apparatus for supplying pressurized hydraulic fluid to the interior of a rotating shaft, comprising in combination:
   a. a rotatable shaft having an interior fluid passageway, an inlet fluid duct connecting the exterior of said shaft with said interior fluid passageway, and a servomotor means connected to said passageway,
   b. at least two pumps for pumping hydraulic fluid through said inlet duct,
   c. each pump being mounted on an external portion of said rotary shaft so that when the rotary shaft rotates each pump will rotate with it,
   d. each pump being driven by the engagement of a first gear means, which is integrally connected with the pump, with a second gear means, which is mounted concentrically and separately with respect to said rotatable shaft,
   e. said second gear means being interconnected to a drive means which is adapted to rotate said second gear means around said rotary shaft when the speed of rotation of said rotary shaft drops below a predetermined value, and
   f. braking means interconnected to said drive means to prevent rotation of said second gear means when operative and to permit rotation of said second gear means when inoperative, whereby, when said rotary shaft is rotating above said predetermined rotary speed each pump will be driven by the intermeshing of said first gear means with the braked non-rotating second gear means and when said rotary shaft rotates below said predetermined rotary speed then each pump will be driven by the intermeshing of said first gear means with the unbraked rotating second gear means.

3,924,412

OIL CONTAINMENT BOOM

John A. Bennett, West Vancouver, and Ian R. McAllister, Vancouver, both of Canada, assignors to Bennett Pollution Controls, Ltd., North Vancouver, Canada

Continuation-in-part of Ser. No. 541,260, Jan. 15, 1975, which is a continuation of Ser. No. 464,539, April 26, 1974, abandoned. This application Mar. 3, 1975, Ser. No. 554,979
Int. Cl.² E02B *15/04*
U.S. Cl. 61—1 F **12 Claims**

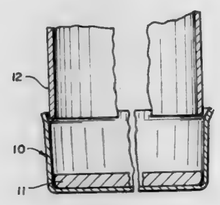
1. A containment boom comprising:
   a. an elongate, generally planar, flexible skirt adapted to be positioned in a body of water at the surface thereof with a longitudinal axis of the skirt being generally parallel to the water surface, and with an upper lateral edge of the skirt being above the water surface and a lower lateral edge of the skirt being below the water surface, said skirt having sufficient strength and being arranged to be a primary load carrying member with respect to tensile forces along the length of the boom, with said skirt thus being subjected to moderate elongation under tensile loading;
   b. a plurality of floats adapted to be mounted to said skirt at spaced intervals along the length of the skirt, each of said floats having an outer exposed surface and a generally flat inner mounting surface adapted to fit against a surface of said skirt;
   c. a plurality of connecting means for said floats to connect the floats to the skirt, each of said connecting means comprising a tongue and groove interconnection between its related float and said skirt, said tongue and groove interconnection having a longitudinal engaging axis permitting limited movement along said axis between connecting portions of the skirt and float, whereby moderate elongation of said skirt does not cause substantial stress at the area of the connection between the float and the skirt, and
   d. stop means arranged to engage said floats so as to limit longitudinal movement thereof relative to the skirt and thus maintain the floats in proper position.

3,924,413

FITTINGS AND THE LIKE FOR PIPE PILING

Richard O. Marsh, Jr., 701 Standard Life Bldg., Pittsburgh, Pa. 15222

Filed Dec. 4, 1973, Ser. No. 421,736
Int. Cl.² E02D *5/00*, *5/72*; F16L *25/00*
U.S. Cl. 61—53 **21 Claims**



1. The combination with a section of pipe piling of a fitting attached to said section of pipe piling, said fitting comprising a metal sleeve having a circular section the inner diameter of which tapers to a minimum diameter less than the outer diameter of the pipe piling, said pipe piling being stronger then said circular section whereby the fitting is expanded over the piling without deforming it when the piling is driven thereinto, to provide a watertight metal-to-metal seal on the pipe piling.

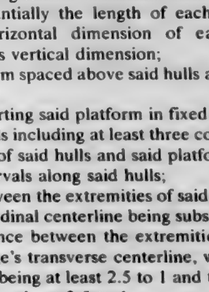
3,924,414

PILE FOR USE IN OFFSHORE AREAS HAVING A SHIFTING LAYER OF MUD

George P. Maly, Newport Beach, Calif., and Clifton A. Tannahill, Houston, Tex., assignors to Union Oil Company of California, Brea, Calif.

Filed Aug. 22, 1974, Ser. No. 499,650
Int. Cl.² E02D *5/22*
U.S. Cl. 61—53 **7 Claims**

1. A pile for use in offshore areas having a layer of mud susceptible to movement overlaying a competent bottom, which comprises:
   an elongated tubular member driven through a mud layer susceptible to movement and imbedded in the underlying competent bottom so as to extend upwardly through said mud layer; and
   fluid ejection means for ejecting fluid outwardly from the interior of said tubular member at a plurality of locations all of which are above said competent bottom and substantially within said mud layer; and for fluidizing the mud adjacent to the pile

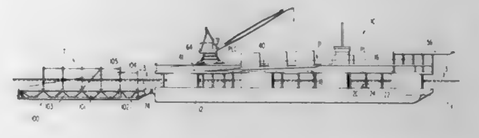


3,924,415

COLUMN STABILIZED SEMISUBMERSIBLE PIPELAYING BARGE

Yoram Goren, Los Angeles, and Charles N. Springett, Irvine, both of Calif., assignors to Santa Fe International Corporation, Orange, Calif.

Filed Dec. 30, 1974, Ser. No. 537,784
Int. Cl.² B63B *35/04*
U.S. Cl. 61—72.3 **93 Claims**



1. A column stabilized semi-submersible pipe-laying barge and pipeline transition combination comprising:
   a pair of elongated hulls disposed in spaced side by side relation with each hull having substantially parallel substantially planar top and bottom surfaces disposed substantially horizontal and perpendicular to a vertical plane through the longitudinal centerline of the barge and extending substantially the length of each hull, with the transverse horizontal dimension of each hull being greater than its vertical dimension;
   a working platform spaced above said hulls a predetermined height;
   means for supporting said platform in fixed spaced relation above said hulls including at least three columns connecting with each of said hulls and said platform and located at spaced intervals along said hulls;
   the distance between the extremities of said barge along the barge's longitudinal centerline being substantially greater than the distance between the extremities of said barge along the barge's transverse centerline, with the ratio of BLH to BWH being at least 2.5 to 1 and the ratio of BLP to BWP being at least 2.5 to 1.
   at least one column on each hull being located adjacent the stern end of said barge, another of said columns on each hull being located adjacent the opposite end of the barge, with at least one additional column at an intermediate position on each hull;
   a plurality of longitudinally spaced structural means reinforcing the structural relationship of the hulls, platform and columns;
   said hulls having ballast compartments and said barge including means for ballasting the barge to alter its draft between a low draft hull supported floating condition with the hulls having freeboard and a high draft semi-sub-

merged column stabilized floating pipelaying operating condition;

each of said columns having a height BCH and predetermined cross-sectional areas BCA, with each column's cross-sectional area BCA being the same for at least that part of the column length extending between about 0.25 BCH above hull top to about 0.75 BCH above hull top; the area of said columns, the number thereof and the distance of said columns from the barge's longitudinal roll axis and transverse pitch axis being such as to provide a greater righting moment about the transverse pitch axis than the righting moment about the longitudinal roll axis when said barge is in semi-submerged high draft pipelaying operating condition;

means for supporting and paying out pipeline from one end of said barge including pipeline transition means for supporting a pipeline extending from said barge end into the water;

means including said pipeline transition means for controlling the curvature of a segment of the pipeline extending from said barge end and over said pipeline transition means;

crane means carried by said barge with means for moving said crane means substantially longitudinally of the barge along most of said platform length BLP from near the aforesaid barge end to near the opposite barge end; said crane means including means for lifting transferring and setting loads and being of a size, weight and capacity such that total crane means load CL and its locus LC in relation to barge trim axis TA at beginning, during and cessation of movement of said crane means cause resultant moment CLM about the barge trim axis TA of such magnitude whereby typical operation of said crane means over a substantial portion of said BLP will cause a change in the angle BATC due to movement of said crane means whereby BATC will exceed plus or minus about one-half degree from the preset angle of trim of the barge PAT before such movement of said crane means if said moment CLM is not counteracted;

said ballast means being operable to preset said barge trim angle PAT between predetermined angular limits;

said ballast means also being operable between beginning and cessation of movement of said crane means as above stated to maintain the barge angle of trim change CMIT less than plus or minus one-half degree variation from said preset barge trim angle PAT;

said barge having columns of such height BCH and said means for ballasting the vessel in semi-submerged condition being operable so that the load line draft of the barge LLD in relation to barge column height BCH is within the limits of envelope curves A and B of FIG. 13 of this application.

3,924,416

REFRIGERATOR CONTROL APPARATUS

Peter Robert Durdin, New Malden, England, assignor to AMF Incorporated, White Plains, N.Y.

Filed Aug. 20, 1974, Ser. No. 499,091

Claims priority, application United Kingdom, Sept. 11, 1973, 42762/73

Int. Cl.² F25D *21/00*

U.S. Cl. 62—80 **15 Claims**

1. In apparatus for controlling the defrosting of a refrigeration system which includes a compressor, fan, and heater, the combination comprising

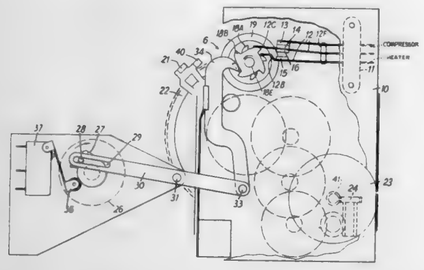
control means for independently and selectively controlling said compressor, fan and heater,

actuating means for selectively actuating said control means,

means for initiating operation of said actuating means upon occurrence of an event, thereby to initiate a defrosting cycle of said refrigeration system,

said actuating means and said control means being constructed and arranged to turn off said compressor and fan and turn on said heater upon a first actuation by the initiating means in a defrosting cycle of operation, to turn on said compressor and turn off said heater at a second actuation, and to turn on said fan at a later third actuation thereof,

a temperature sensing-switching circuit for sensing temperature in a part of said refrigeration system and for providing a first switching function when a predetermined maximum defrosting temperature is sensed and for providing



a second switching function when a predetermined lower temperature is sensed,

motor means selectively operable in response to said temperature sensing-switching circuit for operating said actuating means, and

means for further selectively operating the motor means only during the existence of said first switching function to provide only said second actuation to the actuating means and for selectively operating the motor means only during the existence of said second switching function to provide only said third actuation to the actuating means.

3,924,417

VEHICLE AIR CONDITIONING CONTROL

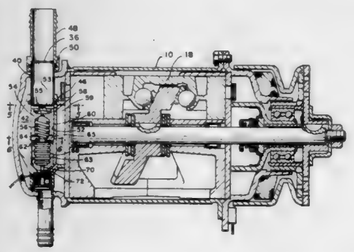
John Henry Heidorn, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 13, 1974, Ser. No. 450,546

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² F25B *41/04*

U.S. Cl. 62—158 **5 Claims**



1. A vehicle air conditioning system including a refrigerant compressor connected in series flow relation with a condenser, expansion means, and an evaporator; said compressor having a housing defining inlet and discharge passages; the system having an improved evaporator control assembly comprising: a valve body member exposed to both inlet and discharge refrigerant fluids in said housing; a throttle valve in said body member regulating flow of inlet fluids to said compressor through a throttle port; said throttle valve being exposed to inlet refrigerant fluids on one side; the other side

partially defining a control chamber and being subjected to a control pressure therein; means normally biasing said throttle valve to a compressor closed inlet position; said valve body containing bleed port connecting said chamber with said inlet passage; a control valve in said control chamber movable in response to the pressure therein to open and close said bleed port changing the pressure differential across said throttle valve whereby it moves opening and closing said throttle port maintaining a predetermined desired control pressure in said chamber and in said evaporator preventing freezing of said evaporator during normal conditions; a pressure responsive control valve actuator plunger in said compressor discharge passages sensing refrigerant pressure increases in evaporator loading above the control pressure established by said control valve; an increase in evaporator loading reflected by an increase in compressor discharge pressure moving said plunger opening said control valve and lowering the control pressure in said control chamber; said throttle valve moving opening said throttling passage thereby increasing cooling capacity of the system while the discharge pressure remains above the predetermined control pressure; and electrical control means connected to said control valve being selectively operable to likewise open said control valve providing increased system cooling capacity as desired.

3,924,418

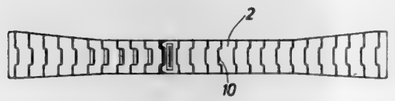
LINK BRACELET CONSTRUCTION, PARTICULARLY WATCH BRACELET

Fritz Bürkle, Jr., Schwann, Germany, assignor to Firma Fritz Bürkle KG, Schwann, Germany

Filed May 20, 1974, Ser. No. 471,666

Int. Cl.² F16G *13/18*

U.S. Cl. 63—4 **10 Claims**



1. Link bracelet construction comprising

an inner-element **1** and an outer element **2**,

the inner element **1** being essentially flat and platelike and having one transverse edge **3** formed with a notch **4**, and inwardly extending hinge pin stubs **5** adjacent said one transverse edge **3**;

the outer element **2** being sheet-like and having a bent-over ear **10** at one transverse side, the ear **10** having a width fitting into the notch **4** of an inner element **1** and engaging around the hinge pin stubs **5** to provide a link connection between the inner and outer elements of adjacent links at one side thereof, the outer element being formed with a notch **8** at the side thereof opposite the side at which the ear **10** is formed to receive the bent-over ear of an adjacent outer element, portions of the outer element adjacent said notch **8** forming flaps, said flaps being bent-over in U- configuration to form a slot between the legs of the U, the inner element **1** being located in said slot formed by said flaps; and

a connecting element **16–19**; **13**, said connecting element **13** having a hook-shaped free end **14** and a width less than the width of the notches **4**, **8** in the inner and outer elements **1**, **2** to permit engagement thereof and hooking over said inner and outer elements.

3,924,419

FLEXIBLE JAW CLUTCH COUPLING

Harald H. Barth, Hermannstrasse 103, 663 Neunkirchen, Saar, Germany

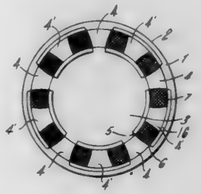
Filed Apr. 11, 1973, Ser. No. 350,143

Claims priority, application Luxembourg, June 12, 1972, 65497

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² F16D *3/64*

U.S. Cl. 64—14 **11 Claims**



1. A flexible coupling including:

a pair of opposed interengaged coupling halves, each of said pair of opposed coupling halves having:

a. a cylindrical outer housing having an end face;

b. a cylindrical attachment within said outer housing; and

c. a plurality of claws evenly distributed over the circumference of the coupling half and extending beyond the cylindrical housing of the coupling half into the other coupling half;

the end faces of said cylindrical housings being spaced apart in the assembled state of said coupling;

the cylindrical attachment of each coupling half extending toward the other coupling half for an axial distance less than the cylindrical housing of the coupling half;

the flanks of each claw being concave and joining concave radially inwardly and outwardly extending surfaces at the roots of the claw to define a pocket between adjacent teeth in a coupling half to receive teeth from the other coupling half, the pocket having radial extending end portions defined by said radially inwardly and outwardly extending surfaces;

the radial dimension of the pockets between the cylindrical attachment and the outer housing in each coupling half being greater than the radial dimensions of the claws extending into the coupling half from the other coupling half; and

a molded part of elastic material positioned between successive claws from each of the coupling halves, said molded part having shaped pieces with convex sides between opposite concave flanks of successive claws and bridging parts alternately connecting opposite end faces of adjacent shaped parts, said shaped pieces, when not transmitting a load, having a radial dimension less than the radial dimension of the pockets, and said shaped pieces being free to expand radially inward and outward when transmitting a load; and

said radial extending end portions of said pocket providing contact surfaces for said shaped pieces when said coupling halves are radially offset or angle with respect to each other.

3,924,420

HIGH DEFLECTION CONSTANT SPEED UNIVERSAL JOINT

James B. Falk, 3 Lake James, St. Louis, Mo. 63034

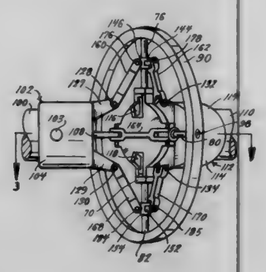
Filed Apr. 12, 1974, Ser. No. 460,434

Int. Cl.² F16D *3/30*

U.S. Cl. 64—21 **18 Claims**

1. A substantially constant-speed universal joint which can provide balanced torque and which comprises an end member

with a torque-transmitting arm thereon that lies in a first plane, a second end member with a torque-transmitting arm thereon that lies in a second plane, an intermediate member which is disposed intermediate said end members and which coacts with said torque-transmitting arm on the first said end member and which also coacts with said torque-transmitting arm on said second end member to transmit torque from one of said end members to the other of said end members and also to hold said second plane angularly displaced from said first plane, interacting surfaces on said intermediate member and on said torque-transmitting arm on said first said end member which provide a swinging and sliding torque-transmitting connection between said intermediate member and said torque-transmitting arm on said first said end member that permits said first plane to swing relative to said intermediate member and that also permits said torque-transmitting arm on said first said end member to rotate within said first plane while said one of said end members is transmitting torque to said other of said end members, and further interacting surfaces on said intermediate member and on said torque-transmitting arm on said second end member which provide a swinging and sliding engagement between said intermediate member and said torque-transmitting arm on said second end



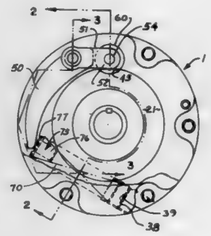
member that permits said second plane to swing relative to said intermediate member and that also permits said torque-transmitting arm on said second end member to rotate within said second plane while said one of said end members is transmitting torque to said other of said end members, centering means connected to said intermediate member and to each of said end members to hold said intermediate member so it divides the supplement of any angle of deflection between the axes of said first said and said second end members, said centering means including a plurality of sliding elements and a plurality of connecting members and a plurality of pivots, each of said connecting members being connected to one of said sliding elements and to an end element by a pivot at each end thereof, whereby said connecting members remain substantially free of bending moments while said one of said end members is transmitting torque to said other of said end members, said intermediate member having a plurality of elements which help define a third plane that is angularly displaced from both said first said and said second planes, said plurality of elements always being substantially coplanar, said plurality of elements including some of the first said interacting surfaces and some of said further interacting surfaces and guiding elements for said sliding elements of said centering means.

3,924,421
OVERLOAD CLUTCH

Wilfried E. Dehne, Berwyn, and Josef Mang, Bridge View, both of Ill., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 12, 1974, Ser. No. 532,022
Int. Cl.² F16D 7/00
U.S. Cl. 64—29 **8 Claims**

1. In an overload clutch in which a driven member is releasably connected to a driving member by means of a spring loaded follower, mounted on one of said members, normally engaged in a seat in a cam plate mounted on the other of said members, the improvement comprising a generally circular cam plate, narrow in its axial dimension relative to its radial dimension, fixedly mounted to a hub, said cam plate having in its periphery said seat; a housing rotatably mounted on said hub, said housing completely enclosing said cam plate, said housing having within it a lever cavity, spaced, aligned journal wells opening through side walls defining said lever cavity on opposite sides of said cam plate, and a spring well opening into said lever cavity at a point axially displaced from said cam plate; anti-friction bearings between said housing and said hub and providing bearing surfaces for relative rotation between said housing and said hub; annular seal means between said housing and said hub outboard of said anti-friction bearings in

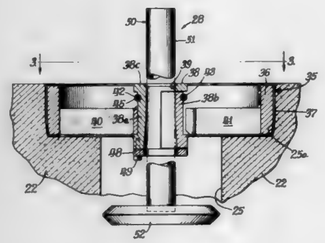


both axial directions, a dog-leg lever mounted in said lever cavity on a shaft journaled in anti-friction bearings mounted in said journal wells, said lever having a yoke at one end with arms positioned at either side of the axial extent of said cam plate and a pin extending between said arms, and a leg on the other side of said shaft from said yoke extending, at an angle, to a position axially clear of the cam plate at the end of said leg opposite said yoke; a roller-follower rotatably mounted, on anti-friction bearings, on said lever yoke pin, said roller-follower seating in said cam plate seat; and a compression spring seated at one end in said housing spring well and bearing at its other end upon said lever leg at the end of said lever leg axially clear of said cam plate.

3,924,422
MOLD STOPPER

Louis Sandor, Hammond, Ind.; Andrew Gerald Germain, Itasca, Ill.; Donald Ray Wiles, Kansas City, Kans., and Ronald A. Filippini, Chicago, Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed Nov. 1, 1974, Ser. No. 519,928
Int. Cl.² B22D 17/30
U.S. Cl. 164—304 **5 Claims**



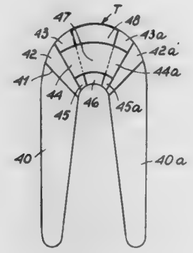
1. A mold structure comprising, in combination,
a mold assembly including
a cope and
a drag
defining therebetween a cavity shaped for forming the desired molded article,

said drag having an ingate in its bottom,
said cope having an opening aligned above said ingate, and a stopper assembly mounted in said cope for stopping the filling of the mold cavity and for preventing reverse flow of metal out of the filled mold cavity, said stopper assembly including
a mounting spider having a mounting ring securely mounted in said opening and a segmented center spool within said ring having an inner bore and defined by a fixed segment fixedly secured relative to said ring and a movable segment radially movable relative to said fixed segment,
biasing means biasing said movable segement radially inwardly, and
a stopper including a stopper plunger having an outer diameter larger than the width of said bore so as to bias said movable segment outwardly against the return bias of said biasing means, and a stopper washer carried at the lower end of said stopper plunger within said cavity adapted to seat against said ingate.

3,924,423
METHOD AND MACHINE FOR MANUFACTURING STOCKINGS

Francesco Lonati, Via Valsorda 28, Brescia, Italy (25100)

Filed Nov. 10, 1972, Ser. No. 305,632
Claims priority, application Italy, Nov. 13, 1971, 31070/71
Int. Cl.² D04B 9/42
U.S. Cl. 66—43 **14 Claims**



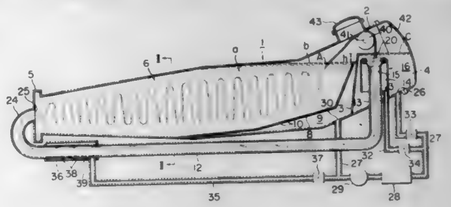
1. A method for manufacturing seamless panty hose and the like having a tubular panty portion with a waist opening and two legs integral with said panty portion on a circular hosiery knitting machine having a needle cylinder, the method including the steps of knitting a first of said legs by continuously rotating said needle cylinder and forming complete courses, knitting a panty portion adjacent said waist opening by reciprocating said needle cylinder and knitting said tubular panty portion with substantially all the needles of said needle cylinder during each of at least a number of strokes of reciprocation and controlling the needles to form a knit selvage edge at the end of each of said at least a number of strokes of reciprocation to define said waist opening, and knitting a second of said legs by continuously rotating said needle cylinder and forming complete courses.

3,924,424
APPARATUS FOR TREATING CLOTH WITH LIQUID

Mikio Watanabe, 6-23-1, Muika, Kanazu-cho, Saki-gun, Fukui, and Keizo Ohtori, Dai 8-9-15, Takayanagi-cho, Fukui, Fukui, both of Japan

Filed Sept. 7, 1973, Ser. No. 395,133
Claims priority, application Japan, Sept. 8, 1972, 47-90077
Int. Cl.² D06B 3/28
U.S. Cl. 68—177 **3 Claims**

1. Apparatus for treating cloth with a liquid comprising an inclined elongated vessel having a first end and a second end, said first end being disposed at an elevation higher than said second end, a partition wall located proximate said first end dividing said vessel into a tank section and a reservoir section, means defining an auxiliary liquid stream chamber within said reservoir section, a guide tube extending externally along said vessel from said first end into flow communication with said second end, said guide tube extending at said first end upwardly through said auxiliary liquid stream chamber, said guide tube and said auxiliary liquid stream chamber each including overlapping terminal wall portions defining therebetween an annular passage enabling a first liquid flow therethrough from the interior of said auxiliary liquid stream chamber into said guide tube, with said terminal wall portion of said auxiliary liquid stream chamber extending over the terminal

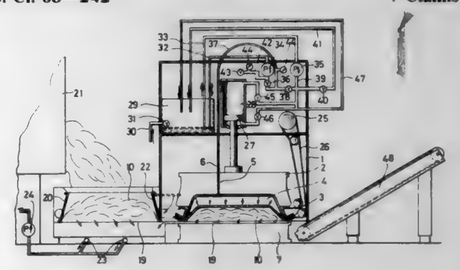


wall portion of said guide tube to define an upwardly directed flow opening through which a second liquid flow from said reservoir section may overflow into said guide tube, said annular passage being configured to introduce into said guide tube said first liquid flow in a downwardly directed direction at a point below the level at which said second liquid flow overflows into said guide tube, a driving reel provided above said liquid reservoir for introducing and circulating through said apparatus cloth to be treated therein, said reel being arranged to cause said cloth to pass downwardly into said guide tube through said upwardly directed flow opening past said annular passage, and means for circulating through said apparatus treatment liquid for treating said cloth.

3,924,425
PRESSES FOR WASHING

Hans F. Arendt, Bleichinsel, 712 Bietigheim, Germany

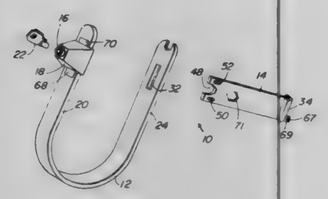
Filed Feb. 25, 1974, Ser. No. 445,580
Claims priority, application Germany, Mar. 6, 1976, 2311013
Int. Cl.² D06F 47/00
U.S. Cl. 68—242 **7 Claims**



1. A press for removing water from wet washing comprising:
A. A perforated plate for receiving the wet washing,
B. A fluid actuated ram reciprocal with respect to the perforated plate, the ram having a bell-shaped bellows support attached thereto on the end adjacent to the perforated plate, and a diaphragm forming a bellows and sealing the bell-shaped bellows support said bellows diaphragm and said bell-shaped bellows support being separated by a cavity for receiving a pressure medium, and
C. A conveyor frame for receiving said wet washing and being, reciprocally moveable at right angles with respect to the ram for introducing and discharging said washing

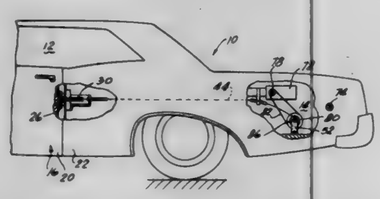
from said plate, said conveyor frame being substantially shaped to correspond to the shape of said diaphragm of said bellows, for pre-shaping the wet washing into a batch and conveying the batch of wet washing between the perforated plate and the bellows diaphgram such that upon inflation of said bellows by said pressure medium water is forced from said washing through said perforated plate.

3,924,426
LOCK FOR BICYCLES AND THE LIKE
Ernest Zane, and Michael S. Zane, both of 85 Dean Road, Brookline, Mass. 02146
Filed Nov. 23, 1973, Ser. No. 418,427
Int. Cl.² E05B *73/00*
U.S. Cl. 70—18 **12 Claims**



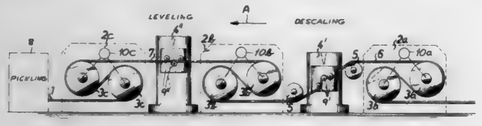
1. A locking mechanism, comprising
a. first and second members relatively movable to one another and adapted for locking and unlocking engagement,
b. said first member including a bolt formed with a pair of openings near one end thereof,
c. said second member including a hollow bonnet formed with an opening therein and a rotatable lock mounted in said bonnet at said opening,
d. said lock including a pair of L-shaped cams offset from the axis of rotation of said lock and extending in spaced parallel relation on opposite sides of said lock whereby the ends of said cams will engage said bolt holes when said lock is turned to a locked position.

3,924,427
ANTI-THEFT AUTOMOBILE DOOR LOCK
Jaime E. San Juaquin, 10629 S. Vernon St., Chicago, Ill. 60628
Filed July 27, 1973, Ser. No. 383,391
Int. Cl.² E05B *65/30*
U.S. Cl. 70—264 **6 Claims**



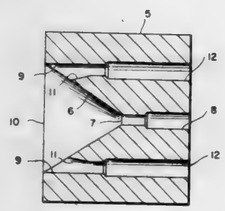
1. An anti-theft lock installed in a vehicle, comprising:
a passenger compartment including a door frame and a hinged door closing said frame;
a lockable trunk compartment;
means defining a hole in an unhinged edge of said door, said means including a plate fixed to said door and having the hole therein;
pin means mounted in said door frame opposite the hole including a movable lock pin for entry into and withdrawal from the hole; and
pin operating means including motor means mounted and concealed in said trunk compartment and connecting means connecting said motor means to said lock pin;
said connecting means including
a shaft mounted in said trunk compartment and rotatable in both directions, said shaft connected to said motor means,
a pulley mounted on said shaft for rotation therewith, and a cable having one end connected to said lock pin and the other end connected to said pulley, and
said pin means further including
a frame connected to said door frame,
at least one second pin extending from said frame,
at least one third pin extending from said lock pin, and
biasing means for biasing said lock pin toward the hole in said plate, said biasing means including a spring connecting said second and third pins.

3,924,428
METHOD OF AND APPARATUS FOR DESCALING AND LEVELING A METAL STRIP
Oskar Noe', Mulheim (Ruhr), Germany, assignor to Firma BWG Bergwerk- und Walzwerk-Maschinenbau GmbH, Duisburg, Germany
Filed Oct. 7, 1974, Ser. No. 512,604
Claims priority, application Germany, Oct. 8, 1973, 2350503
Int. Cl.² B21B *45/06*; **B21D** *1/04*
U.S. Cl. 72—40 **4 Claims**



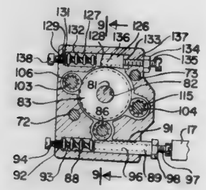
1. A method of treating a metal strip comprising the steps of:
longitudinally stretching said strip to a relatively small extent between 0.5 and 1.3 percent corresponding to maximum-descaling stretch while reverse bending the strip to remove scale from the strip;
thereafter longitudinally stretching said strip to a relatively large extent sufficient to level said strip;
and
pickling said strip after leveling same.

3,924,429
METHOD AND APPARATUS FOR REDUCING EXTRUSION START-UP PRESSURE
Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Inc., New York, N.Y.
Filed Nov. 13, 1974, Ser. No. 523,403
Int. Cl.² B21D *22/10*
U.S. Cl. 72—60 **12 Claims**



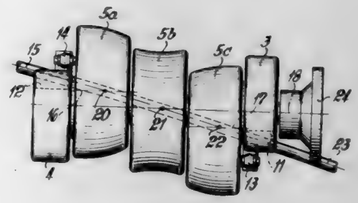
1. Method of producing wire from a billet, said method comprising:
a. applying force to the billet to commence extrusion of the billet simultaneously through first die aperture means and second die aperture means;
b. after extrusion of the billet simultaneously through the first die aperture means and the second die aperture means has commenced, and while maintaining force on said billet, gradually closing the second die aperture means;
c. continuing the application of force to said billet to continue the extrusion of said billet through said first die aperture means to produce wire.

3,924,430
SWING ROLL TOOL ASSEMBLY
Joseph B. Plevyak, 19 Jefferson St., Newton, N.J. 07860
Filed Oct. 21, 1974, Ser. No. 516,268
Int. Cl.² B23P *9/02*; **B21H** *7/14*
U.S. Cl. 72—85 **4 Claims**



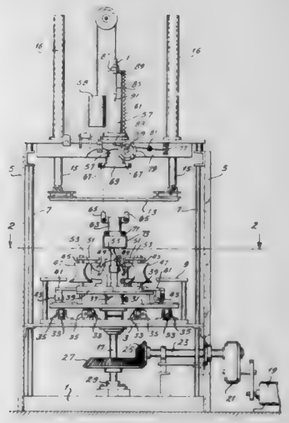
1. A roll tool assembly adapted for use with a lathe turret having a radially extending mounting opening, comprising a main body portion and a mounting stud radiating from one side of the main body and adapted to be extended into the mounting opening in the lathe turret, said main body having diagonally opposed holes on its front face, swing arms respectively carrying tooling rolls, said swing arms having inwardly extending projections respectively pivotally mounted in the respective diagonally opposed holes, an idler gear mounted upon the main body and said pivot projections respectively having pinion gears meshing with the idler gear, and gear means carried upon the main body and operable upon the idler gear to rotate said idler and pinion gears for swinging the arms and the tool rolls simultaneously into engagement with the opposite sides of a workpiece, said tool rolls coming into engagement with the surfaces of the workpiece on dead center diameter so that equal and opposing pressure will be effected between the tool rolls, a rack gear means for rotating said pinion gears and swinging said tool arms, said rack gear means being spring pressed and slidably carried on said main body, said gear means journaled upon said body and meshable with the idler gear and with the rack gear means, said rack gear means being adapted to be actuated by engagement with a movable part of the lathe; a second rack gear means slidably carried by the main body and having rack teeth meshing with the idler gear, a compression spring urging the second rack gear means in a direction to an outermost position toward the movable lathe part, said spring being further compressed upon the first rack gear means being operated by said movable lathe part and an adjusting screw means threaded into one end of the second rack bar and engageable with the main body to limit the movement of the first rack bar and the inward swinging of the roll swing arms.

3,924,431
MACHINE FOR STRAIGHTENING ELONGATED OBJECTS
Heinz Hartkopf, Solingen, Germany, assignor to Th. Kieserling & Albrecht, Solingen, Germany
Filed Aug. 28, 1974, Ser. No. 501,149
Claims priority, application Germany, Sept. 5, 1973, 2344613
Int. Cl.² B21D *3/04*
U.S. Cl. 72—98 **8 Claims**



1. A straightening machine for elongated workpieces comprising: opposed straightening rolls having axes positioned at an angle to the longitudinal axis of the workpiece, one of said straightening rolls including three rollers mounted on parallel axes, the two outer rollers being mounted eccentrically in relation to the center roller and being adjustable in relation thereto along an arc, the points of contact between said rollers and said workpiece being in a plane with the longitudinal axis of the workpiece.

3,924,432
APPARATUS FOR FLARING EDGES OF CIRCULAR OPENINGS
Daniel J. Yarnold, Memphis, Tenn., assignor to Memphis Metal Manufacturing Company, Inc., Memphis, Tenn.
Filed Feb. 25, 1975, Ser. No. 552,988
Int. Cl.² B21D *19/04*
U.S. Cl. 72—123 **14 Claims**



1. Apparatus for flaring the part of a sheet of metal surrounding a circular opening therein including a drive shaft coaxial with the opening, a flaring roll engageable with the edge of the metal defining the opening, means supporting said flaring roll for revolution by said shaft, a table rotatable by said shaft and flaring roll mounting means carried by said supporting means and by said rotatable table and movable radially thereof, said flaring roll support means having anti-friction elements supporting the same on said table, and mechanism actuated by said shaft for applying force to said flaring

roll and move it radially of said table on said antifriction means.

3,924,433

STOP COLLAR FOR TUBE EXPANDER

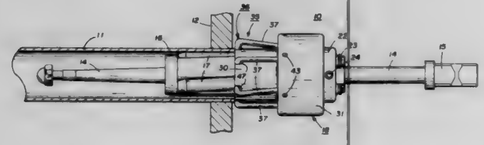
Paul Warren Martin, Springfield, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed July 9, 1973, Ser. No. 377,683

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B21D *3/04, 41/02*

U.S. Cl. 72—122 **8 Claims**



1. In a tube expander including a rotatable tubular cage about which to receive a tube end to be expanded, forming rollers contained in the outer periphery of said cage and a rotatable tapered mandrel within said cage for driving said cage and rollers in an expanding relation to a tube and received thereon, a substantially non-rotatable stop collar adapted for limiting axial advance of a received tube end onto said cage, said stop collar comprising a plurality of individual means disposed circumferentially about said cage operably independent of each other, said individual means each extending into engagement with the periphery of said cage at a predetermined location in the path of tube advance, and being operably adapted to follow the rotating periphery of said cage and rollers in a surface tracking relation therewith.

3,924,434

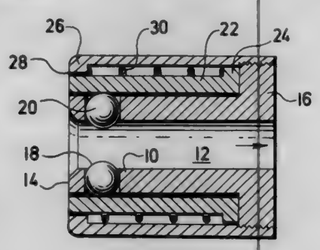
APPARATUS FOR SHAPING HOLLOW METAL BODIES

Josef Fuller, Nove Mesto nad Vahom, Czechoslovakia, assignor to Vyskumny ustav mechanizacie a automatizacie, Nove Mesto nad Vahom, Czechoslovakia

Filed Apr. 25, 1974, Ser. No. 463,915

Int. Cl.² B21D *15/02*

U.S. Cl. 72—208 **10 Claims**



1. Apparatus for shaping hollow metal blind rivets comprising a hollow support having a cylindrical bore, at least one radial opening formed in said support, forming elements rotatably arranged in said radial openings and extending into said bore, an elongated mandrel for receiving and axially inserting said rivets within said bore, said mandrel having an outer contour conforming to the desired shape of said rivet, a movable pressure element at least partially surrounding said support and engaging the external surfaces of the forming element to conjointly roll therewith and to exert a radially inward force on each movement of said mandrel and rivet through said bore, to cause said forming elements to shape said rivet.

3,924,435

DEVICE FOR INSERTING PLUGS IN A PLUG MILL

Louis E. Franceschina; Fred Haromy, both of Sault Ste. Marie, and Frederick W. Kruppert, Goulais River, Ontario, all of Canada, assignors to The Algoma Steel Corporation, Limited, Sault Ste. Marie, Canada

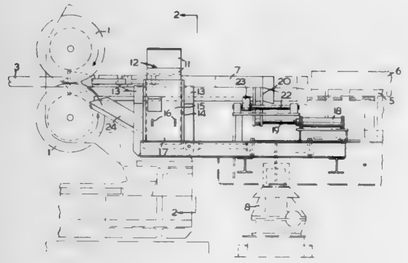
Filed July 26, 1973, Ser. No. 382,798

Claims priority, application Canada, Aug. 2, 1972, 148540

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B21B *17/10*

U.S. Cl. 72—209 **11 Claims**



1. In a plug mill for use in reducing the wall thickness of a heated seamless tube to the desired gauge, said plug mill comprising guide means for guiding said heated seamless tube along a defined path in said mill, a pair of rotatable grooved rolling rolls disposed transversely of said path, said rolls in their rolling position providing a first gap therebetween forming a part of said defined path, said first gap being dimensioned such that said rollers grip said tube in said grooves whereby on rotation thereof said tube in said first gap is pulled therethrough, means for rotation of said rolling rolls in said rolling position, retractable means for moving said tube along said defined path into said first gap, a pair of stripper rolls disposed transversely of said path and downstream of said rolling rolls having a second gap therebetween forming part of said defined path adapted in their stripping position to return the seamless tube along said path after rolling thereof by said rolling rolls, a mandrel extending longitudinally of said path securely mounted at one end thereof and having the free end thereof adapted to releasably accommodate a plug member, said mandrel extending through the second gap between the stripper rolls with a plug member, in use, disposed in the first gap between the rolling rolls, the improvement comprising means for removably placing a plug in said first gap on said mandrel, said means comprising an inlet guide member disposed in said defined path upstream of and adjacent said first gap in said rolling rolls, a rotary device having a plurality of open pockets spaced around the periphery thereof, said rotary device being offset from said path and adjacent thereto, said rotary device and said inlet guide member being arranged to permit a plug contained in one of said pockets to be discharged into said inlet guide member, which inlet guide member supports the plug as it is moved along said defined path into the first gap between the rolling rolls and into abutment with the free end of said mandrel, said inlet guide member being adapted to provide a closable third gap adjacent said rolling rolls dimensioned to allow a plug to pass therethrough, means operatively associated with said inlet guide member for closing said third gap during the presence of the plug in said inlet guide member to provide said support of the plug as it is moved into said first gap and for opening said third gap to allow a plug falling from said first gap under gravity subsequent to operation of the rolling rolls to pass through said third gap, and means for guiding the plug passing through said third gap to an unoccupied pocket in said rotary device.

3,924,436

METHOD AND APPARATUS FOR FORMING CUP-SHAPED METAL ARTICLES

Kazunaga Misonoo, Kudamatsu, Japan, assignor to Kozo Yoshizaki, Tokyo, Japan

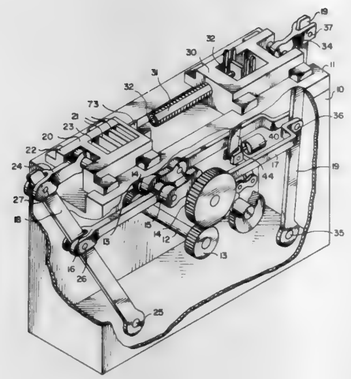
Filed June 25, 1973, Ser. No. 373,297

Claims priority, application Japan, June 23, 1972, 47-62318; Apr. 24, 1973, 48-45767

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B21D *45/00*

U.S. Cl. 72—345 **5 Claims**



1. A method of forming cup-shaped metal articles by means of at least one die and a punch, said method comprising:

positioning a metal blank adjacent said at least one die;

simultaneously moving said punch and said at least one die from spaced apart withdrawn positions thereof toward each other to adjacent forming positions thereof, thereby causing said punch to force said blank through said at least one die and forming said metal article;

simultaneously moving said punch and said at least one die away from each other; and

removing said thus formed metal article from said punch, said step of removing said formed metal article from said punch comprising moving a knockout punch which is coaxially positioned within said punch longitudinally outwardly of said punch toward said at least one die to a position beyond said forming position of said punch.

4. An apparatus for forming cup-shaped metal articles from a metal blank, said apparatus comprising:

a frame having a slideway surface thereon;

a punch and at least one die mounted to move toward and away from each other on said slideway surface;

means for selectively positioning a metal blank adjacent said at least one die;

means for simultaneously moving said punch and said at least one die from spaced apart withdrawn positions thereof toward each other to adjacent forming positions thereof and for causing said punch to force said metal blank through said at least one die, thereby forming said cup-shaped metal article; and

means for removing the thus formed cup-shaped metal article from said punch, said means for removing comprising a knockout punch coaxially and longitudinally movably positioned within said punch, and means for moving said knockout punch longitudinally outwardly of said punch toward said at least one die to a position beyond said forming position of said punch.

3,924,437

PROCESS FOR THE NON-CUTTING PRODUCTION OF SHEET STEEL CONTAINERS

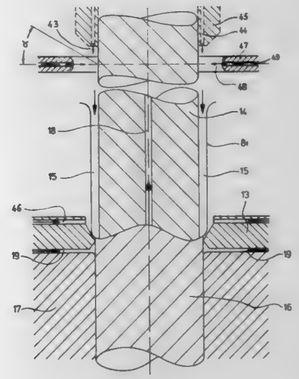
Wilhelm Hörtig, Auerbach, Germany, assignor to K.M. Engineering Aktiengesellschaft at Herrengrabenweg, Basel, Switzerland

Filed Feb. 9, 1973, Ser. No. 330,921

Claims priority, application Switzerland, Feb. 11, 1972, 1967/72

Int. Cl.² B21D *22/28*

U.S. Cl. 72—349 **24 Claims**



1. Process for the production of metal containers, comprising the steps of:

a. deep drawing a sheet metal blank into a cup-shaped blank with a cylindrical portion having a wall thickness substantially the same as said sheet metal blank,

b. providing a plurality of individual forming stages each of which includes a die and corresponding punch member for decreasing the inside diameter of the cup-shaped blank and decreasing the wall thickness of the cup-shaped blank,

c. subjecting said cup-shaped blank only to a separate succession of die and punch members to perform said individual forming stages one at a time to effect a decrease in the inside diameter and wall thickness of the cup-shaped blank at a working zone around the periphery of the blank,

d. said working zone being moved along the length of the blank as said blank moves through said die,

e. providing the punch member at each forming stage with an outside diameter that is smaller than the inside diameter of the cup-shaped blank being formed so that an annular gap is disposed therebetween to a point contiguous to said working zone,

f. introducing a fluid medium into said annular gap to effect cooling of the metal directly at the working zone, and

g. effecting the same frequency of working stroke for all of the punch members operating each of the forming stages.

3,924,438

HYDRAULIC CABLE BENDER

Wayne Linquist; Vernon W. Pearson; Kenneth Hagemeyer, and William E. Smeltzer, all of Rockford, Ill., assignors to Greenlee Brothers and Co., Rockford, Ill.

Filed Sept. 23, 1974, Ser. No. 508,496

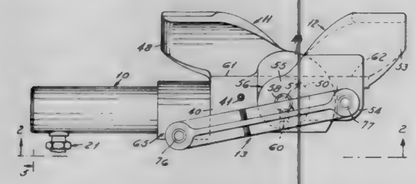
Int. Cl.² B21D *7/04*

U.S. Cl. 72—388 **3 Claims**

1. In a bending apparatus for bending an elongated member as a cable or the like, the combination comprising:

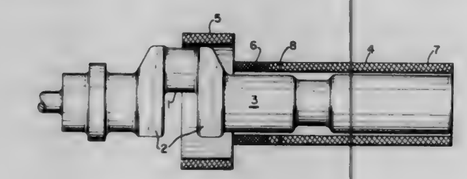
a. an actuating means having an extendable and retractable ram;

b. a drive shoe body fixedly mounted on said ram for engaging an elongated member, said drive shoe body including:
1. a drive shoe, said drive shoe including a first hook with open and closed sides with an outer end portion perpendicular to the longitudinal axis of said hook and an inner end portion extending transverse to said longitudinal axis slanting longitudinally inwardly from the open side of said hook toward the closed side of said hook;
2. a cable bending guide means on the opposite end of said drive shoe body adapted to provide an arcuate seat for said elongated member;
c. a rotating shoe for engaging an elongated member and being pivotally mounted on said drive shoe body;



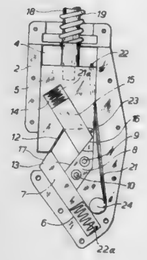
1. said rotating shoe including a second hook with open and closed sides with an outer end portion perpendicular to the longitudinal axis of said hook and an inner end portion extending transverse to said longitudinal axis slanting longitudinally inwardly from the open side of said hook toward the closed side of said hook;
d. said rotating shoe being pivotally mounted on a pivot means on said drive shoe with the inner end portion on each of said hooks in opposed relationship to each other;
e. linkage means connecting said rotating shoe to said actuating means;
whereby an elongated member adapted to be mounted within each of said hooks is adapted to be bent around said arcuate bending guide when said actuating means in energized to extend said ram.

3,924,439
PROCESS FOR THE MANUFACTURE OF CRANK-SHAFTS
Roger Poncin, Liege, Belgium, assignor to Elphiac S.A., Brussels, Belgium
Filed May 16, 1974, Ser. No. 470,461
Claims priority, application Belgium, May 16, 1973, 799572
Int. Cl.² B21K *1/08*
U.S. Cl. 72—342 **3 Claims**



1. A process for the stepwise forging of discrete sections of a crankshaft comprising the steps of:
a. relatively positioning a section of a cylindrical blank and a main induction heating coil by:
1. closely surrounding a portion of said section contiguous to a previously forged web of the crankshaft by a first part of said main induction heating coil having closely wound turns;
2. closely surrounding another portion of said section, spaced from said previously forged web by a second part of said main induction heating coil having less closely wound turns than said first part;
b. separately surrounding said previously forged web by an auxiliary induction heating coil, which is discrete from said main induction heating coil, which is of substantially larger diameter than said main induction heating coil, and which is disposed coaxially with respect thereto;
c. energizing said main induction heating coil;
d. energizing said auxiliary induction heating coil in phase;
e. forging a new crankpin and pair of associated webs from said section;
f. cooling the newly forged section;
g. repeating said positioning, surrounding, energizing, forging and cooling steps.

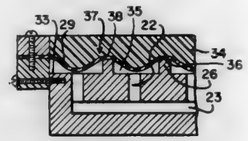
3,924,440
CLAMPING TOOL
Gunnar Vinje, Vilbergveien 2, Oslo 6, Norway
Filed Nov. 9, 1973, Ser. No. 414,198
Claims priority, application Norway, Jan. 25, 1973, 308/73
Int. Cl.² B21K *25/00;* **B23P** *19/02*
U.S. Cl. 72—397 **4 Claims**



1. In a clamping tool having a housing, the tool further comprising:
at least a first jaw member stationarily connected to the housing;
at least a second jaw member slideably mounted in the housing for displacement relative to the first jaw member; actuator means connected to the second jaw member for displacing it;
a plurality of resiliently biased third jaw members slideably mounted within the housing, each third jaw member disposed in coacting relationship with all other jaw members so that all the jaw members constitute work-engaging surfaces therebetween; and
a drive member contained in the housing for driving at least one of the third jaw members to an open position, the drive member having a first end for movably abutting the second jaw member, and a second end of the drive member fastened to at least one of the third jaw members for moving this member to an open position permitting entry of a work piece into the tool.

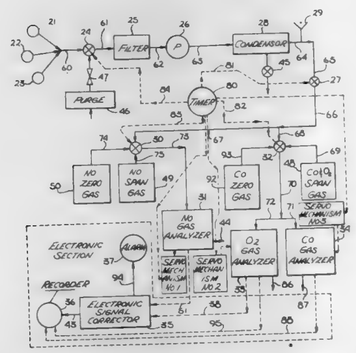
3,924,441
PRIMARY SURFACE HEAT EXCHANGER AND MANUFACTURE THEREOF
Leslie C. Kun, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Division of Ser. No. 189,659, Oct. 15, 1971, Pat. No. 3,757,856. This application June 21, 1973, Ser. No. 372,339
Int. Cl.² B21D *22/04*
U.S. Cl. 72—475 **2 Claims**

1. A die for use in the fabrication of isostress contoured sheets wherein said die has on at least a portion of its surface isostress contours with substantially uniformly disposed unidirectional projections having a dimensional size and a directional relationship therebetween defined by a $^{H}/D$ ratio of between about 0.05 and about 0.2; a $^{D}/d$ ratio of between about 3 and about 10; and a D dimension of between about 0.2 and 2.5 inches; wherein H equals the maximum height measured perpendicularly from a surface which contains the extremeties of the projections enclosing an isostress contour to the innermost crest of the isostress contour; D equals the



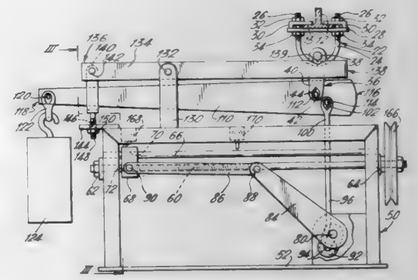
spacing between the centers of the closest adjacent projections on the surface of the die; and *d* equals the equivalent diameter defined by the ratio $^{4a}/p$ whereby *a* equals the area of the load-bearing segment of the wall-supporting projection and *p* equals the perimeter of said load-bearing segment.

3,924,442
POLLUTANT VARIATION CORRECTING SYSTEM
Stephen E. Kerho, Tustin; Claude S. Lindquist, Huntington Beach; John R. White, Tustin, and Bernard P. Breen, Laguna Beach, all of Calif., assignors to KVB Equipment Corporation, Tustin, Calif.
Filed Oct. 9, 1973, Ser. No. 404,503
Int. Cl.² G01N *31/00*
U.S. Cl. 73—1 R **15 Claims**



1. A system for monitoring effluent gas and for determining the concentration of at least one gas in said effluent gas at predetermined reference conditions comprising:
a. sampling means for sampling said effluent gas and for providing a sample;
b. an analyzing means for analyzing said sample to determine the concentration of at least one gas in said sample, and for generating at least a first electrical signal representative of the concentration of a first gas, said analyzing means being coupled to said sampling means; and,
c. correcting means for electrically correcting at least said first electrical signal from said analyzing means to a standard reference gas level, said correcting means being electrically coupled to said analyzing means whereby, said corrected electical signal may be displayed or otherwise monitored, so that the concentration level of at least one gas in said effluent gas may be absolutely determined.

3,924,443
SCALE TESTER
Arthur J. Hebert, 45-45th Ave., Edmundston, New Brunswick, Canada
Filed Sept. 27, 1973, Ser. No. 401,133
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G01L *25/00*
U.S. Cl. 73—1 B **8 Claims**

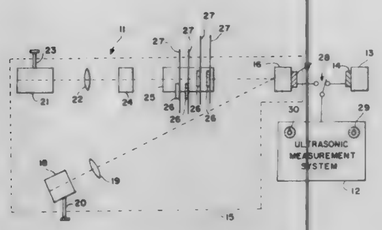


1. Apparatus for testing scales of the type which includes a platform and a weight indicating means connected to said platform which is responsive to a weight supported by said platform, said testing apparatus comprising:
a. a first support means having means thereon connecting the same to said platform;
b. a beam supported by said first support means in a testing position;
c. a base;
d. fulcrum means pivotally connecting said beam to said base at a position along the beam to one side of said first support means;
e. a calibrated weight supported by said beam at a position along said beam to the other side of said first support means;
f. a second support means on said base extending at least in part beneath said beam at a position intermediate said first support means and said calibrated weight; and
g. means for selectively moving said fulcrum means upwardly and downwardly with respect to said base and said platform thereby to move said beam between said testing position wherein it is supported by said first support means and said fulcrum means and a non-testing position wherein it is supported by said second support means and said fulcrum means.

3,924,444
ULTRASONIC CALIBRATION DEVICE
Joseph S. Heyman, Gloucester, Va., and James G. Miller, Clayton, Mo., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.
Filed Nov. 11, 1974, Ser. No. 522,556
Int. Cl.² G01M *7/00*
U.S. Cl. 73—1 R **8 Claims**

1. An ultrasonic calibration device for calibrating an ultrasonic instrument that measures the absorption coefficient and phase velocity of a sample under study comprising: a piezoelectric crystal of photoconducting material with transducer means attached to it to form an ultrasonic resonator; bias lamp means for focusing light onto said crystal to simulate the

background absorption coefficient of said sample; and signal lamp means for focusing light onto said crystal to simulate



changes in absorption coefficient and phase velocity of said sample.

3,924,445

FLOW RATE MEASURING SYSTEM WITH CALIBRATION MEANS

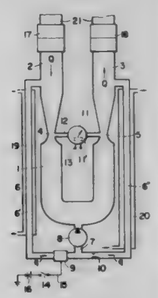
Toshiaki Konomi, Susono, and Akio Takamura, Yokohama, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Ono Sokki Seiksakusho, both of, Japan

Filed Sept. 27, 1974, Ser. No. 510,031

Claims priority, application Japan, Sept. 28, 1973, 48-108556; Sept. 29, 1973, 48-108921

Int. Cl.² G01F *25/00, 1/36*

U.S. Cl. 73—3 **12 Claims**



1. A fluid flow rate measuring system comprising first passage means defining a flow path through which fluid flow whose rate is to be measured is passed, inlet and outlet means for said first passage means, first and second valve means disposed, respectively, to open and close said inlet and outlet means, a first venturi and a second venturi downstream of said first venturi disposed within said first passage means, bypass passage means defining a flow path extending in parallel to said first passage means connected between said inlet and outlet means, a constant capacity pump connected between said bypass passage means and said first passage means at a point intermediate said first and second venturis, a pressure transducer including calibration means connected between said first and second venturis for producing a reading indicative of the rate of fluid flow through said first passage means, and third valve means operable between an open and a closed position and located within said system to effect, during closure thereof and during closure of said first and second valve means with said constant capacity pump in operation, a reading from said pressure transducer which is equivalent to a predetermined fraction of the flow rate through said constant capacity pump whereby said pressure converter may be calibrated by adjustment of the reading produced thereby to said predetermined fraction.

3,924,446

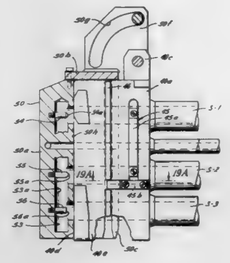
UNDERWATER CONNECTION APPARATUS

Benton F. Baugh, 9050 Longpoint, Houston, Tex. 77055

Division of Ser. No. 386,431, Aug. 7, 1973, Pat. No. 3,866,677. This application Nov. 22, 1974, Ser. No. 526,100

Int. Cl.² G01M *3/02*

U.S. Cl. 73—37 **8 Claims**



1. Apparatus for testing two or more underwater flowlines, comprising:

first and second flowlines extending from the surface of a body of water and terminating in a flowline flange which receives and supports end portions of said first and second flowlines; and

a testing flange assembly mounted onto said flowline flange and including a passageway therein which is in fluid communication with said supported end portions of said first and second flowlines for providing fluid communication therebetween.

3,924,447

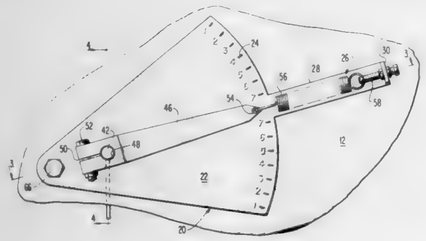
SLUMP INDICATOR

Eldon Garrison, 109 SE. 51st St., Oklahoma City, Okla. 73129

Filed Dec. 19, 1974, Ser. No. 534,306

Int. Cl.² G01N *11/00, 33/38;* **G01D** *13/22*

U.S. Cl. 73—54 **10 Claims**



1. A slump indicator for a rotatable drum concrete mixer comprising:

a generally flat base plate adapted for exterior attachment to a side wall of said drum;

shaft means carried by said base plate for rotation about an axis normal to the plane of said base plate along a radius of said drum, said shaft having first and second portions protruding on either side of said plate for disposition interiorly and exteriorly of the drum, respectively;

a paddle attached along an edge to the end of said first portion of said shaft for sweeping an arcuate path about said shaft axis, said paddle being arranged in the path of movement of the concrete mix in said drum to effect rotation of said shaft;

indicator means in the form of a pointer attached to said second portion of said shaft, said pointer cooperating with a graduated scale on said base plate; and

a spring connecting the tip of said pointer to said base plate to bias said pointer to a neutral position and to present a proportionately increasing resistance to rotation of said shaft by said paddle in either direction from said neutral position.

3,924,448

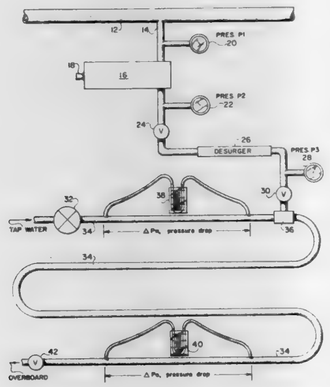
PRESSURE DROP POLYMER CONCENTRATION METER (PCM)

Robert G. Howard, Annapolis, and Edwin L. Zivi, Jr., Severna Park, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 19, 1974, Ser. No. 480,775

Int. Cl.² G01N *11/04*

U.S. Cl. 73—55 **5 Claims**



4. Apparatus for determining the dissolved concentration of drag reducing polymer in a medium comprising:

a metering pump sampling and providing a known flow-rate of polymer solution to be measured;

a source of water for further diluting the polymer solution to a concentration measurable by flow-rate effects;

a dispenser-mixer connected to said metering pump and said source of water for combining the polymer solution and the water;

a predetermined length of restrictor tubing connected between said source of water and said disperser-mixer;

a manometer spanning said predetermined length of restrictor tubing for measuring the pressure drop and hence flow-rate of the water therein;

a similar length of restrictor tubing connected to and farther downstream from said predetermined length; and

another manometer spanning said similar length of restrictor tubing, whereby the pressure drop and hence the flow-rate of the drag reducing polymer plus the water may be determined and compared to the flow-rate of the water.

3,924,449

OIL POLLUTION TOTALIZER

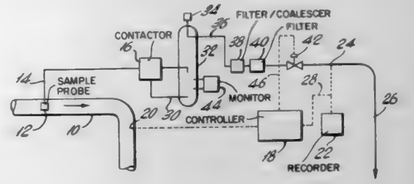
James O. Moreau, Morris Plains, and Richard A. Halko, Flanders, both of N.J., assignors to Exxon Research and Engineering Co., Linden, N.J.

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² G01F *1/00;* **G01N** *1/20*

U.S. Cl. 73—61.1 R **8 Claims**

1. A system for determining the rate and total amount of oil discharged in a flowing discharge stream comprising, means for removing a predetermined sample of said flowing discharge stream; contactor means for intimately mixing said sample with a predetermined volume of solvent; chamber means for receiving and processing the intimately mixed sample and solvent to form a separable first oil-solvent phase and a second phase which is relatively clean; means for recycling the first oil-solvent phase through said contactor means; and outlet means for discharging said relatively clean second phase from said chamber means to an outlet line; flow rate control means operably connected in said outlet line; and



means connected for sensing the relative flow rates of said relatively clean second phase and said flowing discharge stream and controlling said flow rate control means such that the flow rate of said relatively clean second phase is maintained in predetermined direct relation to the flowing discharge stream.

7. The method of claim **6**, including the step of:

f. filtering the second phase of said mixed stream subsequent to removal of the oil-solvent phase therefrom.

3,924,450

DEVICE FOR MEASURING THREE DIMENSIONAL COORDINATES OF MODELS

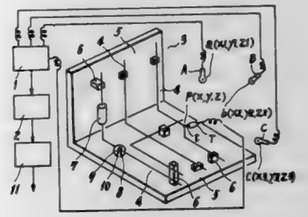
Tomoyoshi Uchiyama; Susumu Sekino, and Kenji Tani, all of Osaka, Japan, assignors to Hitachi Shipbuilding and Engineering Co. Ltd., Osaka, Japan

Filed May 10, 1974, Ser. No. 468,867

Claims priority, application Japan, May 10, 1973, 48-52787; May 10, 1973, 48-52788; May 10, 1973, 48-55774; June 12, 1973, 48-70266

Int. Cl.² G01S *3/80*

U.S. Cl. 73—67 **8 Claims**



1. A system for measuring the three dimensional coordinates of an object disposed in an area which comprises an oscillating means disposed at or in the vicinity of the object whose dimensional coordinates are to be determined, said oscillating means being adapted to produce supersonic waves, at least three receiving means disposed at at least three positions having known coordinates, means for measuring, electrically, the time required for the supersonic waves to travel from the oscillating means to the receiving means, means for converting the travel time of the supersonic waves to distant measurements and means for producing the three dimensional coordinates of said object from said known coordinate of said three positions and said converted values of distance, said oscillating means comprising a rod provided at one end thereof with a contact point for contacting the object whose coordinates are desired and said rod further containing oscil-

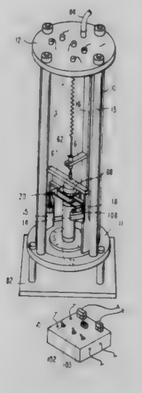
lating elements at the other end thereof, said oscillating elements being unobstructed from the receiving means.

3,924,451

RESONANT COLUMN TESTING APPARATUS

Vincent P. Drnevich, 168 Eastover Drive, Lexington, Ky. 40502

Filed Aug. 21, 1974, Ser. No. 499,317
Int. Cl.² G01M *7/00*
U.S. Cl. 73—67.2 **9 Claims**



1. Resonant column testing apparatus comprising, a first platen for supporting one end of a column of material to be tested, a second platen resting in contact with the other end of said column, a movable magnet plate attached to said second platen and carrying first magnets, stationary first coils cooperating with said first magnets, a second coil disposed centrally of said plate and attached thereto, a second stationary magnet supported for coaction with said second coil, an electrical circuit including means to energize said coils with a sinusoidally variable and controlled voltage whereby said column may optionally be subjected to resonant torsional vibration by the interaction of said first coils and first magnets and to resonant longitudinal vibration by the interaction of said second coil and said second magnet, and means in said circuit for measuring the behavior of said column during application of either of said vibrations.

3,924,452

SECTOR SCANNING ULTRASONIC INSPECTION APPARATUS

Edward P. Meyer, Boulder, and William L. Wright, Longmont, both of Colo., assignors to Picker Electronics, Inc., Longmont, Colo.

Continuation of Ser. No. 801,882, Oct. 1, 1969, abandoned, which is a continuation-in-part of Ser. No. 373,312, June 8, 1964, abandoned. This application Aug. 7, 1970, Ser. No. 62,143
Int. Cl.² G01N *29/04*
U.S. Cl. 73—67.8 S **15 Claims**

9. A method of ultrasonically examining the internal structure of an object to provide improved resolution with an electroacoustic transducer mounted on the end of a series of pivotally interconnected arms comprising the steps of:

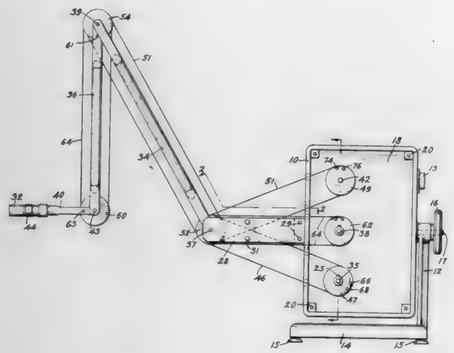
a. positioning said transducer against said object to be investigated;

b. moving said arms within a single plane while pivoting the said transducer in a rocking movement in said single plane substantially about a single point on the surface of said object in the area thereof to be investigated;

c. transmitting ultrasonic signals from the said transducer into said object and receiving by means of said transducer ultrasonic signals reflected by internal structure of said object;

d. developing electrical signals representative of the positioning of said arms and said transducer; and,

e. producing a visual representation of the ultrasonic reflections and controlling the origin and direction of the visual



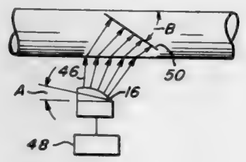
representation production to correspond to location of the transducer and direction of transmission of the ultrasonic signals to provide a reproduction of the investigated object which is oriented with respect to the object.

3,924,453

ULTRASONIC TESTING OF TUBING EMPLOYING A SPIRAL WAVE GENERATOR

John O. Clark, Pittsburgh; James B. Rafferty, Shaler Twsp., Allegheny County, and Donald G. Schindler, Whitehall Borough, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed May 4, 1973, Ser. No. 357,131
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G01N *29/04*
U.S. Cl. 73—67.8 S **5 Claims**



1. Apparatus for detecting spirally oriented defects in the wall of a tube included an angular range from the longitudinal axis of the tube comprising

a transducer for providing a beam of ultrasonic energy,

a lens coupled to the transducer with a generally convex radiating surface for shaping the beam of ultrasonic energy in a divergent pattern,

means for coupling the divergent ultrasonic beam to the wall of the tube,

said transducer, lens and means for coupling being aligned to generate spirally oriented shear waves in the tube wall when the beam is directed into the tube wall and

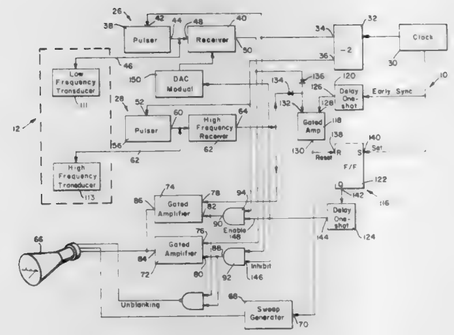
means connected to said transducer for detecting reflections of ultrasonic energy back from a defect in the tube wall.

3,924,454

MULTI-FREQUENCY ULTRASONIC TESTING SYSTEM

Jerry T. McElroy, Danbury, and Sidney Soloway, Wilton, both of Conn., assignors to Automation Industries, Inc., Los Angeles, Calif.

Filed Oct. 24, 1973, Ser. No. 409,078
Int. Cl.² G01N *29/04*
U.S. Cl. 73—67.8 R **7 Claims**



1. A nondestructive testing system for inspecting a workpiece, said system including the combination of

a search unit for being acoustically coupled to said workpiece and for scanning said workpiece,

a clock for generating a series of clock pulses,

a divider coupled to said clock for dividing said series of clock pulses into a first series of synchronizing pulses and a second series of synchronizing pulses, the pulses in said first and second series alternating with each other,

a first pulser coupled to said divider and responsive to the synchronizing pulses in said first series, said pulser being coupled to said search unit and effective to cause said search unit to transmit ultrasonic energy of a first frequency into said workpiece in response to the synchronizing pulses in said first series,

a second pulser coupled to said divider and responsive to the synchronizing pulses in said second series, said pulser being coupled to said search unit and effective to cause said search unit to transmit ultrasonic energy of a second frequency into said workpiece in response to the synchronizing pulses in said second series,

said search unit being effective to receive echoes of said ultrasonic energy and produce a first series of signals of said first frequency and a second series of signals of said second frequency,

a first receiver coupled to said search unit and responsive to said signal of said first frequency,

a second receiver coupled to said search unit and responsive to said signal of said second frequency,

a cathode ray oscilloscope for producing a visual display of signals coupled thereto, and

means for coupling said cathode ray oscilloscope to said first receiver in response to the synchronizing pulses in said first series and for coupling said cathode ray oscilloscope to said second receiver in response to the synchronizing pulses in said second series whereby said oscilloscope produces a combined display of said signals.

3,924,455

METHOD OF REMOVING BRITTLE LACQUER STRESS COATINGS AND STRIPPING COMPOSITIONS THEREFOR

Finn Bergishagen, Union Lake, and James J. Schmidt, Livonia, both of Mich., assignors to Dana Corporation, Toledo, Ohio and Product-Sol, Inc., Birmingham, Mich.

Filed Nov. 20, 1974, Ser. No. 525,379
Int. Cl.² G01B *5/30, 7/16*
U.S. Cl. 73—88 **6 Claims**

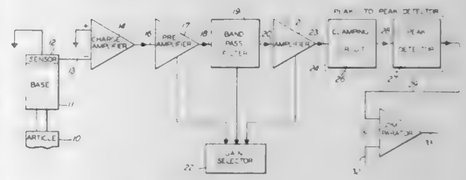
1. The method of nondestructive testing of structures which comprise the steps of fabricating a model to accurate fullsize or fractional scale employing a rigid polyvinyl chloride plastic, applying a brittle lacquer coating to those surface areas of the model at which an evaluation of the stress gradient is to be investigated, loading the model to achieve a desired strain and a cracking of the said brittle lacquer coating in response to the strain of the underlying structural substrate, observing the brittle lacquer coating crack pattern as an indication of the concentration and direction of strain and thereafter removing all or selected portions of said brittle lacquer coating to render the model reuseable for future testing by applying a liquid stripping solution to the surface of said brittle lacquer coating to effect a solubilization and stripping thereof without injury and modification of the mechanical properties and dimensions of the underlying polyvinyl chloride substrate, said stripping solution comprising a mixture containing about 5% to about 30% of a halogenated solvent, about 20% to about 40% of a glycol ether, about 20% to about 60% mineral spirits, up to 10% of a lower alcohol and up to 10% of a surfactant.

3,924,456

METHODS AND APPARATUS FOR DETECTING THE PRESENCE OF CRACKS IN A WORKPIECE BY THE USE OF STRESS WAVES EMITTED THEREFROM

Sotirios John Vahaviolos, Cranbury, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Aug. 17, 1973, Ser. No. 389,414
Int. Cl. G01n *3/100, 29/100*
U.S. Cl. 73—88 R **15 Claims**



2. Apparatus for detecting and measuring stress waves propagating in the material of a workpiece while said material is being subjected to a load for detecting the presence of a defect such as a crack in said material, the apparatus comprising, in combination:

a. a sensor for detecting stress waves propagating in the material of said workpiece to produce an electrical output representative of the detected waves;

b. first signal processing means comprising:

i. an amplifier for amplifying the electrical output from the sensor, said electrical output comprising waves characterized by both a very short duration and a very fast rise time; and

ii. a band-pass filter connected to the output of said amplifier and having a pass-band which falls outside the range of frequencies normally generated by components in proximity to the apparatus;

c. second signal processing means comprising:

i. referencing means, connected to the output of said first signal processing means, for referencing each first amplitude extremity of the amplified and filtered elec-

trical output from said first signal processing means to a first predetermined d-c voltage; and

ii. a peak detector connected to the output of said referencing menas to provide an output signal indicative of the magnitude of each second amplitude extremity of the referenced amplified and filtered electrical output from said referencing means with respect to said first predetermined d-c voltage; and

d. means connected to the output from said second signal processing means for generating an output signal to indicate the presence of a detected defect when the magnitude of the electrical output signal from said peak detector exceeds a second predetermined value.

3,924,457
MISFIRE DETECTING DEVICE FOR INTERNAL COMBUSTION ENGINE

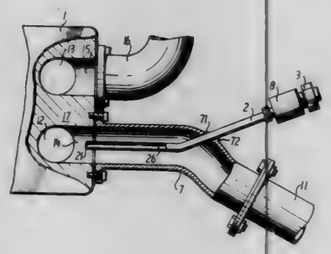
Yujiro Oshima, Ichinomiya; Masao Kataoka, Nagoya; Osamu Tutui, Toyota; Noboru Shibayama, Nagoya; Masayoshi Ohtuka, Nagoya, and Shigehito Ozaki, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Mar. 28, 1974, Ser. No. 455,941

Claims priority, application Japan, Mar. 31, 1973, 48-37328

Int. Cl.² G01M *15/00*

U.S. Cl. 73—116 **14 Claims**



1. A misfire detecting device for an internal combustion engine, comprising:

an exhaust gas introducing tube comprising tube means having openings at the both ends thereof, one opening thereof being provided at a portion adjacent to an exhaust port in an exhaust passage in order to introduce the exhaust gas from a combustion chamber of the internal combustion engine which is of a piston type and the other opening being provided exterior of the exhaust passage, a pressure transducer having a pressure sensing part connected to said other opening of said exhaust gas introducing tube; thereby converting a pressure fluctuation of the exhaust gas introduced by said exhaust gas introducing tube to an electrical signal,

a signal processing circuit electrically connected to said pressure transducer for detecting a predetermined signal from said electrical signal of said pressure transducer,

a counter circuit connected to said signal processing circuit for counting the number of times of misfire of the internal combustion engine in a predetermined time period,

whereby the flow fluctuation of the exhaust gas in the exhaust passage is converted to the electrical signal with said pressure transducer for detecting a portion of the pressure fluctuation based on a misfire of the internal combustion engine from said electrical signal, and thereby enabling the misfire of the internal combustion engine to be detected.

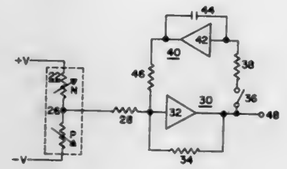
3,924,458
PRESSURE SENSITIVE CONTROL DEVICE

William H. Woodworth, and Robert D. Cunningham, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 1, 1974, Ser. No. 457,159

Int. Cl.² G01L *5/22*

U.S. Cl. 73—133 R **1 Claim**



1. A pressure sensitive control device for placing a remotely located apparatus to which it is electrically connected under the positive control of a human operator by providing electrical outputs coupled to said apparatus that are responsive to the hand pressure applied to the device by the human operator, consisting of:

a substantially rigid, hand-holdable member subjected to said pressure applied by the operator;

orthogonally positioned strain gauges mounted on said member for sensing said pressure applied to said member, wherein the electrical conductivity of at least one of said gauges is altered when said pressure is applied;

an individual electrical circuit coupled to each of said gauges for measuring said alteration and automatically compensating for initial conditions;

each gauge having first, second and third external electrical terminals, said first and second terminals connected to equal but opposite voltage sources, and said third terminal disposed electrically between said first and second terminals, and connected to its said circuit;

each circuit comprising a first operational amplifier coupled to said third terminal and having a first feedback branch including a resistor coupling the output of said amplifier to its input, and a second feedback branch including a second operational amplifier with capacitive feedback as an integrator and an operator controlled switch for selectively coupling said integrator across said first operational amplifier;

such that said switch is closed coupling said integrator across said first operational amplifier to maintain the output of said device at zero by developing a compensating electrical value in the integrator equal but opposite to the output value of said first amplifier, which integrator value is coupled to the input of said first amplifier to drive the output of said first amplifier to zero; until active operation of the device is initiated by said operator by opening said switch, which opening locks the then value in said integrator to the input of said first amplifier to maintain compensation of the initial conditions causing the output of said first amplifier to be responsive to only said alteration of electrical conductivity of the guage to which the circuit is connected, whereby the output of said device is indicative of only the hand pressure applied to said rigid member by said operator and is precisely indicative thereof for remotely controlling an apparatus with precision.

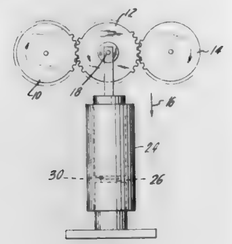
3,924,459
TORQUE SENSOR WITH MEANS FOR MECHANICAL DAMPING

John W. Ossman, Jr., Clifton, N.J., assignor to Haake, Inc., Saddle Brook, N.J.

Filed Nov. 13, 1974, Ser. No. 523,348

Int. Cl.² G01L *3/02*

U.S. Cl. 73—136 R **3 Claims**



3. A method for dynamically sensing mechanical torque in a gear train in which said gear train includes: a drive gear capable of a rotational momentum in a first direction; an idler gear disposed in adjacent engagement with said drive gear and intermeshed with said drive gear such that the angular momentum received from said drive gear is mechanically translated into a second direction of rotation which is opposite to said first direction of said drive gear; a driven gear disposed in adjacent engagement with said idler gear and intermeshed with said idler gear such that the angular momentum received from said idler gear is mechanically translated into an angular direction opposite to the direction of rotation of said idler gear, and in which said driven gear is capable of engaging a mechanical load; in which said method comprises the steps of:

a. mechanically coupling a plunger to said idler gear wherein a differential change in angular momentum between said drive gear and said driven gear, said change resulting from a change in torque of the driven gear, will cause a transverse displacement of said idler gear with respect to a line of reference passing through the axes of said drive and driven gears;

b. inserting a replaceable load cell, disposed upon the longitudinal axis of said plunger, said load cell comprising a pressure transducer which will generate an electrical signal having an amplitude which is directly proportional to the pressure applied to said cell; and

c. interposing a mechanical damper between the bottom of said plunger and said load cell in order to absorb gear and bearing noise which would otherwise impare the quality of the electrical output of said load cell.

3,924,460
MEASURING FRAME FOR A VEHICLE FOR CONTROLLING THE GEOMETRICAL CHARACTERISTICS OF RAILWAY TRACK

M. Johann Lieb, 15, Avenue De La Vallonnette, CH - 1012 Lausanne, Vaud, Switzerland

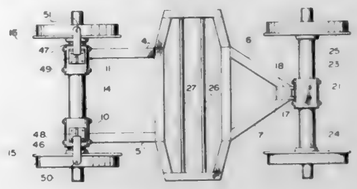
Filed July 11, 1974, Ser. No. 487,632

Claims priority, application Switzerland, July 16, 1973, 10356/73

Int. Cl. B61k *9/12*

U.S. Cl. 73—146 **3 Claims**

1. A measuring frame, for a control vehicle for the geometrical characteristics of railway tracks, supported on two axles of a bogie of said vehicle and having guidance members for sensors of the rails intended to sense the position of the rails in the plane of the track, characterized in that the frame is of a rigid construction, and is connected at two points on two spaced bearings mounted on a first of the axles between the wheels thereof and on a third bearing mounted on a second of the axles between the two wheels thereof; in that the fixing of the frame to the bearings is not rigid over at least one of the three bearings and permits a clearance of the fixing point of the frame within predetermined limits in a plane parallel to the



plane of the track in that the fixing of the frame at its third bearing on the second axle comprises a ball and socket joint.

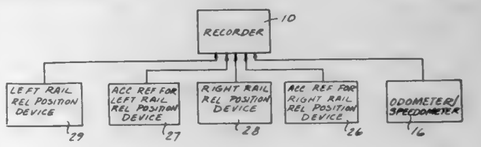
3,924,461
MONITORING SYSTEM FOR DETECTING DEFECTIVE RAILS OR ROAD BEDS

Harris A. Stover, 10306 Mountington Court, Vienna, Va. 22180

Filed Aug. 20, 1974, Ser. No. 499,030

Int. Cl.² B61K *9/00*

U.S. Cl. 73—146 **10 Claims**



1. Apparatus for monitoring and testing rails and road beds comprising:

a vehicle with rail engaging wheels;

an odometer mounted on said vehicle to produce a position reference;

sensing means for sensing the position of the rail as the vehicle passes by;

correlation means receiving the outputs of said odometer and said sensing means to determine the condition of the rail;

wherein said sensing means measures the distance from the vehicle to said rail; and

wherein said sensing means measures the distance from the vehicle to the rail at two locations, one location being near the wheels and one location being remote from the wheels.

3,924,462
METHOD OF MEASURING THE TONER CONCENTRATION OF A DEVELOPER CIRCULATING IN AN ELECTROPHOTOGRAPHIC REPRODUCTION MACHINE

Hartmut Bock, Fischbach, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Wiesbaden, Germany

Filed Aug. 7, 1972, Ser. No. 278,254

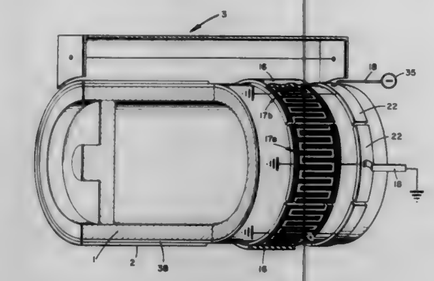
Claims priority, application Germany, Aug. 6, 1971, 2139323

Int. Cl.² G03G *15/08*

U.S. Cl. 73—150 R **4 Claims**

1. A method of measuring the toner concentration of a developer circulating in an electrophotographic reproduction machine comprising applying different voltages to spaced meshing electrodes on a drum carrying the photoconductor whereby the electrodes are arranged besides the exposure zone of the photoconductor, charging an insulating layer formed on the electrodes simultaneously with the photoconductor, connecting the electrodes just moved into the developing zone by grounding each after the charging step, applying a common electrical potential to the electrodes, a test charge pattern being thereby formed on the insulating layer,

developing the test charge pattern based on a treatment identical to that used for developing the latent charge image, said test charge pattern being independent of the photoconductor's properties and treatment and of the other parameters of the electrophotographic reproduction cycle, and measuring



the darkness of the test charge pattern which is a measure of the toner density by optical reflection carried out by light beams from the same light source, one of the beams being affected by the developed test charge pattern and the other being an unaffected reference beam.

3,924,463

APPARATUS FOR TESTING EARTH FORMATIONS COMPOSED OF PARTICLES OF VARIOUS SIZES

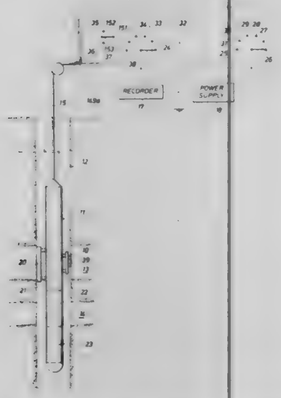
Harold J. Urbanosky, Pearland, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 18, 1973, Ser. No. 407,736

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975

Int. Cl.² E21B *49/00*

U.S. Cl. 73—155 **29 Claims**



1. Formation-testing apparatus adapted for suspension in a borehole having mudcake lining the walls thereof adjacent to earth formations containing producible connate fluids and comprising:

a body having a fluid passage adapted to receive connate fluids;

fluid-admitting means on said body including a fluid entry adapted to be engaged with a borehole wall for isolating a surface thereof from borehole fluids;

means selectively operable for positioning said fluid-admitting means against a borehole wall to place said fluid entry into communication with earth formations beyond an isolated borehole wall surface; and

selectively-positionable fluid-filtering means cooperatively arranged in fluid communication between said fluid passage and said fluid entry and operatively movable upon engagement of said fluid-admitting means with an isolated borehole wall surface to one filtering position for initially passing mudcake particles displaced from an isolated borehole wall surface on through said filtering means into said fluid passage and operatively movable toward another filtering position whenever loose formation particles are eroded from an isolated borehole wall surface for collecting such loosened formation particles in said fluid entry as connate fluids pass on through said filtering means into said fluid passage.

3,924,464

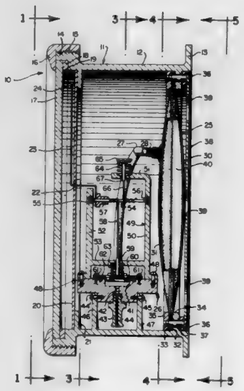
ATMOSPHERIC PRESSURE RATE OF CHANGE INDICATOR

Richard D. Cummins, Hamburg, N.Y., assignor to Carleton Controls Corporation, East Aurora, N.Y.

Filed Feb. 28, 1974, Ser. No. 446,691

Int. Cl.² G01W *1/00*

U.S. Cl. 73—170 R **5 Claims**



1. An atmospheric pressure rate of change indicator, comprising:

a sealed housing having a chamber therewithin and provided with an opening therethrough communicating said housing chamber with the atmosphere;

dampening orifice means operatively arranged in said housing opening and adapted to permit pressure of air within said housing chamber to equalize with atmospheric pressure after a period of time;

compartment means arranged within said housing chamber, said compartment means providing an air chamber therewithin and including movable wall means exposed on one side to the pressure of air in said compartment chamber and exposed on its other side to the pressure of air in said housing chamber;

first restricted orifice means establishing communication between said compartment and housing chambers for permitting the pressure of air in said compartment chamber to equalize with the pressure of air in said housing chamber after a period of time; and

indicator means operatively associated with said movable wall means and responsive to movement thereof for indicating the rate of change of atmospheric pressure, whereby said dampening orifice means may shield said movable wall means from rapid fluctuations in atmospheric pressure.

3,924,465

SHIP NAVIGATION EQUIPMENT

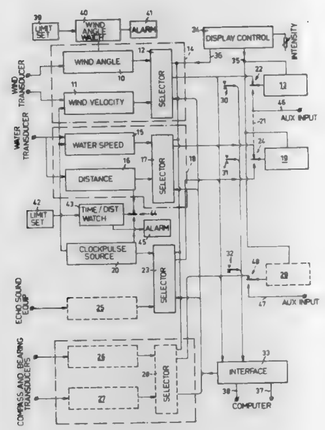
Sverre George Sem-Sandberg, Mariebergsvagen 21, S-136 68 Handen, Sweden

Filed Apr. 4, 1974, Ser. No. 458,009

Claims priority, application Sweden, Apr. 16, 1973, 7305363; Apr. 16, 1973, 7305365

Int. Cl.² G01C *21/10*

U.S. Cl. 73—181 **7 Claims**



1. A shipboard navigational information system comprising a plurality of transducing means for sensing navigational parameters and creating an electrical signal dependant on the parameters, there being transducing means to sense at least wind velocity, wind direction and water velocity relative to the ship,

a calculation unit connected to each of said transducing means to convert the output of the transducing means to a digital signal,

at least two selector circuits each receiving input from two of the calculation units and each selecting and storing the output of one of the calculation units,

at least one display circuit receiving input from the selector circuits, and

display control circuit means using time multiplexing to control the operation of the display circuits and the selector circuits to display information corresponding to the navigational parameter selected by the operator.

3,924,466

MAGNETIC FLOWMETER WITH IMPROVED FIELD COIL

Lewis A. Medlar, Oreland, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 21, 1974, Ser. No. 516,647

Int. Cl.² G01F *1/58*

U.S. Cl. 73—194 EM **19 Claims**

1. A magnetic flowmeter comprising in combination:

a flow tube;

a pair of electrical conducting coils for producing a magnetic field;

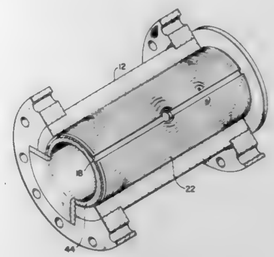
each of said coils comprising a thin pattern of electrical conductors carried by a flexible electrically insulating base;

means securing the flexible base for each of said patterns to said tube;

a magnetic casing surrounding said pair of field coils and providing a magnetic return path therefore;

means for coupling electric power to each of said coils; and

means supporting a pair of probes so that the tip of each



probe is disposed to contact a fluid flowing through said tube.

3,924,467

FLOWMETER

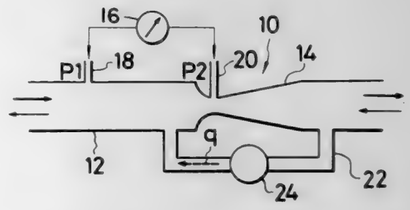
Akio Takamura, Tokyo, and Tsutomu Harada, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Ono Sokki Seikisakusho, Tokyo, Japan

Filed Dec. 17, 1973, Ser. No. 425,221

Claims priority, application Japan, July 1, 1973, 48-74574; July 1, 1973, 48-74575; July 1, 1973, 48-74576

Int. Cl.² G01F *1/44*

U.S. Cl. 73—213 **12 Claims**



1. A flowmeter comprising:

a. two Venturi tubes,

1. each Venturi tube having a throat portion, a first portion tapering at a first cone angle, and a second portion tapering at a second cone angle different from said first cone angle,

2. each tapering portion having a first part of greatest inner cross section remote from said throat portion and a second part of smallest inner cross section connected to the second part of the other tapering portion by said throat portion,

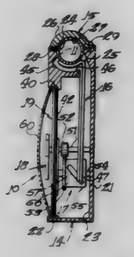
3. the first part of one of said tapering portions of one of said Venturi tubes being joined to the first part of the corresponding tapering portion of the other Venturi tube in a mirror image relationship;

b. means for determining the difference between the fluid pressures in the throat portions of said Venturi tubes;

c. two branch conduits having each two ends, one end of each branch conduit communicating with said joined parts, and the other ends of said branch conduits respectively communicating with the first parts of said Venturi tubes remote from said joined parts; and

d. circulating means for circulating fluid through said branch conduits and said throat portions in opposite respective directions.

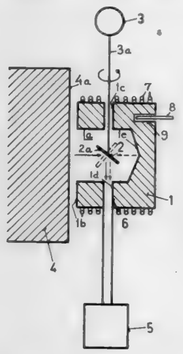
3,924,468
SHOWER SAFETY COMFORT TEMPERATURE GUIDE
Russell C. Persson, 661 San Felipe St., Salinas, Calif. 93901
Filed June 26, 1974, Ser. No. 483,217
Int. Cl.² G01K 1/14, 5/70
U.S. Cl. 73—343 R 8 Claims



1. A shower safety comfort temperature guide device intended for indicating the temperature of water within a tubular pipeline supplying a showerhead assembly, the device comprising:
a hollow housing;
a clamp pivotally affixed to said housing for detachably affixing said housing to said tubular pipe;
a bimetallic temperature responsive element mounted in said hollow housing, said element having one end thereof secured inside said housing, said one end having a substantial area adjacent said clamp for affording a heat conducting relationship between said tubular pipe and said one end when said housing is clamped to said pipe, the opposite end of said element projecting interiorly of said housing and being a free end movable in said housing in response to temperature changes of said element;
a dial face affixed to said housing and having temperature comfort zone indicating means thereon, said housing defining an opening for affording visual access to said dial face;
a pointer member and a shaft for rotatably mounting said pointer member adjacent said dial for sweeping rotative movement thereover to designate temperature indicating portions of said dial, said dial being visible through said opening; a motion transmitting member operatively connected to said pointer for rotation therewith, means operatively connected to said free end of said bimetallic element and responsive to movement of said bimetallic element for coacting with said motion transmitting member such that movement of said bimetallic element is transmitted through said motion transmitting member and said coacting means to effect movement of said pointer member for providing visual indication of the temperature of said element which, in turn, is an indication of the temperature of the water flowing through said pipe when said housing is mounted to said pipe.

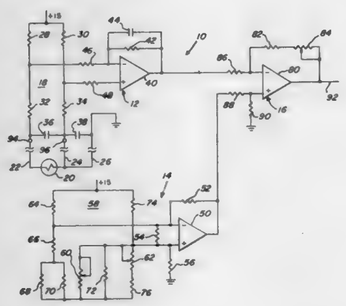
3,924,469
APPARATUS FOR MEASURING SURFACE TEMPERATURES OF OBJECTS BY INFRARED RADIATION THEREFROM
Gerold Brandli, Windisch, and Pierre Keller, Baden, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland
Filed Mar. 11, 1974, Ser. No. 450,046
Claims priority, application Switzerland, Apr. 30, 1973, 6098/73
Int. Cl.² G01J 5/52, 5/62
U.S. Cl. 73—355 EM 8 Claims

1. Apparatus for measuring the temperature at the surface of an object by measurement of infrared radiation emitted from the surface which comprises a compensating radiator in the form of a body having a good thermal conductivity characteristic, a radiation detector, a planar reflective member located within a cavity provided within said compensating radiator, said reflecting member being mounted at its center on a rotatable shaft extending through a bore in said compensating radiator to the exterior thereof for actuation by a motor to effect cyclic rotational movement about an axis forming an oblique angle to the plane of said reflective member between first and second positions such that in one such position only radiation from the surface of the object entering said cavity is reflected by said reflector member into said detector through



a second bore in said compensating radiator aligned with said rotatable shaft while in the other such position only radiation from a wall surface of said cavity is reflected by said reflective member into said detector thusly admitting radiation from the object and compensating radiator in alternation to said detector, said detector producing at its output a signal determined in accordance with any radiation differential existing between the object and compensating radiator, and means controlled by said output signal for variably heating said compensating radiator in such sense as to reduce said signal to zero thereby to attain a condition of radiation equilibrium as between the object and said compensating radiator.

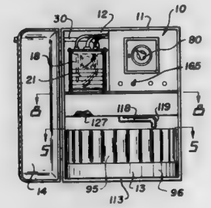
3,924,470
TEMPERATURE MEASUREMENT CIRCUIT
Duane E. Sander, Brookings, S. Dak., assignor to Daktronics, Inc., Brookings, S. Dak.
Filed Sept. 28, 1973, Ser. No. 401,701
Int. Cl.² G01K 7/24
U.S. Cl. 73—362 AR 10 Claims



1. A measurement circuit comprising:
A. an output amplifier having a positive input and a negative input for providing an output signal representative of temperature and proportional to the difference between a measured signal and a reference signal throughout a measurement range;

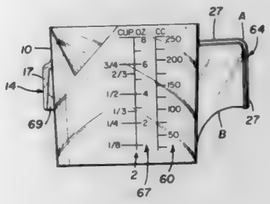
B. a measurement amplifier having a positive input and a negative input and having an output connected to one of the inputs of said output amplifier to provide said measured signal to said output amplifier;
C. input means to said measurement amplifier selected to provide balanced impedances to said measurement amplifier positive and negative inputs throughout the measurement range;
D. a thermoelectric transducer for providing a signal representative of temperature to an input of said measurement amplifier; and
E. impedance means having an impedance balanced to the output impedance of said measurement amplifier and connected to the input of said output amplifier not connected to the output of said measurement amplifier to provide a multiamplifier temperature measurement circuit each of the amplifiers of which have balanced input impedances throughout the measurement range whereby the circuit is temperature stable over long periods of time.

3,924,471
AUTOMATIC LIQUID SAMPLE TAKING AND SEGREGATING APPARATUS
Ernst Singer, 3491 Puget Drive, Vancouver, B. C., Canada
Filed Feb. 7, 1974, Ser. No. 440,294
Int. Cl.² G01N 1/14
U.S. Cl. 73—421 B 14 Claims



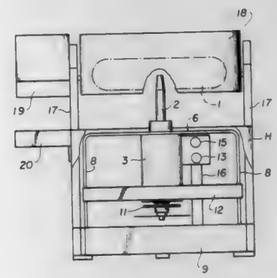
1. Apparatus for taking and segregating measured samples of liquid with or without solids therein, comprising a closed metering chamber, a volume control tube extending down into the chamber and having a lower end positioned above the bottom of the chamber, an inlet tube connected to the control tube for directing fluid into the chamber through said control tube, a liquid outlet tube opening into the chamber at the bottom thereof, valve means for closing and opening said outlet tube, means for selectively operating said valve means to open and close the outlet tube, a source a positive and negative pressure operatively connected to the chamber near the top thereof, control means for causing said source selectively to apply pressure and suction to the chamber, a liquid level controller for the chamber and connected to said source control means to operate said source to shut off the suction and to start the pressure when the liquid sample in the chamber reaches a predetermined level above the lower end of the control tube, said suction drawing liquid samples through the control tube into the chamber when the outlet tube is closed until stopped by the level controller and said pressure blowing liquid out through the control tube until the liquid reaches the lower end thereof and while the outlet tube is closed and out through said outlet tube when the outlet tube is open, a plurality of sample bottles mounted along a path and each having an entrance opening, and liquid distributing means connected to the outlet tube for receiving said expelled samples and mounted for movement along said path to successively direct the samples into the bottles.

3,924,472
MEASURING DEVICE
Janet E. Harris, P.O. Box 2819, West Palm Beach, Fla. 33402
Filed May 28, 1974, Ser. No. 474,134
Int. Cl.² G01F 19/00
U.S. Cl. 73—426 3 Claims



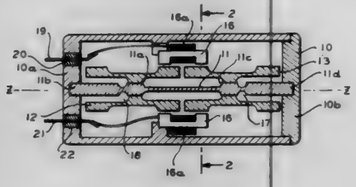
1. A measuring container having in combination, a cup, said cup having an open top with an upper edge, a fastening means fixed to said cup for mounting said cup at a viewing level, said cup including a measuring scale and being transparent so that the level of contents in said cup can be viewed therethrough, a handle fixed to said cup diametrically opposite from said fastening means, a spout on said cup, one side of said spout having its upper edge extending substantially tangentially from the upper edge of said cup above said fastening means, the other side of said spout having its upper edge extending at approximately 90° to the one side, the other side of said spout having its upper edge extending tangentially from the upper edge of said cup, cover means for said cup including its spout.

3,924,473
BALANCING APPARATUS, ESPECIALLY WHEEL BALANCING APPARATUS
Otfrid Maus, Darmstadt, Germany, assignor to Firma Carl Schenck AG, Darmstadt, Germany
Filed Feb. 27, 1975, Ser. No. 553,596
Claims priority, application Germany, Nov. 11, 1974, 2453292
Int. Cl.² G01M 1/22
U.S. Cl. 73—471 11 Claims



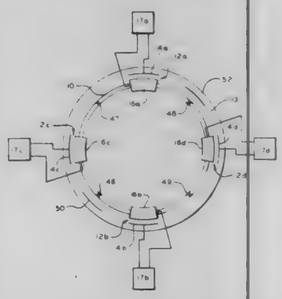
1. A wheel balancing apparatus comprising a base, inverted U-shaped support means including a horizontal member forming a torsion spring and vertically extending spring legs having lower ends secured to said base, said legs having upper ends interconnected by said horizontal torsion spring member, bearing means secured to said horizontal torsion spring member, a rotatable shaft for rotating a wheel to be balanced, said rotatable shaft being vertically supported by said bearing means, horizontally extending bending spring means interconnecting said bearing means with said vertically extending legs of said U-shaped support means, and measuring transducer means operatively arranged for sensing unbalance values of a wheel rotated by said rotatable shaft.

3,924,474
ANGULAR RATE SENSOR
Bernard Friedland, West Orange, and John C. Stiles, Morris Plains, both of N.J., assignors to The Singer Company, Little Falls, N.J.
Filed Nov. 12, 1974, Ser. No. 523,174
Int. Cl.² G01C 19/56
U.S. Cl. 73—505 4 Claims



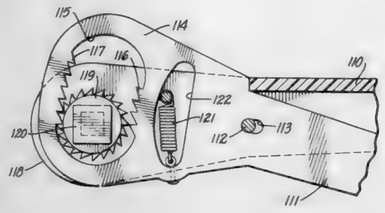
1. An angular rate sensor for measuring the angular rate of change about a reference axis comprising:
a. a housing;
b. an elongated flexible vibrating rod secured at both ends in said housing and having first and second nodal points proximate to its ends equidistant from the center of the rod;
c. fluid damping means filling said housing;
d. a first inertia means operative on the first nodal point of said rod; and
d. first and second inertia means operative on the first and second nodal points, respectively, for adjusting the natural frequency of said rod and the position of said nodal points, whereby the nodal points may be adjusted to lie beyond the ends of said rod and said rod decoupled from external vibrations.

3,924,475
VIBRATING RING GYRO
John C. Stiles, Morris Plains, N.J., assignor to The Singer Company, Little Falls, N.J.
Filed Oct. 23, 1973, Ser. No. 408,314
Int. Cl.² G01C 19/28
U.S. Cl. 74—5.6 A 21 Claims



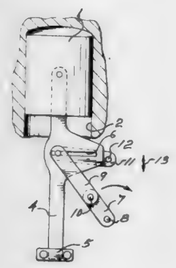
1. The method of providing an indication of the rotation about an axis of a gyroscopic element comprising the steps of:
a. supporting a thin-walled ring to substantially prevent motion thereof in any direction other than rotation about the ring axis;
b. vibrating said ring to set up nodes of vibration;
c. establishing fixed reference positions for said nodes;
d. rotating said ring to move said nodes to said reference positions in response to a relative rotation of said ring and said reference positions; and
e. indicating the amount and directions of rotation required to move said nodes back to said reference positions.

3,924,476
DRIVING GEAR AND FEEDING MECHANISM
Robert M. Wolcott, 750 W. Christie, Banning, Calif. 92220
Filed Feb. 25, 1974, Ser. No. 445,097
Int. Cl.² F16H 9/04
U.S. Cl. 74—30 2 Claims



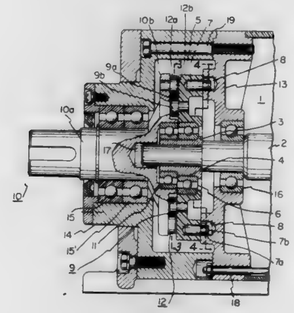
1. A driving mechanism comprising a rotatably mounted wheel, said wheel having a plurality of teeth extending around its periphery, an actuator having a first set of complementary teeth disposed on one side of said wheel and a second set of complementary teeth directed oppositely from said first set and disposed on the opposite side of said wheel, each of said teeth of said wheel and actuator having a radially directed drive face and an angularly directed cam face, the drive faces of said sets of teeth on said actuator being adapted to selectively engage the drive faces of the teeth on said wheel to cause rotational movement of said wheel in a single direction in response to longitudinal movement of said actuator in either direction with respect to said wheel, said teeth being constructed and arranged so that when the teeth on one side of said wheel are fully engaged with one set of teeth of said actuator, the teeth on the opposite side of said wheel barely clear the set of teeth on the opposite side of said actuator, whereby upon reversal of the direction of longitudinal movement of said actuator with respect to said wheel at any longitudinal position of said actuator with respect to said wheel, the cam faces of said teeth automatically engage to provide camming movement of the engaged set of teeth of said actuator out of engagement with the teeth of said wheel and movement of the unengaged set of teeth of said actuator into engagement with the teeth of said wheel, said cam faces also automatically acting upon rotational movement of said wheel in the driven direction other than by movement of said actuator to move said wheel into simultaneous locking engagement with the teeth on both sides of said actuator to prevent further rotational movement of said wheel in the driven direction.

3,924,477
CRANK MOVEMENT MECHANISM
William Portelance, 510 Salaberry, Mont-Laurier, Quebec, Canada
Filed July 1, 1974, Ser. No. 484,969
Int. Cl.² F16H 21/72
U.S. Cl. 74—44 6 Claims



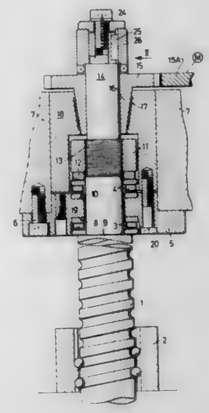
1. A crank movement mechanism comprising an actuating member, means laterally restraining the latter to substantially exclusive rectilinear displacement thereof, said actuating member having a guideway longitudinally extending transversely to said direction of rectilinear displacement, a crank having an axis of rotation, a rotating arm pivoted at one end about an operatively fixed pivot axis, a connecting rod pivoted at one end to said crank and adapted to actuate the latter, a pivotal connection pivotally connecting the other end of said rotating arm to the other end of said connecting rod, slidable along said guideway, defining a second pivot axis for the rotating arm, and producing lateral displacement of said other end of the connecting rod transversely of the actuating member, and said axes extend transversely to the direction of rectilinear displacement and to the guideway.

3,924,478
SPEED REDUCTION MECHANISM
Isamu Takasu, Tokyo, Japan, assignor to Toyo Glass Machinery Company, Ltd., Japan
Continuation of Ser. No. 416,104, Nov. 15, 1973. This application Jan. 30, 1974, Ser. No. 437,787
Claims priority, application Japan, Nov. 18, 1972, 47-115244. The portion of the term of this patent subsequent to Sept. 9, 1992, has been disclaimed.
Int. Cl.² F16H 21/12
U.S. Cl. 74—63 5 Claims



1. A speed changer comprising;
a driving shaft defining an axis and disposed for rotation at a first speed about said axis;
an eccentric boss secured to and rotatable with the shaft;
an intermediate disc pivoted on said boss, locked against rotation, and mounted for circular movement in a closed path;
means for converting the rotation of said boss into the circular movement of the disc;
a driven disc mounted for rotation about said axis of said shaft; and
means for converting the circular movement of the disc into rotation of the driven disc at a speed different from said first speed, comprising a number of first lugs mounted on one of said discs and equally circumferentially spaced apart to define a first circle, a different number of second lugs mounted on the other disc and equally circumferentially spaced apart to define a second circle, one of said circles being disposed generally within the other, and the first and second lugs being disposed to approximately tangentially bear on one another individually and sequentially in driving contact of the lugs on the intermediate disc with the lugs on the driven disc.

3,924,479
BRAKE MECHANISM TO PREVENT REVERSE ROTATION OF A DRIVE SPINDLE
Horst Lanzenberger, Munich, Germany, assignor to Friedrich Deckel Aktiengesellschaft, Munich, Germany
Filed Mar. 4, 1974, Ser. No. 447,923
Claims priority, application Germany, Mar. 7, 1973, 2311307
Int. Cl.² F16H 27/02
U.S. Cl. 74—89.16 6 Claims



1. A brake mechanism for preventing the reverse rotation of a nonself-locking axially movable and rotatable drive spindle upon which a load is applied, comprising:
support means having said drive spindle rotatably mounted therein and a first friction surface thereon;
a drive gear having teeth thereon mounted on said drive spindle, said drive gear being axially movable with respect to said drive spindle and having second friction surface means thereon movable into and out of engagement with said first friction surface;
drive means positively drivingly coupled to said teeth on said drive gear for driving said drive spindle;
a first cam surface secured to said drive spindle and being rotatable therewith; and
a second cam surface mounted on said drive gear and positioned to engage said first cam surface in response to a relative rotation occurring between said drive gear and said drive spindle, said engagement between said first and second cam surfaces effecting an axial movement of said second friction surface on said drive gear into engagement with said first friction surface on said support means during said relative rotation to effect a braking of said drive gear and said drive spindle.

3,924,480
CONSTANT HORSEPOWER VARIABLE SPEED REVERSING TRANSMISSION
Joseph Carapellucci, Broomall, Pa., assignor to Diamond Seven, Inc., Springfield, Pa.
Filed Sept. 11, 1974, Ser. No. 505,079
Int. Cl.² F16H 55/52, 1/38
U.S. Cl. 74—230.17 A 13 Claims

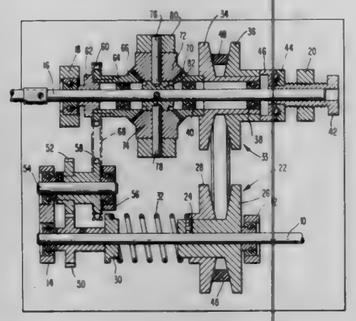
1. A constant horsepower variable speed reversing transmission, comprising:
a. an input shaft;
b. an output shaft spaced from said input shaft;
c. a variable speed transmission having: a first portion; a second portion; and connecting means engaging said portions to rotate said second portion at a speed depen-

dent upon the speed of said first portion; said first portion engaging said input shaft to rotate in response thereto;

d. drive means having a first portion engaging said input shaft for rotation therewith and a second portion rotationally driven in response to the rotation of the first portion thereof;

e. a bevel gear connected to said second portion of said variable speed transmission for rotation therewith;

f. a cage comprising a ring having at least one bevel gear engaged with said first mentioned bevel gear, a supported therein for rotation about its axis;



g. an additional bevel gear engaging the bevel gear supported within said cage; and

h. force transmission means coacting with and engaging said cage, said second portion of said driven means, said additional bevel gear, and said output shaft to transmit the force necessary to rotate said output shaft in response to rotation of said input shaft;

i. the ratio of said gears being such as to rotate said output shaft in either forward or reverse depending on the speed of rotation of said variable speed transmission.

3,924,481

CIRCULAR SIDE POSITIVE DRIVE BELT TEETH

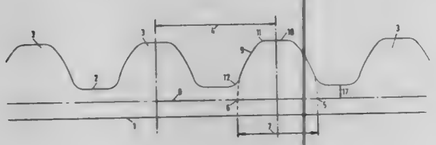
Michael J. W. Gregg, Antrim, Northern Ireland, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 3, 1974, Ser. No. 485,642

Claims priority, application United Kingdom, July 20, 1973, 34840/73

Int. Cl.² F16G *1/00, 5/00*

U.S. Cl. 74—231 C **6 Claims**



1. An endless synchronous drive belt formed of a resilient elastomer comprising: at least one high elastic modulus reinforcing member extending along said belt thereby defining a pitch line; a succession of identical teeth uniformly spaced apart by their pitch P and possessing a notional tooth width W, less than P; each tooth having substantially identical fore and an aft surfaces with at least part of said fore and aft surfaces shaped in cross section as the arc of a circle of radius W; both said arcs being centered on the pitch line at centers spaced at a distance W apart.

3,924,482

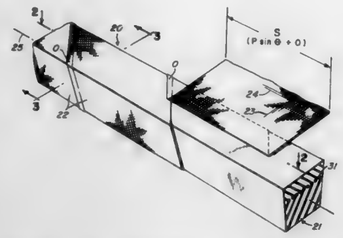
ENDLESS POWER TRANSMISSION BELT AND METHOD OF MAKING SAME

Roger D. Meadows, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Jan. 10, 1974, Ser. No. 432,276

Int. Cl.² F16G *5/08*

U.S. Cl. 74—234 **12 Claims**



1. An endless power transmission belt having a belt body and a woven cover therefor in the form of an elongated strip having warps and wefts therein, said warps extending parallel to the length of said strip, said strip being disposed in a helical pattern around said body so that said strip and thus its warps are arranged at an angle relative to a central longitudinal axis through said belt to provide said woven cover as a bias cover which is in a relaxed condition.

3,924,483

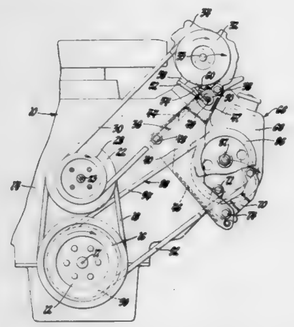
BELT DRIVEN ACCESSORY FOR VEHICLES WITH AUTOMATIC BELT TENSIONER

Frank H. Walker, Grand Blanc; Larry D. Blumer, Swartz Creek; Robert N. Khouri, and David G. Fulks, both of Flint, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1974, Ser. No. 526,515

Int. Cl.² F16H *7/12, 7/10*

U.S. Cl. 74—242.11 R **4 Claims**



1. A drive system for vehicle accessories comprising first pulley means rotatably mounted in a predetermined position in a vehicle, motor means, means drivingly connecting said motor means to said first pulley means, an accessory, support means in the vehicle for said accessory, pivot means mounting said accessory for limited turning movement on said support means, second pulley means drivingly connected to said accessory and secured thereto for turning movement with said accessory on said pivot means, flexible drive belt means operatively mounted on said first and second pulley means to permit said first pulley means to drive said second pulley means, said belt means having a tight side feeding from said second pulley means onto said first pulley means and further having a loose side feeding from said first pulley means onto said second pulley means, said pivot means being positioned relative to said tight side of said belt means to provide a reaction to the force exerted by said tight side of said belt means when driven by said first pulley means, and spring means operatively connected to said accessory for automatically turning said accessory so that said center of said second pulley means is yieldably urged from the center of said first pulley means to tension said loose side of said belt means for all torque loads of said accessory.

3,924,484

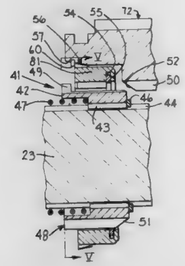
SENSOR UNBLOCKING RAMPS

Elmer A. Richards, Oshtemo, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 20, 1974, Ser. No. 452,726

Int. Cl.² F16H *3/08;* **F16D** *13/20, 21/00*

U.S. Cl. 74—331 **10 Claims**



1. In a transmission system including a main shaft and at least one countershaft, multiple pairs of shiftable ratio gears arranged between said main shaft and said countershaft, with jaw clutch devices for connecting at least one of at least some of said pairs of gears to one of said shafts and said jaw clutches including at least one resiliently loaded jaw clutch element being constantly resiliently urged toward engagement position and positively limited in its response to such urging, the improvement comprising:

a blocker ring positioned between said last-named jaw clutch element and the gear with which it is operatively associated and first friction means operative between said blocker ring and said jaw clutch element providing a significant axial drag between said blocker ring and said jaw clutch element without providing appreciable relative rotational drag therebetween and second friction means effective for causing rotation of said blocker ring with said gear upon axial urging of said blocker ring toward said gear in response to initiation of a clutching movement by said jaw clutch element toward said gear;

whereby said blocker ring will normally rotate with said gear upon initiation of a clutching sequence and before axial engagement thereof by the teeth of said jaw clutch element.

8. In a transmission system including a main shaft and at least one countershaft, multiple pairs of shiftable ratio gears arranged between said main shaft and said countershaft, with jaw clutch devices for connecting at least one of at least some of said pairs of gears to one of said shafts and said jaw clutches including at least one resiliently loaded jaw clutch element being constantly resiliently urged toward engagement position and positively limited in its response to such urging, the improvement comprising:

a blocker ring positioned between said last-named jaw clutch element and the gear with which it is operatively associated, said blocker ring encircling said last-named jaw clutch element for normal rotation therewith and first and second friction means effective for causing rotation of said blocker ring with said gear in response to initiation of a clutching movement by said jaw clutch element relative to said gear, said first friction means effective to apply an axial force for engaging said second friction means without applying a significant rotational drag on said jaw clutch element in response to relative axial movement between said blocker ring and said jaw clutch element;

said blocker ring having radially projecting blocker teeth and said last-named jaw clutch element having radially projecting teeth arranged for interference with said blocker teeth upon relatively axial movement therebetween when said blocker ring is in other than a condition of synchronous rotation with said jaw clutch element and for passage axially therebetween when the rotative speed of said blocker ring crosses that of said jaw clutch element and

the end faces of said blocker teeth facing said interfering tooth of said jaw clutch element being sloped with respect to a plane normal to the axis of said blocker ring.

3,924,485

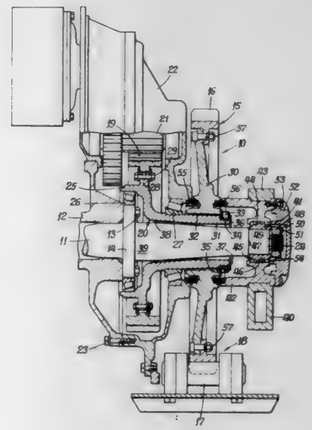
FINAL DRIVES WITH LOAD SEPARATING MEANS

Samuel I. Caldwell, Aurora; Robert S. Orr, Pekin, both of Ill., and Duane D. White, Bloomington, Minn., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed July 15, 1974, Ser. No. 488,573

Int. Cl.² B26D *55/12*

U.S. Cl. 74—410 **8 Claims**



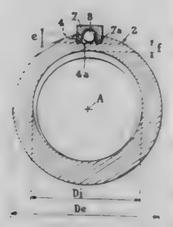
1. In a drive structure having a driver gear, a driven member, a shaft having an inner portion and an outer load support portion, and shaft support means rigidly supporting said inner portion of the shaft, the improvement comprising: mounting means rotatably mounting said driver gear coaxially about said inner portion of the shaft and having a portion extending outwardly in spaced coaxial relationship with said shaft; and means mounting said driven member to said mounting means portion for rotation with said driver gear, said driven member being disposed coaxially outboard of said driver gear, whereby load forces acting on said outer portion of the shaft are effectively isolated from said driver gear.

3,924,486

SCREW AND NUT TRANSMISSION MECHANISM

Jacques Taillardat, Saint Alban-en-Leysse, France, assignor to La Technique Integrale, Chambery, France

Filed Oct. 30, 1973, Ser. No. 411,120
Claims priority, application France, Oct. 30, 1973, 73.38458
Int. Cl.² F16H *1/20*
U.S. Cl. 74—459 **3 Claims**



1. Screw and nut mechanism for converting a movement of rotation into a movement of translation, and vice versa, comprising a screw member and a mating nut member having a common axis, each of said members having at least one peripheral helical groove, which grooves define together at least one helical channel having two ends, a train of balls of predetermined diameter engaged in said helical channel for transmitting forces between said members, at least one substantially straight keyway in the outer peripheral surface of said nut member, said keyway extending parallel to the common axis of said numbers and having side walls spaced apart a width distance, and a floor intermediate said side walls, said keyway having depth in the radial direction less than one-half of said diameter of said balls, an elongated key having side walls spaced apart a width distance corresponding to that of said keyway, and intermediate said side walls a bottom surface including therein a longitudinal channel having cross-section permitting passage of said balls, said key being secured in said keyway with the bottom surface and groove therein facing and adjacent said floor of the keyway, said groove and floor defining a partial ball-recirculation passage including two ends, and connection means for interconnecting the ends of said passage with the ends of said helical channel.

3,924,487

CABLE TRACTION AND RELEASE DEVICE

Roger Huret, and Jacques Huret, both of avenue Felix Faure, 92000 Nanterre, France

Filed Nov. 4, 1974, Ser. No. 520,951
Claims priority, application France, Nov. 7, 1973, 73.39609
Int. Cl.² B62D *1/20*
U.S. Cl. 74—489 **11 Claims**

1. In a cable traction and release device, particularly for a bicycle change speed device, comprising,

a control lever having a transverse opening,

a cable with which the control level co-operates,

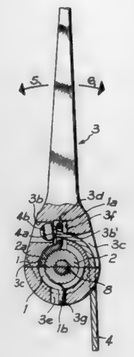
a fixed supporting axle in the form of a drum about which the lever pivots and which is located in said transverse opening,

the drum being arranged to be fixed to a part of a bicycle such as a bicycle frame,

an immobilization system intended to hold an end of the cable in a selected position on application of a tractive force to the cable by an adjusting spring incorporated in the change speed device,

a friction mechanism including a cylindrical helical spring which presses on the drum, incorporated in the immobilization system, one end of the spring co-operating with said lever;

improvement wherein one of two ends of the friction spring is connected directly to one end of the cable in such a way that any traction applied to said one end of the spring in a direction towards another end of the cable tends to press the spring into the drum,



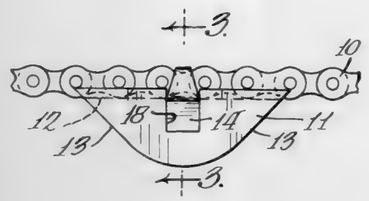
and the control lever includes two lugs each of which is associated with an end of the said spring and is able to urge the corresponding end of the spring in one of two opposing directions of friction spring disengagement.

3,924,488

LIMIT STOP OR FINGER FOR CHAIN OR BELT CONTROL

Edward I. Fox, Chicago, Ill., assignor to H. W. Crane Company, Maywood, Ill.

Filed July 15, 1974, Ser. No. 488,292
Int. Cl.² F16H *53/00*
U.S. Cl. 74—568 R **1 Claim**



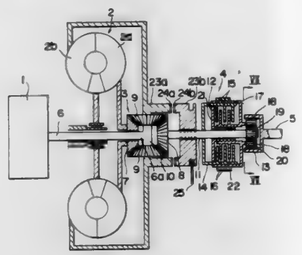
1. In combination with an elongated control member having longitudinally spaced elements, an actuator member positioned at one side of said control member and adapted to be located at any of a plurality of positions spaced longitudinally thereon, and means for connecting the actuator member to the control member in any said spaced positions comprising a U-shaped member having spaced arm portions joined by a cross portion, the arm portions shaped to embrace opposite sides of the control member and each arm portion having a hook end adapted to engage between said longitudinally spaced elements, and a screw bolt extending through said cross portion for clamping the connecting means to the actuator member and also clamping said hook ends to the actuator in any located position of the actuator on the control member, the actuator member having an elongated side adapted to be positioned against one side of the control member and recessed intermediate the ends of said elongated side to receive the U-shaped member.

3,924,489

DIFFERENTIAL TYPE AUTOMATIC SPEED CHANGING APPARATUS INCLUDING VARIABLE SPEED TORQUE CONVERTER

Shoji Yasuda, 11-15 Kamiosaki 3-chome, Shinagawa, Tokyo, Japan

Filed Apr. 29, 1974, Ser. No. 464,951
Claims priority, application Japan, May 2, 1973, 48-49559
Int. Cl.² F16H *47/08*
U.S. Cl. 74—688 **17 Claims**



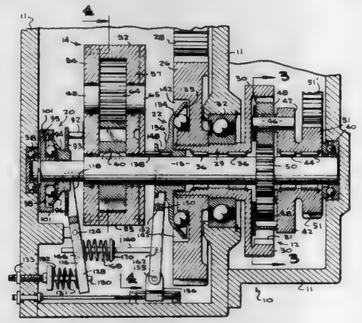
1. Differential automatic speed changing apparatus comprising a rotatable drive shaft and a rotatable driven shaft, variable speed fluid coupler means between said drive and driven shafts for imparting rotation from the former to the latter, said variable speed fluid coupler means including drive and driven elements operatively coupled together by a liquid, differential gearing means coupled between said variable speed fluid coupler means and said driven shaft for imparting rotation to the latter in conjunction with said variable speed fluid coupler means, said differential gearing means including first gear means connected to said drive element, said differential gearing means further including second gear means connected to said drive shaft and said driven element, said differential gearing means further including third gear means connected to said driven shaft, and said second gear means being between and in meshed relationship with said first and third gear means.

3,924,490

VARIABLE RATIO DRIVE UNIT AND METHOD

Ned D. Mills, 2725 Riverside Drive, West Richland, Wash. 99352

Filed May 21, 1974, Ser. No. 471,904
Int. Cl.² F16H *3/74, 57/10*
U.S. Cl. 74—752 E **26 Claims**



1. A variable ratio drive unit comprising a rotary planetary gear carrier, planetary gear means mounted on said rotary planetary gear carrier, rotary sun gear means supported for rotation in meshing engagement with said planetary gear means so as to be rotatable by said planetary gear means, power input drive means drivingly engaged with said planetary gear means, a power output drive means drivingly connected to said rotary planetary gear carrier, a first automatic control means responsive to the rate of rotation of said sun gear for maintaining a constant rate of rotation of said sun gear in response to the sun gear reaching a predetermined rate of rotation and second automatic control means for overriding the first automatic control means in response to said input drive means reaching a predetermined power input rate of rotation for reducing the rate of rotation of the sun gear as the rate of rotation of said input drive means increases above said predetermined power input rate of rotation to provide a minimum gear ratio between said power input drive means and said power output means.

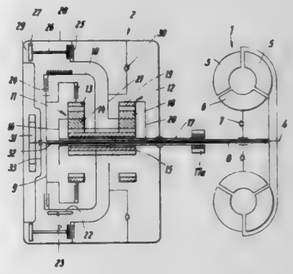
17. A method of automatically varying the input to output gear ratio from an infinite value to a desired minimum value in a variable speed power transmission unit of the type having a power input gear meshing with planetary gears mounted on a rotary planetary gear carrier, a sun gear meshing with the planetary gears and drivingly connected to a gear pump having a fluid inlet and a fluid outlet with valving means in the fluid outlet and a power output gear drivingly connected to the planetary gear carrier, said method comprising the steps of automatically sensing the speed of rotation of the gear pump and the power input gear, initially operating the valving means in the fluid outlet under the sole control of the sensed speed of rotation of the pump to throttle the outlet of the pump in proportion to the speed of rotation of the pump to initially vary the gear ratio from an infinite value to an intermediate value, discontinuing control of the valving means by the speed of rotation of the pump and initiating control of the valving means by the sensed speed of rotation of the power input gear to vary the gear ratio from said intermediate value to said predetermined minimum value by further throttling the output of said pump in proportion to increase in the speed of said power input gear as the speed of said power input gear increases until the pump is substantially completely throttled and said minimum gear ratio is achieved.

3,924,491

HYDRODYNAMIC-MECHANICAL TRANSMISSION FOR AUTOMOBILES

Manfred Kalversberg, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Apr. 24, 1974, Ser. No. 463,821
Claims priority, application Germany, May 30, 1972, 2327471
Int. Cl.² F16H *57/10, 3/44*
U.S. Cl. 74—763 **5 Claims**



1. A hydrodynamic-mechanical transmission having a torque converter and a planetary gear system enclosed in a gear housing and controlled by servo pressure from a pump located on an interior end wall of the gear housing, the planetary gear system comprising:

first and second simple planetary gear sets;

a clutch housing;

a forward clutch concentrically above the first planetary set and being concentrically enclosed by the clutch housing,

the forward clutch connecting a turbine shaft of the torque converter with a ring gear of the first planetary set upon actuation of the forward clutch;

a multiple-disc brake acting on a planet carrier of the second planetary set to halt its rotation upon actuation of the brake, the brake being arranged concentrically above the clutch housing, the forward clutch and the first planetary set;

a grip roller freewheel acting as an overrunning brake on the planet carrier of the second planetary set, the freewheel being arranged concentrically above the second planetary set; and

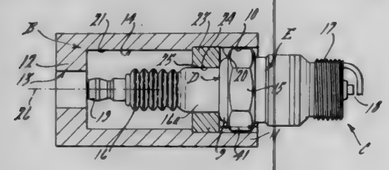
a cylindrical piston for actuating the multiple-disc brake concentrically surrounding the clutch housing, said piston being designed to be moved by pressure from an annular cylinder servo pressure space, defined by the pump and the gear housing and arranged concentrically above the oil pump.

3,924,492

SPARK PLUG SOCKET WRENCH

Stewart V. Bray, Allen Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 28, 1972, Ser. No. 266,914
Int. Cl.² B25B *13/06*
U.S. Cl. 81—121 R **4 Claims**



1. A hollow tool for use in the installation of spark plugs of the type having at least one bearing surface and having a fragile portion adjacent the bearing surface and about which said tool extends, said tool comprising:

a body having a plug-receiving stepped bore therein, a first step thereof having a configuration effective to mate with said bearing surface, a second step thereof spacedly surrounding said fragile portion when said first step mates with said bearing surface, and

a radially inwardly directed non-resilient protuberance on said body effective to engage said spark plug at a location substantially at the juncture between said bearing surface and said fragile portion whereby skewing forces between said bearing surface and tool may be more effectively resisted by said fragile portion.

3,924,493

QUICK RELEASE EXTENSION SHAFT FOR SOCKET WRENCHES

John Penner, P.O. Box 63, Byers, Colo. 80103

Filed Oct. 21, 1974, Ser. No. 516,283
Int. Cl.² B25B *13/00*
U.S. Cl. 81—177 G **5 Claims**

1. A quick release extension shaft for socket wrenches comprising:

a. an elongated shaft,

b. an axial recess formed internally of said extension shaft projecting substantially along the axis of said extension shaft,

c. a socket drive stud formed in one end of said extension shaft,

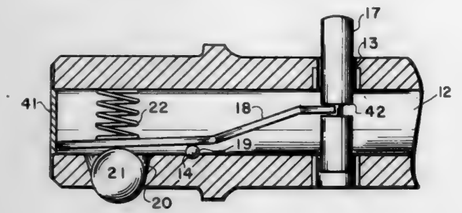
d. a socket retaining means projecting from said socket drive stud, said socket retaining means further comprising:

1. a transverse slot projecting into said socket drive stud,

2. a lock socket engaging member mounted in said transverse slot,

3. said lock socket engaging member including a lock socket engaging pin projecting from the surface of said socket drive stud, and

4. a spring urging said lock socket engaging pin outward of said socket drive stud in a manner adapted to engage a lock socket,



e. a release button projecting from said extension shaft, said release button projecting into said axial recess, and

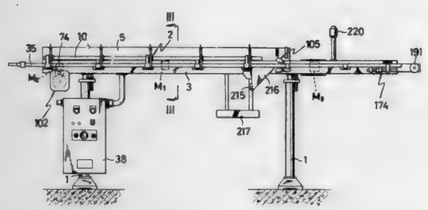
f. an arm mechanically interconnecting said release button and said socket retaining means retracting said socket retaining means responsive to pressure applied to said release button.

3,924,494

AUTOMATIC BAR FEEDING APPARATUS

Shiro Azuma, Kokubunji, Japan, assignor to Azuma Engineering Co., Ltd., Tokyo, Japan

Filed June 25, 1974, Ser. No. 483,060
Int. Cl.² B23B *13/00;* **B23Q** *5/22*
U.S. Cl. 82—2.7 **3 Claims**



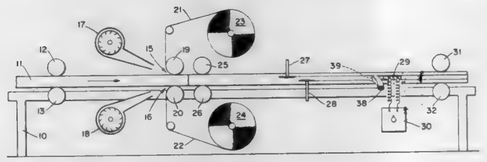
1. An automatic bar feeding apparatus which comprises a mechanism to take a new bar from a storage section to a guide section, a pusher movable reciprocably in the axial direction in the guide section, a driving motor which advances the pusher to push the bar to a machine tool and withdraws the pusher to a position where a new bar is taken into the guide section from the storage section, a holding mechanism operative to hold the bar when the pusher advances to connect with the end of the bar and when the pusher withdraws to detach from the remaining scrap portion of the bar, a finger which is rotatably joined to the pusher, said finger being adapted to hold and release the end of the bar, characterized by means for stopping said driving motor when said pusher is in predetermined position with respect to said holding mechanism, and a motive means connected to simultaneously operate both said holding mechanism and said movement of the pusher in the guide section when the pusher reaches said predetermined position in relation to said holding mechanism, said finger being rotatably coupled to a joint section, the said joint section having notch means on an end facing rearwardly of said finger, a lock piece disposed in confronting relation to said rearward end of said joint section, said lock piece having a front end with protrusion means configured to engage said notch means of said joint section, a threaded push rod extending forwardly at the end of said pusher and having a longitudinally extending groove, said lock piece being slidably received on said push rod with said protrusion means engaging said groove, means on said joint section threadedly engaging said threaded push rod, and spring means urging said lock piece forward for engagement of said protrusion means with said notch means.

3,924,495

APPARATUS FOR PRODUCING GROOVES IN FOAMED THERMOPLASTIC INSULATION BOARDS

Dikrun DerMarderosian, Sudbury, and Paul Albert Tremblay, Billerica, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Division of Ser. No. 314,685, Dec. 13, 1972, abandoned. This application June 24, 1974, Ser. No. 482,142
Int. Cl.² B26D *3/06, 9/00;* **B26F** *3/08*
U.S. Cl. 83—5 **2 Claims**



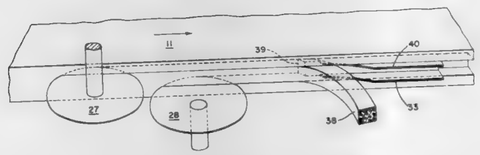
1. An apparatus for the production of grooved foamed thermoplastic resin insulation board, said apparatus comprising a frame; means supported by said frame for mvoing said board relative to said frame; a pair of spaced, rotatable knives positioned to form two continuous slits in a surface of the board; a tool positioned to work between said slits and to remove resinous board material from therebetween and thereby to form a groove in said surface, said tool having a flat, elongated rectangular bottom having a chisel-shaped leading knife edge tapered on one side to direct board material away from said board and a width corresponding to the distance between said slits, said tool further having upstanding side walls rearward of said leading edge and perpendicular to said bottom; and means to heat said tool to at least the softening temperature of said insulation board.

3,924,496

METHOD FOR PRODUCING GROOVES IN FORMED THERMOPLASTIC INSULATION BOARDS

Dikrun DerMarderosian, Sudbury, and Paul Albert Tremblay, Billerica, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Division of Ser. No. 314,685, Dec. 13, 1972, abandoned. This application June 24, 1974, Ser. No. 482,143
Int. Cl.² B26D *3/06*
U.S. Cl. 83—5 **3 Claims**



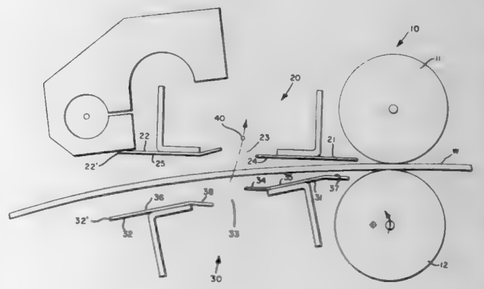
1. The method of forming a groove in a surface of a foamed thermoplastic resin insulation board, said method comprising the steps of first forming a pair of spaced continuous slits in said surface, said slits having a depth corresponding to the depth of the groove to be made in said board; applying a knife-edged tool to the area defined by said slits, said tool having a flat, elongated rectangular bottom having a chisel-shaped leading knife edge tapered on one side to direct board stock away from said surface and a width corresponding to the width of the area defined by said slits, said tool further having upstanding side walls rearward of said leading edge and perpendicular to said bottom; and causing said heated tool to move in said defined area relative to said board while heating said tool to simultaneously soften and separate the portion of foamed material defined by said slits from said board and to direct said separated portion outwardly from said board in the form of a continuous strip.

3,924,497

METHOD OF DISPENSING A MICROFOAM SHEET

Joseph D'Angelo, Wyckoff; Lawrence Maccherone, Ringwood, both of N.J., and Frank George Maros, Media, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 19, 1975, Ser. No. 550,988
Int. Cl.² B26F *3/12*
U.S. Cl. 83—16 **5 Claims**



1. A method of dispensing a microfoam sheet of predetermined size including the steps of:

a. positioning the leading edge of a web of microfoam in operative relationship with a web moving means in the form of nip rolls;

b. moving the web by means of the nip rolls between upper and lower members,

the upper member having means defining first and second plates having an aperture therebetween adapted to receive a web cutting means, the first plate having means defining a web holding surface and the second plate having means defining a web clamping surface,

the lower member having means defining first and second plates having an aperture therebetween adapted to receive such web cutting means, the first plate having means defining a web holding surface and a web first guiding surface and the second plate having means defining a web clamping and first guiding surface, which first guiding surfaces of the first and second plates of the lower member are disposed at an angle to the holding and clamping surfaces of the first and second plates of the upper member as the web is moved between the upper and lower members, such angle extending outwardly in the direction of web travel, and the web cutting means being positioned out of contact with the web in an inoperative position as such web is moved between the upper and lower members;

c. moving the web a predetermined length past the web cutting means with the leading edge extending at least beyond the outer edge of the second plates of the upper and lower members;

d. moving the nip rolls out of operative relationship with the web, while simultaneously pivoting the lower member upwardly into an operative position whereby to hold the web between the holding surfaces of the first plates of the upper and lower members and to clamp the web between the clamping surfaces of the second plates of such upper and lower members;

e. cutting the web to form a microfoam sheet of predetermined size by moving the cutting means through the apertures between the plates of the upper and lower members, then returning such cutting means to its original inoperative position;

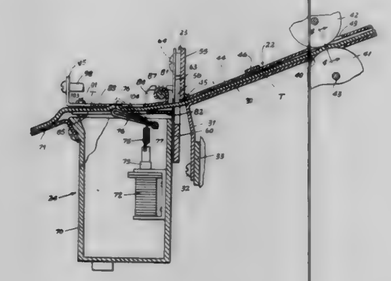
f. retaining, by friction, the cut sheet between the clamping surfaces of the second plates of the upper and lower members; and

g. pulling the cut sheet from between these second plates of such upper and lower members.

3,924,498
REPEATER TAPE MACHINE

Forrest G. Hill, East St. Louis, Ill., assignor to Marsh Stencil Machine Company, Belleville, Ill.

Filed June 14, 1973, Ser. No. 369,958
Int. Cl.² B26D *5/40*
U.S. Cl. 83—58 **13 Claims**



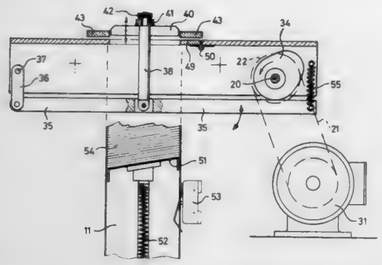
1. In a tape dispensing machine: power-operated means to deliver a strip of tape from a supply to a delivery point; and control means operated by withdrawal of the tape from the delivery point to start the power-operated means to initiate delivery of a subsequent strip of tape from the supply to the delivery point, the power-operated means being electrically operated; circuit means to control energization of the power-operated means including a starting circuit and a running circuit, the means operated by the withdrawal of tape including a first switch in the starting circuit, and a tape-actuated device that opens that switch in response to the presence of tape at the delivery point; the said switch having means to close it when the device responds to the absence of tape at the delivery point; and means operated by energization of the starting circuit to close the running circuit; with means operated by the power operated means to sever the delivered strip of tape; the tape-actuated device having associated therewith feeler means engageable with the tape when tape is present thereat, the feeler means being held by the tape in position to open the switch, electrically-operated means to hold the feeler means out of tape-engaging position when the means to deliver tape is delivering it; means operated upon delivery of the strip of tape and before severance of the tape to cause the electrically operated means to release the feeler means to engage the tape, whereby the feeler does not obstruct delivery of tape but is available to hold the tape strip upon severance.

3,924,499
MACHINE FOR CUTTING CARDS FROM CONTINUOUS STRIPS EMPLOYED IN MULTI-COPYING

Jean Theophile Fortunat Dechambre, 59, Chemin de Rouheid, Heusy; Pierre Jean Simon Lousberg, 10, Chemin de Thiniheid, Stembert, and Joseph Jean Julien Pirard, 35, Avenue du Foyer, Petit-Rechain, all of Belgium

Filed June 14, 1974, Ser. No. 479,589
Claims priority, application Belgium, June 15, 1973, 132328
Int. Cl.² B26D *5/22*
U.S. Cl. 83—96 **10 Claims**

1. A machine for cutting cards from a continuous strip employed in multi-copying by a punching operation comprising a machine frame, a punching mechanism supported by said frame, means for serially advancing a pack of cards to a location for punching in the order of presentation, and means for collecting cards which have been cut out by said punching mechanism, said punching mechanism including a plurality of

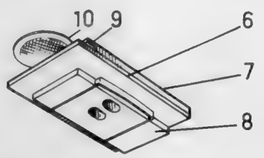


rods which are vertically slidable in said machine frame, a punch, a frame provided around said punch, a transverse bar coupling said punch to said rods, springs being interposed between said frame and transverse bar to provide an even pressure around the outer periphery of a punched card when the latter has been brought into the punching position.

3,924,500
DEVICE IN A MICROTOME FOR HOLDING A GRID ON WHICH SECTIONS ARE COLLECTED

Erik Lennart Kindel, Bandhagen, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden

Filed Aug. 23, 1974, Ser. No. 499,913
Claims priority, application Sweden, Aug. 28, 1973, 7311639
Int. Cl.² B26D *7/00*
U.S. Cl. 83—167 **4 Claims**



1. Device for use in microtomes of the type wherein thin sections of material cut by a knife means are to be collected on a grid, comprising a grid holder, means for mounting the grid holder on said knife means for movement toward and away from the knife edge of said knife means in the plane within which said knife edge is contained, said grid holder being provided with a recess facing said knife edge for removably supporting a grid close to the knife edge to collect specimens cut by the knife means.

3,924,501
CUTTING APPARATUS

Morris Cohen; Evelyn V. Cohen, both of Indianapolis, Ind., and Alfred M. Rubio, Chicago, Ill., assignors to Model Builders, Inc., Chicago, Ill.

Filed May 6, 1974, Ser. No. 466,957
Int. Cl.² B26D *1/02, 4/18*
U.S. Cl. 83—404.3 **13 Claims**

1. A cutting apparatus comprising:

a frame;

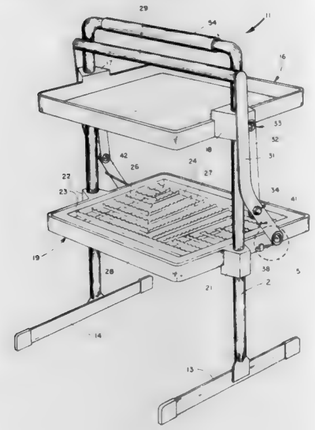
a blade assembly supported by the frame including a plurality of blades;

a pusher head slidably attached to the frame having a first position remote from the blade assembly and a second position adjacent the blade assembly, each blade of the plurality of blades having a serrated edge directed toward the pusher head;

a handle pivotally coupled to both the pusher head and the blade assembly and operable to move the pusher head between its first and second positions in response to angular movement of the handle relative to the frame;

the blade assembly including a blade frame holder rigidly attached to the frame and a first blade frame supported within the holder and including a plurality of blades;

the first blade frame including,



1. first and second originally-curved bars each including a longitudinal clearance slot and a plurality of blade thickness slots essentially perpendicular to their associated clearance slot, the bars being oriented such that the originally-concave sides are facing one another,

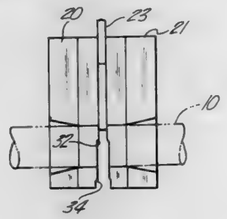
2. first and second retaining rods positioned within the clearance slot of the first and second bars respectively, each blade of the plurality of blades having a hole at each end which is engaged by one of the retaining rods within one of the bars, and

3. means for maintaining the first and second bars in an essentially straight configuration and for maintaining tension on the plurality of blades.

3,924,502
CLAMPING DIE JAW INSERT FOR TUBE CUTOFF APPARATUS

John J. Borzym, Birmingham, Mich., assignor to Alpha Industries, Inc., Detroit, Mich.

Filed Jan. 30, 1975, Ser. No. 545,759
Int. Cl.² B26D *7/04*
U.S. Cl. 83—454 **7 Claims**

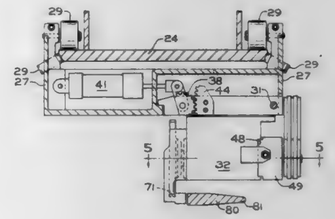


1. For use in a cutoff apparatus of the type having a pair of opposed clamping members for holding a tubular workpiece and a blade which is displaceable along a path of travel which extends through the workpiece proximate the clamping members to sever the workpiece into lengths, each of said clamping members comprising: a body of rigid material having a blade support surface which extends parallel to the path of blade travel and adapted to work in close clearance with the blade over the major portion thereof; a partial aperture intercepting the surface and in opposition to another such partial aperture in the opposite clamping member to clamp the workpiece; and a plurality of relief steps formed in said surface to provide successively greater clearances between the blade and the body as it displaces along the path of travel in the area of the aperture.

3,924,503
FABRIC CUTTING

Mathew Kuts, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed May 12, 1975, Ser. No. 576,325
Int. Cl.² B23D *19/02*; **B26D** *1/20*
U.S. Cl. 83—488 **9 Claims**



1. A bias cutting apparatus for cutting rubberized fabric comprising a support frame, a carriage mounted on said support frame for reciprocal movement, drive means connected to said carriage for reciprocating said carriage, a cutter support member pivotally secured to said carriage, a cutter means journaled on said cutter support member for rotation thereon, power means mounted on said carriage operatively connected to said cutter means for rotating said cutter means, said cutter means having a plurality of spaced linear cutting edges, a guide bar secured to the lower portion of said support frame over which fabric is moved and under which a conveyor belt travels, anvil means mounted on said cutter support member for movement therewith, said anvil means having a linear cutting edge, said cutter means having its cutting edges parallel to said linear cutting edge of said anvil means, and power operated means interconnecting said carriage and said cutter support member for pivoting said cutter support member on said carriage to move said cutter support member and anvil away from said guide bar to facilitate the movement of fabric while said cutter support member and carriage are moved back for a subsequent cutting of the fabric.

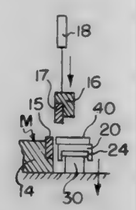
3,924,504
SHEARING APPARATUS

Albert L. Kurtz, Gates Mills, Ohio, assignor to The Hill Acme Company, Cleveland, Ohio

Filed Aug. 17, 1973, Ser. No. 389,327
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B26D *1/00*
U.S. Cl. 83—568 **1 Claim**

1. A shearing machine for shearing an associated planar workpiece with relatively low power and without attendant curling of the workpiece comprising, a stationary frame, a stationary knife mounted on said frame, a movable knife, movable knife support means mounting said movable knife for movement toward and away from said stationary knife in coacting shearing relation therewith, a workpiece outboard support anvil disposed adjacent said stationary knife and directly below said movable knife in opposition thereto, and

leaf-spring type anvil mounting means on said frame for yieldably supporting said anvil, said mounting means effecting a constant even equal yield resistance for the anvil as an associated workpiece is sheared thereon by said movable knife in coaction with the stationary knife, said anvil mounting means including an elongated base mounted on said frame, said base



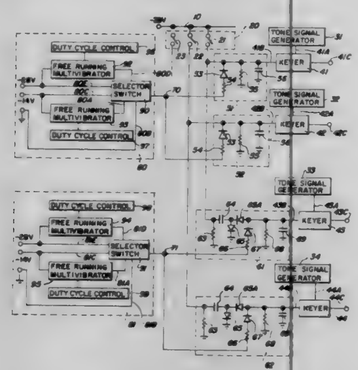
having spaced raised ridges on its upper surface, and an elongated leaf-spring supported at its ends on said ridges respectively, said anvil being disposed on said spring intermediate its ends and providing two-dimensional yield of the anvil thereby effecting a progressively diminishing rake angle as the workpiece is sheared and providing a constant yield resistance.

3,924,505

ELECTRONIC KEYING CIRCUIT WITH SELECTABLE SUSTAIN CHARACTERISTICS

Ray B. Schrecongost, Park Ridge, Ill., assignor to Hammond Corporation, Chicago, Ill.

Filed Nov. 14, 1973, Ser. No. 415,774
Int. Cl.² G10H *1/00, 3/00, 1/02*
U.S. Cl. 84—1.01 **8 Claims**



4. In an electrical musical instrument, a tone signal generator and a keying circuit coupled to said generator to produce a keyed tone signal having a selectably variable decay envelope, said keying circuit comprising:

a keyer, including first and second input leads receiving a tone signal and a keying signal, respectively, operative to produce a keyed tone signal having an amplitude proportional to the magnitude of said keying signal;

a time constant circuit having a keying voltage input lead and a keying signal output lead coupled to said second input lead; and

a keying voltage circuit for selectably applying a first voltage to said keying voltage input lead of said time constant circuit;

said time constant circuit including a first resistor and a capacitor coupled to said keying voltage input lead to form a series timing circuit during a terminal portion of an operating interval of said time constant circuit with the junction of said first resistor and said capacitor coupled to said keying signal output lead, a second resistor and a diode coupled in series between said junction and a sustain control terminal, and circuit means for supplying to said sustain control terminal a selectable one of a plurality of sustain control signals comprising:

first circuit means for generating a ground reference voltage as a first sustain control signal to produce a single stage voltage decay signal having an effective time constant depending solely on the values of said capacitor and said first and second resistors;

second circuit means for generating a chopped voltage signal varying with a preselectable duty cycle between ground reference and a second voltage intermediate ground reference and said first voltage as a second sustain control signal to produce a multiple voltage decay signal with the effective time constant of each stage varying with said preselectable duty cycle;

third circuit means for generating a second voltage as a third sustain control signal to produce a multiple stage voltage decay signal having an effective time constant of each stage dependent upon the values of said capacitor, said first and second resistors and said second voltage;

fourth circuit means for generating a chopped voltage signal varying with a preselectable duty cycle between ground reference and said first voltage as a fourth sustain control signal to produce a single stage voltage decay signal having an effective time constant varying with said preselectable duty cycle;

fifth circuit means for generating said first voltage as a fifth sustain control signal to produce a single stage voltage decay signal having an effective time constant depending solely on the values of said capacitor and said first resistor; and

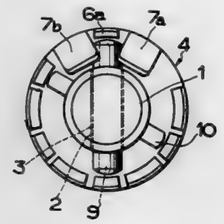
switching circuit means for selectably coupling one of said first through fifth circuit means to said sustain control terminal.

3,924,506

PIN LOCKING DEVICE

Iwao Uozumi, Tokyo, Japan, assignor to Iwatani & Co., Ltd., Osaka, Japan

Filed July 2, 1974, Ser. No. 485,234
Int. Cl.² F16B *19/00*
U.S. Cl. 85—8.1 **3 Claims**



1. In a pin fastener assembly:

a fastener pin having a transverse bore therethrough;

a lock washer embracing said pin adjacent said bore and having a diametrically extending groove thereacross aligned with said bore;

a locking pin extending through said bore and having portions complementary to said groove and lying therein to engage the same throughout a substantial area of contact; diametrically opposed tabs on the periphery of said washer, of a width no greater than the corresponding dimension of said locking pin at the ends of said groove and extending across the ends of said locking pin to hold the same in said bore; and

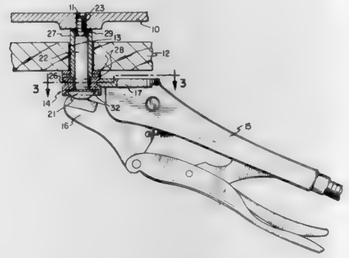
further tabs, on each side of said opposed tabs, substantially wider than said opposed tabs and being bent inwardly to engage the sides of said locking pin to retain the same in said groove.

3,924,507

FASTENER APPARATUS

Charles C. Faroni, Summit, N.J., assignor to Amerace Corporation, New York, N.Y.

Continuation of Ser. No. 341,824, March 16, 1973, abandoned. This application Feb. 1, 1974, Ser. No. 438,851
Int. Cl.² F16B *19/00, 23/00*
U.S. Cl. 85—9 R **17 Claims**



1. Fastener apparatus comprising:

a. a bolt having a head and a shank, at least a portion of said shank being threaded and said head having a smooth non-wrenchable surface; and

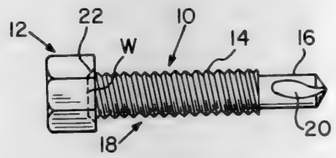
b. a cup washer adapted to be rotatably mounted on the shank of said bolt and having side walls which partially enclose the head of said bolt when said cup washer is positioned adjacent said head, said side walls having bearing surfaces thereon for receiving force externally applied in a direction parallel to the longitudinal axis of said bolt when the cup washer is so mounted, whereby an externally applied compressive force can be releasably applied to the exposed portion of the head of the bolt and said bearing surfaces of the cup washer to hold said head and cup washer together so that a torquing force can thereupon be applied to said cup washer to rotate the bolt.

3,924,508

COMPOSITE DRILL SCREW

Charles J. DeCaro, Brighton Township, Beaver County, Pa., assignor to Textron, Inc., Providence, R.I.

Filed Sept. 27, 1974, Ser. No. 510,115
Int. Cl.² F16B *23/00, 25/00*
U.S. Cl. 85—41 **4 Claims**



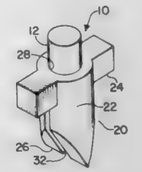
1. An inertia welded composite screw comprising a threaded shank section of a first material terminating in an entry end and a head section of a second material different from the first material, said head section having a recess along a surface thereof, said recess having a greater cross section than the shank cross section, said shank section positioned within the recess and joined to the head section through an inertia weld zone substantially within said recess.

3,924,509

SELF-PIERCING BLIND FASTENER

John Bert Alexander, Hoffman Estates, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Apr. 8, 1974, Ser. No. 458,636
Int. Cl.² F16B *13/06*
U.S. Cl. 85—68 **15 Claims**



1. A self-piercing rivet fastener comprising a rivet body and a drive pin, the rivet body including a shank with an entering end and a trailing end, the entering end including a tapered point, stop surface means extending laterally of the shank at the trailing end thereof, a recess extending axially of the shank from the trailing end and terminating short of the extremity of the entering end, the drive pin and recess including cooperating abutment and wedging surfaces for successively driving and expanding the rivet body as a result of a single driving blow to the drive pin, slot means on the entering end of the shank weakening the shank in a first longitudinal plane extending through the axis of the shank to permit the entering end to expand laterally from the first plane after the entering end extremity has penetrated the workpiece, the trailing portion having a maximum and minimum dimension laterally of the axis of the shank, the maximum dimension incorporated in the stop surface means and being greater than a maximum transverse dimension of the shank, the minimum dimension of the trailing portion extending in a second plane in perpendicular relationship to the first plane, the minimum dimension of the trailing portion being substantially equal to the transverse dimension of the remaining portion of the shank lying in said second plane so that the shank may be supported along substantially its entire length within a driving chamber of an associated fastener driving tool, the drive pin adapted to drive the rivet body through the workpiece and to expand the entering end after the penetration of the entering end through the workpiece.

3,924,510

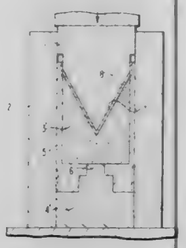
PROCESS FOR THE PRODUCTION OF EXPLOSIVE DEVICES SURROUNDED BY A CASE

Manfred Strunk, Neuenrade; Heinz Kroschel, Troisdorf-Sieglar, and Alfred Voss, Cologne, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

Filed Aug. 9, 1973, Ser. No. 387,039
Claims priority, application Germany, Aug. 10, 1972, 2239281
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C06B *21/02*
U.S. Cl. 86—1 R **14 Claims**

1. Process for the production of explosive devices surrounded by a case comprising the steps of placing an explosive charge in a matrix mold, moving a pressing tool in a first direction within the mold to apply a force to the explosive charge to compress the charge and form an explosive device of a predetermined shape with mutually opposite end portions, the pressing tool during the movement thereof applying the force to one of the mutually opposite end portions, placing the explosive device within a case having an open end such that the other mutually opposite end portion of the explosive device is arranged proximate thereto, and moving a pressing tool to apply a force to the other mutually opposite end por-

tion of the explosive body within the case such that in the two pressing operations, a pressing tool is effective on the mutually

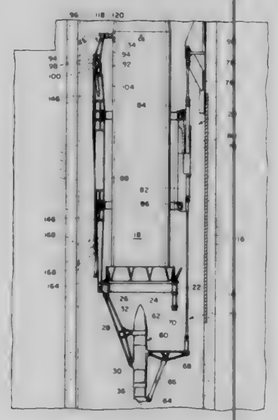


opposite end portions of the explosive device to provide the explosive device with a uniform density.

3,924,511
MISSILE SUPPORT SYSTEM

Giles A. Kendall, Burbank; Harish K. Bhutani, Downey, and Robert Minick, Glendale, all of Calif., assignors to Menasco Manufacturing Company, Burbank, Calif.

Continuation of Ser. No. 224,874, Feb. 9, 1972, abandoned. This application Dec. 21, 1973, Ser. No. 427,073
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.8 **24 Claims**



1. A missile support system to protect a missile located in an underground silo against shock damage wherein said system includes:

base support means to support the base of said missile;

cage means to surround a portion of said missile, said cage means fixedly connected to said base support means but substantially spaced thereabove;

lateral support means connected to said cage means, said lateral support means directly contacting the wall of said missile;

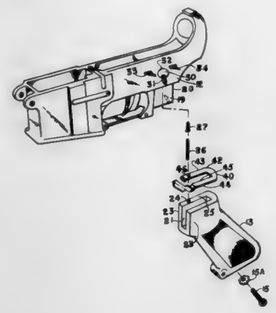
said base support means being secured to the wall of the silo by an attachment means, said attachment means including at least three cables equiangularly spaced about said missile, said attachment means to support said missile centrally located and spaced from the silo wall;

said cage means including openings, guide rod means movably mounted in said openings with the direction of the guide rod movement being substantially parallel to the longitudinal axis of the missile, said guide rod means connected to said cables.

3,924,512
REMOVABLE LOCKPLATE TO PRECLUDE SELECTION OF AUTOMATIC FIRING

Charles R. Fagg, Sherrarde, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 7, 1974, Ser. No. 467,770
Int. Cl.² F41C *17/08*
U.S. Cl. 89—128 **4 Claims**



1. In a weapon having automatic and semi-automatic selective firing selector lever journalled in a lower receiver of said weapon for rotational movement about a transversely extending axis in said lower receiver, said selector lever having a handle portion and a pointer portion, with both said handle and pointer portions pivotally movable over a sidewall of said lower receiver, said pointer portion having the normal capacity of being selectively directed toward indicia means on said lower receiver sidewall representing safe, semi-automatic and automatic firing conditions of the weapon, and a pistol grip secured to said lower receiver,

a removable lock plate mounted intermediate said pistol grip and said lower receiver, said lock plate having an upstanding lug portion extending adjacent said lower receiver sidewall and in the path of said selector lever handle portion to preclude movement of said pointer portion to its automatic firing position,

so constructed and arranged that automatic capability of the weapon is temporarily eliminated for use in civil disturbance operations.

3,924,513
CONTROL MEANS FOR A FLUID-POWERED DEVICE

Jack B. Ottestad, La Jolla, Calif., assignor to Impulse Products Corporation, San Diego, Calif.

Division of Ser. No. 279,694, Aug. 10, 1972, Pat. No. 3,822,633. This application Mar. 1, 1974, Ser. No. 447,083
Int. Cl.² F01B *11/00;* **F01L** *15/16*
U.S. Cl. 91—224 **4 Claims**

1. Control means for a cyclically operated fluid-powered device such as an impact ram or the like wherein the device has a working plunger, and a housing supporting the plunger for movement, said housing having a surface cooperating with a surface of said plunger to define a triggering chamber therebetween, and means for admitting pressured fluid into said housing including means for supplying admitted fluid to a portion of said plunger to hold said plunger against movement and means for venting fluid from said housing; comprising:

means within said housing defining a charging chamber for receiving pressured fluid and for being charged to a predetermined level with said pressured fluid; valving means operative to hold said triggering chamber open to venting via said venting means, until said predetermined level is reached, and operative, when said predetermined level is reached, to close off said triggering chamber venting and to direct pressured fluid from said charging chamber into said triggering chamber to cause movement of said plunger; wherein

said valving means includes a wall member movably disposed within said housing, in slidable and sealing engagement with the plunger; and

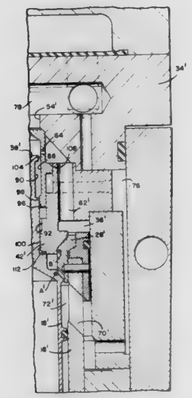
means for resiliently and normally constraining said wall member in a given direction relative to said charging chamber; wherein

said venting means comprises a fluid-conductive passageway open to venting at one end thereof, and opening into said triggering chamber at another end thereof;

said valving means further includes closure means movably disposed within said passageway to allow venting of said triggering chamber and for closing off triggering chamber venting;

said closure means and said wall member each having pressured-fluid-impingement reaction surfaces;

said wall member reaction surfaces being disposed to receive housing-admitting pressured fluid thereupon to



effect a movement of said wall member in a direction other than said given direction; and

said wall member has probe means cooperative with said closure means and said housing to define a conduit for conducting pressured fluid from said charging chamber to both said reaction surface of said closure means and to said triggering chamber, only upon said wall member having moved a predetermined distance in said other direction commensurate with said charging chamber reaching its predetermined level, to cause said closure means to close off said passageway to halt venting of said triggering chamber, wherein

said wall member comprises a piston;

said probe means comprises an elongated probe, extending from and movable with said piston;

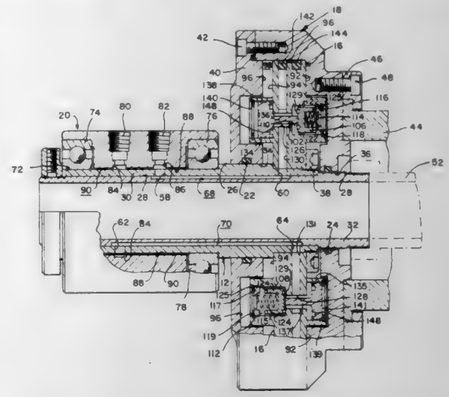
said housing has a bored-through seal base element fixed interpositionally between said charging member and said triggering chamber, and

said closure means has at least one triggering port formed therein communicating at one end thereof with said closure means reaction surface and in communication at the other end thereof with said triggering chamber.

3,924,514
APPARATUS FOR ACTUATING A WORK GRIPPING DEVICE

Hubert J. Parsons, Horseheads, and Anders Adolf Peterson, Elmira, both of N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Aug. 3, 1973, Ser. No. 385,549
Int. Cl.² F15B *11/08, 13/042*
U.S. Cl. 91—420 **9 Claims**



1. A device for actuating a work gripping collet comprising:

a. a cylinder adapted to be mounted to a machine tool spindle,

b. a tubular through hole collet drawing member being mounted within said cylinder for axial movement relative thereto,

c. annular piston means slideably received in said cylinder and including means for axially moving said member relative to said cylinder,

d. said drawing member passing through said piston means,

e. said piston means having a first pressure face cooperating with one end of said cylinder to form a first expansible chamber and having a second pressure face cooperating with the other end of said cylinder to form a second expansible chamber,

f. said piston means including first valve means for admitting fluid under pressure to said first chamber, said first valve means being entirely supported by said piston means and movable therewith,

g. said first valve means extending through said piston and forming a portion of said first and second pressure faces,

h. said piston means including second valve means for admitting fluid under pressure to said second chamber, said second valve means being entirely supported by said piston means and movable therewith,

i. said second valve means extending through said piston and forming a portion of said first and second pressure faces,

j. said first valve means including means for venting said first chamber when fluid under pressure is admitted to said second chamber and said second valve means including means for venting said second chamber when fluid under pressure is admitted to said first chamber,

k. means for alternatively connecting a source of fluid under pressure to said first and second chambers through said first and second valve means, respectively,

l. said first valve means including means for trapping fluid in said first chamber when the pressure of the source of fluid under pressure is reduced while said first chamber is connected to the source of fluid under pressure,

m. said piston means, cylinder and drawing member being mounted for unitary rotation,

n. said first and second valve means being mounted in said piston means radially outward of the axis of rotation of said piston means, cylinder and drawing member for

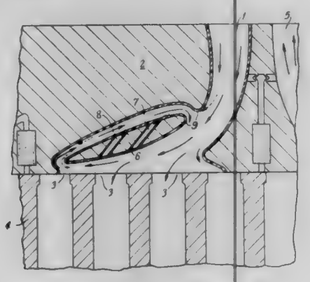
movement relative thereto in a direction parallel to said axis of rotation, and

o. each of said first and second valve means including a pressure responsive valve piston having a face thereof forming said pressure face portion.

3,924,515
PORTING ARRANGEMENTS OF AXIAL PISTON PUMPS AND MOTORS

Robert Cecil Clerk, Edison House, Fullerton Road, Glenrothes, Fife, Scotland

Filed June 15, 1973, Ser. No. 370,374
Int. Cl.² F01B *13/04*
U.S. Cl. 91—472 **7 Claims**



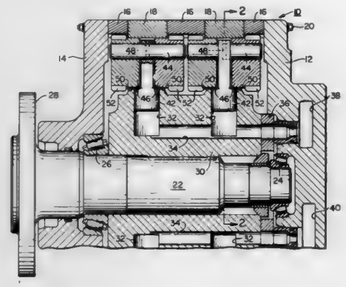
1. In an axial piston pump/motor including reciprocating pistons carried by a rotating cylinder block, a stationary port-face including inlet and outlet ports, each of said inlet and outlet ports having a leading edge and a trailing edge with respect to the direction of rotation of said rotating cylinder block, and a pair of port galleries communicating with said inlet ports and said outlet ports, respectively, whereby fluid entering said port gallery associated with said inlet port flows into said cylinder block as it passes said port-face during rotation, said galleries constructed in a manner such that fluid is directed from said leading edge of said inlet port towards said trailing edge of said inlet port, the improvement which comprises hydrofoil means mounted within said port galleries, so that during increased rotation of said cylinder block a portion of said fluid passing said trailing edge of said inlet port is recirculated around said hydrofoil means towards said leading edge of said inlet port, said hydrofoil means being mounted within said port galleries so that first and second recirculation paths are formed therein, said first recirculation paths being disposed between said hydrofoil means and said rotating cylinder block, and said second recirculation path being disposed between said hydrofoil means and the surface of said port galleries.

3,924,516
HYDRAULIC PUMP OR MOTOR

Roger John Nelson, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed July 6, 1972, Ser. No. 269,444
Int. Cl.² F01B *13/06*
U.S. Cl. 91—491 **10 Claims**

3. A radial piston hydraulic pump or motor comprising: a housing having an internal track means formed on an inner wall thereof; a shaft journaled in the housing coaxial with the track means and projecting from one end of the housing; a cylinder barrel mounted on and keyed to the shaft and having a plurality of generally radially extending and outwardly open cylinders with pistons reciprocally mounted therein and projecting from the open ends thereof; valving means in the housing operatively associated with the cylinder barrel to alternately interconnect each of the cylinders with first and second ports provided in the housing; and roller means journaled on the projecting end of each piston for rotation about an axis eccentric to its central axis; each of the roller means drivingly engaging the track means; whereby upon relative rotation between the shaft and housing, the roller means will move along the track means and cause the pistons to reciprocate or, upon supplying a fluid under pressure to one of the

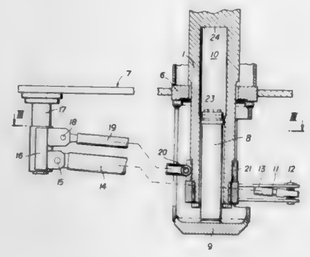


ports in the housing, the reciprocation of the pistons will cause rotation of the roller means which in turn causes relative rotation between the shaft and housing.

3,924,517
DEVICE FOR LIFTING AND PIVOTING A METALLURGICAL VESSEL

Jiri Stulik, Leonding, and Alois Scheinecker, Linz, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Mar. 19, 1974, Ser. No. 452,637
Claims priority, application Austria, Apr. 27, 1973, 3755/73
Int. Cl.² F01B *21/00*
U.S. Cl. 92—2 **2 Claims**



1. A device for lifting and pivoting a metallurgical vessel, in particular a tundish arranged above a mold in a continuous casting plant, said device comprising:

a hollow vertical column secured to the metallurgical vessel;

means for lifting and lowering said vertical column;

a stationary member;

a first lever with one end rigidly secured to said vertical column;

a second lever with one end pivotally fixed to said stationary member;

a swivel drive for rotating said vertical column about its axis, said swivel drive comprising a cylinder and a piston actuated by a pressure medium, one end of said swivel drive being hingeably connected to the other end of said first lever and the other end of said swivel drive being hingeably connected to the other end of said second lever;

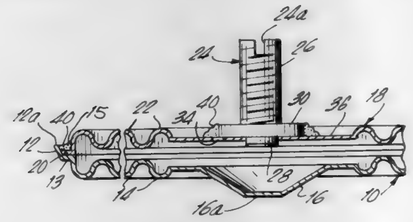
a follower rotatably secured about said vertical column; and

a guide rod with one end hingeably connected to said second lever and the other end pivotally secured to said follower.

3,924,518
BAROMETER CAPSULE

Heinz Eberhard, Kinnelon, and Anton Menzer, Teaneck, both of N.J., assignors to Springfield Instrument Company, Inc., Hackensack, N.J.

Division of Ser. No. 266,622, June 27, 1972, Pat. No. 3,805,368, which is a continuation-in-part of Ser. No. 58,343, July 27, 1970, abandoned. This application Feb. 11, 1974, Ser. No. 441,412
Int. Cl.² F01B *19/02;* **F16J** *3/04*
U.S. Cl. 92—34 **7 Claims**



1. A capsule for use in a pressure-responsive instrument comprising a first capsule member having a central motion-transmitting nipple integral therewith and a first marginal flange, a second capsule member having a central stud-receiving hole and a second marginal flange, a combined mounting and calibrating stud including a projection extending into said stud-receiving hole, means for attaching said stud to said second capsule member and for establishing a vacuum-tight interconnection therebetween, said first and second marginal flanges being constructed and arranged relative to each other to orient said stud substantially perpendicular to and axially aligned with said motion-transmitting nipple, said marginal flanges further being constructed and arranged to define an outwardly upwardly opening annular trough which is adapted to receive a sealant for providing a circumferential vacuum-tight connection between said first and second capsule members and a low viscosity adhesive sealant in said trough providing said vacuum-tight connection.

3,924,519
ACTUATOR

John S. England, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 21, 1968, Ser. No. 754,225
Int. Cl. F01b *19/00;* **F16j** *3/00*
U.S. Cl. 92—92 **11 Claims**



1. An actuating device comprising: an elongated elastic tube having an opening extending longitudinally therein with one end closed and adapted to have fluid under pressure introduced therein, the said tube being formed of elastomeric material with at least one tension layer having a plurality of longitudinally extending substantially inextensible weftless reinforcing cords embedded therein and with the said layer extending transversely of the tube less than one-half of the transverse periphery thereof to provide a region having lesser longitudinal extensibility than the remainder of the periphery so that the tube is caused to assume an arcuate configuration about an axis at substantially right angles to its length upon introduction of a pressurized fluid into said opening.

3,924,520
PREPARING LITHOGRAPHIC PLATES UTILIZING VINYL MONOMERS CONTAINING HYDROLYZABLE SILANE GROUPS

Harold Boardman, Chadds Ford, Pa.; David S. Breslow, Wilmington, Del.; David A. Simpson, Wilmington, Del., and Richard L. Wagner, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

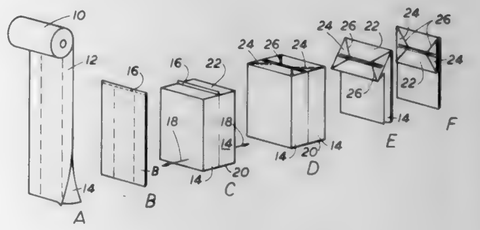
Filed June 27, 1974, Ser. No. 483,844
Int. Cl.² G03F *7/02*
U.S. Cl. 96—33 **8 Claims**

1. The process of making a photographic image which comprises providing the surface of a polymer film with a photooxygenation sensitizer, said film being a film of a polymer containing extralinear olefinic unsaturation of the type in which there is no more than one hydrogen atom on each of the double bond carbons and in which there is at least one allylic hydrogen on at least one of the carbons adjacent to the double bond carbons, which allylic hydrogen is not on a bridgehead carbon, exposing selected areas of the sensitized film to light having a wave length of from about 2000 to about 12,000 angstroms in the presence of oxygen, subjecting the exposed film to contact with a vinyl monomer containing a hydrolyzable silane group to effect graft polymerization of the vinyl silane monomer onto light-exposed areas of the polymer film, removing ungrafted vinyl silane monomer from unexposed areas of the polymer film, hydrolyzing the silane groups of the vinyl silane monomers grafted to the polymer film, and amplifying the hydrophilicity of the hydrolyzed silane groups by treating with at least one amplifying agent selected from soluble silicate solutions and colloidal silica dispersions.

3,924,521
METHOD FOR FORMING FLAT BOTTOM PLASTIC BAGS

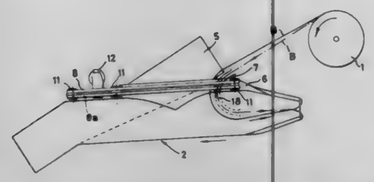
Violet M. Hanson, Old Bethpage, and John E. Finn, Plainview, both of N.Y., assignors to Violet M. Hanson, Old Bethpage, N.Y.

Filed May 22, 1974, Ser. No. 472,167
Int. Cl.² B31B *33/00*
U.S. Cl. 93—35 SB **10 Claims**



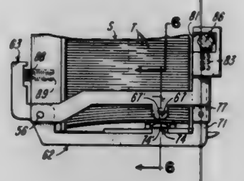
1. A method of making a reinforced flat bottomed bag comprising the steps of providing a sleeve having opposed faces and sides gusseted inwardly between the opposed faces, closing one end of said sleeve with a seam to seal the opposed faces together with the gusseted sides therebetween, thereafter pulling said opposed faces apart to open said sleeve, inserting a form within the other end of said sleeve and pressing the form against the closed end to flatten the whole of the gusseted sides against the faces forming flaps having folds lying in overlapping relationship with the opposed faces, and securing preselected portions of said flaps and said overlapping sides and faces to form a flat bottom.

3,924,522
COMMODITY PACKAGING
Keith Fraser Martin, Near Whalley, England, assignor to F. B. Mercer Limited, England
Filed Nov. 12, 1974, Ser. No. 523,074
Claims priority, application United Kingdom, June 3, 1974, 24425/74
Int. Cl.² B31B 33/02
U.S. Cl. 93—84 TW 6 Claims



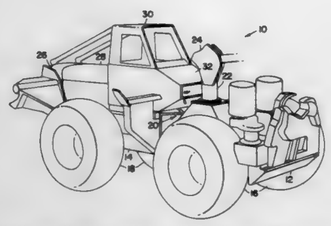
5. Apparatus for commodity packaging comprising an elongate mandrel including an upstream end, a downstream end, a hollow feed portion, a product opening in the surface of said hollow feed portion, a further aperture in the surface of said hollow feed portion, drive means for passing tubular flexible packaging material into the interior of said hollow feed portion through said further aperture, for passing the material through the mandrel interior towards said upstream end, for opening the material up at said upstream end and passing the material back axially along the outer surface of the mandrel towards the downstream end with the material enclosing the mandrel, slitting means for continuously axially slitting the material as it passes over the mandrel, guide means extending along the mandrel to take the severed edges of the material defining the slit in charge and guide the severed edges past the product opening and said further aperture and into sealing juxtaposition downstream of said opening, and sealing means downstream of said opening for sealing the juxtaposed edges so that the material reverts to a continuous tube with an axial seal.

3,924,523
PINNING MACHINE AND METHOD
Charles B. Bussard, Kettering; Paul H. Hamisch, Sr., Dayton, and David R. Wisecup, Xenia, all of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio
Filed Dec. 19, 1974, Ser. No. 534,323
Int. Cl.² B27F 7/06
U.S. Cl. 93—87 15 Claims



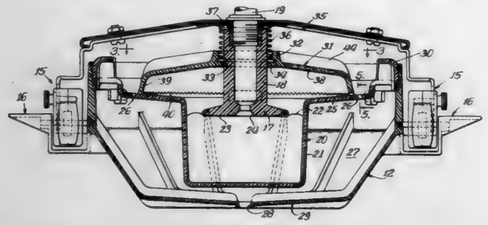
1. Method of pinning tags to merchandise, which method is practiced in a pinning machine having an anvil and a cooperable plunger, a hopper for receiving a stack of tags, means for feeding one tag at a time to a pinning zone between the anvil and the plunger, means for driving a pin through the tag and the merchandise at the pinning zone, comprising the steps of: sensing the position of the leading marginal end of the bottom tag in the stack, positioning a gate opening at the out feed end of the hopper in alignment with the leading end of the bottom tag in accordance with the tag position sensed by the sensing means, feeding the bottom tag through the gate opening to the pinning zone and driving a pin through the tag and merchandise between the die and the anvil to pin the tag to the merchandise.

3,924,524
CAB CONFIGURATION FOR STRATEGICALLY HOUSING AN ENVIRONMENTAL CONTROL UNIT ON AN ARTICULATED VEHICLE
Edwin Lee Whisler, Peosta, Iowa, assignor to Deere & Company, Moline, Ill.
Filed July 19, 1974, Ser. No. 490,139
Int. Cl.² B60H 3/00
U.S. Cl. 98—2.11 1 Claim



1. In an articulated vehicle of the type including first and second frame sections pivotally interconnected by a vertical hinge structure, a boom support structure mounted on the first frame for rotation about a vertical axis located adjacent the hinge structure and including an elevated portion offset laterally from the vertical axis and located to trace an arcuate path extending directly above said hinge structure, and a cab mounted on the second frame section adjacent the hinge structure, the improvement comprising: said cab including a lower housing portion extending directly above said hinge structure at a level below said arcuate path and having at least a portion thereof located directly below a portion of said elevated portion of the boom support when the portion of the elevated portion is located directly above said hinge structure and cab environment control elements being located in said lower housing portion.

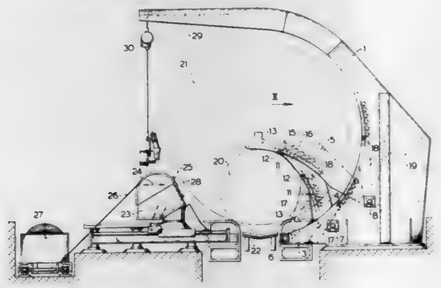
3,924,525
BEVERAGE CHAMBER FILTER
Charles J. Vitous, Berwyn, Ill., assignor to Cory Food Services, Inc., Chicago, Ill.
Filed May 10, 1973, Ser. No. 359,187
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² A47J 31/00
U.S. Cl. 99—303 20 Claims



1. In a brewer for brewing a beverage from a charge of particulate brewing ingredients, means defining a brewing chamber for holding the brewing ingredient charge and having an outlet opening for delivering brewed beverage from the chamber, and means for introducing brewing liquid to said chamber for acting on a charge therein,

means for controlling flow of the brewed beverage outwardly through said outlet opening comprising an impermeable wall element extending across said outlet opening and having a peripheral edge portion engaging said brewing chamber means about said outlet opening and defining therewith a plurality of small flow passages having a size preselected for passing the brewed beverage outwardly therethrough while effectively preventing passage of particulate charge material therethrough.

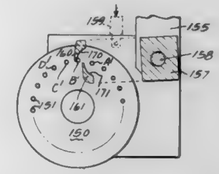
3,924,526
DEVICE FOR APPLYING STRAPPING MATERIAL TO ROUND PACKAGES OR THE LIKE
Gerd Bühne, Schwelm, Germany, assignor to Titan Verpackungssysteme GmbH, Schwelm, Germany
Division of Ser. No. 335,828, Feb. 26, 1973, Pat. No. 3,867,878. This application Apr. 30, 1974, Ser. No. 465,542
Claims priority, application Germany, Feb. 26, 1972, 2209120
Int. Cl.² B65B 13/04
U.S. Cl. 100—25 5 Claims



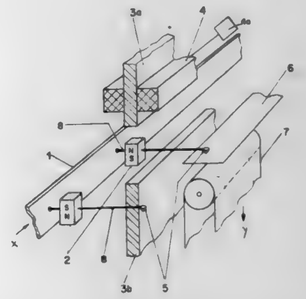
1. A device for strapping round packages of various diameters, which includes: a stand, a plurality of segments respectively supported by and pivotally connected to said stand so that each two adjacent segments have portions thereof boxed into each other, fluid operable cylinder piston means interposed between and operatively connected to said stand and one of said segments for pivoting said segments relative to each other, guiding means including strip means and guiding roller means journalled on said segments so that the first roller means on one segment cooperate with the strip means on the respective adjacent segment so as to guide the same into a position partially closely embracing the package to be strapped, stationarily journalled first magnetic roller means respectively arranged on said segments, and second magnetic roller means displaceably mounted on at least some of said segments and variable as to their positions by said segments during a pivot movement of said segments relative to each other, said first and second magnetic roller means being operable to guide the strap to be applied to a package around the same.

3,924,527
IMPRINTING DEVICE WITH INDEXER
James L. Shenoha, Lockport, and Bud Sheth, Downers Grove, both of Ill., assignors to Norwood Marking & Equipment Co., Inc., Downers Grove, Ill.
Filed Dec. 7, 1973, Ser. No. 422,654
Int. Cl.² B41L 45/00; B41J 4/34
U.S. Cl. 101—88 2 Claims

1. A marking device for imprinting selected indicia on a surface to be imprinted comprising in combination: a marking device including a marking means and means for indexing said marking means, the marking means comprising a plurality of spaced apart face means for imprinting different indicia, the means for indexing comprising a rotatable member associated with the face means for moving the face means, one at a time, by rotation of the rotatable member, into position for imprinting, a plurality of projections associated with the rotatable member, a reciprocatable member having at least two spaced apart cam surfaces attached thereto, a first cam surface engaging one of said projections, engagement of said one projection moving the said one projection in one direction, said one projection being connected to said rotatable member, movement of the said one projection in the one direction imparting rotating movement to the rotatable member in a first direction, a second cam surface engaging either said one projection or an adjacent projection, engagement of the said one projection or an adjacent projection by the second cam surface moving the said one projection or an adjacent projection in the one direction, said projection engaged by said second cam surface connected to the rotatable member, movement of the projection engaged by the said second cam surface in the one direction imparting a rotating movement to the rotatable member in the first direction, engagement of the first cam surface with the said one projection being in dependent relation to movement of the reciprocating member in a first reciprocating direction, engagement of the second cam surface with the projection engaged thereby being in dependent relation to movement of the reciprocatable member in a second reciprocating direction, opposite the first reciprocating direction, only one of said cam surfaces engaging a projection at a time, power means for moving the reciprocatable member in the first and second reciprocating directions, the reciprocatable member being a pivotable member having a pivot point spaced radially of the rotatable member with a face portion positioned axially of the rotatable member spaced from an axial end face of the rotatable member, the cam surfaces being side walls of cam members projecting from the pivotable member, the cam surfaces extending axially of the rotatable member and the projections extending axially of the rotatable member from an axial end face thereof.



3,924,528
PRINTER
Ludwig Ludin, Anglikon, Switzerland, assignor to Camille Bauer Messinstrumente AG, Wohlen, Switzerland
Filed Oct. 3, 1973, Ser. No. 403,329
Claims priority, application Germany, Oct. 6, 1972, 2249125
Int. Cl.² B41J 9/04
U.S. Cl. 101—93.15 12 Claims



1. A printer comprising a plurality of deflectable printing components and a recording means, each of said components

being attached to a movable transport means adapted to sequentially carry said printing components in a path extending along a line with respect to said recording means, a permanent magnet attached to each of said components to move conjointly therewith and an electromagnet fixed in spaced relationship to the line of movement of said permanent magnets, said permanent magnets being adjacent said recording means, said permanent magnets having their polarity varying alternately from component to component, and means for selectively exciting said electromagnet with a given polarity to produce a force field on at least one permanent magnet to thereby cause deflection of selected printing components in the direction of said recording means to cause said print component to print thereon.

3,924,529
TORSION BAR FLOATING SQUEEGEE MOUNT FOR SCREEN PRINTER

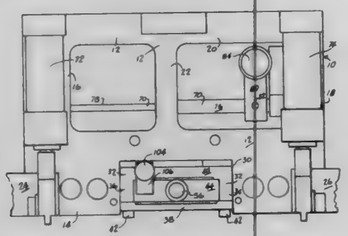
Russell W. Atkinson, Flemington, N.J., assignor to Affiliated Manufacturers Inc., North Branch, N.J.

Continuation-in-part of Ser. No. 188,946, Oct. 13, 1971, abandoned. This application Oct. 15, 1973, Ser. No. 406,357

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B41F *15/42*

U.S. Cl. 101—123 **9 Claims**



1. A squeegee head for horizontal movement over a horizontal printing screen covering a substrate to move a squeegee, in engagement with said screen over said screen to perform a screen printing operation comprising:

a frame;

a squeegee support connected with said frame and vertically slidable with respect to said frame;

a squeegee below, and connected with, said squeegee support;

an elongated torsion bar connected with said frame;

a link fixedly secured at one end to said torsion bar and connected at its other end with said squeegee support;

first rotating means to rotate said torsion bar;

said first rotating means spaced from said link along the longitudinal axis of said torsion bar and connected with said torsion bar so that when said first rotating means is actuated said torsion bar rotates to pivot said link about the axis of said torsion bar so that said other end of said link moves downward to move said squeegee support and said squeegee downward, said torsion bar at the portion thereof extending between said link and said first rotating means being of a cross-sectional area small enough to permit considerable torsional angular deflection in said torsion bar between a cross-sectional plane of said torsion bar adjacent to said rotating means and a cross sectional plane of said torsion bar adjacent to said link when said other end of said link is acted on by an upward force of a value typical of the force between said squeegee and said screen during a printing operation whereby, said squeegee and squeegee support can resiliently, and with substantially uniform pressure follow any irregulaities in said substrate, and;

torque regulating means connected with one of said link and said means to rotate said torsion bar to change the angularity of a cross sectional plane of said torsion bar adjacent to said regulating means;

whereby said first rotating means can rotate said torsion bar to lower said squeegee to a height where it will engage said printing screen during said printing operation and said torque regulating means can be actuated to control the torsional angular deflection in said torsion bar between said first means to rotate said torsion bar and said link and thereby control said substantially uniform pressure when said squeegee is at said height.

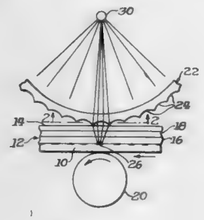
3,924,530
RESOLUTION THERMAL SPIRIT MASTERS APPARATUS

Joseph Gaynor, Arcadia, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 130,722, April 2, 1971, abandoned. This application July 23, 1973, Ser. No. 381,842

Int. Cl. B41l *19/00*

U.S. Cl. 101—141 **5 Claims**



1. Apparatus for thermally transferring a copy of an original image comprising:

a source of radiant energy;

a cylindrical drum transparent to said radiant energy surrounding said radiation source and having a plurality of lenticular lenses perimetrically disposed thereon; and

means spaced from said drum for applying pressure to an assemblage of an original sheet, a thermal transfer sheet, and an image receiving sheet disposed between said drum and said means;

said lenticular lenses having a focal length such that when they directly overlie said pressure applying means and contact said assemblage said energy is focused between said lens and pressure applying means and at the original image on said original sheet.

3,924,531
SPRAY DAMPENER FOR ROTARY PRESS

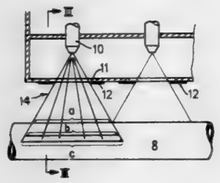
Friedrich Klingler, Kissing, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg A.G., Augsburg, Germany

Filed Nov. 29, 1973, Ser. No. 420,249

Claims priority, application Germany, Nov. 29, 1972, 2258321

Int. Cl.² B41L *25/06*

U.S. Cl. 101—147 **15 Claims**



1. In a rotary printing press, a foutain system for uniformly applying wetting liquid to the printing plates comprising means directing wetting liquid on a roller of the printing press, including

a housing (**9**);

a plurality of spray means (**10**) to spray wetting liquid, located in the housing, each spray means providing a divergent stream of wetting liquid in sheet form directed towards the roller to be wetted and impinging thereon along an impingement line, the housing being formed with openings (**16**) through which the sheet of spray from the spray means may pass,

said spray means being secured in the press in axially fixed position with respect to the roller axis and movable in a plane transverse with respect to said axis to change the impingement line of the spray on the roller and hence the axial coverage of the sheet of spray on the roller from any one spray means.

8. Press according to claim **7**, further comprising adjustment slider means (**120**) secured to the diaphragm slider (121) to fine-adjust the spray pattern from the spray means (**114, 126**) passing through the diaphragm openings (**122**) in the diaphragm slider (**121**).

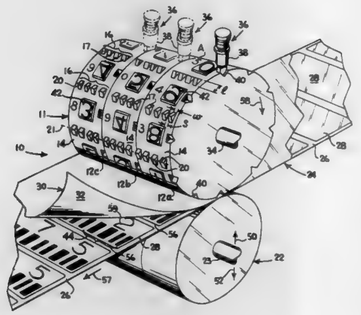
3,924,532
METHOD FOR PRINTING ON LABELS

David W. Hubbard, and William W. Coville, both of Stamford, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 373,381, June 25, 1973, abandoned. This application Apr. 26, 1974, Ser. No. 464,500

Int. Cl.² B41L *47/46*

U.S. Cl. 101—426 **2 Claims**



1. A method of preparing a label or the like that is to be marked with a machine readable bar code character; comprising the steps of

placing the label and an overlying ink ribbon between a pressure element and a printing drum having a plurality of groups of bar code scribing elements and a plurality of groups of alpha-numeric character types peripherially spaced relative to said scribing elements disposed thereon;

locating a selected group of said bar code scribing elements in scribe printing positions;

moving the said selected group of scribing elements and said pressure element toward one another and into opposed printing pressure relation with respect to said ink ribbon and label;

moving said ink ribbon and label between the said selected scribing elements and the pressure element while maintaining said printing drum stationary so as to thereby scribe machine readable code bars on said label;

continuing said movement of said ink ribbon and label for a distance corresponding to the length desired for the code bars of said code character; and

rotating said printing drum in coordination with the movement of said ink ribbon and said label to print alpha-numeric characters on said label adjacent said scribed bar codes.

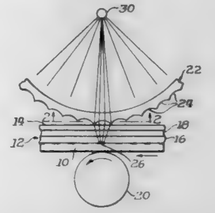
3,924,533
RESOLUTION THERMAL SPIRIT MASTERS METHOD

Joseph Gaynor, Arcadia, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Division of Ser. No. 130,722, April 2, 1971, abandoned. This application July 23, 1973, Ser. No. 381,841

Int. Cl. B41m *5/18, 5/26;* **B41c** *1/10*

U.S. Cl. 101—467 **1 Claim**



1. A method for thermally transferring an original image comprising the steps of:

forming an assemblage of an original image, a thermal transfer sheet and an image receiving sheet;

simultaneously applying pressure to said assemblage using a drum transparent to radiant energy surrounding a radiation source and having a plurality of lenticular lenses perimetrically disposed thereon, and irradiating said original image with a plurality of concentrated spaced bundles of thermal energy focused thereon from said source using said lenses, thereby lessening lateral heat transfer and providing variable optimum exposure time;

ceasing said pressure application and said irradiation; and

separating said image receiving sheet from said assemblage.

3,924,534
LIGHTWEIGHT CARTRIDGE CASE OF IMPROVED ALUMINUM ALLOY MATERIAL WHICH ELIMINATES CATASTROPHIC FAILURES

Frederick R. Gruner, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 8, 1974, Ser. No. 522,075

Int. Cl.² F42B *5/28*

U.S. Cl. 102—43 R **3 Claims**

1. A lightweight cartridge case of a high strength aluminum alloy, said alloy including Al_2O_3 dispersoid in an aluminum alloy matrix uniformly distributed throughout said alloy matrix resulting in a substantially continuous network of Al_2O_3 throughout said alloy.

3,924,535
PULSE GENERATING CIRCUIT

Dewey A. Roos, Corona; Kenneth A. Lawlor, and Erwin I. Abadie, both of Riverside, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 19, 1965, Ser. No. 473,913

Int. Cl.² F42C *15/40*

U.S. Cl. 102—70.2 R **6 Claims**

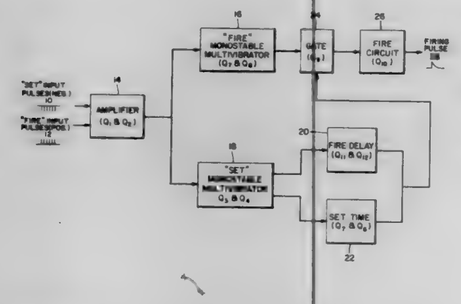
1. In a pulse generating system, the combination of:

an amplifier adapted to receive a series of negative pulses followed by a series of positive pulses, said amplifier being adapted to amplify equally pulses of both polarities;

a pair of monostable multivibrators;

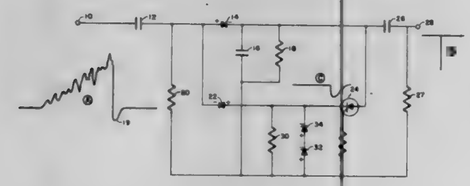
a circuit for applying the output of said amplifier to one of said multivibrators, so that said one multivibrator receives only pulses of positive polarity;

means for applying the output of said amplifier to the other of said multivibrators so that such other multivibrator receives only pulses of negative polarity and develops pulses of both polarities in response thereto;
a pair of timing circuits;
means for applying the positive pulse output of said other multivibrator to one of said timing circuits;
means for applying the negative pulse output of said other multivibrator to the remaining one of said circuits;



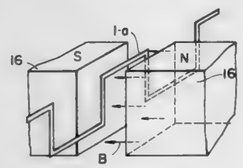
a gating network;
means for combining the respective outputs of said timing circuits and applying such combined outputs to said gating network;
means for applying the output of said one multivibrator to said gating network;
and a utilization circuit receiving the output of said gating network and energized only when said gating network is open.

3,924,536
FUZE SIGNAL CIRCUIT
John O. Dick, Riverside, and Howard M Forrester, Corona, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 15, 1965, Ser. No. 507,962
Int. Cl.[2] F42C *13/02*
U.S. Cl. 102—70.2 P **8 Claims**



1. In a fuze signal processing circuit of an infrared guided missile fuzing system, the combination comprising:
a. capacitor storage circuit means adapted to be charged by only the positive going portions of a reflected target signal having a modulated sawtooth waveform with a negative overshoot at its trailing edge,
b. switch circuit means coupled across said capacitor storage circuit means and being responsive to the negative overshoot portion of the noise modulated signal to close said switch circuit means and thereby discharge said capacitor storage circuit means to produce an output pulse.

3,924,537
ELECTROMAGNETIC RAILS FOR DRIVING TRAINS BY THYRISTOR-CONTROLLED LINEAR MOTORS
Kazumi Matsui, Tokyo; Takashi Umemori, Musashino; Kenji Matsuura; Yoshikado Hosoda, both of Osaka; Tadashige Nishikawa, Tokyo, and Makoto Tawara, Hiratsuka, all of Japan, assignors to Japanese National Railways, Tokyo; Sumitomo Electric Industries, Ltd., Osaka and Furukawa Electric Co., Ltd., Tokyo, all of, Japan
Filed July 26, 1973, Ser. No. 383,017
Claims priority, application Japan, July 27, 1972, 47-75391; Aug. 25, 1972, 47-85183; Sept. 2, 1972, 47-88113; Sept. 2, 1972, 47-88115; Sept. 2, 1975, 47-88117; Sept. 2, 1972, 47-88118; Sept. 2, 1972, 47-88119; Aug. 25, 1972, 47-99209; Aug. 25, 1972, 47-99211; Sept. 22, 1972, 47-110337; Sept. 22, 1972, 47-95336
Int. Cl.[2] B61B *13/08*
U.S. Cl. 104—148 LM **13 Claims**

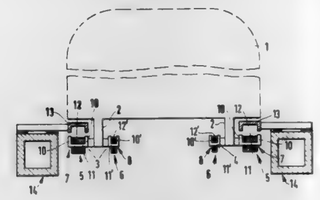


1. In an electromagnetic rail for driving a train by a thyristor-controlled linear motor including a field structure mounted on the train and an armature coil fixed relative to the ground and juxtaposed to said field structure for imparting a driving force and/or a floating force to the train through said field structure when an electric current flowing through said armature coil is commutated by the thyristor, the improvement wherein: said electromagnetic rail comprises an armature coil assembly consisting on N pairs of undulating coil arrays, the coil sides of which contributes a driving force and/or a floating force to the train and one coil array of each pair is displaced one coil pitch interval from the other coil array of said pair, said pairs are displaced at 1/N coil pitch intervals from one another, an insulator covers said coil arrays and is molded integrally with said coil arrays into a unitary plate-form body, and wherein a support supports said molded and insulated armature coil arrays in such a manner that the current loops of the currents flowing in said coil arrays are vertical to the ground.

3,924,538
ELECTROMAGNETIC-SUSPENSION VEHICLE SYSTEM
Ulrich Breitling, Munich, and Klaus Simon, Eichenau, both of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany
Filed Mar. 4, 1974, Ser. No. 447,560
Claims priority, application Germany, Apr. 17, 1973, 2319387
Int. Cl.[2] B61B *13/08*
U.S. Cl. 104—148 MS **3 Claims**

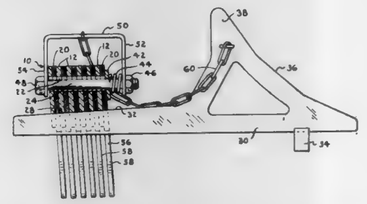
1. In a system for the electromagnetic suspension of a vehicle upon a track wherein the vehicle is provided with a pair of electromagnet arrangements on opposite sides thereof and each of the electromagnet arrangements comprises a pair of subrows of electromagnets, the track being formed with armature rails respectively cooperating with the electromagnets of said subrows and having junctions in which there is a transition of the magnetic suspension function between armature rails cooperating with subrows on a side of the vehicle, the improvement wherein one subrow of each pair of subrows forms main suspension electromagnets which may cooperate with a corresponding main armature rail, wherein the other subrow of said pair of subrows forms auxiliary suspension

electromagnets which may cooperate with a corresponding auxiliary armature rail, the main armature rails and electromagnet cores of the main suspension electromagnets being provided with a substantially common pole spacing which is different from the common pole spacing of the auxiliary armature rails and the electromagnet cores of the auxiliary suspen-



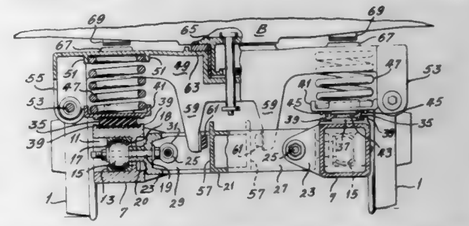
sion electromagnets, such that any magnetic effects between main suspension electromagnets and auxiliary armature rails and between auxiliary suspension electromagnets and main armature rails, respectively are of insubstantial magnitude, the main armature rails and electromagnets having a greater pole spacing than the auxiliary armature rails and electromagnets.

3,924,539
RAIL WHEEL STOP
S. Anton Wladis, 1120 N. Lake Shore Drive, Chicago, Ill. 60611
Filed Dec. 16, 1974, Ser. No. 532,893
Int. Cl.[2] B61K *7/04*
U.S. Cl. 104—258 **4 Claims**



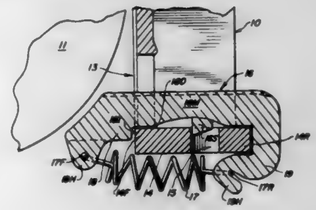
2. A rail wheel stop for attachment to the head of a rail, comprising:
a multiplicity of thin plate members, each thereof having a recess for fitting over one side of said rail head, and a second multiplicity of thin plate members, each thereof having a recess for fitting over the other side of said rail head, said recesses and faces of said plate members defining a corner at the edges thereof;
said multiplicity of said plate member and said second multiplicity of said plate members being alternately mated for interface contact to obtain a lamina body of said plate member;
means acting on said plate members to tighten said plate members against said rail head to render said stop body immovable thereon;
each of said plate members having a hole which are collectively aligned to form a centrally disposed hole passageway;
a pin means through said hole passageway to pivotably connect said first and said second multiplicity of plate members;
a spring member on said pin means for urging said plate members together at their interfaces to obtain a lamina body of plate members; and
said pin means and said hole passageway having a sufficient clearance therebetween to allow said lamina body of said plate members to tilt on said rail head against the bias of said spring to elevate said corners to bear against said rail head when said means act in said plate member to tighten said plate members against said rail head.

3,924,540
RAILWAY VEHICLE TRUCK
Thaddeus W. Podgajny, Granite City, Ill., assignor to General Steel Industries, Inc., St. Louis, Mo.
Filed Apr. 25, 1974, Ser. No. 464,114
Int. Cl.[2] B61F *3/00*
U.S. Cl. 105—197 R **15 Claims**



1. A railway vehicle truck comprising a pair of spaced axles, a gauged pair of wheels mounted on the ends of each said axle, longitudinally extending transversely spaced side frames supported at their ends on opposite end portions of said axles, a transverse transom extending the full distance between said side frames, means preventing relative vertical and lateral movement and relative angular movement in the horizontal plane between said transom and both said side frames, said preventing means including a pivotal connection between one of said side frames and said transom intermediate said axles and in substantial longitudinal alignment with the supports of said one side frame on said axles, permitting pivotal movement of said one side frame about a transverse axis with respect to said transom, and longitudinally extending link means spaced inwardly transversely of the truck from said pivotal connection and being pivotally connected at its one end to said one side frame and at its other end to said transom.

3,924,541
SIDE FRAME KEY ASSEMBLY
Robert W. MacDonnell, Crete, and Otto A. Shander, Chicago Heights, both of Ill., assignors to R. W. Mac Company, Crete, Ill.
Continuation-in-part of Ser. No. 501,067, Aug. 27, 1974, abandoned. This application May 15, 1975, Ser. No. 577,736
Int. Cl.[2] B61F *5/26*
U.S. Cl. 105—221 K **15 Claims**



1. A side frame key assembly for preventing accidental escape of a roller bearing unit mounted for relative vertical movement in a pedestal-type side frame that includes a vertical side wall having a horizontal base portion projecting away from the roller bearing unit, said vertical side wall having a generally rectangular key opening facing a lower peripheral region of the roller bearing unit, the key opening bordered by a front base corner portion and a top corner portion of the side wall, said key assembly comprising angular keying structure overlying the horizontal base portion and freely movable in the key opening and having direct keying means to fulcrum against said front base corner portion and remote keying

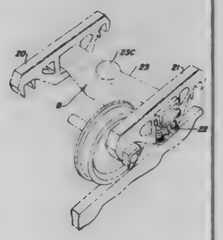
means for abutment against a spaced apart side frame portion, said key structure having a rearwardly projecting lever portion overlying said base portion and an outwardly projecting retainer portion bordering the lower peripheral region of the roller bearing unit, and locking loop means underlying the horizontal base portion and releasably engaging between spaced attachment portions of the key structure to complete a tie loop embracing the horizontal base portion to retain the key structure in movable relation to enable both said keying means to react directly against the side frame when the roller bearing unit applies load force to the retainer portion.

3,924,542

RAILWAY BOLSTER RE-ENFORCEMENT SYSTEM

Robert W. Mac Donnell, Crete, and Otto A. Shander, Chicago Heights, both of Ill., assignors to R. W. Mac Company, Crete, Ill.

Filed May 22, 1974, Ser. No. 472,428
Int. Cl.² B61F *1/12, 5/04, 5/50*; F16B *43/02*
U.S. Cl. 105—226 **25 Claims**



1. In a railway truck bolster structure that includes a hollow bolster body having an upper wall structure incorporating a top center plate section, a lower wall structure having a bottom central section flanked by upwardly and outwardly inclined intermediate bottom wall sections and horizontal spring seal wall sections merging with and extending outwardly from said inclined intermediate sections, and internal ribbing connecting said upper wall structure and said lower wall structure, an improved bolster re-enforcement comprising elongated means extending across said bottom central section, lug means engaging intermediate portions of said inclined intermediate bottom wall sections in flanking relation to said bottom central section and means for securing said tension means to said lug means under predetermined rension to precompress the bottom center section of the bottom wall.

15. In a bolster structure as defined in claim **12** wherein said lug means have weld means securing said lugs to the inclined bottom wall sections outwardly of the outboard bolster edge region of the window opening.

20. A prestressible bolster structure as defined in claim **19** wherein said lug means merge with said inclined intermediate bottom wall sections adjacent the inboard bolster edge regions of the window openings.

3,924,543

COKE QUENCH CAR

Anthony F. Mantione, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Oct. 18, 1974, Ser. No. 516,043
Int. Cl.² B61D *3/00*
U.S. Cl. 105—257 **3 Claims**

1. In a coke quench car equipped with:

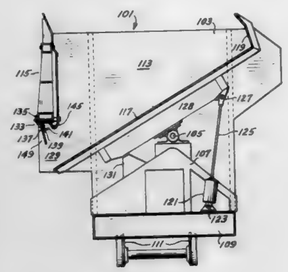
a. a support frame,

b. a coke basket on said frame defined by:

1. a pair of spaced end walls connected to said frame;
2. a front panel extending between said end walls connected to said end walls, spaced above said frame;
3. a floor between said end walls, disposed above said frame, pivotably mounted on said frame; and
4. a back wall extending between said end wall connected to the back edge of said floor;

c. whereby coke is retained in said basket when said floor is pivoted to a closed position and coke is discharged when said floor is pivoted to an open position, the improvement comprising:

1. first sealing means along the lower edge of said front panel for providing a substantially liquid-tight seal



between said floor and said front panel when said floor is in the closed position, to retain coke plus liquid in said basket;

2. a second sealing means along the lower edge of said front panel for discharging liquid and retaining coke in said basket when said floor is pivoted to a liquid-discharge position intermediate the open and closed positions; and

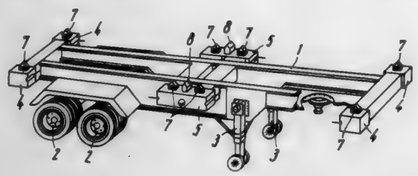
d. means for pivoting said floor between said open position, said closed position, and said liquid-discharge position.

3,924,544

APPARATUS FOR LOCKING A CONTAINER ON A BASE MEMBER, PREFERABLY A CARRIAGE

Dietrich Grau, Grauenbrunnenweg 23, 6906 Leimen; Franz Beigel, Rosenstr. 6, 6906 Malschenberg, and Roland Blanz, Werderstr. 12, 6900 Heidelberg, all of Germany

Filed Mar. 13, 1974, Ser. No. 449,587
Claims priority, application Germany, Mar. 13, 1973, 2312402; Aug. 28, 1973, 2343251
Int. Cl.² B61D *17/00*
U.S. Cl. 105—366 B **16 Claims**



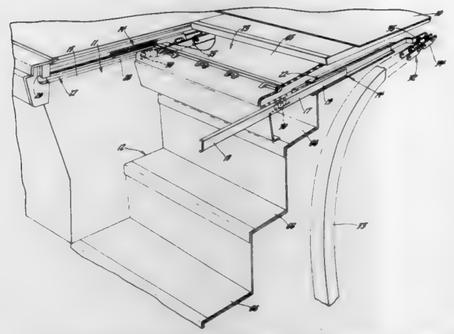
1. Apparatus for locking a container on a base member, said apparatus including one or more spring-loaded tension rods mounted at the base member to engage by force and form one or more fittings provided at the container, where each tension rod has a locking head and can be moved from a locking position into a release position by means of a guide, wherein the improvement comprises a drive means for lifting and pivoting each tension rod into the release position, said drive means comprising a fluid pressurized plunger guided in a working cylinder, the working cylinder being adapted for communication with a source of fluid pressure via a control device, and further comprises a compression spring for the automatic self-locking and continuous retensioning of each tension rod.

3,924,545

RAILWAY CAR DUAL ACCESS LEVEL SELECTION APPARATUS

Robert Anders, Westmont, and Daniel H. Kussow, Lisle, both of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 11, 1975, Ser. No. 549,001
Int. Cl.² B61D *23/00*
U.S. Cl. 105—450 **3 Claims**



1. In a railway car having a floor, a sidewall, a doorway through the sidewall, and a stairwell having steps descending from the floor to the doorway at a lower level, access level selection apparatus comprising, in combination:

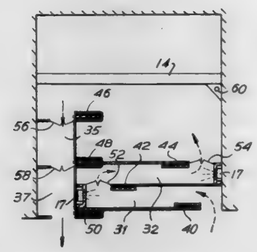
a platform having a cam follower projecting therefrom; a pair of horizontal parallel platform tracks in the stairwell; a longitudinally movable bar in each platform track; a plurality of parallel links connecting the bars to opposite sides of the platform to support the platform parallel to the floor and move the platform with the bars horizontally between the stairwell and a lower level access position under the floor; the links further being pivotably connected to the bars and the platform, whereby the platform is vertically movable in the stairwell to a floor level access position covering the stairwell and continuous with the floor; and a camtrack in the stairwell engaging the platform cam follower to guide the platform between its floor and lower level access positions with longitudinal movement of the bars.

3,924,546

ANTI ROBBERY PROTECTION EQUIPMENT

Gisberto Pretini, Via della Stazione 3, S. Frediano A Settimo, Pisa, Italy (I-56026)

Filed Sept. 20, 1973, Ser. No. 399,083
Claims priority, application Italy, Sept. 30, 1972, 9697/72
Int. Cl.² E05G *3/00*
U.S. Cl. 109—3 **6 Claims**



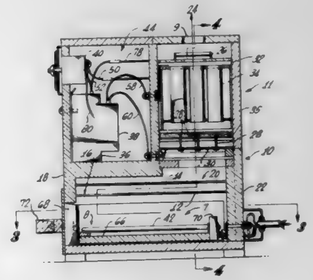
1. In a bank having an area accessible to the public, anti robbery protection equipment comprising, in combination, first partition means defining a first path providing only access to said public area; second partition means defining a second path providing only egress from said public area; said first and second partition means being at least partially transparent to allow the passage of persons along said path to be observed through said partition means; and closure means located at least at opposite ends of each path to define an area in each path which can be closed at both ends; the closure means in said access path being openable automatically responsive to approach of a person in the access direction and blocking movement in the egress direction, and the closure means in said egress path being openable automatically responsive to approach of a person in the egress direction and blocking movement in the access direction.

3,924,547

ELECTRIC INCINERATOR WITH ELECTROSTATIC FILTER

Arthur W. Werner, Cathedral City, Calif., assignor to Earle M. Macartney and Marjorie Macartney, both of Palm Desert, Calif.

Filed Aug. 19, 1974, Ser. No. 498,449
Int. Cl.² F23G *5/10*; B03C *3/00*
U.S. Cl. 110—8 E **12 Claims**



1. An electric incinerator comprising:

a thermally insulated housing having a vent to allow for expulsion of air from said incinerator;

a combustion chamber within said housing, for receiving refuse material to be burned within said incinerator;

heating means within said combustion chamber for igniting the refuse;

electrostatic filter means having at least a first set of elements and a second set of elements for filtering relatively small particles of debris in gaseous products from refuse burned in said incinerator;

power supply means for applying current to said heating means and applying relatively high voltage to said electrostatic filter; and

means for removably securing at least one of said first and second sets of elements of said electrostatic filter means in said housing, whereby said first and second sets of elements may be easily and quickly removed from said housing for periodic cleaning of debris build-up.

3,924,548

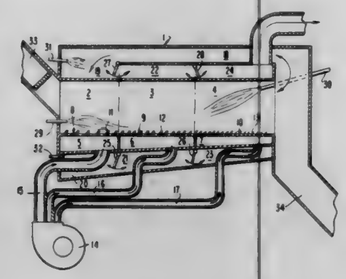
INCINERATOR

Michel G. J. Du Chambon, Versailles, France, assignor to B. V. Peximac, The Hague, Netherlands

Filed Nov. 21, 1973, Ser. No. 418,025
Claims priority, application France, Nov. 24, 1972, 72.41800
Int. Cl.² F23G *5/12*
U.S. Cl. 110—8 C **8 Claims**

1. An incinerator for household refuse, industrial waste, and like material, comprising a combustion chamber having a stationary grate means, means for supplying combustion air through said grate means, and filling and discharge means, characterized in that said grate means includes deflecting

members for directing said combustion air in a manner to lift said material being treated in the incinerator whereby said material is torn apart and brought into a fluidized state, and



whereby owing to a pre-determined orientation of the air effected by said grate means, the combustion air also serves to transport said material through said incinerator.

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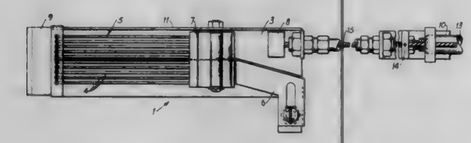
BELT LOOP FEEDING APPARATUS

Donald Cummins, Hopewell, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed Oct. 24, 1974, Ser. No. 517,714

Int. Cl.² D05B *3/12*

U.S. Cl. 112—104 **8 Claims**



1. A semi-automatic apparatus for receiving and guiding belt loops being fed thereto for ultimate positioning and placement at a sewing station forward of said apparatus including: a principal body member having a flat bed feed surface on which one face of the loop is disposed; a side edge member attached to said body member for positioning one longitudinal edge of said belt loop; a canted cantilever spring attached to the top portion of said principal body member being adapted to act on an opposite longitudinal edge of said belt loop; a rake assembly in the form of a plurality of spaced apart fingers substantially parallel with said side edge adapted to constrain the movement and disposition of said loop by forcing it to lie flat on the feed surface of said apparatus; said cantilever spring being mounted on an adjustable shoe member allowing such member to move laterally of said feed surface for adjustment in accordance with a given width of belt loop; a pneumatic piston means having an elongated member with a plunger means at its working end enabling the loops to be fed along a pre-selected path in-line with said apparatus by the action of the working end of said piston member; said working member being adapted to index an outboard end of said loop beneath said plurality of spaced fingers to a predefined position at the sewing station forward of said apparatus; and deflector means disposed at the outlet end of said apparatus adapted to direct the dispensed loop in the same directional sense for each stroke of said pneumatic piston means.

3,924,550

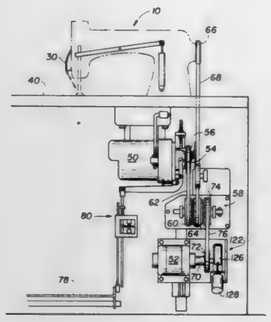
STOP CONTROL MOTOR FOR A SEWING MACHINE

Ronald Boser, and Gerald Gluckin, both of 22 W. 26th St., New York, N.Y. 10010

Filed Aug. 15, 1974, Ser. No. 497,746

Int. Cl.² D05B *37/04, 69/14*

U.S. Cl. 112—130 **6 Claims**



1. In combination, a sewing machine having a sewing needle and motor means for driving said sewing needle through vertically reciprocating sewing strokes, said motor means having stopping characteristics related to its operating speeds, and a stop control for said sewing machine comprising a first motor control means for operating said sewing needle drive motor means at varying speeds so as to contribute to effective use thereof during a normal sewing interval of operation, a second motor control means operatively effective to operate said sewing needle drive motor means at a known selected speed having a correspondingly known stopping characteristic, a first sensing means operatively effective preparatory to termination of the sewing operation of said sewing machine to automatically cause the operation thereof by said second motor control means in preference to said first motor control means so as to have said sewing needle drive motor means operating at said known selected speed of operation, and a second sensing means operatively effective to terminate the sewing interval of said sewing machine while it is operating at said known selected speed, whereby said termination of operation occurs in accordance with said known stopping characteristic to contribute to termination in feed movement of the fabric being sewn at a selected location defining a work station.

3,924,551

AUTOMATIC GUIDE DEVICE FOR SEWING MACHINE OR MACHINE FOR ASSEMBLING TWO OR MORE SUPERPOSED ELEMENTS

Wolfgang Heiler, Soufflenheim, Bas-Rhin; Rudolf Muller, Sessenheim, Bas-Rhin, and Jean-Jacques Becker, Bischheim, Bas-Rhin, all of France

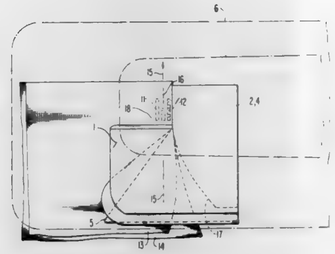
Continuation-in-part of Ser. No. 254,753, May 18, 1972, Pat. No. 3,814,039. This application Dec. 21, 1973, Ser. No. 427,265

Claims priority, application Germany, May 27, 1972, 2225942

Int. Cl.² D05B *35/10*

U.S. Cl. 112—153 **3 Claims**

1. In a sewing machine having a base plate and a head carrying a vertically reciprocable needle and fabric feeding teeth adjacent the needle for moving superposed layers of fabric beneath the needle to form in the superposed layers of fabric an edge seam comprising a line of stitching extending in a stitching direction; the improvement comprising a guiding device mounted on the sewing machine above the base plate, said guiding device comprising a plurality of superposed plates with guide pieces between said plates, said guide pieces having edges that guidingly contact the edges of the superposed layers of fabric with a said guide plate separating adjacent layers of fabric, said edges of said guide pieces extending toward said needle at an acute angle to said line of stitching,



and said fabric feeding teeth being disposed only on the same side of said line of stitching as said guide pieces thereby to exert a torque on the fabric to swing the fabric in a direction to urge said edges of the fabric against said edges of said guide pieces.

3,924,552

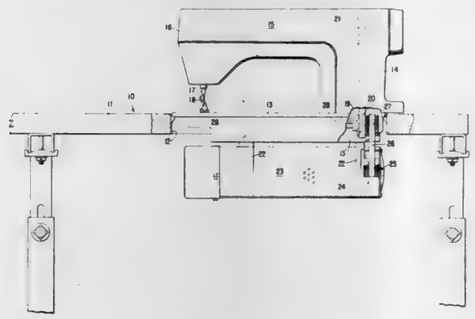
MOTOR DRIVE FOR SEWING MACHINES

Lorenz A. Wendel, Somerville, N.J., assignor to The Singer Company, New York, N.Y.

Filed Feb. 24, 1975, Ser. No. 552,466

Int. Cl.² D05B *75/00*

U.S. Cl. 112—217.1 **5 Claims**



1. A sewing apparatus including a power table having a table top provided with a sewing machine receiving cut-out, a sewing machine mounted in said cut-out and having a bed and a rotary main shaft, hinge means supporting said machine on said table top providing for tilting said sewing machine backwardly to expose mechanism within the bed of the sewing machine, at least one motor supporting bracket secured to said sewing machine beneath the table top and disposed to extend downwardly and rearwardly of the cut-out, a motor fixed downwardly of the cut-out, a motor fixed in unitary relation relatively to said sewing machine by said bracket, and belt means connecting said motor to said sewing machine main shaft, the dimensions and unitary relation of said motor to said sewing machine being such that the sewing machine may be tilted back on said hinges without removing the belt means from the sewing machine or the motor and without causing interference between the motor and the table top in the movement of the machine from its operative position to its tilted back inoperative position.

3,924,553

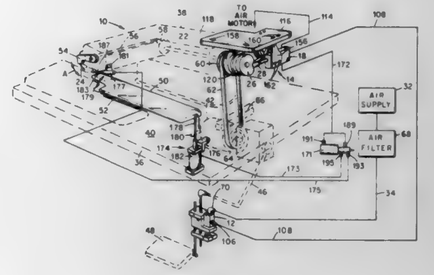
NEEDLE POSITIONING APPARATUS FOR STITCHING MACHINES

William A. Tice, 6675 Maynardville Highway, Knoxville, Tenn. 37918

Filed Sept. 9, 1974, Ser. No. 504,324

Int. Cl.² D05B *69/22, 65/02*

U.S. Cl. 112—219 B **13 Claims**



1. In a stitching machine including a needle adapted for reciprocatory movement into and out of a workpiece, shaft means connected to said needle for reciprocating said needle upon rotation of said shaft, drive means including a drive motor for rotating said shaft, operator control means for activating and deactivating said drive means, the improvement for positioning said needle in a preselected position along its reciprocatory path comprising

a pneumatically powered positioning motor,

means connecting said positioning motor in driving relation to said shaft means for rotation of said shaft means when said drive motor is inactive,

a source of pneumatic pressure,

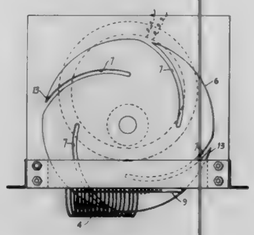
conduit means connecting said source of pneumatic pressure to said positioning motor,

valve means interposed in said conduit means and actuatably responsive to functioning of said operator control means,

control means interposed in said conduit means between said valve means and said positioning motor and operative when said valve means is open to activate said positioning motor to rotate said drive shaft to position said needle in a preselected position along its reciprocatory path,

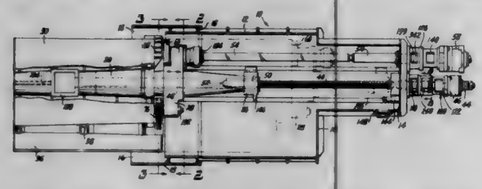
said control means comprising cylinder means having a bore extending therethrough, piston means disposed in said bore and having one of its ends exposed to said pressurized fluid when said valve means is open, the opposite end of said piston means being disposed externally of said cylinder means and defining detent means, cam means having a recess therein and mounted on said drive shaft in juxtaposition to said detent means, means defining a passageway in said piston means from its exposed end to an exit location within said bore, seal means defining a plurality of chambers between said piston means and said cylinder means, at least one of said chambers communicating with said exit location of said passageway in said piston means, and means defining an exit passageway from said bore to the exterior of said cylinder means at a location contiguous to said chambers, whereby the position of said piston means within said bore establishes fluid communication between at least one of said chambers and said exit passageway to control the flow of pressurized fluid to said positioning motor.

3,924,554
THREAD CHAIN CUTTING APPARATUS
Donald Cummins, Hopewell, Va., assignor to AMF Incorporated, White Plains, N.Y.
Filed Nov. 18, 1974, Ser. No. 520,756
Int. Cl.² D05B *65/04, 65/06*
U.S. Cl. 112—252 **9 Claims**



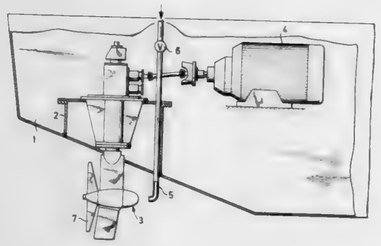
1. An apparatus for severing thread chains attached to a series of garment members is a predefined fashion after conveying such garment sections to said device; a housing structure for retaining said apparatus, guide means integral with said housing, for receiving said thread chain through passage ways associated therewith; a wheel disposed away from said guide means, driven by motor means affixed to said housing, said wheel including means to engage and move a defined section of thread chain away from the point of entry at said guide means; barrier means proximate to said rotating wheel and being spaced therefrom, serving to provide support for said thread chain during its movement away from said guide means by said rotating wheel; a pair of fixed knives each of which being disposed on either side of said rotating wheel for a blade to blade distance representing the amount of chain thread to be cut, said knives being adapted to sever said thread chain at a predefined time in response to the distance traveled by said chain and the force resulting therefrom as it travels under the action of said rotating wheel; and spring loaded sheaths covering the cutting surface of said knives serving to prevent such surfaces from prematurely cutting the thread chain until the downward force applied by the chain on said sheaths exceeds the opposing spring load force, at which time the cutting surface of said blades severs the thread chain.

3,924,555
STABILIZING FIN SYSTEM
Pellegrino E. Napolitano, Brooklyn, N.Y., assignor to Flume Stabilization Systems, Inc., Hoboken, N.J.
Filed Aug. 18, 1972, Ser. No. 281,953
Int. Cl.² B63B *39/06*
U.S. Cl. 114—126 **50 Claims**



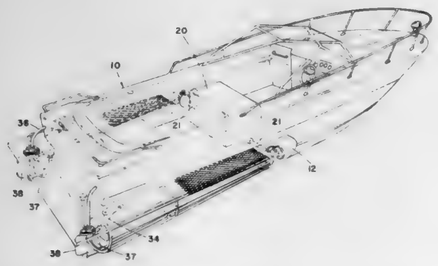
1. A device for damping the rolling motion of a ship comprising a fin chamber adapted to be located arthwartship in a ship's hull, a fin support axle having an opening therein slidably mounted in the fit chamber, a stabilizing fin rotatably mounted on the fin support axle and adapted to be located arthwartship in the operative position on one side of the ship's hull below the water line, a fin retraction shaft having a threaded section being rotatably mounted in the fin chamber and extending into the opening in the fin support axle, rotation means rotatably engaging the fin retraction shaft, nut means mounted in the opening of the fin support axle and operatively engaging the threaded section of the fin retraction shaft such that the stabilizing fin moves arthwartship when the fin retraction shaft is rotated and means cooperating with the stabilizing fin for rotating the stabilizing fin on the fin support axle.

3,924,556
DEVICE FOR REDUCING THE THRUST OF STEERABLE PROPELLERS
Gerd Wacker, Winnigen, Mosel, Germany, assignor to Schottel-Werft Josef Becker KG., Spay (Rhine), Germany
Filed Mar. 22, 1974, Ser. No. 453,690
Claims priority, application Germany, Apr. 9, 1973, 2317731
Int. Cl.² B63H *5/06*
U.S. Cl. 115—35 **3 Claims**



2. A device for controlling the thrust of a steerable propeller pivotal about a vertical axis for the purpose of steering a watercraft, comprising:
a rotatably driven motor having a substantially constant output speed; and
means defining a gas guide which extends into a suction zone of said propeller, at least when said propeller is swung into a certain position, valve means for providing a gas flow to said suction zone which is variable independent of the speed of said rotatably driven motor, said gas guide means being adapted to convey a gas therethrough from said valve means to thereby control the thrust of said propeller driven by said rotatably driven motor, said gas guide means terminating in the suction zone at a location coaxial with the axis of rotation of said propeller.

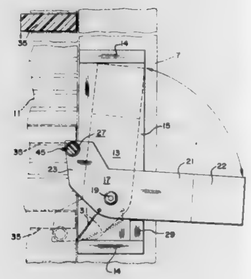
3,924,557
PROPELLER MECHANISM FOR BOATS
David R. Bloch, 400 Merrimac Ways, Apt. 32, Costa Mesa, Calif. 92626
Filed Dec. 16, 1974, Ser. No. 533,139
Int. Cl.² B63H *5/08*
U.S. Cl. 115—38 **1 Claim**



1. An improved propeller drive and rudder mechanism for boats comprising in combination;

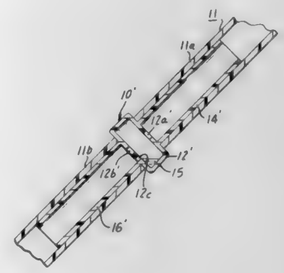
a boat hull having an opening disposed on each side thereof positioned above the waterline;
an inboard motor means having a pair of drive shafts extending outwardly therefrom and received within each of said openings in said boat hull;
a watertight housing mounted over each of said openings;
a shaft drive means operably disposed within each of said housings and connected to respective motor drive shafts;
a pair of propeller shafts positioned along the outer sides of said hull wherein one end thereof is connected to said shaft drive means whereby said motor means operates said propeller shafts;
a propeller means located at one end of each propeller shaft;
a support member secured to said hull above the waterline thereof and positioned along the rear and sides of said hull extending forwardly to said housing whereby said propeller shaft is disposed thereunder;
bearing means attached to said support member and arranged to operably receive respective propeller shafts therethrough;
rudder means positioned to the rear of said propeller means in alignment therewith and attached to said support member; and
a steering mechanism operably mounted within said hull and operably interconnected to each of said rudder means whereby the movement of said rudders is controlled thereby.

3,924,558
TRUCK DOOR POSITION INDICATOR
Alfred Di Grazia, 17588 Rainier Ave., Hayward, Calif. 94541
Filed Oct. 21, 1974, Ser. No. 516,455
Int. Cl.² B60Q *9/00*
U.S. Cl. 116—28 R **9 Claims**



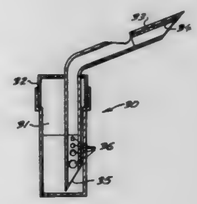
1. A door position indicator for a door of the pull-down type installed in tracks bordering the vertical edges of a door opening in the rear end wall of the body of a truck having a driver's compartment and a rear view mirror, said door position indicator comprising indicator means, means for mounting said indicator means adjacent the rear wall of such truck body, means, when said door position indicator is so installed, for normally urging a section of said indicator means to a position lying within view of a driver via said rear view mirror with said door in its open position to indicate an open position of such door, and means responsive to the closing of such door for removing and holding said indicator means from such view of a driver, while said door remains closed.

3,924,559
SIGNALLING DEVICE FOR PREVENTING SPILL-OVER FROM THE FUEL TANKS OF POWERED BOATS DURING FILLING
Edmund W. Renner, Jr., 40 Chestnut Ave.; Frank P. Sule, 38 Chestnut Ave., both of Berlin, N.J. 08009, and Wayne P. Sule, Chalet Apts., Blue Ridge-C, Pine Hill, N.J. 08021
Filed Oct. 31, 1974, Ser. No. 519,613
Int. Cl.² G01F *23/00*; G08B *21/00*
U.S. Cl. 116—109 **6 Claims**



1. A signalling device for insertion into the vent line connected to a liquid fuel tank of a boat comprising:
a. a generally cylindrical chamber having two opposed generally parallel, substantially planar walls, said walls having substantially central apertures aligned with one another for producing an audible sound signal, and
b. two substantially tubular members having generally circular cross-sections, each being fixed to the outside of one of said walls and being substantially aligned with one another and with said apertures in said wall, and being dimensioned to fit snugly and to be secured in place within said vent line.

3,924,560
WHISTLE
Alojz Karol Kaftan, 7531 Elwell St., Burnaby, British Columbia, Canada
Filed Sept. 30, 1974, Ser. No. 510,425
Int. Cl.² G10K *5/00*
U.S. Cl. 116—140 **3 Claims**



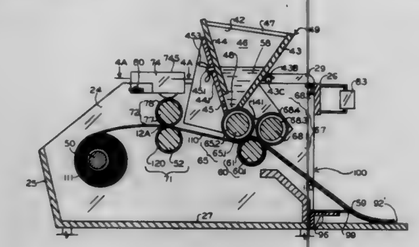
1. A whistle comprising:
a. a chamber open at its upper end adapted to contain water,
b. a perforated cap closing the upper end of the chamber,
c. a tube extending through the cap and having the lower end which is bias cut immersed in the water in the chamber,
d. mouth piece and whistle opening at the upper end of the tube.

3,924,561

APPARATUS FOR DISPENSING, MEASURING, COATING AND CUTTING SHEET MATERIAL

Leonard Crawford Ruthart, 408 Taylor Lane, and Virgil Lynn Williams, 2611 Tenth Avenue, both of Canyon, Tex. 79015

Filed Sept. 10, 1973, Ser. No. 396,059
Int. Cl.² B05C *1/08*
U.S. Cl. 118—9 **2 Claims**



1. In a system for measuring, coating and dispensing textured sheet, said system comprising, in operative combination, a textured sheet comprising a first exterior hard lower textured surface with indentations therein and a second upper rough backing layer adherent to each other, and a sheet metering and dispensing and coating apparatus, said sheet metering and dispensing and coating apparatus comprising, in operative combination, a rigid main frame assembly comprising rigid longitudinally extending frame members, a sheet roll support means, a counter and drive assembly and an adhesive dispensing assembly on said frame assembly, said rigid longitudinally extending frame member including a pair of fixed mountings and a pair of vertically extending slots therein for support of elements of said counter and drive assembly, one slot and one mounting attached to each of said longitudinally extending frame members whereby each of said mountings and each of said slots in a longitudinally extending frame member is in fixed spatial relationship to each other and said sheet roll support means is adapted to support thereon a roll of said textured sheet, said sheet roll support extending transversely of said longitudinal extending frame members and supported thereon; a rigid cutting table surface attached to said main frame having a straight edge parallel to said sheet roll support;

b. said counter and drive assembly comprising, in operative combination, a first lower sheet driving counter roller, and a second upper sheet driven counter roller, drive means attached to said first sheet driving counter roller, and sheet movement sensing means attached to said second sheet driven counter roller, said second sheet driven counter roller operatively connected to said first drive roller only through said textured sheet, and

i. said first sheet driving counter roller extending parallel to said sheet roll support and including a first rotatable internal rigid support member and a compressible elastic peripheral cylindrical surface layer comprising a plurality of fine resilient fibers of varied length extending at an acute angle to said first sheet driving counter roller surface and having a diameter small than the size of the indentations in said first lower surface of said textured sheet and adapted to engage said lower textured surface of said sheet and move together with said textured sheet surface without scratching or puncture thereof; and the ends of said first rotatable internal rigid support member of said first sheet drive counter roller rotatably supported in said pair of mountings fixed to said longitudinally extending frame members,

ii. said second sheet driven counter roller comprising a rotatable rigid vertically movable internal support member having lateral ends and a rough cylindrical surface layer, said ends of said support member being rotatably and vertically movably located in said vertically extending slots, whereby said rough surface layer of said second sheet driven counter roll is adapted to yieldably rest on and engage the upper rough backing layer of one portion of the textured sheet and be rotated thereby without slippage and said second sheet driven upper counter roll is adapted to yieldably hold the lower surface of said one portion of the textured sheet against the compressible elastic peripheral cylindrical surface layer of the first sheet driving counter roller;

iii. said sheet movement sensing means comprising movable means continuously sensitive to rotary movement of said second sheet driven counter roller and operatively connected to said second sheet driven counter roller and supported, in part, on said main frame assembly, and a linear measurement indicating means supported on said main frame assembly and operatively attached to said movable means continuously sensitive to rotary motion of said second upper sheet driven roller;

c. and said adhesive dispensing assembly comprises an upwardly open liquid adhesive container with a bottom orifice at the bottom of said container, and adhesive dispensing means, said adhesive dispensing means adapted to be in operative contact at one portion thereof with said upper backing layer of said textured sheet and at another portion thereof with said bottom orifice in said liquid adhesive container, and extends the width of said textured sheet, and wherein

i. said adhesive dispensing means comprises a cylindrical driven adhesive dispenser roller rotatably supported on said liquid adhesive container with a portion of said driven adhesive dispenser roller blocking said bottom orifice, and

ii. said adhesive container has firmly attached thereto container support means removably attached to said rigid main frame and support thereon and orifice adjustment means located above said driven adhesive dispenser roller; and

iii. said adhesive dispensing means comprises an adhesive dispenser drive roller rotatably supported on said rigid main frame and operatively connected to said drive means for said first lower counter roller, and

iv. said adhesive dispenser drive roller is adapted to contact and support a second portion of said lower exterior surface of said textured sheet and said driven adhesive dispenser roller is rotatably driven by the said adhesive dispenser driver roller and said driven adhesive dispenser roller is adapted to contact the backing layer of said second portion of said textured sheet.

3,924,562

APPARATUS FOR COATING PIPE

Robert J. Harris, Marrero, and Irvin J. Lee, Gretna, both of La., assignors to H. C. Price Co.

Filed July 31, 1974, Ser. No. 493,405
Int. Cl.² B05B *13/04*
U.S. Cl. 118—320 **11 Claims**

1. Pipe coating apparatus comprising:

means for moving first and second pipe sections along spaced apart fore and aft extending paths of travel;

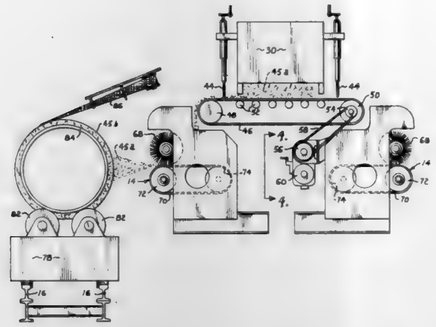
first and second coating applicators disposed adjacent to the respective paths of travel;

a coating preparation station disposed intermediate said paths of travel;

reciprocal conveyor means disposed for receiving coating material from said station and transferring the material to each of said applicators;

power means coupled with said conveyor means for moving the latter in opposite directions; and

brake means coupled with said power means and operable to slow said power means when moving said conveyor means in one direction prior to movement of said conveyor means in the opposite direction.

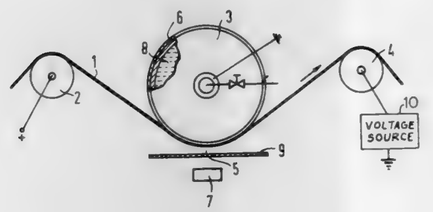


3,924,563

VAPOR DEPOSITION ON ELECTROSTATICALLY TENSIONED FOIL

Hartmut Kessler, and Hubert Kraus, both of Regensburg, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 9, 1974, Ser. No. 431,851
Claims priority, application Germany, Mar. 7, 1973, 2311217
Int. Cl.² C23C *13/08*
U.S. Cl. 118—49.1 **3 Claims**



1. Apparatus for vapor deposition of a metal layer to a plastic foil comprising a metallic cooling drum rotatably supported, an insulating layer covering the cylindrical surface of said cooling drum, means moving said plastic foil with one surface entrained about said insulating layer on said cooling drum, means for applying a metallized layer to the opposed surface of said plastic foil at the area of entrainment and voltage means for applying an electrostatic field between said cooling drum and said plastic foil including an electrically conducting roller engageable with the metallized side of the plastic foil.

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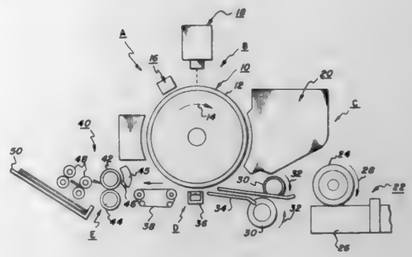
FUSING APPARATUS HAVING AN ARTICULATED RELEASE MATERIAL DISPENSER

Ari Bar-on, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 13, 1975, Ser. No. 540,731
Int. Cl.² G03G *13/08*
U.S. Cl. 118—60 **14 Claims**

1. In an electrostatographic printing machine, an apparatus for dispensing a quantity of release material to a heated fuser member operatively associated with a backup member wherein a sheet of support material having particles thereon passes therebetween with the particles contacting the fuser member, including:

means for applying the release material to the surface of the fuser member; and



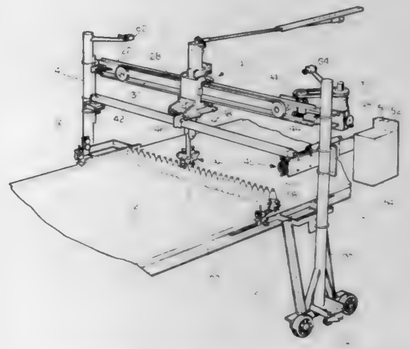
means for automatically, periodically moving the applying means into and out of engagement with the surface of the continuously operating fuser member to apply the release material thereto.

3,924,565

SPRAYING APPARATUS

Robert A. Benner, Toledo, Ohio; Philip H. Fisher, Lambertville, Mich., and Carl L. Parlette, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 13, 1974, Ser. No. 532,581
Int. Cl.² B05B *3/00*
U.S. Cl. 118—323 **12 Claims**



1. In an apparatus for spraying objects arrayed in rows and columns that are continuously moved by a conveying means wherein a traversing spray unit is mounted on support columns positioned on opposite sides of said conveying means and extends transversely across said conveying means, and wherein said traversing spray unit includes a movable carriage that is moved by a drive means in a linear path back and forth transversely across said conveying means, the improvement in said apparatus which comprises, in combination:

a control rail extending transversely across said conveying means;

means for pivotally mounting said control rail adjacent one of said support columns in a location below said traversing spray unit;

reciprocating motor means mounted adjacent the other one of said support columns;

means for connecting the free end of said control rail to said motor means, whereby said motor means can move said control rail about said means for pivotally mounting said control rail;

a slide plate, carried by said movable carriage and slideably mounted thereon for longitudinal movement relative to said conveying means;

a sliding shoe, engaged on said control rail and connected to said slide plate;

at least one downwardly directed spray means carried by said slide plate; and

circuit means for controlling the movement of said traversing spray unit.

3,924,566

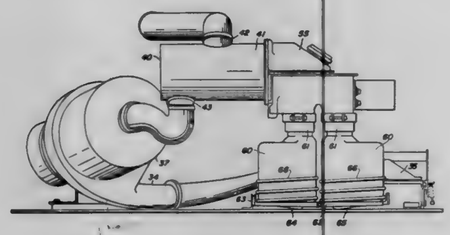
REPRODUCTION MACHINE WITH MEANS FOR SOLIDIFYING THE RECLAIM TONER

Richard H. Dennie, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 25, 1974, Ser. No. 527,119

Int. Cl.² G03G *21/00*

U.S. Cl. 118—637 **3 Claims**



1. An improved electrostatic reproduction machine having a photoconductive surface upon which is formed an electrostatic latent image, developing apparatus for applying developing material comprising toner to the latent image to develop the same, a cleaning mechanism for removing toner from the photoconductive surface after development of the latent image, a reclaim container, and means for conveying toner from the cleaning apparatus to the reclaim container, the improvement comprising:

means for solidifying toner as the latter is being collected in the reclaim container.

3,924,567

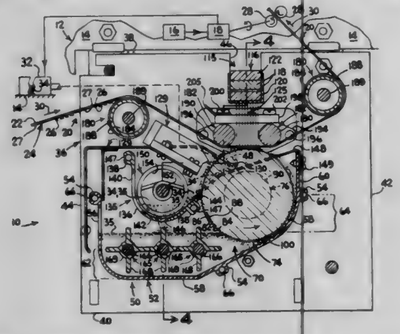
APPARATUS AND PROCESS FOR DEVELOPING ELECTROSTATIC

Geradus A. J. Koeleman, Velden, and Johannes H. A. op de Laak, Blerick, both of Netherlands, assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Mar. 14, 1974, Ser. No. 451,254

Int. Cl.² B05B *5/02*

U.S. Cl. 118—637 **16 Claims**



1. In a copier including a movable strip-type photoconductor having a surface adapted to carry a developable electrostatic latent image, and means for dispensing a replenishing supply of developer material, apparatus for developing the electrostatic latent image comprising:

a. means for holding a working supply of developer material;

b. an elongated rotatable applicator adapted to carry developer material from said holding means to said photoconductor;

c. magnetic means cooperative with the applicator for magnetically bringing at least some of the carried developer material into sufficient contact with the image bearing surface of the photoconductor to brush said image for development thereof;

d. means for collecting developer material from said replenishing supply thereof and from said applicator, said collecting means including an elongated hopper having opposite ends and an aperture midway between the ends thereof; and

e. means for mixing the collected developer materials within the collecting means and feeding the resulting mixture to said holding means, said mixing means including a rotatable shaft and a pair of elongated spiral members, the shaft extending longitudinally of the hopper, the spiral members respectively coiling in opposite directions around the shaft and longitudinally extending towards one another from the opposite ends of the hopper, and said spiral members fixedly secured to the shaft for rotation therewith so as to permit the rotating spiral members to feed the resulting mixture of developer materials to the hopper aperture for discharge therethrough to the holding means.

3,924,568

APPARATUS FOR DEVELOPING LATENT ELECTROSTATIC IMAGES

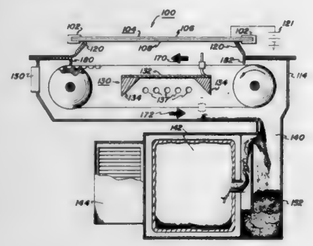
Lothar S. Jeromin, Sierra Madre, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 15, 1973, Ser. No. 323,666

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² G03G *13/08*

U.S. Cl. 118—637 **19 Claims**



1. Apparatus for developing a latent electrostatic image formed on the surface of an insulating member comprising:

a chamber having a pair of opposed sidewalls,

means for supporting said insulating member, said surface facing said chamber,

means for supplying a cloud of charged developer particles to said chamber through a port in one of said opposed sidewalls,

means for supplying gas through a port in the other of said opposed sidewalls,

a baffle overlying said ports through which said developer particles and said gas are introduced into said chamber whereby said gas and developer particles mix under said baffle, said baffle comprising a conductive upper portion which is electrically floating and which faces the surface of said insulating member, said insulating member overlying a conductive substrate, and

means for biasing said conductive substrate to a predetermined potential whereby the electric field between said surface and said conductive baffle portion and said chamber bottom is substantially uniform.

3,924,569

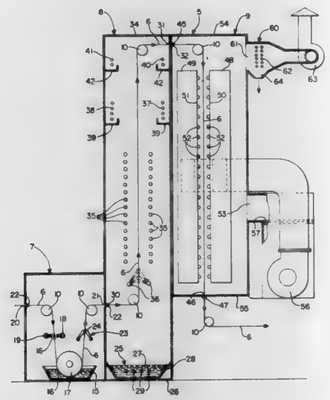
APPARATUS FOR TREATING TIRE CORD FABRIC

Edward E. Hunter, Akron, and Grover W. Rye, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 28, 1974, Ser. No. 501,413

Int. Cl.² B05B *5/00*

U.S. Cl. 118—642 **26 Claims**



1. An apparatus for treating tire cord fabric, comprising in combination:

a. means for coating a tire cord fabric with a liquid mixture of an agent for promoting the bond between cords of the fabric and rubber material used in the production of tires, and a vaporizable solvent which is a carrier of the agent;

b. a drying chamber sealed from the ambient atmosphere and said means, the chamber including an inlet and outlet opening through which the fabric passes as it enters and leaves the chamber, respectively;

c. means for guiding the fabric successively through the means for coating the fabric and the chamber;

d. means for filling the chamber with vapor of a solvent which is similar to the solvent of the mixture;

e. means for condensing solvent vapor accumulating near the inlet and outlet openings;

f. at least one radiant heater disposed in the chamber in spaced relation from fabric moving past the heater, for heating and vaporizing solvent carrier on the fabric; and

g. means for guiding the fabric between the heaters.

3,924,570

AQUARIUM SCENIC FILTER IN FISH TANK

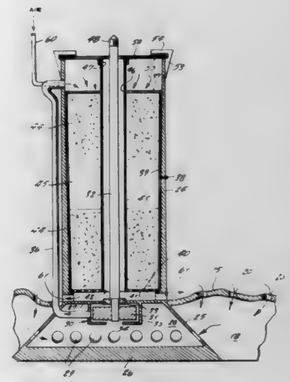
Mercurio Lamonica, 7214 17th Ave., 1st Floor, Brooklyn, N.Y. 11204

Filed Sept. 13, 1974, Ser. No. 505,648

Int. Cl.² A01K *63/00*

U.S. Cl. 119—5 **2 Claims**

1. In an aquarium scenic filter for a fish tank, the combination of a hollow base, an upstanding filter container supported by said base, and a removable end cap upon a top of said container, said hollow base consists of a top wall integral with downward side and end walls forming a base chamber, said top wall being perforated throughout its entire area with small openings, and a upper side of said top wall being contoured to resemble a bottom of a sea, lake or river and being accordingly colored, said container contains a vessel filled with layers of charcoal and fiberglass, a water pump within a lower end of said container being connected to a tube which at its other end is connected to an upper position of said container in order to pour pumped water upon said filter containing vessel, wherein an air vent tube is connected to an intermediate portion of said tube so that air is merged with said water, wherein L-shaped projections integral with an outside side of



said container each includes a radially inward arm for bearing down upon a circular plate of said end cap, said plate including peripheral notches to clear said arms when being vertically placed upon said container and prior to being rotated under said arms, wherein an electric motor is mounted upon said end cap plate, a disengagable motor shaft of said motor extending downwardly through a central tube integral with said vessel, and a lower end of said shaft being connected to a water impeller of said pump.

3,924,571

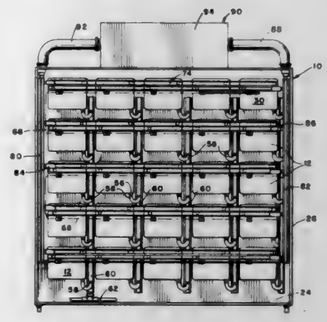
ANIMAL CAGING SYSTEM

Frank Brouwer Holman, Lakewood, N.J., assignor to Lorraine Chirico, Howell and John R. Fulcher, Toms River, both of, N.J., part interest to each

Filed Dec. 7, 1973, Ser. No. 422,901

Int. Cl.² A01K *1/02*

U.S. Cl. 119—15 **6 Claims**



1. A system for caging animals comprising a battery of independent closed wall cages, an air purification means and means connecting the output of said air purification means to each cage in an individual manner so that each cage is supplied with bacteria free air and means connecting each cage to exhaust its dirty air on an individual basis back to said air

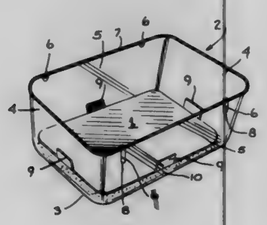
purification means whereby cross contamination from animal to animal housed in the cages is prevented, said connecting means comprising an elongated double plenum duct in fluid communication with a plurality of said cages, one plenum of said double plenum duct supplying purified air to each of said cages, the other plenum of said double plenum duct exhausting dirty air from each of said cages.

3,924,572

ANIMAL CAGE

Anthony V. Classe, New York, N.Y., and Robert P. Mehn, Middletown, N.J., assignors to IPCO Hospital Supply Corporation, Valhalla, N.Y.

Division of Ser. No. 254,898, May 19, 1972, Pat. No. 3,826,229. This application Nov. 21, 1973, Ser. No. 418,084
Int. Cl.² A01K *1/00*
U.S. Cl. 119—17 **7 Claims**



1. An animal cage having a bottom wall and integral upstanding side and end walls having an upper edge, a layer of particulate bedding material on said bottom wall, a solid imperforate retaining element mounted in said cage and adjacent the bottom wall to retain the bedding material in said cage, said retaining element being in close adjacency to said bedding material, said bedding material substantially filling the entire space between the retaining element and the bottom wall, said retaining element being removably mounted within the container to expose said bedding material, means on said retaining element for holding the retaining element within the container, said means comprising spaced locking tabs extending from the retaining element and biased outwardly to bear against the walls of the cage, the distance between the retaining element and the upper edge being substantially greater than the distance between the retaining element and the bottom wall, said holding means mounted on the retaining element and having a portion thereof extending therefrom to bear against the side walls to hold the retaining element in place.

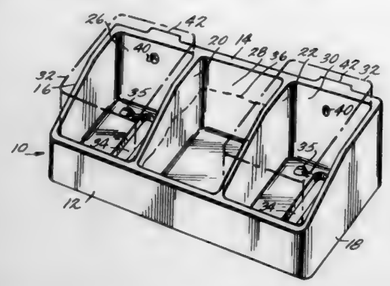
3,924,573

ANIMAL FEEDING DEVICE

Wil B. Thomas, and Fred Boggs, both of Marysville, Ohio, assignors to Riverby Farms, Inc., Marysville, Ohio

Filed Jan. 8, 1974, Ser. No. 431,776
Int. Cl.² A01K *5/00*
U.S. Cl. 119—61 **3 Claims**

2. An animal feeding device comprising an opentopped box-like body having front, rear, bottom and end walls and a plurality of horizontally spaced apart planar partitions which extend between the front and rear walls and divide the interior of the body into a plurality of compartments for holding solid animal feed substances, said rear wall including at least one rearwardly projecting spacer portion which effects an air space between said rear wall and any vertical support surface to which it may be attached, a major portion of the open tops of said compartments lying in an inclined plane extending downwardly and forwardly, the bottom wall in at least one of said compartments having an aperture therethrough, means in said one compartment for supporting a solid feed substance therein at an elevation above the bottom wall so as to allow



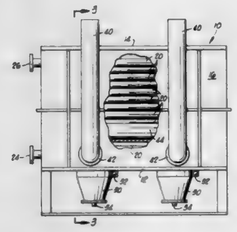
circulation of air around the solid feed substance, the bottom wall in another of said compartments being impervious.

3,924,574

FLUID HEATER APPARATUS

Harold O. Ebeling, Tulsa, Okla., assignor to Black, Sivalls & Bryson, Inc., Houston, Tex.

Filed Mar. 21, 1975, Ser. No. 560,821
Int. Cl.² F22B *31/00*; F23J *5/02*
U.S. Cl. 122—23 **9 Claims**



1. In a fluid heater apparatus having a firing wall, a back wall and side walls defining a furnace space, a plurality of fluid heating tubes disposed in said furnace space and one or more high intensity combustion burners attached to said firing wall and positioned so that combustion gases produced by the burners are directed into said furnace space, impinge on said back wall and are caused to circulate around said heating tubes thereby bringing about the transfer of heat from said combustion gases to the fluid being heated, the improvement which comprises:

at least one baffle disposed in said furnace space adjacent to said firing wall defining a secondary chamber within said furnace space between said firing wall and said baffle so that at least a portion of said combustion gases produced by said burner or burners impinge on said baffle after impinging on said back wall and are caused to recirculate around said heating tubes; and

at least one stack attached to said walls defining said furnace space and communicating with said secondary chamber so that combustion gases are withdrawn from said furnace space through said secondary chamber.

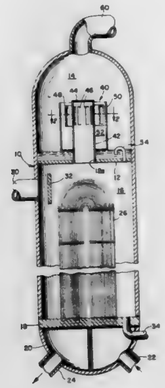
3,924,575

FLUID HEATING AND SEPARATING APPARATUS

Albert John Zipay, Clifton, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Nov. 20, 1974, Ser. No. 525,429
Int. Cl.² F22B *1/02*
U.S. Cl. 122—34 **7 Claims**

1. A fluid heating and separating apparatus comprising a pressure vessel, means defining an upper separating chamber and a lower heating chamber in said vessel, an inlet communicating with the upper portion of said heating chamber for introducing a relatively hot fluid into said heating chamber, a plurality of tubes in said heating chamber, means for passing a relatively cool fluid from an external source through said tubes, the relatively heavy portion of said hot fluid passing downwardly in said heating chamber across said tubes in a



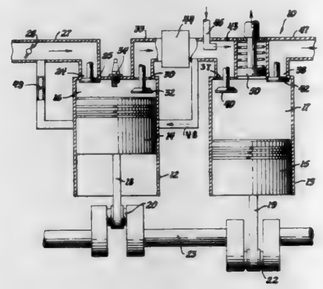
heat exchange relation with said cool fluid to heat said cool fluid, means connecting said chambers to permit the passage of the relative light portion of said hot fluid from said heating chamber into said separating chamber, and means in said separating chamber for separating the vapor portion of said relatively light portion of hot fluid from the liquid portion thereof.

3,924,576

STAGED COMBUSTION ENGINES AND METHODS OF OPERATION

Robert M. Siewert, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 252,853, May 12, 1972. This application Aug. 21, 1972, Ser. No. 282,390
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² F02B *75/10*, *75/12*
U.S. Cl. 123—1 R **6 Claims**



4. The method of operating an internal combustion engine of the type having at least two expansible chambers that execute successive expanding and contracting strokes and each supplies net energy per cycle to a rotating shaft, the method comprising the steps of:

a. successively supplying to one of said chambers a mixture composed primarily of air and hydrocarbon fuel in combustion supporting proportions with an excess of fuel over stoichiometric so as to produce, upon combustion, gases having low residuals of nitrogen oxides and high residuals of combustibles primarily in the form of H_2 and CO;

b. successively compressing, burning, and expanding said mixtures in said one chamber to deliver primary energy to the rotating shaft and to produce interstage gases having substantial amounts of incompletely burned fuel but low in nitrogen oxides;

c. varying the temperature of the interstage gases to control said temperature within a desired range, selected to assure self-ignition of the subsequently formed mixtures near the end of the second compression step (d);

d. successively deliverying said temperature controlled interstage gases to the other of said chambers, together with air in amount sufficient to provide mixtures having (1) overall engine air-fuel ratios leaner than stoichiometric, (2) available total energy substantially less than that of the hydrocarbon fuel originally supplied, and (3) a capability of compression ignition when compressed in a predetermined compression ratio;

e. compressing said successive last mixture in said predetermined ratio in said other chamber so as to cause self-ignition of said mixtures near the end of such compression step; and

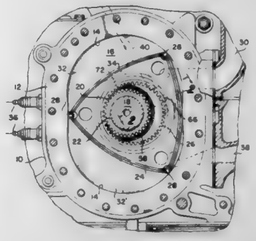
f. successively burning and expanding the mixtures in the last mentioned chamber without substantial additional compression to deliver secondary energy to the rotating shaft while producing exhaust gases having low residuals of both nitrogen oxides and combustibles.

3,924,577

ACCESSORY SHAFT DRIVE FOR A ROTARY MACHINE

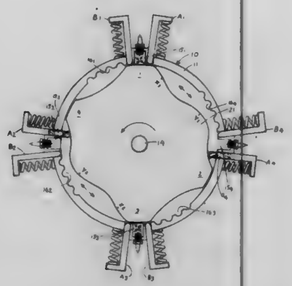
Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 11, 1973, Ser. No. 405,495
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² F02B *67/04*
U.S. Cl. 123—8.01 **4 Claims**



1. In a rotary machine comprising a cylindrical housing, a side housing closing each side of said cylindrical housing, said cylindrical housing having an internal peripheral wall cooperating with end walls of said side housings defining a cavity therein, a crankshaft rotatably mounted in said side housings and extending through said cavity, a rotor rotatably mounted on said crankshaft for rotation within said cavity, a fixed phasing gear attached to one of said side housings, a phasing gear secured to said rotor and meshing with said fixed gear so that said rotor rotates and planetates relative to said crankshaft, an accessory drive shaft rotatably mounted in said one of said side housings adjacent said crankshaft, a driven gear attached to said accessory shaft, and a cylindrical drive gear attached to said crankshaft and extending axially therealong overlying said fixed phasing gear and meshing with said accessory shaft driven gear rotating said accessory shaft with said crankshaft, said cylindrical drive gear having a circumferential slot therein permitting meshing engagement between said fixed phasing gear and said rotor phasing gear.

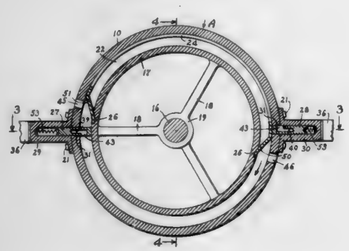
3,924,578
ROTARY INTERNAL COMBUSTION ENGINE
Donald E. Howard, 3382 Aletha Drive, Baton Rouge, La. 70814
Filed Mar. 1, 1974, Ser. No. 447,283
Int. Cl.² F02B *53/04*
U.S. Cl. 123—8.13 **21 Claims**



1. In a rotary engine for the intake and combustion of a fuel and air mixture which includes the combination of
a stator formed by an outer casing,
a rotor coaxially mounted and rotatable within said outer casing,
a plurality of main chambers located within the annulus between the inside wall of the stator casing and external wall surface of the rotor, each being formed by lobes which extend from the external wall surface of the rotor into sliding contact with the inside wall of said stator casing, these including a main firing chamber,
input means for the introduction of a gaseous combustible mixture of fuel and air into a main chamber of the engine,
means for compressing and firing the fuel and air mixture within a primary firing chamber, the volume of the main firing chamber expanding as thrust is imparted by the combusting gaseous mixture to produce rotation of said rotor, and
output means for the exhaust of the burned fuel from a main chamber of the engine,
the improvement comprising
minor chambers formed by recesses located within the inside wall of the stator for the incremental feeding of fuel admixtures into said main firing chamber and for the bypass of combusted fuel for admixture with fresh fuel and subsequent recycle to the main firing chamber, and wherein said
main firing chamber is contoured to provide for an initial rapid increasing of the rate of volume expansion of combusting fuel to moderate the rise in temperature and suppress the formation of nitrous oxides, with a subsequent decreasing of the rate of volume expansion to sustain the moderated temperature and enhance a more complete combustion of the fuel, and then a subsequent increasing of the rate of volume expansion as combustion subsides to provide an increased area for receipt of generated forces through an elongated section to more fully utilize the forces produced.

3,924,579
ROTARY INTERNAL COMBUSTION ENGINE
Paul B. Johnson, 12077 Custer St., Yucaipa, Calif. 92399
Filed Mar. 22, 1974, Ser. No. 453,682
Int. Cl.² F02B *53/08*
U.S. Cl. 123—8.23 **2 Claims**

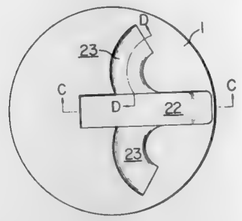
1. An engine comprising
a cylindrical stator having end walls,
a first partition ring within said stator intermediate said walls,
a cylindrical rotor rotatable within said stator,
said rotor being concentric with stator,
said stator, ring and rotor forming an intake-compression chamber and a combustion-exhaust chamber,
a first camming member on said rotor in sealing engagement with said intake-compression chamber,
a second camming member on said rotor in sealing engagement with said combustion-exhaust chamber,
a first sealing gate supported by said stator for movement radially relative to said rotor into and out of said intake-compression chamber,
said gate having a first cavity therein openable into said intake-compression chamber,
a second sealing gate supported by said stator for movement radially relative to said rotor into and out of said combustion-exhaust chamber,
said second gate having a second cavity therein openable into said combustion-exhaust chamber,



said first and second cavities being in communication with each other,
said first camming member being effective to cam said first gate out of said intake-compression chamber and to close said first cavity from said intake-compression chamber,
said second camming member being effective to cam said second gate out of said combustion-exhaust chamber and to close said second cavity when said first cavity is open to said intake-combustion chamber,
means to convey combustible fuel to said intake-compression chamber,
a device for causing ignition in said cavities,
means to convey products of combustion from said combustion-exhaust chamber,
said camming members being yieldable radially outwardly from said rotor.

3,924,580
MAIN COMBUSTION CHAMBER OF SWIRL CHAMBER TYPE DIESEL ENGINE
Kaoru Taira, and Hirotoshi Inoue, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan
Filed Nov. 15, 1974, Ser. No. 524,259
Claims priority, application Japan, May 2, 1974, 49-49547[U]
Int. Cl.² F02F *3/26*; **F02B** *23/02*
U.S. Cl. 123—30 C **3 Claims**

1. In a swirl chamber type diesel engine having a cylinder with a piston slidable therein,
a main combustion chamber defined in said piston, said main combustion chamber comprising a straight inclined groove formed in the top surface of said piston, said straight groove extending diametrically from an edge portion of said surface and becoming shallower as the groove extends inward from said edge portion, said main combustion chamber further comprising a pair of branched inclined grooves extending from said straight inclined groove, each one of said pair of grooves being curved and having a portion curving back toward said

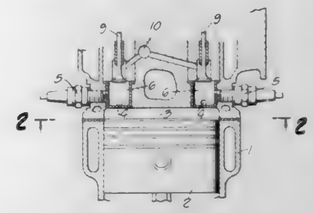


edge portion, and each one of said pair of grooves becoming shallower as it extends from said straight groove.

3,924,581
DOWELING CONSTRUCTION FOR ROTARY ENGINE HOUSING
Charles Jones, Hillsdale, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.
Filed Dec. 6, 1974, Ser. No. 530,288
Int. Cl.² F02B *53/00*
U.S. Cl. 123—8.45 **5 Claims**

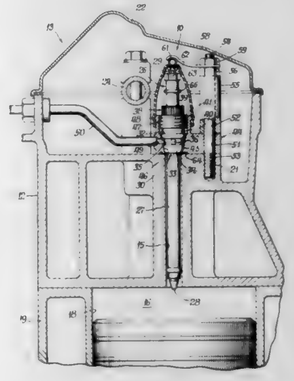
1. In a rotary internal combustion engine having a housing consisting of a pair of spaced, substantially parallel end walls and a peripheral wall having a trochoidal shaped inner surface, the end and peripheral walls defining therebetween a cavity in which a rotor is mounted for planetary rotation and which defines with said walls working chambers which successively expand and contract in volumetric size as the rotor rotates relative to the housing, wherein combustion occurs in the working chambers adjacent one area of the housing exposing that area to relatively higher temperatures and pressures than in the remainder of the housing whereby said area is subjected to high stresses, and wherein at least one end wall and the peripheral wall have different rates of expansion than the other housing walls which differential expansion would tend to subject the housing to additional stress, an improved dowel structure for maintaining alignment of said end walls and peripheral wall, comprising:
a. at least two dowels disposed in the high stress area on opposite sides of the lobe junction in this area of high stress and extending through said end walls and peripheral wall;
b. one of the dowels being disposed to project through an elongated opening in the end wall having a different rate of expansion; and
c. said elongated opening having a longitudinal axis extending in a direction to obviate the additional resultant stress loading on the housing arising out of the differential rate of expansion between the end wall and said peripheral wall.

3,924,582
AUXILIARY CHAMBERS FOR INTERNAL COMBUSTION PISTON ENGINES
Shizuo Yagi; Kiyoshi Miyaki, both of Osaka, and Hiroshi Kogure, Tokorozawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 4, 1974, Ser. No. 439,127
Claims priority, application Japan, Feb. 14, 1973, 48-17412
Int. Cl.² F02B *19/10*, *19/18*
U.S. Cl. 123—32 SP **4 Claims**



1. In an internal combustion piston engine having a valved intake passage for supplying a lean mixture to a main combustion chamber and a valved exhaust passage leading from said chamber, the improvement comprising, in combination: two auxiliary combustion chambers diametrically opposed and symmetrically positioned with respect to the main combustion chamber, ignition means associated with each auxiliary chamber, passage means for supplying the rich mixture to each of said auxiliary chambers, each auxiliary chamber having an auxiliary intake valve controlling flow of rich mixture thereto, respectively, and each having a torch nozzle connecting each auxiliary chamber to said main chamber, respectively, the torch nozzles extending in opposite directions with respect to a plane containing the centers of said auxiliary chambers.

3,924,583
MOUNTING APPARATUS
Thomas K. Jardin, Oxnard, Calif., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed June 21, 1974, Ser. No. 481,799
Int. Cl.² B05B *1/30*
U.S. Cl. 123—32 JV **9 Claims**



1. An improved mounting apparatus, for use in combination with an internal combustion engine having a fuel injection nozzle, a fuel supply line and a cylinder head with the head having a substantially smooth nozzle-receiving bore, comprising:

means forming an external frustoconical surface on said nozzle;

an adapter having an elongated opening therethrough registerable with the nozzle-receiving bore in the head, which opening has an internal frustoconical surface positionable in mating engagement with said external frustoconical surface of said nozzle for supporting the nozzle in predetermined axially extended relation in said bore;

means for operatively connecting said fuel supply line to the adapter and including passage means for supplying fuel therefrom into the nozzle;

first fastening means spaced from said opening for detachably securing said adapter to said head; and

second fastening means independent of said first fastening means and including an internally screw-threaded protuberance formed upon said adapter in coaxially extending relation above said opening thereof and a mating externally screw-threaded member provided about said nozzle which is selectively screw-threadably engageable with said protuberance for separately removably securing said nozzle to said adapter so that the nozzle is selectively removable from the engine without requiring the disassembly of the adapter from the cylinder head or any disturbance of the fuel supply line.

3,924,584

INTERNAL COMBUSTION ENGINE OPERATED BY A LAYERED CHARGE

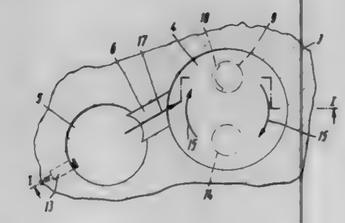
Gerd Decker, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Mar. 6, 1974, Ser. No. 448,499

Claims priority, application Germany, Mar. 12, 1973, 2313201

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 ST **7 Claims**



1. Internal combustion engine operated with a stratified charge, comprising:

a. a main combustion chamber;

b. a precombustion chamber;

c. a connecting channel interconnecting the precombustion chamber with the main combustion chamber and disposed approximately tangential thereto;

d. means operative for generating a twisting current in a predetermined direction in the main combustion chamber, said connecting channel issue discharging into the main combustion chamber approximately tangential to the direction of said twisting current.

3,924,585

ELECTROMAGNETIC FAN CLUTCH FOR A WATER-COOLED VEHICLE ENGINE

Robert L. Woods, Mesquite, Tex., assignor to Eagle-Motive Industries, Inc., Fort Worth, Tex.

Filed Jan. 23, 1975, Ser. No. 543,469

Int. Cl.² F16D *27/10, 43/25*

U.S. Cl. 123—41.12 **4 Claims**

1. An electromagnetic clutch for the radiator cooling fan of a motor vehicle engine comprising:

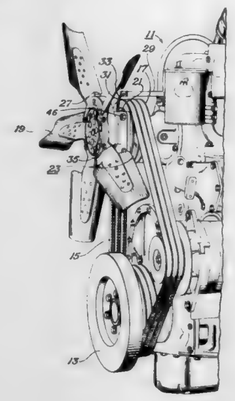
a shaft having one end adapted to bolt to the fan mounting of said engine,

a field coil carried concentrically on said shaft by bearings,

a housing of non-magnetic material carried forwardly of said coil and mounted on said shaft by bearings,

said housing provided with means for mounting a fan,

a hub attached rigidly to said shaft adjacent the forward end of said shaft,



an armature mounted movably to said hub, movable in a plane parallel to said shaft,

bias means connected between said hub and said armature urging said armature away from said housing,

energizing means for supplying electrical current to said coil,

whereby upon energization of said coil a magnetic force draws said armature inwardly to engage frictionally with said housing in order to rotate said fan with said shaft.

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VACUUM CONTROL ASSEMBLY

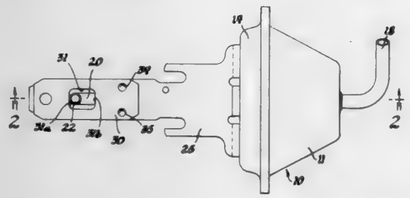
Clarence L. Julian, Daleville, and Robert E. Young, Anderson, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 3, 1973, Ser. No. 356,724

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² F02P *5/04*

U.S. Cl. 123—117 A **1 Claim**



1. A vacuum control assembly for operating the breaker plate of an automotive type ignition distributor to provide ignition spark vacuum advance for an associated internal combustion engine comprising, a vacuum unit including at least a casing, a diaphragm enclosed within said casing in such a manner as to provide a vacuum chamber, a spring interposed between said diaphragm and said casing for urging said diaphragm in a first direction, a vacuum port communicating with said vacuum chamber and an operating rod oscillated linearly by said diaphragm having an elongated portion secured to said diaphragm and an operating end portion extending substantially normal to said elongated portion for operatively engaging said breaker plate, a mounting bracket rigidly secured to said casing and extending in a direction along said operating rod, and a range bracket member having an elongated slot of a length determined by the desired range of degrees of ignition spark vacuum advance from zero to maximum which accommodates said operating end portion of said operating rod, said range bracket member, with a predetermined vacuum applied to said vacuum port, being positioned with one end wall thereof in engagement with said operating end portion of said operating rod and rigidly secured to said mounting bracket member whereby an initial compression is set in said spring.

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EXHAUST GAS RECIRCULATION SYSTEM

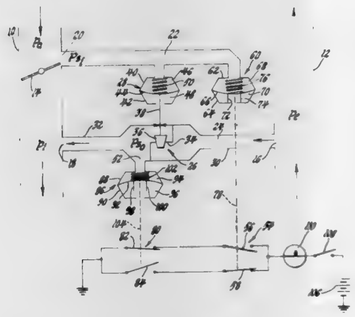
Michael P. Murphy, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1973, Ser. No. 412,867

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **2 Claims**



1. In an internal combustion engine, the combination comprising: means including an intake passage through which ambient air is drawn into the engine from the surrounding atmosphere; means including an exhaust passage through which exhaust gases are forced from the engine into the surrounding atmosphere; means responsive to the operation of the engine for developing an input signal pressure which differs from the atmospheric pressure by more than a first predetermined amount when the recirculation of exhaust gases from the exhaust passage to the intake passage is desired and which differs from the atmospheric pressure by less than the first predetermined amount when the recirculation of exhaust gases from the exhaust passage to the intake passage is not desired; means including a recirculation valve responsive to the input signal pressure and coupled between the exhaust passage and the intake passage for opening to permit the recirculation of exhaust gases from the exhaust passage to the intake passage through the valve when the input signal pressure differs from the atmospheric pressure by more than the first predetermined amount and for closing to prohibit the recirculation of exhaust gases from the exhaust passage to the intake passage through the valve when the input signal pressure differs from the atmospheric pressure by less than the first predetermined amount; means responsive to operation of the recirculation valve for developing an output signal pressure which differs from the atmospheric pressure by more than a second predetermined amount when the recirculation valve is closed and which differs from the atmospheric pressure by less than the second predetermined amount when the recirculation valve is open; and means responsive to the input and output signal pressures for indicating that the recirculation valve is stuck closed when the input signal pressure differs from the atmospheric pressure by more than the first predetermined amount and the output signal pressure differs from the atmospheric pressure by more than the second predetermined amount or for indicating that the recirculation valve is stuck open when the input signal pressure differs from the atmospheric pressure by less than the first predetermined amount and the output signal pressure differs from the atmospheric pressure by less than the second predetermined amount.

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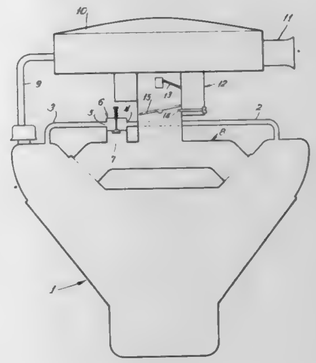
POSITIVE CRANKCASE VENTILATION SYSTEM

Lowell T. Hager, 401 Dayton Ave., West Chicago, Ill. 60185

Filed Jan. 18, 1974, Ser. No. 434,669

Int. Cl.² F02B *33/00*

U.S. Cl. 123—119 B **5 Claims**



1. A positive crankcase ventilating system for an engine having a carburetor and an intake manifold and a crankcase including gas flow connections between crankcase and intake manifold and between crankcase and carburetor air intake, in combination, a flow control valve interposed in the crankcase-intake manifold connection, said flow control valve being a spring poppet valve oriented to permit flow from the crankcase into the intake manifold, the extent of opening of said valve from the extreme positions of closed to full open being progressively responsive to the degree of vacuum in the intake manifold, the force applied by the spring of said poppet valve tending to close the valve against the pull of the vacuum in the intake manifold being such that the valve is only partly open when the engine is idling, is closed during substantial acceleration, and is full open during substantial deceleration.

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EXHAUST GAS RECIRCULATING APPARATUS

Hidetaka Nohira, and Kiyoshi Kobashi, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 369,002, June 11, 1973, abandoned.

This application Oct. 31, 1974, Ser. No. 519,642

Claims priority, application Japan, Mar. 17, 1973, 48-31311

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **7 Claims**

1. An exhaust gas recirculating apparatus associated with an engine on a motor vehicle or the like, comprising:

a regulating valve, the inlet of which is communicated with an exhaust manifold and the outlet of which is communicated with an intake manifold, said regulating valve including:

an actuating rod member,

an upper diaphragm secured to the upper end of said rod member,

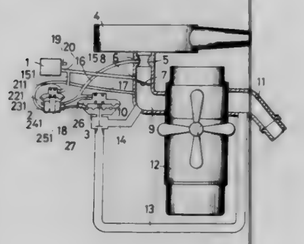
a lower diaphragm smaller than said upper diaphragm and secured to said rod member in a position below said upper diaphragm,

an upper actuating chamber defined above said upper diaphragm,

and a lower actuating chamber defined between said upper and lower diaphragms;

and a changeover device for selectively actuating said regulating valve, including

a diaphragm defining an actuating chamber provided with a first port communicating with a carburetor,



a second port communicating with said upper actuating chamber of said regulating valve and further with a Venturi portion of said carburetor,

a third port communicating with said intake manifold,

a fourth port communicating with the open air,

and a fifth port communicating with said lower actuating chamber of said regulating valve and communicatable with said third port;

said regulating valve being adapted to open to a controlled degree upon elevation of the pressure in said lower actuating chamber to nearly the atmospheric pressure, while closing upon elevation of the pressure in said upper actuating chamber to nearly the atmospheric pressure.

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INTAKE ARRANGEMENT OF AN INTERNAL COMBUSTION ENGINE

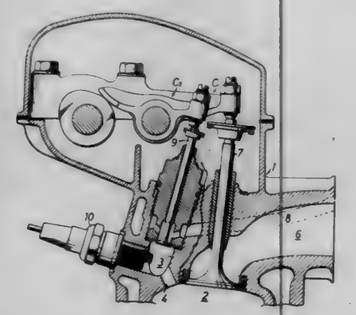
Kiyoshi Miyaki, Asaka, and Hiroshi Kogure, Tokorozawa, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 22, 1973, Ser. No. 372,679

Claims priority, application Japan, June 30, 1972, 47-77408

Int. Cl.² F02M *31/00*; **F02B** *75/02*

U.S. Cl. 123—122 AB **2 Claims**



1. In an internal combustion engine, the combination of a main combustion chamber for a lean air-fuel mixture and a smaller auxiliary combustion chamber for a rich air-fuel mixture, the chambers being connected by a torch passage, the main combustion chamber being provided with an exhaust valve and a main inlet valve and the auxiliary combustion chamber being provided with an inlet valve, a cast body having an elongated exhaust passage formed therein and controlled by the exhaust valve, said cast body also having an elongated main intake passage formed therein for a lean air-fuel mixture controlled by the main inlet valve, said exhaust and main intake passages being substantially parallel, an elongated auxiliary intake passage formed in said cast body and positioned between said other passages and extending downward at an angle with respect to them toward said auxiliary chamber, all three passages being disposed in heat conductive relation whereby the rich air-fuel mixture is heated to a greater extent than the lean air-fuel mixture.

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QUICK WARM-UP INTAKE MANIFOLD

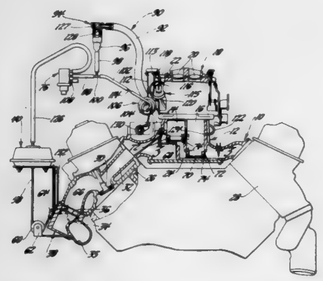
William D. Bond, Warren, and Bruce E. Zemke, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 4, 1973, Ser. No. 394,188

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² F02M *31/00*

U.S. Cl. 123—122 H **4 Claims**



1. A fuel supply system for an internal combustion engine of the type including an intake manifold having a cross-over passageway therein including a thin plate stove exposed on one surface thereof to air-fuel flow to the intake manifold and to exhaust flow on the opposite surface thereof through the cross-over passageway, the improvement comprising: vacuum actuated heat riser valve means having an opened and a closed position, a thermally responsive vacuum control device having means sensing the engine coolant temperature and valve means responsive thereto to selectively direct vacuum to the vacuum actuated heat valve means below a predetermined coolant temperature for maintaining it in its closed position to divert exhaust flow through the crossover passageway during an early fuel evaporation phase of control and operative above the predetermined coolant temperature to direct atmospheric pressure to the heat valve means to open the heat riser valve means to reduce exhaust flow through the crossover passage following the early fuel evaporation phase of operation, a carburetor including a choke for supplying an air-fuel mixture to the intake manifold, means including a vacuum operator to pull the choke open to a start position immediately after the engine has started, and means for continuing opening of the choke at a reduced rate from the start position to a full open position following a predetermined time period, said vacuum operated heat riser valve means maintaining heat flow to the stove during the choke opening period and for a period thereafter to assure vaporization of liquid fuel droplets flowing from the carburetor against the stove, said thermally responsive vacuum control device conditioning said heat riser valve means upon a predetermined increase in engine coolant temperature to open said riser valve means to prevent the heating of the stove and air-fuel flow into the engine once the engine is at a predetermined temperature as reflected by the predetermined increase in engine coolant temperature.

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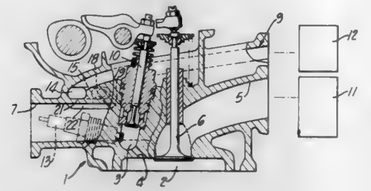
INTAKE SYSTEM FOR THREE-VALVE INTERNAL COMBUSTION ENGINE

Kiyoshi Miyaki, Asaka, and Hiroshi Kogure, Tokorozawa, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1973, Ser. No. 420,226

Int. Cl.² F02M *31/00*

U.S. Cl. 123—122 AB **6 Claims**



1. In a four cylinder spark-ignition internal combustion piston engine, all of the cylinders being in line, each cylinder having a main combustion chamber and an auxiliary combustion chamber connected by a torch nozzle, the combination of: walls forming exhaust passages leading from each of the main combustion chambers, respectively, on one side of the line of cylinders, intake passage means on the other side of the line of cylinders for delivering a lean mixture to each of said main combustion chambers, additional intake passage means for delivering a rich mixture to each of said auxiliary combustion chambers, said additional intake passage means including a transverse primary passage extending across the line of cylinders and symmetrically connected to two longitudinal passages of equal length on the same side of the line of cylinders as said exhaust passages, said longitudinal passages each being connected to two branch passages of equal length, each of said branch passages being connected to one of said auxiliary chambers, respectively, each longitudinal passage having a common wall with two adjacent exhaust passages, respectively, whereby the rich mixture being delivered through said additional intake passage means is heated by exhaust gases discharged from the main combustion chambers.

3,924,593

FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES

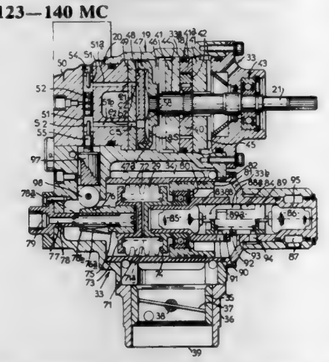
Brian Colin Pagdin, Sutton Coldfield, England, assignor to GKN Transmissions Limited, Birmingham, England

Filed Jan. 31, 1974, Ser. No. 438,354

Claims priority, application United Kingdom, Jan. 31, 1973, 4764/73

Int. Cl.² F02D *1/04, 1/06*

U.S. Cl. 123—140 MC **2 Claims**



1. In fuel injection apparatus for an internal combustion engine such apparatus comprising a body affording an air inlet duct, a fuel pump means for establishing flow of fuel to an outlet means, the outlet means being connected or adapted for connection to one or more fuel injectors, metering means operative between the pump and the outlet means and adapted to be driven in timed relation with the crankshaft or other rotary output member of the engine for delivering a measured quantity of fuel to the outlet means in each cycle of operation of the engine, and sensing means for controlling operation of the metering means and sensing parameters selected to provide a proper air to fuel ratio for a range of engine loads and a range of external conditions of operation, such sensing means comprising a plurality of sensing elements each providing a mechanical output, and mechanical addition means having input elements corresponding in number to the said sensing elements, an output element, and means for algebraically adding displacements imparted to said input elements and applying the resultant to the said output element, the improvement wherein said mechanical addition means comprises:

a. sleeves movable relatively to each other lengthwise of an axis, each sleeve having an axially extending slot slidably receiving an axially extending limb of the other sleeve for coupling said elements to each other for rotation in unison about said axis

b. means for generating an increment of rotation in response to movement of each of said sleeves lengthwise of said axis

c. means for connecting one of said sleeves to said body and the other said sleeve to said metering means whereby the algebraic sum of said increments of rotation is transmitted to said metering means

d. each of said sensing elements comprising a mounting part and a output part movable relatively to the mounting part lengthwise of said axis with said output part associated operatively with a respective one of said sleeves.

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DIESEL ENGINE FUEL INJECTION PUMP GOVERNOR

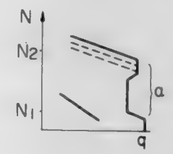
Hachiro Aoki, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed May 22, 1974, Ser. No. 472,396

Claims priority, application Japan, June 23, 1973, 48-74075[U]

Int. Cl.² F02D *1/04, 1/06*

U.S. Cl. 123—140 CC **14 Claims**



1. An engine fuel injection pump governor comprising:

a fuel injection control rod;

flyweights displaceable upon rotation thereof;

first linkage means operatively connecting said flyweights to said control rod;

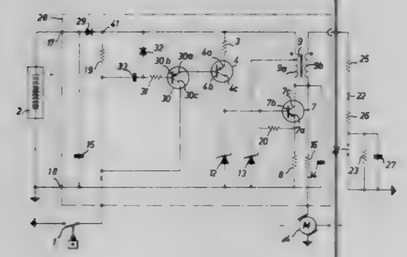
governor spring means connected to said first linkage means and operable to biasingly oppose displacement of said flyweights upon rotational speed increase of the latter; and

second linkage means connected to and movable by said first linkage means, said control rod being engagable with said second linkage means during movement of said control rod in a fuel injection increasing direction to limit the movement of said control rod in accordance with a predetermined function of flyweight rotational speed, said second linkage means including a cam having a profile selected to provide said predetermined function.

3,924,595
AUTOMATIC TURN-OFF FOR TRANSISTORIZED IGNITION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

Heinrich-Josef Brungsberg, Ludenscheid, Germany, assignor to Brown, Boveri & Cie. A.G., Mannheim, Germany

Filed June 3, 1974, Ser. No. 480,541
Claims priority, application Germany, June 12, 1973, 2329918
Int. Cl.² F02P *1/00*; **H05B** *37/02*
U.S. Cl. 123—148 E **2 Claims**



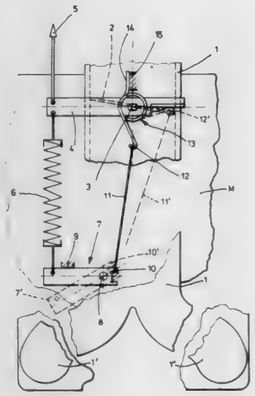
1. An ignition system for internal combustion engines including

a. an ignition coil (**9**) having a primary winding (**9***a*) and a secondary winding (**9***b*);
b. a power transistor (**7**) having a current path arranged in series with said primary winding for controlling the flow of current through said primary winding;
c. a first auxiliary transistor (**4**) controlling the current flow through said power transistor (**7**);
d. an interrupter (**1**) having relatively movable contacts;
e. a second auxiliary transistor (**30**), said second auxiliary transistor (**30**) and said first auxiliary transistor (**4**) being cascade connected and said second auxiliary transistor having a current path including a capacitor (**30**) and said interrupter (**1**) arranged in series relation, whereby current flow through said second auxiliary transistor (**30**) is interrupted when said interrupter (**1**) is in the closed position thereof and said capacitor (**33**) charged;
f. a discharge circuit for said capacitor (**33**) including a first diode (**32**) for discharging said capacitor (**33**) in response to reopening of said interrupter;
g. a first resistor (**19**) arranged in series with said interrupter (**1**);
h. one end of said first resistor (**19**), the emitter (**4***a*) of said first auxiliary transistor (**4**) and the cathode of said diode (**32**) being connected to a common terminal (**17,41**);
i. the base (**4***b*) of said first auxiliary transistor (**4**) being connected to the emitter (**30***a*) of said second auxiliary transistor (**30**);
j. the base (**30***b*) of said second auxiliary transistor (**30**) being connected by the intermediary of a second resistor (**31**) and said capacitor (**33**) to the other end of said first resistor (**19**); and
k. the collector (**30***c*) of said second auxiliary transistor (**30**) being directly connected to said other end of said first resistor (**19**).

3,924,596
FAIL-SAFE THROTTLE FOR AN INTERNAL COMBUSTION ENGINE

Peter Klemm, Wolfsburg, and Klaus Schulze, Hondelage, both of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Jan. 4, 1974, Ser. No. 430,777
Claims priority, application Germany, Jan. 12, 1973, 2301449
Int. Cl.² F02B *77/00*
U.S. Cl. 123—198 D **7 Claims**



1. Throttle control for internal combustion engines, particularly for an automobile having a throttle in an air intake manifold, comprising

throttle means movable between an idle position and a plurality of operating positions;
a normally operative first spring connected to said throttle means and biasing the same to said idle position;
a further spring which is normally disconnected from said throttle means; and
means for operatively connecting said further spring to said throttle means only in the event of failure of said first spring, for said further spring to bias said throttle means to said idle position thereof.

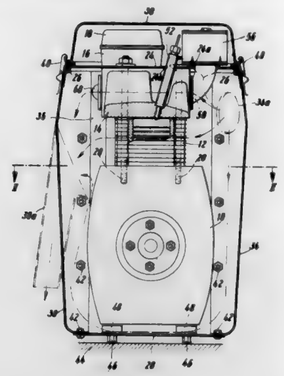
3,924,597
INTERNAL COMBUSTION ENGINE HAVING A SOUND-MUFFLING CASING

Ernst Hatz, Runstorf, and Johann Schmuck, Feilnbach, both of Germany, assignors to Motorenfabrik Hatz KG., Ruhstorf, Germany

Filed Mar. 13, 1974, Ser. No. 450,612
Int. Cl.² F02B *77/00*
U.S. Cl. 123—198 E **7 Claims**

1. In combination with an internal combustion engine having at least two mating part and fastening means for fastening said two parts together, a sound-absorbing casing completely enclosing said engine, comprising:

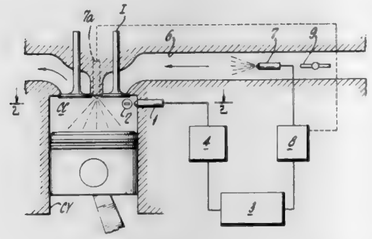
a support plate positioned and secured between said two parts when said two parts are fastened together by said fastening means, said support plate extending laterally outwardly from the walls of said internal combustion engine;
a plurality of sound-muffling plates releasably connected together to define a casing having an open side thereon, said internal combustion engine being received in said casing;
releasable securing means for releasably securing said casing adjacent the edges of said open side to said support plate; and
vibration damping material located between said support plate and said sound-muffling plates and encircling the periphery of said open side, said casing being supported solely by said support plate through said releasable securing means and said vibration damping material.



3,924,598
INTERNAL COMBUSTION ENGINE

Charles W. Davis, Simsbury, Conn., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 1, 1972, Ser. No. 302,692
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² F02B *19/10*, *19/16*
U.S. Cl. 123—32 ST **9 Claims**

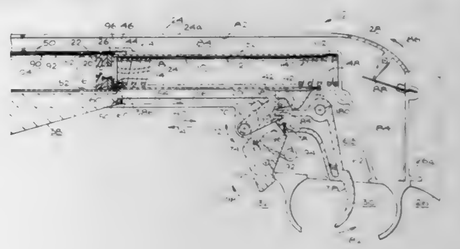


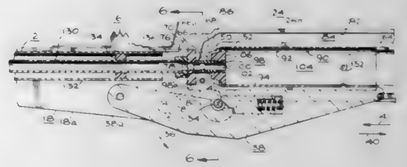
1. An apparatus for the coordinated control of the operation of an internal combustion engine with a leaner usual fuel-air mixture, i.e., a fuel to air (F/A) ratio less than 0.055 (weight basis), by variation of the mixture strength with maximum air consumption comprising a first control means comprising a pilot charge fuel control unit and including injection means for providing an intermittent timed injection of a predetermined quantity of a pilot fuel charge into the combustion chamber of a cylinder of said engine and positive ignition means, e.g. a spark plug, in said combustion chamber adjacent said injection means, intake means for providing a variable premixed fuel-air mixture leading into, said combustion chamber a second control means comprising a premixed charge fuel control unit and including a nozzle positioned in said intake means for providing fuel thereinto, a first pivoted triple linkage comprising an arm, a pinned link and a control lever in operative association with said second control means and electrical switch means actuated thereby, a second triple linkage comprising an arm and a pair of slotted links pinned thereto in operative association with said first control means, one of said pair of slotted links being joined pivotally to said control lever of said first triple linkage, said pair of slotted links responding to the positioning of said control lever of said first triple linkage, one of said pair of slotted links of said second triple linkage being responsive to said electrical switch means.

3,924,599
AIR GUN MECHANISM ARRANGEMENT INCLUDING TRIGGER SAFETY

William D. Hammond, San Juan Capistrano, Calif., assignor to L & R Industries, Inc., Torrance, Calif.

Division of Ser. No. 362,421, May 21, 1973. This application Oct. 21, 1974, Ser. No. 516,168
Int. Cl.² F41B *11/00*; **F41C** *17/02*
U.S. Cl. 124—15 **7 Claims**





1. An air operated gun mechanism comprising, in combination:

a housing;
a compression tube means slidably mounted in said housing for reciprocating motion between a firing position and a retracted position, and having a forward end having first walls defining an air passage aperture;
a plunger means slidably mounted in said housing for reciprocating motion between a firing position and a retracted position, and said plunger means having a forward position slidably mounted in said compression tube means and having a predetermined frictional force therebetween, and said forward portion adjacent said forward end of said compression tube means for the condition of said plunger means and said compression tune means in said firing position thereof, and said compression tube means free of air passageways communicating with regions extenal thereof other than said air passage aperture intermediate said forward end of said compression tube means and said forward end of said plunger means;
cocking means movably mounted in said housing for moving said plunger means from said firing position to said retracted position by movement of said cocking means in a first direction, and said predetermined frictional force between said plunger means and said compression tube means being of such magnitude that when said plunger means is moved by said cocking means from said firing position of said plunger means to said retracted position thereof, said friction force moves said compression tube means from said firing position thereof to said retracted position thereof with said compression tube means free of engagement with said cocking means for said movement between said firing position of said compression tube means and said retracted position thereof, and said cocking means moving said compression tube means from said retracted position to said firing position by movement of

said cocking means in a second direction opposite said first direction;

spring means for resiliently resisting movement of said plunger means from said firing position to said retracted position, and said spring means in a compressed condition for the condition of said plunger means in said retracted position, and said spring means extendable to an extended position to drive said plunger means from said retracted position to said firing position;

trigger means manually actuable for releasably holding said plunger means in said retracted position thereof to releasably hold said spring means in said compressed condition thereof, and actuating said trigger means releases said spring means to drive said plunger means into said firing position thereof, and said movment of said cocking means in said second direction moves said compression tube means into said firing position thereof free of spring forces thereon by said spring means;

projectile holding means on said housing means for holding a projectile to be fired adjacent said air passage aperture to said compression tube for the condition of said compression tube in said firing position, and

safety means movably mounted on said housing and operatively engaging said trigger means and manually movable from a safety position preventing trigger means actuation to a released position allowing trigger means actuation.

3,924,600

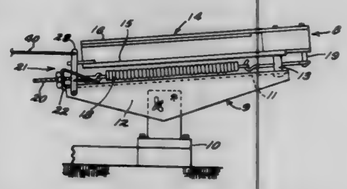
THROWING ARM LATCH FOR SPRING TARGET TRAPS

Geroge C. Luebkeman, 115 Mount Nebo Road, Cleves, Ohio 45002

Continuation of Ser. No. 381,277, July 20, 1973, abandoned. This application Jan. 9, 1975, Ser. No. 539,932

Int. Cl.² F41B *3/04*

U.S. Cl. 124—36 **5 Claims**



1. In a latch assembly for target traps each having an elongated base including a top wall and a side wall depending from a side edge of the top wall, a target throwing arm mounted on the forward end of the base for swinging movement above said base, a contractile spring for the throwing arm positioned between the arm and the base, a latching dog extending from the rear end of the arm, a latch lever associated with the dog, and a lateral pivot means mounting the lower end of the latch lever to the rear exterior part of the base side wall for oscillating movement in a plane normal to the swinging movement of the arm, said assembly comprising;

a bracket mounted upon a rear part of a base's top wall of a trap supporting member and said bracket having an upstanding back wall,

mounting means on the lower end of the back wall connecting the bracket to the rear end of base's top wall of a trap supporting member,

a downwardly and forwardly inclined wall having a lateral portion overhanging a side wall of a base of a trap supporting member and connected to the upper portion of the back wall, and flange means connecting the front portion of the back wall to the top wall of a base of a trap supporting member,

a narrow, longitudinally extending slot formed in the lateral portion of the inclined wall, a latch lever projecting vertically through the slot and having a foreshortened upper end associated with a dog on a throwing arm,

a spring disposed within the bracket biasing the latch lever into latching position with a dog,

said forward end of the slot forming a stop for said lever in said latching position, and latch trip means connected to the free end of the lever, the rear end of said slot forming a stop for the trip means, the lateral side edges of the slot supporting the lever against lateral stress when a throwing arm is moved towards latching and into cocked positions on a base of a trap supporting member and supporting the lever against lateral stress when the lever is moving toward unlatched condition.

3,924,601

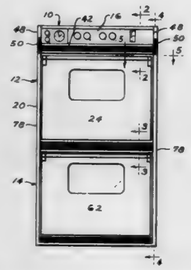
WALL OVEN EXHAUST DUCT SYSTEM

James J. Nuss, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 4, 1974, Ser. No. 520,721

Int. Cl.² F24C *15/32*

U.S. Cl. 126—21 R **10 Claims**



1. A cooking oven comprising an oven body surrounding an oven cooking cavity formed by a box-like oven liner and a front-opening access door, the oven liner having an oven vent opening, first duct means connecting the oven vent opening to an area adjacent the front of the oven body at a location above the access door, said first duct means being connected to a second duct means extending to the side of the oven body, and an exhaust port means at the side of the oven body with a frontward discharge whereby the oven exhaust is substantially clear of the said access door.

3,924,602

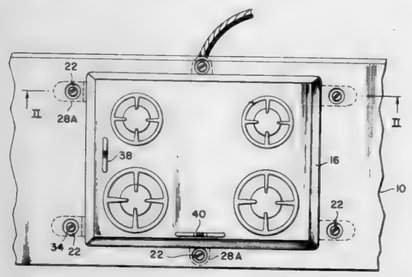
STOVE TOP WITH LEVELING MEANS

Fred Irwin, Sunnyvale, Calif., assignor to Raymond Lee Organization Inc., a part interest

Filed Aug. 26, 1974, Ser. No. 500,337

Int. Cl.² F24C *15/00*

U.S. Cl. 126—214 A **5 Claims**



1. Stove apparatus adapted to be installed in a horizontal counter top opening having two oppositely disposed sides, the counter top edges defining said sides each having at least one vertical bore, said apparatus comprising:

first and second horizontal members spaced below the counter top underneath the bores;

means secured to said members and to said top to hold the members in position;

a stove having a top overlying the counter top and fitting slidably within the opening;

L-shaped bracket means secured to said stove and having horizontal portions extending between bores and members, each portion having a threaded nut aligned with and disposed below the corresponding bore; and

manually rotatable threaded bolts, each bolt extending through the corresponding bore and threadedly engaging the corresponding threaded nut in the corresponding bracket portion, each bolt having a top end accessable from the top of the counter and having a bottom end bearing against the corresponding member.

3,924,603

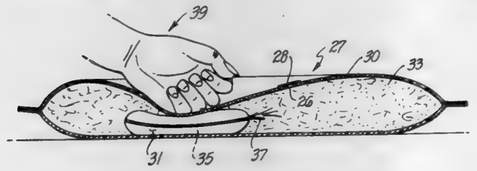
FLAMELESS HEAT SOURCE FOR USE THEREIN FOR SPLICING CABLES

Nancy L. Chapin, San Diego, Calif., assignor to Kay Laboratories, Inc., San Diego, Calif.

Filed June 17, 1974, Ser. No. 480,022

Int. Cl.² F24J *1/04*

U.S. Cl. 126—263 **27 Claims**



1. A portable heat source, including:

a first container;

a second container disposed in the first container;

first chemical means disposed in a particular one of the first and second containers;

second chemical means disposed in the other one of the first and second containers and having properties for entering at least a first reaction with the first chemical means to produce a first quality of heat and thereby elevate the temperature of the heat source to a first particular temperature;

third chemical means disposed in the other one of the first and second containers and having properties for entering at least a second reaction with the first chemical means in the first container to generate a second quantity of heat and thereby elevate the temperature of the heat source to a second particular temperature, the second and third chemical means having properties of activating each other to produce a greater amount of heat than the sum of the first and second quantities of heat when combined chemically with the first chemical means and thereby generate a third temperature higher than the first and second particular temperatures;

the second container having properties for being ruptured to permit the mixing and reacting of the first chemical with the second and third chemicals to produce heat and thereby elevate the temperature of the heat source.

3,924,604

SOLAR ENERGY CONVERSION SYSTEM

Donald E. Anderson, Northfield, Minn., assignor to G. T. Schjeldahl Company, Northfield, Minn.

Filed May 31, 1974, Ser. No. 475,164

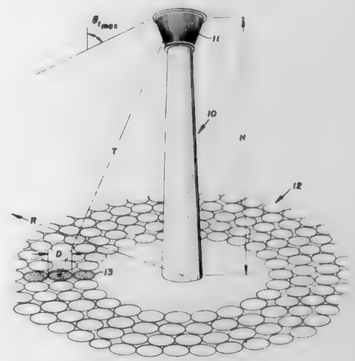
Int. Cl.² F24J *3/02*

U.S. Cl. 126—270 **9 Claims**

1. Solar energy concentrator means, comprising in combination:

a. a centrally disposed column means having solar receiver means arranged at an elevated disposition thereon and having means defining a central system axis, pivotally mounted support pads, each pad supportably retaining an array of solar reflective elements, with each of said pivotally mounted support pads being disposed about said column and spaced outwardly from said central system axis;

b. means supportably mounting said support pads for axial rotation about the central axis thereof, and first drive means for controllably rotating each of said pads about the central axis of each of said pads;



c. said solar reflective elements being mounted upon said support pads for pivotal arcuate rotation of said reflective elements about a generally horizontal support axis;

d. said solar reflective elements having at least one surface reflective to solar radiation, with said reflective surface being mounted upon support frame means, second drive means providing rotational movement of a plurality of said support frame means about said generally horizontal support axis;

e. said second drive means positioning said support frame means to provide substantially concurrent reflection of incident solar radiation from each individual solar reflective surface on each of said support frame means onto said solar receiver means.

3,924,605

EMISSION CONTROL METHOD AND APPARATUS FOR SMOKESTACKS OR OTHER WASTE GAS DISCHARGE STACKS

James A. Weinman, and Charles R. Stearns, both of 1225 W. Dayton St., Madison, Wis. 53576

Filed Dec. 2, 1971, Ser. No. 204,161

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² F23J *11/12*

U.S. Cl. 126—307 A **19 Claims**

1. A method of controlling the waste emissions from a waste gas discharge stack,

comprising the steps of measuring downwardly directed wind components in the neighborhood of the top of the stack,

and closing the stack to prevent the discharge of waste emissions therefrom when a downward wind component exceeding a predetermined magnitude is measured,

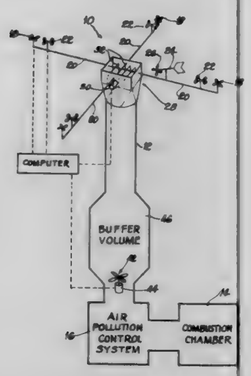
the stack being opened in the absence of a downward wind component, exceeding said predetermined magnitude,

the stack being kept open in the absence of a downward wind component exceeding said predetermined magnitude regardless of the presence or absence of horizontal wind components in the neighborhood of the top of the stack.

6. Apparatus for controlling waste emissions from a waste gas discharge stack

comprising valve means for selectively closing the stack to prevent the discharge of waste emissions therefrom,

vertical wind sensor means for detecting a downward vertical wind component in the vicinity of the stack,



and control means for operating said valve means to close the stack when a downward vertical wind component is detected by said sensor means,

said control means comprising means for causing said valve means to open the stack in the absence of such downward vertical wind component regardless of the presence or absence of a horizontal wind component in the vicinity of the stack.

3,924,606

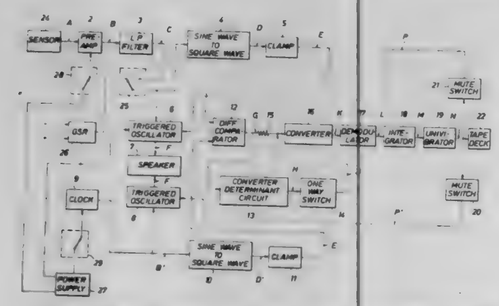
SYSTEM AND METHOD FOR MONITORING PHYSIOLOGICAL PARAMETERS

José R. Silva, and John M. Narrace, both of Laredo, Tex., assignors to José R. Silva, Laredo, Tex.

Continuation-in-part of Ser. No. 334,743, Feb. 22, 1973, Pat. No. 3,875,930. This application Nov. 23, 1973, Ser. No. 418,400

Int. Cl.² A61B *5/04*

U.S. Cl. 128—2.1 B **9 Claims**



1. A system for monitoring a variable human physiological parameter and the like, comprising

detection means for deriving an electrical signal representative of a parameter sought to be monitored,

voltage means for deriving from said signal a voltage having an amplitude functionally related to a characteristic of said parameter sought to be monitored,

a tone signal generator for providing a sequence of discrete increments of tone signal each having a duration and rate of occurrence functionally related to the amplitude of said voltage, and

audio means responsive to said increments of tone signal.

3,924,607

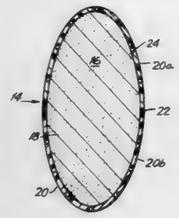
DEVICE FOR TESTING FOR THE PRESENCE OF MICRO-ORGANISMS

Louis Bucalo, 155 Roberts St., Holbrook, N.Y.

Division of Ser. No. 329,862, Feb. 5, 1973, Pat. No. 3,842,166. This application Aug. 23, 1974, Ser. No. 499,926

Int. Cl.² A61B *10/00*

U.S. Cl. 128—2 W **8 Claims**



1. A device to test for the presence of micro-organisms, comprising a culture medium for promoting the growth of micro-organisms which may be present in a body cavity such as the mouth, the nose, a sinus passage, the ear, the anal canal, the vagina, the urethra, the uterus, etc., of the type encountered in human beings, and carrier means carrying the culture medium and forming with the latter a complete unit having at its entire exterior surface a sufficient smoothness and a configuration and size to be comfortably received in and temporarily retained and enclosed entirely within the body cavity with the culture medium being rendered accessible by the carrier means to micro-organisms which are in the body cavity, so that the micro-organisms, if the are present in the body cavity, can grow in the culture medium under the conditions which prevail in the body cavity.

3,924,608

ENDOSCOPE

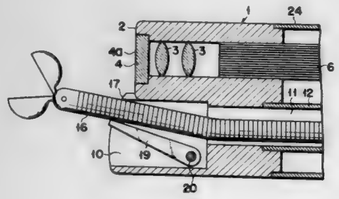
Kazuhiko Mitsui, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 22, 1974, Ser. No. 472,343

Claims priority, application Japan, May 23, 1973, 48-60530[U]; May 23, 1973, 48-60531[U]; May 23, 1973, 48-60532[U]

Int. Cl.² A61B *1/06*

U.S. Cl. 128—2 B **6 Claims**



1. An endoscope to be inserted in the human body cavity including a distal end section having an outer surface provided with a view window, a control unit provided at the proximal end, and a flexible tube connecting said distal end section to said control unit, said endoscope further comprising:

port means formed in said distal end section so as to open at the outer surface, including a main suction port, and adapted to receive liquid substance from the body cavity under suction;

channel means including a forceps channel communicating with the main suction port of said port means and adapted to let the liquid substance pass therethrough from said port means; and

a valve member disposed in the main suction port of said port means and made movable between an open position in which the opening area of the main suction port is fully open and a restricting position where it restricts the opening area of the main suction port, said valve member being positioned relative to said view window and said suction port such that when the valve member is moved to the restricting position, the direction of flow of the liquid substance being taken into said port means under suction is changed to one substantially parallel to said view window and the flow of the liquid substance is accelerated thereby removing the liquid substance deposited on the view window.

3,924,609

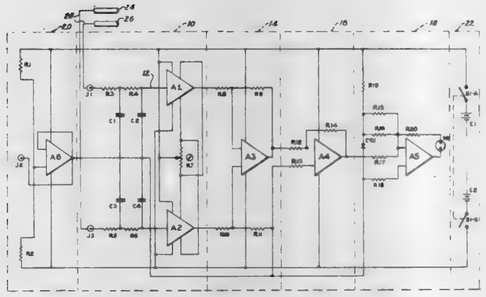
DETECTOR DEVICE AND PROCESS FOR DETECTING OVULATION

Robert Friedenberg, 8792 Oxwell Lane, Laurel, Md. 20810; William Reese, Sterling, Va. 22170, and William H. Reading, III, 3432 Brookwood Drive, Fairfax, Va. 22003

Filed July 2, 1974, Ser. No. 485,262

Int. Cl.² A61B *5/05*

U.S. Cl. 128—2.1 R **15 Claims**



1. Method for determing the phase of an ovulation cycle in an adult mammalian female comprising applying conductive contacts each to a widely separated area of the body of the test individual remote from the ovulation site, measuring and visibly indicating the D.C. potential developed between the conductive contacts by a test circuit having a high input impedance and a high common mode rejection in which interfering potentials developed both within and without the test body have been removed, and identifying the phase of ovulation of the female corresponding to the measured D.C. potential.

5. In a low D.C. potential measuring device for low voltage, for measurement and identifying phases of the ovulation cycle in adult female mammals measured at a point remote from the ovulation site, the combination of means for conductively contacting separate body portions remote from the ovulation site, means for measuring the potential developed between said contacting means which corresponds to the ovulation potential, and means for indicating said potential output, said measuring means including a high input impedance means and a high common mode rejection means for excluding and reducing interfering external and extraneous body generated potentials.

3,924,610

APPARATUS FOR THE RECOGNITION OF THE INITIATON OF HEART BEAT, FROM AN ELECTROCARDIOGRAM UNDER EXTREME CONDITIONS

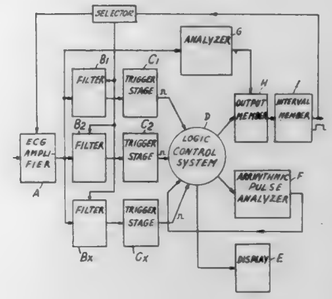
Herwig Thoma, 40/5, Maroltingergasse, Vienna, Austria

Filed Jan. 21, 1974, Ser. No. 435,385

Claims priority, application Austria, Jan. 31, 1973, 852/73

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.06 R **10 Claims**



1. Apparatus for the recognition of the initiation of heart beat from an electrocardiograph under extreme conditions, said apparatus comprising:

a. at least one relatively wide-band conventionally controlled electrocardiographic amplifier connected to the output of the electrocardiograph and having a voltage output,

b. a plurality of filter means covering a frequency spectrum and being electrically connected in parallel to the voltage output of the amplifier for filtering the entire output range of the electrocardiograph,

c. each filter means having a respective voltage output,

d. a plurality of trigger means wherein each trigger means is electrically connected to the voltage output of a respective filter means and is responsive to the pulse produced at said voltage output,

e. each said trigger means having an output for transmitting trigger pulses,

f. a logic control means electrically connected to all the pulse-transmitting outputs of said plurality of trigger means for receiving all said trigger pulses,

g. said logic control means having an output for transmitting that trigger pulse from all the trigger pulses received, that is optimal for the recognition of cardiac activity, and

h. means electrically connected to said output of the logic control means for displaying the initiation of the heart beat.

3,924,611

SPIROMETER AND ANENOMETER APPARATUS

Jury Petrovich Galitsky, ulitsa Kirova 13, kv. 31, Moscow, U.S.S.R.

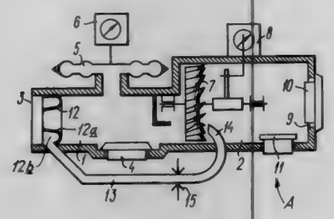
Continuation of Ser. No. 348,627, April 6, 1973, abandoned. This application May 10, 1974, Ser. No. 469,028

Int. Cl.² A61B *5/08*

U.S. Cl. 128—2.08 **4 Claims**

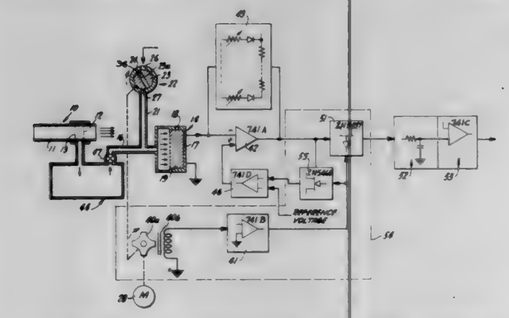
1. A spirometer and anenometer apparatus comprising wall means providing a first chamber for measuring the respiratory rate; said first chamber having an inlet opening in its wall means and an opening providing communication between the first chamber and the atmosphere; an inspiratory valve accommodated in said opening providing communication between said first chamber and the atmosphere; an aneroid respiratory rate meter in movable connection with said first chamber; a registering instrument in movable connection with said aneroid respiratory rate meter; wall means providinig a second

chamber for measuring the volume of consumed air; means providing communication between said first and second chambers; said second chamber having an outlet opening in its wall means and an opening providing communication between said second chamber and the atmosphere; an expiratory valve mounted in said outlet opening; a second inspiratory valve mounted in said opening providing communication between said second chamber and the atmosphere; a rotatable impeller mounted in said second chamber so that it faces said means providing communication between said first and second chambers and rotated by an air jet flowing from said chamber



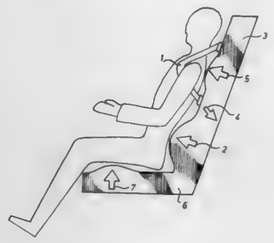
to said second chamber through said means providing communication between said first and second chambers; a second registering instrument in movable connection with said impeller to register circular motions of said impeller during exhalation; means mounted in said inlet opening of said first chamber, said means including a central opening for admitting a portion of the air coming to said inlet opening into said first chamber and a duct surrounding said central opening; and a draw-off pipe having first and second ends; said first end being connected with said duct and said second end turned to said impeller so that the air jet passing from said second end exerts a damping action upon said impeller.

3,924,612
SPIROMETER APPARATUS AND METHOD
Philip T. Dempster, 322 Key Blvd., Richmond, Calif. 94805, and John Y. Pun, 1344 S. 49th St., Richmond, Calif. 94804
Filed Jan. 28, 1974, Ser. No. 437,147
Int. Cl.² A61B *5/08*
U.S. Cl. 128—2.08 **9 Claims**



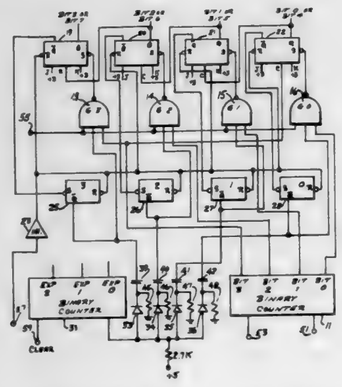
1. In a spirometer, a pneumotach, and pressure transducer connected to said pneumotach for developing an electrical signal in response to pressure changes, chopper means connected in parallel between said input to said transducer and atmospheric pressure to thereby alternately open and close the transducer input between a position reference to atmosphere and a position referenced to the pressure received from said pneumotach, means for continuously operating said chopper means between the open and closed positions, means for amplifying the electrical signals received from said transducer, and circuit means for sensing the position of said chopper means and for synchronously driving said amplifying means to a reference base line whenever said chopper means is opened to reference atmospheric pressure.

3,924,613
SEAT, PARTICULARLY FOR MOTOR VEHICLES
Armin Beck, Sudetenstrasse 11, 8080 Furstenfeldbruck, Germany
Filed July 25, 1974, Ser. No. 491,691
Claims priority, application Germany, Aug. 1, 1973, 2339069; Aug. 26, 1974, 2420446
Int. Cl.² A61H *1/00*
U.S. Cl. 128—24 R **18 Claims**



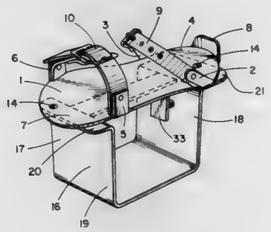
1. In a seat comprising at least one support surface having a surface facing a user of said seat, the improvement comprising means for producing a forward curvature of said support surface as a function of time in a defined area of said support surface and at a level of a specific portion of the user's spinal column abutting on said support surface to physically flex said spinal column adjacent said support surface and at least one shoulder strap for holding the shoulders of said user in engagement with said support surface.

3,924,614
BASE TWO EXPONENTIAL COUNTER
Joshua L. Segal, Chelmsford, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Oct. 17, 1973, Ser. No. 407,357
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² H03K *21/18*
U.S. Cl. 328—51 **1 Claim**



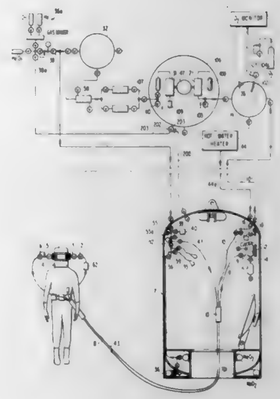
1. A base two exponential counting circuit comprising:
a. a first plurality of flip-flops, each having set and reset input terminals and a complement terminal;
b. a plurality of AND gates having the outputs thereof connected one each to the set terminals of the plurality of flip-flops, the plurality of AND gates each having a terminal for applying strobe pulses thereto;
c. a second plurality of flip-flops activated by one each of the first plurality of flip-flops, the outputs of the second plurality of flip-flops being connected to one each of the plurality of AND gates for inhibiting said gates;
d. a first binary counter having a plurality of bit outputs, one bit each connected to one of the plurality of AND gates;
e. a plurality of capacitors connected to one each of the outputs of the second plurality of flip-flops;
f. a plurality of steering diodes having one terminal connected to one each of the plurality of capacitors;
g. a plurality of grounded resistors interposed one each between the plurality of capacitors and the plurality of steering diodes; and
h. a second binary counter having an input terminal connected to the plurality of steering diodes, the outputs of the second binary counter representing an exponent count.

3,924,615
CORRECTIVE DEVICE FOR CLUBFOOT
Elvin McKim, 1821 Robert St., Wilmington, Ill. 60481
Filed Nov. 1, 1974, Ser. No. 519,839
Int. Cl.² A61F *3/00*
U.S. Cl. 128—80 J **5 Claims**



1. A corrective device for clubfoot, including a sole plate having a peripheral configuration which conforms to that of a human foot, rigid centering means to hold said foot firmly in place on said sole plate, corrective positioning means to adjust said sole plate laterally to a desired corrective position with respect to a fixed longitudinal orientation, permanently securable means to retain said sole plate in said corrective position, and releasable attachment means to releasably retain said corrective positioning means in a desired fixed longitudinal orientation, said sole plate being made of strong metal and said rigid centering means comprising upwardly extending bearing surface means along opposite portions of the side edges of said sole plate, wherein said upwardly extending bearing surface means comprises a first pair of upwardly and forwardly extending metal arms integrally formed with said sole plate at a location rearward thereof and on opposite sides, said first pair of arms forming an acute angle with said sole plate facing forwardly and being parallel with each other, and a second pair of upwardly extending metal arms integrally formed with said sole plate at a location forward thereof and on opposite sides, said second pair of arms being parallel with each other.

3,924,616
CLOSED CIRCUIT, FREE-FLOW, UNDERWATER BREATHING SYSTEM
Mark P. Banjavich, New Orleans, and Anthony V. Gaudiano, Metairie, both of La., assignors to Taylor Diving & Salvage Co., Inc., Belle Chasse, La.
Division of Ser. No. 198,105, Nov. 12, 1971, Pat. No. 3,802,427. This application Dec. 28, 1973, Ser. No. 429,044
Int. Cl.² A62B *7/02*
U.S. Cl. 128—142.3 **6 Claims**



4. Apparatus for conducting underwater diving operations from a vessel means operable to be buoyantly supported upon a body of water, said apparatus comprising:
floating vessel means;
underwater enclosure means operable to permit diver ingress and egress;
helmet means operable to provide a breathable atmosphere for a diver at a submerged location;
flexible conduit means extending through said underwater enclosure means between said vessel means and said helmet means and including supply conduit means and return conduit means;
means for continuously circulating a flow of breathable gas through said supply conduit means to the interior of said helmet means and from the interior of said helmet means back through said return conduit means;
return tank means carried by said vessel means remote from said diver and being connected to said return conduit means for receiving gas from said helmet means;
supply tank means carried by said vessel means remote from said diver and being connected to said supply conduit means for delivering gas thereto;
means for transmitting gas from said return tank means to said supply tank means, and including compressor means operable to pressurize gas in said supply tank means to a relatively higher pressure level than gas in said return tank means and depressor means operable to provide a relatively lower pressure level of gas in said return tank means;
said relatively higher pressure in said supply tank means being operable to induce and sustain a continuous flow of gas from said supply tank means through said supply conduit means to the interior of said helmet means;
means operable independent of diver breathing effort to regulate the rate of continuous flow of gas from said supply conduit means through the interior of said helmet means and into said return conduit means, including
flow throttling means, located generally adjacent said helmet means, and operable to continuously pass said continuous flow therethrough,

said continuous flow of gas being operable to pass continuously through said helmet means, with said continuous flow of gas circulating continuously through said helmet means and continuously removing carbon dioxide therefrom, and

means operable to pass said continuous flow of gas from said helmet means continuously into said return conduit means including

back pressure regulator valve means located generally adjacent said helmet means and operable to maintain a back pressure on said continuous flow of gas downstream of said helmet means and maintain a positive pressure in said helmet means relative to the ambient water pressure surrounding said helmet means,

said helmet means, return conduit means, return tank means, supply tank means and supply conduit means forming essentially a closed loop system of continuously flowing gas;

said continuous flow of gas from said supply conduit means through the interior of said helmet means and into said return conduit means being operable to provide a free and continuous flow of breathable gas operable to generally displace, from the vicinity of said diver's face, gas exhaled by said diver and induce said displaced exhaled gas to flow out of said helmet means and into said return conduit means;

carbon dioxide removing means, carried by said vessel means, and operable to remove carbon dioxide from gas circulating through said closed loop system;

oxygen supplying means carried by said vessel means and operable to supply oxygen into said closed loop system;

sensing means operable to sense the oxygen content of oxygen in said closed loop system and cause said oxygen supply means to supply oxygen to said closed loop system in response to operation of said sensing means;

said oxygen supplying means and said carbon dioxide removing means being operable to concurrently remove carbon dioxide from and add oxygen to gas flowing through said closed loop system;

said supply tank means and said return tank means, each being carried by said vessel means and being relatively large storage capacity relative to said helmet means, and being operable to promote a relatively steady continuous circulation of gas through said helmet means;

heating means operable to heat said breathable gas circulated to said helmet means through said supply conduit means; and

pressure pulse reducing means comprising said supply tank means and said return tank means with said supply tank means and return tank means being interposed, respectively, between said helmet means and said compressor means and between said helmet means and said depressor means and operable to reduce the transmission to said helmet means of pulses generated by said compressor means and said depressor means.

3,924,617

ASPIRATION AND INFUSION NEEDLE

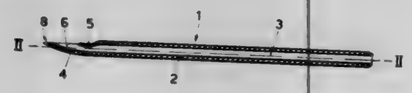
Antonio Ferro, Milan, Italy, assignor to Crinospital S.p.A., Palazzo Pignano, Italy

Filed Aug. 27, 1974, Ser. No. 500,933

Claims priority, application Italy, Sept. 28, 1973, 29490/73

Int. Cl.² A61M *5/00*

U.S. Cl. 128—221 **1 Claim**



1. In a needle for use in the aspiration and infusion of solutions comprising a tubular cylindrical body and a pointed end integral therewith, said body having an axial through-bore that diverges from axiality in the region of the pointed end and terminates in an opening lying in a lateral plane and wherein the curvature of the surface of the body opposite to said opening is such that at the pointed end the body extends over the axis of the tubular body, the improvement wherein the opening and the surface surrounding the opening lie in the same lateral plane located substantially midway between and parallel to the axis of the tubular body and a plane tangent to the tubular body's outer cylindrical surface, and wherein a beveled surface is provided between the end of the surface surrounding the opening opposite from the pointed end and the tubular body's outer cylindrical surface so that the entire opening of the needle lies in the substantially lateral plane.

3,924,618

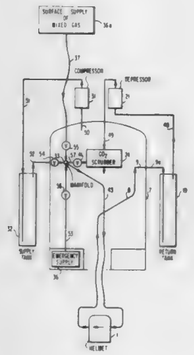
CLOSED CIRCUIT, FREE-FLOW, UNDERWATER BREATHING SYSTEM

Mark P. Banjavich, New Orleans, and Anthony V. Gaudiano, Metairie, both of La., assignors to Taylor Diving & Salvage Co., Inc., Belle Chasse, La.

Division of Ser. No. 198,105, Nov. 12, 1971, Pat. No. 3,802,427. This application Dec. 28, 1973, Ser. No. 429,045The portion of the term of this patent subsequent to Apr. 9, 1991, has been disclaimed.

Int. Cl.² A62B *7/02*

U.S. Cl. 128—142.3 **8 Claims**



1. A method of conducting underwater diving operations, said method comprising:

providing underwater enclosure means operable to permit diver ingress and egress;

providing helmet means operable to provide a breathable atmosphere for a diver at a submerged location;

providing flexible conduit means extending at least between said underwater enclosure means and said

helmet means and including supply conduit means and return conduit means;

continuously circulating a flow of breathable gas from said underwater enclosure means through said supply conduit means to the interior of said helmet means and from the interior of said helmet means back through said return conduit means to said enclosure means;

causing the continuous flow of gas passing from said helmet means through said return conduit means to be transmitted to return tank means located remote from a diver wearing said helmet means;

removing gas from said return tank means by operation of depressor means, with said depressor means being operable to maintain a relatively low pressure in said return tank means to promote a continuous flow of gas from said helmet means through said return conduit means and to said return tank means;

transmitting gas from said depressor means to compressor means at a location remote from said diver;

transmitting gas from said compressor means to supply tank means, with said compressor means being operable to pressurize gas in said supply tank means to a relatively higher pressure level;

transmitting gas from said supply tank means through said supply conduit means continuously to the interior of said helmet means, with said relatively higher pressure in said supply tank means being operable to induce and sustain a continuous flow of gas from

said supply tank means through said supply conduit means to the interior of said helmet means;

independent of diver breathing effort, regulating the rate of continuous flow of gas from said supply conduit means through the interior of said helmet means and into said return conduit means, including

passing said continuous flow of gas continuously through check valve means in said supply conduit means generally adjacent said helmet means,

passing said continuous flow of gas continuously through flow throttling means, located generally adjacent said helment means,

passing said continuous flow of gas continuously through said helmet means, with said continuous flow of gas circulating continuously through said helmet means and continuously removing carbon dioxide therefrom, and

passing said continuous flow of gas from said helmet means continuously into said return conduit means while

maintaining a back pressure on said continuous flow of gas downstream of said helmet means and maintaining a positive pressure in said helmet means relative to the ambient water pressure surrounding said helmet means, and

providing means in said return conduit means continuously operable to close said return conduit means generally adjacent said helmet means in the event of a rupture in said return conduit means remote from said helmet means;

at a location remote from said diver, providing gas reconditioning means operable to receive gas from at least one of said compressor or depressor means,

utilizing said gas reconditioning means, removing at least in part carbon dioxide therefrom, and transmitting said gas with said carbon dioxide removed at least in part therefrom to said supply tank means;

said continuous flow of gas from said supply conduit means through the interior of said helmet means and into said return conduit means being operable to provide a free and continuous flow of breathable gas operable to generally displace, from the vicinity of said diver's face, gas exhaled by said diver and induce said displaced exhaled gas to flow out of said helmet means and into said return conduit means.

3,924,619

CLOSED CIRCUIT, FREE-FLOW, UNDERWATER BREATHING SYSTEM

Mark P. Banjavich, New Orleans, and Anthony V. Gaudiano, Metairie, both of La., assignors to Taylor Diving & Salvage Co., Inc., Belle Chasse, La.

Division of Ser. No. 198,105, Nov. 12, 1971, Pat. No. 3,802,427. This application Dec. 28, 1973, Ser. No. 429,046

Int. Cl.² A62B *7/02*

U.S. Cl. 128—142.3 **4 Claims**

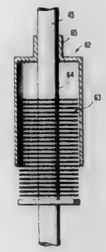
3. Apparatus for controlling the temperature of breathable gas to a diver, said apparatus comprising:

a source of breathable gas remote from a submerged diver

means for transmitting said breathable gas to a submerged diver;

heating means for heating said breathable gas prior to inhalation of said gas by said diver;

selectively adjustable heat transfer means adapted to be carried by said diver and connected exteriorly of said transmitting means downstream of said heating means and operable to reduce the temperature of said breathable gas;



said heat transfer means including heat transfer surface means operable to transfer heat from said gas within said transmitting means to ambient water adjacent said diver which is cooler than said heated, breathable gas; and

said heat transfer surface means included in said heat transfer means being operable in response to selective manipulation of said heat transfer means by said diver, to control the extent of reduction of the temperature of said breathable gas.

3,924,620

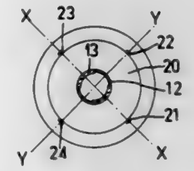
FEEDING DEVICE WITH REGULABLE FLOW

Thierry B. Seunevel, Paris, France, assignor to Alpha Bebe Sante, Zone Industrielle, France

Filed Dec. 4, 1973, Ser. No. 421,721

Int. Cl.² A61J *11/04*

U.S. Cl. 128—252 **12 Claims**



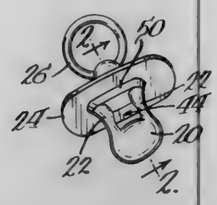
1. A feeding device, particularly for nursing infants, comprising a skirt for connection with a feeding bottle and a nipple extending from the skirt, said nipple having a substantially cylindrical wall portion with respect to an axis and an end portion, said nipple including means for regulating flow therethrough in response to changes in relative rotative position thereof with respect to the infant, wherein said regulating means includes the cylindrical wall portion of the nipple having a varying thickness about the axis, whereby varying resistances to compression of the nipple can be achieved by rotation thereof, and wherein the different thickness portions of the cylindrical wall portion is defined by diameters of different lengths, said cylindrical wall portion of the nipple having the same thickness at the two ends of each of the diameters of said cylindrical wall portion, adjacent diameters of the same length extending over a sector of said cylindrical wall portion delimiting an angle of at least 45°.

3,924,621

ORTHODONTIC DEVICE

K. A. I. Cassimally, 210 Third St. West, Roundup, Mont. 59072

Filed May 13, 1974, Ser. No. 469,422
Int. Cl.[2] A61J *11/00, 17/00*
U.S. Cl. 128—252 **12 Claims**



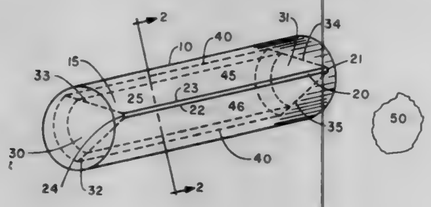
1. An orthodontic device for infants comprising:
a baglet with a connected shank for insertion into an infant's mouth up to the end of the shank,
a broad base attached to the end of the shank and having an extent greater than the shank to prevent further insertion of the device into the infant's mouth, and
the shank which is insertable into the infant's mouth comprises a plurality of connecting members for connecting the baglet to the base and defining therebetween an aperture-like space which forms means to allow a portion of the infant's tongue to move into the space.

3,924,622

ZERO-ORDER RELEASE METHOD

Dana Brooke, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

Continuation-in-part of Ser. No. 405,616, Oct. 11, 1973, Pat. No. 3,851,648. This application Nov. 26, 1974, Ser. No. 527,477
Int. Cl.[2] A61M *31/00, 7/00*
U.S. Cl. 128—260 **11 Claims**



1. Method for the automatic release at a desired substantially constant predetermined rate R of a diffusible solid into a fluid medium into which said solid has a propensity to diffuse wherein said solid has diffusion constant (D) and solubility (C_s) with respect to said medium which comprises
1. introducing said solid into a cavity within a container, said container being impervious to said solid and said medium during the period of delivery of said solid and having a slot-like port having uniform length and width and having two ends and two sides with the narrower dimension (a) at the ends and the longer dimension (L) at the sides, said port communicating in its entirety with said cavity, said cavity being defined by a rear wall, and a pair of parallel congruent planar end walls arranged at right angles to said slot and adjacent to the ends thereof, and a pair of inwardly extending congruent planar side walls adjacent the opposite sides of said slot and in substantially divergent radial relation to said slot and extending to said rear wall, said introduction being carried out so as to completely cover the rear wall of said cavity with said solid and seal said solid to the walls thereof, and expose a single surface thereof to the slot-like port in facing relation thereto for contact with said medium, and
2. immersing said container into said medium so that the medium enters the slot and contacts said exposed surface of said solid, and
3. adjusting the dimensions (a), (L), and (Θ), wherein (Θ) is the angle subtended by the side walls of said cavity, so that said rate R is achieved and is defined by the expression

$$R = \frac{DLC_s}{\frac{h}{a} + \frac{1}{\Theta}}$$

wherein (D), (L), (C_s), (a), and (Θ) are as defined above, and (h) is the distance from the slot to the closest hypothetical point exterior of said container in said medium where the concentration of said drug is zero.

3,924,623

TIP FOR APPLICATOR SWAB

Carl Frederick Avery, Rockford, Ill., assignor to Marion Health and Safety, Inc., Rockford, Ill.

Filed Nov. 4, 1974, Ser. No. 520,467
Int. Cl.[2] A61F *13/00*
U.S. Cl. 128—269 **3 Claims**



1. An applicator swab comprising a tube made of flexible but self-sustaining plastic and having an open end and a closed end, an ampoule filled with liquid and housed within said tube, said ampoule being frangible and releasing said liquid into said tube when the sides of the tube are squeezed inwardly to break the ampoule, and an absorbent swabbing tip telescoped into the open end of said tube and adapted to be saturated by said liquid, said tip comprising a sheet of cotton-like material whose margins are folded inwardly and stuffed into said tube to cause said sheet to define a dome adjacent the open end of the tube, and a layer of resilient foam-like material lining and contacting the inner face of said sheet and resiliently urging the folded margins of said sheet outwardly toward the inner side of said tube, the remaining portion of said layer defining a porous inner core at the central portion of said dome.

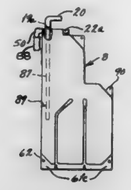
3,924,624

MODULAR THORACIC DRAINAGE DEVICE

Eli Schachet, St. Louis, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Division of Ser. No. 386,130, Aug. 6, 1973, Pat. No. 3,847,152. This application Oct. 10, 1974, Ser. No. 513,618
Int. Cl.[2] A61M *1/00*
U.S. Cl. 128—276 **2 Claims**

1. A drainage apparatus comprising a hollow relatively rigid plastic drainage collector chamber member having a chamber with at least one partition wall integral therewith dividing the chamber into a pair of relatively rigid vertical channels connected in fluid communication with each other above the upper end of said partition wall, one of said channels having an initial predetermined amount of liquid to a predetermined level, an indicia mark on said chamber providing a visual indication of said level, passage means for connection in fluid communication at the upper end thereof with a body cavity to be drained, said passage means extending through an upper portion of said chamber member and into said one channel to a point below said indicia mark, vent means above the upper end of said partition wall connecting said chamber to atmosphere whereby fluid draining from the cavity flows through the passage means and enters the liquid in said one channel to fill said one channel and overflow into said second channel with gas from the cavity passing through the liquid and out through said vent means, and tube connection means above the upper end of said partition wall and the level of liquid in said collector chamber during use of the apparatus for connecting another chamber member in fluid communication with said collector chamber.

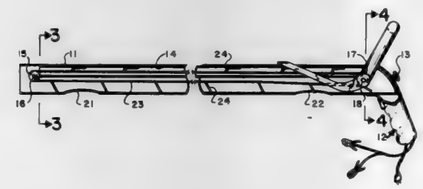


3,924,625

POWERED BOVINE STOMACH PUMP AND TUBE

Hans D. D. Peterson, Rte. 1 Box 28, Eagle Pass, Tex. 78852

Filed Nov. 11, 1974, Ser. No. 522,589
Int. Cl.[2] A61M *1/00*
U.S. Cl. 128—278 **6 Claims**



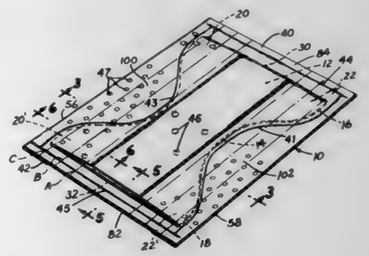
1. An electric motor driven bovine stomach pump and tube, said tube having an overall diameter of approximately one inch, comprising:
a. an elongated flexible outer case having an intake end and a discharge end adapted to project into the esophagus of an animal,
b. an intake opening constructed in the outer case adjacent the intake end,
c. a discharge opening constructed in the outer case adjacent the discharge end,
d. a conveyor means movably mounted internal of said outer case extending substantially the length of said outer case, said conveyor means further comprising:
1. a drive roller rotatably mounted in said outer case adjacent the said discharge opening,
2. an idle roller rotatably mounted in said outer case adjacent the said intake opening,
3. an endless flexible looped belt mounted for rotation on said drive roller and said idle roller, and
4. flexible, flared belt cups secured to said flexible looped belt, the flexible, flared belt cups being of such a configuration as to urge a fluid substance from the said intake opening to the said discharge opening,
e. a bearing means supporting said conveyor means for movement in said outer case, and
f. a drive means interconnected to said conveyor means for operably moving said conveyor means internal of said outer case operably moving the work product of said conveyor means from said intake opening to said discharge opening.

3,924,626

RECTANGULAR DISPOSABLE DIAPER HAVING A CONTOURED ABSORBENT PAD

Charles A. Lee, and Frank D. Sorrells, both of Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Filed Dec. 8, 1972, Ser. No. 313,594
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.[2] A61F *13/16*
U.S. Cl. 128—287 **5 Claims**



1. A disposable diaper comprising in combination,
a liquid impervious backing sheet having rectangular dimensions,
a liquid pervious cover sheet, substantially coextensive in length with said backing sheet and at least as wide as said backing sheet, disposed in superposed relation to said backing sheet and covering said backing sheet to isolate said backing sheet from the skin of a person to whom the diaper is applied,
a continuous absorbent pad of generally hour-glass profile having a midsection and opposite end portions disposed between said backing sheet and said cover sheet, said pad in its end portions extending laterally substantially to the side margins of said backing sheet, whereby said pad at its ends substantially encompasses the waist of a person to whom the diaper is applied but is more narrow than said backing sheet, portions of said cover sheet overlying said backing sheet in the crotch region of said diaper and laterally of said pad midsection to define a span of diaper that is substantially free of said pad on each side of said diaper,
continuous bond line means joining said backing sheet to said cover sheet along lines disposed on opposite sides of said pad immediately adjacent to and aligned with the respective contours of said side margins, said lines being substantially coextensive in length with the longitudinal dimension of said pad and defining a substantially liquid impervious barrier against lateral migration of liquid exudate from said pad,
said diaper being folded with a plurality of longitudinal folds along each side edge thereof, said folds incorporating said spans therein whereby when said diaper is applied with said narrow midsection of said pad disposed in the crotch of said person, said spans at least partially encircle the legs of said person to securely position said diaper about said legs and maintain said pad positioned within said crotch.

3,924,627
DISPOSABLE DIAPER

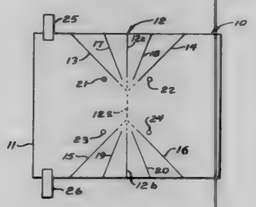
Ernst Daniel Nystrand, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Continuation-in-part of Ser. No. 373,247, June 25, 1973, abandoned. This application Jan. 28, 1974, Ser. No. 437,173

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² A61F *13/16*

U.S. Cl. 128—287 **1 Claim**



1. A generally rectangular disposable diaper comprising an outer impermeable sheet, a layer of liquid absorbing material and an inner liquid permeable sheet all united perimetrically, said diaper having a central transversely extending interrupted line of compression whereby the diaper is adapted to be folded on itself to provide a crotch-forming portion in the middle of said interrupted line of compression,

said line having a segment extending in from each longitudinal edge with each segment terminating short of the crotch-forming portion of the diaper,

a first pair of inwardly convergent foreshortened lines of compression associated with each of said segments and disposed at about 45° relative thereto, and a second pair of inwardly convergent foreshortened lines of compression associated with each of said segments and disposed at about 22½° relative thereto, each of said convergent lines of compression extending in from each longitudinal edge but terminating short of the crotch-forming portion of the diaper and short of the inner end of its associated segment and cooperating with said associated segment to provide a relatively rounded, unstressed crotch-forming portion, said diaper prior to installation on an infant being folded along said interrupted lines and having an infold along each line segment and an infold in said crotch-forming portion, and further having an infold along each first pair convergent line and an outfold along each second pair convergent line,

and means adhering said inner sheet together adjacent each longitudinal edge but spaced inwardly therefrom on opposite sides of each of said first pair of convergent lines of compression.

3,924,628
CYROGENIC BLADDER FOR NECROSING TISSUE CELLS

William Droegemueller, 30 S. Ivy, Denver, Colo. 80222; Ralph N. Eberhardt, Jr., 7323 S. Tamarac St., Englewood, Colo. 80110, and Paul E. Bingham, 236 W. Delaware Circle, Littleton, Colo. 80120

Filed Dec. 1, 1972, Ser. No. 311,069

Int. Cl.² A61B *17/36*; **A61F** *7/12*

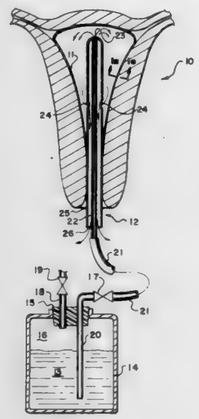
U.S. Cl. 128—303.1 **2 Claims**

1. A method of effecting coagulation necrosis of the functional uterine endometrium comprising the steps of:

a. inserting a flexible bladder in the uterus;

b. inflating said bladder with a fluid at cryogenic temperature so that said bladder is in substantially continuous contact with the inner surface of the functional uterine lining, said fluid undergoing a phase change to extract heat from said functional uterine endometrium; and

c. maintaining said bladder so inflated with said fluid at said cryogenic temperature for a period of time sufficient for



said heat extraction to effect simultaneous coagulation necrosis of substantially all of the functional uterine endometrium.

3,924,629
METHOD FOR CLOSING A CUT END OF A BLOOD VESSEL

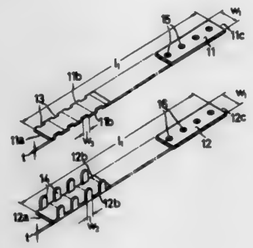
Taichiro Akiyama, 19-23, Shimoochiai 2-chome, Shinjuku, Tokyo, Japan

Division of Ser. No. 432,052, Jan. 9, 1974. This application Nov. 29, 1974, Ser. No. 528,141

Claims priority, application Japan, Jan. 20, 1973, 48-8875; Jan. 20, 1973, 48-8876; Jan. 20, 1973, 48-8878

Int. Cl.² A61B *17/12*

U.S. Cl. 128—325 **6 Claims**



1. A method for closing a cut end of a blood vessel with a pair of closing members formed of plastic material wherein one of said closing members is rectangular with a pair of cut-out portions on opposing edges, and the other of said closing members has a similar rectangular shape with a pair of projections on opposing edges which correspond with said opposing edges of said one closing member, said method comprising the steps of nipping said cut end of the blood vessel between the pair of closing members, and fastening said pair of closing members to each other by aligning said projections with said cut-out portions, and pressing said projections over into engagement with said one closing member.

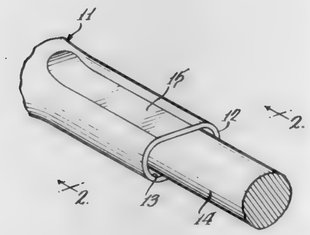
3,924,630
MANUFACTURE OF CONTROLLED RELEASE FLUID SWELLABLE SUTURES

Diann J. Walldorf, East Windsor, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Nov. 18, 1974, Ser. No. 524,584

Int. Cl.² A61B *17/06*

U.S. Cl. 128—339 **12 Claims**



1. In a needle-suture combination comprising a needle with a sharp end and a blunt end and a fluid-swellable suture inserted at one end into a recess in said blunt end and held therein by swaging, the improvement comprising the dimensioning and configuration of said recess, said recess being provided within the swaged portion thereof with a cross-sectional area equivalent to from about 150% to about 250% of the cross-sectional area of the suture end therein when said suture is in a non-swollen state so that a suture pull-out value of from about 3 to 26 ounces is obtained.

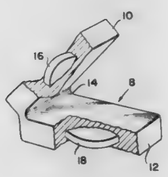
3,924,631
MAGNETIC CLAMP

Joseph J. Mancusi, Jr., Bristol, Conn., assignor to Altair, Inc., Plymouth, Conn.

Filed Dec. 6, 1973, Ser. No. 422,315

Int. Cl.² A61B *17/00*; **F16K** *31/08*

U.S. Cl. 128—346 **6 Claims**



1. In combination with a clamping apparatus comprising a first jaw having a permanent magnet enclosed therein, a second jaw having a magnetically susceptible non-magnet enclosed therein, and a hinge confining the non-magnet within the operable magnetic field of the permanent magnet, the hinge and the first and second jaws being unitarily constructed of a biochemically inert material, means positioned adjacent to the second jaw having a magnetic field greater than and oriented in the opposite direction of the field of said permanent magnet for opening and closing the jaws.

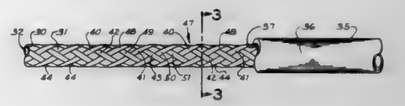
3,924,632
FIBER GLASS REINFORCED CATHETER

William A. Cook, 1208 E. Wylie St., Bloomington, Ind. 47401

Continuation of Ser. No. 312,803, Dec. 7, 1972, abandoned, which is a continuation of Ser. No. 97,710, Dec. 14, 1970, abandoned. This application June 17, 1974, Ser. No. 480,004

Int. Cl.² A61M *25/00*

U.S. Cl. 128—348 **2 Claims**



1. An intravascular catheter comprising:

a. an inner hollow and flexible plastic core having a circular cross section, an outer surface and a first length;

b. an outer flexible plastic tube having an inner surface united to said outer surface of said core along said first length;

c. and fiber glass bands spaced apart and spiralled around said core between said core and said tube; some of said bands being spiralled clockwise and some of said bands being spiralled counterclockwise around said core, said bands each comprising individual multi-filament strands of fiber glass laid in a side-by-side position, said invididual strands moving relative to one another during bending of the catheter allowing the cross section of the bands to change and thus facilitating flexibility of the catheter as well as maintaining good torsional rigidity, said outer surface of said inner core being cohesively united to said inner surface of said outer tube between said bands.

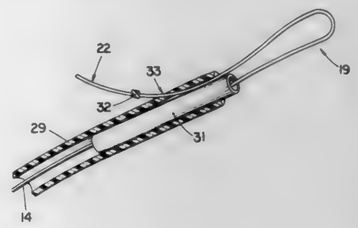
3,924,633
APPARATUS AND METHOD FOR SUPRAPUBIC CATHETERIZATION

William A. Cook, and Thomas A. Osborne, both of Bloomington, Ind., assignors to Cook Inc., Bloomington, Ind.

Filed Jan. 31, 1974, Ser. No. 438,180

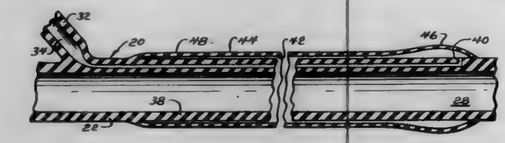
Int. Cl.² A61M *25/00*

U.S. Cl. 128—349 R **6 Claims**



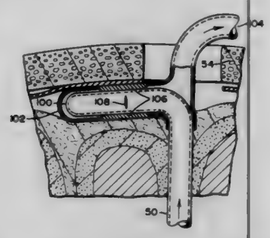
1. In a hollow flexible catheter having a proximal end and a distal end and having an opening near its distal end and having a flexible tension member secured near its distal end and passing through the opening and along within the catheter toward the proximal end, whereby when the member is drawn tight a self-retaining loop will be formed at the distal end portion of the catheter, the improvement which comprises a short tube, less flexible than the catheter, mounted within the proximal end portion of the catheter, the flexible tension member extending along within the catheter through the tube, exiting from the proximal end of the tube, passing in slideable engagement between the inner wall of the catheter and the outer wall of the tube, the wall of the catheter including an opening near the proximal end of the catheter, the flexible tension member extending from between the inner wall of the catheter and the outer wall of the tube through the opening in the catheter near the proximal end of the catheter.

3,924,634
SAFETY CATHETER AND METHOD
Glenn M. Taylor, Cary; Harish A. Patel, Crystal Lake, and Daniel M. McWhorter, Arlington Heights, all of Ill., assignors to The Kendall Company, Walpole, Mass.
Filed Sept. 11, 1974, Ser. No. 504,949
Int. Cl.[2] A61M 25/00
U.S. Cl. 128—349 B 29 Claims



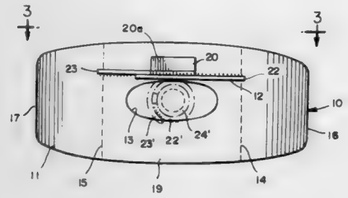
1. A catheter for insertion through a body canal to a body cavity and retention therein, comprising:
an elongated shaft having a proximal end, a distal end, and an inflation lumen; and
an elongated flexible balloon overlying the shaft and having a length approximating or greater than the length of the body canal, said balloon and shaft defining a space communicating with the inflation lumen for inflation of the balloon, said balloon having a distal end portion for placement and inflation to enlarged proportions in the body cavity relative a longitudinal portion of the balloon in the body canal, and a proximal end portion being sufficiently elastic to maintain the distal end portion inflated in its enlarged proportions when the distal end portion is located in the body cavity, and being sufficiently elastic and free to inflate outside the body canal to enlarged proportions relative the portion of the balloon in the body canal when the distal end portion is obstructed by the body canal.

3,924,635
VENTRICULAR SHUNT HAVING A VARIABLE PRESSURE VALVE
Salomon Hakim, Carrera 13, 48-26, Bogota, Colombia
Division of Ser. No. 280,451, Aug. 14, 1972, abandoned. This application June 12, 1974, Ser. No. 478,434
Int. Cl.[2] A61M 27/00
U.S. Cl. 128—350 V 1 Claim



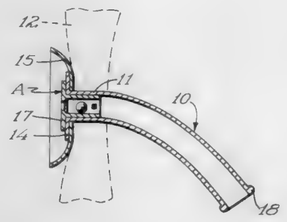
1. A cerebrovascular shunt valve comprising a resilient valve body adapted to be inserted into the dural region, said valve body having opposed wall portions adapted to bear against the skull and the brain respectively;
a resilient tube which extends into said valve body between said wall portions and is adapted for connection to a ventricular catheter, the end of the tube being closed within the valve body, there being a slit in the side wall of the tube within said valve body for communicating CSF from said catheter into said valve body, said slit extending in a direction normal to the direction of the longitudinal axis of the tube and positioned between said opposed wall portions thereby being oriented with respect to the wall portions of said valve body to produce opening of said slit when said wall portions are driven against said tube by pressure of the brain against the skull; and
outlet means for venting CSF from said valve body to a location outside of the skull.

3,924,636
ENDOTRACHEAL TUBE HOLDER
Benjamin Alfred Addison, 2432 Parkwood Drive, Brunswick, Ga. 31520
Filed July 5, 1974, Ser. No. 485,968
Int. Cl.[2] A61M 25/00
U.S. Cl. 128—351 4 Claims



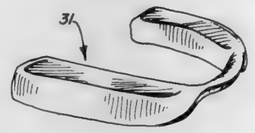
1. An endotracheal tube holder for holding an endotracheal tube in a patient's mouth during surgery comprising an adhesive-backed strip adapted to be adhesively secured over the mouth of the patient, the strip having an opening therethrough adapted to receive an endotracheal tube, and holding means mounted on the strip adjacent the opening for holding the endotracheal tube as it extends through the opening, the holding means including a strap having self-adhering ends and a strap support secured to the adhesive-backed strip adjacent the opening, the strap support having a portion extending from the strip generally parallel to the axis of the opening, the strap extending generally perpendicularly to said strap support portion and having a length sufficient to permit the strap to be wrapped around the tube with the ends of the strap means in overlapping adhering relationship whereby the strap can be wrapped around the tube in a plane extending generally perpendicularly to the axis of the opening and the tube can be held in a position generally parallel with the axis of the opening.

3,924,637
TRACHEOTOMY TUBE
Arthur H. Swanson, 619 S. Cecelia, Sioux City, Iowa 55106
Filed Dec. 23, 1974, Ser. No. 535,427
Int. Cl.[2] A61M 25/00
U.S. Cl. 128—351 1 Claim



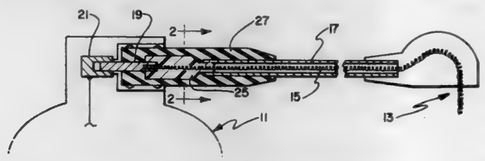
1. A voice prosthesis for the rehabilitation of the voices of laryngecgectomees including:
a tracheotomy tube adapted for connection between the outer atmosphere and the trachea, the outer end of the tube adapted to be terminating adjacent the outer surface of the neck and open to atmosphere,
a flange on said tube adapted to engage the outer surface of the neck,
an attachment including a sleeve frictionally fitted into the outer end of the tracheotomy tube,
a flange at one end of said sleeve to limit insertion of said sleeve into said tube,
a ball within said sleeve of smaller diameter than the inner diameter of said sleeve,
a valve seat inwardly of said flange on said sleeve against which said ball may seat to prevent the outward flow of air through said tube, and
means at the inner end of said sleeve limiting inward movement of said ball within said sleeve when said ball is unseated from said seat.

3,924,638
TENSION RELIEVER
Gilbert E. Mann, 6736 Silver Mountain Road, Paradise Valley, Ariz. 85253
Filed Apr. 18, 1974, Ser. No. 461,900
Int. Cl.[2] A61J 17/00
U.S. Cl. 128—359 4 Claims



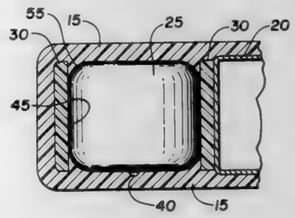
1. In a tension reliever intended to be positioned in the oral cavity of the mouth of a person, said mouth presenting a lower set of teeth including incisors in the front central portion thereof, said tension reliever being intended for application to said lower set of teeth;
a. a one piece integral wall structure of a plastic that is thermosetting and at body temperature has a firm body consistency with slight properties of flexibility and elasticity;
b. said wall structure including a horizontal wall adapted to engage the teeth of said lower set;
c. an inner wall integral with and depending from said horizontal wall, said inner wall adapted to engage inner surfaces of the teeth of said lower set when the tension reliever is in effective position;
d. an outer wall integral with and depending from said horizontal wall, said outer wall adapted to engage outer surfaces of the teeth of said lower set when the tension reliever is in effective position, said outer wall being interrupted at the front central portion thereof to provide a space thereat;
whereby said horizontal, inner and outer walls define a channel to receive the teeth of said lower set to maintain said tension reliever in effective position.

3,924,639
CARDIAC PACER LEAD SYSTEM FOR INTERIM PACING DURING PACER CHANGEOVER
Stanley R. Hess, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.
Filed July 17, 1974, Ser. No. 489,187
Int. Cl.[2] A61N 1/04
U.S. Cl. 128—418 5 Claims



1. A pacer interconnection and lead system for use with an implantable cardiac pacer, which system facilitates interim pacing of a patient's heart during pacer replacement, the pacer having a connector terminal through which signals are coupled for pacing the heart of a patient, said pacer interconnection and lead system comprising:
a flexible, electrical lead;
over said lead, for a majority of its length, an insulating sheath;
at one end of said lead, an electrode adapted to contact cardiac tissue for applying stimulating pulses thereto;
at the other end of said lead, a connector adapted to engage said pacer terminal for coupling stimulating signals generated by said pacer to said electrode;
in the region of the juncture of said lead and said connector, a mass of conductive, rubbery material electrically interconnected with said lead;
an insulating rubbery jacket extending over said conductive mass from said insulating sheath;
auxiliary connection means including a needle-like conductive element insertable through said jacket to establish electrical contact with said conductive rubbery mass to permit interim pacing of a patient's heart during replacement of a pacer; and
guide means for directing said needle-like element into said conductive rubbery mass without directly contacting said lead.

3,924,640
IMPLANTABLE ELECTRICALLY POWERED MEDICAL DEVICE
Wendell L. King, Isanti, Minn., assignor to Medtronic, Inc., Mpls., Minn.
Filed July 15, 1974, Ser. No. 488,524
Int. Cl.[2] A61N 1/36
U.S. Cl. 128—419 P 3 Claims

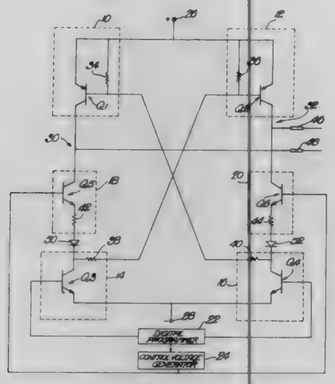


1. An implantable electrically powered medical device comprising: at least one generally cylindrically shaped electrochemical cell of a type which has hydrogen gas emitted during discharge thereof, an electric pulse generator including electrode members extending therefrom, a mounting member having recessed therethrough for positioning said cell and said pulse generator, an encapsulant covering the epoxy resin material positioned over the mounting member with said cell and pulse generator therein, and with the electrode members extending through the mounting member, the encapsulant covering having a thickness over the top and bottom of the cell in the mounting member from 0.040 to 0.140 inches and the radius of curvature of said cells at the top and bottom edges of the same being from greater than ⅛ inch to about ¼ inch and a mesh material positioned in the encapsulant covering over the top and bottom of the cell at at least the edges of the same.

3,924,641
BI-PHASIC CURRENT STIMULATION SYSTEM

Gerhard T. Weiss, Northford, Conn., assignor to Axotronics Inc., Hamden, Conn.

Filed Aug. 19, 1974, Ser. No. 498,740
Int. Cl.² A61N *1/36*
U.S. Cl. 128—419 PG **7 Claims**



1. A bi-phasic pulse generator for producing pulses to stimulate living tissue comprising:

first and second voltage terminals having voltages of different magnitudes;

first and second conducting paths connected in parallel between said first and second voltage terminals, each of said first and second conducting paths including first and second switches connected in series, with said first switch being connected electrically closer to said first voltage terminal than said second switch and the intersections of said first and second switches in each of said paths defining output electrodes across which pulse-generator output bi-phasic pulses are produced;

interconnecting means for connecting said first switch of said first conducting path with said second switch of said second conducting path and said first switch of said second conducting path with said second switch of said first conducting path to respectively close and open said second switches in response to said first switches of opposite paths being opened and closed; and,

a driving means for alternately driving one of said first switches open and the other closed for a first predetermined time period, and vice versa for a second predetermined time period.

3,924,642
TOBACCO AND TOBACCO SUBSTITUTE MATERIAL INCLUDING METAL CHELATE COMPOUNDS

Theo Eicher; Friedemann Müller, and Klaus-Werner Krebs, all of Dormagen, Germany, assignors to Haarmann & Reimer GmbH, Holzminden, Germany

Filed Nov. 15, 1972, Ser. No. 306,655
Claims priority, application Germany, Nov. 19, 1971, 2157370; Mar. 29, 1972, 2215412
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² A24B *15/00, 15/02*
U.S. Cl. 131—2 **22 Claims**

1. In a smokable product comprising a cellulose-based combustible material, the improvement which comprises incorporating therein at least one chelate compound of the stoichiometric formula.

$$K_x[Me_yR_y]_w$$

in which

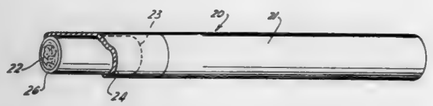
K is an alkaline earth metal or divalent manganese,
Me is trivalent iron or aluminum,
R is the radical of a chelate-forming organic carboxylic acid, and
w, *x*, *y* and *z* are integers up to about 5,

the chelate compound being incorporated in an amount ranging from about 0.5 to 70% by weight of the combustible material.

3,924,643
VENTILATED FILTER TIP CIGARETTE

Thomas Wade Summers, Fern Creek, N.Y., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Continuation of Ser. No. 193,124, Oct. 27, 1971, Pat. No. 3,805,800. This application Dec. 7, 1973, Ser. No. 422,930
Int. Cl.² A24B *15/027*; **A24D** *1/04*; **A24F** *25/00*
U.S. Cl. 131—10 A **10 Claims**



10. A ventilated filter tip cigarette comprising:

a. a tobacco column

b. a filter enclosed by a porous, air permeable wrapper, characterized by substantially uniform porosity;

c. a porous envelope characterized by substantially uniform porosity enclosing at least a portion of said enclosed filter, said envelope and wrapper being adhered together along at least one preselected region, but not over the entire area of their contiguous surfaces, the remainder of said contiguous surfaces being adhesive free, at least a portion of the remainder being air permeable to permit ambient air flow therethrough.

3,924,644
SMOKING MIXTURES

Robert Craig Anderson, and James Andrew Gibson, both of Manchester, England, assignors to Imperial Chemical Industries Limited, England

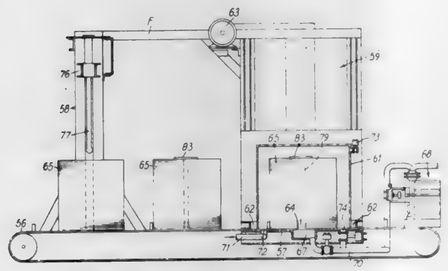
Filed Nov. 13, 1973, Ser. No. 415,427
Claims priority, application United Kingdom, Dec. 4, 1972, 55833/72
Int. Cl.² A24B *3/12, 15/04*
U.S. Cl. 131—17 R **7 Claims**

1. A smoking blend characterized generally by the flavour of flue-cured Virginia tobacco, said blend comprising a mixture of a modified carbohydrate as smoke-producing fuel, nicotine, and as a flavourant, a member of the group consisting of isovaleric acid, β-methyl valeric acid, butyric acid and mixtures of at least two of the said acids, the modified carbohydrate comprising a thermally degraded carbohydrate prepared by subjecting the carbohydrate to catalyzed degradation at a temperature of at least 100°C until the weight of degraded material is less than 90% of the dry weight of the original carbohydrate and the proportion of flavourant acids, comprising from 0.02% to 0.2 % by weight, of the smoking mixture; said mixture being blended with from 30-70% by weight thereof, flue-cured Virginia tobacco.

3,924,645
TOBACCO MOISTENING METHOD

Richard Ernest Gartside Neville, Sailsbury, and John A. Garrett, Andover, both of England, assignors to AMF Incorporated, White Plains, N.Y.

Filed May 20, 1974, Ser. No. 471,389
Claims priority, application United Kingdom, June 27, 1973, 30473/73
Int. Cl.² A24B *1/02, 3/02, 3/04, 3/12*
U.S. Cl. 131—140 A **8 Claims**



6. A process for moistening a body of tobacco having a plurality of elongated cavities the elongated walls of which are unsupported, comprising the steps of:

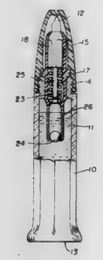
coring the body of tobacco thereby forming elongated cavities before placing the body of tobacco into the chamber, placing the body of tobacco within an enclosed chamber; and

evacuating the chamber and introducing steam into the chamber while applying suction to one end of at least one of the cavities until the body of tobacco has received a sufficient quantity of moisture.

3,924,646
CUTICLE KNIFE WITH STORAGE MEANS FOR HAND LOTION

Joseph LaMura, 102 Dorsa Ave., Livingston, N.J. 07039

Filed Feb. 24, 1975, Ser. No. 552,179
Int. Cl.² A45D *40/00*
U.S. Cl. 132—79 R **7 Claims**



1. A cuticle knife with storage means for hand lotion comprising:

a. a hollow handle closed at one end for storing hand lotion;

b. a hollow knife support of generally hollow cylindrical shape fitted into the other end of the handle for normally closing the other end;

c. a splined piston longitudinally mounted in the hollow portion of the knife support and including a conical end portion fitting into a first constricted surface of the knife support for forming a first valve, said valve adapted to be opened when the knife is depressed a small distance;

d. a knife blade secured to the outer end of the splined piston protruding therefrom for a cutting operation;

e. a resilient expansion spring also positioned within the hollow knife support engaging the inner end of the splined piston and a second constriction surface in the hollow portion of the knife holder for normally closing the first valve;

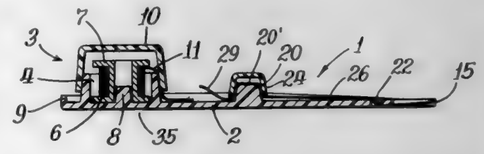
f. a second valve positioned in the hollow knife holder including a spherical ball resting against a third constriction surface in the hollow portion and adapted to cut off flow of a liquid within the hollow holder when the handle is inverted; and,

g. an axial rod secured to the inner end of the splined piston and extending to a position adjacent to the second valve for opening the second valve when the knife is depressed an additional distance.

3,924,647
DENTAL FLOSS APPLICATOR

Frederick Waldemar Lindblad, P.O. Box 1388, Aurora, Ill. 60507

Filed Feb. 28, 1974, Ser. No. 446,752
Int. Cl.² A61C *15/00*
U.S. Cl. 132—92 R **3 Claims**



1. A dental floss applicator comprising a handle having at one end a substantially sealed chamber for receiving a supply of dental floss and at the opposite end a pair of tines extending lengthwise of the handle, the tines having means for supporting a length of dental floss across the free ends thereof, and the handle having wedge means between the chamber and said tines for holding said length of floss taught, said wedge means comprising two telescoping members having conical engaging surfaces movable into and out of telescoping engagement by movements parallel to the longitudinal axes of the conical surfaces, one of said surfacs being a substantially rigid part of the handle, and the other member having an enlarged head for facilitating pushing it onto and off said one member, the engagement of the conical surfaces constituting a limit of the extent of movement of the members into wedging position so that from that position only a reverse movement is possible, whereby the enlarged head facilitates quick release of the floss held between the tines.

3,924,648
METHOD AND MEANS FOR APPLYING ADDITIVES TO INDUSTRIAL GAS

Berwyn E. Etter, 10355 Paradise Blvd., Treasure Island, Fla. 33740

Continuation of Ser. No. 358,005, May 7, 1973, abandoned. This application Mar. 17, 1975, Ser. No. 558,945
Int. Cl.² C10J *1/20*
U.S. Cl. 137—3 **2 Claims**

2. A method for applying additives to industrial gas comprising:

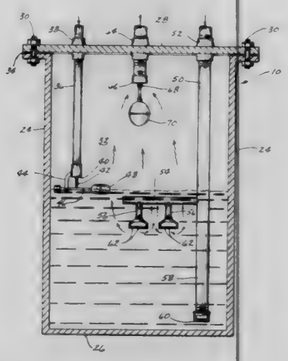
introducing a liquid additive into an enclosed container until said additive reaches a predetermined level within said container;

introducing industrial fuel gas under pressure into said container through a conduit having a first outlet below said predetermined level and a second outlet below said first outlet whereby said fuel gas will exit through at least said first outlet and percolate upwardly through said additive;

drawing off the mixture of additive and fuel gas which percolates upwardly from the upper surface of said additive,

conveying said mixture away from said container through a fluid mixture conduit;

sensing the level of additive in said container and automatically continuously replenishing said container with additive whenever the level of said additive drops below said predetermined level;



adjusting the ratio of gas and additive in said mixture by varying the pressure at which gas is introduced into said container, percolating gas outwardly from both said first and second outlets when said pressure is at increased pressure rates, and

percolating said gas outwardly from only said first outlet when said pressure is at reduced pressure rates.

3,924,649

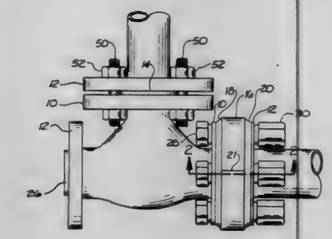
METHOD OF FLANGED JOINT SEALING

Mirrel L. Totman, McPherson, Kans., assignor to Edward L. Brown, Middletown, Ohio, a part interest

Division of Ser. No. 362,371, May 21, 1973. This application Feb. 10, 1975, Ser. No. 548,747

Int. Cl.² F16L 55/18; F17D 3/00

U.S. Cl. 137—15 **3 Claims**



1. A method of sealing on stream gasket leaks in a flanged pipe joint having abutting flange faces with a plurality of aligned holes in the abutting flanges with bolts in said aligned holes comprising the steps of:

sealing the outer circumferential gap between the two abutting flanges of the joint;

replacing the individual bolts one at a time in the flanged joint with a stud and two closed-end nuts each having a beveled bearing portion seated in the rim of the bolt hole; and

deforming the bolt hole rim and beveled portion by tightening said nuts to create a metal to metal seal between the nuts and rim of the bolt hole.

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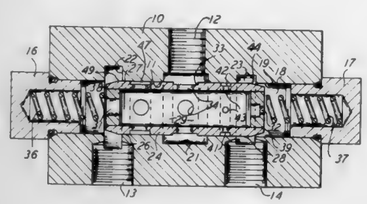
FLUID FLOW DIVIDER VALVE

Donald J. Parquet, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed June 20, 1974, Ser. No. 481,191

Int. Cl.² G05D 11/02

U.S. Cl. 137—101 **6 Claims**



1. A fluid flow divider valve comprising a valve body having a cylindrically-shaped bore defined by a cylindrical wall extending in said body, said body having a fluid inlet opening therein and having two fluid outlet openings in fluid-flow communication with said bore and extending to intersect said cylindrical wall, a one-piece cylindrically-shaped spool snugly disposed in said bore and being axially shiftable along the longitudinal axis of said bore and across said body fluid outlet openings whereby alternate axial shifting of said spool respectively alternately opens and reduces said body fluid outlet openings to the flow of fluid through said body fluid outlet openings, said body fluid outlet openings being located at axially opposite ends of said spool and within the axial extent of said spool when said spool is axially shifted toward either of said body fluid outlet openings, an end length of at least one of the axially opposite ends of said spool having its outer circumference in fluid-tight relation with said cylindrical wall which is contiguous to the respective one of the said body fluid outlet openings when said spool is axially shifted toward its said one end, said spool having a fluid passageway always in fluid-flow communication with said body fluid inlet opening and extending intermediate of said body fluid inlet opening and said one of the said body fluid outlet openings and extending to said end length on said spool and into fluid-flow communication with said one of the said body fluid outlet openings, and said spool end length having a fluid by-pass passageway therein and in fluid-flow communication with the first said fluid passageway and extending exteriorly of said spool to flow communicate with said one of said body fluid outlet openings when said spool is axially shifted toward said one of the said body fluid outlet openings and thereby by-pass fluid from said body fluid inlet opening to said one of the said body fluid outlet openings.

3,924,651

METERING OR INJECTION ELEMENT

Ludwig Jakob Hippel, Lindau, and Alex Pemsl, Hergensweiler, both of Germany, assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 365,605, May 31, 1973, abandoned. This application Oct. 15, 1974, Ser. No. 514,593

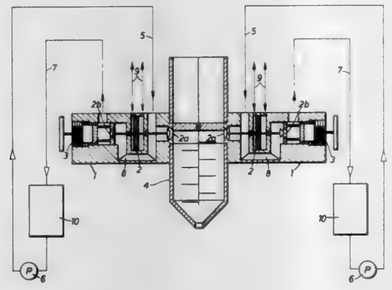
Int. Cl.² B29B 1/04

U.S. Cl. 137—115 **8 Claims**

1. In plastic molding equipment comprising a mixing chamber having at least one injection port, a reservoir for a liquid plastic component to be injected into the mixing chamber, an improved injection element to supply the component to said chamber injection port, and pump means and associated ducts connecting the injection element to said pump and reservoir to deliver the liquid component to said element and return excess to the reservoir, said improved injection element comprising:

a housing for said element having component feed, injection and return ports, said element injection port being formed to be received in said chamber injection port, and said feed and return ports making connection with said ducts,

a pair of shiftable valve members disposed in said housing in back-to-back relation, each having a free end received in one of said injection and return ports, and control means disposed intermediate and positively interconnecting said members for reciprocal movement thereof simultaneously between opposite limiting positions in said housing; annular valve seats formed in said housing at said injection and return ports and cooperating respectively with the free ends of said shiftable valve members



to define said limiting positions, said valve seat in said housing injection port being disposed to be substantially coterminus with the injection port of the mixing chamber; said valve seats and valve members defining annular flow passages of such shape and configuration, respectively, as to provide analogous flow passages complementary to each other in all positions of said shiftable valve members between said limiting positions; and adjustment means accessible externally of said injection element housing for varying the position of said return valve seat in said housing relative to said injection valve seat to simultaneously and commonly adjust the flow cross-sectional areas of said injection and return annular flow passages.

3,924,652

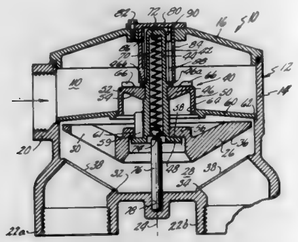
SEQUENCING VALVE

Carl L. C. Kah, Jr., 778 Lakeside Drive, North Palm Beach, Fla. 33408

Continuation of Ser. No. 398,530, Sept. 18, 1973, abandoned. This application Mar. 6, 1975, Ser. No. 555,864

Int. Cl.² F16K 21/00

U.S. Cl. 137—119 **6 Claims**



1. A sequencing valve automatically responsive to the application and reduction of a pressure comprising:

A. a housing having an inlet port and a plurality of outlet ports,

B. a valve means in said housing and positioned between said inlet port and said outlet ports and shaped to sealably engage each of said housing outlet ports when in its seated position and to have at least one port therein positioned to be in register with at least one of said housing outlet ports to permit flow therethrough while blocking flow through the remainder of the housing outlet ports when in said seated position,

C. means for controlling said valve means for seating, unseating and rotational indexing motion in response to a pressure variation comprising:

1. a support member mounted for reciprocating and rotational motion within said housing for cooperation with said valve means to cause seating, unseating and rotational indexing motion of the valve member therein,

2. a pressure responsive piston member rigidly fixed to said support member,

3. a member fixedly positioned in said housing between said inlet port and said valve means and shaped to define a selectively shaped and positioned aperture therein to sealably receive said piston member as said piston member reciprocates with said support member in response to pressure variations and to cooperate with said piston member to either block flow to said valve means or to define a flow port therebetween when out of register to permit flow therethrough to said piston member,

4. cam means operatively connecting said support member and said housing and operative in response to support member reciprocation to cause said support member, said piston member, and said valve means to rotatably index to place said valve means port into register with a second housing outlet port in response to a pressure reduction and reapplication, and

D. means for connecting said valve means control means to the valve means wherein said connecting means is a lost motion connection so that said valve member may move to its seated and indexed position before said piston member comes out of register with said aperture so as to permit flow therethrough and to the said valve means, and so that said support member and said piston member rigidly fixed thereto commence motion together to unseat said valve means while said valve means remains seated so that said support member and said piston member impart a momentum force to said valve means to unseat said valve means when the lost motion is dissipated.

3,924,653

DEVICE FOR TEMPORARY STORAGE OF WASTE AND STORM WATER

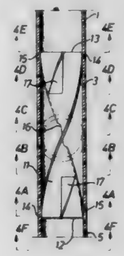
Stein Bendixen, Vatogrand 12, S-19400 Upplands Vasby, Sweden

Filed Mar. 26, 1974, Ser. No. 454,907

Claims priority, application Sweden, Mar. 27, 1973, 7304254; June 8, 1973, 7308200

Int. Cl.² F15D 1/00

U.S. Cl. 137—236 **12 Claims**



1. A device for the temporary storage of waste and storm water or the like supplied into a pipe network draining an area and which can be connected to a treatment or similar plant comprising a flow regulator comprising an oblong blade-

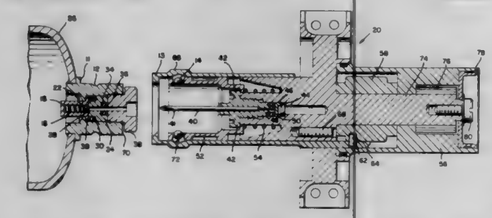
screw-shaped body having two opposite substantially horizontally placed short sides and two opposite long sides extending in a spiral form along the inside inner surface of the pipe, said flow regulator being so arranged in a pipe that it limits an upstream space of the pipe for the temporary storage of water when the flow of water supplied exceeds a predetermined basic or normal flow of the pipe in question and having an opening permitting the passage of water through said pipe beyond said flow regulator in a flow substantially corresponding to the determined basic or normal flow.

3,924,654

QUICK DISCONNECT TANK COUPLER

Joseph S. Buller; Arthur A. Eneim, and David A. Hitzelberger, all of Santa Barbara, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 26, 1973, Ser. No. 427,968
Int. Cl.² F16K *43/00*
U.S. Cl. 137—322 **5 Claims**



1. In a high pressure fluid coupling device including a high pressure tank, the combination comprising

a high pressure valve means in said tank, said valve means being normally seated by pressure in said tank;

an actuator mechanism removably connected to said tank, said actuator mechanism comprising

an outer sleeve;

means for removably securing and sealing one end of said sleeve to said tank substantially adjacent said high pressure valve means;

means within said sleeve for unseating said valve means;

cam means coupled to said sleeve at the other end thereof for axially moving said sleeve so as to provide relative movement between said sleeve and said means for unseating said valve means;

means connected to said cam for manually positioning said cam means in a plurality of preselected positions for securing said sleeve to said tank and for seating and unseating said valve means; and

an outlet passage through said actuator and said means for unseating said valve means.

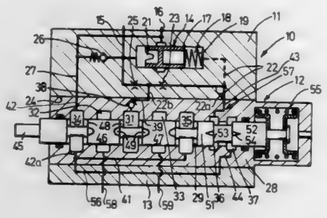
3,924,655

HYDRAULIC CONTROL ARRANGEMENT

Günther Schwerin, Möglingen, Germany, assignor to Robert Bosch G.m.b.H., Germany

Filed Jan. 17, 1974, Ser. No. 434,343
Claims priority, application Germany, Jan. 24, 1973, 2303286
Int. Cl.² F15B *13/04*
U.S. Cl. 137—596.13 **7 Claims**

1. A hydraulic control arrangement comprising a fluid inlet and a fluid outlet; switch valve means communicating with said inlet and said outlet and having a valve member movable between an open position permitting flow of fluid from said inlet to said outlet through said switch valve means and a closed position preventing such flow, and spring means biasing said valve member to said closed position; first control passage means providing constant communication between said inlet and said switch valve means and connected in parallel to the latter so that fluid passing through said first control passage means acts on said valve member in the same direction as said spring means; second control passage means communicating at one end with said first control passage means; a first throttle in said first control passage means upstream of said one end of said second control passage means; a second throttle arranged in said first control passage means upstream of said first throttle and having an open crosssection which remains constant during operation; return flow passage means communicating at one end with said outlet and adapted to communicate at the other end with the other end of said second control passage means; inlet passage means communicating at one



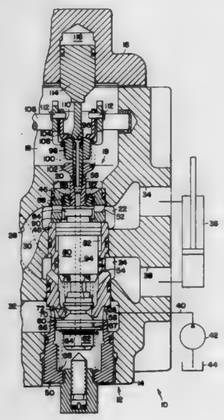
end with said first control passage means between said first and said second throttle therein; and control valve means having a control member movable between a neutral position in which it closes at least one conduit leading to a consumer device and working positions at opposite sides of said neutral position for selectively connecting said conduit with said inlet passage means and said return flow passage means, said control member regulating also flow from said second control passage means to said return flow passage means and from said inlet passage means to said conduit.

3,924,656

DIRECTION CONTROL VALVE HAVING FLOAT MODE

Paul Edmund Hanser, Moline, Ill., and William Lee Snyder, Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 26, 1974, Ser. No. 464,308
Int. Cl.² F16K *11/04*
U.S. Cl. 137—596.14 **4 Claims**



1. In a hydraulic control valve of a type including first and second identical valve assemblies, each valve assembly including a valve stem axially shiftably mounted in a valve bore means, first and second valve elements mounted on the valve stem at axially spaced locations thereof for cooperating with and controlling the flow of fluid across first and second valve seats formed by the bore means at respective locations between first and second ports thereof, respectively adapted for connection to a source of fluid pressure and a respective actuator work port, and between a third work port and a first location thereof, respectively adapted for connection to a

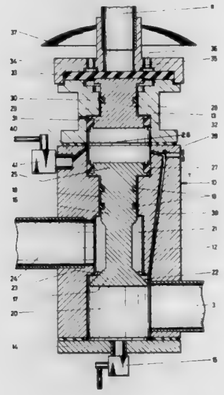
respective actuator work port and a reservoir; and the first, second and third ports and first location of the bore means of the first valve assembly being respectively connected to the first, third and second ports of the bore means of the second valve assembly, the improvement comprising: each of the first and second valve assemblies including first and second mounting means respectively connecting the first and second valve elements on the valve stem thereof such that axial movement of the first valve element in a first direction will unseat the first valve element and cause concurrent movement of the valve stem and unseating of the second valve element while movement of the valve stem in said first direction will leave the first valve element undisturbed while unseating the second valve element; first actuating means for selectively shifting said first valve elements of the first and second valve assemblies in said first direction; and second actuating means exclusive of said first actuating means, for simultaneously shifting each of the valve stems of the first and second valve assemblies in said first direction.

3,924,657

REMOTE-CONTROLLED VALVE, PREFERABLY FOR PNEUMATIC SAND BLAST UNITS

Soeren Kristian Assersen, Mosevangen 210, 5330 Munkebo, Denmark

Filed Apr. 17, 1973, Ser. No. 351,883
Claims priority, application Denmark, Apr. 20, 1972, 1939/72
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B24C *7/00*
U.S. Cl. 137—596.15 **8 Claims**



1. A valve for remotely controlling the supply of a pressure media to a receiver comprising:

a valve casing containing a control chamber vented to the atmosphere via a bore,

a cover fixed to one end of the valve casing and fixed to a pipe leading to said receiver,

a first piston and a second piston, each contained within the valve casing, each having a piston head facing the control chamber, each piston head having a surface area greater than a corresponding surface at the opposite end of each piston, the first piston opposite end positioned between a pressure entrance chamber, connected to said control chamber by a channel, and a pressure outlet chamber connected to said receiver, the second piston opposite end facing said cover and pipe, and

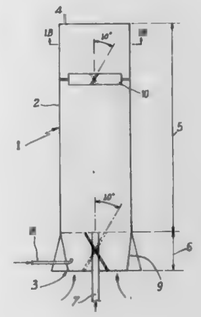
a flexible diaphragm positioned between said pipe and said second piston opposite end.

3,924,658

INSTALLATION TO DISPERSE GAS EFFLUENTS

Flavien Lazarre; Jacques Rozand, both of Pau, and Simonne Roumazeilles, Lons, all of France, assignors to Societe Nationale des Petroles d'Aquitaine, Paris, France

Filed Apr. 10, 1974, Ser. No. 459,585
Claims priority, application France, Apr. 12, 1973, 73.13306
Int. Cl.² F16K *19/00*
U.S. Cl. 137—604 **15 Claims**



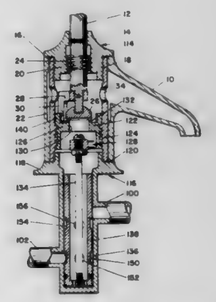
1. An installation to disperse gas effluent, such as hydrocarbon gases, into the atmosphere, comprising at least one dispersal appliance, which can easily be transported, said dispersal appliance comprising a mixing shaft, open at both ends, and a single high-pressure gas injector, placed along the longitudinal axis of the shaft, near one end, the ratio of the square roots of the shaft and injector nozzle section, based on the smallest cross-sectional areas of both shaft and injector, being between 50 and **300.**

3,924,659

FAUCETS

Charles C. Veale, 950 Canyon View Drive, Laguna Beach, Calif. 92651

Filed June 19, 1974, Ser. No. 480,608
Int. Cl.² F16K *11/16*
U.S. Cl. 137—630.17 **13 Claims**



1. A valve for controlling both the combined flow rate and the ratio of the flow rates from two sources using a single operating element comprising in combination:

a valve body defining two separate inlet flow paths which combine to form a single outlet flow path;

first and second valves each comprising cooperating head and seat elements, one of said first and second valves being located in one of said inlet flow paths and the other of said first and second valves being located in said outlet flow path;

a valve operator moveable in each of two directions; and valve actuating means responsive to movement of said valve operator in one of said two directions for opening said first valve and, when said first valve is opened in given degree, for actuating said second valve in said one direction, said valve actuating means being further responsive to movement of said valve operator in the other of said two directions for closing said first valve and, when said first valve is closed, for actuating said second valve in an opposite direction.

3,924,660

DISTRIBUTION VALVE FOR DENTAL EQUIPMENT

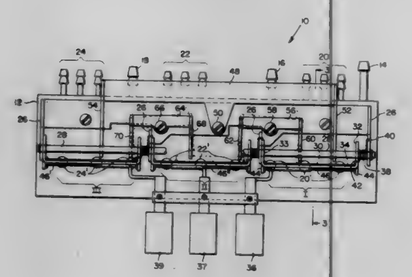
Glen Arthur Woodhams, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed June 22, 1973, Ser. No. 372,823

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.[2] F16K *31/00, 31/44, 35/14*

U.S. Cl. 137—637.1 **4 Claims**



1. A manually operated distribution valve for selecting the simultaneous delivery of a plurality of utility services to one or another of several dental handpieces wherein operation to deliver the services to one instrument automatically terminates delivery to all other instruments, said valve comprising:

a. a manifold block having a single inlet and a plurality of outlets for each utility service, the outlets being grouped in sets so that each set has one outlet for each service;

b. each outlet being valved and having a valve operating stem extending up through said manifold block said stems being aligned along said manifold block;

c. a manually operated lever associated with each set of outlets, said lever being pivoted about an axis located above and along said valve stems;

d. an actuating rod carried by each lever, said rod being moved down and across the valve stems in one set to move the valves therein to an open position when the lever associated with that set is manually pivoted about its axis; and

e. linkage means between said sets and cooperating with said actuating rods for closing the valves in one set when the valves in another set are opened said linkage means including a plurality of levers, one located between each pair of valve sets so that opening any one set will automatically close another previously open set, each of said levers being generally U-shaped with the base of the U-shape being pivoted to said manifold block and each leg of said U-shape being adapted to engage the actuating rods of adjoining sets.

3,924,661

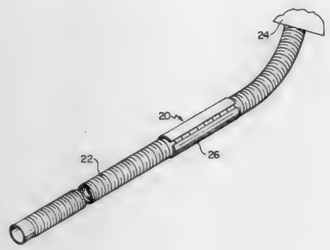
FLEXIBLE HOSE STORAGE CONTAINER

Frank G. Bornhoffer, 79 Esteban Drive, Milford, Ohio 45150

Filed July 16, 1973, Ser. No. 379,354

Int. Cl.[2] F16L *57/00*

U.S. Cl. 138—110 **3 Claims**



1. A storage container and flexible hose combination for lengths of flexible hose, said flexible hose having means for axially expanding and compressing to lengthen or shorten said hose, said container comprising an open-ended cylindrical housing of semi-rigid plastic material having an axial length substantially less than the expanded axial length of said flexible hose, said housing axial length being approximately as long as the compressed length of said flexible hose whereby substantially the entire length of compressed hose is enclosed and protected within said housing, said housing being formed with an axial separation from one end to the other thereby being radially expandable and contractable to accommodate hoses of different diameter, said axial separation forming a pair of linear edges in said housing, said housing defining an inner friction engaging surface for frictionally engaging said flexible hose therein, said housing constructed to cause said linear edges to tend to move toward each other thereby exerting a compressive force radially inwardly whereby said inner surface frictionally engages the outer pheripheral surface of said hose such that maximum frictional engagement occurs when said hose is in a compressed condition within said housing.

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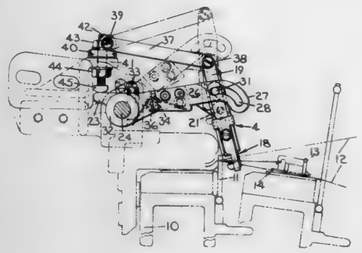
WEFT CUTTER CONTROL APPARATUS

Edward S. Budzyna, East Douglas, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Mar. 12, 1975, Ser. No. 557,500

Int. Cl.[2] D03D *49/00, 45/50*

U.S. Cl. 139—302 **4 Claims**



1. In a shuttleless loom in which weft yarn is inserted into the shed formed by warp yarns from a stationary source located outside of the shed and in which after insertion the weft is beat into the fabric fell by the loom reed and then trimmed by a cutter operated by a cutter shaft, the combination comprising:

a. a cutter;

b. pivotable mounting lever connected to the cutter shaft;

c. a cutter mounting bar mounted on said pivotable mounting lever to provide a fulcrum point between the ends of said cutter mounting bar, said cutter being slidably carried in said cutter mounting bar for operative cooperation with one end of the latter in cutting the weft;

d. a cutter actuating lever operatively connected adjacent one end to said cutter with the opposite end being connected to said cutter shaft;

e. cutter bar control lever means pivotably connecting the end of said cutter mounting bar on the opposite side of the fulcrum point from the cutter cooperating end thereof to a fixed pivotal position adjacent said cutter shaft, said cutter actuating lever and said cutter bar control lever means cooperating during actuation of said cutter shaft to move said cutter between an operative position at the fabric line and an inoperative position located upwardly and forwardly of the fabric fell line so that the cutting mechanism is clear of the loom reed during beatup.

3,924,663

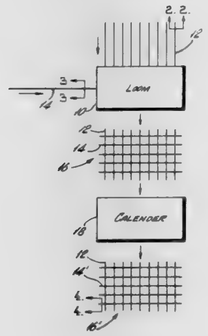
DRAPERY FABRICS

William Bruce Dean, Cornelia, Ga., assignor to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 347,934, April 4, 1973. This application May 7, 1974, Ser. No. 467,703

Int. Cl.[2] D03D *15/00*

U.S. Cl. 139—420 R **2 Claims**



1. A stablilized open-weave drapery fabric having excellent surface coverage, high color intensity and low light penetration per unit weight comprising: (1) a warp containing from about 16 to 24 ends per inch of relatively flat oval strip saran having an average thickness of from about 1½ mils to about 3 mils and an average width of from about 20 mils to about 35 mils and (2) a filling of flattened oval modacrylic yarns having a yarn size of from 8/1 to about 4/1 cotton count, said filling yarns being molded into the flattened oval cross-sectional shape in the plane of the fabric whereby there is no tendency of said filling yarns to roll, shift or move out of their positions as originally woven, there being from about 12 to about 16 picks per inch.

3,924,664

COIL BINDING MACHINE

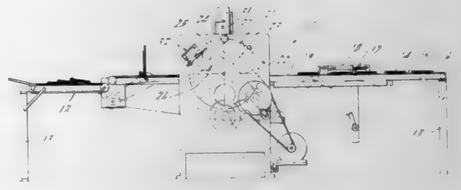
Ernst Pfaffle, Neuffen-Wurttemberg, Germany, assignor to Hans Sickinger Co., Pontiac, Mich.

Filed Feb. 26, 1975, Ser. No. 553,253

Int. Cl.[2] B21F *35/02*

U.S. Cl. 140—92.7 **4 Claims**

1. In combination with an indexing type of coil binding machine having a carriage with a plurality of spaced stations, a pair of cutter assemblies at opposite ends and outwardly of one of said stations for trim-cutting and inwardly bending the ends of a spiral wire binder in an apertured stack supported by said carriage, each cutter assembly having a pair of teeth movable inwardly to partially envelop a coil turn and a blade movably mounted between said teeth for severing and bending the coil end after the cutter assembly has moved inwardly, and a pair of curved guides placed in the path of the coil ends to be trimmed opposite said cutter assembly and so located with respect to the stack apertures in which said coil is disposed that said coil ends will engage and ride upon said guides as said carrier indexes and thereby be lifted to the outsides of said apertures, thus exposing a substantial portion of each coil to be partially enveloped by said teeth and aligned with said cutting blade for severing and bending.



3,924,665

SPRING CORE ASSEMBLY MACHINE

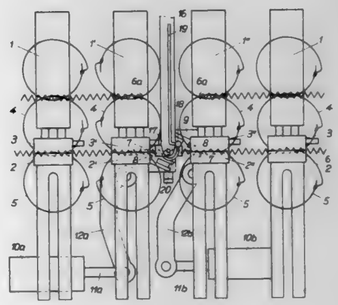
Walter Spühl, St. Gallen, Switzerland, assignor to Spuhl AG, St. Gallen, Switzerland

Filed Mar. 12, 1975, Ser. No. 557,669

Claims priority, application Germany, Mar. 19, 1974, 2413033

Int. Cl.[2] B21F *27/16*

U.S. Cl. 140—92.7 **9 Claims**



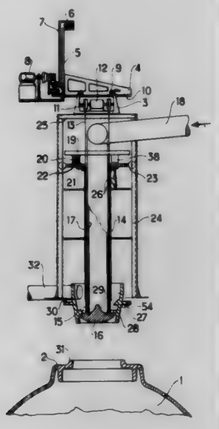
1. A spring core assembly machine comprising, in combination, a plurality of clamping jaw pairs arranged next to one another in a row for holding together the end coils of adjacent coil springs while said springs are connected to one another by threading through wire coils; cut-off and loop forming means for cutting off wire coils on at least one clamping jaw pair and forming the cut-off wire coils into loops, said cut-off and loop forming means being located between two adjacent clamping jaw pairs and having a pair of knives for each respective clamping jaw pairs for cutting said wire coils.

3,924,666

SUSPENDED SUCTION OR FILL PIPE FOR HANDLING FLUID PRODUCTS OR THE LIKE

Michel Raison, Saint-Arnoult-en-Yvelines, France, assignor to Compagnie Generale d'Automatisme, France

Filed Oct. 11, 1972, Ser. No. 299,611
Claims priority, application France, Oct. 11, 1971, 71.36492
Int. Cl.² B65B 3/04; B65G 11/14
U.S. Cl. 141—231 14 Claims



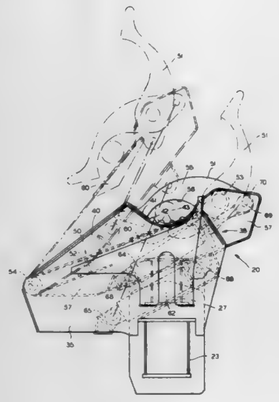
1. A telescopic suction or fill pipe arrangement for conveying into a tank to be loaded or unloaded fluid products or the like at a great flow rate, the arrangement comprising: a product conducting pipe including an external pipe element and an internal pipe element slidable within said external pipe element, said internal pipe element and said external pipe element being insertable into the tank to be loaded or unloaded, said internal pipe element and said external pipe element each having upper and lower end portions, said pipe having an initial retracted position with the lower end portions of said internal pipe element and said external pipe element being in alignment and an extended position with the lower end portion of said external pipe element being disposed at the bottom of the tank and the upper end portion of said external pipe element being disposed at the lower end portion of said internal pipe, supporting means for supporting said pipe including means for effecting movement of said internal and external pipe elements together or separately with respect to said supporting means in a vertical direction, said pipe in said initial retracted position having a total length which is essentially shorter than the total length of a movement stroke of the pipe to the extended position, drive means connected with said means for effecting movement and with said pipe for selectively driving said pipe from said initial retracted position to said extended position and from said extended position to said retracted position, said drive means successively effecting first a relative movement of said external pipe element and said internal pipe element with respect to said supporting means and second a relative movement of said external pipe element with respect to said internal pipe element, said external pipe element being slidably guided on said internal pipe element for movement substantially along the entire length thereof from said intial retracted position to said extended position, and a protective and guiding cage surrounding said pipe and supported at a constant level by said supporting means including at least a pair of tracks, and guide means on said external pipe element for assuring the correct bearing of the internal element on said tracks provided on said cage.

3,924,667

COMPACT TREE CLAMP AND AUTOMATIC SEQUENCE CONTROL FOR A TREE LENGTH HARVESTER

Ian McKenzie, Lambeth, Canada, assignor to Clark Equipment Company, Buchanan, Mich.

Filed Mar. 18, 1974, Ser. No. 452,171
Int. Cl.² A01G 23/08
U.S. Cl. 144—3 D 6 Claims



1. In a mobile tree length harvester including means for cutting a standing tree and holding it upright, means for pivoting the cutter and holding means in a vertical plane to orient the tree in a substantially horizontal position, means for clamping the tree in the horizontal position and means for delimbing the tree in the horizontal position, the improvement in said clamping means comprising a movable jaw having separate pivoted elements disposable in either a raised or lowered position, one pivoted to the other on a first axis parallel to the delimber axis and extending transversely above the delimber axis in the lowered position and the other pivoted about a second axis parallel to the delimber axis on the opposite side of the delimber axis and extending transversely below the delimber axis in the lowered position, a fixed jaw having a tree receiving section formed by a pair of spaced plates between which the movable jaw is lowerable sufficiently to permit deposit of the severed tree on said tree receiving section and cylinder means operable for pivoting said movable jaw about the second axis for lifting the tree out of the tree receiving section of the fixed jaw and means operable to pivot the one element of the movable jaw about the first axis to hold the tree clamped on the tree receiving section of the fixed jaw in the lowered position of the movable jaw and to release the tree in the raised position of the movable jaw.

3,924,668

PRESSURE HEAD ASSEMBLY

Jeff Y. Cromeens, Mesquite, Tex., assignor to Industrial Woodworking Machine Co. Inc., Garland, Tex.

Filed Mar. 15, 1974, Ser. No. 451,451
Int. Cl.² B26D 7/06; B27B 31/00
U.S. Cl. 144—244 5 Claims

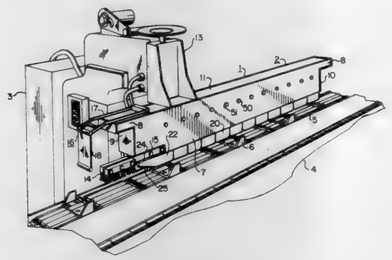
1. A pressure head assembly for holding discrete work pieces of different thicknesses, widths and lengths against displacement while permitting travel of the work pieces therebeneath including:

a pressure head elongated longitudinally of the direction of travel of the work pieces,

a multiplicity of relatively narrow elements slidably mounted in the underside of the pressure head and depending therefrom for upright reciprocation relative thereto and to one another,

pressure-responsive means in said pressure head overlying the elements for operative engagement therewith for resiliently urging said elements into engagement with the work pieces,

said elements being disposed in a plurality of contiguous rows extending longitudinally of said head with the elements of each row being staggered relative to the elements of adjacent rows whereby each portion of each element of each row overlaps portions of said elements of the other rows to provide a continuous bearing surface for the work pieces,



a plurality of means extending transversely of said pressure head for slidably suspending said elements,

each of the suspending means being common to one element of each of said rows for slidably supporting said elements independently of the other elements of the same row,

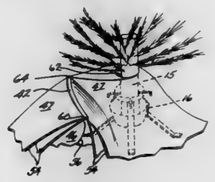
each of said elements common to the same suspending means having independent connection therewith so as to be reciprocable relative to its commonly supported elements.

3,924,669

MEANS FOR DISPOSING OF CHRISTMAS TREES

Roger W. Price, Muskegon, Mich., assignor to NeeTree Corporation, Muskegon, Mich.

Filed Mar. 21, 1974, Ser. No. 453,263
Int. Cl.² B65D 81/00, 65/10
U.S. Cl. 150—52 R 12 Claims



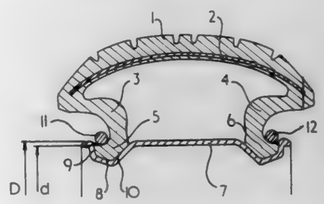
1. A display and disposal envelope for controlling litter from a Christmas tree or the like, which tree is adapted to be supported by its trunk in a stand on a supporting surface, said envelope comprising a cylinder of a flexible membrane having sides, an open end, and a generally closed end; said envelope, when said sides are erected, having a cross-sectional area large enough to receive a tree; said closed end having a center, aperture means located at said center for receiving the trunk of the tree therethrough, and a sealed seam located at said closed end extending across the entire width of said closed end, and joining and closing said sides of said cylinder at said closed end except for said aperture means which allows a tree trunk to pass therethrough; said sealed seam including means for supporting said closed end in an upstanding, crown-like tent over a tree stand such that the remainder of said cylinder sides flair downwardly and outwardly beneath the supported tree during display to form a curved catch basin under the tree for retaining needles and other droppings from the tree, whereby when said envelope is folded into said catch basin, said envelope approximately covers the projection of the largest cross-sectional area of said tree on said supporting surface, and may be pulled up around the tree when the tree is to be removed to enclose the tree and any matter dropped from the tree during display.

3,924,670

PNEUMATIC TIRE FOR VEHICLE WHEELS

Giorgio Tangorra; Italo Bertelli, and Giovanni Calori, all of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed May 29, 1973, Ser. No. 364,334
Claims priority, application Italy, May 31, 1972, 25140/72
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B60C 15/02, 17/00
U.S. Cl. 152—375 2 Claims



1. A pneumatic tire and wheel assembly comprising

a tire provided with a tread portion, two bead portions, and two sidewalls, the section midlines of said sidewalls having a concavity turned towards the outside,

a wheel for mounting said tire, said wheel having channel-shaped seat portions, with a supporting base and two lateral walls extending along the entire circumference of the rims of said wheel, each bead portion of said tire being seated in a corresponding seat of the rims of said wheel, and

a circumferentially extending annular element mounted on each of said rims, at least a part of the axially outermost zone of said bead portion being radially compressed between the base of said channel-shaped seat and said annular element, the radially innermost diameter of said annular element being smaller than the radially outermost diameter of the axially outer lateral walls of said seat portion of said rims, said annular element comprising at least one shaped metallic element of curcular section embedded in a shaped rubber element, the cross section of said annular element being positioned eccentrically with respect to that of said shaped rubber element, said shaped rubber element being provided with an appendix intended to be received in an appropriate groove on the radially outer surface of the bead, said groove extending along the whole circumferential development of the bead.

3,924,671

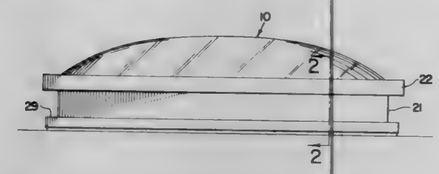
FOLDING SCREEN FOR LIGHT PERMEABLE SKYLIGHTS AND THE LIKE

Charles R. Gates, 15070 Hill Drive, Novelty, Ohio 44072

Continuation-in-part of Ser. No. 462,172, April 18, 1974, which is a continuation of Ser. No. 242,649, April 10, 1972. This application Mar. 5, 1975, Ser. No. 555,365
Int. Cl.² E05D 15/26
U.S. Cl. 160—183 4 Claims

1. A folding radiation screen having predetermined permeability to sunlight, for operation beneath a skylight or light-permeable roof structure, said screen comprising a plurality of relatively rigid panels successively hinged together through interdigitated longitudinal edges thereof for co-action in side-

by-side relationship and supported by a pair of parallel, overhead track means inclinedly disposed at an angle less than 75° with respect to the horizontal, each said track means including a lower horizontal track and an immovable vertical guiding lip means, said panels being movable from a folded, stacked relationship adjacent one end of said track means to a generally planar relationship extending between said one end and the other end of said track means, the end panel adjacent said one end being fixedly disposed for pivotal movement about the longitudinal edge of said end panel adjacent said one end;



rolling means supported by said lower horizontal track, and, washer or spacer means supported by said lip means to coactingly translate said panels along said tracks so as to dispose hinged edges supported by said lip means in a plane vertically upwardly displaced relative to a plane including hinged edges supported by said rolling means; and, flexible means to exert a sufficient force on said panels, in either direction along said tracks, to translate said panels from said stacked relationship into said generally planar relationship, or vice versa, so as to control the intensity of said sunlight below said screen.

3,924,672

DEVICE FOR THE ELECTROSLAG CASTING OF INGOTS

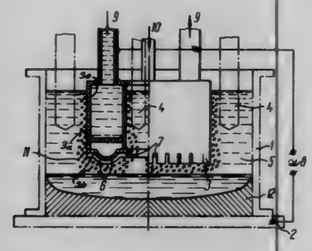
Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 5, kv. 21; Boris Izrailevich Medovar, Bulvar Lesi Ukranki, 2, kv. 8; Leonty Vasilievich Chekotilo, ulitsa Scherbakovka, 49a, kv. 10; Viktor Mikhailovich Martyn, ulitsa Vernadskogo, 65a, kv. 102; Viktor Leonidovich Artamonov, ulitsa Sovskaya, 9, kv. 4; Anzor Ippolitovich Bochorishvili, ulitsa Vernadskogo, 65, kv. 102; Leonid Mikhailovich Stupak, Brest-Litovskoe shosse, 39, kv. 9; Anatoly Petrovich Sysenko, ulitsa Polevaya, 25, kv. 1, and Valery Georgievich Popov, ulitsa Ezhena Potie, kv. 72, all of Kiev, U.S.S.R.

Continuation of Ser. No. 130,412, April 1, 1971, abandoned. This application Dec. 26, 1973, Ser. No. 427,526

Claims priority, application U.S.S.R., Apr. 20, 1970, 1424449; Aug. 8, 1970, 1457823; Oct. 1, 1970, 1475936

Int. Cl.² B22D *27/02*

U.S. Cl. 164—252 **2 Claims**



1. A device for electroslag casting of ingots which comprises a mold, a bottom plate therefor, consumable electrodes, a non-consumable cooled metal electrode to be partially immersed in a melt, and an electric current source provided between the non-consumable electrode and the bottom plate, said non-consumable electrode having a a sidewall, an end wall and a bore through which a gas flow passes, the end wall and the sidewall adjacent thereto having grooves, the grooves being provided with openings in communication with the bore, with the grooves serving for guiding a flow of gas bubbles admitted from the openings over the whole surface of the partially immersed non-consumable cooled metal electrode, thus preventing it from electrochemical destruction.

3,924,673

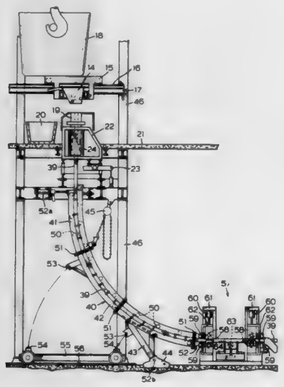
APPARATUS FOR PRODUCING CONTINUOUS METAL CASTINGS

Tibor Miklos Vertesi, Whitby, Canada, assignor to Gamma Engineering Limited, Burlington, Canada

Filed Mar. 18, 1968, Ser. No. 713,904

Int. Cl.² B22D *11/08*

U.S. Cl. 164—274 **23 Claims**



1. In a continuous metal casting apparatus for producing a metal strand of predetermined width, an elongated articulated starting device, a plurality of guide rollers mounted on each side of the starting device at spaced intervals along substantially the entire length thereof, and a roller apron having a pair of laterally spaced tracks engageable by said guide rollers for guiding said starting member through said roller apron, the lateral spacing of said tracks being greater than said predetermined width so that said tracks do not interfere with passage of said strand through said roller apron.

3,924,674

HEAT VALVE DEVICE

Algerd Basiulis, Redondo Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 7, 1972, Ser. No. 304,421

Int. Cl.² F28D *15/00*

U.S. Cl. 165—32 **3 Claims**

1. A heat switching device having first and second states comprising:

a housing of low thermal conductivity having a first heat transfer region and a second heat transfer region, said housing containing a gas during said first state and containing a fluid during said second state;

capillary means having a void volume and disposed within said housing for conveying a fluid between said heat transfer regions during said second state;

a fluid reservoir for containing a fluid during said first state;

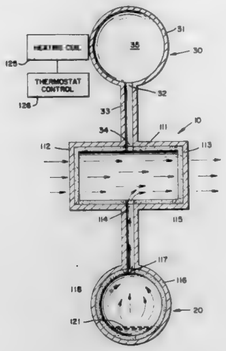
means hermetically sealing said fluid reservoir to said housing for providing fluid communication therebetween;

a volatile working fluid in said fluid reservoir during said first state and being sufficient to fill the void volume of said capillary means during said second state;

a gas reservoir;

means hermetically sealing said gas reservoir to said housing for providing fluid communication therebetween;

an inert gas being non-condensible in said first and second states being at a predetermined pressure within said gas reservoir and said housing for preventing transfer of heat between said heat transfer regions during said first state and being displaceable from said housing into said gas



reservoir by increasing the vapor pressure of said volatile working fluid above said predetermined gas pressure in said second state; and,

means coupled to said gas reservoir for varying the inert gas pressure therein and varying the switching point from said first state to said second state.

3,924,675

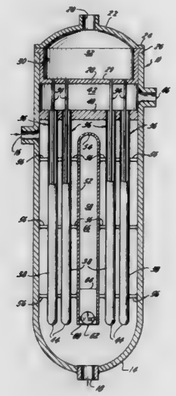
ENERGY ABSORBER FOR SODIUM-HEATED HEAT EXCHANGER

Jan Essebaggers, Succasanna, N.J., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed May 3, 1973, Ser. No. 356,879

Int. Cl. F28f *9/00*

U.S. Cl. 165—134 **4 Claims**



1. A heat exchanger comprising: an outer shell;

a liquid sodium outlet in said shell;

a liquid sodium inlet in said shell;

a plurality of tubes for carrying water, and extending within said shell between said liquid sodium inlet and said liquid sodium outlet;

an energy absorber wholly within said outer shell having a sidewall defining chamber, a channel opening into said chamber, and a one-way valve, said valve being positioned so that nothing can flow through said channel without flowing through said valve and said valve being operable so that it permits flow only into said chamber until the pressure is reduced to a safe level so that said valve can be opened to allow the contents of said chamber to escape slowly and to eventually flow out of said liquid sodium outlet, said energy absorber being capable of withstanding the pressure resulting from an inadvertant water-sodium reaction over the entirety of said sidewall; whereby when water is carried by said tubes, said tubes are heated by a stream of liquid sodium flowing from said liquid sodium inlet to said liquid sodium outlet and said channel extends into said stream of flowing sodium and said chamber contains gas, an inadvertant sodium-water reaction will result in a pressure buildup which is attenuated because sodium and the products of said reaction will enter said chamber through said channel to compress said gas with the products of said reaction being retained within said energy absorber.

3,924,676

HEAT EXCHANGER

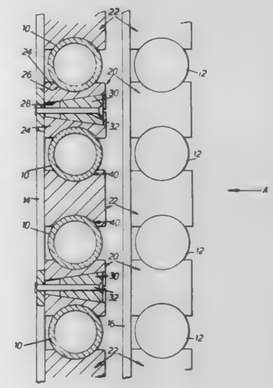
John Charles Bennett, Ponteland, England, assignor to Clarke Chapman-John Thompson Limited, Durham, England

Filed Sept. 20, 1973, Ser. No. 399,235

Claims priority, application United Kingdom, Sept. 23, 1972, 44099/72

Int. Cl. F28f *9/00*

U.S. Cl. 165—172 **5 Claims**



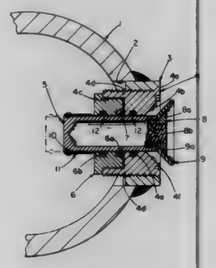
1. In combination for securing tube passes to a member extending past several tube passes, abutment means each having two oppositely facing contoured outer faces in securing engagement with and partly surrounding respective adjacent tube passes, at least some of said abutment means each comprising two abutment portions each having one of said contoured faces, and having an inner inclined surface, the inclined surfaces of said two abutment portions lying between said adjacent tube passes and converging towards one another as they approach said member, a wedge shaped and interposed between said two abutment portions in a position to maintain said contoured faces of said abutment portions in securing relationship with said respective adjacent tube passes and to maintain said two abutment portions in engagement with said member, and a securing device engaging said wedge and said member for securing, under a predetermined load, said wedge to said member in said position, others of said abutment means comprising unitary blocks each having said two oppositely facing contoured faces, said unitary blocks being fixedly secured to said member.

3,924,677

DEVICE FOR USE IN THE COMPLETION OF AN OIL OR GAS WELL

Amnon Prenner; Jacob Bear; David Tohar, all of Haifa, Israel, and Harry Koplin, Miami, Fla., assignors to Harry Koplin, Miami, Fla.

Filed Aug. 29, 1974, Ser. No. 501,622
Int. Cl.² E21B 33/12
U.S. Cl. 166—100 16 Claims



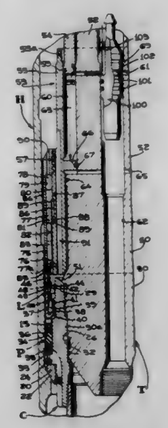
1. An apparatus for providing a passage between an earth stratum and the interior of a well casing comprising a movable hollow conduit member mounted in the casing wall initially held retracted and immovable while the casing is lowered and subsequently after the casing is set extended outwardly from the casing wall to contact said stratum, a dissolvable plug initially blocking the bore of said conduit member, the improvement wherein said plug is water soluible and said apparatus includes removable means on each end of said plug which prevent premature contact of said plug by water.

3,924,678

CASING HANGER AND PACKING RUNNING APPARATUS

Arthur G. Ahlstone, Ventura, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed July 15, 1974, Ser. No. 488,430
Int. Cl.² E21B 23/06, 33/035
U.S. Cl. 166—120 30 Claims



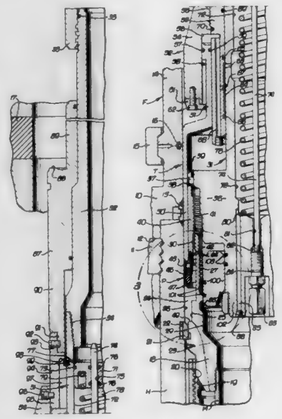
24. A running and operating tool for setting a packing and locking assembly between a wellhead housing and a hanger for a tubular well conduit comprising: a body having means at its upper end connectable to a running pipe string; means at the lower end of said body; means adapted to releasably connect said last-mentioned means to the hanger; a cylinder sleeve reciprocable relative to said body; said cylinder sleeve and said body having means defining a piston chamber; a piston on said cylinder sleeve and in said piston chamber; passage means for admitting fluid under pressure to said piston chamber; said cylinder sleeve having means enabling releasable connection with said packing means; and actuator means responsive to fluid pressure outside of said tool including an actuator member shiftable longitudinally of said cylinder sleeve.

3,924,679

PRESSURE OPERATED APPARATUS FOR RUNNING AND SETTING PACKING ASSEMBLIES IN WELLHEADS

Martin B. Jansen, Jr., Ventura, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Aug. 7, 1974, Ser. No. 495,269
Int. Cl.² E21B 23/00
U.S. Cl. 166—182 23 Claims



1. Apparatus for effecting a seal between a wellhead housing below a blowout preventer means and a hanger disposed in said housing for supporting a tubular string extending into a well bore comprising: a running tool having a body structure connectable to a running pipe string, packing means, means releasably connecting said packing means to said body structure, actuator means disposed between and engageable with the blowout preventer means and packing means for setting said packing means between said housing and said hanger, and locking means for holding said packing means in set condition, said actuator means including fluid pressure operated piston and cylinder means for applying a setting force to said packing means and a reactive force to the blowout preventer means with said actuator means in engagement with the blowout preventer means and packing means.

3,924,680

METHOD OF PYROLYSIS OF COAL IN SITU

Ruel C. Terry, Denver, Colo., assignor to In Situ Technology, Inc., Denver, Colo.

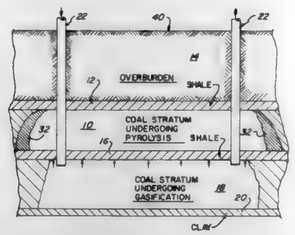
Filed Apr. 23, 1975, Ser. No. 570,714
Int. Cl.² E21B 33/138, 43/24, 43/26
U.S. Cl. 166—258 8 Claims

1. A method of pyrolysis of coal in situ comprising the steps of:

establishing a hermetically sealed passage between a subsurface coal formation and a surface location wherein said passage includes means for removing both liquids and gases from the coal formation,

heating at least a portion of the coal formation,

driving fluid tars in the coal which are mobilized by the heat outwardly from the heated portion and allowing them to solidify in lower temperature portions of the coal formation to define a fluid impervious barrier around the heated portion, and



allowing volatile material released from the heated coal to be removed through said passage and flow to a surface location.

3,924,681

METHOD OF USING OVERBASED CRUDE OIL AS WATERFLOOD ADDITIVE

Charles R. Clark; M. Duane Gregory; Burton M. Casad, all of Ponca City, Okla.; Delmar D. Krehbiel, Lubbock, Tex., and Carl D. Kennedy, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Apr. 30, 1973, Ser. No. 355,635
Int. Cl.² E21B 43/22
U.S. Cl. 166—270 8 Claims

1. a process for recovering hydrocarbons from a petroliferous formation which consists essentially of:

d. injecting into the formation an effective amount of an aqueous mixture which contains about 0.5 to about 25 weight percent of an overbased waterflood additive; the water-flood additive comprising a base component plus a sulfonated virgin crude oil; wherein the waterflood additive is sufficiently overbased that the ratio: "weight of excess base component/weight of sulfonate" is about 0.03 to about 3.0; wherein the base component is sodium hydroxide; wherein the sulfonated virgin crude oil is derived from a crude oil having an API gravity of at least 25 and an aromatic hydrocarbon content of at least 15 percent by weight; and

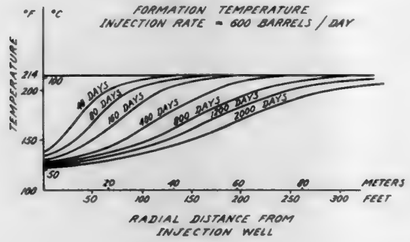
e. recovering the displaced hydrocarbons from the formation.

3,924,682

METHOD OF TREATING A HIGH TEMPERATURE FORMATION TO PERMIT THE USE THEREIN OF TEMPERATURE SENSITIVE SURFACTANTS

Ching H. Wu; Alfred Brown; Wann-Sheng Huang, and Yick-Mow Shum, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Oct. 16, 1974, Ser. No. 515,276
Int. Cl.² E21B 43/22, 43/24
U.S. Cl. 166—274 10 Claims



1. A method of recovering petroleum from a subterranean, petroleum containing formation by means of surfactant flooding wherein the formation temperature exceeds the temperature at which the surfactant is stable which comprises:

introducing a cooling fluid into the formation at a temperature substantially lower than the temperature at which the surfactant is stable for a period of time sufficient to reduce the portion of the formation to be contacted by the surfactant to a temperature level at which the surfactant is stable.

3,924,683

METHOD FOR ENHANCING THE RECOVERY OF OIL USING STEAM STIMULATION PROCESS

William D. George, Missouri, and Chin-Wen Shen, Houston, both of Tex., assignors to Getty Oil Company, Los Angeles, Calif.

Filed Oct. 15, 1974, Ser. No. 514,835
Int. Cl.² E21B 43/24
U.S. Cl. 166—303 25 Claims

1. A method for enhancing the recovery of oil from an underground reservoir having a well communicating thereto, comprising:

providing a source of steam for said well;

adding caustic material to said steam so that the concentration of said caustic material in said steam is in excess of 500 parts per million;

injecting said steam containing said caustic material into said reservoir through said well for a first period of time;

terminating the injection of said steam, and thence commencing the production of well fluids from said well;

continuing the production of well fluids for a second period of time, said first period and said second period defining a steam stimulation cycle;

terminating said production period; and,

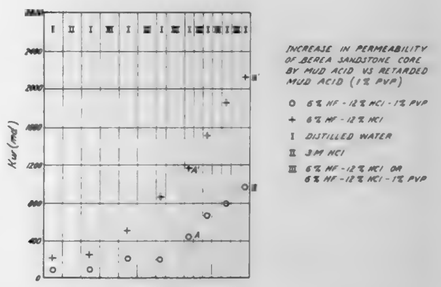
repeating said steam stimulation cycle several times.

3,924,684

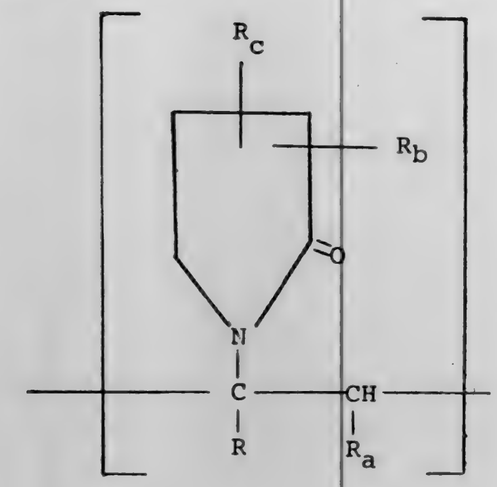
METHOD FOR STIMULATING WELL PRODUCTION

Jack F. Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 20, 1973, Ser. No. 426,998
Int. Cl.² E21B 43/27, 43/26
U.S. Cl. 166—307 12 Claims



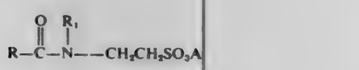
5. A method of increasing the production of fluids from a subterranean fluid bearing formation having present therein sandstone and clay components comprising injecting therefrom into said formation under a pressure greater than the formation pressure an aqueous well acidizing composition comprising an aqueous solution of from about 5 to about 12 percent by weight of a mineral acid selected from the group consisting of hydrochloric and sulfuric acid, from about 3 to about 7 percent by weight of hydrofluoric acid and having dissolved therein from about 0.5 to about 5 percent by weight of a vinylpyrrolidone polymer comprising recurring units of the formula:



wherein R, R_a, R_b and R_c are independently selected from the group consisting of hydrogen and alkyl radicals having from 1 to 5 inclusive carbon atoms, maintaining said composition in contact with the formation for a time sufficient for the acid to chemically react with the acid-soluble components of the formation to etch passageways therethrough thereby increasing substantially the flow capacity of the said subterranean formation.

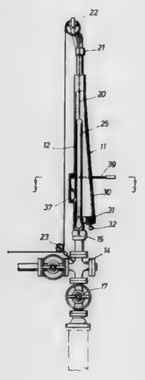
3,924,685
METHOD FOR OIL RECOVERY
Jack F. Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Dec. 20, 1974, Ser. No. 534,982
Int. Cl.² E21B *43/25, 43/26*
U.S. Cl. 166—308 **13 Claims**

1. Method of increasing and sustaining the production of fluids from a subterranean fluid-bearing formation comprising injecting down the well bore penetrating said formation and injecting therefrom into said formation under a pressure greater than the formation pressure, an aqueous solution containing a water-soluble substituted taurine having the following general formula:



wherein R and R_1 are aliphatic hydrocarbon groups, including the corresponding unsaturated aliphatic hydrocarbons, mixtures and isomers, each group containing from 1 to 20 carbon atoms therein, the sum total of the carbon atoms in R and R_1 being between 9 and 30, and A is an alkali metal or ammonium ion.

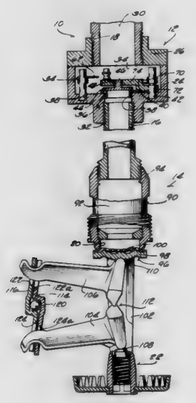
3,924,686
WELLHEAD LUBRICATOR AND METHOD
James F. Arnold, Houston, Tex., assignor to HydroTech International, Inc., Houston, Tex.
Filed Mar. 14, 1975, Ser. No. 558,429
Int. Cl.² E21B *23/00*
U.S. Cl. 166—315 **12 Claims**



1. A wellhead lubricator having a housing arranged for vertically extending attachment to a wellhead assembly and having a wireline for supporting a wireline tool therein and passing said wireline tool in and out of said well through the point of attachment to said wellhead, the improvement comprising:
said housing having a portion extending laterally therefrom and normally forming a part of the pressurized chamber in said housing;
said laterally extending portion having another tool opening for passage of a wireline tool therethrough while said housing remains attached to said wellhead;
means for closing said other tool opening after passage of said tool therethrough;
and guide means supported in said housing for guiding a wireline tool to said other opening when said tool is to be removed from said housing.

11. A method of running wireline tools in and out of a well, the combination of steps comprising:
attaching a generally vertically extending elongated housing to the wellhead of said well in fluid tight relationship therewith;
supporting a wireline tool in said housing while maintaining said housing in a closed fluid tight condition, to thereby contain any pressure that may be present in said well;
lowering said wireline tool into said well and withdrawing said wireline tool from said well while maintaining said housing in said fluid tight condition;
shutting in said well at a point below said housing after said wireline tool is withdrawn from said well;
opening said housing and removing said wireline tool therefrom while said housing remains attached to said wellhead and while said well is shut in;
inserting another wireline tool into said housing while said housing remains attached to said wellhead;
closing said housing to form a fluid tight chamber therein; and lowering said other wireline tool into said well and withdrawing said other wireline tool from said well while maintaining said housing in said fluid tight condition.

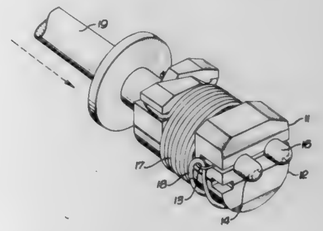
3,924,687
VALVE AND SPRINKLER HEAD FOR AUTOMATIC FIRE EXTINGUISHING SYSTEMS
Richard T. Groos, Hastings, Mich., assignor to The Viking Corporation, Hastings, Mich.
Filed Feb. 20, 1974, Ser. No. 443,962
Int. Cl.² A62C *37/10*
U.S. Cl. 169—19 **25 Claims**



1. An automatic sprinkler control mechanism comprising, in combination: means defining a flow passageway having an inlet and outlet, said inlet adapted for connection to a source of fire extinguishing fluid, said outlet adapted to dispense said fluid; first and second valve means in said passageway, said first valve means being movable between closed and open positions, said second valve means being movable from a closed to an open position; first condition responsive means including first sensing means responsive to a fire condition and first actuator means responsive to said first sensing means and cooperatively associated with said first valve means for opening said first valve means when the fire condition about said first condition responsive means reaches a preselected fire condition level and for closing said first valve means when the fire condition level is below said preselected level; second condition responsive means including second sensing means responsive to a fire condition and second actuator means responsive to said second sensing means and cooperatively associated with said second valve means for causing said second valve means to open when the fire condition level about said second condition responsive means reaches a second preselected level.

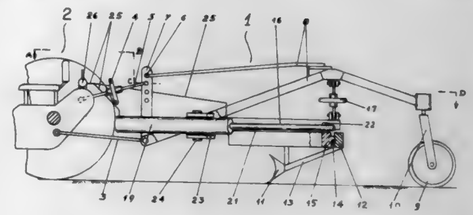
3,924,688
FIRE FIGHTING SYSTEM
Earl A. Cooper, Los Angeles, and Roger C. Stephenson, Woodland Hills, both of Calif., assignors to G & H Technology, Inc., Santa Monica, Calif.
Filed Apr. 5, 1974, Ser. No. 458,221
Int. Cl.² A62C *37/04*
U.S. Cl. 169—61 **17 Claims**

1. An electromechanical mechanism for a non-explosive initiation of an actuator, said mechanism including:
a plurality of separable spool sections secured together and formed to have a recess therebetween,
a pair of electrical terminals on one of said sections,
wrapping means wrapped around said plurality of spool sections for applying circumferential tension thereto to maintain said sections together,
a securing portion formed on said wrapping means,
an electrically conductive element engaged by said securing portion, said electrically conductive element being connected to said terminal,
a movable member disposed at one end in said recess,
a utilization device coupled to said movable member whereby the movement of said utilization device and said movable member are restrained by the application of circumferential tension by said wrapping means to said plurality of separable spool sections, and



a source of electrical current coupled to said electrically conductive element, said electrically conductive element having a tension greater than said circumferential tension applied by said securing means to said plurality of separable members at ambient temperatures, said tension of said electrically conductive element being less than said circumferential tension when said tension element is heated up by current applied by said source of electrical current,
whereby the application of current by said source of electrical current disengages said securing means from said electrically conductive tension element to enable said movable member to initiate actuation of said utilization device.

3,924,689
HYDRAULICALLY CONTROLLED GRADER-LEVELER ADAPTED FOR TRAILING BY TRACTORS
Gedalyahu Manor, Haifa, Israel, assignor to Technion Research and Development Foundation, Ltd. and Aharon Kipnis, both of Haifa, Israel
Continuation-in-part of Ser. No. 266,078, June 26, 1972. This application Dec. 20, 1973, Ser. No. 426,522
Claims priority, application Israel, July 4, 1971, 37217
Int. Cl.² E02S *3/76*
U.S. Cl. 172—780 **11 Claims**



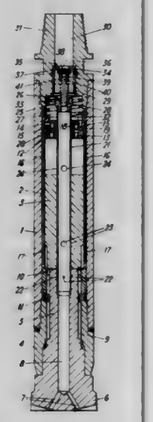
1. Off-center overload protected grader-leveler apparatus comprising
a chassis having means at its forward end for trailing attachment to a farm tractor and, at its rear end, means for

supporting the chassis above ground, said tractor having a hydraulic system including a collecting vessel;
a blade support means, and means rotatably securing the blade support means to the chassis to enable the support means to swing about an essentially vertical axis to permit selective positioning of the support means with respect to said chassis;
a grading and leveling blade supported by the support means;
blade positioning means, quick release means including a hydraulic piston motor having a cylinder;
means connecting the movable force transmitting portion of the hydraulic motor to the blade support means;
and means controlling application of pressurized fluid, selectively, to a side of the piston of the motor in order to rotate the blade support means, and hence the blade about its axis and bring it into a desired position; wherein, to avoid blade damage upon encountering an off-center overload, the improvement comprises
controlled quick fluid release means to open and release fluid from the respective overloaded side of the piston into the collecting vessel whenever the fluid pressure on the piston exceeds a limit defined by an excessive off-center load on the blade, release of fluid permitting the piston to move freely and to allow the blade support means with the blade attached thereto to turn freely about its axis and thereby to prevent damage to the apparatus.

3,924,690
PERCUSSION DRILL CONTROL MEANS

Alan Shaw, Halifax, England, assignor to Halifax Tool Company Limited, Halifax, England

Filed Dec. 5, 1973, Ser. No. 422,068
Claims priority, application United Kingdom, Jan. 9, 1973, 1142/73
Int. Cl.² E21B *5/00*; E21C *7/00*
U.S. Cl. 173—13 **7 Claims**

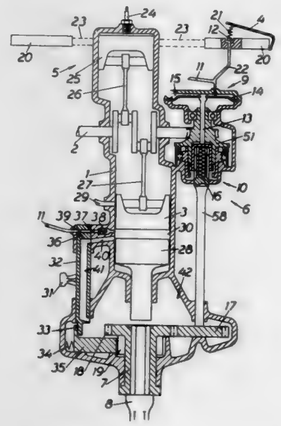


1. A percussion drill which comprises in combination:
a. a drill body formed internally with a cylinder space;
b. means for securing the shank of a drill bit within the drill body, said means permitting limited axial freedom;
c. a fluid pressure-operated hammer piston reciprocably disposed in said cylinder space to deliver blows to said shank;
d. a central tube extending axially through a distributor valve assembly near one end of the tube and axially through said hammer piston to a central bore of the shank of said drill bit, said central tube having limited freedom for axial movement with said shank;
e. a bush with central bore disposed in said one end of the central tube, the rear surface of the bush being exposed to a supply of compressed air, the front face of the bush ordinarily exposed to pressure within the central tube;
f. a spigot extending forwardly and disposed in an inlet passage for compressed air within the rear end of the drill body, said spigot disposed as a shut-off valve assembly for air within the central tube when in mating contact within the bush; and
g. exhaust port means in said central tube positioned for communication with said cylinder space and cooperative with said hammer piston to control the reciprocation thereof, the central tube communicating with an exhaust passage in said shank and extending to a bit flushing passage
h. whereby cooperation of the fixed spigot in said body with said bush providing a clearance between the spigot and bore of the bush which varies in accordance with the longitudinal position of the tube within the drill body, a space surrounding the said rear end of said central tube and the said spigot communicating with a pressure fluid supply passage upstream of the hammer piston for venting pressure fluid to the bore of the central tube upon forward movement thereof.

3,924,691
COMBUSTION ENGINE DRIVEN HAMMER MACHINES

Kurt Östen Brännström, Saltsjo-Boo, and Levi Johannes Karlfors, Nacka, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed June 8, 1973, Ser. No. 368,081
Claims priority, application Sweden, June 30, 1972, 8601/72
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B25D *9/10*
U.S. Cl. 173—48 **5 Claims**



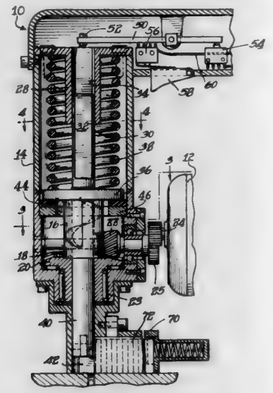
1. A device relating to combustion engine driven hammer machines and comprising a machine housing, a crankshaft which is arranged in the machine housing and connected to a compressor piston and driven by a combustion engine, a throttle controlling said engine, a device comprising a servomotor, which is controlled in dependence on the position of the throttle, for transferring rotation from the crankshaft to a drill-sleeve for rotating a tool which is inserted into the drill-sleeve, and a clutch unit which is actuated by the servomotor for engagement or disengagement of the rotation.

5. A device according to claim **1**, in which a function selector comprising an essentially cylindrical part, which is guided in the machine housing and provided with, an eccentric first terminal for actuating a spring-loaded dog for barring the drill-sleeve against rotation when the function selector is in a certain adjustment position, and a second-terminal which is made as a slide-valve for blocking the transferring of fluid-pressure, created by the compressor piston, to the servomotor when the function selector is in said adjustment position, through which the rotation remains disengaged independent of the adjustment of the throttle.

3,924,692
FASTENER DRIVING TOOL

Oliver Edward Saari, Niles, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 6, 1974, Ser. No. 440,224
Int. Cl.² B25C *1/06*
U.S. Cl. 173—117 **8 Claims**

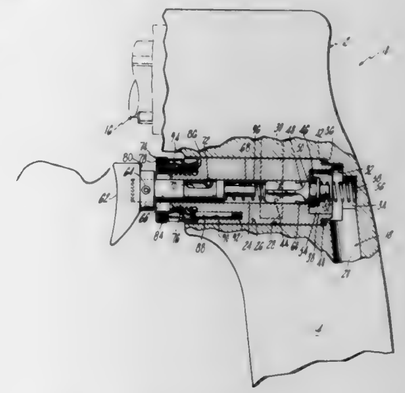


1. In a fastener driving tool, a housing, driving means mounted for axial reciprocating movement therein, the driving means including an elongate ram, guide shaft and a cup-shaped piston opening rearwardly of the housing and the ram including a base portion extending radially outwardly of both the guide shaft and the ram and further including upstanding wall portions extending longitudinally of the housing from the base portion, said piston being located between the ram and guide shaft, seal means positioned between the upstanding wall portion of the piston and the associated inner periphery of the housing, a first helicoidal cam means fixedly attached to the driving means so that the ram extends coaxially through the cam means, a rotatable means for actuating the driving means including a second helicoidal cam means fixedly attached to a gear for rotation about the axis of the ram, a bore extending through the actuating means and second helicoidal cam to allow the ram to pass therethrough and create an impact force on a fastener positioned beneath the cams, compressible spring means in the housing to urge the driving means forwardly in the housing toward the second cam means, the spring means comprising a chamber at the rearmost extremity of the housing, a predetermined volume of gas stored in the chamber, valve means in the chamber to selectively vary the bias of the gas spring means on the cup-shaped piston, a sleeve mounted in the chamber and extending forwardly therein, coaxial with the guide shaft to receive the guide shaft during the reciprocation of the driving means in the housing, the housing also including shoulder means to support the cup-shaped piston when the driving means is in its forward position in the housing, resilient cushion means positioned between the piston and the shoulder means to absorb the impact shock of the driving means and thus prevent abutting cam surfaces to impact each other, a drive shaft driven by a source of rotary power located adjacent the housing, gear means operatively connecting the drive shaft to the gear attached to the second helicoidal cam means to transmit rotary motion to the actuating means, the helicoidal cams including sharp drop-off portions which allow the spring means to periodically drive the ram forwardly to drive a fastener.

3,924,693
FLUID OPERATED TOOL HAVING SELF-COMPENSATING THROTTLE VALVE

Hugh L. Whitehouse, Lyndhurst, Ohio, assignor to The Stanley Works, New Britain, Conn.

Continuation of Ser. No. 208,217, Dec. 15, 1971, abandoned.
This application July 11, 1973, Ser. No. 378,154
Int. Cl.² B23B *45/04*; F15B *13/04*
U.S. Cl. 173—169 **3 Claims**



1. In a power tool having a pneumatically operated drive motor, a control valve having a fluid inlet adapted to be connected to a pneumatic pressure source and a fluid outlet connected to the drive motor, a valve bore interconnecting the valve inlet and valve outlet providing a fluid passageway therebetween, a valve seat surrounding the bore intermediate the valve bore inlet and outlet, a valve member mounted in the bore shiftable in first and second opposite axial directions therein respectively to and from a respective closed position thereof for selectively seating on said valve seat and closing said fluid passageway and providing a variable and decreasing fluid restriction between the valve inlet and outlet as the valve member is shifted in said second opening direction from its closed position, the valve member being mounted to be biased in the first closing direction by the valve inlet pressure and in the second opening direction by the valve outlet pressure, the valve member being mounted in the bore such that the net fluid pressure force on the valve member is in said first closing direction and is a function of the pressure drop from the valve inlet to the valve outlet and therefore the fluid restriction therebetween, first spring means biasing the valve member in said closing direction and manually operated valve control means for selectively shifting the valve in said opening direction for controlling the pneumatic operation of the drive motor, the improvement wherein the manually operated valve control means comprises second spring means biasing the valve member in the opening direction and manual actuator means for manually actuating the valve member in said opening direction from its closed position, said manual actuator means closing the bore at an end thereof and continuously sealing the bore from atmosphere, said second spring means being mounted between said valve member and said manual actuator means, said manual actuator means manually selectively varying the opening spring bias on the valve member in excess of the opposing closing spring bias on the valve member such that the open axial position of the valve member is dependent on the relative opening and closing spring bias on the valve member and on the pressure drop and therefore the fluid restriction between the valve inlet and valve outlet and the valve member automatically compensates for drive motor

speed and therefore drive motor load for varying the valve opening in accordance with the drive motor load.

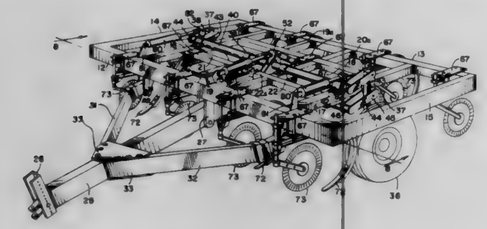
3,924,694
CHISEL PLOW

Herbert W. Baughman, Vermont, Ill. 61484, and Harry G. Yetter, Colchester, Ill. 62326

Continuation-in-part of Ser. No. 366,152, June 1, 1973, Pat. No. 3,812,919, which is a continuation of Ser. No. 225,180, Feb. 10, 1972, abandoned. This application Feb. 14, 1974, Ser. No. 442,586

Int. Cl.[2] A01B *63/22, 63/16, 59/04*

U.S. Cl. 172—413 **3 Claims**



1. An earth working apparatus having a rigid frame structure mounted on supporting wheels and carrying a plurality of earth working devices, said frame structure comprising front and rear transverse end frame members connected at respectively opposite sides of the frame structure by longitudinally extending side frame members, a pair of longitudinal frame members spaced respectively inwardly from said side frame members at opposite sides of the frame structure connecting said front and rear end frame members to define wheel openings in the frame structure, a transversely disposed frame member spaced inwardly from said rear transverse end frame member and connecting said longitudinal frame members, a pair of transversely extending frame members spaced inwardly from said front transverse end frame member and extending inwardly respectively from said longitudinal frame members at opposite sides of the frame structure and spaced apart at their inner ends upon opposite sides of the longitudinal centerline of the frame structure, a pair of central longitudinally disposed frame members spaced respectively equidistant upon opposite sides of said longitudinal centerline extending between said front and rear transverse end frame members, said transversely disposed frame member and said pair of transversely extending frame members extending through said central longitudinally disposed frame members and all of said frame members being integrated by welding, said supporting wheels being operatively mounted on vertically disposed wheel mounts in said respective wheel openings, a first and second set of parallel links each having a pivotal connection with each said wheel mount and said first set of links having a pivotal connection directly with said frame structure, a crank axle pivotally mounted on the frame structure and connecting the second set of links with the wheel mount said second set of links pivotally mounted on the frame structure by said crank axle in vertically spaced relation to said pivotal connection of the first set of links, a generally vertical crank arm secured to one of the links of said second set of links at each wheel mount, a pair of hydraulic cylinders each pivotally connected at one end thereof to each said crank arm and pivotally connected at their respectively opposite ends on said frame structure whereby to impart a rotative action on said sets of links about their pivotal connections with said frame structure and thereby move said wheel mounts in a vertical direction, said crank axle having a generally vertical crank arm fixed thereto and disposed intermediate said crank arms at said wheel mounts, and a hydraulic cylinder pivotally connected at one end thereof to said crank axle crank arm and pivotally connected at its opposite end on said frame structure whereby to impart a rotative action on said crank axle.

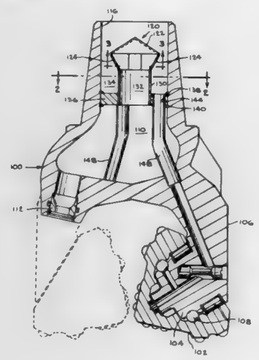
3,924,695
ROTARY DRILLING METHOD AND APPARATUS

John R. Kennedy, 1110 W. Glen-P.O. Box 50485, Tucson, Ariz. 85703

Filed Oct. 2, 1974, Ser. No. 511,364

Int. Cl.[2] E21B *9/08, 9/35*

U.S. Cl. 175—69 **17 Claims**



1. In a rotary drill system of the type using drill stems extending into a bore hole and having means securing a drill bit to said stems, said drill bit including a plurality of drill cones rotatably mounted on bearings secured to said bit, said system including a passageway extending through said stems and into said bore hole for transporting air with lubricant entrained therein, the improvement comprising:

separating means mounted in said passageway for separating said air and lubricant;

means defining a second passageway extending from said separating means through said drill bit for carrying air from said separating means into said bore hole; and

means defining a third passageway extending from said separating means to said bearings for carrying lubricant from said separating means to said bearings.

16. A method of lubricating a roller cutter operably mounted on a drill stem having drilling fluid circulating therethrough including the steps of:

injecting lubricant into the circulating drilling fluid,

separating a substantial portion of the lubricant from the circulating drilling fluid,

conducting the lubricant into the interior of said roller cutter, while

discharging a major portion of the drilling fluid to the exterior of the drill stem.

3,924,696
METHOD AND DEVICE FOR DUST COLLECTING AIR-FLUSHED ROCK DRILLING

Dick Axel Horlin, Handen, and Klas Goran Gunnarsson Ek, Tyreso, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Sept. 5, 1972, Ser. No. 286,614

Claims priority, application Sweden, Sept. 8, 1971, 11355/71

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

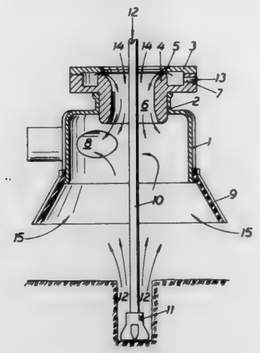
Int. Cl.[2] E21B *21/00;* **E21C** *7/02*

U.S. Cl. 175—209 **12 Claims**

10. Device for dust collecting during air-flushed rock drilling characterized by the combination of:

a shell adapted to be located adjacent the rock surface, said shell being open at its forward end and being provided with a drill stem opening at its rear end, said drill stem opening of the shell being dimensioned so as to allow passage of a drill bit therethrough,

an air ejector provided at the rear end of the shell for producing a forwardly directed air flow through an annular space defined between said drill stem opening and the drill stem, said air ejector including an annular slot through which pressure air is injected in a substantially



radial direction, and a neck ring provided with a curved contour for linking the injected air flow forwards, through the annular space, said neck ring having a minimum internal diameter which is smaller than the diameter of said annular slot, and

an outlet opening in the shell for connection to a suction device for draining of the air and dust from the shell.

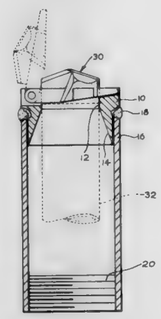
3,924,697
EXCAVATING TOOL

Michael A. College, Everett, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed June 12, 1974, Ser. No. 478,503

Int. Cl.[2] E21B *9/00*

U.S. Cl. 175—382 **9 Claims**



1. In an excavating tool; an annular bit body having a central opening therethrough, an end portion extending from one end of said body smaller in diameter than the bit body and adapted for coaxial extension inside a tubular member to be fixedly held there for rotation on a central axis, the central opening in said end portion flaring out toward the free end thereof, cutters mounted on and protruding axially from one axial end of said body for reducing a formation into which the tool is advanced while rotating, a bar element extending transversely on said one end of said body, pivot means pivotally connecting one end of said bar element to said body and cooperating elements of abutment means on the other end of said bar element and said body, said abutment means supporting said bar element during excavating operations and said pivot means permitting outward pivotal movement of the bar element to expose said central opening, and cutter means on said bar element for reducing the formation radially inwardly from said cutters on said one end of said body.

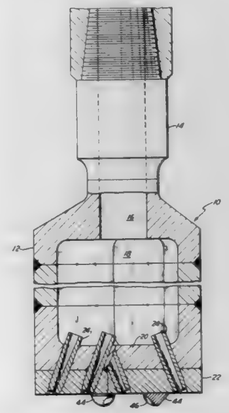
3,924,698
DRILL BIT AND METHOD OF DRILLING

Hans C. Juvkam-Wold, Monroeville, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 8, 1974, Ser. No. 458,531

Int. Cl.[2] E21C *15/00*

U.S. Cl. 175—393 **4 Claims**



1. In a drill bit for abrasive jet drilling of wells in which nozzles extend through the bottom of the drill bit to discharge from outlets of the nozzles streams of abrasive-laden drilling liquid to cut in the bottom of the borehole a central hole surrounded by a plurality of concentric grooves, said grooves being separated by ridges on which the drill bit is supported, the improvement comprising a plurality of nozzles positioned in the drill bit to discharge streams of abrasive-laden drilling liquid to cut each of the grooves, the ratio of the square of the diameter of the outlets of the nozzles times the number of nozzles for each of the grooves divided by the diameter of the grooves being substantially equal.

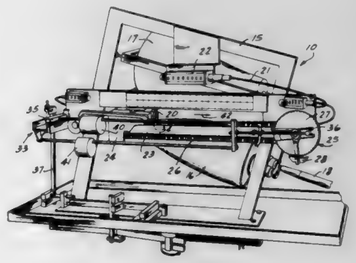
3,924,699
CONVEYOR SCALE WITH INTEGRATOR

Robert B. Chambers, 607 Krall St., Boise, Idaho 83702

Filed Feb. 27, 1975, Ser. No. 553,649

Int. Cl.[2] G01G *11/14, 1/38;* **F16H** *27/02*

U.S. Cl. 177—16 **2 Claims**



1. In a device for use in indicating weight on a conveyor belt or the like comprising a pair of cones mounted for rotation about substantially parallel axes, means for rotating one of the pair of cones as a direct function of the rate of movement of a conveyor belt, transfer means for engaging the surfaces of

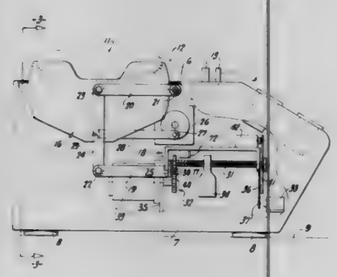
the pair of cones and transmitting rotation of the one cone to the other cone of said pair of cones, means for supporting transfer means for movement along the axes of the pair of cones and means for shifting the transfer means in response to weight on the conveyor belt, the improvements comprising the shifting means including a ratchet wheel having a periphery, a shaft support the ratchet wheel for rotation, means connected to the ratchet wheel for converting movement of the wheel into an output connected to the transfer means, a double ratchet pawl, means for oscillating the pawl in an arc adjacent the periphery of the ratchet wheel, control means for selectively engaging the pawl in response to a weight on the belt, and adjustable means for interconnecting the control means and pawl, said adjustable means including a pin on the pawl, a member rotatably mounted on the control means and a single spring having one end engaged on the member and the other end encircling the pin so that rotation of the member applies a bias on the pawl to enable adjustment of the orientation of the pawl relative to the periphery of the wheel.

3,924,700

BLOOD WITHDRAWING DEVICE

Homer M. Lindsey, Carmichael, and Wilbert D. Silva, Cupertino, both of Calif., assignors to Lifeline Instruments, Inc., Sacramento, Calif.

Filed Nov. 29, 1974, Ser. No. 528,093
Int. Cl.² G01G *13/02, 7/00*; **A61M** *1/00*
U.S. Cl. 177—118 **8 Claims**



1. A blood withdrawing device comprising:
a. a frame;
b. a load measuring device on said frame, said load measuring device being a balance beam;
c. a tray adapted to support a container having a supply tube;
d. means for connecting said tray to transmit a load thereon to said load measuring device;
e. means on said frame for controlling the flow of blood through said tube; and,
f. means actuated by said load measuring device for operating said controlling means including:
a weight mounted for movement along said balance beam,
a motor for moving said weight long said balance beam, means for effectuating a number of counts in accordance with said movement,
means for accumulating said counts, and,
means effective at a predetermined number of counts for disabling said motor.

3,924,701

TWO-SPEED, SELF-PROPELLED DOLLY FOR MOVING AND ELEVATING A MOBILE HOME OR OTHER LOAD

Colin G. Johnstone, 38732 Puerta St., Palmdale, Calif. 93550

Filed Oct. 11, 1974, Ser. No. 514,140
Int. Cl.² B62D *11/04*
U.S. Cl. 180—6.5 **10 Claims**

1. A self-propelled dolly for moving and elevating a load, comprising:
a generally rectangular frame extending in a longitudinal direction;
a pair of longitudinally extending, endless belt tracks movably mounted on opposite sides of said frame supporting said frame for motion along the ground;
load engaging means adapted to releasably engage the load;
elevating means connected to said frame and to said load engaging means for selective raising and lowering thereof, thereby raising and lowering the load relative to said frame;
a pair of drive systems each driving one of said pair of belt tracks, each said drive system including,
a drive wheel rotatably mounted on said frame drivingly engaging the associated one of said belt tracks;
a reversible, synchronous electric motor having a rotary output shaft;
a two-speed gear box drivingly coupling said output shaft to said drive wheel to drive the associated said belt track thereby moving the frame either at a traverse speed approximately equal to the walking pace of an adult human or at a relative slower, load-carrying speed;
direction selector means connected to said motor and to a remote source of electric power for controlling the rotation of said motor in opposite, forward and reverse directions;
speed selector means connected to said gear box and movable between first and second positions for selecting driving motion of said belt track at the traverse speed or the load-carrying speed, respectively;
connecting means connecting said speed selector means of said pair of drive systems together for operation in unison between said first and second positions to ensure that both said belt tracks are operated at the same speed while allowing said belt tracks to be selectively driven in the same or opposite directions; and
a remotely controlled actuator connected with at least one of said speed selector means for selectively controlling movement thereof between said first and second positions.

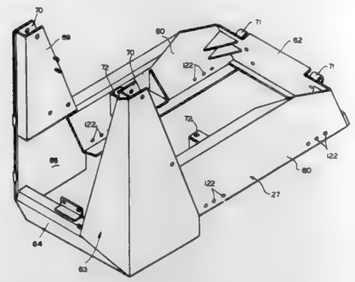
3,924,702

TRACTOR VEHICLE HAVING MATERIAL HANDLING SUBFRAME

John P. Heggen, Lisbon, N. Dak., assignor to Clark Equipment Company, Buchanan, Mich.

Division of Ser. No. 329,939, Feb. 5, 1973, Pat. No. 3,895,728.
This application Aug. 8, 1974, Ser. No. 495,703
Int. Cl.² B62D *11/04, 33/00*
U.S. Cl. 180—6.48 **4 Claims**

1. A skid steered loader vehicle comprising a body defined in part by side walls on opposite sides of the vehicle center line, by end walls at opposite ends of the side walls and by a bottom wall partially enclosing a compartment area defining a fluid lubricant reservoir, a pair of stub axles spaced, one axle behind the other, at opposite ends of the compartment and projecting outwardly from each side, tubular axle housings rigidly secured to said side walls and surrounding said stub axles, a mounting boss on each of said tubular axle housings, a loader subframe comprising laterally spaced, longitudinally extending side beams and cross members at each end defining a generally interior rectangular space for receiving and partially surrounding said body, said side beams having longitudinally spaced mounting locations engageable with said mounting bosses for securing said subframe onto the body.

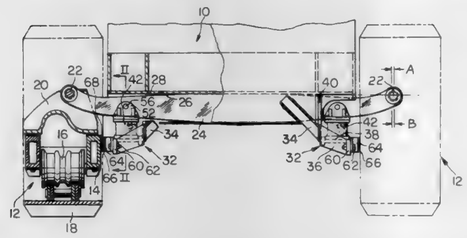


3,924,703

EQUALIZER BAR ASSEMBLY FOR CRAWLER-TYPE VEHICLES

Robert J. Purcell, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 8, 1974, Ser. No. 522,258
Int. Cl.² B62D *55/08*
U.S. Cl. 180—9.54 **5 Claims**



1. In a crawler-type vehicle having a main frame disposed between a pair of track frames and an equalizer bar rockably supporting said main frame and pivotally contacting both of said track frames, the improvement comprising a pair of resilient means, each connected to said equalizer bar at the underside thereof and adjacent corresponding ones of said track frames, said resilient means each further being connected to said main frame whereby rocking movement of said equalizer bar relative to said main frame will cause one or the other of said resilient means to be compressed to thereby improve the stability of the vehicle.

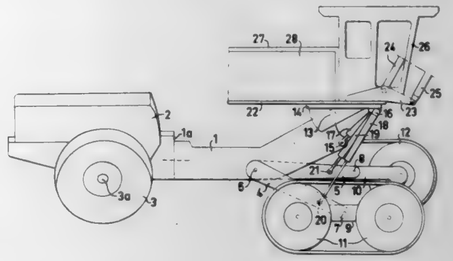
3,924,704

STABILIZING ARRANGEMENT IN TERRAIN-GOING VEHICLES

Karl Thore Lindblom, and Erik Torsten Forslund, both of Alfta, Sweden, assignors to Ostbergs Fabriks AB, Alfta, Sweden

Filed May 31, 1974, Ser. No. 475,292
Int. Cl.² B60G *17/00*
U.S. Cl. 180—41 **3 Claims**

1. A stabilizing arrangement in terrain-going vehicles having a driver's cabin and a rearly branched framework where the stem of the branches, constituting the frame of the vehicle, at its front end is supported by a front wheel shaft, and the branches, constituting longitudinal legs, have each of their ends supported by a different rear shaft for a bogie bar, the improvement wherein the rear end of the frame of the vehicle serves as a support for a fundament plate for receiving operation equipment, and the two longitudinal legs are pivoted in alignment with each other at each side of the frame; a separately operable hydraulic jack forming an upstanding and longitudinally variable supporting bar between each leg and an associated point on the plate in order to enable an individual raising and lowering of the rear shafts, the front part of the frame, supporting the front wheel shaft, being freely rotatable around its longitudinal axis, whereby it will be possible, on one hand, to straighten up the vehicle including the fundament plate when driving along a lateral slant in the terrain and, on the other hand, to enable a simple and gentle surmounting of obstacles on the ground.

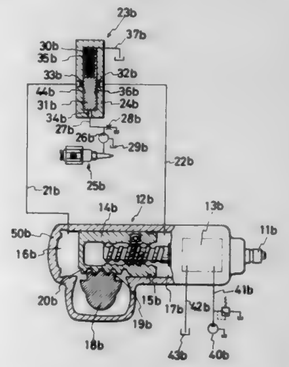


3,924,705

POWER STEERING MECHANISM

Masakazu Sugisawa, Hekinan, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 28, 1972, Ser. No. 310,149
Claims priority, application Japan, Dec. 8, 1971, 46-099186; Dec. 8, 1971, 46-099187
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B62D *5/10*
U.S. Cl. 180—79.2 R **16 Claims**



1. A power steering mechanism comprising,
a housing provided with a cylinder,
a piston fitted within said cylinder for axial sliding movement therein, operably connected to a steering wheel and defining a pair of opposed fluid chambers within said cylinder,
a sector mounted within said cylinder for operative connection with steering road wheels of a vehicle and operatively connected to said piston,
a reservoir for a fluid,
a pump for the fluid,
a changeover control valve for selectively connecting said reservoir through a first passageway to one of said fluid chambers and said pump through a second passageway to

the other of said fluid chambers depending on the direction of turning of the steering wheel to provide an assist for turning said steering road wheels,

a third passage means connecting said two fluid chambers together,

at least one fluid control valve disposed within said third passage means, and

means for opening said at least one fluid control valve in proportional response to increases in at least one operational characteristic of the vehicle while in motion to decrease the assist for turning the steering road wheels.

3,924,706

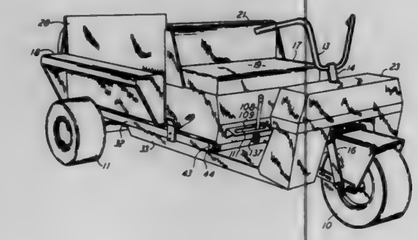
TRUCK VEHICLE

William L. Figura, Bruce, Wis., assignor to Jacobsen Manufacturing Company, Racine, Wis.

Filed Sept. 18, 1974, Ser. No. 507,003

Int. Cl.² B60P *1/04*

U.S. Cl. 180—89 A **6 Claims**



1. A truck vehicle comprising ground engaging wheels, a vehicle frame supported by said wheels and including a forwardly extending portion and a rearwardly extending portion with both said portions respectively extending relative to the fore-and-aft axis of the truck vehicle, a prime mover on said frame for powering the truck vehicle, a drive train connected from said prime mover to said wheels for rotating said wheels, a steering wheel for steering the truck vehicle, an operator's seat pivotally mounted on said frame forwardly extending portion for pivoting upwardly and in the forward direction of the truck vehicle, a truck box pivotally mounted on said frame rearwardly extending portion for pivoting upwardly and in the rearward direction of the truck vehicle, said seat and said box extending from their respective pivot mountings toward each other and along said frame and with said both terminating in upright portions disposed adjacent each other and thereby together extend over said frame, supports on said frame in respective abutment with said seat and said box for upwardly supporting said seat and said box on said frame, and releasable members connected with said frame and respectively being releasably connected with said seat and said box for retaining said seat and said box in their pivotally lowered positions on said supports.

3,924,707

SAFETY INSTRUMENT PANEL FOR MOTOR VEHICLES

Hermann Renner, Magstadt, and Béla Barényi, Maichingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

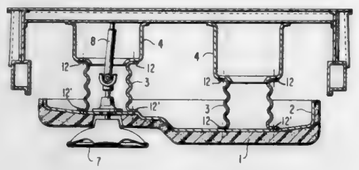
Filed Dec. 7, 1973, Ser. No. 422,680

Claims priority, application Germany, Dec. 7, 1972, 2259906

Int. Cl.² B60K *35/00*

U.S. Cl. 180—90 **10 Claims**

1. A safety instrument panel for motor vehicles, characterized in that the instrument panel is constructed substantially form-rigid and is arranged with a gap with respect to relatively fixed vehicle parts on all sides thereof, and in that the instrument panel is connected with said relatively fixed vehicle parts substantially exclusively by way of energy-absorbing means, said energy-absorbing means being deformation members constructed as impact pots with undulated walls such that a long deformation path of said energy-absorbing means occurs



on impact avoiding deformation of the instrument panel, and further characterized in that the gap provided at the top side of the instrument panel and the fixed vehicle parts is covered off by an undulated sheet metal member.

3,924,708

LUBRICATING AND DRAINING DEVICE

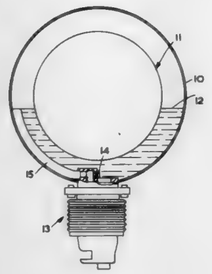
Stanislav Pawel Dabrowka, Leeds, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed Jan. 25, 1974, Ser. No. 436,810

Claims priority, application United Kingdom, Jan. 25, 1973, 3825/73

Int. Cl.² F01M *11/04*

U.S. Cl. 184—105 R **5 Claims**



1. A mechanical device of the kind comprising a housing, mechanism within the housing, said housing in use containing lubricant for lubricating the mechanism, a coupling unit mounted in the housing below the desired level of lubricant within the housing, said coupling unit having first and second passages defined therein, a conduit positioned within the housing, said conduit at one end being connected to the first passage within the coupling unit and the other end of said conduit terminating at the desired level of lubricant within the housing. the second passage within the coupling unit communicating with the interior of the housing, said coupling unit comprising a hollow casing, a tube having a wall extending within the casing said tube defining part of said first passage, means closing the end of said tube within the casing, a lateral port formed in the wall of said tube, a plunger slidable within said casing, said plunger defining a bore in which said tube is located, resilient means biasing the plunger within the casing and in a direction away from the housing, a lateral port formed in said bore, said lateral ports being brought into register when the plunger is moved against the action of the resilient means, a cavity defined in said plunger, said cavity opening at one end to said housing and forming part of said second passage, a port formed in the peripheral wall of the plunger, said port communicating with said cavity, a further port formed in the wall of said casing, said ports being brought into communication with each during movement of the plunger against the action of said resilient means.

3,924,709

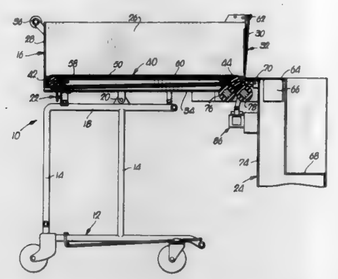
UNLOADING ASSEMBLY FOR SHOPPING CART

Russell K. Swanson, 3212 Coleman Road, Kansas City, Mo. 64111

Filed Aug. 19, 1974, Ser. No. 498,603

Int. Cl.² E04H *3/04*

U.S. Cl. 186—1 AC **10 Claims**



1. An unloading assembly for a shopping cart comprising:

a substantially horizontal conveyor belt carried by the cart and supporting the contents of the cart when in use;

a front and a rear idler roller rotatably carried by the cart, said conveyor belt being trained around said idler rollers;

a stand engageable by the cart; and

driving means on the stand for causing movement of the conveyor belt when the cart is brought into engagement with the stand, said driving means including a pair of driven rollers, a power source for simultaneously driving said driven rollers, said driven rollers being spaced apart in a horizontal plane slightly beneath the horizontal plane of the conveyor belt in the cart, the space between said driven rollers defining a seat, the front idler roller and a stretch of the conveyor belt trained therearound being received within the seat with said stretch of the conveyor belt in engagement with both of said driven rollers whereby, upon actuation of the power source for the driven rollers, the conveyor belt in the cart is caused to move.

3,924,710

RACK AND PINION HOIST

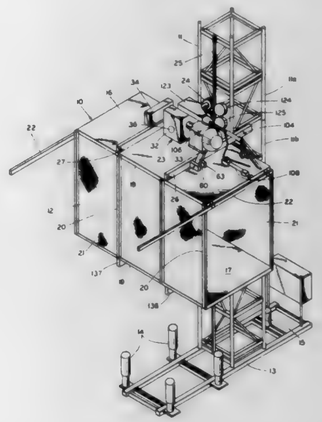
Albert J. Shohet, Cincinnati, Ohio, assignor to Harsco Corporation, Wormleysburg, Pa.

Filed Nov. 30, 1972, Ser. No. 310,962

Int. Cl.² B66B *11/04*

U.S. Cl. 187—19 **3 Claims**

1. In a hoist apparatus having a generally upwardly extending tower, a rack secured to the tower, and a lifting frame operatively connected to the tower for generally vertical movement along the tower, drive means on the frame for moving the frame along the tower, bearing means mounted on the frame, a shaft rotatably supported by the bearing means at at least a pair of axially spaced locations. a brake pinion mounted on the shaft for rotation therewith and engaging the rack, the bearing means including a pair of axially spaced support flanges extending generally transversely to the shaft, each flange having a substantially cylindrical surface which is eccentrically related to the longitudinal axis of the shaft, the frame being provided with a pair of generally circular openings which rotatably receive the cylindrical surfaces of the support flanges, and means for releasably securing the bearing means to the frame whereby the position of the axis of the shaft relative to the frame can be changed by releasing the securing means and rotating the cylindrical surfaces of the support flanges within the frame openings, a brake drum mounted on the shaft for rotation therewith, a brake band extending around a portion of the brake drum and having a pair of ends, one end of the brake band being secured to the frame, a plunger reciprocably mounted on the frame and connected to the other end of the brake band, a spring acting on the plunger for biasing the plunger to tighten the brake band about the brake drum, a latch pivotally mounted on the frame for holding the plunger against the bias of the spring, and centrifugal weight means pivotally mounted on the brake drum and movable outwardly under the influence of centrifugal force as the brake drum rotates, the brake pinion being rotated by the rack as the frame moves along the tower



whereby the shaft and the brake drum are rotated, the centrifugal weight means being engageable with the latch when the centrifugal weight means pivot outwardly whereby the latch is pivoted to release the plunger when the rotational speed of the brake drum exceeds a predetermined value whereby the brake band will be tightened about the brake drum to stop the shaft and the brake pinion and thereby stop movement of the frame along the tower.

3,924,711

PARTIAL LINING DISK BRAKE

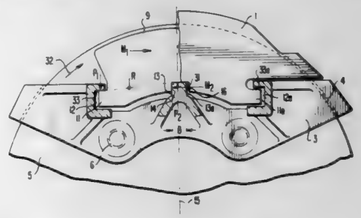
Friedrich Hoffmann, and Wilhelm von Kamp, both of Stuttgart, Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Mar. 29, 1974, Ser. No. 456,294

Claims priority, application Germany, Sept. 6, 1973, 2344902

Int. Cl.² F16D *65/02*

U.S. Cl. 188—73.3 **8 Claims**



1. A partial lining disk brake comprising:

a brake disc means,

brake body means including a first pair of spaced leg portions extending transversely of the axis of rotation of said brake disc means on respective sides thereof and a second pair of leg portions extending substantially parallel to the axis of rotation of said brake disc means and connecting the respective ends of said first pair of leg portions,

side guide rails provided on said brake body means on each side of said brake disc means at an inlet and outlet side

of said brake body means with respect to the direction of rotation of said brake disc means, said side guide rails opening toward each other and extending in the direction of the axis of rotation of the brake disc means,

brake cushion means disposed on each side of said brake disc means, each of said brake cushion means including brake lining means and lining carrier means for supporting said brake lining means, said lining carrier means including an upper edge portion disposed at the periphery of the brake disc means, a lower edge portion disposed radially inwardly of said upper edge portion in the direction of the axis of rotation of said brake disc means, and lateral edge portions connecting the respective ends of said upper and lower edge portions,

projection means provided on each lateral edge portion of each of said lining carrier means at the lower edge portion thereof, said projection means forming a minor portion of said lining carrier means, each of said projection means being disposed in a respective side guide rail so as to be axially displaceably guided therein,

intermediate guide means provided on said brake body means at the lower edge portion of said lining carrier means, said intermediate guide means including guide surface means disposed at an axial center plane of the brake which extends vertially through the axis of rotation of the brake disc means, said guide surface means including first and second support surfaces disposed on respective sides of the axial center plane of the brake and spaced therefrom and a third support surface connecting the free ends of said first and second support surfaces,

intermediate recess means provided on each of said lining carrier means along the lower edge thereof between said side projection means, said intermediate recess means including intermediate guide counter support surfaces which are engageable with said support surfaces of said intermediate guide means,

a floating saddle means displaceably mounted on said brake body means, said floating saddle means including an upper edge portion disposed at the periphery of the brake disc means and a lower edge portion disposed radially inwardly of said upper edge portion in the direction of the axis of rotation of said brake disc means, and

recess means provided in said floating saddle means at the lower edge thereof, said recess means including guide counter support surfaces engageable with said support surfaces of said intermediate guide means.

3,924,712

HYDRAULIC LIQUID OPERATED AND COOLED FRICTION BRAKE

Walter Robert Stirling, Buxton; Christopher Robinson Ellis, Chinley, and Brian Carol Silvester, Leamington Spa, all of England, assignors to Ferodo Limited, Manchester, England

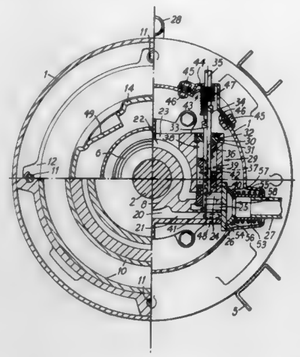
Filed Sept. 27, 1974, Ser. No. 510,126

Claims priority, application United Kingdom, Sept. 29, 1973, 45668/73; Oct. 11, 1973, 47653/73; Oct. 22, 1973, 49149/73; Nov. 2, 1973, 51054/73; Dec. 5, 1973, 56362/73; Mar. 8, 1974, 10423/74; Mar. 9, 1974, 10660/74; Apr. 25, 1974, 18082/74

Int. Cl.² F16D *65/853*

U.S. Cl. 188—264 F **12 Claims**

1. An hydraulically operable friction brake of the kind wherein the hydraulic liquid also provides the medium for removing the heat generated during operation of the brake, comprising (i) a casing, (ii) a rotary member mounted in the casing, (iii) a pressure-operable retarding device arranged and adapted to act upon the rotary member to generate retarding torque, (iv) a pump for circulating hydraulic liquid, (v) two separate fluid circuits provided between the pump and the retarding device one being an actuating circuit arranged and adapted to operate the retarding device, and (vi) valve means comprising (*a*) a valve member, (*b*) a first valve element secured to said member, (*c*) a second valve element slidable on said member and urged away from the first valve element by a spring and constituting pressure sensitive means arranged



and adapted to control distribution of flow of hydraulic liquid between the two circuits, and (*d*) means for equilibrating hydraulic pressure across the valve means.

3,924,713

VEHICLE BRAKING DEVICES

Pierre Etienne Bessiere, Gold St.-Nom-la-Breteche, France, assignor to Labavia S.G.E., Paris, France

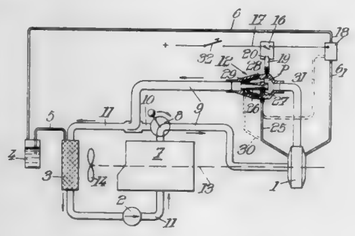
Filed May 10, 1973, Ser. No. 358,939

Claims priority, application France, May 26, 1972, 72.19058

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² F16D *57/02*

U.S. Cl. 188—296 **11 Claims**



1. Hydraulic vehicle braking apparatus, comprising

a housing;

a closed fluid system for supplying fluid to, and emptying fluid from said housing, said system including an expansion vessel (3);

a first purging pipe (6) connecting the center portion of said brake housing with the top of said expansion vessel, whereby the inner gaseous volume at the center of said brake means is conducted to the top of the vessel;

valve means (18) connected in said purging pipe, said valve means being operable between open and closed conditions to afford and to interrupt communication, respectively, between said housing and said expansion vessel; and

means responsive to the pressure of the fluid emptying from said housing in said system for controlling the operation of said valve means to cause said valve means to be in the open condition for a given time delay period (t_A) during the initial filling of the housing and to be in the closed condition during the remainder of the filling period, said control means being operable to cause said valve means to be in the open condition during the entire period of emptying of fluid (t'_F) from said housing.

3,924,714

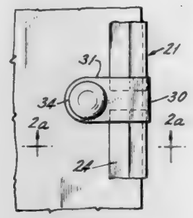
LUGGAGE WITH BINDING STRIP AND METHOD OF MAKING SAME

James K. Bernard, Smyrna, and Pasquale Robert Sollazzi, Newark, both of Del., assignors to Rapid-American Corporation, New York, N.Y.

Filed July 31, 1974, Ser. No. 493,312

Int. Cl.² A45C *13/36*

U.S. Cl. 190—18 R **7 Claims**



1. In luggage having a principal wall and an adjacent wall connected to and substantially normal to said peripheral wall; a peripheral binding strip secured to at least one of said walls at the connection between said principal wall and said adjacent wall;

the ends of said peripheral binding strip being unsecured to each other and lying adjacent each other;

a cover member for said adjacent ends of said binding strip;

means for securing said cover member in place; said cover member spanning and concealing said unsecured adjacent ends of said binding strip.

3,924,715

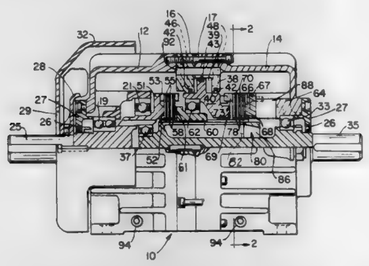
CLUTCH-BRAKE UNIT

Halsey W. Cory, Fairfield, Ohio, assignor to Force Control Industries, Inc., Hamilton, Ohio

Filed Apr. 17, 1974, Ser. No. 461,504

Int. Cl.² F16D *67/06*

U.S. Cl. 192—18 A **8 Claims**



1. In clutch-brake unit including a housing for containing a supply of oil and having first and second opposite end portions, an input shaft rotatably supported by said first end portion of said housing, an output shaft rotatably supported by said second end portion of said housing and extending in axial alignment with said input shaft, a first series of interfitting clutch plates and clutch discs within said housing, said clutch plates mounted on said input shaft for rotation therewith and the interfitting said clutch discs mounted on said output shaft for rotation therewith, a second series of interfitting brake plates and brake discs positioned in axially spaced relation to said first series of clutch plates and discs, said brake discs mounted on said output shaft for rotation therewith and the interfitting said brake plates being supported for nonrotation by said housing, an annular actuating piston supported within said housing coaxial with said output shaft and for nonrotating axial movement, means connected to said piston for applying an axially compressive force to said first series of clutch plates and discs in response to movement of said piston in one axial direction to couple said input shaft with said output shaft, and means for applying an axially compressive force to said second series of brake plates and discs in response to movement of said piston in the other axial direction for braking said output shaft to said housing, the improvement comprising an oil pump impeller on said output shaft and including vane means extending through said first series of clutch plates and discs and second series of brake plates and discs for supplying oil under pressure to said plates and discs upon rotation of said output shaft, said impeller having an inlet located generally between said second series of brake plates and discs and said second end portion of said housing, and means defining a passage for directing oil within said housing to said inlet of said impeller.

3,924,716

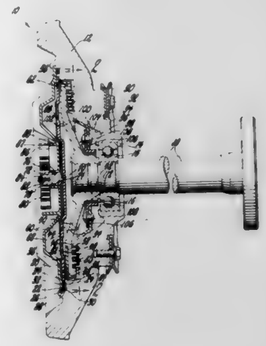
VISCOUS FLUID CLUTCH WITH CENTRIFUGAL CLUTCH

Robert W. Brewer, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 21, 1973, Ser. No. 417,751

Int. Cl. F16d *25/00, 43/18, 43/30*

U.S. Cl. 192—57 **5 Claims**



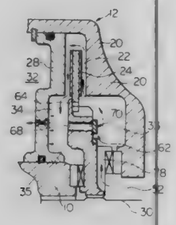
1. A viscous fluid clutch comprising external and internal relatively rotatable drive means, said external drive means being rotatably mounted by bearings on a central shaft extending into said external drive means and having first and second adjacent annular chambers formed therein, said internal drive means having a hub secured to the inner end of said central shaft and extending radially outwardly therefrom into said first annular chamber, a plurality of annular ridges formed on one of said external and internal drive means and a plurality of cooperating annular grooves formed on the other of said external and internal drive means in said first annular chamber, said annular ridges and grooves forming a shear space therebetween and operable with a fluid medium to provide a shear-type fluid drive between said external and internal drive means, a centrifugal clutch operatively connected in said second annular chamber between said external drive means and said hub of said internal drive means, said centrifugal clutch including flange means secured to said external drive means at the radial outer wall surface of said second annular chamber, a pair of oppositely disposed arcuate-shaped centrifugal weights pivotally mounted on said flange means, a clutch shoe secured to the inner peripheral surface of each of said centrifugal weights, and spring means operatively connected between said oppositely disposed centrifugal weights for urging said clutch shoes into contact with said hub of said internal drive means.

3,924,717

FLUID ACTUATED CLUTCH

Takashi Ookubo, Yokohama, and Hideo Hamada, Yokosuka, both of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed July 25, 1973, Ser. No. 382,290
Claims priority, application Japan, July 26, 1972, 47-74781
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² F16D *25/063*
U.S. Cl. 192—86 **6 Claims**



1. A clutch assembly comprising:
a rotatable clutch drum;
a fluid pressure responsive pressure plate defining with said clutch drum first and second chambers which are adapted to receive fluid under pressure selectively;
a drive friction disc fixed to said clutch drum and exposed to said second chamber;
a clutch hub rotatable within said second chamber;
a driven friction disc splined to said clutch hub, said driven friction disc being movable toward said drive friction disc to engage with said drive friction disc in response to pressure in said first chamber, and away from said drive friction disc to disengage from said drive friction disc in response to pressure in said second chamber, said clutch hub and said driven friction disc dividing said second chamber into a first sub-chamber adjacent to said drive friction disc and a second sub-chamber adjacent to said pressure plate, said first and second sub-chambers being on axially opposite sides of the hub and disc assembly;
said pressure plate having formed therethrough at least one passageway for permitting fluid communication between said first chamber and said second subchamber;
said clutch hub having formed therethrough at least one hole for permitting fluid communication between said first and second sub-chambers;
a valve for permitting fluid to flow from said second to said first sub-chamber through said at least one hole, but preventing fluid from flowing from said first to said second sub-chamber through said at least one hole.

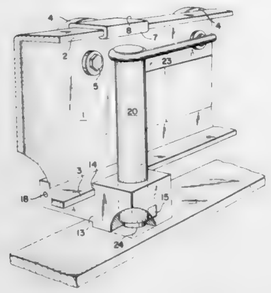
3,924,718

ADJUSTABLE SUPPORT

Andrew T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

Filed June 3, 1974, Ser. No. 475,936
Int. Cl.² B65G *13/12, 41/00*
U.S. Cl. 193—35 R **11 Claims**

8. An adjustable support for selectively varying the spacing between a member to be supported and a support surface, comprising: an elongated rod having one end for engaging said support surface; handle means for rotating said rod about its longitudinal axis; said handle means being an elongated bar having one end bent circumferentially around and secured to the upper end of said rod and the other end extending transversely from said rod; a plurality of rack teeth on only one side of said rod and being generally uniformly longitudinally spaced along said one side of said rod; a bracket body having a through aperture longitudinally receiving therein said rod; means for releasably attaching said bracket body rigidly to the member to the supported; and detent means within said bracket body for engaging at least an adjacent one of said rack teeth in one position of said rod and being completely out of engagement with said rack teeth in another rotated position of



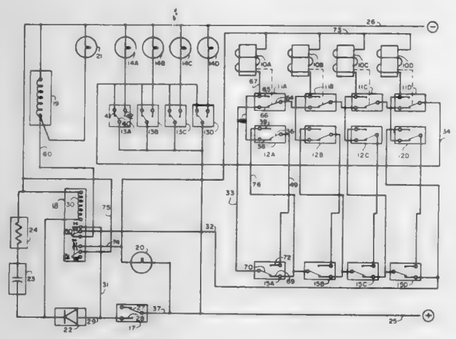
said rod to prevent relative movement between said rod and bracket body in the engaged one position and to allow free longitudinal relative movement between said rod and said bracket body in said disengaged another position.

3,924,719

VENDING MACHINE ELECTRICAL OPERATING CONTROL CIRCUIT

Raymond D. Bowman, Ringgold, Ga., assignor to Cavalier Corporation, Chattanooga, Tenn.

Filed Feb. 21, 1973, Ser. No. 334,251
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G07F *11/00*
U.S. Cl. 194—10 **24 Claims**



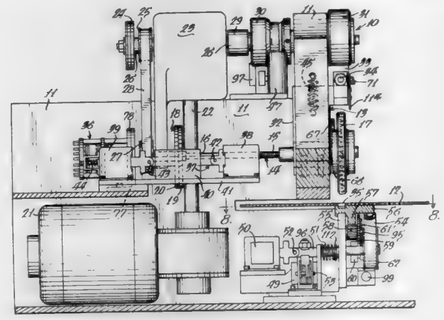
1. An electrical control circuit for a coin operated vending machine incorporating a plurality of dispensing columns each adapted to receive articles to be selectively dispensed, comprising: a coin responsive vend switch; a vend relay responsive to actuation of said vend switch; a plurality of selector switches, each said selector switch being associated with an individual one of said columns; a plurality of dispensing actuators each being associated with an individual one of said columns and being responsive to actuation of one of said selector switches from a first to a second position and energization of said vend relay; and a plurality of control switching means each being associated with an individual one of said columns and being responsive to an individual one of said dispensing actuators, said switching means having a first position for mutually exclusively completing a first enabling circuit including each said selector switches for maintaining said vend relay energized when selector switches are all maintained in their first position and a second position for completing an energizing circuit to each one of said plurality of dispensing actuators for selectively dispensing a single article upon actuation of a selector switch to its second position.

3,924,720

INDEXING TABLE ADVANCE MECHANISM

Ralph T. Wuetig, Dolton, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed July 12, 1974, Ser. No. 488,246
Int. Cl.² B41J *1/22*
U.S. Cl. 197—6.5 **7 Claims**



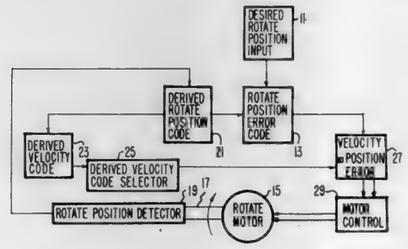
1. An indexing table advance means which comprises a frame; slide means on said frame and supporting an indexing table; rack means mounted on said slide means; pinion means rotatably mounted on said frame and engaging said rack means; escapement wheel means integral with said pinion means; cam means having a pair of spaced substantially parallel detent faces positioned for alternate engagement with a tooth on said escapement wheel means; spacing solenoid means linked to said cam means for axially shifting said cam means so as to alternately engage said detent faces with a tooth on said escapement wheel; release solenoid means linked to said cam means for pivoting said cam means so as to move both of said detent faces out of engagement with said escapement wheel; and negator spring means mounted on said frame and associated with said slide means for applying a substantially constant pull on said slide means and urging a tooth on said escapement wheel against one of said detent faces.

3,924,721

DIGITAL LOGIC AND SERVO SYSTEM FOR PRINT HEAD ROTATE CONTROL

Robert J. Reynolds, Ann Arbor, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 11, 1974, Ser. No. 514,133
Int. Cl.² B41J *7/34*
U.S. Cl. 197—18 **10 Claims**



1. A digital logic and servo system for controlled rotation of a servo motor to a desired rotate position, said servo motor being driven by a motor control circuit in response to a first logical indication of drive current direction, and said servo motor being dynamically braked by said motor control circuit in response to a second logical indication of drive current direction, said logic and servo system comprising:
means for receiving an input code representative of said desired rotate position;
means for detecting the present rotate position of said servo motor;
means responsive to said detecting means for generating a present rotate position code;
means responsive to said present rotate position code generating means for deriving a rotate velocity code from said generated rotate position code;
means responsive to both said receiving means and said generating means for computing a rotate position error code; and
means for comparing said derived rotate velocity code and said computed rotate position error code to provide first and second logical indications of drive current direction for precisely conforming the velocity of the rotate motor to an optimized velocity profile.

10. In a serial printer, a method for controlling the direction of drive current output from a servo motor driver responsive to drive current direction commands for either driving or dynamically braking a servo motor in conformity with a predetermined optimized velocity profile, said servo motor operatively coupled to a single element print head for rotating the single element print head to a desired rotate position, corresponding to a desired print head character column, comprising the steps of:
receiving a binary coded representation of said desired print head character column;
detecting the present rotate position of said servo motor;
generating a binary coded representation of said detected present rotate position;
calculating the difference between said binary coded representation of the desired print head character column and said generated binary coded representation of the present rotate position;
deriving a binary coded representation of servo motor rotate velocity from said generated binary coded representation of present rotate position;
comparing said derived binary coded representation of servo motor rotate velocity with said calculated difference to determine the drive current direction required to conform said servo motor to said optimized velocity profile; and
commanding said servo motor driver to provide drive current to the servo motor in said determined direction.

3,924,722

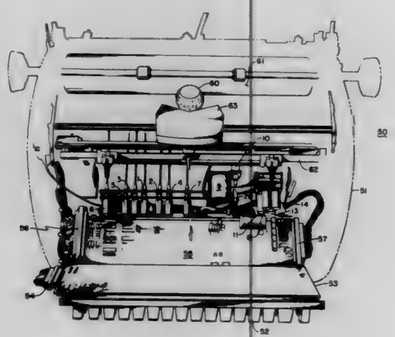
TYPEWRITER WITH ELECTRONIC KEYBOARD

James L. Wienhold, Minneapolis, Minn., assignor to CPT Corporation, Minneapolis, Minn.

Filed Feb. 27, 1973, Ser. No. 336,240
Int. Cl.² B41J *5/30*
U.S. Cl. 197—19 **18 Claims**

1. A typewriter having an operating mechanism and a printing mechanism using a single element print head operable to present one character at a time to a printing position and print the same where the character is determined by tilt and rotational movement in response to distinct typewriter keyboard characters and operations, said typewriter operating and printing mechanism comprising:
a. electrical matrix means having components interconnected to be representative of said distinct typewriter keyboard characters and operations, and producing output signals representative thereof;
b. switch means including electrical power means electrically connected to said electrical matrix means and disposed in a typewriter keyboard pattern representative of the distinct typewriter characters and operations;

c. keyboard buffer means having its input excited by said electrical matrix means for storing and releasing said signals representative of said keyboard characters and operations, said buffer means having a high speed input and a slow speed output characteristic;
d. solenoid drive means operatively interconnected to said keyboard buffer means, said solenoid drive means being actuated in accordance with the characters and operations of the typewriter selected by an operator;
e. buffer control means electrically interconnected to said electrical matrix means and said keyboard buffer means and controlling the flow of signals to said solenoid driver means;



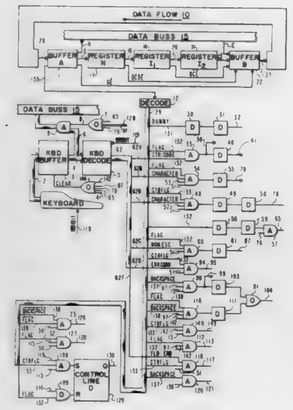
f. first timing means interconnected with said buffer control means and said solenoid drive means for inhibiting said keyboard buffer means while said solenoid drive means is energized;
g. second timing means interconnected with said buffer control means and said keyboard buffer means for inhibiting said keyboard buffer means during a predetermined rest period;
h. and printing cycle timing means operably interconnected to said printing mechanism and said second timing means providing a signal cutting off the operation of said second timing means prior to the end of said predetermined rest period.

3,924,723
CENTERING OF TEXTUAL CHARACTER FIELDS ABOUT A POINT

Donald Walter Cooper, and James Bradley Unruh, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,542
Int. Cl.² B41J *5/30*
U.S. Cl. 197—19 **14 Claims**

1. A system for arranging and storing a sequence of textural codes upon input of said codes into a recirculating memory having an operation flag code defining an operating point therein, said codes being arranged and stored in said memory to facilitate centering of said codes about a chosen point when said codes are output to a printer, said system comprising:
first means for generating textural character codes and one or more escapement control codes capable of causing printer escapement to said chosen point;
second means for generating backspace codes;
escapement control code input means for inputting said one or more escapement control codes into said memory preceding said operation flag code;
textual character input means for inputting each textual character code generated by said first means into said memory immediately preceding said operation flag code; and
backspace input means for inputting a backspace code into said memory in response to the generation of every other escaping textual code, said backspace codes being input into said memory preceding the first entered textual character code and succeeding said one or more escapement control codes;

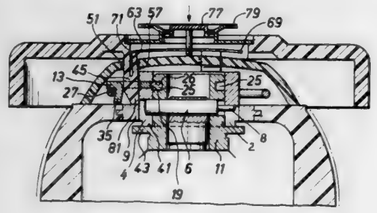


said character input means and said backspace input means cooperating with said first and second generating means and said memory for causing the storage in said memory of a contiguous stream of textural character codes, preceded by a contiguous stream of backspace codes, preceded by one or more escapement control codes.

3,924,724
STRUCTURE FOR FACILITATING INTERCHANGE OF TYPING ELEMENTS

Gunter Kerzel, Middelsfahr, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

Filed Mar. 19, 1975, Ser. No. 560,085
Claims priority, application Germany, Mar. 23, 1974, 2414127
Int. Cl.² B41J *1/60*
U.S. Cl. 197—52 **6 Claims**

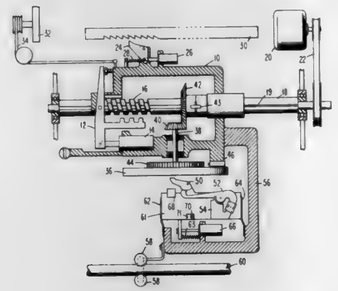


1. In combination: a typing element having a cap at its top and arranged to be interchangeably installed on the element post of a typing machine and to be stored in a container when not on the machine, the element being provided, in the vicinity of its upper extremity and below the cap, with a locking device movable between a locking position in which it fastens the element to the post and an unlocking position in which it permits the element to be lifted from the post; and a member defining a cover arranged to close the container in a hermetically sealed manner, wherein the improvement comprises: detent coupling means arranged to selectively connect said cover to said cap for permitting said typing element to be moved as a unit with said cover; spring means normally maintaining said detent coupling means in the position for creating such connection between said cover and said cap; and latch means carried by said cover for holding said locking means in said unlocking position when said cover is connected to said cap and for enabling said locking device to move to said locking position when said cover is separated from said cap.

3,924,725
DUAL ARRAY DISC PRINTER

Robert F. Kuhn, Montrose, Pa.; Theodore F. Lyons, and Jerry W. Raider, both of Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 28, 1974, Ser. No. 484,022
Int. Cl.² B41J *1/32*
U.S. Cl. 197—53 **9 Claims**

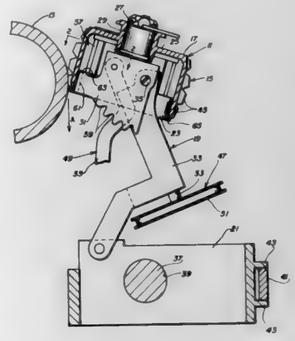


1. The combination in printing apparatus of a carrier having drive means operable to move said carrier past a plurality of print column positions along the print line of a document upon which a printing operation is to be performed,
a rotating print wheel mounted on said carrier having an array of type characters of one group thereon around one portion of the periphery of the wheel and another array of type characters of a different group around another portion of the periphery of the print wheel, said print wheel having means to rotate said print wheel to present said type characters of both groups to each print column position,
a print hammer carried by said carrier operable to impact said type characters and print in said print column positions on said document, and
means to detect when the required printing changes from one selected print group to the other selected print group and to inhibit printing from two timewise adjacent groups, and
means selectively operable to provide additional movement of said print hammer along said print line less than one of said print column positions in accordance with which group of type characters is positioned to print in a print column position so as to cause said hammer to be more nearly centered in the appropriate column position when said selected print group is in print column position in front of the hammer.

3,924,726
TYPEHEAD SUPPORT FOR A SINGLE ELEMENT PRINTER

Herbert Decker, Lauf, Germany, assignor to Triumph Werke Nurnberg A.G., Nurnberg, Germany

Filed Apr. 12, 1973, Ser. No. 350,523
Claims priority, application Germany, Apr. 15, 1972, 2218310
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B41J *7/08*
U.S. Cl. 197—55 **4 Claims**



1. In a single element printer comprising
a hollow inverted cup shaped typehead having type characters on its outer periphery located in rows and columns, a platen,
a support member axially supporting said typehead for rotational movement to position a selected column of type characters opposite said platen,
support means pivotally supporting said support member for tilting movement to position a selected row of type characters opposite said platen,
said support means being movable from a rest position to a printing position to impact a selected type character against said platen,
said typehead on impact experiencing deformation with the lower portion tending to move tangentially relative to said platen and support member,
said lower portion of said typehead having edge defining means located in a radial plane,
and said support member having a radially extending abutment located opposite said platen and located closely beneath said edge defining means for arresting tangential movement of said typehead relative to said platen and said support member on impact of a selected type character against said platen.

3,924,727
CARTRIDGE WITH RESILIENT CONNECTING MEANS

Joseph L. Morelli, Hartford, Conn., assignor to Litton Business Systems, Inc., New York, N.Y.

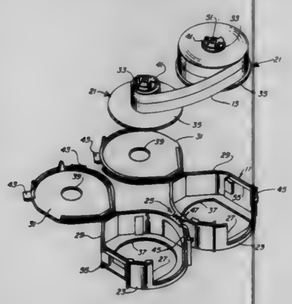
Filed Feb. 2, 1973, Ser. No. 329,115
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B41J *33/14*
U.S. Cl. 197—151 **1 Claim**

1. In a ribbon cartridge, the combination comprising:
a pair of spool holders for rotatably supporting a pair of spool means having a ribbon secured therebetween and wound upon at least one of said pair of spool means,
said pair of spool holders each comprising an upwardly open container having a peripheral wall with at least a partial arcuate configuration and a ribbon opening formed therein for enabling the ribbon extending be-

tween said spool means to pass through the peripheral walls of said containers, a cover hingedly connected to a portion of each of said peripheral walls opposite said ribbon openings, and tab and slot means on said covers and walls for closing said containers,

said covers having a central opening defining an axis for rotation of each of the pair of spool means,

a plurality of resilient connectors extending in a horizontal plane between and joining in close proximity the arcuate portions of the peripheral walls of said pair of spool holders with the ribbon openings spaced circumferentially from said plurality of connectors and spaced apart from each other a distance substantially greater than the distance where the peripheral walls are connected by said plurality of connectors to form a gap to be spanned by the ribbon for enabling the ribbon to be drawn substantially



tangential between said pair of spool holders with the axis of rotation of the pair of spool means being in a common plane,

said plurality of connectors, said span of ribbon and said arcuate peripheral walls of said spool holders defining the boundaries of an area to allow access to a ribbon vibrator through which the span of ribbon is to be threaded,

each of said plurality of connectors having an intermediate portion of reduced cross-section capable of flexure for enabling said pair of spool holders to be manipulatively pivoted and twisted relative to each other with the axis for rotation of the pair of spool means being moved from the common plane to facilitate threading of the ribbon in a ribbon vibrator,

said plurality of connectors being rupturable at the intermediate portions of reduced cross-section after threading by moving said pair of spool holders from each other.

3,924,728

PRESSURE-ADHESIVE CORRECTION MATERIALS AND METHOD FOR PRODUCING SAME

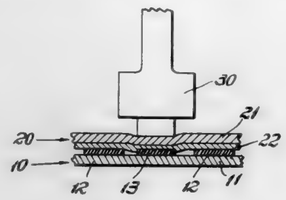
Albert E. Brown; Allan T. Schlotzhauer, and Douglas A. Newman, all of Glen Cove, N.Y., assignors to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Continuation-in-part of Ser. No. 439,395, Feb. 4, 1974, abandoned. This application Nov. 22, 1974, Ser. No. 526,127

Int. Cl.² B41J *31/05*

U.S. Cl. 197—172 **24 Claims**

21. Process for the selective and complete removal of an erroneous typed image from a copy sheet having said image thereon in association with a multiplicity of other images typed from the same imaging composition which comprises resinous binder material and pigment, said process comprising positioning over said images a latent adhesive correction element comprising a pressure-deformable foundation supporting a non-sticky latent adhesive layer which contains at least 10% by weight of an adhesive resin, which is pressure-flowable at ambient temperatures, and a non-adhesive surface material which provides a barrier stratum at said surface and renders said layer non-adhesive to the touch, and typing against the back of said foundation with a type face corresponding to the erroneous image to be removed and in a location corresponding to the position of said erroneous image to cause said latent adhesive correction element to be pressed against said erroneous image and to cause said adhesive resin to flow through said barrier layer and adhere to said erroneous



image, and separating said correction element from said copy sheet whereby said erroneous image remains adhered to the former and is stripped from the latter without the correction sheet adhering to or disturbing the other images on the copy sheet.

3,924,729

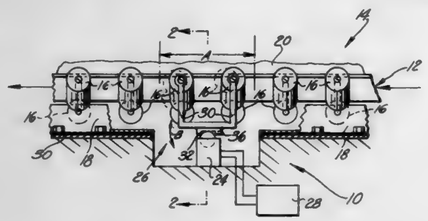
BELT CONVEYOR WEIGHING SYSTEM

Rune Flinth, and Kjell Nordström, both of Vasteras, Sweden, assignors to Conscale AB, Vasteras, Sweden

Filed Oct. 8, 1974, Ser. No. 513,101

Int. Cl.² G01G *11/04*

U.S. Cl. 198—39 **12 Claims**



1. Weighing apparatus comprising a movable conveyor adapted to carry material through a weighing station to be weighed thereat, a single load cell at said weighing station for providing a signal indicative of the weight of the material as it is conveyed by said conveyor, means interposed between said conveyor and said single load cell to transmit a force indicative of the weight of the material to the single load cell, said means interposed between said conveyor and said single load cell including means for enabling relative movement to occur between said conveyor and said single load cell in directions transverse to the direction of movement of said conveyor.

3,924,730

TWO MASS SWING SYSTEM WITH INDEPENDENTLY CONTROLLED VIBRATORY EXCITER MEANS

William R. Brown, Blairsville, Pa., assignor to FMC Corporation, San Jose, Calif.

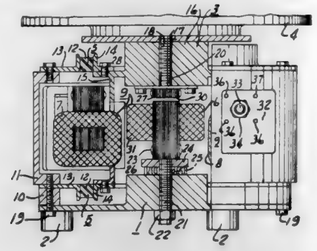
Filed Sept. 21, 1966, Ser. No. 581,058

Int. Cl. B65g *27/00*

U.S. Cl. 198—220 R **30 Claims**

1. A tuned two mass swing system including a base serving as a reaction mass and a feeder frame serving as a feeder mass supported from the base by elastic coupling means permitting independent horizontal and vertical components of vibration to be effective to swing said feeder frame in a controlled excursionary vibratory path of displacement for feeding materials, independent horizontal vibratory exciter means and independent vertical vibratory exciter means to independently

supply said horizontal and vertical components of vibration to said feeder frame, characterized by control means connected to independently and variably control said exciter means to independently change the magnitude of each of said horizon-



tal and said vertical components of vibration and to independently and variably adjust the operating phase relationship between said horizontal and vertical components of vibration of said vibratory exciter means to regulate the action of the material moved on said feeder frame.

3,924,731

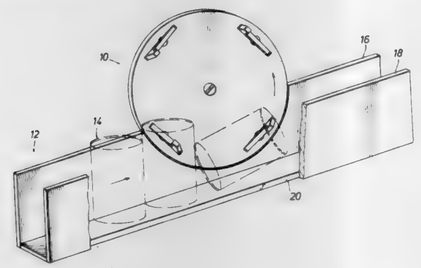
APPARATUS FOR RESTORING CANS TO UPRIGHT POSITIONS

James O. Meeks, 1606 32nd St., Nederland, Tex. 77627

Filed Nov. 15, 1974, Ser. No. 524,073

Int. Cl.² B65G *47/24*

U.S. Cl. 198—268 **11 Claims**



1. An apparatus cooperative with a conveyor system moving a procession of cans having a top lip or edge where the conveyor system confines the cans along a path of movement between a pair of sides spaced apart by a distance wider than the cans and where the conveyor bottom supports the cans in an upright position and the cans move along the conveyor system, and a can is liable to fall over and be pushed along the conveyor along with upright cans, wherein the apparatus comprises a movable means which supports a can lip engaging means located for movement along a path which hooks the lip of a fallen can supported on the conveyor system, said can lip engaging means being ineffective in hooking an upright can on the conveyor system, said movable means moving said can lip engaging means along a path which rotates the fallen can from the fallen position toward an upright position on the conveyor system.

11. An apparatus for cooperation with a conveyor system which transfers cans along a conveyor path defined by a pair of facing side walls where the cans are supported on a bottom and which comprises a means for supporting for circular movement a plurality of latch means which extend into the path of cans travelling on the conveyor system and which have a locus carrying them to a point of interception of the rim at the top or bottom of a fallen can on the conveyor system and which have a hook means for latching such a rim, and which hook means further does not latch on the exterior cylindrical surface of an upright can.

3,924,732

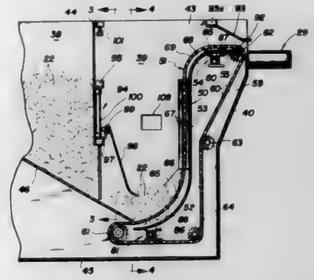
APPARATUS FOR UNSCRAMBLING AND ORIENTING OVERCAPS

George E. Leonard, Davenport, Iowa, assignor to The Kartridg Pak Co., Davenport, Iowa

Filed Nov. 19, 1973, Ser. No. 416,738

Int. Cl.² B65G *47/14*

U.S. Cl. 198—287 **7 Claims**



1. Apparatus for unscrambling and orienting can overcaps for placement onto cans, where each overcap is generally cylindrical in cross section, generally open at the bottom end and generally closed at the top end, of a diameter greater than the height, and constructed to have a center of gravity closer to one end than the other end, said apparatus comprising an unscrambling and orientation compartment for receiving a supply of overcaps, and unscrambling and orientation means in the compartment for engaging the overcaps at the bottom of the compartment, elevating and orienting the overcaps, and discharging the overcaps from the upper end of the compartment in a given oriented position, said unscrambling and orientation means including an upstanding slide having a lower section and an upper substantially vertical section and a set of pusher bars continually movable upwardly along the slide and in closer spaced relation therewith at the vertical section than at the lower section so as to push and lift overcaps from the compartment that are oriented such that their center of gravity is located between a pusher bar and the slide during movement along the substantially vertical section, and said slide including means for adjusting its position relative the pusher bars to accommodate overcaps of various heights.

3,924,733

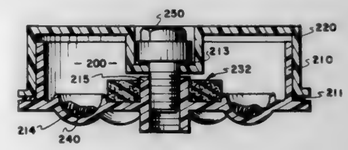
METHOD AND APPARATUS FOR PRESERVING SOLVENT-DISPERSED CHEMICALS

Carol DeLong, 5938 Cahuenga Blvd., North Hollywood, Calif. 91601

Filed May 8, 1974, Ser. No. 468,067

Int. Cl.² B44D *3/00*; **B05C** *17/00*

U.S. Cl. 206—1.7 **10 Claims**



1. A palette for artists comprising:

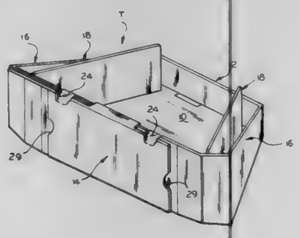
a dished base having an interior paint receiving section formed on a bottom plate, said base including an upstanding wall integrally connected to said bottom plate adjacent the periphery of said bottom plate, said bottom plate being circular, a boss attached to said bottom plate and located within said paint receiving section, said boss being centrally located upon said bottom plate;

a circular shaped cover having a depending annular wall located at the periphery of said cover, an opening centrally located within said cover, a movable locking member extending through said opening, with said cover placed upon said base said upstanding wall of said base being located in a close proximity to and in an overlapping arrangement with said annular wall of said cover and said locking member being located within said boss, said locking member being movable to a locking position to secure said cover to said base.

3,924,734
EXPANDABLE DISPLAY TRAY

Jeffrey M. Gardner, Wheaton, Ill., and William M. Pilz, Eldridge, Iowa, assignors to Container Corporation of America, Chicago, Ill.

Filed Mar. 5, 1975, Ser. No. 555,697
Int. Cl.² B65D *5/52, 1/34, 5/20*
U.S. Cl. 206—44 R **5 Claims**



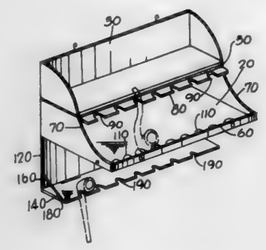
1. In an expandable shipping and display tray, formed of a unitary blank of foldable paperboard or the like, the combination of:
a. a bottom wall and opposed pairs of front and rear side walls and end walls foldably interconnected to form a box-like structure open at the top;
b. said side and end walls each including a pair of inner and outer panels;
c. at least one expansion member including:
i. a first flap interposed between the panels of an end wall;
ii. a second flap slidably interposed between the panels of a side wall for movement between a tray retracted position, wherein substantially all of said second flap is disposed within said side wall, and a tray expanded position, wherein only a distal portion of said second flap is positioned within said side wall;
d. lock means detachably interconnecting said second flap and said side wall when the former is in said tray expanded position.

3,924,735
SMOKING PIPE HOLDER

Luis G. Gonzalez, San Francisco, Calif., assignor to The Raymond Lee Organization, Inc., a part interest

Filed Dec. 13, 1974, Ser. No. 532,583
Int. Cl.² B65D *81/36, 25/10, 25/20*
U.S. Cl. 206—45.11 **2 Claims**

1. A pipe holder, comprising:
a hollow rectangular box with a horizontal floor and an opening in its top and front, the opening having straight top and bottom edges an forwardly and downwardly curving side edges;
a flat horizontal strip projecting forwardly from the top edge of the opening, and bearing a plurality of regularly spaced notches;
a lid hingedly secured to the top edge of the box, the lid being so shaped as to close off the box when the lid is closed into a hollow rectangular box that encloses the strip in its interior;
a rectangular flat first flap with front and rear edges, the first flap being hingedly secured at its rear edge to the floor of the box and extending downwardly and forwardly therefrom;
a rectangular flat second flap with front and rear edges, the second flap being hingedly secured at its rear edge to the

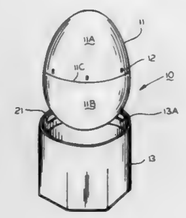


front edge of the first flap and bearing a plurality of regularly spaced notches along its front edge; and
means having first and second states, the means supporting both flaps in a horizontal plane below the floor when in the first state and supporting the second flap in a horizontal plane when the first flap is hanging downwardly in a vertical plane, when the means is in the second state.

3,924,736
TAMPERPROOF DISPLAY PACKAGE

Richard L. Bell, Phoenixville; Richard T. Walter, Norristown, both of Pa.; David L. Botterman, Arlington, Tex., and Philip W. Lewis, Greensboro, N.C., assignors to Container Corporation of America, Chicago, Ill.

Filed Mar. 28, 1974, Ser. No. 455,856
Int. Cl.² B65D *3/04, 5/50, 5/54*
U.S. Cl. 206—45.14 **2 Claims**

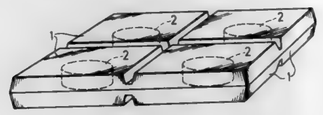


1. A package comprising, in combination:
a. a spheroidal shaped article having extending around its girth a band of circumferentially spaced, aligned protuberances projecting therefrom;
b. a tamperproof carton, formed from a flat unitary blank of foldable paperboard, receiving and retaining a portion of said article;
c. said carton including a generally cylindrical body wall defining a tubular structure open at its upper end and having at its lower end a plurality of closure flaps hingedly attached thereto and folded over and secured to each other in overlapped relation to close said lower end;
d. said body wall having at its upper end an inturned flange hingedly attached thereto and presenting a plurality of circumferentially spaced, aligned aperatures receiving said article protuberances to prevent the withdrawal of said article without rupturing said body wall.

3,924,737
STORAGE-STABLE MULTI-COMPONENT THERMOSETTING RESIN SYSTEM

Otto Ernst, Pfeffingen; Konrad Meyerhans, Therwil, and Eugen Kusenberg, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 27, 1974, Ser. No. 455,460
Claims priority, application Switzerland, Apr. 9, 1973, 5047/73
Int. Cl.² B65D *81/32*
U.S. Cl. 206—84 **17 Claims**

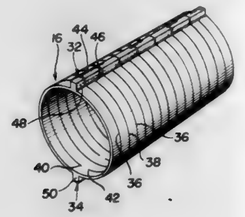


1. A storage-stable multi-component thermosetting resin system consisting of a moulding, possessing at least one closed cavity, of at least one component (A) of this multi-component system, the component being solid at room temperature, inert to atmospheric air and fusible through raising the temperature, and a filling of this cavity, comprising at least one solid or liquid reaction partner (B) of the component (A) for thermosetting resin crosslinking, preferably at temperatures above 20°C, with, optionally, both the component (A) and the component (B) or one of the two components containing customary additives to the mixture, such as fillers, plasticisers, dyestuffs and catalysts, accelerators and inhibitors of the curing reaction, and the ratio of the amounts of the component (A) to component (B) and optionally to the catalysts, accelerators and inhibitors in this multi-component system preferably being the same as in customary thermosetting resin processing of the particular corresponding mixtures.

3,924,738
MULTIPACKAGE DEVICE FOR CONTAINERS AND METHOD FOR MAKING SAME

Ougljesa Jules Poupitch, La Jolla, Calif., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 9, 1974, Ser. No. 530,537
Int. Cl.² B65D *85/62, 75/00, 71/02*
U.S. Cl. 206—150 **19 Claims**

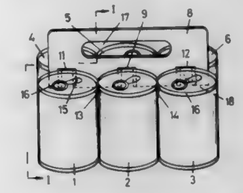


1. A carrier structure for a plurality of articles such as containers and the like comprising a series of carrier units disposed in end-to-end relationship and including ring portions for receiving articles to be carried, and hinge and spacer means interconnecting adjacent ring portions of adjacent carrier units in said series, each of said hinge and spacer means including a first rib element integral with one of said adjacent ring portions and a second rib element integral with the other of said adjacent ring portions, said first and second rib elements having an integral junction with each other, said junction being folded and providing a flexible hinge element between said carrier units.

3,924,739
METHOD OF BRINGING A PLURALITY OF CONTAINERS IN TRANSPORTABLE CONDITION BY MEANS OF A CARRIER MEMBER AND AN ASSEMBLY OBTAINED BY APPLICATION OF SAID METHOD

Elbert Gravesteijn, Abcoude, Netherlands, assignor to Heineken Technisch Beheer B.V., Rotterdam, Netherlands

Filed Apr. 9, 1973, Ser. No. 349,098
Claims priority, application Netherlands, Apr. 10, 1972, 7204768
Int. Cl.² B65D *75/00, 73/00;* **B66C** *1/10*
U.S. Cl. 206—157 **2 Claims**

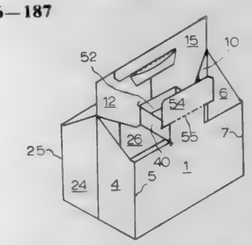


2. A transportable assembly of individual containers comprising an elongated handle consisting of a relatively rigid sheet of material having a finger receiving opening adjoining one elongated edge, at least two rows of circular containers with the containers of each row in substantial alignment, the other elongated edge portion of said material being disposed between said rows and means releasably bonding each of said containers to said handle portion disposed between said rows of containers, said sheet of material being folded upon itself to provide an upper portion of double thickness and a lower portion of single thickness with said upper portion having the finger receiving opening extending therethrough and said lower portion extending between rows of containers, said folded portion having an elongated edge bearing against the tops of the containers, the width of each of said slots being selected to cause corresponding containers of each row to [contact each other] at least partially enter and bear against the edges of said slots.

3,924,740
ARTICLE CARRIER

Prentice J. Wood, Jonesboro, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Dec. 2, 1974, Ser. No. 528,715
Int. Cl.² B65D *75/54;* **G09F** *3/00*
U.S. Cl. 206—187 **8 Claims**



1. An article carrier comprising a bottom wall, opposed side walls foldably joined to the side edges of said bottom wall, end wall panels foldably joined to the end edges of said side walls and extending inwardly therefrom, riser panels foldably joined to said end wall panels remote from said side walls and extending medially inward of the carrier, telescoping handle panels comprising a pair of inner handle panels respectively having a hand gripping aperture and a hand gripping slot and foldably joined respectively to the riser panels at one end of the carrier and a pair of outer handle panels respectively having a hand gripping aperture and a hand gripping slot and foldably joined respectively to the riser panels at the other end of the carrier, a promotional tab adjoined to the top edge of one of said side

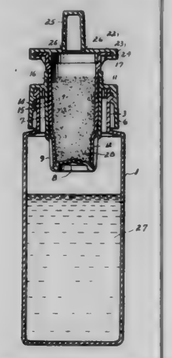
walls, the top edge of said promotional tab disposed at approximately the same level as the top edges of said hand gripping apertures and said hand gripping slots, a portion of said one side wall forming a high center portion to the top edge of which said promotional tab is adjoined, a transverse partition strap joined to each end of said high center portion and to one of said handle panels, and the length of said promotional tab being greater than the length of said high center portion by a distance substantially less than the length of one of said transverse partition straps.

3,924,741

TWO-COMPARTMENT CONTAINER

Nicholas W. Kachur, Clark, and Anthony F. Tomburo, Cranford, both of N.J., assignors to Gibson Associates Incorporated, Cranford, N.J.

Filed Mar. 4, 1975, Ser. No. 555,138
Int. Cl.² B65D *25/08*
U.S. Cl. 206—221 **5 Claims**



1. A two-compartment container comprising a bottle having a cylindrical neck, a stopper and capsule assembly mounted on said neck, said stopper and neck having interengaging means to secure said stopper to said neck, said stopper having a tubular sleeve extending downwardly through said neck and terminating in a transverse wall which closes the lower end of said sleeve, the lower portion of said sleeve adjacent said transverse wall having a plurality of apertures extending therethrough, said capsule comprising a tubular wall slidably mounted within said sleeve to move between upper and lower terminal positions, the lower portion of said tubular wall being adapted to close and seal apertures in the lower terminal position of said capsule and to open said apertures in the upper terminal position of said capsule, said tubular wall terminating in a rim which, in the lower terminal position of said capsule, seats against the transverse wall of said sleeve to seal the lower end of said capsule.

3,924,742

BOX FOR MAGNETIC TAPE CASSETTE

Fernando Primicerio, and Paolo Benigno, both of Naples, Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 6, 1974, Ser. No. 439,972
Claims priority, application Italy, Feb. 6, 1973, 35568/73
Int. Cl.² B65D *85/67, 43/14*
U.S. Cl. 206—387 **2 Claims**

1. Box for magnetic tape cassette comprising

a. a rectangular receptacle formed with

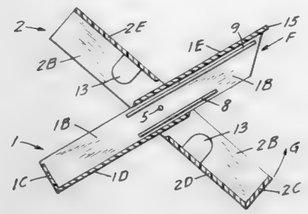
a pair of edge walls,

one end wall,

a partial face wall on one side of the receptacle extending from said end wall to the center of the receptacle, and a partial face wall on the opposite side of the receptacle extending from the center of the receptacle to the open end of the receptacle opposite said one end wall, into which open end a cassette may be inserted, and

b. a rectangular cover hinged to the center of the receptacle and having, when the box is closed,

a pair of edge walls which overlie the edge walls of the receptacle,



an end wall which closes the open end of the receptacle, and two paratial side walls, each of which abuts one of said partial face walls so that the closed box forms a rectangular parallelepiped, and

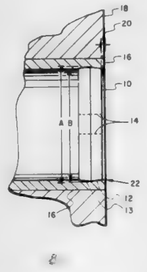
a lug projecting from the inner-facing surface of each side wall of the cover to lock the reels of an inserted cassette when the box is closed.

3,924,743

APPARATUS AND PROCESS FOR PLUGGING A PAPER ROLL CORE

Franklin C. Bittner, Star Route North, Box 560, Newport, Oreg. 97365

Filed July 8, 1974, Ser. No. 486,601
Int. Cl.² B65D *85/676*; **B23P** *19/02*; **B65H** *17/02*
U.S. Cl. 206—389 **15 Claims**



1. A deformable plugged paper roll core having a predetermined inside diameter corresponding to said core's undeformed condition, and a plug inserted coaxially within one end of said core, said plug having a generally double-tapered circular perimeter defined by a first portion of said plug having a diameter greater than said core's predetermined inside diameter and respective plug portions on either side of said first portion decreasing in diameter therefrom for deforming said core at a junction between said plug perimeter and the interior of said core, said plug being inserted in said core adjacent said end thereof at least to a sufficient depth that said first portion of said plug is recessed at a location entirely within said core spaced inwardly from said end expansively deforming said core at said recessed location, said core throughout that portion of said junction of said core and plug located outwardly of said recessed location having an inside diameter which is less than the expansively deformed inside diameter of said core at said recessed location.

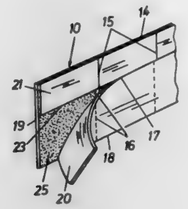
15. The process of claim **12** wherein said shaping of said deformable core includes shaping the inside diameter of said core, throughout said outward portion of said junction of said core and plug, to decrease gradually in a direction toward said end of said core.

3,924,744

INDEX TAB SHEET

Egon Heimann, Falkenberg 61, D-56 Wuppertal-Elberfeld, Germany

Continuation-in-part of Ser. No. 97,463, Dec. 28, 1970, Pat. No. 3,747,242. This application July 11, 1973, Ser. No. 378,060
Claims priority, application Germany, Jan. 9, 1970, 2000798
Int. Cl.² B65D *73/00*
U.S. Cl. 206—460 **5 Claims**



1. An index tab sheet including an indefinite number of juxtaposed index tabs adapted to be attached individually to the margin of a card, comprising in combination:

a. a plurality of relatively stiff label portions arranged in a side-by-side relationship; each label portion having a face coated over its entire area with a pressure-sensitive adhesive; said face being divided into a first zone and a second zone;

b. a plurality of index portions, one attached to said face of each label portion over the entire area of said first zone in registry therewith; said index portions being arranged in a side-by-side relationship; and

c. a continuous supporting strip having a face provided with an adhesive repelling coating; said supporting strip being attached, with its adhesive repelling coating to said face of said label portions over the entire area of said second zones for firmly maintaining said label portions in their side-by-side position; said continuous supporting strip being adapted to be peeled off from successsive label portions to expose their second zones and permit their separation from the index tab sheet; each label portion being adapted to be individually attached by said second zone to said margin of said card subsequent to peeling off said supporting strip, whereby said first zone with said index portion thereon projects beyond said margin of said card and is firmly supported by the relative stiffness of said label portion.

3,924,745

PACKAGE CONSTRUCTION, PARTICULARLY A PACKAGE DESIGNED FOR A SINGLE USE

Ludwig Hannemann, Maximiliansau, and Manfred Horst Simon, Spessart, both of Germany, assignors to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Germany

Filed Feb. 20, 1974, Ser. No. 444,180
Claims priority, application Germany, Mar. 14, 1973, 2312549
Int. Cl.² B65D *73/00, 47/10*
U.S. Cl. 206—484 **6 Claims**

1. A package construction, particularly a package designed for a single use, comprising at least a single layer material having an interior cavity surrounded on all sides by said material forming a space to receive the filling and which is provided with means for opening the package, a hollow tubular body connected to the cavity for the passage of the filling material whose one part is surrounded fixedly in longitudinal direction by said material and whose other part is surrounded loosely in longitudinal direction by said material, the loosely surrounded part of said hollow body serving to open the package and the boundary of said material between the fixedly and the loosely



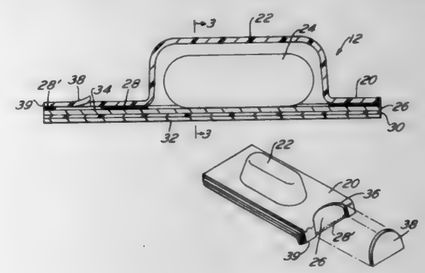
surrounded hollow body having tear-off area extending across the package defining a preset breaking point.

3,924,746

CHILDPROOF PACKAGE

Russell R. Haines, Cherry Hill, N.J., assignor to Paco Packaging, Inc., Pennsauken, N.J.

Continuation-in-part of Ser. No. 270,877, July 12, 1972, Pat. No. 3,835,995. This application Jan. 7, 1974, Ser. No. 431,276
Int. Cl.² B65D *83/04, 75/32*
U.S. Cl. 206—530 **7 Claims**



1. A package comprising a carrier layer of polymeric plastic having a rigid pocket formed therein and spaced from the edges thereof, said carrier layer being sealed opposite the open end of said pocket to a laminate except for an unsealed zone adjacent one end of said carrier layer, said carrier layer being slit at said zone to define a tab only on said carrier layer with the ends of the slit being adjacent to but spaced from said one end of the carrier layer by unslit portions, said tab having a width which is narrower than the width of said carrier layer, said laminate including a layer of material having high resistance to tearing, said unsealed zone being between first and second heat seals between the laminate and the carrier layer, said second heat seal being at said one end and narrower than the width of the unsealed zone while having a width corresponding generally to the width of said unslit portions, access to said pocket being attained by removal of the tab to expose the part of the laminate therebelow and then peeling the laminate with respect to said carrier layer to expose said pocket.

3,924,747

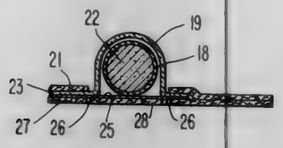
PACKAGING

Daniel F. Gerner, Blackwood, N.J., assignor to Packaging Coordinators, Inc., Philadelphia, Pa.

Filed Mar. 28, 1974, Ser. No. 455,615
Int. Cl.² B65D *83/04, 85/56*
U.S. Cl. 206—531 **14 Claims**

1. A blister card for child-proof packaging of medicaments in discrete capsule, lozenge, or pill form, comprising a non-rupturable transparent plastic strip having a plurality of blister-like protrusions therein outward from one face and leaving a corresponding plurality of hollows and openings thereinto at

the opposite face thereof, a rupturable foil strip adherent to the latter face of the plastic strip and sealing the openings therein, a supporting card portion including a first paper layer juxtaposed to the first face of the plastic strip and having one



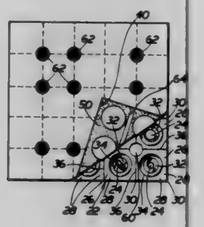
or more openings therein to accommodate the protrusions and including a second paper layer overlying the foil strip and the first paper layer and adherent thereto, the second paper layer having perforated a like plurality of individual access tabs in the parts thereof opposite the corresponding hollow openings.

3,924,748

CLOSURE FOR MULTICOMPARTMENT MEDICINAL DISPENSING DEVICE

Milton Braverman, 640 Wynmill Place, Philadelphia, Pa. 19115

Filed Apr. 11, 1974, Ser. No. 459,491
Int. Cl.² B65D *83/04, 85/56, 75/42*
U.S. Cl. 206—534.1 **7 Claims**



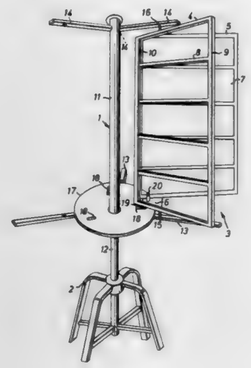
1. For use with a medicinal dispensing device including article holding means having a plurality of article holding units each with flanges having corners and being detachably connected along certain lines so that each unit may be separated by the remaining units, a chamber for holding an article therein depending from each flange and having an opening for said chamber, one corner of at least one flange of each unit being removed in cut-away area, improved closure means including a plurality of closures, each of which being co-extensive in size with each of the article holding units and adapted to seal the opening in a respective one of said units, said closure means comprising a cover sheet and a liner sheet, said cover sheet having an exterior surface and an interior surface having an adhesive thereon, said adhesive temporarily securing the liner sheet to the cover sheet, said cover sheet, when removed from said liner sheet, being disposed upon said article holding means with the adhesive on said cover sheet in contact with the flanges of said article holding means to secure the cover sheet to the article holding means, said cover sheet including plural perforated lines corresponding to the flange lines for forming the closures between said perforated lines, at least one portion of the interior surface of the cover sheet contiguous with one of said perforated lines and extending along said line on both sides thereof having no adhesive thereon such that one portion of each closure defined by said line includes a portion having no adhesive thereon, said non-adhesive interior surface portion being disposed directly over a cut-away area of the flange of the article holding unit when said cover sheet is secured in place to provide a convenient, non-adhesive tab for affecting the removal of the closure from the article holding unit to which it is secured.

3,924,749

DISPLAY DEVICE

Roy Bernard Weston, 9 Dingle Dell, Leighton Buzzard, England

Filed July 22, 1974, Ser. No. 490,604
Int. Cl.² E05B *73/00*
U.S. Cl. 211—4 **2 Claims**



1. A display device comprising a wing-like member in the form of a generally rectangular frame for receiving articles to be displayed; a supporting structure; a rotatable plate carried by said supporting structure; a slot in said rotatable plate; pivot means pivotally mounting said wing-like member about an axis substantially parallel to the plane of the wing-like member, with said axis intersection two oppositely disposed edges of the frame and being parallel to the other two edges of the frame; openings at one of said other edges of the frame through which the said articles can be inserted and removed; a blocking member; a pin extending from one of said oppositely disposed frame edges of said wing-like member at a region of said one edge located between said blocking member and said pivot axis, said pin extending into said slot; said rotatable plate, said slot and said pin constituting means for limiting the pivotable movement of said frame between one limiting position and another limiting position so that in said one limiting position the said openings are blocked by the said one frame edge being in the proximity of the blocking member, whereas in the other limiting position the said one frame edge is clear of the blocking member, thus rendering the articles free for removal; and locking means for fixing the frame in its said one limiting position.

3,924,750

EYEGLASS DISPLAY UNIT

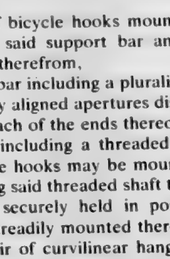
Richard S. Dunchock, Northville, Mich., assignor to Optarac Corporation, Ferndale, Mich.

Filed Aug. 28, 1974, Ser. No. 501,178
Int. Cl.² A47F *7/02*
U.S. Cl. 211—13 **14 Claims**

1. A display unit for eyeglasses and the like, said display unit comprising:

a body panel having an integrally formed top flange extending behind said body panel for mounting said body panel to a vertical wall, said body panel having an integrally formed base flange extending behind said body panel for supporting said body panel in an upright position, said base flange being disposed in a plane which is inclined with respect to the plane within which said body panel is disposed, the perpendicular distance from the face of said body panel to the outer edge of said top flange being equal to the perpendicular distance from said body panel face to the outer edge of said base flange, whereby said body panel is disposed in a vertical plane when said top flange outer edge is attached to said vertical wall and said base flange outer edge rests against said vertical wall;

said body panel having a plurality of vertically spaced pairs of opposed apertures; and



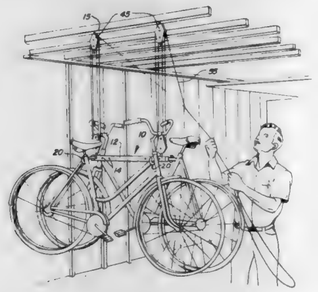
a plurality of eyeglass support elements carried by said body panel at vertically spaced locations between each pair of opposed apertures.

3,924,751

BIKE RACK HOIST

William G. Ballenger, Deerfield, Ill., assignor to Central Specialties Inc., Chicago, Ill.

Filed May 6, 1974, Ser. No. 466,872
Int. Cl.² A47F *5/08*
U.S. Cl. 211—17 **12 Claims**



1. A hoistable storage rack for carrying at least one bicycle thereon and permitting the hoisting of the rack on an overlying support, with at least one bicycle mounted thereon, comprising in combination,

a horizontally disposed support bar having front and rear surfaces,

a plurality of bicycle hooks mounted on the front surface of said support bar and extending forwardly outwardly therefrom,

a plurality of bicycle hooks mounted on the rear support surface of said support bar and extending rearwardly outwardly therefrom,

said support bar including a plurality of horizontally spaced and linearly aligned apertures disposed therethrough and adjacent each of the ends thereof, and each of said bicycle hooks including a threaded shaft, whereby each of said bicycle hooks may be mounted on said support bar by inserting said threaded shaft through one of said apertures and securely held in position by threaded nuts screwed threadily mounted thereon,

at least a pair of curvilinear hanging means, mounted on said support bar, one of said pair of hanging means mounted adjacent each end thereof and extending upwardly therefrom,

each of said hanging means having lower pulley means mounted thereon and extending upwardly therefrom,

the overlying support provided with opposed support hanging means fixedly secured thereto and extending downwardly therefrom,

each of said opposed hanging means having upper pulley means mounted thereon and extending downwardly therefrom,

said upper pulley means being positioned in spaced vertical alignment with respect to said lower pulley means,

said lower pulley means comprising a pair of fiddle blocks, each having a large pulley wheel and a smaller pulley wheel, said smaller pulley wheel being positioned above said larger pulley wheel, and said upper pulley means comprising a pair of second fiddle blocks, each having a larger pulley wheel and a smaller pulley wheel, said smaller pulley wheel being positioned below said larger pulley wheel,

rope means fixedly secured to each of said upper pulley means at the opposed ends of said rope means and having one end portion of said rope means interconnecting vertically opposed one of the said pairs of lower and upper pulley means, and the opposed end portion of said rope means interconnecting the other vertically opposed ones of said pairs of lower and upper pulley means,

and the central portion of said rope means positioned between said vertically opposed ones of said pairs of said lower and upper pulley means,

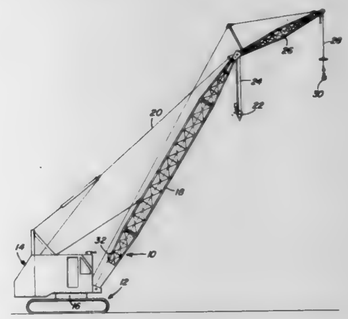
whereby retraction force applied against the central portion of said rope means will cause said vertically opposed ones of said pairs of lower and upper pulley means to work against each other, through said rope means, thereby to hoist said support bar upwardly with at least one bicycle mounted on and between respective bicycle hooks.

3,924,752

CRANE BOOM AND LINE SAFETY LIMIT WARNING ASSEMBLY

Frank M. Hoofnagle, Houma, La., assignor to BWB Controls, Inc., Houma, La.

Filed July 16, 1974, Ser. No. 489,041
Int. Cl.² B66C *13/48*
U.S. Cl. 212—39 MS **10 Claims**



2. In combination with a crane including first and second components with the first component movable relative to the second component in opposite directions toward and away from the second component and in one of said directions toward a predetermined limit position, an abutment portion on one of said components, a normally closed pressure relief valve on the other of said components and including an acutator engageable by said abutment portion upon movement of said first component in said one direction to a position adjacent said limit position to open said pressure relief valve, a source of pressurized gas, a fluid pressure system including a fluid pressure line having an inlet end adapted for connection to said source of gas under pressure and an outlet end, a branch line including an inlet end communicated with said pressure line and an outlet end, a pneumatically actuatable

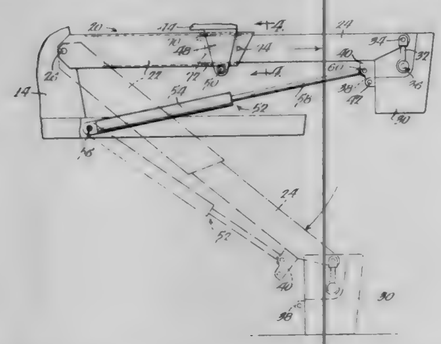
signalling device connected to the outlet end of said branch line, said branch line including a normally closed valve serially connected therein and to which the outlet end of said pressure line is connected and operable to open said valve in response to a drop in pressure at said inlet port caused by the opening of said pressure relief valve, air flow restricting means in said pressure line between the inlet end of said branch line and the outlet end of said pressure line, and a pressure relief line including an inlet end opening into said pressure line between its outlet end and said flow restricting means and an outlet end under the control of said pressure relief valve, further said source of pressurized gas operates said pneumatically actuactable signalling device.

3,924,753

CRANE COUNTERWEIGHT SUPPORT AND MEANS FOR REMOVING AND MOUNTING SAME

Gerald P. Lamer, Rothschild; Ronald L. Zyduck, Mosinee, both of Wis., and David F. Roesler, Edina, Minn., assignors to J. I. Case Company, Racine, Wis.

Filed Apr. 22, 1974, Ser. No. 462,978
Int. Cl.² B66C *23/72*
U.S. Cl. 212—48 **8 Claims**



5. In a crane having a base with an extensible and retractable boom supported on said base; a counterweight; a counterweight carriage having first and second elongated relatively extensible and retractable elements; horizontal pivot means supporting one of said elements for pivotal movement on said base; means on said other element for supporting said counterweight; extensible fluid ram means having one end connected to said base and an opposite end connected to said other element for extending and retracting said elements; a substantially horizontal elongated support arm on said base extending generally parallel to and above said one of said elements; and releasable latch means carried by said arm and cooperating with said counterweight carriage for normally supporting said carriage in a substantially fixed position on said base for horizontal movement of said elements relative to each other, said latch means being selectively releasable to accommodate pivotal movement of said counterweight carriage on said base so that said counterweight may be lowered by said extensible fluid ram means and removed from said base.

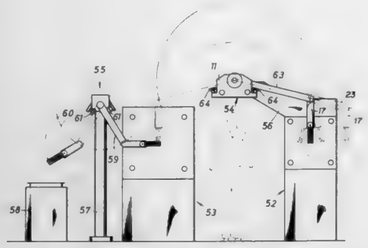
3,924,754

APPARATUS FOR TRANSPORTING WORKPIECES

Walter Reis, Obernburg, and Dietmar Boll, Elsenfeld, both of Germany, assignors to Walter Reis, Obernburg, Germany

Filed May 29, 1974, Ser. No. 474,333
Claims priority, application Austria, June 5, 1973, 4904/73; Germany, Apr. 26, 1974, 2420240
Int. Cl.² B25J *13/00*
U.S. Cl. 214—1 BD **9 Claims**

1. An arrangement for transporting workpieces from one operating station to another, comprising base frame means, guide means supported on said base frame means, carriage means supported on said guide means for movement substantially parallel to at least one of said operating stations, means for moving said carriage on said guide means, a transport arm having first and second ends, means journaling said first end of said transport arm to said carriage means for supporting said arm for rotation about a first axis substantially parallel to said one operating station, drive means positioned on said first axis and operatively coupled to said first end of said transport arm, a tilting arm having one end journaled to said second end of said transport arm about a second axis parallel to said first axis, workpiece gripping means pivoted to the other end of



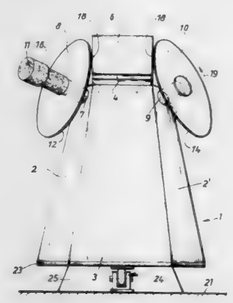
said tilting arm, whereby a workpiece held by said gripping means is movable through an angle of more than 180° about said first axis, tilt control means for said gripping means comprising a first sprocket mounted coaxially on said first axis, a second sprocket affixed to said tilting arm coaxially at said second axis, said first and second sprockets having equal diameter, chain means interconnecting said first and second sprockets and means independent of the position of said transport arm for fixing the angular position of said first sprocket with respect to said frame means, and drive means coupled to said workpiece gripping means and mounted on said frame means.

3,924,755

FEEDING ARRANGEMENT FOR A BAR-SHAPED OBJECT

Herbert Stahl, Koenigsheimer Str. 12, D-7205 Boettingen, Germany

Filed July 15, 1974, Ser. No. 488,556
Int. Cl.² B65H *5/06*
U.S. Cl. 214—1 P **9 Claims**



1. A feeding arrangement for a bar-shaped object comprising:

a. a support, said support in the normal operating position of said arrangement having an upwardly directed face elongated in a horizontally extending direction, said face being adapted to carry said object for sliding movement of the object in said direction; and

b. two discs mounted on said support for rotation in respective planes about respective axes passing through said support below said face in said condition of the arrangement,

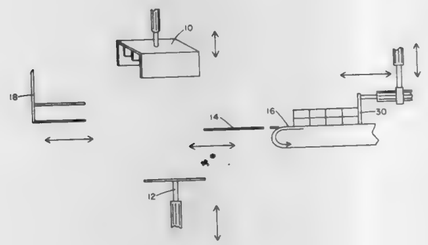
1. said discs being oppositely offset from said face transverse to the direction of elongation of said face, and
2. said planes converging in an upward direction and in the direction of elongation of said face.

3,924,756

APPARATUS FOR STACKING BRICKS IN PREPARATION FOR STRAPPING

William F. Milholen, Siler City, and Cletus E. Lineberry, Staley, both of N.C., assignors to Forrest Paschal Machinery Co., Siler City, N.C.

Filed May 14, 1974, Ser. No. 469,649
Int. Cl.² B65G *57/26*
U.S. Cl. 214—6 A **7 Claims**



1. In combination with a brick stacking device of the type wherein separate and distinct courses of bricks having a plurality of rows therein are transferred sequentially from a conveyor to an elevating device to build a stack of courses to a prescribed height, the apparatus comprising:

a. a receiving plate movable between a first position above said elevating device and a second, laterally spaced position removed therefrom;

b. a transfer means for sequentially slidably moving said courses from said conveyor to said receiving plate;

c. a vertically movable gripper apparatus at said first position above said receiving plate for engaging and holding one of said courses as said receiving plate is moved to said second position;

d. said elevating device being movable between an upper position under-lying said one course held by said gripping apparatus and one of several pre-selected lower positions;

e. a tyne building means selectively positionable between said gripper apparatus and said elevating device during selected cycles of said gripper apparatus for separating the tyne bricks from the other bricks of a selected layer, said gripper apparatus lifting a single uppermost layer from a position above said elevating device and returning said other bricks of said layer to said stack after the tyne bricks are removed by said tyne building means;

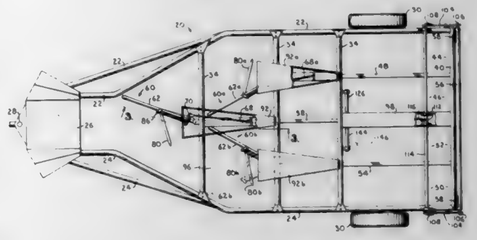
f. whereby as said receiving plate is moved to the second position, said gripping apparatus holds said courses until the elevating device is raised to receive the courses, and said courses are deposited on said elevating device with a minimum of movement and without lateral movement, resulting in a stack having tyne openings therein and with the headers thereof aligned and even.

3,924,757

BALE ACCUMULATOR

Frank A. Meyer, R.R. No. 3, Herington, Kans. 67449

Continuation of Ser. No. 283,902, Aug. 28, 1972, abandoned. This application June 24, 1974, Ser. No. 482,586
Int. Cl.² A01D *87/12*; **B65G** *57/32*
U.S. Cl. 214—6 B **4 Claims**



1. In a bale accumulator employing a carrier adapted for movement over the ground, where the carrier is divided into a plurality of bale-receiving chutes extending in parallelism in the direction of movement thereof, bale guide structure on the carrier for loading the chutes with successively received bales and including a bale guide gate for directing bales successively received by the gate in alternate directions, said gate comprising:

a blocking member mounted for swinging movement about a first upright axis between a pair of operating positions corresponding to said directions;

an over-center mechanism coupled with said blocking member for biasing the latter toward either one or the other of said positions,

said mechanism including a rotatable element mounted on said blocking member for back and forth movement about a second upright axis spaced from said first axis, and yieldable means having a movable connection with said element and applying force thereto to effect said biasing of the blocking member; and

an actuating arm coupled with said element and extending from said blocking member for engagement by a transient bale,

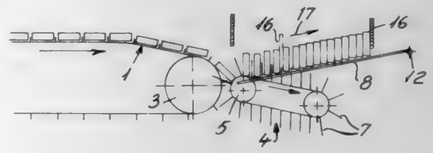
said arm being responsive to said engagement by a transient bale for rotating said element to change the line of action of said yieldable means to cause the blocking member to change positions.

3,924,758

APPARATUS FOR STACKING OBLONG ARTICLES

Hans Gram, Vojens, Denmark, assignor to Brodrene Gram A/A, Vojens, Denmark

Filed June 4, 1974, Ser. No. 476,292
Claims priority, application Denmark, June 8, 1973, 3194/73
Int. Cl.² B65G *57/18*
U.S. Cl. 214—7 **1 Claim**



1. An apparatus for stacking oblong articles, each having a generally rectangular cross-sectional shape, comprising: a supply conveyor for the conveyance of a succession of articles to be stacked, said supply conveyor being divided into com-

partments by pushing dogs, said compartments having a width sufficient for accommodating said articles lying on their broader sides, said supply conveyor passing around a set of spaced rollers; a further conveyor divided into compartments by pushing dogs, the compartments of said further conveyor having a width sufficient for accommodating said articles standing on their smaller sides, the pushing dogs of said further conveyor being divided into sets and one end of said further conveyor being positioned adjacent said spaced rollers of said supply conveyor with said sets of pushing dogs aligned with and partly extending into the spaces between the rollers of said set of rollers for transferring articles from the compartments of said supply conveyor into the compartments of said further conveyor; an accumulator comprising at least two oblong supporting plates being arranged above said further conveyor, one end of said plates being secured to a rocking shaft extending perpendicular to the direction of transportation of said further conveyor, the other free ends of said plates being movable from a first position in which they extend into the compartments of said further conveyor between the sets of pushing dogs of said further conveyor for accumulating a group of articles transferred from said further conveyor and onto said plates, and to a second position in which said free ends are pivoted up over the compartments of said further conveyor, said accumulator, moreover, comprising at least two supporting ribs of which at least one being movable above said supporting plates in the second position thereof and in the longitudinal direction of said supporting plates for further transportation of said accumulated group.

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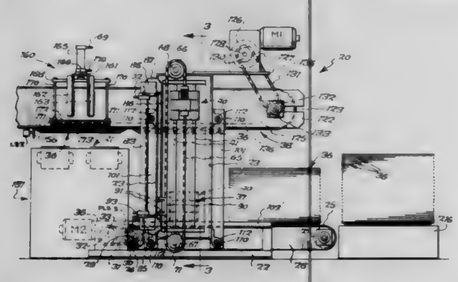
ARTICLE PICK-UP AND TRANSFER APPARATUS

Anthony F. Madonia, 19 Middlebury Lane, Buffalo, N.Y. 14216

Division of Ser. No. 290,269, Sept. 18, 1972. This application Feb. 11, 1974, Ser. No. 441,109

Int. Cl.² B65G *59/04*

U.S. Cl. 214—8.5 D **12 Claims**



1. An article transfer apparatus comprising in combination: means for supporting a stack of articles; carriage means mounted in substantial vertical registry with said stack of articles; means for moving said carriage means toward and away from said article supporting means; magnetic means on said carriage means for engaging a single article on said stack; said magnetic means comprising a plurality of bar magnets suspended from said carriage for vertical and tilting movement relative thereto whereby said bar magnets are self orienting for optimum engagement with said article; means for sensing the engagement of said magnetic means with said articles; said sensing means comprising a sensing plate mounted on said carriage means and engagable with said article prior to the engagement of said magnetic means with said article, said sensing plate mounted on said carriage means for movement relative thereto, and switch means on said carriage means activated by movement of said sensing plate relative to said carriage means for energizing said control means, control means responsive to said sensing means for interrupting downward movement of said carriage means upon engagement of said magnetic means with said article and initiating upward movement of said carriage means to lift said magnetic means and remove a single article from said stack; a transfer conveyor mounting in overlying relation to said carriage means for receiving said article therefrom as said carriage means approaches the end of its upward movement; means for advancing and transfer conveyor to move said article to a discharge station; said control means including an electric interlock preventing actuation of said carriage moving means until said article is moved away from the receiving portion of said transfer conveyor; and means at said discharge station for stripping said article from said conveyor onto an output station, said stripping means comprising a pusher element and means for moving said pusher element relative to said transfer conveyor and into engagement with said article for removing said article from said transfer conveyor.

3,924,760

CAR GARAGE

Ulrich Lendi, Stafa, Switzerland, assignor to Firma Mageba, Bulach, Switzerland

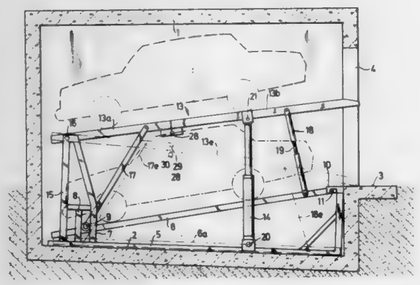
Filed Mar. 6, 1974, Ser. No. 448,571

Claims priority, application Germany, Mar. 20, 1973, 2313695

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² E04H *6/06*

U.S. Cl. 214—16.1 ED **6 Claims**



1. A garage for parking two vehicles one above the other comprising a garage box parking area having an entrance opening providing access thereto, an entrance floor, a garage box floor located at a lower level than said entrance floor, allowing said parking area to be disposed in a recessed position relative to the garage entrance; upper and lower parking platforms, each operative to accommodate a vehicle, whose outer ends are optionally joinable with the garage entrance; a longitudinally spaced pair of rigid rods laterally connecting said platforms, on each side, with their upper and lower ends articulated to the upper and lower platforms respectively; a stationary support on which the inner end of said upper platform is pivotally mounted for movement about a horizontal axis; and a vertically disposed guide for said lower platform rising from the garage floor; wherein said upper platform is composed of two hingedly connected sections, with the inner section being pivotally connected to said stationary support and the outer section being joinable with the garage entrance and said longitudinally spaced connecting rods are articulated at their upper ends to said upper platform's inner and outer sections respectively.

3,924,761

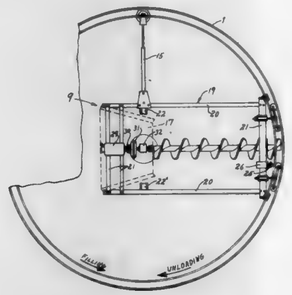
HORIZONTAL ROTARY SWEEPS FOR FEED STORAGE TANKS

Charles F. Lambert, Jr., Louisville, Ky., assignor to Clayton & Lambert Manufacturing Company, Buckner, Ky.

Continuation-in-part of Ser. No. 416,680, Nov. 16, 1973, abandoned. This application Jan. 20, 1975, Ser. No. 542,222

Int. Cl.² B65G *65/32, 65/38*

U.S. Cl. 214—17 CB **2 Claims**



1. An apparatus for use in filling and unloading feed storage tanks or silos having a vertically movable non-rotatable supporting assembly, comprising:

A. means for mounting a horizontaal rotary sweep of the spreading/unloading type on said vertically movable support assembly

1. for raising and lowering movement therewith during respective silo filling and unloading operations and
2. for slow relative sweep rotation about a vertical axis of the assembly;

B. sweep drive means for slowlv rotating the sweep during said filling and unloading operations;

C. means for mounting an auger on said sweep to depend therefrom in concentric relation to said vertical axis; and

D. auger drive means for rapidly rotating said depending auger

1. one way, during a silo-filling sweep-rising operation, to render it operative to function as a cylindrical barrier which prevents the incoming silage from lodging within the cylindrical space of the barrier so that said incoming silage builds up a column around said barrier and thus forms a vertical-open-ended silge-discharge hole extending progressively upward from the bottom of the progressively rising column of silage as the rising rotary sweep spreads the incoming silage over the top of the column.

3,924,762

APPARATUS FOR CONVEYING AND STORING YARN PACKAGES OR PIRNS

Wolfgang Igel, Ebersbach, Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach, Germany

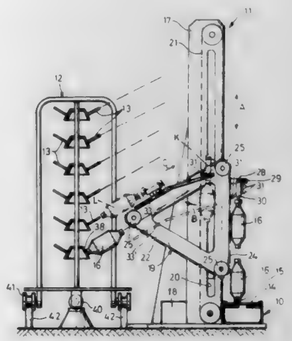
Filed Sept. 20, 1974, Ser. No. 507,862

Claims priority, application Germany, Sept. 24, 1973, 2347926

Int. Cl.² A01D *90/00;* **D01H** *13/26*

U.S. Cl. 214—38 B **6 Claims**

1. In an apparatus for transporting and storing a plurality of wound yarn packages, the apparatus including a conveying device of a textile machine on which the yarn packages can be arranged at spaced intervals from one another, the packages being conveyed by the conveying device to a transfer device which transfers them to a transportable storage unit including a plurality of holders for holding wound yarn packages at spaced intervals from one another, the transfer device operating cyclically and upon each cycle gripping by gripper means at least one yarn package which has been brought to the transfer device by the conveying device and which transfers the yarn package to a holder of the storage unit by displacing the gripper means, and control means for automatically controlling the transfer, the improvement comprising, as part of said storage unit, a plurality of rows of said holders which are arranged at different levels with their longitudinal axes inclined with respect to the vertical, and as part of said transfer device, means for both adjusting vertically and moving downwardly said gripper means towards said holders of said storage unit in an obliquely inclined direction to the vertical, this vertically inclined direction of movement corresponding to the inclination of the longitudinal axes of said holders of said storge unit.



3,924,763

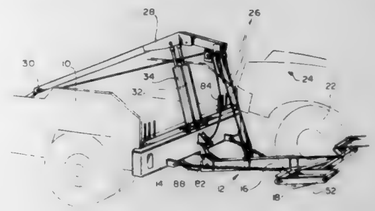
VEHICLE TOWING DEVICE

Norbert G. Pigeon, Ste-Madeleine, Ste-Hyacinthe, Quebec, Canada

Filed Nov. 14, 1974, Ser. No. 523,660

Int. Cl.² B60P *3/12*

U.S. Cl. 214—86 A **10 Claims**



1. A vehicle towing device adapted to be mounted at the rear of a truck for towing a vehicle, the said device comprising;

an extensible beam projecting rearwardly from the vehicle and pivotally mounted therefrom along a vertical plane,

a cross-bar fixed at the free end of said beam in a horizontal position,

a shallow trough-like member having a rigid peripheral frame adapted to receive a segment of the tires of the wheels of the towed vehicle, the said frame being secured to said cross-bar so that the axis of the wheel is substantially in the plane of the cross-bar, the frame comprising a central rod pivotally mounted to the forward portion of the frame, the lowermost position of said rod being located below the said peripheral frame, wherein, when the frame is lowered in contact with the ground, the said rod raises the wheel out of the frame.

3,924,764

RETRACTABLE OVERHEAD CARRIAGE FOR CARRYING CARGO ATOP A VEHICLE

Hugh A. Youngblood, Jr., 3225 N. Virginia, Oklahoma City, Okla. 73118

Filed Nov. 5, 1973, Ser. No. 413,041
Int. Cl.² B60R *9/00*
U.S. Cl. 214—450 **12 Claims**



1. A retractable overhead carriage adapted to be mounted atop a vehicle comprising:
a plurality of elongated fixed supporting rails;
means for mounting the supporting rails in spaced, horizontally extending positions atop a vehicle;
a plurality of elongated movable rails each movably mounted on one of said supporting rails for horizontal movement thereon;
a chain and sprocket assembly connected to each of said movable rails and each including:
a chain having its opposite ends connected to the respective movable rails at points spaced horizontally therealong;
a sprocket drivingly engaging the chain intermediate its length; and
means rotatingly supporting the sprocket and pivotally connectable to said vehicle to facilitate pivotation of the respective chain and sprocket assembly and its respective movable rail about a horizontal axis; and
means for arresting the movement of the movable rails about said horizontal axis, said arresting means comprising:
an elongated arrestor arm having one end thereof pivotally connected to one of said movable rails; and
a first roller carried on the other end of said arrestor arm rollingly engaging the underside of one of said supporting rails below said one movable rail at a location horizontally displaced from the point of pivotal connection of said arrestor arm to said one movable rail; and
means for engaging said roller and arresting further rolling movement thereof along said one supporting rail at a time after said movable rail has undergone pivotal movement about said horizontal axis.

3,924,765

HYDRAULIC SIDE LIFT LOADER

Dewey L. Hostetler, R.R. No. 2, Box 4, Harper, Kans. 67058

Filed Mar. 1, 1974, Ser. No. 447,076
Int. Cl.² B60P *1/38*
U.S. Cl. 214—518 **8 Claims**

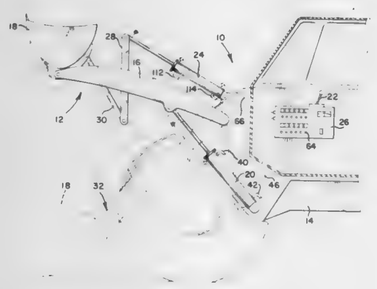
1. A loader and carrier for large, heavy, generally cylindrical bales of hay, or the like comprising:
a. a vehicle having an elongated bed having a retaining cradle for a plurality of said bales end-to-end substantially throughout its length,
b. a conveyor operably mounted on said bed constructed and adapted to move one of said bales along said retaining cradle, said conveyor mounted on said retaining cradle and bed and communicating therebetween,
c. means connected to said conveyor means to operate same,
d. a lifting cradle for said bale having a fork portion to receive and retain said bale between the tines thereof and pivotally mounted on the side of said vehicle and extending outwardly therefrom, said lifting cradle being pivotal from a generally horizontal and bale receiving position at a side of said vehicle to a generally upright and bale discharge position adjacent said retaining cradle,
e. means connected to said vehicle and lifting cradle constructed and adapted to pivot same,
f. said lifting cradle having spaced portions to receive and retain thereon in lifting relation one of said bales,
said loader and carrier being constructed and adapted to receive one of said bales on said lifting cradle, lift same onto said retaining cradle on said bed when said lifting cradle is pivoted to said generally upright position, and said conveyor being constructed and adapted to move said bale along said retaining cradle and to one end portion of said bed.

3,924,766

ADJUSTABLE PROGRAM CONTROL CIRCUIT FOR TWO HYDRAULIC CYLINDERS WITH SINGLE LEVER CONTROL

Michael H. Canning, Libertyville, Ill., assignor to International Harvester Company, Chicago, Ill.

Continuation of Ser. No. 871,790, Oct. 31, 1969, abandoned, which is a continuation of Ser. No. 668,474, Sept. 18, 1967, abandoned. This application July 6, 1970, Ser. No. 52,723
Int. Cl.² E02F *3/86*
U.S. Cl. 214—764 **13 Claims**



1. In a vehicle having a hydraulically actuated boom and a work implement supported by said boom and further having an operator control station on said vehicle, a control system comprising:
first control means for correlating movement of said implement to said boom according to a first predetermined program;
second control means for correlating movement of said implement to said boom according to a second predetermined program;
and program selection means including a manually actuable member located at said operator control station for selectively actuating one of said first and second control means.

3,924,767

PLASTIC COATED CONTAINERS HAVING EMBEDDED FRICTION REDUCING PARTICLES

Roy S. Arrandale, Elmira, and Edward R. Campagna, Horseheads, both of N.Y., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Sept. 30, 1971, Ser. No. 185,051
Int. Cl.² B05D *5/00, 1/36;* **B65D** *11/16*
U.S. Cl. 215—12 R **2 Claims**



1. A container having improved frictional and handling characteristics in container handling apparatus, said container comprising an interior glass receptacle formed as a glass bottle and an exterior resinous plastic surface and a plurality of particles secured to said exterior plastic surface; said particles having exposed outwardly extending particle surfaces adapted to contact articles which touch said container, said particle surfaces further being hard and smooth relative to said container plastic surface so that friction will be reduced between said container and said articles due to contact of said hard smooth particle surface with said articles.

2. A container having improved frictional and handling characteristics in container handling apparatus, said container comprising an interior glass receptacle formed as a glass bottle and covered by a relatively soft resinous plastic coating, said glass receptacle being provided with protrusions which extend through said exterior plastic coating, said protrusions being adapted to contact articles which touch said container so that friction will be reduced between said container having said plastic coating and said articles.

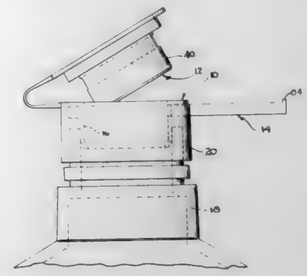
3,924,768

CONTAINER CAP HAVING SAFETY LOCK MEANS

John B. Lemons, Clements, Calif., assignor to Bob Mar, Stockton, Calif.

Continuation of Ser. No. 358,008, June 7, 1973, abandoned. This application Aug. 20, 1974, Ser. No. 498,942
Int. Cl.² B65D *51/12*
U.S. Cl. 215—213 **38 Claims**

1. A cap for a container comprising:
a stopper seat, sized to fit into the mouth of and to rest on the mouth of a container;
a stopper, sized to fit into and conform to said stopper seat, including at least one slide channel formed in and directed across said stopper;
at least one recess in said stopper seat, aligned with said slide channels; and
at least one pin, equal in number to said slide channels, each



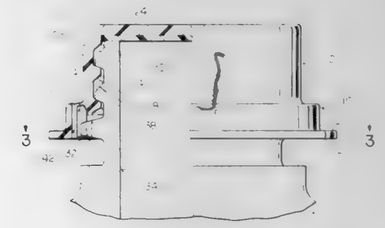
slidable in said recesses and one of said slide channels to lock said stopper into said seat.

3,924,769

SINGLE USE SAFETY CLOSURE

William E. Fillmore, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 20, 1974, Ser. No. 534,859
Int. Cl.² B65D *45/32, 55/02*
U.S. Cl. 215—216 **3 Claims**



1. A safety closure for a container, said container including a finish portion having threads formed on the exterior thereof and a plurality of external projections located below and adjacent to said threads, said safety closure comprising, in combination:
a main body member having threads formed in the interior thereof for engagement with the threads of said container finish;
a flexible skirt, attached to the lower portion of said main body member by a flexible circumferential ring, which is formed with a plurality of interior, inwardly directed projections; and
locking means, integrally formed with said main body member and said flexible skirt, for stiffening said flexible skirt when engaged therewith to prevent removal of said closure from said container when said internal and external projections are engaged, said locking means being movable out of engagement with said flexible skirt to thereby allow removal of said closure from said container.

3,924,770

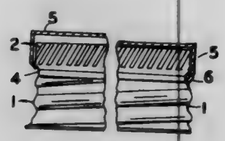
CHILD PROOF CLOSURE

Vincent Scuderi, East Williston, N.Y., assignor to Van Blarcom Closures Inc., Brooklyn, N.Y.

Filed Feb. 11, 1975, Ser. No. 548,907
Int. Cl.² B65D *55/02*
U.S. Cl. 215—220 **3 Claims**

1. A child proof closure for containers having a threaded neck comprising,

a screw type cap,
a first set of teeth on the side of said cap, said teeth being set at an angle to the axis of said cap,
a drive member loosely mounted on said cap for limited axial motion,
a second set of teeth on said drive member, said teeth being angled in the same direction as said first set of teeth,



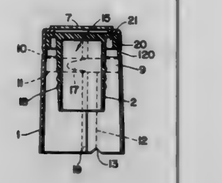
whereby when said drive member is turned in the direction to remove the cap, the interaction of said teeth lifts the drive member relative to the cap and the first and second sets of teeth disengage so that the cap cannot be removed solely by turning.

3,924,771

BOTTLE CAP HAVING A PRESHRUNK FOIL PORTION

Günther Cleff, Idsteinerstrasse 33, 62 Wiesbaden, Germany

Continuation-in-part of Ser. No. 275,252, July 26, 1972, abandoned. This application Nov. 20, 1973, Ser. No. 417,554
Claims priority, application France, July 30, 1971, 71.28012
Int. Cl.² B65D *45/32*
U.S. Cl. 215—246 **19 Claims**



1. A bottle cap for a bottle having a neck containing an orifice to be closed by said cap comprising an encapsulating element of heat shrinkable foil material that has been preshrunk in the form of a thin tubular wall containing substantial residual shrinking capacity and adapted for fitting with clearance over the outer side of said bottle neck during initial assembly, said preshrunk tubular wall having longitudinal portions of different residual shrinking capacity according to a predetermined pattern.

3,924,772

AIRTIGHT CONTAINER CAP

Eugenio Magnani, Fidenza (Parma), Italy, assignor to Fidenza Vetraria S.p.A., Milan, Italy

Filed Jan. 30, 1975, Ser. No. 545,362
Claims priority, application Italy, Feb. 8, 1974, 20319/74
Int. Cl.² B65D *45/32, 45/34, 45/30*
U.S. Cl. 215—276 **6 Claims**

1. An airtight container cap comprising a ring-nut provided, on the top surface thereof, with a circular hole and on the side surface thereof, with at least one window, a stopper adapted for removable engagement with the circular hole in said ring-nut and an elastic gasket provided with a central opening



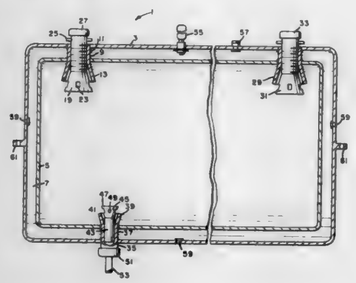
adapted to be removably inserted within said ring-nut in alignment with the window.

3,924,773

FUEL TANK

Nelson C. Wilkinson, 1818 - 4th St., Rensselaer, N.Y. 12144

Filed May 1, 1974, Ser. No. 465,807
Int. Cl.² F16K *17/20*; **B65D** *25/18*
U.S. Cl. 220—88 B **8 Claims**



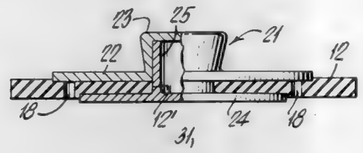
1. A fuel tank for liquid fuel having a fuel line and having fuel-line, valve means responsive to pressure build up on the fuel in said fuel tank to permanently close said fuel line, said valve means comprising a fuel-line housing and a fuel-line valve, said fuel tank carrying said fuel-line housing, said fuel-line housing being in communication with said fuel line and said fuel tank, said fuel-line housing having an open cylindrical portion and an open conical portion outwardly flared therefrom, said fuel-line valve having an open cylindrical portion and conical portion outwardly flared therefrom, said conical portion of said fuel-line valve having a closed bottom, said conical portion of said fuel-line valve having wall opening formed therethrough, said fuel-line valve being complemental with said fuel-line housing, said cylindrical portion of said fuel-line housing receiving and carrying, by means of slight interference fit, said cylindrical portion of said fuel-line valve, said liquid fuel in said fuel tank communicating with said fuel line through said wall openings in said conical portion of said fuel-line valve, through said open cylindrical portion of said fuel-line valve and through said open cylindrical portion of said fuel-line housing when said fuel-line valve is in its open position, said pressure build up on said liquid fuel in said fuel tank acting upon said closed bottom of said conical portion of said fuel-line valve to cause said conical portion of said fuel-line valve to permanently seat itself against said open conical portion of said fuel-line housing by interference fit to permanently close communication of said fuel tank with said fuel line.

3,924,774

CLOSURE FOR CONTAINERS

John H. Donnelly, 343 E. 30th St., New York, N.Y. 10016

Filed Oct. 11, 1972, Ser. No. 296,635
Int. Cl.² B65D *25/10*
U.S. Cl. 220—93 **3 Claims**



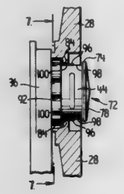
1. A removable closure for containers comprising a disc of relatively air-impervious resilient deflectable material having a selected peripheral configuration, a central relatively rigid support overlying said disc and secured to the disc centrally thereof, the area of said support being smaller than the area of said disc so that the edges of said disc can deflect relative to the edges of said support and a handle secured to and extending from said closure whereby said closure upon being inserted within a container will cause the edge of said disc to deflect upwardly and conform to the configuration of the container, said disc including at least one opening extending therethrough, said opening underlying the edge of said support and being normally closed thereby, said disc upon being deflected downwardly by removal of the closure from the container opens said opening to permit the flow of air therethrough.

3,924,775

POSITIVELY LOCKABLE ANGULARLY ADJUSTABLE HANDLE

Joseph R. Andreaggi, Short Hills, and George Zenuch, Edison, both of N.J., assignors to Weston Instruments, Inc., Newark, N.J.

Filed June 4, 1973, Ser. No. 367,040
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B65D *25/28*
U.S. Cl. 220—96 **10 Claims**



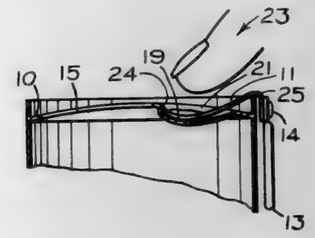
1. A portable instrument comprising:
a housing member;
a generally U-shaped resilient handle member having first and second coextensive arms substantially parallel to a plane and having respective first and second ends, said arms being resiliently movable relative to one another parallel to said plane; and
first and second means respectively adjacent said first and second ends for coupling said handle member to said housing member, each said coupling means including:
journal means having an axis and including a tubular resilient wall projecting from one of said members in a generally axial direction,
the other of said members having an internal wall centered on said axis and defining at least one aperture in which said tubular wall is received in a first axial position thereof for rotation about said axis,
inwardly yieldable stop means on the outer surface of said resilient tubular wall,
retainer means within said aperture for engaging said stop means to retain said resilient tubular wall against axial movement within said aperture in one direction between said first axial position and a second axial position thereof axially displaced with respect to said first position in said one direction when said tubular wall is subjected to an axial force smaller than a given value, and for inwardly camming said yieldable stop means resiliently into said resilient tubular wall upon axial displacement thereof within said aperture in said one direction toward said second axial position when said tubular wall is subjected to an axial force greater than said given value,
first interlocking means disposed upon said one member,
second interlocking means upon said other member for engaging said first interlocking means when said tubular wall is in its said second axial position to lock said handle member in a selected angular locking position with respect to said housing member,
said second interlocking means being disengaged from said first interlocking means when said tubular wall is in its said first axial position for permitting rotation of said handle member with respect to said housing member to select a desired angular locking position for said handle and housing members,
whereby said handle member can be locked in the selected angular position by moving said first and second resilient arms substantially parallel to said plane for causing said resilient tubular wall to shift from its said first to its said second axial position to lockingly engage said first and second interlocking means in the selected angular position.

3,924,776

RETAINER FOR A SEPARATED TEAR TAB ON A CAN

Patricia J. Horst, 2610 Spring Creek Road, Rockford, Ill. 61107

Filed Mar. 6, 1975, Ser. No. 555,829
Int. Cl.² B65D *17/20*
U.S. Cl. 220—269 **8 Claims**



1. A can having an integral closure surrounded by a weakened section defining a tear line and a handle affixed to said closure adjacent the tear line, whereby the closure may be separated from the can along said tear line by pulling on the handle, the invention comprising a pair of spaced opposed walls on the exterior of said can, said walls shaped to receive and retain therebetween the closure separated from said can.

3,924,777

NON-DETACHABLE EASY OPEN FLAP AND TAB ASSEMBLY

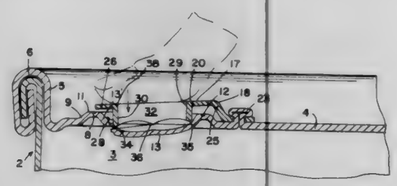
Harry A. Peyser, Olympia Fields, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 1, 1974, Ser. No. 438,910
Int. Cl.² B65D *41/02*
U.S. Cl. 220—277 **8 Claims**

1. In an easy opening container having an end panel with a score defining a flap adapted to be torn away from the panel

to provide an opening, said flap being offset from the panel in a recess formed therein,

an opener comprising a tubular element adapted to fit into the recess and superposed with respect to said flap and in axial alignment therewith and having a plurality of spaced diametrically opposed lance points in alignment with said score for rupturing the score in areas thereadjacent, an anchor strap on the element in radial alignment with one of said lance points and including means for hingedly

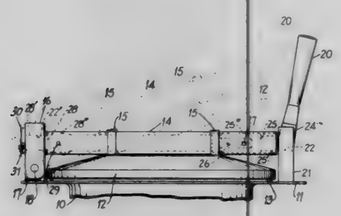


connecting said element to said panel, said one lance point serving as a fulcrum for said element upon application of digital force against said element over another point diametrically opposed to said one point, said another point being aligned with said one point and said anchor strap so that upon application of said force said strap will be loaded in tension and said one point in compression thereby effecting a canting action of the element, both of said points being of equal depth.

3,924,778
PRESSURE VESSEL SEAL AND LOCK

Egon Sorensen, Clinton, Conn., assignor to AMF Incorporated, White Plains, N.Y.

Filed Dec. 20, 1974, Ser. No. 534,718
Int. Cl.² B65D *45/28*
U.S. Cl. 220—314 **3 Claims**

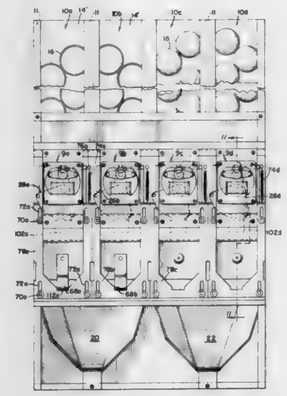


1. A mechanism for sealing and locking a cover to an opening, said mechanism comprising a block on opposite sides of said opening, a cylindrical hole in each of said blocks, said holes being aligned on a common axis, a cylindrical tube extending between said blocks, a cylindrical bearing in each of said holes, cylindrical eccentrics on each of said bearings extending into opposite ends of said tube, means connecting said eccentrics to said tube whereby said bearings, eccentrics and tube rotate in unison, means rotatable with respect to said tube for suspending said cover off said tube, one of said blocks having pivotal mounting for hinged movement away from said opening, the bearing in the other of said blocks being adapted for sliding movement into and out of the same, and handle means connected to said last mentioned bearing to either rotate the same in its block or to move it in and out of its block.

3,924,779
ADAPTABLE ARTICLE DISPENSING APPARATUS WITH CAM ACTUATING MEMBER

James C. Lindsey, Chattanooga, Tenn., assignor to Cavalier Corporation, Chattanooga, Tenn.

Filed Aug. 7, 1974, Ser. No. 495,492
Int. Cl.² G07F *11/08*
U.S. Cl. 221—67 **10 Claims**



1. Apparatus for dispensing a single article at a time from at least two staggered stacks of the articles in a bin, corresponding articles in the two staggered stacks being axially aligned of each other, said apparatus comprising:

a. selectively energizable motor means;

b. cam means coupled to said motor means to be rotatively driven, said cam means comprising a cam surface, and first and second switch actuating surfaces;

c. first and second article support members disposed transversely across the lower end of said bin and mounted for movement from a first supporting position wherein one of said first and second article support members engages and supports the lowermost articles of the staggered stacks, to a second releasing position to permit the discharge of the articles from said bin;

d. latch means pivotably mounted to be moved from a first rest position wherein said latch means engages and holds said first and second article support members in their first supporting positions when said apparatus is in a stand-by condition, to either of a second position wherein said latch means engages and holds said first article support member to prevent its downward movement to its second article releasing position, or of a third position wherein said latch means engages and holds said second article support member against movement to its second article releasing position;

e. a reciprocally mounted operating plate having a surface for engaging and controlling the movement of said first and second article support members and reciprocally movable between a first position, wherein said first and second article support members are in their first position and a second position wherein a selected one of said first and second article support members is lowered with said operating plate to its second article releasing position;

f. first releasable lock means for retaining said pivotably mounted latch means in its first rest position;

g. control means for selectively operating said motor means and including initiating means for initiating the energization of said motor means whereby said cam means is rotatively driven and said cam surface engages said first lock means disengaging it from said pivotably mounted latch means so that said latch means rotates to either of its second or third positions and said cam surface engages said operating plate directing it toward its second position whereby said one support member follows said operating plate to its second article releasing position;

h. switch means disposed to be engaged by said first and second switch actuating surfaces of said cam means and responsive thereto to interrupt the energization of said motor means thus terminating the rotation of said cam means;

i. an escrow bar movable from a first normal position for retaining one of the two articles released from the stacks of articles by one of said first and second support members, to a second article releasing position; and

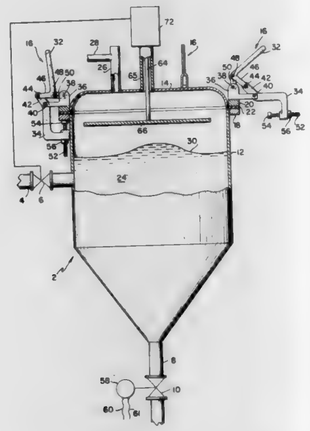
j. a second releasable lock means engagable by said cam surface of said cam means to be disposed from a first locking position wherein said second lock means retains said escrow bar in its first normal position to a second unlocked position, wherein said second lock means releases said escrow bar and said escrow bar is disposed to its second article release position;

k. said initiating means being initiated a second time for energizing said motor means and continuing the rotation of said cam means to dispose said second lock means to its second position, thus permitting the movement of said escrow bar to its second position and the release of the retained article, until said second switch surface engages said switch means to de-energize said motor means and to terminate the movement of said cam means at its starting position.

3,924,780
PRESSURE HOPPER

Robert M. Elsworth, Loudonville, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Nov. 28, 1973, Ser. No. 419,531
Int. Cl.² B67D *5/08*
U.S. Cl. 222—64 **5 Claims**

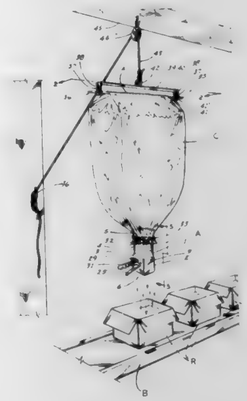


1. A pressure hopper for handling a highly viscous fluid which comprises a hollow body for holding said fluid, a removable top cover with a configuration adapted for a close fit with the rim of an aperture in the upper portion of said body wherein the peripheral edges of said cover and said rim are provided with strong flanges, a sealing gasket located between said cover and said rim, a plurality of rapidly releasable toggle joint clamps disposed around the peripheries of said cover and said rim for quickly and strongly locking said cover to said rim by throwing the toggle joint of each said clamp beyond the neutral point and into the locking position thereof by movement of an operating handle of each said clamp into a substantially erect position extending substantially above said rim and said cover, said clamps being affixed to one of said flanges with a movable operating handle of each said clamp in the locking position extending above said flanges, and a capacitive sensing means for controlling the flow of said fluid into said hopper to maintain the level of said fluid inside said hopper within a predetemined range, said sensing means comprising the pool of said fluid in said body and a substantially flat plate of electrically conductive material suspended substantially horizontally inside said hopper from said cover and located adjacent to and above the surface of said fluid and electric means for sensing a capacitive charge between said plate and said pool.

3,924,781
DISPENSER APPARATUS SUSPENDED FOR BOTTOM DISCHARGE

Henry C. Witte, Memphis, Tenn., assignor to International Comador of Memphis, Inc., Memphis, Tenn.

Filed Aug. 8, 1974, Ser. No. 495,548
Int. Cl.² B67D *5/06*
U.S. Cl. 222—80 **1 Claim**



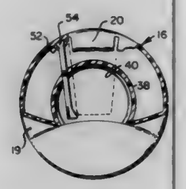
1. The combination with a bulk dispenser having a normally closed bottom portion and an openable content outlet at its normally upper end, means for suspending said container in inverted position whereby its outlet will be disposed at its lower end as suspended, said means comprising a rod extending transversely through said container in its normally closed bottom portion with the ends of said rod extending beyond said container, and hanger means detachably engaging said rod in its projecting end portions, a pulley engaged to said hanger means, means presenting said pulley in elevated relation to said suspended container, a cable connected to said hanger means and extending about said pulley, means provided on said rod for facilitating piercing of rod receptive openings in the said normally closed bottom portion of said container through which openings said rod extends, means for restricting axially slideable displacement of said rod with respect to said container, of a dispensing apparatus having means defining a tubular casing with a normally upper inlet end and a normally lower discharge end, means for connecting said casing upper end to said container content outlet while in suspended condition, the normally upper inlet end of said casing being flared and being received within the outlet end of said suspended container, resilient means engaging the outlet end portion of said container about said flared upper end of said dispensing apparatus, a closure member movably provided within said casing, means pivotally engaging said closure member for movement between upper or casing closed condi-

tion and lower casing open condition, and means controlling operation of said closure member.

3,924,782
SAFETY CLOSURE ASSEMBLY FOR CAPPING A DISPENSING CONTAINER

Rupert M. Starrett, Stratford, Conn., assignor to The Risdon Manufacturing Company, Naugatuck, Conn.

Filed Dec. 23, 1974, Ser. No. 535,963
Int. Cl.[2] B67D *5/32*
U.S. Cl. 222—402.11 **9 Claims**



1. A safety closure assembly for capping an end of a container equipped with dispensing means having an actuating stem projecting from that end of the container, and for operating the actuating stem to dispense product from the container, performance of two functions being a requisite to operation of the dispensing means, said closure assembly comprising:

a collar adapted to be non-rotatively mounted about the actuating stem of the container, said collar having a keying element;

cam means, also adapted to be non-rotatively mounted about the actuating stem and having at least one projecting cam lobe;

an overcap member for enclosing the actuating stem of the container and equipped with catch means in its interior, said cap having means for mounting it on the end of the container for rotation relative to said collar and cam means;

stem actuator means associated with said overcap member having a discharge orifice and a socket opening, adapted to receive the end of said actuator stem, interconnected to said discharge orifice, said actuator means also having a pressure pad and a keying element complementary to said collar element;

a locking member mounted in the interior of said overcap and biased to a normal locking position, said locking member having a cam follower operatively engaged by said cam means upon rotation of said overcap when installed on the container, and latch means to engage said catch means and retain the locking member against return to its normal biased position, said locking member normally assuming a position between said pressure pad and said collar when said latch means is disengaged from said catch means to limit depression of said stem actuator means;

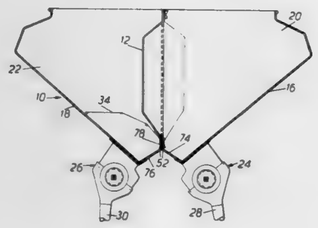
whereby rotation of said overcap member relative to said collar and cam means moves said locking member radially outwardly to retract said locking member from between said collar and said stop means and into engagement with said catch means, and whereby further rotation permits alignment of said keying elements to allow depression of said stem actuator means, said keying elements, except when thus aligned, cooperating to block depression of said stem actuator means relative to said overcap; and

reset means associated with said stem actuator means for disengaging said latch means from said catch means upon depression of said stem actuator means, allowing said locking member to return to blocking position between said actuator pressure pad and said collar.

3,924,783
REVERSIBLE HOPPER PARTITION FOR COMBINE DRILL

Frederick H. Ward, deceased, late of Coventry, England (by Dilys Annie Jane Ward, administratrix), assignor to Massey-Ferguson-Perkins Limited, London, England

Filed Nov. 8, 1972, Ser. No. 304,687
Claims priority, application United Kingdom, Nov. 18, 1971, 53712/71
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.[2] B65D *1/24*
U.S. Cl. 222—134 **4 Claims**



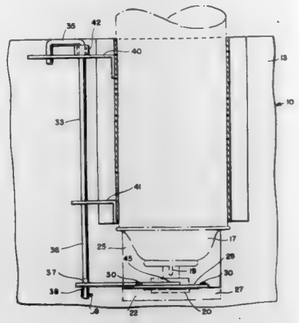
1. A combined seed and fertilizer drill hopper with at least one reversible partition wall for dividing the hopper into front and rear compartments characterized by the hopper including wall means forming an elongated trough, end walls and an open top, at least two rows of openings in the lower portion of said elongated trough, seed and fertilizer metering mechanisms each positioned to receive either seed or fertilizer from at least one of the openings in the lower portion of said elongated trough, a generally vertical elongated bottom flange attached to the wall means forming an elongated trough between rows of openings in the lower portion of said elongated trough, and at least two generally vertical end flanges extending inwardly from each end wall and lying substantially in a plane that is parallel to the long axis of the elongated trough and that contains the bottom flange; and the reversible partition wall for dividing the hopper into compartments including partition bottom flange means and two partition end flanges in substantially the same generally vertical plane parallel to the long axis of the reversible partition wall and a section of the partition wall between said flanges that is recessed to one side of the plane that is parallel to the long axis of the reversible partition wall and fastening means for holding the flanges on the reversible partition wall in engagement with the flanges in the hopper with the recessed portion of the partition wall extending into either the front or the rear compartment.

3,924,784
STRIPE-ADJUSTING APPARATUS FOR SPRAYING MACHINE

Thomas J. Smrt, 31W 300 W. Bartlett Road, Bartlett, Ill. 60103

Filed Feb. 14, 1975, Ser. No. 549,812
Int. Cl.[2] A01C *15/00*
U.S. Cl. 222—176 **8 Claims**

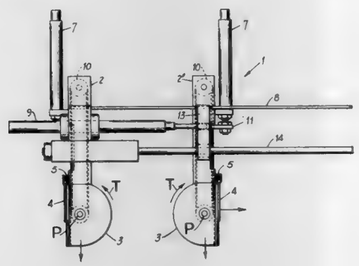
1. In an aerosol spraying machine equipped with an aerosol can containing material to be sprayed, the aerosol can including an actuating stem and a nozzle rotatably mounted on the actuating stem and having an elongated spraying orifice, the spraying machine including an actuating member slidably mounted on the spraying machine for movement in a direction generally perpendicular to the actuating stem, a stripe-adjusting apparatus for varying the width of a stripe of material sprayed by the aerosol can comprising a nozzle-engaging member mounted on the spraying machine for rotation about an axis extending generally parallel to the actuating stem, the nozzle-engaging member having means for engaging the nozzle for rotating the nozzle with the nozzle-engaging member as the nozzle-engaging member is rotated whereby the rectangular spraying orifice of the nozzle can be rotated about said axis.



3,924,785
HEM FORMING APPARATUS

George P. Diacont, Jr., and Vincent J. Serio, Jr., both of Richmond, Va., assignors to AMF Incorporated, White Plains, N.Y.

Filed Nov. 15, 1974, Ser. No. 524,175
Int. Cl.[2] A41H *43/00*
U.S. Cl. 223—2 **9 Claims**



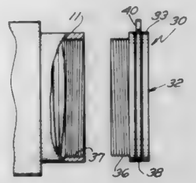
1. An apparatus for forming an overlay of material in the nature of a hem, upon a tubular section of material positioned in said apparatus, including: an apparatus super-structure; ways attached to said super-structure; a pair of parallel disposed arms mounted on said ways, each of said respective arms being provided with pivotally mounted sleeve members integrally formed therewith; material engagement means connected to each of said sleeves and spaced apart therefrom to form a clearance space therebetween for inserting said tubular material into such space; stop means provided on each of said arms for adjusting the length of said clearance space; and prime mover means connected to said arms for laterally moving said arms on said ways.

3,924,786
PHOTOGRAPHIC LENS SAFETY RING

Richard W. Duquette, 21 Rosewood Ave., Cranston, R.I. 02905

Filed Feb. 14, 1974, Ser. No. 442,440
Int. Cl.[2] A45F *5/02*
U.S. Cl. 224—5 V **2 Claims**

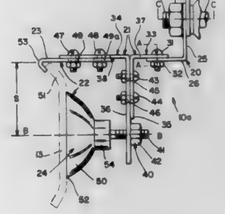
1. A photographic lens safety ring for interchangeable lenses having a female threaded section adjacent the objective thereof comprising a cylindrical member having an outer wall of stepped formation defining two diameter portions and an inner wall having two diameters, a band having an anchor means thereon, said band being received about the larger diameter portion of said outer wall, groove means defined on said portion for retaining the band on said outer wall portion for rotation thereabout in slidable relation therewith, a tether line attached to said anchor means and having its other end provided with means to attach to the body of the camera user, said outer wall having a threaded surface extending inwardly from the one edge of said member on the smaller diameter portion, the inner wall of said cylindrical member having a threaded surface extending inwardly from the other edge of the member in the larger diameter, said threaded surfaces being of the same mating size of pitch and diameter, whereby an accessory normally received in the threaded section of the lens of a camera is selectively received in the inner threaded portion of the safety ring while the outer threaded portion may inturn be received in the threaded section of the camera lens.



3,924,787
CARRIER BRACKET FOR ATTACHING A BICYCLE RELATIVE TO A MOTOR VEHICLE'S BUMPER

James Pershing Gothrup, 3809 14th Ave., Oakland, Calif. 94602

Filed Jan. 7, 1974, Ser. No. 431,206
Int. Cl.[2] B60R *9/10*
U.S. Cl. 224—42.03 B **9 Claims**



1. Carrier bracket means for connecting a wheeled bicycle relative to a motor vehicle's bumper but carryable—in to-to—in permanent relationship relative to said bicycle in a manner which does not unduly hinder normal cycling operations, comprising:

i. surmounting means fixedly attached to and offset from a wheel axle of said bicycle extending away from a central plane of reference through said wheel,

ii. offset linking means disconnectably attached to said surmounting means at a predetermined offset position remote with respect to said central plane of reference, said offset linking means having adjustable cooperative bumper engaging means thereon, said linking means and said bumper engaging means being capable of pivotal movement with respect to said surmounting means to a stowed position so as to not interfere and hinder normal cycling operations,

iii. said cooperative bumper engaging means including a suction cup attaching means and an upper bumper edge engaging bar means attached to said offset linking means

at other selected offset locations more remote with respect to said central plane of reference,

iv. said cooperative bumper engaging means being operative in response to components of force occurring during attachment of said cooperative bumper engaging means relative to said vehicle's bumper, to quickly affix said bicycle relative to said bumper,

v. offset lengths for and elevational spacing above a datum of said offset linking means and said cooperative bumper engaging means being sufficiently small so as not to interfere with said normal cycling operations of said bicycle.

3,924,788

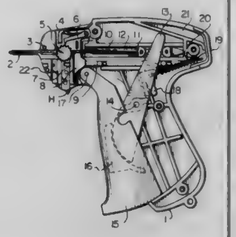
TAG ATTACHER

Akira Furutu, Tokyo, Japan, assignor to Japan Bono'k Co., Ltd., Tokyo, Japan

Filed June 7, 1974, Ser. No. 477,421

Int. Cl.² B25C *1/00*

U.S. Cl. 227—67 **4 Claims**



1. Apparatus for attaching tags using one piece plastic fasteners, each fastener including a bar section and a head section joined by a filament section, said apparatus comprising a body, a needle which is mounted on the end of said body, a driving rod for pushing the bar section of said fastener in a bore in the center of the needle, a second lever operably connected to said driving rod for pushing said driving rod into said bore, a first lever operably connected to said second lever for driving said second lever, a gear for feeding the fasteners one by one to said needle, a sliding rod positioned in parallel with said driving rod said sliding rod being engaged by said second lever and moved thereby at the end of movement of said second lever, moving means for moving in a direction crossing said sliding rod, a pawl on said moving means, said pawl meshing with said gear to rotate said gear, a cam means for transferring movement of said sliding rod to said moving means and a stopper means for allowing said gear to rotate in only one direction, said stopper means including a tooth for meshing with said gear.

3,924,789

ELECTRIC FASTENER DRIVING TOOL

Hazelton H. Avery, Aurora, and Salvatore Morabito, Northlake, both of Ill., assignors to Duo-Fast Corporation, Franklin Park, Ill.

Filed June 7, 1973, Ser. No. 367,812

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B25C *1/06*

U.S. Cl. 227—131 **11 Claims**

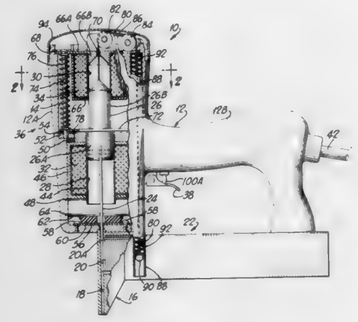
1. An electric tool for driving fasteners into a workpiece using an electric potential comprising

a housing with a nosepiece structure defining a drive track, a magazine assembly for feeding successive fasteners into the drive track at a given position therein,

fastener driving means including a driver movable in the drive track and an armature for actuating the driver, said driver normally occupying at least a portion of said given position in the drive track to prevent a fastener from entering the drive track,

resilient operating means coupled to the fastener driving means for imparting movement to the driver by resilient force,

winding means magnetically coupled to said armature for stressing the resilient operating means,



and a control circuit coupled to the winding means and energized by the potential for energizing the winding means for a period of time to stress the resilient operating means and then deenergizing the winding means to release the resilient operating means and to momentarily withdraw the driver from said given position in the drive track so that the magazine assembly can feed a fastener into the drive track beneath the driver.

3,924,790

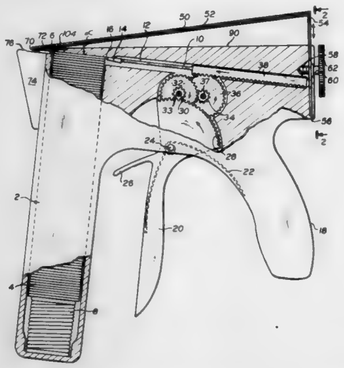
STAPLE GUN

Wolfgang W. Moeller, 4 Glen Cove Drive, Glen Head, N.Y. 11545

Filed July 12, 1974, Ser. No. 488,136

Int. Cl.² B25C *7/00*

U.S. Cl. 227—148 **4 Claims**



1. A hand held and actuated apparatus for propelling a fastening means into a generally flat workpiece which comprises a stationary palm member and a spring-biased finger grip, said finger grip connected to an arcuate rack, said arcuate rack connected through a geared transmission to a longitudinally running staple driver having a lip, said staple driver being received in a guide track in a staple driver housing, said apparatus having a magazine having an exit in alignment with said lip of said staple driver, means within said magazine for feeding fastening means into said guide track in alignment with said lip, said staple driver housing having pivotally connected thereto proximite the end of said guide track a generally planar member which extends generally over said staple driver housing and is height regulatably fastened thereto, said planar member inclined at an angle of less than 90° to said staple driver housing, such that when the upper surface of said planar member is flush against a generally flat workpiece, said staple driver housing and said staple driver are inclined to said workpiece at an angle of less than 90° whereby actuation of said finger grip when said planar member abuts a workpiece causes said staple driver to move forward into engagement with said fastening means in said guide track and to urge said fastening means into said workpiece at an angle of less than 90°.

3,924,791

METHOD OF MAKING A DIAL FOR A WRIST WATCH

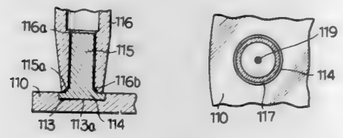
Noriaki Shimizu, 521 - 5, Imafuku, Ohaza, Kawagoe, Saitama, Japan

Division of Ser. No. 326,023, Jan. 23, 1973, Pat. No. 3,803,832. This application Dec. 27, 1973, Ser. No. 412,290

Claims priority, application Japan, Feb. 1, 1972, 47-11541

Int. Cl.² B23K *19/04*

U.S. Cl. 228—110 **1 Claim**



1. A method of making a dial structure for a wrist watch comprising in combination the following steps:

a. making a circular-shaped dial body formed of a flat plate of aluminum and having front and rear surfaces,

b. forming a plurality of circular recesses on the rear surface of said dial body adjacent the periphery thereof,

c. forming each of said recesses so that the bottom surface continuously tapers from an elevated medial section to the periphery thereof,

d. providing a plurality of circular rivet like pin members wherein each of said pin members is formed of an aluminum material and has elongated stem and flat head portions, each stem portion being integrally joined to its respective flat head portion and adapted to engage with a time keeping mechanism, each of said stem portions having an enlarged neck portion at the joint of said stem portion and said flat head portion,

e. positioning said flat head portion of each of said pin members in a perpendicular manner with said elevated medial section of each of said inner surfaces of said recesses, respectively, of said dial body, and

f. ultrasonically welding to integrally join said flat head portions with said elevated medial sections, respectively, to form a circumferential weld portion and a central weld portion.

3,924,792

METHOD OF MANUFACTURING A VACUUM-TIGHT ELECTRIC LEADTHROUGH IN AN ELECTRIC DISCHARGE TUBE

Gerardus Arnoldus Herman Maria Vrijssen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, N.Y., N.Y.

Division of Ser. No. 308,767, Nov. 22, 1972, Pat. No. 3,865,970. This application Oct. 17, 1974, Ser. No. 515,702

Claims priority, application Netherlands, Dec. 7, 1971, 7116765

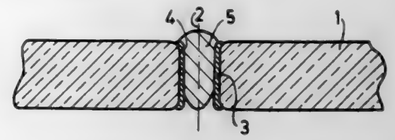
Int. Cl.² B23K *31/02*

U.S. Cl. 228—118 **9 Claims**

1. A method of manufacturing a vacuum-tight electric leadthrough in an electric discharge tube comprising a hole in the tube envelope at the area of the leadthrough, comprising the steps of:

a. covering the wall of the hole with a thin layer of metal,

b. providing in said hole a plug consisting essentially of one of indium and an indium alloy,



c. degassing the assembly in a vacuum and at elevated temperature,

d. dissolving the metal layer in the material of said plug, and, then,

e. cooling said material, whereby said material rigidly adheres to the wall of the hole.

3,924,793

FORMING METALS

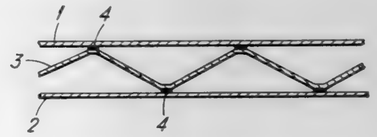
Leo Ewart Arthur Summers, and David Sidney Underhill, both of Bristol, England, assignors to British Aircraft Corporation Limited, London, England

Filed July 22, 1974, Ser. No. 490,887

Claims priority, application United Kingdom, July 24, 1973, 35293/73

Int. Cl.² B23K *31/00*; **B21D** *47/00*

U.S. Cl. 228—157 **7 Claims**



1. A method of forming a stiffened panel including the steps of positioning a metal face sheet on each side of an interior sheet of a metallic alloy having superplastic characteristics, attaching spaced regions of the said interior sheet alternately to the face sheet on one side and to the face sheet on the other side of the interior sheet, sealing the said face sheets one to the other to form an inflatable envelope assembly, bringing the assembly to within that temperature range at which the interior sheet exhibits superplastic characteristics, and applying a differential pressure between the interior and the exterior of the envelope assembly thus causing the face sheets to move apart and draw the attached regions of the interior sheet with them so that the said interior sheet finally extends from one face to the other in alternate sequence.

3,924,794

SOLDER LEVELING PROCESS

Travis A. Allen, and Robert T. Sylvester, both of Albuquergue, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

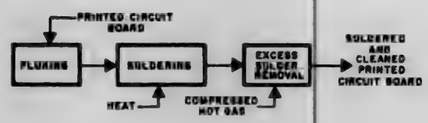
Division of Ser. No. 388,305, Aug. 14, 1973, Pat. No. 3,865,298. This application Dec. 2, 1974, Ser. No. 528,975

Int. Cl.² H05K *3/22*, *3/34*

U.S. Cl. 228—256 **3 Claims**

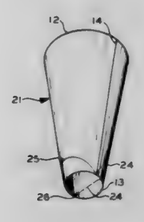
1. A process for removing excess solder from areas and through-holes of a printed circuit board containing conductive areas and through-holes of diameter as small as 0.020 inch between opposite sides of the board comprising, fluxing both sides of said board, contacting both sides of said fluxed board with molten solder, heating a gas to a temperature of from about 375°F to about 600°F, forming said gas into a pair of elongated jets of width from about 0.016 to about 0.020 inch,

while so heated and of such width directing said jets from a distance of about 0.065 to 0.070 inch toward an intermediate board movement path for impingement against opposite sides of said board at pressure of from about 20 to about 80 pounds



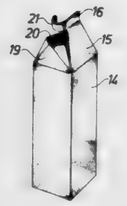
per square inch with said jets impinging on opposite board areas out of registry with each other, subsequent to said impinging deflecting the impinging gas away from said contacting molten solder, and elevating said board through said movement path and impinging jets.

3,924,795
FRUSTOCONICAL CONTAINER AND BLANK THEREFOR
Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed June 12, 1974, Ser. No. 478,537
Int. Cl.² B65D *3/06*
U.S. Cl. 229—4.5 **12 Claims**



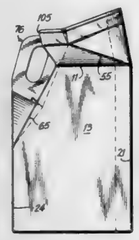
1. A blank for forming a generally frustoconical container, said blank having a top edge, a bottom edge opposite said top edge, and first and second opposite side edges; said first side edge extending at least substantially along a first radial ray of a first circle having a radius greater than the length of either of said first and second side edges; said second side edge extending at least substantially along a second radial ray of said first circle; said top edge at least generally corresponding to an arc of said first circle; said bottom edge at least generally corresponding to an arc of a second circle; at least one of said first and second side edges having a marginal portion extending along the length thereof lying outside the respective one of the first and second radial rays to provide a seam margin along the one of said side edges for overlapping and bonding to the margin along the other of said side edges in the formation of said blank into a preform having a generally frustoconical configuration with generally circular openings at the top and bottom ends thereof; at least one arcuate score line being formed in said blank along one of the top margin and the bottom margin thereof, each said arcuate score line diverging outwardly to the adjacent edge to form an enfoldable panel which can be folded inwardly along the respective arcuate score line to thereby at least substantially close one of said generally circular openings of said preform.

3,924,796
PACKAGING CONTAINERS
Gad Anders Rausing, Lund; Sven Olof Soren Stark, Rydsgard, and Sven Gosta Uno Sevrell, Lund, all of Sweden, assignors to Tetra Pak Developpement SA, Lausanne, Switzerland
Filed June 27, 1972, Ser. No. 266,721
Claims priority, application Sweden, July 8, 1971, 8821/71
Int. Cl.² B65D *5/74*
U.S. Cl. 229—17 G **3 Claims**



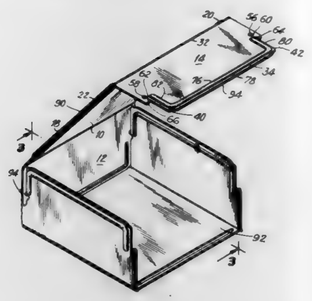
1. In a packaging container formed from a flat blank of a polystyrene foam packaging material having at least one layer of at least one homogeneous thermoplastic material thereon, the container having, at the top thereof, a sealing fin extending upwardly from the top of the package and transversely thereacross, said fin being formed by heat sealing together two sections of the blank, the improvement wherein the at least one layer of at least one homogeneous thermoplastic material on the sections forming the fin are molecularly oriented only in the longitudinal direction of the sealing fin across the top of the container, to facilitate tearing said fin to open the container.

3,924,797
PAPERBOARD CARTON
Warren R. Furbeck, Knoxville, Tenn., assignor to International Paper Company, New York, N.Y.
Filed Dec. 14, 1973, Ser. No. 424,713
Int. Cl.² B65D *5/72*
U.S. Cl. 229—17 G **28 Claims**



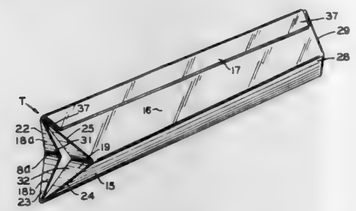
1. In combination with a paperboard gable top container having a gable ridge, said container including foldably connected vertical front, back and side walls and front and back pairs of gusset panels, the improvement which comprises:
- a. a first pair of non-vertical panels foldably connected to said back wall;
- b. a second pair of non-vertical panels, each foldably connected to a respective one of
  - i. said side walls,
  - ii. said first pair of non-vertical panels, and
  - iii. said back pair of gusset panels; and
- c. a handle, foldably connected to said second pair of non-vertical panels.

3,924,798
RELATIVELY FLAT BLANK FOR A CONTAINER AND THE CONTAINER MADE THEREFROM
Saul Saveth, 132-29 33rd Ave., Flushing, N.Y. 11354
Filed Nov. 22, 1974, Ser. No. 526,371
Int. Cl.² B65D *11/10, 11/22*
U.S. Cl. 229—23 AB **15 Claims**



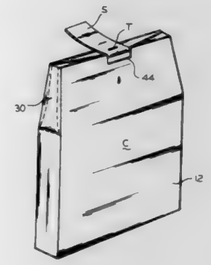
1. A collapsible container comprising first and second separate sections each including hingeably connected, generally quadrilateral central and wing sectors with the wing sectors being connected on opposite sides of the central sector so that each central sector has two opposite free edge sides and two further sides connected to the associated wing sectors, the sectors of the first section corresponding at least substantially in size and shape to the sectors of the second section, the sections each being foldable into a U-shape and being interengageable with each other to form a parallelepiped structure enclosing a chamber, each wing sector having a side connected to the associated central sector and an opposite parallel free side, each wing sector further having two lateral sides extending between the first two said sides thereof, and hook-shaped members on the lateral sides of said wing sectors of each section for locking the wing sectors together, each central sector being provided with grooves extending along and adjacent the free sides thereof for receiving and accommodating the free sides of the wing sectors of the other section, each wing sector being provided with a channel extending along the free and lateral sides thereof and at least in part providing for strengthening the associated wing sector.

3,924,799
CORRUGATED LAMP BULB WRAPPER
Achim R. Lorenz, Olmsted Township, Ohio, assignor to MacMillan Bloedel Containers, Inc., Cleveland, Ohio
Filed May 23, 1974, Ser. No. 472,655
Int. Cl.² B65D *85/42*
U.S. Cl. 229—39 B **8 Claims**



1. A flattened collapsed tube of generally rectangular shape for packaging lamp bulbs formed from a blank comprising a unitary generally rectangular single-faced corrugated sheet having longitudinal corrugations and four regularly spaced parallel transverse crease lines extending across the sheet and dividing the sheet into a glue panel and first, second, third and fourth side wall panels, said glue panel extending from the first side wall panel and adapted to be overlapped at the fourth side wall panel, the glue panel being connected to said first side wall panel along the first of said transverse crease lines, the first and second side wall panels being connected along the second transverse crease line, and the third and fourth side wall panels being connected along the fourth transverse crease line, and eight inclined longitudinal perforated score lines at the opposite ends of said side wall panels which extend between the transverse crease lines at opposite sides of that panel to define triangular flap portions, said score lines being inclined at an angle (C) of from about 50 to about 70 degrees with respect to said transverse crease lines and located so that the wide portions of said triangular flap portions are located at said second and fourth transverse crease lines, said flattened tube being folded only at said last-named crease lines with the first side panel overlying the second side panel, the glue panel adhered to the fourth side panel, and said last-named panel overlying the third side panel.

3,924,800
PILFER RESISTANT PACKAGE
John D. Desmond, Geneva, Ill., and Joseph J. Hart, Philadelphia, Pa., assignors to Container Corporation of America, Chicago, Ill.
Filed Nov. 8, 1974, Ser. No. 522,021
Int. Cl.² B65D *5/10, 45/00, 33/26*
U.S. Cl. 229—39 R **6 Claims**

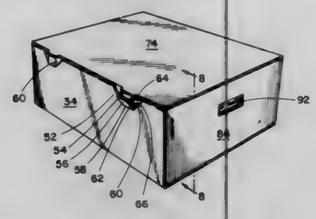


1. In a collapsible, retail package formed from a unitary blank of foldable paperboard, the combination of:
- a. opposed pairs of front and rear side walls and end walls hingedly interconnected to form a tubular structure open at the top and bottom;
- b. at least one bottom closure flap hingedly attached to the lower edge of one of said walls and secured in position to close the bottom of the tubular structure;
- c. top closure means for closing the top of the tubular structure after it has been filled, including:
  - i. a horizontal inner closure flap hinged to an upper edge of one of said side walls and adapted to be folded over the top of said tubular structure;
  - ii. a horizontal outer closure flap hinged to an upper edge of the other of said side walls and adapted to be folded over said inner closure flap in face to face engagement therewith and including a locking tab extending therefrom;
- d. said side walls presenting finger receiving openings adjacent the upper edges thereof;
- e. said one side wall opening being aligned with said locking tab for receipt thereof;
- f. at least one of said openings being located immediately below the upper edge of its respective side wall for receiving a portion of a stapling device to permit a proof of purchase document to be stapled to the overlapped outer and inner closure flaps and said locking tab and thereby render the package tamper resistant.

3,924,801
CARTON FOR REFRIGERATED CONSUMABLE PRODUCTS

James H. Partain, Norcross, Ga., assignor to Stone Container Corporation, Chicago, Ill.

Filed July 11, 1974, Ser. No. 487,625
Int. Cl.[2] B65D 5/02
U.S. Cl. 229—39 R 12 Claims

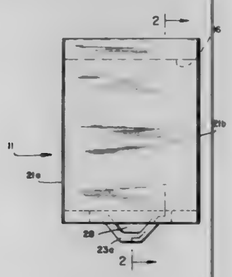


1. A paperboard carton formed from a unitary blank including:
   a. an upwardly opening tray having a closure wall hingedly connected along the edge of a first wall of the tray,
   b. said closure wall having at least one locking tab depending from a free edge thereof,
   c. said tray having a second wall transverse to said closure wall and arranged to be releasably locked therewith for closing the carton,
   said second wall having at least one locking finger integral therewith having a first portion pivotally attached thereto which is movable to a position flush with said second wall and a second portion extending transverse to said first portion into the interior of carton and adapted to cooperably engage said locking tab for releasably locking the carton in a closed condition,
   said second wall having integral hinged flaps adjacent said first portion arranged to be pivoted to a position exposing said locking finger sufficiently to permit same to be manually gripped when flush with the second wall, thereby enabling said finger to be moved relative to the tab for locking and unlocking the closure and second walls one relative to the other.

3,924,802
PLASTIC BAG WITH HANDLES

William Gaffney, Bronx, N.Y., assignor to Charlotte Mintz, New York, N.Y.

Division of Ser. No. 308,293, Nov. 20, 1972, Pat. No. 3,865,018. This application Aug. 2, 1974, Ser. No. 494,203
Int. Cl.[2] B65D 33/10
U.S. Cl. 229—54 R 3 Claims

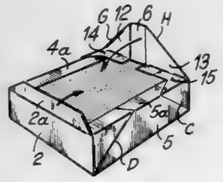


1. A bag comprising a bag body of thermoplastic sheet material, having first and second superimposed walls, said walls being connected at their lower edges to form a closed bottom and at their sides, said bag body being open at its other end to form a mouth, and a pair of handles of thermoplastic sheet material each consisting of aligned outwardly projecting end portions, portions extending from the inner ends of said end portions converging beyond said bag body and a central portion parallel to said end portions interconnecting the outer ends of said converging portions, said portions of each handle lying in a common plane, said end portions of said handles being fused to said walls, respectively, and located between said walls, said central portions of said handles being spaced from said mouth to provide hand holes for said handles, said handles having parallel inner and outer edges across the full length of said handles and having the same widths throughout when measured in a direction from the bottom to the mouth of the bag body so that said handles can be cut from a web without waste.

3,924,803
EASY-OPENING PACKAGING FOR MELTED OR SEMI-IQUID SUBSTANCES

Dominic de Habsburg, Berndorf, Austria, assignor to Samos, France

Continuation-in-part of Ser. No. 262,258, June 13, 1972, abandoned. This application Apr. 24, 1974, Ser. No. 463,733
Claims priority, application France, June 14, 1971, 71.21442
Int. Cl.[2] B65D 45/06
U.S. Cl. 229—87 F 4 Claims

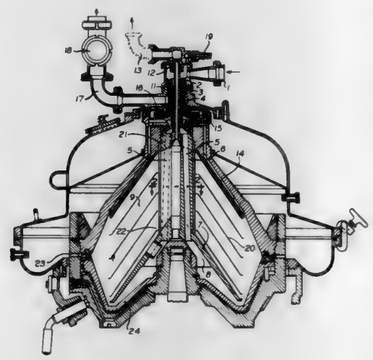


1. A container, for meltable or semi-liquid substances, comprising, in combination, a first sheet of flexible material having only one surface which is weldable to similar material; said surface facing the interior of said container said first sheet defining, through rectilinear fold lines, a polygonal container bottom and container sides extending perpendicularly upwardly from said bottom at the fold lines defining said bottom; said container sides having rectilinear fold lines in spaced parallel relation to said bottom and defining respective edge flaps at their upper edges, a second sheet of flexible material having only one surface which is weldable to similar material, said surface facing outwardly of said container said second sheet being congruent with said bottom and positioned on top of a substance filled into said container to the level of the fold lines defining said edge flaps; one of said edge flaps being wider than the other edge flaps and being folded on itself to form triangular double thickness end portions separated by a single thickness rectangular portion whereby said one edge flap is trapezoidal; the contacting surfaces of said double thickness end portions being welded only to each other; said other edge flaps being folded against and welded to said second sheet and said one edge flap being folded over said second sheet with only said single thickness rectangular portion welded thereto; said one edge flap constituting a pull tab, reinforced by said double thickness end portions not welded to said second sheet for tearing away at least the major portion of the side wall having said one edge flap and at least the major portion of said bottom to expose the filled-in substance.

3,924,804
CENTRIFUGE FOR THE SEPARATION OF MIXTURES OF LIQUIDS

Heinrich Niemeyer, Oelde, Germany, assignor to Wesfalia Separator AG, Oelde Westfalen, Germany

Filed Dec. 6, 1973, Ser. No. 422,467
Claims priority, application Germany, Dec. 12, 1972, 2260617
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.[2] B04B 11/06
U.S. Cl. 233—19 A 5 Claims

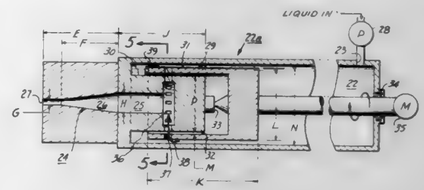


1. A centrifugal separator for separating a liquid raw material into a specifically lighter component and a specifically heavier component, comprising:
   a. a rotatably mounted separator drum providing a separating chamber for the separation and having a distributor coaxially mounted therein for rotation with the drum for receiving material to be separated in the upper part of the drum and conveying it downwardly adjacent the drum axis and directly it radially outwardly adjacent the bottom of the drum,
   b. the distributor comprising a plurality of axially extending ribs disposed adjacent and radially outwardly of the axis of the drum in circumferentially spaced relation, the ribs having passages therein for conveying of raw material to the lower part of the drum, the spaces between the ribs providing free communication between the separating chamber and an axially extending center portion of the drum for passage of specifically lighter component to said center portion of the drum,
   c. an inlet tube mounted on the distributor for rotation therewith for conveying raw material downwardly into the drum to said passages of the ribs, and a stationary inlet connector for delivering of raw material to the upper end of the inlet tube, and a hermetic seal between the inlet tube and stationary inlet connector,
   d. an outlet tube for specifically lighter component mounted on the distributor for rotation therewith for conveying specifically lighter component upwardly from the said center portion of the drum, said outlet tube being disposed within said inlet tube, and a stationary outlet connector for receiving specifically ligher component from the outlet tube, and an hermetic seal between the outlet tube and stationary outlet connector,
   e. a paring chamber and paring disc for removal of specifically heavier component, means communicating the paring chamber with the outer portion of the drum for receiving specifically heavier component therefrom, a discharge line communicating with the paring disc, and a throttle in said discharge line.

3,924,805
METHOD AND APPARATUS FOR PRODUCING AND UTILIZING PERCUSSIVE LIQUID JETS

Eugene B. Nebeker, Los Angeles, and Sergio E. Rodriguez, Woodland Hills, both of Calif., assignors to Scientific Associates, Inc., Santa Monica, Calif.

Filed Oct. 29, 1974, Ser. No. 518,606
Int. Cl.[2] B05B 1/08, 17/00; B44D 1/08
U.S. Cl. 239—1 5 Claims

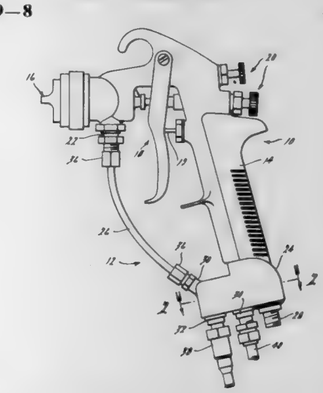


1. A method for creating a percussive liquid jet from a continuous jet discharge consisting of producing a relatively small cyclic variation of the discharge velocity about its time average, whereby the free jet is given a lengthwise variation in forward velocity compelling the free jet to become a bunched stream with a change in lateral diameter occurring periodically along the length of the stream.

3,924,806
MIXING MANIFOLD FOR AIR ATOMIZING SPRAY APPARATUS

Duane C. Schowiak, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 20, 1974, Ser. No. 525,596
Int. Cl.[2] B05B 7/04
U.S. Cl. 239—8 4 Claims



1. A method of operating an air atomizing spray apparatus for spraying a multiple component sprayable fluid coating from an air atomizing spray apparatus wherein the components begin to coreact upon mixing to form a cross-linked coating and wherein the air atomizing spray apparatus is provided with an air passage having an inlet port communicating with a source of pressurized air and terminating in a spray nozzle and a sprayable fluid inlet passage communicating with the air passage intermediate the spray nozzle and the inlet port comprising the steps of:
   establishing a flow of atomizing air through said air passage;
   causing each of the fluid components to flow, separately, to a fluid introduction manifold;
   introducing the components, while flowing, into a unitary fluid flow passage;
   flowing the fluid components through a static mixer wherein the fluid components will become intimately intermixed; and

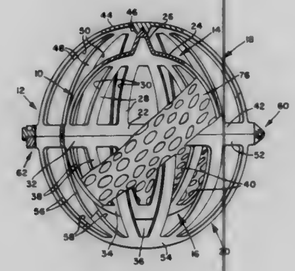
introducing said intimately intermixed fluid components into the sprayable inlet passage of the spray apparatus.

3,924,807

HUMIDITY ALTERING DEVICE

Leonora Elizabeth Nash Morgan, 3700 - 14th St., Moline, Ill. 61265

Filed Nov. 1, 1974, Ser. No. 519,818
Int. Cl.² A24F 25/00; A61L 9/04
U.S. Cl. 239—55 **3 Claims**



1. A humidifying device comprising: a pair of similarly shaped, first and second, thin walled containers, the second container being smaller than and disposed centrally within the first container, the walls of said containers being disposed in spaced relation to define the inner and outer surfaces of a hollow air chamber, the walls of said containers having a plurality of apertures formed therein through which the interior of the second container and the exterior of the first container communicate with the air chamber; upper and lower connecting members extending through the air chambers and connecting the upper portions and lower portions, respectively, of the containers for maintaining said containers in spaced relation; and a moisture absorbent element contained within the second container and externally shaped to conform substantially with the interior thereof, the outer surface of the element being exposed to the air in the air chamber at the apertures formed in the wall of the second container.

3,924,808

SHOWER HEAD VIBRATOR

Howard H. Cooley, Jr., 11685 Gorham Ave., Los Angeles, Calif. 93534

Filed Dec. 17, 1973, Ser. No. 425,210
Int. Cl.² B05B 3/16; A61H 9/00
U.S. Cl. 239—102 **5 Claims**

1. A shower head vibrator for vibrating the spray of water from a shower head to provide a massaging effect, said vibrator comprising:

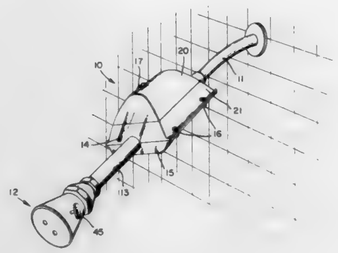
a. a section of flexible tubing for connection between a water pipe and a shower head,

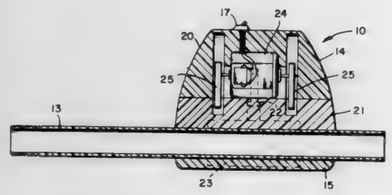
b. a housing mounted to the exterior of said flexible tubing,

c. an electric motor disposed within said housing and having a shaft,

d. two circular weights disposed within said housing and eccentrically mounted to said shaft, and

e. battery means disposed within said housing for energizing said motor, thereby causing said shaft to rotate, whereby





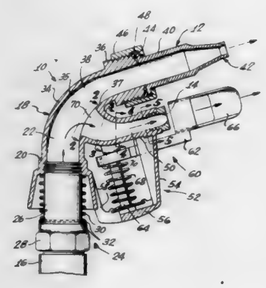
said eccentrically mounted weights cause said flexible tubing to vibrate.

3,924,809

CONSTRUCTION FOR REDUCING VORTEX SWIRL IN ROTARY WATER SPRINKLERS

Edward M. Troup, Glendora, Calif., assignor to Rain Bird Sprinkler, Mfg. Corporation, Glendora, Calif.

Filed July 3, 1974, Ser. No. 485,504
Int. Cl.² B05B 3/08
U.S. Cl. 239—230 **10 Claims**



1. In a rotary water sprinkler of the type including a body having a lower portion defining an inlet water passage for receiving water from a supply pipe, a curved central portion extending upwardly and laterally from the lower portion and within which is a curved central flow passage defined by a rear wall having an outer radius of curvature and a forward wall having an inner radius of curvature, and an upper portion extending from the central portion, a range nozzle attached to the upper portion of the body for ejecting a stream of water over a relatively long distance, and a spreader nozzle attached to the central portion of the body for ejecting a stream of water over a shorter distance, the improvement comprising:

forming said central flow passage as a uniformly and upwardly converging passageway of substantially circular cross section whereby water flowing through said passage is accelerated in the longitudinal direction of flow; and

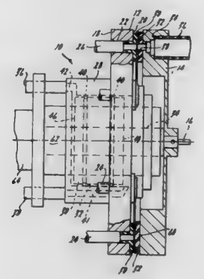
providing a bleed opening through said forward wall below said range nozzle and positioned to bleed swirling water particles from the flow through said central flow passage and to channel said swirling water particles to said spreader nozzle whereby the amount of swirling water in the stream ejected through said range nozzle is substantially reduced.

3,924,810

SPRAYABLE MATERIAL CHANGER APPARATUS

Charles H. Otterstetter, Southgate, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 4, 1974, Ser. No. 520,759
Int. Cl.² A62C 31/00
U.S. Cl. 239—305 **5 Claims**



1. Apparatus for communicating a powder spray gun with a plurality of fluidized powder sources while avoiding cross contamination of powders comprising in combination:

a stationary plate member having a powder side and a sealing side, a plurality of powder passages and at least one flushing passage, said passages extending through said plate from the powder side to the sealing side;

hose means coupled to said powder passages on the powder side of said plate for fluid-tight communication of said powder passages with the plurality of powder sources;

further hose means coupled to said at least one flushing passage on the powder side of said plate;

means coupled to said further hose means for flowing a flushing medium therethrough;

plate valve means supported in closely spaced relation to said stationary plate member and having a flow passage means extending through said plate valve means and aligned for fluid communcation with said powder passage and said at least one flushing passage;

hose means coupled to said flow passage means for communicating said flow passage means with the spray gun;

means connected to said valve plate means for varying the spatial relation between said valve plate means and said stationary plate member;

indexing means operative to align said flow passage with a selected one of said powder and flushing passages;

seal means interposed between said stationary plate member and said valve plate means operative to provide sealed communication between said flow passage and said selected one of said powder and flushing passages;

said plate valve means comprising a plate member mounted for rotation about an axis, said rotation axis being arranged to extend through the stationary plate member, and said spatial relation varying means comprise cylinder means interconnecting said stationary plate member and said plate valve means actuable to increase the spatial relation to a first predetermined amount and to decrease the spatial relation to a second predetermined amount; and

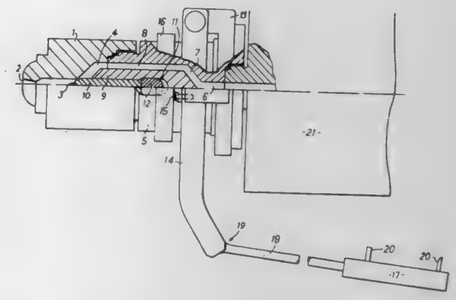
said indexing means comprising step motor means operative when the spatial relation between the stationary plate member and the valve plate means is at the first predetermined amount to rotate said valve plate means about said axis until said flow passages is aligned with the selected one of the powder and flushing passages and to actuate said piston means to establish a spatial relation of the second predetermined amount.

3,924,811

SHUT-OFF VALVES FOR THE NOZZLES OF INJECTION MOULDING MACHINES

Graham Lynex, Pelsall, and Harold Tranter, Aldridge, both of England, assignors to British Industrial Plastics Limited, Manchester, England

Filed Dec. 6, 1974, Ser. No. 530,488
Int. Cl.² B29F 1/03; B05B 1/30
U.S. Cl. 239—533 **1 Claim**



1. A nozzle device for an injection moulding machine, comprizing a nozzle portion and a valve body portion, a bore being defined in the nozzle and a throat being defined in the bore, a flow distributor being formed in the valve body portion to define therewith at least one passageway communicating with the bore, a valve member carried in the flow distributor and freely slidable axially relative thereto to open and close the throat, a transverse opening in the flow distributor, a key in the opening co-operating with the valve member, an axially slidable collar on the valve body portion co-operable with the key, a thrust assembly mounted on the valve body portion, and a fluid pressure-operable device mountable on an injection moulding machine and arranged and adapted to co-operate with the thrust assembly so that the fluid pressure device is operable to effect movement of the valve member to close the throat, and wherein the valve member has a downstream end profiled so that when moulding material is pressurized in the passageway of the valve body, a component of the pressure force acts in an axial direction with respect to the valve member to tend to move same to open the throat.

3,924,812

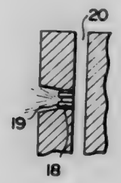
APPARATUS FOR SUPPORTING AND GUIDING SLAB IN THE SECONDARY COOLING ZONE OF CONTINUOUS CASTING MACHINE

Minoru Miura, Minoo; Morio Kawasaki, Nishinomiya; Kantaro Sasaki, Ashiya; Yasuo Sugitani, Takarazuka, and Susumu Ishimura, Nishinomiya, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Oct. 2, 1974, Ser. No. 511,268
Claims priority, application Japan, Oct. 4, 1973, 48-111037; Nov. 12, 1973, 48-126342
Int. Cl.² B05B 1/14
U.S. Cl. 239—550 **3 Claims**

1. An apparatus for supporting and guiding a slab in at least part of the secondary cooling zone of a continuous casting machine, which comprises at least one pair of stationary roller support structures each having a surface spaced a constant distance from a corresponding surface of the slab being withdrawn, and rollers carried by said roller support structure and adapted to roll over an endless surface of said roller support

structure with the descent of the slab, said rollers being adapted to proceed along the gap between the associated roller support structure and the slab, each said roller having a diameter equal to the relevant dimension of said gap, each said roller support structure having a number of cooling water



spraying means, a cooling water supply duct extending within it and branch ducts connecting said respective spraying means and said cooling water supply duct, each said spraying means having its tip disposed on the inner side of the working surface of said roller support structure.

3,924,813

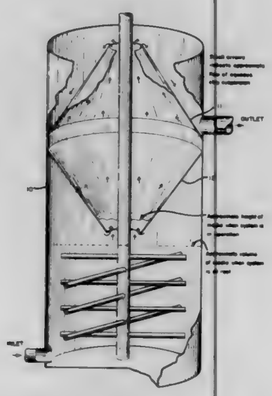
METHOD AND APPARATUS FOR CLAY BENEFICIATING

John H. Chapman, Sandersville; Randolph O. Smith, Gordon, and Verlon E. Josey, Sandersville, all of Ga., assignors to Yara Engineering Corporation, Elizabeth, N.J.

Filed Nov. 11, 1974, Ser. No. 522,523

Int. Cl.² B02C *17/16*

U.S. Cl. 241—4 **7 Claims**



1. A method of clay beneficiating comprising the steps of:
a. forming a aqueous slurry of clay to be beneficiated having a clay concentration of about 10% to 60% in the slurry;
b. passing said clay slurry through a media grinder operating at a speed in the range of 200 rpm to 800 rmp and having therein a finely divided, relatively dense grinding media having a particle size in the range 325 mesh to 40 mesh;
c. maintaining a relative ratio of clay in said slurry to grinding media in said media grinder in the range 1.5:1 to 1:1.5;
d. maintaining a level of slurry in said grinder sufficiently high so that the grinding media is retained in the grinder; and
e. recovering the ground clay from the grinder.

3,924,814

ARRANGEMENT IN GRINDING MILLS

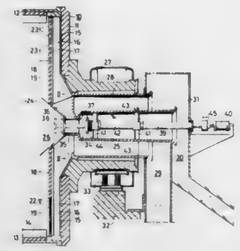
Per Anders Herman Henningsson Fahlström, Akers Runo, and Erik Alfon Jonsson, Boliden, both of Sweden, assignors to Boliden Aktiebolag, Sweden

Filed Aug. 23, 1974, Ser. No. 499,918

Claims priority, application Sweden, Feb. 27, 1974, 7402593

Int. Cl.² B02C *17/18*

U.S. Cl. 241—80 **7 Claims**



1. A device in a drum mill for continuous grinding and of the type including an essentially cylindrical casing and end walls, at the ends of said casing, one end wall being associated with outlet means for discharging from the grinding chamber of said mill a relatively finely ground material and a mixed material containing both relatively finely ground material and relatively coarse pieces of material, at least the outlet means for the mixed material including a number of outlet openings connecting the grinding chamber with at least one duct for carrying the mixed material discharged from the grinding chamber towards the centre of said one end wall, wherein said duct in the central region of said one end wall opens out into a discharge pipe which is associated with a two-way valve for conducting the mixed material arriving from said duct either back again to, or in a direction from the grinding chamber and which shields the outgoing flow of mixed material from the flow of relatively finely ground material discharged from the grinding chamber.

3,924,815

GYRATORY CRUSHER

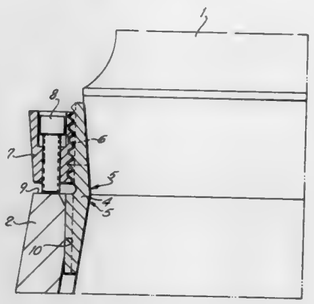
Erik Haggren, Morgardshammar, Sweden, assignor to Morgardshammar AB, Stockholm, Sweden

Filed Feb. 14, 1974, Ser. No. 442,585

Claims priority, application Sweden, Feb. 19, 1973, 7302292

Int. Cl.² B02C *2/06*

U.S. Cl. 241—209 **8 Claims**



1. In a gyratory crusher comprising a crusher shaft for performing eccentric or epicyclic movement in a vertical crusher space, a crusher member clamped on the crusher

shaft, and means including a stopnut for clamping said member on said shaft, the improvement wherein said stopnut is attached to a sleeve encircling said shaft, the inner surface of said sleeve defining substantially the shape of a truncated double cone with the inner surface of said sleeve tapering radially inwardly as the inner surface extends axially from the opposite ends of the sleeve, said sleeve being located on a portion of said crusher shaft having a double-cone shape corresponding to said shape defined by said inner surface and said sleeve having external threads for engaging the threads of said stopnut.

3,924,816

APPARATUS FOR FORMING WINDINGS ON ROTORS OF ELECTRIC MOTORS OR THE LIKE

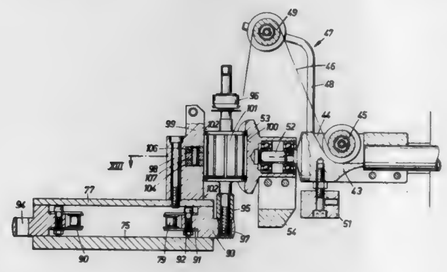
Klaus Schubert, Bottrop, and Klaus Grohmann, Dusseldorf, both of Germany, assignors to Robert Krups, Solingen-Wald, Germany

Continuation-in-part of Ser. No. 218,783, Jan. 18, 1972, abandoned. This application Apr. 10, 1974, Ser. No. 459,689

Claims priority, application Germany, Jan. 19, 1971, 2102354

Int. Cl.² H02K *15/09*

U.S. Cl. 242—7.05 B **38 Claims**



1. Apparatus for applying windings to rotors for use in electric motors or the like and having angularly spaced peripheral slots for reception of convolutions of wire-like conductors, comprising conveyor means having a plurality of rotor-receiving holder means operative for holding a plurality of rotors having random angular orientations, said holder means being arranged to travel stepwise along an endless path and drive means for said holder means; a plurality of winding stations adjacent to a portion of said path to accommodate an equal number of rotors during intervals between stepwise movements of said holder means, and including means for automatically changing the random angular orientations of rotors arriving at said winding stations to a predetermined angular orientation; sources of conductors for each of said stations; winding members provided at said stations and operable to apply conductors furnished by the respective sources to rotors at the corresponding stations; and means for simultaneously operating said winding members so that the number of simultaneously wound rotors equals the number of said stations.

3,924,817

APPARATUS FOR PACKAGING LINEAR MATERIAL

Alex P. Symborski, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toldeo, Ohio

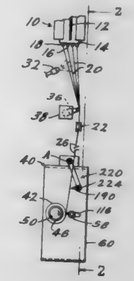
Filed Dec. 3, 1973, Ser. No. 421,362

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B65H *54/02*

U.S. Cl. 242—18 G **18 Claims**

1. Apparatus for packaging linear material comprising:
a rotatable collector upon which linear material is wound in a zone as a package;
means for rotating the collector; and
means effective to move the linear material between the package formation zone along the collector and a temporary winding zone, such means including a movably mounted member having a slot open at one end, the slot being oriented so that its lengthwise dimension extends in a direction transversley of the axis of rotation of the collector with the open end thereof facing towards the collector, the member providing a pair of spaced apart opposing guide surfaces for facilitating movement of the linear material into the slot, such guide surfaces diverging from the open end of the slot to form a tapered guide



space open at its larger end for introduction of the linear material, the guide space communicating at its smaller end with the slot, means for moving the member at the beginning of package build along a path effective to move linear material in the slot from collection at the temporary winding zone into the package formation zone and for moving the member laterally of the axis of rotation away from the collector to disengage the linear material from the slot during package formation member at the end of package formation laterally of the axis of rotation towards the collector to engage the linear material in the slot and for moving the member along a path effective to move such material in the slot out of the package formation zone.

3,924,818

THREAD STORAGE DEVICE

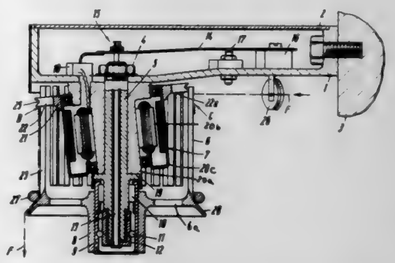
Dieter Pfeifle, Plattenhardt, Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed Feb. 19, 1974, Ser. No. 443,832

Claims priority, application Germany, Feb. 20, 1973, 2308203; Oct. 11, 1973, 2350979

Int. Cl.² B65H *51/22*

U.S. Cl. 242—47.05 **27 Claims**



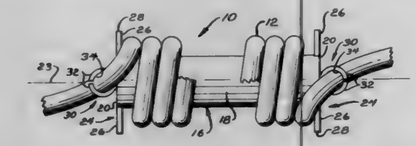
3. Apparatus for the intermediate accumulation of thread being delivered from a supply thereof to a processing station comprising a disc rotatable about its central axis having a

peripheral edge for receiving thread from said supply, a cylindrical storage member rotatable about its central axis having a peripheral surface on which said thread is wound, said disc being arranged adjacent one edge of said storage member, having its axis of rotation inclined to and laterally offset from the axis of rotation of said storage member and its peripheral edge extending radially beyond at least a portion of the peripheral surface of said storage member, means for conjointly rotating said disc and said storage member, said peripheral edge having a lateral face adapted to urge said thread to wind about the peripheral surface of said storage member into a coil and to urge said coil to move axially along the peripheral surface of said storage member to the upper end of said member for withdrawal to said processing station.

3,924,819
ELECTRICAL UTILITY CORD STORAGE AND SHORTENING DEVICE

Edward F. Lapinskas, 4315 S. Harlem Ave., Stickney, Ill. 60402

Filed June 11, 1974, Ser. No. 478,218
Int. Cl.² B65H *75/36*
U.S. Cl. 242—85.1 **4 Claims**



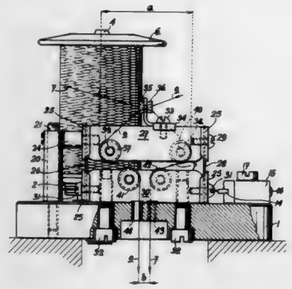
1. A spool-like device adapted for use in wrapping, storing, and shortening utility cord or the like comprising a generally longitudinally extending tubular member having an outer peripheral surface upon which the cord is adapted to be wrapped, at least one pair of generally transversely extending retaining flanges connected to and located adjacent opposite ends of said tubular member and projecting generally radially outwardly from said outer peripheral surface by a distance sufficient to contain at least one winding of the wrapped cord by preventing axial separation thereof, and resilient clip means connected to and located at each said ends of said tubular member having separated jaw portions which partially define an opening for the cord and which snap about the cord whenever the cord is inserted into said opening to firmly hold the cord against unwrapping about said tubular member.

3,924,820
ARRANGEMENT FOR EQUALIZING THE TENSION OF TWO SUPPLIED THREADS

Stanislav Kovar; Jiri Cernocky, and Petr Riha, all of Vsetin, Czechoslovakia, assignors to Zbrojovka Vsetin, narodni podnik, Vsetin, Czechoslovakia

Filed May 7, 1974, Ser. No. 467,665
Claims priority, application Czechoslovakia, May 7, 1973, 3230-73
Int. Cl.² B65H *59/04*
U.S. Cl. 242—156 **4 Claims**

1. Arrangement for equalizing the tension of two supplied threads taken off from individual bobbins, comprising in combination a frame, two thread-carrying bobbins rotatably supported on the frame, a grooved braking disc affixed to each bobbin, braking wires received within the grooves of the respective bobbins, anchoring means for one end of each braking wire affixed to the frame, a two-arm lever rotatably supported on the frame, one arm of said lever serving as an anchoring means for the second ends of both braking wires, a tension spring inserted in one end of each braking wire, a bridge supported for oscillation on the frame, a guiding roller for each thread on opposite sides of said bridge, a drawing-in roller for each thread on a support affixed to the frame, outlet eyelets for the thread fixed on the said support, and means pivotally connecting the bridge to the second arm of the lever so that turning of the lever in one direction by the movement of the bridge in a first direction increases the braking effect of a first wire on the braking disc of the first bobbin while decreasing the braking effect of the second wire on the braking

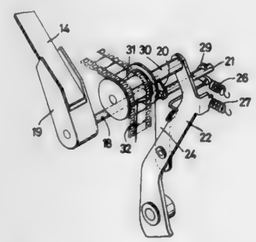


disc of its respective bobbin, and turning of the lever in the other direction by the movement of the bridge in a second direction increases the braking effect of the second wire on the braking disc of the second bobbin while decreasing the braking effect of the first wire upon the braking disc of the first bobbin.

3,924,821
GUIDING DEVICE FOR AN AUTOMATIC FILM LOADER

Yoshinari Minakawa, Nishinomiya, and Akinobu Sashida, Itami, both of Japan, assignors to Eiki Industrial Co., Ltd., Japan

Filed Oct. 10, 1973, Ser. No. 405,160
Claims priority, application Japan, Feb. 3, 1973, 48-14167
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G03B *1/04*; **G11B** *15/32*
U.S. Cl. 242—195 **5 Claims**



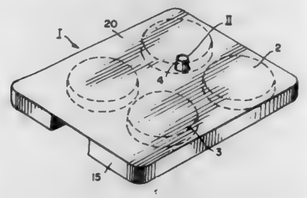
1. A device for guiding a film strip to a takeup reel of a projector and the like, comprising:
- means provided in said takeup reel for automatically taking up the leading end of the film strip;
- an elongated guide plate means for guiding the leading end of the film strip toward a core of the takeup reel, said elongated guide plate means pivotally mounted on the projector and adapted to be positioned within said takeup reel and to withdraw therefrom;
- a link member pivotally mounted on said projector;
- holding means operatively coupled to said link member for releasably holding said guide plate means within said takeup reel, whereby the leading end of the film is directed toward the core of the takeup reel;
- spring means interposed between said link member and said projector and cooperating with said holding means; and guide roller means for guiding the film strip to said guide plate means, said guide roller means rotatably mounted on said link member, said link member adapted to pivot

toward said guide plate means against said spring means due to tension of the film strip acting on said guide roller means when the leading end of the film strip is taken up by the core of the takeup reel, thereby releasing said guide plate means from said holding means, whereby said guide plate means pivotally withdraws from said takeup reel.

3,924,822
CARTRIDGE FOR RECORDING MEDIA

Manfred Moessner, Eppelheim, and Gerhard Kreutze, Bammental, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengellschaft, Ludwigshafen (Rhine), Germany

Filed Mar. 8, 1973, Ser. No. 339,059
Claims priority, application Germany, Mar. 13, 1972, 7209493
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G03b *1/04*; **G11b** *15/32, 23/04*
U.S. Cl. 242—198 **7 Claims**



1. For use in connection with a recording and/or playback apparatus of the type having driving means including spindles, having recording-media-scanning means and having a cartridge-locking and/or -unlocking mechanism controlled by a manually operable member,

a cartridge having

a substantially rectangular housing with a bottom wall, a top wall and side walls,

two pairs of spools designed to carry packs of recording media in the form of strips, the first for the recording of visual information and the second for the recording of audio information, and

means for guiding said strips,

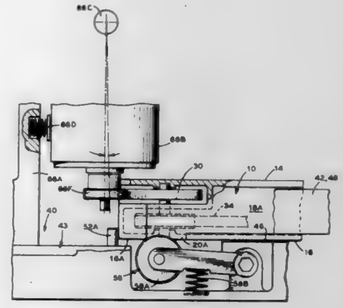
at least one of said side walls having apertures designed to permit passage therethrough of said scanning means and said bottom and top walls having mutually facing openings disposed between the locations of said spools and said strips and designed so that, with the cartridge placed in position on said apparatus, said member projects through at least one of said openings and is accessible for manual operation from outside of said apparatus and said cartridge.

3,924,823
CARTRIDGE DRIVE

William D. Cohen, Huntington, and John J. Darcy, Brentwood, both of N.Y., assignors to Redactron Corporation, Hauppauge, N.Y.

Filed June 26, 1974, Ser. No. 483,412
Int. Cl.² G03B *1/04*; **G11B** *15/32, 23/04*
U.S. Cl. 242—198 **10 Claims**

1. A deck for a cartridge having a tape mounted on two reels which are driven to rotate by the rotation of a drive puck located at the front end of the cartridge, said deck comprising a magnetic head, a base structure and a bed plate assembly, a pair of side guides on said bed plate, each of said guides having a side wall and a top wall for cooperating with said bed plate to guide a cartridge into an operative position with respect to said magnetic head, a motor support means extending upward from the top surface of the base structure nearest a loaded cartridge, a drive motor, a capstan on the shaft of said drive motor, means for pivotably mounting said drive motor on said support means to extend downwardly toward said surface of said base structure and bed plate so that said

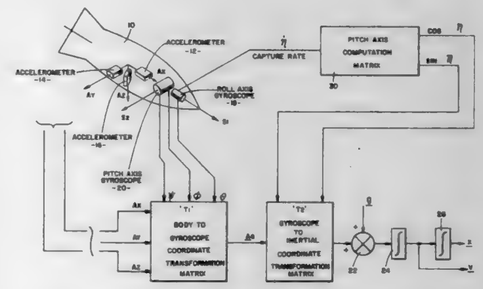


capstan will be opposite the drive puck of a loaded cartridge and biasing means for urging said drive motor to pivot toward a loaded cartridge whereby said capstan is in forced contact with the drive puck of a loaded cartridge.

3,924,824
CROSS TRACK STRAPDOWN INERTIAL QUIDANCE SYSTEM

Peter M. Brodie, Oakland, and Edwin G. Solov, Wayne, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Oct. 17, 1973, Ser. No. 407,121
Int. Cl.² F42B *15/02*; **F41G** *7/00*
U.S. Cl. 244—3.2 **5 Claims**



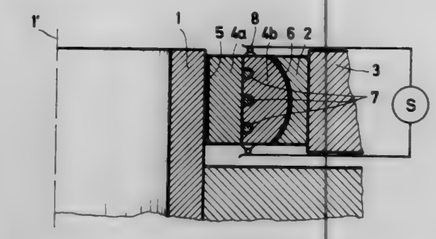
1. A strapdown inertial guidance system for a vehicle, comprising:
- a first accelerometer mounted in said vehicle for producing an output signal (A_Y) representing the acceleration of said vehicle along a heading axis;
- a second accelerometer mounted in said vehicle for producing an output signal (A_n) representing the acceleration of said vehicle along a cross-heading axis perpendicular to said heading axis;
- a third accelerometer mounted in said vehicle for producing an output signal (A_Z) representing the acceleration of said vehicle along a Z-axis perpendicular to said heading and cross-heading axes;
- roll axis gyroscope means captured loosely about null mounted on said vehicle to produce output signals representing the pitch angle (θ) and the rate of angular rotation (η) about the roll axis of the vehicle; and
- pitch axis gyroscope means mounted on said vehicle to produce output signals representative of the yaw angle (Ψ) and of the roll angle (ϕ) of the vehicle.

3,924,825

PLASTIC BEARING

Reiner Peschke, Ottobrunn, Germany, assignor to Messerschmitt-Bolkow-Blohm G.m.b.H., Munich, Germany

Filed Sept. 8, 1972, Ser. No. 287,270
Claims priority, application Germany, Sept. 14, 1971, 2145771
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.[2] B64C *3/38*
U.S. Cl. 244—46 11 Claims



1. In a bearing assembly particularly for rotatably supporting shaft means of a movable wing on an aircraft to effect a variation in the amount of sweepback, said bearing assembly having means defining a freely rotatable spacer positioned between said shaft means and a frame structure of said aircraft, said spacer means thereby defining a pair of radially spaced interfaces, and plastic lubricating layer means positioned between one of said pair of interfaces and in engagement with said spacer means and with one of said shaft means and said frame structure, the improvement comprising:

means defining a passageway in said spacer means intermediate said pair of interfaces; and

means defining a heating medium in said passageway means for effecting a uniform, homogeneous heat travel both radially inwardly and outwardly of said spacer means to heat both of said pair of interfaces and thence said plastic lubricating layer means; and

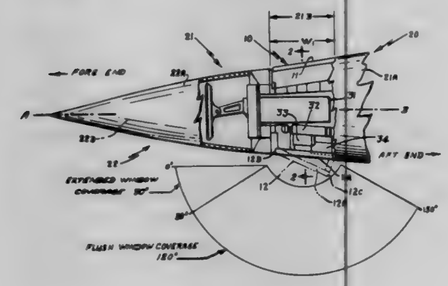
energy supply means for supplying energy to said heating medium in said passageway means in said freely rotatable spacer means.

3,924,826

ROTATABLE WINDOW MEANS

Milton J. Reinert, Florissant, Mo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 20, 1974, Ser. No. 535,060
Int. Cl.[2] B64C *1/14*
U.S. Cl. 244—129 W 4 Claims



1. A window means, adapted for use with an aircraft having a roll axis, a fore end, an aft end, and a fuselage with an aerodynamically configurated nose section having an external surface and an interior, wherein said fuselage has an external surface with an incomplete portion therein immediately aft of the nose section, with said incomplete external surface portion of the fuselage being of a preselected band-like shape having a uniform width completely around the fuselage, comprising:

a. rotatable, complete band of suitable material encircling the fuselage immediately aft of the nose section, fitted within and conforming with the shape of the incomplete external surface portion of the fuselage, and mounted flush with, and aerodynamically configurated to conform to, the external surface of the nose section, with said rotatable band having an opening therein;

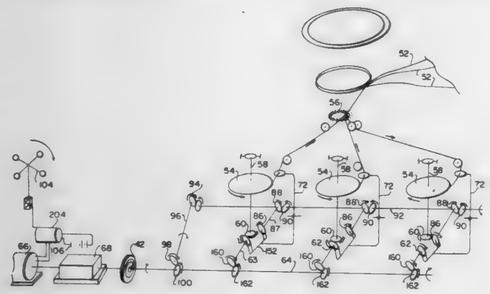
b. and, a window envelope that is operatively associated with said rotatable band and which includes a windowpane of transparent material fitted into, disposed in a flush manner within, and occupying the entire said opening in said rotatable band, with said windowpane shaped to conform to the aerodynamic configuration of said rotatable band and having a fore end edge and an aft end edge, and with said windowpane suitably connected at said fore end edge thereof to said rotatable band opening, thereby permitting the selective opening of said windowpane outwardly from said opening of said rotatable band from and at said fore end edge of said windowpane.

3,924,827

APPARATUS FOR EXTRACTING ENERGY FROM WINDS AT SIGNIFICANT HEIGHT ABOVE THE SURFACE

Lambros Lois, 4857 Battery Lane, Apt. 406, Bethesda, Md. 20014

Filed Apr. 25, 1975, Ser. No. 571,632
Int. Cl.[2] B64C *31/06*
U.S. Cl. 244—153 R 16 Claims



1. Apparatus for harnessing energy from atmospheric winds, comprising a plurality of floating wings, each wing being connected to a flexible line, the other end of each flexible line being wound upon a respective pulley, means including shaft means connecting said pulleys to energy utilization means for utilizing energy extracted from the wind by playing out of said lines and said wings under the influence of the wind, and means to reverse the direction of rotation of the pulleys in sequence to sequentially retract a wing and its respective line.

3,924,828

PAN, TILT AND ROLL TRIPOD HEAD

Victor R. Epperson, 2545 Havencrest Drive, Fallbrook, Calif. 92028

Filed Dec. 23, 1974, Ser. No. 535,724
Int. Cl.[2] F16M *11/12*
U.S. Cl. 248—179 3 Claims

1. A pan, tilt and roll tripod head, comprising:

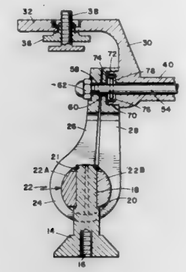
a base having means for attachment to a tripod, said base having an upright post thereon;

a cylindrical, diametrically split trunnion rotatably mounted on said post for panning motion about one axis;

a clamp bracket journalled on said trunnion for tilt motion about another axis perpendicular to the post, said clamp bracket being split and having extended, normally separated arms;

a head bracket pivotally mounted on the end of said arms remote from the trunnion for motion about a roll axis orthogonal to the pan and tilt axes;

frictional locking means including a substantially cylindrical plug on said head bracket, and a socket in one of said clamp bracket arms to receive the plug, said plug and socket having a corresponding axial taper converging to the inner end of the socket;



clamp means including a clamp rod passing through said plug and said clamp bracket arms and having a clamp nut bearing against the other of said arms, and a spring coupled to the clamp rod to bias said arms together and lock said plug frictionally into said socket;

a trigger connected to said clamp rod for axial movemment of the clamp rod against said spring to release clamping pressure on said clamp bracket;

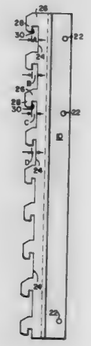
and locking release means between said head bracket and said clamp bracket, operable by movement of the clamp rod beyong that required to release clamping pressure on the clamp bracket, to unlock the plug from frictional grip in the socket.

3,924,829

EVEN LOAD CLIP

Bruce K. Boundy, Holland, Mich., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 18, 1974, Ser. No. 434,749
Int. Cl.[2] A47F *5/08*; A47G *29/02*
U.S. Cl. 248—243 2 Claims



1. A mounting bracket for connecting a cantilevered load to a slotted standard, said mounting bracket comprising;

a body portion constructed and arranged to be connected to the load to be supported,

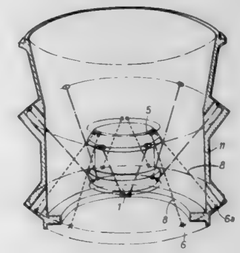
a plurality of linearly aligned hook connectors extending from one edge of said body portion, said hook connectors including a shank portion and a hook portion with the shank portion defining the distance between the hook portion and said one edge of said body portion, said distance between said hook portion and said body portion being of a predetermined non-uniformity with respect to at least some of said plurality of linearly aligned hook connectors and said shank portion being largest for the uppermost hook connector and the shank portions of each adjacent lower hook connector being, for the next several hook connectors, slightly smaller than the connector immediately above with the shank portions of the remainder of said plurality of hook connectors being uniform to thereby provide a more uniform distribution of said cantilevered load.

3,924,830

SYSTEM FOR RIGIDLY FIXING AN OBJECT TO A SUPPORT BY MEANS OF THERMALLY INSULATING TENSION TIES, MORE PARTICULARLY FOR ASTRONOMICAL RADIOMETERS

Maurice A. Collard, Le Chesnay; Serge Alfred Cruchant, Bagneux, and Jean-Louis Lafon, Trappes, all of France

Filed Apr. 30, 1974, Ser. No. 465,597
Claims priority, application France, May 4, 1973, 73.16106
Int. Cl.[2] F16L *15/04*
U.S. Cl. 248—358 A 12 Claims



1. A system for securing an object, which is revolution-shaped around an axis, to a surrounding, coaxial support, said object being moreover symmetrical with respect to a reference median plane perpendicular to said axis, said system comprising individual tension ties formed in groups of four ties which each include two pairs of tension ties that are symmetrical to each other with respect to said reference plane, each tension tie connecting an anchorage point on the object to an anchorage point on the support, the anchorage points of one pair on the object being spaced and the anchorage points of the same one pair on the support being also spaced, but by a greater distance than the former anchorage points, said groups of four tension ties being equally distributed around said axis.

3,924,831

FLUID COUPLING

John Andrich, M. R. No. 5, Titusville, Pa. 16354

Filed Nov. 18, 1974, Ser. No. 524,667
Int. Cl.[2] F16L *37/28*
U.S. Cl. 251—149.7 1 Claim

1. A coupling comprising a male member,

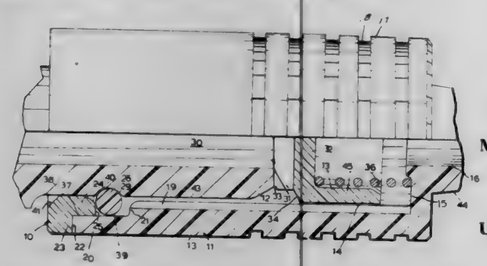
a hollow female member having a first end and a second end,

means adapted to connect a source of fluid to said second end of said female member,

said female member having a bore extending therethrough defining said hollow and a counterbore in the said first end of said female member defining a flange,

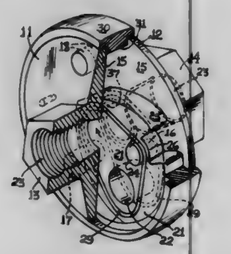
axially extending ribs in said female member extending from said second end to the bottom of said counterbore,

the said bottom of said counterbore defining a shoulder,
a ring L-shaped in cross section having one leg of said L-shape inserted in said counterbore and terminating in spaced relation to the shoulder defined by said bottom of said counterbore defining a groove,
a resilient O-ring in said groove defined by said counterbore and said ring,
an external groove in said male member,
said resilient O-ring being adapted to extend into said groove in said male member when said male member is holding said members together,
a cup-shaped check valve in said female member,



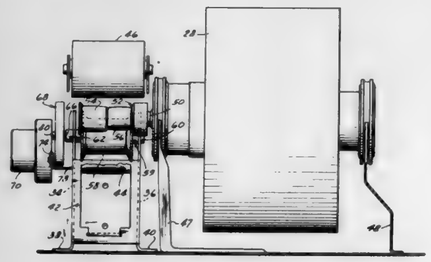
a spring having one end received in said cup-shaped check valve, the other end of said spring engaging the said second end of said female member urging said check valve into engagement with said resilient O-ring,
said check valve terminating in an end surface opposite said cup-shaped side,
a radial groove in said end of said check valve opposite said cup-shaped side,
and an end of said male member being adapted to engage said check valve over said groove,
said check valve defining a passage for fluid flow through said coupling from said second end of said female member between said check valve and said ribs through said radial groove and through a bore in said male member.

3,924,832
IN-LINE CONTROL VALVE
Donald Babcock, 5532 W. 103rd Place, Oak Lawn, Ill. 60453
Filed Sept. 27, 1974, Ser. No. 509,800
Int. Cl.² F16K *3/04*
U.S. Cl. 251—301 **8 Claims**



1. A valve interpositioned in end-to-end aligned pipe lines, comprising
a. a housing including complementary end plates in spaced facial abutment, with each plate providing an internally threaded connector defining a fluid passage cavity disposed in coaxial alignment,
b. a plurality of spacer means connecting said end plates in spaced facial abutment and for coaxially aligning said fluid passage cavities,
c. a valve plate between said end plates and providing an orifice movable into and out of communication with the fluid passage cavities defined by said connectors,
d. means for pivotally mounting said valve plate upon one of said spacer means between said end plates,
e. sealing means carried by said valve plate and extending in a continuous path so as to completely encircle the fluid passage cavity, the orifice formed in the valve plate, and said pivotal mounting means,
f. actuator means mounted upon the periphery of said end plates and rotatable about an axis parallel to the fluid passage cavities, positioning said valve plate into and out of open and closed position,
g. and means providing connection between said valve plate and said actuator means whereby said valve plate is pivoted in one direction when said actuator is rotated in said one direction.

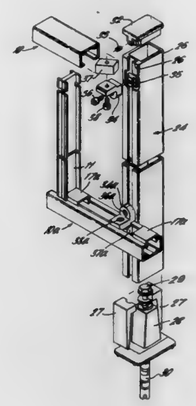
3,924,833
CAM CONTROLLED VARIABLE SPEED DRIVE FOR CLOTHES DRYER
Melvin H. Korrell, Benton Harbor, and Sandy C. Gay, St. Joseph, both of Mich., assignors to Nibco Inc., Elkhart, Ind.
Filed Sept. 11, 1974, Ser. No. 504,981
Int. Cl.² F16H *7/08*
U.S. Cl. 74—242.4 **12 Claims**



1. In a laundry appliance, a belt shifting device for moving a belt axially on a drive pulley having at least two drive surfaces of different diameters, said device comprising:
a shifter roller;
mounting means for supporting said roller for movement with respect to the belt and in frictional engagement with the belt adjacent to the drive pulley; and
cam means for continuously causing periodic movement of the roller between a first position and a neutral position and between a second position and the neutral position on said mounting means,
said roller in the first position urging the belt from one to another of the drive surfaces of the motor pulley in one direction axially along the pulley, and said roller in the second position urging the belt from one to another of the drive surfaces of the motor pulley in the opposite direction axially along the pulley.

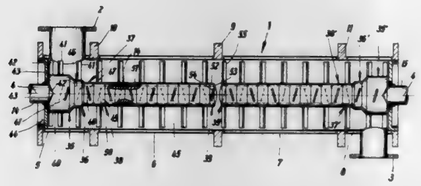
3,924,834
BALUSTRADE UNITS
Charles G. Young, 8 Roberts St., Harbord, New South Wales, Australia
Filed July 25, 1973, Ser. No. 382,615
Claims priority, application Australia, Aug. 8, 1972, 10/72
Int. Cl.² E04H *17/14*
U.S. Cl. 256—22 **8 Claims**

1. A balustrade unit comprising a pair of spaced apart channel section members, the open faces of the members being directed towards one another, the free edges of each of the members being turned inwardly to form a pair of opposed longitudinally extending flanges and a pair of longitudinally extending divergent resilient wings provided in the base of the channel section members and formed integrally therewith; a plurality of balusters extending between the channel section members, each baluster being provided adjacent each end with a pair of transverse shoulder, the balusters each having one cross-sectional dimension adjacent each end smaller than the distance between the opposed longitudinally extending flanges such that the end can be inserted into the space between the flanges of one of the said channel section members



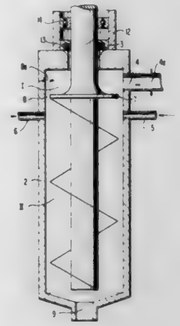
and can then be rotated through a predetermined angle to engage the shoulders of the baluster adjacent the said end with the inner surfaces of said flanges and bring the end face into resilient engagement with said engagement means of the associated channel section member; and a spacing member extending between adjacent balusters, in juxtaposition with at least one of the said channel section members.

3,924,835
MIXER FOR PARTICULATE MATERIALS
Peter Hohnfeld, Melle, and Hartmut Langenberg, Buer, both of Germany, assignors to Dierks & Soehne, Osnabrueck, Germany
Filed Oct. 26, 1973, Ser. No. 410,248
Claims priority, application Germany, Oct. 28, 1972, 2252996
Int. Cl.² B01F *7/04*
U.S. Cl. 259—6 **8 Claims**



1. A machine for the continuous mixing of particulate materials, comprising:
a substantially horizontally-disposed cylindrical mixer vessel,
a material feed opening and a material discharge opening at opposite ends of said vessel,
a rotatable, horizontal tool carrier axially disposed within said vessel, and
a plurality of mixer paddle tools for rotation in said vessel mounted on said tool carrier, said paddle tools including paddles which extend radially towards and terminate adjacent an inner wall of said vessel,
said tools being detachably mounted on said tool carrier, and
said tool carrier comprising two independent shafts disposed in line with one end of each shaft projecting outwardly from an associated end of said vessel,
two bearing units each rotatably receiving the outwardly-projecting ends of a different one of the tool carrier shafts,
separate rotary drive means coupled to said tool carrier shafts,
said mixer vessel comprises at least two vessel sections which meet at a radial joint plane, adjacent inner ends of said tool shafts being disposed on either side of said joint plane,
a portion of said machine is located to one side of said joint plane, and means for supporting said portion for axial shifting movement relative to the remainder of said machine on the opposite side of said plane to allow access to the interior of said vessel and pivotal movement relative to the remainder of said machine on the opposite side of said plane to allow access to the interior of said vessel, the axis of movement of pivotal portion being disposed parallel to and spaced from the common axis of the aligned tool carrier shafts.

3,924,836
MIXING DEVICE FOR CURABLE LIQUID MATERIAL
Klaus Bruning, Troisdorf, and Heinrich Lob, Eschmar, both of Germany, assignors to Dynamit Nobel AG, Germany
Continuation of Ser. No. 231,112, March 2, 1972, abandoned.
This application Apr. 19, 1974, Ser. No. 462,550
Claims priority, application Germany, Mar. 2, 1971, 2109848
Int. Cl.² B01F *7/24*
U.S. Cl. 259—7 **11 Claims**



1. A device for mixing curable liquid materials which comprises a mixing vessel,
a mixer shaft disposed in said mixing vessel, said shaft being supported for rotation at one end of said vessel,
inlet means for introducing components for forming a curable liquid material mixture into said vessel,
outlet means for discharging the resultant mixture therefrom, said outlet means being disposed at an end of said mixing vessel opposite to said one end,
one of said components of said curable liquid mixture being a liquid component which cannot be cured without additives,
partition means for subdividing said vessel into a first chamber and a second mixing chamber in communication with each other, said partition means including an annularly extending disk mounted on said shaft,
said inlet means including at least one first inlet duct for introducing the liquid component which cannot be cured without additives into said first chamber, said first inlet

duct having a predetermined cross-section, and said inlet means including at least one additional inlet duct for introducing only into said second mixing chamber the additives for curing the liquid component which cannot be cured without additives,

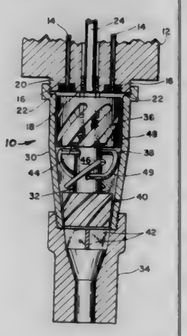
said partition means having an opening from said first chamber into said second chamber, said opening having a cross-section reduced by approximately 0.7 to 0.9 times said predetermined cross-section of said first inlet duct such that said one end of said vessel including said first chamber is maintained free of said curable mixture during mixing of said curable liquid material mixture.

3,924,837

AGITATOR INSERT FOR REACTIVE LIQUID POLYMER MIXER

Stephen A. Knis, Cheshire, and Adnan A. R. Sayigh, North Haven, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 23, 1974, Ser. No. 535,962
Int. Cl.² B01F *7/16*
U.S. Cl. 259—8 **4 Claims**



1. In apparatus for mixing a plurality of reactive liquid components comprising a mixing head and a nozzle assembly mounted thereon wherein said nozzle assembly comprises an open ended tubular casing having rotary agitator means therein, means in said head for driving said agitator, said agitator including an open ended basket section disposed with its open end adjacent a face of said head, liquid component feed passages in said head terminating in feed ports which open onto the face of said head within the confines of the open end of said basket section, the improvement which comprises: an insert member adapted to be received in the open end of said agitator basket section and rotated therewith, said insert member comprising a spider having a hub and a plurality of legs, each of said legs consisting of a radially extending portion, an axially extending portion joined to the outer end of said radial portion, and a terminal portion secured to the end of the axial portion and extending partially inward in a radial direction, said spider being supported in said basket section of said rotary agitator with said terminal leg portions disposed in close axial spaced relation to said feed ports.

3,924,838

COOKING UTENSIL

Kenji Wanishi, and Koichiro Ninomiya, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Sept. 19, 1972, Ser. No. 290,328
Claims priority, application Japan, Sept. 22, 1971, 46-73388
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B01F *7/16*
U.S. Cl. 259—108 **10 Claims**

1. A culinary kitchen utensil comprising:

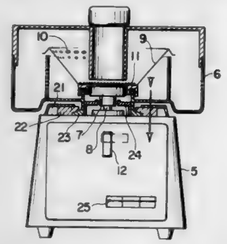
a base member for accommodating a driving means,

removable culinary appliance attachments drivingly connected to said base member,

at least one clamping means for securing said removable attachments to said base member, said clamping means being movable between a clamping position and a releasing position, and

actuating means for moving said clamping means respectively between said clamping and releasing positions,

said actuating means including a single member for moving all of said clamping means between said clamping and releasing positions in a single operation,



wherein said single member of said actuating means is a lever operatively connected to said clamping means, said lever being exteriorly positioned from said base member, and

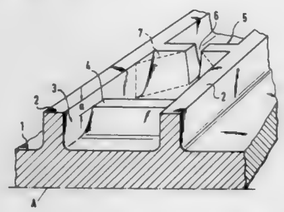
wherein said actuating means includes a shaft supported in said base member for rotation, a cam fixed to said shaft in said base member for rotation with said shaft, and a pivotable arm operatively connected between said cam and said clamping means such that said pivotable arm is moved by rotation of said cam thereby moving said clamping means, said shaft being rotated by said lever.

3,924,839

CONTINUOUSLY OPERATING SCREW CONVEYOR

Christian Millauer, Stuttgart, Germany, assignor to Werner & Pfleiderer, Stuttgart, Germany

Filed Oct. 4, 1973, Ser. No. 403,468
Claims priority, application Germany, Nov. 20, 1972, 2256902
Int. Cl.² B29B *1/10*
U.S. Cl. 259—191 **15 Claims**



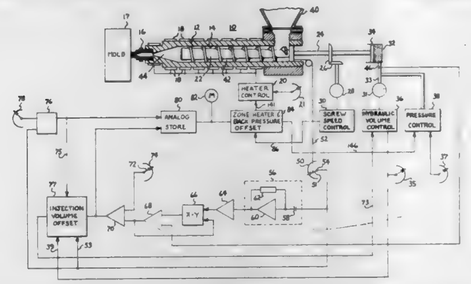
1. In a continuously operating screw conveyor for conveying and working flowable compositions along a flow path, comprising housing means, a screw rotatably mounted in said housing and having screw flights thereon defining a screw channel therebetween and transverse shearing webs disposed in said screw channel having a height which is smaller than the height of said screw flights to define a first shearing gap, the improvement comprising at least one transverse splitting web located in said screw channel intermediate the ends of said flow path, said splitting web having a height equal to the height of said screw flights, said splitting web having means defining a second shearing gap therein having at least a radial component relative to the axis of said screw which is different from the radial component of said first shearing gap, said splitting web and said second shearing gap turning a flat laminar flow in said screw channel generated by said first shearing gap by an angle equal to the angular spacing between said first and second shearing gaps, at least one transverse splitting web being disposed between two transverse shearing webs.

3,924,840

VISCOSITY CONTROL FOR A PLASTIC MOLDING MACHINE

Philip H. Nelson, Jr., Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Sept. 18, 1972, Ser. No. 289,783
Int. Cl.² B29B *1/10*
U.S. Cl. 259—191 **20 Claims**



1. A control for a plastic molding machine of the type in which plastic material is rendered molten through the application of energy by variable means associated with the machine, said control comprising:

a. means to determine the viscosity of the molten plastic material within the machine and to provide an output signal proportional thereto, said means comprising means for determining pressure and velocity parameters associated with said molten plastic material; and,

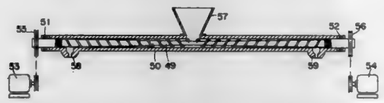
b. control means responsive to said output signal to effect a variation in said variable means whereby the amount of energy applied to said material is changed to thereby change the viscosity of said material.

3,924,841

EXTRUSION MOULDING MACHINE

Jitsumi Shinmoto, 16-4 Koyama 4-chome, Shinaga, Tokyo, Japan

Filed Nov. 30, 1973, Ser. No. 420,700
Claims priority, application Japan, Dec. 7, 1972, 47-122029
Int. Cl.² A23C *1/06*
U.S. Cl. 259—191 **7 Claims**



1. An extruder having an input port and an output port for the mixing and extrusion of plastics, comprising:

a housing defining a cylindrical cavity therein;

a tapered feed screw having first and second ends, said feed screw further having a first helical threading on a portion thereof, said tapered feed screw being positioned within said cylindrical cavity with each end being supported by bearings, said first end having a smaller root diameter and located adjacent said input port and said second end having a larger root diameter and located adjacent said output port;

a mixing surface formed on said feed screw adjacent to said first helical threading and positioned adjacent to said output port; and

a threaded sealing surface formed on said feed screw adjacent to said mixing surface near said outlet port such that said mixing surface is located on said feed screw between said first helical threading and said threaded sealing surface, said threaded sealing surface being a second helical threading opposite in inclination to said first helical threading,

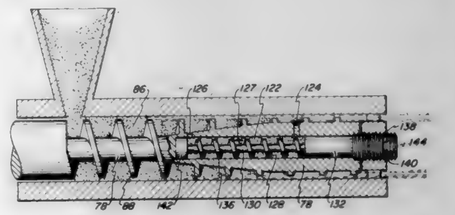
whereby said threaded sealing surface tends to prevent the further progress of said plastic along said housing as said tapered feed screw forces said plastic to be extruded out of said output port adjacent to said mixing surface.

3,924,842

APPARATUS FOR PREPARING A PLASTICATED MATERIAL

Imrich Klein, Highland Park, N.J., and Zehev Tadmor, Haifa, Israel, assignors to Scientific Process & Research, Inc., Highland Park, N.J.

Filed Apr. 11, 1974, Ser. No. 460,046
Int. Cl.² B29B *1/06*
U.S. Cl. 259—192 **26 Claims**



1. Apparatus for preparing a plasticated material from solids introduced into the apparatus, said apparatus comprising:

a barrel;

a first screw conveyor in the barrel, said screw conveyor including a flight defining a channel for conveying the material in a downstream direction as the material is melted within the channel, said flight having a leading face facing downstream and a trailing face facing upstream, said channel extending between the leading face and the trailing face;

a passage communicating with the channel at a downstream location and an upstream location and bypassing the channel between said locations, the locations each being positioned such that the downstream location is adjacent the trailing face of the flight to enable unmelted solids to enter the passage at the downstream location, be carried through the passage in an upstream direction, and be reintroduced into the channel at the upstream location; and

a second screw conveyor in said passage arranged to convey material from the downstream location to the upstream location.

3,924,843

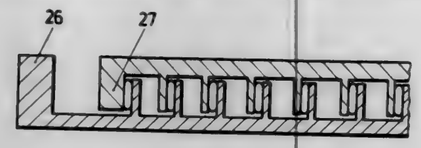
TOOL

Georg Hirmann, Zurich, Switzerland, assignor to Repapress AG, Romanshorn, Switzerland

Filed Mar. 11, 1974, Ser. No. 450,193
Claims priority, application Switzerland, Mar. 9, 1973, 3498/73
Int. Cl.² B25B *1/18*
U.S. Cl. 269—20 **10 Claims**

1. Tool comprising a force-producing device having an inflatable member of hose-like shape, a frame member having plurality of mutually spaced transverse walls subdividing the same, said hose-like inflatable member being sinuously disposed in loops within the subdivisions of said frame, and an opposing frame member having an inner space subdivided by a plurality of mutually spaced transverse walls, said transverse walls of said opposing frame member being fitted in said subdivisions defined by said transverse walls of said first-mentioned frame member, said frame members being mutually

superposed with the respective transverse walls thereof alternatingly disposed in the free space of said subdivisions, said inflatable hose-like member being inflatable so as to displace said frame members relative to one another in given direction.

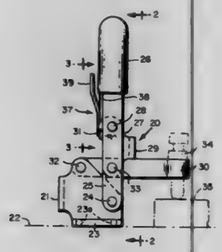


3,924,844

TOGGLE CLAMP LOCK

Hubert C. Bachtel, Jr., Granada Hills, Calif., assignor to Barry Wright Corporation, Watertown, Mass.

Filed July 29, 1974, Ser. No. 488,560
Int. Cl.² B23Q *3/06*
U.S. Cl. 269—94 **23 Claims**



1. A toggle clamp which includes a base, handle means pivotally coupled to the base, link means pivotally coupled to the handle means, workpiece hold-down means pivotally coupled to the base and the link means, and releasable locking means including stop means supported by said link means and movable releasable means for engaging the stop means to prevent relative motion between the handle and the link means when the toggle clamp is in a closed position, said link including camming means for moving said releasable means prior to said releasable means moving off from said camming means and being positioned to engage said stop means as said handle, workpiece hold-down means and link are rotated to place the toggle clamp in a closed position in order to hold said clamp in a closed position.

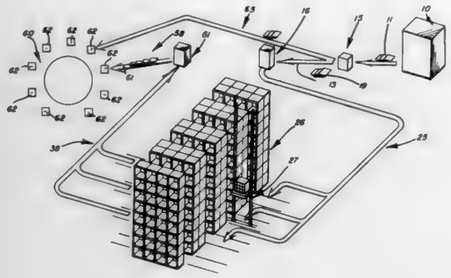
3,924,845

COLLATING METHOD

James C. Wise, and Victoriano Fernandez-Rana, both of Easton, Pa., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed Dec. 10, 1973, Ser. No. 423,056
Int. Cl.² B65H *39/02*
U.S. Cl. 270—54 **6 Claims**

1. A method of forming assemblages from at least first and second signatures, said method comprising the steps of printing the first signatures and delivering the first signatures from a printing press in an overlapped shingled stream, placing segments of said shingled stream on a support, releasably clamping the first signatures in a stable overlapped-shingled relationship on said support, transporting and storing remote from the printing press the first signatures while clamped on the support, removing the first signatures from storage while clamped on the support, unclamping and unloading the first signatures from the support, feeding said first signatures in a shingled stream toward a first hopper of a collating machine, printing second signatures, feeding the second signatures toward a second hopper of the collating machine while the first signatures are fed toward the first hopper of the collating machine, and collating said first and second signatures by operating the collating machine.

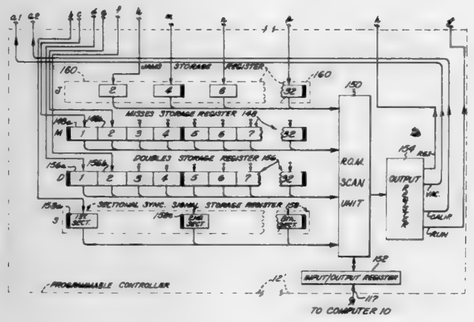


3,924,846

COLLATING METHOD AND APPARATUS

David A. Reed, Easton, Pa., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed May 7, 1973, Ser. No. 357,772
Int. Cl.² B65H *43/02*
U.S. Cl. 270—56 **15 Claims**



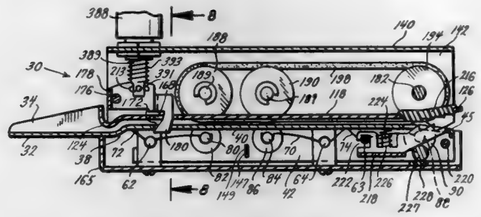
1. A collating apparatus for forming a book from a plurality of signatures, said apparatus comprising a gatherer conveyor having a plurality of conveyor spaces movable in a path successively past a plurality of signature feeding stations and adapted to receive signatures at said feeding stations to form an assembly of different signatures contributing toward a book in each conveyor space, at least one jam detector located on said path of said conveyor spaces for sensing a jam of said assemblies of different signatures as they are moved by said conveyor and for producing a code signal thereupon, means responsive to a code signal from said jam detector to stop said conveyor immediately upon a jam, manually operable means for restarting said conveyor, and reject means along said conveyor path following said plurality of feeding stations for rejecting signature assemblies from said conveyor and controlled by said code signal to reject books from successive conveyor spaces including the conveyor space nearest said jam detector as well as at least one conveyor space upstream from said nearest space and at least one conveyor space downstream from said nearest space when said jam detector produced said reject code signal.

3,924,847

ANTI-RETRIEVAL DEVICE

James R. Pescetto, Hot Springs, Ark., assignor to UMC Industries, Inc., New York, N.Y.

Filed Oct. 11, 1973, Ser. No. 405,538
Int. Cl.² B65H *5/00, 5/38*
U.S. Cl. 271—3 **8 Claims**



1. A validator which comprises passageway-defining members that are spaced apart to define an elongated shallow passageway for a document, a pivot, a blocking member which is rotatably mounted on said pivot and which has a portion thereof that is selectively disposable in blocking position in said passageway or out of said blocking position, said portion of said blocking member having a leading edge which inclines downwardly and forwardly relative to said passageway, and wherein any point on said leading edge of said portion of said blocking member which can be engaged by an object inserted into said passageway will be further away from said pivot than is the lower part of said leading edge of said portion of said blocking member, whereby said lower part of said leading edge of said portion of said blocking member will jam against said object if said portion of said blocking member tends to rotate out of blocking position in response to the insertion of said object, whereby said leading edge of said portion of said blocking member can keep said object from rotating said portion of said blocking member out of said blocking position.
3. A validator which comprises a sensor, means to provide relative movement between a document and said sensor, a toothed member past which said means will move an accepted document, a further toothed member past which said means will move said accepted document, both of said toothed members being stationary during the acceptance of each acceptable document, said toothed members being near each other but being out of register with each other, whereby said toothed members can require said document to bow transversely as it moves, and to enable it to move, between said toothed members, said document, after it has been moved past said toothed members, responding to the restorative forces therein to reassume its flat condition, at least one of said toothed members lying in the path of reverse movement of said document after said document has reassumed its flat condition.

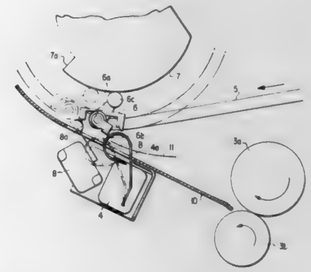
3,924,848

PAPER FEED APPARATUS FOR GRIPPER-TYPE PAPER TRANSPORT DEVICE

Shin-Ichi Murakami, Atsugi, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1974, Ser. No. 437,186
Claims priority, application Japan, June 26, 1973, 48-71253
Int. Cl.² B65H *5/08*
U.S. Cl. 271—10 **6 Claims**

1. A paper feed device for feeding sheets of paper from at least one receptacle therefor, said device comprising:
paper feeding means for feeding sheets of paper from said receptacle at a first rate of speed;
first detecting means responsive to the presence of each of said sheets of paper for rendering said paper feeding means inoperative and stopping each said sheet of paper in a substantially flat condition at a predetermined paper standby position;
chain delivery means having a gripper for clamping each sheet of paper, the locus of said chain delivery means being adjacent to said paper standby position, and the linear speed of said gripper being less than that speed at which said paper sheets are fed;
means for opening said gripper when it is adjacent said paper standby position;



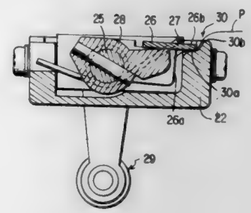
second detecting means for restarting said paper feed means in response to an opened condition of the gripper when the gripper is adjacent the paper standby position to feed each paper sheet from its standby position into the open gripper; and
means for closing said gripper after each paper sheet has been fed into the open gripper so that the paper sheets may be removed from said standby position and transferred by said chain delivery means.

3,924,849

PAPER GRIPPING DEVICE FOR USE WITH A CHAIN DRIVEN PAPER CARRIAGE

Shinichi Murakami, Atsugi, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1974, Ser. No. 460,103
Claims priority, application Japan, Apr. 26, 1973, 48-49277
Int. Cl.² B65H *29/04*
U.S. Cl. 271—277 **3 Claims**

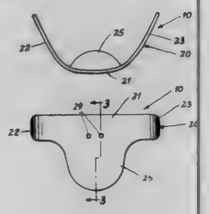


1. Paper gripping device for use with a chain driven paper carriage having at least two driving chains comprising
a gripper bar mounted between the driving chains of the paper carriage, said gripper bar having a U-shaped configuration where one leg of the U-shaped bar is stepped at the upper extremity thereof to form an inner, lower step and an outer, higher step having a rise therebetween;
a shaft rotatably mounted in and along the length of said gripper bar; grip members mounted on said shaft;
springs for respectively biasing said grip members against said inner, lower step of the stepped portion of the gripping bar, said grip members engaging said lower step substantially adjacent to the said rise from said inner, lower step to said outer, higher step so that when a paper sheet is gripped by said gripping member an outwardly convex configuration is imparted thereto by the upper

step of said stepped portion to thereby facilitate subsequent processing of said paper; and

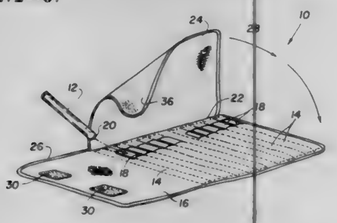
cam means for rotating said grip members away from said lower step against the biasing action of said springs to permit reception or release of said paper away from said paper gripping device.

3,924,850
LABIAL MUSCLE EXERCISER
Thomas J. Robertson, 637 Old State Road, Pevely, Mo. 63070
Filed Feb. 22, 1974, Ser. No. 444,831
Int. Cl.² A63B *23/00*
U.S. Cl. 272—57 H **9 Claims**



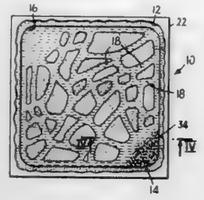
1. A labial muscle exerciser comprising a band contoured to fit in the mouth along the maxillary arch between the upper lip and upper teeth, and a portion extending generally downwardly from the band, the generally downwardly extending portion having an upper portion and a lower portion extending at least somewhat rearwardly from the upper portion, said generally downwardly extending portion being formed to rest against the mentalis muscle with the exerciser in place without force applied forwardly against the action of the labial muscle of the upper lip.

3,924,851
WRIST EXERCISE DEVICE
Herbert Winston, 135 Hazelwood Drive, Jericho, N.Y. 11753
Filed Oct. 25, 1974, Ser. No. 518,043
Int. Cl.² A63B *21/18, 23/00*
U.S. Cl. 272—67 **1 Claim**



1. An exercise device adapted to be worn around the user's wrist comprising a fabric body of a rectangular shape having a lengthwise extent so as to be worn in a wrist-encircling position about the user's wrist, an arrangement of plural side-by-side compartments each having an opening thereinto located adjacent an edge of said fabric body, a selected number of said compartments being used for cooperating weights placed therein preparatory to exercising service of said device, and a weights-covering flap having a resilient plastic foam body secured along said fabric body edge adjacent said compartment openings having an operative position folded over said openings against said fabric body and occupying an interposed position between said exercise device and said user's wrist, whereby said operative folded position of said flap obviates inadvertent movement of said weights from said compartment during use of said exercise device while said resilient foam body thereof contributes to comfort during the wearing of said device.

3,924,852
EDUCATIONAL GAME DEVICE
Ronald A. Tamol, 6710 Buckhill Road, Richmond, Va. 23225
Filed Apr. 30, 1975, Ser. No. 572,950
Int. Cl.² A63B *9/06;* **A63H** *33/26*
U.S. Cl. 273—1 M **18 Claims**



1. An educational game device comprising

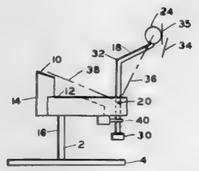
a relatively broad surfaced substantially flat base member, means defining a pair of reservoirs in one face of said base member, each reservoir being disposed at a location remote from the other, there further being means in said one face defining a flow transport course communication between said reservoirs,

a cover member generally coextensive with said base member and received in contact with said one face of said base member, and

a magnetically displaceable colloidal suspension present within said device and normally disposed in one of said reservoirs,

said magnetically displaceable colloidal suspension being selectively transportable from said one reservoir to the other along said flow transport course under the influence of a directional magnetic force.

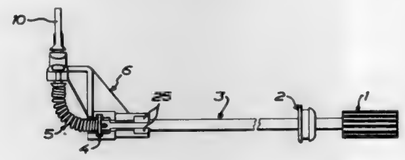
3,924,853
TENNIS PRACTICE DEVICE
Harold F. Schleeger, 1015 Koeps Road, Lancaster, Pa. 17603
Filed Sept. 19, 1974, Ser. No. 507,292
Int. Cl.² A63B *61/00*
U.S. Cl. 273—29 A **8 Claims**



1. A tennis practice device comprising an upright support means, means positioning said upright support means relative a fixed surface, a rebound surface means being positioned on the upper end of the upright support means, one end of an arm means being affixed to the upright support means, a mounting rod means being pivotally affixed adjacent one of its ends by a pivot pin to the opposite end of the arm means, a ball being positioned on the opposite end of said mounting rod means, a straight line distance from the pivot pin to the ball being substantially equal to the distance from the pivot pin to the rebound surface means, releasable means grasping the mounting rod in the vicinity of said pivot pin to hold the mounting rod means in a first position with the ball spaced away from the rebound surface, said mounting rod means being pivotable to move said ball from said first position to a second position where the ball engages the rebound surface, said mounting rod means when moved from said first position to said second position being released by said releasable means, said mounting rod means not being counterbalanced by a spring means

when it moves from said first position to said second position, and said releasable means re-engages said mounting rod means when the mounting rod means rebounds back from its second position to its first position.

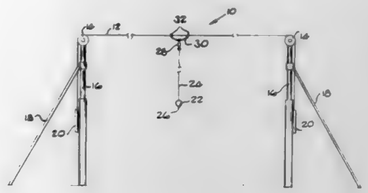
3,924,854
ARRANGEMENT IN TABLE GAMES
Stig Gunnar Hjelmquist, Box 6, 573 01 Tranas 1, Sweden
Filed Aug. 27, 1974, Ser. No. 501,111
Claims priority, application Sweden, Sept. 4, 1973, 7312008
Int. Cl.² A63F *7/06*
U.S. Cl. 273—85 B **5 Claims**



1. A table game of the type intended to imitate hockey, football or like games, comprising a playing area including a board having elongated slots therein and on which a projectile is moved during the game by a number of men mounted for movement by the participants both along said slots and rotated by means of displaceable and rotatable operating assemblies disposed beneath said board, each said operating assembly comprising an elongated rod, an elongated operating pin extending upward through one of said slots and substantially perpendicular to said board for supporting one of said men above said board, an angle shaft coupling connecting the lower end of said pin to one end of said rod for simultaneous rotation therewith, a support member slidably mounted in one of said slots and supporting said pin, said angle shaft coupling, and said one end of said rod for movement therewith, said support member including fixed lower and upper cross pieces cooperating with the lower and upper surfaces, respectively, of said board for mounting said support member in said slots, a first generally vertical guide sleeve journaling said pin for rotation about its axis, and a second generally horizontal guide sleeve engaging and journaling said rod adjacent said one end, said angle coupling being disposed between said first and said second guide sleeves, said second guide sleeve having a slit opening in the side wall thereof extending throughout its length with said opening being of a transverse dimension less than the diameter of said rod adjacent said one end at least throughout a portion of the length of said opening, said second sleeve being formed at least in part from a resilient material whereby said rod may be forced laterally through said opening into said second sleeve, radially extending shoulder means axially fixed on said rod adjacent said one end, and radially extending recess means formed in said second guide sleeve for receiving said shoulder means and cooperating therewith to prevent substantial relative axial movement between said support member and said rod while permitting rotation therebetween.

3,924,855
TETHERED BALL APPARATUS
Hillius Pretorius, Mondeor, Johannesburg, Transvaal, South Africa, assignor to Jet Ball (Eiendoms) Deperk, Johannesburg, South Africa
Filed July 16, 1974, Ser. No. 489,065
Claims priority, application South Africa, July 25, 1973, 73/5082
Int. Cl.² A63B *69/40*
U.S. Cl. 273—95 AA **10 Claims**

1. A ball game apparatus which includes a pair of support members adapted for mounting above ground level; an elongated flexible line having at least one free end and extending essentially horizontally between the support members; a ball slidably suspended from the line intermediate the support members so as to be displaceable along the line by hitting; and a separate weighted element attached to each free end of the



line and adapted to maintain the line resiliently taut between the support members; the line being disposed so that it does not have a slope which favors displacement of the ball in a particular direction along the line.

3,924,856
NON-ROLLING GAME BALL
Howard L. Dekan, 22220-4 James Alan Circle, Chatsworth, Calif. 91311, and John W. Ryan, 674 Nimes Road, Los Angeles, Calif. 90024
Filed Feb. 10, 1975, Ser. No. 548,333
Int. Cl.² A63B *65/00, 71/04*
U.S. Cl. 273—106 R **7 Claims**



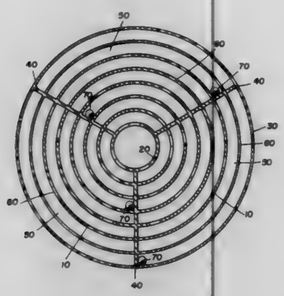
1. An article adapted for throwing, or lobbing, against objects comprising a skin covering formed to provide part of a generally spherical shape, a member formed of more rigid material configurated to provide the remainder of the generally spherical shape having securement to the flexible material, the interior of the article being filled with a particulate material whereby the article has the characteristics of unrigid, generally spherical resilient shape.

3,924,857
PUZZLE TOY
David E. Christensen, Victoria, Tex., assignor to The Raymond Lee Organization, Inc., a part interest
Filed Apr. 4, 1975, Ser. No. 565,277
Int. Cl.² A63F *7/04*
U.S. Cl. 273—113 **2 Claims**

1. A toy, comprising:

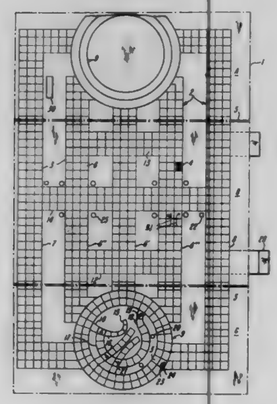
a housing taking the form of a plurality of hollow spherical shells concentrically disposed and connected together by a plurality of radially extending partitions that block off the volume between any two neighboring shells into a plurality of arcuate volumes of like radii of curvature and like radial thickness with each shell that is surrounded by a larger shell bearing a plurality of like circular holes in its surface, whereby neighboring arcuate volumes are connected in sequence to the central spherical volumes

inside the smallest shell; and
a plurality of like spherical balls disposed in the housing, the



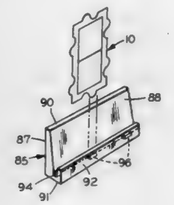
diameter of the balls being less than the diameter of the holes.

3,924,858
BOARD GAME APPARATUS
Siegfried Dittrich, Bergstr. 28, 896 Kempten, and Kurt Jäckel, Langestr. 38a, 293 Varel, both of Germany
Filed Aug. 23, 1973, Ser. No. 391,154
Int. Cl.² A63F *3/00*
U.S. Cl. 273—134 AC **9 Claims**



1. In combination as a game in which traffic flow is simulated; a panel having a plurality of playing tracks in the form of a series of spaces of which at least some bear indicia, said play tracks serving as paths along which figures are moved in conformity with values displayed by at least one thrown die, said playing tracks forming both main streets and auxiliary streets and at least the main streets having at least two driving lanes each made up of a series of spaces, said streets including intersecting streets, traffic signal means disposed at intersections of said streets for directing the movement of the figures, at least some of said traffic signal means being instructively variable, and a circular path connected to the ends of said street portions, said auxiliary streets being at least in part inside said circular path and connecting therewith.

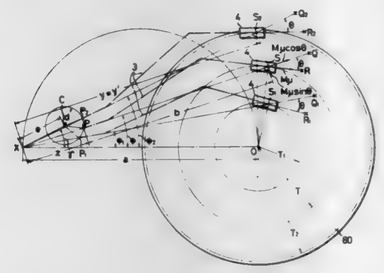
3,924,859
ARITHMETIC FACT GAME
George J. Kramer, 7 High St., Terryville, Conn. 06786
Filed Sept. 27, 1974, Ser. No. 510,075
Int. Cl.² A63F *9/20*
U.S. Cl. 273—137 C **7 Claims**



1. A game apparatus adapted to be played by a plurality of participating players comprising:

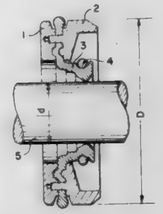
a. a multiplicity of playing pieces assembable relative to each other in a predetermined manner, each of said multiplicity of playing pieces comprising a member having a first pair of sides of equal length extending parallel to each other and a second pair of sides of equal length extending parallel to each other and at right angles to each of said first pair of sides, each of said members having one face thereof divided into two sections, each of said two sections having indicia provided thereon matchable with the indicia appearing on at least one of said two sections of another one of said members, each of said members further including at least one locking means formed on each one of said first pair of sides and of said second pair of sides along the edge thereof, said locking means formed on any one of said first pair of sides and of said second pair of sides of any one of said members being cooperable with said locking means formed on any one of said first pair of sides and of said second pair of sides of any other one of said members for interlocking together any two of said members to maintain said any two of said members in assembled relation in any selected one of a plurality of positions relative to each other, said locking means each comprising a concave-shaped aperture and convex-shaped projection formed in adjoining relation to each other on each of said first pair of sides and on each of said second pair of sides of each of said members, each of said concave-shaped apertures and each of said convex-shaped projections having the same radius of curvature so that said convex-shaped projections formed on any one of said first and second pairs of sides of any one of said members is receivable within said concave-shaped aperture formed on any one of said first and second pairs of sides of any other one of said members, said concave-shaped aperture formed on one of said first pair of sides of each of said members being positioned along the length of said one of said first pair of sides so as to be aligned with said convex-shaped projection formed on the other one of said first pair of sides of the corresponding one of said members and said concave-shaped aperture formed on one of said second pair of sides of said corresponding one of said members being positioned along the length of said one of said second pair of sides so as to be aligned with said convex-shaped projection formed on the other one of said second pair of sides of said corresponding one of said members, and said convex-shaped projection formed on said one of said first pair of sides of said corresponding one of said members being positioned along the length of said one of said first pair of sides so as to be aligned with said concave-shaped aperture formed on said other one of said first pair of sides of said corresponding one of said members and said convex-shaped projection formed on said one of said second pair of sides of said corresponding one of said members being positioned along the length of said one of said second pair of sides so as to be aligned with said concave-shaped aperture formed on said other one of said second pair of sides of said corresponding one of said members and said convex-shaped projection having the same radius of curvature as said convex-shaped projection of said locking means formed on each of said members so as to be capable of receiving therewithin any one of said convex-shaped projections formed on any one of said members.

3,924,860
PICK-UP ARM ASSEMBLY
Etsuro Saito, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Feb. 5, 1974, Ser. No. 439,828
Claims priority, application Japan, Feb. 17, 1973, 48-19627
Int. Cl.² G11B *3/10*
U.S. Cl. 274—1 L **8 Claims**



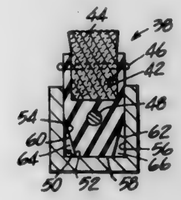
5. A pick-up arm assembly for controlling the reproduction of signals by a stylus from a pre-recorded record disc, the record disc having an initial recorded portion and a terminal recorded portion, comprising: a pick-up arm; a pivotable arm support member for pivotably supporting said pick-up arm at a single pivot point to enable said pick-up arm to scan across the surface of said record disc; means for rotating said pivot point about an axis; a stylus holding member mounted on said pick-up arm for holding said stylus; detecting means for detecting deviations in the position of said pick-up arm with said stylus holding member mounted thereon from a predetermined position during signal reproduction; position adjust means including motor means to drive said pivot point rotating means for adjusting the position of said pick-up arm during signal reproduction to cancel said deviations; and means for limiting the scanning range of said pick-up arm to a confined portion substantially less than the entire surface of said record disc, including: a lead-in memory member for selectively establishing a lead-in position on said record disc for said stylus, said lead-in position being intermediate said initial and terminal recorded portions of said record disc; said lead-in memory member comprising a first rotatable member having a first abutment thereon; a lead-out memory member for selectively establishing a lead-out position on said record disc for said stylus, said lead-out position being intermediate said lead-in position and said terminal recorded portion of said record disc; said lead-out memory member comprising a second rotatable member having a second abutment thereon; stopper means mechanically connected to and rotatable with said pivot point rotating means, said first and second abutments defining an arcuate path for movement of said stopper means to correspondingly limit the movement of said pick-up arm; first restraining means for selectively restraining the rotation of said first rotatable member so that said first abutment defines said leadin position; and second restraining means for selectively restraining the rotation of said second rotatable member so that said second abutment defines said lead-out postion.

3,924,861
RADIAL SHAFT PACKING RING
Jenö Szepesvary, Brockesstr. 3, 8 Munich 83, Germany
Filed Mar. 13, 1974, Ser. No. 450,729
Claims priority, application Germany, Mar. 13, 1973, 2312548
Int. Cl.² F16J *15/32*
U.S. Cl. 277—185 **7 Claims**



1. A radial packing ring for a shaft comprising a sealing element, said sealing element having a bulbous peripheral edge engageable with a bore into which the packing ring is inserted and an inner peripheral lip engageable with a shaft passing through the bore so that the packing ring is sealed simultaneously with respect to a bore into which it is inserted and with respect to a shaft passing through the bore, and first and second rings clamping said sealing element therebetween and connected together.

3,924,862
SEALING DEVICE AND METHOD OF FABRICATION THEREOF
Stanley M. Houston, 74 Scenic Drive, Orinda, Calif. 94563
Filed Mar. 26, 1973, Ser. No. 345,195
Int. Cl.² F16J *15/24*
U.S. Cl. 277—231 **13 Claims**



1. A sealing device for providing sealing relation between itself and a surface of a member comprising:

an elongated resilient elastomeric carrier which may be disposed about a portion of the member; and

an elongated felt member fixed to and along the carrier and which may contact the surface of the member with the carrier so disposed;

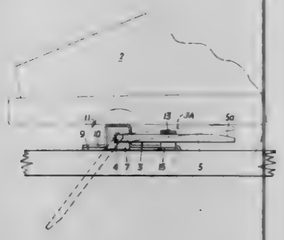
wherein the carrier defines a base, and a pair of carrier sides tapered inwardly of each other in the direction of the base.

3,924,863
GASKET
Soichi Nakano, and Yoshitoku Iizuka, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 10, 1974, Ser. No. 531,311
Claims priority, application Japan, Dec. 11, 1973, 48-137359
Int. Cl.² F16J 15/12
U.S. Cl. 277—235 B 10 Claims



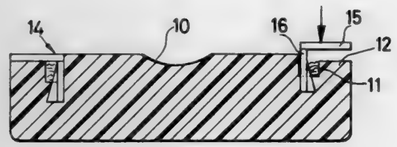
1. A gasket for an internal combustion piston engine having confronting relatively hot and cold contact surfaces comprising, in combination: A first plate formed of insulated material, a second plate formed of metal having a relatively high coefficient of thermal expansion, a third plate formed of metal having a relatively low coefficient of thermal expansion, said first plate being positioned between said second and third plates, said second plate being adapted to contact the relatively cold contact surface of the engine and said third plate being adapted to contact the relatively hot contact surface of the engine.

3,924,864
BRAKING MECHANISM FOR SKIS
Erwin Weigl, Brunn am Gebirge, Austria, assignor to Gertsch AG, Zug, Switzerland
Filed July 2, 1974, Ser. No. 485,247
Claims priority, application Austria, July 6, 1973, 5994/73
Int. Cl.² A63C 7/10
U.S. Cl. 280—11.13 B 10 Claims



1. A braking mechanism for a ski provided with a releasable binding comprising a lever pivotally mounted on the upper surface of the ski in the vicinity of the binding and adapted to be held against movement when a boot is held in the binding and to be pivoted downwardly into engagement with the surface supporting the ski when the boot is released to prevent further travel of the ski, said lever comprising a two-arm bar having one arm which extends substantially parallel to the longitudinal axis of said ski and a transverse arm which extends transversely to said longitudinal axis of said ski, said transverse arm having a twisted polygonal cross section, a guide for holding said twisted polygonal cross section of said transverse arm and having an opening therethrough corresponding in cross section to the cross section of said polygonal cross section so that an outward movement of said transverse arm through said opening will effect a pivoting movement of said two-arm bar and resilient means for urging said two-arm bar outwardly from an at rest position and pivoted into a braking position.

3,924,865
STEEL EDGE
Wolfgang Benner, Landsiedlerstrasse, 7184 Kirchberg (Jagst), Germany
Filed Dec. 4, 1972, Ser. No. 312,129
Claims priority, application Germany, Dec. 3, 1971, 2159993
Int. Cl.² A63C 5/04
U.S. Cl. 280—11.13 N 9 Claims

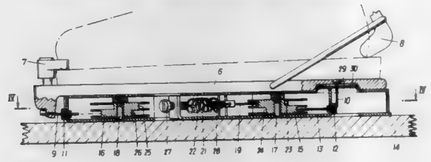


1. In a ski having a body fabricated of wearable, flexible material, a wearing edge construction on at least the two bottom edges of the ski body comprising, for each edge;
a longitudinal anchoring groove having its cross-sectional profile defined by two opposing groove flanks and a groove bottom, said groove extending vertically from the ski bottom spaced from an adjacent bottom edge and extending substantially parallel to the bottom edge and having a cross-sectional depth which is greater than its cross-sectional width;
a wear resistant metallic edge profile of generally L-shaped cross section, having a horizontal leg portion covering at least that portion of the bottom surface of the ski which is included between said groove and the bottom edge of the ski, and a substantially vertical leg portion received between said groove flanks;
a succession of longitudinally spaced cuts in the vertical leg portion of the edge profile, the cuts extending from the top edge thereof over a major portion of the height of the leg portion, whereby the vertical leg portion is subdivided into successive tongue-shaped vertical extensions;
a gap associated with each of said cuts permitting the tongue-shaped extensions to longitudinally approach one another under deflection of the ski body tending to longitudinally bow said edge profile; and
bonding means arranged in said groove for retaining the vertical leg portion of the edge profile within the groove flanks, said bonding means having resilience sufficient to retain said vertical extensions in said groove while permitting longitudinal movement of said extensions within said groove.

3,924,866
SKI BINDING
Gottfried Schweizer, Vienna, Austria, assignor to Gertsch AG, Zug, Switzerland
Filed June 3, 1974, Ser. No. 475,755
Claims priority, application Austria, June 15, 1973, 5301/73
Int. Cl.² A63C 9/08
U.S. Cl. 280—11.35 N 11 Claims

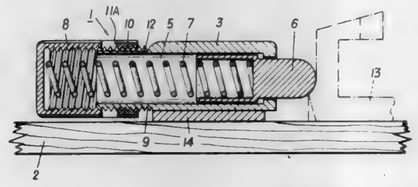
1. A ski binding arrangement for holding a ski boot onto a ski, comprising:

a mounting plate having fastening means thereon for fastening said ski boot to said mounting plate;
threshold releasing securement means for securing said mounting plate to said ski, said threshold releasing securement means including force transmitting means mounted on one of said mounting plate and said ski and pivotal about a fixed pivot axis, elongated cable means secured at one end to said force transmitting means and engaging said force transmitting means at a first location thereon and at the other end to the other of said ski and said mounting plate and resilient means connected at one end to said force transmitting means and applying a force thereto at a second location thereon and anchored at the other end to said one of said mounting plate and said ski, said resilient means effecting a tensioning of said cable means through said force transmitting means to define a holding force when said mounting plate is mounted on said ski and the longitudinal axis of said mounting plate is parallel to said longitudinal axis of said ski;



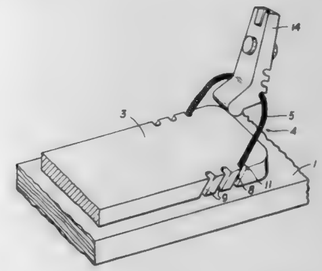
a first normal spacing between a longitudinal axis of said cable means adjacent and extending away from said force transmitting means and intersecting said first location and said pivot axis being less than a second normal spacing between a longitudinal axis of said resilient means adjacent and extending away from said force transmitting means and intersecting said second location and said pivot axis while said mounting plate is mounted on said ski and the longitudinal axis of said mounting plate is parallel to said longitudinal axis of said ski, said first normal spacing increasing and said second normal spacing decreasing and said resilient means becoming more tensioned and said cable means becoming less tensioned in response to an increasing movement of any part of said mounting plate away from said ski, an initial movement of said mounting plate being resisted by said holding force and upon an exceeding of said holding force, a release of said mounting plate from engagement with said ski will be effected.

3,924,867
SPRING LOCKING DEVICE
Josef Koos, Vienna, Austria, assignor to Gertsch AG, Zug, Switzerland
Filed Aug. 14, 1974, Ser. No. 497,219
Claims priority, application Austria, Aug. 30, 1973, 7517/73
Int. Cl.² A63C 9/08
U.S. Cl. 280—11.35 T 3 Claims



1. In a safety ski binding, a spring locking device having an elongated hollow housing with a body part thereon, said body part having a threaded portion at one end thereof, a crown nut rotatably secured on said threaded portion, a locking element at the end of said hollow housing remote from said crown nut and a spring engaging and extending between said crown nut and said locking element to urge said locking element into engagement with a counterlocking part, a rotation of said crown nut on said threaded portion effecting a change in the spring force acting on said locking element, the improvement comprising means defining at least one elongated groove in said body part, the longitudinal axis of which is parallel to the axis of said body part, said groove having indicia therein and indicator means on said crown nut for cooperating with said indicia to indicate the extent to which said spring force is adjusted.

3,924,868
SKI BINDING HAVING AN ADJUSTABLE HEEL HOLDER
Josef Koos, Vienna, Austria, assignor to Gertsch AG, Zug, Switzerland
Filed July 22, 1974, Ser. No. 491,108
Claims priority, application Austria, July 20, 1973, 6452/73
Int. Cl.² A63C 9/086
U.S. Cl. 280—11.35 K 6 Claims

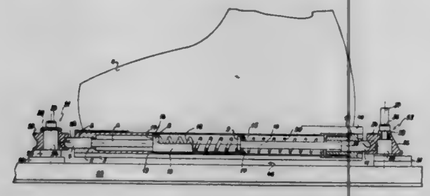


1. A safety ski binding for ski boots, comprising:
a plate separate from said ski and adapted to have a sole of a ski boot mounted on an upper surface thereof;
holding means connected to said plate for holding a heel portion of said ski boot onto said upper surface of said plate, said holding means comprising (1) a control cable having enlargements on the opposite free ends thereof, (2) at least a pair of recesses in said plate, said recesses sized to receive said control cable therein, retain said enlargements therein, and prevent passage of said enlargements therethrough so that said control cable extends between said pair of recesses in vertically spaced relation to said upper surface of said ski, (3) a holding member mounted on said control cable for engaging and holding said heel portion of said ski boot onto said upper surface of said plate and (4) a spring located between said enlargements, engaging said holding member and encircling said control cable, the ends of said spring adjacent said enlargements engaging said upper surface to urge said enlargements into said recesses.

3,924,869
SKI SAFETY BINDING
Rolf Strub, Av. Gennecy 3, 1249 Avully, Geneva, Switzerland
Filed Nov. 5, 1974, Ser. No. 521,168
Claims priority, application Switzerland, Nov. 21, 1973, 16404/73; Oct. 10, 1974, 13620/74
Int. Cl.² A63C 9/086
U.S. Cl. 280—11.35 D 21 Claims

1. Safety ski binding, characterized by the fact that it comprises on the one hand two anchoring supports intended to be fastened to the ski opposite each other and each having a retaining surface of convex shape in a horizontal plane, and on the other hand two catch elements intended to be attached longitudinally to the ski boot, one alongside the other, by the

fact that each of these catch elements comprises an elongate channel two opposite push members movable axially within said channel and intended to extend from said channel, one to come into engagement with the retaining surface of one of the anchoring supports and the other with the retaining surface of the other anchoring support so that the push members corresponding to each of the anchoring supports are arranged symmetrically with respect to the convexity of the retaining surface of the said anchoring support, by the fact that the push



members of each of said catch elements each bear a piston which is movable within said channel against the action of a first spring arranged between said pistons, and by the fact that in each of the catch elements the assembly formed by the pistons and the first spring arranged between them is movable longitudinally in one direction against the action of a second spring arranged within said channel, which is weaker than said first spring, and said assembly is subject to the action of a stop, fixed within said channel, in the opposite direction.

3,924,870

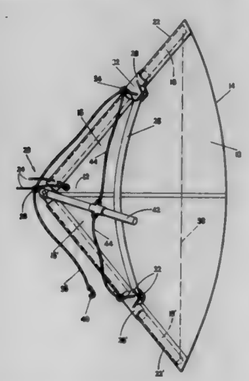
HAND-HELD SAIL

Mayer Splvack, 53 Spruce St., Watertown, Mass. 02172, and Fred R. Kern, Jr., 12 Cooke Road, Lexington, Mass. 02173

Filed Sept. 4, 1973, Ser. No. 393,989

Int. Cl.² A63C *3/00*

U.S. Cl. 280—11.37 S **27 Claims**



1. A hand-held aerodynamic propulsion device comprising: a sail adapted to define an airfoil configuration;

frame means for supporting said sail, said frame means including first grippable means on one side of said sail and aft of the forward region of said sail for gripping the device; and

second grippable means connected to the device forwardly of said first grippable means and on said one side of said sail, said second grippable means having a portion thereof disposed aft of the forward region of said sail and to the same side of said sail as said first grippable means to enable said device to be held away from the user's body, at least one of said grippable means extending in a direction which is away from said sail and to an extent sufficient to provide substantial leverage in controlling the attitude of said sail.

3,924,871

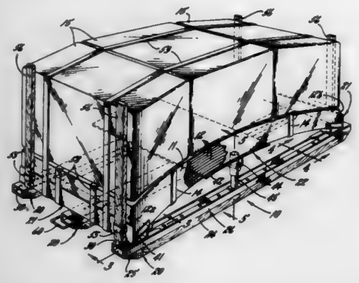
SKID FOR TRANSPORTING SHEET MATERIAL

Miles H. Mesenbring, R.R. 2, Bourbonnais, Ill. 60914

Filed Jan. 13, 1975, Ser. No. 540,573

Int. Cl.² B62B *15/00*

U.S. Cl. 280—12 R **14 Claims**



1. A skid for supporting an arcuate shaped load for transport comprising a plurality of longitudinal runners, means at opposite ends of said runners for releasably connecting said runners together in spaced parallel relation, means associated with each of said connecting means for engaging an end of a load supported on said skid, and an arcuate shaped support removably mounted at the center of said runners for supporting a curved underside of said load.

3,924,872

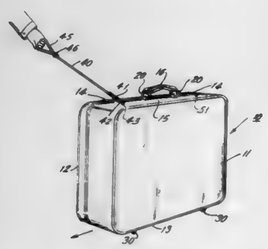
LUGGAGE WITH PULL DEVICE

Pasquale Robert Sollazzi, Newark, Del., and Michael Avrum Kaufman, Melville, N.Y., assignors to Rapid-American Corporation, New York, N.Y.

Filed Aug. 8, 1974, Ser. No. 495,647

Int. Cl.² B62B *11/00*

U.S. Cl. 280—47.37 **3 Claims**



1. In luggage having a bottom wall and a top wall; a flexible pull strap; means for permanently securing one end of said pull strap on said top wall; and means for releasably securing the other end of said pull strap on said top wall, the pull strap, when thus releasably secured, extending in substantial surface to surface relation along said top wall;

said bottom wall being provided with rolling members and the top wall is provided with a handle;

the said strap being permanently secured to said top wall on one side of said handle and releasably secured to said top wall on the other side of said handle;

said strap extending along said handle when said other end of the strap is releasably secured to said top wall;

mountings for said handle comprising loops, the openings of said loops extending normal to the strap when the strap is releasably secured at its said other end; the strap, when so secured, passing through said loops;

the strap being looped at its secured end and having a hand loop at its other end; a releasable attachment member on one surface of said hand loop and a corresponding releasable attachment member on the said top wall on the side of the handle opposite the point of securement of the strap; the said strap presenting a balanced appearance at the luggage top.

3,924,873

REAR WHEEL SUSPENSION FOR A VEHICLE HAVING A BEAM AXLE

Stephen John Crouch, 7 Highwayman's Croft, Coventry, Warwickshire, England, assignor to The Rover Company Limited, Coventry, England

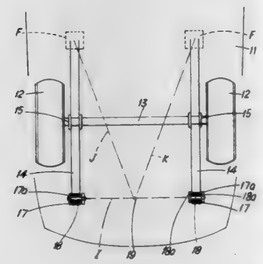
Filed July 18, 1973, Ser. No. 380,338

Claims priority, application United Kingdom, Aug. 23, 1972, 39342/72

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B60G *11/42*

U.S. Cl. 280—124 R **4 Claims**



1. In a rear wheel suspension for a vehicle having a beam axle which supports the vehicle structure through two leaf spring assemblies, disposed perpendicular to and near opposite ends of the axle; the rear end of each assembly being coupled to the vehicle structure by rear resilient means having greater resistance to displacement of the rear end of the assembly relative to the structure in a direction parallel to the ground plane and parallel to the axle than to displacement of the rear end in a direction parallel to the ground plane and at right angles to the axle; the improvement comprising:

first front resilient means coupling the front end of one assembly to the vehicle structure and second front resilient means coupling the front end of the other assembly to said structure, said first front resilient means providing greater resistance displacement of the front end of said one assembly relative to the structure in the direction of a first line extending from said first front resilient means to a point behind said axle midway between said rear resilient means than to the displacement of the front end of the assembly in a direction parallel to the ground plane and at right angles to said line, while said second front resilient means provides a greater resistance to the displacement of the front end of the other of said assemblies relative to the structure in the direction of a second line extending from said second front resilient means to said point than to the displacement of the front end of said other assembly in a direction parallel to the ground plane and at right angles to said line.

3,924,874

PROTECTION DEVICE FOR VEHICLE PASSENGERS

Bela Barenyi, Maichingen, and Hermann Renner, Magstadt, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

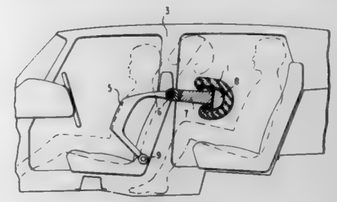
Filed June 2, 1972, Ser. No. 259,236

Claims priority, application Germany, June 4, 1971, 2127688

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B60R *21/10*

U.S. Cl. 280—150 B **11 Claims**



1. In a protection device for front and rear seat vehicle passengers, said device being of the type having an impact means pivotally mounted by at least one pivotal connecting means from at least the vehicle center columns approximately in proximity to front seat backrests of the vehicle so that the impact means are selectively provided in a substantially horizontal use position for the protection of rear seat passengers and in a substantially upright rest position, and said device having safety belt means for protecting front seat passengers, wherein the improvement comprises said at least one pivotal connecting means simultaneously including at least one upper fastening means for said safety belt means.

6. In a protection device for front and rear seat vehicle passengers, said device having an impact means pivotally mounted by pivotal connecting means from each vehicle center column approximately in proximity to front seat backrests of the vehicle so that the impact means are selectively provided in a substantially horizontal use position for the protection of rear seat passengers and in a substantially upright rest position, and said vehicle having safety belt means for protecting front seat passengers, wherein the improvement comprises said pivotal connecting means simultaneously including an upper fastening means for said safety belt means, and

wherein each of said safety belt means are four-point safety belt means, and further wherein an auxiliary bearer means secured to the impact means extends within the area between the backrests of the front seats essentially in the vehicle longitudinal direction, said upper fastening means for each four-point safety belt means including an upper central supporting point being arranged at the auxiliary bearer means and an upper outer fastening point at the pivotal connecting means, said upper central supporting point and said upper outer fastening point of each four-point safety belt means being approximately aligned.

3,924,875

SLIDING FITMENT FOR SAFETY BELT

Andre Lefeuvre, Noisy-le-Roi, France, assignor to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

Filed Jan. 11, 1974, Ser. No. 432,619

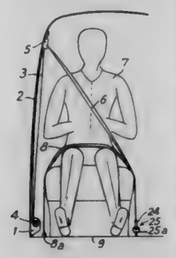
Claims priority, application France, Feb. 15, 1973, 73.05415

Int. Cl.² B60R *21/10*

U.S. Cl. 280—150 SB **6 Claims**

1. In a vehicle having a safety belt system which includes a strap extending between anchorages on the vehicle body and tensioned between said anchorages: a fitment constructed for

slidably receiving said strap, said fitment comprising a body, aperture means on said body for allowing admission of said belt into said body, brake shoe means disposed to clamp said strap with respect to said body, support means comprising a pair of link means connected to said body and to said brake shoe means for supporting said brake shoe means for movement between a first position in which said strap is clamped and a second position in which said strap is released, and driving means for driving said brake shoe means into said first



position, said driving means including first and second brake actuating means including a cross-tie disposed to engage said strap, means connecting one end of each of said link means to said cross-tie, frame means integral with said fitment body, elongate openings in said frame means disposed to slidably receive said cross-tie, and attachment means connected to the other end of each of said link means, further elongate openings in said fitment body disposed to slidably receive said attachment means, and means pivotally connecting said attachment means to said brake shoe means.

3,924,876

APPARATUS FOR INSTALLING A HEAVY MOBILE MACHINE IN A WORKING POSITION

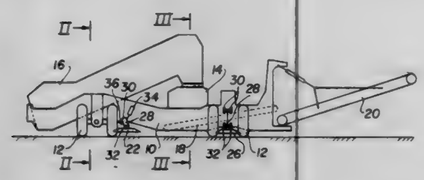
Christian Vaillant, Douchy les Mines, and Jean Pierre Menissez, Wavrechain sous Denain, both of France, assignors to Fives-Cail Babcock, Paris, France

Filed Nov. 15, 1973, Ser. No. 416,198

Claims priority, application France, Nov. 17, 1972, 72.40860

Int. Cl.² B60S 9/10

U.S. Cl. 280—150.5 **4 Claims**



1. In a mobile crusher unit or like machine which comprises a chassis, wheels with pneumatic tires supporting the chassis on the ground for displacement of the chassis to a working site, and retractable support feet supporting the chassis on the ground at the working site in a working position:

1. means for mechanically locking the feet in a lowered or working position, and

2. a pneumatic circuit including a source of pneumatic fluid connected to all pneumatic tires for simultaneously inflating or deflating all the tires,

a. inflation of the tires by the pneumatic circuit enabling the chassis to be fully supported for displacement the working site and keeping the feet in their lowered position off the ground, and

b. deflation of the tires by the pneumatic circuit permitting the locked feet in the lowered position to contact the ground whereby the chassis is supported on the feet in the working position.

3,924,877

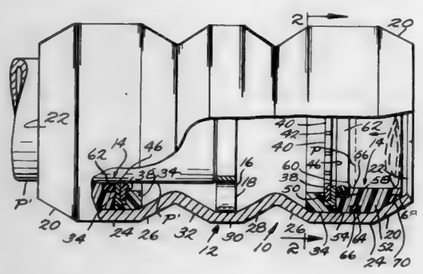
STAB-TYPE COUPLING JOINT

Wilbur R. Leopold, Jr., Decatur, Ill.; Frank C. Hackman, Albertville, Ala.; Lawrence F. Luckenbill, and Daniel A. Ellis, both of Decatur, Ill., assignors to Mueller Co., Decatur, Ill.

Filed Sept. 9, 1974, Ser. No. 504,249

Int. Cl.² F16L 21/02

U.S. Cl. 285—340 **23 Claims**



1. A stab-type coupling joint for connecting an end portion of a smooth wall pipe to fittings or other pipes comprising:

a sleeve member having a substantially uniform wall thickness, said sleeve member having at least one frusto-conical end portion terminating in a pipe receiving aperture, a cylindrical portion adjacent to and merging with the larger end of said frusto-conical end portion and a second frusto-conical portion tapering inwardly from the other end of said cylindrical portion;

stop means spaced inwardly away from said pipe receiving aperture and inwardly of the other end of said cylindrical portion to prevent over-insertion of the pipe through said pipe receiving aperture;

said one frusto-conical end portion, said cylindrical portion, and said second frusto-conical portion defining an annular interior space in said sleeve member;

an annular backup insert ring, an annular finger pipe gripper washer having radially inwardly extending gripper fingers, a rigid annular washer, and a second insert ring in series and positioned in said annular interior space and retained between said second frusto-conical portion and said frusto-conical end portion, respectively, said second annular insert ring having an exterior configuration substantially complementary to a portion of said cylindrical portion and said frusto-conical end portion;

and at least one sealing ring carried by said second insert ring on the interior surface of the same for sealing with the exterior of the pipe and at least one sealing ring carried on the exterior of said second insert ring for sealing with the interior of said sleeve member.

3,924,878

PROTECTIVE HOUSING MEANS FOR TRAILER COUPLER HITCHED TO VEHICLE OR DEVICE

Leslie H. Utman, 1441 NW. 19th St. Apt. 231, Miami, Fla. 33142, and Dante M. Fiorini, 23 Prospect Drive, Coral Gables, Fla. 33133

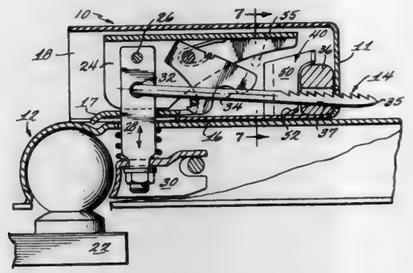
Continuation-in-part of Ser. No. 145,760, May 21, 1971, abandoned. This application June 15, 1972, Ser. No. 263,212

Int. Cl.² B60D 1/12

U.S. Cl. 280—507 **10 Claims**

1. Apparatus for use with a coupler for releasably hitching a trailer to a prime mover, said coupler having a member for releasing the trailer from the prime mover, said apparatus comprising

a. a protective housing means for preventing access to the releasing member and preventing movement thereof from a hitched condition when in access-preventing relationship therewith, said means including a housing member having a first open end thereof for allowing sliding movement of said housing member over said releasing member, and



b. means for locking the coupler in its hitched condition by securing said housing means in access-preventing relationship with the releasing member, said means including a first member positively connected to the coupler and a second member for operative connection to said housing means said housing means also being in access-preventing relationship with said first member.

3,924,879

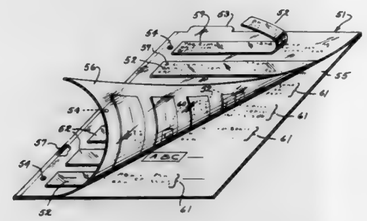
FLEXIBLE FILM TRANSPARENCY DISPLAY MAKERS

John S. Wright, 6115 N. Lake Drive Court, Milwaukee, Wis. 53217

Continuation-in-part of Ser. No. 221,898, Jan. 31, 1972, abandoned, which is a continuation-in-part of Ser. No. 43,086, June 3, 1970, abandoned. This application Mar. 28, 1974, Ser. No. 455,571

Int. Cl.² B41L 1/16

U.S. Cl. 282—28 R **1 Claim**



1. A product for making and storing transparency displays comprising the combination of

a carrier sheet of a transparent material having a glossy surface;

a backing sheet of opaque material bound to said carrier along one edge and adjacent a surface of said carrier sheet opposite said glossy surface;

a pluraity of transparency films, having a glossy surface and being trasparent, soft and flexible, and being removably adherent to said glossy surface of said carrier sheet without adhesive, solvent or fusion by pressing said glossy surface of said transparency films against said glossy surface of said carrier sheet, said transparency films being adapted for receiving imprinted images;

and a duplicating medium between said carrier sheet and said backing sheet to transfer to said backing sheet duplications of images imprinted on said transparency films.

3,924,880

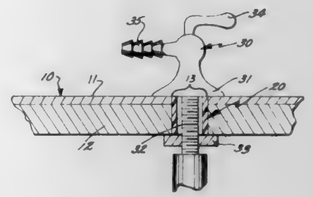
LABORATORY COUNTER TOP AND FITTINGS THEREFOR

Paul J. Betts, Muskegon, Mich., assignor to Inter Dyne, Spring Lake, Mich.

Filed Nov. 5, 1973, Ser. No. 412,670

Int. Cl.² F16L 3/00

U.S. Cl. 285—61 **9 Claims**



1. A laboratory counter top for use with hardware fittings having a shoulder and a securing means spaced from the shoulder whereby the fitting can be secured in an aperture through said top with said shoulder on one side of the top and said securing means on the other side of the top, said laboratory counter top comprising: a composite top including a top layer of a material providing a suitable surface for laboratory use and a substrate layer of a less expensive backing material, said top layer being thin relative to the overall thickness of said counter top; an aperture through said composite top; generally cylindrical spacer means in said aperture, said spacer means having peripheral dimensions throughout its entire length approximately equal to those of said aperture and said spacer means extending from the top surface of said top to the bottom surface of said top and having greater rigidity in an axial direction, extending from the top to the bottom of said counter top, than does said counter top between its said top and bottom surfaces, whereby a fitting inserted through said aperture can be tightened down against said spacer means, thereby minimizing compressive forces on said laboratory counter top.

3,924,881

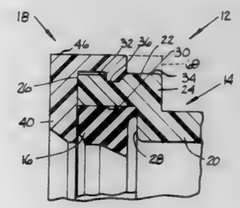
INJECTION MOLDED PLASTIC PIPE FITTING

John Vincent O'Connor, Englewood, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Jan. 22, 1975, Ser. No. 542,979

Int. Cl.² F16L 21/02, 47/00

U.S. Cl. 285—156 **3 Claims**



1. A female member of a pipe joint, comprising:

a. an axially extending hollow section having an external surface, an internal surface and a free end defining an opening into the section to provide entry for the male member of the pipe joint;

b. outwardly directed external shoulder means connected with the external surface of said hollow section, spaced a predetermined distance from said free end and facing away from said free end;

c. inwardly directed internal shoulder means connected with the internal surface of said hollow section, spaced a predetermined distance from and facing said free end;

d. a circumferential sealing gasket disposed concentrically within said hollow section between said free end and said internal shoulder means to provide sealing means for the pipe joint, said gasket having one side thereof adjacent said internal shoulder means and its opposite side facing said free end;

e. an integral, injection molded plastic gasket retaining element including

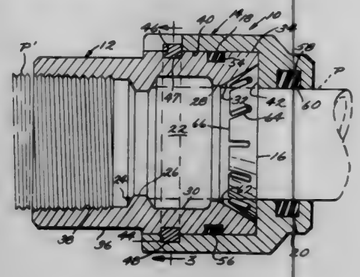
i. a ring-shaped gasket securing segment positioned adjacent the free end of said hollow section and including a circumferential surface in confronting relationship with said opposite side of said gasket to maintain said gasket in its concentrically disposed position within said hollow section, and

ii. an axially extending ring-shaped flange segment joined at one end with said gasket securing segment at approximately said free end of said hollow section, said flange segment extending over and concentrically around a portion of said hollow section from said free end and extending at least to said external shoulder means;

f. two co-planer internal shoulder means connected with and extending circumferentially along the internal surface of said flange segment, adjacent said external shoulder means connected with the external surface of said hollow section, said co-planer shoulder means being spaced from one another by circumferential portions of said flange segment and facing the free end of said hollow section in confronting engagement with said external shoulder means whereby to prevent free separation between said gasket retaining element and said hollow section; and

g. reinforcing means comprising an axial extension of at least a portion of said flange segment, said extension extending axially past said two co-planer external shoulder means.

3,924,882
STAB-TYPE COUPLING JOINT
Daniel A. Ellis, Decatur, Ill., assignor to Mueller Co., Decatur, Ill.
Filed Oct. 4, 1974, Ser. No. 512,484
Int. Cl.² F16L *55/00*
U.S. Cl. 285—175 **9 Claims**



1. A stab-type coupling joint for connecting an end portion of a smooth wall pipe to a fitting or another pipe, said coupling joint comprising:

a body member having a passageway therethrough, stop means in said passageway to limit insertion of the smooth wall pipe, a bore defining a portion of said passageway and having a diameter to receive the smooth wall pipe, said bore terminating at its end away from said stop means in an outwardly flaring frusto-conical surface, said body member having a cylindrical exterior configuration on the end portion which receives the smooth wall pipe;

a tubular member having a bore extending from one end thereof with the bore having a diameter sufficient to telescopingly receive the cylindrical end portion of said body member, said last-mentioned bore terminating in an inwardly extending annular shoulder having an inner diameter at least as great as the diameter of the smooth wall pipe;

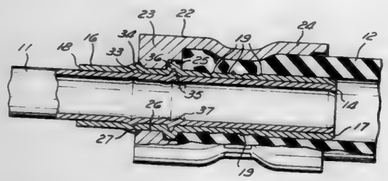
a frusto-conical gripper ring having spaced slots extending from its smaller end to define gripper fingers, the smaller end of said gripper ring having a diameter less than the diameter of the smooth wall pipe;

said annular shoulder of said tubular member and said frusto-conical surface of said body member defining a frusto-conical space receiving said frusto-conical gripper ring when said body member and said tubular member are telescoped together;

means to lock said body member and said tubular member together against axial movement relative each other so as to retain said gripper ring in position while permitting relative rotation between the body member and the tubular member, said lock means including an annular groove in the bore of said tubular member, an annular groove on the cylindrical portion of said body member which cooperates with the groove of said tubular member to define an annular passage, and a ring-like element positioned entirely within said annular passage for locking the tubular member and the body member against axial movement but permitting their relative rotational movement; and,

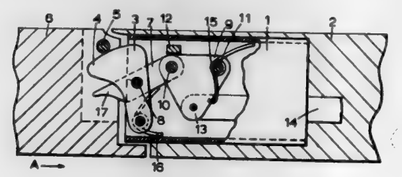
a first sealing means sealingly positioned between the bore of said tubular member and the cylindrical end portion of said body member and a second sealing means between said tubular member and the exterior of the smooth wall pipe, said second sealing means being positioned outwardly of said gripper ring whereby it sealingly engages said tubular member along with said smooth wall pipe on a portion of the same not previously engaged by said gripper ring.

3,924,883
HOSE COUPLING
Irving G. Frank, Euclid, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio
Filed June 12, 1974, Ser. No. 478,582
Int. Cl.² F16L *33/00*
U.S. Cl. 285—256 **7 Claims**



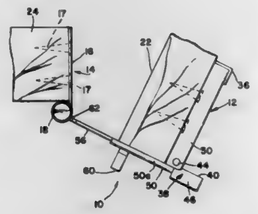
1. A hose coupling comprising a metal tube having an interior and an exterior and a free end, a metal reinforcing sleeve having an interior and an exterior and a free end, a metal collar, and a flexible hose, the reinforcing sleeve being separate from the tube and being disposed on the exterior of the tube, the collar being disposed on the exterior of the reinforcing sleeve, the collar having a body portion closely adjacent the exterior of th reinforcing sleeve and spaced axially from the free ends of the reinforcing sleeve and tube, the collar also having a skirt portion spaced radially outwardly of the exterior of the reinforcing sleeve and extending axially from the body portion toward the free ends of the tube and reinforcing sleeve, the hose being received within the skirt portion over the exterior of the reinforcing sleeve, the tube and reinforcing sleeve each being radially outwardly deflected and providing radially outwardly extending annular beads on at least the side of the collar body portion closest to the hose, and the bead of the tube extending into the bead of the reinforcing sleeve and being arranged such that the exterior of the tube sealingly engages the interior of the reinforcing sleeve at the location of the bead, whereby fluid leakage from the free end of the tube between the exterior of the tube and the interior of the reinforcing sleeve is prevented.

3,924,884
LATCHES
John James Watson Christie, Walsall, England, assignor to Wilfrid Overton Limited, Walsall, England
Filed Apr. 8, 1974, Ser. No. 459,162
Claims priority, application United Kingdom, Apr. 7, 1973, 16798/73
Int. Cl.² E05C *3/00*
U.S. Cl. 292—196 **3 Claims**



1. A slam latch for connecting a door member to a door frame member, said latch comprising a latching member pivoted about an axis and designed to be mounted on the one member (e.g. a door) and to engage a striker on the other member (e.g. a door frame), said latching member being controlled by a toggle linkage comprising first and second links pivoted together, said second link being pivoted to a point fixed in relation to said axis and said first link being pivoted to said latching member, said toggle linkage being designed to pass to an over-center position in the latched condition of the latch, and said first link including an extension beyond its pivotal connection with said latching member, said extension being placed in the path of the striker relative to said latching member whereby when the door member is slammed, said extension is engaged by the striker and displaces said toggle linkage out of its over-center condition.

3,924,885
SAFETY LATCH
Branko Markovitch, Hawthorne, Calif., assignor to Samuel P. Simmons, Lomita, Calif.
Filed Jan. 24, 1974, Ser. No. 436,099
Int. Cl.² E05C *17/04*
U.S. Cl. 292—262 **6 Claims**



1. A safety latch for limiting the opening of a door with respect to a doorframe, comprising:

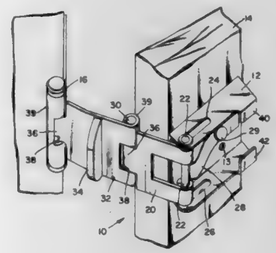
a latchplate for securement to the doorframe, said latchplate having a T-shaped engagement opening therein;

a structure for mounting upon the door, said structure comprising a base with a stop formed therein;

a guide pivotally mounted to said base, said guide having guide flanges;

an engagement link slidably mounted with respect to said guide flanges to slide from a retracted to an extended position, a stop on said engagement link to limit the amount said engagement link can clide out of said guide, said engagement link engaging with respect to said stop to retain said engagement link with respect to said base when said engagement link is in its retracted position, said engagement link also having a manually operable handle thereon, and a T-shaped engagement nose on said engagement link, said engagement nose extending into said engagement opening on said latchplate when the door is closed and said engagement link is extended with respect to said guide, said nose and said opening being configured so that said nose can engage said opening only when said engagement link is lying in said base.

3,924,886
SLIDING LINK SAFETY LATCH
Branko Markovitch, Hawthorne, Calif., assignor to Samuel P. Simmons, Lomita, Calif.
Filed Jan. 24, 1974, Ser. No. 436,097
Int. Cl.² E05C *17/48*
U.S. Cl. 292—263 **12 Claims**



1. A safety latch for mounting upon a door member and upon an associated door frame member to selectively permit the door to swing freely open or to permit the door to swing open a positively limited amount, said safety latch comprising:

a stationary latchplate for mounting on one of the door members, said latchplate having an engagement opening therein;

a base for mounting upon the other door member;

an intermediate link slidably and pivotally mounted with respect to said base;

a latch link pivotally mounted with respect to said intermediate link, said latch link having a nose for engagement into said engagement opening of said latchplate only when the door is in closed position so that said intermediate link and said latch link unfold and pivot with respect to each other and with respect to said base to limit door opening.

3,924,887
PIVOTING LINK SAFETY LATCH
Branko Markovitch, Hawthorne, Calif., assignor to Samuel P. Simmons, Lomita, Calif.
Filed Jan. 24, 1974, Ser. No. 436,098
Int. Cl.² E05C *19/08*
U.S. Cl. 292—283 **10 Claims**

1. A safety latch for limiting the amount of opening of a door member with respect to a doorframe member, said safety latch comprising:

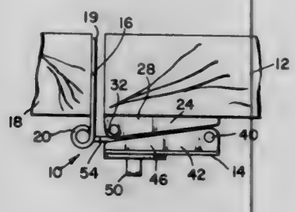
a base for mounting on one of the door members adjacent the edge thereof;

an intermediate link pivotally mounted on said base;

an outer link pivotally mounted on said intermediate link, said base, said intermediate link, and said outer link being

configured so that said outer link lies adjacent said base when said outer link is in its retracted position, and said outer link pivots outward away from said base to extend past said edge when in its extended position;

a latch movably mounted on said outer link;



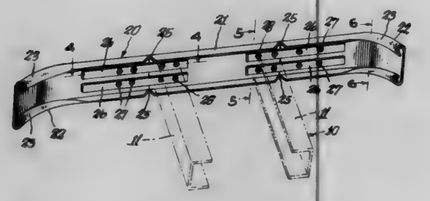
a stationary latchplate for mounting on the other door member, said latch having a nose engageable in a latch slot in said latchplate only when said outer link is in its retracted position and said nose remaining latched in said latch slot as the door opens and said links unfold to a maximum limit position which limits the maximum door opening.

3,924,888

BUMPERS FOR VEHICLES

Thomas V. Butcher, Route 2 Box 363A, Bristolville, Ohio 44406, and Donald H. Stitt, 182 Budd St., Sharon, Pa. 16146

Filed Dec. 26, 1974, Ser. No. 536,541
Int. Cl.² B60R *19/04*
U.S. Cl. 293—76 **4 Claims**



1. A bumper for a vehicle having a frame including a pair of laterally spaced beams extending longitudinally of said vehicle, and rubber-tired wheels mounted in paired relation on said frame in conventional manner so that the wheels of each pair are disposed outwardly of respective beams adjacent the ends thereof, comprising

a center bumper section rigidly secured to said frame at an end thereof and extending horizontally and crosswise of said frame beams,

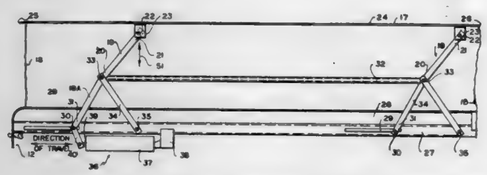
an end bumper section at each end of said center bumper section, each end section being disposed to guard an adjacent wheel of said pair of wheels against impact with an object on the road over which said vehicle travels, and leaf spring means disposed between and secured to each bumper end section and said center bumper section, constructed and arranged for disposition generally within the confines of and lying flat against said sections and operative to bias said end bumper sections to longitudinal continuity with said center section but permitting an end bumper section to be moved toward a respective wheel against the biasing force of its spring connection with said center section when said end section strikes an obstruction in the road.

3,924,889

ELEVATING MECHANISM FOR THE ROOFS OR TOPS OF VANS AND THE LIKE

Michael Gogush, 7101 Robin Blvd., R.R. No. 1, Headingly, Manitoba, Canada

Filed Jan. 3, 1975, Ser. No. 538,369
Claims priority, application Canada, Feb. 27, 1974, 193602
Int. Cl.² B60J *7/08*
U.S. Cl. 296—137 B **8 Claims**



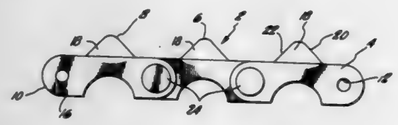
1. In a vehicle body which includes a pair of spaced and parallel side walls, a rear wall and a front wall forming an enclosure, and a roof for said enclosure, a substantially rectangular opening formed in said roof, a substantially rectangular roof panel having a pair of spaced and parallel sides and a front edge and a rear edge, flexible wall means extending from the boundaries of said opening in said roof, to the sides and edges of said panel whereby said panel can be moved substantially vertically from the closed position covering said opening, to the raised position whereby said panel is spaced vertically above said opening with said flexible walls extended; means to raise and lower said roof panel relative to said roof, said means including at least two pairs of crank arms, one pair being pivotally connected by the upper ends thereof in spaced apart relation to one side of said roof panel, the other pair being similarly connected to the opposite side of said roof panel, link means pivotally connected by the ends thereof to the crank arms of each of said pairs intermediate the ends of the crank arms, said one pair of crank arms being pivotally connected by the other ends thereof to adjacent the upper edges of the side walls of said vehicle, the said other pair of crank arms being similarly connected to the other side wall of said vehicle adjacent the upper edge thereof, anchor link means pivotally secured by one end thereof to adjacent said upper side edges of said side walls spaced from said other ends of said crank arms, and by the other end thereof to the point of pivotal connection of said link means to said crank arms and means mounting said other ends of said crank arms to said side walls for longitudinal sliding movement whereby said roof panel raises and lowers substantially vertically relative to said vehicle, an extension formed on said other ends of at least one of said pairs of crank arms and a source of power being operatively connected to said extensions.

3,924,890

FOLDABLE FURNITURE HINGE MEMBER

John William Brennan, Jr., 17866 Sierra Highway, Saugus, Calif. 91350

Filed June 8, 1973, Ser. No. 368,201
Int. Cl.² A47C *4/18*
U.S. Cl. 297—16 **7 Claims**



1. A foldable multi-sectional chair comprising:

four substantially U-shaped sectional members, two members having a pair of leg portions interconnected by a central body, at least one other member forming a seat frame and the final member forming a back rest frame;

a hinge member having at least four substantially identical links rotatably connected together, each link having a body and an inclined bearing surface that is inclined traversely to a plane containing the longitudinal length of the body, the respective bearing surfaces capable of positioning the first and third intermediate link approximately parallel along the longitudinal axis of the link bodies and the second intermediate link and fourth link approximately transverse along the longitudinal axis to the first and third links in the operative position of the foldable chair;

means for connecting each link to a respective U-shaped member including connecting the central body of the leg members to their respective links; and

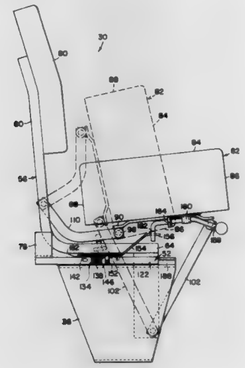
means for connecting the bodies of the respective links along their longitudinal lengths so that the inclined bearing surface of each link is towards the plane containing the body of an adjacent link, the links being relatively rotatable to permit adjacent bearing surfaces that are inclined to extend into the respective rotational paths of adjacent links to permit adjacent bearing surfaces to be positioned against each other when the chair sectional members are forming an operative unit, each link connected to a chair sectional member and capable of positioning the chair sectional members in relatively parallel positions when folded into a compact position.

3,924,891

FOLDING BENCH-TYPE SEAT FOR A MOTOR GRADER

Lary Lynn Williams, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Feb. 20, 1974, Ser. No. 443,967
Int. Cl.² A47C *4/00*
U.S. Cl. 297—334 **3 Claims**



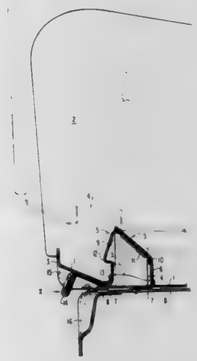
1. A vehicle seat structure comprising: a support frame, a seat cushion including first and second transverse contiguous surfaces extending substantially perpendicular to each other; linkage means including over-center link means connecting said seat cushion to said support frame for movement between a normal position, wherein said first seat cushion surface is generally horizontal and upwardly facing, said second seat cushion surface is generally vertical and rearwardly facing and said link means is in a collapsed condition, and a folded position wherein said first seat cushion surface is generally vertical and forwardly facing, said second seat cushion surface is generally horizontal and upwardly facing and said link means is in a slightly over-center condition tending to resist movement thereof back to said collapsed condition; said first surface including a portion which is forward of said link means when said seat cushion is in said folded position and when respectively considered with the cushion in its normal and folded positions, said first surface having a fore-and -aft dimension which is at least twice that of the second surface; said support frame including a movable portion and a fixed portion; the over-center link means being connected only to the movable frame portion having respective cooperating surface means for retaining and guiding said movable frame portion for fore-and-aft shifting movement; latch receptacle means formed in said cooperating surface means; a latch means movably mounted on said fixed frame portion and including a portion disposed for engagement with said latch receptacle means when the latch means is in a latching position to prevent movement of the movable frame portion; biasing means urging said latch means towards its latching position; said latch means being movable to an unlatched position wherein said portion thereof is free from said latch receptacle; and lever means pivotally mounted on said seat cushion and selectively swingable to engage and operate said latch means when said seat cushion is in said normal position.

3,924,892

INSTALLATION FOR DETACHABLE FASTENING OR REAR SEAT CUSHIONS IN PASSENGER MOTOR VEHICLES

Bernd Geier, Grafenau-Datzingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Aug. 7, 1973, Ser. No. 386,403
Claims priority, application Germany, Aug. 8, 1972, 2238950
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B60N *1/02*; **A47C** *1/034*
U.S. Cl. 297—440 **10 Claims**



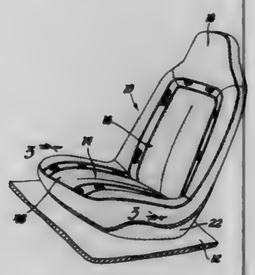
1. An installation for detachable fastening of a rear seat cushion means, characterized in that a rear seat mounting means is provided, aperture means are provided in the rear seat mounting means, the rear seat cushion means includes a sub-frame which is provided in proximity to its forward edge with recess means, a retaining means is fixed at the rear seat mounting means and includes a head portion engaging in the recess means during the lowering of the rear seat cushion means and a base portion inserted into said aperture means provided in the rear seat mounting means, the retaining means adjusting the rear seat cushion means into a position correct as regards its location on the rear seat mounting means when the rear seat is lowered, and a spring means is provided having one bent portion on said retaining means for automatically latching the rear seat cushion means when lowered on the retaining means.

3,924,893

VENTILATED VEHICLE SEAT

Rudolph A. Ferrara, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 17, 1974, Ser. No. 515,583
Int. Cl.² A47C *7/02*
U.S. Cl. 297—455 **3 Claims**



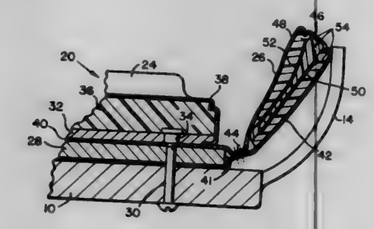
1. A vehicle seat back comprising: a frame for supporting the seat back cushion, a resilient central cushion of generally rectangular shape, first and second resilient side bolster cushions extending vertically and spaced laterally of the central cushion to provide vertically extending air passage spaces between the central cushion and the first and second side bolster cushions, a seat cover covering the central cushion, first and second seat covers respectively covering the first and second side bolster cushions, an air pervious seat covering material attached to the seat cover of the central cushion and the adjacent of the first and second side bolster cushions to bridge the air passage space therebetween, back panel means attached to the back of the seat back and providing vertically extending concave depressions aligned generally with the air passage spaces between the first and second side bolster cushions and the central cushion to provide increased leg room for a passenger seated behind the seat back, the compression of the first and second side bolster cushions and the central cushion by the weight of the seat occupant being effective to tension the air pervious material across the air passage space whereby the seat occupant is supported in spaced non-contacting relation from the supporting frame and the back panel and air circulation is provided for the seat occupant.

3,924,894

DENTAL CHAIR BACKREST WITH INTEGRAL ELBOW SUPPORTS

Azriel J. Rabinowitz, Rochester, and David B. Wilson, Holcomb, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Oct. 7, 1974, Ser. No. 512,486
Int. Cl.² A47C *7/02*
U.S. Cl. 297—460 **3 Claims**



1. An upholstered back with integral elbow supports for the backrest frame of dental chairs and the like comprising:

a. an elongated plate adapted for connection to the backrest frame;

b. first and second sheets of upholstery material fixed respectively to the front and rear surfaces of said elongated plate, portions of said sheets extending outwardly from opposite longitudinal edges of said plate to form wing portions, said first sheet being disposed over the front surface of said plate and defining the front surface of each wing portion, said second sheet comprising a pair of separate sheets defining the rear surface of each wing portion, said second sheets being connected along one edge to said plate;

c. said outward extending wing portions being stitched together along a peripherial line to form a sealed pocket, said peripherial line including a segment running generally along a major length of each of said longitudinal edges wherein said first and second sheets are placed one against the other and stitched to form hinges about which said wing portions can deflect;

d. stiffening means in each of said pockets to rigidity the same and permit said wings to support the elbows of a patient in said dental chair, each means including a pair of stiffening members, one disposed over the other, the top one of said members being formed with a curved portion to cup the elbow of a patient in said dental chair; and

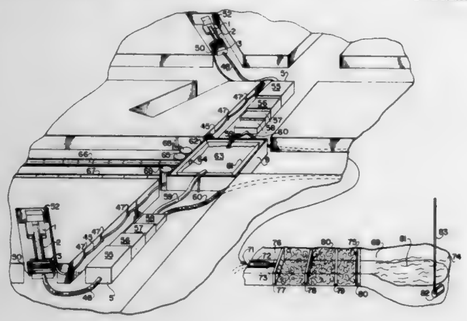
e. upholstery cushion material in each of said wing pockets and about said means to cushion said wings, a portion of said upholstery cushion material being interposed between said members.

3,924,895

METHOD AND APPARATUS FOR HYDRAULIC TRANSPORTATION OF MINED COAL

William C. Leasure, 4130 Durness Way, Houston, Tex. 77025

Filed Dec. 7, 1973, Ser. No. 422,799
Int. Cl.² E21C *35/20*
U.S. Cl. 299—8 **8 Claims**



1. A method for transporting mined coal from a plurality of working faces of an underground mine to a station at the surface of said mine comprising the steps of:

dislodging said coal from said working faces by means of a mobile underground mining machine;

combining said coal with carrier liquid adjacent said working faces;

conveying said mined coal and carrier liquid by means of bifurcated conveyors to crushers fixedly mounted to modile slurrying devices;

crushing said mined coal;

admixing said crushed coal with additional carrier liquid to form slurries within said slurrying devices;

transporting said slurries to said cleaning tables;

forming clean coal slurries and waste coal slurries within said cleaning tables by removing waste coal and a part of said carrier liquid from said slurries by screening means horizontally disposed within said cleaning tables, such that clean coal and a part of said carrier liquid remain above said screens and waste coal and a part of said carrier liquid fall below said screens;

pumping said clean coal slurries along conduits from said cleaning tables to a junction box centrally located within said underground mine;

admixing said clean coal slurries within said junction box to form an aggregate slurry;

pumping said aggregate slurry along a conduit from said junction box to said station at the surface of said underground mine by means of a pump located adjacent said junction box;

separating said slurry into clean coal and carrier liquid;

pumping said waste coal slurries along conduits away from said cleaning tables and joining said conduits with a single conduit leading to the entrance passageway of a sump so as to an aggregate waste coal slurry;

pumping said aggregate waste coal slurry from said single conduit into said entrance passageway to said sump;

separating waste coal tailings from said waste coal slurry by screening means disposed vertically within said entrance passageway;

pumping remaining liquid from said waste coal slurry upwardly along a conduit to a first settling pond located above said underground mine;

transporting said remaining liquid from said first settling pond by force of gravity to a second settling pond disposed in stepped relationship adjacent to and below said first settling pond;

transporting said remaining liquid from said second settling pond by force of gravity to a third settling pond disposed in stepped relationship adjacent to and below said second settling pond;

transporting said remaining liquid from said third settling pond by force of gravity to said station at the surface of said underground mine;

combining said remaining liquid with said remaining liquid from said clean coal slurry and pumping said combined liquid along a conduit to said junction box; and

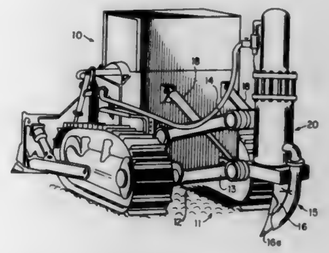
pumping said combined liquid by pump means located adjacent said junction box along a plurality of conduits to said underground mines and said slurrying devices.

3,924,897

EARTH RIPPER EMPLOYING REPETITIVE EXPLOSIONS

John W. Colburn, Jr.; Charles D. Wood, III; Ronald J. Mathis, and Allan R. Nye, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Dec. 21, 1973, Ser. No. 427,039
Int. Cl.² E21C *47/00*
U.S. Cl. 299—36 **4 Claims**



1. An earth ripper for penetrating and fracturing earth, comprising, in combination:

a ripper shank adapted to be mounted on a tractor and including a ripper tooth mounted on the lower end thereof;

a combustion apparatus having a gas inlet, an ignition source, and a high pressure gas outlet, and adapted to be mounted on said tractor for generating repetitive discharge of gas under pressure at said gas outlet; and

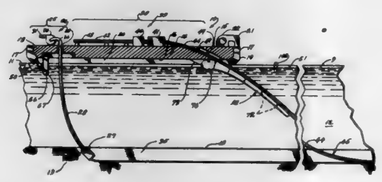
a discharge conduit connected between said outlet and the lower end of said shank for conducting gas under pressure to an area adjacent to and about said tooth, said discharge conduit including an end member for connection to said ripper shank, said end member including an elongated slot for receipt of the lower end of said shank, said tooth extending outwardly from and in front of said end member in the direction of movement of said shank through the earth; and a discharge opening shielded by said tooth to prevent clogging thereof during operation of said earth ripper and disposed relative to said tooth so that gas discharged therefrom is substantially directed towards said tooth.

3,924,896

AIR CUSHION DREDGE FOR USE IN ICE-COVERED WATERS

Owen D. Blankenship, Houston, Tex., assignor to Global Marine Inc., Los Angeles, Calif.

Division of Ser. No. 276,110, July 28, 1972, Pat. No. 3,822,558. This application Apr. 22, 1974, Ser. No. 462,749
Int. Cl.² E02F *3/88*
U.S. Cl. 299—18 **6 Claims**



1. A method for dredging in water susceptible to being covered by a layer of ice comprising the steps of

1. locating a dredging facility on a buoyant platform adapted to be supported on a cushion of air,

2. floating the platform in the water and performing dredging operations from the platform during periods when the water is not covered by ice sufficient to restrict floating movement of the platform, and

3. during periods when the water is covered by ice sufficient to restrict floating movement of the platform, forming an opening through ice below the platform, supporting the platform on a cushion of air, and performing dredging operations from the platform through the ice.

3,924,898

PROTECTIVE HUB CAP FOR BICYCLES

Calvin L. Kain, 1325 Rockdale Road, Bartlesville, Okla. 74003

Filed Oct. 1, 1973, Ser. No. 401,992
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B60B *27/00*
U.S. Cl. 301—108 SC **5 Claims**

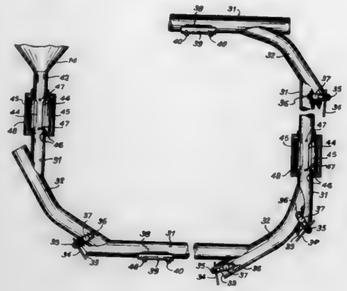
1. A hub cap for bicycle wheel axles comprising a circular hub member having a substantially S-shaped radial cross sectional configuration, said hub member being provided with a centrally disposed aperture therein, an axle attachment washer disposed within said aperture and slidably disposed on the wheel axle, and means for removably securing the washer to the hub member, and wherein the outer portion of the hub member extends outwardly away from the wheel to a point beyond the end of the wheel axle and wherein the outer edge of said hub member curves back towards the wheel thereby forming an annular protective surface around the end of the wheel axle.

5. A hub cap for bicycle wheel axles comprising a circular hub member having a substantially S-shaped radial cross sectional configuration, said hub member being provided with a centrally disposed aperture therein, an axle attachment washer disposed within said aperture and slidably disposed on the wheel axle, and means for removably securing the washer to the hub member, and wherein the outer portion of the hub member extends outwardly away from the wheel to a point beyond the end of the wheel axle and wherein the outer edge of said hub member curves back towards the wheel thereby forming an annular protective surface around the end of the wheel axle, and wherein the washer is cylindrical in shape and is provided with an outwardly extending flange therearound and wherein the means for removably securing the washer to the hub member comprises an annular groove disposed within the hub member aperture, a flared recess provided in the outer end of the aperture between the outer face of the hub member and the groove, the diameter of the cylindrical washer is substantially equal to the diameter of the aperture and the diameter of the flange is substantially equal to the diameter of the groove whereby the cylindrical washer is inserted into the aperture and the flange is passed through the flared recess and snapped into the groove within the aperture.

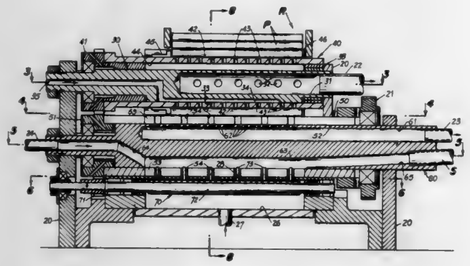


3,924,899
AUTOMATIC CHOKE RELIEF VALVES SYSTEM FOR PNEUMATIC CONVEYANCE
Felipe Salete, Cerro de Macuiltepec No. 449, Col. Campestre Churubusco, Mexico City, Mexico
Filed Sept. 21, 1973, Ser. No. 399,586
Claims priority, application Mexico, July 27, 1973, 145167
Int. Cl.² B65G *53/66*
U.S. Cl. 302—35 **16 Claims**

1. A duct system for pneumatic conveyance of milling products, comprising a conveying line constituted by straight horizontal portions each formed with an opening, straight vertical portions each formed with opposite openings, and change of direction portions joining the straight horizontal and vertical portions, and the system also comprising a plurality of circularly curved plates associated respectively with said openings in said straight horizontal portions and said openings in said straight vertical portions, and suspension means suspending the plates from said conveying line so that each plate is movable under influence of pressure difference between the interior of the conveying line and the exterior thereof between a position in which the plate covers the opening with which it is associated to close off said opening and a position in which it does not close off said opening, so that each plate provides an automatically-operating relief valve.



3,924,900
FEED MECHANISM FOR PNEUMATIC CONVEYOR SYSTEMS
Gerald Mason Eisenlohr, Richmond, Va., assignor to AMF Incorporated, White Plains, N.Y.
Filed July 10, 1974, Ser. No. 487,116
Int. Cl.² B65G *53/46*
U.S. Cl. 302—49 **10 Claims**



1. A mechanism for feeding rod-like articles to a pneumatic conveyor, comprising

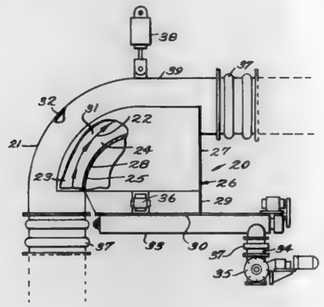
rotatable drum means for receiving rodlike articles moving laterally to their axes into said drum means one by one from a reservoir,

receiver means being disposed within said drum means and supported at its ends against movement,

said receiver means being provided with a longitudinal recess in its periphery forming a fixed receiver chamber and passage means for connecting one end of said chamber to a pneumatic conveyor and the other end of said chamber to a source of pressure air for causing rod-like articles to move axially out of said chamber into the conveyor,

said drum means rotating relative to said receiver means thereby moving each of said articles into alignment adjacent said receiver chamber with the axis of the aligned article parallel to the axis of said receiver chamber, and cam means connected to rotate in timed relation with said drum means and urging a rod-like article to move laterally to its axis into said receiver within said drum means each time said drum means moves a rodlike article into alignment with said receiver chamber.

3,924,901
PARTICLE BUILD UP SUPPRESSOR
Woodrow W. Phillips, 3136 Clairmont Road NE., Atlanta, Ga. 30329
Filed May 3, 1973, Ser. No. 356,808
Int. Cl.² B65G *53/52*
U.S. Cl. 302—64 **34 Claims**



29. A device for use in a conduit system having a conduit bend that changes the direction of a generally vertical flowpath of a pressurized stream of fluid containing suspended particles to a generally horizontal flowpath, the conduit bend having an inner wall at the bend thereof that includes an outer radius segment and opposite thereto an innner radius segment so that as the stream changes direction a high velocity-energy region will be formed adjacent the outer radius and a low velocity-energy region at the inner radius comprising:

a collection means connected to the inner radius for trapping the particles that settle from the high velocity-energy region of the conduit bend to the low velocity-energy region of the conduit bend thereby preventing the build-up of particles at the inner radius segment;

a vibration means operatively attached to said collection means for preventing build-up of particles along the inner walls of said collection means by vibrating said collection means;

means connected to the conduit bend for isolating vibration of said collection means produced by said vibration means from the remainder of the supporting conduit system;

said vibration isolating means comprising:

a spring-hanger connected to the conduit bend and flexible joints connected at least at each end of the conduit bend.

34. A fin-like separator device operatively connected with the internal wall of a conduit, which conduit system has conveyed therethrough a pressurized stream of fluid medium containing suspended particles, the fin like separator device comprising:

a snub means having a generally flat surface which is inclined at a compound angle relative to the longitudinal axis of the conduit from the inner wall of the conduit where said device is mounted, simultaneously in these two senses:

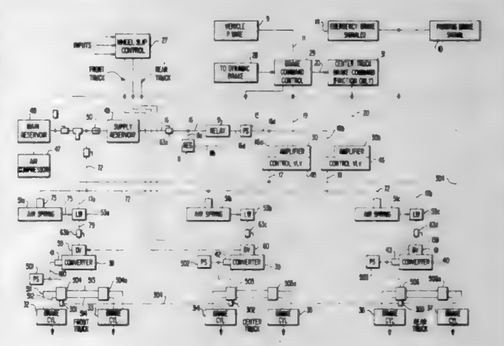
a. proceeding along the generally flat surface from nearer the conduit internal wall towards the longitudinal axis of the conduit, the generally flat surface inclines downstream, to increase the incidence of collision of the suspended particles in the stream by deflecting suspended particles which are near the internal wall towards the center of the stream when the generally flat surface faces the stream and the stream impinges thereon;

b. proceeding along the generally flat surface transversally of the longitudinal axis of the conduit, the generally flat surface is inclined laterally towards one side for providing lateral deflection of the suspended particles when the generally flat surface faces the stream and the stream impinges thereon;

and an aerodynamic surface means, arched transversally and inclined in an opposite sense to the sense (a), said aerodynamic surface means extending from the internal wall to a generally arch-shaped juncture with said generally flat surface of the snub means, for deflecting said suspended particles when said aerodynamic surface means, but not the snub means, faces the stream and the stream impinges on the aerodynamic surface means,

said opposite inclination of the generally flat surface and said aerodynamic surface means resulting in alternative use of the generally flat surface and the aerodynamic surface means, depending upon which direction the stream of fluid medium is being conveyed through the conduit, and, correspondingly, whether the stream impinges upon the generally flat surface or upon the aerodynamic surface means.

3,924,902
BRAKING SYSTEM FOR A LIGHT RAIL VEHICLE
Thomas Engle, Cape Vincent, N.Y., assignor to General Signal Corporation, Rochester, N.Y.
Continuation-in-part of Ser. No. 393,529, Aug. 31, 1973, Pat. No. 3,845,991. This application June 17, 1974, Ser. No. 480,441
Int. Cl.² B60T *8/04*
U.S. Cl. 303—21 A **16 Claims**



1. A brake system for vehicles having at least one axle with friction and dynamic brakes and at least one axle with only friction brakes, said system comprising: fluid operated friction brake means for said vehicle, said friction brake means including means responsive to variations in fluid pressure to actuate said friction brake means, said brake means having:

first and second pressure-responsive fluid motors, said first fluid motor being responsive to positive fluid pressure variations to actuate said brake means;

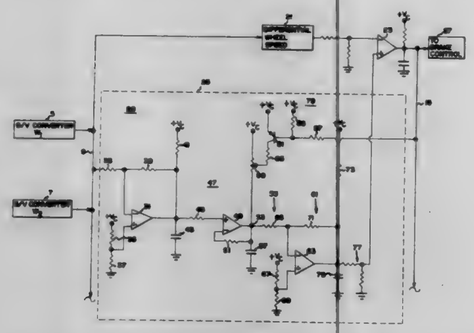
spring motor means responsive to reductions in fluid pressures applied to said second fluid motor to actuate said brake means;

a first fluid pressure control means for providing variations in the fluid pressure applied to the first pressure-responsive fluid motors of said axle having friction and dynamic brakes, said first control means responding to a supplied signal which is inversely proportional to the amount of dynamic braking effort applied to said axle;

a second fluid pressure control means for providing fluid pressure to the first pressure-responsive fluid motors of said axle having friction brakes, said second control means responding to a supplied signal which is independent of the amount of braking effort applied to said axle with friction and dynamic brakes; and

a third fluid pressure control means for providing reductions in fluid pressure to said second fluid motors, said third pressure control means being responsive to both emergency braking control signals and parking brake control signals.

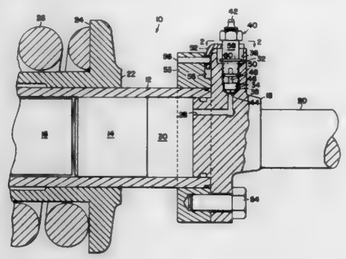
3,924,903
DUAL SLOPE RAMP CIRCUIT FOR ANTI-SKID CONTROL CIRCUITRY
Lucian F. Emerson, Williamsport, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.
Filed May 6, 1974, Ser. No. 467,273
Int. Cl.² B60T *8/08*
U.S. Cl. 303—21 BE **5 Claims**



1. In a wheeled vehicle anti-skid control circuit having first and second voltage sources representative of first and second wheel speeds; acceleration and deceleration means coupled to said first and second voltage sources and to a logic rail connected to a brake control means; and a differential wheel speed means coupled to the first and second voltage sources and by a comparator means to the logic rail and brake control means; an anti-skid control circuit comprising:
passive integrator circuit means connected intermediate a potential source and a potential reference level and coupled to a comparator means;
switching means coupled to said logic rail and to said passive integrator circuit means for selective alteration of the impedance of said passive integrator circuit in accordance with signals on said logic rail; and
potential regulator means having a comparator means with a non-inverter junction, an inverter junction, and an output coupled to said passive integrator circuit means and by way of an impedance to said inverter junction and to said first and second voltage sources representative of said first and second wheel speeds, said potential regulator means effecting control of the energy supplied to said passive integrator circuit from said potential source in accordance with the potential provided by one of said first and second voltage sources.

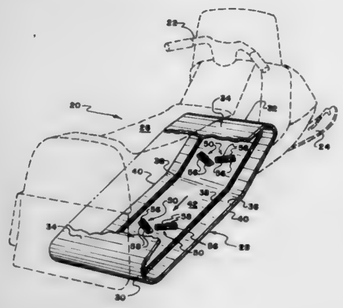
3,924,904
GREASE FITTING ASSEMBLY INCLUDING SAFETY STOP
Joseph Francis Wagner; Ross Thomas Broderick, both of Dubuque; Joseph Edward Link, Farley, and David Emmert Stover, Dubuque, all of Iowa, assignors to Deere & Company, Moline, Ill.
Filed May 1, 1974, Ser. No. 465,996
Int. Cl.² B62D *55/18*; **F15B** *13/04*
U.S. Cl. 305—10 **4 Claims**

1. In a hydraulic track adjustor of a type including a cylinder, a piston slidably mounted in the cylinder and cooperating therewith to define an expandible and retractable grease-receiving chamber, a first passage, including a threaded bore section beginning at the exterior of the adjustor, leading to the chamber, the bore section having an inner end defining a valve seat facing outwardly, a grease inlet valve fitting threadedly received in the bore section, a relief port intersecting the bore section at a location spaced axially from but located adjacent to the valve seat, said grease inlet valve fitting having an inner end portion dimensioned so as to cooperate with the bore section to define a relief passage leading from the valve seat to the relief port, and said grease inlet valve fitting being movable between a fully inserted position wherein its inner end engages the valve seat and prevents grease from flowing from the chamber to the relief port and a first partially unscrewed position permitting grease to flow from the chamber to the relief port, the improvement comprising: said grease inlet valve fitting having axially extending groove means extending towards the outer end thereof from the inner portion thereof; the axial dimension of said groove means being such



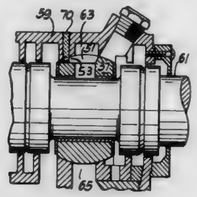
that it is not in fluid communication with the outer end of the bore section when the grease inlet valve fitting in is said first partially unscrewed position but is in fluid communication with the outer end of the bore section when the grease inlet valve fitting is unscrewed from said first unscrewed position to a second partially unscrewed position whereby an alternate passage for permitting grease to flow from the chamber is provided for cases when foreign matter prevents grease from flowing through the relief port.

3,924,905
REMOVAL OF OBSTRUCTING SNOW FROM WITHIN SNOWMOBILE TRACK ENCLOSURES
Verlin M. Simmons, 495 S. Main, Providence, Utah 84332
Filed Oct. 21, 1974, Ser. No. 516,314
Int. Cl.² B60S *1/62*
U.S. Cl. 305—12 **6 Claims**



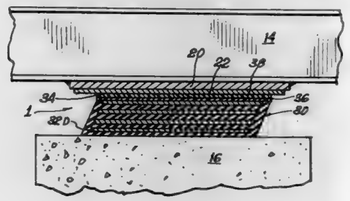
1. A snowmobile comprising:
a prime mover;
an endless belt track having inside and outside surfaces and upper and lower legs and being connected at said inside surface by drive means to and rotated by the prime mover, the outside surface powering the snowmobile by engagement with the snow;
snow plow means secured to the inside surface of the belt track and projecting into the enclosure between said upper and lower legs, the snow plow means being carried during rotation by the belt track and extending angularly across the belt a distance less than the full width of the belt so as to both (a) avoid interference with the drive means and (b) engage, loosen and plow snow from within the enclosure between said upper and lower legs and the ends of the endless belt track.

3,924,906
ELECTRICALLY INSULATED BEARING AND FOR REDUCING SHAFT CURRENT
Hiroo Kitaoka, Chesterland, Ohio, assignor to Reliance Electric Company, Cleveland, Ohio
Filed Aug. 1, 1973, Ser. No. 384,491
Int. Cl.² F16C *33/00*
U.S. Cl. 308—1 R **5 Claims**



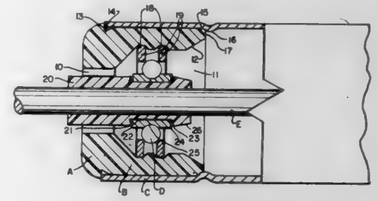
1. A bearing electrically insulated from a stator surface, comprising in combination:
bearing means for journalling rotor means,
said bearing means having a bearing surface for mounting to the stator to have said bearing and stator fixed for non-rotation relative to one another during rotation of said rotor means,
said bearing means having a bearing babbitt with a first melting point which bearing babbitt is thermally coupled to said bearing surface,
a ceramic insulating means having a second melting point greater than said first melting point and hot sprayed to said bearing surface to provide a-support layer for the bearing and to electrically insulate the bearing from the stator with an insulator having a higher melting point than said bearing babbitt;
and a second insulator impregnated into said ceramic insulating means to prevent contamination thereof.

3,924,907
BEARING PAD AND BRIDGE CONSTRUCTION
Daniel E. Czernik, Hinsdale, and Donald J. McDowell, Riverside, both of Ill., assignors to Felt Products Mfg. Co., Skokie, Ill.
Filed Oct. 29, 1974, Ser. No. 518,594
Int. Cl.² F16C *29/02*
U.S. Cl. 308—3 R **18 Claims**



1. A bearing pad for supporting the weight of a load bearing member upon a support structure and for compensating for and accommodating movement of a load bearing member relative to a support structure and being adapted to confront and bear against a slide plate surface, said bearing pad comprising a main body portion, an intermediate layer and a polytetrafluoroethylene layer, said main body portion comprising an elastomeric material having a durometer of from about 40 to about 65 and being adapted to be supported between a said load bearing member and a said support structure, said main body portion having an upper and a lower surface and at least one expansive shim plate lying between said upper and lower surfaces and immediately underlying said intermediate layer, said intermediate layer comprising a non-metallic compressible material which is substantially less compressible than said elastomeric material and which has a greater tension limiting strength under compressive loading than does the upper portion of said elastomeric material, thereby to restrict tensioning of the polytetrafluoroethylene when the bearing pad is compressively loaded, said intermediate layer being bonded to the upper surface of said main body portion in close proximity to the uppermost expansive shim plate, said layer of polytetrafluoroethylene being bonded to the upper surface of said intermediate layer and providing an upper slide surface adapted slidably to engage a confronting slide plate surface for slidably accommodating movement of a said load bearing member relative to a said support structure.

3,924,908
ROLLER WITH INSERTED BALL BEARINGS
Robert W. Gotham, and Robert J. McKnight, both of Toms River, N.J., assignors to Unex Conveying Systems, Inc., Toms River, N.J.
Filed Dec. 7, 1973, Ser. No. 422,794
Int. Cl.² F16C *33/58*
U.S. Cl. 308—20 **4 Claims**



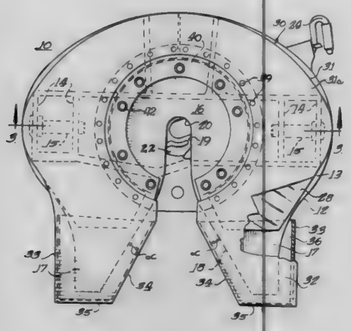
3. A cartridge-type ball bearing including a plastic housing containing a conical opening at one end and at least one internal annular groove with inclined side walls into which groove a bearing outer raceway is pressed, said raceway consisting of at least one ring, said ring forming at least a part of a groove which serves as said outer ball race way.

3,924,909

FIFTH WHEEL

John Allen Kent, Rolling Prarie, Ind.; Robert B. Love, Park Forest, and Harold Louis Meyer, Deerfield, both of Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed Jan. 20, 1975, Ser. No. 542,261
Int. Cl.² B62D *53/08*
U.S. Cl. 308—136 **6 Claims**



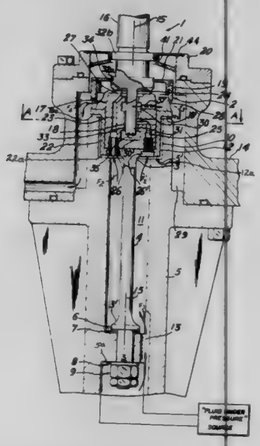
1. In combination, a fifth wheel for a trailer truck having a fifth wheel plate, a liner of low friction material riding on the fifth wheel plate, and a cover plate assembled over said liner, said cover plate being pivotally mounted on said fifth wheel plate.

3,924,910

DAMPENED VERTICAL SPINDLE

René Bourassin, Neauphle le Chateau, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed July 9, 1973, Ser. No. 377,402
Claims priority, application France, July 13, 1972, 72.25549
Int. Cl.² F16C *17/10, 33/80, 35/08, 37/00*
U.S. Cl. 308—156 **10 Claims**



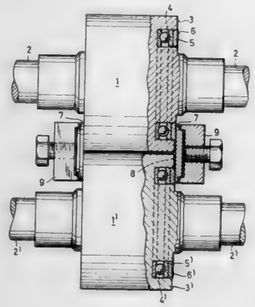
1. A damped pivot for machines which rotate at high velocities, wherein said pivot comprises in combination:
a bearing,
an elastic restoring and centering member acting on said bearing to support elastically and acting to restore to center said bearing during operation,
said bearing comprising a shaft and defining a bearing bore, said shaft being disposed in said bearing bore with a clearance;
a film of fluid under pressure, provided in said clearance to guide and damp the pivot;
a casing means including
a base and surrounding said bearing,
said base defining a damping chamber, a contiguous feed chamber, and pressure fluid ducts interconnecting said chambers.

3,924,911

SEALING DEVICE

Dietrich Bumberger, Bobingen, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed June 11, 1974, Ser. No. 478,221
Claims priority, application Germany, June 13, 1973, 2329978
Int. Cl.² F16C *33/76*
U.S. Cl. 308—187.1 **4 Claims**



1. An end-face sealing device between, on the one hand, rotating pairs of rolls and, on the other, stationary chambers, which comprises
a. sealing elements fitted in the end-faces of the rolls, being adjustable in the axial direction of the rolls and prevented from turning with the rolls,
b. sealing plates fitted in the side walls of the chambers in such a manner that they are pressed on the said sealing elements, and
c. devices for pressing said sealing plates on the said sealing elements.

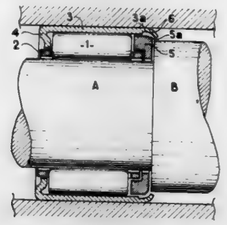
3,924,912

ROLLING BEARING CAPABLE OF FIXING THE AXIAL POSITION OF A MACHINE ELEMENT

Alfred Pitner, Paris, France, assignor to Nadella S.A., France, a part interest

Filed Dec. 18, 1973, Ser. No. 425,819
Claims priority, application France, Dec. 22, 1972, 72.46068
Int. Cl.² F16C *13/00*
U.S. Cl. 308—212 **9 Claims**

1. A radial rolling bearing comprising rolling elements, a bearing ring defining a raceway for rolling elements and defining a radially extending surface adjacent a first end of the ring, a cage co-operative with the rolling elements to guide the rolling elements, a washer for combination with means defining an inner raceway for the rolling elements, the washer defining an abutment surface and disposed inside the ring adjacent a second end of the ring opposed to said first end of the ring and freely movable axially of the ring, and retaining means combined with the ring adjacent said second end for axially retaining the washer within the ring, the rolling elements being capable of axially bearing at one end against the radial surface of the ring and at an opposite end against the abutment surface of the washer, the washer projecting inwardly of the ring radially beyond the retaining means so that although the washer is retained by the retaining means a part of the washer is exposed and capable of receiving an axially-



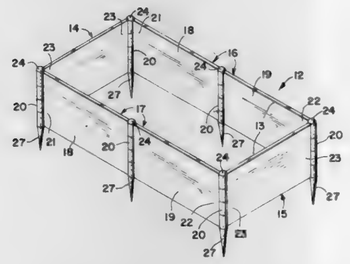
directed thrust from a member outside the bearing ring, whereby said thrust is transmitted to said surface adjacent the first end of the ring through the washer and the rolling elements.

3,924,913

GARBAGE CAN ENCLOSURE DEVICE

Frederick Cooper, Scarborough, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Nov. 20, 1974, Ser. No. 525,686
Int. Cl.² A47B *47/00*; **B65F** *1/00*
U.S. Cl. 312—258 **3 Claims**



1. A foldable garbage can enclosure device adapted to receive therein a plurality of garbage cans, which comprises:
a. a plurality of elongated type hinge assemblies;
b. vertical front and rear walls, each said front and rear walls formed from two rectangularly shaped panels joined together with one said hinge assemblies;
c. a pair of vertical end walls, said end walls joined to said rear and front walls with a plurality of said hinge assemblies into a rectangularly shaped frame;
d. a means for anchoring said enclosure device into the ground.

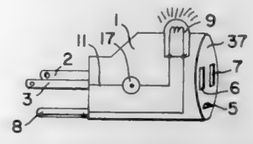
3,924,914

ELECTRICAL SAFETY GROUNDING DEVICE MEANS

Philip M. Banner, 28 Oxford Road, Massapequa, N.Y. 11758

Continuation-in-part of Ser. No. 204,826, Dec. 6, 1971, which is a continuation-in-part of Ser. No. 16,477, March 4, 1970, Pat. No. 3,626,354. This application Dec. 28, 1973, Ser. No. 429,104
Int. Cl.² H01R *3/06*
U.S. Cl. 339—14 P **14 Claims**

1. An electrical safety grounding device means of the type for two and three wire electrical systems having a receptacle comprising a conductive cover plate for said receptacle, means to ground said plate, and a plug adapted to plug into said receptacle, a ground contact on said plug adapted to contact said grounded plate, and fuse protection in said plug connected to a current carrying wire, and ground indicating means connected to said wire and said ground on said plug, wherein the receptacle is an adapter having a receptacle on



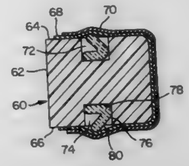
one end having a grounding contact and a connector body on the other end connected to wiring.

3,924,915

ELECTRICAL CONNECTOR

Richard A. Conrad, San Marcos, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 202,526, Nov. 26, 1971, abandoned. This application June 14, 1973, Ser. No. 369,896
Int. Cl.² H01R *11/02*; **H05K** *1/02*
U.S. Cl. 339—17 F **2 Claims**



1. An electrical connector for making electrical connection with a series of electrical conductors on a printed circuit board or the like, comprising, in combination:
a body member including a surface adapted to be secured adjacent a series of electrical conductors, said surface having a longitudinal groove therein extending along at least a portion of its length;
a sheet of insulative material having a front surface and a back surface and having a plurality of electrically conductive contact members secured to and exposed from said front surface;
means securing said back surface of said sheet of insulative material to said surface of said body member; and
means for urging said sheet of insulative material away from said surface of said body member and for providing a wiping action along said back surface of said sheet of insulative material in the direction parallel to said plurality of conductive contact members, said last mentioned means comprising a resilient member having a V shaped cross-section having first and second legs positioned in said groove.

3,924,916

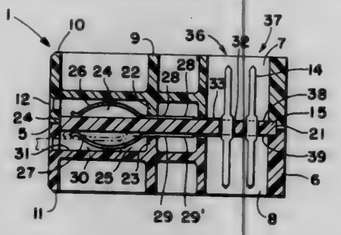
CONNECTOR ADAPTER

John T. Venaleck, Mentor, Ohio, assignor to A & P Products Incorporated, Painesville, Ohio

Filed Feb. 19, 1974, Ser. No. 443,307
Int. Cl.² H05K *1/00*; **H01R** *13/50*
U.S. Cl. 339—17 LC **10 Claims**

1. A connector adapter for electrical and mechanical connection of a plurality of electrically conductive pins arranged in a first array pattern respectively to a plurality of electrically conductive contacts arranged in a second array pattern, comprising an electrically non-conductive housing, a substantially planar electrically non-conductive support surface in said housing, a plurality of electrically conductive paths on said support surface, a plurality of connector contacts arranged in first spaced-apart positions on said support surface and extending in a direction substantially parallel to the plane of said

support surface, each connector contact having a first portion electrically connected to a respective electrically conductive path and a second portion positioned for mechanical engagement with a respective electrically conductive pin that is inserted in a direction substantially parallel to the plane of said support surface to effect substantial mechanical engagement, a plurality of upstanding electrically conductive connector pins supported by said support surface at second spaced-apart positions and extending substantially perpendicular to the plane of said support surface, each of said connector pins having a first portion electrically connected to a respective



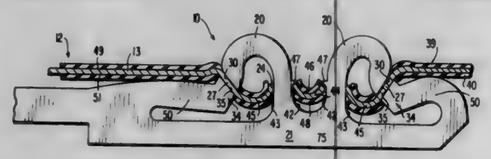
electrically conductive path and a second portion positioned for mechanical engagement with a respective electrically conductive contact that is inserted in a direction substantially perpendicular to the plane of said support surface to effect substantial mechanical engagement, said second portions of said connector pins being positionally arranged with respect to each other in such second array pattern, said plurality of electrically conductive paths on said support surface thus electrically connecting respective connector contacts and connector pins, and at least a portion of each of said connector contacts and connector pins being retained in said housing.

3,924,917

FLAT CABLE TERMINATION METHOD AND APPARATUS

Kenneth Munshower, Norristown, Pa., assignor to Elco Corporation, Willow Grove, Pa.

Filed Apr. 30, 1974, Ser. No. 465,593
Int. Cl.² H01R *9/08, 11/08*
U.S. Cl. 339—17 F **14 Claims**



1. A contact apparatus for flexible flat conductor means comprising:

penetrating means for penetrating completely through a conductor portion of the said flat conductor means at any preselected location on said flat conductor means to provide thereat a first electrical contact between said conductor portion and said contact apparatus; and

conductor engagement means for engaging said conductor portion at a location remote from said penetration at said preselected location, said engagement means comprising: a remote engagement portion of said penetrating means; abutment means for providing a reaction surface against which said flexible flat conductor means may be supported when said engagment portion engages said conductor portion;

said engagement portion and said abutment means being operable to penetrate at least a portion of an insulative covering of said conductor portion at said remote location to provide thereat a second electrical contact between said conductor portion and said contact apparatus;

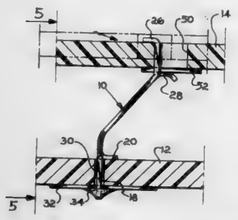
said penetrating means including nub means projecting therefrom and establishing said first electrical contact.

3,924,918

DAUGHTER BOARD CONTACT

Lindsay Carlton Friend, Camp Hill, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 9, 1973, Ser. No. 404,290
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² H01R *13/54*; **H05K** *1/04*
U.S. Cl. 339—17 M **4 Claims**



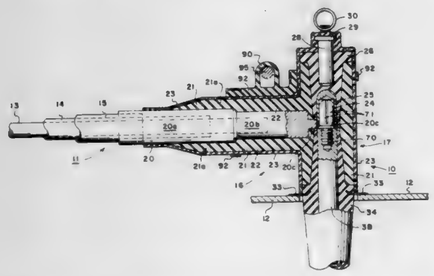
1. A daughter board contact system comprising a mother board, a number of terminals secured to the mother board in spaced relation and extending from one side thereof with each terminal including a link-arm and a daughter-board engaging hook at the free end of the arm, a number of spring contacts extending outwardly of said side of the mother board, a daughter board having a number of hook-receiving openings thereon and contact pads on one side thereof for forming electrical connections with said spring contacts, the hooks engaging said openings so that the arms space the mother and daughter board relative to one another and said spring contacts being biased against said pads to form electrical connections between the mother and daughter boards, and means holding the mother and daughter boards together against the spring force of the spring contacts.

3,924,919

DISCONNECTABLE ELECTRICAL CONNECTOR

James E. McClain, Greenville, Tex., assignor to Esco Manufacturing Company, Greenville, Tex.

Filed Dec. 15, 1972, Ser. No. 315,637
Int. Cl.² H01R *11/02*
U.S. Cl. 339—60 C **6 Claims**



1. Electrical connecting apparatus for disconnectably electrically coupling a high voltage electrical cable with electrical apparatus, comprising:

a. cable connecting means including an elongated first central conductor axially extending through an insulating jacket and adapted for coaxial termination with said cable, said first central conductor having an extending end portion thereof with an opening defined in said end portion; conductive body means rigidly affixed to said

end portion and having a socket therein aligned with said opening; an insulating support body; said conductive body means disposed within said insulating support body; a conductive plug disposed within the base of said insulating support body and having an end portion spaced from said conductive body means, said conductive plug providing a conductive test point for said electrical connecting apparatus,

b. bushing assembly means including an elongated second central conductor axially extending through an insulating jacket for electrical connection with said electrical apparatus,

c. said second central conductor having socket engaging means provided at one end thereof, said socket engaging means comprising a plurality of conductive resilient extensions which extend through said opening into said socket, and

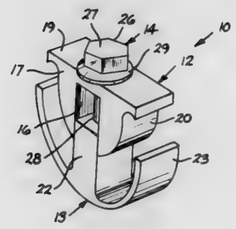
d. means attached to said cable connecting means to enable the lifting of said cable connecting means out of coupling engagement with said bushing assembly.

3,924,920

DEVICE FOR CLAMPING ELONGATED MEMBER

Richard Joseph Moscioni, Linden, and Gerald Miller Sellar, Warren, both of N.J., assignors to Western Electric Company, Inc., New York, N.Y.

Filed June 10, 1974, Ser. No. 477,709
Int. Cl.² H01R *7/24*
U.S. Cl. 339—246 **8 Claims**



1. A device for clamping at least one elongated member, which includes:

a base having an arcuately shaped surface;

a cover adapted to be secured to the base and having an arcuately-shaped surface complementary to the arcuately formed surface of the base when the cover is secured to the base to form a generally elongated arcuately shaped opening having a substantially constant width for receiving an end portion of at least one elongated member with the end portion of the elongated member between the complementary surfaces being essentially linear; and

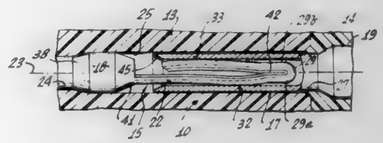
means securing the cover to the base for causing forces to be applied to each elongated member inserted into the arcuately shaped opening to abrade portions of the surfaces of each member and for causing substantially equal clamping forces to be applied to each elongated member, the end portion of each elongated member remaining essentially linear after the cover has been secured to the base.

3,924,921

ELECTRICAL-PIN-AND-SOCKET CONNECTOR

Lewis Clark Feightner, Chatsworth, Calif., assignor to New Twist Connector Corporation, Santa Monica, Calif.

Continuation-in-part of Ser. No. 211,586, Dec. 23, 1971, abandoned, which is a continuation-in-part of Ser. No. 65,452, Aug. 20, 1970, abandoned. This application Oct. 15, 1974, Ser. No. 514,605
Int. Cl.² H01R *13/06*
U.S. Cl. 339—252 P **36 Claims**



1. For use in an electrical connector assembly, a pin connector composed of electrically conductive sheet metal of substantially uniform thickness, and extending generally along a preselected longitudinal axis, comprising:

an elongated, tubular sheet metal body forming a base portion of said connector and extending along said axis, said body having means adjacent one end thereof for connection to an electrical conductor;

and an elongated sheet metal pin contact integrally connected to the other end of said body, and including:

a first resiliently flexible contact arm joined to said one end of said body and extending away from the latter toward the opposite end of said pin contact, said first arm having a laterally facing outer side of convex curvature in transverse cross-section, and extending along one side of said axis to a first contact area closer to said opposite end than to said body, said first arm being inclined away from said axis toward said first contact area, and then extending back toward the axis,

a generally U-shaped, reverse bend joined to the end of said first arm beyond said first contact area, and having two legs disposed in side-by-side relation and joined together by a rounded nose, said nose being offset from said axis on the same side thereof as said first arm, one of said legs being integrally joined to said first arm,

and a second resiliently flexible contact arm integrally connected to the other of said legs and extending from the latter back toward said body, in laterally spaced relation with said first leg, and terminating in a free end adjacent said body but spaced therefrom,

said second contact arm having an outer side facing laterally away from said first arm and of convex curvature in transverse cross-section, and being inclined from said second leg away from said first arm and across said axis to a second contact area that is closer to said free end than to said opposite end, whereby said contact areas are longitudinally offset along said pin contact, and both of said arms flex along substantial lengths thereof.

3,924,922

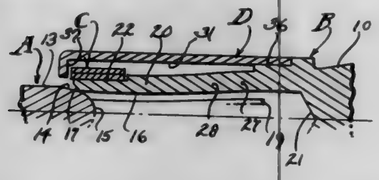
CONSTRICTOR BIASED ELECTRICAL PIN AND SOCKET TYPE CONNECTOR

Herbert A. DeCenzo, 3719 Cannon Ave., Las Vegas, Nev. 89121

Filed Apr. 26, 1971, Ser. No. 137,279
Int. Cl.² H01R *11/22*
U.S. Cl. 339—259 R **2 Claims**

1. A hooded pin and socket connector wherein a male pin member is frictionally slidable into a female receptacle member, the male member having an exterior diameter of right cylinder form and the female receptacle member having an interior diameter of right cylinder form, said exterior and interior diameters of the two said members being of substan-

tially the same diameter for coextensive interface engagement, the said female receptacle member having an outer diameter of right cylinder form concentric with said interior diameter forming a wall open at one end to receive the male pin member, there being slots through the said wall from said open end and substantially coextensive with the depth of penetration of said male pin member therein and thereby severing the female receptacle member into a plurality of radially movable longitudinally disposed circumferentially adjacent contact fingers fixedly rooted in said female receptacle member, and a laminiform spring-damper of right cylinder



form embracing the said contact fingers and comprising concentrically wrapped inner and outer frictionally engaged convolutions and one convolution integrally continuing from the other by means of an angularly disposed member extending therebetween and the inner convolution engageable with the outer diameter of said female receptacle, and a cylindrical hood carried on and extending from the base and spaced from the outer wall of the female receptacle member and having an inner diameter wall engageable with the outer convolution of the laminiform spring-damper stopping its lateral expansion when the female receptacle member reassumes right cylinder form.

3,924,923

FLAT CABLE ELECTRICAL CONNECTIONS AND METHODS OF MAKING SAME

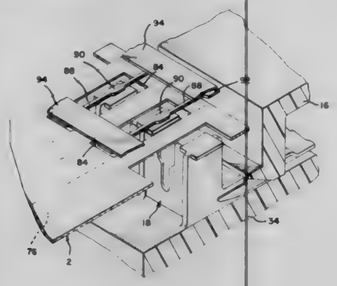
John Robert Shoemaker, Walkerton, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 8, 1973, Ser. No. 368,387

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² H01R 9/06, 31/02

U.S. Cl. 339—278 M **2 Claims**



1. A continuous strip of stuffer members, each of said stuffer members being adapted to be inserted into the conductor-receiving slot of a contact terminal member for the purpose of retaining a conductor in the slot, said strip comprising: two spaced-apart parallel co-planar carrier strips of polymeric insulating material,

said stuffer members each comprising a stuffer pin which is adapted to be moved laterally of its axis against a conductor and into said slot, each of said pins comprising a flat sheet metal member having parallel side edges, an enlarged center section, and enlarged ends,

said stuffer members extending between said strips of polymeric insulating material ladder-rung fashion, said stuffer members being spaced apart along the length of said carrier strips and having said enlarged ends adhered to said strips whereby,

upon positioning each of a plurality of conductors in alignment with the slots of each of a plurality of contact terminals, and upon positioning a section of said stuffer strip proximate to said conductors with one stuffer pin parallel to each of said conductors, and upon subsequently moving said section of stuffer strip towards said conductors and then moving said stuffer strip and said conductors into said slots, said conductors will be engaged by the edges of said slots and thereby establish electrical contact with said terminals, and said stuffer pins will retain said conductors in said slots.

3,924,924

HOLOGRAPHIC MEMORY UTILIZING A CHANGEABLE PHASE OBJECT AND COHERENT SUBTRACTION

Akira Fukuhara, Tachikawa, Japan, assignor to Hitachi, Ltd., Japan

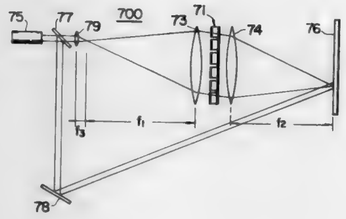
Division of Ser. No. 206,391, Dec. 9, 1971, Pat. No. 3,781,084. This application Sept. 18, 1973, Ser. No. 398,551

Claims priority, application Japan, Dec. 9, 1970, 45-108530; Dec. 25, 1970, 45-130687

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² G03H 1/16, 1/26

U.S. Cl. 350—3.5 **8 Claims**



3. A hologram preparing apparatus comprising:

an interferable-light source;

a beam splitter which is arranged in an optical path of an interferable light beam emitted from said interferable-light source;

a pattern generating device including a plurality of reversible phase-modulating elements each comprising

an irregular ferroelectric crystal plate in which each set of mutually opposing end planes are normal to one of *a*-, *b*- and *c*-axis, and a thickness between said end planes is prescribed with respect to a difference Δn in the refractive index between light beams having wavelength λ and having their polarization planes respectively parallel to said *a*- and *b*-axis within the crystal and to a positive integer P by

$$\frac{\lambda}{2 \cdot \Delta n}(P = \tfrac{1}{2}), \text{ and}$$

means for applying a voltage, sufficient to invert the spontaneous polarization of said irregular ferroelectric crystal plate by 180°, to said irregular ferroelectric crystal plate and in parallel to said *c*-axis,

polarizing means which is arranged in front of and in opposition to one end plane of one set of said mutually opposing end planes of said irregular ferroelectric crystal plate of said reversible phase-modulating element, a polarization plane of said polarizing means being arranged in parallel to one of said *a*- and *b*-axis of said end planes of said irregular ferroelectric crystal plate, said irregular ferroelectric plates, which constitute the respective elements, being arranged on a plane normal to incident light, one of said *a*- and *b*-axis on one set of said mutually opposing end planes of said each crystal plate being arranged in parallel to a predetermined linear polarization plane, which is arranged in an optical path of one of the light beams split by said beam splitter, and which has the split light beam as the incident light beam;

a Fourier transform lens which is arranged in said optical path of said light beam split by said beam splitter, and immediately adjacent said pattern generating device;

a hologram recording medium which is arranged at a rear focalposition of said Fourier transform lens;

polarizing means which is arranged in the other beam path split by said beam splitter; and

optical means which directs the linearly polarized beam, having passed through said polarizing means, to said hologram medium at a predetermined angle,

whereby a hologram of a pattern image of said pattern generating device is prepared.

5. A method of preparing a hologram with a hologram preparing apparatus including a interferable-light source;

polarizing means which is arranged in an optical path of light beam emitted by said interferable-light source, and which converts said interferable light beam into a linearly polarized beam;

a beam splitter which is arranged in an optical path of said linearly polarized beam converted by said polarizing means;

a pattern generating device including a plurality of reversilbe phase-modulating elements each comprising

an irregular ferroelectric crystal plate in which each set of mutually opposing end planes are normal to one of *a*-, *b*- and *c*-axis, and a thickness between said end planes is prescribed with respect to a difference Δn in the refractive index between light beams having a wavelength λ and having their polarization planes respectively parallel to said *a*- and *b*-axis within the crystal and to a positive integer P by

$$\frac{\lambda}{2 \cdot \Delta n}(P = \tfrac{1}{2}), \text{ and}$$

means for applying a voltage, sufficient to invert the spontaneous polarization of said irregular ferroelectric crystal plate by 180°, to said irregular ferroelectric crystal plate and in parallel to said *c*-axis,

said irregular ferroelectric crystal plates, which constitute the respective elements, being arranged on a plane normal to an incident linearly polarized beam so as to form a matrix among them, one of said *a*- and *b*-axis on said mutually opposing end planes of said each crystal plate being arranged in parallel to a polarization plane of said incident linearly polarized beam,

which is arranged in an optical path of one of the linearly polarized beams split by said beam splitter, and which has the split linearly polarized beam as the incident linearly polarized beam;

a Fourier transform lens which is arranged in said optical path of said linearly polarized split beam of said beam splitter, and on one side of said pattern generating device;

a hologram recording medium which is arranged at a rear focal position of said Fourier transform lens; and

optical means which directs the other linearly polarized beam, split by said beam splitter, to said hologram recording medium at a predetermined angle,

whereby a hologram of a pattern image of said pattern generating device is prepared, comprising the steps of:

1. applying a voltage sufficient to invert spontaneous polarization by 180°, separately to reversible modulator elements of a bit group, generating a predetermined information pattern and to reversible modulator elements of a bit group, generating no pattern among said respective reversible phase-modulating elements which constitute said pattern generating device, said spontaneous polarization having random polarities among the respective bits;
2. focussing the pattern image of said pattern generating device, having undergone the above step (1), to said hologram medium;
3. thereafter, applying a voltage sufficient to invert by 180° the spontaneous polarization of said reverisble modulator elements of said bit group, generating no pattern, in the step (1); and
4. focussing the pattern image of said pattern generating device, having undergone the step (3), to said hologram recording medium having undergone the step (2).

3,924,925

FOCUSSED IMAGE HOLOGRAM PROJECTOR USING A LONG NARROW LIGHT SOURCE

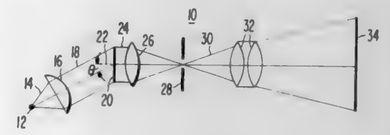
Michael Thomas Gale, Langnau am Albis, and David Greenaway, Basserdorf, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed May 13, 1974, Ser. No. 469,219

Claims priority, application United Kingdom, Jan. 30, 1974, 4226/74

Int. Cl.² G03H 1/28, 1/24

U.S. Cl. 350—3.5 **8 Claims**



1. In a projector for displaying a color picture derived from a focussed image hologram situated in a given plane, said hologram being of the type comprising a plurality of plane parallel diffraction gratings each of said gratings having grating lines of a different constant spatial frequency being modulated in accordance with a different color component of said color picture to form a spatial carrier for that color component; said projector including first means for illuminating said hologram with an incident non-coherent light beam inclined at a predetermined angle with respect to the normal to said given plane, said non-coherent light beam having a spectrum which includes a spectral wavelength portion corresponding to each respective one of said different color components, and second means responsive only to first diffraction-order output light from said respective gratings for projecting said color picture on a viewing screen; the improvement therein:

a. wherein the lines of at least one of said gratings in said given plane is oriented substantially parallel to a given longitudinal axis none of said gratings in said given plane is oriented substantially perpendicular to said longitudinal axis,

b. wherein said first means includes a filamentary light source having a relatively long length dimension oriented substantially parallel to said longitudinal axis and relatively small cross-section dimensions oriented substantially normal to said longitudinal axis, and optical means responsive to light from said light source for deriving said non-coherent light beam with said predetermined angle lying in a plane substantially normal to said longitudinal axis,

c. wherein said second means includes a spatial filter having a narrow, longitudinal slit therein with the length of said slit being oriented along said longitudinal axis, and

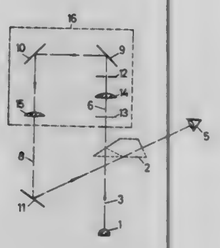
d. wherein said different predetermined spatial frequencies of each of said respective gratings is such as to direct through said slit only the spectral wavelength portion of first diffraction-order output light from that grating which corresponds to the color component of said picture carried by that grating.

3,924,926

POLARIZING ATTACHMENT FOR MICROSCOPES HAVING INCLINED BINOCULAR EYEPIECE

Kurt Merstallinger, and Klaus P. Schindl, both of Vienna, Austria, assignors to C. Reichert Optische Werke, AG, Vienna, Austria

Filed May 28, 1974, Ser. No. 473,593
Int. Cl.² G02B *7/88, 21/06, 21/20*
U.S. Cl. 350—34 **9 Claims**



1. In a microscope having an objective system with an exit pupil and a chosen effective focal length, an inclined binocular eyepiece having a focal plane therein, each of these elements being aligned along an observation axis, and a beam deflector alternately positionable on and off of said observation axis between said objective system and said eyepiece, the improvement comprising an alternate observation axis such that said objective system provides an intermediate object image plane on said alternate observation axis when said beam deflector is positioned off said observation axis, said intermediate object image plane being located at a distance from said objective system substantially equal optically to said effective focal length, said intermediate object image plane and said eyepiece focal plane being optically-spaced equidistant from said objective system, an optical modifying element positioned at said intermediate object image plane, a plurality of deflectors positioned on said alternate observation axis subsequent to said intermediate object image plane to direct said alternate observation axis from said intermediate object image plane toward said eyepiece, and a lens system aligned along said alternate observation axis after said intermediate object image planes to re-image said object in the eyepiece focal plane whereby polarized light from the objective system reaches said optical modifying element without being influenced by said plurality of deflectors.

3,924,927

CORE GLASS FOR FIBER OPTICS

Warren W. Wolf, Reynoldsburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 28, 1975, Ser. No. 563,022
Int. Cl.² C03C *3/04, 13/00*; G02B *5/16*
U.S. Cl. 350—96 B **9 Claims**

1. A bulk zinc alkali silicate glass composition having an index of refraction ranging from 1.545 to 1.560, suitable for use as fiber optics and consisting essentially by weight of:

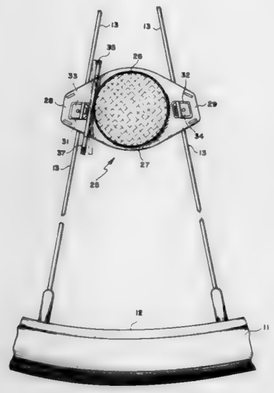
	Weight Percent
SiO_2	61 to 64
Al_2O_3	7 to 10
ZnO	15 to 24
Li_2O	7 to 11
Sb_2O_3	0 to 0.1.

3,924,928

ATTACHMENT FOR REFLECTORS FOR SPOKE WHEELS

Robert C. Trimble, 258 Main St., Northboro, Mass. 01532

Filed Mar. 12, 1975, Ser. No. 557,625
Int. Cl.² G02B *5/12*; B60B *11/00*; B60R *7/00*
U.S. Cl. 350—99 **10 Claims**



1. A safety device in combination with a wheel mounted reflector adapted to be carried by the spokes of a spoke wheel rotatably carried by and between two wheel supporting members, said device comprising:

a. a light reflective member having an opening to receive and engage a wheel reflector, said light reflecting member having a thickness and said opening being of a size that when said light reflecting member is carried by a wheel reflector attached to a spoke wheel, said light reflecting member engages and is substantially held against movement by said wheel reflector and at least one spoke.

3,924,929

RETRO-REFLECTIVE SHEET MATERIAL

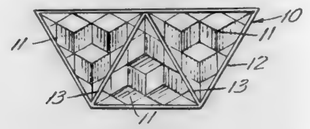
Reynold E. Holmen, White Bear Lake, and Alfred H. Nellessen, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 594,137, Nov. 14, 1966, abandoned. This application Mar. 6, 1972, Ser. No. 232,023
Int. Cl.² G02B *5/12*
U.S. Cl. 350—103 **9 Claims**

1. A cellular reflector structure having a plurality of individual adjacent cells for providing improved vandal-resistant reflectors, signs and legends having high retroreflectivity and good daytime color appearance, said reflector structure comprising a monolithic body of transparent material having

a light receiving front face having a smooth uninterrupted surface area extending over adjacent cells and

a rear face having a rear surface area immediately opposite and coextensive with said uninterrupted front surface area, said rear surface area having a plurality of intersecting septa visible from said front face defining and isolating a plurality of polygonal cells each from the other and having a plurality of cube-corner retroreflecting units each having a set of three mutually perpendicular facets, each said cell having an area not greater than about one



square inch and containing at least three of said cube-corner retroreflecting units and the combined area within said cells being not less than the combined area of said septa, said septa having continuous free edges positioned rearward of the front face at least as far as said cube-corner retroreflecting units, which free edges permit the structure to be affixed to a backing to hermetically seal the cells individually,

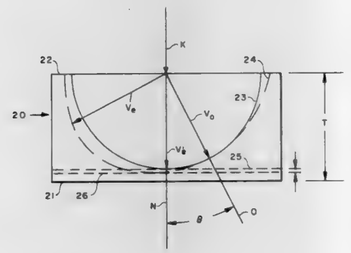
said cube-corner retroreflecting units being oriented in said cells to reflect light falling upon them through said front face back toward the source thereof to render said reflector structure highly visible at night and said septa improving the daytime appearance of the structure.

3,924,930

OPTICAL PARTIAL WAVE PLATE AND METHOD OF FABRICATING AND USING SAME

Donald R. Dewhirst, Torrance, and Alexander R. Muir, Playa Del Rey, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 29, 1974, Ser. No. 501,522
Int. Cl.² G02B *5/00*
U.S. Cl. 350—157 **16 Claims**



1. In an optical partial wave plate formed from a birefringent crystalline material having a known optic axis direction and known indices of refraction in a manner such that said plate may be used for introducing a predetermined phase retardation, $\Delta\lambda_o$, between two components of a beam of polarized light of wavelength λ_o by passing said beam through said plate in a direction orthogonal to the surfaces of the entrance and exit windows thereof, the improvement comprising:

a. a slab of said birefringent material, said slab having two plane parallel opposed major surfaces the normal to each of which is directed at an acute angle of inclination θ to said direction of said optic axis in said material;

b. said slab also having a thickness T, measured perpendicularly between said two major surfaces which form said entrance and exit windows for said beam of light, which thickness T has a predetermined relationship to said angle of inclination, θ; and,

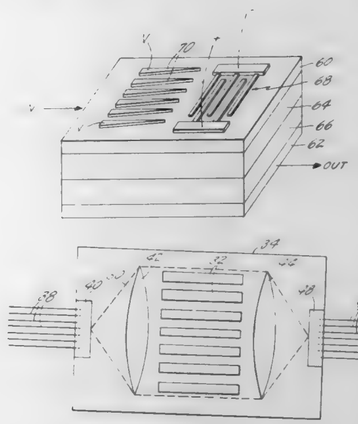
c. said predetermined relationship between said thickness, T, and said angle of inclination, θ, being given by the expression, $\Delta\lambda_o = (\eta_o - \eta_e)\sin^2\theta\, T$, where $\Delta\lambda_o$ is said predetermined phase retardation, η_o is the index of refraction for the ordinary ray in said material, η_e is the index of refraction for the extraordinary ray in said material for a direction of propagation perpendicular to said optic axis of said material, $\sin^2\theta$ is the square of the sine of said angle θ between said optic axis and said normal to said major plane surfaces, and T is said thickness, the value of $\sin^2\theta$ being such as to reduce the produce $(\eta_o - \eta_e)\sin^2\theta$ to permit the thickness T for a given desired value of $\Delta\lambda_o$ to have a value which not only produces the desired phase retardation but also is large enough to increase the strength of the plate.

3,924,931

INTEGRATED OPTICAL SIGNAL PROCESSING SYSTEM

Peter K. Cheo, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 446,579, Feb. 27, 1974. This application Apr. 1, 1974, Ser. No. 456,693
Int. Cl.² G02B *5/14*
U.S. Cl. 350—160 R **20 Claims**



1. A thin film electrooptic switch comprising

an electrically conducting substrate,

a high resistivity thin film material fabricated on the surface of said substrate,

a plurality of flat, metallic electrodes located parallel to each other on the surface of said thin film material and spaced from each other across the width of said thin film material,

means for applying a selected voltage to selected ones of said electrodes to produce a potential difference between each of said selected electrodes and said substrate and thereby generate an intense electric field between each of said selected electrodes and said substrate, said electric field being oriented perpendicular to the plane of said thin film material and producing in said thin film material a spatial variation in the index of refraction thereof across the width of said thin film material,

means for coupling a coherent optical beam into said thin film material and causing said optical beam to propagate as a guided optical wave along an optical waveguide consisting of said thin film material and said substrate,

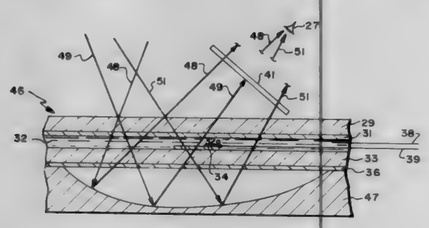
said wave front propagating substantially parallel to the direction of said electrodes and intersecting the portion of the thin film material containing the spatial variation in the index of refraction whereby a phase variation is produced in said optical beam and said beam is selectively deflected in the plane of said thin film material,
and means for coupling said deflected optical beam out of said thin film material.

20. A three dimensional switch comprising
a substrate of electrically conductive material,
first and second electrooptically active thin films fabricated on said substrate on opposite sides thereof,
means for coupling an electromagnetic wave into said first thin film,
electrode means for electrooptically producing a spatial variation in the index of refraction of said first thin film to produce a deflection of said wave in the plane of said thin film material,
means for coupling said wave from said first thin film into said second thin film,
and means for coupling said deflected wave out of said second thin film.

3,924,932
LIQUID CRYSTAL DISPLAY UTILIZING REFLECTED LIGHT

Mititaka Yamamoto, Los Altos, Calif., assignor to Omron Corporation of America, Mountain View, Calif.

Filed Aug. 9, 1974, Ser. No. 496,193
Int. Cl.² G02F *1/13*
U.S. Cl. 350—160 LC **4 Claims**

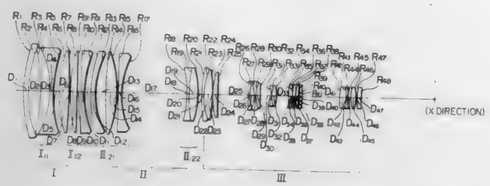


1. In combination with a liquid crystal assembly of the type having sequential layers including a first transparent support plate, a covering transparent electrode attached to one side of the first support plate, a field effect liquid crystal in electrical contact with the covering transparent electrode, a second transparent support plate adjacent to the field effect liquid crystal, a predetermined array of transparent electrodes attached to one side of the second transparent support plate in electrical communication with the field effect liquid crystal, and a first light polarizer attached to the other side of the second transparent support plate, a second polarizer inclined relative to the other side of the first transparent support plate, and a reflector in juxtaposition with the first polarizer, whereby ambient light incident on the first transparent support plate on the side of said second polarizer forming an acute angle therewith may pass through the liquid crystal assembly, impinge on said reflector, and pass back through the liquid crystal assembly to impinge on said second polarizer, so that ambient light energy loss due to reflected and absorbed energy is limited to that occurring during transmission of the ambient light energy through said first polarizer twice and said second polarizer once, whereby an observer positioned on the side of said second polarizer forming an obtuse angle with the first transparent support plate may observe greater light and dark contrast according to the polarization of the reflected light as determined by electric fields applied between the covering transparent and predetermined array of transparent electrodes.

3,924,933
ANAMORPHOTIC LENS SYSTEM

Ryusho Hirose, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Japan

Filed Nov. 15, 1973, Ser. No. 416,057
Claims priority, application Japan, Nov. 17, 1972, 47-115427
Int. Cl.² G02B *13/08*
U.S. Cl. 350—181 **8 Claims**



1. An anamorphotic-type lens system in which a master lens is positioned in rear of a cylindrical lens, which system comprises an afocal spherical lens group for focussing, an afocal anamorphotic cylindrical lens group and a master lens group of the zoom type coaxially arranged in this order from the front, said spherical lens group and said enamorphotic cylindrical lens group each being divided into two parts and satisfying the following relationship in combination:

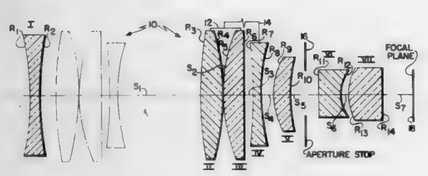
$$|f_2|-|f_1|=e \quad f_{1'}<0 \quad f_{2'}-|f_{1'}|=e'$$

wherein f_1 is the focal length of the front part of the spherical lens group; f_2 is the focal length of the rear part of the spherical lens group; e is the distance between the principal points of the both parts; $f_{1'}$ is the focal length of the front divergent part of the cylindrical lens group; $f_{2'}$ is the focal length of the rear convergent part of the cylindrical lens group; and e' is the distance between the principal points of the both lens parts.

3,924,934
COMPACT SEVEN ELEMENT ZOOM LENS WITH MECHANICAL COMPENSATION

David S. Grey, Lexington, Mass., assignor to Polaroid Corp., Cambridge, Mass.

Filed Dec. 26, 1972, Ser. No. 318,225
Int. Cl. G02b *15/16*
U.S. Cl. 350—184 **14 Claims**

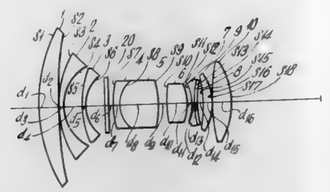


1. A zoom lens the optical portion of which consists of, in an axially aligned arrangement from the long conjugate side to the short conjugate side:
a negative first lens component;
a positive second lens component;
a positive third lens component with unequally curved surfaces, having its more strongly curved surface toward said long conjugate, adjacent and rigidly connected to said positive second component;
a negative fourth lens component;
a positive meniscus fifth lens component curved toward said short conjugate;
a negative sixth lens component, having a strong concave surface toward said short conjugate; and
a positive seventh lens component, having a strong convex surface toward said long conjugate.

3,924,935
LARGE APERTURE WIDE ANGLE LENS

Yasuo Takahashi, and Ryota Ogawa, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 28, 1974, Ser. No. 484,205
Claims priority, application Japan, July 2, 1973, 48-74646
Int. Cl.² G02B *11/34*
U.S. Cl. 350—214 **2 Claims**



1. A wide angle lens system including ten lenses consecutively successively designated from the front to the rear, the lens surfaces being consecutively successively designated, with cemented faces defining a single surface and a filter interposed between the third lens and the fourth lens, said lens system possessing the following dimensions and values:

$r_1 = 326.282$	$d_1 = 40.61$	$n_1 = 1.64000$	$\nu_1 = 60.2$
$r_2 = 949.626$	$d_2 = 0.49$		
$r_3 = 207.067$	$d_3 = 9.98$	$n_2 = 1.78950$	$\nu_2 = 44.2$
$r_4 = 88.291$	$d_4 = 38.62$		
$r_5 = 230.832$	$d_5 = 5.99$	$n_3 = 1.58913$	$\nu_3 = 61.1$
$r_6 = 80.421$	$d_6 = 50.89$		
Filter thickness	7.30		
$r_7 = 276.609$	$d_7 = 11.59$	$n_4 = 1.75700$	$\nu_4 = 47.9$
$r_8 = 60.873$	$d_8 = 78.01$	$n_5 = 1.74950$	$\nu_5 = 35.2$
$r_9 = -349.170$	$d_9 = 20.89$		
$r_{10} = 740.533$	$d_{10} = 39.45$	$n_6 = 1.65160$	$\nu_6 = 58.6$
$r_{11} = -100.524$	$d_{11} = 10.47$		
$r_{12} = -81.327$	$d_{12} = 4.97$	$n_7 = 1.80518$	$\nu_7 = 25.4$
$r_{13} = 228.884$	$d_{13} = 7.50$	$n_8 = 1.48749$	$\nu_8 = 70.1$
$r_{14} = 340.745$	$d_{14} = 9.88$		
$r_{15} = -409.070$	$d_{15} = 21.91$	$n_9 = 1.51633$	$\nu_9 = 64.1$
$r_{16} = -104.702$	$d_{16} = 0.49$		
$r_{17} = 598.995$	$d_{17} = 36.08$	$n_{10} = 1.77250$	$\nu_{10} = 49.6$
$r_{18} = -162.162$			

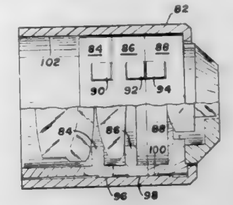
wherein rj is the radius of curvature of the jth lens surface, dj is the axial distance between the jth lens surface and the $(j+1)$th surface, n_i is the refractive index of the ith lens and νi is the Abbe number of the ith lens, the fourth and fifth lenses being cemented at their mating confronting faces to form a first doublet and the seventh and eighth lenses being cemented at their mating confronting faces to form a second doublet.

3,924,936
METHOD OF AND APPARATUS FOR ALIGNING OPTICAL LENSES

James A. Clark, Mendon, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation of Ser. No. 883,213, Dec. 8, 1969, abandoned. This application July 20, 1973, Ser. No. 381,305
Int. Cl. G02b *7/02*
U.S. Cl. 350—252 **10 Claims**

1. A cell for carrying an optical element upon a seat, comprising:
a substantially cylindrical housing defining the seat for the optical element and having only two separate reference projections disposed about the periphery of the housing, each reference projection extending radially outward away from the seat and terminating at a curved surface of each projection comprising an outermost portion of the housing, each of which curved surfaces has a radius of curvature which is no greater than the radius of curvature of the cylindrical housing, to define an identifiable fixed reference point on each separate curved surface which separate points are respectively, disposed at that point along each of the outermost curved surfaces of the projections which is farthest from a centrally located axis

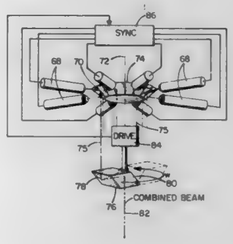


passing through the center of the seat for the optical element, the reference points being spaced equal distances from the centrally located axis along respective lines extending orthogonally to the axis.

3,924,937
METHOD AND APPARATUS FOR SEQUENTIALLY COMBINING PULSED BEAMS OF RADIATION

James L. Munroe, Nonantum, and Paul Gregory DeBaryshe, Lincoln, both of Mass., assignors to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Jan. 30, 1974, Ser. No. 438,029
Int. Cl.² G02B *27/17*
U.S. Cl. 350—285 **39 Claims**



1. A system for combining beams of pulsed radiation comprising:
a plurality of pulsed radiation sources for providing spacially separate beams of radiation pulses in a sequence;
said radiation pulses having a finite time duration;
means for receiving the sequence of spacially separate beams of radiation pulses to direct said separate beams of radiation pulses along a generally common path;
said means for receiving said sequence of beams of radiation pulses to direct them along a generally common path being operative to direct the pulsed beams along said common path substantially without dynamic angular variation in the pulsed radiation beams throughout the finite duration of each rotation pulse.

3,924,938
REMOTELY CONTROLLED DAY-NIGHT OUTSIDE TRUCK MIRROR

James W. Carson, 204 Center Ave. South, Mitchellville, Iowa 50169

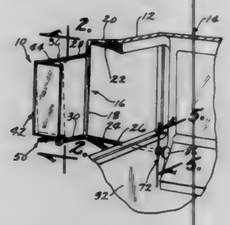
Continuation-in-part of Ser. No. 266,230, June 26, 1972, Pat. No. 3,811,755. This application May 10, 1974, Ser. No. 468,678The portion of the term of this patent subsequent to May 21, 1991, has been disclaimed.
Int. Cl.² G02B *5/08, 17/00*
U.S. Cl. 350—302 **6 Claims**

1. A remotely controlled outside truck mirror comprising, an elongated vertically disposed mirror unit having a mirror and a housing,

said housing having an outwardly extending pin at one end,

a mounting bracket assembly for attachment to the side of a truck cab, including upper and lower support arms, one of said arms having an elongated slot in which said pin at said one end of said housing is received,

connecting means connecting the other support arm to the other end of said housing, and



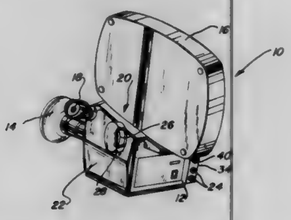
a control cable having one end positioning in a truck cab with the opposite end being connected to said outwardly extending pin thereby pivoting said mirror about a horizontal axis through said connecting means at the other end of said mirror unit as said pin at the one end moves back and forth in said slot in said one support arm.

3,924,939

PORTABLE SYNC-SOUND CAMERA WITH BUILT-IN SOUND-MONITORING SYSTE M

Dennis L. Scheminske, 3000 S. Madison St., Denver, Colo. 80210, and Russell L. Rayburn, 1055 Logan (Apt. 1304), Denver, Colo. 80203

Filed Nov. 25, 1974, Ser. No. 526,801
Int. Cl.² G03B *31/00*
U.S. Cl. 352—34 **2 Claims**



1. In a portable sync-sound camera of the type including a body housing sound recording and playback circuitry and an externally located viewfinder positioned in line with the operator's eye when the operator's head lies alongside said body, the improvement which comprises: an earphone-type speaker fastened to the same side of the camera body alongside which the operator's head lies when looking through the viewfinder, said speaker being electrically connected to the sound circuitry so as to monitor one or more sound inputs to the latter, and said speaker and viewfinder cooperating with one another such that when the operator has his head in position to visually monitor the subject being photographed through said viewfinder he will have an ear against said speaker in position to simultaneously monitor one or more of said sound inputs.

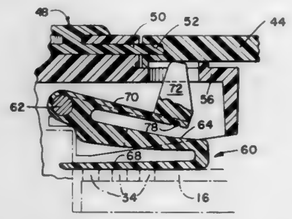
3,924,940

CASSETTE LIGHT SEAL FOR CAMERAS

Peter A. Scibilia, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 2, 1974, Ser. No. 429,720
Int. Cl.² G03B *23/02*
U.S. Cl. 352—75 **12 Claims**

3. In a photographic camera having a body with a chamber to receive a multipurpose film cassette and a closure door movable between open and closed positions with respect to one side of the chamber to permit insertion and removal of the cassette when said door is open and operation of the camera to expose a cassette contained film strip when said door is closed, the cassette having a housing including an edge wall with an exposure opening therein and a side wall with an opening therein facing outwardly toward said one side of said chamber when the cassette is operatively positioned for exposure in said chamber, the improvement comprising independent means for light shielding the opening in the cassette side wall, said shielding means including a substantially opaque member and means on said camera body for supporting said member in a first position permitting substantially unobstructed insertion of the cassette into its operative position and in a second position biased against the cassette housing in covering relation to the opening of the cassette side wall so as to substantially light seal the opening in the cassette side wall during exposure operations.

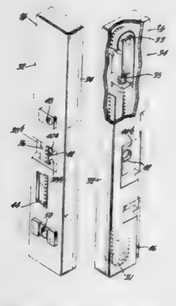


3,924,941

CASSETTE AND CASSETTE HOLDER FOR IMPROVED CONTROLLED-READING DEVICE

Elliott P. Smith, Wilmington, Del.; Robert H. Wachsmuth, Elkins Park, Pa., and Leonard Skolnick, Harwood, Md., assignors to McGraw-Hill, Inc., New York, N.Y.

Division of Ser. No. 323,968, Jan. 15, 1973, Pat. No. 3,862,799. This application Dec. 13, 1973, Ser. No. 424,286
Int. Cl.² G03B *23/02*
U.S. Cl. 352—78 R **9 Claims**



1. A film cassette for a continuous film loop without reel means comprising:

an elongated hollow housing of standardized fixed dimensions having at least projecting and driving apertures for projecting the film through the housing and for admitting drive means to the housing,

a continuous single taut loop of film within said housing having sprocket perforations for advancing the film longitudinally,

guide means within said holder including end guide means adjacent opposite ends of the elongated housing about which said film loop extends defining an elongated narrow loop path without the film contacting itself, including at least one movable guide means within said holder along said path and further guide means intermediate said end guide means along said loop path positioned to gradually twist at least one run of said loop substantially 90° about its longitudinal axis so that the film is generally parallel to planes normal to the film in the rest of the loop as the film loop path passes the projecting and driving apertures, and back again into its initial plane beyond said apertures,

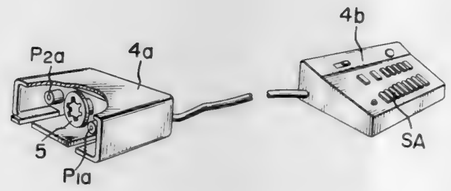
resilient tensioning means urging said movable guide means into said loop path in such direction as to render said loop taut and apply tension through the entire length of the continuous loop of film which tension facilitates cooperation with the drive and projection elements of a projector.

3,924,942

FILM PROJECTION SYSTEM HAVING ATTACHMENT DEVICE CAPABLE OF SWITCHING DIFFERENT SELECTED MODES OF PROJECTION

Tateo Yamada, Tokyo, and Masanori Uchidoi, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1974, Ser. No. 467,484
Claims priority, application Japan, May 8, 1973, 48-51469
Int. Cl.² G03B *23/04*
U.S. Cl. 353—25 **26 Claims**



1. A film projection system capable of random access projection comprising:

a film projection apparatus including slide film storage means for storing a plurality of slide films, and drive means for moving said slide film storage means along a predetermined path and for transporting the slide films in said slide film storage means to a slide film projectable position where a selected slide film is set for projection; and

an attachment unit attachable to and detachable from said projection apparatus, said attachment unit including random access operating means for controlling said drive means to project a desired one of said plurality of slide films, said random access operating means being located at a position in said attachment unit where at least one part of said operating means becomes mechanically linked with said drive means for controlling operation of said drive means when said attachment unit is attached to said film projection apparatus, said random access operating means comprising signal input entry means for entering a desired projection address signal for the random access, signal processing means for converting the entered projection address signal to corresponding movement of said one part of said operating means, signal holding means for holding the entered projection address signal for a predetermined time, and means for releasing said signal holding means from holding operation of the entered projection address signal;

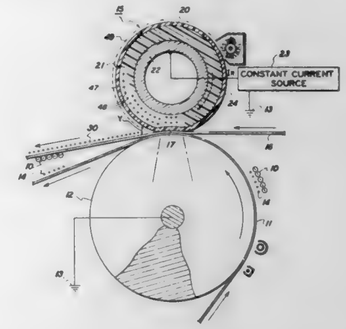
whereby random access projection can be performed when said attachment unit is coupled to said film projection apparatus.

3,924,943

SEGMENTED BIASED TRANSFER MEMBER

Gerald M. Fletcher, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 11, 1974, Ser. No. 478,184
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 R **10 Claims**



1. An improved transfer member for transferring an image from an image support surface to a copy moved between the transfer member and support surface, the improvement comprising:

at least two segments which are electrically discrete in a direction perpendicular to the direction of movement of the copy and

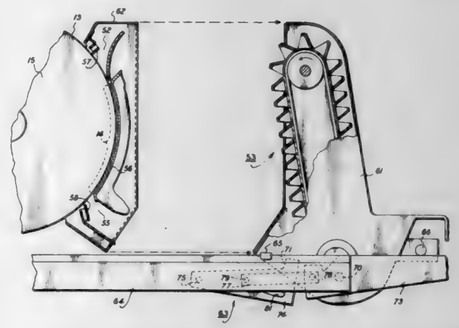
electrical bias means for supplying discrete electrical biases to at least two of the segments.

3,924,944

SPLIT DEVELOPER HOUSING

Richard E. Smith, Webster, and Herbert L. Bresnick, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 20, 1974, Ser. No. 525,532
Int. Cl.² G03G *15/08*
U.S. Cl. 355—3 DD **10 Claims**



1. A development system for developing latent electrostatic images carried by a substrate in an electrostatic processor: said system comprising a housing having a sump for storing a supply of developer; means for circulating developer along a path running from said sump, through a development zone, and then back into said sump; a stationary section mounted immediately adjacent said substrate to define said development zone; a movable section mounted for movement relative to said stationary section; and means for releasably securing said movable section to said stationary section; said movable

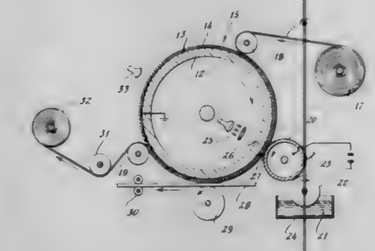
section including said sump, whereby said sump may be accessed without disturbing said development zone.

3,924,945

APPARATUS FOR INDUCTIVE IMAGING WITH SIMULTANEOUS POLAR INK DEVELOPMENT

John W. Weigl, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 3, 1974, Ser. No. 529,157
Int. Cl.² G03G *15/10*
U.S. Cl. 355—10 **3 Claims**



1. An electrostatographic imaging apparatus, comprising: a photoconductor assembly comprising a photoconductive material having a conductive, essentially transparent support base; means for uniformly frontally contacting said photoconductor assembly with a dielectric sheet; means for projecting a light and shadow image pattern through said support base of said photoconductor assembly to expose said photoconductive material; means for applying concurrently with exposure, a polar liquid developer to the surface of the region of the dielectric sheet which is in uniform contact with the exposed photoconductor assembly, said means being electrically biased with respect to said photoconductive assembly conductive support base, and having a patterned surface of raised and depressed portions such that the polar liquid developer is carried in the depressed portions with the raised portions being substantially free of the developer; and means for transferring said developer from said dielectric sheet to an image copy member.

3,924,946

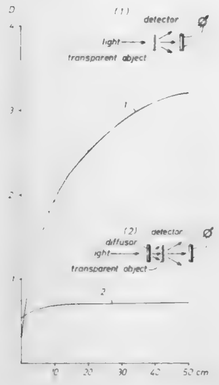
METHOD OF AND APPARATUS FOR PRODUCING ENLARGED REPRODUCTIONS OF VESICULAR IMAGE NEGATIVES

Rudolf Meyer, and Erwin Ranz, both of Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 4, 1973, Ser. No. 366,287
Claims priority, application Germany, June 8, 1972, 2227854
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G03B *27/00*; **G03C** *5/04*; **G03B** *27/76*
U.S. Cl. 355—18 **2 Claims**

1. An enlarger for producing enlarged reproductions of a vesicular image negative comprising a light source capable of issuing a light beam, a condenser receiving the light beam, a vesicular image negative receiving and scattering the condensed light and an enlarging lens receiving the scattered light to form an enlarged reproduction of the image wherein the improvement comprises light scattering diffusion means positioned between the condenser and the image negative to determine the density of the reproduced image by the scattering power of the light scattering diffusion means.

2. The method of producing enlarged reproductions of a vesicular image negative, which comprises the steps of passing a light beam from a light source through a condenser, on to a vesicular image negative, passing the light scattered by the image negative through an enlarging lens to produce an enlarged image wherein the improvement comprises positioning between the vesicular image negative and the condenser a



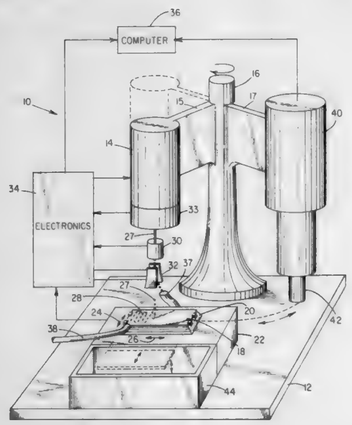
diffuser member, producing diffused light, illuminating the vesicular image with said diffused light, and adjusting and controlling the density in the enlarged reproduction by inserting diffusers, having different diffusion characteristics.

3,924,947

APPARATUS FOR PRESERVATION AND IDENTIFICATION OF PARTICLES ANALYZED BY FLOW-THROUGH APPARATUS

Walter R. Hogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Continuation-in-part of Ser. No. 407,811, Oct. 19, 1973, abandoned. This application Aug. 9, 1974, Ser. No. 496,178
Int. Cl.² G01N *33/16*, *21/00*
U.S. Cl. 356—39 **54 Claims**



1. A method for obtaining information on the characteristics of particles in a liquid suspension comprising the steps of

A. laying a stream of the suspension upon a substrate in a pattern of spaced apart particles whereby the sequence of temporal relationships between individual particles of the stream as they are being laid out determines the sequence of spatial relationships between the individual particles in the laid-out pattern;

B. measuring the spatial relationships of the laid-out particles between individual particles for a plurality of particles to derive a first sequence of measurements;

C. measuring at least one characteristic of each particle in the stream before it reaches the substrate and the temporal relationship of that particle with at least one other individual particle prior to laying down of the particles for a plurality of particles to derive a second sequence of measurements including both those related to temporal relationships and those related to the characteristics of the individual particles; and

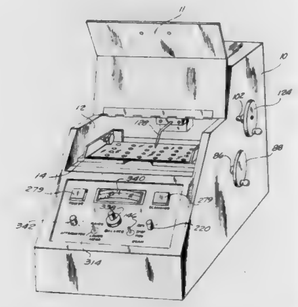
D. correlating the first sequence of measurements with the temporal relationships portion of the second sequence of measurements to identify a particular particle in the laid-out pattern with its at least one measured characteristic contained in said second sequence of measurements.

3,924,948

DENSITOMETER FOR USE IN QUANTITATIVE THIN LAYER CHROMATOGRAPHIC ANALYSIS

John Thoden, Vineland, and Theodore Wagner, Mantua, both of N.J., assignors to Kontes Glass Company, Vineland, N.J.

Filed Dec. 17, 1973, Ser. No. 425,513
Int. Cl.² G06K *9/08*; **G01J** *3/48*
U.S. Cl. 356—71 **35 Claims**



1. A densitometer for use in quantitative analysis of spots on a thin layer chromographic plate comprising a plate support, a head assembly positioned above said support, said assembly comprising a first source of light and means for sensing light from the plate, a second source of light situated below said support, said support having a frame portion for contacting the outer portion of the plate and an open portion aligned with the spotted areas of the plate such that the spotted areas of the plate may be exposed to light from said second light source.

21. A densitometer for use in quantitative analysis of spots on a thin layer chromographic plate comprising a plate support, a head assembly positioned above said support, a source of light and means for sensing light from the plate at least one of which is carried by said head assembly, said head assembly being movable between an operative position adjacent the plate and an inoperative position relatively remote from the plate, and means operatively connected between said power supply and said active portion of said head assembly for moving said active portion to said inoperative position when the densitometer power supply is turned off.

26. A densitometer for use in quantitative analysis of spots on a thin chromographic plate comprising a plate support, a head assembly positioned above said support, a source of light and means for sensing light from said plate at least one of which is carried by said assembly, means to move said head assembly and said support relative to each other to align the head assembly transversely with respect to the plate and to scan the plate longitudinally, and means operatively connected to said head assembly and movable adjacent said plate support for indicating the transverse location of the assembly relative to the plate, said means comprising a pointer mounted on said assembly and extending over the plate support.

35. The densitometer of claim **33** further comprising means for deactivating said sensing means except when said active portion of said head assembly is in said operational position.

3,924,949

SPECTROPHOTOMETER FOR USE AS A SPLIT BEAM AND DUAL WAVELENGTH MEASUREMENTS

Tadashi Honkawa, and Kenji Fukuda, both of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 20, 1972, Ser. No. 235,925
Claims priority, application Japan, Mar. 19, 1971, 46-15126
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G01N *21/00*; **G01J** *3/42*
U.S. Cl. 356—73 **7 Claims**



1. A spectrophotometer comprising a light source, optical means for directing the light beams from said light source along first and second paths, a pair of monochromators positioned along said first and second paths, respectively, for receiving the light beams from said optical means, a chopper for alternately interrupting the respective light beams in said first and second paths at the outputs of said monochromators, a first mirror block means separate from said chopper for receiving the interrupted light beams from said chopper and for directing a portion of the respective light beams in said first and second light paths into a common light path, a cuvette housing positioned at the output of said first mirror block means and through which said common light path extends, and detector means for receiving light from the output of said cuvette housing, said first mirror block means directing the remaining portion of respective light beams in said first and second light paths not directed into the common light path away from at least one of said cuvette housing and said detector means, whereby the presence of shielding means for interrupting the light beams is avoided and further including a second mirror block means interchangeable with said first mirror block means for separately deflecting and condensing the respective light beams in said first and second light paths from said chopper so as to direct the separate light beams onto said cuvette housing.

3,924,950

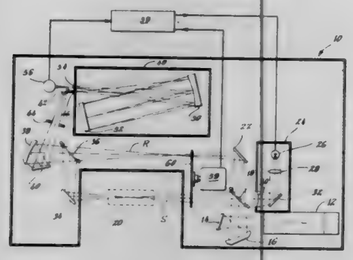
ATOMIC ABSORPTION SPECTROSCOPY WITH BACKGROUND CORRECTION

E. Horace Siegler, Jr., Darien, Conn., assignor to Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sept. 16, 1974, Ser. No. 506,267
Int. Cl.² G02J *3/36*, *3/42*
U.S. Cl. 356—82 **12 Claims**

1. An atomic absorption spectrometer which comprises: means for forming a first beam containing substantially monochromatic radiation comprising a wavelength of interest;

means for forming a second beam of pulsed nonmonochromatic radiation which includes said wavelength of interest; a first beam splitter for combining the radiation of said first and second beams, splitting the combined radiation into a sample beam and a reference beam and directing them, respectively, through a sample region and a reference region; means for chopping said sample and reference beams prior to



their entering said sample and reference regions; a second beam splitter for receiving and recombining said chopped beams after their leaving said sample and reference regions; means for isolating from said recombined beam a relatively narrow wavelength region containing the wavelength of interest; and means for measuring the intensity of said isolated wavelength region at periods established by the pulse rate of said second beam and the frequency of said chopping means.

3,924,951

APPARATUS FOR ILLUMINATING SMALL PARTICLES THAT ARE BEING COUNTED AND CHARACTERIZED

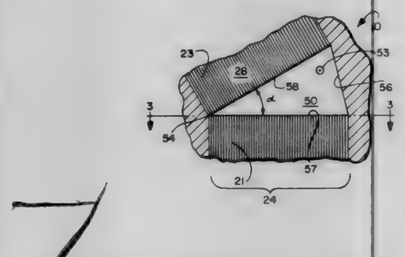
Wolfgang M. Dittrich, 44 Munster (Westf.), Am Krug 40, Germany

Continuation-in-part of Ser. No. 232,026, March 6, 1972, abandoned. This application May 9, 1973, Ser. No. 358,646

Claims priority, application Germany, Mar. 5, 1971, 2110675

Int. Cl.² G01N *15/02, 21/00, 1/00*

U.S. Cl. 356—102 **4 Claims**



2. Apparatus for illuminating small particles for counting and characterizing said particles comprising:

a tubular measuring chamber,

a dispersion current flowing through said chamber wherein water is the medium carrying said particles,

a first wall of said chamber comprising optical fibers which illuminate said chamber,

a second wall of said chamber having means for totally absorbing all light transmitted to it;

means for conducting said current through said measuring chamber; and

means optically coupled to said chamber for counting and evaluating light impulses produced therein.

3,924,952

ARRANGEMENT AND METHOD FOR STUDYING RADIATION BY INTERFERENTIAL SPECTROMETRY

Robert Gaston André Maréchal, Orsay, and Gerard Fortunato, Cachan, both of France, assignors to Etablissement Public: Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Feb. 6, 1974, Ser. No. 440,142

Claims priority, application France, Feb. 6, 1973, 73.04040

Int. Cl.² G01B *9/02*

U.S. Cl. 356—106 S **15 Claims**



1. An arrangement for studying the spectrum of a source, which comprises:

interferometer means for receiving light from said source and splitting it into two laterally spaced images having substantially equal intensities;

lens means for focusing light from said two images to provide a luminous interference pattern in the back focal plane of said lens means, which pattern is an exact, high contrast Fourier transform of the spectrum of said source obtained for positive and negative values of the optical path difference existing by virtue of the lateral spacing of said images; and

modifying means located at said back focal plane for operating on said Fourier transform to analyze said pattern and obtain information about the spectrum of said source.

3,924,953

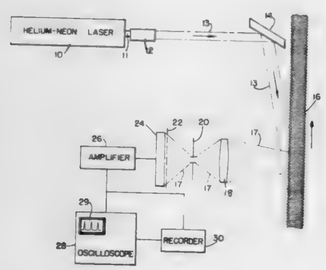
HELIX PITCH MONITOR

Frederick C. Allard, Mystic, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 18, 1974, Ser. No. 534,040

Int. Cl.² G01B *11/14*

U.S. Cl. 356—167 **11 Claims**



1. A pitch monitor for determining quality of spacing on a moving reflector having spaced reflective surfaces comprising:

a source of electromagnetic energy adapted to generate and conduct a beam onto the moving reflector having spaced reflective surfaces for reflecting spatial highlights of said beam;

a lens aligned to receive the reflected portion of said beam for forming an image of the reflected spatial highlights of said beams;

stop means receiving said reflected portion of said beam for establishing telecentricity of said lens;

opaque means having spaced indicators aligned with said image of spatial highlights upon said reflective surfaces being perfectly spaced for transmitting said image of spatial highlights in alignment with said indicators;

photodetection means for converting energy in said image of spatial highlights in alignment with said spaced indicators into an electrical signal; and

readout means connected to receive said electrical signal for providing an indication of the spacing of said reflective surfaces.

3,924,954

HELIOGRAPH

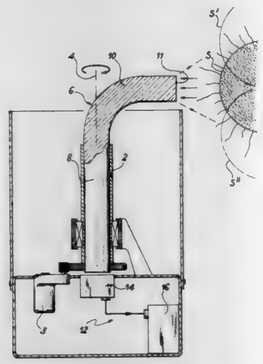
Jean-Claude Decret, Seyssinet-Pariset; Pierre Denis, and Paul Jourdan, both of Grenoble, all of France, assignors to Commissariat a l'Energie Atomique and Institut National de la Recherche Agronomique, both of Paris, France

Filed Apr. 16, 1974, Ser. No. 461,451

Claims priority, application France, Apr. 20, 1973, 73.14538

Int. Cl.² G01J *3/48*

U.S. Cl. 356—188 **10 Claims**



1. A heliograph comprising:

a light guide having an axis parallel to the earth's axis and driven by means in a uniform movement of rotation about its axis at an angular velocity which is higher than the velocity of rotation of the earth on its own axis, the upper portion of said guide being elbowed with respect to the axis,

a stationary photodetector placed beneath the lower end of said guide and

electronic counter means for counting the electrical pulses delivered by said receiver.

3,924,955

SELF-RETAINING WASHER

Barry Roger Michael Barnett, and Arthur William Burton, both of West Drayton, England, assignors to TRW Inc., Cleveland, Ohio

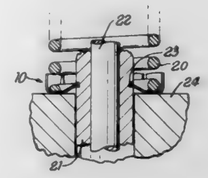
Filed July 17, 1974, Ser. No. 489,244

Claims priority, application United Kingdom, July 23, 1973, 35049/73

Int. Cl.² F16B *9/00*

U.S. Cl. 403—230 **2 Claims**

1. A washer comprising a base portion divided by a plurality of radially extending slots into a plurality of radially arranged tongues having end edges which define the internal circumference of the washer, and an annular flange around the outer circumference of the base portion, the annular flange extending from the base portion at substantially right angles thereto and being divided by a plurality of slits each of which extends into a tongue of the base portion, each of the tongues having an end portion which is inclined away from the plane of the remainder of the tongue so as to extend outwardly therefrom in the same general direction as the flange, and the slots extending into the flange, the arrangement being such that the tongues can be moved radially outwardly to increase the



diameter of the internal circumference of the washer by expanding the flange and thereby opening each slit in the flange to draw the tongues radially outwardly.

3,924,956

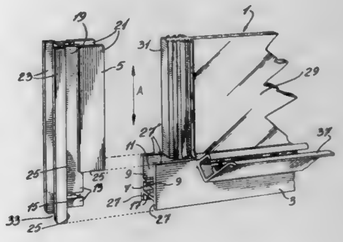
JOINT FOR WINDOW SHUTTER

Germain Fortier, Thetford Mines, Canada, assignor to Emile Fortier Inc., Thetford Mines, Canada

Filed July 1, 1974, Ser. No. 484,998

Int. Cl.² E04C *2/54*

U.S. Cl. 403—231 **2 Claims**



1. A joint interconnecting the ends of two adjacent side members of a shutter movable in either of two opposite directions, one side member extending transversally of said directions and the other parallel to said directions, said joint being characterized by the following features:

a. the other side member is a metal shape having a solid elongated central web provided on either side with a pair of longitudinal flanges projecting from said web, the said pairs of flanges respectively defining an outer channel for the reception of a slide bar to guide said shutter and an inner channel; the flanges defining said inner channel terminating short of the end of said web to define transverse shoulders; the flanges defining said outer channel extending beyond said web; said web further having a transverse groove between said transverse shoulders and the end of said central web;

b. the one side member is a metal shape having two parallel side cheeks of which the outer faces fall respectively in the same parallel planes as the outer faces of the flanges of the other side member; said side cheeks having inwardly projecting strips and a bight extending parallel to said strips, the latter and said bight being located at constant distances respectively from the longitudinal edges of said side cheeks to define inner and outer channels,

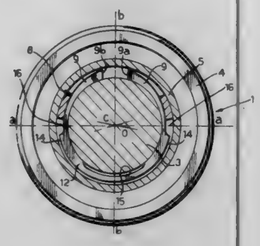
whereby the joint is achieved by inserting said strips of said cheeks into said grooves of said other side member, the inner edges of said cheeks then bearing against said shoulders of said other member.

3,924,957

LOCKING ARRANGEMENT FOR BEARING RINGS

Domenico Camosso, Turin, Italy, assignor to SKF Industrial Trading and Development Company B.V., Amsterdam, Netherlands

Filed May 24, 1974, Ser. No. 473,257
Claims priority, application Italy, June 4, 1973, 68646/73
Int. Cl.² F16D 15/00
U.S. Cl. 403—352 3 Claims



1. An arrangement for locking an annular bearing ring relative to a support comprising an intermediate element adapted to be forced between the bearing ring and the support, said bearing having a groove in the surface of said annular bearing cooperating with said support, said intermediate element being constituted by an elastic split ring located in said groove, said elastic split ring tapering in radial thickness from its free ends to define in cooperation with the cylindrical base surface of the groove a pair of cavities, the radial depth of which vary in the circumferential direction, each tapering section extending angularly for about 90° and being delimited radially by external and internal surfaces having non-concentric circular plan profiles, the center of the internal surface profile coinciding with the axis of the ring and the center of the external surface profile being located on a straight line passing through the center of the internal surface profile and forming, with the plane perpendicular to the diametral plane of symmetry of the ring an angle between 5° and 6°, and means located in each cavity for effecting radial deformation of the elastic ring to join the elastic ring in engagement with both the annular bearing ring and the support and thereby lock the bearing ring relative to the support, wherein the internal surface of the part of the elastic ring comprised between the two sections of tapering thickness has a central radial channel extending circumferentially and subtending at the centre of the ring an angle between 80° and 120°.

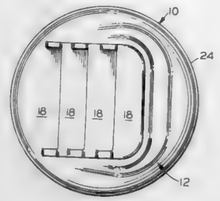
3,924,958

HIGHWAY RETROREFLECTING MARKER

William P. Rowland, Millbrook Lane, Southington, Conn. 06489, assignor to Rowland Development Corporation, Kensington, Conn.

Continuation-in-part of Ser. No. 317,263, Dec. 21, 1972, abandoned. This application May 7, 1973, Ser. No. 358,174
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² E01F 11/00
U.S. Cl. 404—15 17 Claims

1. A highway retroreflecting marker comprising, a housing having a base and a resiliently depressible cap projecting upwardly therefrom, at least said cap being formed from a relatively wear-resistant synthetic resin, said cap being substantially sealingly engaged with said base, and retroreflecting means supported in said housing, said cap having a redirecting means which is transparent to enable light rays to pass therethrough and which redirects the light rays striking said redirecting means to an angle of less than 30° to the perpendicular to the plane of said retroreflecting means, said housing being adapted for positioning of said base thereof and said cap thereof relative to a road surface so that light rays striking said redirecting means are redirected within said housing to said retroreflecting means, then are retroreflected from said retroreflecting means to said redirecting means, and thereafter are directed back from said redirecting means in the direction of the source of the light rays.

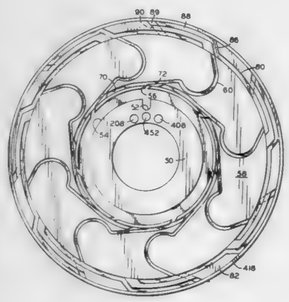


3,924,959

MOTOR CONSTRUCTION

Robert G. Bandy, 10206 Lima Road, Fort Wayne, Ind. 46808

Division of Ser. No. 385,995, Aug. 6, 1973, Pat. No. 3,861,819.
This application June 10, 1974, Ser. No. 477,694
Int. Cl.² F04D 1/00
U.S. Cl. 415—1 3 Claims



1. A method for effecting power actuation of a rotor comprising the steps of:

a. supplying a constant flow of air pressure to a relatively fixed annular member;

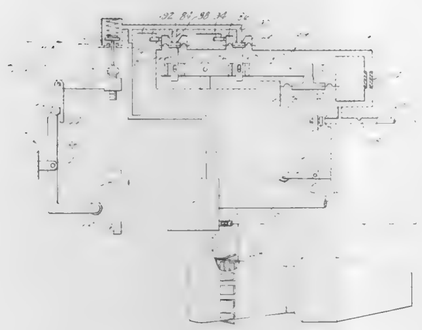
b. passing the compressed air in the inner annular member through radial passages of a rotor which moves relatively to the inner annular member to establish air connections for preselected periods in accordance with the angular position of said rotor, collecting the outflow of air from the rotor as such air is discharged through tangentially directed currents effecting circumferential thrust on said rotor and providing such outlet flow for preselected periods of circumferential movement of the rotor, redirecting the flow of air through said radially outer member and back through the rotor in a radially inner direction to effect additional circumferential thrust on the rotor by the outflow of air at the radially inner portion of said rotor, and recycling the air in radially inner and radially outer directions for at least one additional such cycle and thereafter venting such air.

3,924,960

COMPRESSOR BLEED SENSOR AND CONTROL FOR TURBINE TYPE POWER PLANTS

Kermit I. Harner, Windsor; William W. Hixson, Wethersfield; Michael A. Spadafora, Windsor, all of Conn., and Charles F. Stearns, Longmeadow, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 4, 1974, Ser. No. 457,955
Int. Cl.² F01B 17/00, 25/00
U.S. Cl. 415—28 5 Claims



1. In combination with a steady-state compressor bleed system of a gas turbine power plant that schedules the bleed valves of said bleed system to an opened and closed position as a function of a power plant operating parameter for steady-state power plant operation, including a servo system having control means responsive to said power plant operating parameter, and an actuator responsive to said control means for effectuating the opening and closing of said bleed valves according to said schedule, overriding means, independent of said compressor bleed system, including another servo system also controlling said actuator, and means responsive to another power plant operating parameter for producing a signal indicative of an acceleration condition of said gas turbine power plant, and control means independent of said steady-state compressor bleed system operatively connected to said other servo system being responsive to said signal to further control said actuator whereby said bleed valves are opened and closed independent of said steady-state compressor bleed system, a first control valve disposed in said servo system for controlling servo fluid, a second control valve for controlling servo fluid in parallel flow relation with said first control valve disposed in said other servo system and means responsive to said other power plant operating parameter for producing a rate of change value thereof for controlling said second control valve independently of said first control valve.

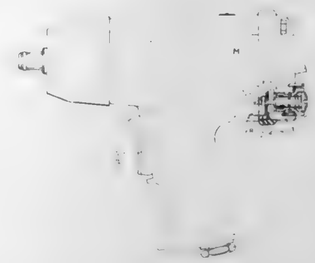
3,924,961

PNEUMATIC TORQUEING TOOL

Johann Hess; Kurt Paule, both of Stuttgart; Kurt Latzina, Waldenbuch, and Richard Wolf, Stuttgart, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Dec. 5, 1974, Ser. No. 530,047
Claims priority, application Germany, Dec. 15, 1973, 2362458
Int. Cl.² F01D 17/06; B23B 45/04
U.S. Cl. 415—32 7 Claims

1. In a pneumatic torqueing tool, particularly a pneumatic wrench, a combination comprising a housing; a pneumatic motor in said housing and rotatable in a first direction and also in an opposite second direction; fluid conduit means, including a fluid passage for supplying pneumatic fluid to said motor when the same is to rotate in said first direction; and an adjustable throttle valve for controlling the flow of fluid through said passage, said throttle valve comprising a valve member having a valve member portion movable into and out of an orifice in said passage, first means mounting said valve member for gradual adjustment of the axial position of said valve member



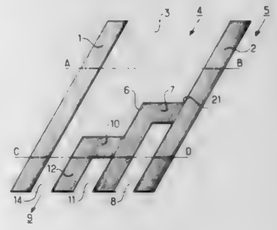
portion within said orifice to thereby vary the effective cross-section of the latter, and second means for rapidly withdrawing said valve member portion entirely from said orifice to thereby expose the maximum effective cross-section thereof.

3,924,962

MOLECULAR PUMPS OF THE DRUM TYPE

Louis Maurice, Paris, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Sept. 4, 1974, Ser. No. 503,126
Claims priority, application France, Sept. 14, 1973, 73.33097
Int. Cl.² F03D 5/00
U.S. Cl. 415—90 4 Claims



1. In a high vacuum molecular pump comprising a cylindrical drum rotating with a slight clearance in a stator whose internal face is cylindrical, comprising several parallel helical, main grooves separated by low walls and cut in at least one of the opposite cylindrical faces, wherein; the improvement starting from a certain point, from the suction end to the discharge end, on the one hand the thickness of the low walls increases and on the other hand, grooves which are blind on the suction side and open on the discharge side are cut in the thickness of the low wall.

3,924,963

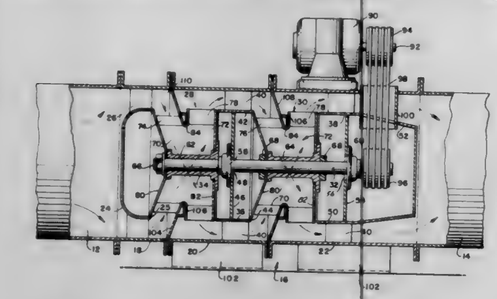
TURBOMACHINE

Dieter G. Zerrer, R.F.D. 5, Box 605, Easton, Md. 21601

Filed Sept. 27, 1973, Ser. No. 401,403
Int. Cl.² F04D 17/02
U.S. Cl. 415—143 16 Claims

1. A pressure increasing turbomachine comprising a stationary housing having an elongated generally cylindrical chamber with a fluid flow intake at one end and a fluid flow discharge at the other end, a shaft, means for mounting said shaft for rotation within and concentric to the housing wall, said shaft adapted to be connected to a prime mover to impart rotation to the shaft, at least one fluid-dynamically integral runner including a centripetal inducer and a centrifugal impeller wheel portion, each portion comprising a plurality of circum-

ferentially spaced fluid flow energy increasing vanes within the vicinity of the periphery of said wheel portions and an intermediate shroud member separating the vanes of one portion from the other, means for mounting said runner for co-rotation on said shaft, means including stationary straightening vanes upstream of said centripetal portion for drawing



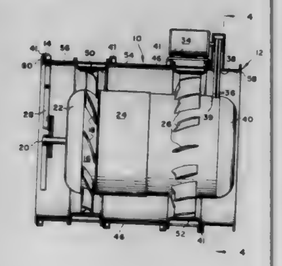
a fluid flow substantially without tangential velocity components radially into said centripetal inducer portion, and stationary means for guiding said flow from said centrifugal impeller portion axially through said housing, said stationary guide means including a plurality of stationary guide vanes arranged for substantially axial through-flow downstream of said centrifugal impeller portion.

3,924,964

AXIAL FLOW FAN APPARATUS

Ronald J. Lievens, Onalaska, and Richard W. Kabat, Genoa, both of Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Dec. 23, 1974, Ser. No. 535,430
Int. Cl.² F01D *1/02*
U.S. Cl. 415—210 **8 Claims**



4. The axial flow fan as defined by claim 3 further including means for rigidly fastening said stator vanes at their radially outer ends to said second web and their radially inner ends to said core.

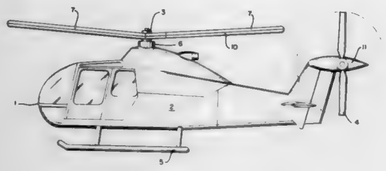
3,924,965

REVERSE VELOCITY ROTOR AND ROTORCRAFT

Harold E. Lemont, Arlington, Tex., assignor to Fairchild Industries, Inc., Germantown, Md.

Division of Ser. No. 325,444, Jan. 22, 1973, abandoned, which is a division of Ser. No. 85,717, Oct. 30, 1970, Pat. No. 3,729,272, which is a division of Ser. No. 700,469, Jan. 25, 1968, Pat. No. 3,554,662. This application Sept. 5, 1974, Ser. No. 503,333
Int. Cl.² B64C *27/74*
U.S. Cl. 416—114 **3 Claims**

1. A rotor system for high speed helicopters comprising a main rotor with rotor blades, power means for rotating said rotor, variable blade pitch control means for regulating the pitch of said blades, drive means operatively connected to and rotating with said rotor, cyclic motion means driven by said drive means, said cyclic motion means comprising variable throw crank means operatively connected to and driven by said drive means, said crank means being adapted to translate the rotational motion of said drive means to a preselected higher than one/rev reciprocal motion for each revolution of said rotor blades, throw control means connected to said



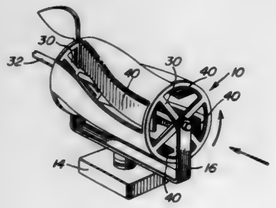
crank means for varying the throw of said crank means and thereby the amplitude of the reciprocal motion, and motion transmitting means driven by said cyclic motion means for transmitting the preselected higher than one/rev cyclic motion to said pitch varying means, said crank means being connected to said motion transmitting means whereby said reciprocal motion is communicated to said variable pitch control means.

3,924,966

WIND DRIVEN POWER GENERATOR

Robert J. Taminini, 4 Pinewood Road, Wyomissing, Pa. 19610

Filed Sept. 25, 1974, Ser. No. 509,349
Int. Cl.² F03D *1/06*
U.S. Cl. 416—177 **4 Claims**



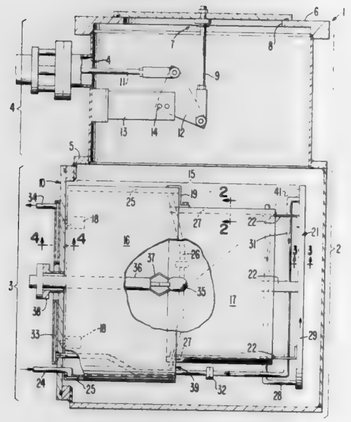
1. A wind rotor comprising an elongated cylindrical body of a length greater than its diameter, having a cylindrical side wall and open at its opposite ends and journaled for rotation about an axis generally coinciding with the center axis of said body, said body including a plurality of circumferentially spaced longitudinally extending slots similarly slightly inclined relative to radial planes passing through said slots, corresponding edge portions of said cylindrical side wall defining corresponding longitudinal edges of said slots including integral inwardly projecting substantially rectangular vanes inclined at least thirty degrees relative to planes tangent to said cylindrical side wall edges, the width of said vanes being substantially equal to the width of said slots and said vanes comprising inwardly deflected integral portions of said cylindrical side wall, the width of said vanes, from the base longitudinal edges thereof supported from said side wall to the remote free longitudinal edges thereof, being equal to at least one-half the radius of said body.

3,924,967

SUBLIMATION VACUUM PUMP HAVING A REMOVABLE GAS PERMEABLE CONDENSER

David J. Harra, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Mar. 22, 1974, Ser. No. 453,739
Int. Cl.² F04B *37/02*
U.S. Cl. 417—51 **16 Claims**



1. In a sublimation vacuum pump of the type wherein a getter material is sublimed onto a surrounding gas permeable cooled condensing structure for gettering gas from within the evacuable structure coupled in gas communication with said condenser, said sublimation pump including:

condenser means for surrounding a source of getter material which is to be sublimed in use, said condenser means having apertures therethrough arranged so that getter material emanating from the source of getter material will not have line-of-sight passage through said apertures to the outside of said condenser means, said apertures forming passageways for providing gas communication between the outside of said condenser means and the interior surfaces of said condenser means which face the source of sublimed getter material and which are to collect the sublimed material;

flange means coupled to said condenser means so as to form a unitary removable structure for sealing, in a gas tight manner, said condenser means to the evacuable structure to be pumped with said condenser means being disposed within the evacuable structure;

fluid cooling means for directing a stream of cooling fluid in heat exchanging relation with the getter condensing surfaces of said condenser means for cooling same in use; and

all portions of said condenser means which are in the path of line-of-sight trajectories from the source of getter material are carried by said flange means and removable therewith.

3,924,968

RADIAL COMPRESSOR WITH MUFFLED GAS CHAMBERS AND SHORT STABLE PISTON SKIRTS AND METHOD OF ASSEMBLING SAME

Marvin E. Gaines, and Robert L. Swadner, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 275,553, July 27, 1972, abandoned. This application Nov. 19, 1973, Ser. No. 416,933
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² F04B *1/04*; B23P *15/00*
U.S. Cl. 417—53 **17 Claims**



1. A radial compressor of the type including a cast cylinder housing having cross bores including cylinder walls therein along axes normal to each other, said housing having one closed end and a removable cylinder head closing its other end; a drive shaft rotatably mounted in said housing and said cylinder head; an eccentric on said drive shaft, a slider block rotatably mounted on said eccentric; a pair of yokes disposed normal to each other and in engagement with normal surfaces of said slider block; pairs of piston assemblies connected to each yoke so that the pistons extend oppositely from each other from said yokes; said piston assemblies being press-fit connected to said yokes providing a stable connection therebetween; said pistons including a relatively short piston skirt; said pistons further including an annular groove in said piston skirts extending a major portion of the width along said skirt; a sealing ring disposed in said groove substantially the full width thereof to provide a relatively wide bearing surface between said piston skirt and the cylinder walls of said cross bores, the relatively wide bearing surface of said sealing ring being sufficiently wide to accomplish a fluid tight seal while providing substantial area of engagement preventing metal-to-metal contact between said piston skirts and said cylinder walls; said cylinder housing being formed to include relatively large intake and discharge cavities muffling sound energy in gases flowing therethrough during operation of the compressor, said discharge cavities molded integral with said cylinder housing between the cylinder bores; reinforcing web portions molded integral with said cylinder housing and at least partially defining said discharge cavities and providing a rigid cylinder housing structure and areas for fastening the cylinder head to said cylinder housing as well as areas for securing the entire assembly in an operational environment, and valve means to direct fluids to and from the cylinder bores.

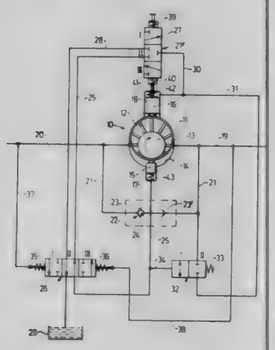
16. An improved method of assembling a radial compressor without screws comprising the steps of inserting a unitized drive shaft assembly including yoke sockets into the central intake chamber of a radially bored and counterbored drum-

shaped cylinder housing, press-fitting stems of unitized piston assemblies including intake valves through the radial bores into stable connections with the yoke sockets of said drive shaft assembly, snap-fastening unitized discharge valve assemblies into seated relationship in said counterbores radially outboard of said piston assemblies, and pressing a sleeve into surrounding relationship with said cylinder housing outboard of said discharge valve assemblies to form a discharge chamber around said cylinder housing.

3,924,969
HYDRAULIC SYSTEM

Werner Rometsch, Gerlingen, and Karl Veil, Uhingen, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Oct. 30, 1974, Ser. No. 519,101
Claims priority, application Germany, Nov. 14, 1973, 2356795
Int. Cl.² F04B 49/00
U.S. Cl. 417—218 **6 Claims**



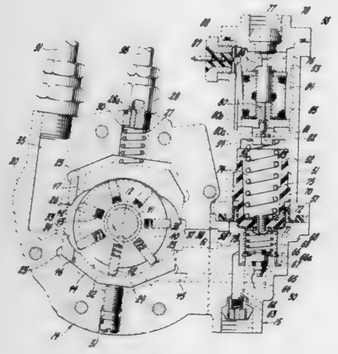
1. A hydraulic system, comprising a variable-flow fluid-handling machine having a high-pressure side and a low-pressure side and an adjusting member which is movable between a plurality of flow-adjusting positions; a larger and a smaller piston acting upon said member in mutually opposite directions, said smaller piston being connected in circuit with said high-pressure side; a multi-position servo-control unit to which said larger piston is mechanically connected so as to share the movements thereof, said unit connected in circuit with said machine and including a relief valve in circuit with said larger piston and said machine for controlling the flow of fluid from said high-pressure side when the fluid pressure exceeds a preset limit; and a control valve connected with said high-pressure side and said unit and operative at a pressure slightly below said preset limit for moving said unit to a position in which said unit connects said larger piston with said high-pressure side and interrupts communication of said larger piston with a low-pressure space.

3,924,970
ELECTRICALLY CONTROLLED FUEL PUMP

Ralph H. Johnston, and Leroy E. Lakey, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1973, Ser. No. 419,481
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² F04B 49/00
U.S. Cl. 417—220 **4 Claims**

1. In a fuel pump mechanism having a variable displacement pump for delivering fuel, said pump including a spring biased slider with a pump cavity therein slidable in a stator chamber of the pump housing for varying the displacement of the pump, a pressure regulator for controlling delivery of fuel from said pump comprising a housing defining a cavity divided by a diaphragm to provide a first chamber for receiving fuel discharged from said pump and a second chamber in communication with said first chamber by a sized orifice, said housing further defining a fuel delivery outlet extending from said first chamber for discharge of fuel and a regulating pressure outlet extending from said first chamber in communication with said stator chamber on the opposite side of said slider from said spring, said diaphragm being movable away from said regulating pressure outlet in response to an increase in fuel pressure within said first chamber, spring means biasing said diaphragm toward said regulating pressure outlet, a bracket secured to

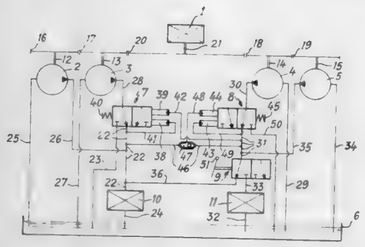


said diaphragm within said first chamber, a valve member disposed in said first chamber and engageable with said regulating pressure outlet for controlling flow therethrough, means biasing said valve member away from said diaphragm toward engagement with said regulating pressure outlet, said valve member including means engageable with said bracket after said diaphragm and said bracket move a selected distance away from said regulating pressure outlet to thereby disengage said valve member from said regulating pressure outlet, a discharge orifice from said second chamber, and a solenoid operated pilot valve positioned to control the flow through said discharge orifice from said second chamber.

3,924,971
DEVICE FOR REGULATING THE SUPPLY OF PRESSURIZED FLUID OF TWO CIRCUIT SYSTEMS HAVING AT LEAST TWO PUMPS OF CONSTANT CUBIC CAPACITY

Jean Noel Jacquot, Saint Soupplets, France, assignor to Societe Anonyme: Poclain, Le Plessis-Belleville, France

Filed Jan. 23, 1975, Ser. No. 544,200
Claims priority, application France, Jan. 30, 1974, 74.03096
Int. Cl.² F04B 49/00
U.S. Cl. 417—286 **4 Claims**



1. Device feeding two circuit systems with pressurised fluid, constituted by:

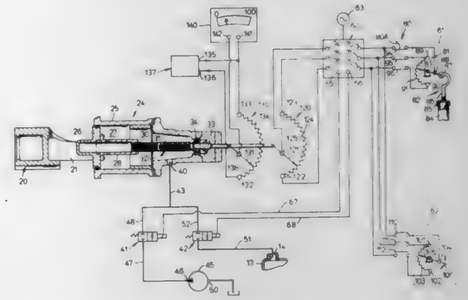
a fluid tank,
a first group of pumps each with constant flow,
a first of the two circuit systems,
a first feed conduit connecting a first pump belonging to the first group of pumps, to the first circuit system,
a first two-way distributor disposed in the first feed conduit ensuring, in its first position, the continuity of the first feed conduit and, in its second position, the communication of that part of the feed conduit included between the first pump and the first distributor with the tank,
a second group of pumps each with constant outflow,
the second of the two circuit systems,
a second feed conduit connecting a second pump belonging to the second group of pumps, to the second circuit system,
a second two-way distributor disposed in the second feed conduit ensuring, in its first position, the continuity of the second feed conduit and, in its second position, the communication of that part of the second feed conduit, included between the second pump and the second distributor with the tank,
a third two-way distributor disposed in the second feed conduit between the second distributor and the second circuit system and
a connecting conduit which connects the third distributor to that part of the first feed conduit included between the first distributor and the first circuit system, whilst the third distributor in its first position, establishes communication between the second distributor and the second circuit system and, in its second position, establishes communication between the second distributor and the connecting conduit and obturates that part of the second feed conduit connected directly to the second feed circuit, well as a first return member are coupled to the first distributor each of the first and second control members having an effect opposing that of the first return member, and said latter having an effect tending to place this first distributor in its first position, whilst third and fourth control members, as well as a second return member are coupled to the second distributor each of the third and fourth control members having an effect opposing that of the second return member, and said latter having an effect tending to place this second distributor in its first position, a first control conduit connecting that part of the first feed conduit, included between the first distributor and the first circuit system to the first control member, a second control conduit connecting that part of the second feed conduit included between the second distributor and the third distributor to the second control member, an auxiliary conduit connecting that part of the first feed conduit included between the first distributor and the first circuit system to that part of the second feed conduit included between the second and third distributors, a shuttle valve disposed in said auxiliary conduit, and a third control conduit connecting that part of the second feed conduit included between the second and third distributors to the third control member, and a fourth control conduit connecting the output of the shuttle valve to the fourth control member and finally the pumps of the first and second groups of pumps are coupled to a single drive motor, the maximum power of which is lower than the sum of the maximum powers of the various pumps.

3,924,972
CONTROL MEANS FOR A VARIABLE CAPACITY ROTARY SCREW COMPRESSOR

Paul G. Szymaszek, Milwaukee, Wis., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.

Filed Oct. 29, 1974, Ser. No. 518,267
Int. Cl.² F04B 49/00
U.S. Cl. 417—310 **15 Claims**

1. In combination: a variable capacity compressor having an adjustable control valve for regulating the capacity of said compressor; an actuator for adjusting said control valve; electro-responsive means for operating said actuator; control means for providing a control signal to establish an initial control valve adjustment, said control means including an automatic control unit and a manual control unit which are alternatively and selectively operable, said automatic control unit being responsive to a variable condition to provide a

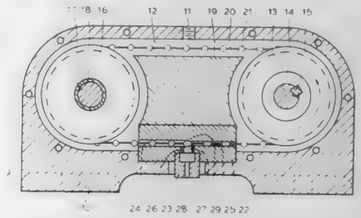


control signal to regulate compressor capacity, said manual control unit being selectively operable to provide a control signal to maintain said control valve in a fixed position; feedback means operable in response to control valve adjustment to provide a feedback signal related thereto; and balancing means for receiving and comparing said control signal and said feedback signal and for providing an output signal related thereto to control said electro-responsive means.

3,924,973
METERING PUMP

Alden A. Lofquist, Jr., 10 Rita Way, Orinda, Calif. 94563

Continuation-in-part of Ser. No. 338,103, March 5, 1973. This application May 7, 1973, Ser. No. 357,682
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² F04B 19/14; F01D 23/00; F03B 9/00
U.S. Cl. 417—320 **12 Claims**



1. Apparatus for metering small volumes of fluids which comprises:

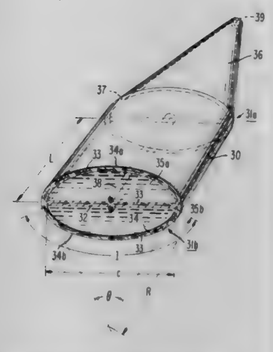
A. Body means having an elongated passageway therein with said passageway having a smaller portion of smaller cross-sectional area, and a larger portion of larger cross-sectional area and a transitionary portion therebetween,
B. An endless member extending longitudinally through said passageway and movable longitudinally therethrough,
C. A plurality of annular portions attached to said endless member for movement therewith through said passageway with said annular portions being engagable with said passageway in fluid sealing relation in both said first and second portions,
D. First fluid flow means communicating with said passageway adjacent to said transitionary portion, and
E. Second fluid flow means communicating with the larger portion of the passageway.

3,924,974

FLUID EJECTION OR CONTROL DEVICE

Kenneth Henry Fischbeck, Princeton, N.J., and Eric McPhail Leyton, deceased, late of Princeton, N.J. (by Sheila Leyton, executrix), assignors to RCA Corporation, New York, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,162
Claims priority, application United Kingdom, May 21, 1973, 24140/73
Int. Cl.² F04B 17/00; B05B 17/04, 1/08; G01D 15/18
U.S. Cl. 417—322 16 Claims



1. The Combination comprising:
a first member, said first member having a cross-section having a bow-like shape;
a second member spanning said first member such that, in cross-section, said second member forms a chord of said bow-like shape;
said first and second members forming a tube-like chamber for fluid, said chamber including an output port for said fluid; and
means for coupling a control signal to said tube-like chamber,
said first member being formed of a first material such that the length of said bow-like shape contracts in response to said control signal,
said second member being formed of a second material such that the length of said chord expands in response to said control signal,
the length of said chord expanding relative to the length of said bow-like shape in response to said control signal so that the area between said bow-like shape and said chord is geometrically changed to thereby reduce the volume of said chamber whereby the flow of fluid through said output port is controlled.

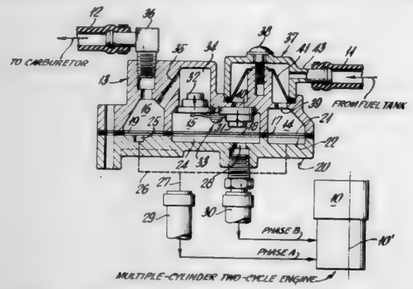
3,924,975

FUEL PUMP

James M. Hundertmark, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Nov. 19, 1973, Ser. No. 416,832
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² F04B 43/06
U.S. Cl. 417—395 7 Claims

1. A fuel pump for supplying fuel from a fuel source to the carburetor of a two-cycle internal-combustion engine having a plurality of cylinders, comprising first and second and third chambers, pressure-responsive diaphragm means extending across each of said chambers, a fuel-supply chamber having a fuel-source connection and having overlapping connection with said first and second chambers, an inlet check valve at the connection between said fuel-supply chamber and said second chamber, means including an outlet check valve connecting said second and third chambers, said third chamber including a fuel-output connection, first crankcase-connection means on the opposite side of the diaphragm at said first chamber for a first phase of pulsed operation thereof in accordance with a first-phase, second crankcase-connection means on the opposite side of the diaphragm at said second chamber



for pulsed operation thereof in accordance with a second phase in phase-displaced relation to said first phase, and third crankcase-connection means on the opposite side of the diaphragm at said third chamber for pulsed operation thereof in phase-displaced relation with said second phase.

3,924,976

ENGINE

John N. Hinckley, Tree Top Apts., Apt. 111, 10522 Santa Gertrudes, Whittier, Calif. 90603

Division of Ser. No. 274,202, July 24, 1972, Pat. No. 3,824,044, which is a division of Ser. No. 860,684, Sept. 24, 1969, Pat. No. 3,684,413, which is a continuation-in-part of Ser. No. 812,656, April 3, 1969, abandoned. This application Nov. 30, 1973, Ser. No. 420,746
Int. Cl.² F01C 1/00, 13/00; F04C 13/00
U.S. Cl. 418—8 17 Claims



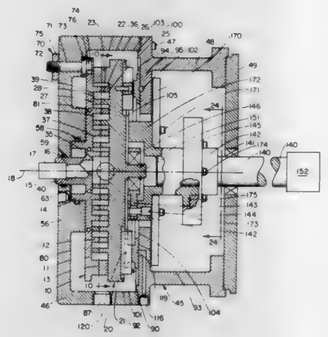
1. A movable power arm for use in transmitting a torgue force to a rotor of a rotary engine contained within a sealed engine having substantial parallel housing side walls comprising:
an elongate arm section having front and rear ends, substantially parallel side portions and substantial transverse top and bottom walls, with said bottom wall adapted for receiving a power impulse from a working fluid within the engine housing and with said side portions adapted to slide in close proximity to said housing side walls;
connecting means intermediate said ends of said arm section for pivotally mounting said section in the engine housing adjacent the rotor and permitting said arm to swing inwardly against said rotor from an outward position adjacent said housing;
a contact surface defined adjacent said front end of said arm section for engaging with and transmitting a torque force to the rotor;
a sliding valve portion defined by the side portions adjacent said rear end of sadi arm section and having a predetermined configuration extending a substantial distance rearwardly of said connecting means and adapted to open and close exhaust port means in the adjacent portion of the engine housing side wall in response to swinging movement of said arm section about said connection means with said valve portions closing said exhaust port means when said arms are in said outward position; and sealing means providing along said side portions of said arm section for sealing with the engine housing to thereby prevent the flow of working fluid past said arm section within said housing.

3,924,977

POSITIVE FLUID DISPLACEMENT APPARATUS

John E. McCullough, Carlisle, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 368,907, June 11, 1973. This application Oct. 23, 1973, Ser. No. 408,912
Int. Cl.² F04C 1/02
U.S. Cl. 418—55 48 Claims



1. In a positive fluid displacement apparatus into which a fluid is introduced through an inlet port for circulation therethrough and subsequently withdrawn through a discharge port, in which two scroll members being maintained at a desired angular relationship and having wraps which make a plurality of moving line contacts to seal off and define at least one moving pocket of variable volume and zones of different fluid pressure when one of said scroll members is driven by driving means to orbit within said other of said scroll members while maintaining a fixed angular relationship therewith, and wherein said driving means associated with said one of said scroll members includes means to provide a centripetal radial force adapted to oppose a fraction of the centrifugal force acting upon said one of said scroll members, the improvement comprising radially compliant mechanical linking means between said driving means and said one of said scroll members, said radially compliant mechanical linking means including said means to provide said centripetal radial force of a magnitude to control the radial sealing force between said scroll members at a level to minimize both wear and internal fluid leakage.

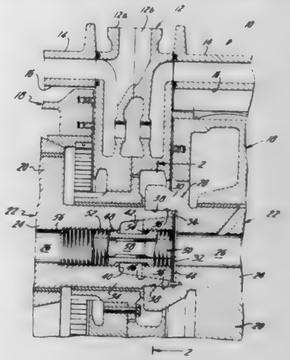
3,924,978

COUPLING MEANS FOR A SECTIONAL DRIVE SHAFT OF A ROTARY MECHANISM

Robert William Loyd, Jr., Wyckoff, and Raymond P. Wallace, Montclair, both of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Continuation of Ser. No. 434,824, Jan. 18, 1974, abandoned. This application Sept. 26, 1974, Ser. No. 509,397
Int. Cl.² F01C 1/02; F02B 53/00; F16B 2/14, 7/00
U.S. Cl. 418—60 5 Claims

1. In a rotary piston mechanism having modular units and at least one split intermediate housing section, a multi-sectional drive shaft comprising
a. a drive shaft section for each unit;
b. passageway means extending longitudinally through each of said drive shaft sections and in registry with each other;
c. means for connecting adjacent drive shaft sections in torque transmitting relationship adjacent each of the abutting surfaces of the split intermediate housing section comprising:
1. one drive shaft section having a coaxial annular first recess in one end portion;
2. the adjacent other drive shaft section having a cylindrical end portion receivable in the annular recess of said one drive shaft section;
3. a second recess having a tapered, annular surface in the end portion of said other drive shaft section;



4. force means separate from said drive shaft sections and having a peripheral surface of substantial complementary taper to the tapered surface of said second recess being disposed within said second recess;
5. actuating means accessible from outside the rotary mechanism through said passageway means for axially moving said force means relative to said second recess so as to exert radially outwardly directed forces on said one drive shaft section to expand the latter without axial movement of the drive shaft sections relative to each other and thereby maintain said drive shaft sections in tight abutting relationship for torque transmission.

3,924,979

ROTARY ENGINE ANTI-SPIN OIL SEAL

Dale P. Rose, Howell, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 13, 1973, Ser. No. 424,572
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² F01C 19/00; F04C 15/00, 27/00
U.S. Cl. 418—142 4 Claims



1. A rotary engine having a housing with an inwardly facing peripheral wall and oppositely facing inner side walls cooperatively defining a cavity, a crankshaft rotatably supported in said housing, said crankshaft having an eccentric located in

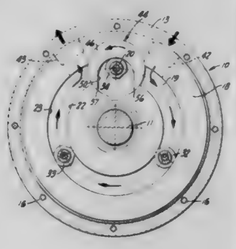
said cavity, a rotor rotatably mounted on said eccentric in said cavity, said rotor having sides facing said side walls and peripheral faces facing said peripheral wall defining a plurality of chambers that are spaced about and move with said rotor while varying in volume as said rotor rotates, a circular oil seal groove in each side of said rotor with its center on the rotor axis, a circular oil seal in each said oil seal groove axially movable to sealingly engage the opposing side wall, said oil seal having a backside and oppositely radially facing sides, said oil seal groove having a bottom and oppositely radially facing walls, a wave spring mounted in said oil seal groove engaging said groove bottom and said oil seal backside for biasing said oil seal to normally move axially in said oil seal groove to sealingly engage the opposite housing side wall, an elastomeric seal groove in one of said radially facing sides of said oil seal, said elastomeric seal groove having a radially facing bottom opposite one of the walls of said oil seal groove and radially extending oppositely facing walls, an elastomeric seal mounted in said elastomeric seal groove in said oil seal and engaging the bottom of said elastomeric seal groove and the oppositely radially facing said one wall of said oil seal groove to provide sealing between said oil seal and said rotor while said oil seal sealingly engages the housing side wall, lock tab means secured in an aperture through the bottom and adjacent one corner of said elastomeric seal groove in said oil seal out of the way of said elastomeric seal and projecting radially past the unsealed other radially facing side of said oil seal, and a lock groove in the unsealed wall of said oil seal groove in said rotor aligned with the normal direction of oil seal movement for receiving said lock tab to prevent said oil seal from spinning in said oil seal groove while permitting said lock tab to move with said oil seal in the normal direction in said oil seal groove so that said oil seal remains free to move axially to maintain sealing engagement with the opposite housing side wall.

3,924,980

LOW FRICTION, CONTROLLED LEAKAGE ROTARY ENGINE

James F. Gordon, Saratoga, Calif., assignor to Gordon Torquer, Ltd., Concord, Calif.

Filed Aug. 1, 1974, Ser. No. 493,720
Int. Cl.² F01C *1/08*
U.S. Cl. 418—191 **14 Claims**



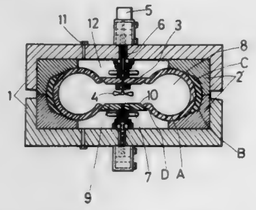
1. A rotary engine comprising the combination of a housing formed with a circular chamber concentric with a first longitudinal axis, means forming inlet and outlet ports in the housing for directing a working fluid into and from the chamber, a piston support member mounted within the housing for rotation about the first axis and with one side of the chamber being exposed to the support member, three circumferentially spaced-apart pistons carried by the support member, each piston projecting longitudinally from the support member into the chamber and being spaced from the chamber walls with a frictionless clearance through which fluid is directed to the volume ahead of the pressure-active piston which is exposed to the inlet port whereby the pressure differential across such piston is insubstantial for minimizing further fluid leakage past said frictionless clearance, a blocking valve positioned across the chamber between said inlet and outlet ports, said valve being mounted for rotation about a second axis parallel with said first axis, said valve being formed with a recess of a size sufficient to substantially envelope the pistons, and means for rotating the valve about the second axis in timed relationship with rotation of the support member whereby the pistons carried thereby move through the recess in the valve while the latter blocks substantial communication of fluid therethrough between the inlet and outlet ports.

3,924,981

APPARATUS FOR VULCANIZATION-PRESSING OF VEHICULAR TIRE TREADS

Kazumasa Sarumaru, Ashiya, Japan, assignor to Kobe Machinery Company, Ltd., Kobe, Japan

Division of Ser. No. 350,926, April 13, 1973. This application Jan. 31, 1975, Ser. No. 545,907
Claims priority, application Japan, Apr. 19, 1972, 47-39371
Int. Cl.² B29H *5/02, 5/04*
U.S. Cl. 425—24 **1 Claim**



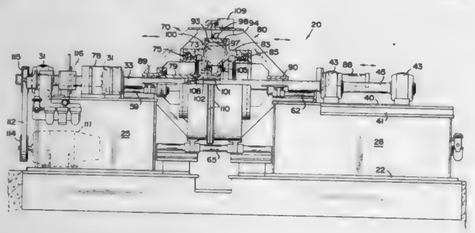
1. An Apparatus for vulcanizing a vehicular tire tread within the interior of tires by means of heat and pressurized air comprising: a pair of split tire receiving matrix segments into which a tire with an unvulcanized tread provisionally adhered to the outer periphery of a tire casing is inserted, an air intake channel through which said pressurized air is introduced into said segments, a heat source and a fan for circulating said air, both being located within a hermetically cooled space formed by closing said matrix segments including the inner wall of said tire casing.

3,924,982

CENTRIFUGAL TIRE CASTING MACHINE

James H. C. Yang, Cleveland, and Heinz W. Beneze, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Feb. 18, 1975, Ser. No. 550,806
Int. Cl.² B29H *5/02, 17/00;* **B29F** *1/00;* **B29C** *5/04*
U.S. Cl. 425—35 **15 Claims**



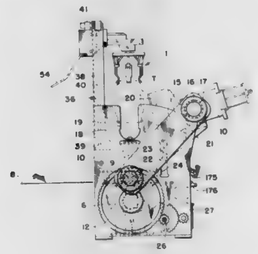
4. A centrifugal tire casting machine including in combination a rotatable drive shaft, a rotatable idler shaft in axial alignment with said drive shaft, a core member having an axial opening therethrough, means for axially moving at least one of said drive and idler shafts toward and away from the other so as to extend through the axial opening in said core member and into engagement with the other of said drive and idler shafts to rotatably support said core member, a first and a second mold half located on opposite sides of said core member and each adapted to move inwardly and outwardly between open and closed positions, said first and second mold halves in closed position being in rotative driving engagement with said core member and, also, defining a tire cavity in combination therewith, drive means extendable between said drive shaft and said core member for rotatively driving said core member, and means for moving said first and second mold halves between open and closed positions.

3,924,983

GREEN TIRE LOADER

Dale S. Barton, Columbiana, and Stephen P. Yendrich, Jr., Beloit, both of Ohio, assignors to NRM Corporation, Akron, Ohio

Filed Nov. 14, 1974, Ser. No. 523,563
Int. Cl.² B29H *5/02*
U.S. Cl. 425—38 **29 Claims**



1. A loader for a tire press comprising two upstanding parallel tracks, an elevator frame mounted on and extending between said tracks for vertical movement therealong, said elevator frame including side plates guided by said tracks with a horizontal frame member extending therebetween, a chuck frame supporting at least one tire chuck, means supporting said chuck frame on said elevator frame for horizontal movement, and drive means interconnecting said elevator frame and chuck frame to move the chuck frame horizontally relative to said elevator frame.

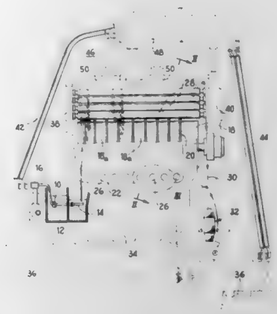
3,924,984

MACHINE FOR CONTINUOUSLY SPINNING AND TREATING RAYON-VISCOSE FILAMENTS AND YARNS

Valeriano Giacobazzi, Milan, Italy, assignor to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A., Italy

Filed Mar. 22, 1974, Ser. No. 453,721
Claims priority, application Italy, Apr. 6, 1973, 22669/73
Int. Cl.² D01D *9/08*
U.S. Cl. 425—68 **3 Claims**

1. In a machine for the continuous spinning and treatment of viscose rayon filaments and yarns of the type including, in a structurally and operatively unitary assembly, a unitary supporting structure, coagulating bath means, spinning means for extruding filaments into the coagulating bath means, stretching means operable to stretch the coagulated filaments, and progressing means for progressively advancing the stretched filaments along the spiral-like path through a sequence of zones individually designed for sequential treating and washing of the filaments, with the progressing means including a rotary drum and the zones being axially juxtaposed along the rotary drum, and drying means operable to dry the filaments and produce a completely treated yarn; the improvement comprising, in combination, a ventilated casing enclosing said structurally and operatively unitary assembly to physically separate the treatment space therein, wherein gases, vapors and harmful substances are evolved, from the exterior environment in which operating personnel may be stationed during regular operation of said machine; yarn-collecting and winding means operable to collect and wind the treated and dried yarns produced by said machine, said yarn-collecting and winding means being also located within the ventilating casing and thus physically separated from the exterior environment; and respective liquid removing means located along said spiral-like path between adjacent zones and operable to exert, on the yarn leaving the immediately preceding zone, a mechanical action for at least partially removing the liquids fed to the yarn in such immediately-preceeding zone before the yarn enters the immediately-following zone.

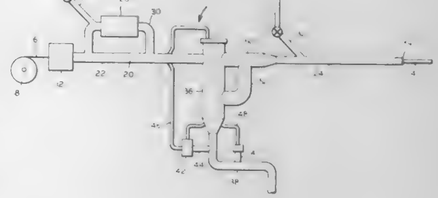


3,924,985

APPARATUS FOR MAINTAINING A PRESSURIZED LIQUID-GAS INTERFACE WITHIN A CONDUIT

Joseph Elwood Betts, Westport; William Michael Ott, Jr., and Howard Thomas Vaum, both of Trumbull, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,669
Int. Cl.² B29C *25/00*
U.S. Cl. 425—72 **9 Claims**



1. Apparatus for establishing and fixing a liquid-gas interface within a substantially horizontal conduit, comprising:

a. an elongated substantially horizontal conduit having a gas section connected with a source of gas under pressure and an adjoining liquid section connected with a source of liquid under pressure whereby both the gas and liquid are motivated by the pressure of their source to extend through the conduit counter to each other;

b. a closed chamber interposed into the substantially horizontal conduit at approximately the location of the liquid-gas interface to be established and fixed between the pressurized gas and liquid section of the conduit and connected in direct fluid communication with each of said sections, said closed chamber extending downward from the level of the substantially horizontal conduit for a substantial distance to provide a gravity feeding liquid reservoir chamber depending therefrom;

c. a drain outlet connected with a lower portion of the closed chamber and a drain valve located in said drain

outlet for controlling the discharge of liquid from the closed chamber; and

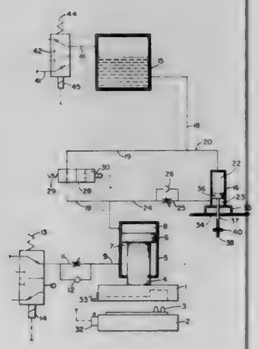
d. a pressure sensing regulator operating the drain valve and having pressure monitoring means responding to the pressure of the gas in the gas section of the conduit and the combined pressure of the gas with the pressure attributable to the weight of the liquid head contained within the closed chamber whereby the accumulation of liquid within the interposed closed chamber overcomes a predetermined balance of pressure between the source of gas and source of liquid and activates the drain valve to discharge liquid from the closed chamber.

3,924,986

CONTROL SYSTEM FOR INJECTION MOLDING APPARATUS

Ladislav Suler, Belleville, Canada, assignor to Bata Shoe Company, Inc., Belcamp, Md.

Filed Oct. 29, 1974, Ser. No. 518,795
Claims priority, application Canada, Oct. 29, 1973, 184459
Int. Cl.² B29C *1/00*; B29H *7/08*
U.S. Cl. 425—451.2 **2 Claims**



1. A control system for a molding apparatus, in which a mold cavity is formed by a first fixed mold and a second mold movable relative to the first mold for opening and closing the mold cavity, the control system comprising a mold operating cylinder with an operating piston movable therein; a piston rod connecting the operating piston to the second mold; supply means for connecting said operating cylinder on one side of the operating piston to a source of operating fluid for moving the second mold towards the first mold; a control cylinder with a control piston therein having one end in fluid communication with the operating cylinder and another end in fluid communication with the source of operating fluid, whereby the control piston moves in unison with the operating piston; a valve in said supply means for preventing the return of fluid to the reservoir from the operating cylinder when the second mold and operating piston are moving towards the first mold; and an adjustable stop means connected to the control piston for directly limiting movement thereof and consequently of the operating piston and the second mold away from the first mold.

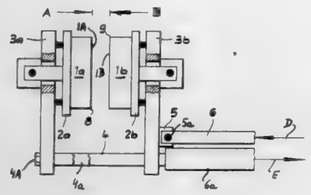
3,924,987

ARTICULATED MOLD OPENING AND CLOSING MEANS FOR USE IN BLOW MOLDING APPARATUS

Gottfried Mehnert, Messelstr. 25, Berlin 33, Germany

Filed Nov. 30, 1973, Ser. No. 420,707
Claims priority, application Germany, Dec. 7, 1972, 7244857
Int. Cl.² B29F *3/00*; B29C *1/16*
U.S. Cl. 425—451.5 **15 Claims**

1. An open-and-shut mold, particularly for use in blow-molding machines, comprising two upright closing members each having an upper portion, a lower portion, and an opening; substantially horizontally oriented parallel tie rods extending between said lower portions, at least one of said lower portions being movable together with and lengthwise of said tie rods; two mold sections having open sides facing each other; means articulately connecting each of said mold sections to said upper portion of one of said closing members in vertically spaced relationship to said tie rods, including ele-



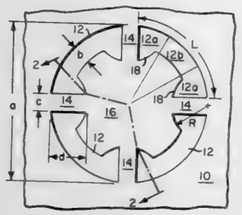
ments rigid with said mold sections and extending with clearance through the openings of the respective closing members, and pivots articulately connecting said elements to the respective closing members; and means for moving at least one of said closing members to thereby shift the respective mold sections in said vertically spaced relationship between first and second positions in which said open sides respectively abut and are spaced from one another.

3,924,988

HOLLOW FILAMENT SPINNERET

James Dwight Hodge, Greenville, N.C., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed May 24, 1972, Ser. No. 256,334
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² D01d *3/00*
U.S. Cl. 425—461 **5 Claims**



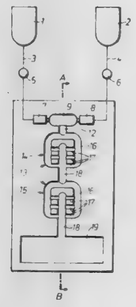
1. In a spinneret plate provided with at least one nozzle, for melt spinning filaments from molten polymers, said nozzle being defined by a substantially symmetrical pattern of four arcuate end-to-end slots interrupted by webs, said nozzle forming a filament having a single hollow core the improvement comprising, said slots having ends bearing inner inwardly-tapered enlargements at the outer one-third portions thereof, adjacent ends having proximate sides straight and parallel throughout their entire lengths, said slots having outer boundaries, said outer boundaries being the arc of a circle, the inner one-third portion of said slot being of substantially uniform width, the ratio of the distance c between adjacent slots and the width b of the slots being less than unity, said single hollow core being relatively smooth.

3,924,989

MACHINE FOR PRODUCING MOLDINGS FROM CHEMICAL COMPONENTS WHICH REACT QUICKLY WITH ONE ANOTHER

Ferdinand Althausen, Neuenkirchen-Seelscheid; Heinrich Boden, Opladen; Heinz Ersfeld, Bergisch-Neukirchen; Lothar Klier, Opladen; Reiner Raffel, St. Augustin, and Walter Schneider, Bensberg, all of Germany, assignors to Bayer Aktiengesellschaft and Maschinenfabrik Hennecke GmbH, both of Leverkusen Bayerwerk, Germany

Filed Oct. 18, 1973, Ser. No. 407,754
Claims priority, application Germany, Oct. 25, 1972, 2252201
Int. Cl.² B29D *27/04*
U.S. Cl. 425—130 **12 Claims**



6. An apparatus for producing moldings from chemical components which react quickly with one another, comprising a mold having an associated mixing chamber for reaction components which, at its outlet end, communicates with a cavity in said mold, means for introducing the said chemical components into the mixing chamber and a remixing system arranged between the mixing chamber and the mold cavity and adapted to homogenize the reaction mixture; said remixing system comprising a distributing channel with which a collecting channel is associated disposed in each half of the mold, and more than one mixing channel extending from each distributing channel to its associated collecting channel, the mixing channels of each mold half being so arranged that they cross over the mixing channels of the other mold half and being so constructed that any one mixing channel has a lesser cross-section than that of either its associated distributing or collecting channel; the assembly being so constructed that the dividing plane dividing the mold into halves extends through the mixing chamber and the remixing system.

3,924,990

COEXTRUSION APPARATUS

Walter J. Schrenk, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 183,786, Sept. 27, 1971, abandoned. This application Jan. 18, 1973, Ser. No. 324,739
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B29F *3/12*
U.S. Cl. 425—131.1 **8 Claims**

1. A multiple extrusion apparatus, the multiple extrusion apparatus for the preparation of resinous film or sheet comprising

a plurality of sources of extrudable material,

a distribution manifold, the distribution manifold defining

a plurality of manifold inlet passageways each adapted to receive and pass a stream of extrudable material from one of the sources, the manifold inlet passageways each having an inlet end and

an outlet end, the outlet ends of the passageways terminating on a generally planar face of the manifold, the manifold defining

a manifold discharge passage having inlet and outlet ends, the discharge passage inlet end terminating in a generally planar face,

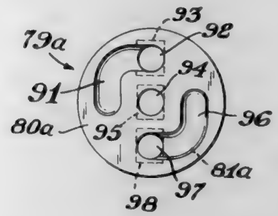
a slot die defining an elongate extrusion slot,

a die plenum in connection with the extrusion slot,

a die inlet feed passageway in communication with the plenum, the feed passageway having

an inlet end and

an outlet end, the extrusion slot being in full communication with the inlet end of the die inlet feed passageway, the die



feed passageway being in communication with the outlet of the manifold discharge passage,

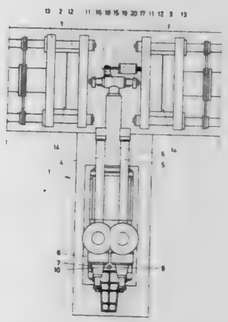
a replaceable insert disposed between the outlets of the manifold inlet passageways and the inlet of the manifold discharge passageway, the insert having a plurality of channels therein providing selective communication between the outlet ends of the manifold passages and the inlet end of the manifold discharge inlet passage wherein the insert has a first end and a second end, the first end being disposed in mating relationship with the generally planar face of the manifold adjacent the outlet ends of the manifold inlet passages and the second end being disposed in mating relationship with the planar face of the manifold adjacent the inlet end of the manifold discharge passage.

3,924,991

INJECTION MOLDING APPARATUS

Robert Albert Melcher, Gerlingen, Germany, assignor to Schloemann-Siemag Aktiengesellshaft, Düsseldorf, Germany

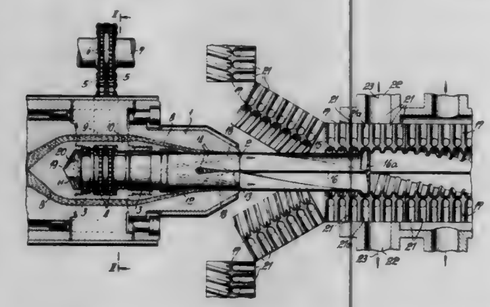
Filed Apr. 22, 1974, Ser. No. 462,976
Claims priority, application Germany, June 7, 1973, 2329097
Int. Cl.² B29F *1/00*
U.S. Cl. 425—190 **1 Claim**



1. Injection molding apparatus for the fabrication of molded parts, consisting of:

a. a base,
b. a first mold and a second mold mounted on the base, each having a sprue, the sprue of the first and second molds facing one another, and being separated by a first distance,
c. an injection unit having an injection distributing part located between the sprues of the molds and having at least two oppositely facing controllable jets adapted to alternately engage the sprues of the molds, the injection unit being mounted on the base for pivotal movement about an axis which is a second distance from the sprues,
d. a swing device between the injection unit and the base, the swing drive being adapted to cause pivotal movement of the injection unit to cause engagement of a jet with a sprue, the second distance being several times larger than the first distance, so that the path of the jets as the injection unit is moved by the swing unit approximates a straight line.

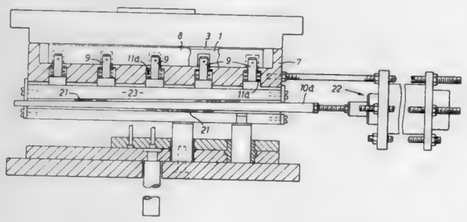
3,924,992
APPARATUS FOR MANUFACTURE OF PARTITIONED PLASTIC TUBING
Wilhelm Hegler, Goethestr. 2, Bad Kissingen, Germany
Filed July 25, 1972, Ser. No. 274,945
Claims priority, application Germany, July 31, 1971, 2138437
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B29C *23/00*; B29D *23/04*
U.S. Cl. 425—233 **6 Claims**



1. In an apparatus for the manufacture of plastic tubing comprising an extrusion head, a generally annular orifice through which molten plastic can flow, said annular orifice in fluid communication with a reservoir and a mandrel disposed within said extrusion head around which plastic flows, the improvement which comprises at least one radial discharge slit in said mandrel, through which molten plastic can flow to define a wall which slit is in fluid communication with a reservoir for molten plastic and a mold train disposed in a downstream relationship to said extrusion head, means for aspirating air from closed molds in said mold train and means for rotating said mandrel about its common axis with the longitudinal axis of the plastic tube to be formed.

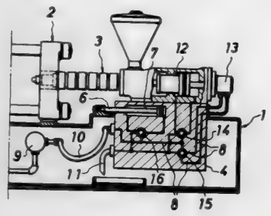
3,924,993
MOLD APPARATUS WITH MOVABLE WEB FORMING BLADE
Christopher E. Terrell, London, England, assignor to Twinlock Limited, Beckenham, England
Division of Ser. No. 164,626, July 21, 1971, abandoned. This application Dec. 28, 1973, Ser. No. 429,188
Int. Cl.² B29C *1/14*; B29F *1/00*
U.S. Cl. 425—242 R **3 Claims**

1. Apparatus for making a plastic article having at least two portions integrally interconnected by at least one thinner web of the same material, said apparatus comprising:
a. a mould providing a mould cavity and having at least one sprue through which material can be injected into said cavity;
b. means for injecting substantially homogeneous molten plastic material under high pressure through said at least one sprue into said cavity;
c. at least one elongate blade movable into said cavity perpendicularly to the longitudinal axis of said blade, for locally reducing the cross-section of the material in said cavity thereby to form said at least one web;
d. a single elongate force-transmission member operatively connected to and extending parallel to said at least one blade outside of said mould cavity, said force-transmission member having a single taper surface, remote from



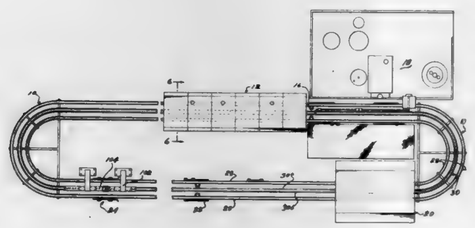
said cavity, that is inclined in the direction of the longitudinal axis of said blade;
e. a fixed bearing member disposed at a spacing from said force-transmission member;
f. a single elongate taper member reciprocally displaceable between said force-transmission member and said fixed bearing member and having a pressure surface co-operable with said single inclined surface of said force-transmission member thereby to cause said at least one blade to be driven into said mould cavity to form said at least one web; and
g. actuating means operable to displace said taper member between said force-transmission member and said fixed bearing member.

3,924,994
INJECTION DEVICE FOR SYNTHETIC RESIN INJECTION MOLDING
Katashi Aoki, 6037 Ozaz Minamijo, Sakaki, Hanishina-gun, Nagano, Japan
Continuation-in-part of Ser. No. 226,812, Feb. 16, 1972, abandoned. This application June 17, 1974, Ser. No. 480,177
Claims priority, application Japan, Feb. 27, 1971, 46-9818
Int. Cl.² B29F *1/00*
U.S. Cl. 425—242 R **6 Claims**



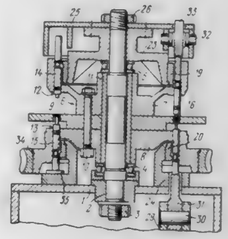
1. In an injection molding machine for a synthetic resin including a mold clamping device, an oil pump all mounted upon a stationary bed, and an injection cylinder with a ram and a screw in a heating cylinder all horizontally disposed said injection device being reciprocably mounted upon said stationary bed, the improvement comprising:
A. a block slidably mounted on said bed and movable reciprocably in a horizontal plane toward and away from said mold clamping device said block further including a horizontal and planar upper surface;
B. said injection device further including a horizontal and planar lower surface removably coupled to said planar upper surface of said block and thereby integrally horizontally movable therewith, said injection device further including an oil motor coupled through said ram to said screw in said heating cylinder;
C. a cylinder and piston for reciprocating said injection device to obtain a nozzle-touch of said injection device wherein;
D. said block includes a cavity therein defining said cylinder, said piston being mounted and operatively contained in said cylinder, a piston rod connected to said piston extending out of said block and being fixedly attached to said bed and fixedly positioning said piston with respect to said bed, said block containing said cylinder being horizontally movable with respect to said fixed piston mounted therewithin;
E. said reciprocal block further comprising therein a plurality of hydraulic circuits, including circuits for controlling said ram in said injection cylinder and said oil motor of said injection device, and a nozzle-touch control circuit opening into spaced positions in said cylinder on opposite sides of said piston operable for controlling said horizontal reciprocating movement of said block with respect to said piston and;
F. a plurality of control valve means respectively in said plurality of hydraulic circuits;
G. wherein all of said hydraulic control circuits and said valve means are incorporated and consolidated into said block with said ram communicating therewith by passages including ports through said horizontal upper surface of said block; and
H. said hydraulic circuits fluid pressure supply is by a single main pressurized fluid inlet on said block which is connected to said oil pump through a flexible pipe.

3,924,995
APPARATUS FOR MOLDING ARTICLES
Russell W. Crooks, Lachute, and Gregory Maya, Laval, both of Canada, assignors to Electromould Engineering Limited, Lachute, Canada
Filed Dec. 23, 1974, Ser. No. 536,960
Int. Cl.² B29C *3/00*; B29F *1/08*; B29H *7/08*
U.S. Cl. 425—243 **13 Claims**



1. An apparatus for molding articles comprising a conveyor for carrying mold members, wherein the mold members are split to open in opposite directions laterally to the direction of travel of the conveyor, a first heating means for heating the mold members as they are opened and passing on the conveyor, means downstream of the heating means for closing the mold members, moldable plastic injecting means downstream of the mold closing means for injecting plastic into the closed mold, means downstream of the plastic injecting means for opening the mold, and means downstream thereof for automatically lifting and removing the plastic molded articles from the open mold.

3,924,996
ROTARY TABLET-MAKING MACHINE
Nikolai Semenovich Talis, ulitsa Zhelyabova, 13, kv. 28, and Anatoly Illarionovich Jursakov, ulitsa Zhelyabova, 13, kv. 32, both of Angarsk, Irkutskoi oblasti, U.S.S.R.
Filed Nov. 19, 1973, Ser. No. 416,944
Int. Cl.² B29C *3/00*
U.S. Cl. 425—348 R **1 Claim**

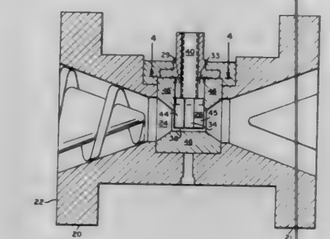


1. A rotary machine for pressing small tablets from powdery substances, comprising in combination: a base carrying a central column; a rotor journalled in said base and consisting of two juxtaposed, coaxially arranged, respectively upper and lower assemblies separated by a counter-die table and having respective body portions; a lower ring member fixed to said base, and a symmetrically disposed but juxtaposed upper ring member supported by said base through the intermediary of said column; said ring members defining circumferentially arranged, symmetrical bores and annular slots encircling said bores from within; upper and lower plungers mounted substantially parallel with the rotor axis, accommodated in said bores, and having cylindrical bodies provided with substantially central annular grooves having tapered end walls and respective engaging surfaces midway of said plungers; upper and lower cams accommodated in the respective assemblies within said annular slots, and having tapered helical working surfaces acting upon said engaging surfaces of the plungers to axially reciprocate the latter from within; said assemblies being provided with small annular recesses in the regions of said bores, extending over a fraction of the height of the respective assembly, corresponding to the limited amount of axial movement allowed for said plungers, said cams being mounted on support lands in said body portions of the rotor assemblies, formed by said annular recesses; said cams and said plungers being arranged so that said cam working surfaces cooperate with surfaces of said annular grooves; said annular slots, said cams therein, and said small annular recesses of the assemblies constituting means for limiting the axial movement of said plungers so that said surfaces of the annular grooves do not pass beyond said bores that accommodate said plungers during their reciprocation.

3,924,997
APPARATUS FOR DRYING POLYMERIC MATERIAL
Edward J. Kosinsky, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Aug. 21, 1972, Ser. No. 282,252
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B29F *1/03, 1/06*
U.S. Cl. 425—376 **7 Claims**

1. In an apparatus for removing liquid from liquid-bearing polymeric material comprising an elongated shell having an upstream feed opening and a downstream discharge zone, means in a first zone within said elongated shell for working and compacting the material passed therethrough and through a second downstream zone adjacent said discharge zone to the discharge zone of said elongated shell, a restriction means positioned between said first and second zone for restricting

the passage of material from said first zone to said second zone for reducing the pressure on the polymeric material passing through said restriction means, and a die having at least one orifice and being positioned downstream of said restriction means and said second zone and at said discharge zone for reducing the pressure on the material passing through the orifice of said die, the improvement comprising:



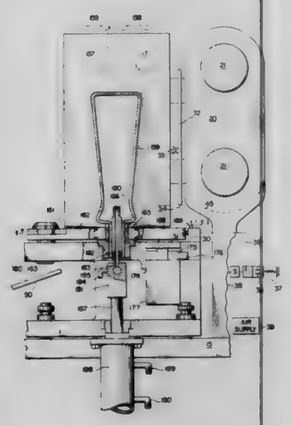
said restriction means being a valve having a valve body, an opening extending therethrough in fluid communication with the first and second zones, and a valve plug movably positioned within said valve body, said opening and said valve plug each having sidewalls and bottom walls of matable, planar configurations, said valve plug being slidably movable into and from said opening, and said valve plug having a hexagonal cross-sectional configuration with first and second opposed sidewalls of the valve plug contacting opposed side walls of said opening.

3,924,998

BLOW MOLDING APPARATUS HAVING SIDE DISCHARGE OF FINISHED ARTICLES

Lawrence A. Moore, Rockford, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Aug. 17, 1972, Ser. No. 281,302
Int. Cl.² B29D *23/03*
U.S. Cl. 425—387 B **15 Claims**



1. An apparatus for blow molding preforms into finished articles comprising:

a heating means for heating said preforms,

mold means to shape said preforms during the blowing of the preforms into finished articles,

means to transfer said performs from the heating means to the mold means, and

discharge means for exerting a generally horizontally directed force on the finished articles in a first generally horizontal direction to move the finished articles in said first generally horizontal direction away from said mold means to a finished article receiving means,

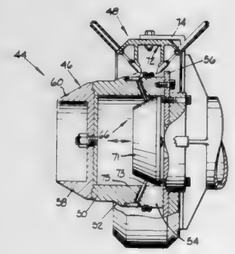
said mold means including mold halves arranged for relative movement along a second generally horizontal direction between open and closed positions, said second generally horizontal direction being essentially transverse to said first generally horizontal direction, said mold means including means for enclosing between the mold halves at least a portion of said preform in said closed position, and including means for blowing said preform into the shape of a finished article.

3,924,999

BELL END OF BELL AND SPIGOT JOINT AND METHOD AND ASSEMBLY

Allan Harris, Santa Ana, and Lemuel Hampton Huff, Paramount, both of Calif., assignors to Johns-Manville Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 408,771, Oct. 23, 1973, abandoned. This application July 18, 1974, Ser. No. 489,624
Int. Cl.² B29C *1/00*
U.S. Cl. 425—392 **5 Claims**



1. An assembly for use in forming a bell end having an inner-circumferential groove in a heat deformable pipe section heated to its range of thermoplastic deformability said assembly comprising:

a. a core section having a longitudinally extending axis, a predetermined outer surface configuration and being adapted to support a circumferential sealing gasket around an annular portion of said core section, said gasket extending outwardly from said outer surface configuration;

b. said core section and gasket being adapted for insertion to a predetermined point within said heated pipe section by relative movement between said pipe section and said core section and gasket whereby to deform said pipe section to include:

i. an inner surface similar in configuration to the outer surface configuration of said core section, and

ii. an inner-circumferential groove within which said gasket is located, the longitudinal extent of said groove being defined by longitudinally spaced circumferential surfaces located on said pipe section and extending outwardly from said inner surface of said pipe section on opposite sides of said gasket and

c. first and second deforming means located outwardly of an adjacent said core section on opposite sides of said annular portion of said core section and movable along straight line paths extending toward said annular portion at acute angles with the axis of said core section between first positions spaced from said heated pipe section after formation of said groove and second positions so that, in said second positions, each of said deforming means is adapted to engage against said pipe section and decrease the longitudinal distance between at least one pair of

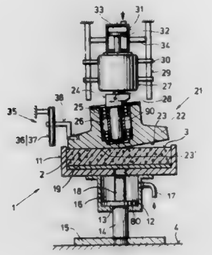
longitudinally aligned surface segments along said outwardly extending surfaces defining said groove.

3,925,000

MOLDING APPARATUS INCLUDING CONICALLY-SHAPED COMPACTING MEMBER

Wilhelm Häberle, Industriegelande, 7481 Scheer, Wurttemberg, Germany

Filed July 5, 1974, Ser. No. 486,066
Claims priority, application Germany, Sept. 29, 1973, 2349132; Mar. 22, 1974, 2413785
Int. Cl.² B28B *3/08*
U.S. Cl. 425—422 **17 Claims**



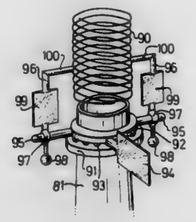
1. A device for compacting and forming pourable, compactable or moldable materials which are formed in molds, particularly for compacting fresh concrete, comprising a forming mold, support means for supporting said forming mold, a compacting member having a bottom material contacting surface which is at least partly conical, a support shaft rotatably supporting said compacting member, said support shaft having an axis line intersecting the apex of said conical surface and inclined from the normal to the surface of said mold and the material being compacted therein, a motor driven rotatable crank connected to said support shaft and being rotatable about an axis normal to the surface of said mold and intersecting the apex of the conical surface to revolve said support shaft and to cause said compacting member to wobble about the apex of said conical surface, said compacting member conical surface being engageable on the surface of the material during its wobbling movement.

3,925,001

PLACEMENT OF CATALYTICALLY ACTIVE MATERIALS IN COMBUSTION FLAMES

Kailish Chander Salooja, Reading, England, assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Dec. 15, 1970, Ser. No. 98,338
Claims priority, application United Kingdom, Dec. 19, 1969, 61916/69; July 29, 1970, 86707/70
Int. Cl.² F23J *7/00*
U.S. Cl. 431—4 **7 Claims**



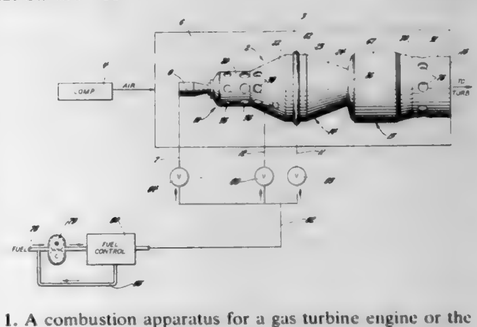
1. A method of improving the combustion of a carbon-containing fuel in a flame, comprising fixedly disposing in the primary reaction zone characterized by the flame having its highest ion concentration, a solid material which is catalytically active for reducing smoke and which is substantially involatile at the temperature of the primary reaction zone, wherein the catalytically active material is selected from the combination of compounds of barium and sodium, barium and yttrium, barium and erbium, barium and zirconium, aluminium and sodium, aluminium and yttrium, aluminium and lanthanum, aluminium and erbium, aluminium and platinum, gallium and sodium, zirconium and yttrium, zirconium and erbium, zirconium and chromium, zirconium and manganese, zirconium and iron, zirconium and platinum, manganese and sodium, manganese and yttrium, manganese and titanium, manganese and chromium, manganese and iron, manganese and nickel and palladium and iron.

3,925,002

AIR PREHEATING COMBUSTION APPARATUS

Albert J. Verdouw, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 11, 1974, Ser. No. 522,683
Int. Cl.² F23M *3/04*
U.S. Cl. 431—10 **9 Claims**



1. A combustion apparatus for a gas turbine engine or the like comprising, in combination, a housing adapted to receive air under pressure and a combustion liner in the housing, the combustion liner having an upstream end and a downstream outlet end and defining, in flow sequence from the upstream end to the downstream end, an air preheating combustor, a fuel vaporizer, a main reaction zone, and a main dilution zone; the air preheating combustor comprising a preheat reaction zone having means for admitting preheat combustion air and fuel and a preheat dilution zone having means for admitting dilution air and mixing the dilution air with the combustion air from the preheat reaction zone to provide at least substantially all combustion air for the main reaction zone, in combination with means to proportion the fuel and air so as to discharge a combustion products and air mixture from the preheating combustor at approximately 600° Celsius into the fuel vaporizer; the fuel vaporizer comprising means defining a passage leading from the preheating combustor to the main reaction zone, and means for delivering fuel into the said passage for evaporation and mixture with the gases flowing through the said passage; and the main dilution zone defining entrances for dilution air by-passing the preheating combustor.

3,925,003

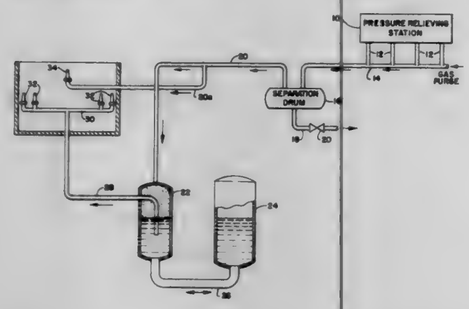
GAS FLOW CONTROL SYSTEM

Andrew A. Kutler, South Orange, N.J., and Joseph F. Keegel, Jr., St. Croix, V.I., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Sept. 5, 1974, Ser. No. 503,417
Int. Cl.² F23N *1/00*
U.S. Cl. 431—89 **6 Claims**

1. A fluid flow control system comprising a tank containing a liquid, a reservoir connected to said tank for permitting the introduction and withdrawal of said liquid to and from said tank to maintain said liquid at a predetermined level in said tank, first conduit means connected to a source of a first fluid

and communicating with the interior of said tank at a point above said liquid level, second conduit means communicating with a second fluid and communicating with the interior of said tank at a point below said liquid level so the said liquid normally prevents flow of either of said fluids from one of said conduit means to the other unless the pressure of said first fluid is sufficient to displace said liquid from said tank to said



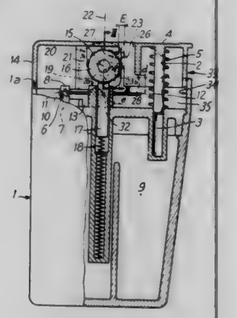
reservoir to the extent that said first conduit means is communicated with said second conduit means, and an inert gas disposed in a portion of said tank not occupied by said liquid for establishing a predetermined fluid pressure in said tank for preventing diffusion of either of said fluids from its respective conduit means through said liquid and into the other conduit means.

3,925,004

CIGAR AND CIGARETTE LIGHTER

Gilles C. Lauri, 29, avenue Leon Blum, 93190 Livry Gargan, France

Filed Apr. 3, 1974, Ser. No. 457,544
Claims priority, application France, Apr. 6, 1973, 73.12554
Int. Cl.² F23Q *2/08*
U.S. Cl. 431—131 **5 Claims**



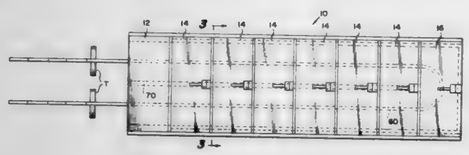
1. A lighter comprising,
a casing having a fuel reservoir therein;
a burner tip mounted in the casing;
selectively operable valve means for providing communication between said reservoir and said burner;
means in said casing for supporting a flint therein;
friction means movably mounted in said casing for generating a fuel-igniting spark upon movement thereof;
at least one lug operatively connected to said friction means for movement therewith;
a pushbutton slidably mounted in said casing for vertical sliding movement with respect to the casing and being operatively connected to said friction means for moving the same to produce a spark upon downward movement of the pushbutton; and
means operatively connecting said pushbutton to said valve means for opening the valve only after the pushbutton has moved through a major portion of its downward stroke;
said pushbutton having a groove formed therein extending generally perpendicularly of the direction of movement of the pushbutton and receiving said lug, thereby to actuate said friction means upon downward movement of the pushbutton, said groove having a length which is at least equal to the amount of clearance required therein to accommodate movement of the lug, in the direction of the groove, during downward movement of the pushbutton;
said pushbutton also including a peripheral wall portion and an elongated piston extending from one side of the pushbutton between and beyond said peripheral wall; said casing including an upper peripheral wall defining a well in the casing and slidably receiving the peripheral wall of the pushbutton therein, a bore slidably receiving said piston, and a helical coil spring coaxially arranged about the pistion in said well between the pushbutton and casing to urge the pushbutton to a normal upmost position with respect to the casing.

3,925,005

MODULAR CURING CHAMBER

William F. Everhardt; Henry L. Brown, Jr., and Clement O. Dennis, Sr., all of Macon, Ga., assignors to American Power Tread Corporation, Macon, Ga.

Filed Oct. 4, 1974, Ser. No. 512,080
Int. Cl.² F27B *9/02, 9/12*
U.S. Cl. 432—82 **7 Claims**



1. A modular chamber for curing a heat curable adhesive and thereby bonding a prevulcanized tread strip to a tire carcass, said chamber comprising:
a. an entrance-exit module, and end module, and at least one intermediate module,
b. said entrance-exit module including a partition wall dividing said module into entrance and exit portions,
c. said at least one intermediate module including a partition wall dividing said intermediate module into two portions,
d. means for conveying tires into said entrance portion around said partition wall and out of said exit portion in a U-shaped path,
e. panel members defining ducting around the outer walls of said intermediate and end modules,
f. a plurality of heating lamps positioned in said ducting along the bottom walls of said intermediate and end modules,
g. a blower positioned in said ducting along the top walls of each of said intermediate and end modules,
h. said blower drawing air over said heating lamps and up through said modules around the tires and forcing the air through said ducting around the outer walls of said modules in a cyclic path so as to provide even heating throughout said chamber and promote even curing of the heat curable adhesive in said chamber.

3,925,006

CATIONIC DYEABLE CELLULOSE ESTERS WITH IMPROVED DYEABILITY

Alex S. Forschirm, Lake Hiawatha, and Kurt F. Wissbrun, Short Hills, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,661
Int. Cl.² D06P *3/40, 3/46*
U.S. Cl. 8—4 **21 Claims**

1. An improved process for dyeing shaped articles of cellulose esters comprising:
a. including in a cellulose ester spinning dope from about 0.5 to about 5 percent by weight of the cellulose ester of a compound selected from the group consisting of sodium tungstophosphate and sodium tungstosilicate;
b. forming a shaped article from the said dope; and
c. contacting the shaped article with an aqueous dyebath containing a cationic dye and a temperature of from about 75° to about 125°C.

3,925,007

DISPERSE DYE CONCENTRATE WITH SAWDUST

Peter Gurtler, 24 Neusatzweg, Therwil, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Sept. 21, 1972, Ser. No. 291,104
Claims priority, application Switzerland, Sept. 30, 1971, 14209/71
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² D06P *1/46*
U.S. Cl. 8—91 **1 Claim**

1. A composition for use as a textile dyeing agent in an extraction process consisting essentially of 40 to 70% by weight of a disperse dyestuff carried on 80 to 30% by weight of wood sawdust and 0 to 10% by weight of an adhesive selected from mineral oil, glycerin, sorbitan fatty acid ester or carboxymethylcellulose.

3,925,008

METHOD FOR SIMULTANEOUSLY SCOURING AND BLEACHING MATERIALS CONSISTING OF TEXTILE FIBERS

Syoso Makino; Kenjiro Hosokawa, both of Osaka, and Junzi Sano, Amagasaki, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Sept. 5, 1974, Ser. No. 503,248
Claims priority, application Japan, Sept. 13, 1973, 48-103624
Int. Cl.² D06L *3/02*
U.S. Cl. 8—111 **21 Claims**

1. A method for simultaneously scouring and bleaching materials consisting of textile fibers in a non-aqueous medium, which comprises the steps of
preparing a non-aqueous scouring and bleaching liquid by adding at least one peroxide bleaching agent and at least one organic carbonate selected from the group consisting of alkylene carbonate and hydroxyalkylene carbonate in a ratio by weight of 10 : 1 to 1 : 5 into a halogenated hydrocarbon solvent, and
treating a material consisting of textile fibers by impregnating the material with said above-prepared non-aqueous scouring and bleaching liquid, heating the impregnated material with steam, and thereafter washing the material with a washing solvent.

3,925,009

FATTY GROUP CONTAINING METHYLOLATED, POLYOXYALKYLENE CARBAMATES AND TEXTILE MATERIALS SOFTENED BY TREATMENT THEREWITH

Thomas F. Rutledge, and John D. Zech, both of Wilmington, Del., assignors to ICI United States Inc., Wilmington, Del.

Filed June 9, 1969, Ser. No. 831,756
Int. Cl.² C07C *125/04, 125/06;* **D06M** *15/54, 3/16*
U.S. Cl. 8—115.7 **12 Claims**

5. A carbamate characterized by the formula

(1) $R-O\text{+}CH_2-CH_2-O\text{+}_x C(=O)-N(R_1)(R_2)$.

(2) $R_3(OA)_y$,

(3) $R_4-N(B)(B)$, or

(4) $(R_5O)_nD$

wherein R is an acyl group containing from 12 to 28 carbon atoms or the group resulting from removing a hydroxyl group from lanolin,
R_1 is hydrogen or $-CH_2OH$,
R_2 is $-CH_2OH$,
n is an integer from 1 to 150,
R_3 is the group remaining after removing all the hydroxyl groups from a saturated, aliphatic polyhydric alcohol having from 3 to 6 carbon atoms and from 2 to 6 hydroxyl groups,
x is an integer from 2 to 6,
each A is independently selected from the group consisting of hydrogen, alkyl groups containing from 12 to 28 carbon atoms, alkenyl groups containing from 12 to 28 carbon atoms, acyl groups containing from 12 to 28 carbon atoms,

$-C(=O)-N(R_1)(R_2)$, and $\text{+}CH_2-CH_2-O\text{+}_n R_6$

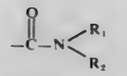
wherein R_6 is hydrogen, an acyl group containing from 12 to 28 carbon atoms, or

$-C(=O)-N(R_1)(R_2)$

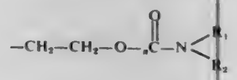
with the proviso that at least one A contains an alkyl, alkenyl, or acyl group containing from 12 to 28 carbon atoms, at least one A contains a $-CH_2CH_2O-_n R_6$ group, and at least one A contains a

$-C(=O)-N(R_1)(R_2)$ group,

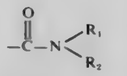
R_4 is an alkyl group containing from 12 to 28 carbon atoms or an alkenyl group containing from 12 to 28 carbon atoms,
each B is independently selected from the group consisting of alkyl groups containing from 1 to 28 carbon atoms, alkenyl groups containing from 1 to 28 carbon atoms, and $-CH_2-CH_2-O-_n R_{10}$ wherein R_{10} is hydrogen or



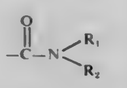
with the proviso that at least one B contains a



group, R_5 is H or



with the proviso that at least one R_5 is



y is a number from 1 to 5, and D is the group remaining after removing all the hydroxyl groups from an adduct of ethylene oxide and a partial fatty acid ester of a polyol having from 2 to 6 hydroxyl groups and from 3 to 6 carbon atoms, said fatty acid containing from 12 to 28 carbon atoms.

11. A process of treating textile material containing cotton and nylon which comprises depositing a carbamate of claim 5 and an acidic textile resin catalyst on the surface of the textile material and thereafter curing by heating the textile material to an elevated temperature.

12. An article of manufacture comprising textile material treated in accordance with the process of claim 11.

3,925,010

DRY CLEANING PROCESS UTILIZING AZEATROPIC NONFLAMMABLE VAPORS

Oliver A. Barton, Florham Park, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 158,129, June 29, 1971, Pat. No. 3,794,590. This application Dec. 3, 1973, Ser. No. 421,192

Int. Cl. D06l *1/00*

U.S. Cl. 8—142 **4 Claims**

1. A process for dry cleaning a soiled textile fabric or fiber which comprises contacting said textile fabric or fiber with the mixture comprising about 87.0 to about 88.9 weight percent tetrachlorodifluoroethane, about 7.0 to about 11.0 weight percent tertiary amyl alcohol and about 0.1 to about 6.0 weight percent water in the liquid phase and evaporating the liquid which adheres to the textile fabric or fiber, thereby removing the tertiary amyl alcohol in a non-flammable azeotropic composition containing tetrachlorodifluoroethane.

3,925,011

EMULSIFYING CARRIER COMPOSITIONS AND PROCESS FOR EMULSIFYING CARRIERS CONTAINING HYDROXYARYL GROUPS

Gunther Boehmke, Leverkusen-Grossendriesch, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Aug. 24, 1972, Ser. No. 283,300

Claims priority, application Germany, Aug. 24, 1971, 2142318

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² D06P *5/04*; **B01F** *17/12*

U.S. Cl. 8—169 **6 Claims**

1. In the known process for emulsifying carriers (dyeing accelerators) containing hydroxyaryl groups selected from the group consisting of o-, m- and p-hydroxydiphenyl; o-, m- and p-benzylphenol; o-, m- and p-(α-phenyl)-ethyl-phenol; benzylcresols; α-(phenyl)-ethyl-chlorophenols; phenylchlorophenols, and cresotic acid esters in aqueous dyeing baths by means of emulsifiers the improvement which comprises using as the emulsifier a mixture consisting essentially of

a. alkali metal salts and/or ammonium salts of saturated or unsaturated fatty acids substituted by 1, 2 or 3 hydroxyl groups, and

b. alkali metal salts, alkaline earth metal salts and/or ammonium salts of organic sulphonic acids possessing at least 10 C atoms, and

wherein components (a) and (b) of the said mixture are present in a weight ratio of 15 : 75 to 80 : 20 and wherein said mixture is employed in an amount of 3 to 30 percent by weight relative to the weight of the carrier.

3,925,012

PROCESS FOR DYEING FIBRE MATERIAL CONTAINING NH-GROUPS FROM ORGANIC SOLVENTS

Paul Ringel, Leverkusen-Wiesdorf; Dietrich Hildebrand, Leverkusen, and Gunter Breidbach, Cologne-Flittard, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Continuation of Ser. No. 859,207, Sept. 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 791,777, Jan. 16, 1969, abandoned. This application May 17, 1974, Ser. No. 470,827

Claims priority, application Germany, Aug. 2, 1968, 1769902

Int. Cl.² D06P *5/04*

U.S. Cl. 8—169 **3 Claims**

1. A process for dyeing natural or synthetic polyamide fiber material containing NH-groups comprising the steps of

1. immersing the fiber materials in a dyebath consisting essentially of

   a. an organic solvent; said organic solvent consisting of chlorohydrocarbon having a boiling point of 40° to 150°C.;

   b. an amine salt of a dyestuff or an amine adduct of a dyestuff; said dyestuff containing 1–4 carboxylic acid or sulfonic acid groups, said amine having at least eight carbon atoms, at least three of which are in an uninterrupted chain; and

   c. 0.01 to 0.5% by weight of water based on the weight of the chlorohydrocarbon;

2. dyeing the fiber material until the dyebath is exhausted; and then

3. removing the dyed fiber materials from the exhausted dyebath.

3,925,013

EUTECTIC BIPHENYL-NAPTHALENE DYE CARRIERS

Gordon L. Axon, and Beverly K. Montezinos, both of Charlotte, N.C., assignors to Catawba Chemicals, Inc., Charlotte, N.C.

Filed May 23, 1973, Ser. No. 363,213

Int. Cl.² D06P *5/04*

U.S. Cl. 8—173 **24 Claims**

1. A aqueous dye carrier composition for dyeing synthetic materials including polyesters and triacetates comprising in combination a solvent, emulsifier, and a eutectic mixture of biphenyl and naphthalene comprising 55–70% by weight biphenyl, and 30–45% by weight naphthalene, said eutectic mixture having a eutectic temperature in the range of 36°–46°C., said dye carrier composition including sufficient solvent so that the combination remains in liquid form at temperatures below 36°C.

3,925,014

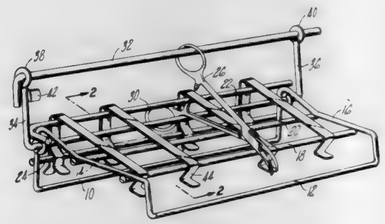
INSTRUMENT STERILIZATION

Robert S. Langdon, R.F.D. No. 1, East Hampton, Conn. 06424

Filed June 26, 1974, Ser. No. 483,228

Int. Cl.² A61L *3/02*; **A47F** *7/00*

U.S. Cl. 21—105 **10 Claims**



1. A surgical instrument rack for supporting instruments during the cleaning and sterilization of said instruments comprising:

means for supporting a plurality of elongated hinged instruments in side-by-side alignment, said supporting means consisting of an open-work frame means comprising plural support surface means whereby each instrument is supported by at least two said support surface means, said at least two said support surface means being horizontally and vertically offset from each other whereby the handle ends of instruments disposed on said supporting means are displaced vertically above the working ends thereof; means for releasably engaging one handle portion of each of the instruments disposed on said supporting means;

frame extension means connected to said supporting means frame for receiving and supporting said releasably engaging means vertically above an inclined plane defined by said support surface means whereby an engaged instrument handle portion will be displaced away from the other handle portion of each such engaged hinged instrument and the instruments may be held in the open condition during cleaning and sterilizing; and

instrument retaining means, said retaining means separably engaging said supporting means and cooperating with said supporting means and the instruments disposed thereon to prevent accidental separation of instruments from the frame when in an installed position, said retaining means being removed from contact with said supporting means when it is desired to use the instruments.

3,925,015

PROCESS FOR DYEING ANIONICALLY MODIFIED SYNTHETIC FIBER MATERIALS

Hans-Peter Kuhlthau, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

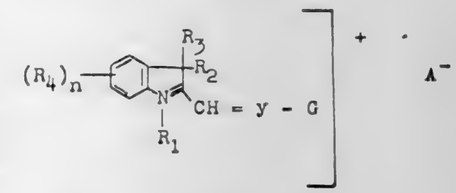
Filed Oct. 24, 1972, Ser. No. 299,658

Claims priority, application Germany, Oct. 23, 1971, 2152948

Int. Cl.² D06P *1/13*

U.S. Cl. 8—168 **4 Claims**

1. In the process of dyeing an anionically modified fiber material by exhaustion from a dyebath consisting essentially of a cationic dyestuff dissolved in halogenated hydrocarbon the improvement comprising the use as said cationic dyestuff a dyestuff soluble in said halogenated hydrocarbon and having the formula



in which A^- is a non-lipophilic anion;

R_1 is hydrogen; alkyl of 1 to 12 carbon atoms; alkyl of 1 to 5 carbon atoms substituted with CN, Cl or OH; cycloalkyl, aralkyl or aryl;

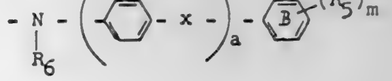
R_2 is alkyl of 1 to 5 carbon atoms, cycloalkyl or aralkyl;

R_3 is alkyl of 1 to 5 carbon atoms, cycloalkyl or aralkyl;

R_4 is halogen, alkyl of 1 to 12 carbon atoms, alkyl of 1 to 5 carbon atoms substituted with CN, Cl or OH, cycloalkyl, aralkyl, alkoxy, nitro, carbalkoxy, nitrile, acyl, acylamino, amino, carbamoyl, N-alkyl-carbamoyl, N,N-dialkylcarbamoyl, N-alkyl-N-arylcarbamoyl, sulphamoyl, N-alkylsulphamoyl, N,N-dialkyl-sulphamoyl, alkylsulphonyl, arylsulphonyl, trifluoromethyl, aryloxy, aralkoxy or carbalkoxy;

Y is CH or N;

G is



R_5 is halogen, alkyl or 1 to 12 carbon atoms, alkyl of 1 to 5 carbon atoms substituted by CN, Cl, or OH, cycloalkyl, aralkyl, alkoxy, nitro, carbalkoxy, nitrile, acyl, acylamino, amino, carbamoyl, N-alkyl-carbamoyl, N,N-dialkylcarbamoyl, N-alkyl-N-arylcarbamoyl, sulphamoyl, N-alkylsulphamoyl, N,N-dialkyl-sulphamoyl, alkylsulphonyl, arylsulphonyl, trifluoromethyl, aryloxy, aralkoxy or carbaralkoxy;

R_6 is hydrogen; alkyl of 1 to 4 carbon atoms; alkyl of 1 to 4 carbon atoms substituted by carbalkoxy of 1 to 5 carbon atoms or alkoxy of 1 to 5 carbon atoms; cycloalkyl, aralkyl or alkenyl of 1 to 5 carbon atoms;

m, n independently of one another are numbers from 0 to 3;

"aryl" is phenyl; naphthyl; 4-methyl-phenyl, 2-methylphenyl, 4-chlorophenyl, 2-chlorophenyl, or 2-methylchlorophenyl;

"aralkyl" is benzyl, β-phenethyl or α,α-dimethylbenzyl; or the foregoing substituted in the phenyl nucleus by lower alkyl, halogen, alkoxy, carboalkoxy, nitro, cyano or hydroxyl;

"aryloxy" is phenoxy or naphthoxy or the foregoing substituted with lower alkyl, halogen, alkoxy, carboalkoxy, nitro, cyano or hydroxyl;

x is CH_2—or 0;

a is 0 or 1; and

where at least one of the substituents R_4 or R_5, is alkyl of 3 to 12 carbon atoms, alkoxy of 3 to 12 carbon atoms or cycloalkyl of 5 to 6 carbon atoms or R_4 or R_5 is a methyl or ethyl in which case n or m has the value 3.

3,925,016
POLYARCRYLONITRILE BASIC DYEING PROCESS WITH ANIONIC ASSISTANT

Jaroslav Haase, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Dec. 12, 1972, Ser. No. 314,489

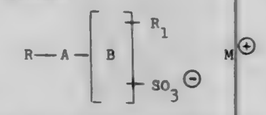
Claims priority, application Switzerland, Dec. 21, 1971, 18720/71

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² D06P *5/04*

U.S. Cl. 8—169 **24 Claims**

1. A process for dyeing textile fibre material made from polyacrylonitrile, comprising the step of treating the fibre material with a basic dye in an acidic, aqueous preparation, which further comprises as dyeing assistant an anionic compound of the formula



wherein R is an alkyl or alkylene radical with 7 to 21 carbon atoms, A is the group —CO—O— or —O—CO—, B is benzene, naphthalene or diphenyl, R_1 is hydrogen, hydroxyl, alkyl, hydroxyalkyl, alkoxy, cycloalkyl aryl, aralkyl or halogen, and M^+ represents an inorganic or organic cation.

3,925,017
PREPARATION OF DRY, POROUS GEL PARTICLES HAVING HIGH WATER REGAIN FOR LIQUID SAMPLING

Stuart J. Updike, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 1, 1973, Ser. No. 356,093

Int. Cl.² B01D *39/04*; **G01N** *31/06*

U.S. Cl. 23—230 B **5 Claims**

1. In the preparation of dry, porous polyacrylamide gel particles having high water regain for use in obtaining reproducible increments of liquid sample upon rehydration with the sample, the improvement comprising mixing the gel in particle form in a volatile, non-aqueous, water miscible, liquid organic solvent medium, removing the gel particles from the non-aqueous medium, and then allowing the gel particles to dry.

3,925,018
METHOD AND APPARATUS FOR QUANTITATIVE ANALYSIS UTILIZING PARTICULATE REAGENT MATERIAL

Alexander M. Saunders, Bedford Village, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

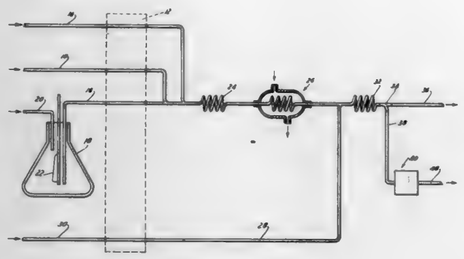
Filed June 8, 1973, Ser. No. 368,406

Int. Cl.² G01N *15/02, 21/26, 31/14, 33/16*

U.S. Cl. 23—230 R **5 Claims**

1. A method of analysis of plural constituents of a sample, comprising:

reacting the sample in the presence of a multitude of microholders suspended in a liquid, each microholder comprising a reagent, the reagent of certain of said microholders being different from the reagent of certain other microholders, and



determing products of reactions of said sample with said microholders as indications of the constituents.

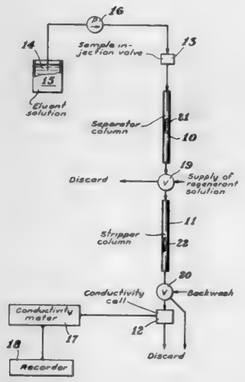
3,925,019
CHROMATOGRAPHIC ANALYSIS OF IONIC SPECIES

Hamish Small, and Timothy S. Stevens, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 6, 1973, Ser. No. 386,261

Int. Cl.² G01N *27/08, 31/04, 31/10*

U.S. Cl. 23—230 R **10 Claims**



1. The method of chromatographic quantitative analysis of a plurality of species of cations in aqueous sample solution, which comprises:

adding a predetermined amount of said sample solution to a cation exchange resin bed means, said means being charged with a cation exchange resin, and chromatographically separating said plurality of species of cations on eluting said cations from the said resin bed means with an aqueous solution of a developing reagent selected from $AgNO_3$ and $BaCl_2$, the cation exchange resin and developing reagent being preselected to cooperatively facilitate chromatographic separation of said cation species;

passing the effluent from the cation exchange resin bed means through an anion exchange resin bed means, said anion exchange resin bed means being charged with an anion exchange resin in a form selected from chloride form and sulfate form capable of (1) precipitating all of the developing reagent and (2) exchanging substantially all anions present to the form selected, the total exchange and precipitation capacity of the anion exchange resin being at least sufficient to precipitate and exchange all of the developing reagent in said effluent, said precipitation and exchange being carried out while maintaining said chromatographic separation of said ion species;

and passing the effluent from said anion exchange resin bed means through a common detector means and quantitatively detecting each of said separated ion species, respectively.

3,925,020
METHOD FOR DETERMINING THE TOTAL IRON-BINDING CAPACITY OF BLOOD SERUM

Hiroshi Ogawa, Kashiwa; Kazuo Nitta, Yachiyo; Nobuhiko Nakazawa, Urawa, and Kentaro Maki, Tokyo, all of Japan, assignors to Mallinckrodt, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 371,051, June 18, 1973, abandoned. This application Feb. 11, 1974, Ser. No. 441,165

Claims priority, application Japan, Mar. 5, 1973, 48-25926

Int. Cl. G01n *23/00, 33/16*

U.S. Cl. 23—230 B **6 Claims**

1. In the method for determining the total iron-binding capacity of blood serum which comprises adding an acid to a blood serum specimen to release the bound iron from the transferrin, removing the released iron, returning the pH of the remaining serum fraction to the range wherein quantitative binding of ferric ions to transferrin occurs, adding an excess of ferric ions including some radioactive ferric ions, measuring the initial activity of the resulting mixture, removing the unbound ferric ions, and determining the residual radioactivity, the improvement which comprises adding a polycarboxylic acid selected from the group consisting of malonic, tartaric, malic, maleic and oxalic acids to the blood serum specimen so as to release the bound iron from the transferrin therein.

3,925,021
APPARATUS COMPRISING A PLURALITY OF CHEMICALLY TREATED ABSORPTION PLATES FOR INJURIOUS GASES CONTAINED IN THE AIR

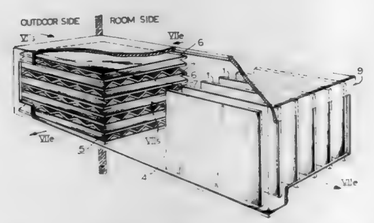
Masataka Yoshino; Hiroyasu Kuwazawa; Haruhiko Shimojima, all of Nakatsugawa; Osamu Tanaka, Amagasaki; Hideaki Kusakawa, Amagasaki; Hiromasa Matsuoka, Amagasaki, and Mitsuo Maeda, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 207,100, Dec. 13, 1971, abandoned. This application June 14, 1974, Ser. No. 479,572

Claims priority, application Japan, Dec. 28, 1970, 46-126084; Dec. 28, 1970, 46-126085; Mar. 22, 1971, 46-20135

Int. Cl.² B01J *1/00*

U.S. Cl. 23—252 R **4 Claims**



1. A device for removing acidic and injurious gases such as a sulfur dioxide gas, a hydrogen sulfide gas or acidic mist contained in the air, which comprises a plurality of absorption plates, spacing means positioned for maintaining the absorption plates apart so as to form a plurality of layers and interposition plates which are interposed in the space between said plurality of layers so as to guide two directional flows of air having different temperatures and humidities from one another alternately into said space, said absorption plates being made of a material selected from the group consisting of paper, asbestos paper, cloth or textile, said material being impregnated with a hygroscopic wetting agent to render the material hygroscopic, selected from the group consisting of glycerine, ethylene glycol or propylene glycol and an alkaline substance selected from the group consisting of hydroxides and carbonates of alkali metals and alkaline earth metals to neutralize said acidic and injurious gases or said acid mist.

3,925,022
DETECTING APPARATUS

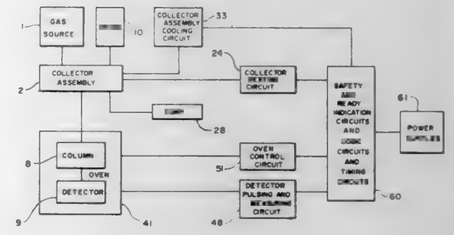
Lane Crawford Showalter; John Leslie Brokenshire, both of Waterloo, and Geoffrey Brian Watts, Kitchener, all of Canada, assignors to Marsland Engineering Limited, Waterloo, Canada

Filed Sept. 26, 1974, Ser. No. 509,623

Claims priority, application Canada, Oct. 1, 1973, 182296

Int. Cl.² G01N *31/06, 31/08*

U.S. Cl. 23—254 E **25 Claims**



1. An apparatus for detecting a trace of a specific vapour in an atmospheric sample, comprising

a. a collector assembly having an inlet and an outlet and a passage extending from the inlet to the outlet, the passage being filled with a solid adsorbant which is capable of adsorbing the specific vapour together with other vapours in the atmospheric sample and which is capable of being readily heated to desorb the adsorbed vapours,

b. heating means for heating the adsorbant to desorb the adsorbed vapours,

c. a partition column connectable to the outlet of the passage for separating the desorbed vapours,

d. a detector connected to the partition column for detecting the specific vapour among the separated vapours,

e. a carrier gas source connectable to the inlet of the passage to provide a flow of a carrier gas so that the carrier gas passes the desorbed vapours to the partition column for separation and the separated vapours to the detector for detection of the specific vapour,

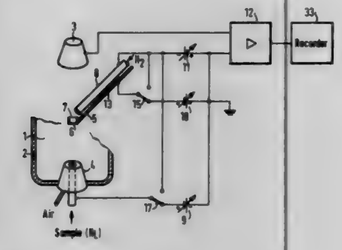
f. said collector assembly being movable between a sampling position where the passage is communicated with the atmosphere while disconnected to the partition column and the carrier gas source, and an analyzing position where the passage is connected to the partition column and the carrier gas source while disconnected to the atmosphere, and

g. means to draw the atmospheric sample over the adsorbant when the collector assembly is in the sampling position.

3,925,023
FLAME IONIZATION DETECTOR

Rudolf Kaiser, Dr.-Dahlem-Str. 9, 6702 Bad Durkheim, Germany

Filed Nov. 21, 1973, Ser. No. 418,121
Claims priority, application Germany, Nov. 21, 1972, 2257099
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G01N 31/12
U.S. Cl. 23—254 EF **10 Claims**



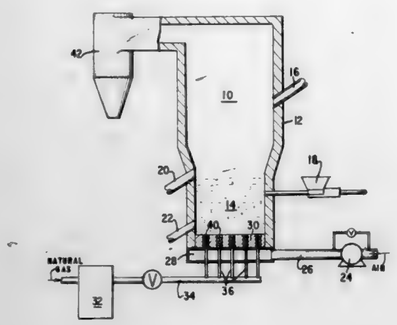
1. A flame ionization detector comprising:
a. an enclosed detection chamber having a central axis associated therewith;
b. a collector electrode arranged in the upper portion of said chamber, essentially along said axis;
c. a first burner nozzle in the lower portion of said chamber, arranged with its outlet directed upward along said axis;
d. a salt source supported within said chamber between said collector and said first nozzle;
e. a second nozzle having its opening directed downwardly in the direction of said first burner nozzle and onto said salt source;
f. means for supplying a sample to said first nozzle;
g. means for selectively supplying a fuel gas to one of said first and second nozzles;
h. a negative voltage supply;
i. means for supplying one of a ground and positive potential;
j. means coupling said negative supply to said second nozzle;
k. means for selectively coupling said first burner nozzle to one of said negative supply and said means for supplying one of a positive and ground potential, whereby, by selectively feeding said fuel gas to said second nozzle and coupling said first nozzle to said means for supplying one of a positive and ground potential, a nitrogen or other hetero compound sample may be fed to said first nozzle for detection, and by selectively feeding said fuel gas to said first nozzle and coupling said first nozzle to said negative supply a hydrocarbon may be fed to said first nozzle and detected.

3,925,024
GRID BURNER SYSTEM

Clinton Allen Hollingsworth, and John Harold Snyder, both of Lakeland, Fla., assignors to Borden, Inc., Columbus, Ohio

Filed Sept. 10, 1971, Ser. No. 179,494
Int. Cl.² F27B 15/10; B01J 8/24
U.S. Cl. 23—277 R **13 Claims**

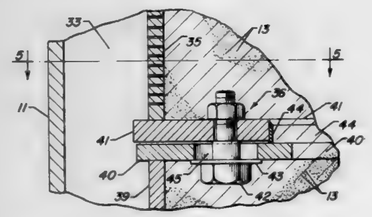
1. In a fluid bed reactor which includes a perforated grid, means for introducing particulate matter into said reactor, means for introducing fuel and air into said reactor for fluidizing the particulate matter and for affecting a thermal reaction between the particulate matter and the combusted air and fuel mixture and means for withdrawing treated particles from the reactor, the improvement comprising combustion chambers in said grid from 1 to 6inches wide and of a length equivalent to the thickness of said grid and interference means provided in said chambers, the fuel and air being introduced into said chambers where they are mixed with the aid of said interference means and combusted within said fluidized bed of particles just above said grid.



3,925,025
RING-FLANGED SLIP-JOINT FOR A REACTOR SYSTEM

Arthur R. Greenwood, Niles; Walter W. Heinze, Chicago; Edward Schnitta, Bensenville, and Frank H. Andrejasich, Summit, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 20, 1973, Ser. No. 356,253
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B01J 8/12
U.S. Cl. 23—288 G **3 Claims**

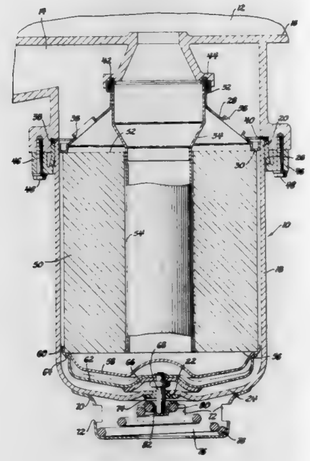


1. A catalytic reactor system providing contact of a reactant stream with catalyst particles movable through said system via gravity flow, which system comprises, in combination:
a. an elongated, vertically-disposed reaction chamber containing;
b. a tubular-form, catalyst-retaining screen, coaxially distended substantially the entire length of said chamber, having (i) a nominal internal cross-sectional area less than said chamber to provide a reactant annulus, and (ii) a first ring flange face immovably connected to the lower peripheral extremity of said catalyst-retaining screen;
c. a tubular-form, perforated centerpipe, coaxially distended substantially the entire length of said chamber, and having a nominal cross-sectional area less than said catalyst-retaining screen to provide an annular catalyst-holding zone;
d. a tubular-form, catalyst-retaining screen support member attached at its lower peripheral extremity to a bottom portion of said chamber, and having a second ring flange face immovably connected to its upper peripheral extremity and in slidable contact with said first ring-flange face; and,
e. a flexible ribbon seal immovably connected to the inner peripheral edge of said first ring-flange face extending downwardly therefrom to contact said second ring-flange face.

3,925,026
SPRING LOADED CATALYTIC CONVERTER WITH EXTERNALLY MOUNTED SPRING

Martin L. Bray, Flint; Edward N. Cole, Bloomfield Hills, and James A. Haggart, Jr., Davison, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 20, 1974, Ser. No. 498,261
Int. Cl.² B01J 8/00; F01N 3/15
U.S. Cl. 23—288 FC **1 Claim**

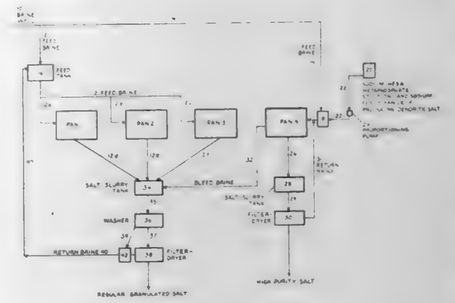


1. A catalytic converter for an engine exhaust system comprising, in combination: a generally cylindrical housing having an axially central inlet and an outlet at one end thereof for exhaust gas flow, a peripheral catalyst element seat at the one end thereof and an axially central opening at the other end thereof;; a generally cylindrical monolithic catalyst element having one axial end positioned against the catalyst element seat, another axial end and a central axial opening therethrough extending between the axial ends and aligned with the housing inlet for conducting exhaust gases from the one axial end to the other; a flow-reversing baffle having a circumferential rim in sealing contact with the other axial end of the catalyst element, the baffle being effective to direct exhaust gas flow from the catalyst element opening radially outward and back through the catalyst element to the outlet; ported spring retaining means fixed to the other end of the housing outside the housing opening; spring means positioned in the spring retaining means for cooling by atmospheric air; and a load-bearing member positioned between the flow-reversing baffle and the other end of the housing, the load-bearing member having a peripheral rim positioned against the peripheral rim of the flow-reversing baffle and a centrally positioned finger projecting out of the housing in slidable sealing engagement with the housing through the housing opening into engagement with the spring means, whereby the force of the spring means is transmitted through the peripheral rims of the load-bearing member and flow-reversing baffle to the catalyst element to retain it firmly against the catalyst element seat, the load-bearing member being otherwise spaced from the flow-reversing baffle for minimum thermal contact therewith, whereby the flow-reversing baffle protects the load-bearing member from the hot exhaust gases.

3,925,027
PROCESS FOR PRODUCING SALT HAVING A REDUCED CALCIUM SULFATE CONTENT

Howard W. Fiedelman, Woodstock, Ill., assignor to Morton-Norwich Products, Inc., Chicago, Ill.

Division of Ser. No. 480,615, June 19, 1974. This application Mar. 3, 1975, Ser. No. 554,649
Int. Cl.² C01D 3/06, 3/16; B01D 9/02
U.S. Cl. 23—296 **3 Claims**



1. An improved process for producing cubic crystalline salt in a multiple effect evaporator system which comprises continuously feeding a raw sodium chloride brine containing dissolved calcium sulfate into an evaporating and crystallizing chamber, evaporating and concentrating said brine at a temperature below about 220°F. and at reduced pressure in the presence of an additive consisting of from about 5 to about 500 parts per million sodium hexametaphosphate to crystallize sodium chloride from said brine, concomitantly bleeding brine from said evaporating chamber in an amount of from 45% to 70% of the brine feed, concomitantly withdrawing and recovering solid sodium chloride having a reduced calcium sulfate content of not more than about 30 parts per million of calcium expressed as calcium from said evaporating chamber, directing said bleed brine containing an enriched dissolved calcium sulfate content to a separate evaporating and crystallizing chamber, concentrating said bleed brine to crystallize sodium chloride therefrom, and recovering the sodium chloride.

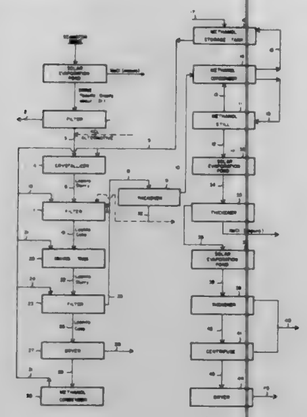
3,925,028
TREATMENT OF SEAWATER BRINES WITH AN ALCOHOL TO RECOVER A FERTILIZER QUALITY DOUBLE SALT

José Antonio Fernández Lozano, Apartado de Correos No. 4526, Puerto La Cruz; Edo. Anzoatequi, Venezuela

Filed Dec. 26, 1972, Ser. No. 318,600
Int. Cl.² B01D 9/00; C13K 1/10
U.S. Cl. 23—298 **5 Claims**

1. A process for the recovery of potassium, magnesium and sulfate from seawater brine in the form of potassium sulfate magnesium sulfate double salt of fertilizer quality, substantially free of sodium chloride, sodium sulfate and other salts, comprising the steps of: (a) Concentrating seawater to a density between about 1.26 and about 1.315 specific gravity; (b) Adding to the said concentrated seawater brine methanol or ethanol at ambient temperature; (c) Agitating the mixture of said seawater brine and methanol or ethanol for a short residence time of about 10 minutes, whereby potassium sulfate magnesium sulfate double salt is formed; (d) Separating the said salt from the liquid phase by filtrations washing and drying the said salt; (e) Conveying the methanol or ethanol vapors from the dryer to a condenser and recycling the condensed methanol or ethanol back to the process; and (f) Conveying the filtrates and washings to a thickener removing the salt formed from the said thickener, removing from the top of the said thickener the clear solution and conveying it to a

distillation column and conveying the methanol or ethanol vapors from the said distillation column to a condenser and



recycling the condensed methanol or ethanol in the process for recovering new amount of the said potassium sulfate magnesium sulfate double salt.

3,925,029

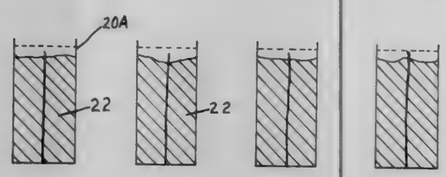
METHOD AND COMPOSITION FOR CANDLE MAKING

William W. Wilson, P.O. Box 36, Norwich, Ohio 43767

Filed Aug. 14, 1973, Ser. No. 388,134

Int. Cl.² C10L *5/00*

U.S. Cl. 44—7.5 **21 Claims**



19. A molded, single pour, paraffin wax candle article having a volume of between one ounce and 100 ounces made by a process comprising the steps of heating a batch of paraffin wax having a melting point between 110°F to 155°F to a predetermined temperature between at least 180°F and 300°F; subsequently adding to the molten batch at a given temperature between 180°F and 300°F at least 0.05 to 1.0 percent by weight of a naturally occurring resinoid compound selected from a group consisting of myrrh, galdanum, opponax, labdanium, benzoin, castorium, oakmoss, olibanum, stryrax, balsam tolu and balsam peru which is dissolved in a carrier that is at least partially soluble in the wax with agitation to achieve substantially complete mixing of the resinoid compound in the batch; pouring said heated wax composition into suitable molds at an ambient temperature which allows said wax to cool and subsequently crystallize in said molds; and wherein the time lapse between adding said resinoid compound to the batch and the beginning of the crystallization of the wax composition in the mold is at least greater than approximately 30 minutes and no longer than approximately 8 hours, said article being characterized by the absence of a substantial shrink cavity, by a substantial reduction of density as compared to a wax composition not containing a resinoid compound added thereto in accordance with the process described and the visual appearance of spherical inclusions.

3,925,030

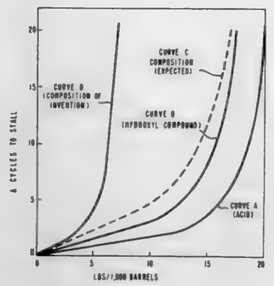
ANTI-ICING COMPOSITION

Bruce Hollis Garth, Newark, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Oct. 6, 1972, Ser. No. 295,660

Int. Cl.² C10L *1/02*

U.S. Cl. 44—56 **14 Claims**



1. An anti-icing composition for gasoline and comprising 30–90 weight % of a gasoline soluble organic compound of the formula Z—OH and 10–70 weight % of a gasoline soluble dimer-trimer acid of a C_{16-18} unsaturated, aliphatic monocarboxylic acid, Z—OH being selected from the group consisting of ROH, HOR^1OH and $R^2(OR^3)_nOH$ wherein R is C_{4-18} alkyl, R^1 is C_{6-10} alkylene, R^2 is H, C_{1-18} alkyl or C_{1-12} alkyl(phenyl), R^3 is C_{2-3} alkylene, n is 2–60 and any two adjacent OR^3 groups are the same or different.

3,925,031

FUEL AND OIL ADDITIVE

Eugenio G. Villacampa, Av. Morelos No. 31-203, Mexico 1, D.F., Mexico

Filed July 23, 1970, Ser. No. 57,835

Int. Cl.² C10L *1/18*

U.S. Cl. 44—56 **5 Claims**

1. A liquid composition of matter comprising:
16 to 19.5 weight percent naphthalene,
6 to 8.7 weight percent camphor,
28 to 42 weight percent of a gasoline fraction,
36 to 45 weight percent toluene,
and 1.8 to 3.0 weight percent benzyl alcohol.

3,925,032

CONTROL OF LIQUID DISSEMINATION

Desmond Wilfrid John Osmond, Windsor; Norman Douglas Patrick Smith, and Frederick Andrew Waite, both of Farnham Common, all of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 818,249, April 22, 1969, which is a continuation-in-part of Ser. No. 786,629, Dec. 24, 1968, abandoned, which is a continuation-in-part of Ser. No. 751,992, Aug. 12, 1968, abandoned. This application Aug. 2, 1971, Ser. No. 168,412

Claims priority, application United Kingdom, May 13, 1971, 14641/71; Apr. 11, 1968, 17544/68

Int. Cl. C10l *1/16*

U.S. Cl. 44—62 **10 Claims**

1. A free-flowing liquid hydrocarbon gas turbine engine aircraft fuel of flash point at least 90°F. having a reduced tendency to particulate dissemination on being subjected to shock, the fuel containing dissolved therein a polymer which is soluble in said fuel and comprises an alkylated polystyrene prepared by the addition polymerization of an alkyl styrene, the polymer having a viscosity average molecular weight greater than 10^6 or of intrinsic viscosity greater than 2.5 dls/gm. and in a concentration such that there is molecular overlap of the polymer molecules in the liquid and the concentration being between 0.1 and 2 percent by weight.

3,925,033

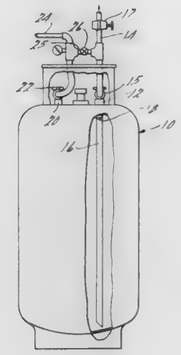
COMBUSTIBLE GAS SYSTEM AND METHOD

Frederick W. Mayo, Livonia, Mich., assignor to N.R.G. Equipment Corporation, Livonia, Mich.

Filed May 23, 1974, Ser. No. 472,601

Int. Cl.² C10J *1/20*

U.S. Cl. 48—144 **8 Claims**



5. A combustible gas system including a pressure vessel having an outlet at the top and having a main inlet and a restricted gas delivery inlet connected to said main inlet and opening into the vessel near the top, a dip tube also interconnected with said main inlet and leading to a discharge opening below the level of liquid in the vessel, and a quantity of a liquid in the vessel of relatively higher heat value than said gas, the level of said liquid being below said restricted gas delivery inlet, whereby when gas is delivered simultaneously to said restricted gas delivery inlet and dip tube it is subdivided and one portion bubbled through the liquid and then combined with gas delivered to the space above the liquid for discharge therewith through the outlet.

3,925,034

RESIN BONDED GRINDING WHEEL CONTAINING GAS-FILLED THERMOPLASTIC RESIN BEADS AND METHOD OF MAKING IT

Leo A. Anna, Chardon, and Kenneth C. Dixon, Shaker Heights, both of Ohio, assignors to Research Abrasive Products, Inc., Willoughby, Ohio

Continuation-in-part of Ser. No. 359,737, May 14, 1973, abandoned. This application Dec. 5, 1974, Ser. No. 529,944

Int. Cl.² B24D *3/32*

U.S. Cl. 51—296 **25 Claims**

1. A process of the character described comprising reacting epichlorohydrin with bisphenol A to provide a liquid condensation product with an epoxide equivalent of at least 180 and a molecular weight of about 350 to about 400, mixing said condensation product with an aromatic diamine curing agent to form an epoxy resin binder, mixing one part of said epoxy resin binder with about 5 to about 7 parts by weight of aluminum oxide having a particle size from about 36 grit to about 80 grit, with about 10 to 30 parts by weight of mica and with gas-filled polystyrene beads with a diameter from 0.05 to 0.2 inch and a density from about 1.5 to 10 pounds per cubic foot to form a composition containing at least 50 percent by volume of said aluminum oxide and from about 10 to 30 percent by volume of said polystyrene, and heating said composition to a temperature not in excess of 350°F. for at least several hours to harden and set the same.

3,925,035

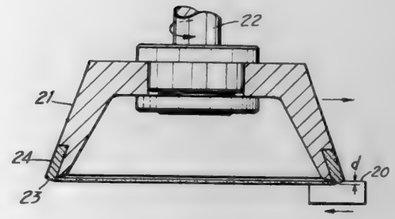
GRAPHITE CONTAINING METAL BONDED DIAMOND ABRASIVE WHEELS

Paul P. Keat, Holden, Mass., assignor to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 227,867, Feb. 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 124,047, March 15, 1971, abandoned. This application Jan. 12, 1973, Ser. No. 323,244

Int. Cl. C04b *31/16*; **C09c** *1/68*; **C23c** *5/00*

U.S. Cl. 51—309 **5 Claims**



1. A cup-type dry grinding wheel having an abrasive section consisting of resin bond type diamond abrasive grains bonded in a metal matrix having a melting point above 300°C, said metal matrix including a filler selected from the group consisting of particulate polytetrafluoroethylene, graphite, hexagonal boron nitride, molybdenum disulfide, and mixtures thereof in the amount of from 15 to 50%, by volume of the bond, said filler having a particle size of between 1 micron and 200 microns, the smaller size filler being present at the lower concentrations of filler, the larger size filler being present at the higher filler concentrations, said diamond abrasive grit being defined by one of the following lists (a), and (b) of characteristics: (a) synthetic multicrystalline diamond having an irregular surface and a friability index F, for grit sizes of 130 and coarser equal to or less than $0.0052s^2$, and equal to or less than $1.07s^{0.9}$, for grit sizes finer than 130, wherein s is the arithmetic average of the number designations of the U.S. Standard sieve series screens used to obtain a sized sample of the diamond, and (b) natural monocrystalline diamond with a friability index of less than $11.3s^{0.43}$ and is selected from a population having a bulk density of 1.7 or less in the 140/170 grit size and 1.6 or less in the 200/230 grit size as measured by the American National Standards Institute method.

3,925,036

STAGE DESIGN

John Shacter, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Mar. 23, 1951, Ser. No. 217,116

Int. Cl.² B01D *13/00*

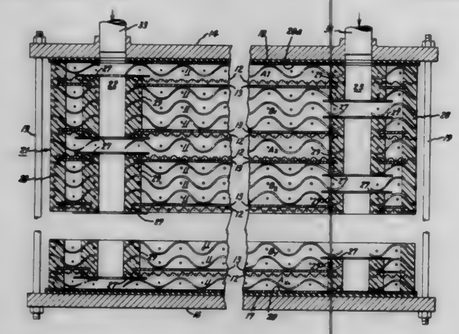
U.S. Cl. 55—158 **2 Claims**

1. A method of cycling gases through a plurality of diffusion stages comprising the steps of admitting the diffused gases from a first diffusion stage into an axial compressor, simultaneously admitting the undiffused gases from a second diffusion stage into an intermediate pressure zone of said compressor corresponding in pressure to the pressure of said undiffused gases, and then admitting the resulting compressed mixture of diffused and undiffused gases into a third diffusion stage.

3,925,037
HIGH PRESSURE MEMBRANE PACKAGE CONSTRUCTION

William J. Ward, III, Schenectady, and William I. Foss, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 4, 1974, Ser. No. 439,431
Int. Cl.² B01D *13/00*
U.S. Cl. 55—158 **8 Claims**



6. In a packaged membrane system in which (a) a plurality of spaced membrane assemblies are disposed is substantially parallel surface-to-surface array to define both a first group of flow volumes and a second group of flow volumes alternating between said first group, (b) spacing means for the membrane assemblies is located in each of said flow volumes, (c) means are provided for simultaneously defining the periphery of each of said flow volumes and bonding together adjacent membrane assemblies and the spacing means located therebetween to form gastight peripheral walls and (d) means are provided for separate access to and egress from the plurality of flow volumes in said first group of flow volumes and in said second group of flow volumes, said access and egress means comprising a plurality of discontinuous channels, said channels being arranged in a plurality of sets with the channels in each set being in alignment and said channels having gas-tight walls extending transversely between adjacent membrane assemblies, each channel placing a pair of adjacent flow volumes of the same group in flow communication and the gas-tight wall of each channel bonding together the portion of the spacing means embedded therein and the portions of the membrane assemblies located at the far ends of said gas-tight walls, the improvement comprising:

1. each gas-tight wall extending through a hole in each of said membrane assemblies contacting said gas-tight wall, the edges of each of said holes in said membrane assemblies being rigidly embedded in said gas-tight walls.

3,925,038
WATER DEGASSING DEVICE

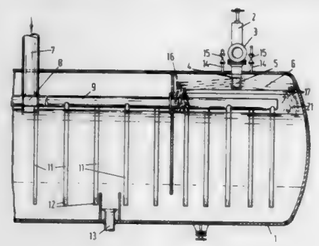
Willem Wiemer, Delden, and Mattheus Besier, Hengelo, both of Netherlands, assignors to B. V. Koninklijke Machinefabriek, Hengelo, Netherlands

Filed Mar. 6, 1973, Ser. No. 338,645
Claims priority, application Netherlands, Mar. 14, 1972, 7203333
Int. Cl.² B01D *19/00*
U.S. Cl. 55—159 **7 Claims**

1. A device for degassing water such as boiler feed water, comprising in combination:

a closed vessel having steam supply means for supplying pressurized steam and including a steam inlet conduit extending into said vessel and a steam distribution manifold presenting steam discharge openings adjacent the bottom of the vessel to discharge steam well below the surface of a body of water contained in the vessel whereby the body of water remains in relatively quiescent state, said vessel having vent means in the top region thereof for venting gasses while maintaining the interior of said vessel under superatmospheric pressure, said vessel having a water discharge conduit for maintaining said surface of the body of water within the upper region of said vessel;

supply means for delivering water under pressure into said vessel and including a spray nozzle located above said surface and delivering at least one high velocity jet spray



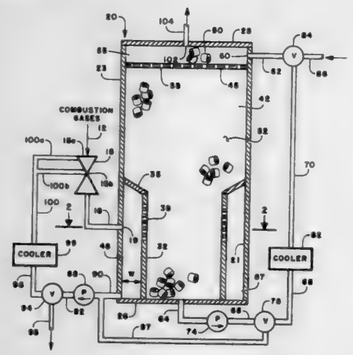
curtain in generally horizontal fashion above said surface; and

grating means for intercepting said high velocity spray curtain and directing it in an undisturbed, gravity fall rainfall-like fashion onto said surface whereby minimally to disturb said relatively quiescent state of the body of water, said grating means comprising a plurality of generally vertical surfaces disposed in horizontally spaced and in ascending overlapping relation in the direction of said jet spray curtain.

3,925,039
SYSTEM FOR TREATING FLUE GAS

Donald L. Ziegler, Golden, Colo., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Nov. 18, 1974, Ser. No. 525,042
Int. Cl.² B01D *47/10, 47/14, 47/16*
U.S. Cl. 55—223 **7 Claims**



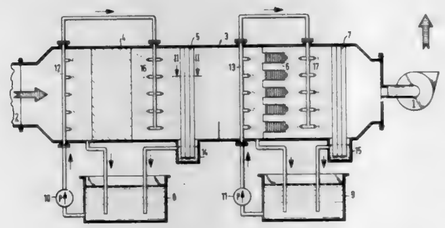
1. A system for treating flue gas containing radioactive contaminants comprising means for mixing a cooling liquid with said flue gas, an elongated housing having a bottom wall and an interior cylindrical wall at a lower portion thereof, a hollow cylindrical wall member coaxially disposed within said housing at a lower portion thereof connected with said housing bottom wall and spaced from said interior cylindrical wall of said housing forming therewith about the circumference of said housing a narrow annular liquid-retaining chamber, a scrub bed of packing elements within said housing separate from said annular chamber, a conduit interconnecting said mixing means and said interior cylindrical wall having an inlet

portion to said housing disposed tangentially to said interior wall of the housing for delivering said mixed flue gas and said cooling liquid containing entrapped particles from said mixing means and tangentially feeding into said housing, apertured wall means within the confines of said housing intermediate said scrub bed and said annular chamber and above said annular liquid retaining chamber for passing undissolved flue gas from said annular chamber to said scrub bed while inhibiting passage of said packing elements from said scrub bed into said annular chamber, a conduit connected to the upper portion of said housing for removing flue gas from the upper portion of said housing subsequent to passage through said bed, means for distributing scrub liquid at an upper portion of said scrub bed in countercurrent flow to said flue gas to mix with said flue gas and pass to a lower portion of said scrub bed, means for recycling said scrub liquid from said lower portion of said scrub bed to said distribution means, and means connected with a lower portion of said narrow annular liquid-retaining chamber for recycling cooling liquid from said annular chamber to said mixing means.

3,925,040
GAS SCRUBBING PLANT

Volker Fattinger, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 9, 1974, Ser. No. 468,786
Claims priority, application Switzerland, May 14, 1973, 6808/73
Int. Cl.² B01D *47/00*
U.S. Cl. 55—257 **8 Claims**



1. A gas scrubbing plant having a gas inlet and gas outlet and further comprising at least one scrubbing station upstream of at least one drop trap for separation of scrubbing liquid, each of said at least one drop trap comprising a plurality of vertical plates extending substantially parallel to one another and defining horizontal gas flow passages therebetween, said plates each having in a horizontal section a zig-zag configuration and each said passage having at least two angled bends therein;

said plates being shaped to form a pocket on the outer side of each bend extending on both sides of the corner of the bend and substantially over the entire height of the respective plate and being positioned prior to each bend such that the passage defined therebetween opens into said pocket for at least partially guiding the gas flow into the associated pocket;

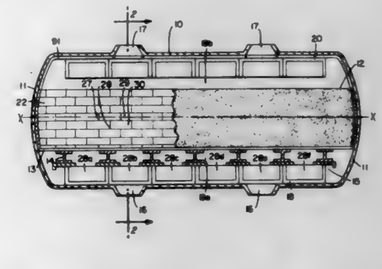
the angle of the first of said bends being greater than the angle of the second of said bends immediately down stream of it, said angles being defined by the juncture of the respective center-lines of the flow passages prior to and after said bends; and

the pocket formed in at least a first of said bends in each passage having a horizontal cross-sectional area of at least 8% of the area of a parallelogram associated with said first bend, the parallelogram being defined by four horizontal lines with first and second of said lines being parallel to the center-line of the flow passage immediately prior to said first bend and touching respectively the inner surface of the plate forming said pocket and the inner surface of the other plate defining the passage immediately before said first bend, and with third and fourth of said lines parallel to the center-line of the flow passage immediately after said first bend and touching respectively the inner surface of the plate forming said pocket and the inner surface of the other plate defining the passage immediately after said first bend, and the cross-sectional area of the pocket at said first bend being defined by the inner surface of the plate which forms the pocket at the said first bend and by said first and third lines of said parallelogram which touch the inner surface of the pocket forming plate.

3,925,041
THERMAL SWING GAS ADSORBER

Michael Frederick Patterson, and Kenneth Calvin Kather, both of Buffalo, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 429,278, Dec. 28, 1973, abandoned. This application Dec. 6, 1974, Ser. No. 530,346
Int. Cl.² B01D *53/04*
U.S. Cl. 55—267 **15 Claims**



1. A gas adsorbent vessel comprising: a rigid outer casing, an adsorbent bed within said casing; support means for said adsorbent bed bearing against the casing inner surface and the adsorbent bed outer surface; gas flow passage means extending through the bottom wall and the top wall of said casing; a compressible fibrous layer of thermal insulation material having fiber diameter of less than 20 microns and an uncompressed porosity of greater than 0.95 positioned against the casing inner surface; a multiplicity of rigid preformed sheets of thermal insulation material having permeability of less than 150 ft²/hr-atm based on air at 70°F, being substantially planar and positioned inwardly of and covering said compressible fibrous layer in an end-to-end and side-to-side abutting relationship with transverse gaps between the casing inner surface and outer surface of said preformed sheets not exceeding ½ inch; and means for positioning and outwardly compressing the compressible fibrous layer-rigid preformed sheet assembly against said casing inner surface such that the ratio of the density of the compressible fibrous layer in the compressed state to its density in the uncompressed state is at least 1.5.

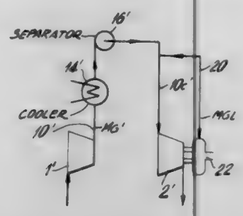
3,925,042
APPARATUS FOR TREATING A GAS CURRENT WHICH IS OBTAINED BY COAL GASIFICATION

Jochen Hütgens, Duisburg-Hamborn, and Günter Adomat, Essen, both of Germany, assignors to Gutehoffnungshütte Sterkrade Aktiengesellschaft, Germany

Division of Ser. No. 315,982, Dec. 18, 1972, Pat. No. 3,879,180. This application June 12, 1974, Ser. No. 478,747
Claims priority, application Germany, Dec. 18, 1971, 2163096
Int. Cl.² B01D *45/00*
U.S. Cl. 55—269 **2 Claims**

1. An apparatus for treating a gas current which is obtained by coal gasification comprising first and second pressure stages, a main gas flow conduit between said first and second stages having cooling means and drip separator means therein

through which the gas separated from the first stage is passed prior to its delivery to the second stage and heating means associated with said conduit downstream of said cooler and separator for heating the gas above the condensation tempera-



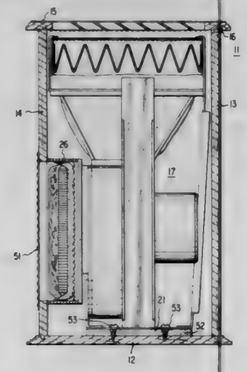
ture, said heating means comprises a gas conduit connected from said second stage into said conduit for the flow of leakage gas from said second stage back into said conduit to heat the gas flowing therein.

3,925,043

LOW COST, EFFICIENT, GENERAL PURPOSE AIR CLEANER CARTRIDGE

John L. Matrone, Schenectady, and William E. Lyons, Guilderland, both of N.Y., assignors to Environment/One Corporation, Schenectady, N.Y.

Filed Nov. 13, 1973, Ser. No. 415,360
Int. Cl.[2] B01D *50/00*
U.S. Cl. 55—276 **15 Claims**



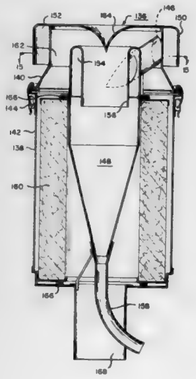
1. A compact, self-supported, low cost, non-enclosed fully operated efficient room air cleaner cartridge for cleaning the room air of homes, offices and the like comprising support means formed by a base member having a relatively flat supporting surface and a plurality of spaced-apart elongated supporting side members secured to and extending from said base member, a high volume air fan having a fan housing with an intake and outlet and supported on the base member, relatively high velocity air discharge conduit means supported by said elongated supporting side members, the high volume fan being disposed on the base member with its outlet discharging into one side of said relatively high velocity air discharge conduit means, means sealing the outlet from the high volume fan to the high velocity air discharge conduit means for preventing the leakage of air therebetween, inlet means connected to the intake of the high volume fan to provide a suction inlet air passageway to the intake of the high volume fan, a coarse, large particle prefilter disposed in the inlet air passageway, a relatively low cost, small particle filter including fine particle filter media, a mounting frame having a closed periperiphy defining a central opening connected to the free ends of said supporting side members mounting said small particle filter transversely across another side of the high velocity air discharge conduit means, said small particle filter being coextensive in size with the central opening in said mounting frame, means sealing said high velocity air discharge conduit means around the central opening in said mounting frame, means sealing the fine small particle filter over the central opening in said mounting frame for preventing leakage of air therebetween whereby air blown into the high velocity air discharge conduit means by the high volume fan is forced through the small particle filter and diffusely discharged exterior of the support means and the cartridge forms a completely self-supported, non-enclosed, fully operational room air cleaner.

3,925,044

AIR FILTER

Peter K. C. Tu, Westerville; Alan H. Brooke, Hudson, both of Ohio, and Frank S. Miller, Norwell, Mass., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 126,046, March 19, 1971, abandoned. This application Feb. 26, 1973, Ser. No. 335,991
Int. Cl.[2] B01D *50/00*
U.S. Cl. 55—337 **2 Claims**



1. An air filter for removing particulate matter and other impurities from an air stream comprising:

a generally cylindrical casing having a central axis;

an annular inlet region encircling a top section of said casing and defined by a hooded section attached to said casing;

a plurality of inlet passages extending from an outer wall of said top section of said casing to an upper portion of a cyclone separating means centrally disposed within said casing, each said passage being disposed substantially tangentially to said cyclone separating means and downwardly from said annular inlet region;

a cylindrical baffle coaxially aligned with said central axis and disposed within said upper portion of said cyclone separating means to insure said air stream entering through said passages circles about and downwardly into a lower, conically-shaped portion of said cyclone separating means for removal of relatively heavy particles from said air stream;

said baffle having an interior passage therethrough communicating with an area above said cyclone separating means and spaces between said inlet passages for effectively directing said air stream from said cyclone separating means to the outer surface of a filter media enclosed within said casing and surrounding and coaxially aligned with said cyclone separating means, said filter media removing substantially all the remaining particulate matter and impurities from said air stream; and

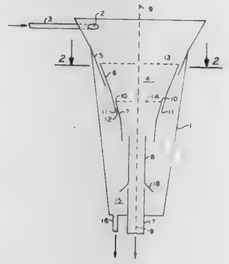
air guide means including the exterior surface of said lower, conically-shaped portion of said cyclone separating means for effectively directing the now cleansed air out of said filter media and through an outlet passage at the lower end of said casing.

3,925,045

MULTISTAGE CYCLONIC SEPARATOR

Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 7, 1972, Ser. No. 313,098
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.[2] B01D *45/12*
U.S. Cl. 55—345 **2 Claims**



1. A separator comprising:

a. a chamber;

b. a truncated cone comprised of a plurality of coaxially aligned conical sections of decreasing inlet diameters positioned in superimposed relationship, the upper portion of the uppermost conical section forming the upper portion of said chamber, the lowermost portion of said uppermost conical section and the remaining conical sections being positioned within said chamber, said truncated cone terminating within said chamber at an intermediate point along the vertical axis thereof, each of said conical sections having an inlet diameter greater than its outlet diameter, the lower portion of said uppermost conical section of said truncated cone extending angularly into said chamber and beneath the upper rim of the next lower conical section, each of the lower conical sections positioned within said chamber having its inlet or upper rim positioned within the outlet or lower rim of the next superimposed section to form an annular passageway therebetween, each of said conical sections consisting of an upper conical portion and a lower conical portion, the walls of said upper conical portion being positioned at a first acute angle relative to the vertical axis of said separator and the walls of said lower conical portion being positioned at a second acute angle relative to said axis, said second angle being less than said first angle;

c. a collection section in a lower portion of said chamber in open communication with said passageways;

d. first outlet conduit means opening downwardly from said collection section;

e. second outlet conduit means opening downwardly from said chamber, the upper terminus of said second outlet conduit being positioned within the lower portion of the lowest of said conical sections and in spaced relationship therefrom to form an annulus therebetween; and

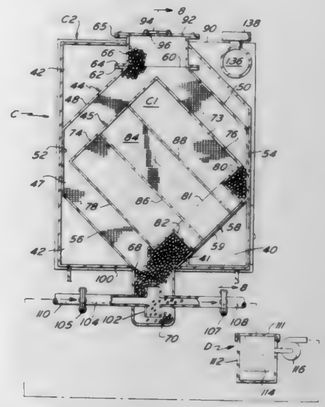
f. an inlet conduit means opening tangentially into an upper portion of said uppermost conical section forming the upper portion of said chamber.

3,925,046

RADIOACTIVE GAS STANDBY TREATMENT APPARATUS WITH HIGH EFFICIENCY RECHARGEABLE CHARCOAL FILTER

Thomas Nelson Hickey, and Ivars Sigurds Spulgis, both of Columbus, Ohio, assignors to CVI Corporation, Columbus, Ohio

Filed Dec. 21, 1972, Ser. No. 317,434
Int. Cl. B01d *50/00*
U.S. Cl. 55—387 **6 Claims**



1. A high efficiency gasketless filter for removal of radioactive isotopes from radioactive contaminated gases comprising a longitudinally extending housing and a plurality of individual filter beds arranged in spaced parallel configuration with respect to each other in said housing and in transverse disposition to the longitudinal direction thereof,

each filter bed comprising (*i*) an outer shell including a pair of spaced parallel perforate side walls transversely positioned across said housing with a peripheral wall portion substantially enclosing said perforate side walls, and (*ii*) an inner shell including a transversely positioned pair of spaced parallel foraminous lateral side walls symmetrically disposed and spaced between said perforate side walls with a marginal rim wall portion enclosing said foraminous lateral side walls, said marginal rim wall portion being further spaced from said peripheral wall portion to define an annular chamber between said inner and outer shells,

means including a closed throat constituting an entrance passageway for admitting radioactive contaminated gas to the interior of each of said inner shells through corresponding peripheral and marginal rim wall portions of each of said filter beds,

an inlet plenum longitudinally extending through said housing and having openings therein registering with the respective throats of said filter beds, and an outlet plenum within said housing communicating with the spaces between adjacent filter beds,

means for filling the annular chamber of each of said filter beds with particulate adsorbent so that the interior of said inner shells and the corresponding throat in communication therewith defines a blind passageway entirely submerged in a cage of particulate adsorbent,

means for drawing the radioactive contaminated gases through the inlet plenum whereby the gas is squeezed laterally in laminar flow disposition through the particulate adsorbent substantially normal to the cages thereof and into the spaces communicating with the outlet plenum, and

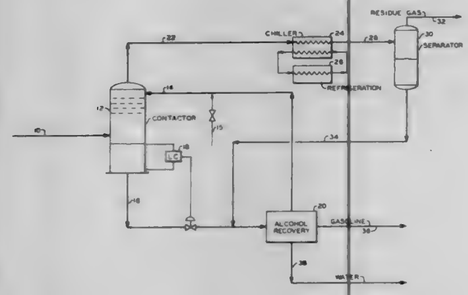
means for removing particulate adsorbent from the annular chamber and said housing when the adsorptive efficacy of the particulate material is expended.

3,925,047

REMOVAL OF MOISTURE FROM A NATURAL GAS STREAM BY CONTACTING WITH A LIQUID DESICCANT-ANTIFREEZE AGENT AND SUBSEQUENTLY CHILLING

Ernest A. Harper, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 101,240, Dec. 24, 1970, abandoned.
This application Dec. 3, 1973, Ser. No. 421,383
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² F25J *3/00, 3/02*
U.S. Cl. 62—20 **7 Claims**



1. A process for reducing the moisture content of a moisture-containing gas stream without substantial moisture removal prior to injecting an antifreeze agent into said gas stream so as to prevent solids formation in said gas stream in a subsequent low temperature processing step, which process comprises: contacting said gas stream which is at an atmospheric temperature in the range 40°–125°F with an aqueous liquid solution containing 51 to 90 weight percent of a low boiling (high vapor pressure) desiccant-antifreeze agent and 49 to 10 weight percent water in an amount and at a temperature in the range 40°–125°F and pressure conditions which are sufficient to (a) absorb a major amount of said moisture from said gas stream into said agent to form a water-agent solution and (b) simultaneously vaporize an amount of said agent into said gas stream removed from said contacting sufficient to prevent said solids formation from residual moisture remaining in said gas stream in a subsequent low temperature processing operation, and chilling said gas stream to a temperature sufficient to condense substantially all of the propane and heavier hydrocarbons therefrom and form a condensate comprising said condensed propane and heavier hydrocarbons, water, and said agent, but at a temperature sufficiently above the eutectic freezing point for the water-agent solution to prevent freezing of the water-agent solution and formation of solids during said chilling.

6. A process according to claim 1 comprising the steps of:

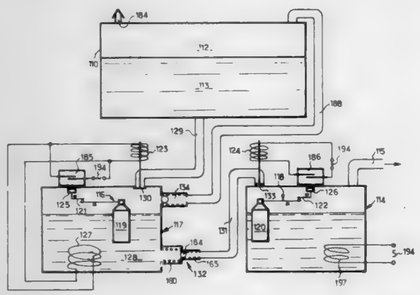
a. contacting a natural gas stream countercurrently in a contacting zone with said agent;
b. withdrawing a moisture-enriched stream of said agent from the lower portion of said contacting zone and passing same to an agent recovery zone;
c. withdrawing from the upper portion of said contacting zone a moisture-lean stream of said gas now containing a small amount of said agent and passing same to a chiller zone, said amount of said agent being sufficient to prevent said solids formation in said chiller zone;
d. passing said gas stream from step (c) to a phase separation zone;
e. withdrawing a treated gas stream from said separation zone of step (d) as a product of the process;
f. passing a liquid phase comprising condensed hydrocarbon and said agent from said separation zone of step (d) to said agent recovery zone;
g. withdrawing a stream of condensed hydrocarbon from said agent recovery zone as another product of the process;
h. withdrawing a stream of water from said agent recovery zone;
i. withdrawing a stream comprising recovered liquid desiccant-antifreeze agent from said recovery zone; and
j. returning said recovered agent of step (i) to said contacting zone in step (a) as the agent used therein.

3,925,048

SYSTEM FOR DISTRIBUTING PRESSURIZED GAS FROM A LIQUEFIED GAS SOURCE

Jacques Iung, Pontarlier, France, assignor to Gurtner, S.A., Paris, France

Filed July 24, 1974, Ser. No. 491,505
Claims priority, application France, Aug. 8, 1973, 73.29034
Int. Cl.² F17C *7/02*
U.S. Cl. 62—55 **10 Claims**



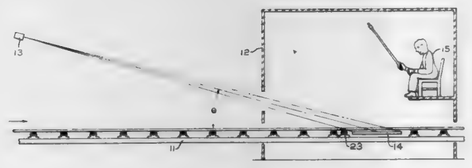
1. In a system for distributing pressurized gas from a liquefied gas source, supply tank means for containing the gas which is to be distributed in an upper gaseous phase and a lower liquid phase, output container means smaller than said storage tank means for also containing the gas which is to be distributed in an upper gaseous phase and a lower liquid phase, distributing duct means communicating with said output container means at said upper gaseous phase thereof for receiving from said output container means the gas which is to be distributed, intermediate container means smaller than said supply tank means for also containing the gas which is to be distributed in an upper gaseous phase and a lower liquid phase situated in said intermediate container means, supply duct means communicating with a lower portion of said supply tank means and an upper portion of said intermediate container means for supplying liquefied gas from said supply tank means to said intermediate container means, electromagnetic valve means operatively connected with said supply duct means for opening and closing the same to control the supply of liquefied gas from said supply tank means to said intermediate container means, connecting duct means connecting a lower portion of said intermediate container means with an upper portion of said output container means for supplying liquefied gas from said intermediate container means to said output container means, electromagnetic valve means operatively connected with said connecting duct means for controlling the flow of liquefied gas from said intermediate container means to said output container means, a pair of control means respectively situated in said intermediate and output container means and respectively cooperating with the pair of electromagnetic valve means operatively connected with said supply duct means and connecting duct means for respectively opening said valves when the liquid level of the liquid phase reaches a given lower elevation and closing said valves when said liquid level reaches a given upper elevation, a pair of heating means respectively situated in said intermediate and output container means for heating the interiors thereof, and means controlling the heating means of said intermediate container means when said electromagnetic valve means operatively connected with said supply duct means is closed.

3,925,049

FLAT GLASS INSPECTION SYSTEM AND METHOD

Ronald L. Schwenninger, Cumberland, Md., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 10, 1974, Ser. No. 487,325
Int. Cl.² G01N *21/16*
U.S. Cl. 65—29 **12 Claims**



1. A method for detecting the presence of point type defects having distortion diameters as small as 0.010 inch in flat glass having both point type defects and elongated drawline defects comprising:

orienting the flat glass between a light source and a viewing screen with the drawline defects extending in a longitudinal direction;

continuously projecting light through the glass in a transversely extending band across the full width of glass to be inspected, the rays of said light having an acute angle of incidence with respect to the surface of the glass sufficient to enhance the optical power of point type defects in the glass and to thereby render images cast by small point type defects visually perceptible, the rays of said light also lying in planes that are essentially parallel to the drawline defects and normal to the surface of the glass so as to avoid substantial enhancement of the optical power of the drawline defects;

receiving said light rays on said viewing screen after they have passed through the glass and casting onto said viewing screen images created by optical distortion associated with point type defects, without substantial interference from drawline defect images; and

visually monitoring the viewing screen for images cast thereon.

8. A system for inspecting flat glass for the presence of small point type defects without substantial interference from elongated drawline defects, comprising:

conveyor means for transporting flat glass in a longitudinal direction in a predetermined glass-transporting plane;

light projecting means on one side of said glass-transporting plane for projecting through the glass a band of light across the full transverse width of the area of the glass-transporting plane subject to examination, said projecting means being oriented so as to direct the rays of the band of light toward said glass transporting plane at acute angles thereto sufficient to enhance the optical power of point type defects in the glass and render images cast by the point type defects visually perceptible, and so as to intersect the glass-transporting plane with the rays in substantially parallel, longitudinally extending planes normal to the glass transporting plane; and

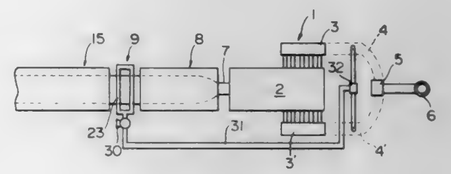
a viewing screen disposed on the other side of the glass-transporting plane and aligned with the path of the projected rays of the band of light so as to receive the defect distortion images cast by point type defects.

3,925,050

PROCESS AND APPARATUS FOR PRODUCING GLASS HAVING METAL OXIDE COATING

Akira Kushihashi; Yutaka Fuziwara, both of Ichihara, and Naotomo Akashi, Maizuru, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Feb. 1, 1974, Ser. No. 438,706
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C03C *17/00*
U.S. Cl. 65—60 **9 Claims**



1. A process for producing glass having a metal oxide coating, which comprises a step of coating the surface of high temperature glass with a heat-decomposable metal compound or its solution, a step of sucking and removing exhaust gases generated in said step from the vicinity of the surface of the glass, and a step of feeding the exhaust gases so removed into a regenerator chamber of a glass melting furnace and then releasing them into the atmosphere.

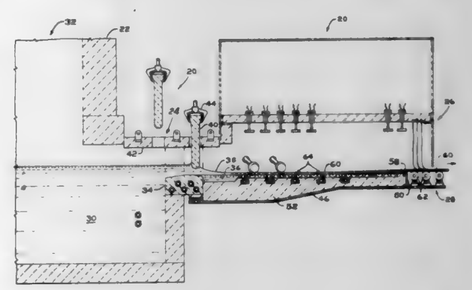
6. An apparatus for producing glass having a metal oxide coating, comprising means for spraying a heat-decomposable metal compound or its solution onto the surface of glass held at a high temperature, exhausting means for sucking and removing exhaust gases generated as a result of spraying, from the vicinity of the surface of the glass, and a conduit for conducting exhaust gases sucked and removed by the exhaust means into a regenerator chamber of a glass melting furnace.

3,925,051

REMOVABLE DAM BARRIER FOR A FLOAT CHAMBER OF A GLASSMAKING APPARATUS

Robert A. Lawhon, Carlisle, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 15, 1974, Ser. No. 514,975
Int. Cl.² C03B *18/02*
U.S. Cl. 65—65 A **18 Claims**



1. In a glassmaking apparatus for making a continuous glass sheet wherein the glassmaking apparatus is of the type comprising a glass melting furnace for melting glassmaking ingredients; a forming chamber having a bottom bounded by side members and end members for containing a pool of supporting molten metal; and delivery means connecting the glassmaking furnace and the forming chamber for delivering molten glass from the glassmaking furnace onto the pool of supporting molten metal, the improvement comprising:

a plurality of dam barrier sections;

means provided within the chamber at the bottom thereof adjacent a side member for vertically receiving individual ones of said plurality of dam barriers; and

recess means at the bottom of the forming chamber in communication with said receiving means, said recess means provided with means for restricting upward movement of said dam barrier sections.

14. A method of positioning a dam barrier in a forming chamber of a glassmaking apparatus, the forming chamber containing a pool of supporting molten metal wherein the dam barrier provides discrete compartments of molten metal in the forming chamber, comprising the steps of:

providing a plurality of dam barrier sections;

providing within the chamber at the bottom thereof adjacent a side member means for vertically receiving individual ones of the dam barrier sections;

providing recess means at the bottom of the forming chamber in communication with the receiving means to restrict upward movement of the dam barrier sections;

sequentially inserting individual ones of the plurality of dam barrier sections into the receiving means; and

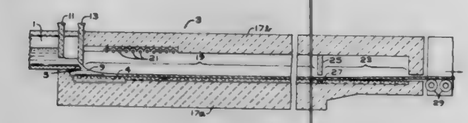
sequentially moving the dam barrier sections from the receiving means into the recess means to provide a dam barrier.

3,925,052

METHOD OF IMPROVING QUALITY OF FLAT GLASS FORMED ON MOLTEN TIN

Merritt J. Hummel, Lower Burrell, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 15, 1974, Ser. No. 514,981
Int. Cl.² C03B *18/02*
U.S. Cl. 65—65 A **14 Claims**



1. In a process of forming flat glass which comprises the steps of fusing a glass batch to form molten glass, delivering the molten glass to a pool of molten tin in a forming chamber, attenuating the molten glass along the surface of the tin while cooling to form a continuous sheet of flat glass having a desired, predetermined, final shape and thickness, advancing said sheet of glass along the pool of molten tin and eventually out of said forming chamber, said glass absorbing into its tin-contacting surface stannous tin which is capable of causing top surface distortion in the glass, the improvement comprising:

interfusing with said glass an oxidizing agent which is capable of oxidizing stannous tin to stannic tin in an environment of molten glass, said oxidizing agent being present in the glass in an amount sufficient to maintain said glass substantially free of top surface distortion but is present in an amount insufficient to impart heat-absorbing characteristics to the glass, said oxidizing agent being selected from the group consisting of the higher oxides of chromium, manganese, cerium, arsenic, and antimony.

3,925,053

SLOW ACTING FERTILIZER

Joseph P. Kealy, Winterhaven, Fla., assignor to Swift Chemical Company, Chicago, Ill.

Filed May 14, 1973, Ser. No. 360,099
Int. Cl.² C05B *15/00*
U.S. Cl. 71—29 **6 Claims**

1. A highly insoluble granular fertilizer that will simultaneously release all plant food sources slowly and uniformly over a long period of time, which fertilizer contains about ten percent to about 50 percent, by weight, of hydrated calcium sulfate and about 90 percent to about 50 percent of isobutylidene diurea, said calcium sulfate being hydrated and crystallized while in intimate contact with the said isobutylidene diurea so as to produce a homogeneously bound fertilizer having controlled rates of solubility.

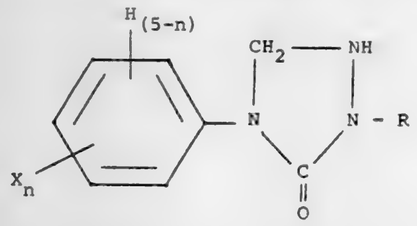
3,925,054

METHOD OF INCREASING THE YIELD OF PLANTS HAVING STORAGE ORGANS BY TREATMENT WITH TRIAZOLIDINONES

John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Dec. 19, 1974, Ser. No. 532,110
Int. Cl.² A01N *9/22*
U.S. Cl. 71—92 **7 Claims**

1. A method of increasing the yield of plant food contained in plant storage organs which comprises contacting the plants having storage organs with from about 0.05 to about 4.0 pounds per acre of a compound of the formula



wherein X is selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, halogen, lower haloalkyl and nitro; n is an integer from 1 to 3; and R is lower alkyl.

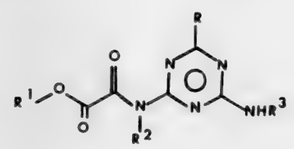
3,925,055

CERTAIN ALKYLOXALYL AMINO SUBSTITUTED S-TRIAZINES HERBICIDES

Alan A. MacDonald, Albany, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 347,296, April 2, 1973, Pat. No. 3,856,793. This application Aug. 23, 1974, Ser. No. 500,202
Int. Cl.² A01N *9/22*
U.S. Cl. 71—93 **6 Claims**

1. The method of controlling undesirable vegetation which comprises applying thereto an herbicidal amount of a compound having the formula



where R is chlorine, methylthio or ethylthio; R^1 is alkyl having 1 to 4 carbon atoms; R^2 is alkyl having 1 to 4 carbon atoms; and R^3 is alkyl having 1 to 4 carbon atoms.

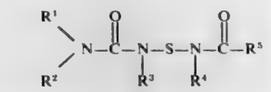
3,925,056

HERBICIDAL BIS-UREA AND UREA-CARBAMOYL SULFIDES

Melancthon S. Brown, deceased, late of Berkeley, Calif., and by Gustave K. Kohn, administrator, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 189,732, Oct. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 88,212, Nov. 9, 1970, Pat. No. 3,755,437, which is a continuation-in-part of Ser. No. 250,907, May 8, 1972, said Ser. No. 250,907, is a continuation-in-part of Ser. No. 189,732, Oct. 15, 1971. This application Mar. 14, 1974, Ser. No. 450,965
Int. Cl.² A01N *9/12*
U.S. Cl. 71—98 **14 Claims**

1. A method for controlling undesirable vegetation which comprises applying thereto an herbicidally effective amount of a compound of the formula



wherein R^1 is hydrogen or alkyl of 1 to 6 carbon atoms; R^2 is alkyl of 1 to 6 carbon atoms or phenyl substituted with up to 4 fluorine, chlorine, bromine, nitro, alkyl of 1 to 5 carbon atoms, alkoxy of 1 to 4 carbon atoms, or up to 1 trifluoromethyl or trichloromethyl; R^3 and R^4 individually are hydrogen, alkyl of 1 to 6 carbon atoms, or phenyl substituted with up to 4 fluorine, chlorine, bromine, nitro, alkyl of 1 to 5 carbon atoms, alkoxy of 1 to 4 carbon atoms, or up to 1 trifluoromethyl or trichloromethyl; and R^5 is $-NR^6R^7$ wherein R^6 is hydrogen or alkyl of 1 to 6 carbon atoms and R^7 is alkyl of 1 to 6 carbon atoms or phenyl substituted with up to 4 fluorine, chlorine, bromine, nitro, alkyl of 1 to 5 carbon atoms, alkoxy of 1 to 4 carbon atoms, or up to 1 trifluoromethyl or trichloromethyl.

3,925,057

PROCESS FOR RECYCLING CHLORINE GAS IN THE CHLORINATION TREATMENT OF IRON OXIDE ORES CONTAINING TITANIUM

Seitaro Fukushima, Saitama, and Kiyoshi Kawahara, Tokyo, both of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed July 11, 1974, Ser. No. 487,802
Claims priority, application Japan, July 12, 1973, 48-78757
Int. Cl.² C22B *1/00*
U.S. Cl. 75—1 T **13 Claims**

1. A process for cycling chlorine gas in the selective chlorination treatment of an iron oxide ore containing titanium for the purpose of obtaining an ore enriched with titanium dioxide which comprises converting chlorine gas introduced into the chlorination treatment process of the iron oxide ore containing titanium to ferric chloride by reaction with the iron oxide contained in the ore in the chlorination process, reconverting said ferric chloride to free chlorine gas by reaction with oxygen in an oxidation process, subjecting the total quantity of the exit gases containing said free chlorine gas from the oxidation process to dust-removing and drying operations, isolating chlorine from said exit gases in a final process, and returning the isolated chlorine to the chlorination process.

3,925,058

METHOD OF RECYCLING SILICON DIOXIDE

Einar Onarheim, Vagsbygd, Norway, assignor to Elkem-Spigerverket A/S, Oslo, Norway

Continuation-in-part of Ser. No. 301,350, Oct. 27, 1972. This application Aug. 12, 1974, Ser. No. 496,404
Claims priority, application Norway, Nov. 8, 1971, 4108/71
Int. Cl.² C22B *1/00, 1/08, 7/02*; C01B *33/12*
U.S. Cl. 75—1 **4 Claims**

1. The method of recycling silicon dioxide dust to smelting furnaces comprising:

a. recovering silicon dioxide-containing flue dusts from smelting furnaces producing materials rich in silicon;

b. pelletizing said recovered flue dust by admixing it with water in sufficient amount to form cohering pellets of a minimum diameter of at least about 1 cm consisting essentially of said recovered flue dust and water;

c. immediately thereafter and without a previous drying step subjecting the pellets to sintering temperatures of from about 800° to about 1200°C. to form a mechanically strong pellet having a compression strength of at least about 40 kgs.; and

d. introducing the thus formed pellets into a smelting furnace.

3,925,059

FOUNDRY PROCESSES AND METALLURGICAL ADDITION AGENTS THEREFOR

Paul Isidore Fontaine, Solihull, England, and Louis Favillier, Brussels, Belgium, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Sept. 3, 1974, Ser. No. 502,625
Claims priority, application United Kingdom, Sept. 7, 1973, 42221/73
Int. Cl.² C22B *4/00*; C21C *7/00*; C22B *9/12*; B23P *3/00*
U.S. Cl. 75—10 R **17 Claims**

1. A metal melting process wherein a metallurgical addition agent is added to the melt, in the form of aluminium-containing particles having on the particles coatings comprising at least one of the metals selected from the group consisting of nickel, cobalt and iron, said coatings encapsulating said particles sufficiently to prevent reaction of the aluminium-containing particles with air prior to addition of the agent to the melt.

3,925,060

COMPACT CONTAINING IRON OXIDE AND CARBON AND METHOD FOR ITS USE IN STEELMAKING

Ray A. Bloom and Herbert L. Phillips, both of N. Canton, Ohio, assignors to The Timken Company, Canton, Ohio

Filed Sept. 23, 1974, Ser. No. 508,170
Int. Cl.² C21C *5/52*; C22B *1/08*
U.S. Cl. 75—11 **5 Claims**

1. A method for melting steel in an electric arc furnace which comprises charging into said furnace scrap having dispersed therein compacts comprising a mixture of essentially entirely unreduced iron oxide, carbon and an air-drying binder, and causing an electrical current to flow between electrodes disposed within the furnace so as to form a molten pool of metal at the bottom of said furnace, the surface level of said pool rising as the scrap melts with the heat from said pool and the electrodes causing said carbon to react with the iron oxide to reduce the same to iron before the surface of the molten pool reaches a compact and melts the same.

3,925,061
STEEL MANUFACTURE

Lars Erik Carlsson, Borlange; Nils Fredrik Grevillius, and Lars Ivar Hellner, both of Karlskoga, all of Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation-in-part of Ser. No. 305,681, Nov. 13, 1972, abandoned, which is a continuation of Ser. No. 54,480, July 13, 1970, abandoned. This application Feb. 20, 1973, Ser. No. 333,476

Claims priority, application Sweden, July 15, 1969, 9974/69

Int. Cl.² C21C *7/02, 7/06, 7/10*

U.S. Cl. 75—58 **3 Claims**

1. Method of desulphurizing deoxidized melts of steel in charges over 1 ton in a container, which container is provided with a lining which substantially prevents oxygen from leaking in from the lining, and which includes a basic slag line liner at the slag line which comprises adding to the molten steel at least one basic slag-former in the container in order to obtain a high basic molten slag, adding aluminum to the melt and adding misch metal directly into the melt as a desulphurizing agent without substantial contact with the slag and principally at a point of downward movement in the stirring pattern.

3,925,062
PROCESS FOR TREATMENT OF ORES

Jean-Christian Trombe, and Gerard Montel, both of Toulouse, France, assignors to Etablissement Public: Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France

Filed Aug. 2, 1972, Ser. No. 277,206

Claims priority, application France, Aug. 6, 1971, 71.28914

Int. Cl. C22b *61/04, 61/00, 59/00*

U.S. Cl. 75—84 **13 Claims**

1. The process for the treatment of an ore containing at least one of a rare earth element, yttrium and uranium to free said ore thereof and to concentrate said rare earth element, yttrium and uranium, which comprises heating said ore in powder form in an atmosphere consisting essentially of a gaseous halide or oxyhalide of a member of Group V or VI of the Periodic Table other than a fluoride or oxylfluoride of such member, removing effluent gas containing at least one of said rare earth element, yttrium and uranium while leaving the structure of said ore intact, and recovering said rare earth element, yttrium and uranium from said effluent gas by condensation.

3,925,063
ELECTROMAGNETIC STAINLESS STEEL HAVING EXCELLENT MACHINABILITY

Tetsuo Kato, and Isao Sekio, both of Nagoya, Japan, assignors to Daido Seiko Kabushiki Kaisha, Nagoya, Japan

Filed Sept. 18, 1972, Ser. No. 289,883

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C22C *38/22*

U.S. Cl. 75—124 **4 Claims**

1. An electromagnetic stainless steel having improved machinability consisting essentially of up to 0.05% carbon, 11 to 20 percent chromium, silicon as a magnetic property improving alloy element in an amount up to 6 percent, aluminium as a magnetic property improving alloy element in an amount up to 5 percent, at least one machinability improving alloy element selected from the group consisting of 0.03 to 0.40 percent lead, 0.001 to 0.009 percent calcium and 0.01 to 0.30 percent tellurium, and the balance iron.

3,925,064
HIGH CORROSION FATIGUE STRENGTH STAINLESS STEEL

Akira Takamura, Akashi; Kazutoshi Shimogori; Toshiaki Yamagata, both of Kobe; Masao Sato, Osaka, and Koziro Kitanata, Akashi, all of Japan, assignors to Kobe Steel Ltd., Kobe, Japan

Filed May 31, 1973, Ser. No. 365,714

Int. Cl.² C22C *38/44, 38/48, 38/58*

U.S. Cl. 75—128 A **1 Claim**

1. A high corrosion fatigue strength stainless steel which consists essentially of less than 0.05 wt% carbon, less than 0.03 wt% nitrogen, from 0.1 to 2 wt% silicon, from 0.1 to 4 wt% manganese, from 12 to 14 wt% chromium, from 4 to 6 wt% nickel, from 0.1 to 3 wt% molybdenum and a total of from 0.01 to 1 wt% of at least one element selected from the group consisting of titanium, niobium and tantalum with the balance being essentially iron such that said steel has from 10 – 45% retained austenite.

3,925,065
VALVE SEAT MATERIALS FOR INTERNAL COMBUSTION ENGINES

Makoto Osawa, Tokyo; Yoshitoshi Hagiwara, Niiza; Kunio Kusaka, Yokohama; Takao Kawakita, Itami; Kenya Motoyoshi, Itami, and Nobuhito Kuroishi, Itami, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Sumitomo Electric Industries, Ltd., Osaka, both of, Japan

Filed June 22, 1973, Ser. No. 372,612

Int. Cl.² C22C *38/30, 38/38, 38/60, 38/44*

U.S. Cl. 75—128 R **9 Claims**

1. A valve seat material for internal combustion engines, which consists essentially of at least one lubricating material selected from the group consisting of 0.2–10% lead and 0.5–8% glass in a phosphorus- containing precipitation hardened austenitic matrix which is strengthened by the addition of cobalt, said austenitic matrix consisting of 10–35% chromium, 8–45% nickel, 0.1–6.0% molybdenum, 0.2–2.5% carbon, 0.05–0.7% phosphorus, 0.1–20% cobalt and the balance iron except for impurities associated usually with these elements.

3,925,066
GOLD/SILVER ALLOYS

Edward Louis Kohrn, 9 Sunset Drive, Cape Arthur, Severna Park, Md. 21146, and Seymour Globus, 268 Wakely Terrace, Bel Air, Md. 21014

Filed June 19, 1974, Ser. No. 480,890

Int. Cl.² C22C *5/06*

U.S. Cl. 75—134 C **5 Claims**

1. A metal alloy consisting essentially of about 25 to 30 percent, by weight, gold, about 45 to 57 percent, by weight, silver, about 18 to 25 percent, by weight, of copper and 0 to about 5 percent by weight zinc.

3,925,067
HIGH STRENGTH ALUMINUM BASE CASTING ALLOYS POSSESSING IMPROVED MACHINABILITY

Philip R. Sperry, North Haven; Derek E. Tyler, Cheshire, and Leon Butzky, North Haven, all of Conn., assignors to Swiss Aluminium Limited, Chippis, Switzerland

Filed Nov. 4, 1974, Ser. No. 520,412

Int. Cl.² C22C *21/16*

U.S. Cl. 75—142 **8 Claims**

1. An aluminum base casting alloy possessing improved machinability consisting essentially of from about 3.5 to about 6.0% copper, from about 0.5 to 3.0% silver, up to about 1% manganese, from about 0.15 to about 0.90% magnesium, up to about 0.20% silicon, up to about 0.20% iron, from about 0.4 to about 0.7% bismuth, from about 0.4 to about 0.7% lead and the remainder aluminum.

3,925,068
PREPARATION OF ALLOYS

Ronald A. Guidotti, Reno, Nev., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Sept. 5, 1974, Ser. No. 503,536

Int. Cl.² C22C *27/02;* **C22B** *34/22, 34/24*

U.S. Cl. 75—174 **1 Claim**

1. A process for preparation of an alloy useful as a steel additive comprising (1) admixing a nitride of tantalum, niobium or vanadium with an alloying metal consisting of nickel, cobalt or iron, the particle size of the nitride and the alloying metal being reduced to about −50 to −300 mesh prior to admixing, with the ratio of the alloying metal to the nitride ranging from about 0.3 to 3.0, (2) compacting the admixture at a pressure of about 25,000 to 45,000 psi and (3) heating the resulting compact under a vacuum of about 1000 to 10μ Hg at a temperature of about 1200° to 1800°C, but above the liquidus temperature of the desired alloy, for a period of about 2 to 12 hours.

3,925,069
PROCESS FOR PRODUCING PELLETS WITH CEMENT

Shunsaku Shimada, and Tadahiro Inazumi, both of Tokai, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 30, 1973, Ser. No. 420,568

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C21B *1/24;* **C04B** *7/22*

U.S. Cl. 75—3 **2 Claims**

1. A process for producing pellets, which comprises blending **98** to **60%** by weight of iron ores and **2** to **40%** by weight of a mixture comprising **95** to **15%** by weight of cement and **5** to **85%** by weight of iron containing powders smaller than **100** meshes with addition of **9** to **20%** by weight of water on the basis of the mixture.

3,925,070
BRAZING ALLOY

Arthur T. Cape, Monterey, Calif., assignor to Coast Metals, Inc., Little Ferry, N.J.

Filed Apr. 24, 1974, Ser. No. 463,451

Int. Cl.² C22C *9/05*

U.S. Cl. 75—159 **2 Claims**

1. A brazing alloy of relatively high tensile shear strength at elevated temperatures, said alloy consisting of from about 30% to about 70% copper, from about 0% to about 18% cobalt, from about 3% to about 20% nickel, and from about 1% to about 3% gold, with the remainder essentially all manganese, but not less than about 20% manganese.

3,925,071
HEAT RESISTANT ALLOYS

Subrata Ghosh, Southfield, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed May 20, 1968, Ser. No. 730,226

Int. Cl. C22c *19/00*

U.S. Cl. 75—170 **1 Claim**

1. A temperature resistant metallic alloy consisting essentially of about 65.0 to 85.5 weight per cent nickel and about 7 to 17 weight per cent aluminum which combines to form an alloy composition, said alloy composition having a matrix which is a stable solid solution when at a temperature less than about half of the absolute melting point of said alloy, said matrix when at a temperature above about half and within two-thirds of the absolute melting point of said alloy changing from said solid solution to a supersaturated solid solution such that said matrix due to said supersaturation above said temperature of about half of said absolute melting point forms at least one additional solid state phase in precipitate form to provide strengthening of the alloy matrix above said temperature of about half of said absolute melting point, said alloy including a stable aluminum oxide dispersion phase which will remain upon cooling, said dispersion phase being formed by reacting gaseous oxygen with said additional solid state phase.

3,925,072
NICKEL-CHROMIUM ALLOYS AND CASTING THEREOF

Stuart Walter Ker Shaw, Sutton Coldfield, England, assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Apr. 12, 1974, Ser. No. 460,460

Claims priority, application United Kingdom, Apr. 13, 1973, 17951/73

Int. Cl.² C22C *19/05*

U.S. Cl. 75—171 **7 Claims**

1. A cast alloy consisting essentially of, by weight, from 26 to 35% chromium, from 10 to 25% cobalt, from 0.1 to 0.6% niobium, from 0.3 to 1.5% tungsten, from 1 to 3% tantalum, from 2.5 to 5% titanium, from 1 to 2.5% aluminum, both titanium and aluminum in a total amount from 4.3 to 5.75% with the provisos that the ratio of titanium to aluminum is from 1.4:1 to 4:1 by weight and that the sum

$$5[\%Nb + \tfrac{1}{2}(\%Ta)] + 6(\%Ti + \%Al) + \tfrac{3}{5}(\%Cr)$$

is from 54.5 to 61.3, from 0.05 to 0.15% carbon, from 0.02 to 0.5% zirconium, from 0.002 to 0.05% boron, from 0 to 2% hafnium, and from 0 to 0.2% in total of yttrium and/or lanthanum, the balance, apart from impurities, being nickel.

3,925,073
GOLD/SILVER ALLOYS

Edward Louis Kohrn, 9 Sunset Drive, Cape Arthur, Severna Park, Md. 21146, and Seymour Globus, 268 Wakely Terrace, Bel Air, Md. 21014

Continuation-in-part of Ser. No. 480,890, June 19, 1974. This application Nov. 26, 1974, Ser. No. 527,189

Int. Cl.² C22C *5/06*

U.S. Cl. 75—173 C **4 Claims**

1. A metal alloy consisting essentially of about 25 to 30 percent by weight gold, about 57 to 71 percent by weight silver, about 3 to 10 percent by weight copper and about 0 to 5 weight percent zinc.

3,925,074
ELECTROPHOTOGRAPHIC ELEMENTS CONTAINING DIELECTRIC RESINS AS BINDERS

John R. Wyhof, Newark, Del., assignor to ICI United States Inc., Wilmington, Del.

Division of Ser. No. 362,540, May 21, 1974, Pat. No. 3,865,789. This application Oct. 10, 1974, Ser. No. 513,889

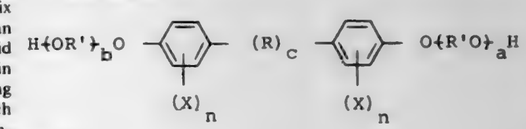
Int. Cl.² G03G *5/04, 5/08*

U.S. Cl. 96—1.8 **11 Claims**

1. An electrophotographic recording element comprising a base support having coated thereon a layer comprising a photoconductive material and a dielectric resin said resin comprising the reaction product of

a. a dicarboxylic acid or an anhydride thereof, provided that at least 80 mol percent of said acid or anhydride is an alpha unsaturated dicarboxylic acid, an anhydride thereof, an aromatic dicarboxylic acid or an anhydride thereof, and

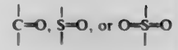
b. a polyol blend comprising a first polyol having the following formula:



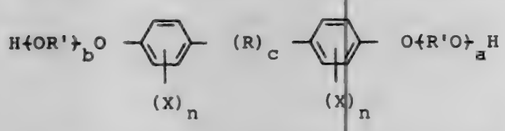
wherein

R is an alkylidene group containing from 1 to 4 carbon atoms, a cycloalkylidene group containing 5 or 6 carbon atoms, oxygen, sulfur, or a radical having one of the

following formulas:



c is 0 or 1;
X is halogen or an alkyl radical containing from 1 to 3 carbon atoms;
n is an integer equal to from 0 to 4;
R′ is an alkylene group containing from 2 to 4 carbon atoms or the radical $CH_2CH\phi$; and
a and *b* are integers each of which is equal to at least 1 and the sum of which is equal to about 2, provided that the sum must be equal to at least 2.0
and a second polyol having the following general formula:



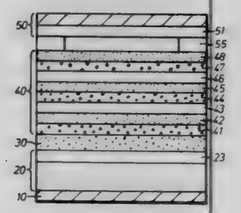
wherein R, c, X, R′, and n are as defined above and *a* and *b* are integers each of which is equal to at least 1 and the sum of which is equal to from about 4 to about 16,
wherein the amount of acid or anhydride employed is sufficient to introduce from about 0.8 to about 1.2 carboxyl groups per hydroxyl group in the polyol blend.

3,925,075

PHOTOGRAPHIC DYE DIFFUSION TRANSFER PROCESS USING SILVER SALT TRANSFER FOR REVERSAL

Kaspar Wingender, Leverkusen, and Hans Vetter, Cologne, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed May 28, 1974, Ser. No. 473,790
Claims priority, application Germany, June 1, 1973, 2327963
Int. Cl.² G03C *7/00, 5/54, 1/40*
U.S. Cl. 96—3 **7 Claims**



1. A photographic dye diffusion transfer process for the production of positive coloured transfer images, comprising the steps of
a. producing a negative silver image by development in a light-sensitive silver halide emulsion layer which has been exposed imagewise,
b. transferring by means of a silver halide solvent the silver halide that remains undeveloped into an associated layer which contains development nuclei and a non-diffusible dye-giving compound
c. developing the transferred silver halide at the development nuclei to form a positive silver image and simultaneously an image distribution of developer oxidation products
d. causing a condensation reaction between the developer oxidation products produced in this associated layer and the non-diffusible dye-giving compound to release a diffusible dye therefrom, and
e. transferring the diffusible dye to an image receptor layer to form a dye image therein, wherein the improvement comprises
i. the light-sensitive silver halide emulsion layer contains a nondiffusible silver halide developer compound which is incapable of an oxidative condensation reaction with the non-diffusible dye-giving compound,
ii. the associated binder layer which contains development nuclei and the dye-giving compound contains a non-diffusible developer compound which in its oxidized form is capable of undergoing a condensation reaction in the associated layer with the dye-giving compound to release the diffusible preformed dye thereform, and
iii. the development is carried out in the presence of catalytic quantities of a diffusible auxiliary developer.

3,925,076

LIGHT SENSITIVE COMPOSITIONS AND PRODUCTS

Robert A. Heimsch, St. Louis, and Eric T. Reaville, Webster Groves, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 115,727, Feb. 16, 1971, Pat. No. 3,790,389, which is a continuation-in-part of Ser. No. 644,121, June 7, 1967, abandoned. This application Nov. 14, 1973, Ser. No. 415,845
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G03C *5/00, 1/68;* **B41M** *1/12*
U.S. Cl. 96—35.1 **8 Claims**

1. The process of passing a fluid through a layer in imagewise manner which comprises providing a layer having a latent image comprised of a polymer having aliphatic carbon-to-carbon double bonds and having oxidized portions having chemically bonded oxygen, and non-oxidized portions and applying a fluid to a surface of the layer which fluid selectively penetrates through one of such portions and permitting such fluid to penetrate through such layer selectively.

6. A method of obtaining images which comprises exposing imagewise to light in the presence of oxygen a layer comprising a photosensitizer and a photochemically oxidizable polymer having aliphatic carbon-to-carbon unsaturation, causing addition of oxygen to said polymer forming chemical bonds therewith in exposed areas while otherwise substantially retaining the structure of such polymer, thereby forming a latent image in said layer, and applying a fluid to the surface of the layer which fluid selectively penetrates imagewise through said layer to produce an image.

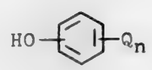
3,925,077

PHOTORESIST FOR HOLOGRAPHY AND LASER RECORDING WITH BLEACHOUT DYES

James M. Lewis, Aurora, and Raymond W. Newyear, Willoughby, both of Ohio, assignors to Horizons Incorporated, Cleveland, Ohio

Filed Mar. 1, 1974, Ser. No. 447,267
Int. Cl.² G03C *5/00, 5/04, 5/24, 1/68*
U.S. Cl. 96—35.1 **14 Claims**

1. A process for producing a relief image which comprises:
1. preparing a photoresist composition comprising:
at least one N-vinyl monomer;
at least one organic iodine containing compound selected from the group consisting of alkyl iodides, aryl sulfenyl iodides, aryl sulfonyl iodides, α-αdiiodotoluene and α-α-αtriiodotoleune;
a phenol represented by the formula



where *n* is an integer from 1 to 5 and each Q is selected from the group consisting of hydroxyl, amino, alkyl and allyl;
and at least one bleachout component selected from the group consisting of: (a) substituted anthraquinones, (b) binuclear merocyanines, (c) complex merocyanines, (d) cyanines, and (e) 9-phenyl-fluoren-9-ols;
each of the above constituents being dispersed or dissolved in a resin binder;
and in which the relative amount of said bleachout component is in the range of 2 to 10% by weight of the amount of N-vinyl monomer;
2. depositing a thin film of said composition on a suitable substrate;
3. printing on said thin film by means of a laser beam;
4. then heating said film whereby a relief image is obtained by totally dry means; and
5. then blanket exposing the film to suitable radiation to bleachout any color present in said film.

3,925,078

HIGH FREQUENCY DIODE AND METHOD OF MANUFACTURE

Harry Kroger, Sudbury, and Curtis N. Potier, Holliston, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Division of Ser. No. 223,616, Feb. 4, 1972, Pat. No. 3,816,194. This application Nov. 26, 1973, Ser. No. 419,185
Int. Cl.² G03C *5/00;* **B29C** *17/08*
U.S. Cl. 96—36.2 **2 Claims**

1. A method of manufacture affording protection of a first portion of a silicon semiconductor diode body while etching a second portion of said semiconductor body, said first portion projecting from said second portion, comprising the steps of: coating said first and second portions with a continuous temporary chromium layer,
coating said continuous temporary chromium layer with a continuous temporary gold layer,
coating said continuous temporary gold layer overlying said first portion with a fluid photoresist layer,
photographically exposing said fluid photoresist layer and generating a temporary etch-resistant mask,
removing by etching said continuous temporary gold and chromium layers overlying said second portion,
etching said second portion to a predetermined depth,
removing said temporary etch-resistant mask from said first portion, and
removing by etching the remainder of said continuous temporary metal gold and chromium layers from said first portion.

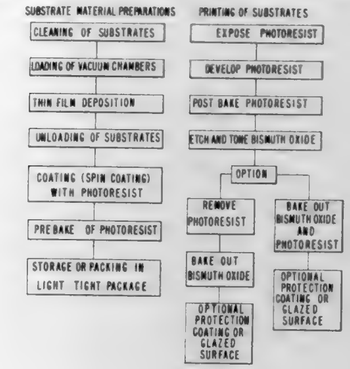
3,925,079

DECORATIVE ARTICLE AND METHOD OF MAKING SAME

Richard W. F. Hager, and Frans C. L. Hager, both of 1464 Wessex Ave., Los Altos, Calif. 94022

Filed June 16, 1972, Ser. No. 263,684
Int. Cl.² G03C *5/00*
U.S. Cl. 96—38.1 **7 Claims**

1. A method of making a decorative article comprising
evaporating a layer of image forming material of an oxide of bismuth for a resulting layer of bismuth trioxide of gray-black cubic crystalline form on a substrate,
coating the layered substrate with a photo sensitive material,
exposing the photo sensitive material with a picture,
developing the picture exposed photo sensitive material and etching away the undesired bismuth trioxide of gray-black cubic crystalline form defined by the picture



thereby leaving the image forming bismuth trioxide of gray-black cubic crystalline form on the substate.

3,925,080

MULTI-LAYERED PHOTOSENSITIVE MATERIAL HAVING GLASS SUBSTRATE AND METHOD OF MANUFACTURE

Lambertus Postma, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 24, 1973, Ser. No. 326,514
Claims priority, application Netherlands, Feb. 2, 1972, 7201333
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G03C *1/80, 1/76*
U.S. Cl. 96—67 **2 Claims**

1. A method of manufacturing a photosensitive material comprising applying to a glass substrate a layer of less than 1 μm of a metal compound capable of pyrolysis to a transparent insoluble metal oxide, heating the resultant moistened glass substrate to a temperature of from about 180°C to 220°C to thereby form an insoluble transparent layer of metal oxide on said glass substrate, applying a layer of a cellulose ester to said layer of metal oxide, saponifying said layer of cellulose oxide to a depth of from 1 to 10 μ and then impregnating the resultant saponified layer with a solution of a photosensitive compound.

2. A photosensitive material produced by the method of claim 1.

3,925,081

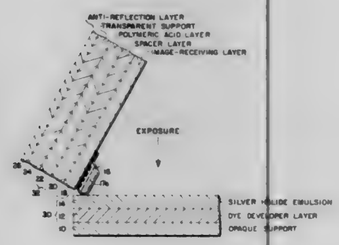
PHOTOGRAPHIC PRODUCTS CONTAINING ANTI-REFLECTION LAYER

Charles K. Chiklis, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1973, Ser. No. 354,008
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G03C *1/76, 3/00, 1/40, 1/84*
U.S. Cl. 96—72 **53 Claims**

1. A photographic product for use in diffusion transfer processes comprising a transparent polyester support carrying on one side thereof an image-receiving layer, the other side of said transparent polyester support carrying an anti-reflection coating, said anti-reflection coating having an index of refraction less than said polyester support and comprising a quarter-wave stratum of a fluorinated polymer and an isocyanate in said stratum or between said stratum and said transparent polyester support, said isocyanate being present in a quantity effective to increase the abrasion resistance of said fluorinated polymer stratum.

23. A photographic film product comprising a first support and a second support, at least one of said supports being a transparent polyester support, a photosensitive layer carried on one of said supports, and a rupturable container releasably holding a processing composition adapted, when distributed between predetermined layers carried by said supports, to develop said photosensitive layer and provide an image viewable through said transparent polyester support, the external



surface of said transparent polyester support carrying an anti-reflection coating, said anti-reflection coating having an index of refraction less than said polyester support and comprising a quarter-wave stratum of a fluorinated polymer and an isocyanate in said stratum or between said stratum and said transparent polyester support, said isocyanate being present in a quantity effective to increase the abrasion resistance of said fluorinated polymer stratum.

3,925,082

MULTICOLOR SCREEN ELEMENT CONTAINING A HYDROPHILIC COLLOID TREATED WITH A BASIC DYE AND ZIRCONIUM ACETATE

Herbert L. Fielding, Wilmington, and Samuel H. Liggero, Wellesley, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 29, 1972, Ser. No. 319,226

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² G03C *1/84*; **G03F** *5/00*

U.S. Cl. 96—76 R **6 Claims**

1. A photographic multicolor screen element which comprises, in combination, a geometrically repetitive plurality of chromatic filter element series; at least one of said chromatic filter element series comprising filter elements comprising a hydrophilic colloid dyed with an aqueous solution of a basic dye and zirconium acetate.

3,925,083

SYNTHETIC SILVER HALIDE EMULSION BINDER

Maurice J. Fitzgerald, Canton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

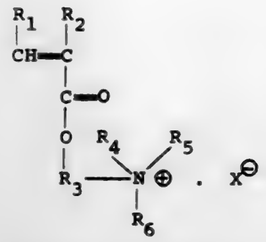
Filed Jan. 2, 1973, Ser. No. 320,452

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² G03C *1/02*, *1/72*

U.S. Cl. 96—114 **29 Claims**

1. A photosensitive silver halide emulsion wherein the emulsion binder consists essentially of a water-soluble film-forming copolymer of a first monomer of the formula:



wherein R_1 is hydrogen, a lower alkyl group or a halogen; R_2 is hydrogen, a lower alkyl group, halogen or cyano group; R_3 is a lower alkylene or lower cycloalkylene group and R_4, R_5 and R_6 each is a lower alkyl, or lower cycloalkyl group; or R_3 and/or R_4 and/or R_5 and/or R_6 taken together represent the atoms necessary to complete a 3 to 8-membered heterocyclic ring structure; and X is a salt-forming anion; and

a second monomer which is an acrylamide.

3. The product as defined in claim **1** wherein said silver halide emulsion is a silver iodobromide emulsion.

3,925,084

FOGGED, DIRECT-POSITIVE SILVER HALIDE EMULSION CONTAINING A CYANINE DYE HAVING A PYRAZOLO[1,5-a]BENZIMIDAZOLE NUCLEUS

Akira Sato; Keisuke Shiba, and Masanao Hinata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 16, 1973, Ser. No. 351,386

Claims priority, application Japan, Apr. 14, 1972, 47-37445

Int. Cl.² G03C *1/36*, *1/28*

U.S. Cl. 96—101 **29 Claims**

1. A fogged direct positive silver halide emulsion containing at least one cyanine dye comprising a pyrazolo[1,5-a]benzimidazole nucleus and a cyanine heterocyclic nucleus, which nuclei may be substituted with substituents as are commonly used in the cyanine dye art, in which the carbon atom at the 3-position of the pyrazolo[1,5-a]benzimidazole nucleus is joined to the 2-position or 4-position of the cyanine heterocyclic nucleus, by a methine chain, the carbon atom being joined to the 4-position, however, only when the cyanine heterocyclic nucleus is a quinoline nucleus or a pyridine nucleus, said cyanine dye being present in a concentration effective to provide high sensitivity, maximum image density and providing substantially no color stains.

3,925,085

DIRECT POSITIVE SILVER HALIDE EMULSION

Akira Sato; Akira Ogawa; Keisuke Shiba, and Masanao Hinato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Dec. 19, 1973, Ser. No. 426,145

Claims priority, application Japan, Dec. 19, 1972, 47-127574

Int. Cl.² G03C *1/28*, *1/16*

U.S. Cl. 96—101 **14 Claims**

1. A direct positive prefogged silver halide emulsion containing at least one dimethinecyanine dye wherein the 3-position of a pyrrolo [2,3b] pyridine nucleus is bonded through a dimethine chain to the 1-, 2-, 3- or 4-position of a cyanine hetero ring nucleus, provided that where the bonding is in the 4-position said cyanine nucleus is a quinoline nucleus or a pyridine nucleus and where the bonding is in the 1- or 3-position said cyanine nucleus is an isoquinoline nucleus, said dimethincyanine dye being present in an amount sufficient to sensitize said emulsion.

3,925,086

AZOTRIAZOLE AND AZOTETRAZOLE ANTIFOG, ANTISTAIN AND SELECTIVE DESENSITIZERS FOR SILVER HALIDE EMULSIONS

Agostino Baldassarri, Savona, and Luigi Cellone, Albissola Marina-Savona, both of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 15, 1972, Ser. No. 235,011

Claims priority, application Italy, Mar. 16, 1971, 49093/71

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² G03C *1/34*

U.S. Cl. 96—109 **12 Claims**

1. A silver halide photographic emulsion having contacted therewith at least a fog-inhibiting amount of an azotriazole or an azotetrazole.

3,925,087

CORROSION INHIBITION OR PREVENTION WITH INORGANIC-ORGANIC COMPLEXES

Thomas G. Lechner, Lake Elmo, and Michael E. Besse, Eagan, both of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed Apr. 4, 1974, Ser. No. 457,708

Int. Cl.² C08L *91/00*; **C09D** *3/26*, *5/08*

U.S. Cl. 106—14 **16 Claims**

1. A corosion-inhibiting composition comprising:

a. about 10 to about 30% by weight of a rust-inhibitive, grease-like concentrate comprising a thixotropic inorganic/organic complex stably dispersed in an essentially inert liquid oily phase in an amount not to exceed 4 parts, per part of said complex, of said essentially inert liquid oily phase, said inorganic-organic complex comprising an over-based alkaline earth organic sulfonate salt, whereby the crystalline structure of the inorganic portion of said complex is platelet and film-forming in character;

b. about 2 to about 10% by weight of a drying oil; said drying oil being miscible in a diluent oil selected from the group consisting of aliphatic hydrocarbon diluents, cycloaliphatic hydrocarbon diluents, aromatic hydrocarbon diluents, and mixtures thereof boiling at temperatures above 150°C.; and

c. from at least 60% by weight to essentially the balance of said composition being a diluent oil selected from the group consisting of aliphatic hydrocarbon diluents, cycloaliphatic hydrocarbon diluents, aromatic hydrocarbon diluents, and mixtures thereof boiling at temperatures above 150°C.

3,925,088

THERMALLY SENSITIVE INK

Joseph T. Leonard, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 20, 1973, Ser. No. 381,119

Int. Cl.² C09D *11/02*, *11/16*

U.S. Cl. 106—20 **4 Claims**

1. In a method of printing information with a carbon-based printing composition so that said information is capable of being totally destroyed by burning, the improvement which comprises:

adding an oxidizer to said carbon-based printing composition prior to printing, said oxidizer being selected from the group consisting of sodium nitrate, sodium chlorate, potassium nitrate, magnesium nitrate and ammonium nitrate and said oxidizer being present in an amount at least equal to about the stoichiometric quantity required to oxidize the carbon present in said carbon-based printing composition to carbon dioxide.

3,925,089

METHOD OF MANUFACTURING A MIXTURE FOR TV GLASSES

Mathijs Maria Hendrikus Houben, Eindohoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 24, 1973, Ser. No. 400,402

Claims priority, application Netherlands, Oct. 5, 1972, 7213465

Int. Cl.² C03C *3/04*

U.S. Cl. 106—53 **1 Claim**

1. A method of manufacturing a glass mixture intended for the manufacture of glasses for the screen of the cone of a cathode-ray tube for television image display, comprising the steps of:

providing a mixture having the composition within the range limited as follows in % by weight:

SiO_2	50–75		$CaO+MgO<5$
Al_2O_3	0.5–6		$R_2O>13$ ($Li_2O+Na_2O+K_2O$)
PbO	0–15		$B_2O_3<1$
BaO	0–15	Combined>8	
ZrO	0–8		
SrO	0–12		

consisting of a pulverulent mixture of feldspar, quartz sand and other glass-forming components, wherein said feldspar has a specific surface larger than 1 sq. m/g and said quartz sand has a specific surface smaller than 0.1 sq. m/g and

producing a glass melt from said mixture substantially free from bubbles and having enhanced dissolution of crystalline constituents.

3,925,090

CELLULAR CEMENT COMPOSITION

James L. Head, P.O. Box 7431, Metairie, La. 70002

Filed Mar. 28, 1974, Ser. No. 455,716

Int. Cl.² C04B *7/35*

U.S. Cl. 106—87 **8 Claims**

1. A method for making cellular cement which comprises vigorously mixing for about two minutes from about 22% to about 26% by weight of water and from about 65% to about 70% by weight of Portland cement, adding from about 5% to about 10% by weight of a styrenated chlorinated polyester precursor mix and mixing vigorously for about five minutes, adding from about 0.04% to about 0.07% by weight of fine aluminum flakes and mixing vigorously for about 30 seconds, and adding from about 0.10% to about 0.15% by weight of an alkali and mixing vigorously to incipient gelation and pouring the product into a form and allowing said product to set.

3,925,091

METHOD AND AN APPARATUS FOR BURNING THE MATERIAL FOR THE MANUFACTURE OF CEMENT

Eiji Yoshida, Yashiro, and Yoshimasa Hayashi, Saitama, both of Japan, assignors to Nihon Cement Company Limited, Tokyo, Japan

Filed Mar. 28, 1975, Ser. No. 455,551

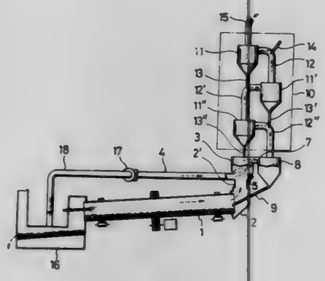
Claims priority, application Japan, Apr. 11, 1973, 48-41034

Int. Cl.² C04B *7/36*; **F26B** *17/00*; **F27B** *15/12*, *7/02*

U.S. Cl. 106—100 **11 Claims**

1. In a method of burning cement material using a rotary kiln with the attachment of a suspension preheater equipped with a material burning furnace, said method comprising forming a constriction in the charging-end duct of a rotary kiln, connecting a riser duct formed of a straightly cylindrical upper body portion and a coni-cylindrical lower portion direct onto said constriction at the coni-cylindrical lower portion, said riser duct being provided with a secondary-air intake duct for utilizing air extracted from a clinker cooler and installing in the riser duct a combustion means so positioned as to inject fuel toward the center of the duct, disposing a calcining zone thus set up by said combustion means between the suspension preheater and the kiln, introducing the material preheated by

the suspension preheater into the upper end of the calcining zone, while, at the same time, supplying secondary air for combustion of the fuel into the riser-duct in a tangential direction so as to form a swirling flow therein, flowing the exhaust gases from said kiln through the constriction to supply an



ascending stream to the calcining zone, burning the material with the ascending and swirling stream of the resulting combustion gas, separating the calcined material from said exhaust gas of the riser duct in a separator provided through the outlet of exhaust gas in the upper part of the riser duct, and finally charging the material thus treated to the rotary kiln.

3,925,092

JOINT RAMMING CEMENT

Herbert K. Reamey, and Jerry F. Newman, both of Hot Springs, Ark., assignors to Reynolds Metals Company, Richmond, Va.

Division of Ser. No. 411,537, Oct. 31, 1973, Pat. No. 3,871,986. This application Aug. 5, 1974, Ser. No. 494,770

Int. Cl.² C08L *95/00*

U.S. Cl. 106—281 R **4 Claims**

1. A ramming cement adapted for joining carbon bodies, consisting essentially of a mixture of carbonaceous aggregate and from about 13 to about 16.5 percent by weight of petroleum pitch, wherein any course particles of said carbonaceous aggregate, which are at least as large as ⅜ inch size, constitute a minor proportion in relation to the more finely divided material of which about 50% passes 200 mesh screen and said pitch being characterized by having a cube-in-water softening point between about 40° and about 85°C. and having a content of material insoluble in quinoline not greater than about 1 percent.

3,925,093

ADDITION OF PYRIDINIUM C_{12-16} ALKYL BENZENE SULFONATE TO GAMMA-METHACRYLOXYPROPYLTRIS (BETA-METHOXYETHOXY)SILANE

John J. Walsh, and Vincent T. Chuang, both of Marietta, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 12, 1973, Ser. No. 331,980

Int. Cl.² C09K *3/00*

U.S. Cl. 106—287 SB **4 Claims**

1. Gamma-mathacryloxypropyltris (beta-methoxyethoxy) silane containing a small quantity of pyridinium C_{12-16} alkyl benzene sulfonate wherein the amount of pyridinium C_{12-16} alkyl benzene sulfonate which is present, based upon the weight of the gamma-methacryloxypropyltris(beta-methoxyethoxy)silane, is from about **0.75** to about **5** weight per cent.

3,925,094

DYESTUFF PREPARATIONS AND PROCESS FOR THEIR MANUFACTURE

Theodor Papenfuss; Rolf Rehberg, both of Niederhofheim, Taunus, and Ernst Spietschka, Oberauroff, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

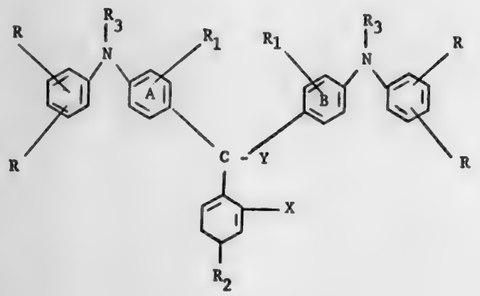
Continuation of Ser. No. 134,472, April 15, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 348,865

Claims priority, application Germany, Apr. 16, 1970, 2018169

Int. Cl.² C09B *57/00*

U.S. Cl. 106—288 Q **5 Claims**

1. A process for making a pigment composition consisting essentially of resins and triphenyl-methane dyestuffs which comprises preparing a solution in an organic amine which is liquid below 50°C. of an acid-precipitatable resin and a triphenylmethane dyestuff of the general formula



in which

R is hydrogen, chlorine, bromine, alkyl, alkoxy, cyano, carboxylic acid ester, carboxamido, nitro, amino, alkylamino, phenylamino, acylamino, substituted phenyl, phenyl or sulfon-amido and two radicals, R in o-position may form together a condensed phenyl ring,

R_1 is hydrogen, methyl or ethyl, and R_1 may be directly bonded to a radical R,

R_2 is hydrogen, chlorine, bromine, amino, phenylamino, or naphthylamino which may be substituted by one or two radicals which have the meaning of R,

R_3 is hydrogen, methyl or ethyl,

X is hydrogen, chlorine, bromine or a radical $-SO_3H$ or $-COOH$

Y is hydroxy,

and X and Y together may be a $-SO_2O$ or $-CO-O$ group and one of the radicals R_3 and Y may also be directly bonded with the ring A or B, one ring being a quinonoidal system, mixing the resulting solution with an aqueous solution of an acid at a temperature between about −10° and +50°C. to precipitate resin-dyestuff particles and recovering the precipitated particles.

3,925,095

FREE-FLOWING DISPERSIBLE INORGANIC PIGMENT OF FILLER COMPOSITIONS CONTAINING HYDROXYALKYLATE ALKYLENE DIAMINES

August Böckmann; Günter Teichmann, both of Krefeld, and Hans Rudolph, Krefeld-Bockum, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 19, 1973, Ser. No. 380,926

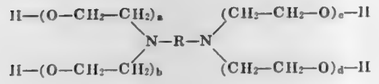
Claims priority, application Germany, Aug. 1, 1972, 2237791

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C09C *3/08*

U.S. Cl. 106—308 N **5 Claims**

1. A free-flowing, dispersible composition comprising an inorganic pigment or filler selected from the group consisting of titanium dioxide, zinc oxide, zinc sulfide, iron oxide, chromium oxide, cadmium chalcogenide, aluminum oxide, mica, kaolin, calcium carbonate, talcum, silicon dioxide and dolomite and about 0.1 to 3% by weight of the pigment or filler of a hydroxyalkylated alkylene diamine of the formula



(I)

in which

R is an alkylene radical of about two to 15 carbon atoms, *a*, *b*, *c* and *d* are integers from 1 to about 22 and the sum of *a*, *b*, *c* and *d* is about 5 to 25.

3,925,096

METHOD OF PRODUCING RESIN-CONTAINING PIGMENT PREPARATIONS

Otto Karkov, Hojelse Gamle Skole, Lille Skensved, Denmark

Continuation-in-part of Ser. No. 757,107, Sept. 3, 1968, abandoned. This application May 18, 1973, Ser. No. 361,667

Int. Cl.² C08J *3/20*; **C09C** *3/10*; **C09D** *17/00*

U.S. Cl. 106—309 **3 Claims**

1. Method of producing a particulate resin-containing pigment preparation, comprising ball-milling an organic solvent-soluble, linear polymer resin in the presence of at least 70% by weight of pigment based on the total weight of resin and pigment, water, and an organic water-immiscible solvent or mixture of solvents being soluble in, but incapable of dissolving the said resin, said solvent or solvents being used in amounts sufficient to be homogeneously taken up by said polymer resin to form a swollen, coherent, non-sticky, soft polymer resin.

3,925,097

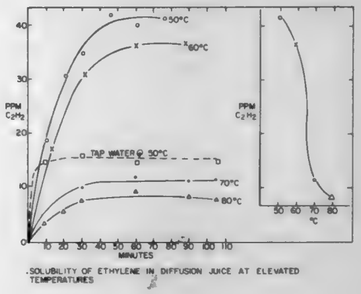
STIMULATION OF SUGAR DIFFUSION FROM PLANT TISSUE WITH THE USE OF ETHYLENE, ETHYLENE PRECURSORS, AND ANALOGS

Arthur H. Freytag, Longmont, and James C. Linden, Loveland, both of Colo., assignors to The Great Western Sugar Company, Denver, Colo.

Filed Nov. 16, 1973, Ser. No. 416,637

Int. Cl. C13d *1/08*

U.S. Cl. 127—44 **20 Claims**



SOLUBILITY OF ETHYLENE IN DIFFUSION JUICE AT ELEVATED TEMPERATURES

1. A method of stimulating sugar diffusion from plant tissues containing sugar selected from the group consisting of sugar beets, sugar cane, sugar maize and sugar sorghum which comprises contacting the plant tissues with diffusion water in the presence of ethylene.

3,925,098

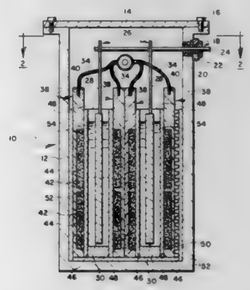
POSITIVE ELECTRODE FOR ELECTRICAL ENERGY STORAGE DEVICE

Richard C. Saunders, Simi, and Laszlo A. Heredy, Canoga Park, both of Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Nov. 27, 1974, Ser. No. 527,678

Int. Cl.² H01M *35/00*

U.S. Cl. 136—6 LF **20 Claims**

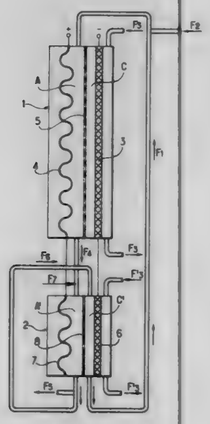


1. In a rechargeable electrical energy storage device comprising a negative electrode containing lithium, a fused salt electrolyte containing lithium ions, and a positive electrode containing at least one selected transition metal chalcogenide, the improvement wherein the positive electrode comprises a porous, compressible felt matrix formed from resilient carbon or graphite fibers, said matrix being impregnated with particles of the selected transition metal chalcogenide.

3,925,099
FUEL CELL WITH A DECARBONATION CYCLE, CONSUMING A MIXED FUEL

Pierre Bono, Morangis; Philippe Demange, Chatenay Malabry; Claudine Leclere, Antony, and Alexis Tissier, St. Michel-sur-Orge, all of France, assignors to Societe Generale de Constructions Electriques et Mecaniques "Alsthom & Cie", Paris, France

Filed Jan. 16, 1975, Ser. No. 541,595
Claims priority, application France, Jan. 28, 1974, 74.02689
Int. Cl.[2] H01M 8/04
U.S. Cl. 136—86 C 8 Claims

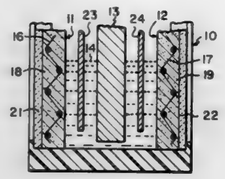


1. Method for decarbonation of an alkaline electrolyte of a fuel cell utilizing a carbonaceous fuel and an oxygen-containing oxidant, the electrolyte and fuel being supplied to the anode compartment of the power portion of the fuel cell and the oxidant being fed to the cathode compartment, separated from said anode compartment by a first membrane, of said fuel cell, the electrolyte being decarbonated during operation of the cell, said method comprising the steps of:
withdrawing electrolyte from said anode compartment for decarbonation;
adding to the electrolyte thus withdrawn a material containing formate ions;
passing the mixture of said electrolyte and said formate ion containing material successively through the anode and cathode compartments of a decarbonation portion of said fuel cell said anode compartment and said cathode compartment separated by a second membrane permitting passage of OH^- ions, carbon dioxide being removed after passage of said mixture through said anode compartment and before passage into said cathode compartment, and returning the decarbonated electrolyte from said decarbonation portion of said fuel cell to said anode compartment of said power portion of said fuel cell,
the amount of said formate ion containing material added to the electrolyte being such that the sum of the formate ion content of the withdrawn electrolyte resulting from the oxidation of said carbonaceous fuel and the formate ion content added as aforesaid to the electrolyte is sufficient to produce coomplete decarbonation of the electrolyte.

3,925,100
METAL/AIR CELLS AND AIR CATHODES FOR USE THEREIN

Edward S. Buzzelli, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 26, 1974, Ser. No. 446,088
Int. Cl. H01m 27/04
U.S. Cl. 136—86 A 7 Claims

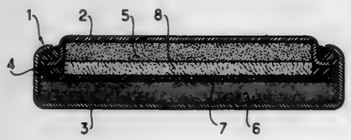


1. An air electrode for use in metal/air cells comprising:
A. a hydrophilic layer including the composition comprising:
i. an oxygen absorption/reduction carbon,
ii. 50 to 70% by weight manganese dioxide,
iii. at least one of polytetrafluoroethylene and fluorinated ethylene propylene, and
iv. metal fiber current collector integrally molded into said composition to form said layer; and
B. a porous, unsintered, completely fibrillated polytetrafluoroethylene hydrophobic sheet laminated to said hydrophilic layer, wherein said composition includes a silver-mercury catalyst.

3,925,101
ELECTRIC PRIMARY CELL IN WHICH THE POSITIVE ACTIVE MATERIAL IS SILVER CHROMATE

Gerard Lehmann, and Alfred Brych, both of Chasseneuil-du-Poitou, France, assignors to SAFT-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed Jan. 7, 1975, Ser. No. 539,184
Claims priority, application France, Feb. 8, 1974, 74.04280
Int. Cl.[2] H01M 6/00
U.S. Cl. 136—100 R 5 Claims

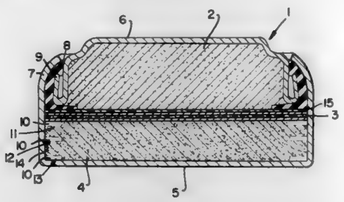


1. In an electric primary cell whose components comprise as positive active material silver chromate, as negative active material an alkaline metal, and as electrolyte a solution of a salt in an aprotic solvent and wherein the said components are enclosed in a casing comprising two parts electrically insulated from each other and containing respectively the negative active material and the positive active material, and said parts each comprising at least a metallic portion acting respectively as the positive and negative terminals of the cell, said cell being characterized in that the metallic portion of the positive part of the casing is made of stainless steel containing at least 11% by weight of chromium.

3,925,102
DIVALENT SILVER OXIDE CELL HAVING A UNIPOTENTIAL DISCHARGE LEVEL

Akiya Kozawa, Middleburg Heights, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed June 25, 1974, Ser. No. 483,014
Int. Cl.[2] H01M 6/12, 4/24
U.S. Cl. 136—111 12 Claims

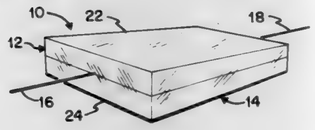


1. In an alkaline silver oxide cell comprising a negative electrode, a positive electrode comprising divalent silver oxide, an electrolyte, and a two-part conductive container comprising an upper section and a cylindrical lower section having an upstanding wall and a closed end; said cylindrical lower section housing the positive electrode, the improvement wherein at least one oxidizable metal strip is interposed between and in electrical and physical contact with said positive electrode and the inner upstanding wall of the cylindrical lower section so that the electrochemical reaction of the oxidizable metal strip in the presence of the electrolyte will produce a substantially unipotential discharge over the useful life of the cell.

3,925,103
RADIATION HARD SOLAR CELL AND ARRAY

Robert L. Russell, Tustin, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Oct. 27, 1972, Ser. No. 301,453
Int. Cl. H01v 1/12; H01l 15/02
U.S. Cl. 136—202 13 Claims



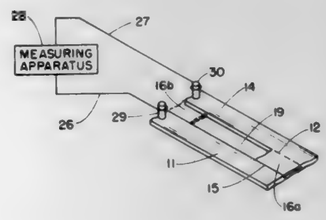
1. A radiation hard solar cell module, comprising:
a pair of solar cells including a primary power generating cell having an active face for receiving solar radiation in a nuclear radiation environment, and a shunt cell having an active face for receiving nuclear radiation in said nuclear radiation environment but shielded from receiving solar radiation in said solar radiation environment;
the response of said shunt cell to nuclear radiation being at least substantially equal to that of said power cell;
first and second terminals for connecting said module to other similar modules to form a solar array;
first means electrically connecting said first terminal to the positive contact of said power cell and the negative contact of said shunt cell; and
second means electrically connecting said second terminal to the negative contact of said power cell and the positive contact of said shunt cell.

11. The method of suppressing the output of a power generating solar cell in a nuclear radiation environment while permitting normal output of the cell in a solar environment which comprises the steps of:
shunting said power cell with a second solar cell having a response to nuclear radiation at least substantially equal to that of the power cell in such a way that the contacts of said shunt cell are reversed relative to said power cell, exposing said power cell only to the solar radiation in said solar radiation environment; and
exposing both cells to the nuclear radiation in said nuclear radiation environment.

3,925,104
THERMOCOUPLE TAPE

Ralph D. Thomas, Cleveland, Ohio, assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Division of Ser. No. 104,885, Jan. 8, 1971, Pat. No. 3,729,343.
This application May 17, 1972, Ser. No. 254,323
Int. Cl.[2] H01L 35/04, 35/28
U.S. Cl. 136—225 4 Claims

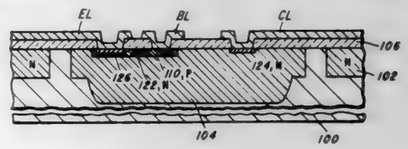


1. A thermocouple tape comprising:
an elongated strip of flexible electrically nonconductive material having at least one aperture therein;
a first strip of a first thermoelectric metal disposed on one side of said tape; and
a second strip of a second thermoelectric metal disposed on said one side of said tape parallel to said first strip, said first and second strips overlapping along the length of said tape except at said aperture, said aperture having a width at least equal in width to said overlapping area whereby at least two longitudinally extending junctions are formed on said tape, the portions of said first and second layers on each side of said junctions and said at least one aperture serving as connecting leads.

3,925,105
PROCESS FOR FABRICATING INTEGRATED CIRCUITS UTILIZING ION IMPLANTATION

Benjamin Johnston Sloan, Jr., Richardson, Tex., assignor to Texas Instruments, Incorporated, Dallas, Tex.

Filed July 2, 1974, Ser. No. 485,200
Int. Cl.[2] H01L 21/265
U.S. Cl. 148—1.5 14 Claims



1. A method of fabricating a semiconductor device including a semiconductor substrate of one conductivity type having semiconductor layer of opposite conductivity type thereon, including the steps of:
a. forming a substantially flat surfaced layer of insulating material on said semiconductor layer;

b. forming a first single mask definition layer on said insulating layer to delineate an inner area within and spaced from a surrounding closed contour area;

c. implanting dopant ions of said one conductivity type through said flat surfaced insulating layer into surface areas of said semiconductor layer beneath said closed contour and inner areas delineated by said masking layer to form a closed contour surface region and an inner region of said one conductivity type in said semiconductor layer, said mask definition layer providing a barrier to implantation of said dopant ions therethrough;

d. covering said first mask layer and inner area with an implantation barrier material layer having at least one aperture therein positionally corresponding to but oversize in relation to said closed contour area, and implanting further dopant ions of said one conductivity type through said insulating layer into said semiconductor layer to extend said closed-contour surface region of said one conductivity type completely through the thickness of said semiconductor layer, said mask definition layer and said implantation barrier material providing a barrier against implantation of said dopant ions therethrough;

e. uncovering said insulating layer and forming a second mask definition layer on the same said insulating layer to delineate self-aligned areas within said closed contour region having a predetermined positional relation with said inner region of one conductivity type, first and second ones of said self-aligned areas located over spaced areas of said inner region of said one conductivity type and a third said self-aligned area located over an area of said semiconductor layer;

f. covering said second self-aligned area with an implantation barrier layer and implanting dopant ions of said opposite conductivity type through said first and third self-aligned areas to form a first doped surface region of said opposite conductivity type in said inner region of one conductivity type and a second doped region of opposite conductivity type in said semiconductor layer; and

g. uncovering said substantially flat surfaced insulating layer.

3,925,106

ION BOMBARDMENT METHOD OF PRODUCING INTEGRATED SEMICONDUCTOR CIRCUIT RESISTORS OF LOW TEMPERATURE COEFFICIENT OF RESISTANCE

San-Mei Ku, and Burton J. Masters, both of Poughkeepsie, N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,537
Int. Cl. H01l *7/44*
U.S. Cl. 148—1.5 **15 Claims**

1. A method for forming a high resistivity region of a selected sheet resistance and a reduced temperature coefficient of resistance in an integrated circuit comprising

introducing dopant ions into a region of a semiconductor substrate, and additionally bombarding the region with non-dopant ions at a dose which is sufficient to damage the crystal structure but insufficient to form an amorphous phase in the bombarded region,

the concentration of the introduced dopant ions being in excess of the concentration required for said selected sheet resistance in an umbombarded region, but said bombardment producing a resistance higher than the selected resistance, and

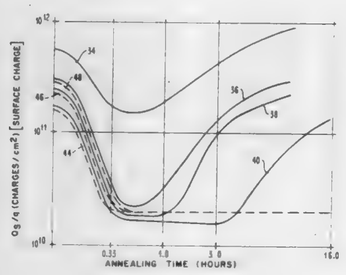
heating at a temperature of from 500°C. to 800°C. for a time sufficient to partially anneal the damage so as to lower the sheet resistance of the region to the selected sheet resistance while the temperature coefficient of resistance is maintained below the temperature coefficient of resistance of said unbombarded region.

3,925,107

METHOD OF STABILIZING MOS DEVICES

Robert A. Gdula, Pleasant Valley; Stanley I. Raider, and Martin Revitz, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 11, 1974, Ser. No. 522,794
Int. Cl.² H01L *21/324*
U.S. Cl. 148—1.5 **8 Claims**



1. A method of fabricating and stabilizing a gate dielectric layer for MOS devices to reduce the fixed oxide charge in the gate dielectric layer without degrading the layer comprising: forming a layer which includes at least a layer of silicon oxide of a thickness less than 500 Angstroms over at least the gate region by thermal oxidation of the monocrystalline silicon device substrate,

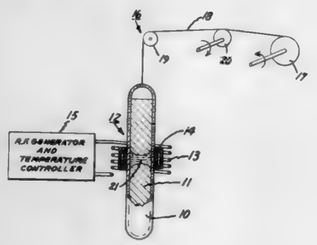
annealing the substrate in an atmosphere of a gas selected from the group consisting of He, Ne, Ar, Kr and Xe, at a temperature of at least 900°C for at least ten minutes.

3,925,108

METHOD FOR PREPARING DECOMPOSABLE MATERIALS WITH CONTROLLED RESISTIVITY

Henry H. Woodbury, Scotia, and Robert S. Lewandowski, Amsterdam, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 92,661, Nov. 25, 1970, abandoned. This application Dec. 26, 1972, Ser. No. 318,361
Int. Cl. H01l *7/42*; **B01j** *17/08*
U.S. Cl. 156—618 **11 Claims**



1. A method of preparing a body of cadmium telluride of predetermined resistivity comprising

sealing a quantity of cadmium telluride in an evacuated vessel,

melting and cooling said quantity of cadmium telluride within said evacuated vessel to cause the formation of a solid body of said quantity which completely fills the cross section of said vessel while being freely movable therein from the bottom to the top thereof,

lowering said sealed evacuated vessel with said solid body therein through a narrow heated zone to cause a narrow molten zone to be formed in said solid body and to traverse said solid body from the bottom to the top thereof,

said molten zone being confined between adjacent solid portions of said body and the walls of said vessel,

providing said narrow molten zone with heat to maintain the temperature thereof at a predetermined value corresponding to said predetermined resistivity within the range of approximately 1,120°C to 1,220°C,

whereby said quantity of cadmium telluride is formed into a body of said predetermined resistivity.

3,925,109

PRECISE CARBON CONTROL OF FABRICATED STAINLESS STEEL

Roy J. Nilsen, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 29, 1974, Ser. No. 438,148
Int. Cl.² C23C *11/12*; **G21C** *3/34*
U.S. Cl. 148—6.35 **1 Claim**

1. A method for controlling the carbon content to a level of about 0.05 weight percent in a fabricated AM-350 stainless steel nuclear reactor fuel rod grid comprising:

a. exposing the said nuclear reactor fuel rod grid to an oxidizing atmosphere of wet hydrogen having a dew point of from −23°F. to −7°F. at a temperature of from 1,880°F. to 1,920°F. for a period of 28 to 40 minutes;

b. replacing said oxidizing atmosphere with dry hydrogen having a dew point of −80°F. or less and maintaining said nuclear reactor fuel rod grid in said dry hydrogen for a period of 10 to 15 minutes at a temperature of 1,880°F. to 1,920°F.; and

c. replacing said dry hydrogen atmosphere with a reducing carbon/oxygen/hydrogen atmosphere containing about 350 ppmv CO and about 200 ppmv H_2O and exhibiting a carbon activity equal to an equilibrium AM-350 carbon concentration of about 0.05 weight percent at about 1,900°F and maintaining said grid at said temperature for about 1 hour.

3,925,110

SUPERPLASTIC ALLOY OF TIN AND ZINC

Robert Joseph Prematta, Hightstown, and Peruvemba Swaminatha Venkatesan, Princeton, both of N.J., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Apr. 25, 1974, Ser. No. 464,010
Int. Cl.² C22F *1/16*
U.S. Cl. 148—11.5 R **5 Claims**

1. A tin-zinc alloy consisting essentially of about 91 percent by weight of tin and about 9 percent by weight of zinc, having an average grain size ranging between 0.001–0.002 mm.

3,925,111

HIGH TENSILE STRENGTH AND STEEL AND METHOD FOR MANUFACTURING SAME

Hiroshi Takechi; Tsuyoshi Kawano, both of Kisarazu; Toshio Hashizume; Kazuo Koyama, both of Kimitsu, and Hiroaki Masui, Chiba, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 28, 1973, Ser. No. 429,274
Claims priority, application Japan, Dec. 31, 1972, 48-2832; Dec. 31, 1972, 48-2833
Int. Cl.² C21D *7/14*
U.S. Cl. 148—12 F **9 Claims**

1. In a method for manufacturing high tensile steel having superior cold workability and toughness wherein an aluminum killed steel slab is heated and hot rolled, the improvement wherein the steel contains 0.04 to 0.35% Ti, 0.005 to 0.15% soluble aluminum, less than 0.008% N, and Ti/C is less than 4, and the steel slab is heated to greater than 1200°C and the hot rolling is finished at a temperature between 730° and 880°C and carried out with more than one pass at a temperature from 980° to 1100°C and a reduction of more than 28%.

3,925,112

SOLDER FLUXES

Arthur Petersen, Sr., Florham Park; Leonard S. Mackowiak, East Hanover, and Daniel Schoenholz, Basking Ridge, all of N.J., assignors to Hercules Chemical Co., Inc., New York, N.Y.

Filed Feb. 19, 1974, Ser. No. 443,877
Int. Cl.² B23K *35/362*
U.S. Cl. 148—25 **7 Claims**

1. A solder flux comprising an aqueous emulsion including an oil phase comprising from about 5 to about 50 parts by weight of a paraffin wax-petrolatum melt, the weight ratio of petrolatum being about 1 to about 2 parts for each part by weight of paraffin wax in said paraffin wax-petrolatum melt, and from about 0.1 to about 50 parts by weight of an emulsifier system comprising an oil soluble admixture of fatty acid esters of sorbitol and ethoxylated fatty acid esters of sorbitol, the weight ratio of fatty acid esters of sorbitol being about 3 to about 6 parts for each part by weight of ethoxylated fatty acid esters of sorbitol in said emulsifier system, and including an aqueous phase comprising from about 2 to about 30 parts by weight of a water soluble hydrazine salt, from about 0.05 to about 5.0 parts by weight of sodium sulfite, and the remainder being deionized water.

3,925,113

QUENCHING OIL COMPOSITION

Dale J. Wilpers, Godfrey, Ill., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 427,204, Dec. 21, 1973, Pat. No. 3,866,603. This application Dec. 9, 1974, Ser. No. 530,647
Int. Cl.² C21D *1/44*
U.S. Cl. 148—29 **4 Claims**

1. A non-staining quenching oil composition consisting essentially of a mineral oil, having a high-heat exchange rate as measured by a magnetic quenchometer time of from about 9 to about 15 seconds, and from about 0.1 to about 10 percent by weight of a mono(polyisobutenyl)-substituted succinimide of tetraethylenepentamine wherein the polyisobutenyl substituent has a molecular weight of from about 750 to about 5,000.

3,925,114

PROCESS FOR PREPARATION OF MAGNETIC ALLOY POWDER

Noboru Takahashi; Mutsuaki Nakamura; Sadao Ozaki; Hiromasa Isono, and Iwao Fukushima, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Japan

Filed Apr. 29, 1974, Ser. No. 465,300
Int. Cl.² C22C *1/04*
U.S. Cl. 148—105 **10 Claims**

1. A process for the preparation of an aluminum-containing magnetic alloy powder, comprising iron and at least one of cobalt and nickel, the process comprising the steps of:

preparing an aqueous solution of water-soluble salts of the respective alloy component metals and a water-soluble salt of aluminum, the amount of said salt of aluminum being such that the amount of aluminum ion in said solution is between 1 and 20 mole % of the total metal ions; regulating pH of said solution to about 1.5;

preparing a solution of oxalic acid in a mixture of a major amount of acetone and a minor amount of toluene;

mixing said aqueous solution and said solution of oxalic acid with stirring to precipitate a crystalline powder consisting of the oxalates of said alloy component metals and aluminum; and

heating said crystalline powder in a hydrogen atmosphere at a temperature between 300 and 400°C until said powder is reduced to powdered metal magnetic alloy.

3,925,115
PROCESS EMPLOYING COOLING IN A STATIC ATMOSPHERE FOR HIGH PERMEABILITY SILICON STEEL COMPRISING COPPER

James A. Salsgiver, Sarver, and Frank A. Malagari, Freeport, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Nov. 18, 1974, Ser. No. 524,831
Int. Cl.² H01F 1/04
U.S. Cl. 148—112 15 Claims

1. In a process for producing electromagnetic silicon steel having a cube-on-edge orientation and a permeability of at least 1850 (G/O_e) at 10 oersteds, which process includes the steps of: preparing a melt of silicon steel; casting said steel; hot rolling said steel into a hot rolled band; subjecting said steel to at least one cold rolling; subjecting said steel to a final annealing prior to the final cold rolling; decarburizing said steel; and final texture annealing said steel; the improvement comprising the steps of carrying out said final anneal prior to the final cold rolling at a temperature of from 1400° to 2150°F for a period of from 15 seconds to 2 hours; cooling said steel from a temperature below 1700°F and above 750°F to a temperature at least as low as 500°F with a liquid quenching medium or gaseous stream and from its maximum annealing temperature to said temperature below 1700°F and above 750°F at a rate which is no faster than one wherein the steel is cooled in a static atmosphere or in a continuous processing line where there is some relative motion between the atmosphere and the steel, although the only deliberate motion is that imparted to the steel; and cold rolling the cooled steel at a reduction of at least 80%; said melt consisting essentially of, by weight, up to 0.07% carbon, from 2.60 to 4.0% silicon, from 0.03 to 0.24% manganese, at least 0.01% selenium, from 0.01 to 0.09% of material from the group consisting of sulfur and selenium, from 0.015 to 0.04% aluminum, up to 0.02% nitrogen, from 0.1 to 0.5% copper, balance iron.

3,925,116
SUPERHARD MARTENSITE AND METHOD OF MAKING THE SAME

Niels N. Engel, 720 Gonzales Road, Santa Fe, N. Mex. 87501

Continuation-in-part of Ser. No. 279,244, Aug. 9, 1972. This application Dec. 14, 1973, Ser. No. 424,672
Int. Cl.² C21D 1/00; C23C 15/00
U.S. Cl. 148—143 14 Claims

1. Process of producing a fine grain iron substrate comprising the steps of:

a. subjecting steel having interstitial alloy atoms ranging from about 0.3 to about 1.8% by weight selected from the group consisting of beryllium, boron, carbon and nitrogen to an ion bombardment by an insoluble element selected from the group consisting of helium, neon, argon, krypton, xenon, radon, lithium, sodium. potassium, rubidium, cesium, francium, calcium, strontium, barium, radium, silver, cadmium, mercury, thallium, lead, beryllium, magnesium, yttrium, lanthanum, zirconium, hafnium, thorium, tantalum, copper, indium, selenium, tellurium and polonium sufficient to implant ions of the element into the surface of said substrate in sufficient quantity to retard the growth of crystals during the subsequent heat treatment of the substrate;

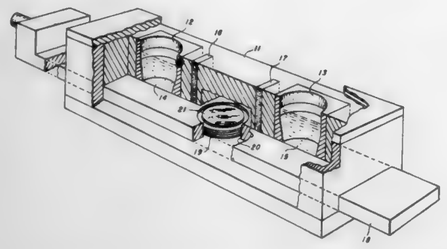
b. heating the substrate containing the implanted element to an austenite temperature range; and

c. quenching the heated substrate at a sufficient rate to produce crystals along the surface of said substrate which are substantially smaller than crystals which normally would have been formed on the surface of the substrate had the ions of the element not been implanted into the surface of the substrate.

3,925,117
METHOD FOR THE TWO-STAGE EPITAXIAL GROWTH OF III–V SEMICONDUCTOR COMPOUNDS

Louis Earl Stone, Richardson, Tex., and Roberto Romano, Mexico City, Mexico, assignors to Texas Instruments, Incorporated, Dallas, Tex.

Division of Ser. No. 147,998, May 28, 1971, Pat. No. 3,747,562. This application July 24, 1973, Ser. No. 382,254
Int. Cl.² H01L 7/38
U.S. Cl. 148—171 5 Claims



1. A method for the growth of first and second epitaxial layers of crystalline material on a suitable substrate comprising the steps of:

a. placing said substrate in contact with a first growth solution at suitable growth conditions for a time sufficient to deposit a first epitaxial layer;

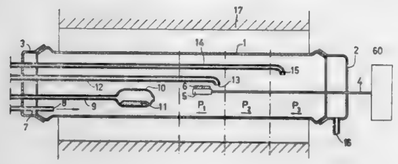
b. then transferring the substrate from contact with said first growth solution, into contact with a second solution for a time sufficient to deposit a second epitaxial layer; and

c. concurrently removing substantially all said first solution from the surface of said first epitaxial layer prior to contact with the second solution.

3,925,118
METHOD OF DEPOSITING LAYERS WHICH MUTUALLY DIFFER IN COMPOSITION ONTO A SUBSTRATE

Laszlo Hollan, Sevres, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 13, 1972, Ser. No. 243,592
Claims priority, application France, Apr. 15, 1971, 71.13279
Int. Cl. H01l 7/36; C23c 11/00
U.S. Cl. 148—175 6 Claims



1. A method of providing on a substrate successive layers mutually differing in composition, comprising the steps of:

a. providing an elongated reaction vessel containing said substrate and comprising vapor introduction locations disposed in sequence along the longitudinal axis of said vessel;

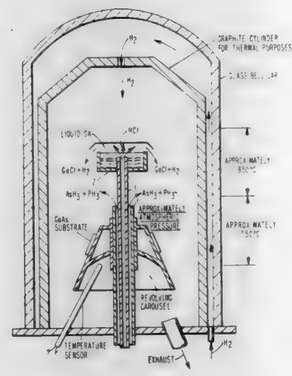
b. introducing vapors into said vessel at different said vapor introduction locations, said vapors flowing generally in the longitudinal direction of said vessel and comprising the constituents for said layer materials and being conveyed in said vessel to said substrate, during at least said layer material deposition said vapor introduced at one of said introduction locations differing from vapors introduced at others of said introduction locations with respect to at least one of composition and constituent concentrations; and

c. moving said substrate only along said axis so as to successively maintain said substrate at different positions in said vessel relative to said vapor introduction locations, said layer materials being deposited on said substrate while said substrate is disposed at various ones of said different positions.

3,925,119
METHOD FOR VAPOR DEPOSITION OF GALLIUM ARSENIDE PHOSPHIDE UPON GALLIUM ARSENIDE SUBSTRATES

John W. Philbrick, Poughkeepsie, and William C. Wuestenhoefer, Mahopac, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 358,241, May 7, 1973, abandoned. This application July 15, 1974, Ser. No. 488,639
Int. Cl.² H01L 21/205, 33/00
U.S. Cl. 148—175 10 Claims



1. A method for producing an epitaxial film of gallium arsenide phosphide on a gallium arsenide substrate where the electroluminescent efficiency of said film of gallium arsenide phosphide is enhanced,

said method comprising reacting in the vapor state and depositing therefrom in the presence of hydrogen the reaction product of gallium and a hydrogen halide combined with arsenic and phosphorous hydride at a partial pressure between 7×10^{-3} and 35×10^{-3} atmospheres at a temperature between 740°C and 800°C, while a substantially constant ratio between the Group III and Group V vapor pressure in a range of 0.5 to 1.0 is maintained and a total pressure of essentially atmospheric pressure.

3,925,120
METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE HAVING A BURIED EPITAXIAL LAYER

Hiroji Saida, Hachioji; Yuichi Ono; Masayoshi Nomura, both of Kokubunji; Masao Tamura, Hachioji, and Hirotsugu Kozuka, Tokyo, all of Japan, assignors to Hitachi, Ltd., Japan

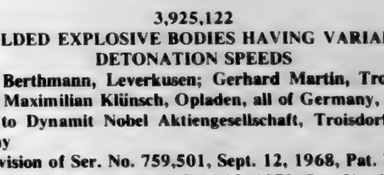
Division of Ser. No. 295,873, Oct. 10, 1972, abandoned, which is a continuation of Ser. No. 83,526, Oct. 23, 1970, abandoned. This application July 11, 1974, Ser. No. 487,659
Claims priority, application Japan, Oct. 27, 1969, 44-85231; Mar. 13, 1970, 45-20884
Int. Cl.² H01L 29/34, 21/74, 29/06
U.S. Cl. 148—175 12 Claims

1. A method of manufacturing a semiconductor device comprising the steps of:

a. preparing a semiconductor substrate;

b. providing a recess in the surface of said semiconductor substrate;

c. epitaxially growing a layer in said recess to form an epitaxial layer embedded in and coplanar with said semiconductor substrate and having a conductivity type opposite to that of said semiconductor substrate; and



d. diffusing an impurity into a closed loop region which extends over the edge of the junction layer between said semiconductor substrate and said embedded epitaxial layer and which extends beyond the junction layer to the surface of the semiconductor substrate and to the surface of said embedded epitaxial layer.

3,925,121
PRODUCTION OF SEMICONDUCTIVE MONOCRYSTALS OF GROUP III-V SEMICONDUCTOR COMPOUNDS

Wolfgang Touchy, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 8, 1973, Ser. No. 339,218
Claims priority, application Germany, Mar. 23, 1972, 2214224
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² H01L 7/44
U.S. Cl. 148—189 8 Claims

1. A method of producing a semiconductor monocrystal composed of Group III-V compounds and having a p-conductive layer therein, comprising the steps of;

covering the surface of a monocrystal composed of a Group III-V compound with a protective layer composed of a material that allows Group III elements to diffuse therethrough and selected from the group consisting of silicon dioxide, aluminum oxide and mixtures thereof;

sealing the coated semiconductor monocrystal in an ampule containing a Group II element diffusion source and a gaseous atmosphere composed of about 80% by volume of hydrogen and about 20% by volume nitrogen; and

subjecting the coated semiconductor monocrystal to time-temperature conditions comprising heating the coated monocrystal at a temperature in the range of about 500° to 1,000° C. for a period of time ranging from about 1 to 5 hours whereby the Group III element of the Group III-V compound diffuses out of the monocrystal through the protective layer and the Group II element diffuses into the monocrystal through the protective layer.

3,925,122
MOLDED EXPLOSIVE BODIES HAVING VARIABLE DETONATION SPEEDS

Adolf Berthmann, Leverkusen; Gerhard Martin, Troisdorf, and Maximilian Klünsch, Opladen, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Division of Ser. No. 759,501, Sept. 12, 1968, Pat. No. 3,619,306. This application Feb. 12, 1970, Ser. No. 14,876
Claims priority, application Germany, Sept. 13, 1967, 54099
Int. Cl.² F42B 1/00
U.S. Cl. 149—2 3 Claims

1. A homogeneous high strength molded explosive body comprising a solidified mixture of solid pentaerythrite-tetrani-

trate explosive, hollow spheres of phenolic resin density reducing material and diethyldiphenyl urea binding agent, said molded explosive body having a detonation velocity within a defined range, said detonation velocity being less than the detonation velocity of the explosive itself, said pentaerythritetetranitrate uniformly mixed with said hollow spheres and said binding agent.

3,925,123

POURABLE AQUEOUS BLASTING COMPOSITION

Harvey A. Jessop, Murray, Utah, assignor to IRECO Chemicals, Salt Lake City, Utah

Filed Oct. 11, 1974, Ser. No. 514,205
Int. Cl.² C06B *31/30*
U.S. Cl. 149—60 **4 Claims**

1. In a water resistant explosive composition which contains an aqueous inorganic oxidizer salt solution forming a continuous fluid phase throughout the composition and having a fudge point below intended temperatures of use of the composition; the improvement comprising a thickening system consisting essentially of a combination of non-cross-linked guar gum and starch and a small amount of a self-complexing thickening agent, which thickening system simultaneously provides water resistance, stability at temperatures as high as 60° C and pourability into receptacles as small as 3 inches in diameter or less at temperatures as low as 5° C

3,925,124

HETEROGENEOUS MONOPROPELLANT COMPOSITIONS

Stanley Tannenbaum, Morristown, N.J., assignor to Thiokol Corporation, Bristol, Pa.

Filed Apr. 22, 1964, Ser. No. 363,333
Int. Cl.² C06D *5/10*
U.S. Cl. 149—74 **6 Claims**

1. Novel thixotropic, monopropellant compositions comprising a mixture of a solid fuel selected from the group consisting of inorganic silicides, silicon carbide and mixtures thereof, a strong liquid oxidizer and a thixotroping agent selected from the group consisting of particulated carbon and silica.

3,925,125

MOISTURE REPLACEMENT IN PELLETIZED NITROCELLULOSE

Charles D. Cox, Paw Paw, W. Va.; Craig E. Johnson, Indian Head, and Larry D. Henderson, Bryans Road, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 6, 1973, Ser. No. 422,243
Int. Cl.² C06B *45/00, 25/18, 25/34*; **C08B** *5/04*
U.S. Cl. 149—96 **12 Claims**

1. A process for removing water from water-wet nitrocellulose comprising:

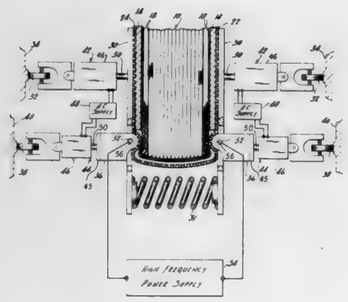
a. treating the nitrocellulose with a first liquid which is a non-solvent for the nitrocellulose and which is miscible with water to form a slurry;
b. adding to the slurry a second liquid which is a non-solvent for the nitrocellulose and which forms an azeotrope with water and the first liquid and is miscible with the first liquid;
c. removing the first liquid and the second liquid from the slurry and an amount of water from the nitrocellulose;
d. recovering nitrocellulose containing up to 0.5% of water by weight.

3,925,126

VIBRATORY BOOK BINDING METHOD

Alfred F. Leatherman, Columbus, Ohio, and Leonard Shatzkin, Croton-on-Hudson, N.Y., assignors to William C. Heller, Jr., Milwaukee, Wis.

Filed July 5, 1973, Ser. No. 376,327
Int. Cl.² B32B *31/18*
U.S. Cl. 156—73.6 **21 Claims**



1. An improved method of joining a body of leaves within an embracing case having front and back covers to form a bound book of conventional construction, said method comprising the steps of:

applying a liquifiable adhesive to selected areas of at least one of the body or case;
placing the body in the case with the covers on either side of the body;
compressing the assembled body and case to bring the adhesive areas of one book element into contact with the other book element;
causing the adhesive to assume a liquid state;
applying vibratory compressive blows to the compressed assembled body, case the liquid adhesive at less than ultrasonic frequencies and at a magnitude sufficient to mechanically enhance the adhesive action in the joinder area; and
terminating the compression of the body and case and the application of the vibratory blows.

3,925,127

BULKY PAPER AND METHOD OF MAKING SAME

Yoshihide Yoshioka, Kawanoe, Ehime-ken, Japan, assignor to Gomei Kaisha Touyo Shoji, Japan

Filed June 26, 1974, Ser. No. 483,295
Claims priority, application Japan, July 9, 1973, 48-77210
Int. Cl.² B32B *3/10, 7/10, 31/08, 31/26*
U.S. Cl. 156—85 **6 Claims**

1. A method for producing a bulky paper comprising the steps of inserting a plastic film between a pair of crepe papers, passing the assembly through the nip of a pair of heated embossing rolls to cause a partial adhesion of the plastic film with the crepe papers, subsequently moistening the crepe papers to extend the crepe, and then subjecting the assembly to a thermal treatment to cause a shrinkage or melting of the plastic film and the formation of a network configuration therein.

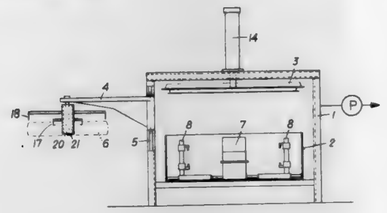
6. The bulky paper obtained by the process of claim 1.

3,925,128

PROCESS FOR RETREADING A VEHICLE TYRE

Bruno Edler, Roseggerstrasse 25, A-8600 Bruck a.d. Mur, Austria

Division of Ser. No. 52,861, July 7, 1970, Pat. No. 3,738,893.
This application Feb. 5, 1973, Ser. No. 329,612
Claims priority, application Austria, July 17, 1969, 6875/69
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B29H *5/04, 5/16, 17/36*
U.S. Cl. 156—96 **14 Claims**



1. A process for retreading a vehicle tyre comprising the steps of:

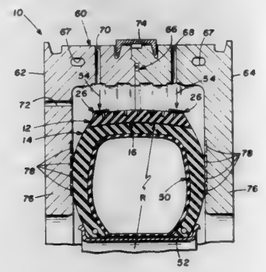
a. positioning a closed tread band and a tyre to be retreaded within a vessel with the tread band loosely surrounding the tyre and spaced out of contact with the tyre by an intervening open space;
b. sealing the vessel;
c. maintaining said tread band and tyre spaced apart while reducing the pressure in the interior of the vessel, including said space between said tread band and tyre;
d. thereafter moving said tread band and tyre into contact and eliminating said space therebetween while maintaining said reduced pressure; and
e. affixing together the contacting tread band and tyre.

3,925,129

TIRE RETREADING SYSTEM

James O. Blankenship, Garland, Tex., assignor to Long Mile Rubber Company, Dallas, Tex.

Filed Apr. 19, 1974, Ser. No. 462,520
Int. Cl.² B29H *5/04, 5/16*
U.S. Cl. 156—96 **27 Claims**



1. A process for retreading a tire with a premolded, precured tread strip including the steps of:

establishing a thermally responsive adhesive layer around the circumference of a tire body;
wrapping a premolded, precured tread strip around the circumference of the tire body over the adhesive layer thereon;
removing air trapped between the tread strip and adhesive layer and the tire body and adhesive layer;
applying an inwardly directed force along each outer edge of the mounted tread strip around the entire periphery thereof to generate a larger sealing force along each outer edge of the mounted tread strip around the entire periphery thereof than intermediate of the outer edges of the tread strip for forming a sealed zone between the tread strip and the tire body having the thermally responsive layer contained therein;
positioning the tire body - adhesive layer - tread strip assembly in a chamber having a generally annular shape and a generally U-shaped cross-section;
forming a seal between the chamber and the side walls of the tire body and thereby forming a sealed zone surrounding the entire circumference of the tire body, the entire premolded, precured tread strip and the adhesive layer therebetween;
admitting heated, pressurized fluid to the sealed zone and thereby actuating the adhesive layer to form a bond between the tire body and the premolded, precured tread strip;
said inwardly directed forces preventing the heated and pressurized fluid from entering the zone between the tire body and the tread strip and thereby assuring a uniform bond therebetween.

3,925,130

PRODUCTION OF BONDED FIBROUS PRODUCTS

Robert Brown, Kirkcaldy, Scotland, assignor to Nairn Floors Limited, Lune Mills, England

Filed May 18, 1973, Ser. No. 361,702
Claims priority, application United Kingdom, May 31, 1972, 25541/72; Jan. 29, 1973, 4483/73
Int. Cl.² B32B *5/02*
U.S. Cl. 156—148 **11 Claims**

1. A process of making a needled non-woven carpet having a pile surface comprising the steps of (1) needling a web containing at least 250 g/m² fibres of which at least 50% are tackifiable fibres having a melting point above 160°C. and forming on a surface of the web by the needling a pile which contains at least 10% by weight of the fibres in the web and which is at least 20% of the total thickness of the web to form a pile surface, (2) impregnating at least the entire pile of the needled web by applying direct onto the pile from 100 to 300% by weight of fibres in the web of an aqueous solution containing 3 to 30% by weight of a tackifying agent that has substantially no tackifying effect on the tackifiable fibres below said melting point at its concentration in the solution but which does have a tackifying effect at a temperature below 120°C. when present in a solution of higher concentration, (3) heating the web while uncompressed to a temperature of 100° to 200°C. for half a minute to half an hour to evaporate water and thereby to accumulate solution at fibres intersections and to concentrate the solution sufficiently to tackify the tackifiable fibres of the intersections throughout the pile and subsequently to solidify the fibres, and (4) washing the web to remove tackifying agent.

3,925,131

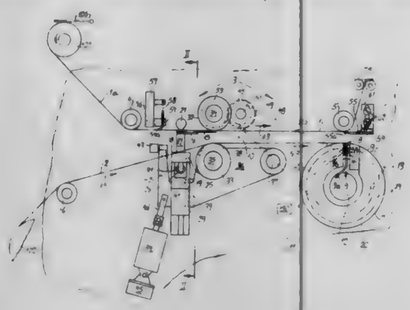
METHOD OF UNITING WEBS OF CIGARETTE PAPER OR THE LIKE

Lothar Krause, Hamburg, Germany, assignor to Hauni-Werke Korber & Co., KG, Hamburg, Germany

Division of Ser. No. 143,700, May 14, 1971, Pat. No. 3,749,634. This application May 22, 1973, Ser. No. 362,755
Int. Cl.² B31F *5/06*
U.S. Cl. 156—159 **10 Claims**

1. A method of making a splice between an expiring web and a fresh web, particularly in a machine for the production or processing of smokers' products, comprising the steps of advancing the expiring web longitudinally; advancing the fresh web longitudinally in the general direction of movement of the expiring web and maintaining the fresh web in spaced-apart position with respect to the expiring web; placing between said webs a uniting band which is adhesive at both sides thereof and spaced from both said webs; moving at least one of the

advancing webs transversely of said direction toward the other web to thus place the advancing webs into contact with the respective sides of the uniting band whereby the band connects the advancing webs to each other and the trailing and



leading portions of the advancing expiring and fresh webs respectively extend rearwardly and forwardly from the uniting band; and severing said trailing and leading portions from the respective webs.

3,925,132

METHOD OF FORMING CIRCUMFERENTIALLY EXTENDING RIBS ON A ROTATING SHELL

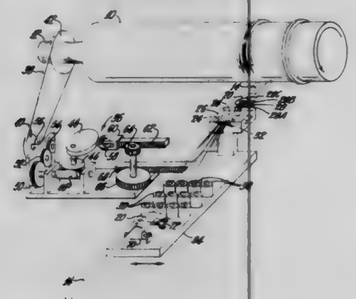
David H. Bartlow, Huntingdon, Pa.; Bernard Howard Jones, Pendleton, S.C., and Lee E. Pearson, Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sept. 13, 1972, Ser. No. 288,638

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B32B *17/04*

U.S. Cl. 156—161 **8 Claims**



1. A method of installing glass fiber mat over the sloping surface of an envelope which extends around an axis of revolution, said sloping surface sloping inwardly obliquely toward said axis of revolution, said method comprising: causing said envelope to revolve about said axis of revolution, feeding a mat strip over said sloping surface of said envelope, feeding individual strands to said revolving sloping surface to become wound thereon, said strands being fed generally tangentially under tension over the external surface of said mat in a plane generally normal to said axis of revolution, and causing the tensioned strands to pull said mat down onto said sloping surface of said envelope and then slide obliquely sideways and inwardly toward said axis of revolution over said mat to automatically smooth said mat onto said obliquely sloping surface before said strands assume their final positions on said form.

7. A method of producing a glass fiber reinforced plastic shell having an external stiffening rib thereon, comprising: rotating a generally horizontal cylindrical mandrel about its longitudinal axis, applying a coating of resin and glass fiber shell forming materials onto the surface of the mandrel, feeding a band of strands generally tangentially to the bottom of the cylindrical mandrel over the shell forming materials and causing the strands to be pulled thereon by the mandrel, feeding a mat of glass fibers to the mandrel on top of the strands, wetting the mat and strands with resin, feeding a form having a cross section that is an isosceles trapezoid having its short parallel side resting on the mat, said band of strands having portions directly beneath the sloping sides of the form, and tensioning the strands to cause strands on opposite sides of the top to bring the mat against the sloping sides of the form and thereafter slide down the sloping sides of the mat to smoothen the mat and with the strands coming to rest on the portions of the mat which engage the shell forming materials.

8. A method producing a glass fiber reinforced plastic rib on the revolving surface of a glass fiber reinforced plastic shell comprising: feeding a rib form strip having a generally flat base and sloping sides onto the revolving surface with the base adjacent the surface to cause the strip to wrap around the surface, concurrently feeding a mat strip over the outer surface of the rib form, and feeding individual strands to the revolving surface to become wound thereon, wetting the mat and strands with resin, said strands being fed generally tangentially under tension to the revolving surface at locations outwardly of the mat and sloping sides of the rib form, and causing the tensioned strands to pull the mat down onto the sloping sides of the rib form and then slide over the mat to come to rest on the revolving surface at the foot of the rib form, and whereby the mat is automatically smoothed onto the rib form.

3,925,133

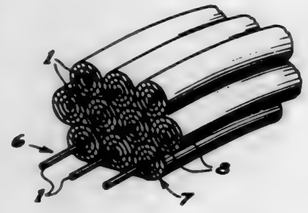
METHOD FOR MAKING REINFORCED PYROLYTIC GRAPHITE-SILICON CARBIDE MICROCOMPOSITES

Eugene L. Olcott, Falls Church, Va., assignor to Atlantic Research Corporation, Alexandria, Va.

Division of Ser. No. 65,899, Aug. 21, 1970, Pat. No. 3,738,906. This application Nov. 27, 1972, Ser. No. 309,639

Int. Cl. C01B *31/07*

U.S. Cl. 156—175 **5 Claims**



1. A method for making a reinforced pyrolytic graphite article comprising:

1. progressively positioning continuous refractory filaments or strands on a shaped form;
2. pyrolyzing a mixture of methyl trichlorosilane, an inert gas, and hydrocarbon gas, said mixture having a volumetric ratio of inert gas to hydrocarbon gas of at least 86.7 to 13.3 and a weight ratio of methyl trichlorosilane to hydrocarbon gas of between about 5 to 95 and 75 to 25, onto said filament or strand at a temperature of about 2800°F. — 3800°F. at about the point of positioning contact as said filament or strand is positioned and thereby nucleating a microcomposite of pyrolytic graphite and silicon carbide from said filament or strand;
3. progressively positioning additional refractory continuous filament or strand laterally spaced from and superimposed on previously positioned filament or strand; and
4. as said additional filament or strand is positioned, simultaneously pyrolyzing said mixture of methyl trichlorosilane, an inert gas, and hydrocarbon gas on said additional filament or strand at about the point of positioning contact and on the microcomposite of pyrolytic graphite and silicon carbide nucleated from previously positioned filament or strand to form a microcomposite matrix interconnecting laterally spaced filaments or strands, said matrix comprising crystallite layers of pyrolytic graphite containing embedded SiC aciculae in which the longitudinal axes of said aciculae are aligned substantially in the *c*-direction relative to the *a-b* plane of the associated pyrolytic graphite crystallite.

3,925,134

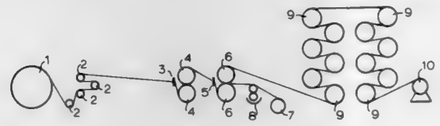
PROCESS FOR PREPARING SUPPORTED RIBBONS

Robert T. Montgomery, Matthews, N.C., assignor to Celanese Corporation, Charlotte, N.C.

Division of Ser. No. 185,015, Sept. 30, 1971, Pat. No. 3,776,808. This application July 5, 1973, Ser. No. 376,753

Int. Cl.² B32B *5/08, 7/04*

U.S. Cl. 156—178 **3 Claims**



1. A process for the preparation of supported ribbon having improved bulk and cover, said process comprising (a) applying adhesive to a support and (b) bonding only peripheral filaments of substantially parallel, substantially zero twist compacted continuous filament yarns to said adhesive coated support whereby a continuous filament ribbon having a bulked three dimensional effect is produced.

3,925,135

METHOD OF MAKING LAMINATES OF SUPPORT MATERIAL AND FLUORINATED POLYMER CONTAINING PENDANT SIDE CHAINS CONTAINING SULFONYL GROUPS

Walther Gustav Grot, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 196,772, Nov. 8, 1971, Pat. No. 3,770,567. This application Aug. 1, 1973, Ser. No. 384,499

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B32B *7/04, 17/04, 27/06*

U.S. Cl. 156—213 **4 Claims**

1. A process for preparing a laminate of a first layer of fluorinated polymer containing pendant side chains containing sulfonyl groups wherein the sulfonyl groups are in the $-(SO_3)_nMe$ form wherein Me is a metallic cation or NH_4 and n is the valence of Me and a second layer of fluorinated polymer containing pendant side chains containing sulfonyl groups wherein the sulfonyl groups are in the $-SO_2M$ form wherein M is a halogen atom, said second layer being integral with said first layer and containing support material completely encapsulated therein which comprises

1. contacting the $-SO_2M$ surface of a film of a fluorinated polymer containing pendant side chains containing sulfonyl groups wherein the sulfonyl groups of one surface of said film are in the $-SO_2M$ form wherein M is a halogen atom and the sulfonyl groups of the other surface of the film are in the $-(SO_3)_nMe$ form wherein Me is a metallic cation or NH_4 and n is the valence of Me with a support material, and
2. applying a differential pressure to the contacted support material and film, the pressure on the opposite surface of the support material from that which is contacting said fluorinated polymer film being at least 5 inches of mercury less than the pressure on the surface of the fluorinated polymer film opposite to that contacting the support material, for a sufficient period of time to cause the support material which is in contact with said film to become completely encapsulated within the film of fluorinated polymer while heating the film and support material at from 240°–320°C.

3,925,136

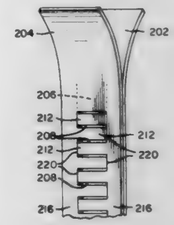
METHOD OF MAKING PLIABLE TAPE STRUCTURES

Alfred W. Wakeman, Madison Road, Durham, Conn. 06422

Division of Ser. No. 379,265, July 16, 1973, Pat. No. 3,851,353, which is a division of Ser. No. 159,796, July 6, 1971, Pat. No. 3,751,760, which is a continuation-in-part of Ser. No. 859,619, Sept. 23, 1969, abandoned. This application Nov. 21, 1974, Ser. No. 525,743

Int. Cl.² B32B *31/00*

U.S. Cl. 156—252 **1 Claim**



1. A method of producing a tape with bridging tabs of square wave form which comprises bonding confronting strips of sheet material together along their central portions to provide freely separable marginal portions, slotting the bonded strips in their intermediate portion transversely of the tape axis at spaced intervals therealong to form said bridging tabs, and slitting each of said strips longitudinally of the tape axis to sever said bridging tabs from alternately opposite marginal portions of said strips, said slitting being arranged in alternation on opposite faces of the confronting strips so that both strips are not slit through at the same location.

3,925,137

METHOD FOR PRODUCING FLAME-RETARDANT FIREPROOF CLEAR COAT

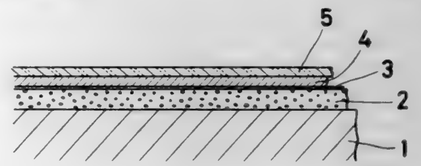
Masutada Kamei, Tokyo, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 12, 1974, Ser. No. 450,325

Claims priority, application Japan, Mar. 13, 1973, 48-29777

Int. Cl.² B32B *33/00;* **C09D** *5/18;* **C09K** *3/28*

U.S. Cl. 156—278 **5 Claims**



1. A method for forming a flame-retardant fireproof and decorative coat, characterized by applying to the surface of a substrate a flame-retardant foaming paint composed of 30 – 40 parts by weight of ammonium phosphate monobasic, 20 parts by weight of pentaerythritol, 20 parts by weight of dicyandiamide and 40 – 60 parts by weight of a vehicle using polyvinyl acetate as a main ingredient and having an involatile matter content of 60% and diluted with water, subsequently attaching thereto a decorative material, and further applying thereto a flame-retardant clear paint composed of 100 parts

by weight of a polyurethane resin of the type used in paints having a viscosity of 10 – 13 sec. (FC No. 4 at 20°C), 7 – 10 parts by weight of tris(2-chloroethyl)-phosphate and 1 – 3 parts by weight of tris(2-bromoethyl)-phosphite and finally drying the applied films.

3,925,138

PROCESS FOR PREPARING AN INSULATING SUBSTRATE FOR USE IN PRINTED CIRCUITS

Anthony James Shaul, Wokingham, and Edward Russell Wood, Twyford, both of England, assignors to Formica International Ltd., London, England

Filed Nov. 27, 1973, Ser. No. 419,475
Int. Cl.² C09J 7/00
U.S. Cl. 156—313 **7 Claims**

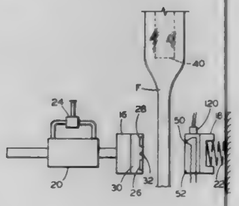
1. A process for preparing an insulating substrate suitable for use in the production of printed circuits by electroless deposition techniques, the process consisting essentially of the steps:
   1. substantially fully curing a mixture consisting essentially of (a) an etchable synthetic rubber polymer which, in the substantially fully cured state, is attackable by a chemical etchant solution and (b) a first thermosettable resin, to give a selectively etchable and substantially non-adhesive layer consisting essentially of said rubber and the thermoset resin,
   2. superimposing said layer on a fibrous substrate which consists essentially of at least one sheet or web, said sheet or web being impregnated with a second thermosettable resin, and
   3. consolidating the assembly so produced and curing said second thermosettable resin by heating under pressure.

3,925,139

SEAL MONITORING APPARATUS

Charles J. Simmons, East Longmeadow, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.

Filed Jan. 10, 1974, Ser. No. 432,321
Int. Cl.² G05G 15/00
U.S. Cl. 156—358 **15 Claims**



1. In a form, fill and seal packaging machine which discharges sealed film pouches filled with bulk material, seal monitoring apparatus comprising:
   - a pair of reciprocating sealing jaws periodically moved into clamping relationship on the pouch film, one of the jaws bearing a heating element to fuse the clamped film and form a seal;
   - a temperature sensor mounted on the other jaw opposite the heating element and at a station on the jaw contacted by the clamped film to detect the film temperature on the side of the clamped film opposite the heating element;
   - a memory for storing a preselected seal temperature limit; and
   - a comparator connected to the temperature sensor and the memory for comparing the sensed temperature and the preselected temperature limit and producing a signal when the limit is exceeded.

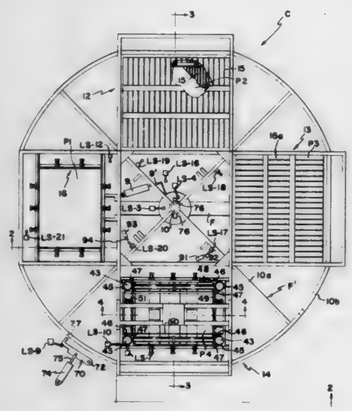
4. In a packaging machine which forms a heat seal in multiple piles of a fusible material by means of a pair of heat-sealing members which close in mating relationship on the material, the first of the sealing members having a heating element positioned to heat the material at one side of the plies and the second of the sealing members having a clamping surface disposed during a sealing operation at the other side of the plies directly opposite the heating element of the first sealing member, the seal monitoring apparatus comprising:
   - sensing means connected with and cooperative with the sealing members to generate a signal representative of the temperature of the fusible material during operation of the sealing members in the packaging machine, the sensing means including a temperature sensor mounted on the second sealing member opposite the heating element of said first sealing member and at a station on said second sealing member which is contacted by said fusible material whereby the sensor detects the temperature to which the fusible material is elevated on said other side of clamped plies.

3,925,140

FABRICATING APPARATUS FOR TWIN-SHEETS

Gaylord W. Brown, Beaverton, Mich., assignor to Koehring Company, Milwaukee, Wis.

Filed Mar. 16, 1973, Ser. No. 341,850
Int. Cl.² B32B 31/26
U.S. Cl. 156—382 **3 Claims**



1. Apparatus for forming hollow objects from first and second thermoplastic sheets wherein the amount of heat required to bring a first sheet to its forming temperature differs substatially from the amount of heat required to bring a second sheet to its forming temperature, said apparatus comprising heating means, diferential pressure, mold forming means located at a forming station adjacent said heating means, carrier means for advancing first and second sheets in uniformly spaced alternate succession in intermittent step-by-step movement along a fixed path with each first sheet being located one step in advance of a second sheet, said carrier means carrying said sheets in succession into operative relationship with said heating means and subsequently advancing said sheets in succession into operative relationship with said forming means at said forming station while pausing for a predetermined time interval between successive steps of movement to accommodate heating and forming of said sheets while said sheets are at said heating means and forming station, means at said forming station operable on alternate steps of movement of said carrier means to transfer a first sheet from said carrier means to said forming means within said predetermined time interval between a first step of movement of said carrier means and its next step of movement and operable after said next step of movement of said carrier means advances a second sheet into operative relationship with said forming means to actuate said forming means to form said

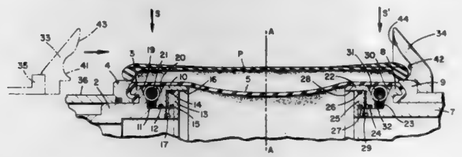
object within the predetermined time interval between said next step of movement and the next subsequent step of movement, and first heater control means responsive to the arrival of a first sheet at said heating means for operating said heating means to supply a first amount of heat to said first sheet within said predetermined time interval and responsive to the arrival of a second sheet at said heating means for operating said heating means to supply a second amount of heat, differing from said first amount of heat, to said second sheet within said predetermined time interval.

3,925,141

MACHINE FOR MANUFACTURING PNEUMATIC TIRES, IN PARTICULAR RADIAL TIRES

Renato Caretta, Varese, Italy, assignor to Industrial Pirelli S.p.A., Milan, Italy

Filed Sept. 8, 1972, Ser. No. 287,275
Claims priority, application Italy, Sept. 14, 1971, 28578/71
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B29H 17/16
U.S. Cl. 156—416 **1 Claim**



1. An expansible type drum machine for building pneumatic tires comprising
   - two shoulders to support the carcass zones concerned with the bead cores, said shoulders being movable relative to each other in an axial direction;
   - means for admitting a fluid under pressure inside the drum during the shaping of the carcass;
   - a helical spring, for each drum shoulder, closed as a ring and mounted under tension, each of said drum shoulders defining a groove of conical surfaces, facing each other, and being formed of two elements forming a part of the corresponding drum shoulder, said elements slidable axially relatively to each other so as to vary the width of said groove and cause the expansion and the contraction of the helical spring, and
   - two bells, facing each other and having an inner profile axially narrower than that of the freely shaped carcass, said bells extending radially for a portion of the height of the section of the completely shaped carcass, and abutting the carcass sides on the inner profiles thereof during the shaping of the carcass.

3,925,142

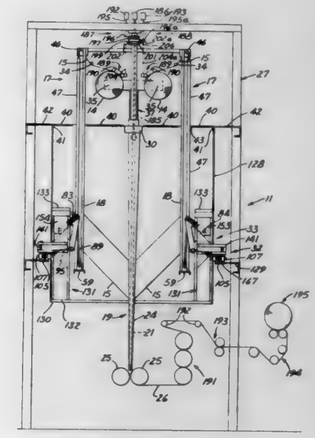
METHOD OF AND APPARATUS FOR BIAS LAYING

Charles A. Lee, and Warren R. Furbeck, both of Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Continuation-in-part of Ser. No. 95,756, Dec. 7, 1970, Pat. No. 3,715,255. This application Dec. 1, 1972, Ser. No. 311,313
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B65H 81/00
U.S. Cl. 156—425 **10 Claims**

1. An apparatus for generally helically winding at least one web into a tube and for flattening the tube to form a multi-ply bias-laid ribbon, said apparatus comprising:
   - a carrier rotatable in a circular path about a vertical axis, means for supporting and carrying at least one parent web roll in a circular path about said axis and in a horizontal plane and from which a web travels forwardly, a vertically extending mandrel centered on said vertical axis and having horizontally spaced areas for contacting and for carrying said web vertically and at a substantially constant speed to discharge continually as a tube, folding bar means on said carrier movable in a circular path and at a fixed radial distance from said axis guiding said web and discharging the web to each of said mandrel areas at a predetermined angle, said folding bar means traveling from positions closely adjacent each of said horizontally spaced mandrel areas outwardly therefrom for a predetermined arcuate extent and then traveling inwardly toward the other of said spaced mandrel areas to positions closely adjacent to said other mandrel areas, means for shifting said folding bar means to ascend and descend relative to said mandrel and to said carrier during said circular path rotation of said carrier and said folding bar means to provide a substantially uniform travel of said web onto said mandrel and vertically along said mandrel and means for removing said tube from said mandrel and for flattening said tube into a multi-ply bias-laid ribbon.

7. An apparatus for generally helically winding at least



one web into a tube and for flattening the tube to form a multi-ply bias-laid ribbon, said apparatus comprising:
   - a carrier rotatable about a vertical axis and carrying at least one parent web roll from which a web travels forwardly, a vertically extending mandrel having horizontally spaced areas for contacting and for carrying said web vertically and at a substantially constant speed, folding bar means on said carrier for guiding said web and for discharging the web to the mandrel at a predetermined angle, means for shifting said folding bar means vertically relative to said mandrel during rotation of said carrier to provide a substantially more uniform travel of said web onto and vertically along said mandrel, said means for shifting said folding bar means comprising a cam ring disposed in a horizontal plane and a cam follower means for converting horizontal displacements by said cam ring into vertical displacements of said folding bar means, said folding bar means comprising a slide mounted on said carrier for rectilinear vertical movement and a folding bar carried by said slide for movement therewith vertically.

3,925,143

METHOD AND APPARATUS FOR AUTOMATICALLY SPLICING FILM

Bruce D. Aldo, 6 Redwing Road, Enfield, Conn. 06082

Filed June 3, 1974, Ser. No. 475,946
Int. Cl.² G03D 15/04
U.S. Cl. 156—505 **5 Claims**

1. Apparatus for splicing the lead end of a second identified exposed film strip to the trailing end of a first or next preced-

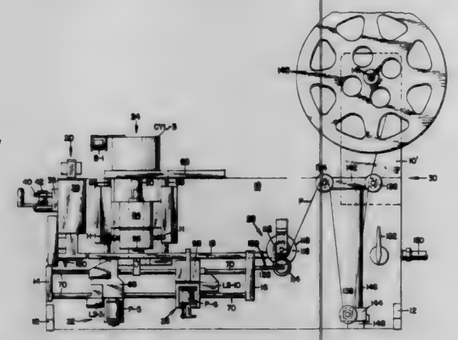
ing film strip, each film strip being of the type having image-bearing areas thereon and openings therein adjacent the leading and trailing ends thereof, comprising:

a film track for guiding the film strips,

a lead carriage assembly and a tail carriage assembly for selectively gripping and moving the film strips along the film track,

means for effecting reciprocating movement of the lead carriage and tail carriage assemblies relative to the track,

means for photographically exposing the leading end of the second film strip for an impression of identifying coded indicia thereon,



a cutting station for cutting the leading and trailing ends of the second film strip along a predetermined transverse line with reference to the image bearing areas,

a splicing station for splicing together the trailing end of the first or next preceding film strip to the leading end of the second film strip by means of a heat-setting adhesive tape member joined in sealed interlocking position with respect to the respective ends, and means for sensing the openings adjacent the leading and trailing ends of the film strips for selectively actuating the lead carriage assembly and the tail carriage assembly.

3,925,144

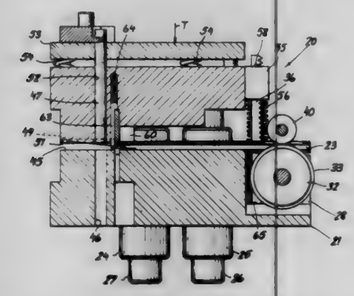
APPARATUS FOR APPLYING REINFORCEMENT ZONES TO SHEET MATERIAL

William F. Lowe, Bridgehampton, and Harry L. Bondy, Plainview, both of N.Y., assignors to E-Z Machine Corporation, Plainview, N.Y.

Filed Oct. 18, 1973, Ser. No. 407,623

Int. Cl. B32b *31/00*

U.S. Cl. 156—518 **10 Claims**



1. A device for applying patches of a strip of resilient thermally adhesive material to a substrate, comprising:

a pair of relatively displaceable die members receiving said substrate between them, at least one of said die members being continuously heated;

means for feeding said strip into juxtaposition with a surface of said substrate between said die members;

cutting means on said die members for severing a portion of the strip juxtaposed with said substrate from the remainder of said strip;

means for buckling said strip as it is fed into juxtaposition with said surface of said substrate for preventing adhesion of said remainder of said strip to said cutting means and of said severed portion to said die members during the cutting of said severed portion from said remainder of said strip;

means on said die members for compressing said severed portion against said substrate and thereby bonding said severed portion thereto; and

a holddown element on one of said members effective intermediate the severing of said portion of the bonding thereof to said substrate for yieldably retaining said portion against said substrate.

3,925,145

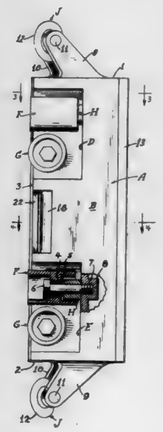
CORNER ROLLER FOR EMBEDDING TAPE IN MASTIC

Robert G. Ames, Hillsborough, Calif., assignor to Ulysses Stanley Ames, San Carlos, Calif., a part interest

Filed Jan. 31, 1974, Ser. No. 438,182

Int. Cl.² B32B *31/20, 35/00*

U.S. Cl. 156—579 **5 Claims**



1. A corner roller for embedding tape in a room corner where the mastic and tape have already been applied to cover the corner joint and comprising:

a. a tool body having a pair of integral wings whose outer surfaces extend substantially at right angles to each other;

b. said body having a pair of compartments, both being spaced from one another and extending into the areas of both wing outer surfaces and straddling the junction of said outer surfaces;

c. a pair of rollers mounted in each compartment, the axis of one roller in each pair paralleling the outer surface of one wing with the cylindrical peripheries of these rollers projecting a slight distance beyond the plane of said adjacent outer surface and the axis of the other roller in each pair paralleling the outer surface of the other wing with the cylindrical peripheries of these last named rollers projecting a slight distance beyond the plane of the adjacent outer surface of the other wing, the peripheral portions of said rollers that project beyond the outer surfaces of both wings being adapted to contact with the tape for embedding it in the mastic as the tool is moved over the tape; and

d. a double bevelled tape creasing and guiding wheel mounted at each end of said tool body and having its periphery lying substantially tangent to a line that coincides with the juncture line formed by the outer surfaces of the two wings whose outer surfaces extend substantially at right angles to each other.

3,925,146

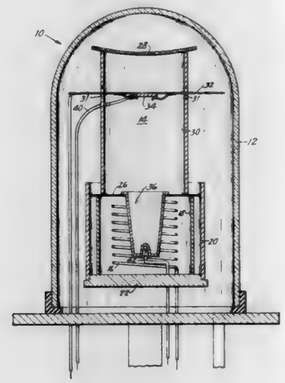
METHOD FOR PRODUCING EPITAXIAL THIN-FILM FABRY-PEROT CAVITY SUITABLE FOR USE AS A LASER CRYSTAL BY VACUUM EVAPORATION AND PRODUCT THEREOF

Keith H. Olsen, and Marvin H. Christmann, both of Bloomington, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 96,390, Dec. 9, 1970, abandoned. This application Dec. 7, 1972, Ser. No. 312,957

Int. Cl. B44d *1/18;* **C23c** *13/02*

U.S. Cl. 156—601 **8 Claims**



1. A vacuum evaporation process for producing an epitaxial thin-film Fabry-Perot cavity suitable for use as a laser crystal, comprising the steps of:

a. positioning within a reaction chamber having restricted openings for controlling the flow of vapors from the reaction chamber to a surrounding enclosure, a container containing as a source material a quantity of a direct band-gap semiconductor material, and further positioning within said reaction chamber a substrate having a test growth surface spaced from said source material;

b. evacuating said surrounding enclosure to a pressure of less than 10^{-5}Torr,

c. heating said source material to sinter and out-gas said material until only an adherent film is observed to form on said test growth surface, and determining the source material and test growth surface temperatures at which said film is formed as an evaporation-reaction temperature and a condensation-reaction temperature, respectively;

d. positioning within said reaction chamber at a region in which the growth conditions are the same as at the test growth surface, a crystalline substrate having a growth surface;

e. preheating said crystalline substrate to a temperature greater than said condensation-reaction temperature;

f. heating said source material to said evaporation-reaction temperature;

g. terminating said step of preheating said substrate after said source material has reached said evaporation-reaction temperature thereby allowing said growth surface to cool to an equilibrium state wherein said growth surface is maintained at said condensation-reaction temperature by heat radiated within said reaction chamber as a result of continuing to heat said source material, thereby causing vapors of said source material to be deposited as a uniform epitaxial film on said substrate growth surface; and

h. terminating said step of heating said source material when said uniform epitaxial film is formed.

3,925,147

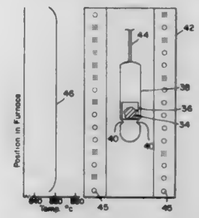
PREPARATION OF MONOCRYSTALLINE LEAD TIN TELLURIDE

Hiroshi Kimura, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 176,157, Aug. 30, 1971, abandoned. This application July 2, 1973, Ser. No. 375,417

Int. Cl.² H01L *7/62;* **B01J** *17/00*

U.S. Cl. 156—603 **5 Claims**



1. A method for synthesizing a single crystal of lead tin telluride composition from a polycrystalline source material thereof comprising the step of heating the source material in an isothermal environment and at a resulting sufficiently high uniform temperature for forming a solid and liquid heterogeneous phase therefrom in which the quantity of the solid phase is large with respect to the quantity of the liquid phase and in which the liquid phase acts as a diffusion medium for enabling mass transfer until the solid phase comes into equilibrium with the liquid phase, thereby for permitting the solid phase to form into the single crystal.

3,925,148

HEAT EXCHANGERS & EVAPORATORS

Ransome W. Erwin, Ogden, Utah, assignor to Austral-Erwin Engineering Co., Houston, Tex.

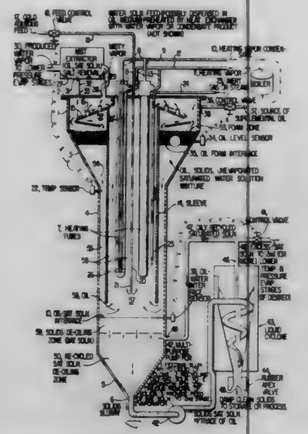
Division of Ser. No. 401,655, Sept. 28, 1973, which is a continuation-in-part of Ser. No. 306,183, Nov. 14, 1972, Pat. No. 3,891,496. This application Dec. 27, 1974, Ser. No. 536,792

Int. Cl.² B01D *1/00, 1/22;* **B03C** *3/00*

U.S. Cl. 159—23 **20 Claims**

1. An apparatus for evaporating aqueous solutions containing solids and/or mineral salts without adherence of such solids to any surfaces contacted by the aqueous solution, wherein all contacted surfaces are preferentially oil wettable and coated with an oily liquid, and all heated surfaces are also substantially zero water adsorbent, said apparatus comprising an outer container enclosing a confined heating and vaporizing zone, having therein heating means arranged to be externally contacted by fluids within said heating and vaporizing zone and being provided with an exterior contacting surface which is both preferentially oil wettable and substantially zero water adsorbent; a source of cold aqueous feed solution containing solids and/or dissolved mineral salts, a feed line leading from said source of aqueous solution to a portion of said confined heating and vaporizing zone adjacent to but below said heating means, means for passing oil and saturated solution and oil up through said heating and vaporizing zone and ing zone, means for effecting flow of said aqueous feed solution and oil by through said heating and vaporizing zone and into contact with the exterior of said heating means, and other contacted surfaces whereby said heating means and surfaces

are externally coated with oil and said aqueous feed liquid is at least partially vaporized and the vapors separated from the oily liquid and solids, upper outlet means for withdrawing hot vapor, derived from contacting said aqueous feed solution



with said heating means, from the upper portion of said container, lower outlet and recycle means for withdrawing a slurry including solids, salts and oily saturated aqueous solution from the lower portion of said container for further treatment and said recycling.

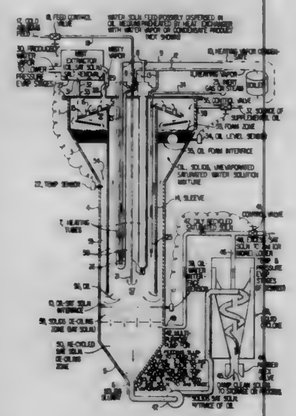
3,925,149
HEAT EXCHANGERS & EVAPORATORS

Ransome W. Erwin, Ogden, Utah, assignor to Austral-Erwin Engineering Co., Houston, Tex.

Continuation-in-part of Ser. No. 306,183, Nov. 14, 1972, Pat. No. 3,891,496. This application Sept. 28, 1973, Ser. No. 401,655

Int. Cl.² B01D *1/00*; **F26B** *7/00*; **F28F** *13/18*; **B01D** *3/34*

U.S. Cl. 159—47 **12 Claims**



1. The method of evaporating an aqueous feed solution containing dissolved and/or suspended solids or mineral salts without adherence of the solids or mineral salts to any surfaces contacting the aqueous solution, said surfaces being hereinafter referred to as fluid contacting surfaces, said method being carried out in an apparatus comprising a main vessel having an outer wall and containing a vertical open-ended heating zone spaced from the outer wall, said heating zone having heating means therein and a settling zone below the heating zone, and succeeding separating zones, both inside and outside the main vessel;

said heating zone, heating means, settling zone and separating means having fluid contacting surfaces;

all fluid contacting zones within said apparatus being preferentially oil wettable and all fluid contacting surfaces within the confining heating zone comprising substantially zero water adsorbent fluorocarbon polymers, which method comprises the following steps:

a. supplying the feed solution, prior to entry into the heating zone, into an organic liquid immiscible with the aqueous feed solution, intimately mixing said organic liquid and aqueous solution,

b. feeding the mixture centrally into said main vessel downwardly to a discharge point below the heating zone but above the settling zone, passing the said mixture upwardly through said heating zone and into contact with the heating means therein whereby all fluid contacting surfaces within the confining heating zone are wetted with said organic liquid, supplying sufficient heat to the mixture within said heating zone to effect at least partial evaporation of the aqueous solution, converting a portion at least of the aqueous solution to misty water vapor and solids slurry, and

c. separating the resulting mixture comprising immiscible organic liquid and misty vapors, solids-slurry and aqueous solution into components, in said succeeding separating zones.

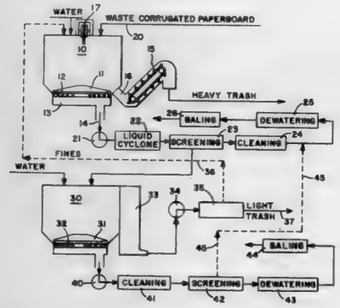
3,925,150
SELECTIVE RECLAMATION OF WASTE PAPER PRODUCTS

Paul G. Marsh, Middletown, Ohio, assignor to The Black Clawson Company, Middletown, Ohio

Filed Apr. 6, 1973, Ser. No. 348,496

Int. Cl.² D21C *5/02*

U.S. Cl. 162—4 **5 Claims**



1. The process of selectively recovering two different fibrous constituents of waste paper products which have different properties of defiberability from a mixture of such products, comprising:

a. subjecting said mixed products to a primary pulping action in water suspension,

b. terminating said pulping action on said suspension as a whole as soon as the majority of the more readily defibered of said products is defibered sufficiently for passage through screening openings of a predetermined small size and while the majority of the less readily defibered of said products has not defibered sufficiently for passage through said holes,

c. selectively extracting said defibered product from said suspension by effecting passage thereof through screening holes of said predetermined size, and thereafter

d. subjecting the remaining said suspension to further defibering treatment to defiber the paper products remaining therein.

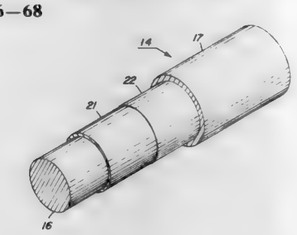
3,925,151
NUCLEAR FUEL ELEMENT

Harold H. Klepfer, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Feb. 11, 1974, Ser. No. 441,133

Int. Cl.² G21C *3/20*

U.S. Cl. 176—68 **32 Claims**



1. A nuclear fuel element which comprises a metallic elongated container in the form of a right circular cylinder, a layer of high lubricity material being disposed in and adjacent to the inside surface of said container, a low neutron capture cross section metal liner being disposed in said container and adjacent to said layer, a body of nuclear fuel material disposed in said container and surrounded by said liner, and end plugs sealing each end of said container.

3,925,152
VIRUS SEPARATION

Jerker Olof Porath, and Jan-Christer Janson, both of Uppsala, Sweden, assignors to Exploaterings Aktiebolaget T.B.F., Uppsala, Sweden

Continuation-in-part of Ser. No. 261,807, June 12, 1972, abandoned. This application Dec. 11, 1973, Ser. No. 423,730

Claims priority, application Sweden, June 18, 1971, 7968/71

Int. Cl.² C12K *7/00*

U.S. Cl. 195—1.5 **1 Claim**

1. Method of separating a mixture of virus variants of substantially the same size by bringing the mixture in aqueous suspension to pass a bed of adsorbent, characterized in that the adsorbent is constituted of an insoluble, organic macroporous polymer selected from the group consisting of agar, agarose, dextran and cellulose, containing amphoteric substituents composed of both basic nitrogen-containing groups and carboxylate or sulphonate groups, where the proportion between the basic and the acid groups is simple and stoichiometric, whereby said viruses adsorb to said adsorbent, eluting said viruses in a plurality of elution steps with solutions of successively different ion strength, to thereby obtain virus variant separation and collecting the eluates in separate fractions.

3,925,153
COMPOSITION FOR CONSERVATION OF BLOOD

Henri Laborit, Paris, France, assignor to Centre d'Etudes Experimentales et Cliniques de Physio Biologie de Pharmacologie et d'Eutonologie, Paris, France

Continuation-in-part of Ser. Nos. 143,568, May 14, 1971, abandoned, and Ser. No. 19,532, March 18, 1970, abandoned, and Ser. No. 670,186, Sept. 25, 1967, abandoned. This application Jan. 8, 1973, Ser. No. 321,642

Int. Cl.² A61K *35/14*

U.S. Cl. 195—1.8 **3 Claims**

1. A composition comprising one part of collected red blood cells stabilized with respect to 2,3-diphosphoglycerate content with 1 to 99 parts of a blood-2,3 diphosphoglycerate stabilizing combination consisting essentially of:

a. An effective amount of dihydroxyacetone sufficient when administered with effective amounts of:

b. sodium citrate dihydrate,

c. citric acid monohydrate and

d. phosphate monosodium monohydrate or mixture thereof to maintain ph and PO_2 values and globular 2,3 D.P.G. (diphoshoglycerate) levels for 9 days in vitro and thereby to conserve glycolysis of said R.B.C. (red blood cells, in vitro) for at least 9 days in vitro as compared with 3 days in vitro stability of 2,3 diphosphoglycerate content when red blood cells are stabilized with (b) (c) (d) and glucose, and

e. an amount of nicotinamide effective to maintain the globular 2,3 diphosphoglycerate content of red blood cells 11 days in vitro.

3,925,154
METHOD OF PRODUCING INOSINE-5'-MONOPHOSPHATE

Hitoshi Enei, Zushi; Hiroshi Matsui, Yokohama, and Yoshio Hirose, Fujisawa, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Oct. 7, 1974, Ser. No. 512,465

Claims priority, application Japan, Oct. 12, 1973, 48-114487

Int. Cl.² C12D *13/06*

U.S. Cl. 195—28 N **4 Claims**

1. A method of producing inosine-5'-monophosphate from a starting material consisting of inosine and hypoxanthine which comprises culturing a strain of Corynebacterium sp. selected from the group consisting of strain FERM-P 2310 and strain FERM-P 2311 in an aqueous culture medium containing assimilable sources of carbon and nitrogen, inorganic ions and minor organic nutrients necessary for the growth of said strain, said starting material, and phosphate ions until said starting material is converted to said inosine-5'-monophosphate, and said inosine-5'-monophosphate accumulates in said medium, and recovering the accumulated inosine-5'-monophosphate from said medium.

3,925,155
PREPARATION OF 6-AMINOPENICILLANIC ACID 1-OXIDE

Eiji Kondo, Ikeda; Takashi Mitsugi, Takaishi, and Ryonosuke Muneyuki, Takatsuki, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Sept. 11, 1974, Ser. No. 505,086

Claims priority, application Japan, Sept. 21, 1973, 48-107299

Int. Cl.² C12D *9/14*

U.S. Cl. 195—36 P **9 Claims**

1. A process for preparing 6-aminopenicillanic acid 1-oxide or a salt thereof which comprises (A) subjecting a penicillin 1-oxide or salt thereof to the penicillin 1-oxide amidase action of (1) a penicillin 1-oxide amidase-producing microorganism of the genus Streptomyces or (2) the mycelium preparation resulting from said microorganism and (B) recovering the resultant 6-aminopenicillanic acid 1-oxide or salt thereof.

3,925,156
MICROBIOLOGICAL PROCESS FOR PREPARING 2-SUBSTITUTED-4-(R)-HYDROXY-CYCLOPENTANE-1,3-IONES

Lung Ting Chang, Elkhart, Ind., and Carol Ann Terry, Cassopolis, Mich., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 10, 1973, Ser. No. 423,257

Int. Cl.² C07B *29/02*

U.S. Cl. 195—51 R **11 Claims**

1. In a microbiological process for converting a 2-substituted-cyclopentane-1,3,4-trione or a 2-substituted-3-alkoxy-cyclopent-2-ene-1,4-dione substrate into a 2-substituted-

4(R)-hydroxy-cyclopentane-1,3-dione product utilizing a microorganism of the Class Ascomycetes, by incubating the microorganism in a medium having an initial carbohydrate concentration of from 2% to 6% and an initial pH of from 5 to 6 and subsequently adding the substrate to the incubated medium for conversion, the improvement comprising:

maintaining a subsequent carbohydrate concentration of from 0.1 to 1% and a subsequent pH of from 4 to 5 during incubation of the microorganism until a cell concentration of the microorganism of from 20% to 35% is obtained in the medium;

then adding the substrate to the incubated medium at a rate of from 0.4 gram to 1.0 gram per hour per 10 liters and maintaining said subsequent carbohydrate concentration and said subsequent pH of the medium during the entire microbiological conversion of substrate to product.

3,925,157
IMMOBILIZED ENZYMES

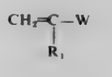
James J. Hamsher, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 271,159, July 12, 1972, abandoned. This application Dec. 6, 1972, Ser. No. 312,694

Int. Cl.² C07G 7/02

U.S. Cl. 195—63 **22 Claims**

1. A process for preparing an immobilized enzyme which comprises contacting an enzyme with a polymerizable, ethylenically unsaturated monomer until said enzyme is covalently bonded to said monomer and then polymerizing or copolymerizing the enzyme-monomer product thus produced in the presence of a cross-linking agent and an initiator, the polymerizable, ethylenically unsaturated monomer having the formula:



wherein

R_1 is selected from the group consisting of hydrogen, methyl and chloro;

W is selected from the group consisting of $-COR_2$, $-SO_2Cl$ and p-(chlorosulfonyl)phenyl;

R_2 is selected from the group consisting of

A. hydroxy,
halide,
azido,
acryloyloxy,
lower alkoxy carbonyloxy,
benzenesulfonyloxy, and
N-[(p-diazonium chloride)phenyl]amino; and

B. $-X-(Y-X')_n-Z$

wherein each of X and X' is selected from the group consisting of —O— and $-NR_3$ wherein R_3 is selected from the group consisting of hydrogen and alkyl containing from 1 to 6 carbon atoms;

Y is selected from the group consisting of alkylene containing from 2 to 3 carbon atoms;

n is an integer from 1 to 2; and

Z is selected from the group consisting of haloacetyl, 2-(4,6-dichloro)-s-triazinyl, p-toluenesulfonyl, p-(halomethyl) benzoyl and cyano;

with the proviso that when Z' is p-toluenesulfonyl, X' is —O—.

3,925,158
PROCESS OF MANUFACTURING ENZYME PREPARATION RICH IN LIPASE

Hans Betzing, Horrem, and Dac Lekim, Cologne, both of Germany, assignors to A. Nattermann & Cie. GmbH, Cologne, Germany

Filed Feb. 18, 1975, Ser. No. 550,641

Claims priority, application Germany, Feb. 21, 1974, 2408379; Jan. 30, 1975, 2505887

Int. Cl.² C07G 7/026

U.S. Cl. 195—66 R **4 Claims**

1. In a process of preparing an enzyme preparation rich in lipase by comminution of pancreas tissue, autolysis, removal of fat and aqueous extraction of the tissue, and recovery of the enzyme from the aqueous extract, the improvement wherein: the comminuted pancreas tissue is first partially degreased with a mixture of about 9 parts by volume of chloroform and 1 part by volume butanol, then the partially degreased tissue material is left standing for 24–96 hours at 0° – 4°C to effect autolysis, and then after said aqueous extraction, said recovery is carried out.

3,925,159
BIOLOGICAL INDICATOR AND METHOD FOR ITS PRODUCTION

Eberhard Steiger, Leipzig, Germany, assignor to VEB Kombinat Medizin-und Labortechnik Leipzig, Leipzig, Germany

Continuation-in-part of Ser. No. 367,988, June 7, 1973. This application Jan. 30, 1974, Ser. No. 438,058

Int. Cl.² C12K 1/04

U.S. Cl. 195—73 **10 Claims**

1. Method for the preparation of a biological indicator for the reproducible control of the conducting of chemical sterilizations, comprising suspending a spore sòil in a liquid at a ratio of at least 1.5 ml. of the liquid per g. of the soil, separating the solid constituents from the suspension thereby to obtain a biotope-free germ suspension having a germ concentration no greater than 6000 germs per ml., concentrating the germ suspension to a concentration of at least 10^6 germs per ml. while the germ suspension is not yet packaged, packaging the germ suspension and drying the germ suspension.

3,925,160
METHOD OF PRODUCING AN ANTIBIOTIC

W. Eugene Sanders, Jr., and Christine C. Sanders, both of Omaha, Nebr., assignors to Creighton University, Omaha, Nebr.

Filed Sept. 26, 1974, Ser. No. 509,457

Int. Cl.² C12D 9/20

U.S. Cl. 195—96 **6 Claims**

1. A process for producing the antibiotic substance Enocin having antibacterial activity against group A streptococci and other pantothenate - requiring organisms comprising cultivating *Streptococci salivarius* strain K58 (ATCC No. 31067) in an aqueous growth medium until a substantial amount of Enocin is produced, and recovering the Enocin from said growth medium.

3,925,161
FECAL STREPTOCOCCI SPECIATING MEDIA

Mary M. Galvani, 540 Mississippi River Blvd., St. Paul, Minn. 55116

Filed July 18, 1973, Ser. No. 380,141

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C12K 1/10

U.S. Cl. 195—100 **8 Claims**

1. A fecal streptococci speciating media consisting of a mixture of Peptone, Esculin, Ferric Ammonium Citrate Sodium Azide and Bacteriological Gelatin having a pH of 6.8.

2. The media set forth in claim **1** and including Sodium Citrate.

3. The media set forth in claim **1** and the amounts of the said ingredients being in the ranges of: Peptone, 10.0 to 30.0 grams per liter; Esculin, 0.10 to 5.00 grams per liter; Ferric Ammonium Citrate, 0.10 to 3.00 grams per liter; Sodium Azide, 0.01 to 0.50 grams per liter; and Bacteriological Gelatin, 50.0 to 200.00 grams per liter.

7. The process and method of providing a fecal streptococci speciating media including the steps of providing a selection of elements including:

a. Peptone, Esculin, Ferric Ammonium Citrate, Sodium Azide and Bacteriological Gelatin;
b. providing all the dry ingredients in powdered form and thoroughly mixing the same;
c. providing 143.00 grams of the dry, mixed ingredients for mixture in cold distilled water to provide a thoroughly wetted and evenly suspended mixture;
d. slowly heating the mixture to boiling while constantly agitating the same;
e. cooling the mixture immediately after reaching the boiling point;
f. autoclaving the resulting mixture as selected; and
g. adjusting the pH of the mixture to 6.8.

3,925,162
METHOD FOR SIMULTANEOUS DETERMINATION OF ENZYMATIC ACTIVITIES OF ENZYMES

Takashi Kanno, Tokyo, Japan, assignor to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1973, Ser. No. 385,815

Claims priority, application Japan, Aug. 17, 1972, 47-81818

Int. Cl.² C12K 1/04

U.S. Cl. 195—103.5 R **23 Claims**

1. A method for the simultaneous determination of enzymatic activities of a plurality of enzymes in a single reaction medium, comprising:

adding a substrate for each of the enzymes to be determined, each substrate being selected such that it is capable of giving an enzymatic reaction with its respective enzyme, it does not interact with the other substrates, reaction products or reagents used and it does not adversely affect the measurement of the enzymatic activity, to an aqueous solution containing a plurality of enzymes to be determined, the enzymes being selected such that the enzymatic conditions of each are similar to each other and they can be reacted with their respective substrates under the same reaction conditions;

simultaneously reacting each of the enzymes with their respective substrates under the optimum reaction conditions with respect to each of the enzymes under which the enzymatic reactions of the plurality of enzymes to be determined take place simultaneously;

measuring simultaneously changes in the absorbance or fluorescence of the resulting reaction system with the lapse of time at a plurality of optional wavelengths which are different from each other and the number of which is equal to the number of enzymes to be determined;

formulating simultaneous equations of the first degree by taking advantage of the proportional relationship, which is independent with respect to each of the enzymes, between the measurement values and the enzymatic activities; and

determining the enzymatic activity of each of the enzymes by the thus formulated equations.

3,925,163
DIAGNOSTIC DEVICE

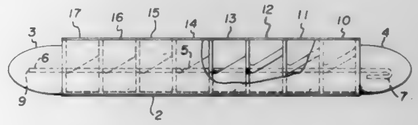
Thomas Cekoric, Jr., Hopatcong, and Patrick Michael Yananton, Garfield, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 256,984, May 25, 1972, Pat. No. 3,784,448. This application Sept. 24, 1973, Ser. No. 400,080

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C12K 1/04

U.S. Cl. 195—103.5 R **6 Claims**



1. A method for innoculating and insuring the biochemical reaction of a test media contained in compartments of a tubular member of a disposable diagnostic device, said disposable device including an innoculation member extending longitudinally through the tubular member via axially aligned openings contained in the walls which define said compartments, said innoculation member including a handle end and an innoculation end; at least one of such compartments containing a media which biochemically reacts under anaerobic conditions, any such last-mentioned compartment being disposed sequentially adjacent to one end of the tubular member which method comprises contacting said innoculation end with isolates obtained from a specimen sample, pulling on said handle end whereby said innoculation member is withdrawn from said tubular member and said innoculation end passes through and hence, contacts all of said test media and permits air to enter the tubular member through the compartment adjacent the inoculation end and reinserting an insertable member into the openings in the walls of any compartment that contain a medium which biochemically reacts under anaerobic conditions, such insertable member being so sized as to pass only through both walls defining any of such last-mentioned compartment.

2. A method as in claim **1** which comprises coating any media which biochemically reacts under anaerobic conditions with a non-porous, pliable material which is solid below **50°C**.

4. A method as in claim **1** wherein the innoculation member is provided with a scored portion and the innoculation member is broken at the scored portion after said innoculation member is withdrawn from the tubular member and utilizing one of said broken portions as the said insertable member.

3,925,164
METHOD FOR THE DETERMINATION OF CHOLESTEROL

Klaus Beaucamp; Hans Möllering; Gunter Lang; Wolfgang Gruber, and Peter Roeschlau, all of Tutzing, Upper Bavaria, Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim-Waldhof, Germany

Filed Mar. 25, 1974, Ser. No. 454,522

Claims priority, application Germany, Mar. 28, 1973, 2315501; Apr. 3, 1973, 2316637

Int. Cl.² C12K 1/04

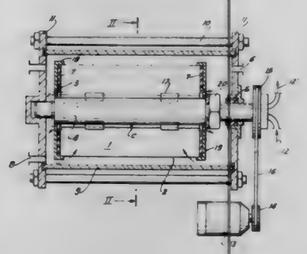
U.S. Cl. 195—103.5 R **18 Claims**

1. Method of determining total cholesterol or bound cholesterol in a sample, which method comprises treating said sample with cholesterol esterase obtained from a micro-organism, thereby releasing the bound cholesterol, and then determining the resulting cholesterol content of said sample using a standard determinatiion.

3,925,165
APPARATUS FOR CULTURING OF TISSUE CELLS AND MICRO-ORGANISMS

Hans Müller, Im Allmendli, Erlenbach, Zurich, Switzerland

Filed Aug. 13, 1973, Ser. No. 388,036
Claims priority, application Switzerland, Aug. 18, 1972, 12326/72
Int. Cl.² C12B *1/16*
U.S. Cl. 195—127 **11 Claims**

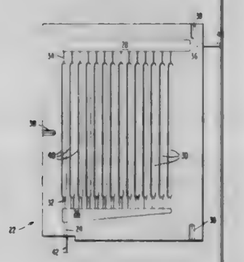


1. In an apparatus for culturing of tissue cells and micro-organisms, a combination comprising a housing; a support mounted in said housing for rotation about an axis; drive means for rotating said support about said axis; a plurality of elongated culture carriers circumferentially spaced from each other about the periphery of said support and each elongated in a direction parallel to said axis and partly bounding with an adjacent carrier a space that is elongated lengthwise of said axis, and having exposed surfaces on which respective cultures are to grow, and longitudinally spaced ends; connecting means for releasably connecting said carriers with said support; and a pair of end plates located at the respective ends of said carriers.

3,925,166
AUTOMATED SYSTEM FOR THE DETERMINATION OF BACTERIAL ANTIBIOTIC SUSCEPTIBILITIES

Phillip Blume, Minneapolis, Minn., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed Sept. 6, 1974, Ser. No. 503,744
Int. Cl.² C12K *1/04*
U.S. Cl. 195—139 **7 Claims**

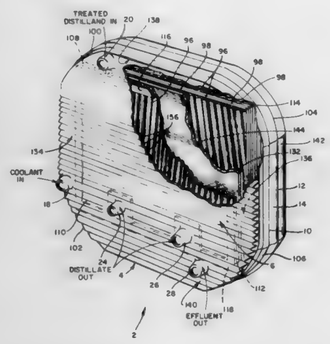


1. A sample plate for testing antibiotic susceptibility of bacterially impregnated gels comprising:
- a transparent plate having upper and lower surfaces;
- a plurality of parallel grooves in said plate each of said grooves having an outlet end and an inlet end;
- first and second manifolds disposed in said plate respectively at said inlet end and said outlet end of said parallel grooves;
- first connecting means for connecting each of said inlet ends of said parallel grooves to said first manifold;
- second connecting means for connecting said outlet ends of said parallel grooves to said second manifold;
- an inlet bore connected to said first manifold through which a solution of agar may be introduced to said first manifold;
- an aspiration bore connected to said second manifold, said aspiration bore being adapted to be connected to a means for applying a suction to said aspiration bore, and
- a transparent covering means, sealingly engaging said upper surface of said transparent plate, for forming, with said first and second connecting means and said parallel grooves, a plurality of sealed tube-like channels connecting said first and second manifolds, and for scaling said manifolds.

3,925,167
MULTI-STAGE DISPOSABLE STILL

Franklin A. Rodgers, Brookline, Mass., assignor to Pactide Corporation, Cambridge, Mass.

Filed Dec. 22, 1972, Ser. No. 317,624
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B01D *1/26, 3/00*
U.S. Cl. 202—174 **27 Claims**



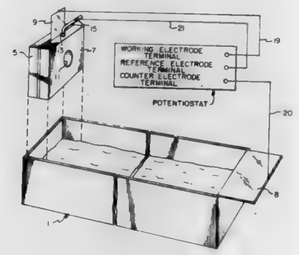
1. A disposable still structure, including:
- an array of alternating vapor-impermeable and vapor-permeable stacked membranes in uniformly spaced layers means defining a plurality of open channels on at least one surface of alternate ones of said impermeable membranes extending generally in a reference direction but canted in a first direction with respect to said reference direction;
- means defining a plurality of open channels on at least one surface of each of said impermeable membranes intermediate said alternate impermeable membranes and extending generally in said reference direction but canted with respect to said reference direction in a second direction; means for sealing discrete portions of adjacent impermeable and permeable membranes to close both said pluralities of open channels to define at least a plurality of channels for receiving distilland on one side of said plurality of permeable membranes; and
- means for maintaining a temperature differential across said permeable membranes whereby vapor from said distilland may pass through said permeable membranes and be condensed as distillate on the other side thereof.

18. A multi-stage distillation device of the type useful in distilling potable water from saline water by passing heated distilland over one surface of a microporous vapor-permeable, liquid-impermeable membrane and diffusing the vapor of said distilland through the pores of said membrane to the other side thereof where it may be cooled and condensed as potable water, including as elements in each of said multi-stages:
- a first liquid and vapor-impermeable membrane having at least one corrugated surface;
- a second liquid and vapor-impermeable membrane having a corrugated surface disposed facing a corrugated surface of said first impermeable membrane;
- a vapor-permeable, liquid-impermeable membrane compressively sandwiched between said first and second impermeable membranes; and
- means for preventing the facing corrugated surface of said impermeable membranes from nesting together, thereby preventing said vapor permeable membrane from being compressively urged into said corrugations;
- wherein the corrugations in said first impermeable membrane are canted in one direction with respect to a reference and the corrugations in said second impermeable membrane are canted in a direction opposite said one direction.

3,925,168
METHOD OF MONITORING THE ACTIVE ROUGHENING AGENT IN A COPPER PLATING BATH

Louis P. Costas, Cheshire, Conn., assignor to Anaconda American Brass Company, Waterbury, Conn.

Filed July 26, 1972, Ser. No. 275,426
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G01N *27/46*; **C23B** *5/20*
U.S. Cl. 204—1 T **3 Claims**



1. A method of determining the amount of active roughening agent in a plating bath comprising
- a. submerging a test cathode in a quantity of the bath to be tested;
- b. shielding the test cathode from exposure to the bath except for a defined area;
- c. placing a reference electrode adjacent to the cathode;
- d. maintaining either the voltage difference between the cathode and reference electrode substantially constant or the current density in the defined area of the cathode substantially constant;
- e. measuring said current density or said voltage difference whichever is not held constant;
- f. thereafter repeating steps (d) and (e) with selected voltage differentials or selected current densities with baths having varying known active roughening agent content; and
- g. finally determining the amount of such agent in an unknown bath by
  - i. controlling the voltage applied or controlling the current density;
  - ii. measuring the current density or voltage differential whichever is not controlled; and
  - iii. comparing the data with said prior measurements of (e) above.

3,925,169
ACTIVE GRIGNARD ELECTRODE AND PROCESS

Charles L. Baimbridge, Sweeny; James R. Minderhout, Lake Jackson; Robert W. Bearman, Lake Jackson, and Donald E. Carpenter, Lake Jackson, all of Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Mar. 19, 1973, Ser. No. 342,346
Int. Cl.² G01N *27/46*; **C25B** *3/12*
U.S. Cl. 204—1 T **6 Claims**



1. A method of continuously monitoring the concentration of Grignard reactant in a Freeport Process cell for producing organolead compounds which comprises measuring the potential drop between a reference half cell comprising an electrode selected from the group consisting of lead and zinc metal in anhydrous ether solution and a platinum group sample electrode in process Grignard reactant coupled to said reference half cell through a bridge means.

3,925,170
METHOD AND COMPOSITION FOR PRODUCING BRIGHT PALLADIUM ELECTRODEPOSITIONS

Robert M. Skomoroski, Paterson, N.J., and Robert G. Zobbi, Southbury, Conn., assignors to American Chemical & Refining Company, Inc., Waterbury, Conn.

Filed Jan. 23, 1974, Ser. No. 435,844
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C25D *3/56*
U.S. Cl. 204—43 N **15 Claims**

1. In an aqueous bath for the electroplating of palladium, the combination consisting essentially of:
- A. 0.02–0.25 gram mole per liter of palladium ion;
- B. 0.9–3.6 gram moles per liter of ammonium hydroxide;
- C. 0.1–0.7 gram mole per liter of a soluble electrolyte selected from the group consisting of alkali metal and ammonium sulfates, sulfamates, phosphates, nitrates, nitrites and mixtures thereof;
- D. a soluble metallic brightener selected from the group consisting of 0.002–0.04 gram mole per liter of cobalt ion, 0.004–0.02 gram mole per liter of nickel ion and mixtures thereof providing 0.003–0.068 gram mole per liter of metal ions; and
- E. up to 6×10^{-4} gram mole per liter of cetyltrimethylammonium bromide;

said bath having a pH of 7.5–11.0.

8. In the method of electroplating palladium deposits upon a workpiece, the steps comprising:

A. immersing a workpiece having a conductive surface in an aqueous bath consisting essentially of:
1. 0.02–0.25 gram mole per liter of palladium ion;
2. 0.9–3.6 gram moles per liter of ammonium hydroxide;
3. 0.1–0.7 gram mole per liter of a soluble electrolyte selected from the group consisting of alkali metal and ammonium sulfates, sulfamates, phosphates, nitrates, nitrites and mixtures thereof;
4. a soluble metallic brightener selected from the group consisting of 0.002–0.04 gram mole per liter of cobalt ion, 0.004–0.02 gram mole per liter of nickel ion and mixtures thereof providing 0.003–0.068 gram mole per liter of metal ions; and
5. up to 6×10^{-4} gram mole per liter of cetyltrimethylammonium bromide;

said bath having a pH of 7.5–11.0;

B. maintaining the temperature of said bath at 26°–60° Centigrade;

C. applying a potential across said workpiece and an anode inert to said bath, said potential providing a current density of 0.05–2.0 amperes per square decimeter and the anode to cathode surface ratio being 1.0–5.0:1.0; and

D. removing said workpiece from said bath.

3,925,171

METHOD FOR ELECTROCHEMICAL PASSIVATION OF TINPLATE AND ELECTROLYTE FOR USE THEREIN

Franz Jargon, Schwanewede; Erich Maschke, Bremen, and Rudolf Eylens, Leuchtenberg, all of Germany, assignors to Klockner-Werke AG, Duisburg, Germany

Filed May 2, 1974, Ser. No. 466,247

Claims priority, application Germany, May 9, 1973, 2323336

Int. Cl.² C25D *11/38*

U.S. Cl. 204—56 R **8 Claims**

1. A method for treating a material having a tin-containing surface to passivate and improve the corrosion resistance of the said surface which comprises making the material a cathode in an aqueous hexavalent chromium electrolyte consisting essentially of an aqueous solution of an alkali-metal dichromate in an amount of at least 20 and at most 25 grams per liter, an alkali-metal acetate in an amount of at least 5 and at most 10 grams per liter, and chromium trioxide in an amount of at least 4 and at most 6 grams per liter, the said electrolyte having a hydrogen-ion concentration corresponding to a pH between 4.0 and 5.0 and an electrical conductivity of at least 28,000 micromhos per centimeter at a temperature of 50°C, and passing an electric current through the material and the electrolyte until an amount of chromium-containing film is deposited upon the said surface that is sufficient to improve the corrosion resistance of the said material.

3,925,172

ELECTROCHEMICAL OXIDATION AND REDUCTION

John Davidson Voorhies, New Canaan, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 14, 1972, Ser. No. 226,306

Int. Cl.² C25B *3/00*; **C07C** *85/00, 39/08, 107/00*

U.S. Cl. 204—72 **5 Claims**

1. A process for electrolyzing material capable of being oxidized or reduced comprising

A. forming a liquid permeable mixture of

a. conductor particles, said conductor particles being of small particle size, electrically conductive, and insoluble in and unreactive to the electrolyte solution used in combination therewith, and

b. material to be electrolyzed, said material being insoluble in and unreactive to the electrolyte solution used in combination therewith, in the physical form of particles of small particle size, and capable of being oxidized or reduced to yield products which are soluble in the electrolyte solution,

in contact with an electrode and electrolyte solution, said electrolyte solution being capable of conducting electricity and of dissolving the products produced on oxidizing or reducing said material being electrolyzed but being incapable of dissolving said material to be electrolyzed or said conductor particles;

B. immersing a counter-electrode in said electrolyte solution out of contact with said liquid permeable mixture of particles; and

C. flowing electricity in a single direction between said electrode and said counter-electrode to oxidize or reduce said electrolyzable material thereby forming a solution in said electrolyte of the resultant oxidized or reduced material.

3,925,173

ELECTROCATALYTIC HYDROGENATION PROCESS

Klaus Junghans, Berlin, Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Filed May 2, 1974, Ser. No. 466,172

Claims priority, application Germany, May 4, 1973, 2323091

Int. Cl. C25B *3/04*; **C07C** *167/12, 169/00*

U.S. Cl. 204—73 R **9 Claims**

1. A process for the stereospecific selective electrolytic hydrogenation of a carbon-carbon, non-aromatic multiple bond of an unsaturated steroid having an aromatic ring and which is reducible to a mixture of stereoisomers, while leaving the aromatic ring intact, which comprises subjecting an acidic solution of the unsaturated steroid to electrolysis in a divided cell employing a cathode whose surface is a finely divided metal hydrogenation catalyst until the carbon-carbon multiple bond is hydrogenated.

3,925,174

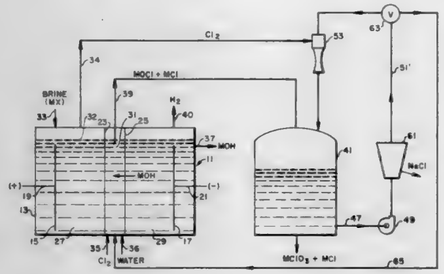
ELECTROLYTIC METHOD FOR THE MANUFACTURE OF HYPOCHLORITES

Jeffrey D. Eng, North Vancouver, and Cyril J. Harke, Burnaby, both of Canada, assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Nov. 1, 1973, Ser. No. 411,620

Int. Cl.² C25B *1/26*; **C01B** *11/06*; **C25B** *13/08*; **B01K** *1/00*

U.S. Cl. 204—95 **8 Claims**



1. A method for electrolytically manufacturing a hypochlorite which comprises electrolyzing an aqueous solution containing chloride ions in an electrolytic cell having at least three compartments therein, being anode and cathode compartments and at least one buffer compartment, an anode, a cathode, at least one cation-active permselective membrane selected from the group consisting of a hydrolyzed copolymer of a perfluorinated hydrocarbon and a fluorosulfonated perfluorovinyl ether, and a sulfostyrenated perfluorinated ethylene propylene polymer, defining a cathode-side wall of a buffer compartment between the anode and cathode, an anode-side wall of a buffer compartment being defined by such a cation-active permselective membrane or a porous diaphragm, and such walls, with walls thereabout, defining anode, cathode and buffer compartments, while feeding gaseous chlorine into a buffer compartment and regulating the rate of feed thereof and reaction conditions to produce hypochlorite in the buffer compartment.

3,925,175

ELECTRODIALYSIS OF FIXER CONTAINING SOLUTIONS

Richard S. Fisch, and Norman Newman, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 24, 1973, Ser. No. 391,509

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C25C *1/12*

U.S. Cl. 204—109 **2 Claims**

1. A process for the removal of silver and halide from a thiosulfate solution comprising thiosulfate, silver ions, and halide ions, said process comprising passing the thiosulfate containing solution through the cathode chamber of an electrodialysis cell which comprises:
1. an anode
2. a cathode
3. an anionic semipermeable membrane separating the anode and cathode and forming two chambers within the cell, and
4. a power source connected to the anode and cathode, passing an aqueous solution of an electrode active oxidizable species through the anode chamber, and with the power source applying a voltage differential across the anode and cathode.

3,925,176

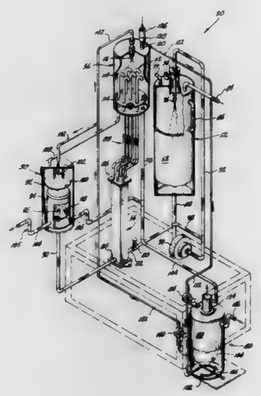
APPARATUS AND METHOD FOR ELECTROLYTIC SEWAGE TREATMENT

Adolph P. Okert, N. 2916 Woodruff Road, Spokane, Wash. 99206

Filed Oct. 10, 1973, Ser. No. 405,151

Int. Cl.² C02B *1/82*; **B03D** *1/02*; **C02C** *5/12*

U.S. Cl. 204—152 **8 Claims**



1. A method of processing sewage, comprising
macerating said sewage,
screening the macerated sewage through a screen,
pasing the screened sewage through an electrolytic cell comprising an anode and a cathode between which said sewage passes,
applying a voltage to said anode and cathode to electrolytically treat the sewage with the production of a gaseous foam within said cell,
withdrawing said foam from said cell to separate the foam from the remainder of the sewage, and
breaking up said foam to release gases contained therein.

3,925,177

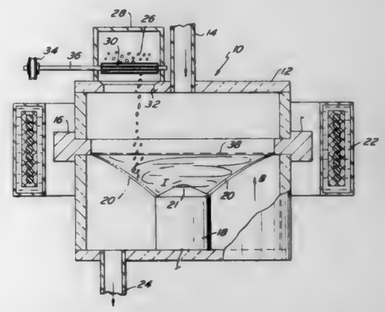
METHOD AND APPARATUS FOR HEATING SOLID AND LIQUID PARTICULATE MATERIAL TO VAPORIZE OR DISASSOCIATE THE MATERIAL

Melvin J. Kofold, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jan. 30, 1973, Ser. No. 327,914

Int. Cl.² C01G *27/04*; **C01F** *7/30*

U.S. Cl. 204—164 **27 Claims**



1. A process for separating the constituent species of solid or liquid particulate material by increasing the residence time of the material in a high temperature zone, comprising the steps of:
revolving an electric arc extending between two electrodes to define a surface of revolution, said surface of revolution including within its boundaries an arc volume;
directing said particulate material so as to be incident upon said surface of revolution;
revolving said arc at a rate sufficient to make the surface of revolution impervious to particulate material in solid or liquid form and to heat the particulate material within the arc volume so that at least a portion of the particulate material is vaporized and dissociated into constituent species; and
removing at least one of the dissociated constituent species from the arc volume.

3,925,178

CONTACT LENSES

Hymie D. Gesser, 218 Girton Blvd., Winnipeg 29, Manitoba, and Robert E. Warriner, 106 Longsdale Drive, Winnipeg 22, Manitoba, both of Canada

Continuation of Ser. No. 29,635, April 17, 1970, abandoned, which is a continuation-in-part of Ser. No. 449,297, April 19, 1965. This application June 7, 1974, Ser. No. 477,265

Int. Cl.² B01K *1/00*; **B01J** *1/10*

U.S. Cl. 204—165 **5 Claims**

1. A process of treating a plastic contact lens to make the total lens surface hydrophilic without changing the optical characteristics or the physical dimensions of the lens, which comprises:
placing the lens in a vacuum chamber containing water vapor;
subjecting the molecules of water vapor to the action of a source of an electrical discharge or a radio frequency discharge;
subjecting substantially the total lens surface to the excited molecules of the water vapor in a vacuum in the range of

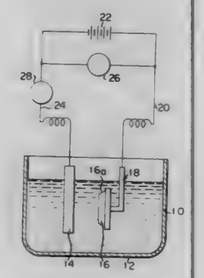
about 1 micron to 1 millimeter pressure of mercury; and maintaining the lens surface in contact with the excited molecules of the water vapor until the lens surface is wettable by human tear fluid.

3,925,179

METHOD OF ELECTRICALLY DEPOSITING GLASS PARTICLES ON OBJECTIVE BODY

Takeshi Yamamoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1973, Ser. No. 336,345
Claims priority, application Japan, Mar. 2, 1972, 47-21734
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C25D *13/02, 13/12*
U.S. Cl. 204—181 **6 Claims**



1. A method of electrically depositing glass particles on a semiconductive body, comprising the steps of disposing the semiconductive body and an electrode in spaced relationship within a suspension having glass particles suspended in a non-ionized electrically conductive solvent consisting essentially of a first organic solvent to which the glass particles are lyophobic and a second organic solvent to which the glass particles are lyophilic, said suspended glass particles being negatively charged by said solvent, and applying a dc voltage across said semiconductive body and said electrode such that said semiconductive body has a positive polarity.

3,925,180

ELECTRODEPOSITION PROCESS USING A NOVEL PIGMENT DISPERSANT

Robert D. Jerabek, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 248,752, April 28, 1972, Pat. No. 3,842,111, which is a continuation-in-part of Ser. No. 193,590, Oct. 28, 1971. This application Jan. 3, 1974, Ser. No. 430,450
Int. Cl.² C25D *13/06, 13/10*
U.S. Cl. 204—181 **6 Claims**

1. A method of electrocoating an electrically-conductive surface serving as a cathode in an electrical circuit comprising said cathode, an anode and an aqueous electrodepositable composition wherein the electrodepositable composition comprises an aqueous dispersion of:

A. an acid-solubilized polyamine group-containing resin and

B. a pigment paste comprising

1. an adduct comprising the reaction product of:
   a. a fatty glycidyl ether or ester; and
   b. a secondary amine or tertiary amine salt; said adduct being at least partially neutralized with a water-soluble acid; and
2. a pigment dispersed therewith.

3,925,181

CATHODIC ELECTROCOATING PROCESS

Vincent D. McGinniss, Valley City, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Oct. 31, 1974, Ser. No. 519,409
Int. Cl.² C25D *13/10*
U.S. Cl. 204—181 **2 Claims**

1. In a process for electrodeposition of a heat-curable electrocoating composition containing a polymer having pendant amine groups and a cross-linking agent in an aqueous dispersion onto a cathode substrate disposed within an aqueous electrocoating bath, said polymer being cross-linkable upon subsequent heating of said electrocoated cathode substrate, the improvement comprising:

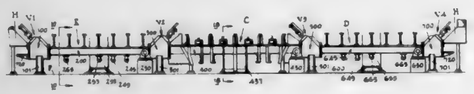
a. providing said electrocoating composition containing
   i. a polymer having at least about 5% pendant primary or secondary amine groups, said amine groups being protonated with acid to render said polymer water dispersible in said bath and
   ii. at least about 5% bis-maleimide cross-linking agent by weight of said polymer;
b. applying an electromotive potential through said bath to electrodeposit said polymer and said cross-linking agent onto said cathode substrate, said pendant amine groups of said polymer becoming de-protonated thereby; and
c. heating said electrocoated cathode substrate, said bis-maleimide cross-linking said polymer by addition polymerization with said de-protonated pendant amine groups to form a heat-cured electrodeposited coating.

3,925,182

METHOD FOR CONTINUOUS PRODUCTION OF SPUTTER-COATED GLASS PRODUCTS

Donald C. Carmichael; Douglas L. Chambers, and Chong T. Wan, all of Columbus, Ohio, assignors to Shatterproof Glass Corporation, Detroit, Mich.

Division of Ser. No. 400,561, Sept. 25, 1973, Continuation-in-part of Ser. No. 305,877, Nov. 13, 1972, abandoned, which is a continuation of Ser. No. 70,143, Sept. 8, 1970, abandoned. This application July 8, 1974, Ser. No. 486,492
Int. Cl.² C23C *15/00;* **C03C** *17/06;* **C23C** *13/08*
U.S. Cl. 204—192 **14 Claims**



1. A method for the production of sputter-coated glass sheets, which comprises:

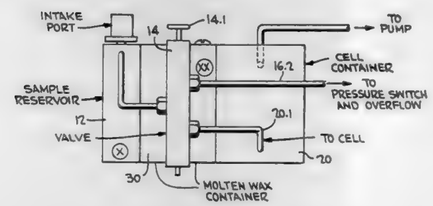
a. freely supporting a glass sheet to be coated in a horizontal position on the upper substantially continuous surface of a support platen,
b. freely supporting said platen and glass sheet horizontally upon a conveyor means,
c. conveying the platen and sheet horizontally into a coating chamber,
d. maintaining a predetermined pressure in said coating chamber,
e. sputter-coating a continuous film of a selected coating material on the upper surface of said sheet when supported in the coating chamber, and
f. removing the platen and coated sheet from said chamber.

3,925,183

GAS DETECTING AND QUANTITATIVE MEASURING DEVICE

Harry G. Oswin, Chauncey, and Keith F. Blurton, Ossining, both of N.Y., assignors to Energetics Science, Inc., Elmsford, N.Y.

Division of Ser. No. 263,531, June 16, 1972, Pat. No. 3,824,168, and a continuation-in-part of Ser. Nos. 172,486, Aug. 17, 1971, Pat. No. 3,824,167, and Ser. No. 88,267, Nov. 10, 1970, Pat. No. 3,776,832. This application Jan. 28, 1974, Ser. No. 436,979
Int. Cl.² G01N *27/46*
U.S. Cl. 204—195 R **4 Claims**



1. A gas detecting and measuring unit comprising in combination intake means, a gas sample reservoir, an electrochemical cell, means for drawing a gas through said intake means and into said electrochemical cell at a controlled flow rate, and read-out means for reading the quantity of said detected gas, at least said gas sample reservoir and said electrochemical cell being in heat communication with a heat reservoir means for maintaining said gas sample reservoir and electrochemical cell at a predetermined, substantially constant temperature; said heat reservoir means for providing constant temperature for at least a time sufficient for performing a measurement without requiring additional heat energy input, said heat reservoir means comprising a high latent heat of fusion material adapted to be heated to at least its melting point prior to use.

3. The gas detecting and measuring unit of claim 1 wherein the material having a high latent heat of fusion comprises wax having a melting point above about 50°C.

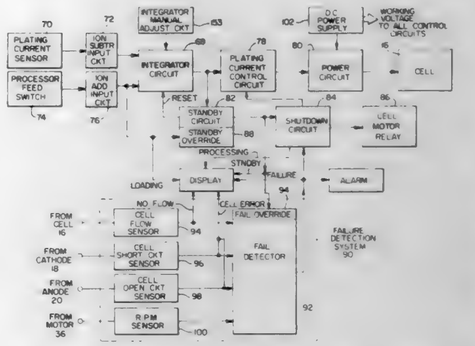
3,925,184

ELECTROLYTIC SYSTEM FOR RECOVERING METAL FROM CHEMICAL SOLUTIONS WITH CONTROLLED PLATING CURRENT

Ellis K. Cave, Garland, Tex., assignor to Gus A. Buder, Eureka, Mo.

Filed May 30, 1974, Ser. No. 474,777
Int. Cl.² C25C *7/00*
U.S. Cl. 204—229 **18 Claims**

1. A system for recovering silver from a chemical fixing solution in a photographic film processing system comprising an electrolytic cell having an anode and cathode adapted to be immersed in the chemical fixing solution of said film processing system, a variable current source operatively connected to the electrodes of said electrolytic cell to provide plating current therethrough, computing means to continuously compute the level of silver ions in said fixing solution from the amplitude of said plating current and the amount of film processed by the system and to generate an indication representing said level of said ions, said computing means changing the value of said indication in one direction in response to film being processed in said film processing system and changing the value of said indication in the opposite direction responsive to the amplitude of plating current flowing in said electrolytic cell the rate of change of said indication corresponding to said amplitude of plating current, and means to control said variable current source in accordance with said indication generated by said computing means to vary said plating current



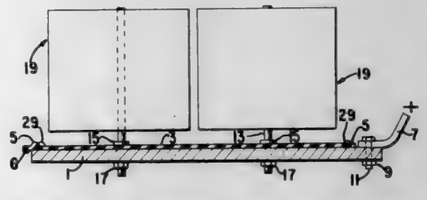
through a plurality of levels in accordance with the value of said indication.

3,925,185

PREVENTION OF CREVICE CORROSION

Joseph J. Lint, Bedford, Ohio, assignor to Electronor Corporation, Panama City, Panama

Filed Apr. 3, 1974, Ser. No. 457,603
Int. Cl.² C25B *9/00*
U.S. Cl. 204—252 **12 Claims**



1. In a diaphragm cell comprising a cell base with anodes mounted thereon and covered with a protective blanket and a cell can with cathodes mounted therein, the improvement comprising providing in the area of the cell base where crevice corrosion normally occurs a mixture of metallic powder nickel and nickelous oxide in the protective blanket or gasket sealing means.

3,925,186

ELECTROLYSIS CELL WITH VERTICAL BIPOLAR ELECTRODES

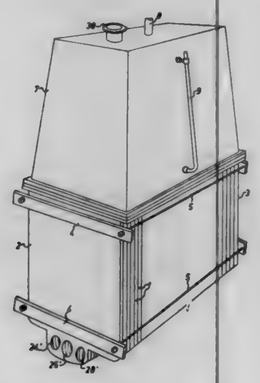
Umberto Giacopelli, Solvay, Leghorn, Italy, assignor to Solvay & Cie, Belgium

Filed Dec. 26, 1972, Ser. No. 318,640
Claims priority, application Belgium, Dec. 23, 1971, 112096
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C25B *13/00*
U.S. Cl. 204—256 **3 Claims**

1. A bipolar filter press type diaphragm electrolyser for the production of chlorine, hydrogen and caustic alkali by the electrolysis of a solution of an alkali metal chloride, said electrolyser comprising:

a. a plurality of vertical elementary cells disposed face-to-face, connected in series and each having an anode, a cathode, a diaphragm between said anode and cathode and at least one peripheral frame made of insulating material and having openings through the upper part thereof;

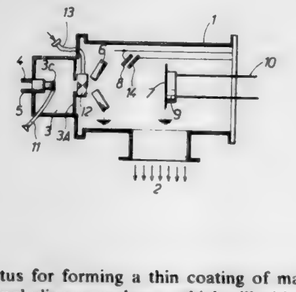
b. means defining a tank above said cells for holding said solution comprising a partition tightly overlying all the frames and insulated from the latter and having holes and apertures therein, and a lid tightly fitted over said partition;
c. means for feeding said solution to said tank;
d. means for supplying said solution from said tank to said cells, said means including channels in said frames opening at one end inside said tank through said holes provided in the partition and opening at the other end in the respective cells through a bottom portion thereof, whereby the electric current by-passed through said solution in said tank is limited;
e. means for evacuating chlorine out of the cells, said means including said openings provided through the upper part



of the frames, said apertures provided through the partition and registering with said openings and at least one duct attached to the partition and disposed about said apertures and extending upward from said partition and beneath the lid; and
f. means for evacuating hydrogen and caustic alkali out of the cells, each of said cells having at least one peripheral frame having an opening through a bottom portion thereof, and said means for evacuating caustic alkali out of the cells comprising, for each cell, a U-shaped tube of insulating material which extends upward into the cell, doubles back on itself and opens at one end in a bottom portion of the cell, and at the other end in said opening provided through the bottom of the peripheral frame of the cell, the openings of all the peripheral frames of the cells registering to form a duct for the caustic alkali.

2. A diaphragm electrolyser for the production of chlorine, hydrogen and caustic alkali by the electrolysis of a solution of an alkali metal, said electrolyser comprising:
a. a plurality of vertical elementary cells each having an anode, a cathode and a diaphragm between said anode and cathode, said cells being disposed face-to-face and being connected in series;
b. means defining a tank above said cells for holding said solution comprising a partition overlying said cells and electrically insulated from the latter and having apertures therein and a lid tightly fitted over said partition;
c. means for feeding said solution to said tank;
d. means for supplying said solution from said tank to said cells, said means including, for each cell, a separate feed duct of insulating material extending substantially over the whole height of the cell and opening at one end in the tank and opening at the other end in the cell through a bottom portion of the cell, whereby the electric current by-passed through said solution in said tank is limited;
e. means for evacuating chlorine out of the cells, said means including, said apertures provided through the partition and communicating with the cells and at least one duct attached to the partition and disposed about said apertures and extending upward from said partition and beneath the lid; and
f. means for evacuating hydrogen and caustic alkali out of the cells, each of said cells having at least one peripheral frame each having an opening through a bottom portion thereof, and said means for evacuating hydrogen out of the cells comprising, for each cell, a tube extending upward into the cell and opening, at one end, in the upper part of the cell and, at the other end, in said opening provided through the bottom of the peripheral frame of the cell, the openings of all the peripheral frames of the cells registering to form a duct for the hydrogen.

3,925,187
APPARATUS FOR THE FORMATION OF COATINGS ON A SUBSTRATUM
Jacques Léon Bernard, Toulouse, France, assignor to Centre National d'Etudes Spatiales, Paris, France
Filed Mar. 21, 1972, Ser. No. 236,609
Claims priority, application France, Mar. 25, 1971, 71.10598
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.[2] C23c *15/00*
U.S. Cl. 204—298 **5 Claims**

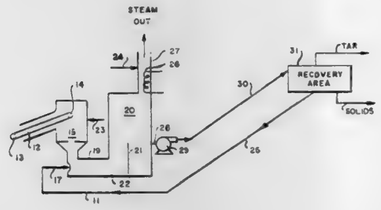


1. Apparatus for forming a thin coating of material on a substratum, including an enclosure which will withstand a high vacuum, said enclosure being partitioned into a first chamber containing a duoplasmatron, an intermediate chamber and a third chamber, said duoplasmatron including activation means for delivery of ions and inlet means for feeding said duoplasmatron with gas, the intermediate chamber being positioned so as to allow the transit therethrough of ions from said duoplasmatron into said third chamber, said third chamber containing a target device, a substratum device, and a set of ion focusing electrodes for directing the ions entering said third chamber to said target whose ejected particles are deposited onto said substratum, and means for supplying from a gas source a gas capable of reacting with the material of said target and a small passage for connecting said gas source with said intermediate chamber so as to introduce a small amount of reacting gas into said intermediate chamber.

3,925,188
PRODUCTION OF HYDROGEN FOR USE IN COAL LIQUEFACTION
George R. Lester, Park Ridge, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of Ser. No. 236,771, March 22, 1972, abandoned. This application Jan. 17, 1974, Ser. No. 434,153
Int. Cl.[2] C10G *1/04*
U.S. Cl. 208—8 **6 Claims**

1. In the liquefaction of coal by reaction thereof with hydrogen, the process which comprises separating from the products of the coal liquefaction a liquid comprising polycyclic aromatic, polycyclic hydroaromatic and alkylaromatic hydrocarbons, reacting sufficient amounts of said liquid and steam in contact with a dealkylation catalyst to form substantially all of the hydrogen required in the aforesaid coal liquefaction step, separating a hydrogen-containing gas from the resultant effluent and supplying to the coal liquefaction step a sufficient quantity of said gas to provide substantially all of the hydrogen requirements for the coal liquefaction.

3,925,189
PIPELINE PROCESSING OF OIL-CONTAINING SOLIDS TO RECOVER HYDROCARBONS
Moye Wicks, III, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Continuation-in-part of Ser. No. 720,773, April 12, 1968, abandoned. This application Jan. 29, 1971, Ser. No. 111,132
Int. Cl. C10g *1/04*
U.S. Cl. 208—11 **8 Claims**

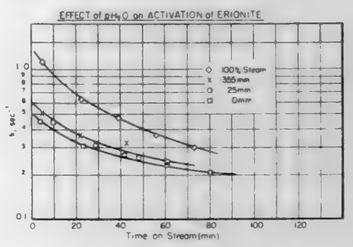


1. An improved method of pipeline transporting and recovering hydrocarbons from tar sands comprising: mixing tar sands with sufficient solvent to form a tar sands-solvent slurry; holding the slurry while disengaging vapors therefrom; excluding air from said process during both the steps of mixing the tar sands with solvent, and while disengaging said vapors; and pipeline transporting said tar sands-solvent slurry; utilizing a pipeline between 8 and 24 inches in diameter, as a reactor by forming a tar sand-solvent slurry and injecting and maintaining the slurry at a critical velocity of between 3 and 20 feet per second into a pipeline, said pipeline being positioned uphill at an angle of between 5° and 7° to the horizontal, thereby effecting increase of solid holdup and residence time in the pipeline so as to effect maximum leaching and extraction of the hydrocarbons from the slurry by the time the slurry reached the terminal end of the pipeline.

3,925,190
PREHEATING OIL SHALE PRIOR TO PYROLYSIS THEREOF
John A. Whitcombe, Los Angeles, Calif.; Kenneth D. Van Zanten, Littleton, Colo., and George C. Kane, Pacific Palisades, Calif., assignors to The Oil Shale Corporation, Los Angeles, Calif.
Filed July 29, 1974, Ser. No. 492,447
Int. Cl.[2] C10G *1/02*
U.S. Cl. 208—11 **8 Claims**

1. A process for preheating oil shale to a temperature in the order of 400°F to 650°F prior to the pyrolysis thereof in a retort which comprises heating the oil shale in a series of at least two dilute phase fluidized beds by entraining partially preheated oil shale in the final dilute phase fluidized bed with hot flue gas to provide oil shale preheated to between about 400°F and 650°F for introduction into the retort and partially cooled flue gas containing entrained oil shale fines and hydrocarbon vapors, passing the partially cooled flue gas through an incineration zone and incinerating in the presence of combustion products the entrained oil shale fines and hydrocarbon vapors emanating from the final dilute phase fluidized bed to provide a portion of the fuel requirement to reheat the flue gas, cooling the flue gas from the incineration zone and entraining crushed raw oil shale in a first dilute phase fluidized bed with the cooled flue gas from the incineration zone to provide partially preheated oil shale for subsequent introduction into the final dilute phase fluidized bed and cooled flue gas.

3,925,191
HYDROCARBON CONVERSION OVER ACTIVATED ERIONITE
William P. Burgess, Hopewell, N.J., assignor to Mobil Oil Corporation, New York, N.Y.
Filed July 17, 1974, Ser. No. 489,952
Int. Cl.[2] C10G *13/04, 37/06;* **B01J** *29/28*
U.S. Cl. 208—111 **8 Claims**



1. An improved process for the shape selective conversion of straight-chain hydrocarbons from a hydrocarbon feed which comprises the selective conversion of said feed by contact, at elevated temperature and pressure and in the presence of hydrogen, with a catalyst comprising a crystalline aluminosilicate erionite, the erionite having no hydrogenation-dehydrogenation metal associated therewith and having been prepared by the steps of comprising (a) exchange with the ammonium cation, (b) exposing it to 100% steam at elevated temperatures and (c) reexchanging with the ammonium cation.

3,925,192
REMOVING HEAVY METAL IONS FROM WATER
John M. Randall, El Cerrito; Earl Hautala, Martinez; Anthony C. Waiss, Jr., Pinole, and Judith A. Kuhnle, Alameda, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Aug. 5, 1974, Ser. No. 495,018
Int. Cl.[2] B01D *15/00*
U.S. Cl. 210—38 **2 Claims**

1. A method for removing dissolved heavy metal ions from water containing the same, which comprises contacting said water with a formaldehyde-modified tree bark, said bark being modified solely by reaction with 15-20% formaldehyde based on the weight of bark, at 50–70° C. for 1–3 hours under acidic conditions so that the physical integrity of said tree bark is retained.

2. The method of claim 1 wherein the tree bark is hemlock bark.

3,925,193
REMOVAL OF FLUORIDES FROM CATALYTIC REACTOR FEED
George J. Constantikes, and Joe Van Pool, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Oct. 10, 1974, Ser. No. 513,825
Int. Cl.[2] C10G *25/00*
U.S. Cl. 208—91 **10 Claims**

1. In a catalytic process for treating hydrocarbon feedstock said process using a catalyst sensitive to fluorides, a method for pretreating process feedstock containing a maximum of about 20 parts per million fluorides, said method comprising contacting said feedstock with an adsorbent consisting essentially of alumina at a temperature in the range of about 340° to 480°F thereby reducing the fluoride content of said feed-

stock to less than one part per million of the hydrocarbon mixture.

3,925,194
HYDROCARBON CONVERSION WITH CATALYST OF SBF_5 ON SILICA

Paul G. Rodewald, Rocky Hill, and Darrell D. Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 418,153, Nov. 21, 1973. This application Sept. 25, 1974, Ser. No. 508,930
Int. Cl.² C07C *5/30*; B01J *23/18*; C10G *11/08, 13/08*
U.S. Cl. 208—109 **9 Claims**

1. A hydrocarbon conversion process which comprises contacting a hydrocarbon, at hydrocarbon conversion conditions, with a catalyst consisting essentially of antimony pentafluoride deposited on silica resulting from pyrolysis of methylated silica.

3,925,195
HYDROCARBON CRACKING PROCESS USING ZEOLITE MIXTURES

Julius Scherzer, Columbia, and Edwin Wolf Albers, Annapolis, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 267,907, June 30, 1972, abandoned. This application Nov. 15, 1973, Ser. No. 416,130
Int. Cl.² C10G *11/04*; B01J *29/08, 29/18*
U.S. Cl. 208—120 **5 Claims**

1. A method for the catalytic cracking of hydrocarbons which comprises contacting a hydrocarbon feedstock with a catalyst comprising
a. rare earth-hydrogen type Y zeolite,
b. a second zeolite consisting of exchanged mordenite having the general formula M-mordenite wherein M is selected from the group consisting of hydrogen, rare earth, cobalt, nickel and group II cations, under catalytic cracking conditions and recovering the products formed thereby.

3,925,196
REFORMING PROCESS

John H. Sinfelt, Berkeley Heights, and James L. Carter, Chatham, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 111,695, Feb. 1, 1971, Pat. No. 3,789,020. This application Oct. 31, 1973, Ser. No. 411,483
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C10G *35/06*
U.S. Cl. 208—139 **15 Claims**

1. A process for the reforming of naphtha feed stocks which comprises contacting a naphtha feed stock and hydrogen at reforming conditions with a catalyst composition comprising a physical mixture of a metal component supported on a nonmetallic refractory material and additional nonmetallic refractory material, said supported metal component comprising a combination of Group VIII metals or a combination including at least one Group VIII metal and at least one metal selected from Group IB or VIIB metals contained on a nonmetallic refractory material, the nonmetallic refractory material of said supported component comprising less than about one-fourth of the total nonmetallic refractory material of said catalyst, said catalyst additionally containing a halogen constituent.

3,925,197
HYDRODESULFURIZATION PROCESS

Jakob Van Klinken, and Frits M. Dautzenberg, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 4, 1972, Ser. No. 312,246
Claims priority, application United Kingdom, Dec. 7, 1971, 56803/71
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 **8 Claims**

1. A fixed bed process for the catalytic hydrodesulphurization at hydrogen partial pressures of at least 80 and at most 180 bar, at a temperature of 300°–475°C, a space velocity of 0.1–10 pbw of fresh feed per pbv of catalyst per hour and a hydrogen feed ratio of 150–2000 Nl H_2/kg feed of residual hydrocarbon oils having a total vanadium and nickel content of at most 120 ppmw and a C_5-asphaltene content above 0.5%w wherein a catalyst is applied comprising 0.5–20% w nickel and/or cobalt and 2.5–60% w molybdenum and/or tungsten on an alumina or silica-alumina carrier, said catalyst having a specific average pore diameter, p, in nm, in the range of 4.6 to 25.6 inclusive and a specific average particle diameter, d, in mm, in the range of 0.5 to 2.5, inclusive such that the quotient $p/(d)^{0.9}$ meets the requirement

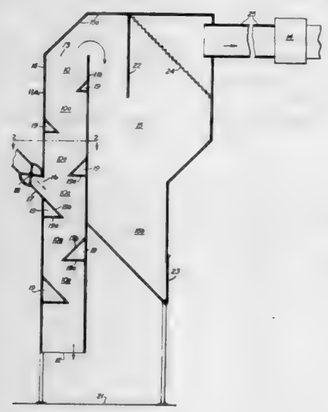
$$3\times10^{-4}\times(P_{H_2})^2 \leq p/(d)^{0.9} \leq 17\times10^{-4}\times(P_{H_2})^2,$$

wherein P_{H_2} is said hydrogen partial pressure in bar; and said catalyst having a pore volume above 0.45 ml/g, with at least 0.4 ml/g of said pore volume in pores having a diameter of at least $0.7\times p$ and at most $1.7\times p$, and a sharp pore diameter distribution characterized by:
a. less than 20% of the pore volume in pores with a diameter smaller than $0.7\times p$,
b. less than 20% of the pore volume in pores with a diameter larger than $1.7\times p$, and
c. less than 10% of the pore volume in pores with a diameter larger than 100 nm.

3,925,198
APPARATUS AND METHOD OF AIR CLASSIFYING MUNICIPAL SOLID WASTES

David W. Eckhoff, and Blaine L. Fullmer, both of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Filed Jan. 29, 1975, Ser. No. 545,191
Int. Cl.² B07B *7/04*
U.S. Cl. 209—3 **10 Claims**



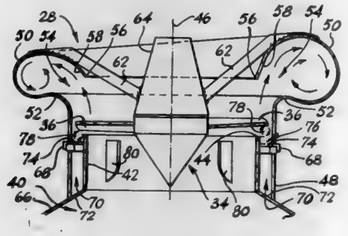
1. Apparatus for classifying, into combustible and non-combustible fractions, collected municipal solid waste materials

that have been shredded, comprising wall means defining a substantially vertical airflow column; means for flowing a classifying stream of air upwardly through the column; air lock means for feeding shredded municipal solid waste materials into the column intermediate the height thereof; opposing sets of baffles projecting inwardly of the column from respective, mutually opposite walls of said wall means, the baffles thereof alternating from wall to wall in substantially vertically spaced arrangement to define a series of individual stages along the height of the column, each stage extending from wall to wall of said mutually opposite walls and between mutually adjacent but opposing baffles, each of the baffles having its lower surface extending substantially perpendicularly of said walls for abruptly intercepting the upward flow of air and entrained waste materials and directing such flow transversely across the column, so there will be localized circulation of air and entrained waste materials across the column within the individual aircirculation stages for effecting repeated impacts of entrained waste materials against baffle and wall surfaces of said stages, each of the baffles having its upper surface substantially flat and sloping downwardly into the column, so heavier waste materials deposited thereon will slide downwardly by gravity, there being at least one of said stages located below the air lock feeding means and formed by baffles that overlap across the column, said column increasing progressively in flow area between each baffle and the opposing wall of the column above said baffles that overlap for progressively decreasing upward flow velocity; means at or near the upper end of the column for the discharge of lighter components of the shredded solid waste materials as a relatively combustible fraction; and means at or near the lower end of the column for the discharge of heavier components of the shredded solid waste materials as a relatively non-combustible fraction.

3,925,199
TRASH REMOVAL APPARATUS FOR SUGAR CANE HARVESTERS

Donald Jonathon Quick, Bundaberg, Australia, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Oct. 16, 1974, Ser. No. 515,287
Claims priority, application United Kingdom, Nov. 20, 1973, 53714/73
Int. Cl.² B07B *15/00*
U.S. Cl. 209—3 **14 Claims**

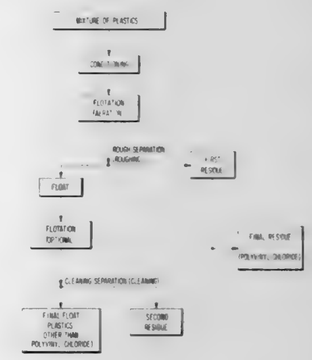


1. A sugar cane harvester including a frame, cane dividing means mounted on the frame for cutting each harvested cane stick into two or more pieces, and trash removal means mounted on the frame for removing trash from the can pieces that have been cut by the cane dividing means, the trash removal means comprising an axial flow extractor fan capable of drawing air through the cane pieces, and means defining an air outlet on the pressure side of the fan for receiving air passing through the fan in the axial direction characterized by means defining an annular trash-receiving opening between the fan and the outlet for receiving trash passing through the fan to pass through said opening under the action of centrifugal forces.

3,925,200
METHOD FOR SEPARATION OF MIXTURE OF PLASTICS

Sumio Izumi, Kokubunji, and Hiroshi Tanaka, Chofu, both of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Nihonba, Japan

Filed Feb. 19, 1974, Ser. No. 443,936
Claims priority, application Japan, May 18, 1973, 48-54551
Int. Cl.² B03B *1/00*
U.S. Cl. 209—9 **15 Claims**

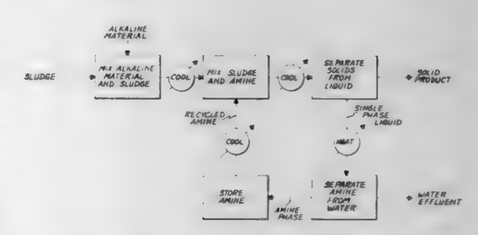


1. A method for the separation of a mixture of particulate plastics comprising (1) at least one of polystyrene, polypropylene, polyethylene and polyamide and (2) polyvinyl chloride into at least one of polystyrene, polypropylene, polyethylene and polyamide, and polyvinyl chloride which comprises conditioning said mixture of plastics in an aqueous liquid medium using at least one conditioning agent selected from the group consisting of an alkali metal or alkaline earth metal salt of lignin sulfonic acid, a hydrophilic organic colloid or a mixture thereof, which conditioning agent renders the polyvinyl chloride more hydrophilic than the at least one of polystyrene, polypropylene, polyethylene and polyamide, and subjecting the resulting mixture to a froth-floatation float at least one of polystyrene, polyethylene, polypropylene and polyamide, in the presence of a frothing agent and simultaneously separating said polyvinyl chloride together with said liquid medium.

3,925,201
METHOD OF DEWATERING MATERIAL CONTAINING SOLID MATTER AND BOUND AND UNBOUND WATER

Robert K. Ames, Seattle, Wash., assignor to Resources Conservation Co., Renton, Wash.

Filed Aug. 3, 1973, Ser. No. 385,489
Int. Cl. B01d *11/02*
U.S. Cl. 210—22 **10 Claims**



1. In the process for dewatering a sludge containing solid matter and water including the steps of:
admixing said sludge with a secondary or tertiary amine to form a mixture, said amine having the formula



wherein:

R_1 is hydrogen or alkyl,

R_2 and R_3 are alkyl radicals having from one to six carbon atoms or alkenyl radicals having from two to six carbon atoms, and

the total number of carbon atoms in the molecule being in the range of from three to seven, inclusive, said amine having an inverse critical solution temperature in a two phase system with water, and

maintaining the temperature of said mixture below the inverse critical solution temperature of said amine to yield a single phase liquid containing said amine and water and a solid phase containing at least a portion of said solid matter which is insoluble in said single phase liquid and separating said solid phase from said single phase liquid, the separated solid phase containing residual amine, the improvement comprising:

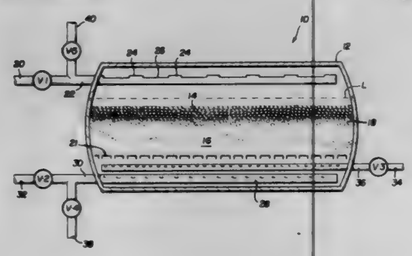
prior to admixing said sludge and said amine, admixing with said sludge an alkaline composition selected from lithium hydroxide, sodium hydroxide, potassium hydroxide, calcium hydroxide, and a lithium, sodium or potassium salt of a weak acid in an amount effective to reduce the residual amine in said solid phase after separation from said single phase liquid.

3,925,202

METHOD OF AND APPARATUS FOR FILTERING WATER

Gene Hirs, Birmingham, Mich., assignor to Hydromation Filter Company, Livonia, Mich.

Filed Apr. 25, 1974, Ser. No. 464,289
Int. Cl.² B01D *15/06, 23/24*
U.S. Cl. 210—32 **8 Claims**



1. In a filter for reducing the agglomeration of hydrocarbons such as tramp oils with particulate contaminants and filter medium granules, including vertically spaced inlet and outlet conduits, a filter bed interposed between said conduits comprising vertically superimposed, upper and lower granular filter medium layers, and means for backwashing said filter with backwash water and pressurized air, the improvement of said filter medium layers being comprised of hydrophilic materials having a weak to negative affinity for hydrocarbons, the material of said upper layer consisting essentially of particulate granulated black walnut shells having an average size of between about −6 to +12 mesh and the material of said lower layer consisting essentially of particulate sand medium having an average size in the range of between about −16 mesh and +30 mesh, said layers being in contact and being intermixed along the contacting interface and said upper layer having a depth for sufficient intermixing to facilitate the penetration of said lower layer by contaminants, and means flowing water contaminated with suspended particulate matter and immiscible tramp oils through said inlet and into the upper filter medium layer, wherein the water flows through the filter medium for the removal of at least a major portion of the contaminated particulate matter and the immiscible tramp oils.

6. In a method of filtering suspended particulate contaminants and immiscible tramp oils from water, the steps of:

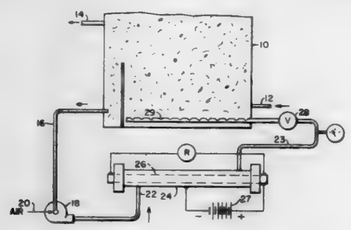
1. flowing water contaminated by said particulate contaminants and tramp oils into and through a filter bed including upper and lower medium layers at a rate sufficient (a) to flow the contaminated liquid downwardly into and through both the upper and lower layers, (b) to enable the removal of contaminants in the lower layer, and (c) to flow the liquid from the lower layer as a clarified filtrate, said lower medium being comprised of granular sand filter media having an average filter medium size in the range of −16 mesh to +30 mesh to reduce mudballing and said upper medium being comprised of granular black walnut shells having an average filter medium size between about −6 and +12 mesh, said layers contacting and being intermixed in the region of the contacting interface, and said upper medium layer having a depth sufficient for adequate intermixing for improved penetration by contaminants into said lower layer;
2. during the performance of Step (1), penetrating said lower medium layer by at least a portion of the particulate contaminants and tramp oils in the flow of water and removing at least a portion of said contaminants from the flow of contaminated water by said lower filter medium layer;
3. terminating the flow of contaminated liquid after said filter medium has removed at least a portion of the contaminants from the filtration flow;
4. regenerating said filter bed by introducing (a) pressurized gas to scour the bed and (b) backwash fluid for expanding the bed and removing accumulated contaminants; and
5. terminating the introduction of pressurized gas and backwash liquid.

3,925,203

SYSTEM FOR INTRODUCING FLOCCULATING IONS AND AIR INTO WASTE WATER TREATMENT SYSTEMS

Abner B. Turner, R.D. 3, Box 364, Greensburg, Pa. 15601

Filed Feb. 25, 1974, Ser. No. 445,502
Int. Cl. B01d *21/01*
U.S. Cl. 210—44 **2 Claims**



1. A process for removing particulate suspended matter from a liquid in a flotation cell comprising the steps of:

utilizing a pump to withdraw liquid from said cell and introducing air into the pump to form a liquid-air mixture;

supplying the pressurized mixture of air and liquid to an energized electrode positioned in a housing located exteriorly of a flotation cell;

supplementing the supply of air in said mixture with bubbles electrolytically generated by said electrode;

allowing the mixture to remain in contact with the electrode for a time sufficient to permit the air to be dissolved in said liquid and for the electrode to impart metal ions to the liquid;

discharging the mixture from said housing through an expansion valve to reduce the pressure thereof and then delivering the reduced pressurized mixture to said flotation cell wherein the air comes out of solution in the form of small bubbles;

utilizing the electric charges on said ions to cause colloidal particulate matter to form a loosely assembled concentrated mass of solids; and

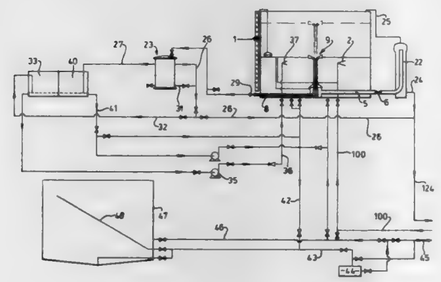
utilizing the buoyant characteristics of the air bubbles to combine with the solids to carry the solids to the surface in the form of floc.

3,925,204

LIQUID SEPARATING EQUIPMENT

Philippe Jean-Marie Cheysson, Sainte Adresse; Paul Jean Verney, and Michel Alain Coquard, both of Le Havre, all of France, assignors to Exxon Research & Engineering Company, Linden, N.J.

Filed Mar. 29, 1973, Ser. No. 346,056
Claims priority, application France, Mar. 30, 1972, 72.11324
Int. Cl.² B01D *17/02*
U.S. Cl. 210—73 **17 Claims**



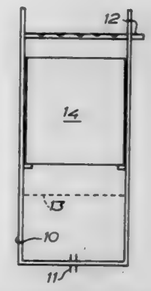
1. A method of at least partially separating substantially immiscible liquids of different densities from a mixture of liquids as a body of liquid contained within a tank whose surface level is at least at a minimum level about the bottom of said tank and below a maximum level which is substantially at the top of said tank, comprising the steps of: passing the mixture of liquids into the body of liquid in said tank adjacent to the side of said tank in a substantially tangential direction relative to said body of liquid for promoting circular motion of the liquid in said tank and at a speed which substantially avoids the generation of turbulence in said body of liquid within said tank; continuously removing from the surface of said body of liquid a first liquid fraction of relatively low density at a location below the surface of said liquid by means of a skimming weir which floats within a variable predetermined distance below said surface level of said liquid during operation thereof, said distance being selected such that substantially pure low density liquid is removed; passing the removed first liquid fraction to a first fraction receiving zone; separating said first fraction which is received in said first fraction receiving zone into a low density third fraction and a high density fourth fraction; passing said fourth fraction into the body of liquid in said tank substantially tangentially and in the same circumferential direction as said mixture of liquids is passed into said tank, said mixture and said fourth fraction being introduced at a location below said minimum level to substantially avoid direct flow to the skimming weir; continuously removing from the bottom region of said body of liquid a second liquid fraction of relatively high density at least when the concentration of low density liquid in the bottom region is no more than a selected maximum concentration; and passing the removed second liquid fraction to a discharge conduit.

3,925,205

METHOD OF SEPARATING SOLIDS SUSPENDED IN A LIQUID

Vaughan Reynell Sparham, 42 Church St., Great Budworth, Northwich, Cheshire, England

Filed July 2, 1969, Ser. No. 838,613
Int. Cl.² B01D *21/00*
U.S. Cl. 210—73 **14 Claims**



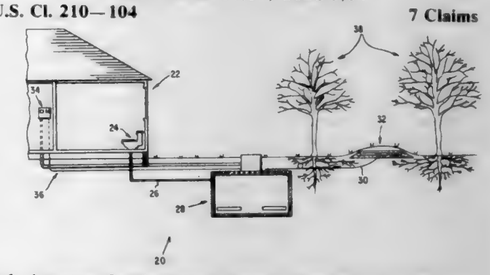
1. An apparatus for reducing the solids content of a liquid phase such as sewage works effluent containing colloidal or gelatinous solids suspended therein, said apparatus comprising in combination, a sedimentation tank having an inlet and an outlet, wall means defining a separate chamber within the upper portion of said tank, a sheet perforate member mounted in a substantially horizontal position within said tank in vertically spaced relation to the bottom wall thereof and defining the bottom wall of said chamber, said outlet being located within said chamber whereby liquid flowing from said inlet to said outlet must pass upwardly through said sheet perforate member, and means defining a labyrinth mounted within said separate chamber between said sheet perforate member and said outlet whereby a liquid flowing from said sheet perforate member to said outlet must flow through said labyrinth, said means defining said labyrinth including a plurality of members mounted within said chamber and cooperating to define a plurality of fluid passages through which the liquid flows, said members having a plurality of rugosities thereon extending generally across the direction of flow for forming eddy currents in liquid flowing through said passages to thereby promote cavity sedimentation and adsorption of the solids from the liquid.

3,925,206

SYSTEM FOR HOME WASTEWATER TREATMENT AND DISPOSAL

Stanley J. Dea, 7 Dogwood Lane, Glen Head, N.Y. 11545

Filed Sept. 26, 1974, Ser. No. 509,572
Int. Cl.² B01D *21/24*; **C02C** *5/04*
U.S. Cl. 210—104 **7 Claims**



1. A system for the aerobic batch treatment of wastewater and for the disposal of said treated wastewater in an above-ground disposal field, said system being suited for use in a locale where the existing soil displays unsuitable percolation capabilities, said system comprising:

a unitary treatment tank assembly for receiving and treating said wastewater, said tank assembly having inlet means

for receiving said wastewater from and outlet means including means for transporting said treated wastewater from said tank to said disposal field, said treatment tank assembly further including means for aerating said wastewater to aerobically treat said wastewater while said wastewater is in said tank, said tank assembly further including means for pumping said aerobically treated wastewater through said outlet means out of said tank to said disposal field;

means for sequentially operating said aerating means for a first preselected period of time and said pumping means for a second preselected period of time to provide batch treatment and disposal of said wastewater; and

an above-ground disposal field constructed at the surface of ground displaying unsuitable percolation capabilities, said disposal field including a multilayer bed of porous fill material and a network of perforated distribution piping positioned in a first layer of said bed of porous fill, said first layer of fill being disposed above a second layer of porous fill, said first layer having particles of a larger size than particles of said second layer, said first and second layers forming said bed; said above ground disposal field receiving periodically said aerobically treated wastewater from said tank assembly and dispersing and disposing of said wastewater by evaporation and evapotranspiration whereby said wastewater disposal may be completed independently of said soil upon which said disposal field is constructed.

3,925,207

SEMI-AUTOMATIC CHROMATOGRAPHIC SEPARATION APPARATUS

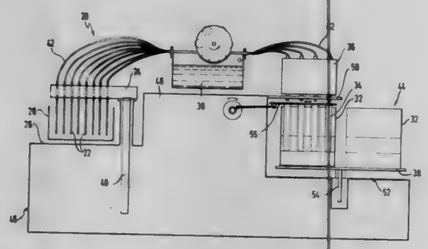
Peter C. Scriba, Munich, Germany, assignor to Sartorius-Membranfilter GmbH, Gottingen, Germany

Filed Apr. 2, 1975, Ser. No. 564,465

Claims priority, application Germany, Apr. 17, 1974, 2418509

Int. Cl.² B01D *15/08*

U.S. Cl. 210—138 **12 Claims**



1. An apparatus for the simultaneous semi-automatic chromatographic separation of *n* sample solutions into a least two fractions, which comprises *n* chromatographic columns, *n* flexible tubes each connected at one end to one inlet of the *n* chromatographic columns and connected at the other end to a hollow suction needle, a roller pump arranged to act on the *n* flexible tubes and thus pump sample solutions into which the suction needles may be dipped to the chromatographic columns, a collector device comprising *n* fraction collection flasks for each fraction, a carrier arm in which the *n* suction needles are mounted in parallel spaced relationship with their free ends extending from the carrier arm, the carrier arm being displaceable both in the direction of the length-wise axes of the needles as well as at right angles thereto into predetermined positions relative to a carrier surface for sample solution flasks, a carrier plate situated beneath the outlets of the chromatographic columns and onto which collector devices for carrying fraction collection flasks may be placed in predetermined positions, the carrier plate being rotatable in a plane which is at right angles to the length wise axes of the chromatographic columns, and a time control arrangement having adjustable time elements to co-ordinate and control displacement of the carrier arm, the carrier plate and pumping of the roller pump.

3,925,208

AEROBIC SEWAGE TREATMENT SYSTEM

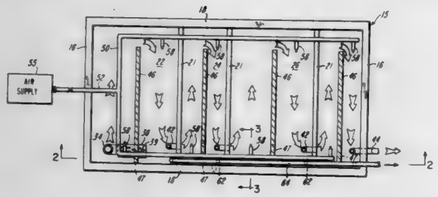
Kenneth J. Yost, Eaton, Ohio, assignor to Coate Burial Vault, Inc., West Milton, Ohio

Filed Mar. 13, 1973, Ser. No. 340,833

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C02C *5/04*

U.S. Cl. 210—199 **4 Claims**



1. In apparatus for treating a liquid containing organic solid material, comprising a tank having side and bottom walls defining a treating chamber, a removable cover member mounted on said tank for enclosing said chamber, inlet means for directing the liquid into said chamber, and outlet means for limiting the liquid within said chamber at a level below said cover member to define an air space within said chamber between said cover member and the surface of the liquid, the improvement comprising a plurality of air nozzles supported by said cover member and positioned above the surface of the liquid, means for supplying air to said nozzles for producing corresponding streams of air from said nozzles against the surface of the liquid to cause surface diffusion of the air into the liquid and aerobic digestion of the organic solid material within the liquid, each of said nozzles being positioned on an incline relative to said cover member and the surface of the liquid, means for producing slow and continuous horizontal circulation of the liquid within said chamber in a generally circular path and including an arrangement of said nozzles spaced along said path and inclined in the same direction relative to the circulation of the liquid along said path to effect said circulation in response to the air streams contacting the surface of the liquid, and means defining a passage for exhausting the air from said chamber.

3,925,209

STRAINER VALVES

Robert C. Bradley, Paramus, N.J., and Garland L. Fulton, Wayne, Pa., assignors to Multi-Metal Wire Cloth Inc., Tappan, N.Y.

Filed Aug. 28, 1974, Ser. No. 501,290

Int. Cl.² B01D *29/38*

U.S. Cl. 210—304 **11 Claims**

1. Strainer apparatus comprising

a housing having opposite fluid inlet and outlet connections at its ends and side fluid inlet and outlet connections,

one of said fluid inlet connections being for process fluid to be strained and one of said fluid inlet connections being for a strainer cleaning fluid,

one of said fluid outlet connections being for strained process fluid and the other of said fluid outlet connections being for discharge of strainer cleaning fluid,

a piston slidably mounted in said housing,

means for controlling the positioning of said piston in said housing comprising

fluid pressure connections to the ends of said housing,

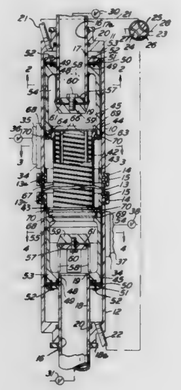
said piston comprising a pair of piston heads with transverse portions against which the fluid pressure at said fluid pressure connections is effective,

said piston heads having

a hollow strainer member interposed therebetween and movable therewith, and

fluid flow control members therein for respectively controlling one of said fluid inlet connections and one of said fluid outlet connections,

said piston having portions in one position connecting the process fluid inlet connection through said strainer in one



direction with the strained process fluid outlet connection and in another position connecting the cleaning fluid inlet connection through said strainer in the opposite direction with the cleaning fluid outlet connection,

said housing being composed of like end sections one with both said fluid inlet connections and the other with both said fluid outlet connections,

said housing having an intermediate section interposed between said housing end sections and to which said housing end sections are detachably connected,

said intermediate section having sealing portions limiting movement of said piston within said housing.

3,925,210

FILTERING DEVICE

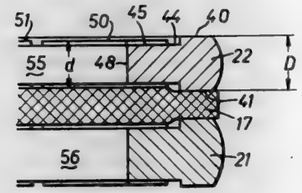
Kurt Strauven, Bonn, Germany, assignor to Wasser-Sand-Forschungs-U. Vertriebs G.m.b.H., Bonn, Germany

Filed Feb. 7, 1974, Ser. No. 440,551

Claims priority, application Switzerland, Feb. 20, 1973, 2402/73

Int. Cl.² B01D *35/02*

U.S. Cl. 210—335 **8 Claims**



1. A filter package for assembly in a holder of an influx container for treatment of potable water, comprising a series of spaced apart filters of varying grades fixedly positioned along a series flow path, each of said filters having a perimeter intercalated by annular sealing and spacing ring means in form of rings each having a region of increased thickness about its outer periphery, each of said rings including plural channel means defined by recessed opposed front surfaces in a region adjacent said region of increased thickness, said plural channel means serving to conduct water flowing radially in said filters out of said filters away from said filters and back to the storage volume to be recycled therethrough along the series flow path.

3,925,211

POLYIMIDE MEMBRANE AND PROCESS FOR MAKING SAME

Wilhelm Schumann, and Heinrich Strathmann, both of Tubingen, Germany, assignors to Forschungsinstitut Bergof GmbH, Tubingen, Germany

Filed Apr. 8, 1974, Ser. No. 458,483

Claims priority, application Germany, Apr. 12, 1973, 2318346

Int. Cl.² B01D *31/00*

U.S. Cl. 210—500 M **7 Claims**

1. A process for making asymmetric semipermeable, polyimide membranes of the type useful in ultrafiltration and desolination process comprising the steps of

a. casting a film of a solution of a reactive prepolymer

b. precipitating an asymmetric membrane structure of said prepolymer by contacting said prepolymer with a precipitating bath; and

c. increasing the chemical and thermal stability of said asymmetric membrane by subjecting said prepolymer membrane to a thermal or chemical ring-closure step.

3,925,212

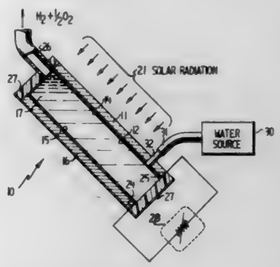
DEVICE FOR SOLAR ENERGY CONVERSION BY PHOTO-ELECTROLYTIC DECOMPOSITION OF WATER

Dimiter I. Tchernev, 3905 Sierra Drive, Austin, Tex. 78731

Filed Jan. 2, 1974, Ser. No. 430,085

Int. Cl.² B01K *1/00*

U.S. Cl. 250—527 **16 Claims**



1. A device producing a photoenergized decomposition of water comprising a container with at least one transparent member permitting the transmission of electromagnetic radiant energy into the container, at least two spaced semiconductor electrodes of different composition each comprising means absorbing at least part of said radiant energy thereby causing the emission of minority carriers therefrom, said semiconductor electrodes arranged in said container so that both said electrodes absorb at least part of said energy, said container adapted to contain an aqueous electrolytic solution in direct contact with both said electrodes, the composition of said electrolytic solution and of said electrodes being such that electrode dissolution does not take place during operation of the device, said minority carrier having a potential energy difference between said electrodes which is at least sufficient to cause decomposition of such electrolytic solution into

hydrogen and oxygen gases, and an external circuit provided between said electrodes.

3,925,213

SULFUR AND PHOSPHORUS BEARING LUBRICANT

Rasmus Froeschmann, Irschenhausen, and Friedrich Sprügel, Munich, both of Germany, assignors to Optimol-Oelwerke GmbH, Munich, Germany

Division of Ser. No. 227,234, Feb. 17, 1972, Pat. No. 3,840,463. This application Sept. 30, 1974, Ser. No. 510,220
Claims priority, application Germany, Feb. 24, 1971, 2108780
Int. Cl.² C10M *3/18, 5/14, 7/20, 7/24*
U.S. Cl. 252—18 **11 Claims**

1. In a lubricant composition including a base oil of mineral or synthetic origin and a lubrication-improving additive containing chemically bound phosphorus and sulfur while free from chemically bound heavy metal, the improvement which comprises:

a. a metalorganic dithiophosphate in an amount sufficient to enhance the lubrication-improving effect of said additive,
b. said dithiophosphate having the formula



wherein R_1 and R_2 are members of the group consisting of straight-chained alkyl, branched alkyl, and cycloalkyl having 2 to 10 carbon atoms, phenyl, o-alkylphenyl, or p-alkylphenyl, the alkyl of said alkylphenyl having 1 to 6 carbon atoms;

Me is a metal of the group consisting of zinc, lead, tin, tungsten, molybdenum, niobium, lanthanum, antimony, bismuth, chromium, vanadium, or cadmium;

w is 1 or 2;

x is zero or an integer not greater than 6;

y is zero or an integer not greater than 4;

z is 2 or 3.

3,925,214

HOT FORMING LUBRICANT COMPOSITION, SYSTEM AND METHOD

Howard J. Livingston, Jericho, and Bernard Etienne Esquenet, Whitestone, both of N.Y., assignors to Chemclean Corporation, College Point, N.Y.

Filed May 28, 1974, Ser. No. 473,343
Int. Cl.² C01M *3/18, 5/14, 7/20, 7/24*
U.S. Cl. 252—21 **23 Claims**

1. A lubricant composition for use in the hot forming of metals and comprising an organic film forming compound having exfoliated vermiculite particles suspended therein, said exfoliated vermiculite particles having a substantially laminar construction and comprising a plurality of platelet members spaced from one another defining interplatelet spaces, and a portion of said organic film forming compound being absorbed by said particles and disposed in said interplatelet spaces said organic film forming compound being selected from the group consisting of water soluble, water emulsifiable, and non-aqueous compounds.

6. A lubricant composition for use in the hot forming of metals in accordance with claim **1**, wherein

said organic film forming compound is water soluble and selected from the group consisting of lignin sulfonates, sodium gluconates, sodium heptagluconates, cerelose, polyethylene glycols, polyvinyl chloride alcohol, the water soluble salts of rosin-maleic and the water soluble salts of styrene-maleic.

3,925,215

ANTIOXIDANT MIXTURE COMPRISING A MIXTURE OF PHENOTHIAZINE ORALKYL SUBSTITUTED PHENOTHIAZINE AND AN OXIDIZED DIARYLAMINE AND LUBRICATING OILS CONTAINING SAID ANTIOXIDANT MIXTURE

Graham James Jervis, Abingdon, and Robert Robson, Wantage, both of England, assignors to Exxon Research & Engineering Company, Linden, N.J.

Filed May 2, 1974, Ser. No. 466,240
Claims priority, application United Kingdom, May 11, 1973, 22618/73
Int. Cl.² C10M *1/38, 3/32*; **C09K** *15/26*
U.S. Cl. 252—47.5 **6 Claims**

1. An antioxidant comprising a mixture of:

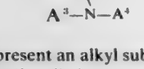
A. at least one thiodiarylamine from the group consisting of phenothiazine and 3,7-dialkyl phenothiazines having alkyl groups of from 1 to 10 carbon atoms, and

B. at least one oxidized diarylamine, the diarylamine being selected from the group consisting of those having the formula:

(1) $A^1—NH—A^2$

or

(2)



wherein A^1–A^4 represent an alkyl substituted phenyl or naphthyl group, wherein the alkyl groups have from 1 to 12

the oxidized diarylamine having been obtained by contacting the diarylamine with air or oxygen at from 150° to 250°C. until a product is obtained having from 0.5 to 2.5 gram atoms of oxygen per gram atom of nitrogen,

the weight ratio of (A) to (B) being between 20:1 and 1:2.

4. A lubricating oil composition comprising a major proportion by weight of a lubricating oil and an antioxidant amount by weight of the antioxidant claimed in claim **1**.

3,925,216

LUBRICATING COMPOSITION FOR CONDUITS AND RACEWAYS

Thomas R. Moorhouse, Anoka, Minn., assignor to American Polywater Corporation, Anoka, Minn.

Filed Sept. 13, 1974, Ser. No. 505,637
Int. Cl.² C10M *1/06, 3/04, 5/04, 7/08*
U.S. Cl. 252—49.3 **5 Claims**

1. A liquid lubricant for lubricating the engagement of articles which are to be pulled through an elongated conduit, the lubricant being a solution by weight ranging from .5 to 5% of poly(ethylene oxide) that has a weight average molecular weight ranging from 100,000 to 5,000,000, about 5 by volume to about 50% by volume of alcohol selected from the group consisting of methanol, ethanol and isopropanol with the remainder being water.

3,925,217

LUBRICANTS FOR ROLLING CONTACT BEARINGS

Richard L. Green, St. Louis, and James C. Wygant, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 455,764, March 28, 1974, abandoned. This application July 10, 1974, Ser. No. 487,357
Int. Cl.² C10M *1/20, 3/14, 5/12, 7/16*
U.S. Cl. 252—52 A **7 Claims**

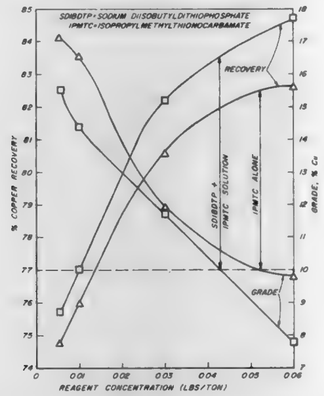
1. A method for improving the elastohydrodynamic film thickness and increasing the fatigue life of rolling contact bearings which comprises introducing to the rolling contact surfaces a fluid comprising one or more cyclohexyl compounds having two or more cyclohexyl rings, said rings being fused, concatenated or linked by one or more C_1 to C_{16} alkylene, carboxy, or ether linkages, each of said compounds having from 10 to 70 carbon atoms.

3,925,218

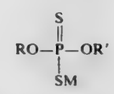
CONCENTRATION OF ORE BY FLOTATION WITH SOLUTIONS OF AQUEOUS DITHIOPHOSPHATES AND THIONOCARBAMATE AS COLLECTOR

Donald Edwin Zipperian; James Allen Jones, and Thomas Brian Buza, all of Tucson, Ariz., assignors to American Cyanamid Company, Stamford, Conn.

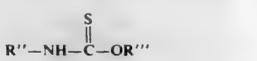
Filed Aug. 1, 1974, Ser. No. 493,946
Int. Cl.² B03D *3/00*; **C09K** *3/00*; **C22B** *1/00*
U.S. Cl. 252—61 **8 Claims**



1. An aqueous solution comprising from about 35 to 50 weight percent of an alkali metal salt of a dialkyl dithiophosphate of the formula



wherein M is an alkali metal or ammonium ion and R and R′ are individually selected from alkyl groups of 2 to 8 carbon atoms and correspondingly, from about 65 to 50 weight percent of water, said solution containing dissolved therein an N-alkyl, O-alkyl thionocarbamate of the structure



wherein R″ and R‴ are individually selected from alkyl groups of about 1 to 6 carbon atoms, said thionocarbamate being present in an amount sufficient to provide a weight ratio in the range of from about 30:70 to 95:5 of said dialkyldithiophosphate solution to said thionocarbamate, respectively.

3,925,219

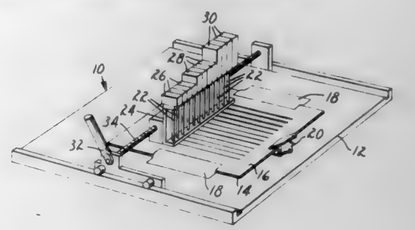
PRESSURE-FIXABLE DEVELOPING POWDER CONTAINING A THERMOPLASTIC RESIN AND WAX

Doyle L. Strong, West Lakeland Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 29, 1973, Ser. No. 375,169
Int. Cl.² G03G *9/00*
U.S. Cl. 252—62.1 P **9 Claims**

1. A flowable, pressure-fixable, dry powder comprising thermoplastic, essentially spherical particles, the binder material of which has a conductivity of at most 10^{-12} mho/cm and which comprises (a) about 50 to 100 parts by weight of a wax component having a melting point between about 45° C. and 150° C., and (b) about 2 to 50 parts by weight of thermo-plastic resin having a softening point above about 60° C.; wherein electrically conductive particles are firmly anchored in said binder material, said electrically conductive particles having a conductivity of at least 10^{-2} mho/cm and an average diameter below about 100 millimicrons forming a radially disposed zone; and wherein said essentially spherical particles exhibit:

a. an electronic conductivity ranging monatonically without decreasing from between about 10^{-11} and 10^{-4} mho/cm in a 100 v./cm. DC electrical field to between about 10^{-8} and 10^{-3} mho/cm in a 10,000 v./cm. DC electrical field,



b. a number average particle diameter below about 20 microns, and

c. a volume ratio of said electrically conductive particles to said total particle volume of between 0.01/100 and 4/100; wherein the dry powder exhibits a transfer density of less than about 0.15 and a paper abrasion density of less than about 0.15.

3,925,220

PROCESS OF COMPRISING SOLVENT EXTRACTION OF A BLENDED OIL

Ivor W. Mills, Media, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Aug. 15, 1972, Ser. No. 280,919
Int. Cl.² H01B *3/00*
U.S. Cl. 252—63 **15 Claims**

1. A composition containing in the range of 0.01 to 2 weight percent of a phenolic oxidation inhibitor and a petroleum oil of improved stability, said petroleum oil having been obtained by a process comprising blending from 40–95 parts by weight of a hydrogenated naphthenic distillate oil having a viscosity-gravity constant in the range of 0.78–0.94, an ultraviolet absorptivity of less than 0.1 in the 330 millimicron region, and less than 0.04 in the 335 millimicron region, with from 60–5 parts of an unhydrogenated and unhydrorefined petroleum oil having a viscosity gravity constant in the range of 0.78–0.899 and then extracting said blend with an aromatic selective solvent to obtain a raffinate product, and wherein said naphthenic distillate is substantially free of naphthenic acids.

2. A composition containing in the range of 0.01 to 2 weight percent of a phenolic oxidation inhibitor and a petroleum oil of improved stability, said petroleum oil having been obtained by a process comprising blending from 25–98 parts by weight of a hydrogenated petroleum oil having a viscosity-gravity constant in the range of 0.78–0.94, an ultraviolet absorptivity of less than 0.1 in the 330 millimicron region and of less than 0.04 in the 335 millimicron region with from 75–2 parts of an unhydrogenated and unhydrorefined petroleum oil having a viscosity-gravity constant in the range of 0.78–0.899 and then extracting said blend with an aromatic selective solvent to obtain a raffinate product, and wherein the blend contains as an additional component from 0.1–30 weight percent of a catalytically cracked cycle oil.

11. A hydrogenated naphthenic oil having a viscosity at 100°F. in the range of 30–40 SUS and containing an effective amount of an oxidation inhibitor, and which is useful as a transformer oil for arctic regions, wherein a component of said oil was obtained by a process comprising hydrorefining a naphthenic distillate having a viscosity greater than 50 SUS at 100°F. to produce a hydrorefined oil having a 335 UVA less than 0.04, 330 UVA Less than 0.1 and a lower boiling range than said distillate, and distilling said hydrorefined oil to pro-

duce, as a fraction, said component having a viscosity at 100°F. in the range of 30–40 SUS.

3,925,221
STABILIZED ESTER IMPREGANT

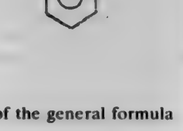
John W. Eustance, South Glens Falls, N.Y., assignor to General Electric Company, Hudson Falls, N.Y.

Continuation-in-part of Ser. No. 281,204, Aug. 16, 1972, Pat. No. 3,754,173. This application June 12, 1973, Ser. No. 369,204

Int. Cl.² H01B *3/18*

U.S. Cl. 252—63.7 **29 Claims**

1. Dielectric liquid composition with a power factor of less than 5% measured at 100°C. and 100 Hz for use in electrical capacitors, and having as a principal constituent an ester of phthalic acid and an alcohol having the formula



where R is an aromatic substituent and R′ is a branched chain alkyl or aryl group, and a stabilizer dissolved in said ester and characterized by containing the group



with an affinity of chemically reacting with acids and acid constituents and precursors, and other impurities in electrical capacitors to limit the power factor thereof to less than about 5.0% measured at 100°C. and 100 Hz the amount of said stabilizer being in the range of from about 0.01 percent to about 10.0 percent by weight.

3,925,222
ELECTRICAL INSULATION OIL

Jiro Ogura; Ikuo Seki; Kiyotaka Sato, all of Hitachi; Masaaki Takahashi; Akira Ito, both of Tokyo, and Yuriko Igarashi, Mitaka, all of Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

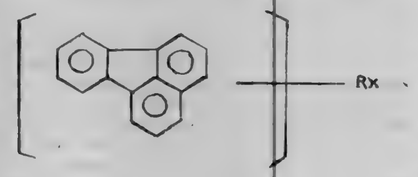
Filed Sept. 30, 1974, Ser. No. 510,224

Claims priority, application Japan, Oct. 4, 1973, 48-111869; Nov. 15, 1973, 48-127669

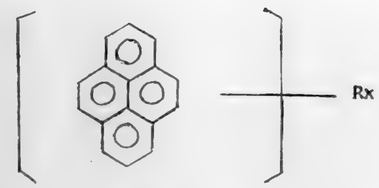
Int. Cl.² H01B *3/18*

U.S. Cl. 252—63.7 **3 Claims**

1. An electric insulating oil comprising a silicone oil and 0.1–10.0% by weight of at least one additive selected from the group consisting of alkyl fluoranthenes of the general formula



and alkyl pyrenes of the general formula



wherein, R denotes an alkyl group having from 1 to 4 carbon atoms and x is an integer of from 1 to 4, and when x is an integer of 2 or more, R may be same or different.

3,925,223
HYDRAULIC FLUIDS BASED ON BORATE ESTERS

Robert L. Coffman, Mahopac, and Richard W. Shiffler, Briarcliff Manor, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

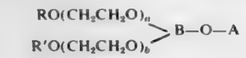
Filed July 19, 1974, Ser. No. 489,890

Int. Cl.² C09K *3/00*; **C10M** *3/20, 3/48*

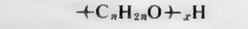
U.S. Cl. 252—78 **6 Claims**

1. Hydraulic fluid consisting essentially of:

1. about 2 to about 100% by weight of a borate ester having the formula:



wherein each of a and b is an integer having values of 2 to 4, each of R and R′ is an alkyl group having 1 to 4 carbon atoms, and A is an oxyalkylene unit, including mixed oxyalkylene units, having the formula:



wherein n is an integer having values of 2 to 5 and x is an integer having values of 1 to 5;

2. 0 to about 62% by weight of a monoalkoxy trialkylene glycol having the formula:



wherein R‴ is an alkyl group having 1 to 4 carbon atoms and R″ is H or $-CH_3$; and

3. 0 to about 36% by weight of a monoalkyl ether of diethylene glycol wherein the alkyl group contains 1 to about 4 carbon atoms.

3,925,224
DETERGENT ADDITIVE COMPOSITION

Anthony E. B. Winston, Liverpool, N.Y., assignor to Church & Dwight Co., Inc., Syracuse, N.Y.

Continuation-in-part of Ser. No. 352,078, April 17, 1973, abandoned. This application Dec. 13, 1974, Ser. No. 532,527

Int. Cl.² C11D *1/00*

U.S. Cl. 252—89 **9 Claims**

1. A detergent additive composition consisting essentially of (1) from 0.1% to 60% by weight of a water-insoluble surfactant system selected from the group consisting of (a) an essentially water-insoluble component having a lipophilic moiety with from 8 to 24 carbon atoms and at least one polar moiety selected from the group consisting of nonionic, anionic and amphoteric, and (b) an essentially water-insoluble mixture of said component (a) with a water-soluble surfactant selected from the group consisting of anionic surface-active agents, nonionic surface-active agents and amphoteric surface-active agents, where said water-insoluble surfactant system has an HLB value between 2 and 11, (2) from 40% to 99.9% by weight of at least one detergent salt selected from the group consisting of builder salts, detergent fillers and buffer, (3) from 0 to 35% by weight of bleaching agents and their stabilizers and activators, and (4) from 0 to 5% by weight of at least one customary detergent additive selected from the group consisting of enzymes, corrosion inhibitors, anti-redepositing agents, optical brighteners, foam stabilizers and foam inhibitors.

3,925,225
DOUBLE SOAP BAR

David J. Morrison, 1402 S. 78th St., Omaha, Nebr. 68124

Filed Dec. 26, 1974, Ser. No. 536,337

Int. Cl.² C11D *19/00*

U.S. Cl. 252—90 **3 Claims**

1. A double soap bar comprising:

a first bar formed into a predetermined shape, and a second bar disposed within the first bar.

3,925,226
PROCESS FOR IMPROVING GRANULATED DETERGENTS

Kuniyoshi Takenouchi, Funabashi; Norihiro Ohno, Chofu, and Fusao Kondo, Chiba, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed June 27, 1974, Ser. No. 483,806

Claims priority, application Japan, July 4, 1973, 48-74863; July 4, 1973, 48-74864

Int. Cl.² C11D *17/00*

U.S. Cl. 252—92 **4 Claims**

1. A process for improving the properties of granulated detergents, which comprises adding a lower alcohol or liquid perfume to an ordinary hollow granular detergent produced by the spray drying method when the temperature of the detergent is lower than the boiling point of the alcohol or perfume while making the detergent grains roll over, and subsequently adding thereto a powder of a water insoluble metal soap having a mean particle diameter of less than 100μ when the surface of the grains has been imparted with sufficient adhesive power by the addition of the alcohol or perfume.

3,925,227
NOVEL LAUNDERING COMPOSITIONS

Garland G. Corey, Milltown, and Bernard Weinstein, North Plainfield, both of N.J., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 258,153, May 31, 1972, abandoned. This application Sept. 28, 1973, Ser. No. 401,736

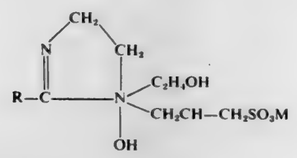
Int. Cl.² C11D *3/48, 3/29*

U.S. Cl. 252—106 **3 Claims**

1. A liquid detergent formulation which comprises the following components:

	quantity to make to 100%
Triethanolamine linear dodecyl benzene sulfonate	0.1 – 50%
Sodium lauryl ether sulfate	0.1 – 20%
wherein the number of ethoxy groups is three	
Dimethyl cocoamine oxide	0.1 – 2%

Amphoteric coconut acid derivative having the following formula:



wherein R is a mixture of hydrocarbon radicals ranging from about 10 to about 18 carbon atoms and M is hydrogen or an alkali metal.	0.1 – 4%
Coconut fatty acid diethanolamine condensate	0.1 – 2%
2,4,4′-trichloro-2′-hydroxydiphenyl ether	0.10–1.00%
Ethanol	0.1 – 10%
Water	Sufficient

wherein

2,4,4′-Trichloro-2′-hydroxydiphenyl ether is pre-mixed and solubilized with sodium lauryl ether sulfate and wherein the pH of the system is about 7 to about 8.

3,925,228
CARBONATE BUILT DETERGENTS

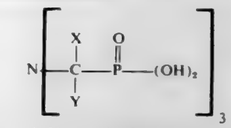
Bao-Ding Cheng, Highland Park, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 11, 1973, Ser. No. 322,730

Int. Cl.² C11D *3/08, 3/10, 9/34*

U.S. Cl. 252—110 **8 Claims**

1. A laundry detergent composition consisting essentially of from 6 to 25% by weight of a detergent system consisting essentially of a mixed non-ionic, synthetic anionic surfactant, soap system wherein the non-ionic is an alkanol-poly (lower alkanoxy), said alkanol having from 10 to 22 carbon atoms and said lower alkanoxy having from 2 to 3 carbon atoms and being formed by the reaction of 1 mole of the alkanol with from 5 to 25 moles of the lower alkylene oxide, the anionic is a linear alkyl benzene sulfonate wherein the alkyl group has from 11 to 13 carbon atoms and the soap is a sodium soap, the ratio of anionic-nonionic-soap, respectively, being 7–3:1:0-.5–2, from about 15 to 50% by weight of a filler selected from alkali metal sulfates and alkali metal silicates, from about 35 to 60% by weight of an alkali metal carbonate and from about 2 to 10% by weight of a builder compound selected from the group consisting of amino tri(lower alkylidene)phosphonic acids having the formula:



wherein X and Y are hydrogen or lower alkyl groups, $CH_3COH(PO_3H_2)_2$, $(H_2O_3PCH_2)_2N\text{-}CH_2CH_2\text{-}N(CH_2PO_3H_2)_2$, $CH_3(CH_2)_{11}N(CH_2PO_3H_2)_2$, $CH_3CH(PO_3H_2)_2$, $CH_2OH(\text{-}PO_3H_2)$, and their water-soluble salts.

3,925,229
CLEANING COMPOSITION CONTAINING PHOSPHORIC ACID, A PROCESS FOR ITS MANUFACTURE AND ITS USES

Friedrich Bolsing, Knapsack Aktiengeselischaft, Knapsack, Germany

Division of Ser. No. 208,395, Dec. 15, 1971, Pat. No. 3,786,091, which is a continuation-in-part of Ser. No. 44,900, June 9, 1970, abandoned. This application Oct. 26, 1973, Ser. No. 409,992

Claims priority, application Germany, June 23, 1969, 19311768

Int. Cl.² C11D *3/06*

U.S. Cl. 252—136 **5 Claims**

1. A phosphoric acid-containing cleaning composition consisting essentially of

a. a paste base containing between 10 and 90 weight percent of water, between 2 and 90 weight percent of at least one amine selected from the group consisting of primary, secondary, and tertiary alkyl and alkylene amines with one or more amine functions, the said amines being derivatives of substituted or unsubstituted hydrocarbon compounds having from 8 to 24 carbon atoms, between 0 and 80 weight percent of an organic solvent immiscible with water or of a mixture of said solvents selected from the group consisting of petroleum, paraffin oil, petroleum ether, benzine, ligroine, mineral oils, fatty oils, chlorinated hydrocarbons, benzene, toluene and xylene, between 0 and 30 weight percent, calculated on the amounts of the water and the said organic solvent(s), of

an emulsifier or a mixture of emulsifiers selected from the group consisting of alkali metal and ammonium salts, amines and esters of fatty acids or sulfonated fatty acids of high molecular weight, fatty alcohol sulfonates, quaternary ammonium compounds, sulfonated amines and phosphoric acid esters, phosphoric acid with a concentration from 5 to 100 weight percent in an amount sufficient to neutralize the said amine or mixture of amines and

b. additives selected from the group consisting of amines other than the said long-chain amines, organic acids, inorganic acids, abrasives, special metal cleaning and polishing agents and corrosion inhibitors.

3,925,230
NON-CAKING LAUNDRY SOUR

Frank Xavier Koepfle, and Herbert Edward Grote, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 26, 1973, Ser. No. 428,512
Int. Cl.² C11D *7/10, 7/14;* **D06M** *1/18*
U.S. Cl. 252—136 **2 Claims**

1. A non-caking laundry sour composition consisting essentially of:

a. sodium silicofluoride;

b. sodium bifluoride;

c. anhydrous calcium sulfate; wherein the weight ratio of sodium silicofluoride to sodium bifluoride is 3:1 and wherein the calcium sulfate is present at from 0.3 to 1% by weight of the total fluoride salt content.

3,925,231
WATER DISPERSABLE CHLORINATED SOLVENT AND METHOD

Jack Henry Ritzi, Hamilton, Ohio, assignor to W. R. Grace & Co., New York, N.Y.

Filed Feb. 19, 1975, Ser. No. 551,218
Int. Cl.² C11D *7/50*
U.S. Cl. 252—171 **5 Claims**

1. A method for cleaning surfaces which comprises applying a blend of from 0% to about 75% by weight methylene chloride, from about 25% to about 99.9% by weight of a low volatibity chlorinated solvent, and from about 0.1 to about 25% by weight of an emulsifier, said blend being disposed in water in an amount from about 1 to about 25% by weight and applied to the surface at a temperature of 120°F. to 190°F., and thereafter rinsing the applied solution from the surface with water.

3,925,232
HYDROXYAMIDE ACID PRODUCTS AND BUTYROLACTONE AND BUTYROLACTAM PRODUCTS

EL-Ahmadi Ibrahim Heiba, Princeton, and Albert Lloyd Williams, Hopewell Township, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 212,626, Dec. 27, 1971, abandoned. This application Apr. 27, 1973, Ser. No. 355,360
Int. Cl.² C11D *7/50*
U.S. Cl. 252—171 **13 Claims**

1. A detergent composition comprising a proportion sufficient to provide detergent properties thereto of a product selected from the group consisting of an alkali metal salt, an amine salt, an amide of a 3-amidocarbonyl-5-hydroxycarboxylic acid and an amine salt and an amide of a 3-metallocarboxy-5-hydroxycarboxylic acid.

3,925,233
FORMALDEHYDE-HEXAMETHYLENE TETRAMINE COMPOSITIONS

Benjamin T. Woodruff, Charleston, W. Va., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Dec. 4, 1972, Ser. No. 311,977
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C09K *3/00*
U.S. Cl. 252—182 **6 Claims**

1. A stable aqueous solution of up to 80% by weight of hexamethylene tetramine and formaldehyde containing an acidic material selected from mineral acids, organic acids or an acid reacting salt, in which solution the mole ratio of formaldehyde to hexamethylene tetramine is from 3.3:1 to 2:1, the mole ratio of acidic material to hexamethylene tetramine is at least 1:2, the pH of the solution is from 7.4 to 8.4, the density of the solution is about 1.15 to 1.35 grams per ml. and the viscosity is from 20 to 55 cp at 25°C.

2. A method for making a stable aqueous solution of up to about 80% by weight of hexamethylene tetramine and formaldehyde by making a slurry of hexamethylene tetramine in an aqueous solution of up to 60% by weight formaldehyde, the amount of formaldehyde to hexamethylene tetramine varying from 3.3:1 to 2:1, adding to said slurry an acidic material selected from mineral acids, organic acids or an acid reacting salt, the acidic material being added in the amount of one mole of acid to two moles of hexamethylene tetramine, and heating the mixture at a temperature between 60° and 90°C. until it becomes clear.

3,925,234
COATED BLEACH ACTIVATOR

Klaus Hachmann, Hilden; Herbert Saran, Dusseldorf-Holthausen, and Gerhard Sperling, Hilden, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

Filed July 25, 1973, Ser. No. 382,595
Claims priority, application Austria, July 31, 1972, 6594/72
Int. Cl.² C01B *15/00;* **C11D** *9/42*
U.S. Cl. 252—186 **8 Claims**

1. A stabilized bleaching assistant suitable for use in pulverulent washing and bleaching compositions comprising drop-shaped to globular-shaped particules at least 70 percent of which have an average diameter within the range of 0.1 mm to 1 mm consisting essentially of 10 percent to 70 percent by weight of at least one activator for active oxygen derived from compounds yielding H_2O_2 in aqueous solutions having an activating action of at least 3 in the Per-Acid Formation Test selected from the group consisting of N-acyl compounds having 2 to 9 carbon atoms in the acyl, O-acyl compounds having 2 to 9 carbon atoms in the acyl, carbonic acid esters and pyrocarbonic acid esters, substantially surrounded by from 30 percent to 90 percent by weight of a mixture of (a) from 2 to 10 parts by weight of said mixture of acids having substantially from 12 to 24 carbon atoms selected from the group consisting of substantially saturated fatty acids, saturated hydroxy-fatty acids, and mixtures thereof, and (b) 1 part by weight of said mixture of alcohols selected from the group consisting of substantially saturated aliphatic monohydric alcohols having from 10 to 20 carbon atoms, their ethoxylated products, their propyloxylated products, and mixtures thereof, where the alkoxylated products are water-insoluble and have from 1 to 5 alkoxy units.

3,925,235
PRODUCTION OF LUMINESCENCE

Vin-Jang Lee, Columbia, Mo., assignor to The Curators of the University of Missouri, Columbia, Mo.

Filed Oct. 30, 1972, Ser. No. 302,359
Int. Cl.² C09K *3/00*
U.S. Cl. 252—188.3 CL **3 Claims**

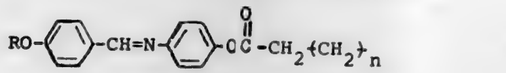
1. A process for continuously producing luminescence comprising carrying out a heterogeneous exothermic charge transfer chemical reaction of at least one reactant in a fluid phase on the surface of a solid state catalyst at temperatures substantially below the temperature of incandescence of the catalyst wherein chemical energy is directly converted into light energy continuously to produce luminescence, and utilizing the luminescence thus produced at a position spaced from the solid state catalytic surface where the luminescence is produced.

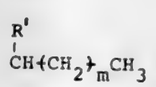
3,925,236
ELECTRO-OPTIC COMPOSITIONS AND DEVICE

Joel Edward Goldmacher, and Michael Thomas McCaffrey, both of Cranbury, N.J., assignors to RCA Corporation, New York, N.Y.

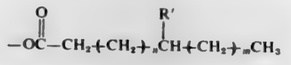
Continuation of Ser. No. 240,819, April 3, 1972, abandoned, which is a continuation-in-part of Ser. No. 829,649, June 2, 1969, abandoned. This application June 22, 1973, Ser. No. 372,649
Int. Cl.² C09K *3/34, 3/00;* **G02B** *5/23;* **G02F** *1/01*
U.S. Cl. 252—299 **10 Claims**

9. A liquid crystal composition consisting essentially of a mixture of one or more compounds having the formula

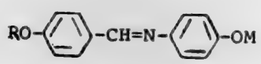




wherein R is a normal alkyl radical of 1–8 carbon atoms, R′ is a normal alkyl radical of 1–6 carbon atoms, *n* and *m* integers of 0–5 with the proviso that the acyloxy group



contains up to 10 carbon atoms and a compound having the formula



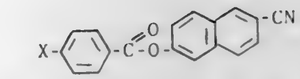
wherein R is a normal alkyl radical of 1–8 carbon atoms and OM is an acyloxy group of 4–10 carbon atoms.

3,925,237
NOVEL LIQUID CRYSTAL ELECTRO-OPTIC DEVICES

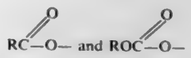
Daniel Louis Ross, Princeton, and Dragan Milan Gavrilovic, Cranbury, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed June 28, 1974, Ser. No. 484,085
Int. Cl.² C09K *3/34;* **C07C** *121/50, 121/60, 121/66, 121/74, 121/75, 121/76;* **G02B** *5/23*
U.S. Cl. 252—299 **8 Claims**

1. In an electro-optic cell comprising a liquid crystal layer between two electrodes, the improvement which comprises including in the liquid crystal layer a compound of the formula



wherein X is a member selected from the group consisting of



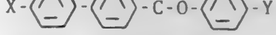
wherein R is an alkyl group having 1–10 carbon atoms.

3,925,238
NOVEL LIQUID CRYSTAL ELECTRO-OPTIC DEVICES

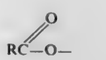
Dragan Milan Gavrilovic, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 28, 1974, Ser. No. 484,086
Int. Cl.² C09K *3/34;* **C07C** *121/74, 79/46*
U.S. Cl. 252—299 **10 Claims**

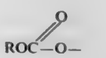
1. In an electro-optic cell comprising a liquid crystal layer between two electrodes, the improvement which comprises including in the liquid crystal layer a nematic liquid crystal compound of the formula:



wherein X is a member selected from the group consisting of R-, RO-,



and



groups wherein R is an alkyl group of 1 to 10 carbon atoms and Y is a cyano or a nitro group.

3,925,239
METHOD OF MANUFACTURING A LUMINESCENT ALKALINE EARTH HALOPHOSPHATE

Willem Lambertus Wanmaker, and Dragutin Radielović, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 288,018
Claims priority, application Netherlands, Sept. 11, 1971, 7112525
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C09K *11/44*
U.S. Cl. 252—301.4 P **5 Claims**

1. In a method of preparing a trivalent antimony activated luminescent alkaline earth halophosphate having the apatite structure by contacting gaseous antimony trioxide in an inert atmosphere with a base material at a temperature of between 900° and 1,250°C, said base material comprising at least one substance selected from the group consisting of mixtures of reactants capable of producing alkaline earth halophosphate having the apatite structure, non-activated alkaline earth halophosphate having the apatite structure and manganese activated alkaline earth halophosphate having the apatite structure, the improvement which comprises forming the gaseous antimony trioxide in at least one vessel separated from the base material by heating for at least 0.25 hour at a temperature between 900° and 1,250°C at least one substance selected from the group consisting of the alkaline earth antimonites, cadmium antimonite, manganese antimonite, mixtures of at least one of said antimonites with at least one of calcium and strontium pyrophosphate, mixtures of at least one

alkaline earth antimonate with at least one alkaline earth pyrophosphate, mixtures of cadmium antimonate with at least one alkaline earth pyrophosphate and mixtures of manganese antimonate with at least one alkaline earth pyrophosphate, in a molar ratio of antimonate to pyrophosphate of between 4 and 0.5, and contacting the gaseous antimony trioxide obtained with the base material by means of an inert gas stream.

3,925,240

HALOGEN CONTAINING LEAD ACTIVATED CALCIUM SULFIDE LUMINESCENT COMPOSITION

Willi Lehmann, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 876,766, Nov. 14, 1969, abandoned. This application Oct. 18, 1973, Ser. No. 407,728

Claims priority, application Japan, Oct. 26, 1970, 45-93590

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C09k *11/34*

U.S. Cl. 252—301.4 S **4 Claims**

1. A luminescent composition which has an emission substantially confined to the ultraviolet range of 300–400 NM which composition is substantially free from alkali metal, said composition consisting essentially of CaS:Pb, X, wherein Pb is present in an activating proportion of from about 10^{-5} to 10^{-3} gram-atom per mol of sulfide, and X is at least one of the halogens, chlorine, bromine or iodine in a gram-atom amount which is at least equal to and up to about ten times greater than the Pb gram-atom content.

3,925,241

AMPHOTERIC SURFACTANT GELS

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 580,204, Sept. 19, 1966, Pat. No. 3,740,421. This application Feb. 26, 1973, Ser. No. 320,516The portion of the term of this patent subsequent to June 19, 1990, has been disclaimed.

Int. Cl.² B01J *13/00*

U.S. Cl. 252—316 **7 Claims**

1. A stable gel comprising, based on a total of 100 parts by weight,

a. from about 5 parts to about 50 parts of amphoteric surfactant

b. from about 10 parts to about 80 parts of water

c. from about 15 parts to about 40 parts of a copolymer having the formula: $HO(C_3H_6O)_b(C_3H_6O)_a(C_2H_4O)_bH$ wherein a is an integer such that the hydrophobe portion represented by (C_3H_6O) has a molecular weight of from 2,250 to 4,000 and b is an integer of from 16 to 360.5 such that the hydrophile portion represented by (C_2H_4O) constitutes from about 10 to 90 weight percent of the copolymer with the provisos that:

1. when a is an integer such that the average molecular weight of the hydrophobe is about 2,250, then the total moles of ethylene oxide is from about 52 to 193.2, and the total average molecular weight of the block copolymer is from 4,600 to 10,750;
2. when a is an integer such that the average molecular weight of the hydrophobe is about 2,750, then the total moles of ethylene oxide is from about 48 to 244.2, and the total average molecular weight of the block copolymer is about 4,910 to 13,500;
3. when a is an integer such that the average molecular weight of the hydrophobe is about 3,250, then the total moles of ethylene oxide is from about 36 to 279.6, and the total average molecular weight of the block copolymer is from about 4,910 to 15,500;
4. when a is an integer such that the average molecular weight of the hydrophobe is about 4,000, then the total moles of ethylene oxide is from about 48 to 360.5, and the total average molecular weight of the block copolymer is from 6,150 to 20,000.

3,925,242

PROCESS FOR REDUCING FOAMING OF LIQUIDS SUSCEPTIBLE TO FOAMING

Ferenc Sagi, Bron, and Michel Roussos, Lyon, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Division of Ser. No. 153,829, June 16, 1971, abandoned. This application June 18, 1973, Ser. No. 370,706

Claims priority, application France, June 17, 1970, 70.22284

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B01D *19/04*

U.S. Cl. 252—321 **3 Claims**

1. A process for reducing the foaming of a liquid susceptible to foaming which comprises incorporating in the liquid, as an anti-foaming agent, an emulsion consisting essentially of water and a silicone phase and 2 to 50 parts by weight sucro-glyceride per 100 parts by weight silicone.

3,925,243

APPARATUS FOR THE MANUFACTURE OF EMULSIONS

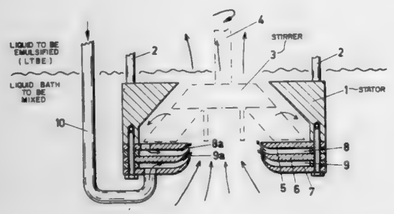
Hans G. Brogli, Gotthelfstrasse 42, Basel, and Werner F. Brogli, Kindergartenstrasse 3, Reinach, Basel-Land, both of Switzerland

Continuation-in-part of Ser. No. 145,853, May 21, 1971, Pat. No. 3,791,984. This application Aug. 23, 1973, Ser. No. 391,158

Claims priority, application Switzerland, June 1, 1970, 8159/70

Int. Cl.² B01F *7/16*; **B01J** *13/00*; **B01F** *5/16*

U.S. Cl. 252—359 C **3 Claims**



2. Apparatus for the manufacture of an emulsion from a first bath liquid and a second feed liquid immiscible with said first liquid, one of said liquids being heated and the other liquid being relatively cool, said apparatus comprising:

a mixing and homogenizing tool immersed in said first liquid comprising an annular stator and a stirring member disposed in said stator, the stator having an inlet side and an outlet side, sand said stirring member being rotatable to form a draw in area for drawing said first liquid from said inlet side into said mixing and homogenizing tool,

and at least one nozzle disposed at said inlet side of said stator and having a nozzle opening of shape and position to introduce said second liquid in fine distribution in the draw in area of said stirring member so that said second liquid is drawn into said mixing and homogenizing tool together with said first liquid and thoroughly mixed therewith in said tool before said liquids are thrust out at said outlet side,

said nozzle having an annular gap which is formed by the inner peripheries of coaxial annular plates which are fixed to said inlet side of said stator, said annular gap being disposed surrounding said draw in area of said stirring member in such manner that said first liquid sucked by the stirring member and flowing past the annular gap produces a low pressure in the nozzle in order to suck in said second liquid through a supply pipe connected to said nozzle.

3,925,244

AUTOMATIC CONTROL DEVICE FOR CAR LIGHTING

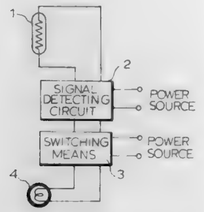
Mashahiro Nagasawa; Hiroyuki Watanabe, both of Hirakata, and Takashi Wakabayashi, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 25, 1974, Ser. No. 464,618

Claims priority, application Japan, Oct. 19, 1973, 48-118205

Int. Cl.² G01J *1/42*

U.S. Cl. 250—372 **3 Claims**



1. An automatic control device for car lighting having a detecting means and circuit means for providing an electric signal in response to a signal from the detecting means for switching a lighting means on or off, characterized in that said detecting means consists of a stannic oxide photoconductive device for selectively detecting ultraviolet light having a wavelength in the range of 3200 to 3600A so that said lighting means is automatically switched on or off according to the amount of ultraviolet light detected by said detecting means.

3,925,245

CORROSION INHIBITING COMPOSITION CONTAINING AN AMINOALKYL-PHOSPHONIC ACID AND AN INORGANIC NITRITE

Arthur Harris, Poynton; John Burrows, Congleton, and James Roger Hargreaves, Sale, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 22, 1972, Ser. No. 265,369

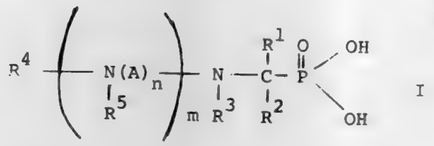
Claims priority, application United Kingdom, June 26, 1971, 30064/71

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C23F *11/10*, *11/16*

U.S. Cl. 252—389 A **22 Claims**

1. A synergistic combination consisting essentially of a combination of from 10% to 99% by weight of an alkali metal nitrite and from 90% to 1% by weight of a compound having the formula



I

wherein

R^1 and R^2 may be the same or different and each represents hydrogen or a hyrocarbyl or hydroxy-substituted hydrocarbyl radical containing up to 8 carbon atoms,

R^3 and R^4 may be the same or different and each represents hydrogen or a hydrocarbyl or hydroxy-substituted hydrocarbyl radical containing up to 8 carbon atoms, a carboxy-alkyl or alkoxy radical containing up to 3 carbon atoms, a phosphonic acid, an alkylene phosphonic acid grouping containing up to 4 carbon atoms or an aralkylene phosphonic acid such that not more than two phosphonic acid groupings separated by less than two carbon atoms may be attached to any nitrogen atoms,

R^5 is hydrogen or an alkylene phosphonic acid containing up to 4 carbon atoms,

A is a saturated divalent hydrocarbyl radical containing up to 6 carbon atoms.

m is 0 or an integer from 1 to 60,

n is 0 or 1; when *m* is 0, R^4 may be a hydroxy grouping or R^3 and R^4 together with the nitrogen atom may form a six membered ring; when *m* is 1, the grouping $R^3N—A—NR^5$ may form a heterocyclic ring, and when m is greater than 1, the constituent R^5 groupings may be the same or different; and the water-soluble salts thereof.

3,925,246

ESTERS AND MIXTURES THEREOF WITH ORGANOTIN COMPOUNDS

Harold Coates, Wombourne; John Desmond Collins, Albrighton, and Iftikhar Hussain Siddiqui, Edgbaston, all of England, assignors to Albright & Wilson Limited, Oldbury near Birmingham, England

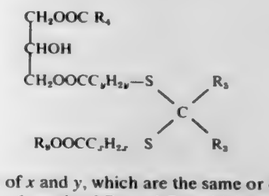
Filed Feb. 15, 1974, Ser. No. 442,874

Claims priority, application United Kingdom, Feb. 19, 1973, 07984/73

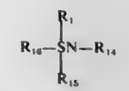
Int. Cl.² C09K *15/32*, *15/10*; **C08K** *00/00*

U.S. Cl. 252—400 R **10 Claims**

1. A stabilizer composition comprising (1) an ester of the general formula



wherein each of *x* and *y*, which are the same or different, is an integer of 1 – 6, each of R_4 and R_9, which are the same or different, is selected from the group consisting of alkyl groups of 1 to 21 carbon atoms, alkenyl groups of 2 – 21 carbon atoms, cycloalkyl groups, aromatic hydrocarbyl groups, aralkyl hydrocarbyl groups and aralkenyl hydrocarbyl groups, each of R_3 and R_5, which are the same or different, is as defined above for R_4 and R_9, or is hydrogen or R_3 and R_5, together with the carbon atom to which they are attached, forms a cycloalkyl ring, and (2) an organotin compound of the formula



wherein R_1 is selected from the group consisting of alkyl groups of 1 to 12 carbon atoms, cycloalkyl groups, aromatic hydrocarbyl groups or aralkyl hydrocarbyl groups, R_{14} is as defined for R_1 or each of R_{14}, R_{15} and R_{16}, which are the same or different, is selected from the group consisting of groups of formula $—OOCR_4$, $—OOCR_{17}COOR_9$, $—SC_xH_{2x}COOR_9$ and $—SR_4$, or R_{15} and R_{16} together is selected from the group consisting of groups of formula —S—, $—OOCR_{17}COO—$, and $—SC_xH_{2x}COO—$, or R_{15} and R_{16} together represent —S—and R_{14} represents —SH, wherein R_4, R_9 and x are as defined in claim 1 and R_{17} represents a group selected from the group consisting of alkylene, alkenylene, cycloalkylene and arylene groups.

3,925,247
METHOD FOR PREPARING CATALYST FOR THE PRODUCTION OF VINYL FLUORIDE

Eiji Ogura; Nobuki Nomura, both of Onoda, and Kiyotada Emoto, Ube, all of Japan, assignors to Onoda Cement Company, Ltd., Yamaguchi, Japan

Filed Dec. 28, 1973, Ser. No. 429,691
Claims priority, application Japan, Dec. 28, 1972, 47-130229
Int. Cl.² B01J *31/04, 27/12, 27/24, 27/02*
U.S. Cl. 252—429 R **10 Claims**

1. A method of producing a catalyst for the production of vinyl fluoride by the gaseous reaction of acetylene and hydrogen fluoride, consisting essentially of incorporating activated carbon, which has been activated with nitric acid and washed with water so as to eliminate said nitric acid, with mercuric chloride, mercuric fluoride, mercuric nitrate, mercuric acetate, mercuric oxide, cadmium chloride, cadmium fluoride, cadmium nitrate, cadmium sulphate, cadmium oxide, cadmium hydroxide, or a mixture of mercuric chloride, mercuric fluoride, mercuric nitrate, mercuric acetate or mercuric oxide and a compound consisting of chloride, fluoride, sulphate, nitrate, oxide or hydroxide of lead, tin, cadmium or zinc, and pre-treating the resultant activated carbon with hydrogen fluoride gas.

3,925,248
FILTER MEDIUM FOR GASES

Rolf Moroni, Bornheim-Hersel; Friedrich Karl Rinck, Wachtberg-Niederbachem, and Peter Ehlenz, Vinxel, all of Germany, assignors to Collo Rheincollodium Koln GmbH Werk Hersel, Bornheim-Hersel, Germany

Continuation of Ser. No. 251,080, May 8, 1972, abandoned. This application Aug. 26, 1974, Ser. No. 500,520
Claims priority, application Germany, May 11, 1971, 2123159; Sept. 10, 1971, 2134587
Int. Cl.² B01J *31/06*
U.S. Cl. 252—428 **7 Claims**

1. A filter material for filtering air to remove noxious substances therefrom comprises an intimate mixture of the following particles in a loose bed;
   a. a prefoamed plastic material in the form of flakes, said flakes containing open pores and being obtained by comminuting an open pore hydrophilic prefoamed plastic material which has an average pore size of between 0.3 to 4 mm and contains reduction-oxidation catalyst particles incorporated into said prefoamed plastic material during the foaming thereof; and
   b. particles of activated carbon in a ratio of about 10–40% by volume with respect to said prefoamed material, at least a predominant proportion of which particles have an average particle size substantially less than the average pore size of said prefoamed plastic material, whereby adhesion of said activated carbon particles to said flakes is attained by binder free mechanical bonding so that separation of said activated carbon particles from said mixture is substantially precluded.

3,925,249
CATALYST FOR PREPARATION OF 6-METHYL-1,5-HEPTADIENE

Peter Fitton, Pequannock, N.J., and Thomas Whitesides, Madison, Wis., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 409,122, Oct. 24, 1973, Pat. No. 3,855,338. This application Aug. 29, 1974, Ser. No. 501,517
Int. Cl.² B01J *21/04, 31/12*
U.S. Cl. 252—430 **5 Claims**

1. A catalyst system comprising at least 0.1% by weight, based on the weight of the catalyst system of a tetra(lower alkyl)tin and at least 40% by weight, based upon the weight of the catalyst system of rhenium oxide on alumina.

3,925,250
PROCESS FOR PREPARING AN IRON CONTAINING CATALYST

Arnold Hausweiler, Zons; Nikolaus Paris, and Karl-Heinz Ennenbach, both of Dormagen, all of Germany, assignors to Erdolchemie Gesellschaft mit beschrankter Haftung, Cologne, Germany

Filed June 8, 1972, Ser. No. 260,945
Claims priority, application Germany, June 11, 1971, 2128903
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B01J *27/18*
U.S. Cl. 252—437 **9 Claims**

1. Process for preparing an iron-containing catalyst for the synthesis of acrylonitrile by the reaction of propylene with ammonia and molecular oxygen or air on a supported catalyst containing bismuth, molybdenum, iron and phosphorus, which consists essentially of
   a. impregnating a bismuth/phosphorus molybdate catalyst on silica gel with an aqueous solution of an iron salt;
   b. drying and calcining the impregnated catalyst for 0.3 to 7 hours at 500°C. to 750°C.;
   c. the catalysts thus produced consisting essentially of catalytically active metal contents as follows:
      6. to 26% by weight bismuth;
      2 to 20% by weight molybdenum
      0.5 to 10% by weight iron and
      0.1 to 1% by weight phosphorus;
   and having a specific surface of from 4 to 50 m^2/g.

3,925,251
ANTIMONY PENTAFLUORIDE HYDROCARBON CONVERSION CATALYST

Paul G. Rodewald, Rocky Hill, and Darrell D. Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 21, 1973, Ser. No. 418,153
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B01J *27/12*
U.S. Cl. 252—441 **3 Claims**

1. A hydrocarbon conversion catalyst consisting essentially of antimony pentafluoride deposited on silica resulting from pyrolysis of methylated silica.

3,925,252
CATALYZER APPARATUS AND METHOD FOR THE PRODUCTION THEREOF

Tozo Yabuta, Okazaki; Yasuhisa Kaneko, and Akiyoshi Morita, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Nov. 3, 1972, Ser. No. 303,373
Claims priority, application Japan, Nov. 5, 1971, 46-88085
Int. Cl.² B01J *21/18, 35/00*
U.S. Cl. 252—447 **21 Claims**

1. A catalyzer apparatus, in which pellet catalyzers are held between closely seated layers of a heat-resistant net-like material which is wound into a roll like block and both ends of said block are capped by a heat resistant net-like material.

3,925,253
CATALYSTS

Ruth E. Stephens, Royal Oak, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Mar. 19, 1973, Ser. No. 342,787
Int. Cl. B01J *29/06*
U.S. Cl. 252—455 R **20 Claims**

1. A catalyst support resistant to loss by attrition consisting essentially of a carrier coated with a silica coating, said silica coating containing a rare earth metal oxide and optionally alumina dispersed throughout said coating, the atom ratio of rare earth metal to silicon to aluminum in said coating being 1:0.1–2.0:0–20.

10. An attrition resistant exhaust gas catalyst consisting essentially of a carrier coated with a silica coating and a catalytic metal oxide, said silica coating containing a rare earth metal oxide, and optionally alumina dispersed throughout said coating, in an amount such that the atom ratio of rare earth metal to silicon to aluminum is 1:0.1–2.0:0–20 and the amount of catalytic metal oxide is such that the atom ratio of catalytic metal to rare earth metal is about 0.6–1.5:1.

3,925,254
DEHYDROCYCLIZATION OF HYDROCARBONS

Masayoshi Oishi, Wilmington, Del., assignor to Sun Ventures, Inc., St. Davids, Pa.

Division of Ser. No. 314,207, Dec. 11, 1972, Pat. No. 3,832,414. This application Sept. 20, 1973, Ser. No. 399,236
Int. Cl.² B01J *29/06*
U.S. Cl. 252—455 Z **4 Claims**

1. A process of preparing a catalyst comprising treating an alkali metal zeolite X or zeolite Y wherein the alkali metal is lithium, sodium or potassium with dilute aqueous solution of an alkali metal salt of a strong acid which is lithium salt, sodium salt or potassium salt and a platinum salt at from 25° to 80°C. to ion exchange from 0.1 to 1.2 weight percent as based on said zeolite of platinum ions for the alkali metal ions of said zeolite, washing the ion exchanged zeolite with water, calcining the zeolite at from 400° to 650°C. in an oxygen containing atmosphere for from about 1 to about 6 hours, reducing the platinum to a free metal state with flowing hydrogen at from 350° to 550°C., applying from 0.1 to 1.2 weight percent dadmium in the form of a cadmium salt and sufficient water to wet the surface of the zeolite to impregnate cadmium on said zeolite, drying said zeolite, calcining the cadmium and platinum containing zeolite at from 400° to 650°C. in an oxygen containing atmosphere for from about 1 to about 6 hours, reducing the platinum and cadmium in the thus calcined zeolite to the free metal state with flowing hydrogen at from 350° to 550°C.

3,925,255
OXIDATION/AMMOXIDATION CATALYST

Tao P. Li, Chesterfield, and Charles W. Hobbs, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 2, 1973, Ser. No. 320,373
Int. Cl.² B01J *29/16, 29/26, 23/64, 23/84*
U.S. Cl. 252—456 **4 Claims**

1. A catalyst system suitable for operation under pressure comprising the elements antimony, uranium, iron and bismuth in an oxidized state represented by the formula:

$Sb_aU_bFe_cBi_dO_e$

wherein a is 1 – 10, b is 1 – 10, c is 0.01 to 1, d is 0.001 to 0.1 and e is a number taken to satisfy the average valences of the Sb, U, Fe and Bi in their catalytic active oxidation states prepared by forming a mixture of oxides or sulfates of antimony, uranium, bismuth and iron in sulfuric acid, digesting the resulting mixture, adjusting the pH to about 8, filtering the mixture, mixing the filter cake with a catalyst support and evaporating the filter cake mixture to dryness, then heating the dried mixture at a temperature of from about 500°C to about 1150°C to form said active oxidation states.

3,925,256
METHOD OF SOL MANUFACTURE

David A. Rolf, and Vernon B. Chance, Jr., both of Shreveport, La., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed July 15, 1974, Ser. No. 488,383
Int. Cl.² B01J *21/04, 23/26, 23/06, 23/08*
U.S. Cl. 252—463 **4 Claims**

1. A method of preparing a sol which comprises admixing an oxygen containing gas with an acid selected from the group consisting of hydrochloric acid and hydrofluoric acid, and contacting the aerated acid with particles of a metal selected from the group consisting of aluminum, chromium, iron, zirconium, zinc and gallium, in a metals digestion zone while maintaining an excess of the metal reactant therein and maintaining a reaction temperature sufficient to form the sol.

3,925,257
SULFUR RECOVERY CATALYST AND PRODUCTION THEREOF FROM BAUXITE ORE

John P. Horzepa, Edison, and David B. Swanson, Cranford, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Filed Mar. 21, 1974, Ser. No. 453,333
Int. Cl.² B01J *23/08*
U.S. Cl. 252—463 **5 Claims**

1. A method for making a catalyst which comprises forming a mixture consisting of a major weight percentage of dry calcined bauxite fines and a minor weight percentage of dry powdered hydrous colloidal boehmite alumina, adding an aqueous solution of an acid capable of peptizing boehmite alumina to the resulting dry mixture of calcined bauxite fines and boehmite alumina with thorough mixing, the acid solution being used in amount sufficient to form a plastic mixture, forming the plastic mixture into particles of desired size and shape, drying and calcining the particles.

3,925,258
METHOD FOR ACTIVATING A CATALYST

Ralph Cox, Pasadena, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 2, 1973, Ser. No. 337,409
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B01J *23/16*
U.S. Cl. 252—467 **11 Claims**

1. In a method for activating a catalyst comprising controllably passing a heated fluid stream at a preselected rate through a catalyst positioned in a heating zone, discharging the fluid stream from the heating zone and passing said fluid stream to a first location,
   the improvement consisting of
   a. measuring the pressure of the heated fluid at the heating zone or downstream thereof, and
   b. passing at least a portion of said heated fluid discharging from said heating zone to a second location when said measured pressure has reached a first preselected value.

3,925,259
CATALYTIC STRUCTURE FOR THE PURIFICATION OF WASTE GASES AND ITS METHOD OF PREPARATION

Robert Harvey Kane, Ho-Ho-Kus, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Nov. 12, 1973, Ser. No. 411,691
Int. Cl.² B01J *23/84*
U.S. Cl. 252—470 **22 Claims**

1. A method of making a shaped catalytic structure comprised of a chromium and copper-containing alloy comprising: a. forming into a structure of desired shape a fine powder comprised of an alloy containing chromium and copper, and b. heating the shaped powder to a temperature above about 2050°F in a non-oxidizing atmosphere for a period of time sufficient to effect a liquid-phase sintering of said fine powder; thereby forming a coherent shaped structure.

3,925,260
CRYSTALLINE FORMS OF 4,4-BIS-TRIAZINYLAMINOSTILBENE DERIVATIVES AND PROCESSES FOR MAKING SAME

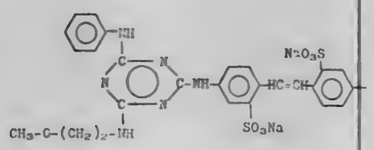
Christopher Johannes Tscharner, Warwick; Maurice Jacob Schwarz, Cranston, both of R.I., and Paul Horlacher, Mohlin, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

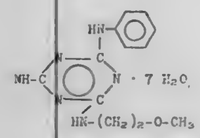
Continuation of Ser. No. 195,494, Nov. 3, 1971, abandoned, which is a continuation of Ser. No. 814,562, April 9, 1969, abandoned. This application Aug. 17, 1973, Ser. No. 389,416

Int. Cl.² C11D *3/42*; **C07D** *251/68*

U.S. Cl. 252—543 **2 Claims**

1. A composition of matter consisting essentially of an anionic detergent and an amount sufficient to impart optical brightening thereto of the α-crystalline form of a compound having the formula:





characterized by an X-ray diffraction pattern having the following characteristic lines corresponding to: a very strong line at 3.42° and four fairly strong lines at 9.38°, 20.0°, 25.5° and 26.42°.

3,925,261
EXPONENTIAL RESISTANCE MATERIAL AND METHOD OF MANUFACTURING SAME

Inge Lauterbach-Dammler, Nurnberg, Germany, assignor to C. Conradty, Nurnberg, Germany

Filed July 16, 1974, Ser. No. 489,182

Claims priority, application Germany, July 18, 1973, 2336504

Int. Cl.² H01B *1/08*

U.S. Cl. 252—519 **10 Claims**

1. A composition adapted for use as an electrical resistance element wherein the electrical resistance varies exponentially with the voltage drop across the element, said voltage drop being given by the equation:

$$E = B \times I^{(1/n)}$$

wherein E is said voltage drop; I is the current through the element, B is a constant equal to the voltage value at which the current is equal to 1 Ampere, and n is a number; said composition comprising about 50–90% ZnO, about 0.1 – 40% ZnF_2, and about 0.1 – 40% MeO; wherein MeO is an oxide selected from the oxides of magnesium, calcium, strontium, barium, iron, cobalt, lead, boron, aluminum, bismuth, manganese, chromium, nickel, antimony, and mixtures thereof.

3,925,262
DETERGENT COMPOSITION HAVING ENHANCED PARTICULATE SOIL REMOVAL PERFORMANCE

Robert Gene Laughlin, and Robert Lee Stewart, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 1, 1974, Ser. No. 493,952

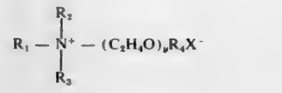
Int. Cl.² C11D *3/066, 1/18*

U.S. Cl. 252—526 **11 Claims**

1. A detergent composition comprising

A. 1 to 99% by weight of the composition of a compound having the formula selected from the group consisting of

i)



wherein

R_1 is selected from the group consisting of straight and branched chain C_8–C_{30} alkyl and alkenyl moieties and alkaryl moieties in which the alkyl group has 10–24 carbon atoms;

R_2 is selected from the group consisting of straight and branched chain C_8–C_{21} alkyl and alkenyl moieties, alkaryl moieties in which the alkyl group has 6–16 carbon atoms, and C_{1-4} alkyl and hydroxyalkyl moieties;

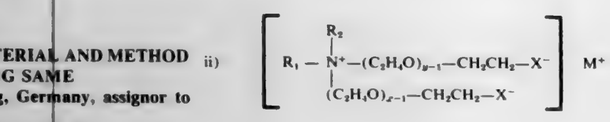
R_3 is selected from the group consisting of straight and branched chain C_8–C_{21} alkyl and alkenyl moieties, alkaryl moieties in which the alkyl group has 6–16 carbon atoms, C_{1-4} alkyl and hydroxyalkyl moieties and $-(C_2H_4O)_xH$ wherein x has a value of about 3 to about 50;

R_4 is selected from the group consisting of C_1–C_8 alkylene, C_3–C_8 alkenylene, 2-hydroxy propylene, and 2- and 3-hydroxy butylene moieties and C_1–C_4 alkarylene moieties provided that where R_3 is $-(C_2H_4O)_xH$ then R_4 is $-CH_2-CH_2-$;

X^- is an anion selected from the group consisting of sulfate and sulfonate radicals;

and y has a value in the range of 2–100 provided that where R_3 is $-(C_2H_4O)_xH$ then $x+y \geq 10$; and

ii)



wherein

R_1 is selected from the group consisting of linear and branched C_8–C_{30} alkyl and alkenyl radicals;

R_2 is selected from the group consisting of linear and branched C_8–C_{30} alkyl and alkenyl radicals and C_1–C_4 alkyl and hydroxyalkyl radicals;

X^- is selected from the group consisting of sulfate and sulfonate;

y and x have values in the range of 2–100 provided that $y+x \geq 12$;

M is a cation selected from the group consisting of alkali metal, ammonium and alkanolammonium ions; and

B. 99to 1% by weight of the composition of a detergent builder.

2. A detergent composition according to claim 1 wherein the detergent builder is an inorganic detergent builder selected from the group consisting of alkali metal, ammonium, and alkanolammonium polyphosphates, carbonates, bicarbonates, silicates, aluminosilicates, borates, and sulfates.

3,925,263
PROCESS FOR PREPARING POLYCARBONMONOFLUORIDE

Rokuo Ukaji, Ibaraki; Tutomu Kamihigoshi, Takatsuki; Kenji Mikami, and Shoji Takaki, both of Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed June 11, 1974, Ser. No. 478,365

Claims priority, application Japan, June 11, 1973, 48-66036

Int. Cl.² C01B *7/19*

U.S. Cl. 260—2 H **11 Claims**

1. In the process for preparing polycarbonmonofluoride by the reaction of carbon materials with fluorine gas, the improvement which comprises employing as a diluent for the fluorine gas perfluorocarbon compounds having 4 to 8 carbon atoms, said reaction being conducted at a temperature in the range of from 250° to 600°C and under a partial pressure for the fluorine gas of from 0.4 to 0.1.

3,925,264
PROCESS FOR THE PRODUCTION OF ANION EXCHANGERS

Herbert Corte, Oplanden; Harold Heller, Cologne, and Otto Netz, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Continuation of Ser. No. 338,886, March 2, 1973, abandoned. This application Aug. 7, 1974, Ser. No. 495,441

Claims priority, application Germany, Mar. 8, 1972, 2211134

Int. Cl.² C08F *8/02, 8/12, 257/02*

U.S. Cl. 260—2.1 E **8 Claims**

1. A process for the production of a synthetic, anion-exchange resin, in which at least one crosslinked, insoluble organic polymer containing at least one aromatic nucelus is condensed with at least one N-hydroxyalkyl-imide in the presence of at least one swelling agent and of at least one Freidel-Crafts catalyst, said at least one N-hydroxyalkyl-imide being used in an amount of from 1 to 8 moles per each 2 moles of aromatic nuclei present in said organic polymer and said catalyst being present in an amount of from 2 to 50% by weight, based on the weight of said organic polymer, the water formed during the condensation reaction is continuously removed from the reaction mixture, and the reaction product thus obtained is hydrolysed.

3,925,265
METHYL PHOSPHINE OXIDES AS FLAME RETARDANTS FOR ORGANIC POLYMERS

Kingso Chingtsung Lin, Newark, Ohio, assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 89,103, Nov. 12, 1970, Pat. No. 3,732,316. This application Mar. 8, 1973, Ser. No. 339,456

Int. Cl.² C08G *18/14, 18/38*; **C08K** *5/53*

U.S. Cl. 260—2.5 AJ **9 Claims**

2. A method of rendering an organic polymer fire retardant comprising incorporating therein an effective fire retardant amount of a composition comprising bis (hydroxymethyl)methylphosphine oxide which has been produced by a process comprising heating tris(hydroxymethyl)phosphine in an inert solvent, at a temperature from about 120° to about 250° centigrade.

3. The method of claim 2 wherein said organic polymer is a polyurethane foam or polyester.

3,925,266
FLEXIBLE POLYETHERURETHANE FOAMS WITH IMPROVED RESILIENCE

Hubert Jakob Fabris, Akron, and Edwin Morgan Maxey, Kent, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed June 18, 1973, Ser. No. 371,179

Int. Cl.² C08J *9/04*

U.S. Cl. 260—2.5 AM **11 Claims**

1. A method for the preparation of a highly resilient flexible polyetherurethane foam consisting essentially of (1) mixing a foam formulation consisting essentially of (A) 100 parts by weight of a polyalkyleneether polyol having from 2 to 4 hydroxyl groups per polymer molecule and having an average equivalent wegith per hydroxyl group between about 1,000 and 4,000, said polyol (A) containing no more than 30 mol percent ethylene oxide mers, (B) a low molecular weight chain-extender containing per molecule two isocyanate-reactive functions and being selected from the group consisting of alkanol amines, polyalkylene glycol amines, ortho-diamino-substituted aromatic hydrocarbons and para-diaminosubstituted aromatic hydrocarbons, said compound (B) being present in amounts sufficient to provide from 0.0015 to 0.03 weight equivalents of its more active function per 100 parts of polyol (A), (C) from 1 to 4 parts by weight of water, (D) an aromatic hydrocarbon diisocyanate present in an amount equivalent to an index of 90 to 130, (E) from 0.01 to 1.0 part by weight of a silicon-based surfactant, and (F) 0.1 to 1 part by weight of a tertiary amine catalyst, and (2) allowing the resulting mixture to foam and cure.

3,925,267
POLYMERIC CARRIER FOR A CONTROLLED SYNTHESIS OF PEPTIDES

Jiri Coupek, Prague, and Vladimir Gut, Uhrineves, both of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Nov. 6, 1973, Ser. No. 413,390

Claims priority, application Czechoslovakia, Nov. 6, 1972, 7475-72

Int. Cl.² C08J *9/00*; **C08G** *12/08, 12/46*

U.S. Cl. 260—2.5 R **6 Claims**

1. A polymeric gel carrier, for use in the controlled synthesis of polypeptides comprising a terpolymer of a first monomer selected from the group consisting of hydroxyalkyl acrylates, hydroxyalkyl methacrylates, aminoalkyl acrylates, aminoalkyl methacrylates, acrylamides and methacrylamides, a polyfunctional cross-linked monomer of acrylate or methacrylate, and a third monomer which contains an aromatic ring selected from the group consisting of acrylanilide, methacrylanilide, phenyl acrylate, phenyl methacrylate, phenoxyalkyl acrylates, phenoxyalkyl methacrylates, and styrene, said aromatic rings being chloromethylated under the action of formaldehyde and hydrogen chloride.

3,925,268
BETA-AMINO NITRILE CATALYSTS FOR POLYURETHANE PREPARATION

Walter Richard Rosemund, Englewood, N.J.; Michael Ray Sandner, Charleston, and David John Trecker, South Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 353,512, April 23, 1973, abandoned. This application June 13, 1973, Ser. No. 369,556

Int. Cl.² C08G *18/18, 18/20, 18/14*

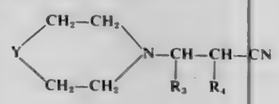
U.S. Cl. 260—2.5 AC **51 Claims**

1. A method for producing a cellular urethane polymer which comprises reacting an organic polyisocyanate and an organic polyol comprising a polyether polyol having an average of at least two hydroxyl groups per molecule, in the presence of a blowing agent comprising water, an amine catalyst system comprising 3-(N,N-dimethylamino)propionitrile, and at least one organic compound of tin selected from the group

consisting of stannous salts of carboxylic acids, dialkyltin dicarboxylates, dialkyltin oxides, trialkyltin oxides and tin mercaptides.

23. A method for producing a flexible polyurethane foam which comprises reacting and foaming a reaction mixture containing: (a) a tolylene diisocyanate; (b) a polyester polyol having a hydroxyl number of from about 20 to about 100; (c) water; (d) 3-(N,N-dimethylamino)propionitrile; (e) at least one tertiary amine selected from the group consisting of dimethylethanolamine, bis[2-(N,N-dimethylamino)ethyl]ether, 3-dimethylamino-N,N-dimethylpropionamide, triethylenediamine and1,4-dimethylpiperazine; (f) hexadecyldimethylamine; and (g) a foam-stabilizing component.

27. A method for producing a urethane polymer which comprises reacting an organic polyisocyanate and an organic polyol having an average of at least two hydroxyl groups per molecule, in the presence of a catalyst comprising a beta-aminopropionitrile having the formula,



wherein:

Y is an oxygen or nitrogen atom and, when Y is nitrogen, the remaining valence thereof is satisfied by a bond to an alkyl group having from 1 to 4 carbon atoms or to a second $-(CH(R_3)CH(R_4)CN$ group; and

R_3 and R_4 are independently hydrogen or an alkyl group having from 1 to 4 carbon atoms.

3,925,269

PHOTO-DEGRADING RESINOUS COMPOSITION

Hiroshi Miyoshi, Takatsuki; Hirohumi Mori, and Yoriko Tanoue, both of Suita, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Japan

Filed Dec. 28, 1971, Ser. No. 213,211

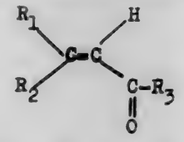
Claims priority, application Japan, Dec. 28, 1970, 45-126944; Dec. 28, 1970, 45-126945

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C08F *36/02, 36/06, 36/08, 36/14*

U.S. Cl. 260—2.5 B **10 Claims**

1. A photo-degrading resinous composition which consists essentially of from 50 to 100% by weight of a copolymer composed of (i) 95.0–99.9% by weight of a monomer selected from the group consisting of styrene and methyl methacrylate, (ii) 5.0–0.1% by weight of a diene monomer and (iii) 0.5 to 4.9% by weight of an unsaturated ketone having the formula



wherein R_1, R_2 and R_3, which may be the same or different, represent a hydrogen atom or a methyl or phenyl group.

3,925,270

POLYMERIC COMPOSITION COMPRISING SULFONYL CARBAZATES AS BLOWING AGENTS

Byron A. Hunter, Woodbridge, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed June 5, 1974, Ser. No. 476,752

Int. Cl.² C08J *9/06*

U.S. Cl. 260—2.5 R **19 Claims**

1. A composition comprising a gas-expandable polymeric material and at least one sulfonyl carbazate containing at least one $-SO_2-NHNH-COO-$-group.

3,925,271

PRESSURE SENSITIVE ADHESIVE COMPOSITION

Ivan J. Balinth, Cranford, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 238,945, March 28, 1972, abandoned. This application Aug. 8, 1974, Ser. No. 495,706

Int. Cl.² A61L *15/06;* **C08K** *3/36, 5/01;* **C08L** *7/00*

U.S. Cl. 260—3 **10 Claims**

1. A pressure-sensitive adhesive composition consisting essentially of about 14–60% of uncured or reclaimed elastomers selected from the group consisting of natural rubber, styrene-butadiene rubber, nitrile rubber, butyl rubber, chloroprene rubber, isoprene rubber and isobutylene rubber; 21–50% tackifier; 0–15% plasticizer; 0.25–4% stabilizer; 14–19% of particulate silica having a surface area of at least 130 meters ²/gram; and 0–40% of fillers other than silica; all percentages being by weight.

3,925,272

COMPOSITE ELASTOMER COMPOSITIONS

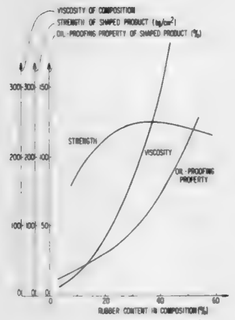
Jyoji Ibata, Saitama; Hidehiko Kobayashi; Kazuo Toyomoto, both of Tokyo; Kazuhiro Suzuoki, and Sumitaka Nogami, both of Saitama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 19, 1973, Ser. No. 342,904

Claims priority, application Japan, Mar. 18, 1972, 47-027938

Int. Cl.² C08L *7/00, 9/06;* **C08K** *5/01, 5/12*

U.S. Cl. 260—4 **28 Claims**



1. Composite elastomer compositions which comprise at least four components:

a. 15–45 parts of at least one rubber component selected from the group consisting of polybutadiene, polychlorobutadiene, polyisobutylene, copolymers of isobutylene with isoprene, polyisoprene, copolymers of ethylene and propylene, acrylic rubber, copolymers of a diolefin and acrylonitrile, random or block copolymers of styrene-butadiene, non-vulcanized natural rubbers, polybutadiene terminated with hydroxy or carboxy terminal groups and a mixture of two or more of such substances;

b. 5–60 parts of at least one unsaturated polyester;

c. 5–50 parts of at least one crosslinkable monomer containing ethylenically unsaturated bonds; and

d. 15-60 parts of at least one plasticizer selected from the group consisting of paraffin series process oil, naphthene series process oil, aromatic series process oil, liquid paraffins, n- or iso-butene homopolymers or a copolymer thereof, said polymers or copolymers thereof having a molecular weight of 500 to 5,000, low molecular weight polybutadiene, phthalic acid esters or fatty acid esters, per 100 parts by weight of composition,

which compositions are liquid at normal temperature, have a viscosity of $10 - 10^5$ poises at normal room temperature

and which can be hardened by heat or by means of a radical catalyst.

3,925,273

OIL-IN-WATER TRANSFER PRINTING EMULSIONS AND METHOD

Edmond N. Cuthbertson, Otley, England, and Raymond Davenport, Dover, N.J., assignors to Sandoz, Inc., East Hanover, N.J.

Filed Aug. 5, 1974, Ser. No. 494,551

Int. Cl.² C08L *1/26, 5/04*

U.S. Cl. 260—17 A **11 Claims**

1. A heat transfer printing paste comprising a hydrocarbon mineral oil-in-water emulsion consisting essentially of, per 100 total parts by weight: a) 0.5 to 6 parts by weight of a sublimable disperse dye; b) 1 to 15 parts by weight of an anionic sulfonate dispersing agent, said dispersing agent being present in a weight ratio of at least 0.4 part per part by weight of dye; c) 0.25 to 4 parts by weight of a water soluble film-forming resin selected from the group consisting of a polyvinyl alcohol, a cellulose ether and mixtures thereof; d) 0.05 to 4 parts by weight of a non-ionic emulsifying agent; e) 5 to 25 parts by weight of a hydrocarbon mineral oil which has an International boiling point in the range of 290°F. to 420°F. and which is at least 50% distilled in the boiling range of from 300°F. to 450°F.; f) 45 to 95 parts by weight of water; and g) up to 5 parts by weight of a solid water soluble polysaccharide viscosity modifying agent to provide a final emulsion viscosity in the range of 800 to 5,000 centipoises at 25°C., said paste having a pH of 4.0 to 8.5.

3,925,274

ABRASION RESISTANT CELLULOSIC FABRICS CONTAINING GRAFT POLYMERIZED DIETHYLPHOSPHATOETHYLMETHACRYLATE AND/OR DIETHYLPHOSPHATO-ETHYL ACRYLATE

W. James Brickman, Philadelphia, and Robert W. Faessinger, Media, both of Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Oct. 2, 1974, Ser. No. 511,176

Int. Cl.² C08L *1/02;* **D06M** *13/32, 13/44*

U.S. Cl. 260—17.4 GC **8 Claims**

1. A cellulosic fabric having improved abrasion resistance comprising a cellulosic fabric graft copolymerized with a monomer selected from the group consisting of ethylphosphatoethylmethacrylate and ethylphosphatoethylacrylate.

3,925,275

FLAMEPROOF POLYBUTADIENE RESIN COMPOSITION HAVING EXCELLENT ELECTRICAL PROPERTIES

Akira Musashi; Masami Yamazaki, both of Ichihara, and Makoto Hiruta, Chiba, all of Japan, assignors to Nippon Soda Company, Ltd., Tokyo, Japan

Filed Jan. 22, 1974, Ser. No. 435,419

Claims priority, application Japan, Jan. 25, 1973, 48-10450

Int. Cl.² C08K *3/20, 3/36;* **C08L** *1/02, 9/00*

U.S. Cl. 260—17.4 CL **9 Claims**

1. A peroxide curable flameproof butadiene polymer resin composition comprising:

a. 95% to 5% of 1,2-configuration butadiene polymer;

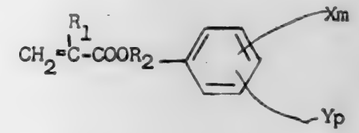
b. 5% to 95% of a halogen containing vinyl compound in such an amount that the halogen content is 3% to 40% of the total composition; and,

c. 0.1% to 10% of an organic peroxide compound, wherein

d. said 1,2-configuration butadiene polymer is a polymer having a molecular weight of 500 to 100,000 having at least one butadiene polymer chain consisting of a butadiene residue and at most 50% of comonomer residue, containing about 60% to about 100% of 1,2-configuration of the total butadiene units or

e. a polymer having molecular weight of 500 to 100,000 containing at least a polymer chain which is obtained by hydrogenizing a butadiene polymer having at least one butadiene polymer chain consisting of a butadiene residue and at most 50% of comonomer residue and containing about 6% to 100% of 1,2-configuration of the total butadiene unit; and further:

f. said halogen containing vinyl compound is a compound having the following formula:



(wherein R_1 is a hydrogen atom or alkyl group having 1, 2 or 3 carbon atoms; R_2 is $(-CH_2CH_2O)_n$; n is 0 or an integer of from 1 to 2, X is chlorine or bromine and X can be the same of different, m is an integer of from 1 to 5, Y is an alkyl group having 1, 2 or 3 carbon atoms, p is 0 or an integer of from 1 to 4 and $m + p$ is 5 or less than 5).

3,925,276

ORGANOPOLYSILOXANE RELEASE RESINS USEFUL IN COOKING AND BAKING PROCESSES

Duane F. Merrill, Ballston Spa, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 115,715, Feb. 16, 1971, abandoned, which is a continuation-in-part of Ser. No. 798,187, Feb. 10, 1969, abandoned, which is a continuation-n-part of Ser. No. 671,574, Sept. 29, 1967, abandoned. This application Sept. 16, 1974, Ser. No. 505,988

Int. Cl.² C08L *91/00*

U.S. Cl. 260—18 S **18 Claims**

1. A silanol-containing organopolysiloxane resin prepared by the process comprising the steps of

i. agitating a mixture comprising (A) an organohalosilane blend consisting essentially of about 60 mole percent methyltrichlorosilane, about 35 mole percent phenyltrichlorosilane, and about 5 mole percent dimethyldichlorosilane, (B) water, (C) acetone, and (D) a water-immiscible organic solvent, wherein there is present by weight in said mixture per part by weight of (A), about 1.7 to about 10 parts of (B), about 0.2 to about 5 parts of (C), and about 0.3 to about 5 parts of (D); and

ii. separating the organic solvent solution of (F) from the resulting hydrolysis mixture of step (i), wherein (F) is a silanol-containing organopolysiloxane resin having an average ratio of about 1.05 organo radicals per silicon atom.

3,925,277

PROCESS FOR PACKAGING AND MIXING A TWO-PART ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER COMPOSITION

Warren R. Lampe, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

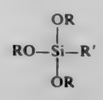
Division of Ser. No. 316,856, Dec. 20, 1972, abandoned, which is a division of Ser. No. 220,532, Jan. 24, 1972, Pat. No. 3,782,379, which is a division of Ser. No. 76,265, Sept. 28, 1970, Pat. No. 3,696,090. This application May 6, 1974, Ser. No. 467,488

Int. Cl.² C08L *91/00*

U.S. Cl. 260—18 S **1 Claim**

1. A process for packaging and mixing the first portion and the second portion of a two-part temperature vulcanizable silicone rubber composition comprising placing said first portion in a first plastic bag and sealing the bag, placing said second portion and said sealed first plastic bag in a second plastic bag and sealing said second plastic bag, kneading said first plastic bag so as to break it and mixing in said second

plastic bag the first portion and the second portion of said room temperature vulcanizable silicone rubber composition, wherein said second portion of said room temperature vulcanizable silicone rubber composition comprises (a) a linear, high molecular weight fluid organopolysiloxane containing terminal silicon-bonded hydroxy groups and having a viscosity of 3×10^6 to 2×10^8 centipoise when measured at 25°C, the organic groups of the aforesaid organopolysiloxane representing monovalent hydrocarbon radicals; (b) 1–100% by weight of said high molecular weight organopolysiloxane of a low molecular weight fluid organopolysiloxane containing terminal silicon bonded hydroxy groups and having a viscosity within the range of 100 to 3.0×10^5 centipoise at 25°C, wherein the organic groups of the low molecular weight organopolysiloxane represent monovalent hydrocarbon radicals such that the blend of the high molecular weight organopolysiloxane and low molecular weight organopolysiloxane has a viscosity in the range of 3×10^6 to 25×10^8 centipoise at 25°C; and (c) a filler, and said first portion of said room temperature vulcanizable silicone rubber composition comprises (d) an alkyl silicate selected from the class consisting of (1) a monomeric organosilicate corresponding to the general formula



wherein R is a radical selected from the class consisting of alkyl, haloalkyl, aryl, haloaryl, araikyl, alkenyl, cycloalkyl, cycloalkenyl, and cyanoalkyl radicals, and R′ is selected from the class consisting of alkyl, haloalkyl, aryl, haloaryl, alkenyl, cycloalkyl, cycloalkenyl, cyanoalkyl, alkoxy and aryloxy radicals and (2) a liquid partial hydrolysis product of the aforementioned organosilicate monomeric compounds; and (e) a metallic salt of an organic monocarboxylic or dicarboxylic acid in which the metal ion is selected from the class consisting of lead, tin, zirconium, antimony, iron, cadmium, barium, calcium, titanium, bismuth and manganese.

3,925,278

PAINT COMPOSITIONS

Koichi Murai; Yasuo Choshi, and Toshiaki Kobayashi, all of Kyoto, Japan, assignors to New Japan Chemical Company, Limited, Japan

Filed Apr. 11, 1973, Ser. No. 350,040

Claims priority, application Japan, Oct. 4, 1971, 46-77632The portion of the term of this patent subsequent to Oct. 23, 1990, has been disclaimed.

Int. Cl.² C08L *67/02*; **C08B** *3/00*

U.S. Cl. 260—22 R **14 Claims**

1. In a method of making a thickened coating composition containing a film forming binder composition selected from the group consisting of tar epoxy, alkyd and modified alkyd resin binder compositions by adding a thickening agent to said binder composition, the improvement which comprises adding to said binder composition from about 0.001% to about 10% by weight of a thickening agent consisting essentially of a condensation product of 1 to 3 moles of a polyhydric alcohol selected from the group consisting of Xylitol, sorbitol and heptitol, and 1 mole of aromatic monoaldehyde selected from the group consisting of benzaldehyde, methyl benzaldehyde, nitrobenzaldehyde, aminobenzaldehyde, naphthylaldehyde, isopropylbenzaldehyde, methylnaphthylaldehyde, nitronaphthylaldehyde, aminonaphthylaldehyde, halogen substituted napthyladehyde, and halogen substituted benzylaldehyde.

3,925,279

COLD SETTING COATING COMPOSITIONS

Hideo Horii, Yokohama; Atsushi Kaiya, Kawasaki, and Yutaka Otsuki, Yokohama, all of Japan, assignors to Nippon Oil Company Ltd., Tokyo, Japan

Filed June 5, 1974, Ser. No. 476,764

Claims priority, application Japan, June 7, 1973, 48-63342

Int. Cl.² C09D *3/34, 3/66*

U.S. Cl. 260—22 CB **2 Claims**

1. A cold setting coating composition comprising

a. 100 parts by weight of a maleinized polybutadiene or esterified compound thereof prepared by the addition of 0.5 – 30 weight percent of maleic acid anhydride to a liquid polybutadiene or esterified compound thereof having a number average molecular weight of 500 – **10,000**, more than 50 percent of the butadiene units in the polymer chain being linked in 1, 2-bonds;

b. 5 – 100 parts by weight of a polyfunctional vinyl monomer selected from the group consisting of ethyleneglycol dimethacrylate, ethyleneglycol diacrylate, triethyleneglycol dimethacrylate, and trimethylolpropane trimethacrylate;

c. 5 – 200 parts by weight of a drying oil or semi-drying oil modified alkyd resin;

d. 50 – 500 parts by weight of a pigment;

e. 1 – 10 parts by weight of a ketone peroxide; and

f. 0.01 – 5 parts by weight of a heavy metal salt of organic acid.

3,925,280

FABRICATION MULTIPHASE PLASTICS FROM LIQUID SUSPENSION

Robert D. Lundberg, Somerville, and Henry S. Makowski, Scotch Plains, both of N.J., assignors to Exxon Research & Engineering Company, Linden, N.J.

Division of Ser. No. 229,487, Feb. 25, 1972, Pat. No. 3,846,462. This application Dec. 28, 1973, Ser. No. 429,162

Int. Cl.² C08J *3/08, 3/18*; **C08K** *5/05, 5/12*

U.S. Cl. 260—23 R **5 Claims**

1. A composition of matter which comprises a suspension of a thermoplastic composition in finely divided form, i.e., an average particle size of from about 0.1 to about 200 microns, in a nonvolatile liquid medium in such amounts that the solids content of the suspension is in the range of from about 15 to about 75 wt. %; said thermoplastic composition being a thermoplastic ionomer, i.e. a polymer having a backbone composed of a thermoplastic resin and having polar groups pendant to that backbone, said polar groups being sufficiently polar so as to have the capability of forming ionic domains and said nonvolatile liquid medium being capable of solvating and plasticizing the backbone near or above the softening point of that backbone.

3,925,281

VULCANIZABLE ACRYLATE RUBBER COMPOSITIONS

August H. Jorgensen, Rocky River, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed June 5, 1974, Ser. No. 476,587

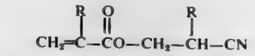
Int. Cl.² C08F *8/34, 8/40, 8/42*

U.S. Cl. 260—23 AR **10 Claims**

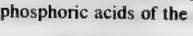
1. A composition comprising (1) an acrylate rubber consisting essentially of interpolymerized units of (a) from about 50% to about 99.8% by weight of an acrylate monomer of the formula



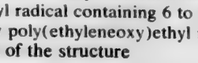
wherein R is hydrogen, or a methyl or ethyl radical and R′ is selected from the group consisting of an alkyl radical containing 1 to about 24 carbon atoms, an alkoxyalkyl radical containing 2 to about 12 carbon atoms in the radical, and an alkylthioalkyl radical containing 2 to about 12 carbon atoms in the radical, (b) from about 0.1% to about 15% by weight of a halogenbearing monomer, (c) from about 0.1% to about 4% by weight of a β-cyanoalkyl acrylate of the formula



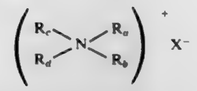
wherein R is defined as above, and (d) up to 49.8% by weight of a copolymerizable monomer containing a terminal vinylidene group selected from the group consisting of vinyl and allyl esters, vinyl ketones, vinyl and allyl ethers, vinyl aromatics, vinyl nitriles, dienes, α-monoolefins, vinyl amides, and divinyls, and (2) a cure system consisting essentially of (a) from about 0.5 part to about 7 parts by weight of an alkali metal salt of an organic acid selected from the group consisting of monocarboxylic acids containing 2 to about 24 carbon atoms, organophosphoric acids of the structure



wherein M is an alkali metal, $y = 1$ or 2, $z = 1$ or 2, and $y + z = 3$, and R is an alkyl radical containing 1 to 24 carbon atoms, an aryl radical containing 6 to 24 carbon atoms, or an alkylphenoxy poly(ethyleneoxy)ethyl radical, and an organosulfonic acid of the structure



wherein y, z, M, and R are defined as above, (b) from about 0.1 to about 10 parts by weight of a quaternary ammonium salt of the structure



wherein R_a, R_b, R_c and R_d are hydrocarbon radicals containing 1 to about 18 carbon atoms selected from the group consisting of alkyl, aryl, alkaryl, and aralkyl radicals, or wherein two or three of the R_a, R_b, R_c and R_d radicals form with the nitrogen atom a heterocyclic structure containing 3 to 8 atoms selected from the group consisting of C, N, O, and S where at least two atoms are C; and X is an anion from an inorganic or organic acid wherein the acidic hydrogen is attached to halogen or oxygen or a monofunctional tertiary amine selected from the group consisting of tertiary aliphatic amines containing 1 to 18 carbon atoms in the aliphatic groups wherein at least one aliphatic group is a methyl or ethyl radical and cyclic methyleneamines and heterocyclic amines containing 4 to 8 carbon atoms in the ring, and (c) up to 15 parts by weight of an acid acceptor, the parts by weight of the cure system ingredients each based upon 100 parts by weight of the acrylate rubber.

3,925,282

PRESSURE SENSITIVE HOT MELT ADHESIVES

Irwin Davis, Somerville; Martin M. Skoultchi, Somerset, and John A. Fries, Piscataway, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed July 24, 1974, Ser. No. 491,270

Int. Cl.² C08L *91/100*

U.S. Cl. 260—23 H **9 Claims**

1. A pressure sensitive, hot melt adhesive composition which possesses the reversible properties of strong cohesive strength at ambient temperatures and desirable melt viscosity at application temperatures, said composition comprising an adhesive polymer formed by the reaction of:

A. a normally tacky random copolymer consisting essentially of:

1. at least about 50% by weight of at least one monomer chosen from the group consisting of the alkyl esters of acrylic and methacrylic acid wherein the alkyl groups contain 4 to about 12 carbon atoms, and

2. 0.5 to 15% by weight of a tertiary amine-containing comonomer containing at least 7 carbon atoms; and

B. 0.25 to 40% by weight of the copolymer of at least one organic metallic salt wherein the metal is chosen from the group consisting of the transition metals and tin and lead and the anionic component is an organic acid anion.

3,925,283

POLYURETHANE PRESSURE-SENSITIVE ADHESIVE PRODUCTS AND PROCESSES

Rolf Dahl, West Columbia, S.C., assignor to Continental Tapes, Incorporated, Columbia, S.C.

Division of Ser. No. 50,953, June 29, 1970, Pat. No. 3,761,307. This application Mar. 22, 1972, Ser. No. 236,957

Int. Cl.² C08L *93/00*

U.S. Cl. 260—24 **10 Claims**

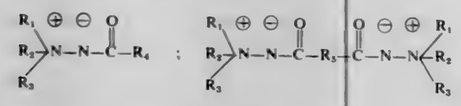
1. A pressure-sensitive adhesive comprising the polyurethane-polymer reaction product of: (1) a polyol selected from the class consisting of diols of hydroxyl number from about 56 to 265 and molecular weight from about 400 to 3000 (b) triols of hydroxyl number from about 28 to 56 and molecular weight from about 3000 to 10000 and (c) mixtures of the triols of (b) with 10 to 90% by weight of the diols of (a) and; (2) an aromatic polyamine in amount from about 80 to 100% of the equivalents of excess isocyanate originally present, wherein at least 2 of the amino groups are separated by a distance in the molecule at least equal to that represented by the lengths of the groups selected from the class consisting of (a) 2 to 3 phenylene grups and (b) 2 phenylene groups plus 1 to 2 methylene groups, and wherein said amino groups are all relatively unreactive, being hindered by negative groups in the molecule in a position ortho to said amino groups on the same benzene ring, said negative groups being selected from at least one of the class consisting of chlorine, bromine, ioidne, hydroxyl, ether and aromatic and aliphatic hydrocarbon radicals, with (3) an aromatic polyisocyanate in amounts such that the ratio of the number of equivalents of isocyanate to the number of equivalents of hydroxyl from said polyols is from about 1.1 to 2, in the present of at least one catalyst in amount from about 0.5 to 5% of the weight of said polyols and selected from the class consisting of the stannous salt of an organic carboxyllic acid containing from 1 to 22 atoms of carbon per molecule, dibutyl tin dilaurate, cobalt naphthenate, lead naphthenate, bismuth naphthenate, phenyl mercuric benzoate, phenyl mercuric acetate and the foregoing catalysts mixed with 10 to 100% of their weight of a tertiary amine; and further containing from 0 to 100% of the weight of said polyols, of (A) a tackifying resin selected from the class consisting of the ethylene glycol ester of rosin, the glycerol ester of rosin, the ethylene glycol ester of tall oil, the glycerol ester of tall oil, terpene resins, coumarone-indene resins, unsaturated petroleum hydrocarbon residue resins and heat-reactive and non-heat-reactive phenol-formaldehyde resins (B) a plasticizer in amount from about 0 to 100% of the weight of said polyols and selected from the class consisting of the methyl ester of hydrogenated rosin and chlorinated diphenyl.

3,925,284
POLYISOCYANATE-BASED FOAM PROCESS USING AMINIMIDES AS CATALYST

Peter S. Carleton, Branford; Robert J. Lockwood, East Haven, and Harold E. Reymore, Jr., Wallingford, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed June 24, 1974, Ser. No. 482,261
Int. Cl.² C08G *18/16, 18/20*
U.S. Cl. 260—2.5 AC **7 Claims**

1. In a process for the reaction of a polyisocyanate with a polyol in the presence of a catalyst to obtain a polymer containing urethane linkages, the improvement comprising reacting said components at ambient temperature in the presence of a catalytic amount of an aminimide corresponding to a formula selected from:



wherein R_1, R_2 and R_4 are monovalent hydrocarbyl from 1 to 12 carbon atoms, R_1 and R_2 taken together with the N atom to which they are attached additionally represent a heterocyclic radical, R_3 is selected from the class consisting of hydroxyalkyl from 2 to 12 carbon atoms, hydroxyalkoxyalkyl from 3 to 12 carbon atoms and monovalent hydrocarbyl from 1 to 12 carbon atoms, and R_5 is a divalent hydrocarbyl from 1 to 12 carbon atoms.

3,925,285
ANTISTRUCTURE AGENT

Lewis, Richard Newton, Tecumseh, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Filed June 20, 1974, Ser. No. 481,006
Int. Cl.² C08G *77/04*
U.S. Cl. 260—29.1 SB **2 Claims**

1. A heat curable organopolysiloxane composition composed of an organopolysiloxane polymer, an organic peroxide curing agent, a reinforcing filler and a sufficient amount of an antistructure agent to provide an OH content of at least 1 percent of the weight of the filler, said antistructure agent comprising a mixture of hexamethyltrisiloxane-1,5-diol and 1-methoxy-hexamethyltrisiloxane-5-ol, in which the hydroxyl content is between 5 and 11 percent, the methoxy content is between 2 and 4 percent, and the mole ratio of hydroxyl to methoxy is between 2.5 and 7.

3,925,286
SIZING, COATING AND COMBINED SIZING AND COATING COMPOSITION FOR GLASS FIBERS

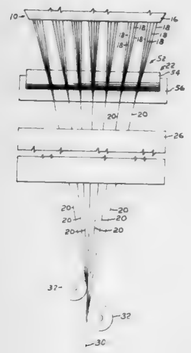
Dennis M. Fahey, Aspinwall, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 292,576, Sept. 27, 1972, which is a division of Ser. No. 93,980, Dec. 1, 1970, Pat. No. 3,718,449. This application Dec. 14, 1973, Ser. No. 425,032
Int. Cl.² C08L *61/06*
U.S. Cl. 260—29.3 **2 Claims**

1. In an aqueous coating composition for coating glass fibers consisting essentially of:

20 to 70 percent by weight of a latex selected from the group consisting of natural rubber latex, neoprene latex, isoprene latex, butyl rubber latex, butadiene-sytrene copolymer latex, acrylonitrite-butadiene-styrene copolymer latex, styrene-butadiene-vinylpyridine copolymer latex, and mixtures thereof, and a rubber adhesive comprising a resorcinol formaldehyde resin, with the remainder of said coating composition being water; the improvement comprising; as

said rubber adhesive, a composition consisting essentially of 0.01 to 10 percent by weight of the coating composition of furfuryl alcohol, and 1 to 15 percent by weight of the



coating composition of said resorcinol formaldehyde resin.

3,925,287
ETHYLENE/VINYL CHLORIDE INTERPOLYMERS

Harry M. Andersen, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 328,981, Feb. 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 255,372, May 22, 1972, abandoned. This application Mar. 12, 1974, Ser. No. 450,512
Int. Cl.² C08F *210/02*
U.S. Cl. 260—29.6 TA **9 Claims**

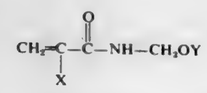
1. An interpolymer latex comprising an interpolymer consisting essentially of:

A. 5 to 70 weight percent ethylene,

B. 30 to 95 weight percent VCl,

C. 2 to 6 weight percent acrylamide or acrylamide in combination with a polar monomer selected from the group consisting of methyacrylamide; N-(alkyl) acrylamide containing 1 to 8 carbon atoms in the alkyl group; N-(alkyl) methacrylamide containing 1 to 8 carbon atoms in the alkyl group; unsaturated carboxylic acids; alkali metal salts and ammonium salts of unsaturated carboxylic acids; acrylylamides and methacrylylamides of aminoalkanoic acids; and alkyl and hydroxy alkyl esters of polycarboxylic acids containing 1 to 4 carbon atoms in the alkyl group and

D. 2 to 6 weight percent of a compound represented by the formula



wherein X represents CH_3 or H and Y represents an alkyl group containing from 1 to 10 carbon atoms, based on the total weight of the interpolymer.

3,925,288
PROCESS FOR PREPARING SALT STABLE LATICES

Stuart Harold Ganslaw, Piscataway, and James L. Walker, Middlesex, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 310,170, Nov. 28, 1972, abandoned. This application Oct. 3, 1974, Ser. No. 511,658
Int. Cl.² C08F *2/16, 18/08*
U.S. Cl. 260—29.6 TA **9 Claims**

1. A process for preparing a salt stable latex comprising

a. polymerizing about 5 to 15 parts of a polymerizable monomeric system selected from the group consisting of vinyl acetate and mixtures of vinyl acetate and at least one copolymerizable ethylenically unsaturated comonomer in an aqueous medium containing a free radical polymerization initiator, from 1.0 to 7.0% of a stabilizing electrolyte selected from the group consisting of homopolymerizable ethylenically unsaturated monocarboxylic acids which contain from 3 to 5 carbon atoms, and from 0.1 to 3.0% of a surfactant selected from the group consisting of anionic and nonionic surfactants and mixtures thereof, at a pH of 3.5 to 5.0 and at a temperature of from 40° to 80°C., and

b. adding to the polymerization mixture of step (a) while polymerization is continued the remaining 95 to 85 parts of the monomeric system of step (a) in incremental portions and polymerizing the monomeric system to substantially complete conversion to yield a salt stable latex,

wherein the total amount of monomer added in steps (a) and (b) is equal to 100 parts and wherein the percentages of electrolyte and surfactant are based on the total monomer weight.

3,925,289
WATER-RESISTANT ADHESIVE COMPOSITIONS

Naoyuki Sakato, and Hidetosi Nakamura, both of Saitama, Japan, assignors to Shinetsu Chemical Company, Japan

Filed Apr. 24, 1974, Ser. No. 463,774
Claims priority, application Japan, Apr. 25, 1973, 48-47072
Int. Cl.² C08F *45/24*
U.S. Cl. 260—29.6 B **10 Claims**

1. An adhesive composition consisting essentially of

1. an aqueous dispersion of 100 parts by weight of a resin composed of from 10 to 100% by weight of vinyl polymer containing vinyl acetate unit as its main component and from zero to 90% by weight of polyvinyl alcohol;

2. from 2 to 100 parts by weight of a persulfate and

3. from one to 30 parts by weight of a multifunctional compound selected from the group consisting of N-methylol acrylamide, N-methylol methacrylamide, N,N-dimethylol acrylamide, N,N-dimethylol methacrylamide, N,N'-methylene bisacrylamide, ethylene dimethacrylate, diallyl phthalate, triallyl isocyanurate, triallyl phosphate, triallyl trimellitate and tetraallyl oxyethane.

3,925,290
EMULSIONS USEFUL IN THE PREPARATION OF HEAT RESISTANT FIBERS AND FILMS

Kazuto Matsuo, Imari; Michiya Araki; Tomoyuki Matsugu, both of Yatsushiro, and Takahito Mikami, Nishinomiya, all of Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1973, Ser. No. 416,801
Claims priority, application Japan, Nov. 21, 1972, 47-116207
Int. Cl.² C08L *29/04*
U.S. Cl. 260—29.6 WB **13 Claims**

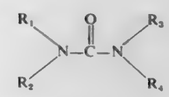
1. An aqueous emulsion containing a polymeric composition comprising (A) polyvinyl alcohol of polymerization degree from 900 to 2500, (B) polyvinyl alcohol derivative of polymerization degree from 100 to 1000 containing 0.5 to 20% by moles of sulfone or sulfate groups and (C) chlorine-containing vinyl polymer, a part of the chlorine-containing vinyl polymer being grafted on to the polyvinyl alcohol derivative, the contents of said polyvinyl alcohol being 40 to 250% by weight of (B) and (C), and the content of said polyvinyl alcohol derivative being 1.5 to 20% by weight of (B) and (C), and the content of said chlorine-containing vinyl polymer being 80 to 98.5% by weight of (C), the graft efficiency of said composition being from about 5 to 50%.

3,925,291
AQUEOUS ACRYLONITRILE POLYMER SOLUTION CONTAINING THIOCYANATE AND AMIDE COMPOUND

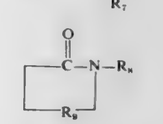
Yasuo Matsumura, and Shoichi Takeuchi, both of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Oct. 24, 1973, Ser. No. 411,324
Claims priority, application Japan, Nov. 1, 1972, 47-109615
Int. Cl.² C08L *33/20*
U.S. Cl. 260—29.6 AN **9 Claims**

1. An acrylonitrile polymer solution consisting essentially of 5 to 25% by weight, based on the weight of the solution, of an acrylonitrile co-polymer consisting of polymerized units from at least 40% by weight, based on said copolymer, of acrylonitrile, 10 to 50% by weight, based on said copolymer, of vinyl halide, vinylidene halide or mixtures thereof and 0% to 15% by weight, based on said copolymer, of one or more ethylenically unsaturated compounds, and a solvent consisting of 35% to 50% by weight, based on the solvent, of an inorganic thiocyanate and 30 to 50% by weight based on the solvent, of water and 10 to 35% by weight, based on the solvent, of at least one of the organic compounds shown by the following general formulae (I), (II) and (III):



(I)



(II)

(III)

wherein each from R_1 through R_8 is hydrogen or an alkyl group, R_9 is an alklene group, the sum of the carbon atoms of R_1, R_2, R_3 and R_4 and the sum of the carbon atoms of R_5, R_6 and R_7 are each less than 4, and the sum of the carbon atoms of R_8 and R_9 is less than 8.

3,925,292
POLYTETRAFLUOROETHYLENE AQUEOUS DISPERSIONS WHICH PROVIDE COATINGS OF IMPROVED GLOSS

David Alan Holmes, Vienna, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 72,555, Sept. 15, 1970, abandoned. This application Nov. 5, 1973, Ser. No. 412,619
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C08L *27/18*
U.S. Cl. 260—29.6 F **9 Claims**

1. The composition consisting essentially of an aqueous dispersion of (a) a non-melt-fabricable polytetrafluoroethylene, (b) a nonelastomeric, melt-fabricable tetrafluoroethylene copolymer and (c) a nonionic surfactant for said polytetrafluoroethylene and said copolymer, said tetrafluoroethylene copolymer being a copolymer of tetrafluoroethylene with sufficient other perfluorinated ethylenically unsaturated copolymerizable monomer to make the copolymer melt-fabrica-

ble said copolymer being present in the amount from 1 to 6 percent based on the weight of said polytetrafluoroethylene, said nonionic surfactant being present in the amount from 3 to 15 percent based on the weight of said polytetrafluoroethylene plus said copolymer, said polytetrafluoroethylene and said copolymer being in the form of particles dispersed in the water of said dispersion.

3,925,293

LOW-TEMPERATURE CURABLE LATICES OF VINYL AND ACRYLIC MONOMERS

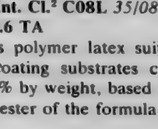
Donald P. Knechtges, Grafton, and Bela K. Mikoflavy, Sheffield Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 258,266, May 31, 1972, abandoned, Division of Ser. No. 72,107, Sept. 14, 1970, Pat. No. 3,702,785. This application July 22, 1974, Ser. No. 490,326

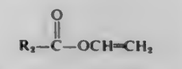
Int. Cl.² C08L *35/08, 27/06*

U.S. Cl. 260—29.6 TA **10 Claims**

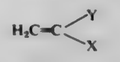
1. An aqueous polymer latex suitable for impregnating, saturating and coating substrates consisting essentially of about 60% to 91% by weight, based on the total monomers, of (a) an acrylic ester of the formula



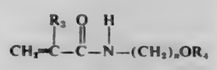
or a vinyl ester of the formula



wherein R is hydrogen or an alkyl radical containing from 1 to 4 carbon atoms, R_1 is a hydrocarbon radical containing from 1 to 12 carbon atoms and R_2 is an alkyl radical containing from 1 to 6 carbon atoms, or a mixture of said monomers; from 5% to 30% by weight of (b) a monomer of the formula



wherein X is chlorine, and Y is hydrogen or chlorine; about 0.5% to 5% by weight of (c) an α,β-olefinically unsaturated carboxylic acid containing from 2 to 12 carbon atoms; from 0.5% to 5% by weight of (d) an N-alkylol amide or N-alkoxyalkyl amide of the formula



wherein R_3 is hydrogen or an alkyl radical containing from 1 to 4 carbon atoms, R_4 is hydrogen or an alkyl group containing from 1 to 8 carbon atoms and n is an integer from 1 to 4; and (e) about 2 to 15% by weight of monomer containing a polymerizable double bond selected from the group consisting of α-olefins, vinyl aromatics, alkylvinyl ethers, α,β-olefinically unsaturated nitriles and acrylamides, said latex maintained at a pH below about 7 and containing from about 5% to 75% by weight total solids.

3,925,294

CONTROLLING VISCOSITY OF CHLOROPRENE-SULFUR COPOLYMERS

Alfred Michael Doyle, Londonderry, Ireland, and William Shear, Louisville, Ky., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 17, 1973, Ser. No. 324,505

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C08F *2/22, 2/44*

U.S. Cl. 260—29.7 SQ **8 Claims**

1. In a process for polymerizing chloroprene, containing up to 50% by weight of an ethylenically unsaturated monomer copolymerizable therewith, in an aqueous emulsion containing a small amount of dissolved sulfur, to give a latex of rubbery polymer in which the polymer is plasticized by the addition of a tetraalkyl thiuram disulfide and a sodium alkyl dithiocarbamate and isolating the polymer from said latex in a multiplicity of Mooney viscosity grades, the improvement which comprises (1) maintaining the mole ratio of said dithiocarbamate to said thiuram disulfide substantially constant in the preparation of each viscosity grade and (2) varying the total amount of dithiocarbamate plus thiuram disulfide present to give isolated polymers of each desired viscosity grade.

3,925,295

PROCESS FOR THE PREPARATION OF POLYMER DISPERSIONS

Peter George Osborn, Windsor, and Peter Francis Nicks, Maidenhead, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 237,522, March 23, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 439,640

Claims priority, application United Kingdom, Mar. 30, 1971, 8164/71

Int. Cl.² C08J *3/00;* **C08K** *5/01;* **C08L** *67/00, 77/00*

U.S. Cl. 260—34.2 **10 Claims**

1. A process for the preparation of a dispersion of finely divided particles of a condensation polymer selected from the group consisting of polyesters and polyamides in a liquid medium in which the polymer is insoluble which comprises heating in the liquid medium at a temperature of at least 150°C. at least one reactant which undergoes a condensation polymerization reaction to form a polyester or polyamide with the elimination of a by-product of low molecular weight, the liquid medium having a boiling point not lower than the reaction temperature, at least one of the reactants being insoluble in said liquid medium and present as a liquid disperse phase in an emulsion in which the emulsifying agent is a polymeric material containing in its molecule at least one chain-like component of a type which is soluble and non-self-associated in the liquid of the disperse phase and at least one chain-like component of another type which is soluble and non-self-associated in the liquid of the continuous phase, the average molecular weight of the individual components being at least 1,000, the total molecular weight of the individual components of each type being at least 3,000 or at least $n \times 1{,}000$, where n is the number of the individual components of the other type, whichever is the higher, and the ratio of the total weights of the individual components of the two types being from 3:1 to 1:3, one of the chain-like components of an emulsifying agent present which is soluble in a disperse phase also being provided with a reactive group selected from the group consisting of glycidyl groups and carboxyl groups which can take part in the condensation polymerization reaction so as to form a component capable of associating with the polymer produced.

3,925,296

FOUNDRY AGGREGATE BINDERS

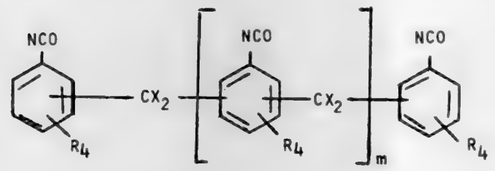
Jonathan A. Stone, Heath, Ohio, and Albert W. Bluemle, North Tonawanda, N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. Nos. 197,503, Nov. 10, 1971, abandoned, and Ser. No. 192,627, Oct. 26, 1971, abandoned, which is a continuation-in-part of Ser. No. 787,262, Dec. 26, 1968, abandoned. This application Jan. 2, 1974, Ser. No. 430,324

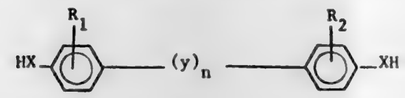
Int. Cl.² C08L *75/04*

U.S. Cl. 260—37 N **45 Claims**

1. A binder composition for foundry aggregates which comprises a solution of an inert solvent and a room temperature curable composition comprising (1) an organic polyisocyanate of the formula:



wherein R_4 is selected from the group consisting of hydrogen, chlorine, bromine, alkyl having 1 to 5 carbon atoms, and alkoxy having 1 to 5 carbon atoms; X is selected from the group consisting of hydrogen, alkyl having 1 to 10 carbon atoms, and phenyl; and m has an average value of at least about 0.5, and (2) a phenolic compound of the formula:



wherein X is oxygen or sulfur, y is an alkylidene radical, an aryl bis alkylene radical, an arylene radical, —S—, —S—S—, or



n is 0 or 1, and R_1 and R_2 are hydrogen, alkyl of 1 to 6 carbon atoms or halogen, and wherein said polyisocyanate is present in a proportion to provide from about 0.9 to 1.1 reactive isocyanate groups per reactive hydrogen present in said curable composition.

3,925,297

FILLED COMPOSITION AND ARTICLE CONTAINING PERFLUORINATED SURFACTANT

Gerhard R. Sprengling, Blairsville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 298,214, Oct. 17, 1972, Pat. No. 3,841,957. This application Apr. 30, 1974, Ser. No. 465,637

Int. Cl.² C08L *63/00*

U.S. Cl. 260—37 EP **22 Claims**

1. A composition comprising

1. about 15 to about 70% synthetic, organic resin;
2. about 30 to about 85% non-conductive filler; and
3. about 0.001% to about 1.0% of a surfactant having a perfluorinated chain at least 3 carbon atoms long at one end and a polar group at the other end, said surfactant possessing the property of lowering the surface energy of said resin by freely migrating to the surface of said resin and to its interfaces with said filler after said resin is hardened.

3,925,298

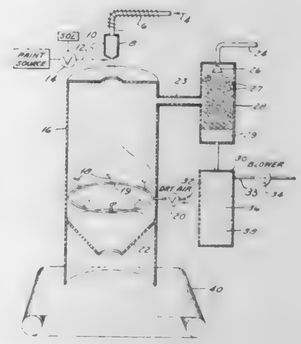
METHOD OF MAKING DRY PIGMENTED POWDER PAINT

Ivan H. Tsou, Pontiac, Mich., assignor to Grow Chemical Corporation, New York, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,375

Int. Cl.² C08J *3/08, 3/12, 3/20*

U.S. Cl. 260—39 **9 Claims**



1. The method of making dry pigmented powder paint, comprising:

making a liquid paint having a pigmented film forming portion, and a solvent portion which is immiscible with water,

finely dividing the liquid paint into minute droplets,

contacting the minute droplets, contacting the minute droplets with steam superheated sufficiently to vaporize the solvent portion and cause the pigmented film forming portion to form dry paint particles, wherein the vapor pressure of solvent and steam totals at least atmospheric pressure,

separating the spent superheated steam-solvent vapor mixture at a sufficient rate to prevent the condensation of either vapor on the powder paint particles,

cooling the dry powder paint sufficiently to prevent agglomeration,

condensing the steam-solvent vapor mixture to form an immiscible liquid mixture of water and the paint solvent, and

separating the solvent for reuse in making the liquid paint.

3,925,299

ANHYDRIDE ACRYLIC COPOLYMERS AS ADDITIVES FOR UNSATURATED POLYESTER MOLDING COMPOSITIONS

Thomas Richard Phillips, Belpre, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 17, 1973, Ser. No. 425,073

Int. Cl.² C08L *33/12, 67/06*

U.S. Cl. 260—40 R **6 Claims**

1. In a composition useful for bulk molding and sheet molding which comprises (a) 20 to 80% by weight of an alpha,beta-ethylenically unsaturated polyester, (b) 20 to 80% by weight of an ethylenically unsaturated monomer and (c) 1 to 25% by weight of a thermoplastic copolymer which is soluble in mixtures of (a) and (b), an improvement which comprises employing as the thermoplastic copolymer, a copolymer containing (1) polymerized methylmethacrylate units, (2) polymerized units selected from the group consisting of ethyl acrylate, n-butylmethacrylate, isobutylmethacrylate, and (3) polymerized units selected from the group consisting of maleic anhydride and itaconic anhydride.

3,925,300
MOLDING COMPOUNDS AND METHOD OF MAKING SAME

Michael G. Roberts, Heath, and Kenneth P. Chase, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 4, 1974, Ser. No. 457,948
Int. Cl.² C08K *7/14*; **C08L** *67/06*
U.S. Cl. 260—40 R **20 Claims**

1. In the process of producing low-shrink thermosetting polyester molding compounds wherein an unsaturated thermosetting polyester prepolymer, an unsaturated solvent therefor, and a minor amount of a thermoplastic polymer that is also miscible in said solvent is mixed therewith, the improvement comprising: initiating polymerization of an unsaturated monomer composed principally of styrene at a temperature between 40°C and 90°C to produce a non-highly branched thermoplastic polymer, stopping the polymerization reaction when less than 50% of the monomer has reacted to give a polystyrene having a narrow band of intermediate molecular weight between approximately 75,000 and approximately 500,000 and having a dispersity between 1.0 and 2.6, maintaining said polystyrene dispersed in the styrene as a solution thereof, and mixing the solution of said polystyrene and styrene with the thermosetting polyester prepolymer to form a hardenable mixture, and whereby the hardenable mixture during cure forms nonspherical thermoplastic bodies of a separated phase having a diffuse interface tightly bonded with the cured thermoset resin.

3,925,301
PROCESS FOR THE CONTINUOUS PRODUCTION OF CARBON BLACK-SYNTHETIC RESIN CONCENTRATES

Claus Richard Engel, Bruhl; Heinz Linke, Grossauheim; Lothar Rothbühr, Hermulheim; Werner Sroka, Bruhl; Jes Vogt, Furtwangen, and Hermann Westfänning, Kleinostheim, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Filed June 27, 1974, Ser. No. 483,823
Claims priority, application Germany, June 29, 1973, 2333079
Int. Cl.² C08K *3/04*
U.S. Cl. 260—42 **13 Claims**

1. In a process for preparing highly concentrated carbon black-thermoplastic synthetic resin concentrates employing a continuous screw kneader in which kneading occurs, the improvement comprising adding the carbon black to the synthetic resin in at least two separate places in series in the conveying direction during the kneading, 10 to 80% by weight of the total carbon black being added in the first place of addition.

3,925,302
EMBOSSED PACKAGING MATERIAL

Jules Magder, and Murray H. Reich, both of Princeton, N.J., assignors to Princeton Chemical Research, Inc., Princeton, N.J.

Filed Nov. 4, 1971, Ser. No. 195,801
Claims priority, application Japan, July 15, 1971, 46-52771
Int. Cl.² C08K *3/20, 3/36, 5/09*
U.S. Cl. 260—42.46 **11 Claims**

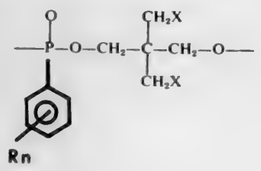
1. The process which comprises forming packaging material such as a film of container of polybutene which is at least 50% isotactic and contains 5 to 80% by weight of a filler and thereafter embossing said packaging material so as to exceed the yield point in selected areas which then stand out as more opaque against a less opaque or transparent background, which areas retain their distinctness at temperatures in excess of 140°F.

3,925,303
FLAMEPROOFING OF ACRYLONITRILE POLYMERS AND COPOLYMERS

Andre Rio, and Gilbert Vivant, both of Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

Continuation of Ser. No. 374,098, June 27, 1973, abandoned. This application Aug. 19, 1974, Ser. No. 498,431
Claims priority, application France, June 30, 1972, 72.23796
Int. Cl.² C08K *5/53*
U.S. Cl. 260—45.7 P **8 Claims**

1. In a fire-resistant composition based on polyacrylonitrile or a copolymer of acrylonitrile with 0.5 to 30% by weight of one or more ethylenic comonomers, the improvement wherein the composition comprises 1 to 40% by weight of a glycol polyarylphosphonate, which consists essentially of a plurality of units of the general formula:



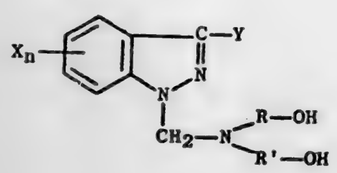
in which R represents a hydrogen atom, a halogen atom, an alkyl radical containing 1 to 4 carbon atoms, or a halogen-substituted alkyl radical containing 1 to 4 carbon atoms, *n* is equal to 1, 2 or 3 and X represents a halogen atom.

3,925,304
SURFACE-COATING COMPOSITIONS CONTAINING N-(INDAZOLYL-N¹-METHYL)DIALKANOLAMINES

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Division of Ser. No. 308,156, Nov. 20, 1972, Pat. No. 3,828,067. This application Feb. 5, 1974, Ser. No. 439,721
Int. Cl.² C09D *5/14*
U.S. Cl. 260—45.8 N **6 Claims**

1. A surface-coating composition that comprises (*a*) a water-insoluble, film-forming resinous binder selected from the group consisting of oleoresinous binders, synthetic linear addition polymers obtained by the vinyl polymerization of monoethylenically-unsaturated monomers, and mixtures thereof and (*b*) about 0.10 percent to 3 percent, based on the weight of said composition, of a biocidal compound having the structural formula



wherein X represents halogen; Y represents hydrogen or halogen; R and R′ each represents an alkylene group having 1 to 8 carbon atoms; and n represents a number in the range of 0 to 3.

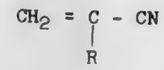
3,925,305
THERMALLY-STABLE HIGH NITRILE RESINS AND METHOD FOR PRODUCING THE SAME

Eddie Wardlow, Jr., Cleveland, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Aug. 8, 1973, Ser. No. 386,592
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C08K *5/20*; **C08L** *51/06*
U.S. Cl. 260—45.9 NC **11 Claims**

1. A polymer composition stable toward thermal discoloration containing from about 0.1 to 1.5 parts by weight of acrylamide per hundred parts of resin, wherein said polymer is composed of 100 parts by weight of:

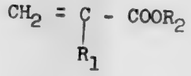
A. at least 50% by weight of at least one nitrile having the structure



wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and

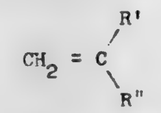
B. up to 50% by weight based on the combined weight of (A) and (B) of at least one member selected from the group consisting of:

1. styrene,
2. an ester having the structure



wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms,

3. an alpha-olefin having the structure

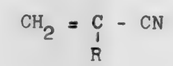


wherein R′ and R″ are alkyl groups having from 1 to 7 carbon atoms,

4. a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers, and
5. vinyl acetate, and

wherein said monomers are copolymerized in the presence of from 0 to 40 parts by weight of:

C. a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and optionally a comonomer selected from the group consisting of styrene and a nitrile monomer having the structure



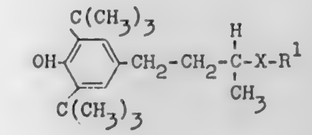
wherein R has the above designation, said rubbery polymer containing from 50 to 100% by weight of polymerized conjugated diene and from 0 to 50% by weight of comonomer.

3,925,306
PROCESS FOR STABILIZING POLYAMIDES

Karl Schlichting, Bobenheim-Roxheim; Peter Horn; Johannes Schlag, both of Ludwigshafen, and Wolfgang Koernig, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen(Rhine), Germany

Filed Feb. 21, 1974, Ser. No. 444,414
Claims priority, application Germany, Feb. 24, 1973, 2309435
Int. Cl.² C08K *5/16*
U.S. Cl. 260—45.9 NC **6 Claims**

1. A process for stabilizing polyamides against oxidation and thermal degradation, which comprises incorporating therein 0.01 to 2% by weight, based on said polyamide, of a stabilizing compound of the formula



in which X denotes —NH—, and R^1 denotes a carbonylalkyl or carbonylaryl group in which the alkyl moieties are branched-chain or straight-chain hydrocarbon radicals of from 1 to 20 carbon atoms, and the aryl moieties are phenyl or naphthyl radicals which may be substituted at any position.

3,925,307
ANTIOXIDANTS FOR POLYARYLETHER KETONES

Klaus Joachim Dahl, Palo Alto, and Floyd Masato Kameda, Mt. View, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Apr. 23, 1973, Ser. No. 353,422
Int. Cl.² C08G *67/00*
U.S. Cl. 260—45.75 R **9 Claims**

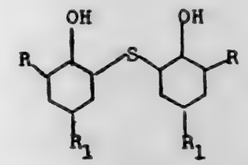
1. A composition comprising a polyarylether ketone and an effective antioxidant amount of metal oxide selected from the group consisting of the amphoteric metal oxides of aluminum, beryllium, bismuth, cadmium, cerium, gallium, germanium, lanthanum, lead, manganese, tin, titanium, zinc, zirconium, uranium, and mixtures thereof.

3,925,308
HYDRAZINO NICKEL THIO-BIS-PHENOLATES AND POLYOLEFINS STABILIZED THEREBY AGAINST THE EFFECTS OF HEAT AND LIGHT

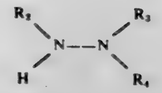
Elmar Harry Jancis, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Feb. 6, 1974, Ser. No. 439,801
Int. Cl.² C08G *6/00*
U.S. Cl. 260—45.75 N **20 Claims**

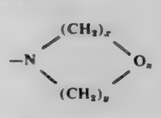
1. A stabilized polyolefin composition having incorporated therein a stabilizing amount of a hydrazino nickel thio-bis-phenolate which is a hydrazine complex of a nickel thio-bis-phenolate, where the thio-bis phenol is of the formula:



where R is selected from the group consisting of hydrogen, normal alkyl or normal alkenyl, and R_1 is selected from the group consisting of normal, secondary, tertiary and cyclic alkyl groups, and the hydrazine is of the formula



where R_2, R_3 and R_4 are independently chosen from the group consisting of hydrogen and primary, secondary and tertiary alkyl groups consisting of 1 to 8 carbon atoms and R_3 and R_4 may be joined together with the nitrogen to form a heterocyclic structure of the formula



where x is 1 to 3, y is 1 to 3 and n is zero or 1.

3,925,309

DIMETHYLTIN ESTERS

Lewis B. Weisfeld, Princeton, N.J., and Robert C. Witman, Cincinnati, Ohio, assignors to Cincinnati Milacron Chemicals Inc., Reading, Ohio

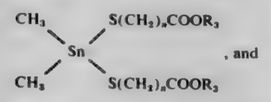
Continuation-in-part of Ser. Nos. 177,516, Sept. 2, 1971, and Ser. No. 317,228, Dec. 21, 1972, Pat. No. 3,810,868, and Ser. No. 435,264, Jan. 21, 1974, Pat. No. 3,887,519. This application Apr. 9, 1974, Ser. No. 459,372

Claims priority, application Germany, June 7, 1973, 2329039The portion of the term of this patent subsequent to June 3, 1992, has been disclaimed.

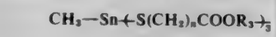
Int. Cl.² C08G *6/00*

U.S. Cl. 260—45.75 S **49 Claims**

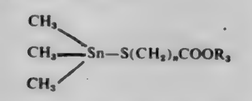
1. A pipe comprising a halogen-containing resin selected from the group consisting of chlorinated polyethylene a vinyl halide resin and a vinylidene halide resin with a stabilizingly effective amount of a mixture of (1) 60 to 96% of a compound having the formula



(2) 4 to 40% of a compound having the formula



and having not over 0.6% of



as an impurity in the stabilizer and where R_3 is hydrocarbon of up to 20 carbon atoms and n is an integer of 1 to 3.

3,925,310

HIGH MOLECULAR WEIGHT COPOLYAMIDES CONTAINING HYDANTOIN UNITS

Gerhard Dieter Wolf; Hans Egon Kunzel, both of Dormagen; Günther Blankenstein, Stommeln; Peter Kleinschmidt, Dormagen, and Francis Bentz, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Continuation-in-part of Ser. No. 361,526, May 18, 1973, abandoned. This application May 3, 1974, Ser. No. 466,841

Int. Cl.² C08G *69/32*

U.S. Cl. 260—47 CZ **10 Claims**

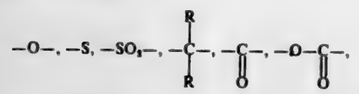
1. High molecular weight aromatic copolyamide consisting essentially of less than 15 mol percent of structural units which contain hydantoin rings of the formula

(I)

in which

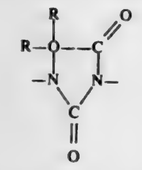
Z is a single bond or —Hy—X—;

X and Y, which may be the same or different, are divalent aromatic groups which consist of one or more condensed rings or several aromatic rings which are linked together by single bonds or by bridge members selected from the group consisting of



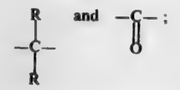
and —NH—SO_2—; or the halogen, C_1 to C_4 alkyl, NO_2 or CN substitution products of said divalent aromatic group;

Hy is a divalent hydantoin ring of the formula



R is hydrogen, C_1-C_4 alkyl, cycloalkyl or phenyl;

Ar is a divalent aromatic group which contains of one or more condensed rings or of several aromatic rings which are linked together by single bonds or by bridge members selected from the group consisting of members—O—,—S—,—SO_2—,



or the halogen, C_1 to C_4 alkyl, NO_2 and CN substitution products of said divalent aromatic group; and more than 85 mol percent of structural units of the formula

(II)

in which

Ar has the meaning indicated above; and

Ar′ has the meaning indicated for X; the copolyamides having a relative solution viscosity η_{rel} (measured on a 0.5% solution of the copolyamide in concentrated sulphuric acid at 25°C) of 1.2 – 2.5; the copolyamides containing a mol percent of hydantoin units sufficient to achieve a moisture absorption of at least 9% in a fiber prepared therefrom in which moisture absorption is measured by comparing moist fiber prepared by washing the fiber at 30°C., drying, exposure to an atmosphere of 20°C. and 65% relative humitity for 24 hours; and dry fiber dried in a vacuum at 80°C.

3,925,311

THERMALLY STABLE ARYLOXYBENZIMIDAZOBENZOPHENANTHROLINE COMPOSITIONS

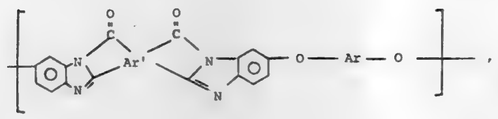
Fred E. Arnold, Centerville, Ohio; John G. Breland, and Frank W. Villaescusa, both of Colorado Springs, Col., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 30, 1974, Ser. No. 474,562

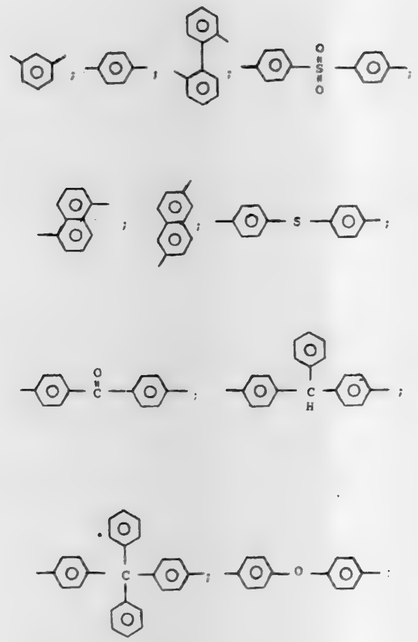
Int. Cl.² C08G *73/20*

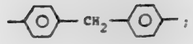
U.S. Cl. 260—47 CP **6 Claims**

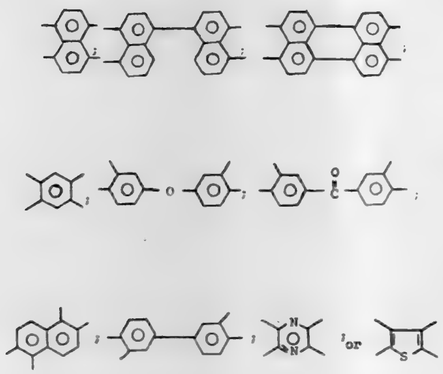
1. A thermally stable polymer consisting essentially of repeating units having the following formula:



wherein Ar is



or  ; and wherein Ar′ is



3,925,312

POLYIMIDES OF ETHER-LINKED ARYL TETRACARBOXYLIC DIANHYDRIDES

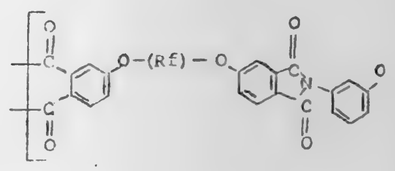
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and James A. Webster, Dayton, Ohio

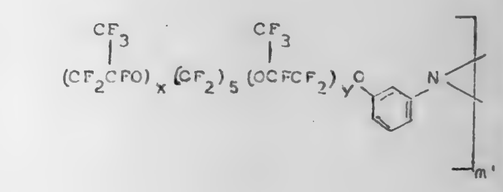
Filed July 11, 1974, Ser. No. 487,852

Int. Cl.² C08G *73/10*

U.S. Cl. 260—47 CP **5 Claims**

1. A normally-solid polyimide consisting essentially of repeating units having the structure:





wherein Rf is perfluoroalkylene having the structure —$(CF_2)_n$— or a perfluoroalkylene ether having the structure -$(CF_2)_m$-O-$(CF_2)_m$- wherein n is an integer of 2 to 10 and m is an integer of 1 to 10; x and y are each 0 to 3 and $x + y = 0$ to 5; and m' is 1 to 100.

3,925,313

POLYIMIDE WATER-SOLUBLE COMPOSITION

Makoto Kojima; Yuzuru Noda; Yasuhiro Suzuki, and Toshihide Okamoto, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaraki, Japan

Filed July 9, 1974, Ser. No. 486,932

Claims priority, application Japan, Nov. 9, 1973, 48-126587

Int. Cl.² C08G *73/10*

U.S. Cl. 260—47 CP **8 Claims**

1. A water-soluble composition comprising an ammonium salt of a polyimide precursor having a residual acid value ratio of about 3 to 30%, said ammonium salt of said polyimide precursor being obtained by the reaction steps of:

a. reacting 1,2,3,4-butane tetracarbocylic acid and a diamine in about equimolar amounts in a water soluble solvent and, optionally, water at a temperature of from about 60°C to a boiling point of the reaction system to obtain a polyimide precursor and

b. treating said polyamide precursor with ammonia or an aqueous solution of ammonia in an amount at least equimolar to the acid value of the formed polyimide precursor at a temperature of from about 0° to 200°C.

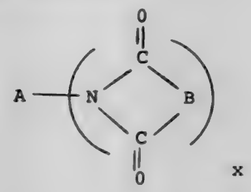
3,925,314
STORAGE-STABLE COMPOSITIONS OF POLYIMIDES AND AZOMETHINES

Alfred Renner, Munchenstein, and Theobald Haug, Frenkendorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 381,326, July 20, 1973, abandoned. This application Sept. 3, 1974, Ser. No. 503,025
Claims priority, application Switzerland, Oct. 10, 1972, 14888/72
Int. Cl.² C08G *73/10*
U.S. Cl. 260—47 UA **12 Claims**

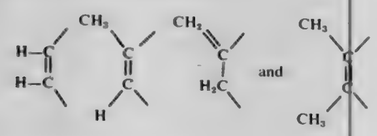
1. A storage-stable, thermosetting composition of matter, which comprises

a. polyimides of certain unsaturated dicarboxylic acids of the general formula I



(I)

in which A denotes a x-valent organic radical with at least 2 and at most 30 carbon atoms, B represents a radical selected from the formula consisting of

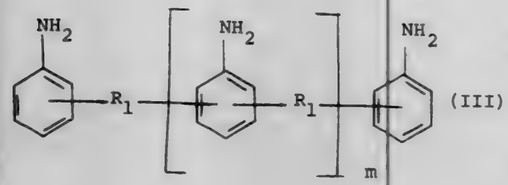


and x denotes the number 2 or 3,

b. polyamines of the formula II or III



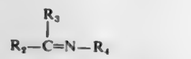
(II)



(III)

wherein, in the formula II, the radical D denotes a y-valent organic radical with 2 to 40 carbon atoms and y represents an integer from 2 to 4 and wherein, in the formula III, the radicals R_1 each denote a divalent hydrocarbon radical of an aldehyde or ketone with 1 to 8 carbon atoms obtained by removal of the oxygen atom and m represents a number from 0.1 to 2, and

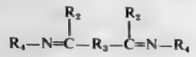
c. azomethines of the general formulae IV, V or VI



(IV)



(V)



(VI)

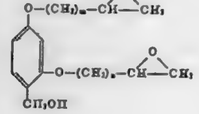
in which R_2 denotes a hydrogen atom, a linear or branched aliphatic hydrocarbon radical with up to 12 carbon atoms, a cycloaliphatic or cycloaliphatic-aliphatic hydrocarbon radical with up to 12 carbon atoms, an aromatic radical with 6 – 12 hydrocarbon atoms, an araliphatic hydrocarbon radical with up to 20 carbon atoms or a heterocyclic radical, R_3 and R_4, with the exception of the meaning of a hydrogen atom, have the same meaning as R_2, and R_3 together with R_2 and with inclusion of the C atom carrying the two substituents can also denote a cycloaliphatic ring system and E denotes a divalent organic radical with at least 2 and at most 30 carbon atoms, the ratio of components (a), (b) and (c) being so chosen that the composition contains 0.1 to 0.85 equivalent of primary amino group and 0.45 to 0.08 equivalent of >C=N group per 1 equivalent of imide group, with the sum of the equivalents of primary amino group and >C=N group amounting to 0.33 to 1 equivalent per 1 equivalent of imide group.

3,925,315
DIGLYCIDYL ETHER OF 4-METHYLOL RESORCINOL

John J. Schmid, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 20, 1974, Ser. No. 507,836
Int. Cl.² C08G *30/14*
U.S. Cl. 260—47 EN **6 Claims**

1. A curable epoxy composition comprising an epoxy compound of the formula:



wherein m and n each have a value of at least 1, and a known epoxide curing agent.

3,925,316
PROCESS FOR THE PREPARATION OF MIXTURES OF CYCLOALKANOLS AND CYCLOALKANONES

Jean-Claude Brunie; Noel Creene, both of Lyon, and Felix Maurel, Villeurbanne, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed May 23, 1968, Ser. No. 731,634
Claims priority, application France, May 26, 1967, 67.108082
Int. Cl.² C07C *27/04, 29/00, 45/00*
U.S. Cl. 260—586 R **4 Claims**

1. Process for the preparation of a mixture of a cycloalkanol and the corresponding cycloalkanone which comprises heating a solution of a cycloalkylhydroperoxide having 5 to 16 carbon atoms in the ring, in the corresponding cycloalkane, the solution containing, as catalyst, a soluble derivative of vanadium, molybdenum or ruthenium having a solubility of at least 0.1 grams per liter in the cycloalkane at ambient temperature.

3,925,317
ALKENE OXIDE OR ACRYLATE POLYMERIZATION OR COPOLYMERIZATION CATALYZED BY ORGANOALUMINUM-ORGANOPHOSPHINE-METAL SALT OF A BETA-DIKETONE

Henry Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 19, 1973, Ser. No. 416,816
Int. Cl.² C08F *4/52*; **C08G** *65/26*
U.S. Cl. 260—63 R **22 Claims**

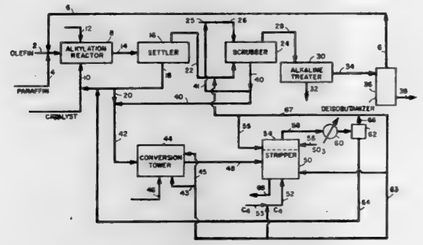
1. A process for the copolymerization of at least one monooxirane compound, and at least one vinyl monomer which is a vinyl ester, vinyl ether, or vinyl ketone, under polymerization conditions, employing a catalyst system consisting essentially of (I) hydrocarbon aluminum compound R_nAlH_m wherein each R is a hydrocarbon radical, n is an integer of 1 to 3, inclusive, and m is zero or an integer of 1 or 2, such that $n + m$ equals 3, (II) triorganophosphine compound R'_3P wherein R' is hydrocarbon or alkoxy-substituted hydrocarbon, and (III) a beta-diketone substantially as the metal salt of said beta-diketone, in catalytically effective ratios,

wherein said metal of said (III) is beryllium, magnesium, calcium, strontium, barium, boron, aluminum, gallium, indium, thallium, germanium, tin, lead, zinc, cadmium, or mercury.

3,925,318
ALKYLATION PROCESS WITH RECOVERY AND REGENERATION OF FLUOROSULFURIC ACID CATALYST

Paul T. Parker, Baton Rouge, La., and Ivan Mayer, Summit, N.J., assignors to Exxon Research & Engineering Company, Linden, N.J.

Continuation of Ser. No. 236,737, March 21, 1974, Pat. No. 3,766,293. This application July 30, 1973, Ser. No. 383,581The portion of the term of this patent subsequent to Oct. 16, 1990, has been disclaimed.
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C07C *3/54*
U.S. Cl. 260—683.58 **14 Claims**



1. An improved alkylation process comprising:

a. contacting an olefin and a paraffin hydrocarbon in an alkylation reactor with an alkylation catalyst comprising fluorosulfuric acid at alkylation conditions to thereby form a mixture of fluorosulfuric acid phase and a hydrocarbon phase containing alkylation reaction product;

b. settling said mixture into said hydrocarbon phase and said fluorosulfuric acid phase;

c. washing said hydrocarbon phase with an acid comprising sulfuric acid thereby removing at least a portion of the fluorosulfuric acid present in said hydrocarbon phase;

d. separating a sulfuric acid phase containing said fluorosulfuric acid from said hydrocarbon phase containing said alkylation reaction product;

e. contacting said sulfuric acid phase separated in step (d) with water to form an acid-water mixture thereby converting at least a portion of the fluorosulfuric acid contained in said acid phase to hydrogen fluoride and sulfuric acid;

f. stripping hydrogen fluoride from said acid-water mixture of step (e) with a paraffin hydrocarbon thereby forming a hydrocarbon phase containing hydrogen fluoride;

g. treating the hydrocarbon phase from step (f) with sulfur trioxide to regenerate fluorosulfuric acid; and

h. withdrawing said regenerated fluorosulfuric acid from said alkylation process.

3,925,319
LIGHT-STABLE THERMOPLASTIC POLYURETHANES

Norman A. Hiatt, Hamden; Harold G. Wolf, Waterbury, and Robert A. Hlavacek, Stratford, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Sept. 19, 1973, Ser. No. 398,733
Int. Cl.² C08G *18/76*; **C09D** *3/72*; **B32B** *27/40*
U.S. Cl. 260—75 NT **9 Claims**

1. A light stable solid thermoplastic polyurethane composition comprising a one-shot reaction product of a macropolyol and a mixture of an aromatic polyisocyanate and an aliphatic polyisocyanate, the equivalence ratio of aromatic to aliphatic polyisocyanate being 50:50, and the overall isocyanate to hydroxyl ratio being from 1:1 to 1.1:1 whereby the solid thermoplastic polyurethane is substantially devoid of free isocyanate groups, the said aromatic polyisocyanate being methylenebis(4-phenylisocyanate) and the said aliphatic polyisocyanate being methylenebis(4-cyclohexylisocyanate).

3,925,320
SOLID CURABLE POLYENE COMPOSITIONS CONTAINING LIQUID POLYTHIOLS AND SOLID STYRENE-ALLYL ALCOHOL COPOLYMER BASED POLYENES

Charles R. Morgan, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 250,554, May 5, 1972, abandoned. This application Feb. 8, 1973, Ser. No. 330,818
Int. Cl. C08g *22/04*
U.S. Cl. 260—77.5 CR **9 Claims**

1. A solid curable composition useful for obtaining a solid cross-linked polythioether consisting essentially of:

1. a solid polyene which is the reaction product of a styrene-allyl alcohol copolymer and at least one reactive unsaturated monoisocyanate, said polyene containing at least 2 reactive unsaturated carbon to carbon bonds per molecule; and

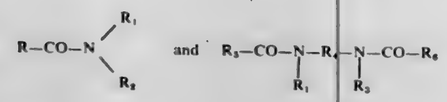
2. a liquid polythiol containing at least 2 thiol groups per molecule, the total combined functionality of (1) the reactive unsaturated carbon to carbon bonds per molecule in the polyene and (2) the thiol groups per molecule in the polythiol being greater than 4.

3,925,321
POLYAMIDE COMPOSITIONS WHICH HAVE BEEN RENDERED ANTISTATIC BY THE ADDITION OF SULFOCARBOXYLIC ACID AMIDES

Claus-Rudiger Bernert, Dormagen, and Eduard Radlmann, Dormagen-Hackenbroich, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

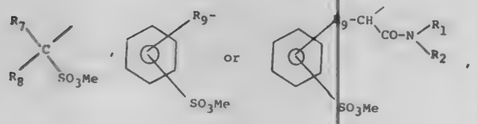
Filed Mar. 7, 1974, Ser. No. 449,101
Claims priority, application Germany, Mar. 7, 1973, 2311329
Int. Cl.² C08L *77/10, 77/02*
U.S. Cl. 260—78 S **3 Claims**

1. Antistatic film and fiber-forming polyamide composition consisting essentially of an aliphatic polyamide and 0.5 – 20 percent by weight, based on the polyamide composition, of a sulphonatocarboxylic acid amide of the general formulae

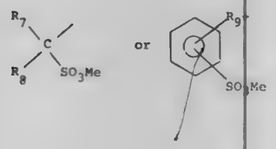


wherein

R denotes a group of the general formulae



R_3 and R_6 denote groups of the general formulae



and

R_1 denotes a short chain alkyl group containing 1 to 5 carbon atoms,

R_2 and R_6 denote long chained alkyl groups containing 4 to 30 carbon atoms,

R_3 and R_7 denote hydrogen or short chain alkyl groups containing 1 to 5 carbon atoms,

R_4 denotes a straight chained or branched chain alkylene group containing 1 to 18 carbon atoms,

R_9 denotes a straight chain or branched chain alkylene group containing 0 to 3 carbon atoms and Me denotes alkali metals.

3,925,322

ANAEROBIC CURABLE COMPOSITIONS

Kishiro Azuma; Isao Tsuji; Hiroyuki Kato; Hidemaro Tatemichi; Akira Motegi; Osamu Suzuki, and Kishichiro Kondo, all of Nagoya, Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1974, Ser. No. 430,782

Claims priority, application Japan, Jan. 19, 1973, 48-8419

Int. Cl.² C08F *18/14, 18/16, 22/14, 120/20*

U.S. Cl. 260—78.4 E **8 Claims**

1. An anaerobic curable composition comprising a hydroperoxide in the amount 0.01–5% by weight based on said composition, a 1,1-dialkylhydrazine or its acid salt in the amount 0.001–5% by weight based on said composition, the alkyl groups making up said dialkylhydrazine being a C_1–C_4 alkyl, and the remainder of said composition comprising essentially a polyesterpolyacrylate and/or a polyesterpolymethacrylate or an anaerobic curable monomer mixture containing said polyesterpolyacrylate and/or said polyesterpolymethacrylate.

3,925,323

POLY(META-PHENYLENE ISOPHTHALAMIDE)POWDER

John William Turnbull, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed June 14, 1972, Ser. No. 262,599

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C08G *69/46*

U.S. Cl. 260—78 S **6 Claims**

1. A coalescible and densifiable powder of poly(meta-phenylene isophthalamide) characterized by a density of at least about 1.0 g./cc. when pressed into a preform and a density when sintered of at least about 1.24 g./cc. produced by adding a solution of between about 0.5 and about 3.5 percent by weight, based upon the total weight of said solution, of poly(-meta-phenylene isophthalamide) in a solvent selected from any of the group consisting of dimethylformamide and dimethylacetamide to water to form a slurry and agitating said slurry and thereafter filtering said slurry to recover solid particles of said poly(meta-phenylene isophthalamide), and washing and drying said solid particles and comminuting said solid particles whereby to provide said coalescible and densifiable powder of poly(meta-phenylene isophthalamide).

3,925,324

PROCESS FOR THE PREPARATION OF THERMOSETTING POLYMERS FROM N,N-BIS-MALEIMIDE

Bernard Gerard, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Dec. 20, 1972, Ser. No. 317,080

Claims priority, application France, Dec. 27, 1971, 71.46753

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C08L *73/12*

U.S. Cl. 260—78 UA **6 Claims**

1. In a continuous process for the preparation of a thermosetting prepolymer by heating a mixture of an N,N′-bis-maleimide and bis-(4-amino-phenyl)-methane at a temperature between 95° and 250°C., the improvement wherein the bis-maleimide, as a particulate solid, and the diamine, in the molten state, are mixed by introducing separately into a kneader equipped with an extrusion screw, the molar ratio of bis-maleimide to diamine being from 1 to 5, advancing, polymerising and collecting the extruded prepolymer.

3,925,325

ORGANOALUMINUM PROCESS FOR IMIDE-ALCOHOL CONDENSATION

Robert Arthur Heimsch, St. Louis, and Edward Hugo Mottus, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed July 22, 1974, Ser. No. 490,440

Int. Cl.² C08G *69/16*

U.S. Cl. 260—78 L **10 Claims**

1. A catalyzed imide-alcohol condensation process for the preparation of polymeric compounds of polyester-polyamides comprising: contacting alcohols having one or more hydroxyl groups attached to an aliphatic carbon, and acyl lactams in the presence of an organoaluminum catalyst having the formula:

$$X_2Al(RAl)_nX$$
$$\quad\quad\quad |$$
$$\quad\quad\quad X$$

wherein R is an alkylene group having from one to about fifteen carbon atoms, X is a halogen, and *n* is an integer of one or more.

3,925,326

ALTERNATING COPOLYMERS OF ETHYLENE/ALKYL ACRYLATES/CURE-SITE MONOMERS AND A PROCESS FOR THEIR PREPARATION

Anestis Leonidas Logothetis, Louisville, Ky., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 132,177, April 7, 1971, abandoned. This application Mar. 10, 1972, Ser. No. 233,741

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

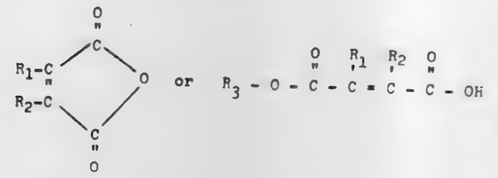
Int. Cl.² C08F *15/00*

U.S. Cl. 260—78.5 R **14 Claims**

1. An amorphous substantially linear atactic alternating copolymer having a glass transition temperature less than about 0°C. and an inherent viscosity of about 1–6 (measured on a 0.1 wt. % solution in chloroform at 30°C.), said copolymer having repeating units consisting essentially of:

—A—B—

wherein A is independently selected from at least one alkyl acrylate, said alkyl group having from 1–8 carbon atoms and an acrylic cure-site monomer, and B is ethylene, said cure-site monomers having the formulae:



wherein R_1 and R_2 are independently selected from H, Cl, Br, a C_1–C_8 alkyl, phenyl, or naphthyl, and R_3 is hydrogen, C_1–C_{10} alkyl, phenyl or naphthyl, substituted phenyl or naphthyl where substituents are alkyl C_1–C_{10}, halogen, nitro, and C_1–C_{10} alkoxy groups,

the mole percent alkyl acrylate plus cure-site monomer in the copolymer is about 50, the balance being ethylene.

3,925,327

METHOD FOR PRODUCING VINYL ACETATE-ETHYLENE-DICARBOXYLIC ACID DIALLYL ESTER COPOLYMER

Hirotsugu Mitsushima, and Motohiro Katata, both of Ichihara, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 15, 1972, Ser. No. 306,582

Claims priority, application Japan, Nov. 15, 1971, 46-91773

Int. Cl.² C08F *2/30, 210/02, 218/08, 218/18*

U.S. Cl. 260—78.5 UA **7 Claims**

1. A method for producing a vinyl acetate-ethylene-dicarboxylic acid diallyl ester copolymer having an intrinsic viscosity of about 0.2 to about 3.0 at 30°C. in benzene which comprises emulsion-polymerizing a monomeric mixture consisting essentially of vinyl acetate, ethylene and a dicarboxylic acid diallyl ester in water with an emulsifier in the presence of a water-soluble radical initiator at a temperature of 30° to 80°C. under an ethylene pressure of 0 to 100 atm, said dicarboxylic acid diallyl ester being employed in an amount of 0.01 to 2 mole % based on the total amount of reactants and being an aliphatic dicarboxylic acid diallyl ester of the formula:

$$H_2C{=}HC{-}H_2COOCC_nH_mCOOCH_2{-}CH{=}CH_2$$

wherein *n* represents an integer of 2 to 10 and *m* represents 2*n* or 2*n*−2, an aromatic dicarboxylic acid diallyl ester or a mixture thereof, the average degree of polymerization of the resulting copolymer being controlled by the use of said diallyl ester in the polymerizing mixture.

3,925,328

SURFACE SIZING COMPOSITIONS

Yasuo Shibahara, and Yoichi Tominaga, both of Kyoto, Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Nov. 2, 1973, Ser. No. 412,350

Claims priority, application Japan, Nov. 15, 1972, 47-115078

Int. Cl.² C08F *8/44*

U.S. Cl. 260—78.5 T **14 Claims**

1. A surface sizing composition for paper, which comprises: a copolymer of styrene and at least one unsaturated carboxylic compound selected from the group consisting of maleic acid, maleic anhydride and half esters of maleic acid, wherein said copolymer has a carboxylate equivalent of 80 – 300 based on the free carboxylic acid form, and wherein said copolymer has 5 – 50% of its total carboxylic groups as alkali metal salts and 95 – 50% of its total carboxylic groups as at least one non-metal salt selected from the group consisting of ammonium salts and lower alkyl amine salts.

3,925,329

PRODUCTION OF POLYMERS IN POWDERED FORM WHICH CONTAIN CARBOXYLIC ACID OR CARBOXYLIC ANHYDRIDE GROUPS

Bernhard Heinrich, Frankenthal; Herbert Naarmann, Wattenheim, and Peter Thoma, Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Dec. 28, 1973, Ser. No. 429,133

Int. Cl.² C08F *2/14, 6/10*

U.S. Cl. 260—78.5 R **8 Claims**

1. A process for the production in powdered form of a polymer containing carboxylic acid or carboxylic anhydride groups which comprises polymerizing acrylic acid, methacrylic acid or maleic anhydride with one or more than one other monomers selected from the group consisting of styrene and esters of acrylic acid and methacrylic acid with alcohols of the structure $HO{-}CH_2{-}R$ wherein R is hydrogen, alkyl of from one to five carbons, benzyl, $CH_2{-}NR_2$ or $CH_2{-}CH_2{-}NR_2$, in such amounts that the resulting copolymers contain from 5 to 40% by weight of the monomers containing carboxylic acid groups or from 10 to 50% by weight of maleic anhydride, said polymerization being conducted at a temperature of from 70° to 150°C and in the presence of an alcohol or hydrocarbon auxiliary liquid having a boiling point of from 70° to 150°C, wherein the ratio by weight of monomers to auxiliary liquid is from 0.5:1 to 1.5:1, and wherein the surface area of the mixture in the reaction zone is increased by mechanical stirring to at least twenty times that of the unstirred mixture, and distilling off the auxiliary liquid while stirring after the mixture has reached a viscosity of at least 20,000 centipoises measured at 20°C.

3,925,330

CASTABLE COMPOSITIONS CONTAINING UNSATURATED LIQUID VINYLIDENE-TERMINATED POLYMERS

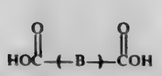
William J. McCarthy, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 7, 1974, Ser. No. 431,076

Int. Cl.² C08F *2/00, 222/10, 236/20*

U.S. Cl. 260—78.5 B **7 Claims**

1. Castable compositions comprising (1) a liquid vinylidene-terminated polymer being the reaction product of (a) a liquid carboxyl-terminated polymer of the structure



where B consists of interpolymerized units of about 20 percent to about 100 percent by weight of a diene monomer containing 4 to about 10 carbon atoms in the molecule, and up to 80 percent by weight of a vinyl monomer selected from the group consisting of vinyl aromatics, vinyl nitriles, vinyl acids, vinyl and allyl alcohols, vinyl and allyl esters, vinyl and allyl ethers, divinyls, diacrylates, and acrylic esters of the formula



wherein R′ is —H, —CH_3 or —C_2H_5, and R″ is an alkyl radical containing 1 to 18 carbon atoms or an alkoxyalkyl, alkylthioalkyl, or cyanoalkyl radical containing 2 to about 12 carbon atoms with (b) a compound containing a vinylidene group and an epoxide group selected from the group consisting of isopropenyl glycidyl ether, allyl glycidyl ether, methallyl glycidyl ether, glycidyl acrylate, and glycidyl methacrylate, (2) from about 20 parts to about 180 parts by weight of a polymerizable vinyl monomer and (3) from about 0.1 part to about 5 parts by weight of a free-radical catalyst system, the parts by weight of (2) and (3) based on 100 parts by weight of (1).

3,925,331
POLYMERIC SEALANTS

Christopher Scott Ely, Oldbury, England, assignor to Albright & Wilson Ltd., Oldbury, England

Continuation-in-part of Ser. No. 410,700, Oct. 29, 1973, Pat. No. 3,872,059, which is a continuation of Ser. No. 259,935, June 5, 1972, abandoned. This application Nov. 27, 1973, Ser. No. 419,378

Claims priority, application United Kingdom, June 3, 1971, 18910/71; Dec. 1, 1972, 55695/72The portion of the term of this patent subsequent to Mar. 18, 1992, has been disclaimed.

Int. Cl.² C08G *75/14, 75/16*

U.S. Cl. 260—79 **41 Claims**

1. A moisture curable sealant composition maintained under anhydrous conditions and containing unreacted SH groups and in the absence of peroxides or tin compounds, said sealant comprising the product of reacting under anhydrous conditions (i) a polysulphide of the statistical formula

$$HS[(-CH_2(R')_bCH_2S_a-)_c(-R''S_a-)_d(SH)_f]CH_2(R')_bCH_2SH$$

where

a is 1–5,

b is 0 or 1

c is 1–200

d is 0 up to 0.05c,

f is subject to the conditions 0.05c is equal to or larger than *f*, *f* is equal to or larger than *d*, and *f* is equal to or less than 1, and *f*−*d* multiplied by the (No. of free valencies in R″ −2) R′ is —O—, —S— or an organic divalent radical free of aliphatic unsaturation selected from the group consisting of radicals containing only C and H atoms and radicals containing C and H atoms and at least one of O and S atomsin the form of —C—O—C, —OH or —C—S_a—C— links, R″ is an organic radical free of aliphatic unsaturation having at least 3 free valencies and selected from the group consisting of radicals containing C and H atoms only and radicals containing C and H atoms and at least one of O and S atoms in the form of —C—O—C, —OH or —C—S_a—C— links, and the free valencies being for carrying all the *f* SH groups and the $CH_2R'_bCH_2S_a$ and R″S_a groups being in any order, with (ii) an amount of a silane of the formula $Q_nSiX_{(4-n)}$, where *n* is 1 or 2, Q is an organic group having an epoxide group, an organic group having a mercapto group $CH_2=CR_{14}COO\,C_{m+1}\,H_{2m+2}$ — or $CH_2=CR_{15}-C_m\,H_{2m}$ — group, where *m* is 0, 1, 2 or 3, each of R_{14} and R_{15} which are the same or different, is hydrogen or is an alkyl radical of 1 to 4 carbon atoms, and at least two X's are organic hydrolyzable groups and the remaining group X (if any) is an alkyl group of 1 to 6 carbon atoms, or a chloro alkyl radical of 1 to 6 carbon atoms, the silane having a total of only 1 or 2 groups, which react with SH in the polysulphide under the reaction conditions, sufficient to react with from 3% to 30% of the SH groups of said polysulphide, and the reaction with a silane containing a mercapto group being carried out in the presence of a base of pK at least 9.

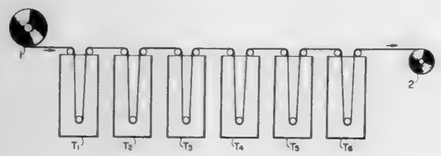
3,925,332
HYDROPHILIC MEMBRANE AND PROCESS FOR THE PREPARATION THEREOF

Hirokuni Naito, Hino; Isao Yoshimura, Fujisawa, and Hiroo Nakano, Kawasaki, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

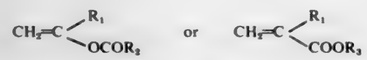
Filed June 18, 1974, Ser. No. 480,579

Int. Cl.² C08F *28/00;* **C08G** *75/00*

U.S. Cl. 260—79.3 R **11 Claims**



1. A hydrophilic membrane of a sulfonated product of a film or tube made of a polymeric composition comprising a copolymer of ethylene with 3.0 to 18.0 mole % of a comonomer of the formula



or

wherein R_1 is hydrogen or a methyl group, R_2 is an alkyl group with 1 to 5 carbon atoms and R_3 is hydrogen or an alkyl group with 1 to 6 carbon atoms, or an ionically crosslinked derivative of such a copolymer when R_3 is hydrogen, said membrane containing sulfonic acid groups or salts thereof in an amount of 0.5 to 4.0 milliequivalents per gram of dry membrane, having excellent alkali resistance and having an effective resistivity of 0.002 to 2 Ω.cm² and a folding endurance of at least 100 times.

3,925,333
OLEFINIC POLYMERS OF METHYL-TRICYCLO-3,8-DECADIENE

Alberto Valvassori, Milan, Italy; Guido Sartori, Roselle, N.J., and Nazzareno Cameli, Milan, Italy, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 868,943, Oct. 23, 1969, abandoned, which is a continuation of Ser. No. 646,468, June 16, 1967, abandoned. This application Feb. 5, 1971, Ser. No. 113,055

Claims priority, application Italy, June 17, 1966, 19149/66

Int. Cl.² C08D *9/00, 3/02*

U.S. Cl. 260—79.5 B **8 Claims**

1. Substantially linear, amorphous, unsaturated copolymers consisting of macromolecules made up of polymerized units of ethylene, polymerized units of at least one aliphatic 1-olefin of the general formula R — CH = CH_2, wherein R is an alkyl group containing 1 to 6 carbon atoms, and polymerized units of at least one of 3-methyl-tricyclo[5,2,1,$0^{2,6}$]-3,8-decadiene and 4-methyl-tricyclo-[5,2,1,$0^{2,6}$]-3,8-decadiene, said copolymers having a molecular weight higher than 20,000 and containing, by mols, from 5 percent to about 75 percent of ethylene, from about 0.1 to about 20 percent of the diene, and the balance aliphatic alpha-olefin.

3,925,334
PROCESS FOR PREPARING ETHYLENE/PROPYLENE/1,4-HEXADIENE ELASTOMERIC TERPOLYMERS USING CATALYST PREPARED IN A WIPED-WALL CATALYST PREMIXER

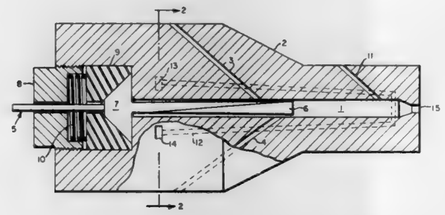
Herbert Felix Mc Shane, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 19, 1973, Ser. No. 342,423

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C08F *2/06, 4/68, 36/20*

U.S. Cl. 260—80.78 **17 Claims**



1. In a continuous process for the solution interpolymerization of ethylene, propylene, and 1,4-hexadiene monomers in the reactor and in the presence of a coordination catalyst prepared from $VOCl_3$ and R_xAlCl_{3-x}, where R is a C_4 to C_{12} and is an alkyl group having a β-alkyl substituent and *x* is about 1.6 to 2.0, the improvement wherein $VOCl_3$ and R_xAlCl_{3-x} are continuously premixed in solvent in the absence of monomer in a wiped-wall catalyst premixer to prepare catalyst solution having an aluminum to vanadium atomic ratio of about 1.6 to 2.8 and a concentration of about 20 to 50 millimoles vanadium per liter of solvent, and the premixed catalyst solution is continuously injected into the reactor as it is formed.

3,925,335
VINYL URETHANE RESINS FROM HALOGENATED DIOLS AND PHOSPHONATE DIOLS

Erich Kuehn, Wilmington, Del., assignor to ICI United States Inc., Wilmington, Del.

Filed May 29, 1973, Ser. No. 364,910

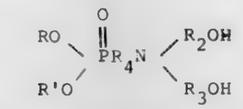
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C08L *75/00*

U.S. Cl. 260—859 R **18 Claims**

1. A composition comprising

a. a vinyl urethane resin comprising the reaction product of a mixture of a halogen-containing diol and a phosphonate having the formula:



wherein R and R′ are selected from the group consisting of allyl, lower alkyl, and lower haloalkyl radicals; and R_2, R_3, and R_4 are lower alkylene or lower haloalkyl radicals, provided that either R_2 or R_3 must be an alkylene radical, wherein the amount of phosphonate in said mixture is such that the molar ratio of diol to phosphonate is equal to from about 0.4/0.6 to about 0.9/0.1; an isocyanate having a functionality equal to from about 2.0 to about 3.0; and a hydroxyl terminated ester of acrylic or methacrylic acid; provided that, (i) when the amount of the mixture of diol and phosphonate is equal to up to 1 mole the amount of the isocyanate is equal to about 2 moles per mole of the mixture and the amount of the hydroxyl terminated ester is equal to about 2 moles per mole of the mixture, and (ii) when the amount of the mixture of diol and phosphonate is equal to greater than 1 mole, the amount of isocyanate is equal to about 1 mole plus 1 mole per mole of the mixture and the amount of the hydroxyl terminated ester is equal to about 2 moles; and

b. a monomer selected from the group consisting of styrene, t-butyl styrene, alpha methyl styrene, chlorostyrene, divinyl benzene, acrylic acid, dimethyl maleate, dibutyl fumarate, butyl methacrylate, nonyl methacrylate, and allyl alcohol.

3,925,336
PROCESS FOR PREPARING GRANULAR ETHYLENE-VINYL ALCOHOL COPOLYMER

Atsuo Sawada, Ogaki, Japan, assignor to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 7, 1974, Ser. No. 477,419

Int. Cl.² C08F *210/00, 212/00, 220/00, 222/00*

U.S. Cl. 260—87.3 **12 Claims**

1. In a process for preparing ethylene-vinyl alcohol copolymer by hydrolyzing ethylene-vinyl acetate copolymer in the presence of a hydrolyzing catalyst, the improvement which comprises

a. forming a solution containing a lower alkyl alcohol having 1 to 4 carbon atoms and an ethylene-vinyl acetate copolymer, said copolymer having an ethylene content of 5 to 85% by mole and a vinyl acetate content of 95 to 15% by mole,

b. suspending the solution in a non-solvent which is substantially incapable of dissolving the ethylene-vinyl acetate copolymer and the ethylene-vinyl alcohol copolymer and is immiscible with the lower alkyl alcohol and lower alkyl acetate corresponding to the lower alkyl alcohol,

c. mixing together the solution and non-solvent in the presence of a hydrolyzing catalyst at a temperature in the range frorm 20° to 60°C such that not less than 80% by mole of the vinyl acetate is hydrolyzed to form ethylene-vinyl alcohol copolymer granules, and

d. separating the granules from the solution-non-solvent mixture said granular ethylene-vinyl alcohol copolymer having a uniform size and being spherical without the need for employing a crushing step.

3,925,337
POST CHLORINATED VINYL CHLORIDE COPOLYMERS

Charles A. Heiberger, Princeton, N.J., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 846,417, July 31, 1969, abandoned. This application July 21, 1972, Ser. No. 273,936

Int. Cl. C08f *15/02*

U.S. Cl. 260—87.5 C **6 Claims**

1. A post-chlorinated vinyl chloride-propylene copolymer having a heat deflection temperature of at least 185°F, a chlorine content of 60% to 73% by weight and a melt flow value of from 0.1 dg./min. to 250 dg./min. said post-chlorinated copolymer prepared from a vinyl chloride-propylene copolymer having a propylene content of from about 2% to about 12% by weight, a vinyl chloride content of from about 88% to about 98% by weight, an intrinsic viscosity of 0.45 dl./g. to 1.2 dl./g. and a melt flow value of 0.3 to 1000 dg./min.

3,925,338
CONTROL OF POLYMER PARTICLE SIZE IN OLEFIN POLYMERIZATION

Morris R. Ort, Seabrook, Tex., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 16, 1973, Ser. No. 341,837
Int. Cl.² C08F *2/34, 10/02, 110/02, 210/16*
U.S. Cl. 260—88.2 R **11 Claims**

1. A process for producing homopolymers and copolymers of ethylene in the gas-phase which comprises contacting a gas stream containing ethylene under polymerization conditions with a Ziegler-type catalyst deposited on a solid support in a fluidized bed operation and controlling the particle size of the polymer product by determining the average particle size of the polymer produced and decreasing the average particle size of the catalyst support if the average particle size of the polymer product is too large and increasing the average particle size of the catalyst support if the average particle size of the polymer product is too small.

3,925,339
SHAPED ARTICLES OF POLYVINYLIDENE FLUORIDE

Hajime Ishii; Nubuo Bannai, and Sadao Nishita, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Division of Ser. No. 3,204, Jan. 15, 1970, Pat. No. 3,707,592, and a continuation-in-part of Ser. No. 501,888, Oct. 22, 1965, abandoned. This application Sept. 22, 1972, Ser. No. 291,694
Claims priority, application Japan, Oct. 21, 1964, 39-59812; Sept. 18, 1965, 40-57016
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C08F *14/22*
U.S. Cl. 260—92.1 **3 Claims**

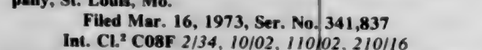
1. A shaped article of polyvinylidene fluoride having improved heat-resistance, mechanical stability, and dimensional stability, said shaped article having been prepared by polymerizing vinylidene fluoride at a temperature between 0° and 30°C in a water medium in the presence of a catalyst selected from the group consisting of

1. a dialkyl peroxydicarbonate represented by the following general formula



wherein R is a primary alkyl group having 1–4 carbon atoms, or a secondary alkyl group having 3–6 carbon atoms, and

2. a dialkyl peroxy carbonate



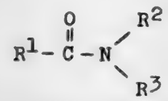
wherein R is a primary alkyl group having 1 to 3 carbon atoms or a secondary alkyl group having 4 to 6 carbon atoms and R′ is a primary alkyl group having 1 to 3 carbon atoms or a secondary alkyl group having 3 to 5 carbon atoms, and in the presence of a chain transfer agent selected from the group consisting of chloroform, n-hexane, and cyclohexane to control the degree of polymerization, thereby obtaining a polyvinylidene fluoride resin having a melting point of between 185° and 190°C, a crystallization temperature of from 135° to 146°C, and an inherent viscosity of from 0.4 to 1.20; and melt extruding said polymer at a temperature of about 250°C and above to produce a pre-formed article of a film or fiber and stretching the pre-formed article at a temperature between 80° and 130°C and at a draw ratio of at least 150 percent to form a film or fiber having an intensity ratio of at most 1.3.

3,925,340
PREPARATION OF SOL CHLOROPRENE POLYMERS

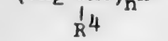
Ausat Ali Khan, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 8, 1974, Ser. No. 468,198
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C08F *113/16, 200/00, 220/42, 214/00*
U.S. Cl. 260—92.3 **8 Claims**

1. In the process of polymerizing in the presence of a C_8—C_{20} alkyl mercaptan in aqueous emulsion at a pH of about 10–13 chloroprene containing from 0 to about equal weight of a copolymerizable monomer at a temperature from the freezing point of the emulsion to about 52°C., the improvement of having present in the emulsion about 0.05–1 part by weight per 100 parts of the starting monomer, of an amide having the following Formula (1)



wherein R^1 is a C_7—C_{19} alkyl or alkenyl,
R^2 is represented by the following Formula (2):



wherein n is a number having an average value of 1 to about 50, and
R^4 in each parenthetical unit is independently of any other such unit hydrogen or methyl; and
R^3 is hydrogen, phenyl, benzyl, a C_1—C_5 alkyl, or a radical of the above Formula (2);
with the provisos that when R^3 has the above Formula (2), the sum of the average values of n in R^2 and R^3 is at most about 50; and when R^1 is alkenyl, the double bond is separated from the nitrogen atom by at least one saturated carbon atom.

3,925,341
PROCESS FOR WORKING UP PARTICULATE POLYOLEFINS OBTAINED BY POLYMERIZATION CARRIED OUT WITH THE AID OF ZIEGLER/NATTA CATALYSTS

Heinz Mueller-Tamm, Ludwigshafen; Hannes Schick, Mannheim; Wolfgang Rau, Heidelberg, and Peter Hennenberger, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Nov. 26, 1973, Ser. No. 419,060
Claims priority, application Germany, Nov. 29, 1972, 2258345
Int. Cl.² C08F *6/00, 6/28*
U.S. Cl. 260—93.7 **7 Claims**

1. A process for working up particulate polyolefins in an extruder, said particulate polyolefins having been obtained by gas phase polymerization with the aid of Ziegler/Natta catalysts and having a particle diameter of less than 5 mm, said process consisting essentially of:

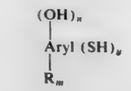
a. continuously introducing said particulate polyolefin into a melting zone wherein sufficient heat is applied to melt said polyolefin;
b. adding to said particulate polyolefin before it reaches said melting zone or within said melting zone,
   1. a C_2- C_6 alkenoxide, and
   2. water,
   the amount of said alkenoxide being from 3 to 50 parts by weight per 1,000 parts of polyolefin and the amount of water being from 0.5 to 20 parts by weight per 1,000 parts of polyolefin;
c. passing said molten polyolefin to which said oxide and said water have been added to a degassing zone wherein volatiles are driven off under a vacuum of from 0.1 to 500 millibars to substantially reduce the halogen content of said polyolefin;
d. transferring the degassed polyolefin to a discharge zone; and thereafter,
e. extruding and granulating the resulting polyolefin.

3,925,342
POLYMERIZATION OF UNSATURATED FATTY MATERIALS

Roland Pierre Franz Scharrer, Pelham, N.Y., assignor to Arizona Chemical Company, New York, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,736
Int. Cl.² C09F *7/06*
U.S. Cl. 260—97.5 **7 Claims**

1. A process for the polymerization of fatty material which comprises heating in the presence of a steam blanket a fatty acid material containing both a carboxylic acid group and a major amount of diene linkages therein in the presence of an effective amount of a catalyst having the structure:



where n is an integer from 1 to 4, y is an integer from 1 to 3, R is a C_1-C_{10} hydrocarbon group, said group being alkyl, cycloalkyl, cycloalkyl substituted alkyl, aryl substituted alkyl or alkaryl substituted alkyl, m is an integer from 0 to 4 and the sum of m, n and y cannot exceed the substitutable positions on the aryl ring, said aryl ring being phenyl, naphthyl or phenanthryl and wherein at least one of said hydroxyl and said mercaptan groups are ortho positioned on the same aryl ring.

3,925,343
READILY DISPERSIBLE DRY GLUTEN PRODUCT AND USES THEREOF

Richard John Hampton, Pierrefonds; Jacques Robert Rolland, Bouchardville, and Thomas Gallo, Toronto, all of Canada, assignors to Ogilvie Flour Mills Company Limited, Montreal, Canada

Continuation-in-part of Ser. No. 309,656, Nov. 27, 1972, abandoned, which is a continuation of Ser. No. 26,405, April 7, 1970, Pat. No. 3,704,131. This application Jan. 7, 1974, Ser. No. 431,318The portion of the term of this patent subsequent to Nov. 28, 1989, has been disclaimed.
Int. Cl.² A23J *3/00*
U.S. Cl. 260—112 G **4 Claims**

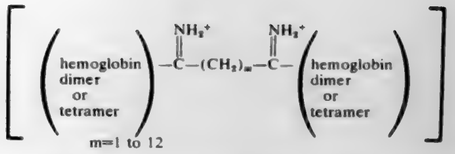
1. A dry vital wheat gluten product in the form of coarse, porous, irregularly-shaped agglomerates having a moisture content of between about 6 and 10 percent and composed of a multiplicity of individual gluten particles adhered together in a random form and array, the major proportion of the agglomerates having a particle size exceeding 149 microns and up to a maximum of 500 microns, and said agglomerated gluten product being further characterised by the ease with which it can be dispersed in neutral aqueous dispersion having a pH between about 4 and about 8 by simply stirring to form a relatively stable dispersion in such a medium.

3,925,344
PLASMA PROTEIN SUBSTITUTE

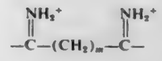
Abraham Mazur, New York, N.Y., assignor to The Community Blood Council of Greater New York, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 350,225, April 11, 1973, abandoned. This application Feb. 13, 1974, Ser. No. 442,276
Int. Cl.² C07C *103/52;* **A61K** *37/00*
U.S. Cl. 260—112.5 **23 Claims**

1. A plasma protein substitute comprising a hemoglobin containing material in polymeric form, said polymer having the following repeating unit:



said polymer having an average molecular weight of between 68,000 and 600,000, the



moiety being joined to the hemoglobin dimer or tetramer group through epsilon amino groups of lysyl residues of the hemoglobin dimer or tetramer.

3,925,345
[SAR¹,THR⁸]ANGIOTENSIN II AS AN ANGIOTENSIN ANTAGONIST

Francis Merlin Bumpus, 75 Winterberry Lane, Chagrin Falls, Ohio 44022; Mahesh Chandra Khosla, 415 Warwick Lane, Chesterland, Ohio 44026, and Robert Rudolph Smeby, 36801 Riviera Road, Willoughby, Ohio 44094

Filed May 10, 1974, Ser. No. 468,853
Int. Cl.² C07C *103/52;* **A61K** *37/00*
U.S. Cl. 260—112.5 **1 Claim**

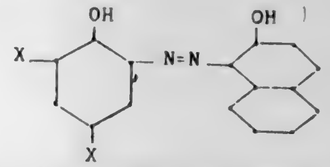
1. The octapeptide Sar-L-Arg-L-Val-L-Tyr-L-Ile-L-His-L-Pro-L-Thr.

3,925,346
MIXED CHROMIUM-CONTAINING AZO DYESTUFFS CONTAINING, PER ATOM OF CHROMIUM, ONE MOLECULE OF AN O,O′-DIHYDROXY-SULPHOPHENYLENE-AZO-NAPHTHALENE AND ONE MOLECULE OF AN -O-HYDROXYPHENYLENE-AZO-ACETOACETAMIDE

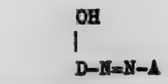
Arthur Buehler, Rheinfelden, and Hans-Ulrich Schuetz, Basel, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 820,334, April 29, 1969, abandoned. This application Oct. 19, 1971, Ser. No. 190,679
Claims priority, application Switzerland, May 14, 1968, 7130/68
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C09B *45/06;* **D06P** *3/00, 3/04*
U.S. Cl. 260—145 A **7 Claims**

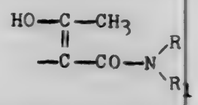
1. A metal compound that contains one atom of chromium bound in complex union with one molecule each of two different monoazo dyestuffs, one of which corresponds to the formula



in which one X represents nitro and the other X is sulphonic acid, and the other monoazo dyestuff corresponds to the formula



wherein D is selected from the group consisting of phenyl and phenyl substituted by up to three groups selected from the group consisting of chlorine bromine, nitro, C_{1-5}alkyl, C_{1-5}alkoxy, C_{1-4}alkanoylamino, sulfonamido, N-phenylsulfonamido and N-(carboxyphenyl)-sulfonamido; and A is an acetoacetamide group of the formula



wherein R and R_1 are each independently hydrogen, C_{1-5}alkyl, C_{1-5}alkoxyalkyl, phenyl-C_{1-5}alkyl, cyclopentyl, cyclohexyl, phenyl and phenyl substituted by up to two groups selected from the group consisting of C_{1-5}alkoxy, C_{1-5}alkyl, chlorine and bromine.

3,925,347

PROCESSES OF SYNTHESIZING AZO COMPOUNDS

Paul S. Huyffer, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

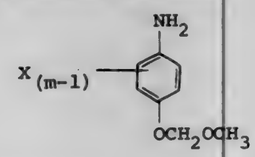
Continuation of Ser. No. 655,306, July 24, 1967, abandoned. This application Mar. 30, 1970, Ser. No. 22,114

Int. Cl.² C07C *107/04*

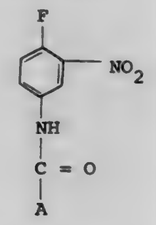
U.S. Cl. 260—147 **5 Claims**

1. A process which comprises the steps of:

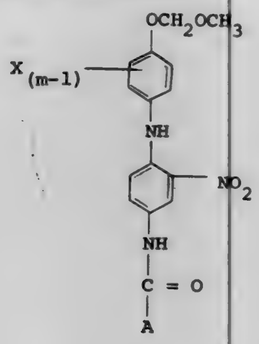
a. reacting a compound of the formula:



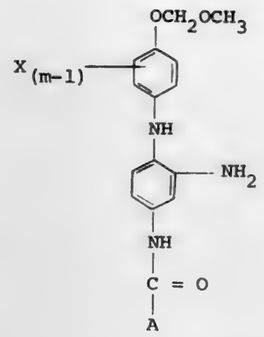
with a compound of the formula:



to form a compound of the formula:



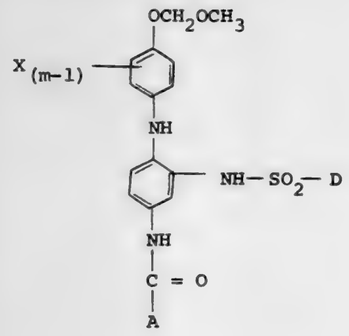
b. reducing the nitro group of said last-named compound to form a compound of the formula:



c. reacting said last-named compound with a dye salt of the formula:

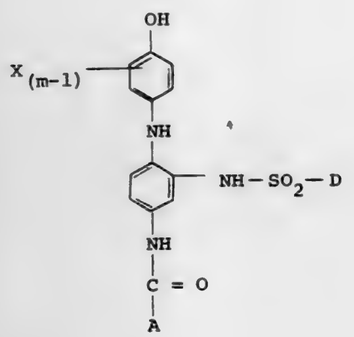


to form a compound of the formula:



and

d. removing said $-CH_2OCH_3$ group to form a compound of the formula:



wherein:

X is methyl, methoxy, hydroxy, amino, chloro or carboxy; *m* is a positive integer from 1 to 2;

A is an alkyl radical having from 9–17 carbon atoms; and

D is an azo dye moiety.

3,925,348

AZONAPHTHIMIDAZOLE COMPOUNDS

Alexander Wohlkonig, Arlesheim; Peter Hindermann, Bottmingen; Fabio Beffa, Riehen, and Gert Hegar, Schonenbuch, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

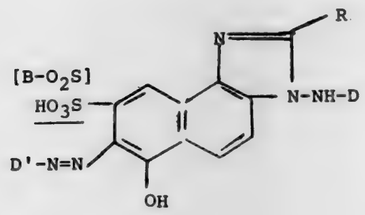
Filed Sept. 29, 1972, Ser. No. 293,632

Claims priority, application Switzerland, Oct. 1, 1971, 14348/71; Sept. 4, 1972, 12983/72

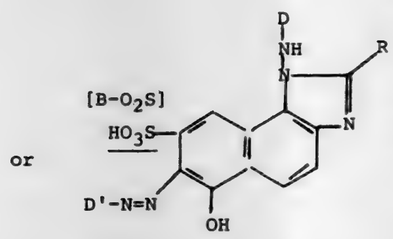
Int. Cl.² C09B *29/36*

U.S. Cl. 260—157 **3 Claims**

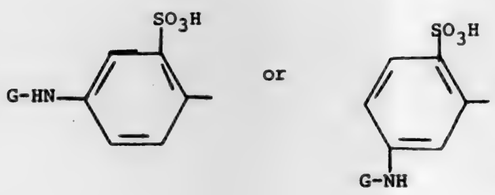
1. A 1H- or 3H-naphtho-(1,2-d)imidazole dyestuff of the formula



or

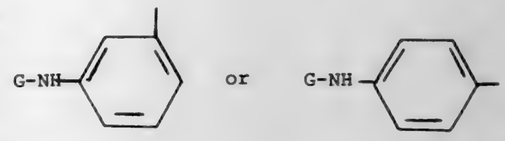


wherein D and D′ are each independently phenyl or phenyl substituted by chloro, bromo, nitro, cyano, methylsulphonyl, carboethoxy, carbomethoxy, methyl, trifluoromethyl, β-hydroxyethylsulphonyl, β-chloroethylsulphonyl, carbocyclohexyloxy, sulphonamido, N-alkyl or N-di-alkyl sulphonamido in which alkyl contains 1–4 carbon atoms, N-oxy- or N,N-dioxy-lower alkyl sulphonamido in which alkyl contains 1 to 3 carbon atoms, N-ethyl-N-phenylsulphonamido, N-methyl-N-cyclohexyl sulphonamido, N-phenylmethyl sulphonamido or N,β-methoxyethylsulphonamido or a group of the formula



wherein G is acetyl, propionyl, isopropionyl, benzoyl, chloro-, bromo- or nitro- substituted benzoyl, α-chloroacetyl, acryloyl, α-chloro- or bromacryloyl or α,β-dichloro- or dibromopropionyl;

R is alkyl having 1 to 6 carbon atoms, phenyl or phenyl substituted by nitro, sulpho, carboxy, hydroxy, chloro, methoxy, methyl, dimethylamino or a group of the formula



wherein G has the meanings indicated above.

3,925,349

RADIATION CURABLE NON-GELLED MICHAEL ADDITION REACTION PRODUCTS

Joseph E. Gaske, Mount Prospect, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Division of Ser. No. 290,068, Sept. 18, 1972, Pat. No. 3,844,916. This application Jan. 31, 1974, Ser. No. 438,315

Int. Cl.² C08F *2/48*; **C08L** *63/10*

U.S. Cl. 204—159.15 **7 Claims**

1. An ultraviolet curable composition comprising: (1) a radiation curable liquid, non-gelled Michael additiion reaction product of an aliphatic amine containing a single amino hydrogen atom selected from dibutyl amine and diethyl amine with a stoichiometric excess of polyester of acrylic acid with an epoxy resin, thus providing a Michael addition reaction product in which the amino hydrogen atoms are substantially consumed and containing unreacted acrylate groups, said amine constituting at least 0.5% of said composition; and (2) a photosensitizer rendering the product sensitive to ultraviolet radiation.

3,925,350

PHENYL-AZO-INDOLE COMPOUNDS

Gerhard Wolfrum, Bergisch-Neukirchen; Richard Sommer, Leverkusen, and Erich Klauke, Odenthal-Hahnenberg, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Jan. 26, 1973, Ser. No. 327,109

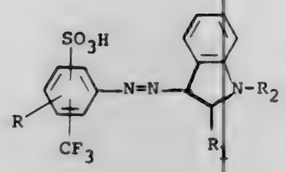
Claims priority, application Germany, Jan. 26, 1972, 2203460.2

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C09B *29/36*

U.S. Cl. 260—165 **1 Claim**

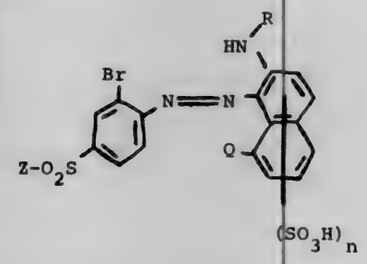
1. Dyestuff of the formula



wherein
R is hydrogen, methyl, methoxy, chloro or bromo;
R_1 is C_1—C_4—alkyl or phenyl;
R_2 is hydrogen, C_1—C_4—alkyl or C_1—C_4—alkyl substituted by cyano, carbonamido, or carboxy.

3,925,351
WATER-SOLUBLE REACTIVE MONOAZODYESTUFFS
Fritz Meininger; Ernst Hoyer, both of Frankfurt am Main, and Hermann Fuchs, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed Dec. 18, 1972, Ser. No. 316,251
Claims priority, application Germany, Dec. 21, 1971, 2163389
Int. Cl.² C09B *29/06, 29/30;* **D06P** *1/38, 3/66*
U.S. Cl. 260—196 **6 Claims**

1. Water-soluble azo dyestuff of the formula



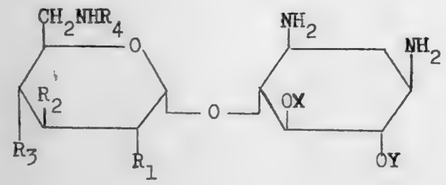
wherein R is hydrogen, lower alkyl, cyclohexyl or phenyl, Q is hydrogen, or hydroxy, Z is
—CH_2—CH_2—OSO_3H
—CH = CH_2 or
—CH_2—CH_2—OH
and *n* is 1 or 2.

3,925,352
L-ASPARTATE OF CYCLIC ERYTHROMYCIN A CARBONATE AND PROCESS OF PREPARING THE SAME
Halina Bojarska-Dahlig, and Zdzislaw Szypka, both of Warsaw, Poland, assignors to Instytut Przemysku Farmaceutycznego, Warsaw, Poland
Filed July 29, 1974, Ser. No. 492,916
Claims priority, application Poland, July 28, 1973, 164368
Int. Cl.² C07G *3/00*
U.S. Cl. 260—210 E **1 Claim**

1. L-aspartate of cyclic erythromycin A carbonate.

3,925,353
4-0-(6-ALKYLAMINO-6-DEOXY-ALPHA-D-HEXOPYRANOSYL)-DEOXYSTREPTAMINE DERIVATIVES AND THE PRODUCTION THEREOF
Hamao Umezawa; Sumio Umezawa, both of Tokyo, and Osamu Tsuchiya, Yokohama, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan
Filed Aug. 22, 1973, Ser. No. 390,403
Claims priority, application Japan, Aug. 23, 1972, 47-83671
Int. Cl.² C08B *19/00*
U.S. Cl. 260—210 AB **6 Claims**

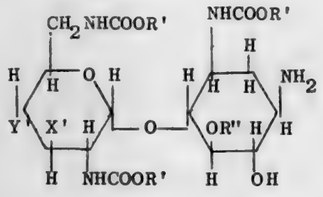
1. A compound of the formula:



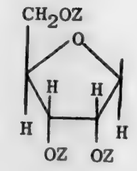
wherein R_1 is hydroxyl or amino; R_2 and R_3 are both hydrogen or hydroxyl; R_4 is alkyl of 1–4 carbon atoms; X is hydrogen or β-D-ribosyl; and Y is hydrogen or 3-amino-3-deoxy-α-D-glucopyranosyl, and the pharmaceutically acceptable acid-addition salts thereof.

3,925,354
PROCESS FOR THE PRODUCTION OF AN 1-N-(S)-ALPHA- SUBSTITUTED-W-AMINOACYL) DERIVATIVE OF NEAMINE, 3′, 4′-DIDEOXYNEAMINE, RIBOSTAMYCIN OR 3′,4′-DIDEOXYRIBOSTAMYCIN
Hamao Umezawa; Sumio Umezawa, both of Tokyo, and Osamu Tsuchiya, Yokohama, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan
Filed Oct. 1, 1973, Ser. No. 402,086
Claims priority, application Japan, Oct. 6, 1972, 47-99866
Int. Cl.² C07H *1/00*
U.S. Cl. 260—210 AB **18 Claims**

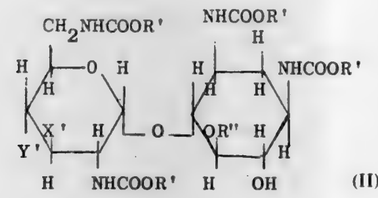
1. A process for preparing an aminoglycosidic antibiotic aminol derivative of the formula



wherein
R′ is alkyl of 1–4 carbon atoms, benzyl, p-nitrobenzyl or phenyl;
R″ is hydrogen, alkanoyl of 1–6 carbon atoms, benzoyl, benzyl, tetrahydropyranyl, methoxycyclohexyl, allyl, isopropylidene, cyclohexylidene, benzylidene or β-D-ribrofuranosyl of the formula

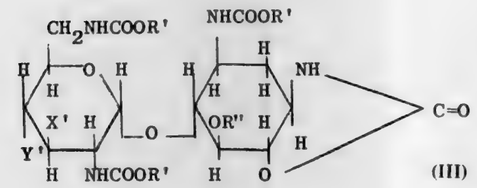


wherein Z
is hydrogen, alkanoyl of 1–6 carbon atoms, benzoyl, benzyl, tetrahydropyranyl, methoxycylohexyl, allyl, isopropylidene, cyclohexylidene or benzylidene; and
X′ and Y′ are both hydrogen, hydroxyl or —OZ′ wherein Z′ is alkanoyl of 1–6 carbon atoms, benzoyl, benzyl, tetrahydropyranyl, methoxycylohexyl, allyl, isopropylidene, cyclohexylidene or benzylidene; which comprises:
a. reacting a compound of the formula



(II)

wherein
R′, R″, X′ and Y′ have the above-indicated values with an alkali metal hydroxide or an alkali metal hydride in a non-aqueous reaction medium to form a cyclic carbamate of the formula

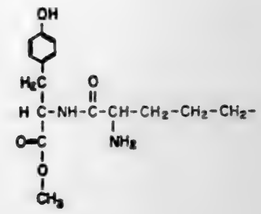


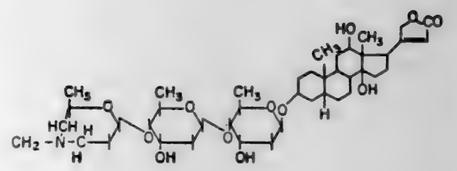
(III)

wherein
R′, R″, X′ and Y′ have the above-indicated values; and
b. partially hydrolyzing said cyclic carbamate in an aqueous reaction medium with a weak base selected from the group consisting of alkali metal carbonates, alkaline earth metal hydroxides and hydrazine to form said aminoglycosidic antibiotic aminol derivatives.

3,925,355
LABELLED DIGOXIN DERIVATIVES FOR RADIOIMMUNOASSAY
Roger N. Piasio, and James E. Woiszwillo, both of Medfield, Mass., assignors to Corning Glass Works, Corning, N.Y.
Filed Mar. 1, 1974, Ser. No. 447,249
Int. Cl. C07c *173/02*
U.S. Cl. 260—210.5 **5 Claims**

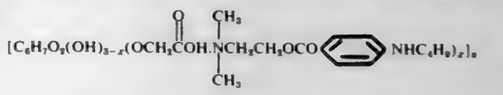
1. A digoxin derivative having the following chemical structure:





3,925,356
HIGH-MOLECULAR DERIVATIVE OF 2-DIMETHYLAMINOETHYL ESTER OF P-BUTYLAMINOBENZOIC ACID, METHOD FOR PREPARING SAME AND APPLICATION THEREOF
Milda Yanovna Pormale, ulitsa Suvorova 104, kv. 10; Nadezhda Alexandrovna Kashkina, ulitsa Talsu 9/11, kv. 22; Elfrida Indrikovna Veinberg, ulitsa Volguntes, 78, kv. 1a; Arvid Yanovich Kalninsh, ulitsa Sverdlova 8, kv. 3; Janis Shusters, ulitsa Kveles 15, korpus 4, kv. 30; Valdis Danielovich Mikazhans, ulitsa Marupes 17, kv. 35; Indulis Valdovich Purvinsh, ulitsa Marupes, 17, kv. 86a, all of Riga, and Antons Petrovich Skutelis, Tuberkuleznaya bolnitsa "Jugla", korpus 1, kv. 7, Rizhsky raion, Stopinsky S/S, all of U.S.S.R.
Filed May 15, 1973, Ser. No. 360,479
Int. Cl.² C08B *3/00;* **A01N** *9/00*
U.S. Cl. 260—214 **6 Claims**

1. A high-molecular derivative of 2-dimethylaminoethyl ester of p-butylaminobenzoic acid having the general formula



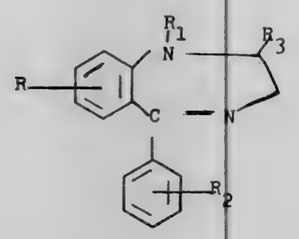
where *x* is the degree of substitution from 0.6 to 1.5, and *n* is the degree of polymerization from 30 to 120.

3,925,357
α-SULFOBENZYLPENICILLIN SALT
Hiroaki Okada, Osaka; Hiroshi Fujisawa, Uenohiga; Masshiko Fujita, Osaka; Tsugio Shimamoto, Hyogo, and Hiroaki Nomura, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed June 19, 1973, Ser. No. 371,528
Claims priority, application Japan, July 1, 1972, 47-66301
Int. Cl.² C07D *499/22*
U.S. Cl. 260—239.1 **4 Claims**

1. α-Sulfobenzylpenicillin di-amine salt in which the amine is arginine, lysine or N-methylglucamine.

3,925,358
1-LOWER ALKYL-2-SUBSTITUTED-1,4-BENZODIAZEPINES
Robert Ye-Fong Ning, West Caldwell, and Morton A. Schwartz, Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed July 27, 1973, Ser. No. 383,228
Int. Cl.² C07D *243/16*
U.S. Cl. 260—239 BD **8 Claims**

1. A compound of the formula

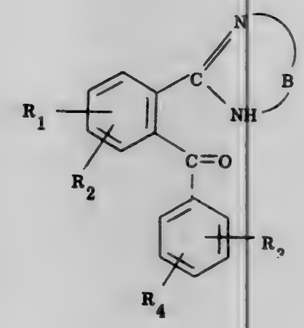


wherein R is selected from the group consisting of hydrogen, halogen, lower alkyl, trifluoromethyl, nitro, cyano, lower alkoxy and lower alkylthio; R_1 signifies lower alkyl; R_2 signifies hydrogen or halogen; and R_3 signifies cyano, carboxamido or lower alkoxyimino

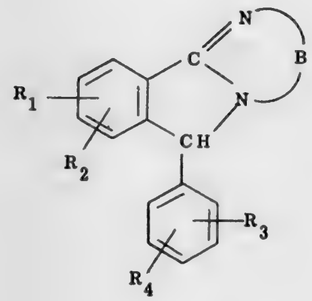
and the pharmaceutically acceptable acid addition salts thereof.

3,925,359
NOVEL 2[2-(1,3-DIAZACYCLOALK-2-ENYL)]BENZOPHENONE DERIVATIVES AND NOVEL 1,3-DIAZACYCLOALKENYL[2,1-*l*]ISOINDOLE DERIVATIVES
Werner Metlesics, Clifton, and Leo Henryk Sternbach, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 639,315, May 18, 1967, Pat. No. 3,888,846, which is a continuation-in-part of Ser. No. 626,965, Mar. 30, 1967. This application July 30, 1974, Ser. No. 493,017
Int. Cl.² C07D *243/04*
U.S. Cl. 260—239 BC **1 Claim**

1. A process for the preparation of a compound of the formula:



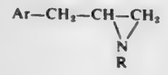
wherein B represents an alkylene chain of 2 to 4 carbon atoms in which one or more of the hydrogens can be replaced by lower alkyl; and R_1, R_2, R_3, and R_4 are each independently selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy and trifluoromethyl and tautomers thereof, which comprises treating a compound of the formula:



wherein B, R_1, R_2, R_3, and R_4 are as defined hereinabove with gaseous oxygen.

3,925,360
2-BENZYL AZIRIDINES
John Lambert Jackson, Henley-on-Thames, England, assignor to John Wyeth & Brother Ltd., Taplow, England
Filed Dec. 5, 1973, Ser. No. 422,031
Claims priority, application United Kingdom, Dec. 21, 1972, 59138/72
Int. Cl.² C07D *203/08*
U.S. Cl. 260—239 E **5 Claims**

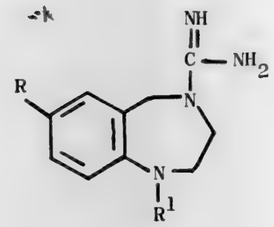
1. A compound selected from the group consisting of aziridines of the formula



and the pharmaceutically acceptable salts thereof, in which Ar is a member of the group consisting of trifluoromethylphenyl and dichlorophenyl and R is hydrogen or lower alkyl.

3,925,361
2,3,4,5-TETRAHYDRO-1H-1,4-BENZODIAZEPINE-4-CARBOXAMIDINES
Dong H. Kim, Wayne, Pa., assignor to American Home Products Corporation, New York, N.Y.
Filed Aug. 1, 1974, Ser. No. 493,813
Int. Cl.² C07D *243/14*
U.S. Cl. 260—239 BD **4 Claims**

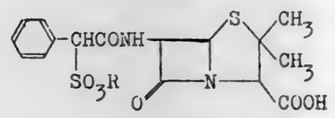
1. A compound of the formula



wherein R is hydrogen, chlorine, bromine, fluorine, or iodine; R^1 is hydrogen, methyl, ethyl, or propyl; and the non-toxic, pharmaceutically acceptable acid addition salts thereof.

3,925,362
α-ALKYLSULFOBENZYL PENICILLINS AND PRODUCTION THEREOF
Keiichi Sugimoto, Kawanishi; Kouji Nishijima, and Nobuharu Kakeya, both of Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Apr. 24, 1973, Ser. No. 354,140
Claims priority, application Japan, May 22, 1972, 47-50998
Int. Cl.² C07D *499/44*
U.S. Cl. 260—239.1 **6 Claims**

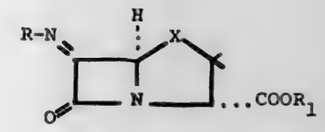
1. A penicillin compound selected from the group consisting of compounds of the formula



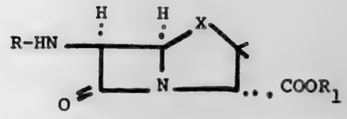
wherein R is a straight chain alkyl group of 7 to 22 carbon atoms, and pharmaceutically acceptable salts thereof.

3,925,363
PROCESS FOR EPIMERIZING PENICILLIN COMPOUNDS, AND RELATED PRODUCTS
Lovji D. Cama, Edison, N.J., assignor to Merck & Co., Inc., Rahway, N.J.
Filed Jan. 17, 1974, Ser. No. 434,158
Int. Cl.² C07D *499/44*
U.S. Cl. 260—239.1 **7 Claims**

1. The process for reducing a 6-acylimino penicillin having the formula



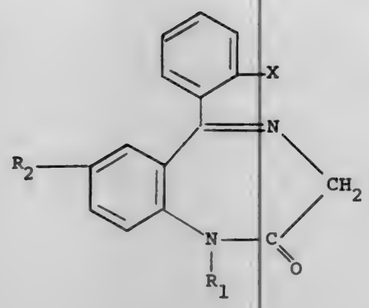
wherein X is O or S, R is a conventional pharmaceutically acceptable acyl group, and R_1 is an easily removable conventional ester blocking group which comprises reacting, in an inert solvent, at a temperature of between about −10°C. to −60°C., the compound above with an active hydride selected from the group consisting of lithium aluminum trialkoxy hydride, sodium borohydride, lithium borohydride, or lithium borohydride cyanide followed by warming the reaction mixture to about 0°C., and recovering the compound:



thereby produced.

3,925,364
BENZODIAZEPINE DERIVATIVES
Hisao Yamamoto; Shigeho Inaba, both of Nishinomiya; Tadashi Okamoto, Ashiya; Toshiyuki Hirohashi, Kobe; Kikuo Ishizumi, Minoo; Michihiro Yamamoto, Takarazuka; Isamu Maruyama, Minoo; Kazuo Mori, Kobe, and Tsuyoshi Kobayashi, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
Division of Ser. No. 762,341, Sept. 16, 1968, Pat. No. 3,828,027. This application Aug. 13, 1973, Ser. No. 387,713
Claims priority, application Japan, Oct. 9, 1967, 42-65104; Oct. 18, 1967, 42-67354; Nov. 2, 1967, 42-70794; Nov. 2, 1967, 42-70796; Nov. 2, 1967, 42-70798; Nov. 6, 1967, 42-71598; Nov. 8, 1967, 42-72078; Dec. 9, 1967, 42-79166; Dec. 15, 1967, 42-80514; Dec. 21, 1967, 42-82273; Jan. 10, 1968, 43-1501; Sept. 22, 1967, 42-60952; Sept. 27, 1967, 42-62424; Sept. 27, 1967, 42-62425; Sept. 27, 1967, 42-62426; Sept. 27, 1967, 42-62427; Sept. 27, 1967, 42-62428; Sept. 27, 1967, 42-62429; Sept. 27, 1967, 42-62430; Oct. 9, 1967, 42-65102
Int. Cl.² C07D *243/24, 243/36*
U.S. Cl. 260—239.3 D **3 Claims**

1. A compound of the formula



wherein R_1 is cyclopropylmethyl, R_2 is chlorine and X is a chlorine or fluorine atom.

3,925,365

METHOD FOR ISOLATING EPSILON-CAPROLACTAM MATERIAL

Nobuo Izawa, and Toshihiko Kohno, both of Sakai, Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Feb. 11, 1974, Ser. No. 441,061

Int. Cl.² C07D *201/12, 201/16;* **C08G** *69/14*

U.S. Cl. 260—239.3 A **17 Claims**

1. A method for purifying an ϵ-caprolactam material comprising the steps of:

bringing an ϵ-caprolactam material selected from the group consisting of a monomer, oligomers, and polymers of ϵ-caprolactam and mixtures of two or more of the above-mentioned compounds and containing at least one impurity compound selected from the group consisting of phosphoric acid and ionized metal compounds, at a temperature of at least 60°C, into contact with an aqueous solution containing 15 to 75 percent by weight of at least one alkali metal phosphate to extract said impurity compound from said ϵ-caprolactam material into said alkali metal phosphate aqueous solution, and

separating said ϵ-caprolactam material phase from said alkali metal phosphate aqueous solution phase.

3,925,366

1,3-OXAZINO(5,6-C)RIFAMYCINS AND METHOD FOR PREPARING THE SAME

Leonardo Marsili, and Carmine Pasqualucci, both of Milan, Italy, assignors to Archivar Industrie Chimiche del Trentino S.p.A., Rovereto, Italy

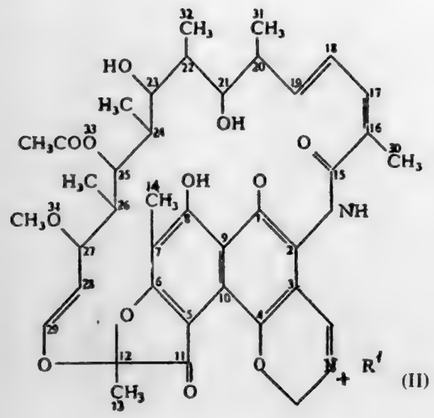
Filed May 23, 1974, Ser. No. 472,886

Claims priority, application Italy, July 25, 1973, 27066/73; Jan. 24, 1974, 19774/74

Int. Cl.² C07D *498/22*

U.S. Cl. 260—239.3 P **7 Claims**

1. 1,3-oxazino(5,6-c)rifamycin compounds, characterized by the formula



(II)

wherein R^1 is lower alkyl, lower alkenyl, cycloalkyl having 5 to 6 carbon atoms, phenyl, benzyl, α- or β-phenethyl.

3,925,367

PYRAZOLINE BRIGHTENERS

Gunther Boehmke, and Hans Theidel, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Oct. 15, 1971, Ser. No. 189,772

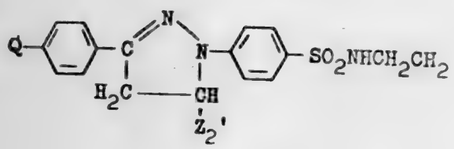
Claims priority, application Germany, Oct. 15, 1970, 2050725

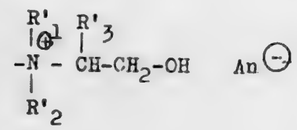
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07D *231/06*

U.S. Cl. 260—239.65 **4 Claims**

1. Pyrazoline compound of the formula





in which

R'_1 and R'_2 represent hydrogen; C_1-C_4-alkyl radicals which are optionally substituted by chlorine, hydroxyl, nitrile, C_1-C_4-alkoxy, phenoxy or C_2-C_3-alkylcarbonyl groups; cyclohexyl or benzyl radicals, or together with the N atom form a pyrrolidine, piperidine, imidazole or morpholine ring,

R'_3 denotes hydrogen or C_1-C_4-alkyl radicals which are optionally substituted by chlorine, hydroxyl or C_1-C_4-alkoxy groups,

Z'_2 represents hydrogen or C_1-C_4-alkyl radicals and Q represents hydrogen or chlorine.

3,925,368

ACYLUREIDO SUBSTITUTED CEPHALOSPORINS

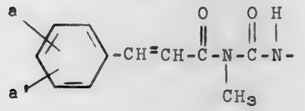
Robin D. G. Cooper, and David K. Herron, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

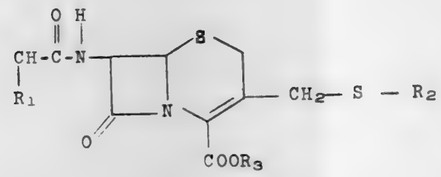
Filed Apr. 1, 1974, Ser. No. 456,517

Int. Cl.² C07D *501/36*

U.S. Cl. 260—240 J **5 Claims**

1. The compound of the formula



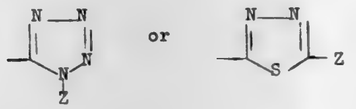


wherein

a and *a'* are independently hydrogen, halogen or nitro;

R_1 is phenyl, monohydroxyphenyl, mono- or dihalophenyl, monohydroxy substituted mono- or dihalophenyl, thienyl or furyl;

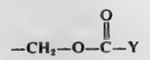
R_2 is



wherein

Z is C_1–C_4 lower alkyl;

R_3 is hydrogen, indanyl, phthalidyl or an acyloxymethyl group of the formula



wherein

Y is C_1–C_4 alkyl or phenyl; and when

R_3 is hydrogen, the pharmaceutically acceptable, nontoxic salts thereof.

3,925,369

NEW TRICYCLIC UREAS PROCESSES FOR THEIR PRODUCTION AND PHARMACEUTICAL COMPOSITIONS

Michel Vincent, Bagneux; Georges Remond, Versailles, and Michel Lauble, Vaucresson, all of France, assignors to Science Union et Cie, Societe Francaise de Recherche Medicale, Suresnes, France

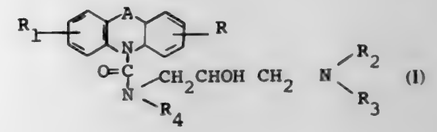
Filed Oct. 31, 1973, Ser. No. 411,540

Claims priority, application United Kingdom, Nov. 3, 1972, 50697/72

Int. Cl.² C07D *279/36, 223/22, 223/24*

U.S. Cl. 260—243 A **9 Claims**

1. A compound selected from the group consisting of a Tricyclic ureas of formula I



(I)

wherein

A is $—CH_2—CH_2—$, $—CH=CH—$ or $—S—$

R and R_1 which may be the same or different, are each hydrogen, halogen, lower alkoxy, trifluoromethyl, lower alkylthio or trifluoromethoxy,

R_4 is hydrogen, lower alkyl or monosubstituted lower alkyl,

R_2 is hydrogen, lower alkyl, lower alkenyl, phenyl lower alkyl or phenyl monosubstituted lower alkyl,

R_3 is lower alkyl, monosubstituted lower alkyl, lower alkenyl, lower alkynyl, phenyl lower alkyl or phenyl monosubstituted lower alkyl,

or where R_2 and R_3 are joined together there is provided a heterocycle selected from the group consisting of pyrollidine, piperidine, aziridine, hexamethyleneimine, oxazolidine, morpholine, thiazolidine, thiamorpholine, piperazine and homomorpholine,

said heterocycle being substituted by from 0 to 2 lower alkyl moieties,

wherein: the lower alkyl moiety is a branched or straight chain hydrocarbyl moiety of 1-6 carbon atoms,

the lower alkenyl moiety is a branched or straight chain hydrocarbyl residue of one or more double bonds and having 2-10 carbon atoms,

the lower alkynyl moiety is a hydrocarbon residue of 2-6 carbon atoms having one triple bond,

the substituents on the substituted-lower alkyl moiety are hydroxy, lower alkoxy and di-lower alkyl amino, wherein said lower alkoxy and lower alkyl moieties contain 1-6 carbon atoms,

the substituents on said substituted phenyl moiety are selected from the group consisting of methoxy, trifluoromethyl, halogen, lower alkyl, and lower alkythio,

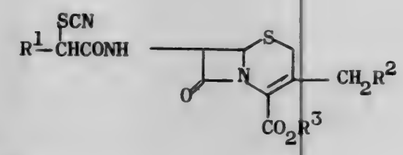
b. the physiologically tolerable acid addition thereof with a mineral or organic acid.

3,925,370
2-THIOCYANATOALKYL AND ARALKYLCARBOXAMIDO CEPHALOSPORANIC AND PENICILLANIC ACID DERIVATIVES

Peter H. L. Wei, Springfield, and Ronald J. McCaully, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 18, 1974, Ser. No. 452,085
Int. Cl.² C07D *501/28, 499/62;* **A61K** *31/545, 31/43*
U.S. Cl. 260—243 C **4 Claims**

1. A compound of the formula:



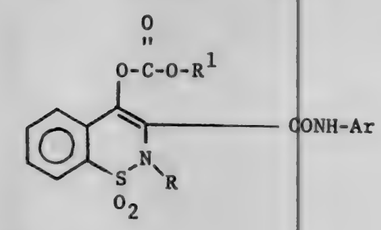
in which
R^1 is hydrogen or phenyl;
R^2 is hydrogen, alkanoyloxy of 2 to 6 carbon atoms or, when taken with the 3-carboxy group, N-pyridinium;
and
R^3 is hydrogen, an alkali metal or the ammonium ion.

3,925,371
BENZOTHIAZINE-1,1-DIOXIDES

Chris Royce Rasmussen, Ambler, Pa., assignor to McNeil Laboratories, Incorporated, Ft. Washington, Pa.

Filed Sept. 23, 1974, Ser. No. 508,116
Int. Cl.² C07D *279/02*
U.S. Cl. 260—243 R **2 Claims**

1. A compound represented by the formula



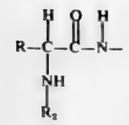
wherein
R is lower alkyl;
R^1 is selected from the group consisting of lower alkyl, phenyl and benzyl; and
Ar is a heteroaryl radical selected from the group consisting of 2-thiazolyl, 3isoxazolyl and mono- and di-methyl substituted 2-thiazolyl and 3-isoxazolyl.

3,925,372
ALPHA-AMINOACYL-3-HALO CEPHALOSPORINS

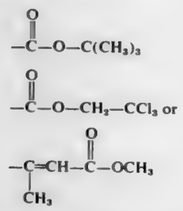
Robert R. Chauvette, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 335,381, Feb. 23, 1973, abandoned. This application Apr. 1, 1974, Ser. No. 457,153
Int. Cl.² C07D *501/20*
U.S. Cl. 260—243 C **10 Claims**

1. A compound of the formula



wherein
R is phenyl, hydroxyphenyl, halophenyl, methylphenyl, methoxyphenyl, 2-thienyl, 3-thienyl or 2-furyl;
R_1 is hydrogen, benzyl, p-methoxybenzyl, p-nitrobenzyl, diphenylmethyl, 2,2,2-trichloroethyl, trimethylsilyl, or t-butyl;
R_2 is hydrogen,



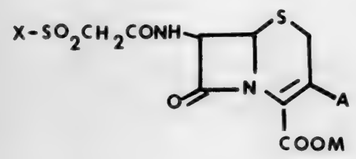
X is fluoro, chloro, bromo or iodo; and the pharmaceutically acceptable, non-toxic salts thereof.

3,925,373
SUBSTITUTED SULFONYLACETAMIDO CEPHALOSPORINS

Robert M. De Marinis, King of Prussia, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 249,858, May 3, 1972, Pat. No. 3,865,819. This application Dec. 3, 1974, Ser. No. 529,168
Int. Cl.² C07D *501/28*
U.S. Cl. 260—243 C **8 Claims**

1. A compound of the structure:



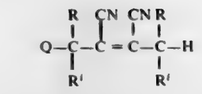
where:
X is lower alkyl of C_1–C_6;
A is hydrogen, methyl, acetoxymethyl, or pyridiniummethyl; and
M is hydrogen, alkali, metal cation, nontoxic ammonium cation, or when A is pyridiniummethyl an anionic charge.

3,925,374
AMINODICYANO ALKENE COMPOUNDS

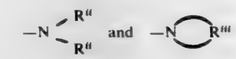
Van C. Vives, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 11, 1974, Ser. No. 460,044
Int. Cl.² C07C *121/45;* **C07D** *211/34, 295/14*
U.S. Cl. 260—247 **20 Claims**

1. An aminodicyano alkene of the formula



having from 8 to 26 carbon atoms per molecule, wherein each R is individually selected from the group consisting of hydrogen, alkyl having from 1 to 4 carbon atoms and cycloalkyl having from 3 to 6 carbon atoms, each R^1 is individually selected from the group consisting of R and aryl having from 6 to 10 carbon atoms, and Q is selected from the group consisting of



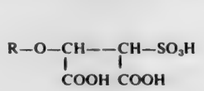
wherein each R'' is individually selected from the group consisting of alkyl radicals having from 1 to 10 carbon atoms and R''' is selected from the group consisting of alkylene and oxydialkylene radicals having from 4 to 6 carbon atoms.

3,925,375
SULFOSUCCINATE DERIVATIVES AS DETERGENT BUILDERS

Vincent Lamberti, Upper Saddle River, N.J., assignor to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 156,933, June 25, 1971, abandoned. This application Sept. 5, 1973, Ser. No. 394,613
Int. Cl.² C07D *295/00;* **C07C** *143/00*
U.S. Cl. 260—247.1 E **7 Claims**

1. An α-substituted-β-sulfosuccinic acid having the general formula:



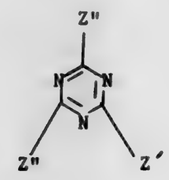
and the alkali metal, ammonium, or substituted ammonium salt forms thereof wherein the substituted ammonium salts are selected from the group consisting of monoethanolammonium, diethanolammonium, triethanolammonium, methylammonium, dimethylammonium, trimethylammonium, tetramethylammonium, morpholinium, N-methyl-monoethanolammonium and N-ethylmonoethanolammonium, wherein R is an alkyl group containing 1–30 carbon atoms.

3,925,376
PIPERIDINE DERIVATIVES

Alexander Michael Chalmers, Cheadle Hulme; James Jack, Bramhall, and Barry Cook, Manchester, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

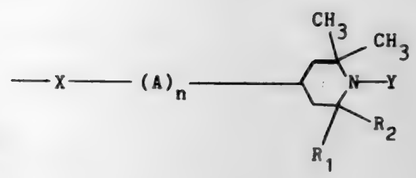
Filed Apr. 11, 1973, Ser. No. 350,296
Claims priority, application United Kingdom, Apr. 21, 1972, 18558/72; Feb. 3, 1973, 5469/73
Int. Cl.² C07D *251/26*
U.S. Cl. 260—248 CS **11 Claims**

1. A compound of the formula



I

and salts thereof,
Z′ is a group having the formula:

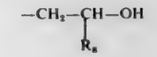


II

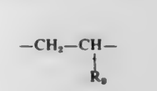
wherein R_1 and R_2 are the same or different and each is a straight or branched alkyl of 1 to 12 carbon atoms or R_1 and R_2 form together with the ring carbon atom to which they are bound, a cycloalkyl group having from 5 to 12 carbon atoms;

X is —O—, —S— or —N—, wherein
R_7

wherein R_7 is hydrogen, a straight- or branched alkyl of 1 to 20 carbon atoms or benzyl; Y is 0′, hydrogen, a straight- or branched alkyl of 1 to 20 carbon atoms, an alkenyl or alkynyl of 3 to 12 carbon atoms, an aralkyl having from 7 to 11 carbon atoms or the group



wherein R_8 is hydrogen, methyl or phenyl; n is 0 or 1; and A is $—CH_2—$, or the group



wherein R_9 is a hydrogen or alkyl of 1 to 20 carbon atoms; Z″ and Z‴ are the same
or different and each is a piperidine group of formula II as hereinbefore defined, a halogen atom, a substituted amino group having the formula:



III

wherein R_3 and R_4 are the same of different and each is hydrogen a straight or branched alkyl of 1 to 20 carbon atoms, a cycloalkyl of 5 to 12 carbon atoms, an aryl which is unsubstituted or substituted with one or more alkyl groups and having a total of from 6 to 18 carbon atoms or an aralkyl having from 7 to 12 carbon atoms, or R_3 and R_4 together with the nitrogen atom to which they are bound, form a nitrogen containing ring having 5 to 7 ring atoms; or Z″ and Z‴ are a hydroxy or an ether group having the formula:

$$—OR_5 \qquad \text{IV}$$

wherein R_5 is hydrogen, a straight or brached chain alkyl of 1 to 20 carbon atoms, a cycloalkyl of 5 to 12 carbon atoms, an aryl which is unsubstituted or substituted by one or more alkyl groups and having a total of 6 to 18 carbon atoms, or an aralkyl having from 7 to 12 carbon atoms;
or Z″ and Z‴ are a thiol or thio ether group having the formula:

$$—SR_6 \qquad \text{V}$$

wherein R_6 is hyrogen, a straight or branched alkyl of 1 to 20 carbon atoms or a cycloalkyl of 5 to 12 carbon atoms.

3,925,377

PROCESS FOR PRODUCTION OF CYANURIC CHLORIDE

Friedhelm Geiger, Grossauheim; Werner Heimberger; Gerd Schreyer, Grossauheim, and Wolfgang Weigert, Offenbach, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Filed June 26, 1974, Ser. No. 483,454

Claims priority, application Germany, June 27, 1973, 2332636

Int. Cl.² C07D *251/28*

U.S. Cl. 260—248 C 9 Claims

1. A process for the recovery of liquid cyanuric chloride from a mixture formed by the trimerization of cyanogen chloride in a trimerization reactor with subsequent fractionation of said mixture comprising conducting the mixture in an at least partially gaseous condition at 146° to 500°C. to a column system, bringing said mixture in a first fractionating column into contact with a solvent for cyanuric chloride having a boiling point between that of cyanogen chloride and that of cyanuric chloride and which is stable to cyanuric chloride, cyanogen chloride, chlorine and hydrogen chloride, recovering condensed liquid cyanuric chloride from the bottom of said first column at a temperature above the boiling point of said solvent, removing distillate mixture containing solvent, cyanogen chloride, chlorine and any carbon dioxide, nitrogen and hydrogen chloride from the top of said first column, partially condensing a portion of said distillate and returning said partial condensate to the top of the first fractionating column, leading the solvent containing residual gas of chlorine, cyanogen chloride and any carbon dioxide, nitrogen and hydrogen chloride present to a second fractionating column adding sufficient liquid cyanogen chloride to the top of said second column to maintain a reflux in the top of said second column, removing a mixture of chlorine and cyanogen chloride and any carbon dioxide, nitrogen and hydrogen chloride free of said solvent from the top of said second column, returning the chlorine and cyanogen chloride to the trimerization reactor, insuring that the gas entering said reactor contains at least 50 weight percent cyanogen chloride, collecting chlorine and cyanogen chloride free solvent in the bottom of the second column and returning it to the top of the first fractionating column.

3,925,378

TETRAALKYL PYRAZINES FROM ALKANOLAMINES BY COPPER-CHROMITE CATALYSIS

Heinz-Werner Voges, and Josef Ewers, both of Dorsten, Germany, assignors to Veba-Chemie AG, Gelsenkirchen-Buer, Germany

Filed Aug. 11, 1972, Ser. No. 280,015

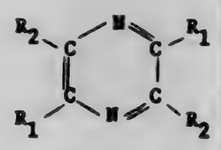
Claims priority, application Germany, Aug. 13, 1971, 2140649

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07D *241/12*

U.S. Cl. 260—250 B 4 Claims

1. Process for preparing 2,3,5,6-tetraalkylpyrazines having the formula



which comprises the step of cyclization by dehydrogenation and dehydration of 1,2-dialkylmonoethanolamines having the formula

wherein R_1 and R_2 represent identical or different C_{1-4} alkyl radicals on copper-chromate catalyst at temperatures of 200° to 300° C, in the presence of 1 to 20 moles of ammonia per mole of 1,2-dialkylmonoethanolamine and in the presence of 0.1 to 20 moles of water vapor per mole of 1,2-dialkylmonoethanolamine; said catalyst consisting essentially of 5–50 wt/% copper, and 1–10 wt/% chromium and aluminum oxide and/or silicon dioxide support.

3,925,379

N-(SUBSTITUTED PHENYL)-2,3-DIAZABICYCLO[2.2.2]OCT-5-ENE AND [2,2.1]HEPT-5-ENE,2,3-DICARBOXIMIDES

Brigitta von Bredow, Binningen, and Hans U. Brechbühler, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

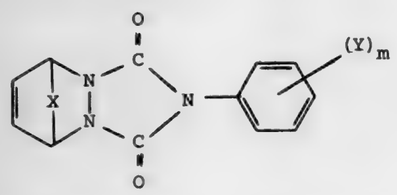
Filed Aug. 22, 1973, Ser. No. 390,648

Claims priority, application Switzerland, Sept. 1, 1972, 12920/72; Aug. 3, 1973, 11302/73

Int. Cl.² C07D *237/26*

U.S. Cl. 260—250 AC 11 Claims

1. A compound of the formula



wherein X represents $—CH_2—$ or $—CH_2—CH_2—$, Y represents chlorine, or trifluoromethyl, and *m* is a number from 1 to 3 with the proviso that only one Y is trifluoromethyl.

3,925,380

QUINOXALINYLTHIOALLOPHANATE FUNGICIDES

John Benjamin Adams, Jr., Hockessin, and Gregory Wayne Schwing, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

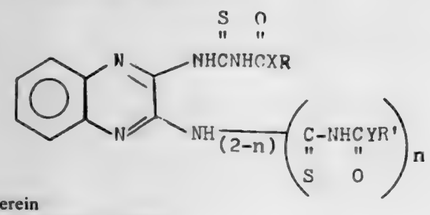
Filed Aug. 13, 1973, Ser. No. 387,790

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07D *241/40*

U.S. Cl. 260—250 Q 3 Claims

1. A compound of the formula



wherein

X is oxygen or sulfur;

Y is oxygen or sulfur;

n is 0 or 1;

R is alkyl of 1 to 4 carbon atoms, allyl or methoxyethyl, and

R′ is alkyl of 1 to 4 carbon atoms, allyl or methoxyethyl.

3,925,381

6-SUBSTITUTED 3-CARBETHOXYHYDRAZINOPYRIDAZINE

Carlo Carpi, Reggio Emilia; Luciano Dorigotti, and Giorgio Pifferi, both of Milan, all of Italy, assignors to I.S.F. S.p.A., Milan, Italy

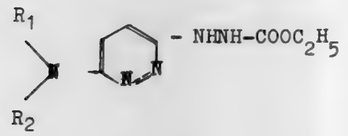
Filed Mar. 4, 1974, Ser. No. 447,523

Claims priority, application Italy, Mar. 7, 1973, 21297/73

Int. Cl.² C07D *237/20*

U.S. Cl. 260—250 A 6 Claims

1. A compound of the formula:



(I)

wherein R_1 and R_2 which may be the same or different, represent alkyl having from 1 to 6 carbon atoms, allyl, 2-hydroxyethyl or 2-hydroxypropyl and their pharmaceutically acceptable salts.

3,925,382

PROCESS FOR PREPARING QUINAZOLINE DERIVATIVES

Kikuo Ishizumi, Osaka; Kazuo Mori, Hyogo; Michihiro Yamamoto, Hyogo; Masao Koshiba, Hyogo; Shigeho Inaba, Hyogo, and Hisao Yamamoto, Hyogo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

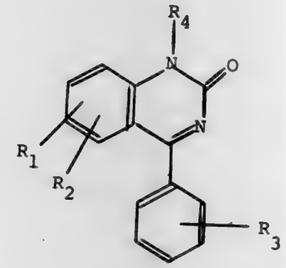
Filed Mar. 23, 1973, Ser. No. 344,400

Claims priority, application Japan, Mar. 24, 1972, 47-29984

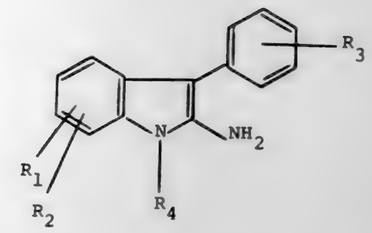
Int. Cl.² C07D *239/82*

U.S. Cl. 260—251 QB 7 Claims

1. A process for preparing a quinazolinone derivative represented by the formula



wherein R_1, R_2 and R_3 each represents a hydrogen atom, a halogen atom, trifluoromethyl, nitro, lower alkyl or lower alkoxy; and R_4 represents a hydrogen atom, benzyl, lower alkyl, 2,2,2-trifluoroethyl, 2,2,3,3,3-pentafluoropropyl or (C_{3-6} cycloalkyl)C_{1-3} alkyl, which comprises the step of reacting an aminoindole derivative represented by the formula



wherein R_1, R_2, R_3 and R_4 are as defined above, with an oxidizing agent selected from the group consisting of ozone and potassium hydroxide-bromine in the presence of an inert solvent.

3,925,383

BICYCLIC IMIDAZOLES AND PYRIMIDINES

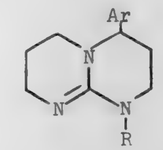
Josephus Ludovicus Hubertus Van Gelder; Alfons Herman Margaretha Raeymaekers, both of Beerse; Leopold Frans Corneel Roevens, Rijkevorsel, and Willey Joannes Van Laerhoven, Ravels, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 313,285, Dec. 8, 1972, Pat. No. 3,865,836. This application Aug. 13, 1974, Ser. No. 499,743

Int. Cl.² C07D *239/00*

U.S. Cl. 260—256.4 F 2 Claims

1. A member selected from the group of compounds having the formula:



and the therapeutically active acid addition salts thereof, wherein:

R is a member selected from the group consisting of hydrogen and benzyl; and

Ar is a member selected from the group consisting of phenyl, loweralkylphenyl, halophenyl and di-halophenyl.

3,925,384

2-AMINO-4,5-DIHYDRO-4-ARYLINDENO PYRIMIDINES

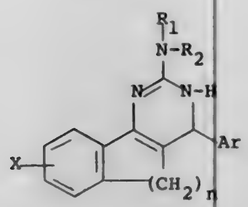
John Krapcho, Somerset, and Chester Frank Turk, Kendall Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 21, 1974, Ser. No. 516,306

Int. Cl.² C07D *239/70*

U.S. Cl. 260—256.4 Q 9 Claims

1. A compound of the formula:



wherein X is selected from the group consisting of hydrogen, alkyl of 1 to 3 carbons, alkoxy of 1 to 3 carbons, halogen, and trifluoromethyl; *n* is 1, 2 or 3; Ar is selected from the group consisting of X-monosubstituted phenyl wherein X is as defined above, pyridyl, and thienyl; and R_1 and R_2 are independently selected from the group consisting of hydrogen and straight or branched chain alkyl of 1 to 4 carbons provided that wherein R_1 and R_2 are both alkyl, the alkyl chains are straight of 1 to 4 carbons; and the pharmaceutically acceptable acid-addition salts and N-oxides thereof.

3,925,385

6-CARBETHOXY-3,7-DISUBSTITUTEDPYRAZOLO[1-,5A]PYRIMIDINES

Darrell E. O'Brien, Mission Viejo; Roland K. Robins, and Robert H. Springer, both of Santa Ana, all of Calif., assignors to ICN Pharmaceuticals, Inc., Irvine, Calif.

Filed Apr. 20, 1972, Ser. No. 245,870

Int. Cl.² C07D *487/04*

U.S. Cl. 260—256.4 F **3 Claims**

1.

6-Carbethoxy-7-ethylamino-pyrazolo[1,5a]pyrimidine.

3,925,386

6-HYDROXY-DIHYDRO-URACILS, PROCESS FOR THEIR PREPARATION

Gerhard Jager, Wuppertal-Elberfeld; Hans Jurgen Wenzelburger, Wuppertal-Cronenberg, and Robert R. Schmidt, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

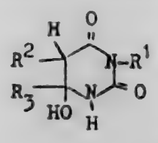
Filed June 28, 1972, Ser. No. 266,872

Claims priority, application Germany, July 1, 1971, 2132763

Int. Cl.² C07D *239/04*

U.S. Cl. 260—260 **26 Claims**

1. 6-Hydroxy-dihydro-uracil compound of the formula



wherein

R^1 is alkyl of from 1 to 13 carbon atoms, cyclohexylmethyl, cyclohexylidene-methyl, alkenyl of from 2 to 4 carbon atoms, haloalkyl of from 1 to 6 carbon atoms, cyanoalkyl of from 1 to 3 carbon atoms, alkoxycarbonylalkyl of from 2 to 3 carbon atoms, cycloalkyl of from 5 to 8 carbon atoms, methylcyclohexyl, plenyl, phenyl substituted with from one to three of methyl, halogen, halomethyl, methoxy and methylthio; naphthyl; phenylalkyl of from 1 to 2 carbon atoms in the alkyl moiety; or phenylcarbonyl;

R^2 is hydrogen or alkyl of from 1 to 2 carbon atoms;

R^3 is alkyl of from 1 to 3 carbon atoms; and

R^2 and R^3 taken together may be an alkylene bridge having 3 carbon atoms and forming a fused ring, which ring may be methyl substituted once or twice.

3,925,387

1-[γ-O-AMINO-P-HALOPHENYL-OXY, THIO OR SULFINYL)-PROPYL]-4-(ALKOXY OR HALO PHENYL)PIPERAZINES

Isamu Maruyama, Minoo; Masaru Nakao; Kikuo Sasajima, both of Toyonaka; Keiichi Ono, Osaka; Masaharu Takayama, Minoo; Shigenari Katayama; Yoshihiro Tanaka, both of Takarazuka; Izumi Yanagihara, Osaka; Shigeho Inaba, Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

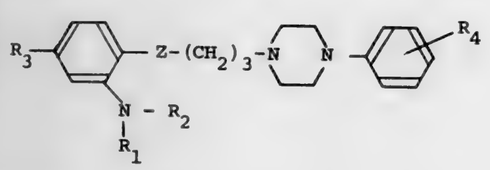
Filed Dec. 4, 1972, Ser. No. 312,106

Claims priority, application Japan, Dec. 3, 1971, 46-97939

Int. Cl.² C07D *295/12*

U.S. Cl. 260—268 PH **6 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, R_2 is hydrogen or C_1–C_7 alkanoyl, R_3 is halogen, Z is oxygen, sulphur or sulfinyl, R_4 is C_1–C_7 alkoxy or halogen, and pharmaceutically acceptable salts thereof.

3,925,388

4-PIPERAZINO-[3,4-B]PYRIDINE-5-CARBOXYLIC ACIDS AND ESTERS

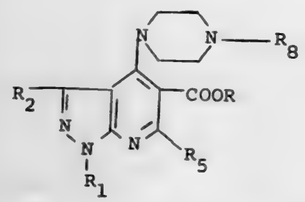
Hans Hoehn, Tegernheim, and Theodor Denzel, Regensburg, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 169,536, Aug. 5, 1971, Pat. No. 3,755,340, which is a continuation-in-part of Ser. No. 41,568, May 28, 1970, abandoned. This application June 11, 1973, Ser. No. 368,561

Int. Cl.² C07D *295/12*

U.S. Cl. 260—268 BC **10 Claims**

1. A compound of the formula



wherein R is hydrogen or alkyl up to 12 carbon atoms; R_1 is hydrogen, lower alkyl, phenyl or phenyl-lower alkyl; R_2 is hydrogen, phenyl or lower alkyl, R_3 is hydrogen, lower alkyl, phenyl or phenyl-lower alkyl and R_4 is hydrogen, lower alkyl or hydroxy-lower alkyl, or physiologically acceptable acid addition salts thereof.

3,925,389

PREPARATION OF AMINOETHYLPIPERAZINES

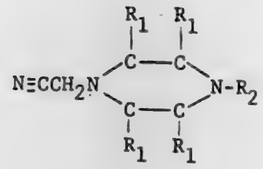
Ernest Leon Yeakey, and Thomas Howard Austin, both of Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

Filed Nov. 15, 1973, Ser. No. 416,181

Int. Cl.² C07D *295/12*

U.S. Cl. 260—268 SY **6 Claims**

1. A direct continuous process for preparing a 2-aminoethylpiperazine compound from a cyanomethylpiperazine compound of the formula:



wherein R_1 is selected from a group consisting of hydrogen, alkyl of from 1–12 carbon atoms, and phenyl, and R_2 is selected from a group consisting of hydrogen and cyanomethyl comprising the steps of:

continuously hydrogenating said cyanomethylpiperazine compound in the presence of a pelleted hydrogenation catalyst consisting essentially of cobalt, copper and chromium metal oxides having about 50% to 80% cobalt, about 10% to 49% copper, and about 1% to 10% chromium, based on the total weight of said metals, at a temperature within the range of about 80°C to about 150°C and a pressure within the range of about 1,000 psig to 10,000 psig; and,

recovering the 2-aminoethylpiperazine from the resulting reaction product.

3,925,390

TRIAZOYL-NAPHTHALIMIDE BRIGHTENING AGENTS

Alfons Dorlars, Leverkusen, and Carl-Wolfgang Schellhammer, Opladen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Germany

Continuation of Ser. No. 704,524, Feb. 12, 1968, abandoned. This application Jan. 8, 1973, Ser. No. 322,182

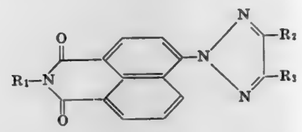
Claims priority, application Germany, Feb. 21, 1967, 51581

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07D *221/14, 249/06*

U.S. Cl. 260—281 NH **11 Claims**

1. Triazolyl-naphthalimide of the formula



wherein R_1 is hydrogen, unsubstituted alkyl with 1-12 carbon atoms, β-acetoxyethyl, β-hydroxyethyl, β-propionoxyethyl, 3-dimethyl aminopropyl, cyanomethyl, β-butoxyethyl, 3-trimethylammonium propyl, cyclohexyl, methylcyclohexyl or benzyl;

R_2 and R_3 denote independently of one another hydrogen, unsubstituted alkyl with 1–12 carbon atoms, cyclohexyl, phenyl or phenyl mono or disubstituted with fluoro, chloro, methoxy or methyl.

3,925,391

2-AMINOALKYL TETRAHYDROQUINOLINES

Hugh Colin Richards, Canterbury, England, assignor to Pfizer Inc., New York, N.Y.

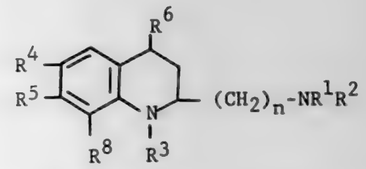
Division of Ser. No. 139,955, May 3, 1971, Pat. No. 3,821,228, which is a continuation-in-part of Ser. No. 732,850, May 29, 1968, abandoned. This application Mar. 18, 1974, Ser. No. 451,979

Claims priority, application United Kingdom, June 10, 1967, 26893/67

Int. Cl.² C07D *215/48*

U.S. Cl. 260—288 R **7 Claims**

1. A compound of the formula:



and the pharmaceutically acceptable mono-acid addition salts thereof, wherein R^1 and R^2, when taken separately, are each selected from the group consisting of hydrogen, alkyl having from 1 to 5 carbon atoms, β-hydroxyethyl and cycloalkyl having from 3 to 6 carbon atoms; R^1 and R^2, when taken together, complete a ring selected from the group consisting of pyrrolidino, piperidino and morpholino; R^3 is selected from the group consisting of hydrogen, methyl and ethyl; R^4 is methyl; R^5 is selected from the group consisting of nitro, cyano, fluorine, chlorine and bromine, R^6 is hydrogen or methyl; R^8 is hydrogen or methyl, and *n* is 1 or 2, and the N-oxides of said base compounds wherein R^1 and R^2, when taken separately, are each other than hydrogen.

3,925,392

PROCESS FOR PREPARING VINCAMINE AND ITS STEREOISOMERS

Henry Najer, and Yves Robert Alain Pascal, both of Paris, France, assignors to Synthelabo, Paris, France

Filed Dec. 12, 1973, Ser. No. 423,901

Claims priority, application France, Dec. 15, 1972, 72.44673

Int. Cl.² C07D *471/06*

U.S. Cl. 260—293.53 **11 Claims**

1. A process for the preparation of vincamine, epivincamine or stereoisomer thereof which comprises (I) treating vincaminol or stereoisomer thereof to oxidizing dehydration to yield apovincaldehyde or stereoisomer, thereof; (II) esterifying said apovincaldehyde or stereoisomer thereof into apovincamine or stereoisomer, thereof; (III) hydrogenating said apovincamine or stereoisomer thereof to yield a mixture of 16-methoxycarbonyleburnane stereoisomers, (IV)A treating said mixture with a base to yield the carbanion thereof and treating said carbanion with molecular oxygen whereby there is produced a 16-hydroxy derivative, or (IV)B saponifying the 16-methoxycarbonyl-eburnane stereoisomers to yield 16-carboxy-eburnanes, treating said 16-carboxy-eburnanes with a strong base to yield a carbanion, treating said carbanion with molecular oxygen to yield said 16-hydroxy derivative; and esterifying said 16-hydroxy derivative to yield vincamine, 16-epivincamine stereoisomers thereof.

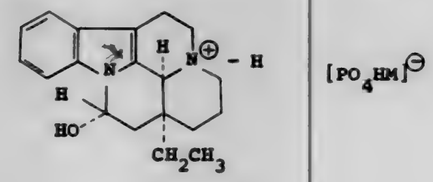
3,925,393

NOVEL SALTS OF VINCANOL

Simone Heurtaux, Allee Dunand, and Germain Costerousse, Vernouillet, both of France, assignors to Roussel Uclaf, Paris, France

Filed July 9, 1973, Ser. No. 377,503
Claims priority, application France, July 13, 1972, 72.25495
Int. Cl.² C07D 371/22
U.S. Cl. 260—293.53 2 Claims

1. A racemic or optically active mixed alkali metal or ammonium phosphate salt of Vincanol of the formula:



$[PO_4HM]^{\ominus}$

wherein M is NH_4 or an alkali metal.

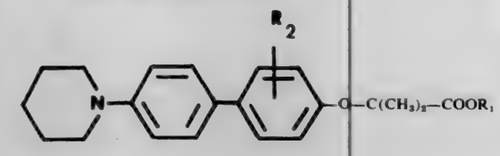
3,925,394

PHENOXYACETIC ACID DERIVATIVES

Johann Dahm; Joachim Borck; Herbert Nowak; Zdenek Simane, and Detlev Kayser, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Division of Ser. No. 234,343, March 13, 1972, Pat. No. 3,804,839. This application Sept. 4, 1973, Ser. No. 393,936
Claims priority, application Germany, Mar. 15, 1971, 2112272
Int. Cl.² C07D 295/10
U.S. Cl. 260—293.83 8 Claims

1. A compound of the formula



wherein R_1 is H or alkyl of 1–10 carbon atoms; R_2 is H, alkyl of 1–4 carbon atoms or halogen.

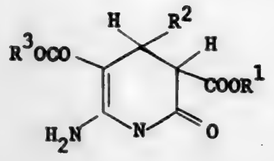
3,925,395

4-ARYL-6-AMINO-3,4-DIHYDROPYRID-2-ONE-3,5-DICARBOXYLIC ACID ESTER

Horst Meyer; Friedrich Bossert, both of Wuppertal; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Aug. 21, 1973, Ser. No. 390,193
Claims priority, application Germany, Aug. 31, 1972, 2242787
Int. Cl.² C07D 213/55
U.S. Cl. 260—294.8 G 18 Claims

1. A compound of the formula:



wherein

R^2 is (a) unsubstituted phenyl, (b) phenyl which is monosubstituted by cyano, or carbalkoxy in which alkoxy has from 1 to 4 carbon atoms, (c) phenyl which is monosubstituted by one member or disubstituted by two like or different members selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogeno, nitro, trifluoromethyl and alkylthio of 1 to 4 carbon atoms, (d) naphthyl or (e) naphthyl which is monosubstituted by a member selected from the group consisting of halogeno, alkyl of 1 to 4 carbon atoms, and alkoxy of 1 to 4 carbon atoms, and

each of R^1 and R^3 is independently selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, alkynyl of 2 to 4 carbon atoms and alkoxyalkyl of 3 to 4 carbon atoms.

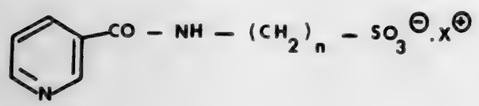
3,925,396

β-PYRIDYL-CARBONAMIDO-ALKANE-SULFONIC ACID SALTS

Jacques Baetz, La Garenne-Colombes, France, assignor to Seperic, Morat, France

Filed Jan. 31, 1974, Ser. No. 438,368
Claims priority, application United Kingdom, Feb. 15, 1973, 7407/73
Int. Cl.² C07D 213/82
U.S. Cl. 260—294.8 F 7 Claims

1. A β-pyridyl-carbonamido-alkane-sulfonic acid salt having the formula



in which *n* is an integer selected from 2 and 3 and X is a cation selected from choline, betaine, ethanolamine, pyridoxine and the pharmaceutically acceptable alkali and alkaline-earth metals.

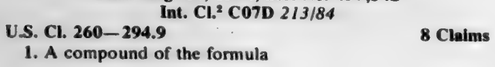
3,925,397

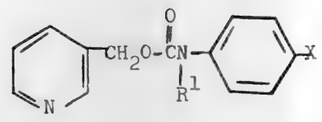
3-PYRIDYLMETHYL-(N-SUBSTITUTED PHENYL)-CARBAMATE DERIVATIVES

Edward E. Kilbourn, Chalfont, and Ernest D. Weiler, Ambler, both of Pa., assignors to Rohm & Haas Company, Philadelphia, Pa.

Filed Aug. 14, 1974, Ser. No. 497,542
Int. Cl.² C07D 213/84
U.S. Cl. 260—294.9 8 Claims

1. A compound of the formula





wherein X is cyano, or nitro and R^1 is alkyl of 1 to 4 carbon atoms, allyl, benzyl.

3,925,398

3-ACETYL-1,4-DIHYDRO-4-OXO-1,8-NAPHTHYRIDINES

George Y. Lesher, and Ruth Pauline Brundage, both of Rensselaer, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 453,928, March 22, 1974, Pat. No. 3,895,017, which is a division of Ser. No. 333,541, Feb. 20, 1973, Pat. No. 3,875,172. This application Nov. 1, 1974, Ser. No. 520,135
Int. Cl.² C07D 471/04
U.S. Cl. 260—296 N 4 Claims

1. A compound selected from 3-acetyl-1,4-dihydro-7-Q-4-oxo-1,8-naphthyridine and its tautomeric 3-acetyl-4-hydroxy-7-Q-1,8-naphthyridine, where Q is lower-alkyl, loweralkanoyloxymethyl, hydroxymethyl, 4(or 3)-pyridyl or 4(or 3)-pyridyl having one or two lower-alkyl substituents.

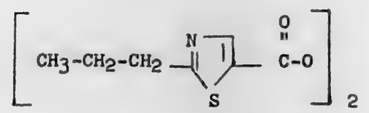
3,925,399

BASIC ALUMINUM SALT OF 2-N-PROPYL-5-THIAZOLE-CARBOXYLIC ACID

Francois Clemence, Rosny-sous-Bois, and Odile Le Martret, Paris, both of France, assignors to Roussel-UCLAF, Paris, France

Filed Apr. 29, 1974, Ser. No. 465,188
Claims priority, application France, Mar. 26, 1974, 74.10277
Int. Cl.² C07D 277/56; A61K 31/425; C07F 5/06
U.S. Cl. 260—299 1 Claim

1. The basic aluminum salt of 2-n-propyl-5-thiazole-carboxylic acid having the formula



Al OH

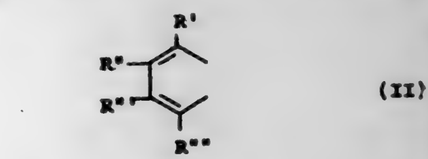
3,925,400

CERTAIN 2-OXO-4-THIAZOLINE-5-CARBOXYLIC ACID ESTERS

Klaus Grohe, Cologne, and Paul-Ernst Frohberger, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 12, 1972, Ser. No. 271,104
Claims priority, application Germany, July 28, 1971, 2137649
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C07D 277/14
U.S. Cl. 260—306.7 R 4 Claims

1. Thiazolinone-(2)-carboxylic acid esters of the formula:



wherein

R^1 is selected from the group of C_1 to C_{12}-alkyl, phenyl, and phenyl substituted one or more times by fluorine, chlorine or bromine atoms or by C_1 to C_3-alkyl groups;

R^2 is selected from the group of C_1 to C_{12}-alkyl or $[C_1+C_{12}]$ C_1 to C_{12}-alkyl substituted by phenyl which is itself optionally substituted one or more times by fluorine, chlorine or bromine atoms or by C_1 to C_3-alkyl; and

R^3 is the same as R^2 or is selected from the group of hydrogen, methoxy carbonyl, ethoxy carbonyl and phenyl which is itself optionally substituted one or more times by fluorine, chlorine or bromine atoms or by C_1 to C_3-alkyl.

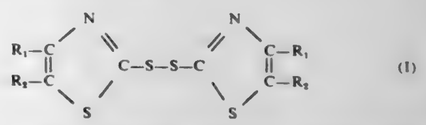
3,925,401

PROCESS FOR THE PREPARATION OF DIBENZOTHIAZOLYL DISULPHIDE

Raymond Janin, Irigny, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Nov. 7, 1973, Ser. No. 413,574
Claims priority, application France, Nov. 8, 1972, 72.39514
Int. Cl.² C07D 277/78
U.S. Cl. 260—306.5 7 Claims

1. Process for the preparation of a 2,2'-dithiazolyl disulphide of the general formula:

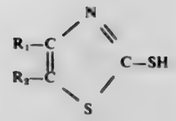


(I)

in which R_1 and R_2, which may be identical or different, each represents a hydrogen atom, a halogen atom, a nitro group, an alkyl or alkoxy radical containing 1 to 5 carbon atoms, or an unsubstituted aryl, haloaryl, nitroaryl, alkaryl or alkoxyaryl radical, where the aryl residue contains 6 to 12 carbon atoms and the alkyl or alkoxy residues contain 1 to 5 carbon atoms, or R_1 and R_2 together form a divalent radical of the general formula:

(II)

in which R', R'', R''' and R'''', which may be identical or different, each represents a hydrogen atom,, a halogen atom, a nitro group, an alkyl or alkoxy radical containing 1 to 5 carbon atoms, or an unsubstituted aryl, haloaryl, nitroaryl, alkaryl or alkoxyaryl radical where the aryl residue contains 6 to 12 carbon atoms and the alkyl or alkoxy residue contains 1 to 5 carbon atoms, which comprises oxidation of a 2-mercapto-thiazole of the general formula:



(III)

in which R_1 and R_2 are as defined above, using molecular oxygen and iron chloride in a solvent comprising a saturated aliphatic alcohol containing 1 to 10 carbon atoms, the proportion of iron chloride being 0.1 mol to 2 mols per mol of 2-mercaptothiazole.

3,925,402

1-THIADIAZOLYL-5-CARBAMOYLOXYIMIDAZOLIDINONES

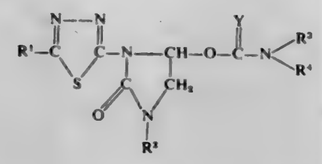
John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 425,272, Dec. 26, 1973, abandoned. This application Feb. 15, 1974, Ser. No. 442,934

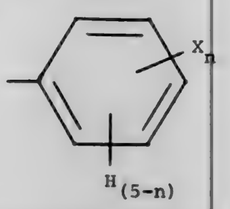
Int. Cl.² C07D *513/02*

U.S. Cl. 260—306.8 D **8 Claims**

1. A compound of the formula



wherein R^1 is selected from the group consisting of lower alkyl, lower alkenyl, lower haloalkyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl and lower alkylsulfinyl; R^2 is lower alkyl R^3 is selected from the group consisting of hydrogen and lower alkyl; Y is selected from the group consisting of oxygen and sulfur; and R^4 is selected from the group consisting of hydrogen, lower alkyl, cycloalkyl of from 3 to 7 carbon atoms and



wherein X is selected from the group consisting of lower alkyl, halogen, lower haloalkyl and lower alkoxy, and *n* is an integer from 0 to 3.

3,925,403

CERTAIN 1-(2-SUBSTITUTED-1,3,4-THIADIAZOL-5-YL)--ALKYL-IMIDAZOLIDIN-2-ONES

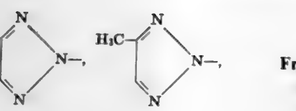
John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 433,181, Jan. 14, 1974, abandoned, which is a continuation-in-part of Ser. No. 223,011, Feb. 2, 1972, abandoned. This application Jan. 17, 1975, Ser. No. 541,746

Int. Cl.² C07D *513/02*

U.S. Cl. 260—306.8 D **6 Claims**

1. A compound of the formula



wherein R^1 is selected from the group consisting of lower alkyl, lower alkenyl, lower haloalkyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl and lower alkylsulfinyl; R^2 is lower alkyl; and R^3 is lower alkyl.

3,925,404

CARBOXYLIC ACID AMIDE AND HYDRAZIDE DERIVATIVES OF 4,5-DIPHENYLOXAZOLE AND PROCESS FOR PREPARING THEM

Enzo Marchetti, Rome, Italy, assignor to Instituto Farmacologico Serono S.p.A., Rome, Italy

Division of Ser. No. 119,832, March 1, 1971, Pat. No. 3,869,455. This application Apr. 23, 1973, Ser. No. 353,675

Claims priority, application Italy, Mar. 5, 1970, 21550/70

Int. Cl.² C07D *263/38*

U.S. Cl. 260—307 R **6 Claims**

1. 4,5-Diphenyl-2-oxazolyl-carboxylic acid N-methylamide.

3,925,405

TRIAZOLE-COUMARINS

Günther Boehmke, and Hans Theidel, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Oct. 15, 1971, Ser. No. 189,773

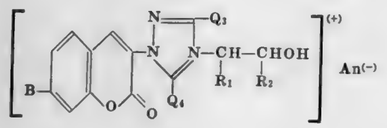
Claims priority, application Germany, Oct. 15, 1970, 2050726

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07D *249/06, 249/08*

U.S. Cl. 260—308 R **5 Claims**

1. Coumarine compound of the formula:

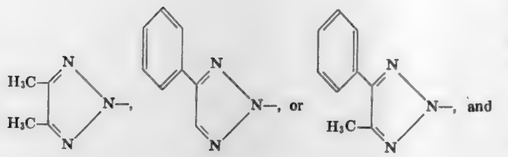


wherein

R_1 and R_2, independently of each other, are hydrogen, C_1–C_4-alkyl, or phenyl;

Q_3 and Q_4, independently of each other, are hydrogen, chloro, C_1–C_4-alkyl, phenyl, cyano, carboxyl, or carbonamido;

B is C_1–C_4-alkoxy,



An $^-$ is chloride, bromide, iodide, hydroxide, carbonate, bicarbonate, alkylsulphate, sulphate, disulphate, perchlorate, phosphate, benzenesulphonate, naphthalenesulphonate, 4-chlorobenzenesulphonate, oxalate, acetate, maleinate, propionate, methanesulphonate, chloroacetate, lactate, tartrate, glycerate, citrate, benzoate, formate or the anion of zinc chloride double salts.

3,925,406

DIALKOXYPHOSPHONOMETHYL DERIVATIVES OF HYDANTOINS

Daniel Porret, Fresens, NE, and Jürgen Habermeier, Pfeffingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

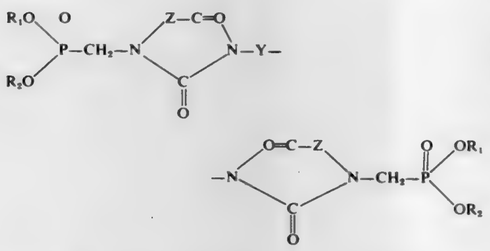
Continuation-in-part of Ser. No. 347,527, April 3, 1973, abandoned. This application Feb. 7, 1975, Ser. No. 548,050

Claims priority, application Switzerland, Apr. 4, 1972, 4893/72

Int. Cl.² C07D *233/72*

U.S. Cl. 260—309.5 **7 Claims**

1. A dialkoxyphosphonomethyl derivative of hydantoin of the formula



wherein

Z denotes $—CR_3R_4—$ where R_3 and R_4 are alkyl of 1 to 6 carbon atoms or R_3 and R_4 together are tetramethylene or pentamethylene,

Y denotes alkylene of 1 to 12 carbon atoms or 3-oxapentamethylene, and

R_1 and R_2 are lower alkyl of 1 to 4 carbon atoms.

3,925,407

TRIGLYCIDYL COMPOUNDS AND THEIR USE

Friedrich Stockinger, Therwil, and Friedrich Lohse, Oberwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

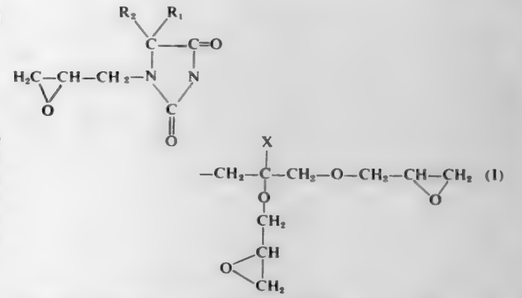
Filed Sept. 27, 1974, Ser. No. 509,876

Claims priority, application Switzerland, Oct. 10, 1973, 14394/73

Int. Cl.² C07D *49/32*

U.S. Cl. 260—309.5 **6 Claims**

1. Triglycidyl compounds of the formula I



wherein X denotes a hydrogen or methyl and R_1 and R_2 independently of one another each denote a hydrogen, alkyl, alkenyl, cycloalkyl or phenyl, which can be substituted, or wherein R_1 and R_2 together denote the tetramethylene or pentamethylene.

3,925,408

PYRAZOLINIUM COMPOUNDS AS HERBICIDES

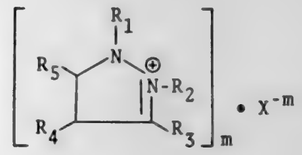
Barrington Cross, Rocky Hill, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed July 1, 1974, Ser. No. 484,515

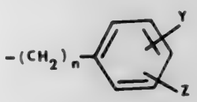
Int. Cl.² C07D *231/12*; **A01N** *9/22*

U.S. Cl. 260—311 **10 Claims**

1. A compound having the formula:



wherein R_1 and R_2 each represent alkyl C_1–C_4; R_4 represents a member selected from the group consisting of hydrogen, methyl, methoxy, methylthio, methylsulfinyl and methylsulfonyl; R_3 and R_5 each represent members selected from the group consisting of cycloalykl C_3–C_7, cycloalkylmethyl C_3–C_7, methylcycloalkyl C_3–C_7, cycloalkenyl C_3–C_7, alkyl C_2–C_{11}, thienyl and



provided that when R_4 is hydrogen at least one of R_3 and R_5 is a member other than phenyl; X represents an anion having a charge of from 1 to 3; *n* is an integer selected from 0 and 1; *m* is an integer selected from 1, 2 and 3; and Y and Z each represent members selected from the group consisting of

hydrogen, halogen, nitro, cyano, alkyl C_1–C_4, alkoxy C_1–C_4 and CF_3.

3,925,409

4-ARYL-1,2,3,4-TETRAHYDROPYRROLO[3,4-B]INDOLES

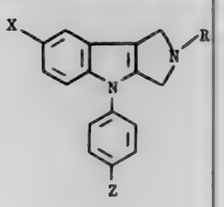
Willard M. Welch, Jr., North Stonington, and Charles A. Harbert, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Apr. 1, 1974, Ser. No. 456,641

Int. Cl.² C07D *207/12*

U.S. Cl. 260—326.5 B **6 Claims**

1. A compound selected from those of the formula

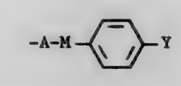


and the pharmaceutically acceptable acid addition salts thereof, wherein

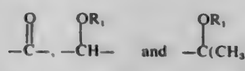
X is selected from the group consisting of fluoro, chloro, bromo, methyl and hydrogen;

Z is selected from the group consisting of fluoro, methoxy, chloro and hydrogen; and

R is selected from the group consisting of alkyl having 1 to 6 carbon atoms, benzyl and substituted alkylene of the formula



wherein A is alkylene having 1 to 5 carbon atoms, M is selected from the group consisting of —CH=CH—, —CH_2—,



wherein R_1 is selected from the group consisting of hydrogen and alkanoyl having 2 to 5 carbon atoms and Y is selected from the group consisting of fluoro, methyl, chloro and hydrogen.

3,925,410

PROCESS FOR MAKING 1-PYRROLIDINYL METHYL FERROCENE

Dennis C. Van Landuyt, Auburn, and Orval E. Ayers, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 15, 1971, Ser. No. 155,672

Int. Cl.² C07D *207/04*; **C07F** *15/02*

U.S. Cl. 260—326.8 **1 Claim**

1. The process of producing 1-pyrrolidinyl-methylferrocene comprising reacting a mixture of (ferrocenylmethyl) trimethylammonium iodide, aqueous sodium hydroxide solution and pyrrolidine in a container that has a mechanical stirrer and reflux condenser, mechanically stirring the mixture and maintaining the mixture at reflux temperature for about 6 hours to produce a reaction product, and then extracting the reaction product with a suitable solvent, said (ferrocenylmethyl) trimethylammonium iodide being present in a proportion of about 150 grams to about 120 ml of 1 molar solution of said aqueous sodium hydroxide, and to about 100 ml of said pyrrolidine, and said solvent solution being about a 50—50 volume solution of benzene and heptane, said reaction product being dried over anhydrous $MgSO_4$ and evaporated to yield the product said 1-pyrrolidinylmethylferrocene with a melting point from about 50° to 50.5°C.

3,925,411

OXOTREMORINE ANTAGONIST

Johan Richard Dahlbom, Sodertalje; Bo Lennart Karlen, Skarholmen, and Sune Gunnar Lindgren, Linkoping, all of Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

Continuation-in-part of Ser. No. 203,907, Dec. 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 774,530, Nov. 8, 1968, abandoned. This application Nov. 15, 1972, Ser. No. 306,829

Claims priority, application United Kingdom, Nov. 9, 1967, 51146/67

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07D *205/00*

U.S. Cl. 260—326.25 **1 Claim**

1. The compound N-(5-pyrrolidino-3-pentynyl)-pyrrolidin-2-one or its therapeutically acceptable salts.

3,925,412

CYCLOAMIDINES

Werner Obendorf; Irmgard Lindner; Ernst Schwarzinger, and Josef Krieger, all of Linz (Danube), Austria, assignors to Osterreichische Stickstoffwerk Aktiengesellschaft, Linz (Danube), Austria

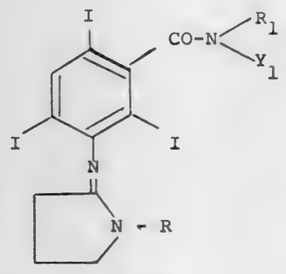
Filed July 20, 1793, Ser. No. 381,336

Claims priority, application Germany, July 21, 1972, 2235915

Int. Cl.² C07D *207/12*

U.S. Cl. 260—326.47 **12 Claims**

1. A compound selected from the group consisting of compounds of the formula



wherein Y_1 is $-CH_2-COOH$, $-(CH_2)_3-COOH$, $CH_3-CH(CH_3)-COOH$ or $CH_2-CH(C_2H_5)-COOH$, R is methyl, ethyl, cyclohexyl, β-hydroxyethyl, β-methoxyethyl, γ-methoxypropyl or phenyl and R_1 is hydrogen, methyl, ethyl, propyl, allyl or γ-methoxypropyl, alkyl esters thereof wherein the alkyl group contains 1 to 4 carbon atoms and pharmaceutically acceptable salts thereof with bases.

3,925,413

PROCESS FOR THE PRODUCTION OF CYCLIC THIOCARBONATES

Paolo Koch, San Giuliano Milanese, and Emilio Perrotti, San Donato Milanese, both of Italy, assignors to Snamprogetti S.p.A., San Donato Milanese, Italy

Filed Oct. 1, 1973, Ser. No. 402,065

Claims priority, application Italy, Oct. 10, 1972, 30288/72

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07D *327/04*

U.S. Cl. 260—327 M **5 Claims**

1. Process for the production of cyclic thiocarbonates having the formula



wherein A is a divalent alkyl radical having from 2 to 5 carbon atoms, separating the oxygen and sulfur atoms by two carbon atoms, characterized in that a thioglycol or a hydroxydisulphide having the general formula HO—A—SX, wherein X is a hydrogen atom or a radical —S—A—OH, wherein A is as defined above, is reacted with carbon mon-oxide and oxygen in the presence of a catalyst selected from Ni $(CO)_4$, $Co_2(CO)_8$,Fe $(CO)_5$, Mn $(CO)_6$ and Se (CO).

3,925,414

REACTION PRODUCT OF ISOBUTYLENE, SULFUR MONOHALIDE AND ALKALI METAL MERCAPTIDE

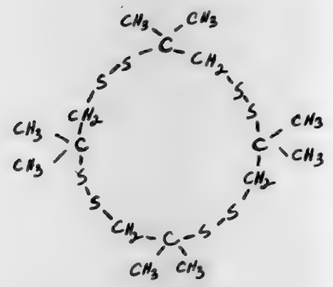
Phillip S. Landis, Woodbury, and Abraham O. M. Okorodudu, West Deptford, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 22, 1974, Ser. No. 453,610

Int. Cl.² C07D *341/00*

U.S. Cl. 260—327 R **12 Claims**

1. A compound having the structure:



3,925,415

METHOD FOR MANUFACTURE OF NOVEL COMPOUNDS

Torao Ishida; Junichi Ohoishi, both of Shizuoka, Japan; Kouichi Yoshida, Cleveland, Ohio; Kageyasu Akashi, Shizuoka, Japan; Isao Takeda, deceased, late of Tokyo, Japan, and by Emiko Takeda, legal representative, Osaka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

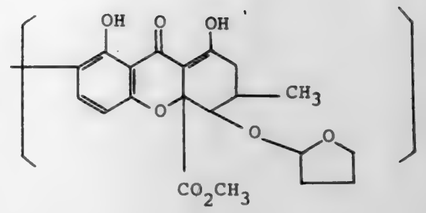
Filed May 6, 1974, Ser. No. 467,468

Claims priority, application Japan, May 9, 1973, 48-50658

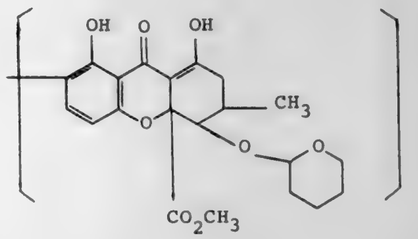
Int. Cl.² C07D *311/86*

U.S. Cl. 260—335 **2 Claims**

1. A compound having the formula:



2. A compound having the formula:



3,925,416

BENZ[C]FLUORAN COMPOUNDS AND RECORDING SHEET CONTAINING THE SAME

Takashi Akamatsu, Ashiya; Koichi Koga, Toyonaka; Mitsuru Kondo, Kawanishi; Makoto Miyake, Nishinomiya, and Hiroshi Iwasaki, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka and Kanzaki Paper Manufacturing Co., Ltd., Tokyo, both of, Japan

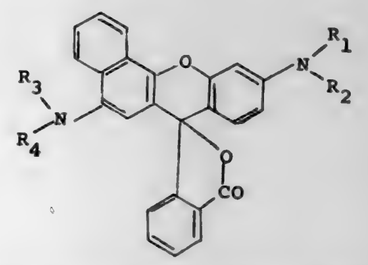
Continuation of Ser. No. 188,529, Oct. 12, 1971, abandoned. This application June 27, 1974, Ser. No. 483,519

Claims priority, application Japan, Oct. 13, 1970, 45-90245; Nov. 4, 1970, 45-97426; Dec. 25, 1970, 45-129018; Dec. 26, 1970, 45-130391

Int. Cl.² C07D *407/04*

U.S. Cl. 260—335 **5 Claims**

1. A compound of the formula



wherein R_1 and R_2 are respectively methyl or ethyl and R_3 and R_4 are respectively hydrogen or benzyl.

3,925,417
TRICYCLOHEXYLIDENE PEROXIDE AND DICYCLOHEXYLIDENE PEROXIDE AND METHOD OF PRODUCING THE SAME

Paul R. Story, and Peter Busch, both of Athens, Ga., assignors to Story Chemical Corporation, Muskegon, Mich.

Division of Ser. No. 50,963, June 29, 1970. This application Oct. 10, 1973, Ser. No. 404,885
Int. Cl.² C07D *323/00, 323/04*
U.S. Cl. 260—338 **1 Claim**

1. A method for the preparation of a mixture of tricyclohexylidene peroxide and dicyclohexylidene peroxide which comprises forming a reaction mixture consisting essentially of 1-hydroperoxy-1′-hydroxydicyclohexyl peroxide containing about 50–300% by weight water, an organic solvent selected from the group consisting of pentane, hexane, heptane, cyclohexane, decane, cyclodecane, nonane, undecane, dodecane, benzene, toluene, xylene, ether, carbon tetrachloride, chloroform and acetonitrile and a strong acid catalyst selected from the group consisting of perchloric acid, phosphoric acid, p-toluenesulfonic acid, anhydrous hydrogen chloride, sulfur trioxide and sulfur dioxide, while agitating the resulting mixture maintaining the reaction mixture at a temperature in the range between about −78°C. and 50°C. and recovering from the resulting reaction mixture the organic solvent phase containing dissolved therein the resulting produced tricyclohexylidene peroxide and dicyclohexylidene peroxide.

3,925,418
HEMISOLVATE OF D-(-)-2-(P-HYDROXYPHENYL)GLYCYL CHLORIDE HYDROCHLORIDE AND PROCESS

Walter A. Williams, Jamesville, and Herbert H. Silvestri, Dewitt, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed June 19, 1974, Ser. No. 480,895
Int. Cl.² C07D *319/12*
U.S. Cl. 260—340.6 **4 Claims**

1. The crystalline hemi-dioxane solvate of D-(−)-2-(p-hydroxyphenyl)glycyl chloride hydrochloride containing one mole of dioxane for every two moles of D-(−)-2-(p-hydroxyphenyl)glycyl chloride hydrochloride.

3,925,419
5-CYCLIC ETHYLENE ACETALS OF 5-OXOCYCLOPENTANE HEPTANOIC ACIDS AND ESTERS

Norman L. Wendler, Summit, and David Taub, Metuchen, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 48,548, June 22, 1970, Pat. No. 3,736,335. This application Nov. 24, 1972, Ser. No. 309,326
Int. Cl.² C07D *317/30*
U.S. Cl. 260—340.9 **3 Claims**

1. The 5-cyclic ethylene acetal of 3-hydroxy-2-(3-hydroxy-1-octenyl)-5-oxocyclopentane heptanoic acid.

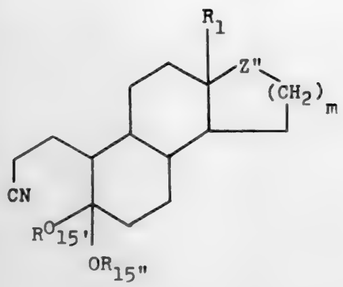
2. 3-Acetoxy-2-(3-oxo-1-octenyl)-5-oxocyclopentane heptanoic acid lower alkyl ester, 5-cyclic ethylene acetal.

3,925,420
CYANOALKYL A-RING PROCURSORS

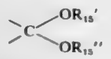
Noal Cohen, Montclair; Michael Rosenberger, Caldwell, and Gabriel Saucy, Essex Fells, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 67,296, Aug. 26, 1970, Pat. No. 3,813,417. This application Mar. 13, 1974, Ser. No. 450,709
Int. Cl.² C07D *317/30, 319/06, 321/00, 321/04*
U.S. Cl. 260—340.9 **5 Claims**

1. The compound of the formula



where R_1 is a primary alkyl group of from 1 to 5 carbon atoms; Z″ is a group of the formula



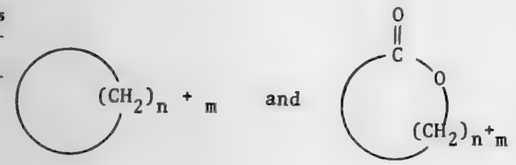
where R_{15}', and R_{15}'' taken together are lower alkylene having from 1 to 4 carbon; and m is 1 or 2.

3,925,421
METHOD FOR THE PREPARATION OF MACROCYCLIC COMPOUND

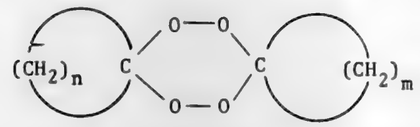
Paul Richard Story, Athens, Ga.; Peter Busch, Willich, Germany; Donald Derby Denson, Kettering, Ohio, and Carl Edward Wright, Athens, Ga., assignors to Research Corporation, New York, N.Y.

Division of Ser. No. 238,936, March 28, 1972, abandoned, Continuation-in-part of Ser. No. 842,739, July 17, 1969, abandoned. This application Mar. 9, 1973, Ser. No. 339,906
Int. Cl.² C07D *313/00;* **C07C** *13/27*
U.S. Cl. 260—343 **6 Claims**

1. A method for the preparation of a product consisting essentially of a mixture of a macrocyclic hydrocarbon and a macrocyclic lactone having the following structural formulae, respectively:



wherein n is a positive integer of from 4 to 17 and m is a positive integer of from 4 to 17 consisting essentially of heating a mixture consisting essentially of (1) a peroxide having the structural formula:



and (2) an alkane which is a solvent for said peroxide at a temperature of from about 100°C to about 350°C for a time sufficient to decompose said peroxide to said macrocyclic compounds; the weight ratio of said alkane to said peroxide being at least about 1:1.

3,925,422
PREPARATION OF 3,4,5,6,7,8-HEXAHYDROCOUMARIN

Sijbrandus E. Schaafsma, Beek(L), and Johannes J. M. Deumens, Limbricht, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Feb. 27, 1973, Ser. No. 336,243
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C07D *311/74*
U.S. Cl. 260—343.2 R **9 Claims**

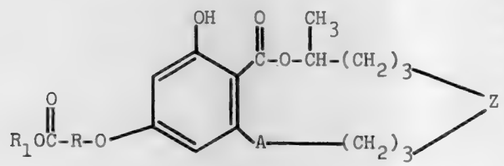
1. A process for the preparation of 3,4,5,6,7,8-hexahydrocoumarin by the lactonization of 2-(β-carboxyethyl)-cyclohexanone, said process comprising lactonizing the carboxyethylcyclohexanone by heating the carboxyethylcyclohexanone, in the presence of a catalytic amount of a strong acid having an atmospheric boiling point greater than 200°C, to a temperature of about 140 to about 245°C, at a pressure of about 6 to about 200 mm Hg and recovering hexahydrocoumarin from the resulting vapor.

3,925,423
RESORCYCLIC ACID LACTONES AND THEIR PRODUCTION

Edward B. Hodge, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Filed Jan. 22, 1974, Ser. No. 435,497
Int. Cl.² C07D *313/00*
U.S. Cl. 260—343.2 F **11 Claims**

1. A compound of the formula:



wherein —A— is either $-CH_2-CH_2-$ or $-CH=CH-$, >Z is either $>CH_2$, >C=O or >CH—OH, R is lower alkylene, and R_1 is lower alkyl.

3,925,424
PROCESS FOR PREPARING 4-CHLOROFORMYL PHTHALIC ACID ANHYDRIDE

Paul Riegger, Augustiner Str. 1, 521 Troisdorf-Sieglar, and Hermann Richtzenhain, 5066 Schwellenbach/Post Marialinden, both of Germany

Filed Mar. 8, 1972, Ser. No. 233,383
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl. C07D *307/89*
U.S. Cl. 260—346.3 **10 Claims**

1. A method for preparing a 4-chloroformyl phthalic acid anhydride which comprises contacting a trimellitic acid anhydride with an aromatic trichloromethyl compound of the formula:

$$R(-CCl_3)_a,$$

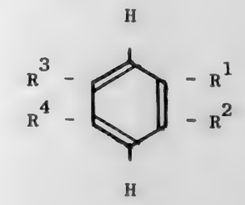
wherein R represents a mono- or polynuclear aromatic radical and a is a number from 1 to 6 in the presence of ferric chloride, at 80° to 200°C.

3,925,425
PROCESS FOR PRODUCING ANHYDRIDES OF AROMATIC POLYCARBOXYLIC ACIDS

Emmanuel R. E. G. Draguez de Hault, Waterloo; Henri R. Debus, Meise, and Marcel Van Tongelen, Diegem, all of Belgium, assignors to Labofina S.A., Brussels, Belgium

Filed Oct. 26, 1973, Ser. No. 410,275
Claims priority, application Belgium, May 4, 1973, 13073
Int. Cl.² C07D *307/89*
U.S. Cl. 260—346.4 **12 Claims**

1. A process for producing anhydrides of benzenepolycarboxylic acids by the vapor-phase oxidation of aromatic hydrocarbons selected from the group consisting of naphthalene, octahydroanthracene and polyalkylbenzenes containing at least two alkyl substituents in ortho position to one another and having the general formula



wherein R^1 and R^2 are alkyl radicals having a straight or branched chain and containing 1 to 6 carbon atoms and R^3 and R^4 are radicals selected from the group consisting of hydrogen and alkyl radicals containing 1 to 4 carbon atoms, the total number of carbon atoms of said polyalkylbenzenes being no higher than 18, said process comprising oxidizing said aromatic hydrocarbons at a temperature of between about 300° and 550°C and in the presence of a catalyst consisting of a refractory carrier and vanadium oxide, said catalyst prepared by impregnating said refractory carrier with an oxytrihalide of vanadium in which the halide is selected from the group consisting of chlorine and bromine, hydrolyzing said oxytrihalide of vanadium and then calcining said catalyst.

3,925,426
PROCESS FOR THE PRODUCTION OF 1-NITROANTHRAQUINONE

Axel Vogel, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 2, 1973, Ser. No. 376,042
Claims priority, application Germany, July 6, 1972, 2233185
Int. Cl.² C07C *79/37*
U.S. Cl. 260—369 **15 Claims**

1. In a process for preparing 1-nitroanthraquinone by nitrating anthraquinone the improvement which comprises carrying out the nitration in the presence of at least one organic solvent which is inert under the reaction conditions said solvent being selected from the group consisting of aliphatic and alicyclic hydrocarbons with up to 12 carbon atoms and the foregoing substituted one or more times by halogen or nitro.

3,925,427
MANUFACTURE OF ANTHRAQUINONOID DISPERSE DYES CONTAINING BROMINE

Wolfgang Elser; Heinz Ellingsfeld, both of Frankenthal, and Werner Schoch, Eschelbronn, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed July 8, 1974, Ser. No. 486,418

Claims priority, application Germany, July 7, 1973, 2334657

Int. Cl.² C07C *97/26;* **C09B** *1/50*

U.S. Cl. 260—380 **10 Claims**

1. In a process for the preparation of blue anthraquinonoid disperse dyes containing bromine, wherein 1,5-dinitro-4,8-dimethoxyanthraquinone, 1,8-dinitro-4,5-dimethoxyanthraquinone or mixtures thereof, are reduced and the reaction product is brominated in an acid medium within the range from 96% strength by weight sulfuric acid to 5% strength by weight oleum, or in an organic solvent which is inert under the reaction conditions, at a temperature of from room temperature to 135°C, until the reaction product contains from 12 to 30% by weight of bromine, the improvement which comprises carrying out the reduction of said dinitro-dimethoxyanthranquinones in oleum which contains from 20 to 45% by weight of sulfur trioxide, with not less than the stoichiometrically required amount of sulfur in the presence of boric acid at a temperature of from −10 to +50°C.

3,925,428
HYDROXY-ALUMINUM NITRATE POLYMER PRODUCTION

Clive Hodgson, Forest Knolls, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 8, 1974, Ser. No. 458,531

Int. Cl.² C01B *21/40*

U.S. Cl. 423—394 **6 Claims**

1. A process of preparing hydroxy-aluminum nitrate of the empirical formula

$$Al(OH)_{2d}(NO_3)_{(3-2d)}$$

wherein *d* varies from about 0.1 to 1.4 and ammonium nitrate by reacting aluminum nitrate and urea, wherein the molar ratio of aluminum mitrate to urea varies from about 1:0.1 to 1:1.4, at a temperature of about 50 to 150°C, in aqueous solution of about 1 mol to 1,000 mols of water per mol urea.

3,925,429
UNSATURATED ETHER AND THIOETHER AMIDES

Hans-Peter Schelling, Oberwil, and Fritz Schaub, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

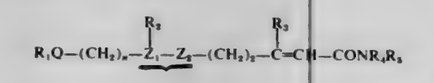
Continuation-in-part of Ser. No. 257,671, May 30, 1972, abandoned. This application Dec. 19, 1973, Ser. No. 426,427

Claims priority, application Switzerland, June 2, 1971, 8036/71

Int. Cl.² C07C *103/175, 149/23;* **A01N** *9/20, 9/12*

U.S. Cl. 260—404 **3 Claims**

1. A compound of the formula:



wherein

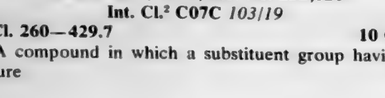
R_1 is alkyl of 1 to 10 carbon atoms; alkenyl of 3 to 10 carbon atoms; alkynyl of 3 to 10 carbon atoms; cycloalkyl of 3 to 6 carbon atoms; cycloalkyl of 3 to 6 carbon atoms mono substituted by alkyl of 1 to 4 carbon atoms; cycloalkenyl of 5 to 7 carbon atoms; cycloalkenyl of 5 to 7 carbon atoms mono substituted by alkyl of 1 to 4 carbon atoms; cycloalkyl(of 3 to 6 carbon atoms)alkyl (of 1 to 4 carbon atoms); cycloalkyl(of 3 to 6 carbon atoms)alkyl (of 1 to 4 carbon atoms) ring mono substituted by alkyl of 1 to 4 carbon atoms; cycloalkenyl(of 5 to 7 carbon atoms)alkyl (of 1 to 4 carbon atoms); or cycloalkenyl(of 5 to 7 carbon atoms)alkyl (of 1 to 4 carbon atoms) ring mono substituted by alkyl of 1 to 4 carbon atoms;

R_2 and R_3, which are the same or different, are each hydrogen or alkyl of 1 to 4 carbon atoms,

R_4 and R_5, which are the same or different, are each hydrogen or alkyl of 1 to 4 carbon atoms, or

R_4 and R_5 together with the nitrogen atom form a pyrrolidino, piperidino or morpholino ring;

Q is oxygen or sulphur;



n is an integer 1, 2 or 3.

3,925,430
PREPARATION OF ALKYLAMIDES

Roger G. Duranleau, Ardonia, and John M. Larkin, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 12, 1974, Ser. No. 532,289

Int. Cl.² C07C *103/02*

U.S. Cl. 260—404 **20 Claims**

1. A method of preparing an alkylamide which comprises contacting a nitroketone with an acidic mineral acid salt as catalyst in the presence of a carboxylic acid solvent.

3,925,431
THERMAL PREPARATION OF ALKYLAMIDES

Roger G. Duranleau, Ardonia, and John F. Matteo, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 12, 1974, Ser. No. 532,423

Int. Cl.² C07C *103/02*

U.S. Cl. 260—404 **16 Claims**

1. A method of preparing an alkylamide which comprises contacting an alpha-nitroketone with an oxygenated polar aprotic solvent at a temperature of from about 70°C. to 200°C.

3,925,432
BORONATED TETRACYCLINE COMPOUNDS

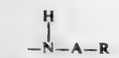
William C. Gilchriest, Los Angeles, Calif., assignor to Smyth, Roston & Pavitt, Los Angeles, Calif.

Filed Mar. 7, 1972, Ser. No. 232,620

Int. Cl.² C07C *103/19*

U.S. Cl. 260—429.7 **10 Claims**

1. A compound in which a substituent group having the structure



is bonded to the 7-position of tetracycline or anhydrotetracycline, and

wherein A is methylene, ethylene or phenylene and R is carborano or dodecacarborano.

3,925,433
1:1 AND 2:1 CHROMIUM, ALPHA AMINO ACID COMPLEX SALTS

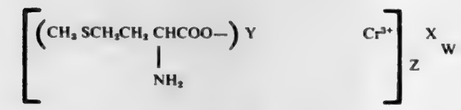
Mahmond M. Abdel-Monem, St. Paul, and Dean R. Anderson, Excelsior, both of Minn., assignors to Zinpro Corporation, Excelsior, Minn.

Continuation-in-part of Ser. No. 395,848, Sept. 10, 1973, which is a continuation-in-part of Ser. No. 163,046, July 15, 1971, abandoned. This application Sept. 24, 1973, Ser. No. 400,231

Int. Cl.² C07F *11/00*

U.S. Cl. 260—438.5 R **7 Claims**

1. In solid form, a water soluble methionine chromium complex salt, of the formula:



wherein Y is a whole integer and is 1 or 2, X is inorganic anion selected from the group consisting of chloride, sulphates, phosphates, and acetate, and Z and W are whole integers selected to electrostatically balance the cationic and anionic charges of the complex salt, said salt having the capability of enhancing the nutrition and health of animals and humans by effectively increasing the absorption, distribution, and utilization of chromium and methionine within the body system of said animals and humans.

3,925,434
THE REACTION OF CHLOROSILANES WITH UNSATURATED ORGANIC COMPOUNDS

Vincent T. Chuang, Marietta, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Jan. 22, 1975, Ser. No. 543,128

Int. Cl.² C07F *7/08, 7/12, 7/14*

U.S. Cl. 260—448.2 E **13 Claims**

1. In the platinum catalyzed addition reaction of a chlorosilane, containing at least one hydrogen bonded to silicon, with an olefinically unsaturated hydrocarbon other than acrylonitrile, an improved method which comprises carrying out said addition reaction in the presence of about 0.001 to about 10 percent, by weight based on the total weight of reactants of a promoter selected from the group consisting of phenothiazine, diphenylamine, N,N-diphenyl-p-phenylenediamine or phenoxazine.

3,925,435
PRODUCTION OF ISOCYANATES

John Crosby; Robert Michael Paton, and Robert Allan Campbell Rennie, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

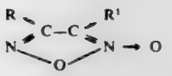
Filed July 5, 1973, Ser. No. 376,298

Claims priority, application United Kingdom, July 21, 1972, 34203/72

Int. Cl.² C07C *118/00*

U.S. Cl. 260—453 P **12 Claims**

1. A process for the preparation of mono- or di-isocyanates in which a furoxan of general formula



where R and R¹, which may be the same or different, represent aliphatic hydrocarbyl groups containing from 1 to 18 carbon atoms which may bear alkoxy groups, aryl groups or halogen atoms as substituents, and may be linked one to another to form a ring system which may contain both aliphatic and aromatic components, provided that that part of said ring which is fused directly to the furoxan ring is aliphatic, is heated to a temperature at which the furoxan ring is opened to produce at least one mono-isocyanate when R and R¹ are separate groups or a di-isocyanate when R and R¹ are linked.

3,925,436
PROCESS FOR PRODUCTION OF AROMATIC ISOCYANATES

Takeshi Yamahara, Itami, and Masahiro Usui, Takatsuki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed Mar. 22, 1974, Ser. No. 453,956

Claims priority, application Japan, Mar. 23, 1973, 48-33910

Int. Cl.² C07C *118/06*

U.S. Cl. 260—453 PC **11 Claims**

1. A process for producing aromatic isocyanates which comprises reacting an aromatic nitro compound with carbon monoxide in the presence of a catalyst at an elevated temperature under an elevated pressure, the said catalyst being a product obtained by contacting a halogen-containing platinum group metal compound seiected from the group consisting of the halides, carbonyl halides, complexes and complex salts of palladium, rhodium, iridium, ruthenium, platinum and osmium with a copolymer of styrene, vinylpyridine and divinylbenzene.

3,925,437
REDUCTION OF ACIDITY OF ORGANIC POLYMERIC ISOCYANATES

Richard Lee Rowton, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

Filed July 18, 1974, Ser. No. 489,819

Int. Cl.² C07C *119/042*

U.S. Cl. 260—453 SP **9 Claims**

1. A process for the reduction of the acidity of methylene-bridged polyphenyl polyisocyanate mixtures which comprises: admixing a methylene-bridged polyphenyl polyisocyanate mixture of methylene diphenylisocyanate isomers and higher functionality polymethylene polyphenylisocyanates with a lower alkylene oxide compound containing from 2 to about 4 carbon atoms per molecule, said lower alkylene oxide compound being admixed in an amount at least in excess of the stoichiometric amount, based upon the amount of acid present in the methylene-bridged polyphenyl polyisocyanate mixture.

3,925,438
FLUORINATED URETHANE-N-SULFONIC ACID ESTERS

Heinz Brecht, Bad Soden, Taunus, and Dieter Hoffmann, Bobingen, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

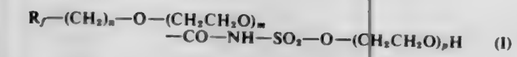
Filed July 2, 1974, Ser. No. 485,242

Claims priority, application Germany, July 6, 1973, 2334346

Int. Cl.² C07C *143/00*

U.S. Cl. 260—456 A **9 Claims**

1. A compound of the formula



in which
R_f is n-perfluoroalkyl of 6 to 10 carbon atoms,
n is a number of 1 to 2,
m is a number of zero to 4 and
p is a number of about 4 to about 50.

3,925,439
SUBSTITUTED O-(AMINOSULFONYL)-GLYCOLIC ANILIDES

Adolf Fischer, Mutterstadt; Gerhard Hamprecht, Mannheim; Dietrich Mangold, Neckargemuend, and Wolfgang Rohr, Mannheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

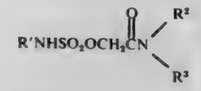
Division of Ser. No. 321,548, Jan. 5, 1973, Pat. No. 3,870,740. This application Sept. 3, 1974, Ser. No. 502,746

Claims priority, application Germany, Jan. 13, 1972, 2201432

Int. Cl.² C07C *143/02*

U.S. Cl. 260—456 A **6 Claims**

1. A substituted O-(aminosulfonyl)-glycolic anilide of the formula



where R′ denotes hydrogen or alkyl of one to six carbon atoms, R^2 denotes phenyl, and R^3 denotes alkenyl of three to six carbon atoms.

3,925,440
CARBOXAMIDES

Michael Edward McMenim, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

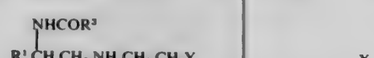
Division of Ser. No. 270,928, July 10, 1972, Pat. No. 3,845,070. This application May 31, 1974, Ser. No. 475,272

Claims priority, application United Kingdom, July 27, 1971, 35206/71

Int. Cl.² C07C *103/44, 103/82, 141/02*

U.S. Cl. 260—457 **7 Claims**

1. A compound which is a member selected from the group consisting of diethylamine derivatives of the formula:



wherein R^1 is a member selected from the group consisting of phenyl, nitrophenyl, aminophenyl and tolyl, and R^3 is a member selected from the group consisting of hydrogen, alkyl of not more than five carbon atoms, phenyl and benzyl and Y is a member selected from the group consisting of chlorine, bromine and hydrogen-sulphato.

3,925,441
ISOTHERMAL SULFONATION PROCESS

Sadao Toyoda; Toshiaki Ogoshi, both of Funabashi; Minoru Maruyama, Soka; Yozo Miyawaki, Narashino, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Oct. 24, 1973, Ser. No. 409,088

Int. Cl.² C07C *141/02, 143/16*

U.S. Cl. 260—458 **2 Claims**

1. In a process for sulfonating α-olefins having 8 to 30 carbon atoms, comprising flowing a thin film of said α-olefin having a temperature of from 10° to 45°C along an externally cooled reaction surface in a reaction zone, and contacting said film with a separately supplied first stream of a mixture of gaseous sulfur trioxide and inert gas and with a separately supplied second stream of cooling gas that flows in parallel with said film and said first stream and is located therebetween, the volumetric flow rate of said second stream being from 2 to 12 times the volumetric flow rate of the first stream, whereby to effect sulfonation, the improvement which comprises: the second gaseous stream consists essentially of a mixture of gaseous sulfur tri-oxide and inert gas and said second stream is flowed into the feed end of said reaction zone in parallel with, in contact with and between said film and said first stream so as to form at the feed end of said reaction zone a parallel flowing layer of said second gaseous stream between said film and said first stream, said second stream having a temperature of from 10° to 40°C and having a velocity in the range of from 1 to 1.4 times the velocity of the first stream, said second stream containing from 0.01 to 2 volume percent of sulfur trioxide and the balance is inert gas, said first stream containing from 3 to 15 volume percent of SO_3 and the balance is inert gas, said first stream having a velocity of from 20 to 100 m/sec and a temperature of from 20° to 50°C, said second stream supplying from 1 to 20 weight percent of the total SO_3 supplied by both the first and second streams.

2. In a process for sulfating condensation products of ethylene oxide with an aliphatic alcohol having 8 to 22 carbon atoms, comprising flowing a thin film of said condensation product having a temperature of from 10° to 45°C along an externally cooled reaction surface in a reaction zone, and contacting said film with a separately supplied first stream of a mixture of gaseous sulfur trioxide and inert gas and with a separately supplied second stream of cooling gas that flows in parallel with said film and said first stream and is located therebetween, the volumetric flow rate of said second stream being from 2 to 12 times the volumetric flow rate of the first stream, whereby to effect sulfation, the improvement which comprises: the second gaseous stream consists essentially of a mixture of gaseous sulfur trioxide and inert gas and said second stream is flowed into the feed end of said reaction zone in parallel with, in contact with and between said film and said first stream so as to form at the feed end of said reaction zone a parallel flowing layer of said second gaseous stream between said film and said first stream, said second stream having a temperature of from 10° to 40°C and having a velocity in the range of from 1 to 1.4 times the velocity of the first stream, said second stream containing from 0.01 to 2 volume percent of sulfur trioxide and the balance is inert gas, said first stream containing from 3 to 15 volume percent of SO_3 and the balance is inert gas, said first stream having a velocity of from 20 to 100 m/sec and a temperature of from 20° to 50°C, said second stream supplying from 1 to 20 weight percent of the total SO_3 supplied by both the first and second streams.

3,925,442
MONOMERIC EMULSION STABILIZERS

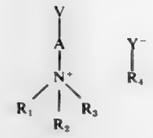
Carlos M. Samour, Wellesley Hills, Mass., assignor to The Kendall Company, Walpole, Mass.

Continuation of Ser. No. 110,588, Jan. 28, 1971, abandoned, which is a continuation-in-part of Ser. No. 769,355, Oct. 21, 1968, abandoned. This application Mar. 18, 1974, Ser. No. 452,073

Int. Cl.² C07C *141/00*

U.S. Cl. 260—459 **4 Claims**

1. A monomeric emulsion stabilizer of the formula



where
V is selected from the group consisting of 4-hydroxymaleoyloxy and 4-hydroxycitraconoyloxy radicals;
A is selected from the group consisting of ethylene and propylene; R_1, R_2, are methyl groups and R_3 is an acetamido group; Y=R_4 selected from the group consisting of alkyl phosphate and alkyl sulfate, said alkyl group containing 8 to 28 carbon atoms.

3,925,443
ALKYLSULPHURIC ACID SALTS OF SUBSTITUTED GUANIDINES

Engelbert Kühle, Berg. Gladbach; Ferdinand Grewe, Burscheid, and Helmut Kaspers, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

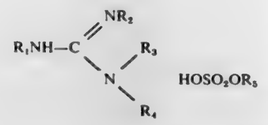
Filed Sept. 3, 1968, Ser. No. 757,091

Claims priority, application Germany, Sept. 14, 1967, 1668019The portion of the term of this patent subsequent to May 19, 1987, has been disclaimed.

Int. Cl.² C07C *141/02*

U.S. Cl. 260—459 R **10 Claims**

1. Alkylsulfuric acid salt of substituted guanidine having the formula



in which R_1 is selected from the group consisting of n-dodecyl and n-tetradecyl, R_2, R_3 and R_4 each individually is selected from the group consisting of hydrogen, alkyl having 1–4 carbon atoms and phenyl, and R_5 is alkyl having 1–4 carbon atoms, with the proviso that at least one of R_2, R_3 and R_4 is selected from the group consisting of such alkyl and phenyl.

3,925,444
LIQUID CRYSTALLINE ISONITRILES

Arthur Boller, Binningen, and Hanspeter Scherrer, Therwil, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

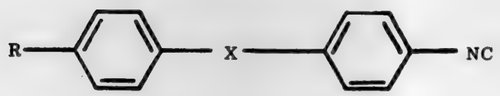
Filed Feb. 22, 1974, Ser. No. 444,923

Claims priority, application Switzerland, Mar. 2, 1973, 3099/73

Int. Cl.² C07C *119/02*

U.S. Cl. 260—463 **20 Claims**

1. A compound of the formula



wherein
X is

and R is straight-chain alkyl of 1 to 7 carbon atoms, straight-chain alkoxy of 1 to 7 carbon atoms, straight-chain alkanoyloxy of 1 to 7 carbon atoms or β-alkyloxycarbonyloxy wherein the alkoxy group is straight-chain alkoxy of 1 to 7 carbon atoms.

3,925,445
HYDROCYANATION OF OLEFINS

Charles Morgan King, Wilmington, Del.; William Carl Seidel, Orange, Tex., and Chadwick Alma Tolman, Wilmington, Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 168,352, Aug. 2, 1971, Pat. No. 3,798,256. This application Oct. 17, 1973, Ser. No. 407,265The portion of the term of this patent subsequent to Mar. 19, 1991, has been disclaimed.

Int. Cl.² C07C *120/02*

U.S. Cl. 260—465 R **12 Claims**

1. In a process of hydrocyanating an olefinic unsaturated organic compound containing from 2 to 20 carbon atoms and having at least one olefinic carbon-carbon double bond, the olefinic unsaturated organic compound being selected from the group consisting of (a) monoolefinic aliphatic and aromatic hydrocarbons and monoolefinic aliphatic and aromatic hydrocarbons containing a functional group of the group consisting of —OR′,



and $—NR'_2$ wherein R′ is selected from group consisting of hydrogen, alkyl and aryl radicals having up to 10 carbon atoms and each open bond other than that required for connection of the functional group to the olefinic radical is connected to a radical of the group consisting of hydrogen, aliphatic and aromatic hydrocarbon radicals, wherein the carbon-carbon double bond is separated from the aforesaid functional group by at least one carbon atom, and (b) polyoelfinic aliphatic compounds wherein the carbon-carbon double bonds are separated from each other by at least one carbon atom;

the improvement which comprises reacting the unsaturated compound with hydrogen cyanide in the presence of an olefin-bonded zerovalent nickel complex of the formula $Ni(PXYZ)_2A$; wherein X is OR, Y and Z are R or OR and R is an alkyl or aryl radical having up to 18 carbon atoms; wherein the R radicals of a given PXYZ ligand may be cojoined, may be the same or different and are so chosen that the ligand has a cone angle with an average value between 130° and 170°;

wherein A is an unsaturated organic compound containing from 2 to 20 carbon atoms and having at least one olefinic carbon-carbon double bond, the unsaturated organic compound being selected from the group consisting of (a) monoolefinic aliphatic and aromatic hydrocarbons and monoolefinic and aromatic hydrocarbons containing a functional group, the functional group being as defined above, and (b) polyolefinic aliphatic compounds wherein the carbon-carbon double bonds are separated from each other by at least one carbon atom;

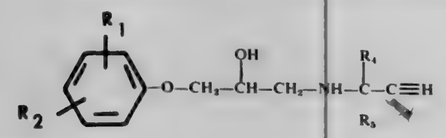
at a temperature in the range of −50°C. to 150°C. and at a pressure in the range of about 0.05 to about 100 atmospheres, the molar ratio of the unsaturated compound to the complex being from 1:2 to 2000:1; and recovering an organic cyano compound wherein said olefinic unsaturation is the sole aliphatic unsaturation present.

3,925,446
1-ARYLOXY-2-HYDROXY-3-ALKYNYLAMINO-PROPANES

Herbert Köppe; Werner Kummer; Helmut Stähle, and Gojko Muscevic, all of Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Filed Feb. 22, 1974, Ser. No. 444,713
Claims priority, application Germany, Feb. 28, 1973, 2309887; Jan. 26, 1974, 2403809
Int. Cl.² C07C *121/80*
U.S. Cl. 260—465 E **6 Claims**

1. A racemic or optically active compound of the formula



wherein

R_1 is $-(CH_2)_x-CN$, where X is 0, 1, 2 or 3,

R_2 is hydrogen, halogen or —NH—CO—NHR, where R is lower alkyl,

R_4 is alkyl of 1 to 3 carbon atoms, and

R_5 is alkyl of 1 to 3 carbon atoms or, together with R_4, $-(CH_2)_p-$ where p is 4, 5 or 6,

or a physiologically compatible acid addition salt thereof.

3,925,447
PRODUCTION OF NITRILES

Abraham P. Gelbein, Plainfield, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Division of Ser. No. 147,159, May 26, 1971, which is a continuation-in-part of Ser. No. 803,874, Feb. 27, 1969, abandoned. This application Apr. 24, 1974, Ser. No. 463,758
Int. Cl.² C07C *120/14*
U.S. Cl. 260—465 C **11 Claims**

1. A process for producing a nitrile, comprising:

contacting ammonia with a hydrocarbon selected from the group consisting of alkyl substitued benzenes and alkyl substituted naphthalenes wherein the alkyl group contains no more than four carbon atoms, isobutylene and propylene, in the presence of a metal oxide supported on a porous support, said support containing from about 25% to about 75%, by weight, of the metal oxide having been placed in molten form substantially entirely within the pores of the support, the support having a surface area greater than about 50 meter square per gram and a porosity greater than about 0.4 cc per gram, said metal oxide being selected from the group consisting of vanadia, molybdena and mixtures thereof, and said support being selected from the group consisting of gamma-alumina and silica-alumina.

3,925,448
PROCESS FOR PRODUCING NITRILOTRIACETONITRILE

Carroll W. Lanier, Baker, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Sept. 30, 1970, Ser. No. 76,812
Int. Cl.² C07C *121/43*
U.S. Cl. 260—465.5 A **11 Claims**

1. A process for producing nitrilotriacetonitrile which comprises:

forming at a temperature of from about 50° to about 120°F an aqueous system of ammonium ion $(NH_4)^+$, sulfate ion $(SO_4)^{--}$ and formaldehyde wherein the ratio of mols of formaldehyde to ammonium ions is from about 2.9:1 to about 3.1:1, and the ratio of sulfate ions $(SO_4)^{--}$ to ammonium ions $(NH_4)^+$ is from about 0.175 to about 0.5, and

reacting said system with hydrogen cyanide wherein the ratio of mols of (HCN) to the total ammonium ions $(NH_4)^+$ of said system is from about 2.9:1 to about 3.1:1 while maintaining the resultant system in a substantially liquid-full state at a reaction temperature of from about 120° to about 250°F and a pressure of from about 15 psig to about 200 psig, and while avoiding the presence of HCN vapor in the process, for a time of from about 10 minutes up to about 6 hours and sufficient to produce nitrilotriacetonitrile.

3,925,449
DIMERIC CHLOROACETONITRILE AND METHOD FOR MAKING THE SAME

Hans-Joachin Teuber, Fichtenstr. 13, D 6242 Kronberg, and Günther Schutz, Konigsteiner Str. 32 A, D 623 Frankfurt-Hochst, both of Germany

Filed June 18, 1974, Ser. No. 480,369
Claims priority, application Germany, June 23, 1973, 2332024
Int. Cl.² C07C *120/00, 121/42*
U.S. Cl. 260—465.5 R **2 Claims**

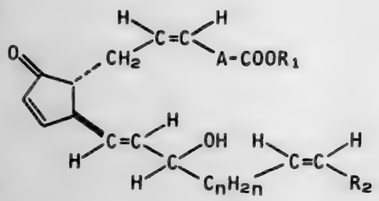
1. α,γ-dichloro-β-amino-crotonic acid nitrile.

3,925,450
PGA_3 ANALOGS

Udo F. Axen, Comstock Township, Kalamazoo County, Township of Comstock, County of Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 112,032, Feb. 2, 1971, Pat. No. 3,775,462, which is a continuation-in-part of Ser. No. 30,312, April 20, 1970, abandoned. This application Nov. 5, 1973, Ser. No. 412,970
Int. Cl.² C07C *61/38, 64/74*
U.S. Cl. 260—468 D **13 Claims**

1. A racemic mixture of a compound of the formula:



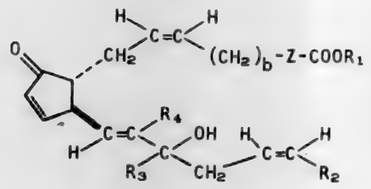
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and its mirror image, wherein R_1 is hydrogen, alkyl of one to eight carbon atoms, inclusive, cycloalkyl of three to 10 carbon atoms, inclusive, aralkyl of seven to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one to three chloro or alkyl of one to four carbon atoms, inclusive, or β,β,β-trichloroethyl; wherein R_2 is alkyl of one to four carbon atoms, inclusive, substituted with zero to three fluoro; wherein n is an integer of one to four, inclusive; wherein A is alkylene of one to 10 carbon atoms, inclusive, substituted with zero to two fluoro, and with one to five carbon atoms, inclusive, between $-COOR_1$ and



or a pharmacologically acceptable salt thereof when R_1 is hydrogen.

8. An optically active compound of the formula:



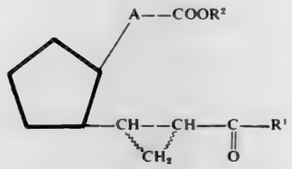
or a racemic compound of that formula and the mirror image thereof, wherein R_1 is hydrogen, alkyl of one to eight carbon atoms, inclusive, cycloalkyl of three to 10 carbon atoms, inclusive, aralkyl of seven to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to four carbon atoms, inclusive, or β,β,β-trichloroethyl; wherein R_2 is alkyl of one to four carbon atoms, inclusive, substituted with zero to three fluoro; wherein R_3 and R_4 are hydrogen or alkyl of one to four carbon atoms, inclusive; wherein Z is ethylene substituted by one or 2 fluoro; wherein b is zero, one, 2, or 3; or a pharmacologically acceptable salt thereof when R_1 is hydrogen.

3,925,451
13,14ξ-METHYLENE-15-OXOPROSTANOIC ACID DERIVATIVES

Kiyoshi Sakai; Kenji Inoue; Yawara Tajima; Mitsuo Yamazaki; Kazuo Ohuchi, and Takashi Yusa, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed May 15, 1974, Ser. No. 470,050
Claims priority, application Japan, June 2, 1973, 48-62122
Int. Cl.² C07C *61/38.*
U.S. Cl. 260—468 D **5 Claims**

1. 13,14 ξ-Methylene-15-oxoprostanoic acid derivatives having the formula



wherein A represents a straight or branched alkylene group having from 4 to 8 carbon atoms, R^1 represents a straight or branched alkyl group having from 4 to 10 carbon atoms and R^2 represents hydrogen atom or a straight or branched alkyl group having from one to 6 carbon atoms and pharmaceutically acceptable salts thereof.

3,925,452
PROCESS FOR THE PRODUCTION OF ALLYL ACETATE

Wolfgang Swodenk, Odenthal-Globusch, and Gerhard Scharfe, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 15,700, March 2, 1970, abandoned. This application Feb. 7, 1973, Ser. No. 330,536
Claims priority, application Germany, Mar. 5, 1969, 1911178
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C07C *67/04*
U.S. Cl. 260—497 A **12 Claims**

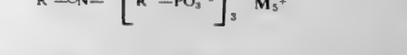
1. Process for the production of allyl acetate wherein propylene, oxygen and acetic acid are reacted in the gaseous phase and in the presence of a catalyst consisting essentially of palladium and alkali metal acetate and, optionally, a Group V to VIII metal, gold, or copper, or compounds thereof, which process comprises supplying the reactants at hourly rates of 1 to 3 moles of acetic acid per liter of catalyst, 1 to 5 moles of oxygen per mole of acetic acid, and 4 to 40 moles of propylene and inert components per mole of oxygen, and supplying water in the feed stream and controlling the ratio of said water to said acetic acid, within the range of 1 to 100 moles of water per mole of acetic acid to result in a conversion of more than 90 percent of the acetic acid introduced per pass.

3,925,453
QUATERNARY AMINOALKYLENE PHOSPHONIC ACIDS AND METHOD OF PREPARATION

Fredric B. Clarke, III, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

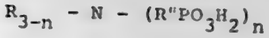
Filed Jan. 25, 1974, Ser. No. 436,417
Int. Cl.² C07F *9/38*
U.S. Cl. 260—501.12 **12 Claims**

1. Quaternary aminoalkylene phosphonic acids and salts thereof having the general formula



wherein R′ is alkyl of 1 to about 20 carbon atoms; R″ is alkylene or alkylidene of 1 to about 6 carbon atoms, and each M is individually hydrogen, alkali metal or ammonium ion.

6. A process for preparing quaternized aminoalkylene phosphonic acid compounds which comprises contacting a tertiary aminoalkylene phosphonic acid of the formula



or



wherein each R is individually an alkyl, cycloalkyl or aralkyl radical having from 1 to about 20 carbon atoms, R_1 is alkylene of from 2 to 8 carbon atoms, R″ is alkylene or alkylidene of 1 to about 6 carbon atoms, n is 1 to 3 and m is 1 or 2, with an alkylating agent of the formula R′—X wherein R′ is an alkyl or alkenyl group having from 1 to about 20 carbon atoms and X is halide, acetate, toluene sulfonate or benzene sulfonate in a polar organicsolvent and organic solvent the presence of a tertiary alkyl amine sufficiently hindered to inhibit quaternization thereof and having a pKa of from about 8 to about 11 at a temperature of from about 50°C. to about 250°C. for a time sufficient to achieve significant alkylation of the aminoalkylene phosphonic acid.

3,925,454
PREPARATION OF OPTICALLY ACTIVE ISOMERS OF LYSINES

Ichiro Chibata; Shigeki Yamada, both of Toyonaka, and Masao Yamamoto, Kyoto, all of Japan, assignors to Tanabe Seiyaku Co. Ltd., Osaka, Japan

Filed Apr. 17, 1969, Ser. No. 817,148
Claims priority, application Japan, Apr. 22, 1968, 43-27181; Apr. 22, 1968, 43-27182
Int. Cl.² C07C *143/00*
U.S. Cl. 260—501.12 14 Claims

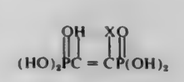
1. A process for resolving DL-lysine-p-aminobenzenesulfonate comprising the steps of preparing a supersaturated solution of DL-lysine-p-aminobenzenesulfonate in an inert solvent selected from the group consisting of water, a mixture of water and a alkanone having up to 6 carbon atoms, a mixture of water and an alkanol having up to 6 carbon atoms, and an alkanol having up to 6 carbon atoms; adding crystals of the desired enantiomer of the DL-lysine-p-aminobenzenesulfonate to cause crystallization of the desired enantiomer to take place, and recovering the separated crystals.

3,925,455
HALOVINYLENE- 1,2-BIS(PHOSPHONIC ACIDS AND ESTERS)AND PROCESS FOR THEIR PREPARATION

Ludwig Maier, Kilchberg, Switzerland, assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 261,171, June 9, 1972, Pat. No. 3,789,092. This application Oct. 29, 1973, Ser. No. 410,651
Claims priority, application Switzerland, June 30, 1971, 9591/71
Int. Cl.² C07F *9/38*
U.S. Cl. 260—502.4 P 2 Claims

1. A halovinylene -1,2-bis(phosphonic acid) of the formula 8n



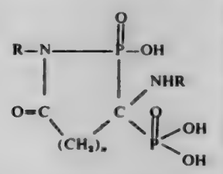
where X is selected from the group consisting of chlorine, bromine and iodine.

3,925,456
CYCLIC AMINOPHOSPHONIC ACIDS

Walter Ploger, Hilden Rhineland; Manfred Schmidt-Dunker, Dusseldorf, and Christian Gloxhuber, Haan Rhineland, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

Filed Aug. 20, 1974, Ser. No. 498,996
Claims priority, application Germany, Aug. 27, 1973, 2343195
Int. Cl.² C07F *9/38*
U.S. Cl. 260—502.5 8 Claims

1. A cyclic aminophosphonic acid derivative selected from the group consisting of (1) compounds of the formula



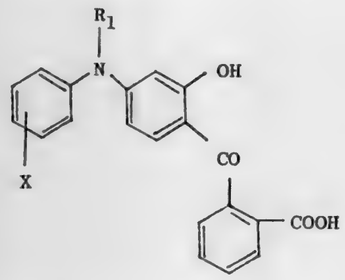
wherein R is a member selected from the group consisting of hydrogen and alkyl having from 1 to 6 carbon atoms and *n* is an integer from 1 to 4, and (2) alkali metal or ammonium salts thereof.

3,925,457
SUBSTITUTED O-[4-(N-ALKYL-N-PHENYLAMINO)-2-HYDROXYBENZOYL]-BENZOIC ACID

Katsuhiko Tsunemitsu; Kanji Kiuchi; Yasushi Nakai; Hajime Kawai, and Shimpei Yamada, all of Kyoto, Japan, assignors to Yamada Kagaku Kenkyusho Co., Ltd., Japan

Division of Ser. No. 319,026, Dec. 27, 1972. This application Sept. 9, 1974, Ser. No. 504,078
Claims priority, application Japan, Dec. 27, 1971, 46-311
Int. Cl.² C07C *101/78*
U.S. Cl. 260—517 4 Claims

1. A compound of the formula



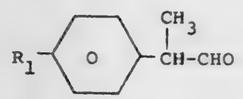
wherein X is hydrogen, halogen or alkyl of 1–5 carbon atoms and R_1 is alkyl of 1–5 carbon atoms.

3,925,458
PROCESS FOR PREPARING 2-(4-ALKYLPHENYL)-PROPION-ALDEHYDE AND PROPIONIC ACID

Katsura Kogure, and Kunio Nakagawa, both of Kawagoe, Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

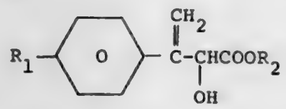
Filed Jan. 25, 1974, Ser. No. 436,634
Claims priority, application Japan, Jan. 29, 1973, 48-11166
Int. Cl.² C07C *51/26*, *47/48*
U.S. Cl. 260—523 A 10 Claims

1. A process for preparing a 2-(4-alkylphenyl)propionaldehyde of the formula



wherein R_1 is alkyl of 2–4 carbon atoms, which comprises reacting:

a. a 2-hydroxy-3-(4-alkylphenyl)-3-butenoic acid or ester of the formula



wherein R has the above-identified values and R is alkyl of 1–3 carbon atoms, hydrogen or an alkali metal cation, with

b. a mineral acid at a reaction temperature of 80°–100°C. to form said propionaldehyde.

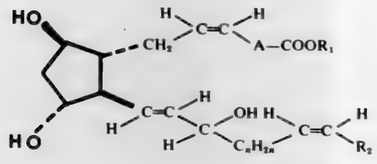
10. A process according to claim 2 further comprising oxidizing the 2-(4-alkylphenyl)-propionaldehyde product to form the corresponding 2-(4-alkylphenyl)-propionic acid or a salt thereof.

3,925,459
$PGF_{3}\beta$ ANALOGS

Udo F. Axen, Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 112,032, Feb. 2, 1971, Pat. No. 3,775,462, which is a continuation-in-part of Ser. No. 30,312, April 20, 1970, abandoned. This application Nov. 5, 1973, Ser. No. 412,801
Int. Cl.² C07C *61/38*, *69/74*
U.S. Cl. 260—468 D 13 Claims

1. A racemic mixture of a compound of the formula:

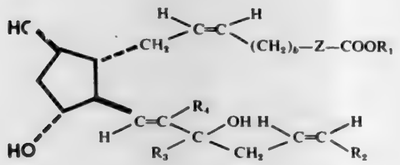


and its mirror image, wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one to 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or β,β,β-trichloroethyl; wherein R_2 is alkyl of one to 4 carbon atoms, inclusive, substituted with zero to 3 fluoro; wherein n is an integer of one to 4, inclusive; wherein A is alkylene of one to 10 carbon atoms, inclusive, substituted with zero to 2 fluoro, and with one to 5 carbon atoms, inclusive, between $-COOR_1$ and



or a pharmacologically acceptable salt thereof when R_1 is hydrogen.

8. An optically active compound of the formula:



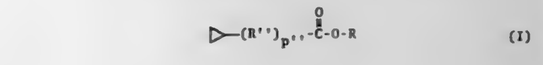
or a racemic compound of that formula and the mirror image thereof, wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or β,β,β-trichloroethyl; wherein R_2 is alkyl of one to 4 carbon atoms, inclusive, substituted with zero to 3 fluoro; wherein R_3 and R_4 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein Z is ethylene substituted by one or 2 fluoro; wherein *b* is zero, one, 2, or 3; or a pharmacologically acceptable salt thereof when R_1 is hydrogen.

3,925,460
ESTERS OF CYCLOPROPANE SUBSTITUTED CARBOXYLIC ACIDS

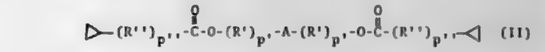
Clive A. Henrick, and Gerardus B. Staal, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. Nos. 413,958, Nov. 8, 1973, Ser. No. 367,058, June 4, 1973, abandoned, Ser. No. 390,991, Aug. 23, 1973, abandoned, Ser. No. 350,952, April 13, 1973, Pat. No. 3,849,466, and Ser. No. 351,028, April 13, 1973, Pat. No. 3,860,629. This application Apr. 12, 1974, Ser. No. 461,189
Int. Cl.² C07C *69/74*
U.S. Cl. 260—468 H 50 Claims

1. Compounds selected from those of the formula I or II:



(I)



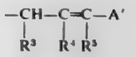
(II)

wherein,

R'' is $-CH=CH-$ or $-(CH_2)_n-$ in which *n* is a positive number from one to four;

p'' is 0 or 1;

R is alkyl of 10 to 22 carbon atoms, alkenyl of 10 to 22 carbon atoms and having one to three sites of olefinic unsaturation, alkynyl of ten to twenty-two carbon atoms and having one or two sites of acetylenic unsaturation or the group



in which A' is phenyl, naphthyl or cycloalkyl of 4 to 8 carbon atoms, each ring being optionally substituted by one or more halogen, alkyl of 1 to 22 carbon atoms, alkoxy of 1 to 15 carbon atoms, aryl of 6 to 14 carbon atoms, aralkyl of 7 to 15 carbon atoms, aryloxy of 6 to 14 carbon atoms or aralkoxy of 7 to 15 carbon atoms groups, and each of R^3, R^4 and R^5 is hydrogen or lower alkyl;

p' is 0 or 1;

R' is alkylene of 1 to 6 carbon atoms or alkenylene of 2 to 6 carbon atoms; and

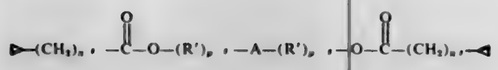
A is alkylene of 2 to 20 carbon atoms, alkenylene of 2 to 20 carbon atoms and having one to three sites of olefinic unsaturation, alkynylene of 2 to 20 carbon atoms and having one or two sites of acetylenic unsaturation, arylene of 6 to 20 carbon atoms optionally substituted by one or two groups selected from alkyl of 1 to 22 carbon atoms, halogen or nitro, or cycloalkylene of 4 to 6 carbon atoms optionally substituted by one or two alkyl groups of 1 to 22 carbon atoms or one or two alkoxy groups of 1 to 15 carbon atoms.

3,925,461
ESTERS OF CYCLOPROPANE ALKANOIC ACIDS

Clive A. Henrick, and Gerardus B. Staal, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed July 17, 1974, Ser. No. 489,205
Int. Cl.² C07C *61/04*, *69/74*
U.S. Cl. 260—468 H 9 Claims

1. Compounds of the formula



wherein,

n' is the even integer 6, 8 or 10;

R' is alkylene of one to six carbon atoms or alkenylene of two to six carbon atoms;

p' is zero or one; and

A is alkylene of one to 10 carbon atoms; alkenylene of two to ten carbon atoms; alkynylene of two to 10 carbon atoms; cycloalkylene of four to six carbon atoms, optionally substituted by one or two alkyl groups of one to 20 carbon atoms or one or two alkoxy groups of one to 15 carbon atoms; or arylene of six to 20 carbon atoms, optionally substituted by one or two groups selected from alkyl of one to 20 carbon atoms, halogen or nitro.

3,925,462

WASH-DURABLE ANTISTATIC AGENT

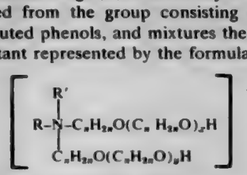
Kenneth W. Graff, Hockessin, Del., assignor to ICI United States Inc., Wilmington, Del.

Filed Dec. 29, 1972, Ser. No. 319,745

Int. Cl.² C07C *125/06*

U.S. Cl. 260—471 C **7 Claims**

1. A composition consisting essentially of the reaction product of (a) an organic aromatic polyisocyanate containing at least 2 NCO groups directly attached to the carbon atoms of an aromatic ring, (b) a thermally reversible blocking agent selected from the group consisting of phenol, lower alkyl substituted phenols, and mixtures thereof, and (c) a cationic surfactant represented by the formula



wherein *n* represents an integer from 2 to 4, *x* represents a number from 0 to 100, *y* represents a number from 0 to 100, R represents a radical selected from the group consisting of alkyl and alkenyl radicals containing from 6 to 22 carbon atoms, R' represents a radical selected from the group consisting of alkyl and hydroxyalkyl radicals containing from 1 to 5 carbon atoms, and X represents an anion said reaction being carried out at a temperature up to 200°C. and the amounts of organic aromatic polyisocyanate, thermally reversible blocking agent, and cationic surfactant are selected to furnish a ratio of mols of blocking agent to NCO groups present in the aromatic polyisocyanate of less than 1 and a number of NCO groups of not more than the sum of the hydroxyl groups of the cationic surfactant and mols of blocking agent.

3,925,463

PROCESS FOR THE PRODUCTION OF METHYL ACRYLATE

Natale Ferlazzo, Milan; Gian Fausto Buzzi, Novara, and Marcello Ghirga, Milan, all of Italy, assignors to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Nov. 29, 1973, Ser. No. 420,352

Claims priority, application Italy, Nov. 30, 1972, 32279/72

Int. Cl.² C07C *69/54*

U.S. Cl. 260—486 R **16 Claims**

1. Process for the production of methyl acrylate, which consists of contacting a gaseous stream containing at least one unsaturated compound selected from the group consisting of propylene and acrolein together with methanol and an oxidizing agent selected from the group consisting of molecular oxygen and gases containing molecular oxygen with an oxidation catalyst selected from the group comprising:

mixtures of antimony and tin oxides containing compounds of iron, vanadium and/or tungsten, or

mixtures of oxides of molybdenum and cobalt, optionally activated with tellurium compounds,

wherein the molar ratio of the unsaturated compound or compounds to oxygen is in the range of from about 0.1/1 to 1/1, while the molar ratio of the unsaturated compound to methanol is in the range of from about 0.5/1 to 2/1 and wherein the operation is carried out at a temperature in the range of from about 200° to 450°C., at a pressure of from about 1 to 5 atmospheres and wherein a contact time of from 0.1 to 10 seconds is employed and subsequently recovering methyl acrylate from the gaseous reaction products.

3,925,464

PROCESS FOR PREPARING UNSATURATED CARBOXYLIC ACIDS FROM THE CORRESPONDING UNSATURATED ALDEHYDES

Yoshio Oda; Keiichi Uchida, both of Yokohama; Manabu Suhara, Tokyo, and Takeshi Morimoto, Yokohama, all of Japan, assignors to Asahi Glass Co., Ltd, Tokyo, Japan

Filed Dec. 12, 1972, Ser. No. 314,397

Claims priority, application Japan, Dec. 14, 1971, 46-100718; Feb. 25, 1972, 47-18877

Int. Cl.² C07C *51/26*

U.S. Cl. 260—530 N **16 Claims**

1. The process for preparing acrylic acid or methacrylic acid which comprises reacting acrolein or methacrolein with molecular oxygen in the vapor phase at a temperature from 250° to 450°C, in the presence of a catalyst having the empirical formula: $Mo_{12}—P_\alpha—X_\beta—Y_\gamma—O_\delta$ wherein X is at least one element selected from the group consisting of tungsten and magnesium; Y is at least one element selected from the group consisting of vanadium and bismuth; α is a number from 0.1 to 5; β is a number 0.1 to 10; γ is a number from 0.1 to 10, and δ is a number from 37 to 131.

3,925,465

CRYSTALLIZATION OF ALPHA MONOSODIUM CITRATE MONOHYDRATE

Kiyoshi Nara, Kyoto; Kazuyoshi Katamoto, Osaka; Kazuhiko Ohta, Osaka, and Hideo Fukuda, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed Apr. 25, 1974, Ser. No. 464,614

Claims priority, application Japan, May 26, 1973, 48-47890; Dec. 7, 1973, 48-137112

Int. Cl.² C07C *59/16*

U.S. Cl. 260—535 P **4 Claims**

1. Prism-shaped crystals of monosodium citrate monohydrate which have the following X-ray diffraction characteristics at λ=1.542 using a CuK-line, 40 KV, 80 mA and Ni-filter:

Spacing d (A)	Relative intensities
7.8	Strong
6.4	Medium
5.4	Medium
4.1	Weak
4.0	Weak
3.89	Very Strong
3.79	Very Weak
3.71	Medium
3.58	Weak
3.49	Medium
3.35	Weak
3.30	Weak
3.25	Very Weak
3.18	Medium
2.92	Weak
2.77	Very Weak
2.70	Weak
2.60	Weak
2.55	Weak
2.45	Very Weak
2.42	Medium
2.36	Very Weak
2.34	Weak
2.29	Weak.

3,925,466

REACTION PRODUCT OF OXALYLDIHYDRAZIDE AND BIS(SULFONYL HALIDE)

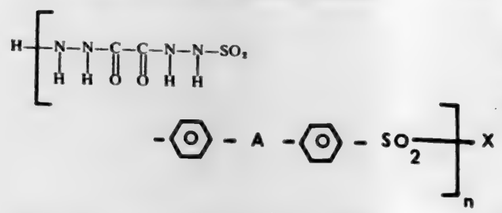
Byron A. Hunter, Woodbridge, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 354,819, April 26, 1973, abandoned. This application May 8, 1974, Ser. No. 468,060

Int. Cl.² C07C *143/70*

U.S. Cl. 260—543 R **2 Claims**

1. An oligomer having the general formula:



where *n* is a number from 1 to 100, X is chlorine, bromine or iodine, and A is a single bond, or a radical selected from the group consisting of oxygen, sulfur, sulfoxide, sulfone, and alkylene of 2 to 6 carbon atoms, an alkylidene of 2 to 6 carbon atoms, and an oxydialkylene of 4 to 12 carbon atoms.

3,925,467

1,5-DIOXO-2,4,6,8,9,11-HEXAKIS (METHYLIMIDA)-1,5-IPHOSPHABICYCLO[3,3,3]UNDECANE

Charles W. Heitsch, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 331,935, Feb. 12, 1973, abandoned. This application Oct. 21, 1974, Ser. No. 516,515

Int. Cl.² C07F *9/44*

U.S. Cl. 260—551 P **2 Claims**

1. 1,5-dioxo-2,4,6,8,9,11-hexakis (methylimida)-1,5-diphosphabicyclo[3.3.3]-undecane.

3,925,468

1-(ARYLTHIO) METHANESULFONAMIDES

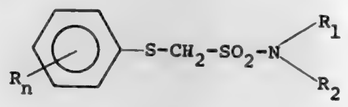
Christian T. Goralski, and Thomas C. Klingler, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 314,793, Dec. 13, 1972. This application July 10, 1974, Ser. No. 487,111

Int. Cl.² C07C *149/425*

U.S. Cl. 260—556 A **3 Claims**

1. A 1-(arylthio)methanesulfonamide corresponding to the formula



wherein R represents H, lower alkyl, lower alkoxy, halo or trifluoromethyl, *n* represents an integer from 0 to 3 and R_1 and R_2 independently represent H, lower alkyl or phenyl at least one of which is phenyl.

3,925,469

TERTIARY-ALKYLAMINO-LOWER-ACYL-XYLIDIDE LOCAL ANAESTHETICS

Herbert H. F. Adams, Westboro; Jon C. Anderson, Wyckoff, both of N.J.; Murray R. Blair, Jr., Sudbury, Mass.; Robert L. DiRubio, Paxton, Mass., and Bertil H. Takman, Worcester, Mass., assignors to Astra Pharmaceutical Products, Inc., Worcester, Mass.

Continuation-in-part of Ser. Nos. 230,114, Feb. 28, 1972, abandoned, and Ser. No. 325,378, Jan. 22, 1973, abandoned. This application June 12, 1973, Ser. No. 369,146

Int. Cl.² C07C *103/34*

U.S. Cl. 260—562 B **4 Claims**

1. A local anesthetic compound selected from the group consisting of 2-(N-ethyl-tert.-amylamino)-2',6'-acetoxylidide and a pharmaceutically acceptable salt thereof.

3,925,470

AMINOPHENYLAMIDINES, THEIR PRODUCTION AND THEIR MEDICINAL USE

Hartmund Wollweber, Wuppertal, Germany, and Winfried Flucke, Beenleigh, Australia, assignors to Bayer Aktiengesellschaft, Germany

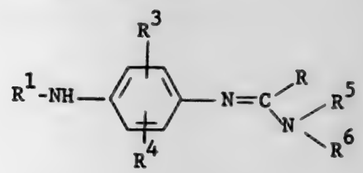
Division of Ser. No. 399,813, Sept. 24, 1973, which is a division of Ser. No. 151,575, June 9, 1971, Pat. No. 3,855,292. This application Oct. 17, 1974, Ser. No. 515,626

Claims priority, application Germany, June 13, 1970, 2029299

Int. Cl.² C07C *123/00*

U.S. Cl. 260—564 RF **3 Claims**

1. A compound of the formula:



wherein

R^1 is hydrogen, alkyl of 1 to 5 carbon atoms, alkoxyalkyl of 2 to 5 carbon atoms or alkenyl of 2 to 5 carbon atoms;

each of R^3 and R^4, independently of the other, is alkenyl of 2 to 6 carbon atoms, or one is hydrogen and the other is alkenyl of 2 to 6 carbon atoms;

R is alkyl of 1 to 5 carbon atoms;

R^5 is alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, alkynyl of 2 to 4 carbon atoms, or cycloalkyl of 3 to 6 carbon atoms; and

R^6 is hydrogen, alkyl of 1 to 5 carbon atoms or alkenyl of 2 to 5 carbon atoms;

or a salt thereof of a pharmaceutically acceptable acid.

3,925,471

AMINOPHENYLAMIDINES THEIR PRODUCTION AND THEIR MEDICINAL USE

Hartmund Wollweber, Wuppertal-Elberfeld, Germany, and Winfried Flucke, Beenleigh, Australia, assignors to Bayer Aktiengesellschaft, Germany

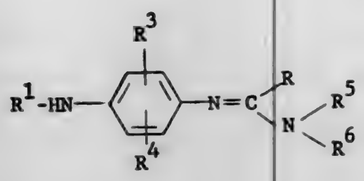
Division of Ser. No. 399,813, Sept. 24, 1973, which is a division of Ser. No. 151,575, June 9, 1971, Pat. No. 3,855,292. This application Oct. 17, 1974, Ser. No. 515,627

Claims priority, application Germany, June 13, 1970, 2029299

Int. Cl.² C07C *123/00*

U.S. Cl. 260—564 RF **3 Claims**

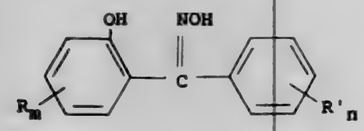
1. A compound of the formula:



wherein
R^1 is hydrogen, alkyl of 1 to 5 carbon atoms, alkoxyalkyl of 2 to 5 carbon atoms or alkenyl of 2 to 5 carbon atoms;
each of R^3 and R^4, independently of the other, is alkoxy of 1 to 6 carbon atoms, or one is hydrogen and the other is alkoxy of 1 to 6 carbon atoms;
R is alkyl of 1 to 5 carbon atoms;
R^5 is alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, alkynyl of 2 to 4 carbon atoms, or cycloalkyl of 3 to 6 carbon atoms; and
R^6 is hydrogen, alkyl of 1 to 5 carbon atoms or alkenyl of 2 to 5 carbon atoms;
or a salt thereof of a pharmaceutically acceptable acid.

3,925,472
PHENOLIC OXIMES
Ronald R. Swanson, New Hope, Minn., assignor to General Mills Chemicals, Inc., Minneapolis, Minn.
Continuation of Ser. No. 709,801, Mar. 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 498,121, Oct. 19, 1965, abandoned. This application Nov. 21, 1973, Ser. No. 417,915
Int. Cl.² C07C *131/00*
U.S. Cl. 260—566 A **14 Claims**

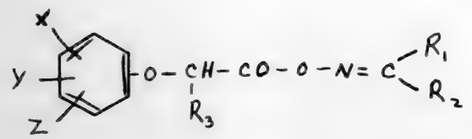
1. A compound having the formula:



in which R and R′ may be individually alike or different and are saturated aliphatic hydrocarbon groups of 1–25 carbon atoms, *m* and *n* are 0, 1, 2, 3 or 4 with the proviso that both are not 0 and the total number of carbon atoms in R_m and R'_n is from 3–25, said compound being further characterized as being substantially insoluble in water, having a solubility of at least 2% by weight in benzene and forming a complex with copper which complex is also soluble to the extent of at least 2% by weight in benzene.

3,925,473
HERBICIDAL OXIME ESTERS OF PHENOXYALKANOIC ESTERS AND THEIR USE AS SELECTIVE HERBICIDES
Ludwig Nusslein, and Friedrich Arndt, both of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany
Filed Dec. 12, 1973, Ser. No. 424,005
Int. Cl.² C07C *131/00*
U.S. Cl. 260—566 AE **3 Claims**

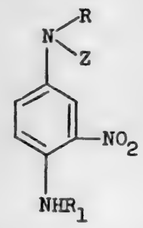
1. A compound of the formula



wherein R_1 and R_2 each represent a member selected from the group consisting of alkyl groups containing from one to six carbon atoms, phenoxymethyl, 2-methoxymethyl, phenyl, nitrophenyl, methylphenyl, chlorophenyl, and hydrogen except that R_1 and R_2 cannot both be hydrogen; R_1 and R_2 taken together with the adjacent carbon atom can be cyclopentylidene, 3-methylcyclopentylidene, cyclohexlidene, dimethylcyclohexylidene or trimethylcyclohexylidene; R_3 can be hydrogen or methyl and X, Y, and Z taken individually can be hydrogen, methyl or a halogen.

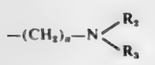
3,925,474
NITROPARAPHENYLENE DIAMINE DERIVATIVES AND METHODS OF MAKING THEM
Gregoire Kalopissis, Paris; Andree Bugaut, Boulogne-sur-Seine, and Vahan Zorayan, Enghien-les-Bains, all of France, assignors to L'Oreal, Paris, France
Division of Ser. No. 729,499, May 16, 1968, Pat. No. 3,694,140. This application Dec. 15, 1971, Ser. No. 208,490
Claims priority, application France, May 16, 1967, 53676
Int. Cl.² C07C *87/14*
U.S. Cl. 260—570.5 P **3 Claims**

1. A method for preparing a compound of the formula

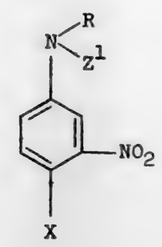


in which R is selected from the group consisting of hydrogen, lower alkyl having 1–6 carbon atoms, amino-alkyl having 1–6 carbon atoms, amino dialkyl wherein each of the alkyl moieties has 1–6 carbon atoms and alkylaminodialkyl wherein each of the alkyl moieties has 1–6 carbon atoms,

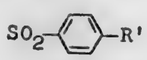
Z is hydrogen, and
R_1 is



in which
n is a whole number between 2 and 6 inclusive and R_2 and R_3 are selected from the group consisting of hydrogen, lower alkyl having 1–6 carbon atoms and lower hydroxyalkyl having 1–6 carbon atoms, with the proviso that R is other than hydrogen and lower alkyl having 1–6 carbon atoms when R_2 and R_3 are both lower alkyl having 1–6 carbon atoms, which method comprises the steps of
reacting an amine of the formula $R_1—NH_2$, in which R_1 has the significance hereinbefore indicated, with a compound of the formula

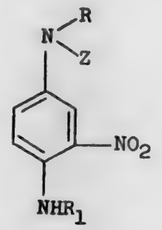


in which
R has the significance hereinbefore indicated,
X represents halogen,
Z^1 is selected from the group consisting of

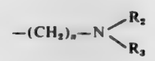


and OC—R″ in which R′ is selected from the group consisting of hydrogen, methyl and NO_2 and R″ is lower alkyl having 1–6 carbon atoms and acid hydrolyzing the resulting product to yield said compound.

2. A compound selected from the group consisting of
a. a compound of the formula



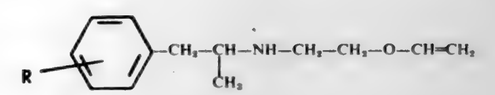
in which R is selected from the group consisting of hydrogen, alkyl having 1–6 carbon atoms, amino-alkyl having 1–6 carbon atoms, amino dialkyl wherein each of the alkyl moieties has 1–6 carbon atoms and alkyl amino-dialkyl wherein each of the alkyl moieties has 1–6 carbon atoms, Z is hydrogen, and R_1 represents



in which *n* is a whole number between 2 and 6 and R_2 and R_3 are selected from the group consisting of hydrogen, lower alkyl having 1–6 carbon atoms and lower hydroxyalkyl having 1–6 carbon atoms, with the proviso that R is other than hydrogen and lower alkyl having 1–6 carbon atoms when R_2 and R_3 are both lower alkyl having 1–6 carbon atoms and
b. the quaternized compound of (a).

3,925,475
N-VINYL OXYETHYL-α-METHYL-β-PHENETHYLAMINES
Bruce Wayne Horrom, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Continuation-in-part of Ser. No. 481,626, June 21, 1974, abandoned. This application Aug. 16, 1974, Ser. No. 498,013
Int. Cl.² C07C *87/29*
U.S. Cl. 260—570.8 R **6 Claims**

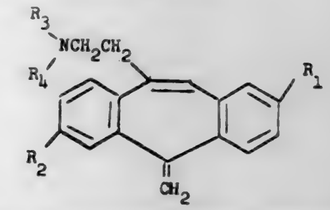
1. A compound of the formula



wherein R is hydrogen, halo or trifluoromethyl, and acid addition salts thereof.

3,925,476
10-(2-DIALKYLAMINOETHYL)-10,11-DIHYDRO, OR 10-(2-DIALKYLAMINOETHYL)-5-METHYLENE-2,7-SUBSTITUTED OR UNSUBSTITUTED-5H-DIBENZO[A,D]CYCLOHEPTENES
William J. Houlihan, Mountain Lakes, N.J., and Jeffrey Nadelson, Lake Parsippany, N.J., assignors to Sandoz, Inc., E. Hanover, N.J.
Filed Feb. 7, 1972, Ser. No. 224,323
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C07C *87/29*
U.S. Cl. 260—570.8 TC **3 Claims**

1. A compound having the formula

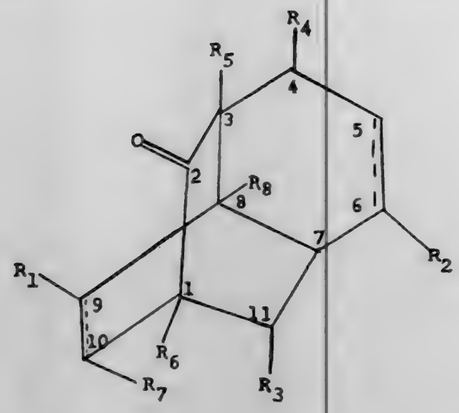


wherein
R_1 and R_2 are independently hydrogen, lower alkyl having 1 to 3 carbon atoms, lower alkoxy having 1 to 3 carbons atoms, halo having an atomic weight of 19 to 36 or trifluoromethyl,
R_3 and R_4 are independently lower alkyl having 1 to 3 carbon atoms.

2. A pharmaceutically acceptable acid addition salt of a compound of claim **1.**

3,925,477
TRICYCLO[5,3,1,0^{3,8}]UNDECAN-2-ONES AND THE CORRESPONDING MONO- AND DI-UNSATURATED DERIVATIVES
Georg Frater, Greifensee; Hans Greuter, Horgen, and Hans Schmid, Schwerzenbach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 300,603, Oct. 25, 1972, Pat. No. 3,836,584. This application June 10, 1974, Ser. No. 477,865
Claims priority, application Switzerland, Nov. 12, 1971, 16517/71
Int. Cl.² C07C *49/54*
U.S. Cl. 260—586 G **8 Claims**

1. A compound selected from the group consisting of tricyclic ketones of the formula:



wherein R_1, R_7 and R_8 are independently selected from the group consisting of lower alkyl, hydrogen and lower alkoxy; R_2 is a hydrogen atom, lower alkyl or lower alkenyl; R_3 and R_4 are independently selected from the group consisting of hydrogen or lower alkyl; R_5 and R_6 are independently lower alkyl; and wherein the dotted bond represents a single or double bond.

3,925,478

STEREOSPECIFIC TOTAL STEROIDAL SYNTHESIS VIA SUBSTITUTED C/D-TRANS INDANONES

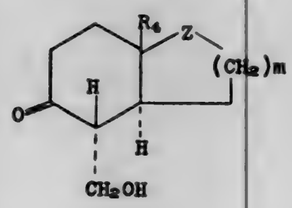
Zoltan George Hajos, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 765,023, Oct. 4, 1968. This application June 24, 1974, Ser. No. 482,822

Int. Cl.² C07C *49/36, 49/38, 49/27, 43/18*

U.S. Cl. 260—586 F **4 Claims**

1. A compound of the formula



wherein

R_4 is hydrogen or lower alkyl; Z is carbonyl, lower alkylenedioxy or $CH(OR_2)$; *m* is an integer having the value of 1 or 2 and R_2 is hydrogen, lower alkyl, lower alkoxy-lower alkyl, phenyl-lower alkyl, tetrahydropyranyl, lower alkanoyl, benzoyl, nitrobenzoyl, carboxylower alkanoyl, carboxy-benzoyl, trifluroacetyl, or camphorsulfonyl.

3,925,479

TRICYCLO (5,4,0,0^{3,9})UNDECAN-2-ONES

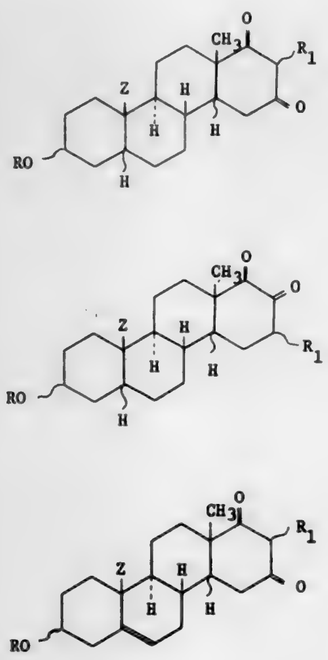
Georg Frater, Greifensee; Hans Greuter, Horgen, and Hans Schmid, Schwerzenbach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

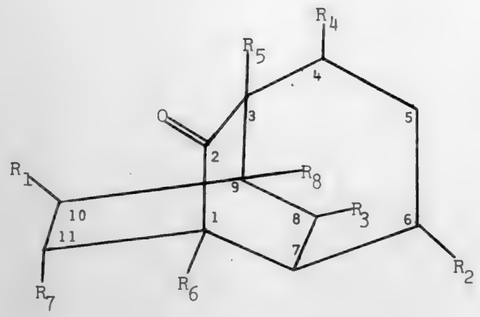
Division of Ser. No. 300,603, Oct. 25, 1972, Pat. No. 3,836,584. This application Apr. 12, 1974, Ser. No. 460,395

Int. Cl.² C07C *49/36, 49/54*

U.S. Cl. 260—586 G **5 Claims**

1. A compound of the formula:





wherein R_1, R_7 and R_8 are independently selected from the group consisting of lower alkyl, hydrogen and lower alkoxy; R_2 is a hydrogen atom, lower alkyl or lower alkenyl; R_3 and R_4 are independently selected from the group consisting of hydrogen or lower alkyl; R_5 and R_6 are independently lower alkyl.

3,925,480

NOVEL 16,17α AND 17,17α DIKETO-D-HOMOSTEROIDS AND THEIR METHOD OF PREPARATION

Bernard Gastambide, Reims; Claude Thal, Gif-sur-Yvette; Philippe Rohrbach, Paris, and Marie-Jeanne Laroche, Nogent-sur-Marne, all of France, assignors to Etablissement Public: Centre National de la Recherche Scientifique, Paris, France

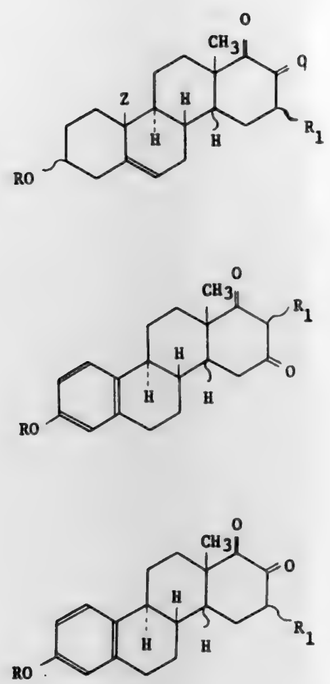
Filed Mar. 23, 1967, Ser. No. 625,312

Claims priority, application France, Mar. 31, 1966, 66.55903; June 27, 1966, 66.67026; Mar. 6, 1967, 67.97572

Int. Cl.² C07C *49/48*

U.S. Cl. 260—586 E **9 Claims**

1. Diketo-D-homosteroid of one of the formulae



wherein each of

R and R_1 is, independently, a member selected from the group consisting of a hydrogen atom and lower alkyl; and Z is a member selected from the group consisting of a hydrogen atom and methyl.

3,925,481

PROCESS AND CATALYST FOR THE PREPARATION OF KETONES AND/OR ALDEHYDES FROM OLEFINES

John W. Geus, Geleen, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Continuation-in-part of Ser. Nos. 765,651, Nov. 7, 1968, abandoned, and Ser. No. 108,081, Jan. 20, 1971, abandoned. This application July 20, 1972, Ser. No. 273,428

Claims priority, application Netherlands, Apr. 18, 1970, 7005647

Int. Cl.² C07C *45/02*

U.S. Cl. 260—597 R **8 Claims**

1. In a process for preparing ketones wherein an alkene containing up to 4 carbon atoms and an oxidizing agent are passed at an elevated temperature over a supported catalyst, the improvement consisting essentially in reacting said alkene together with both molecular oxygen and steam in a combined amount in excess of the quantity of said alkene in the presence of a catalyst system containing finely divided discrete tin oxide particles, a majority of which are of a size of at most 50 A units, homogeneously distributed over a solid particulate, inorganic, thermally stable supporting material, and having a substantially monomolecular layer of molybdenum oxide deposited over said discrete tin oxide particles, said reaction being carried out at an average catalyst surface temperature within the range of between 100°C to about 350°C.

3,925,482

DISUBSTITUTED TOLANS AND PREPARATION THEREOF

Jean Jacques, Paris, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Hauts de Seine, France

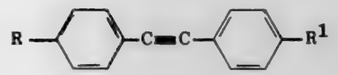
Filed June 1, 1972, Ser. No. 258,859

Claims priority, application France, June 2, 1971, 71.19929; Nov. 19, 1971, 71.41515

Int. Cl.² C07C *43/20, 43/22*

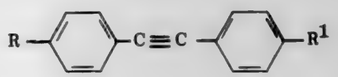
U.S. Cl. 260—612 R **17 Claims**

1. A tolan of the formula



wherein R and R^1 are unlike alkoxy groups, wherein each of R and R^1 has at least 1 but less than 11 carbon atoms and the total number of the carbon atoms in R and R^1 is more than 9 and less than 13.

2. A tolan of the formula



wherein R is an n-alkyl group and R^1 is an n-alkoxy group, wherein each of R and R^1 has at least 1 but less than 11 carbon atoms and the total number of the carbon atoms in R and R^1 is more than 3 but less than 13.

3,925,483

α-(P-BENZYLOXYPHENYL)-P-CRESOL

Mario Gustav Buzzolini, Morristown, and Robert Everett Manning, Mountain Lakes, both of N.J., assignors to Sandoz-Wander, Inc., E. Hanover, N.J.

Division of Ser. No. 258,787, June 1, 1972. This application Feb. 15, 1974, Ser. No. 442,919

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07C *43/20*

U.S. Cl. 260—613 R **1 Claim**

1. The phenolic compound which is α-(p-benzyloxyphenyl)-p-cresol.

3,925,484

PROCESS FOR MAKING POLYTETRAMETHYLENE ETHER GLYCOL HAVING A NARROW MOLECULAR WEIGHT DISTRIBUTION

Melvin C. Baker, Youngstown, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 8, 1973, Ser. No. 414,129

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07C *41/00*

U.S. Cl. 260—615 B **4 Claims**

1. A process for producing polytetramehylene ether glycol having a narrow molecular weight distribution of about 1.30–1.70, a number average molecular weight of about 1600–3200 and a viscosity of about **4.0–20** poise at **40°C.**, said process comprising the steps of (1) partially depolymerizing at a temperature from about **120°–150°C.** polytetramethylene ether glycol starting material having a number average molecular weight of about **600–2200** in the presence of a cross-linked ion exchange resin in acid form to produce tetrahydrofuran and removing the tetrahydrofuran by vaporization as formed said depolymerization being conducted to an extent sufficient to obtain said narrow molecular weight distribution

polytetramethylene ether glycol and said resin being present at about 3–7 percent based upon the weight of starting polytetramethylene ether glycol, (2) cooling to about 70°–90°C., (3) filtering the polytetramethylene ether glycol to remove the resin therefrom, and (4) removing any remaining tetrahydrofuran at a low pressure of about 1–100 mm. of mercury.

4. A narrow molecular weight distribution polytetramethylene ether glycol having a molecular weight distribution of about 1.30 to 1.40, a number average molecular weight of about 1600–3200 and a viscosity of about 4.0–20 poise at 40°C.

3,925,485
PROCESS FOR THE PREPARATION OF ALLYLIC ALCOHOLS

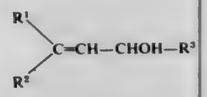
Pierre Chabardes; Charles Grard, both of Lyon, and Charles Schneider, Vernaison, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Continuation of Ser. No. 888,934, Dec. 29, 1969, abandoned. This application Sept. 7, 1972, Ser. No. 286,889

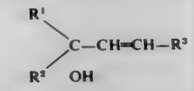
Int. Cl.² C07C *33/02, 69/61, 41/00*

U.S. Cl. 260—617 R **8 Claims**

1. A process for the preparation of allylic primary or secondary alcohols of the formulae:



and the tautomers thereof, comprising the step of heating in the liquid phase an ethylenic tertiary alcohol of the formulae:



in the presence of a transition metal catalyst selected from the group consisting of compounds of vanadium, niobium molybdenum, tungsten and rhenium, and wherein R^1 and R^2 are selected from the group consisting of alkyl, non-conjugated alkenyl and alkadienyl, cyclo-alkyl of 3 – 10 carbons, carbocyclic arylakyl and carbocyclic aromatic groups, and wherein R^1 and R^2 together may represent an alkylene or alkenylene of 4 to 7 carbons in the starting material, and together form a 1-cycloalkenylene of 5 to 8 carbons in the alcohol product, and wherein R^1 and R^2 may be substituted by halogen, hydroxy, alkoxy, alkanoyl or alkanoyloxy, and R^3 may be the same as R^1 and R^2, individually, or hydrogen.

3,925,486
POLYCYCLIC ALCOHOLS

Hans Greuter, Horgen; Georg Frater, Greifensee, and Hans Schmid, Schwerzenbach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

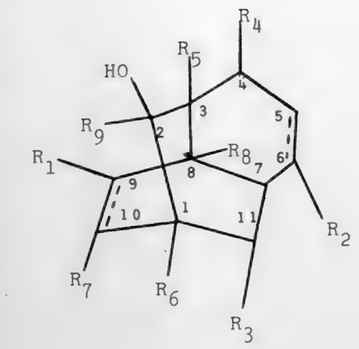
Filed Nov. 7, 1972, Ser. No. 304,402

Claims priority, application Switzerland, Nov. 12, 1971, 16518/71; Mar. 10, 1972, 3563/72; July 26, 1972, 11146/72

Int. Cl.² C07C *35/22*

U.S. Cl. 260—617 F **11 Claims**

1. A compound of the formula:



wherein R_1, R_7 and R_8 are independently selected from the group consisting of hydrogen, or lower alkyl; R_2 is hydrogen, or lower alkyl; R_3 and R_4 are independently selected from the group consisting of hydrogen or lower alkyl; R_5 and R_6 are independently lower alkyl; R_9 is hydrogen, or lower alkyl; and wherein the dotted bonds can be optionally hydrogenated and wherein lower alkyl has 1–6 carbon atoms.

3,925,487
SUBSTITUTED DIPHENYL ETHENE

Bernt Borretzen; Knut Gunnar Olsson, and Bertil Sundbeck, all of Malmo, Sweden, assignors to AB Ferrosan, Malmo, Sweden

Filed Dec. 22, 1969, Ser. No. 887,335

Claims priority, application United Kingdom, Dec. 24, 1968, 61474/68

Int. Cl.² C07C *39/12*

U.S. Cl. 260—619 A **1 Claim**

1. The compound bis(p-hydroxyphenyl)-2-methyl-cyclohex-4-enylidene methane.

3,925,488
PROCESS FOR THE PRODUCTION OF 1,3,5-TRIMETHY-2,4,6-TRIS(3,5-DI-TERT-ALKYL-4-HYDROXYBENZYL)BENZENE

Kju Hi Shin, Bloomfield Hills, Mich., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 146,538, May 24, 1971, abandoned. This application Mar. 1, 1974, Ser. No. 447,315

Int. Cl.² C07C *37/00*

U.S. Cl. 260—619 B **8 Claims**

1. In a process for making 1,3,5-tri-methyl-2,4,6-tris(3,5-di-tert-alkyl-4-hydroxybenzyl) benzene, said process comprising reacting 3,5-di-tert-alkyl-4-hydroxybenzyl alcohol with mesitylene in the presence of an acid catalyst, the improvement whereby dealkylation is reduced and increased yields are obtained, said improvement comprising (a) conducting said process in a substantially inert water-immiscible solvent having a normal boiling point of from about 30°–100°C, said process being carried out at the boiling point of the reaction mixture and distilling water formed during said process from said reaction mixture, (b) using as said acid catalyst a sulfonic acid selected from the group consisting of lower alkane sulfonic acids, halo-substituted lower alkane sulfonic acids and hydrocarbyl aromatic sulfonic acids, and (c) adding said 3,5-di-tert-alkyl-4-hydroxybenzyl alcohol over an extended time period to a boiling reaction mixture containing said mesitylene, said sulfonic acid catalyst and said inert solvent at a controlled rate such that the mole ratio of unreacted 3,5-di-tert-alkyl-4-hydroxybenzyl alcohol to original mesitylene in said boiling reaction mixture remains below about one mole of said 3,5-di-tert-alkyl-4-hydroxybenzyl alcohol per mole of original mesitylene.

5. The process of claim 3 further improved by adding from about 0.05 to about 0.5 moles, per mole of said 3,5-di-tert-butyl-4-hydroxybenzyl alcohol, of formaldehyde to the process reaction mixture prior to the completion of the reaction of said 3,5-di-tert-butyl-4-hydroxybenzyl alcohol with said mesitylene.

3,925,489
METHOD FOR PRODUCING HYDRATES OF SODIUM CHLOROPHENATE AND HYDRATES PRODUCED THEREBY

Robert S. Cohen, Dover, and Lila J. Crites, Tuscarawas, both of Ohio, assignors to Dover Chemical Corporation, Dover, Ohio

Filed Apr. 15, 1968, Ser. No. 721,173

Int. Cl.² C07C *39/36, 39/24*

U.S. Cl. 260—623 R **10 Claims**

1. A process for forming water insoluble, sodium tri, tetra or penta chlorophenate hydrate from an aqueous solution containing a dissolved sodium chlorophenate selected from sodium tri, tetra and penta chlorophenate comprising establishing a sufficient quantity of dimethylsulfoxide in said solution such that, upon bringing the temperature of said solution to a point no greater than about 40°C at atmospheric pressure, said insoluble hydrate will form, and bringing the temperature of said solution to a point at which said insoluble hydrate comes into existence and precipitates from said solution.

3,925,490
HYDROGENATION CATALYSTS AND PROCESS FOR THE REMOVAL OF ALDEHYDES AND KETONES FROM GASEOUS STREAMS RICH IN CARBON MONOXIDE

Manfred Reich; Wolfgang Müller, and Manfred zur Hausen, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft

Filed July 13, 1970, Ser. No. 54,589

Claims priority, application Germany, July 15, 1969, 1935900

Int. Cl.² C07C *29/14*

U.S. Cl. 260—643 B **11 Claims**

1. In a process for the removal of alkanals and alkanones having 3 to 8 carbon atoms from gaseous streams obtained in the Oxo process rich with about 5 to 95 percent by volume of hydrogen, about 5 to 60 percent by volume of carbon monoxide and about 5 to 60 grams of said alkanals and alkanones per cubic meter at normal conditions, the improvement comprising hydrogenating said aldehydes and ketones to alkanols at a temperature of about 100° to 200°C, a pressure of about 3 to 50 atmospheres and in the presence of a supported metal catalyst comprising 100 parts support material by weight, about 5 to 100 parts by weight of copper and about 0.5 to 50 percent by weight of chromium based on the weight of the copper, said supported metal catalyst is prepared by precipitating salts of the copper and chromium from solution, drying the precipitated material and reducing the salts in a hydrogen stream at an elevated temperature of about 100° to 300°C.

3,925,491
NEW FLUORINATED DIENES AND PROCESS FOR PREPARING SAME

Jean G. Riess; Maurice Le Blanc; Georges Santini, and Jacky Guion, all of Nice, France, assignors to Produits Chimiques Ugine Kuhlmann, Saint-Denis, France

Division of Ser. No. 446,101, Feb. 26, 1974, Pat. No. 3,901,948. This application Jan. 31, 1975, Ser. No. 545,894

Claims priority, application France, Feb. 28, 1973, 73.07107

Int. Cl.² C07C *17/28*

U.S. Cl. 260—653.3 **2 Claims**

1. A process for the preparation of tetrafluorobutadiene, which comprises reacting the compound of the formula $H-CF_2-CH=CH_2$ and the compound CF_3I in a molar excess of approximately 5 to 100 percent, in the presence of approximately 2 to 5 gram atoms of copper per mole of the compound CF_3I, in a solvent at a temperature of between about 120°C and about 150°C for a time to produce exclusively or substantially exclusively tetrafluorobutadiene.

3,925,492
PROCESS FOR PREPARING POLYCARBONMONOFLUORIDE

Rokuo Ukaji, Ibaraki; Tutomu Kamihigoshi, Takatsuki; Kenji Mikami, and Shoji Takaki, both of Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed May 30, 1974, Ser. No. 474,804

Claims priority, application Japan, May 30, 1973, 48-61076

Int. Cl.² C07C *17/00*

U.S. Cl. 260—653.9 **6 Claims**

1. In the process for preparing polycarbonmonofluoride by the reaction of carbon materials with fluorine gas, the improvement which comprises employing air as a diluent of said fluorine gas, said carbon materials being selected from the group consisting of carbon black petroleum coke, petroleum pitch coke charcoal, natural graphite and artificial graphite and the reaction being carried out at a temperature in the range from 250°C to 600°C.

3,925,493
PROCESS FOR PREPARING DICHLOROHEXADIENES

Andre A. Bader, and Francis J. Weiss, both of Pierre-Benite, France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation of Ser. No. 636,672, May 8, 1967, abandoned. This application Apr. 20, 1970, Ser. No. 28,256

Claims priority, application France, May 13, 1966, 66.61472

Int. Cl.² C07C *21/02*

U.S. Cl. 260—654 R **3 Claims**

1. In a process for preparing dichlorohexadienes which comprises reducing acrolein by a known manner in a solution with a metal selected from the group consisting of copper, zinc or a mixture thereof or a zinc amalgam in the presence of an acid capable of forming a soluble metal salt with said metal to produce divinylglycol, the improvement comprising introducing at least a stoichiometric amount of HCl to the resultant reaction mixture and continuing the reaction to produce dichlorohexadienes therefrom.

3,925,494
RUTHENIUM COMPLEXES AS CATALYSTS FOR REDUCTION OF POLYENES

Darryl R. Fahey, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 140,564, May 5, 1971, abandoned. This application Dec. 20, 1972, Ser. No. 316,917

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07C *13/00*

U.S. Cl. 260—666 A **4 Claims**

1. A process for the partial hydrogenation of 1,5,9-cyclododecatriene to cyclododecene which comprises contacting 1,5,9-cyclododecatriene with a ruthenium-ligand complex catalyst consisting essentially of $(Ph_3P)_2(CO)_3Ru$ or $[Ru(CO)_4]_3$ under hydrogenation conditions which partially reduce 1,5,9-cyclododecatriene to cyclododecene.

3,925,495
HYDROCARBON CONVERSION IN THE PRESENCE OF A CATALYST OF A LEWIS ACID INTERCALATED IN GRAPHITE

Paul G. Rodewald, Rocky Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 6, 1974, Ser. No. 467,316

Int. Cl.² C07C *5/28*

U.S. Cl. 260—666 P **15 Claims**

1. A process for effecting skeletal isomerization of a hydrocarbon charge which comprises contacting said charge under isomerization conditions with a catalyst consisting essentially of graphite having intercalated in the lattice thereof between about 5 and about 75 weight percent of a Lewis acid consisting essentially of a halide of an element of Group II-A, III-A, IV-B, V or VI-B.

3,925,496
PRODUCTION OF STYRENE

Harold Shalit, Drexel Hill, and Joseph A. Kieras, Lincoln University, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 21, 1974, Ser. No. 433,317

Int. Cl.² C07C *3/30*

U.S. Cl. 260—669 R **1 Claim**

1. In the method for the production of styrene by the thermal conversion, at a temperature in the range of from 600° to 850°C. at pressures ranging from 0.25 atmospheres to 10 atmospheres, absolute, and for a contact time in the range of from about 0.1 to 2.0 seconds, of alkyl benzenes selected from the group consisting of cumene and sec-butylbenzene the improvement comprising carrying out said thermal conversion of said alkylbenzene in the presence of added toluene, wherein the mole ratio of added toluene to said alkylbenzene hydrocarbon charge is in the range of from 0.1:1 to 10:1, thereby increasing the yield of styrene.

3,925,497
SUBSTITUTED 1,3,7-OCTATRIENES AND THEIR PREPARATION

Alden Dwayne Josey, and Jack Robert Kirchner, both of Wilmington, Del., assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 79,644, Oct. 9, 1970, abandoned. This application Oct. 24, 1973, Ser. No. 409,026

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C07C *11/00*

U.S. Cl. 260—677 R **18 Claims**

1. An alkyl substituted 1,3,7-octatriene of the formula

$$CH_2{=}C(R_1)-C{=}CH-CH_2-CH(R_3)-C(R_4){=}CH_2$$

in which both R_1 and R_4 are alkyl groups, or either is an alkyl group and the other is hydrogen; and each of R_2 and R_3 is an alkyl group or hydrogen, provided that when either R_1 or R_4 is an alkyl group and the other is hydrogen and either R_2 or R_3 is hydrogen, the other of R_2 and R_3 is hydrogen, said alkyl groups being 1–8 carbon straight chain hydrocarbon alkyl groups.

7. A method of preparing an alkyl substituted octatriene according to claim 1 comprising: (A) homodimerizing (a) a monoalkyl butadiene of the formula

$$CH_2{=}C(R_1)-CH{=}CH_2,$$ or (b) a dialkyl butadiene of the formula

$$CH_2{=}C(R_1)-C(R_2){=}CH_2,$$

in which formulas R_1 and R_2 are 1–8 carbon straight chain hydrocarbon alkyl groups; or, (B) codimerizing (a) 1,3-butadiene and one such monoalkyl butadiene or one such dialkyl butadiene, or (b) two different such monoalkyl butadienes or two different such dialkyl butadienes, or (c) one such monoalkyl butadiene and one such dialkyl butadiene, under liquid phase conditions in the presence of a catalyst which is a dienophile-coordinated palladium-phosphine complex.

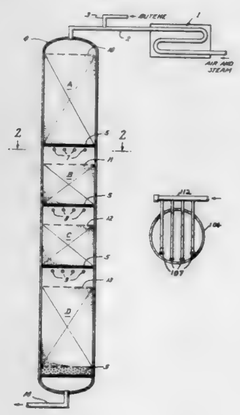
3,925,498
OXIDATIVE DEHYDROGENATION PROCESS

William P. Stadig, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Filed May 27, 1970, Ser. No. 40,772

Int. Cl.² C07C *5/48*

U.S. Cl. 260—680 E **25 Claims**



1. In a process for the oxidative dehydrogenation of organic compounds with a metal containing oxidative dehydrogenation catalyst in a fixed bed in the presence of oxygen by passing a mixture comprising said organic compound and oxygen through said fixed bed wherein the improvement comprises adding incremental amounts of oxygen to said organic compounds as said organic compounds pass through said fixed bed and intimately mixing said oxygen and said organic compounds, said adding and mixing occurring in the absence of said catalyst.

3,925,499
OXIDATIVE DEHYDROGENATION USING GROUP IA OR IIA METAL/SN/P/O CATALYST

Emory W. Pitzer, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 194,614, Nov. 1, 1971, Pat. No. 3,824,195. This application Apr. 1, 1974, Ser. No. 456,876

Int. Cl.² C07C *5/48*

U.S. Cl. 260—680 E **8 Claims**

1. A method of oxidatively dehydrogenating an organic feed selected from the group consisting of alkenes, cycloalkenes, alkylpyridines, and alkylaromatics by contacting said feed with a free oxygen-containing gas and a catalyst prepared by:

a. impregnating a calcined composition consisting essentially of tin, phosphorus and oxygen, said composition containing from about 0.1 to about 14 weight percent phosphorus, with a calcinable phosphorus-containing compound to increase the phosphorus content to a maximum of about 15 weight percent;

b. calcining the composition produced in step (a);

c. incorporating into the calcined composition of step (b) a calcinable compound of a metal selected from Group IA or IIA of the Periodic Table; and,

d. calcining the composition formed in step (c) to produce said catalyst.

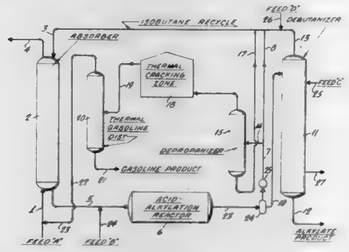
3,925,500
COMBINED ACID ALKYLATION AND THERMAL CRACKING PROCESS

William W. Wentzheimer, Glen Mills, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed June 26, 1974, Ser. No. 483,170

Int. Cl.² C07C *3/54*

U.S. Cl. 260—683.44 **5 Claims**



1. In an $H_3PO_4{\cdot}BF_3$ catalyzed alkylation process wherein

a. a hydrocarbon stream comprising pentane and lower boiling paraffins and olefins is separated in a liquid absorption zone to produce a liquid absorption stream containing a predominant portion of said olefins in said hydrocarbon stream, said liquid absorption stream being formed by passing isobutane as the absorbent in said zone,

b. the isobutane absorbent and absorbed olefins in said absorption stream are alkylated in said $H_3PO_4{\cdot}BF_3$ catalyzed alkylation zone to produce an alkylate product,

c. the alkylation hydrocarbon phase is separated by distillation in a debutanizer and depropanizer into at least three fractions, the first fraction comprising said alkylate product is withdrawn from the debutanizer, the second fraction comprising propane and lower boiling hydrocarbons is removed as overhead from the depropanizer and the third fraction comprising unalkylated isobutane is separated from both the debutanizer and the depropanizer and recycled as absorbent to said absorption zone, the improvement which comprises

d. thermally cracking said second fraction of step (c) which comprises propane and lower boiling hydrocarbons in a thermal cracking zone to produce a product stream comprising thermal gasoline, propylene, ethylene, unconverted propane and lower boiling paraffins,

e. fractionating said product stream of step (d) to withdraw said thermal gasoline as a product of said process, and

f. recycling said propylene, ethylene, unconverted propane and lower boiling paraffins from said fractionating step (e) to said absorption zone in step (a).

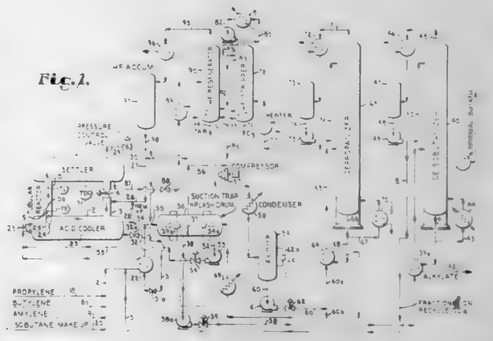
3,925,501
HYDROGEN FLUORIDE ALKYLATION WITH EFFLUENT REFRIGERATION

David H. Putney, Shawnee Mission, Kans., and Ward A. Graham, Kansas City, Mo., assignors to Stratford Engineering Corporation, Kansas City, Mo.

Filed Mar. 4, 1974, Ser. No. 447,648

Int. Cl.² C07C *3/54*

U.S. Cl. 260—683.48 **13 Claims**



1. A process of effluent refrigeration applied to the alkylation of isoparaffinic hydrocarbons by olefinic hyrodcarbons wherein hydrogen fluoride is the alkylation reaction catalyst and

the reaction vessel comprises an elongate vertical tube interconnecting an overhead settler vessel and a below-situated acid cooler vessel,

there being an additional valve-controlled recycle flow line interconnecting the settler and acid cooler,

whereby circulation of liquid alkylation reaction mixture occurs upwardly through said reaction vessel to said settler and separated acid returns from said settler downwardly through said flow line to said cooler vessel, comprising the steps of:

a. admixing said isoparaffinic hydrocarbons and said olefinic hydrocarbons with liquid hydrogen fluoride catalyst in an alkylation reaction step in said reaction vessel,

b. passing said reaction mixture of hydrocarbons, including alkylate, propane and isobutane, and said catalyst from said reaction vessel overhead to said settler,

c. maintaining said settler, said reactor and said acid cooler under sufficient back pressure to maintain all of said reaction mixture in liquid phase,

d. withdrawing overhead from said settler a hydrocarbon phase which comprises primarily isobutane and alkylate and a minor amount of propane and catalyst,

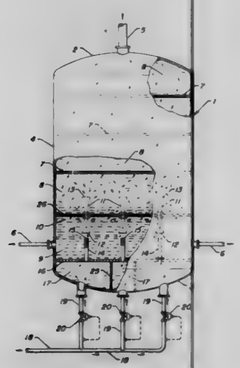
e. reducing the pressure on said hydrocarbon phase to vaporize excess volatile hydrocarbons, thereby refrigerating said hydrocarbon phase,

f. passing at least a substantial portion of said refrigerated hydrocarbon phase, including both liquid and vapor without separation, in indirect heat exchange with said acid in said acid cooler whereby to lower the temperature thereof,

g. passing said hydrocarbon phase, after use of same as a heat exchange medium in step (f) to a vapor-liquid separating step,

h. the vapor phase from said separating step being passed to a depropanizing step and overhead from said depropanizing step being passed to an HF stripping step,
i. recycling hydrogen fluoride catalyst from said stripping step to the alkylation reaction in step (a),
j. passing a first portion of the separation step liquid bottoms from step (g) to a deisobutanizing step and recycling overhead liquids from said deisobutanizing step to the reaction step (a), and
k. withdrawing alkylate product bottoms from said deisobutanizing step.

3,925,502
ALKYLATION PROCESS
William G. Boney, Arlington Heights, and Paul J. Kuchar, Hinsdale, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Division of Ser. No. 373,544, June 25, 1973, Pat. No. 3,867,103. This application May 30, 1974, Ser. No. 474,569
Int. Cl.² C07C 3/54
U.S. Cl. 260—683.48 **4 Claims**



1. In the liquid-phase, acid-catalyzed reaction of an isoparaffin with an olefin to form a high octane alkylate the process which comprises:
a. maintaining acid alkylation catalyst in a lower section of a reaction vessel,
b. maintaining a turbulent mass of acid-hydrocarbon emulsion in an upper section of said vessel,
c. injecting a mixture of an olefin and an isoparaffin into and through a plurality of standpipes disposed within said reaction vessel and communicating with said lower section,
d. passing the mixture from said standpipes into a plurality of venturi-shaped conduits disposed within said vessel and communicating with said lower section above said plurality of standpipes and with said upper section,
e. effecting the injection of said mixture through said standpipes at sufficient velocity to aspirate acid catalyst from said lower section into and through said conduits thus reacting said olefin and isoparaffin in said conduits, the reaction effluent through said conduits being at an acid to hydrocarbon ratio of less than one,
f. discharging said reaction effluent from said conduits into said mass of emulsion and effecting agitation of the emulsion,
g. passing acid catalyst, in addition to the acid aspirated into said conduit, through said lower section into said mass of emulsion in said upper section, and
h. completing the olefin-isoparaffin reaction in said turbulent mass of emulsion in said upper section of said reaction vessel in contact with the combining acid catalyst which is aspirated into and through said conduits and which is passed through said lower section into said mass of emulsion of said upper section.

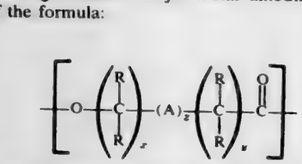
3,925,503
ISOMERIZATION OF NORMAL PARAFFINS WITH HYDROGEN MORDENITE CONTAINING PLATINUM AND PALLADIUM
R. Parthasarathy, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.
Filed Feb. 6, 1975, Ser. No. 547,666
Int. Cl.² C07C 5/30
U.S. Cl. 260—683.65 **3 Claims**

1. A process for isomerizing normal paraffins having from 4 to 6 carbon atoms per molecule which comprises contacting said normal paraffins in the presence of hydrogen at a temperature of 500° to 600°F. with hydrogen mordenite having incorporated therewith, a mixture of platinum and palladium in a concentration of 0.3 to 2.0 percent, wherein the ratio of platinum to palladium in said mixture is in the range of 2 to 4.

3,925,504
POLY(HYDROXY ETHER) POLYMERS BLENDED WITH CYCLIC ESTER POLYMERS
Joseph Victor Koleske; Clyde Jesse Whitworth, Jr., both of Charleston, W. Va., and Robert Dean Lundberg, Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.
Division of Ser. No. 140,951, May 6, 1971, Pat. No. 3,781,381, which is a continuation-in-part of Ser. No. 812,314, April 1, 1969, abandoned. This application Oct. 11, 1973, Ser. No. 405,514
Int. Cl.² C08L 71/00, 67/00
U.S. Cl. 260—823 **8 Claims**

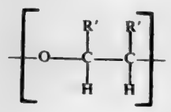
1. A thermoplastic composition consisting essentially of a blend of about 1 to about 95 weight percent of a cyclic ester polymer having a reduced viscosity of about 0.1 to about 15 and containing at least a major molar amount of recurring units I of the formula:

(I)



wherein each R, individually, is selected from the class consisting of hydrogen, alkyl, halo, and alkoxy; A is the oxy group; x is an integer from 1 to 4; y is an integer from 1 to 4; z is an integer of zero or one; with the provisos that (a) the sum of $x+y+z$ is at least 4 and not greater than 7, and (b) the total number of R substituents which are substituents other than hydrogen does not exceed 3, and up to a minor molar amount of recurring units II of the formula:

(II)



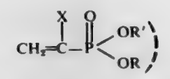
wherein each R′ is selected from the class consisting of, individually, hydrogen, alkyl, cycloalkyl, aryl, and chloroalkyl, and, together with the ethylene moiety of the oxyethylene chain of Unit II, a saturated cycloaliphatic hydrocarbon ring having from 4 to 8 carbon atoms, and about 5 to about 99 weight percent of an aromatic poly(hydroxy ether) as the thermoplastic organic polymer, said aromatic poly(hydroxy ether) being the reaction product of an aromatic dihydroxy compound having from 6 to 24 carbon atoms with an epihalohydrin, said percentages being based on the total weight of thermoplastic polymer and cyclic ester polymer.

3,925,505
THERMOPLASTIC MOLDING COMPOSITION BASED ON POLY (OXYMETHYLENES)
Günter Sextro, Naurod, Taunus, and Karlheinz Burg, Langenhain, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Continuation of Ser. No. 281,127, Aug. 16, 1972, abandoned. This application May 3, 1974, Ser. No. 466,899
Int. Cl.² C08G 16/06, 4/00
U.S. Cl. 260—823 **9 Claims**

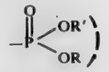
1. A thermoplastic molding composition comprising poly-(oxymethylene) containing from 0.1 to 40% by weight of polyether segments having a number average molecular weight (Mn) of at least 500 and at least two different structural units, said polyether segments containing from 30 to 95% by weight of units derived from tetrahydrofurane, from 0 to 60% by weight of units derived from ethylene oxide and from 0 to 40% by weight of units derived from 3,3-bis(chloromethyl)oxacyclobutane, said polyether segments containing at least 5% by weight of units derived from ethylene oxide or 3,3-bis(chloromethyl)oxacyclobutane.

3,925,506
POLYMER MODIFIED POLYOLS
Jung Il Jin, Irvington, N.Y., and Jesse C. H. Hwa, Stanford, Conn., assignors to Stauffer Chemical Company, Westport, Conn.
Filed Apr. 1, 1974, Ser. No. 456,580
Int. Cl.² C08L 63/00
U.S. Cl. 260—836 **21 Claims**

1. A process for forming a modified polyol which comprises polymerizing in the presence of a polyol a monomer charge which comprises at least one monomer containing an ethylenically unsaturated group and at least one (hydrocarbyl) vinylphosphonate having the structure



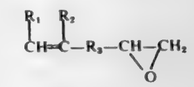
wherein X is selected from the group consisting of hydrogen, halogen, cyano, aryl, haloaryl, C_1–C_{18} alkyl, C_1–C_{18} haloalkyl and



wherein R and R′ are hydrocarbyl and substituted hydrocarbyl groups consisting essentially of hydrogen and carbon and containing up to about 18 carbon atoms inclusive with the proviso that R and R′ may be the same, different or conjoint.

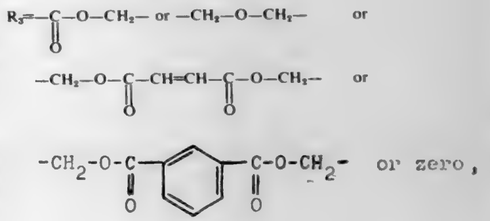
3,925,507
HEAT-CURABLE PULVERULENT COATING AGENT CONSISTING OF A MIXTURE OF COPOLYMERS CONTAINING GLYCIDYL GROUPS, DICARBOXYLIC ACID ANHYDRIDES AND CURING ACCELERATORS
Themistoklis Katsimbas, Hamburg, Germany, assignor to Hoechst Aktiengesellschaft, Germany
Filed May 30, 1974, Ser. No. 474,531
Int. Cl.² C08L 63/00
U.S. Cl. 260—836 **6 Claims**

1. Pulverulent coating agent of a mixture of
A. a copolymer of relatively low moelcular weight, which contains glycidyl groups and is a copolymer of several ethylenically unsaturated compounds,
B. at least one dicarboxylic acid anhydride in an amount corresponding to 0.4 – 1.0 anhydride group per epoxy group (hydroxyl group) of the copolymer and
C. a curing accelerator in the form of an organic base,
D. a flow control agent in an amount of at least 0.05 percent by weight of the mixture, which agent is a polymer of molecular weight (M_n) of at least 1,000 and has a glass transition temperature which is at least 50°C lower than the glass transition temperature of the copolymer (A), characterised in that the component (A) consists of 84 to 94 percent by weight of copolymers containing epoxide groups and hydroxyl groups, which copolymers have Durran softening points of about 90°–120°C and are soluble in organic solvents and comprise:
a. 6–24 percent by weight of ethylenically unsaturated epoxide monomers with 6–12 carbon atoms, of the general formula



wherein

R_1 and R_2 = H— or $—CH_3$,



b. 4–20 percent by weight of hydroxyalkyl esters of acrylic acid or methacrylic acid, with the hydroxyalkyl ester group being saturated and containing 2–4 C atoms,
c. 24–38 percent by weight of acrylic acid esters of aliphatic saturated monoalcohols with 1–8 carbon atoms,
d. 6–14 percent by weight of methacrylic acid esters of aliphatic saturated monoalcohols with 1–8 carbon atoms and
e. 24–42 percent by weight of styrene or vinyltoluene, the component (B) consisting of 6–16 percent by weight of at least one dicarboxylic acid anhydride with melting points of about 60°–140°C, the component (C) consisting of 0.5–1.8 percent by weight of N′,N′-bis-(dimethylaminoisobutylidene)-melamine and the optional component (D) consisting of a flow control agent and other customary additives.

3,925,508
PROCESS TO REDUCE BLOCKING IN ETHYLENE OR PROPYLENE POLYMER OF COPOLYMER FILMS WITHOUT REDUCING THEIR OPTICAL PROPERTIES
Elias Agouri, Residence du Manoir, Avenue Couderes; Claude Favie, 14 rue de Coutras, both of 64 Pau, and Jean-Claude Rebeille, Residence Les-Chenes Rue du Lys, 64140 Billere, all of France
Filed Dec. 26, 1973, Ser. No. 428,120
Claims priority, application France, Dec. 28, 1972, 72.46603; Dec. 13, 1973, 73.44467
Int. Cl.² C08L 23/04, 23/10, 23/08
U.S. Cl. 260—876 R **30 Claims**

1. A process to reduce blocking in flat and tubular films made from ethylene or propylene polymers or copolymers, without reducing their optical properties, characterized by the fact that the said polymers or copolymers, at some point during production of the films, are mixed with at least one graft copolymer consisting essentially of an ethylene or propy-

lene substrate and at least one vinylaromatic monomer grafted thereto, the quantity of the graft copolymer being such that the polymeric part derived from the vinylaromatic monomer represents less than 1% of the weight of the polymer or copolymer used to make the films.

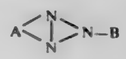
3,925,509

LIGHT STABILIZED POLYPHENYLENE ETHER RESIN COMPOSITION

Glen D. Cooper, and Visvaldis Abolins, both of Delmar, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 26, 1973, Ser. No. 428,448
Int. Cl.² C08L *51/00, 53/00*
U.S. Cl. 260—876 R **8 Claims**

1. A stabilized composition comprising a major amount of a thermoplastic resin having from 20–80 parts by weight of a normally unstable polyphenylene ether component, from 20–80 parts by weight of a rubber modified, high-impact styrene resin and from 0.5–5 parts by weight of a stabilizer which comprises in combination, a first component which is an ultra-violet light absorber selected from the group consisting of hydroxybenzotriazoles of the formula:



wherein A represents an o-phenylene radical bound by two neighboring carbon atoms to two nitrogen atoms of the triazole ring, and B represents a phenyl radical which contains in the 2-position an OH group and in further positions a member selected from the group consisting of H, lower alkyl, lower alkoxy, lower carbalkoxy, cyclohexyl, phenyl and halogen and a second component which is an organic nickel complex, the weight ratio of the first component to the second component being from 0.25:1 to 4:1.

3,925,510

VINYL CHLORIDE POLYMER COMPOSITION

Fumio Ide; Kazuo Kishida, and Akira Hasegawa, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1974, Ser. No. 453,543
Claims priority, application Japan, Mar. 26, 1973, 48-33465; Apr. 19, 1973, 48-44328; May 28, 1973, 48-59568
Int. Cl.² C08L *51/04, 27/06, 31/02*
U.S. Cl. 260—876 R **10 Claims**

1. A thermoplastic vinyl chloride polymer composition which comprises

I. 80 to 99.9 parts by weight of polyvinyl chloride and/or a copolymer containing no less than 80% by weight of vinyl chloride and no greater than 20% by weight of at least one other copolymerizable ethylenically unsaturated monomer, and

II. 20 to 0.1 parts by weight of a methyl methacrylate composite polymer characterized by the combination of

10 to 60% by weight of component A consisting essentially of, in polymerized form, 80 to 100% by weight of methyl methacrylate, 0 to 20% by weight of at least one copolymerizable monoethylenically unsaturated monomer and 0 to 2% by weight of at least one copolymerizable polyfunctional monomer having at least two ethylenically unsaturated bonds, and having a reduced viscosity $\eta sp/C$ of at least 2.0;

40 to 80% by weight of component B consisting essentially of in polymerized form, 30 to 80% by weight of styrene and 70 to 20% by weight of an acrylic acid ester or a methacrylic acid ester, the component B being prepared by polymerizing monomers thereof in the presence of a preformed latex of the component A and having a reduced viscosity $\eta sp/C$ of not greater than 1.0; and,

0 to 40% by weight of component C consisting essentially of, in polymerized form, 80 to 100% by weight of methyl methacrylate and 0 to 20% by weight of at least one copolymerizable monoethylenically unsaturated monomer and 0 to 2% by weight of at least one copolymerizable polyfunctional monomer having at least two ethlenically unsaturated bonds, the component C being prepared by polymerizing monomers thereof in the presence of a preformed latex of the component B.

3,925,511

METALLATION OF POLYMERS AND SUBSEQUENT REACTION TO FORM MODIFIED OR GRAFTED POLYMERS

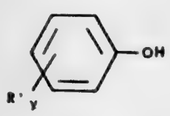
Frederick C. Loveless, Cheshire, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Aug. 27, 1973, Ser. No. 391,903
Int. Cl. C08d *5/02*; **C08f** *47/00*
U.S. Cl. 260—877 **19 Claims**

1. A method of metallating a polymer having activated hydrogen atoms which is a polymer of a conjugated diene comprising contacting a solution of said polymer in an inert liquid hydrocarbon solvent, selected from the group consisting of a saturated aliphatic solvent and benzene with

A. an organolithium compound having the formula RLi wherein R is a hydrocarbon radical selected from the group consisting of aliphatic, cycloaliphatic and aromatic radicals and

B. a hydrocarbon-soluble cocatalyst complex of a potassium or sodium alkylphenolate which is a reaction product of (I) a hydrocarbon-soluble alkylphenol of the formula



wherein R′ is an alkyl group containing a minimum of 8 carbon atoms per group and a maximum of 26 carbon atoms in one or more such groups and y is an integer from 1 to 3, inclusive, with (II) an alkali metal compound MOR″ where R″ is selected from the group consisting of hydrogen and aliphatic, cycloaliphatic and aromatic hydrocarbon radicals and M is potassium or sodium, the said hydrocarbon-soluble cocatalyst complex having been formed by bringing the said reactants (I) and (II) together under an inert atmosphere in an inert liquid hydrocarbon solvent, with agitation, in amount of 1 mole of alkylphenol (I) per mole of alkali metal compound (II) when M is potassium and in amount of 2 moles of alkylphenol (I) per mole of alkali metal compound (II) when M is sodium, to form a hydrocarbon-soluble complex of alkali metal alkylphenolate and by-product of the reaction of (I) with (II), the molar ratio of (A) organolithium compound to (B) potassium or sodium alkylphenolate complex being from 20:1 to 0.5:1, the said metallation being carried out at a temperature of from 0°C to 100°C for a period of time 1 to 30 hours, the amount of organolithium compound (A) present during the metallation being from 0.1 to 200 moles per mole of polymer, the mixture being agitated during the metallation.

3,925,512

PROCESS FOR THE PREPARATION OF BLOCK COPOLYMERS CONTAINING α-METHYLSTYRENE

Bernard C. Roest, Geleen, and Herman A. J. Schepers, Stein, both of Netherlands, assignors to Stamicarbon N.V., Geleen, Netherlands

Filed Apr. 7, 1972, Ser. No. 242,234
Claims priority, application Netherlands, Apr. 14, 1971, 7104949
Int. Cl.² C08L *9/06, 25/10, 25/16*
U.S. Cl. 260—880 B **13 Claims**

1. In a process for the preparation of copolymers comprising polymer blocks of the formulae A-B-C and $(B\text{-}C)_n$, wherein B is an elastomeric diene polymer block of butadiene or isoprene, C is a polymer block of alpha-methylstyrene, and A is C or a non-elastomeric polymer block of styrene, and *n* is defined hereinafter, said process comprising forming a living polymer carrying at least one negatively charged diene unit in the end position by polymerization of said diene at a temperature of about 20° to about 100° C in the presence of an organo lithium compound initiator having a functionality of *n*, and thereafter polymerizing alpha-methylstyrene on said living polymer at a temperature below about 15°C to form an alpha-methylstyrene polymer block, the improvement comprising polymerizing on said living polymer from 1 to 100 monomer units of styrene per diene anion in the end position, at a temperature of about 20° to about 100°C, prior to the polymerization of said alpha-methylstyrene, whereby the cross-over reaction from the polymer block with said dienyl anion in the end position to the alpha-methylstyrene is facilitated.

3,925,513

MOULDING COMPOSITIONS

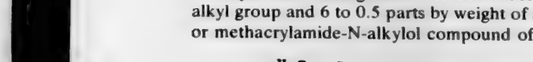
Herbert Schuster, Koeln-Stammheim, Germany; Edmund Huther, Rio de Janeiro, Brazil; Karl-Heinz Ott, Leverkusen, and Karl Dinges, Odenthal, both of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed May 25, 1972, Ser. No. 256,936
Claims priority, application Germany, May 26, 1971, 2126151
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C08L *33/00, 39/00*
U.S. Cl. 260—883 **13 Claims**

1. A process for the production of high impact and ageing-resistant molding composition, which process comprises polymerizing (A) total of 95 parts by weight of a monomer mixture consisting of

i. styrene, nuclear or side chain alkyl styrene or a mixture thereof and

ii. acrylonitrile, methacrylonitrile or a mixture thereof in a weight ratio of (i) : (ii) of 100:0 to 60:40 in an aqueous dispersion at a temperature of from 60° to 70°C. in the presence of 5 to 90 parts by weight of (B) an elastomer, which elastomer is an emulsion polymer prepared at a temperature of below 70°C. and comprising in polymerized form from 94 to 99.5 parts by weight of an alkyl ester of acrylic acid having from 4 to 10 carbon atoms in the alkyl group and 6 to 0.5 parts by weight of an acrylamide or methacrylamide-N-alkylol compound of the formula



wherein

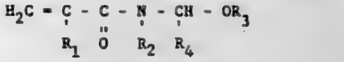
R_1 is hydrogen or methyl;

R_2 is hydrogen or alkyl having from 1 to 8 carbon atoms;

R_3 is hydrogen, alkyl having 1 to 10 carbon atoms or carboxyalkyl having from 1 to 10 carbon atoms and

R_4 is hydrogen or methyl.

11. A molding composition which comprises from 5 to 50 parts by weight of an elastomer, which elastomer comprises in polymerized form from 94 to 99.5 parts by weight of an alkyl ester of acrylic acid having from 4 to 10 carbon atoms in the alkyl group and from 6 to 0.5 parts by weight of an acrylamide or methacrylamide-N-alkylol compound of the formula:



wherein

R_1 is hydrogen or methyl;

R_2 is hydrogen or alkyl having from 1 to 8 carbon atoms;

R_3 is hydrogen, alkyl having 1 to 10 carbon atoms or carboxyalkyl having from 1 to 10 carbon atoms and

R_4 is hydrogen or methyl

and 95 to 50 parts by weight of a polymerized mixture consisting of

i. styrene, nuclear or side chain alkyl styrene or a mixture thereof and

ii. acrylonitrile, methacrylonitrile or a mixture thereof in a weight ratio of (i) : (ii) of 100:0 to 60:40,

at least 20% of said polymerized mixture having been graft polymerized in the presence of the elastomer in an aqueous dispersion.

3,925,514

RUBBER IMPROVEMENT WITH POLYCYCLOPENTENE

Jacques R. Kohler, and Frederik L. Binsbergen, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 5, 1974, Ser. No. 494,580
Int. Cl.² C08L *9/06, 23/12*
U.S. Cl. 260—889 **7 Claims**

1. A process for improving the green strength of a butadiene rubber selected from the group consisting of butadiene homopolymers and copolymers of butadiene containing at least 70% butadiene by admixing said butadiene rubber with from about 5 to about 50 parts per hundred rubber (phr) of a high viscosity polycyclopentene having a limiting viscosity number (LVN) of at least 4 dl/g and having about 75% to 99% of the double bonds present in the trans configuration.

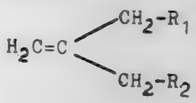
3,925,515

2-METHYLENE PROPANE PHOSPHONIC ACID ESTERS

Eugen Velker, Dormagen-Hackenbroich; Francis Bentz, Cologne, and Gunther Nischk, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Dec. 1, 1972, Ser. No. 311,413
Claims priority, application Germany, Dec. 3, 1971, 2160019; Dec. 3, 1971, 2160021
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C07F *9/40*
U.S. Cl. 260—932 **4 Claims**

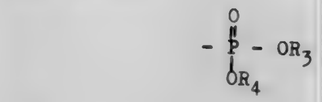
1. 2-methylene propane phosphonic acid esters corresponding to the general formula



in which R_1 represents halogen or the radical



and R_2 the radical



where R_3 and R_4 are C_1–C 4-alkyl.

3,925,516

S-(α-SUBSTITUTED-ARYLMETHYLTHIO, -ARYLMETHYLSULFINYL, AND -ARYLMETHYLSULFONYL)METHYLPHOSPHORUS ESTERS

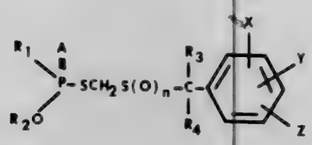
Frank Albert Wagner, Jr., and Roger Williams Addor, both of Pennington, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 347,308, April 2, 1973, abandoned. This application Apr. 5, 1974, Ser. No. 458,376

Int. Cl.² C07F *9/165, 9/40;* **A01N** *9/36*

U.S. Cl. 260—940 **12 Claims**

1. An organophosphorus compound having the formula:



wherein R_1 represents a member selected from the group consisting of C_1-C_4 alkyl, C_1-C_4 alkoxy, C_3-C_6 alkoxyalkyl, C_3-C_6 alkoxyalkylthio and C_1-C_4 alkylthio; R_2 is C_1-C_4 alkyl; R_3 represents a member selected from the group consisting of hydrogen and C_1-C_4 alkyl; R_4 is C_1-C_4 alkyl; A represents a member selected from the group consisting of sulfur and oxygen; n represents an integer selected from 0, 1 and 2; X and Y each represent members selected from hydrogen, alkyl C_1-C_4 and halogen; and Z represents a member selected from the group consisting of hydrogen, C_1-C_4 alkyl, C_1-C_4 alkoxy, cyano, halogen, C_1-C_4 alkylthio, CCl_3, CF_3, and nitro.

3,925,517

PHOSPHORYLFORMAMIDINES

Georg Pissiotas, Lorrach, Germany; Willy Meyer, Basel, Switzerland; Beat Bohner, Binningen, Switzerland, and Jozef Drabek, Allschwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

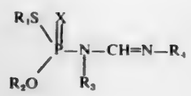
Filed Oct. 23, 1974, Ser. No. 517,358

Claims priority, application Switzerland, Nov. 5, 1973, 15561/73; July 29, 1974, 10397/74

Int. Cl.² A01N *9/36;* **C07F** *9/24*

U.S. Cl. 260—944 **9 Claims**

1. A phosphorylformamidine of the formula



wherein

R_1, R_3 and R_4 represent C_1-C_5-alkyl,

R_2 represents methyl or ethyl, and

X represents oxygen or sulphur.

3,925,518

BIS(PHENYL)AMIDOTRIOPHOSPHATES

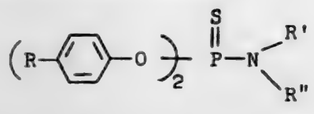
Richard Spector, Kendall Park, and Joseph Anthony Stretanski, Clinton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 351,043, April 13, 1973. This application Nov. 5, 1973, Ser. No. 412,922

Int. Cl.² C07F *9/24;* **C08K** *5/53*

U.S. Cl. 260—958 **7 Claims**

1. A compound having the formula:



wherein:

R is alkyl or 1–6 carbons, or halogen;

R′ is cyclohexyl; and

R″ is hydrogen or R′.

3,925,519

DEODORIZED MERCAPTAN-CONTAINING PHOSPHOROTRITHIOITES AND PROCESS OF PREPARATION

Ross A. Kremer, Belle Mead, and Richard H. Leitman, Kendall Park, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 6, 1974, Ser. No. 467,026

Int. Cl.² C07F *9/201*

U.S. Cl. 260—967 **10 Claims**

1. A method for stabilizing against malodor development a normally malodorous mercaptan-containing phosphorotrithioite compound having the following general formula:

$$P(SR)_3$$

wherein R is a C_1—C_8 alkyl which comprises adding to said compound from about 0.05 to about 1.5% by weight, based on the weight of said compound, of a C_1—C_{20} alkyl anhydride to stabilize said compound against malodor development.

3,925,520

ALKYLATION OF N-ACYL-O-HYDROCARBYLPHOSPHOROAMIDOTHIOATE SALTS

Hans G. Franke, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

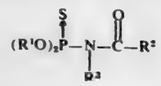
Continuation-in-part of Ser. No. 317,479, Dec. 21, 1972, Pat. No. 3,832,425. This application June 17, 1974, Ser. No. 479,972

Int. Cl.² C07F *9/24*

U.S. Cl. 260—979 **9 Claims**

1. A process for producing an O-hydrocarbyl-S-hydrocarbyl-N-acylphosphoroamidothioate which comprises:

1. reacting an N-acylphosphoroamidothioate of the formula



wherein R^1 individually is alkyl, alkenyl, or alkynyl of up to six carbon atoms, R^2 has up to 18 carbon atoms and is hydrogen, alkyl, alkenyl, phenyl, aralkyl or alkaryl substituted with up to three fluorine, chlorine or bromine atoms or with up to one alkoxy or alkylthio of up to four atoms, and R^3 is hydrogen or alkyl of one to six carbon atoms, with an ammonium, sulfide or polysulfide in aqueous phase at a temperature of about 10°C to 125°C to produce an S-ammonium salt of the N-acylphosphoroamidothioate, and

2. reacting the resulting S-ammonium salt with an alkylating agent in an inert solvent at a temperature of 0° to 80°C. to produce the O-hydrocarbyl-S-hydrocarbyl-N-acylphosphoroamidothioate.

3,925,521

VARIABLE VENTURI TYPE CARBURETOR

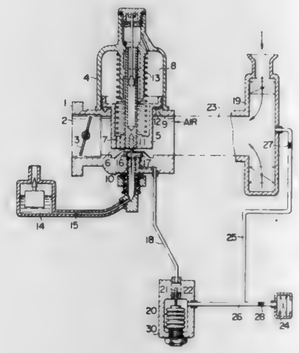
Tadahiko Otani, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed May 15, 1974, Ser. No. 470,277

Claims priority, application Japan, May 18, 1973, 48-54567

Int. Cl.² F02M *9/06*

U.S. Cl. 261—39 A **9 Claims**



1. A variable Venturi type carburetor which consists of a carburetor main body having an induction passage extending through it and connected to an air cleaner, a piston movably arranged so as to project into said induction passage for thereby forming a Venturi section, means responsive to the pressure in said Venturi section to move the piston for thereby maintaining the pressure in the Venturi section at a substantially constant level, fuel metering means consisting of an orifice integrally formed in the carburetor main body and a needle mounted to said piston, and means for supplying the fuel into said fuel metering means, characterized by a small chamber arranged between said orifice and Venturi section so as to be in communication with said Venturi section through a second orifice; air metering means in communication with said small chamber; a first air passage communicating said air metering means with said air cleaner; a second air passage communicating said air metering means with atmosphere; atmospheric density sensitive means responsive to the atmospheric density to operate said air metering means; and wherein said first and second air passages are respectively provided with means for controlling the air passing resistance.

3,925,522

APPARATUS FOR DISSOLVING OXYGEN IN WATER

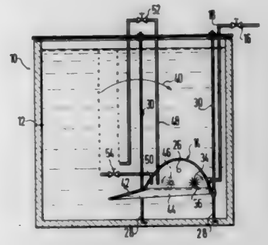
Richard Schreiber, Martinstrasse 31, 61 Darmstadt, Germany

Filed Apr. 3, 1973, Ser. No. 347,579

Claims priority, application Germany, Apr. 7, 1972, 2216917

Int. Cl.² B01F *3/04*

U.S. Cl. 261—92 **12 Claims**



1. Apparatus for dissolving oxygen in water comprising an elongate inverted channel shaped receptacle, closed at the top, completely submerged below the surface of a body of water and filled partly with an oxygen containing gas to establish a gas-water interface in said receptacle at a higher than atmospheric pressure, means for supplying gas to the receptacle continuously under at least approximately the hydrostatic pressure at the location of the receptacle, and at least one rotary brush mounted in the receptacle for rotation across said interface for mixing the gas and the water and for producing a water flow across the receptacle, discharge means for removing the gas which is not dissolved from the receptacle and introducing the same in the form of bubbles into the body of water outside the receptacle, the improvement comprising means for causing the gas to traverse the receptacle from an inlet at one end thereof in the longitudinal direction thereof to an outlet at the other end, said brush extending approximately over the entire length of the receptacle and being mounted on a shaft which extends in the longitudinal direction of the receptacle, said discharge means comprising a pipe and a valve connected in the pipe, the opening of the pipe through which the gas is introduced into the water outside the receptacle being at a depth at which the hydrostatic pressure is slightly smaller than the pressure of the gas discharged from the receptacle.

3,925,523

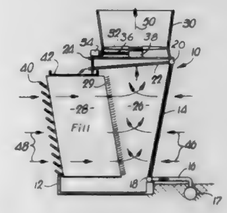
OPPOSED AIR PATH WET-DRY COOLING TOWER AND METHOD

Robert E. Cates, Leawood, Kans., assignor to The Marley Company, Mission, Kans.

Filed Nov. 12, 1973, Ser. No. 414,639

Int. Cl.² B01F *3/04*

U.S. Cl. 261—151 **20 Claims**



1. In a water cooling tower, the combination of:

spaced, separate, horizontally aligned, indirect and evaporative heat exchange structures adapted to receive hot water to be cooled for lowering the temperature thereof;

means for serially delivering the hot water first to one of

said heat exchange structures for initial cooling thereof and thence to the other of said heat exchange structures for further cooling of the same,

said heat exchange structures each having ambient air inlets and respective hot air outlets both communicating with an enclosed common plenum area which discharges to the atmosphere; and

means communicating with said plenum area for simultaneously moving ambient derived first and second air streams through the heat exchangers respectively from the inlets thereof to said outlets of the same in thermal interchange relationship with water passing therethrough whereby hot dry air is directed into said plenum area from the indirect heat exchange structure and hot moist air is discharged into the plenum area from the evaporative heat exchange structure,

the heat exchange structures being located relatively in sufficiently closely spaced relationship and disposition causing the hot dry air to exit from the indirect heat exchange structure and the hot moist air to leave the evaporative heat exchange structure along respective paths for collision intersection of the same within and throughout the common vertical height thereof in the plenum area to assure thorough admixing thereof prior to discharge of the mixture to the atmosphere.

3,925,524
PROCESS FOR THE PRODUCTION OF CARBON FILAMENTS

Robert M. Kimmel, Springfield, N.J.; John P. Riggs, Mount Vernon, Ind.; Robert W. Swander, Charlotte, N.C., and Wells Whitney, Menlo Park, Calif., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 265,123, June 22, 1972, abandoned. This application Aug. 17, 1973, Ser. No. 389,280
Int. Cl. B29c *25/00*; **C01b** *31/07*
U.S. Cl. 264—29 **20 Claims**

1. In a process for the production of a carbon filament from a dry spun acrylic filament selected from the group consisting essentially of an acrylonitrile homopolymer and an acrylonitrile copolymer which contains at least about 85 mol percent acrylonitrile units and up to about 15 mol percent of one or more copolymerized monovinyl units which is capable of absorbing water, comprising thermally stabilizing said filament until non-burning when subjected to an ordinary match flame, and heating said stabilized filament in a non-oxidizing atmosphere at a temperature of at least about 1000°C. until a carbonaceous filament is formed which contains at least about 90 percent carbon by weight; the improvement comprising contacting said dry spun acrylic filament prior to said thermal stabilization with water at a temperature of about 20° to 90°C. until said filament substantially becomes water-laden, and drawing the resulting water-laden acrylic filament while suspended in a heated gaseous atmosphere at a temperature of at least 100°C. to form an acrylic filament having a highly microporous and fibrillar internal structure which is particularly suited for thermal conversion to a carbon filament.

3,925,525
SPINNING METHOD

Herman L. LaNieve, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

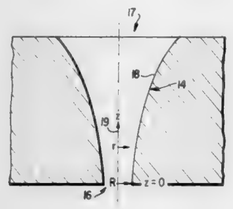
Filed Aug. 10, 1973, Ser. No. 387,407
Int. Cl.² F02M *11/00*
U.S. Cl. 264—40 **13 Claims**

1. In a method of spinning fibers from fiber-forming, liquid polymeric material utilizing a spinneret for extruding said material through at least one converging nozzle passageway having an entry opening and an exit orifice, the improvement comprising establishing an essentially constant extensional strain rate condition for flow of said liquid through said passageway by providing a nozzle passageway bounded by gradually curving walls having a profile described essentially by the equation

$$1/r_w^2 = Az + 1/R^2$$

where:

R is the perpendicular distance between an axis of the passageway and the nozzle wall at the exit orifice;



r_w is the perpendicular distance between nozzle wall and points along that axis;

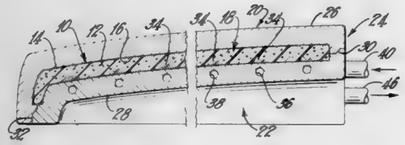
Z is the distance along that axis measured from said exit orifice; and

A is a constant.

3,925,526
METHOD OF MAKING AN INTEGRAL SKIN FOAMED PRODUCT WHEREIN PORTIONS OF THE SKIN ARE OF GREATER DENSITIES

James Lynn Haas, Aliquippa, Pa., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Feb. 4, 1972, Ser. No. 223,621
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B29D *27/04*
U.S. Cl. 264—45.5 **1 Claim**



1. A method of making a product having a foam core and a skin, which skin differs in density at portions thereof, said method comprising preparing an exothermic, foamable, thermosetting resin reaction mixture including a liquid blowing agent which vaporizes at a temperature between about 20° and 400°F., placing an amount of the mixture in a mold cavity, said amount being sufficient to cause the resulting foam to contact the entire walls of the mold, closing the mold, cooling certain areas of the walls of the mold cavity to a temperature sufficiently low as to cause the blowing agent to condense in those areas and redissolve in the mixture, and thereby form the skin for the product at different densities with denser portions of the skin being located at the surface of the product adjacent the cooled areas, and heating areas of the walls of the mold cavity between cooled areas and thereby form thinner skin areas for the product at the surface portions adjacent the heated areas.

3,925,527
METHOD OF MAKING FOAMED URETHANE RESINS HAVING IMPROVED MOLD RELEASE PROPERTIES

Helmut Kleimann; Wulf von Bonin, both of Leverkusen; Heinz-Georg Schneider, Gummersbach, and Herbert Gebauer, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Germany

Filed Jan. 30, 1974, Ser. No. 438,111
Claims priority, application Germany, Apr. 18, 1973, 2319648
Int. Cl.² C08G *18/14*; **G08G** *18/36*; **C08K** *5/16*
U.S. Cl. 264—53 **14 Claims**

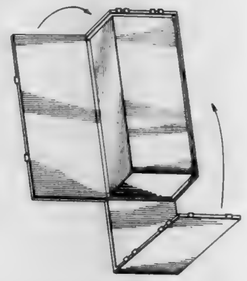
1. In a process for molding foam products wherein a foamable reaction mixture containing an organic polyisocyanate is reacted in a closed mold, said foamable reaction mixture being adapted to expand and fill the mold while closed, the improvement which comprises including in the foamable reaction mixture as a mold release agent a preformed reaction product of an active hydrogen containing fatty acid ester and an organic monoisocyanate, said reaction product being soluble in said organic polyisocyanate.

11. The process of improving the mold release properties of a molded product obtained by reacting and shaping a foamable reaction mixture containing an organic polyisocyanate in a closed mold which comprises including as a mold release agent an effective amount of the preformed reaction product of an active hydrogen containing fatty acid ester and an excess of an organic monoisocyanate in the foamable reaction mixture, said reaction product being soluble in the organic polyisocyanate.

3,925,528
METHOD FOR PREPARING A COMPLETELY COVERED FOAM MOLDING

Karl-Heinz Müller, Leverkusen; Harry Röhr, Koenigsdorf, Cologne, and Karl-Heinz Ott, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 13, 1972, Ser. No. 262,241
Claims priority, application Germany, June 15, 1971, 2129523
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B29D *27/08*
U.S. Cl. 264—54 **5 Claims**



1. A process for producing a moulded article which comprises the steps of applying a vinyl chloride polymer containing a plasticizer to the internal surfces of a mould which is preheated to a temperature of from 30° to 150°C., thereafter completely filling the mould with granules of a thermoplastic or elasticthermoplastic polymer containing a blowing agent and heating the mould to a temperature of from 150° to 270°C. until the vinyl chloride polymer containing a plasticizer has formed a homogeneous covering layer and the thermoplastic or elastic-thermoplastic polymer has formed a foamed core having a uniform density of 0.2 to 0.8 g/cm³ or having zones of different uniform densities in the range of from 0.2 to 0.8 g/cm³, said core comprising

1. from 5 to 60 percent by weight of a rubbery elastic butadiene or isoprene polymer containing up to 50 percent by weight of copolymerized styrene, acrylonitrile or a lower alkyl ester of acrylic or methacrylic acid or a polyalkyl acrylate or a cis- or trans-polypentenamer or ethylene-propylene terpolymer containing not more than 10 percent by weight of ter-component and
2. from 95 to 40 percent by weight of polymerised (a) styrene, alkylstyrene, methyl methacrylate or mixtures thereof and (b) styrene, acrylonitrile, alkylacrylonitrile, methyl methacrylate or mixtures thereof in a proportion by weight of (a):(b) in the range of from 95:5 to 50:50, in which the monomers (2) have been completely or partially polymerised in the presence of polymer (1) and a residue of the monomers (2) has been added in the form of a separately made copolymer, and said covering layer comprising

a. from 30 to 85 percent by weight of a vinyl chloride copolymer containing up to 20 percent by weight of comonomers with a K-value according to Fikentscher of from 55 to 80, which is suitable for the preparation of a plastisol; or a mixture of from 90 to 30 percent by weight, of a vinyl chloride polymer which has a K-value of from 55 to 80 and a particle size of from 0.2 to 50 μ, and from 10 to 70 percent by weight of a vinyl chloride polymer which has a K-value of from 55 to 80 and a particle size of from 50 to 500μ and

b. from 70 to 15 percent by weight of a saturated or unsaturated monomeric plasticiser or mixtures thereof in which the vinyl chloride polymers are not completely soluble.

3,925,529
METHOD FOR MAKING SHOES WITH CLEATED BOTTOMS

Louis E. Bernier, Rockland, and James P. Giblin, Milton, both of Mass., assignors to E. T. Wright & Co., Inc., Rockland, Mass.

Division of Ser. No. 831,373, June 9, 1969, Pat. No. 3,587,181. This application Oct. 2, 1970, Ser. No. 77,672
Int. Cl.² B29H *7/08*
U.S. Cl. 264—244 **8 Claims**



1. The method of making a cleated bottom comprising providing cleats with heads of relatively large diameter from which stem shanks having first cylindrical portions next to the heads, second cylindrical portions of smaller diameter extending from the first cylindrical portions, tapered portions extending from the second cylindrical portions, and first conical shoulders at the junctions of the first and second cylindrical portions and second conical shoulders at the junctions of the second cylindrical portions and the tapered portions, supporting the cleats by means of the first conical shoulders within holes in the bottom of an open top mold containing a cavity of smaller area and depth than the bottom to be formed, forming a cleat plate of an elastomer about the portions of the cleats above said first shoulders within said mold cavity, removing the cleat plate from the mold cavity with the cleats attached thereto, supporting the cleat plate and the cleats attached thereto by means of the second conical shoulders within holes in the bottom of an open top mold containing a cavity corresponding in area and depth to the bottom to be formed, and forming a bottom of elastomer about the cleat plate and the cleats situated within the cavity above the bottom.

3,925,530

RELEASE COATING FOR MOLDS

Robert L. Rees, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 113,607, Feb. 8, 1971, abandoned. This application Dec. 4, 1972, Ser. No. 312,139.

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B29C *1/04*

U.S. Cl. 264—297 10 Claims

1. A method of molding which comprises:

a. applying a mold release coating composition consisting essentially of polyphenylene sulfide in an amount within the range of from about 50 to about 90 parts by weight, polytetrafluoroethylene in an amount up to 10 parts by weight and a filler in an amount within the range of from about 10 to about 50 parts by weight said filler selected from the group consisting of titanium oxide, aluminum oxide, iron oxide and clay to the inner surface of a mold;

b. curing said coating;

c. introducing into said mold and into contact with the cured coating a polymeric composition moldable at a temperature less than that temperature at which the mold release coating composition becomes inoperable as a satisfactory coating;

d. molding said moldable polymeric composition;

e. removing said moldable polymeric composition from said mold as a molded object; and

f. repeating steps (c), (d), and (e) to produce a multiplicity of molded objects.

3,925,531

PRODUCTION OF TITANIUM TETRAHALIDE

John Hickman Moss, Middlesbrough, and Barrie Leng, Hartlepool, both of England, assignors to British Titan Limited, Billingham, Teeside, England

Filed Apr. 9, 1973, Ser. No. 349,454

Claims priority, application United Kingdom, June 27, 1972, 29944/72

Int. Cl.² C01G *23/02*, *23/06*, *49/06*

U.S. Cl. 423—76 17 Claims

1. A process for the production of titanium tetrafluoride comprising heating together ferric fluoride and an iron-containing titaniferous material selected from the group consisting of ferric oxide containing ilmenite and ferric oxide containing leucoxene and thereafter separately recovering titanium tetrafluoride and ferric oxide.

3,925,532

PROCESS FOR MANUFACTURING ALUMINUM SULFATE

Kenneth F. Griffiths, 21 N. Chatsworth Ave., Larchmont, N.Y. 10538

Filed Feb. 11, 1974, Ser. No. 441,128

Int. Cl.² C01F *7/74*

U.S. Cl. 423—132 18 Claims

1. A process for the production of a substantially pure aluminum sulfate comprising the steps of contacting in a reaction zone solid aluminum containing metallic impurities, simultaneously with an aqueous solution of sulfuric acid and a pool of liquid mercury maintaining said aluminum in contact with said mercury pool, said mercury being operative to cause the rapid dissolution of said solid aluminum and sulfuric acid to liberate the metallic impurities and the hydrogen therein, maintaining said contact for a period of time sufficient to convert said aluminum and sulfuric acid into aluminum sulfate, free said hydrogen and cause the metallic impurities freed from said aluminum to be absorbed by said mercury.

3,925,533

PROCESS FOR TREATING NICKELIFEROUS LATERITE ORE CONTAINING LIMONITE AND SERPENTINE FRACTIONS

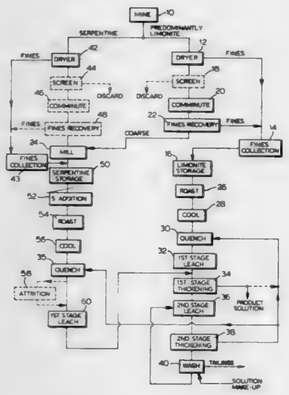
Donald Robert Weir, Fort Saskatchewan, and David John Ivor Evans, North Edmonton, both of Canada, assignors to Sherritt Gordon Mines Limited, Ontario, Canada

Filed Dec. 6, 1973, Ser. No. 422,214

Claims priority, application Canada, Oct. 29, 1973, 184513

Int. Cl.² C01G *53/12*

U.S. Cl. 423—150 6 Claims



1. A process for extracting nickel from nickeliferous laterite ore composed of limonitic and serpentinic ore particles which comprises: dividing said particles into a first fraction consisting predominantly of limonite ore and a second fraction consisting predominantly of serpentine ore; mixing with said second fraction a sulphur-bearing additive in an amount sufficient to provide a sulphur content in the mixture of between about 0.2 and about 5% by weight; separately roasting in the presence of reducing gases said first fraction and said additive containing second fraction at temperatures within the ranges of 1150°F. to 1350°F. and 1200°F. to 1600°F. respectively in order to convert contained nickel values to a crude metallic state; separately passing to first leach stages said roasted first fraction and said roasted additive containing second fraction and separately leaching each said fraction with aqueous ammoniacal ammonium carbonate solutions in the presence of free oxygen to extract nickel values and dissolve them in solution; combining solution and undissolved residue from the first leach stage containing said roasted first fraction with solution and undissolved residue from the first leach stage containing said roasted additive containing second fraction and passing said combined solution and undissolved residue to a liquidsolids separation operation; removing solution from said liquidsolids separation operation and recovering at least a portion thereof as product liquor while recycling any remaining unrecovered solution to the first leach stage for said roasted first fraction; passing undissolved residue removed from said liguid-solids separation operation to a second leach stage and leaching same with an aqueous ammoniacal ammonium carbonate solution in the presence of free oxygen to extract nickel values and dissolve them in solution; removing solution from said second leach stage and recycling a sufficient portion thereof to said first leach stage for said roasted additive containing second fraction to provide make-up solution therefor and recycling any remaining said solution to said first leach stage for said roasted first fraction.

3,925,534

TREATMENT OF CEMENT KILN FLUE DUST

Frank Henry Singleton, Croydon, and Jack William Bruce, Lindfield, both of England, assignors to Woodall-Duckham, Limited, Crawley, England

Filed Sept. 4, 1973, Ser. No. 393,805

Claims priority, application United Kingdom, Sept. 4, 1972, 40939/72

Int. Cl.² C01F *11/18*; C01D *3/04*, *5/00*; C22B *7/02*

U.S. Cl. 423—208 10 Claims

1. A process of treating cement kiln flue dust, said dust containing lime and the chloride and sulphate salts of sodium and potassium, said process comprising:

a. in a first stage, forming a slurry in a first vessel by mixing the dust with fresh water at a temperature within the range of 40° to 90°C. for about 5 to 20 minutes to dissolve substantially all of the sodium and potassium chlorides, while simultaneously contacting the slurry with a carbon dioxide containing gas so as to convert, to insoluble calcium carbonate, substantially all of the soluble lime and the lime solubilized upon dissolution of the said chlorides;

b. in a second stage, treating in a second vessel the slurry of said first stage with additional water at a temperature within the range of 70° to 100°C. for between 30 minutes and 3 hours to dissolve substantially all of the sodium and potassium sulphates, while simultaneously contacting the slurry with a carbon dioxide containing gas so as to convert substantially all of the lime that is solubilized upon dissolution of the said sulphates to insoluble calcium carbonate; and

c. filtering the slurry from said second stage to obtain an insoluble residue and a liquid filtrate containing dissolved chloride and sulphate salts of sodium and potassium.

3,925,535

CATALYTIC PRODUCT FOR THE OXIDATIVE DESTRUCTION OF GASEOUS ORGANIC COMPOUNDS AND METHOD FOR THEIR PREPARATION

Christian Belliot; Etienne Cheylan; Serge Madelaine, and Johannes Ebbing, all of Paris, France, assignors to Compagnie Francaise Thomson Houston-Hotchkiss Brandt, Paris, France

Continuation of Ser. No. 203,833, Dec. 1, 1971, abandoned. This application Mar. 12, 1974, Ser. No. 450,348

Claims priority, application France, Dec. 1, 1970, 70.43189

Int. Cl.² B01J *8/00*, *10/00*

U.S. Cl. 423—213.2 13 Claims

1. A method for the oxidative destruction of gaseous organic compounds consisting of passing gaseous organic compounds and at least a five-fold excess of air at a temperature from about 180° to about 800° C over a catalyst consisting essentially of from about 50 to about 80% by weight of catalyst components consisting of from about 50 to about 85% by weight of manganese oxides, substantially in the rhombohedral form; up to about 30% by weight of manganous carbonate; from about 3 to about 10% by weight of cupric oxide and up to about 15% by weight of nickel oxides and from about 50 to about 20% by weight of cold-shapable refractory excipient.

3,925,536

METHOD OF RECOVERING URANIUM HEXAFLUORIDE

Seymour Schuman, Nutley, N.J., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed June 19, 1947, Ser. No. 755,755

Int. Cl.² C01G *43/06*

U.S. Cl. 423—258 9 Claims

1. A method of recovering uranium hexafluoride from gaseous mixtures which comprises adsorbing said uranium hexafluoride on activated carbon.

3,925,537

METAL BORACITES

Tom Allen Bither, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 181,605, Sept. 17, 1971, Pat. No. 3,801,703. This application Nov. 9, 1973, Ser. No. 414,288

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C01B *35/00*, *9/08*

U.S. Cl. 423—277 8 Claims

1. Metal boracites of the formula

$$M_3B_7O_{13}F$$

wherein M is at least one divalent ion of Mg, Cr, Mn, Fe, Co, Zn or Cd.

3,925,538

PROCESS FOR PRODUCING ALUMINA MONOHYDRATE FROM BASIC ALUMINUM NITRATES

Charles P. Bruen, Basking Ridge, and Donald H. Kelly, Gladstone, both of N.J., assignors to Reynolds Metals Company, Richmond, Va.

Division of Ser. No. 48,919, June 18, 1970, Pat. No. 3,864,462. This application Nov. 6, 1974, Ser. No. 521,381

Int. Cl.² C01B *21/42*; C01F *7/30*

U.S. Cl. 423—390 1 Claim

1. In a process for recovering alumina monohydrate and aluminum nitrate from basic aluminum nitrates prepared by melting aluminum nitrate nonahydrate, partially denitrifying said molten aluminum nitrate nonahydrate by heating it to a temperature above its decomposition temperature but not above about 235°C. under superatmospheric pressure of at least about 25 psig and sufficient to maintain said decomposition temperature, while removing gaseous nitric acid decomposition products until between about 45% and about 55% of the HNO_3 of the aluminum nitrate nonahydrate has been removed, the steps which comprise

1. adding to a basic aluminum nitrate having the empirical formula

$$Al_2O_3 \cdot xAl(NO_3)_3 \cdot yH_2O$$

wherein X is a numeral from 0.667 to 6,0 inclusive, and Y is a numeral from 4 to 38 inclusive, about 7.2 moles H_2O to about 28.2 moles H_2O per mole of NO_3 in said basic aluminum nitrate to provide an aqueous solution having in solution a nitrate concentration between about 10 percent and about 25 percent by weight calculated as NO_3, respectively, (2) heating said diluted solution to a temperature between about 180°C and about 235°C. under autogenous pressure for a period sufficient to convert the basic aluminum nitrate to solid alumina monohydrate and dissolved aluminum nitrate wherein oxides of nitrogen released therefrom are substantially N_2O_5, (3) recovering the solid alumina monohydrate by separating the same from the solution, (4) recycling the separated solution to a succeeding aluminum nitrate dentrification step, whereby a steady state is established wherein recovery of both alumina and nitric acid is high, and (5) recovering approximately 99.5% of the HNO_3 originally present in said aluminum nitrate nonahydrate.

3,925,539

PROCESSES OF SYNTHESIZING ANHYDROUS LITHIUM HEXAFLUOROARSENATE

Dayal T. Meshri, and Darrell L. Westfall, both of Sand Springs, Okla., assignors to Ozark-Mahoning Company, Tulsa, Okla.

Filed July 12, 1974, Ser. No. 487,976

Int. Cl.² C01B *27/00*, *27/02*; C01D *15/00*

U.S. Cl. 423—464 19 Claims

1. A process of producing anhydrous $LiAsF_6$ (lithium hexafluoroarsenate) comprising the steps of:

1. adding dry lithium fluoride to AsF_3 in a reaction vessel, thereby obtaining a milky solution of LiF in AsF_3,

2. thereafter adding to said solution anhydrous HF to obtain a clear solution comprising a mixture of LiF, anhydrous HF and AsF_3 in said reaction vessel,

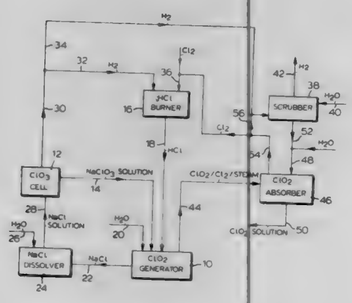
3. flowing gaseous AsF_5 through the mixture in the reaction vessel until the contents thereof are saturated with AsF_5,
4. closing the reaction vessel and letting the AsF_5 saturated mixture stand therein until the reaction is completed, and
5. thereafter passing an inert gas into the reactor with all volatile materials (including AsF_5, HF and AsF_3) are removed therefrom and white crystals of $LiAsF_6$ remain behind in the reaction vessel.

3,925,540

PRODUCTION OF CHLORINE DIOXIDE

David G. Hatherly, 14 Regina Place, St. Johns, Newfoundland, Canada

Continuation of Ser. No. 150,600, June 7, 1971, abandoned. This application Sept. 30, 1974, Ser. No. 510,607
Claims priority, application Canada, June 10, 1970, 85091
Int. Cl.² C01B *11/02, 11/14, 1102, 7/01*
U.S. Cl. 423—478 **12 Claims**



1. A method of forming chlorine dioxide which includes:
electrolyzing an aqueous solution of an alkali metal chloride to form an alkali metal chlorate and hydrogen in accordance with the equation:

$$MCl + 3H_2O \rightarrow MClO_3 + 3H_2$$

where M is an alkali metal,
providing said formed alkali metal chlorate as an aqueous solution thereof and forwarding said aqueous solution to a reaction zone,
separating said hydrogen into a first stream containing approximately one-third of the mole of quantity of said hydrogen and a second stream containing approximately two-thirds of the mole quantity of said hydrogen,
recovering said second stream of hydrogen,
reacting the hydrogen in said first stream thereof with chlorine to form hydrogen chloride in accordance with the equation:

$$H_2 + Cl_2 \longrightarrow 2HCl,$$

forwarding said hydrogen chloride to said reaction zone to provide with said forwarded aqueous solution of alkali metal chlorate an aqueous reaction medium in said reaction zone containing alkali metal chlorate and hydrochloric acid,
controlling the quantity of hydrochloric acid present in said reaction medium to provide an acidity of about 0.05 to below 1 normal therein,
heating the aqueous reaction medium to an elevated temperature corresponsing to its boiling point at the absolute pressure of said reaction zone and below the temperature above which substantial decomposition of chlorine dioxide occurs,
effecting reaction between said alkali metal chlorate and hydrochloric acid in said reaction medium at said elevated temperature while maintaining said reaction zone under subatmospheric pressure to form chlorine dioxide and chlorine predominantly in accordance with the equation:

$$MClO_3 + 2HCl \rightarrow ClO_2 + \tfrac{1}{2}Cl_2 + MCl + H_2O$$

where M is an alkali metal,
evaporating water from said reaction medium at said elevated temperature and forming in said reaction zone a gaseous admixture consisting essentially of said formed chlorine dioxide and chlorine and evaporated water,
removing said gaseous admixture from said reaction zone,
saturating said reaction medium with alkali metal chloride formed in said chlorine dioxide and chlorineproducing reaction and thereafter depositing alkali metal chloride from said reaction medium in said reaction zone.

3,925,541

METHOD OF COATING STABILIZED ERYTHROCYTES

Arthur Atsunobu Hirata, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 117,737, Feb. 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 760,052, Sept. 16, 1968, abandoned, which is a continuation-in-part of Ser. No. 682,550, Nov. 13, 1967, abandoned. This application Nov. 8, 1972, Ser. No. 304,677The portion of the term of this patent subsequent to Jan. 30, 1990, has been disclaimed.
Int. Cl.² A01N *1/00;* **G01N** *31/00, 33/16*
U.S. Cl. 424—12 **6 Claims**

1. A method of coating stabilized double aldehyde-treated erythrocytes wherein said erythrocytes have been stabilized by (a) preparing a suspension of washed erythrocytes in a neutral buffered solution, (b) treating said erythrocyte suspension with from 1.5 to 5.0% by volume of pyruvic aldehyde per volume of erythrocytes for from 12 to 24 hours at room temperature, (c) washing the pyruvic aldehyde-treated erythrocyte suspension with said buffered solution to remove the excess pyruvic aldehyde, (d) treating the washed pyruvic aldehyde-treated erythrocyte suspension with from 1.5 to 5.0% by volume of formaldehyde for from 12 to 24 hours and (e) washing the resulting stabilized erythrocytes with said buffered solution to remove the excess formaldehyde, said method comprising the step of adsorbing a substance selected from the group consisting of antigens or antibodies onto said erythrocytes.

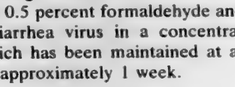
3,925,542

HAIR LACQUER AND WAVE SETTING COMPOSITIONS CONTAINING VINYL ACETATE-CROTONIC ACID-CONTAINING POLYMERS

Andre Viout, and Regine Pasero, both of Paris, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation-in-part of Ser. No. 747,470, July 25, 1968, Pat. No. 3,716,633, which is a continuation-in-part of Ser. Nos. 655,770, July 25, 1967, Pat. No. 3,579,629, and Ser. No. 530,395, Feb. 28, 1966, abandoned. This application Nov. 24, 1972, Ser. No. 309,502
Claims priority, application France, Mar. 3, 1965, 65.7787; Jan. 27, 1966, 66.47441; Aug. 3, 1966, 66.71998; Luxemburg, May 28, 1967, 54202The portion of the term of this patent subsequent to May 18, 1988, has been disclaimed.
Int. Cl.² A61K *7/11*
U.S. Cl. 424—47 **12 Claims**

6. A pressurized sprayable aerosol hair lacquer composition comprising a solution of 1–4% by weight of a salt of an amine base and a copolymer in a mixture of ¼ to ⅕ by weight of a solvent -butenoic from the group consisting of ethanol and isopropanol and ⅖ to ¾ by weight of an aerosol propellant selected from the group consisting of trichlorofluoromethane, dichlorodifluoromethane and their mixtures, said copolymer being selected from the group consisting of copolymers consisting essentially of (1) 50 to 90% by weight of a monomer selected from the group consisting of vinyl acetate, vinyl propionate, allyl acetate and vinyl butyrate, (2) 5 to 25% by weight of a monomer selected from the group consisting of crotonic acid, 3-cutenoic acid, 4-pentenoic acid, allyloxyacetic acid, and allyloxypropionic acid and (3) 5 to 30% by weight of a monomer selected from the group consisting of lanolin crotonate, oleyl crotonate, 1-allyloxy-3-dodecyloxy-2-propanol, 1-allyloxy-3-dodecylthio-2-propanol, 1-octene, 1-hexadecene, allyl oleate, stearyl vinyl ether and an ester of the formula:



wherein R is linear alkyl having 8 to 18 carbon atoms, *n* is 0 – 1 and R′ is selected from the group consisting of hydrogen and methyl.

3,925,543

ANTIBACTERIAL ORAL COMPOSITIONS CONTAINING PRESERVATIVE-ANTIOXIDANTS

John Donohue, Neshanic, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 1, 1973, Ser. No. 411,706
Int. Cl.² A61K *7/16, 7/18, 7/22*
U.S. Cl. 424—52 **11 Claims**

1. An oral dental plaque and stain formation preventing preparation consisting essentially of an aqueous vehicle having a pH in the range of about 4.5 to about 7 which aqueous vehicle contains from about 0.01 percent to 5 percent by weight of a non-toxic water-soluble bis-biguanido hexane compound as antibacterial dental plaque formation preventing agent which is selected from the group consisting of 1,6-di-(p-chlorophenyl biguandio) hexane, 1,6-bis-(2-ethylhexyl biguanido) hexane and salts thereof, and about 0.1 percent to 5 percent by weight of ascorbic acid as a stabilizing agent which is effective to inhibit dental stain formation otherwise caused by said antibacterial agent at levels established as effective for plaque reduction.

3,925,544

BOVINE VACCINES AND METHODS OF MAKING AND USING SAME

Isaac L. Shechmeister; Joseph R. Kolar, Jr., and William G. Kammlade, Jr., all of Carbondale, Ill., assignors to Southern Illinois University Foundation, Carbondale, Ill.

Division of Ser. No. 161,701, July 12, 1971, abandoned, which is a division of Ser. No. 8,631, Feb. 4, 1970, Pat. No. 3,629,413. This application Dec. 27, 1973, Ser. No. 428,658
Int. Cl.² A61K *27/12*
U.S. Cl. 424—89 **3 Claims**

1. A vaccine comprising a suspension of 1 to 5 percent weight/volume of a soluble alginate adjuvant vehicle suitable for parenteral injection and an admixed volume of an aqueous solution containing a final concentration of between about 0.3percent and 0.5 percent formaldehyde and formalin-killed bovine viral diarrhea virus in a concentration of 10^5–10^8 $TCID_{50}$/ml. which has been maintained at a temperature of about 4°C. for approximately 1 week.

3,925,545

PROCESS FOR PREPARING ADSORBED VACCINES

Edgar Hans Relyveld, Paris, France, assignor to Institut Pasteur, Paris, France

Filed Mar. 20, 1973, Ser. No. 342,932
Claims priority, application France, Apr. 6, 1972, 72.12036
Int. Cl.² A61K *39/02, 39/06, 39/12, 39/16*
U.S. Cl. 424—92 **7 Claims**

1. In the method of preparing a composition including a vaccine in an adsorbed state, by contacting an aqueous vaccine with an aqueous gel formed by pouring a calcium chloride aqueous solution having a concentration of 0.01 M to 0.5 M into an aqueous solution of dibasic sodium phosphate having a concentration of 0.01 M to 0.5 M, in a proportion substantially equal to 1 mol of PO_4HNa_2 per mol of $CaCl_2$, under stirring, the mixture thus obtained being further stirred while its pH is adjusted to a value of 6.8 to 7.2, and the gel formed being subsequently decanted and washed, the improvement which comprises carrying out said pouring of the calcium chloride solution as rapidly as possible within less than 3 minutes.

3,925,546

ANTIBIOTIC NO. 156-B1 AND PROCESS FOR PRODUCTION THEREOF

Yukiji Shimojima, Tokyo, Japan; Isao Takeda, deceased, late of Japan; by Emiko Takeda, legal representative, Osaka, Japan; Masayuki Mizuno, Miyazaki, Japan; Yukiko Mizuno, Minamiohoizumi, Japan, and Tadaaki Ohoka, Ohoi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 336,459, Feb. 28, 1973, abandoned. This application May 14, 1974, Ser. No. 469,778
Claims priority, application Japan, Mar. 3, 1972, 47-21542
Int. Cl.² A61K *35/00*
U.S. Cl. 424—116 **3 Claims**

1. Antibiotic No. 156-B1 having an elementary analysis of 34.9% C, 5.9% H, 18.1% N, 22.0% O and 14.93% Cl, an optical rotation of $[\alpha]_D^{18}$ −43.0° (1% in H_2O), a melting point of 200° – 203°C, a decomposition color of brown, a molecular weight of 480 by the vapor pressure osmotic method, and exhibiting the infrared absorption spectrul illustrated in FIG. 1, or a pharmaceutically acceptable salt thereof selected from the group consisting of the hydrochloride, sulfate and acetate salts.

3,925,547

ISOLATION AND PURIFICATION OF ACTIVE PRINCIPLE OF FRUIT OF SYNSEPALUM DULCIFICUM

Robert I. Henkin, Bethesda, Md., and Eugene L. Giroux, Strasbourg, France, assignors to The United States of America as represented by the Secretary of Health, Education and Welfare, Washington, D.C.

Filed Apr. 24, 1973, Ser. No. 354,098
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² A61K *35/78*
U.S. Cl. 424—195 **4 Claims**

1. A process for obtaining the active principle of the fruit of the plant *Synsepalum dulcificum* which comprises:
a. contacting the fruit of *Synsepalum dulcificum* with a suspension of polyvinyl pyrrolidone in a basic medium;
b. filtering the suspension to obtain a supernatant containing the active principle of the fruit;
c. adding ξ-amino caproic acid to the supernatant;
d. acidifying the supernatant to reduce the pH to the range of 6.0 – 6.5;
e. filtering the supernatant to obtain a solution of the active principle;
f. adsorbing the active principle on at least one chromatographic column, with at least one column employing a support material selected from the group consisting of cellulose and polyacrylamide - based strongly basic anion exchangers; and
g. eluting the active principle with a buffered solution of Na_2HPO_4 to recover the active principle from the column.

3,925,548

1-SUBSTITUTED-4-ARYL-2(1H)-QUINAZOLINONES AS PHARMACEUTICAL AGENTS

Hans Oh, Pfeffingen, Switzerland, assignor to Sandoz, Inc., E. Hanover, N.J.

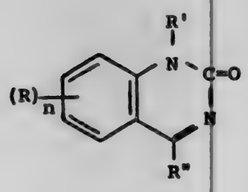
Division of Ser. No. 775,201, Nov. 12, 1968, Pat. No. 3,723,432, which is a continuation-in-part of Ser. No. 741,804, July 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 707,932, Feb. 26, 1968, abandoned, which is a continuation-in-part of Ser. No. 672,739, Oct. 4, 1967, abandoned, which is a continuation-in-part of Ser. No. 636,015, May 4, 1967, abandoned, which is a continuation-in-part of Ser. No. 575,511, Aug. 29, 1966, abandoned. This application Dec. 8, 1972, Ser. No. 313,531The portion of the term of this patent subsequent to Sept. 12, 1992, has been disclaimed.

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.[2] A61K *31/505*

U.S. Cl. 424—251 **46 Claims**

24. A pharmaceutical composition for treating inflammation and/or pain in animals comprising an inert pharmaceutically acceptable carrier and an inflammation and/or pain treating effective amount of a compound of the formula:



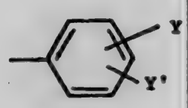
wherein

R represents hydrogen, halo, lower alkyl, hydroxy, lower alkoxy, nitro, amino, acetamido, mercapto, cyano, trifluoromethyl, lower alkylthio, N-(lower)alkylamino or di(-lower)alkylamino;

n is 1 or 2, and when 2 then: A) one and the other R is, independently, halo, lower alkyl or lower alkoxy, or one R is from the group of halo, lower alkyl and lower alkoxy and the other R is from the group of nitro, amino, N-(lower)alkylamino or di(lower)alkylamino or B) one R is N-(lower)alkylamino or di(lower)alkylamino while the other R is nitro;

R′ represents lower alkyl, allyl, methallyl or propargyl; provided R′ is not an unsaturated hydrocarbon substituent when R is N-alkylamino;

R″ represents phenyl or substituted phenyl of the formula



Y represents halo, hydroxy, lower alkyl, lower alkoxy or trifluoromethyl, and

Y′ represents hydrogen, halo, hydroxy, lower alkyl or lower alkoxy

or a pharmaceutically acceptable acid addition salt thereof.

3,925,549

1-SUBSTITUTED-QUINAZOLINE-2(1H)-THIONES IN THE TREATMENT OF INFLAMMATION

Hans Ott, Basel-Land, Switzerland, assignor to Sandoz, Inc., E. Hanover, N.J.

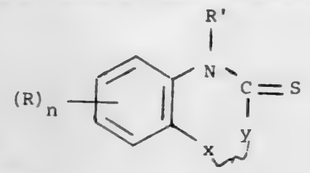
Division of Ser. No. 78,587, Oct. 6, 1970, Pat. No. 3,764,600, which is a continuation of Ser. No. 819,477, April 25, 1969, which is a continuation-in-part of Ser. No. 741,805, July 1, 1968. This application June 11, 1973, Ser. No. 368,862The portion of the term of this patent subsequent to Sept. 12, 1992, has been disclaimed.

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.[2] A61K *31/505*

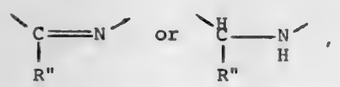
U.S. Cl. 424—251 **19 Claims**

11. A pharmaceutical composition comprising an inert pharmaceutically acceptable carrier and an anti-inflammatory treating effective amount of a compound of the formula:



wherein

$\overset{\frown}{x\ y}$ is either



R is, independently, hydrogen; halo having an atomic weight no greater than 80; lower alkyl; lower alkoxy; nitro; cyano; lower alkylthio; trifluoromethyl; or di(-lower)alkylamino;

n is 1 or 2, and when 2 then one and the other R is, independently, halo, lower alkyl or lower alkoxy, or the other R is di(lower)alkylamino;

R′ is lower alkyl; allyl; methallyl; or propargyl;

R″ is phenyl; or substituted phenyl of the formula:



Y represents halo (as defined above); lower alkyl; lower alkoxy; or trifluoromethyl; and

Y″ represents hydrogen, halo (as defined above); lower alkyl; or lower alkoxy.

3,925,550

1-(5-NITROTHI-ALZOL-2-YL)-IMIDAZOLIDINE-2-THIONE HAVING ANTI-PARASITIC AND ANTI-MICROBIAL PROPERTIES

Serge Tchelitcheff, Thiais, France, assignor to Rhone-Poulenc S.A., Paris, France

Division of Ser. No. 236,579, March 21, 1972, Pat. No. 3,810,908. This application July 20, 1973, Ser. No. 381,083

Claims priority, application France, Mar. 23, 1971, 71.10150

Int. Cl.[2] A61K *27/00*

U.S. Cl. 424—270 **4 Claims**

1. A method for combatting bilharzioses due to *Schistosoma mansoni*, *Schistosoma haematobium* or to *Schistosoma japonicum*, in a patient which comprises administering to the patient 1-(5-nitrothiazol-2-yl)-imidazolidine-2-thione in an amount sufficient to improve the condition of the patient.

3,925,551

2-SUBSTITUTED PHENYLHYDRAZONOIMIDAZOLENINE FUNGICIDAL AND BACTERICIDAL AGENTS

Karl Heinz Buchel, Wuppertal-Elberfeld; Paul-Ernst Frohberger; Hans Scheinpflug, both of Leverkusen, and Edgar Enders, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 12, 1972, Ser. No. 261,828

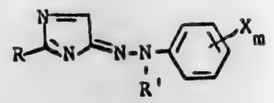
Claims priority, application Germany, June 15, 1971, 2129524

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.[2] A01N *9/22*

U.S. Cl. 424—273 **9 Claims**

1. A method of combating pests selected from the group consisting of fungi and bacteria which comprises applying to said pests or their habitat a fungicidally or bactericidally effective amount of a compound of the formula



in which

R is alkyl of up to 6 carbon atoms,

R′ is a member selected from the group consisting of hydrogen, lower alkylcarbonyl, lower alkoxycarbonyl, lower alkylsulfonyl, phenylcarbonyl, phenoxycarbonyl and phenylsulfonyl,

X is a member selected from the group consisting of halogen, trifluoromethyl, nitro, lower alkyl, lower alkoxy, lower alkylthio, lower alkylamino and di-lower alkylamino, said lower alkyl and lower alkoxy radicals in R_1 and X having up to 6 carbon atoms and

m is 0 to 3.

3,925,552

PHARMACEUTICAL COMPOSITIONS CONTAINING 1-CARBOXAMIDINE PYROZOLES AND THEIR ACID ADDITION SALTS AND USE OF SAME

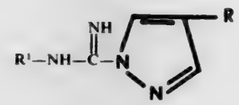
Isaac Karadavidoff, and Michele Moreau, both of Paris, France, assignors to Fuveau S.A., Paris, France

Division of Ser. No. 247,833, April 26, 1972, Pat. No. 3,833,605. This application Sept. 26, 1973, Ser. No. 400,733

Int. Cl.[2] A61K *31/415*

U.S. Cl. 424—273 **8 Claims**

1. A pharmaceutical composition for use as an anti-inflammatory or analgesic agent which contains an effective amount of a compound of the formula:



in which R is hydrogen or lower alkyl and R^1 is hydrogen, lower alkyl or benzyl, or an acid addition salt thereof, with a pharmaceutically acceptable inorganic or organic acid, and a pharmaceutically acceptable carrier.

3,925,553

HERBICIDAL AND/OR FUNGICIDAL 5-POLYHALOETHYLIMINO- AND 5-POLYHALOVINYLIMINO-2,4-IMIDAZOLIDINEDIONES

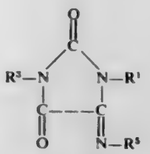
Malcolm S. Singer, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 239,357, March 29, 1972, Pat. No. 3,822,282. This application Mar. 27, 1974, Ser. No. 455,167

Int. Cl.[2] A01N *9/22*

U.S. Cl. 424—273 **11 Claims**

1. A method of controlling fungi which comprises applying thereto a fungicidally effective amount of a compound of the formula



wherein one of R^1 or R^3 independently is alkyl of from 1 to 4 carbon atoms, and the other R^1 or R^3 is alkenyl of 3 to 6 carbon atoms, naphthyl, phenyl, halo-substituted phenyl of from 1 to 4 halogens of atomic number 9 to 35, alkphenyl of 7 to 12 carbon atoms, or halo-substituted alkphenyl of 7 to 12 carbon atoms and of from 1 to 4 halogens of atomic number 9 to 35 or from 1 to 2 alkoxy of 1 to 4 carbon atoms; and R^5 is 1-hydroxy-2,2,2-trihaloethyl, 1,2,2,2-tetrahaloethyl, trihalovinyl or dihalovinyl wherein the halogen is of atomic number 17 to 35.

3,925,554

CERTAIN 3,5-DICHLOROPHENYL COMPOUND USED AS A PLANT FUNGICIDE

Nobumasa Tottori, Minoo; Toshiro Kato, Amagasaki; Yasuhisa Asano, Ooita; Minoru Ueda; Osamu Kirino, both of Takarazuka; Shigehiro Ooba, Kobe; Akira Fujinami, Ashiya, and Toshiaki Ozaki, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

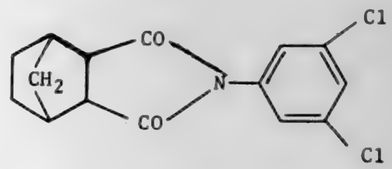
Filed Nov. 6, 1973, Ser. No. 413,326

Claims priority, application Japan, Nov. 30, 1972, 47-120436; Nov. 30, 1972, 47-120437

Int. Cl.[2] A01N *9/22*

U.S. Cl. 424—274 **16 Claims**

1. A method for killing phyto-pathogenic fungi on plants which comprises applying to said fungi a fungicidally effective amount of a 3,5-dichlorophenyl compound of the formula



3,925,555
METHOD OF CONTROLLING MITES USING CHLOROMETHANESULFONAMIDE

Itsuki Okuda, Shimizu; Hiroshi Shinohara; Haruki Ogawa, both of Shizuoka, and Hideo Itoh, Shimizu, all of Japan, assignors to Kumiai Chemical Industry Co., Tokyo, Japan

Continuation-in-part of Ser. No. 341,367, March 15, 1973, Pat. No. 3,795,743, which is a continuation of Ser. No. 13,204, Feb. 20, 1970, abandoned. This application Dec. 10, 1973, Ser. No. 423,198The portion of the term of this patent subsequent to Mar. 5, 1991, has been disclaimed.

Int. Cl.² A01N *9/16*

U.S. Cl. 424—321 **2 Claims**

1. A method for killing mites, which comprises spraying a solution containing 250–1000 ppm of chloromethanesulfonamide on plants infested by mites.

3,925,556
ANTI MICROBIAL COMPOSITIONS CONTAINING UNSYMMETRICAL OLIGOQUATERNARY AMMONIUM COMPOUNDS

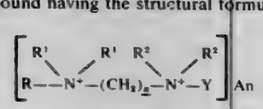
Robert Andrew Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 185,388, Sept. 30, 1971, abandoned, which is a division of Ser. No. 82,594, Oct. 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 716,412, March 27, 1968, abandoned. This application Sept. 17, 1974, Ser. No. 506,807

Int. Cl.² A61K *7/22, 31/14*

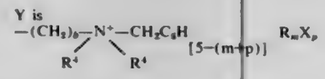
U.S. Cl. 424—329 **14 Claims**

1. An antimicrobial composition comprising about 0.1–10% by weight of an unsymmetrical poly-onium quaternary ammonium compound having the structural formula:



An

wherein R is a substantially straight chain alkyl group having 10 to 18 carbon atoms,



R_mX_p

n is an integer 2 to 18;
R^1, R^2, R^3 and R^4 are lower alkyls having 1 to 3 carbon atoms;
b is an integer 2 to 12;
X is selected from the group consisting of chlorine, bromine and iodine;
m is 0 to 3;
p is 0 to 3;
m+*p* is 0 to 3;
and
An is a compatible anion and a compatible inert pharmaceutical carrier therefor.

3,925,557
ANTI-ALLERGIC PHARMACEUTICAL COMPOSITIONS

Derek Richard Buckle, Redhill, and Harry Smith, Maplehurst near Horsham, both of England, assignors to Beecham Group Limited, United Kingdom

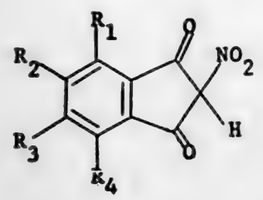
Division of Ser. No. 317,296, Dec. 21, 1972. This application Dec. 3, 1973, Ser. No. 421,239

Claims priority, application United Kingdom, June 20, 1972, 28707/72; Oct. 18, 1972, 48027/72; Mar. 22, 1972, 13300/72; Jan. 25, 1972, 3348/72

Int. Cl.² A61K *31/04, 31/12, 31/44, 31/135*

U.S. Cl. 424—331 **24 Claims**

1. A pharmaceutical composition in a form suitable for oral, parenteral or insufflation administration to humans comprising an amount of a compound of the formula:



(I)

or a pharmaceutically acceptable nontoxic salt thereof, wherein R_1, R_2, R_3 and R_4 are each hydrogen, lower alkyl, aryl, aralkyl, or halogen, provided that R_1, R_2, R_3 and R_4 are not simultaneously hydrogen, sufficient to be effective for the prophylaxis or treatment of asthma or hay-fever, or the treatment or rhinitis, in combination with a pharmaceutically acceptable non-toxic inert diluent or carrier suitable for said administration form.

3,925,558
USE OF OBTUSAQUINONE AS A FUNGICIDE TO CONTROL WOOD-INHABITING MARINE FUNGI

John D. Bultman, Oxon Hill, Md.; Leonard Jurd, Berkley, Calif., and Donald D. Ritchie, New York, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 25, 1974, Ser. No. 518,112

Int. Cl.² A01N *9/24*

U.S. Cl. 424—331 **2 Claims**

1. A method of treating wood for preventing growth of fungus which comprises impregnating a fungicidal amount of obtusaquinone into said wood.

3,925,559
ANIMAL FEEDS FOR HERBIVOROUS DOMESTIC ANIMALS

Elmer F. Glabe, Northbrook; Perry W. Anderson, Niles, and Stergios Laftsidis, Chicago, all of Ill., assignors to Food Technology, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 300,736, Oct. 25, 1972, abandoned, which is a continuation-in-part of Ser. No. 158,616, June 30, 1971, abandoned. This application June 28, 1974, Ser. No. 484,080

Int. Cl.² A23K *3/00*

U.S. Cl. 426—2 **6 Claims**

1. A process of feeding herbivorous animals selected from the group consisting of cattle, pigs, horses, sheep, goats and fowl, which comprises feeding such animals with animal feed containing sodium diacetate in sufficient amount to serve as an attractant and to enhance the taste threshhold of said feed, the quantity of sodium diacetate added thereto being within the range of 0.1% to 1.5% by weight of the total feed, and said feed to which said sodium diacetate is added being selected from the group consisting of corn and mixed feeds containing at least 25% by weight of corn.

3,925,560
FEED SUPPLEMENTS FOR RUMINANTS COMPRISING LIPID ENCAPSULATED WITH PROTEIN-ALDEHYDE REACTION PRODUCT

Trevor William Scott, Kellyville, and Geoffrey Dean Loftus Hills, Beaumaris, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Australia

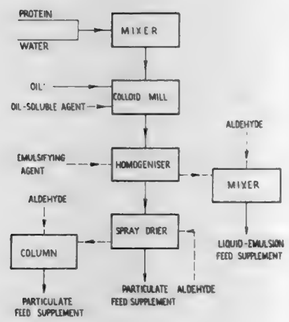
Filed May 14, 1973, Ser. No. 359,793

Int. Cl.² A23K *1/18*

U.S. Cl. 426—2 **11 Claims**

1. In a method of feeding ruminant animals whereby a feed supplement comprises a nutritionally effective portion of the ruminants' diet, the improvement of providing dietary lipid to said ruminant animals in effective nutritional amounts thereby permitting modification of said ruminant animals nutrition, fat, meat and milk production without causing digestive disturbances by the method comprising:

feeding said ruminant animals a composite feed supplement material made of dietary lipid which is assimilable by ruminant animals and encapsulated by a reaction product of dietary protein and aldehyde which is substantially insoluble at a pH greater than about 5 and substantially soluble at a pH less than about 4 and therefore not degradable in the rumen but subject to degradation in the abomasum and lower gut, said dietary lipid consisting essentially of nutrient lipid globules of a size less than about 0.1 millimeter, said supplement being fed in a quantity which will supply said dietary lipid in said nutritional amounts for said ruminant animals; and allowing said supplement to be ingested by said ruminant animals and pass through the rumen and become digested in the abomasum and lower gut and thereby assimilated by said ruminant animals.



3,925,561
METHOD FOR IMPARTING COLOR TO TEXTURIZED VEGETABLE PROTEIN

Henk Herstel, and Godefridus Antonius Maria van den Ouweland, both of Zevenaar, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Feb. 19, 1974, Ser. No. 443,552

Claims priority, application United Kingdom, Feb. 26, 1973, 9235/73

Int. Cl.² A23L *1/275*

U.S. Cl. 426—250 **5 Claims**

1. A process for imparting a brown color that will not be leached out with water and which is not associated with any noticeable odor or taste, to an extruded texturized vegetable protein product, which comprises incorporating in the mixture fed to an extruder wherein the protein-containing vegetable material is cooked and texturized at a temperature between 120° and 170°C, a proportion sufficient to impart said color in the texturized product but which is not more than 10% by weight, based on the amount of protein present, of a C_5 sugar or a phosphate ester of a C_5 sugar.

3,925,562
TEXTURIZING PROCESS FOR SINGLE CELL PROTEIN CONTAINING PROTEIN MIXTURES

Steven R. Tannenbaum, Framingham, Mass., assignor to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 230,949, March 1, 1972, Pat. No. 3,845,222, which is a continuation-in-part of Ser. No. 32,387, April 27, 1970, abandoned. This application July 19, 1974, Ser. No. 490,037The portion of the term of this patent subsequent to Oct. 29, 1991, has been disclaimed.

Int. Cl.² A23J *3/00*

U.S. Cl. 426—276 **14 Claims**

1. A process for imparting texture to a mixture of microbial cells and vegetable protein comprising the steps of:

a. heating an aqueous paste of microbial cell material and vegetable protein to a temperature wherein the range from about 150° to about 400°F. for a time period within the range from about 10 to about 300 seconds, said paste containing from about 10 to about 50 wt. % water;
b. simultaneously applying a shearing force to said cell paste, the shearing force corresponding to a shear rate of about 10 to about 60 rpm and a torque of about 200 to about 2,000 meter-grams;
c. extruding the heated and sheared cell paste through a die to provide a shaped extrudate; and
d. exposing the shaped extrudate to an oxygen-containing gas stream to produce a product which is chewy, crunchy, crispy and resists dispersion in water.

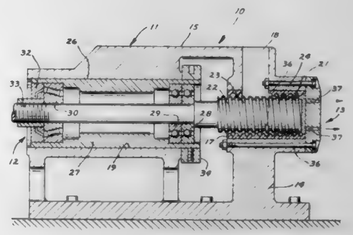
3,925,563
PREPARING AN EXTRUDED PUFFED SNACK PRODUCT

Robert O. Straughn; Gary L. Elofson, and Richard D. Reinhart, all of Minneapolis, Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed May 27, 1970, Ser. No. 40,979

Int. Cl. A23l *1/12*

U.S. Cl. 426—302 **8 Claims**



1. A method for preparing a puffed snack product resembling a French fried potato stick, said method comprising: dry blending a mixture including by weight at least 30% potato solids and up to 70% cereal meal; adding and thoroughly dispersing sufficient water in said dry blend to raise the total moisture content of the mixture to between 16 and 22%, by weight; working the mixture in an extruder under a controlled temperature of up to 340°F.; adjusting the mixture to a temperature in the range of between 255° and 340°F. and a pressure in the range of between 800 and 1500 pounds per square inch gauge and then extruding and expanding the mixture, said mixture expanding between 4 and 5.5 times upon extrusion; cutting the extruded mixture into pieces; toasting the pieces and enrobing the pieces with an edible oil and salt.

3,925,564
METHOD OF CURING AND DRYING WILD RICE
Ned W. Finnell, Route 4, Hayward, Wis. 54843
Filed July 22, 1974, Ser. No. 490,520
Int. Cl.² A23B *4/04*
U.S. Cl. 426—418 2 Claims

1. A method of dehulling wild rice kernels which comprises moistening said rice kernels at a temperature not greater than 55°F. to a moisture content of 45–50% on a weight basis, maintaining said rice kernels at a temperature not greater than 55°F. and at a moisture content of 45–50% for 7–21 days until the hulls of said kernels turn brown, drying said kernels to a moisture content of 6–8% on a weight basis, and thereafter dehulling said kernels to produce grain.

3,925,565
SIMULATED MEAT PRODUCT
Robert R. Reinhart, Des Plaines, and George M. Smith, Jr., Crystal Lake, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.
Continuation-in-part of Ser. No. 180,122, Sept. 13, 1971, abandoned. This application May 28, 1974, Ser. No. 473,569
Int. Cl.² A23J *3/00*; A23P *1/00*
U.S. Cl. 426—447 18 Claims

1. A process for preparing a puffed food product simulating meat comprising:

A. admixing a proteinaceous mixture of a protein material comprising a member selected from the group consisting of gelatin, microbiological protein, egg white, muscle protein, keratins, lactalbumin, and blood having protein concentrations of at least about 30 percent with water in an amount sufficient to provide a final moisture content of from about 25 percent to about 40 percent by weight;

B. subjecting the moistened proteinaceous mixture to a pressure above atmospheric pressure and a temperature above 212°F. to convert it into a flowable substance; C. extruding the flowable substance in a uniform linear flow as an extrudate into a medium of lower pressure without puffing the flowable substance, said extruding being accomplished in the form of an annular shape in which both the inside and outside of the annular flowable substance are cooled to a temperature below 212°F. in order to avoid puffing and said extrusion creating a translucent to glassy extrudate;

D. placing the extrudate in a confined space;

E. subjecting the extrudate in the confined space to a water-boiling temperature for a time of from 15 to 75 seconds and a pressure of from 150 to 250 psi; and

F. suddenly releasing the pressure on the extrudate in less than 2 seconds causing the extrudate to puff and resemble simulated meat with said sudden release of pressure removing the translucent to glassy characteristics and creating an exterior skin portion and a fibrous inner portion in the simulated meat.

3,925,566
SIMULATED MEAT PRODUCT
Robert R. Reinhart, Des Plaines, and Louis Sair, Evergreen Park, both of Ill., assignors to The Quaker Oats Company and The Griffith Laboratories, Inc., both of Chicago, Ill.
Continuation-in-part of Ser. Nos. 180,120, Sept. 13, 1971, abandoned, and Ser. No. 180,121, Sept. 13, 1971, abandoned. This application May 28, 1974, Ser. No. 473,570
Int. Cl.² A23J *3/00*; A23P *1/00*
U.S. Cl. 426—447 7 Claims

1. A process for preparing a puffed food product simulating meat comprising:

A. admixing a proteinaceous mixture having protein concentrations of at least about 30 percent with water in an amount sufficient to provide a final moisture content of from about 25 percent to about 40 percent by weight; said proteinaceous mixture comprising a protein material selected from the group oil seed vegetable proteins, casein and caseinate salts;

B. subjecting the moistened proteinaceous mixture to a pressure above atmospheric pressure and a temperature above 212°F to convert it into a flowable substance;

C. extruding the flowable substance in a uniform linear flow as an extrudate into a medium of lower pressure without puffing the flowable substance, said extruding being accomplished in the form of an annular shape in which both the inside and outside of the annular flowable substance are cooled to a temperature below 212°F. in order to avoid puffing and said extrusion creating a translucent to glassy extrudate;

D. placing the extrudate in a confined space;

E. subjecting the extrudate in the confined space to a water-boiling temperature for a time of from 5 to 100 seconds and a pressure of from 100 psi to 250 psi; and

F. suddenly releasing the pressure in less than 2 seconds on the extrudate causing the extrudate to puff and resemble simulated meat with said sudden release of pressure substantially removing the translucent to glassy characteristics and creating an exterior skin portion and a fibrous inner portion in the simulated meat.

3,925,567
PROCESS FOR PREPARING SNACK-FOODS FROM STARCH
Shunji Abe, 1-Banchi Oaza Tsuchikawa, Ojiya, Niigata, Japan
Filed Mar. 26, 1974, Ser. No. 454,909
Int. Cl.² A21D *10/00*
U.S. Cl. 426—559 2 Claims

1. A process for preparing puffed snack food products from glutinous type starch which comprises mixing by kneading with steam for a period of time sufficient to produce a homogeneous cake material a glutinous type starch selected from the group consisting of glutinous rice starch, waxy corn starch, glutinous millet starch and glutinous kaoliang starch with at least 20% based on the weight of the mixture of a flour selected from the group consisting of rice flour and cereal flour, immediately thereafter rapidly cooling the mixture to a temperature sufficient to form a solidified material, shaping and forming the solidified material, into the desired shape drying said shaped and formed material and then baking the dried material under conditions sufficient to form the puffed snack food product.

3,925,568
PROCESS FOR FORTIFYING FOOD AND FEED PRODUCTS WITH AMINO ACIDS
Ganta V. Rao, and Oliver B. Gerrish, Sr., both of Hutchinson, Kans., assignors to Far-Mar-Co., Inc, Hutchinson, Kans.
Continuation-in-part of Ser. No. 291,341, Sept. 22, 1972, abandoned. This application Feb. 6, 1974, Ser. No. 439,860
Int. Cl.² A23L *1/20*
U.S. Cl. 426—618 21 Claims

1. A process for fortifying vegetable protein food products for human and animal consumption with amino acids comprising the steps of:

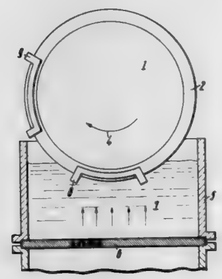
a. tempering said products in an aqueous solvent having a pH in the range from about 8 to 14 for a time sufficient to achieve the desired amino acid fortification, said solvent containing an alkaline catalyst and from 0.05 to 20 percent by weight of said amino acid based upon the weight of the untempered product, and

b. drying said tempered product to reduce the moisture level thereof.

3,925,569
WET PROCESS FOR MAKING BLANDER HIGH-PROTEIN SOYBEAN PRODUCTS
Rasik D. Daftary, Decatur, Ill., assignor to Archer Daniels Midland Company, Decatur, Ill.
Continuation-in-part of Ser. No. 245,920, April 20, 1972, abandoned. This application Apr. 2, 1973, Ser. No. 345,969
Int. Cl.² A23L *1/20*
U.S. Cl. 426—634 11 Claims

1. The process of producing a soybean material having the combined properties of bland flavor, high protein content with high protein dispersibility index, high fat content, and low flatulence, comprising soaking a full-fat soybean material in a liquid mixture of at least one aliphatic alcohol of 1–4 carbon atoms and water in a volume ratio of not more than 2:1 alcohol: water at a temperature of 0°–70°C and for a time at least sufficient for said liquid mixture to penetrate all of the soybean material, separating the soaking liquid from the soybean material, and recovering a soybean material containing substantially all of the fat in the original untreated soybean material.

3,925,570
METHOD OF COATING METALLIC MATERIAL ONTO A METALLIC SUBSTRATE
Friedhelm Reinke, Remscheid; Edgar Stengel, Wuppertal-Hahnerberg, and Friedhelm Emde, Huckeswagen, all of Germany, assignors to AEG-Elotherm G.m.b.H., Remscheid-Hasten, Germany
Filed Sept. 19, 1972, Ser. No. 290,384
Claims priority, application Germany, Sept. 30, 1971, 2148779
Int. Cl.² B05D *3/02*, *1/24*
U.S. Cl. 427—46 8 Claims



1. A method of applying a coating of metallic material to specified metal regions on a base material of a different metal comprising the steps of:

immersing at least the metal surface regions of the workpiece that are to be coated in a fluidized bed containing particles of the coating metallic material,

providing an ascending current of gas in said fluidized bed so that said coating particles are suspended,

inductively heating in the fluidized bed a surface layer of the workpiece in the regions that are to be coated in the fluidized bed so that said suspended material from the fluidized bed is deposited on said inductively heated regions and

inductively reheating the coated material outside the fluidized bed after deposition.

3,925,571
METHOD OF MAKING A SELENIUM CHARGE CARRIER PLATE
Karl Esser, Stein, and John E. Segain, Gunzenhausen, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Feb. 1, 1974, Ser. No. 438,831
Claims priority, application Germany, Feb. 8, 1973, 2306157
Int. Cl.² B44D *1/18*
U.S. Cl. 427—76 7 Claims

1. An improved method of preparing a selenium charge carrier foil for use in a copying machine wherein a non-conducting layer of selenium is evaporated onto a metal substrate wherein the improvement comprises:

spraying a layer of conductive lacquer onto a flexible charge carrier metal foil; and

evaporating a non-conducting layer of selenium onto said layer of conductive lacquer at a deposition rate of approximately 0.5 microns per minute.

3,925,572
MULTILEVEL CONDUCTOR STRUCTURE AND METHOD
Charles T. Naber, Centerville, Ohio, assignor to NCR Corporation, Dayton, Ohio
Division of Ser. No. 296,920, Oct. 12, 1972, Pat. No. 3,833,919. This application Apr. 18, 1974, Ser. No. 461,815
Int. Cl.² B44D *1/18*
U.S. Cl. 427—87 3 Claims

1. A method of forming a first conductor over and insulated from a second conductor on a substrate having diffused regions therein comprising the steps of:

a. depositing an undoped insulator layer on the first conductor;

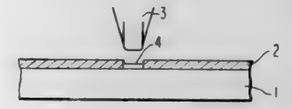
b. depositing a doped insulator layer having a given flow temperature, on the undoped insulator layer to form a matrix;

c. heating the matrix to the flow temperature of the doped insulator layer to cause the exposed surface of the doped insulator layer to flow and become tapered at areas adjacent the edges of the first conductor; and

d. depositing the second conductor on the tapered surface of the doped insulator layer.

3. The method of claim 1 wherein the flow temperature is maintained below 1,200°C.

3,925,573
RECORDING METHOD
Ichirow Sugi; Haruo Takenaka; Toshiaki Okiyama, all of Tokyo, and Teruo Kobayashi, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Division of Ser. No. 214,215, Dec. 30, 1971. This application Feb. 12, 1974, Ser. No. 441,784
Claims priority, application Japan, Dec. 30, 1970, 45-123039
Int. Cl.² B44F *1/10*; G03C *11/22*
U.S. Cl. 427—145 10 Claims



1. A recording method which comprises drawing on a coated film with a writing instrument having a bleaching agent, said film being transparent and having at least one layer of a dye bleachable by said bleaching agent coated thereon, said bleaching agent bleaching said dye to cause it to become transparent.

3,925,574

PROCESS FOR COATING SUBSTRATES WITH α-SUBSTITUTED β-PROPIOLACTONE GRAFT COPOLYMERS

Arthur Charles Shor, and John William Van Dyk, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Mar. 7, 1973, Ser. No. 338,688
Int. Cl. B44d 1/094, 1/09
U.S. Cl. 427—195 9 Claims

1. A process for coating a substrate comprising:

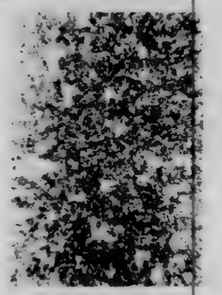
1. applying to at least one surface of the substrate a layer of a polymer composition, in the form of a plastisol, organosol or powder, consisting essentially of
   a. 10–95% by weight, based on the weight of the polymer composition, of a polymer, said polymer comprising a copolymer formed by contacting an amorphous base polymer of at least 2000 molecular weight having at least one random anionic site thereon selected from the group consisting of carbanion, carboxylic anion and alkoxide anion with up to 150% by weight of the polymer of at least one α-substituted-β-propiolactone, polymerizing the β-lactone to form crystallizable polymer sidechains having a length of between 3 and 1000 monomer units and a weight up to 60% by weight of the graft composition, and
   b. 5–90% by weight, based on the weight of the polymer composition, of plasticizer, solvent or a mixture thereof; and
2. heating the layer to a temperature not exceeding 200°C, in the absence of pressure, to fuse the polymer into a coherent coating.

3,925,575

CERAMIC TREATING PROCESS AND PRODUCT PRODUCED THEREBY

Peter K. Church, Cascade, and Oliver J. Knutson, Colorado Springs, both of Colo., assignors to Kaman Sciences Corporation, Colorado Springs, Colo.

Division of Ser. No. 694,303, Dec. 28, 1967, Pat. No. 3,789,096, which is a continuation-in-part of Ser. No. 642,704, June 1, 1967, abandoned. This application Feb. 15, 1973, Ser. No. 332,745The portion of the term of this patent subsequent to Jan. 29, 1991, has been disclaimed.
Int. Cl. B44d 1/14
U.S. Cl. 427—226 55 Claims



1. A method of producing a chemically hardened refractory body which comprises:

forming an unsintered porous body from a mass of finely divided particles, at least the surface of said particles consisting of a refractory oxide of at least one metallic element having a vitrification temperature in excess of 600°F;

impregnating said porous body with a solution of a soluble compound of a metal selected from the group consisting of aluminum, beryllium, silicon, tin and zirconium which compound is capable of being converted to an oxide on heating to a temperature below the vitrification temperature of said particles;

drying and curing said impregnated body by heating same to a temperature of at least 600°F. but below the vitrification temperature of the particles to convert the metal compound in situ to the oxide; and,

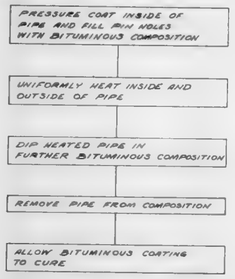
repeating the impregnation and heat curing steps at least once to harden and densify the body.

3,925,576

BITUMINOUS COATING SYSTEM AND ARTICLES PRODUCED THEREBY

Palmer G. Hendrix, Hickory, N.C., assignor to The Hill and Griffith Company, Cincinnati, Ohio

Division of Ser. No. 323,443, Jan. 15, 1973. This application Aug. 3, 1973, Ser. No. 385,284
Int. Cl.² B05D 7/22
U.S. Cl. 427—230 12 Claims



1. A process for coating porous metal structures with a water based bituminous composition comprising the steps of:

a. applying said composition onto said structure to cover the exposed surfaces thereof, at least certain of said composition being applied under a pressure in the range of about 20 to about 40 pounds per square inch against said structure to force composition into any porosities of said structure to substantially completely block same; and

b. uniformly applying heat to said structure exposed surfaces to evaporate water therefrom and thereby cure said bituminous coating, said heat being approximately at the melting point of the bituminous ingredient of said composition.

3,925,577

SILICON CARBIDE COATED GRAPHITE MEMBERS AND PROCESS FOR PRODUCING THE SAME

Elmer G. Fatzer, Brunswick, Ohio, and Edgar L. Kochka, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 24, 1972, Ser. No. 309,591
Int. Cl.² C23C 11/08
U.S. Cl. 427—249 6 Claims



1. In the process of applying a silicon carbide coating to a graphite member to produce a composite structure, the steps comprising

a. heat treating at a temperature of from about 1700°C to 2400°C an isotropic graphite body comprising fine grained isotropic graphite of a density of at least 1.75 gm/cc and having a coefficient of thermal expansion of about 7.5 to 8.3 inch per inch per degree Centigrade × 10^{-6}, the graphite grains being of a maximum particle size of less than 0.001 inch, and characterized by a relatively uniform distribution of many interconnected fine pores of an average diameter of about 5 microns and less, the pores extending to the surface of the body, the heat treating being applied for at least an hour in a halogen atmosphere, the halogen comprising at least one of the group consisting of chlorine and fluorine, the heat-treatment purifying the body to reduce the ash impurities to a range of the order of 2 to 10 ppm,

b. machining the heat treated isotropic graphite body to a member of predetermined shape and surface condition,

c. ultrasonically cleaning the machined body in a liquid cleaning fluid to remove loose surface particles,

d. depositing silicon by a gas phase reaction on the surfaces of the cleaned isotropic graphite member while at a temperature of at least 1000°C but below the melting point of silicon, to provide an infiltratable layer of silicon on the surfaces,

e. heating the silicon coated isotropic graphite member to a temperature and for a period of time to cause the silicon to melt and penetrate the pores and crevices of the graphite member and to react completely in situ with the graphite to form a layer of silicon carbide to a depth of at least about 5 mils, and

f. depositing thereover by a gas phase reaction a sealing layer of silicon carbide on the graphitic member.

3,925,578

SENSITIZED SUBSTRATES FOR CHEMICAL METALLIZATION

Joseph Polichette, South Farmingdale; Edward J. Leech, Oyster Bay, and Francis J. Nuzzi, Lynbrook, all of N.Y., assignors to Photocircuits Division of Kollmorgen Corporation, Glen Cove, N.Y.

Division of Ser. No. 167,432, July 29, 1971, Pat. No. 3,772,056. This application Aug. 13, 1973, Ser. No. 387,586The portion of the term of this patent subsequent to Mar. 27, 1990, has been disclaimed.
Int. Cl. B44d 1/14, 1/18
U.S. Cl. 427—304 16 Claims

1. A process for producing metallized articles which comprises coating a substrate selected from the group consisting of

i. a chemically clean metal clad laminated substrate free of all loose particles,

ii. a non-metallic resinous laminated substrate having a polarized surface and

iii. a clean, non-metallic wettable substrate with a solution of copper, nickel, cobalt or iron salt or mixtures thereof, said salt capable of reduction to a layer of metallic copper, nickel, coablt, or iron nuclei on exposure to a chemical reducing agent until the copper, nickel, cobalt or iron salt or mixture is reduced to metallic copper, nickel, coblat or iron nuclei, and exposing said nuclei to an electroless copper, nickel, cobalt, gold, tin, rhodium or zinc bath to build up a layer of electroless nickel, cobalt, gold, silver, tin, rhodium or zinc thereon.

3,925,579

METHOD OF COATING LOW ALLOY STEELS

Charles Flinchum, Trenton; F. Curtiss Dunbar, Monroe, and Jerry L. Arnold, Franklin, all of Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Filed May 24, 1974, Ser. No. 473,142
Int. Cl.² C23C 1/00
U.S. Cl. 427—320 16 Claims

14. In the method of fluxless hot dip metallic coating of low alloy steel strip and sheet stock containing at least one alloying element in uncombined form chosen from the group consisting of up to about 3% aluminum, up to about 1% titanium, up to about 2% silicon, up to about 5% chromium, and mixtures thereof, said alloying element being present in an amount greater than the critical content thereof as calculated from the following equation wherein aluminum and aluminum oxide are used as illustrative of the alloying element:

$$N_{Al}^{*} = \left[\frac{0.3 \times \pi \times D_O \times N_O^{(s)} \times V_{Fe}}{2 \times \nu \times D_{Al} \times V_{AlO_{3/2}}}\right]^{1/2}$$

where

N_{Al}^{*} = original mole fraction soluble Al
D_O = diffusivity of oxygen
$N_O^{(s)}$ = oxygen mole fraction established at the surface
V_{Fe} = molar volume of body-centered-cubic iron
ν = stoichiometric ratio of oxygen to aluminum atoms in Al_2O_3
D_{Al} = diffusivity of Al
$V_{AlO_{3/2}}$ = molar volume of $AlO_{3/2}$

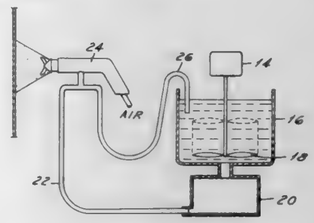
wherein the surface of said stock is prepared for coating by a continuous preliminary treatment involving heating under conditions producing an oxide coating on said surface, followed by further heat treatment under conditions reducing to iron oxide, and wherein the stock is thereafter passed into a molten metal coating bath while surrounded by a protective atmosphere, the improvement which comprises heating said stock in the first said heating step to a temperature of about 1100° to about 1675° F in an atmosphere oxidizing to iron whereby to produce a surface layer of iron oxide containing a uniform dispersion or solid solution of oxides of said alloying elements.

3,925,580

METHOD OF SPRAYING A POWDER PAINT SLURRY

George E. F. Brewer, Brighton, Mich., assignor to Grow Chemical Corporation, New York, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,374
Int. Cl.² B05D 1/02
U.S. Cl. 427—372 6 Claims



1. The method of spray painting an aqueous slurry of powder paint, comprising the steps of: preparing a slurry of the powder paint and water having a surface tension of the aqueous portion of less than 35 dynes/cm and having a minimum amount of water greater than the interstitial volume of the powder; spraying the powder slurry onto a substrate and evaporating from the slurry during the spraying of the slurry onto the substrate a sufficient amount of water to form a layer of powder paint and water on the substrate in which the amount of water is less than the interstitial volume of the powder.

3,925,581

PROCESS FOR FINISHING TEXTILES MADE OF FIBERS WHICH CONTAIN KERATIN

Karl Schafer, Opladen; Hans Schuster, Schildgen, and Wolfgang Klebert, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Aug. 17, 1973, Ser. No. 389,300
Claims priority, application Germany, Sept. 1, 1972, 2243068
Int. Cl.² B05D 3/02, 3/04
U.S. Cl. 427—377 6 Claims

1. A process for imparting dimensional stability and felt proofing to textiles containing at least some keratinous fibers

which comprises treating said textiles with an aqueous bath which contains:

a. salts of sulphurous acid or pyrosulphites as reducing agents,

b. a polyurethane which contains free isocyanate groups prepared by a process which comprises reacting excess of an aliphatic or cycloaliphatic diisocyanate with organic polyhydroxyl compounds and which is emulsified to form an aqueous emulsion with the aid of an non-iogenic or an ion active emulsifier using a high speed stirrer, and

c. a dispersion of a polymer or copolymer based on vinyl monomers or divinyl monomers which is formed by adding the polymer or copolymer to said polyurethane dispersion,

said aqueous bath having a pH of about 5.5 to about 6.5, drying the treated textile at a temperature of 90° to 100°C and then treating it with steam at about 100°C.

3,925,582

SCALE CONTROL

Thomas E. Sample, Jr.; James W. Hughes, and Jack F. Tate, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 141,892, May 10, 1971, abandoned. This application Oct. 10, 1972, Ser. No. 296,399

Int. Cl.² B05D *3/02*; **B32B** *27/40*

U.S. Cl. 427—385 **13 Claims**

1. A process for imparting scale-resistant properties to substrate surfaces normally susceptible to mineral scale formation while in contact with mineralized water containing less than about 5 percent hydrocarbons and wherein any heat flow is from the substrate surface into the mineralized water comprising the steps of:

a. applying to said surfaces normally susceptible to scale formation a scale-resistant amount of partially heat cured polyurethane resins sufficient to coat said surfaces, said resin being an adduct of polyol having an average hydroxyl functionality of three or greater and containing pendant polyoxyalkylene chains obtained by including in the polyurethane reactive mixture monohydric polyethers having the structural formula

$$R-O-(CH_2-CHR'-O)_nH$$

wherein R = alkyl, aryl or other radical which is non-reactive with isocyanate functional groups, R' = alkyl, and n is an integer from about 3 to about 50 and

b. further heat curing the partially cured polyurethane resin to a degree such that said resin possesses good adhesion to said substrate, stability to in-service environmental conditions, but without significantly altering the integrity of the pendant polyoxyalkylene chains in the further cured polyurethane resin.

3,925,583

COMPOSITE QUARTZ GLASS BODY

Karlheinz Rau, and Karl Seiler, both of Hanau am Main, Germany, assignors to Heraeus-Schott Quarzschmelze GmbH, Hanau am Main, Germany

Filed Feb. 6, 1973, Ser. No. 330,136

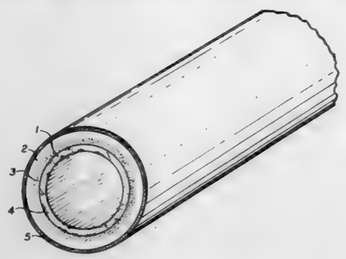
Claims priority, application Germany, Feb. 11, 1972, 2206493

Int. Cl.² C03B *19/06*; **C03C** *17/02*

U.S. Cl. 428—36 **13 Claims**

1. Composite quartz glass body comprising an inner layer of synthetic quartz glass and an outer layer of quartz glass fused onto said inner layer by melting of quartz crystal granules, said outer layer having a portion thereof which covers said inner layer and containing at least one inhibitor selected from the group of hydroxyl ions and divalent cations, said inhibitor retarding the diffusion of substances through said quartz glass body which interfere with the process of manufacturing solid state components, said portion of said outer layer being at least 10 percent to at most 90 percent of the thickness of said fused-on outer layer, said portion of the outer layer being contiguous with the inner layer, the remaining portion of said outer layer being free of said inhibitor and being more distant from said inner layer than the portion containing said inhibitor.

8. Composite quartz glass body comprising an inner layer of synthetic quartz glass and an outer layer of quartz glass fused onto said inner layer by melting of quartz crystal granules, said outer layer having a portion thereof which covers said inner layer and containing small air bubbles as an inhibitor which retards the diffusion of substances through said quartz glass



body which interfere with the process of manufacturing solid state components, said portion of said outer layer being at least 10 percent to at most 90 percent of the thickness of said fused-on outer layer, said portion of the outer layer being contiguous with the inner layer, the remaining portion of said outer layer being free of said inhibitor and being more distant from said inner layer than the portion containing said inhibitor.

3,925,584

ADHESIVE SEAL AND TAPE FOR SEALING

Nagayuki Suzuki; Tsutomu Nakamura, and Katsuto Yamada, all of Tokyo, Japan, assignors to Daiichi Seiyaku Company Limited and Sugawara Kogyo Co., Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 283,416, Aug. 24, 1972, abandoned. This application Feb. 7, 1974, Ser. No. 440,484

Int. Cl.² C09J *7/02*; **G09F** *3/03*

U.S. Cl. 428—40 **9 Claims**



1. An adheisve tape or article for sealing packages, containers and the like which comprises a weak thin-leaf material having a breaking strength of less than 2 kg/25 mm width laminated to a support sheet through an interlying weak adhesive layer consisting essentially of paraffin wax, microcrystalline wax or mixtures thereof having an adheisve strength in the range of 50 g to 400 g per 25 mm width and having the exposed surface of said thin-leaf material coated with a strong pressure-sensitive or heat-sensitive adhesive which has an adhesive strength greater than 500 g per 25 mm width.

3,925,585

STICKER

Katumi Aoyagi, Chofu, Japan, assignor to Shiro Kojima, Japan, a part interest

Filed Apr. 27, 1973, Ser. No. 355,211

Claims priority, application Japan, Apr. 27, 1972, 47-42528

Int. Cl. B32b *3/16*

U.S. Cl. 428—42 **10 Claims**

1. A sticker comprising a sheet, a layer of pressure sensitive adhesive supported on said sheet, a detachable release paper temporarily attached to said layer, said sheet being provided with a parting line which divides said sheet into a sheet clipping and an annular piece of the sheet, to be individually detached from the release paper, and an imprint on said sheet which correlates said clipping with said piece when detached.

3,925,586

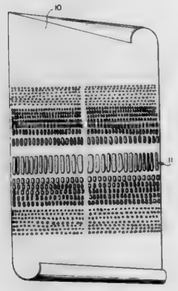
STENCIL CASTING PROCESS AND RESULTING ARCHITECTURAL ART PRODUCT

Paul E. Maxwell, Carrollton, Tex., assignor to Multiple Originals, Inc., Dallas, Tex.

Filed Feb. 19, 1974, Ser. No. 443,313

Int. Cl.² B32B *3/16*

U.S. Cl. 428—195 **9 Claims**



1. An architectural art product, comprising:

a. a building size structure section forming a substrate material for attachment to a structural member,

b. a bas-relief build-up of a non-metallic, nonhardening medium onto said material to be incorporated thereinto for permanent integration into said material for installation into the architectural construction with which it is used, and wherein,

c. said medium represents a non-brittle attractive pattern that is distinctive from conventional architectural appearances, and wherein,

d. said substrate material has a high degree of flexibility.

3,925,587

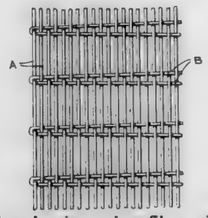
PERVIOUS LOW DENSITY CARBON FIBER REINFORCED COMPOSITE ARTICLES

Im Keun Park, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 347,594, April 3, 1973, Pat. No. 3,859,158, which is a division of Ser. No. 135,698, April 20, 1971, Pat. No. 3,779,789. This application July 31, 1974, Ser. No. 493,633

Int. Cl.² C09J *5/02*

U.S. Cl. 428—255 **10 Claims**



1. A pervious low density carbon fiber reinforced composite article having a pore volume of approximately 10 to 75 percent by volume of the total composite article, and a bulk density of about 0.4 to 1.4 grams/c.c. comprising:

a. at least one layer of carbon tape of an open weave construction comprising a plurality of adjacent substantially parallel and laterally spaced linear warp ends of a carbonaceous fibrous material containing at least 90 percent carbon by weight substantially coextensive with the length of said tape wherein no substantial lateral contact is made between said adjacent warp ends, and a fibrous weft pick containing at least 90 percent carbon by weight interlaced with said warp ends in a plain weave construction at a frequency of about 2 to 8 picks per inch of said tape with said weft pick being provided under a tension sufficient that said linear configuration of said warp ends is substantially unimpaired, and

b. a substantially cured thermosetting resinous material in intimate association with said carbon tape in a concentration of about 20 to 50 percent by weight based upon the total weight of said composite article wherein lateral interstices are substantially maintained between said adjacent warp ends within a given layer of said tape of said composite article.

3,925,588

PRODUCTION OF POLYESTER YARN

Robert Moore Marshall, Chester, and Kimon Constantine Dardoufas, Richmond, both of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 1, 1974, Ser. No. 456,502

Int. Cl.² D02G *3/36*; **D02M** *13/20*

U.S. Cl. 428—395 **4 Claims**

1. Polyester yarn having incorporated thereon a finish composition consisting essentially of a polyalkylene glycol condensation product having the formula:

$$R-\overset{O}{\overset{\|}{C}}-O(C_2H_4O,\ C_3H_6O)_{x+y}H$$

where R is an alkyl group having 6 to 18 carbon atoms, x and y are the number of moles of propylene oxide and ethylene oxide respectively and wherein ethylene oxide comprises 40 to 60% of the combined total of ethylene oxide and propylene oxide and $x+y$ has a value to produce a molecular weight of from 300 to 600, said polyalkylene glycol condensate being incorporated on the yarn at an application level of 0.50% to 1.5% based on the weight of the yarn.

3,925,589

ESTERS OF POLYOXYALKYLENE GLYCOLS AND MIXED DIBASIC ACIDS AS FIBER FINISHES

Robert J. Sturwold, and Fred O. Barrett, both of Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Division of Ser. No. 260,516, June 7, 1972, Pat. No. 3,850,682, and a continuation-in-part of Ser. No. 223,752, Feb. 4, 1972, Pat. No. 3,769,215. This application Aug. 16, 1974, Ser. No. 497,917

Int. Cl.² C08G *69/46*; **C08J** *7/04*

U.S. Cl. 428—395 **5 Claims**

1. A lubricated fiber comprising a polyamide having deposited thereon about 0.1 to 10% by weight of an ester obtained by the reaction of 1.5 to 2.1 mols polyoxyethylene glycol having a molecular weight from about 300 to about 4000 and recurring alkylene units containing from 2 to 4 carbon atoms with 1 mol of a mixture of dibasic acids consisting of 5 to 95 mol percent dimer hydrocarbon acids containing 32 to 54 carbon atoms and 95 to 5 mol percent short-chain dibasic

hydrocarbon acids containing 2 to 12 carbon atoms, said ester having 70% or more of the carboxyl groups reacted.

3,925,590

LAMINATE WITH AN ADHESIVE INCLUDING AN N-NITROSO COMPOUND

Walter R. Hausch; John W. Fieldhouse, and Edward L. Kay, all of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 383,761, July 30, 1973, abandoned. This application Aug. 23, 1974, Ser. No. 500,199

Int. Cl.² B32B *27/40*

U.S. Cl. 428—423 **1 Claim**

1. An adhesively-bonded laminate wherein olefinic rubber is bonded to polyurethane rubber by an adhesive composition comprising an organic film-forming material, an organic isocyanate and as an adhesion promoter a compound selected from the group consisting of N-nitrosodiphenylamine, N,N′-dinitrosopiperazine and N,N′-dihexyl-N,N′-dinitroso-m-phenylenediamine.

3,925,591

TRANSPARENT LAMINATE FILMS OF POLYOLEFINES AND POLYESTERS AND PROCESSES FOR THEIR MANUFACTURE

Franz Breitenfellner, and Wolfgang Eberle, both of Bensheim, Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 29, 1975, Ser. No. 544,985

Claims priority, application Switzerland, Feb. 5, 1974, 1554/74

Int. Cl.² B32B *27/08, 27/32, 27/36*

U.S. Cl. 428—483 **10 Claims**

1. Deep-drawable, transparent laminate films of polyethylene films, polyester films and an adhesion promoter, characterised in that at least one unstretched polyester film consisting of or based on polyethylene terephthalate, having a crystallisation temperature of at least 150°C, measured in the film, is bonded via an adhesion-promoting layer of ethylene/vinyl acetate copolymer to at least one unstretched polyethylene film.

ELECTRICAL

3,925,592

HOLDER FOR ELECTRICAL EQUIPMENT

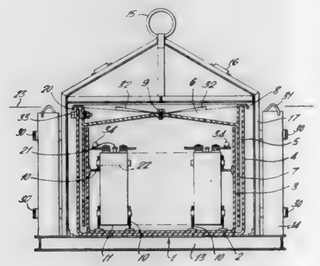
Alan David Webb, Hinchley Wood, England, assignor to The British Petroleum Company Limited, London, England

Filed Mar. 12, 1974, Ser. No. 450,319

Claims priority, application United Kingdom, Mar. 15, 1973, 12405/73

Int. Cl.² H05K *5/00*

U.S. Cl. 174—17 LF **8 Claims**



1. A holder suitable for protection of electrical equipment in an underwater location comprising: a container having an inner wall and an outer wall defining a space therebetween, said outer wall and said inner wall extending upwardly from a bottom means, a removable cover having a downwardly extending skirt intermediate the outer wall and inner wall and which extends downwardly into the space defined by the inner wall and outer wall such that, when the container is filled with an electrically non-conducting water-immiscible liquid and the holder submerged underwater, then ingress of water into the container and egress of liquid from the container are prevented, said outer wall being higher than said inner wall and said cover having an upwardly and outwardly extending projection fitting over the outer wall of the container, and access means for an electrical connection between the interior of the container and the exterior.

3,925,593

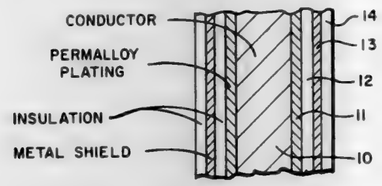
MONOTONICALLY CHANGING SKEW IN A MAGNETOSTRICTIVE ANISOTROPIC THIN FILM PLATED WIRE LINE SENSOR

Vahram S. Kardashian, Plymouth Village, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 11, 1974, Ser. No. 522,398The portion of the term of this patent subsequent to Feb. 18, 1992, has been disclaimed.

Int. Cl.² H01B *7/18*

U.S. Cl. 174—36 **2 Claims**



1. An improved plated wire for use in an intrusion detection system which uses as a transducer an extended length of strain responsive anisotropic thin film plated wire, the source end of the wire being energized by the output of a high frequency oscillator and in which system because of losses in the plated wire it is desired that the voltage vs. strain response of the wire at the remote end produces a larger electrical signal at that point than the same strain at the source end, the improved plated wire comprising:

an extended length of wire substrate; and

a strain responsive anisotropic magnetostrictive thin film deposit on said substrate, said deposit being monotonically varied along the length of said wire in that the magnetization skew angle is progressively increased thereby providing a controlled skew variation along the length of said wire so that the voltage vs. strain response along the length of said wire increases progressively from a relatively low level response at the source end of the wire to a relatively large response at the remote end of the wire.

3,925,594

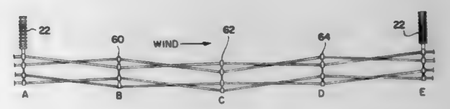
SUPPRESSION OF WAKE-INDUCED OSCILLATIONS IN A CONDUCTOR BUNDLE

Charles B. Rawlins, Massena, N.Y., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 16, 1974, Ser. No. 532,742

Int. Cl.² H02G *7/14, 7/12*

U.S. Cl. 174—42 **7 Claims**



1. An arrangement spacing at least three overhead conductors in an aerodynamically stable, torque-free manner, with two of said conductors being disposed in generally the same horizontal plane, the arrangement comprising at least two devices spacing the conductors at spaced apart locations lengthwise thereof, with each spacing device having a clamping means respectively attaching the spacing devices to the conductors at said spaced apart locations, the clamping means of each spacing device attaching the same to the two horizontal conductors being vertically displaced from each other, the clamping means of the two spacing devices attached to the same horizontal conductor being vertically displaced from each other, such that the horizontal conductors respectively meander in an opposed, vertical manner from spacer to spacer.

7. A method of suppressing aerodynamic instability in a bundle of three or more overhead conductors in a torque free manner, with two of said conductors being located in generally the same horizontal plane, the method comprising the steps of vertically displacing the two horizontal conductors in an opposed, undulating manner and maintaining the horizontal conductors in such an opposed undulating manner by inserting at least two spacing devices in the cross section of the bundle at spaced locations lengthwise of the bundle, and clamping the two spacing devices to the conductors at said spaced locations using clamps on the two horizontal conductors at one location lengthwise of the bundle that are vertically displaced from each other, and, using clamps at the two spaced locations of each of the two horizontal conductors that are vertically displaced from each other.

3,925,595

FRAMELESS DAMPING SPACER

Ronald G. Hawkins, Massena, N.Y., assignor to Aluminum Company of America, Pittsburgh, Pa.

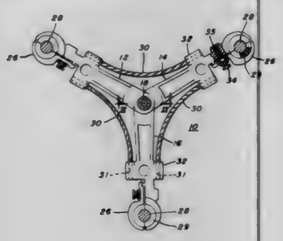
Filed Feb. 24, 1975, Ser. No. 552,222

Int. Cl.² H02G *7/14, 7/12*

U.S. Cl. 174—42 **18 Claims**

1. A damping spacer for parallel, overhead conductors, the damping spacer comprising at least two rigid, spacer arms each having a conductor clamp at one end and rigid pin means

pivotally connecting the other ends of the arms together about the axis of the rigid pin means, and, a stranded wire cable



extending between said arms resiliently connecting the arms together.

3,925,596

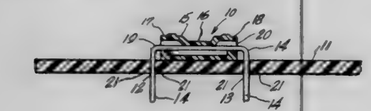
HEAT RECOVERABLE CONNECTORS

Dennis C. Siden, Sunnyvale, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 261,788, June 12, 1972, abandoned. This application Mar. 1, 1973, Ser. No. 337,138

Int. Cl. H05k *1/18*

U.S. Cl. 174—68.5 20 Claims



1. A termination device useful for making a connection between at least two conductors, said device comprising:
   a hollow, heat-recoverable member having at least two unrecovered open ends; and
   a conductor held within said member having a portion thereof extending outside of at least two of said unrecovered open ends.

3,925,597

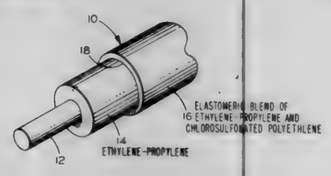
ELECTRICAL CONDUCTORS WITH STRIPPABLE INSULATION AND METHOD OF MAKING THE SAME

Thaddeus Dominick Misiura, Sandy Hook; Joseph Edward Vostovich, Bridgeport, and Ralph Edward Wahl, Trumbull, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed May 9, 1974, Ser. No. 468,397

Int. Cl.² H01B *7/02*

U.S. Cl. 174—102 SC 7 Claims



1. An insulated metallic electrical conductor having a covering thereon comprising polymeric materials including a composite of an electrically insulating body of a copolymer of ethylene and propylene having an ethylene content of not more than about 50 percent by weight with a surface adheringly joined to a contacting surface of an easily and cleanly strippable overlying semiconductive body comprising an elastomeric blend of about 20 to about 40 parts by weight of a copolymer of ethylene and propylene admixed with about 60 to about 80 parts by weight of chlorosulfonated polyethylene, said contacting surfaces of the insulating body and overlying semiconducting body being adheringly joined to each other substantially continuously over their common interface so as to require a pulling force for their separation of at least about 2 pounds and not more than about 18 pounds per ½ inch width of the joined composite by applying the body of semiconducting elastomeric blend while in an uncured condition to the insulating body in a cured condition and thereafter curing said body of semiconducting elastomeric blend while a surface thereof is in adjoining physical contact with a surface of the cured insulating body.

3,925,598

ARMORED SUBMARINE CABLE HAVING LENGTHWISE DISTRIBUTED INSULATION MEANS IN EACH ARMOR WIRE

Kinya Suzuki, Tokyo, and Tokio Izumi, Yokohama, both of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Ocean Cable Co., Ltd., both of Tokyo, Japan

Filed Dec. 30, 1974, Ser. No. 537,140

Claims priority, application Japan, Jan. 10, 1974, 49-6260

Int. Cl.² H02G *15/08*

U.S. Cl. 174—108 13 Claims



1. In an armored submarine cable including a cable core centrally of said cable and a plurality of armor wires extending substantially longitudinally of said cable around said core and spaced apart therefrom,
   the improvement wherein each of said armor wires comprises a plurality of lengthwise successively aligned sections of anticorrosive metal wires and an electric insulation means between each adjacent two of said sections of said anticorrosive metal wires.

3,925,599

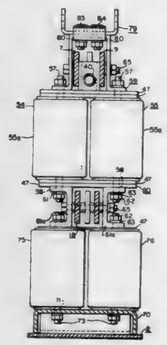
POWER-CONDUCTOR ASSEMBLY AND INSULATING SUPPORTING MEANS THEREFOR

Charles M. Cleaveland, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 308,370, Nov. 21, 1972, abandoned. This application Jan. 16, 1974, Ser. No. 433,964

Int. Cl.² H01B *17/16*

U.S. Cl. 174—150 9 Claims



1. In combination, two aligned pairs of post-type supporting insulators having a pair of laterally spaced channel members

(61) disposed therebetween, said channel members each having a web portion and spaced edge flanges attached thereto, each of said pairs comprising two laterally spaced post-type separate insulators in generally parallel relationship with respect to each other, the first and second insulators of one pair being axially aligned with the first and second insulators of the other pair, each channel member having its edge flanges fixedly secured to the confronting end faces of the respective first or second insulators of the two aligned pairs of insulators, and a single-phase longitudinally extending power-conductor assembly fixedly fastened between the spaced webbed portions of the two laterally-spaced channel members (61) for fixed supporting securement.

3,925,600

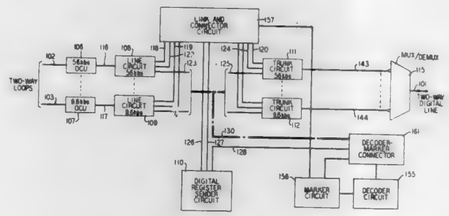
LINE SWITCHING SYSTEM FOR DIGITAL DATA

Robert Edward Cardwell, Fair Haven; Robert Leon Davis, Holmdel; Patrick John Marino, Middletown, and Edward Joseph McNamara, Manalapan Township, Monmouth County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 20, 1975, Ser. No. 542,582

Int. Cl.² H04L *11/00*

U.S. Cl. 178—3 14 Claims



7. In a data signaling system, a plurality of switching offices interconnected by two-way trunk lines conveying digital data signals, each switching office including line circuits terminating two-way station lines conveying digital data signals, trunk circuits terminating the two-way trunk lines and switch means for selectively interconnecting station circuits and available ones of the trunk cirrcuits to interchange the digital data signals on the station and trunk lines, each of the trunk circuits being rendered unavailable when selectively interconnected, and each of the trunk circuits including means responsive to concurrence of predetermined incoming digital data signals on the trunk line and predetermined outgoing digital data signals on the selective interconnection for releasing the trunk circuit from the selective interconnection.

3,925,601

DIGITAL REGISTER SENDER AND LINE CIRCUIT FOR DATA SWITCH

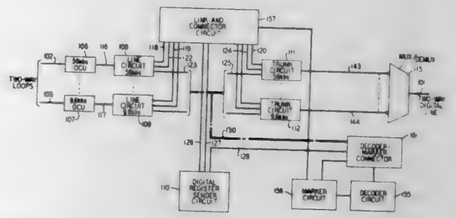
Robert Edward Cardwell, Fair Haven; David Emory Carlson; Robert Leon Davis, both of Holmdel; Edward Joseph McNamara, Manalapan Township, Monmouth County; Randolph John Pilc, Holmdel; Gabriel Gary Schlanger, West Orange; David Morris Tutelman, Ocean Township, Monmouth County; Peter Stephen Warwick, Middletown, and Herbert Mortimer Zydney, Rumson, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 20, 1975, Ser. No. 542,583

Int. Cl.² H04L *11/00*

U.S. Cl. 178—3 24 Claims

1. A line switching office for interconnecting data transmission channels including a plurality of intraoffice channels, an interface circuit including means for applying data signals received from each of the transmission channels to an associated one of the intraoffice channels, and switch means for interconnecting intraoffice channels;
   CHARACTERIZED BY
   a common control circuit connectable to the intraoffice channels and including means for sending control data signals to the interface circuits by way of the intraoffice channels; and



   means in each interface circuit responsive to the control data signals for precluding the application of received data signals to the associated intraoffice channel.

3,925,602

APPARATUS FOR ENGRAVING A PORTRAIT ON CERTIFICATION CARD

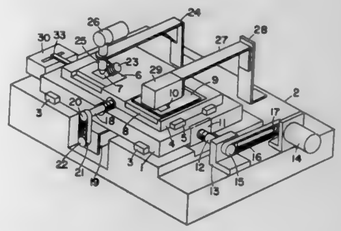
Yasushi Doi, Kyoto; Mikio Shoda, Nagaokakyo; Masatoshi Oguri, and Joji Hashimoto, both of Kyoto, all of Japan, assignors to Dainippon Screen Seizo Kabushiki-Kaisha, Kyoto, Japan

Filed Oct. 19, 1973, Ser. No. 408,162

Claims priority, application Japan, Oct. 31, 1972, 47-108501

Int. Cl. G03f *7/00*; H04n *1/22*

U.S. Cl. 178—6.6 B 1 Claim



1. An apparatus for reproducing an engraved image for exhibiting a portrait on a certification card comprising,
   a frame having a top portion,
   a first base horizontally movably mounted on said top portion of said first base,
   first drive means for laterally reciprocating said first base relative to said frame,
   a second base horizontally movably mounted on said first base, said second base having a top portion,
   second drive means for moving said second base a predetermined distance in a transverse relationship with respect to the direction of movement of said first base, said predetermined distance comprising one scanning pitch,
   an original picture base plate mounted on the top portion of said second base,
   a certification card base plate mounted on the top portion of said second base,
   a photoelectric scanning means on said frame and being disposed in horizontal stationary opposition to an original picture on said original picture base plate,
   an engraving scanning means on said frame and being disposed in horizontal stationary opposition to a certification card on said certification base plate, said engraving scanning means including a graver,

said photoelectric scanning means scanning said original picture in linear succession to obtain an image signal current,

means connecting said engraving scanning means and said photoelectric scanning means so that said image signal current is fed to said engraving scanning means,

means for vibrating said engraving scanning means in a vertical relationship with respect to said certification card in response to said image signal current so that a halftone image is engraved on the certification card,

the amplitude of said graver being controlled by said image signal current so as to vary the size of the engraved dots in response to the appearance of the original picture to reproduce a halftone image similar thereto,

a linear encloder operatively connected to said first and second bases for producing a timing pulse signal,

means connecting said linear encoder with said graver for controlling the dot pitch thereof,

said second drive means comprising a pulse motor which is rotated intermittently upon reciprocation of said first base thereby causing said second base to move through one scanning pitch upon each reciprocation,

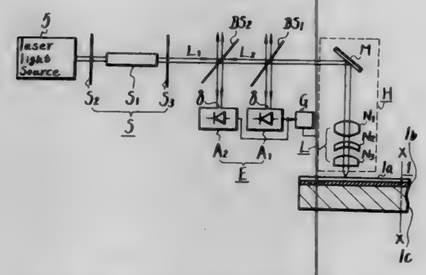
said second drive means also comprising a feed screw threadably secured to said second base, an elastic transmission member connecting said pulse motor and said feed screw for extinguishing non-uniformity of pitch of the scanning dots in the reproduced image.

3,925,603

APPARATUS FOR RECORDING AND/OR REPRODUCING INFORMATION SIGNALS HAVING AUTOMATIC FOCUSING

Yosuke Naruse; Taisuke Yoshioka; Masami Himuro, and Keiichi Ito, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 3, 1974, Ser. No. 476,153
Claims priority, application Japan, June 11, 1973, 48-65663
Int. Cl.² H04N 5/76; G11B 7/12
U.S. Cl. 178—6.6 R **2 Claims**



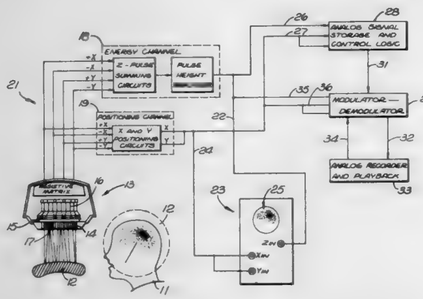
1. Automatic focusing apparatus for use in apparatus for recording and/or reproducing information signals having a record medium with a mirror surface; a source of light and a lens assembly optically positioned in the light path extending between the light source and the record medium to focus a beam of light emitted from said light source onto said mirror surface whereby the focused beam is used to record information on the record medium and/or reproduce information from the record medium, comprising: a first beam splitter optically positioned in said light path for transmitting light from said light source toward said lens assembly, for transmitting a portion of light reflected from said mirror surface and received from said lens assembly, and for reflecting a portion of said light reflected from said mirror surface; a second beam splitter optically positioned in said light path and spaced from said first beam splitter for transmitting said light from said light source toward said lens assembly for receiving said portion of light transmitted by said first beam splitter, and for reflecting a portion of said light received from said first beam splitter; first photosensing means optically coupled to said first beam splitter for receiving said portion of light reflected by said first beam splitter to produce a first signal proportional to the intensity of light received thereby; second photosensing means optically coupled to said second beam splitter for receiving said portion of light reflected by said second beam splitter to produce a second signal proportional to the intensity of light received thereby; first and second slit means positioned in light intercepting relation with respect to said first and second photosensing means, respectively, each of said slit means having an aperture in the range of 6 to 100 microns through which light is transmitted to said photosensing means; and lens control means mechanically coupled to at least one element of said lens assembly and responsive to the difference between said first and second signals for moving said at least one element to thereby maintain the point of focus of said beam of light on said mirror surface notwithstanding fluctuations in the spacing between said lens assembly and said mirror surface.

3,925,604

ANALOG-RECORDING APPARATUS FOR RECORDING AND DERANDOMIZING RANDOMLY-OCCURRING DATA

Richard D. Bliss, Riverside, Calif., assignor to Riverside Bio-Engineering, Inc., Riverside, Calif.

Filed Aug. 4, 1972, Ser. No. 277,966
Int. Cl.² G01T 1/20; H04N 1/04
U.S. Cl. 178—6.6 R **13 Claims**



1. Analog-recording apparatus for recording analog signals on serial-recording medium in a derandomized fashion which signals are representative of randomly-occurring data emanating from a detector, said apparatus comprising:

A. a plurality of storage cells each adapted to receive and store for later complete removal one of a plurality of analog signals representative of randomly-occurring data;

B. timing means for generating first and second time intervals;

C. gating means operative during said first time interval for applying one of said analog signals upon generation thereof to one of said cells only in the absence of a signal being stored therein; and

D. means operative during said second time interval for sequentially removing said stored signals from said cells with a regularized time interval therebetween for recording on said recording medium.

3,925,605

DROPOUT DETECTOR FOR VIDEO DISC PLAYBACK

John L. Rennick, Elmwood Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed June 28, 1974, Ser. No. 484,041
Int. Cl.² H04N 5/76
U.S. Cl. 178—6.6 R **3 Claims**

1. In a video player for developing a television image from a recorded carrier wave signal which is angle-velocity-modulated over a predetermined range of frequencies in accordance with desired information, said carrier wave signal being subject to frequency excursions outside of said frequency range which excursions represent abnormalities and undesired information, a dropout compensator comprising:

angle-velocity-modulation detector means having an amplitude-versus-frequency response characteristic which has a knee extending over a band of frequencies of a width corresponding to that of said predetermined frequency range;

means for impressing said carrier wave signal on said angle-velocity-modulation detector means with the predetermined frequency range of the carrier wave signal substantially centered on said knee of said amplitude-versus-frequency response characteristic;

amplitude-clipping means coupled to said angle-velocity-modulation detector means for responding to said carrier wave signal to develop a control signal only during operating intervals in which said carrier wave signal experiences said frequency excursions;

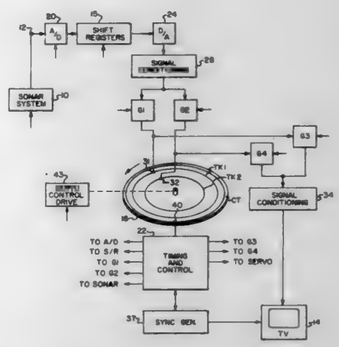
and means for utilizing said control signal for substantially eliminating visible dropouts from said television image.

3,925,606

SCAN CONVERSION APPARATUS

Kenneth E. Wood, Annapolis; William F. Parrish, Baltimore, both of Md., and Paul G. Kennedy, Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 10, 1974, Ser. No. 478,127
Int. Cl.² H04N 7/18
U.S. Cl. 178—6.8 **8 Claims**



1. Scan conversion apparatus comprising:

A. display means for displaying multiple lines of information on a display area;

B. means for providing multiple sequential input signals indicative of a condition to be displayed on said display means as display signals;

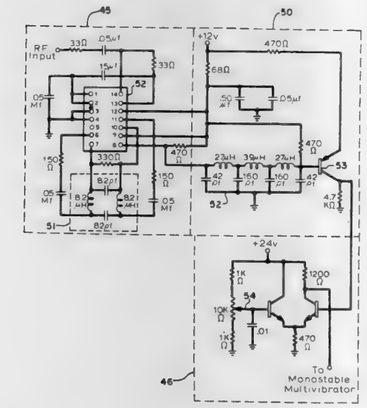
C. first storage means;

D. means for periodically sampling a said input signal and placing each sampled value into said first storage means at a first rate;

E. second storage means;

F. means for reading out said stored sampled values periodically during the period between successive input signals and placing said read out values into said second storage means at a second rate, as portions of a display signal; and

G. means for reading out all of said stored portions of a display signal to provide a total display signal to be displayed as a line on said display means.



3. In a video player for developing a television image from a recorded carrier wave signal which is frequency modulated with brightness information over a predetermined frequency range, a dropout compensation system for substantially eliminating dropouts from said reproduced image, which system comprises:

means, including a delay line and at least one frequency discriminator having a linear amplitude-versus-frequency response characteristic throughout said predetermined frequency range, for developing a principal program signal and a delayed program signal;

dropout detector means comprising an additional frequency discriminator having an amplitude-versus-frequency response characteristic with a knee substantially centered with respect to said predetermined frequency range and having substantially linear portions extending in the same polarity from opposite sides of said knee;

amplitude-selective means coupled to said dropout detector means for developing a control signal in response to any frequency excursion beyond said predetermined frequency range;

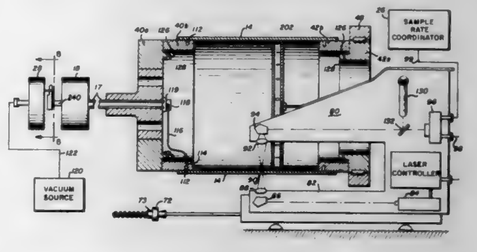
and means responsive to said control signal for substituting said delayed program signal for said primary program signal during intervals of said excursions to substantially eliminate dropouts in said reproduced image.

3,925,607

ROTARY DATA BASE CONVERTER WITH FLEXIBLE DATA BASE

Charles Elwood Hauber, San Jose, Calif., assignor to The Singer Company, New York, N.Y.

Filed Aug. 21, 1974, Ser. No. 499,200
Int. Cl.² H04N 1/08
U.S. Cl. 178—7.1 **10 Claims**



1. A rotating digitizer system for converting existing data on a flexible transparent medium into a new data base, comprising:

a support assembly having spaced end drums connected by a rigid member and adapted to peripherally retain the

transparent medium in a cylindrical configuration across a scanning window formed by the space between the end drums and the rigid member and occupying at least a major arcuate portion of the cylindrically retained transparent substrate;

an internal radial force means adapted to prevent deviation of the transparent medium inwardly from the cylindrical configuration for minimizing saddle effect and edge effect deviations;

a scanning assembly having a light source means and a light sensing means, one of which is positioned within the support assembly;

a rotary drive for establishing relative rotary motion between the assemblies about an axis of rotation concentric with the axis of the cylinder formed by the transparent medium;

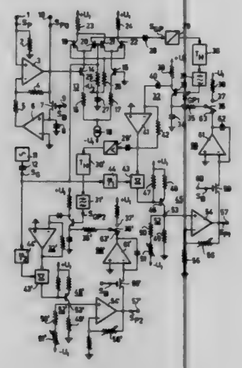
a traverse drive for establishing relative traverse motion between the assemblies parallel to the axis of rotation; and

drive controller for coordinating the drives to scan at least a portion of the transparent medium displayed in the scanning window.

3,925,608
ARRANGEMENT FOR SIGNAL DELAY, PARTICULARLY FOR USE IN A VERTICAL APERTURE CORRECTOR FOR TELEVISION

Prudent Eduardus Jacobus Mollet, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 27, 1973, Ser. No. 373,945
Claims priority, application Netherlands, July 8, 1972, 7209540
Int. Cl.² H04N *3/16*
U.S. Cl. 178—7.1 **10 Claims**

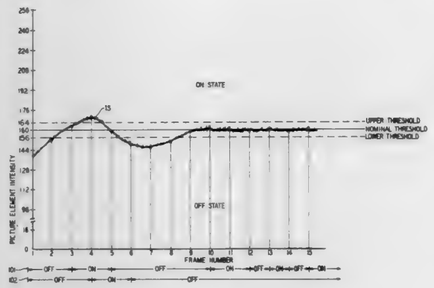


1. A circuit arrangement for delaying a television image signal to provide an output signal with a black level at a reference potential, said circuit comprising a high frequency circuit including an carrier oscillator, a modulator having a first input means for receiving said television image signal, a second input means coupled to said oscillator, and an output, a first delay circuit having an input coupled to said modulator output and an output, and a first demodulator having an input coupled to said first delay circuit output, and an output means for providing said output signal; and first control circuit means coupled to said demodulator output and said high frequency circuit, said first control circuit including both a clamping circuit means for setting the black level of said output signal to a reference potential and a means for comparing said black level with said reference level and for generating and applying a control voltage to said high frequency circuit.

3,925,609
ANIMATED DISPLAY SYSTEMS WITH DITHER THRESHOLD HYSTERESIS BAND

William Herbert Ninke, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 21, 1975, Ser. No. 542,861
Int. Cl.² H04N *3/14*
U.S. Cl. 178—7.3 D **22 Claims**



1. In a display system including a plurality of selectively energized and de-energized bi-level display cells to each of which are assigned respective first and second dither threshold values, a method for representing a matrix of picture elements each having a predetermined intensity and each corresponding to a respective one of said display cells, said method comprising the steps of,

selecting for each of said cells one of the dither threshold values assigned thereto,

accessing a de-energized one of said cells only if the intensity of the corresponding picture element bears a first predetermined relationship to the dither threshold value selected for that cell, and

accessing an energized one of said cells only if the intensity of the corresponding picture element bears a second predetermined relationship to the dither threshold value selected for that cell,

said method characterized in that said selecting for each of said cells is made on the basis of the state of said each cell.

3,925,610
GRAPHIC COMMUNICATIONS TABLET

Joseph Charles French, North Plainfield, N.J.; Anant Kumar Nigam, Fairfield, Conn., and Gerhard Martin Sessler, Summit, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 12, 1974, Ser. No. 496,530
Int. Cl.² G08C *21/00*; **G11B** *9/02*; **H04R** *19/00*
U.S. Cl. 178—18 **10 Claims**

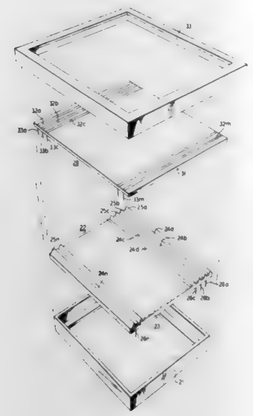
1. Graphic communications apparatus comprising:

an electret film selectively metallized on one surface thereof, said electret film locally deformable in response to the pressure of a writing stylus;

a rigid backplate selectively metallized on one surface thereof, said backplate mounted in spaced juxtaposition with said electret film so that said metallized areas of said backplate are in spaced juxtaposition with said metallized areas of said electret film;

a plurality of ridge means dimensioned for decreasing the rise time of said electret film to improve performance at low writing speeds by reducing the amplitude of the reverse polarity overshoot signal, each of said ridge means

interposed between the metallized regions of said backplate; and

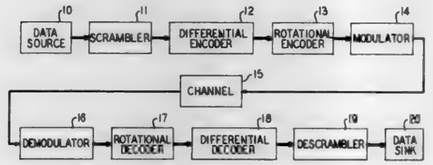


means for connecting the metallized areas of said electret film and said backplate to a plurality of output terminals.

3,925,611
COMBINED SCRAMBLER-ENCODER FOR MULTILEVEL DIGITAL DATA

Thomas Mann Dennis, Oakhurst, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 12, 1974, Ser. No. 496,529
Int. Cl.² H04L *3/00*, *9/00*
U.S. Cl. 178—22 **10 Claims**



1. In combination with a synchronous digital data transmission system in which multilevel symbols plottable as points on a two-dimensional four-quadrant signal space diagram are encoded on parallel bit streams, a transmitting terminal comprising:

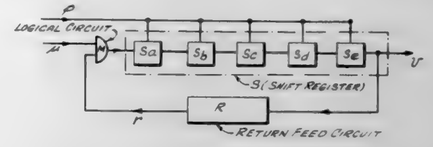
means for differentially encoding at least the parallel streams representing the most significant bits of said multilevel symbols by continuously augmenting the last-transmittted bits by the increment between such last-transmitted bits and incoming bits therein, and

means for rotationally encoding other parallel streams representing bits of lesser significance in said multilevel symbols from a uniform rotational Gray coding format throughout all quadrants of said signal space diagram to a bilaterally symmetric relationship.

3,925,612
DIGITAL SCRAMBLING APPARATUS FOR USE IN PULSED SIGNAL TRANSMISSION

Gustav Guanella, Zurich, and Rudolf Schweizer, Wettingen, both of Switzerland, assignors to Patelhold Patentverwertungs- und Elektro-Holding AG, Glarus, Switzerland

Filed Jan. 24, 1964, Ser. No. 339,953
Claims priority, application Switzerland, Jan. 30, 1963, 1165/63
Int. Cl.² H04L *9/00*; **H04K** *1/02*
U.S. Cl. 178—22 **17 Claims**

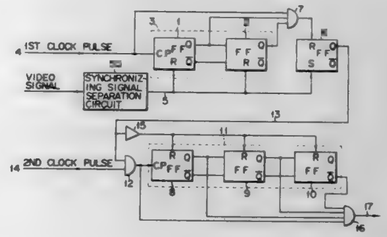


1. In combination, a secrecy signaling system for transmitting a polarity modulated message pulse series from a transmitting station to a receiving station including scrambling pulse generating means at both said stations, to produce a pair of identical scrambling pulse series, for scrambling and unscrambling, respectively, said message pulse series, scrambling pulse converting means at each of said stations to convert a scrambling control pulse series of arbitrarily varying polarity into a final scrambling pulse series, said converting means comprising a pulse shift register having a plurality of cascade-connected pulse storage stages and an input fed by said control pulse series, at least one feedback circuit connecting the output of a first one of said stages to the input of a second preceding stage of said register, and at least one logical circuit interposed in the path of said feedback circuit, to produce final scrambled pulses at the output of said register.

3,925,613
APPARATUS FOR EXTRACTING A VERTICAL SYNCHRONIZING PULSE FROM A COMPOSITE SYNCHRONIZING SIGNAL INCLUDED IN A VIDEO SIGNAL

Naoyuki Kokado, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed June 7, 1974, Ser. No. 477,287
Claims priority, application Japan, June 19, 1973, 48-68287
Int. Cl.² H04L *7/00*
U.S. Cl. 178—69.5 TV **5 Claims**



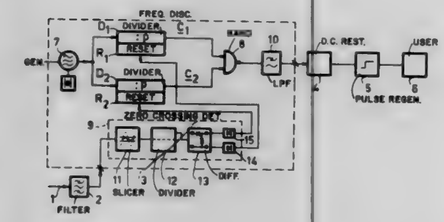
1. An apparatus for extracting a vertical synchronizing pulse from a composite synchronizing signal included in a video signal, comprising a synchronizing signal-separating circuit for separating a composite synchronizing signal from a video signal; a device for providing a reproduced composite synchronizing signal which comprises a first counter circuit supplied with the composite synchronizing signal and first clock pulses, reset at the rise of the respective synchronizing pulses constituting the composite synchronizing signal and designed to commence the counting of the first clock pulses starting

with the fall of the respective synchronizing pulses; a reset circuit connected to the first counter circuit so as to give forth a reset output when the first counter circuit has counted a prescribed number of the first clock pulses, and a flip-flop circuit set at the rise of the respective synchronizing pulses constituting the composite synchronizing signal, and reset by an output from the reset circuit, thereby obtaining said reproduced composite synchronizing signal containing a reproduced continuous vertical synchronizing pulse obtained by equally broadening the width of respective pulses included in the composite synchronizing signal to an extent at least larger than the width of the splits by which the vertical synchronizing pulse included in the composite synchronizing signal is previously divided at a time interval equal to half the period of a horizontal synchronizing pulse; and a device for extracting the reproduced continuous vertical synchronizing pulse from the reproduced composite synchronizing signal.

3,925,614
RECEIVER FOR THE RECEPTION OF PULSE SIGNALS TRANSMITTED BY MEANS OF FREQUENCY SHIFT MODULATION

Michel Antony Marie Joseph Bousmar, Brussels, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 30, 1974, Ser. No. 510,660
Claims priority, application Netherlands, Sept. 28, 1973, 7313361
Int. Cl.² H04L *27/14*
U.S. Cl. 178—88 **7 Claims**

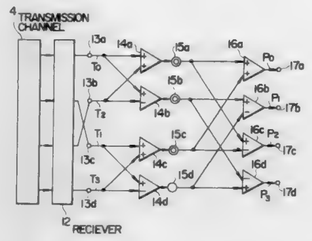


1. A receiver for the reception of pulse signals transmitted by means of frequency shift modulation in which the received modulated pulse signals are applied to a frequency discriminator from which the demodulated pulse signals are derived, the frequency discriminator comprising a plurality of parallel channels whose inputs are coupled to a common generator having a fixed frequency and whose outputs are coupled to a plase comparator, each channel including a frequency divider provided with a phase adjusting circuit, said divider having output means for providing output signals at a frequency which is equal for all channels and which is higher than the highest frequency of the received modulated pulse signals, said frequency discriminator furthermore including a zero crossing detector for generating set pulses as a function of the zero crossings in the received modulated pulse signals, said set pulses being cyclically applied to the phase adjusting circuits of the different frequency dividers, the output signals of two channels being compared in phase in the phase comparator and the demodulated pulse signals being derived from a low-pass filter coupled to the output of the phase comparator.

3,925,615
MULTI-CHANNEL SOUND SIGNAL GENERATING AND REPRODUCING CIRCUITS

Yasuaki Nakano, Hino, Japan, assignor to Hitachi, Ltd., Japan

Filed Feb. 26, 1973, Ser. No. 335,741
Claims priority, application Japan, Feb. 25, 1972, 47-18949
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² H04R *5/00*
U.S. Cl. 179—1 GQ **8 Claims**



1. A matrix circuit comprising first, second, third, and fourth input terminals; first arithmetic circuit means for adding signals provided from said first and second input terminals; second arithmetic circuit means for subtracting said signal of said second input terminal from said signal of said first input terminal; third arithmetic circuit means for adding signals from said third and fourth input terminals; fourth arithmetic circuit means for subtracting said signal of said fourth input terminal from said signal of said third input terminal; first, second, and third phase shifters having a first phase shift which are respectively connected to the outputs of said first, second, and third arithmetic circuit means; a fourth phase shifter having a second phase shift connected to the output of said fourth arithmetic circuit means, fifth arithmetic circuit means for adding the outputs of said first and third phase shifters; sixth arithmetic circuit means for subtracting the output of said fourth phase shifter from the output of said second phase shifter; seventh arithmetic circuit means for subtracting said output of said third phase shifter from said output of said first phase shifter; eighth arithmetic circuit means for subtracting said output of said second phase shifter from said output of said fourth phase shifter; and first, second, third, and fourth output terminals which are respectively connected to said fifth, sixth, seventh, and eighth arithmetic circuit means; the phase difference between said first and second phase shifts being 90°.

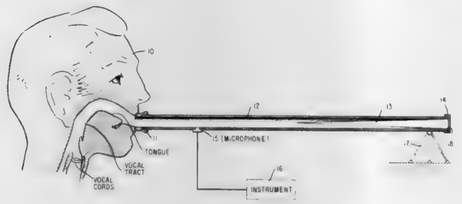
6. Multi-channel sound system having a first matrix circuit for encoding a four directional input signal obtained from four signal sources arranged in such manner that their azimuths on a plane are spaced by approximately 90°, a plurality of transmission channels for transmitting the output signals of the signals of the first matrix circuit and a second matrix circuit for decoding the transmitted signal and reproducing directional output sound signals correlated with the input signals, wherein said matrix circuit includes first, second, third, and fourth input terminals; first, second, third, and fourth phase shifters having a first phase shift which are respectively connected to said first, second, third, and fourth input terminals; first arithmetic circuit means for subtracting a signal of said fourth input terminal from a signal of said third input terminal; a fifth phase shifter having a phase shift connected to the output of said first arithmetic circuit means; second arithmetic circuit means for producing a sum among outputs of said first, second, third, and fourth phase shifters; third arithmetic circuit means for subtracting said output of said second phase shifter from a sum between said output of said first phase shifter and an output of said fifth phase shifter; fourth arithmetic circuit means for subtracting said outputs of said third and fourth phase shifters from a sum between said outputs of said first and second phase shifters; and fifth arithmetic circuit

means for subtracting said output of said second phase shifter and said output of said fifth phase shifter from said output of said first phase shifter; the phase difference between said first and second phase shifts being 90°;and first, second, third, and fourth output terminals respectively connected to said second, third, fourth, and fifth arithmetic circuit means.

3,925,616
APPARATUS FOR DETERMINING THE GLOTTAL WAVEFORM

Man Mohan Sondhi, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 30, 1974, Ser. No. 465,604
Int. Cl.² G10L *1/04*
U.S. Cl. 179—1 SC **8 Claims**

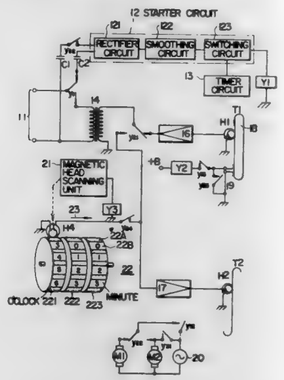


1. Apparatus for detecting the glottal waveform comprising:
an acoustic waveguide having a cross-sectional area substantially equal to that of the human vocal tract, said waveguide terminated at one end to substantially reduce acoustic wave reflections and adapted at the other end for physical coupling to a subject's lips; and
means positioned in the wall of said waveguide for detecting said glottal waveform.

3,925,617
TELEPHONE AUTO-ANSWERING DEVICE WITH TIME RECORDING

Takashi Sato, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 13, 1972, Ser. No. 305,774
Claims priority, application Japan, Nov. 16, 1971, 46-91638
Int. Cl.² H04M *11/00*
U.S. Cl. 179—6 R **5 Claims**

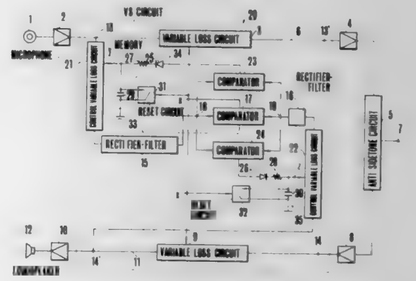


1. In a telephone auto-answering device including an answering tape and a recording tape and comprising starter circuit means responsive to an incoming calling signal from a caller for controlling an auto-answering operation of the device, a reproducing means responsive to actuation of said starter circuit means for driving the answer tape and reproducing an answer-message previously recorded on the answering tape to send out the answer-message to the caller, and recording means responsive to the termination of the answer-message send-out operation for recording the caller's message on the recording tape, the improvement comprising voice clock means coupled to said recording means and operable to reproduce a pre-recorded voice signal indication of the time, timer means automatically operating said voice clock means at preset intervals for continually recording said voice signal time indications on the recording tape at said preset intervals, and means for preventing said recording means from recording the time indications on the recording tape when said recording means is recording the caller's message.

3,925,618
VOICE SWITCH CIRCUITS FOR USE IN LOUDSPEAKING TELEPHONE CIRCUITS

Kunihiro Kato, Hachiaji; Ryoichi Matsuda, Musashino, and Ryoichi Okayasu, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Feb. 12, 1975, Ser. No. 549,192
Claims priority, application Japan, May 2, 1974, 49-48683
Int. Cl.² H04M *1/60*
U.S. Cl. 179—1 VC **15 Claims**



1. In a voice switch circuit for use in a loudspeaking telephone circuit of the class comprising a main comparator for comparing the signal level of a receiving circuit with the signal level of a transmitting circuit, a transmitting variable loss circuit responsive to a condition wherein the signal level of the receiving circuit is higher than the signal level of the transmitting circuit for inserting a loss in the transmitting circuit thereby establishing a receiving condition, and a receiving variable loss circuit responsive to a condition wherein the signal level of the transmitting circuit is higher than the signal level of the receiving circuit for inserting a loss in the receiving circuit thereby establishing a transmitting condition, the improvement wherein said voice switch circuit comprises a control variable loss circuit inserted between said receiving circuit and said main comparator, a second comparator for comparing the output signal level from said control variable loss circuit with the signal level of said transmitting circuit, and means connected between said second comparator and said control variable loss circuit for operating said control variable loss circuit under the receiving condition for decreasing the level difference between two inputs of said main comparator.

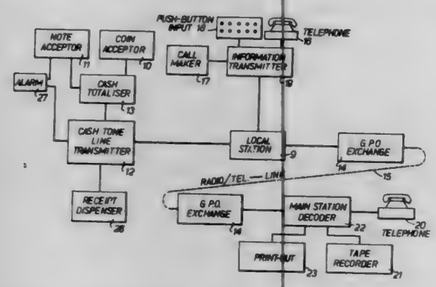
3,925,619
APPARATUS FOR TRANSMITTING INFORMATION REGARDING MONETARY TRANSACTIONS

Ralph Charles Freethy, Barnhay House, Barnhay, Churchdown, Gloucester, England

Filed Mar. 25, 1974, Ser. No. 454,767
Int. Cl.² G07G *5/00*
U.S. Cl. 179—6.3 R **13 Claims**

1. The combination of apparatus for enabling monetary transactions to be transmitted from a plurality of local stations to a main station and recorded thereat, wherein each local

station apparatus comprises a cash accepting and validating device, an encoding signal generator arranged to produce a different coded signal sequence for each cash value registered by the cash accepting and validating device, wherein the main station apparatus incorporates a synchronising signal generator for producing clock pulses to be passed to the local station to initiate and control the timing of the signal sequence from the encoding signal generator, an information transmitter



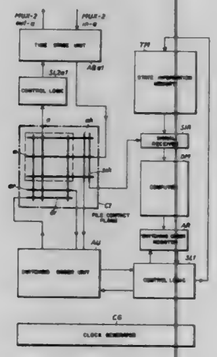
arranged for transmitting the signal sequence produced by the encoding signal generator to the main station, and wherein the main station further includes a decoder controlled by the clock pulses produced by the synchronising signal generator for receiving the signal sequence produced by the information transmitter and decoding that sequence when the signal sequence is substantially synchronised with the clock pulses, and a data recording device controlled by the decoder.

3,925,620

METHOD OF TRANSFER OF SWITCHING ORDER INFORMATION FOR TRANSMISSION OF PCM WORDS

Nils Herbert Edström, Stockholm; Stig Gustaf Wilhelm Lindqvist, Enskede, and Gunnar Erik William Sparrendahl, Handen, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jan. 22, 1973, Ser. No. 327,612
Claims priority, application Sweden, Feb. 8, 1972, 1445/72
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² H04J *3/00*
U.S. Cl. 179—15 AT **3 Claims**



1. In a multichannel time division multiplex system for handling PCM words which has incoming and outgoing links connected to an exchange comprising a first time stage, a space stage and a second time stage wherein during time slots of frames indicated by time slot numbers the PCM words are transferred from the first time stage via the space stage to the second time stage wherein the space stage is divided into a number of file contact planes, each of which has an incoming transfer file connected to an associated switching order unit having register means, and has incoming and outgoing files connected to associated respective substages in the first and second time stage, respectively, and wherein each substage is connected to links associated with the respective substage among the incoming and outgoing links to and from the exchange, so that the number of file contact planes corresponds to the number of outgoing and incoming files from and to any one of the substages in the first and second time stage, a substage in the first time stage and a substage in the second time stage forming part of a common time substage, each furthermore including switching order memories which, for receiving of switching order information, are connected to the respective files outgoing from the file contact planes, the method of transferring switching order information from the switching order units to the switching order memories wherein the switching order information includes in the case when a communication path is to be connected between an incoming channel on an incoming link and an outgoing channel on an outgoing link, a slot number which indicates the time slot allotted to such path, and time substage addresses and channel indices which together indicate the channels, and including, in the case the path is to be disconnected, the substage address indicating the incoming link and the slot number which have been used during the connection, and instead of the channel indices and the substage address indicating the outgoing link, used during the connection, such indices and such an address which cannot be used for any connection, the method comprising the steps of:

selecting definite time slots during which only switching order information, and not PCM words, is transferred on the files outgoing from the file contact planes,

dividing each of said definite time slots into two portions,

storing the switching order information in the register means of one of the switching order units,

transferring from the respective register means to the transfer file of the switching order unit, said slot number in each of the first portions of said definite time slots, and reading from the respective register means the substage address indicating the outgoing link and the channel indices in their respective second portions of said definite time slots,

decoding the substage address indicating the incoming link during the time slots in which the substage address indicating the outgoing link and the index indicating the outgoing link and the index indicating the incoming channel are read,

further decoding the substage address indicating the outgoing link during the time slot in which the index indicating the outgoing channel is read,

and connecting during said decoding and during said further decoding in the file contact plane the transfer file to the file outgoing to the time substage the address of which is being decoded.

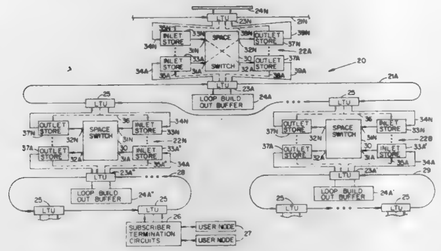
3,925,621

DIGITAL CIRCUIT SWITCHED TIME-SPACE-TIME SWITCH EQUIPPED TIME DIVISION TRANSMISSION LOOP SYSTEM

Arthur A. Collins, Dallas, and Robert D. Pedersen, Richardson, both of Tex., assignors to Arthur A. Collins, Inc., Dallas, Tex.

Filed Jan. 17, 1974, Ser. No. 434,198
Int. Cl.² H04J *3/06*
U.S. Cl. 179—15 AL **17 Claims**

1. In a loop digital telecommunications system: interconnection of time-space-time digital switching node means in a distributed loop switching system; a plurality of time division transmission loops interconnected by said time-space-time digital switching node means wherein user terminal-to-terminal connections are established through interconnected time-space-time switching nodes and connected loops in the circuit



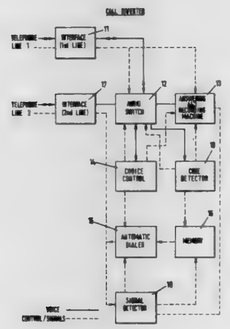
prior to commencing communication; a loop build-out buffer in each of said plurality of time division transmission loops; and timing means connected through said time-space-time digital switching node means to each of said build-out buffers.

3,925,622

TELEPHONE APPARATUS

Stephen Perrin Robinson, Camberley, England, assignor to Ansafone Limited, England

Filed Feb. 14, 1974, Ser. No. 442,607
Claims priority, application United Kingdom, Feb. 16, 1973, 7783/73
Int. Cl.² H04M *3/42*
U.S. Cl. 179—18 BE **6 Claims**



1. A telephone apparatus comprising:

means for receiving an incoming telephone call over a first line;

means for announcing to the caller that an attempt will be made to divert the call to another telephone number;

means for automatically dialling a predetermined telephone number;

means for initiating operation of the automatic dialling means over a second line;

means for verifying a coded response to the automatically dialled call;

means for connecting the incoming call to said predetermined number only in the event of a correctly coded response to said automatically-dialled call; and

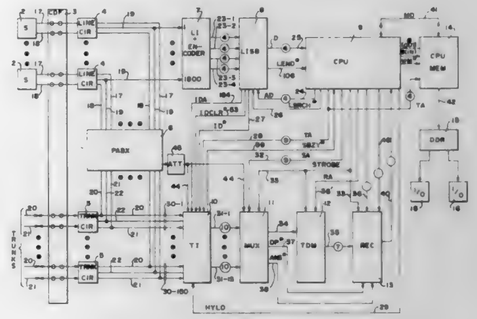
means for inhibiting further automatic dialling to said predetermined number in the absence of a correctly coded response to the automatically dialled call.

3,925,623

LINE IDENTIFICATION AND METERING SYSTEM

Harold Tysseland, Cupertino, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Mar. 8, 1974, Ser. No. 449,384
Int. Cl.² H04M *15/06*
U.S. Cl. 179—18 FH **21 Claims**



1. A message metering apparatus for operation with a telephone system having station lines and trunk lines, having a switching exchange for connecting the station lines to the trunk lines, said apparatus comprising,

sensing means for sensing the busy condition of a busy trunk line,

generator means for generating an identification signal for transmission on said busy trunk line through said exchange to a station line connected to said busy trunk line, said generator means including means for generating said identification signal as a plurality of digital pulses,

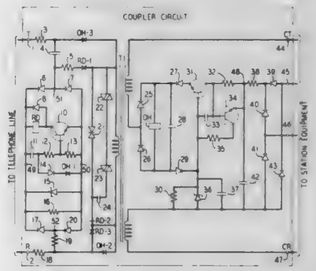
detector means connected to said station lines for detecting the presence of said identification signal on said station line connected to said busy trunk line whereby the presence of said identification signal on said station line identifies said station line.

3,925,624

COUPLING CIRCUIT FOR PROVIDING BILATERAL PROTECTION FROM HAZARDOUS VOLTAGES

Harold Westly Earle, New Shrewsbury, and Joseph Robbins, Marlboro, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 27, 1974, Ser. No. 536,732
Int. Cl.² H04M *1/00*
U.S. Cl. 179—81 R **14 Claims**



1. A circuit for providing a two-way signaling path between a telephone line and station equipment including means for limiting the amplitude of signals on the signaling path to provide hazardous voltage protection, and means responsive to ringing signals from the telephone line for disabling the limiting means, characterized in that the circuit further includes, means responsive to the presence of station generated signals

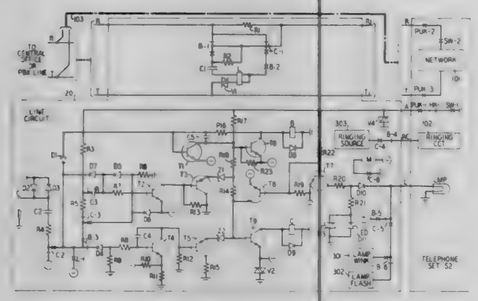
exceeding a predetermined amplitude for preventing the disabling of the limiting means.

3,925,625

TRANSIENT CONTROLLED TELEPHONE LINE CIRCUIT

Ronald Joseph Angner, Freehold, and Alexander Feiner, Rumson, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 25, 1974, Ser. No. 491,823
Int. Cl.² H04M *1/00*
U.S. Cl. 179—99 **14 Claims**



1. A line circuit for use in controlling communication services between a telephone switching machine and a telephone station, said line circuit adapted for connection in parallel across the communication conduction pair between said switching machine and said telephone station and adapted for A-lead control from said station, said line circuit means including

hold means operable for maintaining a connection from said switching machine in an active noncommunicating condition,

means for detecting signals on said A lead,

means for providing transition control signals upon any transition of said telephone station from an off-hook condition to an on-hook condition, said transition control signals being provided in response to the transient signal generated when said telephone station becomes disconnected from said conduction pair, and

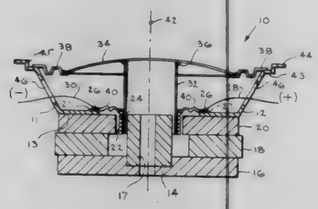
means for enabling said hold means upon a detected signal from said A lead and the absence of said telephone station transition control signals.

3,925,626

DYNAMIC SPEAKER HAVING DOME DIAPHRAGM AND BASKET FRAME

Robert John Stallings, Jr., P.O. Box 230, Sugarland, Tex. 77478

Filed Feb. 22, 1974, Ser. No. 444,825
Int. Cl.² H04R *9/06, 1/02*
U.S. Cl. 179—115.5 R **6 Claims**



3. A dynamic loudspeaker comprising a framework, a magnet structure secured to one end of the framework and having an air gap as said end, an outwardly convex, rigid diaphragm disposed at the other end of said framework with its outer periphery resiliently supported thereon, a voice coil form having one end secured to the center portion of

said diaphragm on the concave side thereof and extending to said magnet with its other

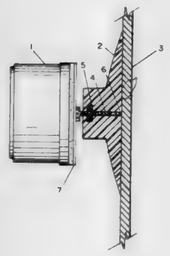
end disposed in said air gap, and a voice coil securely mounted on said other end of the form and also disposed in said air gap.

3,925,627

TRANSDUCER MOUNTING TO SOUNDING BOARD

William J. Ashworth, Rte. 2, New Albany, Miss. 38652

Filed June 13, 1974, Ser. No. 478,937
Int. Cl.² H04R *1/00*
U.S. Cl. 179—181 W **4 Claims**



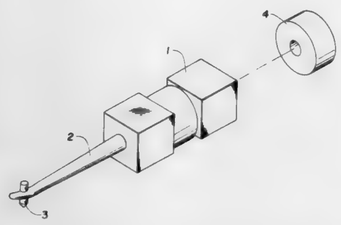
1. An inertia type electro-mechanical audio transducer in combination with a vacuum cup and a sounding board wherein said vacuum cup is secured to said sounding board by a vacuum seal formed therebetween, said inertia type electro-mechanical audio transducer comprises a vibratory transfer means which extends through said vacuum cup to make solid contact with said sounding board for the transfer of vibratory energy from said transducer to said sounding board for acoustic reproduction, wherein said vacuum cup is the sole support of said transducer by means of said vibratory transfer means.

3,925,628

ELECTROMAGNETIC SOUND PICK-UP

Hans-Robert Kühn, Kiel, Germany, assignor to Electroacustic GmbH Kiel, Kiel, Germany

Filed June 1, 1973, Ser. No. 365,841
Claims priority, application Germany, July 20, 1972, 2235484
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² H04R *11/12*
U.S. Cl. 179—100.41 K **2 Claims**



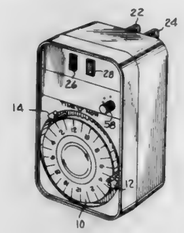
1. An electromagnetic sound pick-up armature for reproduction of stereo sound signals having 90° phase shift between individual channels comprising an armature secured to a needle carrier, said armature being elastically deflectable with uniform stiffness in all deflection directions, the cross section of the armature being cylindrical in the region of its mounting and quadrilateral in the part of its length, which is adapted to be inserted between the ends of two pole shoes of a magnetic pick-up.

3,925,629

VARIABLE TIME SWITCH WITH VARIABLE CONTROL CAM STRUCTURE FOR DIFFERENT TIME PERIODS AND MODES OF OPERATION

Harry Albinger, Jr., Ashland, Mass., assignor to General Electric Company, Bridgeport, Conn.

Filed Oct. 16, 1974, Ser. No. 515,143
Int. Cl.² H01H *43/10*
U.S. Cl. 200—38 R **18 Claims**



1. A time switch comprising:

a. electrical switch means having closed ON positions and open OFF positions;

b. switch actuator means positioned adjacent to said switch means for actuating said switch means to an ON or an OFF position;

c. a time of day member continuously rotated as a function of time positioned adjacent to said switch actuator, said time of day member having an OFF member selectively positionable on said time of day member for moving said switch actuator to cause said switch actuator to operate said switch means to an open OFF position, and an ON member selectively positionable on said time of day member for operating said switch actuator to move said switch means to a closed ON position; and

d. said switch actuator means including a first cam means arranged for engagement with said switch means for opening and closing said switch means at the same times during a number of consecutive complete rotations of said time of day member at the times set by said slectively positionable ON and OFF members, and said switch actuator including a second cam means positioned adjacent to said switch means for opening and closing said switch means at different times than the times set by said selectively positionable ON and OFF members for opening and closing said switch means at different times during consecutive complete rotations of said time of day member; and

e. selector means for manually selecting operation of said switch means by said first cam means or said second cam means of said switch actuator.

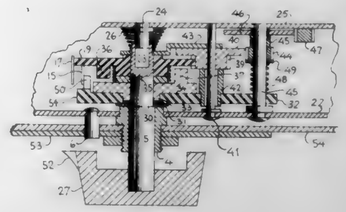
3,925,630

TIMER SWITCH ASSEMBLY HAVING LATCH ASSEMBLY FOR PREVENTING CONTACT ENGAGEMENT

John L. Harris, Clearwater, Fla., assignor to Deltrol Corporation, Bellwood, Ill.

Filed Dec. 19, 1974, Ser. No. 534,359
Int. Cl.² H01H *43/10*
U.S. Cl. 200—39 R **13 Claims**

9. In a push to start timer, a cam having a drop off lobe on its periphery, said cam including axially movable and rotatable mounting means, means including a timer motor for rotating the cam, and outer flexible switch blade having one end fixed and having a free end adapted for engagement with the cam lobe, an inner flexible switch blade having one end fixed and a free end adapted for engagement with the cam lobe, both of said blades being biased toward the cam and the outer blade extending beyond the inner blade over the cam lobe causing the inner blade to move away from the outer blade when the



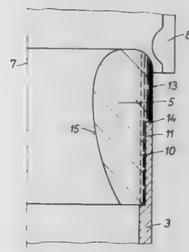
cam rotates to the point where the cam lobe drops the inner blade, the cam and outer blade being arranged so that axial movement of the cam in one direction drops the outer blade from the side of the cam, causing the outer blade to move toward the inner blade in response to the axial movement.

3,925,631

CONTACT ARRANGEMENT FOR A HIGH-VOLTAGE POWER CIRCUIT BREAKER

Claus Kessler, and Helmut Beier, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 23, 1973, Ser. No. 353,365
Claims priority, application Germany, Apr. 28, 1972, 2221630
Int. Cl.² H01H *33/60*
U.S. Cl. 200—148 R **6 Claims**



1. In a high-voltage, compressed gas power circuit breaker wherein the gas is blown through the arc developed when the breaker is switched, a contact arrangement whereat the circuit breaker is switched between open and closed positions, the contact arrangement comprising at least two metal contact pieces having respective hollow interiors for accommodating the discharge of the gas blown through the arc, arcing electrodes between which the arc is drawn when the breaker is switched to the open position, said contact pieces being mounted in the breaker so as to conjointly define a gap therebetween, and a bridging contact member movable relative to said contact pieces between open and closed positions to electrically join said contact pieces in the closed position and to electrically separate said contact pieces in the open position whereby the arc is drawn when said gap is opened, said bridging contact member being arranged with respect to said contact pieces so as to cause said bridging contact member to slide over the electrode of at least one of said contact pieces when moving into said open position from said closed position, said arcing electrodes being electrically and mechanically joined to said contact pieces respectively, each of said arcing electrodes and the corresponding contact piece conjointly defining an interface whereat the arcing electrode is joined to the contact piece, said arcing electrodes being made from carbon bodies and having a nozzle-like configuration,

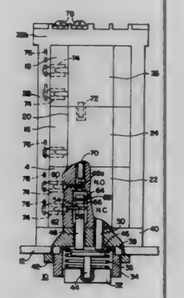
and an electrically conductive supplement embedded in each of said electrodes in the region thereof next to said interface to increase the conductivity of said carbon electrode at said region to mitigate the discontinuity in conductivity between said carbon electrode and said metal contact piece at the joint therebetween and to also impart an increased mechanical strength to said electrode at said region to increase the strength of said joint, said supplement comprising at least one metal.

3,925,632

PUSHBUTTON SWITCH WITH SEPARABLE SWITCH UNITS

Stanley L. Frank, and Stephen S. Dobroselski, both of Beaver, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 15, 1974, Ser. No. 470,106
Int. Cl.² H01H 9/00
U.S. Cl. 200—307 **6 Claims**



1. A switch comprising a plurality of separable switch units, the switch units being stacked in end-to-end abutment and having side walls facing a uniform direction, each unit comprising at least one set of stationary contacts and cooperable movable contacts, movable contact operating means for each unit and including a guided plunger, the plungers of the switch units being movable in unison, pushbutton switch means disposed at one end of the stacked switch units to effect movement of the plungers, first conductor means leading from each set of stationary contacts and comprising terminals at said side walls, a terminal strip of electrically insulating material extending along said side walls and having second conductor means comprising a separate terminal receptacle for each terminal, the terminal strip being coextensive with the stacked switch units, the second conductor means comprising terminal connectors at the end of the strip remote from the pushbutton switch means, the second conductor means also comprising conductors in the strip and extending from the terminal receptacles to the terminal connectors, the terminal strip comprising a longitudinal portion and a transverse portion, the longitudinal portion extending adjacent to said side walls, and the transverse portion extending across the end of the switch unit remote from the pushbutton switch means.

3,925,633

CIRCUIT FOR CONTROLLING POWER FLOW FROM A HIGH FREQUENCY ENERGY SOURCE TO A PLURALITY OF HIGH FREQUENCY LOADS

Donald F. Partridge, 1036 Harlen Drive, San Jose, Calif. 95129

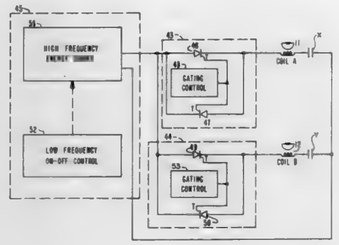
Filed Sept. 6, 1974, Ser. No. 503,781
Int. Cl.² H05B 5/04
U.S. Cl. 219—10.49 **10 Claims**

1. An inductive heating apparatus for supplying energy to one or more induction heating coil loads comprising:

a high frequency energy source suitable for heating said load by an inductive heating effect;

on-off switching means to cycle said energy source on and off at a frequency rate substantially lower than the high frequency rate of the energy source; and

interconnecting circuit means connecting said source and said load for supplying energy to the load, said interconnecting circuit means including individual switching means for impeding energy flow from the source to the load, said individual switching means being capable of impeding energy flow after each time said on-off switching means cycles said energy source off and being capable of initiating energy at any time interval following the cycling on of the energy source.

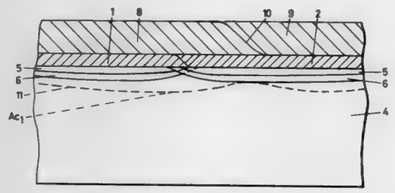


3,925,634

PROCESS FOR WELDING A CLADDING ONTO A BASE MATERIAL

Jan Pieter Fokke Mulder, Rotterdam, Netherlands, assignor to De Rotterdamsche Droogdok Maatschappij B.V., Rotterdam, Netherlands

Filed June 7, 1972, Ser. No. 260,455
Claims priority, application Netherlands, June 10, 1971, 7107977
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B23K 9/04
U.S. Cl. 219—76 **3 Claims**



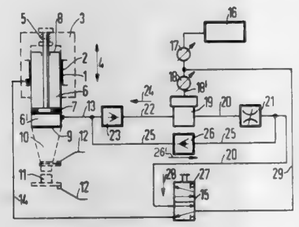
1. A process for welding a cladding onto a steel base material, the process comprising the steps of: cladding a first thin buffer layer of stainless steel cladding material onto said base material at a first welding speed and at a first welding temperature so that a region of said base material, near the cladded surface thereof, is austenitized to the extent that a course-grained region is developed; and cladding a second layer of stainless steel cladding material onto said first thin layer of cladding material at a second welding speed and a second welding temperature so that said course-grained region of base material is recrystallized to the extent that it is converted to a fine-grained region, and so that the temperature conditions which resulted in the development of the course-grained region of base material during the cladding of the first thin layer of cladding material are restricted to the boundaries of said first thin layer of cladding material.

3,925,635

PRESSURE OPERATED CONTROL FOR RESISTANCE WELDING MACHINES

Bernd Schneider, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 15, 1973, Ser. No. 415,957
Claims priority, application Germany, Nov. 23, 1972, 2257537
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B23K 11/10
U.S. Cl. 219—89 **9 Claims**



1. In a pressure actuated control for energizing the electrodes of a resistance welding machine having a stationary anvil electrode,

a movable presure electrode,

means engaging pressure electrodes with a workpiece between said electrodes and pressurizing the pressure electrode to a predetermined pressure,

a source of fluid under pressure,

a fluid pressure cylinder,

a piston within said cylinder,

pressure inlets into said cylinder on opposite sides of said piston,

the admission of fluid under pressure to one side of said piston raising the pressure electrode above the workpiece and pressure on the opposite side of said piston engaging the pressure electrode with the workpiece,

a pressure-dependent triggering switch controlling the energization of said electrodes,

a first valve controlling the supply and release of fluid under pressure to opposite sides of said piston,

a pressure supply line from said source of supply of fluid under pressure to said first valve,

individual first and second pressure lines leading from said first valve to said cylinder, on opposite sides of said piston,

a second valve operated by fluid under pressure for controlling the supply of fluid under pressure to effect lowering of the pressure electrode to engage the workpiece with a predetermined pressure,

means for setting the pressure of closing of said pressure switch to a pre-set pressure of engagement of said pressure electrode with the workpiece,

including a throttle valve,

an operative connection from said second valve to said pressure-dependent switch, to effect closing of said switch upon the building of a predetermined pressure on the workpiece by said pressure electrode,

a check valve holding fluid under pressure in the end of said cylinder pressurizing said pressure electrode,

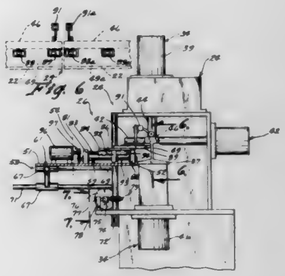
a bridging line bridging said first check valve and said second valve and having a check valve therein set to prevent the building up of pressure in said bridging line and to accommodate the release of fluid under pressure in the end of said cylinder pressurizing said pressure electrode.

3,925,636

METHOD AND MACHINE FOR AXIALLY ALIGNING AND WELDING CONTINUOUS RAIL

William R. Coleman, Earlham, Iowa, assignor to Darrell L. Dehm, Eldon, Iowa, a part interest

Filed Aug. 15, 1974, Ser. No. 497,520
Int. Cl.² B23K 11/02
U.S. Cl. 219—104 **4 Claims**



3. The method for forming a single continuous elongated unit from a plurality of like elongated members having adjacent end sections axially aligned and butt welded together comprising:

a. supporting adjacent end sections of said elongated members in an end to end relation with opposing end faces thereof in abutting engagement,

b. electrically sensing said adjacent end sections for lateral misalignment of one of the corresponding side surfaces thereof,

c. relatively moving said end sections a predetermined increment distance toward laterally aligned positions therefor in response to each sensing operation,

d. terminating the sensing operation when the corresponding side surfaces of the end sections are in lateral alignment,

e. vertically adjusting the end sections into axial aligned positions therefor, and then

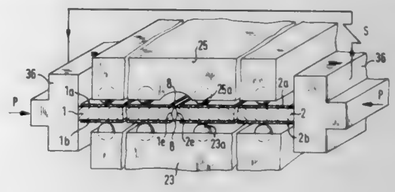
f. butt welding said end sections together.

3,925,637

RESISTANCE WELDING

Otto Alfred Becker, Robert-Koch-Strasse 59, 66 Saarbruecken 6, Germany

Division of Ser. No. 238,918, March 28, 1972, Pat. No. 3,805,014. This application Dec. 28, 1973, Ser. No. 429,111
Int. Cl.² B23K 11/02
U.S. Cl. 219—105 **5 Claims**



1. The method of resistance welding of coated metal articles to each other along the adjacently disposed cut edges thereof by means of electric current, comprising the steps of:

a. milling out by means of a milling cutter a substantial thickness of the cut edge of each of said metal articles to be welded so as to form a plurality of linear contact surfaces on each of said cut edges,

b. establishing pressure contact of said linear contact surfaces on the opposed cut edges of said articles, and

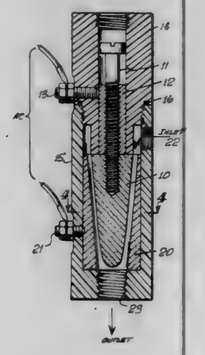
c. supplying electric welding current by current conducting means to one of the metal articles at a region spaced from said linear contact surfaces, said current travelling through said one metal article and said contact surfaces to the other metal article thereby effecting welding, the current being conducted away from the other one of the metal articles at a region spaced from said contact surfaces, whereby the metal articles are welded only in the weld area defined by said contact surfaces.

3,925,638

ELECTRODE CLEANING MEANS IN AN ELECTRIC WATER HEATER

Guido J. Scatoloni, 1942 Gladwick St., Compton, Calif. 90220

Filed June 20, 1973, Ser. No. 371,740
Int. Cl.² H05B *3/60*
U.S. Cl. 219—295 **11 Claims**



1. A flow through electric water heater of the type having a plurality of carbon-containing electrodes held in a spaced apart relationship within the body of said heater and having means for supplying an alternating current potential between adjacent electrodes wherein the improvement comprises:

electrode cleaning means comprising at least two electrodes, each of said electrodes containing a substantial amount of carbon, an electrical circuit adapted to supply a direct current potential of between **6** and **220** volts between adjacent electrodes for an intermittant time interval sufficient to clean said electrode, said electric circuit further being adapted to provide each electrode in said heater with a positive charge with respect to an adjacent electrode whereby deposits are removed from the surface of an electrode during the time at which a positive charge is applied thereto.

3,925,639

METHOD AND APPARATUS FOR READING BAR CODED DATA WHEREIN A LIGHT SOURCE IS PERIODICALLY ENERGIZED

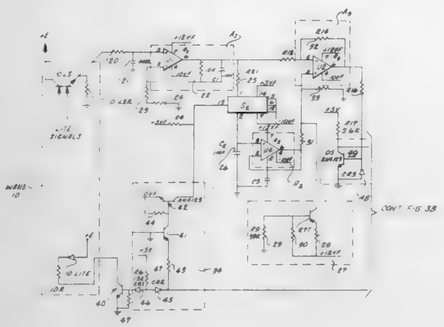
Gerald Hester, Santa Ana, Calif., assignor to MSI Data Corporation, Costa Mesa, Calif.

Filed Mar. 25, 1974, Ser. No. 454,585
Int. Cl.² G06K *7/10*
U.S. Cl. 235—61.11 E **24 Claims**

1. Apparatus for optically reading bar coded data wherein the binary bits are encoded in terms of bars of different widths of the same optical characteristic separated by areas of the opposite optical characteristic comprising

optical sensing means for producing electrical signals representative of the optical characteristic of a surface presented thereto upon the production of relative movement between the surface and the sensing means, said sensing means having a normally de-energized light source and a light sensor for receiving the light rays from the light source reflected from the surface being sensed, and

control circuit means including means for automatically and periodically energizing the light source coupled to be responsive to the sensor signals and maintaining the energization of the light source in response to a sensor signal of one kind and automatically de-energizing the light source in response to a sensor signal of the other kind.

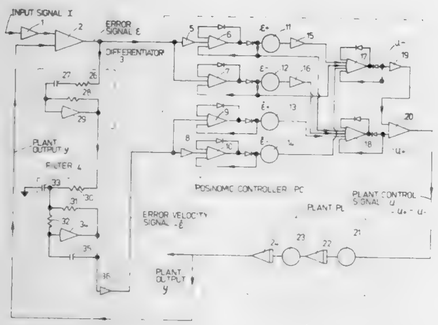


3,925,640

CLOSED LOOP CONTROL SYSTEM HAVING PLURAL MODES OF OPERATION

Matthew Duggan, Hemel Hempstead, England, assignor to Rolls-Royce (1971) Limited, London, England

Filed Mar. 4, 1974, Ser. No. 447,829
Claims priority, application United Kingdom, Mar. 6, 1973, 10678/73; Apr. 14, 1973, 18100/73
Int. Cl.² G06B *13/02*
U.S. Cl. 235—150.1 **9 Claims**



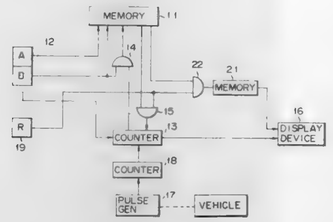
1. A closed loop control system for controlling a plant in accordance with an input signal to the control system, the system comprising means for receiving an input signal into the plant, means for generating a plant output signal, a comparator for comparing the input and output signals to produce an error signal proportional to the difference between the input and output signals, means for producing an error velocity signal proportional to the rate of change of the error signal, means responsive to said error and said error velocity signals for generating at least two different linear functions of the error and error velocity signals, each of said linear functions corresponding to a different mode of operation of said control system, means for changing from one linear function to another depending upon a predetermined ratio between the error signal and the error velocity signal, and means for producing a continuous plant control signal varying in accordance with one of said linear functions.

3,925,641

ROUTE GUIDING APPARATUS

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Higashiyamato, Japan

Filed May 3, 1974, Ser. No. 466,701
Claims priority, application Japan, May 8, 1973, 48-50915
Int. Cl.² G06F *15/50*
U.S. Cl. 235—150.2 **15 Claims**



1. A route guiding apparatus comprising:

means for generating pulses as a function of the rotation of the wheels of a vehicle such as an automobile, a motorcycle, a bicycle or the like, for each specified increment of distance covered by said vehicle;

counting means coupled to said pulse generating means for counting the pulses from said pulse generating means so as to measure the distance covered by said vehicle;

first indicating means coupled to said counting means for displaying a distance data item corresponding to the covered distance obtained by said counting means;

input means for supplying a direction data item indicating "right turn," "left turn" or "go-straight" guiding

write-in means coupled to said input means for pairing said distance data and said direction data item into a route segment data item upon receipt of said direction data from said input means;

memory means coupled to said write-in means for sequentially storing a plurality of route segment data items from said write-in means;

instructing means for instructing read-out of the route segment data items from said memory means;

read-out means responsive to instructions from said instructing means for reading out controllably and sequentially a plurality of route segment data items from said memory means, each route segment data item including a distance data item corresponding to the distance of a route segment to be covered by said vehicle and a direction data item corresponding to the direction of the next route segment to be covered;

second indicating means coupled to said memory means for displaying the direction data item read out from said memory means; and

third indicating means coupled to said memory means for displaying the remaining distance of a route segment and including means for reducing the number of pulses defining the distance data item read out by said read-out means as the vehicle advances along the route segment to generate signals corresponding to said remaining distance of a route segment.

3,925,642

STRAPDOWN GYRO DRIFT CALCULATOR

James P. Roantree, West Hartford, and John Saunders, East Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 13, 1974, Ser. No. 469,191
Int. Cl.² G06F *15/50*
U.S. Cl. 235—150.25 **8 Claims**

1. In a control system containing a strapdown gyro having a rotating wheel, said gyro being subject to external angular motion and producing an output signal which contains a component proportional to true angular motion and a component proportional to gyro drift, the improvment of means for determining the gyro drift component comprising

means for cyclically modulating the rotation speed of said gyro wheel wherein the speed of said gyro wheel is increased during one portion of said modulation cycle and decreased during another portion of said modulation cycle, said gyro output signal being correspondingly modulated by said cyclic modulation means,

means for producing a first product signal including means for multiplying the output signal from said gyro, during the portion of the modulation cycle when the gyro wheel speed rotation is increased, by a first multiplication factor which comprises the average change in wheel speed rotation during said modulation cycle minus a preselected integral number,

means for producing a second product signal including means for multiplying the output signal from said gyro, during the portion of the modulation cycle when the gyro wheel speed rotation is decreased, by a second multiplication factor which comprises the average change in wheel speed rotation during said modulation cycle plus said preselected integral number,

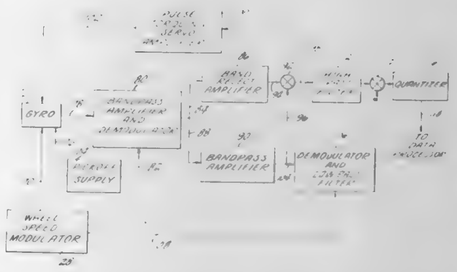
and means for subtracting one of said first and second product signals from the other said product signal.

3,925,643

DRIFT CORRECTING GYRO SYSTEM USING FILTERS

James P. Roantree, West Hartford; John Saunders, East Hartford, and Robert A. Baum, Canton, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 13, 1974, Ser. No. 469,190
Int. Cl.² G06F *15/50*
U.S. Cl. 235—150.25 **6 Claims**

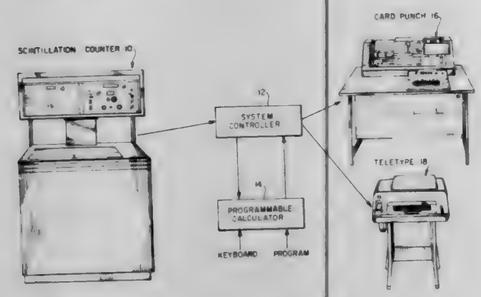


1. In a control system containing a strapdown gyro which is subject to external angular motion and which produces an output signal containing a component proportional to true angular motion and a component proportional to gyro drift, said gyro having a rotating wheel, the improvement of eliminating the drift component from the gyro output signal comprising

means for cyclically modulating the speed of rotation of said gyro wheel to produce a modulation component in said gyro output signal,

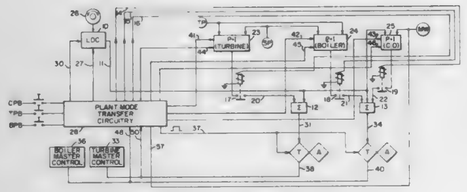
a band-pass amplifier having an input and an output and tuned to the wheel speed modulation frequency,
a band-reject amplifier having an input and an output and tuned to the wheel speed modulation frequency,
means for connecting said gyro output signal to the inputs of said band-pass amplifier and said band-reject amplifier,
a summing junction connected to the outputs of said band-pass amplifier and said band-reject amplifier,
a high pass filter having an input and an output,
means connecting said summing junction with the input to said high pass filter,
a demodulator having an input and an output and tuned to the wheel speed modulation frequency,
means connecting the output from said band-pass amplifier with said demodulator,
a low pass filter having an input and an output,
means connecting the output of said demodulator with the input of said low pass filter,
and means for combining the outputs from said high pass filter and said low pass filter.

3,925,644
SYSTEM CONTROLLER FOR USE WITH RADIOLOGICAL ASSAY SYSTEM
Steven C. Bergman, Old Tappan; Thomas B. Gnirrep, Kinnelon, and Charles A. Nazzaro, Hillsdale, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Feb. 4, 1974, Ser. No. 439,202
Int. Cl.² G06F *15/20*
U.S. Cl. 235—151.3 **10 Claims**



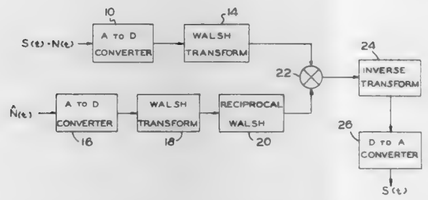
1. A system controller for use in radiological assays for coupling raw data appearing in decimal form on a plurality of lines from a scintillation counter to a calculator and for connecting the calculator to at least one of a plurality of output devices, comprising
means for converting the voltage levels appearing on said lines to a second voltage level,
means responsive to said converting means for producing a multi-bit binary signal indicating which of said lines contains a signal,
multi-stage register means for storing said binary signal,
means for coupling the data stored in said register means to said calculator,
additional register means for storing characters in binary form transmitted by said calculator,
a timing pulse generator,
gating means connected to said timing pulse generator for cyclically connecting said calculator and additional register means at preselected times when said calculator is generating output data, and
control means connected to said timing pulse generator and said additional register means for selectively coupling said additional register means to said output devices, said control means being responsive to the information stored in said additional register means.

3,925,645
SYSTEM AND METHOD FOR TRANSFERRING BETWEEN BOILER-TURBINE PLANT CONTROL MODES
Louis P. Stern, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 7, 1975, Ser. No. 556,363
Int. Cl.² F01D *17/02*; **G05B** *15/02*
U.S. Cl. 235—151.21 **15 Claims**



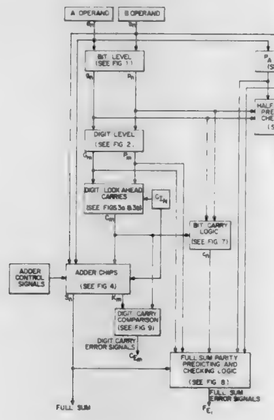
1. A system for transferring a boiler turbine power plant from one operating mode to another rapidly without disturbing the plant process wherein predetermined selected in service feedback loops trim a feedforward signal for controlling the boiler and turbine in each operating mode and at least one feedback loop is put in service for changing operating modes, said system comprising
a turbine control apparatus for controlling turbine inlet valve position in accordance with the value of an input signal,
a boiler control apparatus for controlling boiler firing rate in accordance with the value of an input signal,
means to generate a feedforward signal representative of desired plant operation connected electrically to input the feedforward signal to the boiler and turbine control apparatus in parallel,
at least one feedback loop for each control apparatus to generate an output signal,
first circuit means including each feedback loop to modify the value of the input signal to the boiler and turbine apparatus in accordance with the output signal value of its associated feedback loop that is in service for a distinct operating mode,
mode transfer selection means effective when activated to govern the turbine and boiler control apparatus to be unresponsive to a change in the value of either a feedforward or feedback signal to prevent any change in turbine valve position and boiler firing rate during a mode transfer,
second circuit means including the feedforward signal generating means governed by the activation of the transfer means to modify the generated feedforward signal to be representative of a selected value in accordance with the operating mode selected by the mode transfer means,
third circuit means governed by the activated transfer means to control each feedback loop put in service in accordance with the selected operating mode to generate a feedback output signal for the first circuit means having a value to modify the input signal for the turbine and boiler control apparatus to be representative of the value of the turbine and boiler control apparatus input signal upon activation of the transfer means, and
means deactivating the transfer means to render the boiler and turbine control apparatus responsive to their respective input signal from the signal generating means as modified by the first circuit means.

3,925,646
INFORMATION AND PROCESS CONTROL ENHANCEMENT SYSTEM EMPLOYING SERIES OF SQUARE WAVE COMPONENTS
Richard L. Richardson, Kennewick; Bernard P. Hildebrand, Richland, and Robert E. Mahan, Kennewick, all of Wash., assignors to Battelle Memorial Institute, Columbus, Ohio
Filed Apr. 19, 1974, Ser. No. 462,372
Int. Cl.² G06F *15/34*
U.S. Cl. 235—152 **18 Claims**



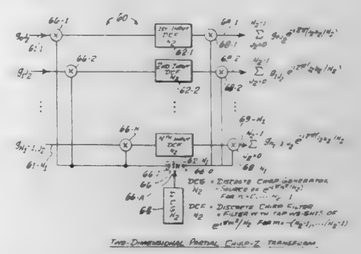
1. Apparatus for combining a pair of inputs, said apparatus including means for representing each input as a series expansion of square wave components,
means for generating the reciprocal of one said series expansion of square wave components as a third series of square wave components,
and means for combining said third series of square wave components with the remaining series expansion of square wave components to provide an output.

3,925,647
PARITY PREDICTING AND CHECKING LOGIC FOR CARRY LOOK-AHEAD BINARY ADDER
Ming H. Louie, Norristown, Pa., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed Sept. 30, 1974, Ser. No. 510,674
Int. Cl.² G06F *11/10*
U.S. Cl. 235—153 BB **10 Claims**



1. In combination with a carry look-ahead binary adder for a first and a second operand, said adder responsive to control signals for performing one of a plurality of logical operations and providing a corresponding set of result signals and including adder chips and a half-sum adder with look-ahead logic, an improved system for error detection comprising:
first logical means responsive to said first and said second operands for predicting parities for each byte of half-sums of said operands;
second logical means coupled to output terminals of said first means and to output terminals of said half-sum adder for comparing said predicted half-sum parities to parities of each byte of generated half-sums of said operands and for producing half-sum error signals corresponding to each byte when said predicted and said generated half-sum parities are unequal;
third logical means responsive to said control signals and coupled to said look-ahead logic for predicting parities for each byte of said result signals for said operands;
fourth logical means coupled to output terminals of said third means and to output terminals of said adder chips for comparing said predicted result signal parities to parities of each byte of generated result signals for said operands and for producing result error signals corresponding to each byte when said predicted and said generated result signal parities are unequal; and
fifth logical means coupled to said look-ahead logic and to output terminals of said adder chips for comparing carries generated by said look-ahead logic to output carries generated by said adder chips and for producing carry error signals when said carries are unequal.

3,925,648
APPARATUS FOR THE GENERATION OF A HIGH CAPACITY CHIRP-Z TRANSFORM
Jeffrey M. Speiser; Harper J. Whitehouse, and James M. Alsup, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed July 11, 1974, Ser. No. 487,849
Int. Cl.² G06F *15/34*; **G06G** *7/19*
U.S. Cl. 235—156 **2 Claims**



1. Apparatus for performing a high-capacity two-dimensional, chirp Z transform, in size N_1 times N_2, suitable for the signal processing of radar and sonar signals, comprising:
an N_2 plurality of two-dimensional partial chirp-Z transform devices, each transform device comprising:
a discrete chirp generator, which comprises a source of $e^{-\pi n^2/N2}$ signals, for $n=0, 1, \ldots, N_2-1$;
a plurality of N_1 signal input multipliers, each receiving two inputs, one being of the N_1 columnar input transform values;
a single-pole double-throw (SPDT) switching means, having a switching pole connected to the discrete chirp generator, one fixed pole, the input pole, being connected to each of the N_1 input multipliers;
a plurality of N_1 input discrete chirp filters with tap weights of $e^{-i\pi m^2/N2}$, for $m=-(N_2-1), \ldots, (N_2-1)$, each filter having its input connected to the output of one of the N_1 input multipliers; and a plurality of N_1 signal output multipliers, each multiplier having one input connected to the output of one of the discrete chirp filters, the other input being connected to the other pole, the output pole, of the SPDT switching device, the N_1 outputs of the multipliers comprising

output signals

$$\sum_{j_2=0}^{N_2-1} R(\ldots)e^{\ldots}$$; and

an acoustic surface-wave demultiplexer and chirp multiplier, whose inputs comprise all the outputs of the partial transform devices;

an acoustic surface-wave discrete chirp filter, whose input comprises the output of the demultiplexer and chirp multiplier; and

an output multiplier whose two inputs comprise the output of the surface-wave discrete chirp filter and the output of the acoustic surface-wave discrete chirp generator, the output of the output multiplier comprising the terms of a one-dimensional chirp-Z transform in a linear congruential scan.

3,925,649

ELECTRONIC COMPUTER FOR THE STATIC RECOGNITION OF THE DIVISIBILITY, AND THE DIVISION OF, NUMBERS DIVISIBLE BY THREE, SIX AND NINE

Jochen Haeusler, Nurnberg-Laufamholz, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

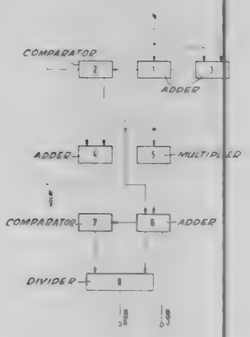
Filed Apr. 30, 1973, Ser. No. 355,595

Claims priority, application Germany, May 18, 1972, 2224329

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² G06F *7/39*

U.S. Cl. 235—159 **6 Claims**



1. An electronic computer for the static recognition of the divisibility, and the division, of numbers N which are divisible by the integers 3, 6 and 9, comprising:

means for summing the digits of a dividend N;

means, coupled to said summing means, for indicating the divisibility of the sum of the dividend digits by the integers 3, 6 and 9;

means, coupled to said summing means, for determining an integer *n* which is nearest but less than the quotient of the dividend N divided by the integer 9, from both the carrys of the sum of the dividend digits and the dividend N;

means, coupled to said means for determining said integer *n* and to said indicating means, for determining the quotient of the dividend N divided by the integer 9;

means, coupled to said means for determining said integer *n*, for tripling said integer *n*;

means, coupled to said indicating means and said tripling means, for determining the quotient of the dividend N divided by the integer 3; and

means, coupled to said means for determining the quotient N/3, for determining the quotient of the dividend N divided by the integer 6.

3,925,650

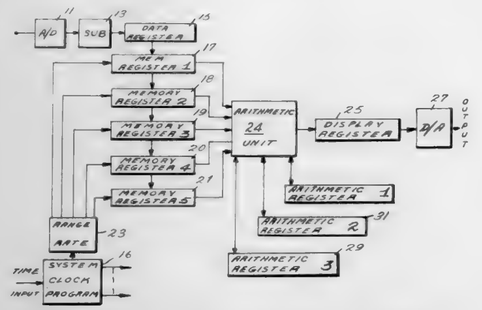
METHOD AND APPARATUS FOR DETECTING A REPETITIVE SIGNAL IN A NOISY BACKGROUND

Buck C. Brown, Rockville, Md., assignor to Presearch Incorporated, Silver Spring, Md.

Filed Feb. 15, 1974, Ser. No. 443,117

Int. Cl.² G06F *7/38*

U.S. Cl. 235—164 **8 Claims**



1. An apparatus for detecting repetitive and similar input information signals in a noisy background wherein the information signals exist for only a short time relative to a complete repetitive interval and wherein the noise background exists for the complete repetition interval, comprising

means for generating a plurality of digital signals, one for each of a plurality of time increments in each repetition interval, said digital signals having a value corresponding to the amplitude of the input signal at each time increment,

means for subtracting the value of the digital signal in each time increment from the value of the digital signal in the next succeeding time interval to derive a plurality of difference signals,

means for sequentially storing each of said difference signals,

means for sequentially storing the difference signals of a plurality of said repetition intervals, and

means for summing the values of each of the difference signals in a predetermined time increment of each of said plurality of repetition intervals, wherein the difference signals in corresponding time intervals of said plurality of repetition intervals are summed to form a cumulative difference signal for the predetermined time increment over the plurality of repetition intervals.

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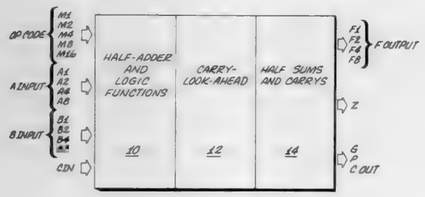
CURRENT MODE ARITHMETIC LOGIC ARRAY

Homer W. Miller, Peoria, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Mar. 26, 1975, Ser. No. 562,316

Int. Cl.² G06F *7/50*

U.S. Cl. 235—175 **8 Claims**



1. A current mode arithmetic logic array comprising:

a first array portion for receiving a carry input, a binary operation code, and first and second binary signal inputs and producing half-sum of said inputs and carry generate output signals in response to said binary operation code,

a second array portion receiving said carry input, said half-sums and said carry generate signals and producing carry signals for each binary level of said first and second signals other than the least significant binary level, and

a third array portion responsive to said half-sum signals from said first portion, said carry signals from said second portion, and said operation code and producing a binary output resultant of the operation defined by said operation code on said first and second binary signals,

said first, second, and third portions comprising soft saturating current mode logic series gates including a lower level gate and an upper level gate having an output voltage range limited to approximately 0.5 volt.

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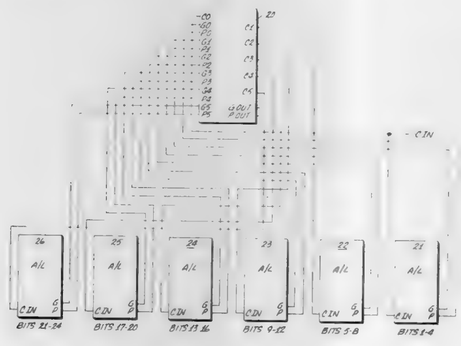
CURRENT MODE CARRY LOOK-AHEAD ARRAY

Homer W. Miller, Peoria, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Mar. 26, 1975, Ser. No. 562,327

Int. Cl.² G06F *7/50*

U.S. Cl. 235—175 **7 Claims**



1. A current mode logic carry look-ahead array for use with up to six arithmetic/logic circuits, each arithmetic/logic circuit processing a limited number of bits of binary data in response to an operation code (**M1-M16**), a carry input (**C**), and input data (**A1-A8, B1-B8**), and producing output data (**F1-F8**) and carry generate (G_i) and carry propagate (P_i) signals, said carry look-ahead array comprising a plurality of logic circuits for receiving the carry generate (G_i) and carry propagate (P_i) signals from said arithmetic/logic circuits and the initial carry-in (C_{in}) signal and simultaneously producing carry signals for the arithmetic/logic circuits in accordance with the following equations:

$C1 = (G0)+(P0.C0)$

$C2 = (G1)+(P1.G0)+(P1.P0.C0)$

$C3 = (G2)+(P2.G1)+(P2.P1.G0)+(P2.P1.P0.C0)$

$C4 = (G3)+(P3.G2)+(P3.P2.G1)+(P3.P2.P1.G0)+(P3.P2.P1.P0.C0)$

$C5 = (G4)+(P4.G3)+(P4.P3.G2)+(P4.P3.P2.G1)+(P4.P3.P2.P1.G0)+(P4.P3.P2.P1.P0.C0)$

3,925,653

APPARATUS FOR TRANSFORMING ELECTRONICS SIGNALS BETWEEN THE TIME AND FREQUENCY DOMAINS UTILIZING ACOUSTIC WAVES

Oberdan W. Otto, Los Angeles, Calif., assignor to The Board of Trustees of Leland Stanford Jr. University, Stanford, Calif.

Filed Jan. 21, 1974, Ser. No. 434,965

Int. Cl.² G06G *7/19*; **H01L** *41/00*

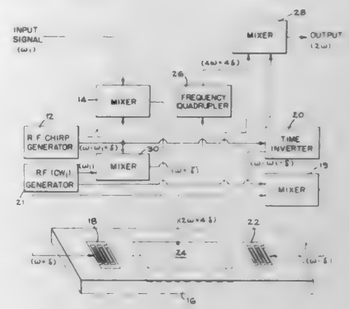
U.S. Cl. 235—181 **4 Claims**

1. Apparatus for transforming an electronic signal between the time and frequency domain which comprises

means for generating a chirp signal,

means for mixing the electronic signal to be transformed with said chirp signal,

a piezoelectric medium,



transducer means for applying said mixed chirp and electronic signals to said piezoelectric medium to generate acoustic waves in a fashion such that parametric interaction occurs,

means for detecting the parametrically-interacted signals, and means for mixing the detected signal with said chirp signal.

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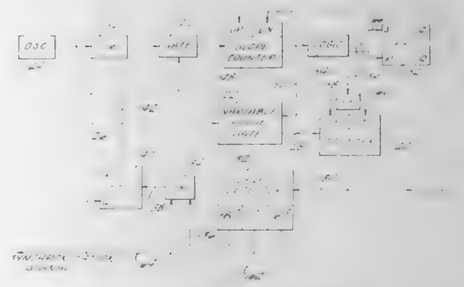
DIGITAL SINE WAVE SYNTHESIZER

James P. Roantree, West Hartford, and John Saunders, East Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 13, 1974, Ser. No. 469,189

Int. Cl.² G06F *15/34*

U.S. Cl. 235—197 **3 Claims**



1. A digital sine wave synthesizer comprising

an oscillator for producing a series of timed pulses,

a variable pulse gate circuit connected to receive said series of oscillator pulses and to pass therethrough a variable proportion of said series of pulses,

a main counter connected with said variable pulse gate circuit for counting the pulses passed thereto by said variable pulse gate circuit,

a level detector connected to said main counter and responsive to a preselected count therein for producing a gating signal,

a divider circuit having an input connected to receive said oscillator pulses and to produce a series of output pulses equivalent to the number of oscillator pulses received at the input thereof divided by an integral number,

a gate circuit connected to receive the series of output pulses from said divider circuit,

a slope counter circuit connected to said gate circuit,

means for connecting said gating signal to said gate circuit to actuate said gate circuit and permit the passage of said

series of output pulses therethrough to said slope counter circuit, said slope counter circuit counting the pulses supplied thereto by said gate circuit,

means for connecting said slope counter circuit with said variable pulse gate circuit to cause said variable pulse gate circuit to vary in response to the count in said slope counter circuit the proportion of pulses passed therethrough to said main counter,

means responsive to a preselected count in said slope counter for reversing the direction of count in said slope counter and in said main counter,

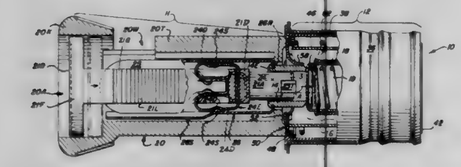
and means connected with said main counter for producing an output signal.

3,925,655

COMPOSITE MAP LIGHT AND CIGAR LIGHTER PLUG

Donald J. Mattis, Norwalk, Conn., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Aug. 26, 1974, Ser. No. 500,370
Int. Cl.² F21V *33/00*
U.S. Cl. 240—2 CL **22 Claims**



1. A lighting assemblage for attachment to a contactor plug of the type receivable in electric cigar lighter wells and having electrical circuits, comprising in combination:

a. a hollow body member having separable-type mechanical and electrical connector means engageable with cooperable means on the contactor plug, for demountably attaching the body member on said plug and effecting an electrical connection to a circuit thereof,

b. a unitary lamp socket in said body member, comprising a pair of conductors and means insulatedly securing the same to each other as a unit,

c. means for providing a plurality of circuits from the conductors of the lamp socket respectively to a circuit on the contactor plug and to said mechanical and electrical connector means,

d. a switching device in one of said circuit-providing means for controlling the same,

d. manually-engageable means carried by said body member for operating said switching device, and

f. means removably mounting said unitary socket and conductors thereof in the hollow of the body member for removal as a unit therefrom without the use of tools, to facilitate replacement of the lamp.

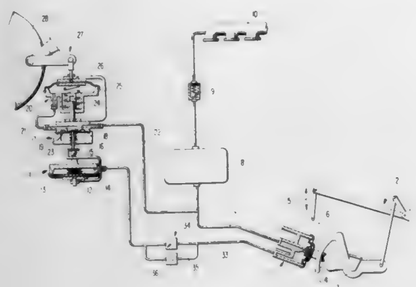
3,925,656

PNEUMATIC CONTROL SYSTEM FOR SELF ALIGNMENT OF MOTOR VEHICLE HEADLIGHTS

Rudolf Andres, Sindelfingen; Hermann Müller, Aidlingen, and Franz Seyfried, Sindelfingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Apr. 27, 1973, Ser. No. 355,095
Claims priority, application Germany, Apr. 29, 1972, 2221320
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B60Q *1/00*
U.S. Cl. 240—7.1 LJ **14 Claims**

1. A pneumatically operating control system for the automatic alignment of motor vehicle headlights which includes control means coordinated to at least one axle of the motor vehicle which align the motor vehicle headlights to a substantially constant light distance in dependence on the change of the distance of the respective axle to the body of the motor vehicle by way of adjusting motor means and control shifting means, a vacuum supply means operatively connected with the control system, and pressure modulator means forming part of the control means for modulating the vacuum pressure in the control system, characterized in that an automatically



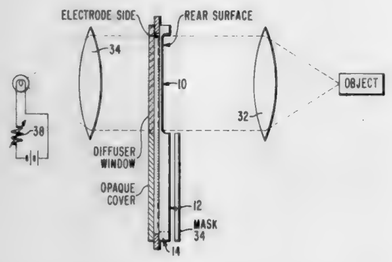
operating valve means is arranged in a line means leading from said pressure modulator means to the adjusting motor means, said valve means being operable to substantially eliminate the throttling effect in said line means during strong braking and acceleration operations and thereby leading to an essentially immediate compensation of the change in angular value between the optical axis of the headlights and the road surface.

3,925,657

INTRODUCTION OF BIAS CHARGE INTO A CHARGE COUPLED IMAGE SENSOR

Peter Alan Levine, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 21, 1974, Ser. No. 481,746
Int. Cl.² H01J *39/12*
U.S. Cl. 250—211 J **5 Claims**



1. A method for introducing a background charge signal into a surface channel charge coupled device image sensing array having a front surface at which the charge transfer electrodes are located and having also a back surface, which array receives a radiant energy image through one of said surfaces, comprising the step of:

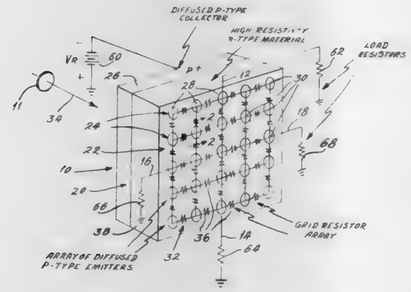
applying radiant energy illumination at a bias level which is uniform over the entire area of the surface on which the radiant energy illumination at said bias level impinges, through the other of said surfaces, said entire area on which said radiant energy illumination at said bias level impinges including an area corresponding to substantially the entire area of said one surface receiving said radiant energy image.

3,925,658

GRID LATERAL PHOTODETECTOR WITH GAIN

William P. Connors, Florissant, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 464,690, April 26, 1974, Pat. No. 3,859,521. This application Sept. 16, 1974, Ser. No. 506,228
Int. Cl.² H01J *39/12*
U.S. Cl. 250—211 J **19 Claims**



1. A grid lateral photodetector comprising a wafer element formed by adjacent layers of different type semi-conductor materials forming a barrier layer therebetween, one of said adjacent layers forming a collector element adjacent to one surface of the device and a second of said layers forming a relatively high resistivity depletion region in said element, a plurality of spaced regions of a selected semi-conductor material formed on the wafer element opposite from the collector forming layer, each of said spaced regions and the adjacent portions of the wafer element forming a region in the element having current amplifying characteristics, current being generated in said element at each location where radiation impinges on the collector element, and means for producing outputs to represent the location where radiation impinges on the collector element including an array of angularly related connected resistive conductors on the surface of said element opposite from the collector element, currents produced in said element when radiation impinges flowing into the array of resistive conductors.

3,925,659

INELASTIC GAMMA RAY LOGGING SYSTEM

Hans J. Paap, and Hubert D. Scott, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

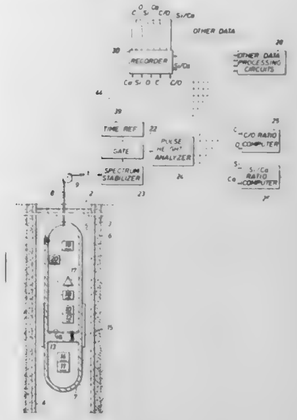
Filed Mar. 23, 1973, Ser. No. 344,304
Int. Cl. G01t *1/20*
U.S. Cl. 250—270 **10 Claims**

1. Apparatus for determining the characteristics of material in the vicinity of a well borehole, comprising:

a fluid tight hollow body member sized for passage through a well borehole and having situated therein;

neutron source means for providing a flux of fast neutrons to irradiate materials in the vicinity of the borehole and liquid scintillation detector means comprising a scintillator material disposed in an essentially hydrogen free organic solvent for detecting gamma radiations attributable to the inelastic scattering of fast neutrons from materials in the vicinity of the borehole and for producing voltage pulses functionally related to the energy of the gamma radiations; and

means for separating said functionally related voltage pulses into a spectrum of corresponding inelastic gamma ray



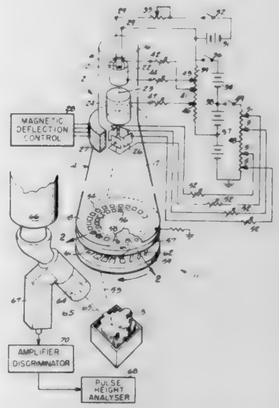
energies and for recording said spectrum of inelastic gamma ray energies.

3,925,660

SELECTABLE WAVELENGTH X-RAY SOURCE, SPECTROMETER AND ASSAY METHOD

Richard D. Albert, 317 Hartford Road, Danville, Calif. 94523

Continuation-in-part of Ser. No. 251,378, May 8, 1972, abandoned. This application Apr. 24, 1973, Ser. No. 353,451
Int. Cl. G01n *23/20*
U.S. Cl. 250—272 **18 Claims**



1. In a method for analyzing the composition of a substance by X-ray fluorescence analysis, the steps comprising:

producing primary X-rays by directing charged particles to a selected one of a plurality of primary targets which are disposed at separate locations on a primary target plate and each of which has a different composition, the primary X-rays including a wavelength characteristic of the material of the selected primary target and further including a bremmstrahlung spectrum of many wavelengths,

directing said primary X-rays toward a selected one of a plurality of secondary targets which are disposed at separate locations on a secondary target carrier and each of which has a different composition whereby secondary X-rays are emitted from said selected secondary target,

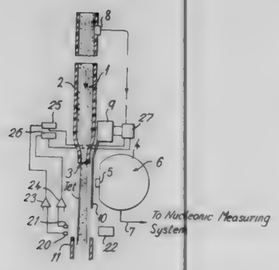
said selected one of said secondary targets having a composition which emits characteristic X-rays having a wavelength spectra that produces X-ray fluorescence in a specific possible constituent element of said substance, and said selected one of said primary targets being of different composition than said selected one of said secondary targets and being selected to produce primary X-rays which promote said characteristic X-ray emission by said selected secondary target,

irradiating said substance with said secondary X-rays, and detecting the wavelength of characteristic fluorescent X-rays emitted by said substance in response to said irradiation thereof to enable identification of at least one constituent element thereof.

3,925,661
ANALYSIS OF MOVING FLUIDS

Kenneth Garfield Carr-Brion, Stevenage, England, assignor to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 292,786, Sept. 27, 1972, abandoned. This application Mar. 11, 1974, Ser. No. 450,233
Claims priority, application United Kingdom, Oct. 4, 1971, 46105/71; Germany, Oct. 3, 1972, 2248505
Int. Cl.² G01N *23/20*
U.S. Cl. 250—272 **10 Claims**



1. Apparatus for the analysis of a parameter of a moving fluid comprising means for passing said fluid through an orifice shaped to provide a fluid jet of defined dimensions; analyzing means comprising a detector of electromagnetic radiation, said detector being positioned in non-contacting proximity to said jet adjacent the orifice for receiving radiation travelling from said jet to produce a signal varying as a function of said parameter of said fluid; flow sensor means mounted adjacent said orifice for measuring the rate of flow of said fluid through said orifice; and means connected to said flow sensor means and operative to protect said detector should the rate of flow of said fluid fall below a predetermined value as indicated by said flow sensor means.

3,925,662
HIGH-RESOLUTION FOCUSSING DIPOLE MASS SPECTROMETER

Peter H. Dawson, Quebec, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Mar. 25, 1974, Ser. No. 454,729
Claims priority, application Canada, July 20, 1973, 176936
Int. Cl.² B01D *59/44*
U.S. Cl. 250—290 **15 Claims**

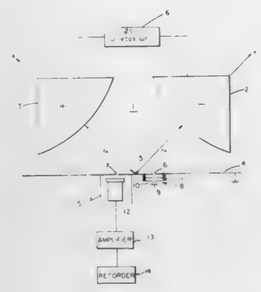
1. A mass analyser for focussing ions of a particular mass-to-charge ratio in an ion beam comprising:

a plane electrode;

parallel entrance and exit slits located in the plane electrode;

first and second elongated electrodes positioned in parallel to one side of the plane electrode such that the electrodes are symmetrically located with respect to a plane normal to the plane electrode and containing a centerline located between the slits;

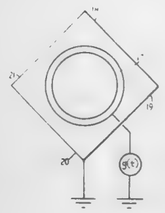
a voltage source having a d.c. component and an rf component connected across the first and second electrodes to provide an electrostatic field for focussing ions in a beam entering the field through the entrance slit such that ions of a particular mass-to-charge ratio will exit the field through the exit slit.



3,925,663
EXTENDED MONOPOLE SPECTROMETERS AND FILTERS

John Barry Hiller, Thornleigh; John Alan Richards, Townsville, and Richard Meredyth Huey, Sylvania, all of Australia, assignors to Unisearch Limited, Kensington, Australia

Filed June 28, 1973, Ser. No. 374,369
Claims priority, application Australia, June 28, 1972, 9497/72
Int. Cl.² H01J *39/34*
U.S. Cl. 250—292 **13 Claims**



1. A monopole mass spectrometer comprising:

an analyzing configuration consisting of a circular cylindrical electrode extending coaxially within a surrounding hollow square cylindrical electrode;

means for injecting ionized beams into said spectrometer between said circular cylindrical electrode and said square cylindrical electrode;

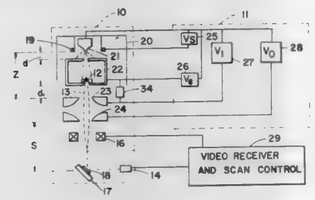
means for detecting said beams disposed opposite said injecting means; and

means for applying potential to both said circular cylindrical electrode and to said hollow square cylindrical electrode.

3,925,664
FIELD EMISSION ELECTRON GUN

Vincent J. Coates, Los Altos, and Leonard M. Welter, Saratoga, both of Calif., assignors to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 225,970, Feb. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 46,425, June 15, 1970, Pat. No. 3,678,333. This application Jan. 2, 1975, Ser. No. 537,879
Int. Cl.² H01J *37/285*
U.S. Cl. 250—310 **7 Claims**

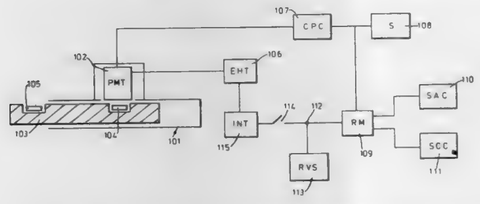


1. In a field emission gun for a scanning charged particle microprobe system including a field emission gun a housing defining a vacuum chamber, a field emission tip disposed in said chamber for generating charged particles, electrode means including an intermediate electrode and a main electrode for establishing focusing and accelerating fields for forming a beam of said charged particles, voltage means connected to said electrode means and said field emission tip for supplying electrical potential to establish said focusing and accelerating fields and an extraction electrode connected to said voltage means in juxtaposition to said tip for developing an electric field for generating said charged particles, the improvement of a multi-element extraction electrode comprising a first member having an aperture centrally located and axially aligned with said beam, a second member having an aperture centrally located and axially aligned with said beam, said second member being interposed between said first member and said intermediate electrode and electrically connected to said first member, and means for spacing said first member and said second member forming a field free drift space in the region between said members.

3,925,665
THERMOLUMINESCENCE DOSIMETER READER

Malcolm Eric Alexander Robertson, Brookwood; John Marshall, Camberley; Jules Anthony Peter Brabants, Walton-on-Thames, and Michael Edward Davies, Maidenhead, all of England, assignors to D.A. Pitman Limited, Weybridge, England

Filed Aug. 14, 1974, Ser. No. 497,507
Claims priority, application United Kingdom, Aug. 17, 1973, 38989/73
Int. Cl.² G01T *1/11*
U.S. Cl. 250—337 **20 Claims**

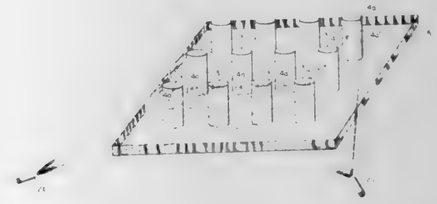


1. A thermoluminescence dosimeter reader comprising an electric circuit arrangement including a photomultiplier tube for detecting thermoluminescence from a dosimeter, said photomultiplier tube having an input connected to a high voltage source and an output for producing an output current signal, and wherein there is provided a feedback loop from said output to said high voltage source; said feedback loop comprising converter means connected to said output to convert the output current signal of said photomultiplier tube into a pulse signal having a repetition frequency proportional to said output current signal; a rate meter connected to said converter and to which said pulse signal is supplied and which provides an output voltage proportional to the repetition frequency of said pulse signal; a reference voltage source connected to said rate meter; and an integrator connected to said rate meter and said reference voltage source, and to which the output voltage from said rate meter and a reference voltage from said reference voltage source are supplied, so as to produce a high voltage output signal from said integrator which output signal, when supplied to said high voltage source, acts to control the output of said high voltage source, whereby to provide automatic gain stabilisation for said tube.

3,925,666
GAS DETECTION SYSTEM

Colin J. Allan, and John G. Bayly, both of Deep River, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed July 29, 1974, Ser. No. 492,458
Claims priority, application Canada, Nov. 14, 1973, 185825
Int. Cl.² G01D *21/04*; **G01J** *1/00*; **G01N** *21/34*; **G08B** *21/00*
U.S. Cl. 250—338 **6 Claims**



1. An apparatus for monitoring a known gas in the atmosphere around a plant area comprising:

a. a first number of reflector means mounted in a spaced manner in the plant area;

b. first detector means positioned at a first predetermined location in direct line of sight with each first reflector means, the first detector means including:

i. light source means providing a collimated beam having at least a wavelength which corresponds to an absorption line of the gas;

ii. means for cyclically directing the beam onto each first reflector means at a first scan rate; and

iii. means for receiving the reflected beam indicating the presence of the gas in the beam path as a function of any absorption of the corresponding wavelength;

c. a second number of reflector means mounted in a spaced manner in the plant area; and

d. second detector means positioned at a second predetermined location in direct line of sight with each second reflector means such that the lines of sight between the second detector means and the second reflector means overlap with the lines of sight between the first detector means and the first reflectors means to form a grid, the second detector means including:

i. light source means providing a collimated beam having at least a wavelength which corresponds to an absorption line of the gas;

ii. means for cyclically directing the beam onto each second reflector means at a second scan rate; and

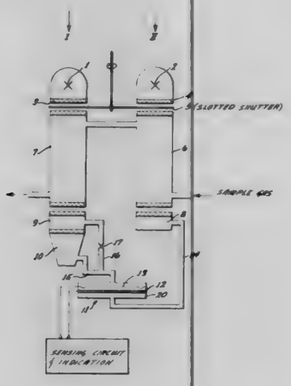
iii. means for receiving the reflected beam indicating the presence of the gas in the beam path as a function of any absorption of the corresponding wavelength.

3,925,667

TWO BEAM INFRARED GAS ANALYZER

Joachim Staab, Frankfurt am Main, Germany, assignor to Hartmann & Braun Aktiengesellschaft, Frankfurt, Germany

Filed Oct. 17, 1974, Ser. No. 515,518
Claims priority, application Germany, Oct. 20, 1973, 2352813
Int. Cl.² G01N 21/36
U.S. Cl. 250—343 7 Claims



5. A detector for use in an infrared gas analyzer, the analyzer having means for providing two radiation beams which are periodically intercepted for intensity modulation of both beams, further having sample cell means disposed to be traversed by said two beams as modulated, comprising:

first and second absorbtion chambers disposed respectively to be serially traversed by one of said beams after having traversed the sample cell means;

a third absorbtion chamber disposed to be traversed by the other one of the beams after having traversed the sample cell means; and

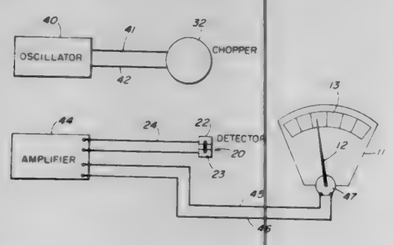
a chamber with partitioning diaphragm being part of a sensing capacitor for connection to an electrical sensing circuit and connected with one side to the second chamber as receiving radiation from the first chamber due to optically serial relationship between the first and second chambers, the chamber with diaphragm having its other side connected to the third chamber so that the diaphragm is deflected upon pressure differences between the second and third chambers.

3,925,668

SPECTRAL SENSOR AND METHOD

Norman C. Anderson, Morris Island, Chatham, and Robert E. Rupert, South Dennis, both of Mass., assignors to F-S Inc., South Dennis, Mass.

Filed Mar. 25, 1974, Ser. No. 454,318
Int. Cl.² G01J 1/04
U.S. Cl. 250—351 2 Claims



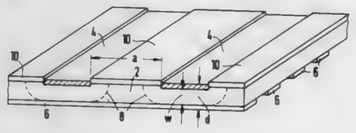
1. A radiation sensor for detecting and indicating temperature responsive radiation comprising a radiation sensitive detector means enclosed within a case and adapted to generate an electric response to radiation, an aperture associated with said detector means and positioned to admit radiation and to direct radiation to said detector, a flexible shield positioned between said aperture and said detector, said shield having a mechanically resonant frequency of vibration and being so positioned that it is adapted to vibrate into and out of a shielding position in which is interrupts radiation from said aperture, means to generate a periodically varying electric signal at said resonant frequency, means responsive to said signal to flex said shield whereby said shield is caused to vibrate at a resonant frequency, and means responsive to electric output of said detector means to denote the presence of activating radiation impinging on said detector means.

3,925,669

STRIPLINE RADIATION DETECTION APPARATUS

Peter Glasow, Bubenreuth, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed July 18, 1973, Ser. No. 380,470
Claims priority, application Germany, Aug. 14, 1972, 2239953
Int. Cl. G01t 1/24
U.S. Cl. 250—370 10 Claims



1. An apparatus for detecting ionizing radiation, comprising:

a planar sheet of semiconductor material; and

a plurality of stripline electrodes disposed on opposite planar surfaces of said sheet and offset from each other by a predetermined angle, said electrodes on one of said sheet surfaces being spaced apart by a distance which is at least equal to twice the thickness of the sheet of semiconductor material and said electrodes on both of said surfaces in combination, the length of said sheet and said semiconductor material being chosen so as to provide a predetermined electrical resistance which, in response to a selected voltage applied to said electrodes, creates a field zone of a depth equal approximately to the distance between oppositely disposed electrodes at their planar crosswise points of intersection.

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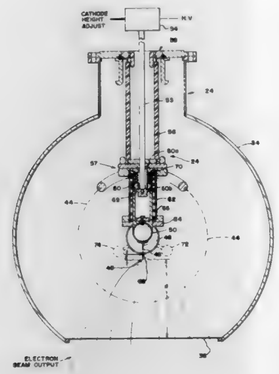
ELECTRON BEAM IRRADIATION OF MATERIALS USING RAPIDLY PULSED COLD CATHODES

Sherman R. Farrell, Orinda, and Gary K. Loda, Danville, both of Calif., assignors to Systems, Science and Software, La Jolla, Calif.

Filed Jan. 16, 1974, Ser. No. 433,866
Int. Cl.² H01J 37/00
U.S. Cl. 250—400 11 Claims

10. In an electron irradiation processing apparatus, means forming a vacuum chamber, means forming an electron discharge device disposed in said chamber, a high voltage power supply including means for pulsing said electron discharge device at a rate greater than about 1 pulse per second, a cold cathode capable of plasma emission of electrons disposed within said electron discharge device, means forming a high voltage bushing connecting said power supply to said cathode, said cathode including means forming a cathode housing having a generally elongate cylindrical configuration said housing having an elongate slit therein, means forming an elongate electron emissive edge projecting through said slit and directed toward a predetermined location, and means for adjusting the position of said edge relative to said housing;

means forming an anode along the area at said location, means connecting said anode to said power supply, whereby electrons are caused to be emitted from said cathode as extended



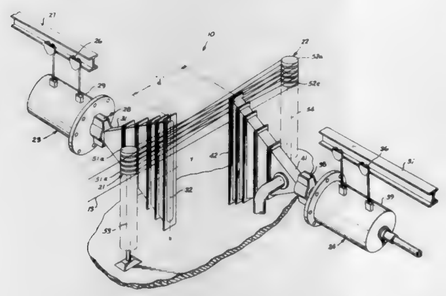
streams along the length of said cathode and splayed over the area of said anode without scanning, and means for passing a material to be treated through said predetermined location.

3,925,671

IRRADIATING STRAND MATERIAL

James Raymond Austin, Williamsville, N.Y.; Martin John Brown, Lambertville, and Leonard Donald Loan, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated and Western Electric Company, Inc., both of New York, N.Y.

Continuation of Ser. No. 304,458, Nov. 7, 1972, abandoned. This application Sept. 19, 1974, Ser. No. 507,500
Int. Cl.² A61N 5/00; A61K 27/02; C08F 2/46
U.S. Cl. 250—400 8 Claims



1. A method of irradiation cross-linking the insulation of a plurality of conductors, which includes the steps of:

directing a first electron radiation beam toward and into engagement with a plurality of conductors each of which is strung up in a path between spaced conductor engagement surfaces which includes a plurality of repetitive superimposed spaced apart layers, each of the layers having a figure eight configuration, the beam being directed through a window toward a corresponding portion of one loop of each of the layers; while

directing a second electron radiation beam through a window toward the path and into engagement with a corresponding portion of the other loop of each of the layers without overlapping the first beam in the vicinity of the layers, the windows being spaced from the conductors a distance substantially greater than the external diameter of the insulated conductor, the beams being oriented with respect to the superimposed adjacent layers such that each layer is exposed to substantially the same radiation dose; and

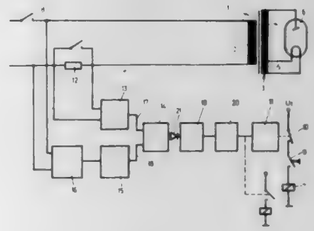
advancing the conductors along each of the layers to expose sequentially different rotational orientations of the insulation to the first and to the second electron beams thereby causing perturbation of the angle of incidence of the beams on the conductors to uniformly dose the insulation thereof substantially by exposure to direct radiation from the first and second electron radiation beams.

3,925,672

X-RAY DIAGNOSIS APPARATUS WITH A DIRECTLY HEATED X-RAY TUBE

Eickhardt Soder, Uttenreuth, and Ulrich Grassme, Nurnberg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation-in-part of Ser. No. 313,094, Dec. 6, 1972, abandoned. This application May 10, 1974, Ser. No. 468,640
Int. Cl.² H05G 1/10
U.S. Cl. 250—402 5 Claims



1. An X-ray diagnosis apparatus, comprising an X-ray tube of the directly heated type having a filament, a high-voltage transformer connected to a line and having a first secondary winding, connected to the anode and the cathode of the X-ray tube and a second secondary winding connected to said filament, a time switch, and a blocking circuit connected with said time switch and said transformer for releasing said time switch when the anode current of said X-ray tube has reached a predetermined value after the X-ray tube is switched on, said blocking circuit having means for detecting the change in phase displacement between the primary current of said transformer and the line voltage during a rise in the current of the X-ray tube.

3,925,673

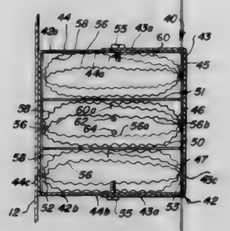
APPARATUS FOR GENERATING HEAVY OXYGEN MOLECULES

Joseph E. Wright, Jr., 1119 E. Prairie Ave., Wheaton, Ill. 60187

Continuation of Ser. No. 340,296, March 12, 1973, abandoned. This application July 11, 1974, Ser. No. 487,644
Int. Cl.² H01J 37/00
U.S. Cl. 250—432 11 Claims

1. Air purification apparatus comprising: a plurality of electrode elements each comprised of a flattened tubular spiral of metal wire mesh wound so as to define effectively an inner tube coaxially within an outer tube and so that the inner tube is of substantially the same width as said outer tube; means for retaining said electrode elements in a side-by-side array with the tubes thereof generally aligned and parallel;

dielectric means for effecting an insulating separation between adjacent electrode elements of said array; and means



for establishing an electric discharge between adjacent ones of said elements.

3,925,674

X-RAY IMAGE INTENSIFIER PHOSPHOR

Arthur P. D'Silva, and Velmer A. Fassel, both of Ames, Iowa, assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 30, 1973, Ser. No. 327,899

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.[2] G01D *15/14*

U.S. Cl. 250—483 **1 Claim**

1. An X-ray intensifier screen including a base transparent to X-ray but opaque to ultraviolet-visible light; an X-ray excitable phosphor disposed upon said base, said X-ray excitable phosphor emitting ultraviolet-visible light, said phosphor having the formula $Y_{1-x}Gd_xPO_4:Tb^{+3}$ where $x = 0.3$ to 0.1 and the terbium concentration is between about 0.008 and 0.012 mole per mole of phosphate, and a binder for retaining said X-ray excitable phosphor upon said base.

3,925,675

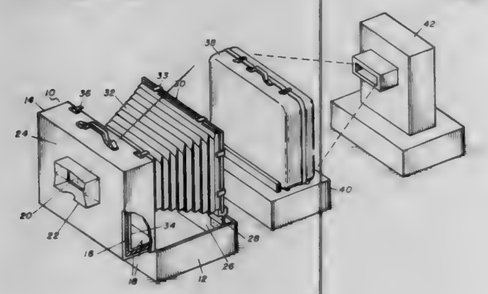
PORTABLE FLUOROSCOPE

Imants Gulbis, Reston, Va., and Rodney W. Jordan, Newton, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 6, 1974, Ser. No. 504,000

Int. Cl.[2] G01N *21/52*

U.S. Cl. 250—485 **1 Claim**



1. A portable fluoroscope for inspecting the contents of closed packages which comprises:

housing means for carrying said fluoroscope to an inspection site, having a radiation shielding top cover section hingedly attached to a radiation shielding bottom section wherein said housing means includes a suitcase;

sensing means, hingedly positioned on said bottom cover section, for producing an image of the contents of said packages, wherein said sensing means includes a fluorescent screen;

a lead-glass eyepiece centrally positioned in said top cover section for viewing said sensing means; and

means for excluding light from said sensing means to enable an observer peering through said eyepiece to clearly discern the contents of said closed packages, as imaged on said sensing means, wherein said means for excluding light includes a bellows removably attached to said fluorescent screen and to said top cover section.

3,925,676

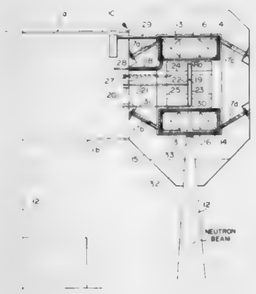
SUPERCONDUCTING CYCLOTRON NEUTRON SOURCE FOR THERAPY

Clifford B. Bigham, and Harvey R. Schneider, both of Deep River, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed July 31, 1974, Ser. No. 493,415

Int. Cl.[2] G21G *4/02*

U.S. Cl. 250—499 **6 Claims**



1. A neutron source for medical therapy purposes comprising:

a. a cyclotron comprising an iron metal housing acting as a magnetic yoke, magnetic shield, radiation shield, and vacuum vessel, a pair of superconducting coils mounted in a cavity in the housing said coils being cooled to superconducting temperatures by passage of a refrigerant fluid therethrough and connected to an electrical energy source such that a high current flows in the coils producing an intense magnetic field inwardly between the coils, an ion orbiting region defined by pairs of sectoral-shaped RF electrode structures energized at an Rf frequency and focussing flutter poles mounted in the intense magnetic field between coils, a source of ions positioned centrally of the ion orbiting region to provide a stream of ions that will be orbited in the orbit region;

b. an ion target positioned internally of said iron housing at an outer position in the orbit region such that orbiting ions strike the target and produce neutrons;

c. a channel formed in the iron housing from the target to the exterior for passage of the beam of neutrons formed at the target, said channel acting as a beam collimator; and

d. a mounting structure for movably mounting the cyclotron and target such that the neutron beam produced can be employed at more than one position.

3,925,677

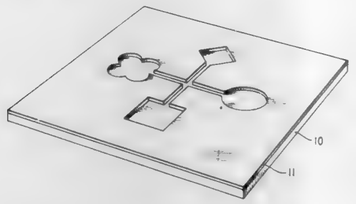
PLATINUM OXIDE LITHOGRAPHIC MASKS

David Bruce Fraser, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 15, 1974, Ser. No. 460,756

Int. Cl.[2] G21F *5/04*

U.S. Cl. 250—505 **4 Claims**



3. A lithographic mask comprising a rigid transparent substrate, and a selectively applied pattern of thin platinum oxide formed on the substrate, the pattern having microscopic features suitable for microcircuit lithography.

3,925,678

ABSORPTION LAYER FOR USE DURING X-RAY FLUORESCENCE ANALYSIS WHICH PREVENTS HARD X-RAYS

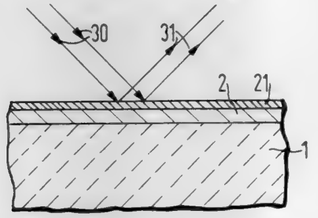
Otto Eberspaecher, and Herman Pfisterer, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed July 12, 1974, Ser. No. 488,076

Claims priority, application Germany, July 18, 1973, 2336652

Int. Cl.[2] H01J *35/16*

U.S. Cl. 250—508 **6 Claims**



1. A layered structure for x-ray absorption formed on and covering a base member comprising a first layer of high-purity aluminum formed on said base member, and a second layer of high-purity anodic oxidized aluminum formed on said first layer.

3,925,679

MODULAR OPERATING CENTERS AND METHODS OF BUILDING SAME FOR USE IN ELECTRIC POWER GENERATING PLANTS AND OTHER INDUSTRIAL AND COMMERCIAL PLANTS, PROCESSES AND SYSTEMS

Paul A. Berman, Plymouth Meeting; Theodore C. Giras, Pittsburgh, and Roy E. Crews, Allison Park, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 21, 1973, Ser. No. 399,582

Int. Cl.[2] B65D *85/00*

U.S. Cl. 290—1 **36 Claims**

1. A method of building an operating center for a plant designed to produce goods or services, the steps of said method comprising:

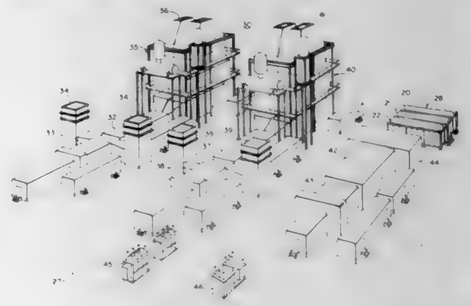
loading each of a plurality of transportable room-size building modules with predetermined electrical control system equipment units at a factory site, such building modules constituting structural parts of a unitary operating center building and such control system equipment units constituting parts of a system for use in monitoring and/or controlling the operation of the production plant;

establishing at the factory site predetermined intramodule connections among the control equipment units within each building module;

establishing at the factory site predetermined intermodule connections among the control system equipment units in different ones of the building modules;

establishing at the factory site predetermined connections to the control system equipment units for ultimate attachment from one or more of the modules to the production plant at predetermined plant points;

employing a plurality of conductors to establish the intramodule connections;



employing a plurality of cables having a plurality of conductors to establish the intermodule and plant connections through cable connection points;

testing the control system equipment at the factory site, such testing including the combined testing of the control system equipment interconnected by the intermodule cable connections;

preparing the loaded building modules for transportation to the plant installation site including disconnecting the intermodule and any test connections at the cable connection points;

transporting the modules to the plant site;

and installing the modules and establishing the cable connections from the modules to the plant points and reestablishing the intermodules cable connection.

3,925,680

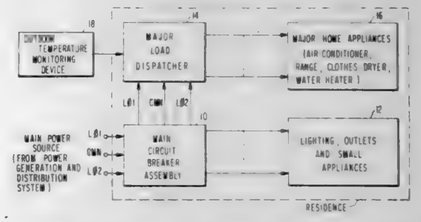
METHOD AND SYSTEM FOR REGULATING PEAK RESIDENTIAL POWER DEMAND

William A. Dixon, 132 Stewart St., St. Simons Island, Ga. 31522

Filed Apr. 4, 1975, Ser. No. 565,224

Int. Cl.[2] H02J *13/00*

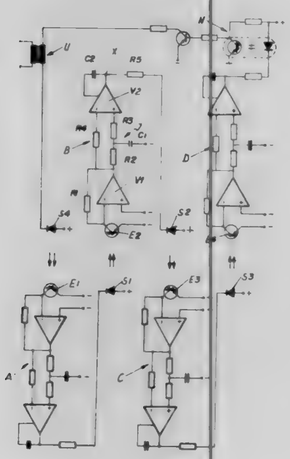
U.S. Cl. 307—39 **12 Claims**



5. Apparatus for regulating peak power demands of major residential appliances including air conditioning and food preparation devices of residential users in an electrical power distribution system connected to a residence comprising:

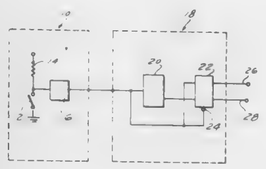
means for monitoring the temperature outside the residence related to the peak power demands; and,
means for supplying electrical power to the devices in response to the monitored temperature exceeding a predetermined value, said supplying means including:
means for detecting requirements for electrical power for at least some of the devices; and,
means for supplying electrical power to one of the devices requiring power to the exclusion of at least one of the others irrespective of a requirement for power of said at least one of the others.

3,925,681
MONITORING, COUNTING AND SAFETY APPARATUS
Hans-Dieter Grudelbach, Seestrasse 10, Plon, Germany
Filed Mar. 11, 1974, Ser. No. 450,221
Claims priority, application Germany, Mar. 13, 1973, 2312375
Int. Cl.² G01D *21/04*
U.S. Cl. 307—117 **4 Claims**



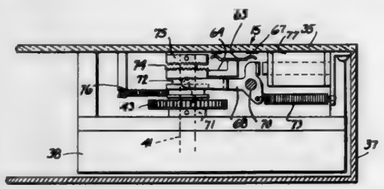
1. Detecting apparatus comprising a plurality of emitters which are capable of emitting a signal beam across a space to be subject to surveillance, a receiver connected to and adapted to control each respective emitter, each pair of connected emitters and receivers forming a separate channel, the respective channels of emitter and receiver pairs being physically located to form a complete ring circuit wherein the receiver of one channel receives a beam signal from an emitter of an adjacent channel, first circuit means in each channel adapted to stop operation of a respective emitter as long as its respective receiver is receiving a signal beam from the emitter of the adjacent channel, second circuit means in each channel to start operation of a respective emitter as long as its respective receiver fails to receive a signal beam from the emitter of the adjacent channel, and interpreting means connected in the channel ring operable in response to change of state of the circuit for interpreting by signal the state of the circuit, the number of channels of said ring circuit being selected to produce the most desirable natural frequency of oscillation of the circuit when in operation.

3,925,682
CHATTERING IMMUNE CIRCUIT
Kenji Hamada, Yokohama, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Feb. 25, 1974, Ser. No. 445,355
Claims priority, application Japan, Mar. 26, 1973, 48-34292
Int. Cl.² H03B *1/00, 1/04*
U.S. Cl. 307—134 **10 Claims**



1. A chattering immune circuit for use with means for generating a control signal having chattering components present therein for a pre-determined period subsequent to the initiation thereof, said circuit comprising a monostable multivibrator, said monostable multivibrator being operably connected to said control signal generator means and effective to generate an intermediate signal upon the detection of the rising edge portion of said chattering components and for a given time thereafter, said given time being at least as long as said pre-determined time, and means operatively connected to said monostable multivibrator for generating an output signal comprising means for causing said output signal to commence at a time determined by the termination of said intermediate signal and means for causing said output signal to terminate simultaneously with the termination of said control signal.

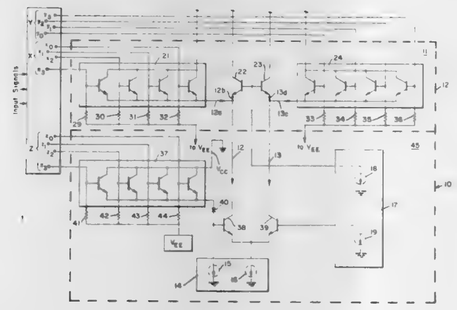
3,925,683
AUTOMATIC MULTIPLE STATION TIMING SYSTEM
Gustav A. Link, Los Angeles, and Robert E. Boyden, Temple City, both of Calif., assignors to Gustav A. Link, Los Angeles, Calif.
Filed Dec. 13, 1973, Ser. No. 424,196
Int. Cl.² H01H *7/00, 43/00*
U.S. Cl. 307—141 **9 Claims**



1. A multiple station timing system comprising
a station device movable to different stations,
a first motor for moving said station device,
a continuous operable clock motor,
start means controlled by said clock motor for energizing said first motor at a selected time,
means responsive to said station device upon reaching one of said stations for deenergizing said first motor,
a control device movable through a predetermined path by said clock motor,
time duration control means for determining the duration of time said station device is at different ones of said stations,
said duration control means including elements spaced along the path of said control device,

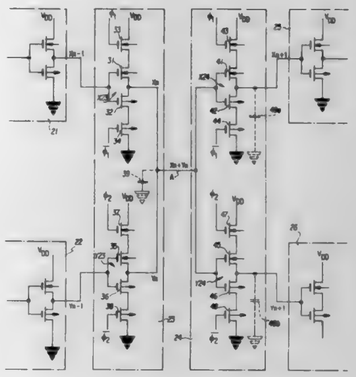
means for conditioning selected ones of said elements,
means responsive to engagement of said control device with a conditioned one of said elements for reenergizing said first motor,
means normally maintaining said control device in a home position spaced from said elements, and
means responsive to movement of said station device to one of said stations for causing said clock motor to drive said control device from said home position through said path.

3,925,684
UNIVERSAL LOGIC GATE
James R. Gaskill, Jr., Pacific Palisades, and Don C. Devendorf, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Mar. 11, 1974, Ser. No. 450,114
Int. Cl.² H03K *19/08*
U.S. Cl. 307—203 **10 Claims**



1. A universal logic gate for synthesizing logic functions having a plurality of cascode circuits and a plurality of load circuits having input and output terminals, each of said cascode circuits comprising:
an upper current switch section having first, second, third and fourth current paths; a lower current switch section having first and second main current paths, said first and second current paths of said upper current switch section being coupled to said first main current path, said third and fourth current switch paths of said upper current section being coupled to said second main current switch path;
a current switch source being coupled to said first and second main current paths;
first switching means having a plurality of input terminals for controlling the flow of said switch current in said first and second main current paths;
second switching means having a plurality of input terminals for controlling the flow of switch current in said first and second current paths of said upper current switch sections;
third switching means having a plurality of input terminals for controlling the flow of current in said third and fourth current switch paths of said upper current switch section; selected ones of said upper current switch paths being coupled to said input terminals of selected ones of said plurality of load circuits; and
selected output terminals of selected other ones of said plurality of load cells being coupled together.

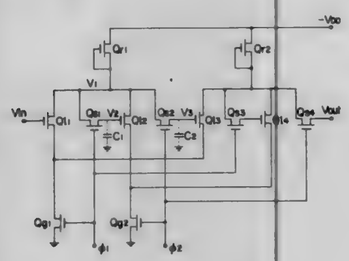
3,925,685
TIME SHARING INFORMATION CIRCUIT
Yasoji Suzuki, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Tokyo, Japan
Filed Apr. 30, 1973, Ser. No. 355,876
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² H03K *17/00*
U.S. Cl. 307—205 **11 Claims**



1. A time sharing information transmission circuit comprising,
a time sharing circuit having two inputs and an output,
a restoring circuit having one input and two outputs,
a transmission line connected between the output of said time sharing circuit and the input of said restoring circuit, said time sharing circuit comprising,
a first insulated gate field effect transistor,
a second insulated gate field effect transistor,
a third insulated gate field effect transistor,
a fourth insulated gate field effect transistor,
a fifth insulated gate field effect transistor,
a sixth insulated gate field effect transistor,
a seventh insulated gate field transistor,
an eighth insulated gate field effect transistor,
means connecting a first clock signal to said first transistor,
means connecting a first voltage source to said first transistor,
means connecting said first transistor to said second transistor,
means connecting said second transistor to said third transistor,
means connecting a first information signal to said second and third transistors,
means connecting said third transistor to said fourth transistor,
means connecting a second clock signal to said fourth transistor,
means connecting said fourth transistor to a fifth voltage source,
means connecting a third clock signal to said fifth transistor,
means connecting a second voltage source to said fifth transistor,
means connecting said fifth transistor to said sixth transistor,
means connecting said sixth transistor to said seventh transistor,
means connecting a second information signal to said sixth and seventh transistors,
means connecting said seventh transistor to said eighth transistors,
means connecting a fourth clock signal to said eighth transistor,

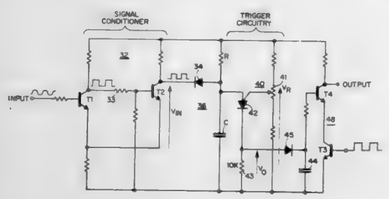
means connecting connecting said eighth transistor to a sixth voltage source,
means connecting said second and third transistors to said input of said transmission line,
means connecting said sixth and seventh transistors to said input of said transmission line,
said restoring circuit comprising,
a ninth insulated gate field effect transistor,
a tenth insulated gate field effect transistor,
an eleventh insulated gate field effect transistor,
a twelfth insulted gate field effect transistor,
a thirteenth insulated gate field effect transistor,
a fourteenth insulated gate field effect transistor,
a fifteenth insulated gate field effect transistor,
a sixteenth insulated gate field effect transistor,
means connecting said first clock signal to said ninth transistor,
means connecting a third voltage source to said ninth transistor,
means connecting said ninth transistor to said tenth transistor,
means connecting said tenth transistor and said eleventh transistor to a first output of said restoring circuit,
means connecting the output of said transmission line to said tenth and eleventh transistors,
means connecting said eleventh transistor to said twelfth transistor,
means connecting said second clock signal to said twelfth transistor,
means connecting said twelfth transistor to a seventh voltage source,
means connecting said third clock signal to said thirteenth transistor,
means connecting a fourth voltage source to said thirteenth transistor,
means connecting said thirteenth transistor to said fourteenth transistor,
means connecting said fourteenth transistor and said fifteenth transistor to a second output of said restoring circuit,
means connecting the output of said transmission line to said fourteenth and fifteenth transistors,
means connecting said fifteenth transistor to said sixteenth transistor,
means connecting said fourth clock signal to said sixteenth transistor,
means connecting said sixteenth transistor to an eighth voltage source.

3,925,686
LOGIC CIRCUIT HAVING COMMON LOAD ELEMENT
Kosei Nomiya, Tokyo, Japan, assignor to Hitachi, Ltd., Japan
Filed Nov. 6, 1973, Ser. No. 413,322
Claims priority, application Japan, Nov. 6, 1972, 47-110319
Int. Cl.² H03K *19/08, 19/34, 19/22;* **G11C** *19/28*
U.S. Cl. 307—205 **2 Claims**



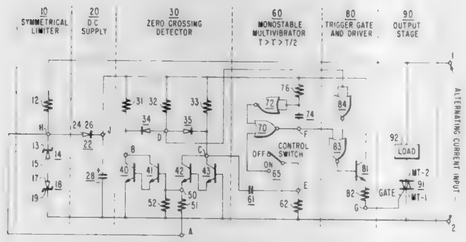
1. A logic circuit having first and second clock controlled logic stages, each logic stage comprising:
a depletion type load MISFET having a drain electrode connected to a first terminal, a source electrode connected to a second terminal and a gate electrode connected to said second terminal;
a first logic block connected between said second terminal and a third terminal, said first logic block comprising at least one first MISFET having a gate electrode, a drain electrode electrically connected to said second terminal and a source electrode electrically connected to said third terminal;
a second logic block connected between said second terminal and a fourth terminal, said second logic block comprising at least one second MISFET having a gate electrode, a drain electrode electrically connected to said second terminal and a source electrode electrically connected to said fourth terminal;
said depletion load MISFET acting as a common load for the transistors in said first and second logic blocks;
a third MISFET having a gate electrode, a drain electrode connected to said third terminal and a source electrode connected to a ground terminal;
a fourth MISFET having a gate electrode, a drain electrode connected to said fourth terminal and a source electrode connected to the ground terminal;
a fifth MISFET having a gate electrode and two output electrodes, one of said output electrodes being connected to said second terminal and the other output electrode being connected to the gate electrode of said at least one second MISFET in said second logic block;
a sixth MISFET having a gate electrode and two output electrodes, one of the output electrodes being connected to the second terminal;
means for applying an electrical potential to said first terminal;
means for applying a first clock pulse signal simultaneously to the gate electrodes of said third MISFET and said fifth MISFET;
means for applying a second clock pulse signal simultaneously to the gate electrodes of said fourth MISFET and said sixth MISFET, said second clock pulse signal being different from said first clock pulse signal in phase; and
means for applying an input signal to the gate electrode of said first MISFET, wherein said third and fourth MISFETs, respectively, of said first logic stage are the third and fourth MISFETs of said second logic stage.

3,925,687
GATED FILTER CIRCUIT
Elias E. Solomon, Duxbury, Mass., assignor to Gulf & Western Manufacturing Company (Systems), New York, N.Y.
Filed July 19, 1973, Ser. No. 380,583
Int. Cl.² H03D *13/00;* **H03K** *5/20;* **H03D** *3/00*
U.S. Cl. 307—233 R **11 Claims**



1. A filter circuit comprising:
means for receiving an alternating signal,
a free-running oscillator circuit including a capacitance means and means defining a reference level to which the capacitance means is chargeable,
means coupled from said receiving means to said capacitance means for controlling operation of said oscillator to clamp said capacitance means and inhibit charging thereof during a portion of the period of the alternating signal and to unclamp said capacitance means and enable charging thereof during the remainder of the period of the alternating signal,
and means coupled from said free-running oscillator for providing an output signal when the period of the alternating signal is greater than a predetermined period corresponding to a predetermined cut-off frequency, the frequency of the output signal when occuring being proportional to the frequency of the alternating signal,
wherein said means for providing an output signal includes output circuit means and means for coupling a gating signal to said output circuit means.

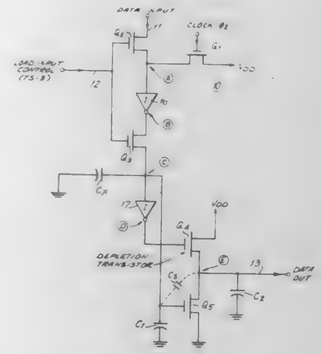
3,925,688
INTEGRAL CYCLE ZERO-VOLTAGE SWITCHING CIRCUITS
Martin Aaron Kalfus, Morganville, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Jan. 29, 1975, Ser. No. 545,158
Int. Cl.² H03K *17/72*
U.S. Cl. 307—252 B **9 Claims**



1. In a system which includes first and second terminals for receiving an alternating current signal of period T thereacross, a load connected between the first terminal and a third terminal, and the main conduction path of a gate controlled switch connected between the second and third terminals, a circuit for insuring that the switch, when closed, will be closed for an integral number of periods T, the circuit comprising, in combination:
first means responsive to said alternating current signal for producing a control signal at a first level for a period between T/2 and T beginning at an axis crossing of a given sense of said alternating current signal and at a second level for the remainder of the period;
second means responsive to the potential of a selected one of the first and third terminals for producing a trigger signal at each axis crossing thereof;
third means responsive to the control signal and to the trigger signals for applying the trigger signals to a gate electrode of the switch solely when the control signal is at the first level; and
fourth means for initiating and terminating the control signal, in each case solely when the latter is at its second level.

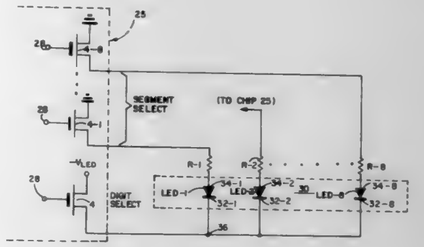
3,925,689
HIGH SPEED DATA BUFFER AND AMPLIFIER
Richard B. Rubenstein, New York, N.Y., assignor to General Instrument Corporation, Clifton, N.J.
Filed Sept. 13, 1974, Ser. No. 505,560
Int. Cl.² H03K *5/02*
U.S. Cl. 307—260 **2 Claims**

1. A high-speed data buffer and amplifier, which comprises: first (Q_2) and second Q_3) serially-connected transistors, the data signal to be amplified being connected to the source electrode of said first transistor;
a first inverter (**16**) interposed between the drain electrode of said first transistor and the source electrode of said second transistor;
means (Q_1, VDD, $\phi 2$), connected to the input of said first inverter, for supplying clock pulses of a first phase ($\phi 2$) from an external source to the input of said first inverter to pre-charge the same;
means (**12**), connected to the gate electrode of said first and second transistors, for supplying a control pulse (**CTS-3**) from an external source, said pulse being of opposite phase to said clock pulse and gating said first and second transistors into conduction;



third (Q_4) and fourth (Q_5) transistors serially connected between a supply potential and ground, the output (**13**) of said buffer being connected to the juncture of the drain electrode of said third transistor and the source electrode of said fourth transistor; and
a second inverter (**17**) connected between the drain electrode of said second transistor and the gate electrode of said third transistor, the gate electrode of said fourth transistor being connected to the input of said second inverter.

3,925,690
DIRECT DRIVE CIRCUIT FOR LIGHT EMITTING DIODES
John R. Spence, Villa Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Sept. 30, 1974, Ser. No. 510,254
Int. Cl.² H03K *1/02;* **H05B** *39/04, 39/02;* **H03K** *3/42*
U.S. Cl. 307—270 **14 Claims**



8. A driver circuit to drive a plurality of light emitting diodes, each having first and second terminals thereof, comprising
a first three electrode transistor means including a control electrode and two electrodes having a conduction path formed therebetween,

one of said first transistor means conduction path electrodes connected at a common point to the first terminal of each of said plurality of light emitting diodes,

a supply of voltage subject to variation applied to the other of said conduction path electrodes of said first transistor means,

a constant supply of voltage applied to the control electrode of said first transistor means,

a plurality of second three electrode transistor means, each of said second transistor means including a control electrode and two electrodes having a conduction path formed therebetween, each of said conduction paths to be selectively connected to the second terminal of a respective light-emitting diode so as to comprise current regulating paths to continuously control the drive current to said plurality of light-emitting diodes and simultaneously activate any of said light-emitting diodes according to a predetermined sequence of operation, each of said control electrodes connected to selectively receive said constant supply of voltage, and

a supply of reference potential applied to one electrode of each of said second transistor means.

3,925,691

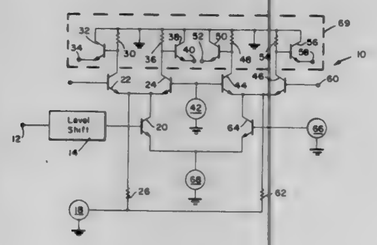
CASCODE NODE IDLE CURRENT INJECTION MEANS

James R. Gaskill, Jr., Pacific Palisades, and Don C. Devendorf, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 11, 1974, Ser. No. 450,018

Int. Cl.² A03K *17/00*

U.S. Cl. 307—300 **2 Claims**



1. In an ECL network having a lower current switching circuit and a first and second upper current switching circuit, each circuit comprising a plurality of input transistors and a reference transistor, their emitters being connected, each upper circuit having the bases of one of its input transistors connected to input signals, the bases of the other two reference transistors of said upper circuits being connected to each other and to a bias voltage source, the emitters of said first upper circuit being connected to the collector of said first transistor of said lower circuit and the emitters of said second upper circuit being connected to the collector of said second transistor of said lower circuit, the base of said first transistor being connected to a plurality of level shifted input signals and the base of said second transistor of said lower circuit being connected to a bias voltage source the emitters of the lower current switching transistors being connected together and to the collector of a current source transistor, that current source transistor having its emitter connected through a resistor to a negative voltage source and its base to a diode reference circuit, wherein the improvement comprises:

a first and second idle current source, each comprising a resistor;

said first idle current source is connected between said emitters of said first upper circuit and any appropriate negative voltage source or constant voltage point within said circuit, for supplying idle current to said emitters in order to keep said transistors of said first upper circuit partially conducting at all times to reduce said network's switching time;

said second idle current source is connected between said emitters of said second upper circuit and said negative voltage source for supplying idle current to said emitters in order to keep said transistors of said second upper circuit partially conducting at all times to reduce said network's switching time;

a switch current source comprising a transistor and a resistor, which is connected between said emitters of said lower circuit and said negative voltage source.

3,925,692

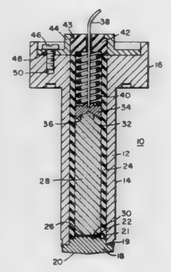
REPLACEABLE ELEMENT ULTRASONIC FLOWMETER TRANSDUCER

Walter C. Leschek, and James L. McShane, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 13, 1974, Ser. No. 479,057

Int. Cl.² H01L *41/04*

U.S. Cl. 310—8.7 **2 Claims**



1. An acoustic transducer assembly comprising:

an electrically conductive, generally tubular metal transducer housing;

an acoustically transmissive metal window sealingly disposed at one end of the transducer housing, with the exterior and interior surfaces of the metal window being lapped optically flat for optimum acoustic coupling;

a thin disk, piezoelectric transducer element having opposed surfaces lapped optically flat and one such surface in optical contact with the interior surface of the metal window;

an insulating sleeve disposed within the generally tubular metal transducer housing;

a generally cylindrical acoustic wave damping block disposed within the insulating sleeve, which damping block is electrically conductive and has one end surface lapped optically flat and in optical contact with the transducer element disk, while the other end of the damping block has a convex cone shaped terminus;

an electrical contact member disposed within the insulating sleeve and having a concave conically shaped surface which mates with the damping block convex cone shaped terminus, which contact member is retained in physical and electrical contact with the damping block by a coil spring means disposed within the insulating sleeve;

an insulating plate provided at one end of the insulating sleeve contacting the coil spring and having an electrical lead-in extending therethrough connected to the contact member, whereby electrical connection is made to the interior surface of the transducer element serially via the electrical contact member and the conductive damping block, with the metal transducer housing serving as another electrical lead to the other side of the transducer element via the metal window;

a closure member closing the tubular transducer housing and connectable thereto about the insulating plate and contacting the insulating plate to thereby compress the coil spring to compress together the contact member, the damping block, and the transducer element to the metal window.

3,925,693

MOUNTING DEVICE FOR A QUARTZ RESONATOR

Rene Meister, Neuchatel, and Alain Tyrode, Colombier, both of Switzerland, assignors to Ebauches S.A., Neuchatel and Faubourg de l'Hospital, both of, Switzerland

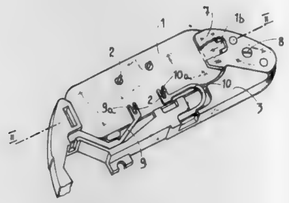
Filed Mar. 21, 1973, Ser. No. 343,240

Claims priority, application Switzerland, Mar. 21, 1972, 4142/72

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² H01L *41/08*

U.S. Cl. 310—9.1 **3 Claims**



1. Mounting device for rigidly and removably mounting a quartz resonator, the resonator including a housing with a quartz crystal therein and at least one pin for providing an electrical connection to the quartz crystal, said mounting device comprising,

support means for supporting the housing of the resonator, said support means including,

a frame including walls which define a notch on one side of the frame for surrounding a first ear of the housing,

a resilient conductor secured to said frame, said conductor including means for elastically and electrically coupling the conductor to the pin of the resonator,

said support means also including means for removably and rigidly mounting the housing of the resonator to said frame.

3,925,694

ARRANGEMENT FOR THE TRANSMISSION OF CONTROL COMMANDS FROM A STATIONARY PART TO A ROTATING PART OF AN ELECTRIC MACHINE

Martin Richter, Marloffstein, and Ingo Kröger, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 20, 1973, Ser. No. 399,349

Claims priority, application Germany, Sept. 21, 1972, 2246424

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² H02k *11/00*

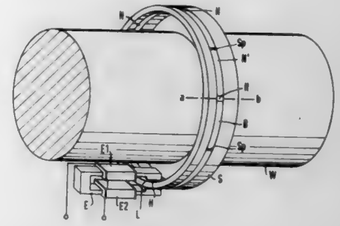
U.S. Cl. 310—68 D **11 Claims**

1. Apparatus for the contactless transmission of control commands from a stationary part to a rotating part of an electric machine, which machine is controlled through the use of rotating thyristors comprising:

a. a ring shaped anti-magnetic signal receiving member adapted to be coupled to the machine shaft and having installed, at the circumference of the ring, a plurality of Hall effect generators;

b. a stationary electromagnet having poles forming an air gap located so that said signal receiving member will rotate therein; and

c. means to provide a control signal to said electromagnet.



3,925,695

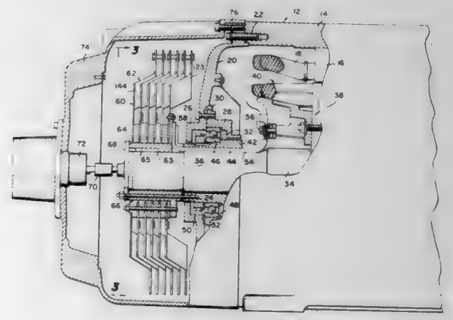
ROTOR RESISTOR AND FAN FOR AC INDUCTION MOTOR

Virgil W. Raby, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 25, 1974, Ser. No. 482,888

Int. Cl.² H02K *11/00*

U.S. Cl. 310—72 **4 Claims**



1. A rotor-resistor and cooling fan assembly for an electric motor including a stator, a rotor including a shaft, and a winding carried by said shaft and rotatable relative to said stator, said rotor resistor and cooling fan assembly comprising: a cylindrical support member mounted on and drivingly connected with said shaft, a plurality of insulator plates positioned on said cylindrical support member, a plurality of resistor-fan electrically conductive discs each positioned between said insulator plates, means fastening said insulator plates and said resistor-fan discs in an assembled relationship upon said support member with said resistor-fan discs each being electrically insulated from one another, a plurality of fan blades integrally formed on each resistor-fan disc, electrically conductive means fastened between respective pairs of said resistor-fan discs adjacent their outer peripheries providing a current path therebetween, first electric conductor means connecting a radial inward surface of one of said paired resistor-fan discs in circuit with said rotor winding, and second electric conductor means connecting a radial inward surface of the other of said paired resistor-fan discs in circuit with a ground connection providing a complete circuit from said rotor winding whereby a current path is provided from said rotor winding radially outwardly through one of said resistor-fan discs and back radially inwardly through the other of said resistor-fan discs whereby said discs act as a resistor placing a predetermined resistance in accordance with the surface area of said discs in the current path with said rotor winding while said

resistor-fan discs simultaneously pump cooling air across the motor assembly.

3,925,696

STATORLESS DYNAMO-ELECTRIC MACHINE

Encho Nikolov Popov; Nikola Ganev Diakov; Emilia Dobreva-Dimitrova; Roumen Konstantinov Apostolov, and Hristo Petkov Hristov, all of Sofia, Bulgaria, assignors to DSO "Elprom", Sofia, Bulgaria

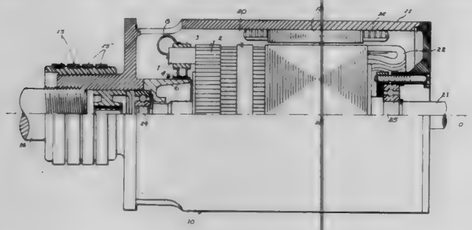
Continuation-in-part of Ser. No. 178,765, Sept. 8, 1971. This application May 16, 1973, Ser. No. 360,910

Claims priority, application Bulgaria, Sept. 8, 1970, 15625

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² H02K *13/00*

U.S. Cl. 310—242 **3 Claims**



1. In a dynamo-electric machine including a rotor armature with a commutator on a face transverse to the axis of rotation, a rotatable inductor centered on said axis, and a set of brush holders with brushes carried by said inductor for contact with said commutator, the improvement wherein said inductor is provided with carrier means for said brushes and elastically deformable mounting on said carrier means supporting each brush holder with limited axial mobility whereby the corresponding brush is centrifugally biased toward said commutator upon rotation of said inductor, said carrier means forming a base for each brush holder disposed radially inwardly thereof, said mounting means forming at least one leg extending generally radially outwardly from said base to the associated brush holder.

3,925,697

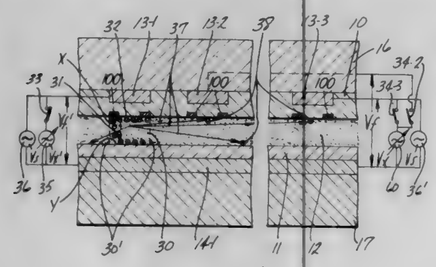
HELIUM-XENON GAS MIXTURE FOR GAS DISCHARGE DEVICE

Michael E. Fein, Toledo, and David C. Hinson, Whitehouse, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 24, 1972, Ser. No. 300,162

Int. Cl.² H01J *17/20*

U.S. Cl. 313—223 **12 Claims**



11. In a gaseous discharge display/memory device comprising an ionizable gaseous medium in a gas chamber formed by a pair of opposed dielectric material bodies having charge storage surfaces in contact with said ionizable gaseous medium, said charge storage surfaces being backed by electrode members, the electrode members behind each charge storage surface being transversely oriented with respect to the electrode members behind the opposing charge storage surface so as to provide a plurality of electrode intersections, each defining a discharge unit, the improvement consisting of the combination of phosphor means on at least one of said dielectric material members at each discharge unit and an ionizable gaseous medium capable on discharge of emitting radiation exciting said phosphor and consisting essentially of about 0.1 to 5 percent atoms of xenon and about 99.9 to 95 percent atoms of helium-based composition, said helium-based composition consisting essentially of about 95 to 100 percent atoms of helium and about 5 to 0 percent atoms of another gaseous component selected from neon, krypton, nitrogen, argon and mercury, whereby upon discharge of at least one of said discharge cells to stimulate the respective phosphor in the device there is no pronounced visible discharge emission to distort phosphor colors.

3,925,698

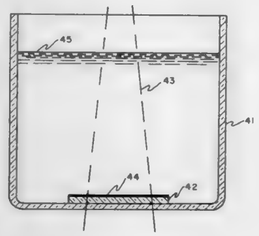
COLLOIDAL SEMICONDUCTOR AND METHOD OF MANUFACTURE

Herbert A. Stahl, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 12, 1973, Ser. No. 406,048

Int. Cl.² H01J *1/14, 19/06*

U.S. Cl. 313—346 **4 Claims**



1. A photocathode comprising:

a transparent window plate; and a base layer on said plate of photoemissively active semiconductor material consisting of individual, colloidal particles deposited by the evaporation of their suspension medium, said particles being under 100 millimicrons in size and formed of compounds from a group consisting of elements from columns III and V, or II and VI, of the periodic system of elements containing a p-type dopant.

3,925,699

PICK-UP TUBES

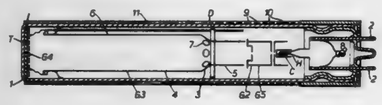
Peter Baldwin Banks, Rawreth, and Hans Scholz, Great Baddow, both of England, assignors to English Electric Valve Company Limited, London, England

Filed July 26, 1971, Ser. No. 166,119

Claims priority, application United Kingdom, July 30, 1970, 36870/70

Int. Cl.² H01J *31/38, 31/08*

U.S. Cl. 313—384 **24 Claims**



1. In a television camera tube of the type comprising an evacuated envelope having a transparent face plate, a photoconductive target at said face plate having a surface receiving an image of a scene and constituted of material exhibiting a relatively low dark current, said target having a transparent signal plate between it and the face plate, means for scanning the opposite surface of said target with an electron beam thereby generating an electrical current corresponding to light variations in said said scene, said means including an electron gun for generating an electron beam remote from said target and means for deflecting the electron beam before it reaches said target and a tubular anode electrode having one end adjacent said opposite surface of the target and extending therefrom to adjacent said electron gun, said electrode having opening means therein spaced from said one end thereof, and means for illuminating said opposite surface of said target through said opening means and that portion of the tubular anode electrode lying between said opening means and said one end of the electrode to produce an artificial dark current for reducing build up and decay lag at low light level operating conditions, the improvement wherein:

said means for illuminating comprises a light scattering surface on the inner surface of said portion of the tubular electrode lying between said target and said opening means, light source means disposed in spaced relation to said opening means and exteriorly of said electrode for illuminating said opposite surface of the target through said portion of the electrode as aforesaid, diffuser means located adjacent said opening means and extending circumferentially around said electrode for shielding said opening means from said light source means and for diffusing light emanating from said light source means prior to reaching said light scattering surface, and said opening means constituting means for admitting diffuse light from said diffuser means into the interior of said anode electrode substantially uniformly circumferentially therearound and inwardly of said light scattering surface whereby substantially uniformly to illuminate said opposite surface of the target.

3,925,700

SHADOW MASK FOR A BLACK-STRIPE COLOR PICTURE TUBE HAVING SUCCESSIVELY CURVED PERFORATIONS

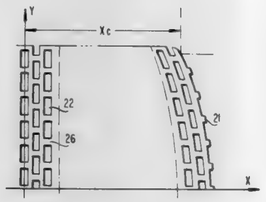
Yuji Saito, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan

Claims priority, application Japan, Dec. 10, 1973, 48-139463

Filed Dec. 10, 1974, Ser. No. 531,414

Int. Cl.² H01J *29/07*

U.S. Cl. 313—403 **6 Claims**



1. In a shadow mask for a color picture tube having a generally rectangular glass face plate of a substantially spherical curvature, and mask having a shape of a similar rectangle and an approximately equal spherical curvature to be positioned substantially parallel to an inside surface of said face plate and having a plurality of perforations formed therethrough, said perforations being elongate in a first direction parallel to a predetermined pair of sides of said similar rectangle and arranged in a regular array with respect to said direction and to a second direction perpendicular to said first direction, the improvement wherein said perforations are arranged, when said mask is extended to coincide with a plane, parallel to said first direction in an area adjacent to a center line bisecting the remaining pair of said sides and, in remaining areas of said mask, along a plurality of curves whose curvatures grow successively larger with an increase in the distance from said center line.

3,925,701

ELECTRON BEAM COLLECTOR ELECTRODE FOR AN ELECTRON BEAM TUBE

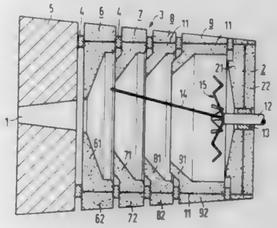
Roland Wolfram, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 4, 1974, Ser. No. 520,469

Claims priority, application Germany, Nov. 8, 1973, 2355902

Int. Cl.² H01J *23/02*

U.S. Cl. 315—5.38 **18 Claims**



1. In an electron beam collector for a transit-time tube to receive an electron beam incident on said electron beam collector having a hollow body closed off in a direction of the incident electron beam by a base member to form a cavity, and a grid located in said cavity in front of said base member and electrically insulated in relation thereto, extending transversely to the direction of the incident electron beam, the improvement of

a star grid having a center and a plurality of radially extending members of definite width emanating from said center and terminating in a cavital space, wherein said center is located approximately on the axis of the incident electron beam at entry into said collector.

3,925,702

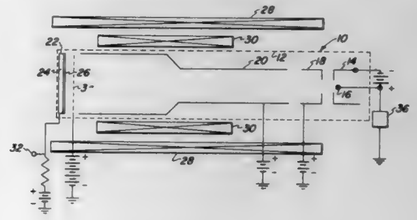
METHOD AND APPARATUS FOR IMPROVING THE READOUT CHARACTERISTICS OF ELECTRONIC STORAGE TUBES

Steven R. Hofstein, North Brunswick, N.J., assignor to Princeton Electronic Products, Inc., North Brunswick, N.J.

Filed Mar. 8, 1974, Ser. No. 449,397

Int. Cl.² H01J *29/41*

U.S. Cl. 315—12 **64 Claims**



1. The method of improving the readout characteristics of an electronic storage tube system having a charge storage member, a source of a reading electron beam and output signal reading means, which method comprises:

applying a periodic varying voltage between the source of the reading electron beam and the charge storage member to thereby vary the energy level of the electrons in the

reading electron beam relative to the potential pattern on the charge storage member;

the frequency of said periodic varying voltage being higher than the highest frequency of the signal to be read by the output signal reading means;

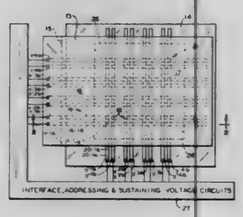
whereby the usable voltage range of the potential pattern on the charge storage member is increased.

3,925,703

SPATIAL DISCHARGE TRANSFER GASEOUS DISCHARGE DISPLAY/MEMORY PANEL

Jerry D. Schermerhorn, Swanton, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 22, 1973, Ser. No. 372,730
Int. Cl.² H05B *37/00*
U.S. Cl. 315—169 TV **20 Claims**



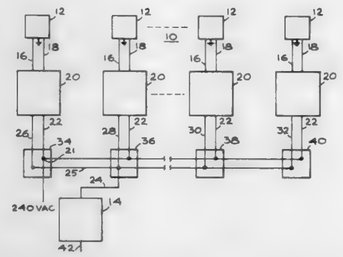
1. A gas discharge display/memory device comprising a first and a second conductor having proximate portions, said first and said second conductors being spaced and non-intersecting; a third conductor having an effective electrode region proximate each of the proximate portions of said first and second conductors; a volume of ionizable gas between said first and second conductor proximate portions and said the third conductor effective electrode region; a dielectric layer between said gas volume and at least one of said conductors; an enclosure for said gas volume; said proximate portions of each of said first and second conductors each cooperating with the effective electrode region of said third conductor and the volume of gas therebetween to define respective first and second discharge sub sites; said first and second conductors being conductively isolated from each other and each so spaced from the effective electrode region of said third conductor as to be adapted to maintain an on state of discharge between either of said first and second conductors and said third conductor and to maintain an off state of discharge between both of said first and second conductors and said third conductor respectively when a periodically alternating sustaining voltage is imposed between said third conductor and both of said first and second conductors; and said first and second conductors being so spaced from each other in their portions proximate the effective electrode region of said third conductor as to be adapted to initiate an on state of discharge in a discharge sub site including one of said first and second conductors which is in an off state of discharge in response to an on state of discharge in the discharge sub site of the other of said first and second conductors.

3,925,704

LIGHTING SYSTEM WITH VARIABLE FLASHING RATE

Donald L. Camic, Granada Hills, Calif., assignor to Hughey and Phillips, Inc., Burbank, Calif.

Filed Oct. 24, 1974, Ser. No. 517,601
Int. Cl.² G08G *5/00*
U.S. Cl. 315—200 A **17 Claims**



17. A lighting system with variable flashing rate, said system including:

at least one strobe light;

a triggerable ignition circuit coupled to said strobe light; and

a master timer coupled to said ignition circuit, said timer including;

a trigger-control-signal input terminal adapted for the application of a trigger control signal thereto;

at least one trigger-signal-output terminal;

a first source of pulses at a rate corresponding to the frequency of a master source;

a second source of pulses at $1/n$ of the rate of pulses from said first pulse source;

selector switch means having an output terminal and having a plurality of fixed contacts connected, respectively, to said first source of pulses and said second source of pulses having a switch arm movable, selectively, to each of said fixed contacts for providing, at the output terminal of said selector switch, pulses at a rate corresponding to the rate of the pulses at the fixed contact to which the switch arm is selectively moved;

a first decade counter having input and output terminals, one of said input terminals being coupled to said output terminal of said selector switch to receive pulses therefrom at a rate selected by the positioning of said switch arm with respect to said fixed contacts, said output terminals of said first decade counter having thereon, in sequence, pulses spaced in time according to the position of said switch arm in said selector switch; and

switching means coupled to said output terminals of said first decade counter and responsive to the sequential pulses therefrom to produce at said at least one trigger-signal-output terminal trigger-signals, in sequence.

3,925,705

LOW-COST POWER-REDUCING DEVICE FOR HID LAMP

Robert T. Elms, Monroeville, Pa., and Merle E. Keck, Bay Village, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

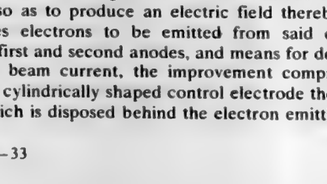
Filed May 15, 1974, Ser. No. 470,102
Int. Cl.² H05B *41/16*
U.S. Cl. 315—246 **7 Claims**

1. In combination, an add-on control device connected in circuit with an HID lamp and current-limiting inductor connected in series therewith, wherein said current-limiting inductor has an inductive reactance of predetermined value to pass a current of average nominal predetermined value to operate said lamp at a predetermined wattage input when said inductor-ballasted lamp is energized by a predetermined AC potential, said add-on control device reducing by a predetermined amount the average nominal current passed by said inductor to reduce by a predetermined amount the wattage at which said lamp will operate, said add-on control device comprising:

a. two electrical circuit paths connected in parallel and each connected to terminals which are connected in series with said series-connected lamp and said inductor;

b. one of said circuit paths comprising a series-connected resistor means and a capacitor means each having predetermined electrical values;

c. the other of said circuit paths having therein a solid-state AC control-signal-responsive switching means having a control terminal, said AC control-signal-responsive switching means is responsive to the application of a control signal to the control terminal thereof to close during each half cycle of said AC energizing potential and to remain closed for the remainder of each such half cycle to supply electrical energy to said lamp, and the point in time during each half cycle of said AC energizing potential at which said AC control-signal-responsive switching means is closed determining the average current flow through said inductor;



d. solid-state AC voltage-responsive switch means which will conduct only when the AC voltage applied thereacross exceeds a predetermined value, said AC voltage-responsive switch means connecting between the control terminal of said AC control-signal-responsive switching means and the junction of said series-connected resistor means and said capacitor means to provide, when in a conducting state, a voltage control signal to the control terminal of said AC control-signal-responsive switching means to effect a closing of same; and the respective predetermined electrical values of said resistor means and said capacitor means providing a predetermined time constant to predetermine the time during each half cycle of said AC energizing potential said AC voltage-responsive switch means conducts to effect a closing of said AC control-signal-responsive switching means and thus reduce by a predetermined amount said average nominal current passed by said inductor.

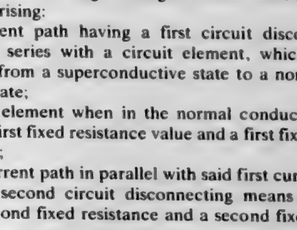
3,925,706

FIELD EMISSION ELECTRON GUN DEVICE OF THE AUTOMATIC CONTROL TYPE

Setsuo Nomura; Tsutomu Komoda, and Yasushi Nakaizumi, all of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 29, 1973, Ser. No. 410,444
Claims priority, application Japan, Feb. 23, 1973, 48-21287
Int. Cl.² H01J *29/70*
U.S. Cl. 315—383 **15 Claims**

1. In an electron gun device of the field emission type for generating an electron beam having a disposed along a beam path a cathode having an electron emitting surface, a first anode and a second anode, and further including means for applying an electric voltage between said cathode and said first anode so as to produce an electric field therebetween which causes electrons to be emitted from said cathode toward said first and second anodes, and means for detecting the electron beam current, the improvement comprising a substantially cylindrically shaped control electrode the entire length of which is disposed behind the electron emitting surface of said cathode with respect to the direction of electron emission and voltage control means responsive to said detection means for applying a variable voltage to said control electrode whereby the field emission current from said cathode is controlled in accordance with the output from said detecting means.

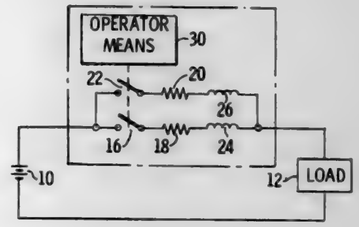


3,925,707

HIGH VOLTAGE CURRENT LIMITING CIRCUIT BREAKER UTILIZING A SUPER CONDUCTIVE RESISTANCE ELEMENT

Suresh K. Bhate, Pittsburgh; Robert J. Spreadbury, Murrysville; Michael S. Walker, Pittsburgh, and Frederick J. Young, Edgewood, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 17, 1973, Ser. No. 407,338
Int. Cl. H02h *7/22*
U.S. Cl. 317—11 A **2 Claims**



1. A direct current high voltage current limiting circuit breaker comprising:

a first current path having a first circuit disconnection means in series with a circuit element, which can be actuated from a superconductive state to a normal conductive state;

said circuit element when in the normal conductive state having a first fixed resistance value and a first fixed inductive value;

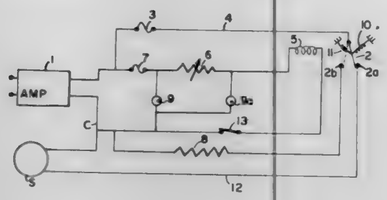
a second current path in parallel with said first current path having a second circuit disconnecting means in series with a second fixed resistance and a second fixed inductance;

an actuator means mechanically connected to said first circuit disconnecting means and said second circuit disconnecting means to open said first circuit disconnecting means and said second disconnecting means together a fixed time after being activated; and said first fixed resistance value, said second fixed resistance value, said first fixed inductance value, and said second fixed inductance value being selected so that a current minimum occurs in the circuit to be interrupted at the fixed time when said actuator opens said first circuit disconnecting means and said second circuit disconnecting means.

3,925,708
SAFETY MEANS FOR AUDIO SPEAKERS

Andrew V. Picciochi, 208 Andrews Road, Mineola, N.Y. 11501

Filed Mar. 25, 1974, Ser. No. 454,234
Int. Cl.² H02H *7/20*
U.S. Cl. 317—13 R **6 Claims**

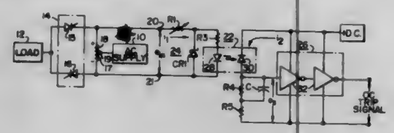


1. An overload protection circuit for an audio speaker system connected to an audio amplifier, including:
relay means having contacts normally connecting said audio amplifier to said audio speaker system and operative to effect disconnection when the output power from said audio amplifier exceeds a predetermined level; and alternate load means connected to said audio amplifier when said audio speaker system is disconnected; the improvement comprising:
impedance means serially connecting the coil of said relay means across said audio amplifier and adjustable for setting the level at which the output of said amplifier effects operation of said relay means; and
indicator means shunting the coil of said relay means and operative to produce a visual signal when the input power to the coil of said relay means is above a predetermined level; thereby indicating imminent operation of the relay means.

3,925,709
OVERCURRENT PROTECTION CIRCUIT FOR AC SYSTEMS

James T. Mitchell, and William W. Billings, both of Lima, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 13, 1973, Ser. No. 387,993
Int. Cl.² H02H *3/01*
U.S. Cl. 317—33 VR **4 Claims**

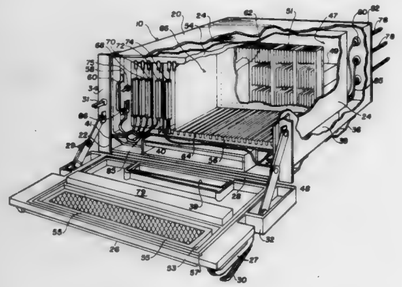


1. An overcurrent protection circuit for AC systems, comprising;
means for developing a full wave DC sensing voltage whose magnitude is proportional to the load current of the system to be protected;
an optical isolator comprising an optically responsive solid state device and an optically sensitive solid state device in optically coupled relationship, said optically responsive device having a threshold voltage for initiation of conduction that has a predetermined relationship with the sensing voltage magnitude for normal load current;
means to apply said sensing voltage to said optically responsive solid state device;
said optically responsive device conducting when said sensing voltage exceeds the threshold voltage and producing radiation to which said optically sensitive device is sensitive;
means responsive to the current through said optically sensitive device to result in an overcurrent trip signal upon occurrence of predetermined overcurrent conditions, said responsive means comprising a resistive-capacitive time delay circuit and a voltage level detector which in combination respond to magnitude of an overcurrent condition to produce a trip signal faster for larger overcurrents.

3,925,710
GENERAL PURPOSE ELECTRONIC INTERFACE EQUIPMENT PACKAGE

Robert H. Ebert, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 1, 1974, Ser. No. 484,746
Int. Cl.² H05K *7/14*
U.S. Cl. 317—100 **10 Claims**



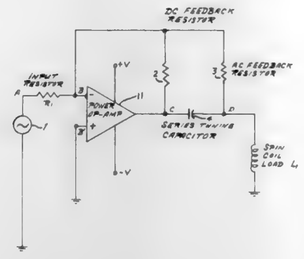
1. General purpose electronic interface equipment package for interconnecting a variety of different functions comprising:
an outer chassis having a front opening and a door therefore;
an inner chassis compactly nested within said outer chassis and removable through said front opening;
a row of parallel sockets in the inner chassis for receiving individually a plurality of basic plug-in modules, and of special readily changeable plug-in modules depending on the specific requirements of a given system;
a bus-bar plate mounted in the rear of said inner chassis perpendicular to said sockets having a plurality of connectors for electrically interfacing a selected number of said modules;
a transition plate forming an outer wall of said outer chassis and having a plurality of electrical connectors interconnecting and supporting a plurality of outside and inside cables; and
said inner cables positioned between said outer and inner chassis, and extending from the connectors on the transition plate and capable of being connected to separable connectors on the front end of the plug-in modules;
whereby the inner chassis can be readily removed through the front opening merely by disconnecting the connectors in the front of said plug-in modules.

3,925,711
SERIES TUNED SPIN COIL SUPPLY

Wesley C. Sewell, Dunedin, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 29, 1974, Ser. No. 501,725
Int. Cl.² G05F *7/00*
U.S. Cl. 317—123 **3 Claims**

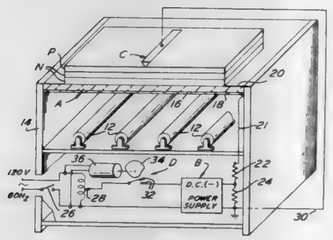
1. A series tuned spin coil supply comprising a source of a sine wave input signal of a predetermined frequency, a power operational amplifier receiving said sine wave input signal, said power operational amplifier having input and output terminals, DC feedback means for said power operational amplifier, AC feedback means for said power amplifier, a series tuning capacitor, and a spin coil load, said series tuning capacitor and said spin coil load in a series arrangement in the recited sequence connected between said output terminal and ground with the series tuning capacitor selected to resonate with said spin coil load at said predetermined frequency.



3,925,712
MULTIPLE COPY ELECTROSTATIC HOLD-DOWN APPARATUS

Harold A. Schweriner, Hatfield, Pa., assignor to The Simco Company, Inc., Lansdale, Pa.

Filed Nov. 11, 1974, Ser. No. 522,352
Int. Cl.² G03B *27/62*
U.S. Cl. 317—262 E **7 Claims**

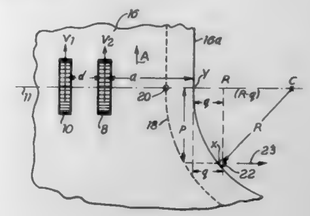


1. An electrostatic copyboard for holding a plurality of sheets in laminated disposition thereon comprising:
an insulative plate having opposed surfaces,
a unidirectional high voltage generator having a D.C. output,
applicator means adapted for traversal across the outermost face of each of said sheets as such sheet is successively abutted in laminar disposition against one surface of said insulative plate, and
automatic switching means for cyclically altering the manner of connecting said high voltage generator to said applicator means and said insulative plate so that during a first portion of the cycle said applicator means and the other surface of said insulative plate are coupled across opposite sides of the D.C. output and then during a second portion of the cycle said applicator means and the other surface of said insulative plate are coupled to the same side of the D.C. output whereby discrete areas of positive charges and negative charges are randomly distributed through the various sheets being laminated.

3,925,713
AUTOMATICALLY GUIDING WORKPIECES THROUGH A MACHINE

Richard Malcolm Richmond, Rushden, England, assignor to The Shoe & Allied Trades Research Association, Northamptonshire, England

Filed Nov. 7, 1973, Ser. No. 413,426
Claims priority, application United Kingdom, Nov. 9, 1972, 51880/72
Int. Cl. G05b *19/32*
U.S. Cl. 318—575 **30 Claims**

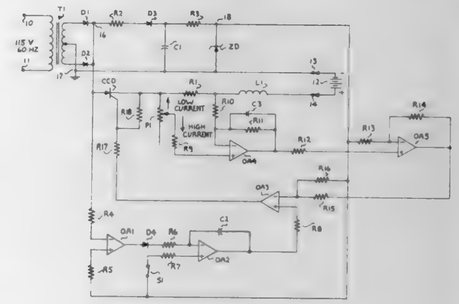


1. Apparatus for guiding a workpiece through a machine to present to a work station successive portions of the workpiece located along a curved path, comprising drive means for imparting motion to the workpiece to advance said portions of said workpiece through said work station in a substantially constant direction, means for providing a signal dependent upon the radius of curvature of said curved path to be followed by the workpiece, and control means responsive to said signal for controlling said drive means to cause the workpiece to rotate the workpiece so as to steer the workpiece substantially about the center of curvature of said curved path.

3,925,714
CONSTANT CURRENT BATTERY CHARGING CIRCUIT

Ralph R. Sherman, Jr., Forest, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Sept. 26, 1974, Ser. No. 509,359
Int. Cl.² H02J *7/04*
U.S. Cl. 320—39 **3 Claims**



1. An improved battery charging circuit comprising:
a. main input terminals adapted to be connected to a source of alternating current;
b. main output terminals adapted to be connected to a battery to be charged;
c. a rectifier circuit having input terminals connected to said main input terminals and having output terminals for producing rectified alternating current;
d. a reference voltage circuit connected to said rectifier output terminals for producing a direct current reference voltage;
e. a first operational amplifier having first input terminals connected to said rectifier output terminals, second input

terminals connected to said reference voltage circuit, and output terminals for producing reset pulses;

f. a second operational amplifier having first input terminals connected to said first operational amplifier output terminals, second input terminals connected to said reference voltage circuit, output terminals, and a capacitor connected between one of said output terminals and one of said first input terminals for producing a sawtooth voltage at said output terminals;

g. a current control device having an anode-cathode path connected in series between said rectifier output terminals and said main output terminals, and having a control electrode;

h. a current sensing resistor connected in series with said anode-cathode path of said current control device;

i. a third operational amplifier having first input terminals, second input terminals connected to said second operational amplifier output terminals, and output terminals;

j. a fourth operational amplifier having first input terminals connected to said reference voltage circuit, second input terminals connected to said current sensing resistor, and output terminals for producing an error signal indicative of the relative magnitude of the current in said resistor and a selected reference current;

k. means connecting said fourth operational amplifier output terminals to said first input terminals of said third operational amplifier for permitting said third operational amplifier to produce a control signal in response to said sawtooth voltage exceeding said error signal;

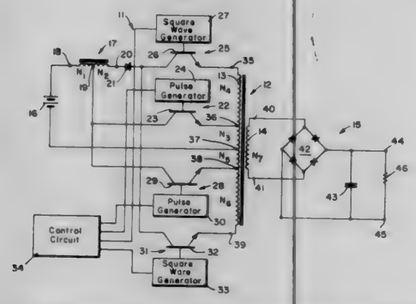
l. and means connecting said output terminals of said third operational amplifier to said control electrode for causing said current control device to conduct in response to said control signal.

3,925,715

REGULATED DC TO DC CONVERTER

H. Dean Venable, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed June 5, 1974, Ser. No. 476,640
Int. Cl.² H02M *3/335*
U.S. Cl. 321—2 **26 Claims**



1. A high efficiency, variable, pulsewidth modulated DC to DC converter, comprising:

input means;

an inductor having first and second windings, said inductor being coupled to said input means;

a transformer having a primary and a secondary, said primary having a plurality of windings provided first, second and third current paths;

first switch means coupled to said first winding of said inductor for conducting current through said inductor and said first current path during a first period of a cycle in response to a first signal;

second switch means coupled to said second winding of of said inductor for conducting current through said inductor and said second current path during a second period of a cycle in response to a second signal;

third switch means coupled to said second winding of said inductor for conducting current through said inductor and said third current path during a third period of a cycle in response to a third signal;

rectifier means coupled to said secondary;

means coupled to said first, second and third switch means for providing said first, second and third signals; and

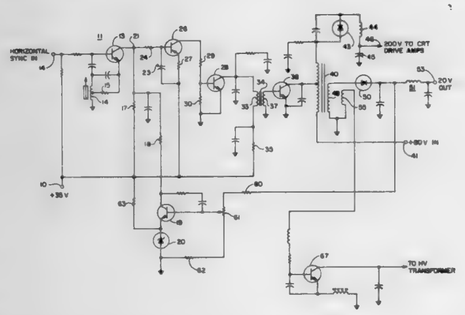
output means coupled to said rectifier means.

3,925,716

STABLE POWER SUPPLY

Donald E. Griffey, Skokie, Ill., assignor to Quasar Electronics Corporation, Franklin Park, Ill.

Filed June 27, 1974, Ser. No. 483,693
Int. Cl.² H02M *3/335*
U.S. Cl. 321—2 **15 Claims**



1. A system for producing a regulated direct current (DC) voltage including in combination:

first circuit means for producing a substantially square wave output at a predetermined frequency and varying between first and second voltage levels on alternate half-cycles thereof;

switch means coupled with the output of said first circuit means for switching between first and second states in response to said first and second voltage levels, respectively, said switch means including means for delaying switching from said second to said first state thereof for a time interval after said first circuit means output attains said first voltage levels following said second voltage levels, said time interval being proportional to the relative magnitudes of said first and second voltage levels;

half-wave rectifier means coupled with said switch means for producing a rectified output voltage, the magnitude of which is proportional to the duration of time said switch means is in one of said first and second states; and

sensing means coupled with said half-wave rectifier means for sensing said rectified output voltage and coupled with said first circuit means for varying said relative magnitudes of said first and second voltage levels.

3,925,717

INDUCTIVE BASE DRIVE FOR TRANSISTOR SWITCHING IN DC CONVERTERS

J. Rothe Kinnard, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1974, Ser. No. 511,840
Int. Cl.² H02M *3/335*
U.S. Cl. 321—2 **8 Claims**

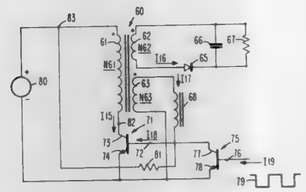
1. A circuit for converting a first DC voltage to a second voltage, comprising:

a transformer having a first winding, a second winding, and a third winding;

switching means connecting said first winding to said first DC voltage for generating said second voltage in said second winding and a third voltage in said third winding, said switching means having a control element responsive to a first current to maintain said switching means in conduction;

said third winding having a first terminal connected to a reference potential of said first DC voltage;

an inductive means connected between a second terminal of said third winding and said control element of said switching means for maintaining conduction of said switching means by supplying said first current to said control element; and



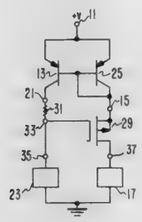
means for connecting said control elements of said switching means to said reference potential for opening said switching means, whereby energy stored in said inductive means and in said transformer is transferred to said second winding.

3,925,718

CURRENT MIRROR AND DEGENERATIVE AMPLIFIER

Harold Allen Wittlinger, Pennington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 26, 1974, Ser. No. 526,259
Int. Cl.² G05F *1/56*
U.S. Cl. 323—4 **24 Claims**



1. In combination:

a current mirror including an input terminal, an output terminal, a common terminal, and bipolar transistors, said bipolar transistors of said current mirror having distributed capacitance between base and emitter electrodes which tends to deteriorate the high-frequency performance of said transistor;

means for counteracting said tendency comprising a field effect transistor having a source electrode connected to the output terminal of said current mirror, a gate electrode coupled to the input terminal of said current mirror, and a drain electrode;

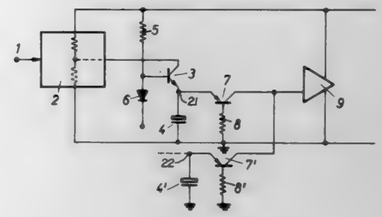
a current supply connected between the input terminal of said current mirror and a point of reference potential; and a load connected between said drain electrode and said point of reference potential.

3,925,719

CIRCUIT FOR SELECTING AN EXTREME VALUE

Anton Rodi, St. Ilgen, Germany, assignor to Teldix GmbH, Heidelberg, Germany

Continuation-in-part of Ser. No. 348,262, April 4, 1973, abandoned. This application July 19, 1974, Ser. No. 489,900
Claims priority, application Germany, Apr. 5, 1972, 2216322
Int. Cl.² B60T *8/02*; **G01R** *19/00*
U.S. Cl. 323—16 **5 Claims**



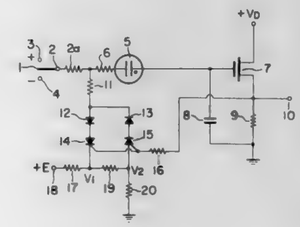
1. A circuit for selecting an extreme value from at least two potentials of identical and unchanging polarity and having amplitudes within a given range present on different input conductors comprising a plurality of transistors having an amplification factor greater in the normal direction than in the inverse direction, an output conductor, means for connecting the emitter-collector path of each said transistor between one of said input conductors and said output conductor, means for continuously applying a potential as the only control signal to the bases of said transistors for maintaining said transistors conductive while the amplitudes of the potentials present on the input conductors remain within the given range thereby enabling a current to be conducted along their emitter-collector paths so as to cause normal operation of said transistor carrying the desired extreme value and to cause inverse operation of the other said transistors.

3,925,720

DEVICE FOR VARYING OUTPUT VOLTAGE WITHIN A LIMITED RANGE

Shunji Minami, Moriguichi; Shunzo Oka, and Takehide Takemura, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 424,717, Dec. 14, 1973, abandoned. This application Dec. 18, 1974, Ser. No. 533,827
Claims priority, application Japan, Dec. 20, 1972, 47-147211[U]
Int. Cl.² G05F *1/60*
U.S. Cl. 323—22 SC **6 Claims**



1. A device for varying output voltage within a limited range comprising

a. a single-pole, double-throw, center-off switch,

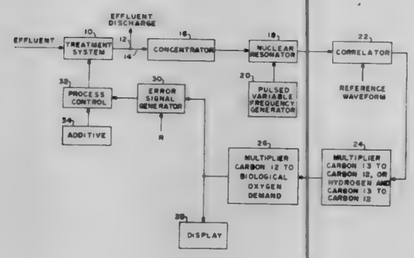
b. a neon bulb having one terminal in series connection with an armature of said switch,

c. a MOS field-effect transistor the gate of said MOS field-effect transistor being connected to one terminal of said neon bulb,
d. a non-polarized capacitor connected between the gate of said MOS field-effect transistor and ground,
e. an output resistor connected between the source of said MOS field-effect transistor and ground,
f. a first diode and resistance means, the anode of said first diode being connected to said armature of said switch through said resistance means,
g. a p-gate type silicon-controlled rectifier whose anode is connected to the cathode of said first diode,
h. a second diode whose cathode is connected to the anode of said first diode,
i. a n-gate type silicon-controlled rectifier whose cathode is connected to the anode of said second diode, and
j. a control resistor, the gates of said p-gate type and n-gate type silicon-controlled rectifiers being connected through said control resistor to the source of said MOS field-effect transistor, whereby the output voltage is derived from the source of said MOS filed-effect transistor while the control voltage for limiting the output voltage is applied to the cathode of the p-gate type silicon-controlled rectifier or to the anode of the n-gate type silicon-controlled rectifier.

3,925,721
PROCESSED SEWAGE EFFLUENT

Peter D. Petroff, 4102 Piedmont Drive SE., Huntsville, Ala. 35802

Filed Nov. 29, 1974, Ser. No. 528,451
Int. Cl.² G01R *33/08*
U.S. Cl. 324—.5 R **11 Claims**

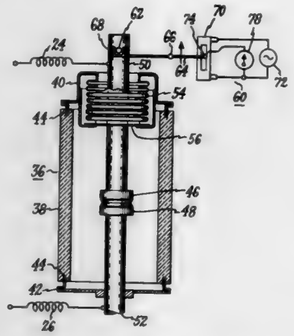


1. A system for the measurement of biological oxygen demand of an effluent comprising:
sample means adapted to be coupled to an effluent line for providing a sample of the effluent;
nuclear resonating means adapted to receive said sample and subjecting it to a magnetic field and for detecting the disturbance of that field by the sample and providing as an output an indication of the disturbance of that field;
correlation means responsive to the output of said nuclear resonating means for comparing said output to a signal representative of the disturbance of said field by a sample containing a known substance representative of a known biological oxygen demand; and
conversion means responsive to the output of said correlation means for indicating the level of biological oxygen demand in said sample.

3,925,722
WEAR INDICATOR FOR VACUUM CIRCUIT INTERRUPTER

Howard A. Fohrhaltz, Lanesborough, and Richard D. Blackburn, Dalton, both of Mass., assignors to General Electric Company

Filed May 1, 1972, Ser. No. 249,136
Int. Cl.² G01R *31/02*; **H01H** *9/16*
U.S. Cl. 324—28 R **4 Claims**

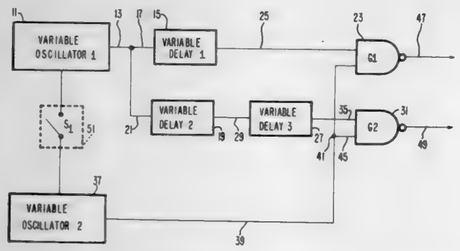


1. A wear indicator for indicating the wear between the fixed contact and the movable contact of a switch device, said wear indicator comprising a lever, one end of said lever being mechanically connected to said movable contact, the other end of said lever being connected to the slide wire of an electrical resistance, said lever being pivoted about a pivot secured to said lever between said ends, a source of voltage connected across said resistor, an electrical meter connected between said slide wire and one end of said electrical resistance, movement of said movable contact into said fixed contact because of contact wear pivoting said lever, moving said slide wire along said electrical resistance to thereby change the reading of said electrical meter to indicate the wear of said contacts.

3,925,723
SYSTEM FOR SIMULATING SWITCH CONTACT BOUNCE

Lawrence A. Millben, Detroit, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 29, 1974, Ser. No. 528,436
Int. Cl.² G01R *31/02*
U.S. Cl. 324—28 CH **10 Claims**



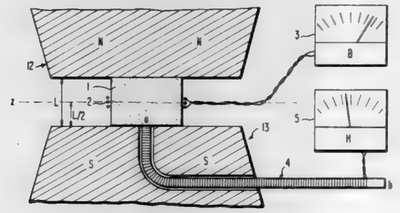
1. A system for electronically simulating the mechanisms of switch contact bounce comprising:
first variable oscillator means for determining the switch transfer rate of the system;
first delay multivibrator means responsive to said first variable oscillator means for generating the low frequency component of contact bounce attributable to a normally-closed side of a switch;

second delay multivibrator means responsive to said first variable oscillator means for determining the time of the flight of said switch;
third delay multivibrator means responsive to the output of said second delay multivibrator means for generating the low frequency component of contact bounce attributable to the normally-open side of a switch;
second variable oscillator means for generating the high frequency component of contact bounce; and
output gating means coupled to said first delay multivibrator means, said third delay multivibrator means and said second variable oscillator means for gating an electrical output signal which simulates the mechanisms of switch contact bounce.

3,925,724
APPARATUS FOR MEASURING THE HYSTERESIS CURVE OF MAGNETIC BODIES USING A MAGNETIC POTENTIAL COIL

Erich Steingroever, Bonn, Germany, assignor to Elektro-Physik, Hans Nix & Dr. Ing. E. Steingroever, KG, Cologne, Germany

Filed Nov. 9, 1973, Ser. No. 414,324
Claims priority, application Germany, June 6, 1973, 2328690
Int. Cl.² G01R *33/00*
U.S. Cl. 324—34 R **8 Claims**

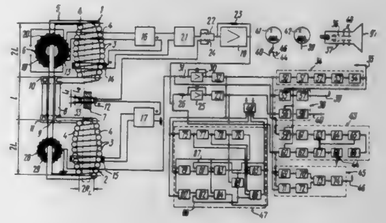


1. In apparatus for measuring the internal field intensity H of a sample body of magnetic material having opposite pole surfaces extending in parallel planes by subjecting a sample body to a magnetic field of variable intensity having lines of force passing through said sample body in directions perpendicular to said parallel planes, the improvement which comprises an elongated magnetic potential measuring coil means having a non-magnetic core and a uniform winding area density along its length, one end of said measuring coil means being disposed in contact with one of the pole surfaces of said body, while being subjected to said magnetic field; the other end of the measuring coil means being disposed in a zone having a neutral magnetic potential with respect to the opposite pole surfaces of the sample body, and a fluxmeter connected with said coil means, means for generating a magnetic field of variable intensity comprising an adjustable magnetic measuring yoke provided with a pair of opposing soft iron pole pieces for contact with the respective opposite pole surfaces of said sample body, said one end of the measuring coil means being embedded in one of said soft iron pole pieces, the other end of the measuring coil means extending exteriorly of said pole piece.

3,925,725
OSCILLOSCOPIC FERROMETER

Vitaly Moritsovich Mogilevsky, ulitsa O. Zhilinoi, 92-b, kv. 23; Nikolai Filippovich Deriga, ulitsa Ilicha, 19, kv. 48; Vadim Petrovich Ekimov, ulitsa Schetinkina, 48, kv. 33; Alexandr Petrovich Erastov, ulitsa Bogatkova, 205, kv. 15; Viktor Vladimirovich Posokhin, ulitsa A. Lezhena, 30, kv. 35, and Benya Elievich Furer, ulitsa Promyshiennaya, 1, kv. 12, all of Novosibirsk, U.S.S.R.

Filed Sept. 23, 1974, Ser. No. 508,470
Int. Cl.² G01R *33/12*
U.S. Cl. 324—34 R **19 Claims**



1. An oscilloscopic ferrometer comprising: a magnetizing means; a measuring channel for magnetization interrelated with said magnetizing means; a measuring channel for a magnetizing field interrelated with said magnetizing means; a circuit for measuring the parameters of a dynamic remagnetization loop of a sample being tested; said magnetizing means comprising: a step-down transformer; a core of said stepdown transformer; a single-turn secondary winding of said stepdown transformer; at least two identical ellipsoidal solenoids connected to said secondary winding, said solenoids being coaxially arranged relative to each other with an air gap therebetween and each having hollow turns with uniform pitch along the generatrix; a direct current lead and a return current lead establishing an aiding-series connection between said ellipsoidal solenoids, said current leads constituting an integral part of said single-turn secondary winding; said current leads comprising hollow coaxial cylindrical bodies; said return current lead extending inside and direct current lead; manifolds connected to said coaxial cylindrical bodies; cooling fluid flowing through the hollow turns of said ellipsoidal solenoids, said secondary winding and said manifolds; said measuring channel for magnetization comprising: a measuring coil located in the central zone of said air gap; a compensation coil coaxially disposed with respect to said current lead of the secondary winding; a field intensity sensor of said measuring channel for magnetizing field; a cathode-ray tube having a control electrode and deflecting plates to fix an image of the dynamic remagnetization loop of the sample being tested placed inside said ellipsoidal solenoids which create a uniform magnetic field so that the intensity of this field and magnetization of said sample are converted in said measuring channels into electric signals fed to the electrodes of said cathode-ray tube; the geometric dimensions of said ellipsoidal solenoids being selected on the basis of the following relationship therebetween and the dependence on the size of said air gap:

$$\frac{R_L}{L} = -0.1368K^3+0.0822K^2+0.7168K+0.007 \quad \left| \; K\epsilon\ 0.1+0.9 \right.$$

$$K = 1.108 \left(\frac{l}{L}\right) 0.6415$$

wherein R_L is the radius of the effective opening of said ellipsoidal solenoids;

L is equal to one-half of the length of said ellipsoidal solenoid;

l is the size of said air gap between said solenoids,

k is a coefficient of constriction of the generatrix of said solenoid,

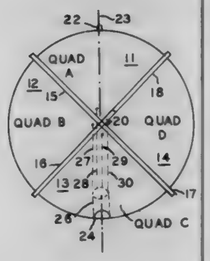
the symbol ϵ indicates that K belongs to the set of $0.1 + 0.9$.

3,925,726

ELECTRIC FIELD SENSOR

Arthur A. Few, Houston, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 8, 1974, Ser. No. 468,128
Int. Cl.² G01R *31/02*
U.S. Cl. 324—72 **7 Claims**



1. An improved balloon electric field sensor comprising:

a. a superpressure balloon having a substantially spherical surface when inflated and having a vertical axis;

b. said surface of said balloon being divided into a plurality of segments wherein each segment is electrically insulated from another;

c. electronic circuitry positioned inside said balloon surface;

d. one group of said surface segments being connected to said electronic circuitry for measuring any vertical electrical field component in the atmosphere and a second group of surface segments coupled to said electronic circuitry for measuring any horizontal electrical field component in the atmosphere; and,

e. said electronic circuitry including means for measuring said electrical field components and means for transmitting said information to a remote location.

3,925,727

OPTICAL SAMPLING OSCILLOSCOPE UTILIZING ORGAN ARRAYS OF OPTICAL FIBERS

Michel Albert Duguay, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 401,635, Sept. 28, 1973. This application Mar. 10, 1975, Ser. No. 556,636
Int. Cl.² G01R *13/20;* **G02B** *5/14*
U.S. Cl. 324—121 R **6 Claims**

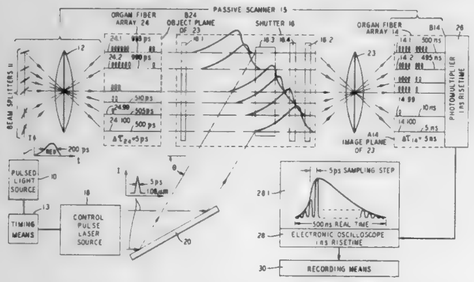
1. An optical sampling oscilloscope for displaying on an electronic display device an optical pulse of duration T less than the risetime τ_R of said device, comprising, in combination:

1. a passive optical scanner comprising

a. means for producing from said light pulse of duration T a plurality of light pulses propagating along spatially separate paths, each of said plurality being substantially identical in transverse shape to the light pulse from which it is produced,

b. a first array of optical fibers of different lengths with the difference in length between functionally adjacent fibers being uniform, each of said fibers being arranged so that one end thereof terminates in an input plane and the opposite end thereof terminates in an output plane, said difference in length producing a substantially uniform difference in time delay $\Delta\tau_1$ between functionally adjacent fibers so that $\Delta\tau_1 > T$, and

c. means for coupling each of said plurality of light pulses into separate ones of said fibers at said input plane so that said plurality of light pulses arrive at said output plane at different times and in different spatial locations, thereby to scan said output plane,



2. said difference $\Delta\tau_1$ in time delay between said functionally adjacent fibers of said first array being greater than both the risetime τ_R of said device and the duration T of said optical pulse,

3. means for delaying each of said plurality of spatially separate pulses by uniformly different amounts $\Delta\tau_2$ less than the duration T of said pulses, said delaying means being disposed betweeen said producing means and said first array,

4. an optical gate positioned between said delaying means and said first array to receive the spatially separated and sequentially delayed pulses emanating from said delaying means,

5. control means for opening said gate for a time period equal to a sample time t_s, coincident in real time but time-wise separated by $\Delta\tau_2$ in sampling time, and

6. detecting means for converting said delay pulse samples into electrical analogs thereof and for reconstructing a sampled version of said optical pulse on a time scale greater than τ_R for display on said device.

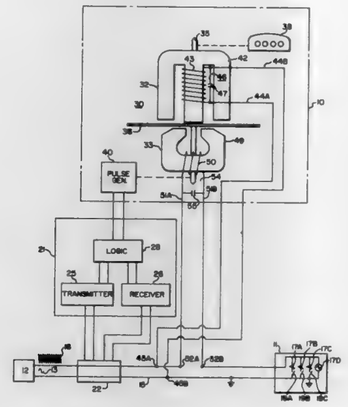
3,925,728

INDUCTION WATTHOUR METER FOR POWER SYSTEMS TRANSMITTING CARRIER COMMUNICATION SIGNALS

Ian A. Whyte, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 21, 1974, Ser. No. 444,583
Int. Cl.² G01R *7/00, 11/32*
U.S. Cl. 324—142 **7 Claims**

1. An induction watthour meter for power systems transmitting carrier communication signals, comprising: an electromagnetic assembly including a voltage magnetic section having stator core made of a ferrite magnetic material and a current magnetic section having stator core made of a ferrite magnetic material; a voltage metering coil on said stator core of said voltage magnetic section; and a current metering coil on said stator core of said current magnetic section so as to define a metering circuit including said voltage and current metering coils connectable to power line conductors of a power system for measuring the consumption of electrical energy of a customer electric load with said power line conductors transmitting high frequency carrier signals of a communication system connected to said power system; a terminating impedance network including said current metering coil and a capacitor element connected together to define a



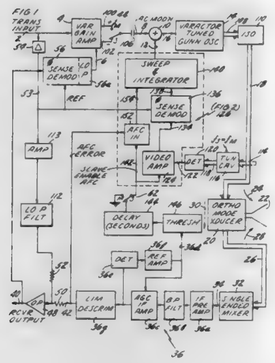
parallel resonant circuit tuned to said carrier signals such that said resonant circuit presents a predetermined value of impedance that is higher than the impedance of said customer electric load to said carrier signals when occurring in the same power line conductors supplying the electrical energy to the customer load.

3,925,729

SKIRT-TUNED SINGLE OSCILLATOR TRANSCEIVER

Salvatore Amoroso, Fairfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 29, 1974, Ser. No. 501,722
Int. Cl.² H04B *1/40*
U.S. Cl. 325—17 **8 Claims**



1. In a transceiver, adapted for use in a duplex transceiver system including a pair of such transceivers settable for operation with one in a master mode and one in a slave mode, said transceiver comprising:

a single, voltage-tunable oscillator having means for providing a frequency-controlling voltage input thereto;

an FM receiver, having the same IF frequency in the master mode as in the slave mode;

antenna means for transmitting and receiving microwave energy;

frequency stability means including resonant means responsive to the energy output of said oscillator to provide a feedback signal dependent on the closeness of the frequency of the output of said oscillator to the resonant frequency of said resonant means within a band of frequency differences, the resonant means having the same resonant frequency in the master mode as in the slave mode;

means for coupling energy from said oscillator to said antenna means for transmission thereby, for coupling a small portion of the energy of said oscillator to said frequency stability means, and for simultaneously coupling energy received at said antenna means and a small portion of the energy of said oscillator to the input of said FM receiver; and

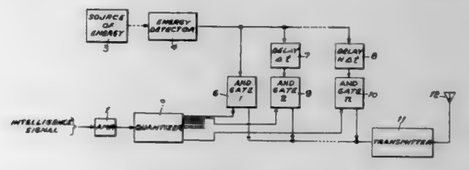
frequency control means including means providing an initial frequency sweep controlling voltage to the input of said oscillator to thereby sweep the frequency of said oscillator to a frequency within said band of frequencies, and having an input connected for response to the feedback signal output of said resonant means, for providing a frequency control voltage to the frequency-controlling voltage input means of said oscillator, and further including means settable to designate said transceiver for operation in the master mode or the slave mode, and operable when set in the slave mode to provide said frequency control voltage in response to said feedback signal to establish operation of said oscillator at a frequency separated from said center frequency by said IF frequency, and operable when set in the master mode to provide said frequency control voltage in response to said feedback signal to establish operation of said oscillator at said center frequency.

3,925,730

SECURE COMMUNICATION SYSTEM

Louis A. de Rosa, Upper Montclair, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Feb. 15, 1966, Ser. No. 527,317
Int. Cl.² H04K *1/00*
U.S. Cl. 325—32 **10 Claims**



1. A communication system comprising:

a source of intelligence signal;

first means to produce a plurality of other signals, each of said other signals differing from each other by a predetermined time delay and being related to a different magnitude of a predetermined characteristic of said intelligence signal;

second means coupled to said source and said first means responsive to said magnitude of said predetermined characteristic of said intelligence signal to select the appropriate ones of said other signals;

third means coupled to said second means to transmit said selected other signals;

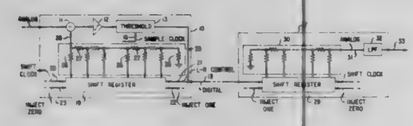
fourth means coupled to said third means to detect said selected other signals;

fifth means to produce replicas of said other signals; and

sixth means coupled to said fourth means and said fifth means to compare said detected selected other signals

and said replicas of said other signals to recover said intelligence signal.

3,925,731
DIFFERENTIAL PULSE CODED SYSTEM USING SHIFT REGISTER COMPANDING
Ralph Carter Brainard, Holmdel, and James Charles Candy, Convent Station, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Apr. 18, 1974, Ser. No. 461,878
Int. Cl.² H03K *13/22*
U.S. Cl. 325—38 B **25 Claims**



9. In a differential pulse code system, digital signal decoding means comprising

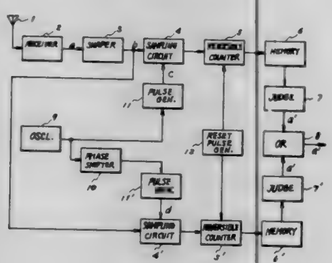
a reversible shift register having an input connection for application of shift clock signals

means, including said shift register, for accumulating information represented by a differential pulse coded signal train,

said accumulating means comprises means responsive to said pulse coded signal train for controlling shifting direction in said shift register to shift in a first direction in response to a pulse signal state in said train and to shift in a second direction in response to a no-pulse signal state in said train, said signal train including a succession of signal bit times recurring at the same rate as said clock signals, and

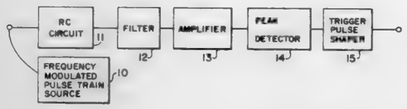
means for deriving from said shift register a discrete analog approximation signal having in each bit time an amplitude corresponding to the binary coded value of the contents of said shift register at that time.

3,925,732
SIGNAL DETECTING DEVICE
Hideki Tanaka, Takatsuki; Mikio Watanabe, Kobe; Minoru Handa, Ikoma; Mitsuhiro Inouchi, Nishinomiya; Shigeru Yoshioka, Kobe, and Kazutaka Ishida, Suita, all of Japan, assignors to Furuno Electric Company, Ltd., Japan
Filed Jan. 14, 1974, Ser. No. 432,856
Int. Cl.² H04B *1/16*
U.S. Cl. 325—325 **5 Claims**



1. A signal detecting device, comprising a receiver for receiving an incoming signal, means for sampling said incoming signal at a frequency synchronized with the frequency of said incoming signal and producing an output indicative of the amplitude of said incoming signal at each sampling position, means for algebraically accumulating the output of said sampling means, means for resetting said accumulating means at predetermined intervals during sampling, means for storing said accumulated output just prior to resetting said accumulating means, and means for generating a signal having a first level when the output level of said means for storing said accumulated output is above a predetermined level and a second level when it is below said predetermined level.

3,925,733
MAXIMUM PULSE DENSITY DETECTOR
Wayne E. Moore, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 24, 1974, Ser. No. 473,049
Int. Cl.² H03K *5/20*; **H03D** *3/26*
U.S. Cl. 328—140 **8 Claims**



1. An improved circuit for providing a trigger pulse synchronous with the maximum pulse density in a frequency modulated pulse train comprising:

means for providing a frequency modulated pulse train having periods of maximum pulse density;

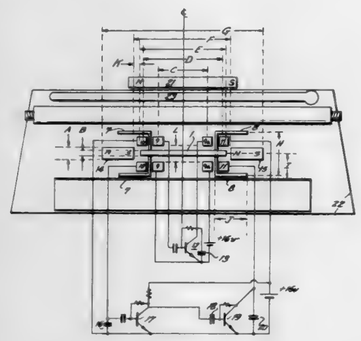
means for forming a waveform from said pulse train, said waveform having an amplitude proportional to the frequency of said pulse train;

means coupled to said forming means for defining peak amplitudes of said waveform;

means coupled to said defining means for sensing the peak amplitudes of said waveform; and

means responsive to said sensing means for providing a trigger pulse upon the sensing of a peak amplitude.

3,925,734
OSCILLATOR DEVICE FOR GENERATING SIGNALS OF A PRECISE FREQUENCY
Scudder Smith, 1100 Lake Shore Drive, Menasha, Wis. 54952
Filed Jan. 9, 1974, Ser. No. 432,058
Int. Cl.² H03B *5/36*
U.S. Cl. 331—41 **16 Claims**



1. A electromechanical oscillator device comprising: a vibratory means capable of physical vibration at two discrete substantially harmonically related detectable frequencies;

first means for activating said vibratory means to effect its vibration;

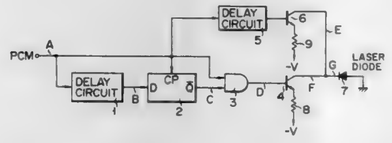
second means responsive to said vibration of said vibratory means and generating electrical signals representative of the vibratory frequencies;

third means for frequency multiplying at least one frequency of the output of the second means to which it is coupled;

fourth means coupled to said third means for frequency dividing at least one of the output signals of the third means;

fifth mixing means coupled to the third and fourth means for mixing the third and fourth means output signal frequencies to produce a beat frequency, whereby said beat frequency is more stable than the vibratory means frequencies.

3,925,735
MODULATION APPARATUS OF SEMICONDUCTOR LASER DEVICE
Takeshi Ozeki, and Takao Ito, both of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan
Filed Mar. 26, 1974, Ser. No. 455,026
Claims priority, application Japan, Mar. 27, 1973, 48-34934
Int. Cl.² H01S *3/19*, *3/10*
U.S. Cl. 332—7.51 **10 Claims**



1. Apparatus for modulating a current-modulated semiconductor laser comprising:

a laser diode means responsive to a modulation signal current flowing therethrough to emit a laser beam;

a source of modulation signal which is pulsed on and off according to an information signal;

first circuit means responsive to said modulation signal to produce a compensation pulse when a one-bit modulation pulse arrives after one or more bit time intervals in which there exist no modulation pulses;

second circuit means connected to said laser diode means to cause a compensation current pulse to flow through said laser diode in response to said compensation pulse; and

third circuit means connected to said laser diode means to cause a modulation signal current to flow through said laser diode means in response to said modulation signal.

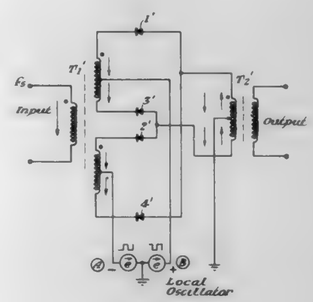
3,925,736
DIODE QUAD MODULATOR WITH VERY HIGH DYNAMIC RANGE
Dieter R. Lohrmann, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sept. 6, 1974, Ser. No. 504,003
Int. Cl.² H03C *1/58*, *1/60*
U.S. Cl. 332—43 B **2 Claims**

1. An improved diode quad modulator for mixing a modulating frequency with a carrier RF frequency to obtain an output signal frequency in which the carrier frequency is suppressed comprising:

an output transformer;

an input transformer, said input transformer having a primary input frequency signal receiving means; and a secondary winding, said secondary winding comprising a first branch and a second branch, the positive terminal of said first branch being connected to the negative terminal of said second branch through a pair of series back-to-back diodes, the center connection of said series back-to-back diodes being connected to one end of the primary winding of said output transformer; the negative terminal of said first branch being connected to the positive terminal of said second branch through another pair of similarly connected back-to-back diodes, the center connection of said other pair of series back-to-back diodes being connected to the other end of said primary winding of said output transformer;

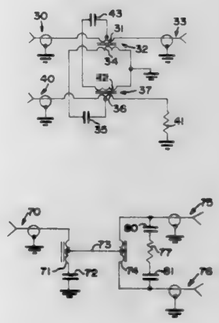
a double-ended RF oscillator, said RF oscillator having a grounded connection between the ends of said double-ended RF oscillator, one end of said double-ended RF



oscillator, being connected to a center tap on said first branch of said input transformer secondary winding, and the other end of said double-ended RF oscillator being connected to a center tap on said second branch of said input transformer secondary winding;

center tap to ground connected to the primary winding of the output transformer; and a secondary winding connected to the output transformer for producing an output signal.

3,925,737
SIGNAL COUPLING APPARATUS
Geoffrey Allen Headley, El Paso, Tex., assignor to GTE Sylvania Incorporated, Stamford, Conn.
Filed Nov. 18, 1974, Ser. No. 524,615
Int. Cl.² H03H *7/48*
U.S. Cl. 333—6 **3 Claims**



1. A directional coupler for coupling a portion of a radio frequency signal from a primary transmission path to a secondary transmission path wherein low frequency power is coupled on said primary transmission path comprising:

a first transformer having a primary winding connected in series with said primary transmission path and a secondary winding connected in shunt with said secondary transmission path;

a second transformer having a primary winding connected in shunt with said primary transmission path and a sec-

ondary winding connected in series with said secondary transmission path;

a first capacitor connected in series with said primary winding of said second transformer for blocking low frequency power therefrom; and

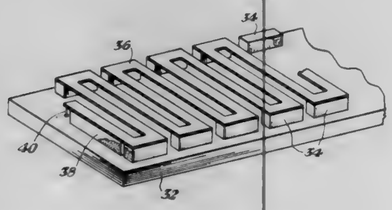
a second capacitor connected in series with said secondary winding of said first transformer for blocking low frequency power induced therein.

3,925,738

RAIL OR PEDESTAL MOUNTED MEANDER LINE CIRCUIT FOR CROSSED-FIELD AMPLIFIERS

Calvin D. Bates, Neptune, and Joseph H. Hartley, Jackson, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 8, 1974, Ser. No. 522,159
Int. Cl.² H01P *3/08, 9/00;* **H01J** *23/24*
U.S. Cl. 333—31 R **5 Claims**



1. A meander slow wave structure comprising:

a conductive ground plane;

a meander line conductor means for propogating a wave in a predetermined direction, said conductor means including a continuous conductive material having first and second sets of longitudinal conductors and a set of transverse conductors;

said first and second sets of longitudinal conductors each having a plurality of linearly aligned conductors extending along a line parallel to said predetermined direction; said set of transverse conductors including a plurality of equally spaced parallel conductors each extending transverse to said predetermined direction and each connecting the end of a different one of said conductors from said first set to the end of a different one of said conductors in said second set;

a plurality of dielectric supporting means mounted on said ground plane for supporting said longitudinal conductors and for spacing said transverse conductors above said ground plane.

3,925,739

RADIO FREQUENCY NOTCH FILTER

Dudley C. Brownell, Glen Arm, and Harold W. Jackson, Towson, both of Md., assignors to The Bendix Corporation, Southfield, Mich.

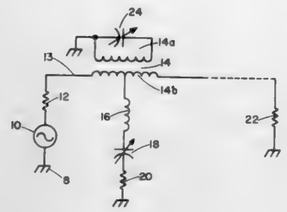
Filed Oct. 2, 1974, Ser. No. 511,150
Int. Cl.² H03H *7/10, 7/14*
U.S. Cl. 333—76 **3 Claims**

1. An electrical filter network connected into a transmission line having a current return terminal for selectively attenuating at least one predetermined frequency from a signal encompassing a frequency band propagating therethrough comprising:

a transformer including a secondary winding connected in series in said transmission line and having a primary winding, said secondary winding having an intermediate tap;

means cooperating with said primary winding to be parallel resonant with said primary winding at said predetermined frequency; and,

a reactive circuit connected between said current return terminal and said intermediate tap and tuned to be series



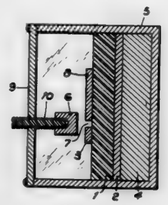
resonant at said predetermined frequency to drain current traversing said secondary winding.

3,925,740

TUNING STRUCTURES FOR MICROSTRIP TRANSMISSION LINES

Peter Dennis Steensma, Midland Park, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed July 19, 1974, Ser. No. 489,956
Int. Cl.² H01P *7/00, 1/20*
U.S. Cl. 333—82 B **3 Claims**



1. A tuning structure for a microstrip transmission line comprising:

a substrate;

a ground plane disposed on one surface of said substrate;

a strip conductor disposed on the other surface of said substrate superimposed with respect to said ground plane, said substrate, said ground plane and said strip conductor providing said microstrip transmission line;

a carrier in association with said ground plane to support said microstrip transmission line;

an arrangement including a tuning member associated with said strip conductor and capable of moving inward and outward in a perpendicular relationship with respect to said substrate to change an impedance of said microstrip transmission line and thereby tune said microstrip transmission line; and

an enclosure for said transmission line, said carrier and said arrangement to provide a radio frequency interference shield therefore;

said arrangement further including

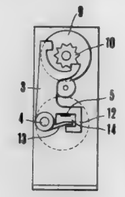
a stub strip conductor disposed on said other surface of said substrate spaced from and at right angles to said strip conductor, the spacing of said stub strip conductor and said strip conductor provides a gap in operative association with said tuning member, said tuning member varying a capacitance across said gap and thereby the total shunt impedance presented to said microstrip transmission line.

3,925,741

ELECTROMAGNETIC COUNTER

Shuji Ohtsuka, Yonezawa, and Toshio Sato, Yamagata, both of Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan

Filed Aug. 28, 1974, Ser. No. 501,157
Claims priority, application Japan, Aug. 30, 1973, 48-101924
Int. Cl.² H01H *51/08*
U.S. Cl. 335—140 **1 Claim**



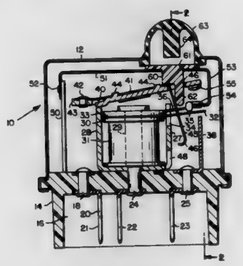
1. In an electromagnetic counter of the type wherein a digit wheel is operated by the movement of an armature of an electromagnet through a ratchet wheel and a plastic pawl, the improvement wherein said pawl comprises a letter L-shaped member, one leg thereof being shaped to actuate said ratchet wheel whereas the other leg being provided with a relatively rigid C-shaped portion and a resilient member, said resilient member engaged by said armature when it is attracted by said electromagnet, said resilient member having a bending strength which is larger than the force necessary to operate said digit wheel but smaller than the attractive force so that the movement of said armature is yieldingly resisted by the resiliency of said resilient member when said armature engages the core of said electromagnet, said C-shaped portion and said resilient member cooperating with each other to define a substantially closed window which receives said armature.

3,925,742

MECHANICAL LATCH RELAY

Rudolph E. Muench, Shelby, N.C., assignor to Fasco Industries, Inc., Rochester, N.Y.

Filed June 25, 1974, Ser. No. 482,868
Int. Cl.² H01H *45/00*
U.S. Cl. 335—186 **11 Claims**



1. a latching relay, comprising

a housing,

a plurality of spaced electrical terminals, secured to said housing

a pair of switches in said housing,

actuating means on said housing operable manually to close one of said switches to complete a first circuit between a first pair of said terminals.

means for releasably latching said one switch in its closed position each time it is moved thereto,

means for closing the other said switches to complete a second circuit between a second pair of said terminals after said one switch has been latched closed, and

means including a relay coil in said housing operative, when energized, to release said latching means,

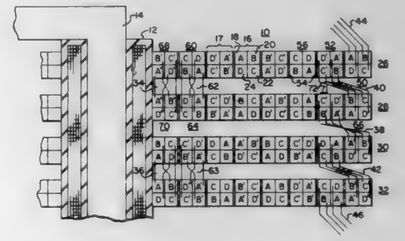
said coil being connected in series with said one switch, whereby said coil may be energized only when said one switch has been closed by said actuating means.

3,925,743

INTERLEAVED WINDING FOR ELECTRICAL INDUCTIVE APPARATUS

Robert I. Van Nice, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 23, 1974, Ser. No. 517,114
Int. Cl.² H01F *27/28*
U.S. Cl. 336—70 **5 Claims**



1. An interleaved winding for power transformers, comprising:

at least one coil disc which contains a continuously transposed conductor having a plurality of conductor strands which are spirally disposed around the winding axis for a plurality of turns to form a plurality of stranded conductor locations, with each turn containing a plurality of strand transpositions; and

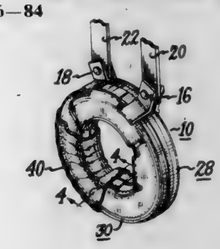
an interleaving connection which connects together two stranded conductor locations in said winding, and which electrically connects all of the strands in the interleaving connection to each other.

3,925,744

END CAP FOR PRIMARY WINDINGS

Robert S. Canney, Berwick, Maine, assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 13, 1974, Ser. No. 523,255
Int. Cl.² H01F *15/04, 27/28*
U.S. Cl. 336—84 **2 Claims**



1. A composite primary foil winding comprising at least one turn of an electrical conducting foil, a pair of molded end caps mounted on opposite sides of said foil winding, each said end cap provided with an internal and an external radius to relieve electrical stress at the sharp corners of said foil winding, and each said end cap having a plurality of tongues snugly fitting within the central opening of said foil winding to provide mechanical strength to said foil winding, and an electrical

conducting tape wrapped about the exterior surfaces of said end caps.

3,925,745

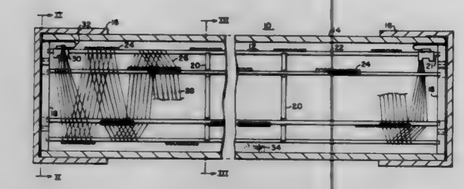
HIGH VOLTAGE FUSE WITH LOCALIZED GAS EVOLVING SUPPRESSORS

Donald D. Blewitt, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 27, 1974, Ser. No. 483,602

Int. Cl.² H01H *85/44*

U.S. Cl. 337—279 **19 Claims**



1. An electrical fuse, comprising:

a. fuse housing means;

b. fuse terminal means disposed on said fuse housing means;

c. fuse element means electrically interconnected with said fuse terminal means; and

d. support means disposed within said fuse housing means for supporting said fuse element means thereon, said support means comprising gas evolving-electrically insulating material only in a region near and including a place where said fuse element means is in physical contact with said support means for evolving gas when exposed to an electric arc.

3,925,746

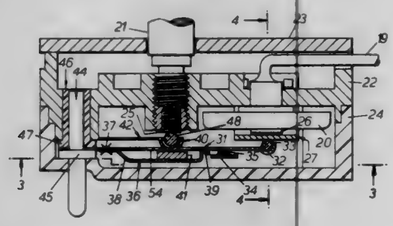
OVEN VALVE CIRCUIT AND THERMOSTATIC ACTUATOR THEREOF

Richard Davis Grayson, Arcadia, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 176,139, Aug. 30, 1971, Pat. No. 3,754,704. This application Sept. 25, 1972, Ser. No. 291,705

Int. Cl.² H01H *37/28, 37/40*

U.S. Cl. 337—309 **1 Claim**



1. A thermostat comprising: a base; first switch means including a first conductive contact; first means on said base to hold said first contact in a first predetermined position; a member movably mounted on said base; temperature sensitive second means mounted on said base to move said member in accordance with temperature; overtravel means spring biased against said member in a direction toward said second means, said member being movable by said second means toward and away from said first contact, said first switch means including a second condutive contact carried by said overtravel means in a position to engage said first contact when said member is close enough to said first means, said overtravel means moving relative to said member when said member is moved toward said first means during engagement of said contacts; and second switch means fixed relative to said base, said second switch means being actuable in response to movement of said member, said second switch means including a leaf fixed at one end relative to said base, said leaf running approximately in a plane parallel to that of said member on the side thereof opposite the side of said member on which said second means is located; and a stop mounted on said base in a position to be engaged by the other end of said leaf on the member side of said leaf, said second switch means having third and fourth conductive contact portions engageable with each other and fixed to said member and said leaf, respectively, said third and fourth contact portions being mutually engaged at and above a predetermined temperature sensed by said second means, said leaf always being spring biased toward said member from a position on one side of said member opposite the side on which said second means is positioned, said leaf being spring biased into engagement with said stop when it engages the same, said third and fourth contact portions being disengaged from each other when said member moves away from said leaf below the stabilized position thereof which it reaches when it engages said stop.

3,925,747

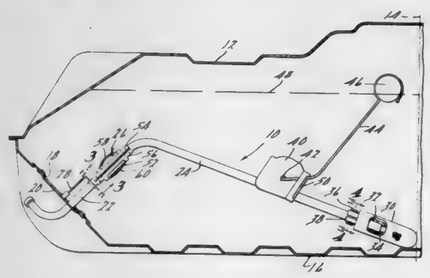
FUEL SENDER MECHANISM FOR A MOTOR VEHICLE

Gary F. Woodward, Ann Arbor, Mich., and Lawrence J. Vanderberg, Hendersonville, N.C., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 11, 1974, Ser. No. 514,060

Int. Cl.² H01C *13/00*

U.S. Cl. 338—33 **1 Claim**



1. An improved fuel sender mechanism for indicating the level of fuel in a fuel tank of a motor vehicle, said fuel sender mechanism being of the type having a tubular device extending from the exterior to the interior of said fuel tank to permit fuel to be withdrawn therefrom through said tubular device, said fuel sender mechanism having a variable resistance device secured to said tubular device and a float mechanism extending from said variable resistance device, said float mechanism varying said variable resistance in response to the level of fuel in said fuel tank, wherein the improvement comprises: a flexible device in said tubular device to permit said float mechanism and variable resistance device to assume a predetermined location with reference to the bottom of said fuel tank, said tubular device comprising first and second tubular metallic elements, said first element extending from the exterior of said fuel tank to the interior thereof and said second tubular element abutting said first tubular element in said fuel tank, said variable resistance device and said float mechanism being attached to said second tubular element, said abutting first and second tubular elements being interconnected by a piece of flexible tubing having an inner diameter approximately equal to the outer diameters of said first and second tubular elements, and spring means for biasing said second tubular element toward the bottom of said fuel tank, said spring means comprising a pair of identical spring steel elements, each of said spring steel elements having one of its ends welded to said first tubular element and having its opposite end welded to said second tubular element, and each of said spring steel elements having a plurality of ribs, one of said ribs extending in an arcuate path along the length of said piece of flexible tubing and an other rib extending along said piece of flexible tubing to provide torsional stiffness in the flexible joint formed by the interconnection of said first and second tubular elements by said piece of flexible tubing and spring means.

3,925,748

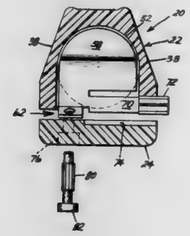
RESISTANCE DEVICE FOR USE IN ENERGIZING THE STARTING WINDING OF A SPLIT PHASE INDUCTION MOTOR

Charles W. Slocum, Spring Lake Heights, N.J., assignor to Thermo-Electronics, Inc., Allenwood, N.J.

Filed Nov. 8, 1973, Ser. No. 413,839

Int. Cl.² H01C *1/02*

U.S. Cl. 338—57 **11 Claims**



1. For use in selectively energizing the starting field winding of a split phase induction motor; a positive temperature coefficient resistance device adapted to be series connected with said starting winding, said device including a housing of insulating material having a retaining cavity, a high temperature coefficient resistor disposed in said cavity having two extended area contact surfaces, two contact elements removably mounted in said housing in conductive engagement with said contact surfaces, respectively; said contact elements each including a resilient contact pad having an extended area contact surface resiliently engageable with an extended area of a respective resistor contact surface, and a terminal which projects beyond said housing; the area of contact between the contact surfaces of both said resistor and said pads providing an area current-conducting path therebetween, said cavity having opposed wall portions with said pads being juxtaposed therewith and said resistor surfaces, respectively; said housing having two heat-dissipating openings, each communicating with said cavity and being in registry, respectively, with said resistor contact surfaces, said openings being relatively large for dissipation of heat from said resistor surfaces, said pads lying between said openings and the resistor whereby heat imparted thereto by said resistor may be at least in part dissipated through said openings; and, said pads being of a size corresponding to the contact surfaces on said resistor.

3,925,749

ASYNTHRONOUS PULSE TELEMETRY SYSTEM AND METHOD

Charles R. McLaughlin, and Jerry B. West, both of Dallas, Tex., assignors to The Western Company of North America, Forth Worth, Tex.

Filed Sept. 24, 1973, Ser. No. 400,174

Int. Cl. G01v *1/40*

U.S. Cl. 340—18 P **16 Claims**

11. A system for transmitting randomized pulses comprising:

means for receiving said randomized pulses,

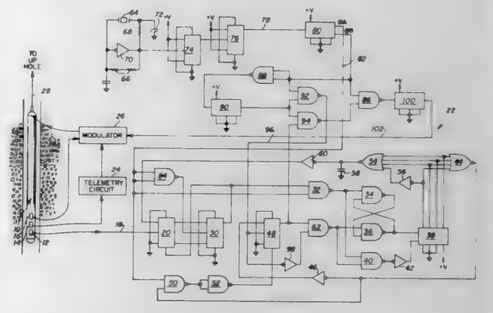
a clock for generating a periodic pulse train having a first frequency,

means responsive to the reception of said randomized pulses for extending the periods of cycles of said periodic pulse train and to provide a series of pulses representative of the reception of said randomized pulses, the extended cycles being out of phase with said periodic pulse train by a predetermined magnitude,

means for transmitting said series of pulses to a remote location,

means for multiplying said series of pulses by a magnitude sufficient that said extended cycles are out of phase with the remainder of said series of pulses by 360 degrees, and

means for generating representations of said randomized pulses in response to the output of said multiplying means.



16. The method of transmitting randomized pulses from a downhole well logging device through a cable to an uphole station comprising:

receiving said randomized pulses at a downhole location,

generating periodic clock pulses,

gating said clock pulses in response to reception of said randomized pulses to delete ones of said clock pulses,

dividing said gated clock pulses to generate a series of pulses having periods representative of the reception of said randomized pulses,

transmitting said series of pulses to an uphole location, and

reconstructing at said uphole location representations of said randomized pulses from said series of pulses.

3,925,750

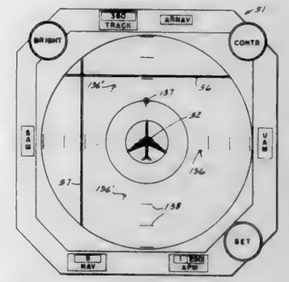
AIR TRAFFIC CONTROL SYSTEM

Glen A. Gilbert, Hialeah, Fla., and James Hobbs, Overland Park, Kans., assignors to Butler National Corporation, Minneapolis, Minn.

Division of Ser. No. 776,209, Nov. 15, 1968, Pat. No. 3,623,090. This application Nov. 19, 1971, Ser. No. 200,633

Int. Cl.² G01C *23/00*

U.S. Cl. 340—27 NA **1 Claim**



1. An aircraft navigation instrument comprising:

an aircraft indicia presented at the center of the instrument

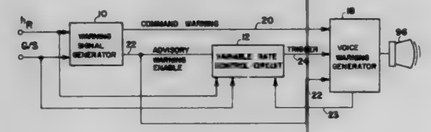
and controlled so as to indicate the aircraft's heading,
a vertical indicator on the instrument for indicating the aircraft's offset from a selected ground location,
a horizontal indicator on the instrument for indicating the aircraft's distance to or from said selected ground location,
indicia on the instrument for indicating the position of other aircraft, and
including a larger indicia which represents a selected one of said other aircraft.

3,925,751

GLIDE SLOPE WARNING SYSTEM WITH A VARIABLE WARNING RATE

Charles Donald Bateman, Bellevue, and Hans Rudolf Muller, Kirkland, both of Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Apr. 2, 1975, Ser. No. 564,505
Int. Cl.² G08G *5/00*
U.S. Cl. 340—27 AT **13 Claims**



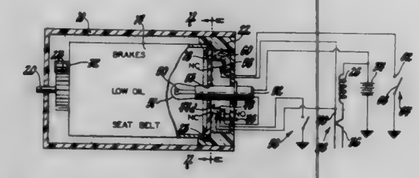
1. A glide slope warning system for aircraft responsive to a glide slope radio beam and an altitude signal, with a variable warning capacility, comprising:
means for generating a below glide slope voice warning; and
means for varying the repetition rate of said voice warning as a function of the aircraft's deviation from the glide slope.

3,925,752

AUTOMOTIVE VEHICLE ROTARY DISPLAY DEVICE

William K. Jensen, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 1, 1973, Ser. No. 384,613
Int. Cl. G08h *19/00*
U.S. Cl. 340—52 F **3 Claims**



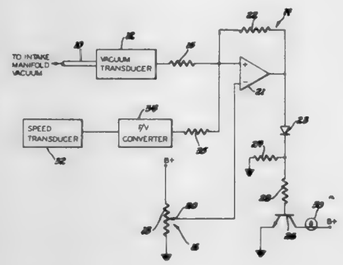
1. An automotive vehicle rotary display apparatus for providing an indication of the occurrence of events at remote locations in the vehicle, comprising: a plurality of event sensors positioned at remote locations in the vehicle, each of said event sensors sensing the occurrence of a respective event for generating a signal upon said occurrence; a viewing window; a drum rotatably supported adjacent the viewing window; a plurality of messages spaced around the drum so as to be sequentially positioned adjacent the viewing window as the drum is rotated, each of said messages representing the occurrence of a respective one of the events; drive means for rotating the drum while said drive means is energized; a plurality of switch means, each of said switch means being associated with a respective one of the events and having a normally closed contact, a normally open contact, and a movable contact normally engaging the normally closed contact; means responsive to the angular position of the drum for shifting the movable contact of the switch means associated with the event represented by the message adjacent the viewing window from engagement with the normally closed contact of said switch means to engagement with the normally open contact of said switch means; means for energizing the drive means, said means for energizing the drive means including a plurality of series circuits coupled to the drive means, each of the series circuits being comprised of a respective one of the event sensors, the movable contact of the switch means associated with the event sensed by said event sensor and the normally closed contact of said switch means, the drive means being energized by the signal generated by an event sensor while the movable contact of the switch means associated with said event engages the normally closed contact thereof; a lamp carried internal of the drum; and means for energizing the lamp, said means for energizing the lamp including a plurality of lamp energizing circuits coupled to the lamp, each of said circuits being comprised of the series combination of a respective one of the event sensors, the movable contact of the switch means associated with the event sensed by said event sensor and the normally open contact of said switch means, the lamp being energized by the signal generated by an event sensor while the movable contact of the switch means associated with said event engages the normally open contact thereof, whereby the drive means is energized in response to the occurrence of one of the events to rotate the drum to position the message representing said event adjacent the viewing window and the lamp is energized to illuminate said message to provide an indication of the occurrence of said event.

3,925,753

SPEED COMPENSATED FUEL CONSUMPTION WARNING DEVICE

John T. Auman, Washington; Wesley A. Rogers, Grosse Pointe Park, and Trevor O. Jones, Birmingham, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 10, 1975, Ser. No. 548,682
Int. Cl.² B60Q *1/00*
U.S. Cl. 340—52 R **2 Claims**



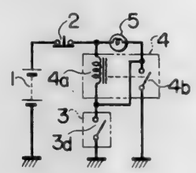
1. A fuel consumption warning device for use with a vehicle powered by a throttle controlled internal combustion engine having an intake manifold, comprising: a vacuum transducer pneumatically coupled with the intake manifold for generating a vacuum signal having a magnitude progressively changing with a progressively increased manifold vacuum level; means for generating a speed signal having a magnitude substantially equal to the difference between the magnitude of the vacuum signal at a manifold vacuum level representing a predetermined excessive fuel consumption at zero vehicle speed and the magnitude of the vacuum signal at a manifold vacuum level representing a predetermined excessive fuel consumption at the instantaneous vehicle speed; means combining said speed signal and vacuum signal and generating an output signal when the magnitude of the combined signals differs with a fixed polarity from the magnitude of the vacuum signal at the manifold vacuum level representing the predetermined excessive fuel consumption at zero vehicle speed; and an indicator responsive to the output signal for producing an operator observable indication representing excessive fuel consumption at the instantaneous vehicle speed.

3,925,754

MILEAGE WARNING SYSTEM

Nobuyoshi Ota, and Hiroyuki Tashiro, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 16, 1974, Ser. No. 470,661
Claims priority, application Japan, Sept. 14, 1973, 48-107974[U]; Sept. 14, 1973, 48-107981[U]
Int. Cl.² B60Q *1/00*
U.S. Cl. 340—52 D **4 Claims**



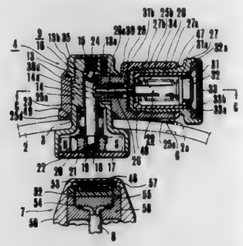
1. A mileage warning system for an automotive vehicle comprising
a battery positioned in said vehicle,
mileage detecting means including a detecting switch of the single pole, double throw type for moving the contact arm of the switch between a pair of fixed contacts each time the vehicle reaches a predetermined distance set by the mileage warning system,
a reset switch means including a second pair of fixed contacts connected with said first fixed contacts of the detecting switch respectively, and
warning means connected with said battery through said detecting means and said reset switch wherein when said predetermined distance is reached, said contact arm closes on a first fixed contact thereby connecting said battery through said reset switch and said detecting switch to energize said warning means and wherein said warning means is deenergized when said reset switch is moved from a first contact to a second.

3,925,755

TIRE PRESSURE ALARM EQUIPMENT

Shigeki Hata, Omiya, Japan, assignor to Kanto Seiki Co., Ltd., Japan

Filed Mar. 8, 1974, Ser. No. 449,442
Int. Cl.² B60C *23/02*
U.S. Cl. 340—58 **8 Claims**



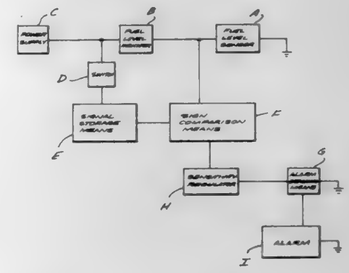
1. Tire pressure alarm apparatus comprising, in combination, a first housing mounted on a wheel rim, rotatably mounted on a vehicle and supporting a tubeless tire, so as to extend at least partially into the air space defined by said rim and said tire; a plunger housing operatively associated with said first housing, a plunger mounted for reciprocation in said plunger housing in a direction substantially perpendicular to a radial plane of said tire, and movable in accordance with the air pressure in said tire; a shaft arranged inside said first housing to extend substantially parallel to said radial plane; anti-friction thrust ball bearing means supporting said shaft at its one end for smooth rotation of said shaft even when subjected to centrifugal force in its axial direction due to rotation of said rim and tire; detent means on said shaft and said plunger interengageable when said plunger is subjected to a tire air pressure having at least a preselected value to maintain said shaft in a first angular position; said plunger moving, to disengage said detent means, when the tire air pressure decreases below said preselected value; means adjustably mounting said plunger housing in said first housing for setting the working pressure to a predetermined value; means biasing said shaft to a second angular position upon disengagement of said detent means; an elongated magnetic member fixed on an end of said shaft to extend diametrically thereof and producing a change in magnetic flux in the space outside said rim during rotation of said rim and tire with said shaft and magnet in said second angular position; a magnetic flux responsive element mounted on a non-rotatable portion of the vehicle at a position wherein it is subject to such change in magnetic flux and operable to produce an output signal responsive to such change; and alarm signal means connected to said element and providing an alarm signal responsive to such output signal.

3,925,756

VEHICLE FUEL LOSS ALARM

Joseph Edwards, Rte. 1, Ludingtonville Road, Holmes, N.Y. 12531

Continuation-in-part of Ser. No. 490,560, July 22, 1974, abandoned. This application Aug. 16, 1974, Ser. No. 498,190
Int. Cl.² B60R *25/10*
U.S. Cl. 340—59 **14 Claims**



1. An alarm circuit for use in a vehicle having a power source, a fuel supply and means for sensing the level of fuel in said supply and for generating a signal in accordance therewith, said circuit comprising an alarm, signal storage means operatively connected to the fuel level sensing means for storing the signal generated by the fuel level sensing means, signal comparison means operatively connected to said storage means and to the fuel level sensing means for generating an actuation signal when said signal from said fuel level sensing means is different from said stored signal and means for energizing the alarm upon receipt of said actuation signal.

3,925,757

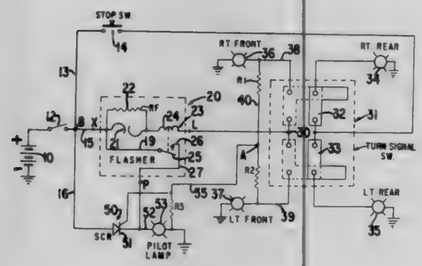
TURN SIGNAL SYSTEM FOR POSITIVE INDICATION OF LAMP FAILURE

Samuel Kimmelman, Cranford, N.J., assignor to Ideal Corporation, Brooklyn, N.Y.

Filed Nov. 23, 1973, Ser. No. 418,571
Int. Cl.² B60Q *1/00*
U.S. Cl. 340—66 **6 Claims**

1. In a turn signal circuit for a vehicle having a D.C. current source, a plurality of signal lamps and a turn signal switch therefor, a flasher load circuit comprising, for connection in series between said source and said turn signal switch, a variable load flasher the contacts of which are closed and opened repetitively in response to current in the load circuit, a load-sensitive relay having normally open contacts, and a first current path including a pilot lamp closable by said relay

contacts, the combination which further includes a second current path containing a silicon controlled rectifier (SCR) in series with said pilot lamp for lighting said pilot lamp and means for applying a triggering voltage to the gate of said SCR and thereby rendering said SCR conductive to activate said second path when said load circuit is activated, said SCR being bridged anode to cathode by a part of said first path, and thereby being rendered non-conductive, when said relay



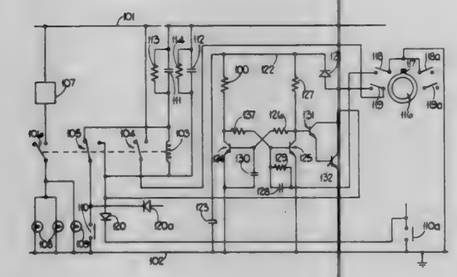
contacts are closed, said relay being operative to close said relay contacts in response to normal flow of load current to said signal lamps but being inoperative to close them if the load current is below a predetermined level, whereby when a signal lamp has failed said SCR will be kept conductive and said second path active to keep said pilot lamp lighted steadily while the signal lamp or lamps remaining operative continue being flashed.

3,925,758

DIRECTION INDICATOR CONTROL CIRCUIT

William David Holt, Colne, England, assignor to Lucas Electrical Company Limited, Birmingham, England

Filed May 20, 1974, Ser. No. 471,716
Claims priority, application United Kingdom, May 19, 1973, 23961/73
Int. Cl. B60q *1/34, 1/46*
U.S. Cl. 340—73 **4 Claims**



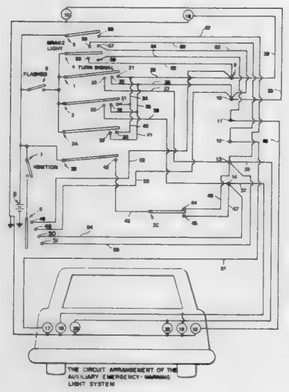
1. A direction indicator control circuit for a road vehicle, including a manually operable switch biased to an open position, an electromagnetic bistable latching mechanism which is operated when the switch is closed momentarily and serves to close a contact coupling a flasher unit to a flasher lamp, a further momentary closure of the switch serving to operate the latching mechanism again to open the contact, and means operable upon completion of a turn for operating the latching mechanism to open the contact.

3,925,759

AUXILIARY EMERGENCY WARNING LIGHT SYSTEM

David F. Lucas, 8003 Pine Lake Road, Columbia, S.C.

Filed May 3, 1974, Ser. No. 466,826
Int. Cl.² B60Q *1/52*
U.S. Cl. 340—81 R **5 Claims**



1. An auxiliary emergency warning light system for a motor vehicle comprising

a first set of signaling lamps comprising a pair of laterally spaced high intensity lamps producing light of a first color which is visible from the front of said vehicle,

a second set of signaling lamps comprising a pair of laterally spaced high intensity lamps producing light of a second color which is visible from the rear of said vehicle,

a third set of signaling lamps comprising a pair of laterally spaced high intensity lamps producing light of a third color which is visible from the rear of said vehicle,

control means embodied with said vehicle for causing said lamps to produce a plurality of signals comprising at least a first signal comprising the flashing of the lamps of said first and second sets, a second signal comprising the flashing of the lamps of said first and third sets and a third signal comprising the flashing of the lamps of said first set and the flashing of the lamps of the second and third sets alternately, and said system

further including a pair of laterally spaced high intensity turn signal indicating lamps visible from the rear of said vehicle, and said control means including a vehicle turn actuated switch means for alternately electrically connecting said first flasher means to one of the lamps of said first set and that one of the lamps of said set of turn signal indicating lamps positioned on the same side of the longitudinal axis of the vehicle to cause said lamps to flash according to the direction of turning of the vehicle.

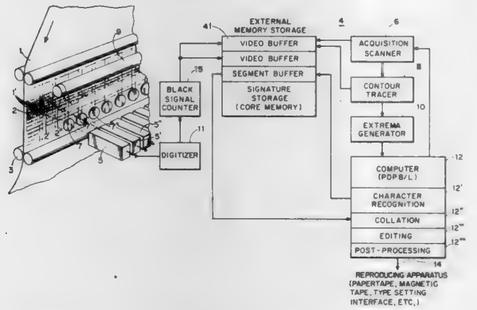
3,925,760

METHOD OF AND APPARATUS FOR OPTICAL CHARACTER RECOGNITION, READING AND REPRODUCTION

Samuel J. Mason, Jamaica Plain; Donald E. Troxel, Belmont, and William F. Schreiber, Lexington, all of Mass., assignors to ECRM, Inc., Bedford, Mass.

Continuation of Ser. No. 140,830, May 6, 1971, abandoned. This application June 7, 1973, Ser. No. 367,950
Int. Cl.² G06K *9/16*
U.S. Cl. 340—146.3 ED **1 Claim**

1. In a machine-implemented process of character recognition and reading in which text comprising a font of humanly-readable, conventional-language, alpha-numeric characters disposed in lines of characters of predetermined reading sequence on a sheet is scanned in line-by-line sequence to produce electrical code symbols corresponding to the scanned characters, a machine-implemented method of editing said text, that comprises detecting during said line-by-line scanning sequence a deletion editing line drawn through a plurality of said characters to indicate intended rub out thereof, detecting during said line-by-line scanning sequence, and in response to editing marks, an insertion to replace the characters to be rubbed out, said insertion comprising a plurality of said characters of said font interlineated between the line of characters



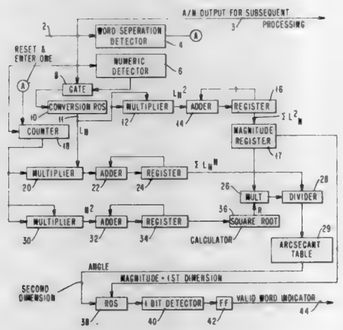
containing said characters to be rubbed out and an adjacent line of said characters without regard for alignment with the characters to be rubbed out, said insertion being delimited at the beginning and end thereof by said editing marks, producing distinctive electrical code symbols corresponding to the insertion characters delimited by said editing marks, and transmitting the character code symbols in the said predetermined reading sequence but with the code symbols corresponding to the rubbed out characters replaced by the code symbols corresponding to the insertion characters.

3,925,761

BINARY REFERENCE MATRIX FOR A CHARACTER RECOGNITION MACHINE

Anne Marie Chaires, Lanham; Jean Marie Ciconte, Rockville; Allen Harold Ett, Bethesda; John Joseph Hilliard, Potomac, and Walter Steven Rosenbaum, Silver Spring, all of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 2, 1974, Ser. No. 494,251
Int. Cl.² G06K *9/00*
U.S. Cl. 340—146.3 WD **3 Claims**



1. A binary reference matrix apparatus for verifying input alpha words as valid linguistic expressions, from an OCR having a character transfer function, comprising:

detection means for detecting an alpha word at the input of said apparatus;

conversion means connected to said detection means for assigning numeric values to the characters in the input alpha word based upon the OCR read reliability of the characters;

a first-dimensional bit address calculation means connected to said conversion means for calculating a first-dimensional bit address as a vector magnitude

$$Y^2 = \sum_{N=1}^{M} L_N^2$$

of the input word where L_N is the numeric value assigned to each alpha character in the input word by said conversion means;

a counter connected to said detection means for counting the number of characters in the input alpha word;

a second-dimensional bit address calculation means connected to said counter and said conversion means for calculating a second-dimensional bit address as a vector angle arcsecant

$$|Y|\,|R| \sum_{N=1}^{M} L_N N$$

of the input words, where N equals 1, 2, 3, etc., for each character position in the word and

$$R^2 = \sum_{N=1}^{M} N^2;$$

a two-dimensional read only binary array containing bit addresses representing valid linguistic expressions organized to minimize the size of the array needed for accurate verification by choosing numeric values of the alpha characters in inverse proportion to the characters' OCR read reliability;

a first-dimensional accessing means connected to said first-dimensional address calculation means and said two-dimensional read only binary array for accessing said binary array at a bit address equal to the calculated first-dimensional bit address;

a second-dimensional accessing means connected to said second-dimensional bit address calculation means and said two-dimensional read only binary array for accessing said binary array at a bit address equal to the calculated second-dimensional bit address; and

indicator means connected to said two-dimensional read only binary arrary for indicating whether the bit at the calculated bit address in said two-dimensional binary array is on or off and correspondingly whether the input alpha word is valid or invalid.

3,925,762

PATIENT MONITORING AND DATA PROCESSING SYSTEM

Louis J. Heitlinger, Waukesha; John P. Bahr, Wauwatosa; John H. Smith, Milwaukee, and Thomas W. Anderson, Greendale, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 25, 1973, Ser. No. 409,738
Int. Cl.² H04J *3/00, 6/00;* **H04Q** *11/04, 5/00*
U.S. Cl. 340—150 **45 Claims**

1. A patient monitoring and data handling system for use with hospitalized patients, comprising:

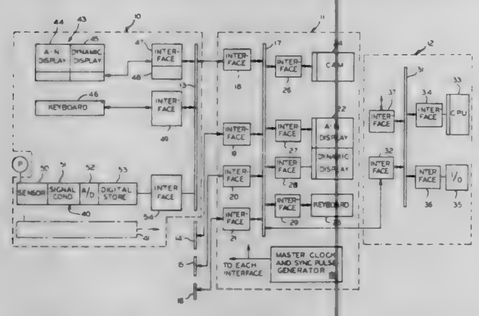
a. a plurality of data sending units for being placed in the vicinity of a hospitalized patient and having means for producing digital data words representative of information pertinent to a patient and a plurality of data receiving units for being placed in the vicinity of said patient and having means for receiving digital words pertinent to monitoring a patient, each of said digital words being assigned to a particular time slot in a sequence of time slots,

b. first data bus means having a conductor for each bit in a data word to permit parallel transmission of the bits comprising a word,

c. means for connecting said sending and receiving units, respectively, to said data bus, said last named means each including gate means and gate enabling means associated with each sending and receiving unit for selectively transmitting data words between an associated sending unit and said data bus and between said data bus and an associated receiving unit when gate means associated with a sending unit and gate means associated with a receiving unit are simultaneously enabled in time correspondence with occurrence of a time slot to which the word to be transmitted is assigned,

d. a source of constant rate clock pulses, said clock pulses corresponding with said sequence of time slots,

e. means for generating a sync pulse signal in response to occurrence of repeatable numbers of clock pulses,



f. pulse counting means associated with each sending and receiving unit and each counting means responding to occurrence of each sync pulse signal by simultaneously initiating counting of clock pulses and continuing to count selected predetermined numbers of ensuing clock pulses so that a counting means associated with at least one of said receiving units reaches its predetermined number of counts in coincidence with counting means associated with at least one sending unit reaching its predetermined number of counts between which units data assigned to a time slot corresponding with occurrence of said coincidence may be exchanged,

g. the said gate means associated with the said ones of said sending and receiving units, respectively, being enabled to respond to said coincidence for said transmitting of said data words and other of said gate means for words assigned to other time slots being enabled sequentially in response to other coincidences at predetermined times whereby respective sending units operate synchronously with receiving units that are intended to receive data from said sending units.

3,925,763
SECURITY SYSTEM

Romesh Tekchand Wadhwani, 5559 Beelet St., and Krishnahadi Sikun Pribadi, 120 Westland Drive, both of Pittsburgh, Pa. 15217

Filed Sept. 13, 1973, Ser. No. 397,158
Int. Cl.² H04B *13/02*; **H04Q** *11/00*
U.S. Cl. 340—164 R **10 Claims**

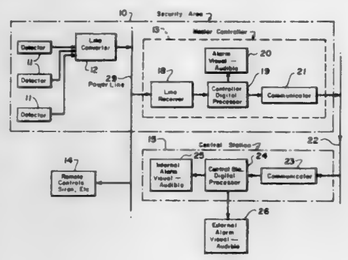
4. A security system for a given security area, such system comprising:

a. security breach detecting means actuable responsively to occurrence of a breach condition,

b. a sensor for encoding and transmitting selfidentification signals responsively to actuation of said detecting means,

c. communication means comprising two lines of a secondary power distribution system of which at least one line is a phase line,

d. line converter means connected between said two lines of the secondary power distribution system, said converter means receiving coded signals, transmitted by said sensor, adding its own self-identification code thereto, and transmitting the resulting synthesized line converter signal at radio frequencies along said two lines and

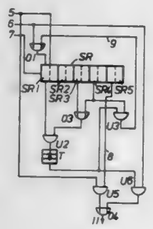


e. master controller means comprising line receiver means connected between said two lines of the secondary power distribution system, and means for decoding and registering said synthesized line converter signals.

3,925,764
MEMORY DEVICE

Karl-Heinz Wiesenewsky, Berlin, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Oct. 16, 1974, Ser. No. 515,708
Claims priority, application Germany, Oct. 16, 1973, 2352324; Dec. 8, 1973, 2361680
Int. Cl.² H03K *21/00*; **H04Q** *3/02*
U.S. Cl. 340—168 R **27 Claims**



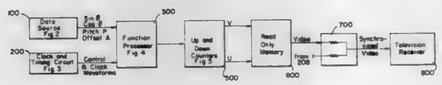
1. A memory device for control pulse patterns in automatic switching control systems comprising in combination: A shift register having $n + 1$ register stages, where n is the number of clock pulses per pulse pattern, the input stage of said shift register having a clock input means for receiving a continuous supply of pattern clock pulses, an erase input means for receiving an erase signal and a signal input means, for receiving a working pulse pattern; a first OR circuit having its output connected to said signal input means and a first input connected to a source of working pulse patterns; and logic circuit means connected to said shift register for detecting the presence of a desired working pulse pattern in said register and for causing the storage thereof, said logic circuit means including a timing means responsive to an input pulse for thereafter producing an output pulse for a predetermined time period, first, second, third and fourth AND circuits, and second and third OR circuits; said first AND circuit having a first input connected to the output of said first register stage, a second input connected to the output of said second OR circuit, and its output connected to the input of said timing means; said second OR circuit having at least one input connected to the output of a register stage other than said first register stage;

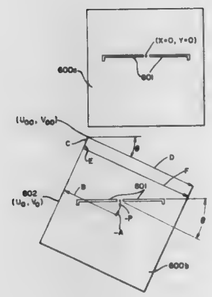
and second AND circuit having a first input connected to the output of said timing means, a second input connected to the output of a penultimate register stage of said shift register, and its output connected to a second input of said first OR circuit; said third AND circuit having a first input connected to the output of the last register stage of said shift register, a second input connected to said clock input means, and its output connected to one input of said third OR circuit; and said fourth AND circuit having a first input connected to the output of said timing means, a second input connected to said first input of said first OR circuit, and its output connected to a second input of said third OR circuit, the output of said third OR circuit constituting the output of said memory device.

3,925,765
DIGITAL RASTER ROTATOR

Ted W. Berwin, and Everett T. Wilbur, both of Playa Del Rey, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 29, 1973, Ser. No. 411,546
Int. Cl.² G06F *3/00, 3/14*; **G01C** *21/20*; **H01J** *29/70*
U.S. Cl. 340—172.5 **15 Claims**





1. A digital system that angularly orients a television raster with respect to a symbol fixed in a memory of said system by coordinate axes rotation, comprising in combination:

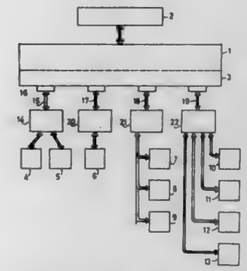
a data source for providing data signals and a timing source for providing timing signals, as outputs of said data and timing sources respectively;

function processing means, electrically connected to the data and timing sources, for providing outputs therefrom in binary form, the function processing means including means for multiplying the rates of change of all absolute values of each argument and modulus of said data signals; counting means, electrically connected to the function processing means, responsive to outputs from the function processing means providing binary information to said memory, for angularly rotating said coordinate axes during operative mode of said system.

3,925,766
DYNAMICALLY VARIABLE PRIORITY ACCESS SYSTEM

Angelo Bardotti, Cesano Boscone, and Renzo Pederzini, Melegnano, both of Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

Filed Nov. 27, 1973, Ser. No. 419,312
Claims priority, application Italy, Nov. 29, 1972, 32201/72
Int. Cl.² G06F *9/18*
U.S. Cl. 340—172.5 **4 Claims**



1. In a data processing system comprising an information store, a central processor, a plurality of data handling devices, and a plurality of channels provided to enable said data handling devices to communicate with said central processor to provide an information exchange with said store, wherein said data handling devices generate respective request signals when they require communication with said central processor over said channels; priority determining apparatus for variably assigning relative priority levels to said request signals comprising:

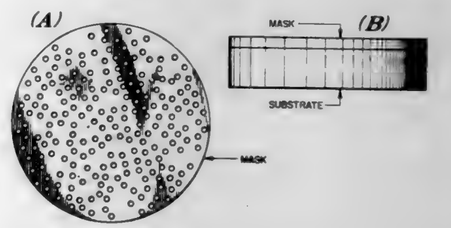
a temporary storage member for each of said channels, each of said storage members being adapted to receive from said central processor and hold a representation of any one of a plurality of different priority levels assigned to the corresponding channel, and

a variable priority network for each of said channels, each of said networks being adapted to receive a request signal for communication on the corresponding channel and response to the representation held in the corresponding storage member for generating a signal representing both said request signal and the priority level assigned by said representation.

3,925,767
RADIATION SET THERMALLY RESET READ-ONLY-MEMORY

Abraham A. Witteles, Forrest Hills, N.Y., and Harry Putterman, Elizabeth, N.J., assignors to The Singer Company, Little Falls, N.J.

Division of Ser. No. 789,054, Dec. 31, 1968. This application June 30, 1971, Ser. No. 158,515
Int. Cl. G11c *11/42*
U.S. Cl. 340—173 LM **6 Claims**



1. The method of forming a reprogramable memory array for a read only memory comprising the following steps:

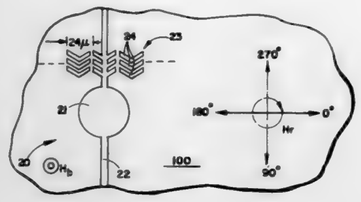
preparing a semi-conductor substrate having a multiplicity of MOS transistor switches thereon, said switches being wired to form a memory array, each of said switches having substantially the same threshold voltage;
placing a radiation shielding mask over said substrate, said mask having apertures corresponding to preselected ones of said switches;
irradiating said pre-selected ones of said switches by exposing said shielded substrate to radiation to cause a semi-permanent shift in their corresponding threshold values wherein said radiated switches are adapted to store zeros and all non-irradiated switches are adapted to store ones; and
placing said irradiated substrate in a memory reading circuit which provides read pulses to a predetermined plurality of the multiplicity of switches to provide an output whereby said irradiated switches will provide a zero when subsequently gated by an input pulse and said non-irradiated switches will provide a one when subsequently gated by an input pulse.

3,925,768
GAPLESS DOUBLE-SIDED PROPAGATION STRUCTURE FOR BUBBLE DOMAIN DEVICES
Yeong S. Lin, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 27, 1973, Ser. No. 429,000
Int. Cl.² G11C *11/14, 19/08*
U.S. Cl. 340—174 TF **13 Claims**

1. A gapless, double-sided propagation structure for implementing the continuous movement of magnetic bubble domains in a supporting material in response to a reorienting in plane magnetic field comprising a plurality of discs of magnetically soft material disposed in contiguous relation to each other on one surface of said supporting material and a plurality of discs of magnetically soft material disposed in contiguous relationship to each other on the opposite side of said supporting material in aligned relation to said discs on said one side but offset therefrom by one-half of periodicity.

3,925,769
DISK GENERATOR
Peter K. George, Placentia, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Sept. 27, 1974, Ser. No. 509,882
Int. Cl.² G11C *11/14*
U.S. Cl. 340—174 TF **9 Claims**

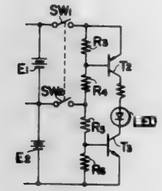
1. A magnetic bubble domain generator disposed on a magnetic bubble domain film comprising:
a bubble domain propagation path defined by adjacent areas of magnetizable material
a seed bubble domain area of magnetizable material disposed on the bubble domain film adjacent said propagation path for establishing a seed bubble domain; and
a conductor intersecting said seed bubble domain area of magnetizable material and one of said adjacent areas of magnetizable material in said propagation path for passing a current between said seed bubble domain area and said adjacent areas.



3,925,770
AUDIBLE SIGNALING DEVICE FOR A COMPUTER
Ronald Beacham, Mound; Dennis Covington, Minneapolis, and Reginald McNutt, Long Lake, all of Minn., assignors to Business Electronics, Inc., Minneapolis, Minn.
Filed July 29, 1974, Ser. No. 492,429
Int. Cl.² G08B *21/00*
U.S. Cl. 340—228 S **14 Claims**

1. An audible signaling device for a computer having a visual display window in which at least one halt signal is illuminated, when the computer halts, comprising:
sensing means for sensing the illuminated halt signal from the computer;
electrical means connected to the sensing means for producing an audible signal when the halt signal is sensed;
a frame securely fastened to the computer and surrounding the visual display window; and
a sensor unit housing the sensing means slideably mounted in the frame relative to the visual display window so that when the computer is operating the sensing means can sense the visual display and when the computer is halted the sensing unit may be slideably removed to permit observation of the halt code in the display window.

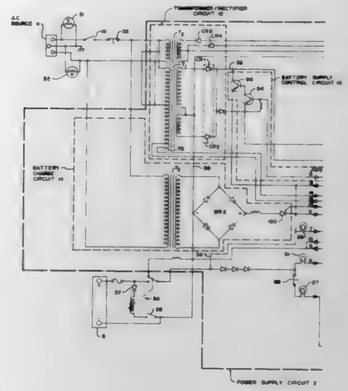
3,925,771
VOLTAGE CHECKING MEANS FOR AN ELECTRIC CIRCUIT EMPLOYING TWO POWER SOURCES
Yoshihiro Satake, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan
Filed July 18, 1974, Ser. No. 489,713
Claims priority, application Japan, July 19, 1973, 48-84907[U]
Int. Cl.² G01N *27/46*; **G03B** *17/18*; **G01R** *19/16*
U.S. Cl. 340—249 **2 Claims**



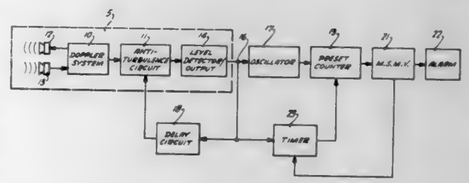
1. A voltage checking means comprising:
a first power-source battery for an electric circuit,
a second power-source battery for said electric circuit connected in series to said first power-source battery,
a first pair of resistors connected in series with one another and connected across the terminals of said first power-source battery,
a second pair of resistors connected in series with one another and connected across the terminals of said second power-source battery,
a first transistor having a base electrode connected to the connecting point of said first pair of resistors,
a second transistor having a base electrode connected to the connecting point of said second pair of resistors, and
an indicating element connected between the collector electrodes of said first and second transistors for providing an indication in response to the voltage level of either or both of said batteries falling below a predetermined level.

3,925,772
A.C. POWER SUPPLY CIRCUIT IN COMBINATION WITH AN A.C. SOURCE AND A D.C. SOURCE
Lowell E. Miller, American Fork, and Gail R. Nielsen, Salt Lake City, both of Utah, assignors to Com Tel, Inc., Salt Lake City, Utah
Filed June 27, 1974, Ser. No. 483,635
Int. Cl.² G08B *21/00*; **H02J** *7/00*
U.S. Cl. 340—253 C **22 Claims**

1. An A.C. power supply circuit in combination with an A.C. source and a D.C. source for producing an oscillatory output in response to signals either from the A.C. source, the D.C. source, or both, said power supply circuit comprising
a first rectifier for rectifing the A.C. signal produced by the A.C. source,
a control circuit responsive to a control signal for coupling the D.C. source to the output of said rectifier,
an A.C. sensing circuit coupled to the A.C. source for applying a control signal to said control circuit if the amplitude of the signal produced by said A.C. source falls below a predetermined level, and
an oscillator circuit coupled to the output of said rectifier for producing an oscillatory signal in response to the signal present on the output of said rectifier,
whereby said power supply circuit produces a substantially continuous oscillatory signal by drawing power from the D.C. source to the extent the output on the A.C. source falls below said predetermined level.



3,925,773
ALARM SIGNAL PROCESSING SYSTEM AND METHOD
Robert Leonard Green, Teddington, England, assignor to Emergency Products Corporation, Parsippany, N.J.
Filed Aug. 31, 1973, Ser. No. 393,566
Int. Cl.² G08B *13/18*
U.S. Cl. 340—258 A **4 Claims**



1. In a system for processing the output signal of an alarm system to distinguish alarm conditions from spurious disturbances, oscillator means responsive to the alarm system output signal for producing a cyclical signal of predetermined frequency in the event of a predetermined condition in the alarm system output signal, means for counting the cycles of the signal produced by the oscillator means, means for resetting the means for counting to an initial level a predetermined time after the oscillator means is actuated, and means for providing an alarm signal when the number of cycles of predetermined frequency counted reaches a predetermined number.

3,925,774
FIELD DISTURBANCE TYPE MOTION DETECTION SYSTEM
Clifford L. Amlung, Nutley, N.J., assignor to Security Devices Corporation, Pompton Lakes, N.J.
Filed Mar. 24, 1975, Ser. No. 561,229
Int. Cl.² G08B *13/18*
U.S. Cl. 340—258 A **10 Claims**

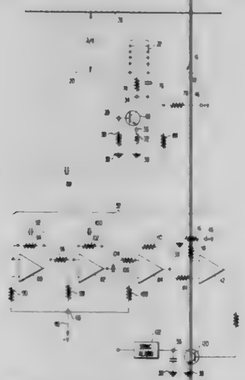
1. A field disturbance motion detection system generating an electromagnetic wave pattern which is radiated to a selected location and being responsive to a predetermined disturbance of said wave pattern thereat to activate an alarm device, comprising in combination:
a housing having a front portion adapted to pass electromagnetic waves therethrough without substantial attenuation;

a printed circuit board in said housing adjacently behind said front portion;

said printed circuit board including thereon a single transceiver antenna comprised of a pair of opposing quarter wave antenna elements including a spacing therebetween forming a half-wave dipole antenna, and tuning control means located in said spacing coupled between said opposing elements;

an electromagnetic wave reflecting plate attached to said housing substantially one quarter wavelength behind said printed circuit board thereby providing a predetermined antenna gain and directional sensitivity;

a transceiver oscillator/detector circuit located immediately adjacent and coupled to said pair of antenna elements on said printed circuit board and including a single transistor having an emitter, base and collector, and additionally including a direct circuit connection of said base to one of said pair of antenna elements, first circuit means coupling said base to a point of reference potential, second circuit means coupling said emitter to said point of reference potential, third circuit means coupling said collector to said one antenna element, fourth circuit means coupling said collector to the other of said pair of antenna elements, and fifth circuit means coupling said collector to a supply potential, whereby said circuit is energized to provide oscillations which are coupled to said antenna whereupon electromagnetic signals of a predetermined frequency are radiated to a localized area which when a field disturbance occurs a change in collector current of said transistor results providing a relatively low level output signal of another predetermined frequency across said fifth circuit means;



bandpass filter-amplifier means coupled to said collector and being responsive to said output signal occurring across said fifth circuit means and being adapted to increase the amplitude of said output signal by a predetermined gain;

comparator circuit means having first and second input means respectively coupled to the output of said bandpass filter-amplifier means and a reference potential whereby a control signal is generated in response to a field disturbance for initiating an alarm when the amplitude of said output signal from said bandpass amplifier exceeds said reference potential.

3,925,775

MULTIPLE DIGIT DISPLAY EMPLOYING SINGLE DIGIT READOUT

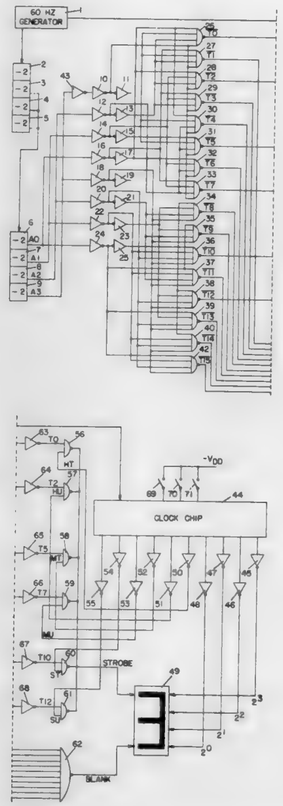
Leslie W. Gay, Escondido, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 26, 1973, Ser. No. 410,166
Int. Cl.² G08B *23/00*; **G09B** *13/00*; **H05B** *39/00*; **G04B** *19/30*
U.S. Cl. 340—324 R **6 Claims**

1. A method for displaying multiple digit information comprising the steps of:

A. arranging the digits in a predetermined order of significance from most significant to least significant;

B. displaying the most significant previously undisplayed digit on a single digit readout device for a period having a first predetermined duration, said first predetermined duration being in the range from one-eighth to one-half second;



C. blanking the readout device for a period having a second predetermined duration, said second predetermined duration being in the range from one-eighth second to one-half second;

D. repeating steps (B) and (C) until all digits of the information have been displayed.

3,925,776

DISPLAY TERMINAL SYSTEM

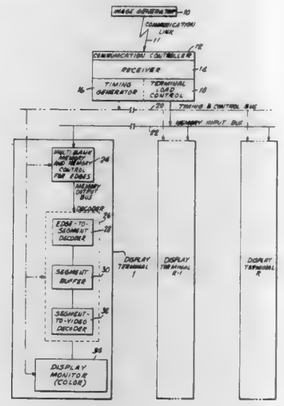
Ronald J. Swallow, Upper Marlboro, Md., assignor to Research Corporation, New York, N.Y.

Filed Apr. 18, 1974, Ser. No. 462,171
Int. Cl.² G06F *3/14*
U.S. Cl. 340—324 AD **36 Claims**

1. A system of display terminals, each for displaying a raster pattern along regular scanlines on a two-dimensional screen and each receiving edge definitions, each edge definition comprising signals defining a continuous, visible line on the screen and a plurality of selected visible attributes for a two-dimensional portion of the screen adjacent said continuous line, each display terminal comprising:

edge memory means for storing edge definitions and means for storing in the edge memory means a selected set of edge definitions ordered along at least one coordinate of the screen;

edge-to-segment decoder means for converting at least a selected subset of the edge definitions stored in the edge memory means to definitions of one-dimensional segments along each of a plurality of defined scanlines across the screen, each segment definition comprising signals defining the position and said attributes of a scanline portion adjacent the intersection of the scanline by an edge line, and



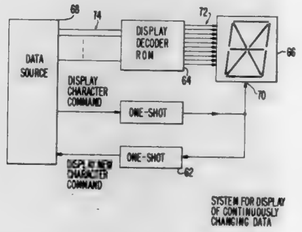
segment-to-video decoder means for converting the segment definition signals into video raster points on the screen, each video raster point being produced by an electrical signal defined by the attributes of the coinciding segment, to provide on the screen a video raster representation of at least a selected subset of the set of edges.

3,925,777

ELECTRONIC CLOCK EMPLOYING REPEATING SEQUENTIAL SINGLE DIGIT DISPLAY

Lloyd Douglas Clark, Palo Alto, Calif., assignor to D. R. Pressman, San Francisco, Calif., a part interest

Filed Sept. 23, 1974, Ser. No. 508,248
Int. Cl.² G08B *5/36*
U.S. Cl. 340—336 **8 Claims**



1. A single digit, repetitive sequential display electronic clock, comprising, in combination:

a. a character display matrix for selectively displaying any one of a predetermined plurality of characters in a single, fixed position, said matrix comprising an array of elements which are selectively actuable in predetermined combinations to display said respective characters,

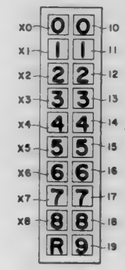
b. driver means for supplying a signal to said display matrix to cause it to display repetitively plural character elapsed time indications, each such indication consisting of a plurality of characters indicative of the number of time units which have elapsed from a predetermined starting time, said plurality of characters being displayed in individual sequence by said character display matrix in the order which they would be read by an observer if all of said plurality of characters were simultaneously presented in a horizontal row, each plural character time indication repeating continuously until at least the least significant portion thereof should change due to the passage of time, whereupon a new time indication, consisting of a new sequence of a plurality of characters indicative of the next higher number of time units which have elapsed from said predetermined starting time, will be repetitively displayed.

3,925,778

CHANNEL INDICATING MEANS FOR T.V. TUNERS

Yasuhiro Wada, Fujimi, and Katsuhiko Okabe, Tokorozawa, both of Japan, assignors to Kabushiki Kaisha Koparu, Tokyo, Japan

Filed Aug. 29, 1973, Ser. No. 392,774
Claims priority, application Japan, Aug. 31, 1972, 47-87246
Int. Cl.² G08B *5/36*
U.S. Cl. 340—378 R **4 Claims**



1. A channel indicating means for T.V. tuners comprising:

two adjacent rows of push buttons, one of said rows corresponding to units digits from 0-9; the other of said rows corresponding to tens digits;

indication means associated with each of said buttons for indicating channel availability and selection;

interlocking rod members connected to said buttons corresponding to said tens digits buttons, said interlocking rods being movable between normal and displaced positions;

at least one first signal setting element and at least ten second signal setting elements, located on each interlocking rod, each of said first and second signal setting elements being movable between first and second positions, wherein said indicating means associated with said tens digits buttons are energized when said first signal setting element associated therewith is in said second position and said interlocking rod member is in its normal position and

wherein said indicating means associated with said units digit buttons are energized when said second signal setting elements are in said second position and said interlocking rod member is in its displaced position.

3,925,779

MESSAGE COMMUNICATOR FOR HANDICAPPED PERSONS

Suzanne Gerstenhaber, 4100 Greenbriar Drive, Houston, Tex. 77006

Filed July 10, 1974, Ser. No. 486,947
Int. Cl.² G06F *3/14*
U.S. Cl. 340—337 **7 Claims**

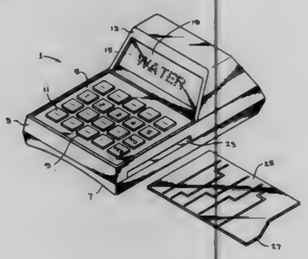
1. The device for enhancing communication from a person having a speech impairment to another comprising:

a portable housing having a bottom surface and an upper surface, the bottom surface being adapted to rest on the lap of the user during operation, the upper surface being characterized by a keyboard panel,

a plurality of message keys disposed in said message panel in visually exposed position to the user, each said message key

being coded on the surface thereof to correspond to a message transmission,

a screen means integrally affixed to the housing proximate an end thereof, said screen means extending substantially vertically upwardly and including a message receiver screen and a message sender screen mounted in back-to-back relation to one another, the message sender screen being visually accessable to the user and the message receiver screen being visually accessable to another person so that a message may be readily transmitted from the sender to such other person,



multiple pair of indicia display means, one indicia display means of each pair being mounted in each screen, and,

an electronic circuit means and power means therefore,

said electronic circuit means disposed in said housing and operably connected to each said respective message keys and to said multiple pair of indicia display means so that pressure applied by the user to any of said keys produces a duplicate visual message on both said screens, thereby providing communication from the user to the receiver.

3,925,780

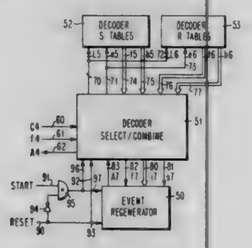
APPARATUS FOR DATA COMPRESSION ENCODING AND DECODING

David C. Van Voorhis, Los Gatos, Calif., assignor to International Business Machines Corporation, New York, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,500

Int. Cl.[2] H03K *13/24*

U.S. Cl. 340—347 DD **2 Claims**



1. An apparatus (FIGS. 2 and 9) for decoding variable length code words y into symbols s and i indicative of extended run length code words where s designates either that the number i represents one of $n-f$ code words for ordinary runs of lengths f through $n-1$, or that the number i represents one of $m+f$ code words for special evants, taken as any of m special situations, runs of lengths l through $f-1$, or runs of lengths n, where f is the most frequently occurring run length, the variable length code words being constrained such that the maximum code work length is bounded by a quantity $L_{max} \geq \log_2(m+n)$ and all code work lengths are ordered according to the formulas

$$1 \leq L_r(1) \leq L_r(2) \leq \ldots \leq L_r(n-f) \leq L_{max}$$

$$1 \leq L_S(1) \leq L_s(2) \leq \ldots \leq L_s(m+f) \leq L_{max}$$

the apparatus comprising:

a first stored table TS, a second stored table TR, a third stored table BR, and a fourth stored table TR (**52, 53**); means for accumulating successive codeword bits Y_1, Y_2, . . . , Y_k to form a single integer $Y=Y_1Y_2 \ldots Y_k$;

means (**51**) for comparing Y with successive elements of the TS table such ath if $Y \quad t_s(k)$, then another bit of y is accumulated; if $y<t_s(k)$, then the codeword y is decoded; means (**51**) for comparing y with successive elements of the TR table and, if $y<t_r(k)$, for computing the values s and i from y and the table values $t_r(k)$ and $b_r(k)$, such that $s=0$ and $i=y-t_r(k)+b_r(k)+1$, thus signifying that y is the ith regular code word $c_r(i)$; and

means (**51**) for comparing y with successive elements of the TR table and, if $y \quad t_r(k)$, for computing the values s and i from y and the table values $t_s(k)$ and $b_s(k)$, such that $s=1$ and $i=y-t_s(k)+b_s(k)+1$, thus signifying that y is the ith special code word $c_s(i)$.

3,925,781

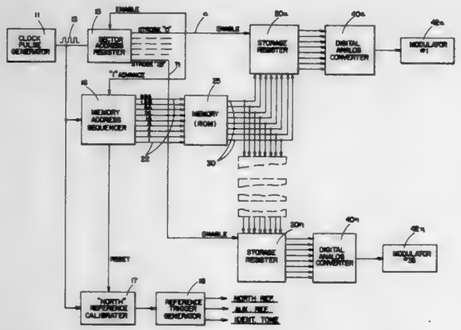
DIGITAL MODULATION GENERATOR WITH CYLINDRICAL ANTENNA ARRAY SYSTEM

James S. Hulett, Canoga Park, and Lowell N. Shestag, Woodland Hills, both of Calif., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 5, 1973, Ser. No. 403,997

Int. Cl.[2] G01S *1/44*

U.S. Cl. 343—106 R **15 Claims**



1. A modulation generator for generating a plurality of modulation signals for successively separately modulating the radio frequency signals radiated by individual elements of an antenna array, comprising:

a digital memory having stored therein binary coded digital signals representing a series of incremental modulation signals for modulating the signals radiated by each of said antenna elements,

means for addressing said memory to provide successive outputs in binary coded form, said outputs representing the modulation signal associated with each of said antenna elements in sequence,

separate storage register means for receiving the outputs of the memory associated with each of said antenna elements respectively,

digital-analog converter means for converting the outputs of each of said register means to analog form,

addressing means including means for successively enabling each of said storage register means to provide outputs therefrom in sequence to associated ones of said digital analog converter means, and

modulator means for generating a modulation signal for the radio frequency signals radiated by each of said antenna elements, said modulator means each receiving the output of a respective one of said digital-analog converter means and operating in response thereto.

3,925,782

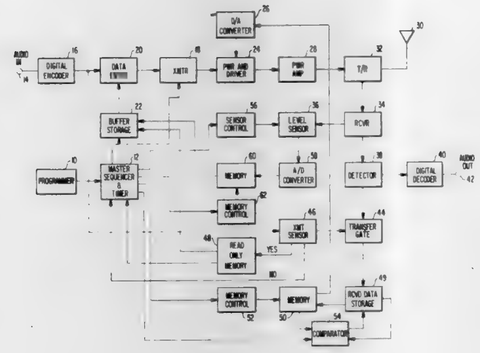
ADAPTIVE RF POWER OUTPUT CONTROL FOR NET RADIOS

Josef H. Anderl, and George R. Oliva, Jr., both of Eatontown, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 28, 1975, Ser. No. 554,334

Int. Cl.[2] H04J *3/12*; **H04B** *1/59, 3/60*

U.S. Cl. 343—178 **11 Claims**



1. A simplex data net communication system comprised of a plurality of like participant radio stations operating in a predetermined ordered time sequence wherein at least one station operates as a transmitter/interrogator station which interrupts its transmission of communications signals to the other stations of said plurality respectively operating as receiver/responder stations and interrogates said other stations as to the respective power received from said one station and said other stations respond in their proper time slot to said one station requesting a desired change in transmitted power from said one station, each said participant radio station including as a transmitter/interrogator station;

transmitter and receiver sections alternately coupled to an antenna;

means programmed with data as to the number of said plurality of participants in the net and its respective time slot in the overall operational time sequence of the system;

timing and control means coupled to said programmed means and being operable in response to said data to provide synchronized operational control signals for said station according to its respective time slot;

means coupling a digital interrogation code signal periodically to said transmitter section during said respective time slot in response to control signals from said timing and control means while temporarily suspending normal communications signal transmission, said interrogation code signal being transmitted to said other stations causing said other stations to respond in their respective time slot with a digital coded request signal for a power correction from said transmitter/interrogator section;

means coupled to said receiver section for sequentially receiving and storing each said digital coded request signal from said other stations;

means comparing each digital coded request signal with the next subsequently received digital coded request signal and retaining the request signal for the lesser power correction until all digital coded request signals have been received in sequence from said other stations; and

means coupled from said comparing and retaining means to said transmitter section, being operable to cause a change in the transmitted power output of said transmitter section in response to the digital coded request signal for the least power correction change.

3,925,783

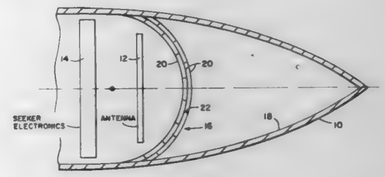
RADOME HEAT SHIELD

Michael P. Bleday, Concord, and Fred R. Youngren, Lexington, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 15, 1974, Ser. No. 524,284

Int. Cl.[2] H01Q *1/42*

U.S. Cl. 343—705 **5 Claims**



1. In a radar system wherein microwave energy is transmitted from an antenna through a radome, the inprovement of an electromagnetic window comprising: a dielectric heat shield disposed within said radome and spaced apart from the radome inner forward surface for reflecting radiant heat energy and absorbing convection heat energy induced by temperature differences within the radome while allowing microwave energy to pass therethrough, said heat shield having plural concentric layers of spaced apart titanium dioxide epoxy filled paper configured to prevent heat from escaping the aft end of the radome.

3,925,784

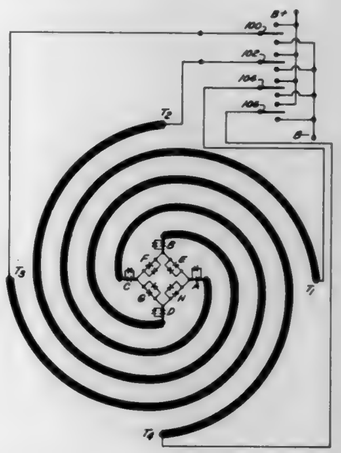
ANTENNA ARRAYS OF INTERNALLY PHASED ELEMENTS

Harry R. Phelan, Indialantic, Fla., assignor to Radiation Incorporated, Melbourne, Fla.

Continuation of Ser. No. 192,869, Oct. 27, 1971, abandoned. This application Feb. 6, 1974, Ser. No. 440,182

Int. Cl.[2] H01Q *19/00*

U.S. Cl. 343—754 **30 Claims**



1. A passive antenna for receiving and reradiating electromagnetic waves comprising:

at least three electrically conductive arms each having an inner end and an outer end,

said arms being spaced apart and symmetrically arranged in a plane and having a common center such that AC electrical signals are induced in said arms by a received elec-

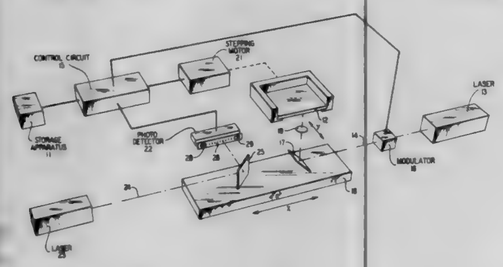
tromagnetic wave and in such a manner that said respective signals differ in phase among said arms, and

interconnecting means located proximate to said inner arm ends at said common center and in said plane for connecting a selected pair of said inner arm ends together with essentially a short circuit for reapplying said phase differing signals to the interconnected arms in such a manner that an electromagnetic wave radiates from the antenna with a phase relationship with respect to the received electromagnetic wave that is determined by the selected interconnections of said inner arm ends.

3,925,785
PATTERN GENERATING APPARATUS

Victor Andrew Firtion, Secaucus; Leif Rongved, Summit, and Thomas Edward Saunders, Basking Ridge, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 9, 1974, Ser. No. 496,150
Int. Cl.² G01D *15/24*
U.S. Cl. 346—1 **15 Claims**



1. In a method for forming patterns on a workpiece comprising the steps of forming on the workpiece a film responsive to radiant energy, forming and projecting against the workpiece a writing beam of radiant energy, causing relative movement of the writing beam with respect to the workpiece in orthogonal x and y directions, whereby the beam scans a surface of the workpiece, and modulating the intensity of the writing beam to describe the desired pattern, the improvement wherein:

the step of providing relative x-direction movement comprises the steps of mounting a carriage on a linear bearing surface extending in the x direction between two springs, propelling the carriage toward one of the springs, thus causing it to rebound from the spring, be propelled toward the opposite spring and begin reciprocating movement along the linear bearing;

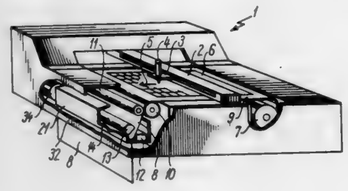
and further comprising the step of periodically imparting kinetic energy to the carriage, thereby to maintain uniformity of carriage reciprocation.

3,925,786
RECORDER WITH CUTTING MECHANISM

Jörg Haas, Neureut, Germany, assignor to Bruker-Physik AG, Germany

Continuation of Ser. No. 295,840, Oct. 10, 1972, abandoned.
This application June 5, 1974, Ser. No. 476,595
Claims priority, application Germany, Oct. 11, 1971, 2150554
Int. Cl.² G01D *15/00*
U.S. Cl. 346—24 **9 Claims**

1. Apparatus for recording a plotting data, especially a recording measuring device of X-Y plotter comprising feeding means including a feed mechanism for moving a strip-shaped record carrier in the longitudinal direction thereof, cutting means for severing the record carrier on which a recording is applied into sheets of predetermined size, the cutting means including a circular-shear device with a helical cutter arranged on the surface of a cylinder rotatable about the axis thereof, a fixed cutter bar being arranged in parallel to the axis of the cylinder, and electric cutting motor means having an output shaft directly coupled with the cutting cylinder, and control means for alternately operating the feeding means and the cutting means such that prior to and after each cutting operation, a feeding operation is effected, the control means including a plurality of cam-controlled switch means and associated cam means for engagement with the cam-controlled switch

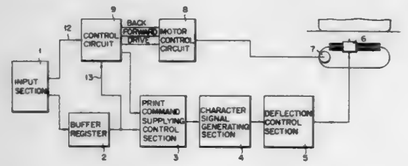


means, the cam means including at least one cam member coupled with the feeding means for actuating one of the switch means to stop the feeding movement of the record carrier by the feeding means in response to a predetermined feeding movement of the feeding means and for actuating the cutting means to sever the record carrier, one of the switch means being responsive to the termination of the cutting operation for reactivating the feeding means to complete the feeding movement thereof.

3,925,787
INK JET TYPE PRINTING DEVICE

Masahiko Suzuki, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Yamato, Japan

Continuation of Ser. No. 314,950, Dec. 14, 1972, abandoned.
This application July 3, 1974, Ser. No. 485,586
Claims priority, application Japan, Dec. 14, 1971, 46-101634
Int. Cl.² G01D *15/18*
U.S. Cl. 346—75 **5 Claims**



1. An ink jet type printing device comprising:

an input section (1) providing character signals and controlling printing;

a recording head section (6) including an ink jet printing means;

a drive motor (7) driving the recording head section (6);

a drive motor control section (8,9) controlling the rotation of the drive motor (7) in both rotary directions;

a character signal generating section (4,5) supplying a deflection-controlled character signal to the printing means;

a print command supplying control section (3) for controllably supplying a print command signal to the character signal generating section (4,5);

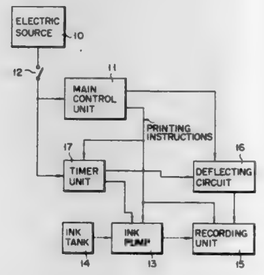
a register (2) for storing desired print information, connected to and supplied by an input signal from the input section (1) the output of the register (2) being coupled; to the print command supply control section (3);

and a control circuit means (9) connected to the input section (1), and providing output control signals to the print command supplying control section (3), the control circuit means (9) including means responsive to input signals from the input section (1) for providing command signals to the motor control section (8,9) for causing the motor control section to controllably excite the motor to move the record head section (6) first backward and then forward for a specific distance before the printing means starts printing characters, and thereafter providing output control signals to the print command supplying control section (3) to enable printing of the information in said register, to thereby prevent non-uniform printing due to initial non-uniform speed of the recording head upon start of movement of the recording head section (6).

3,925,788
INK JET RECORDING APPARATUS

Toshio Kashio, Yamato, Japan, assignor to Casio Computer Co., Ltd., Yamato, Japan

Continuation of Ser. No. 314,947, Dec. 14, 1972, abandoned.
This application July 8, 1974, Ser. No. 486,479
Claims priority, application Japan, Dec. 16, 1971, 46-101444
Int. Cl.² G01D *15/18*
U.S. Cl. 346—75 **4 Claims**



1. An ink jet recording system comprising:

a source of electric power; and

a recording apparatus selectively coupled to said source of electric power, said recording apparatus including:

a nozzle for emitting ink droplets for printing;

deflecting means including means for deflecting said ink droplets on a recording medium to print characters thereon;

an ink collector for collecting ejected ink droplets which are not used to print characters;

a timing means coupled to said power source for periodically generating an output signal upon the lapse of a predetermined time period when electric power is supplied to said recording apparatus;

a source of print command signals;

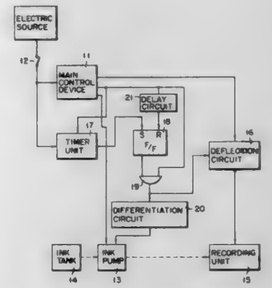
ink ejection means coupled to said source of print command signals and to said nozzle for producing a preprinting ejection of ink droplets from said nozzle for a period of time just prior to the printing of characters and in response to print command signals from said print command signal source, said ink ejection means being further coupled to said timing means for producing a nozzle clearing ejection of ink droplets from said nozzle for a given period of time in response to said periodic output signals from said timing means and independent of said print command signals; and

a deflection control means coupled to said deflecting means and to said timing means for causing said deflection means to deflect said nozzle clearing ejection of ink droplets which are ejected in response to said periodic timing means output signals to said ink collector, thereby maintaining said nozzle in a normal ink ejectable condition over extended periods of time.

3,925,789
INK JET RECORDING APPARATUS

Toshio Kashio, Yomato, Japan, assignor to Casio Computer Co., Ltd., Yomato, Japan

Continuation of Ser. No. 314,999, Dec. 14, 1972, abandoned.
This application July 8, 1974, Ser. No. 486,480
Claims priority, application Japan, Dec. 16, 1971, 46-101443
Int. Cl.² G01D *15/18*
U.S. Cl. 346—75 **9 Claims**



1. An ink jet recording apparatus comprising:

a recording unit including a nozzle for continuously ejecting ink droplets during a normal printing or recording operation;

means for deflecting said normally ejected ink droplets so as to print characters on a recording medium;

an ink collector for collecting ejected ink droplets which are not used to print characters;

a source of print command signals for instructing the carrying out of a printing operation;

detecting means having an instruction input coupled to said source of print command signals and generating a detection signal responsive to a print command signal, said detecting means including delay means coupled to said recording unit for delaying carrying out of said printing operation for a predetermined period of time; and

preliminary ejection means coupled to said detecting means and to said recording unit, and including means for producing a first nozzle-clearing preliminary ejection of ink from said nozzle for a first given period of time during said predetermined period of time responsive to said detection signal from said detecting means, and means for then producing a second preliminary ejection of ink for a second given period of time during said predetermined period of time in order to produce a steady ink flow from the nozzle, said first given period of time being much longer than said second given period of time;

said deflection means being responsive to outputs of said detecting means and said preliminary ejection means for deflecting said preliminarily ejected ink droplets to said ink collector during said predetermined period of time;

said printing operation being carried out after the expiration of said predetermined period of time.

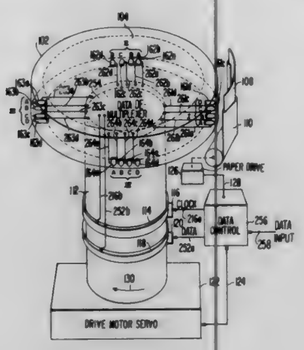
3,925,790
IMAGE GENERATOR HAVING A PLURALITY OF MARKER UNITS OPERATED IN A PREDETERMINED SEQUENCE TO INHIBIT THE FORMATION OF PATTERNS

Kenneth Henry Fischbeck, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 25, 1974, Ser. No. 463,996
Int. Cl.² G01D *15/18*
U.S. Cl. 346—140 **7 Claims**

1. A printing apparatus for marking picture elements along a line of a recording medium comprising:

a plurality of substantially matched marking units, each of said marking units being operable in response to a control signal manifesting tonal information to mark said recording medium, marks made by each of said marking units being normally substantially indistinguishable from marks made by the other marking units, at least one of said marking units being subject to malfunction; and



means for sequentially coupling said control signals to successive ones of said marking units in accordance with a predetermined sequence wherein no marking unit marks adjacent picture elements in said line whereby the marks of any malfunctioning marking unit are distributed at spaced intervals along said line.

3,925,791

PATTERN PRINTING APPARATUS

David Patrick Hunt, Cambridge, England, assignor to Imperial Chemical Industries Limited, London, England

Filed June 13, 1974, Ser. No. 479,178

Claims priority, application United Kingdom, June 13, 1973, 28169/73

Int. Cl.² G01D *15/18*

U.S. Cl. 346—140 **4 Claims**



1. An improved adjustable nozzle for pattern printing equipment having a plurality of printing guns each having a nozzle from which emerges a jet of printing liquid, the nozzle comprising:

a housing having interior walls defining an opening extending therethrough,

a plate member having a surface defining a plane and an opening extending therethrough, said plate member being adjustably mounted on said housing so that the opening in said plate member communicates with the opening in said housing,

a compressible member having an opening extending therethrough, said compressible member being positioned between said plate member and said housing such that the opening in said compressible member communicates with the opening in said housing,

a disc member having interior walls defining an opening extending therethrough, said opening having an axis through the center thereof and said disc member being positioned in contact with said plate member so that the opening in said disc member communicates with the opening in said plate member,

positioning means for holding said compressible member, said plate member and thereby said disc member on said housing, said positioning means being adjustable to move said plate member with respect to said housing thereby changing the degree of compression of said compressible member to move the plane defined by said plate member and moving the axis of said opening in said disc member whereby the direction of flow of printing liquid emerging from the opening in said disc member is alterable.

3,925,792

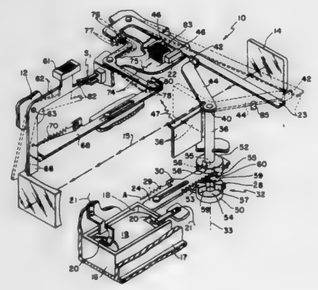
BATTERY TEST APPARATUS FOR USE IN A PHOTOGRAPHIC CAMERA

David E. Beach, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 17, 1974, Ser. No. 480,443

Int. Cl.² G03B *17/18*

U.S. Cl. 354—60 **6 Claims**



1. In a camera having a housing, apparatus for determining the operational status of a camera battery comprising:

a. an indicator member mounted within said housing and movable between a viewable position to indicate an unoperational battery condition and a nonviewable position, in which position an operational battery condition is indicated;

b. means for continuously urging said indicator member towards said viewable position;

c. electrical means energizable in a manner functionally related to the magnitude of the output voltage of a received battery, said electrical means having an output member operably associated with said urging means and mounted for concurrent movement therewith between a retaining position wherein said output member prevents said urging means from moving said indicator member from its nonviewable position and a released position wherein said urging means locates said indicator member in its viewable position, said output member being constructed and located to attain said retaining position in response to energization of said electrical means above a predetermined voltage level;

d. a manually operatable actuating member;

e. releasable latch means for maintaining said output member in said retaining position prior to energization of said electrical means;

f. control means responsive to operation of said actuating member for connecting the received battery to said electrical means and for releasing said latch means; and

g. means cooperating with said releasable latch means for permitting said output member to maintain said indicator member in its viewable position when the received battery is in an unoperational condition.

3,925,793

EYE FUNDUS CAMERA WITH FOCUS SETTING DEVICE

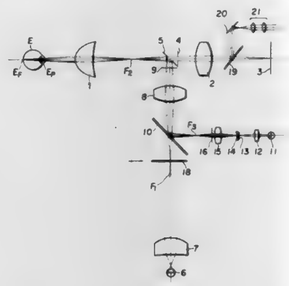
Isao Matsumura, Yokohama, and Yoshimi Kohayakawa, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1974, Ser. No. 455,945

Claims priority, application Japan, Mar. 31, 1973, 48-36215

Int. Cl.² G03B *29/00*

U.S. Cl. 354—62 **9 Claims**



1. An eye fundus camera having a focus setting device, comprising:

photographing optics having an objective, a first reflection member, a first relay lens, and a photographing plane in said order from an eye to be inspected;

illuminating optics having a light source, a condenser lens, and a second relay lens for directing a beam onto an eye fundus through said first reflection member;

mark projection optics having a mark element, beam splitting means to separate the beam coming from said mark into a pair of beams, a beam diaphragm plate to limit each of said beams and an optical means for imaging the separated beams coming from said beam diaphragm plate; and a second reflection member being obliquely disposed on an optical axis of the first reflection member and the condenser lens of said illuminating optics to direct the beam from said mark projection optics into the illuminating optics;

wherein said photographing plane has a conjugate relationship with the imaging plane of the separated beams from the beam diaphragm plate in the mark projection optics, and wherein said beam diaphragm plate in the mark projection optics and the pupil plane of an eye to be inspected are in an imaging position relationship.

3,925,794

DEVICE FOR TAKING SEQUENCES OF AERIAL PHOTOGRAPHS

Aime Elie Alouges, Evry, France, assignor to Centre National d'Etudes Spatiales, Paris, France

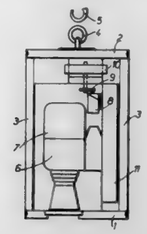
Filed Jan. 17, 1974, Ser. No. 434,135

Claims priority, application France, Jan. 17, 1973, 73.01611

Int. Cl.² G03B *29/00*

U.S. Cl. 354—70 **12 Claims**

1. In combination with an aerial photography device fixed to a nacelle, and having at least one photographic apparatus arranged to be directed towards the ground when the nacelle is suspended from a balloon, a connection element for connecting the balloon with the nacelle, an element for controlling the taking of photographic exposures by the or each photographic apparatus and a mechanism for orienting the device about a vertical axis; an intervalometer for controlling the sequence of successive photographic exposures, a magnetometer for detecting the angular orientation of the nacelle in relation to the direction of the magnetic field of the Earth and means under control of the intervalometer and the magnetometer for initiating a photographic exposure taken by the or



each photographic apparatus when a predetermined angular orientation is reached.

3,925,795

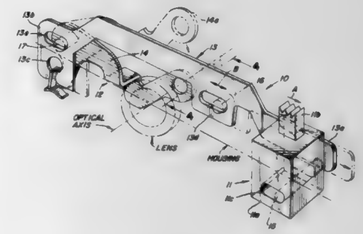
MECHANISM FOR CONTROLLING THE POSITIONING OF A DIAPHRAGM WITHIN A CAMERA

Walter A. Booth, Springfield, N.J., assignor to Berkey Photo, Inc., Paramus, N.J.

Filed Jan. 7, 1974, Ser. No. 431,480

Int. Cl.² G03B *15/03*

U.S. Cl. 354—139 **3 Claims**

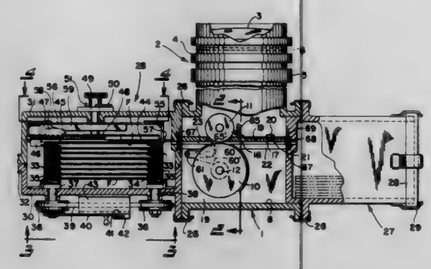


1. A mechanism of the type described for use on a camera having a housing provided with a film chamber, a lens positioned forwardly of and aligned with the film chamber, a manually activated shutter release for the lens, and a strobe light selectively responsive to the manual actuation of the shutter release; said mechanism comprising an on-off switch means mountable on the housing for manual movement between "on" and "off" positions and adapted to be operatively connected to the strobe light whereby the latter is energized upon actuation of the shutter release only when said on-off switch means is disposed in an "on" position, an apertured diaphragm adjustably mountable on the housing for movement between an operative position intermediate the film chamber and the lens whereby an aperture of the diaphragm is aligned with the optical axis of the lens, and an inoperative position wherein said diaphragm aperture is substantially out of registration with the lens, said diaphragm being provided with a first complemental portion spaced from said diaphragm aperture, an elongated link member adjustably mountable within the housing and carried by and movable in unison with said on-off switch means, said link member being provided with a second complemental portion in abutting engagement with said first complemental portion whereby movement of said switch means is directly transmitted to said iris to effect movement of the latter to either the operative or inoperative position, and resilient means mountable within the housing and being slidably engaged by a portion of the diaphragm and releasably retaining the latter in either said operative or inoperative position depending upon the relative position of said on-off switch means.

3,925,796
CAMERA APPARATUS FOR MAKING PHOTOGRAPHIC IMAGES ON MOVING CUT FILM PIECES

John J. Taylor, 539 S. San Marcos Road, Santa Barbara, Calif. 93111

Filed Aug. 22, 1973, Ser. No. 390,379
Int. Cl.² G03B *19/10*
U.S. Cl. 354—180 10 Claims

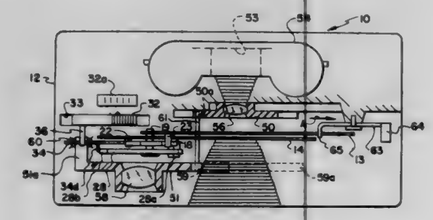


1. Camera apparatus for making a photographic image on a piece of cut photographic film while it is moving, comprising a body having an interior chamber; a lens mounted on said body and adapted to project an image into said chamber; means for guiding an individual cut film piece in a fixed path of travel in said chamber past said lens; means for propelling said individual film piece at a predetermined speed in said fixed path past said lens, said propelling means comprising two rolls that between them grip said film piece to propel it past said lens without substantial slippage, and means for rotating at least one of said rolls prior to entry of a film piece therebetween at a speed that will accelerate and propel said film piece at said predetermined speed past said lens; a light-tight supply chamber for storing a plurality of unexposed cut film pieces; means for sequentially individually positioning each of said individual unexposed film pieces in a substantially stationary condition at a location where it can enter said path of travel; and means for moving said film piece from said location to said propelling means so said propelling means can engage said film piece, accelerate it to said predetermined speed, and move said film piece in said path past said lens.

3,925,797
EXPOSURE CONTROL APPARATUS FOR A PHOTOGRAPHIC CAMERA HAVING INTERCHANGEABLE LENSES

Helmut Ettischer, Ruit, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 16, 1974, Ser. No. 515,273
Claims priority, application Germany, Sept. 26, 1975, 2352076
Int. Cl.² G03B *3/00*
U.S. Cl. 354—197 8 Claims



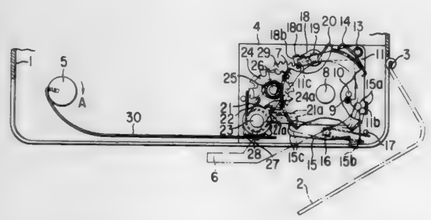
1. In a camera of the type having means adapted to locate lens apparatus having a plurality of focal lengths along a picture-taking axis, the improvement comprising:

a. means actuatable for selecting a particular lens apparatus having a predetermined focal length;
b. shutter means movable along a path between an initial, light-blocking position and a terminal, light-unblocking position for defining a varying progression of effective exposure apertures in registry with said axis as a function of the position of said shutter means along said path; and
c. means responsive to selection of said particular lens apparatus for varying said terminal position of said shutter means.

3,925,798
FILM-ADVANCING DEVICE FOR A CAMERA

Noriaki Sanada, and Kanehiro Sorimachi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 18, 1973, Ser. No. 380,229
Claims priority, application Japan, July 27, 1972, 47-75451
Int. Cl.² G03B *1/24*; B03B *1/62*
U.S. Cl. 354—215 1 Claim



1. A film advancing device for a camera using a magazine to accomodate a roll film therein, which comprises in combination:

supply spool means for winding the film out of the magazine and onto a supply spool of said means prior to phototaking;

means for taking up the film wound on said supply spool back into the magazine, said take-up means having a film take up lever, said take up lever being so arranged as to be able to control frame-by-frame movement of the film; film counter means movably operative in correspondence to the film winding operation of said supply spool and to the frame-by-frame movement of the film by said film take-up means;

means for locking said take-up means, said locking means being associated with and responsive to said film counter means to lock said take-up means against movement in the take-up direction prior to completion of an initial portion of said film winding operation and to release said take-up means after a predetermined length of the film is wound up on said supply spool; and

means for driving said film counter means in accordance with movement of said film, said driving means being so interlocked with the back cover of the camera as to be engaged and disengaged with said film counter means and to cause said film counter means to displace to a position where said driving means cannot drive the counter when said camera back cover is open.

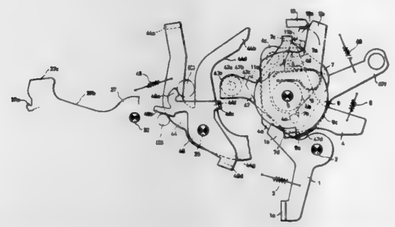
3,925,799
SHUTTER CONTROL ARRANGEMENT FOR CAMERAS

Atsutada Nakatani, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Mar. 27, 1974, Ser. No. 455,512
Claims priority, application Japan, Mar. 28, 1973, 48-35191
Int. Cl.² G03B *9/08*
U.S. Cl. 354—235 6 Claims

1. A shutter mechanism for cameras comprising: a control lever arranged to be released from its locked condition by

shutter release operation, a front blade release lever engageable with said control lever and rotated by movement of said control lever, a front blade actuating lever engageable with said front blade release lever and released by movement of said front blade release lever to move front blades, a hold lever engageable with said control lever and rotated by movement of said control lever, a magnet lever engageable with said hold lever and rotatable by following rotation of said hold lever, a rear blade release lever engageable with said magnet lever and rotated by said magnet lever at the final stage of movement of said magnet lever, a rear blade actuating lever

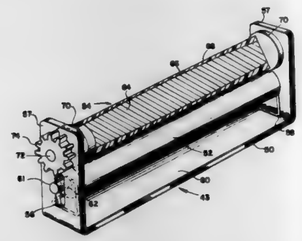


engageable with said rear blade release lever and released by rotation of said rear blade release lever to move rear blades, a lock lever engageable with said magnet lever and capable of locking said magnet lever, an indication control lever engaging with said magnet lever and engageable with said control lever, and an indicating lever connected to said indication control lever, engagement of said magnet lever and lock lever being released by said front blade actuating lever at the final stage of movement of said front blade actuating lever, and said indicating lever being moved by said control lever through said indication control lever when said magnet lever is locked by said lock lever.

3,925,800
SPREAD ROLLER SYSTEM FOR SELF DEVELOPING TYPE PHOTOGRAPHIC APPARATUS

James M. Whall, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 2, 1974, Ser. No. 466,415
Int. Cl.² G03D *9/00*
U.S. Cl. 354—301 14 Claims



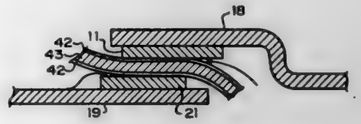
1. Photographic apparatus including means for spreading a processing fluid in a layer between a pair of sheet elements, said spreading means comprising:

a first member having a first sheet-contacting surface; and a second member mounted in juxtaposed relation to said first member and adapted to define a pressure generating gap therewith through which the sheet elements are adapted to be advanced during spreading of the processing fluid, said second member including a generally rigid support member having superimposed thereon a layer of resilient material having a longitudinally extending continuously varying thickness that cooperates with said support member to provide a second sheet-contacting surface having longitudinally extending variable deformation capability.

3,925,801
PHOTON ISOLATOR WITH IMPROVED PHOTODETECTOR TRANSISTOR STAGE

Roland H. Haitz, Portola Valley; Paul G. Sedlewicz, Menlo Park; Keith A. Stirrup, Los Altos; David F. Hilbiber, Los Altos Hills, and Robert W. Teichner, Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 408,033, Oct. 19, 1973, which is a continuation of Ser. No. 225,896, Feb. 14, 1972, abandoned. This application May 31, 1974, Ser. No. 475,216
Int. Cl.² H01L *33/00, 31/12, 31/16*
U.S. Cl. 357—19 1 Claim



1. An optically coupled isolator comprising:

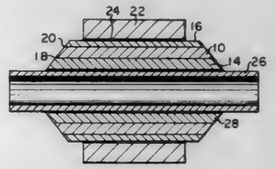
a semiconductor photon emitter and a semiconductor photon detector, said emitter and detector being mounted together in spaced-apart alignment; and

an isolating material comprising a lamination of a polymide film between two fluorinated ethylene-propylene copolymer films sandwiched between said emitter and detector for providing a selected spacing and electrical isolation therebetween.

3,925,802
SEMICONDUCTOR DEVICE

Jinzo Watanabe; Noboru Terao; Koichi Kamahara; Kazuhisa Miyashita, and Kenji Fujihira, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Feb. 21, 1974, Ser. No. 444,312
Claims priority, application Japan, Feb. 27, 1973, 48-23497; Feb. 15, 1974, 49-18797
Int. Cl.² H01L *29/06*
U.S. Cl. 357—20 6 Claims

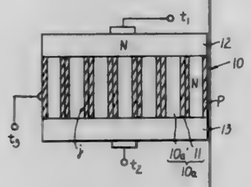


1. A semiconductor device comprising, a tubular substrate of semiconductor material with one type conductivity, an annular inner layer of semiconductor material of an opposite type conductivity internally of said tubular substrate defining a PN junction therebetween, a tubular conductive anode electrode bonded internally of said annular inner layer of semiconductor material and of greater axial length than said annular layer and said substrate, an N^+ type semiconductor annular outer layer circumferentially of said substrate defining an NN^+ junction therebetween, a tubular conductive cathode electrode circumferentially of the last-mentioned layer and of lesser axial length, and the substrate and inner and outer layers having bevelled outer edges defining in axial cross-section two frusto-conical configurations each having a base on a side opposite the longitudinal axis of the anode electrode.

3,925,803
ORIENTED POLYCRYSTAL JFET

Isamu Kobayashi, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed July 12, 1973, Ser. No. 378,449
Claims priority, application Japan, July 13, 1972, 47-70225
Int. Cl.² H01L *21/365, 29/80*
U.S. Cl. 357—22 **6 Claims**

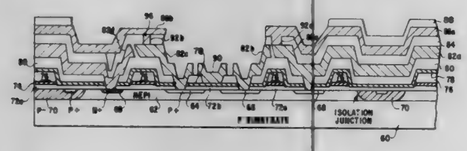


1. A semiconductor device comprising:
A. a polycrystalline region comprising a plurality of slender, rod-shaped semiconductor crystals grown simultaneously in a closely packed group substantially parallel to each other and having grain boundaries therebetween, said crystals being of one conductivity type;
B. a sheath comprising an impurity layer of the opposite conductivity type along the length of each of said crystals to form, with the central crystalline material of the respective rod-shaped crystal, a P-N junction;
C. a first electrode connected to one end of said crystals;
D. a second electrode connected to said sheath;
E. a third electrode connected to the other end of said crystals.

3,925,804
STRUCTURE OF AND THE METHOD OF PROCESSING A SEMICONDUCTOR MATRIX OR MNOS MEMORY ELEMENTS

James Ronald Cricchi, Baltimore, and Barry W. Ruehling, Belair, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 29, 1974, Ser. No. 437,650
Int. Cl.² H01L *29/78, 29/34*
U.S. Cl. 357—23 **15 Claims**

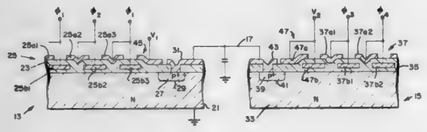


1. A semiconductive structure comprising:
a. a semiconductive member of a first conductivity type, having a surface;
b. first and second regions disposed within said surface of said semiconductive member and formed of a second conductivity type material opposite to that of said first conductivity type, said first and second regions being spaced from each other and defining a second portion of said surface of said semiconductive member;
c. a first silicon oxide layer disposed over a first, further portion of said surface of said semiconductive member;
d. a second silicone oxide layer disposed to cover said second portion of said surface;
e. third and fourth layers of silicon nitride or aluminum oxide deposited respectively over said first and second silicon oxide layers;
f. a first conductive element disposed in intimate electrical contact with that portion of said fourth nitride layer covering at least a part of said semiconductive member intermediate said first and second regions, thus permitting the formation of a channel therebetween in response to the application of a signal to said first conductive element, said fourth layer being deposited at a rate and at a temperature to provide a minimal interface charge at the interface surface between said second silicon oxide layer and said fourth layer; and
g. a second conductive element disposed through a window within said second silicon oxide layer and said fourth layer to form an intimate electrical contact with one of said first and second regions of said member and disposed to overlie said third layer, said third layer deposited at a rate and at a temperature to provide a maximum interface charge at the interface surface between said first silicon oxide layer and said third layer, of a polarity to inhibit the formation of a parasitic region beneath said second conductive element upon the application of a signal to said second conductive element.

3,925,805
SYSTEM FOR TRANSFERRING CHARGE BETWEEN SPACED APART CCDS BY DIRECT SERIES CONNECTION

Darrell M. Erb, Newport Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 28, 1974, Ser. No. 437,422
Int. Cl.² H01L *29/78*
U.S. Cl. 357—24 **14 Claims**

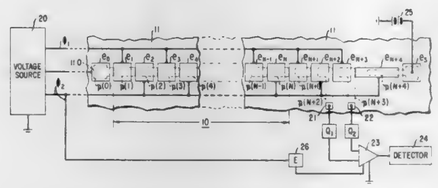


1. A system for coupling charge from a sending CCD to a receiving CCD, each CCD having distributed along the surface of a semiconducting substrate an array of charge handling electrodes, said system comprising:
a. means for cyclically stepping the electrodes of said sending CCD through a plurality of potentials so as to intermittently induce potential wells under them;
b. means for cyclically stepping the electrodes of said receiving CCD through a plurality of potentials so as to intermittently induce potential wells under them;
c. a doped region forming an output P-N junction in the substrate of said sending CCD adjacent one of its electrodes;
d. a doped region forming an input P-N junction in the substrate of said receiving CCD adjacent one of its electrodes;
e. an output coupling electrode in said sending CCD intermediate said one of its electrodes and said doped region adjacent thereto;
f. an input coupling electrode in said receiving CCD between said one of its electrodes and said doped region adjacent thereto;
g. means for directly interconnecting said doped regions; and
h. means for maintaining respective ones of said output coupling electrode and said input coupling electrode at first and second preselected potentials relative to said substrates.

3,925,806
TRANSFER FILTER FOR TRANSFER DEVICES

Robert Joseph Strain, North Indialantic, Fla., and Karvel Kuhn Thornber, Berkeley Heights, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 373,269, June 25, 1973, abandoned. This application Nov. 29, 1974, Ser. No. 528,030
Int. Cl.² H01L *29/78*
U.S. Cl. 357—24 **11 Claims**

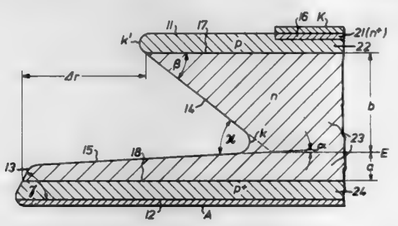


1. A transfer device which comprises:
a. a first transfer device section having N successive transfer stages for transferring a transfer signal entity in a transfer direction from stage to stage sequentially;
b. a second transfer device section, responsive to the output of the first transfer device section, having at least two transfer stages of which one stage has a coefficient of incomplete transfer which is within 50 percent of the sum of the coefficients of incomplete transfer in all transfer stages in the first and second sections previous in the transfer direction to the said one stage.

3,925,807
HIGH VOLTAGE THYRISTOR

Alois Sonntag, Muhlheim, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Nov. 26, 1974, Ser. No. 527,396
Claims priority, application Germany, Nov. 27, 1973, 2358937
Int. Cl.² H01L *29/06*
U.S. Cl. 357—55 **3 Claims**

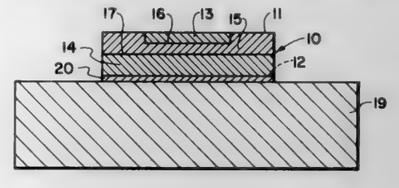


1. In a thyristor for operation at high voltages and including: a fully diffused, generally cylindrical semiconductor element having two opposed end surfaces defining major surfaces of the element, the major surfaces being of respectively different radii, and the element further having a conically tapered edge surface extending between the major surfaces, the element being composed of a plurality of semiconductor regions of alternatingly opposite conductivity types defining pn-junctions lying in planes essentially parallel to the major surfaces, one of the semiconductive regions being bounded by first and second ones of the pn-junctions, the first one of the pn-junctions being arranged to be reverse-biassed in the forward conducting direction of the thyristor, and the first and second ones of the pn-junctions having respectively different radii; and two electrodes each contacting a respective major surface; the improvement wherein: the circumference of at least part of said one semiconductive region is radially constricted and is defined by two surface portions lying in conical planes sloping radially inwardly toward one another and intersecting at an intersection plane parallel to said pn-junctions; one of said surface portions intersects said first one of said junctions and extends substantially to the smaller one of said major surfaces; the other of said surface portions extends to said tapered edge surface and is located entirely between said first and second ones of said junctions so as to not intersect any pn-junction; the angle between said one of said surface portions and said first one of said junctions is larger than the angle between said other of said surface portions and said intersection plane; the distance between said first one of said junctions and said intersection plane is greater than the distance between said second one of said junctions and said intersection plane; and the distance between said first one of said junctions and said second one of said junctions is smaller than the difference between the radii of said first and second ones of said junctions.

3,925,808
SILICON SEMICONDUCTOR DEVICE WITH STRESS-FREE ELECTRODES

Prosenjit Rai-Choudhury, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 8, 1974, Ser. No. 495,755
Int. Cl.² H01L *23/48, 29/44*
U.S. Cl. 357—67 **9 Claims**



1. A silicon semiconductor device comprising:
A. a silicon semiconductor body having opposed major surfaces and containing impurity regions of different conductivity types to impart given electrical characteristics to the device;
B. at least one electrode of silicon doped therethrough to an impurity concentration of greater than about 1×10^{19} atoms/cm^3; and
C. at least one solder layer, said solder layer being disposed between and bonding together the silicon body and the electrode of silicon in intimate electrical and mechanical contact, said solder layer formed by alloying a solder material with the silicon body and the electrode of silicon, said device being so constructed and arranged that at least one of the opposed major surfaces of the silicon body is in its entirety in intimate contact with the electrode of silicon.

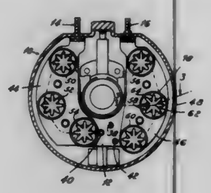
3,925,809
SEMI-CONDUCTOR RECTIFIER HEAT SINK

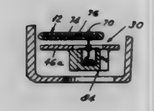
David L. Striker, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 379,136, July 13, 1973, abandoned. This application Feb. 4, 1975, Ser. No. 546,965
Int. Cl.² H01L *23/02*
U.S. Cl. 357—81 **7 Claims**

1. In a semi-conductor rectifier assembly for a polyphase AC alternator of the type having a plurality of semi-conductor diode members equal in number to twice the number of electrical phases in the alternator output, each of the diode members having a cathode electrode and an anode electrode, electrical circuit means interconnecting selected pairs of the diode members with the phases of the alternator output such that the cathode electrodes of the first diode member of a diode pair and the anode electrode of the second diode member of a diode pair are electrically common and are connected

to receive a phase of the alternator output, and further electrical circuit means interconnecting the anode electrodes of the first diode members of the diode pairs and interconnecting the cathode electrodes of the second diode members of the diode pairs for producing a rectified DC output wherein the further electrical circuit means comprise first and second heat dissipating plate members having a generally uniform thickness in a first direction, the first plate member being electrically common with the anode electrodes of the first diode members of the diode pairs and the second plate member being electrically common with the cathode electrodes of the second diode members of the diode pairs, the improvement comprising:





a plurality of finned elements having fin members in thermal contact with the plate members and extending away therefrom in the first direction with said fin members extending away from the finned elements in a direction transverse to the first direction;

each of said diode members being arranged to be in thermal contact with one of the finned elements; and

a plurality of apertures defining air flow passages extending through the first and second plate members in proximity to said fin members to facilitate air flow over said fin members.

3,925,810

MAGNETIC RECORDING AND/OR REPRODUCING SYSTEM

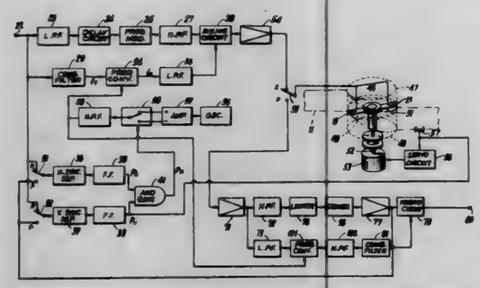
Yoshio Ishigaki; Hisaaki Narahara, both of Tokyo, and Takao Tsuchiya, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 21, 1975, Ser. No. 542,697

Claims priority, application Japan, Jan. 21, 1974, 49-9160

Int. Cl.² H04N *5/79*

U.S. Cl. 358—4 **5 Claims**



1. Apparatus in which video signals are recorded in *h*-alignment in adjacent tracks on a recording medium, said apparatus comprising:

A. means for generating a frequency converting carrier signal in first and second versions of opposite polarity;

B. a frequency converter to receive chrominance components of said video signals; and

C. means to apply said first and second versions of said carrier signal in a predetermined sequence to said frequency converter, said sequence being such that, during alternate tracks, only one of said versions is applied and, during the remaining alternate tracks, said first and second versions are applied alternately in successive line intervals.

3,925,811

APPARATUS HAVING DROPOUT DETECTION AND COMPENSATION FOR REPRODUCING A VIDEO SIGNAL RECORDED ON A RECORD

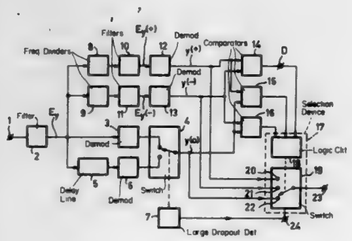
George Churchill Kenney, Briarcliff Manor, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Feb. 14, 1974, Ser. No. 442,354

Claims priority, application Netherlands, Aug. 7, 1973, 7310869

Int. Cl.² H04N *5/76, 9/02*

U.S. Cl. 358—8 **6 Claims**



1. An apparatus for reproducing a video signal which is recorded on a record carrier which contains a carrier which is frequency modulated by the luminance information of the video signal, said apparatus comprising a first filter having input means for receiving said recorded signal and an output, a first and a second frequency divider, each having an input coupled to said first filter output such that each divider provides a signal of lower frequency than said recorded signal, the first frequency divider having output means for supplying a first lower frequency signal whose consecutive zero crossings correspond to the zero crossings of the rising edges of the modulated carrier, the second frequency divider having output means for supplying a second lower frequency signal whose consecutive zero crossings correspond to the zero crossings of the falling edges of said modulated carrier, a first frequency demodulator means coupled to said first divider output means for demodulating the first lower frequency signal, a second frequency demodulator means coupled to said second divider output means for demodulating the second lower frequency signal, and a first comparator means coupled to said demodulator output means for comparing the demodulated first and second lower frequency signals, said comparator means having an output means for supplying an output signal which indicates the occurrence of a signal dropout.

3,925,812

COLOUR TELEVISION CAMERA INCLUDING A POSITION CORRECTOR FOR AT LEAST TWO SCANNING RASTERS IN THE CAMERA

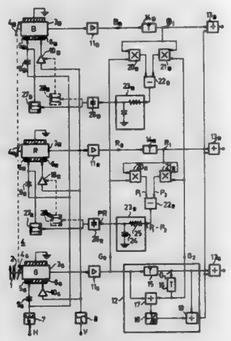
Hendrik Blom, and Prudent Eduardus Jacobus Mollet, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 2, 1972, Ser. No. 249,527

Claims priority, application Netherlands, May 6, 1971, 7106184

Int. Cl.² H04N *9/08*

U.S. Cl. 358—51 **7 Claims**



1. A circuit for registering a first scanning raster onto a second scanning raster, said circuit comprising a position corrector means having a pair of inputs for receiving video signals representative of said rasters respectively and an output means for supplying an error signal in accordance with any differences in registration between said rasters; means for eliminating high frequency components from said error signal comprising an integrator having an input coupled to said output means, and an output, and having a time constant at least substantially equal to one field period; and a store having an input coupled to said integrator output and an output means for applying a signal to a deflection means whereby said registration is performed without high frequency distortion.

3,925,813

OPTICAL SYSTEM FOR COLOR TELEVISION CAMERA

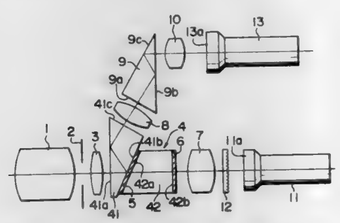
Seiji Toyama, Kawaguchi; Kazuo Yoshikawa, Omiya, and Takeshi Higuchi, Tokyo, all of Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Feb. 5, 1974, Ser. No. 440,139

Claims priority, application Japan, July 2, 1973, 48-73648

Int. Cl.² H04N *9/04*

U.S. Cl. 358—55 **15 Claims**



1. An optical system for a double tube color television camera comprising an afocal objective lens component, a color separating optical means located behind said objective lens component for dividing the light incident thereto into first light carrying first color image information and second light carrying second color image information, a first focussing lens system located behind the color separating optical means for focussing said first light on a first image pickup tube of the camera, a second focussing lens system located beside the color separating optical means for focussing said second light on a second image pickup tube of the camera, and a light deviating means provided in said second focussing lens system for directing the second light in the direction parallel to the optical path of said first light.

3,925,814

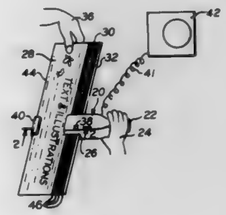
SOUND CARD AND SOUND APPARATUS SUITABLE FOR MULTI-CHANNEL USE

Maurice E. Chernowitz, 91 Payson Ave., New York, N.Y. 10034

Continuation-in-part of Ser. No. 103,589, Jan. 4, 1971, Pat. No. 3,767,208. This application Aug. 23, 1973, Ser. No. 390,748. The portion of the term of this patent subsequent to Oct. 23, 1990, has been disclaimed.

Int. Cl.² G11B *25/04, 15/12, 5/12*

U.S. Cl. 360—2 **9 Claims**

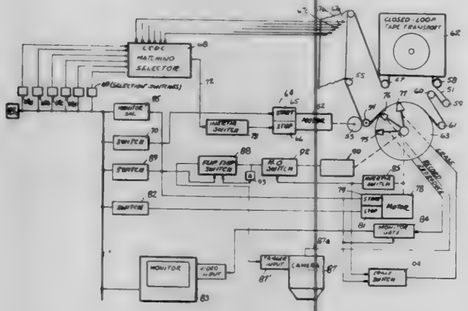


1. Audio apparatus having a card with a substantially straight longitudinal edge along one side thereof, a sound track on the card extending parallel to said edge and including a plurality of sub-channels thereon, a frame having a portion that is shaped to fit the grip of one hand of an operator holding it during use, a channel shaped guideway at one end of the frame facing away from the portion that is gripped in one hand, said channel shaped guideway having top and bottom guide surfaces having portions that extend to the end of the frame remote from the grip portion and that covers the portion of the card inward from said longitudinal edge, including the sound track, and with a mid-surface of the guideway between the top and bottom guide surfaces thereof in angular relation to the top and bottom guide surfaces and with which said longitudinal edge of the card contacts to guide the card during relative movement of the card and frame lengthwise of the sound track, the guideway being substantially shorter than the card in the direction of relative movement of the card and guideway, a sound head carried by the frame with a portion that projects through the top guide surface of the guideway into working relation with the sound track when the edge of the card is against the mid-surface of the channel, the card being substantially greater in width than the part that extends into the guideway whereby most of the card is visible beyond the guideway and there is a wide card area beyond the end of the guideway that can be gripped by the other hand of an operator who is holding the grip portion with his first hand, the sound head having different contacts that operate along the different sub-channels of the sound track, and switch means operable into different positions to make different contacts effective.

3,925,815
VIDEO TRANSDUCING APPARATUS AND METHOD FOR EDITING

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 225,173, Aug. 27, 1962, which is a continuation-in-part of Ser. No. 668,348, June 27, 1957, Pat. No. 3,051,777, which is a continuation-in-part of Ser. No. 515,417, June 14, 1955, Pat. No. 3,003,109. This application Jan. 14, 1974, Ser. No. 432,906
Int. Cl.² G11B 27/02
U.S. Cl. 360—14 10 Claims



1. A method of recording and reproducing video information relative to an eraseable record member by selectively erasing and replacing video picture signals which have been previously recorded with respective newly generated video signals recorded along the recording areas of the record member from which said previously recorded signals have been erased, comprising:

generating a plurality of full-frame video picture signals and recording said full-frame video picture signals on respective frame recording areas of an eraseable record member,

thereafter replacing a selected portion of the recorded full-frame video signals with respective new full-frame video picture signal recordings by:

scanning said record member by relatively moving it and a plurality of transducers including a recording transducer which is operable for recording video signals and an erasing transducer which is normally deactivated and may be selectively operable for erasing selected of the recorded video signals,

generating a pulse signal each time a full-frame video picture signal recording on said record member is scanned by said recording transducer whereby said pulse signals define respective frame position indicating marker pulses, initiating a recording control function by passing the marker pulses so generated to a counter control means to cause the uncounting thereof upon receipt by said counter control means of a predetermined number of said marker pulse signals,

generating a control signal when said counter control means uncounts and applying said control signal to activate and energize said erasing transducer to initiate erasure of a selected portion of the recorded video information,

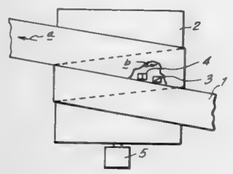
generating new full-frame video picture signal information, and

also applying said control signal to control the transmission of the newly generated full-frame video picture signal information to said recording transducer so as to initiate the recording of new video information on that portion of the eraseable record member along which erasure was effected by said erasing transducer.

3,925,816
MAGNETIC RECORDING SYSTEM WITH OVERLAPPING TRACKS OF HIGH AND LOW FREQUENCY INFORMATION

Nobutoshi Kihara, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 840,283, July 9, 1969, abandoned. This application July 2, 1973, Ser. No. 375,465
Claims priority, application Japan, July 10, 1968, 43-48254
Int. Cl.² H04N 5/79
U.S. Cl. 360—19 2 Claims

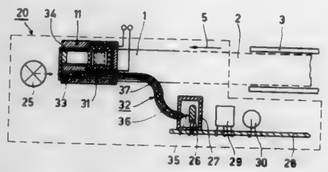


1. In a magnetic recording and reproducing apparatus, the combination of guiding means for guiding a magnetic tape, first and second magnetic recording and reproducing heads moved relative to said tape adjacent a surface of the tape for respectively tracing first and second parallel tracks on said tape with said second track overlapping only a portion of said first track with said first head preceding said second head in the relative movement of said hands with respect to said tape, said second head having a core gap extending transversely at right angles to the longitudinal direction of said second track, said first head having a core gap that is substantially wider than the core gap of said second head and extending transversely across said first track at an acute angle with respect to the direction of said core gap of the second head, recording circuit means operable to apply a first signal to said first head for recording by the latter in said first track to a substantial depth in said tape from said surface of the latter and to apply to said second head a second signal having a substantially higher frequency than said first signal for recording of said second signal in said second track only adjacent said surface of the tape, whereby said second signal erases only so much of said first signal as appears adjacent said surface of the tape in the overlapping portions of said first and second tracks, and reproducing circuit means operable to cause said first and second heads to reproduce said first and second signals recorded in said first and second tracks, respectively, at a substantial depth from said surface and adjacent said surface, respectively.

3,925,817
OPTICAL DRIVE CONTROL WITH HEAD MOUNTED LIGHT GUIDE MEANS

Horst Althuber, and Karl Rupp, both of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 24, 1974, Ser. No. 463,675
Claims priority, application Austria, May 3, 1973, 3893/73
Int. Cl.² G11B 15/22, 15/08, 5/22
U.S. Cl. 360—74 4 Claims



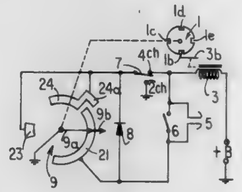
1. A magnetic recording and/or playback apparatus for recording and/or playing back information on magnetic tape,

comprising a magnetic recording and/or playback head, a magnetic erase head, at least one of said magnetic heads being provided with a curved surface, said record carrier abutting a substantial area of the curved surface of said one of said magnetic heads, motor means for selectively driving said record carrier past said magnetic heads in the forward and reverse directions, a light source mounted opposite said one of said heads, said record carrier being provided with opaque magnetically recorded areas and transparent control areas, a photosensitive element, a light shield surrounding said photosensitive element, a light guide means in said one of said heads for optically connecting the area of the curved surface of said one of said heads that abuts said record carrier to said photosensitive element through said light shield whereby radiation from said light source is conducted to said photosensitive element when said transparent control portion of said record carrier is interposed between said light guide means and said light source, and drive control means connected to said photosensitive element and to said motor means for selecting the direction of motion of said record medium in response to signals from said photosensitive element.

3,925,818
HEAD SHIFTING MECHANISM FOR TWO-CHANNEL AND FOUR-CHANNEL CARTRIDGE TAPE RECORDER

Kumeo Tahara, Iwaki, Japan, assignor to Alps Motorola, Inc., Tokyo, Japan

Filed Aug. 1, 1974, Ser. No. 493,941
Claims priority, application Japan, Aug. 2, 1973, 48-91452
Int. Cl.² G11B 5/55, 21/08
U.S. Cl. 360—106 6 Claims



1. A magnetic head shifting mechanism for a cartridge-type tape player adapted to receive and play two-channel and four-channel tape cartridges and including a changeover switch mechanism between a first position when a two-channel tape cartridge is inserted into the player and a second position when a four-channel tape cartridge is inserted into the player, including in combination:

magnetic tape head means having four pick-up areas,

head shifting cam means mounted to the player and engageable with said tape head means, said cam means being rotatable between first, second, third and fourth levels to align said pick-up areas with selected tracks on the tape, drive means coupled to said cam means for rotating said cam means between said first, second, third and fourth levels,

rotary switch means including a rotary contactor portion coupled to said cam means and a contact portion having first, second, third and fourth contacts coupled to said drive means for actuating the same to rotate said cam means, the contact portion further including means for aligning the contacts with respect to the contactor such that a selected sequential one of the contacts is in electrical engagement with the contactor as the contactor is rotated, and

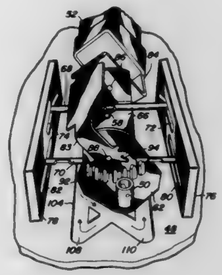
manual switch means coupled to said drive means and to said rotary switch means for energizing said drive means to rotate said cam means when the changeover switch mechanism is in the second position,

said rotary contact portion and said first and fourth contacts being constructed to continuously energize said drive means as said contactor portion moves from said fourth contact to said first contact when the changeover switch is in the second position and said manual switch means has been actuated to energize said drive means to rotate said cam means to successive levels to thereby align said pick-up areas with selected tracks on the tape.

3,925,819
TAPE HEAD ROTATOR MECHANISM FOR TRACK CHANGING

Mario E. Bachmann, Chicago, Ill., assignor to Motorola, Inc., Chicago, Ill.

Division of Ser. No. 333,411, Feb. 16, 1973, Pat. No. 3,855,628. This application Aug. 5, 1974, Ser. No. 491,027
Int. Cl.² G11B 5/54, 5/55, 21/08
U.S. Cl. 360—106 6 Claims



1. A tape head rotator mechanism for a multitrack tape comprising

a tape head having a pickup portion, the pickup portion located on the tape head so that it is aligned with at least one track when the tape head is in a first position and aligned with at least one different track when the tape head is in a second position rotated 180° relative to the first position,

a movable carriage,

a base plate,

means mounting the carriage on the base plate for sliding movement between a forward position engaging the tape head with the tape and a rearward position disengaging the tape head from the tape,

means for moving the carriage between the said positions, and

means for rotating the tape head 180° when the carriage is moved in a cycle from the forward to the rear position and returned to the forward position including

a frame supporting the tape head, means mounting the frame to permit 180° rotation of the frame and tape head relative to the carriage,

a second plate,

means mounting the second plate to the carriage to provide for movement of the second plate in an arcuate path transverse the path of movement of the carriage,

pinion and gear rack means mounted between the frame and the second plate for rotating the frame and tape head 180° and

means for moving the second plate relative to the carriage in said accurate path responsive to the carriage being moved from the first position to the second position and back to the first position to effect the desired 180° rotation through the pinion and gear rack means.

3,925,820

ENDLESS LOOP TAPE CARTRIDGE FOR USE WITH TAPE EXTRACTION SYSTEMS

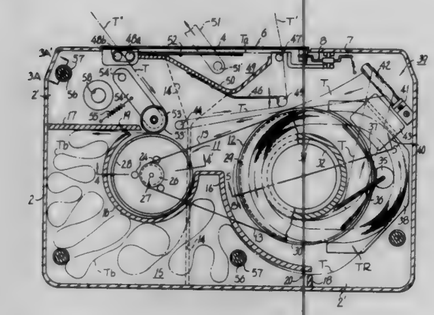
Hanjiro Esashi, Sendai, and Shuji Yoshizaki, Tagajyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 390,864, Aug. 23, 1973, abandoned. This application Nov. 22, 1974, Ser. No. 526,395

Claims priority, application Japan, Aug. 24, 1972, 47-98834[U]

Int. Cl.² G11B *23/04*; B65H *17/48*

U.S. Cl. 360—132 **10 Claims**



1. An improved tape cartridge comprising a housing having an access opening and partition means dividing the interior of the housing into a main compartment which opens to the exterior of the housing at said access opening and a storage compartment which communicates with said main compartment at an entry and an exit defined by said partition means, an endless loop of tape having its major portion wound to form a coil, means rotatably supporting said coil within said main compartment, a drive roller rotatably mounted within said main compartment adjacent said entry to the storage compartment and adapted to be rotated from the exterior of said housing, guide means within said housing including guide members adjacent the opposite sides of said access opening for guiding said tape in a run that extends from the innermost winding of said coil across said access opening and from the latter into said entry of the storage compartment and out of said exit of the latter back to the outermost winding of said coil, a substantial portion of said run of the tape being normally disposed in loose serpentine folds within said storage compartment, the tape in said run between said guide members being withdrawable from said housing through said access opening for the recording and reproducing of signals on the withdrawn tape at the exterior of said housing, a freely rotatable pinch roller in said main compartment adjacent said drive roller, means supporting said pinch roller for movement of the latter generally toward and away from said drive roller, said pinch roller engaging said run of the tape at the portion thereof between one of said guide members and said entry to the storage compartment and forming a bend in said portion of the tape run with the tape between said one guide member and said pinch roller being directed so that tension therein tends to move said pinch roller away from said drive roller and with the tape engaged by said pinch roller facing toward said drive roller, and spring means yieldably urging said pinch roller against said drive roller for driving by the latter of the tape therebetween into said entry of the storage compartment, the force of said spring means being selected to be overcome by an increased tension in said tape between said one guide member and said pinch roller in response to the withdrawal of tape through said access opening for moving said pinch roller away from said drive roller and permitting the tape constituting said loose serpentine folds to run out of said storage compartment through said entry.

DESIGN PATENTS

GRANTED DECEMBER 9, 1975

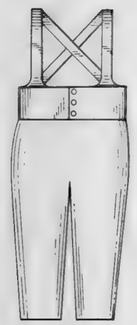
ERRATA

For CLASS	See PATENT NO.
019-097	238,005

DESIGNS

DECEMBER 9, 1975

237,914
TROUSERS
Granville W. Anderson, 27694 Mound Road, Warren, Mich. 48089
Filed May 31, 1974, Ser. No. 474,930
Term of patent 7 years
Int. Cl. D2—*02*
U.S. Cl. D2—28



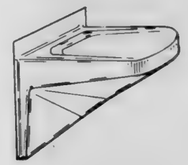
237,915
DISPLAY STAND
Lester V. Molenaar, Box 777—West Highway 40, Willmar, Minn. 56201
Filed May 6, 1974, Ser. No. 467,493
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—23



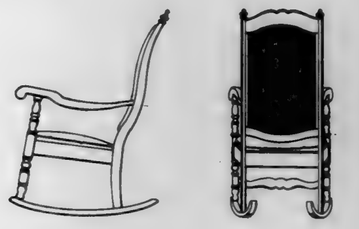
237,916
COLLAPSIBLE CHAIR
Burkhard Mleinik, Untergruppenbach, Germany, assignor to Rudolf Baresel-Bofinger
Filed June 26, 1974, Ser. No. 483,384
Claims priority, application Germany Feb. 12, 1974
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—37



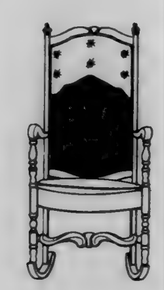
237,917
WALL MOUNTED SEAT
Merritt W. Seymour, Sylvania, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Nov. 21, 1972, Ser. No. 308,356
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—47



237,918
ROCKING CHAIR
Richard Morse Chapin and Hamlin Taylor Haynes, Charlotte, N.C., assignors to Paoli Chair Company, Inc., Paoli, Ind.
Filed Aug. 5, 1974, Ser. No. 495,048
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—49



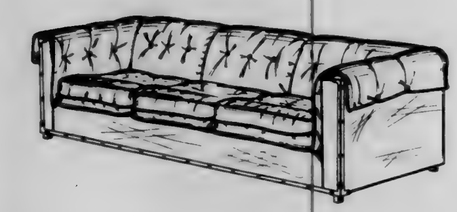
237,919
ROCKING CHAIR
Richard Morse Chapin and Hamlin Taylor Haynes, Charlotte, N.C., assignors to Paoli Chair Company, Inc., Paoli, Ind.
Filed Aug. 5, 1974, Ser. No. 495,050
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—49



237,920
CHAIR
Charles Bernard, Montreuil-sous-Bois, France, assignor to Airborne, S.A.
Filed Mar. 20, 1972, Ser. No. 236,567
Claims priority, application France Sept. 22, 1971
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



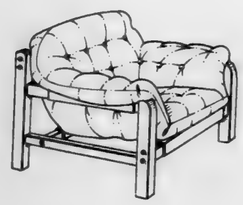
237,921
FURNISHING ELEMENT
Burton H. Kaplan, Potomac, Md., assignor to Rowe Furniture Corporation, Salem, Va.
Filed Sept. 17, 1974, Ser. No. 506,842
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



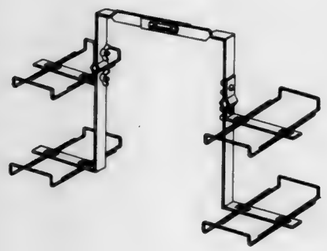
237,922
CHAIR
Henry C. Pedersen, 4807 E. Jackson Road, Elkhart, Ind. 46514
Filed Mar. 25, 1974, Ser. No. 454,060
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68



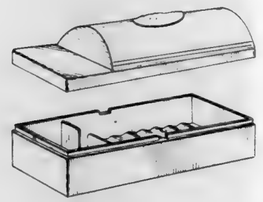
237,923
SEAT
Thomas Winrow, Naperville, Ill., assignor to Futorian Corp,. Amsterdam, N.Y.
Filed Dec. 13, 1974, Ser. No. 532,570
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



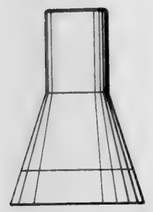
237,924
DISPLAY RACK
Aaron I. Friedman, 425 2nd St., San Francisco, Calif. 94107
Filed July 12, 1974, Ser. No. 488,146
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—85



237,925
COMBINED SOAP BAR CONTAINER AND COVER THEREFOR
Tedd Theodore Thomas, New Canaan, Conn., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed May 16, 1974, Ser. No. 470,454
Term of patent 14 years
Int. Cl. D9—*03;* D23—*02*
U.S. Cl. D6—89



237,926
COMBINED SOAP DISH, TOOTHBRUSH HOLDER, AND TUMBLER
Barbara Adler Katzander, New York, N.Y., assignor to Joseph A. Kaplan & Sons, Inc., Yonkers, N.Y.
Filed Feb. 27, 1975, Ser. No. 553,755
Term of patent 14 years
Int Cl. D23—*02*
U.S. Cl. D6—91

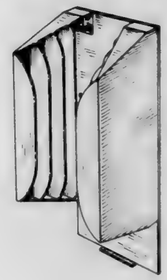




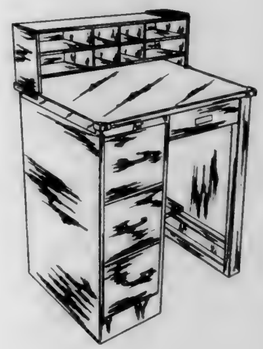




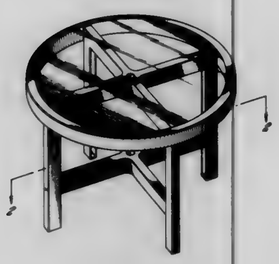
237,927
BOOK HOLDER AND SUPPORT FOR TELEPHONE DIRECTORIES AND THE LIKE
Donald G. King, 241 Dickson Park Crescent, Mississauga, Ontario, Canada
Filed May 6, 1974, Ser. No. 467,444
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—114



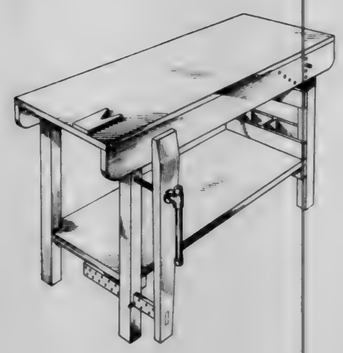
237,928
SHOP DESK OR SIMILAR ARTICLE
Eugene R. Kent, Lombard, Ill., assignor to Draik Midwest Company, Inc., Oak Brook, Ill.
Filed Nov. 27, 1974, Ser. No. 527,756
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—162



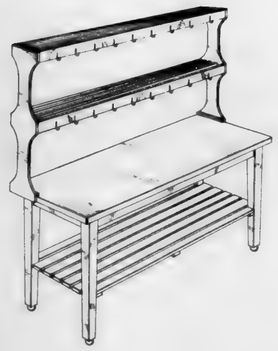
237,929
DINING TABLE OR THE LIKE
Harry Laylon, Syracuse, N.Y., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Jan. 7, 1974, Ser. No. 431,445
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—175



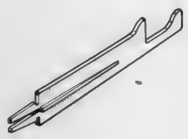
237,930
CHILD'S WORKBENCH
Darwin L. Demmer, 379 Perkinswood SE., Warren, Ohio 44483
Filed June 13, 1973, Ser. No. 369,443
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



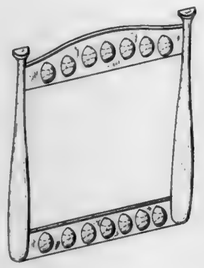
237,931
KITCHEN ISLAND TABLE
Carl Brandenfels, 102 SE. Santosh, Scappoose, Oreg. 97056
Filed June 24, 1974, Ser. No. 482,318
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



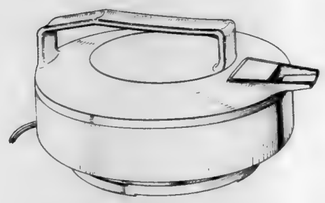
237,932
EYEGLASS DISPLAY SUPPORT POST
Richard S. Dunchock, Northville, Mich., assignor to Optarac Corporation, Ferndale, Mich.
Filed Aug. 19, 1974, Ser. No. 498,543
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



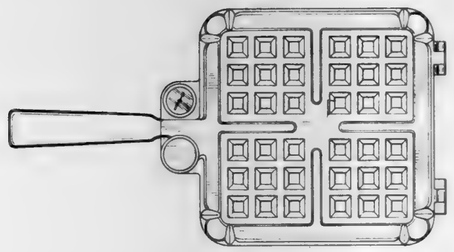
237,933
MIRROR OR PICTURE FRAME
Oliver Farley, 1428 Sterling Place, Brooklyn, N.Y. 11213
Filed Apr. 5, 1973, Ser. No. 348,369
Term of patent 7 years
Int. Cl. D6—*07*
U.S. Cl. D6—244



237,934
ELECTRIC TEA KETTLE
Victor L. Fairthorne, Willowdale, Ontario, Canada, assignor to Westinghouse Canada Limited
Filed Mar. 4, 1974, Ser. No. 447,757
Claims priority, application Canada Oct. 29, 1973
Term of patent 7 years
Int. Cl. D7—*02*
U.S. Cl. D7—62



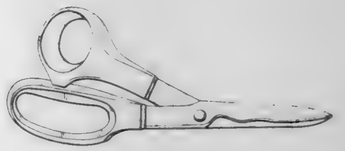
237,935
WAFFLE IRON
Donald W. Nygren, Minneapolis, Minn., assignor to Northland Aluminum Products, Inc., Minneapolis, Minn.
Filed Mar. 25, 1974, Ser. No. 454,215
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—88



237,936
SCISSORS
Alfred W. Wakeman, Durham, Conn., assignor to The Risdon Manufacturing Company, Naugatuck, Conn.
Filed Oct. 11, 1973, Ser. No. 405,576
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—57



237,937
KITCHEN SCISSORS
Olof Fredrik Bäckström, Tammisaari, and Erkki Olavi Lindén, Billnas, Finland, assignors to Oy Fiskars Ab, Helsinki, Finland
Filed Jan. 3, 1974, Ser. No. 430,443
Claims priority, application Finland Nov. 28, 1973
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—57



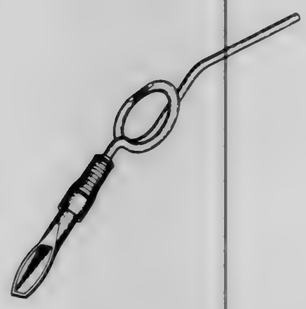
237,938
VALVE PULLING TOOL
Ezekiel Seminario, 15500 Tustin Village Way, Tustin, Calif. 92680
Filed Dec. 21, 1973, Ser. No. 427,207
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—59



237,939
VALVE CORE EXTRACTION TOOL
Ezekiel Seminario, 15500 Tustin Village Way, Tustin, Calif. 92680
Filed Feb. 1, 1974, Ser. No. 438,556
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—59



237,940
VACUUM PICK-UP FOR WAFERS
T. John Trayes, Phoenix, Ariz., assignor to Motorola, Inc., Chicago, Ill.
Filed Mar. 28, 1974, Ser. No. 455,683
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—71



237,941
GOLF CART UMBRELLA MOUNT
William F. Dotter, 49 Spruce St., Smithtown, N.Y. 11787
Filed May 23, 1974, Ser. No. 472,622
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235



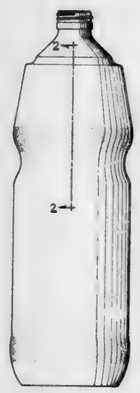
237,942
DISPENSING CONTAINER
George W. Welker III, Downingtown, and Joseph E. Brady, West Chester, Pa., assignors to American Home Products Corp., New York, N.Y.
Filed July 25, 1974, Ser. No. 491,904
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—2



237,943
DISPENSING CONTAINER FOR GRANULATED MATERIAL
Alberto Alemagna, Milan, Italy, assignor to Alemagna S.p.A., Milan, Italy
Filed Apr. 8, 1974, Ser. No. 458,659
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—63



237,944
BOTTLE
Harvey Carter Taylor, Decatur, and Michael W. J. Godden, and Marshall J. Barrash, Atlanta, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Apr. 18, 1974, Ser. No. 459,138
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—100



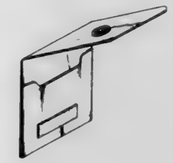
237,945
BOTTLE
Gordon A. Strand, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed May 13, 1974, Ser. No. 469,372
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—127



237,946
COMBINED BOTTLE AND CAP THEREFOR
John Pardo, Yonkers, N.Y., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Apr. 4, 1973, Ser. No. 347,675
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—128

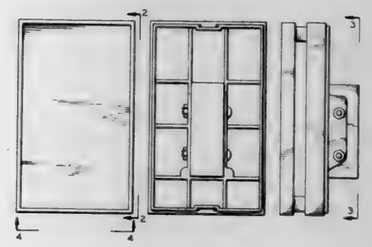


237,947
CONTAINER FOR MATCHES OR THE LIKE
Nobuyoshi Ochiai, 4–18 Kisshiki-cho, Omiya-shi, Saitama-ken, Japan
Filed Dec. 17, 1973, Ser. No. 424,931
Claims priority, application Japan Oct. 15, 1973
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—173

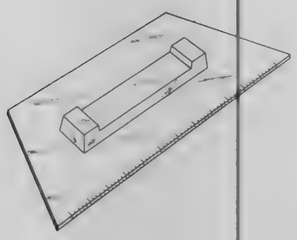


237,948
REPAIRING AND SPLICING KIT CONTAINER
John V. Nowicki, St. Paul, and Harold K. Gavere, Marine-on-St. Croix, Minn., assignors to Minnesota Mining & Manufacturing Co., St. Paul, Minn.
Filed Apr. 8, 1974, Ser. No. 458,641
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—174

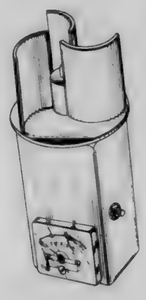
237,949
THERMOSTAT
Herbert J. Taylor and Gordon R. Boyd, Aloha, Oreg., assignors to Sunne Controls Division of Peco Manufacturing Co., Inc., Portland, Oreg.
Filed Jan. 2, 1974, Ser. No. 429,595
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—50



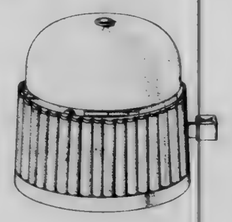
237,950
DRAFTING INSTRUMENT
Peter S. Hoagland, 18769 Saratoga, Lathrup Village, Mich. 48076
Original design application Dec. 15, 1971, Ser. No. 208,511, now Patent No. D. 232,051, which is a continuation in part of Ser. No. 160,234, dated July 6, 1971, Patent No. D. 226,226. Divided and this application Jan. 2, 1974, Ser. No. 429,790
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—62



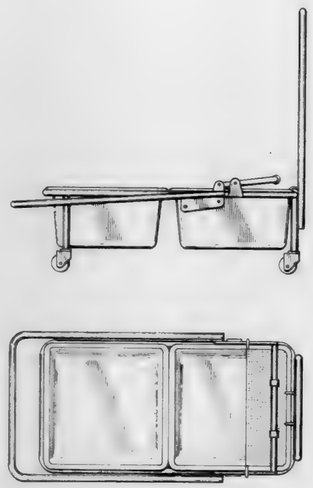
237,951
ANEMOMETER
R. A. Simerl, 528 Epping Forest Road, Annapolis, Md. 21401
Filed May 10, 1974, Ser. No. 468,641
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—96



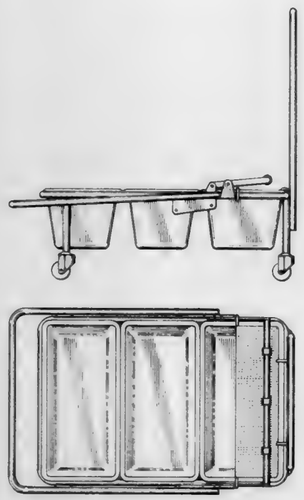
237,952
BELL
Masakatsu Nakada, Tachibana 5–35–2, Sumida-ku, Tokyo, Japan
Filed Oct. 22, 1974, Ser. No. 516,955
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—116



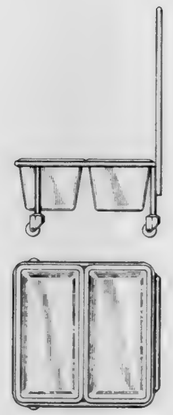
237,953
UTILITY CLEANING CART
George E. Seufert, Lakewood, and Carl B. Davis, Denver, Colo., assignors to Market Achievement Programs, Inc., Denver, Colo.
Filed Mar. 8, 1974, Ser. No. 449,340
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—29



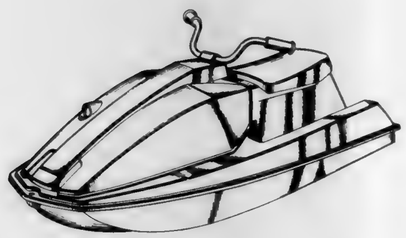
237,954
UTILITY CLEANING CART
George E. Seufert, Lakewood, and Carl B. Davis, Denver, Colo., assignors to Market Achievement Programs, Inc., Denver, Colo.
Filed Mar. 8, 1974, Ser. No. 449,341
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—29



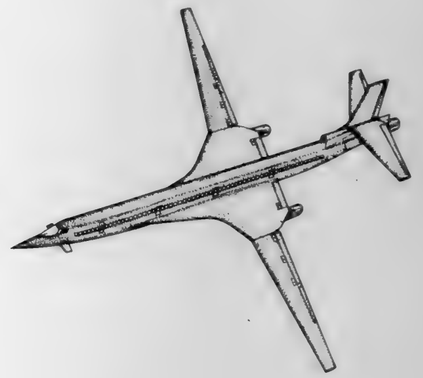
237,955
UTILITY CLEANING CART
George E. Seufert, Lakewood, and Carl B. Davis, Denver, Colo, assignors to Market Achievement Programs, Inc., Denver, Colo.
Filed Mar. 8, 1974, Ser. No. 449,342
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—29



237,956
WATER SCOOTER
Hiroshi Naito, Miki, and Katsuichi Kato, Akashi, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan
Filed Sept. 9, 1974, Ser. No. 504,062
Claims priority, application Japan Apr. 16, 1974
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—69



237,957
AIRCRAFT
Lawrence Bernard Rellis, Miami, Fla. (2209 W. Villa Maria Drive, Phoenix, Ariz. 85023)
Filed Apr. 4, 1974, Ser. No. 457,993
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—78



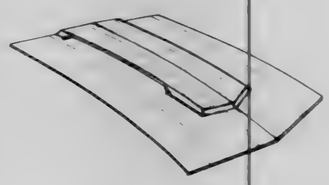
237,958
HORSE TRAILER BODY
Bobby J. Gore, Wilmington, N.C., assignor to Fiber Classics, Ltd., Wilmington, N.C.
Filed Apr. 25, 1974, Ser. No. 463,888
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—105



237,959
BICYCLE STEERING POST
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Aug. 13, 1971, Ser. No. 171,792
Term of patent 14 years
The term of this patent subsequent to July 25, 1986, has been disclaimed
Int. Cl. D12—*11*
U.S. Cl. D12—118



237,960
AUTOMOBILE HOOD
Robert J. Whitehead, Orange, Calif., assignor to Nissan Motor Corporation in U.S.A., Gardena, Calif.
Filed July 24, 1974, Ser. No. 491,311
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—173



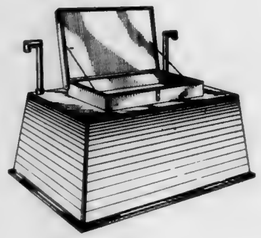
237,961
MOTORCYCLE FENDER
Preston L. Petty, 403 N. Main St., Newberg, Oreg. 97132
Continuation-in-part of abandoned design application Ser. No. 316,653, Dec. 20, 1972, and Ser. No. 378,258, July 11, 1973. This application Feb. 28, 1974, Ser. No. 446,650
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—186



237,962
SPINDLE FOR USE IN DOORS, PANELS, OR THE LIKE
Ralph Mondragon, Taos, N. Mex. (P.O. Box 199, Ranchos de Taos, N. Mex. 87557)
Filed Apr. 2, 1974, Ser. No. 457,364
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 R



237,963
ROOT CELLAR
Lynn C. Broadbent, Box 267, Alpine, Utah 84033, and William B. Thomas, 8335 South 10th East, Sandy, Utah 84070
Filed Mar. 4, 1974, Ser. No. 447,579
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1 R



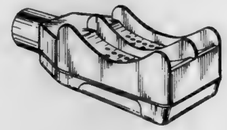
237,964
ICE FISHING SHANTY
Roger J. Choponis, 1021 Dyer Lake Road, Traverse City, Mich. 49684
Filed May 18, 1973, Ser. No. 361,474
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1 L



237,965
STEAM TRAP
Ronald D. Schlesch, Three Rivers, Mich., assignor to Armstrong Machine Works, Three Rivers, Mich.
Filed Nov. 27, 1973, Ser. No. 419,437
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—1



237,966
MASSAGE SPRAY HEAD
Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co., Kansas City, Mo.
Filed Dec. 23, 1974, Ser. No. 535,192
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



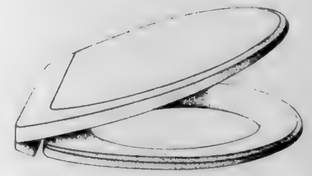
237,967
COMBINATION FLUSH VALVE AND BEDPAN RINSER
Henry R. Billeter, Deerfield, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.
Filed Nov. 19, 1973, Ser. No. 417,188
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—38



237,968
THUMBSCREW VALVE DEPRESSOR
John W. Olson, Jr., Garland, Tex., assignor to C & D Valve Manufacturing Company, Oklahoma City, Okla.
Filed June 25, 1973, Ser. No. 372,960
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40



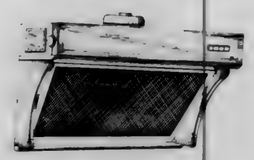
237,969
TOILET SEAT
Jacques Firdmann, Venon par Gieres, France, assignor to Allibert Exploitation Societe Anonyme, Puteaux, France
Filed Oct. 22, 1974, Ser. No. 517,104
Claim priority, application France Apr. 22, 1974
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71



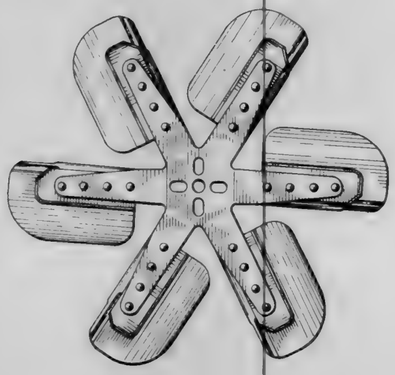
237,970
HOUSING FOR AN AQUARIUM IMMERSION HEATER
Frank Kenneth Hall and Donald D. Moore, Saginaw, Mich., assignors to O'Dell Manufacturing, Inc., Saginaw, Mich.
Filed May 24, 1974, Ser. No. 473,204
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—87



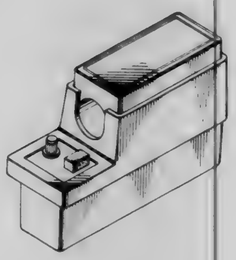
237,971
RANGE HOOD
Yang-K'un Chiang, 82–2 Lane 40 San-Min Road, Taipei, Taiwan, Republic of China
Filed May 28, 1974, Ser. No. 474,065
Claims priority, application Republic of China Apr. 4, 1974
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151



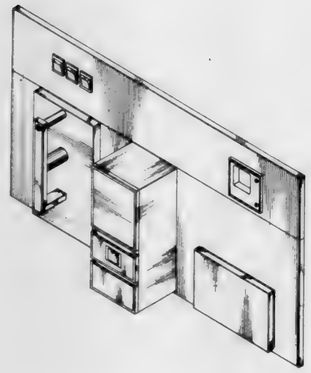
237,972
FAN FOR INTERNAL COMBUSTION ENGINES
Bern M. Bonifant, Tacoma, Wash., assignor to Flex-A-Lite Corporation, Tacoma, Wash.
Filed Feb. 26, 1975, Ser. No. 553,159
Term of patent 14 years
Int. Cl. D15—*01;* D23—*04*
U.S. Cl. D23—165



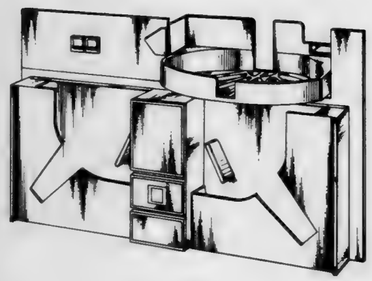
237,973
COMBINATION BATTERY HOLDER AND BATTERY
Ralph Stern, 6719 Shenandoah Ave., Los Angeles, Calif. 90056
Filed Feb. 21, 1974, Ser. No. 444,541
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—4



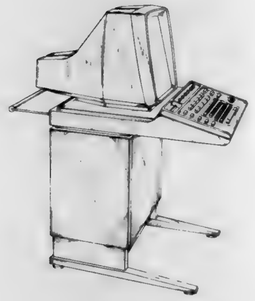
237,974
COMBINATION PERFORATOR AND PERFORATED TAPE READER
Gene D. Vedder, Granada Hills, Calif., assignor to Ex-Cell-O Corp. (Remex)
Filed Sept. 7, 1973, Ser. No. 394,995
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



237,975
COMBINATION PERFORATOR AND PERFORATED TAPE READER
Gene D. Vedder, Granada Hills, Calif., assignor to Ex-Cell-O (Remex)
Filed Sept. 7, 1973, Ser. No. 395,197
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

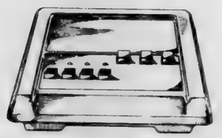


237,976
KEYBOARD AND DISPLAY UNIT
William L. Wolfe, and Robert C. Zimmerman, Manlius, and Gerald M. Adams, Fayetteville, N.Y., assignors to SCM Corporation, New York, N.Y.
Filed July 29, 1974, Ser. No. 492,623
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



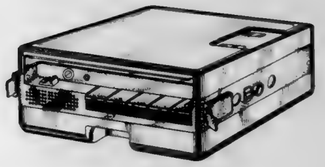
237,977
HOUSING FOR ELECTRONIC CONSOLE
Robert Brian Isaacs, Ottawa, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed Jan. 28, 1975, Ser. No. 544,853
Term of patent 14 years
Int. Cl. D13—*03;* D14—*02*
U.S. Cl. D26—5 R





237,978
TAPE RECORDER OR SIMILAR ARTICLE
Peter Hartwein, Schwalbach, Taunus, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Feb. 22, 1974, Ser. No. 445,299
Claims priority, application Germany Sept. 2, 1973
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B





237,979
BATTERY CHARGER
Robert J. Debrey, Edina, Minn., assignor to Magnetic Controls Company, Minneapolis, Minn.
Filed Apr. 15, 1974, Ser. No. 461,154
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15 B

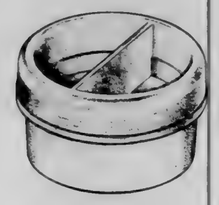




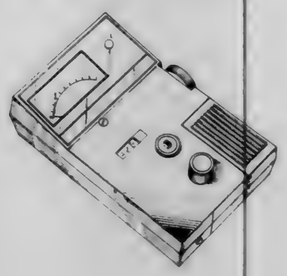
237,980
CATTLE FEEDER
George Doyle Clugston, P.O. Box 581, R.R. 3, Pittsburg, Kans. 66762
Filed Aug. 30, 1973, Ser. No. 392,973
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



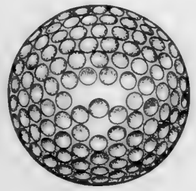
237,981
COMBINED CONTAINER AND TEST CUP INTENDED FOR BACTERIOLOGICAL PREPARATIONS AND FOR BACTERIOLOGICAL TESTS
Carl Edvard Mastrell, Helsingor, Denmark, assignor to AB Leo, Helsingborg, Sweden
Filed Feb. 20, 1974, Ser. No. 444,179
Claims priority, application Sweden Aug. 21, 1973
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D32—1 R



237,982
MINIATURIZED SPECTROPHOTOMETER
Paul A. Hoogesteger, Penfield, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Apr. 25, 1974, Ser. No. 464,006
Term of patent 14 years
Int. Cl. D10—*04;* D24—*02*
U.S. Cl. D32—2 C



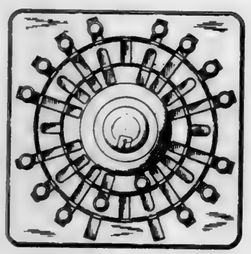
237,983
GOLF BALL
Francis de S. Lynch, Mattapoisett, and John W. Jepson and Robert A. Brown, Marion, Mass., assignors to Acushnet Company, New Bedford, Mass.
Filed Mar. 1, 1973, Ser. No. 337,078
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 QQ



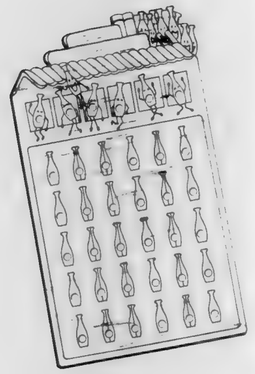
237,984
TOY RACING TRACKWAY
Shizuka Kojima, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Feb. 5, 1974, Ser. No. 439,752
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 CC



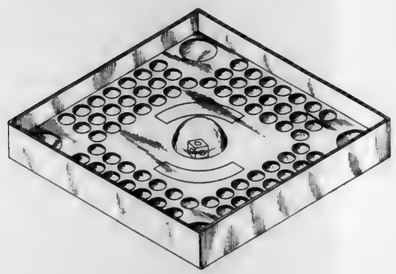
237,985
DIE GAME BOARD
Albert Stubbmann, Franklin Lakes, N.J., assignor to Gabriel Industries, Inc., New York, N.Y.
Filed Mar. 11, 1974, Ser. No. 450,015
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



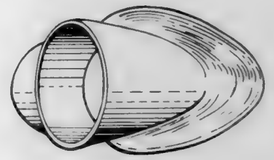
237,986
GAMEBOARD
Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner, Inc., Elmwood Park, N.J.
Filed Mar. 20, 1974, Ser. No. 452,772
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



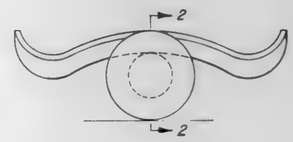
237,987
GAMEBOARD
Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner, Inc., Elmwood Park, N.J.
Filed Mar. 20, 1974, Ser. No. 452,860
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



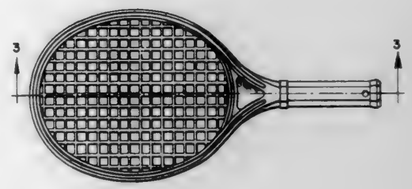
237,988
GRIP LOCATOR FOR A TENNIS RACQUET
Hector O. Conde, Richmond, and Jose G. Vidal, Kensington, Calif., assignors to Electronic Protection Systems
Filed Apr. 8, 197-, Ser. No. 458,556
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 ST



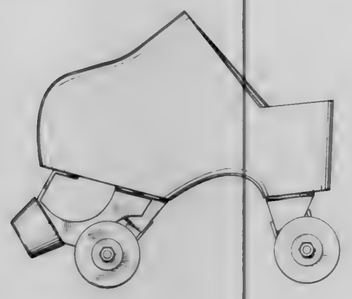
237,989
ROLLER BOARD
Will Clarke England, 7310 Eastcrest, Austin, Tex. 78752
Filed May 24, 1974, Ser. No. 473,936
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 K



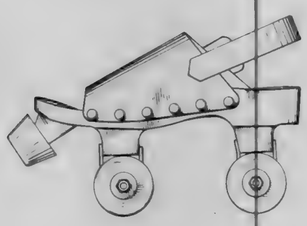
237,990
TENNIS RACQUET
Monte C. Gillespie, and Darle L. Kerkenbush, South Bend, Ind., assignors to South Bend Toy Manufacturing Company, Inc., South Bend, Ind.
Filed Nov. 8, 1974, Ser. No. 522,096
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 ST



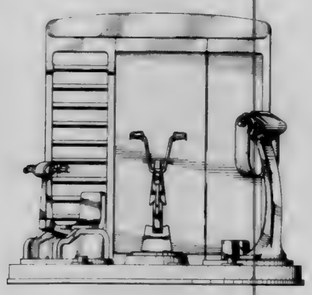
237,991
CLOG ROLLER SKATE
Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.
Filed Mar. 1, 1974, Ser. No. 447,313
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 C



237,992
SANDAL ROLLER SKATE
Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.
Filed Mar. 1, 1974, Ser. No. 447,314
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 C



237,993
TOY HEALTH CENTER
Osamu Takahashi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Aug. 27, 1974, Ser. No. 500,936
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AC

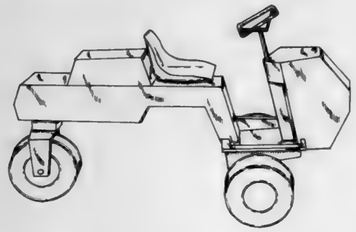


237,994
GARDEN PLANT IDENTIFICATION STAKE
John D. Davis, Fort Worth, Tex., assignor to Loma Corporation
Filed Sept. 13, 1974, Ser. No. 505,534
Term of patent 14 years
Int. Cl. D19—*08*
U.S. Cl. D35—1

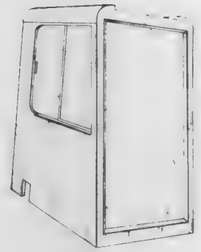




237,995
LAWN AND GARDEN TRACTOR
Dean A. Meyer, Caledonia, Donald G. Haffner, Glendale, and Knud H. Hoffmeyer and Edward J. Lazzeroni, Sr., Racine, Wis. assignors to Jacobsen Manufacturing Company
Filed Aug. 23, 1974, Ser. No. 500,161
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—5



237,996
CAB FOR EARTH MOVING AND HANDLING MACHINERY OR THE LIKE
Bernard Jean Marie Pierre, Crepy-en-Valois, France, assignor to Poclain, Le Plessis-Belleville, Oise, France
Filed Oct. 18, 1974, Ser. No. 516,091
Claims priority, application France Apr. 23, 1974
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D40—5

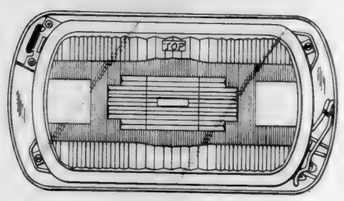


237,997
RING OR SIMILAR ARTICLE
Eugene A. Poulin, 85 Royal Oak Road, New Britain, Conn. 06053
Continuation-in-part of abandoned design application Ser. No. 344,469, filed Mar. 26, 1973. This application June 24, 1974, Ser. No. 482,094
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 B





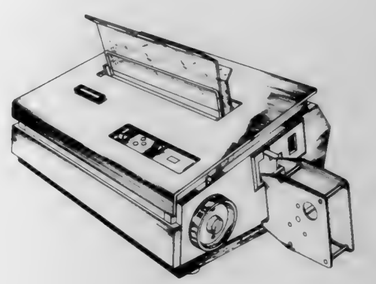
237,998
MOTOR VEHICLE HEADLIGHT
Pierre Cibie, Paris, France, assignor to Cibie Projecteurs, Bobigny, France
Filed Oct. 4, 1974, Ser. No. 511,954
Claims priority, application France Apr. 11, 1974
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 R

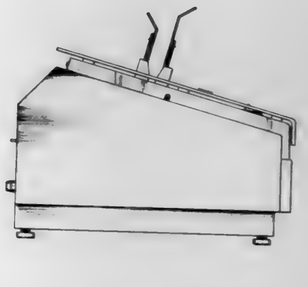


237,999
WARNING DEVICE FOR EMERGENCY VEHICLES OR THE LIKE
Richard C. Runyon, Los Angeles, Calif., assignor to Royal Industries
Filed Jan. 16, 1975, Ser. No. 541,583
Term of patent 14 years
Int. Cl. D10—*06*; D26—*06*
U.S. Cl. D48—32 R

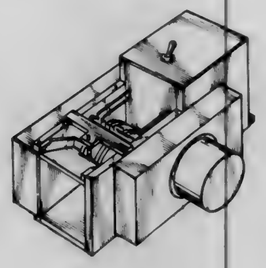


238,000
BOOKBINDING MACHINE
Jacob W. Patla, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 19, 1973, Ser. No. 426,172
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D55—1 R

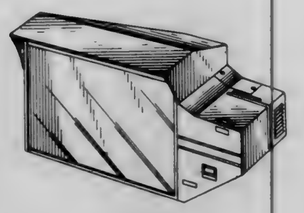




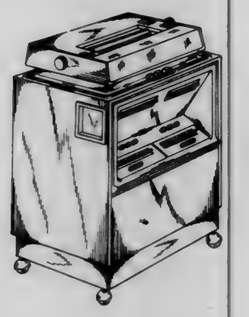
238,001
SORTER FOR ELECTRICAL COMPONENT TESTING APPARATUS
Frederick Wohlman, Jr., 2409 Chelsea Road, Palos Verdes Estates, Calif. 90274
Filed Mar. 27, 1974, Ser. No. 455,207
Term of patent 3½ years
Int. Cl. D15—*99*
U.S. Cl. D55—1 D



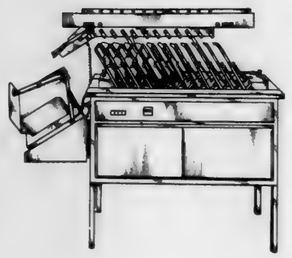
238,002
APERTURE CARD READER OR SIMILAR ARTICLE
Roger A. Gross, Hartford, Wis., assignor to Bell & Howell Company, Chicago, Ill.
Filed Mar. 4, 1974, Ser. No. 448,172
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 N



238,003
PRINTER UNIT
William L. Wolfe, Manlius, Robert S. Metzner, Syracuse, and Robert C. Zimmerman, Manlius, N.Y., assignors to SCM Corporation, New York, N.Y.
Filed July 29, 1974, Ser. No. 492,624
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 R



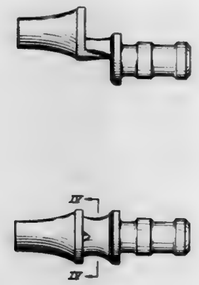
238,004
SHEET COLLATOR
Arne Egil Holmquist, Hagersten, Sweden, assignor to Lindaco Ltd., Geneva, Switzerland
Filed Aug. 22, 1974, Ser. No. 499,776
Claims priority, application Sweden Feb. 22, 1974
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—11 R



238,005
PAPERWEIGHT OR SIMILAR ARTICLE
Hazel Jacks, 5520 Sabine Drive, Marrero, La. 70072
Filed July 6, 1973, Ser. No. 377,134
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—97



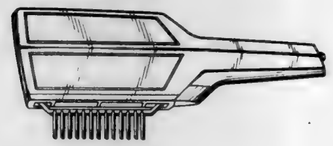
238,006
NOZZLE FOR AN EAR SYRINGE OR THE LIKE
Roy A. Anderson, 4554 Malden Ave., Chicago, Ill. 60640
Filed Mar. 13, 1973, Ser. No. 340,916
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 Q



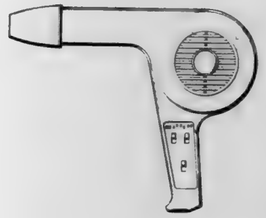
238,007
POST AURICULAR PRESSURE DRESSING
James L. Geraci, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio
Filed Apr. 29, 1974, Ser. No. 465,205
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 J



238,008
HAND HELD DETANGLER
Bernard B. Bluestein, Des Plaines, and Norman A. Steinkamp, Chicago Heights, Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed July 15, 1974, Ser. No. 488,549
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8



238,009
HAIR DRYER
Douglas A. Long, 94 Sturges Ridge Road, Wilton, Conn. 06897, and Frederick A. Burke, 40 Riverside Ave., Riverside, Conn. 06878
Filed July 17, 1974, Ser. No. 489,201
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



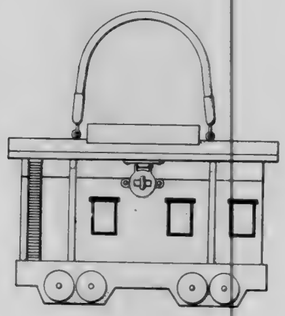
238,010
CARRYING CASE
Joaquin J. Canton, 707 E. 242nd St., Bronx, N.Y. 10470
Filed June 17, 1974, Ser. No. 479,833
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



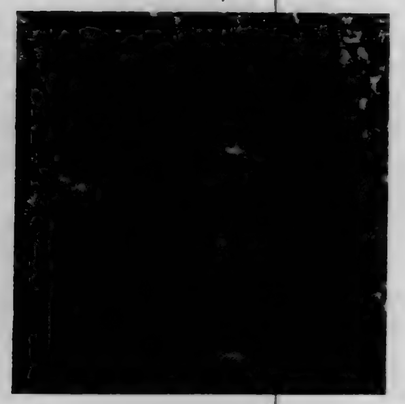
238,011
CARRYING CASE
Joaquin J. Canton, 707 E. 242nd St., Bronx, N.Y. 10470
Filed June 17, 1974, Ser. No. 479,836
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



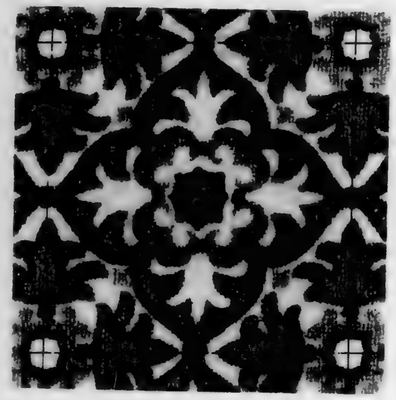
238,012
HANDBAG
Nancy M. Huseman, 3836 Nine Mile Road; Joyce R. Castellini, Woodsedge Road; and Joan M. Feldkamp, 6793 High Meadows, all of Cincinnati, Ohio 45230
Filed Aug. 10, 1973, Ser. No. 387,434
Term of patent 7 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 C



238,013
SOFT SURFACE FLOOR COVERING OR SIMILAR ARTICLE
Robert N. Byerly, Greenwood Lake, N.Y., assignor to Congoleum Industries, Inc.
Filed Feb. 15, 1974, Ser. No. 442,700
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D92—4 R



238,014
SOFT SURFACE FLOOR COVERING OR SIMILAR ARTICLE
Philip Nugent, North Andover, Mass., assignor to Congoleum Industries, Inc.
Filed Feb. 28, 1974, Ser. No. 446,982
Term of patent 14 years
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U.S. Cl. D92—4 R



238,015
SOFT SURFACE FLOOR COVERING OR SIMILAR ARTICLE
Philip Nugent, North Andover, Mass., assignor to Congoleum Industries, Inc.
Filed Feb. 28, 1974, Ser. No. 446,983
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D94—4 R



LIST OF PATENTEES

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PATENTS WERE ISSUED ON THE 9TH DAY OF DECEMBER, 1975

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Ishii, Hajime; Bannai, Nubuo; and Nishita, Sadao, 3,925,339.
Banner, Philip M. Electrical safety grounding device means. 3,924,914, Cl. 339-14.00P.
Bar-on, Ari, to Xerox Corporation. Fusing apparatus having an articulated release material dispenser. 3,924,564, Cl. 118-60.000.
Bardotti, Angelo; and Pederzini, Renzo, to Honeywell Information Systems Italia. Dynamically variable priority access system. 3,925,766, Cl. 340-172.500.
Barenyi, Bela; and Renner, Hermann, to Daimler-Benz Aktiengesellschaft. Protection device for vehicle passengers. 3,924,874, Cl. 280-150.00B.
Barenyi, Bela: *See—*
Renner, Hermann; and Barenyi, Bela, 3,924,707.
Barnett, Barry Roger Michael; and Burton, Arthur William, to TRW Inc. Self-retaining washer. 3,924,955, Cl. 403-230.000.
Barrett, Fred O.: *See—*
Sturwold, Robert J.; and Barrett, Fred O., 3,925,589.
Barry Wright Corporation: *See—*
Bachtel, Hubert C., Jr., 3,924,844.
Barth, Harald H. Flexible jaw clutch coupling. 3,924,419, Cl. 64-14.000.
Bartlow, David H.; Jones, Bernard Howard; and Pearson, Lee E., to Owens-Corning Fiberglas Corporation. Method of forming circumferentially extending ribs on a rotating shell. 3,925,132, Cl. 156-161.000.
Barton, Dale S.; and Yendrich, Stephen P., Jr., to NRM Corporation. Green tire loader. 3,924,983, Cl. 425-38.000.
Barton, Oliver A., to Allied Chemical Corporation. Dry cleaning process utilizing azeatropic nonflammable vapors. 3,925,010, Cl. 8-142.000.
BASF Aktiengesellschaft: *See—*
Elser, Wolfgang; Eilingsfeld, Heinz; and Schoch, Werner, 3,925,427.
Heinrich, Bernhard; Naarmann, Herbert; and Thoma, Peter, 3,925,329.
Mueller-Tamm, Heinz; Schick, Hannes; Rau, Wolfgang; and Hennenberger, Peter, 3,925,341.
Schlichting, Karl; Horn, Peter; Schlag, Johannes; and Koernig, Wolfgang, 3,925,306.
BASF Wyandotte Corporation: *See—*.
Schmolka, Irving R., 3,925,241.
Basiulis, Algerd, to Hughes Aircraft Company. Heat valve device. 3,924,674, Cl. 165-32.000.
Bata Shoe Company, Inc.: *See—*
Suler, Ladislav, 3,924,986.
Bateman, Charles Donald; and Muller, Hans Rudolf, to Sundstrand Data Control, Inc. Glide slope warning system with a variable warning rate. 3,925,751, Cl. 340-27.0AT.
Bates, Calvin D.; and Hartley, Joseph H., to United States of America, Army. Rail or pedestal mounted meander line circuit for crossed-field amplifiers. 3,925,738, Cl. 333-31.00R.
Battelle Memorial Institute: *See—*
Richardson, Richard L.; Hildebrand, Bernard P.; and Mahan, Robert E., 3,925,646.
Baugh, Benton F. Underwater connection apparatus. 3,924,446, Cl. 73-37.000.
Baughman, Herbert W.; and Yetter, Harry G. Chisel plow. 3,924,694, Cl. 172-413.000.
Baum, Robert A.: *See—*
Roantree, James P.; Saunders, John; and Baum, Robert A., 3,925,643.
Bauman, Robert Andrew, to Colgate-Palmolive Company. Anti microbial compositions containing unsymmetrical oligoquaternary ammonium compounds. 3,925,556, Cl. 424-329.000.
Bausch & Lomb Incorporated: *See—*
Clark, James A., 3,924,936.
Bayer Aktiengesellschaft: *See—*
Althausen, Ferdinand; Boden, Heinrich; Ersfeld, Heinz; Klier, Lothar; Raffel, Reiner; and Schneider, Walter, 3,924,989.
Bernert, Claus-Rudiger; and Radlmann, Eduard, 3,925,321.
Bockmann, August; Teichmann, Gunter; and Rudolph, Hans, 3,925,095.
Boehmke, Gunther, 3,925,011.
Boehmke, Gunther; and Theidel, Hans, 3,925,367.
Boehmke, Gunther; and Theidel, Hans, 3,925,405.
Buchel, Karl Heinz; Frohberger, Paul-Ernst; Scheinpflug, Hans; and Enders, Edgar, 3,925,551.
Corte, Herbert; Heller, Harold; and Netz, Otto, 3,925,264.
Dorlars, Alfons; and Schellhammer, Carl-Wolfgang, 3,925,390.
Grohe, Klaus; and Frohberger, Paul-Ernst, 3,925,400.
Jager, Gerhard; Wenzelburger, Hans Jurgen; and Schmidt, Robert R., 3,925,386.
Kleimann, Helmut; von Bonin, Wulf; Schneider, Heinz-Georg; and Gebauer, Herbert, 3,925,527.
Kuhle, Engelbert; Grewe, Ferdinand; and Kaspers, Helmut, 3,925,443.
Kuhlthau, Hans-Peter, 3,925,015.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,925,395.
Muller, Karl-Heinz; Rohr, Harry; and Ott, Karl-Heinz, 3,925,528.
Ringel, Paul; Hildebrand, Dietrich; and Breidbach, Gunter, 3,925,012.
Schafer, Karl; Schuster, Hans; and Klebert, Wolfgang, 3,925,581.
Schuster, Herbert; Huther, Edmund; Ott, Karl-Heinz; and Dinges, Karl, 3,925,513.
Swodenk, Wolfgang; and Scharfe, Gerhard, 3,925,452.
Velker, Eugen; Bentz, Francis; and Nischk, Gunther, 3,925,515.
Vogel, Axel, 3,925,426.
Wolf, Gerhard Dieter; Kunzel, Hans Egon; Blankenstein, Gunther; Kleinschmidt, Peter; and Bentz, Francis, 3,925,310.
Wolfrum, Gerhard; Sommer, Richard; and Klauke, Erich, 3,925,350.
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Wollweber, Hartmund; and Flucke, Winfried, 3,925,471.
Bayly, John G.: *See—*
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BBC Brown Boveri & Company Limited: *See—*
Brandli, Gerold; and Keller, Pierre, 3,924,469.
Beach, David E., to Eastman Kodak Company. Battery test apparatus for use in a photographic camera. 3,925,792, Cl. 354-60.000.
Beacham, Ronald; Covington, Dennis; and McNutt, Reginald, to Business Electronics, Inc. Audible signaling device for a computer. 3,925,770, Cl. 340-228.00S.

Bear, Jacob: *See—*
Prenner, Amnon; Bear, Jacob; Tohar, David; and Koplin, Harry, 3,924,677.

Bearman, Robert W.: *See—*
Baimbridge, Charles L.; Minderhout, James R.; Bearman, Robert W.; and Carpenter, Donald E., 3,925,169.

Beaucamp, Klaus; Mollering, Hans; Lang, Gunter; Gruber, Wolfgang; and Roeschlau, Peter, to Boehringer Mannheim G.m.b.H. Method for the determination of cholesterol. 3,925,164, Cl. 195-103.50R.

Beck, Armin. Seat, particularly for motor vehicles. 3,924,613, Cl. 128-24.00R.

Becker, Charles Henry, to TRW Inc. Method of coupling the components of a molding retainer. 3,924,317, Cl. 29-509.000.

Becker, Jean-Jacques: *See—*
Heiler, Wolfgang; Muller, Rudolf; and Becker, Jean-Jacques, 3,924,551.

Becker, Otto Alfred. Resistance welding. 3,925,637, Cl. 219-105.000.

Beecham Group Limited: *See—*
Buckle, Derek Richard; and Smith, Harry, 3,925,557.

Beffa, Fabio: *See—*
Wohlkonig, Alexander; Hindermann, Peter; Beffa, Fabio; and Hegar, Gert, 3,925,348.

Beier, Helmut: *See—*
Kessler, Claus; and Beier, Helmut, 3,925,631.

Beigel, Franz: *See—*
Grau, Dietrich; Beigel, Franz; and Blanz, Roland, 3,924,544.

Beiswenger, David W.; Paddock, Gordon R.; and Ranft, Ernst L., to General Motors Corporation. Diverter valve and pressure regulator assembly. 3,924,408, Cl. 60-290.000.

Bell & Howell Company: *See—*
Gaynor, Joseph, 3,924,530.
Gaynor, Joseph, 3,924,533.

Bell, Richard L.; Walter, Richard T.; Botterman, David L.; and Lewis, Philip W., to Container Corporation of America. Tamperproof display package. 3,924,736, Cl. 206-45.140.

Bell Telephone Laboratories, Incorporated: *See—*
Angner, Ronald Joseph; and Feiner, Alexander, 3,925,625.
Austin, James Raymond; Brown, Martin John; and Loan, Leonard Donald, 3,925,671.
Brainard, Ralph Carter; and Candy, James Charles, 3,925,731.
Cardwell, Robert Edward; Davis, Robert Leon; Marino, Patrick John; and McNamara, Edward Joseph, 3,925,600.
Cardwell, Robert Edward; Carlson, David Emory; Davis, Robert Leon; McNamara, Edward Joseph; Pilc, Randolph John; Schlanger, Gabriel Gary; Tutelman, David Morris; Warwick, Peter Stephen; and Zydney, Herbert Mortimer, 3,925,601.
Cauceglia, Walter Bartholomew; Gerlt, Charles; and Peralta, Luis Arturo, 3,924,370.
Dennis, Thomas Mann, 3,925,611.
Duguay, Michel Albert, 3,925,727.
Earle, Haroid Westly; and Robbins, Joseph, 3,925,624.
Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, 3,925,785.
Fraser, David Bruce, 3,925,677.
French, Joseph Charles; Nigam, Anant Kumar; and Sessler, Gerhard Martin, 3,925,610.
Ninke, William Herbert, 3,925,609.
Sondhi, Man Mohan, 3,925,616.
Strain, Robert Joseph; and Thornber, Karvel Kuhn, 3,925,806.

Bell Telephone Labratories, Incorporated: *See—*
Mohsen, Amr Mohamed, 3,924,319.

Belliot, Christian; Cheylan, Etienne; Madelaine, Serge; and Ebbing, Johannes, to Compagnie Francaise Thomson Houston-Hotchkiss Brandt. Catalytic product for the oxidative destruction of gaseous organic compounds and method for their preparation. 3,925,535, Cl. 423-213.200.

Beloit Corporation: *See—*
Brenner, Lawrence A.; and Scholl, Charles H., 3,924,375.
Moore, Lawrence A., 3,924,998.

Bendix Corporation, The: *See—*
Brownell, Dudley C.; and Jackson, Harold W., 3,925,739.

Bendixen, Stein. Device for temporary storage of waste and storm water. 3,924,653, Cl. 137-236.000.

Beneze, Heinz W.: *See—*
Yang, James H. C.; and Beneze, Heinz W., 3,924,982.

Benigno, Paolo: *See—*
Primicerio, Fernando; and Benigno, Paolo, 3,924,742.

Benkoe, Erwin: *See—*
Goldfarb, Adolph E.; Benkoe, Erwin; Everitt, Delmar K.; Chesley, Ronald F.; and Frierdich, Richard D., 3,924,352.

Benner, Robert A.; Fisher, Philip H.; and Parlette, Carl L., to Owens-Illinois, Inc. Spraying apparatus. 3,924,565, Cl. 118-323.000.

Benner, Wolfgang. Steel edge. 3,924,865, Cl. 280-11.13N.

Bennett, John A.; and McAllister, Ian R., to Bennett Pollution Controls, Ltd. Oil containment boom. 3,924,412, Cl. 61-1.00F.

Bennett, John Charles, to Clarke Chapman-John Thompson Limited. Heat exchanger. 3,924,676, Cl. 165-172.000.

Bennett Pollution Controls, Ltd.: *See—*
Bennett, John A.; and McAllister, Ian R., 3,924,412.

Bentz, Francis: *See—*
Velker, Eugen; Bentz, Francis; and Nischk, Gunther, 3,925,515.
Wolf, Gerhard Dieter; Kunzel, Hans Egon; Blankenstein, Gunther; Kleinschmidt, Peter; and Bentz, Francis, 3,925,310.

Bergishagen, Finn; and Schmidt, James J., to Dana Corporation; and Product-Sol, Inc. Method of removing brittle lacquer stress coatings and stripping compositions therefor. 3,924,455, Cl. 73-88.000.

Bergman, Steven C.; Gnirrep, Thomas B.; and Nazzaro, Charles A., to Hoffmann-La Roche Inc. System controller for use with radiological assay system. 3,925,644, Cl. 235-151.300.

Berkey Photo, Inc.: *See—*
Booth, Walter A., 3,925,795.

Berman, Paul A.; Giras, Theodore C.; and Crews, Roy E., to Westinghouse Electric Corporation. Modular operating centers and methods of building same for use in electric power generating plants and other industrial and commercial plants, processes and systems. 3,925,679, Cl. 290-1.000.

Bernard, Jacques Leon, to Centre National d'Etudes Spatiales. Apparatus for the formation of coatings on a substratum. 3,925,187, Cl. 204-298.000.

Bernard, James K.; and Sollazzi, Pasquale Robert, to Rapid-American Corporation. Luggage with binding strip and method of making same. 3,924,714, Cl. 190-18.00R.

Bernert, Claus-Rudiger; and Radlmann, Eduard, to Bayer Aktiengesellschaft. Polyamide compositions which have been rendered antistatic by the addition of sulfocarboxylic acid amides. 3,925,321, Cl. 260-78.00S.

Bernier, Louis E.; and Giblin, James P., to E. T. Wright & Co., Inc. Method for making shoes with cleated bottoms. 3,925,529, Cl. 264-244.000.

Bertelli, Italo: *See—*
Tangorra, Giorgio; Bertelli, Italo; and Calori, Giovanni, 3,924,670.

Berthmann, Adolf; Martin, Gerhard; and Klunsch, Maximilian, to Dynamit Nobel Aktiengesellschaft. Molded explosive bodies having variable detonation speeds. 3,925,122, Cl. 149-2.000.

Berwin, Ted W.; and Wilbur, Everett T., to Hughes Aircraft Company. Digital raster rotator. 3,925,765, Cl. 340-172.500.

Besier, Mattheus: *See—*
Wiemer, Willem; and Besier, Mattheus, 3,925,038.

Besse, Michael E.: *See—*
Lechner, Thomas G.; and Besse, Michael E., 3,925,087.

Bessiere, Pierre Etienne, to Labavia S.G.E. Vehicle braking devices. 3,924,713, Cl. 188-296.000.

Bethlehem Steel Corporation: *See—*
Mantione, Anthony F., 3,924,543.

Betts, Joseph Elwood; Ott, William Michael, Jr.; and Vaum, Howard Thomas, to General Electric Company. Apparatus for maintaining a pressurized liquid-gas interface within a conduit. 3,924,985, Cl. 425-72.000.

Betts, Paul J., to Inter Dyne. Laboratory counter top and fittings therefor. 3,924,880, Cl. 285-61.000.

Betzing, Hans; and Lekim, Dac, to A. Nattermann & Cie. GmbH. Process of manufacturing enzyme preparation rich in lipase. 3,925,158, Cl. 195-66.00R.

Bhate, Suresh K.; Spreadbury, Robert J.; Walker, Michael S.; and Young, Frederick J., to Westinghouse Electric Corporation. High voltage current limiting circuit breaker utilizing a super conductive resistance element. 3,925,707, Cl. 317-11.00A.

Bhutani, Harish K.: *See—*
Kendall, Giles A.; Bhutani, Harish K.; and Minick, Robert, 3,924,511.

Bigham, Clifford B.; and Schneider, Harvey R., to Atomic Energy of Canada Limited. Superconducting cyclotron neutron source for therapy. 3,925,676, Cl. 250-499.000.

Billings, William W.: *See—*
Mitchell, James T.; and Billings, William W., 3,925,709.

Bingham, Paul E.: *See—*
Droegemueller, William; Eberhardt, Ralph N., Jr.; and Bingham, Paul E., 3,924,628.

Binsbergen, Frederik L.: *See—*
Kohler, Jacques R.; and Binsbergen, Frederik L., 3,925,514.

Bither, Tom Allen, Jr., to Du Pont de Nemours, E. I., and Company. Metal boracites. 3,925,537, Cl. 423-277.000.

Bittner, Franklin C. Apparatus and process for plugging a paper roll core. 3,924,743, Cl. 206-389.000.

Black Clawson Company, The: *See—*
Marsh, Paul G., 3,925,150.

Black, Sivalls & Bryson, Inc.: *See—*
Ebeling, Harold O., 3,924,574.

Blackburn, Richard D.: *See—*
Fohrhaltz, Howard A.; and Blackburn, Richard D., 3,925,722.

Blair, Murray R., Jr.: *See—*
Adams, Herbert H. F.; Anderson, Jon C.; Blair, Murray R., Jr.; DiRubio, Robert L.; and Takman, Bertil H., 3,925,469.

Blankenship, James O., to Long Mile Rubber Company. Tire retreading system. 3,925,129, Cl. 156-96.000.

Blankenship, Owen D., to Global Marine Inc. Air cushion dredge for use in ice-covered waters. 3,924,896, Cl. 299-18.000.

Blankenstein, Gunther: *See—*
Wolf, Gerhard Dieter; Kunzel, Hans Egon; Blankenstein, Gunther; Kleinschmidt, Peter; and Bentz, Francis, 3,925,310.

Blanz, Roland: *See—*
Grau, Dietrich; Beigel, Franz; and Blanz, Roland, 3,924,544.

Bleday, Michael P.; and Youngren, Fred R., to United States of America, Army. Radome heat shield. 3,925,783, Cl. 343-705.000.

Blewitt, Donald D., to Westinghouse Electric Corporation. High voltage fuse with localized gas evolving suppressors. 3,925,745, Cl. 337-279.000.

Bliss, Richard D., to Riverside Bio-Engineering, Inc. Analog-recording apparatus for recording and derandomizing randomly-occurring data. 3,925,604, Cl. 178-6.60R.

Bloch, David R. Propeller mechanism for boats. 3,924,557, Cl. 115-38.000.

Blom, Hendrik; and Mollet, Prudent Eduardus Jacobus, to U.S. Philips Corporation. Colour television camera including a position corrector for at least two scanning rasters in the camera. 3,925,812, Cl. 358-51.000.

Bloom, Ray A.; and Phillips, Herbert L., to Timken Company, The. Compact containing iron oxide and carbon and method for its use in steelmaking. 3,925,060, Cl. 75-11.000.

Bluemle, Albert W.: *See—*
Stone, Jonathan A.; and Bluemle, Albert W., 3,925,296.

Blume, Philip, to United States of America, Health, Education and Welfare. Automated system for the determination of bacterial antibiotic susceptibilities. 3,925,166, Cl. 195-139.000.

Blumer, Larry D.: *See—*
Walker, Frank H.; Blumer, Larry D.; Khouri, Robert N.; and Fulks, David G., 3,924,483.

Blurton, Keith F.: *See—*
Oswin, Harry G.; and Blurton, Keith F., 3,925,183.

Boardman, Harold; Breslow, David S.; Simpson, David A.; and Wagner, Richard L., to Hercules Incorporated. Preparing lithographic plates utilizing vinyl monomers containing hydrolyzable silane groups. 3,924,520, Cl. 96-33.000.

Bobkowicz, Andrew John: *See—*
Bobkowicz, Emilian; Bobkowicz, Andrew John; and Lefebvre nee Bobkowicz, Margaret Mary, 3,924,396.

Bobkowicz, Emilian; Bobkowicz, Andrew John; and Lefebvre nee Bobkowicz, Margaret Mary. Composite yarn forming method and apparatus. 3,924,396, Cl. 57-35.000.

Bochorishvili, Anzor Ippolitovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bochorishvili, Anzor Ippolitovich; Stupak, Leonid Mikhailovich; Sysenko, Anatoly Petrovich; and Popov, Valery Georgievich, 3,924,672.

Bock, Hartmut, to Hoechst Aktiengesellschaft. Method of measuring the toner concentration of a developer circulating in an electrophotographic reproduction machine. 3,924,462, Cl. 73-150.00R.

Bockmann, August; Teichmann, Gunter; and Rudolph, Hans, to Bayer Aktiengesellschaft. Free-flowing dispersible inorganic pigment of filler compositions containing hydroxyalkylate alkylene diamines. 3,925,095, Cl. 106-308.00N.

Boden, Heinrich: *See—*
Althausen, Ferdinand; Boden, Heinrich; Ersfeld, Heinz; Klier, Lothar; Raffel, Reiner; and Schneider, Walter, 3,924,989.

Boehmke, Gunther, to Bayer Aktiengesellschaft. Emulsifying carrier compositions and process for emulsifying carriers containing hydroxyaryl groups. 3,925,011, Cl. 8-169.000.

Boehmke, Gunther; and Theidel, Hans, to Bayer Aktiengesellschaft. Pyrazoline brighteners. 3,925,367, Cl. 260-239.650.

Boehmke, Gunther; and Theidel, Hans, to Bayer Aktiengesellschaft. Triazole-coumarins. 3,925,405, Cl. 260-308.00R.

Boehringer Ingelheim GmbH: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, 3,925,446.

Boehringer Mannheim G.m.b.H.: *See—*
Beaucamp, Klaus; Mollering, Hans; Lang, Gunter; Gruber, Wolfgang; and Roeschlau, Peter, 3,925,164.

Boeing Company, The: *See—*
Kofoid, Melvin J., 3,925,177.

Boggs, Fred: *See—*
Thomas, Wil B.; and Boggs, Fred, 3,924,573.

Bohner, Beat: *See—*
Pissiotas, Georg; Meyer, Willy; Bohner, Beat; and Drabek, Jozef, 3,925,517.

Bojarska-Dahlig, Halina; and Szypka, Zdzislaw, to Instytut Przemysku Farmaceutycznego. L-aspartate of cyclic erythromycin a carbonate and process of preparing the same. 3,925,352, Cl. 260-210.00E.

Boliden Aktiebolag: *See—*
Fahlstrom, Per Anders Herman Henningsson; and Jonsson, Erik Alfon, 3,924,814.

Boll, Dietmar: *See—*
Reis, Walter; and Boll, Dietmar, 3,924,754.

Boller, Arthur; and Scherrer, Hanspeter, to Hoffmann-La Roche Inc. Liquid crystalline isonitriles. 3,925,444, Cl. 260-463.000.

Bolsing, Friedrich. Cleaning composition containing phosphoric acid, a process for its manufacture and its uses. 3,925,229, Cl. 252-136.000.

Bond, Helen Inez. Therapeutic prop-like support for hemiside reclining persons. 3,924,282, Cl. 5-327.00R.

Bond, William D.; and Zemke, Bruce E., to General Motors Corporation. Quick warm-up intake manifold. 3,924,591, Cl. 123-122.00H.

Bondy, Harry L.: *See—*
Lowe, William F.; and Bondy, Harry L., 3,925,144.

Boney, William G.; and Kuchar, Paul J., to Universal Oil Products Company. Alkylation process. 3,925,502, Cl. 260-683.480.

Boni, Raymond L.: *See—*
Rauch, Marvin A.; Boni, Raymond L.; and Hadnagy, Thomas D., 3,924,332.

Bono, Pierre; Demange, Philippe; Leclere, Claudine; and Tissier, Alexis, to Societe Generale de Constructions Electriques et Mecaniques "Alsthom & Cie". Fuel cell with a decarbonation cycle, consuming a mixed fuel. 3,925,099, Cl. 136-86.00C.

Booth, Walter A., to Berkey Photo, Inc. Mechanism for controlling the positioning of a diaphragm within a camera. 3,925,795, Cl. 354-139.000.

Borck, Joachim: *See—*
Dahm, Johann; Borck, Joachim; Nowak, Herbert; Zimane, Zdenek; and Kayser, Detlev, 3,925,394.

Borden, Inc.: *See—*
Hollingsworth, Clinton Allen; and Snyder, John Harold, 3,925,024.

Bornhoffer, Frank G. Flexible hose storage container. 3,924,661, Cl. 138-110.000.

Borretzen, Bernt; Olsson, Knut Gunnar; and Sundbeck, Bertil, to AB Ferrosan. Substituted diphenyl ethene. 3,925,487, Cl. 260-619.00A.

Borzym, John J., to Alpha Industries, Inc. Clamping die jaw insert for tube cutoff apparatus. 3,924,502, Cl. 83-454.000.

Boser, Ronald; and Gluckin, Gerald. Stop control motor for a sewing machine. 3,924,550, Cl. 112-130.000.

Bossert, Friedrich: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,925,395.

Botterman, David L.: *See—*
Bell, Richard L.; Walter, Richard T.; Botterman, David L.; and Lewis, Philip W., 3,924,736.

Boundy, Bruce K., to Westinghouse Electric Corporation. Even load clip. 3,924,829, Cl. 248-243.000.

Bourassin, Rene, to Commissariat a l'Energie Atomique. Dampened vertical spindle. 3,924,910, Cl. 308-156.000.

Bousmar, Michel Antony Marie Joseph, to U.S. Philips Corporation. Receiver for the reception of pulse signals transmitted by means of frequency shift modulation. 3,925,614, Cl. 178-88.000.

Boustred, Brian Malcolm: *See—*
Pedlar, Roy; and Boustred, Brian Malcolm, 3,924,342.

Bowman, Raymond D., to Cavalier Corporation. Vending machine electrical operating control circuit. 3,924,719, Cl. 194-10.000.

Bowthorpe Hellermann Limited: *See—*
McCormick, Mathew, 3,924,299.

Boyden, Robert E.: *See—*
Link, Gustav A.; and Boyden, Robert E., 3,925,683.

Brabants, Jules Anthony Peter: *See—*
Robertson, Malcolm Eric Alexander; Marshall, John; Brabants, Jules Anthony Peter; and Davies, Michael Edward, 3,925,665.

Bradley, Robert C.; and Fulton, Garland L., to Multi-Metal Wire Cloth Inc. Strainer valves. 3,925,209, Cl. 210-304.000.

Brainard, Ralph Carter; and Candy, James Charles, to Bell Telephone Laboratories, Incorporated. Differential pulse coded system using shift register companding. 3,925,731, Cl. 325-38.00B.

Brandli, Gerold; and Keller, Pierre, to BBC Brown Boveri & Company Limited. Apparatus for measuring surface temperatures of objects by infrared radiation therefrom. 3,924,469, Cl. 73-355.0EM.

Brannstrom, Kurt Osten; and Karlfors, Levi Johannes, to Atlas Copco Aktiebolag. Combustion engine driven hammer machines. 3,924,691, Cl. 173-48.000.

Braverman, Milton. Closure for multicompartment medicinal dispensing device. 3,924,748, Cl. 206-534.100.

Bray, Martin L.; Cole, Edward N.; and Haggart, James A., Jr., to General Motors Corporation. Spring loaded catalytic converter with externally mounted spring. 3,925,026, Cl. 23-288.0FC.

Bray, Stewart V., to Ford Motor Company. Spark plug socket wrench. 3,924,492, Cl. 81-121.00R.

Brechbuhler, Hans U.: *See—*
von Bredow, Brigitta; and Brechbuhler, Hans U., 3,925,379.

Brecht, Heinz; and Hoffmann, Dieter, to Hoechst Aktiengesellschaft. Fluorinated urethane-N-sulfonic acid esters. 3,925,438, Cl. 260-456.00A.

Breen, Bernard P.: *See—*
Kerho, Stephen E.; Lindquist, Claude S.; White, John R.; and Breen, Bernard P., 3,924,442.

Breidbach, Gunter: *See—*
Ringel, Paul; Hildebrand, Dietrich; and Breidbach, Gunter, 3,925,012.

Breitenfellner, Franz; and Eberle, Wolfgang, to Ciba-Geigy Corporation. Transparent laminate films of polyolefines and polyesters and processes for their manufacture. 3,925,591, Cl. 428-483.000.

Breitling, Ulrich; and Simon, Klaus, to Krauss-Maffei Aktiengesellschaft. Electromagnetic-suspension vehicle system. 3,924,538, Cl. 104-148.0MS.

Breland, Dorothy S. Brush having a head of gathered net material. 3,924,288, Cl. 15-225.000.

Breland, John G.: *See—*
Arnold, Fred E.; Breland, John G.; and Villaescusa, Frank W., 3,925,311.

Brennan, John William, Jr. Foldable furniture hinge member. 3,924,890, Cl. 297-16.000.

Brenner, Lawrence A.; and Scholl, Charles H., to Beloit Corporation. Automatic crimper. 3,924,375, Cl. 53-380.000.

Breslow, David S.: *See—*
Boardman, Harold; Breslow, David S.; Simpson, David A.; and Wagner, Richard L., 3,924,520.

Bresnick, Herbert L.: *See—*
Smith, Richard E.; and Bresnick, Herbert L., 3,924,944.

Brewer, George E. F., to Grow Chemical Corporation. Method of spraying a powder paint slurry. 3,925,580, Cl. 427-372.000.

Brewer, Robert W., to General Motors Corporation. Viscous fluid clutch with centrifugal clutch. 3,924,716, Cl. 192-57.000.

Brickman, W. James; and Faessinger, Robert W., to Scott Paper Company. Abrasion resistant cellulosic fabrics containing graft polymerized diethylphosphatoethylmethacrylate and/or diethylphosphatoethyl acrylate. 3,925,274, Cl. 260-17.4GC.

Bristol-Myers Company: *See—*
Williams, Walter A.; and Silvestri, Herbert H., 3,925,418.

British Aircraft Corporation Limited: *See—*
Summers, Leo Ewart Arthur; and Underhill, David Sidney, 3,924,793.

British Industrial Plastics Limited: *See—*
Lynex, Graham; and Tranter, Harold, 3,924,811.

British Petroleum Company Limited, The: *See—*
Webb, Alan David, 3,925,592.

British Steel Corporation: *See—*
Crownshaw, Robert; and Jubb, Ronald, 3,924,358.

British Titan Limited: *See—*
Moss, John Hickman; and Leng, Barrie, 3,925,531.

Broderick, Frank William, to Standex International Corporation. Metal applicator roll. 3,924,313, Cl. 29-121.00R.

Broderick, Ross Thomas: *See—*
Wagner, Joseph Francis; Broderick, Ross Thomas; Link, Joseph Edward; and Stover, David Emmert, 3,924,904.

Brodie, Peter M.; and Solov, Edwin G., to Singer Company, The. Cross track strapdown inertial quidance system. 3,924,824, Cl. 244-3.200.

Brodrene Gram A/A: *See—*
Gram, Hans, 3,924,758.

Brogli, Hans G.; and Brogli, Werner F. Apparatus for the manufacture of emulsions. 3,925,243, Cl. 252-359.00C.

Brogli, Werner F.: *See—*
Brogli, Hans G.; and Brogli, Werner F., 3,925,243.

Brokenshire, John Leslie: *See—*
Showalter, Lane Crawford; Brokenshire, John Leslie; and Watts, Geoffrey Brian, 3,925,022.

Brooke, Alan H.: *See—*
Tu, Peter K. C.; Brooke, Alan H.; and Miller, Frank S., 3,925,044.

Brooke, Dana, to Mead Johnson & Company. Zero-order release method. 3,924,622, Cl. 128-260.000.

Brosh, Amnon: *See—*
Kurtz, Anthony D.; Brosh, Amnon; Gravel, Charles L.; and Mallon, Joseph R., 3,924,322.

Brown, Albert E.; Schlotzhauer, Allan T.; and Newman, Douglas A., to Columbia Ribbon and Carbon Manufacturing Co., Inc. Pressure-adhesive correction materials and method for producing same. 3,924,728, Cl. 197-172.000.

Brown, Alfred: *See—*
Wu, Ching H.; Brown, Alfred; Huang, Wann-Sheng; and Shum, Yick-Mow, 3,924,682.

Brown, Anna P., to Brown, Anna P.; Brown, Joseph S.; and Brown, Richard A. R. J., part interest to each. Artist's paintbrush. 3,924,287, Cl. 15-192.000.

Brown, Boveri & Cie. A.G.: *See—*
Brungsberg, Heinrich-Josef, 3,924,595.

Brown, Buck C., to Presearch Incorporated. Method and apparatus for detecting a repetitive signal in a noisy background. 3,925,650, Cl. 235-164.000.

Brown, Edward L.: *See—*
Totman, Mirrel L., 3,924,649.

Brown, Gaylord W., to Koehring Company. Fabricating apparatus for twin-sheets. 3,925,140, Cl. 156-382.000.

Brown, Henry L., Jr.: *See—*
Everhardt, William F.; Brown, Henry L., Jr.; and Dennis, Clement O., Sr., 3,925,005.

Brown, Joseph S.: *See—*
Brown, Anna P., 3,924,287.

Brown, Martin John: *See—*
Austin, James Raymond; Brown, Martin John; and Loan, Leonard Donald, 3,925,671.

Brown, Melancthon S., deceased; and by Kohn, Gustave K., administrator, to Chevron Research Company. Herbicidal bis-urea and urea-carbamoyl sulfides. 3,925,056, Cl. 71-98.000.

Brown, Richard A. R. J.: *See—*
Brown, Anna P., 3,924,287.

Brown, Robert, to Nairn Floors Limited. Production of bonded fibrous products. 3,925,130, Cl. 156-148.000.

Brown, William R., to FMC Corporation. Two mass swing system with independently controlled vibratory exciter means. 3,924,730, Cl. 198-220.00R.

Brown & Williamson Tobacco Corporation: *See—*
Summers, Thomas Wade, 3,924,643.

Brownell, Dudley C.; and Jackson, Harold W., to Bendix Corporation, The. Radio frequency notch filter. 3,925,739, Cl. 333-76.000.

Bruce, Jack William: *See—*
Singleton, Frank Henry; and Bruce, Jack William, 3,925,534.

Bruen, Charles P.; and Kelly, Donald H., to Reynolds Metals Company. Process for producing alumina monohydrate from basic aluminum nitrates. 3,925,538, Cl. 423-390.000.

Bruker-Physik AG: *See—*
Haas, Jorg, 3,925,786.

Brundage, Ruth Pauline: *See—*
Lesher, George Y.; and Brundage, Ruth Pauline, 3,925,398.

Brungsberg, Heinrich-Josef, to Brown, Boveri & Cie. A.G. Automatic turn-off for transistorized ignition systems for internal combustion engines. 3,924,595, Cl. 123-148.00E.

Brunie, Jean-Claude; Creene, Noel; and Maurel, Felix, to Rhone-Poulenc S.A. Process for the preparation of mixtures of cycloalkanols and cycloalkanones. 3,925,316, Cl. 260-586.00R.

Bruning, Klaus; and Lob, Heinrich, to Dynamit Nobel AG. Mixing device for curable liquid material. 3,924,836, Cl. 259-7.000.

Brunswick Corporation: *See—*
Hundertmark, James M., 3,924,975.

Brych, Alfred: *See—*
Lehmann, Gerard; and Brych, Alfred, 3,925,101.

Bucalo, Louis. Device for testing for the presence of micro-organisms. 3,924,607, Cl. 128-2.00W.

Buchel, Karl Heinz; Frohberger, Paul-Ernst; Scheinpflug, Hans; and Enders, Edgar, to Bayer Aktiengesellschaft. 2-Substituted phenylhydrazonoimidazolenine fungicidal and bactericidal agents. 3,925,551, Cl. 424-273.000.

Buckle, Derek Richard; and Smith, Harry, to Beecham Group Limited. Anti-allergic pharmaceutical compositions. 3,925,557, Cl. 424-331.000.

Buder, Gus A.: *See—*
Cave, Ellis K., 3,925,184.

Budzyna, Edward S., to Rockwell International Corporation. Weft cutter control apparatus. 3,924,662, Cl. 139-302.000.

Buehler, Arthur; and Schuetz, Hans-Ulrich, to Ciba-Geigy AG. Mixed chromium-containing azo dyestuffs containing, per atom of chromium, one molecule of an o,o'-dihydroxy-sulphophenylene-azo-naphthalene and one molecule of an -o-hydroxyphenylene-azo-acetoacetamide. 3,925,346, Cl. 260-145.00A.

Bugaut, Andree: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Zorayan, Vahan, 3,925,474.

Buhne, Gerd, to Titan Verpackungssysteme GmbH. Device for applying strapping material to round packages or the like. 3,924,526, Cl. 100-25.000.

Buller, Joseph S.; Eneim, Arthur A.; and Hitzelberger, David A., to Hughes Aircraft Company. Quick disconnect tank coupler. 3,924,654, Cl. 137-322.000.

Bultman, John D.; Jurd, Leonard; and Ritchie, Donald D., to United States of America, Navy. Use of obtusaquinone as a fungicide to control wood-inhabiting marine fungi. 3,925,558, Cl. 424-331.000.

Bumberger, Dietrich, to Hoechst Aktiengesellschaft. Sealing device. 3,924,911, Cl. 308-187.100.

Bumpus, Francis Merlin; Khosla, Mahesh Chandra; and Smeby, Robert Rudolph. [Sar^1,Thr^8]angiotensin II as an angiotensin antagonist. 3,925,345, Cl. 260-112.500.

Burg, Karlheinz: *See—*
Sextro, Gunter; and Burg, Karlheinz, 3,925,505.

Burgess, William P., to Mobil Oil Corporation. Hydrocarbon conversion over activated erionite. 3,925,191, Cl. 208-111.000.

Burkle, Fritz, Jr., to Fritz Burkle KG, Firma. Link bracelet construction, particularly watch bracelet. 3,924,418, Cl. 63-4.000.

Burroughs Corporation: *See—*
Millben, Lawrence A., 3,925,723.
Reynolds, Robert J., 3,924,721.

Burrows, John: *See—*
Harris, Arthur; Burrows, John; and Hargreaves, James Roger, 3,925,245.

Burton, Arthur William: *See—*
Barnett, Barry Roger Michael; and Burton, Arthur William, 3,924,955.

Busch, Peter: *See—*
Story, Paul R.; and Busch, Peter, 3,925,417.
Story, Paul Richard; Busch, Peter; Denson, Donald Derby; and Wright, Carl Edward, 3,925,421.

Business Electronics, Inc.: *See—*
Beacham, Ronald; Covington, Dennis; and McNutt, Reginald, 3,925,770.

Bussard, Charles B.; Hamisch, Paul H., Sr.; and Wisecup, David R., to Monarch Marking Systems, Inc. Pinning machine and method. 3,924,523, Cl. 93-87.000.

Butcher, Thomas V.; and Stitt, Donald H. Bumpers for vehicles. 3,924,888, Cl. 293-76.000.

Butler National Corporation: *See—*
Gilbert, Glen A.; and Hobbs, James, 3,925,750.

Butzky, Leon: *See—*
Sperry, Philip R.; Tyler, Derek E.; and Butzky, Leon, 3,925,067.

Buza, Thomas Brian: *See—*
Zipperian, Donald Edwin; Jones, James Allen; and Buza, Thomas Brian, 3,925,218.

Buzzelli, Edward S., to Westinghouse Electric Corporation. Metal/air cells and air cathodes for use therein. 3,925,100, Cl. 136-86.00A.

Buzzi, Gian Fausto: *See—*
Ferlazzo, Natale; Buzzi, Gian Fausto; and Ghirga, Marcello, 3,925,463.

Buzzolini, Mario Gustav; and Manning, Robert Everett, to Sandoz-Wander, Inc. α-(p-benzyloxyphenyl)-p-cresol. 3,925,483, Cl. 260-613.00R.

BWB Controls, Inc.: *See—*
Hoofnagle, Frank M., 3,924,752.

BWG Bergwerk- und Walzwerk-Maschinenbau GmbH, Firma: *See—*
Noe, Oskar, 3,924,428.

C. Conradty: *See—*
Lauterbach-Dammler, Inge, 3,925,261.

C. Reichert Optische Werke, AG: *See—*
Merstallinger, Kurt; and Schindl, Klaus P., 3,924,926.

Cacossa, Frank: *See—*
Guarino, Michael C.; and Cacossa, Frank, 3,924,369.

Cady, Edward W.; and Parsons, George R., to Aluminum Company of America. Apparatus for removing pilferproof closure bands from returnable bottles. 3,924,315, Cl. 29-200.00D.

Cain, James F., to Marlboro Manufacturing Inc. Hinge structure. 3,924,293, Cl. 16-169.000.

Caldwell, Samuel I.; Orr, Robert S.; and White, Duane D., to Caterpillar Tractor Co. Final drives with load separating means. 3,924,485, Cl. 74-410.000.

Calori, Giovanni: *See—*
Tangorra, Giorgio; Bertelli, Italo; and Calori, Giovanni, 3,924,670.

Cama, Lovji D., to Merck & Co., Inc. Process for epimerizing penicillin compounds, and related products. 3,925,363, Cl. 260-239.100.

Cameli, Nazzareno: *See—*
Valvassori, Alberto; Sartori, Guido; and Cameli, Nazzareno, 3,925,333.

Camic, Donald L., to Hughey and Phillips, Inc. Lighting system with variable flashing rate. 3,925,704, Cl. 315-200.00A.

Camille Bauer Messinstrumente AG: *See—*
Ludin, Ludwig, 3,924,528.

Camosso, Domenico, to SKF Industrial Trading and Development Company B.V. Locking arrangement for bearing rings. 3,924,957, Cl. 403-352.000.

Campagna, Edward R.: *See—*
Arrandale, Roy S.; and Campagna, Edward R., 3,924,767.

Canada, Atomic Energy of, Limited: *See—*
Allan, Colin J.; and Bayly, John G., 3,925,666.

Canadian Patents and Development Limited: *See—*
Dawson, Peter H., 3,925,662.

Candle, Richard D., to Goodyear Tire & Rubber Company, The. Inflatable shelter. 3,924,363, Cl. 52-2.000.

Candy, James Charles: *See—*
Brainard, Ralph Carter; and Candy, James Charles, 3,925,731.

Canney, Robert S., to General Electric Company. End cap for primary windings. 3,925,744, Cl. 336-84.000.

Canning, Michael H., to International Harvester Company. Adjustable program control circuit for two hydraulic cylinders with single lever control. 3,924,766, Cl. 214-764.000.

Canon Kabushiki Kaisha: *See—*
Hirose, Ryusho, 3,924,933.
Matsumura, Isao; and Kohayakawa, Yoshimi, 3,925,793.
Sanada, Noriaki; and Sorimachi, Kanehiro, 3,925,798.
Yamada, Tateo; and Uchidoi, Masanori, 3,924,942.

Cape, Arthur T., to Coast Metals, Inc. Brazing alloy. 3,925,070, Cl. 75-159.000.

Carapellucci, Joseph, to Diamond Seven, Inc. Constant horsepower variable speed reversing transmission. 3,924,480, Cl. 74-230.17A.

Cardwell, Robert Edward; Davis, Robert Leon; Marino, Patrick John; and McNamara, Edward Joseph, to Bell Telephone Laboratories, Incorporated. Line switching system for digital data. 3,925,600, Cl. 178-3.000.

Cardwell, Robert Edward; Carlson, David Emory; Davis, Robert Leon; McNamara, Edward Joseph; Pilc, Randolph John; Schlanger, Gabriel Gary; Tutelman, David Morris; Warwick, Peter Stephen; and Zydney, Herbert Mortimer, to Bell Telephone Laboratories, Incorporated. Digital register sender and line circuit for data switch. 3,925,601, Cl. 178-3.000.

Caretta, Renato, to Industrial Pirelli S.p.A. Machine for manufacturing pneumatic tires, in particular radial tires. 3,925,141, Cl. 156-416.000.

Carl Schenck AG, Firma: *See—*
Maus, Otfrid, 3,924,473.

Carleton Controls Corporation: *See—*
Cummins, Richard D., 3,924,464.

Carleton, Peter S.; Lockwood, Robert J.; and Reymore, Harold E., Jr., to Upjohn Company, The. Polyisocyanate-based foam process using aminimides as catalyst. 3,925,284, Cl. 260-2.5AC.

Carlone, Eugene R. Wrist-actuatable switch. 3,924,400, Cl. 58-50.00R.

Carlson, David Emory: *See—*
Cardwell, Robert Edward; Carlson, David Emory; Davis, Robert Leon; McNamara, Edward Joseph; Pilc, Randolph John; Schlanger, Gabriel Gary; Tutelman, David Morris; Warwick, Peter Stephen; and Zydney, Herbert Mortimer, 3,925,601.

Carlsson, Lars Erik; Grevillius, Nils Fredrik; and Hellner, Lars Ivar, to Allmanna Svenska Elektriska Aktiebolaget. Steel manufacture. 3,925,061, Cl. 75-58.000.

Carmichael, Donald C.; Chambers, Douglas L.; and Wan, Chong T., to Shatterproof Glass Corporation. Method for continuous production of sputter-coated glass products. 3,925,182, Cl. 204-192.000.

Carpenter, Donald E.: *See—*
Baimbridge, Charles L.; Minderhout, James R.; Bearman, Robert W.; and Carpenter, Donald E., 3,925,169.

Carpi, Carlo; Dorigotti, Luciano; and Pifferi, Giorgio, to I.S.F. S.p.A. 6-Substituted 3-carbethoxyhydrazinopyridazine. 3,925,381, Cl. 260-250.00A.

Carr-Brion, Kenneth Garfield, to National Research Development Corporation. Analysis of moving fluids. 3,925,661, Cl. 250-272.000.

Carson, James W. Remotely controlled day-night outside truck mirror. 3,924,938, Cl. 350-302.000.

Carter, James L.: *See—*
Sinfelt, John H.; and Carter, James L., 3,925,196.

Carter, Ronald David, to Stanley Tools Ltd. Hand tool comprising a handle and removable blade. 3,924,329, Cl. 30-339.000.

Casad, Burton M.: *See—*
Clark, Charles R.; Gregory, M. Duane; Casad, Burton M.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,924,681.

Casio Computer Co., Ltd.: *See—*
Kashio, Toshio, 3,925,641.
Kashio, Toshio, 3,925,788.
Kashio, Toshio, 3,925,789.
Suzuki, Masahiko, 3,925,787.

Cassimally, K. A. I. Orthodontic device. 3,924,621, Cl. 128-252.000.

Catawba Chemicals, Inc.: *See—*
Axon, Gordon L.; and Montezinos, Beverly K., 3,925,013.

Caterpillar Tractor Co.: *See—*
Caldwell, Samuel I.; Orr, Robert S.; and White, Duane D., 3,924,485.
Jardin, Thomas K., 3,924,583.
Purcell, Robert J., 3,924,703.

Cates, Robert E., to Marley Company, The. Opposed air path wet-dry cooling tower and method. 3,925,523, Cl. 261-151.000.

Cauceglia, Walter Bartholomew; Gerlt, Charles; and Peralta, Luis Arturo, to Bell Telephone Laboratories, Incorporated. Raised floor with clamped panel support. 3,924,370, Cl. 52-126.000.

Cavalier Corporation: *See—*
Bowman, Raymond D., 3,924,719.
Lindsey, James C., 3,924,779.

Cave, Ellis K., to Buder, Gus A. Electrolytic system for recovering metal from chemical solutions with controlled plating current. 3,925,184, Cl. 204-229.000.

Caveny, Leonard H.; and Summerfield, Martin, to United States of America, Air Force. Embedded porous element rocket motor. 3,924,406, Cl. 60-254.000.

Cekoric, Thomas, Jr.; and Yananton, Patrick Michael, to Hoffmann-La Roche Inc. Diagnostic device. 3,925,163, Cl. 195-103.50R.

Celanese Corporation: *See—*
Forschirm, Alex S.; and Wissbrun, Kurt F., 3,925,006.
Kimmel, Robert M.; Riggs, John P.; Swander, Robert W.; and Whitney, Wells, 3,925,524.
LaNieve, Herman L., 3,925,525.
Montgomery, Robert T., 3,925,134.
Park, Im Keun, 3,925,587.

Cellone, Luigi: *See—*
Baldassarri, Agostino; and Cellone, Luigi, 3,925,086.

Central Specialties Inc.: *See—*
Ballenger, William G., 3,924,751.

Centre d'Etudes Experimentales et Cliniques de Physio Biologie de Pharmacologie et d'Eutonologie: *See—*
Laborit, Henri, 3,925,153.

Centre National d'Etudes Spatiales: *See—*
Alouges, Aime Elie, 3,925,794.
Bernard, Jacques Leon, 3,925,187.

Cernocky, Jiri: *See—*
Kovar, Stanislav; Cernocky, Jiri; and Riha, Petr, 3,924,820.

Ceskoslovenska akademie ved: *See—*
Coupek, Jiri; and Gut, Vladimir, 3,925,267.

Chabardes, Pierre; Grard, Charles; and Schneider, Charles, to Rhone-Poulenc S.A. Process for the preparation of allylic alcohols. 3,925,485, Cl. 260-617.00R.

Chaires, Anne Marie; Ciconte, Jean Marie; Ett, Allen Harold; Hilliard, John Joseph; and Rosenbaum, Walter Steven, to International Business Machines Corporation. Binary reference matrix for a character recognition machine. 3,925,761, Cl. 340-146.3WD.

Chalmers, Alexander Michael; Jack, James; and Cook, Barry, to Ciba-Geigy Corporation. Piperidine derivatives. 3,925,376, Cl. 260-248.0CS.

Chambers, Douglas L.: *See—*
Carmichael, Donald C.; Chambers, Douglas L.; and Wan, Chong T., 3,925,182.

Chambers, Robert B. Conveyor scale with integrator. 3,924,699, Cl. 177-16.000.

Chance, Vernon B., Jr.: *See—*
Rolf, David A.; and Chance, Vernon B., Jr., 3,925,256.

Chang, Lung Ting; and Terry, Carol Ann, to Miles Laboratories, Inc. Microbiological process for preparing 2-substituted-4-(R)-hydroxy-cyclopentane-1,3-diones. 3,925,156, Cl. 195-51.00R.

Chapin, Nancy L., to Kay Laboratories, Inc. Flameless heat source for use therein for splicing cables. 3,924,603, Cl. 126-263.000.

Chapman, John H.; Smith, Randolph O.; and Josey, Verlon E., to Yara Engineering Corporation. Method and apparatus for clay beneficiating. 3,924,813, Cl. 241-4.000.

Chapman, Sydney G.: *See—*
Altman, Carl; Chapman, Sydney G.; and Satya, Akella V. S., 3,924,320.

Chase, Kenneth P.: *See—*
Roberts, Michael G.; and Chase, Kenneth P., 3,925,300.

Chauvette, Robert R., to Eli Lilly and Company. Alpha-aminoacyl-3-halo cephalosporins. 3,925,372, Cl. 260-243.00C.

Cheatum, Leo George, to Deere & Company. Adjustable crop compressor for a pickup mechanism. 3,924,391, Cl. 56-364.000.

Chekotilo, Leonty Vasilievich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bochorishvili, Anzor Ippolitovich; Stupak, Leonid Mikhailovich; Sysenko, Anatoly Petrovich; and Popov, Valery Georgievich, 3,924,672.

Chemclean Corporation: *See—*
Livingston, Howard J.; and Esquenet, Bernard Etienne, 3,925,214.

Chemische Werke Huls Aktiengesellschaft: *See—*
Reich, Manfred; Muller, Wolfgang; and zur Hausen, Manfred, 3,925,490.

Cheng, Bao-Ding, to Colgate-Palmolive Company. Carbonate built detergents. 3,925,228, Cl. 252-110.000.

Cheng, Paul J., to Phillips Petroleum Company. Multistage cyclonic separator. 3,925,045, Cl. 55-345.000.

Cheo, Peter K., to United Technologies Corporation. Integrated optical signal processing system. 3,924,931, Cl. 350-160.00R.

Chernowitz, Maurice E. Sound card and sound apparatus suitable for multi-channel use. 3,925,814, Cl. 360-2.000.

Chesley, Ronald F.: *See—*
Goldfarb, Adolph E.; Benkoe, Erwin; Everitt, Delmar K.; Chesley, Ronald F.; and Frierdich, Richard D., 3,924,352.

Chevron Research Company: *See—*
Brown, Melancthon S., deceased; and Kohn, Gustave K., administrator, 3,925,056.
Franke, Hans G., 3,925.520.
Hodgson, Clive, 3,925,428.
Singer, Malcolm S., 3,925,553.

Cheylan, Etienne: *See—*
Belliot, Christian; Cheylan, Etienne; Madelaine, Serge; and Ebbing, Johannes, 3,925,535.

Cheysson, Philippe Jean-Marie; Verney, Paul Jean; and Coquard, Michel Alain, to Exxon Research & Engineering Company. Liquid separating equipment. 3,925,204, Cl. 210-73.000.

Chibata, Ichiro; Yamada, Shigeki; and Yamamoto, Masao, to Tanabe Seiyaku Co. Ltd. Preparation of optically active isomers of lysines. 3,925,454, Cl. 260-501.120.

Chiklis, Charles K., to Polaroid Corporation. Photographic products containing anti-reflection layer. 3,925,081, Cl. 96-72.000.

Chirico, Lorraine: *See—*
Holman, Frank Brouwer, 3,924,571.

Chisnall, David William: *See—*
Taylor, Christine; and Chisnall, David William, 3,924,348.

Choshi, Yasuo: *See—*
Murai, Koichi; Choshi, Yasuo; and Kobayashi, Toshiaki, 3,925,278.

Christensen, Carl O., to Roll-Rite Corporation. Anti-flutter caster. 3,924,292, Cl. 16-35.00D.

Christensen, David E., to Raymond Lee Organization, Inc., The, a part interest. Puzzle toy. 3,924,857, Cl. 273-113.000.

Christie, John James Watson, to Wilfrid Overton Limited. Latches. 3,924,884, Cl. 292-196.000.

Christmann, Marvin H.: *See—*
Olsen, Keith H.; and Christmann, Marvin H., 3,925,146.

Chrysler Corporation: *See—*
Ghosh, Subrata, 3,925,071.

Chuang, V'ncent T., to Union Carbide Corporation. The reaction of chlorosilanes with unsaturated organic compounds. 3,925,434, Cl. 260-448.20E.

Chuang, Vincent T.: *See—*
Walsh, John J.; and Chuang, Vincent T., 3,925,093.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Kanno, Takashi, 3,925,162.

Church & Dwight Co., Inc.: *See—*
Winston, Anthony E. B., 3,925,224.

Church, Peter K.; and Knutson, Oliver J., to Kaman Sciences Corporation. Ceramic treating process and product produced thereby. 3,925,575, Cl. 427-226.000.

Ciba-Geigy AG: *See—*
Buehler, Arthur; and Schuetz, Hans-Ulrich, 3,925,346.
Gurtler, Peter, 3,925,007.
Haase, Jaroslav, 3,925,016.
Wohlkonig, Alexander; Hindermann, Peter; Beffa, Fabio; and Hegar, Gert, 3,925,348.

Ciba-Geigy Corporation: *See—*
Breitenfellner, Franz; and Eberle, Wolfgang, 3,925,591.
Chalmers, Alexander Michael; Jack, James; and Cook, Barry, 3,925,376.
Ernst, Otto; Meyerhans, Konrad; and Kusenberg, Eugen, 3,924,737.
Fattinger, Volker, 3,925,040.
Harris, Arthur; Burrows, John; and Hargreaves, James Roger, 3,925,245.
Pissiotas, Georg; Meyer, Willy; Bohner, Beat; and Drabek, Jozef, 3,925,517.
Porret, Daniel; and Habermeier, Jurgen, 3,925,406.
Renner, Alfred; and Haug, Theobald, 3,925,314.
Stockinger, Friedrich; and Lohse, Friedrich, 3,925,407.
Tscharner, Christopher Johannes; Schwarz, Maurice Jacob; and Horlacher, Paul, 3,925,260.
von Bredow, Brigitta; and Brechbuhler, Hans U., 3,925,379.

Cibie Projecteurs: *See—*
Puyplat, Olivier, 3,924,290.

Ciconte, Jean Marie: *See—*
Chaires, Anne Marie; Ciconte, Jean Marie; Ett, Allen Harold; Hilliard, John Joseph; and Rosenbaum, Walter Steven, 3,925,761.

Cincinnati Milacron Chemicals Inc.: *See—*
Weisfeld, Lewis B.; and Witman, Robert C., 3,925,309.

Clark, Charles R.; Gregory, M. Duane; Casad, Burton M.; Krehbiel, Delmar D.; and Kennedy, Carl D., to Continental Oil Company. Method of using overbased crude oil as waterflood additive. 3,924,681, Cl. 166-270.000.

Clark Equipment Company: *See—*
Heggen, John P., 3,924,702.
McKenzie, Ian, 3,924,667.

Clark, James A., to Bausch & Lomb Incorporatdd. Method of and apparatus for aligning optical lenses. 3,924,936, Cl. 350-252.000.

Clark, John O.; Rafferty, James B.; and Schindler, Donald G., to United States Steel Corporation. Ultrasonic testing of tubing employing a spiral wave generator. 3,924,453, Cl. 73-67.80S.

Clark, Lloyd Douglas, to Pressman, D. R., a part interest. Electronic clock employing repeating sequential single digit display. 3,925,777, Cl. 340-336.000.

Clarke Chapman-John Thompson Limited: *See—*
Bennett, John Charles, 3,924,676.

Clarke, Fredric B., III, to Monsanto Company. Quaternary aminoalkylene phosphonic acids and method of preparation. 3,925,453, Cl. 260-501.120.

Classe, Anthony V.; and Mehn, Robert P., to IPCO Hospital Supply Corporation. Animal cage. 3,924,572, Cl. 119-17.000.

Clayton & Lambert Manufacturing Company: *See—*
Lambert, Charles F., Jr., 3,924,761.

Cleaveland, Charles M., to Westinghouse Electric Corporation. Power-conductor assembly and insulating supporting means therefor. 3,925,599, Cl. 174-150.000.

Cleff, Gunther. Bottle cap having a preshrunk foil portion. 3,924,771, Cl. 215-246.000.

Clemence, Francois; and Le Martret, Odile, to Roussel-UCLAF. Basic aluminum salt of 2-N-propyl-5-thiazole-carboxylic acid. 3,925,399, Cl. 260-299.000.

Clerk, Robert Cecil. Porting arrangements of axial piston pumps and motors. 3,924,515, Cl. 91-472.000.

Coast Metals, Inc.: *See—*
Cape, Arthur T., 3,925,070.

Coate Burial Vault, Inc.: *See—*
Yost, Kenneth J., 3,925,208.

Coates, Harold; Collins, John Desmond; and Siddiqui, Iftikhar Hussain, to Albright & Wilson Limited. Esters and mixtures thereof with organotin compounds. 3,925,246, Cl. 252-400.00R.

Coates, Vincent J.; and Welter, Leonard M., to American Optical Corporation. Field emission electron gun. 3,925,664, Cl. 250-310.000.

Coffman, Robert L.; and Shiffler, Richard W., to Union Carbide Corporation. Hydraulic fluids based on borate esters. 3,925,223, Cl. 252-78.000.

Cogne Macchine Tessili-Cognetex S.p.A.: *See—*
Grossi, Oscar, 3,924,395.

Cohen, Evelyn V.: *See—*
Cohen, Morris; Cohen, Evelyn V.; and Rubio, Alfred M., 3,924,501.

Cohen, Joseph; and Zimmerman, Gilbert A., to Aerojet-General Corporation. Solid propellants with stability enhanced additives of particulate refractory carbides or oxides. 3,924,405, Cl. 60-219.000.

Cohen, Morris; Cohen, Evelyn V.; and Rubio, Alfred M., to Model Builders, Inc. Cutting apparatus. 3,924,501, Cl. 83-404.300.

Cohen, Noal; Rosenberger, Michael; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Cyanoalkyl a-ring procursors. 3,925,420, Cl. 260-340.900.

Cohen, Robert S.; and Crites, Lila J., to Dover Chemical Corporation. Method for producing hydrates of sodium chlorophenate and hydrates produced thereby. 3,925,489, Cl. 260-623.00R.

Cohen, William D.; and Darcy, John J., to Redactron Corporation. Cartridge drive. 3,924,823, Cl. 242-198.000.

Colburn, John W., Jr.; Wood, Charles D., III; Mathis, Ronald J.; and Nye, Allan R., to Southwest Research Institute. Earth ripper employing repetitive explosions. 3,924,897, Cl. 299-36.000.

Cole, Edward N.: *See—*
Bray, Martin L.; Cole, Edward N.; and Haggart, James A., Jr., 3,925,026.

Coleman, William R., to Dehm, Darrell L., a part interest. Method and machine for axially aligning and welding continuous rail. 3,925,636, Cl. 219-104.000.

Colgate-Palmolive Company: *See—*
Bauman, Robert Andrew, 3,925,556.
Cheng, Bao-Ding, 3,925,228.
Donohue, John, 3,925,543.

Collard, Maurice A.; Cruchant, Serge Alfred; and Lafon, Jean-Louis. System for rigidly fixing an object to a support by means of thermally insulating tension ties, more particularly for astronomical radiometers. 3,924,830, Cl. 248-358.00A.

College, Michael A., to Kennametal Inc. Excavating tool. 3,924,697, Cl. 175-382.000.

Collins, Arthur A.; and Pedersen, Robert D., to Arthur A. Collins, Inc. Digital circuit switched time-space-time switch equipped time division transmission loop system. 3,925,621, Cl. 179-15.0AL.

Collins, John Desmond: *See—*
Coates, Harold; Collins, John Desmond; and Siddiqui, Iftikhar Hussain, 3,925,246.

Collo Rheincollodium Koln GmbH Werk Hersel: *See—*
Moroni, Rolf; Rinck, Friedrich Karl; and Ehlenz, Peter, 3,925,248.

Colt Industries Operating Corporation: *See—*
Kindl, George F., 3,924,338.

Columbia Ribbon and Carbon Manufacturing Co., Inc.: *See—*
Brown, Albert E.; Schlotzhauer, Allan T.; and Newman, Douglas A., 3,924,728.

Com Tel, Inc.: *See—*
Miller, Lowell E.; and Nielsen, Gail R., 3,925,772.

Commercial Solvents Corporation: *See—*
Hodge, Edward B., 3,925,423.

Commissariat a l'Energie Atomique: *See—*
Bourassin, Rene, 3,924,910.
Decret, Jean-Claude; Denis, Pierre; and Jourdan, Paul, 3,924,954.

Commonwealth Scientific and Industrial Research Organization: *See—*
Scott, Trevor William; and Hills, Geoffrey Dean Loftus, 3,925,560.

Community Blood Council of Greater New York, Inc., The: *See—*
Mazur, Abraham, 3,925,344.

Compagnie Francaise Thomson Houston-Hotchkiss Brandt: *See—*
Belliot, Christian; Cheylan, Etienne; Madelaine, Serge; and Ebbing, Johannes, 3,925,535.

Compagnie Generale d'Automatisme: *See—*
Raison, Michel, 3,924,666.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Maurice, Louis, 3,924,962.

Conibear, Frank R. Actuator for animal trap. 3,924,347, Cl. 43-90.000.

Connors, William P., to McDonnell Douglas Corporation. Grid lateral photodetector with gain. 3,925,658, Cl. 250-211.00J.

Conrad, Richard A., to Teledyne, Inc. Electrical connector. 3,924,915, Cl. 339-17.00F.

Conscale AB: *See—*
Flinth, Rune; and Nordstrom, Kjell, 3,924,729.

Constantikes, George J.; and Van Pool, Joe, to Phillips Petroleum Company. Removal of fluorides from catalytic reactor feed. 3,925,193, Cl. 208-91.000.

Container Corporation of America: *See—*
Bell, Richard L.; Walter, Richard T.; Botterman, David L.; and Lewis, Philip W., 3,924,736.
Desmond, John D.; and Hart, Joseph J., 3,924,800.
Gardner, Jeffrey M.; and Pilz, William M., 3,924,734.
Walter, Richard T., 3,924,385.

Contexo Limited: *See—*
Mould, Frank, 3,924,328.

Continental Can Company, Inc.: *See—*
Peyser, Harry A., 3,924,777.

Continental Oil Company: *See—*
Clark, Charles R.; Gregory, M. Duane; Casad, Burton M.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,924,681.

Continental Tapes, Incorporated: *See—*
Dahl, Rolf, 3,925,283.

Cook, Barry: *See—*
Chalmers, Alexander Michael; Jack, James; and Cook, Barry, 3,925,376.

Cook Inc.: *See—*
Cook, William A.; and Osborne, Thomas A., 3,924,633.

Cook, Koy B., Jr.; Davidson, Jimmy L.; Gibson, Joseph D.; and Patterson, Raymond B., III, to Harris Corporation. Radiation hardened mis devices. 3,924,321, Cl. 29-580.000.

Cook, William A. Fiber glass reinforced catheter. 3,924,632, Cl. 128-348.000.

Cook, William A.; and Osborne, Thomas A., to Cook Inc. Apparatus and method for suprapubic catheterization. 3,924,633, Cl. 128-349.00R.

Cooley, Howard H., Jr. Shower head vibrator. 3,924,808, Cl. 239-102.000.

Cooper, Donald Walter; and Unruh, James Bradley, to International Business Machines Corporation. Centering of textual character fields about a point. 3,924,723, Cl. 197-19.000.

Cooper, Earl A.; and Stephenson, Roger C., to G & H Technology, Inc. Fire fighting system. 3,924,688, Cl. 169-61.000.

Cooper, Frederick, to Lawrence Peska Associates, Inc., a part interest. Garbage can enclosure device. 3,924,913, Cl. 312-258.000.

Cooper, Glen D.; and Abolins, Visvaldis, to General Electric Company. Light stabilized polyphenylene ether resin composition. 3,925,509, Cl. 260-876.00R.

Cooper, Robin D. G.; and Herron, David K., to Eli Lilly and Company. Acylureido substituted cephalosporins. 3,925,368, Cl. 260-240.00J.

Copal Company Limited: *See—*
Nakatani, Atsutada, 3,925,799.
Satake, Yoshihiro, 3,925,771.

Coquard, Michel Alain: *See—*
Cheysson, Philippe Jean-Marie; Verney, Paul Jean; and Coquard, Michel Alain, 3,925,204.

Cordis Corporation: *See—*
Hess, Stanley R., 3,924,639.

Corey, Garland G.; and Weinstein, Bernard, to American Home Products Corporation. Novel laundering compositions. 3,925,227, Cl. 252-106.000.

Cornell, Charles R.; Simpson, Dennis D.; and Knapp, Kenneth K., to Eaton Corporation. Hydrostatic transmission control system. 3,924,410, Cl. 60-403.000.

Corning Glass Works: *See—*
Piasio, Roger N.; and Woiszwillo, James E., 3,925,355.

Corte, Herbert; Heller, Harold; and Netz, Otto, to Bayer Aktiengesellschaft. Process for the production of anion exchangers. 3,925,264, Cl. 260-2.10E.

Cory Food Services, Inc.: *See—*
Vitous, Charles J., 3,924,525.

Cory, Halsey W., to Force Control Industries, Inc. Clutch-brake unit. 3,924,715, Cl. 192-18.00A.

Costas, Louis P., to Anaconda American Brass Company. Method of monitoring the active roughening agent in a copper plating bath. 3,925,168, Cl. 204-1.00T.

Costerousse, Germain: *See—*
Heurtaux, Simone; and Costerousse, Germain, 3,925,393.

Coulter Electronics, Inc.: *See—*
Hogg, Walter R., 3,924,947.

Coupek, Jiri; and Gut, Vladimir, to Ceskoslovenska akademie ved. Polymeric carrier for a controlled synthesis of peptides. 3,925,267, Cl. 260-2.50R.

Coussot, Gerard; and Dieulesaint, Eugene, to Thomson-CSF. Method of manufacturing an electromechanical system having a high resonance frequency. 3,924,312, Cl. 29-25.350.

Couture, Paul A.: *See—*
Anghinetti, Joseph R.; Couture, Paul A.; and Jentoft, Arthur P., 3,924,372.

Coville, William W.: *See—*
Hubbard, David W.; and Coville, William W., 3,924,532.

Covington, Dennis: *See—*
Beacham, Ronald; Covington, Dennis; and McNutt, Reginald, 3,925,770.

Cox, Charles D.; Johnson, Craig E.; and Henderson, Larry D., to United States of America, Navy. Moisture replacement in pelletized nitrocellulose. 3,925,125, Cl. 149-96.000.

Cox, Ralph, to Phillips Petroleum Company. Method for activating a catalyst. 3,925,258, Cl. 252-467.000.

CPT Corporation: *See—*
Wienhold, James L., 3,924,722.

Creene, Noel: *See—*
Brunie, Jean-Claude; Creene, Noel; and Maurel, Felix, 3,925,316.

Creighton University: *See—*
Sanders, W. Eugene, Jr.; and Sanders, Christine C., 3,925,160.

Crews, Roy E.: *See—*
Berman, Paul A.; Giras, Theodore C.; and Crews, Roy E., 3,925,679.

Cricchi, James Ronald; and Ruehling, Barry W., to Westinghouse Electric Corporation. Structure of and the method of processing a semiconductor matrix or MNOS memory elements. 3,925,804, Cl. 357-23.000.

Crinospital S.p.A.: *See—*
Ferro, Antonio, 3,924,617.

Crites, Lila J.: *See—*
Cohen, Robert S.; and Crites, Lila J., 3,925,489.

Cromeens, Jeff Y., to Industrial Woodworking Machine Co. Inc. Pressure head assembly. 3,924,668, Cl. 144-244.000.

Crooks, Russell W.; and Maya, Gregory, to Electromould Engineering Limited. Apparatus for molding articles. 3,924,995, Cl. 425-243.000.

Crosby, John; Paton, Robert Michael; and Rennie, Robert Allan Campbell, to Imperial Chemical Industries Limited. Production of isocyanates. 3,925,435, Cl. 260-453.00P.

Cross, Barrington, to American Cyanamid Company. Pyrazolinium compounds as herbicides. 3,925,408, Cl. 260-311.000.

Crouch, Stephen John, to Rover Company Limited, The. Rear wheel suspension for a vehicle having a beam axle. 3,924,873, Cl. 280-124.00R.

Crownshaw, Robert; and Jubb, Ronald, to British Steel Corporation. Machine for processing billet or bar stock. 3,924,358, Cl. 51-34.00C.

Cruchant, Serge Alfred: *See—*
Collard, Maurice A.; Cruchant, Serge Alfred; and Lafon, Jean-Louis, 3,924,830.

Cuhel, Gerald A.: *See—*
Wamsley, Vernon R.; and Cuhel, Gerald A., 3,924,349.

Cummins, Donald, to AMF Incorporated. Belt loop feeding apparatus. 3,924,549, Cl. 112-104.000.

Cummins, Donald, to AMF Incorporated. Thread chain cutting apparatus. 3,924,554, Cl. 112-252.000.

Cummins, Richard D., to Carleton Controls Corporation. Atmospheric pressure rate of change indicator. 3,924,464, Cl. 73-170.00R.

Cunningham, Robert D.: *See—*
Woodworth, William H.; and Cunningham, Robert D., 3,924,458.

Curtiss-Wright Corporation: *See—*
Jones, Charles, 3,924,581.
Loyd, Robert William, Jr.; and Wallace, Raymond P., 3,924,978.

Cuthbertson, Edmond N.; and Davenport, Raymond, to Sandoz, Inc. Oil-in-water transfer printing emulsions and method. 3,925,273, Cl. 260-17.00A.

CVI Corporation: *See—*
Hickey, Thomas Nelson; and Spulgis, Ivars Sigurds, 3,925,046.

Czernik, Daniel E.; and McDowell, Donald J., to Felt Products Mfg. Co. Bearing pad and bridge construction. 3,924,907, Cl. 308-3.00R.

D.A. Pitman Limited: *See—*
Robertson, Malcolm Eric Alexander; Marshall, John; Brabants, Jules Anthony Peter; and Davies, Michael Edward, 3,925,665.

Dabrowka, Stanislav Pawel, to Lucas Aerospace Limited. Lubricating and draining device. 3,924,708, Cl. 184-105.00R.

Daftary, Rasik D., to Archer Daniels Midland Company. Wet process for making blander high-protein soybean products. 3,925,569, Cl. 426-634.000.

Dahl, Klaus Joachim; and Kameda, Floyd Masato, to Raychem Corporation. Antioxidants for polyarylether ketones. 3,925,307, Cl. 260-45.75R.

Dahl, Rolf, to Continental Tapes, Incorporated. Polyurethane pressure-sensitive adhesive products and processes. 3,925,283, Cl. 260-24.000.

Dahlbom, Johan Richard; Karlen, Bo Lennart; and Lindgren, Sune Gunnar, to Aktiebolaget Astra. Oxotremorine antagonist. 3,925,411, Cl. 260-326.250.

Dahm, Johann; Borck, Joachim; Nowak, Herbert; Zimane, Zdenek; and Kayser, Detlev, to Merck Patent Gesellschaft mit beschrankter Haftung. Phenoxyacetic acid derivatives. 3,925,394, Cl. 260-293.830.

Daido Seiko Kabushiki Kaisha: *See—*
Kato, Tetsuo; and Sekio, Isao, 3,925,063.

Daiichi Rubber Co., Ltd.: *See—*
Hamamura, Yoshitaro, 3,924,305.

Daiichi Seiyaku Company Limited: *See—*
Suzuki, Nagayuki; Nakamura, Tsutomu; and Yamada, Katsuto, 3,925,584.

Daikin Kogyo Co., Ltd.: *See—*
Ukaji, Rokuo; Kamihigoshi, Tutomu; Mikami, Kenji; and Takaki, Shoji, 3,925,263.
Ukaji, Rokuo; Kamihigoshi, Tutomu; Mikami, Kenji; and Takaki, Shoji, 3,925,492.

Daimler-Benz Aktiengesellschaft: *See—*
Andres, Rudolf; Moller, Hermann; and Seyfried, Franz, 3,925,656.
Barenyi, Bela; and Renner, Hermann, 3,924,874.
Geier, Bernd, 3,924,892.
Hoffmann, Friedrich; and von Kamp, Wilhelm, 3,924,711.
Renner, Hermann; and Barenyi, Bela, 3,924,707.

Dainippon Screen Seizo Kabushiki-Kaisha: *See—*
Doi, Yasushi; Shoda, Mikio; Oguri, Masatoshi; and Hashimoto, Joji, 3,925,602.

Daktronics, Inc.: *See—*
Sander, Duane E., 3,924,470.

Dana Corporation: *See—*
Bergishagen, Finn; and Schmidt, James J., 3,924,455.

D'Angelo, Joseph; Maccherone, Lawrence; and Maros, Frank George, to Du Pont de Nemours, E. I., and Company. Method of dispensing a microfoam sheet. 3,924,497, Cl. 83-16.000.

Darcy, John J.: *See—*
Cohen, William D.; and Darcy, John J., 3,924,823.

Dardoufas, Kimon Constantine: *See—*
Marshall, Robert Moore; and Dardoufas, Kimon Constantine, 3,925,588.

Dart Industries Inc.: *See—*
Arrandale, Roy S.; and Campagna, Edward R., 3,924,767.

Dautzenberg, Frits M.: *See—*
Van Klinken, Jakob; and Dautzenberg, Frits M., 3,925,197.

Davenport, Raymond: *See—*
Cuthbertson, Edmond N.; and Davenport, Raymond, 3,925,273.

Davidson, Jimmy L.: *See—*
Cook, Koy B., Jr.; Davidson, Jimmy L.; Gibson, Joseph D.; and Patterson, Raymond B., III, 3,924,321.

Davies, Michael Edward: *See—*
Robertson, Malcolm Eric Alexander; Marshall, John; Brabants, Jules Anthony Peter; and Davies, Michael Edward, 3,925,665.

Davis, Charles H. Emergency sign device. 3,924,344, Cl. 40-129.00C.

Davis, Charles W., to Texaco Inc. Internal combustion engine. 3,924,598, Cl. 123-32.0ST.

Davis, Irwin; Skoultchi, Martin M.; and Fries, John A., to National Starch and Chemical Corporation. Pressure sensitive hot melt adhesives. 3,925,282, Cl. 260-23.00H.

Davis, Robert Leon: *See—*
Cardwell, Robert Edward; Davis, Robert Leon; Marino, Patrick John; and McNamara, Edward Joseph, 3,925,600.
Cardwell, Robert Edward; Carlson, David Emory; Davis, Robert Leon; McNamara, Edward Joseph; Pilc, Randolph John; Schlanger, Gabriel Gary; Tutelman, David Morris; Warwick, Peter Stephen; and Zydney, Herbert Mortimer, 3,925,601.

Dawson, Peter H., to Canadian Patents and Development Limited. High-resolution focussing dipole mass spectrometer. 3,925,662, Cl. 250-290.000.

Dayco Corporation: *See—*
Meadows, Roger D., 3,924,482.

De Rotterdamsche Droogdok Maatschappij B.V.: *See—*
Mulder, Jan Pieter Fokke, 3,925,634.

Dea, Stanley J. System for home wastewater treatment and disposal. 3,925,206, Cl. 210-104.000.

Dean, William Bruce, to Johnson & Johnson. Drapery fabrics. 3,924,663, Cl. 139-420.00R.

DeBaryshe, Paul Gregory: *See—*
Munroe, James L.; and DeBaryshe, Paul Gregory, 3,924,937.

Debus, Henri R.: *See—*
Draguez de Hault, Emmanuel R. E. G.; Debus, Henri R.; and Van Tongelen, Marcel, 3,925,425.

DeCaro, Charles J., to Textron, Inc. Composite drill screw. 3,924,508, Cl. 85-41.000.

DeCenzo, Herbert A. Constrictor biased electrical pin and socket type connector. 3,924,922, Cl. 339-259.00R.

Dechambre, Jean Theophile Fortunat; Lousberg, Pierre Jean Simon; and Pirard, Joseph Jean Julien. Machine for cutting cards from continuous strips employed in multi-copying. 3,924,499, Cl. 83-96.000.

Decker, Gerd, to Volkswagenwerk Aktiengesellschaft. Internal combustion engine operated by a layered charge. 3,924,584, Cl. 123-32.0ST.

Decker, Herbert, to Triumph Werke Nurnberg A.G. Typehead support for a single element printer. 3,924,726, Cl. 197-55.000.

Decret, Jean-Claude; Denis, Pierre; and Jourdan, Paul, to Commissariat a l'Energie Atomique; and Institut National de la Recherche Agronomique. Heliograph. 3,924,954, Cl. 356-188.000.

Deere & Company: *See—*
Cheatum, Leo George, 3,924,391.
Hanser, Paul Edmund; and Snyder, William Lee, 3,924,656.
Nelson, Roger John, 3,924,516.
Wagner, Joseph Francis; Broderick, Ross Thomas; Link, Joseph Edward; and Stover, David Emmert, 3,924,904.
Whisler, Edwin Lee, 3,924,524.
Williams, Lary Lynn, 3,924,891.

Deering Milliken Research Corporation: *See—*
Ingham, Robert M., Jr., 3,924,297.
Richards, Ernest Levon, 3,924,289.

de Habsburg, Dominic, to Samos. Easy-opening packaging for melted or semi-liquid substances. 3,924,803, Cl. 229-87.00F.

Dehm, Darrell L.: *See—*
Coleman, William R., 3,925,636.

Dehne, Wilfried E.; and Mang, Josef, to Emerson Electric Co. Overload clutch. 3,924,421, Cl. 64-29.000.

Dekan, Howard L.; and Ryan, John W. Non-rolling game ball. 3,924,856, Cl. 273-106.00R.

DeLong, Carol. Method and apparatus for preserving solvent-dispersed chemicals. 3,924,733, Cl. 206-1.700.

Del Priore, Paul Joseph: *See—*
White, Joseph Paul; and Del Priore, Paul Joseph, 3,924,361.

Deltrol Corporation: *See—*
Harris, John L., 3,925,630.

Demange, Philippe: *See—*
Bono, Pierre; Demange, Philippe; Leclere, Claudine; and Tissier, Alexis, 3,925,099.

De Marinis, Robert M.; and Hoover, John R. E., to SmithKline Corporation. Substituted sulfonylacetamido cephalosporins. 3,925,373, Cl. 260-243.00C.

Dempster, Philip T.; and Pun, John Y. Spirometer apparatus and method. 3,924,612, Cl. 128-2.080.

Denis, Pierre: *See—*
Decret, Jean-Claude; Denis, Pierre; and Jourdan, Paul, 3,924,954.

Dennie, Richard H., to Xerox Corporation. Reproduction machine with means for solidifying the reclaim toner. 3,924,566, Cl. 118-637.000.

Dennis, Clement O., Sr.: *See—*
Everhardt, William F.; Brown, Henry L., Jr.; and Dennis, Clement O., Sr., 3,925,005.

Dennis, Thomas Mann, to Bell Telephone Laboratories, Incorporated. Combined scrambler-encoder for multilevel digital data. 3,925,611, Cl. 178-22.000.

Dennison Manufacturing Company: *See—*
Merser, Francis Gerard, 3,924,298.

Denson, Donald Derby: *See—*
Story, Paul Richard; Busch, Peter; Denson, Donald Derby; and Wright, Carl Edward, 3,925,421.

Denzel, Theodor: *See—*
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Deriga, Nikolai Filippovich: *See—*
Mogilevsky, Vitaly Moritsovich; Deriga, Nikolai Filippovich; Ekimov, Vadim Petrovich; Erastov, Alexandr Petrovich; Posokhin, Viktor Vladimirovich; and Furer, Benya Elievich, 3,925,725.

DerMarderosian, Dikrun; and Tremblay, Paul Albert, to W. R. Grace & Co. Apparatus for producing grooves in foamed thermoplastic insulation boards. 3,924,495, Cl. 83-5.000.

DerMarderosian, Dikrun; and Tremblay, Paul Albert, to W. R. Grace & Co. Method for producing grooves in formed thermoplastic insulation boards. 3,924,496, Cl. 83-5.000.

de Rosa, Louis A., to International Telephone and Telegraph Corporation. Secure communication system. 3,925,730, Cl. 325-32.000.

Desmond, John D.; and Hart, Joseph J., to Container Corporation of America. Pilfer resistant package. 3,924,800, Cl. 229-39.00R.

DeSoto, Inc.: *See—*
Gaske, Joseph E., 3,925,349.

Deumens, Johannes J. M.: *See—*
Schaafsma, Sijbrandus E.; and Deumens, Johannes J. M., 3,925,422.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Engel, Claus Richard; Linke, Heinz; Rothbuhr, Lothar; Sroka, Werner; Vogt, Jes; and Westlinning, Hermann, 3,925,301.
Geiger, Friedhelm; Heimberger, Werner; Schreyer, Gerd; and Weigert, Wolfgang, 3,925,377.

Devendorf, Don C.: *See—*
Gaskill, James R., Jr.; and Devendorf, Don C., 3,925,684.
Gaskill, James R., Jr.; and Devendorf, Don C., 3,925,691.

Dewhirst, Donald R.; and Muir, Alexander R., to Hughes Aircraft Company. Optical partial wave plate and method of fabricating and using same. 3,924,930, Cl. 350-157.000.

Diacont, George P., Jr.; and Serio, Vincent J., Jr., to AMF Incorporated. Hem forming apparatus. 3,924,785, Cl. 223-2.000.

Diakov, Nikola Ganev: *See—*
Popov, Encho Nikolov; Diakov, Nikola Ganev; Dobreva-Dimitrova, Emilia; Apostolov, Roumen Konstantinov; and Hristov, Hristo Petkov, 3,925,696.

Diamond Seven, Inc.: *See—*
Carapellucci, Joseph, 3,924,480.

Dick, John O.; and Forrester, Howard M, to United States of America, Navy. Fuze signal circuit. 3,924,536, Cl. 102-70.20P.

Dierks & Soehne: *See—*
Hohnfeld, Peter; and Langenberg, Hartmut, 3,924,835.

Diesel Kiki Co., Ltd.: *See—*
Aoki, Hachiro, 3,924,594.

Dieulesaint, Eugene: *See—*
Coussot, Gerard; and Dieulesaint, Eugene, 3,924,312.

Di Gaetano, Dante. Nut shell cutter. 3,924,326, Cl. 30-120.200.

Di Grazia, Alfred. Truck door position indicator. 3,924,558, Cl. 116-28.00R.

Dinges, Karl: *See—*
Schuster, Herbert; Huther, Edmund; Ott, Karl-Heinz; and Dinges, Karl, 3,925,513.

DiRubio, Robert L.: *See—*
Adams, Herbert H. F.; Anderson, Jon C.; Blair, Murray R., Jr.; DiRubio, Robert L.; and Takman, Bertil H., 3,925,469.

Dittrich, Siegfried; and Jackel, Kurt. Board game apparatus. 3,924,858, Cl. 273-134.0AC.

Dittrich, Wolfgang M. Apparatus for illuminating small particles that are being counted and characterized. 3,924,951, Cl. 356-102.000.

Dixon, Kenneth C.: *See—*
Anna, Leo A.; and Dixon, Kenneth C., 3,925,034.

Dixon, William A. Method and system for regulating peak residential power demand. 3,925,680, Cl. 307-39.000.

Dobreva-Dimitrova, Emilia: *See—*
Popov, Encho Nikolov; Diakov, Nikola Ganev; Dobreva-Dimitrova, Emilia; Apostolov, Roumen Konstantinov; and Hristov, Hristo Petkov, 3,925,696.

Dobrosielski, Stephen S.: *See—*
Frank, Stanley L.; and Dobrosielski, Stephen S., 3,925,632.

Doi, Yasushi; Shoda, Mikio; Oguri, Masatoshi; and Hashimoto, Joji, to Dainippon Screen Seizo Kabushiki-Kaisha. Apparatus for engraving a portrait on certification card. 3,925,602, Cl. 178-6.60B.

Donnelly, John H. Closure for containers. 3,924,774, Cl. 220-93.000.

Donohue, John, to Colgate-Palmolive Company. Antibacterial oral compositions containing preservative-antioxidants. 3,925,543, Cl. 424-52.000.

Donovan, Betty J. Sleep-walker bag. 3,924,273, Cl. 2-69.500.

Dorigotti, Luciano: *See—*
Carpi, Carlo; Dorigotti, Luciano; and Pifferi, Giorgio, 3,925,381.

Dorlars, Alfons; and Schellhammer, Carl-Wolfgang, to Bayer Aktiengesellschaft. Triazoyl-naphthalimide brightening agents. 3,925,390, Cl. 260-281.0NH.

Dover Chemical Corporation: *See—*
Cohen, Robert S.; and Crites, Lila J., 3,925,489.

Dow Chemical Company, The: *See—*
Goralski, Christian T.; and Klingler, Thomas C., 3,925,468.
Hamish, Small; and Stevens, Timothy S., 3,925,019.
Schrenk, Walter J., 3,924,990.

Doyle, Alfred Michael; and Shear, William, to Du Pont de Nemours, E. I., and Company. Controlling viscosity of chloroprene-sulfur copolymers. 3,925,294, Cl. 260-29.7SQ.

Drabek, Jozef: *See—*
Pissiotas, Georg; Meyer, Willy; Bohner, Beat; and Drabek, Jozef, 3,925,517.

Draguez de Hault, Emmanuel R. E. G.; Debus, Henri R.; and Van Tongelen, Marcel, to Labofina S.A. Process for producing anhydrides of aromatic polycarboxylic acids. 3,925,425, Cl. 260-346.400.

Dresser Industries, Inc.: *See—*
Martin, Paul Warren, 3,924,433.

Drnevich, Vincent P. Resonant column testing apparatus. 3,924,451, Cl. 73-67.200.

Droegemueller, William; Eberhardt, Ralph N., Jr.; and Bingham, Paul E. Cyrogenic bladder for necrosing tissue cells. 3,924,628, Cl. 128-303.100.

D'Silva, Arthur P.; and Fassel, Velmer A., to United States of America, Energy Research and Development Administration. X-ray image intensifier phosphor. 3,925,674, Cl. 250-483.000.

DSO "Elprom": *See—*
Popov, Encho Nikolov; Diakov, Nikola Ganev; Dobreva-Dimitrova, Emilia; Apostolov, Roumen Konstantinov; and Hristov, Hristo Petkov, 3,925,696.

Du Chambon, Michel G. J., to B. V. Peximac. Incinerator. 3,924,548, Cl. 110-8.00C.

Duggan, Matthew, to Rolls-Royce (1971) Limited. Closed loop control system having plural modes of operation. 3,925,640, Cl. 235-150.100.

Duguay, Michel Albert, to Bell Telephone Laboratories, Incorporated. Optical sampling oscilloscope utilizing organ arrays of optical fibers. 3,925,727, Cl. 324-121.00R.

Dunbar, F. Curtiss: *See—*
Flinchum, Charles; Dunbar, F. Curtiss; and Arnold, Jerry L., 3,925,579.

Dunchock, Richard S., to Optarac Corporation. Eyeglass display unit. 3,924,750, Cl. 211-13.000.

Duo-Fast Corporation: *See—*
Avery, Hazelton H.; and Morabito, Salvatore, 3,924,789.

Du Pont de Nemours, E. I., and Company: *See—*
Adams, John Benjamin, Jr.; and Schwing, Gregory Wayne, 3,925,380.
Baker, Melvin C., 3,925,484.
Bither, Tom Allen, Jr., 3,925,537.
D'Angelo, Joseph; Maccherone, Lawrence; and Maros, Frank George, 3,924,497.
Doyle, Alfred Michael; and Shear, William, 3,925,294.
Friend, Lindsay Carlton, 3,924,918.
Garth, Bruce Hollis, 3,925,030.
Grot, Walther Gustav, 3,925,135.
Hodge, James Dwight, 3,924,988.
Holmes, David Alan, 3,925,292.
Josey, Alden Dwayne; and Kirchner, Jack Robert, 3,925,497.
Khan, Ausat Ali, 3,925,340.
King, Charles Morgan; Seidel, William Carl; and Tolman, Chadwick Alma, 3,925,445.
Logothetis, Anestis Leonidas, 3,925,326.
Mc Shane, Herbert Felix, Jr., 3,925,334.
Phillips, Thomas Richard, 3,925,299.
Shor, Arthur Charles; and Van Dyk, John William, 3,925,574.
Turnbull, John William, 3,925,323.
Woodruff, Benjamin T., 3,925,233.

Duprez, Wayne R., to Standard-Thomson Corporation. Hose clamp comprising a one-piece band and housing. 3,924,308, Cl. 24-274.00R.

Duquette, Richard W. Photographic lens safety ring. 3,924,786, Cl. 224-5.00V.

Duranleau, Roger G.; and Larkin, John M., to Texaco Inc. Preparation of alkylamides. 3,925,430, Cl. 260-404.000.

Duranleau, Roger G.; and Matteo, John F., to Texaco Inc. Thermal preparation of alkylamides. 3,925,431, Cl. 260-404.000.

Durdin, Peter Robert, to AMF Incorporated. Refrigerator control apparatus. 3,924,416, Cl. 62-80.000.

Dynamit Nobel AG: *See—*
Bruning, Klaus; and Lob, Heinrich, 3,924,836.

Dynamit Nobel Aktiengesellschaft: *See—*
Berthmann, Adolf; Martin, Gerhard; and Klunsch, Maximilian, 3,925,122.
Strunk, Manfred; Kroschel, Heinz; and Voss, Alfred, 3,924,510.

E. R. Squibb & Sons, Inc.: *See—*
Hoehn, Hans; and Denzel, Theodor, 3,925,388.
Krapcho, John; and Turk, Chester Frank, 3,925,384.

E. T. Wright & Co., Inc.: *See—*
Bernier, Louis E.; and Giblin, James P., 3,925,529.

E-Z Machine Corporation: *See—*
Lowe, William F.; and Bondy, Harry L., 3,925,144.

Eagle-Motive Industries, Inc.: *See—*
Woods, Robert L., 3,924,585.

Earle, Harold Westly; and Robbins, Joseph, to Bell Telephone Laboratories, Incorporated. Coupling circuit for providing bilateral protection from hazardous voltages. 3,925,624, Cl. 179-81.00R.

Eastman Kodak Company: *See—*
Beach, David E., 3,925,792.
Ettischer, Helmut, 3,925,797.

Eaton Corporation: *See—*
Cornell, Charles R.; Simpson, Dennis D.; and Knapp, Kenneth K., 3,924,410.
Richards, Elmer A., 3,924,484.

Eaton, Richard E. Surgically implantable trapezium prosthesis and method of reconstructing the thumb carpometacarpal joint. 3,924,276, Cl. 3-1.910.

Ebauches S.A.: *See—*
Meister, Rene; and Tyrode, Alain, 3,925,693.

Ebbing, Johannes: *See—*
Belliot, Christian; Cheylan, Etienne; Madelaine, Serge; and Ebbing, Johannes, 3,925,535.

Ebeling, Harold O., to Black, Sivalls & Bryson, Inc. Fluid heater apparatus. 3,924,574, Cl. 122-23.000.

Eberhard, Heinz; and Menzer, Anton, to Springfield Instrument Company, Inc. Barometer capsule. 3,924,518, Cl. 92-34.000.

Eberhardt, Ralph N., Jr.: *See—*
Droegemueller, William; Eberhardt, Ralph N., Jr.; and Bingham, Paul E., 3,924,628.

Eberle, Wolfgang: *See—*
Breitenfellner, Franz; and Eberle, Wolfgang, 3,925,591.

Eberspaecher, Otto; and Pfisterer, Herman, to Siemens Aktiengesellschaft. Absorption layer for use during x-ray fluorescence analysis which prevents hard x-rays. 3,925,678, Cl. 250-508.000.

Ebert, Robert H., to United States of America, Navy. General purpose electronic interface equipment package. 3,925,710, Cl. 317-100.000.

Eckhoff, David W.; and Fullmer, Blaine L., to University of Utah. Apparatus and method of air classifying municipal solid wastes. 3,925,198, Cl. 209-3.000.

Economics Laboratory, Inc.: *See—*
Lechner, Thomas G.; and Besse, Michael E., 3,925,087.

ECRM, Inc.: *See—*
Mason, Samuel J.; Troxel, Donald E.; and Schreiber, William F., 3,925,760.

Edelsohn, Henry, to International Telephone and Telegraph Corporation. Doppler microwave landing system signal simulator. 3,924,341, Cl. 35-10.400.

Edler, Bruno. Process for retreading a vehicle tyre. 3,925,128, Cl. 156-96.000.

Edstrom, Nils Herbert; Lindqvist, Stig Gustaf Wilhelm; and Sparrendahl, Gunnar Erik William, to Telefonaktiebolaget L M Ericsson. Method of transfer of switching order information for transmission of PCM words. 3,925,620, Cl. 179-15.0AT.

Edwards, Jerry Clyde. Powered windshield track cutter. 3,924,327, Cl. 30-277.000.

Edwards, Joseph. Vehicle fuel loss alarm. 3,925,756, Cl. 340-59.000.

Eerkens, Cornelis. Wind-inflatable tent. 3,924,364, Cl. 52-2.000.

Ehlenz, Peter: *See—*
Moroni, Rolf; Rinck, Friedrich Karl; and Ehlenz, Peter, 3,925,248.

Eicher, Theo; Muller, Friedemann; and Krebs, Klaus-Werner, to Haarmann & Reimer GmbH. Tobacco and tobacco substitute material including metal chelate compounds. 3,924,642, Cl. 131-2.000.

Eiki Industrial Co., Ltd.: *See—*
Minakawa, Yoshinari; and Sashida, Akinobu, 3,924,821.

Eilingsfeld, Heinz: *See—*
Elser, Wolfgang; Eilingsfeld, Heinz; and Schoch, Werner, 3,925,427.

Eisenlohr, Gerald Mason, to AMF Incorporated. Feed mechanism for pneumatic conveyor systems. 3,924,900, Cl. 302-49.000.

Ekimov, Vadim Petrovich: *See—*
Mogilevsky, Vitaly Moritsovich; Deriga, Nikolai Filippovich; Ekimov, Vadim Petrovich; Erastov, Alexandr Petrovich; Posokhin, Viktor Vladimirovich; and Furer, Benya Elievich, 3,925,725.

Ekman, Lars Gustaf, to Olle Blomqvist Rehab-Produkter AB. Bathtub. 3,924,278, Cl. 4-176.000.

Elco Corporation: *See—*
Munshower, Kenneth, 3,924,917.

Elder Wilbert Corporation: *See—*
Andrus, Edward R., Jr.; Fahnstrom, Dale E.; Hansen, James G.; and Nichols, Charles E., 3,924,309.

Electric Power Research Institute: *See—*
Saunders, Richard C.; and Heredy, Laszlo A., 3,925,098.

Electroacustic GmbH Kiel: *See—*
Kuhn, Hans-Robert, 3,925,628.

Electromould Engineering Limited: *See—*
Crooks, Russell W.; and Maya, Gregory, 3,924,995.

Electronor Corporation: *See—*
Lint, Joseph J., 3,925,185.

Elektro-Physik, Hans Nix & Dr. Ing. E. Steingroever, KG: *See—*
Steingroever, Erich, 3,925,724.

Eli Lilly and Company: *See—*
Chauvette, Robert R., 3,925,372.
Cooper, Robin D. G.; and Herron, David K., 3,925,368.

Elias, Jiri: *See—*
Esser, Miroslav; Ledr, Zdenek; Ferkl, Frantisek; Kubovy, Miloslav; Ripka, Josef; Hortlik, Frantisek; and Elias, Jiri, 3,924,398.

Elkem-Spigerverket A/S: *See—*
Onarheim, Einar, 3,925,058.

Elliott, Anthony, to Judge International Limited. Line gripping pegs. 3,924,303, Cl. 24-137.00R.

Ellis, Christopher Robinson: *See—*
Stirling, Walter Robert; Ellis, Christopher Robinson; and Silvester, Brian Carol, 3,924,712.

Ellis, Daniel A., to Mueller Co. Stab-type coupling joint. 3,924,882, Cl. 285-175.000.

Ellis, Daniel A.: *See—*
Leopold, Wilbur R., Jr.; Hackman, Frank C.; Luckenbill, Lawrence F.; and Ellis, Daniel A., 3,924,877.

Elms, Robert T.; and Keck, Merle E., to Westinghouse Electric Corporation. Low-cost power-reducing device for hid lamp. 3,925,705, Cl. 315-246.000.

Elofson, Gary L.: *See—*
Straughn, Robert O.; Elofson, Gary L.; and Reinhart, Richard D., 3,925,563.

Elphiac S.A.: *See—*
Poncin, Roger, 3,924,439.

Elser, Wolfgang; Eilingsfeld, Heinz; and Schoch, Werner, to BASF Aktiengesellschaft. Manufacture of anthraquinonoid disperse dyes containing bromine. 3,925,427, Cl. 260-380.000.

Elsworth, Robert M., to General Electric Company. Pressure hopper. 3,924,780, Cl. 222-64.000.

Ely, Christopher Scott, to Albright & Wilson Ltd. Polymeric sealants. 3,925,331, Cl. 260-79.000.

Emde, Friedhelm: *See—*
Reinke, Friedhelm; Stengel, Edgar; and Emde, Friedhelm, 3,925,570.

Emergency Products Corporation: *See—*
Green, Robert Leonard, 3,925,773.

Emerson Electric Co.: *See—*
Dehne, Wilfried E.; and Mang, Josef, 3,924,421.
Hulett, James S.; and Shestag, Lowell N., 3,925,781.

Emerson, Lucian F., to GTE Sylvania Incorporated. Dual slope ramp circuit for anti-skid control circuitry. 3,924,903, Cl. 303-21.0BE.

Emery Industries, Inc.: *See—*
Sturwold, Robert J.; and Barrett, Fred O., 3,925,589.

Emile Fortier Inc.: *See—*
Fortier, Germain, 3,924,956.

Emoto, Kiyotada: *See—*
Ogura, Eiji; Nomura, Nobuki; and Emoto, Kiyotada, 3,925,247.

Enders, Edgar: *See—*
Buchel, Karl Heinz; Frohberger, Paul-Ernst; Scheinpflug, Hans; and Enders, Edgar, 3,925,551.

Enei, Hitoshi; Matsui, Hiroshi; and Hirose, Yoshio, to Ajinomoto Co., Inc. Method of producing inosine-5'-monophosphate. 3,925,154, Cl. 195-28.00N.

Eneim, Arthur A.: *See—*
Buller, Joseph S.; Eneim, Arthur A.; and Hitzelberger, David A., 3,924,654.

Energetics Science, Inc.: *See—*
Oswin, Harry G.; and Blurton, Keith F., 3,925,183.

Eng, Jeffrey D.; and Harke, Cyril J., to Hooker Chemicals & Plastics Corporation. Electrolytic method for the manufacture of hypochlorites. 3,925,174, Cl. 204-95.000.

Engel, Claus Richard; Linke, Heinz; Rothbuhr, Lothar; Sroka, Werner; Vogt, Jes; and Westlinning, Hermann, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the continuous production of carbon black-synthetic resin concentrates. 3,925,301, Cl. 260-42.000.

Engel, Niels N. Superhard martensite and method of making the same. 3,925,116, Cl. 148-143.000.

Engelhard Minerals & Chemicals Corporation: *See—*
Horzepa, John P.; and Swanson, David B., 3,925,257.

England, John S., to B. F. Goodrich Company, The. Actuator. 3,924,519, Cl. 92-92.000.

Engle, Thomas, to General Signal Corporation. Braking system for a light rail vehicle. 3,924,902, Cl. 303-21.00A.

English Electric Valve Company Limited: *See—*
Banks, Peter Baldwin; and Scholz, Hans, 3,925,699.

Ennenbach, Karl-Heinz: *See—*
Hausweiler, Arnold; Paris, Nikolaus; and Ennenbach, Karl-Heinz, 3,925,250.

Environment/One Corporation: *See—*
Matrone, John L.; and Lyons, William E., 3,925,043.

Epperson, Victor R. Pan, tilt and roll tripod head. 3,924,828, Cl. 248-179.000.

Erastov, Alexandr Petrovich: *See—*
Mogilevsky, Vitaly Moritsovich; Deriga, Nikolai Filippovich; Ekimov, Vadim Petrovich; Erastov, Alexandr Petrovich; Posokhin, Viktor Vladimirovich; and Furer, Benya Elievich, 3,925,725.

Erb, Darrell M., to Hughes Aircraft Company. System for transferring charge between spaced apart CCDs by direct series connection. 3,925,805, Cl. 357-24.000.

Erdolchemie Gesellschaft mit beschrankter Haftung: *See—*
Hausweiler, Arnold; Paris, Nikolaus; and Ennenbach, Karl-Heinz, 3,925,250.

Erickson, Norman. Dental appliance. 3,924,333, Cl. 32-33.000.

Ericson, John W.: *See—*
Wilson, Stewart W.; and Ericson, John W., 3,924,339.

Ernst, Otto; Meyerhans, Konrad; and Kusenberg, Eugen, to Ciba-Geigy Corporation. Storage-stable multi-component thermosetting resin system. 3,924,737, Cl. 206-84.000.

Ersfeld, Heinz: *See—*
Althausen, Ferdinand; Boden, Heinrich; Ersfeld, Heinz; Klier, Lothar; Raffel, Reiner; and Schneider, Walter, 3,924,989.

Erwin, Ransome W., to Austral-Erwin Engineering Co. Heat exchangers & evaporators. 3,925,148, Cl. 159-23.000.

Erwin, Ransome W., to Austral-Erwin Engineering Co. Heat exchangers & evaporators. 3,925,149, Cl. 159-47.000.

Esashi, Hanjiro; and Yoshizaki, Shuji, to Sony Corporation. Endless loop tape cartridge for use with tape extraction systems. 3,925,820, Cl. 360-132.000.

Esco Manufacturing Company: *See—*
McClain, James E., 3,924,919.

Esquenet, Bernard Etienne: *See—*
Livingston, Howard J.; and Esquenet, Bernard Etienne, 3,925,214.

Esseb aggers, Jan, to United States of America, Energy Research and Development Administration. Energy absorber for sodium-heated heat exchanger. 3,924,675, Cl. 165-134.000.

Esser, Karl; and Segain, John E., to International Standard Electric Corporation. Method of making a selenium charge carrier plate. 3,925,571, Cl. 427-76.000.

Esser, Miroslav; Ledr, Zdenek; Ferkl, Frantisek; Kubovy, Miloslav; Ripka, Josef; Hortlik, Frantisek; and Elias, Jiri, to Vyzkumny ustav bavlnarsky. Method of and apparatus for open end spinning from staple fibers. 3,924,398, Cl. 57-58.890.

Etablissement Public: Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Marechal, Robert Gaston Andre; and Fortunato, Gerard, 3,924,952.
Trombe, Jean-Christian; and Montel, Gerard, 3,925,062.

Etablissement Public: Centre National de la Recherche Scientifique: *See—*
Gastambide, Bernard; Thal, Claude; Rohrbach, Phillippe; and Laroche, Marie-Jeanne, 3,925,480.

Ethicon, Inc.: *See—*
Walldorf, Diann J., 3,924,630.

Ethyl Corporation: *See—*
Lanier, Carroll W., 3,925,448.
Shin, Kju Hi, 3,925,488.
Stephens, Ruth E., 3,925,253.

Ett, Allen Harold: *See—*
Chaires, Anne Marie; Ciconte, Jean Marie; Ett, Allen Harold; Hilliard, John Joseph; and Rosenbaum, Walter Steven, 3,925,761.

Etter, Berwyn E. Method and means for applying additives to industrial gas. 3,924,648, Cl. 137-3.000.

Ettischer, Helmut, to Eastman Kodak Company. Exposure control apparatus for a photographic camera having interchangeable lenses. 3,925,797, Cl. 354-197.000.

Eustance, John W., to General Electric Company. Stabilized ester impregant. 3,925,221, Cl. 252-63.700.

Evans, David John Ivor: *See—*
Weir, Donald Robert; and Evans, David John Ivor, 3,925,533.

Everhardt, William F.; Brown, Henry L., Jr.; and Dennis, Clement O., Sr., to American Power Tread Corporation. Modular curing chamber. 3,925,005, Cl. 432-82.000.

Everitt, Delmar K.: *See—*
Goldfarb, Adolph E.; Benkoe, Erwin; Everitt, Delmar K.; Chesley, Ronald F.; and Frierdich, Richard D., 3,924,352.

Evers, Albert Leo, to Apostol, Frank. Fishing equipment. 3,924,346, Cl. 43-26.200.

Ewers, Josef: *See—*
Voges, Heinz-Werner; and Ewers, Josef, 3,925,378.

Exploaterings Aktiebolaget T.B.F.: *See—*
Porath, Jerker Olof; and Janson, Jan-Christer, 3,925,152.

Exxon Research & Engineering Company: *See—*
Cheysson, Philippe Jean-Marie; Verney, Paul Jean; and Coquard, Michel Alain, 3,925,204.
Jervis, Graham James; and Robson, Robert, 3,925,215.
Lundberg, Robert D.; and Makowski, Henry S., 3,925,280.
Moreau, James O.; and Halko, Richard A., 3,924,449.
Parker, Paul T.; and Mayer, Ivan, 3,925,318.
Salooja, Kailish Chander, 3,925,001.
Sinfelt, John H.; and Carter, James L., 3,925,196.

Eylens, Rudolf: *See—*
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F. B. Mercer Limited: *See—*
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F-S Inc.: *See—*
Anderson, Norman C.; and Rupert, Robert E., 3,925,668.

Fabris, Hubert Jakob; and Maxey, Edwin Morgan, to General Tire & Rubber Company, The. Flexible polyetherurethane foams with improved resilience. 3,925,266, Cl. 260-2.5AM.

Faessinger, Robert W.: *See—*
Brickman, W. James; and Faessinger, Robert W., 3,925,274.

Fagg, Charles R., to United States of America, Army. Removable lock-plate to preclude selection of automatic firing. 3,924,512, Cl. 89-128.000.

Fahey, Darryl R., to Phillips Petroleum Company. Ruthenium complexes as catalysts for reduction of polyenes. 3,925,494, Cl. 260-666.00A.

Fahey, Dennis M., to PPG Industries, Inc. Sizing, coating and combined sizing and coating composition for glass fibers. 3,925,286, Cl. 260-29.300.

Fahlstrom, Per Anders Herman Henningsson; and Jonsson, Erik Alfon, to Boliden Aktiebolag. Arrangement in grinding mills. 3,924,814, Cl. 241-80.000.

Fahnstrom, Dale E.: *See—*
Andrus, Edward R., Jr.; Fahnstrom, Dale E.; Hansen, James G.; and Nichols, Charles E., 3,924,309.

Fairchild Industries, Inc.: *See—*
Lemont, Harold E., 3,924,965.

Falk, James B. High deflection constant speed universal joint. 3,924,420, Cl. 64-21.000.

Far-Mar-Co., Inc: *See—*
Rao, Ganta V.; and Gerrish, Oliver B., Sr., 3,925,568.

Faroni, Charles C., to Amerace Corporation. Fastener apparatus. 3,924,507, Cl. 85-9.00R.

Farrell, Sherman R.; and Loda, Gary K., to Systems, Science and Software. Electron beam irradiation of materials using rapidly pulsed cold cathodes. 3,925,670, Cl. 250-400.000.

Fasco Industries, Inc.: *See—*
Muench, Rudolph E., 3,925,742.

Fassel, Velmer A.: *See—*
D'Silva, Arthur P.; and Fassel, Velmer A., 3,925,674.

Fattinger, Volker, to Ciba-Geigy Corporation. Gas scrubbing plant. 3,925,040, Cl. 55-257.000.

Fatzer, Elmer G.; and Kochka, Edgar L., to Westinghouse Electric Corporation. Silicon carbide coated graphite members and process for producing the same. 3,925,577, Cl. 427-249.000.

Faubourg de l'Hospital: *See—*
Meister, Rene; and Tyrode, Alain, 3,925,693.

Favie, Claude: *See—*
Agouri, Elias; Favie, Claude; and Rebeille, Jean-Claude, 3,925,508.

Favillier, Louis: *See—*
Fontaine, Paul Isidore; and Favillier, Louis, 3,925,059.

Fawcett, John L.: *See—*
Tschudy, Donald B.; and Fawcett, John L., 3,924,291.

Feightner, Lewis Clark, to New Twist Connector Corporation. Electrical-pin-and-socket connector. 3,924,921, Cl. 339-252.00P.

Fein, Michael E.; and Hinson, David C., to Owens-Illinois, Inc. Helium-xenon gas mixture for gas discharge device. 3,925,697, Cl. 313-223.000.

Feiner, Alexander: *See—*
Angner, Ronald Joseph; and Feiner, Alexander, 3,925,625.

Felt Products Mfg. Co.: *See—*
Czernik, Daniel E.; and McDowell, Donald J., 3,924,907.

Ferchland, Harold W., to General Motors Corporation. Assembly method for rotary engine. 3,924,314, Cl. 29-156.40R.

Ferkl, Frantisek: *See—*
Esser, Miroslav; Ledr, Zdenek; Ferkl, Frantisek; Kubovy, Miloslav; Ripka, Josef; Hortlik, Frantisek; and Elias, Jiri, 3,924,398.

Ferlazzo, Natale; Buzzi, Gian Fausto; and Ghirga, Marcello, to Societa Italiana Resine S.I.R. S.p.A. Process for the production of methyl acrylate. 3,925,463, Cl. 260-486.00R.

Fernandez-Rana, Victoriano: *See—*
Wise, James C.; and Fernandez-Rana, Victoriano, 3,924,845.

Ferodo Limited: *See—*
Stirling, Walter Robert; Ellis, Christopher Robinson; and Silvester, Brian Carol, 3,924,712.

Ferrara, Rudolph A., to General Motors Corporation. Ventilated vehicle seat. 3,924,893, Cl. 297-455.000.

Ferro, Antonio, to Crinospital S.p.A. Aspiration and infusion needle. 3,924,617, Cl. 128-221.000.

Few, Arthur A., to United States of America, Navy. Electric field sensor. 3,925,726, Cl. 324-72.000.

Fidenza Vetraria S.p.A.: *See—*
Magnani, Eugenio, 3,924,772.

Fiedelman, Howard W., to Morton-Norwich Products, Inc. Process for producing salt having a reduced calcium sulfate content. 3,925,027, Cl. 23-296.000.

Fieldhouse, John W.: *See—*
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Fielding, Herbert L.; and Liggero, Samuel H., to Polaroid Corporation. Multicolor screen element containing a hydrophilic colloid treated with a basic dye and zirconium acetate. 3,925,082, Cl. 96-76.00R.

Figari, Jorge Galvez. Method and apparatus for enriching irrigation water. 3,924,353, Cl. 47-1.000.

Figura, William L., to Jacobsen Manufacturing Company. Truck vehicle. 3,924,706, Cl. 180-89.00A.

Filippini, Ronald A.: *See—*
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Fillmore, William E., to Owens-Illinois, Inc. Single use safety closure. 3,924,769, Cl. 215-216.000.

Finn, John E.: *See—*
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Finnell, Ned W. Method of curing and drying wild rice. 3,925,564, Cl. 426-418.000.

Fiorini, Dante M.: *See—*
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Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, to Bell Telephone Laboratories, Incorporated. Pattern generating apparatus. 3,925,785, Cl. 346-1.000.

Fisch, Richard S.; and Newman, Norman, to Minnesota Mining and Manufacturing Company. Electrodialysis of fixer containing solutions. 3,925,175, Cl. 204-109.000.

Fischbeck, Kenneth Henry; and Leyton, Eric McPhail, deceased (by Leyton, Sheila, executrix), to RCA Corporation. Fluid ejection or control device. 3,924,974, Cl. 417-322.000.

Fischer, Adolf; Hamprecht, Gerhard; Mangold, Dietrich; and Rohr, Wolfgang, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Substituted O-(aminosulfonyl)-glycolic anilides. 3,925,439, Cl. 260-456.00A.

Fishbeck, Kenneth Henry, to RCA Corporation. Image generator having a plurality of marker units operated in a predetermined sequence to inhibit the formation of patterns. 3,925,790, Cl. 346-140.000.

Fisher, Philip H.: *See—*
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Fitton, Peter; and Whitesides, Thomas, to Hoffmann-La Roche Inc. Catalyst for preparation of 6-methyl-1,5-heptadiene. 3,925,249, Cl. 252-430.000.

Fitzgerald, Maurice J., to Polaroid Corporation. Synthetic silver halide emulsion binder. 3,925,083, Cl. 96-114.000.

Fives-Cail Babcock: *See—*
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Fletcher, Gerald M., to Xerox Corporation. Segmented biased transfer member. 3,924,943, Cl. 355-3.00R.

Flinchum, Charles; Dunbar, F. Curtiss; and Arnold, Jerry L., to Armco Steel Corporation. Method of coating low alloy steels. 3,925,579, Cl. 427-320.000.

Flinth, Rune; and Nordstrom, Kjell, to Conscale AB. Belt conveyor weighing system. 3,924,729, Cl. 198-39.000.

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Wollweber, Hartmund; and Flucke, Winfried, 3,925,471.

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Fohrhaltz, Howard A.; and Blackburn, Richard D., to General Electric Company. Wear indicator for vacuum circuit interrupter. 3,925,722, Cl. 324-28.00R.

Fontaine, Paul Isidore; and Favillier, Louis, to International Nickel Company, Inc., The. Foundry processes and metallurgical addition agents therefor. 3,925,059, Cl. 75-10.00R.

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Ford Motor Company: *See—*
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Forschungsinstitut Bergof GmbH: *See—*
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Zipay, Albert John, 3,924,575.
Fox, Edward I., to H. W. Crane Company. Control actuator for gear belts and the like. 3,924,301, Cl. 24-31.00L.
Fox, Edward I., to H. W. Crane Company. Limit stop or finger for chain or belt control. 3,924,488, Cl. 74-568.00R.
Franceschina, Louis E.; Haromy, Fred; and Kreppert, Frederick W., to Algoma Steel Corporation, Limited, The. Device for inserting plugs in a plug mill. 3,924,435, Cl. 72-209.000.
Frank, Irving G., to Weatherhead Company, The. Hose coupling. 3,924,883, Cl. 285-256.000.
Frank, Stanley L.; and Dobrosielski, Stephen S., to Westinghouse Electric Corporation. Pushbutton switch with separable switch units. 3,925,632, Cl. 200-307.000.
Franke, Hans G., to Chevron Research Company. Alkylation of N-acyl-O-hydrocarbylphosphoroamidothioate salts. 3,925,520, Cl. 260-979.000.
Franzen; Gustav; and Veltges, Helmut, to Palitex Project Company G.m.b.H. Apparatus for mounting portable manually operated yarn knotter mechanisms on yarn processing machines. 3,924,392, Cl. 57-34.00R.
Fraser, David Bruce, to Bell Telephone Laboratories, Incorporated. Platinum oxide lithographic masks. 3,925,677, Cl. 250-505.000.
Frater, Georg; Greuter, Hans; and Schmid, Hans, to Hoffmann-La Roche Inc. Tricyclo[5,3,1,$0^{2,6}$]undecan-2-ones and the corresponding mono- and di-unsaturated derivatives. 3,925,477, Cl. 260-586.00G.
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Freethy, Ralph Charles. Apparatus for transmitting information regarding monetary transactions. 3,925,619, Cl. 179-6.30R.
French, Joseph Charles; Nigam, Anant Kumar; and Sessler, Gerhard Martin, to Bell Telephone Laboratories, Incorporated. Graphic communications tablet. 3,925,610, Cl. 178-18.000.
Freytag, Arthur H.; and Linden, James C., to Great Western Sugar Company, The. Stimulation of sugar diffusion from plant tissue with the use of ethylene, ethylene precursors, and analogs. 3,925,097, Cl. 127-44.000.
Frhr. von Andrian-Werburg, Hanns: *See—*
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Fuchs, Francis Joseph, Jr., to Western Electric Company, Inc. Method and apparatus for reducing extrusion start-up pressure. 3,924,429, Cl. 72-60.000.
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Fulks, David G.: *See—*
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Gaines, Marvin E.; and Swadner, Robert L., to General Motors Corporation. Radial compressor with muffled gas chambers and short stable piston skirts and method of assembling same. 3,924,968, Cl. 417-53.000.
Gale, Michael Thomas; and Greenaway, David, to RCA Corporation. Focussed image hologram projector using a long narrow light source. 3,924,925, Cl. 350-3.500.
Galitsky, Jury Petrovich. Spirometer and anenometer apparatus. 3,924,611, Cl. 128-2.080.
Gallo, Thomas: *See—*
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Ganslaw, Stuart Harold; and Walker, James L., to National Starch and Chemical Corporation. Process for preparing salt stable latices. 3,925,288, Cl. 260-29.6TA.
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Garrison, Eldon. Slump indicator. 3,924,447, Cl. 73-54.000.
Garth, Bruce Hollis, to Du Pont de Nemours, E. I., and Company. Anticing composition. 3,925,030, Cl. 44-56.000.
Gaske, Joseph E., to DeSoto, Inc. Radiation curable non-gelled Michael addition reaction products. 3,925,349, Cl. 204-159.150.
Gaskill, James R., Jr.; and Devendorf, Don C., to Hughes Aircraft Company. Universal logic gate. 3,925,684, Cl. 307-203.000.
Gaskill, James R., Jr.; and Devendorf, Don C., to Hughes Aircraft Company. Cascode node idle current injection means. 3,925,691, Cl. 307-300.000.

Gastambide, Bernard; Thal, Claude; Rohrbach, Phillippe; and Laroche, Marie-Jeanne, to Etablissement Public: Centre National de la Recherche Scientifique. Novel 16,17α and 17,17α diketo-D-homosteroids and their method of preparation. 3,925,480, Cl. 260-586.00E.
Gates, Charles R. Folding screen for light permeable skylights and the like. 3,924,671, Cl. 160-183.000.
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Gaynor, Joseph, to Bell & Howell Company. Resolution thermal spirit masters method. 3,924,533, Cl. 101-467.000.
Gdula, Robert A.; Raider, Stanley I.; and Revitz, Martin, to International Business Machines Corporation. Method of stabilizing MOS devices. 3,925,107, Cl. 148-1.500.
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Geier, Bernd, to Daimler-Benz Aktiengesellschaft. Installation for detachable fastening or rear seat cushions in passenger motor vehicles. 3,924,892, Cl. 297-440.000.
Geiger, Friedhelm; Heimberger, Werner; Schreyer, Gerd; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for production of cyanuric chloride. 3,925,377, Cl. 260-248.00C.
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Gerard, Bernard, to Rhone-Poulenc S.A. Process for the preparation of thermosetting polymers from N,N-bis-maleimide. 3,925,324, Cl. 260-78.0UA.
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Gibbs, John Reynell. Bed. 3,924,281, Cl. 5-81.00R.
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Gilbert, Glen A.; and Hobbs, James, to Butler National Corporation. Air traffic control system. 3,925,750, Cl. 340-27.0NA.
Gill, Clyde E., to Lennon Manufacturing Inc. Door. 3,924,377, Cl. 52-620.000.
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Kohrn, Edward Louis; and Globus, Seymour, 3,925,073.
Gloxhuber, Christian: *See—*
Ploger, Walter; Schmidt-Dunker, Manfred; and Gloxhuber, Christian, 3,925,456.
Gluckin, Gerald: *See—*
Boser, Ronald; and Gluckin, Gerald, 3,924,550.
Gnirrep, Thomas B.: *See—*
Bergman, Steven C.; Gnirrep, Thomas B.; and Nazzaro, Charles A., 3,925,644.
Gogush, Michael. Elevating mechanism for the roofs or tops of vans and the like. 3,924,889, Cl. 296-137.00B.

Goldfarb, Adolph E.; Benkoe, Erwin; Everitt, Delmar K.; Chesley, Ronald F.; and Frierdich, Richard D., to Goldfarb, Adolph E.; and Benkoe, Erwin. Toy vehicle. 3,924,352, Cl. 46-202.000.

Goldmacher, Joel Edward; and McCaffrey, Michael Thomas, to RCA Corporation. Electro-optic compositions and device. 3,925,236, Cl. 252-299.000.

Gomei Kaisha Touyo Shoji: *See*—
Yoshioka, Yoshihide, 3,925,127.

Gonzalez, Luis G., to Raymond Lee Organization, Inc., The, a part interest. Smoking pipe holder. 3,924,735, Cl. 206-45.110.

Goodyear Tire & Rubber Company, The: *See*—
Candle, Richard D., 3,924,363.
Gregg, Michael J. W., 3,924,481.
Hunter, Edward E.; and Rye, Grover W., 3,924,569.

Goosen, Richard H. Marking template. 3,924,331, Cl. 30-366.000.

Goralski, Christian T.; and Klingler, Thomas C., to Dow Chemical Company, The. 1-(Arylthio) methanesulfonamides. 3,925,468, Cl. 260-556.00A.

Gordon, James F., to Gordon Torquer, Ltd. Low friction, controlled leakage rotary engine. 3,924,980, Cl. 418-191.000.

Gordon Torquer, Ltd.: *See*—
Gordon, James F., 3,924,980.

Goren, Yoram; and Springett, Charles N., to Santa Fe International Corporation. Column stabilized semisubmersible pipelaying barge. 3,924,415, Cl. 61-72.300.

Gotham, Robert W.; and McKnight, Robert J., to Unex Conveying Systems, Inc. Roller with inserted ball bearings. 3,924,908, Cl. 308-20.000.

Gothrup, James Pershing. Carrier bracket for attaching a bicycle relative to a motor vehicle's bumper. 3,924,787, Cl. 224-42.03B.

Graff, Kenneth W., to ICI United States Inc. Wash-durable antistatic agent. 3,925,462, Cl. 260-471.00C.

Graham, Ward A.: *See*—
Putney, David H.; and Graham, Ward A., 3,925,501.

Gram, Hans, to Brodrene Gram A/A. Apparatus for stacking oblong articles. 3,924,758, Cl. 214-7.000.

Grandmont, Joseph L. Box buckle for wrist-watch band. 3,924,304, Cl. 24-163.00K.

Grard, Charles: *See*—
Chabardes, Pierre; Grard, Charles; and Schneider, Charles, 3,925,485.

Grassme, Ulrich: *See*—
Soder, Eickhardt; and Grassme, Ulrich, 3,925,672.

Grau, Dietrich; Beigel, Franz; and Blanz, Roland. Apparatus for locking a container on a base member, preferably a carriage. 3,924,544, Cl. 105-366.00B.

Gravel, Charles L.: *See*—
Kurtz, Anthony D.; Brosh, Amnon; Gravel, Charles L.; and Mallon, Joseph R., 3,924,322.

Gravesteijn, Elbert, to Heineken Technisch Beheer B.V. Method of bringing a plurality of containers in transportable condition by means of a carrier member and an assembly obtained by application of said method. 3,924,739, Cl. 206-157.000.

Grayson, Richard Davis, to International Telephone and Telegraph Corporation. Oven valve circuit and thermostatic actuator thereof. 3,925,746, Cl. 337-309.000.

Great Western Sugar Company, The: *See*—
Freytag, Arthur H.; and Linden, James C., 3,925,097.

Green, Richard L.; and Wygant, James C., to Monsanto Company. Lubricants for rolling contact bearings. 3,925,217, Cl. 252-52.00A.

Green, Robert Leonard, to Emergency Products Corporation. Alarm signal processing system and method. 3,925,773, Cl. 340-258.00A.

Greenaway, David: *See*—
Gale, Michael Thomas; and Greenaway, David, 3,924,925.

Greenlee Brothers and Co.: *See*—
Linquist, Wayne; Pearson, Vernon W.; Hagemeyer, Kenneth; and Smeltzer, William E., 3,924,438.

Greenwood, Arthur R.; Heinze, Walter W.; Schnatta, Edward; and Andrejasich, Frank H., to Universal Oil Products Company. Ring-flanged slip-joint for a reactor system. 3,925,025, Cl. 23-288.00G.

Gregg, Michael J. W., to Goodyear Tire & Rubber Company, The. Circular side positive drive belt teeth. 3,924,481, Cl. 74-231.00C.

Gregoire Flowers, Inc.: *See*—
Gregoire, Gerald L., 3,924,354.

Gregoire, Gerald L., to Gregoire Flowers, Inc. Shipping and display carton for cut flowers. 3,924,354, Cl. 47-34.110.

Gregory, M. Duane: *See*—
Clark, Charles R.; Gregory, M. Duane; Casad, Burton M.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,924,681.

Greuter, Hans; Frater, Georg; and Schmid, Hans, to Hoffmann-La Roche Inc. Polycyclic alcohols. 3,925,486, Cl. 260-617.00F.

Greuter, Hans: *See*—
Frater, Georg; Greuter, Hans; and Schmid, Hans, 3,925,477.
Frater, Georg; Greuter, Hans; and Schmid, Hans, 3,925,479.

Grevillius, Nils Fredrik: *See*—
Carlsson, Lars Erik; Grevillius, Nils Fredrik; and Hellner, Lars Ivar, 3,925,061.

Grewe, Ferdinand: *See*—
Kuhle, Engelbert; Grewe, Ferdinand; and Kaspers, Helmut, 3,925,443.

Grey, David S. Compact seven element zoom lens with mechanical compensation. 3,924,934, Cl. 350-184.000.

Griffey, Donald E., to Quasar Electronics Corporation. Stable power supply. 3,925,716, Cl. 321-2.000.

Griffith Laboratories, Inc., The: *See*—
Reinhart, Robert R.; and Sair, Louis, 3,925,566.

Griffiths, Kenneth F. Process for manufacturing aluminum sulfate. 3,925,532, Cl. 423-132.000.

Griss, Peter: *See*—
Heimke, Gunther; Griss, Peter; and Frhr. von Andrian-Werburg, Hanns, 3,924,274.
Heimke, Gunther; Griss, Peter; and von Andrian-Werburg, Hanns Frhr., 3,924,275.

Grohe, Klaus; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Certain 2-oxo-4-thiazoline-5-carboxylic acid esters. 3,925,400, Cl. 260-306.70R.

Grohmann, Klaus: *See*—
Schubert, Klaus; and Grohmann, Klaus, 3,924,816.

Groos, Richard T., to Viking Corporation, The. Valve and sprinkler head for automatic fire extinguishing systems. 3,924,687, Cl. 169-19.000.

Grossi, Oscar, to Cogne Macchine Tessili-Cognetex S.p.A. Thread suction tube connection. 3,924,395, Cl. 57-34.500.

Grot, Walther Gustav, to Du Pont de Nemours, E. I., and Company. Method of making laminates of support material and fluorinated polymer containing pendant side chains containing sulfonyl groups. 3,925,135, Cl. 156-213.000.

Grote, Herbert Edward: *See*—
Koepfle, Frank Xavier; and Grote, Herbert Edward, 3,925,230.

Grow Chemical Corporation: *See*—
Brewer, George E. F., 3,925,580.
Tsou, Ivan H., 3,925,298.

Gruber, Wolfgang: *See*—
Beaucamp, Klaus; Mollering, Hans; Lang, Gunter; Gruber, Wolfgang; and Roeschlau, Peter, 3,925,164.

Grudelbach, Hans-Dieter. Monitoring, counting and safety apparatus. 3,925,681, Cl. 307-117.000.

Gruner, Frederick R., to United States of America, Army. Lightweight cartridge case of improved aluminum alloy material which eliminates catastrophic failures. 3,924,534, Cl. 102-43.00R.

GTE Sylvania Incorporated: *See*—
Emerson, Lucian F., 3,924,903.
Headley, Geoffrey Allen, 3,925,737.

Guanella, Gustav; and Schweizer, Rudolf, to Patelhold Patentverwertungs- und Elektro-Holding AG. Digital scrambling apparatus for use in pulsed signal transmission. 3,925,612, Cl. 178-22.000.

Guarino, Michael C.; and Cacossa, Frank, to M. C. Guarino Associates, Inc. Adjustable modular partition system. 3,924,369, Cl. 52-122.000.

Guidotti, Ronald A., to United States of America, Interior. Preparation of alloys. 3,925,068, Cl. 75-174.000.

Guion, Jacky: *See*—
Riess, Jean G.; Le Blanc, Maurice; Santini, Georges; and Guion, Jacky, 3,925,491.

Gulbis, Imants; and Jordan, Rodney W., to United States of America, Army. Portable fluoroscope. 3,925,675, Cl. 250-485.000.

Gulf Research & Development Company: *See*—
Juvkam-Wold, Hans C., 3,924,698.

Gulf & Western Manufacturing Company (Systems): *See*—
Solomon, Elias E., 3,925,687.

Gunnarsson Ek, Klas Goran: *See*—
Horlin, Dick Axel; and Gunnarsson Ek, Klas Goran, 3,924,696.

Gurtler, Peter, to Ciba-Geigy AG. Disperse dye concentrate with sawdust. 3,925,007, Cl. 8-91.000.

Gurtner, S.A.: *See*—
Jung, Jacques, 3,925,048.

Gut, Vladimir: *See*—
Coupek, Jiri; and Gut, Vladimir, 3,925,267.

Gutehoffnungshutte Sterkrade Aktiengesellschaft: *See*—
Hutgens, Jochen; and Adomat, Gunter, 3,925,042.

H. C. Price Co.: *See*—
Harris, Robert J.; and Lee, Irvin J., 3,924,562.

H. L. Bouton, Company: *See*—
Hirschmann, Jack B., Jr., 3,924,271.

H. W. Crane Company: *See*—
Fox, Edward I., 3,924,301.
Fox, Edward I., 3,924,488.

Haake, Inc.: *See*—
Ossman, John W., Jr., 3,924,459.

Haarmann & Reimer GmbH: *See*—
Eicher, Theo; Muller, Friedemann; and Krebs, Klaus-Werner, 3,924,642.

Haas, James Lynn, to Owens-Corning Fiberglas Corporation. Method of making an integral skin foamed product wherein portions of the skin are of greater densities. 3,925,526, Cl. 264-45.500.

Haas, Jorg, to Bruker-Physik AG. Recorder with cutting mechanism. 3,925,786, Cl. 346-24.000.

Haase, Jaroslav, to Ciba-Geigy AG. Polyarcrylonitrile basic dyeing process with anionic assistant. 3,925,016, Cl. 8-169.000.

Haberle, Wilhelm. Molding apparatus including conically-shaped compacting member. 3,925,000, Cl. 425-422.000.

Habermeier, Jurgen: *See*—
Porret, Daniel; and Habermeier, Jurgen, 3,925,406.

Hachmann, Klaus; Saran, Herbert; and Sperling, Gerhard, to Henkel & Cie G.m.b.H. Coated bleach activator. 3,925,234, Cl. 252-186.000.

Hackman, Frank C.: *See*—
Leopold, Wilbur R., Jr.; Hackman, Frank C.; Luckenbill, Lawrence F.; and Ellis, Daniel A., 3,924,877.

Hadnagy, Thomas D.: *See*—
Rauch, Marvin A.; Boni, Raymond L.; and Hadnagy, Thomas D., 3,924,332.

Haeusler, Jochen, to Siemens Aktiengesellschaft. Electronic computer for the static recognition of the divisibility, and the division of, numbers divisible by three, six and nine. 3,925,649, Cl. 235-159.000.

Hafner, Otto P. Interlocking joint for overlying sheet material. 3,924,378, Cl. 52-758.00D.

Hagemeyer, Kenneth: *See*—
Linquist, Wayne; Pearson, Vernon W.; Hagemeyer, Kenneth; and Smeltzer, William E., 3,924,438.

Hager, Frans C. L.: *See*—
Hager, Richard W. F.; and Hager, Frans C. L., 3,925,079.

Hager, Lowell T. Positive crankcase ventilation system. 3,924,588, Cl. 123-119.00B.

Hager, Richard W. F.; and Hager, Frans C. L. Decorative article and method of making same. 3,925,079, Cl. 96-38.100.

Haggart, James A., Jr.: *See*—
Bray, Martin L.; Cole, Edward N.; and Haggart, James A., Jr., 3,925,026.

Haggren, Erik, to Morgardshammar AB. Gyratory crusher. 3,924,815, Cl. 241-209.000.

Hagiwara, Yoshitoshi: *See*—
Osawa, Makoto; Hagiwara, Yoshitoshi; Kusaka, Kunio; Kawakita, Takao; Motoyoshi, Kenya; and Kuroishi, Nobuhito, 3,925,065.

Haile, Paul C.; and Sellgren, Arthur O. Knife sharpener. 3,924,360, Cl. 51-221.0BS.

Haines, Russell R., to Paco Packaging, Inc. Childproof package. 3,924,746, Cl. 206-530.000.

Haitz, Roland H.; Sedlewicz, Paul G.; Stirrup, Keith A.; Hilbiber, David F.; and Teichner, Robert W., to Hewlett-Packard Company. Photon isolator with improved photodetector transistor stage. 3,925,801, Cl. 357-19.000.

Hajos, Zoltan George, to Hoffmann-La Roche Inc. Stereospecific total steroidal synthesis via substituted C/D-trans indanones. 3,925,478, Cl. 260-586.00F.

Hakim, Salomon. Ventricular shunt having a variable pressure valve. 3,924,635, Cl. 128-350.00V.

Halifax Tool Company Limited: *See*—
Shaw, Alan, 3,924,690.

Halko, Richard A.: *See*—
Moreau, James O.; and Halko, Richard A., 3,924,449.

Hamada, Hideo: *See*—
Ookubo, Takashi; and Hamada, Hideo, 3,924,717.

Hamada, Kenji, to Alps Electric Co., Ltd. Chattering immune circuit. 3,925,682, Cl. 307-134.000.

Hamamura, Yoshitaro, to Daiichi Rubber Co., Ltd. Water-tight fastener. 3,924,305, Cl. 24-205.10R.

Hamisch, Paul H., Sr.: *See*—
Bussard, Charles B.; Hamisch, Paul H., Sr.; and Wisecup, David R., 3,924,523.

Hamish, Small; and Stevens, Timothy S., to Dow Chemical Company, The. Chromatographic analysis of ionic species. 3,925,019, Cl. 23-230.00R.

Hammond Corporation: *See*—
Schrecongost, Ray B., 3,924,505.

Hammond, William D., to L & R Industries, Inc. Air gun mechanism arrangement including trigger safety. 3,924,599, Cl. 124-15.000.

Hamprecht, Gerhard: *See*—
Fischer, Adolf; Hamprecht, Gerhard; Mangold, Dietrich; and Rohr, Wolfgang, 3,925,439.

Hampton, Richard John; Rolland, Jacques Robert; and Gallo, Thomas, to Ogilvie Flour Mills Company Limited. Readily dispersible dry gluten product and uses thereof. 3,925,343, Cl. 260-112.00G.

Hamsher, James J., to Pfizer Inc. Immobilized enzymes. 3,925,157, Cl. 195-63.000.

Handa, Minoru: *See*—
Tanaka, Hideki; Watanabe, Mikio; Handa, Minoru; Inouchi, Mitsuhiro; Yoshioka, Shigeru; and Ishida, Kazutaka, 3,925,732.

Hannemann, Ludwig; and Simon, Manfred Horst, to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Package construction, particularly a package designed for a single use. 3,924,745, Cl. 206-484.000.

Hans Sickinger Co.: *See*—
Pfaffle, Ernst, 3,924,664.

Hansen, James G.: *See*—
Andrus, Edward R., Jr.; Fahnstrom, Dale E.; Hansen, James G.; and Nichols, Charles E., 3,924,309.

Hanser, Paul Edmund; and Snyder, William Lee, to Deere & Company. Direction control valve having float mode. 3,924,656, Cl. 137-596.140.

Hanson, Violet M.; and Finn, John E., to Violet M. Hanson. Method for forming flat bottom plastic bags. 3,924,521, Cl. 93-35.0SB.

Harada, Tsutomu: *See*—
Takamura, Akio; and Harada, Tsutomu, 3,924,467.

Harbert, Charles A.: *See*—
Welch, Willard M., Jr.; and Harbert, Charles A., 3,925,409.

Harboe, Henrik. Combustion chamber for gas turbines and the like having a fluidized burner bed. 3,924,402, Cl. 60-39.18C.

Hardinge Brothers, Inc.: *See*—
Parsons, Hubert J.; and Peterson, Anders Adolf, 3,924,514.

Hargreaves, James Roger: *See*—
Harris, Arthur; Burrows, John; and Hargreaves, James Roger, 3,925,245.

Harke, Cyril J.: *See*—
Eng, Jeffrey D.; and Harke, Cyril J., 3,925,174.

Harner, Kermit I.; Hixson, William W.; Spadafora, Michael A.; and Stearns, Charles F., to United Technologies Corporation. Compressor bleed sensor and control for turbine type power plants. 3,924,960, Cl. 415-28.000.

Haromy, Fred: *See*—
Franceschina, Louis E.; Haromy, Fred; and Kruppert, Frederick W., 3,924,435.

Harper, Ernest A., to Phillips Petroleum Company. Removal of moisture from a natural gas stream by contacting with a liquid desiccant-antifreeze agent and subsequently chilling. 3,925,047, Cl. 62-20.000.

Harra, David J., to Varian Associates. Sublimation vacuum pump having a removable gas permeable condenser. 3,924,967, Cl. 417-51.000.

Harris, Allan; and Huff, Lemuel Hampton, to Johns-Manville Corporation. Bell end of bell and spigot joint and method and assembly. 3,924,999, Cl. 425-392.000.

Harris, Arthur; Burrows, John; and Hargreaves, James Roger, to Ciba-Geigy Corporation. Corrosion inhibiting composition containing an aminoalkyl-phosphonic acid and an inorganic nitrite. 3,925,245, Cl. 252-389.00A.

Harris Corporation: *See*—
Cook, Koy B., Jr.; Davidson, Jimmy L.; Gibson, Joseph D.; and Patterson, Raymond B., III, 3,924,321.

Harris-Intertype Corporation: *See*—
Reed, David A., 3,924,846.
Wise, James C.; and Fernandez-Rana, Victoriano, 3,924,845.

Harris, Janet E. Measuring device. 3,924,472, Cl. 73-426.000.

Harris, John L., to Deltrol Corporation. Timer switch assembly having latch assembly for preventing contact engagement. 3,925,630, Cl. 200-39.00R.

Harris, Robert J.; and Lee, Irvin J., to H. C. Price Co. Apparatus for coating pipe. 3,924,562, Cl. 118-320.000.

Harsco Corporation: *See*—
Hutchinson, Leigh, 3,924,379.
Shohet, Albert J., 3,924,710.

Hart, Joseph J.: *See*—
Desmond, John D.; and Hart, Joseph J., 3,924,800.

Hartkopf, Heinz, to Th. Kieserling & Albrecht. Machine for straightening elongated objects. 3,924,431, Cl. 72-98.000.

Hartley, Joseph H.: *See*—
Bates, Calvin D.; and Hartley, Joseph H., 3,925,738.

Hartmann & Braun Aktiengesellschaft: *See*—
Staab, Joachim, 3,925,667.

Hasegawa, Akira: *See*—
Ide, Fumio; Kishida, Kazuo; and Hasegawa, Akira, 3,925,510.

Hashimoto, Joji: *See*—
Doi, Yasushi; Shoda, Mikio; Oguri, Masatoshi; and Hashimoto, Joji, 3,925,602.

Hashizume, Toshio: *See*—
Takechi, Hiroshi; Kawano, Tsuyoshi; Hashizume, Toshio; Koyama, Kazuo; and Masui, Hiroaki, 3,925,111.

Hata, Shigeki, to Kanto Seiki Co., Ltd. Tire pressure alarm equipment. 3,925,755, Cl. 340-58.000.

Hatherly, David G. Production of chlorine dioxide. 3,925,540, Cl. 423-478.000.

Hatz, Ernst; and Schmuck, Johann, to Motorenfabrik Hatz KG. Internal combustion engine having a sound-muffling casing. 3,924,597, Cl. 123-198.00E.

Hauber, Charles Elwood, to Singer Company, The. Rotary data base converter with flexible data base. 3,925,607, Cl. 178-7.100.

Haug, Theobald: *See*—
Renner, Alfred; and Haug, Theobald, 3,925,314.

Hauni-Werke Korber & Co., KG: *See*—
Krause, Lothar, 3,925,131.

Hausch, Walter R.; Fieldhouse, John W.; and Kay, Edward L., to Firestone Tire & Rubber Company, The. Laminate with an adhesive including an N-nitroso compound. 3,925,590, Cl. 428-423.000.

Hausweiler, Arnold; Paris, Nikolaus; and Ennenbach, Karl-Heinz, to Erdolchemie Gesellschaft mit beschrankter Haftung. Process for preparing an iron containing catalyst. 3,925,250, Cl. 252-437.000.

Hautala, Earl: *See*—
Randall, John M.; Hautala, Earl; Waiss, Anthony C., Jr.; and Kuhnle, Judith A., 3,925,192.

Hawkins, Ronald G., to Aluminum Company of America. Frameless damping spacer. 3,925,595, Cl. 174-42.000.

Hayashi, Yoshimasa: *See*—
Yoshida, Eiji; and Hayashi, Yoshimasa, 3,925,091.

Head, James L. Cellular cement composition. 3,925,090, Cl. 106-87.000.

Headley, Geoffrey Allen, to GTE Sylvania Incorporated. Signal coupling apparatus. 3,925,737, Cl. 333-6.000.

Hebert, Arthur J. Scale tester. 3,924,443, Cl. 73-1.00B.

Hegar, Gert: *See*—
Wohlkonig, Alexander; Hindermann, Peter; Beffa, Fabio; and Hegar, Gert, 3,925,348.

Hegarty, Brian Anthony: *See*—
Trevail, Lewis Herbert; and Hegarty, Brian Anthony, 3,924,323.

Heger, Donald A. Method for making a plastic bag. 3,924,383, Cl. 53-14.000.

Heggen, John P., to Clark Equipment Company. Tractor vehicle having material handling subframe. 3,924,702, Cl. 180-6.480.

Hegler, Wilhelm. Apparatus for manufacture of partitioned plastic tubing. 3,924,992, Cl. 425-233.000.

Heiba, EL-Ahmadi Ibrahim; and Williams, Albert Lloyd, to Mobil Oil Corporation. Hydroxyamide acid products and butyrolactone and butyrolactam products. 3,925,232, Cl. 252-171.000.

Heiberger, Charles A., to Air Products and Chemicals, Inc. Post chlorinated vinyl chloride copolymers. 3,925,337, Cl. 260-87.50C.

Heidorn, John Henry, to General Motors Corporation. Vehicle air conditioning control. 3,924,417, Cl. 62-158.000.

Heiler, Wolfgang; Muller, Rudolf; and Becker, Jean-Jacques. Automatic guide device for sewing machine or machine for assembling two or more superposed elements. 3,924,551, Cl. 112-153.000.

Heilman, Gerald D.; Paddock, Gordon R.; and Ranft, Ernst L., to General Motors Corporation. Engine secondary air flow control valve. 3,924,409, Cl. 60-290.000.

Heim, Egon. Torsion pendulum clock. 3,924,401, Cl. 58-152.00R.

Heimann, Egon. Index tab sheet. 3,924,744, Cl. 206-460.000.

Heimberger, Werner: *See—*
Geiger, Friedhelm; Heimberger, Werner; Schreyer, Gerd; and Weigert, Wolfgang, 3,925,377.

Heimke, Gunther; Griss, Peter; and Frhr. von Andrian-Werburg, Hanns, to Friedrichsfeld GmbH Steinzeug-und Kunststoffwerke. An adjunct and method for facilitating implantation of joint prostheses. 3,924,274, Cl. 3-1.910.

Heimke, Gunther; Griss, Peter; and von Andrian-Werburg, Hanns Frhr., to Friedrichsfeld GmbH Steinzeug-und Kunststoffwerke. Artifical joint prosthesis using Al_2O_3 material. 3,924,275, Cl. 3-1.912.

Heimsch, Robert A.; and Reaville, Eric T., to Monsanto Company. Light sensitive compositions and products. 3,925,076, Cl. 96-35.100.

Heimsch, Robert Arthur; and Mottus, Edward Hugo, to Monsanto Company. Organoaluminum process for imide-alcohol condensation. 3,925,325, Cl. 260-78.00L.

Heineken Technisch Beheer B.V.: *See—*
Gravesteijn, Elbert, 3,924,739.

Heinrich, Bernhard; Naarmann, Herbert; and Thoma, Peter, to BASF Aktiengesellschaft. Production of polymers in powdered form which contain carboxylic acid or carboxylic anhydride groups. 3,925,329, Cl. 260-78.50R.

Heinze, Walter W.: *See—*
Greenwood, Arthur R.; Heinze, Walter W.; Schnitta, Edward; and Andrejasich, Frank H., 3,925,025.

Heitlinger, Louis J.; Bahr, John P.; Smith, John H.; and Anderson, Thomas W., to General Electric Company. Patient monitoring and data processing system. 3,925,762, Cl. 340-150.000.

Heitsch, Charles W., to Monsanto Company. 1,5-Dioxo-2,4,6,8,9,11-hexakis (methylimida)-1,5-diphosphabicyclo[3,3,3]undecane. 3,925,467, Cl. 260-551.00P.

Heller, Harold: *See—*
Corte, Herbert; Heller, Harold; and Netz, Otto, 3,925,264.

Heller, William C., Jr.: *See—*
Leatherman, Alfred F.; and Shatzkin, Leonard, 3,925,126.

Hellner, Lars Ivar: *See—*
Carlsson, Lars Erik; Grevillius, Nils Fredrik; and Hellner, Lars Ivar, 3,925,061.

Henderson, Larry D.: *See—*
Cox, Charles D.; Johnson, Craig E.; and Henderson, Larry D., 3,925,125.

Hendrix, Palmer G., to Hill and Griffith Company, The. Bituminous coating system and articles produced thereby. 3,925,576, Cl. 427-230.000.

Henkel & Cie G.m.b.H.: *See—*
Hachmann, Klaus; Saran, Herbert; and Sperling, Gerhard, 3,925,234.
Ploger, Walter; Schmidt-Dunker, Manfred; and Gloxhuber, Christian, 3,925,456.

Henkin, Robert I.; and Giroux, Eugene L., to United States of America, Health, Education and Welfare. Isolation and purification of active principle of fruit of synsepalum dulcificum. 3,925,547, Cl. 424-195.000.

Hennenberger, Peter: *See—*
Mueller-Tamm, Heinz; Schick, Hannes; Rau, Wolfgang; and Hennenberger, Peter, 3,925,341.

Henrick, Clive A.; and Staal, Gerardus B., to Zoecon Corporation. Esters of cyclopropane substituted carboxylic acids. 3,925,460, Cl. 260-468.00H.

Henrick, Clive A.; and Staal, Gerardus B., to Zoecon Corporation. Esters of cyclopropane alkanoic acids. 3,925,461, Cl. 260-468.00H.

Heraeus-Schott Quarzschmelze GmbH: *See—*
Rau, Karlheinz; and Seiler, Karl, 3,925,583.

Hercules Chemical Co., Inc.: *See—*
Petersen, Arthur, Sr.; Mackowiak, Leonard S.; and Schoenholz, Daniel, 3,925,112.

Hercules Incorporated: *See—*
Boardman, Harold; Breslow, David S.; Simpson, David A.; and Wagner, Richard L., 3,924,520.

Heredy, Laszlo A.: *See—*
Saunders, Richard C.; and Heredy, Laszlo A., 3,925,098.

Herron, David K.: *See—*
Cooper, Robin D. G.; and Herron, David K., 3,925,368.

Herstel, Henk; and van den Ouweland, Godefridus Antonius Maria, to Lever Brothers Company. Method for imparting color to texturized vegetable protein. 3,925,561, Cl. 426-250.000.

Hess, Johann; Paule, Kurt; Latzina, Kurt; and Wolf, Richard, to Robert Bosch G.m.b.H. Pneumatic torqueing tool. 3,924,961, Cl. 415-32.000.

Hess, Stanley R., to Cordis Corporation. Cardiac pacer lead system for interim pacing during pacer changeover. 3,924,639, Cl. 128-418.000.

Hesse, Jurgen: *See—*
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Hester, Gerald, to MSI Data Corporation. Method and apparatus for reading bar coded data wherein a light source is periodically energized. 3,925,639, Cl. 235-61.11E.

Heurtaux, Simone; and Costerousse, Germain, to Roussel Uclaf. Novel salts of vincanol. 3,925,393, Cl. 260-293.530.

Hewlett-Packard Company: *See—*
Haitz, Roland H.; Sedlewicz, Paul G.; Stirrup, Keith A.; Hilbiber, David F.; and Teichner, Robert W., 3,925,801.

Heyman, Joseph S.; and Miller, James G., to United States of America, General Counsel-Code GP. Ultrasonic calibration device. 3,924,444, Cl. 73-1.00R.

Hiatt, Norman A.; Wolf, Harold G.; and Hlavacek, Robert A., to Uniroyal, Inc. Light-stable thermoplastic polyurethanes. 3,925,319, Cl. 260-75.0NT.

Hickey, Thomas Nelson; and Spulgis, Ivars Sigurds, to CVI Corporation. Radioactive gas standby treatment apparatus with high efficiency rechargeable charcoal filter. 3,925,046, Cl. 55-387.000.

Higuchi, Takeshi: *See—*
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Hilary Page "Sensible" Toys Limited: *See—*
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Hildebrand, Dietrich: *See—*
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Hilger, Edwin T.; and Miller, James S., to A-T-O, Inc. Shuttel car mechanism for transferring loads between two stations. 3,924,300, Cl. 214-16.40A.

Hill Acme Company, The: *See—*
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Hill, Forrest G., to Marsh Stencil Machine Company. Repeater tape machine. 3,924,498, Cl. 83-58.000.

Hill and Griffith Company, The: *See—*
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Hiller, John Barry; Richards, John Alan; and Huey, Richard Meredyth, to Unisearch Limited. Extended monopole spectrometers and filters. 3,925,663, Cl. 250-292.000.

Hilliard, John Joseph: *See—*
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Hills, Geoffrey Dean Loftus: *See—*
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Himuro, Masami: *See—*
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Hinata, Masanao: *See—*
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Hinckley, John N. Engine. 3,924,976, Cl. 418-8.000.

Hindermann, Peter: *See—*
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Hinson, David C.: *See—*
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Hippel, Ludwig Jakob; and Pemsl, Alex, to Upjohn Company, The. Metering or injection element. 3,924,651, Cl. 137-115.000.

Hirata, Arthur Atsunobu, to Abbott Laboratories. Method of coating stabilized erythrocytes. 3,925,541, Cl. 424-12.000.

Hirmann, Georg, to Repapress AG. Tool. 3,924,843, Cl. 269-20.000.

Hirohashi, Toshiyuki: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,925,364.

Hirokawa, Kyoichi: *See—*
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Hirose, Ryusho, to Canon Kabushiki Kaisha. Anamorphotic lens system. 3,924,933, Cl. 350-181.000.

Hirose, Yoshio: *See—*
Enei, Hitoshi; Matsui, Hiroshi; and Hirose, Yoshio, 3,925,154.

Hirs, Gene, to Hydromation Filter Company. Method of and apparatus for filtering water. 3,925,202, Cl. 210-32.000.

Hirschmann, Jack B., Jr., to H. L. Bouton, Company. Goggles. 3,924,271, Cl. 2-14.00D.

Hiruta, Makoto: *See—*
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Hitachi, Ltd.: *See—*
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Honkawa, Tadashi; and Fukuda, Kenji, 3,924,949.
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Saida, Hiroji; Ono, Yuichi; Nomura, Masayoshi; Tamura, Masao; and Kozuka, Hirotsugu, 3,925,120.
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Hobbs, James: *See—*
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Hodge, Edward B., to Commercial Solvents Corporation. Resorcyclic acid lactones and their production. 3,925,423, Cl. 260-343.20F.

Hodge, James Dwight, to Du Pont de Nemours, E. I., and Company. Hollow filament spinneret. 3,924,988, Cl. 425-461.000.

Hodgson, Clive, to Chevron Research Company. Hydroxy-aluminum nitrate polymer production. 3,925,428, Cl. 423-394.000.

Hoechst Aktiengesellschaft: *See—*
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Brecht, Heinz; and Hoffmann, Dieter, 3,925,438.
Bumberger, Dietrich, 3,924,911.
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Sextro, Gunter; and Burg, Karlheinz, 3,925,505.

Hoehn, Hans; and Denzel, Theodor, to E. R. Squibb & Sons, Inc. 4-Piperazino-[3,4-b]pyridine-5-carboxylic acids and esters. 3,925,388, Cl. 260-268.0BC.

Hoffmann, Dieter: *See—*
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Hoffmann, Friedrich; and von Kamp, Wilhelm, to Daimler-Benz Aktiengesellschaft. Partial lining disk brake. 3,924,711, Cl. 188-73.300.

Hoffmann-La Roche Inc.: *See—*
Bergman, Steven C.; Gnirrep, Thomas B.; and Nazzaro, Charles A., 3,925,644.
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Ning, Robert Ye-Fong; and Schwartz, Morton A., 3,925,358.

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Hogg, Walter R., to Coulter Electronics, Inc. Apparatus for preservation and identification of particles analyzed by flow-through apparatus. 3,924,947, Cl. 356-39.000.

Hohnfeld, Peter; and Langenberg, Hartmut, to Dierks & Soehne. Mixer for particulate materials. 3,924,835, Cl. 259-6.000.

Hollan, Laszlo, to U.S. Philips Corporation. Method of depositing layers which mutually differ in composition onto a substrate. 3,925,118, Cl. 148-175.000.

Hollingsworth, Clinton Allen; and Snyder, John Harold, to Borden, Inc. Grid burner system. 3,925,024, Cl. 23-277.00R.

Holman, Frank Brouwer, to Chirico, Lorraine; and Fulcher, John R., part interest to each. Animal caging system. 3,924,571, Cl. 119-15.000.

Holmen, Reynold E.; and Nellessen, Alfred H., to Minnesota Mining and Manufacturing Company. Retro-reflective sheet material. 3,924,929, Cl. 350-103.000.

Holmes, David Alan, to Du Pont de Nemours, E. I., and Company. Polytetrafluoroethylene aqueous dispersions which provide coatings of improved gloss. 3,925,292, Cl. 260-29.60F.

Holt, William David, to Lucas Electrical Company Limited. Direction indicator control circuit. 3,925,758, Cl. 340-73.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
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Miyaki, Kiyoshi; and Kogure, Hiroshi, 3,924,592.
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Osawa, Makoto; Hagiwara, Yoshitoshi; Kusaka, Kunio; Kawakita, Takao; Motoyoshi, Kenya; and Kuroishi, Nobuhito, 3,925,065.
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Honeywell Information Systems Inc.: *See—*
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Miller, Homer W., 3,925,652.

Honeywell Information Systems Italia: *See—*
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Honkawa, Tadashi; and Fukuda, Kenji, to Hitachi, Ltd. Spectrophotometer for use as a split beam and dual wavelength measurements. 3,924,949, Cl. 356-73.000.

Hoofnagle, Frank M., to BWB Controls, Inc. Crane boom and line safety limit warning assembly. 3,924,752, Cl. 212-39.0MS.

Hooker Chemicals & Plastics Corporation: *See—*
Eng, Jeffrey D.; and Harke, Cyril J., 3,925,174.
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Horii, Hideo; Kaiya, Atsushi; and Otsuki, Yutaka, to Nippon Oil Company Ltd. Cold setting coating compositions. 3,925,279, Cl. 260-22.0CB.

Horizons Incorporated: *See—*
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Horlacher, Paul: *See—*
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Horlin, Dick Axel; and Gunnarsson Ek, Klas Goran, to Atlas Copco Aktiebolag. Method and device for dust collecting air-flushed rock drilling. 3,924,696, Cl. 175-209.000.

Horn, Peter: *See—*
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Horrom, Bruce Wayne, to Abbott Laboratories. N-vinyl oxyethyl-α-methyl-β-phenethylamines. 3,925,475, Cl. 260-570.80R.

Horst, Patricia J. Retainer for a separated tear tab on a can. 3,924,776, Cl. 220-269.000.

Hortig, Wilhelm, to K.M. Engineering Aktiengesellschaft at Herrengrabenweg. Process for the non-cutting production of sheet steel containers. 3,924,437, Cl. 72-349.000.

Hortlik, Frantisek: *See—*
Esser, Miroslav; Ledr, Zdenek; Ferkl, Frantisek; Kubovy, Miloslav; Ripka, Josef; Hortlik, Frantisek; and Elias, Jiri, 3,924,398.

Horzepa, John P.; and Swanson, David B., to Engelhard Minerals & Chemicals Corporation. Sulfur recovery catalyst and production thereof from bauxite ore. 3,925,257, Cl. 252-463.000.

Hosho, Yukio; Oyama, Yoshishige; and Karino, Kimiji, to Hitachi, Ltd. Exhaust emission control device. 3,924,407, Cl. 60-284.000.

Hosoda, Yoshikado: *See—*
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Hostetler, Dewey L. Hydraulic side lift loader. 3,924,765, Cl. 214-518.000.

Houben, Mathijs Maria Hendrikus, to U.S. Philips Corporation. Method of manufacturing a mixture for TV glasses. 3,925,089, Cl. 106-53.000.

Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz, Inc. 10-(2-Dialkylaminoethyl)-10,11-dihydro, or 10-(2-dialkylaminoethyl)-5-methylene-2,7-substituted or unsubstituted-5H-dibenzo[a,d]cycloheptenes. 3,925,476, Cl. 260-570.8TC.

Houston, Stanley M. Sealing device and method of fabrication thereof. 3,924,862, Cl. 277-231.000.

Howard, Donald E. Rotary internal combustion engine. 3,924,578, Cl. 123-8.130.

Howard, Robert G.; and Zivi, Edwin L., Jr., to United States of America, Navy. Pressure drop polymer concentration meter (pcm). 3,924,448, Cl. 73-55.000.

Hoyer, Ernst: *See—*
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Hsu, John P. T. Cartesian toy. 3,924,350, Cl. 46-92.000.

Huang, Wann-Sheng: *See—*
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Hubbard, David W.; and Coville, William W., to Pitney-Bowes, Inc. Method for printing on labels. 3,924,532, Cl. 101-426.000.

Huey, Richard Meredyth: *See—*
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Hukuba, Hiroshi, to Kabushiki Kaisha Hukuba Future Research. Floor sweeper. 3,924,285, Cl. 15-49.00R.

Hulett, James S.; and Shestag, Lowell N., to Emerson Electric Co. Digital modulation generator with cylindrical antenna array system. 3,925,781, Cl. 343-106.00R.

Hummel, Merritt J., to PPG Industries, Inc. Method of improving quality of flat glass formed on molten tin. 3,925,052, Cl. 65-65.00A.

Hundertmark, James M., to Brunswick Corporation. Fuel pump. 3,924,975, Cl. 417-395.000.

Hunt, David Patrick, to Imperial Chemical Industries Limited. Pattern printing apparatus. 3,925,791, Cl. 346-140.000.

Hunter, Byron A., to Uniroyal, Inc. Polymeric composition comprising sulfonyl carbazates as blowing agents. 3,925,270, Cl. 260-2.50R.

Hunter, Byron A., to Uniroyal, Inc. Reaction product of oxalyldihydrazide and bis(sulfonyl halide). 3,925,466, Cl. 260-543.00R.

Hunter, Edward E.; and Rye, Grover W., to Goodyear Tire & Rubber Company, The. Apparatus for treating tire cord fabric. 3,924,569, Cl. 118-642.000.

Huret, Jacques: *See—*
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Huret, Roger; and Huret, Jacques. Cable traction and release device. 3,924,487, Cl. 74-489.000.

Hutchinson, Leigh, to Harsco Corporation. Telescopic connector for coaxially superposed frame members. 3,924,379, Cl. 52-637.000.

Hutgens, Jochen; and Adomat, Gunter, to Gutehoffnungshutte Sterkrade Aktiengesellschaft. Apparatus for treating a gas current which is obtained by coal gasification. 3,925,042, Cl. 55-269.000.

Huther, Edmund: *See—*
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Huyffer, Paul S., to Polaroid Corporation. Processes of syntheaizing AZO compounds. 3,925,347, Cl. 260-147.000.

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HydroTech International, Inc.: *See—*
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Ibata, Jyoji; Kobayashi, Hidehiko; Toyomoto, Kazuo; Suzuoki, Kazuhiro; and Nogami, Sumitaka, to Asahi Kasei Kogyo Kabushiki Kaisha. Composite elastomer compositions. 3,925,272, Cl. 260-4.000.

ICI United States Inc.: *See—*
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Kuehn, Erich, 3,925,335.
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Ide, Fumio; Kishida, Kazuo; and Hasegawa, Akira, to Mitsubishi Rayon Co., Ltd. Vinyl chloride polymer composition. 3,925,510, Cl. 260-876.00R.

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Igel, Wolfgang, to Zinser Textilmaschinen GmbH. Apparatus for conveying and storing yarn packages or pirns. 3,924,762, Cl. 214-38.00B.

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Industrie Pirelli S.p.A.: *See—*
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Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft: *See—*
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Inoue, Kenji: *See—*
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Inoue, Kiyoshi. Measuring instrument. 3,924,336, Cl. 33-164.00R.

Institut National de la Recherche Agronomique: *See—*
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Institut Pasteur: *See—*
Relyveld, Edgar Hans, 3,925,545.

Instituto Farmacologico Serono S.p.A.: *See—*
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Instytut Przemysku Farmaceutycznego: *See—*
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International Harvester Company: *See—*
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International Nickel Company, Inc., The: *See—*
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Furbeck, Warren R., 3,924,797.
Lee, Charles A.; and Sorrells, Frank D., 3,924,626.
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International Standard Electric Corporation: *See—*
Esser, Karl; and Segain, John E., 3,925,571.

International Telephone and Telegraph Corporation: *See—*
de Rosa, Louis A., 3,925,730.
Edelsohn, Henry, 3,924,341.
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IPCO Hospital Supply Corporation: *See—*
Classe, Anthony V.; and Mehn, Robert P., 3,924,572.

IRECO Chemicals: *See—*
Jessop, Harvey A., 3,925,123.

Irwin, Fred, to Raymond Lee Organization Inc., a part interest. Stove top with leveling means. 3,924,602, Cl. 126-214.00A.

Irwin, John A., to General Motors Corporation. Combustion liner spring support used for hot wire igniter circuit. 3,924,403, Cl. 60-39.320.

Ishida, Kazutaka: *See—*
Tanaka, Hideki; Watanabe, Mikio; Handa, Minoru; Inouchi, Mitsuhiro; Yoshioka, Shigeru; and Ishida, Kazutaka, 3,925,732.

Ishida, Torao; Ohoishi, Junichi; Yoshida, Kouichi; Akashi, Kageyasu; Takeda, Isao, deceased; and by Takeda, Emiko, legal representative, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for manufacture of novel compounds. 3,925,415, Cl. 260-335.000.

Ishigaki, Yoshio; Narahara, Hisaaki; and Tsuchiya, Takao, to Sony Corporation. Magnetic recording and/or reproducing system. 3,925,810, Cl. 358-4.000.

Ishii, Hajime; Bannai, Nubuo; and Nishita, Sadao, to Kureha Kagaku Kogyo K.K. Shaped articles of polyvinylidene fluoride. 3,925,339, Cl. 260-92.100.

Ishii, Katsutoshi: *See—*
Tatsumi, Youji; Ito, Shohei; and Ishii, Katsutoshi, 3,924,355.

Ishimura, Susumu: *See—*
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Ishizumi, Kikuo; Mori, Kazuo; Yamamoto, Michihiro; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Process for preparing quinazoline derivatives. 3,925,382, Cl. 260-251.0QB.

Ishizumi, Kikuo: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,925,364.

Isono, Hiromasa: *See—*
Takahashi, Noboru; Nakamura, Mutsuaki; Ozaki, Sadao; Isono, Hiromasa; and Fukushima, Iwao, 3,925,114.

Ito, Akira: *See—*
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Ito, Keiichi: *See—*
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Ito, Shohei: *See—*
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Ito, Takao: *See—*
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Itoh, Hideo: *See—*
Okuda, Itsuki; Shinohara, Hiroshi; Ogawa, Haruki; and Itoh, Hideo, 3,925,555.

Iung, Jacques, to Gurtner, S.A. System for distributing pressurized gas from a liquefied gas source. 3,925,048, Cl. 62-55.000.

Iwasaki, Hiroshi: *See—*
Akamatsu, Takashi; Koga, Koichi; Kondo, Mitsuru; Miyake, Makoto; and Iwasaki, Hiroshi, 3,925,416.

Iwatani & Co., Ltd.: *See—*
Uozumi, Iwao, 3,924,506.

Izawa, Nobuo; and Kohno, Toshihiko, to Kanebo, Ltd. Method for isolating epsilon-caprolactam material. 3,925,365, Cl. 260-239.30A.

Izumi, Sumio; and Tanaka, Hiroshi, to Mitsui Mining & Smelting Co., Ltd. Method for separation of mixture of plastics. 3,925,200, Cl. 209-9.000.

Izumi, Tokio: *See—*
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J. I. Case Company: *See—*
Lamer, Gerald P.; Zyduck, Ronald L.; and Roesler, David F., 3,924,753.
Parquet, Donald J., 3,924,650.

Jack, James: *See—*
Chalmers, Alexander Michael; Jack, James; and Cook, Barry, 3,925,376.

Jackel, Kurt: *See—*
Dittrich, Siegfried; and Jackel, Kurt, 3,924,858.

Jackson, Harold W.: *See—*
Brownell, Dudley C.; and Jackson, Harold W., 3,925,739.

Jackson, John Lambert, to John Wyeth & Brother Ltd. 2-Benzyl aziridines. 3,925,360, Cl. 260-239.00E.

Jacobsen Manufacturing Company: *See—*
Figura, William L., 3,924,706.

Jacques, Jean, to Agence Nationale de Valorisation de la Recherche (ANVAR). Disubstituted tolans and preparation thereof. 3,925,482, Cl. 260-612.00R.

Jacquot, Jean Noel, to Societe Anonyme: Poclain. Device for regulating the supply of pressurized fluid of two circuit systems having at least two pumps of constant cubic capacity. 3,924,971, Cl. 417-286.000.

Jager, Gerhard; Wenzelburger, Hans Jurgen; and Schmidt, Robert R., to Bayer Aktiengesellschaft. 6-Hydroxy-dihydro-uracils, process for their preparation. 3,925,386, Cl. 260-260.000.

Jancis, Elmar Harry, to Uniroyal, Inc. Hydrazino nickel thio-bisphenolates and polyolefins stabilized thereby against the effects of heat and light. 3,925,308, Cl. 260-45.75N.

Janin, Raymond, to Rhone-Poulenc S.A. Process for the preparation of dibenzothiazolyl disulphide. 3,925,401, Cl. 260-306.500.

Jansen, Martin B., Jr., to Vetco Offshore Industries, Inc. Pressure operated apparatus for running and setting packing assemblies in wellheads. 3,924,679, Cl. 166-182.000.

Janson, Jan-Christer: *See—*
Porath, Jerker Olof; and Janson, Jan-Christer, 3,925,152.

Janssen Pharmaceutica N.V.: *See—*
Van Gelder, Josephus Ludovicus Hubertus; Raeymaekers, Alfons Herman Margaretha; Roevens, Leopold Frans Corneel; and Van Laerhoven, Willey Joannes, 3,925,383.

Japan Bono'k Co., Ltd.: *See—*
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Japan Exlan Company Limited: *See—*
Matsumura, Yasuo; and Takeuchi, Shoichi, 3,925,291.

Japanese National Railways: *See—*
Matsui, Kazumi; Umemori, Takashi; Matsuura, Kenji; Hosoda, Yoshikado; Nishikawa, Tadashige; and Tawara, Makoto, 3,924,537.

Jardin, Thomas K., to Caterpillar Tractor Co. Mounting apparatus. 3,924,583, Cl. 123-32.0JV.

Jargon, Franz; Maschke, Erich; and Eylens, Rudolf, to Klockner-Werke AG. Method for electrochemical passivation of tinplate and electrolyte for use therein. 3,925,171, Cl. 204-56.00R.

Jefferson Chemical Company, Inc.: *See—*
Rowton, Richard Lee, 3,925,437.
Yeakey, Ernest Leon; and Austin, Thomas Howard, 3,925,389.

Jensen, William K., to General Motors Corporation. Automotive vehicle rotary display device. 3,925,752, Cl. 340-52.00F.

Jentoft, Arthur P.: *See—*
Anghinetti, Joseph R.; Couture, Paul A.; and Jentoft, Arthur P., 3,924,372.

Jerabek, Robert D., to PPG Industries, Inc. Electrodeposition process using a novel pigment dispersant. 3,925,180, Cl. 204-181.000.

Jeromin, Lothar S., to Xerox Corporation. Apparatus for developing latent electrostatic images. 3,924,568, Cl. 118-637.000.

Jersey Nuclear-Avco Isotopes, Inc.: *See—*
Munroe, James L.; and DeBaryshe, Paul Gregory, 3,924,937.

Jervis, Graham James; and Robson, Robert, to Exxon Research & Engineering Company. Antioxidant mixture comprising a mixture of phenothiazine oralkyl substituted phenothiazine and an oxidized diarylamine and lubricating oils containing said antioxidant mixture. 3,925,215, Cl. 252-47.500.

Jessop, Harvey A., to IRECO Chemicals. Pourable aqueous blasting composition. 3,925,123, Cl. 149-60.000.

Jet Ball (Eiendoms) Deperk: *See—*
Pretorius, Hillius, 3,924,855.

Jin, Jung Il; and Hwa, Jesse C. H., to Stauffer Chemical Company. Polymer modified polyols. 3,925,506, Cl. 260-836.000.

John Wyeth & Brother Ltd.: *See—*
Jackson, John Lambert, 3,925,360.

Johns-Manville Corporation: *See—*
Harris, Allan; and Huff, Lemuel Hampton, 3,924,999.
O'Connor, John Vincent, 3,924,881.

Johnson, Craig E.: *See—*
Cox, Charles D.; Johnson, Craig E.; and Henderson, Larry D., 3,925,125.

Johnson & Johnson: *See—*
Balinth, Ivan J., 3,925,271.
Dean, William Bruce, 3,924,663.

Johnson, Paul B. Rotary internal combustion engine. 3,924,579, Cl. 123-8.230.

Johnson, Robert C., to Metalogic, Inc. Expansible device for stretching material and method. 3,924,343, Cl. 38-102.100.

Johnston, Ralph H.; and Lakey, Leroy E., to General Motors Corporation. Electrically controlled fuel pump. 3,924,970, Cl. 417-220.000.

Johnstone, Colin G. Two-speed, self-propelled dolly for moving and elevating a mobile home or other load. 3,924,701, Cl. 180-6.500.

Jones, Bernard Howard: *See—*
Bartlow, David H.; Jones, Bernard Howard; and Pearson, Lee E., 3,925,132.

Jones, Charles, to Curtiss-Wright Corporation. Doweling construction for rotary engine housing. 3,924,581, Cl. 123-8.450.

Jones, James Allen: *See—*
Zipperian, Donald Edwin; Jones, James Allen; and Buza, Thomas Brian, 3,925,218.

Jones, Trevor O.: *See—*
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Jonsson, Erik Alfon: *See—*
Fahlstrom, Per Anders Herman Henningsson; and Jonsson, Erik Alfon, 3,924,814.

Jordan, Rodney W.: *See—*
Gulbis, Imants; and Jordan, Rodney W., 3,925,675.

Jorgensen, August H., to B. F. Goodrich Company, The. Vulcanizable acrylate rubber compositions. 3,925,281, Cl. 260-23.0AR.

Josey, Alden Dwayne; and Kirchner, Jack Robert, to Du Pont de Nemours, E. I., and Company. Substituted 1,3,7-octatrienes and their preparation. 3,925,497, Cl. 260-677.00R.

Josey, Verlon E.: *See—*
Chapman, John H.; Smith, Randolph O.; and Josey, Verlon E., 3,924,813.

Jourdan, Paul: *See—*
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Jubb, Ronald: *See—*
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Judge International Limited: *See—*
Elliott, Anthony, 3,924,303.

Julian, Clarence L.; and Young, Robert E., to General Motors Corporation. Vacuum control assembly. 3,924,586, Cl. 123-117.00A.

Junghans, Klaus, to Schering aktiengesellschaft. Electrocatalytic hydrogenation process. 3,925,173, Cl. 204-73.00R.

Jurd, Leonard: *See—*
Bultman, John D.; Jurd, Leonard; and Ritchie, Donald D., 3,925,558.

Jursakov, Anatoly Illarionovich: *See—*
Talis, Nikolai Semenovich; and Jursakov, Anatoly Illarionovich, 3,924,996.

Juvkam-Wold, Hans C., to Gulf Research & Development Company. Drill bit and method of drilling. 3,924,698, Cl. 175-393.000.

K.M. Engineering Aktiengesellschaft at Herrengrabenweg: *See—*
Hortig, Wilhelm, 3,924,437.

Kabat, Richard W.: *See—*
Lievens, Ronald J.; and Kabat, Richard W., 3,924,964.

Kabushiki Kaisha Hukuba Future Research: *See—*
Hukuba, Hiroshi, 3,924,285.

Kabushiki Kaisha Koparu: *See—*
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Kabushiki Kaisha Ono Sokki Seiksakusho: *See—*
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Takamura, Akio; and Harada, Tsutomu, 3,924,467.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Oshima, Yujiro; Katsoka, Masao; Tutui, Osamu; Shibayama, Noboru; Ohtuka, Masayoshi; and Ozaki, Shigehito, 3,924,457.

Kachur, Nicholas W.; and Tomburo, Anthony F., to Gibson Associates Incorporated. Two-compartment container. 3,924,741, Cl. 206-221.000.

Kaftan, Alojz Karol. Whistle. 3,924,560, Cl. 116-140.000.

Kah, Carl L. C., Jr. Sequencing valve. 3,924,652, Cl. 137-119.000.

Kain, Calvin L. Protective hub cap for bicycles. 3,924,898, Cl. 301-108.0SC.

Kaiser, Rudolf. Flame ionization detector. 3,925,023, Cl. 23-254.0EF.

Kaiya, Atsushi: *See*—
Horii, Hideo; Kaiya, Atsushi; and Otsuki, Yutaka, 3,925,279.

Kakeya, Nobuharu: *See*—
Sugimoto, Keiichi; Nishijima, Kouji; and Kakeya, Nobuharu, 3,925,362.

Kalfus, Martin Aaron, to RCA Corporation. Integral cycle zero-voltage switching circuits. 3,925,688, Cl. 307-252.00B.

Kalninsh, Arvid Yanovich: *See*—
Pormale, Milda Yanovna; Kashkina, Nadezhda Alexandrovna; Veinberg, Elfrida Indrikovna; Kalninsh, Arvid Yanovich; Shusters, Janis; Mikazhans, Valdis Danielovich; Purvinsh, Indulis Valdovich; and Skutelis, Antons Petrovich, 3,925,356.

Kalopissis, Gregoire; Bugaut, Andree; and Zorayan, Vahan, to L'Oreal. Nitroparaphenylene diamine derivatives and methods of making them. 3,925,474, Cl. 260-570.50P.

Kalversberg, Manfred, to Volkswagenwerk Aktiengesellschaft. Hydrodynamic-mechanical transmission for automobiles. 3,924,491, Cl. 74-763.000.

Kamahara, Koichi: *See*—
Watanabe, Jinzo; Terao, Noboru; Kamahara, Koichi; Miyashita, Kazuhisa; and Fujihira, Kenji, 3,925,802.

Kaman Sciences Corporation: *See*—
Church, Peter K.; and Knutson, Oliver J., 3,925,575.

Kameda, Floyd Masato: *See*—
Dahl, Klaus Joachim; and Kameda, Floyd Masato, 3,925,307.

Kamei, Masutada, to Agency of Industrial Science & Technology. Method for producing flame-retardant fireproof clear coat. 3,925,137, Cl. 156-278.000.

Kamihigoshi, Tutomu: *See*—
Ukaji, Rokuo; Kamihigoshi, Tutomu; Mikami, Kenji; and Takaki, Shoji, 3,925,263.
Ukaji, Rokuo; Kamihigoshi, Tutomu; Mikami, Kenji; and Takaki, Shoji, 3,925,492.

Kammlade, William G., Jr.: *See*—
Shechmeister, Isaac L.; Kolar, Joseph R., Jr.; and Kammlade, William G., Jr., 3,925,544.

Kane, George C.: *See*—
Whitcombe, John A.; Van Zanten, Kenneth D.; and Kane, George C., 3,925,190.

Kane, Robert Harvey, to International Nickel Company, Inc., The. Catalytic structure for the purification of waste gases and its method of preparation. 3,925,259, Cl. 252-470.000.

Kanebo, Ltd.: *See*—
Izawa, Nobuo; and Kohno, Toshihiko, 3,925,365.
Makino, Syoso; Hosokawa, Kenjiro; and Sano, Junzi, 3,925,008.

Kaneko, Minoru: *See*—
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Kaneko, Yasuhisa: *See*—
Yabuta, Tozo; Kaneko, Yasuhisa; and Morita, Akiyoshi, 3,925,252.

Kanno, Takashi, to Chugai Seiyaku Kabushiki Kaisha. Method for simultaneous determination of enzymatic activities of enzymes. 3,925,162, Cl. 195-103.50R.

Kanto Seiki Co., Ltd.: *See*—
Hata, Shigeki, 3,925,755.

Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Akamatsu, Takashi; Koga, Koichi; Kondo, Mitsuru; Miyake, Makoto; and Iwasaki, Hiroshi, 3,925,416.

Karnadavidoff, Isaac; and Moreau, Michele, to Fuveau S.A. Pharmaceutical composition containing 1-carboxamidine pyrozoles and their acid addition salts and use of same. 3,925,552, Cl. 424-273.000.

Karatjas, Manuel: *See*—
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Kardashian, Vahram S., to Honeywell Inc. Monotonically changing skew in a magnetostrictive anisotropic thin film plated wire line sensor. 3,925,593, Cl. 174-36.000.

Karino, Kimiji: *See*—
Hosho, Yukio; Oyama, Yoshishige; and Karino, Kimiji, 3,924,407.

Karkov, Otto. Method of producing resin-containing pigment preparations. 3,925,096, Cl. 106-309.000.

Karlen, Bo Lennart: *See*—
Dahlbom, Johan Richard; Karlen, Bo Lennart; and Lindgren, Sune Gunnar, 3,925,411.

Karlfors, Levi Johannes: *See*—
Brannstrom, Kurt Osten; and Karlfors, Levi Johannes, 3,924,691.

Kartridg Pak Co., The: *See*—
Leonard, George E., 3,924,732.

Kashio, Toshio, to Casio Computer Co., Ltd. Route guiding apparatus. 3,925,641, Cl. 235-150.200.

Kashio, Toshio, to Casio Computer Co., Ltd. Ink jet recording apparatus. 3,925,788, Cl. 346-75.000.

Kashio, Toshio, to Casio Computer Co., Ltd. Ink jet recording apparatus. 3,925,789, Cl. 346-75.000.

Kashkina, Nadezhda Alexandrovna: *See*—
Pormale, Milda Yanovna; Kashkina, Nadezhda Alexandrovna; Veinberg, Elfrida Indrikovna; Kalninsh, Arvid Yanovich; Shusters, Janis; Mikazhans, Valdis Danielovich; Purvinsh, Indulis Valdovich; and Skutelis, Antons Petrovich, 3,925,356.

Kaspers, Helmut: *See*—
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Katamoto, Kazuyoshi: *See*—
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Kataoka, Masao: *See*—
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Katata, Motohiro: *See*—
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Kather, Kenneth Calvin: *See*—
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Kato, Hiroyuki: *See*—
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Kato, Kunihiro; Matsuda, Ryoichi; and Okayasu, Ryoichi, to Nippon Telegraph and Telephone Public Corporation. Voice switch circuits for use in loudspeaking telephone circuits. 3,925,618, Cl. 179-1.0VC.

Kato, Tetsuo; and Sekio, Isao, to Daido Seiko Kabushiki Kaisha. Electromagnetic stainless steel having excellent machinability. 3,925,063, Cl. 75-124.000.

Kato, Toshiro: *See*—
Tottori, Nobumasa; Kato, Toshiro; Asano, Yasuhisa; Ueda, Minoru; Kirino, Osamu; Ooba, Shigehiro; Fujinami, Akira; and Ozaki, Toshiaki, 3,925,554.

Katsimbas, Themistoklis, to Hoechst Aktiengesellschaft. Heat-curable pulverulent coating agent consisting of a mixture of copolymers containing glycidyl groups, dicarboxylic acid anhydrides and curing accelerators. 3,925,507, Cl. 260-836.000.

Kaufman, Michael Avrum: *See*—
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Kawahara, Kiyoshi: *See*—
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Kawai, Hajime: *See*—
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Kayser, Detlev: *See*—
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Kealy, Joseph P., to Swift Chemical Company. Slow acting fertilizer. 3,925,053, Cl. 71-29.000.

Keat, Paul P., to Norton Company. Graphite containing metal bonded diamond abrasive wheels. 3,925,035, Cl. 51-309.000.

Keck, Merle E.: *See*—
Elms, Robert T.; and Keck, Merle E., 3,925,705.

Keegel, Joseph F., Jr.: *See*—
Kutler, Andrew A.; and Keegel, Joseph F., Jr., 3,925,003.

Keller, Pierre: *See*—
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Kendall Company, The: *See*—
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Taylor, Glenn M.; Patel, Harish A.; and McWhorter, Daniel M., 3,924,634.

Kendall, Giles A.; Bhutani, Harish K.; and Minick, Robert, to Menasco Manufacturing Company. Missile support system. 3,924,511, Cl. 89-1.800.

Kennametal Inc.: *See*—
College, Michael A., 3,924,697.

Kennedy, Carl D.: *See*—
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Kennedy, John R. Rotary drilling method and apparatus. 3,924,695, Cl. 175-69.000.

Kennedy, Paul G.: *See*—
Wood, Kenneth E.; Parrish, William F.; and Kennedy, Paul G., 3,925,606.

Kenney, George Churchill, to North American Philips Corporation. Apparatus having dropout detection and compensation for reproducing a video signal recorded on a record. 3,925,811, Cl. 358-8.000.

Kent, John Allen; Love, Robert B.; and Meyer, Harold Louis, to Amsted Industries Incorporated. Fifth wheel. 3,924,909, Cl. 308-136.000.

Kerho, Stephen E.; Lindquist, Claude S.; White, John R.; and Breen, Bernard P., to KVB Equipment Corporation. Pollutant variation correcting system. 3,924,442, Cl. 73-1.00R.

Kern, Fred R., Jr.: *See*—
Spivack, Mayer; and Kern, Fred R., Jr., 3,924,870.

Kerzel, Gunter, to Olympia Werke AG. Structure for facilitating interchange of typing elements. 3,924,724, Cl. 197-52.000.

Kessler, Claus; and Beier, Helmut, to Siemens Aktiengesellschaft. Contact arrangement for a high-voltage power circuit breaker. 3,925,631, Cl. 200-148.00R.

Kessler, Hartmut; and Kraus, Hubert, to Siemens Aktiengesellschaft. Vapor deposition on electrostatically tensioned foil. 3,924,563, Cl. 118-49.100.

Khan, Ausat Ali, to Du Pont de Nemours, E. I., and Company. Preparation of sol chloroprene polymers. 3,925,340, Cl. 260-92.300.

Khosla, Mahesh Chandra: *See*—
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Khouri, Robert N.: *See*—
Walker, Frank H.; Blumer, Larry D.; Khouri, Robert N.; and Fulks, David G., 3,924,483.

Kidwell, Raymond A. Ground anchor apparatus. 3,924,371, Cl. 52-161.000.

Kieras, Joseph A.: *See*—
Shalit, Harold; and Kieras, Joseph A., 3,925,496.

Kihara, Nobutoshi, to Sony Corporation. Magnetic recording system with overlapping tracks of high and low frequency information. 3,925,816, Cl. 360-19.000.

Kilbourn, Edward E.; and Weiler, Ernest D., to Rohm & Haas Company. 3-Pyridylmethyl-(N-substituted phenyl)-carbamate derivatives. 3,925,397, Cl. 260-294.900.

Kim, Dong H., to American Home Products Corporation. 2,3,4,5-Tetrahydro-1H-1,4-benzodiazepine-4-carboxamidines. 3,925,361, Cl. 260-239.0BD.

Kimmel, Robert M.; Riggs, John P.; Swander, Robert W.; and Whitney, Wells, to Celanese Corporation. Process for the production of carbon filaments. 3,925,524, Cl. 264-29.000.

Kimmelman, Samuel, to Ideal Corporation. Turn signal system for positive indication of lamp failure. 3,925,757, Cl. 340-66.000.

Kimura, Hiroshi, to Hughes Aircraft Company. Preparation of monocrystalline lead tin telluride. 3,925,147, Cl. 156-603.000.

Kindel, Erik Lennart, to LKB-Produkter AB. Device in a microtome for holding a grid on which sections are collected. 3,924,500, Cl. 83-167.000.

Kindl, George F., to Colt Industries Operating Corporation. Rotary positioning apparatus and method. 3,924,338, Cl. 33-174.0TC.

King, Charles Morgan; Seidel, William Carl; and Tolman, Chadwick Alma, to Du Pont de Nemours, E. I., and Company. Hydrocyanation of olefins. 3,925,445, Cl. 260-465.00R.

King, Wendell L., to Medtronic, Inc. Implantable electrically powered medical device. 3,924,640, Cl. 128-419.00P.

Kinnard, J. Rothe, to International Business Machines Corporation. Inductive base drive for transistor switching in DC converters. 3,925,717, Cl. 321-2.000.

Kinney, Alfred W., to Phillips Petroleum Company. Method and apparatus for capping containers. 3,924,384, Cl. 53-38.000.

Kipnis, Aharon: *See*—
Manor, Gedalyahu, 3,924,689.

Kirchner, Jack Robert: *See*—
Josey, Alden Dwayne; and Kirchner, Jack Robert, 3,925,497.

Kirino, Osamu: *See*—
Tottori, Nobumasa; Kato, Toshiro; Asano, Yasuhisa; Ueda, Minoru; Kirino, Osamu; Ooba, Shigehiro; Fujinami, Akira; and Ozaki, Toshiaki, 3,925,554.

Kishida, Kazuo: *See*—
Ide, Fumio; Kishida, Kazuo; and Hasegawa, Akira, 3,925,510.

Kita, Stanley B. Automatic lawn mower. 3,924,389, Cl. 56-10.200.

Kitanata, Koziro: *See*—
Takamura, Akira; Shimogori, Kazutoshi; Yamagata, Toshiaki; Sato, Masao; and Kitanata, Koziro, 3,925,064.

Kitaoka, Hiroo, to Reliance Electric Company. Electrically insulated bearing and for reducing shaft current. 3,924,906, Cl. 308-1.00R.

Kitchel, George B. Machine and method for grinding and polishing beads and marbles. 3,924,356, Cl. 51-7.000.

Kiuchi, Kanji: *See*—
Tsunemitsu, Katsuhiko; Kiuchi, Kanji; Nakai, Yasushi; Kawai, Hajime; and Yamada, Shimpei, 3,925,457.

Klauke, Erich: *See*—
Wolfrum, Gerhard; Sommer, Richard; and Klauke, Erich, 3,925,350.

Klebert, Wolfgang: *See*—
Schafer, Karl; Schuster, Hans; and Klebert, Wolfgang, 3,925,581.

Kleimann, Helmut; von Bonin, Wulf; Schneider, Heinz-Georg; and Gebauer, Herbert, to Bayer Aktiengesellschaft. Method of making foamed urethane resins having improved mold release properties. 3,925,527, Cl. 264-53.000.

Klein, Imrich; and Tadmor, Zehev, to Scientific Process & Research, Inc. Apparatus for preparing a plasticated material. 3,924,842, Cl. 259-192.000.

Kleinschmidt, Peter: *See*—
Wolf, Gerhard Dieter; Kunzel, Hans Egon; Blankenstein, Gunther; Kleinschmidt, Peter; and Bentz, Francis, 3,925,310.

Klemm, Peter; and Schulze, Klaus, to Volkswagenwerk Aktiengesellschaft. Fail-safe throttle for an internal combustion engine. 3,924,596, Cl. 123-198.00D.

Klepfer, Harold H., to General Electric Company. Nuclear fuel element. 3,925,151, Cl. 176-68.000.

Klier, Lothar: *See*—
Althausen, Ferdinand; Boden, Heinrich; Ersfeld, Heinz; Klier, Lothar; Raffel, Reiner; and Schneider, Walter, 3,924,989.

Klingler, Friedrich, to Maschinenfabrik Augsburg-Nurnberg A.G. Spray dampener for rotary press. 3,924,531, Cl. 101-147.000.

Klingler, Thomas C.: *See*—
Goralski, Christian T.; and Klingler, Thomas C., 3,925,468.

Klockner-Werke AG: *See*—
Jargon, Franz; Maschke, Erich; and Eylens, Rudolf, 3,925,171.

Klunsch, Maximilian: *See*—
Berthmann, Adolf; Martin, Gerhard; and Klunsch, Maximilian, 3,925,122.

Knapp, Kenneth K.: *See*—
Cornell, Charles R.; Simpson, Dennis D.; and Knapp, Kenneth K., 3,924,410.

Knechtges, Donald P.; and Mikoflavy, Bela K., to B. F. Goodrich Company, The. Low-temperature curable latices of vinyl and acrylic monomers. 3,925,293, Cl. 260-29.6TA.

Knis, Stephen A.; and Sayigh, Adnan A. R., to Upjohn Company, The. Agitator insert for reactive liquid polymer mixer. 3,924,837, Cl. 259-8.000.

Knutson, Oliver J.: *See*—
Church, Peter K.; and Knutson, Oliver J., 3,925,575.

Kobashi, Kiyoshi: *See*—
Nohira, Hidetaka; and Kobashi, Kiyoshi, 3,924,589.

Kobayashi, Hidehiko: *See*—
Ibata, Jyoji; Kobayashi, Hidehiko; Toyomoto, Kazuo; Suzuoki, Kazuhiro; and Nogami, Sumitaka, 3,925,272.

Kobayashi, Isamu, to Sony Corporation. Oriented polycrystal jfet. 3,925,803, Cl. 357-22.000.

Kobayashi, Teruo: *See*—
Sugi, Ichirow; Takenaka, Haruo; Okiyama, Toshiaki; and Kobayashi, Teruo, 3,925,573.

Kobayashi, Toshiaki: *See*—
Murai, Koichi; Choshi, Yasuo; and Kobayashi, Toshiaki, 3,925,278.

Kobayashi, Tsuyoshi: *See*—
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,925,364.

Kobe Machinery Company, Ltd.: *See*—
Sarumaru, Kazumasa, 3,924,981.

Kobe Steel Ltd.: *See*—
Takamura, Akira; Shimogori, Kazutoshi; Yamagata, Toshiaki; Sato, Masao; and Kitanata, Koziro, 3,925,064.

Koch, Paolo; and Perrotti, Emilio, to Snamprogetti S.p.A. Process for the production of cyclic thiocarbonates. 3,925,413, Cl. 260-327.00M.

Kochka, Edgar L.: *See*—
Fatzer, Elmer G.; and Kochka, Edgar L., 3,925,577.

Kodera, Yoichi, to Sony Corporation. Method of making electret. 3,924,324, Cl. 29-592.000.

Koehring Company: *See*—
Brown, Gaylord W., 3,925,140.

Koeleman, Geradus A. J.; and op de Laak, Johannes H. A., to Pitney-Bowes, Inc. Apparatus and process for developing electrostatic. 3,924,567, Cl. 118-637.000.

Koepfle, Frank Xavier; and Grote, Herbert Edward, to Procter & Gamble Company, The. Non-caking laundry sour. 3,925,230, Cl. 252-136.000.

Koernig, Wolfgang: *See*—
Schlichting, Karl; Horn, Peter; Schlag, Johannes; and Koernig, Wolfgang, 3,925,306.

Kofoid, Melvin J., to Boeing Company, The. Method and apparatus for heating solid and liquid particulate material to vaporize or disassociate the material. 3,925,177, Cl. 204-164.000.

Koga, Koichi: *See*—
Akamatsu, Takashi; Koga, Koichi; Kondo, Mitsuru; Miyake, Makoto; and Iwasaki, Hiroshi, 3,925,416.

Kogure, Hiroshi: *See*—
Miyaki, Kiyoshi; and Kogure, Hiroshi, 3,924,590.
Miyaki, Kiyoshi; and Kogure, Hiroshi, 3,924,592.
Yagi, Shizuo; Miyaki, Kiyoshi; and Kogure, Hiroshi, 3,924,582.

Kogure, Katsura; and Nakagawa, Kunio, to Nisshin Flour Milling Co., Ltd. Process for preparing 2-(4-alkylphenyl)-propion-aldehyde and propionic acid. 3,925,458, Cl. 260-523.00A.

Kohayakawa, Yoshimi: *See*—
Matsumura, Isao; and Kohayakawa, Yoshimi, 3,925,793.

Kohjin Co., Ltd.: *See*—
Matsuo, Kazuto; Araki, Michiya; Matsugu, Tomoyuki; and Mikami, Takahito, 3,925,290.

Kohler, Jacques R.; and Binsbergen, Frederik L., to Shell Oil Company. Rubber improvement with polycyclopentene. 3,925,514, Cl. 260-889.000.

Kohn, Gustave K., administrator: *See—*
Brown, Melancthon S., deceased; and Kohn, Gustave K., administrator, 3,925,056.

Kohno, Toshihiko: *See—*
Izawa, Nobuo; and Kohno, Toshihiko, 3,925,365.

Kohrn, Edward Louis; and Globus, Seymour. Gold/silver alloys. 3,925,066, Cl. 75-134.00C.

Kohrn, Edward Louis; and Globus, Seymour. Gold/silver alloys. 3,925,073, Cl. 75-173.00C.

Koivunen, Erkki A., to General Motors Corporation. Accessory shaft drive for a rotary machine. 3,924,577, Cl. 123-8.010.

Kojima, Makoto; Noda, Yuzuru; Suzuki, Yasuhiro; and Okamoto, Toshihide, to Nitto Electric Industrial Co., Ltd. Polyimide water-soluble composition. 3,925,313, Cl. 260-47.0CP.

Kojima, Shiro: *See—*
Aoyagi, Katumi, 3,925,585.

Kokado, Naoyuki, to Tokyo Shibaura Electric Co., Ltd. Apparatus for extracting a vertical synchronizing pulse from a composite synchronizing signal included in a video signal. 3,925,613, Cl. 178-69.5TV.

Kolar, Joseph R., Jr.: *See—*
Shechmeister, Isaac L.; Kolar, Joseph R., Jr.; and Kammlade, William G., Jr., 3,925,544.

Koleske, Joseph Victor; Whitworth, Clyde Jesse, Jr.; and Lundberg, Robert Dean, to Union Carbide Corporation. Poly(hydroxy ether) polymers blended with cyclic ester polymers. 3,925,504, Cl. 260-823.000.

Komoda, Tsutomu: *See—*
Nomura, Setsuo; Komoda, Tsutomu; and Nakaizumi, Yasushi, 3,925,706.

Kondo, Eiji; Mitsugi, Takashi; and Muneyuki, Ryonosuke, to Shionogi & Co., Ltd. Preparation of 6-aminopenicillanic acid 1-oxide. 3,925,155, Cl. 195-36.00P.

Kondo, Fusao: *See—*
Takenouchi, Kuniyoshi; Ohno, Norihiro; and Kondo, Fusao, 3,925,226.

Kondo, Kishichiro: *See—*
Azuma, Kishiro; Tsuji, Isao; Kato, Hiroyuki; Tatemichi, Hidemaro; Motegi, Akira; Suzuki, Osamu; and Kondo, Kishichiro, 3,925,322.

Kondo, Mitsuru: *See—*
Akamatsu, Takashi; Koga, Koichi; Kondo, Mitsuru; Miyake, Makoto; and Iwasaki, Hiroshi, 3,925,416.

Konomi, Toshiaki; and Takamura, Akio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Ono Sokki Seiksakusho. Flow rate measuring system with calibration means. 3,924,445, Cl. 73-3.000.

Konstantin, Anatole E. Banding machine. 3,924,387, Cl. 53-291.000.

Kontes Glass Company: *See—*
Thoden, John; and Wagner, Theodore, 3,924,948.

Koos, Josef, to Gertsch AG. Spring locking device. 3,924,867, Cl. 280-11.35T.

Koos, Josef, to Gertsch AG. Ski binding having an adjustable heel holder. 3,924,868, Cl. 280-11.35K.

Koplin, Harry: *See—*
Prenner, Amnon; Bear, Jacob; Tohar, David; and Koplin, Harry, 3,924,677.

Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, to Boehringer Ingelheim GmbH. 1-Aryloxy-2-hydroxy-3-alkynylamino-propanes. 3,925,446, Cl. 260-465.00E.

Kornylak, Andrew T., to Kornylak Corporation. Adjustable support. 3,924,718, Cl. 193-35.00R.

Kornylak Corporation: *See—*
Kornylak, Andrew T., 3,924,718.

Korrell, Melvin H.; and Gay, Sandy C., to Nilco Inc. Cam controlled variable speed drive for clothes dryer. 3,924,833, Cl. 74-242.400.

Koshiba, Masao: *See—*
Ishizumi, Kikuo; Mori, Kazuo; Yamamoto, Michihiro; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 3,925,382.

Kosinsky, Edward J., to Phillips Petroleum Company. Apparatus for drying polymeric material. 3,924,997, Cl. 425-376.000.

Kovar, Stanislav; Cernocky, Jiri; and Riha, Petr, to Zbrojovka Vsetin, narodni podnik. Arrangement for equalizing the tension of two supplied threads. 3,924,820, Cl. 242-156.000.

Kowada, Masunari: *See—*
Mitsuhashi, Shigeru; Hirokawa, Kyoichi; Saito, Noboru; Kaneko, Minoru; Shoji, Michihiro; Kowada, Masunari; and Kazama, Yasuo, 3,924,330.

Koyama, Kazuo: *See—*
Takechi, Hiroshi; Kawano, Tsuyoshi; Hashizume, Toshio; Koyama, Kazuo; and Masui, Hiroaki, 3,925,111.

Kozawa, Akiya, to Union Carbide Corporation. Divalent silver oxide cell having a unipotential discharge level. 3,925,102, Cl. 136-111.000.

Kozo Yoshizaki: *See—*
Misonoo, Kazunaga, 3,924,436.

Kozuka, Hirotsugu: *See—*
Saida, Hiroji; Ono, Yuichi; Nomura, Masayoshi; Tamura, Masao; and Kozuka, Hirotsugu, 3,925,120.

Kramer, George J. Arithmetic fact game. 3,924,859, Cl. 273-137.00C.

Krapcho, John; and Turk, Chester Frank, to E. R. Squibb & Sons, Inc. 2-Amino-4,5-dihydro-4-arylindeno pyrimidines. 3,925,384, Cl. 260-256.40Q.

Kraus, Hubert: *See—*
Kessler, Hartmut; and Kraus, Hubert, 3,924,563.

Krause, Lothar, to Hauni-Werke Korber & Co., KG. Method of uniting webs of cigarette paper or the like. 3,925,131, Cl. 156-159.000.

Krauss-Maffei Aktiengesellschaft: *See—*
Breitling, Ulrich; and Simon, Klaus, 3,924,538.

Krebs, Klaus-Werner: *See—*
Eicher, Theo; Muller, Friedemann; and Krebs, Klaus-Werner, 3,924,642.

Krehbiel, Delmar D.: *See—*
Clark, Charles R.; Gregory, M. Duane; Casad, Burton M.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,924,681.

Kremer, Ross A.; and Leitman, Richard H., to Mobil Oil Corporation. Deodorized mercaptan-containing phosphorotrithioites and process of preparation. 3,925,519, Cl. 260-967.000.

Krenzer, John, to Velsicol Chemical Corporation. Method of increasing the yield of plants having storage organs by treatment with triazolidinones. 3,925,054, Cl. 71-92.000.

Krenzer, John, to Velsicol Chemical Corporation. 1-Thiadiazolyl-5-carbamoyloxyimidazolidinones. 3,925,402, Cl. 260-306.80D.

Krenzer, John, to Velsicol Chemical Corporation. Certain 1-(2-substituted-1,3,4-thiadiazol-5-yl)-3-alkyl-imidazolidin-2-ones. 3,925,403, Cl. 260-306.80D.

Kreutze, Gerhard: *See—*
Moessner, Manfred; and Kreutze, Gerhard, 3,924,822.

Krieger, Josef: *See—*
Obendorf, Werner; Lindner, Irmgard; Schwarzinger, Ernst; and Krieger, Josef, 3,925,412.

Kroger, Harry; and Potier, Curtis N., to Sperry Rand Corporation. High frequency diode and method of manufacture. 3,925,078, Cl. 96-36.200.

Kroger, Ingo: *See—*
Richter, Martin; and Kroger, Ingo, 3,925,694.

Kroschel, Heinz: *See—*
Strunk, Manfred; Kroschel, Heinz; and Voss, Alfred, 3,924,510.

Kruppert, Frederick W.: *See—*
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Krups, Robert: *See—*
Schubert, Klaus; and Grohmann, Klaus, 3,924,816.

Ku, San-Mei; and Masters, Burton J., to International Business Machines Corporation. Ion bombardment method of producing integrated semiconductor circuit resistors of low temperature coefficient of resistance. 3,925,106, Cl. 148-1.500.

Kubovy, Miloslav: *See—*
Esser, Miroslav; Ledr, Zdenek; Ferkl, Frantisek; Kubovy, Miloslav; Ripka, Josef; Hortlik, Frantisek; and Elias, Jiri, 3,924,398.

Kuchar, Paul J.: *See—*
Boney, William G.; and Kuchar, Paul J., 3,925,502.

Kuehn, Erich, to ICI United States Inc. Vinyl urethane resins from halogenated diols and phosphonate diols. 3,925,335, Cl. 260-859.00R.

Kufner, Kenneth L., to Molex Incorporated. Method and apparatus for mounting terminal pins from a single side of a double sided terminal board. 3,924,325, Cl. 29-626.000.

Kuhle, Engelbert; Grewe, Ferdinand; and Kaspers, Helmut, to Bayer Aktiengesellschaft. Alkylsulphuric acid salts of substituted guanidines. 3,925,443, Cl. 260-459.00R.

Kuhlthau, Hans-Peter, to Bayer Aktiengesellschaft. Process for dyeing anionically modified synthetic fiber materials. 3,925,015, Cl. 8-168.000.

Kuhn, Hans-Robert, to Electroacustic GmbH Kiel. Electromagnetic sound pick-up. 3,925,628, Cl. 179-100.41K.

Kuhn, Robert F.; Lyons, Theodore F.; and Raider, Jerry W., to International Business Machines Corporation. Dual array disc printer. 3,924,725, Cl. 197-53.000.

Kuhnle, Judith A.: *See—*
Randall, John M.; Hautala, Earl; Waiss, Anthony C., Jr.; and Kuhnle, Judith A., 3,925,192.

Kulite Semiconductor Products, Inc.: *See—*
Kurtz, Anthony D.; Brosh, Amnon; Gravel, Charles L.; and Mallon, Joseph R., 3,924,322.

Kumiai Chemical Industry Co,: *See—*
Okuda, Itsuki; Shinohara, Hiroshi; Ogawa, Haruki; and Itoh, Hideo, 3,925,555.

Kummer, Werner: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, 3,925,446.

Kun, Leslie C., to Union Carbide Corporation. Primary surface heat exchanger and manufacture thereof. 3,924,441, Cl. 72-475.000.

Kunzel, Hans Egon: *See—*
Wolf, Gerhard Dieter; Kunzel, Hans Egon; Blankenstein, Gunther; Kleinschmidt, Peter; and Bentz, Francis, 3,925,310.

Kureha Kagaku Kogyo K.K.: *See—*
Ishii, Hajime; Bannai, Nubuo; and Nishita, Sadao, 3,925,339.
Ogura, Jiro; Seki, Ikuo; Sato, Kiyotaka; Takahashi, Masaaki; Ito, Akira; and Igarashi, Yuriko, 3,925,222.

Kuris, Arthur: *See—*
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Kuroishi, Nobuhito: *See—*
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Kurtz, Albert L., to Hill Acme Company, The. Shearing apparatus. 3,924,504, Cl. 83-568.000.

Kurtz, Anthony D.; Brosh, Amnon; Gravel, Charles L.; and Mallon, Joseph R., to Kulite Semiconductor Products, Inc. Economical pressure transducer assemblies, methods of fabricating and mounting the same. 3,924,322, Cl. 29-580.000.

Kusaka, Kunio: *See—*
Osawa, Makoto; Hagiwara, Yoshitoshi; Kusaka, Kunio; Kawakita, Takao; Motoyoshi, Kenya; and Kuroishi, Nobuhito, 3,925,065.

Kusakawa, Hideaki: *See—*
Yoshino, Masataka; Kuwazawa, Hiroyasu; Shimojima, Haruhiko; Tanaka, Osamu; Kusakawa, Hideaki; Matsuoka, Hiromasa; and Maeda, Mitsuo, 3,925,021.

Kusenberg, Eugen: *See—*
Ernst, Otto; Meyerhans, Konrad; and Kusenberg, Eugen, 3,924,737.

Kushihashi, Akira; Fuziwara, Yutaka; and Akashi, Naotomo, to Nippon Sheet Glass Co., Ltd. Process and apparatus for producing glass having metal oxide coating. 3,925,050, Cl. 65-60.000.

Kussow, Daniel H.: *See—*
Anders, Robert; and Kussow, Daniel H., 3,924,545.

Kutler, Andrew A.; and Keegel, Joseph F., Jr., to Foster Wheeler Energy Corporation. Gas flow control system. 3,925,003, Cl. 431-89.000.

Kuts, Mathew, to B. F. Goodrich Company, The. Fabric cutting. 3,924,503, Cl. 83-488.000.

Kuwazawa, Hiroyasu: *See—*
Yoshino, Masataka; Kuwazawa, Hiroyasu; Shimojima, Haruhiko; Tanaka, Osamu; Kusakawa, Hideaki; Matsuoka, Hiromasa; and Maeda, Mitsuo, 3,925,021.

KVB Equipment Corporation: *See—*
Kerho, Stephen E.; Lindquist, Claude S.; White, John R.; and Breen, Bernard P., 3,924,442.

L & R Industries, Inc.: *See—*
Hammond, William D., 3,924,599.

La Technique Integrale: *See—*
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Labavia S.G.E.: *See—*
Bessiere, Pierre Etienne, 3,924,713.

Labofina S.A.: *See—*
Draguez de Hault, Emmanuel R. E. G.; Debus, Henri R.; and Van Tongelen, Marcel, 3,925,425.

Laborit, Henri, to Centre d'Etudes Experimentales et Cliniques de Physio Biologie de Pharmacologie et d'Eutonologie. Composition for conservation of blood. 3,925,153, Cl. 195-1.800.

Lafon, Jean-Louis: *See—*
Collard, Maurice A.; Cruchant, Serge Alfred; and Lafon, Jean-Louis, 3,924,830.

Laftsidis, Stergios: *See—*
Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergios, 3,925,559.

Lakey, Leroy E.: *See—*
Johnston, Ralph H.; and Lakey, Leroy E., 3,924,970.

Lambert, Charles F., Jr., to Clayton & Lambert Manufacturing Company. Horizontal rotary sweeps for feed storage tanks. 3,924,761, Cl. 214-17.0CB.

Lamberti, Vincent, to Lever Brothers Company. Sulfosuccinate derivatives as detergent builders. 3,925,375, Cl. 260-247.10E.

Lamer, Gerald P.; Zyduck, Ronald L.; and Roesler, David F., to J. I. Case Company. Crane counterweight support and means for removing and mounting same. 3,924,753, Cl. 212-48.000.

Lamonica, Mercurio. Aquarium scenic filter in fish tank. 3,924,570, Cl. 119-5.000.

Lampe, Warren R., to General Electric Company. Process for packaging and mixing a two-part room temperature vulcanizable silicone rubber composition. 3,925,277, Cl. 260-18.00S.

LaMura, Joseph. Cuticle knife with storage means for hand lotion. 3,924,646, Cl. 132-79.00R.

Landis, Phillip S.; and Okorodudu, Abraham O. M., to Mobil Oil Corporation. Reaction product of isobutylene, sulfur monohalide and alkali metal mercaptide. 3,925,414, Cl. 260-327.00R.

Lang, Gunter: *See—*
Beaucamp, Klaus; Mollering, Hans; Lang, Gunter; Gruber, Wolfgang; and Roeschlau, Peter, 3,925,164.

Langdon, Robert S. Instrument sterilization. 3,925,014, Cl. 21-105.000.

Langenberg, Hartmut: *See—*
Hohnfeld, Peter; and Langenberg, Hartmut, 3,924,835.

Lanier, Carroll W., to Ethyl Corporation. Process for producing nitrilotriacetonitrile. 3,925,448, Cl. 260-465.50A.

LaNieve, Herman L., to Celanese Corporation. Spinning method. 3,925,525, Cl. 264-40.000.

Lanzenberger, Horst, to Friedrich Deckel Aktiengesellschaft. Brake mechanism to prevent reverse rotation of a drive spindle. 3,924,479, Cl. 74-89.160.

Lapinskas, Edward F. Electrical utility cord storage and shortening device. 3,924,819, Cl. 242-85.100.

Larkin, John M.: *See—*
Duranleau, Roger G.; and Larkin, John M., 3,925,430.

Laroche, Marie-Jeanne: *See—*
Gastambide, Bernard; Thal, Claude; Rohrbach, Phillippe; and Laroche, Marie-Jeanne, 3,925,480.

Latzina, Kurt: *See—*
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Laubie, Michel: *See—*
Vincent, Michel; Remond, Georges; and Laubie, Michel, 3,925,369.

Laughlin, Robert Gene; and Stewart, Robert Lee, to Procter & Gamble Company, The. Detergent composition having enhanced particulate soil removal performance. 3,925,262, Cl. 252-526.000.

Lauri, Gilles C. Cigar and cigarette lighter. 3,925,004, Cl. 431-131.000.

Lauterbach-Dammler, Inge, to C. Conradty. Exponential resistance material and method of manufacturing same. 3,925,261, Cl. 252-519.000.

Lawhon, Robert A., to PPG Industries, Inc. Removable dam barrier for a float chamber of a glassmaking apparatus. 3,925,051, Cl. 65-65.00A.

Lawlor, Kenneth A.: *See—*
Roos, Dewey A.; Lawlor, Kenneth A.; and Abadie, Erwin I., 3,924,535.

Lawrence Peska Associates, Inc.: *See—*
Cooper, Frederick, 3,924,913.

Lazarre, Flavien; Rozand, Jacques; and Roumazeilles, Simonne, to Societe Nationale des Petroles d'Aquitaine. Installation to disperse gas effluents. 3,924,658, Cl. 137-604.000.

Leasure, William C. Method and apparatus for hydraulic transportation of mined coal. 3,924,895, Cl. 299-8.000.

Leatherman, Alfred F.; and Shatzkin, Leonard, to Heller, William C., Jr. Vibratory book binding method. 3,925,126, Cl. 156-73.600.

Le Blanc, Maurice: *See—*
Riess, Jean G.; Le Blanc, Maurice; Santini, Georges; and Guion, Jacky, 3,925,491.

Lechner, Thomas G.; and Besse, Michael E., to Economics Laboratory, Inc. Corrosion inhibition or prevention with inorganic-organic complexes. 3,925,087, Cl. 106-14.000.

Leclere, Claudine: *See—*
Bono, Pierre; Demange, Philippe; Leclere, Claudine; and Tissier, Alexis, 3,925,099.

Ledr, Zdenek: *See—*
Esser, Miroslav; Ledr, Zdenek; Ferkl, Frantisek; Kubovy, Miloslav; Ripka, Josef; Hortlik, Frantisek; and Elias, Jiri, 3,924,398.

Lee, Charles A.; and Sorrells, Frank D., to International Paper Company. Rectangular disposable diaper having a contoured absorbent pad. 3,924,626, Cl. 128-287.000.

Lee, Charles A.; and Furbeck, Warren R., to International Paper Company. Method of and apparatus for bias laying. 3,925,142, Cl. 156-425.000.

Lee, Irvin J.: *See—*
Harris, Robert J.; and Lee, Irvin J., 3,924,562.

Lee, Vin-Jang, to University of Missouri, The Curators of the. Production of luminescence. 3,925,235, Cl. 252-188.3CL.

Leech, Edward J.: *See—*
Polichette, Joseph; Leech, Edward J.; and Nuzzi, Francis J., 3,925,578.

Lefebvre nee Bobkowicz, Margaret Mary: *See—*
Bobkowicz, Emilian; Bobkowicz, Andrew John; and Lefebvre nee Bobkowicz, Margaret Mary, 3,924,396.

Lefeuvre, Andre, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Sliding fitment for safety belt. 3,924,875, Cl. 280-150.0SB.

Lehmann, Gerard; and Brych, Alfred, to SAFT-Societe des Accumulateurs Fixes et de Traction. Electric primary cell in which the positive active material is silver chromate. 3,925,101, Cl. 136-100.00R.

Lehmann, Willi, to Westinghouse Electric Corporation. Halogen containing lead activated calcium sulfide luminescent composition. 3,925,240, Cl. 252-301.40S.

Leitman, Richard H.: *See—*
Kremer, Ross A.; and Leitman, Richard H., 3,925,519.

Lekim, Dac: *See—*
Betzing, Hans; and Lekim, Dac, 3,925,158.

Leland Stanford Jr. University, The Board of Trustees of: *See—*
Otto, Oberdan W., 3,925,653.

Le Martret, Odile: *See—*
Clemence, Francois; and Le Martret, Odile, 3,925,399.

Lemelson, Jerome H. Video transducing apparatus and method for editing. 3,925,815, Cl. 360-14.000.

Lemons, John B., to Mar, Bob. Container cap having safety lock means. 3,924,768, Cl. 215-213.000.

Lemont, Harold E., to Fairchild Industries, Inc. Reverse velocity rotor and rotorcraft. 3,924,965, Cl. 416-114.000.

Lendi, Ulrich, to Mageba, Firma. Car garage. 3,924,760, Cl. 214-16.1ED.

Leng, Barrie: *See—*
Moss, John Hickman; and Leng, Barrie, 3,925,531.

Lennon Manufacturing Inc.: *See—*
Gill, Clyde E., 3,924,377.

Lentine, Frank Nickolis; and Keller, William Francis, to Sybron Corporation. Root canal implement. 3,924,334, Cl. 32-57.000.

Leonard, George E., to Kartridg Pak Co., The. Apparatus for unscrambling and orienting overcaps. 3,924,732, Cl. 198-287.000.

Leonard, Joseph T., to United States of America, Navy. Thermally sensitive ink. 3,925,088, Cl. 106-20.000.

Leopold, Wilbur R., Jr.; Hackman, Frank C.; Luckenbill, Lawrence F.; and Ellis, Daniel A., to Mueller Co. Stab-type coupling joint. 3,924,877, Cl. 285-340.000.

Leschek, Walter C.; and McShane, James L., to Westinghouse Electric Corporation. Replaceable element ultrasonic flowmeter transducer. 3,925,692, Cl. 310-8.700.

Lesher, George Y.; and Brundage, Ruth Pauline, to Sterling Drug Inc. 3-Acetyl-1,4-dihydro-4-oxo-1,8-naphthyridines. 3,925,398, Cl. 260-296.00N.

Lester, George R., to Universal Oil Products Company. Production of hydrogen for use in coal liquefaction. 3,925,188, Cl. 208-8.000.

Lever Brothers Company: *See—*
Herstel, Henk; and van den Ouweland, Godefridus Antonius Maria, 3,925,561.
Lamberti, Vincent, 3,925,375.

Levine, Peter Alan, to RCA Corporation. Introduction of bias charge into a charge coupled image sensor. 3,925,657, Cl. 250-211.00J.

Lewandowski, Robert S.: *See—*
Woodbury, Henry H.; and Lewandowski, Robert S., 3,925,108.

Lewis, James M.; and Newyear, Raymond W., to Horizons Incorporated. Photoresist for holography and laser recording with bleachout dyes. 3,925,077, Cl. 96-35.100.

Lewis, Philip W.: *See—*
Bell, Richard L.; Walter, Richard T.; Botterman, David L.; and Lewis, Philip W., 3,924,736.

Lewis, Richard Newton, to SWS Silicones Corporation. Antistructure agent. 3,925,285, Cl. 260-29.1SB.

Leyton, Eric McPhail, deceased: *See—*
Fischbeck, Kenneth Henry; and Leyton, Eric McPhail, deceased, 3,924,974.

Leyton, Sheila, executrix: *See—*
Fischbeck, Kenneth Henry; and Leyton, Eric McPhail, deceased, 3,924,974.

Li, Tao P.; and Hobbs, Charles W., to Monsanto Company. Oxidation/ammoxidation catalyst. 3,925,255, Cl. 252-456.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Sonntag, Alois, 3,925,807.
Wiesenewsky, Karl-Heinz, 3,925,764.

Lieb, M. Johann. Measuring frame for a vehicle for controlling the geometrical characteristics of railway track. 3,924,460, Cl. 73-146.000.

Lievens, Ronald J.; and Kabat, Richard W., to Trane Company, The. Axial flow fan apparatus. 3,924,964, Cl. 415-210.000.

Lifeline Instruments, Inc.: *See—*
Lindsey, Homer M.; and Silva, Wilbert D., 3,924,700.

Liggero, Samuel H.: *See—*
Fielding, Herbert L.; and Liggero, Samuel H., 3,925,082.

Lin, Kingso Chingtsung, to Hooker Chemicals & Plastics Corporation. Methyl phosphine oxides as flame retardants for organic polymers. 3,925,265, Cl. 260-2.5AJ.

Lin, Yeong S., to International Business Machines Corporation. Gapless double-sided propagation structure for bubble domain devices. 3,925,768, Cl. 340-174.0TF.

Lindblad, Frederick Waldemar. Dental floss applicator. 3,924,647, Cl. 132-92.00R.

Lindblom, Karl Thore; and Forslund, Erik Torsten, to Ostbergs Fabriks AB. Stabilizing arrangement in terrain-going vehicles. 3,924,704, Cl. 180-41.000.

Linden, James C.: *See—*
Freytag, Arthur H.; and Linden, James C., 3,925,097.

Lindgren, Sune Gunnar: *See—*
Dahlbom, Johan Richard; Karlen, Bo Lennart; and Lindgren, Sune Gunnar, 3,925,411.

Lindner, Irmgard: *See—*
Obendorf, Werner; Lindner, Irmgard; Schwarzinger, Ernst; and Krieger, Josef, 3,925,412.

Lindquist, Claude S.: *See—*
Kerho, Stephen E.; Lindquist, Claude S.; White, John R.; and Breen, Bernard P., 3,924,442.

Lindqvist, Stig Gustaf Wilhelm: *See—*
Edstrom, Nils Herbert; Lindqvist, Stig Gustaf Wilhelm; and Sparrendahl, Gunnar Erik William, 3,925,620.

Lindsey, Homer M.; and Silva, Wilbert D., to Lifeline Instruments, Inc. Blood withdrawing device. 3,924,700, Cl. 177-118.000.

Lindsey, James C., to Cavalier Corporation. Adaptable article dispensing apparatus with cam actuating member. 3,924,779, Cl. 221-67.000.

Lineberry, Cletus E.: *See—*
Milholen, William F.; and Lineberry, Cletus E., 3,924,756.

Link, Gustav A.; and Boyden, Robert E., to Link, Gustav A. Automatic multiple station timing system. 3,925,683, Cl. 307-141.000.

Link, Joseph Edward: *See—*
Wagner, Joseph Francis; Broderick, Ross Thomas; Link, Joseph Edward; and Stover, David Emmert, 3,924,904.

Linke, Heinz: *See—*
Engel, Claus Richard; Linke, Heinz; Rothbuhr, Lothar; Sroka, Werner; Vogt, Jes; and Westlinning, Hermann, 3,925,301.

Linquist, Wayne; Pearson, Vernon W.; Hagemeyer, Kenneth; and Smeltzer, William E., to Greenlee Brothers and Co. Hydraulic cable bender. 3,924,438, Cl. 72-388.000.

Lint, Joseph J., to Electronor Corporation. Prevention of crevice corrosion. 3,925,185, Cl. 204-252.000.

Lion Fat & Oil Co., Ltd.: *See—*
Takenouchi, Kuniyoshi; Ohno, Norihiro; and Kondo, Fusao, 3,925,226.
Toyoda, Sadao; Ogoshi, Toshiaki; Maruyama, Minoru; and Miyawaki, Yozo, 3,925,441.

Litton Business Systems, Inc.: *See—*
Morelli, Joseph L., 3,924,727.

Livingston, Howard J.; and Esquenet, Bernard Etienne, to Chemclean Corporation. Hot forming lubricant composition, system and method. 3,925,214, Cl. 252-21.000.

Lizdas, Thomas E.; and Peterson, Bulow A., to United States Gypsum Company. Combination screw aligning and frame reinforcing brace. 3,924,373, Cl. 52-213.000.

LKB-Produkter AB: *See—*
Kindel, Erik Lennart, 3,924,500.

Loan, Leonard Donald: *See—*
Austin, James Raymond; Brown, Martin John; and Loan, Leonard Donald, 3,925,671.

Lob, Heinrich: *See—*
Bruning, Klaus; and Lob, Heinrich, 3,924,836.

Lockwood, Robert J.: *See—*
Carleton, Peter S.; Lockwood, Robert J.; and Reymore, Harold E., Jr., 3,925,284.

Loda, Gary K.: *See—*
Farrell, Sherman R.; and Loda, Gary K., 3,925,670.

Lofquist, Alden A., Jr. Metering pump. 3,924,973, Cl. 417-320.000.

Logothetis, Anestis Leonidas, to Du Pont de Nemours, E. I., and Company. Alternating copolymers of ethylene/alkyl acrylates/cure-site monomers and a process for their preparation. 3,925,326, Cl. 260-78.50R.

Lohrmann, Dieter R., to United States of America, Army. Diode quad modulator with very high dynamic range. 3,925,736, Cl. 332-43.00B.

Lohse, Friedrich: *See—*
Stockinger, Friedrich; and Lohse, Friedrich, 3,925,407.

Lois, Lambros. Apparatus for extracting energy from winds at significant height above the surface. 3,924,827, Cl. 244-153.00R.

Lonati, Francesco. Method and machine for manufacturing stockings. 3,924,423, Cl. 66-43.000.

Long Mile Rubber Company: *See—*
Blankenship, James O., 3,925,129.

L'Oreal: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Zorayan, Vahan, 3,925,474.

Lorenz, Achim R., to MacMillan Bloedel Containers, Inc. Corrugated lamp bulb wrapper. 3,924,799, Cl. 229-39.00B.

Louie, Ming H., to Honeywell Information Systems Inc. Parity predicting and checking logic for carry look-ahead binary adder. 3,925,647, Cl. 235-153.0BB.

Lousberg, Pierre Jean Simon: *See—*
Dechambre, Jean Theophile Fortunat; Lousberg, Pierre Jean Simon; and Pirard, Joseph Jean Julien, 3,924,499.

Love, Robert B.: *See—*
Kent, John Allen; Love, Robert B.; and Meyer, Harold Louis, 3,924,909.

Loveless, Frederick C., to Uniroyal, Inc. Metallation of polymers and subsequent reaction to form modified or grafted polymers. 3,925,511, Cl. 260-877.000.

Lowe, William F.; and Bondy, Harry L., to E-Z Machine Corporation. Apparatus for applying reinforcement zones to sheet material. 3,925,144, Cl. 156-518.000.

Loyd, Robert William, Jr.; and Wallace, Raymond P., to Curtiss-Wright Corporation. Coupling means for a sectional drive shaft of a rotary mechanism. 3,924,978, Cl. 418-60.000.

Lozano, Jose Antonio Fernandez. Treatment of seawater brines with an alcohol to recover a fertilizer quality double salt. 3,925,028, Cl. 23-298.000.

Lucas Aerospace Limited: *See—*
Dabrowka, Stanislav Pawel, 3,924,708.

Lucas, David F. Auxiliary emergency warning light system. 3,925,759, Cl. 340-81.00R.

Lucas Electrical Company Limited: *See—*
Holt, William David, 3,925,758.

Luckenbill, Lawrence F.: *See—*
Leopold, Wilbur R., Jr.; Hackman, Frank C.; Luckenbill, Lawrence F.; and Ellis, Daniel A., 3,924,877.

Ludin, Ludwig, to Camille Bauer Messinstrumente AG. Printer. 3,924,528, Cl. 101-93.150.

Luebkeman, Geroge C. Throwing arm latch for spring target traps. 3,924,600, Cl. 124-36.000.

Lummus Company, The: *See—*
Gelbein, Abraham P., 3,925,447.

Lundberg, Robert D.; and Makowski, Henry S., to Exxon Research & Engineering Company. Fabrication multiphase plastics from liquid suspension. 3,925,280, Cl. 260-23.00R.

Lundberg, Robert Dean: *See—*
Koleske, Joseph Victor; Whitworth, Clyde Jesse, Jr.; and Lundberg, Robert Dean, 3,925,504.

Lynex, Graham; and Tranter, Harold, to British Industrial Plastics Limited. Shut-off valves for the nozzles of injection moulding machines. 3,924,811, Cl. 239-533.000.

Lyons, Theodore F.: *See—*
Kuhn, Robert F.; Lyons, Theodore F.; and Raider, Jerry W., 3,924,725.

Lyons, William E.: *See—*
Matrone, John L.; and Lyons, William E., 3,925,043.

M. C. Guarino Associates, Inc.: *See—*
Guarino, Michael C.; and Cacossa, Frank, 3,924,369.

Macartney, Earle M.: *See—*
Werner, Arthur W., 3,924,547.

Macartney, Marjorie: *See—*
Werner, Arthur W., 3,924,547.

Maccherone, Lawrence: *See—*
D'Angelo, Joseph; Maccherone, Lawrence; and Maros, Frank George, 3,924,497.

MacDonald, Alan A., to Stauffer Chemical Company. Certain alkyloxalyl amino substituted s-triazines herbicides. 3,925,055, Cl. 71-93.000.

MacDonnell, Robert W.; and Shander, Otto A., to R. W. Mac Company. Side frame key assembly. 3,924,541, Cl. 105-221.00K.

Mac Donnell, Robert W.; and Shander, Otto A., to R. W. Mac Company. Railway bolster re-enforcement system. 3,924,542, Cl. 105-226.000.

Mackowiak, Leonard S.: *See—*
Petersen, Arthur, Sr.; Mackowiak, Leonard S.; and Schoenholz, Daniel, 3,925,112.

MacMillan Bloedel Containers, Inc.: *See—*
Lorenz, Achim R., 3,924,799.

Madelaine, Serge: *See—*
Belliot, Christian; Cheylan, Etienne; Madelaine, Serge; and Ebbing, Johannes, 3,925,535.

Madonia, Anthony F. Article pick-up and transfer apparatus. 3,924,759, Cl. 214-8.50D.

Maeda, Mitsuo: *See—*
Yoshino, Masataka; Kuwazawa, Hiroyasu; Shimojima, Haruhiko; Tanaka, Osamu; Kusakawa, Hideaki; Matsuoka, Hiromasa; and Maeda, Mitsuo, 3,925,021.

Magder, Jules; and Reich, Murray H., to Princeton Chemical Research, Inc. Embossed packaging material. 3,925,302, Cl. 260-42.460.

Mageba, Firma: *See—*
Lendi, Ulrich, 3,924,760.

Magnani, Eugenio, to Fidenza Vetraria S.p.A. Airtight container cap. 3,924,772, Cl. 215-276.000.

Mahan, Robert E.: *See—*
Richardson, Richard L.; Hildebrand, Bernard P.; and Mahan, Robert E., 3,925,646.

Maier, Ludwig, to Monsanto Company. Halovinylene- 1,2-bis(phosphonic acids and esters)and process for their preparation. 3,925,455, Cl. 260-502.40P.

Maki, Kentaro: *See—*
Ogawa, Hiroshi; Nitta, Kazuo; Nakazawa, Nobuhiko; and Maki, Kentaro, 3,925,020.

Makino, Syoso; Hosokawa, Kenjiro; and Sano, Junzi, to Kanebo, Ltd. Method for simultaneously scouring and bleaching materials consisting of textile fibers. 3,925,008, Cl. 8-111.000.

Makowski, Henry S.: *See—*
Lundberg, Robert D.; and Makowski, Henry S., 3,925,280.

Malagari, Frank A.: *See—*
Salsgiver, James A.; and Malagari, Frank A., 3,925,115.

Mallinckrodt, Inc.: *See—*
Ogawa, Hiroshi; Nitta, Kazuo; Nakazawa, Nobuhiko; and Maki, Kentaro, 3,925,020.

Mallon, Joseph R.: *See—*
Kurtz, Anthony D.; Brosh, Amnon; Gravel, Charles L.; and Mallon, Joseph R., 3,924,322.

Maly, George P.; and Tannahill, Clifton A., to Union Oil Company of California. Pile for use in offshore areas having a shifting layer of mud. 3,924,414, Cl. 61-53.000.

Mancusi, Joseph J., Jr., to Altair, Inc. Magnetic clamp. 3,924,631, Cl. 128-346.000.

Mang, Josef: *See—*
Dehne, Wilfried E.; and Mang, Josef, 3,924,421.

Mangold, Dietrich: *See—*
Fischer, Adolf; Hamprecht, Gerhard; Mangold, Dietrich; and Rohr, Wolfgang, 3,925,439.

Mann, Gilbert E. Tension reliever. 3,924,638, Cl. 128-359.000.

Manning, Robert Everett: *See—*
Buzzolini, Mario Gustav; and Manning, Robert Everett, 3,925,483.

Manor, Gedalyahu, to Technion Research and Development Foundation, Ltd.; and Kipnis, Aharon. Hydraulically controlled grader-leveler adapted for trailing by tractors. 3,924,689, Cl. 172-780.000.

Mantione, Anthony F., to Bethlehem Steel Corporation. Coke quench car. 3,924,543, Cl. 105-257.000.

Mar, Bob: *See—*
Lemons, John B., 3,924,768.

Marchetti, Enzo, to Instituto Farmacologico Serono S.p.A. Carboxylic acid amide and hydrazide derivatives of 4,5-diphenyloxazole and process for preparing them. 3,925,404, Cl. 260-307.00R.

Marechal, Robert Gaston Andre; and Fortunato, Gerard, to Etablissement Public: Agence Nationale de Valorisation de la Recherche (ANVAR). Arrangement and method for studying radiation by interferential spectrometry. 3,924,952, Cl. 356-106.00S.

Marino, Patrick John: *See—*
Cardwell, Robert Edward; Davis, Robert Leon; Marino, Patrick John; and McNamara, Edward Joseph, 3,925,600.

Marion Health and Safety, Inc.: *See—*
Avery, Carl Frederick, 3,924,623.

Markovitch, Branko, to Simmons, Samuel P. Safety latch. 3,924,885, Cl. 292-262.000.

Markovitch, Branko, to Simmons, Samuel P. Sliding link safety latch. 3,924,886, Cl. 292-263.000.

Markovitch, Branko, to Simmons, Samuel P. Pivoting link safety latch. 3,924,887, Cl. 292-283.000.

Marlboro Manufacturing Inc.: *See—*
Cain, James F., 3,924,293.

Marley Company, The: *See—*
Cates, Robert E., 3,925,523.

Maros, Frank George: *See—*
D'Angelo, Joseph; Maccherone, Lawrence; and Maros, Frank George, 3,924,497.

Marsh, Paul G., to Black Clawson Company, The. Selective reclamation of waste paper products. 3,925,150, Cl. 162-4.000.

Marsh, Richard O., Jr. Fittings and the like for pipe piling. 3,924,413, Cl. 61-53.000.

Marsh Stencil Machine Company: *See—*
Hill, Forrest G., 3,924,498.

Marshall, John: *See—*
Robertson, Malcolm Eric Alexander; Marshall, John; Brabants, Jules Anthony Peter; and Davies, Michael Edward, 3,925,665.

Marshall, Robert Moore; and Dardoufas, Kimon Constantine, to Allied Chemical Corporation. Production of polyester yarn. 3,925,588, Cl. 428-395.000.

Marsili, Leonardo; and Pasqualucci, Carmine, to Archivar Industrie Chimiche del Trentino S.p.A. 1,3-Oxazino(5,6-c)rifamycins and method for preparing the same. 3,925,366, Cl. 260-239.30P.

Marsland Engineering Limited: *See—*
Showalter, Lane Crawford; Brokenshire, John Leslie; and Watts, Geoffrey Brian, 3,925,022.

Martin, Gerhard: *See—*
Berthmann, Adolf; Martin, Gerhard; and Klunsch, Maximilian, 3,925,122.

Martin, Keith Fraser, to F. B. Mercer Limited. Commodity packaging. 3,924,522, Cl. 93-84.0TW.

Martin, Paul Warren, to Dresser Industries, Inc. Stop collar for tube expander. 3,924,433, Cl. 72-122.000.

Martyn, Viktor Mikhailovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bochorishvili, Anzor Ippolitovich; Stupak, Leonid Mikhailovich; Sysenko, Anatoly Petrovich; and Popov, Valery Georgievich, 3,924,672.

Maruyama, Isamu; Nakao, Masaru; Sasajima, Kikuo; Ono, Keiichi; Takayama, Masaharu; Katayama, Shigenari; Tanaka, Yoshihiro; Yanagihara, Izumi; Inaba, Shigeho; and Yamamoto, Hisao, to Sumitomo Chemical Company, Ltd. 1-[γ-o-Amino-p-halophenyloxy, thio or sulfinyl)-propyl]-4-(alkoxy or halo phenyl)piperazines. 3,925,387, Cl. 260-268.0PH.

Maruyama, Isamu: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,925,364.

Maruyama, Minoru: *See—*
Toyoda, Sadao; Ogoshi, Toshiaki; Maruyama, Minoru; and Miyawaki, Yozo, 3,925,441.

Marvin Glass & Associates: *See—*
Terzian, Rouben T., 3,924,351.

Maschinenfabrik Augsburg-Nurnberg A.G.: *See—*
Klingler, Friedrich, 3,924,531.

Maschinenfabrik Hennecke GmbH: *See—*
Althausen, Ferdinand; Boden, Heinrich; Ersfeld, Heinz; Klier, Lothar; Raffel, Reiner; and Schneider, Walter, 3,924,989.

Maschke, Erich: *See—*
Jargon, Franz; Maschke, Erich; and Eylens, Rudolf, 3,925,171.

Mason, Samuel J.; Troxel, Donald E.; and Schreiber, William F., to ECRM, Inc. Method of and apparatus for optical character recognition, reading and reproduction. 3,925,760, Cl. 340-146.3ED.

Massey-Ferguson-Perkins Limited: *See—*
Ward, Frederick H., deceased, 3,924,783.

Massey-Ferguson Services N.V.: *See—*
Quick, Donald Jonathon, 3,925,199.

Masters, Burton J.: *See—*
Ku, San-Mei; and Masters, Burton J., 3,925,106.

Masui, Hiroaki: *See—*
Takechi, Hiroshi; Kawano, Tsuyoshi; Hashizume, Toshio; Koyama, Kazuo; and Masui, Hiroaki, 3,925,111.

Mathis, Ronald J.: *See—*
Colburn, John W., Jr.; Wood, Charles D., III; Mathis, Ronald J.; and Nye, Allan R., 3,924,897.

Matlock, Thomas D.; and Smith, Kenneth R., to Westinghouse Electric Corporation. Tube pushing apparatus. 3,924,316, Cl. 29-202.00R.

Matrone, John L.; and Lyons, William E., to Environment/One Corporation. Low cost, efficient, general purpose air cleaner cartridge. 3,925,043, Cl. 55-276.000.

Matsuda, Ryoichi: *See—*
Kato, Kunihiro; Matsuda, Ryoichi; and Okayasu, Ryoichi, 3,925,618.

Matsugu, Tomoyuki: *See—*
Matsuo, Kazuto; Araki, Michiya; Matsugu, Tomoyuki; and Mikami, Takahito, 3,925,290.

Matsui, Hiroshi: *See—*
Enei, Hitoshi; Matsui, Hiroshi; and Hirose, Yoshio, 3,925,154.

Matsui, Kazumi; Umemori, Takashi; Matsuura, Kenji; Hosoda, Yoshikado; Nishikawa, Tadashige; and Tawara, Makoto, to Japanese National Railways; Sumitomo Electric Industries, Ltd.; and Furukawa Electric Co., Ltd. Electromagnetic rails for driving trains by thyristor-controlled linear motors. 3,924,537, Cl. 104-148.0LM.

Matsumura, Isao; and Kohayakawa, Yoshimi, to Canon Kabushiki Kaisha. Eye fundus camera with focus setting device. 3,925,793, Cl. 354-62.000.

Matsumura, Yasuo; and Takeuchi, Shoichi, to Japan Exlan Company Limited. Aqueous acrylonitrile polymer solution containing thiocyanate and amide compound. 3,925,291, Cl. 260-29.6AN.

Matsuo, Kazuto; Araki, Michiya; Matsugu, Tomoyuki; and Mikami, Takahito, to Kohjin Co., Ltd. Emulsions useful in the preparation of heat resistant fibers and films. 3,925,290, Cl. 260-29.6WB.

Matsuoka, Hiromasa: *See—*
Yoshino, Masataka; Kuwazawa, Hiroyasu; Shimojima, Haruhiko; Tanaka, Osamu; Kusakawa, Hideaki; Matsuoka, Hiromasa; and Maeda, Mitsuo, 3,925,021.

Matsushita Electric Industrial Co., Ltd.: *See—*
Minami, Shunji; Oka, Shunzo; and Takemura, Takehide, 3,925,720.
Nagasawa, Mashahiro; Watanabe, Hiroyuki; and Wakabayashi, Takashi, 3,925,244.

Matsuura, Kenji: *See—*
Matsui, Kazumi; Umemori, Takashi; Matsuura, Kenji; Hosoda, Yoshikado; Nishikawa, Tadashige; and Tawara, Makoto, 3,924,537.

Matteo, John F.: *See—*
Duranleau, Roger G.; and Matteo, John F., 3,925,431.

Mattis, Donald J., to Sun Chemical Corporation. Composite map light and cigar lighter plug. 3,925,655, Cl. 240-2.0CL.

Maurel, Felix: *See—*
Brunie, Jean-Claude; Creene, Noel; and Maurel, Felix, 3,925,316.

Maurice, Louis, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Molecular pumps of the drum type. 3,924,962, Cl. 415-90.000.

Maus, Otfrid, to Carl Schenck AG, Firma. Balancing apparatus, especially wheel balancing apparatus. 3,924,473, Cl. 73-471.000.

Maxey, Edwin Morgan: *See—*
Fabris, Hubert Jakob; and Maxey, Edwin Morgan, 3,925,266.

Maxwell, Paul E., to Multiple Originals, Inc. Stencil casting process and resulting architectural art product. 3,925,586, Cl. 428-195.000.

May, Eric R., to Stone Manganese Marine Limited. Oil-supply means for runner hubs with controllable pitch blades. 3,924,411, Cl. 60-416.000.

Maya, Gregory: *See—*
Crooks, Russell W.; and Maya, Gregory, 3,924,995.

Mayer, Ivan: *See—*
Parker, Paul T.; and Mayer, Ivan, 3,925,318.

Mayo, Frederick W., to N.R.G. Equipment Corporation. Combustible gas system and method. 3,925,033, Cl. 48-144.000.

Mazur, Abraham, to Community Blood Council of Greater New York, Inc., The. Plasma protein substitute. 3,925,344, Cl. 260-112.500.

McAleer, Howard J., to Formax Manufacturing Corporation. Sanding pad assembly. 3,924,362, Cl. 51-358.000.

McAllister, Ian R.: *See—*
Bennett, John A.; and McAllister, Ian R., 3,924,412.

McCaffrey, Michael Thomas: *See—*
Goldmacher, Joel Edward; and McCaffrey, Michael Thomas, 3,925,236.

McCarthy, William J., to B. F. Goodrich Company, The. Castable compositions containing unsaturated liquid vinylidene-terminated polymers. 3,925,330, Cl. 260-78.50B.

McCaully, Ronald J.: *See—*
Wei, Peter H. L.; and McCaully, Ronald J., 3,925,370.

McClain, James E., to Esco Manufacturing Company. Disconnectable electrical connector. 3,924,919, Cl. 339-60.00C.

McCormick, Mathew, to Bowthorpe Hellermann Limited. Cable ties. 3,924,299, Cl. 24-16.0PB.

McCullough, John E., to Arthur D. Little, Inc. Positive fluid displacement apparatus. 3,924,977, Cl. 418-55.000.

McDonnell Douglas Corporation: *See—*
Connors, William P., 3,925,658.

McDowell, Donald J.: *See—*
Czernik, Daniel E.; and McDowell, Donald J., 3,924,907.

McElroy, Jerry T.; and Soloway, Sidney, to Automation Industries, Inc. Multi-frequency ultrasonic testing system. 3,924,454, Cl. 73-67.80R.

McGinniss, Vincent D., to SCM Corporation. Cathodic electrocoating process. 3,925,181, Cl. 204-181.000.

McGraw-Hill, Inc.: *See—*
Smith, Elliott P.; Wachsmuth, Robert H.; and Skolnick, Leonard, 3,924,941.

McKenzie, Ian, to Clark Equipment Company. Compact tree clamp and automatic sequence control for a tree length harvester. 3,924,667, Cl. 144-3.00D.

McKim, Elvin. Corrective device for clubfoot. 3,924,615, Cl. 128-80.00J.

McKnight, Robert J.: *See—*
Gotham, Robert W.; and McKnight, Robert J., 3,924,908.

McLaughlin, Charles R.; and West, Jerry B., to Western Company of North America, The. Asynthronous pulse telemetry system and method. 3,925,749, Cl. 340-18.00P.

McMenim, Michael Edward, to Imperial Chemical Industries Limited. Carboxamides. 3,925,440, Cl. 260-457.000.

McNamara, Edward Joseph: *See—*
Cardwell, Robert Edward; Davis, Robert Leon; Marino, Patrick John; and McNamara, Edward Joseph, 3,925,600.
Cardwell, Robert Edward; Carlson, David Emory; Davis, Robert Leon; McNamara, Edward Joseph; Pilc, Randolph John; Schlanger, Gabriel Gary; Tutelman, David Morris; Warwick, Peter Stephen; and Zydney, Herbert Mortimer, 3,925,601.

McNeil Laboratories, Incorporated: *See—*
Rasmussen, Chris Royce, 3,925,371.

McNutt, Reginald: *See—*
Beacham, Ronald; Covington, Dennis; and McNutt, Reginald, 3,925,770.

Mc Shane, Herbert Felix, Jr., to Du Pont de Nemours, E. I., and Company. Process for preparing ethylene/propylene/1,4-hexadiene elastomeric terpolymers using catalyst prepared in a wiped-wall catalyst premixer. 3,925,334, Cl. 260-80.780.

McShane, James L.: *See—*
Leschek, Walter C.; and McShane, James L., 3,925,692.

McWhorter, Daniel M.: *See—*
Taylor, Glenn M.; Patel, Harish A.; and McWhorter, Daniel M., 3,924,634.

Mead Corporation, The: *See—*
Wood, Prentice J., 3,924,740.

Mead Johnson & Company: *See—*
Brooke, Dana, 3,924,622.

Meadows, Roger D., to Dayco Corporation. Endless power transmission belt and method of making same. 3,924,482, Cl. 74-234.000.

Medlar, Lewis A., to Honeywell Inc. Magnetic flowmeter with improved field coil. 3,924,466, Cl. 73-194.0EM.

Medovar, Boris Izrailevich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bochorishvili, Anzor Ippolitovich; Stupak, Leonid Mikhailovich; Sysenko, Anatoly Petrovich; and Popov, Valery Georgievich, 3,924,672.

Medtronic, Inc.: *See—*
King, Wendell L., 3,924,640.

Meeks, James O. Apparatus for restoring cans to upright positions. 3,924,731, Cl. 198-268.000.

Mehn, Robert P.: *See—*
Classe, Anthony V.; and Mehn, Robert P., 3,924,572.

Mehnert, Gottfried. Articulated mold opening and closing means for use in blow molding apparatus. 3,924,987, Cl. 425-451.500.

Meininger, Fritz; Hoyer, Ernst; and Fuchs, Hermann, to Hoechst Aktiengesellschaft. Water-soluble reactive monoazodyestuffs. 3,925,351, Cl. 260-196.000.

Meister, Rene; and Tyrode, Alain, to Ebauches S.A.; and Faubourg de l'Hospital. Mounting device for a quartz resonator. 3,925,693, Cl. 310-9.100.

Melcher, Robert Albert, to Schloemann-Siemag Aktiengesellshaft. Injection molding apparatus. 3,924,991, Cl. 425-190.000.

Memphis Metal Manufacturing Company, Inc.: *See—*
Yarnold, Daniel J., 3,924,432.

Menasco Manufacturing Company: *See—*
Kendall, Giles A.; Bhutani, Harish K.; and Minick, Robert, 3,924,511.

Menissez, Jean Pierre: *See—*
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Menzer, Anton: *See—*
Eberhard, Heinz; and Menzer, Anton, 3,924,518.

Merck & Co., Inc.: *See—*
Cama, Lovji D., 3,925,363.
Wendler, Norman L.; and Taub, David, 3,925,419.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Dahm, Johann; Borck, Joachim; Nowak, Herbert; Zimane, Zdenek; and Kayser, Detlev, 3,925,394.

Merrill, Duane F., to General Electric Company. Organopolysiloxane release resins useful in cooking and baking processes. 3,925,276, Cl. 260-18.00S.

Merser, Francis Gerard, to Dennison Manufacturing Company. Attachment and mounting construction. 3,924,298, Cl. 24-16.0PB.

Merstallinger, Kurt; and Schindl, Klaus P., to C. Reichert Optische Werke, AG. Polarizing attachment for microscopes having inclined binocular eyepiece. 3,924,926, Cl. 350-34.000.

Meserbring, Miles H. Skid for transporting sheet material. 3,924,871, Cl. 280-12.00R.

Meshri, Dayal T.; and Westfall, Darrell L., to Ozark-Mahoning Company. Processes of synthesizing anhydrous lithium hexafluoroarsenate. 3,925,539, Cl. 423-464.000.

Measer Griesheim G.m.b.H.: *See—*
Schmidt, Jurgen; and Hesse, Jurgen, 3,924,357.

Messerschmitt-Bolkow-Blohm G.m.b.H.: *See—*
Peschke, Reiner, 3,924,825.

Metalogic, Inc.: *See—*
Johnson, Robert C., 3,924,343.

Metlesics, Werner; and Sternbach, Leo Henryk, to Hoffmann-La Roche Inc. Novel 2[2-(1,3-diazacycloalk-2-enyl)]benzophenone derivatives and novel 1,3-diazacycloalkenyl[2,1-1]isoindole derivatives. 3,925,359, Cl. 260-239.0BC.

Meyer, Edward P.; and Wright, William L., to Picker Electronics, Inc. Sector scanning ultrasonic inspection apparatus. 3,924,452, Cl. 73-67.80S.

Meyer, Frank A. Bale accumulator. 3,924,757, Cl. 214-6.00B.

Meyer, Harold Louis: *See—*
Kent, John Allen; Love, Robert B.; and Meyer, Harold Louis, 3,924,909.

Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. 4-Aryl-6-amino-3,4-dihydropyrid-2-one-3,5-dicarboxylic acid ester. 3,925,395, Cl. 260-294.80G.

Meyer, Rudolf; and Ranz, Erwin, to Agfa-Gevaert Aktiengesellschaft. Method of and apparatus for producing enlarged reproductions of vesicular image negatives. 3,924,946, Cl. 355-18.000.

Meyer, Willy: *See—*
Pissiotas, Georg; Meyer, Willy; Bohner, Beat; and Drabek, Jozef, 3,925,517.

Meyerhans, Konrad: *See—*
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Mikami, Kenji: *See—*
Ukaji, Rokuo; Kamihigoshi, Tutomu; Mikami, Kenji; and Takaki, Shoji, 3,925,263.
Ukaji, Rokuo; Kamihigoshi, Tutomu; Mikami, Kenji; and Takaki, Shoji, 3,925,492.

Mikami, Takahito: *See—*
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Mikazhans, Valdis Danielovich: *See—*
Pormale, Milda Yanovna; Kashkina, Nadezhda Alexandrovna; Veinberg, Elfrida Indrikovna; Kalninsh, Arvid Yanovich; Shusters, Janis; Mikazhans, Valdis Danielovich; Purvinsh, Indulis Valdovich; and Skutelis, Antons Petrovich, 3,925,356.

Mikoflavy, Bela K.: *See—*
Knechtges, Donald P.; and Mikoflavy, Bela K., 3,925,293.

Miles Laboratories, Inc.: *See—*
Chang, Lung Ting; and Terry, Carol Ann, 3,925,156.

Milholen, William F.; and Lineberry, Cletus E., to Forrest Paschal Machinery Co. Apparatus for stacking bricks in preparation for strapping. 3,924,756, Cl. 214-6.00A.

Millauer, Christian, to Werner & Pfleiderer. Continuously operating screw conveyor. 3,924,839, Cl. 259-191.000.

Millben, Lawrence A., to Burroughs Corporation. System for simulating switch contact bounce. 3,925,723, Cl. 324-28.0CH.

Miller, Douglas E., to Minnesota Mining and Manufacturing Company. Cleaning brush. 3,924,286, Cl. 15-114.000.

Miller, Frank S.: *See—*
Tu, Peter K. C.; Brooke, Alan H.; and Miller, Frank S., 3,925,044.

Miller, Homer W., to Honeywell Information Systems Inc. Current mode arithmetic logic array. 3,925,651, Cl. 235-175.000.

Miller, Homer W., to Honeywell Information Systems Inc. Current mode carry look-ahead array. 3,925,652, Cl. 235-175.000.

Miller, James G.: *See—*
Heyman, Joseph S.; and Miller, James G., 3,924,444.

Miller, James S.: *See—*
Hilger, Edwin T.; and Miller, James S., 3,924,300.

Miller, Lowell E.; and Nielsen, Gail R., to Com Tel, Inc. A.C. power supply circuit in combination with an A.C. source and a D.C. source. 3,925,772, Cl. 340-253.00C.

Millet Roux & Cie., Ltee.: *See—*
Volper, Jean, 3,924,374.

Mills, Ivor W., to Sun Oil Company of Pennsylvania. Process of comprising solvent extraction of a blended oil. 3,925,220, Cl. 252-63.000.

Mills, Ned D. Variable ratio drive unit and method. 3,924,490, Cl. 74-752.00E.

Minakawa, Yoshinari; and Sashida, Akinobu, to Eiki Industrial Co., Ltd. Guiding device for an automatic film loader. 3,924,821, Cl. 242-195.000.

Minami, Shunji; Oka, Shunzo; and Takemura, Takehide, to Matsushita Electric Industrial Co., Ltd. Device for varying output voltage within a limited range. 3,925,720, Cl. 323-22.0SC.

Minderhout, James R.: *See—*
Baimbridge, Charles L.; Minderhout, James R.; Bearman, Robert W.; and Carpenter, Donald E., 3,925,169.

Minick, Robert: *See—*
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Minieri, Pasquale P., to Tenneco Chemicals, Inc. Surface-coating compositions containing N-(indazolyl-N¹-methyl)dialkanolamines. 3,925,304, Cl. 260-45.80N.

Minnesota Mining and Manufacturing Company: *See—*
Baldassarri, Agostino; and Cellone, Luigi, 3,925,086.
Fisch, Richard S.; and Newman, Norman, 3,925,175.
Holmen, Reynold E.; and Nellessen, Alfred H., 3,924,929.
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Olsen, Keith H.; and Christmann, Marvin H., 3,925,146.
Primicerio, Fernando; and Benigno, Paolo, 3,924,742.
Strong, Doyle L., 3,925,219.

Mintz, Charlotte: *See—*
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Misiura, Thaddeus Dominick; Vostovich, Joseph Edward; and Wahl, Ralph Edward, to General Electric Company. Electrical conductors with strippable insulation and method of making the same. 3,925,597, Cl. 174-102.0SC.

Misonoo, Kazunaga, to Kozo Yoshizaki. Method and apparatus for forming cup-shaped metal articles. 3,924,436, Cl. 72-345.000.

Mitchell, James T.; and Billings, William W., to Westinghouse Electric Corporation. Overcurrent protection circuit for AC systems. 3,925,709, Cl. 317-33.0VR.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Watanabe, Jinzo; Terao, Noboru; Kamahara, Koichi; Miyashita, Kazuhisa; and Fujihira, Kenji, 3,925,802.
Yamamoto, Takeshi, 3,925,179.
Yoshino, Masataka; Kuwazawa, Hiroyasu; Shimojima, Haruhiko; Tanaka, Osamu; Kusakawa, Hideaki; Matsuoka, Hiromasa; and Maeda, Mitsuo, 3,925,021.

Mitsubishi Kinzoku Kabushiki Kaisha: *See—*
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Mitsubishi Rayon Co., Ltd.: *See—*
Ide, Fumio; Kishida, Kazuo; and Hasegawa, Akira, 3,925,510.

Mitsugi, Takashi: *See—*
Kondo, Eiji; Mitsugi, Takashi; and Muneyuki, Ryonosuke, 3,925,155.

Mitsuhashi, Shigeru; Hirokawa, Kyoichi; Saito, Noboru; Kaneko, Minoru; Shoji, Michihiro; Kowada, Masunari; and Kazama, Yasuo, to Nitto Kohki Co., Ltd. Hydraulically operated working machine. 3,924,330, Cl. 30-362.000.

Mitsui, Kazuhiko, to Olympus Optical Co., Ltd. Endoscope. 3,924,608, Cl. 128-2.00B.

Mitsui Mining & Smelting Co., Ltd.: *See—*
Izumi, Sumio; and Tanaka, Hiroshi, 3,925,200.

Mitsushima, Hirotsugu; and Katata, Motohiro, to Sumitomo Chemical Company, Limited. Method for producing vinyl acetate-ethylene-dicarboxylic acid diallyl ester copolymer. 3,925,327, Cl. 260-78.5UA.

Miura, Minoru; Kawasaki, Morio; Sasaki, Kantaro; Sugitani, Yasuo; and Ishimura, Susumu, to Sumitomo Metal Industries, Ltd. Apparatus for supporting and guiding slab in the secondary cooling zone of continuous casting machine. 3,924,812, Cl. 239-550.000.

Miyake, Makoto: *See—*
Akamatsu, Takashi; Koga, Koichi; Kondo, Mitsuru; Miyake, Makoto; and Iwasaki, Hiroshi, 3,925,416.

Miyaki, Kiyoshi; and Kogure, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Intake arrangement of an internal combustion engine. 3,924,590, Cl. 123-122.0AB.

Miyaki, Kiyoshi; and Kogure, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Intake system for three-valve internal combustion engine. 3,924,592, Cl. 123-122.0AB.

Miyaki, Kiyoshi: *See—*
Yagi, Shizuo; Miyaki, Kiyoshi; and Kogure, Hiroshi, 3,924,582.

Miyashita, Kazuhisa: *See—*
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Miyawaki, Yozo: *See—*
Toyoda, Sadao; Ogoshi, Toshiaki; Maruyama, Minoru; and Miyawaki, Yozo, 3,925,441.

Miyoshi, Hiroshi; Mori, Hirohumi; and Tanoue, Yoriko, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Photo-degrading resinous composition. 3,925,269, Cl. 260-2.50B.

Mizuno, Masayuki: *See—*
Shimojima, Yukiji; Takeda, Isao, deceased; Takeda, Emiko, legal representative; Mizuno, Masayuki; Mizuno, Yukiko; and Ohoka, Tadaaki, 3,925,546.

Mizuno, Yukiko: *See—*
Shimojima, Yukiji; Takeda, Isao, deceased; Takeda, Emiko, legal representative; Mizuno, Masayuki; Mizuno, Yukiko; and Ohoka, Tadaaki, 3,925,546.

Mobil Oil Corporation: *See—*
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Heiba, EL-Ahmadi Ibrahim; and Williams, Albert Lloyd, 3,925,232.
Kremer, Ross A.; and Leitman, Richard H., 3,925,519.
Landis, Phillip S.; and Okorodudu, Abraham O. M., 3,925,414.
Rodewald, Paul G.; and Whitehurst, Darrell D., 3,925,194.
Rodewald, Paul G.; and Whitehurst, Darrell D., 3,925,251.
Rodewald, Paul G., 3,925,495.

Model Builders, Inc.: *See—*
Cohen, Morris; Cohen, Evelyn V.; and Rubio, Alfred M., 3,924,501.

Moeller, Wolfgang W. Staple gun. 3,924,790, Cl. 227-148.000.

Moessner, Manfred; and Kreutze, Gerhard, to Badische Anilin- & Soda-Fabrik Aktiengellschaft. Cartridge for recording media. 3,924,822, Cl. 242-198.000.

Mogilevsky, Vitaly Moritsovich; Deriga, Nikolai Filippovich; Ekimov, Vadim Petrovich; Erastov, Alexandr Petrovich; Posokhin, Viktor Vladimirovich; and Furer, Benya Elievich. Oscilloscopic ferrometer. 3,925,725, Cl. 324-34.00R.

Mohsen, Amr Mohamed, to Bell Telephone Labratories, Incorporated. Method of fabricating stepped electrodes. 3,924,319, Cl. 29-578.000.

Molex Incorporated: *See—*
Kufner, Kenneth L., 3,924,325.

Moller, Hermann: *See—*
Andres, Rudolf; Moller, Hermann; and Seyfried, Franz, 3,925,656.

Mollering, Hans: *See—*
Beaucamp, Klaus; Mollering, Hans; Lang, Gunter; Gruber, Wolfgang; and Roeschlau, Peter, 3,925,164.

Mollet, Prudent Eduardus Jacobus, to U.S. Philips Corporation. Arrangement for signal delay, particularly for use in a vertical aperture corrector for television. 3,925,608, Cl. 178-7.100.

Mollet, Prudent Eduardus Jacobus: *See—*
Blom, Hendrik; and Mollet, Prudent Eduardus Jacobus, 3,925,812.

Monarch Marking Systems, Inc.: *See—*
Bussard, Charles B.; Hamisch, Paul H., Sr.; and Wisecup, David R., 3,924,523.

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Clarke, Fredric B., III, 3,925,453.
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Heimsch, Robert Arthur; and Mottus, Edward Hugo, 3,925,325.
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Li, Tao P.; and Hobbs, Charles W., 3,925,255.
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Montezinos, Beverly K.: *See—*
Axon, Gordon L.; and Montezinos, Beverly K., 3,925,013.

Montgomery, Robert T., to Celanese Corporation. Process for preparing supported ribbons. 3,925,134, Cl. 156-178.000.

Moore, Lawrence A., to Beloit Corporation. Blow molding apparatus having side discharge of finished articles. 3,924,998, Cl. 425-387.00B.

Moore, Wayne E., to United States of America, Navy. Maximum pulse density detector. 3,925,733, Cl. 328-140.000.

Moorhouse, Thomas R., to American Polywater Corporation. Lubricating composition for conduits and raceways. 3,925,216, Cl. 252-49.300.

Morabito, Salvatore: *See—*
Avery, Hazelton H.; and Morabito, Salvatore, 3,924,789.

Moreau, James O.; and Halko, Richard A., to Exxon Research and Engineering Co. Oil pollution totalizer. 3,924,449, Cl. 73-61.10R.

Moreau, Michele: *See—*
Karadavidoff, Isaac; and Moreau, Michele, 3,925,552.

Morelli, Joseph L., to Litton Business Systems, Inc. Cartridge with resilient connecting means. 3,924,727, Cl. 197-151.000.

Morgan, Charles R., to W. R. Grace & Co. Solid curable polyene compositions containing liquid polythiols and solid styrene-allyl alcohol copolymer based polyenes. 3,925,320, Cl. 260-77.5CR.

Morgan, Leonora Elizabeth Nash. Humidity altering device. 3,924,807, Cl. 239-55.000.

Morgardshammar AB: *See—*
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Mori, Hirohumi: *See—*
Miyoshi, Hiroshi; Mori, Hirohumi; and Tanoue, Yoriko, 3,925,269.

Mori, Kazuo: *See—*
Ishizumi, Kikuo; Mori, Kazuo; Yamamoto, Michihiro; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 3,925,382.
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,925,364.

Morimoto, Takeshi: *See—*
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Morita, Akiyoshi: *See—*
Yabuta, Tozo; Kaneko, Yasuhisa; and Morita, Akiyoshi, 3,925,252.

Moroni, Rolf; Rinck, Friedrich Karl; and Ehlenz, Peter, to Collo Rheincollodium Koln GmbH Werk Hersel. Filter medium for gases. 3,925,248, Cl. 252-428.000.

Morris, Earl L.; and Sally, Theodore J., to Acorn Engineering Company. Hanger and support structure for toilet bowls and the like. 3,924,279, Cl. 4-252.00R.

Morrison, Anna Mae Elsie. Eye protection device for aminals. 3,924,388, Cl. 54-80.000.

Morrison, David J. Double soap bar. 3,925,225, Cl. 252-90.000.

Morton-Norwich Products, Inc.: *See—*
Fiedelman, Howard W., 3,925,027.

Moscioni, Richard Joseph; and Sellar, Gerald Miller, to Western Electric Company, Inc. Device for clamping elongated member. 3,924,920, Cl. 339-246.000.

Moss, John Hickman; and Leng, Barrie, to British Titan Limited. Production of titanium tetrahalide. 3,925,531, Cl. 423-76.000.

Motegi, Akira: *See—*
Azuma, Kishiro; Tsuji, Isao; Kato, Hiroyuki; Tatemichi, Hidemaro; Motegi, Akira; Suzuki, Osamu; and Kondo, Kishichiro, 3,925,322.

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Motorola, Inc.: *See—*
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Motoyoshi, Kenya: *See—*
Osawa, Makoto; Hagiwara, Yoshitoshi; Kusaka, Kunio; Kawakita, Takao; Motoyoshi, Kenya; and Kuroishi, Nobuhito, 3,925,065.

Mottus, Edward Hugo: *See—*
Heimsch, Robert Arthur; and Mottus, Edward Hugo, 3,925,325.

Mould, Frank, to Contexo Limited. Cutting tool for wallpaper. 3,924,328, Cl. 30-307.000.

MSI Data Corporation: *See—*
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Muacevic, Gojko: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, 3,925,446.

Mueller Co.: *See—*
Ellis, Daniel A., 3,924,882.
Leopold, Wilbur R., Jr.; Hackman, Frank C.; Luckenbill, Lawrence F.; and Ellis, Daniel A., 3,924,877.

Mueller-Tamm, Heinz; Schick, Hannes; Rau, Wolfgang; and Hennenberger, Peter, to BASF Aktiengesellschaft. Process for working up particulate polyolefins obtained by polymerization carried out with the aid of Ziegler/Natta catalysts. 3,925,341, Cl. 260-93.700.

Muench, Rudolph E., to Fasco Industries, Inc. Mechanical latch relay. 3,925,742, Cl. 335-186.000.

Muir, Alexander R.: *See—*
Dewhirst, Donald R.; and Muir, Alexander R., 3,924,930.

Mulder, Jan Pieter Fokke, to De Rotterdamsche Droogdok Maatschappij B.V. Process for welding a cladding onto a base material. 3,925,634, Cl. 219-76.000.

Muller, Friedemann: *See—*
Eicher, Theo; Muller, Friedemann; and Krebs, Klaus-Werner, 3,924,642.

Muller, Hans. Apparatus for culturing of tissue cells and microorganisms. 3,925,165, Cl. 195-127.000.

Muller, Hans Rudolf: *See—*
Bateman, Charles Donald; and Muller, Hans Rudolf, 3,925,751.

Muller, Karl-Heinz; Rohr, Harry; and Ott, Karl-Heinz, to Bayer Aktiengesellschaft. Method for preparing a completely covered foam molding. 3,925,528, Cl. 264-54.000.

Muller, Rudolf: *See—*
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Muller, Wolfgang: *See—*
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Multi-Metal Wire Cloth Inc.: *See—*
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Multiple Originals, Inc.: *See—*
Maxwell, Paul E., 3,925,586.

Muneyuki, Ryonosuke: *See—*
Kondo, Eiji; Mitsugi, Takashi; and Muneyuki, Ryonosuke, 3,925,155.

Munroe, James L.; and DeBaryshe, Paul Gregory, to Jersey Nuclear-Avco Isotopes, Inc. Method and apparatus for sequentially combining pulsed beams of radiation. 3,924,937, Cl. 350-285.000.

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Murakami, Shin-Ichi, to Fuji Xerox Co., Ltd. Paper feed apparatus for gripper-type paper transport device. 3,924,848, Cl. 271-10.000.

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Musashi, Akira; Yamazaki, Masami; and Hiruta, Makoto, to Nippon Soda Company, Ltd. Flameproof polybutadiene resin composition having excellent electrical properties. 3,925,275, Cl. 260-17.4CL.

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Mayo, Frederick W., 3,925,033.

Naarmann, Herbert: *See—*
Heinrich, Bernhard; Naarmann, Herbert; and Thoma, Peter, 3,925,329.

Naber, Charles T., to NCR Corporation. Multilevel conductor structure and method. 3,925,572, Cl. 427-87.000.

Nadella S.A.: *See—*
Pitner, Alfred, 3,924,912.

Nadelson, Jeffrey: *See—*
Houlihan, William J.; and Nadelson, Jeffrey, 3,925,476.

Nagasawa, Mashahiro; Watanabe, Hiroyuki; and Wakabayashi, Takashi, to Matsushita Electric Industrial Co., Ltd. Automatic control device for car lighting. 3,925,244, Cl. 250-372.000.

Nairn Floors Limited: *See—*
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Naito, Hirokuni; Yoshimura, Isao; and Nakano, Hiroo, to Asahi-Dow Limited. Hydrophilic membrane and process for the preparation thereof. 3,925,332, Cl. 260-79.30R.

Najer, Henry; and Pascal, Yves Robert Alain, to Synthelabo. Process for preparing vincamine and its stereoisomers. 3,925,392, Cl. 260-293.530.

Nakagawa, Kunio: *See—*
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Nakai, Yasushi: *See—*
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Nakaizumi, Yasushi: *See—*
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Nakamura, Hidetosi: *See—*
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Nakamura, Mutsuaki: *See—*
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Nakamura, Tsutomu: *See—*
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Nakano, Hiroo: *See—*
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Nakano, Soichi; and Iizuka, Yoshitoku, to Honda Giken Kogyo Kabushiki Kaisha. Gasket. 3,924,863, Cl. 277-235.00B.

Nakano, Yasuaki, to Hitachi, Ltd. Multi-channel sound signal generating and reproducing circuits. 3,925,615, Cl. 179-1.0GQ.

Nakao, Masaru: *See—*
Maruyama, Isamu; Nakao, Masaru; Sasajima, Kikuo; Ono, Keiichi; Takayama, Masaharu; Katayama, Shigenari; Tanaka, Yoshihiro; Yanagihara, Izumi; Inaba, Shigeho; and Yamamoto, Hisao, 3,925,387.

Nakatani, Atsutada, to Copal Company Limited. Shutter control arrangement for cameras. 3,925,799, Cl. 354-235.000.

Nakazawa, Nobuhiko: *See—*
Ogawa, Hiroshi; Nitta, Kazuo; Nakazawa, Nobuhiko; and Maki, Kentaro, 3,925,020.

Nalco Chemical Company: *See—*
Baimbridge, Charles L.; Minderhout, James R.; Bearman, Robert W.; and Carpenter, Donald E., 3,925,169.

Napolitano, Pellegrino E., to Flume Stabilization Systems, Inc. Stabilizing fin system. 3,924,555, Cl. 114-126.000.

Nara, Kiyoshi; Katamoto, Kazuyoshi; Ohta, Kazuhiko; and Fukuda, Hideo, to Takeda Chemical Industries, Ltd. Crystallization of alpha monosodium citrate monohydrate. 3,925,465, Cl. 260-535.00P.

Narahara, Hisaaki: *See—*
Ishigaki, Yoshio; Narahara, Hisaaki; and Tsuchiya, Takao, 3,925,810.

Narrace, John M.: *See—*
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Naruse, Yosuke; Yoshioka, Taisuke; Himuro, Masami; and Ito, Keiichi, to Sony Corporation. Apparatus for recording and/or reproducing information signals having automatic focusing. 3,925,603, Cl. 178-6.60R.

National Research Development Corporation: *See—*
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Freeman, Michael Alexander Reykers; and Swanson, Sydney Alan Vasey, 3,924,277.

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Nazzaro, Charles A.: *See—*
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NCR Corporation: *See—*
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Naber, Charles T., 3,925,572.

Nebeker, Eugene B.; and Rodriguez, Sergio E., to Scientific Associates, Inc. Method and apparatus for producing and utilizing percussive liquid jets. 3,924,805, Cl. 239-1.000.

NeeTree Corporation: *See—*
Price, Roger W., 3,924,669.

Nellessen, Alfred H.: *See—*
Holmen, Reynold E.; and Nellessen, Alfred H., 3,924,929.

Nelson, Alvin M. Thermo-cloud electric mattress. 3,924,284, Cl. 5-347.000.

Nelson, Philip H., Jr., to General Electric Company. Viscosity control for a plastic molding machine. 3,924,840, Cl. 259-191.000.

Nelson, Roger John, to Deere & Company. Hydraulic pump or motor. 3,924,516, Cl. 91-491.000.

Netz, Otto: *See—*
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Neville, Richard Ernest Gartside; and Garrett, John A., to AMF Incorporated. Tobacco moistening method. 3,924,645, Cl. 131-140.00A.

New Japan Chemical Company, Limited: *See—*
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New Twist Connector Corporation: *See—*
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Newman, Douglas A.: *See—*
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Newman, Jerry F.: *See—*
Reamey, Herbert K.; and Newman, Jerry F., 3,925,092.

Newman, Norman: *See—*
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Newyear, Raymond W.: *See—*
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Osborn, Peter George; and Nicks, Peter Francis, 3,925,295.

Nielsen, Gail R.: *See—*
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Niemeyer, Heinrich, to Wesfalia Separator AG. Centrifuge for the separation of mixtures of liquids. 3,924,804, Cl. 233-19.00A.

Nigam, Anant Kumar: *See—*
French, Joseph Charles; Nigam, Anant Kumar; and Sessler, Gerhard Martin, 3,925,610.

Nihon Cement Company Limited: *See—*
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Nilsen, Roy J., to United States of America, Energy Research and Development Administration. Precise carbon control of fabricated stainless steel. 3,925,109, Cl. 148-6.350.

Ning, Robert Ye-Fong; and Schwartz, Morton A., to Hoffmann-La Roche Inc. 1-Lower alkyl-2-substituted-1,4-benzodiazepines. 3,925,358, Cl. 260-239.0BD.

Ninke, William Herbert, to Bell Telephone Laboratories, Incorporated. Animated display systems with dither threshold hysteresis band. 3,925,609, Cl. 178-7.30D.

Ninomiya, Koichiro: *See—*
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Nippon Electric Company Limited: *See—*
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Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See—*
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Nippon Oil Company Ltd.: *See—*
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Nippon Sheet Glass Co., Ltd.: *See—*
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Nippon Soda Company, Ltd.: *See—*
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Nippon Steel Corporation: *See—*
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Nippon Telegraph and Telephone Public Corporation: *See—*
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Nippondenso Co., Ltd.: *See—*
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Nischk, Gunther: *See—*
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Nishijima, Kouji: *See—*
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Nishikawa, Tadashige: *See—*
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Nissan Motor Company Limited: *See—*
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Nisshin Flour Milling Co., Ltd.: *See—*
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Nitta, Kazuo: *See—*
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Nitto Electric Industrial Co., Ltd.: *See—*
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Nitto Kohki Co., Ltd.: *See—*
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Noda, Yuzuru: *See—*
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Noe, Oskar, to BWG Bergwerk- und Walzwerk-Maschinenbau GmbH, Firma. Method of and apparatus for descaling and leveling a metal strip. 3,924,428, Cl. 72-40.000.

Nogami, Sumitaka: *See—*
Ibata, Jyoji; Kobayashi, Hidehiko; Toyomoto, Kazuo; Suzuoki, Kazuhiro; and Nogami, Sumitaka, 3,925,272.

Nohira, Hidetaka; and Kobashi, Kiyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculating apparatus. 3,924,589, Cl. 123-119.00A.

Nomiya, Kosei, to Hitachi, Ltd. Logic circuit having common load element. 3,925,686, Cl. 307-205.000.

Nomura, Hiroaki: *See—*
Okada, Hiroaki; Fujisawa, Hiroshi; Fujita, Masahiko; Shimamoto, Tsugio; and Nomura, Hiroaki, 3,925,357.

Nomura, Masayoshi: *See—*
Saida, Hiroji; Ono, Yuichi; Nomura, Masayoshi; Tamura, Masao; and Kozuka, Hirotsugu, 3,925,120.

Nomura, Nobuki: *See—*
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Nomura, Setsuo; Komoda, Tsutomu; and Nakaizumi, Yasushi, to Hitachi, Ltd. Field emission electron gun device of the automatic control type. 3,925,706, Cl. 315-383.000.

Nordstrom, Kjell: *See—*
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North American Philips Corporation: *See—*
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Nuss, James J., to General Electric Company. Wall oven exhaust duct system. 3,924,601, Cl. 126-21.00R.

Nusslein, Ludwig; and Arndt, Friedrich, to Schering Aktiengesellschaft. Herbicidal oxime esters of phenoxyalkanoic esters and their use as selective herbicides. 3,925,473, Cl. 260-566.0AE.

Nuzzi, Francis J.: *See—*
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Nye, Allan R.: *See—*
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Nystrand, Ernst Daniel, to Paper Converting Machine Company. Disposable diaper. 3,924,627, Cl. 128-287.000.

Obendorf, Werner; Lindner, Irmgard; Schwarzinger, Ernst; and Krieger, Josef, to Osterreichische Stickstoffwerk Aktiengesellschaft. Cycloamidines. 3,925,412, Cl. 260-326.470.

O'Brien, Darrell E.; Robins, Roland K.; and Springer, Robert H., to ICN Pharmaceuticals, Inc. 6-Carbethoxy-3,7-disubstituted-pyrazolo[1,5a]pyrimidines. 3,925,385, Cl. 260-256.40F.

Ocean Cable Co., Ltd.: *See—*
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O'Connor, John Vincent, to Johns-Manville Corporation. Injection molded plastic pipe fitting. 3,924,881, Cl. 285-156.000.

Oda, Kiyoshi, to Yoshida Kogyo Kabushiki Kaisha. Lock slider. 3,924,306, Cl. 24-205.14R.

Oda, Yoshio; Uchida, Keiichi; Suharn, Manabu; and Morimoto, Takeshi, to Asahi Glass Co., Ltd. Process for preparing unsaturated carboxylic acids from the corresponding unsaturated aldehydes. 3,925,464, Cl. 260-530.00N.

Odom Sausage Co. Inc. of Kentucky: *See—*
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Ogawa, Akira: *See—*
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Ogawa, Haruki: *See—*
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Ogawa, Hiroshi; Nitta, Kazuo; Nakazawa, Nobuhiko; and Maki, Kentaro, to Mallinckrodt, Inc. Method for determining the total iron-binding capacity of blood serum. 3,925,020, Cl. 23-230.00B.

Ogawa, Ryota: *See—*
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Ogilvie Flour Mills Company Limited: *See—*
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Ogoshi, Toshiaki: *See—*
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Ogura, Eiji; Nomura, Nobuki; and Emoto, Kiyotada, to Onoda Cement Company, Ltd. Method for preparing catalyst for the production of vinyl fluoride. 3,925,247, Cl. 252-429.00R.

Ogura, Jiro; Seki, Ikuo; Sato, Kiyotaka; Takahashi, Masaaki; Ito, Akira; and Igarashi, Yuriko, to Kureha Kagaku Kogyo K.K. Electrical insulation oil. 3,925,222, Cl. 252-63.700.

Oguri, Masatoshi: *See—*
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Oh, Hans, to Sandoz, Inc. 1-Substituted-4-aryl-2(1H)-quinazolinones as pharmaceutical agents. 3,925,548, Cl. 424-251.000.

Ohno, Norihiro: *See—*
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Ohoishi, Junichi: *See—*
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Ohtsuka, Shuji; and Sato, Toshio, to Tamura Electric Works, Ltd. Electromagnetic counter. 3,925,741, Cl. 335-140.000.

Ohtuka, Masayoshi: *See—*
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Ohuchi, Kazuo: *See—*
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Oishi, Masayoshi, to Sun Ventures, Inc. Dehydrocyclization of hydrocarbons. 3,925,254, Cl. 252-455.00Z.

Oka, Shunzo: *See—*
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Okabe, Katsuhiko: *See—*
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Okada, Hiroaki; Fujisawa, Hiroshi; Fujita, Masahiko; Shimamoto, Tsugio; and Nomura, Hiroaki, to Takeda Chemical Industries, Ltd. α-sulfobenzylpenicillin salt. 3,925,357, Cl. 260-239.100.

Okamoto, Tadashi: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,925,364.

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Okert, Adolph P. Apparatus and method for electrolytic sewage treatment. 3,925,176, Cl. 204-152.000.

Okiyama, Toshiaki: *See—*
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Okuda, Itsuki; Shinohara, Hiroshi; Ogawa, Haruki; and Itoh, Hideo, to Kumiai Chemical Industry Co,. Method of controlling mites using chloromethanesulfonamide. 3,925,555, Cl. 424-321.000.

Olcott, Eugene L., to Atlantic Research Corporation. Method for making reinforced pyrolytic graphite-silicon carbide microcomposites. 3,925,133, Cl. 156-175.000.

Oliva, George R., Jr.: *See—*
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Olle Blomqvist Rehab-Produkter AB: *See—*
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Olsen, Keith H.; and Christmann, Marvin H., to Minnesota Mining and Manufacturing Company. Method for producing epitaxial thin-film fabry-perot cavity suitable for use as a laser crystal by vacuum evaporation and product thereof. 3,925,146, Cl. 156-601.000.

Olsson, Knut Gunnar: *See—*
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Omron Corporation of America: *See—*
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Onarheim, Einar, to Elkem-Spigerverket A/S. Method of recycling silicon dioxide. 3,925,058, Cl. 75-1.000.

Ono, Keiichi: *See—*
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Ookubo, Takashi; and Hamada, Hideo, to Nissan Motor Company Limited. Fluid actuated clutch. 3,924,717, Cl. 192-86.000.

op de Laak, Johannes H. A.: *See—*
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Orberg, Robert Elliott. Seal and curtain support means. 3,924,365, Cl. 52-63.000.

Orr, Robert S.: *See—*
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Ort, Morris R., to Monsanto Company. Control of polymer particle size in olefin polymerization. 3,925,338, Cl. 260-88.20R.

Osawa, Makoto; Hagiwara, Yoshitoshi; Kusaka, Kunio; Kawakita, Takao; Motoyoshi, Kenya; and Kuroishi, Nobuhito, to Honda Giken Kogyo Kabushiki Kaisha; and Sumitomo Electric Industries, Ltd. Valve seat materials for internal combustion engines. 3,925,065, Cl. 75-128.00R.

Osborn, Peter George; and Nicks, Peter Francis, to Imperial Chemical Industries Limited. Process for the preparation of polymer dispersions. 3,925,295, Cl. 260-34.200.

Osborne, Thomas A.: *See—*
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Oshima, Yujiro; Kataoka, Masao; Tutui, Osamu; Shibayama, Noboru; Ohtuka, Masayoshi; and Ozaki, Shigehito, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Misfire detecting device for internal combustion engine. 3,924,457, Cl. 73-116.000.

Osmond, Desmond Wilfrid John; Smith, Norman Douglas Patrick; and Waite, Frederick Andrew, to Imperial Chemical Industries Limited. Control of liquid dissemination. 3,925,032, Cl. 44-62.000.

Osman, John W., Jr., to Haake, Inc. Torque sensor with means for mechanical damping. 3,924,459, Cl. 73-136.00R.

Ostberga Fabriks AB: *See—*
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Otani, Tadahiko, to Hitachi, Ltd. Variable Venturi type carburetor. 3,925,521, Cl. 261-39.00A.

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Ott, Hans, to Sandoz, Inc. 1-Substituted-quinazoline-2(1H)-thiones in the treatment of inflammation. 3,925,549, Cl. 424-251.000.

Ott, Karl-Heinz: *See—*
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Ott, William Michael, Jr.: *See—*
Betts, Joseph Elwood; Ott, William Michael, Jr.; and Vaum, Howard Thomas, 3,924,985.

Otterstetter, Charles H., to Ford Motor Company. Sprayable material changer apparatus. 3,924,810, Cl. 239-305.000.

Ottestad, Jack B., to Impulse Products Corporation. Control means for a fluid-powered device. 3,924,513, Cl. 91-224.000.

Otto, Oberdan W., to Leland Stanford Jr. University, The Board of Trustees of. Apparatus for transforming electronics signals between the time and frequency domains utilizing acoustic waves. 3,925,653, Cl. 235-181.000.

Overkott, Franz Josef, to Peddinghaus, Carl Ullrich, Dr. Method for making cartridges containing pressure gas and means for carrying out this method. 3,924,382, Cl. 53-7.000.

Owens-Corning Fiberglas Corporation: *See—*
Bartlow, David H.; Jones, Bernard Howard; and Pearson, Lee E., 3,925,132.
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Roberts, Michael G.; and Chase, Kenneth P., 3,925,300.
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Owens-Illinois, Inc.: *See—*
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Ozaki, Sadao: *See—*
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Ozaki, Toshiaki: *See—*
Tottori, Nobumasa; Kato, Toshiro; Asano, Yasuhisa; Ueda, Minoru; Kirino, Osamu; Ooba, Shigehiro; Fujinami, Akira; and Ozaki, Toshiaki, 3,925,554.

Ozark-Mahoning Company: *See—*
Meshri, Dayal T.; and Westfall, Darrell L., 3,925,539.

Ozeki, Takeshi; and Ito, Takao, to Tokyo Shibaura Electric Co., Ltd. Modulation apparatus of semiconductor laser device. 3,925,735, Cl. 332-7.510.

Paap, Hans J.; and Scott, Hubert D., to Texaco Inc. Inelastic gamma ray logging system. 3,925,659, Cl. 250-270.000.

Package Machinery Company: *See—*
Simmons, Charles J., 3,925,139.

Packaging Coordinators, Inc.: *See—*
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Heilman, Gerald D.; Paddock, Gordon R.; and Ranft, Ernst L., 3,924,409.

Pagdin, Brian Colin, to GKN Transmissions Limited. Fuel injection apparatus for internal combustion engines. 3,924,593, Cl. 123-140.0MC.

Palitex Project Company G.m.b.H.: *See—*
Franzen, Gustav; and Veltges, Helmut, 3,924,392.

Papenfuss, Theodor; Rehberg, Rolf; and Spietschka, Ernst, to Hoechst Aktiengesellschaft. Dyestuff preparations and process for their manufacture. 3,925,094, Cl. 106-288.00Q.

Paper Converting Machine Company: *See—*
Nystrand, Ernst Daniel, 3,924,627.

Paris, Nikolaus: *See—*
Hausweiler, Arnold; Paris, Nikolaus; and Ennenbach, Karl-Heinz, 3,925,250.

Park, Im Keun, to Celanese Corporation. Pervious low density carbon fiber reinforced composite articles. 3,925,587, Cl. 428-255.000.

Parker, Paul T.; and Mayer, Ivan, to Exxon Research & Engineering Company. Alkylation process with recovery and regeneration of fluorosulfuric acid catalyst. 3,925,318, Cl. 260-683.580.

Parlette, Carl L.: *See—*
Benner, Robert A.; Fisher, Philip H.; and Parlette, Carl L., 3,924,565.

Parquet, Donald J., to J. I. Case Company. Fluid flow divider valve. 3,924,650, Cl. 137-101.000.

Parrish, William F.: *See—*
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Parsons, George R.: *See—*
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Parsons, Hubert J.; and Peterson, Anders Adolf, to Hardinge Brothers, Inc. Apparatus for actuating a work gripping device. 3,924,514, Cl. 91-420.000.

Partain, James H., to Stone Container Corporation. Carton for refrigerated consumable products. 3,924,801, Cl. 229-39.00R.

Parthasarathy, R., to W. R. Grace & Co. Isomerization of normal paraffins with hydrogen mordenite containing platinum and palladium. 3,925,503, Cl. 260-683.650.

Partridge, Donald F. Circuit for controlling power flow from a high frequency energy source to a plurality of high frequency loads. 3,925,633, Cl. 219-10.490.

Pascal, Yves Robert Alain: *See—*
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Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bochorishvili, Anzor Ippolitovich; Stupak, Leonid Mikhailovich; Sysenko, Anatoly Petrovich; and Popov, Valery Georgievich. Device for the electroslag casting of ingots. 3,924,672, Cl. 164-252.000.

Paton, Robert Michael: *See—*
Crosby, John; Paton, Robert Michael; and Rennie, Robert Allan Campbell, 3,925,435.

Patterson, Michael Frederick; and Kather, Kenneth Calvin, to Union Carbide Corporation. Thermal swing gas adsorber. 3,925,041, Cl. 55-267.000.

Patterson, Raymond B., III: *See—*
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Paule, Kurt: *See—*
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Pearson, Lee E.: *See—*
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Peddinghaus, Carl Ullrich, Dr.: *See—*
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Pedersen, Kristen Hald, to Aktieselskabet Jens Villadsens Fabriker. Building construction having three-hinged arched lattice girders. 3,924,368, Cl. 52-86.000.

Pedersen, Robert D.: *See—*
Collins, Arthur A.; and Pedersen, Robert D., 3,925,621.

Pederzini, Renzo: *See—*
Bardotti, Angelo; and Pederzini, Renzo, 3,925,766.

Pedlar, Roy; and Boustred, Brian Malcolm, to Redifon Limited. Ground-based flight simulators. 3,924,342, Cl. 35-12.00N.

Pemsl, Alex: *See—*
Hippel, Ludwig Jakob; and Pemsl, Alex, 3,924,651.

Penner, John. Quick release extension shaft for socket wrenches. 3,924,493, Cl. 81-177.00G.

Pennwalt Corporation: *See—*
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Perrotti, Emilio: *See—*
Koch, Paolo; and Perrotti, Emilio, 3,925,413.

Persson, Russell C. Shower safety comfort temperature guide. 3,924,468, Cl. 73-343.00R.

Peacetto, James R., to UMC Industries, Inc. Anti-retrieval device. 3,924,847, Cl. 271-3.000.

Peschke, Reiner, to Messerschmitt-Bolkow-Blohm G.m.b.H. Plastic bearing. 3,924,825, Cl. 244-46.000.

Petersen, Arthur, Sr.; Mackowiak, Leonard S.; and Schoenholz, Daniel, to Hercules Chemical Co., Inc. Solder fluxes. 3,925,112, Cl. 148-25.000.

Peterson, Anders Adolf: *See—*
Parsons, Hubert J.; and Peterson, Anders Adolf, 3,924,514.

Peterson, Bulow A.: *See—*
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Peterson, Hans D. D. Powered bovine stomach pump and tube. 3,924,625, Cl. 128-278.000.

Petro-Tex Chemical Corporation: *See—*
Stadig, William P., 3,925,498.

Petroff, Peter D. Processed sewage effluent. 3,925,721, Cl. 324-.50R.

Peyser, Harry A., to Continental Can Company, Inc. Non-detachable easy open flap and tab assembly. 3,924,777, Cl. 220-277.000.

Pfaffle, Ernst, to Hans Sickinger Co. Coil binding machine. 3,924,664, Cl. 140-92.700.

Pfeifle, Dieter, to SKF Kugellagerfabriken GmbH. Thread storage device. 3,924,818, Cl. 242-47.050.

Pfisterer, Herman: *See—*
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Pfizer Inc.: *See—*
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Richards, Hugh Colin, 3,925,391.
Welch, Willard M., Jr.; and Harbert, Charles A., 3,925,409.

Phelan, Harry R., to Radiation Incorporated. Antenna arrays of internally phased elements. 3,925,784, Cl. 343-754.000.

Philbrick, John W.; and Wuestenhoefer, William C., to International Business Machines Corporation. Method for vapor deposition of gallium arsenide phosphide upon gallium arsenide substrates. 3,925,119, Cl. 148-175.000.

Phillips, Herbert L.: *See—*
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Phillips Petroleum Company: *See—*
Cheng, Paul J., 3,925,045.
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Fahey, Darryl R., 3,925,494.
Harper, Ernest A., 3,925,047.
Hsieh, Henry, 3,925,317.
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Pitzer, Emory W., 3,925,499.
Rees, Robert L., 3,925,530.
Smith, Ernest L., 3,924,795.
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Phillips, Thomas Richard, to Du Pont de Nemours, E. I., and Company. Anhydride acrylic copolymers as additives for unsaturated polyester molding compositions. 3,925,299, Cl. 260-40.00R.

Phillips, Woodrow W. Particle build up suppressor. 3,924,901, Cl. 302-64.000.

Photocircuits Division of Kollmorgen Corporation: *See—*
Polichette, Joseph; Leech, Edward J.; and Nuzzi, Francis J., 3,925,578.

Piasio, Roger N.; and Woiszwillo, James E., to Corning Glass Works. Labelled digoxin derivatives for radioimmunoassay. 3,925,355, Cl. 260-210.500.

Picciochi, Andrew V. Safety means for audio speakers. 3,925,708, Cl. 317-13.00R.

Picker Electronics, Inc.: *See—*
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Pifferi, Giorgio: *See—*
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Pigeon, Norbert G. Vehicle towing device. 3,924,763, Cl. 214-86.00A.

Pilc, Randolph John: *See—*
Cardwell, Robert Edward; Carlson, David Emory; Davis, Robert Leon; McNamara, Edward Joseph; Pilc, Randolph John; Schlanger, Gabriel Gary; Tutelman, David Morris; Warwick, Peter Stephen; and Zydney, Herbert Mortimer, 3,925,601.

Pilz, William M.: *See—*
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Pioneer Electronic Corporation: *See—*
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Pirard, Joseph Jean Julien: *See—*
Dechambre, Jean Theophile Fortunat; Lousberg, Pierre Jean Simon; and Pirard, Joseph Jean Julien, 3,924,499.

Pissiotas, Georg; Meyer, Willy; Bohner, Beat; and Drabek, Jozef, to Ciba-Geigy Corporation. Phosphorylformamidines. 3,925,517, Cl. 260-944.000.

Pitner, Alfred, to Nadella S.A., a part interest. Rolling bearing capable of fixing the axial position of a machine element. 3,924,912, Cl. 308-212.000.

Pitney-Bowes, Inc.: *See—*
Hubbard, David W.; and Coville, William W., 3,924,532.
Koeleman, Geradus A. J.; and op de Laak, Johannes H. A., 3,924,567.

Pitzer, Emory W., to Phillips Petroleum Company. Oxidative dehydrogenation using group IA or IIA metal Sn/P/O catalyst. 3,925,499, Cl. 260-680.00E.

Platt, Dan: *See—*
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Plevyak, Joseph B. Swing roll tool assembly. 3,924,430, Cl. 72-85.000.

Ploger, Walter; Schmidt-Dunker, Manfred; and Gloxhuber, Christian, to Henkel & Cie G.m.b.H. Cyclic aminophosphonic acids. 3,925,456, Cl. 260-502.500.

Podgajny, Thaddeus W., to General Steel Industries, Inc. Railway vehicle truck. 3,924,540, Cl. 105-197.00R.

Polaroid Corporation: *See—*
Chiklis, Charles K., 3,925,081.
Fielding, Herbert L.; and Liggero, Samuel H., 3,925,082.
Fitzgerald, Maurice J., 3,925,083.
Huyffer, Paul S., 3,925,347.
Scibilia, Peter A., 3,924,940.
Whall, James M., 3,925,800.
Wilson, Stewart W.; and Ericson, John W., 3,924,339.

Polichette, Joseph; Leech, Edward J.; and Nuzzi, Francis J., to Photocircuits Division of Kollmorgen Corporation. Sensitized substrates for chemical metallization. 3,925,578, Cl. 427-304.000.

Pollert, Wolfgang, to Motoren- und Turbinen-Union Munchen GmbH. Apparatus for adjusting fan blades in a turbojet engine. 3,924,404, Cl. 60-226.00R.

Poncin, Roger, to Elphiac S.A. Process for the manufacture of crankshafts. 3,924,439, Cl. 72-342.000.

Popov, Encho Nikolov; Diakov, Nikola Ganev; Dobreva-Dimitrova, Emilia; Apostolov, Roumen Konstantinov; and Hristov, Hristo Petkov, to DSO "Elprom". Statorless dynamo-electric machine. 3,925,696, Cl. 310-242.000.

Popov, Valery Georgievich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bochorishvili, Anton Ippolitovich; Stupak, Leonid Mikhailovich; Sysenko, Anatoly Petrovich; and Popov, Valery Georgievich, 3,924,672.

Porath, Jerker Olof; and Janson, Jan-Christer, to Exploaterings Aktiebolaget T.B.F. Virus separation. 3,925,152, Cl. 195-1.500.

Pormale, Milda Yanovna; Kashkina, Nadezhda Alexandrovna; Veinberg, Elfrida Indrikovna; Kalninsh, Arvid Yanovich; Shusters, Janis; Mikazhans, Valdis Danielovich; Purvinsh, Indulis Valdovich; and Skutelis, Antons Petrovich. High-molecular derivative of 2-dimethylaminoethyl ester of p-butylaminobenzoic acid, method for preparing same and application thereof. 3,925,356, Cl. 260-214.000.

Porret, Daniel; and Habermeier, Jurgen, to Ciba-Geigy Corporation. Dialkoxyphosphonomethyl derivatives of hydantoins. 3,925,406, Cl. 260-309.500.

Portelance, William. Crank movement mechanism. 3,924,477, Cl. 74-44.000.

Posokhin, Viktor Vladimirovich: *See—*
Mogilevsky, Vitaly Moritsovich; Deriga, Nikolai Filippovich; Ekimov, Vadim Petrovich; Erastov, Alexandr Petrovich; Posokhin, Viktor Vladimirovich; and Furer, Benya Elievich, 3,925,725.

Postma, Lambertus, to U.S. Philips Corporation. Multi-layered photosensitive material having glass substrate and method of manufacture. 3,925,080, Cl. 96-67.000.

Potier, Curtis N.: *See—*
Kroger, Harry; and Potier, Curtis N., 3,925,078.

Poupitch, Ougljesa Jules, to Illinois Tool Works Inc. Multipackage device for containers and method for making same. 3,924,738, Cl. 206-150.000.

PPG Industries, Inc.: *See—*
Fahey, Dennis M., 3,925,286.
Hummel, Merritt J., 3,925,052.
Jerabek, Robert D., 3,925,180.
Lawhon, Robert A., 3,925,051.
Schwenninger, Ronald L., 3,925,049.

Prematta, Robert Joseph; and Venkatesan, Peruvemba Swaminatha, to Western Electric Company, Inc. Superplastic alloy of tin and zinc. 3,925,110, Cl. 148-11.50R.

Prenner, Amnon; Bear, Jacob; Tohar, David; and Koplin, Harry, to Koplin, Harry. Device for use in the completion of an oil or gas well. 3,924,677, Cl. 166-100.000.

Presearch Incorporated: *See—*
Brown, Buck C., 3,925,650.

Pressman, D. R.: *See—*
Clark, Lloyd Douglas, 3,925,777.

Pretini, Gisberto. Anti robbery protection equipment. 3,924,546, Cl. 109-3.000.

Pretorius, Hillius, to Jet Ball (Eiendoms) Deperk. Tethered ball apparatus. 3,924,855, Cl. 273-95.0AA.

Pribadi, Krishnahadi Sikun: *See—*
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Price, Roger W., to NeeTree Corporation. Means for disposing of christmas trees. 3,924,669, Cl. 150-52.00R.

Primicerio, Fernando; and Benigno, Paolo, to Minnesota Mining and Manufacturing Company. Box for magnetic tape cassette. 3,924,742, Cl. 206-387.000.

Princeton Chemical Research, Inc.: *See—*
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Procter & Gamble Company, The: *See—*
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Product-Sol, Inc.: *See—*
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Produits Chimiques Ugine Kuhlmann: *See—*
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Pun, John Y.: *See—*
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Purcell, Robert J., to Caterpillar Tractor Co. Equalizer bar assembly for crawler-type vehicles. 3,924,703, Cl. 180-9.540.

Purvinsh, Indulis Valdovich: *See—*
Pormale, Milda Yanovna; Kashkina, Nadezhda Alexandrovna; Veinberg, Elfrida Indrikovna; Kalninsh, Arvid Yanovich; Shusters, Janis; Mikazhans, Valdis Danielovich; Purvinsh, Indulis Valdovich; and Skutelis, Antons Petrovich, 3,925,356.

Putney, David H.; and Graham, Ward A., to Stratford Engineering Corporation. Hydrogen fluoride alkylation with effluent refrigeration. 3,925,501, Cl. 260-683.480.

Putterman, Harry: *See—*
Witteles, Abraham A.; and Putterman, Harry, 3,925,767.

Puyplat, Olivier, to Cibie Projecteurs. Cleaning device e.g. for vehicle headlight lens. 3,924,290, Cl. 15-250.040.

Quaadvliet, Hendricus Johannes Adrianus, to Stichting Reactor Centrum Nederland. Lattice for supporting a bunch of bar-shaped members. 3,924,380, Cl. 52-664.000.

Quaker Oats Company, The: *See—*
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Quasar Electronics Corporation: *See—*
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Quick, Donald Jonathon, to Massey-Ferguson Services N.V. Trash removal apparatus for sugar cane harvesters. 3,925,199, Cl. 209-3.000.

R. W. Mac Company: *See—*
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Mac Donnell, Robert W.; and Shander, Otto A., 3,924,542.

Rabinowitz, Azriel J.; and Wilson, David B., to Sybron Corporation. Dental chair backrest with integral elbow supports. 3,924,894, Cl. 297-460.000.

Raby, Virgil W., to General Motors Corporation. Rotor resistor and fan for AC induction motor. 3,925,695, Cl. 310-72.000.

Radiation Incorporated: *See—*
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Radielovic, Dragutin: *See—*
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Rai-Choudhury, Prosenjit, to Westinghouse Electric Corporation. Silicon semiconductor device with stress-free electrodes. 3,925,808, Cl. 357-67.000.

Raider, Jerry W.: *See—*
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Raider, Stanley I.: *See—*
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Rain Bird Sprinkler, Mfg. Corporation: *See—*
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Raison, Michel, to Compagnie Generale d'Automatisme. Suspended suction or fill pipe for handling fluid products or the like. 3,924,666, Cl. 141-231.000.

Randall, John M.; Hautala, Earl; Waiss, Anthony C., Jr.; and Kuhnle, Judith A., to United States of America, Agriculture. Removing heavy metal ions from water. 3,925,192, Cl. 210-38.000.

Ranft, Ernst L.: *See—*
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Heilman, Gerald D.; Paddock, Gordon R.; and Ranft, Ernst L., 3,924,409.

Ranz, Erwin: *See—*
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Rao, Ganta V.; and Gerrish, Oliver B., Sr., to Far-Mar-Co., Inc. Process for fortifying food and feed products with amino acids. 3,925,568, Cl. 426-618.000.

Rapid-American Corporation: *See—*
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Sollazzi, Pasquale Robert; and Kaufman, Michael Avrum, 3,924,872.

Rasmussen, Chris Royce, to McNeil Laboratories, Incorporated. Benzothiazine-1,1-dioxides. 3,925,371, Cl. 260-243.00R.

Rau, Karlheinz; and Seiler, Karl, to Heraeus-Schott Quarzschmelze GmbH. Composite quartz glass body. 3,925,583, Cl. 428-36.000.

Rau, Wolfgang: *See—*
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Rauch, Marvin A.; Boni, Raymond L.; and Hadnagy, Thomas D. Intraoral fusion process. 3,924,332, Cl. 32-14.00R.

Rausing, Gad Anders; Stark, Sven Olof Soren; and Sevrell, Sven Gosta Uno, to Tetra Pak Developpement SA. Packaging containers. 3,924,796, Cl. 229-17.00G.

Rawlins, Charles B., to Aluminum Company of America. Suppression of wake-induced oscillations in a conductor bundle. 3,925,594, Cl. 174-42.000.

Rayburn, Russell L.: *See—*
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Raychem Corporation: *See—*
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Raymond Lee Organization, Inc., The: *See—*
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RCA Corporation: *See—*
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Fishbeck, Kenneth Henry, 3,925,790.
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Goldmacher, Joel Edward; and McCaffrey, Michael Thomas, 3,925,236.
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Ross, Daniel Louis; and Gavrilovic, Dragan Milan, 3,925,237.
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Reading, William H., III: *See—*
Friedenberg, Robert; Reese, William; and Reading, William H., III, 3,924,609.

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Reaville, Eric T.: *See—*
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Rebeille, Jean-Claude: *See—*
Agouri, Elias; Favie, Claude; and Rebeille, Jean-Claude, 3,925,508.

Redactron Corporation: *See—*
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Redifon Limited: *See—*
Pedlar, Roy; and Boustred, Brian Malcolm, 3,924,342.

Reed, David A., to Harris-Intertype Corporation. Collating method and apparatus. 3,924,846, Cl. 270-56.000.

Rees, Robert L., to Phillips Petroleum Company. Release coating for molds. 3,925,530, Cl. 264-297.000.

Reese, William: *See—*
Friedenberg, Robert; Reese, William; and Reading, William H., III, 3,924,609.

Regie Nationale des Usines Renault: *See—*
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Rehberg, Rolf: *See—*
Papenfuss, Theodor; Rehberg, Rolf; and Spietschka, Ernst, 3,925,094.

Reich, Manfred; Muller, Wolfgang; and zur Hausen, Manfred, to Chemische Werke Huls Aktiengesellschaft. Hydrogenation catalysts and process for the removal of aldehydes and ketones from gaseous streams rich in carbon monoxide. 3,925,490, Cl. 260-643.00B.

Reich, Murray H.: *See—*
Magder, Jules; and Reich, Murray H., 3,925,302.

Reinert, Milton J., to United States of America, Air Force. Rotatable window means. 3,924,826, Cl. 244-129.00W.

Reinhart, Richard D.: *See—*
Straughn, Robert O.; Elofson, Gary L.; and Reinhart, Richard D., 3,925,563.

Reinhart, Robert R.; and Smith, George M., Jr., to Quaker Oats Company, The. Simulated meat product. 3,925,565, Cl. 426-447.000.

Reinhart, Robert R.; and Sair, Louis, to Quaker Oats Company, The; and Griffith Laboratories, Inc., The. Simulated meat product. 3,925,566, Cl. 426-447.000.

Reinke, Friedhelm; Stengel, Edgar; and Emde, Friedhelm, to AEG-Elotherm G.m.b.H. Method of coating metallic material onto a metallic substrate. 3,925,570, Cl. 427-46.000.

Reis, Walter; and Boll, Dietmar, to Walter Reis. Apparatus for transporting workpieces. 3,924,754, Cl. 214-1.0BD.

Reliance Electric Company: *See—*
Kitaoka, Hiroo, 3,924,906.

Relyveld, Edgar Hans, to Institut Pasteur. Process for preparing adsorbed vaccines. 3,925,545, Cl. 424-92.000.

Remond, Georges: *See—*
Vincent, Michel; Remond, Georges; and Laubie, Michel, 3,925,369.

Renner, Alfred; and Haug, Theobald, to Ciba-Geigy Corporation. Storage-stable compositions of polyimides and azomethines. 3,925,314, Cl. 260-47.0UA.

Renner, Edmund W., Jr.; Sule, Frank P.; and Sule, Wayne P. Signalling device for preventing spill-over from the fuel tanks of powered boats during filling. 3,924,559, Cl. 116-109.000.

Renner, Hermann; and Barenyi, Bela, to Daimler-Benz Aktiengesellschaft. Safety instrument panel for motor vehicles. 3,924,707, Cl. 180-90.000.

Renner, Hermann: *See—*
Barenyi, Bela; and Renner, Hermann, 3,924,874.

Rennick, John L., to Zenith Radio Corporation. Dropout detector for video disc playback. 3,925,605, Cl. 178-6.60R.

Rennie, Robert Allan Campbell: *See—*
Crosby, John; Paton, Robert Michael; and Rennie, Robert Allan Campbell, 3,925,435.

Repapress AG: *See—*
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Research Abrasive Products, Inc.: *See—*
Anna, Leo A.; and Dixon, Kenneth C., 3,925,034.

Research Corporation: *See—*
Story, Paul Richard; Busch, Peter; Denson, Donald Derby; and Wright, Carl Edward, 3,925,421.
Swallow, Ronald J., 3,925,776.

Resources Conservation Co.: *See—*
Ames, Robert K., 3,925,201.

Revitz, Martin: *See—*
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Reymore, Harold E., Jr.: *See—*
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Reynolds Metals Company: *See—*
Bruen, Charles P.; and Kelly, Donald H., 3,925,538.
Reamey, Herbert K.; and Newman, Jerry F., 3,925,092.

Reynolds, Robert J., to Burroughs Corporation. Digital logic and servo system for print head rotate control. 3,924,721, Cl. 197-18.000.

Rhee, Jhoon Goo: *See—*
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Rhone-Poulenc S.A.: *See—*
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Chabardes, Pierre; Grard, Charles; and Schneider, Charles, 3,925,485.
Gerard, Bernard, 3,925,324.
Janin, Raymond, 3,925,401.
Rio, Andre; and Vivant, Gilbert, 3,925,303.
Sagi, Ferenc; and Roussos, Michel, 3,925,242.
Tchelitcheff, Serge, 3,925,550.

Richards, Elmer A., to Eaton Corporation. Sensor unblocking ramps. 3,924,484, Cl. 74-331.000.

Richards, Ernest Levon, to Deering Milliken Research Corporation. Wet mop head construction. 3,924,289, Cl. 15-229.0AC.

Richards, Hugh Colin, to Pfizer Inc. 2-Aminoalkyl tetrahydroquinolines. 3,925,391, Cl. 260-288.00R.

Richards, John Alan: *See—*
Hiller, John Barry; Richards, John Alan; and Huey, Richard Meredyth, 3,925,663.

Richardson, Richard L.; Hildebrand, Bernard P.; and Mahan, Robert E., to Battelle Memorial Institute. Information and process control enhancement system employing series of square wave components. 3,925,646, Cl. 235-152.000.

Richmond, Richard Malcolm, to Shoe & Allied Trades Research Association, The. Automatically guiding workpieces through a machine. 3,925,713, Cl. 318-575.000.

Richter, Martin; and Kroger, Ingo, to Siemens Aktiengesellschaft. Arrangement for the transmission of control commands from a stationary part to a rotating part of an electric machine. 3,925,694, Cl. 310-68.00D.

Richtzenhain, Hermann: *See—*
Riegger, Paul; and Richtzenhain, Hermann, 3,925,424.

Riegger, Paul; and Richtzenhain, Hermann. Process for preparing 4-chloroformyl phthalic acid anhydride. 3,925,424, Cl. 260-346.300.

Riess, Jean G.; Le Blanc, Maurice; Santini, Georges; and Guion, Jacky, to Produits Chimiques Ugine Kuhlmann. New fluorinated dienes and process for preparing same. 3,925,491, Cl. 260-653.300.

Riggs, John P.: *See—*
Kimmel, Robert M.; Riggs, John P.; Swander, Robert W.; and Whitney, Wells, 3,925,524.

Riha, Petr: *See—*
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Rinck, Friedrich Karl: *See—*
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Ringel, Paul; Hildebrand, Dietrich; and Breidbach, Gunter, to Bayer Aktiengesellschaft. Process for dyeing fibre material containing NH-groups from organic solvents. 3,925,012, Cl. 8-169.000.

Rio, Andre; and Vivant, Gilbert, to Rhone-Poulenc S.A. Flameproofing of acrylonitrile polymers and copolymers. 3,925,303, Cl. 260-45.70P.

Ripka, Josef: *See—*
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Ritchie, Donald D.: *See—*
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Ritzi, Jack Henry, to W. R. Grace & Co. Water dispersable chlorinated solvent and method. 3,925,231, Cl. 252-171.000.

Riverby Farms, Inc.: *See—*
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Riverside Bio-Engineering, Inc.: *See—*
Bliss, Richard D., 3,925,604.

Roantree, James P.; and Saunders, John, to United Technologies Corporation. Strapdown gyro drift calculator. 3,925,642, Cl. 235-150.250.

Roantree, James P.; Saunders, John; and Baum, Robert A., to United Technologies Corporation. Drift correcting gyro system using filters. 3,925,643, Cl. 235-150.250.

Roantree, James P.; and Saunders, John, to United Technologies Corporation. Digital sine wave synthesizer. 3,925,654, Cl. 235-197.000.

Robbins, Joseph: *See—*
Earle, Harold Westly; and Robbins, Joseph, 3,925,624.

Robert Bosch G.m.b.H.: *See—*
Hess, Johann; Paule, Kurt; Latzina, Kurt; and Wolf, Richard, 3,924,961.
Rometsch, Werner; and Veil, Karl, 3,924,969.
Schwerin, Gunther, 3,924,655.

Roberts, Michael G.; and Chase, Kenneth P., to Owens-Corning Fiberglas Corporation. Molding compounds and method of making same. 3,925,300, Cl. 260-40.00R.

Robertson, Malcolm Eric Alexander; Marshall, John; Brabants, Jules Anthony Peter; and Davies, Michael Edward, to D.A. Pitman Limited. Thermoluminescence Dosimeter Reader. 3,925,665, Cl. 250-337.000.

Robertson, Thomas J. Labial muscle exerciser. 3,924,850, Cl. 272-57.00H.

Robins, Roland K.: *See—*
O'Brien, Darrell E.; Robins, Roland K.; and Springer, Robert H., 3,925,385.

Robinson, Ralph C., to General Time Corporation. Digital alarm clock. 3,924,399, Cl. 58-16.00D.

Robinson, Stephen Perrin, to Anaafone Limited. Telephone apparatus. 3,925,622, Cl. 179-18.0BE.

Robson, Robert: *See—*
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Rockwell International Corporation: *See—*
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George, Peter K., 3,925,769.
Spence, John R., 3,925,690.
Tu, Peter K. C.; Brooke, Alan H.; and Miller, Frank S., 3,925,044.

Rodewald, Paul G.; and Whitehurst, Darrell D., to Mobil Oil Corporation. Hydrocarbon conversion with catalyst of SbF_5 on silica. 3,925,194, Cl. 208-109.000.

Rodewald, Paul G.; and Whitehurst, Darrell D., to Mobil Oil Corporation. Antimony pentafluoride hydrocarbon conversion catalyst. 3,925,251, Cl. 252-441.000.

Rodewald, Paul G., to Mobil Oil Corporation. Hydrocarbon conversion in the presence of a catalyst of a lewis acid intercalated in graphite. 3,925,495, Cl. 260-666.00P.

Rodgers, Franklin A., to Pactide Corporation. Multi-stage disposable still. 3,925,167, Cl. 202-174.000.

Rodi, Anton, to Teldix GmbH. Circuit for selecting an extreme value. 3,925,719, Cl. 323-16.000.

Rodriguez, Sergio E.: *See—*
Nebeker, Eugene B.; and Rodriguez, Sergio E., 3,924,805.

Roeschlau, Peter: *See—*
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Roesler, David F.: *See—*
Lamer, Gerald P.; Zyduck, Ronald L.; and Roesler, David F., 3,924,753.

Roest, Bernard C.; and Schepers, Herman A. J., to Stamicarbon N.V. Process for the preparation of block copolymers containing α-methylstyrene. 3,925,512, Cl. 260-880.00B.

Roevens, Leopold Frans Corneel: *See—*
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Rogers, Wesley A.: *See—*
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Rohm & Haas Company: *See—*
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Rohr, Harry: *See—*
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Rohr, Wolfgang: *See—*
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Rohrbach, Phillippe: *See—*
Gastambide, Bernard; Thal, Claude; Rohrbach, Phillippe; and Laroche, Marie-Jeanne, 3,925,480.

Rolf, David A.; and Chance, Vernon B., Jr., to Universal Oil Products Company. Method of sol manufacture. 3,925,256, Cl. 252-463.000.

Roll-Rite Corporation: *See—*
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Rolland, Jacques Robert: *See—*
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Rolls-Royce (1971) Limited: *See—*
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Romano, Roberto: *See—*
Stone, Louis Earl; and Romano, Roberto, 3,925,117.

Rometsch, Werner; and Veil, Karl, to Robert Bosch G.m.b.H. Hydraulic system. 3,924,969, Cl. 417-218.000.

Rongved, Leif: *See—*
Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, 3,925,785.

Roos, Dewey A.; Lawlor, Kenneth A.; and Abadie, Erwin I., to United States of America, Navy. Pulse generating circuit. 3,924,535, Cl. 102-70.20R.

Rose, Dale P., to General Motors Corporation. Rotary engine anti-spin oil seal. 3,924,979, Cl. 418-142.000.

Rosemund, Walter Richard; Sandner, Michael Ray; and Trecker, David John, to Union Carbide Corporation. Beta-amino nitrile catalysts for polyurethane preparation. 3,925,268, Cl. 260-2.5AC.

Rosenbaum, Walter Steven: *See—*
Chaires, Anne Marie; Ciconte, Jean Marie; Ett, Allen Harold; Hilliard, John Joseph; and Rosenbaum, Walter Steven, 3,925,761.

Rosenberger, Michael: *See—*
Cohen, Noal; Rosenberger, Michael; and Saucy, Gabriel, 3,925,420.

Ross, Daniel Louis; and Gavrilovic, Dragan Milan, to RCA Corporation. Novel liquid crystal electro-optic devices. 3,925,237, Cl. 252-299.000.

Rothbuhr, Lothar: *See—*
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Roumazeilles, Simonne: *See—*
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Roussel-UCLAF: *See—*
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Heurtaux, Simone; and Costerousse, Germain, 3,925,393.

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Rover Company Limited, The: *See—*
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Rowland Development Corporation: *See—*
Rowland, William P., 3,924,958.

Rowland, William P., to Rowland Development Corporation. Highway retroreflecting marker. 3,924,958, Cl. 404-15.000.

Rowton, Richard Lee, to Jefferson Chemical Company, Inc. Reduction of acidity of organic polymeric isocyanates. 3,925,437, Cl. 260-453.0SP.

Rozand, Jacques: *See—*
Lazarre, Flavien; Rozand, Jacques; and Roumazeilles, Simonne, 3,924,658.

Rubenstein, Richard B., to General Instrument Corporation. High speed data buffer and amplifier. 3,925,689, Cl. 307-260.000.

Rubio, Alfred M.: *See—*
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Rudolph, Hans: *See—*
Bockmann, August; Teichmann, Gunter; and Rudolph, Hans, 3,925,095.

Ruehling, Barry W.: *See—*
Cricchi, James Ronald; and Ruehling, Barry W., 3,925,804.

Rupert, Robert E.: *See—*
Anderson, Norman C.; and Rupert, Robert E., 3,925,668.

Rupp, Karl: *See—*
Althuber, Horst; and Rupp, Karl, 3,925,817.

Russell, Robert L., to TRW Inc. Radiation hard solar cell and array. 3,925,103, Cl. 136-202.000.

Ruthart, Leonard Crawford; and Williams, Virgil Lynn. Apparatus for dispensing, measuring, coating and cutting sheet material. 3,924,561, Cl. 118-9.000.

Rutledge, Thomas F.; and Zech, John D., to ICI United States Inc. Fatty group containing methylolated, polyoxyalkylene carbamates and textile materials softened by treatment therewith. 3,925,009, Cl. 8-115.700.

Ryan, John W.: *See—*
Dekan, Howard L.; and Ryan, John W., 3,924,856.

Rye, Grover W.: *See—*
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Saari, Oliver Edward, to Illinois Tool Works Inc. Fastener driving tool. 3,924,692, Cl. 173-117.000.

SAFT-Societe des Accumulateurs Fixes et de Traction: *See—*
Lehmann, Gerard; and Brych, Alfred, 3,925,101.

Sagi, Ferenc; and Roussos, Michel, to Rhone-Poulenc S.A. Process for reducing foaming of liquids susceptible to foaming. 3,925,242, Cl. 252-321.000.

Saida, Hiroji; Ono, Yuichi; Nomura, Masayoshi; Tamura, Masao; and Kozuka, Hirotsugu, to Hitachi, Ltd. A method for manufacturing a semiconductor device having a buried epitaxial layer. 3,925,120, Cl. 148-175.000.

Sair, Louis: *See—*
Reinhart, Robert R.; and Sair, Louis, 3,925,566.

Saito, Etsuro, to Sony Corporation. Pick-up arm assembly. 3,924,860, Cl. 274-1.00L.

Saito, Noboru: *See—*
Mitsuhashi, Shigeru; Hirokawa, Kyoichi; Saito, Noboru; Kaneko, Minoru; Shoji, Michihiro; Kowada, Masunari; and Kazama, Yasuo, 3,924,330.

Saito, Yuji, to Nippon Electric Company Limited. Shadow mask for a black-stripe color picture tube having successively curved perforations. 3,925,700, Cl. 313-403.000.

Sakai, Kiyoshi; Inoue, Kenji; Tajima, Yawara; Yamazaki, Mitsuo; Ohuchi, Kazuo; and Yusa, Takashi, to Sankyo Company Limited. 13,14-ξ-Methylene-15-oxoprostanoic acid derivatives. 3,925,451, Cl. 260-468.00D.

Sakato, aoyuki; and Nakamura, Hidetosi, to Shinetsu Chemical Company. Water-resistant adhesive compositions. 3,925,289, Cl. 260-29.60B.

Salete, Felipe. Automatic choke relief valves system for pneumatic conveyance. 3,924,899, Cl. 302-35.000.

Sally, Theodore J.: *See—*
Morris, Earl L.; and Sally, Theodore J., 3,924,279.

Salooja, Kailish Chander, to Exxon Research and Engineering Company. Placement of catalytically active materials in combustion flames. 3,925,001, Cl. 431-4.000.

Salsgiver, James A.; and Malagari, Frank A., to Allegheny Ludlum Industries, Inc. Process employing cooling in a static atmosphere for high permeability silicon steel comprising copper. 3,925,115, Cl. 148-112.000.

Samos: *See—*
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Samour, Carlos M., to Kendall Company, The. Monomeric emulsion stabilizers. 3,925,442, Cl. 260-459.000.

Sample, Thomas E., Jr.; Hughes, James W.; and Tate, Jack F., to Texaco Inc. Scale control. 3,925,582, Cl. 427-385.000.

Sanada, Noriaki; and Sorimachi, Kanehiro, to Canon Kabushiki Kaisha. Film-advancing device for a camera. 3,925,798, Cl. 354-215.000.

Sander, Duane E., to Daktronics, Inc. Temperature measurement circuit. 3,924,470, Cl. 73-362.0AR.

Sanders, Christine C.: *See—*
Sanders, W. Eugene, Jr.; and Sanders, Christine C., 3,925,160.

Sanders, W. Eugene, Jr.; and Sanders, Christine C., to Creighton University. Method of producing an antibiotic. 3,925,160, Cl. 195-96.000.

Sandner, Michael Ray: *See—*
Rosemund, Walter Richard; Sandner, Michael Ray; and Trecker, David John, 3,925,268.

Sandor, Louis; Germain, Andrew Gerald; Wiles, Donald Ray; and Filippini, Ronald A., to Amsted Industries Incorporated. Mold stopper. 3,924,422, Cl. 164-304.000.

Sandoz, Inc.: *See—*
Cuthbertson, Edmond N.; and Davenport, Raymond, 3,925,273.
Houlihan, William J.; and Nadelson, Jeffrey, 3,925,476.
Oh, Hans, 3,925,548.
Ott, Hans, 3,925,549.

Sandoz Ltd.: *See—*
Schelling, Hans-Peter; and Schaub, Fritz, 3,925,429.

Sandoz-Wander, Inc.: *See—*
Buzzolini, Mario Gustav; and Manning, Robert Everett, 3,925,483.

San Junquin, Jaime E. Anti-theft automobile door lock. 3,924,427, Cl. 70-264.000.

Sankyo Company Limited: *See—*
Sakai, Kiyoshi; Inoue, Kenji; Tajima, Yawara; Yamazaki, Mitsuo; Ohuchi, Kazuo; and Yusa, Takashi, 3,925,451.

Sano, Junzi: *See—*
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Santa Fe International Corporation: *See—*
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Santini, Georges: *See—*
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Sanyo Chemical Industries, Ltd.: *See—*
Shibahara, Yasuo; and Tominaga, Yoichi, 3,925,328.

Sapp, Maurice. Fishing rod with storable stake. 3,924,345, Cl. 43-21.200.

Saran, Herbert: *See—*
Hachmann, Klaus; Saran, Herbert; and Sperling, Gerhard, 3,925,234.

Sardo, Alberto Carmelo, to Pennwalt Corporation. System for the handling of fruits and vegetables. 3,924,381, Cl. 53-3.000.

Sartori, Guido: *See—*
Valvassori, Alberto; Sartori, Guido; and Cameli, Nazzareno, 3,925,333.

Sartorius-Membranfilter GmbH: *See—*
Scriba, Peter C., 3,925,207.

Sarumaru, Kazumasa, to Kobe Machinery Company, Ltd. Apparatus for vulcanization-pressing of vehicular tire treads. 3,924,981, Cl. 425-24.000.

Sasajima, Kikuo: *See—*
Maruyama, Isamu; Nakao, Masaru; Sasajima, Kikuo; Ono, Keiichi; Takayama, Masaharu; Katayama, Shigenari; Tanaka, Yoshihiro; Yanagihara, Izumi; Inaba, Shigeho; and Yamamoto, Hisao, 3,925,387.

Sasaki, Kantaro: *See—*
Miura, Minoru; Kawasaki, Morio; Sasaki, Kantaro; Sugitani, Yasuo; and Ishimura, Susumu, 3,924,812.

Sashida, Akinobu: *See—*
Minakawa, Yoshinari; and Sashida, Akinobu, 3,924,821.

Satake, Yoshihiro, to Copal Company Limited. Voltage checking means for an electric circuit employing two power sources. 3,925,771, Cl. 340-249.000.

Sato, Akira; Shiba, Keisuke; and Hinata, Masanao, to Fuji Photo Film Co., Ltd. Direct-positive silver halide emulsion containing a cyanine dye having a pyrazolo[1,5-a]benzimidazole nucleus. 3,925,084, Cl. 96-101.000.

Sato, Akira; Ogawa, Akira; Shiba, Keisuke; and Hinato, Masanao, to Fuji Photo Film Co., Ltd. Direct positive silver halide emulsion. 3,925,085, Cl. 96-101.000.

Sato, Kiyotaka: *See—*
Ogura, Jiro; Seki, Ikuo; Sato, Kiyotaka; Takahashi, Masaaki; Ito, Akira; and Igarashi, Yuriko, 3,925,222.

Sato, Masao: *See—*
Takamura, Akira; Shimogori, Kazutoshi; Yamagata, Toshiaki; Sato, Masao; and Kitanata, Koziro, 3,925,064.

Sato, Takashi, to Pioneer Electronic Corporation. Telephone auto-answering device with time recording. 3,925,617, Cl. 179-6.00R.

Sato, Toshio: *See—*
Ohtsuka, Shuji; and Sato, Toshio, 3,925,741.

Satya, Akella V. S.: *See—*
Altman, Carl; Chapman, Sydney G.; and Satya, Akella V. S., 3,924,320.

Saucy, Gabriel: *See—*
Cohen, Noal; Rosenberger, Michael; and Saucy, Gabriel, 3,925,420.

Saunders, Alexander M., to Technicon Instruments Corporation. Method and apparatus for quantitative analysis utilizing particulate reagent material. 3,925,018, Cl. 23-230.00R.

Saunders, John: *See—*
Roantree, James P.; and Saunders, John, 3,925,642.
Roantree, James P.; Saunders, John; and Baum, Robert A., 3,925,643.
Roantree, James P.; and Saunders, John, 3,925,654.

Saunders, Richard C.; and Heredy, Laszlo A., to Electric Power Research Institute. Positive electrode for electrical energy storage device. 3,925,098, Cl. 136-6.0LF.

Saunders, Thomas Edward: *See—*
Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, 3,925,785.

Saveth, Saul. Relatively flat blank for a container and the container made therefrom. 3,924,798, Cl. 229-23.0AB.

Sawada, Atsuo, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Process for preparing granular ethylene-vinyl alcohol copolymer. 3,925,336, Cl. 260-87.300.

Sayigh, Adnan A. R.: *See—*
Knis, Stephen A.; and Sayigh, Adnan A. R., 3,924,837.

Scatoloni, Guido J. Electrode cleaning means in an electric water heater. 3,925,638, Cl. 219-295.000.

Schaafsma, Sijbrandus E.; and Deumens, Johannes J. M., to Stamicarbon B.V. Preparation of 3,4,5,6,7,8-hexahydrocoumarin. 3,925,422, Cl. 260-343.20R.

Schachet, Eli, to Sherwood Medical Industries Inc. Modular thoracic drainage device. 3,924,624, Cl. 128-276.000.

Schafer, Karl; Schuster, Hans; and Klebert, Wolfgang, to Bayer Aktiengesellschaft. Process for finishing textiles made of fibers which contain keratin. 3,925,581, Cl. 427-377.000.

Schaller, Robert L., to Sundstrand Syracuse, Inc. Centerless grinder with hydraulic drive. 3,924,359, Cl. 51-103.0TF.

Scharfe, Gerhard: *See—*
Swodenk, Wolfgang; and Scharfe, Gerhard, 3,925,452.

Scharrer, Roland Pierre Franz, to Arizona Chemical Company. Polymerization of unsaturated fatty materials. 3,925,342, Cl. 260-97.500.

Schaub, Fritz: *See—*
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Schellhammer, Carl-Wolfgang: *See—*
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Scheminske, Dennis L.; and Rayburn, Russell L. Portable sync-sound camera with built-in sound-monitoring system. 3,924,939, Cl. 352-34.000.

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Schmermund, Alfred. Machine for packaging rod-shaped articles. 3,924,386, Cl. 53-60.000.

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Schmid, John J., to United States of America, Army. Diglycidyl ether of 4-methylol resorcinol. 3,925,315, Cl. 260-47.0EN.

Schmidt-Dunker, Manfred: *See—*
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Schmidt, James J.: *See—*
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Schrecongost, Ray B., to Hammond Corporation. Electronic keying circuit with selectable sustain characteristics. 3,924,505, Cl. 84-1.010.

Schreiber, Richard. Apparatus for dissolving oxygen in water. 3,925,522, Cl. 261-92.000.

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Schumann, Wilhelm; and Strathmann, Heinrich, to Forschungsinstitut Bergof GmbH. Polyimide membrane and process for making same. 3,925,211, Cl. 210-500.00M.

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Science Union et Cie, Societe Francaise de Recherche Medicale: *See—*
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Scott, Trevor William; and Hills, Geoffrey Dean Loftus, to Commonwealth Scientific and Industrial Research Organization. Feed supplements for ruminants comprising lipid encapsulated with protein-aldehyde reaction product. 3,925,560, Cl. 426-2.000.

Scriba, Peter C., to Sartorius-Membranfilter GmbH. Semi-automatic chromatographic separation apparatus. 3,925,207, Cl. 210-138.000.

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Security Devices Corporation: *See—*
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Seunevel, Thierry B., to Alpha Bebe Sante, Zone Industrielle. Feeding device with regulable flow. 3,924,620, Cl. 128-252.000.

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Sewell, Wesley C., to United States of America, Air Force. Series tuned spin coil supply. 3,925,711, Cl. 317-123.000.

Sextro, Gunter; and Burg, Karlheinz, to Hoechst Aktiengesellschaft. Thermoplastic molding composition based on poly (oxymethylenes). 3,925,505, Cl. 260-823.000.

Seyfried, Franz: *See—*
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Shacter, John, to United States of America, Energy Research and Development Administration. Stage design. 3,925,036, Cl. 55-158.000.

Shalit, Harold; and Kieras, Joseph A., to Atlantic Richfield Company. Production of styrene. 3,925,496, Cl. 260-669.00R.

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Shave, Robert C. Cushion construction. 3,924,283, Cl. 5-338.000.

Shaw, Alan, to Halifax Tool Company Limited. Percussion drill control means. 3,924,690, Cl. 173-13.000.

Shaw, Stuart Walter Ker, to International Nickel Company, Inc., The. Nickel-chromium alloys and casting thereof. 3,925,072, Cl. 75-171.000.

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Sherman, Ralph R., Jr., to General Electric Company. Constant current battery charging circuit. 3,925,714, Cl. 320-39.000.

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Shin, Kju Hi, to Ethyl Corporation. Process for the production of 1,3,5-trimethy-2,4,6-tris(3,5-di-tert-alkyl-4-hydroxybenzyl)benzene. 3,925,488, Cl. 260-619.00B.

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Showalter, Lane Crawford; Brokenshire, John Leslie; and Watts, Geoffrey Brian, to Marsland Engineering Limited. Detecting apparatus. 3,925,022, Cl. 23-254.00E.

Shum, Yick-Mow: *See—*
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Singleton, Frank Henry; and Bruce, Jack William, to Woodall-Duckham, Limited. Treatment of cement kiln flue dust. 3,925,534, Cl. 423-208.000.

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Skoultchi, Martin M.: *See—*
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Sloan, Benjamin Johnston, Jr., to Texas Instruments, Incorporated. Process for fabricating integrated circuits utilizing ion implantation. 3,925,105, Cl. 148-1.500.

Slocum, Charles W., to Thermo-Electronics, Inc. Resistance device for use in energizing the starting winding of a split phase induction motor. 3,925,748, Cl. 338-57.000.

Smeby, Robert Rudolph: *See—*
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Smith, Elliott P.; Wachsmuth, Robert H.; and Skolnick, Leonard, to McGraw-Hill, Inc. Cassette and cassette holder for improved controlled-reading device. 3,924,941, Cl. 352-78.00R.

Smith, Ernest L., to Phillips Petroleum Company. Frustoconical container and blank therefor. 3,924,795, Cl. 229-4.500.

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Smith, Scudder. Oscillator device for generating signals of a precise frequency. 3,925,734, Cl. 331-41.000.

SmithKline Corporation: *See—*
De Marinis, Robert M.; and Hoover, John R. E., 3,925,373.

Smrt, Thomas J. Stripe-adjusting apparatus for spraying machine. 3,924,784, Cl. 222-176.000.

Smyth, Roston & Pavitt: *See—*
Gillchriest, William C., 3,925,432.

Snamprogetti S.p.A.: *See—*
Koch, Paolo; and Perrotti, Emilio, 3,925,413.

Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
Giacobazzi, Valeriano, 3,924,984.

Snyder, John Harold: *See—*
Hollingsworth, Clinton Allen; and Snyder, John Harold, 3,925,024.

Snyder, William Lee: *See—*
Hanser, Paul Edmund; and Snyder, William Lee, 3,924,656.

Societa Italiana Resine S.I.R. S.p.A.: *See—*
Ferlazzo, Natale; Buzzi, Gian Fausto; and Ghirga, Marcello, 3,925,463.

Societe Anonyme dite: L'Oreal: *See—*
Viout, Andre; and Pasero, Regine, 3,925,542.

Societe Anonyme: Poclain: *See—*
Jacquot, Jean Noel, 3,924,971.

Societe Generale de Constructions Electriques et Mecaniques "Alsthom & Cie": *See—*
Bono, Pierre; Demange, Philippe; Leclere, Claudine; and Tissier, Alexis, 3,925,099.

Societe Nationale des Petroles d'Aquitaine: *See—*
Lazarre, Flavien; Rozand, Jacques; and Roumazeilles, Simonne, 3,924,658.

Soder, Eickhardt; and Grassme, Ulrich, to Siemens Aktiengesellschaft. X-ray diagnosis apparatus with a directly heated X-ray tube. 3,925,672, Cl. 250-402.000.

Sollazzi, Pasquale Robert; and Kaufman, Michael Avrum, to Rapid-American Corporation. Luggage with pull device. 3,924,872, Cl. 280-47.370.

Sollazzi, Pasquale Robert: *See—*
Bernard, James K.; and Sollazzi, Pasquale Robert, 3,924,714.

Solomon, Elias E., to Gulf & Western Manufacturing Company (Systems). Gated filter circuit. 3,925,687, Cl. 307-233.00R.

Solov, Edwin G.: *See—*
Brodie, Peter M.; and Solov, Edwin G., 3,924,824.

Soloway, Sidney: *See—*
McElroy, Jerry T.; and Soloway, Sidney, 3,924,454.

Solvay & Cie: *See—*
Giacopelli, Umberto, 3,925,186.

Somann, Gert P. Strap connector buckle. 3,924,302, Cl. 24-74.00A.

Sommer, Richard: *See—*
Wolfrum, Gerhard; Sommer, Richard; and Klauke, Erich, 3,925,350.

Sondhi, Man Mohan, to Bell Telephone Laboratories, Incorporated. Apparatus for determining the glottal waveform. 3,925,616, Cl. 179-1.0SC.

Sonntag, Alois, to Licentia Patent-Verwaltungs-G.m.b.H. High voltage thyristor. 3,925,807, Cl. 357-55.000.

Sony Corporation: *See—*
Esashi, Hanjiro; and Yoshizaki, Shuji, 3,925,820.
Ishigaki, Yoshio; Narahara, Hisaaki; and Tsuchiya, Takao, 3,925,810.
Kihara, Nobutoshi, 3,925,816.
Kobayashi, Isamu, 3,925,803.
Kodera, Yoichi, 3,924,324.
Naruse, Yosuke; Yoshioka, Taisuke; Himuro, Masami; and Ito, Keiichi, 3,925,603.
Saito, Etsuro, 3,924,860.

Sorensen, Egon, to AMF Incorporated. Pressure vessel seal and lock. 3,924,778, Cl. 220-314.000.

Sorimachi, Kanehiro: *See—*
Sanada, Noriaki; and Sorimachi, Kanehiro, 3,925,798.

Sorrells, Frank D.: *See—*
Lee, Charles A.; and Sorrells, Frank D., 3,924,626.

Southern Illinois University Foundation: *See—*
Shechmeister, Isaac L.; Kolar, Joseph R., Jr.; and Kammlade, William G., Jr., 3,925,544.

Southwest Research Institute: *See—*
Colburn, John W., Jr.; Wood, Charles D., III; Mathis, Ronald J.; and Nye, Allan R., 3,924,897.

Spadafora, Michael A.: *See—*
Harner, Kermit I.; Hixson, William W.; Spadafora, Michael A.; and Stearns, Charles F., 3,924,960.

Sparham, Vaughan Reynell. Method of separating solids suspended in a liquid. 3,925,205, Cl. 210-73.000.

Sparrendahl, Gunnar Erik William: *See—*
Edstrom, Nils Herbert; Lindqvist, Stig Gustaf Wilhelm; and Sparrendahl, Gunnar Erik William, 3,925,620.

Spector, Richard; and Stretanski, Joseph Anthony, to American Cyanamid Company. Bis(phenyl)amidotriophosphates. 3,925,518, Cl. 260-958.000.

Speiser, Jeffrey M.; Whitehouse, Harper J.; and Alsup, James M., to United States of America, Navy. Apparatus for the generation of a high capacity chirp-Z transform. 3,925,648, Cl. 235-156.000.

Spence, John R., to Rockwell International Corporation. Direct drive circuit for light emitting diodes. 3,925,690, Cl. 307-270.000.

Sperling, Gerhard: *See—*
Hachmann, Klaus; Saran, Herbert; and Sperling, Gerhard, 3,925,234.

Sperry, Philip R.; Tyler, Derek E.; and Butzky, Leon, to Swiss Aluminium Limited. High strength aluminum base casting alloys possessing improved machinability. 3,925,067, Cl. 75-142.000.

Sperry Rand Corporation: *See—*
Kroger, Harry; and Potier, Curtis N., 3,925,078.

Spietschka, Ernst: *See—*
Papenfuss, Theodor; Rehberg, Rolf; and Spietschka, Ernst, 3,925,094.

Spivack, Mayer; and Kern, Fred R., Jr. Hand-held sail. 3,924,870, Cl. 280-11.37S.

Spreadbury, Robert J.: *See—*
Bhate, Suresh K.; Spreadbury, Robert J.; Walker, Michael S.; and Young, Frederick J., 3,925,707.

Sprengling, Gerhard R., to Westinghouse Electric Corporation. Filled composition and article containing perfluorinated surfactant. 3,925,297, Cl. 260-37.0EP.

Springer, Robert H.: *See—*
O'Brien, Darrell E.; Robins, Roland K.; and Springer, Robert H., 3,925,385.

Springett, Charles N.: *See—*
Goren, Yoram; and Springett, Charles N., 3,924,415.

Springfield Instrument Company, Inc.: *See—*
Eberhard, Heinz; and Menzer, Anton, 3,924,518.

Sprugel, Friedrich: *See—*
Froeschmann, Rasmus; and Sprugel, Friedrich, 3,925,213.

Spuhl AG: *See—*
Spuhl, Walter, 3,924,665.

Spuhl, Walter, to Spuhl AG. Spring core assembly machine. 3,924,665, Cl. 140-92.700.

Spulgis, Ivars Sigurds: *See—*
Hickey, Thomas Nelson; and Spulgis, Ivars Sigurds, 3,925,046.

Sroka, Werner: *See—*
Engel, Claus Richard; Linke, Heinz; Rothbuhr, Lothar; Sroka, Werner; Vogt, Jes; and Westlinning, Hermann, 3,925,301.

Staab, Joachim, to Hartmann & Braun Aktiengesellschaft. Two beam infrared gas analyzer. 3,925,667, Cl. 250-343.000.

Staal, Gerardus B.: *See—*
Henrick, Clive A.; and Staal, Gerardus B., 3,925,460.
Henrick, Clive A.; and Staal, Gerardus B., 3,925,461.

Stadig, William P., to Petro-Tex Chemical Corporation. Oxidative dehydrogenation process. 3,925,498, Cl. 260-680.00E.

Stahl, Herbert. Feeding arrangement for a bar-shaped object. 3,924,755, Cl. 214-1.00P.

Stahl, Herbert A., to United States of America, Army. Colloidal semiconductor and method of manufacture. 3,925,698, Cl. 313-346.000.

Stahle, Helmut: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, 3,925,446.

Stahlecker, Fritz; and Stahlecker, Hans. Apparatus for piecing a thread in an open-end spinning unit. 3,924,393, Cl. 57-34.00R.

Stahlecker, Fritz; and Stahlecker, Hans. Apparatus for piecing a thread in an open-end spinning unit. 3,924,394, Cl. 57-34.00R.

Stahlecker, Fritz; and Stahlecker, Hans. Apparatus for removing impurities from fibrous material. 3,924,397, Cl. 57-56.000.

Stahlecker, Hans: *See—*
Stahlecker, Fritz; and Stahlecker, Hans, 3,924,393.
Stahlecker, Fritz; and Stahlecker, Hans, 3,924,394.
Stahlecker, Fritz; and Stahlecker, Hans, 3,924,397.

Stallings, Robert John, Jr. Dynamic speaker having dome diaphragm and basket frequency. 3,925,626, Cl. 179-115.50R.

Stamicarbon B.V.: *See—*
Geus, John W., 3,925,481.
Schaafsma, Sijbrandus E.; and Deumens, Johannes J. M., 3,925,422.

Stamicarbon N.V.: *See—*
Roest, Bernard C.; and Schepers, Herman A. J., 3,925,512.

Standard Oil Company: *See—*
Tannenbaum, Steven R., 3,925,562.
Wardlow, Eddie, Jr., 3,925,305.

Standard-Thomson Corporation: *See—*
Duprez, Wayne R., 3,924,308.

Standex International Corporation: *See—*
Broderick, Frank William, 3,924,313.

Stanley, Robert K., to Textured Yarn Co., Inc. Strand treatment apparatus. 3,924,310, Cl. 28-1.600.

Stanley, Robert K. Strand drawing and crimping treatment. 3,924,311, Cl. 28-72.110.

Stanley Tools Ltd.: *See—*
Carter, Ronald David, 3,924,329.

Stanley Works, The: *See—*
Whitehouse, Hugh L., 3,924,693.

Stark, Sven Olof Soren: *See—*
Rausing, Gad Anders; Stark, Sven Olof Soren; and Sevrell, Sven Gosta Uno, 3,924,796.

Starrett, Rupert M., to Risdon Manufacturing Company, The. Safety closure assembly for capping a dispensing container. 3,924,782, Cl. 222-402.110.

Stauffer Chemical Company: *See—*
Jin, Jung Il; and Hwa, Jesse C. H., 3,925,506.
MacDonald, Alan A., 3,925,055.

Stearns, Charles F.: *See—*
Harner, Kermit I.; Hixson, William W.; Spadafora, Michael A.; and Stearns, Charles F., 3,924,960.

Stearns, Charles R.: *See—*
Weinman, James A.; and Stearns, Charles R., 3,924,605.

Steensma, Peter Dennis, to International Telephone and Telegraph Corporation. Tuning structures for microstrip transmission lines. 3,925,740, Cl. 333-82.00B.

Steiger, Eberhard, to VEB Kombinat Medizin-und Labortechnik Leipzig. Biological indicator and method for its production. 3,925,159, Cl. 195-73.000.

Steingroever, Erich, to Elektro-Physik, Hans Nix & Dr. Ing. E. Steingroever, KG. Apparatus for measuring the hysteresis curve of magnetic bodies using a magnetic potential coil. 3,925,724, Cl. 324-34.00R.

Stengel, Edgar: *See—*
Reinke, Friedhelm; Stengel, Edgar; and Emde, Friedhelm, 3,925,570.

Stephens, Ruth E., to Ethyl Corporation. Catalysts. 3,925,253, Cl. 252-455.00R.

Stephenson, Roger C.: *See—*
Cooper, Earl A.; and Stephenson, Roger C., 3,924,688.

Sterling Drug Inc.: *See—*
Lesher, George Y.; and Brundage, Ruth Pauline, 3,925,398.

Stern, Louis P., to Westinghouse Electric Corporation. System and method for transferring between boiler-turbine plant control modes. 3,925,645, Cl. 235-151.210.

Sternbach, Leo Henryk: *See—*
Metlesics, Werner; and Sternbach, Leo Henryk, 3,925,359.

Stevens, Timothy S.: *See—*
Hamish, Small; and Stevens, Timothy S., 3,925,019.

Stewart, Richard P., to American Farm Systems, Inc. Roof structure. 3,924,367, Cl. 52-80.000.

Stewart, Robert Lee: *See—*
Laughlin, Robert Gene; and Stewart, Robert Lee, 3,925,262.

Stichting Reactor Centrum Nederland: *See—*
Quaadvliet, Hendricus Johannes Adrianus, 3,924,380.

Stiles, John C., to Singer Company, The. Vibrating ring gyro. 3,924,475, Cl. 74-5.60A.

Stiles, John C.: *See—*
Friedland, Bernard; and Stiles, John C., 3,924,474.

Stirling, Walter Robert; Ellis, Christopher Robinson; and Silvester, Brian Carol, to Ferodo Limited. Hydraulic liquid operated and cooled friction brake. 3,924,712, Cl. 188-264.00F.

Stirrup, Keith A.: *See—*
Haitz, Roland H.; Sedlewicz, Paul G.; Stirrup, Keith A.; Hilbiber, David F.; and Teichner, Robert W., 3,925,801.

Stitt, Donald H.: *See—*
Butcher, Thomas V.; and Stitt, Donald H., 3,924,888.

Stockinger, Friedrich; and Lohse, Friedrich, to Ciba-Geigy Corporation. Triglycidyl compounds and their use. 3,925,407, Cl. 260-309.500.

Stoepel, Kurt: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,925,395.

Stone Container Corporation: *See—*
Partain, James H., 3,924,801.

Stone, Jonathan A.; and Bluemle, Albert W., to Hooker Chemicals & Plastics Corporation. Foundry aggregate binders. 3,925,296, Cl. 260-37.00N.

Stone, Louis Earl; and Romano, Roberto, to Texas Instruments, Incorporated. Method for the two-stage epitaxial growth of III–V semiconductor compounds. 3,925,117, Cl. 148-171.000.

Stone Manganese Marine Limited: *See—*
May, Eric R., 3,924,411.

Story Chemical Corporation: *See—*
Story, Paul R.; and Busch, Peter, 3,925,417.

Story, Paul R.; and Busch, Peter, to Story Chemical Corporation. Tricyclohexylidene peroxide and dicyclohexylidene peroxide and method of producing the same. 3,925,417, Cl. 260-338.000.

Story, Paul Richard; Busch, Peter; Denson, Donald Derby; and Wright, Carl Edward, to Research Corporation. Method for the preparation of macrocyclic compound. 3,925,421, Cl. 260-343.000.

Stover, David Emmert: *See—*
Wagner, Joseph Francis; Broderick, Ross Thomas; Link, Joseph Edward; and Stover, David Emmert, 3,924,904.

Stover, Harris A. Monitoring system for detecting defective rails or road beds. 3,924,461, Cl. 73-146.000.

Strain, Robert Joseph; and Thornber, Karvel Kuhn, to Bell Telephone Laboratories, Incorporated. Transfer filter for transfer devices. 3,925,806, Cl. 357-24.000.

Stratford Engineering Corporation: *See—*
Putney, David H.; and Graham, Ward A., 3,925,501.

Strathmann, Heinrich: *See—*
Schumann, Wilhelm; and Strathmann, Heinrich, 3,925,211.

Straughn, Robert O.; Elofson, Gary L.; and Reinhart, Richard D., to General Mills, Inc. Preparing an extruded puffed snack product. 3,925,563, Cl. 426-302.000.

Strauven, Kurt, to Wasser-Sand-Forschungs-U. Vertriebs G.m.b.H. Filtering device. 3,925,210, Cl. 210-335.000.

Stretanski, Joseph Anthony: *See—*
Spector, Richard; and Stretanski, Joseph Anthony, 3,925,518.

Striker, David L., to Ford Motor Company. Semi-conductor rectifier heat sink. 3,925,809, Cl. 357-81.000.

Strong, Doyle L., to Minnesota Mining and Manufacturing Company. Pressure-fixable developing powder containing a thermoplastic resin and wax. 3,925,219, Cl. 252-62.10P.

Strub, Rolf. Ski safety binding. 3,924,869, Cl. 280-11.35D.

Strunk, Manfred; Kroschel, Heinz; and Voss, Alfred, to Dynamit Nobel Aktiengesellschaft. Process for the production of explosive devices surrounded by a case. 3,924,510, Cl. 86-1.00R.

Stulik, Jiri; and Scheinecker, Alois, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Device for lifting and pivoting a metallurgical vessel. 3,924,517, Cl. 92-2.000.

Stupak, Leonid Mikhailovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bochorishvili, Anzor Ippolitovich; Stupak, Leonid Mikhailovich; Sysenko, Anatoly Petrovich; and Popov, Valery Georgievich, 3,924,672.

Sturwold, Robert J.; and Barrett, Fred O., to Emery Industries, Inc. Esters of polyoxyalkylene glycols and mixed dibasic acids as fiber finishes. 3,925,589, Cl. 428-395.000.

Sugawara Kogyo Co., Ltd.: *See—*
Suzuki, Nagayuki; Nakamura, Tsutomu; and Yamada, Katsuto, 3,925,584.

Sugi, Ichirow; Takenaka, Haruo; Okiyama, Toshiaki; and Kobayashi, Teruo, to Fuji Photo Film Co., Ltd. Recording method. 3,925,573, Cl. 427-145.000.

Sugimoto, Keiichi; Nishijima, Kouji; and Kakeya, Nobuharu, to Takeda Chemical Industries, Ltd. α-Alkylsulfobenzyl penicillins and production thereof. 3,925,362, Cl. 260-239.100.

Sugisawa, Masakazu, to Aisin Seiki Kabushiki Kaisha. Power steering mechanism. 3,924,705, Cl. 180-79.20R.

Sugitani, Yasuo: *See—*
Miura, Minoru; Kawasaki, Morio; Sasaki, Kantaro; Sugitani, Yasuo; and Ishimura, Susumu, 3,924,812.

Suhara, Manabu: *See—*
Oda, Yoshio; Uchida, Keiichi; Suhara, Manabu; and Morimoto, Takeshi, 3,925,464.

Sule, Frank P.: *See—*
Renner, Edmund W., Jr.; Sule, Frank P.; and Sule, Wayne P., 3,924,559.

Sule, Wayne P.: *See—*
Renner, Edmund W., Jr.; Sule, Frank P.; and Sule, Wayne P., 3,924,559.

Suler, Ladislav, to Bata Shoe Company, Inc. Control system for injection molding apparatus. 3,924,986, Cl. 425-451.200.

Sumitomo Chemical Company, Limited: *See—*
Akamatsu, Takashi; Koga, Koichi; Kondo, Mitsuru; Miyake, Makoto; and Iwasaki, Hiroshi, 3,925,416.
Ishizumi, Kikuo; Mori, Kazuo; Yamamoto, Michihiro; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 3,925,382.
Maruyama, Isamu; Nakao, Masaru; Sasajima, Kikuo; Ono, Keiichi; Takayama, Masaharu; Katayama, Shigenari; Tanaka, Yoshihiro; Yanagihara, Izumi; Inaba, Shigeho; and Yamamoto, Hisao, 3,925,387.
Mitsushima, Hirotsugu; and Katata, Motohiro, 3,925,327.
Tottori, Nobumasa; Kato, Toshiro; Asano, Yasuhisa; Ueda, Minoru; Kirino, Osamu; Ooba, Shigehiro; Fujinami, Akira; and Ozaki, Toshiaki, 3,925,554.
Yamahara, Takeshi; and Usui, Masahiro, 3,925,436.
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,925,364.

Sumitomo Electric Industries, Ltd.: *See—*
Matsui, Kazumi; Umemori, Takashi; Matsuura, Kenji; Hosoda, Yoshikado; Nishikawa, Tadashige; and Tawara, Makoto, 3,924,537.
Osawa, Makoto; Hagiwara, Yoshitoshi; Kusaka, Kunio; Kawakita, Takao; Motoyoshi, Kenya; and Kuroishi, Nobuhito, 3,925,065.

Sumitomo Metal Industries, Ltd.: *See—*
Miura, Minoru; Kawasaki, Morio; Sasaki, Kantaro; Sugitani, Yasuo; and Ishimura, Susumu, 3,924,812.

Summerfield, Martin: *See—*
Caveny, Leonard H.; and Summerfield, Martin, 3,924,406.

Summers, Leo Ewart Arthur; and Underhill, David Sidney, to British Aircraft Corporation Limited. Forming metals. 3,924,793, Cl. 228-157.000.

Summers, Thomas Wade, to Brown & Williamson Tobacco Corporation. Ventilated filter tip cigarette. 3,924,643, Cl. 131-10.00A.

Sun Chemical Corporation: *See—*
Mattis, Donald J., 3,925,655.

Sun Oil Company of Pennsylvania: *See—*
Mills, Ivor W., 3,925,220.
Wentzheimer, William W., 3,925,500.

Sun Ventures, Inc.: *See—*
Oishi, Masayoshi, 3,925,254.

Sundbeck, Bertil: *See—*
Borretzen, Bernt; Olsson, Knut Gunnar; and Sundbeck, Bertil, 3,925,487.

Sundstrand Data Control, Inc.: *See—*
Bateman, Charles Donald; and Muller, Hans Rudolf, 3,925,751.

Sundstrand Syracuse, Inc.: *See—*
Schaller, Robert L., 3,924,359.

Suzuki, Kinya; and Izumi, Tokio, to Nippon Telegraph and Telephone Public Corporation; and Ocean Cable Co., Ltd. Armored submarine cable having lengthwise distributed insulation means in each armor wire. 3,925,598, Cl. 174-108.000.

Suzuki, Masahiko, to Casio Computer Co., Ltd. Ink jet type printing device. 3,925,787, Cl. 346-75.000.

Suzuki, Nagayuki; Nakamura, Tsutomu; and Yamada, Katsuto, to Daiichi Seiyaku Company Limited; and Sugawara Kogyo Co., Ltd. Adhesive seal and tape for sealing. 3,925,584, Cl. 428-40.000.

Suzuki, Osamu: *See—*
Azuma, Kishiro; Tsuji, Isao; Kato, Hiroyuki; Tatemichi, Hidemaro; Motegi, Akira; Suzuki, Osamu; and Kondo, Kishichiro, 3,925,322.

Suzuki, Yasoji, to Tokyo Shibaura Electric Company, Ltd. Time sharing information circuit. 3,925,685, Cl. 307-205.000.

Suzuki, Yasuhiro: *See—*
Kojima, Makoto; Noda, Yuzuru; Suzuki, Yasuhiro; and Okamoto, Toshihide, 3,925,313.

Suzuoki, Kazuhiro: *See—*
Ibata, Jyoji; Kobayashi, Hidehiko; Toyomoto, Kazuo; Suzuoki, Kazuhiro; and Nogami, Sumitaka, 3,925,272.

Swadner, Robert L.: *See—*
Gaines, Marvin E.; and Swadner, Robert L., 3,924,968.

Swallow, Ronald J., to Research Corporation. Display terminal system. 3,925,776, Cl. 340-324.0AD.

Swander, Robert W.: *See—*
Kimmel, Robert M.; Riggs, John P.; Swander, Robert W.; and Whitney, Wells, 3,925,524.

Swanson, Arthur H. Tracheotomy tube. 3,924,637, Cl. 128-351.000.

Swanson, David B.: *See—*
Horzepa, John P.; and Swanson, David B., 3,925,257.

Swanson, Ronald R., to General Mills Chemicals, Inc. Phenolic oximes. 3,925,472, Cl. 260-566.00A.

Swanson, Russell K. Unloading assembly for shopping cart. 3,924,709, Cl. 186-1.0AC.

Swanson, Sydney Alan Vasey: *See—*
Freeman, Michael Alexander Reykers; and Swanson, Sydney Alan Vasey, 3,924,277.

Swift Chemical Company: *See—*
Kealy, Joseph P., 3,925,053.

Swiss Aluminium Limited: *See—*
Sperry, Philip R.; Tyler, Derek E.; and Butzky, Leon, 3,925,067.

Swodenk, Wolfgang; and Scharfe, Gerhard, to Bayer Aktiengesellschaft. Process for the production of allyl acetate. 3,925,452, Cl. 260-497.00A.

SWS Silicones Corporation: *See—*
Lewis, Richard Newton, 3,925,285.

Sybron Corporation: *See—*
Lentine, Frank Nickolis; and Keller, William Francis, 3,924,334.
Rabinowitz, Azriel J.; and Wilson, David B., 3,924,894.
Woodhams, Glen Arthur, 3,924,660.

Sylvester, Robert T.: *See—*
Allen, Travis A.; and Sylvester, Robert T., 3,924,794.

Symborski, Alex P., to Owens-Corning Fiberglas Corporation. Apparatus for packaging linear material. 3,924,817, Cl. 242-18.00G.

Synthelabo: *See—*
Najer, Henry; and Pascal, Yves Robert Alain, 3,925,392.

Sysenko, Anatoly Petrovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bochorishvili, Anzor Ippolitovich; Stupak, Leonid Mikhailovich; Sysenko, Anatoly Petrovich; and Popov, Valery Georgievich, 3,924,672.

Systems; Science and Software: *See—*
Farrell, Sherman R.; and Loda, Gary K., 3,925,670.

Szepesvary, Jeno. Radial shaft packing ring. 3,924,861, Cl. 277-185.000.

Szymaszek, Paul G., to Vilter Manufacturing Corporation. Control means for a variable capacity rotary screw compressor. 3,924,972, Cl. 417-310.000.

Szypka, Zdzislaw: *See—*
Bojarska-Dahlig, Halina; and Szypka, Zdzislaw, 3,925,352.

Tadmor, Zehev: *See—*
Klein, Imrich; and Tadmor, Zehev, 3,924,842.

Tahara, Kumeo, to Alps Motorola, Inc. Head shifting mechanism for two-channel and four-channel cartridge tape recorder. 3,925,818, Cl. 360-106.000.

Taillardat, Jacques, to La Technique Integrale. Screw and nut transmission mechanism. 3,924,486, Cl. 74-459.000.

Taira, Kaoru; and Inoue, Hirotoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Main combustion chamber of swirl chamber type diesel engine. 3,924,580, Cl. 123-30.00C.

Tajima, Yawara: *See—*
Sakai, Kiyoshi; Inoue, Kenji; Tajima, Yawara; Yamazaki, Mitsuo; Ohuchi, Kazuo; and Yusa, Takashi, 3,925,451.

Takahashi, Masaaki: *See—*
Ogura, Jiro; Seki, Ikuo; Sato, Kiyotaka; Takahashi, Masaaki; Ito, Akira; and Igarashi, Yuriko, 3,925,222.

Takahashi, Noboru; Nakamura, Mutsuaki; Ozaki, Sadao; Isono, Hiromasa; and Fukushima, Iwao, to Victor Company of Japan, Limited. Process for preparation of magnetic alloy powder. 3,925,114, Cl. 148-105.000.

Takahashi, Yasuo; and Ogawa, Ryota, to Asahi Kogaku Kogyo Kabushiki Kaisha. Large aperture wide angle lens. 3,924,935, Cl. 350-214.000.

Takaki, Shoji: *See—*
Ukaji, Rokuo; Kamihigoshi, Tutomu; Mikami, Kenji; and Takaki, Shoji, 3,925,263.
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Takamura, Akio; and Harada, Tsutomu, to Kabushiki Kaisha Ono Sokki Seiksakusho. Flowmeter. 3,924,467, Cl. 73-213.000.

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Takamura, Akira; Shimogori, Kazutoshi; Yamagata, Toshiaki; Sato, Masao; and Kitanata, Koziro, to Kobe Steel Ltd. High corrosion fatigue strength stainless steel. 3,925,064, Cl. 75-128.00A.

Takasu, Isamu, to Toyo Glass Machinery Company, Ltd. Speed reduction mechanism. 3,924,478, Cl. 74-63.000.

Takayama, Masaharu: *See—*
Maruyama, Isamu; Nakao, Masaru; Sasajima, Kikuo; Ono, Keiichi; Takayama, Masaharu; Katayama, Shigenari; Tanaka, Yoshihiro; Yanagihara, Izumi; Inaba, Shigeho; and Yamamoto, Hisao, 3,925,387.

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Talis, Nikolai Semenovich; and Jursakov, Anatoly Illarionovich. Rotary tablet-making machine. 3,924,996, Cl. 425-348.00R.

Taminini, Robert J. Wind driven power generator. 3,924,966, Cl. 416-177.000.

Tammone, John M. Blackjack teaching device. 3,924,340, Cl. 35-8.00B.

Tamol, Ronald A. Educational game device. 3,924,852, Cl. 273-1.00M.

Tamura Electric Works, Ltd.: *See—*
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Tamura, Masao: *See—*
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Tanaka, Hideki; Watanabe, Mikio; Handa, Minoru; Inouchi, Mitsuhiro; Yoshioka, Shigeru; and Ishida, Kazutaka, to Furuno Electric Company, Ltd. Signal detecting device. 3,925,732, Cl. 325-325.000.

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Tannenbaum, Steven R., to Standard Oil Company. Texturizing process for single cell protein containing protein mixtures. 3,925,562, Cl. 426-276.000.

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Tashiro, Hiroyuki: *See—*
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Tate, Jack F., to Texaco Inc. Method for stimulating well production. 3,924,684, Cl. 166-307.000.

Tate, Jack F., to Texaco Inc. Method for oil recovery. 3,924,685, Cl. 166-308.000.

Tate, Jack F.: *See—*
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Taylor, Glenn M.; Patel, Harish A.; and McWhorter, Daniel M., to Kendall Company, The. Safety catheter and method. 3,924,634, Cl. 128-349.00B.

Taylor, James L. Height gage. 3,924,337, Cl. 33-169.00R.

Taylor, John J. Camera apparatus for making photographic images on moving cut film pieces. 3,925,796, Cl. 354-180.000.

Tchelitcheff, Serge, to Rhone-Poulenc S.A. 1-(5-Nitrothi-alzol-2-yl)-imidazolidine-2-thione having anti-parasitic and anti-microbial properties. 3,925,550, Cl. 424-270.000.

Tchernev, Dimiter I. Device for solar energy conversion by photoelectrolytic decomposition of water. 3,925,212, Cl. 250-527.000.

Technicon Instruments Corporation: *See—*
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Terzian, Rouben T., to Marvin Glass & Associates. Kissing doll having air actuated sounder which sounds after building predetermined pressure. 3,924,351, Cl. 46-118.000.

Tetra Pak Developpement SA: *See—*
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Teuber, Hans-Joachin; and Schutz, Gunther. Dimeric chloroacetonitrile and method for making the same. 3,925,449, Cl. 260-465.50R.

Texaco Inc.: *See—*
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Duranleau, Roger G.; and Matteo, John F., 3,925,431.
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Thoma, Herwig. Apparatus for the recognition of the initiaton of heart beat, from an electrocardiogram under extreme conditions. 3,924,610, Cl. 128-2.06R.
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Tice, William A. Needle positioning apparatus for stitching machines. 3,924,553, Cl. 112-219.00B.
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Touchy, Wolfgang, to Siemens Aktiengesellschaft. Production of semiconductive monocrystals of group III-V semiconductor compounds. 3,925,121, Cl. 148-189.000.
Toyama, Seiji; Yoshikawa, Kazuo; and Higuchi, Takeshi, to Fuji Photo Optical Co., Ltd. Optical system for color television camera. 3,925,813, Cl. 358-55.000.
Toyo Glass Machinery Company, Ltd.: *See—*
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Trimble, Robert C. Attachment for reflectors for spoke wheels. 3,924,928, Cl. 350-99.000.
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Tscharner, Christopher Johannes; Schwarz, Maurice Jacob; and Horlacher, Paul, to Ciba-Geigy Corporation. Crystalline forms of 4,4-bis-triazinylaminostilbene derivatives and processes for making same. 3,925,260, Cl. 252-543.000.
Tschudy, Donald B.; and Fawcett, John L., to Hoover Company, The. Blower connection and exhaust valve configuration for a cleaner or the like. 3,924,291, Cl. 15-330.000.
Tsou, Ivan H., to Grow Chemical Corporation. Method of making dry pigmented powder paint. 3,925,298, Cl. 260-39.000.
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Tsurumi, Sukeo. Cuboidal structure. 3,924,376, Cl. 52-593.000.
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Turk, Chester Frank: *See—*
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Turnbull, John William, to Du Pont de Nemours, E. I., and Company. Poly(meta-phenylene isophthalamide)powder. 3,925,323, Cl. 260-78.00S.
Turner, Abner B. System for introducing flocculating ions and air into waste water treatment systems. 3,925,203, Cl. 210-44.000.
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Vaiano, Vincent; 116-30-127th St. Portable play pen. 3,924,280, Cl. 5-98.00R.
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Valvassori, Alberto; Sartori, Guido; and Cameli, Nazzareno, to B. F. Goodrich Company, The. Olefinic polymers of methyl-tricyclo-3,8-decadiene. 3,925,333, Cl. 260-79.50B.
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Van Voorhis, David C., to International Business Machines Corporation. Apparatus for data compression encoding and decoding. 3,925,780, Cl. 340-347.0DD.

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Villacampa, Eugenio G. Fuel and oil additive. 3,925,031, Cl. 44-56.000.

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Wada, Yasuhiro; and Okabe, Katsuhiko, to Kabushiki Kaisha Koparu. Channel indicating means for T.V. tuners. 3,925,778, Cl. 340-378.00R.

Wadhwani, Romesh Tekchand; and Pribadi, Krishnahadi Sikun. Security system. 3,925,763, Cl. 340-164.00R.

Wagner, Frank Albert, Jr.; and Addor, Roger Williams, to American Cyanamid Company. S-(α-Substituted-arylmethylthio, -arylmethylsulfinyl, and -arylmethylsulfonyl)methylphosphorus esters. 3,925,516, Cl. 260-940.000.

Wagner, Joseph Francis; Broderick, Ross Thomas; Link, Joseph Edward; and Stover, David Emmert, to Deere & Company. Grease fitting assembly including safety stop. 3,924,904, Cl. 305-10.000.

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Wanmaker, Willem Lambertus; and Radielovic, Dragutin, to U.S. Philips Corporation. Method of manufacturing a luminescent alkaline earth halophosphate. 3,925,239, Cl. 252-301.40P.

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Ward, Frederick H., deceased (by Ward, Dilys Annie Jane, administratrix), to Massey-Ferguson-Perkins Limited. Reversible hopper partition for combine drill. 3,924,783, Cl. 222-134.000.

Ward, William J., III; and Foss, William I., to General Electric Company. High pressure membrane package construction. 3,925,037, Cl. 55-158.000.

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Wentzheimer, William W., to Sun Oil Company of Pennsylvania. Combined acid alkylation and thermal cracking process. 3,925,500, Cl. 260-683.440.

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B 288,627	3,916,179	Oct. 28, 1975
B 288,638	3,925,132	Dec. 9, 1975
B 289,175	3,924,309	Dec. 9, 1975
B 289,471	3,917,184	Nov. 4, 1975
B 289,523	3,921,166	Nov. 18, 1975
B 289,883	3,925,063	Dec. 9, 1975
B 290,328	3,924,838	Dec. 9, 1975
B 291,104	3,925,007	Dec. 9, 1975
B 291,694	3,925,339	Dec. 9, 1975
B 292,054	3,915,877	Oct. 28, 1975
B 292,126	3,914,465	Oct. 21, 1975
B 292,140	3,914,340	Oct. 21, 1975
B 292,563	3,923,653	Dec. 2, 1975
B 293,378	3,923,725	Dec. 2, 1975
B 293,437	3,913,414	Oct. 21, 1975
B 294,103	3,924,396	Dec. 9, 1975
B 294,579	3,916,737	Nov. 4, 1975
B 294,673	3,916,023	Oct. 28, 1975
B 295,481	3,921,593	Nov. 25, 1975
B 295,674	3,916,107	Oct. 28, 1975
B 295,860	3,923,880	Dec. 2, 1975
B 299,267	3,917,106	Nov. 4, 1975
B 300,353	3,921,734	Nov. 25, 1975
B 302,692	3,924,598	Dec. 9, 1975
B 302,836	3,923,573	Dec. 2, 1975
B 303,655	3,924,642	Dec. 9, 1975
B 303,702	3,914,131	Oct. 21, 1975
B 304,687	3,924,783	Dec. 9, 1975
B 305,417	3,915,882	Oct. 28, 1975
B 305,868	3,921,463	Nov. 25, 1975
B 305,881	3,923,478	Dec. 2, 1975
B 306,829	3,925,411	Dec. 9, 1975
B 306,938	3,916,050	Oct. 28, 1975
B 307,677	3,915,276	Oct. 28, 1975
B 308,661	3,924,349	Dec. 9, 1975
B 308,892	3,919,624	Nov. 11, 1975
B 309,207	3,914,743	Oct. 21, 1975
B 309,499	3,922,002	Nov. 25, 1975
B 309,755	3,919,468	Nov. 11, 1975
B 309,756	3,914,136	Oct. 21, 1975
B 309,860	3,922,485	Nov. 25, 1975
B 310,149	3,924,705	Dec. 9, 1975
B 310,271	3,923,689	Dec. 2, 1975
B 311,313	3,925,142	Dec. 9, 1975
B 311,317	3,918,975	Nov. 11, 1975
B 311,413	3,925,515	Dec. 9, 1975
B 311,910	3,924,357	Dec. 9, 1975
B 311,911	3,925,233	Dec. 9, 1975
B 312,139	3,925,530	Dec. 9, 1975
B 312,477	3,923,714	Dec. 2, 1975
B 313,098	3,925,045	Dec. 9, 1975
B 313,531	3,925,548	Dec. 9, 1975
B 313,594	3,924,626	Dec. 9, 1975
B 313,900	3,915,932	Oct. 28, 1975
B 314,049	3,920,588	Nov. 18, 1975
B 314,255	3,923,764	Dec. 2, 1975
B 314,271	3,921,845	Nov. 25, 1975
B 314,489	3,925,016	Dec. 9, 1975
B 314,977	3,923,459	Dec. 2, 1975
B 315,363	3,920,673	Nov. 18, 1975
B 315,397	3,923,963	Dec. 2, 1975
B 315,731	3,914,108	Oct. 21, 1975
B 316,014	3,920,861	Nov. 18, 1975
B 316,239	3,913,546	Oct. 21, 1975
B 316,917	3,925,494	Dec. 9, 1975
B 317,080	3,925,324	Dec. 9, 1975
B 317,347	3,923,552	Dec. 2, 1975
B 317,624	3,925,167	Dec. 9, 1975
B 318,195	3,915,699	Oct. 28, 1975
B 318,618	3,915,365	Oct. 28, 1975
B 318,640	3,925,186	Dec. 9, 1975
B 318,745	3,916,571	Nov. 4, 1975
B 319,226	3,925,082	Dec. 9, 1975
B 319,339	3,916,056	Oct. 28, 1975
B 319,402	3,919,568	Nov. 11, 1975
B 320,261	3,924,033	Dec. 2, 1975
B 320,452	3,925,083	Dec. 9, 1975
B 320,603	3,915,571	Oct. 28, 1975
B 321,018	3,921,623	Nov. 25, 1975
B 321,101	3,917,163	Nov. 4, 1975
B 321,938	3,923,889	Dec. 2, 1975
B 322,182	3,925,390	Dec. 9, 1975
B 322,239	3,920,973	Nov. 18, 1975
B 322,564	3,914,373	Oct. 21, 1975
B 322,611	3,920,863	Nov. 18, 1975
B 322,777	3,924,382	Dec. 9, 1975
B 323,127	3,923,967	Dec. 2, 1975
B 323,191	3,914,566	Oct. 21, 1975
B 323,203	3,916,165	Oct. 28, 1975
B 323,568	3,920,536	Nov. 18, 1975
B 323,666	3,924,568	Dec. 9, 1975
B 324,505	3,925,294	Dec. 9, 1975

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JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 324,739	3,924,990	Dec. 9, 1975
B 324,879	3,923,538	Dec. 2, 1975
B 325,102	3,924,355	Dec. 9, 1975
B 325,262	3,921,304	Nov. 25, 1975
B 326,514	3,925,080	Dec. 9, 1975
B 327,109	3,925,350	Dec. 9, 1975
B 327,363	3,923,504	Dec. 2, 1975
B 327,612	3,925,620	Dec. 9, 1975
B 327,674	3,918,540	Nov. 11, 1975
B 327,899	3,925,674	Dec. 9, 1975
B 328,164	3,914,703	Oct. 21, 1975
B 328,200	3,916,031	Oct. 28, 1975
B 328,205	3,914,106	Oct. 21, 1975
B 328,210	3,914,275	Oct. 21, 1975
B 328,870	3,916,486	Nov. 4, 1975
B 329,115	3,924,727	Dec. 9, 1975
B 329,476	3,920,562	Nov. 18, 1975
B 329,612	3,925,128	Dec. 9, 1975
B 329,787	3,920,688	Nov. 18, 1975
B 329,816	3,923,947	Dec. 2, 1975
B 330,536	3,925,452	Dec. 9, 1975
B 330,828	3,913,589	Oct. 21, 1975
B 331,417	3,914,157	Oct. 21, 1975
B 331,557	3,916,577	Nov. 4, 1975
B 331,895	3,916,403	Oct. 28, 1975
B 332,527	3,924,017	Dec. 2, 1975
B 332,811	3,924,359	Dec. 9, 1975
B 333,876	3,921,208	Nov. 18, 1975
B 334,251	3,924,719	Dec. 9, 1975
B 334,868	3,919,469	Nov. 11, 1975
B 334,985	3,923,912	Dec. 2, 1975
B 335,741	3,925,615	Dec. 9, 1975
B 335,773	3,920,953	Nov. 18, 1975
B 336,129	3,923,606	Dec. 2, 1975
B 336,243	3,925,422	Dec. 9, 1975
B 336,345	3,925,179	Dec. 9, 1975
B 336,652	3,914,211	Oct. 21, 1975
B 336,902	3,918,897	Nov. 11, 1975
B 336,946	3,919,425	Nov. 11, 1975
B 336,978	3,923,968	Dec. 2, 1975
B 337,235	3,919,386	Nov. 11, 1975
B 337,409	3,925,258	Dec. 9, 1975
B 337,442	3,913,658	Oct. 21, 1975
B 337,703	3,914,690	Oct. 21, 1975
B 337,787	3,923,506	Dec. 2, 1975
B 339,057	3,924,822	Dec. 9, 1975
B 339,218	3,925,121	Dec. 9, 1975
B 340,212	3,922,645	Nov. 25, 1975
B 340,833	3,925,208	Dec. 9, 1975
B 341,579	3,913,363	Oct. 21, 1975
B 342,423	3,925,334	Dec. 9, 1975
B 342,886	3,923,507	Dec. 2, 1975
B 343,136	3,919,453	Nov. 11, 1975
B 343,240	3,925,693	Dec. 9, 1975
B 343,506	3,916,021	Oct. 28, 1975
B 343,577	3,921,165	Nov. 18, 1975
B 344,479	3,924,042	Dec. 2, 1975
B 345,060	3,916,018	Oct. 28, 1975
B 345,384	3,916,146	Oct. 28, 1975
B 345,422	3,914,392	Oct. 21, 1975
B 345,567	3,913,985	Oct. 21, 1975
B 346,165	3,913,293	Oct. 21, 1975
B 346,210	3,916,142	Oct. 28, 1975
B 346,350	3,915,824	Oct. 28, 1975
B 346,585	3,913,820	Oct. 21, 1975
B 346,613	3,923,545	Dec. 2, 1975
B 346,901	3,915,583	Oct. 28, 1975
B 348,083	3,923,774	Dec. 2, 1975
B 348,383	3,923,452	Dec. 2, 1975
B 348,495	3,914,654	Oct. 21, 1975
B 348,558	3,914,109	Oct. 21, 1975
B 349,141	3,915,363	Oct. 28, 1975
B 349,177	3,914,033	Oct. 21, 1975
B 349,231	3,915,831	Oct. 28, 1975
B 349,321	3,916,103	Oct. 28, 1975
B 349,948	3,914,557	Oct. 21, 1975
B 350,143	3,924,419	Dec. 9, 1975
B 350,219	3,917,802	Nov. 4, 1975
B 350,245	3,914,331	Oct. 21, 1975
B 350,523	3,924,726	Dec. 9, 1975
B 350,708	3,923,871	Dec. 2, 1975
B 350,843	3,915,461	Oct. 28, 1975
B 351,055	3,914,074	Oct. 21, 1975
B 351,218	3,914,186	Oct. 21, 1975
B 351,222	3,921,179	Nov. 18, 1975
B 351,348	3,923,563	Dec. 2, 1975
B 351,421	3,914,733	Oct. 21, 1975
B 351,493	3,914,758	Oct. 21, 1975
B 351,535	3,915,239	Oct. 28, 1975
B 351,665	3,919,701	Nov. 11, 1975
B 351,672	3,914,000	Oct. 21, 1975
B 351,735	3,913,385	Oct. 21, 1975
B 351,863	3,914,700	Oct. 21, 1975
B 351,883	3,924,657	Dec. 9, 1975
B 351,926	3,914,133	Oct. 21, 1975
B 351,939	3,913,480	Oct. 21, 1975
B 352,934	3,913,692	Oct. 21, 1975
B 352,950	3,922,590	Nov. 25, 1975
B 352,965	3,921,926	Nov. 25, 1975
B 353,317	3,916,446	Nov. 4, 1975
B 353,387	3,924,404	Dec. 9, 1975
B 353,546	3,913,273	Oct. 21, 1975
B 354,008	3,925,081	Dec. 9, 1975
B 354,098	3,925,547	Dec. 9, 1975
B 354,296	3,914,580	Oct. 21, 1975
B 354,889	3,913,204	Oct. 21, 1975
B 354,979	3,914,251	Oct. 21, 1975
B 355,095	3,925,656	Dec. 9, 1975
B 355,269	3,914,561	Oct. 21, 1975
B 355,510	3,913,704	Oct. 21, 1975
B 355,595	3,925,649	Dec. 9, 1975
B 355,876	3,925,685	Dec. 9, 1975
B 356,253	3,925,025	Dec. 9, 1975
B 356,724	3,924,586	Dec. 9, 1975
B 357,039	3,924,406	Dec. 9, 1975
B 357,057	3,913,738	Oct. 21, 1975
B 357,131	3,924,453	Dec. 9, 1975
B 357,402	3,914,180	Oct. 21, 1975
B 357,682	3,924,973	Dec. 9, 1975
B 357,803	3,919,470	Nov. 11, 1975
B 358,174	3,924,958	Dec. 9, 1975
B 358,244	3,913,411	Oct. 21, 1975
B 358,311	3,923,561	Dec. 2, 1975
B 358,939	3,924,713	Dec. 9, 1975
B 359,174	3,914,117	Oct. 21, 1975
B 359,187	3,924,525	Dec. 9, 1975
B 359,540	3,915,235	Oct. 28, 1975
B 359,825	3,921,344	Nov. 25, 1975
B 359,946	3,914,132	Oct. 21, 1975
B 359,947	3,914,653	Oct. 21, 1975
B 360,208	3,923,750	Dec. 2, 1975
B 360,296	3,916,720	Nov. 4, 1975
B 360,719	3,915,715	Oct. 28, 1975
B 360,910	3,925,696	Dec. 9, 1975
B 361,265	3,923,569	Dec. 2, 1975
B 361,569	3,914,554	Oct. 21, 1975
B 361,604	3,922,702	Nov. 25, 1975
B 361,734	3,915,764	Oct. 28, 1975
B 362,589	3,914,012	Oct. 21, 1975
B 363,205	3,923,744	Dec. 2, 1975
B 363,457	3,922,595	Nov. 25, 1975
B 363,892	3,913,395	Oct. 21, 1975
B 363,962	3,921,826	Nov. 25, 1975
B 364,022	3,913,499	Oct. 21, 1975
B 364,163	3,916,092	Oct. 28, 1975
B 364,241	3,916,668	Nov. 4, 1975
B 364,334	3,924,670	Dec. 9, 1975
B 364,528	3,919,510	Nov. 11, 1975
B 364,786	3,921,673	Nov. 25, 1975
B 364,910	3,925,335	Dec. 9, 1975
B 365,490	3,918,527	Nov. 11, 1975
B 365,834	3,914,702	Oct. 21, 1975
B 365,841	3,925,628	Dec. 9, 1975
B 365,855	3,917,258	Nov. 4, 1975
B 366,287	3,924,946	Dec. 9, 1975
B 366,589	3,914,719	Oct. 21, 1975
B 367,021	3,914,752	Oct. 21, 1975
B 367,040	3,924,775	Dec. 9, 1975
B 367,661	3,914,158	Oct. 21, 1975
B 367,739	3,923,648	Dec. 2, 1975
B 367,812	3,924,789	Dec. 9, 1975
B 368,081	3,924,691	Dec. 9, 1975
B 368,387	3,924,923	Dec. 9, 1975
B 368,392	3,913,812	Oct. 21, 1975
B 368,397	3,914,677	Oct. 21, 1975
B 368,862	3,925,549	Dec. 9, 1975
B 369,563	3,924,449	Dec. 9, 1975
B 369,607	3,923,786	Dec. 2, 1975
B 369,997	3,913,533	Oct. 21, 1975
B 370,706	3,925,242	Dec. 9, 1975
B 371,085	3,923,783	Dec. 2, 1975
B 371,787	3,921,217	Nov. 18, 1975

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DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 371,805	3,914,433	Oct. 21, 1975	B 397,527	3,913,488	Oct. 21, 1975
B 371,836	3,923,541	Dec. 2, 1975	B 397,990	3,914,848	Oct. 28, 1975
B 372,823	3,924,660	Dec. 9, 1975	B 398,262	3,913,481	Oct. 21, 1975
B 373,297	3,924,436	Dec. 9, 1975	B 398,551	3,924,924	Dec. 9, 1975
B 373,326	3,920,433	Nov. 18, 1975	B 398,597	3,913,743	Oct. 21, 1975
B 373,428	3,915,511	Oct. 28, 1975	B 398,625	3,920,996	Nov. 18, 1975
B 375,220	3,920,417	Nov. 18, 1975	B 399,292	3,914,810	Oct. 28, 1975
B 375,652	3,921,303	Nov. 25, 1975	B 399,304	3,919,567	Nov. 11, 1975
B 376,504	3,914,570	Oct. 21, 1975	B 399,349	3,925,694	Dec. 9, 1975
B 376,654	3,922,513	Nov. 25, 1975	B 399,766	3,915,667	Oct. 28, 1975
B 376,742	3,924,392	Dec. 9, 1975	B 400,080	3,925,163	Dec. 9, 1975
B 376,799	3,913,955	Oct. 21, 1975	B 400,293	3,923,719	Dec. 2, 1975
B 377,172	3,918,255	Nov. 11, 1975	B 400,310	3,915,507	Oct. 28, 1975
B 377,683	3,924,433	Dec. 9, 1975	B 401,133	3,924,443	Dec. 9, 1975
B 377,833	3,913,884	Oct. 21, 1975	B 401,992	3,924,898	Dec. 9, 1975
B 377,869	3,917,002	Nov. 4, 1975	B 402,065	3,925,413	Dec. 9, 1975
B 378,621	3,923,840	Dec. 2, 1975	B 402,555	3,914,688	Oct. 21, 1975
B 379,038	3,923,994	Dec. 2, 1975	B 403,140	3,913,486	Oct. 21, 1975
B 379,172	3,914,379	Oct. 21, 1975	B 403,355	3,913,352	Oct. 21, 1975
B 379,282	3,913,462	Oct. 21, 1975	B 403,990	3,914,684	Oct. 21, 1975
B 379,955	3,913,157	Oct. 21, 1975	B 403,996	3,916,016	Oct. 28, 1975
B 380,014	3,921,915	Nov. 25, 1975	B 404,290	3,924,918	Dec. 9, 1975
B 380,141	3,925,161	Dec. 9, 1975	B 404,437	3,915,200	Oct. 28, 1975
B 380,310	3,921,048	Nov. 18, 1975	B 405,136	3,915,565	Oct. 28, 1975
B 380,312	3,913,953	Oct. 21, 1975	B 405,137	3,915,566	Oct. 28, 1975
B 380,338	3,924,873	Dec. 9, 1975	B 405,160	3,924,821	Dec. 9, 1975
B 380,446	3,923,836	Dec. 2, 1975	B 405,305	3,922,111	Nov. 25, 1975
B 380,900	3,913,307	Oct. 21, 1975	B 405,360	3,913,403	Oct. 21, 1975
B 380,926	3,925,095	Dec. 9, 1975	B 405,495	3,924,577	Dec. 9, 1975
B 381,074	3,919,583	Nov. 11, 1975	B 405,938	3,920,109	Nov. 18, 1975
B 381,632	3,914,732	Oct. 21, 1975	B 406,065	3,914,199	Oct. 21, 1975
B 381,847	3,921,152	Nov. 18, 1975	B 406,357	3,924,529	Dec. 9, 1975
B 382,021	3,913,212	Oct. 21, 1975	B 407,736	3,924,463	Dec. 9, 1975
B 382,261	3,914,991	Oct. 28, 1975	B 407,357	3,924,614	Dec. 9, 1975
B 382,290	3,924,717	Dec. 9, 1975	B 407,728	3,925,240	Dec. 9, 1975
B 382,783	3,919,527	Nov. 11, 1975	B 408,487	3,924,046	Dec. 2, 1975
B 382,798	3,924,435	Dec. 9, 1975	B 408,749	3,914,116	Oct. 21, 1975
B 382,840	3,922,007	Nov. 25, 1975	B 409,026	3,925,497	Dec. 9, 1975
B 383,532	3,914,246	Oct. 21, 1975	B 409,220	3,915,648	Oct. 28, 1975
B 383,581	3,925,318	Dec. 9, 1975	B 409,251	3,922,620	Nov. 25, 1975
B 384,499	3,925,135	Dec. 9, 1975	B 409,816	3,921,317	Nov. 25, 1975
B 384,658	3,913,452	Oct. 21, 1975	B 410,062	3,923,855	Dec. 2, 1975
B 384,773	3,915,416	Oct. 28, 1975	B 410,168	3,914,717	Oct. 21, 1975
B 385,210	3,913,406	Oct. 21, 1975	B 411,145	3,914,168	Oct. 21, 1975
B 386,403	3,924,895	Dec. 9, 1975	B 411,356	3,919,649	Nov. 11, 1975
B 386,592	3,925,305	Dec. 9, 1975	B 411,483	3,925,196	Dec. 9, 1975
B 387,039	3,924,510	Dec. 9, 1975	B 411,633	3,914,741	Oct. 21, 1975
B 387,331	3,913,701	Oct. 21, 1975	B 412,619	3,925,292	Dec. 9, 1975
B 387,687	3,918,151	Nov. 11, 1975	B 412,867	3,924,587	Dec. 9, 1975
B 387,761	3,914,245	Oct. 21, 1975	B 413,006	3,914,850	Oct. 28, 1975
B 387,790	3,925,380	Dec. 9, 1975	B 413,546	3,924,314	Dec. 9, 1975
B 387,818	3,918,935	Nov. 11, 1975	B 414,129	3,925,484	Dec. 9, 1975
B 388,580	3,923,712	Dec. 2, 1975	B 414,288	3,925,537	Dec. 9, 1975
B 389,070	3,914,171	Oct. 21, 1975	B 415,113	3,915,717	Oct. 28, 1975
B 389,285	3,914,631	Oct. 21, 1975	B 415,124	3,915,944	Oct. 28, 1975
B 389,327	3,924,504	Dec. 9, 1975	B 415,845	3,925,076	Dec. 9, 1975
B 389,639	3,914,626	Oct. 21, 1975	B 415,847	3,914,208	Oct. 21, 1975
B 389,726	3,921,010	Nov. 18, 1975	B 415,957	3,925,635	Dec. 9, 1975
B 389,807	3,922,623	Nov. 25, 1975	B 416,598	3,923,473	Dec. 2, 1975
B 389,932	3,913,268	Oct. 21, 1975	B 416,832	3,924,975	Dec. 9, 1975
B 389,933	3,913,267	Oct. 21, 1975	B 416,710	3,923,746	Dec. 2, 1975
B 390,679	3,913,668	Oct. 21, 1975	B 416,933	3,924,968	Dec. 9, 1975
B 390,732	3,913,878	Oct. 21, 1975	B 417,299	3,918,235	Nov. 11, 1975
B 391,184	3,914,214	Oct. 21, 1975	B 418,121	3,925,023	Dec. 9, 1975
B 391,210	3,914,220	Oct. 21, 1975	B 418,153	3,925,251	Dec. 9, 1975
B 391,437	3,915,416	Oct. 28, 1975	B 418,302	3,913,252	Oct. 21, 1975
B 391,509	3,925,175	Dec. 9, 1975	B 419,327	3,921,197	Nov. 18, 1975
B 391,675	3,916,017	Oct. 28, 1975	B 419,481	3,924,970	Dec. 9, 1975
B 392,154	3,923,809	Dec. 2, 1975	B 420,016	3,914,572	Oct. 21, 1975
B 392,696	3,916,175	Oct. 28, 1975	B 420,514	3,923,929	Dec. 2, 1975
B 392,732	3,914,903	Oct. 21, 1975	B 420,568	3,925,069	Dec. 9, 1975
B 392,753	3,916,341	Oct. 28, 1975	B 421,026	3,914,785	Oct. 21, 1975
B 392,894	3,914,763	Oct. 21, 1975	B 421,362	3,924,817	Dec. 9, 1975
B 393,163	3,914,535	Oct. 21, 1975	B 421,383	3,925,047	Dec. 9, 1975
B 393,970	3,914,638	Oct. 21, 1975	B 421,797	3,914,023	Oct. 21, 1975
B 394,088	3,914,740	Oct. 21, 1975	B 422,467	3,924,804	Dec. 9, 1975
B 394,188	3,924,591	Dec. 9, 1975	B 422,949	3,921,873	Nov. 25, 1975
B 394,300	3,914,159	Oct. 21, 1975	B 424,415	3,919,458	Nov. 11, 1975
B 394,712	3,916,306	Oct. 28, 1975	B 424,462	3,920,522	Nov. 18, 1975
B 395,478	3,922,577	Nov. 25, 1975	B 424,572	3,924,979	Dec. 9, 1975
B 395,496	3,919,435	Nov. 11, 1975	B 424,748	3,924,395	Dec. 9, 1975
B 395,671	3,920,418	Nov. 18, 1975	B 425,035	3,914,025	Oct. 21, 1975
B 395,889	3,913,190	Oct. 21, 1975	B 425,345	3,922,015	Nov. 25, 1975
B 396,025	3,913,869	Oct. 21, 1975	B 425,470	3,923,796	Dec. 2, 1975
B 396,551	3,921,929	Nov. 25, 1975	B 425,539	3,916,742	Nov. 4, 1975
B 397,027	3,923,736	Dec. 2, 1975	B 425,541	3,914,051	Oct. 21, 1975

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B 427,631	3,921,433	Nov. 25, 1975	B 440,898	3,921,789	Nov. 25, 1975
B 428,177	3,914,624	Oct. 21, 1975	B 441,024	3,913,629	Oct. 21, 1975
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B 430,106	3,918,941	Nov. 11, 1975	B 442,859	3,918,570	Nov. 11, 1975
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Umezawa, Sumio; Umezawa, Hamao; and Tsuchiya, Tsutomu, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Preparation of 3-4 dideoxykanamycin B active against resistant bacteria. Re. 28,647, Cl. 260-210.00K.

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252R 3,924,279

CLASS 5
81R 3,924,281
98R 3,924,280
327R 3,924,282
338 3,924,283
347 3,924,284

CLASS 8
4 3,925,006
91 3,925,007
111 3,925,008
115.7 3,925,009
142 3,925,010
168 3,925,015
169 3,925,011
3,925,012
3,925,016
173 3,925,013

CLASS 15
49R 3,924,285
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192 3,924,287
225 3,924,288
229AC 3,924,289
250.04 3,924,290
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CLASS 16
35D 3,924,292
169 3,924,293
174 3,924,294

CLASS 17
32 3,924,295
45 3,924,296

CLASS 19
255 3,924,297

CLASS 21
2.5R Re.28,644
105 3,925,014

CLASS 23
230B 3,925,017
3,925,020
230R 3,925,018
3,925,019
252R 3,925,021
254EF 3,925,023
254E 3,925,022
277R 3,925,024
288FC 3,925,026
288G 3,925,025
296 3,925,027
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3,924,299
31L 3,924,301
74A 3,924,302
137R 3,924,303
163K 3,924,304
205.1R 3,924,305
205.14R 3,924,306
243P 3,924,307
274R 3,924,308

CLASS 27
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CLASS 28
1.6 3,924,310
72.11 3,924,311

CLASS 29
25.35 3,924,312
121R 3,924,313
156.4R 3,924,314
200D 3,924,315
202R 3,924,316
509 3,924,317
567 3,924,318
578 3,924,319
3,924,320
580 3,924,321
3,924,322
583 3,924,323
592 3,924,324
626 3,924,325

CLASS 30
120.2 3,924,326
277 3,924,327
307 3,924,328
339 3,924,329
362 3,924,330
366 3,924,331

CLASS 32
14R 3,924,332
33 3,924,333
57 3,924,334
58 3,924,335

CLASS 33
164R 3,924,336
169R 3,924,337
174TC 3,924,338

CLASS 35
8B 3,924,340
8R 3,924,339
10.4 3,924,341
12N 3,924,342

CLASS 38
102.1 3,924,343

CLASS 40
129C 3,924,344

CLASS 43
21.2 3,924,345
26.2 3,924,346
90 3,924,347

CLASS 44
7.5 3,925,029
56 3,925,030
3,925,031
62 3,925,032

CLASS 46
17 3,924,348
3,924,349
92 3,924,350
118 3,924,351
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CLASS 47
1 3,924,353
34.11 3,924,354

CLASS 48
144 3,925,033

CLASS 49
264 Re.28,639

CLASS 51
3 3,924,355
7 3,924,356
13 3,924,357
34C 3,924,358
103TF 3,924,359
221BS 3,924,360
283 3,924,361
296 3,925,034
309 3,925,035
358 3,924,362

CLASS 52
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3,924,364
19 Re.28,640
63 3,924,365
69 3,924,366
80 3,924,367
86 3,924,368
122 3,924,369
126 3,924,370
161 3,924,371
213 3,924,373
232 3,924,372
243 3,924,374
593 3,924,376
620 3,924,377
637 3,924,379
664 3,924,380
758D 3,924,378

CLASS 53
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7 3,924,382
14 3,924,383
38 3,924,384
48 3,924,385
60 3,924,386
291 3,924,387
380 3,924,375

CLASS 54
80 3,924,388

CLASS 55
158 3,925,036
3,925,037
159 3,925,038
223 3,925,039
257 3,925,040
267 3,925,041
269 3,925,042
276 3,925,043
337 3,925,044
345 3,925,045
387 3,925,046

CLASS 56
10.2 3,924,389
328TS 3,924,390
364 3,924,391

CLASS 57
34R 3,924,392
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3,924,394
34.5 3,924,395
35 3,924,396
56 3,924,397
58.89 3,924,398

CLASS 58
16D 3,924,399
50R 3,924,400
152R 3,924,401

CLASS 60
39.18C 3,924,402
39.32 3,924,403
219 3,924,405
226R 3,924,404
254 3,924,406
284 3,924,407
290 3,924,408
3,924,409
403 3,924,410
486 3,924,411

CLASS 61
1F 3,924,412
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3,924,414
72.3 3,924,415

CLASS 62
20 3,925,047
55 3,925,048
80 3,924,416
158 3,924,417

CLASS 63
4 3,924,418

CLASS 64
14 3,924,419
21 3,924,420
29 3,924,421

CLASS 65
3,925,049
60 3,925,050
65A 3,925,051
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CLASS 66
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CLASS 68
177 3,924,424
242 3,924,425

CLASS 70
18 3,924,426
264 3,924,427

CLASS 71
29 3,925,053
92 3,925,054
93 3,925,055
98 3,925,056

CLASS 72
40 3,924,428
60 3,924,429
85 3,924,430
98 3,924,431
122 3,924,433
123 3,924,432
208 3,924,434
209 3,924,435
342 3,924,439
345 3,924,436
349 3,924,437
388 3,924,438
397 3,924,440
475 3,924,441

CLASS 73
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1R 3,924,442
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54 3,924,447
55 3,924,448
61.1R 3,924,449
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67.8R 3,924,454
67.8S 3,924,452
3,924,453
88R 3,924,456
88 3,924,455
116 3,924,457
133R 3,924,458
136R 3,924,459
146 3,924,460
3,924,461
150R 3,924,462
155 3,924,463
170R 3,924,464
181 3,924,465
194EM 3,924,466
213 3,924,467
343R 3,924,468
355EM 3,924,469
362AR 3,924,470
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505 3,924,474

CLASS 74
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230.17A 3,924,480
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234 3,924,482
242.11R 3,924,483
242.4 3,924,833
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410 3,924,485
459 3,924,486
489 3,924,487
568R 3,924,488
688 3,924,489
752E 3,924,490
763 3,924,491

CLASS 75
1T 3,925,057
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3 3,925,069
10R 3,925,059
11 3,925,060
58 3,925,061
84 3,925,062
124 3,925,063
128A 3,925,064
128R 3,925,065
134C 3,925,066
142 3,925,067
159 3,925,070
170 3,925,071
171 3,925,072
173C 3,925,073
174 3,925,068

CLASS 81
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177G 3,924,493

CLASS 82
2.7 3,924,494

CLASS 83
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58 3,924,498
96 3,924,499
167 3,924,500
404.3 3,924,501
454 3,924,502
488 3,924,503
568 3,924,504

CLASS 84
1.01 3,924,505

CLASS 85
8.1 3,924,506
9R 3,924,507
41 3,924,508
68 3,924,509

CLASS 86
1R 3,924,510

CLASS 89
1.8 3,924,511
128 3,924,512

CLASS 91
224 3,924,513
420 3,924,514
472 3,924,515
491 3,924,516

CLASS 92
2 3,924,517
34 3,924,518
92 3,924,519

CLASS 93
35SB 3,924,521
84TW 3,924,522
87 3,924,523

CLASS 96
1.8 3,925,074
3 3,925,075
33 3,924,520
35.1 3,925,076
3,925,077
36.2 3,925,078
38.1 3,925,079
67 3,925,080
72 3,925,081
76R 3,925,082
101 3,925,084
3,925,085
109 3,925,086
114 3,925,083

CLASS 98
2.11 3,924,524

CLASS 99
303 3,924,525

CLASS 100
25 3,924,526

CLASS 101
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93.15 3,924,528
123 3,924,529
141 3,924,530
147 3,924,531
426 3,924,532
467 3,924,533

CLASS 102
43R 3,924,534
70.2P 3,924,536
70.2R 3,924,535

CLASS 104
148LM 3,924,537
148MS 3,924,538
258 3,924,539

CLASS 105
197R 3,924,540
221K 3,924,541
226 3,924,542
257 3,924,543
366B 3,924,544
450 3,924,545

CLASS 106
14 3,925,087
20 3,925,088
53 3,925,089
87 3,925,090
100 3,925,091
281R 3,925,092
287SB 3,925,093
288Q 3,925,094
308N 3,925,095
309 3,925,096

CLASS 109
3 3,924,546

CLASS 110
8C 3,924,548
8E 3,924,547

CLASS 112
104 3,924,549
130 3,924,550
153 3,924,551
217.1 3,924,552
219B 3,924,553
252 3,924,554

CLASS 114
126 3,924,555

CLASS 115
35 3,924,556
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CLASS 116
28R 3,924,558
109 3,924,559
140 3,924,560

CLASS 118
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49.1 3,924,563
60 3,924,564
320 3,924,562
323 3,924,565
637 3,924,566
3,924,567
3,924,568
642 3,924,569

CLASS 119
5 3,924,570
15 3,924,571
17 3,924,572
61 3,924,573

CLASS 122
23 3,924,574
34 3,924,575

CLASS 123
1R 3,924,576
8.01 3,924,577
8.13 3,924,578
8.23 3,924,579
8.45 3,924,581
30C 3,924,580
32JV 3,924,583
32SP 3,924,582
32ST 3,924,584
3,924,598
41.12 3,924,585
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119A 3,924,587
3,924,589
119B 3,924,588
122AB 3,924,590
3,924,592
122H 3,924,591
140CC 3,924,594
140MC 3,924,593
148E 3,924,595
198D 3,924,596
198E 3,924,597

CLASS 124
15 3,924,599
36 3,924,600

CLASS 126
21R 3,924,601
214A 3,924,602
263 3,924,603
270 3,924,604
307A 3,924,605

CLASS 127
44 3,925,097

CLASS 128
2B 3,924,608
2W 3,924,607
2.06R 3,924,610
2.08 3,924,611
3,924,612
2.1B 3,924,606
2.1R 3,924,609
24R 3,924,613
80J 3,924,615
142.3 3,924,616
3,924,618
3,924,619
221 3,924,617
252 3,924,620
3,924,621
260 3,924,622
269 3,924,623
276 3,924,624
278 3,924,625
287 3,924,626
3,924,627
303.1 3,924,628
325 3,924,629
339 3,924,630
346 3,924,631
348 3,924,632
349B 3,924,634
349R 3,924,633
350V 3,924,635
351 3,924,636
3,924,637
359 3,924,638
418 3,924,639
419PG 3,924,641
419P 3,924,640

CLASS 131
2 3,924,642
10A 3,924,643
17R 3,924,644
140A 3,924,645

CLASS 132
79R 3,924,646
92R 3,924,647

CLASS 136
6LF 3,925,098
86A 3,925,100
86C 3,925,099
100R 3,925,101
111 3,925,102
202 3,925,103
225 3,925,104

CLASS 137
3 3,924,648
15 3,924,649
101 3,924,650
115 3,924,651
119 3,924,652
236 3,924,653
322 3,924,654
596.13 3,924,655
596.14 3,924,656
596.15 3,924,657
604 3,924,658
630.17 3,924,659
637.1 3,924,660

CLASS 138
110 3,924,661

CLASS 139
302 3,924,662
420R 3,924,663

CLASS 140
92.7 3,924,664
3,924,665

CLASS 141
231 3,924,666

CLASS 144
3D 3,924,667
244 3,924,668

CLASS 148
1.5 3,925,105
3,925,106
3,925,107
6.35 3,925,109
11.5R 3,925,110
12F Re.28,645
3,925,111
25 3,925,112
29 3,925,113
105 3,925,114
112 3,925,115
143 3,925,116
171 3,925,117
175 3,925,118
3,925,119
3,925,120
189 3,925,121

CLASS 149
2 3,925,122
60 3,925,123
74 3,925,124
96 3,925,125

CLASS 150
52R 3,924,669

CLASS 152
375 3,924,670

CLASS 156
73.6 3,925,126
85 3,925,127
96 3,925,128
3,925,129
148 3,925,130
159 3,925,131
161 3,925,132
175 3,925,133
178 3,925,134
213 3,925,135
252 3,925,136
278 3,925,137
313 3,925,138
358 3,925,139
382 3,925,140
416 3,925,141
425 3,925,142
505 3,925,143
518 3,925,144
579 3,925,145
601 3,925,146
603 3,925,147
618 3,925,108

CLASS 159
23 3,925,148
47 3,925,149

CLASS 160
183 3,924,671

CLASS 162
4 3,925,150

CLASS 164
252 3,924,672
274 3,924,673
304 3,924,422

CLASS 165
32 3,924,674
134 3,924,675
172 3,924,676

CLASS 166
100 3,924,677
120 Re.28,641
3,924,678
182 3,924,679
258 3,924,680
270 3,924,681
274 3,924,682
303 3,924,683
307 3,924,684
308 3,924,685
315 3,924,686

CLASS 169
19 3,924,687
61 3,924,688

CLASS 172
413 3,924,694
780 3,924,689

CLASS 173
13 3,924,690
48 3,924,691
117 3,924,692
169 3,924,693

CLASS 174
17LF 3,925,592
36 3,925,593
42 3,925,594
3,925,595
68.5 3,925,596
102SC 3,925,597
108 3,925,598
150 3,925,599

CLASS 175
69 3,924,695
209 3,924,696
382 3,924,697
393 3,924,698

CLASS 176
68 3,925,151

CLASS 177
16 3,924,699
118 3,924,700

CLASS 178
3 3,925,600
3,925,601
6.6B 3,925,602
6.6R 3,925,603
3,925,604
3,925,605
6.8 3,925,606
7.1 3,925,607
3,925,608
7.3D 3,925,609
18 3,925,610
22 3,925,611
3,925,612
69.5TV 3,925,613
88 3,925,614

CLASS 179
1GQ 3,925,615
1SC 3,925,616
1VC 3,925,618
6R 3,925,617
6.3R 3,925,619
15AL 3,925,621
15AT 3,925,620
18BE 3,925,622
18FH 3,925,623
81R 3,925,624
99 3,925,625
100.41K 3,925,628
115.5R 3,925,626
181W 3,925,627

CLASS 180
6.48 3,924,702
6.5 3,924,701
9.54 3,924,703
41 3,924,704
79.2R 3,924,705
89A 3,924,706
90 3,924,707

CLASS 184
105R 3,924,708

CLASS 186
1AC 3,924,709

CLASS 187
19 3,924,710

CLASS 188
73.3 3,924,711
264F 3,924,712
296 3,924,713

CLASS 190
18R 3,924,714

CLASS 192
18A 3,924,715
57 3,924,716
86 3,924,717

CLASS 193
35R 3,924,718

CLASS 194
10 3,924,719

CLASS 195
1.5 3,925,152
1.8 3,925,153
28N 3,925,154
36P 3,925,155
51R 3,925,156
63 3,925,157
66R 3,925,158
73 3,925,159
96 3,925,160
100 3,925,161
103.5R 3,925,162
3,925,163
3,925,164
127 3,925,165
139 3,925,166

CLASS 197
6.5 3,924,720
18 3,924,721
19 3,924,722
3,924,723
52 3,924,724
53 3,924,725
55 3,924,726
151 3,924,727
172 3,924,728

CLASS 198
39 3,924,729
220R 3,924,730
268 3,924,731
287 3,924,732

CLASS 200
38R 3,925,629
39R 3,925,630
148R 3,925,631
307 3,925,632

CLASS 202
174 3,925,167

CLASS 204
1T 3,925,168
3,925,169
43N 3,925,170
56R 3,925,171
72 3,925,172
73R 3,925,173
95 3,925,174
109 3,925,175
152 3,925,176
159.15 3,925,349
164 3,925,177
165 3,925,178
181 3,925,179
3,925,180
3,925,181
192 3,925,182
195R 3,925,183
229 3,925,184
252 3,925,185
256 3,925,186
298 3,925,187

CLASS 206
1.7 3,924,733
44R 3,924,734
45.11 3,924,735
45.14 3,924,736
84 3,924,737
150 3,924,738
157 3,924,739
187 3,924,740
221 3,924,741
387 3,924,742
389 3,924,743
460 3,924,744
484 3,924,745
530 3,924,746
531 3,924,747
534.1 3,924,748

CLASS 208
8 3,925,188
11 3,925,189
3,925,190
91 3,925,193
109 3,925,194
111 3,925,191
120 3,925,195
139 3,925,196
216 3,925,197

CLASS 209
3 3,925,198
3,925,199
9 3,925,200

CLASS 210
22 3,925,201
32 3,925,202
38 3,925,192
44 3,925,203
73 3,925,204
3,925,205
104 3,925,206
138 3,925,207
199 3,925,208
304 3,925,209
335 3,925,210
500M 3,925,211

CLASS 211
4 3,924,749
13 3,924,750
17 3,924,751

CLASS 212
39MS 3,924,752
48 3,924,753

CLASS 214
1BD 3,924,754
1P 3,924,755
6A 3,924,756
6B 3,924,757
7 3,924,758
8.5D 3,924,759
16.1ED 3,924,760
16.4A 3,924,300
17CB 3,924,761
38B 3,924,762
86A 3,924,763
450 3,924,764
518 3,924,765
764 3,924,766

CLASS 215
12R 3,924,767
213 3,924,768
216 3,924,769
220 3,924,770
246 3,924,771
276 3,924,772

CLASS 219
10.49 3,925,633
76 3,925,634
89 3,925,635
104 3,925,636
105 3,925,637
295 3,925,638

CLASS 220
88B 3,924,773
93 3,924,774
96 3,924,775
269 3,924,776
277 3,924,777
314 3,924,778

CLASS 221
67 3,924,779

CLASS 222
64 3,924,780
80 3,924,781
134 3,924,783
176 3,924,784
402.11 3,924,782

CLASS 223
2 3,924,785

CLASS 224
5V 3,924,786
42.03B 3,924,787

CLASS 227
67 3,924,788
131 3,924,789
148 3,924,790

CLASS 228
1 Re.28,642
110 3,924,791
118 3,924,792
157 3,924,793
256 3,924,794

CLASS 229
4.5 3,924,795
17G 3,924,796
3,924,797
23AB 3,924,798
39B 3,924,799
39R 3,924,800
3,924,801
54R 3,924,802
87F 3,924,803

CLASS 233
19A 3,924,804

CLASS 235
61.11E 3,925,639
150.1 3,925,640
150.2 3,925,641
150.25 3,925,642
3,925,643
151.21 3,925,645
151.3 3,925,644
152 3,925,646
153BB 3,925,647
156 3,925,648
159 3,925,649
164 3,925,650
175 3,925,651
3,925,652
181 3,925,653
197 3,925,654

CLASS 239
1 3,924,805
8 3,924,806
55 3,924,807
102 3,924,808
230 3,924,809
305 3,924,810
533 3,924,811
550 3,924,812

CLASS 240
2CL 3,925,655
7.1LJ 3,925,656

CLASS 241
4 3,924,813
80 3,924,814
209 3,924,815

CLASS 242
7.05B 3,924,816
18G 3,924,817
47.05 3,924,818
85.1 3,924,819
156 3,924,820
195 3,924,821
198 3,924,822
3,924,823

CLASS 244
3.2 3,924,824
46 3,924,825
129W 3,924,826
153R 3,924,827

CLASS 248
179 3,924,828
243 3,924,829
358A 3,924,830

CLASS 250
211J 3,925,657
3,925,658
270 3,925,659
272 3,925,660
3,925,661
290 3,925,662
292 3,925,663
310 3,925,664
337 3,925,665
338 3,925,666
343 3,925,667
351 3,925,668
370 3,925,669
372 3,925,244
400 3,925,670
3,925,671
402 3,925,672
432 3,925,673
483 3,925,674
485 3,925,675
499 3,925,676
505 3,925,677
508 3,925,678
527 3,925,212

CLASS 251
149.7 3,924,831
301 3,924,832

CLASS 252
18 3,925,213
21 3,925,214
47.5 3,925,215
49.3 3,925,216
52A 3,925,217
61 3,925,218
62.1P 3,925,219
63 3,925,220
63.7 3,925,221
3,925,222
78 3,925,223
89 3,925,224
90 3,925,225
92 3,925,226
106 3,925,227
110 3,925,228
136 3,925,229
3,925,230
171 3,925,231
3,925,232
182 3,925,233
186 3,925,234
188.3CL 3,925,235
299 3,925,236
3,925,237
3,925,238
301.4P 3,925,239
301.4S 3,925,240
316 3,925,241
321 3,925,242
359C 3,925,243
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422	3,925,000	418	3,925,564	87	3,925,572	385	3,925,582	395	3,925,588	131	3,925,004
451.2	3,924,986	447	3,925,565	145	3,925,573				3,925,589		
451.5	3,924,987		3,925,566	195	3,925,574		CLASS 428	423	3,925,590		CLASS 432
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2	3,925,559	634	3,925,569	249	3,925,577						

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	85	237,924		235	237,941		105	237,958		5C	237,974		14C 237,991
	89	237,925	D9—	2	237,942		118	237,959			237,975		237,992
	91	237,926		63	237,943		173	237,960			237,976		15AC 237,993
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		237,999											
D55—	1D	238,001											
	R	238,000											
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	3,924,920		3,924,674		3,925,596		3,924,837		3,924,652		3,924,656
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1 :	3,924,288		3,924,679		3,925,607		3,924,931		3,924,947		3,924,694
	3,924,344		3,924,688		3,925,623		3,924,950		3,925,024		3,924,703
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January 27, 1976
February 3, 1976

Additional publication dates will be announced as they become known.

RICHARD J. SHAKMAN,
Dec. 1, 1975. *Assistant Commissioner for Administration.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,826,760, E. G. Rice, COMBINATION STOCKINGS AND PANTY; **Re. 25,360,** same, **filed** June 25, 1975, D.C., W.D.N.C. (Statesville), Doc. ST–C–75–27, *Tights, Inc.* v. *Maro Hosiery Corporation, doing business as Temptation Hosiery Mills.* **Same, filed** June 25, 1975, D.C., W.D.N.C. (Statesville), Doc. ST–C–75–28, *Tights, Inc.* v. *Troydon Hosiery Mill, Inc.* **Same, filed** July 1, 1975, D.C.S.C. (Columbia), Doc. C/A 75–1124, *Tights, Inc.* v. *C. W. Anderson Corp.* **Same, filed** July 3, 1975, D.C., W.D.N.C. (Statesville), Doc. ST–C–75–29, *Tights, Inc.* v. *J. P. Stevens & Co., Inc.*

2,989,302, H. B. Clark, FIRE DOOR OPERATING APPARATUS; **3,166,155,** same, MOTOR OPERATED FIRE DOORS WITH AUTOMATIC DOOR RELEASE, **filed** Jan. 30, 1973, D.C.N.J. (Newark), Doc. C–119–73, *Mesker Brothers Industries, Inc. et al.* v. *Henry B. Clark.* Stipulation and order of dismissal of action, May 1, 1975.

3,011,198, T. V. Moss, MOP SWAB, **filed** Aug. 15, 1975, D.C., N.D. Ga. (Atlanta), Doc. C75–1612A, *Theron V. Moss and South Eastern Cordage Company* v. *Wilen Manufacturing Company.*

3,103,618, S. I. Slater, CONTINUOUSLY VARIABLE DIMMER SWITCH; **3,222,488,** B. H. Matthews, ELECTRICAL SWITCH WITH CAMMING BRIDGING CONTACT; **3,328,676,** S. I. Slater, CONTINUOUSLY VARIABLE DIMMER SWITCH, **filed** Apr. 29, 1966, D.C., N.D. Ohio (Cleveland), Doc. C66–315, *Lucerne Products, Inc. and Slater Electric, Inc.* v. *Cutler-Hammer, Inc. (substituted for Sears, Roebuck and Company by stipulation on 12–6–66),* Judgment is hereby entered finding that the defendant has infringed a valid patent held by plaintiff, Mar. 7, 1975.

3,166,155. (See 2,989,302.)

3,185,364, R. A. Kleist, DRIVE SYSTEM FOR TAPE TRANSPORT SYSTEM; **3,251,563,** same, MAGNETIC TAPE TRANSPORT SYSTEM; **3,276,651,** P. S. Bryer, ROLLER GUIDE FOR WEB TRANSPORT MECHANISMS; **3,318,545,** R. Tobey, WEB TRANSPORT SYSTEM; **3,379,948,** Lewis, Wang and Kleist, TAPE TRANSPORT DRIVE SYSTEM; **3,383,578,** M. A. Lewis, CONTINUOUS MODE MOTOR SPEED CONTROL SYSTEM, **filed** May 27, 1975, D.C., C.D. Calif. (Los Angeles), Doc. CV–75–1711–R, *Ampex Corporation* v. *Wangco Incorporated.*

3,186,491, L. J. Fischer, HELICOPTER DRIVE SYSTEM UTILIZING TIP MOUNTED FANS; **Re. 26,518,** Mau and Nagy, THREAD AND OTHER FORM ROLLING DIES, **filed** Sept. 12, 1972, D.C., N.D. Ohio (Cleveland), Doc. C–72–960, *The National Rolled Thread Die Co.* v. *The Lamson & Sessions Co.* Judgment on decision by the Court, finding that patent in suit valid, but not infringed, judgment entered in favor of defendant, as to the claim of infringement, further ordered that Court's memorandum opinion is adopted as findings of fact and conclusions of law, Apr. 30, 1975. **Same, filed** Sept. 12, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72–961, *The National Rolled Thread Die Co.* v. *Sterling Die Division of Pratt & Whitney, Inc. and Colt Industries Operating Corp.* Judgment on decision by the Court, finding that patent in suit valid, but not infringed, judgment entered in favor of the defendant, as to the claim of infringement, further ordered that Court's memorandum opinion is adopted as finding of fact and conclusions of law, Apr. 30, 1975.

3,197,710, H. C. Lin, COMPLEMENTARY TRANSISTOR STRUCTURE; **3,237,062,** B. T. Murphy, MONOLITHIC SEMICONDUCTOR DEVICES; **3,321,340,** same, METHODS FOR FORMING MONOLITHIC SEMICONDUCTOR DEVICES; **3,412,460,** H. C. Lin, METHOD OF MAKING COMPLEMENTARY TRANSISTOR STRUCTURE, **filed** July 8, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c2230, *Westinghouse Electric Corporation* v. *Motorola, Inc. et al.*

3,205,532, R. D. MacDonald, LATCHLESS DOOR HINGE; **3,212,124,** same, HINGE FOR LATCHLESS DOOR, **filed** Apr. 16, 1975, United States Court of Appeals, Ohio (Cincinnati), Doc. 74–113 and 1134, *Cardinal of Adrian, Inc.* v. *Peerless Wood Products, Inc. et al.* The judgment of the District Court as to both patents is affirmed, Apr. 16, 1975.

3,212,124. (See 3,205,532.)

3,215,976, W. N. Bascom, METHOD FOR SURVEYING AND SEARCHING THE OCEAN BOTTOM AND RECOVERING OBJECTS THEREFROM; **3,472,191,** E. E. Horton, HYDROPNEUMATIC SALVAGE SYSTEM, **filed** July 16, 1975, United States Court of Claims (District of Columbia), Doc. 239–75, *Ocean Science & Engineering, Inc. and Willard N. Bascom* v. *The United States.*

3,222,488. (See 3,103,618.)

3,237,062. (See 3,197,710.)

3,251,563. (See 3,185,364.)

3,276,651. (See 3,185,364.)

3,318,545. (See 3,185,364.)

3,321,240. (See 3,197,710.)

3,379,948. (See 3,185,364.)

3,383,578. (See 3,185,364.)

3,472,191. (See 3,215,976.)

Re. 25,360. (See 2,826,760.)

Re. 25,360, E.G. Rice COMBINATION STOCKINGS AND PANTY, **filed** June 25, 1975, D.C., W.D.N.C. (Charlotte), Doc. C–C–75–203, *Tights, Inc.* v. *Hampshire Designers, Inc.* **Same,** filed June 25, 1975, D.C., W.D.N.C. (Charlotte), Doc. C–C–75–204, *Tights, Inc.* v. *Knit Products Corporation.* **Same, filed** June 25, 1975, D.C., W.D.N.C. (Charlotte), Doc. C–C–75–205, *Tights, Inc.* v. *Outlook Manufacturing Company.* **Same, filed** June 25, 1975, D.C., W.D.N.C. (Charlotte), Doc. C–C–75–206, *Tights, Inc.* v. *Admiration Hosiery Mill, Inc.* **Same, filed** July 9, 1975, D.C., W.D.N.C. (Charlotte), Doc. C–C–75–218, *Tights, Inc.* v. *Vision Hosiery Mills, Inc.* **same, filed** June 20, 1975, D.C., M.D.N.C. (Greensboro), Doc. C–75–225–G, *Tights, Inc.* v. *Aladdin Knit Mills, Inc. (Division of Kellwood Co.).* **same, filed** June 20, 1975, D.C., M.D.N.C. (Winston-Salem), Doc. C–75–226–WS, *Tights, Inc.* v. *Amos & Smith Hosiery Company.* **Same, filed** June 20, 1975, D.C., M.D.N.C. (Greensboro), Doc. C–75–227–G, *Tights, Inc.* v. *Ann-Carol Hosiery Mills, Inc.* **Same, filed** June 20, 197*, D.C., M.D.N.C. (Greensboro), Doc. C–75–228–G, *Tights, Inc.* v. *Bossong Hosiery Mills, Inc.* **Same, filed** June 20, 1975, D.C., M.D.N.C. (Greensboro), Doc. C–75–229–G, *Tights, Inc.* v. *Commonwealth Hosiery Mills, Inc.* **Same, filed** June 20, 1975, D.C. M.D.N.C. (Greensboro), Doc. C–75–230–G, *Tights, Inc.* v. *Glen Raven Mills, Inc.* **Same, filed** June 20, 1975, D.C., M.D.N.C. (Greensboro), Doc. C–75–231–G, *Tights, Inc.* v. *Laughlin Hosiery Mills, Inc.* **Same, filed** June 20, 1975, D.C., M.D.N.C. (Greensboro), Doc. C–75–232–G, *Tights, Inc.* v. *Silver-Knit Industries, Inc.* **Same, filed** June 20, 1975, D.C., M.D.N.C. (Greensboro), Doc. C–75–233–G, *Tights, Inc.* v. *Slane Hosiery Mills, Inc.* **Same, filed** June 20, 1975, D.C., M.D.N.C. (Salisbury), Doc. C–75–234–S, *Tights, Inc.* v. *Stanley Knitting Mills, Inc.* **Same, filed** June 20, 1975, D.C., M.D.N.C. (Greensboro), Doc. C–75–235–G, *Tights, Inc.* v. *Troxler Hosiery Company, Inc.* **Same, filed** June 20,, 1975, D.C., M.D.N.C. (Salisbury), Doc. C–75–236–S, *Tights, Inc.* v. *U.S. Industries.* **Same, filed** June 23, 1975, D.C., M.D.N.C. (Wilkesboro), Doc. C–75–244–W, *Tights, Inc.* v. *Ithaca Hosiery, Inc.* **Same, filed** June 25, 1975, D.C., M.D.N.C. (Greensboro), Doc. C–75–251–S, *Tights, Inc.* v. *Caburrus Hosiery Company.* **Same, filed** June 25, 1975, D.C., M.D.N.C. (Greensboro), Doc. C–75–252–S, *Tights, Inc.* v. *Hillview Industries, Inc.* **Same, filed** June 25, 1975, D.C., M.D.N.C. (Greensboro), Doc. C–75–253–S, *Tights, Inc.* v. *Scenic Hosiery, Inc.* **Same, filed** June 25, 1975, D.C., M.D.N.C. (Greensboro), Doc. C–75–254–S, *Tights, Inc.* v. *Trend Hosiery Company, Inc.* **Same, filed** June 25, 1975, D.C., M.D.N.C. (Greensboro), Doc. C–75–255–G, *Tights, Inc.* v. *Nantucket Hosiery Mills Corp. (Division of Nantucket Industries, Inc.).* **Same, filed** June 26, 1975, D.C., M.D.N.C. (Greensboro), Doc. C–75–260–G, *Tights, Inc.* v. *Best Wear Hosiery Mills, Inc.*

Re. 26,518. (See 3,186,491.)

D. 180,053, J. Zalewski, COLLAPSIBLE DISPLAY ORNAMENT OR SIMILAR ARTICLE, **filed** Aug. 21, 1963, D.C., S.D.N.Y., Doc. 63–C–2519, *Austen Display Inc.* v. *Lerner, Corwin & Young Inc. et ano.* Filed order dismissing action for lack of prosecution without prejudice, Dec. 7, 1964.

D. 198,760, L. T. Harris, RIVETLESS CHAIN LINK, **filed** Jan. 20, 1975, D.C., S.D., W. Va. (Charleston), Doc. 75–0010BK, *Portec, Inc.* v. *Janes Manufacturing, Inc. and Cooke-Wilson Electric Supply Company.*

D. 206,447, R. V. Switzer, COMBINED WHEEL CHOCK AND FLAG, **filed** Jan. 3, 1975, D.C., S.D. Fla. (Miami), Doc. 75–9–NCR, *The Aldon Company* v. *Equipment Company of America.*

D. 208,971, L. G. Stone, PULL, **filed** May 6, 1975, D.C., S.D. Ind. (Evansville), Doc. EV–75–59–C, *Amerock Corporation* v. *Bliss & Laughlin Industries, Incorporated.*

Erratum

Under Patent Suits in the OFFICIAL GAZETTE of November 4, 1975, volume 940, page 2, the entire paragraph beginning with "3,485,587" should be deleted.

PATENT NOTICES

Certificates of Correction for the Week of Dec. 16, 1975

D. 236,141	3,860,650	3,895,864	3,904,009
3,744,861	3,861,956	3,898,934	3,904,069
3,746,850	3,863,710	3,897,137	3,904,312
3,763,228	3,866,849	3,897,242	3,904,326
3,768,482	3,867,130	3,897,488	3,904,455
3,772,353	3,867,626	3,897,513	3,904,545
3,777,465	3,870,426	3,898,188	3,904,701
3,778,408	3,870,585	3,898,225	3,904,730
3,781,170	3,873,409	3,898,287	3,904,933
3,785,956	3,874,803	3,898,330	3,905,239
3,789,195	3,874,845	3,898,940	3,905,923
3,790,964	3,875,097	3,898,974	3,906,136
3,791,847	3,875,283	3,899,388	3,906,211
3,792,768	3,877,021	3,899,443	3,906,566
3,792,971	3,878,328	3,899,772	3,906,598
3,805,849	3,879,173	3,899,949	3,906,685
3,809,159	3,880,296	3,900,282	3,906,768
3,813,424	3,880,402	3,900,319	3,907,127
3,813,591	3,881,173	3,900,362	3,907,128
3,816,421	3,882,442	3,900,438	3,907,167
3,817,840	3,882,668	3,900,824	3,907,178
3,818,096	3,883,368	3,900,851	3,907,201
3,819,842	3,883,997	3,900,918	3,907,282
3,821,068	3,884,700	3,900,920	3,907,382
3,821,376	3,885,005	3,901,247	3,907,470
3,831,882	3,886,004	3,901,357	3,907,528
3,840,653	3,886,210	3,901,418	3,907,546
3,841,494	3,886,260	3,901,660	3,907,620
3,843,660	3,887,311	3,901,757	3,907,655
3,843,839	3,888,715	3,901,907	3,907,847
3,844,733	3,888,812	3,901,998	3,908,118
3,844,861	3,890,200	3,902,151	3,908,264
3,845,009	3,891,565	3,902,153	3,908,271
3,846,173	3,891,658	3,902,666	3,908,397
3,850,642	3,891,898	3,902,859	3,908,570
3,852,313	3,892,750	3,902,964	3,908,671
3,854,126	3,892,785	3,903,053	3,908,727
3,854,784	3,893,757	3,903,195	3,909,084
3,855,111	3,893,842	3,903,198	3,909,131
3,856,006	3,894,150	3,903,243	3,909,213
3,857,052	3,894,248	3,903,251	3,909,542
3,857,759	3,895,544	3,903,375	3,910,496
3,858,901	3,895,635	3,903,527	3,911,080
3,860,102	3,895,723	3,903,575	

Disclaimers

3,770,315.—*Darrell G. Smittle*, Malibu, and *Asbjorn Karlsen*, Pacific Palisades, Calif. SELECTIVELY ADJUSTABLE LUMBAR SUPPORT FOR AIRCRAFT SEATS AND THE LIKE. Patent dated Nov. 6, 1973. Disclaimer filed Sept. 25, 1975, by the assignee, *UOP Inc.*

Hereby enters this disclaimer to claims 5 and 6 of said patent.

3,810,697.—*Samuel B. Steinberg*, Baltimore, Md. PORTABLE FILTER EVALUATION APPARATUS. Patent dated May 14, 1974. Disclaimer filed Nov. 19, 1974, by the assignee, *Air Techniques, Inc.*

Hereby enters this disclaimer to claims 1–10 of said patent.

3,825,583.—*Anwar A. Hussain* and *James E. Truelove*, Lawrence, Kans. ESTER OF 3-HYDROXY-a-[(METHYLAMINO)METHYL]BENZYL ALCOHOL. Patent dated July 23, 1974. Disclaimer filed Oct. 8, 1975, by the assignee, *Interx Research Corporation*.

The term of this patent subsequent to May 7, 1991, has been disclaimed.

3,850,414.—*Hans R. Scharer*, Wallingford, Conn. HOMOGENIZING EXTRUDERS. Patent dated Nov. 26, 1974. Disclaimer filed Sept. 15, 1975, by the assignee, *USM Corporation*.

Hereby enters this disclaimer to claims 1–8 of said patent.

3,904,979.—*Tadao Suzuki*, Tokyo, Japan. PROTECTIVE CIRCUIT FOR TRANSISTOR AMPLIFIER. Patent dated Sept. 9, 1975. Disclaimer filed Oct. 20, 1975, by the assignee, *Sony Corporation*.

Hereby enters this disclaimer to claims 1, 2, 5 and 9 of said patent.

3,905,098.—*Oliver R. Garretson* and *Richard C. Harmon*, Mountain View, Calif. MICROELECTRONIC TEST PROBE CARD INCLUDING A MULTIPLICITY OF PROBE CONTACTS AND METHOD OF MAKING SAME. Patent dated Sept. 16, 1975. Disclaimer filed Sept. 23, 1975, by the assignee, *Xynetics, Inc.*

The term of this patent subsequent to Sept. 10, 1991, has been disclaimed.

3,912,281.—*Stephen A. Platt*, Grand Haven, Mich. SOUND REPRODUCTION APPARATUS. Patent dated Oct. 14, 1975. Disclaimer filed Oct. 6, 1975, by the assignees, *Stephen A. Platt* and *Vernet B. Platt*.

The term of this patent subsequent to Feb. 11, 1992, has been disclaimed.

Dedications

3,821,640.—*George Bahder, Suffern*, and *Carlos Katz*, Spring Valley, N.Y. METHOD AND APPARATUS FOR ACCELERATED TESTING OF POWER CABLE INSULATION FOR SUSCEPTIBILITY TO TREEING. Patent dated June 28, 1974. Dedication filed Aug. 20, 1975, by the assignee, *Phelps Dodge Industries, Inc.*

Hereby dedicates the entire remaining term of said patent to the Public.

3,831,263.—*Stanley F. Dzierski*, Arnold, Pa. METHOD OF SOLDERING. Patent dated Aug. 27, 1974. Dedication filed Oct. 14, 1975, by the assignee, *Aluminum Company of America*.

Hereby dedicates to the Public the remaining term of said patent.

3,854,331.—*Charles H. Bateman, Jr.*, East Haven, *Allan A. Campbell*, Trumbull, and *James J. Capasso*, Shelton, Conn. VENTED TEST BARREL ASSEMBLY FOR REVOLVER AMMUNITION. Patent dated Dec. 17, 1974. Delication filed July 28, 1975, by the assignee, *Remington Arms Company, Inc.*

Hereby dedicates the remaining term of said patent to the Public.

3,885,293.—*Charles H. Bateman, Jr.*, East Haven, *Allan A. Campbell*, Trumbull, and *James J. Capasso*, Shelton, Conn. METHOD OF MAKING VENTED TEST BARREL ASSEMBLY FOR REVOLVER AMMUNITION. Patent dated May 27, 1975. Dedication filed July 28, 1975, by the assignee, *Remington Arms Company, Inc.*

Hereby dedicates the remaining term of said patent to the Public.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 22, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds: Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	2-21-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-13-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-13-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-6-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-21-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-23-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-2-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-11-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-5-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-13-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	7-10-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-25-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-26-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-18-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-17-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	4-23-75

Expiration of patents: The patents within the range of numbers indicated below expire during December 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

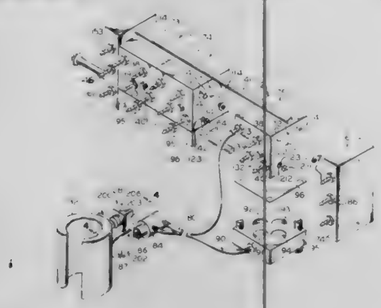
Patents..... Numbers 2,862,205 to 2,866,972 inclusive
Plant Patents..... Numbers 1,775 to 1,791 inclusive

REISSUES

DECEMBER 16, 1975

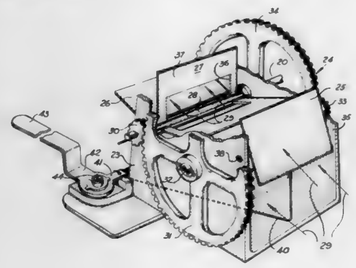
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,649
DENTAL HANDPIECE CONTROL
George K. Austin, Jr., P.O. Box 209, Rte. 2, Box 254, Newberg, Oreg. 97132
Original No. 3,638,310, dated Feb. 1, 1972, Ser. No. 869,088, Oct. 24, 1969. Application for reissue Sept. 27, 1974, Ser. No. 510,042
Int. Cl.² A61C *9/00*
U.S. Cl. 32—22 **18 Claims**



1. In a dental handpiece control,
a solid control block having a drive air passage therethrough having an inlet and an outlet and a cooling fluid passage extending therethrough having an inlet and an outlet,
a diaphragm sheet positioned on a first face of the control block,
cover means secured to the outer face of the diaphragm sheet and the first face of the control block and having a pair of diaphragm actuating chambers therein,
the drive air passage having a pair of ports intermediate the inlet and outlet thereof and opening into *a portion of said first face opposite* one of the diaphragm chambers and adapted to be closed by the diaphragm sheet,
the cooling fluid passage having a pair of ports intermediate the inlet and outlet thereof and opening into [the other of] *a portion of said first face opposite* the diaphragm chambers and adapted to be closed by the diaphragm sheet,
an air driven dental handpiece,
air supply means supplying drive air under pressure to the inlet of the drive air passage,
cooling fluid supply means supplying a cooling fluid under pressure to the inlet of the cooling fluid passage,
air conduit means connecting the outlet of the drive air passage to the handpiece,
cooling fluid conduit means connecting the outlet of the cooling fluid passage to the handpiece,
second fluid supply means for supplying fluid under pressure to the diaphragm chambers,
valve means in said second fluid supply means for controlling the supply of fluid to said diaphragm chambers,
and hanger means serving to releasably support the handpiece *and operatively connected to and controlling the valve means* and operable by the weight of the handpiece [to close the valves and operable] *when the handpiece is positioned on the hanger means* to open the [valves] *valve means to permit fluid under pressure to flow to the diaphragm chambers thus to cause said diaphragm sheet to be pressed against said first face and prevent flow of air and cooling fluid through the respective passages therefor and operable* when the handpiece is lifted therefrom [,] *to close the valve means to shut off flow of fluid under pressure to the diaphragm chambers thus to permit movement of said diaphragm sheet away from said first face and permit flow of air cooling fluid through the respective passages therefor.* [and means under the control of the hanger means for supplying fluid under pressure to the diaphragm chambers.]

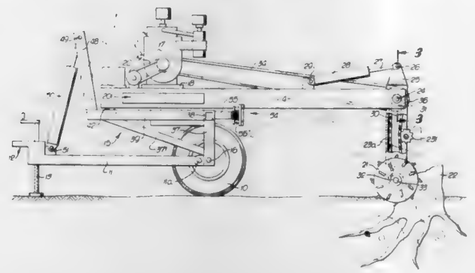
Re. 28,650
ADJUSTABLE SPEED AIR DRIVE-AIR SWEEP FOR AIR CONDITIONER
George W. Sisk, Jr.; Arthur W. Miller, and Frank Koleszar, all of Evansville, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Original No. 3,677,166, dated July 18, 1972, Ser. No. 33,403, Apr. 30, 1970. Application for reissue Oct. 19, 1973, Ser. No. 407,981
Int. Cl.² E06B *7/02*
U.S. Cl. 98—94 **14 Claims**



1. In a variable directing apparatus for a fluid stream having means for defining a flowing fluid stream, movable fluid directing means for cyclically changing the direction of said stream on movement of said directing means, and fluid propelled rotatable means in said stream for moving said directing means due to a fluid force-caused rotation of said rotatable means, the improvement comprising adjustable means for adjustably regulating the speed of rotation of said rotatable means by said fluid stream and thus the movement of said fluid directing means.

Re. 28,651
STUMP REMOVAL MACHINE
Robert E. Welborn, Lafayette, Ind., assignor to FMC Corporation, San Jose, Calif.
Original No. 3,625,267, dated Dec. 7, 1971, Ser. No. 884,218, Dec. 11, 1969. Application for reissue July 2, 1974, Ser. No. 485,173
Int. Cl.² A01G *23/06*
U.S. Cl. 144—2 N **5 Claims**

12. A stump removal machine of the type comprising a vehicle having spaced, axially aligned wheels, an elongated boom extending rearwardly from said vehicle, means for pivotally mounting a forward portion of said boom on said vehicle including pivot means for providing up and down motion of the boom and pivot means for providing laterally swinging motion of the rearward end of the boom relative to the vehicle, an arm pivotally mounted on and depending from the rearward end portion of said boom, arm actuator means on said boom for oscillating said arm longitudinally of said boom, a rotary stump cutter on the lower end of said arm, and a motor for driving said stump cutter; the improvement wherein said means for pivotally mounting said boom on the vehicle comprises a carriage, pivot means mounting said carriage on the vehicle for pivotal motion about a generally horizontal axis for providing said up and down boom motion, carriage actuator means connected between said vehicle and the carriage for pivoting said carriage about said generally horizontal axis to displace said arm and cutter up and down, pivot means mounting said boom on said carriage for



pivotal motion about a generally vertical axis that is forward of the axis of said wheels for providing said laterally swinging boom motion, said boom extending from said vertical axis pivot means across and rearwardly of said wheel axis, and actuator means connected between said carriage and the boom for laterally swinging said boom relative to said carriage.

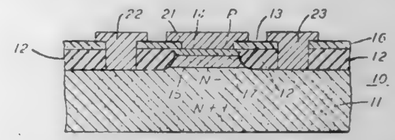
Re. 28,652
AERODYNAMIC DEFLECTOR
Johann T. Bildfell, London, Canada, assignor to Trail-Air Scoop Limited, London, Canada
Original No. 3,731,969, dated May 8, 1973, Ser. No. 142,467, May 12, 1971. Application for reissue June 25, 1973, Ser. No. 361,577
Claims priority, application Canada, Nov. 16, 1970, 098171
Int. Cl.² B62D *35/00*
U.S. Cl. 296—1 S **10 Claims**



1. An aerodynamic body for mounting on the top of a prime mover vehicle when pulling a trailing vehicle wherein a thrust is exerted on the aerodynamic body by virtue of the wind resistance of the moving prime mover vehicle while it proceeds along its line of travel, said body having an (effective) angle of attack inclined in relation to the prime mover vehicle and comprising a deflection member having an aerodynamic striking surface generally curved upward and rearwardly from a lower front portion to an upward rearward portion, the lower portion connecting to a surface of a leading edge member having one side thereof perpendicular to the line of travel and means thereon for disposing the body in near proximity and above the top of the prime mover vehicle such that wind striking the surface is deflected, in the lower portions, upward and outward away from the top of the prime mover vehicle and hence over the trailing vehicle.

Re. 28,653
METHOD OF FABRICATING SEMICONDUCTOR DEVICES
Bernard Thomas Murphy, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Original No. 3,649,386, dated Mar. 14, 1972, Ser. No. 723,529, Apr. 23, 1968. Application for reissue Aug. 10, 1972, Ser. No. 279,701
Int. Cl. H01 *7/36, 7/50*
U.S. Cl. 148—175 **5 Claims**

12. A method of fabricating a semiconductor device comprising the steps of:
first forming a semiconductive epitaxial layer on a semiconductive bulk portion, the bulk portion and the layer constituting a semiconductive body;
second forming on the surface of the epitaxial layer a first mask of a material having the characteristics that it resists etching in a first ambient which etches the semiconductor material, it inhibits oxidation of the underlying semiconductor material during a subsequent step in which the unmasked portion of the surface is oxidized, and it is removable by etching in a second ambient which attacks the mask but does not appreciably attack the grown oxide of the semiconductor material;
immersing the body in the first ambient so that the unmasked portions of the surface of the epitaxial layer are removed by etching at least partially through the epitaxial layer to form a mesa;
exposing the body at an elevated temperature to a second ambient sufficient to oxidize the unmasked portions of the epitaxial layer for a time sufficient that the oxide grown there extends essentially completely through the epitaxial

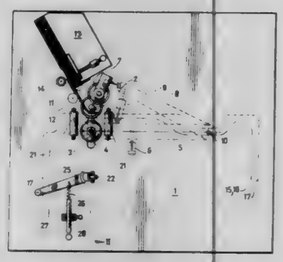


layer and planarity is substantially restored to the surface of the body;
removing the mask from the surface to expose the portions of the surface thereunderlying;
introducing impurities into the exposed semiconductor portions to modify the conductivity therein, this last-mentioned step using the aforementioned grown oxide as a second mask for enabling selective introduction of impurities into the exposed semiconductor regions; and
characterized in that:
1. the semiconductor material is silicon;
2. the first forming step produces an epitaxial silicon layer which is about one micron thick on a thicker bulk portion and which is doped differently from the bulk portion;
3. the first mask is of a material selected from the group consisting of silicon nitride and aluminum oxide,
4. the unmasked regions are etched to a depth of about 0.7 micron, and
5. the first mask is removed by etching in a solution of hot phosphoric acid.

Re. 28,654
METHOD FOR GLUING A STRIP OF MATERIAL AGAINST THE SIDE OF A FLAT WORK PIECE, LIKE A TABLE LEAF, AND A DEVICE FOR PERFORMING THIS METHOD
Gerardus P. Helmes; P. M. Helmes; Christiaan T. Helmes; Johan P. H. Helmes, and Franciscus J. Helmes, all of Steyl-Tegelen, Netherlands, assignors to Helmes Machinefabriek N.V., Netherlands
Original No. 3,655,479, dated Apr. 11, 1972, Ser. No. 811,098, Mar. 27, 1969. Application for reissue Oct. 24, 1973, Ser. No. 409,087
Claims priority, application Netherlands, Apr. 2, 1968, 6804576
Int. Cl.² B29C *17/02*
U.S. Cl. 156—212 **9 Claims**

1. An apparatus for applying an adhesive strip to a peripherally irregularly contoured edge of a panel comprising a base having a bed, a table supported freely on the bed of said base and shiftable horizontally thereon to allow rotary, rectilinear and general plane motions of said table, said table to support a panel and broadside relation thereto having a peripherally irregularly contoured edge, means to hold said panel to said table for rotary, rectilinear and general plane motions there-

with, a pressure roller overlying the periphery of the panel to press an adhesive tape against the edge of the panel as the panel moves with said table, a driven cam affixed to said table and having a peripheral surface conforming substantially to



the peripherally irregularly contoured edge of the panel, a driving means mounted on said base and engaging said cam to impart motion to said cam and table, and resilient means mounted on said base urging said cam against said driving roller.

Re. 28,655

PROCESS FOR THE PRODUCTION OF A REFORMING CATALYST

Jens Richard Rostrup-Nielsen, Virum, Denmark, assignor to Haldor Topsoe A/S, Soborg, Denmark

Original No. 3,791,993, dated Feb. 12, 1974, Ser. No. 81,534, Oct. 16, 1970. Continuation of Ser. No. 734,232, June 4, 1968, abandoned. Application for reissue May 8, 1974, Ser. No. 468,163

Claims priority, application United Kingdom, June 12, 1967, 27066/67

Int. Cl. B01j *11/22*

U.S. Cl. 252—466 J **8 Claims**

1. The process for the preparation of a precursor for a catalyst for reforming hydrocarbons which comprises the steps of mixing an aqueous solution of a salt selected from the group consisting of soluble salts of nickel, iron and cobalt, said solution further containing a substance selected from the group consisting of soluble salts of magnesium and dispersed, finely divided, reactive magnesium oxide, with another solution containing a member selected from the group consisting of sodium aluminate and potassium aluminate, and also containing an excess of base not chemically combined in the aluminate, to simultaneously and differentially coprecipitate a fine sludge of intimately mixed fine particles of aluminum hydroxide, a hydroxide of an element selected from the group consisting of nickel, iron and cobalt, and a member of the group consisting of magnesium hydroxide and magnesium oxide, then washing said sludge substantially free from sodium and potassium in any form and thereafter drying and dehydrating said sludge at a temperature of 300–750° C. to form an intimate mixture of oxides of magnesium, aluminum and of an element selected from the group consisting of nickel, iron and cobalt, and then calcining said oxides mixture at a temperature of 850°–1100° C. and wherein the starting materials are used in proportions so as to give the oxides mixture prior to calcination a content of 5–50% of an oxide selected from the class consisting of nickel, iron and cobalt oxides, 10–75% of magnesium oxide and 5–60% of aluminum oxide the percentages being calculated on the total weight of the said compounds.

Re. 28,656

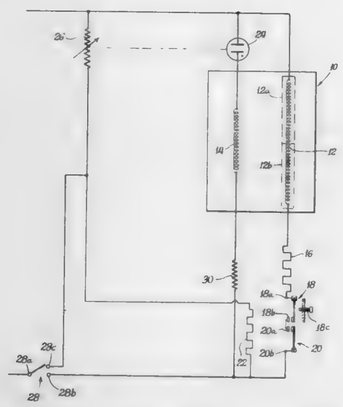
THERMOSTATLESS BLANKET CONTROL CIRCUIT

George C. Crowley, Winnetka, and Gordon S. Carlson, Northbrook, both of Ill., assignors to Northern Electric Company, Chicago, Ill.

Original No. 3,673,381, dated June 27, 1972, Ser. No. 192,181, Oct. 26, 1971. Application for reissue June 26, 1974, Ser. No. 483,213

Int. Cl.² H01H *37/00*

U.S. Cl. 219—212 **6 Claims**



1. An overload protection circuit for an electric blanket having a heating means and a sensing means *and a heat sensitive material* which has a resistance that decreases with increasing temperature, the sensing means being located in proximity in said blanket to said heating means and electrically coupled in parallel with *to* said heating means *by said heat sensitive material* comprising a diode filled with an ionizable gas which emits radiation when said gas is ionized; said diode being coupled in series with *connected between* said sensing means *and said heating means in parallel with said heat sensitive material*, control means having a pair of overload contacts which are coupled in series with said heating means and radiation responsive means coupled to said control means and positioned to receive said radiation from said diode; said control means being constructed to control the opening and closing of said overload contacts in accordance with the condition of said radiation responsive means wherein said condition changes in accordance with the radiation received by said radiation responsive means from said diode.

PLANT PATENTS

GRANTED DECEMBER 16, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,815

FLOWERING PEAR TREE

William Flemer III, Princeton, N.J., assignor to Treesearch, Kingston, N.J.

Filed July 16, 1974, Ser. No. 488,960

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct variety of flowering pear tree of the species botanically known as *Pyrus calleryana*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a dense, robust and pyramidal habit of growth; large, glossy foliage; late flowering and leafing out habits, both of which are about ten days later than the variety "Bradford"; cessation of growth and ripening up of the wood earlier in the fall than the variety "Bradford"; and greater hardiness than the variety "Bradford," as evidenced by its ability to survive winters in central Vermont which killed "Bradford" outright in the same plantings.

3,816

CARNATION PLANT "BELLITA"

Maurits C. van Staaveren, 30 Hornweg, Aalsmeer, Netherlands

Filed Oct. 15, 1974, Ser. No. 514,427

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—70 **1 Claim**

1. The new and distinct variety of carnation plant, substantially as herein shown and described, characterized by the strong color pattern of its flowers, the long strong stems on which the flowers are borne, and its vigorous and very tall growth habit.

3,817

MAPLE TREE

William Flemer III, Princeton, N.J., assignor to Treesearch, Kingston, N.J.

Filed Dec. 4, 1974, Ser. No. 529,513

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of maple tree of the species botanically known as *Acer saccharum* "columnare," substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a spreading, broad oval tree shape; a more rapid growing habit as compared to ordinary sugar maples; good resistance to terminal injury from the feeding activities of leaf hopper insects, particularly when growing as young trees in nursery rows; and a distinctive and very attractive bright red leaf color during the fall season.

PATENTS

GRANTED DECEMBER 16, 1975

ERRATA

For CLASS	See PATENT NO.
350-218	3,925,910
062-121	3,926,000
062-378	3,926,001
096-067	3,926,436
312-107	3,926,483
123-148	3,926,557
428-095	3,926,700
252-063.5	3,926,916
424-177	3,926,921
252-522	3,927,083
197-019	3,927,274

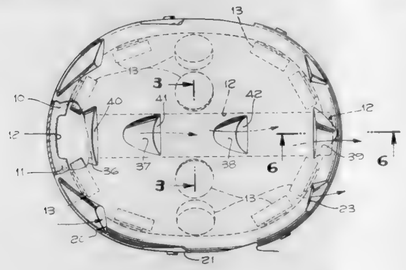
PATENTS

GRANTED DECEMBER 16, 1975

NOTE—A cross reference listing of applications published under Trial Voluntary Protest Program on January 28, 1975 is located in the back of this Issue. These entries will be in numerical order by document publication number.

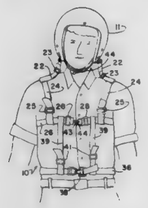
GENERAL AND MECHANICAL

3,925,821
AIR COOLED HELMET
Lester R. Lewicki, Woodland Hills, Calif., assignor to Bell Helmets Inc., Long Beach, Calif.
Filed July 5, 1974, Ser. No. 485,827
Int. Cl.² A42C *5/04;* **A42B** *3/00*
U.S. Cl. 2—3 R **15 Claims**



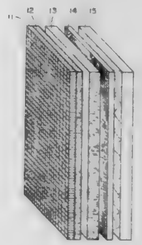
1. A protective helmet including an outer shell containing distributed openings through which air streams enter the helmet by virtue of advancing movements of the wearer, and baffles angularly positioned at said openings to direct the entering air streams rearwardly of the helmet in cooling relation with the interior, said baffles being one-piece with the outer shell and projecting inwardly toward and within the helmet interior, the baffles forming edges of the openings offset inwardly into the helmet interior, at least one baffle located at the helmet forward facing portion and having its edge located at the rearwardmost extent of said one baffle.

3,925,822
SAFETY HARNESS FOR A HELMET
John H. Sawyer, 247 Cary's Lane, Pensacola, Fla. 32507
Filed June 18, 1974, Ser. No. 480,572
Int. Cl.² A42B *1/08*
U.S. Cl. 2—3 R **5 Claims**



1. In combination, a crash helmet for motor cyclists or the like having an opening on each side thereof adjacent the lower edge of the helmet and a centrally disposed opening at the rear of the helmet adjacent the lower edge thereof and having a chin strap, a safety harness cooperating with the chin strap for securing said helmet on the head of the cyclist to prevent accidental dislodgement of the helmet from the head of the cyclist during an accident comprising a fastening element secured in each side opening of the helmet, a flexible shoulder strap for engaging over each shoulder of the cyclist, a flexible connecting strap removably and swivelly secured to each said fastening element and to each shoulder strap, a flexible chest strap to which the opposite ends of each shoulder strap is attached, a rear fastening element secured in the rear central opening of the helmet, a flexible back strap removably and swivelly secured at one end to said rear fastening element and at its other end to said chest strap, a flexible waist strap for encircling the waist of the cyclist, a right and left side flexible strap each secured at one end to said chest strap and at their opposite ends to said waist strap and a second flexible back strap secured at one end to said chest strap and at its other end to said waist strap.

3,925,823
WETTABLE FIRE FIGHTERS' GARMENT
Zelig Kupferman, Framingham, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 8, 1973, Ser. No. 340,611
Int. Cl.² A41D *31/02*
U.S. Cl. 2—81 **3 Claims**

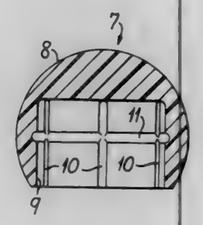


1. A non-reflective wettable fire fighters' suit for use in close proximity to and for brief emergency entry into fires where high heat fluxes are encountered comprising:
a plurality of layers of material assembled in suit form,
said layers including an outer heat shield made of an open weave flame resistant fabric;
a next adjacent inner layer made of a fibrous batt having a capability of substantially instantaneously passing water therethrough,
said batt being needled-punched to the open weave fabric so that the two fabrics are permanently interlocked;
a next adjacent inner layer made of a water absorbent fibrous felt material to act as a water reservoir and provide for the capillary transfer of water received through said outer heat shield and said fibrous batt;
a next adjacent inner layer made of a coated flame resistant nylon fabric to provide a barrier substantially impermeable to gas and liquids; and
a next adjacent inner quilted fabric lining made of insulating material to protect the wearer from the conductive heat of a fire after first having said garment saturated with water and thereafter periodically wetted while in close proximity to the fire,
whereby a person wearing the garment may closely approach a fire and remain in close proximity thereto for brief periods of time.

3,925,824
ENDOPROSTHETIC BONE JOINT DEVICES

Michael Alexander Reykers Freeman, London, and Sydney Alan Vasey Swanson, Carshalton, both of England, assignors to National Research Development Corporation, London, England

Filed May 9, 1974, Ser. No. 468,583
Int. Cl.² A61F 1/24
U.S. Cl. 3—1.912 5 Claims



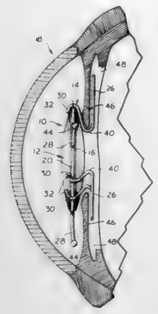
1. An endoprosthetic hip joint device comprising:
an acetabular component in the form of a socket member having an inner bearing surface concavely spherically shaped to not more than hemispherical extent, and a hemispherically shaped outer fixation surface formed with a shallow relieved configuration, said socket member being formed of metal with its inner and outer surfaces both being substantially hemispherical and concentrically located to define a thin uniform thickness therebetween,
and a femoral component in the form of a cap member having an outer bearing surface of convex majorspherical-segment shape in complementary, mutually articulatory engagement with said inner bearing surface, and a concave inner fixation surface of generally cylindrical shape coaxial with the axis of symmetry of said outer bearing surface and formed with a shallow relieved configuration,
said cap member being formed of a plastic material of significantly greater thickness between its respective inner and outer surfaces than said acetabular component; both of said fixation surfaces having relieved formations for receiving gap-filling medium in respective direct securement with the acetabulum and femur.

3,925,825
SUPPORTING SYSTEM FOR ARTIFICIAL INTRAOCULAR LENS

William Richards, Medway, and Bernard Grolman, Worcester, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Jan. 24, 1975, Ser. No. 543,735
Int. Cl.² A61F 1/16, 1/24
U.S. Cl. 3—13 12 Claims

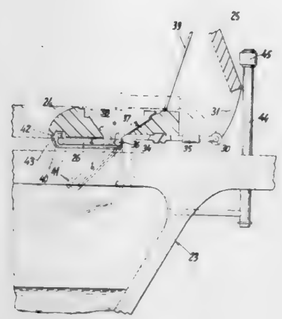
1. A supporting system for an artificial intraocular lens comprising:
a rim adapted to extend about at least the major portion of the periphery of a lens to be supported by said system; and
at least one integral iris clip extending away from said rim, said clip including a portion adapted to partially overly at least one surface of said lens for preventing displacement thereof from said rim in a final assembly of said lens and supporting system.



3,925,826
SANITARY APPARATUS

Robert Huyot, and Antje S. Huyot, both of 25 rue Laugier, 75017 Paris, France

Filed May 24, 1973, Ser. No. 363,734
Claims priority, application France, May 26, 1972, 72.18841; Apr. 25, 1973, 73.14914
Int. Cl. A47k 3/22
U.S. Cl. 4—7 14 Claims

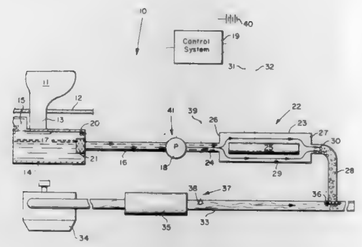


10. Sanitary apparatus comprising a bowl including a lowerable seat supported by said bowl, a flush nozzle mounted on the apparatus, manually operable lever means for moving said nozzle between an inoperative position and a plurality of operative positions along a vertical plane, means for manipulating said lever means from above said seat and for retracting said lever means below the upper surface of said seat and being manipulable from above said seat, means for rotating the nozzle about an axis perpendicular to said vertical plane; said nozzle being retractable to its inoperative position below the upper surface of said seat on said bowl and being housed wholly within said seat in the inoperative position of the nozzle and means being provided for connecting the nozzle with a water supply and connecting the bowl to a waste water outlet.

3,925,827
WASTE PRODUCTS INCINERATION SYSTEM FOR A VEHICLE OR THE LIKE

Bruce E. Wagenhals, Fountain Valley, Calif., assignor to Monogram Industries, Inc., Santa Monica, Calif.

Filed Apr. 3, 1974, Ser. No. 457,589
Int. Cl.² B60R 15/04
U.S. Cl. 4—114 10 Claims



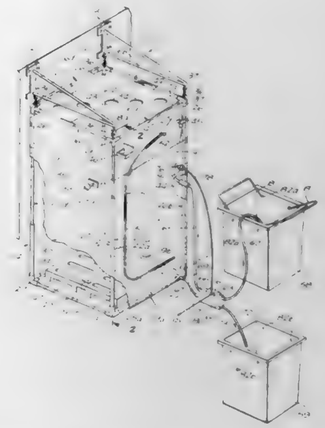
1. In a waste products incineration system for use on a vehicle or the like wherein said vehicle includes an engine and an exhaust system having a tailpipe exhausting a stream of hot exhaust gases from the engine to the atmosphere, the system further including a toilet mounted on said vehicle, a holding tank mounted on said vehicle in fluid communication with said toilet for receiving waste products therefrom, conduit means extending from fluid engagement with the interior of said holding tank into fluid engagement with the stream of exhaust gases passing through said tailpipe, and normally inactivated pumping means associated with said conduit means for selectively pumping a slurry of waste products from said holding tank to said tailpipe, the improvement which comprises:
electrolysis means disposed between said pumping means and said tailpipe for electrolytically converting said slurry into a deodorized and disinfected foam before entry thereof into said tailpipe whereby solids in said foam are completely burned and liquids in said foam are completely evaporated when said foam comes into contact with the hot exhaust gases in said tailpipe thereby discharging said waste products out of said tailpipe as totally harmless gases.

3,925,828
PORTABLE SHOWER

Sunyong P. Kim, 3885 S. Norton Ave., Los Angeles, Calif. 90008

Filed June 8, 1973, Ser. No. 368,188
Int. Cl.² A47K 3/22; F24H 1/06
U.S. Cl. 4—147 5 Claims

1. A portable shower comprising:
a box-like shaped housing formed of a thin plastic material, said housing having a water tight bottom and having a zippered opening on the front side wall thereof;
a pair of brackets extending from the sidewall of a camping vehicle, the upper corners of said boxlike shaped housing being suspended from said brackets;
a stand disposed on the bottom of the interior of said housing;
a shower head fixture within said housing, said shower head fixture including a length of hose having a coupler on the end thereof, said coupler extending through the sidewall of said housing, said housing having an outlet tube extending from the bottom of a sidewall thereof;
a first and second container positioned outside said housing;
a pump having a supply portion and a return portion, said supply pump portion having a supply inlet and a supply outlet, and said return pump portion having a return inlet and a return outlet;
a first length of supply hose connecting said first container to the supply inlet of said supply pump portion;
a second length of supply hose connecting the supply outlet of said supply pump portion to said coupler;

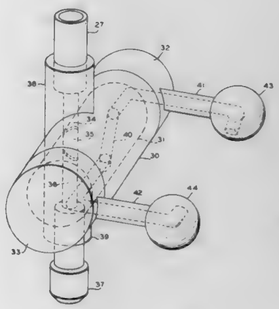


a first length of return hose connecting the outlet tube on the bottom of said housing to the return inlet of said return pump portion;
a second length of return hose connecting the return outlet of said return pump portion to said second container; and
a remote switch actuator having a knob disposed within said housing for controlling the actuation of said pump.

3,925,829
EMERGENCY EYE WASH FOUNTAIN APPARATUS

Howard W. Bost, 1334 Quail Drive, Bartlesville, Okla. 74003

Filed Aug. 12, 1974, Ser. No. 496,920
Int. Cl.² A61H 33/04
U.S. Cl. 4—166 5 Claims



1. An eye wash fountain for mounting on a sink faucet comprising:
a valve body having a normally fixed portion and a swivel portion pivotally attached to said fixed portion, said fixed and swivel body portions having major flat abutting surfaces in a plane perpendicular to the axis along which said body portions are pivotally attached, and
a pair of spray heads rigidly connected to said swivel portion of said valve body by two conduit means adapted to position said spray heads in a forward eye-flushing position or a back out-of-use position,
said fixed body portion having an inlet channel connectable to a sink faucet and passing straight through said fixed

body portion with the outlet end of said inlet channel lying in said abutting surface of said fixed body portion, and

said swivel body portion having first and second outlet channels,

said first outlet channel passing straight through said swivel body portion with the inlet end of said first outlet channel lying in said abutting surface of said swivel body portion, said first outlet channel being alignable with said inlet channel when said spray heads are in said out-of-use position and thus aligned directed to pass water straight through said valve body for normal faucet use, and

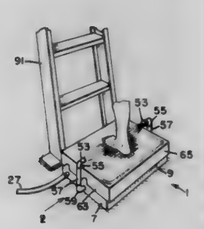
said second outlet channel passing through said swivel body portion in a Y-shape with the inlet end of said second outlet channel lying in said abutting surface of said swivel body portion and the two outlet ends of said second outlet channel being connected to said conduit means of said spray heads, said second outlet channel being alignable with said inlet channel when said spray heads are swiveled into said forward eye-flushing position and thus aligned directed to divert water from said inlet channel to each of said conduit means.

3,925,830

FOOT SHOWER AND SPRAY DEVICE

Francis Bud Delaney, 608 Curry Road, Schenectady, N.Y. 12306

Filed Mar. 17, 1975, Ser. No. 559,006
Int. Cl.² A47K *3/12*
U.S. Cl. 4—182 **8 Claims**



1. A foot shower and spray device comprising a base, actuating platform, valve means, and shower and spray means; said base mounting said actuating platform and said valve mean, said base having upstanding sidewalls, said actuating platform having depending sidewalls, said depending sidewalls receiving said upstanding sidewalls in such mounting relationship, said valve means being adapted for connection with a water source under pressure, said valve means being connected with said shower and spray means, and said actuating platform being operatively connected to said valve means to open said valve means to establish communication of said water source with said shower and spray means upon said actuating platform being depressed.

3,925,831

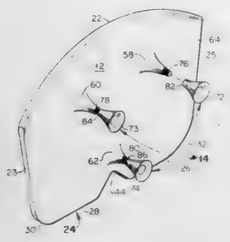
SAFETY PANEL FOR BATHTUBS

Roger S. Perkins, 2129 Eveningside Drive, West Covina, Calif. 91792

Filed Nov. 15, 1974, Ser. No. 524,031
Int. Cl.² A47K *3/14*
U.S. Cl. 4—183 **6 Claims**

1. A safety panel adapted to partition a bathtub adjacent the forward end thereof which includes spigot or water control knobs means projecting therefrom, said bathtub including a bottom and bottom side edges comprising

rigid planar panel means including front and rear faces and dimensioned to approximate the vertical cross-section taken substantially transverse to the longitudinal dimension of said bathtub, said panel including a generally rounded upper edge and a bottom edge, said bottom edge having opposite corners that are radiused to define with the bottom side edges of said bathtub passageways for the flow of water past said panel, said bottom edge being recessed generally centrally thereof to define with the bottom of said bathtub a further passageway for the flow of water past said panel, and



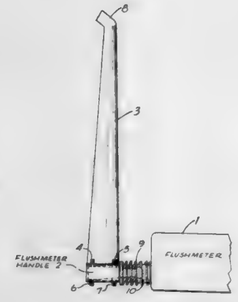
a plurality of spacer means extending generally perpendicularly from that face of said panel facing said forward end of said bathtub and releasably engaging said forward end to position said panel spaced apart from said forward end of said bathtub and beyond the outboard ends of said spigot or water control knobs means.

3,925,832

FLUSHOMETER DEVICE

John Falzone, Brooklyn, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Dec. 16, 1974, Ser. No. 533,298
Int. Cl.² F16D *1/06*
U.S. Cl. 4—249 **2 Claims**



1. A flushometer device for a flushometer having a handle extending substantially horizontally therefrom for operating the flushometer, when it is moved in predetermined directions, said flushometer device comprising

a handle extension; and

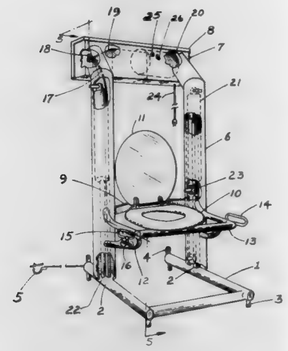
fastening means removably affixing the handle extension to the handle of a flushometer in a manner whereby the handle extension extends substantially vertically from the handle whereby movement of the handle extension in predetermined directions moves the handle in corresponding predetermined directions to operate the flushometer, said fastening means comprising a plurality of screws threadedly coupled in internally threaded bores formed through the handle extension and in close abutment with the handle of the flushometer.

3,925,833

PORTABLE ELECTRIC HYDRAULIC JOHNNY AID

Australia Hunter, 1540 E. Ocean Front, Balboa, Calif. 92661

Continuation-in-part of Ser. No. 259,738, June 5, 1972, abandoned. This application Mar. 8, 1974, Ser. No. 449,521
Int. Cl.² A47K *17/02*
U.S. Cl. 4—251 **10 Claims**



1. A transfer device to assist an infirm person in using a toilet bowl, comprising frame means arranged to be positioned over a toilet bowl, said frame means including a U-shaped horizontal base member with the opening in the U-shaped base member being in the rear thereof for receiving a toilet bowl, a toilet seat means, said U-shaped base member having upstanding vertical support elements on opposite side portions of said U-shaped base member adjacent the opening therein, respective movable side frame members slidably interengaged with said support elements, means to secure the toilet seat means to said side frame members, means to constrain said side frame members to upward and downward vertical movement relative to said base member, whereby said toilet seat means is constrained to upward and downward movement in a straight line relative to said base member, reciprocating drive means on said frame means, means connecting said drive means to said toilet seat means and being arranged to move the toilet seat means vertically responsive to energization of said drive means, and means to selectively energize said drive means for upward and downward movement of the toilet seat means, whereby to assist an infirm person using the device to assume a standing position from a sitting position, and vice versa, without forward or rearward movement while maintaining the toilet seat means horizontal and enabling the person to maintain supportive contact with the forward edge of the toilet seat means.

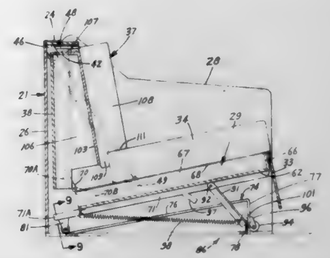
3,925,834

BED AND LOUNGE UNIT

Clarence R. Johnson, Duluth; Jay T. Kidder, Minneapolis, and Orlando N. Talarico, Duluth, all of Minn., assignors to The Tilt-A-Bed Corporation, Minneapolis, Minn.

Filed June 14, 1974, Ser. No. 479,222
Int. Cl.² A47C *17/14*
U.S. Cl. 5—13 **17 Claims**

1. In a combination bed and lounge unit having a frame and mattress assembly selectively movable to a bed position and a seat position: said frame having a member located below said mattress assembly, support means movably connected to the mattress assembly and carrying wheel means movably supporting at least a part of said mattress assembly relative to said member of the frame, said support means having a cross member, arms secured to opposite ends of the cross member, pivot means pivotally connecting the arms to the mattress assembly, said cross member movable to a position behind said member of the frame to hold the mattress assembly in the seat position and movable ahead of said member of the frame



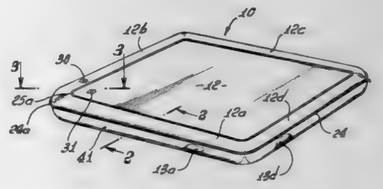
to allow said mattress assembly to be moved to the bed position.

3,925,835

FRAMELESS SAFETY WATER BED

William Pennington, and William Pennington, III, both of 30200 Oceanaire Drive, Palos Verdes Peninsula, Calif. 90274

Continuation-in-part of Ser. No. 221,589, Jan. 28, 1972, Pat. No. 3,787,907. This application July 1, 1974, Ser. No. 484,966
Int. Cl.² A47C *27/08*
U.S. Cl. 5—348 WB **4 Claims**



1. In a water bed, the combination comprising

a. plastic sheet structure defining a main water compartment and an air pressure compartment extending in a generally horizontal loop bounding the water compartment, and

b. an additional and separate safety sheet attached to said sheet structure and extending in closely underlying relation to the air and water compartments to receive and retain any water leakage from the water compartment,

c. the safety sheet being peripherally bonded to the sheet structure along a locus bounding the main extent of the air compartment and at an elevation generally above the bottom level of the water compartment.

3,925,836

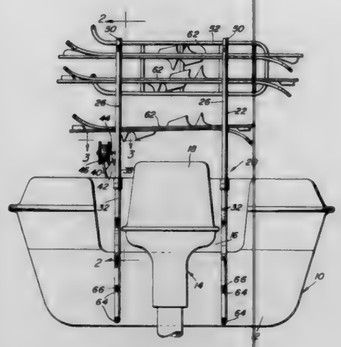
TRANSOM MOUNTED SKI RACK AND TOW ROPE REEL SUPPORT

Harold V. Simmonds, R.R. #4, Box 145, Greenville, Ill. 62246

Filed Sept. 18, 1974, Ser. No. 507,069
Int. Cl.² A63C *11/00*
U.S. Cl. 9—1 D **9 Claims**

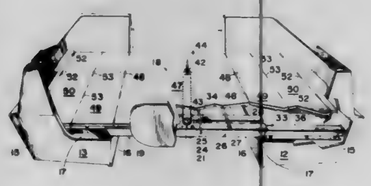
1. A support rack for water skis and the like to be stored exteriorly of the cockpit of a boat, said rack comprising a pair of uprights having upper and lower end portions and including mounting means on their lower end portions for support of said uprights in a stationary manner from opposite side portions of the rear of a boat hull, the upper end portions of said uprights including vertically spaced pairs of horizontally aligned forwardly projecting shelves, each of said shelves including releasable clamp means for clampingly engaging the corresponding end portion of a water ski supported therefrom

and having its other end supported from the corresponding shelf of the other upright, said mounting means includes a plurality of elongated front to rear extending mounting studs



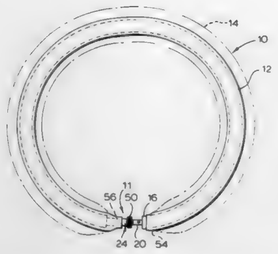
adjustably secured through said lower end portions and including forward ends adapted to be secured through the transom of a boat.

3,925,837
BOAT HULL CONSTRUCTION
Keith Roy Phillip Miller, 183 Main St., Ailsa Craig, Ontario, Canada
Filed Sept. 18, 1974, Ser. No. 506,948
Claims priority, application Canada, Dec. 13, 1973, 189243
Int. Cl.² B63B *7/00*
U.S. Cl. 9—2 R **2 Claims**



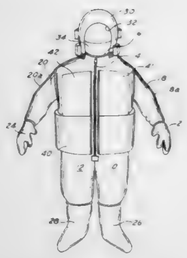
1. A boat comprising:
a. a hull of two juxtaposed hollow sections, each section including a plate and an enclosing body portion, the plate being essentially flat and longitudinally extending as a side of the section across the body portion to form a hollow member or section therewith;
b. struts interconnectingly mounted fore and aft on each of the hollow sections and essentially at right angles to the plates to dispose the plates relatively proximate and substantially parallel to each other; and
c. gear means including interconnected fore and aft arrangements of a hollow parallel guide into which a strut from each hollow section telescopingly is adapted to move and means for relatively moving and constraining the struts within the guides comprising a fore and aft gear box mounted on the guides and containing a pinion gear, each strut disposing a rack along one margin which engages the pinion gear, and link means for connecting the fore and aft gear boxes whereby rotation of one pinion gear transmits rotation to the other pinion gear and relative movement of the fore and aft struts and hollow sections whereby the sections may be selectively disposed in adjacent juxtaposition or separated at will.

3,925,838
INFLATABLE LIFE PRESERVER
Patrick Hayes Kennedy, 1780 Lawrence Ave. East, Scarborough, Ontario, Canada
Continuation-in-part of Ser. No. 502,434, Sept. 3, 1974, abandoned. This application Dec. 6, 1974, Ser. No. 530,139
Int. Cl.² B63C *9/16*
U.S. Cl. 9—319 **10 Claims**



1. An inflatable life preserver collar comprising:
a toroidal, tubular core of pressure resistant material forming a first closed chamber;
a first inflatable tubular membrane mounted coaxially on the core and forming a second, annular closed chamber about the core;
passage means connecting the first chamber and the second chamber;
valve means located in the passage means; and
means, actuable on the application of axial force to the collar, to open the valve means for the passage of pressurized gas from the first chamber into the second chamber.

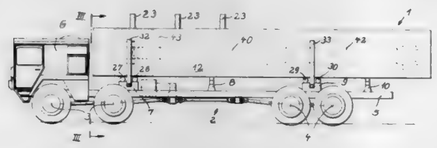
3,925,839
SURVIVAL SUIT
James W. Smith, 557 Milwaukee St., Denver, Colo. 80206
Filed Apr. 17, 1974, Ser. No. 461,492
Int. Cl.² B63C *9/10*
U.S. Cl. 9—331 **5 Claims**



1. A cold water survival suit comprising:
a. a body covering of closed-cellular material having a thickness of approximately three-sixteenths inch to one-fourth inch, said body covering having inside and outside surfaces and having a waist portion, a chest portion, a hood portion, glove portions, and boot portions, said hood portion having a front and back and an opening in the front for the face of the user;
b. head flotation means in band form and of essentially the same material as said body covering, said head flotation means being contiguously joined with said outside surface of said body covering at said hood portion thereof and extending around the back of said hood portion for holding a user's head high in the water;

c. waist flotation means in the form of a wide band of essentially the same material as said body covering, said waist flotation means being contiguously joined with said outside surface of said body covering, said waist flotation means extending around said waist portion of said body covering;
d. chest flotation means of essentially the same material as said body covering, said chest flotation means being contiguously joined with said outside surface of said body covering at said chest portion thereof;
e. all regions of said suit having an essentially solid cross section substantially free of voids other than those within the cells of said closed-cellular material;
f. whereby the buoyancy and protective properties of said suit are maintained even if said outside surface is damaged.

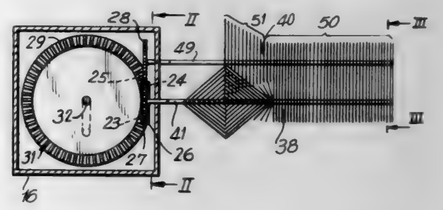
3,925,840
VEHICLE FOR TRANSPORTING BRIDGE SECTIONS
Gerhard Wagner, Mainz-Lerchenberg, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany
Filed Oct. 21, 1974, Ser. No. 516,418
Claims priority, application Germany, Oct. 23, 1973, 2353019
Int. Cl.² E01D *1/00*
U.S. Cl. 14—1 **14 Claims**



1. A vehicle for transporting bridge sections each comprising at least a pair of bridge beams; said vehicle including means for supporting said sections on longitudinal side by side relation with the roadway forming sides of the beams parallel to the vertical, each beam having coupling means at one end for connection to the other beam of the respective section, one beam of each section being toward the outside of the vehicle and the other beam of each section being adjacent the said one beam toward the center of the vehicle, the coupling means of said one beam of each section being at the forward end of the vehicle and the coupling means of the other beam of each section being toward the rearward end of the vehicle.

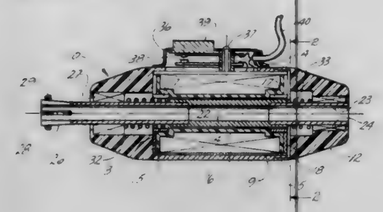
3,925,841
ROTARY TOOTHBRUSH
Joseph L. Caliendo, 578 Driggs Ave., Brooklyn, N.Y. 11211
Filed Mar. 4, 1974, Ser. No. 447,575
Int. Cl.² A46B *13/02*
U.S. Cl. 15—23 **4 Claims**

1. A rotary toothbrush for brushing all the teeth of a jaw, said teeth being in a substantially U-shaped pattern with front teeth at the curvilinear portion of the pattern and side teeth at the substantially linear portions of the pattern and each tooth having an inner surface on the inside of the U-shaped pattern, an outer surface on the outside of the U-shaped pattern and a bite surface facing the bite surfaces of the teeth of the other jaw, said toothbrush comprising
a housing;
first, second, third, fourth, fifth and sixth substantially linearly extending brushes rotatably mounted at one end in the housing and positioned so that the first brush operatively abuts a corresponding one of the inner surfaces of substantially half the front teeth and the corresponding side teeth, the second brush operatively abuts the outer surfaces of substantially half the front teeth and the corresponding side teeth and the third brush operatively abuts the bite surfaces of substantially half the front teeth and the bite surfaces of the corresponding side teeth, the first brush comprising a substantially linear rod having a first plurality of substantially radially extending bristles in planes substantially perpendicular to the rod in the area of the side teeth, a second plurality of substantially radially extending bristles in planes inclined at angles opening away from the first plurality of bristles in the area of the inner surfaces of the front teeth and a third plurality of substantially radially extending bristles in planes inclined at angles opening toward the first and second pluralities of bristles in the area of the outer surfaces of the front teeth, the bristles of each of the second and third pluralities of bristles substantially abutting each other in a plane substantially perpendicular to the rod and the bristles of each of the second and third pluralities of bristles increasing in length substantially in proportion with the distance from said plane, the bristles of each of the second and third pluralities of bristles forming substantially conical configurations, the second brush comprising a substantially linear rod having a first plurality of substantially radially extending bristles in planes substantially perpendicular to the rod in the area of the side teeth, the bristles



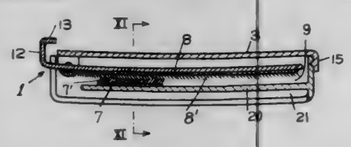
of the first plurality of bristles having substantially equal lengths, and a second plurality of substantially radially extending bristles in planes substantially perpendicular to the rod, the bristles of the second plurality of bristles increasing in length substantially in proportion with the distance from the first plurality of bristles in a flared configuration, and the third brush comprising a substantially linear rod having a first plurality of substantially radially extending bristles in planes substantially perpendicular to the rod in the area of the side teeth, the bristles of the first plurality of bristles having substantially equal lengths, and a second plurality of substantially radially extending bristles in planes substantially perpendicular to the rod, the bristles of the second plurality of bristles increasing in length substantially in proportion with the distance from the first plurality of bristles in a flared configuration, the fourth of the brushes being identical to the first brush and abutting the inner surfaces of the other half of the front teeth of the jaw and the inner surfaces of the corresponding side teeth, the fifth of the brushes being identical to the second brush and abutting the outer surfaces of the other half of the front teeth and the outer surfaces of the corresponding side teeth and the sixth of the brushes being identical to the third brush and abutting the bite surfaces of the other half of the front teeth of the jaw and the bite surfaces of the corresponding side teeth; and
motive means in the housing coupled to the brushes for rotating the brushes about their axes in predetermined directions.

3,925,842
POWER ERASER
Bjorn P. Selinder, and Bo Eric Selinder, both of San Pedro, Calif., assignors to Semo Incorporated, Fallon, N.Y.
Continuation of Ser. No. 403,679, Oct. 4, 1973, abandoned. This application Feb. 21, 1975, Ser. No. 551,594
Int. Cl. H02k *33/02*
U.S. Cl. 15—3.53 **9 Claims**



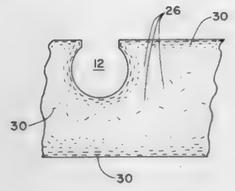
1. A power eraser comprising:
a housing;
a chuck means adapted to hold an elongated rod-shaped eraser element;
an elongated eraser element secured in and extending from the chuck means, the eraser element being of a type specifically adapted for removing marks from paper and the like; and
linearly reciprocating drive means secured to the housing and to the chuck means for oscillating the chuck means and eraser element along the longitudinal axis of the eraser element, the chuck means being substantially free of movement lateral to the eraser-element axis.

3,925,843
CLEANING BRUSH DEVICE
Teruya Tsuruzawa, 22-8, Nishi 3-chome, Senriyama, Suita, and Muneyuki Ueda, 6-23, Kurakuen Sanbancho, Nishinomiya, both of Japan
Division of Ser. No. 395,000, Sept. 7, 1973. This application Oct. 29, 1974, Ser. No. 518,933. The portion of the term of this patent subsequent to May 27, 1992, has been disclaimed.
Claims priority, application Japan, Sept. 9, 1972, 47-90719
Int. Cl.² A46B *17/04*
U.S. Cl. 15—184 **3 Claims**



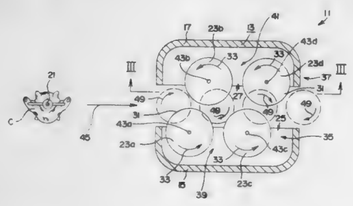
1. A cleaning brush device comprising: a relatively flat casing having an opening at one end; a guide plate positioned within the casing and defining first and second regions therein, said guide plate having a length less than the length of said casing, whereby said regions are in communication with one another in the vicinity of said casing opening; a first brush member formed on said guide plate; a second brush member adapted to be inserted into and pulled out of said casing through said opening, said second brush member being positioned within said first region for storage, and positioned within said second region when using said brush; short bristles closely implanted on one surface of the first brush member to form a dust removing surface; short bristles closely implanted on one surface of the second brush member to form a cleaning brush surface, bristles on the first brush surface being inclined in the direction away from said opening; the bristles on the second brush member being inclined in the same direction as the bristles on the first brush member, the bristles of said first brush member and said second brush member being engageable with one another as the second brush member is inserted into or pulled out of the casing; and means for holding the pulled-out second brush member on the casing when inserted in the second region so that the cleaning brush surface thereof is exposed so as to be engageable with an article to be cleaned for brushing.

3,925,844
FIBER-LOADED WINDSHIELD WIPER SUPERSTRUCTURE
Irwin C. Cone, Littleton, Colo., assignor to The Gates Rubber Company, Denver, Colo.
Filed July 15, 1974, Ser. No. 488,372
Int. Cl.² B60S *1/02*
U.S. Cl. 15—250.42 **11 Claims**



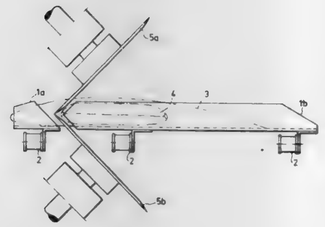
1. An elongated yoke for a windshield wiper superstructure comprising:
a polymeric matrix in which is embedded through at least a portion of the length of the yoke fibers having a tensile strength greater than that of the polymeric matrix alone, more of said fibers being oriented substantially longitudinally with respect to the elongated yoke than in any other single direction, such longitudinal orientation being more prevalent near the outer surface of the yoke than inward of such outer surface.

3,925,845
CARCASS POLISHER
Donald L. Arendale, 2516 Boysenberry, Bartlett, Tenn. 38134
Filed Apr. 25, 1974, Ser. No. 464,154
Int. Cl.² A22B *5/08*
U.S. Cl. 17—18 **12 Claims**



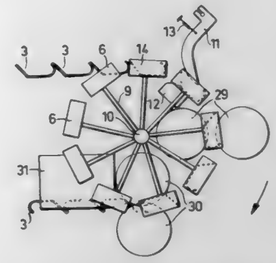
1. Apparatus for removing scurf and singed hair from a carcass, said apparatus comprising frame means having a pair of frame elements, means for suspending and moving the carcass laterally between said elements, means for enabling the carcass to be free to rotate about a vertical axis as it moves between said elements, and multiple pairs of cylindrical like shaped scrub brushes rotatably attached to said frame means, said scrub brushes being rotatably driven about their respective vertically disposed axes for vigorously engaging and scrubbing the carcass and imparting a twirling action thereto to present substantially the entire area of the outer surface of the carcass to each of said rotating scrub brushes as the scurf and singed hair are scrubbed therefrom, said scrub brushes being arranged in first and second rows with each of said pairs of said multiple pairs thereof having one brush in said first row and one brush in said second row, the scrub brushes in said first and second rows respectively having spaced distances therebetween, the rotating axes of said scrub brushes in said first row being arranged alternately with said spaced distances in said second row whereby the carcass alternately encounters individual rotating brushes on either side thereof as it passes laterally between said frame elements.

3,925,846
METHOD OF REMOVING THE HARD AND SOFT ROE SACKS, RESPECTIVELY, FROM FISHES AND APPARATUS FOR CARRYING OUT THIS METHOD
Leif Leander, Vastra Frolunda, Sweden, assignor to Arenco KM-AB, Vastra Frolunda, Sweden
Filed Feb. 7, 1974, Ser. No. 440,388
Claims priority, application Sweden, Feb. 22, 1973, 7302338
Int. Cl.² A22C *25/14*
U.S. Cl. 17—60 **14 Claims**



1. Apparatus for removing the hard and soft roe sacks, respectively, from a fish, comprising
a. a head severing station including means for severing the head of the fish by a V-shaped cut, the legs of which extend transversely of and at acute angles to the longitudinal direction of the fish;
b. a belly cutting station which comprises an edged cutting tool for cutting the belly of the fish in its longitudinal direction, and protective means for preventing engagement of the hard and soft roe sacks, respectively, with the edge of the cutting tool;
c. a hard and soft roe sack, respectively, squeezing out station comprising compressing means which are located for substantially symmetrical engagement with the sides of the fish and are pressable against an initially narrow area of said fish located between the longitudinal central lines of the hard and soft roe sacks, respectively, and the upper contour of said sacks, and means for successively displacing said compressing means downwards towards the belly of the fish, for successively squeezing out of the hard and soft roe sacks, respectively, through the opening cut in the belly of the fish;
d. a separation station including means for removing the dependent hard and soft roe sacks, respectively; and
e. transport means for advancing the fish first substantially perpendicular to its longitudinal direction through the head severing station and then substantially in the longitudinal direction of the fish through the subsequent stations, in the order stated above.

3,925,847
METHOD AND APPARATUS FOR MEASURING AND POSITIONING OF FISH AT HEAD CUTTING
Leif Leander, and Curt Eriksson, both of Vastra Frolunda, Sweden, assignors to Arenco-KM AB, Vastra Frolunda, Sweden
Filed Aug. 2, 1973, Ser. No. 384,899
Int. Cl.² A22C *25/14*
U.S. Cl. 17—63 **7 Claims**

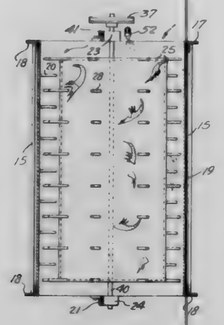


1. Apparatus for measuring fish and positioning them in an optimum position for deheading, said apparatus comprising a first conveyor having a path of movement and having a plurality of fish boxes carried thereby, each of said fish boxes being adapted to advance a fish carried thereby sideways with the fish head located on a particular side thereof,
a second conveyor having a path of movement extending adjacent and substantially parallel to part of the path of movement of said first conveyor and having a plurality of head boxes carried thereby,
sensing means for determining the thickness of a fish carried by a fish box in the region of the fish located immediately behind the eyes of the fish,
means for locating said sensing means in an interspace between the respective paths of movement of said fish boxes and said head boxes,
means for moving each of said plurality of head boxes of said second conveyor in synchronism with and in the same direction as and directly opposite to an individual fish box of said first conveyor along a portion of the path of movement of said second conveyor,
means for displacing each of said head boxes toward and away from an individual fish box in the longitudinal direction of a fish resting in said fish box,
a first control means fixedly mounted with respect to the paths of movement of said conveyors for actuating second control means in response to said sensing means,
a plurality of second control means for controlling said head box displacing means to optimum locations, a second control means connected to each of said head boxes and movable therewith in the path of movement of said second conveyor and for controlling said head box displacing means to move its connected head box longitudinally to an optimum location dependent upon the measured thickness of the fish in its connected head box, and
means for locking each head box at said optimum position.

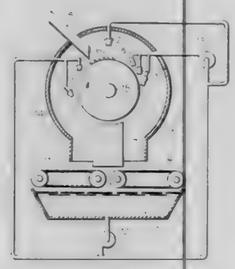
3,925,848
SHRIMP DEHEADER
Hubert Ward, 1412 Choctaw Avenue, Metairie, La. 70005
Filed June 29, 1973, Ser. No. 375,151
Int. Cl.² A22C *29/00*
U.S. Cl. 17—71 **10 Claims**

1. A shrimp deheading apparatus comprising an upstanding stationary cylindrical shell member having an axis which is disposed closer to the vertical than to the horizontal, a rotary drum member substantially coaxially mounted in said shell member, means to rotate said drum member with respect to said stationary shell member, said drum member having a

circular top wall for receiving shrimp to be deheaded which is slightly less in diameter than the said shell member so as to define an annular space between the drum member and the shell member of just sufficient radial width to receive shrimp lengthwise from said drum top wall, a plurality of inwardly extending pin elements on the interior surface of said shell member terminating closely adjacent the peripheral surface of the drum member, a plurality of outwardly extending pin elements on the drum member extending toward and terminating closely adjacent the interior surface of the shell member, the pin elements on said shell member being of different elevations than the pin elements on the drum member, and means for spraying water downwardly onto the central portion of the top wall of said drum member to facilitate outward sliding movement of shrimp and assist centrifugal force in moving shrimp toward said annular space, whereby shrimp deposited on said top wall of the rotary drum member are fed by centrifugal force to said annular space in which the shrimp drop by gravity and are engaged by the pin elements to dehead the shrimp.

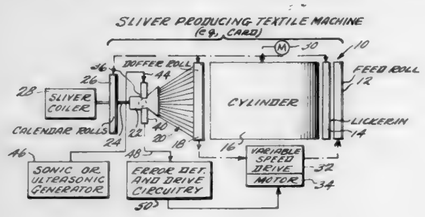


3,925,849
FLUID IMPACT GIN
Anselm C. Griffin, Jr., Leland, Miss., and Harold Watson, Auburn, Ala., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Nov. 19, 1974, Ser. No. 525,129
Int. Cl.² D01B *1/04*
U.S. Cl. 19—48 **9 Claims**



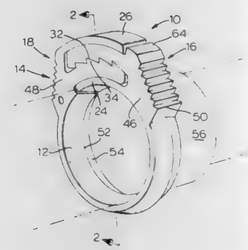
1. An apparatus and system for removing cottonseeds from cotton fiber comprising:
a. a horizontal rotating cylinder comprising:
1. a saw toothed external surface with which to enmesh the cotton fibers,
2. a means of rotating the cylinder in a clockwise direction,
b. a system of low pressure nozzles to wet the cotton fiber and mingle the cotton fiber with the metal saw teeth, and
c. a means of supplying fluid to said low pressure nozzles,
d. a system of high pressure impact nozzles directing the impacting fluid stream tangentially to the horizontal rotating cylinder thereby forcibly removing the cottonseed from the fibers while retaining the fibers in the saw teeth of the rotating cylinder, and
e. a means of supplying high pressure fluid to said high pressure impact nozzles,
f. a means gathering and directing spent fluid and cottonseed released by said nozzles, and
g. a means receiving and separating said gathered fluid and cottonseeds and conveying the cottonseeds away from the apparatus for further processing,
h. a means of retaining said separated impacting fluid in storage,
i. a system of doffing nozzles to remove the cotton fibers from the teeth on the surface of the horizontal rotating cylinder, and
j. a means of supplying fluid to said doffing nozzles,
k. a means of gathering and directing the spent fluid and cotton fibers released by said doffing nozzles,
l. a means receiving and separating said gathered fluid and cotton fibers and conveying the cotton fiber away from the apparatus for additional processing,
m. an enclosure encompassing said cylinder and said nozzle systems thereby directing splash fluid to the said gathering and directing means described in (f) and (k) and thence to said retaining means described in (h).

3,925,850
DENSITY SENSING AND CONTROLLING EQUIPMENT
Kenneth G. Lytton, Gastonia, N.C., assignor to Fibers Controls Corporation, Gastonia, N.C.
Filed Nov. 1, 1973, Ser. No. 411,842
Int. Cl.² D01G *15/36*; G01N *9/24*
U.S. Cl. 19—98 **9 Claims**



1. Textile sliver density sensing apparatus comprising:
a textile processing machine for producing a multiplicity of spaced parallel fiber strands,
funnel shaped strand collector means having a throughput aperture for collecting said strands and producing a sliver in said aperture,
means for drawing said sliver through said aperture constantly,
means including a transmitting transducer for transmitting into said sliver a compression wave in the sonic ultrasonic frequency range,
a receiving transducer for receiving the part of said wave that passes through said sliver, and
circuit means connected to said receiving transducer for electrically determining the sliver density deviation from a predetermined norm based on the amount of said wave that passes through said sliver,
said strand collector having a cone shaped receiving section and a tube-like shaped section connected thereto with said throughput aperture extending from the apex of said cone section through said tube section,
said tube-like section having transverse apertures in two opposing sides adjacent said apex and in communication with said throughput aperture,
said transducers being respectively disposed adjacent said opposing sides of said tube-like section and in open communication with each other through said transverse and throughput apertures, and
wherein said throughput aperture in said tube-like section has a width substantially greater than the width of said aperture at the apex of said cone section.

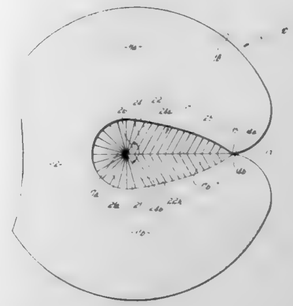
3,925,851
PLASTIC HOSE CLAMP
Douglas L. Bevans, 134 Dornie Road, Oakville, Ontario, Canada
Filed May 20, 1974, Ser. No. 471,359
Int. Cl.² B65D *63/02*
U.S. Cl. 24—20 TT **1 Claim**



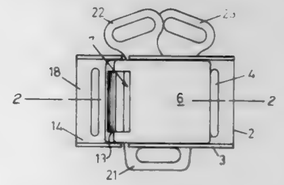
1. A plastic hose clamp comprising in combination an open-ended hose-surrounding band and a clamping assembly integral therewith, said assembly comprising first and second interlocking parts, said parts each including a jaw, said jaws being opposed, a tongue spaced from and substantially parallel with each of said jaws to provide with said jaws a pair of cavities into which the opposing jaws may extend, said jaws interlocking by way of a set of triangularly prismoidal teeth on each jaw wherein as viewed in diametrical cross-section the vertex edges of the teeth of one jaw converge from the outer ends of such vertex-edges toward an exterior apical midpoint and the vertex-edges of the teeth of the other jaw converge to an interior apical midpoint, the said band having an inner surface with a longitudinal centreline of smaller diameter when tightened on a hose than the outer edges parallel therewith, and having said inner surface of said band in substantially diametrical cross-section of shallow conical configuration with the vertex projecting.

3,925,852
BAG CLOSURE DEVICE
Rolland E. Wood, R.R. No. 4, Greensburg, Ind. 47240
Filed Oct. 21, 1974, Ser. No. 516,445
Int. Cl.² B26B *19/00*, *13/00*
U.S. Cl. 24—30.5 R **3 Claims**

1. A generally plate like bag closure device comprising
an interior mouth section adapted to hold the neck of a bag in closure relationship within said mouth section, said mouth section being defined by oppositely disposed jaws interconnected by a shoulder portion, and said mouth section comprising a closure area and a latching area, each area being provided with a plurality of flexible teeth that are substantially touching along adjacent side edges when said teeth are not engaged with a bag, and
structure defining an entry throat through which a bag neck may be disposed within said mouth section from the exterior of said bag closure device,
said teeth within said mouth's closure area being each of a generally wedge shaped geometry which extend from the center point of said mouth section to the periphery of said mouth section, and said teeth within said mouth's latching area being angled inwardly toward the center of said mouth section away from said entry throat.



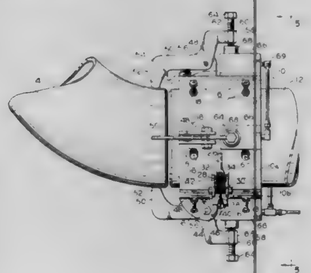
3,925,853
BELT COUPLINGS
John Mills Nicklin, Auckland, New Zealand, assignor to John Edward Butler (New Zealand) Ltd., Auckland, New Zealand
Filed Nov. 18, 1974, Ser. No. 524,872
Int. Cl.² A62B *35/60*; A44B *17/00*
U.S. Cl. 24—75 **4 Claims**



1. A belt coupling comprising:
a. a latching member, said latching member including (i) a latch plate of a predetermined thickness having an aperture therein, (ii) a movable slide of a predetermined thickness adapted to slide on said latch plate, said slide having an aperture therein adapted to correspond to the aperture in said latch plate in a first position of said slide, (iii) means for biasing said slide to a second position wherein a portion of said slide overlaps the aperture in said latch plate while not completely covering the latch plate aperture, said biasing means allowing movement of said slide from said second position to said first position thereof, (iv) means for moving said slide against the bias of said biasing means,
b. means formed with said latch member for connecting said latching member to a belt,
c. a tongue member, said tongue member including (i) a tongue plate, (ii) a tongue integral with said tongue plate and having a portion thereof extending generally normal to said tongue plate from a line of connection therewith, and having an end thereof remote from said tongue plate, (iii) a lip formed integral with the end of said tongue remote from said tongue plate, said lip having a portion thereof extending generally parallel to said tongue plate in a direction away from said line of connection of said tongue with said tongue plate, and said lip portion being spaced from said tongue plate a predetermined distance generally at least as great as the thickness of said latch plate plus the thickness of said slide, and
d. means formed with said tongue member for connecting said tongue part to a belt, whereby said tongue may be

inserted through said apertures in said latch plate and said slide when said slide is in the first position thereof, and after return of said slide under the influence of said biasing means to the second position thereof said lip portion will engage a surface of said slide remote from said latch plate to thereby latch said latching member and said tongue member together.

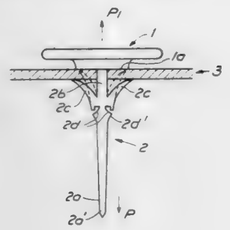
3,925,854
ALIGNMENT CLAMP
James D. McFadden, 2300 Jefferson Ave., Anchorage, Alaska 99503
Continuation-in-part of Ser. No. 404,491, Oct. 9, 1973. This application Sept. 23, 1974, Ser. No. 508,673
Int. Cl.² A44B *21/00*; B25B *1/20*; F16L *13/02*
U.S. Cl. 24—81 PE **17 Claims**



12. A device for holding two structural shapes in alignment for welding one to the other, such device comprising:
an outer band for surrounding a first said structural shape, said outer band being removably securable to said first structural shape,
said outer band having a configuration similar to the exterior cross sectional outline of said first structural shape, movable dogs mounted from said band and having forward ends for engaging a second of said structural shapes, said dogs extending outwardly of the region of the joint between the two structural shapes to permit welding between the structural shapes,
and operating means interengageable between said outer band and said movable dogs for bringing about the movement of the forward ends of said dogs toward the second of said structural shapes in supporting relation to the second of said structural shapes.

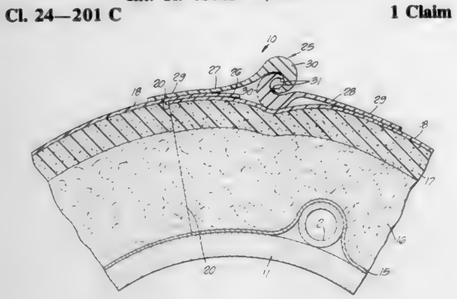
3,925,855
BUTTON RETAINER
Gudmar Olovson, 23, rue de la Ronce, 92 Ville D'Avray, Frankrike, Sweden
Continuation of Ser. No. 375,473, July 2, 1973. This application Feb. 10, 1975, Ser. No. 548,621
Int. Cl.² A44B *1/26*
U.S. Cl. 24—90 PR **1 Claim**

1. A button assembly adapted to secure a button to a fabric material comprising:
a. a button member for abutting one side of the fabric;
b. a fabric piercing member integrally formed with the button member and extending from said button member;
c. said fabric piercing member comprising:
i. a relatively rigid portion having a free and pointed end for piercing the fabric;
ii. a relatively resilient portion between the button member and said rigid portion;
iii. said rigid portion being recessed to form a frangible web connecting with said resilient portion to facilitate the breaking off of the rigid portion upon completion of the fabric piercing operation;
iv. a plurality of flexible barbs extending obliquely from said relatively resilient postion towards said button member, the free ends of said flexible barbs which face the button member being a spaced distance from the button member which is less than the thickness of the fabric, said barbs being adapted to flex towards each other during the fabric piercing operation and to flex away from each other to abut against the opposite side of the fabric when the resilient portion is seated in the fabric to thereby anchor the button in the fabric;



d. said button member comprising a widened head portion and a narrow shank portion resting against the fabric and spacing the head from the fabric, said shank portion being dimensioned to form a backing surface for fabric being pressed thereagainst by the barbs;
e. the rigidity of said rigid portion increasing progressively in stiffness from its point of connection to said web toward its point.

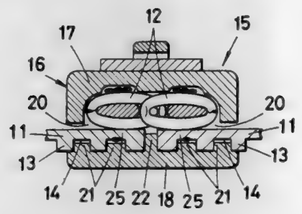
3,925,856
SELF LOCKING SEAM FORMING MEMBERS
Walter A. Plummer, III, Tempe, Ariz., assignor to Walter A. Plummer, Sherman Oaks, Calif.
Filed Nov. 29, 1972, Ser. No. 310,257
Int. Cl.² A44B *17/00*
U.S. Cl. 24—201 C **1 Claim**



1. A pair of continuous inter-engaging seam-forming members extruded from plastic material, said seam-forming members being of the same J-shape in cross section and each including a stem portion integral with one edge of a crescent shaped trough portion, the trough portions of said seam forming members being interlockable when overlapped with their open sides facing toward one another, the free lip edge of each trough shaped portion being engageable with the interior surface of the trough portion of the other seam forming member generally in the plane of the stem portion thereof, said stem portion being relatively wide thin and flexible, said trough shaped portion having a relatively non-flexible mid-portion several times thicker than said stem portion and with the opposed sidewalls of said trough shaped portion converging from said thick mid-portion to provide a relatively thin entrance lip edge and the other sidewalls tapering into a merger with said relatively thin stem portion, and the stem

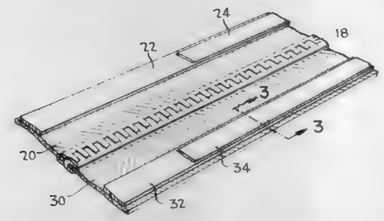
portions of said seam forming members lying generally in a common plane passing between said free lip edges of said trough shaped portions when said seam forming members are assembled and under tension load crosswise of the seam.

3,925,857
SLIDER FOR A SLIDE FASTENER
Toshiyuki Kihara, Kurobe, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 8, 1974, Ser. No. 495,584
Claims priority, application Japan, Sept. 17, 1973, 48-109086[U]
Int. Cl.² A44B *19/26*
U.S. Cl. 24—205.15 R **4 Claims**



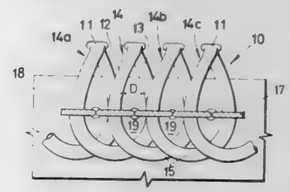
1. In a slide fastener having a pair of stringer tapes, rows of interlockable fastener elements each connected to a corresponding stringer tape, and a slider having guide channels therethrough for receiving said rows of fastener elements and respective adjoining portions of said stringer tapes, said slider being moveable along said rows of fastener elements and stringer tape portions to selectively couple and uncouple the fastener elements, the improvement which comprises a plurality of alternate ridges and grooves in each of said stringer tapes; and at least a pair of guide ridges disposed within said slider to extend along respective guide channels thereof, said guide ridges being positioned for sliding contact with corresponding grooves of the stringer tapes to maintain a given spacing of said tapes and fastener element rows assuring correct coupling and uncoupling of said rows of fastener elements as the slider is moved therealong.

3,925,858
ADHESIVELY SECURABLE SLIDE FASTENER
Bruce K. Thaeler, Meadville, Pa., assignor to Textron Inc., Providence, R.I.
Filed June 26, 1973, Ser. No. 373,715
Int. Cl.² A44B *19/34*
U.S. Cl. 24—205.16 D **6 Claims**



1. A slide fastener installation, the combination comprising a pair of carrier tapes having outer edges and having inner edges adjacent each other,
a plurality of interlocking elements on each inner edge and being adapted for movement by a slider member which causes opening and closing of interlocking elements on one edge relative to the interlocking elements on the other edge,
a layer of heat bondable adhesive on each of said tapes,
a layer of water soluble, liquid activated adhesive on each of said layers of heat bondable adhesive whereby said slide fastener can be temporarily held in place on an article by moistening the layers of liquid activated adhesive on said tapes prior to permanent installation as by heating the heat bondable adhesive.

3,925,859
CONTINUOUS COUPLING ELEMENT FOR SLIDE FASTENERS
Kiichi Yoshikawa, Toyonaka, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Aug. 9, 1974, Ser. No. 496,195
Claims priority, application Japan, Sept. 21, 1973, 48-111093
Int. Cl.² A44B *19/12*
U.S. Cl. 24—205.16 C **2 Claims**

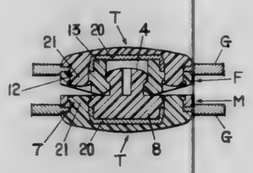


1. In a slide fastener having a continuous coupling element attached to a stringer tape by stitches extending along a line of stitching the improvement which comprises a coupling element in the form of a substantially helically wound filament with the turns thereof forming a plurality of spaced apart coupling heads along one longitudinal side of said filament for mating engagement with identical coupling heads of a complementary coupling element, each of said turns of said filament having first and second shanks which are curved arcuately in opposite directions, so as to protrude from the central axis of the turn toward the adjacent turns over a maximum distance equal to substantially one-half of the pitch of said turns of said filament, said first shank of one exemplary turn being disposed in partially overlapping relationship to the second shank of the turn immediately adjoining said exemplary turn on one side thereof and being connected via a bight to the second shank of the turn immediately adjoining said exemplary turn on the other side thereof, the last mentioned second shank partially underlying the first shank of the turn two pitches away from said exemplary turn on said other side thereof, said continuous coupling element being stitched against one surface of the stringer tape, and said first shanks of said turns of said filament overlapping said second shanks of the adjoining turns along said line of stitching.

3,925,860
SNAP BUTTON
Toshitsugu Furuya, Hyogo, Japan, assignor to Furuya Kogyo Kabushiki Gaisha, Japan
Filed July 18, 1974, Ser. No. 489,513
Claims priority, application Japan, July 21, 1973, 48-81571; Nov. 16, 1973, 48-129389
Int. Cl.² A44B *17/00*
U.S. Cl. 24—208 A **15 Claims**

1. A snap button comprising a male member and a tacking member, said male member comprising a base formed with uniformly space holes positioned at equal distances from the center of said base, a projection, and a raised portion having a polygonal cross section, the polygon having a predetermined positional relationship with respect to said holes, said raised portion including at least one segment formed over a central

area of said base, said raised portion serving to restrict the orientation of the male member, said tacking member having



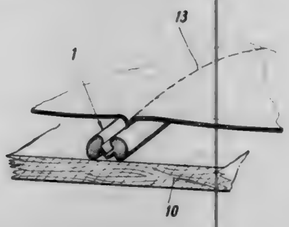
uniformly spaced pointed legs at equal distances from the center of the member and adapted to be aligned to said holes.

3,925,861

UPHOLSTERY FASTENING DEVICE

Alfred Tillner, Beim, Germany, assignor to Oke Rainer von der Heyde & Co., Lotte, Germany

Filed July 3, 1974, Ser. No. 485,482
Claims priority, application Germany, Apr. 26, 1974, 2420331
Int. Cl.² A47C *3/00*; A44B *21/00*
U.S. Cl. 24—243 K **11 Claims**



5. A fastening device for use in attaching fabric to the surface of a foundation comprising: a flexible, one-piece extrusion made of plastic material, said extrusion having a cross-sectional configuration in the general shape of an I, said extrusion thereby having two spaced-apart ribs and a central web joining said ribs, said web being spaced from said foundation surface when said two spaced-apart ribs are in contact with said foundation surface, said web being constructed and arranged such that securing means may be driven through said web into said foundation surface to thereby bend said web into a V-shaped configuration, whereby, upon laying said extrusion on said foundation surface, covering said extrusion with said fabric, and driving said securing means through said fabric and through said web into said foundation surface as aforesaid, said web is bent into said V-shaped configuration and the portions of said ribs remote from said foundation surface are brought together to trap said fabric between said ribs and within said V.

3,925,862

QUICK CLOSING CLAMP

Hugh A. Youngblood, Jr., 3225 N. Virginia, Oklahoma City, Okla. 73118

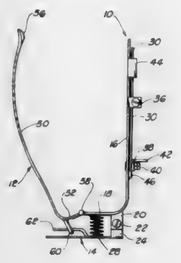
Filed Nov. 7, 1974, Ser. No. 521,582
Int. Cl.² A44B *21/00*; F16M *13/02*
U.S. Cl. 24—252 R **11 Claims**

1. A quick closing, automatically actuated clamp comprising:

a base;

a generally L-shaped slotted jaw pivotally mounted on the base for pivotation about a horizontal pivotal axis, said jaw including a foot plate terminating in an edge spaced from said horizontal pivotal axis and another plate extending substantially normal to said foot plate and having a slot therein;

a generally L-shaped male jaw having a base portion pivotally connected to said plate at said edge for pivotation about a pivotal axis spaced from, and extending substantially parallel to, said first-mentioned pivotal axis, said second pivotal axis moving toward and away from said base as said jaws are respectively pivoted toward and away from each other, said male jaw further including a clamping portion dimensioned to fit into the slot in said slotted jaw;



means resiliently biasing said jaws apart from each other to a location where said second-mentioned pivotal axis is located at its furthest distance from said base;

means movably interconnecting said male jaw to said base for limiting the distance said male jaw can be pivoted away from said slotted jaw; and

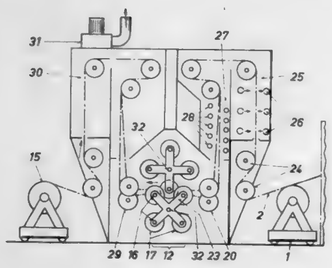
a latching tongue movably mounted on said slotted jaw for engaging said male jaw when it is pivoted toward said slotted jaw, and said clamping portion enters the slot in said other plate of said slotted jaw.

3,925,863

APPARATUS FOR THE CONTINUOUS WRINKLING OF WEB SHAPED FLAT MATERIALS

Arnfried Meyer, Neckargartacherstrasse, 7101 Frankenbach, Germany

Filed Dec. 14, 1971, Ser. No. 207,898
Claims priority, application Austria, Dec. 14, 1970, 11219/70
Int. Cl.² D06C *19/00*
U.S. Cl. 26—1 **16 Claims**



1. An apparatus for the continuous crumpling of a flexible, flat web to form random creases therein comprising: treatment means forming a treatment zone for continuously and alternately gathering said web simultaneously in its longitudinal and transverse directions, said treatment means comprising a plurality of guide elements for gathering said web in said zone, said guide elements arranged in succeeding rows in the feeding direction of said web, the guide elements in each row intermeshing with guide elements in adjacent rows in the direction of travel of the web through said zone, the web being guided through said treating zone in a wavelike manner simultaneously in longitudinal and transverse directions, said treatment means further including drive means for rotating said guide elements for advancing said web through said treatment means; feeding means for continuously supplying said web in its flat, outstretched state to said treatment means; means for continuously removing said web from said treatmet means; and means for continuously stretching and spreading out said web to yield the flexible, flat web having random creases therein; said treatment means further comprising at least two parallel rotatable axles, a multi-pronged member disposed on each axle, shafts rotatably mounted on the prongs of each of said members and containing said guide elements thereon such that said guide elements are radially offset from said axles, and drive means for synchronously rotating said axles and hence said multi-pronged members in opposite directions whereby said guide elements mesh in a cogwheel manner.

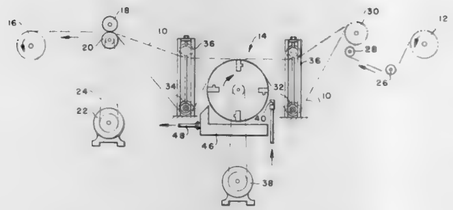
10. An apparatus for the continuous crumpling of a flexible, flat web to form random creases therein comprising at least two multi-pronged members mounted for rotation about respective parallel axes, a plurality of parallel shafts mounted on the prongs of said multi-pronged members, a plurality of guide elements mounted on each shaft, said multi-pronged members, shafts and guide elements mounted so that the guide elements on the shaft of one multi-pronged member intermesh in a cogwheel manner with the guide elements on the shafts of the other multipronged member, and first drive means for synchronously rotating said multi-pronged members.

3,925,864

LOOP PILE FABRIC CUTTING APPARATUS WITH SELVEDGE PROTECTOR

Michael William Gilpatrick, Chesnee, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 3, 1975, Ser. No. 554,739
Int. Cl.² D06C *13/08*
U.S. Cl. 26—9 **1 Claim**



1. Apparatus to provide a cut loop pile fabric product comprising: a rotor, a plurality of rows of cutting means in said rotor, means to rotate said rotor, each of said plurality of rows having a plurality of cutting modules therein and blank modules outside of the cutting modules on each end, each of said cutting modules comprising a plurality of upwardly projecting cutting blade members, a plurality of cutting blade guard members adjacent said cutting blade members and projecting upwardly beyond said cutting blade members, means to pass the loops of a loop pile fabric into contact with the cutting module and means to take up the loop pile fabric having cut loops.

3,925,865

FABRIC BULKING UNIT

Donald K. Christian, 119 Woodbine Ter., Spartanburg, S.C. 29301

Filed Oct. 24, 1973, Ser. No. 409,180
Int. Cl.² D06C *1/00*
U.S. Cl. 26—18.5 **4 Claims**

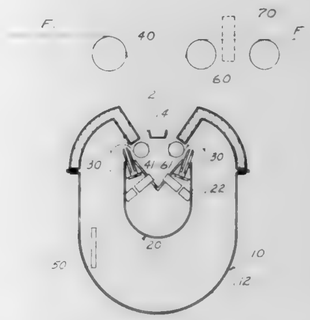
1. Bulking apparatus for textile fabric comprising:

a. a treating vessel;

b. a pressure manifold received in said vessel and extending at least along the effective treating width thereof, said manifold having at least one upwardly oriented nozzle therein at a predetermined angle;

c. means to feed a textile fabric to the treating vessel;

d. means to withdraw the textile fabric from the treating vessel, the fabric passing in transit through the vessel between said feeding and withdrawing means over the



upwardly oriented nozzle and forming a downwardly extending loop therebetween; and

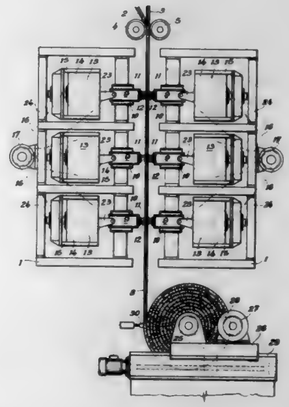
e. means adjacent the loop for sensing the extent thereof for controlling the rate of travel of the fabric through the vessel, the fabric being solely and freely supported on an upwardly directed air stream generated by the nozzle of the pressure manifold and bulked by actions induced therein by said air stream between the feeding and withdrawing means.

3,925,866

METHOD AND NEEDLE MACHINE FOR THE PRODUCTION OF PILE FABRICS

Herbert Lochner, Kempen, Germany, assignor to Cikalon-Vliesstoffwerk GmbH, Kempen, Germany

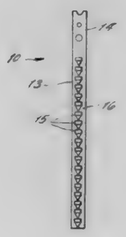
Filed Feb. 19, 1974, Ser. No. 443,719
Claims priority, application Germany, Feb. 21, 1973, 2308516
Int. Cl.² D04H *18/00*
U.S. Cl. 28—4 R **10 Claims**



1. Needling apparatus for producing needled pile web from fibre web passed therethrough comprising, in combination, roller guide means for guiding said fibre web through said

apparatus in a direction extending vertically downwardly therefrom, a take-up drum disposed substantially directly below said roller guide means adapted to have said needled pile web wound thereabout in an accumulated web roll, at least one pair of directly opposed horizontally movable needle boards located between said roller guide means and said take-up drum and arranged to perform needling operations from opposite sides thereof upon fibre web passing therebetween in order to form pile layers thereupon, means for sensing the amount of web material accumulated upon said take-up roll, and means for moving said take-up roll in response to said sensing means in accordance with the amount of material accumulated thereupon to retain substantially constant the location through which portions of said web material incoming to said take-up roll are passed.

3,925,867
COMBINATION SAW AND FILING BLADE FOR USE WITH JIG OR SABRE SAW
James Kareman, 516 Monmouth Ave., Bradley Beach, N.J. 07720
Filed Feb. 4, 1975, Ser. No. 547,011
Int. Cl.² B23D *71/00*
U.S. Cl. 29—78 **3 Claims**



1. In a combination Saw and Filing Blade for use with a Jig or Sabre Saw, the combination of a bar made of suitable hard steel; said bar having flat opposite sides; one end of said bar being adaptable for being held in a chuck of a portable electrically powered Jig or Sabre Saw, and a longitudinal row of teeth formed on each of said flat sides, having means for sawing and filing at the same time; each said tooth including a flat rectangular face having three cutting edges, and a body of said tooth tapering from said face to a point.

3,925,868
CLAMPING ASSEMBLY FOR CUTTER BITS
Kanwar J. Singh, Meadville, Pa., assignor to McCrosky Tool Corporation, Meadville, Pa.
Filed June 21, 1974, Ser. No. 481,781
Int. Cl.² B26D *1/00*
U.S. Cl. 29—96 **8 Claims**

1. A tool clamping assembly for detachably fastening an indexable cutting bit on a tool holder, comprising

a. a tool holder having a recessed seat therein for receiving a regular polygonal cutting bit provided with a plurality of cutting edges,

b. said recessed seat having a base portion and at least one shoulder portion extending upwardly therefrom,

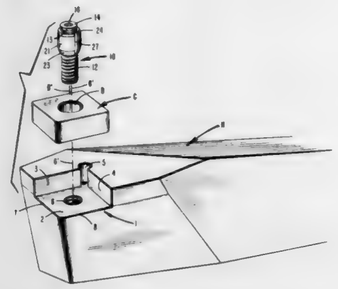
c. said base portion having a threaded bore at the interior portion thereof extending inwardly of the tool holder,

d. said indexable cutting bit having a cylindrical opening of larger diameter than said threaded bore, said opening extending between the opposite faces of said bit and centrally of the lateral edges thereof,

e. a clamping bolt for fastening said cutting bit onto said seat, said bolt having a threaded portion at the one end thereof and an external tapered lateral surface at the opposite end thereof,

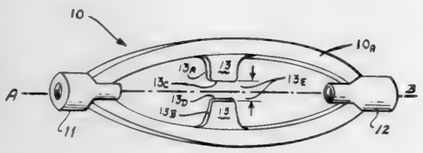
f. a radially expansible sleeve surrounding said tapered lateral surface of said bolt provided with a narrow slot in the lateral wall thereof extending from the opposite ends thereof,

g. said sleeve having an external substantially cylindrical surface normally fitting closely within said cylindrical opening of said cutting bit, and an internal frusto-conical surface having a conicity corresponding to the tapered lateral surface of said bolt to effect substantially complete surface contact between said internal frusto-conical surface and the tapered lateral surface of said bolt around its entire circumferential area except for the small area adjacent to said narrow slot, and



h. means at the end of said bolt for imparting rotary movement thereto, whereby the advancing movement of the threaded portion of said bolt into said threaded bore of said tool holder imparts only radial expansive movement to said sleeve to the exclusion of any translational movement thereto, which effects tightly engaging contact between substantially the entire periphery of said tapered lateral surface of said bolt and the correspondingly tapered internal surface of said sleeve as well as between substantially the entire external cylindrical surface of said sleeve and the internal periphery of said cylindrical opening in said indexable cutting bit, whereby a rigid and tight clamping interconnection is effected between said tool holder and cutting bit at both said base portion and shoulder portion of said seat.

3,925,869
METHOD OF MAKING TENSION INDICATOR-TURNBUCKLE
Fredrick W. Thompson, Downey, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Division of Ser. No. 431,197, Jan. 7, 1974, abandoned. This application Mar. 11, 1975, Ser. No. 557,419
Int. Cl.² B23P *13/00*
U.S. Cl. 29—175 **1 Claim**



1. The method of manufacturing a tension indicator-turnbuckle, comprising the steps of:

a. forming, from elastic material, a body of preselected shape and having an axis, wherein said preselected shape includes a first end and a second end in axially aligned spaced-apart relationship along said axis, and further wherein said preselected shape also includes a middle portion between said axially aligned first end and second end;

b. threading said first end and said second end internally;

c. applying simultaneously a preselected tension load to said first end, and an equal and directionally opposite tension load to said second end, whereby said formed elastic body temporarily deforms;

d. forming a slit in said middle portion of said temporarily deformed elastic body;

e. and, discontinuing the application of said preselected tension load to said first end and of said preselected oppositely directed equal tension load to said second end; whereby the temporarily deformed elastic body returns to its original preselected shape, and whereby said slit formed in said middle portion of said temporarily deformed elastic body becomes a gap, and also whereby the complete closing of the gap resulting from the subsequent application of tension loads to said first end and said second end of said elastic body is a visual indication that the applied tension loads are equal to the preselected loads which were originally applied to said first and second ends to temporarily deform the said formed elastic body.

3,925,870
TRUSS ASSEMBLY JIG
James D. Adams, P. O. Box 7462, Colorado Springs, Colo. 80933
Filed Jan. 21, 1974, Ser. No. 435,201
Int. Cl.² B23P *19/00*
U.S. Cl. 29—200 J **10 Claims**

1. A truss assembly jig for forming at least one structural truss by joining a plurality of individual precut wooden members, the truss joints being made by compressing and embedding toothed gusset plates on each side of the joints of the individual members, the jig comprising:

a. base means;

b. movable support means mounted on said base means and having a flat elongated surface for supporting the precut members arranged into the shape of at least one structural truss;

c. a plurality of clamping means mounted on said support means and arranged around the outside of the perimeter of a held truss to hold the assembled members in truss position, said clamping means including means for elevating the held truss members above the surface of the support means to permit the positioning of the gusset plates on each side of the joints of the held individual precut members;

d. first roller means mounted on said base means and having a pair of spaced apart, opposed substantially vertical rollers arranged with their bite horizontally aligned with said support means for passing said support means therethrough, one of said rollers being disposed beneath said surface, aid rollers being arranged to receive said movable support means and at least one truss thereon, so as to partially embed the gusset plates into said precut members passing between said roller means, said first roller means further including means following said roller means to sequentially release each clamping means after it passes through said roller means to free the truss;

e. a second roller means mounted on said base means and having a pair of spaced apart, opposed substantially vertical rollers horizontally aligned with said first roller means and arranged to pass at least one truss therethrough after it passes said first roller means so that said gusset plates are fully compressed and embedded into said precut members to form said structural truss; and

f. said movable support means includes power drive means drivingly connected to said support means and said first and second roller means, whereby said movable support means is moved toward said first roller means at a lineal speed which is equivalent to the rotative speed of said first and second roller means.

3,925,871
HAND TOOL
Peter W. Beaumont, 6806 1st Ave. N., Birmingham, Ala. 35206
Filed Jan. 6, 1975, Ser. No. 538,606
Int. Cl.² B23P *19/04*
U.S. Cl. 29—239 **3 Claims**



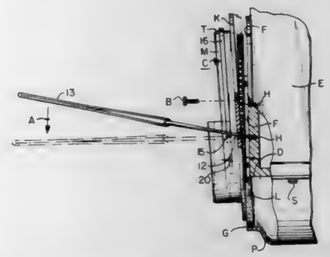
1. A hand tool for use in the removal of guttering from buildings and the like comprising:

a. an angle iron member, said angle iron member being sized appropriately to allow the distal edge of said angle iron member to engage the lip portion of a gutter;

b. an elongated handle member attached to said angle iron member, the long dimension of said handle member being mounted at substantially right angles to the long dimension of said angle iron member; and

c. gripping members mounted on both ends of said angle iron members, said gripping members being mounted in such a manner that when said angle iron member has engaged said lip portion of said gutter said gripping members can be locked onto said gutter to prevent slipping or buckling of said gutter during removal.

3,925,872
TIMING COVER REPLACEMENT TOOL
Lloyd B. McDaniel, 927 W. Larissa St., Jacksonville, Tex. 75766
Filed Oct. 4, 1974, Ser. No. 512,761
Int. Cl.² B25B *27/14*
U.S. Cl. 29—267 **2 Claims**



1. A tool comprising a handle portion, a working portion comprising a bar attached to said handle portion and having spaced prongs extending from the bar away from the handle portion, and a band portion comprising a U-shaped band having free ends with openings therethrough extending normal to the plane of the band and sized and spaced to pass said

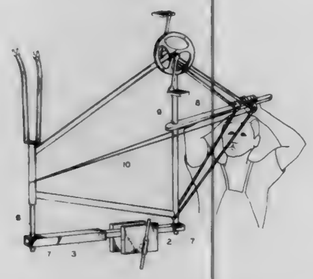
prongs, and said working portion and said band portion being cooperatively assembled with said prongs extending through the openings in said free ends.

3,925,873

BICYCLE FRAME ALIGNMENT APPARATUS

Robert C. Mecum, 5728 Monona Drive, Madison, Wis. 53716

Filed Feb. 3, 1975, Ser. No. 546,193
Int. Cl.² B25B *27/14*
U.S. Cl. 29—271 2 Claims



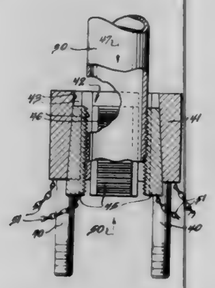
1. A method of aligning the rear stays of a bicycle frame having a head tube, a seat tube, rear stays, and rear dropouts, said method comprising:
   a. placing the head and seat tubes of a bicycle frame over stationary head and seat tube spindles,
   b. attaching an elastic band from the rear dropouts forward around the head tube of the bicycle frame, and
   c. placing a stay aligning tool against either side of the head tube of the bicycle frame and levering the rear stays of the bicycle frame into a position to equalize the distance from the elastic band to the seat tube on each side while maintaining the desired rear wheel hub distance between the rear dropouts.

3,925,874

PIPE GRIPPER

Steven M. Moyers, Omaha, Nebr., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed July 9, 1974, Ser. No. 486,924
Int. Cl.² B23P *19/02*
U.S. Cl. 29—282 2 Claims



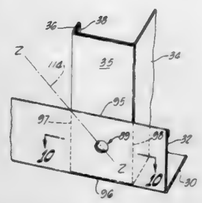
1. A tool for gripping the exterior surface of a pipe to enable an axial force to be transmitted to the pipe, comprising:
   a wedge-seating member having a first side and a second side opposite said first side, said wedge-seating member having a hole in the shape of a cruciform extending therethrough from said first side to said second side capable of receiving said pipe, said hole having a longitudinal axis with each end interior surface of the branches of said cruciform hole forming axial seating surfaces positioned symmetrically about said longitudinal axis in substantially circular alignment, said wedge-seating member having coupling bolts extending from said first side axial to said longitudinal axis, a pulling machine coupled to said coupling bolts for applying force thereto axial to said longitudinal axis, each of said seating surfaces being equally tapered with respect to said longitudinal axis in the same direction from said first side toward said second side, and a plurality of wedges each having two ends, a seating face and a grooved concave face opposing said seating face, each of said seating faces being tapered from one end of said wedges to the other with the same degree of taper as said seating surfaces so that with a pipe inserted into said hole, and each of said seating faces in sliding contact with one of said seating surfaces, said concave faces are maintained in substantially circular alignment about said longitudinal axis, and whereby force applied by said pulling machine to said coupling bolts in a first direction from said first side to said second side causes axial sliding of said seating faces across said seating surfaces, thereby decreasing the diameter of said circular alignment and tending to grip the pipe, the decrease in diameter of said circular alignment being limited by the abutting of adjacent concave faces, and force applied to said wedge-seating member opposite in direction to said first direction thereby causes axial sliding of said seating faces across said seating surfaces in the direction from said second side to said first side increasing the diameter of said circular alignment tending to release the pipe.

3,925,875

METHOD OF CONSTRUCTING A PREFABRICATED WALL MODULE

Jack Doke, Diamond Bar, Calif., assignor to Angeles Metal Trim Co., Los Angeles, Calif.

Continuation of Ser. No. 364,295, May 29, 1973, abandoned.
This application July 8, 1974, Ser. No. 486,629
Int. Cl.² B21D *39/00*; B23P *11/00*
U.S. Cl. 29—509 4 Claims



3. A method of constructing a prefabricated wall module for a building, wherein the wall module comprises:
   a first normally horizontal sheet metal member in the form of an upper U-shaped downwardly facing cap member having a main web and two longitudinal side flanges depending from the main web;
   a second normally horizontal sheet metal member in the form of a lower U-shaped floor track member having a main web and two longitudinal side flanges extending upward therefrom;
   a plurality of horizontally spaced normally upright sheet metal studs, each having a main longitudinal web and two opposite side flanges extending from the main web,
   the upper and lower ends of the studs being telescoped into the first and second horizontal members respectively into pressure contact with the main webs thereof with the two side flanges of each longitudinal member in face-to-face relation with the side flanges of the studs thereby providing a pair of opposite rectangular areas of two layers of overlapping sheet metal at each end of each stud,

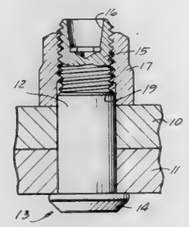
the intersection of the side flanges of the studs with the side flanges of the two horizontal members forming 90° angles with the vertex of each angle at a corner of one of said rectangular areas;
said method being characterized by the use of a tool having two parts with the reach of the jaws thereof at least equal to the distance from said vertex to a central portion of the corresponding rectangular area,
the two parts of the tool respectively carrying two cooperating punching elements, one being a hollow die, and the other being a punch;
said method including the steps of:
   placing each stud in the desired assembled position relative to said horizontal members thereby providing two of said rectangular areas at each end of the stud with one of said vertices at the corner of the rectangular area;
   applying pressure to said track member and said cap member to force the webs of said members into pressure contact with the ends of said studs;
   placing said tool in the region of each of said vertices with the parts extending diagonally of the corresponding rectangular area into a central portion of the rectangular area and with said two punching elements on opposite sides of the overlapping portions of said sheet metal in said area;
   and forcing said jaws together to drive said punch through the two layers of metal of the rectangular area into the interior of the die,
   while the ends of said studs are held in pressure contact with the webs of said longitudinal members,
   said punch and die being shaped and dimensioned to form an aperture in the two layers with interlocking tongues of the two layers projecting from the periphery of the aperture into the interior of the stud and with the tongues more nearly perpendicular to than parallel to the inner surface of the stud.

3,925,876

METHOD OF JOINING BOLTS OR RIVETS TO NUTS

Donald A. Curtis, Ashville, N.Y., assignor to TRW Inc., Cleveland, Ohio

Filed Mar. 26, 1974, Ser. No. 454,856
Int. Cl.² B21D *39/00*; B23P *11/00*
U.S. Cl. 29—509 3 Claims



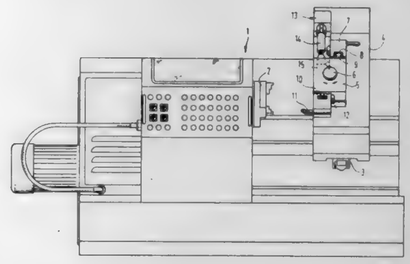
1. The method of fastening together a plurality of members having aligned coaxial apertures which comprises providing a headed pin having a threaded shank portion with a polygonal recess formed therein, seating the head of the pin against one surface of the members to be fastened together, the pin being of sufficient length so that the threaded shank portion extends through said apertures and beyond the opposite surface of the members to be fastened together, threading a nut onto said threaded shank portion with sufficient torque to develop a preloading stress in said pin, and thereafter inserting a heating element into said polygonal recess to thereby cause radially outward plastic deformation of the threaded shank portion from which results increased tension in said pin.

3,925,877

APPARATUS FOR CHANGING THE TOOL HOLDERS CARRYING MOUNTED TOOLS ON A MACHINE TOOL

Wilhelm August Karl Junike, and Hans-Joachim Koch, both of Hannover, Germany, assignors to Max Muller Brinker Maschinenfabrik Zweigniederlassung der Gildemeister Aktiengesellschaft, Langenhagen, Germany

Filed Apr. 11, 1974, Ser. No. 460,177
Claims priority, application Germany, Apr. 13, 1973, 2318778
Int. Cl.² B23Q *3/155*
U.S. Cl. 29—568 6 Claims



1. Apparatus for changing tool holders carrying tools used on a lathe having a main frame, a bed slide longitudinally slidable on said main frame, a face slide slidably mounted on said bed slide for transverse movement with respect thereto and inclined to the horizontal said apparatus including in combination:
   a tool turret rotatably supported by said face slide and having at least two tool holder clamping devices,
   at least one movable tool holder magazine supported by said main frame for slidable movement in the same direction as said bed slide and positioned generally above said face slide and above the turret,
   said magazine having a series of arbors, each carrying a tool holder, and having means for indexing said arbors around a closed loop having a straight portion lying in a plane perpendicular to the longitudinal displacement direction of said bed slide and being at least as long as the displacemnt range of the turret in the displacement direction of said face slide, and arranged generally above and directly opposite said-mentioned displacement range of said turret,
   said magazine itself being displaceable only in the displacement direction of said bed slide, and
   said indexing movement of said arbors and their tool holders on said magazine lying parallel to the displacement direction of said face slide,
   tool holder transfer means supported by said face slide for transferring tool holders between said magazine and said turret.

3,925,878

GRINDING MACHINE WITH AN AUTOMATIC EXCHANGE DEVICE FOR GRINDING WHEELS

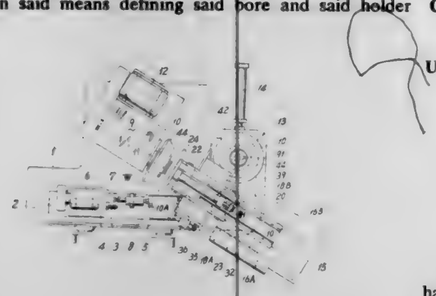
Makoto Kikuchi, Kariya, Japan, assignor to Toyoda-Koki Kabushiki-Kaisha, Kariya, Japan

Filed May 17, 1974, Ser. No. 470,936
Claims priority, application Japan, May 17, 1973, 48-54935; May 17, 1973, 48-54937
Int. Cl.² B23Q *3/157*
U.S. Cl. 29—568 12 Claims

1. A grinding machine comprising:
   a wheel head,
   a wheel spindle rotatably mounted upon said wheel head and having a wheel support end for supporting one of a plurality of wheel holders respectively fixing grinding

wheels, each wheel holder having means defining a bore which is engageable with said wheel support end;

a storage device provided with a plurality of stub shafts each of which includes a holder support end for supporting one of said wheel holders as a result of the engagement between said means defining said bore and said holder



support end, said holder support end having a configuration similar to that of said wheel support end; and

an exchange device for transferring one of said wheel holders from said storage device to said wheel head in order to attach said one of said wheel holders to said wheel spindle through the engagement between said bore and said wheel support end.

3,925,879

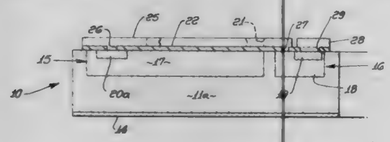
PROCESS OF FABRICATING PHOTOSENSITIVE DARLINGTON DEVICE

Harold Weinstein, Sherman Oaks, Calif., assignor to Sensor Technology, Inc., Chatsworth, Calif.

Filed Sept. 11, 1974, Ser. No. 505,036

Int. Cl.² H01C *7/08*

U.S. Cl. 29—572 **6 Claims**



1. A process for fabricating a Darlington photodetector device having light response characteristics within a specified narrow range, comprising;

forming in a semiconductor substrate a relatively large base region for a phototransistor and a base region for a second transistor, and forming emitter regions in the respective base regions,

producing an insulating layer over both said transistors, said layer having openings to both the emitter of said phototransistor and to the base of the second transistor,

depositing an optically opaque metalization layer over a substantial portion of the base of said phototransistor and over the openings to said emitter and the second transistor base so as to electrically interconnect the same,

providing an initial light-admitting opening of controlled area through said opaque metalization for passage of light to said phototransistor base region, the area of said initial opening being of such a size that the desired output current is not obtained,

measuring the device output current while said device is illuminated with light of known level, and

modifying the size of said opening to achieve an output current within the specified narrow range.

3,925,880

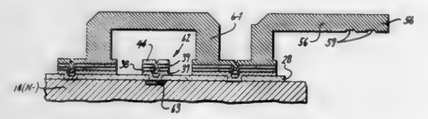
SEMICONDUCTOR ASSEMBLY WITH BEAM LEAD CONSTRUCTION AND METHOD

Warren C. Rosvold, Sunnyvale, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 138,497, April 29, 1971, abandoned. This application June 18, 1973, Ser. No. 371,054

Int. Cl.² B01J *17/00*

U.S. Cl. 29—578 **8 Claims**



1. In a method for fabricating a semiconductor assembly having beam leads, providing a semiconductor body having a planar surface, forming a plurality of semiconductor devices in said body with each of the semiconductor devices having at least one junction extending to said surface and defining a region in said body and having a contact area generally on said surface, forming a layer of insulating material on said surface, forming openings in said layer of insulating material, forming contact pad means on said layer of insulating material extending through said openings for making contact with said contact areas, delineating a plurality of dice in said semiconductor body with each die having certain semiconductor devices therein, depositing a thick layer of photoresist in an initially solid form over said contact pads to a thickness in excess of approximately ½ mil, forming openings in said thick layer of photoresist in registration with said contact pad means, forming beam leads overlying said photoresist and extending through said openings to make electrical contact with said contact pad means and being physically secured thereto, said beam leads extending over the boundaries of said dice and overlying adjacent dice and with the beam leads of each die being insulated from the beam leads of adjacent dice, and removing the thick layer of photoresist so that the beam leads are cantilevered and have their lower surfaces spaced above the layer of insulating material a distance in excess of approximately ½ mil and separating the body to form separate and individual dice with the beam leads mounted thereon.

3,925,881

METHOD OF MAKING A FACE COMMUTATOR

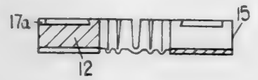
Roy Price Bowcott, Solihull, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Jan. 8, 1975, Ser. No. 539,340

Claims priority, application United Kingdom, Feb. 16, 1974, 7180/74

Int. Cl.² H01R *43/08*

U.S. Cl. 29—597 **2 Claims**



1. A method of manufacturing a face commutator, comprising starting with an annular blank of conductive material, forming in one face of the blank an annular channel so as to define upstanding circumferential flanges at the inner and outer peripheries of said one face of the blank, forming in said one face of the blank a plurality of equi-angularly spaced radially extending grooves, said grooves extending over the whole radial width of the blank and being deeper than the thickness of the blank so as to produce upstanding ribs on the opposite face of the blank, said grooves dividing the blank into a plurality of interconnected segments, performing a stamping operation on the outer peripheral flange portion of each segment to bifurcate the flange portion and deform the two limbs so produced away from one another to define a pair of circumferentially divergent projections at the radially outer end of each segment, moulding a synthetic resin body onto said one face of the blank, providing means on each segment whereby an electrical connection can be made thereto, and then removing said ribs from the other face of the blank to separate the segments.

3,925,882

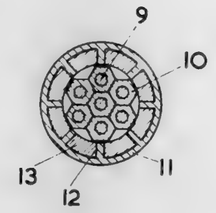
COMPOSITE MATERIALS

David John Sambrook, Warley, England, assignor to Imperial Metal Industries (Kynoch) Limited, Birmingham, England Division of Ser. No. 242,969, April 11, 1972, abandoned. This application Apr. 16, 1974, Ser. No. 461,353

Claims priority, application United Kingdom, Apr. 15, 1971, 9495/71

Int. Cl.² H01V *11/00*

U.S. Cl. 29—599 **6 Claims**



1. A method of manufacturing a metal composite material which comprises the steps of

a. assembling together a plurality of longitudinally-extending elements of a non-ferromagnetic metal having a low electrical resistivity,

b. separating each element from the other elements by a layer of a metal having a higher electrical resistivity,

c. forming a can including a plurality of substantially alternate segments of a low electrical resistivity metal and a metal of higher electrical resistivity,

d. locating the assembled elements in the can to form an assembly,

e. securing the assembly together, and

f. longitudinally extending the assembly to elongate the elements to produce corresponding filaments and to metallurgically bond the components of the assembly securely together.

3,925,883

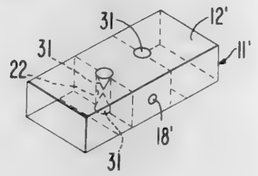
METHOD FOR MAKING WAVEGUIDE COMPONENTS

Charles T. Cavalear, Hamilton, Mass., assignor to Varian Associates, Palo Alto, Calif.

Filed Mar. 22, 1974, Ser. No. 453,742

Int. Cl.² H01P *11/00;* **B23K** *31/02*

U.S. Cl. 29—600 **8 Claims**



1. A method for making a microwave waveguide apparatus comprising the following steps:

bending a first metallic sheet into an open-sided rectangular channel member,

forming a second metallic sheet to provide a waveguide obstacle having outline dimensions fitting the inner transverse dimensions of said channel, said obstacle including an opening to define a waveguide iris, said forming of said second sheet including the step of bending at least one side of said sheet to form an angular foot projecting from said side,

positioning said obstacle within and transverse to said channel with said foot abutting a surface of said channel,

covering the open side of said channel with a third metallic sheet, and

sealing said channel, said obstacle and said third sheet together to form a tubular waveguide with said obstacle closing said waveguide except for said iris in said obstacle.

3,925,884

METHOD OF MANUFACTURING MULTI-TRACK MAGNETIC HEADS

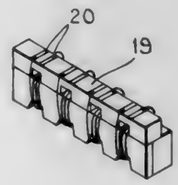
Derek Frank Case, 122 Cadbury Rd., Sunbury-on-Thames, England

Filed Dec. 7, 1973, Ser. No. 422,686

Claims priority, application United Kingdom, Dec. 29, 1972, 60100/72

Int. Cl. H01f *7/06*

U.S. Cl. 29—603 **6 Claims**



1. A method of manufacturing multi-track magnetic heads comprising the steps of:

providing a plate of magnetic material;

bonding a plate of non-magnetic material to said plate of magnetic material;

dividing the bonded plates into a plurality of elongate elements each element comprising a strip of magnetic material bonded to a non-magnetic strip;

turning each of said elements through 90° so that said magnetic strips are spaced from each other by said non-magnetic strips;

temporarily securing the elements in that position;

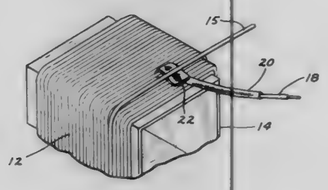
forming a plurality of parallel channels in a direction transverse to the length of said strips, each channel cutting through all said strips so as to form a window in each said magnetic strip;

separating the elements again;

winding around each said element a plurality of coils passing through respective ones of said windows;

bonding said elements, with the coils wound on them, together in spaced parallel relationship with corresponding ones of said windows aligned in a direction transverse to the length of said elements, and with said magnetic strips spaced from each other by said non-magnetic strips; and dividing said elements along spaced parallel planes extending in said transverse direction, thereby to produce a plurality of substantially identical multi-track magnetic heads each containing a portion of each said element and each having one of said coils electromagnetically coupled to it.

3,925,885
METHOD FOR MAKING AND INSULATING A COIL TAP
Leonard S. Smith, Minneapolis, Minn., assignor to Century Mfg. Co., Inc., Minneapolis, Minn.
Filed Jan. 10, 1975, Ser. No. 540,283
Int. Cl.² H01F 7/06
U.S. Cl. 29—605 2 Claims



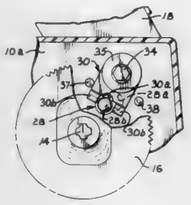
1. A method for tapping a coil and insulating the same, consisting of the steps of
stripping the end of a tap lead,
applying said stripped end of said tapped lead to a turn of the winding of a coil,
crimping said stripped end onto said turn forming a tap,
applying an insulating sleeve to said tap lead consisting of slitting one end portion of said sleeve forming a flap portion,
moving said sleeve onto said tap lead and placing said slit end adjacent said tap,
folding said flap portion about said tap insulating the same, and
overlying said flap portion with subsequent turns of said winding securing said flap portion.

3,925,886
NOVEL CATHODE FINGERS
Leo G. Evans, Tonawanda, and Walter W. Ruthel, Grand Island, both of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.
Division of Ser. No. 430,430, Jan. 3, 1974, Pat. No. 3,899,408.
This application Aug. 29, 1974, Ser. No. 501,715
Int. Cl.² H01R 43/02
U.S. Cl. 29—628 3 Claims



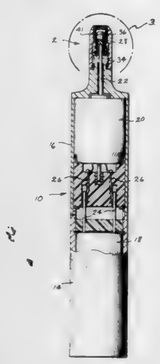
1. A method of electrically connecting at least one length of a highly conductive metal to a conductive metal cathode reinforcing means which substantially eliminates metal warpage from welding comprising the steps of:
a. welding a tip of conductive metal of the same type as the cathode reinforcing means to one end of said length of highly conductive metal and a bar of conductive metal of the same type as the cathode reinforcing means along the other end of said length of highly conductive metal,
b. correcting any metal warpage from welding dissimilar types of metals,
c. welding said tip and said bar to said cathode reinforcing means thereby electrically interconnecting said length of highly conductive metal and said cathode reinforcing means.

3,925,887
CAN OPENER WITH REMOVABLE HAND LEVER AND PIVOTAL LATCH
Robert E. McLean, Raytown, Mo., assignor to Rival Manufacturing Company, Kansas City, Mo.
Filed Mar. 21, 1974, Ser. No. 453,256
Int. Cl.² B67B 7/38
U.S. Cl. 30—4 R 5 Claims



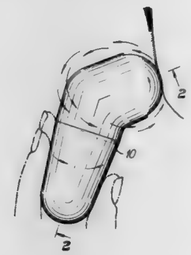
1. In a can opener having an upright frame, a rotary feed wheel, and means for rotating said feed wheel, the combination therewith of:
a hand lever carrying a cutting element thereon;
means defining an opening in one of said hand lever and said frame;
a pin member extending from the other of said hand lever and said frame, said pin member being axially insertable in said opening to mount said hand lever on said frame for pivotal movement about the axis of the pin member and said pin member being axially removable from said opening to detach said hand lever from said frame; and
a latch member supported on one of said hand lever and said frame for pivotal movement between a latching position wherein said pin member is engagingly retained in said opening by said latch member to preclude detachment of said hand lever from said frame and a release position wherein said pin member is axially removable from said opening to permit detachment of said hand lever from said frame, said pin member being selectively movable in said opening transversely thereof to engagingly pivot said latch member between said latching and release positions.

3,925,888
HAIR CLIPPER FOR THE NOSE AND EARS
William G. Bozsanyi, 2514 Hollywood Place, South Bend, Ind. 46614
Filed Sept. 30, 1974, Ser. No. 510,245
Int. Cl.² B26B 19/14
U.S. Cl. 30—29.5 5 Claims



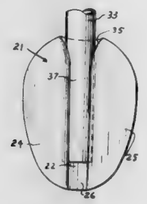
1. In a hair clipper including a conically shaped hollow open ended head defined by a side wall, the side wall at said head open end being serrated, a shaft extending into said head and terminating inwardly of the open end thereof, power means for rotating said shaft relative to said head, cutter blade means located within said head and having spaced cutters overlying the inner surface of said side wall at said head open end, means securing said blade means to said shaft for rotation with the shaft, the improvement comprising means located within said head between said spaced blade parts for deflecting hair protruding into said head open end toward said blade parts and between said serrations whereby said hairs will be caused to be severed by said blade parts, said deflecting means including a conically shaped portion having sides converging toward said head open end and being located oppositely of a blade part in alignment with such blade part and said head open end.

3,925,889
MECHANICAL HAIR FEEDING ELECTRIC RAZOR
Karmen D. Albert, 74-16 58th Ave., Elmhurst, N.Y. 11373
Filed Jan. 29, 1974, Ser. No. 437,705
Int. Cl.² B26B 19/12
U.S. Cl. 30—43.8 7 Claims



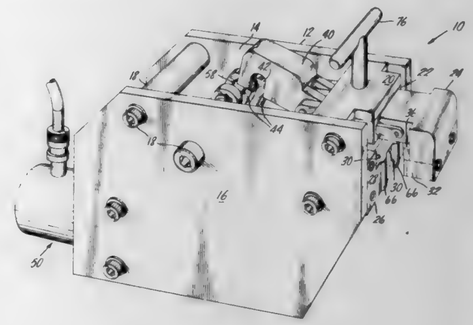
1. In an electric shaver having a housing containing an electric motor, at least one cutting blade coupled to the output shaft of the motor for movement, and a shaving head with a comb in contact with the at least one cutting blade, the improvement comprising at least one eccentric member, of sufficient weight to move the shaver housing in an elliptical path with respect to the shaving area pivotably mounted in said housing, said eccentric member having an axis of rotation substantially parallel to the comb of the cutting head, and means for coupling said at least one eccentric member to the shaft of the motor so that the rotation of said eccentric member generates an unbalanced centrifugal force to cause the housing of the shaver to oscillate in a circular motion.

3,925,890
SPOON ATTACHMENT FOR SODA STRAW
Vaughn D. Frodsham, Fullerton, Calif., assignor to Howard E. Huntington, Fullerton, Calif.
Filed June 29, 1973, Ser. No. 375,085
Int. Cl.² A47J 43/28
U.S. Cl. 30—141 1 Claim



1. A spoon bowl attachment for cooperation with a soda straw comprising a substantially cylindrical wall defining a straw-receiving tunnel open along one side and enveloping a major portion of the straw section therein, spoon bowl wings extending away from the longitudinal axis of the tunnel and attached to the cylindrical wall, said tunnel diminishing in cross section toward the tip of the spoon bowl remote from the straw so as to grip a soda straw inserted therein, and an end wall of the tunnel tending to close the suction end of the tunnel.

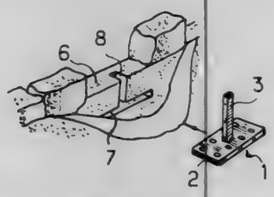
3,925,891
PUNCH MECHANISM FOR MODIFYING CIGARETTE MACHINE MAGAZINES
Roy J. Devilbiss, Richmond, Va., assignor to Philip Morris Inc., New York, N.Y.
Filed July 8, 1974, Ser. No. 486,301
Int. Cl.² B26F 1/00
U.S. Cl. 30—362 6 Claims



1. Punching apparatus for removing segments of predetermined configuration from a sheet, said apparatus comprising an elongated frame,
a die element fixed to one end of said frame, said die element having a shear surface of predetermined configuration corresponding to the shape of the segment to be punched from the sheet,
an elongated carrier member having a punch fixed to one end thereof, said punch being complementally configured with said die element shear surface, said carrier member being supported on said frame for sliding straight line travel from a first position in which the punch at the said one end thereof is spaced outwardly a distance from the said one end of said frame to a second position in which the punch is spaced inwardly a distance from said one end of said frame, said punch when slid from said first to said second position passing through said die element adjacent said shear surface for applying punching force to a sheet positioned against said die element,
an elongated link pivotally connected at one of its ends to the other end of said carrier member, and
means for applying substantially straight line stroking force in the direction in which said carrier member slides when moving from its first to second position, the other end of said link being selectively connectable to said stroking means in force transmitting relationship therewith, said stroking means being effective to transmit a punching force through said link to said punch which is sufficient to shear a segment from said sheet,
the stroking means comprising a lever carrier in said frame and pivoted intermediate its ends for rotative movement about an axis extending substantially transversely of the travel course of said carrier member, the said other end of said link being selectively connectable to one end of said lever, biasing means engaged with the other end of said lever tending to rotate same about said axis in a predetermined direction, and a power operated ram operably engageable with the said other end of said lever for

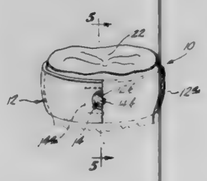
rotating same about said axis in an opposite direction counter to the action of said biasing means whereby when said link is connected with said one end of said lever and said ram is operated, said carrier member is slid from its first to second position.

3,925,892
ARTIFICIAL TOOTH IMPLANT DEVICE
Jean-Marc G. Juillet, 102 rue de Courcelles, 75017 Paris, France
Filed Jan. 12, 1973, Ser. No. 323,239
Claims priority, application France, June 12, 1972, 72.21113
Int. Cl. A61c *13/00*
U.S. Cl. 32—10 A **12 Claims**



1. An artificial tooth implant device engageable into a complemental artificial recess formed in the front or rear face of a jawbone for permanent retention of said device in said jawbone, said device comprising an implanting portion defined by a flat anchoring plate structure having at least one opening therein, and a mounting portion defined by an elongated post structure extending from a substantially central surface area of one face of said plate structure in a direction substantially perpendicular to said one face, and said post structure including means for mounting an artificial tooth or tooth structure on a free end length portion of said post structure.

3,925,893
ORTHODONTIC ANCHORAGE
Roland M. Anderson, Lake Oswego, Oreg., assignor to Modcom, Inc., Canby, Oreg.
Filed July 11, 1974, Ser. No. 487,387
Int. Cl.² A61C *7/00*
U.S. Cl. 32—14 A **2 Claims**



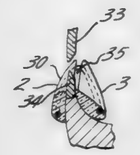
1. Orthodontic anchorage apparatus adapted for mounting on the crown of a tooth comprising

an endless, mouth-acid-resistant, elastomeric band elastically stretchable over and removably securable to such a crown for tight fitment thereon, said band when so fitted being in tension and contouring itself for substantially complete complementary embracement of the confronting surface of the crown,

means defining an opening in said band, and

an orthodontic attachment enabling the connection thereto of external orthodontic equipment, said attachment including a connecting portion insertable through said opening from the inside to the outside of said band so that the connecting portion when so inserted is accessible from the outside of the band, and a generally flattened base portion joined to said connecting portion and sized to prevent its own passage through said opening, said base portion being constructed whereby, with said connecting portion inserted through said opening, and said band fitted on a crown, the base portion is clamped in place between the band and the crown.

3,925,894
DUAL PURPOSE TOOTH ALIGNER
Lenford L. Robins, 244 Fieldstone Terrace, Riverdale, Bronx, N.Y. 10471
Continuation-in-part of Ser. No. 429,073, Dec. 28, 1973, Pat. No. 3,849,885. This application Aug. 8, 1974, Ser. No. 495,582
Int. Cl.² A61C *7/00*
U.S. Cl. 32—14 B **19 Claims**



1. An improved tooth aligner for aligning teeth in both a first and second row of teeth, comprising,

substantially arcuate first and second tooth-aligning members, spaced apart to permit the insertion of said first row of teeth therebetween,

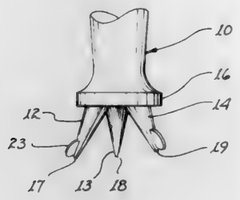
wire support means joining said first tooth-aligning member to said second tooth-aligning member into a predetermined tooth-aligning orientation, said wire support means including a substantially arcuate forward portion cooperating with said first tooth-aligning member and a pair of support arms extending from the ends of said forward portion to said second tooth-aligning member to thereby properly align teeth disposed between said first and said second tooth-aligning members, and

means associated with said first tooth-aligning member to urge the teeth in said second row of teeth into proper alignment, without employing any means continuously associated with said second row of teeth.

3,925,895
HYDROPHILIC ROOT CANAL FILLING MATERIAL
Karel Kliment, Princeton, and Robert S. Tu, East Brunswick, both of N.J., assignors to National Patent Development Corporation, New York, N.Y.
Filed Apr. 26, 1973, Ser. No. 354,866
Int. Cl.² A61K *5/01*
U.S. Cl. 32—15 **27 Claims**

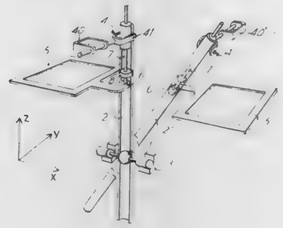
1. A process comprising filling a root canal with a fluid hydrophilic polymerizable material consisting essentially of a member of the group consisting of hydroxy lower alkyl acrylates and methacrylates, hydroxy lower alkyl lower alkoxy acrylates and methacrylates, hydroxy lower alkyl poly(lower alkoxy) acrylates and methacrylates, methacrylamide, acrylamide, N-lower alkyl acrylamides and N-lower alkyl methacrylamides and vinyl pyrrolidone, up to 25% of an alkyl acrylate or methacrylate and 0.05 to 5.0% of a polyethylenically unsaturated monomer as a cross-linking agent.

3,925,896
METHOD AND APPARATUS FOR ENCODING DENTAL WORK
James A. McDowell, 7025 E. McDowell Road, Scottsdale, Ariz. 85257
Filed Sept. 12, 1974, Ser. No. 505,585
Int. Cl.² A22C *11/08*
U.S. Cl. 32—40 R **6 Claims**



1. Apparatus for encoding information on dental work comprising: a base member, a plurality of tines extending from said base member and arranged in a predetermined pattern, each tine terminating in a point for forming an index point; a plurality of digit indicators each positioned on one of said tines adjacent the point of said tine, each digit indicator positioned on a radial extending from said point.

3,925,897
STEREO-PLOTTING APPARATUS FOR AIR AND EARTH PHOTOGRAMMETRY
Walter Ferri, and Giulio Grassotti, both of Florence, Italy, assignors to Officine Galileo S.p.A., Florence, Italy
Filed May 9, 1973, Ser. No. 358,808
Claims priority, application Italy, May 16, 1972, 9483/72
Int. Cl.² G01C *11/12, 11/24*
U.S. Cl. 33—1 A **5 Claims**



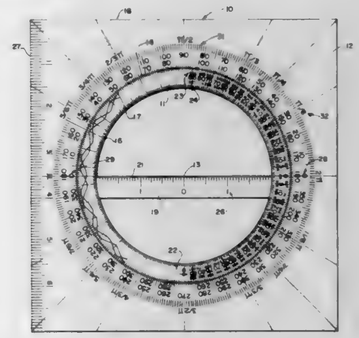
1. In stereo-plotting apparatus for mechanical photogrammetric projection having a frame, a carriage movable along three mutually perpendicular axes, two projection rods each having a concave surface, a universal joint adapted to secure each rod to said frame of the apparatus, joint means connecting the carriage to the rods for universal movement, the joint means being movable with the carriage and slidable with respect to the concave surfaces of the rods along the axis of each rod, and a plate-carrier carriage associated with each rod and being operatively connected to means mounted on said frame for supporting said plate-carrier carriage for movement in its own respective plane, an improvement comprising means connecting each plate-carrier carriage to its respective rod including a pin carried by means located on the upper portion of said rod for permitting axial sliding movement of said pin along said concave surface, said pin having a lower end, and a ball joint connecting said lower end of said pin to said plate-carrier carriage, said ball joint being axially aligned in said rod with said pin and said joint means, and means mounted on each pin for guiding said pin along the concave surface of said rod.

3,925,898
RULER-BEAM
George Melnik, 907 Nottingham Road, Newark, Del. 19711
Filed July 29, 1974, Ser. No. 492,435
Int. Cl.² B43L *9/04*
U.S. Cl. 33—27 C **1 Claim**



1. A beam compass comprising an elongated beam having an elongated top wall and elongated downwardly extending substantially parallel side walls forming a beam of substantially C-shape in cross-section, the free ends of said walls having inwardly extending bulb shaped projections formed along the entire length thereof; a pair of identical sliders, formed of low friction material, each having elongated grooves receiving said leg projections in intimate surface to surface contact; the distance between said leg projections being less than the distance between the grooves such that an interference fit is formed therebetween; each said slider having means extending therethrough at right angles to the direction of the groove for receiving a point and scriber holders, a point holder and a scriber holder mounted in said means; said interference fit allowing said slider to be adjusted along said beam by a force applied by the thumb and to remain securely in the adjusted position for describing arcs.

3,925,899
GRAPHICS INSTRUMENT
Sarah Hesse, 929 Oxford St., Berkeley, Calif. 94707, and Justin J. Shapiro, 39 Domingo Ave., Berkeley, Calif. 94705
Filed Mar. 19, 1974, Ser. No. 452,635
Int. Cl.² B43L *7/06*
U.S. Cl. 33—75 **1 Claim**



1. A graphics instrument comprising an annular inner scale member having a circular outer periphery and a circular inner periphery, an outer scale member having a circular inner periphery mounted for rotation with respect to the outer periphery of the inner member about a common center, said inner and outer members having co-planar surfaces which are adapted to move over a graphics surface, said outer member being formed with an outer periphery in the configuration of a polygon having adjacent sides which are in orthogonal relation to each other, means forming a first continuous graduated scale about the entire outer periphery of said inner member, means forming a second continuous graduated scale about the entire inner periphery of said outer member in register with said first scale whereby the scale members can be positioned in a selected angular relationship, an elongate member

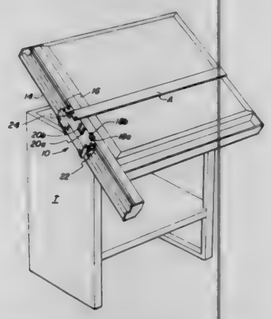
mounted on the inner member, said elongate member being formed with parallel side edges with one of the side edges extending along and forming a first straight edge along a diameter of the inner member, each side edge of the elongate member cooperating with the inner periphery of the inner member to form a pair of substantially semicircular openings of a large area relative to the areas of said co-planar surfaces whereby the semi-circular openings provide substantial open spaces for drawing and locating a wide range of angles, lines and points on the graphic surface, and means forming a third graduated scale along the first straight edge, and the outer edges of the polygon on the outer scale member forming additional straight edges, wherein said polygon configuration comprises a square, and each outer edge of said square configuration comprises a straight edge, wherein the first graduated scale includes indicia displaying a scale of angular degree measurement and indicia indicating a scale of angular radian measurement, wherein the second graduated scale includes indicia displaying a scale of trigonometric function values for the corresponding degree or radian measurements on the first scale, wherein the trigonometric function values include sine and cosine values, and wherein said first straight edge is aligned with the 0° trigonometric function values of said second graduated scale and said first graduated scale is arranged so that its 0° indicia will be in alignment with said first straight edge when said first straight edge is parallel to an outer edge of said square configuration.

3,925,900

COUNTER SYSTEM FOR STEP-AND-REPEAT DRAFTING ARM

John H. Raffensparger, 1412 Shoemaker Rd., Baltimore, Md. 21209

Filed July 30, 1974, Ser. No. 493,085
Int. Cl.² B43L *13/24*
U.S. Cl. 33—81 **5 Claims**



1. In an adjustable step and repeat drafting arm mechanism having: a frame (26), a tubular anvil (66) on the frame, with a peripheral screwthread (78) extending longitudinally along a portion thereof and terminating at a first end thereof and a first reference face (64) on the second end thereof, an elongate movable anvil (72) with an interior screwthread (80) adjacent a first end thereof engaging said peripheral screwthread (78); a knob portion (22) at the second end of said movable anvil, an elongate shank (82) extending axially through and projecting beyond the tubular anvil (66) with a first end of said shank connected to said movable anvil; the second end of said shank having a radial protrusion (70) with an annular radial surface (68) on the inner end of said radial protrusion, said annular radial surface being a second reference face, a sliding block (46) disposed between said first and second reference faces with the elongate shank (82) passing through a hole in the sliding block (46), a rod (16) passing through the frame (26), means (20c) having pivotal attachment to the sliding block (46) for grasping the rod (16) and advancing the frame therealong in adjustable increments, and means for indicating said increments, the improvment comprising:

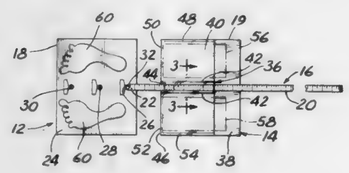
the means indicating including: said radial protrusion having tubular shape (88) and having at least one slot (90) extending therealong, a shaft (92) coaxially aligned with the tubular shape (88), means for engaging a first end of the shaft (92) with said slot (90) such that rotation of said radial protrusion will cause rotation of said shaft, a journal (98) rotatably mounting the shaft to said frame, a gear (100) fixed proximate the second end of the shaft, a numerical (106) counter having an input shaft, a pinion (104) on the numerical counter input shaft, and means for adjustably holding the numerical counter (106) in a position engaging the pinion (104) with the gear (100), such that rotation of said knob will adjust the distance between said first and second reference faces and will concurrently rotate said counter input shaft to give a value for said spacing.

3,925,901

SYSTEM FOR MEASURING GROWTH AND HEALTH CHARACTERISTICS

James B. McCormick, 9950 W. Lawrence Ave., Schiller Park, Ill. 60176

Filed Aug. 16, 1973, Ser. No. 388,767
Int. Cl.² G01B *3/10*; A61B *5/10*
U.S. Cl. 33—137 R **3 Claims**



1. A system for use in measuring growth and health characteristics and the like, comprising, in combination, a first generally flat plate member adapted to be placed in a generally flat position on a floor surface or the like, an elongated flexible tape having one end attachable to said first plate member and having dimensional indicia therealong increasing in magnitude from said end attachable to said first plate member, and a second generally flat plate member having guide means thereon cooperable with said elongated measuring tape in a manner to facilitate movement of said second plate member along the length of said measuring tape, said guide means defining registration means cooperable with said measuring tape to indicate the distance between said second plate member and the point of attachment of said one end of said measuring tape to said first plate member, said first plate member having a first fastening means thereon to which said one end of said measuring tape may be attached for use when measuring a person's height, said first plate member having a second fastening means thereon to which said one end of said measuring means may be attached for use when measuring a person's blowing strength, said first plate member having a third fastening means thereon to which said one end of said measuring tape may be attached for use when measuring a person's flexion at the waist.

3,925,902

ADJUSTABLE SIGHT FOR FIRE-ARMS

Georges A. Gevers, Liege, Belgium, assignor to Fabrique Nationale Herstal S.A. en brege, Liege, Belgium

Filed Oct. 1, 1974, Ser. No. 510,997
Claims priority, application Belgium, Dec. 11, 1973, 808471
Int. Cl.² F41G *1/26*
U.S. Cl. 33—257 **6 Claims**



1. An adjustable sight for a firearm, comprising:

a support member having a first transverse threaded bore therethrough adjacent one end thereof perpendicular to the line of sight and a second transverse threaded bore adjacent its other end, said second bore being perpendicular to said line of sight and to said first bore;

a body having a pair of arms extending from one end thereof provided with aligned apertures aligned with said first bore and being outwardly of opposite sides of said support member;

a first screw threaded through said first bore, extending through said aligned apertures and having means bearing against the outer sides of said arms, said body having a resilient tongue between said arms, bearing against said support member to resiliently bias said body to pivot upwardly about said first screw;

an opening in said body aligned with said second bore and having upward projections at its lateral sides;

a second screw threaded in said second bore, extending upwardly through said opening and having a head provided with notches engageable with said projections;

and means at the other end of said body defining a sight notch.

3,925,903

REDUCING THE MOISTURE CONTENT OF A FOODSTUFF BY IMMERSING A FROZEN FOODSTUFF IN THANOL MAINTAINED AT A TEMPERATURE IN THE RANGE OF −20° TO 0°C

James Patrick Ward, Rushden, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Mar. 9, 1973, Ser. No. 339,797
Claims priority, application United Kingdom, Mar. 17, 1972, 12615/72
Int. Cl. A23b *7/02, 1/04, 3/04*
U.S. Cl. 34—9 **2 Claims**

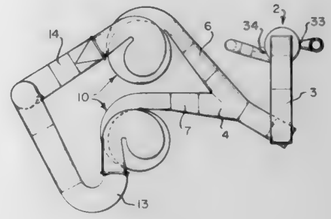
1. In a method of drying a foodstuff by immersing the foodstuff in ethanol in order to extract moisture from its interior by solution in the ethanol, and subsequently evaporating residual ethanol from the foodstuff, the improvement which consists in the step of immersing the foodstuff in the ethanol while the foodstuff is in the frozen state, and maintaining the temperature of both foodstuff and ethanol in the range −20°C to 0°C until at least half the moisture content of the foodstuff has been dissolved from it so as to produce a substantially unshrunkened product.

3,925,904

METHOD AND APPARATUS FOR DRYING STILLAGE

James G. Kelly, Richmond, Va., assignor to American Brands, Inc., New York, N.Y.

Filed May 14, 1974, Ser. No. 469,790
Int. Cl.² F26B *3/08*
U.S. Cl. 34—10 **6 Claims**



1. A method of drying moist stillage material composed of moisture and moist particles having moisture pervaded throughout the particles comprising

a. maintaining a rapidly moving gas stream emanating from a heat source and moving to one or more gas-stream and particulate-matter separator means which gas stream includes a columnar portion and is heated to a temperature sufficient to volatile moisture on and at the surface area of the particulate matter mixed therewith;

b. continuously introducing non-fluidized material into the columnar portion of the stream to cause the material to be mixed with it and heated by it;

c. causing the material to move a substantial distance along with the stream during which movement moisture on or at the surface area of the particulate matter is removed;

d. separating the material from the gas stream;

e. collecting the separated material;

f. conveying and handling the collected material for a sufficient time to permit moisture in the interior of the particulate to migrate to the surface area;

g. introducing a substantial quantity of the treated material in non-fluidized form back into the columnar portion of gas stream after said moisture migration; and

h. repeating the above steps until the material has been substantially dried,

whereby the stillage is progressively and incrementally dried at temperatures that avoid any substantial reduction in the nutrient value of the stillage and without emitting significant amounts of smoke or odors.

6. Apparatus for drying spent stillage comprising

a. an elongated drying conduit;

b. gas pumping means for pumping a gas at high speed through the conduit;

c. non-fluidized stillage introducing means for introducing the non-fluidized stillage into the conduit as gas passes through the conduit;

d. heating means for heating the gas prior to its entering the conduit;

e. separator means associated with the conduit for separating the material from the gas after it has travelled a distance in the conduit; and

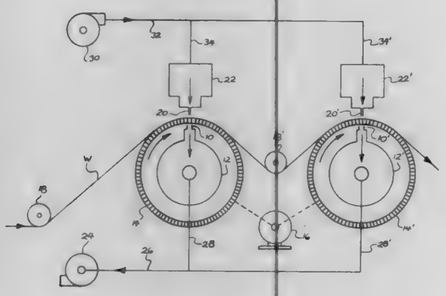
f. recirculating means for introducing a substantial portion of the material back to the stillage introducing means while diverting a portion of the material to a separate location.

3,925,905

PIECE GOODS EXTRACTION APPARATUS AND METHOD

Dieter F. Zeiffer, Charlotte, N.C., assignor to Gaston County Dyeing Machine Company, Mount Holly, N.C.

Filed Aug. 6, 1973, Ser. No. 386,007
Int. Cl.² F26B 5/04
U.S. Cl. 34—16 **8 Claims**



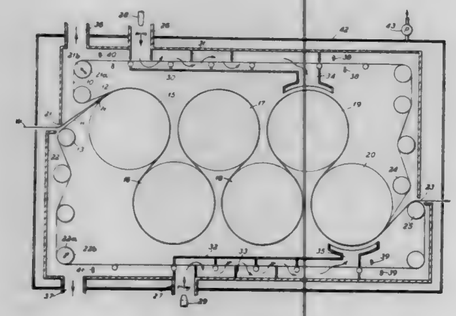
1. Piece goods extraction apparatus comprising means forming a stationary suction slot, traveling reticulate means for passing a moisture-containing piece goods web in spaced relation over said suction slot with the latter oriented transversely of and reaching fully across the web width and having a slot width proportioned for concentrating suction on said web through said traveling reticulate means, means forming an aligned pressure slot disposed opposite said suction slot and closely spaced at the other face of a passing piece goods web, means for impressing stripped moisture recovery suction at said suction slot, and means for delivering air at moisture stripping velocity through said pressure slot, said first and second mentioned means comprising, respectively, a stationary suction chamber and a surrounding openwork roll body of tubular form arranged for rotation, and said suction chamber presenting said suction slot in relation to the inner face of a piece goods web supported at the roll body surface and passed over said slot by roll rotation.

3,925,906

HOT WIRE DRYING

James L. Chance, Rockford, and Shu Tang Han, South Beloit, both of Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed Aug. 14, 1972, Ser. No. 280,667
Int. Cl.² F26B 7/00
U.S. Cl. 34—18 **12 Claims**



1. An apparatus for drying a traveling fibrous moisture containing web which comprises in combination:

first and second flexible pervious looped wire belts formed of highly heat conductive metal;

means for guiding a fibrous moisture containing web between the wire belts for heating the web by conduction and convection from the wires of the belts;

a plurality of dryer drums over which the wire belts are trained to travel in a serpentine path for carrying the web through a drying path sandwiched firmly between the wire belts insuring heat conducting drying contact between the wire belts and the web;

a first heating chamber positioned in advance of the drying path with said first wire belt passing therethrough;

a second heating chamber positioned in advance of the drying path with said second wire belt passing therethrough;

a first heating means for said first chamber;

a second heating means for said second chamber; each of said heating means heating each of said wires to a high temperature sufficient to heat the web by contact with the wire belt to evaporate the moisture and dry the web;

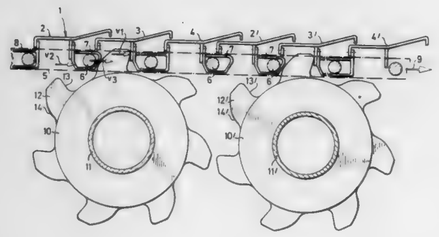
and an enclosure surrounding the web and wire belts in said dryihg path for receiving moisture evaporating from the web.

3,925,907

PROCESS AND APPARATUS FOR COOLING OF FIRED OR SINTERED MATERIAL

Otto Heinemann, Ennigerloh, Germany, assignor to Polysius AG, Neubeckum, Germany

Filed Sept. 30, 1974, Ser. No. 510,438
Claims priority, application Germany, Oct. 10, 1973, 2350811
Int. Cl.² F26B 7/00; F27B 9/14
U.S. Cl. 34—20 **10 Claims**



1. In a method of cooling a layer of fired or sintered material supported on a straight portion of an air permeable support movable at a substantially constantly speed in one direction and composed of a plurality of relatively movable plates coupled to one another, the improvement comprising periodically varying the speed of movement of adjacent plates in said straight portion of said support whereby adjacent plates of said straight portion have a periodically varying resultant rate of movement in said direction.

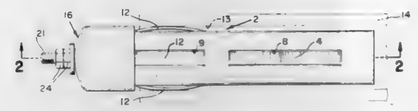
5. Apparatus adapted for use in the cooling of fired or sintered material comprising a plurality of grate plates fitted to one another and together forming a grate band having an air permeable support surface on which a layer of such material may rest; drive means movable in one direction; lost motion means coupling said grate plates to said drive means whereby said grate plates and said drive means are capable of relative movement; and additional driving means engageable with selected ones of said grate plates during their movement by said drive means for varying the rate of speed of said selected ones of said grate plates relative to the rate of speed of said drive means.

3,925,908

PAINT BRUSH AND PAINT ROLLER CLEANING DEVICE

Kirkley J. Dunn, 818 Cristich Lane No. 3, Campbell, Calif. 95008

Filed Jan. 9, 1975, Ser. No. 539,924
Int. Cl.² F26B 17/00; B08B 11/02
U.S. Cl. 34—58 **4 Claims**



1. A paint brush and paint roller cleaning device, comprising:

a. an elongated tubular body symmetrical about a longitudinal axis;

b. means on one end of the tubular body including a shaft adapted to be mounted in the chuck of a drill motor or other rotative device; and

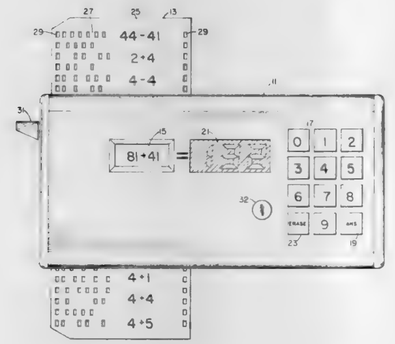
c. means formed in the wall of the elongated tubular body adapted to retain the handle of a paint brush when inserted into the interior of said elongated tubular body and adapted to retain a paint roller when the latter is slipped around the exterior of the tubular body.

3,925,909

TEACHING MACHINE

Ernest R. Duncan, Mount Harmony Road, Harmony Hill, Bernardsville, N.J. 07924

Filed July 24, 1973, Ser. No. 382,273
Int. Cl.² G09B 7/02
U.S. Cl. 35—9 A **15 Claims**



11. A teaching machine comprising:

a housing adapted to receive a record member;

a keyboard on said housing, in which a student enters one at a time on said keyboard the answers to a plurality of problems serially presented to him;

a display on said housing, constructed and arranged for displaying the answers to said problems when the correct answer is entered; and

actuatable interrogating means comprising:

means for counting the number of answers attempted and number of correct answers entered by the student on said keyboard; and

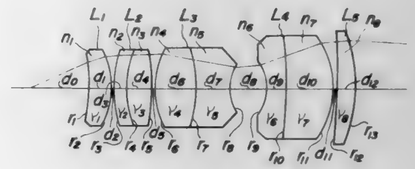
actuatable means for enabling the display on said display of the contents of said counting means.

3,925,910

OBJECTIVE LENS SYSTEMS FOR USE IN MICROSCOPES

Masaki Matsubara, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 277,040, Aug. 1, 1972, abandoned. This application May 1, 1974, Ser. No. 466,044
Int. Cl.² G02B 9/60, 1/00
U.S. Cl. 350—218 **6 Claims**



1. An objective lens system for use in microscopes, constructed as five components and eight lenses of the Gauss type, consisting of a first component of a single positive lens, a second component of a compound positive lens, third and fourth components of compound negative lenses, and a fifth component of a single positive lens, all lenses arranged in succession from the side of the object,

wherein N.A. = 0.4, Magnification = 20 X, $f = 11.51$, $f_1 = 11.108$ and r_1 to r_{13}, d_0 to d_{12}, n_1 to n_8 and ν_1 to ν_8 are defined by the following values:

$r_1 = -16.437$	$d_0 = 5.0$		
	$d_1 = 1.93$	$n_1 = 1.788$	$\nu_1 = 47.5$
$r_2 = -6.007$	$d_2 = 0.11$		
$r_3 = 15.0$	$d_3 = 1.09$	$n_2 = 1.6398$	$\nu_2 = 34.6$
$r_4 = 7.304$	$d_4 = 2.14$	$n_3 = 1.48656$	$\nu_3 = 84.5$
$r_5 = -14.127$	$d_5 = 0.28$		
$r_6 = 6.923$	$d_6 = 3.44$	$n_4 = 1.618$	$\nu_4 = 63.4$
$r_7 = -11.03$	$d_7 = 3.03$	$n_5 = 1.62588$	$\nu_5 = 35.7$
$r_8 = 3.982$	$d_8 = 3.02$		
$r_9 = -3.127$	$d_9 = 1.62$	$n_6 = 1.64769$	$\nu_6 = 33.8$
$r_{10} = -63.654$	$d_{10} = 4.2$	$n_7 = 1.48656$	$\nu_7 = 84.5$
$r_{11} = -6.629$	$d_{11} = 0.16$		
$r_{12} = -88.716$	$d_{12} = 1.7$	$n_8 = 1.6968$	$\nu_8 = 56.5$
$r_{13} = -11.782$			

where

f is the focal length of the total lens system;

f_1 is the focal length of the first component of the single positive lens;

r_1, r_8, r_9 are radii of curvatures of the front concave surface of the first component of the single positive lens, rear and front concave surfaces of the third and fourth components of compound negative lenses, respectively;

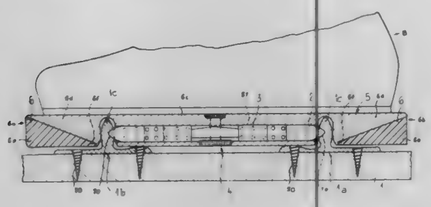
d_1 is the axial thickness of the first component of the single positive lens; and

ν_3, ν_7 are Abbe's numbers of the positive lenses of the second and fourth components of compound negative lenses, respectively.

3,925,911
SKI BOOT

Richard Erlebach, Kleinwalsertal, Austria, assignor to Gertsch AG, Interlaken, Switzerland

Division of Ser. No. 282,548, Aug. 21, 1972, Pat. No. 3,834,723. This application Apr. 29, 1974, Ser. No. 464,960
Claims priority, application Germany, Aug. 19, 1971, 2141675
Int. Cl.² A43B *00/00*
U.S. Cl. 36—2.5 AL **4 Claims**

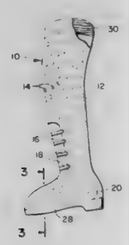


1. A ski boot embodying a ski boot sole having a toe portion and a heel portion and an intermediate sole portion formed of essentially rigid material arranged between said toe portion and said heel portion, said toe portion and said heel portion of said ski boot sole being formed of an elastically compressible material.

3,925,912
VENTILATED BOOT

Florianne Martineau, St. Leonard, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed July 31, 1974, Ser. No. 493,413
Int. Cl.² A43B *7/06*
U.S. Cl. 36—3 R **4 Claims**



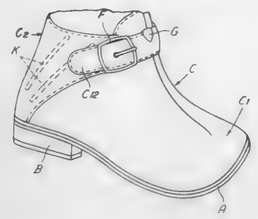
1. Footwear comprising, in combination, a sole-heel member; a false sole secured on top of said sole-heel member; front and back foot support members secured on top of said false sole and a ventilated foot and leg encasing member secured about the periphery of said false sole and covering said front and back support members; said foot and leg encasing member having a plurality of spaced openings therein and being formed by crocheting.

3,925,913
SHOE HAVING A TWO-PART VAMP

Oscar Del Vecchio, Via Manara 6, Falconara Marittima, Ancona, Italy

Filed May 6, 1974, Ser. No. 467,726
Int. Cl.² A43B *3/12*
U.S. Cl. 36—11.5 **6 Claims**

1. A shoe for deformed feet particularly for children's feet, comprising, in combination a sole with a shaped undersole, said undersole adapting to the instep of the foot; a first vamp element fixed to the front part of said sole to retain the end of the foot; a second substantially triangularly shaped vamp element with one of the vertexes of said second vamp element fixed to the rear part of said sole, the other vertexes of said triangle being joined to one another in the form of a ring; and joining members for holding the shoe to the neck of the foot, said rear element of the vamp having substantially the form of

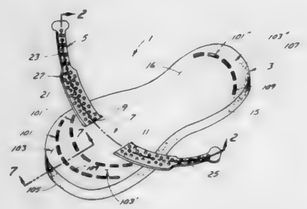


an isosceles triangle, the vertex whereof, opposite to the base, can be anchored to the heel of the shoe below the undersole, the base of said triangular element being ring-shaped, the diameter of said ring-shaped element being variable, so as to restrain said ring-shaped element to the instep of the foot.

3,925,914
SANDAL

Emery Marcoux, 445a Fleury St., Montreal, Quebec, Canada

Filed Aug. 19, 1974, Ser. No. 498,365
Claims priority, application Canada, Aug. 20, 1973, 179208
Int. Cl.² A43B *3/12*
U.S. Cl. 36—11.5 **9 Claims**



1. A sandal having a sole member, means for mounting a strap substantially transversely of the sole member in the region of the sole member which supports the ball of the foot of the sandal wearer, said means comprising a pair of longitudinal slots in the sole member through which the strap is threaded and further including means defining at least one removable section at one of the heel or toe ends of the sole member for use in shortening the sole member, if desired.

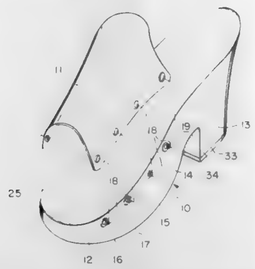
3,925,915
SANDAL SHOE

J. Louise Colli, New York, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y.

Filed Feb. 19, 1975, Ser. No. 551,033
Int. Cl.² A43B *3/12*
U.S. Cl. 36—11.5 **6 Claims**

1. A sandal shoe, which comprises:
a. a shoe bottom having a forward sole portion, a middle shank, and a raised heel;
b. said middle shank extending rearwardly upward from said forward sole portion to an upper end of said raised heel;
c. a bottom base of said forward sole portion having a convex curvative;
d. a rubber sole affixed onto said bottom base of said forward sole portion;
e. a rubber base element affixed onto a bottom end of said raised heel;
f. a plurality of male snap members contained in each sidewall of said shoe bottom, wherein said male snap members are arranged in a row extending from said forward sole portion to said middle shank;

g. a vamp portion; and

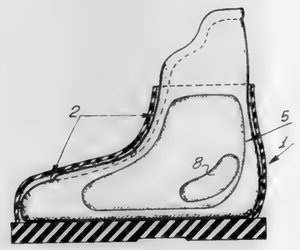


h. said vamp portion having a plurality of female snap members, wherein said female snap members communicate with said male snap members.

3,925,916
FOOT-FITTING INSERT FOR SKI BOOT OR THE LIKE

Carlo Garbuio, Volpago del Montello, Treviso, Italy

Filed Aug. 22, 1974, Ser. No. 499,406
Claims priority, application Italy, Oct. 4, 1973, 29732/73
Int. Cl.² A43B *19/00*
U.S. Cl. 36—71 **9 Claims**



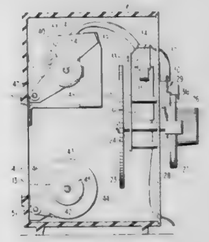
1. An insert for a boot; comprising a foot-fitting liner of flexible sheet material including an elastomeric core sandwiched between two skins, at least part of said core having a multiplicity of interstices filled with air, said skins including a fabric impregnated with an air-impervious mass to form an airtight envelope about said part.

3,925,917
ASTROLOGICAL APPARATUS

Teodosio Jose Concha C, Pittston, Pa., assignor to Ver-Con, Inc., West Pittston, Pa.

Filed June 7, 1973, Ser. No. 367,726
Int. Cl.² G03B *23/12*; G09F *11/295*; G04C *23/00*
U.S. Cl. 40—31 **1 Claim**

1. An apparatus for presenting astrological data relating to said individual horoscope comprising; in combination:
a. a housing having a front member, a top member, a bottom member and two side members;
b. a timing means fixed to said housing and providing repetitively an enabling control signal upon the expiration of each successive first time interval of a first given duration of 24 hours and a disabling control signal upon the expiration of each successive second time interval of a second given duration measured from the time of occurrence of the enabling signal, the disabling signal being produced subsequent to the enabling signal and said second time interval having a duration of less than 24 hours;
c. a first pair of spaced apart brackets fixedly mounted within said housing on said front member in close vicinity to said bottom member, each bracket of said first pair of brackets having a respective bearing surface spaced from said front member for removably supporting a spool-like member;
d. a first free running roller mounted between the brackets of said first pair of brackets, said first free running roller being positioned between said front member and said bearing surfaces of said first pair of brackets in close vicinity of said front member;
e. a second pair of spaced apart brackets fixedly mounted within said housing on said front member in close vicinity to said top member, each bracket of said second pair of brackets having a respective bearing surface spaced from said front member for removably supporting a spool-like member;

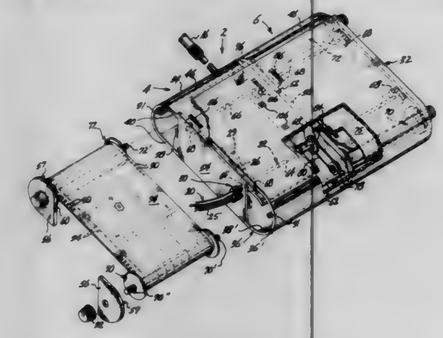


f. a second free running roller mounted between the brackets of said second pair of brackets, said second free running roller being positioned between said front member and said bearing surfaces of said second pair of brackets in close vicinity of said front member;
g. an opaque strip in the form of a roll storing astrological data related to an individual horoscope;
h. a first spool-like member positioned within said housing and supported by said bearing surfaces of said first pair of brackets;
i. second spool-like member positioned within said housing and supported by said bearing surfaces of said second pair of brackets, said opaque strip being carried by said first spool-like member and extending, via said first and second free-running rollers, to said second spool-like member;
j. a further bracket fixedly mounted on said front member in close proximity to one bracket of said second pair of brackets, said further bracket including an upstanding portion spaced from said front member;
k. an electric motor supported by a pivotable support movably mounted on said upstanding member;
l. drive means including a surface drive roller and an electric motor having a drive shaft connected to said drive roller positioned within said housing on said pivotable support, said electric motor being coupled to said timing means and responsive to said two control signals therefrom for moving said opaque strip selectively at a fixed velocity for a given period once each interval of 24 hours thereby selectively retrieving from said opaque strip in the form of a roll for storing respective different portions of the stored astrological data related to an individual horoscope in response to each excessive occurrence of a signal pair composed of the enabling control signal and the disabling control signal; and
m. a viewing aperture in said front member of said housing between said first and second free running rollers for receiving the selectively retrieved data relating to an individual horoscope for making a different respective portion of said different portions available for viewing once every 24 hours.

3,925,918
DASHBOARD-MOUNTED AUTOMATIC ROUTE INFORMATION DISPLAY DEVICE

Charles Pelin, P.O. Box 18, Eastsound, Wash. 98245

Continuation of Ser. No. 265,647, June 23, 1972, abandoned.
This application Sept. 23, 1974, Ser. No. 508,669
Int. Cl.² G09F 11/24
U.S. Cl. 40—42 10 Claims

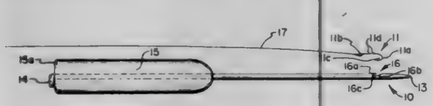


1. In a roadway route information display device, a case, carrier means and a rotatably mounted takeup spool in the case, an elongated, windable roadway route information strip disposed on the carrier means and extending lengthwise in a plane between the spool and the carrier means in engagement with the spool, a transparent cover on the case above the strip, means defining an elongated slot which extends in a plane below the cover on a parallel to the plane of the strip, means on the case defining openings to the outside thereof adjacent the opposite ends of the slot and the carrier means and spool, respectively drive means operative to advance the strip in the longitudinal direction thereof relatively from the carrier means toward the spool and to wind the strip on the spool, a second elongated, free-ended route information strip disposed in the slot and the opening adjacent the carrier means, and engaged with the drive means to be driven lengthwise in the plane of the slot in unison and co-directional with the windable strip, and means for guiding the free end of the second strip relatively out of the opening adjacent the other end of the case, after said second strip has traversed the length of the slot.

3,925,919
BAITING DEVICE

Clinton C. Huth, P.O. Box 156, Wisdom Pack Station, West Yellowstone, Mont. 59758

Filed Apr. 16, 1973, Ser. No. 351,147
Int. Cl.² A01K 31/06
U.S. Cl. 43—4 3 Claims



1. A method for installing an item of bait onto a fish hook attached to a fishing line using a baiting device having a hand engaging portion and a straight rod portion extending therefrom, which straight rod portion has a notch formed on a bias therein, which notch slants towards said hand engaging portion comprising the steps of

installing a curved portion of the fish hook within the notch formed in the baiting device rod;

pulling taut the fishing line against an eyelet end of said fish hook to seat the fish hook curved portion within the notch;

securing the fishing line in a taut state against the baiting device handle portion;

inserting the end of the baiting device rod opposite to the handle portion thereof into the body of an item of bait;

inserting the baiting device rod into said item of bait, while passing the fish hook arranged in the notch in the baiting device rod into said body of said item of bait;

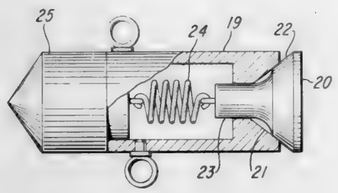
releasing the tension on the fishing line; and

separating the baiting device rod from the body of the item of bait through the opening formed by insertion of the rod thereinto while leaving each hook positioned therein in place.

3,925,920
RELEASABLE LINE-HOLDING DEVICE

William S. Walker, Portage, Mich., assignor to Pacific-Atlantic Products, Ltd., Portage, Mich.

Filed Mar. 29, 1974, Ser. No. 456,132
Int. Cl.² A01K 95/00
U.S. Cl. 43—43.12 8 Claims



1. A releasable, fishing line-holding device for use with a downrigger line and weight system for trolling, for releasably holding a fishing line to the downrigger system, said device comprising a hollow outer housing having a line-holding end with a bore passing therethrough and a leading end, the bore of said outer housing at its line-holding end being tapered progressively smaller from the outside inwardly, a poppet-shaped, line-holding plug member having a tapered line-holding portion and a plug stem, said tapered line-holding plug portion tapering progressively smaller in diameter toward the juncture of said tapered line-holding plug portion with said plug stem, the angle of taper of the bore at the line-holding end of said outer housing being substantially equal to the angle of taper of said tapered line-holding plug portion so as to provide a line-holding seat in the line-holding end of said outer housing for said tapered line-holding plug portion, the diameter of of said plug stem being less than the inside diameter of the bore at the base of the line-holding seat in said line-holding end of said outer housing, said line-holding plug member being positioned with said plug stem projecting into said outer housing and the tapered surface of said line-holding plug portion resting against the tapered line-holding seat in the line-holding end of said outer housing, the size of said tapered line-holding plug portion being sufficiently large so that part of said line-holding plug portion projects outside the end of said outer housing, means for resiliently urging said tapered line-holding plug portion against the tapered line-holding seat in said line-holding end of said outer housing, and means for attaching said device to the downrigger system at an angle thereto whereby said line-holding end of said device is at an angle measured against the horizontal of between 20° above the horizontal and 45° below the horizontal.

3,925,921
FISHING SINKER

John L. Tucker, and George Spector, both of 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Sept. 5, 1974, Ser. No. 503,343
Int. Cl.² A01K 95/00
U.S. Cl. 43—43.12 4 Claims

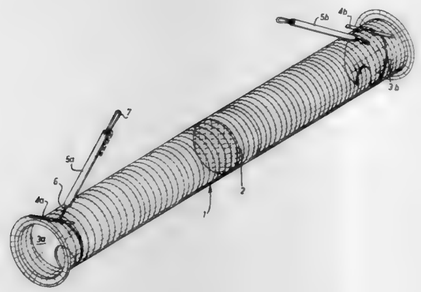


1. In an improved fishing sinker, the combination of a sinker body made of suitable material so as to sink in water, an eylet opening on said sinker for a fishing line to be attached therein, and means whereby said fishing line is freed from said sinker body in case said sinker body becomes snagged behind an underwater obstacle, wherein said means comprises a weakened, thin neck between said body and an eyelet portion having said opening.

3,925,922
MOLE TRAPS

Pierre Foltier, Orleans, France, assignor to Fonderies & Ateliers des Sablons, France

Filed Mar. 21, 1975, Ser. No. 560,983
Int. Cl.² A01M 23/08
U.S. Cl. 43—66 7 Claims

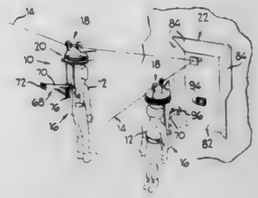


1. A mole trap comprising a tubular enclosure having an open end and a closure wall spaced from said open end, a movable wall connected to said tube at said open end for pivotal movement about an axis, which wall the animal pushes back on entering the tubular enclosure and which afterwards returns to its initial position, an attachment in the form of a tube disposed outside the tubular enclosure for projecting above the surface of the ground when the trap is buried in the ground, and a resilient element slidably mounted in said tube and having one end engaged with the movable wall and an opposite end bent in the form of loop and having a free extremity fitted into the free end of said tube, when the trap is put into place, said free extremity of said loop being displaced from the free end of the tube when the animal enters the trap so that said free extremity comes to lie outside the outer surface of the tube when the movable wall returns to its initial position and the resilient element is retracted back into the tube.

3,925,923
BUBBLE GUN TOY

John E. La Fata, 2714 E. Bolker Circle, Port Hueneme, Calif. 93041, and John D. Cuccio, 808 N. Signal St., Ojai, Calif. 93023

Filed Nov. 18, 1974, Ser. No. 524,466
Int. Cl.² A63H 33/28
U.S. Cl. 46—7 18 Claims



1. A bubble gun comprising:

a. a casing simulating a gun and having a front section and a rear section;

b. a cylinder positioned within and extending laterally across the casing front section;

c. a first port through an end portion of the cylinder;

d. a second port through an intermediate portion of the cylinder;

e. pumping means coupled to the casing for alternately driving a charge of compressed air sequentially through the first and second ports and drawing a fresh charge of air sequentially back through the second and first ports;

f. a shuttle in the cylinder arranged for travel between the first and second ports, the shuttle being lifted beyond the second port when a charge of compressed air is driven through the cylinder and dropped to a level adjacent the first port when a fresh charge of air is drawn through the cylinder;

g. an arm connected to the shuttle;

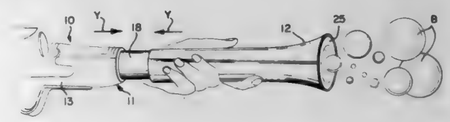
h. an annular-shaped reservoir for holding bubble-producing liquid coupled to the casing front section and having a slot formed in an inner wall portion; and,

i. a dip ring carried by the arm and oriented to pass through the reservoir slot and into the reservoir as the shuttle is dropped, and, be lifted from the reservoir as the shuttle is lifted.

3,925,924
AERIAL BACK PACK FOR USE WITH A FIGURE TOY

Palmer J. Schoenfield, Evanston, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Sept. 12, 1974, Ser. No. 505,594
Int. Cl.² A63H 21/04
U.S. Cl. 46—201 15 Claims



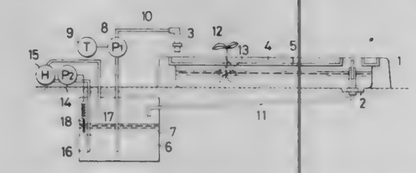
15. An aerial pack accessory for use with a figure toy or the like, comprising: a housing having a securing device for removably securing the housing to the figure toy, guide means including a support frame for supporting the figure toy for movement along a guide wire or the like, and a guide wire for positioning beneath said support frame, one end of the guide wire being securable to a wall or the like whereby the free end of the guide wire may be raised to cause the aerial pack accessory to move toward the wall and lowered to cause the aerial pack accessory to move away from the wall to carry the removably secured figure toy therewith.

3,925,925
TOY AUTOMOBILE
Shaul P. Ladany, 5700 Arlington Ave., Apt. 16J, Bronx, N.Y. 10471
Filed Apr. 25, 1974, Ser. No. 464,122
Int. Cl.² A63H *17/36*
U.S. Cl. 46—213 **6 Claims**



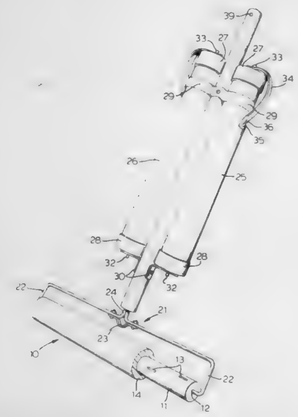
1. A toy automobile comprising a front axle having a pair of wheels, a rear axle having a pair of wheels, the wheels of one of said axles being fixed thereto, a drive for rotating said one axle to propel the automobile, and cyclically operable mechanism for continuously changing the direction of motion of travel of the automobile to cause the automobile to travel in a series of continuously changing curved paths, wherein said one axle driven by the drive includes a large wheel of larger diameter than the pair of wheels on that axle and disposed between said pair of wheels, and wherein the cyclically operable mechanism includes a weight cyclically shiftable from one side of the automobile to the other, to cause the automobile to tip to one side and then to the other during its travel, whereby during one period of the cycle the large wheel and one of said pair of wheels engage the ground for driving the automobile along a circular arc in one direction, and during the other period of the cycle the large wheel and the other of said pair of wheels engage the ground for driving the automobile along a circular arc in another direction.

3,925,926
METHOD AND APPARATUS FOR WATER AND AIR CULTURE OF PLANTS
Nozawa Shigeo, Takatsuki, Japan, assignor to Kyowa Kagakukogyo Kabushiki Kaisha, Japan
Filed Nov. 8, 1973, Ser. No. 413,949
Int. Cl.² E03C *1/08;* **A01G** *31/00*
U.S. Cl. 47—1.2 **1 Claim**



1. An improvement in an apparatus for water and air culture comprising: a culture bed packed with a support for a plant and positioned at an upper level of a plantation vessel; a plantation vessel accommodating the culture bed to be supplied with a culture solution so that the solution may pass through a lower space of the culture bed; means for supplying the culture solution from a tank to the plantation vessel at one end thereof for a period of time controlled by control means including a timer, said supplying means including means for incorporating air into the culture solution while the solution is being supplied; a drain tube having means for regulating the highest and lowest liquid levels by an adjustable slot of the tube provided at the other end of the plantation vessel; and a tank for containing the culture solution of a temperature suitable for causing a plant to grow and for receiving the culture solution flowing out from the drain tube, the means for supplying the culture solution being provided with a nozzle having air intakes and slitter means, and positioned above the one end of the vessel.

3,925,927
HERBICIDE ROLLER FOR WEED CONTROL
Thomas Harry Linton, 48 Farmcrest Drive, Agincourt, Ontario, Canada
Filed Feb. 8, 1974, Ser. No. 440,940
Int. Cl.² A01C *15/02;* **A01G** *1/12*
U.S. Cl. 47—1.5 **3 Claims**



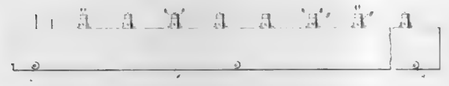
1. A device for applying a selected herbicide to weeds from a roller having a synthetic wax base impregnated with said herbicide, comprising an elongated handle having a longitudinal axis, a U-shaped bracket transversely secured at one end of said handle, said bracket being made of a resilient rod element and having two spaced leg portions with free ends bent towards each other to form axes operative for mounting said roller rotatably thereon, two cylindrical containers slidably and removably mounted on said elongated handle, said cylindrical containers being substantially parallel to the axis of said handle, said cylindrical containers having two open ends covered by removable caps, one of said containers being adapted for holding said roller when the device is not in use and the other container being adapted for holding a replacement roller.

3,925,928
AIR CONDITIONING, SOIL IRRIGATION, FERTILIZATION AND PEST-FIGHTING PLANT FOR USE IN GREENHOUSES
Petre Constantinescu; Nicolae Hristea; Speranta Blebea; Ieronim Hristea, all of Bucharest; Mihai Huniadi, Judetul Ilfov, and Mircea Gabureanu, Bucharest, all of Romania, assignors to Intreprinderea 30 Decembrie, Judetul Ilfov, Romania
Filed July 2, 1974, Ser. No. 485,295
Claims priority, application Romania, July 23, 1973, 75562
Int. Cl.² A01G *9/00*
U.S. Cl. 47—17 **1 Claim**

1. In a greenhouse having a roof supported on rows of pillars, the improvement which comprises an environmental control installation, said installation comprising a plurality of elongated air-distribution ducts extending toward the interior of the greenhouse over an end of each duct proximal to an external wall;

a respective air-displacement unit mounted on said end of a respective duct, each of said ducts comprising a U-section light weight reinforced concrete member and precast concrete slabs covering said members, said members being disposed overhead along respective rows of said pillars;

a respective spray means disposed between each of said units and a respective duct for spraying water into the air displaced along the duct, said ducts each being formed with outlets along an upper side thereof, and means for



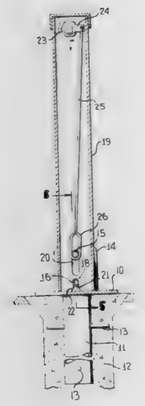
selectively directing the air from said outlets upwardly, and laterally;

a CO_2 injection station connected with said spray means for injecting carbon dioxide into the water sprayed into the air displaced by said units;

an emulsion preparing station connected with said units for distributing an anti-pest emulsion into the air displaced thereby; and

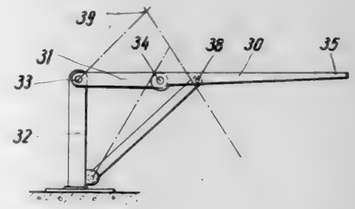
a network of pressureless distribution conduits connecting said ducts and supplying same with irrigation and fertilizer liquid, said conduits being formed with dropping pipes for dripping liquid from said distribution conduits.

3,925,929
PARKING SPACE BARRIER
George R. Montgomery, 1152 Okeechobee Road, West Palm Beach, Fla. 33401
Filed Mar. 21, 1975, Ser. No. 560,334
Int. Cl.² E05B *65/00*
U.S. Cl. 49—35 **5 Claims**



1. A parking space barrier comprising a base adapted to be anchored to a floor or to ground and having a pair of spaced upright elements, a cross pin secured to and extending between said elements near their upper ends, opposing shear pins removably mounted on said elements near their lower ends and below said cross pin and projecting interiorly of said elements, a barrier post engaged between said upright elements and having bottom end opening slots in opposite sides thereof engaging over the shear pins removably and having vertically elongated closed end slots in the same opposite sides thereof above the first-named slots and slidably and pivotally receiving said cross pin, a key lock on said post near the top thereof including a rotary crank arm within the post, and a link connected with said crank arm and moved thereby and extending through the post and having a lower end loop receiving said cross pin with sufficient play between the loop and cross pin to allow the loop to be lowered by turning of the crank arm to release the post for lifting relative to the cross pin sufficiently to separate said shear pins from said first-named slots.

3,925,930
BARRIER DEVICE
Josef Gail, 8891 Unterwittelsbach 1, and Josef Kauferle, Dachauerstrasse 8, 8890 Aichach, both of Germany
Filed Jan. 7, 1974, Ser. No. 431,431
Claims priority, application Germany, Jan. 10, 1973, 2300944
Int. Cl.² E06B *11/00*
U.S. Cl. 49—124 **6 Claims**



1. A barrier device operative to selectively block a roadway comprising:

a vertical column fixed in the ground adjacent said roadway;

a barrier arm having a rigid generally straight solid body portion extending between a free end and an articulated end of said barrier arm, said barrier arm being mounted upon said vertical column to extend generally horizontally therefrom with said articulated end proximate said column and with said free end remote therefrom to block said roadway,

and to extend generally vertically and parallel to said column with said free end below said articulated end to unblock said roadway;

a rigid generally straight support member having a pair of ends, one of said ends of said support member being pivotally mounted to said barrier arm at a point thereon intermediate said free end and said articulated end, with the other of said ends of said support member being pivotally mounted to said vertical column; and

operating means pivotally mounting said articulated end of said barrier arm to said vertical column, said operating means including means for raising and lowering said articulated end relative to said vertical column.

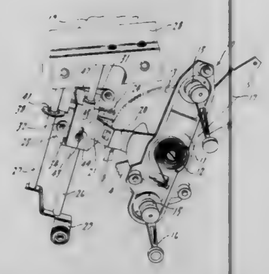
3,925,931
VEHICLE WINDOW CONTROL SYSTEM
Floyd N. Ladd, Warren, and Donald G. Stacy, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Aug. 5, 1974, Ser. No. 489,273
Int. Cl.² E05F *11/52*
U.S. Cl. 49—227 **4 Claims**

1. A vehicle window control system for controlling the movement of a window panel during the raising and lowering thereof, comprising:

a window regulator mechanism mounted on a vertical panel of a vehicle body structure and having a swingable driving arm,

a primary and a secondary guide rod, each rod being longitudinally curved,

separate upper and lower brackets each fastened to the vehicle body structure to provide common supports for the respective ends of the guide rods,
the guide rods being positioned in parallel proximate relationship to each other with the direction of curvature of the rods extending laterally away from the vertical panel,
a unitary carriage to which the window panel is directly secured,
the carriage straddling the primary and secondary guide rods for slidable movement therealong,
the carriage having two point engagement with the primary guide rod and single point engagement with the secondary guide rod,
coupling means coupling the swingable driving arm to the carriage intermediate the two point engagement of the latter with the primary guide rod,



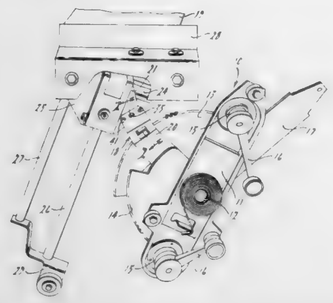
the two point engagement of the carriage with the primary guide rod comprising upper and lower guide bushings mounted respectively in vertically spaced flanges carried on a part of the carriage,
the guide bushings complementarily encompassing the primary guide rod to stabilize movement of the carriage therealong,
and the one point engagement of the carriage with the secondary guide rod comprises an elongated guide bushing mounted in a third flange on the carriage,
the third flange being vertically intermediate the vertically spaced flanges and integral with the same part of the carriage carrying the latter,
the elongated bushing restraining the carriage against rotation around the primary guide rod.

3,925,932
WINDOW REGULATOR MECHANISM

Floyd N. Ladd, Warren, and Donald G. Stacy, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 5, 1974, Ser. No. 489,274
Int. Cl.² E05F *11/52*
U.S. Cl. 49—227 **5 Claims**

1. A window regulator mechanism having a mounting plate,
a planar gear sector mounted on the mounting plate for rotation about a fixed axis,
and an articulated drive arm swingable about the fixed pivot axis of the gear sector,
the drive arm having a first section fixed to the gear sector for swinging movement in a plane with the latter and a second section having coupling means adapted to couple the drive arm to a window panel guided for vertical movement on guide means curved laterally of the panel,
the first and second sections of the drive arm having longitudinally overlapping portions intermediate the gear sector and coupling means ends,
and coacting pivot means coupling the overlapping portions of the arm sections together,
the second section being pivotable on the pivot means in a direction traversely of the plane of swinging movement of the first section about the gear sector pivot axis,
the overlapping portions of the first and second sections having interlocking means coacting with the pivot means to maintain the sections in substantial longitudinal alignment during swinging movement,

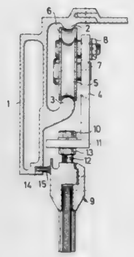


the pivot means and the interlocking means including lost motion means providing for longitudinal movement of the second section relative to the first section as the length of the drive arm varies as the second arm section pivots relative to the first arm section about the pivot means therebetween.

3,925,933
STRUCTURAL MEMBERS FOR MOUNTING AND GUIDING SLIDING DOORS

Manfred Reuter, Misburg, Germany, assignor to Georg Spellmann Hannov.-Holz-Industrie, Hannover-Kleefeld, Germany

Filed Jan. 4, 1974, Ser. No. 430,812
Claims priority, application Germany, Jan. 8, 1973, 2300692
Int. Cl.² E05D *13/02*
U.S. Cl. 49—409 **1 Claim**



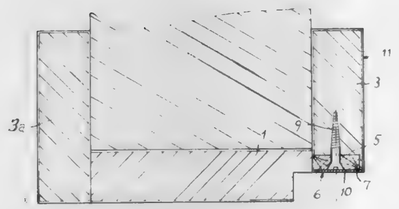
1. A structural member for mounting and guiding sliding doors for a building structure comprising:
an integral extrusion profile having opposed, linear runner and guide rails arranged vertically with the guide rail disposed above the runner rail, said extrusion including an integrally formed hollow box section disposed between the runner and guide rails for increasing the torsional and structural rigidity of said extrusion, said extrusion profile includes a recess for accommodating a lower part of a fanlight, said extrusion profile having an upwardly projecting trapozoidal portion adjacent said upper guide rail having a horizontal slot;
a horizontal member having an inclined "L" shaped end with a horizontal part snuggly engaged in said slot;
an L-shaped carriage having one arm pivotably coupled to said rollers, said carriage having at least one oblong hole for adjustable receiving at least one guide roller so that said guide roller is vertically adjustable between said opposed rails;

runner and guide rollers being pivotably mounted to said carriage, and said carriage comprising fastening screw means for supporting the door vertically below the rollers, said fastening screw means being adjustable with respect to said carriage so as to permit the height of the door to be adjustable;
said runner and guide rollers engaging the runner and guide rails respectively, said rollers having a concave runner cross section;
said hollow box section forming an opening having a vertical depending lowermost portion extending below said runner rails, and said L-shaped carriage to form a connice with the door, and including adjacent said lowermost vertically depending opening portion a thickened corner portion having a groove and a sealing ledge disposed in said groove for slidably contacting and sealing the space between the door and the box section.

3,925,934
DOOR FRAME

August Bürgers, Erkelenz-Gerderath, Germany, assignor to Europatent S.A., Luxemburg

Filed Oct. 1, 1973, Ser. No. 402,583
Claims priority, application Germany, Sept. 30, 1972, 2248151
Int. Cl.² E06B *1/04*
U.S. Cl. 49—504 **4 Claims**

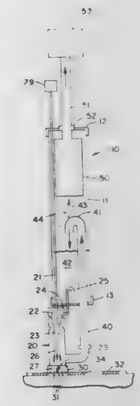


1. A door frame with a lining having a step-shaped portion on each side, which includes: two vertical cover parts separated from each other by said lining and extending at a substantially right angle thereto while having one side portion in engagement with the respective adjacent outermost end face section of said step-shaped portions, each of said two vertical cover parts having a recess at the respective adjacent step-shaped portion, said recess being adapted to receive a closing plate with holes therethrough for connecting screws, a dummy strip corresponding in its dimensions substantially to the dimensions of said closing plate and detachably inserted into said recess, screw means detachably holding said dummy strip in said recess, and covering means covering up said dummy strip toward the outside and being at least approximately flush with the adjacent surface of the respective adjacent step, said cover parts having holes therein threadedly engaged by said screw means, the axes of said holes corresponding to the axes of the holes in the closing plate, said two vertical cover parts and the respective adjacent step-shaped portions of said lining being provided with aligned blind holes for receiving hinge bolts, said blind holes being closed toward the outside of said lining and said vertical cover parts prior to receiving hinge bolts.

3,925,935
ABRADING SYSTEM

Robert U. Ricklefs, Box 2050, Pebble Beach, Calif. 93953

Continuation-in-part of Ser. No. 452,950, March 20, 1974, abandoned. This application Aug. 28, 1974, Ser. No. 501,026
Int. Cl.² B24C *3/06, 3/32, 7/00*
U.S. Cl. 51—8 HD **3 Claims**



1. Apparatus for continuously rendering the floors of bathtubs slip-resistant by abrading a predetermined portion of the floor with a stream of recycling, abrasive granules and recovering spent granules comprising:
an elongated, cylindrical cannister means forming an enclosed supply of abrasive granules,
casing means forming an abrading zone positionable adjacent to said predetermined portion of the surface,
aspirating means adjacent to said cannister means for drawing abrasive granules from said cannister means and propelling them against said predetermined portion of said surface in the abrading zone;
exhaust means comprising an exhaust line extending from said casing means to the interior of said cannister means and a vacuum source connected by a vacuum line to the interior of said cannister means for applying a vacuum to said exhaust line;
filter means in the interior of said cannister means; and
said cannister means, casing means, exhaust means, filter means and aspirating means being combined into a single, elongated and generally cylindrical unitary structure whereby the device may be used near the walls of said bathtub.

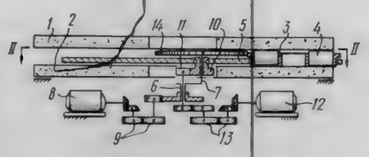
3,925,936
LAPPING MACHINE

Petr Nikolaevich Orlov, ulitsa M. Ulyanovoi, 21, korpus 2, kv. 54; Jury Ivanovich Nesterov, ulitsa Moldagulovoi, 28, korpus 4, kv. 19, both of Moscow; Vasily Yakovlevich Kudashov, ulitsa Komsomolskaya 22 E, kv. 30; Alexandr Vasilievich Zimnyakov, ulitsa Schelkovichnaya, 184, kv. 12, both of Saratov; Irina Nikolaevna Ermakova, Scherbakovskaya ulitsa, 58a, kv. 38, Moscow; Igor Vasilievich Bogomolov, ulitsa Koltsovskaya, 38, kv. 29, Voronezh; Efim Matveevich Nirman, Piskarevsky prospekt, 24, kv. 73, and Vladimir Dmitrievich Sokolov, prospekt Shvernika, 10, kv. 42, both of Leningrad, all of U.S.S.R.

Continuation of Ser. No. 435,998, Jan. 23, 1974, abandoned. This application Jan. 20, 1975, Ser. No. 542,266
Int. Cl.² B24B *5/00, 29/00, 9/00*
U.S. Cl. 51—118 **4 Claims**

1. A lapping machine for a two-side lapping of flat surfaces of workpieces, comprising a fixed disk lapping tool having a

central axis, cages in which the workpieces are placed and brought into contact with the working surface of the lapping tool, the cages having axes, a first drive for simultaneously rotating the cages with the workpieces around the central axis of the lapping tool and the axes of the cages, said drive including a shaft eccentric with respect to the central axis of the lapping tool, a sun wheel rigidly mounted on said shaft, said cages having planet gears meshing externally with said sun wheel, and operably connected by a gear train with a main



drive rotating the cages and eccentric shaft around the axis of the lapping tool and around the axes of the cages, a flat disk parallel to the lapping tool, sockets in said disk, said cages being placed in said sockets coaxially to the eccentric shaft, a second drive, a central gear located on the axis of the lapping tool operably connected to said flat disk and a train of replacable gears with said second drive for imparting rotation to the flat disk together with the cages around the axis of the eccentric shaft.

3,925,937

COPYING MACHINE TOOLS

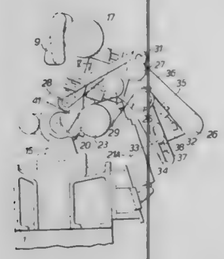
Arthur Royden Stevens, Torquay, and Ronald Forrester Cartwright, Exminster, both of England, assignors to Centrax Limited, Devon, England

Filed Feb. 5, 1974, Ser. No. 439,730

Claims priority, application United Kingdom, Feb. 8, 1973, 6256/73

Int. Cl.² B24B *21/02, 21/12, 17/02*

U.S. Cl. 51—145 R **9 Claims**



1. In a belt grinding machine for grinding a profiled surface of a workpiece, including a supporting structure, means carried by said supporting structure and mounting a cam having a profiled surface and a workpiece for movement in synchronism, a member also carried by said supporting structure and relatively movable toward and away from said profiled surfaces of said cam and said workpiece, a follower mounted on said movable member for engagement with said profiled surface of said cam, biasing means connected between said movable member and said supporting structure for pressing said follower against said profiled surface of said cam, an abrasive belt, belt supporting means carried by said movable member for supporting and driving said abrasive belt to remove material from said profiled surface of said workpiece under the control of said cam, said belt supporting means including a belt contact wheel around which said abrasive belt passes and by which said abrasive belt is pressed against said profiled surface of said workpiece, the improvement comprising:

further mounting means carrying said belt contact wheel, said further mounting means being movable relative to said driving means toward and away from said profiled surface of said workpiece;

stop means carried by said movable member and limiting the movement of said further mounting means relative to said movable member in the direction towards said profiled surface of said workpiece; and

yielding means connected between said further mounting means and said movable member for urging said further mounting means to carry said belt contact wheel and said abrasive belt in the direction towards said profiled surface of said workpiece, said yielding means being incapable of transmitting to said further mounting means the whole of the force applied to said movable member by said biasing means;

whereby said follower is held in engagement with said profiled surface of said cam by said biasing means even in the event that said belt contact wheel and said abrasive belt encounter resistance from said profiled surface of said workpiece, said yielding means yielding to permit movement of said further mounting means and said belt contact wheel relative to said movable member in the direction away from said profiled surface of said workpiece.

3,925,938

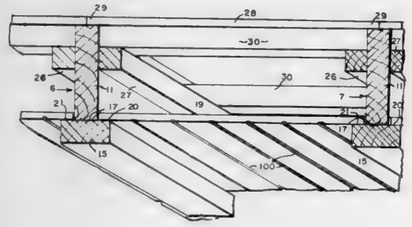
COMPOSITE BUILDING STRUCTURE

Ronald L. Molen, Salt Lake City, Utah, assignor to Research Homes, Inc., McLean, Va.

Filed Oct. 24, 1972, Ser. No. 299,694

Int. Cl.² E04B *7/02, 5/52*

U.S. Cl. 52—22 **10 Claims**



1. A composite building structure which comprises, in combination, a pair of spaced beams each comprised of a first tension member of dimension lumber firmly secured to the bottom edge of a second wider compression member of dimension lumber, at least one additional compression member of dimension lumber and of substantial compressive strength firmly secured to a side face of the second member along a line spaced from the upper free edge of said second member and projecting towards the other beam of said pair of beams, and a panel member supported by its marginal edges on the said upper free edge of the second member, said panel member being further supported indirectly by the further or additional compression member secured to the same second member, the strength of the said beams being such that the spacing between them and the width of the panel supported by them are substantially greater than in conventional practice.

3,925,939

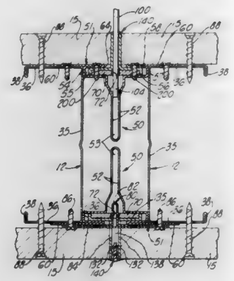
SUPPORT STRUCTURE FOR SHELVING

Peter Costruba, Pico Rivera, Calif., assignor to Angeles Metal Trim Co., Los Angeles, Calif.

Division of Ser. No. 292,093, Sept. 25, 1972, Pat. No. 3,848,364, which is a division of Ser. No. 48, Jan. 2, 1970, Pat. No. 3,714,748. This application Feb. 28, 1974, Ser. No. 446,742

Int. Cl.² A47F *5/00*

U.S. Cl. 52—36 **4 Claims**



1. A device adapted to be attached to a pair of elongated C-shaped studs having their main webs spaced from one another for adjustably receiving a support bar between said webs, comprising:

an elongated upstanding interlock member adapted to be positioned generally in alignment with the studs between their spaced main webs and having flanges for attaching said member to each of said studs, said interlock member defining a shallow vertical channel extending longitudinally of said interlock member adapted to be located in the space between said webs to adjustably receive a support bar therein, said interlock member further defining an inward elongated vertical passage behind said vertical channel; said flanges being oriented in directions transverse to the direction of elongation of said vertical passage and having portions which extend beyond said vertical channel for receiving fasteners adapted to fasten said interlock members to said studs at positions exterior of said vertical channel;

said passage having a U-shaped closed end extending longitudinally of said interlock member, said closed end forming one extremity of said interlock member;

an elongated support bar positioned in said vertical channel having a slot communicating with said inward vertical passage; and

anchoring means adapted to anchor said support bar in said vertical channel.

3,925,940

BUILDING

Harry P. O'Connell, Jr., and Eugene E. Hopster, both of El Cajon, Calif., assignors to Donn H. Gross

Filed July 24, 1972, Ser. No. 274,495

Int. Cl.² E04B *1/32*

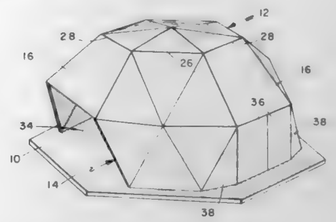
U.S. Cl. 52—81 **7 Claims**

1. A geodesic type building having a self-supporting shell, said shell comprising:

an equilateral hexagonal roof sub-assembly unit having the peripheral edges thereof horizontal, and

three hexagonal wall sub-assembly units in upstanding tripod arrangement, the lowermost edges thereof being coplanar and horizontal and together defining the base plane of the building, and the upper edges thereof being secured to alternate edges of said roof sub-assembly unit; and

three trapezoidal panels each having one edge secured to an edge of said roof sub-assembly unit between two of said wall sub-assemblies and having two opposing edges secured to adjacent edges of said two wall sub-assembly units;



all of said units being of identical planform.

3,925,941

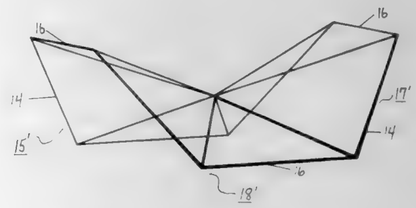
MODULAR CURVED SURFACE SPACE STRUCTURES

Peter J. Pearce, Studio City, Calif., assignor to Synestructics, Inc., Chatsworth, Calif.

Division of Ser. No. 216,488, Jan. 10, 1972, abandoned. This application May 13, 1974, Ser. No. 469,415

Int. Cl.² E04B *1/32*

U.S. Cl. 52—82 **16 Claims**



1. A saddle-like polygonal surface module for defining, in conjunction with other, related modules, space enclosing structures, the module comprising:

a nonplanar, skew polygonal periphery, having straight edges and a plurality of linear strut members extending from each junction of said straight edges at the periphery forming a fully triangulated interior framework to define a saddle-like structural module,

said polygonal periphery having six edges, one pair of opposing edges and an included edge defining a first plane, a second pair of opposing edges and an included edge defining a second plane; the interior angles of the edges defining said first and second planes being 120°, said first and second planes intersecting at a dihedral angle of 125° 16′, the edges at said intersection of planes joining at 90°.

3,925,942

MODULAR STRUCTURE FORMED OF INTERCONNECTED TUBULAR MEMBERS

Richard J. Hemmelsbach, West Olive, Mich., assignor to Space Age Industries, Inc., Grand Haven, Mich.

Filed Nov. 12, 1973, Ser. No. 414,952

Int. Cl.² E04B *1/32, 7/02*

U.S. Cl. 52—86 **16 Claims**

1. A modular structure comprising:

a pair of vertical support towers spaced apart and defining the sides of the modular structure, each support tower comprising a base formed of interconnected tubular members and support struts extending upwardly from the base so as to form a pair of upper corners spaced apart a pre-determined distance, each said tower further comprising reinforcing means that interconnect the base and the support struts so as to maintain the upper corners of

the tower in a fixed position relative to the base of the tower; and

a section of a domed roof mounted on and extending between the support towers, said section of domed roof comprising a plurality of interconnected truss units formed in the shape of inverted pyramids having rectan-



gular bases, said truss units being formed of tubular members connected together at the ends thereof, with the truss units being connected together along common sides of their bases, the truss units on each end of the domed roof section being mounted on the upper corners of the tower such that one side of the base of each such truss unit extends between the upper corners of the tower.

3,925,943

PORTABLE STRUCTURAL FRAMING MEMBER

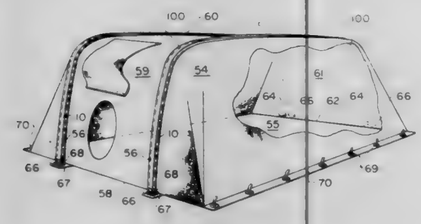
John David Petrie, 1112 Manulife House, 603-7th Ave. SW., Calgary, Alberta, Canada

Filed Sept. 30, 1974, Ser. No. 510,863

Claims priority, application United Kingdom, Oct. 2, 1973, 182482/73

Int. Cl.² E04H *12/18*

U.S. Cl. 52—108 **11 Claims**



1. A structural member capable of being coiled by bending said member in one direction and being uncoiled by bending said member in the opposite direction to form a frame member which is relatively rigid except when said frame member is bent in said one direction, said structural member comprising an elongated one-piece body member of suitably flexible material, said body member having a passageway extending lengthwise therethrough and having transverse cuts distributed along the length thereof, each cut extending inwardly from one side of the body member and having a bottom near but spaced apart from the opposite side of the body member, said body member being divided into member segments by said cuts with each member segment being joined to an adjacent member segment by a relatively thin, flexible joint, and sheer members of suitably strong material fitted securely in said passageway, a first portion of one sheer member being disposed in each of said member segments and the remaining portion of said one sheer member protruding from one end of the member segment in which said first portion is disposed, said remaining portion extending into the passageway of the adjacent member segment when the structural member is uncoiled, said sheer members thereby absorbing sheer forces at adjacent ends of adjacent member segments.

3,925,944

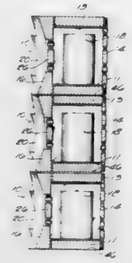
NICHES

Robert Paul Pickel, New Berlin, Wis., assignor to Conrad Pickel Studios, Inc., New Berlin, Wis.

Continuation-in-part of Ser. No. 362,630, May 21, 1973, abandoned. This application Sept. 13, 1974, Ser. No. 505,711

Int. Cl.² E04H *13/00*

U.S. Cl. 52—134 **7 Claims**



1. In a building having a window opening in an exterior wall thereof, the improvement comprising an assemblage of box-shaped niches positioned adjacent to each other within said window opening, each niche having side walls and having a bottom, urn means for the ashes of a deceased person supported on the bottoms of at least some of said niches, the inner end of each niche forming a receiving opening, a light-transmitting inner end panel removably fitted to the inner end of each container to close said receiving opening, there being an outer end panel for each niche which includes light-transmitting elements for admitting light from the exterior to said niche to pass therethrough through the light-transmitting inner end panel, the light-transmitting means at at least one of said ends forming a decorative window, the size of said urn means being minor with respect to the interior of the niche so as to allow space for the passage of light through the niche, said niches completely filling said window opening so that said inner end panels taken together serve as a large decorative window, the urn means of each niche being flat and fitted to the niche to form the bottom thereof, leaving a clear space thereabove for passage of light through the niche, and the inner surface of at least one of the side walls of the niche being provided with a special light-reflecting surface of a type which substantially enhances the reflection of light.

3,925,945

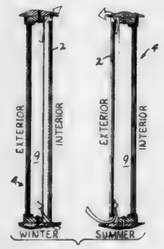
HEAT EXCHANGER WINDOW

Walter S. White, 833 Old Dutch Mill Road, Colorado Springs, Colo. 80904

Filed Nov. 23, 1973, Ser. No. 418,606

Int. Cl.² E06B *7/12*; **E04B** *2/28*

U.S. Cl. 52—171 **3 Claims**



1. A transparent insulating building panel reversibly mounted for positioning commensurate with the outside temperature, comprising:

a frame pivotally mounted in the plane of a wall of said building,

a pane of tinted heat absorbing glass mounted within said frame,

a pair of spaced apart glass panes mounted within said frame and in air tight engagement therewith, said pair of panes mounted in spaced relation and parallel to said pane of heat absorbing glass, and

aperture means in said frame providing an unrestricted path of air flow through the space between the heat absorbing glass and the said pair of panes.

3,925,946

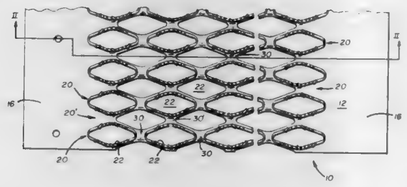
RETICULATED GRATING

Henry A. Balinski, Hoffman Estates, and Albert F. Kuhr, Elk Grove Village, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Nov. 16, 1973, Ser. No. 416,481

Int. Cl.² E04C *2/42*; **E04F** *11/16*

U.S. Cl. 52—180 **9 Claims**



1. In a grating including a sheet having opposite surfaces and apertures therein, said apertures being defined by side walls, each said side wall extending transversely across the sheet to opposite edge portion which are spaced apart by a distance greater than the thickness of said sheet, the side wall edge portions projecting from at least one of said sheet surfaces being provided with serrations thereon to reduce slippage over the sheet;

the improvement wherein at least alternate serrations are each twisted through an angle with respect to the plane of the edge portion of the aperture, the resulting structure being so arranged that each of said serrations is skewed with respect to the next adjacent serration of that edge portion whereby slippage over the sheet is further reduced.

3,925,947

AUTOMOBILE WINDOW SEALING

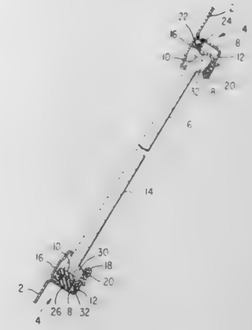
Robert M. Meyers, Fairless Hills, Pa.; Edward F. Kutch, Trenton, and Matthew M. Sitter, Convent Station, both of N.J., assignors to Novagard Corporation, Trenton, N.J.

Continuation of Ser. No. 266,076, June 26, 1972. This application Jan. 25, 1974, Ser. No. 436,451

Int. Cl.² E04B *1/62*; **E06B** *3/00*

U.S. Cl. 52—208 **11 Claims**

1. An automobile window assembly comprising a pinch weld member surrounding the opening in which the window is to be located and presenting an outwardly facing surface, a pane of glass closing said opening and supported about its edges by the outwardly facing surface of said pinch weld member, there being a hot melt elastomeric sealing composition disposed between said edges of said pane of glass and the outwardly facing surface of said pinch weld member throughout the entire periphery of the pane of glass, said sealant composition being characterized by the fact that it is fluid at a temperature above about 150°F so that upon contact thereof with the surface of the glass and pinch weld member while at such temperature it will establish a fluid-type contact with both the glass and pinch weld member, said sealing composition consisting essentially of a nonreactant mechanical mixture of from about 10 to 200 parts by weight of an elastomeric polymer, from about 1 to 200 parts by weight of tackifying resins, from about 10 to 400 parts by weight of plasticizer, from about 0.5 to 60 parts by weight of one or more adhesion promoters, and from about 5 to 500 parts by weight of inert



filler, said sealing composition further being characterized by the fact that upon cooling to atmospheric temperature, it will have a hardness of from about 20 to 95 on a Shore A Durometer.

3,925,948

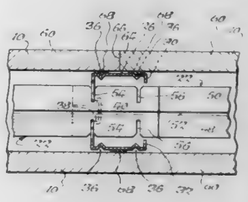
MODULAR WALL CONSTRUCTION

Gale E. Sauer, Williamsville, and Barton G. Hansen, Cheektowaga, both of N.Y., assignors to Roblin Hope's Industries, Inc., Buffalo, N.Y.

Filed Nov. 1, 1973, Ser. No. 411,703

Int. Cl.² E04B *2/30*, *2/60*

U.S. Cl. 52—481 **2 Claims**



1. Means supporting opposed panel members in a double wall comprising at least two vertical studs spaced longitudinally along the length of said double wall; each said stud comprising an elongated body member of generally channel U-shaped cross sectional configuration providing a web portion and a pair of opposite side walls in substantial parallelism with each other and extending in a direction normal to said web portion; said web portion having a plurality of longitudinally spaced openings formed therein with each of said openings having a uniform radius and an uninterrupted periphery; at least one elongated spacer bar extending between said studs and having opposite ends projecting through aligned openings of said studs; said spacer bar having diverging legs with a pair of slots at each said end extending inwardly from the longitudinal edges thereof and being in planes substantially perpendicular to the longitudinal axis of said spacer bar, the longitudinal axes of the slots of each pair being aligned, each pair of said slots being mounted over the lower peripheral edge portion of each corresponding said opening to lock each respective end of said spacer bar in a locked axial position, and opposed panel members defining opposed wall surfaces; each of said stud side walls defining a bearing surface receiving the edge portions of side-by-side related panel members thereon.

3,925,949
STRUCTURAL MEMBER AND METHOD OF MAKING THE SAME

Tom T. Mikulin, 1469 Bellevue Ave., Burlingame, Calif. 94010

Filed Sept. 30, 1974, Ser. No. 510,480
Int. Cl.² E04H *12/00*
U.S. Cl. 52—581 8 Claims



1. The method of forming an elongated structural member comprising the steps of:

providing a section of said member comprising a plurality of rectangular sidewalls swingably secured together about longitudinally extending parallel axes,

providing a second similar section in end to end relation with said first section and securing the adjacent ends of said sections together,

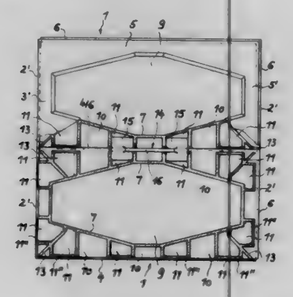
arranging the sidewalls of both sections by swinging the same about said axes to form a prism of a length equal to the length of both sections and with the opposite parallel free edges of the two outer sidewalls of said plurality of both sections in engagement, and thereafter,

connecting said free edges of both sections together.

3,925,950
BUILDING BLOCK ASSEMBLY

Jurgen von der Ley, Rothelteich 41, D-5828 Ennepetal 14, Germany

Filed June 4, 1974, Ser. No. 476,256
Claims priority, application Germany, June 16, 1973, 2330772
Int. Cl.² E04C *1/14, 1/42*
U.S. Cl. 52—585 5 Claims



1. In a building block assembly, a building block having a four-sided frame and a panel surrounded by the frame; each frame side having longitudinally extending, parallel-spaced legs and an interconnecting floor together defining an outwardly open, generally U-shaped cross section, wherein the improvement comprises in combination:

a. a rib-and-shoulder formation provided on an outer zone of each leg on each side of the frame; the shoulders of the rib-and-shoulder formation on two adjoining sides of the frame being oriented towards one another; the shoulders of the rib-and-shoulder formation on the other two adjoining sides of the frame being oriented away from one another;

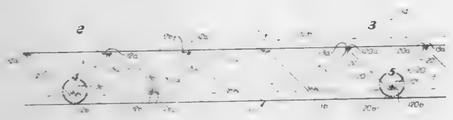
b. a plurality of outwardly open, tubular sockets disposed centrally between the two legs of each frame side on the interconnecting floor and connected to the legs by transverse bridge members; said sockets being distributed along the length of each frame side; the distance between any adjoining two sockets in one frame side being twice the distance of an outermost socket from the adjacent end of the frame; each socket has a terminal edge that is recessed with respect to said outer edges of the legs; and

c. a removable and reinsertable coupling member conforming in shape to each socket opening for being received by the socket.

3,925,951
TRUSSED JOIST

Edgar D. Jackson, Alta Loma, and Thomas E. Jackson, Upland, both of Calif., assignors to Steel Web Corporation, Alta Loma, Calif.

Filed Aug. 5, 1974, Ser. No. 494,414
Int. Cl.² E04C *3/292*
U.S. Cl. 52—693 8 Claims



1. In a trussed joist, the combination comprising

a. upper and lower chord members extending in generally the same longitudinal direction and in spaced apart relation,

b. metallic tubular webs extending in zig-zag configuration in the space between the chord members, each web having opposite ends which are flat, one end of each web extending proximate the inner side of the upper chord member and the other flat end of each web extending proximate the inner side of the lower chord member, the ends of successive webs extending in overlapping relation,

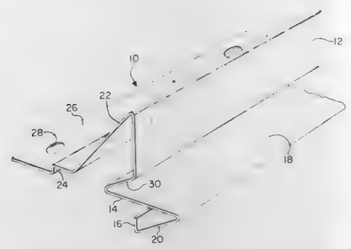
c. said webs including tension webs extending diagonally upwardly and longitudinally toward an end of the joist, and compression webs extending diagonally downwardly and longitudinally toward an end of the joist, the tension web ends extending flatly against the inner sides of the chord members,

d. said tension web ends including first portions overlapped by compression web ends, and second portions extending longitudinally substantially beyond said compression web ends, and there being certain fasteners projecting through both the compression web ends and the tension web end first portions and into the chord member, and other fasteners projecting only through the tension web end second portions and into the chord members and in offset relation to both the certain fasteners and said compression web ends.

3,925,952
PANEL SUPPORT AND ATTACHMENT SYSTEM

John Louis Hagel, Hinsdale; Robert Carl Pape, Hanover Park, and Ernest William Reinwall, Jr., McHenry, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 25, 1974, Ser. No. 454,644
Int. Cl.² E04B *1/38*
U.S. Cl. 52—714 21 Claims

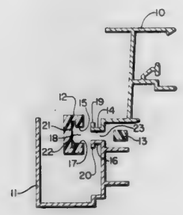


1. A system for securing one extremity of a panel to an edge portion of a support structure, the system including, a horizontal alignment means cooperating with and connected to a vertical alignment means lying in planes generally perpendicular to one another, a shelf portion extending outwardly from the plane of the vertical alignment means at a predetermined vertical position on the system and on one side of the plane of the vertical alignment means with the horizontal alignment means extending on the opposite side of the plane of the vertical alignment means, a panel attachment and vertical support surface extending in a plane generally perpendicular to that of the horizontal alignment means and located above the predetermined vertical position of the shelf portion, the aligment means, shelf portion and panel attachment surface all being interconnected wherein the system may be secured to the edge portion of the support structure and is adapted to subsequently receive and secure a panel thereto.

3,925,953
METHOD OF MAKING A THERMAL BREAK CONSTRUCTION ELEMENT

Joseph N. LaBorde, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 458,823, April 8, 1974, abandoned, which is a continuation of Ser. No. 286,315, Sept. 5, 1972, abandoned. This application Mar. 24, 1975, Ser. No. 561,242
Int. Cl.² E04B *1/64*; E06B *1/32*
U.S. Cl. 52—741 10 Claims



1. A method of making a unitary thermal break construction element comprising two lineal metal members and two lineal plastic locking elements, the latter comprising a clamp and a wedge, comprising the steps of:

a. aligning a pair of lineal metal members in a spaced apart parallel relationship, each of said metal members having a recessed portion therein extending the length thereof for receiving an end portion of a lineal plastic clamp, and said metal members being so aligned with each other that said recessed portions are also aligned with each other in a spaced apart parallel relationship and opposite each other;

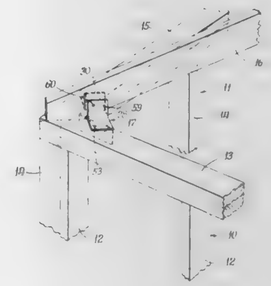
b. positioning a lineal plastic clamp on said metal members, said plastic clamp having a pair of oppositely facing end portions thereon adapted to be received by the recessed portions in said metal members, and said plastic clamp being so positioned on said metal members that one end portion thereon is received by a recessed portion in one metal member and the other end portion thereon is received by a recessed portion in the other metal member; and

c. inserting a lineal plastic wedge into an opening between the two metal members and between the recessed portions therein thereby locking the plastic clamp on the metal members and forming a unitary thermal break construction element.

3,925,954
CORNER BRACKET WITH HIP SADDLE

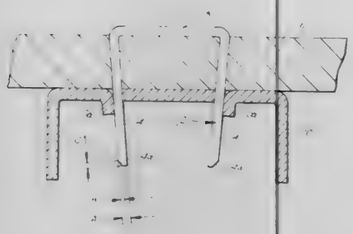
Kenneth T. Snow, 1303 N. Cross St., Wheaton, Ill. 60187, and Kenneth T. Snow, Jr., 317 Shagbark Court, Schaumburg, Ill. 60172

Filed Sept. 24, 1973, Ser. No. 400,009
Int. Cl.² F16B *7/00*
U.S. Cl. 52—752 3 Claims



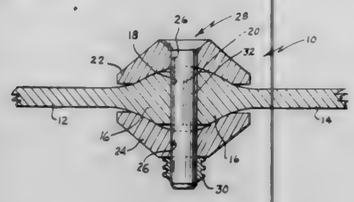
1. A building corner bracket with a hip saddle for wood framed buildings of the type having walls disposed at right angles to one another and each wall having vertically disposed spaced apart wooden studs with adjoining wooden top plates, comprising an angled member with vertical side walls disposed at right angles to one another, a horizontally extending diagonally disposed bridge member spanning the inside space between the vertical side walls of the angled member and acting to reinforce the spacing of the vertical side walls, said bridge member integrally fastened to and located at the top of the angled member, a pair of angle members having horizontal and vertical sides, said horizontal sides integrally joined to the top side of the bridge member in spaced apart relationship, and each angle member having a portion of its horizontal side extending beyond the vertical side walls of the angled member and lying generally in the same plane as the bridge member and acting as top flanges adapted to lie on the top surface of the adjoining wooden top plates, and the vertical sides of the pair of angle members together with the bridge member acting as a saddle adapted to receive a roof hip rafter whereby the vertical sides of the pair of angle members are adapted to abut opposite sides of the roof hip rafter.

3,925,955
STAPLE FOR LIGHT GAUGE METAL PIERCING
Carl T. Becht, Cincinnati, Ohio, assignor to Senco Products, Inc., Cincinnati, Ohio
Filed Aug. 16, 1973, Ser. No. 388,893
Int. Cl.² F16B 5/00, 15/00
U.S. Cl. 52—758 D 2 Claims



1. A structure comprising an element secured to a piece of light gauge sheet metal by means of a staple comprising a drivable U-shaped wire member having legs terminating in piercing ends, the legs of said staple, at their piercing ends, having their outside surfaces beveled, leaving partial blunt points, the length of said bevels axially of said legs being at least about 50% of the wire size and the angle of said bevels being such as to remove between about 25% and about 50% of the wire size at the points, in the "as driven" condition of said staple said legs passing through said element and said piece of light gauge sheet metal securing said element and said light gauge sheet metal piece together in abutting relationship, tabs of said sheet metal being bent down along and bearing against the outsides of the legs of said staple, and the legs of said staple converging toward each other.

3,925,956
FATIGUE RESISTANT SPLICE
Lester M. Atkinson, Marietta; Carroll R. Bigham, Dunwoody, and James L. Peed, Marietta, all of Ga., assignors to The United States of America as prepresented by the Secretary of the Air Force, Washington, D.C.
Filed July 22, 1974, Ser. No. 490,600
Int. Cl.² F16B 5/06
U.S. Cl. 52—758 D 2 Claims

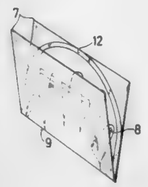


1. In a splice for fastening in fixed relationship with respect to one another a pair of aircraft wing panels which undergo both forces of compression and tension, the improvement therein comprising a pair of edge-abutting wing panels, an edge of each of said panels being transversely enlarged, each of said enlarged edges gradually increasing in size toward said edge over a longitudinal distance of more than twice the thickness of said wing panel and terminating at a thickness of substantially twice the thickness of the remainder of said panel whereby the stress concentrations produced thereon are both evenly and gradually distributed in the panel, said enlarged edge of each of said panels being in direct contact with one another, at least one semi-circular cut out located within said enlarged edge of each of said panels thereby forming at least one complete aperture along the area of contact of said edges of said panels, a pair of securing elements matingly engaging and mounted about said enlarged edges of said panels, the mating surface of each of said securing elements being a distance from said edges in excess of the thickness of said remainder of each of said wing panels, at least one hole located within each of said securing elements in alignment with said aperture in said edges of said panels, and means passing through said aperture in said wing panels and said hole in said securing means fixedly securing said panels together.

3,925,957
TOOTHPASTES
Susan Mary Venables, Ascot, and Charles Andrew Watson, Ruislip, both of England, assignors to Lever Bros. Co., New York, N.Y.
Division of Ser. No. 309,535, Nov. 24, 1972, Pat. No. 3,878,938. This application Aug. 23, 1974, Ser. No. 499,815
Int. Cl.² A61K 7/22; A45D 40/00
U.S. Cl. 53—6 1 Claim

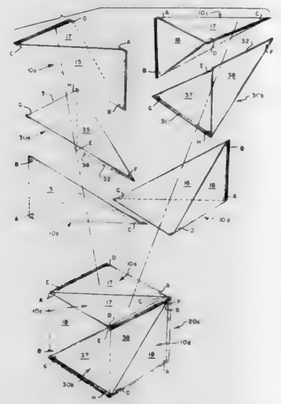
1. A process for inhibiting the corrosive action of a toothpaste containing chloroform on unlacquered aluminum tubes comprising incorporating in said toothpaste an effective corrosion-inhibiting amount of a substance selected from the group consisting of urea, biuret, gelatine, benzoic acid and soluble salts of benzoic acid, said effective amount of urea and gelatine being within the proportions of about 0.1% to about 10%, and said effective amount of biuret, benzoic acid, and soluble salts of benzoic acid being within the proportions of about 0.5% to about 10%, by weight of said toothpaste, and packing said toothpaste containing said corrosion-inhibiting substance in an unlacquered aluminum tube.

3,925,958
METHOD OF PRODUCING AND PACKAGING GLOVES FORMED OF THERMOPLASTIC FOIL
Wilhelm Heisig, Pahlstr. 12, Munich, Germany (55)
Filed July 5, 1973, Ser. No. 376,807
Int. Cl. B65b 11/48
U.S. Cl. 53—21 FW 7 Claims



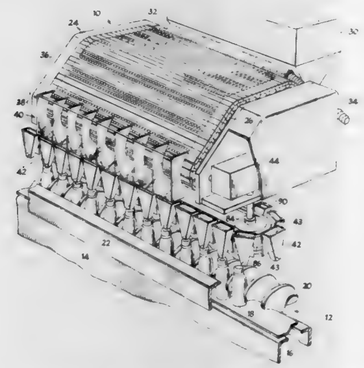
1. Method of producing and packaging gloves formed of thermoplastic material by severing from two superimposed foil sheets of thermoplastic material disposed on a paper web respective portions of the foil sheets each corresponding to half of a glove, welding together the corresponding edges of the glove-half portions except for respective edge portions which define an opening for sliding a hand into the thus-formed glove, and then subdividing the paper web into sections at locations between the individual thus-formed gloves, the improvement therein which comprises folding over once the subdivided paper sections together with the respective, thus-formed glove adhering thereto, and heating opposite marginal portions of the folded paper sections while the remainder of the thermoplastic material portions severed from the foil sheets remain disposed therebetween to form a welding seam.

3,925,959
TETRAHEDRAL PACKAGING MEANS AND METHOD OF MAKING SAME
Ralph E. Dykes, White Plains, N.Y., and Robert M. Mitchell, South Norwalk, Conn., assignors to General Foods Corporation, White Plains, N.Y.
Division of Ser. No. 683,047, Sept. 22, 1967, which is a division of Ser. No. 420,646, Dec. 23, 1964, Pat. No. 3,347,363. This application Dec. 6, 1971, Ser. No. 205,433
Int. Cl.² B65B 9/08
U.S. Cl. 53—28 10 Claims



1. A package comprised of a plurality of product-enclosing containers, said package having a rectangular three-dimensional outline, each of said containers being generally of an irregular tetrahedral shape, each face of each container being in the general configuration of a right triangle, said containers being oriented in face-to-face relationship within said package with the long edge of the container extending througgh said package and between two diagonally opposed corners thereof.

3,925,960
ARTICLE COUNTING AND FILLING MACHINE
George W. Saari, Westminster, and Ronald L. Belliveau, Fitchburg, both of Mass., assignors to The Lakso Company, Incorporated, Fitchburg, Mass.
Filed Apr. 18, 1974, Ser. No. 462,107
Int. Cl.² B65B 57/20
U.S. Cl. 53—78 1 Claim

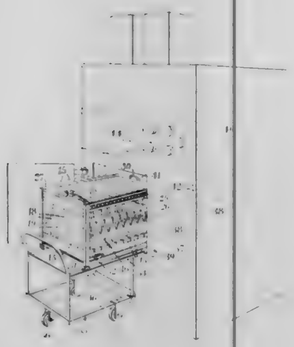


1. In a machine for filling containers with discrete articles comprising a series of elongated slat members, means supporting said slat members for movement in a closed path in a direction generally transverse to the lengths thereof, at least some of said slat members having outer surfaces with a multiplicity of spaced apart cavities therein, said path including spaced apart cavity charging and discharging stations, means at said charging station for depositing articles in said cavities, the outer surface of each slat member tilting at said discharge station to discharge simultaneously all articles from the cavities therein,
a first set of article-guiding chutes disposed in side-by-side relation, each chute positioned to receive articles discharged from a predetermined number of the cavities of each slat member when it reaches said discharge station, each chute having an upper inlet and a lower outlet,
a second set of article-guiding chutes, disposed beneath said first set of chutes, each chute of said second set having an upper inlet of predetermined size and a lower outlet which is smaller than the inlet,
container delivery means for delivering containers along a container path which passes beneath chutes of said second set, and
drive means for driving said container delivery means and said slat members,
the improvement wherein,
means are provided for supporting said second set chutes for movement in a closed loop having a loop portion that extends the full length of said slat members, said loop portion being in vertically spaced alignment with said first set of chutes, each said second set chute inlet having a leading edge and a trailing edge spaced apart by a distance greater than the corresponding dimension of any first set chute outlet,
said drive means are connected to drive said delivery means continuously to provide a continuous uniform speed of container movement along said container path and to drive said second set chutes in synchronism with said containers at said uniform speed, whereby, as each chute traverses said loop portion, its outlet is in vertically spaced alignment with a container mouth, said drive means arranged to drive said slat members at a rate dependent upon said uniform speed and in synchronism with said second set of chutes so that discharge of articles at said discharge station occurs only when each second set chute is positioned to receive articles from a first set chute outlet.

3,925,961
DEVICE FOR PACKAGING AND PRESERVING STERILIZED PRODUCTS UNDER VACUUM IN PLASTIC PACKS, IN PARTICULAR LINEN
Maurice Orliaguet, Sucy en Brie, France, assignor to M.A.J., Pantin, France
Continuation-in-part of Ser. No. 348,527, April 6, 1973, abandoned. This application Dec. 4, 1974, Ser. No. 529,295
Int. Cl.² B65B 31/02
U.S. Cl. 53—89 9 Claims

1. Device for packaging and preserving sterilized products under vacuum in plastic packs, in particular linen, in an autoclave, comprising at least one parallelepipedical support-rack, rails along the upper longitudinal edges of said rack, baskets suspended in this rack, packs in the form of bags of air-impervious plastics bags open at their upper end and carried by said baskets, horizontal and transverse parallel bars provided at their ends with rollers rolling along the rails of the rack, vertical side arms firmly attached to said bars, scissor-type members bracing said arms, members for compressing and sealing the open ends of packs fixed above said arms, means for

introducing the support racks loaded with filled packs into the autoclave, and in the autoclave connecting members for compressed air and electricity to said compressing and sealing members of the racks.



3,925,962

APPARATUS FOR COMPACTING CONTENTS OF CONTAINERS

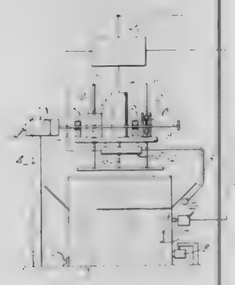
Werner Knopf, and Harald Liebscher, both of Dresden, Germany, assignors to VEB Kombinat Nagema, Germany

Filed Sept. 3, 1974, Ser. No. 502,997

Claims priority, application Germany, Dec. 11, 1973, 175247

Int. Cl.² B65B *1/24*

U.S. Cl. 53—124 B **10 Claims**



1. Apparatus for compacting the contents of an open top container which comprises the base for supporting the bottom of a container, a carriage supporting a press plate, means in said carriage for guiding said press plate for vertical movement towards and away from said base to compact the contents of the container disposed on said base, means for moving said press plate vertically in said means for guiding, means for shifting said carriage horizontally, said carriage being mounted for sliding movement along guide rails, said guide rails in turn being mounted for sliding movement along guide bars disposed orthogonally to said guide rails and wherein said guide bars are mounted for vertical adjustment.

3,925,963

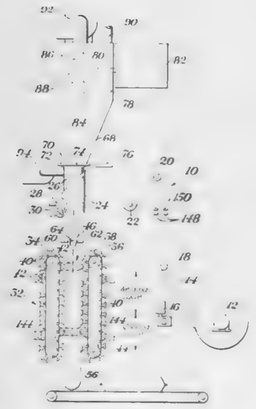
FORM, FILL AND SEAL INDUSTRIAL BAG MACHINE

Eddie Lee Greenawalt, and Lorenzo Dow Geren, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 347,923, April 4, 1973, abandoned. This application Apr. 15, 1974, Ser. No. 460,864

Int. Cl.² B65B *9/08*

U.S. Cl. 53—182 **32 Claims**



1. Apparatus adapted particularly for forming industrial size bags from continuous thermally sealable web materials, and for simultaneously filling and sealing the bags in-line as they are formed, said apparatus comprising: a hollow tube former for converting the web into an upwardly open vertical tube having its marginal edges overlapped, a filling mandrel suspended downwardly generally centrally through the tube former for communication with the interior of the tube, means to integrally join together the overlapped marginal edges of the tube, at least one pair of co-acting sealing heads, means to move the sealing heads to periodically grasp the tubing across the transverse extent thereof, and to draw the tubing downwardly from the filling mandrel, the sealing heads being adapted to clamp the tube by mechanical pressure to form a temporary bottom, means to dump a product load through the filling mandrel and into the tube subsequent to the formation of each such temporary bottom, means to introduce heated welding gas to the sealing heads, the sealing heads including means to transversely part the tube, and to apply the heated gas generally preferentially to the parted edges thereof, said sealing heads together defining a welding space in which the parted edges are free from mechanical clamping restraint, said welding space including areas of retarded heat transfer conditions residing intermediate said parted edges, respectively, and the portions of the tube under mechanical clamping pressure by the sealing heads, said areas of retarded heat transfer conditions being adapted to prevent the clamped areas of the tube from reaching heat deformation temperatures.

3,925,964

ARRANGEMENT FOR PULLING A TUBE OF HEAT-SHRINKABLE PLASTIC DOWNWARDLY OVER A STACK OF GOODS

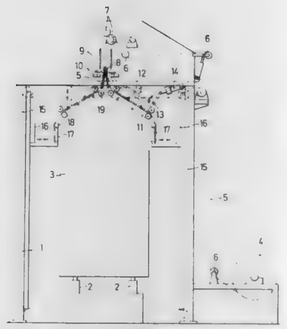
Richard Birkenfeld, Sudring, and Friedrich Wieligmann, Sennlich, both of Germany, assignors to Firma E. Mollers, Maschinenfabrik, Beckum, Germany

Filed Dec. 26, 1974, Ser. No. 536,297

Claims priority, application Germany, May 11, 1974, 2422935

Int. Cl.² B65B *43/34*

U.S. Cl. 53—183 **14 Claims**



1. Apparatus for placing a tube of heat-shrinkable plastic over a stack of goods by moving the tube over the goods, the tube is originally supplied flattened in a roll with longitudinally extending pleating sides extending along the flattened side of the tube, the apparatus including first means for removing the flattened tube from the roll and partially opening the tube, second means for receiving the partially opened tube from said first means and for opening and spreading the tube, third means for severing a section of the tube and closing the severed end after a partial movement of the tube by said second means, and said second means arranged to move the severed section of the tube over the goods, wherein the improvement comprises that said second means includes conveyor means arranged to receive the partially opened tube at each of its opposite pleated sides from said first means for moving the tube from said first means and for continuing to spread the pleated sides while holding at least a portion of the pleated sides, said conveyor means having an inlet end arranged to receive the partially opened tube from said first means and an outlet end, gripping means located adjacent the outlet end of said conveyor means for engaging the opened end of the tube moving from the outlet end and for spreading the tube to a size sufficient for movement over the goods in contact-free relation therewith, and displacing means associated with said conveyor means and being movably displaceable for withdrawing the pleated portions of the tube from engagement with said conveyor means so that the downward movement of the severed tubular tube section can be completed for movement over the stack of goods.

3,925,965

FUEL ROD PELLET LOADING ASSEMBLY

George E. Rushworth, Richland, Wash., assignor to Exxon Nuclear Company Inc., Richland, Wash.

Filed Jan. 22, 1973, Ser. No. 325,723

Int. Cl. B65b *31/00, 21/06, 57/00*

U.S. Cl. 53—112 R **13 Claims**

1. An assembly for the loading of nuclear fuel pellets into a fuel rod comprising in combination:

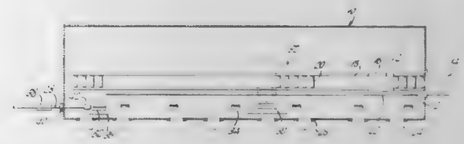
a. a main housing having an inert atmosphere and adapted to receive fuel pellets for loading into fuel rods;

b. a trough of predetermined length for receiving said pellets in end-to-end relationship;

c. a weighing station including balance means for weighing said pellet-loaded trough;

d. means for determining the length of said fuel pellets; and

e. a pellet loader assembly disposed for alignment with said trough and said fuel rod, said trough arranged to longitudinally receive a predetermined load of said fuel pellets for passage from said trough through said assembly into said fuel rod, said pellet loader assembly comprising a tube supporting member and a fuel pellet holder member for longitudinally receiving said fuel pellets from



said trough spaced from said tube supporting member to define a gap therebetween, and pellet loading insert means having a first circular pellet entry end and an opposite circular pellet exit end bridging said gap, said insert means carried at said pellet entry end by said fuel pellet holder member and in operable communication and axial alignment with said fuel rod at said pellet exit end for facilitating transfer of said fuel pellets from said pellet holder member into said fuel rod with a minimum amount of chipping of said pellets, said insert means comprising a plurality of spring-like fingers disposed in a circular array and tapered in the direction from said pellet entry end toward said pellet exit end.

3,925,966

COIN PACKAGING APPARATUS

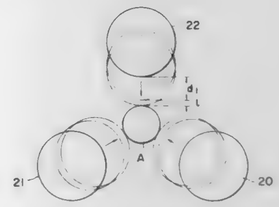
Masatoshi Ushio, Himeji, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Japan

Filed Jan. 14, 1974, Ser. No. 432,890

Claims priority, application Japan, Jan. 12, 1973, 48-6421

Int. Cl.² B65B *11/04*

U.S. Cl. 53—212 **1 Claim**



1. In a coin packaging apparatus of the type including a coin stacking means for arranging and stacking each of a predetermined number of coins of the same diameter into a neat stack, a plurality of wrapping rolls disposed below said stacking means and arranged annularly in parallel spaced relationship to each other, a guide means movable in a straight line along a path for guiding a stack of coins from said stacking means to a position between said wrapping rolls, means for imparting rotation at least to one of said wrapping rolls and hence to a stack of coins held therebetween, and means for supplying a wrapper between the stack of coins and wrapping rolls as the stack of coins rotates with said wrapping rolls; the improvement comprising:

means connected to said stacking means for selectively adjusting the inside diameter of said stacking means to the diameter of the coins to be stacked therein and for

maintaining the central axis of said stacking means coincident with said straight line path along which said guide means moves; and

means connected to said wrapping rolls for moving, prior to guidance of the coin stack from said stacking means into the wrapping space between said wrapping rolls by means of said guide means, all of said wrapping rolls to a first position spaced from but closely adjacent to the position to be occupied by the peripheral surface of the coin stack in accordance with the diameter of coins to be packaged, and for then moving, after the coin stack has been guided from said stacking means into said position in said wrapping space, all of said wrapping rolls to a second position contacting said coin stack, while maintaining the central axis of said wrapping space between said wrapping rolls coincident with said central axis of said stacking means and said straight line path of said guide means.

3,925,967
PRODUCT BAGGING MACHINE
Jan Bloemhof, 13336 58th St., Edmonton, Alberta, Canada
Filed June 24, 1974, Ser. No. 482,549
Int. Cl.² B65B *43/36*
U.S. Cl. 53—385 **7 Claims**



1. A product bagging machine comprising:

a slide member having a slide surface;

said slide member having an outlet portion divided into two sections which are outwardly rotatable to a wide position; means associated with the sections for normally drawing them together to a narrow position;

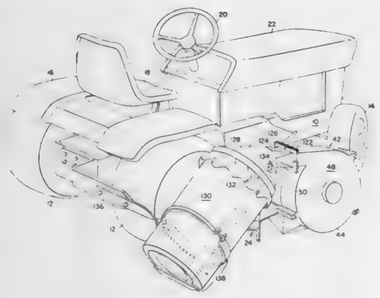
means at the outlet end of the slide surface for supporting a stack of bags;

means for supplying a stream of air at the outlet end of the slide member to open the top bag of the stack; and

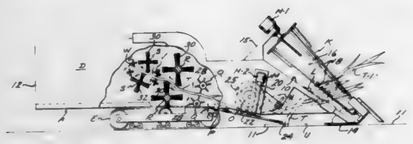
means, coacting with the movement of a product advancing along the slide member, for expanding from within the open top bag to hold its mouth portion fully open.

3,925,968
POWER LAWN MOWER AND MULCHER-BAGGER COMBINATION
Fred William Wagenhals, Marion, Ohio, assignor to Deere & Company, Moline, Ill.
Filed Mar. 4, 1974, Ser. No. 447,842
Int. Cl.² A01D *49/00*
U.S. Cl. 56—13.3 **3 Claims**

3. In combination with a tractor supporting a rotary mower of the type including an open bottom mower housing having mower blade means disposed therein and adapted to sever material and to impel the severed material along a discharge path defined by a top wall and front and rear vertical walls of the housing and extending in general tangential relationship to the cutting blade means, said path terminating at a discharge opening in the side of the mower housing, a mulcher-bagger attachment comprising: a housing means secured to the mower housing and including baffle means inserted in said discharge opening comprising front and rear portions disposed against said front and rear vertical walls and interconnected by a bottom portion inclined upwardly away from the mower housing; said housing means further including a generally cylindrical portion having transversely spaced end walls and a generally circular, tubular immediate wall joining said end walls; a generally horizontal and transversely extending rotatable drive shaft means extending axially through and supported by said end walls of said housing means; said cylindrical portion having an inlet opening in a lower area thereof and said baffle means leading to said inlet for guiding severed material to the exterior of said housing means; said cylindrical portion having an outlet opening in an upper area of said intermediate wall; rotor means including a mulcher-impeller blade means being mounted on said drive shaft means for rotation therewith for carrying material from said inlet opening to said outlet opening; cutterbar means fixed to said housing means and positioned to cooperate with said mulcher-impeller blade means for recutting material as it is carried by the blade means between said inlet and outlet openings; container means supported on the tractor and including conduit means leading from said outlet opening so as to receive mulched material discharged from said housing means; and drive means connected to said drive shaft means for rotating the latter.



3,925,969
SUGAR CANE HARVESTING MACHINE
Okamura Shunichi, 108 Kamoike Bldg., No. 2691, Korimoto, Kagoshima, Japan
Filed Dec. 20, 1973, Ser. No. 426,946
Int. Cl.² A01D *45/10*
U.S. Cl. 56—13.9 **12 Claims**



1. A device that may be used by a single operator to harvest and defoliate sugar cane growing on raised elongate laterally separated ridges of earth both when said sugar cane is standing upright and when in bent positions, said device including:

a. a vehicle assembly that comprises

1. an elongate frame that includes two laterally separated sidewalls that have forward and rearward ends;
2. an engine supported from said frame;
3. two rotatable laterally spaced supporting members that straddle one of said ridges and support said frame thereabove, with said supporting members driven by said engine;
4. a seat for said operator supported from said frame;
5. defoliated sugar cane receiving means disposed in a fixed position relative to said frame adjacent said rearward ends of said sidewalls;
6. first, second, third, fourth, fifth and sixth power means supported from said frame;
7. manually operable control means adjacent said seat to permit said operator to selectively control the speed of rotation of said supporting members to guide said vehicle and the operation of said first to sixth power means inclusive;

b. first rotatable means rotatably supported in fixed positions adjacent said forward ends of said sidewalls and driven by said first power means, said first rotatable means engaging said sugar cane as said device moves forwardly to raise sugar cane to a first position;

c. a horizontal push bar that occupies a fixed position adjacent said forward ends of said side walls for moving upright sugar cane and sugar cane that has been raised to said first position to a second position where said sugar cane may be cut;

d. rotatable cutting means driven by said second power means that is supported from said frame rearwardly of said push bar, said cutting means including at least one disk slightly inclined to the horizontal, and said disk rigidly supporting a plurality of circumferentially spaced cutter blades that not only cut said sugar cane adjacent the ground but direct the cut sugar cane rearwardly relative to said sidewalls;

e. second rotatable means for removably engaging sugar cane cut by said rotatable cutting means and minimizing the tendency of said sugar cane to move laterally as said sugar cane moves rearwardly relative to said sidewalls;

f. a horizontal roller resiliently and rotatably supported between said sidewalls above said cutting assembly and driven by said third power means and cooperating with said cutting assembly and said second rotatable means to guide said sugar cane that has been cut rearwardly relative to said sidewalls with minimum lateral movement;

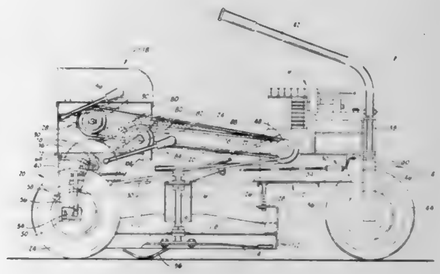
g. cut sugar cane supporting means disposed between said sidewalls and rearwardly of said second rotatable means;

h. a pair of first horizontal vertically spaced rollers that are concurrently driven by said fourth power means to have adjacent portions of said rollers move rearwardly, said first pair of rollers rotatably supported between said sidewalls rearwardly of said supporting means, with said first pair of rollers of such structure as to resiliently grip cut sugar cane of varying diameters therebetween, and said first pair of rollers moving said sugar cane passing therebetween rearwardly at a first speed;

i. a pair of second horizontal, vertically spaced, brush supporting rollers that are concurrently driven by said fifth power means to have adjacent portions of said rollers move rearwardly, said second pair of rollers having said cut sugar cane discharge therebetween from said first pair of rollers, said second pair of brush supporting rollers defoliating said cut sugar cane moving rearwardly therebetween due to the differential in the circumferential speed of said second pair of rollers to the rearward longitudinal speed of said sugar cane; and

j. a pair of third horizontal, vertically spaced brush supporting rollers that are concurrently driven by said sixth power means to have adjacent portions of said rollers move rearwardly and that receive the cut defoliated sugar cane therebetween from said second pair of brush supporting rollers, said third pair of brush supporting rotatably supported between said sidewalls rearwardly of said second pair of brush supporting rollers, said third pair of brush supporting rollers rotating at a speed substantially less than that of said second pair of brush supporting rollers, and said third pair of rollers moving said cut defoliated sugar cane rearwardly at a speed that is such that said cut defoliated sugar cane will drop to said defoliated sugar cane receiving means by gravity when freed from said third pair of brush supporting rollers.

3,925,970
LAWNMOWER
Easborn Rusco, 211 Westwood, Manhattan, Kans. 66502
Filed June 24, 1974, Ser. No. 482,000
Int. Cl.² A01D *35/26*
U.S. Cl. 56—14.7 **5 Claims**



1. In a power-driven vehicle, having a frame, a power means mounted on the frame, and a steering wheel means pivotally mounted on the frame, the improvement comprising:

a. a drive wheel means having a pair of drive wheels individually mounted on drive wheel mounts pivotally mounted on the frame, said drive wheel mounts individually pivotable in a downward direction from a driving position to a disengaged position; said drive wheel mounts secured to an axle and said axle has said drive wheels freely rotatably mounted thereon;

b. a steering means connected individually to each of said drive wheel mounts with a pair of cables, said cable on the side toward which the vehicle is to be turned disengaging said drive wheel mount on that side;

c. a powered drive shaft means having a drive shaft rotatably mounted on the frame and having end portions extending therefrom, said end portions having friction means mounted thereon to frictionally engage said drive wheels when said drive wheels are in a driving position;

d. a forward drive means having a variable speed pulley mounted on said drive shaft, a first idler pulley mounted on the frame, a first drive belt connecting said variable speed pulley, first idler pulley, and the power means, and a first lever means connected to said first idler pulley to engage said first idler pulley when in use;

e. a reverse drive means having a drum portion being part of said variable speed pulley, a second idler pulley mounted on the frame and adjacent to said drum portion, and a second drive belt connecting said second idler pulley and the power means, and a second lever means connected to said second idler pulley to engage said second drive belt with said drum portion when in use; and

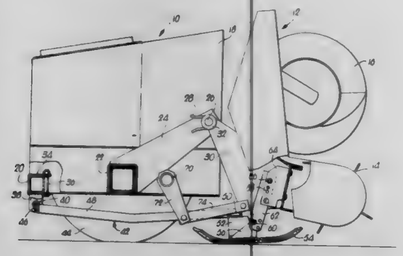
f. said drive shaft operatively connected to the power means, the vehicle being constructed and adapted to in operation when said steering means is turned, said drive wheel on the inside of the turn is disengaged from said drive shaft, and both of said drive wheels engaged with said drive shaft when the vehicle is not turning.

3,925,971

GAUGING APPARATUS FOR IMPLEMENT HEAD

Lowell J. Goering, Moundridge, and Ferol S. Fell, Newton, both of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Mar. 15, 1974, Ser. No. 451,365
Int. Cl.[2]A01D *67/00*
U.S. Cl. 56—208 **3 Claims**



1. In an implement having a mobile main frame and a crop head attached to said frame for vertical swinging movement relative thereto about a first generally horizontal axis, gauging apparatus at least partially supporting said head and comprising:

a pair of laterally spaced apart ground engaging members mounted on said main frame for swinging movement independently of said head about a second axis in response to rises and falls in the terrain,

said second axis being generally horizontal and being spaced rearwardly from said first axis; and

structure disposed between said members and the head for transmitting vertical motion from said members to the head as terrain variations are encountered whereby to shift the head in a direction to compensate for such variations,

said members having a common support frame extending rearwardly therefrom and said support frame having a single pivotal coupling with said main frame at said second axis,

said support frame including a transversely extending, rigid crossbar fixed at its opposite ends to said members and a pair of rigid, rearwardly extending legs leading from said crossbar at longitudinally spaced locations thereon,

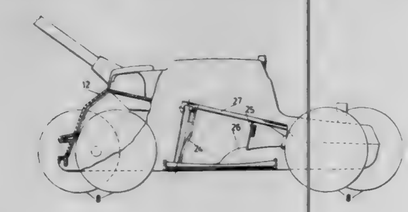
said single pivotal coupling of the support frame with the main frame being adjacent the rearmost ends of said legs and being spaced inwardly from said ground engaging members.

3,925,972

LAWN MOWER WITH A SIDE OUTLET

Kjell Arne Andersson, Huskvarna, Sweden, assignor to Husqvarna AB, Huskvarna, Sweden

Filed June 14, 1974, Ser. No. 479,531
Int. Cl.[2] A01D *67/00*
U.S. Cl. 56—320.2 **1 Claim**



1. A rotary lawn mower comprising:

a chassis;

wheels supporting said chassis;

a rotor housing formed in said chassis;

a cutting blade rotatably supported in housing;

a motor means operatively associated with said blade for rotating same;

said rotor housing having an open bottom, having a height increasing successively around said motor means, and portions of said housing defining a side outlet for expulsion of cut grass including front, rear, upper and lower edges;

a pair of flap members pivotably attached respectively to said front and rear edges of said outlet and movable between a closed position in which they cover said outlet and an opened position in which they expose said outlet, said flap members being restricted in their movement away from said outlet to form a shield in their opened position against objects which are thrown by said blade through said outlet;

a cover plate hingedly attached to said upper edge of said outlet for locking said flap members in their closed position; and

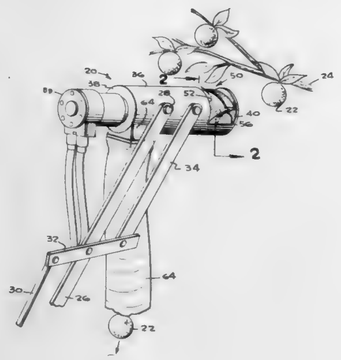
said lower edge extending upwardly over the forward portion of said outlet limiting the height of said outlet at said forward portion relative to the height of said outlet at the rearward portion thereof.

3,925,973

FRUIT PICKING APPARATUS

George M. Glover, Merritt Island, Fla., assignor to Caroline J. Starkey, Merritt Island, Fla.

Filed Nov. 19, 1974, Ser. No. 525,197
Int. Cl.[2] A01D *46/24*
U.S. Cl. 56—328 R **11 Claims**



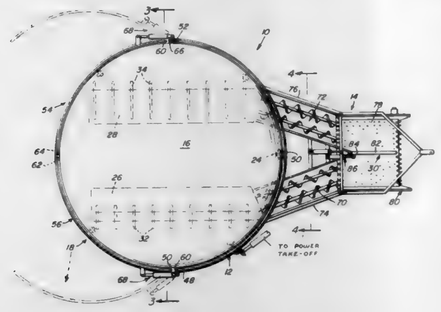
1. A fruit harvester for harvesting fruit from a tree comprising in combination, an elongated spiral member, support means supporting said elongated spiral member for rotation about its axis, means defining a fixed abutment extending transversely adjacent said elongated spiral member, drive means for drivingly rotating said elongated spiral member about its axis in direction so that positioning of an unharvested fruit member inwardly of the outer periphery of said spiral member between said spiral member and said fixed abutment results in movement of the fruit member past the fixed abutment to harvest the fruit member from the tree.

3,925,974

HAYSTACKER

Morton P. Bartlett, 700 North Main, Chadron, Nebr. 69337

Filed Mar. 26, 1974, Ser. No. 455,038
Int. Cl.[2] A01D *87/00*
U.S. Cl. 56—346 **14 Claims**



1. A haystacker, comprising, in combination:

a. an enclosure;

b. feed means for pushing hay into the enclosure; and

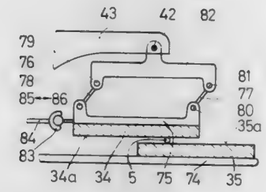
c. packer means associated with the enclosure for packing hay in the enclosure to a predetermined tension, the enclosure having a bed, and the feed means includes a trough provided in the bed and arranged opening into the enclosure, and further including unloading means for removing packed hay from the enclosure, the feed means having a plurality of troughs provided in the bed and arranged opening into the enclosure, and further including diverter means for alternately forcing hay into the troughs.

3,925,975

APPARATUS FOR PIECING A THREAD IN AN OPEN-END SPINNING UNIT

Fritz Stahlecker, Josef-neidhart-Strasse 18, D 7341 Bad Ueberkingen, and Hans Stahlecker, Haldenstrasse 20, D 7334 Suessen, both of Germany

Filed Oct. 10, 1974, Ser. No. 513,775
Claims priority, application Germany, Oct. 10, 1973, 2350844
Int. Cl.[2] D01H *7/00, 1/12, 15/00*
U.S. Cl. 57—34 R **20 Claims**



1. Apparatus for piecing a thread end in an open-end spinning unit having a spinning rotor with a ring of opened-up fibers comprising:

a clamping device containing a first clamping member, and a second clamping member,

first clamp control means for moving said clamping members toward and away from one another to effect clamping and unclamping of a portion of said thread end therebetween,

second clamp control means for moving said clamping members with respect to one another in a direction transverse to the longitudinal direction of said portion of said thread end while said portion of said thread end is clamped between said clamping members to effect at least partial elimination of the spinning twist in said thread end,

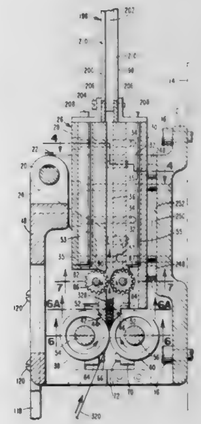
and a device for returning the thread end into the spinning rotor after said partial elimination of the spinning twist.

3,925,976

METHOD AND APPARATUS FOR TEXTURING CONTINUOUS FILAMENT YARN

Alexander L. Trifunovic, Wilmington, Del.; William H. Hills, Melbourne; Milton H. Borgman, Satellite Beach, both of Fla., and Emory P. Mersereau, Wilmington, Del., assignors to Indian Head, Inc., New York, N.Y.

Filed June 1, 1973, Ser. No. 366,200
Int. Cl.[2] D02G *1/12*
U.S. Cl. 57—140 R **14 Claims**



1. A method of texturing continuous filament yarn having a denier in the range of approximately 40–150, said method comprising:

feeding said yarn into a confined crimping zone against a mass of crimped yarn therein causing the yarn to collapse longitudinally and fold over forming crimps which become part of said mass, said mass in said crimping zone being in the form of a core of crimped yarn having a substantially rectangular transverse cross-section, the ratio of the shortest dimension of said cross-section in inches to the denier of said yarn having a minimum value of about 0.000667;

applying heat and pressure to said crimped yarn mass in said crimping zone to plastically deform the yarn and partially set said crimps;

feeding said crimped yarn mass from said crimping zone to a setting zone;

applying heat and pressure to said crimped yarn mass in said setting zone to fully set said crimps, the pressure applied to said mass in said setting zone being substantially only sufficient to keep said crimps closed;

feeding said crimped yarn mass from said setting zone to a cooling zone;

cooling said crimped yarn mass in said cooling zone to a temperature below the temperature at which the yarn undergoes any molecular structural alteration in the absence of the application of a substantial force thereto; and

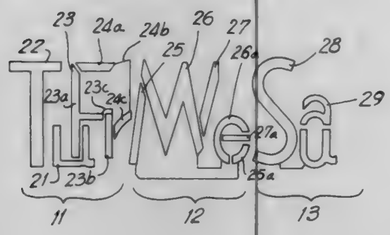
withdrawing the yarn in continuous filament form from said cooling zone.

14. A crimped yarn product produced by the method recited in claim 1.

3,925,977
DISPLAY SYSTEM FOR SHOWING THE DAYS OF THE WEEK IN AN ELECTRICAL TIMEPIECE

Shuji Maezawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 354,417, April 25, 1973, abandoned. This application Mar. 18, 1974, Ser. No. 452,317
Claims priority, application Japan, May 2, 1972, 47-44022
Int. Cl.² G04B *19/24*; G09D *3/00*; G09B *13/00*
U.S. Cl. 58—4 A **3 Claims**

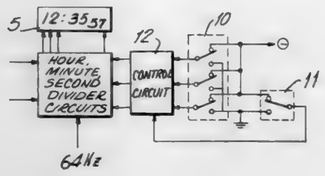


1. A display system in a timepiece for showing each of the days of the week in the form of the corresponding initial two letters, said display system being electrically activated, comprising three groups of letters, said first group of letters consisting of an S and an *a* to the right of said S, the letter *a* being horizontally divided into two segments so that activation of the lower segment presents the letter *u* and activation of both segments presents the letter *a*, said letter S being electrically connected with said lower segment of said letter *a* for activation together, said second group of letters consisting of a first subgroup of segments including a left segment, a middle segment and a right segment, activation of said left segment and said middle segment forming an M and activatiaon of said middle segment and said right segment forming a W, and a second subgroup of segments to the right of said first subgroup of segments, said second subgroup including an upper left segment, a lower right segment and a middle horizontal segment, activation of said lower right segment and said upper left segment presenting the letter *o*, and activation of all three segments in said second subgroup forming the letter *e*, said left segment in said first subgroup being electrically connected with said lower right segment in said second subgroup, said middle segment in said first subgroup being electrically connected with said upper left segment in said second subgroup, and said right segment in said first subgroup being arranged for simultaneous electrical activation with said horizontal segment of said second subgroup connected with said horizontal segment in said second subgroup, and a third group of letters consisting of a T, and a *u* to the right of said T, a long vertical bar having a horizontal arm extending rightward therefrom at approximately the mid-point thereof, said long vertical bar having lower and upper ends and being positioned with its lower end within the vertical legs of said *u*, a horizontal bar having a left end positioned with its left end proximate the upper end of said long vertical bar, a short vertical bar positioned to the right of said *u* and a curved bar in an angled position to the right of said short vertical bar, said long vertical bar and said horizontal bar forming an F, said long vertical bar and said short vertical bar forming an *h* and said short vertical bar with said curved angle bar forming an *r*, said long vertical bar and said short vertical bar being electrically connected and said horizontal bar and said curved angled bar being electrically connected, said first group thereby being adapted for presenting Sa and Su, said second group being adapted for presenting Mo and We, and said third group being adapted for presenting Tu, Th and Fr, whereby the initial two letters of all days of the week may be presented.

3,925,978
TIME CORRECTING ARRANGEMENT FOR ELECTRONIC WRIST WATCHES

Okito Naito, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed July 31, 1973, Ser. No. 384,339
Claims priority, application Japan, July 31, 1972, 47-76697
Int. Cl.² G04C *3/00*; G04B *19/30*, *27/00*; H03B *19/00*
U.S. Cl. 58—23 R **5 Claims**



1. An electronic timepiece comprising oscillator circuit means for producing a high frequency time standard signal; frequency divider means for dividing said high frequency time standard signal to produce a plurality of low frequency timekeeping signals; display means for the digital display of time including a display element associated with each said timekeeping signal to be displayed; electronic control circuit means coupled to said divider means; means for providing a correction signal directly coupled to said control circuit means; at least one manually operable time correction switch, each said correction switch being associated with a displayed timekeeping signal to be corrected, each time correction switch being directly coupled to said control circuit means for the selective application of said correction signal through said control circuit means to the divider means for the selective correction of the count of the associated displayed timekeeping signal to be corrected upon the manual actuation of said correction switch; and a manually operable multi-position safety switch directly coupled to said control circuit means, said control circuit means isolating each correction switch from said divider means to prevent selective application of a correction signal by actuation of any of said correction switches when said safety switch is in a first position, and said control circuit means effecting a transmission of a correction signal through said control circuit means and to the divider means in response to actuations of each of said correction switches for effecting time correction of the displayed timekeeping signal associated with the actuated correction switch when said safety switch is in a second position whereby the time standard signal applied by the oscillator means to said divider means to provide timekeeping signals to be displayed is not interrupted during the selective application of said correction signal by each correction switch to the divider means.

3,925,979
ANTI-ICING SYSTEM FOR A GAS TURBINE ENGINE

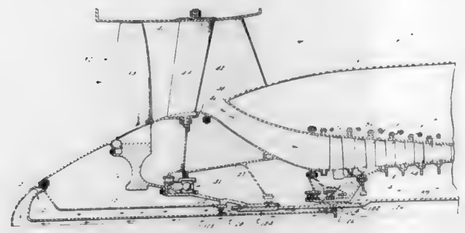
Walter Herbert Ziegler, Topsfield, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Oct. 29, 1973, Ser. No. 410,759
Int. Cl.² F02G *3/00*; B64D *15/00*; F01D *5/08*, *29/08*
U.S. Cl. 60—39.07 **8 Claims**

1. In a gas turbine engine having a bullet nose, a compressor, a combustor, and at least one turbine arranged in serial flow relation together with at least one seal continuously pressurized by compressed airflow bled from the compressor and a hollow shaft driven by a turbine, there is also included an anti-icing system comprising:

a plenum contiguous with the inside surface of the bullet nose for receipt of a portion of the compressed airflow bled from the compressor after the compressor bleed airflow has been utilized for seal pressurization,

first conduit means for ducting the compressed bleed airflow from the pressurized seal to the plenum, and second conduit means for ducting the compressed bleed airflow

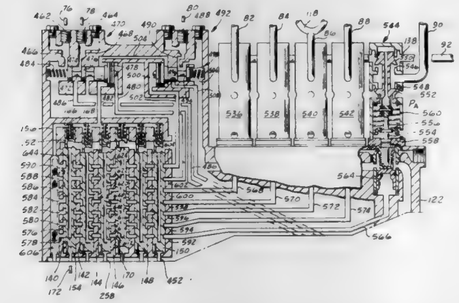


away from the plenum through the bore of the shaft and out the downstream end thereof into the ambient airstream.

3,925,980
CONTROL APPARATUS PARTICULARLY FOR A PLURALITY OF COMPRESSOR BLEED VALVES OF GAS TURBINE ENGINE

Howard L. McCombs, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Division of Ser. No. 289,404, Sept. 15, 1972, Pat. No. 3,848,636. This application July 22, 1974, Ser. No. 490,624
Int. Cl.² F02C *9/14*
U.S. Cl. 60—39.29 **7 Claims**



1. Gas turbine engine compressor air bleed control apparatus comprising:

a plurality of first valve means operatively connected to said compressor for venting pressurized air from selected stages thereof;

fluid pressure responsive control means operatively connected to each of said first valve means for actuating the same;

a first source of pressurized fluid;

a second source of pressurized fluid at a lower pressure relative to said first source;

conduit means communicating said first source of pressurized fluid with said control means;

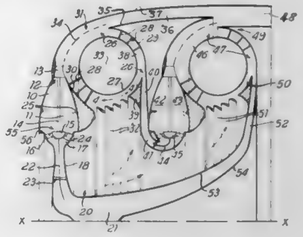
a plurality of second valve means operatively connected to said conduit means in series flow relationship for venting the same to said second source of pressurized fluid depending upon the relative positions of said second valve means; and

second control means responsive to a variable condition of engine operation operatively connected to each of said plurality of second valve means for actuating the same independently of the remaining valve means.

3,925,981
GAS GENERATOR

Alexander Hossen Etessam, 91 Eldorado Ave., Shemiran, Tehran, Iran

Filed June 24, 1974, Ser. No. 482,664
Int. Cl.² F02K *7/02*, *7/04*, *7/06*
U.S. Cl. 60—39.77 **22 Claims**



1. A gas generator comprising:

a plurality of annular combustion chambers arranged in at least one pair disposed on a common central axis,

the combustion chambers of each pair being of the same volume, co-extensive and adjacent, having air inlets and exhaust outlets,

a common annular air inlet passage leading to said air inlets of the combustion chambers of each said pair,

a primary exhaust passage leading commonly from the exhaust outlets of the combustion chambers of each said pair,

an exhaust duct communicating with said exhaust passage,

fuel injection means and ignition means for each combustion chamber,

means for operating at least one of said fuel injection means and ignition means of each pair of combustion chambers alternately at least during start-up whereby the paired combustion chambers operate in an alternate cycle,

an air intake passage,

means for transferring energy from high velocity exhaust gasses emitted by each pair of combustion chambers to cooler, lower velocity gas from said air intake passage so as to establish a combined gas stream of resultant energy, a secondary exhaust passage,

means for separating part of said combined stream consisting substantially of combustion products into said secondary exhaust passage,

a diffuser for collecting and diffusing part of said combined stream consisting substantially of air and conducting it to said air inlet passage of a said pair of combustion chambers whereby each air inlet passage receives high pressure air from a said diffuser,

said combustion chambers of each pair converging directly and without individual scavenging means into said primary exhaust passage in the form of mutually inductive nozzles whereby the combustion chambers operate in pulses in alternate sequence with the ignition cycle in one chamber creating a reduced pressure in the other chamber thereby assisting the air intake.

3,925,982
FLUID-DYNAMIC SHOCK RING FOR CONTROLLED FLOW SEPARATION IN A ROCKET ENGINE EXHAUST NOZZLE

Heinz E. Mueller, Littleton, Colo., assignor to Martin Marietta Corporation, New York, N.Y.

Filed Sept. 11, 1973, Ser. No. 396,261
Int. Cl.² F02K *1/14*, *1/18*, *9/02*
U.S. Cl. 60—242 **1 Claim**

1. In a rocket engine main nozzle having throat and divergent sections for the expansion and discharge of a main thrust producing gas stream, said nozzle section having a large area

ratio; means for injecting at launch and thereafter a low mass secondary fluid radially interiorly of the nozzle and about the full circumference thereof to form at least one fluid-dynamic shock ring to force the boundary layer of said main gas stream to separate uniformly from the nozzle wall, the improvement comprising:

said means for injecting a secondary fluid interiorly of said nozzle wall being plural in number, axially spaced at positions corresponding to specified area ratio,

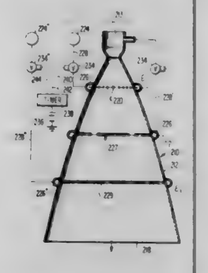
an annular manifold surrounding each injecting means on the exterior surface of the nozzle wall being sealed at both side edges to said wall,

a source of fluid provided for each injection means,

means fluid coupling said source respectively to each manifold,

selectively operable valve means provided within said fluid coupling means, and

timer operated means for controlling said selectively operable valve means to effect secondary fluid flow sequentially within said axially spaced secondary fluid injecting



means in order from said throat at times corresponding to specific rocket altitude such that flow initiated in the immediately succeeding secondary fluid injecting means after terminating in the immediately proceeding secondary fluid injecting means, such that the boundary layer separates uniformly from the nozzle wall at succeedingly downstream positions corresponding to said specified area ratios at corresponding rocket altitude under rocket engine launch conditions,

and wherein, each secondary fluid injecting means is provided with a separate supply of secondary fluid of a mass such that the flow of secondary fluid to a given secondary fluid injecting means terminates automatically in response to the rocket engine reaching the altitude corresponding to the flight point wherein the next secondary fluid injecting means in said sequence is to receive secondary fluid under control of said timer operated means such that valve opening is initiated by said timer operated means during secondary fluid injection in said given sequence to provide boundary layer separation at specified area ratios corresponding generally to rocket altitude.

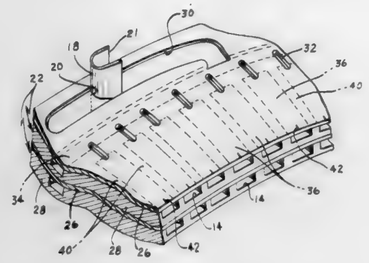
3,925,983

TRANSPIRATION COOLING WASHER ASSEMBLY

Richard J. LaBotz, Fair Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 17, 1974, Ser. No. 461,670
Int. Cl.² F02K *11/02*
U.S. Cl. 60—265 **4 Claims**

1. In a transpiration cooled device having a washer assembly and means for delivering coolant to said washer assembly operatively connected thereto, the improvement therein comprising a washer assembly having at least a first and second plate, said first plate having a primary metering slot of a predetermined size and at least one secondary metering slot therein, said primary and secondary metering slots extending completely through said first plate, said second plate having an aperture located therein capable of being operatively aligned with said primary metering slot in a plurality of positions, said aperture being of a size less than said predetermined size of said primary metering slot, a plurality of channels formed in said second plate operatively connected to said primary and said secondary metering slots, said plurality of channels extending only partially through said second plate, and said first plate being fixedly secured to said second plate in any of a



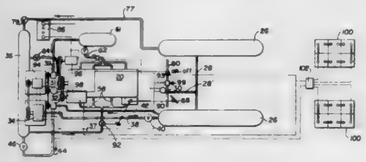
number of predetermined positions with respect thereto thereby permitting different effective lengths of said primary metering slot, whereby coolant is delivered from said delivery means to said primary metering slot, from said primary metering slot to one of said channels, from there to said second metering slot and onto said remaining channels wherefrom said coolant is distributed in such a manner as to cool said device.

3,925,984

COMPRESSED AIR POWER PLANT

John E. Holleyman, 3402 Polk St., Monroe, La. 71201

Continuation-in-part of Ser. No. 419,551, Dec. 5, 1973, abandoned. This application Dec. 10, 1974, Ser. No. 530,561
Int. Cl.² F15B *11/06*
U.S. Cl. 60—370 **9 Claims**



1. A noxious exhaust-gas-free compressed air power plant for vehicles comprising, in combination, a piston and cylinder type engine having a drive shaft; manifold means for admitting equally highly compressed air to and discharging it from each of the cylinders of said engine to effect reciprocation of the pistons and rotation of the shaft; low and high pressure compressed air tanks; a battery powered compressor for compressing air and delivering it to said tanks; and a battery powered high pressure pump manually actuatable upon a drop in pressure in said high pressure tank to further compress air from said low pressure tank, and deliver it to said high pressure tank for delivery to said engine manifold means.

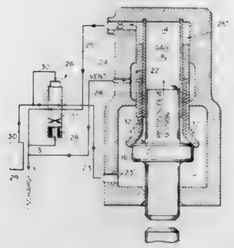
3,925,985

IMPACT ACTUATOR

Carl R. Peterson, Boxford, Mass., assignor to Rapidex, Inc., Gloucester, Mass.

Filed Jan. 9, 1973, Ser. No. 322,110
Int. Cl.² F01L *25/06*; **F01B** *7/18*
U.S. Cl. 60—371 **19 Claims**

1. In an actuator capable of delivering repeated impacts to a variable, stopped position comprising the combination of an impact member movable back and forth relative to said position, an expansible drive for driving said member toward said position while expanding, and a return for returning said impact member and recompressing said drive, said return including a follower which follows said impact member to its variable stopped position and a hydraulic system enabled by said position of said follower to apply return force to said



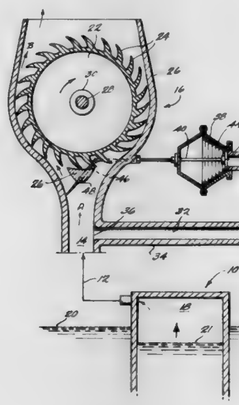
impact member, the improvement wherein said hydraulic system includes a hydraulic drive for said follower in the following direction, a valve separate from said follower and impact member effective to direct said flow alternately to drive said follower in following direction and drive said impact member in its return direction and a control for actuating said follower drive upon said driving of said impact member.

3,925,986

AIR ENGINE

William M. Barwick, Rte. 5, Box 234, Washington, N.C. 27889

Filed July 8, 1974, Ser. No. 486,646
Int. Cl.² F03B *13/12*
U.S. Cl. 60—398 **4 Claims**



1. In an air engine for utilizing power generated by the rise and fall of ocean tides, having a tidal chamber with an interior space in which pressure is created during the rise of the tide and in which a partial vacuum is created during the fall of the tide, a turbine connected to a power output and disposed in an inlet which is in communication with the interior space, and a valve disposed in the inlet between the turbine and the tidal chamber, the improvement comprising:

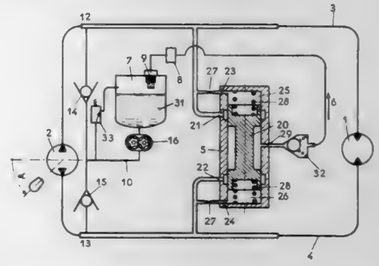
a valve control mechanism having an inlet conduit in communication with the tidal chamber upstream from the turbine, an air tight chamber in communication with the conduit and having a diaphragm member forming at least a portion of a wall of the chamber, an actuating rod connected at one end to the diaphragm member and an opposite end connected to the valve, whereby when air pressure increases in the tidal chamber due to a rising tide the diaphragm and actuating rod will be moved in one direction so as to move the valve to cause operation of the turbine by impingement of the air going out of the tidal chamber thereon, and whereby when air pressure decreases in the tidal chamber due to a lowering tide the diaphragm will be moved in an opposite direction so as to move the valve to cause operation of the turbine by impingement of the air going into the tidal chamber thereon.

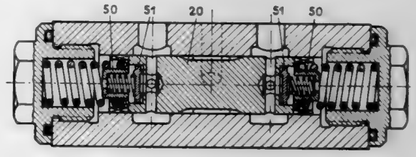
3,925,987

HYDRAULIC CONTROL CIRCUIT

Jacques Faisandier, 32, Bd Felix Faure, 92 Chatillon-sous-Bagneux, France

Continuation of Ser. No. 295,531, Oct. 6, 1972, abandoned, which is a continuation of Ser. No. 81,721, Oct. 19, 1970, abandoned. This application Nov. 18, 1974, Ser. No. 524,483
Int. Cl.² F15B *21/04*
U.S. Cl. 60—464 **3 Claims**





1. A hydraulic control circuit for delivering pressurized fluid to a load comprising:

reversible pump means, said pump means having a discharge port commensurate with each flow direction;

first conduit means for connecting each of said pump means discharge ports to the load, said first conduit means cooperating with said pump means and the load to define a main flow path;

means for treating fluid extracted from said conduit means; means connected between said treating means and said first conduit means for returning the treated fluid under pressure to the main flow path; and

valve means connected between said first conduit means and said treating means for extracting fluid from the first conduit means connected to the pump means discharge port having the instantaneously lower pressure, said valve means including:

a valve body, said body defining a chamber;

a slide member positioned in said chamber, said slide member being characterized by at least two spaced lands, said lands dividing said chamber into an intermediate chamber portion and two distal chamber portions;

means including an exit port in said valve body for providing fluid communication between said intermediate chamber portion and said treating means;

means including spacially spaced inlet ports in said valve body for providing fluid communication between respective of said first conduit means and said valve body de-

fined chamber, said inlet ports being positioned so as to be closed by said slide member lands and to be alternately opened by movement of said slide member to establish a flow path through said intermediate chamber portion between one of said inlet ports and said means providing fluid communication between said intermediate chamber portion and said treating means;

means for resiliently biasing said slide member to an intermediate position wherein said inlet ports are closed by said slide member lands;

second conduit means providing communication between a first distal portion of the valve body chamber and a point which is in communication with the main flow path defined by said first conduit means at a first side of the load; a first one-way valve mounted in said second conduit means for modifying the response time of said resiliently biased slide member;

third conduit means providing communication between the second distal portion of the valve body chamber at a point which is in fluid communication with the main flow path defined by said first conduit means at a second side of the load; and

a second one-way valve mounted in said third conduit means for modifying the response time of said resiliently biased slide member.

3,925,988

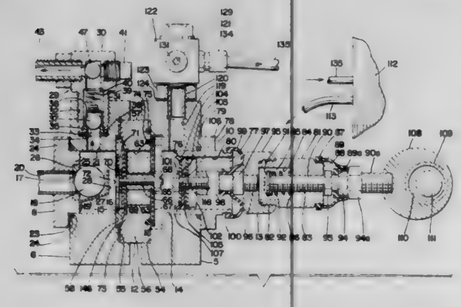
PUMP HAVING SPRING-LOADED PISTON SHAFT ASSEMBLY

Zar W. Kelley, Cleveland, Ohio, assignor to Louis Beck, Cleveland, Ohio

Filed Nov. 30, 1973, Ser. No. 420,662

Int. Cl.² F15B 7/02; F01B 3/00; F04B 9/08, 19/00

U.S. Cl. 60—539 **4 Claims**



1. In a pump, means including a first housing portion defining a fluid driving compartment, means including a second housing portion defining a driven fluid compartment, valve-controlled means for introducing fluid into said fluid driving compartment, piston means in said fluid driving compartment having a suction stroke in response to which said valve-controlled means is opened to cause said fluid to pass into said fluid driving compartment, said valve being of a size such that intake of said fluid into said fluid driving compartment is so restricted that on the suction stroke of said piston means, said piston means cannot completely fill said fluid driving compartment with sufficient rapidity to avoid cavitation in said fluid driving compartment, and means for preventing significant cavitation in said fluid driving compartment, said last-named means comprising a stem extending axially from said piston means, a body removably secured to the outer end of said stem, said body comprising a portion having an axial bore which is counterbored to provide a hollow chamber in said body, the junction of said bore and chamber forming a shoulder, a piston shaft slidably mounted in said axial bore and having a portion extending into said chamber and provided at one end with an abutment, a compression coil spring interposed between said abutment and said shoulder for resiliently biasing said piston shaft toward said stem, and means for causing reciprocal movement of said piston shaft, whereby on the suction stroke of said piston means, said piston shaft is first retracted through said axial bore, so that said compression coil spring is compressed while said piston means remains in a forward position relatively to said piston shaft, the pressure of said compression coil spring being less than atmospheric pressure, so that when said compression coil spring expands to its initial condition, said piston means is drawn back, thereby substantially eliminating what would otherwise have been a vacuum in said fluid driving compartment, and, in effect, substantially eliminating the possibility of cavitation in said fluid driving compartment.

3,925,989

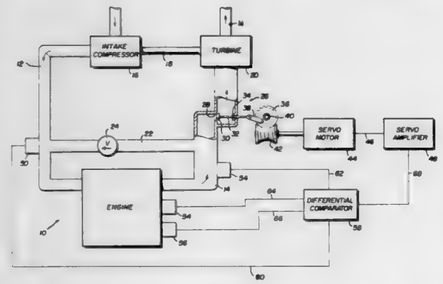
TURBOCHARGER EXHAUST GAS RECIRCULATION SYSTEM

Roy J. Pustelnik, Tinley Park, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed Apr. 15, 1974, Ser. No. 460,850

Int. Cl.² F02D 23/00

U.S. Cl. 60—602 **1 Claim**



1. An exhaust gas recirculation system for reducing emissions of oxides of nitrogen from an internal combustion engine, including:

an intake manifold and an exhaust manifold;

a turbine in said exhaust manifold driven by exhaust gases from said engine, and an intake compressor in said intake manifold, said turbine being drivingly interconnected with said intake compressor for pressurizing intake gases before entering the engine;

a bypass manifold interconnected between said intake and exhaust manifolds to accommodate the recirculation of exhaust gases from the exhaust manifold into the intake manifold for selectively reducing emissions of oxides of nitrogen from the engine, said bypass manifold being connected to the intake manifold between the intake compressor and the engine to eliminate exhaust contaminant build-up in the compressor;

one-way valve means in the bypass manifold (a) preventing pressurized air within said intake manifold from flowing through the bypass manifold into the exhaust manifold, and (b) openable at a predetermined pressure differential between the exhaust and intake manifolds to recirculate exhaust gases into the pressurized intake air;

adjustable valve means in the exhaust manifold for selectively restricting exhaust gas flow from the engine in order to selectively recirculate exhaust gases from the exhaust manifold through the biasing valve means in the bypass manifold to the intake manifold;

control means for regulating the adjustable valve means to selectively recirculate exhaust gases, said control means including (a) linear variable differential transducers monitoring engine speed, engine throttle, intake manifold pressure, and exhaust manifold pressure, (b) a differential comparator interconnected with each of the linear variable differential transducers for receiving information output signals therefrom, said differential comparator being preprogrammed in accordance with the performance characteristics of the engine for generating electrical command signals, (c) a servoamplifier interconnected with said differential comparator for receiving the electrical command signals, and (d) a servomotor interconnected with both said servoamplifier and said adjustable valve means for regulating the position of the valve in response to the electrical command signal.

3,925,990

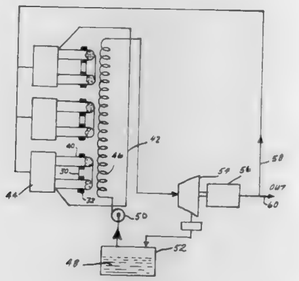
SHOCK HEATED, WALL CONFINED FUSION POWER SYSTEM

Robert A. Gross, New Rochelle, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 28, 1973, Ser. No. 392,377

Int. Cl.² G21D 5/12

U.S. Cl. 60—644 **4 Claims**



1. A fusion reactor power system comprising: means for controlling and containing a thermonuclear fusion reaction including, a pair of coaxial cylinders, each of said cylinders being closed at one end with a concave shaped reflecting wall and forming a cavity; means for absorbing heat energy from said containing means; heat exchange means located in the heat absorbing means; fluid means; a pump means for pumping said fluid through the heat exchange means; a turbine generator means connected to the heat exchange means whereby the fluid pumped through the heat exchanger will expand and cause the turbine to operate and generate electrical current.

3,925,991

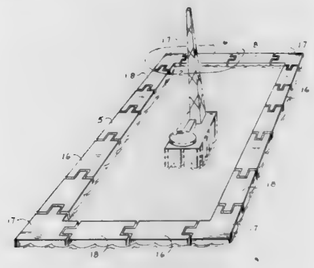
FLOATING OIL FENCE

John M. Poche, 6317 Franklin Ave., New Orleans, La. 70122

Filed July 24, 1974, Ser. No. 491,522

Int. Cl.² E02B 15/04

U.S. Cl. 61—1 F **12 Claims**



1. A floating oil fence comprising a plurality of interlocking pontoons, flexibly connected in a rectangular-like shaped form around oil or other pollutant, the interlocked pontoons capable of riding waves longitudinally and laterally without becoming disconnected and without permitting pollutants within the rectangle-like shape from seeping out to the water outside said rectangle, each of said pontoons having a rigid rectangular projection at one end and a vertically disposed U-shaped recess at the other end, the recess being adapted to slidably receive the rectangular projection of the next pontoon, said rigid rectangular projection being provided with a longitudinally and laterally disposed recess in the outer end and sides thereof through which passes both a vertically disposed coupling pin and a laterally disposed pin, the pins preventing the pontoons from becoming disconnected when interlocked.

3,925,992

METHOD AND RESERVOIR FOR STORING NUCLEAR RESIDUES

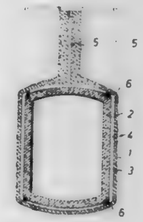
Arne L. Bäckström, Stockholm, Sweden, assignor to Svenska Entreprenad AB Sentab, Stockholm, Sweden

Filed June 13, 1974, Ser. No. 479,063

Claims priority, application Sweden, June 14, 1973, 7308359

Int. Cl.² B65G 5/00; G21F 9/24

U.S. Cl. 61—.5 **12 Claims**



1. A rock-cavity reservoir, especially for storing radioactive residues comprising:

a. a container disposed within an underground rock-cavity;

b. resilient means connecting top and bottom walls of the container to the walls of the rock-cavity such that the container is spaced from the walls of the rock-cavity; and

c. a liquid having a higher density than water disposed within the space between the rock-cavity walls and said container, said liquid having a sealing action on the walls of the rock-cavity and the container.

3,925,993

PROCESS FOR THE PREVENTION OF FROST HEAVES IN FINE-GRAINED SOILS

Wolfgang Roth, Los Angeles, Calif., assignor to Chemie Linz Aktiengesellschaft, Linz, Austria

Filed June 10, 1974, Ser. No. 478,163

Claims priority, application Austria, June 8, 1973, 5054/73

Int. Cl.² E02D 3/12, 5/00

U.S. Cl. 61—36 A **10 Claims**

1. A process for the preparation of frost heaves in fine-grained soils, in particular of frost fractures in roads which comprises interrupting the transport of water in the soil capillaries in the region of the frost boundary by inserting, in the region of the frost boundary, a large-pored filter layer of loosely introduced grains made of rot-proof inert material, the pores of said filter layer are of a dimension, that any seepage water present is not held in the filter layer by capillary action and is protected, on its upper and lower sides, against contam-

ination by fine soil particles from the upper and lower adjacent soil layers by means of a water-permeable rot-proof web,



selected from the group consisting of fabric and fleece made of a thermoplastic synthetic resin.

3,925,994

SYSTEM OF ARMOURING EARTH

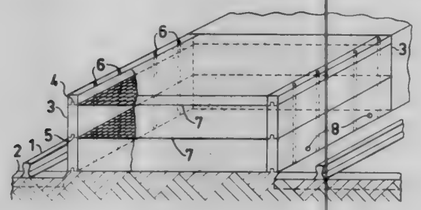
Bengt Broms, Vallingby, and Oleg Wager, Bromma, both of Sweden, assignors to AB Fodervavnader, Boras, Sweden

Filed June 20, 1974, Ser. No. 481,296

Claims priority, application Sweden, June 21, 1973, 7308792

Int. Cl.² E02D *5/00*

U.S. Cl. 61—39 **10 Claims**



1. A structure for reinforcing and anchoring a body of earth, comprising at least one comparatively wide, elongated, substantially continuous sheet of reinforcing material imbedded within said body of earth and oriented in a plane spaced from and substantially parallel to the external surface of said body of earth, said sheet having a net-like configuration throughout its length and width and being fabricated of a substantially non-corrosive material, each of the opposing comparatively wide ends of said elongated sheet being interposed and rigidly anchored between the facing edges of a pair of elongated, contiguous, superposed beam elements extending respectively in directions substantially parallel to the plane of said sheet.

3,925,995

ROOF SUPPORT FRAMES FOR MINING

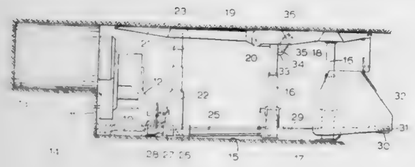
Guenter Harmsma, Bergkamen-Overberge; Harry Rosenberg, Leudinghausen; Johannes Laabs, Oberaden, and Kunibert Becker, Werl, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed Aug. 12, 1974, Ser. No. 496,687

Int. Cl.² E21D *15/44*

U.S. Cl. 61—45 D **6 Claims**

1. A longwall mining system comprising: a conveyor, a mining machine guided for movement along the conveyor, and a series of roof supports arranged alongside the conveyor; at least one roof support comprising a base, at least one first prop extending upwardly from the base, a roof bar means supported on said at least one first prop, at least one second prop depending from said roof bar means forwardly of said at least one first prop, said at least one second prop being retractable from a floor engaging position into a position spaced from the floor by a distance at least equal to the height of the conveyor, means for advancing the roof support in order to displace the said at least one second prop from a position rearwardly of the conveyor to a position forwardly of the conveyor, said means including a fluid operated ram means having a stroke shorter than the advance step of the roof support, said ram means beipg coupled between the conveyor and a sliding block, the base defining a guideway for the sliding block, said guideway having associated therewith a first



stop means for supporting the sliding block against the force of the ram means during an initial extension stroke thereof and second stop means for supporting the sliding block against the force of the ram means during a subsequent extension stroke thereof, said second stop means being located forwardly of the first stop means and being cooperable with a locking device adapted to be moved into an active position upon extension of the ram means during said subsequent extension stroke.

3,925,996

ROCK BOLT/ANCHORING RESIN CARTRIDGE SYSTEM

John Bentley Wiggill, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Sept. 27, 1974, Ser. No. 509,897

Int. Cl.² E21D *20/02*

U.S. Cl. 61—45 B **8 Claims**

1. In a method of anchoring a rock bolt in a drill hole by introducing into the drill hole a film cartridge containing a curable resin and forcing the bolt through the cartridge in a manner such as to shred the cartridge and cause the resin to mix with a curing system therefor and thereupon to harden, the improvement comprising forcing through the cartridge in the drill hole a bolt coated with a curing system component, the motion of the bolt causing the coating to become absorbed in the resin and admixed therewith.

3,925,997

BREAKWATER DEVICE FOR OFFSHORE SUBMERGED FOUNDATION STRUCTURES

Petter Sigvardt Hafskjold, Bekkestua, Norway, assignor to Ingenior F. Selmer A/S, Oslo, Norway

Division of Ser. No. 369,694, June 13, 1973. This application Aug. 28, 1974, Ser. No. 501,402

Claims priority, application Norway, June 13, 1972, 2083/72

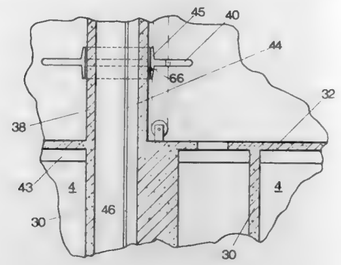
Int. Cl.² E02D *27/38*; **E02B** *3/04*

U.S. Cl. 61—46.5 **3 Claims**

1. An offshore submerged foundation structure comprising: vertical supporting columns extending from below sea level up to a working platform above sea level;

at least one breakwater device comprising a collar member defining an opening through which one of said supporting columns extends and a disk-shaped element secured rigidly to and surrounding said collar member;

hoist means mounted on said structure and secured to the breakwater device to raise and lower the breakwater device along said one supporting column; and



releasable locking means locking the breakwater to said one supporting column at a selected position therealong.

3,925,998

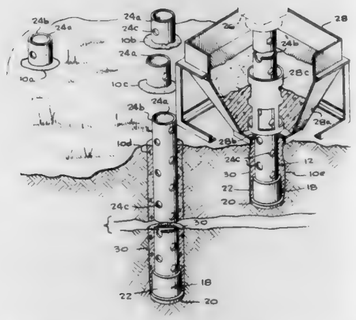
METHOD FOR FORMING CAST-IN-PLACE CASELESS CONCRETE PILES

William R. LeCorgne, New Orleans, La., assignor to Interpile USA, Inc., New Orleans, La.

Filed July 22, 1974, Ser. No. 491,481

Int. Cl.² E02D *5/34*, *3/08*

U.S. Cl. 61—53.64 **10 Claims**



1. The method of forming plural cast-in-place caseless concrete piles in such proximity area to each other that earth transmission of forces during driving of some of the pile holes may damage the shape of other pile holes already formed in the proximity area, comprising the steps of forming a first pile hole in the earth by driving to the desired depth a first hole forming assembly including a first driving foot having a portion of cross-sectional shape and size corresponding to the desired cross-sectional shape and size of the pile hole and a first elongated driving mandrel of hollow tubular configuration releasably coupled to the driving foot and having a tube wall surrounding the hollow interior of the mandrel of slightly smaller size than the transverse size of the pile hole locating the outer surface of the tube wall sufficiently near the pile hole wall surface to protect the latter against inward distortion, temporarily leaving said first driving mandrel and driving foot in said first pile hole driven to said predetermined depth and forming a second pile hole located in said proximity area by driving a hole forming assembly of a second driving foot and a second driving mandrel of substantially the same construction as said first driving foot and mandrel to the desired depth in the earth while the first driving mandrel remains fully inserted in its respective pile hole protecting the shape of the first pile hole throughout its height against distorting forces, filling the formed pile holes with concrete, and withdrawing the driving mandrels from the pile holes before any concrete therein has set sufficiently such that mandrel withdrawal would damage the concrete, thereby leaving a cast-in-place caseless concrete pile in each pile hole.

3,925,999

DRY DOCKS

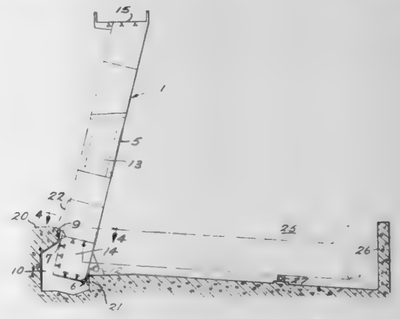
Paul Hugh Finden Andrew, Mt. Eliza, and Kenneth Ewing Moxham, Vale Park, both of Australia, assignors to Maunsell & Partners Pty. Limited, Australia

Filed Oct. 10, 1973, Ser. No. 396,298

Claims priority, application United Kingdom, Sept. 11, 1972, 42016/72

Int. Cl.² B63C *1/00*; **E02B** *7/40*

U.S. Cl. 61—64 **14 Claims**



1. A dock gate of the flap type located in a dock having a dock sill for sealing off at least part of the dock comprising in combination:

cantilever members rotatably mounted with respect to said dock sill,

a claw formed in or adjacent to said dock sill for receiving the lower end of said cantilever members when in their raised position,

load bearing surfaces on opposite sides of said claw against which said cantilever members abut when in their raised position, one surface being higher than the other to thereby provide restraint to the cantilever members of the gate.

3,926,000

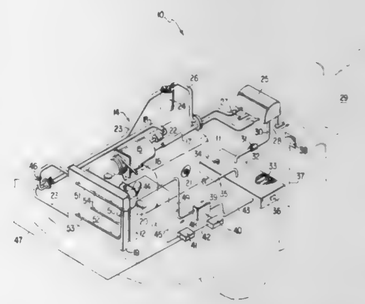
AUTOMOTIVE AIR CONDITIONER AND METHOD OF OPERATING THE SAME

Carlie D. Scofield, 31 - 40th St., Gulfport, Miss. 39501

Filed June 24, 1974, Ser. No. 482,577

Int. Cl.² F28C *1/00*

U.S. Cl. 62—121 **23 Claims**



1. In an automotive vehicle air conditioning system employing a normally gaseous refrigerant which is circulated therein, the air conditioning system being installed in an automotive

vehicle powered by an internal combustion engine subject to overheating, the air conditioning system including compressor means driven by the internal combustion engine for compressing the normally gaseous refrigerant to an elevated pressure at which the compressed refrigerant gas liquefies upon being cooled, condenser means including an air cooled heat exchange surface in heat exchange relationship with ambient air for condensing the compressed gaseous refrigerant and thereby producing liquid refrigerant, conduit means for passing the compressed refrigerant from the compressor means to the condenser means, liquid refrigerant evaporator means including a heat exchange surface in heat exchange relationship with relatively moist air whereby the evaporator heat exchange surface is cooled by evaporating liquid refrigerant and the moist air in contact therewith is cooled and liquid water is condensed therefrom on the evaporator heat exchange surface, conduit means for passing liquid refrigerant from the condenser means to the evaporator means, and means for passing gaseous evaporated refrigerant from the evaporator means to the compressor means, the air conditioning system or the internal combustion engine tending to overheat when operated at prolonged idling speeds in hot weather, the improvement in combination therewith comprising providing an internal combustion engine for supplying power for the automotive vehicle which also has an air intake for supplying air for admixing with fuel to be combusted therein, a radiator for cooling the internal combustion engine including an air cooled heat exchange surface and means for transferring air rearwardly over the internal combustion engine including a fan positioned forward of the internal combustion engine, temperature sensing means for sensing the temperature of at least one component carried by the said air conditioning system or the said internal combustion engine which varies directly in temperature with an increase in the operating temperature thereof, the temperature of the said component indicating when the said air conditioning system or the said internal combustion engine is overheating, and means for applying water to the said heat exchange surface of the condenser means, the last named means including means which is rendered operative to apply the water to the heat exchange surface when the temperature of the said component sensed by the temperature sensing means is above a predetermined level and which is rendered inoperative when the temperature of the said component drops below a predetermined level, the said means for applying the water including means for spraying liquid water on the front of the said heat exchange surface of the condenser in an amount effective to prevent the said air conditioning system or the said internal combustion engine from overheating and at the rate of about 1-10 gallons per hour, the said air cooled heat exchange surface of the radiator being positioned between the said heat exchange surface of the condenser and the fan whereby the liquid water sprayed on the front of the heat exchange surface of the condenser passes rearward into intimate contact with the said heat exchange surfaces of the condenser and the radiator in the form of liquid water of water vapor and aids in the cooling thereof, the said means for spraying liquid water also including means for spraying the water at a rate whereby it is evaporated upon passing into intimate contact with the said heat exchange surfaces of the condenser and the radiator and the resulting water vapor is passed rearwardly by the fan into the vicinity of the said air intake whereby the air admixed with the fuel combusted in the internal combustion engine contains a high moisture content which aids in reducing the operating temperature thereof.

3,926,001

MOVABLE DECK FOR A TOP-OPENING FREEZER

William M. Webb, Louisville, Ky.

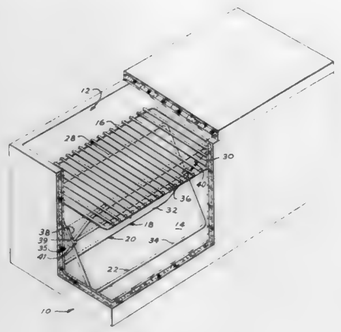
Filed Oct. 31, 1974, Ser. No. 519,525

Int. Cl.² F25D *25/00*

U.S. Cl. 62—378 **6 Claims**

1. In a top-opening chest freezer, an improved movable support frame for a rising bottom deck, comprising:

a plurality of frame members pivotally attached at their ends; and



torsion bar means having their respective ends attached to the ends of different ones of said frame members for biasing the deck toward the top opening of the freezer.

3,926,002

DEVICE FOR EXCLUDING WATER FROM A WORKING SITE LOCATED ADJACENT TO A BODY OF WATER

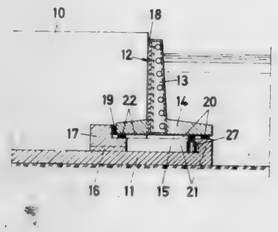
Birger Ludvigsson, Sodra vagen 38, Goteborg, Sweden (41234)

Filed July 23, 1974, Ser. No. 490,942

Claims priority, application Sweden, July 26, 1973, 7310358

Int. Cl.² B63C *1/08*

U.S. Cl. 61—64 **9 Claims**



1. A device for use in excluding water from a working site located adjacent a body of water and beneath the water level thereof in which a wall separates the working site from the body of water, with the wall having an opening providing communication between the working site and the body of water, a threshold and two side posts constituting said opening, the threshold including portions located inwardly and outwardly of the wall, the device comprising a door structure closing the opening, the door structure including a vertical waist portion defining the closure proper and a lower balancing portion rigidly connected to the waist portion, the lower balancing portion cooperating with at least one of said portions of the threshold to provide a zone communicating with the working site and the water pressure in the zone being dependent upon the water level within the working site, and means cooperable with the lower balancing portion and the threshold to prevent inward movements of the door structure in a horizontal direction, the arrangement being such that upon evacuation of the working site, the water outside the working site will exert a laterally directed pressure upon the door structure with the main horizontal component of such pressure being taken care of by the cooperation between the lower balancing portion of the door structure and said at least one portion of the threshold and the tilting moment upon the door structure being balanced by the load of the water externally applied to the lower balancing portion being greater than the upwardly directed pressure in the zone which is dependent on the water level within the working site.

3,926,003

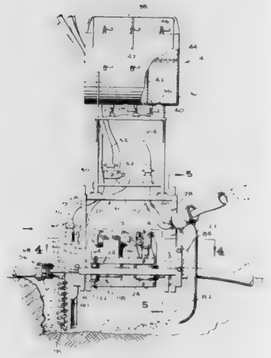
BOUYANCY AND ATTITUDE CORRECTION METHOD AND APPARATUS

Robert M. Norman, Route #1, Lafayette, La. 70501

Division of Ser. No. 175,448, Aug. 27, 1971. This application Oct. 25, 1973, Ser. No. 409,601

Int. Cl. E02f *5/02*; **F16l** *1/00*; **B63b** *35/42*

U.S. Cl. 61—72.4 **10 Claims**



1. An underwater trenching apparatus for burying pipeline and the like comprising:

a frame for positioning about the pipeline to be buried,

means secured to said frame for digging a trench to receive the pipeline,

means positioned on said frame to propel the apparatus along the pipeline,

independent buoyancy means supported upon said frame on each side of the pipeline,

each said buoyancy means having a plurality of separate individual compartments,

opening means in each compartment to provide communication with the water, and

means selectively operable upon the water level of each compartment to control the buoyant effect of each compartment including a gaseous inlet means and a gaseous outlet means for each compartment whereby the fore to aft and port to starboard attitude of the apparatus is controllable.

3,926,004

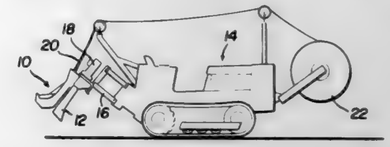
MULTI-CABLE LAYING BLADES OR CHUTES

John M. Baylor, Bettendorf, Iowa, assignor to J.I. Case Company, Racine, Wis.

Filed Dec. 9, 1974, Ser. No. 530,890

Int. Cl.² E02F *5/02*

U.S. Cl. 61—72.6 **12 Claims**



1. In a cable guiding chute assembly including a pair of spaced, generally vertical sidewalls defining therebetween a passageway to receive generally vertically oriented cables and to guide said cables into a generally horizontal orientation for placement in the ground, the improvement of:

a divider component interposed between said pair of sidewalls to define a plurality of cable guiding channels, said divider component including (a) a support plate generally parallel with the sidewalls and (b) a plurality of separators rigidly connected to the support plate and being generally perpendicular thereto, said separators extending from the support plate substantially to one of the sidewalls and having respective, generally parallel arcuate portions perpendicular to said sidewalls for guiding the cables into horizontal position for placement in the ground wherein the cable guiding channels are defined by the support plate, the separators and said one sidewall; and

releasable and engageable latching means, said means when engaged releaseably securing said divider component between the pair of sidewalls and said means when released accomodating telescopic withdrawal of said component from between the sidewalls whereupon the separators define laterally open channels to facilitate the insertion or removal of cables therefrom.

3,926,005

TUNNEL DRIVING APPARATUS

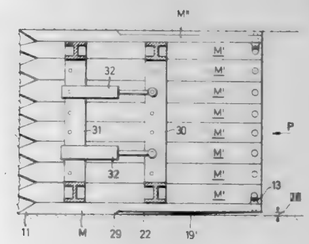
Adolf Foik, Altlunen, Germany, assignor to Gewerkschaft Eisenhutte, Westphalia, Germany

Filed July 2, 1974, Ser. No. 485,303

Claims priority, application Germany, July 14, 1973, 2335984

Int. Cl.² E01G *3/00*

U.S. Cl. 61—85 **24 Claims**



1. An advanceable shield for a tunnelling machine, said shield comprising: a plurality of individual longitudinally displaceable elongate members arranged side-by-side and disposed generally around the longitudinal axis of a tunnel, said elongate members contacting and supporting the tunnel wall to define a excavation space, means for supporting and guiding all said elongate members during longitudinal movement, means for selectively shifting one or more of said elongate

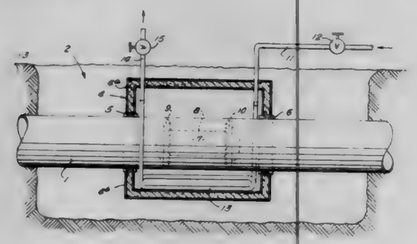
members at a time in the longitudinal direction of tunnel advance, at least one of said elongate members having a main body, a further component displaceably attached to said main body, and means for selectively displacing said further component generally transversally of the longitudinal axis of said main body, said selective displacing means operably controlling the direction of tunnel advancement.

3,926,006

METHOD AND APPARATUS OF FREEZING A PLUG IN A PIPE FOR PRESSURE TESTING

Leon E. Brooks, and James T. White, both of Shreveport, La., assignors to Cap-Con International, Inc., Shreveport, La.

Filed Apr. 9, 1973, Ser. No. 348,961
Int. Cl.[2] F16L 55/16
U.S. Cl. 62—66 5 Claims



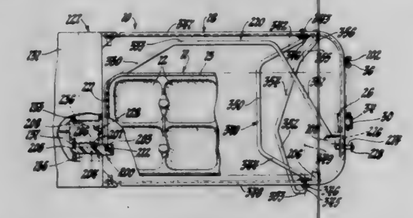
1. Apparatus for freezing a plug in a pipe comprising: a heat exchanger casing positioned about the pipe; heat exchange media within the casing about the pipe; at least one blocking plug within the pipe arranged to block off an area in the pipe within the casing, said blocking plug having a central passage therethrough and having a body with spaced resilient wiping flanges secured to the outer surface thereof; a valve in the passage; an ultrasonic frequency generator located exteriorally of the pipe; a receiver-rectifier located within the plug; and means actuated by the rectified signal to operate the valve.

3,926,007

ICE LEVEL SENSING ARM RETRACTOR

Ralph S. Braden, Bellbrook; Cecil C. Pugh, and Ralph R. Rigg, both of Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 22, 1974, Ser. No. 490,760
Int. Cl.[2] F25C 1/04
U.S. Cl. 62—137 3 Claims



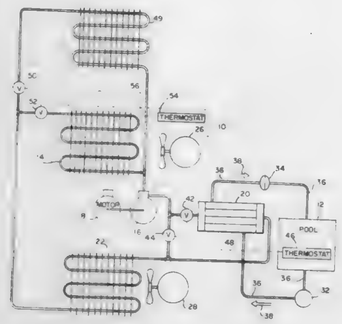
3. An automatic ice maker for use in a refrigerated compartment comprising a frame, an ice mold on said frame, means for ejecting ice from said mold, a bin for receiving ice pieces ejected from said mold located below said mold, a longitudinally extending ice level sensing arm pivotally received on said frame for movement between a gravity biased lower ice sensing position in said bin and an elevated ice maker shut-off position above said bin, the improvement residing in an integral sensing arm retractor torque rod including a U-shaped portion and a V-shaped portion each in separate planes which planes intersect at a common transverse pivotal axis, said U-shaped and V-shaped portions having first ends terminating in a common first pintle portion and connecting bight portion, said common pintle portion aligned on said transverse pivotal axis rotatably received in one side wall of said frame and said bight portion in the plane of said V-shaped portion, the free end of said U-shaped portion terminating in a second pintle portion aligned with said common first pintle portion for pivotal reception in the opposite side wall of said frame, the free end of said V-shaped portion terminating in a third pintle portion rotatably received in said frame opposite side wall offset from said second pintle portion, said rod torsional stress normally causing pivotal movement of said U-shaped portion in a clockwise direction engaging and biasing said sensing arm into an elevated position within the frame deenergizing said ice maker upon a predetermined outward movement of said bin, said bin upon being moved rearwardly into said freezer compartment beneath said ice maker engaging said V-shaped portion for pivotal movement in a counterclockwise direction, whereby said U-shaped portion is pivoted from its elevated position through an angle of about 90° into a substantially vertical plane disengages said sensing arm and allows said arm to gravitationally pivot to its ice sensing position within said bin such that said icemaker is energized if said arm senses a quantity of ice pieces therein below a predetermined level.

3,926,008

BUILDING COOLING AND POOL HEATING SYSTEM

Robert C. Webber, 8634 Brookville Road, Indianapolis, Ind. 46239

Filed Aug. 15, 1974, Ser. No. 497,765
Int. Cl.[2] E04H 3/18; F25B 39/02
U.S. Cl. 62—200 4 Claims



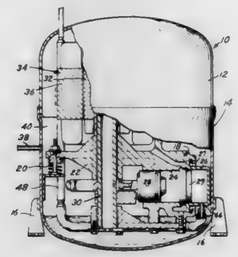
1. For use in cooling a building and warming a swimming pool, a system comprising a compressor, condenser means, an evaporator in cooling association with the interior of said building, and refrigerant conduit means for connecting said compressor, condenser means and evaporator in a conventional phase-change refrigeration circuit having a phase-change refrigerant therein, said condenser means having a first passageway for conducting the refrigerant therethrough and a second passageway in heat-conducting association with said first passageway, said second passageway having an inlet end and an exhaust end, a water pump, and water conduit means for inter-connecting said swimming pool, said pump, the inlet end of said second passageway and the exhaust end of said second passageway such that water is pumped through said second passageway, an auxiliary evaporator connected in said refrigeration circuit in parallel with said first-mentioned evaporator, said auxiliary evaporator being positioned externally to said building, and second thermostatically controlled valve means for by-passing said first-mentioned evaporator and conducting the refrigerant through said auxiliary evaporator when the temperature in said building decreases to a predetermined level.

3,926,009

HERMETIC COMPRESSOR WITH INSULATED DISCHARGE TUBE

Sidney A. Parker, Fort Worth, Tex., and Seymour Rothstein, Highland Park, Ill., assignors to Lennox Industries Inc., Marshalltown, Iowa

Filed Jan. 27, 1975, Ser. No. 544,190
Int. Cl.[2] F25D 19/00
U.S. Cl. 62—296 16 Claims



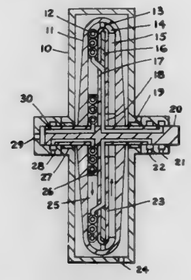
1. In a refrigerant compressor having compression mechanism for compressing a refrigerant and a discharge tube communicating with the compression mechanism for forwarding the relatively hot refrigerant to a refrigeration system, said compression mechanism being within an outer housing, a lubricant sump within the outer housing, said discharge tube being in heat exchange relationship with the lubricant in the lubricant sump, the improvement wherein an imperforate tubular member is disposed about the discharge tube in heat transfer relation with the lubricant sump in such manner as to insulate the discharge tube from the lubricant.

3,926,010

ROTARY HEAT EXCHANGER

Michael Eskeli, 7994-41 Locke Lee, Houston, Tex. 77042

Continuation-in-part of Ser. No. 393,571, Aug. 31, 1973. This application Jan. 24, 1974, Ser. No. 436,124
Int. Cl.[2] F25B 3/00
U.S. Cl. 62—401 5 Claims



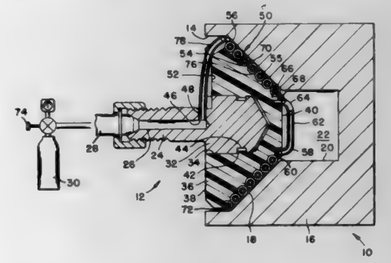
1. A heat exchanger comprising a rotor, means for mounting said rotor for rotation, said rotor having first and second closed passages extending outwardly from the axis of rotation of the rotor, a first passage means for connecting the outer ends and a second passage means for connecting the inner ends of said first and second closed outwardly extending passages to allow a fluid to flow outwardly in said first passage and inwardly toward the axis of rotation in said second passage, a compressible first fluid in said passages, a first heat exchanger carried by said rotor and a second heat exchanger carried by said rotor and located inwardly from the outermost part of said first heat exchanger, means for passing a second fluid through said first heat exchanger to remove heat from the first fluid, and means for passing a third fluid through said second heat exchanger to add heat to said first fluid, and means for rotating said rotor to cause said first fluid to flow outwardly in said first passage and be heated by compression due to centrifugal force and to flow inwardly in said second passage toward the axis of rotation of the rotor.

3,926,011

HEAD ASSEMBLY FOR A CRYOGENIC COOLER

Blase J. Sollami, Davenport, Iowa, assignor to The Bendix Corporation, South Bend, Ind.

Filed June 24, 1974, Ser. No. 482,045
Int. Cl.[2] F25B 19/00
U.S. Cl. 62—514 3 Claims



1. A head assembly for a cryogenic cooling apparatus comprising:

a housing having a first blind bore therein, said first blind bore having a first section joined to a second section by a tapered section;

a frusto-conical body having a base and a vortex with a second blind bore which extends from the base toward the vortex, said body having a spiral groove which extends from said base to the vortex, said frusto-conical body having an annular rib extending from said second blind bore, said frusto-conical body having a slot which extends from said second blind bore to said spiral groove, said frusto-conical body engaging said tapered section to create a chamber between the vortex and the second section of the first blind bore;

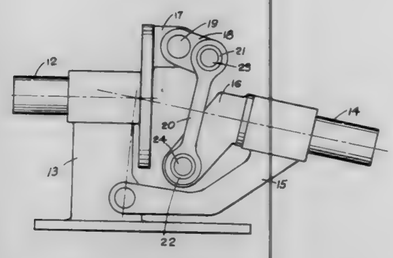
stem means having a head section and a connector section, said connector section having an axial passage which extends toward the head section, said axial passage having an opening adjacent the base of the frusto-conical body when said head section is secured in said axial bore, said connector section having an annular channel located in the head section for engaging said annular rib in the second blind bore for rigidly holding said stem means in a fixed position, said connector section transmitting a source of fluid under pressure to said opening; and

tube means located in said slot in said frusto-conical body and connected to said opening in the stem means having a finned section located in the spiral groove in the frusto-conical body and a distribution section located adjacent the vortex of the frusto-conical body, said distribution section having a closed end and an orifice located along a line concurrent with the axial bore, said orifice permitting said fluid to expand in said chamber and cool by the Joule-Thomson effect, said fluid in said chamber upon cooling being directed by said spiral groove through the finned section to precool the fluid flowing to the distribution section, said frusto-conical body being a non-metal through which heat transfer is inhibited to prevent the stem means from being cooled by conduction of the cooled fluid present in said chamber and flowing in said spiral groove.

3,926,012
CONSTANT VELOCITY UNIVERSAL JOINTS

Arnold E. Biermann, Redart, Va. 23142

Filed July 10, 1973, Ser. No. 377,939
Int. Cl.² F16D 3/54
U.S. Cl. 64—19 8 Claims

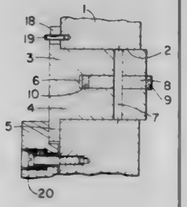


1. In a universal joint for connecting a first rotatable member to a second rotatable member, an averaging-lever pivoted on said first rotatable member and connecting links connecting said averaging-lever and said second rotatable member, said connecting links being connected to said averaging-lever and said second rotatable member with universal joint means.

3,926,013
CAM SYSTEMS FOR CIRCULAR KNITTING MACHINES

Harald Kurth, Mittweida; Dieter Laube, Frankenau, and Erich Berthold, Mittweida, all of Germany, assignors to VEB Wirkmaschinenbau Karl-Marx-Stadt, Karl-Marx-Stadt, Germany

Filed Oct. 16, 1972, Ser. No. 298,163
Int. Cl. D04b 9/00
U.S. Cl. 66—40 2 Claims

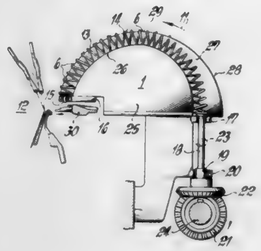


1. A cam system for a circular knitting machine comprising a cam retainer, cam carrier means, a cam element, means for releasably mounting said cam carrier means and said cam retainer whereby said cam carrier means may be selectively positioned in said cam retainer at a plurality of different angular positions, at least two cam surfaces on said cam element, means mounting said cam element on said carrier for positioning a selected cam surface whereby said cam surfaces may be selectively positioned in operative relationship in a knitting machine in ejecting, tucking and circular running positions, said cam carrier means comprising a cylindrical support having a transversely extending recess, a plate constituting said cam element and pivotally mounted in said recess, said cam surfaces being disposed on at least two edges of said plate, whereby said cam surfaces may be selectively positioned in operative relationship in a knitting machine.

3,926,014
WEFT STORAGE DEVICE FOR WARP KNITTING MACHINES

Günter Frehn, Monchen-Gladbach, Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Germany

Filed Apr. 11, 1974, Ser. No. 460,183
Claims priority, application Germany, Apr. 13, 1973, 2318622
Int. Cl.² D04B 23/06
U.S. Cl. 66—84 A 8 Claims

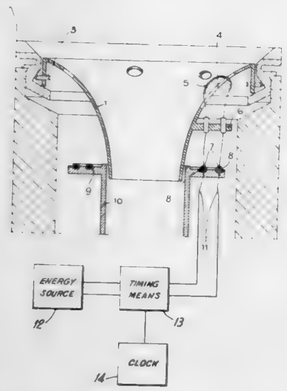


1. Weft thread storage device for a warp knitting machine having knitting needles for knitting weft and warp threads into a fabric web, comprising a pair of rotatable discs, a first and a second group of holding members each group mounted on one of said discs, said discs being spaced one from the other at respective locations at which they are adjacent opposite edges of a fabric web being knitted in the machine, and at least one intermediate support device disposed in the space between said groups of holding members to intercept weft threads extending between said groups of holding members, said discs and said intermediate support device being actuatable to transport said threads in direction toward the knitting needles of the machine, said support device having shape and dimensions similar to the discs.

3,926,015
CONTROLLED CUTTER FOR CIRCULAR HOSIERY MACHINES

Fulvio Sangiacomo, via 0. Villa 13, Brescia, Italy

Continuation-in-part of Ser. No. 873,341, Nov. 3, 1969, abandoned. This application Sept. 13, 1971, Ser. No. 179,701
Claims priority, application Italy, Dec. 5, 1968, 2841/68
Int. Cl.² D04B 35/34
U.S. Cl. 66—147 4 Claims



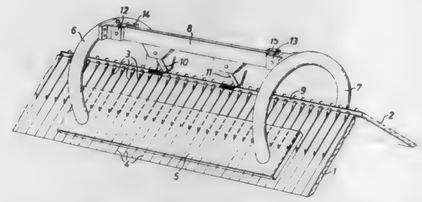
1. In a circular hosiery machine having a central cylinder, improved means for cutting the article manufactured by the machine, said improved means comprising;

a. an inverted, truncated, tubular element secured to a rotatable portion of the machine, said element being coaxially telescoped within and positioned proximate the upper end of the cylinder of the machine, said element having a slot in the wall thereof;
b. an electrical resistance filament of the type adapted to be coupled to and heated by a source of electrical energy;
c. means for supporting said filament adjacent said element at a position exterior thereof;
d. means for locating at least a portion of said filament within the interior of said element such that said filament makes contact along a predetermined path with the article being made by the machine; and
e. means for energizing and thereby heating said filament such that said heated filament is in contact with the article during selected time periods for effecting a longitudinal cut in the article as the article moves over said filament.

3,926,016
KNITTING MACHINES

John Flavell, Coundon, Coventry, and Keith Jeffcoat, Nuneaton, both of England, assignors to Courtaulds Limited, London, England

Filed May 2, 1974, Ser. No. 466,310
Claims priority, application United Kingdom, May 10, 1973, 22311/73
Int. Cl.² D04B 35/10
U.S. Cl. 66—157 7 Claims



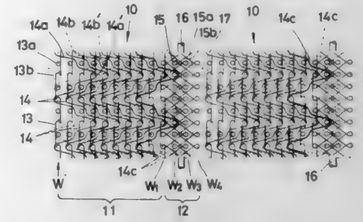
1. In a knitting machine having two cooperating arrays of latch needles arranged in opposed needle beds, means for independent actuation of successive needles in the arrays to move said needles between a lower and raised position, a carrier, support means positioning said carrier above said needle beds and movable longitudinally of the needle beds, and a hold-down element for holding down knitted loops as the needles rise, said hold-down element being supported from said carrier, the improvement comprising in combination mounting means for said carrier, said mounting means being fixed to said support means and said carrier being yieldably connected to said mounting means for movement between a first level below the level of the needles in their raised position, and a second level, said second level being higher than said first level, and switch means operable by movement of said carrier from said first level to said second level.

3,926,017
WARP KNITTED TAPE FOR SLIDE FASTENERS

Yoshio Matsuda, Nyuzen, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1974, Ser. No. 512,060
Int. Cl.² D04B 21/00
U.S. Cl. 66—195 6 Claims

1. A warp-knitted tape for a slide fastener, which comprises a web portion and a marginal edge portion extending longitudinally of the web portion and adapted to carry a row of coupling elements each having a pair of spaced-apart legs extending in a transverse direction to said row of coupling elements, said web portion comprising chain stitches forming a plurality of longitudinally extending wales and at least two different groups of transversely extending lapping threads laid in to connect said wales coursewise, and said marginal edge portion comprising chain stitches forming a plurality of longitudinally extending wales and two different groups of tricot stitches extending across and interknitted with said wales

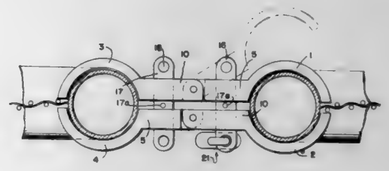


whereby said marginal edge portion is thickened and projects symmetrically with respect to the plane of the tape to accommodate securing said row of coupling elements to the marginal edge portion with the legs of the elements mounted astride of said marginal edge portion.

3,926,018
LOCKING DEVICE

Donald F. Joersz, Box 496, Kahlotus, Wash. 99335

Filed Feb. 11, 1974, Ser. No. 441,186
Int. Cl.² E05B 65/00, 65/08, 73/00
U.S. Cl. 70—19 5 Claims

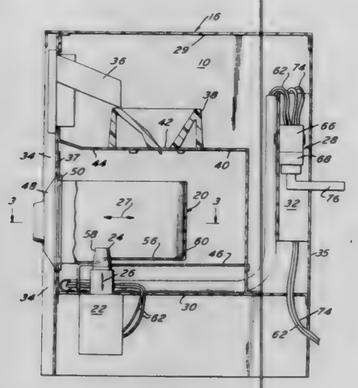


1. A detachable locking device for securing adjacent, cooperating closure members to prevent relative movement of the closure members comprising:
a. opposed pairs of clamping members having first and second longitudinally aligned portions, said members configured to engage closure members and said first and second portions including projections with centrally located receiving means;
b. interengaging, hinged connecting means joining the ends of said projections of said first portions with the ends of said projections of said second portions of each of said pairs of clamping members and cooperating with said portions to maintain them in predetermined relation when said clamping members are in closed condition; and
c. removable lock engaging members joined said first portions together and said second portions together when said clamping members are in closed condition, said lock engaging members disposed within said receiving means and having ends with openings therein projecting beyond the edges of said projections to receive locking means and extending transversely of the length of said projections when said clamping members are in closed condition whereby said locking device maintains the closure members in predetermined relation when said removable lock engaging member joins said first and second portions of each of said pairs of clamping members and receives said locking means.

3,926,019
LOCKING SYSTEM

Albert J. Mazeika, Philadelphia, Pa., assignor to Eugene H. Clement, Hi-Gene Laundry Co., Overbrook Hills, Pa.

Filed Mar. 15, 1974, Ser. No. 451,467
Int. Cl.² E05B 65/44
U.S. Cl. 70—85 10 Claims



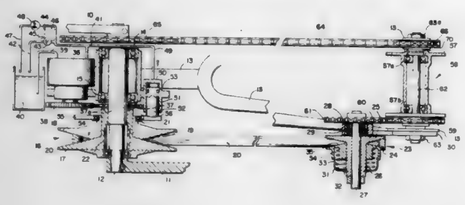
1. A locking system comprising:
(a) a housing having a frontal and rear portions;
(b) a compartment member insertable within said frontal portion of said housing;
(c) mechanical lock means mounted to said compartment member, said mechanical lock means having a latch member insertable within said frontal portion of said housing for capturing said compartment member within said housing when said mechanical lock means is in a locked position;
(d) solenoid lock means being secured to said housing, said solenoid lock means having a plug member retractably insertable through a floor member of said compartment member until said solenoid lock means is actuated; and
(e) switch means for actuating said solenoid lock means independent of said mechanical lock means, said switch means including a pair of contact blocks, each of said contact blocks having a plurality of positionally alignable contacts to complete a circuit coupled to a power source for actuating said solenoid lock means when said contact blocks are contiguously mated each to the other, said switch means mounted in said rear portion of said housing in remote positional relation to said mechanical lock means.

3,926,020
VEHICLE AUTOMATIC TRANSMISSION BICYCLE WITH ALTERNATE FIXED RATIO OR VARIABLE RATIO SPEED SENSITIVE POWER PATHS

Philip Dantowitz, 39 Nancy Ave., Peabody, Mass. 01960, and William A. Holmes, 7 Bradlee Road, Marblehead, Mass. 01945

Filed Jan. 9, 1974, Ser. No. 431,953
Int. Cl.² F16H 55/22, 11/04
U.S. Cl. 74—217 B 22 Claims

1. A bicycle drive system in which operator driven pedals are connected to power a drive wheel comprising:
first drive shaft means connected to be driven by the operator pedals;
second drive shaft means connected to power the drive wheel of the bicycle;
first transmission means driven by said first drive shaft means through overrunning device means allowing said first transmission means to be driven in one direction by operation of the pedals and to overrun the pedals in the opposite direction;
second transmission means driving said second drive shaft means;
means interconnecting said first transmission means in driving relationship to said second transmission means;
control means for adjusting the speed ratio between said first and second transmission means through the path formed by said interconnecting means;

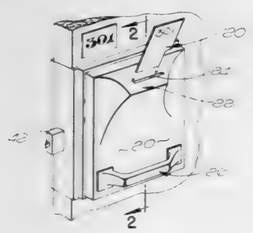


speed responsive means generating a signal as a function of pedal drive speed; and
means responsive to said speed responsive signal to adjust said control means to regulate said speed ratio as a function of said pedal drive speed responsive signal to maintain said pedal drive speed substantially constant upon attainment of the predetermined cadence pedalling speed range.

3,926,021
ELECTRONIC COMBINATION LOCK AND SYSTEM

Leonard J. Genest, Huntington Beach; Frederick E. Feagin, Tustin; Sylvan Cole, Los Angeles, and Daryle Messner, Buena Park, all of Calif., assignors to Monitron Industries, Inc., Santa Ana, Calif.

Filed Jan. 2, 1974, Ser. No. 430,247
Int. Cl.² E05B 49/02
U.S. Cl. 70—278 2 Claims

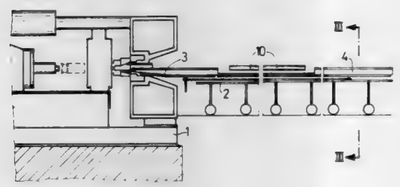


1. An independently operable electronic lock and system having an alterable combination, said lock being operable in response to insertion of a correct combination code, comprising:
a lock housing adapted to be secured in a door;
securing means attached to said housing;
alterable memory means within said housing storing combination information for operating said lock;
means within said housing for receiving and detecting a first stationary combination code inserted into the lock, comparing said inserted first combination code with said stored combination information, and generating a drive signal when a comparison is favorable;
said receiving and detecting means comprising a plurality of sensor coils connected to receive the output of an oscillator, each coil having a ferrous metal core and being connected to produce a first signal across said coil in the absence of a code entry and a second signal across said coil in the presence of a code entry and a tuned circuit connected to produce a first output in response to the first signal across the respective coil and a second output in response to the second signal across the respective coil;
said inserted code entries comprising a least one electrically conductive area positioned adjacent to and within the magnetic field of at least one of said sensor coils to cause said second signal to be produced across said at least one coil, said first and second output signals providing a second combination code corresponding to said first combination code;
drive means within said housing adapted to operate said securing means in response to said drive signal;
means within said housing for changing said stored combination information to said inserted combination when a comparison is favorable; and,
an energy source connected to supply the power requirements of said lock and system.

3,926,022
DEVICE FOR USE IN CONNECTION WITH METAL EXTRUSION PRESSES ALONG A PRESS PATH

Richard Raab, Rothenbach, Germany, assignor to Diehl, Nuremberg, Germany

Continuation of Ser. No. 267,038, June 28, 1972, abandoned. This application June 19, 1974, Ser. No. 480,729
Int. Cl.² B21J 7/46; B21B 31/07
U.S. Cl. 72—24 5 Claims



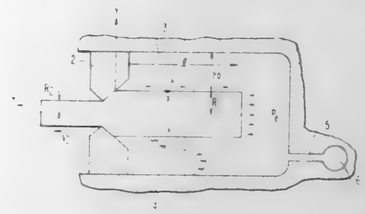
1. In combination with a horizontal extrusion press for extruding heated, softened, tubular articles, a device aligned with said press below its axis for conveying extruded, elongated, tubular articles from said press in which a tubular articles passes over a press-way receiving an article from said press, said press-way having a plurality of nozzles spaced longitudinally along said press-way and directed generally upwardly, air supply means connected to said nozzles to supply air under pressure to said nozzles and to form upwardly directed jets of air against the under side of a tubular articles passing along said press-way, said upwardly directed jets of air cooling and hardening said extruded articles and maintaining it centered in said press-way during its passage.

3,926,023
HYDROSTATIC EXTRUSION PROCESS FOR PRODUCING FINE GAUGE WIRES

Makoto Hayashi; Masanori Hinata; Minoru Yokota, and Takasi Kondo, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 6, 1975, Ser. No. 547,853
Claims priority, application Japan, Feb. 6, 1974, 49-15614
Int. Cl.² B21C 23/22
U.S. Cl. 72—60 2 Claims

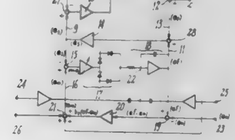
1. In a hydrostatic extrusion process for producing relatively fine gauge wires less than 250μ in diameter by liquid pressure extruding a metal ingot of larger diameter than that of a die opening, through said die opening of a high pressure container, the improvement wherein a liquid providing a viscosity less than 100 poise at a pressure of 10,000 atmospheric is employed as the pressure medium contained in the high pressure container.



3,926,024
METHOD AND DEVICE FOR REGULATING THE THICKNESS OF ROLLED PRODUCTS

Jean Philippe Mornas, St. Etienne, France, assignor to Compagnie des Ateliers et Forges de la Loire (St Chamond, Firminy, St Etienne, Jacob-Holtzer), Paris, France

Filed Oct. 27, 1970, Ser. No. 84,299
Claims priority, application France, Oct. 31, 1969, 69.37440
Int. Cl.² B21B 37/08
U.S. Cl. 72—8 7 Claims



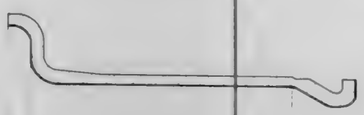
1. In a rolling mill having a position-corrected under load clamping system, a means for accurately regulating the thickness of the rolled product, comprising:
a. means to measure the rolling effort of the rolling mill;
b. a primary correcting circuit connected to said measuring means and adapted to set the value of a clamping position correction in such a manner that the measured rolling effort is constantly very substantially equal to a first reference magnitude called an effort reference value;
c. a second correcting circuit connected to said first circuit and to said measuring means and adapted to determine the magnitude of the said effort reference value, said second circuit comprising:
a dead zone device having the property of transmitting, in magnitude and sign, of the signal applied to the input of this device, only the fraction lying outside of a predetermined range, the limits of this range being disposed symmetrically on either side of a predetermined magnitude called a position reference,
a device having integrating and memory functions responsive to said dead zone device in such a manner that its output signal is the integral of the signal delivered by said dead zone device, this output signal constitutes the effort reference value and is connected to a reference inlet of said primary circuit; and
d. means for adjusting the width of the dead zone.

3,926,025

METHOD OF PRODUCING SPECIAL WHEEL RIMS

Paul B. Schröder, Hamm, and Günter Polkötter, Neubeckum, both of Germany, assignors to Leifeld & Co., Ahlen, Germany

Filed June 28, 1974, Ser. No. 484,157
Claims priority, application Germany, Aug. 28, 1973, 2343247
Int. Cl.² B21D 53/30
U.S. Cl. 72—84 4 Claims



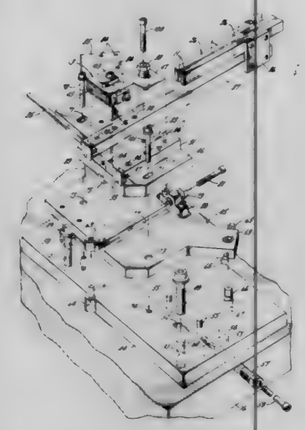
1. A spinning process for making a special wheel rim from a metal cylindrical blank, said wheel rim having a recessed spring ring groove on one side, a central rim section, a slant shoulder and a raised wheel flange on the other side, said method comprising the steps of: spin forming a spring ring groove on one side of the metal blank to reduce the thickness of said initial metal blank and to form said groove with a predetermined wall thickness and with its final wheel spring groove shape, stretch drawing the remainder of the blank to reduce its cross-sectional thickness from said predetermined wall thickness and to extend the axial length of the remainder of said blank, spin drawing a slant shoulder on the other side of the blank, and spin forming the other side of the stretched metal blank radially outwardly to form the raised wheel flange having a wall thickness less than said predetermined wall thickness for the spring ring groove.

3,926,026

FLAT DIE THREAD ROLLING MACHINE

Warren M. Jackson, 5071 Crofton Drive, Rockford, Ill. 61111

Filed Nov. 20, 1974, Ser. No. 525,485
Int. Cl.² B21H 3/06
U.S. Cl. 72—90 6 Claims



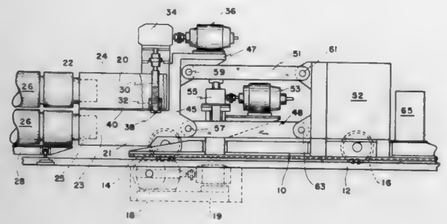
1. A flat die thread rolling machine comprising a support; stationary and movable dies on said support and having opposed faces with thread forming elements extending therealong; means for reciprocating said movable die back and forth relative to said stationary die between first and second positions and along a first path extending in the same general direction as said thread forming elements; mechanism for feeding a fastener blank between said dies each time said movable die is in said first position; and means mounting said stationary die on said support for selective adjustment relative to said movable die, said mounting means comprising a first member mounted on said support for back and forth linear adjustment along a path extending substantially parallel to said first path thereby to enable adjustment of the longitudinal alinement of the thread forming elements of said dies, a second member mounted on said first member for back and forth angular adjustment relative to said first member about an axis extending substantially perpendicular to said first path thereby to enable adjustment of the squeeze angle between the thread forming elements of said dies, a third member mounted on said second member for back and forth linear adjustment relative to said second member along a path extending substantially perpendicular to said first path thereby to enable adjustment of the transverse spacing between the thread forming elements of said dies, and a fourth member carrying said stationary die and mounted on said third member for back and forth angular adjustment relative to said third member about an axis extending substantially parallel to said first path thereby to enable adjustment of the taper angle between the thread forming elements of said dies; and said feeding mechanism being mounted on said third member and being adjusted with said stationary die whenever said first, second or third members are adjusted.

3,926,027

ROLL CHANGING APPARATUS FOR A ROLLING MILL OR THE LIKE

Werner Krumme, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Feb. 11, 1975, Ser. No. 549,129
Int. Cl.² B21B 31/08
U.S. Cl. 72—239 5 Claims



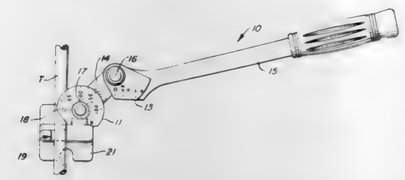
1. An apparatus for removing and replacing rolls to and from a rolling mill or the like comprising:
a car arranged on the operator's side of the said mill,
said car including a counterweight mounted on one end arranged to offset at least a part of the weight of one or more of said rolls when supported by said car,
two members carried by the other end of said car having portions for receiving and supporting in a cantilever fashion a different one of said rolls in a position parallel to their working positions when said rolls are in said mill,
means for displacing one of said members parallel and relative to other member in a direction coincident to a plane containing the axes of said rolls,
means for displacing said two members in unison in said direction, and
means for horizontally moving said car to and from said rolling mill.

3,926,028

TUBE BENDER

Leonard J. Kowal, Prospect Heights, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Filed Aug. 23, 1974, Ser. No. 500,156
Int. Cl.² B21D 11/04
U.S. Cl. 72—319 18 Claims



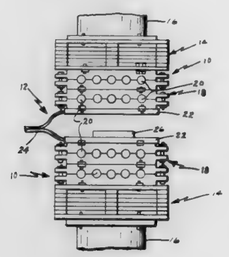
1. In a manually operable tube bender having a mandrel provided with a peripheral tube receiving groove, a shoe swingably mounted to said mandrel, and a handle for swinging said shoe about said mandrel for urging a tube into said groove in a tube bending operation, the improvement comprising:
a one-piece combination mandrel support and tube holder having a first integral portion defining a male clamp element adapted to be clamped fixedly in a female clamping device for supporting the tube bender during a tube bending operation, a second integral portion defining a hook adapted to be engaged by the tube for preventing longitudinal movement thereof during the tube bending operation, and a third integral portion defining a connector; and
securing means for fixedly securing said connector to said mandrel.

3,926,029

HEATED DIE ASSEMBLY

David J. Abson, Medway, and Ferdinand J. Gurney, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 30, 1974, Ser. No. 465,711
Int. Cl.² B21J 13/02
U.S. Cl. 72—342 14 Claims



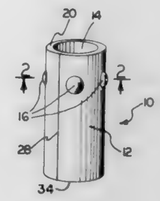
1. A heated die assembly adapted to be used in conjunction with a forge press comprising a load bearing insulated stack, at least one heater block secured at one end thereof to said load bearing insulated stack and a die face plate secured to the other end of said heater block, said load bearing stack being made of alternate layers of at least two plates, one of said plates being made of a material having a high toughness, the other of said plates being made of a composite construction of two materials, one of said materials of said composite construction having high toughness and the other of said materials of said composite construction having a high compressive strength and low thermal conductivity and said heater block being made of two heater elements which contain a means for generating heat therein.

3,926,030

METHOD FOR MAKING WIRE PROTECTOR

William R. Baillie, Hoffman Estates, Ill., assignor to Blue Ribbon Industries, Inc., Arlington Heights, Ill.

Division of Ser. No. 341,476, March 15, 1973, Pat. No. 3,855,413. This application Aug. 12, 1974, Ser. No. 496,760
Int. Cl.² B21D 51/10
U.S. Cl. 72—368 2 Claims



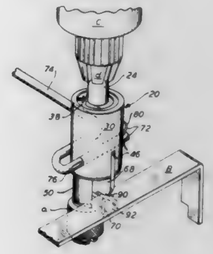
1. A method of making a wire protector of sheet steel which comprises forming a rectangular blank of sheet steel and punching recesses in one surface on a line parallel with a pair of opposite edges of said blank simultaneously producing surface protrusions on the opposite surface of said blank, and roll forming the blank into a hollow cylindrical tube so that the two other opposite edges are tightly abutting in a seam, the protrusions being unaffected by the rolling and defining a circumferential line on the exterior of said tube, the recesses being punched prior to forming of the tubular body.

3,926,031

DEBURRING DEVICE WITH OPPOSITELY ACTING DEBURRING ELEMENTS

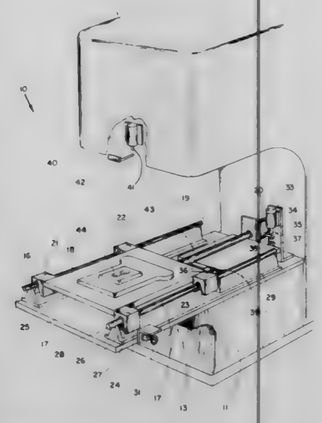
Hildaur L. Neilsen, 2 Juniper St., Metuchen, N.J. 08840

Filed Jan. 23, 1975, Ser. No. 543,271
Int. Cl.² B21J 7/32
U.S. Cl. 72—407 10 Claims



1. A deburring device for smoothing edges of sheet material, comprising a housing, intermittently impacting hammer means supported within said housing, means for rapidly operating said hammer means, a first peening tool member loosely connected to said housing and coacting with said hammer means to be vibratorily actuated thereby to engage and deburr an edge of a related workpiece of sheet material, an extension stem rigidly integral with said housing, extending alongside said tool member in parallelism to the direction of vibratory movement of the latter, and a second peening tool member carried on said stem in position to support said workpiece in line with and against said vibratory movement of said first tool member.

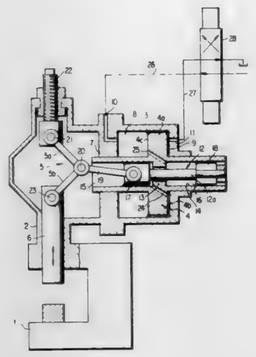
3,926,032
SHUTTLE LOADER FOR PRESS
Wayne D. Brooks, Losantville, and Thomas L. Hendricks, New Castle, both of Ind., assignors to Magna Machine & Tool Co., New Castle, Ind.
Filed June 6, 1973, Ser. No. 367,569
Int. Cl.² B21J 13/00
U.S. Cl. 72—419 10 Claims



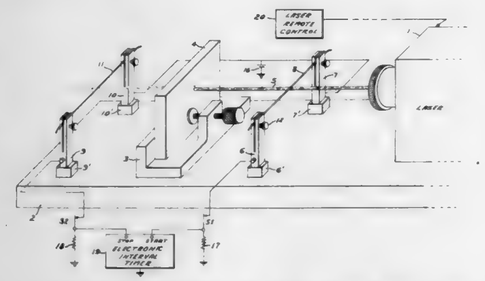
9.
The combination of:
a press including a press bed and a ram movable to and from said press bed, said ram having mountable thereon a first die shoe;
a support frame mounted on said press bed and extending outwardly from beneath said ram;
a shuttle slidably mounted on said support frame to support a second die shoe complementary to said first die shoe;
drive means including a driver connected to said shuttle, said drive means being operable to move said shuttle from a press operating position immediately beneath said ram to a remote position outwardly from said ram and back to said operating position;
first locking means operable to lock said shuttle in said operating position, said locking means includes an actuator and a movably mounted locking rod on said support frame, said actuator is operably connected to said movably mounted locking rod which moves into said shuttle when said shuttle moves to said operating position and contacts said actuator, said locking rod projects into said shuttle preventing said shuttle from moving from said operating position;
a pressure plate mounted atop said support frame and beneath said ram; and wherein:
said shuttle includes a main frame mounted upon but spaced from said support frame to pass over said pressure plate as said shuttle moves to said operating position, said pressure plate has sufficient thickness to contact said main frame and limit downward movement thereof when said ram applies downward force thereto.

3,926,033
TOGGLE-JOINT PRESS
Gaston Forichon, Boulogne, France, assignor to Regie Nationale Des Usines Renault, Billancourt, France
Filed Jan. 28, 1975, Ser. No. 544,816
Claims priority, application France, Jan. 28, 1974, 74.02670
Int. Cl.² B21J 9/18
U.S. Cl. 72—451 10 Claims

1. A fluid-driven toggle-joint press of the type comprising a cylinder having a control piston means moveable therein which is joined by a connecting rod to the knee of a toggle joint formed by at least two links, one link being hinged at a fixed point and the other at the end of a tool-holding piston, the press being characterized by the improvement comprising: said control piston means being formed of two relatively moveable coaxial pistons; and
means for stopping and thus limiting the travel of at least one of said coaxial piston while permitting the other to continue its motion to effect the return of the tool-holding piston.

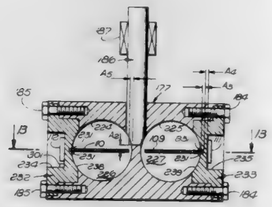


3,926,034
DEVICE FOR MEASURING LASER BEAM PENETRATION TIME
Conrad M. Phillippi, 7420 Brantford Road, Dayton, Ohio 45414; Donald F. Stevison, 218 Zimmerman St., New Carlisle, Ohio 45344, and Willard J. Ekman, 4543 Kendall Drive, Woodbridge, Va. 22193
Filed Feb. 27, 1975, Ser. No. 553,699
Int. Cl.² G01N 25/00
U.S. Cl. 73—15 R 4 Claims



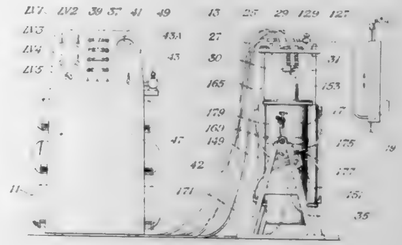
1. Apparatus for measuring the time required for a laser beam to penetrate a test specimen of a material as a measure of the resistance of the material to laser radiation, said apparatus comprising: a laser, having on-off control means, for producing, when on, a beam of radiation of predetermined size and power density; means for supporting a test specimen of the material in the path of said beam; first and second small conductive switch strips each capable of being easily severed by said beam; means for holding said first strip tautly across the path of said beam between the specimen and the laser; means for holding said second strip tautly across the path of said beam on the opposite side of the specimen from said laser; an electronic interval timer having start and stop circuits; means including the holding means for said first strip for including the first strip as a control element in the start circuit of said timer; and means including the holding means for said second strip for including the second strip as a control element in the stop circuit of said timer.

3,926,035
GRAVITOMETER
Gerald Lance Schlatter, Boulder, Colo., assignor to International Telephone & Telegraph Corporation, New York, N.Y.
Filed Nov. 29, 1974, Ser. No. 528,022
Int. Cl.² G01N 9/00
U.S. Cl. 73—32 A 5 Claims



1. A gravitometer comprising: a body having first and second chambers therein to contain air and a gas of interest, respectively; first and second spring metal ferromagnetic cantilevered vanes mounted in said first and second chambers, respectively, each vane having one end fixed relative to said body and a free end opposite thereof for immersion in said air and gas, respectively, said first vane free end being positioned to vibrate back and forth in a first pair of predetermined opposite directions in said first chamber without touching said body, said second vane free end being positioned to vibrate back and forth in a second pair of predetermined opposite directions in said second chamber without touching said body, said first pair of directions being approximately parallel to the direction in which the thicknesses of both of said first and second vanes are measured, said second pair of directions being approximately parallel to the direction in which the second vane thickness is measured; driver coil means fixed relative to said body in a position to attract said vane free ends when said coil is energized; first and second pickups fixed relative to and contiguous to the said one end of said first and second vanes, respectively, to produce respective output signals of the respective vane frequencies; and amplifier means connected from both of said pickups to said drive coil means to impress an output signal on said driver coil means to cause the current therein to flow alternately in opposite directions and to cause said first and second vanes to vibrate continuously at respective frequencies equal to one-half the frequencies of the output signals of said first and second pickups, respectively, said amplifier means including first and second means connected from said first and second pickups, respectively, to produce first and second signals of first and second frequencies, respectively, equal to one-half the frequencies of the output signals of said first and second pickups, respectively, and third means connected from said first and second means to produce a sum signal directly proportional to the sum of said first and second signals, said amplifier means being connected to said driver coil means to impress said sum signal thereon.

3,926,036
TEST APPARATUS FOR HIGH PRESSURE CONTAINER
James C. Bower, 7401 Bettinger, Grapevine, Tex. 76051
Filed Nov. 1, 1974, Ser. No. 520,028
Int. Cl.² G01M 3/02; B08B 9/08
U.S. Cl. 73—37 7 Claims

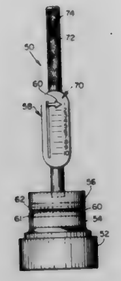


1. A combination apparatus system for cleaning and pressure testing and drying a high pressure container having an opening leading to its interior comprising:
a. a closed system for pressure testing said container; said closed system including:
i. two tanks for holding a volume of a first liquid chemical less than the total volume of said two tanks; said first liquid chemical having good cleaning characteristics, having high vapor pressure for rapid vaporization, and being nonflammable;
ii. first and second conduits having first ends adapted to be coupled in fluid communication with the interior of said high pressure container by way of its opening;
iii. a first pair of flow lines comprising two lines separately connected to the tops of said two tanks;
iv. first flow control means for separately connecting said first conduit with either of said lines of said first pair;
v. a second pair of flow lines comprising two lines separately connected to the bottoms of said two tanks;
vi. second flow control means for separately connecting said second conduit with either of said lines of said second pair of flow lines; and
vii. pressurizing means connected to said second conduit for elevating the pressure interiorly of said container once said container has been filled with said liquid chemical;
b. an open system for measuring the volumetric expansion of said container when subjected to pressure; said open system including:
i. a reservoir for a second liquid;
ii. a jacket means adapted for insertion of said container therewithin; having a lid means for sealingly engaging the top of said jacket and encompassing said container;
iii. conduits connected with said reservoir and said lid means;
iv. liquid flow means for flowing said second liquid into and from said jacket and about said container means disposed therewithin when said lid means is closed; and
v. differential volume measuring means connected with one of said conduits that are connected with said lid means for measuring the differential volume of liquid displaced by said container when subjected to high pressure; said differential volume measuring means having means for obtaining a zero reading before pressure is applied interiorly of said container within the filled jacket and a means for reading the volume displaced by said container after said pressurizing thereof.

3,926,037
PROCESSES AND DEVICES FOR DETERMINING PROPERTIES OF BODILY MUCUS

Louis Kopito, Brookline; Samuel R. Schuster, Wellesley, and Harold Kosasky, Brookline, all of Mass., assignors to Ovutime, Inc., Wellesley, Mass.

Filed Mar. 14, 1975, Ser. No. 558,247
Int. Cl.² G01N *33/16, 13/04*
U.S. Cl. 73—53 **10 Claims**



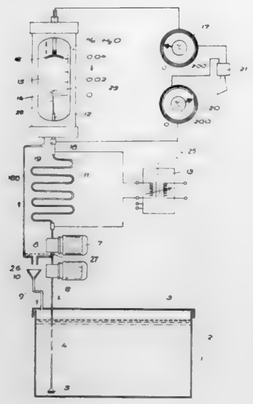
1. A device for determining the properties of bodily mucus comprising:
   a. a pair of separable cooperating members, each said member having a working face defining a bearing surface of predetermined configuration, said bearing surfaces in face to face relationship define a plurality of regions adapted to contain a bodily mucus sample, the surface area of said regions being greater that the surface area of the interface between said bearing surfaces; and
   b. indicating means operatively connected to at least one of said members for providing an indication of the force required to separate said members when said regions contain a bodily mucus sample, the force required to separate said bodily mucus sample at said interface defines the property of said bodily mucus.

3,926,038
METHOD AND APPARATUS FOR TESTING OF A LQIUID TO DETERMINE A MINOR ADMIXTURE OF A LOWER BOILING POINT MATERIAL

Joachim Wunning, Warmbronn; Rolf Bieber, Ditzingen, and Heinz Lustig, Friolzheim, all of Germany, assignors to Firma J. Aichelin, Stuttgart, Germany

Filed May 8, 1974, Ser. No. 467,912
Claims priority, application Germany, July 5, 1973, 2334255
Int. Cl.² G01N *25/00*
U.S. Cl. 73—61.1 R **17 Claims**

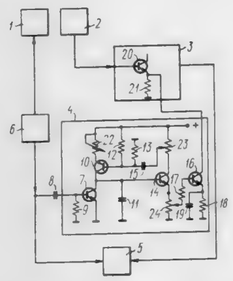
1. A method for determining the amount of a minor liquid component in a liquid comprising a major component and said minor component, said minor component having a lower boiling point than said major component, comprising passing a predetermined volume of said liquid being tested through a heating device whereby said liquid being tested is heated during a predetermined period of time to a predetermined temperature which is above the boiling point of said minor liquid component and below the boiling point of said major liquid component whereby any minor liquid component contained in said liquid being tested is vaporized, said predetermined period of time being insufficient for separation of said vaporized minor component from said major component, and then passing said heated liquid through a nozzle defining a constricted opening to produce an unsupported liquid jet, measuring a dimension of said unsupported liquid jet, and then comparing said measured dimension with a predetermined dimensional value corresponding to an unsupported liquid jet for the same predetermined volume of a liquid consisting of said major component passed through said constricted opening after having been heated under the same conditions.



3,926,039
PULSED ULTRASONIC FLAW DETECTOR

Oleg Nikolaevich Zhukov, Sovkhoz Krasny Mayak, 7, kv. 4; Moisei Davidovich Medvinsky, Pushkinskaya ulitsa, 9, kv. 58, and Vladimir Izidorovich Ryk, pereulok Axakova, 18, kv. 14, all of Moscow, U.S.S.R.

Filed June 7, 1973, Ser. No. 367,874
Int. Cl.² G01N *29/04*
U.S. Cl. 73—67.7 **6 Claims**

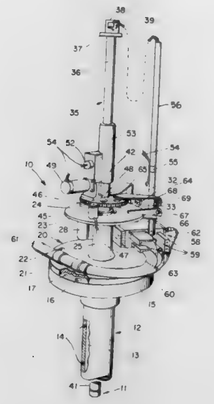


1. A pulsed ultrasonic flaw detector for testing materials, comprising an ultrasonic oscillator; a receiver for signals reflected from the internal defects in the material under test; a first amplifier for said receiver, including at least one stage for amplifying the signals introduced from said receiver; an AC negative feedback circuit in said one amplifier stage; an operational amplifier having therein a current generator circuit and at least two stages, including an output stage; said operational amplifier being connected to said first amplifier via said negative feedback circuit; said generator circuit having a controllable internal resistance and having applied thereto AC positive feedback furnished by one of said stages of said operational amplifier; in the latter, a capacitor coupled to said generator circuit and to said one stage thereof, said capacitor forming a signal to control said first amplifier, thereby compensating for the effect of the depth, at which the defects occur, on the amplitude of the signals reflected therefrom; an indicator connected to said first amplifier; a synchronizer connected to said oscillator, to said operational amplifier and to said indicator, in controlling relation thereto; and means for quickly discharging said capacitor which forms the control signal.

3,926,040
DEVICE FOR GUIDING SENSOR MOVEMENT WITHIN A TUBE

Thomas E. Cowell, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sept. 4, 1973, Ser. No. 394,428
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.8 S **18 Claims**



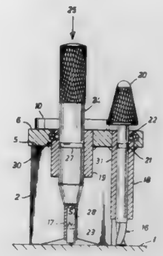
1. A positional control mechanism for guiding mechanical movement within a tube, comprising:
   a. a mounting base defining a central guideway and structured for removable placement on an end of a tube;
   b. a drive gear having an opening therethrough in alignment with the central guideway and a drive element extending into the opening, the drive gear being rotatably coupled to the mounting base;
   c. an elongated carrier pipe extending through the opening in the drive gear and mouting base central guideway and formed along one longitudinally extending portion with a drive slot for receiving the drive element and along a different longitudinally extending portion with a recessed gear rack;
   d. a working head carried by the carrier pipe;
   e. a first motor (28) connected to the mounting base and operatively coupled with the drive gear to cause rotation of the carrier pipe;
   f. a second motor (49) mounted on the drive gear and operatively coupled with the gear rack to selectively cause axial movement of the carrier pipe;
   g. actuator means for operating the first motor and second motor to cause movement of the carrier pipe and repositioning of the working head within the tube; and,
   h. bearing means located in the mounting base central guideway for receiving the carrier pipe in sliding, rotatable engagement.

3,926,041
PORTABLE HARDNESS INSPECTION TOOL

Robert B. Shaw, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 221,224, Jan. 27, 1972, abandoned. This application Dec. 20, 1972, Ser. No. 317,023
Int. Cl.² G01N *3/42*
U.S. Cl. 73—85 **10 Claims**

10. A method of measuring the hardness of a test piece comprising the steps of:
   positioning an expendable indenter above the test piece;
   driving the indenter against the test piece a known distance; and

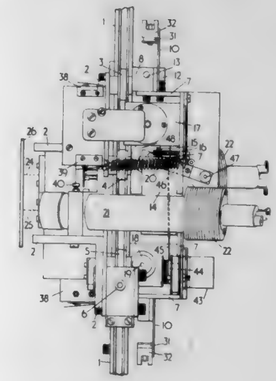


   measuring the amount of deformation of the indenter, the amount of deformation being a direct measure of the hardness of the test piece.

3,926,042
METHOD AND APPARATUS FOR FOLLOWING THE MOTION OF A DATUM MARK

Arthur Rowlatt More, Oxted, and Robert John Whittington, Sevenoaks, both of England, assignors to H. W. Wallace & Company, Limited, England

Filed Feb. 19, 1974, Ser. No. 443,755
Int. Cl.² G01B *11/16*
U.S. Cl. 73—88 A **8 Claims**



1. An apparatus for following the motion of a datum mark characterised in comprising a rectilinear rail, a carriage movable longitudinally of the rail and supported thereby, a reversible electric motor on the carriage the drive of which makes driving engagement with the rail, an electric lamp means on the carriage arranged to illuminate a datum mark positioned adjacent the rail, a photo-electric cell on the carriage having a pair of light sensitive electrodes closely adjacent one another, optical means for projecting an image of a datum mark on the light sensitive electrodes of the photo-electric cell, boundary between the electrodes being rectinilinear and at right angles to the longitudinal axis of the rail, means for deriving an electric signal from each light sensitive electrode of the photocell means, for comparing the signals the one with the other and deriving a difference signal therefrom, means for amplifying the difference signal and means for applying the difference signal to the electric motor of a polarity as will operate the motor in that direction of rotation as will tend to maintain or will move the carriage in such direction as to restore the position of the image of the datum mark symmetrical with the boundary between the electrodes in the photocell

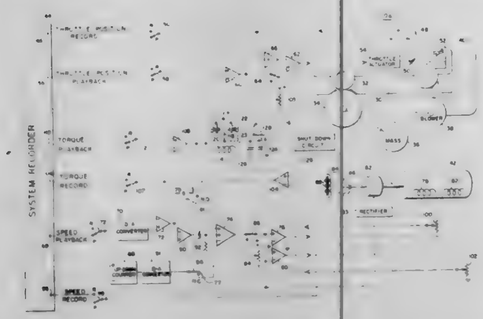
as and when the datum mark moves along the path parallel to the said rail.

3,926,043

ROAD SIMULATOR SYSTEM WITH PROVISION FOR ENGINE DEGRADATION COMPENSATION

Richard A. Marshall, and Edward F. Miller, both of Indianapolis, Ind., assignors to Laboratory Equipment Corporation, Mooresville, Ind.

Filed Apr. 24, 1974, Ser. No. 463,470
Int. Cl.² G01L 5/13
U.S. Cl. 73—117 **27 Claims**



1. The method for simulating a road test of an accelerator controlled vehicle comprising the steps of:

road testing the vehicle to provide a road test record having signals representative of the speed of the vehicle and the corresponding position of the accelerator recorded thereon;

placing a driving wheel of the vehicle in contact with a traction roller of a dynamometer;

simulating a road test by playing back the road test record and adjusting the position of the accelerator in accordance with the position indicated by the accelerator position representative signal recorded on the road test record while simultaneously adjusting the mechanical load provided by the dynamometer traction roller to maintain the speed of the vehicle substantially similar to the speed indicated by the speed representative signal recorded on the road test record;

monitoring the torque provided by the vehicle during the road test simulation and recording a signal representative of the torque corresponding to each speed and accelerator position occurring during the road test simulation;

repeating the road test simulation while playing back the record torque representative signal and comparing the torque indicated by the recorded torque representative signal with the torque provided by the vehicle during the repeated road test simulation; and

adjusting the accelerator position of the vehicle during the repeated road test simulation as required to maintain the torque provided by the vehicle substantially similar to the torque indicated by the recorded torque representative signal obtained during the road test simulation and to maintain the speed of the vehicle substantially similar to the speed indicated by the road test record.

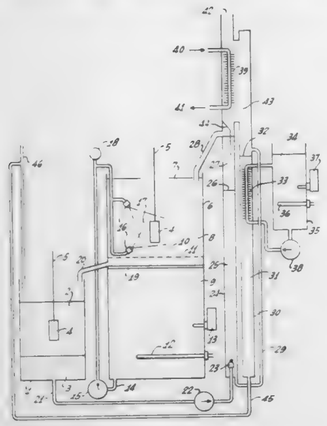
3,926,044

CLOSED-LOOP WATER-WASHABLE INSPECTION PENETRANT PROCESS

James R. Alburger, 5007 Hillard Ave., La Canada, Calif. 91011

Filed Jan. 11, 1974, Ser. No. 432,752
Int. Cl.² G01N 21/16
U.S. Cl. 73—104 **2 Claims**

1. In a water-washable inspection penetrant process in which a water-removable dyed liquid inspection penetrant is applied to a test surface and excess surface penetrant is removed by washing said test surface with water, leaving entrapments of said penetrant in any crack defects which are present, and leaving at least part of said penetrant in the form of a solution in said wash water, the improvement which permits recovery and re-use of both the wash water and penetrant dissolved in said wash water in which said penetrant is a non-surfactant-type low-solubility composition, and in which recovery of said penetrant is effected by the steps of (1) injecting said water solution of penetrant into a normally liquid water-insoluble volatile halocarbon solvent to provide for extracting said penetrant from said water solution, (2) separating said wash water from said volatile halocarbon by flotation, and (3) distilling said volatile halocarbon to separate said extracted penetrant.

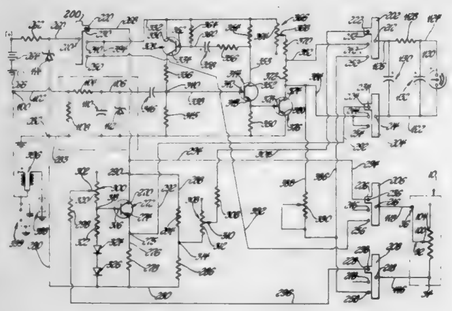


3,926,045

FLOW SENSOR AND SYSTEM

Gerald K. Miller, Hersey, Mich., assignor to Nartron Corporation, Reed City, Mich.

Filed Jan. 30, 1974, Ser. No. 437,926
Int. Cl.² G01M 15/00
U.S. Cl. 73—114 **9 Claims**



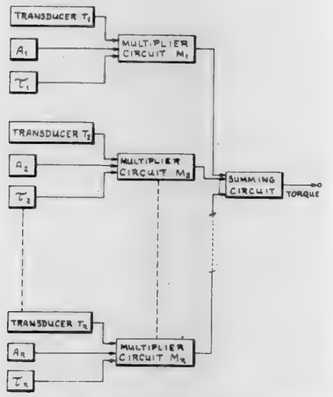
3. Electrical circuit means, for use in an automotive vehicle having a fluid-fuel consuming engine, for producing, in response to a plurality of variable input signals indicative of indicia of vehicle operation, a linear output signal corresponding to the distance-rate of consumption of said fuel, said electrical circuit means comprising first branch electrical circuit means effective for opening and closing related electrical output circuit means in timed relationship to the speed of operation of said engine for producing a first variable electrical signal indicative of engine speed, second branch electrical circuit means effective for producing a second variable electrical voltage signal the magnitude of which varies in a linear relationship with respect to the rate of flow of said fuel to said engine, electrical output means operatively connected to said output circuit means and adapted to be responsive to said second variable electrical signal, said output means being effectively acted upon by said second variable electrical signal whenever said output circuit means is closed in response to said first electrical signal for producing an output in response thereto; and operator actuatable switch means, said switch means having at least two operating positions one of which is effective to electrically disconnect said second branch electrical circuit means to thereby prevent the application of said second variable electrical signal to said output means.

3,926,046

SYSTEM FOR MEASURING UNSTEADY AERODYNAMIC TORQUES

Leonard J. Otten, III, Sunnyvale, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 8, 1974, Ser. No. 522,365
Int. Cl.² G01N 3/22
U.S. Cl. 73—133 R **2 Claims**



1. A system for determining the collective aerodynamic normal pressures in a cavity comprising:

a. a shell positioned inside the cavity;

b. a plurality of high response pressure transducers uniformly positioned about the shell, each transducer being associated with a predetermined area thereabout;

c. a plurality of signal sources associated with one each of the pressure transducers and indicating the particular area of interest about the transducer;

d. a plurality of multiplying circuits fed by one each of the pressure transducers and one each of the plurality of signal sources; and

e. a summing circuit fed by the plurality of multiplying circuits, the outputs indicating the collective pressure.

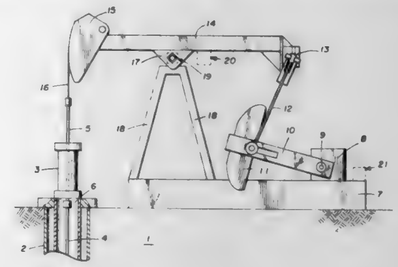
3,926,047

WELL PRODUCTION SIGNAL MEANS

Spencer E. Duke, Garland, and Gerald L. Stevens, Houston, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed June 15, 1972, Ser. No. 262,941
Int. Cl.² E21B 47/00
U.S. Cl. 73—151 **1 Claim**

1. In a well pumping unit containing a walking beam carried by a saddle bearing which in turn is supported by a sampson post, said walking beam being driven by a main shaft from a gear box, the improvement comprising a displacement trace signal means which produces a signal upon movement of a member of said signal means and without a cable-and-reel driven device, the character of said signal varying with the extent of movement of said member, said signal means is carried by said walking beam so that movement of said walking beam can cause movement of said movable member, a first elongate member having opposing first and second ends and fixed at its first end to said movable member, said first elongate member extending generally toward said sampson post-saddle bearing combination, said first elongate member terminates at its opposing second end intermediate said signal means and said combination, said second end of said first



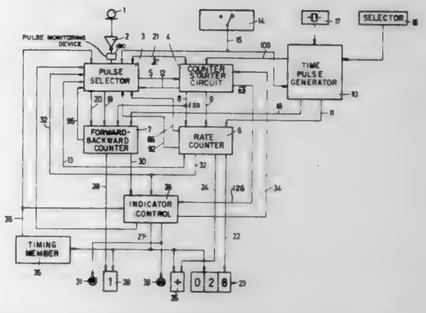
elongate means carries a swivel means, a second elongate means having opposing first and second ends and fixed at its first end to said sampson post, said opposing second end of said second elongate means being connected to said swivel means so that as said walking beam reciprocates up and down the movable member is moved by the restraint placed thereon by said first and second elongate means, and means for conducting said signal from said signal means to a receiving means.

3,926,048

DEVICE FOR THE DIGITAL INDICATION OF THE ACCURACY OF A MECHANICAL CLOCKWORK

Heinrich Uebelhart; Erich Schmid, and Paul Wyser, all of Itingen, Switzerland, assignors to Renata A.G., Itingen, Switzerland

Filed Dec. 12, 1972, Ser. No. 314,464
Int. Cl. G04d 7/12
U.S. Cl. 73—6 **2 Claims**



1. Apparatus for the digital indication of the accuracy of a mechanical clockwork comprising means for producing electrical signals in response to the periodic sounds produced in the clockwork, pulse selector means connected to the output of said electrical signal producing means for producing a first measuring pulse at the beginning of a measuring interval extending over several oscillations of the balance of the clockwork and a second measuring pulse at the end of the measuring interval, pulse monitoring means coupled between said means for producing said electrical signals and said pulse selector means, gate means located between the input and the output of said pulse monitoring means, means for blocking

said gate means until a predetermined time after the end of a measuring interval, means for producing timing signals, first counter means connected to said timing signal producing means and responsive to said first measuring pulse for starting a count at the beginning of said measuring interval and for terminating said count in response to the second measuring pulse, the count an said first counter means corresponding to the accuracy of the balance of the clockwork, forward and backward counter means for receiving said timing signals, means responsive to said electrical signals for staring said forward and backward counter means counting in one direction for a predetermined time of one oscillation cycle of the clockwork balance and in the reverse direction for the remainder of the oscillation cycle for measuring the poise of the balance of the clockwork, first indicator display means connected to said first counter means for displaying the count of said first counter means, second indicator display means connected to said forward and backward counter for displaying the count of said forward and backward counter means.

3,926,049
QUADRATURE-VOLTAGE BALANCING CIRCUIT OR ELECTROMAGNETIC FLOWMETER

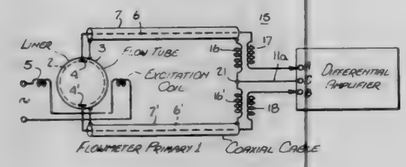
Albert Seebode, Rosdorf; Eggert Appel, Dransfeld, and Gottfried Geisler, Gottingen, all of Germany, assignors to Fischer & Porter Co., Warminster, Pa.

Filed Aug. 20, 1974, Ser. No. 499,014

Claims priority, application Germany, Nov. 3, 1973, 2355085

Int. Cl.² G01F *1/58*

U.S. Cl. 73—194 EM **8 Claims**



1. In combination with an electromagnetic flowmeter wherein a fluid whose flow rate is to be measured is conducted through a metallic flow tube to intersect a transverse alternatingcurrent magnetic field whereby a signal representing flow rate is induced in first and second diametrically-opposed electrodes projecting into said tube; a balancing circuit for coupling said electrodes to the respective input terminals of an amplifier while compensating for the quadrature voltage induced in the leads extending from said electrodes, said circuit comprising:

A. a transformer assembly having first and second sections each having a primary and a secondary, and

B. first and second coaxial cables each having an inner conductor surrounded by an outer shielding conductor, said first and second electrodes being respectively connected through said first and second inner conductors in series with the secondaries of said first and second sections to the input terminals of said amplifier, the primaries of said first and second sections being connected through said outer conductors to external points on the circumference of said metallic flow tube whereby quadrature voltage induced in said outer conductors and applied to said primaries acts in opposition to quadrature voltage induced in said inner conductors and applied to said secondaries, whereby the signal applied to said amplifier is substantially free of a quadrature voltage component.

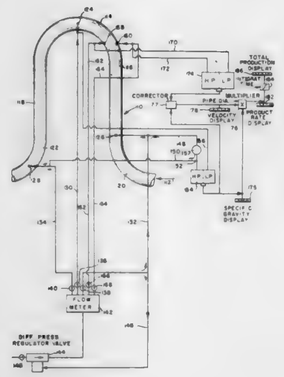
3,926,050
METHOD AND APPARATUS FOR DETERMINING SOLIDS DELIVERED FROM MOVING SLURRY

Thomas M. Turner, Severna Park, and Charles H. Scheid, Baltimore, both of Md., assignors to Ellicott Machine Corporation, Baltimore, Md.

Continuation-in-part of Ser. No. 367,865, June 7, 1973, abandoned, and Ser. No. 299,134, Oct. 19, 1972, abandoned, which is a continuation-in-part of Ser. No. 218,760, Jan. 18, 1972, abandoned. This application Aug. 28, 1974, Ser. No. 501,297

Int. Cl.² G01N *9/26*; **G01F** *1/88*

U.S. Cl. 73—205 D **18 Claims**



4. The method of measuring the specific gravity of slurries moving through a pipe line having a U-bend therein including a pair of legs having vertical components comprising the steps of alternately pumping clear water and slurry of known specific gravity through said pipe line, measuring the pressure difference between a pair of vertically spaced positions in each of the respective legs when clear water and when said known slurry is moving in said pipeline, varying said positions, placing pressure taps at those vertically spaced positions of each leg where the pressure difference between said positions in each leg is equal for clear water and also equal for said known slurry, measuring the pressure differential between the average pressure at the upper of said taps and the average pressure at the lower of said taps of both legs when slurry of unknown specific gravity is flowing through the pipe line, and converting said pressure differential into a signal which is a function of the specific gravity of said slurry.

5. The method of claim 4 including, in addition, sensing the velocity of the slurry flow, deriving from said specific gravity reading the solids concentration in said slurry, and deriving the solid flow rate by multiplying the derived concentration by the sensed velocity of flow.

3,926,051
FROST PROTECTION PLUG FOR A WATER METER

Oded Katzman, Samech Vav St., No. 32, Kiryat Chaim, Israel

Filed Jan. 2, 1975, Ser. No. 537,959

Int. Cl.² G01F *15/10*

U.S. Cl. 73—277 **6 Claims**

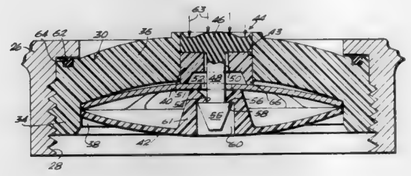
1. A frost protection plug assembly for a water meter, having inlet and outlet spuds connected respectively to inlet and outlet water conduits and an enlarged central portion providing a conventional water measuring unit and dial means to record the volume of water passing therethrough, said plug assembly comprising:

A. A main plug housing fixed as by screw threading into a through hole in a wall of said central portion, said main plug housing providing:

1. An annular outer cavity, and

2. A reduced diameter annular hole, coaxial therewith, extending between said cavity and an interior chamber of said central portion;

B. Spring means contained in said outer cavity in a normally tensioned condition;



C. Piston means normally in a slidable, sealed condition within said reduced diameter annular hole;

D. Connection means between said piston means and said spring means whereby said spring means and piston means are maintained in said normal positions when the water pressure in said water meter is maintained below a certain level and are ejected therefrom when said pressure level is exceeded to permit the water to drain from said water meter through said reduced diameter annular hole and outer cavity.

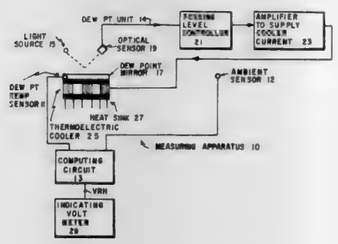
3,926,052
RELATIVE HUMIDITY COMPUTER

Jon Harold Bechtel, Goshen, Ind., assignor to Johnson Service Company, Milwaukee, Wis.

Filed May 6, 1974, Ser. No. 466,977

Int. Cl.² G01N *25/02*

U.S. Cl. 73—336.5 **16 Claims**



1. In a system for monitoring a condition of a given environment, a measuring apparatus comprising first sensing means for sensing a first parameter of the environment, second sensing means for sensing a second parameter of the environment, first amplifier means, input means for providing an input signal to said first amplifier means to enable said first amplifier means to provide an amplified output signal, said first and second sensing means being operable to control the gain of said first amplifier means whereby said output signal varies linearly with changes in the condition being monitored, said input means including second amplifier means for summing said output signal with a reference signal to provide said input signal for said first amplifier means.

3,926,053
APPARATUS FOR NON-CONTACT, ACCURATE AND CONTINUOUS DETERMINATION OF SURFACE TEMPERATURE ON A PART

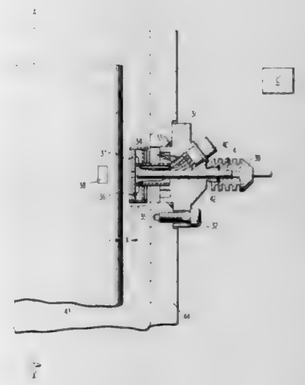
Josef Schurrer, Karlsfeld, and Josef Meyer, Olching, both of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Germany

Filed Aug. 22, 1973, Ser. No. 390,486

Claims priority, application Germany, Aug. 22, 1972, 2241107; Aug. 22, 1972, 2241108

Int. Cl.² G01K *13/08*, *7/00*

U.S. Cl. 73—351 **42 Claims**



1. Apparatus for non-contact, accurate and continuous determination of the temperature on a surface comprising:

temperature detecting means,

and distance measuring means for continuously measuring the distance between said surface and said temperature detecting means,

wherein said temperature detecting means and said distance measuring means are arranged together to form a measuring probe spaced from said surface for simultaneously detecting the temperature of a spot on the surface and the distance of the probe from the spot, and

wherein signal line means are provided for said distance measuring means and said temperature detecting means for supplying signals representative of the instantaneous distance measured and temperature detected to analyser means positioned remotely of said probe, said analyser means compensating the detected temperature signal in accordance with the instantaneous distance signal so as to provide an accurate determination of the temperature of the spot on the surface.

3,926,054
GRAVITY GRADIOMETER

Sheldon W. Buck, Brookline, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Nov. 11, 1974, Ser. No. 522,635

Int. Cl.² G01V *7/00*

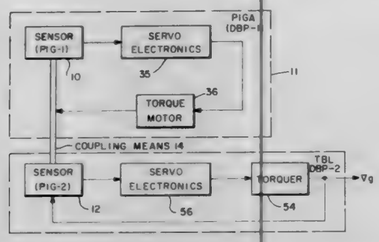
U.S. Cl. 73—382 **23 Claims**

1. A gravity gradiometer comprising:

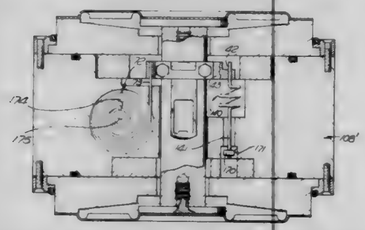
A. first and second dynamically balanced pendulum (DBP), each including a sensor having perpendicular DBP input and output axes and a DBP sensitive axis, said DBP sensitive axis being perpendicular to said output axis and having a common intersection point with said input and output axes, wherein the sensitive axis of each sensor is parallel to a common gradiometer sensitive axis, and

B. a means for coupling said first and second sensors to rotate at related angular rates about their respective

sensitive axes, said angular rates being related to physical characteristics of said sensors, said sensors being separated by a predetermined distance along said gradiometer sensitive axis.



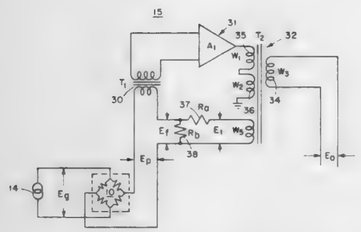
3,926,055
MECHANICAL SPAN AND ZERO ADJUSTMENT APPARATUS FOR PRESSURE TRANSDUCERS
Lawrence Taylor Garnett, Fullerton, Calif., assignor to International Telephone & Telegraph Corporation, New York, N.Y.
Filed Oct. 1, 1973, Ser. No. 402,336
Int. Cl.² G01L 7/08
U.S. Cl. 73—398 AR **28 Claims**



1. Apparatus for producing an output in accordance with the pressure of a fluid, said apparatus comprising: a body having a portion with a hole extending all the way therethrough, said body portion having two openings into said hole at the respective opposite ends thereof; two diaphragms each having an annular part sealed and fixed relative to said body portion around a respective one of said two openings sealing both of said openings shut, said diaphragms being fixed relative to said body portion in a manner such that said annular parts lie in respective first and second parallel planes, a first side of each diaphragm facing the corresponding opening adjacent thereto, each diaphragm having a second side opposite said first side thereof; input means to supply fluid under pressure to the second side of one diaphragm, each of said diaphragms having a movable part to take a deflection in accordance with the magnitude of said fluid pressure, said movable part of said one diaphragm having a portion; connection means movable independent of said body, but holding said diaphragm portions in fixed positions relative to each other; a spring having first and second ends, said first end being fixed relative to one of said portions to bias the said one diaphragm in a direction normal to the plane thereof; span adjustment means selectively movable from a first position to a second, and vice versa, to fix said spring second end relative to and connect it to the other of said portions, and to disconnect said spring second end from said other portion, respectively, said spring being constructed and mounted to apply a force in a direction toward the first side of said one diaphragm when said span adjustment means is in said first position thereof; and output means connected from said one diaphragm portion to said body for producing an output which is a predetermined function of said fluid pressure.

10. Apparatus for producing an output in accordance with the pressure of a fluid, said apparatus comprising: a body having a portion with an opening thereinto; a sensor having first and second sides and an annular part of said first side sealed to and fixed relative to said body portion around said opening; input means to supply fluid under pressure at least to a first predetermined one of said first and second sides of said sensor to cause deflection and movement of one portion thereof in accordance with said pressure; a spiral spring having inner and outer ends, said spring outer end being fixed relative to one of said sensor portions; a shaft rotatably mounted in a fixed axial position on the other of said portions, said spiral being coiled around said shaft, said spring inner end being fixed relative to said shaft; and releasable means to fix said shaft in a selected position of its rotation to the said other portion, said spiral spring being constructed and mounted to apply a force to said sensor in a direction toward a second predetermined one of said first and second sides thereof when said shaft is fixed as aforesaid, said first and second predetermined sides not necessarily being the same side, rotation of said shaft causing the said force to vary when said shaft is not fixed; and output means connected from said sensor portion to said body for producing an output which is a predetermined function of said fluid pressure.

3,926,056
CONDUCTIVITY, TEMPERATURE AND PRESSURE MEASURING SYSTEM
Neil L. Brown, Falmouth, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sept. 26, 1974, Ser. No. 509,508
Int. Cl.² G01L 9/04
U.S. Cl. 73—398 AR **5 Claims**



1. In a system for measuring the pressure within a fluid medium, the combination of

a strain gage bridge adapted to sense the pressure within said fluid medium,

said bridge being excited with an AC input signal of a known constant amplitude and of a kHz frequency;

a high-gain, multiple-stage amplifier having one of its stages tuned to said kHz frequency and having a negative feedback circuit;

means for connecting the bridge output circuit to the input circuit of said amplifier such that the negative feedback signal equals and opposes the bridge output signal whereby said bridge and amplifier operate as a self-balancing circuit,

the ratio of the amplitudes of the output signal of said amplifier and the A.C. input signal energizing said bridge when said balanced condition exists being proportional to the pressure then being sensed by said strain gage bridge; and

means for producing from said A.C. input signal and the output signal of said amplifier an n-bit binary signal indicative of the value of said ratio.

3,926,057
SPIRAL MANOMETER
Roy V. Baker, Lubbock, Tex., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Sept. 26, 1974, Ser. No. 509,596
Int. Cl.² G01L 7/18
U.S. Cl. 73—401 **9 Claims**



1. An apparatus for measuring pressure comprising:

a. a vertical cylindrical support tube comprising:

1. a spiral groove circumscribing the outer surface of the vertical cylinder from the top to the bottom in equidistant spirals,

2. a plurality of equidistant vertical lines for indexing, inscribed on the outer surface of the vertical cylinder substantially the full length thereof,

3. a plurality of equidistant horizontal rings inscribed around the circumference of the outer surface and spaced and numbered from the top to the bottom of the vertical cylinder for indicating vertical distance measurements,

4. an access hole located near the lower end of the vertical support cylinder to allow for access of

b. a transparent spiral tubing substantially of size and length to fit the spiral groove and attaching to

c. a fluid reservoir member, designed and located to fit inside the upper top section of the vertical support cylinder and comprising:

1. a standard connecting means for connecting the lower and upper of the spiral tubing,

2. an access opening for adding fluid to the reservoir,

3. a standard connecting means utilized as a low pressure port, located on the top of the fluid reservoir to allow for pressure differential measurement,

4. a yoke member affixed to the outer top circumference of the vertical support cylinder and used to support a standard connection fitting which is installed through the yoke in such a manner that the top end of the transparent spiral tubing can be connected to the bottom of the fitting and the top of the standard connection forms the high pressure port as well as a connecting device for pressure differential measurement,

5. a means of attaching the reservoir to a

6. top ring designed to fit and substantially form the top of the vertical cylinder, said top ring also having two holes for guide pins which function for alignment of the reservoir with the top ring,

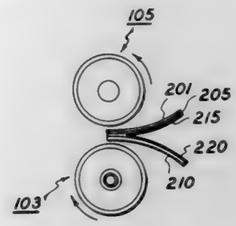
d. a base member for support of the vertical cylinder comprising:

1. a round flat horizontal base piece with a male threaded center insert portion designed to fit the inside diameter of the female threaded vertical cylinder which is threaded on the inside diameter of the vertical cylinder thereby allowing the base to screw into the vertical support cylinder,

2. a level bubble attached to the upper surface of the round flat horizontal base piece to allow for visual leveling of the entire device,

3. a leveling means.

3,926,058
CONTACT ARC REPLICATION DEVICE
Raghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 12, 1974, Ser. No. 532,083
Int. Cl.² G01D 21/00
U.S. Cl. 73—432 R **6 Claims**



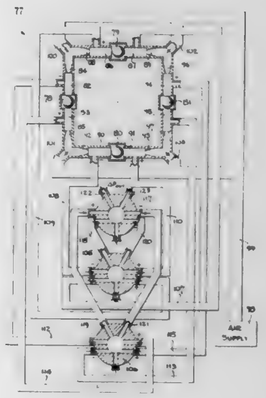
1. A device for measuring heat and pressure characteristics of a nip between pressure heated fusing rolls comprising:

a first sheet of support material,

a uniform layer of silicone rubber bonded to said support material, and

a layer of toner material coated on said silicone rubber whereby upon positioning a second sheet of unmarked support material in overlying contact with said toner layer and insertion of the sheets between pressure heated fusing rolls for a predetermined time and separation of the sheets, a portion of the toner pattern is offset from said silicone rubber layer onto said second sheet immediately indicating heat and pressure characteristics of the nip.

3,926,059
ACCELEROMETER
Vernon R. Fish, 525 Meadowbrook Ave., Orange, Calif. 92665
Division of Ser. No. 277,676, Aug. 3, 1972, Pat. No. 3,804,471.
This application Apr. 15, 1974, Ser. No. 460,993
Int. Cl.² G01P 15/02
U.S. Cl. 73—510 **1 Claim**



1. An accelerometer comprising

first, second, third and fourth seismic masses,

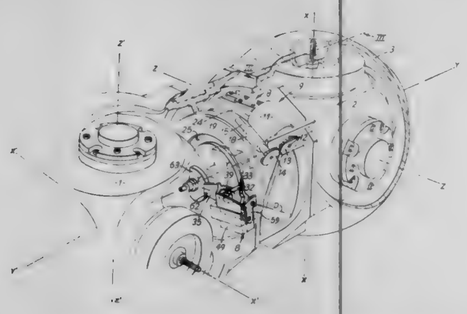
said masses being of equal size, shape and mass,
a pair of chambers positioned one on either side of each of said masses,
each of said chambers including an outlet opening facing the adjacent seismic masses,
said outlet openings being opposed and axially aligned for each of said seismic masses,
a source of pressurized fluid for providing fluid streams discharging through said outlet openings,
whereby each of said masses is suspended between opposed fluid streams and is movable toward and away from the adjacent outlet openings,
said fluid streams for said first and second seismic masses being substantially parallel,
said fluid streams for said third and fourth seismic masses being substantially parallel and normal to the direction of said fluid streams for said first and second seismic masses,
said masses and chambers being in substantially a square pattern,
means for detecting the static pressure in each of said chambers for obtaining signals of pressure increase from relative movement of a seismic mass toward an outlet opening and of pressure decrease from relative movement of a seismic mass away from an outlet opening as a result of angular deceleration of said chambers, and means for adding said signals so as to obtain a composite output signal proportional to angular acceleration.

3,926,060

GYROSCOPIC APPARATUS

Barrie Andrew Gillies, Crowthorne, and Frederick Granville Simpson, Woodley, both of England, assignors to Sperry Rand Limited, Bracknell, England

Filed May 10, 1973, Ser. No. 359,049
Claims priority, application United Kingdom, May 12, 1973, 22475/73
Int. Cl. G01c *19/24, 19/26*
U.S. Cl. 74—5.1 **20 Claims**



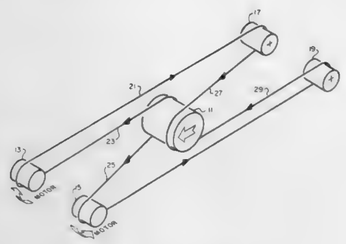
1. In a gyroscopic apparatus including at least one two-degree-of-freedom gyroscope having an outer case, a sensitive element mounted in an inner gimbal rotatable about an axis and an outer gimbal rotatable about an axis orthogonal to the inner gimbal axis, an improved caging mechanism for said inner and outer gimbal comprising,
a releasably operable plunger oriented within an attached to said outer case and movable along a line that passes through the inner gimbal axis and is parallel to the outer gimbal axis, and
inner gimbal extension means positioned along the inner gimbal axis for coacting with said plunger whereby said plunger engages said extension means thereby accurately caging said inner and outer gimbals simultaneously in a specified position.

3,926,061

DIFFERENTIAL DRIVE ROTATING DISC IMPACT PRINTER

Gary L. Paulson, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 2, 1974, Ser. No. 511,339
Int. Cl.² F16H *21/00, 7/00;* **B41J** *1/32, 19/00*
U.S. Cl. 74—22 R **8 Claims**



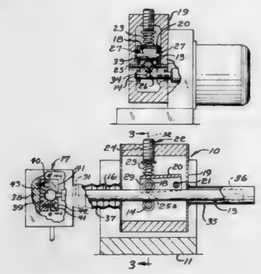
1. A differential drive system comprising:
a support;
first and second drive means fixedly mounted on said support for providing rotational motion;
moving means movably positioned for rotational and translational motion with respect to said support; and
linking means interconnected between said first and second drive means and said moving means for transmitting forces and torques therebetween, said moving means thereby undergoing motion having rotational and translational components whose magnitudes and directions depend on the relative magnitudes and directions of the rotational motions of said first and second drive means.

3,926,062

LINEAR MEASURING APPARATUS

Frederick R. Neff, Des Plaines, Ill., assignor to A & A Engineering Co., Franklin Park, Ill.

Filed Oct. 24, 1973, Ser. No. 409,175
Int. Cl. F16h *27/02*
U.S. Cl. 74—89 **21 Claims**



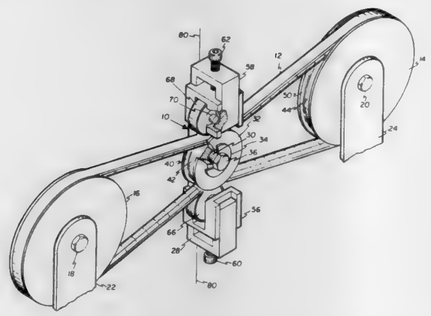
1. Apparatus for providing a rotary output corresponding accurately to linear movement of a movable member, comprising: a cylindrical output roller; means supporting said roller for rotation about an axis of rotation; an elongated actuator element having a circular cross section; holding means for positioning the actuator element in point contact engagement with said output roller and extending substantially normally to the axis thereof; means applying a pressure force against said actuator element, said force acting through said actuator element and against said output roller through said point contact at a position spaced from said one end for causing the actuator element to be forcibly urged against said output roller whereby said actuator element has effectively positive driving engagement with said output roller, said force applying means concurrently adjustably constricting said output roller relative to said axis of rotation to adjust the amount of rotation thereof effected by longitudinal movement of said actuator element; and means for causing relative movement between the output roller and the actuator element to effect a rolling of the output roller along the longitudinal extent of the actuator element corresponding to linear movement of the movable member.

3,926,063

FLOATING IDLER PULLEY APPARATUS

Leonard E. Mayfield, B-7 Rocket Mobile Village, Alamogordo, N. Mex. 88310

Filed Dec. 9, 1974, Ser. No. 530,546
Int. Cl.² F16H *7/12, 7/00, 7/10*
U.S. Cl. 74—242.11 A **9 Claims**



1. A floating idler tensioner for a drivable band having a driving portion and a driven portion, said band engaging at least one driven wheel and one driving wheel, said tensioner being supportable solely by said band, said tensioner comprising:
a housing having a longitudinal axis;
central means for frictionally engaging said drivable band rotatably attached to said housing and having an axis of rotation perpendicular to said longitudinal axis;
first rotatable and adjustable tension imposing means for frictionally engaging said drivable band on said driving portion of said band having an axis of rotation essentially perpendicular to said longitudinal axis and parallel to said axis of rotation of said central means; and
second rotatable and adjustable tension imposing means for frictionally engaging said drivable band on said driven portion of said band having an axis of rotation essentially perpendicular to said longitudinal axis and parallel to said axis of rotation of said central means.

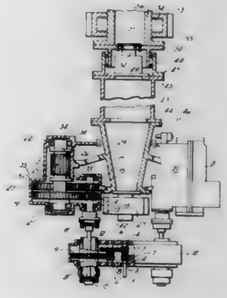
3,926,064

GEAR TRANSMISSION REDUCTION FOR DIVISION OF POWER

Francois Durand, 11 rue du Bateau, 06 Antibes, France

Filed Jan. 2, 1974, Ser. No. 430,226
Claims priority, application France, Sept. 21, 1973, 73.35920
Int. Cl.² F16H *1/20, 37/06, 1/06*
U.S. Cl. 74—421 R **7 Claims**

1. A gear reduction device for driving a single output gear at four spaced locations about the output gear's periphery from a single input shaft, said device comprising
first and second gear shafts, each of said first and second gear shafts being connected through a gear with said input shaft such that the power input to said input shaft is equally divided between said first and second gear shafts,
two helical pinions of reverse pitches mounted on each of said first and second gear shafts,
a pair of drive gear shafts connected with each of said first and second gear shafts through respective pairs of said pinions carried on said first and second gear shafts, one of said pair of pinions on said first gear shaft being adapted to drive one of each pair of said drive gear shafts associated with that first gear shaft and the other of said pair of said pinions on said first gear shaft being adapted to drive the other of that same pair of said drive gear shafts associated with that same gear shaft, and one of said pair of pinions on said second gear shaft being adapted to drive one of each pair of said drive gear shafts associated with that second gear shaft and the other of said pair of pinions on said second gear shaft being adapted to drive the other of that same pair of said drive gear shafts associated with that same second gear shaft, said connections being such that the power input to each pair of said drive gear shafts from each of said first and second gear shafts is equally divided therebetween, and



a pinion drive gear fixed to each of said drive gear shafts, all four of said pinion drive gears being simultaneously meshed with said single output gear,
said device initially subdividing an input torque into four equal and separate torques, and subsequently regrouping those torques on said single output gear continuously during operation of said device.
4. A device as set forth in claim 1 including
a first housing independent of said output gear, said first housing carrying a portion of said first and second gear shafts, and said first housing also carrying said input gear, a second housing for said drive gear shafts, said second housing also carrying a portion of said first and second gear shafts, and said second housing being independent of said first housing, and
a gear coupler interconnecting that portion of each first and second gear shaft carried by said first housing with that portion of that same gear shaft carried by said second housing.

3,926,065

BEVEL AND RING GEAR DRIVE

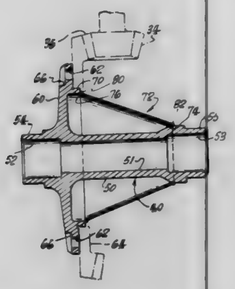
Robert S. Summers, 9190 Baseline, Alta Loma, Calif. 91701, and William R. Summers, 2105 Bonita, Ontario, Calif. 91761

Filed June 26, 1974, Ser. No. 483,133
Int. Cl.² F16H *1/14, 1/20*
U.S. Cl. 74—424 **2 Claims**

1. A bevel ring gear component comprising:
an elongate generally circular hub,
web means surrounding and extending radially out from said hub in a plane transverse to and spaced a distance from one end of the hub,
a bevel ring gear disposed circumferentially about and rigid on said web means and having a circular row of bevel gear

teeth coaxial with and facing said one end of said web, and

bracing means extending between and rigidly joined to said web means closely adjacent said ring gear and to said one hub end in a manner such that said bracing means extends



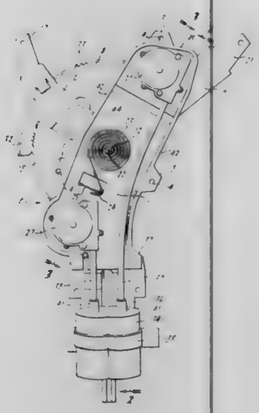
between said web means and hub at an oblique angle to the hub and acts in tension to resist deflection of said web means in the direction of the opposite end of said hub under the thrust in said direction of a gear mating with said ring gear.

3,926,066

POWER OPERATED WINDOW REGULATOR MECHANISM

Floyd N. Ladd, Warren; Marcel R. Raveschot, Allen Park, and Donald G. Stacy, Plymouth, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 28, 1974, Ser. No. 473,864
Int. Cl.² F16H *55/04*
U.S. Cl. 74—435 **2 Claims**



1. A window regulator mechanism for raising and lowering adjacent movable sections of a divided window panel,

the window regulator mechanism comprising:

an elongated mounting plate,

a pair of gear sectors rotatably superposed on a common pivot shaft journalled in the mounting plate intermediate the ends of the latter,

each gear sector having a regulator arm fixed thereto adapted to be coupled to one of the window panel sections,

independent reduction gear units located at opposite ends of the mounting plate, each coupled to a respective gear sector,

the reduction gear units being mounted on one face of the mounting plate and the gear sectors driven thereby being proximate to the opposite face,

the reduction gear units each having a drive pinion projecting through an aperture in the plate to mesh with a respective gear sector,

a drive cable means coupled to each reduction gear unit,

and an electric drive motor coupled to each drive cable means,

the drive motors being positioned in parallel relationship within a common casing carried on a support bracket attached to one end of the mounting plate,

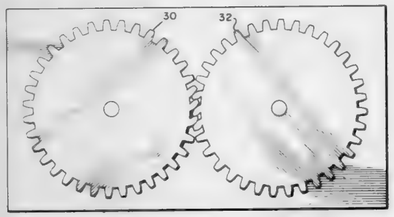
the drive cables extending from parallel output shafts at the same ends of the drive motors to the reduction gear units, the drive motors being independently operable to rotate the gear sectors to swing the regulator arms independently in window panel section lowering or raising directions.

3,926,067

CLUTCH FOR GEAR TRAINS

James S. Blanchard, Indianapolis, and Robert F. Weaver, Jamestown, both of Ind., assignors to P.R. Mallory & Co. Inc., Indianapolis, Ind.

Filed May 6, 1974, Ser. No. 467,388
Int. Cl.² F16H *55/14, 57/00*
U.S. Cl. 74—461 **7 Claims**



1. In a gear train that includes a first gear rotatably carried by a housing, a second gear rotatably carried by said housing and in running engagement with said first gear, an improved clutch comprising:

a. first gear teeth disposed on said first gear; and

b. second gear teeth disposed on said second gear adapted for operating in running engagement with said first gear teeth and having sufficient flexibility to permit deflection past said first gear teeth upon impediment of rotation of one of said first and second gears;

c. whereby said first and second gears can run together in a normal gear-to-gear fashion or slip past one another in a clutching fashion.

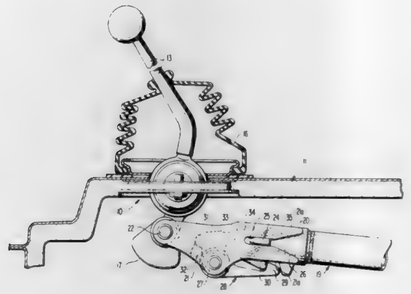
3,926,068

SHIFTING LINKAGE FOR SHIFTING CHANGE-SPEED TRANSMISSIONS

Hermann Jantzen, Hannover; Karl Kuffel, Kassel, and Herbert Puchta, Elgershausen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed May 31, 1974, Ser. No. 475,176
Claims priority, application Germany, June 2, 1973, 2328230
Int. Cl.² G05G *9/12, 9/16*
U.S. Cl. 74—473 R **28 Claims**

1. A shifting linkage for vehicles having a change-speed transmission and including a shifting lever means for shifting the transmission, the shifting lever means being supported in a portion of the vehicle accommodating the driver, and telescopic means for connecting the shift lever means with the transmission, the telescopic means being operable to be locked in a contracted position, characterized in that the telescopic means includes at least one inner telescopic member and at least one outer telescopic member, one of said inner and outer telescopic members being operatively connected with a part pivotally engaging at the shifting lever means, the other of said telescopic members being operatively connected with the change-speed transmission, and in that the locking action of the telescopic means in the contracted position takes place between said part and the other telescopic member.

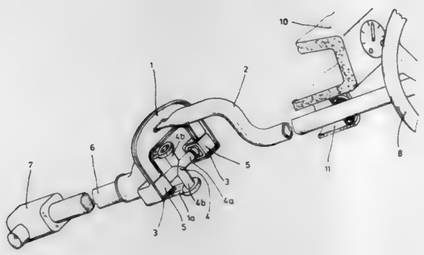


3,926,069

BREAKAWAY UNIVERSAL JOINT ASSEMBLY

Josef Wenninger, Vorsfelde, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Oct. 18, 1974, Ser. No. 515,982
Claims priority, application Germany, Oct. 30, 1973, 2354165
Int. Cl.² B62D *1/16*
U.S. Cl. 74—492 **5 Claims**



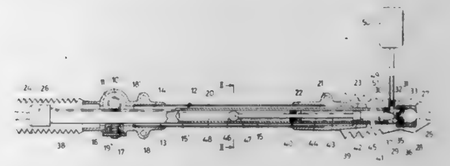
1. In a safety steering column for a vehicle having a steering wheel assembly and a steering gear assembly, the steering column extending between the steering wheel assembly and the steering gear assembly, the improvement comprising a breakaway universal joint assembly that includes a spider having four arms disposed in a cross-like configuration, a first yoke releasably coupled to a first two opposed arms of the spider, and a second yoke coupled to a second two opposed arms of the spider, the first yoke being adapted to release the first two opposed arms in response to a load exerted on the joint assembly which exceeds a predetermined load and which is exerted in a direction generally parallel to a longitudinal axis of the steering column.

3,926,070

RACK-AND-PINION STEERING GEAR BOX INCORPORATING A DAMPER FOR MOTOR VEHICLES

Giuseppe Busso, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed Sept. 7, 1973, Ser. No. 395,342
Claims priority, application Italy, Sept. 8, 1972, 28977/72
Int. Cl. B62D *3/12*
U.S. Cl. 74—498 **6 Claims**



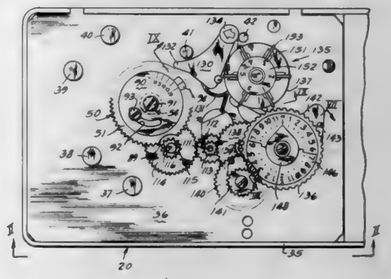
1. A rack-and-pinion steering-gear box for motor vehicles wherein a straight toothed rod is controlled to slide within a fixed tubular body by the rotation of a pinion, comprising aa two-membered hydraulic damper located inside an axially directed cavity of a hollow portion of said rod, said damper having a piston and a cylinder, which are respectively movable with a rectilinear motion along the axis of movement of said rod, the members of said damper being contained in the interior of said fixed body, one member being fastened to said body and the other to said rod.

3,926,071

CONTROL DEVICE

Eugene R. Elliott, Libertyville, Ill., assignor to Culligan International Company, Northbrook, Ill.

Filed Nov. 4, 1974, Ser. No. 520,468
Int. Cl.² F16H *53/00, 55/04;* **G06M** *3/00*
U.S. Cl. 74—567 **27 Claims**



1. A device for controlling actuation of valves of a liquid treatment apparatus during a reconditioning operation performed thereon, comprising a support; a compound cam unit mounted on said support for rotation, said cam unit including a driven gear having a cut-out segment in its periphery, a center member attached to the driven gear to rotate therewith, a segment member, and means for adjustably interconnecting the segment member and the center member, said center member and segment member each having a partial crylindrical surface, at least one of said partial cylindrical surfaces having axially spaced portions of different arcuate lengths, said interconnecting means positioning the cylindrical surface of the segment member in overlapping relation with a portion of the cylindrical surface of the center member so that said partial cylindrical surfaces coact to form a first and second cylindrical cam surfaces which are axially spaced and have different arcuate lengths, said interconnecting means enabling relative rotation between said members to vary the lengths of both cam surfaces; first and second means for controlling actuation of a valve with each means having cam

followers, said first and second means being mounted on the support with their cam followers engaging the first and second cam surfaces as the cam unit is in a service position; a motor mounted on said support; a pinion driven by said motor; means for mounting the pinion at the cut-out segment of the driven gear when the cam unit assumes the service position, said means for mounting enabling yielding of the pinion gear relative to the driven gear to enable mesh engagement therewith as the driven gear is rotated from the service position; and means engageable with the cam unit when in the service position for rotating the cam unit from the service position in response to an initiating signal so that the pinion rotates the cam unit through one revolution to sequentially actuate the first and second switch means to control the valves during the reconditioning operation.

3,926,072

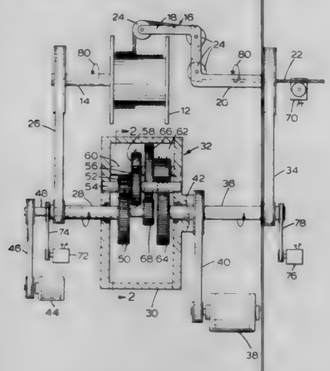
PLANETARY DIFFERENTIAL TRANSMISSION

Walter Lorne Richardson, Pointe Claire, Canada, assignor to Northern Eelectric Company Limited,, Montreal, Canada

Filed Oct. 24, 1974, Ser. No. 517,496

Int. Cl.² F16H *37/06*; **7/24** *07/24*; **D01H** *13/00*

U.S. Cl. 74—665 N **9 Claims**



1. A drive mechanism for a cable stranding machine having a rotatable take-up reel and a flyer rotatable concentrically about the reel, comprising:

A first drive shaft connectable with the reel;

A second drive shaft connectable with the flyer and coaxial with the first drive shaft;

differential transmission means coupling the first and second drive shafts, the transmission means comprising a housing journally mounted on said first and second drive shafts and gear means interengaging said shafts;

first drive means rotating the housing; and

second drive means engaging the gear means whereby the relative rotation of the first and second drive shafts is variably controllable.

3,926,073

AUTOMATIC TRANSMISSIONS WITH PLANETARY GEARS HAVING A BRAKING MECHANISM CAPABLE OF BEING PRE-ASSEMBLED

Jean Claude Roche, Rueil-Malmaison; Martial Lavarec, Paris, and Jean Maurice, St. Germain de la Grange, all of France, assignors to Regie Nationale des Usines Renault and Societe dite: Automobiles Peugeot, both of Paris, France

Filed Jan. 31, 1974, Ser. No. 438,402

Int. Cl.² F16H *57/10*, *03/44*

U.S. Cl. 74—753 **4 Claims**

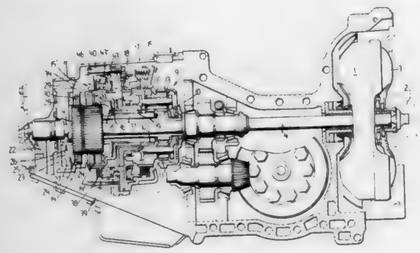
1. An automatic transmission having a planetary gear train and braking and clutching mechanisms associated with the elements of the planetary gear train comprising:

a housing;

coaxially disposed means provided within said housing, hydraulically controlled by means of spring biased pistons, for actuating said braking and clutching mechanisms for said elements of said planetary gear train;

a bulkhead forming the bearing for a free wheel and connected to said housing;

channel means for the distribution of hydraulic fluid to said braking mechanisms;



a brake casing fixed to said bulkhead; and

friction discs disposed within said casing,

said casing including a single portion projecting radially inwardly towards the longitudinal axis thereof so as to form a supporting surface for said friction discs, and wherein the periphery of said casing includes first means for securing said casing to said housing and second means for securing said casing to said bulkhead, internal wall portions of said casing forming seat means for said piston springs which are secured between said single radially inward portion of said casing and radially extending portion of said pistons.

3,926,074

RESONANCE PREVENTIVE SYSTEM FOR POWER TRANSMISSION SYSTEMS OF INTERNAL COMBUSTION ENGINES

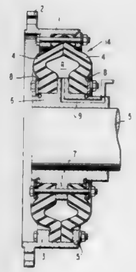
Eisuke Sugahara, Tokyo, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1974, Ser. No. 455,086

Claims priority, application Japan, Mar. 27, 1973, 48-35203

Int. Cl.² B60K *21/00*; **F16D** *23/10*, *3/80*

U.S. Cl. 74—857 **6 Claims**



1. A resonance preventive system for use with a power transmission system of an internal combustion engine, said resonance preventive system comprising:

a fluid coupling with variable torsional rigidity disposed midway of the power transmission system between input and output transmission system elements, said coupling comprising a hollow annular rubber member means fixedly coupled between said input and output elements and forming a fluid pressure chamber therebetween;

means for detecting the rotative speed and/or the applied load on said engine and for producing a signal indicative thereof; and

control means responsive to said signal for supplying a control fluid whose pressure and flow rate varies in accordance with variance of said signal to said fluid coupling chamber to vary the torsional rigidity of said annular rubber member means to shift the resonance point of the power transmission system.

3. The resonance preventive system as claimed in claim 1, wherein said annular rubber member means comprises a pair of annular rubber elements and wherein a hub is of a diameter less than that of said annular casing, and means secure said annular rubber elements at their peripheries respectively to said casing and said hub, means mount said hub and said casing to respective elements of said power transmission system for rotation under torisonal restraint provided by said rubber elements, at least one of said annular elements defines said fluid pressure chamber and said control fluid is supplied to said chamber, whereby, said fluid coupling has its torsional rigidity varied depending upon the pressure of the fluid within said chamber.

3,926,075

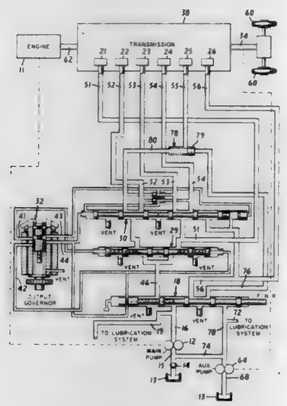
VEHICLE AUTOMATIC TRANSMISSION HAVING PUSH START CAPABILITY

Victor Kronstadt, Hagerstown, Md., assignor to Mack Trucks, Inc., Allentown, Pa.

Filed Oct. 18, 1974, Ser. No. 515,832

Int. Cl.² B60K *41/00*

U.S. Cl. 74—867 **8 Claims**



1. A vehicle automatic transmission comprising an input shaft adapted to be coupled to the vehicle engine, an output shaft adapted to be coupled to the driven wheels of the vehicle, drive means connecting the input shaft to the output shaft with an adjustable transmission ratio, automatic control means for adjusting the transmission ratio of the drive means, a first pump adapted to be driven by the vehicle engine for delivering pressurized liquid to the automatic control means, means for selecting a predetermined transmission ratio of the drive means, a second pump driven by the output shaft for delivering pressurized liquid to energize the selecting means so as to select the predetermined transmission ratio, and means for selectively communicating the output of the second pump with the selecting means independently of the automatic control means, whereby the vehicle engine may be started by moving the vehicle so as to drive the engine from the wheels at the predetermined transmission ratio, the automatic control means exerting no control over the transmission ratio of the drive means before the engine is started.

3,926,076

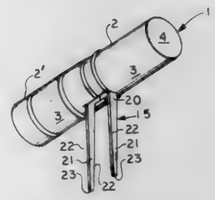
CORK PULLER

Boleslaw Szumacher, 2708 N. Richmond Ave., Chicago, Ill. 60647

Filed Apr. 14, 1975, Ser. No. 567,518

Int. Cl.² B67B *7/06*

U.S. Cl. 81—3.41 **10 Claims**



1. A cork puller comprising a puller element and a pair of telescoping inner and outer handle sections, said element adapted to fit lengthwise into said handle sections, interengaging detent means on said sections, said element having portions biasing and maintaining said detent means in releasable interengaged relationship.

3,926,077

COMBINED ADJUSTABLE SPANNER AND RATCHET WRENCH

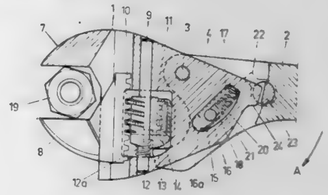
Simon Nils Nordgren, 14, Centralvagen, Rimbo, Sweden

Filed Nov. 16, 1973, Ser. No. 416,346

Claims priority, application Sweden, June 28, 1973, 7309170

Int. Cl.² B25B *13/16*

U.S. Cl. 81—126 **7 Claims**



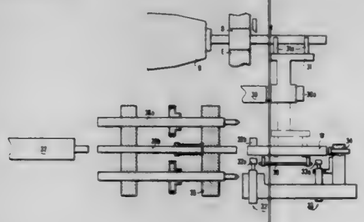
1. A combined adjustable spanner and ratchet wrench adapted to clamp and turn a work piece when turned in the working direction and to slide on the work piece without turning the same when turned in the return direction opposite to the working direction, said wrench comprising a wrench head having a fixed jaw and a moveable jaw, means for setting the moveable jaw including a rack on the moveable jaw and a worm engaging said rack and displaceable axially between two limitary positions including a working position, a handle having a fork-like construction at one end provided by a pair of legs, said wrench head having a tongue projecting centrally therefrom and being embraced by said legs of said fork-like end of said handle, axle means perpendicular to the main plane of the wrench received in said wrench head and said handle for pivotally joining the same, locking means for retaining said worm in its working position when said handle is actuated in the working direction and to release said worm for axial displacement from its working position when said handle is moved in its return direction, said tongue having an opening formed therein, and a stem extending perpendicular to the main plain of the wrench passing through said opening in said

tongue between said legs of said fork-like end of said handle, said stem being supported at its ends on said legs of said fork-like end of said handle, said stem being positioned to engage the edge contour of said opening to limit the swinging movement of said wrench head and said handle reciprocally, said stem being positioned, with said worm in its working position, to take a stop position fixed by the edge contour of said opening by bearing on said edge contour during turning of the wrench in the working direction to turn a work piece so that said stem positively urges the wrench head in the working direction by direct contact with the edge contour of said opening.

3,926,078
NUMERICAL CONTROL LATHE OF SLIDING-HEADSTOCK TYPE

Shinichi Ishizuka, Tokyo, and Kuniyuki Mihara, Tachikawa, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 367,389, June 6, 1973, abandoned. This application Jan. 10, 1975, Ser. No. 539,995
Claims priority, application Japan, June 10, 1972, 47-57819; June 14, 1972, 47-59139; Oct. 17, 1972, 47-103863; Apr. 20, 1973, 48-4496
Int. Cl.² B23B *13/00*
U.S. Cl. 82—2.5 **5 Claims**

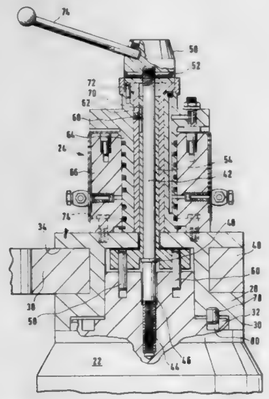


1. A numerical control lathe of the sliding-headstock type comprising:
an elongated bed;
a headstock reciprocatingly disposed on said bed for travel in a longitudinal direction thereof, said headstock being advanced by numeric control;
a driving spindle rotatably supported on said headstock, said driving spindle having a collet chuck for clamping a workpiece and a throughgoing bore through which said workpiece is fed;
a spindle head on said driving spindle;
means rotatably supporting said driving spindle on said headstock close to said spindle head;
a guide bush situated coaxially with the axis of said driving spindle so as to rotatably support the workpiece;
a pedestal for supporting said guide bush and detachably mounted on said bed;
a first turret toolpost having a slide block driven in numeric control, said slide block being movable in a direction perpendicular to the axis of said driving spindle;
another turret toolpost having a slide block driven by an oil pressure cylinder, this slide block being movable in a direction parallel to the axis of said driving spindle;
a turret head mounted on said first turret toolpost, the slide block of the latter being movable in a direction perpendicular to the axis of said driving spindle, said turret head being rotatably supported on said slide block alongside said guide bush with the rotation axis of said turret head being parallel to the axis of said driving spindle;
a portal housing block spanned over said driving spindle and mounted on said bed;
a guide rail located on said housing block in a direction perpendicular to the axis of said driving spindle, said slide block of said first turret toolpost being movable along said guide rail;
an oil pressure actuator for pushing said slide block toward said driving spindle; and
a device for adjusting progressive advance of tools attached to said turret head for exactly guiding the respective ends of the tools to a cutting position defined near said guide bush even where the tools have different lengths.

3,926,079
MACHINE TOOLS

Reginald Francis Johnson, Leicester; Thomas James Potts, Derby, and Gordon Bridgman Jennings, Nottingham, all of England, assignors to Rolls-Royce (1971) Limited, London, England

Filed Mar. 18, 1975, Ser. No. 559,426
Claims priority, application United Kingdom, Mar. 22, 1974, 12852/74
Int. Cl.² B23B *29/00*
U.S. Cl. 82—36 A **9 Claims**



1. A turret adapted for traversable and rotatable mounting on a machine tool saddle, wherein said turret comprises an assembly of a rotatable base adapted for the rigid holding of a plurality of cutting tools and surmounted by a pair of relatively rotatable, electrically non-conductive sleeves arranged one within the other about a common axis of rotation which is normal to said base, and sleeve retaining means, one of said sleeves having connections and passages for the receipt and passage of respective flows of water, gas and electricity and the other of said sleeves having means for receiving said flows from said one sleeve and re-directing them to positions adjacent a respective one of the cutting tools positions on said rotatable base at each of which adjacent positions in operation, there will be a plasma gun.

3,926,080
APPARATUS FOR AND METHOD OF PROCESSING MEAT PRODUCTS

Louis A. Bettcher, Amherst, Ohio, assignor to Bettcher Industries, Inc., Birmingham, Ohio

Filed Sept. 10, 1973, Ser. No. 395,859
Int. Cl.² B26D *7/08*
U.S. Cl. 83—15 **5 Claims**

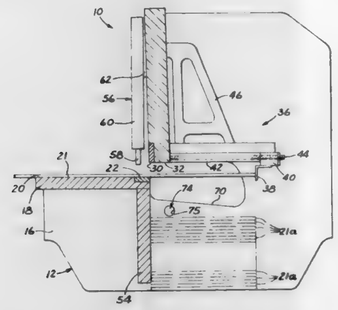


1. The method of subdividing a comestible body which comprises the step of immersing the comestible body in liquid nitrogen to crust freeze the same, removing the crust frozen body from the liquid nitrogen and while so frozen severing the body into smaller parts.

3,926,081
BACK GAUGE WARNING SYSTEM FOR SHEARS AND THE LIKE

Verne W. Roberts, 5021 Glendale Drive, Gurnee, Ill. 60031

Filed Dec. 9, 1974, Ser. No. 530,722
Int. Cl.² B26D *7/16, 7/22*
U.S. Cl. 83—96 **5 Claims**



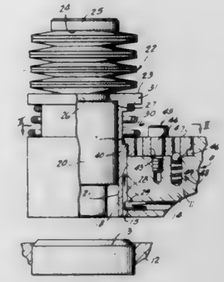
1. In a shear or the like having frame means, means defining a generally horizontal support surface along which a workpiece may be moved preparatory to shearing the workpiece, cutter means supported by said frame means and having a cutting edge movable between a first position spaced above the plane of said support surface and a second position spaced below the plane of said support surface so as to shear a workpiece underlying said cutting edge when moved from its said first to its said second positions, back gauge means disposed rearwardly of said cutter means and movable with said cutting edge, said back gauge means being disposed to provide a stop against which the leading edge of a workpiece may abut to establish a predetermined length of the workpiece to be sheared by said cutting edge, said frame means defining a receiving area below said cutter means and said back gauge means to receive severed portions of workpieces which may progressively stack up, and drive means operative to effect selective movement of said cutter means and back gauge means between their said first and second positions; the combination therewith comprising safety means operatively associated with said frame means and adapted to detect the presence of stacked severed workpiece portions at a predetermined height in said receiving area below said cutter means and said back gauge means, said safety means including means for providing a signal when the stack of severed workpiece portions in said receiving area reaches said predetermined height such that an operator is notified to remove severed workpiece portions from below said cutting means and back gauge means before said stack reaches a height sufficient to be engaged by said back gauge means.

3,926,082
PUNCHING DEVICE HAVING ADJUSTABLE GUIDE RETAINER

Vitmar G. von Langendorff, Tonawanda, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Feb. 14, 1975, Ser. No. 550,759
Int. Cl.² B26D *7/22, 1/06*
U.S. Cl. 83—140 **10 Claims**

1. A punching device comprising:
a. a frame having a lower arm on which a die is supported, and an upper arm having a vertical bore aligned therewith;
b. a punch-guide and stripper sleeve slidably disposed in the bore in said upper arm, there being a recess facing said bore and defining a shoulder facing away from said die;
c. a punch having a body slidably disposed in said sleeve;
d. a stripping spring acting between said sleeve and said punch to urge the lower end of said punch into said sleeve;
e. a lifting spring acting between said sleeve and said upper arm and urging said sleeve away from said die; and

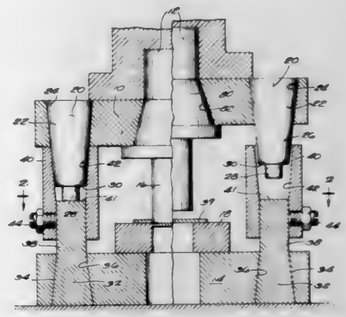


f. a retainer plate movably secured to the upper side of said upper arm, said plate having a plurality of peripheral portions for overhanging said bore and projecting into said recess of said sleeve, said portions each having a shoulder (1) facing toward said die, (2) being located at differing distances from said die, and (3) being respectively engageable with said shoulder on said sleeve in response to horizontal repositioning of said plate.

3,926,083
DIE SET WITH TWO-PART LEADER PINS

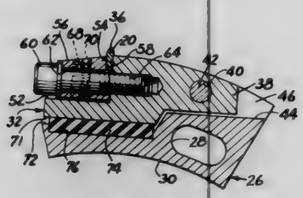
Kasimir Janiszewski, 11908 W. Loomis Road, Franklin, Wis. 53132

Filed Sept. 20, 1974, Ser. No. 507,637
Int. Cl.² B26D *5/20*; F16C *29/02*
U.S. Cl. 83—637 **9 Claims**



1. In a die set including a punch holder and a die shoe, the improvement comprising an upper leader pin portion mounted on said punch holder and having a tapered surface decreasing in diameter remote from said punch holder, a lower leader pin portion anchored in said die shoe and having a tapered bore complementary to said tapered surface of said leader pin and adapted to telescopically and reciprocally receive said upper leader pin tapered portion and guide said punch holder during reciprocal movement of said punch holder and leader pin toward and away from said die shoe.

3,926,084
KNIFE HOLDING APPARATUS
Cedric W. Blazer, Rockford, Ill., assignor to Zenith Cutter Company, Rockford, Ill.
Filed Nov. 21, 1974, Ser. No. 525,723
Int. Cl.² B23D 25/12; B26D 1/56, 1/36
U.S. Cl. 83—698 11 Claims



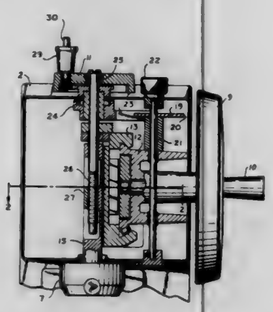
1. A knife holding apparatus for use with a slotting head mounted on a rotating shaft and cooperating anvil surface, said apparatus comprising:

a block having means for attachment to said cutting head; a holding bar pivotally attached to said block and movable through a limited arc, said bar having generally vertical and horizontal contact surfaces at one end thereof, said vertical contact surface being adapted to cooperate in holding an elongated cutting knife, the cutting edge of which extends upwardly beyond the general surface of the bar and block;

said bar having a clamp means with a front face for holding the cutting knife against said vertical contact surface in secure engagement, said clamp means having a shoulder along the lower portion of said front face for engaging the bottom of said cutting knife, first means for adjusting the height of said clamp means relative to said horizontal contact surface of said holding bar, second means for selectively moving said clamp means toward and away from said vertical contact surface;

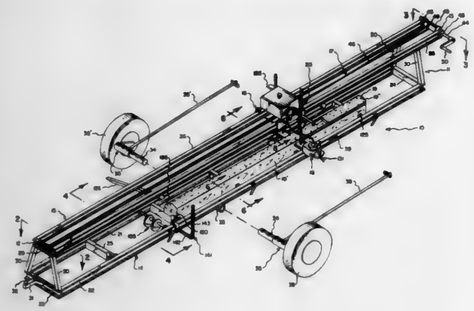
a resilient member positioned generally beneath the cutting knife between adjacent surfaces of said block and said holding bar for reducing shock to the cutting knife during a cutting operation.

3,926,085
SPECIMEN FEED FOR A MICROTOME
Norman W. Shatzel, deceased, late of Williamsville, N.Y. (by Mary P. Shatzel, administratrix), assignor to American Optical Corporation, Southbridge, Mass.
Filed Dec. 2, 1974, Ser. No. 528,958
Int. Cl.² G01N 1/06
U.S. Cl. 83—718 2 Claims



1. A microtome having a base, a support extending from said base, a carriage slideably mounted on said support, a manually operable drive means to move said carriage in a reciprocating path along said support, a manually positionable actuator on said support positionable along an axis parallel to the reciprocating path, a slideable specimen holder arm extending from said carriage in a direction generally perpendicular to the reciprocating path, means for holding a specimen in the distal end of said arm, a knife adjustably mounted on said base and positioned to cut said specimen as said carriage travels along said reciprocating path in one direction, an incremental feed means connecting said arm and said carriage, said feed means including a shaft mounted on said carriage, one end of said shaft being threaded, means mounted in said arm to engage the threads on said shaft, a clutch mounted on the other end of said shaft, said clutch being adapted to rotate said shaft in a single direction to advance the specimen toward said knife, a finger mounted to and extending from said clutch, said finger being adapted to engage said actuator as said carriage travels along said reciprocating path in the other direction to rotate said clutch and shaft through a small arc thereby providing an incremental feed of said specimen toward the knife between cuts.

3,926,086
PORTABLE SAW MILL
Paul R. Crane, Tucker Hill, Houghton, N.Y. 14744
Filed Nov. 1, 1974, Ser. No. 519,826
Int. Cl.² B27B 17/02; B23D 57/02
U.S. Cl. 83—801 13 Claims



1. A saw mill adapted to make a longitudinal cut in a log, comprising:

an elongated frame having a front end and a rear end, said frame including a horizontal lower section adapted to support a log to be sawed and including a horizontal upper section spaced above said lower section;

a carriage arranged on said upper section for movement therealong in either longitudinal direction;

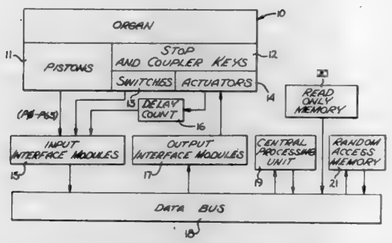
carriage movement means engaging said carriage and said front and rear frame ends and operable to move said carriage along said upper section in either of said longitudinal directions;

a chain saw positioned between said upper and lower sections and supported by said carriage for movement therewith and operable to make a longitudinal cut in a log supported by said lower section; and

adjustment means operatively arranged between said chain saw and carriage for adjusting the vertical position of said chain saw relative to said carriage, said adjustment means including a pair of transversely-spaced vertically-movable racks having their lower ends connected to said chain saw, a transverse shaft rotatably mounted on said carriage, and a pair of transversely-spaced pinions mounted fast to said shaft and positioned to engage said racks,

whereby by rotating said shaft said racks may be moved to adjust the vertical position of said chain saw relative to said carriage.

3,926,087
COMPUTERIZED ORGAN REGISTRATION AFFECTING SYSTEM
Steven W. Griffis, 4753 Irvine Ave., N. Hollywood, Calif. 91602
Filed Oct. 4, 1974, Ser. No. 511,996
Int. Cl.² G10B 3/10
U.S. Cl. 84—345 7 Claims



1. An organ registration affecting system for use with electronic and pipe organs having a plurality of pistons and a plurality of stop and coupler keys and a plurality of actuators for setting and resetting the stops and couplers, said system comprising:

a. input interface means for translating and presenting signals responsive to a selected piston, the state of stop and coupler keys and engagement time of the organ actuators; b. output interface means for setting and resetting the states of selected stop and coupler keys and actuators;

c. a central processing unit including a program counter, address register and arithmetic and logic unit and input and output means for transferring data to and from said central processing unit respectively, said input means being coupled to said input interface means and said output means being coupled to said output interface means;

d. read-only memory means for program storage, said central processing unit input means being coupled to said read-only memory means;

e. random-access memory means for storing data correlating the signal responsive to a selected piston and the selected actuator, the input and output means of said control processing unit being coupled to said random access memory means; and

f. at least two pages of working registers, each page comprising eight registers of two bytes each, said working registers being coupled to said arithmetic and logic unit of said central processing unit whereby a selected organ piston causes said central processing unit to correlate said piston with signals responsive to selected stop and coupler actuators, said signals responsive to said actuators being output to the organ by said output interface means.

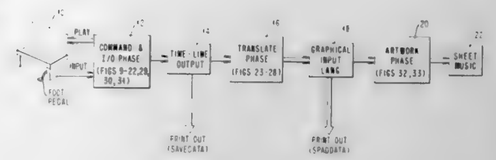
3,926,088
APPARATUS FOR PROCESSING MUSIC AS DATA
Stephen A. Davis, Wappingers Falls; Keith H. Dougherty, Peekskill; Alan D. Levit; Thomas A. Hendrickson, both of Poughkeepsie, and Kenneth R. Sanderson, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 2, 1974, Ser. No. 430,458
Int. Cl.² G10G 3/04
U.S. Cl. 84—462 5 Claims

1. In combination with a data processing system:

a keyboard musical instrument connected to said data processing system;

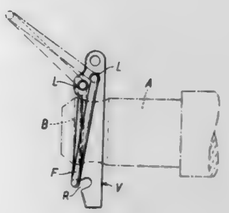
means for scanning the key contacts of the individual keys of the keyboard for converting electrical signals produced by depressing said keys into data which is compatible with said data processing system,

means connected to said scanning means and responsive to signals from said data processing system for tranferring said data to said data processing system to thereby collect data representative of the music performed; and



means in said data processing system for translating said data into a format suitable for outputting said data in musical notation.

3,926,089
SAFETY PIN
Herbert Ruebig, and Helmut Ruebig, both of Wels, Austria, assignors to Franz Rubig & Sohne KG, Wels, Austria
Filed Oct. 16, 1973, Ser. No. 406,962
Claims priority, application Austria, Oct. 31, 1972, 9240/72
Int. Cl.² F16B 21/18
U.S. Cl. 85—5 CP 2 Claims



1. A safety pin assembly for axles and rotating shafts which comprises

a pin member having opposite ends;

a loop shaped snap-in spring member of a circular diameter having opposite ends which are pivoted to said pin member adjacent to each other near one end thereof, and an intermediate portion which is pivotally movable about said ends of said spring member into and out of engagement with one side of said pin member near the opposite end thereof,

said pin member being formed on one side near said opposite end thereof with a u-shaped recess with an actuate bottom which is adapted to fully receive and releasably hold said intermediate portion of said spring member under initial stress;

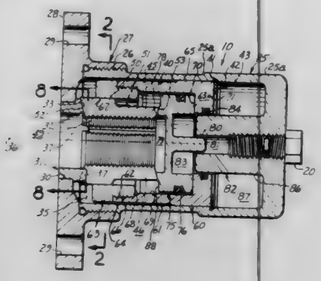
said recess shaped as an inclined notch with an upper and a lower arm, which extend from the surface of said pin member inwardly forming at the inner end of said notch said recess and a safety catch nose in the outer end of one of said arms inclined toward the outer end of the other said arm;

whereby the catch-end of said loop, when in ingagement with said notch is embedded therein and thus protected against disengagement by accidental extraneous impacts against it.

3,926,090
SEPARATION NUT

James W. Bunker, Saugus, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.

Filed Mar. 23, 1973, Ser. No. 344,158
Int. Cl.² F16B 37/10
U.S. Cl. 85—33 4 Claims

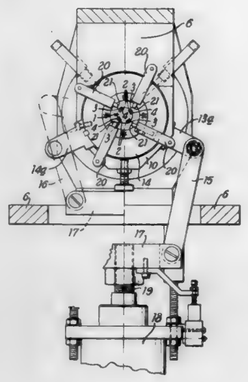


1. A separation nut for releasably engaging a threaded element, comprising: a housing having an internal cavity, an aperture to receive an element to be engaged by the nut, and a gas port communicating with the cavity; a seat member fixed to the housing and extending around said aperture, said seat member facing into the cavity and tapering inwardly as it extends into the cavity; anti-rotation means fixed relative to the housing; a plurality of nut segments, each having a concave surface bearing a fragment of the same thread facing in an inward direction and engaged by the anti-rotation means, a lock surface and a relief surface, both facing in an outward direction, and a pair of abutment surfaces, one at each end of the segments, the segments being grouped around a central axis with one of their abutment surfaces bearing against the seat member; an axially-extending lock cylinder in said cavity; a lock piston slidably fitted in said lock cylinder, said lock piston including a lock surface so proportioned and arranged as to embrace and hold the segments in said grouped condition when it overlaps their lock surfaces, an engagement shoulder, and a head having a driving face and a deceleration face, and an axially-extending buffer cylinder in said lock piston; a buffer piston slidably fitted in said buffer cylinder in fluid-sealing contact therewith, a power chamber being formed in said buffer cylinder between the buffer piston and said driving face, an abutment face on the opposite side of the buffer piston from the power chamber so disposed and arranged as to bear against the other of said abutment surfaces of the nut segments; a shoulder on said buffer piston facing and radially overlapping the engagement shoulder of the lock piston, whereby said shoulders can engage one another, the gas entry port communicating with the power chamber, and restraint means for holding the lock piston against the buffer piston and thereby holding the buffer piston against the nut segments, with the lock surface of the lock piston overlapping the lock surfaces of the nut segments, the restraint means releasing the lock piston for axial motion after the exertion of sufficient fluid pressure on the lock piston, whereby upon the exertion of said sufficient fluid pressure, the lock piston is axially shifted so that its lock surface overlaps the relief surfaces of the nut segments and not their lock surfaces, the buffer piston presses against the segments to move them radially outward, and the shoulder on the lock piston engages the shoulder on the buffer piston with an accompanying dissipation of kinetic energy, a deceleration chamber being formed in the cavity between the housing and the deceleration face, displacement of the lock piston being resisted in the deceleration chamber; a neck on said housing entering the deceleration chamber and passing through the head of the lock piston; and seal means extending between said neck and the head of the lock piston, which seal means is exposed to the power chamber.

3,926,091
MANUFACTURE OF TOOTHED WORKPIECES

Clifford Sloane, Neath, England, assignor to Cam Gears Limited, Hitchin, England

Filed June 13, 1974, Ser. No. 479,123
Claims priority, application United Kingdom, June 14, 1973, 28366/73
Int. Cl.² B23F 19/10
U.S. Cl. 90—1.4 20 Claims



1. A method of removing surplus metal from the axial end faces of a plurality of teeth on a workpiece, said method comprising the steps of radially inwardly displacing a cutting means having a cutting edge for each tooth while simultaneously imparting circumferential rotation between the cutting means and the workpiece so that the cutting edges remove surplus metal from the end faces of their respectively associated teeth, and limiting said relative circumferential rotation so that each cutting edge is restricted to removing surplus metal from the end face of its associated tooth.

6. Apparatus for removing surplus metal from the end faces of a plurality of teeth on a workpiece, said apparatus comprising cutting means having a plurality of spaced apart cutting edges disposed in a generally circular array, means for locating the workpiece within the circular array of cutting edges, means for moving said cutting edges radially inwardly toward the workpiece and for simultaneously imparting relative circumferential rotation between said cutting edges and the workpiece so that said cutting edges remove surplus metal from the end faces of teeth with which they are respectively associated, and means for limiting said relative circumferential rotation between said cutting edges and the end faces of the teeth to restrict the removal of metal by each cutting edge to an associated one of the teeth.

3,926,092
CONCENTRIC HYDRAULIC BRAKE BOOST MECHANISM WITH SYSTEM BY-PASS ON PISTON O.D.

Robert E. Meyers, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed June 13, 1973, Ser. No. 369,625
Int. Cl.² F15B 9/10, 13/04
U.S. Cl. 91—378 8 Claims

1. In a hydraulic boost mechanism for a vehicle hydraulic system including a fluid pressure source:

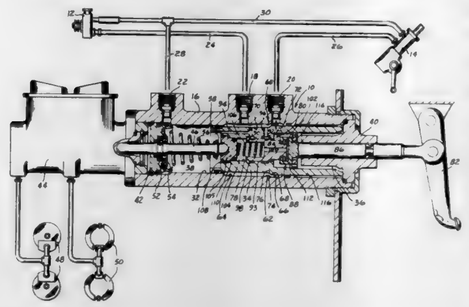
a housing defining a bore therewithin having an inlet adapted to be connected to said source and an outlet;

a piston slidably mounted in said bore and cooperating with one end of the latter to define a boost chamber therebetween;

fluid pressure control means carried by said piston and by the wall of the bore for regulating the fluid pressure level at said inlet between a lower value when said piston is disposed in a first position and a higher value when the piston is shifted toward a second position, said fluid pressure control means including means for maintaining a continuous flow to the outlet independently of the position of the pistons said fluid pressure control means being defined by radially spaced annular surface means on said piston and said bore, respectively;

means defining a vent for said boost chamber;

control valve means slidably and coaxially arranged in said piston and shiftable from a first condition communicating



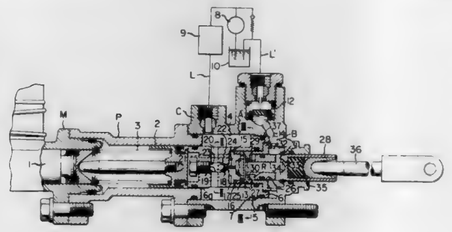
said boost chamber to the means defining said vent and to a second condition closing communication through the means defining the vent and initiating communication between the inlet and the boost chamber as the control valve means is shifted from the first condition; and

first resilient means acting on the control valve means to urge the latter to said first condition and second resilient means acting on said piston urging the latter to said first position.

3,926,093
OIL-HYDRAULIC SERVO-MOTOR

Tadao Nakagawa, Ueda, Japan, assignor to Nisshin Kogyo Kabushiki Kaisha, Japan

Filed June 6, 1974, Ser. No. 477,064
Claims priority, application Japan, Apr. 24, 1974, 49-46177
Int. Cl.² F15B 13/10
U.S. Cl. 91—391 R 3 Claims

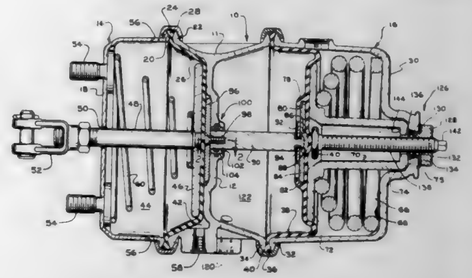


1. An oil-hydraulic servo-motor comprising: a power cylinder having a bore and an output piston slidably fitted in said bore, a control casing secured to said power cylinder at the rear end thereof and defining a cylindrical bore in axial alignment with said power cylinder, a servo piston slidably fitted in said cylindrical bore and defining, when fully retracted, a high and a low oil pressure chamber in said cylindrical bore, respectively, in the front and rear portions thereof, a piston rod extending axially and forwardly from said servo piston and held in sliding engagement with the rear end portion of said power cylinder in end-to-end relation with said output piston, an oil pressure supply source connected to said high oil pressure chamber, an oil reservoir communicating with said low oil pressure chamber, a reaction oil pressure chamber defined in said servo piston and communicating with the bore in said power cylinder, an input piston slidably supported in said control casing in axial alignment with said servo piston and having the piston face thereof extending forwardly into said reaction oil pressure chamber, and control valve means operable in response to limited forward and rearward movement of said input piston to place the bore in said power cylinder in and out of fluid communication with said high and low oil pressure chambers, said cylindrical bore of the control casing having a larger diameter front portion and a smaller diameter rear portion, said servo piston being slidable in said smaller diameter rear portion and including at the front end thereof an annular flange slidably fitted in said larger diameter front portion of said cylindrical bore, seal means on said servo piston engaging said smaller diameter rear portion, said annular flange having a number of circumferentially spaced radial notches therein operable to place said high and low oil pressure chambers in fluid communication with each other across the periphery of said servo piston when said servo piston assumes a definite axial position during advancing movement thereof in which said seal means is disengaged from said smaller diameter rear portion and enters said larger diameter front portion.

3,926,094
AIR OPERATED SPRING BRAKE

Sham L. Kurichh, Owosso, and Leon R. Acre, Ovid, both of Mich., assignors to Midland-Ross Corporation, Cleveland, Ohio

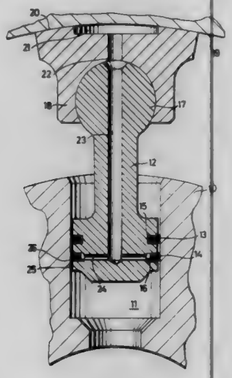
Filed July 2, 1973, Ser. No. 375,622
Int. Cl.² F01B 7/16
U.S. Cl. 92—63 8 Claims



1. A spring operated brake actuator in combination with an air operated service brake actuator having a diaphragm movable in the presence of air pressure to actuate brakes on a vehicle, said spring operated actuator having a housing, an auxiliary diaphragm in said housing dividing the latter into a spring chamber and a fluid pressure chamber, a spring in said spring chamber acting on said auxiliary diaphragm to move the latter generally longitudinally of said housing in a brake applying direction upon a decrease in pressure in said fluid pressure chamber, said auxiliary diaphragm being movable generally longitudinally in the other direction to compress said spring in the presence of pressure in said fluid pressure chamber to allow operation of said service brake actuator independently of said spring operated actuator, a push plate in said fluid pressure chamber connected to said auxiliary diaphragm for movement with the latter, a push member extending generally longitudinally in said housing and having an end portion projecting through a wall of the latter, means connecting the other end of said push member to said plate for longitudinal movement of said push member with said plate and for universal angular displacement of said push member relative to said plate during longitudinal movement, a bearing slidably supported on said push member, and mounting means for supporting said bearing relative to said wall for universal angular displacement of said push member relative to said wall during longitudinal movement of said push member, said one end of said push member engaging the diaphragm of said service

brake actuator to operate the latter in the absence of pressure in said fluid pressure chamber.

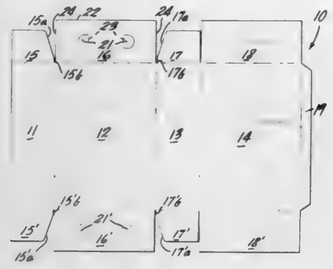
3,926,095
PISTON PUMP
Dieter Weigle, Urach, Germany, assignor to Firma Wepuko-Hydraulik GmbH, Metzingen, Germany
Filed May 13, 1974, Ser. No. 469,455
Claims priority, application Germany, May 18, 1973, 2325242
Int. Cl.² F01B *31/10*
U.S. Cl. 92—157 **1 Claim**



1. In a high-pressure piston pump having a cylinder, a piston supported for reciprocation within the cylinder, a decompression chamber, means associated with the piston and in communication with the cylinder for defining a fluid throttling region, and means disposed in the piston and including a radial passage therethrough for providing communication between the fluid throttling region and the decompression chamber, the improvement wherein the outer peripheral surface of the piston is provided with an annular groove aligned and communicating with the radial passage, and wherein the fluid throttling region defining means comprises a piston ring disposed loosely in the annular groove and extending outwardly thereof to a position adjacent the cylinder wall, the axial gap defined between one face of the piston and the adjacent side wall of the annular groove defining a self-wiping fluid throttling region that communicates with the radial gap between the outer peripheral surface of the adjacent forward portion of the piston and the surrounding cylinder wall.

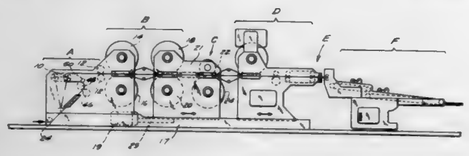
3,926,096
METHOD OF ASSEMBLING CARTON BLANKS
William J. Cupo, 216 York St., Jersey City, N.J. 07302
Division of Ser. No. 297,921, Oct. 16, 1972, Pat. No. 3,871,571. This application Sept. 12, 1974, Ser. No. 505,220
Int. Cl.² B31B *49/02*
U.S. Cl. 93—49 M **3 Claims**

1. A method of assembling a carton having four serially connected rectangular panels and four flaps at one end of the carton with each flap being hinged to a panel along the length of the panel end, a first of said flaps being joined to the first of said panels, the second of said flaps being joined to a second of said panels spaced from said first flap by third and fourth flaps which are joined to third and fourth panels, respectively, said first and second flaps being bent inwardly perpendicular to their respective panels to form inner flaps for the carton end, said third flap lying generally over both the first and second flaps perpendicular to its respective panel and glued to said first and second flaps, and said fourth flap overlying at least a portion of said third flap to form an outer flap for the carton end perpendicular to its respective panel and being glued to said third flap, said first and second flaps having a side lying adjacent the hinge line of the third flap and third panel which tapers generally upwardly and inwardly from said third flap when the first, second and third flaps are in a position which is substantially coplanar with their respective panels and tab means cut in the surface of the third flap which underlie and hold a portion of said first and second flaps, said tab means being joined to said third panel by hinge lines which lie in a direction traverse to the hinge line of said third flap, comprising applying glue to inner portions of said third and fourth flaps, pushing said tabs in said third flap so that they protrude from the surface of the third flap and are thereby



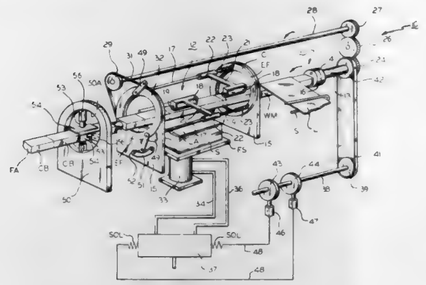
adapted to engage and underlie a portion of the first and second flaps, positioning the first, second and third flaps so that they are inwardly inclined to the mouth of the carton and the tab means in said third flap is in position to engage the underside of a portion of the first and second flaps, rotating the first, second and third flaps inwardly until all three flaps lie substantially perpendicular to their respective panels and the tab means in the third flap is under a portion of the first and second flaps and the third flap is thereby glued to portions of the first and second flaps, and rotating the fourth flap inwardly until it also is perpendicular to its respective panel and is glued to portions of said third flap.

3,926,097
ROTARY DIE MECHANISM WITH VARIABLE SHEET VELOCITY MEANS FOR FORMING DIFFERENT SIZED BLANKS
Richard C. Santa Maria, Edison, and Frank J. Anastasio, Paramus, both of N.J., assignors to Bobst Champlain, Inc., Roseland, N.J.
Filed Aug. 13, 1974, Ser. No. 496,934
Int. Cl.² B26D *1/56*; B23D *25/12*; B31B *1/16*
U.S. Cl. 93—58.2 R **26 Claims**



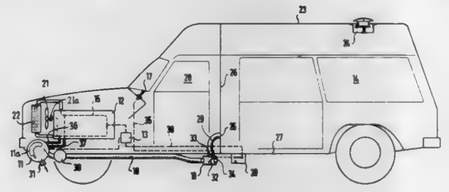
1. Apparatus for performing operations on a continuous sheet material comprising a first pair and a second pair of die carrying cylinders, the cylinders in said pairs respectively being spaced to form a first and a second nip respectively therebetween, each of the cylinders in said cylinder pairs being rotatable such that each of said pairs periodically performs an operation along a substantial length of the material during respective operative intervals, means for varying the velocity of the sheet material as it passes between said first nip, said means having a cyclical operation divided into first and second portions wherein the material is caused to move at a constant velocity during said first portion and at a nonconstant velocity during said second portion, said first portion occurring during the operative interval of said first cylinder pair.

3,926,098
WINDING CONVOLUTE CAN BODIES
Curtis J. Smith, Fenton, Mo., assignor to Container Corporation of America, Chicago, Ill.
Filed Aug. 12, 1974, Ser. No. 496,759
Int. Cl.² B31C *1/00*
U.S. Cl. 93—81 R **8 Claims**



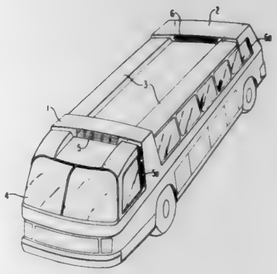
1. In a machine for convolutely winding a container body other than one of purely cylindrical cross section from laminar plies;
- a. a winding mandrel for receiving an end of a lamina and convolutely winding said lamina thereon;
- b. means for advancing said wound lamina along said mandrel to a position for application of pressure against said wound lamina and for applying a second lamina to said wound lamina;
- c. means for applying pressure to said wound lamina while the same is disposed on said mandrel throughout rotation thereof comprising;
  - i a frame rotating along an axis coincident with the axis of rotation of said winding mandrel;
  - ii means for rotating said frame in the same direction as said winding mandrel but at a speed lower than the speed of said winding mandrel;
  - iii pressure applying mechanism mounted on said frame including members in contact with said second lamina throughout complete rotation of said container body and the lamina thereof.

3,926,099
METHOD OF AND DEVICE FOR DISINFECTING THE AIR EXTRACTED FROM THE ISOLATED INTERIOR OF AN AMBULANCE
Karl Grunenwald, Lorch, Germany, assignor to Binz & Co., Lorch, Germany
Filed July 24, 1974, Ser. No. 491,246
Claims priority, application Germany, July 30, 1973, 2338601
Int. Cl.² B60H *1/00*
U.S. Cl. 98—2.05 **9 Claims**



1. An ambulance comprising: an engine, a coolant circuit associated with said engine, a hot water heater unit, means for extracting air from the sealed interior of said ambulance and for feeding said extracted air for use in the combustion of a fuel to said heater unit, said hot water heater unit being connected to said coolant circuit, automatic cut-out means connected to said heater unit for rendering the same selectively effective and ineffective, said cut-out means responding to the temperature of the coolant in said coolant circuit, a manually operable switch connected to said automatic cout-out means for rendering the same ineffective, an air induction line leading from said air extracting means to said heater unit, and a change-over valve for selectively admitting outside air and air from said ambulance interior to said induction line.

3,926,100
BUS
Robert Bermanseder, and Norbert Bermanseder, both of Sindelfingen, Germany, assignors to Daimler-Benz AG, Germany
Division of Ser. No. 114,420, Feb. 11, 1971, Pat. No. 3,797,881. This application Jan. 2, 1974, Ser. No. 429,817
Claims priority, application Germany, Feb. 12, 1970, 2006250
Int. Cl.² B62D *31/04*; B60H *1/26*
U.S. Cl. 98—2.14 **13 Claims**

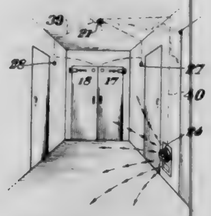


1. A bus body arrangement comprising:
- lower frame means operatively connected to respective front and rear axles,
- a forward roll-over girder means constructed as a hollow bearer means extending upwardly from said lower frame means,
- a rearward roll-over girder means constructed as a hollow bearer means extending upwardly from said lower frame means,
- each of said roll-over girder means being supported on said lower frame means,
- a first longitudinal bearer means constructed as a hollow bearer means extending longitudinally along one lateral side of a roof area of the bus body, and
- a second longitudinal bearer means constructed as a hollow bearer means extending along the lateral side of said roof area opposite said one lateral side,
- each of said first and second longitudinal bearer means being connected with said forward and rearward roll-over girder means, wherein the longitudinal bearer means include means for the guideance of air for the interior ventilation of the bus body.

3,926,101
FIRE SAFETY SYSTEMS
Cyril H. Moss, Heath Common, Storrington, Sussex, England
Filed June 27, 1974, Ser. No. 483,818
Claims priority, application United Kingdom, June 26, 1973, 30345/73
Int. Cl.² A62C *37/18*
U.S. Cl. 98—33 R **10 Claims**

1. A fire safety system for use in a building having a plurality of accommodation units and a plurality of communal units providing means of access to said accommodation units, said system including a plurality of smoke detectors in said com-

munal units and means controlled by said smoke detectors and responsive to detection of smoke in one of said communal

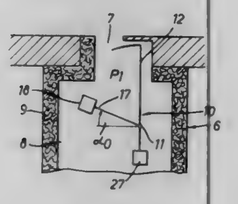


units to admit air under pressure to that communal unit and to restrict passage of smoke from that communal unit to another communal unit or other communal units.

3,926,102
AIR INJECTING APPARATUS FOR AIR CONDITIONERS OR THE LIKE

Guido Amandus De Lepeleire, Heverlee, Belgium, assignor to Danfoss A/S, Nordborg, Denmark

Division of Ser. No. 356,498, May 2, 1973, Pat. No. 3,865,021.
This application Oct. 7, 1974, Ser. No. 512,543
Int. Cl.² F24F *13/10*
U.S. Cl. 98—102 **4 Claims**



1. An air conditioning system air inlet assembly comprising an air flow duct, a damper forming a variable outlet orifice for said duct, said damper being mounted for pivotal movement relative to a horizontally extending axis, said damper being movable in an opening direction by pressurized upstream air in said duct, mechanical means biasing said damper in a closing direction, said mechanical means having an angular relationship with said damper to vary the size of said orifice in accordance with the pressure of said pressurized air to maintain a constant air velocity at said orifice, said duct extending vertically, said damper constituting a first lever arm relative to said axis, said mechanical means including a second lever arm extending in a generally horizontal direction.

3,926,103
RECOVERY SYSTEM FOR SPRAYING APPARATUS

Everett C. Smith, Slippery Rock, Pa., assignor to American Glass Research, Inc., Butler, Pa.

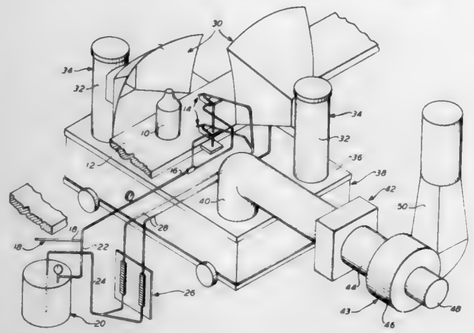
Filed Dec. 6, 1973, Ser. No. 422,416
Int. Cl.² F23J *11/00*; B05C *15/00*, *11/10*
U.S. Cl. 98—115 SB **9 Claims**

1. A material recovery system for a glass bottle spraying apparatus wherein the solution sprayed is a liquid containing a tin compound, comprising:

a. spray channeling means for gathering the solution not deposited on said bottles;

b. collecting means, including a removable tray connected cooperatively with said channeling means; said channeling means including at least one exhaust hood and intake duct, said exhaust hood having generally a curved design, whereby sharp corners and recesses are eliminated or minimized to avoid, otherwise, the collection of said sprayed solution in said corners and recesses, said exhaust hood connected to the sidewall of said intake duct, said intake duct straightly extending therefrom downward into the top of said collecting means;

c. means for creating a flow of said sprayed, undeposited solution into said channeling means and through said recovery system; said flow creating means including at least one exhaust duct connected to said collecting means, said intake duct and exhaust duct physically arranged at the interface with said collecting means such that said collected spray undergoes a 180° change of



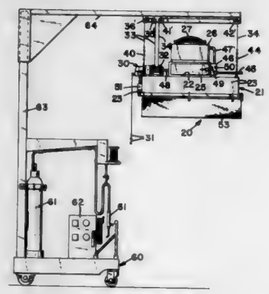
direction in passing from said intake duct to said exhaust duct; and

d. means for deflecting substantially all of said flow entering said collecting means via said intake duct, downward towards the bottom of said tray and into physical contact therewith said flow of sprayed, undeposited solution entering said collecting means out of said intake duct, substantially parallel to the plane of said deflecting means in a substantially vertical, downward direction, whereby there is insubstantial contact with said deflecting means.

3,926,104
INDUSTRIAL SAFETY APPARATUS FOR DISPOSING OF WELDING FUMES

James H. El Dorado, Minneapolis, Minn., assignor to Midwest Mechanical Services, Inc., Minneapolis, Minn.

Filed June 24, 1974, Ser. No. 482,201
Int. Cl.² F23J *11/00*
U.S. Cl. 98—115 VM **1 Claim**



1. Self-contained industrial safety apparatus for use to maintain the quality of air in welding shop while conserving the energy required to heat the shop and protecting the air ambient to the shop from pollution, comprising, in combination:

a rigid hood having a closed top with an outlet and surrounding edges depending therefrom;

movable means including a wheeled vehicle for positioning said hood over a work piece to be welded;

connecting means including a winch carried by said hood and pulleys carried by said vehicle for actuation to vary the height of said hood to accomodate work pieces of different heights;

a flexible skirt of flame resistant material depending from the lower edges of said hood to define a working volume of shop space beneath which welding operations releasing atmospheric pollutents may be performed;

illumination means carried by said hood within said hood for providing working illumination within said volume to replace normal illumination cut off by said hood;

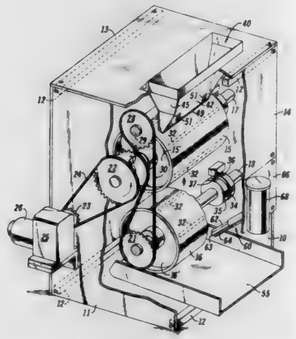
an electrostatic air cleaner mounted in said outlet in the top of said hood;

and means mounted on said air cleaner for drawing shop air from said working volume through said air cleaner and thereafter returning said air to the shop.

3,926,105
COOKING APPARATUS

Walter B. Warning, Sr., Chicago, Ill., assignor to Automation Development & Engineering Corporation, Elk Grove Village, Ill.

Continuation of Ser. No. 137,492, April 26, 1971, abandoned.
This application Nov. 23, 1973, Ser. No. 418,403
Int. Cl.² A21B *1/48*
U.S. Cl. 99—423 **5 Claims**



1. Apparatus for cooking pancakes, comprising

a housing,

a pair of drums each having an external cylindrical cooking surface thereon,

means rotatably mounting said drums in mutually parallel spaced apart relationship one above the other within said housing,

means disposed within said drums for heating said cooking surfaces to a pancake cooking temperature,

motor means for rotating said drums in opposite directions at the same circumferential speed,

feed means mounted above the upper one of said drums having a fill opening accessible from outside said housing for feeding an uncooked liquid pancake batter directly onto the upper portion of the cooking surface of said upper one of said drums,

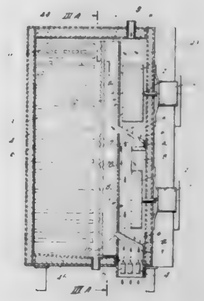
said speed being selected in combination with the cooking temperature of said drums such that said batter is cooked on one side on the upper drum and then falls by gravity onto the lower drum with the other side in contact with the lower drum to cause said other side to be cooked, and means disposed below the lower one of said drums for receiving the completely cooked pancakes as they fall by gravity from said lower one of said drums,

whereby said batter is cooked from one side on the upper drum and then falls by gravity onto the lower drum where the batter is cooked from the other side.

3,926,106
FOOD-TREATMENT APPARATUS WITH CIRCULATED HOT COMBUSTION GAS

Erich Deusing, Herbornseelbach; Helmut Bernhardt, Weidenhausen, and Wilfried Durth, Burbach-Wahlbach, all of Germany, assignors to Burger Eisenwerke Aktiengesellschaft, Herborn, Germany

Filed June 11, 1973, Ser. No. 368,692
Claims priority, application Germany, June 15, 1972, 7222344
Int. Cl.² A47J *37/06*; F24C *15/32*
U.S. Cl. 99—447 **5 Claims**



1. A food-treatment apparatus comprising:

a food-treatment chamber adapted to receive a foodstuff and having a rear wall;

a circulating chamber behind said wall adjacent said food-treatment chamber and communicating therewith through an inlet formed in said wall;

circulating means in said circulating chamber for displacing hot combustion gas along a circulation path through said chambers past said foodstuff;

a burner chamber behind said wall and directly beneath said circulating chamber;

a gas burner in said gas-burner chamber directly beneath said circulating chamber, said wall being formed with an opening communicating between said food-treatment chamber and said burner chamber at an upper portion of the latter for introducing hot combustion gas from said gas burner into said food-treatment chamber and for feeding hot combustion gas along said circulation path; and

a common heat-conductive partition between said gas-burner chamber and said circulating chamber, said partition being inclined upwardly towards said opening.

3,926,107
APPARATUS FOR APPLYING DEODORIZING CHEMICALS TO COMPACTED REFUSE

Peter Dunlap, Box 117, Amherst, N.H. 03031, and Daniel W. Sullivan, 29 Mechanic St., Fitchburg, Mass. 01420

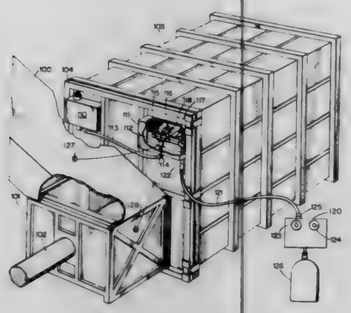
Filed Aug. 7, 1973, Ser. No. 386,397
Int. Cl.² B30B *15/16*
U.S. Cl. 100—45 **5 Claims**

1. A refuse disposal system consisting of:

a. a compactor-type solid waste disposal and storage unit which comprises a sealed container with one side adapted to receive a compaction chamber and ram which may optionally be connected to a chute feed; and,

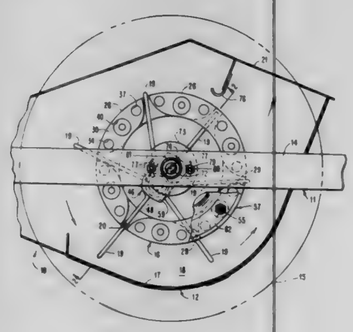
b. in combination therewith, a refuse odor control system comprising: a source of liquid chemical-deodorizer suitable for inhibiting odor, bacteria, and insects in solid waste matter; connector and valve-micronizing means together with a source of compressed gas for dispensing said chemical, said valve means being mounted adjacent

to an opening in the storage unit so as to direct the chemical-deodorizer into said unit; and a dual timer mechanism



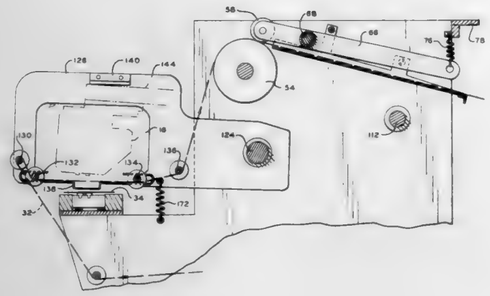
for automatically activating said valve means at a predetermined frequency and for a predetermined duration.

3,926,108
DEBRIS COLLECTING APPARATUS
Charles W. Doering, Clarksville, Ind., assignor to Brinly-Hardy Co., Inc., Louisville, Ky.
Filed Nov. 26, 1973, Ser. No. 418,898
Int. Cl.[2] B30B *5/00*; E01H *1/04*
U.S. Cl. 100—177 **18 Claims**



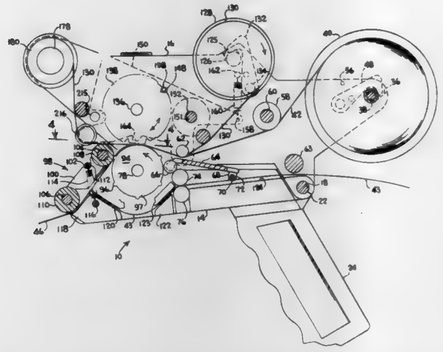
13. A debris collecting apparatus including:
a frame having wheels to support said frame;
a housing supported by said frame;
compression means disposed within said housing to compress debris received within said housing;
and said compression means including:
a hollow cylindrical compression drum having a plurality of openings;
a blade disposed within each of said openings;
means supporting said blades and said drum to cause rotation of said drum and said blades and to move each of said blades during each cycle of rotation so that each of said blades is retracted inwardly within the periphery of said drum through said opening and extended outwardly beyond the peripphery of said drum through said opening;
each end of said supporting means being supported by said frame;
and means cooperating with each end of said supporting means and said frame to control the angular position of said supporting means relative to said frame to determine the positions of maximum extension and retraction of each of said blades.

3,926,109
PRINTING RIBBON ADVANCING MEANS
John F. Filsinger, and Roger P. Mueller, both of Syracuse, N.Y., assignors to Texmark, Incorporated, Syracuse, N.Y.
Division of Ser. No. 272,922, Sept. 13, 1972. This application Mar. 22, 1974, Ser. No. 453,847
Int. Cl. B41j *35/34*
U.S. Cl. 101—90 **4 Claims**



1. In apparatus for making successive inscriptions on a continuous strip of textile material by transfer of a printing medium from each of a plurality of continuous ribbons coated therewith by pressure of raised type face with ribbons while contacting the strip, mechanism for automatically advancing the ribbon and strip by selectively controlled increments in conjunction with sequential movement of the type face to make successive inscriptions, said mechanism comprising:
a. powered drive means;
b. a plurality of individual pairs of ribbon advancing rollers arranged with the rollers of each pair frictionally engaging therebetween one of the continuous ribbons, and one roller of each pair carried by a common shaft;
c. a base support defining a plane and path of movement for the textile strip;
d. means supporting the type face and ribbons for reciprocating movement between a first position, wherein each of the ribbons contact the strip and the type face contacts the ribbons, and a second position, wherein the ribbons are spaced from the strip and the type face is spaced from the ribbons;
e. a pair of strip advancing rollers between which the strip is frictionally engaged;
f. first cam means rotatable by said drive means to move the type face and ribbons between said first and second positions;
g. second cam means rotatable by said drive means to effect intermittent rotation of said common shaft, thereby rotating said one ribbon advancing roller of each pair and advancing each of the ribbons;
h. third cam means rotatable by said drive means to effect intermittent rotation of one of said strip advancing rollers, thereby moving said strip along its path of movement;
i. motion transfer means for transmitting movement from said drive means through each of said cam means to effect simultaneous advance of the ribbons and strip upon each movement of the type face and ribbons to said second position;
j. first adjustment means for selectively controlling the distance of travel of the ribbons at each intermittent advance thereof; and
k. second adjustment means for selectively controlling the distance of travel of the strip at each intermittent advance thereof.

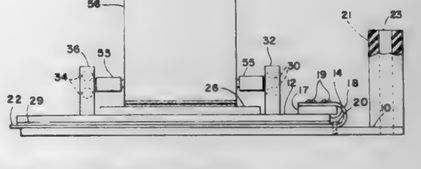
3,926,110
HAND HELD TICKET PRINTER APPLICATOR
David W. Hubbard, Stamford, and Lloyd G. Kittredge, Trumbull, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Apr. 11, 1974, Ser. No. 460,210
Int. Cl.[2] B41L *47/46*
U.S. Cl. 101—92 **8 Claims**



1. A hand held ticket printer applicator for the printing of bar codes, the combination comprising:
a. a frame member having a lower portion and an upper portion pivotably mounted to one another;
b. means for releasably holding said upper portion to said lower portion;
c. a printing drum supported by said upper portion having at least one line of bar code font and at least one line of alpha-numerics on the perimeter thereof;
d. a label strip extending intermediate said frame member portions adjacent said printing drum;
e. a printing medium supported within said upper portion and extending intermediate to said drum and said label strip;
f. means associated with said frame member for moving said printing medium through said frame member;
g. means supported by said frame member for placing said printing drum and said label strip into printing engagement with one another when said printing drum is in an original position where said one line of bar code is adjacent to said printing medium;
h. means for holding said printing drum stationary and moving said label strip relative to said printing drum when said label strip and said printing drum are in printing engagement;
i. means for releasing said printing drum holding means;
j. means for partially rotating in a first direction said printing drum in unison with the movement of said label strip when engaged with one another to bring said line of alpha-numerics into printing engagement with said label strip;
k. means for disengaging said printing drum and said label strip; and
l. means for partially rotating said printing drum opposite to said first direction to return said printing drum to said original position.

3,926,111
PRINTING MACHINE
Walter Bohm, A-6322 Kirchbichl 226, Austria
Continuation-in-part of Ser. No. 293,171, Sept. 28, 1972, abandoned. This application Aug. 26, 1974, Ser. No. 500,467
Int. Cl.[2] B41L *13/08*
U.S. Cl. 101—116 **11 Claims**

1. A printing machine for repeatedly printing relatively long overall patterns on a web of material, said machine comprising:
support means for continuously moving said web of material at a predetermined speed;
at least two printing units mounted on the side of said web of material opposite said support means, each of said printing units including a rotatably mounted cylindrical screen, each of said screens having on the periphery thereof a printing sector with leading and trailing edges in the direction of rotation for printing a separate portion of said overall pattern and a non-printing sector;
means operatively connected to each of said printing units to lower the screens thereof from a raised position into a lowered position in a predetermined sequence with the leading edge of each said printing sector in contact with said web of material for printing on said web of material the respective portions of said overall pattern when the respective printing sectors of said screens are rotatively aligned with said web of material, and for raising said screens out of contact with said web of material into said



raised position after the trailing edge of each said printing sector has contacted said web of material;
first drive means operatively connected to each of said screens for continuously imparting a first rotary movement of said screens while said screens are in both said raised and lowered positions, said first rotary movement causing a circumferential rotation of each of said screens at a speed equal to said speed of said web of material; and second drive means operatively connected to each of said screens for imparting a second rotary movement thereto, simultaneous to the application of said first rotary movement, each time said screens are in said raised position, and only when said screens are in said raised position, said second rotary movement being predetermined in accordance with system parameters including the size of said printing and non-printing sectors of said screens, the net of said first and second rotary movements when said screens are in said raised position being such that the leading edges of the printing sectors are in position to be engaged by said web when said screens are lowered by said means for raising and lowering.

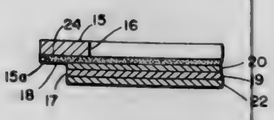
3,926,112
SIMPLIFIED SILK SCREEN PRINTING DEVICE
Mary Neman, 2531 Vera Ave., Cincinnati, Ohio 45237
Filed Aug. 6, 1973, Ser. No. 385,737
Int. Cl. B41f *15/02*; B41n *1/24*; B41f *15/42*
U.S. Cl. 101—123 **14 Claims**

1. Printing apparatus comprising:

a base plate upon which a blank sheet is placed for receiving an imprint;
a frame having at least one substantially straight edge and having an opening;
a hinge comprising an elongated relatively thin elastic sheet secured along said edge of the frame and to said base plate whereby said frame is pivotally secured to said base for movement between a printing position in which said frame lies flat on said base and a ready position pivoted away from said base;
a screen received in said opening, said screen means having porous portions defining a predetermined imprint pattern through which ink can be forced to said blank sheet on said base plate when said frame is in said printing position, thereby causing said blank sheet to receive said imprint; and
means for forcing ink through said screen means.

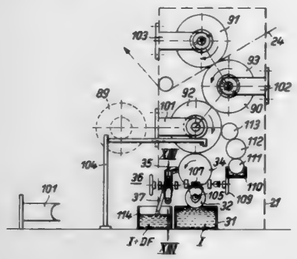
12. An inking device for use with a screen printing apparatus having a porous sheet through which ink is forced in a predetermined imprint pattern onto a blank sheet, when said inking device is swept across said porous sheet, said inking device comprising:
an operator-manipulated handle having an elongated slot in one end thereof;
a base removably attached to said handle, said base having a tab complementary to said slot, said tab being releasably retained in said slot, said base having a curved surface; and
a porous elongated ink-retaining element mounted on the curved surface of said base,
the ink in said porous element being forced through said porous sheet as said base and porous element are swept across said porous sheet.

3,926,113
THIN FRAME STENCIL ASSEMBLY
Donald J. Steldinger, Barrington, Ill., assignor to Wallace Business Forms, Inc., Hillside, Ill.
Filed Mar. 21, 1974, Ser. No. 453,641
Int. Cl.² B41N *1/24*
U.S. Cl. 101—128.1 **4 Claims**



1. A business form comprising at least one ply having space thereon for receipt of a stencil assembly, a unitary stencil assembly releasably adhered to said ply over said space and completely removable therefrom, said assembly including two layers adhesively secured together, the first of said layers being a flexible stencil layer immediately adjacent said ply and in contact therewith, the second of said layers being a relatively flexible frame layer spaced from said ply in the major portion thereof by said first layer, said second layer having a back face in confronting relation to said ply, said second layer back face being totally covered with a pressure sensitive adhesive to cause the same to adhere to said one ply, said frame layer having a cut-out portion affording access to said stencil layer, said frame layer being generally peripherally coextensive with said stencil but having a portion extending beyond the stencil periphery with said portion being directly adhered to said ply, said relatively flexible frame layer having a thickness of the order of said ply to thereby pass unobtrusively around the platen of a typewriter.

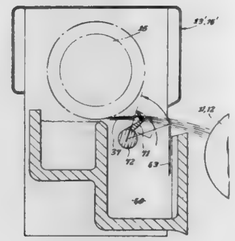
3,926,114
ROTARY LITHOGRAPHIC PRINTING PRESS WITH INK AND DAMPENING FLUID SEPARATOR
Walter E. S. Matuschke, Kaiser-Wilhelm-Strasse 6, 36 Hamburg, Germany
Continuation-in-part of Ser. No. 739,843, June 25, 1968, abandoned. This application Aug. 21, 1970, Ser. No. 65,932
Claims priority, application Germany, June 30, 1967, 1561056; Oct. 24, 1967, 1611272
Int. Cl.² B41F *7/26, 7/32, 31/04, 31/08*
U.S. Cl. 101—142 **1 Claim**



1. A rotary lithographic offset printing device for printing a moving web, comprising, in combination, a frame, a printing form cylinder rotatably mounted upon said frame, said printing form cylinder having a smooth, uninterrupted peripheral cylindrical surface, thin offset printing form means carried directly by said printing form cylinder surface, a transfer cylinder rotatably mounted upon said frame adjacent said printing form cylinder and parallel thereto and having a closed cylindrical peripheral rubber surface engaging said printing form means, said web engaging said transfer cylinder periphery, a pressure cylinder rotatably mounted upon said frame adjacent said transfer cylinder and parallel thereto and engaging said web in opposed relation with respect to engagement of said web and transfer cylinder, a dampening roller rotatably mounted upon said frame for dampening said printing form means with a dampening fluid, an inking roller rotatably mounted upon said frame engaging said printing form means, an ink fountain, ink supply means for supplying an ink film of uniform thickness to said inking roller, scraping-off means engaging said inking roller and removing the ink not taken from said inking roller by the printing form means and the dampening liquid transferred from said printing form cylinder to said inking roller, an ink and dampening fluid separator communicating with said scraping-off means, and separated ink transfer means interconnecting said ink supply means and said separator, said ink supply means including an ink layer thickness adjusting member defining a border extending parallel to the axis of said inking roller, said border being adjustably displaceable as a whole parallel to itself.

3,926,115
SPRAY DAMPENING APPARATUS
Arthur Graham Alsop, Bristol, England, assignor to Strachan & Henshaw Limited, Bristol, England
Filed Jan. 25, 1974, Ser. No. 436,829
Claims priority, application United Kingdom, Feb. 1, 1973, 5148/73The portion of the term of this patent subsequent to Sept. 18, 1990, has been disclaimed.
Int. Cl.² B41F *7/30, 7/32*
U.S. Cl. 101—148 **6 Claims**

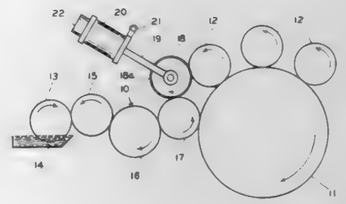
1. In a dampening apparatus for a printing machine, the dampening apparatus having a supply trough, the trough having upstanding walls, one of said walls having a horizontal upper edge lower than upper edges of other walls thereby providing a weir edge, means for feeding liquid in the trough so that the liquid can be maintained at a given level in the trough higher than the level of the weir edge and spill continuously over the weir edge, a tangentially rigid rotor with an axis of rotation parallel to the weir edge and approximately vertically above it, thin projections on the rotor and axially spaced from one another along said axis of rotation, the said projections extending radially from and being spaced from the weir edge and extending to above the level of the weir edge and below the level of the liquid in the trough, means for rotating said rotor for causing the projections to cut into the thickness of the liquid over the weir edge to emerge where it spills from the weir edge to project directionally a spray of liquid and means positioning the dampening apparatus and a roll of a dampening train of the printing machine such that the said roll receives liquid directionally sprayed by the rotor, a drain trough below a path of the spray projected from the weir, a front wall of the drain trough being parallel to and spaced from the said one of the walls of the supply trough providing the weir edge, and a base of the drain trough extending from the said front wall to the said one wall, an output orifice for the spray being above an upper edge of the front wall of the drain trough, lips defining the outlet orifice, a cover for said rotor, said cover having a vertical front wall, the improvement



consisting of a quick-response means for adjustment of spray output from the dampening apparatus to the dampening train comprising means in the dampening apparatus actuable for preventing at least partially egress of spray from the apparatus and control elements for actuating the said actuable means, the said actuable means actuable between a condition in which the spray passes out through the orifice and a condition in which it is at least partially caught, wherein the said actuable means is a shutter, means positioning the shutter above the base of the drain trough whereby it is movable in planar movement into and out of the spray path to catch liquid of the spray, so that the said liquid when caught can fall to the base of the drain trough, said shutter being between the front wall of the cover and the rotor, said shutter having a planar portion extending parallel to the axis of rotation of the rotor, said positioning means being located on the cover, obliquely extending slots in the planar portion of the shutter engaged by the positioning means whereby the planar movements of the shutter have a vertical component into and out of the path of the spray and a lateral component parallel to the axis of the rotor, and a drive element for the shutter arranged to drive the shutter in directions generally parallel to the axis of the rotor.

3,926,116
DAMPENING APPARATUS FOR OFFSET PRINTING PRESS
Fredric C. Wildeman, Madison, Wis., assignor to Webcrafters, Inc., Madison, Wis., a part interest
Filed July 1, 1974, Ser. No. 484,704
Int. Cl.² B41F *7/26, 31/30*
U.S. Cl. 101—148 **8 Claims**

1. An improved offset printing press of the type having a plate cylinder, an ink supply system including at least one ink form roller which is adapted to deposit ink on said plate cylinder by making rolling contact therewith, and a dampening system including a form dampener roller disposed adjacent to one ink form roller and which is adapted to deposit dampening liquid on the plate cylinder by making rolling contact therewith, wherein the improvement comprises:
a. a revolvable separator roller interposed between said form dampener roller and said one adjacent ink form roller;
b. said separator roller having a surface consisting of a material that has an affinity for ink; and



c. means for maintaining said separator roller in contact with said one ink form roller whereby said surface of said separator roller is wetted with ink, for advancing said separator roller into rolling contact with said form dampener roller when said press is printing and said form dampener roller surface has a film of dampening liquid thereon, and for retracting said separator roller from contact with said form dampener roller when said press is not printing.

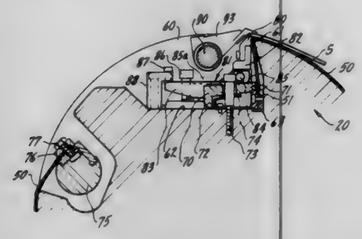
3,926,117
COLOR PRINTING METHOD
Donald Dunn Milligan, North Balwyn, Australia, assignor to Triprint Pty. Ltd., North Balwyn, Australia
Filed Apr. 11, 1974, Ser. No. 460,056
Claims priority, application Australia, Apr. 13, 1973, 2981/73
Int. Cl.² B41C *1/12;* **B41M** *1/14*
U.S. Cl. 101—211 **7 Claims**

1. An improved method of preparing half-tone combination primary color and black printing plates and using said plates in a half-tone primary color printing process including black line work where the black color is approximated by balancing the primary color components of the print and where the printing process involves using three primary color printing passes only, in a manner known generally per se, comprising, as the improvement, the steps of:
a. preparing separated, differentially angled screen images having normal dot densities of the primary color and black components of the combination plates in a manner known generally per se;
b. reducing the dot sizes of the normal dot density screen images corresponding to the respective red, blue and yellow components of the combination plates prior to the combining of each image with its respective black component, while leaving the dot sizes of the normal dot density black component of the prepared screen images unreduced;
c. preparing combination primary color and black half-tone printing plates in a manner generally known per se using the prepared screened primary color images having reduced dot sizes as the primary color component image of each combination plate;
d. printing the final color image using said plates and primary color inks; and
e. maintaining the density and volume of said inks during said printing process within a range suitable to maintain optimum color density in the final half-tone image despite the reduction of dot sizes of the primary color components of each printing plate, whereby dense black line work is obtained and the appearance of the half-tone color work is enhanced.

3,926,118
ROTARY PRINTING PRESS IMPRESSION CYLINDER HAVING CLAMPING AND SHEET GRIPPING DEVICES

Friedrich Preuss, Sprendlingen, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher, Germany

Filed Aug. 15, 1974, Ser. No. 497,723
Claims priority, application Germany, Aug. 16, 1973, 2341326
Int. Cl.² B41F *21/04, 29/04, 7/10*
U.S. Cl. 101—246 **1 Claim**



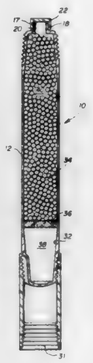
1. In an impression cylinder for a lithograph printing press, the combination comprising a body having a gap in the form of a longitudinally extending groove having a well-defined longitudinal edge and a recess extending continuously thereunder, a covering layer having a rigid mounting bar at one end, clamping means for clamping the mounting bar in the recess, means recessed in the cylinder for tensioning the opposite end of the covering layer so that the layer is drawn into a tight bend over the edge of the groove and thence over the surface of the cylinder, a gripper pad bar extending continuously along the edge of the groove, spaced mounts seated in the groove for mounting the gripper pad bar and for releasably holding it in a normal position in which it is snugly adjacent the bend in the covering layer, each mount being of "L" shape having a radial portion supportively engaging the gripper pad bar and having a projecting arm portion at right angles thereto with a pivot at the bend of the "L", a gripper shaft in the groove having a set of grippers cooperating with the gripper pad bar, means including a cam follower on the shaft for engaging a relatively fixed cam surface adjacent the cylinder for cyclical operation of the grippers for engaging the leading edges of successive sheets, means for disengaging the gripper shaft from the cam follower so that the grippers may be retracted well away from the gripper pad bar, the projecting arm portion having a limit stop to define the normal position and having screw means for retracting the gripper pad bar from its normal position to a position separated from the bend of the covering layer to provide a clear radial path so that upon loosening of the clamping means the mounting bar and covering layer may be removed from the recess clear of the cylinder for replacement by an alternate mounting bar and covering layer.

3,926,119
EXPLOSIVE DEVICE

Gerald L. Hurst, and Oldrich Machacek, both of Dallas, Tex., assignors to Tyler Holding Company, Dallas, Tex.

Filed Jan. 28, 1974, Ser. No. 436,591
Int. Cl.² F42B *3/00*
U.S. Cl. 102—24 R **53 Claims**

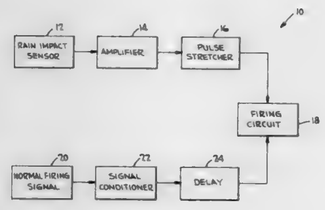
1. An explosive device which includes a particulate primary solid component and a particulate secondary solid component, which solid components are both actuated by a liquid component, comprising:
- a. a container forming an enclosure and at least one sealable opening for adding said liquid component therein;
- b. a bed comprising sensitized particulate material selected from oxidizing and non-oxidizing material having a particle size smaller than about 3000 microns and positioned within said enclosure forming said particulate primary solid component;
- c. porous retaining means which will pass the said liquid component but not said primary or secondary solid components, said porous retaining means separating said particulate solid primary component from the remainder of the cavity within said enclosure; and
- d. a bed comprising solid particulate oxidizing material forming said particulate secondary solid component and positioned within the said remainder of said cavity.



3,926,120
RAIN IMPACT SENSING PROXIMITY FUZE

David Williams, Bethesda, and George K. Lucey, Jr., Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 30, 1970, Ser. No. 90,211
Int. Cl.² F42C *13/00, 11/02*
U.S. Cl. 102—70.2 P **7 Claims**

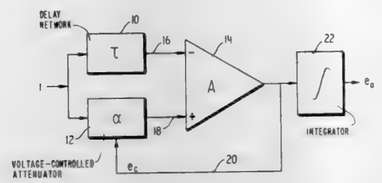


1. A rain impact sensing proximity fuze, comprising:
- a. a firing circuit that initiates the detonation of said fuze;
- b. proximity sensing means for delivering a firing signal to said firing circuit; and
- c. rain impact sensing means for momentarily desensitizing said firing circuit against unwanted firing signals generated by said proximity sensing means upon the impact of a raindrop with said fuze.

3,926,121
TIME REMAINING UNTIL ENCOUNTER COMPUTER FOR A FUZE SYSTEM

Robert H. McCracken, Chevy Chase, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 7, 1974, Ser. No. 467,769
Int. Cl.² F42C *13/04*; G01S *9/00*
U.S. Cl. 102—70.2 P **3 Claims**

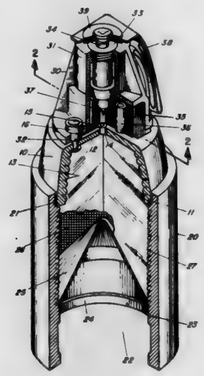


1. Electronic apparatus mounted on a moving projectile for determining the time remaining until said projectile encounters a target, said projectile including means for receiving a signal reflected from said target, which comprises:
- means for delaying said received signal for a predetermined time interval;
- variable attenuator means for attenuating said received signal according to the magnitude of a control signal; and differential amplifier means having as its two inputs the respective outputs from said delaying means and said variable attenuator means for producing as its output said control signal;
- whereby said control signal is indicative of the time remaining until said projectile encounters said target.

3,926,122
GRENADE WITH FUZE (U)

William G. Wolterman, Huntington Beach, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 282,081, Aug. 11, 1972. This application Apr. 22, 1974, Ser. No. 463,939
Int. Cl.² F42C *15/22*
U.S. Cl. 102—79 **1 Claim**

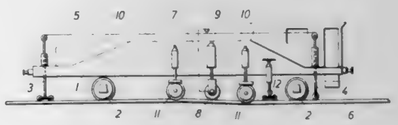


1. A fuze for safing and arming an artillery deliverable, submissile grenade used against personnel and armored targets which comprises:
- a housing having an axially aligned cylindrical arming screw bore which communicates with a transversely positioned rectangular slider bore, said rectangular slider bore having its longitudinal axis perpendicular to said arming screw bore axis;
- a stab detonator;
- an internally threaded arming screw retainer axially positioned within said cylindrical bore;
- a cylindrical arming screw operatively retained within said cylindrical housing bore by said retainer, said arming screw having a firing pin on one end and a firing pin threaded section on the other end;
- ribbon means for unscrewing said cylindical arming screw fixedly attached to said threaded end of said arming screw;
- an eccentrically weighted detonator slider slidably held by said housing and said arming screw so that said stab detonator contained therein is held in an out-of-line position when said arming screw is in a safe position, and centrifugally moved by the spin forces of said grenade to an in-line armed position when said arming screw is withdrawn therefrom by the differential forces of spin on said grenade and said unscrewing means; and
- detent means for locking said slider into said in-line armed position so that said slider cannot return to said out-of-line position when said grenade is expelled from said artillery over said target.

3,926,123
TRACK SURFACING APPARATUS

Franz Plasser, deceased, late of Vienna, Austria; by Erna Plasser, heir; Josef Theurer, both of Johannesgasse 3, Vienna, Austria (A-1010); Egon Schubert, Lainzerstr. 24b/8, and Klaus Riessberger, Paniglgasse 24, both of Vienna, Austria

Filed Oct. 9, 1973, Ser. No. 404,427
Claims priority, application Austria, Oct. 13, 1972, 8816/72
Int. Cl.² E01B *37/00*
U.S. Cl. 104—7 R **29 Claims**



1. An apparatus for surfacing a track consisting of rails fastened to ties resting on ballast, comprising means for determining any deviation of the track position from a desired level, means for imparting a substantially horizontal vibration to the track including a vibration-producing means and means for transmitting the vibration produced by said means to the track, and means arranged in association with the vibration imparting means for imparting a substantially vertical downward ballast compacting pressure on both rails of the track whereby the ballast under the track ties may be compacted simultaneously with positioning the track at the desired level.

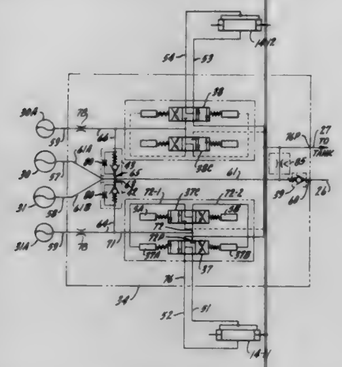
3,926,124
RAILROAD CAR RETARDERS

Earl E. Frank, Tallman, N.Y., assignor to Abex Corporation, New York, N.Y.

Filed July 25, 1974, Ser. No. 491,830
Int. Cl.² B61K *7/08*
U.S. Cl. 104—26 A **16 Claims**

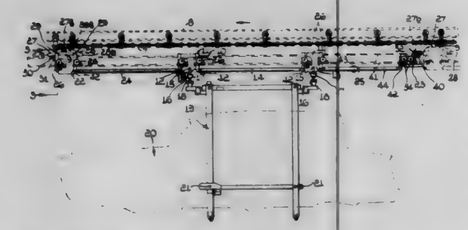
1. In a hydraulically operated railroad car retarder system in which retarders on adjacent tracks are actuated by respective hydraulic cylinders, hydraulic apparatus for actuating the respective retarder cylinders independently or concurrently and comprising:
- a pair of accumulator subsystems each of which includes at least one large accumulator of predetermined capacity and a small accumulator of less capacity paired therewith for conjointly delivering fluid pressure to the respective retarder cylinders;

directional valve means interposed between each of the accumulator subsystems and each of the retarder cylinders to control delivery of fluid under pressure from the accumulator subsystems respectively to the retarder cylinders;



and means to restrict delivery of fluid from each of the smaller accumulators to a rate substantially less than the rate of delivery from the larger accumulator.

3,926,125
POWER AND FREE CONVEYOR
Olaf John Barclay Orwin, Birmingham, England, assignor to Redman Fisher Engineering Limited, England
Filed Feb. 20, 1974, Ser. No. 444,174
Int. Cl.² B61B *3/00*
U.S. Cl. 104—94 **7 Claims**



1. In a conveyor system comprising:

a. an endless power-driven conveyor element having a plurality of driving dogs spaced from one another lengthwise of the element,

b. a load-supporting track extending parallel to the path of travel of the conveyor element,

c. a plurality of load carriers which run on the track, each load carrier comprising a trolley having a body mounted on wheels which run on said track,

d. a first drive control element at the front end of each load carrier,

e. a second drive control element at the rear end of each load carrier for co-operation with the first drive control element of a following carrier when such following carrier comes into proximity with a preceding carrier,

f. a supporting body supporting one of said drive control elements, spaced lengthwise of the track from the load carrier and mounted on wheels which run on the track,

g. a connecting element articulately connecting said supporting body with said body of the load carrier,

h. drive transmitting means associated with each load carrier for releasably engaging with a driving dog of the conveyor element to transmit drive from the conveyor element to the load carrier, said drive transmitting means being releasable from engagement with a driving dog of the conveyor element by co-operation of the first drive control element of the associated load carrier with the second drive control element of a preceding load carrier, the improvement wherein:

i. said supporting body is spaced lengthwise of the track from the drive transmission means of the load carrier,

j. said connecting element is contractable to permit relative movement of said supporting body and said body of the load carrier in a direction lengthwise of the track,

k. said connecting element comprises two members relatively slidable in the fore and aft direction,

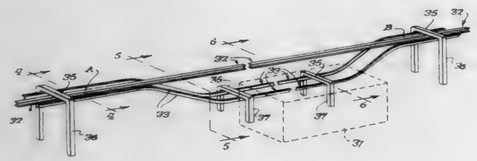
l. one of said members is articulated to the supporting body,

m. the other of said members is articulated to said body of the load carrier, and

n. resilient damping means for damping said relative movement is interposed between said supporting body and said body of the load carrier,

o. said resilient damping means comprises a helically coiled spring whereof opposite end portions are connected with respective ones of said members, whereby when a following load carrier carrying a load comes into proximity with a preceding, stationary, load carrier, a substantial part of the momentum of the load is absorbed by said damping means.

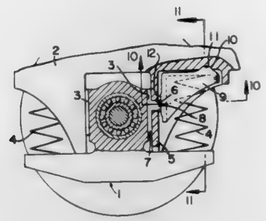
3,926,126
VEHICLE DIVERTING APPARATUS
Karl Heinz Voss, 6781 Ward Road, Wheatfield, N.Y. 14304
Filed Feb. 12, 1975, Ser. No. 549,364
Int. Cl.² E01B *25/26*
U.S. Cl. 104—130 **17 Claims**



1. In a vehicle adapted to be selectively diverted from a primary track comprising a pair of rail surfaces to a secondary track comprising a pair of spaced rails located on opposite sides of said primary track, said primary track being provided with first cam means and said secondary track being provided with second cam means; a first set of wheels engageable with said secondary track rails; a second set of wheels engageable with said primary track in one position and movable axially, when said secondary track is engaged by said first set of wheels, to a second position out of engagement with said primary track; first reciprocating means adapted to be moved by said first cam means to disengage said second set of wheels from said primary track; and second reciprocating means adapted to be moved by said second cam means to engage said second set of wheels with said primary track.

3,926,127
RAILWAY AXLE FRICTION SNUBBER ASSEMBLY
Seisuke Shima, Yamatokoriyama, Japan, assignor to Sumitomo Metal Industries Limited, Osaka, Japan
Filed Dec. 19, 1973, Ser. No. 425,949
Int. Cl.² B60G *15/04*; **B61F** *5/30, 5/38, 5/52*
U.S. Cl. 105—224 R **11 Claims**

1. An axle spring snubbing device for railway cars comprising a friction surface provided on each upper side surface of a wing type axle box, an axle spring interposed between said axle box and a truck frame, a cap means mounted on the upper end of the axle spring between said upper end and said truck frame, an axle spring guide provided in the truck frame, mutually directly engaging means on said cap means and axle spring guide, respectively, for moving said cap means laterally toward a friction surface of said axle box when the axle spring



is compressed and a laterally movable friction shoe means provided between said cap and said axle box friction surface.

3,926,128
RAILWAY CAR SHUNTING LOCOMOTIVE
Werner Zappel, Muehlstrasse 13-15, D-6921, Grombach, Germany
Filed Sept. 24, 1973, Ser. No. 399,962
Claims priority, application Germany, Oct. 18, 1972, 2251093; Aug. 16, 1973, 2341491
Int. Cl.² B60B *17/02*; **B61C** *9/08, 13/00*; **B61F** *13/00*
U.S. Cl. 105—26 R **7 Claims**

1. A shunting device especially useful for shunting freight cars, having traction wheels along each longitudinal side thereof adapted to run along railway tracks, and having a platform to accommodate thereon a motor-driven driving vehicle such as a fork-lift truck having driving wheels, there being at least one pair of rotatably mounted driving rollers at the top of said platform arranged on substantially parallel axes and spaced apart from each other and having generally upwardly facing traction surfaces defining therebetween a space which is narrower than the diameter of the driving wheels of the driving vehicle, so that said driving wheels with their axes generally parallel to said driving rollers can rest thereon in driving relation, the improvement comprising:

at least three traction wheels arranged one behind the other on each longitudinal side of the device;

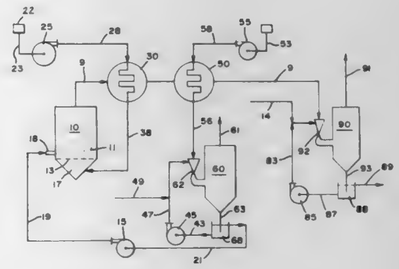
the treads of all of the traction wheels having a covering of resilient friction material;

motion-transmitting connection means coupling said traction wheels and said driving rollers, so that rotary driving of said rollers by said driving wheels will effect running rotation of said traction wheels;

the foremost and rearmost traction wheels on each side of the device having a flange; and

the traction wheels intermediate said foremost and rearmost traction wheels at each side of the device being flangeless so as to facilitate negotiating curves in railway tracks.

3,926,129
EVAPORATIVE CONCENTRATION OF WASTE SLUDGES WITH INCINERATOR EXHAUST GASES
Clarence J. Wall, Westport, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.
Filed Jan. 3, 1975, Ser. No. 538,396
Int. Cl.² F23G *5/02*
U.S. Cl. 110—7 B **15 Claims**



1. A fluid bed incineration system for combustible waste streams having a high proportion of water therein wherein the waste feed liquor is subjected to evaporative concentration using the waste heat of said fluid bed incinerator comprising, a fluid bed reactor having a constriction plate for supporting a fluidized bed of particulate material thereabove and defining a windbox therebelow,

heat exchangers arranged to receive the exhaust gases of said fluid bed incinerator,

means for conducting the exhaust gas stream from said fluid bed reactor through said heat exchangers and thence to a venturi scrubber,

blower means for providing air in volume to said heat exchangers,

conduit means for conducting preheated air from a first of said heat exchangers to said windbox as the fluidizing air for said fluid bed incinerator,

an evaporator connected to said second of said heat exchangers by a conduit whereby a heated air flow is provided to said evaporator,

means for introducing a weak feed liquor into said evaporator for exposure to said heated air flow to drive off water from said weak liquor and thereby provide a concentrated feed liquor,

means for conducting said concentrated feed liquor from said evaporator to said fluid bed reactor for direct injection into the fluidized bed thereof.

10. A method for fluid bed incineration of combustible waste liquors in which weak feed liquors are subjected to evaporative concentration using waste heat from the exhaust gases of said fluid bed incinerator, comprising the steps of,

passing the exhaust gas of said fluid bed reactor through heat exchangers,

heating air by passing air in volume through said heat exchangers,

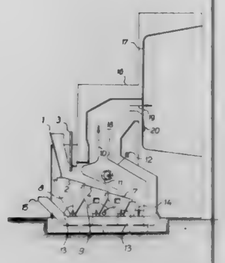
fluidizing the fluid bed in said reactor with said heated air, evaporating water from said weak feed liquor with said heated air to provide a strong feed liquor,

injecting said strong feed liquor into said fluid bed reactor for destruction by combustion.

3,926,130
INCINERATION OF HOSPITAL REFUSE

Mojmir Stloukal; Zdenek Syrovatka; Milan Dolezel, and Karel Stripek, all of Brno, Czechoslovakia, assignors to Prvni Brnenska strojirna, Brno, Czechoslovakia

Filed Aug. 20, 1974, Ser. No. 499,087
Int. Cl.² F23G *5/00*; **F22B** *1/22*
U.S. Cl. 110—10 **3 Claims**

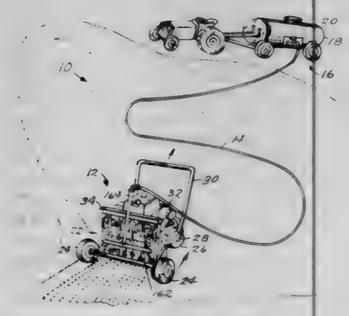


1. An incinerator for the incineration of refuse, comprising an auxiliary chamber having at least three serially arranged mechanical grate platforms, a hopper for the discharge of the refuse above the first of the grate platforms, each of the platforms comprising a plurality of spaced bars, means for reciprocating the bars of the first platform, means for reciprocally moving alternate bars of a second of the three platforms, the bars between the alternate bars of the second platform being fixed in position, a portion of the bars of the second platform being in vertical alignment with the bars of a third of the platforms, means for moving the bars of the third platform in phase opposition with the bars of the second platform, the bars of the third platform comprising a plurality of fixed bars and a plurality of movable bars, the fixed bars of the second platform being in partial vertical alignment with the movable bars of the third platform and the movable bars of the second platform being in partial vertical alignment with the fixed bars of the third platform, the incinerator further comprising a waste heat boiler, said grate platforms being separated from the waste heat boiler, said waste heat boiler being equipped with an independent ignition means, said auxiliary chamber being interconnected by an outlet draught to a combustion chamber of the waste heat boiler.

3,926,131
INJECTOR FOR SOIL TREATING LIQUIDS

William C. Collins, 5501 SW. 74 St., Miami, Fla. 33143

Filed Mar. 29, 1973, Ser. No. 346,023
Int. Cl.² A01C *23/02*
U.S. Cl. 111—6 **3 Claims**



1. An injector for soil treating liquids, comprising:

an applicator including a frame means for supporting the frame from the ground surface for permitting the frame to be drawn along the ground surface;

a plurality of injection tongs generally arranged in a transversally extending row, each injection tong being vertically disposed and having a downwardly directed tip;

indexing means mounting the injection tongs on the chassis for cyclic reciprocation of each tong between an upper extreme wherein the tip is raised clear of the ground surface and a lower extreme wherein the tip has plunged beneath the surface, the indexing means including: a crank shaft means, means for rotating the crank shaft; means pivotally connecting the tongs to the crank shaft means at a plurality of angularly disparate cranking positions for reciprocation upon rotation of the crank shaft; said tongs being grouped into a plurality of units, each unit including at least two of the tongs, the indexing means further including a body for each unit co-mounting the tongs thereof;

means defining a nozzle adjacent each tip, aimed for dispensing treating liquid into the soil when the tip lies beneath the surface;

means defining a passageway for liquid leading from the frame, through each tong to the nozzle means, said passageway including a manifold mounted on the frame, a high pressure hose connection upstream of the inlet to the manifold and a plurality of conduits leading from the manifold to the tongs;

said plurality of conduits proceeding through the respective number of branches of said conduits to individually serve each tong;

a valve for each unit, interposed in said passageway for normally selectively obstructing each conduit, each valve being disposed in the respective unit body upstream from the dividing of the respective conduit therein;

a valve actuator having a first portion disposed to sense where the tong is in relation to its cycle of rising and plunging and a second portion connecting between the first portion and the respective valve for opening and closing the respective valve only during at least one portion of the cycle wherein the respective tong tip lies submerged below the surface;

the first portion of the valve actuator for each valve comprising a rod mounted on the respective unit body for intermittent engagement with the ground and means connecting the rod to the second portion of the respective valve actuator;

a reservoir disposed free of the applicator;

high pressure flexible hose means communicating the reservoir with said passageway carried on the frame;

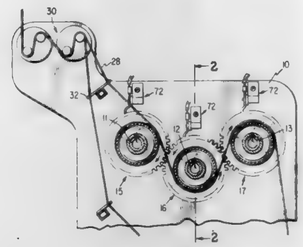
pump means communicated with the reservoir and high pressure hose means for supplying treating liquid under pressure pressure in the range of 150–600 p.s.i. to the applicator.

3,926,132
YARN FEED ROLLER ASSEMBLY

Edward C. Lear, Farleton, and Nigel S. Fitton, Great Harwood, both of England, assignors to The Singer Company, New York, N.Y.

Filed Oct. 17, 1974, Ser. No. 515,769
Claims priority, application United Kingdom, Aug. 17, 1974, 36310/74
Int. Cl. D05c *15/18*
U.S. Cl. 112—79 A **12 Claims**

1. A yarn feed roller assembly for a tufting machine including a plurality of hollow drive shafts, at least a feed roll on each of said shafts and rotatable relative thereto, the corresponding rolls of the said shafts being drivingly connected one to another, an electromagnetic clutch means between each roll and its respective shaft comprising a first element fixed for rotation with said shaft and a second element axially movable relative to said shaft, said feed roll being rotationally fixed to said axially movable member, a slip ring for each roll, means on each shaft for mounting a slip ring corresponding to each roll on said shaft, electrical conducting means connected to said first element and extending through said shaft axially into operative electrical contact with a corresponding slip ring, electricity conducting brushes, brush supporting means held

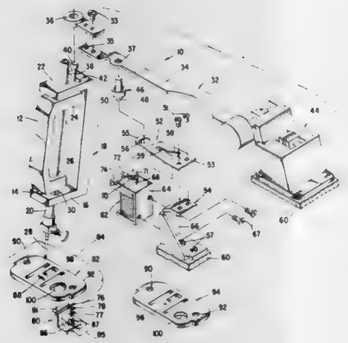


against rotation and positioned on said slip rings for retaining at least one brush in contact with each slip ring and for communicating electricity from a source selectively to the brushes, whereby the electromagnetic clutches may be actuated to drivingly couple the rolls to one or the other of the drive shafts.

3,926,133
SEWING MACHINE SAFETY DEVICE

William Herron, Elizabeth; Kenneth D. Adams, Madison, and John Petronchak, Singac, all of N.J., assignors to The Singer Company, New York, N.Y.

Filed Nov. 1, 1974, Ser. No. 520,084
Int. Cl.² D05B *3/02*
U.S. Cl. 112—158 R **18 Claims**

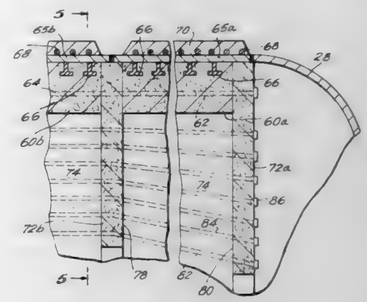


1. In a sewing machine having a needle bar supporting an endwise reciprocatory needle and jogging means cooperating with the needle to laterally jog the needle during the formation of zig-zag stitches, a work bed on the sewing machine, throat plate means accommodated on said work bed having selectable portions to support work against reciprocation of said needle to accommodate the formation of a zig-zag stitch pattern or a straight stitch pattern, and safety means for inhibiting operation of said jogging means, said safety means including switching means responsive to the presence on said work bed of said throat plate means when one of said selected portions is arranged adjacent to the reciprocatory path of said needle to accommodate the formation of one of said stitch patterns.

3,926,134
PRESTRESSED CONCRETE TANKS FOR LIQUID NATURAL GAS TANKERS

John J. Closner, Douglaston; Tadeusz Josef Marchaj, New York, and Sven Hjalmar Wichman, Yaphank, all of N.Y., assignors to Preload Technology, Inc., Garden City, N.Y.

Division of Ser. No. 292,727, Sept. 27, 1972, Pat. No. 3,863,408. This application Dec. 12, 1974, Ser. No. 532,016
Int. Cl.² B63B *25/12*
U.S. Cl. 114—74 R **3 Claims**



1. A marine transport system for cryogenic liquids, comprising the elements of:

a. an outer marine hull;

b. a cradle for a horizontally-oriented, cylindrical tank formed from prestressed concrete and having a circular cross-section; and

c. a horizontally-oriented, cylindrical tank of circular cross-section, adapted for containing cryogenic liquids positioned in said cradle, comprising the elements of:

1. a concrete, cylindrical tank wall having a plurality of steel prestressing tendons located therein in axial orientation;

2. a steel sheath anchored to the exterior surface of said wall;

3. a prestressing tendon wrapped essentially circumferentially about the exterior of said steel sheath;

4. at least two, annular stiffening disks positioned coaxially within the said wall said disks having holes therein for through-passage of axially oriented prestressing tendons;

5. a plurality of stiffening plates positioned radially-axially with respect to said tank and abutting at both axial extensions thereof, said stiffening disks and at their radial outermost extension, the said cylindrical tank wall, said stiffening plates having essentially axially oriented prestressing tendons therein;

6. steel heads defining the ends of said cylindrical tank and attached to said stiffening disks; and

7. inlet and outlet means for said cryogenic liquid.

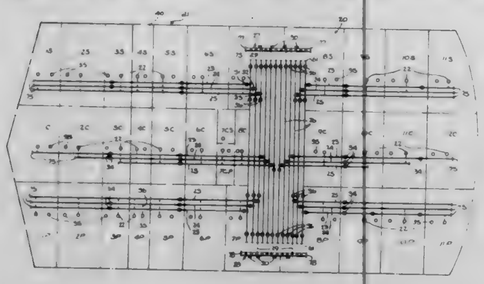
3,926,135
MULTIPURPOSE PIPELINE SYSTEM FOR HANDLING FLUIDS ON LIQUID CARGO VESSELS

Paul V. De Gregorio, Armonk, N.Y., assignor to Stolt-Nielsen, Inc., Greenwich, Conn.

Filed Dec. 18, 1974, Ser. No. 533,963
Int. Cl.² B63B *25/08*
U.S. Cl. 114—74 R **20 Claims**

1. A fluid storage tank and pipeline system comprising a plurality of storage tanks, a plurality of transfer pipelines extending adjacent to and between said plurality of tanks for conducting fluids to and from selected ones of the tanks, said plurality of transfer pipelines being fewer in number than said plurality of storage tanks, each of said storage tanks having means providing a pipe connection opening of the tank, each of said plurality of transfer pipelines having respectively opposite ends and further having means providing pipe connection

openings thereof respectively associated with, but spaced from each said storage tank pipe connection opening, means for closing selected ones of said transfer pipeline pipe connection openings, movable pipe connection means for connecting said pipe connection opening on any storage tank to a selected one of said transfer pipeline pipe connection openings associated with the tank, removable cap means on each of said respectively opposite ends of each said transfer pipeline, and



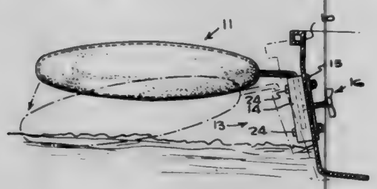
a plurality of shutoff valves in each of said transfer pipelines, one of said shutoff valves in each said transfer pipeline being adjacent to an end thereof which is common to such valved end of each other of said plurality of transfer pipelines, and the others of said shutoff valves being at respective locations between two of said pipe connection openings in the transfer pipeline with which the valve is associated.

3,926,136

REMOVABLE OUTRIGGER FLOAT AND MOUNTING DEVICE

Milton B. Shroyer, P.O. Box 338, Mineral Wells, Miss. 38648

Filed Aug. 27, 1974, Ser. No. 501,199
Int. Cl.² B63B *43/14*
U.S. Cl. 114—123 **3 Claims**



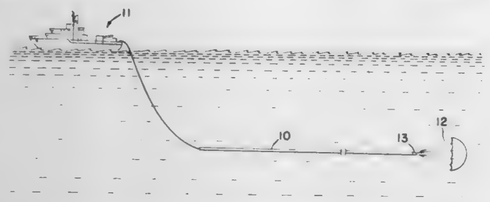
1. An outrigger float device for a boat comprising a float having two containment straps encircling the float and spaced from opposite ends of the float with the ends of each strap overlapped and fastened together with the opposite end of the same strap and bent downwardly and parallel to the side of the boat to form a downwardly projecting member and with a threaded bore extending hereinto, mounting blocks positioned on an outboard side of the boat in alignment with the downwardly projecting members and having upwardly opening slots to receive the downwardly projecting members and a safety bolt hole through an inboard side of each of the mounting blocks for alignment with the threaded bore on the downwardly projecting member when the downwardly projecting member is inserted in the mounting block slot and mounting bolt holes extending through each of the mounting blocks, stress distribution plates positioned on an inboard side of the boat and having mounting bolt apertures aligned with the mounting bolt holes in the mounting blocks and safety bolt apertures aligned with the safety bolt holes in the mounting blocks, mounting bolts passing through the mounting bolt apertures in the stress plates, the side of the boat and the mounting bolt holes in the mounting blocks to secure said mounting blocks to the side of the boat, and safety lock bolts having wing-nut type heads and self-locking threaded bolt portions whereby the safety lock bolts can be inserted through the safety bolt apertures in the stress plates, the side of the boat, and the safety bolt holes in the mounting blocks to engage the threaded bores in the downwardly projecting members.

3,926,137

DEEP OCEAN PARACHUTE RELEASE

Norman F. Johnson, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1975, Ser. No. 555,012
Int. Cl.² B63B *21/48*
U.S. Cl. 114—209 **6 Claims**



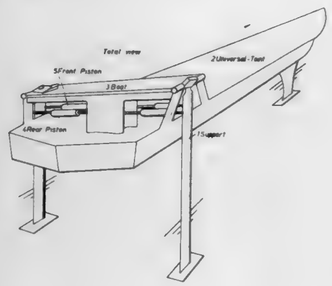
1. An apparatus for releasing a drogue chute from an elongate array extended in tension comprising:
a housing connected to the array;
means for frangibly coupling the housing to more than one riser of the drogue chute;
means for breaking the frangible coupling means being mounted adjacent thereto; and
means for sequentially initiating the breaking means to effect releasing of the drogue chute in stages thereby preventing the snapping of the elongate array.

3,926,138

DRIVE FOR HYDROFOIL BOAT

Horst Eichler, Auf den Sande 12, 5400 Koblenz, Germany

Filed Oct. 11, 1974, Ser. No. 514,168
Claims priority, application Germany, Oct. 11, 1973, 2351034
Int. Cl.² B63H *1/36*; B63B *1/28*
U.S. Cl. 115—29 **4 Claims**



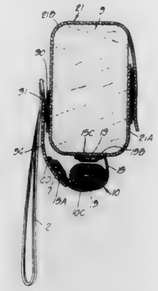
1. A drive for a hydrofoil boat comprising:
at least one foil substantially horizontally parallel to the longitudinal axis of the boat disposed on each side of the boat;
a flat vertical support member disposed substantially perpendicular to the longitudinal axis of said foils and having one end connected to each foil and its other end pivotably connected to the boat; and
drive means mounted on the boat and connected to each support member so that during a lateral movement to the starboard, the associated supports are pointed in an angular pitch toward the starboard, and when the supports are laterally moved toward the port side, the associated sections are pointed in an angular pitch toward the port side.

3,926,139

SELF STORING PROTEST FLAG USED IN BOAT RACES

Cullen M. Sabin, Solana Beach, Calif., assignor to Geoscience Ltd., Solana Beach, Calif.

Filed Feb. 25, 1975, Ser. No. 552,928
Int. Cl.² G09F *17/00*
U.S. Cl. 116—26 **8 Claims**



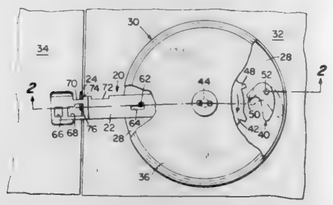
1. A flag or the like of clothlike material for attachment to a support, a cloth base strip having one edge thereof secured to one edge of said clothlike material, means including adhesive like material secured to said base strip for quickly attaching and detaching said base strip to said support, and quickly attachable and detachable means for releasably maintaining said clothlike material in a furled condition.

3,926,140

ACTUATING DEVICE FOR A CLOSURE ALARM MECHANISM

Joseph Bargiel, 5245 Ambridge Drive, Agoura, Calif. 91301

Continuation-in-part of Ser. No. 133,052, April 12, 1971, abandoned. This application Dec. 10, 1973, Ser. No. 423,388
Int. Cl.² G08B *13/08*
U.S. Cl. 116—85 **10 Claims**



1. An actuating device adapted to be mounted on a closure member having a stationary portion and a movable portion, for indicating the unauthorized opening of the movable portion of the closure member, the device comprising:
an alarm mechanism, having a deactivated position, and an activated position, providing the indication of the unauthorized opening of the movable portion of the closure member in the activated position;
a slider movably mounted on the closure member for selective movement to an unarmed position, a first position, a second position, a third position and a fourth position, the slider having a portion connectable to a portion of the alarm mechanism, the slider being connected to the alarm mechanism in the unarmed position, the first position, the second position and the third position of the slider and the slider being disconnected from the alarm mechanism in the fourth position of the slider, the alarm mechanism being positioned in the deactivated position when connected to the slider and the alarm mechanism being positioned in the activated position when disconnected from the slider in the fourth position of the slider;
bias means connected to the slider for biasingly moving the slider toward the fourth position of the slider; and
means removably engageable with portions of the slider for cooperatingly positioning the slider in the unarmed position, the first position, the second position and the third position, said means engaging one portion of the slider preventing movement of the slider via the bias means and positioning the slider in the unarmed position, said means being disengageable from the slider allowing the slider to be moved via the bias means from the unarmed position to the first position wherein said means engages another portion of the slider preventing movement of the slider via the bias means and positioning the slider in the first position, said means being disengageable from the slider via the opening of the movable portion of the closure member allowing the slider to be moved via the bias means from the first position to the second position wherein said means engages one other portion of the slider preventing movement of the slider via the bias means and positioning the slider in the second position, said means being disengageable from the slider via the closing of the movable portion of the closure member allowing the slider to be moved via the bias means from the second position to the third position wherein said means engages one other portion of the slider preventing movement of the slider via the bias means and positioning the slider in the third position, and said means being disengageable from the slider via the unauthorized opening of the movable portion of the closure member allowing the slider to be moved via the bias means from the third position to the fourth position disengaging the slider from the alarm mechanism and positioning the alarm mechanism in the activated position.

3,926,141

MODULAR WIRE GUARD

Philip W. Taylor, Howell, Mich., assignor to Taylor Industries, Inc., Howell, Mich.

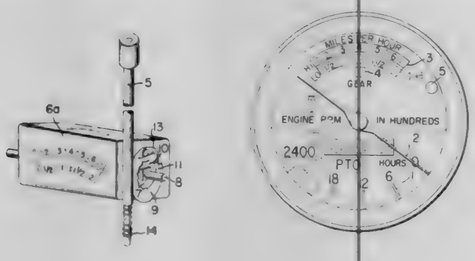
Filed May 31, 1974, Ser. No. 475,153
Int. Cl.² E04H *12/20*; G01D *21/04*
U.S. Cl. 116—114 R **13 Claims**



1. A modular guard assembly for protecting and enhancing the visibility of a length of wire, said assembly comprising a plurality of individual modular units disposed end to end about said length of wire, each of said units comprising:

a pair of mating half shell sections adapted to snap together and peripherally loosely enclose said wire;
means integral with said half shell sections for permanently interlockingly connecting said half shell sections in mated relationship, said means comprising:
a barbed prong on one half shell section, and
a corresponding lip on said mating half shell section for engaging said barbed prong; and
means at each end of said modular unit for nonrigidly interconnecting adjacent modular units for forming said assembly.

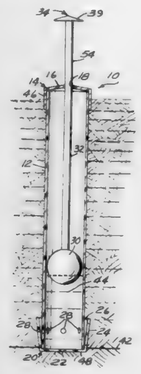
3,926,142
METER
Keiji Okamoto, Fujieda, Japan, assignor to Yazaki Sogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 4, 1974, Ser. No. 512,218
Claims priority, application Japan, Dec. 14, 1973, 48-141747[U]
Int. Cl.² G01P *1/08*
U.S. Cl. 116—116 **3 Claims**



1. A meter for use in a multi-speed vehicle for indicating both the rotating speed of the engine and the running speed of the vehicle by a single pointer, comprising a meter body, a dial, a display window formed in said dial, a character drum of polygonal cross section incorporated within said meter body and provided on a plurality of side faces thereof with respective speed scales corresponding to the individual gear positions of said vehicle, means for causing rotation of said character drum so that the speed scale corresponding to the specific gear position at which said vehicle is operating can solely be exposed in said display window, said means for causing rotation of said character drum including a push knob at the exterior of said meter body adapted to be moved linearly, means for converting linear movement of said push knob into rotating movement of rotary elements thereby causing rotation of said character drum, said converting means including a ratchet wheel fixed to one end of said character drum, a ratchet pawl urged in response to the linear movement of said push knob thereby causing rotation of said ratchet wheel, and a ratchet spring urging said ratchet pawl toward said ratchet wheel to maintain firm engagement therebetween.

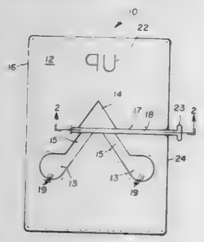
3,926,143
LIQUID DETECTING GAUGE
Harold A. Hothan, 1445 E. Dexter St., Covina, Calif. 91724
Continuation-in-part of Ser. No. 434,787, Jan. 21, 1974, abandoned. This application Aug. 16, 1974, Ser. No. 497,948
Int. Cl.² G01F *23/08*
U.S. Cl. 116—118 R **11 Claims**

11. Liquid level means, comprising:
first means adapted to serve as a tubular housing;
float means adapted to fit loosely within the tubular housing so as to move freely, in a longitudinal direction, therewithin;
stem means adapted for use in cooperation with said float means in a manner to extend away therefrom;
said first means comprising a tubular body, top closure means for the tubular body, bottom closure means for the tubular body, and gutter means adapted to form a liquid receiving gutter around the base of said tubular housing;
said tubular body having liquid inlet means near its lower end through which liquid from the gutter can flow into the tubular housing when the liquid level indicating means is in a normal position of use, said normal position of use being an upright one in which the tubular housing is buried with its top closure means up and at least partially exposed to view;



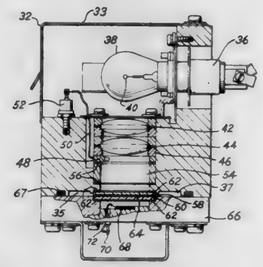
said top closure means having an opening adapted to receive said stem means and to permit it to move freely therethrough, the float means being positioned within the tubular housing, and said stem means being oriented and sized to extend through said opening at all times when said tubular housing is in said normal position of use;
whereby, when said tubular housing is buried in said normal position of use, liquid penetrating the surrounding burial medium flows into said gutter when it reaches the level of the latter, and from there into the tubular housing, causing said float means to rise and push said stem means upwardly through the opening in said top closure means to give visual indication of the liquid penetration to said level.

3,926,144
TILT OR INVERSION INDICATOR
William M. Lander, Horseheads, N.Y., assignor to Index Packages, Inc., Horseheads, N.Y.
Filed Nov. 6, 1974, Ser. No. 521,345
Int. Cl.² G01C *9/10*
U.S. Cl. 116—124 R **4 Claims**



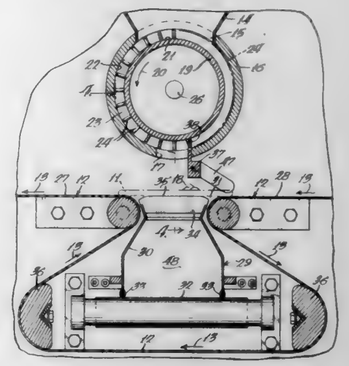
1. In a tilt or inversion indicator having a storage chamber containing flowable colored particles and an indicator chamber into which said particles are free to flow through a connecting passageway upon tilting or inversion of said indicator, the improvement comprising:
a. said indicator being molded of transparent resin material;
b. said indicator having a generally plane back;
c. said storage and indicator chambers and said passageway being recessed forward relative to said plane back and being protected by said resin material;
d. printed material formed directly on said plane back around said storage and indicator chambers and said passageway to be read through said transparent resin from the front of said indicator;
e. a backing sheet covering over said printed material and said storage and indicator chambers;
f. adhesive means on the rear of said backing sheet for securing said back of said indicator to a container so said printed material is protected by said resin material and is visible through said resin material;
g. said indicator having an actuator channel extending transversely across said passageway and opening outward at one edge of said indicator;
h. a stop in said actuator channel;
i. a resin actuator rod housed in said actuator channel and extending outward from said one edge of said indicator for blocking said passageway until actuation of said indicator;
j. said rod being normally held in said blocking position in said channel by said backing sheet and being movable outward from said channel for unblocking said passageway to actuate said indicator; and
k. said rod having an abutment for engaging said stop in said channel to limit said outward sliding motion of said rod.

3,926,145
TONER CONCENTRATION DETECTOR
Robert M. Muth, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed Mar. 4, 1974, Ser. No. 447,701
Int. Cl.² B05B *5/02*
U.S. Cl. 118—7 **8 Claims**



1. In a printing apparatus for rendering visible a latent electrostatic image carried on a recording medium by applying to the medium at a toning station a working toner solution comprising a suspension of toner particles in a volatile carrier, improved means for maintaining a predetermined concentration of toner particles in the working toner solution comprising, in combination:
a reservoir of toner particles;
measuring means for continuously measuring the concentration of toner particles in the working toner solution, said measuring means including a light source,
a transparent chamber spaced apart from the light source to receive a continuously flowing stream of working toner solution,
first light detection means sensitive to light in the near infrared region of the light spectrum for measuring light intensity from the light source passing through the chamber, and means for transmitting light from the light source through the transparent chamber to the first light detection means along a first path having a first predetermined length;
second light detection means for detecting the intensity of light passed to said chamber from said light source;
means for providing current to the light source;
means for adjusting the current to the light source in response to said second light detection means to maintain a predetermined constant light intensity from the light source;
transfer means for transferring toner particles from the reservoir to the working toner solution at a predetermined rate; and
operation means responsive to the measuring means for operating the transfer means when the toner particle concentration decreases below a first predetermined value and for terminating the operation of the transfer means when the toner particle concentration increases to the first predetermined value.

3,926,146
APPARATUS FOR DISTRIBUTING PARTICLES
Frederick Breyer; George T. Davis, and Edwin C. Krusche, all of Boca Raton, Fla., assignors to Hollymatic Corporation, Park Forest, Ill.
Filed Feb. 4, 1974, Ser. No. 439,249
Int. Cl.² B05B *3/02*
U.S. Cl. 118—24 **1 Claim**



1. Apparatus for depositing an adherent particulate solid material on a traveling series of articles having spaced adjacent peripheries, comprising: conveyor means for transporting said articles through a depositing station; a dispensing housing above said conveyor means at said depositing station having an opening for depositing said material by gravity fall from the dispensing housing onto the articles as said articles are transported through the station with some of the material falling beyond and between said peripheries; a receiving hopper above and communicating with the dispensing housing for supplying material from the hopper to said housing; a recovery means at said depositing station for recovering said portions of material falling beyond and between said peripheries of said articles; a rotor in said dispensing housing having a peripheral surface spaced from said housing to provide a conduit passage between the rotor and housing for conveying of said adherent material from said hopper through said conduit passage and to said conveyor and the articles thereon by way of said passage; and spaced pins on said rotor substantially spanning said passage and rotatable with said rotor for engaging and moving said adherent material through said passage on rotation of the rotor without substantial compacting of said adherent material, said conveyor means comprising a pair of spaced horizontal reaches and said recovery means at said depositing station comprising a generally vertical open chute between said reaches having two longitudinal sides, a recovery conveyor

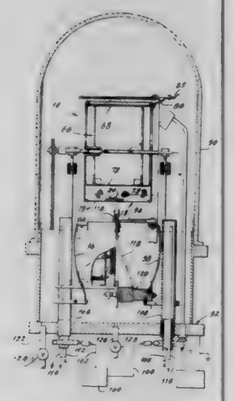
beneath the bottom of said chute and flexible guards on said chute bottom at said longitudinal sides engaging the recovery conveyor and closing the space between said chute bottom and guards and the conveyor to prevent substantial loss of said material laterally between the chute and the recovery conveyor.

3,926,147

GLOW DISCHARGE-TUMBLING VAPOR DEPOSITION APPARATUS

Kenneth E. Steube, St. Charles, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Nov. 15, 1974, Ser. No. 524,365
Int. Cl.² C23C *13/12*
U.S. Cl. 118—49.1 **14 Claims**



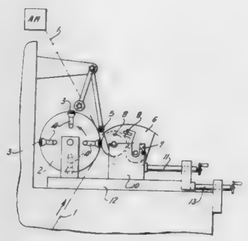
1. Means for plating articles comprising means forming an enclosed chamber, means for evacuating the chamber to establish a near vacuum condition therein, other means for introducing a gas into the evacuated chamber to raise the pressure in the chamber to a predetermined level, a source of a plating substance positioned in the chamber including means for evaporating the plating substance, the improvement comprising means for supporting a supply of articles to be plated in spaced relationship relative to the source of vaporized plating substance, said support means including a perforated wall member on which the articles to be plated are positioned, means for rotating the perforated wall member during the plating operation in such a way that the articles supported thereon tumble and present different surfaces to the source of vaporized plating substance, means connecting the perforated wall member to a source of relatively high negative electric potential, a relatively non-movable shield structure positioned adjacent to the perforated wall member above the articles to be plated thereon, means to maintain said non-movable shield structure at a relatively low electric potential, said shield structure having a portion positioned extending relatively closely in spaced relationship above the articles being plated and to the adjacent portion of the perforated wall member to define with said adjacent portion of the perforated wall member a chamber in which the articles being plated are located and restricted in the vertical component of tumbling movement and to define a relatively limited region of glow discharge.

3,926,148

APPLICATION OF ADHESIVE TO A MOVING WEB

Karl-Heinz Honsel, Heidelberger Weg 15, 48 Bielefeld, Germany

Division of Ser. No. 230,817, March 1, 1972, abandoned. This application Mar. 9, 1973, Ser. No. 339,943
Claims priority, application Germany, Mar. 5, 1971, 2110491
Int. Cl.² B05C *1/08, 1/16*
U.S. Cl. 118—247 **8 Claims**



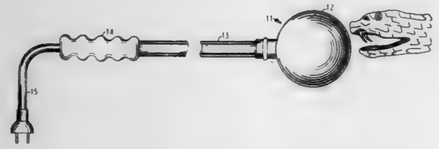
1. Apparatus for applying a self-adhesive material to a flat web, particularly to envelope blanks, comprising advancing means for advancing a flat web having two opposite major surfaces, in one direction; an adhesive carrier adjacent one of said major surfaces; transfer means, comprising a pressure-applying transfer roller located adjacent the other major surface and having a circumferential face and at least one pressure-exerting projection extending from said face for intermittent contact with the advancing web so as to press spaced portions of said one major surface into adhesive-transferring contact with said carrier; applying means, including an applying roller for applying to said carrier a self-adhesive material which tends to form a build-up on said adhesive carrier in the region where said one major surface is pressed against said adhesive carrier by portions of said projection; and moving means for moving said adhesive carrier in an opposite direction to, and at a speed higher than the speed of said web so as to prevent the formation of such build-up and consequent uneven transfer of said adhesive onto said major surface of said flat web.

3,926,149

SNAKE VENOM MILKER

Raymond D. Berger, 1504 40th Ave. Court, Rock Island, Ill. 61201

Filed Feb. 10, 1975, Ser. No. 548,883
Int. Cl.² A01K *29/00*
U.S. Cl. 119—1 **3 Claims**



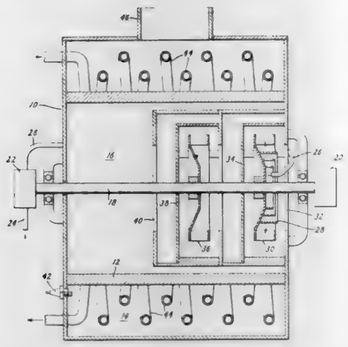
1. A snake venom milker comprising: a venom container having a wall of rubber-like material, said wall being of such thickness that it can be penetrated by the fangs of a snake and still not be torn by the snake, an extending handle, said venom container attached to one end of said handle, and heating means for warming said container.

3,926,150

VAPOR GENERATOR CARBURETION SYSTEM

Rudolf R. Laessig, West Chester, Pa., assignor to General Electric Company, Fairfield, Conn.

Filed June 3, 1974, Ser. No. 475,647
Int. Cl.² F22B *27/08*
U.S. Cl. 122—250 R **5 Claims**



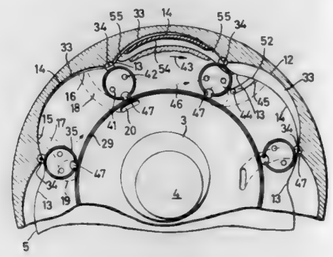
1. In a vapor generator having a central plenum formed by a porous member for receiving a combustible mixture, an improved carburetion system comprising:
a rotatable member having secured thereto for rotation with it:
a liquid fuel pump,
a blower, and
a fuel atomizer/vaporizer;
means for rotating said rotatable member;
conveying means for delivering to said fuel atomizer/vaporizer fuel pumped by said liquid fuel pump;
said fuel atomizer/vaporizer directing atomized and/or vaporized fuel outwardly;
said blower positioned to mix said atomized and/or vaporized fuel with air and blow the mixture into said plenum; and
scroll means for converting the velocity of the mixture caused by said blower to a pressure head.

3,926,151

ROTARY PISTON COMBUSTION ENGINE

Johann Keylwert, Bensberg, Germany, assignor to Klockner-Humboldt-Deutz AG, Cologne, Germany

Filed Dec. 2, 1974, Ser. No. 528,999
Claims priority, application Germany, Dec. 14, 1974, 2362092
Int. Cl.² F02B *55/14*
U.S. Cl. 123—8.05 **8 Claims**



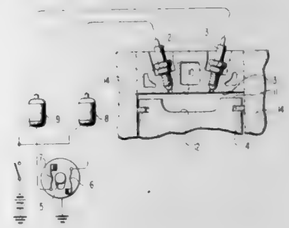
1. A rotary piston internal combustion engine comprising; housing means, piston means in the housing means and a shaft rotatably supported on the axis of the housing means and having eccentric means supporting said piston means, whereby relative rotation between said eccentric means and said piston means effects a change in the volume of fluid between said housing means and said piston means, said housing means when viewed in cross section comprising a plurality of radially inwardly concave arched regions, said piston means when viewed in cross section comprising radially outwardly convex arched regions amounting in number to a whole multiple of three, said piston means having intermediate portions at the junctures of adjacent arched regions which are nearest the axis of the piston means, said piston means being provided with overflow passage means extending circumferentially thereof and leading from near each third said intermediate portion of the piston means to near the following said intermediate portion of the piston means in the direction of rotation of the piston means, said overflow passage means providing fluid communication between two of said arched regions, conduit means for supplying a combustible mixture to the working chamber means formed between the piston means and housing means and for withdrawing products of combustion therefrom, combustion chamber means, and first and second conduit systems communicating said combustion chamber means with said working chamber means.

3,926,152

ROTARY PISTON INTERNAL COMBUSTION ENGINE

Hans O. Scherenberg, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Nov. 6, 1974, Ser. No. 521,463
Claims priority, application Germany, Nov. 7, 1973, 2355587
Int. Cl.² F02B *53/12*
U.S. Cl. 123—8.09 **10 Claims**



1. A rotary piston internal combustion engine with a housing casing, which includes an ignition means having at least two spark plugs at the housing casing, characterized in that said ignition means includes means providing an alternate ignition of the spark plugs with only one ignition in a respective compression volume of the combustion engine.

3,926,153

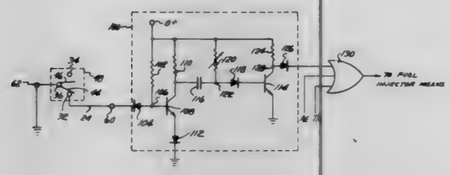
CLOSED THROTTLE TIP-IN CIRCUIT

Junuthula N. Reddy, Troy, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 3, 1974, Ser. No. 457,680
Int. Cl.² F02M *51/00*
U.S. Cl. 123—32 EA **14 Claims**

1. In combination with an internal combustion engine fuel control system, having a source of electrical power, an electronic fuel control generating signals indicative of the engine's fuel requirements, fuel delivery means for delivering fuel to the engine in response to the signals generated by said fuel control computer and a throttle moveable intermediate a closed and a full open position to control the air delivery to the engine, an improvement comprising:
means for generating a closed throttle signal only when the throttle is in the closed position and for terminating said closed throttle signal when said throttle is intermediate said open and closed position;

input circuit portion means responsive to the termination of said closed throttle signals for generating a pulse width control signal each time said closed throttle signal is terminated; and

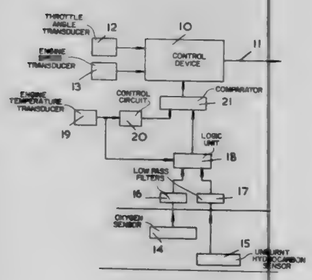


output circuit portion means including at least one output transistor switch for generating a fuel enrichment pulse signal in response to a pulse width control signal.

3,926,154
FUEL CONTROL SYSTEMS

Malcolm Williams, Solihull, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed May 3, 1974, Ser. No. 466,886
Claims priority, application United Kingdom, May 4, 1973, 21446/73
Int. Cl.² F02B *3/00*; F02M *39/00*
U.S. Cl. 123—32 EA **6 Claims**

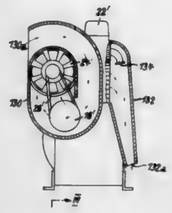


1. A fuel control system for an internal combustion engine comprising means for sensing the quantity of oxygen within the exhaust emission of the engine, means for sensing the quantity of carbon monoxide or unburnt hydrocarbon within the exhaust emission, means for measuring the temperature of the engine, control means for controlling the rate of supply of fuel to the engine in accordance with at least one engine parameter, and operation means coupled to said engine temperature measuring means and to said control means for modifying the quantity of fuel fed to the engine in accordance with engine temperature and the quantity of carbon monoxide or unburnt hydrocarbon within the exhaust emission when the engine temperature is below a predetermined value and in accordance with the quantity of oxygen within the exhaust emission when the engine temperature is above said predetermined value.

3,926,155
INTERNAL COMBUSTION ENGINE WITH SILENCING MEANS

Ernst Hatz, Ruhstorf, and Johann Schmuck, Feilnbach, both of Germany, assignors to Motorenfabrik Hatz KG, Ruhstorf, Germany

Division of Ser. No. 358,337, May 8, 1973. This application Nov. 4, 1974, Ser. No. 520,825
Claims priority, application Germany, May 8, 1972, 2222556; June 15, 1972, 7222447
Int. Cl.² F01P *1/02*
U.S. Cl. 123—41.68 **3 Claims**

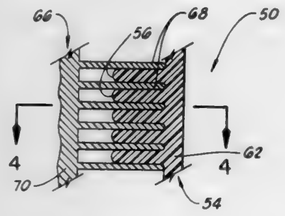


1. An internal combustion engine comprising at least one combustion cylinder, a cooling air conducting system including a cooling air blower associated with said cylinder, and sound muffling means incorporated in said cooling air conducting system wherein the conducting system comprises an air admission section in the form of tubular ducting which is disposed round said cooling air blower in spiral or volute form wherein said tubular ducting is provided with an air admission port substantially at the uppermost part thereof, and an air filter being disposed in the cooling air conducting system.

3,926,156
ENGINE DAMPENER MEANS

Eugene C. McCormick, P.O. Box 706, Wellington, Kans. 67152

Filed May 13, 1974, Ser. No. 469,427
Int. Cl. F02f *1/06, 1/30*
U.S. Cl. 123—41.69 **5 Claims**



1. In an engine having a plurality of cooling fins mounted in a spaced relation, that improvement of a cooling fin vibration dampener in combination therewith, comprising:

a. a member of resilient fully cured material having a first portion and a second portion, said first portion having at least two lug-like portions being mounted on opposite sides of an engine cooling fin and in compression between cooling fins adjacent to said first-named cooling fin, said lug portions being longitudinally elongated substantially, having a length substantially greater than any transverse dimension, and having their outer end portions being wider than the distance between said first-named fin and said fins adjacent thereto, said lug-like portions when mounted extending inward into the outer edge portions of said cooling fins with said outer end portions being essentially rounded in external shape;

b. said second portions connects end portions of said first portion to when mounted traverse ends of said cooling fins,

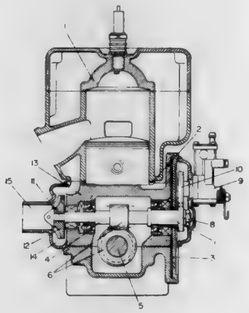
c. said first portion is integral with said second portion, and

d. said dampener is constructed and adapted to be mounted and held in place on an engine solely by friction with said lug-like portions compressed between said fins, said cooling fin vibration dampener is constructed and adapted to in use reduce the normal operating natural frequency to which said cooling fins can be forced by normal operatio. of said engine thereby reducing the overall normal operating natural frequency of said engine to prevent said engine from reaching a resonant frequency.

3,926,157
TWO-CYCLE ENGINE WITH INLET PORTING BY ROTARY VALVE

Hans Heinz Lippitsch, Gunskirchen, Austria, assignor to Bombardier Limited, Valcour, Quebec, Canada

Filed Oct. 12, 1973, Ser. No. 405,864
Int. Cl.² F01L *7/12*
U.S. Cl. 123—73 D **1 Claim**



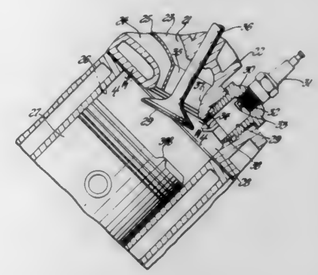
1. A two-cycle engine with rotary valve induction control, comprising: an engine casing defining a crankcase; a crankshaft rotatably mounted in said casing to deliver power from said engine; a drive shaft rotatably mounted in said casing transversely of said crankshaft, worm gear means drivingly connecting said crankshaft to said driveshaft; a rotary valve means to control the supply of combustion mixture to said crankcase directly connected to said drive shaft at one end thereof for rotation thereby; at least one additional auxiliary system drivingly connected to the other end of said drive shaft, said at least one additional auxiliary system comprising a liquid coolant circulation pump having a housing which is at least in part integral with said casing and an impeller within said housing directly connected to said other end of said drive shaft for rotation thereby; an oil injection pump in said casing, said oil injection pump being gear driven and including a driven gear; and said rotary valve means including a hub comprising a driving pinion meshing with said driven gear.

3,926,158
SEGREGATED LEAN-RICH FED SPARK IGNITION ENGINE

John Dolza, Sr., 810 State St., Fenton, Mich. 48430

Filed Jan. 2, 1974, Ser. No. 430,367
Int. Cl.² F02B *19/10*
U.S. Cl. 123—75 B **20 Claims**

1. In a spark ignition internal combustion engine having a power cylinder, a piston and a combustion chamber opposite the piston, an inlet valve openable into the combustion chamber toward the piston, an inlet passage communicating with the combustion chamber via the inlet valve, a fuel mixture segregation chamber adjacent the valve, said segregation chamber extending upwardly from the combustion chamber in a direction generally parallel with the longitudinal axis of the cylinder, said inlet passage having partitioning means therein defining a first passage sector for flow of spark ignitable fuel and air mixture into the portion of the combustion chamber nearest the segregation chamber during the suction stroke of the piston and a second passage sector for simultaneous flow of other gaseous fluid into the remainder of the combustion chamber, the combustion chamber end of the segregation

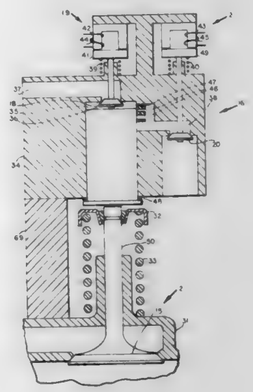


chamber having a deflector member for directing said spark ignitable mixture into the segregation chamber, a portion of said deflector member extending toward the longitudinal axis of the cylinder, a deflecting ridge on the piston operative to maintain a relatively rich mixture of said ignitable mixture and said other gaseous fluid adjacent the side of the cylinder nearest the segregation chamber during the compression stroke of the piston, and a spark plug having electrodes extending into the segregation chamber for initiating combustion of said spark ignitable mixture therein.

3,926,159
HIGH SPEED ENGINE VALVE ACTUATOR

Gunnar P. Michelson, 505 Sea Ranch Drive, Santa Barbara, Calif. 93105, and Louis A. Ule, 27 Mustang Road, Rolling Hills, Calif. 90274

Filed Mar. 25, 1974, Ser. No. 454,683
Int. Cl.² F01L *9/04*
U.S. Cl. 123—90.11 **8 Claims**



1. A control device comprising:

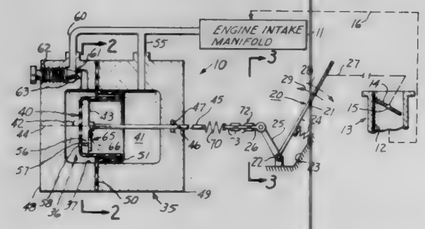
an internal combustion engine having at least one intake valve and one exhaust valve;

an hydraulic cylinder and piston assembly having a piston slidably disposed within a cylinder for actuating a respective one of said intake and exhaust valves;
pump and fluid supply means for supplying pressurized fluid to the interior of each cylinder of said assemblies so that said piston slides therein;
each of said assemblies having an inlet valve and an outlet valve, both disposed to open under the influence of said high pressure fluid;
a solenoid for each one of said inlet and outlet valves, said solenoid being disposed to hold the respective inlet or outlet valve closed while energized;
a computer means responsive to the output of said internal combustion engine for supplying a first signal to deenergize said solenoid associated with said respective inlet valve and energizing said solenoid associated with said respective outlet valve, so that said respective piston is forced out of said cylinder by said pressurized fluid and for supplying a second signal to de-energize said solenoid associated with said respective outlet valve and energizing said solenoid associated with said inlet valve so that said piston is free to move into said cylinder.

3,926,160
ACCELERATOR DAMPER

Reed J. Husband, 650 Carroll Way, Pasadena, Calif. 91107

Filed Feb. 22, 1974, Ser. No. 445,277
Int. Cl.² F02D *11/08*
U.S. Cl. 123—103 E **23 Claims**

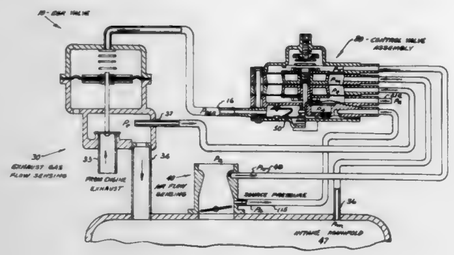


1. An accelerator damper for an accelerator that controls the supply of fuel to an engine which includes a source of fluid under pressure whose pressure increases when the engine is accelerated, the accelerator having a path of movement in a first direction to open a carburetor throttle, and in a second direction to permit the throttle to close, the accelerator damper comprising: a body enclosing a cavity; an internal wall at least partially bounding said cavity; a barrier in said cavity making a peripheral fluid-sealing fit with said internal wall so as to divide the cavity into a first and a second chamber, at least a portion of said barrier being bidirectionally movable along an axis whereby inversely to enlarge the volume of one chamber and reduce the volume of the other chamber; first conduit means for communicating the pressure source with said first chamber, said first chamber being that chamber which, when it holds a greater pressure than the second chamber, will cause the said portion to move and tend to close the throttle; second conduit means fluidly interconnecting the first conduit means and the second chamber; a bleed conduit means fluidly interconnecting the first conduit means and the second chamber; flow check means permitting fluid flow through the second conduit means from the second chamber to the first conduit means and resisting fluid flow in the reverse direction; and a restrictor in the bleed conduit means to limit the rate of fluid flow therethrough, the said movable portion of the barrier being adapted to be connected to the accelerator to resist movement of the accelerator in the first direction when the consequence of said movement is an increase of pressure in the pressure source.

3,926,161
EXHAUST GAS RECIRCULATION FLOW CONTROL SYSTEM

Harry P. Wertheimer, Horseheads, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 28, 1974, Ser. No. 446,856
Int. Cl.² F07M *25/06*
U.S. Cl. 123—119 A **30 Claims**



1. In combination with an internal combustion engine of the type having a carburetor with a venturi passage and a spark port, an intake manifold between said carburetor and the engine; a recirculated exhaust gas passage directing a portion of the exhaust gases from the engine to the intake manifold and valve means disposed within said exhaust gas passage for controlling the flow of recirculated exhaust gas to the intake manifold, the improvement comprising:
means for generating a first signal corresponding to engine air flow;
means for generating a second signal corresponding to intake manifold pressure; and
means for receiving said first and second signals, said receiving means operative to control said valve means whereby the flow of exhaust gas recirculated to said intake manifold is a function of engine air flow and intake manifold pressure, said receiving means further including means for receiving a third signal corresponding to recirculated exhaust gas flow, so that said receiving means is operative to maintain the flow through said recirculated exhaust gas passage as a function of said first, second and third signals.

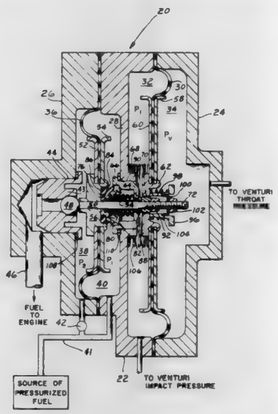
3,926,162
FUEL CONTROL APPARATUS

Elmer A. Haase, and James M. Kirwin, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Dec. 19, 1973, Ser. No. 426,397
Int. Cl.² F02D *1/04*
U.S. Cl. 123—139 A **5 Claims**

1. Fuel control apparatus for a combustion engine having an air intake comprising:
fuel conduit means having an inlet connected to a source of pressurized fuel and an outlet connected to supply metered fuel to the engine;
first valve means including a metering restriction and a valve member for varying the flow area of said metering restriction in said fuel conduit means for controlling fuel flow therethrough;
second valve means operatively connected to said fuel conduit means for controlling the fuel pressure differential across said restriction and thus the flow of fuel therethrough to said engine;
an air pressure differential responsive means operatively connected to said air intake and responsive to a control air pressure differential indicative of mass air flow consumed by the engine;
a fuel pressure differential responsive means operatively connected to said fuel conduit and responsive to the fuel pressure differential across said restriction;

a fixed wall separating said air and fuel pressure differential responsive means;
an opening in said fixed wall;
a control rod extending through said opening for axial movement relative thereto and operatively connected to said valve member and said air and fuel pressure differential responsive means for actuating said valve member to establish a force balance on said control rod; and
a bellows fixedly secured at one end to said wall coaxial with said opening and fixedly secured at the opposite end to said control rod coaxial therewith for preventing fluid communication between said air and fuel pressure differential responsive means and resiliently supporting said control rod for axial movement through said opening;



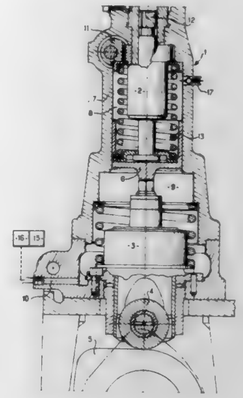
said control rod having an effective range of axial movement of approximately 0.010 inches such that the compression of said bellows is limited accordingly;
said bellows having an outer diameter of approximately 0.220 inches and a mean effective area substantially equal to the flow area of said valve orifice;
and wherein said fuel pressure differential responsive means is provided with a central portion having a recess therein adapted to receive an annular resilient seal member;
a circular member having a central opening through which said rod extends and a radially extending flange portion adapted to bear against said resilient seal member;
means including a fastener threadedly engaged with said rod for urging said circular member against said annular seal member to compress same thereby establishing a fluid seal.

3,926,163
METHOD AND DEVICE FOR STOPPING AN INTERNAL COMBUSTION ENGINE WITH FUEL INJECTION IN CASE OF OVERSPEED

Dirk Bastenhof, Eaubonne, France, assignor to Societe d'Etudes de Machines Thermiques, Saint Denis, France

Filed May 28, 1974, Ser. No. 473,940
Claims priority, application France, June 26, 1973, 73.23380
Int. Cl.² F02B *77/00*
U.S. Cl. 123—139 AZ **11 Claims**

4. A device for stopping an internal combustion engine in case of overspeed including fuel injection pumps of the constant-stroke, reciprocating piston type, each of said pumps comprising a pump body, a piston, a drive tappet for driving the piston, a hollow cylinder closed at one end and slidably mounted within said pump body between said piston and said tappet and defining within said pump body a pair of separated closed chambers, a first one of which contains said piston and the second one of which contains said tappet, said device comprising a source of pressurized gaseous fluid, and means for providing a communication between said source and said second chamber for feeding said pressurized gaseous fluid into

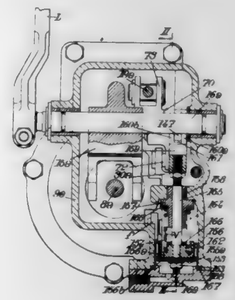


said second chamber, said gaseous fluid having a pressure high enough for disengaging and separating said hollow cylinder and thereby said piston from said drive tappet to thereby stop said injection pump.

3,926,164
REGULATING DEVICES FOR THE FLOW OF FUEL FOR INTERNAL COMBUSTION ENGINES

Andre Vuaille, Lyon, France, assignor to Societe Industrielle Generale de Mecanique Appliquee S.I.G.M.A., France

Filed May 21, 1973, Ser. No. 362,360
Claims priority, application France, June 6, 1972, 72.20364
Int. Cl.² F02D *1/04, 1/06*
U.S. Cl. 123—140 FG **2 Claims**



1. Device for regulating the flow rate per revolution of an injection pump for an internal combustion engine, comprising:
a centrifugal regulator sensitive to the rotary speed of the engine, comprising a pusher element slideable along the axial direction of the centrifugal regulator,
elastic means operating in a direction opposite to the direction of operation of the centrifugal regulator, said elastic means having a tension which depends upon the position of an accelerator,
a regulating member for regulating the flow rate per revolution of the pump,
linking means between the pusher element and the flow rate regulating member, comprising at least one transmission lever respectively connected to the pusher element and to the flow-rate per revolution regulating member, a middle

portion of this transmission lever being mounted on pivoting means borne by a casing in which is housed the regulating device,

said pivoting means of the transmission lever comprising a pivot borne by the casing and a pivoting axle of said lever fast to the pivot, the geometric axis of this pivoting axle being parallel and eccentric with respect to the geometric axis of the pivot, said pivot and said pivoting axis being fast to a linking element, said linking element being situated between said axle and said pivot,

said pivoting means enabling a displacement of the geometric axis of rotation of said lever, causing a movement of the flow rate regulating member,

and actuating means for controlling the displacement of the pivoting axle of said lever, said actuating means being sensitive to the pressure of a fluid,

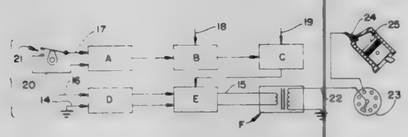
said transmission lever being pivoted by one end on the regulating member for the flow rate per revolution of the pump and, by its other end, on an intermediate lever, said intermediate lever connecting one end of the transmission lever to the pusher element, said intermediate lever being pivoted, in its middle part, on a first sleeve movable with the pusher element, said first sleeve being slidably mounted in a second sleeve connected for translation with said pusher element, the first-named elastic means being in abutment against said first sleeve, and a further elastic means being provided between said first sleeve and said second sleeve so as to enable relative movement of said two sleeves which causes rotation of the levers and movement of the flow rate regulating member.

3,926,165

MULTIPLE SPARK DISCHARGE SYSTEM

James Walter Merrick, El Paso, Tex., assignor to Autotronic Controls Corporation, El Paso, Tex.

Filed Feb. 11, 1974, Ser. No. 440,996
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 E **14 Claims**



1. In an internal combustion engine having a combustion chamber within which an ignition spark is to be provided with the spark occuring in timed sequence respective to engine rotation, said engine having means providing a timing signal, a DC current source, and a distributor connected to deliver high voltage current for the spark; the improvement comprising:

a multiple spark discharge apparatus for delivering current to the distributor in response to said timing signal; said discharge apparatus including means forming a multiple spark discharge control circuit connected to deliver multiple strikes for said spark when said circuit is energized; means, including circuitry, forming a DC/DC converter for increasing the voltage of said DC current source, and connected to supply current to said multiple spark discharge control circuit;

a firing duration control circuit means connected to said multiple spark discharge control circuit for controlling the duration of firing each time said timing signal is received;

an engine timing control circuit means for changing the time of firing respective to engine rotation; said engine timing control circuit means divides the firing interval between successive firing pulses into first and second intervals, means by which the ratio of said first and second intervals is made proportional to a first and second current source, and means for adjusting one said current source to thereby provide an adjustable ignition timing signal;

an engine timing signal conditioning circuit means connected to said engine timing control circuit for conditioning the timing signal, to thereby provide a signal for driving said engine timing control circuit;

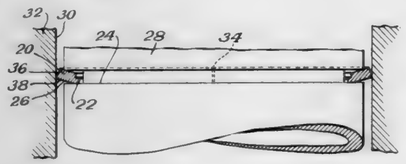
so that a spark of multi-strikes is provided for initiating combustion each stroke of the internal combustion engine with the duration and time of the multi-strikes being controlled.

3,926,166

RING MANUFACTURE, PRODUCTIVE OF LINE CONTACT SEAL

Norman M. Packard, Des Plaines, Ill., assignor to International Harvester Company, Chicago, Ill.

Division of Ser. No. 77,163, Oct. 1, 1970, Pat. No. 3,826,508. This application June 3, 1974, Ser. No. 475,558
Int. Cl.² F02F *5/00*
U.S. Cl. 123—193 P **6 Claims**



1. In engines wherein sealing is accomplished by split piston rings which, in collapsed state, become closed or substantially so as when sealing in operation:

piston having a ring receiving groove;

split ring therein having at least one side, and a face and a back adjacent the side and respectively adjoining same at the side of the ring and forming corners therewith at that side;

said receiving groove having a side which confronts the said one side of the ring so as to be sealed thereby;

said one side of the ring being generally frusto conical when the ring is in collapsed state, said one side as viewed in cross section in that state presenting an inner periphery, which is characterized by having all points thereof planar to one another so as to limit out-of-flatness to no more than about 5 to 10 light bands at standard inspection wavelength and which is effective during operation to establish a substantially continuous ring of pressure contact with the confronting side of the groove sealed thereby; and

cylinder slidably receiving the piston and engaging the face of the ring to retain the latter at all times in collapsed state on the piston.

3,926,167

STARTING CIRCUIT FOR ENGINE UTILIZING FUEL INJECTION PUMP

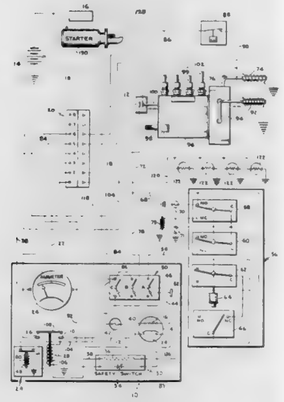
Lionel S. Camp, Auburndale, Fla., assignor to M. Bruce Woods, Orlando and Julian C. Renfro, Winter Park, both of, Fla.; part interest to each

Filed Aug. 26, 1971, Ser. No. 175,295
Int. Cl.² F02N *17/00*
U.S. Cl. 123—179 L **8 Claims**

5. An automatic starting device for automatically accomplishing a starting cycle for an engine that utilizes a fuel pump for supplying metered quantities of fuel and which pump has a control rod that is in an extended position when the engine is not operating, and in a retracted position when the engine is operating at a selected speed, said engine also having a battery, an electric starter, and electrically heated glow plugs for preheating the engine prior to energizing the starter, said starting device comprising:

a. normally open starter switch means, said switch means in operative electrical connection with the starter and the battery;

b. electrical heating means disposed closely adjacent said starter switch means, said starter switch means being actuated to a closed position by the heat generated by said electric heating means at a predetermined temperature thereof, said electric heating means being connected in series with the glow plugs and arranged to reach such predetermined temperature coincident in time with such glow plugs achieving a selected engine preheat temperature;



c. starting cycle switch means, said starting cycle switch means being connected functionally in series with said electric heating means, and arranged to be in a closed position when the pump control rod is in an extended position, and to be in an open position when the control rod is in a retracted position; and

d. temperature-responsive switch means, said temperature-responsive switch means being connected in series with said starting cycle switch means and electrically connected to the battery.

3,926,168

SINGLE STAGE COLD START AND EVAPORATIVE CONTROL SYSTEM USING A BIMODAL ADSORBENT BED

Sigmund M. Csicsery, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

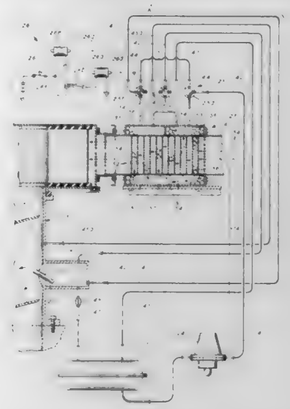
Continuation-in-part of Ser. No. 295,028, Oct. 4, 1972, Pat. No. 3,831,572. This application Mar. 6, 1974, Ser. No. 448,773
Int. Cl.² F02M *1/16*
U.S. Cl. 123—180 R **8 Claims**

1. In a spark-ignition internal combustion engine of the type having an air intake system, a fuel system, and a mixing means interconnected therebetween for mixing of full-range fuel with air to form a combustible mixture for delivery to combustion chambers of said engine, the improvement for reducing exhaust pollutants of said engine by (i) dynamically varying the composition of said full-range fuel during cold starting of said engine (cold start cycle) and (ii) alternatively adsorbing evaporative emissions originating from vapor zones within said fuel system at least during an inoperative state of said engine, comprising:

i. cannister means selectively connectable between said mixing means and a reservoir of said full-range fuel and including an adsorption bed of adsorbent material,

ii. control means for controlling fluid flow including liquid fuel as well as vapor emission flow between said reservoir means, said cannister means and said mixing means as a function of selected operating parameters,

iii. said control means including at least first and second condition means for alternatively (i) initiating, during said cold start cycle, flow of said full-range fuel from said reservoir to said cannister means and hence over said



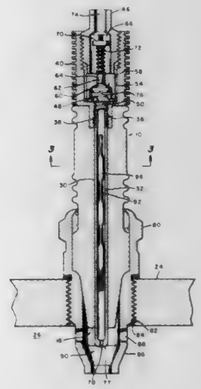
adsorption bed so as to elute a cold start fuel effluent composed essentially of low molecular weight liquid constituents, said effluent being passed to said mixing means in sufficient amounts to assure starting of said engine, and (ii) permitting flow of evaporation vapors from said vapor zones of said fuel system to said same adsorption bed for capture thereon, at least during said inoperative state of said engine.

3,926,169

COMBINED FUEL VAPOR INJECTOR AND IGNITER SYSTEM FOR INTERNAL COMBUSTION ENGINES

Ervin Leshner, and Michael D. Leshner, both of Cherry Hill, N.J., assignors to Fuel Injection Development Corporation, Bellmawr, N.J.

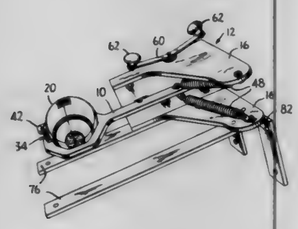
Filed June 21, 1974, Ser. No. 481,702
Int. Cl.² F02B *19/10, 19/18*
U.S. Cl. 123—32 SJ **35 Claims**



1. In combination with an internal combustion engine having a combustion chamber and means to selectively supply air

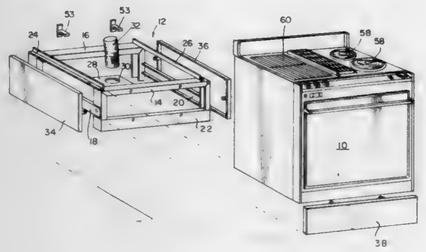
or an air-fuel mixture thereto, a combined fuel vapor injector and igniter comprising an insulating body, an electrically conductive member securing said body to said chamber and including a first electrode extending into said chamber, a heat electrically conductive vaporizing tube extending through said insulating body and into said chamber serving as a second electrode and terminating in an end adjacent said first electrode to provide a spark gap therebetween, a fuel vapor exit orifice at said end of said tube, a liquid fuel inlet orifice adjacent the other end of said tube, means to supply liquid fuel to said tube through said inlet orifice, a check valve interposed between said inlet orifice and said fuel supply means, said check valve opening only in response to a predetermined drop in pressure in said chamber to allow fuel to enter said inlet orifice, said vaporizing tube having been heated by the combustion in said chamber and in said tube, and means to provide a spark across said spark gap at and during the time fuel in vapor form exits into said chamber from said exit orifice to admix with the air or an air-fuel mixture in said chamber supplied thereto and produce a readily ignitable mixture of fuel vapor and air at said spark gap, said electrically conductive member including an open-ended shield surrounding said fuel vapor exit orifice of said tube to confine the exiting fuel vapor and increase the ratio of fuel to air in said shield.

3,926,170
FOOTBALL PASSER
Jack R. Dixon, Miami, Okla., assignor to Indian Head, Inc., New York, N.Y.
Filed Oct. 9, 1973, Ser. No. 404,497
Int. Cl.² F41B *3/04*
U.S. Cl. 124—8 **23 Claims**



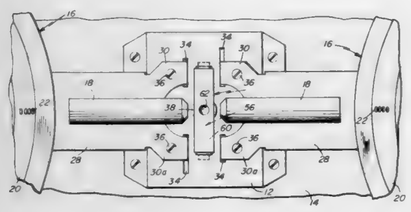
13. A football passer comprising a frame; an elongated throwing arm mounted on the frame for pivotal movement relative to the frame about an axis that is more nearly vertical than horizontal and that is located adjacent one end of said arm, the throwing arm also having adjacent its other end a holder means for holding a football; a football received in the holder means, the holder means being shaped and dimensioned to nest loosely the football therein and enable the football to roll generally radially outwardly with respect to the pivot axis of the throwing arm and upwardly out of the holder means upon imposition of centrifugal and tangential forces thereon; and propulsion means associated with the throwing arm and frame for accelerating the throwing arm pivotally relative to the frame about said pivot axis and moving the holder means in an arc, to impart centrifugal and tangential forces to the football in the holder means and propel the football from the holder means and for decelerating the pivoting of the throwing arm after the football has been propelled out of the holder means as the throwing arm traverses said arc without abruptly and substantially slowing the movement of the throwing arm and the holder means such that the throwing arm follows through smoothly and simulates natural arm motion of a human passer.

3,926,171
BASE FOR A VENTILATED COOKING RANGE
Edwin J. Kurek, and Joseph J. Cerola, both of Indianapolis, Ind., assignors to Jenn Air Corporation, Indianapolis, Ind.
Filed Mar. 16, 1972, Ser. No. 235,277
Int. Cl.² F24C *15/32*
U.S. Cl. 126—21 A **2 Claims**



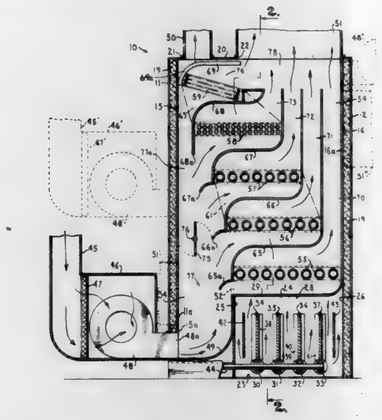
1. In combination, a support base and a built-in type cooking range assembly incorporating within the range assembly a powered ventilating means for the range which exhausts through a conduit accessible at the underside of the range assembly, said support base comprising a rectangular box-like frame resting on a floor or other supporting surface with its lower face adjacent the supporting surface and its upper face accommodating, in overlying relation, the base portion of the range assembly, horizontal guide rails carried on two opposite upper margins of said support base providing for sliding insertion of the range assembly into overlying relation to said support base, a discharge duct accommodated within said support base frame with its entrance supported by said frame adjacent the upper face thereof and adapted for registering connection to the range ventilating means exhaust conduit when the range assembly is in place on said support base.

3,926,172
ELECTRIC IGNITER FOR GAS BURNERS
Domenick Saponara, Macungie, Pa., assignor to Raytheon Company, Lexington, Mass.
Filed Oct. 29, 1974, Ser. No. 518,440
Int. Cl.² F24C *3/10*
U.S. Cl. 126—39 E **21 Claims**



1. An electrical igniter electrode comprising an insulating support having an aperture therethrough, a lead comprising an electrically conducting wire having an end portion positioned within said aperture, and mechanical gripping means attached to said end portion of the lead for retaining said lead in said aperture, said gripping means being a threaded metal member disposed at least partially internally of and in threaded engagement with the end of the wire and in electrical contact therewith.

3,926,173
FURNACE AND COLD AIR RETURN SYSTEMS
Gene R. Jury, 125 Ridgeway Drive, Greenwood, Mo. 64034
Filed July 15, 1974, Ser. No. 488,564
Int. Cl.² F24H *3/00, 3/02*
U.S. Cl. 126—110 R **12 Claims**

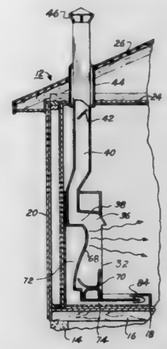


1. A method of extracting heat from a heat source exhausting heated gases adjacent a forced air circulating heating system, said forced air system having at least one cold air return duct and a hot air circulation duct positioned adjacent one another, comprising the steps of:
establishing a heat extraction chamber communicating between the cold air return duct and the hot air circulation duct,
flowing the exhaust gases from the heat source substantially horizontally through the heat extraction chamber (back and forth) sequentially at a plurality of vertically spaced apart levels therein through a plurality of vertically spaced apart banks of heat exchanging tubes, moving from lower to higher levels in said banks,
flowing cold air from the cold air return duct into the lower portion of said chamber,
dividing the cold air input flow into the heat extraction chamber therewithin into as many parts as there are banks of heat exchange tubes and flowing same upwardly in a separated set of vertically spaced apart, individual flows, one flow through each one of said banks,
exhausting the then heated air from the heat extraction chamber overhead therefrom into the hot air duct, and
venting the exhaust gases after passing same through the topmost bank of heat exchange tubes,

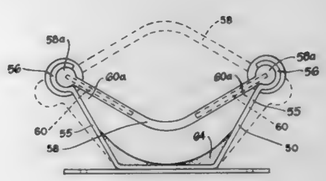
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3,926,174
FIREPLACE STRUCTURE
Ralph E. Bell, 308 E. Wabash Ave., Wakarusa, Ind. 46573
Filed Feb. 21, 1974, Ser. No. 444,273
Int. Cl.² F24B *7/00*
U.S. Cl. 126—121 **9 Claims**

1. A prefabricated movable fireplace structure comprising walls defining a housing having a bottom, two side walls and a rear wall, a firebox in said housing having a bottom, two side walls and a rear wall of sheet metal and an open front, said firebox walls being spaced from the respective walls of said housing to form an air passageway beneath and at the sides and back of the firebox to heat the air in the passageway, and to provide an insulating effect for the walls and bottom of the housing, baffles joined integrally with the rear wall of said firebox and disposed in said passageway along the back of said firebox for dissipating heat from the firebox into the air flowing in said passageway, means forming outlets near the bottom for directing heated air outwardly at a low level from said passageway, blower means for moving the air downwardly in said passageway around said baffles, a flue connected to said firebox and extending upwardly therefrom, and a hearth disposed in front of said firebox and having an air conduit means with an outlet opening facing the front of the firebox for supplying air from an outside source to the firebox.



3,926,175
IMPLANTABLE VALVE FOR MEDICAL PURPOSES
James H. Allen, 4282 Senisa, Irvine, Calif. 92664, and Frederic L. Green, 110 Sea View Drive, El Cerrito, Calif. 94530
Filed June 3, 1974, Ser. No. 475,528
Int. Cl.² A61B *19/00*; A61F *1/24*
U.S. Cl. 128—1 R **10 Claims**

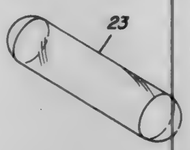


1. A valve adapted to be implanted in the body of a human or animal to control the flow of a fluid through a conduit, said valve comprising:
a circumscribing structure adapted to at least substantially circumscribe the conduit, said circumscribing structure being separable to permit the circumscribing structure to receive the conduit without requiring ligation of the conduit;
said circumscribing structure including a body section adapted to at least partially circumscribe the conduit and a movable section;
means for mounting said movable section on said body section;
said movable section being movable relative to said body section along a path having a radial component between first and second positions, said first position being radially outwardly of said section position whereby said circumscribing section can compressively load and restrict the flow of fluid through the conduit in said section position; and
said body section having at least one resilient portion, said resilient portion being cooperable with said movable section to at least partially define an over center device whereby said movable section tends to remain in whichever of said first and second positions it is placed.

3,926,176
RADIOACTIVE GAS-CONTAINING POLYMERIC CAPSULE

Harry S. Winchell, Lafayette, and Robert E. Lewis, Pleasanton, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Aug. 15, 1973, Ser. No. 388,700
Int. Cl.² G21F 5/00; A61J 1/06
U.S. Cl. 128—1.2 18 Claims

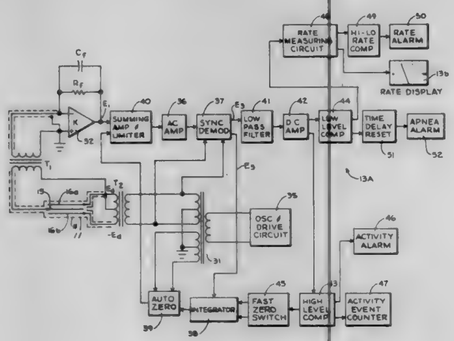


1. A capsule comprising a gas impermeable polymeric enclosure selected from the group consisting of vinyl-vinylidene chloride, polyethylene-terephthalate, and polysulfone, said enclosure containing a gaseous radioisotope therein and a physiologically benign absorbent for radiolysis products of the capsule enclosure material.

3,926,177
ACTIVITY AND RESPIRATION MONITOR

Edward V. Hardway, Jr., Houston, and William H. Holtman, La Porte, both of Tex., assignors to Cavitron Corporation, New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 287,844
Int. Cl. A61b 5/00
U.S. Cl. 128—2 S 2 Claims

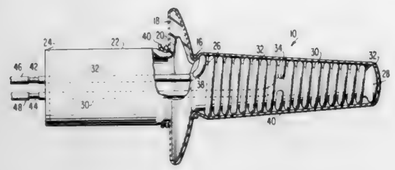


1. Apparatus responsive to movement of the body of a human or animal to provide an indication of a condition of such a body, comprising, in combination:
a resilient, capacitive pad adapted to respond to movement of such a body when disposed over the pad to provide a capacitance change, said pad including at least two electrodes extending beneath a substantial portion of the upper surface area of said pad, and a dielectric between said electrodes;
electrical driving signal means;
capacitance sensing means; means for connecting said driving signal means and said sensing means to said electrodes; said sensing means being responsive to said capacitance change to provide an output signal representing said indication, said sensing means comprising an electronic high pass filter for substantially rejecting changes in capacitance of said pad of relatively long term as compared to the term of capacitance changes caused by the condition being indicated, and means for shortening the response time of said high pass filter when such activity exceeds a predetermined level.

3,926,178
APPARATUS FOR AIDING THE VOLUNTARY EXERCISING OF SPHINCTER MUSCLES

Alvin N. Feldzamen, 55 East St., Annapolis, Md. 21401

Filed Jan. 17, 1975, Ser. No. 541,830
Int. Cl.² A61B 5/00
U.S. Cl. 128—2 S 10 Claims

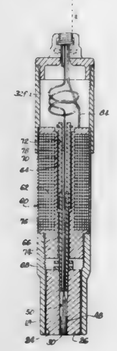


1. An apparatus to aid the voluntary exercising of muscles comprising:
a member adapted to be inserted into a sphincter muscle cavity, said member having a rigid core;
a plurality of flexible tubes forming helices disposed around the core, said tubing yieldable to the contractive forces exercised by the sphincter muscles; and
means connected to said flexible tubing to indicate the degree of effort intended to exercise the muscles against helices and the rapidity by which the muscles can be contracted and relaxed.

3,926,179
BLOOD PRESSURE MEASURING APPARATUS

Jeffrey C. Petzke, Middleton, and Dennis E. Bahr, Madison, both of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Apr. 3, 1974, Ser. No. 457,485
Int. Cl.² A61B 5/02
U.S. Cl. 128—2.05 N 11 Claims

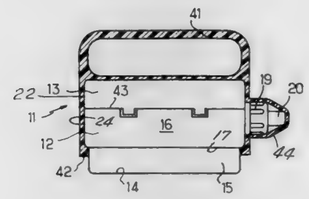


1. Apparatus for measuring the blood pressure in an artery near the surface of a body member,
comprising a blood pressure probe having a housing for engaging the body member,
said probe including a pressure applying member movably mounted in said housing for engaging the surface of the body member over said artery,
power operated pressure exerting means on said probe for pressing said pressure applying member against the surface of said body member to produce a degree of flattening of said artery,
a sensor in said pressure applying member for engaging the surface of said body member over said artery to sense the pressure pulses in said artery,
said sensor including a transducer for producing electrical signals corresponding to said pressure pulses,
and control means having an input circuit for receiving said electrical signals and power output regulating means connected to said pressure exerting means and responsive to said electrical signals for operating said pressure exerting means in a variable manner to maximize said electrical signals corresponding to said pressure pulses.

3,926,180
VIBRO-MASSAGING APPARATUS

Claude Jean Virgile Zambelli, 6, rue Cattulle Mendes, Paris, France (75017)

Filed July 30, 1974, Ser. No. 493,075
Claims priority, application France, July 30, 1973, 73.27853
Int. Cl.² A61H 1/00
U.S. Cl. 128—32 5 Claims

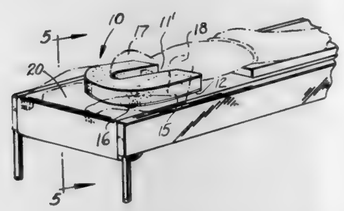


1. A vibro-massaging apparatus comprising:
a housing consisting of a body and a cover, said body and said cover joined together by a seal, said body including a massaging face and a shoulder located between said seal of said body and said cover; and
an impermeable flexible casing covering said housing beyond said seal between said body and said cover, said casing having a roll bordering an aperture of said casing which cooperates with said shoulder and having a junction between said casing and said body which is watertight.

3,926,181
CERVICAL-DORSAL RELAXATION PAD

Clement G. Eischen, Sr., 601 NE. 167th Place, Portland, Oreg. 97230

Continuation-in-part of Ser. No. 352,199, April 18, 1973, abandoned. This application Jan. 2, 1974, Ser. No. 430,220
Int. Cl. A61f 5/00
U.S. Cl. 128—68 13 Claims

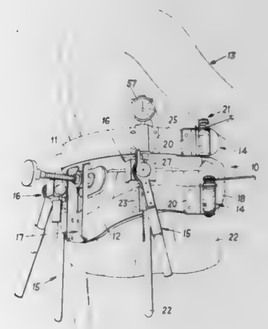


1. A device for supporting a user's head and shoulders above a supportive surface when such user is lying face down; said device comprising an elongate resilient pad having a substantially planar upper surface, said pad having an elongate opening defined therein opening to said upper surface, extending longitudinally of the pad and terminating short of one end of said pad, said opening having such width that opposed upper marginal edge portions of the pad on opposite sides of said opening may support the cheek regions of the user's face and an upper marginal edge portion of the pad adjacent said opening and said one end of the pad may support the user's forehead, said opening having such depth that portions of the user's face between said opposed edge margins are untouched by said pad, said pad having such length that when the user's forehead is resting on said marginal edge portion of the pad adjacent said one end of the pad the opposite end of the pad underlies and supports the user's shoulders above said supportive surface.

3,926,182
LUMBAR TRACTION APPARATUS

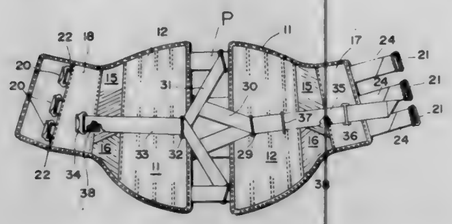
Ludvig M. Stabholz, Netanya, Israel, assignor to Meditrac, Beni Brak, Israel

Filed Jan. 24, 1974, Ser. No. 436,219
Claims priority, application Israel, Jan. 29, 1973, 41411
Int. Cl.² A61H 1/02
U.S. Cl. 128—75 12 Claims



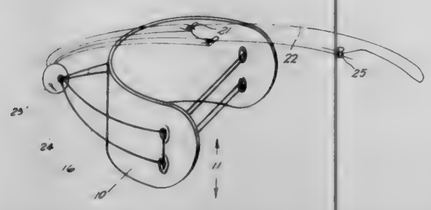
1. Lumbar traction apparatus comprising a pair of upper and lower U-shaped supports adapted to be attached to the upper and lower waist portions respectively of a patient undergoing treatment; a belt assembly associated with each of the supports for tightening them to the patient; a pair of laterally spaced apart traction control assemblies extending between the supports, each assembly having a vertically extending tube connected to one of the supports and a toothed rod telescopically mounted for reciprocation in the tube and connected to the other support, and a rotatable shaft carrying a pinion engaged with the teeth on the rod; and a ratchet drive mechanism associated with each traction control assembly for rotating the shaft carrying the pinion in one direction to move the rod relative to the tube thereby moving the supports apart and applying traction to the lower lumbar region of the patient (1), wherein the belt assembly associated with each of the supports comprises a belt, one end of which is adapted to be releasably attached to one leg of the support and the other end of which is wrapped around a rotatable shaft mounted on the other leg of the support, and a ratchet drive mechanism associated with each belt for rotating the shaft in one direction to wind the belt thereon and thereby tighten the support to the patient.

3,926,183
DORSAL LUMBO SACRAL SUPPORT
Irving Spiro, Miami, Fla., assignor to All Orthopedic Appliances Inc., Miami, Fla.
Filed Nov. 27, 1974, Ser. No. 527,884
Int. Cl.² A61F *5/02*
U.S. Cl. 128—78 **3 Claims**



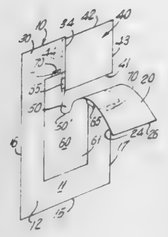
1. A support for a person's back comprising a pair of panel members adapted to be fitted about a person's torso at the position of his back, a plurality of fastening members mounted along one edge portion of each of said panel members for securing said panels at the front portion of the torso, a pair of loops mounted on the other edges of each of said panels, said loops of one of said panels being positioned in proximity of a top and bottom edge portion of said panel and substantially equidistant from a longitudinal center line of said panels, said loops of the other of said panels being positioned in proximity of said mid-portion of said panel and substantially equidistant from said longitudinal center line of said panels, a pair of elongated tape members having end portions, said end portions of one of said pair of elongated tape members being secured to said loops positioned in proximity of said top and bottom edge portions, said end portions of the other of said pair of elongated tape members being secured to said loops positioned in proximity of said mid-portion of said panel, a second pair of loops, one of last named loops being slidably mounted on each of said elongated tape members intermediate their end portions, a pair of further tape members secured at one end to each of said second pair of loops, adjustable fastening members secured to the free ends of said further tape members whereby upon drawing said further tape members about said panels to the front portion of said torso and fastening said adjustable fastening members equal pressures will be exerted by said panels in supporting said torso.

3,926,184
PENIS ENCIRCLING DEVICE
Fred J. Gehl, U.S. 50, P.O. Box 144, Loogootee, Ind. 47553
Filed Sept. 4, 1974, Ser. No. 503,486
Int. Cl.² A61F *5/00*
U.S. Cl. 128—79 **4 Claims**



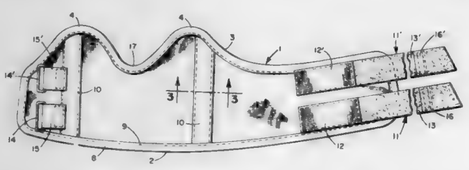
1. In a device of the type including clasping means to encircle the human penis, tightening means to control the pressure exerted by said clasping means, and securing means for maintaining said tightening means at a constant pressure the improvement comprising tension means connected to said clasping means for causing movement of a user's head and neck to apply force to said clasping means, said tension means having a portion which encircles the neck of the user.

3,926,185
SURGICAL DRAPE
Henrietta K. Krzewinski, Old Bridge, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.
Filed Dec. 12, 1974, Ser. No. 532,282
Int. Cl.² A61F *13/00*
U.S. Cl. 128—132 D **30 Claims**



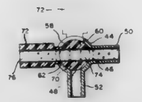
1. A surgical drape comprising a sheet of flexible drapable material, said sheet having a main portion at one end thereof, and a pair of spaced wings at the other end thereof, said wings extending outwardly from a central region of said sheet and defining a slit in said sheet; said slit merging into a widened fenestration located generally inwardly of the perimeter of the drape; a flap secured to one of said wings, said flap being transversely extendible from said wing so as to cover at least a portion of the length of said slit and to be in contacting relationship with at least part of the other of said pair of wings when the drape is in use; and means on said drape for preventing said wings from moving with respect to each other when the drape is in use.

3,926,186
MUSCULAR SUPPORT
Robert P. Nirschl, 4143 N. River St., Arlington, Va. 22207
Continuation-in-part of Ser. No. 345,370, March 27, 1973, Pat. No. 3,877,426. This application May 28, 1974, Ser. No. 473,878
Int. Cl.² A61F *13/00*
U.S. Cl. 128—165 **9 Claims**



1. A support device capable of being wrapped about and surrounding the muscle of a bodily limb or member without extensive overlap and capable of applying circumferential pressure to a wide area of said muscle to thereby relieve internal tension of the muscle, comprising a substantially curvilinear, elongated pad having one long edge convexly arcuately shaped and having an opposing long edge with a portion thereof forming a pair of spaced, flat projections of said pad extending away from said convexly arcuately shaped long edge, said opposing long edge being of a predetermined length measured longitudinally of said elongated pad such that such support device will be of generally conical shape when wrapped about the muscle of said bodily limb or member, said pad being flexible in all directions and comprising a laminate having an inner layer of resilient foamed material bonded to an outer layer of substantially inelastic flexible sheet and having fastening means for securing said support device tightly about said muscle.

3,926,187
UROLOGICAL BLADDER EVACUATOR
Jose J. Iglesias, 1341 North Ave., Elizabeth, N.J. 07208
Filed Dec. 19, 1974, Ser. No. 534,309
Int. Cl.² A61M *1/00*
U.S. Cl. 128—232 **1 Claim**



1. In an evacuator assembly for use in urological operative procedures comprising a syringe and a tube for insertion into the operative field, an improved valve providing communication between the syringe and the tube comprising

a. a fixed hollow cylindrical casing having end walls and a peripheral wall,

b. the cylindrical casing having in its peripheral wall two ports which are positioned at 90° to each other, one of which is adapted to be connected to the tube and the other to a discharge fitting, the latter being downwardly directed in the use of the evacuator assembly to permit discharge into a container, and the cylindrical casing also having a circumferentially extending opening,

c. a cylindrical valve body rotatably mounted within the fixed cylindrical casing and having a passage extending diametrically therethrough positioned to communicate selectively with the two ports in the cylindrical casing,

d. a hollow tubular connecting device forming a one-piece integral connection with the cylindrical valve body and extending outwardly therefrom through the circumferentially extending opening in the cylindrical casing and adapted to be connected to the syringe of the evacuator device,

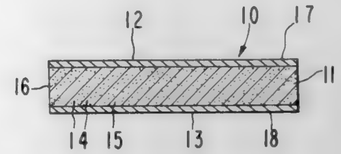
e. the length of the circumferentially extending opening in the cylindrical body being such that when the connecting device engages one or the other of the end walls of the opening the passage through the valve body registers with one or the other of the ports in the cylindrical casing,

f. the centers of the ports in the valve casing and the axis of the passage in the valve body lying in the same plane which lies between the end walls of the cylindrical casing and is substantially parallel thereto, thereby providing straight line communication between the syringe and the tube and between the syringe and the discharge port.

3,926,188
LAMINATED DRUG DISPENSER
Richard W. Baker, Bend, Oreg., and Robert M. Gale, San Jose, Calif., assignors to Alza Corporation, Palo Alto, Calif.
Filed Nov. 14, 1974, Ser. No. 523,720
Int. Cl.² A61M *31/00*; **A61K** *27/12*
U.S. Cl. 128—260 **13 Claims**

1. An active agent dispenser comprising a laminate of:

a. a core lamina of particles of a crystalline active agent of low water solubility dispersed in a solid material having a permeability, P, to the agent, the core lamina having a thickness $2t$, and an exposed surface area, A, from which agent is released, and being partially covered by;



b. at least one outer lamina made of an active agent release rate controlling polymer having a permeability, P′, to the agent, a thickness, t', and an exposed surface area, A′, from which agent is released wherein

$$\frac{P}{t} \cdot \frac{t'}{P'},$$

is greater than about 2 and

$$K\left(\frac{A'}{A}\right)^2$$

is at least three times

$$\frac{P}{t} \cdot \frac{t'}{P'},$$

k being a constant whose value is dependent upon the geometrical shape of the laminate.

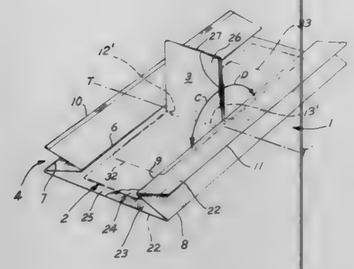
3,926,189
SELECTIVELY POSITIONABLE DIAPER ASSEMBLY
Glenn N. Taylor, Cary, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Aug. 5, 1974, Ser. No. 495,027
Int. Cl.² A16F *13/16*; **A41B** *13/02*
U.S. Cl. 128—287 **12 Claims**

1. An improved diaper construction comprising in operative combination:

a. a main pad assembly having an absorbent pad and outer fluid impervious backing sheet adapted to be removably secured to an infant,

b. means defining an auxiliary pad assembly movably se-

between a first, frontal position and a second, rear position depending on one or more of the age, sex, activity or



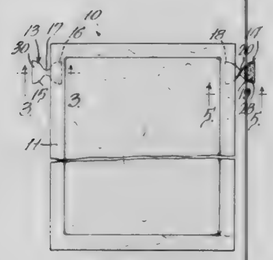
health of the infant, to dispose at the point of need additional absorbent material.

3,926,190

DISPOSABLE DIAPER WITH TWIST TAB FASTENER

Ludwig Tritsch, Wilmette, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Nov. 20, 1974, Ser. No. 525,536
Int. Cl.² A61F 13/16
U.S. Cl. 128—287 **8 Claims**



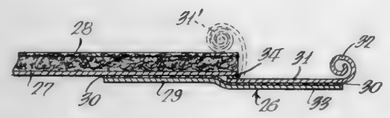
1. In combination with a disposable diaper of substantially quadrilateral configuration, having an inside surface for direction toward an infant when the diaper is worn by that infant and an outside surface for direction away from said infant, and including a thin, flexible backing sheet of substantially moisture-impermeable material defining said outside surface and a moisture-retaining layer having a pad of absorbent material superposed on said backing sheet and attached thereto, a fastening tab means secured to the backing sheet adjacent one end thereof and comprising a pair of relatively wider terminal portions and including a means for adjustably positioning one of said terminal portions to temporarily attach it to the diaper comprising a relatively narrower, twistable and flexible central segment connecting the terminal portions; the other of said terminal portions being fixedly, attached on one side to said backing sheet and having an outwardly-facing release surface, on the other side, said one terminal portion bearing a layer of pressure-sensitive adhesive for attachment to the outside surface of the diaper adjacent a second end thereof when the diaper is applied to the infant and also positionable for removable attachment to said release surface by means of the adhesive layer thereon.

3,926,191

DISPOSABLE DIAPER HAVING ADHESIVE TABS AND RELEASE STRIPS THEREFOR PERMANENTLY ATTACHED AT MARGINAL EDGES OF DIAPER

Ludwig Tritsch, Wilmette, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Nov. 20, 1974, Ser. No. 525,607
Int. Cl.² A61F 13/16
U.S. Cl. 128—287 **4 Claims**



1. In combination with a disposable diaper having an inside surface for direction toward an infant when the diaper is worn by that infant and an outside surface for direction away from said infant and provided with a moisture-retaining layer and a moisture-impervious backing sheet, an improved adhesive tab having a fixed end secured to said backing sheet on the outside surface of the diaper and at a marginal location thereof, and an outwardly extending free end provided with a tacky surface facing in the same direction as said inside surface; and a cover strip provided with a release coating on one surface thereof, releasably attached to, and covering said tacky surface;

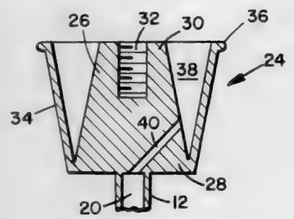
said cover strip extending longitudinally beyond said tacky surface and being permanently attached to said backing sheet at a marginal location thereof.

3,926,192

ATRAUMATIC UTERINE DIRECTOR

Harold B. Van Maren, 1313 Solano Ave., Albany, Calif. 94706

Filed Aug. 12, 1974, Ser. No. 496,843
Int. Cl.² A61B 17/42; A61M 1/00
U.S. Cl. 128—303 R **9 Claims**



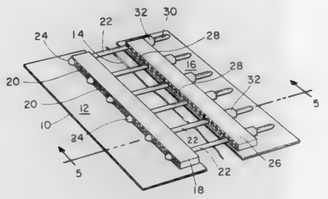
1. A device of the character described comprising a member having an end wall, a continuous side wall extending axially outwardly from the periphery of said end wall, an element extending axially from a central portion of said end wall and spaced radially inwardly from said side wall to define a continuous space therebetween, a tip extending axially from said element, a rigid tube connected to said end wall and extending in a contra direction to said side wall, and means defining a passage placing said tube and said continuous space in flow communication.

3,926,193

SURGICAL CLOSURE HAVING EASE OF ASSEMBLY

Harrith M. Hasson, 345 Fullerton Parkway, Chicago, Ill. 60614

Continuation-in-part of Ser. No. 209,165, Dec. 17, 1971, which is a continuation-in-part of Ser. No. 123,559, March 12, 1971, Pat. No. 3,698,395. This application July 3, 1974, Ser. No. 485,327
Int. Cl.² A61B 17/08
U.S. Cl. 128—335 **14 Claims**



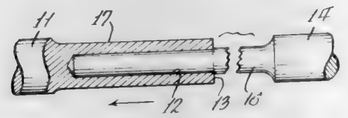
1. A surgical closure which comprises: a first surgical tape member for application to one side of an incision; a second surgical tape member for application to the other side of an incision; said first surgical tape member being provided with a plurality of tie member anchors and said second surgical tape member having a plurality of tie member receiving slide ports, the improvement comprising, in combination, elongated tie members removably connected to said anchors for coupling to said anchors while a portion of said tie members are received in said slide ports, and separate, tie members locking means removably connected to said tie members, for cooperating with said slide ports to grasp and retain said tie members in desired positions within said slide ports, said locking means comprising sleeve members proportioned to receive said tie members in sliding relationship within the bores of said sleeve members.

3,926,194

SUTURES WITH REDUCED DIAMETER AT SUTURE TIP

Jonathan Fred Greenberg, New York, N.Y., and Robert T. Quade, Bernardsville, N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Nov. 20, 1974, Ser. No. 525,327
Int. Cl.² A61B 17/06
U.S. Cl. 128—339 **17 Claims**



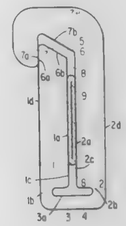
1. A needle-suture combination comprising a needle having a sharp end and a blunt end and having a recess at said blunt end, a suture having one tip positioned within said recess, means retaining said tip of said suture within said recess to attach said suture to said needle, said tip within said recess and a segment thereof beyond said recess and adjacent the location of the attachment of the suture to said needle being reduced in cross-sectional area and in the amount of cross-sectional suture material as compared to the cross-sectional area and the amount of cross-sectional suture material in the remainder of the suture length.

3,926,195

CLIP, CLAMPING JAW AND ASSEMBLY FOR THE INTERRUPTION OF THE UROGENITAL SYSTEM

Waldemar Bleier, Saarlouis, and Max Gremmelspacher, Freiburg, both of Germany, assignors to Waldemar Bleier, Germany

Filed Apr. 23, 1973, Ser. No. 353,374
Claims priority, application Germany, Apr. 25, 1972, 2220117
Int. Cl.² A61B 17/08, 17/10
U.S. Cl. 128—346 **7 Claims**



1. An oviduct clip for long term reversible or permanent interruption of the oviduct and vas deferens in human and animal organisms and for retention in said organisms, to be employed with a combined clip-fitting clamp for fitting the clip on the oviduct and vas deferens in a living organism, comprising:

two rigid clamping jaws, one being longer than the other, substantially parallel inside clamping surfaces forming a longitudinal oviduct clamping slop between the jaws in a closed position of the clip, each part having a first and second end, said second end being a free end;

a resilient bridge joining said first ends of said jaws by connecting other portions of the clamping jaws, said bridge forming a transverse slot which communicates and is continuous with the clamping slot, said transverse slot being formed between an inside surface of the resilient bridge and inner first end portions of the clamping jaws; the free second end of said longer clamping jaw having an extending lip, and the free second end of said shorter clamping jaw having a limb, said lip extending around said limb to form a latching mechanism in the closed position of said clip; and

said clip being constructed as a single continuous piece of plastic material which is inert to body fluids and body tissues.

3,926,196

AIRWAY

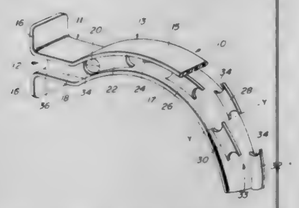
Walter J. Bornhorst, Acton; Steven J. Coleman, Marlboro, and James W. O'Brien, Waltham, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Aug. 5, 1974, Ser. No. 494,651
Int. Cl.² A61M 25/00
U.S. Cl. 128—351 **7 Claims**

1. An oral airway for providing both an air passage to a person's trachea and a channel through which to insert a flexible tube into the trachea comprising:

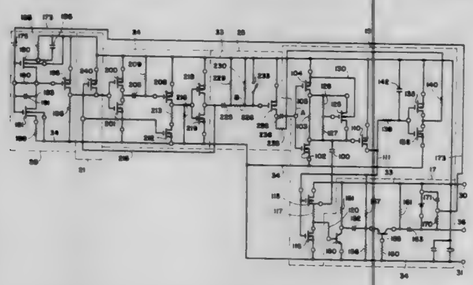
a curved section adapted to fit over a person's tongue and extending to the entrance of the trachea connected to one end of a second section adapted to fit between and support a person's teeth, the other end of said second section being adapted to extend out of a person's mouth to serve as the entrance of said airway, said curved and second sections forming an upper surface and a lower surface, said upper surface being spaced from and connected to

said lower surface by two rows of struts, said two rows of struts together with said upper and lower surfaces defining said channel, said struts in each of said rows being separated from one another to form open passages therebetween, wherein struts in each of said rows define surfaces facing said channel which converge toward the



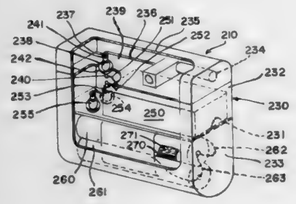
longitudinal midline of said channel to form tube guides for directing the end of a tube inserted through said entrance toward said midline to thereby guide said tube through said channel and into the trachea, and means mounted on said airway to inhibit inward displacement of said airway.

3,926,197
DEMAND HEART PACER
Lawrence Everett Alley, III, North Easton, Mass., assignor to ARCO Medical Products Company, Leechburg, Pa.
Filed Jan. 4, 1974, Ser. No. 430,827
Int. Cl.² A61N *1/36*
U.S. Cl. 128—419 PT **8 Claims**



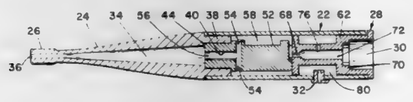
1. A heart pacer for producing heart stimulation pulses in the absence of naturally occurring heart pulses, comprising:
a voltage source;
a pair of electrodes, at least one of which is connectable to the heart;
means connected to said electrodes for detecting naturally occurring heart pulses and for generating an inhibiting pulse corresponding to each detected natural heart pulse;
means connected to said voltage source, including a timing capacitor, for generating stimulation pulses for delivery to said electrodes at a constant heartbeat rate independent of the voltage of said voltage source;
means connected to said stimulation pulse generating means for discharging said timing capacitor to inhibit the generation of selected stimulation pulses;
means connected to said detecting means refernced to said voltage source for generating in response to a naturally occurring heart pulse, a waveform having a time varying amplitude directly proportional to the voltage of said voltage source;
means having a threshold activating voltage to which said waveform is applied connected for activating said capacitor discharging means during the time said waveform exceeds the threshold voltage to control the time said timing capacitor is discharged, thereby changing the heartbeat rate of said stimulation pulse generating means directly proportionally to said supply voltage; and,
means for decoupling said waveform to prevent it from activating said stimulation pulse generating means to enable said stimulation pulse generating means to pulse without being inhibited to produce a reference heartbeat rate comparable to the heartbeat rate with said inhibiting means coupled, the difference between said heart beat rates being indicative of the voltage of said voltage source.

3,926,198
CARDIAC PACER
Steve A. Kolenik, Leechburg, Pa., assignor to ARCO Medical Products Company, Leechburg, Pa.
Continuation-in-part of Ser. No. 477,571, June 10, 1974, abandoned. This application May 2, 1975, Ser. No. 574,199
Int. Cl.² A61N *1/36*
U.S. Cl. 128—419 PG **3 Claims**



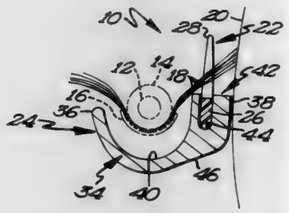
1. A cardiac pacer consisting essentially of the combination of:
a metal casing hermetically sealing the interior zones of the cardiac pacer from exposure to body fluids in the cavity in which the cardiac pacer is implanted, said casing being less than 20 mm thick, and each other orthagonal dimension being less than 60 mm, such small dimensions permitting implantation without troublesome bulging of the skin adjacent the cardiac pacer, said metal casing shielding electrical components from electro-magnetic interference and constituting a grounding electrode for the cardiac pacer;
a hermetically sealed battery chamber and a hermetically sealed circuitry chamber within said casing;
a plurality of batteries in said battery chamber, there being an electrical conductor transmitting battery power from each battery to said circuitry chamber, each battery generating no gas, each battery having a lithium anode and an electrolyte consisting predominantly of thionyl chloride, each battery having prolonged low impedance and constant high voltage of at least 3.3 volts during an expected life of more than 5 years, the voltage diminishing significantly only during the terminal period of use of the battery, whereby detection of battery depletion is manageable, the positive pole of the batteries being grounded to the metal casing;
wires and pass-throughs within the casing associating at least two batteries in parallel and assuring the redundant reliability of parallel batteries;
a circuitry unit employing complementary metal oxide semiconductor circuit means for producing pulses adapted to stimulate the heart, said circuit means being electrically energized by current from said batteries, the casing of the circuit means being grounded to the casing of the heart pacer, said circuit means being within said circuitry chamber, said circuit means including an output wire, said wires and pass-throughs being electrically connected to said circuit means;
said complementary metal oxide semiconductors and said circuit means consuming such a small amount of power that the battery life is more than 5 years;
electrical socket means adapted to transmit to an electrical conduit the output from said circuit means, said electrical conduit being adapted to transmit the output from said circuit means to a signal-receiving zone of a heart, electrical pass-through means connecting said output wire to said socket means; and
said combination of casing, batteries, wires, pass-throughs, circuit means, and electrical socket means having a weight less than 100 grams and a specific gravity less than 1.7, whereby changes in acceleration or deceleration of a body having such implanted cardiac pacer impart only forces which are tolerable to tissue adjacent the cavity in which the cardiac pacer is implanted.

3,926,199
TOBACCO SMOKE FILTER
Leonard L. Thomas, 375 NW. Cypress, Orange, Calif. 92668
Filed Feb. 12, 1975, Ser. No. 549,335
Int. Cl.² A24F *5/04*
U.S. Cl. 131—187 **16 Claims**



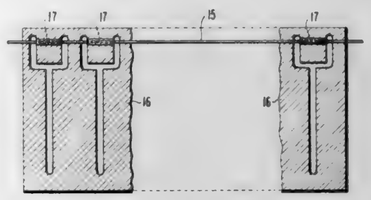
1. In a holder for a cylindrically shaped tobacco smokers' product, the holder having an exit opening at one end and a recess for receiving the end of the tobacco product at its opposite end, the interior walls of which define a passageway for smoke from the recess to the exit opening, the improvement which comprises:
a holder body having means defining a cylindrical cavity;
smoke flow control means in the form of a generally cylindrically having an end face and member having an outer diameter less than the inner diameter of said body and having a region of its outer surface cut away intermediate its ends;
said smoke flow control means being disposed axially within said cavity means for forming, with said body, means providing a substantially annular cavity extending around the inner periphery of said body, a portion the length of which has a greater cross-sectional area than the remainder thereof; and
means for introducing smoke into said annular cavity comprising means providing a recess in said end face of said member and a smoke accelerating channel formed by the outer surface of said member and said body and extending from said recess means to said cut away region.

3,926,200
PROTECTION APPARATUS
Luigi G. Losenno, 3804 Thomas Ave. South, Minneapolis, Minn. 55410
Filed Jan. 30, 1974, Ser. No. 545,613
Int. Cl.² A45D *1/18*
U.S. Cl. 132—9 **8 Claims**



1. Protection apparatus for use with a hair curling iron including a heating element having a circumference and a curling clamp where, during use of the hair curling iron, the hair from the head of a person desiring their hair curled is placed around at least a portion of the circumference of the heating element and is pressed between the heating element and the curling clamp, comprising in combination: a comb member having a length and including a back member having a substantially uniform width through a substantial portion of that length, with the remaining portions of that length having a width equal to or less than the width of the substantial portion, and a multitude of teeth upstanding from the back member; and a guard including a body having a first end, a second end, and of a length which is shorter than the length of the comb by an amount sufficient to allow a portion of the comb to be grasped by the hand of an operator and including a trough member having a first side member, a second side member, and a curved bottom portion therebetween and being of sufficient size to receive the heating element and curling clamp of the hair curling iron therein and to substantially surround the circumference of the heating element to aid in preventing the heating element of the curling iron from contacting the head of the person, the second side member including means for removably receiving the back member of the comb comprising: a U-shaped slot having a width substantially equal to but less than the uniform width of the substantial portion of the back member for receiving the back member of the comb to allow the comb to be positioned in a first position and a second position with a portion of the comb forming a handle member where the handle is formed on the first end of the guard in the first position and where the handle is formed on the second end of the guard in the second position so that the comb can be used to comb the hair, to direct the hair into the trough member of the guard member, and for a handle, and the guard aids in preventing the heating element of the curling iron from coming in contact with the head of the person.

3,926,201
METHOD OF MAKING A DISPOSABLE DENTAL FLOSS TOOTH PICK
Harry Selig Katz, 785 Pleasant Valley Way, W. Orange, N.J. 07052
Filed Nov. 17, 1972, Ser. No. 307,478
Int. Cl.² A61C *15/00*
U.S. Cl. 132—91 **5 Claims**



1. A method of making a disposable dental floss tooth pick having a pair of arms forming a generally U-shaped element, a handle attached to said element and a short-length piece of dental floss strung across the extremities of said arms and embedded therein which comprises the steps of:
providing a plurality of said U-shaped elements having said handle attached thereto with the extremities of said arms generally aligned, stretching an elongated dental floss filament across extremities, embedding said floss into said arms, and cutting the floss at the ends of each of said picks.

3,926,202

COLLAPSIBLE AND TILTABLE UMBRELLA

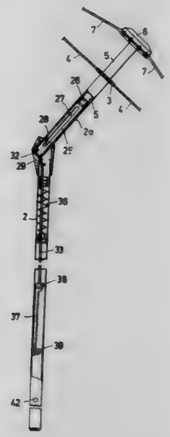
Wolfgang Uthemann, and Josef Hofman, both of Leichlingen, Rhineland, Germany, assignors to Rosenkaimer GmbH, Leichlingen, Rhineland, Germany

Filed Jan. 4, 1974, Ser. No. 430,748

Claims priority, application Germany, Jan. 5, 1973, 2300472

Int. Cl.² A45B *17/00, 19/04, 25/02*

U.S. Cl. 135—20 M **10 Claims**



1. An umbrella frame comprising a plurality of cover ribs, hinge means for articulately connecting each cover rib to a crown, a crown shaft carrying said crown, a rim, a rim shaft carrying said rim, said crown shaft being mounted for linear sliding motion relative to said rim shaft, a plurality of struts, hinge means for articulately connecting each strut between said cover ribs and said rim, means for imparting sliding movement to said crown shaft whereby the crown and rim are moved away from and toward each other respectively during respective opening and closing operations of said umbrella, said rim shaft including upper and lower shaft sections, and means mounting said upper and lower shaft sections for pivotal movement relative to each other whereby said shaft sections may be disposed either with the axes thereof coincident or oblique relative to each other.

3,926,203

METHOD OF TRANSPORTING CRUDE OIL AT LOW TEMPERATURES BY DISPERSION IN METHANOL

Sullivan S. Marsden, Jr., Stanford, and Phillip R. Hooker, Ventura, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed June 5, 1974, Ser. No. 476,447

Int. Cl.² F17D *1/16*

U.S. Cl. 137—13 **11 Claims**

1. A method of transporting hydrocarbon products through a pipeline from arctic hydrocarbon recovery locations to another location without inducing thawing of the permafrost or other frozen body lying adjacent the pipeline, said method comprising recovering both crude oil as well as natural gases at the arctic locations, converting at least a portion of the recovered gases to methanol, admixing the crude oil with a dispersing medium made up of from about 100 to 65% of the said methanol and about 0 to 35% water in the presence of a surface-active dispersant of such a nature, and present in such amount, as to stabilize the resulting dispersion, said dispersing medium being employed in such proportions as to provide a stable dispersion of the oil-in-methanol type, cooling said dispersion to a temperature below freezing to provide a cold liquid dispersion of good pumpability which does not cause melting of frozen bodies lying adjacent a pipeline when the dispersion is pumped therethrough, and pumping the cold dispersion through a pipeline to the desired location.

3,926,204

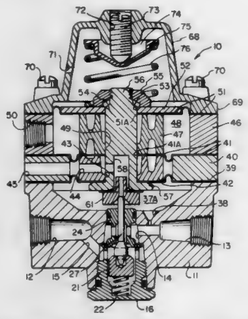
PRESSURE REGULATOR

Webster B. Earl, Pfafftown, N.C., assignor to Fairchild Industries, Inc., Germantown, Md.

Filed May 17, 1974, Ser. No. 470,837

Int. Cl.² G05D *16/06*

U.S. Cl. 137—116.5 **11 Claims**



1. A pressure regulator comprising a body having an inlet and an outlet port, means associated with said body for defining at least a portion of a control chamber, means associated with said control chamber for defining a second chamber including two diaphragms, means for connecting the central portions of said diaphragms including a member having a hole therein, an exhaust valve seat member including a projection and having a valve seat with an aperture extending from the valve seat through said projection for exhausting fluid from said control chamber, the projection of said exhaust valve seat member being laterally moveable within the confines of the hole in the member of said connecting means, the hole of said member being sized to permit free movement of said exhaust valve seat member to compensate for misalignment of said member and said diaphragms, a supply valve including a supply valve seat and a supply valve head located between said ports and means associated with said supply valve head for engaging the valve seat of said exhaust valve seat member.

3,926,205

QUICK COUPLING CONNECTORS

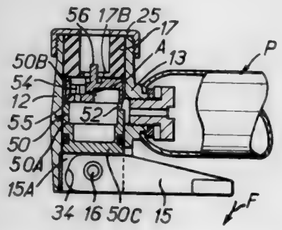
Gaston Gourlet, Vaucresson, France, assignor to Etablissements Boutrait-Morin, Aubervilliers, France

Filed Apr. 9, 1973, Ser. No. 349,311

Claims priority, application France, Apr. 11, 1972, 72.12586

Int. Cl.² F16K *15/20*

U.S. Cl. 137—223 **11 Claims**



1. A quick-coupling connector adapted to be temporarily coupled to an inflation valve of an air chamber or tire while being in communication with a source of fluid under pressure, said connector comprising a tubular body, an elastically deformable sealing ring disposed in said tubular body adjacent

one end thereof for receiving an inflation valve body, piston actuator means mounted for axial displacement in said tubular body, an operatino, member carried by said tubular body for displacing said piston actuator means, said piston actuator means being arranged between said sealing ring and said operating member for movement by said operating member to compress said sealing ring, said operating member having a coupling position for exerting a compressive force on said sealing ring temporarily deforming said sealing ring in order to assure fluid-tightness between said connector and an inflation valve body positioned within said sealing ring, said operating member also having a rest or uncoupled position wherein said sealing ring is uncompressed, said tubular body having an air flow orifice therethrough and connecting means for connecting said tubular body air flow orifice to the source of fluid under pressure, said connecting means being in the form of a tubular radial extension integrally formed on said tubular body in communication with said tubular body air flow orifice, said piston actuator means having an air passage therein in communication with said sealing ring and an air flow orifice between said air passage and the exterior of said piston actuator means into said tubular body, said piston actuator means air flow orifice being in communication with said tubular body air flow orifice for directing fluid under pressure to said sealing ring, and check valve means disposed in the path of fluid flow between the source of fluid under pressure and said sealing ring for preventing return flow of fluid under pressure from inflation valve to the source of fluid under pressure.

3,926,206

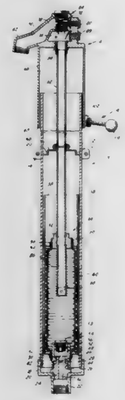
YARD HYDRANT

Noel M. Anderson, Storm Lake, and Arlin W. Otto, Lakeside, both of Iowa, assignors to Merrill Manufacturing Company, Inc., Storm Lake, Iowa

Filed Sept. 18, 1974, Ser. No. 506,956

Int. Cl.² E03B *9/04*

U.S. Cl. 137—281 **6 Claims**



1. A yard hydrant, comprising:

a casing having an upper and lower end,

a valve housing with a spring loaded valve means therein in the lower end of said casing and operatively connected to a source of fluid under pressure,

a head section including an integral nozzle,

means for arranging said head section relative to the upper end of said casing for vertical reciprocation relative thereto,

a longitudinal expandable and retractible bellows fluid reservoir having an upper and lower end arranged within said casing,

a standpipe within said casing having one end secured to said head section in flow communication therewith and its other end extended through the upper end of said reservoir and terminating within said reservoir,

said standpipe being vertically reciprocal with corresponding movement of said head section,

a respective integral axial projecting lower neck portion and upper neck portion at the respective lower and upper ends of said bellows reservoir,

said upper neck portion embracing said standpipe and said lower neck portion embracing said valve housing,

a first stop member embracing said lower neck portion and said valve housing and in abutment with the lower end of said bellows reservoir including means for locking said stop member in said position,

a second stop member embracing said upper neck portion and said standpipe and in abutment with the upper end of said bellows reservoir including means for locking said stop member in said position,

the downwardly movement of said standpipe effecting the retraction and compression of said reservoir and with said other end of said standpipe acting against said valve means to open fluid flow through said hydrant, and

the upwardly movement of said standpipe elevating the same from contact with said valve means permitting it to close and simultaneously expanding said reservoir whereby fluid in said standpipe upon closing of said valve means drains therefrom into said reservoir for storage.

3,926,207

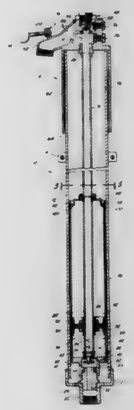
YARD HYDRANT

Noel M. Anderson, Storm Lake, and Arlin W. Otto, Lakeside, both of Iowa, assignors to Merrill Manufacturing Company, Inc., Storm Lake, Iowa

Continuation-in-part of Ser. No. 506,956, Sept. 18, 1974. This application Nov. 5, 1974, Ser. No. 520,978

Int. Cl.² E03B *9/04*

U.S. Cl. 137—281 **4 Claims**



1. A yard hydrant, comprising:

a casing having an upper and lower end,

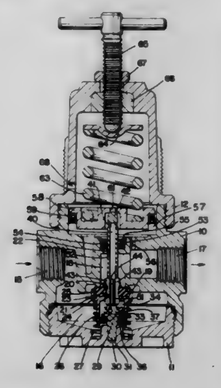
a valve housing with a spring loaded valve means therein in fluid seal contact with the lower end of said casing,

a fitting means secured to the lower end of said casing and adapted for flow communication with the source of fluid under pressure,

said fitting means having an orifice plug with an externally threaded neck extended into the lower end of said casing, said valve housing being removably threadably attached to said threaded neck,

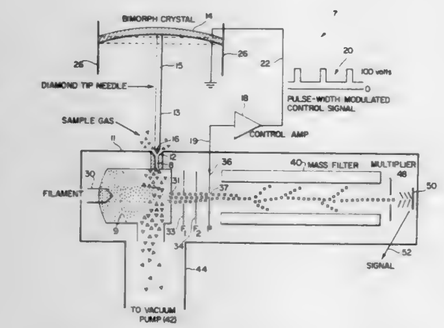
a head section including an integral nozzle,
means for arranging said head section relative to the upper end of said casing for vertical reciprocation and rotation relative thereto,
a standpipe within said casing having one end secured to said head section in flow communication therewith and being vertically reciprocal with corresponding movement of said head section,
a cylinder having an upper and lower end and arranged in the lower end of said casing,
means for securing the lower end of said cylinder in fluid seal contact with said valve housing,
said other end of said standpipe being disposed axially within said cylinder and vertically reciprocal relative thereto,
fluid seal means on said standpipe being operable relative to said cylinder whereby a fluid reservoir is defined at the bottom by said valve housing, at the top by said fluid seal means and for the reservoir wall component by said cylinder,
the downwardly movement of said standpipe and fluid seal means thereon effecting the reduction in size of said reservoir and with said other end of said standpipe acting against said valve means to open fluid flow through said hydrant,
the upwardly movement of said standpipe and fluid seal means thereon elevating said standpipe from contact with said valve means permitting it to close and simultaneously enlarging said reservoir whereby fluid in said standpipe upon closing of said valve means drains therefrom into said reservoir for storage,
the upper end of said cylinder being provided with a notch, and
a lug key secured to said standpipe at a point thereon whereby in a downwardly movement of said standpipe said lug key is engaged in said notch so that an assembly comprising said head section, standpipe, cylinder and valve housing with valve means can be manually rotated to remove said valve housing from said fitting means to permit withdrawal from said casing as a unit said assembly for purposes of repair or maintenance.

3,926,208
PRESSURE REGULATOR
Robert Kendall Hoffman, Plainwell, Mich., and 137, 116.5, assignors to Parker-Hannifin Corporation, Cleveland, Ohio
Filed June 20, 1974, Ser. No. 481,152
Int. Cl.² F16K *17/34*
U.S. Cl. 137—484.8 **13 Claims**



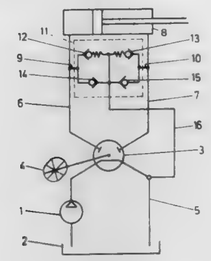
1. In a fluid pressure regulator having a housing with a main passage therethrough that includes passage portions upstream and downstream of a valve seat, a valve element on the upstream side of the seat and having a head at one end thereof movable into and out of engagement with the seat for controlling flow through the passage, said valve element having a first area subject to downstream fluid pressure acting to unseat the valve element, a control chamber in the housing, a piston having one side thereof forming a movable wall of the control chamber, a spring on the other side of the piston pressing the piston toward the valve element, a stem connecting the valve element and the piston, and a first aspirating passage connecting the control chamber to the downstream passage portion; the improvement comprising a cylindrical skirt extending from the valve head into the upstream passage portion and being open at its end remote from the valve head, a packing slidably and sealingly engaging the inner wall of the skirt to form a balancing chamber within the skirt that is sealed from said upstream passage portion by said packing, said packing with the skirt defining an area on said valve element substantially the same as and opposite said first area, and a second passage connecting the balancing chamber to said downstream passage portion whereby fluid pressures acting on opposite sides of the valve element are substantially balanced, said housing includes a cap removably connected to the remainder of the housing and carrying said packing whereby upon separation of the cap from the remainder of the housing the packing is also removed from the remainder of the housing with the cap and is readily accessible for replacement.

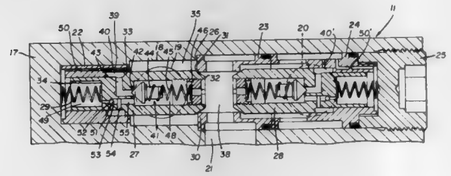
3,926,209
METHOD AND INLET CONTROL SYSTEM FOR CONTROLLING A GAS FLOW SAMPLE TO AN EVACUATED CHAMBER
Ingvar E. Sodal; Lars Hoivik, both of Boulder; Alexander J. Micco; John V. Weil, both of Denver, and Norman W. Baer, Boulder, all of Colo., assignors to Regents of the University of Colorado, Boulder, Colo.
Division of Ser. No. 355,792, April 30, 1973, Pat. No. 3,895,231. This application Sept. 23, 1974, Ser. No. 508,452
Int. Cl.² F16K *31/02*
U.S. Cl. 137—487.5 **8 Claims**



1. A servo-controlled inlet system for an evacuated chamber, said system comprising: an inlet passage opening into the interior of an evacuated chamber and through which gas may be introduced into said chamber; valve means at said inlet passage for controlling the effective opening through which gas may be introduced into said passage; valve positioning means connected with said valve means to position the same; sensing means for sensing the pressure within said evacuated chamber and developing an electrical signal indicative thereof; and signal processing means including control amplifier means for receiving said signal from said sensing means and responsive thereto producing a pulse-width modulated control signal that is coupled to said valve positioning means to control the same whereby said valve means is automatically adjusted in position dependent upon sensed pressure.

3,926,210
VALVE COMBINATION FOR HYDRAULIC SYSTEMS
Ivar Rasmussen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Apr. 12, 1974, Ser. No. 460,278
Claims priority, application Germany, Apr. 14, 1973, 2318962
Int. Cl.² F15B *21/00*
U.S. Cl. 137—491 **2 Claims**

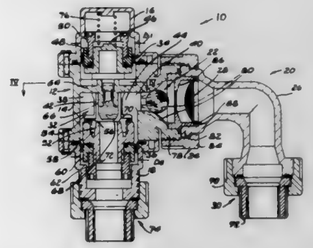




1. A valve assembly for hydraulic installations which is connectable between two different pressures in first and second regions and which opens when the pressure in a first chamber connected to said first region exceeds the pressure in a second chamber connected to said second region by a predetermined amount or falls below the pressure in said second region by a smaller amount, comprising, a casing, a valve member axially movable in said casing, a valve seat, said valve member having a face engageable with said seat, resilient means biasing said valve member towards said seat, said first and second pressure regions and chambers being upstream and downstream respectively relative to said valve seat, said valve member having pressure faces in both of said chambers for biasing said valve member in an opening direction, said valve member and casing forming third and fourth chambers, said valve member having third and fourth pressure faces in said third and fourth chambers for biasing said valve member in a closing direction, fluid communication between said first and third chambers with restrictor means disposed therebetween, fluid communication between said first and fourth chambers with restrictor means disposed therebetween, spring loaded valve means between said third and second chambers, and one way valve means between said fourth and second chambers.

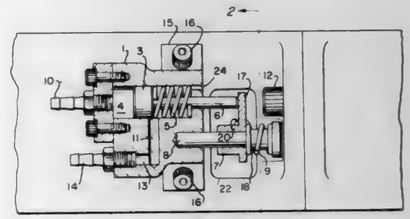
3,926,211
FLUID FLOW CONTROL VALVE
Bernard Graham MacLarty, Bedfordview, South Africa, assignor to Phoenix Valve Manufacturers Limited, Durban, South Africa
Filed May 6, 1974, Ser. No. 467,100
Claims priority, application South Africa, May 8, 1973, 73/3118
Int. Cl.² F16K *31/365, 31/385*
U.S. Cl. 137—494 **10 Claims**

1. A fluid flow control valve comprising a casing, an inlet leading into said casing, a movable valve element in said casing, first and second means sealing between said element and said casing, such means being spaced apart in the direction in which said element is capable of movement and, together with said casing and said element, bounding a pressure chamber into which said inlet leads, the valve element having a hollow interior and there being an outlet from said hollow interior of the valve element which outlet reduces the area of the movable element on which inlet pressure acts in one direction and which opens into an outlet path leading to the exterior of the valve, said pressure chamber communicating with said outlet path by way of said outlet and said hollow interior, a valve closure member for closing-off said outlet, and said



element having a position in which said member closes said outlet to prevent flow from said hollow interior to said outlet path and being capable of movement from said position to establish communication between said hollow interior and said outlet path thereby to open the valve, and the area of one end wall of said chamber, over which area inlet pressure is effective, being different to the area of the other end wall of said chamber over which inlet pressure is effective, and the difference providing a differential area subjected to inlet pressure which compensates for the reduction in inlet pressure subjected area arising from the provision of said outlet.

3,926,212
SIGNAL VALVE
Paul K. Bizilia, Sayre, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Jan. 16, 1975, Ser. No. 541,520
Int. Cl.² F16K *37/00*
U.S. Cl. 137—495 **10 Claims**



1. A signal valve for determining the initiation of movement of a part comprising:
a valve body having a central bore;
a pressure fluid inlet entering said bore;
a pressure fluid outlet from said bore;
a piston member disposed in said bore for displacement from a first position close to said inlet to a second position close to said outlet, to a third position beyond said outlet; said piston being disposed between said inlet and outlet in both the first and second positions to seal the pressure fluid from the outlet;

intercept means to prevent said piston from displacement beyond the second position once pressure fluid is applied to said inlet;

displacement means operable only after said piston is in said second position and in response to a motion to be sensed to displace said intercept means and allow said piston to move to said third position; and signal means responsive to said piston moving to said third position.

3,926,213

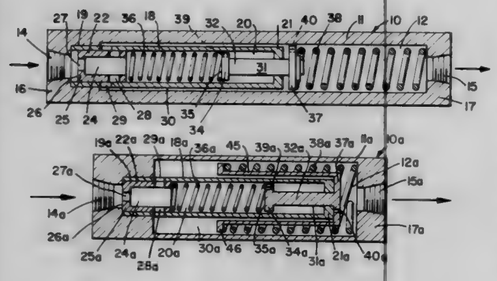
FLOW CONTROL DEVICE

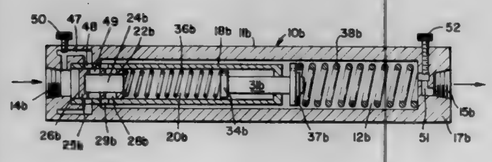
Victor H. Carder, 505 Sausalito Blvd., Sausalito, Calif. 94965

Filed Dec. 20, 1973, Ser. No. 426,941

Int. Cl.² G05D *7/01*

U.S. Cl. 137—504 **12 Claims**





1. A flow control device operative to change the volumetric flow of a fluid therethrough in inverse relation to changes from a predetermined norm in the supply pressure of such fluid, comprising: casing structure defining an axially extending chamber therein having both an inlet opening and an outlet opening communicating therewith, and further having a flow control port interposed in a flow path relationship with said inlet and outlet openings and communicable with each; flow adjustment means interposed in the flow path intermediate said chamber and each of said inlet and outlet openings to regulate the flow of fluid through said device and pressure drop thereacross; said flow adjustment means comprising: a piston axially reciprocable within said chamber generally between normal-pressure and abnormal-pressure positions in traversing relation with said flow control port, and having an end wall providing surface areas disposed in pressure-receiving relation with said inlet opening to have a pressure force developed thereagainst; a spring seat structure axially reciprocable within said chamber generally between normal-pressure and abnormal-pressure positions and having a pressurizable surface spaced from said piston and forming a pressurizable space therewith communicable with said inlet opening and being disposed in facing relation with said piston to enable a pressure force to develop therebetween urging the piston and seat structure in opposite axial directions; spring structure biasing said seat structure toward the normal-pressure position thereof; and spring means operative between said seat structure and piston to bias the latter toward the normal-pressure position thereof.

3,926,214

LAMELLA VALVE FOR PISTON COMPRESSORS

Hans Hrabal, Vienna, Austria, assignor to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna, Austria

Filed June 12, 1974, Ser. No. 478,731

Claims priority, application Austria, June 28, 1973, 5680/73

Int. Cl.² F16K *15/16*

U.S. Cl. 137—525.3 **3 Claims**



1. A lamella valve comprising a seat plate formed with passage means, a flexible lamella having one end portion clamped on the seat plate, the free end of said lamella being movable from said seat plate for controlling fluid flow through said passage means, a stop member for said free end portion of said lamella spaced from said seat plate, a gap formed beween said stop member and said seat plate and said free end portion of said lamella projecting in the longitudinal direction thereof within said gap and over an edge of said stop member whereby said edge is adapted to form a tilt bearing so that the projecting end of said lamella can swivel about the tilt bearing and cause the free end of said lamella to strike against said seat plate to brace said free end portion between said seat plate and said tilt bearing.

3,926,215

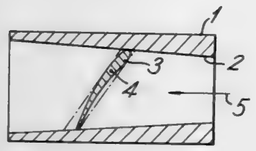
FLUID CONTROL VALVES

Norman Macleod, Edinburgh, Scotland, assignor to National Research Development Corporation, London, England

Filed Aug. 3, 1973, Ser. No. 385,337

Int. Cl.² F16K *15/03*

U.S. Cl. 137—527.8 **6 Claims**



1. A fluid control valve comprising a smooth annular seat member defining a fluid flow passageway therethrough, and a disc shaped in plan view to correspond with the radially inner portion of a transverse section of said seat member for movement about an axis through the seat member and disc to and from a position in which the disc closes said passageway, said axis defining smaller and larger disc portions on opposite sides thereof wherein the mass of said disc is substantially balanced about said pivotal axis, said disc having a non-symmetrical aerofoil cross-sectional shaping in a direction perpendicular to said axis to define leading and trailing edges respectively located in said smaller and larger disc portions, said aerofoil shaping of said disc including a concave surface on one side of said disc and a convex surface on the other side thereof, and said shaping defining respective centers of pressure which are both located in said larger portion of said disc in respect to fluid flow in opposite directions through said shaping, said shaping rendering said disc self-stabilized in its open position.

3,926,216

ARRANGEMENT OF CHECK VALVES

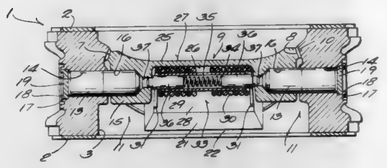
Carl-Edvard Jan Rülcker, Linkoping, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

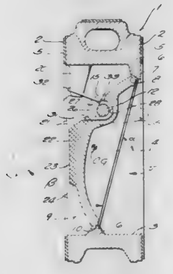
Filed June 6, 1974, Ser. No. 477,149

Claims priority, application Sweden, June 8, 1973, 7308107

Int. Cl.² F16K *15/03*

U.S. Cl. 137—527.8 **15 Claims**





1. A damper-type check valve of the type comprising a valve body that defines a passage through which fluid is intended to flow in a forward axial direction and around which passage there is an annular valve seat, and a damper in said body having a peripheral surface that is sealingly engageable with the seat in a closed position of the damper, said damper being swingable to and from said closed position about a pivot axis that extends parallel to the plane of said valve seat, is spaced in the forward direction from said plane and is spaced above the axis of the passage when the valve is oriented with said axes horizontal, said damper being biased by gravity towards its closed position and being urged away from its closed position by the force of fluid flowing in said forward direction, said check valve being characterized by:

A. the pivot axis about which the damper swings being spaced above the axis of the passage by a distance substantially less than the radius of the valve seat; and

B. the damper having a counterweight which comprises a projection on its forward face and which is wholly located in a zone near the passage axis and is substantially centered on that axis so that the center of gravity of the damper is near the geometrical center thereof and a substantial part of its mass is at a comparatively small distance from the pivot axis, to provide the damper with a small radius of gyration that assures fast movement of it to its closed position when the velocity of fluid flow in the forward direction diminishes rapidly.

3,926,217

FLUID LOGIC PROGRAMMER

Masateru Ohishi, Kobe, Japan, assignor to Konan Electric Company, Ltd., Japan

Filed Aug. 13, 1973, Ser. No. 387,695

Int. Cl.² F16K *11/00*

U.S. Cl. 137—596.18 **6 Claims**

1. A fluid logic valve assembly comprising in combinations:

A. a first valve section comprising:

a first cylindrical block having first and second ends and an axial opening extending in alignment with the longitudinal axis of said first block, said axial opening being, at said first and second ends, enlarged in different diameters thereby forming first and second fluid chambers;

a third fluid chamber in axial alignment and communication with said second fluid chamber;

a plunger housed within said first fluid chamber;

said first fluid chamber with said plunger housed therein being confined by a first closure member connected to said first end of said first cylindrical block;

said first fluid chamber being communicated without said first block through a plurality of first passages formed in said first cylindrical block and extending radially outwardly from said first fluid chamber, with outer openings of said plurality of said first passages being communicated with each other by a first annular groove formed around said first cylindrical block;

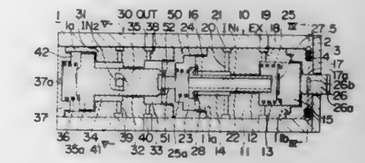
said second chamber being communicated without said first block through a plurality of second passages formed in said cylindrical block and extending radially outwardly from said second fluid chamber, with outer openings of said plurality of said second passages being communicated with each other by a second annular groove formed around said first cylindrical block;

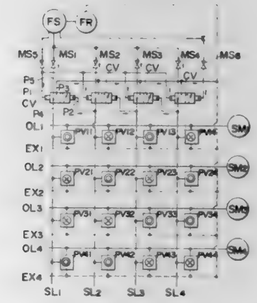
a hollow valving rod slidably and fluid tightly extending through said axial opening and having a first end situated within said first fluid chamber and a portion adjacent a second end thereof situated within said second fluid chamber;

said hollow valving rod having a third fluid passage formed therein in alignment with a longitudinal axis thereof, said third passage having a first end open towards said first fluid chamber and a second end open towards said third fluid chamber;

said second end of said hollow valving rod adjacent to said second end of said third fluid passage being formed with a radially outward flange forming a valving member means for selectively opening and closing communications between said second and third fluid chambers;

a first spring means positioned in said first fluid chamber for biasing said plunger toward said first end of said first block into a first position with said plunger abutting said first closure member;





a second spring means positioned in said third fluid chamber for biasing said hollow valving rod toward said first end of said first block into a first position with said flange of said hollow valving rod abutting said second end of said first block and closing communication between said second and third fluid chambers;

there being a space between said first end of said hollow rod and said plunger when said hollow valving rod and said plunger are in said respective first positions; and

an actuating member, having a first end rigidly connected with said plunger and a second end situated outside said first closure member, slidably extending through a through hole formed in said first closure member in alignment with said longitudinal axis of said first cylindrical block;

said actuating member being reciprocable along said longitudinal axis of said first block to cause said plunger to close communication between said third and first fluid chambers and open communication between said second and third fluid chambers;

B. a second valve section comprising:

a second cylindrical block having first and second ends and an axial opening extending in alignment with a longitudinal axis of said second block, said axial opening being, at said first and second ends, enlarged in different diameters to form fourth and fifth fluid chambers;

a piston slidably extending through said axial opening in said second cylindrical block and having a land on a first end thereof;

third spring means interposed between said land and a second closure member closing said second end of said second cylindrical block;

a plurality of fourth fluid passages formed in said second block and extending radially outwardly from said fourth fluid chamber, with outer openings of said plurality of fourth passages being communicated with each other by a third annular groove formed around said second block;

a plurality of fifth fluid passages formed in said second block and extending radially outwardly from said fifth fluid chamber, with outer openings of said plurality of fifth passages being communicated with each other by a fourth annular groove formed around said second block; and

said second closure member and said piston forming a space therebetween within which space said third spring means is housed and which space is communicated with atmosphere through a hole formed in said second closure member and is of a sufficient size to permit said piston to move between first and second positions, said piston being normally biased in one direction by the action of said third spring means to said first position whereat said land of said piston is spaced farthest away from said second closure member;

said piston being actuatable by fluid pressure in said fifth fluid passages to said second position whereat said land of said piston is adjacent said second closure member;

C. coupler means for fixedly connecting said first end of said second block and said second end of said first block and separating said third and fourth fluid chambers, said coupler means and said second end of said first block defining therebetween said third fluid chamber, said coupler means having extending therethrough a sixth passage communicating said third and fourth fluid chambers and in axial alignment with the longitudinal axis of at least one of said hollow valving rod and said piston, a second end of said piston when said piston is in said first position abutting said coupler means and closing said sixth passage, said second end of said piston being spaced from said coupler means when said piston is in said second position, thus allowing communication between said third and fourth fluid chambers via said sixth passage; and

D. a single housing having a cylindrical opening therethrough; said first and second blocks connected by said coupler means being positioned in said cylindrical opening; separate first, second, third and fourth port means extending through said housing for respectively providing fluid communication with said first, second, third and fourth annular grooves.

3,926,218

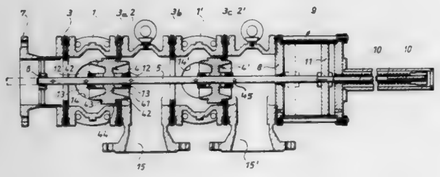
VALVE

Horst Weller, Heilbronn, Germany, assignor to Cillichemie Ernst Vogelmann, Heilbronn, Germany

Filed Sept. 13, 1974, Ser. No. 505,647

Int. Cl.² F16K *11/04*

U.S. Cl. 137—625.27 **10 Claims**



1. A valve comprising:

a. a casing having a plurality of sections juxtaposed in a row,

1. each section defining a cavity therein and being formed with two ports aligned in the direction of said row with the ports of the other sections;

b. a valve seat member interposed between each pair of juxtaposed sections and formed with an aperture aligned with said ports in said direction, whereby two valve seat members are associated with each of said sections;

c. a drive member passing through the aligned ports and apertures;

d. two valve disc members mounted on said drive member in the cavities of respective sections for movement with said drive member between respective first and second positions,

1. each valve disc member in said first position thereof sealingly engaging one valve seat member associated with the cavity receiving said valve disc member, said valve disc member in said second position sealingly engaging the other valve seat member associated with said receiving cavity,

2. said valve disc member having a cross section transverse to said direction greater than the cross sections of the apertures in said one valve seat member and in said other valve seat member;

e. two throttling members oppositely projecting from said valve disc member in said direction,

1. one throttling member being received in the aperture of said one valve seat member when said valve disc member is in said first position thereof, and the other throttling member being received in the aperture of said other valve seat member when said valve disc member is in said second position thereof,

2. the cross section of each throttling member transverse to said direction being smaller than the cross section of the receiving aperture, whereby said throttling members and the associated valve seat members define gaps therebetween when said valve disc members approach said first and second positions thereof,

3. the dimensions of said gaps respectively defined by the throttling members on one of said valve disc members with the associated valve seat members differing from the dimensions of the gaps simultaneously defined by the throttling members mounted on the other valve disc member with the associated valve seat members.

3,926,219

INJECTION NOZZLE FOR FOAMING MACHINES

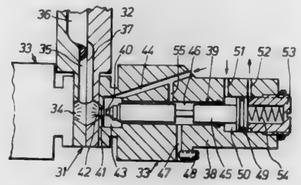
Heinrich Ersfeld; Klaus Nadolski, both of Bergisch-Neukirchen; Walter Schneider, Bensberg, Immenkaeppel; Klaus Schulte, Leverkusen, and Heinrich Boden, Opladen, Luetzenkirchen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 19, 1974, Ser. No. 534,318

Claims priority, application Germany, Dec. 24, 1973, 2364501

Int. Cl.² F16K *11/07*

U.S. Cl. 137—625.49 **3 Claims**



1. An injection nozzle for injecting reactants into the mixing chamber of a foam machine mixing head which comprises

a housing having a longitudinal bore adapted to receive a nozzle needle, a nozzle opening located in a traverse wall which terminates one end of said bore, a first traverse bore entering the longitudinal wall of the longitudinal bore at a point adjacent to said nozzle opening, a second traverse bore entering said longitudinal wall at a point remote from the point of entry of said first traverse bore and an annular groove immediately adjacent to said traverse wall; and

a nozzle needle slidingly disposed within said longitudinal bore of the housing and having one end adapted to sealingly engage said nozzle opening and the other end coupled to a positive control means for moving said needle a preset longitudinal distance into or out of engagement with said nozzle opening;

said nozzle needle being provided with an annular groove so positioned that when the nozzle needle is in sealing engagement with the nozzle opening the annular groove provides communication between said first traverse and said second traverse bores and when said nozzle needle is moved its preset distance out of engagement they provide no communication between said traverse bores.

3,926,220

MIXER FOR HOT AND COLD LIQUIDS

Francois-Regis Mahrer, Geneva, Switzerland, assignor to Kugler Fonderie et Robinetterie S.A., Geneva, Switzerland

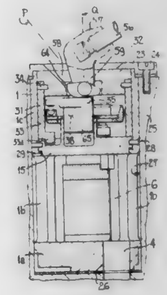
Filed Dec. 9, 1974, Ser. No. 530,716

Claims priority, application Switzerland, Dec. 11, 1973, 17346/73; Nov. 20, 1974, 15413/74

Int. Cl.² F16K *19/00*

U.S. Cl. 137—636.1 **10 Claims**

1. A mixer for hot and cold liquids, comprising housing means providing a mixing chamber, first and second liquid supply ducts leading to the mixing chamber and a mixture discharge duct leading from the mixing chamber, the mixer including first and second valves in said first and second liquid supply ducts, first and second operating members for said first and second valves respectively, means mounting said operating members for movement in said housing means in a first direction, means coupling said valves with their respective operating members whereby the flow cross-section of the respective supply duct through the respective valve is variable by movement of the respective operating member in said first direction, a control element, and means mounting said control element for rotation with respect to said housing means about a first axis extending in said first direction, a variable - inclination actuating element, means mounting said actuating element for pivoting about a second axis perpendicular to, and intersecting, the axis of said control element and fixed with respect to said control element, an adjustable abutment acting on said actuating element at a position offset from said first axis, means mounting said adjustable abutment for movement in said first direction only with respect to said casing means for varying the inclination of said actuating element about said second axis, said operating members acting on said actuating element at positions offset from each other, from said position of said adjustable abutment and from said first axis, said positions at which said operating members and said adjustable



abutment act on said actuating element together defining a plane the intersection of which with said first axis is substantially equidistant from said positions at which said operating members act on said actuating element, and the position at which said adjustable abutments acts on said actuating element lying substantially on the bisector of the angle subtended at said point of intersection by the positions at which said operating members act on the actuating element, the dispositions of said positions with respect to said first axis and with respect to each other being such that over a range of possible settings of the mixer the ratio

$$\frac{R3}{(R1 + R2)}$$

is substantially constant, where R1, R2 and R3 denote the perpendicular distance from said second axis to the positions at which said first operating member, said second operating member, and said adjustable abutment respectively act on actuating element, whereby the proportions of fluid from said first and second supply ducts in the mixture issuing from the mixture discharge duct is substantially determined by the angular position of said control element about said first axis, while the total mixture delivery is substantially determined by the position, in said first direction, of said adjustable abutment.

3,926,221

LAMINAR FLUIDIC MULTIPLIER

Robert L. Woods, Kensington, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 14, 1974, Ser. No. 497,412

Int. Cl.² F15C *1/14*

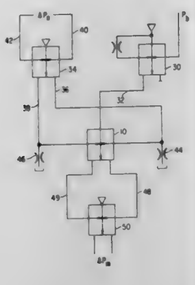
U.S. Cl. 137—819 **2 Claims**

1. A fluidic multiplier circuit, which comprises:

a proportional fluidic amplifier operated in the laminar region having a supply pressure input and a pair of signal inputs and a pair of outputs;

a biased fluid amplifier having a supply pressure, an output and a single-sided transfer characteristic, said output connected to said supply pressure input of said proportional fluidic amplifier; and

a preconditioning fluid amplifier having a supply pressure equal to that of said biased fluid amplifier and an output

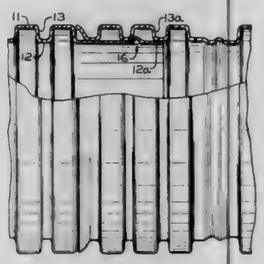


connected to said pair of signal inputs of said proportional fluidic amplifier.

3,926,222
CORRUGATED TUBING WITH INTEGRAL COUPLING MEANS THEREON

Robert E. Shroy, and John Schmunk, both of Findlay, Ohio, assignors to Hancock Brick and Tile Company, Findlay, Ohio

Filed Dec. 18, 1973, Ser. No. 425,878
Int. Cl. F16l *21/00, 37/00, 41/00*
U.S. Cl. 138—122 **8 Claims**



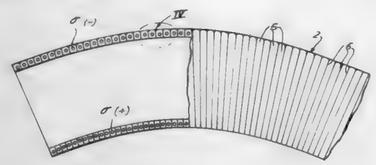
1. An indeterminate length of thermoplastic tubing comprised of:
- at least two corrugated sections of tubing having corrugations upon the inner and outer surfaces thereof defined by roots and crests joined by walls;
- said two sections being joined by a unitary coupling blank having a male portion integral with one section and a female portion integral with the other section; said male portion being essentially smooth walled and uncorrugated and having a plurality of radially outwardly projecting cleats thereon;
- said female portion having corrugated inner and outer surfaces with the crests thereof being essentially of the same outer diameter as the crests of said at least two corrugated sections of tubing;
- the roots of the corrugations of the female portion defining an inner diameter which is greater than the outer diameter of the said male portion and also greater than the inner diameter of the said at least two sections;
- said radially projecting cleats defining a diameter greater than the inner diameter and less than the outer diameter of the corrugations of the female portion; whereby upon severing the male and female portions,

the female portion will telescopically receive the male portion and the cleats will lockingly engage the corrugations thereof to thereby connect said at least two corrugated sections.

3,926,223
LARGE DIAMETER HOLLOW BODIES OF HELICAL THERMOPLASTIC STRIP

Aristovoulos George Petzetakis, Thessaloniki & Chandri Street, Moschaton, Piraeus, Greece

Filed June 19, 1973, Ser. No. 371,558
Claims priority, application Greece, June 21, 1972, 48609
Int. Cl.² F16L *11/12*
U.S. Cl. 138—129 **3 Claims**

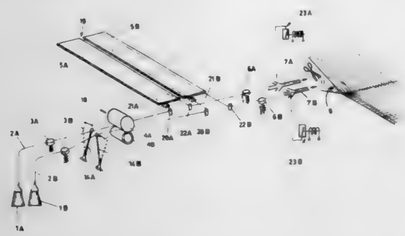


1. A large-diameter duct consisting of a multiplicity of generally helical turns of a hollow-profile strip, the strip being of substantially square outer cross-section and substantially circular internal cross-section, said strip having a pair of lateral parallel flank walls and a pair of free walls between said flanks, the flank walls of adjoining turns being butt-welded together whereby said free walls define inner and outer surfaces of the duct, said strip being composed of polyvinylchloride or polyethylene thermoplastic synthetic-resin material enabling elastic deformation of said free walls upon bending of said duct and relaxation of the deformation stresses in said free walls with time, said strip having a minimum wall thickness at said lateral flanks which is approximately 50% of the minimum wall thickness at said free walls, each pair of adjoining turns defining accumulations of thermoplastic material of V-section at the butt-weld between them.

3,926,224
WEFT SELECTING, MEASURING AND STORING APPARATUS

Geert Jan Vermeulen, and Adrianus Henricus Van Duynhoven, both of Deurne, Netherlands, assignors to Ruti-Te Strake B.V., Deurne, Netherlands

Filed Oct. 10, 1974, Ser. No. 513,645
Claims priority, application Netherlands, Oct. 11, 1973, 7314025
Int. Cl.² D03D *47/36*
U.S. Cl. 139—122 H **1 Claim**

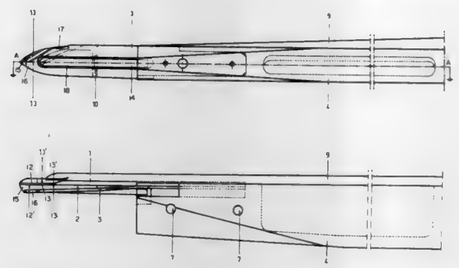


1. In a weaving machine, apparatus for selectively feeding a weft yarn, comprising a pair of continuously driven rollers, one of which has at least one peripheral groove with diverging side walls, and the other of which has a similar peripheral groove, said rollers engaging to form a nip in which said grooves register to form an opening between the rollers, a thread guide which is movably mounted for movement between a position in which it is in alignment with said opening, so as to maintain a weft yarn in said opening, and a position in which it guides said weft yarn into driven engagement in the nip of the rollers at one side of said opening, and means for selectively moving said thread guide between said positions.

3,926,225
GRIPPER POINT FOR LOOM PROJECTILES WITH AN EXTERNAL FEED

Jacques Palencher, Troyes, France, assignor to Lebocey Industrie, Troyes, France

Filed Dec. 26, 1973, Ser. No. 428,518
Claims priority, application France, Feb. 20, 1973, 73.05975
Int. Cl.² D03J *5/06*
U.S. Cl. 139—125 **8 Claims**

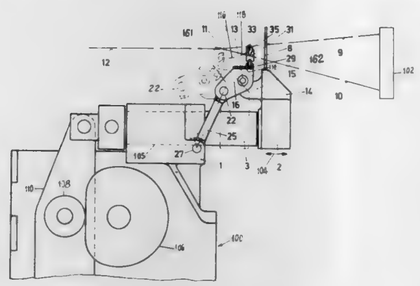


1. A gripper point for loom projectiles with an external feed, comprising a plate, a rocker strip and a spring blade, said rocker strip pivoting about an axis parallel to said plate and supported by said plate, said spring blade bearing resiliently on said rocker strip near one end thereof in order to press said rocker strip against said plate, said plate and said rocker strip having in the area in which they are pressed against one another surfaces for gripping a weft thread, and said plate being provided with a hook for guiding a weft thread toward the gripping surfaces.

3,926,226
GUIDE MEMBER SUPPORT AND DEVICE FOR BEATING UP WEFT YARN IN THE SHED OF A LOOM

Allan William Henry Porter, Lustmuhle, Switzerland, assignor to Aktiengesellschaft Adolph Saurer, Arbon, Switzerland

Filed Apr. 1, 1974, Ser. No. 456,808
Claims priority, application Switzerland, Apr. 10, 1973, 5111/73
Int. Cl.² D03D *49/60*
U.S. Cl. 139—190 **16 Claims**

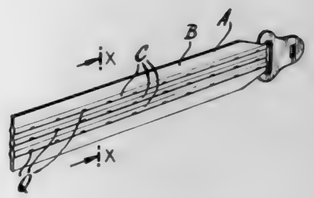


1. Device for guiding the picking of weft yarn and for beating up weft yarn in the shed of a loom, comprising:
a loom comprising:
- warp yarn supporting means for supporting warp threads to define a warp shed;
- a slay reciprocally movable along a generally straight line in the weaving direction toward the fell of the fabric being woven on the loom and being reciprocally movable in a direction opposite to the weaving direction; means for so moving said slay; said slay having a first position, which is its position of furthest reciprocation in the weaving direction, and having a second position, which is its position of furthest reciprocation opposite to the weaving direction;
- weft yarn beat up means supported on the loom to beat up the weft yarn at the fell of the fabric;
- weft yarn motion guide means connected to said slay to be moved thereby; means for picking weft yarn in said guide means; said guide means comprising: a plurality of guide members and a common support on which said guide members are carried; said guide members being spaced apart across their said guide member support in the weft direction; each said guide member including means for holding a picked weft thread and including means for releasing the picked weft thread when said guide member is in a first tilted orientation and that weft thread engages a warp thread in the warp shed;
- a sword arm; said guide member support having a first location at which there is a first pivot; at said first pivot, said guide member support is pivotally connected with one end of said sword arm; the other end of said sword arm being pivotally connected at a loom pivot that is located on a portion of said loom that is stationary with respect to movement of said slay; with said slay moved into said second position, said loom pivot being further in said weaving direction than said first pivot;
- said guide member support having a second location at which there is a second pivot; at said second pivot, said guide member support being pivotally connected to said slay; said second pivot being spaced from said first pivot; said first pivot being located further in said weaving direction than is said second pivot,
- whereby reciprocating movement of said slay correspondingly reciprocates said guide means and tilts said guide members so that they move along a curved pathway between an orientation at which said means for holding a picked weft thread is in the shed and said first tilted orientation at which said means for holding a picked weft thread has moved out of the shed.

3,926,227
LOAD SENSITIVE BELT

Takezo Takada, deceased, late of Tokyo, Japan, and by Juichiro Takada, legalized authorized heir, Tokyo, Japan, assignors to Takata Kojyo Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1973, Ser. No. 427,282
Claims priority, application Japan, Dec. 28, 1972, 47-148602[U]
Int. Cl.² D03D *15/00*
U.S. Cl. 139—383 R **3 Claims**



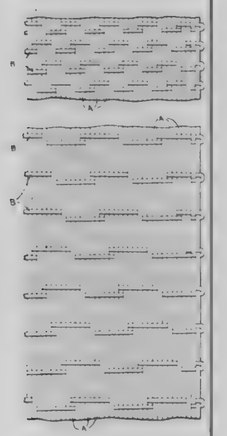
1. A load sensitive belt comprising an elongated web including longitudinally extending ground warps and indicator warps and characterized in that said indicator warps are at least partially visible along a face of said web and possess a lesser rupture elongation than said ground warps and are of different color than and visually distinguishable from said ground warps at said face of said web whereby said indicator warps rupture upon a load exceeding a predetermined value being applied to said belt less than the value of the rupture load of said belt and

the rupture of said indicator warps are observable at a face of said web.

3,926,228
CARBONACEOUS TAPES

Kenneth S. Burns, Basking Ridge; George R. Ferment, Dover, both of N.J., and Roger C. Waugh, Rock Mart, Ga., assignors to Cellanese Corporation, New York, N.Y.

Division of Ser. No. 112,189, Feb. 3, 1971, Pat. No. 3,818,082.
This application Apr. 27, 1973, Ser. No. 355,232
Int. Cl. D03d *15/00*
U.S. Cl. 139—420 R **9 Claims**



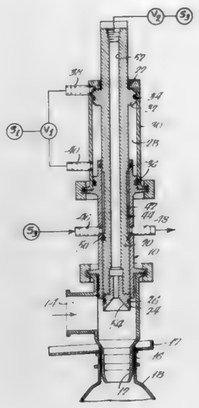
1. A tape of sateen weave construction suitable for use as a fibrous reinforcing medium when incorporated in a matrix material consisting of at least 32 adjoining substantially parallel linear warp ends of a carbonaceous fibrous material essentially coextensive with the length of said tape containing at least 90 per cent carbon by weight, and a fibrous weft pick interlaced with said warp ends at a plurality of points capable of maintaining said substantially parallel relationship of said warp ends which floats at least 4 of said warp ends prior to each additional interlacing point in the main body of said tape as said warp ends are traversed and provided at a frequency of about 0.1 to 8 picks per inch of said tape.

3,926,229
VISCOUS MATERIAL FILLING DEVICE

William R. Scholle, Compton, Calif., assignor to Scholle Corporation, Northlake, Ill.

Filed Feb. 20, 1974, Ser. No. 444,127
Int. Cl.² B65B *3/04*; B67C *3/02*
U.S. Cl. 141—1 **5 Claims**

1. A method for filling a container with a viscous material, comprising the steps of bringing the neck of a container into communication with a viscous material outlet, delivering viscous material through said outlet into the container until the level of material reaches the neck of the container and the viscous material extends between said outlet and the container, stopping delivery of viscous material through said outlet, then, with the neck of the container still in communication with the outlet, directing a stream of cleansing fluid under pressure through said outlet and into the neck of the container for discharging all of the viscous material in said outlet and between said outlet and the container into the container, and then removing the container from said outlet, whereupon the

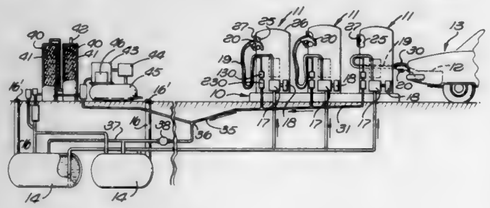


viscous material will not cone up in the container neck and said outlet will remain clean.

3,926,230
RECOVERY OF FLAMMABLE VAPORS

Marvin L. Stary, 1454 Ashland Ave.; Edward L. Brown, 1505 Lafayette Road, both of Claremont, Calif. 91711, and Eric L. Pridonoff, 727 S. Orange Grove Blvd., Apt. 7, Pasadena, Calif. 91105

Filed June 12, 1974, Ser. No. 478,519
Int. Cl.² B65B *31/06*
U.S. Cl. 141—45 **33 Claims**

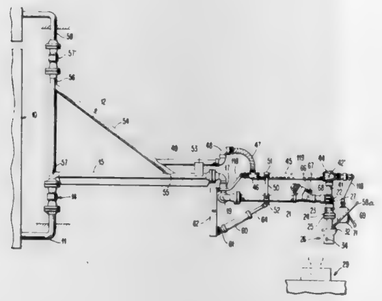


1. Apparatus comprising:
a liquid dispensing system including tank means for holding a flammable liquid, hose means for dispensing said liquid, and discharge nozzle means on said hose means;
means for collecting flammable vapors of said liquid from said dispensing system and including collection line means for withdrawing vapors from the vicinity of said nozzle means during a dispensing operation;
adsorption chamber means through which said collected vapors and intermixed air are passed and containing a substance adapted to adsorb said vapors;
an engine;
means for feeding said collected vapors to the intake of said engine as its only fuel in a quantity sufficient to drive said engine solely by the combustion of said vapors, said vapor feeding means acting to progressively desorb vapors from said substance for delivery to the engine; and
means for delivering air to the intake of said engine with said collected vapors in a controlled total air-vapor ratio which is combustible in the engine to drive it solely by burning of said vapors.

3,926,231
SYSTEM FOR LOADING LIQUID INTO A CONTAINER OR THE LIKE

Michael J. Madden, West Covina, Calif.; Robert L. Murray, Dayton, Ky.; Stephen C. Lemon, and Paul R. Ostand, both of Cincinnati, Ohio, assignors to Dover Corporation, New York, N.Y.

Division of Ser. No. 77,361, Oct. 1, 1970, Pat. No. 3,753,453.
This application Mar. 15, 1973, Ser. No. 341,381
Int. Cl.² B65B *3/18*; B67C *3/34*
U.S. Cl. 141—192 **3 Claims**



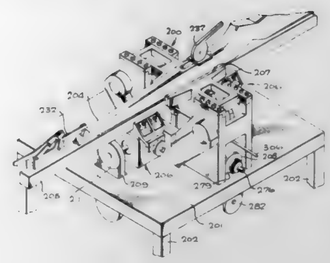
1. A fluiid handling system including a conduit for conducting a fluid therethrough to a container or the like, conduit valve means in said conduit to regulate flow therethrough, said valve means being normally biased closed, support means, means pivotally connecting said conduit to said support means, a conduit pivoting cylinder connected with said conduit to pivot said conduit about said pivotal connecting means to move said conduit into and out of communication with the container, means urging said conduit valve means to a closed position, cylinder means to move said conduit valve means to an open position, single control means to simultaneously produce actuation of said pivoting cylinder and said moving cylinder, and fluid flow circuit means connected with said cylinder means and said pivoting cylinder and said single control means, said circuit means being responsive to said single control means, pressurized fluid flow sensing means in said circuit means, said sensing means being operatively connected with said pivoting cylinder wherein pressurized fluid is supplied to said pivoting cylinder when fluid flow is sensed by said sensing means, said sensing means insuring that said conduit valve means is closed by said urging means before said pivoting cylinder moves said conduit out of communication with the container.

3,926,232
APPARATUS FOR CUTTING PATTERN IN GUN STOCK OR OTHER WORK PIECE

Frank A. Pachmayr, Los Angeles, and Edward B. Miller, Harbor City, both of Calif., assignors to Pachmayr Gun Works, Inc., Los Angeles, Calif.

Division of Ser. No. 156,655, June 25, 1971. This application Sept. 23, 1974, Ser. No. 508,329
Int. Cl.² B27M *3/22*
U.S. Cl. 144—136 J **21 Claims**

1. Apparatus comprising:
a cutter structure having cutting edges arranged in a predetermined pattern which is to be essentially reproduced on a work piece;
means for producing relative vibratory movement between said cutter structure and said work piece, while the cutter structure is positioned for contact with the work piece, and in a relation progressively cutting said pattern on the work piece; and

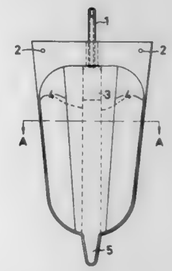


means for shifting the work piece in a lateral direction during said relative vibratory movement and in addition thereto.

3,926,233
CONTAINER

Lennart Brendling, 81, Axvagen, Jarfalla, Sweden (S-175 44)

Filed July 24, 1974, Ser. No. 491,553
Claims priority, application Sweden, July 25, 1973, 7310331
Int. Cl.² A61F *7/00*
U.S. Cl. 150—2.5 **6 Claims**



1. A container of flexible material, especially intended for collection of urine and/or faeces, which container is substantially two-dimensional in empty state and comprises two outer walls, a plurality of intermediate walls arranged between the outer walls to form an odd number of at least three chambers which are in connection with each other, and an inlet provided with a valve leading to the container, the same number of intermediate walls being arranged on both sides of an imaginary line passing through the middle chamber and extending in the longitudinal direction of the container, the intermediate walls being connected to the outer walls along joints extending in the longitudinal direction of the container and at least one distance between the joints of two adjacent intermediate walls at one outer wall being greater than the distance between the joints of the same adjacent intermediate walls at the other outer wall.

3,926,234
CONTAINER FOR STORING KEYS

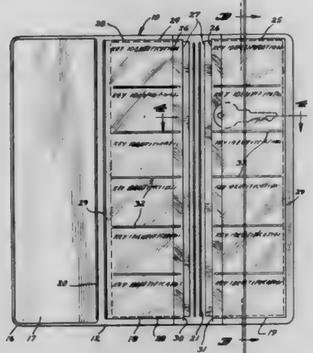
Gerald R. Dean, Minneapolis, Minn., assignor to Stanley W. Dahlmeier, Minneapolis, Minn.

Filed July 20, 1972, Ser. No. 273,490
Int. Cl.² A45C *11/32*
U.S. Cl. 150—40 **2 Claims**

1. In a folder for storing extra keys,
a. a backing member having two equal panels foldable against each other along a center line,

b. an inner wall secured along three sides to the inner side of each panel to form a card pocket between the inner wall and panel,

c. said inner wall comprising two sheets of transparent material being secured together at spaced intervals to



form a series of key receiving pockets opening toward the center line and each adapted to receive an individual key,

d. an identification card disposed between the inner wall and panel and extending the length of the inner wall and adapted to receive data observable through the inner wall to identify the key in each of said pockets.

3,926,235

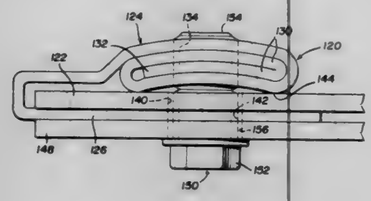
NUT, CLIP AND PANEL ASSEMBLY

William C. Wehner, Clarence Center, N.Y., assignor to Multifastener Corporation, Detroit, Mich.

Filed Mar. 25, 1974, Ser. No. 454,056

Int. Cl.² F16B *39/28*

U.S. Cl. 151—21 C **4 Claims**



1. A nut member, comprising: a continuous, relatively thin resilient strip spirally interfolded upon itself and permanently flattened to define at least four laminae in face-to-face contact, a continuous bore through said laminae having a continuous, spiral female thread formed therein, said laminae symetrically concave about the axis of said bore defining a bearing face equally spaced on opposite sides of said bore on the concave side of said nut member, said lamina retained at their opposite sides within the spiral folds of the outer adjacent lamina of said strip, with the central portion including said bore spaced from the plane of said bearing face and free to flex in the axis of said bore, whereby said nut member laminae function as a single unit upon threading a male threaded fastener in said bore, through said concave side of said nut member, and permitting said laminae to resiliently flex about said bearing face upon torquing of the male threaded fastener, the thickness of the laminae equal to approximately the thread pitch.

3,926,236

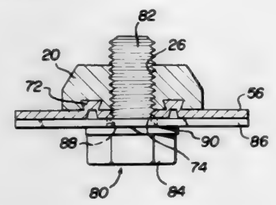
SELF-FASTENING NUT, PANEL ASSEMBLY AND APPARATUS

Thomas M. Pouch, Farmington, and Harold A. Ladouceur, Livonia, both of Mich., assignors to Multifastener Corporation, Detroit, Mich.

Division of Ser. No. 302,312, Oct. 30, 1972, Pat. No. 3,829,957. This application Mar. 25, 1974, Ser. No. 454,656

Int. Cl.² F16B *37/04*

U.S. Cl. 151—41.73 **11 Claims**



1. A structural assembly, comprising, in combination, a nut having a cylindrical central bore, a pilot portion surrounding said bore having a planar end face, a groove adjacent said pilot end face on opposite sides of said bore and a flange portion having an end face substantially coplanar with said pilot end face, a panel engaging said coplanar end faces of the nut in overlying relation and having a circular opening coaxially aligned with said nut bore, said panel coplanar with said pilot adjacent said opening, the internal diameter of said circular opening being substantially equal to the internal diameter of said nut bore, said panel having a portion disposed within said nut groove and said groove having a restricted opening including a portion overlying a bottom wall configured to retain said nut on said panel in interlocking relation, the inner panel edge defining said panel opening and said nut bore having a continuous female thread, a structural member overlying said panel, opposite said nut, having a hole in registry with said panel opening, and a self-tapping male threaded fastener threadably received in said continuous female thread of said panel edge and said nut bore, retaining said structural member to said panel.

3,926,237

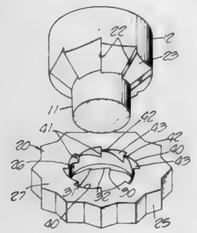
SELF-LOCKING VIBRATION-PROOF LOCK WASHER AND COOPERATING THREADED FASTENER

Max L. Enders, 965 N. Fair Oaks, Pasadena, Calif. 91103

Continuation-in-part of Ser. No. 239,488, March 30, 1972, abandoned. This application Aug. 2, 1973, Ser. No. 384,811

Int. Cl.² F16B *39/282*

U.S. Cl. 151—34 **26 Claims**



10. A self-locking vibration-proof fastener comprising a threaded shank having a wrench-seating retainer means at one end thereof, said retainer means having a frusto-conical surface sloping inwardly toward the axis of said threaded shank at an obtuse angle with the smaller end of said frusto conical surface substantially merging with said shank and having a

ring of shallow teeth each having a generally radial face and a relatively long helical face having a pitch substantially in excess of the pitch of said shank threads, a wrenchable lock washer encircling said shank having an axial bore fitting loosely about said threaded shank, substantial portions of said bore on the end half thereof adjacent said frusto-conical surface being generally cylindrical, the rim edge of said bore adjacent said ring of shallow teeth on said retainer means having a ring of similar long shallow notches of varying depth circumferentially of said rim edge adapted to internest partially with the leading higher end of a respective one of said shallow teeth on said retainer means, said notches having a long generally helical surface having a pitch substantially in excess of the pitch of said shank threads and merging at the deeper end thereof with a generally radially disposed end wall surface, the lateral edges of said end wall and of said helical surface converging and merging with the rim edges of said washer bore at the respective opposite ends of said notches, the deeper end portion of said teeth on said retainer means having load bearing contact with the shallow end of a respective one of said notches in an area immediately adjacent the rim edge of said cylindrical bore and adjacent the sidewall of said threaded shank as the generally radial faces of said teeth engage said generally radial end wall of said notches whereby the tightening of said fastener loads said washer in hoop tension from a plurality of areas located about the periphery of said washer substantially at the rim edge of said cylindrical bore, and the end face of said washer remote from said notches having a ring of row-height sharp-edged barb-like teeth extending generally radially thereacross with one face of each inclined acutely and the other face inclined obtusely to said one end face and in directions to cam said washer over the surface of a workpiece as said fastener is wrenched to tighten the same and to dig into the surface of the workpiece upon any tendency of the fastener to rotate in a loosening direction.

3,926,238

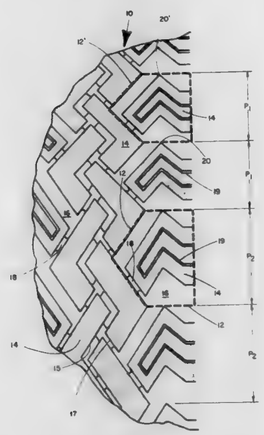
MODULATING NOISE PRODUCED BY ROTATING BODIES

William J. Vorih, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Aug. 31, 1971, Ser. No. 176,460

Int. Cl.² B60C *11/08*

U.S. Cl. 152—209 **13 Claims**



1. In a tire construction having an outer tread portion divisible into a plurality of discrete design elements extending circumferentially about the tire, not all of said design elements having identical pitch lengths, the improvement comprising:

providing the tire tread with sequenced design elements in which the sequence is characterized by comprising in at least a portion thereof of a plurality of strings of design elements, each string consisting of three or more consecutive design elements of substantially identical pitch length, the length and sequential positioning of said strings selected to modulate the tread frequency harmonic produced upon impact of the road by the tire.

3,926,239

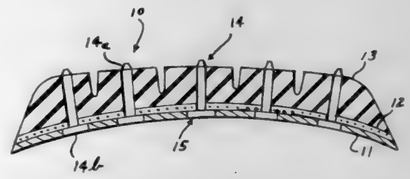
STUDDED REPLACEABLE TREAD TIRE

Aivars V. Petersons, 1925 Little York Road, Dayton, Ohio 45414, and Howell K. Brewer, 1921 N. Longview St., Dayton, Ohio 45432

Filed Aug. 21, 1974, Ser. No. 499,231

Int. Cl.² B60C *11/16*

U.S. Cl. 152—210 **3 Claims**



1. A replaceable tread belt assembly for a pneumatic tire, comprising; a radially-inwardmost, cushion layer disposable around and in contact with the carcass of a pneumatic-type tire when the tread belt is in its mounted condition; a replaceable-type of tread belt having a tire tread-reinforcing means such as at least one cord reiforcing ply layer at the inside surface thereof positioned in intermediate and sealing contacting relation respectively between the outside and inside surfaces of said cushion layer and tread belt; a plurality of anti-skid/traction studs each having integral, relatively elongated shank and relatively enlarged head portions, and being supported by and projecting out of the outside surface of said tread belt for contact with the pavement or other road surface; and stud-mounting means for mounting each of said plurality of studs in removable relation within, and extending completely through said tread belt from the inside to the outside surfaces thereof including the said cushion and cord reinforcing ply layers; said stud-mounting means being premolded in said tread belt including said cushion and tire tread-reinforcing means during cure, and including a separate socket for releasably receiving therewithin each of said plurality of studs; each of said sockets being of a stepped diameter configuration incorporating a relatively narrow and elongated socket portion extending entirely through said tread belt including its reinforcing ply layer for positioning therewithin a respective stud shank portion with a slight interference fit to thereby permit the relatively easy hand or manual installation and removal thereof; and an enlarged diameter portion incorporated within said cushion layer and thus being oriented entirely and immediately below the inside surface of the cord reinforcing ply layer for thereby positioning the said enlarged stud-head portion of a corresponding stud in a positive anchored relation relative to, and just behind the said cord reinforcing ply layer when said tread belt is mounted to the carcass of a pneumatic tire.

3,926,240

AUXILIARY TRACTION MEANS FOR VEHICLE WHEELS

Bryan W. Nickerson, Jr., 200 Lore Ave., Wilmington, Del. 19809

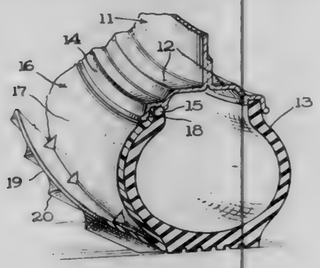
Filed Nov. 16, 1972, Ser. No. 307,115

Int. Cl.² B60C *27/02*

U.S. Cl. 152—226 **1 Claim**

1. The combination with a vehicle wheel and tire having its outer periphery adapted to roll over surfaces ranging in hard-

ness from unyielding to yielding, traction means mounted on said wheel and tire, said traction means constructed of a resilient material in the form of an annular collar in opposed relationship to the lateral face of the side wall of said tire and a plurality of spaced traction lugs arranged contiguous the outer periphery of said collar, said traction lugs inoperatively positioned radially within the outer periphery of said tire, said traction lugs being responsive to the centrifugal force of said wheel whereby they are caused to radiate outwardly beyond the outer periphery of said tire, there being a resistance means



associated with said collar and said traction lugs causing said traction lugs to resist being radiated outwardly relative to said collar, the radially inner portion of said collar remains fixed relative to the lateral face of said tire, said resistance means characterized as a resilient stiffness that will cause said traction lugs to resist being radiated outwardly beyond the outer periphery of said tire until a predetermined number of revolutions per minute of said wheel is reached whereby the activation of said traction lugs is dependent upon the elective speed of the wheel.

3,926,241

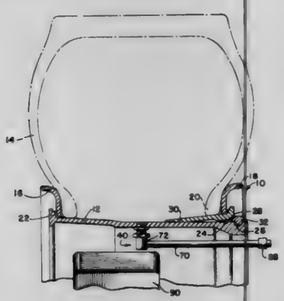
FITTING STRUCTURE FOR TIRE RIM

Peter P. Evankovich, Butte; Robert J. Madden, Divide, and Edward M. Peterson, Butte, all of Mont., assignors to The Anaconda Company, New York, N.Y.

Filed Apr. 10, 1974, Ser. No. 459,592

Int. Cl.² B60C *29/00*

U.S. Cl. 152—415 **2 Claims**



1. In combination: a rim assembly for an oversized off-the-road vehicle including a cylindrical base, a pair of annular flanges received around the base adjacent the peripheries, each of the flanges supporting a portion of the outer wall of a tire adjacent an inner bead thereof which is disposed substantially within the region of the junction of the cylindrical base and flange, means for retaining each of the flanges on the cylindrical rim and the tire therebetween so that the tire may be inflated, and a tapped bore formed in the cylindrical base between the flanges; a fitting in the form of a member having an elongated cylindrical shank and a through-bore of substantially constant diameter, the member including abutment means on the shank between the ends, and threaded partially along the length of the shank from the abutment means toward one end and along the length of the shank from the abutment means toward the other end, the latter thread being relatively coarser for threadedly receiving the member into the bore so that the abutment resides juxtaposed to the cylindrical base; and means for communicating a pressurizing fluid to the tire interior for inflating the same including connector means for threaded receipt on the shank from the one end, a conduit mounted by the connector and extending from the connector along the cylindrical base at least to the region of one of the flanges, and a valve in the conduit remote from the connector for opening and closing fluid communication with the tire.

3,926,242

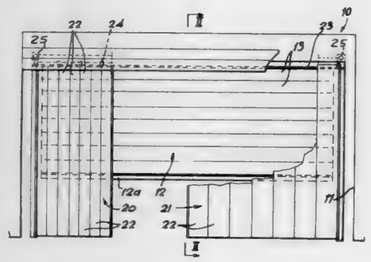
DOORS

Kenneth Lowe, Stockport, England, assignor to Simon-Carves Limited, Stockport, England

Filed Jan. 2, 1974, Ser. No. 429,843

Int. Cl.² E06B *3/32*

U.S. Cl. 160—89 **1 Claim**



1. In combination with a shed for the building of a ship by the so-called extrusion method said shed having a doorway opening in one end through which the ship under construction is extruded in successive steps as it grows in length, means for defining a rectangular aperture of any predetermined height and width within the perimeter of said doorway opening comprising two door arrangements disposed one behind the other at said doorway opening, means whereby one of said door arrangements is operable upwardly to an adjustable extent to define an aperture which extends over the full width of the doorway opening and which is of desired height from the ground to the lower edge of the door arrangement, the other of said door arrangements being comprised by two door parts disposed one on each side of the doorway opening, and means whereby each of said door parts is openable outwardly to an adjustable extent to define an aperture extending over the full height of the doorway opening and of desired width between the inner vertical edges of the two door parts, the two door arrangements being operable together to define said rectangular aperture of any desired height and width to conform the effective doorway opening size and shape to the size and shape of the part of the ship extending through the doorway at any time during building, said first mentioned door arrangement comprising a plurality of horizontally extending pivotally interconnected parallel plates, the uppermost edge of the uppermost plate being pivotally connected with a fixed frame member and the lowermost edge of the lowermost plate being pivotally connected with a movable frame member which extends across the width of the doorway opening, said movable frame member being suspended by cable means which can be raised and lowered to open or close said first door arrangement to a desired extent, and means for moving said cable means to open and close said first door arrangement, and each of said door parts of the second mentioned door arrangement comprising a plurality of vertically extending pivotally interconnected parallel plates whose upper ends are

suspended from a track running along the upper edge of the doorway opening, and means for moving the innermost plate of said each door part inwardly or outwardly across the doorway opening, each of said means for moving said door parts and said means for moving said cable means being operable independently of one another.

3,926,243

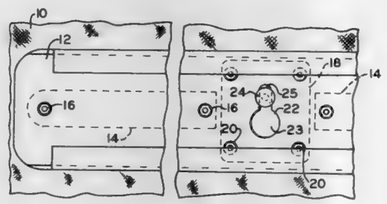
CARGO CONTAINER LATCHES

John W. Lovich; Oscar W. Meller, both of Akron, Ohio, and Walter F. Sprick, Phoenix, Ariz., assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Feb. 11, 1974, Ser. No. 441,616

Int. Cl.² A47H *23/00;* **E05C** *1/04*

U.S. Cl. 160—328 **10 Claims**



1. A latch system for use on a cargo container having a frame work, base, and a fabric door for closing an opening allowing access to the interior thereof, comprising:

a first rigid member connected to and horizontally traversing the fabric door and dividing the door into at least two sections;

a plurality of first latch assemblies connected to and spaced along the first rigid member;

a second rigid member connected to and horizontally traversing the fabric door at the bottom thereof; and

a plurality of second and third latch assemblies connected to the second rigid member, the second latch assemblies securing the positioning of the fabric door over the opening and the third latch assemblies, separate and distinct from the second latch assemblies and interposed therebetween, maintaining the engagement of the second latch assemblies.

3,926,244

METHOD OF CONTROLLING THE COOLING RATE OF NARROW SIDE WALLS OF PLATE MOLDS AS A FUNCTION OF THE CASTING TAPER DURING CONTINUOUS CASTING

Walter Meier, Winterthur; Josef Zeller, Weesen; Peter J. Koenig, Zumikon; Werner Bruderer, Feldmeilen, and Markus Schmid, Zurich, all of Switzerland, assignors to Concast AG, Zurich, Switzerland

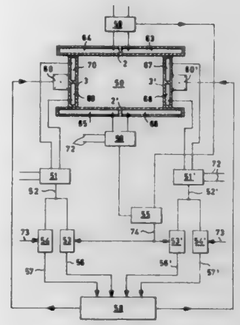
Filed Mar. 25, 1974, Ser. No. 454,682

Claims priority, application Switzerland, Mar. 30, 1973, 4599/73

Int. Cl.² B22D *11/02*

U.S. Cl. 164—4 **15 Claims**

1. A method of controlling the cooling rate of the narrow side walls of a plate mold during continuous casting, said plate mold further possessing wide side walls, wherein the narrow side walls of the mold are fixedly clamped between the wide side walls of the mold, prior to the start of the casting operation the hollow mold compartment is provided between the narrow side walls with a casting taper which converges in the direction of travel of the cast strand and which is accommodated to the quality of the steel and the width of the strand, the improvement comprising the steps of prior to starting the casting operation additionally adjusting the casting taper to a reference value corresponding to at least one prescribed casting parameter, and upon deviation of the casting parameter during the casting operation altering the casting taper according to predetermined reference values which produce a desired cooling effect and corresponding to such changing casting parameter.



3,926,245

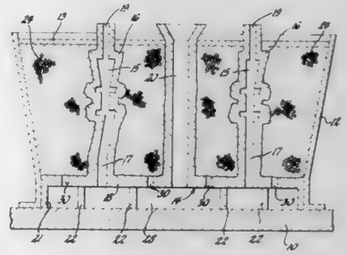
METHOD FOR PRODUCING DIRECTIONALLY SOLIDIFIED CAST ALLOY ARTICLES AND APPARATUS THEREFOR

Randel R. Kanaby, Lebanon, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 28, 1973, Ser. No. 401,694

Int. Cl.² B22D *15/00, 27/04*

U.S. Cl. 164—53 **3 Claims**


24
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3,926,246
FLUX FOR CONTINUOUS CASTING OF STEEL

Paul M. Corbett, Baltimore, Md., and Michael P. Fedock, Seven Hills, Ohio, assignors to SCM Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 290,196, Sept. 18, 1972, abandoned. This application Feb. 20, 1974, Ser. No. 444,072
Int. Cl.² B22D *27/20;* **C22B** *9/10;* **C03C** *3/16*
U.S. Cl. 164—56 **6 Claims**

1. A flux composition having flowidity, plastic deformation point, and alumina solubility suitable for use in the continuous casting of steel, said composition being substantially in the vitreous state as frit particles, and consisting essentially of:

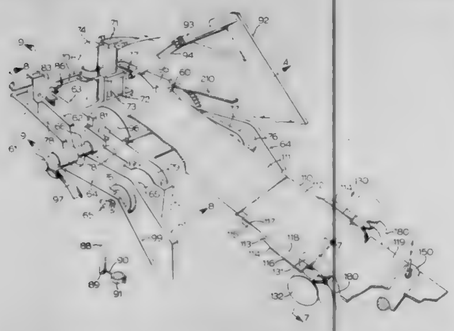
Ingredients	% by Weight
Na_2O	18–24
K_2O	0–10
Li_2O	2.5–6
SiO_2	1–20
P_2O_5	10–40
Al_2O_3	0–25
F	0–10
MgO	5–20
CaO	5–20
BaO	5–20
SrO	5–20
B_2O_3	0–6

and wherein the percentages of said ingredients total 100% by weight.

3,926,247
LEAD SHEET CASTING MACHINE

Kenneth Daniel Geiger, Port Credit; Steven Joseph Horvath, Mississauga; Victor Paul Kallay, Toronto; Theodore Joseph Seymour, Oakville; Thorpe Wesley Watson, Oakville, and John Zervoudis, Oakville, all of Canada, assignors to Cominco Ltd., Vancouver, Canada

Filed Oct. 29, 1974, Ser. No. 518,851
Int. Cl.² B22D *11/126, 11/06*
U.S. Cl. 164—263 **29 Claims**

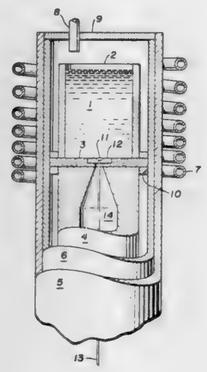


1. In a machine for casting metal sheet from molten metal by rotating a drum in a pool of said molten metal contained in a trough for casting of the metal onto the drum and withdrawal of said cast metal as a continuous sheet, support means for raising and lowering said drum and for leveling said drum comprising: a stationary outer frame enclosing the casting trough on its sides and at least one end, an inner adjusting frame pivotally mounted at one end within said stationary outer frame and enclosing the casting trough on its sides and its end opposite the pivotal mounting having said drum journalled in bearings secured therein, means for raising and lowering the inner frame relative to said outer stationary frame for angular rotation about the pivotal mounting for coarse and fine adjustment of the height of the drum in the casting trough, said coarse adjustment for placement of the drum in a lower position in the trough to immerse the drum periphery to a preset depth below the surface of molten metal in the trough and placement of the drum in an upper position to remove the drum periphery from said molten metal in the trough and said fine adjustment for providing changes in said preset depth, means for raising or lowering one side of said inner frame relative to the other side for adjusting the level of the drum, and means connected to said inner frame for pivoting said inner frame out of contact with said stationary outer frame for removal of the drum from the casting trough.

3,926,248
ORIFICE STRUCTURE FOR EXTRUDING MOLTEN METAL TO FORM FINE DIAMETER WIRE

Jerome J. English, Cary, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 11, 1973, Ser. No. 405,388
Int. Cl.² B22D *11/00*
U.S. Cl. 164—273 R **3 Claims**

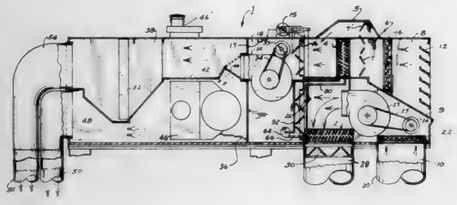


1. In an apparatus for extruding molten metal to form fine diameter wire, said apparatus being characterized by a crucible assembly for containing a molten metal charge and having an orifice defining element as an essential part thereof, means for forcing molten metal contained in the crucible through an orifice in said orifice defining element and heating means for maintaining said charge in the molten state, the improvement which comprises: an orifice defining element which is composed of polycrystalline thorium oxide having a density of from 9.5 to 10.0 gm/cm³ and a purity of at least 99.5 percent.

3,926,249
ENERGY RECOVERY SYSTEM

Walter P. Glancy, 7120 Baxtershire, Dallas, Tex. 75230

Filed Dec. 11, 1973, Ser. No. 423,844
Int. Cl.² F24F *3/14*
U.S. Cl. 165—3 **7 Claims**

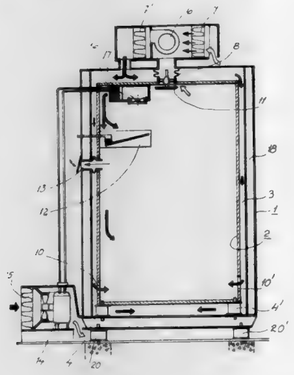


1. A method of recovering maximum energy from air exhausted from an enclosure comprising the steps of: delivering air from inside the enclosure through an exhaust passage to the outside of the enclosure; delivering fresh air from the outside the enclosure through an inlet passage to the inside of the enclosure; positioning a first heat exchanger in the inlet passage; positioning a second heat exchanger in the outlet passage; circulating liquid in a closed circuit through the first and second heat exchangers to transfer maximum energy between the inlet and outlet passages; and maintaining the mass flow rate of the liquid substantially equal to one-half the sum of the mass flow rates of all the air flowing over the first and second heat exchangers multiplied by the apparent specific heat of the respective air streams and divided by the specific heat of the liquid to maintain a maximum heat transfer rate from air exhausted from the enclosure to fresh air.

3,926,250
WORK CABIN FOR UNHEALTHY ENVIRONMENTS

Bertil Engwall, Solna, Sweden, assignor to AB Svendiesel, Solna, Sweden

Filed Dec. 6, 1973, Ser. No. 422,142
Claims priority, application Sweden, Dec. 7, 1972, 15993/72
Int. Cl.² F25B *29/00*
U.S. Cl. 165—48 **10 Claims**



1. A work cabin for use in unhealthy environments comprising: two cabin-shaped containers comprising an inner container positioned within an outer container and spaced therefrom to form an air space surrounding said inner container; at least one inlet connecting said air space with the space contained by the inner container; fan means with at least two air filter means spaced from each other; outside air inlet means positioned on the upstream side of a first filter means; outlet means on the downstream side of a second filter connecting to said air space; a second outlet means for exhausting the air from said space in the inner container to a plenum between the downstream side of the first filter means and the upstream side of the second filter means; and a number of vibration-absorbing elements made of elastic material separating said inner and outer containers.

3,926,251
RECUPERATOR STRUCTURES

Yu K. Pei, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 16, 1973, Ser. No. 333,402
Int. Cl. F28d *9/00*
U.S. Cl. 165—165 **28 Claims**

1. A recuperator heat exchange assembly, comprising
a. a first plurality of layers of tubes, each tube in said plurality of layers having open ends and a portion intermediate the open ends which is essentially parallel to corresponding intermediate portions of the other tubes in the same layer and to corresponding intermediate tube portions in the other of said first plurality of layers to form a first series of longitudinally extending essentially parallel passageways for receiving a first fluid;
b. a second plurality of layers of tubes, each tube in said second plurality of layers having open ends and a portion intermediate the open ends which is essentially parallel to corresponding intermediate portions of the other tubes in the same layer and to corresponding intermediate tube portions in the other of said second plurality of layers to form a second series of longitudinally extending essentially parallel passageways for receiving a second fluid;
c. the intermediate tube portions of each of said first plurality of layers being disposed adjacent to, essentially parallel with, and at heat exchange relationship with the intermediate tube portions of att least one of said second plurality of layers; and the intermediate tube portions of each of said second plurality of layers being disposed adjacent to, essentially parallel with, and in heat exchange relationship with intermediate tube portions of at least one of said first plurality of layers, thereby forming a stacked array of tubes having four sets of open ends for receiving and discharging first and second fluids;
d. the portions of the tubes in each of one of said first and second pluralities of layers between the intermediate portions thereof and a first set of the open ends thereof extending obliquely with respect to the intermediate portions thereof to position said first set of open tube ends outside of said stacked array of tubes, thereby forming a first plurality of obliquely extending tube portions having a first of said four sets of open ends outside of said stacked array and available for connection to a first header means;
e. another portion of each of the tubes in each of one of said first and second pluralities of layers between the intermediate portions thereof and a second set of the open ends thereof extending obliquely with respect to the intermediate portions thereof to position said second set of open tube ends outside of said stacked array of tubes, thereby forming a second plurality of obliquely extending tube portions having a second of said four sets of open ends outside of said stacked array and available for connection to a second header means;
f. the remaining two portions of the tubes in said first and second pluralities of layers between the intermediate portions thereof and the third and fourth sets of the open ends thereof extending outwardly from the intermediate portions thereof to position said third and fourth sets of open ends away from the stacked array of contiguous intermediate tube portions and away from each other to form third and fourth sets of open ends available for connection to third and fourth header means; and
g. header connecting means for each of said four sets of open ends substantially coextensive with the open ends of each set and for closing the spaces between and around the open ends of each set to prevent leakage of said fluids between a header means and the tube ends of each set;
h. said tubes and said header connecting means being constructed of material having essentially zero porosity, consisting essentially of an inorganic crystalline oxide ceramic material, and having an average coefficient of lineal thermal expansion of about -18 to $+50 \times 10^{-7}$/°C over the range of 0° – 300°C;
i. said stacked layers of tubes and said header connecting means being fused together to form an integral assembly.

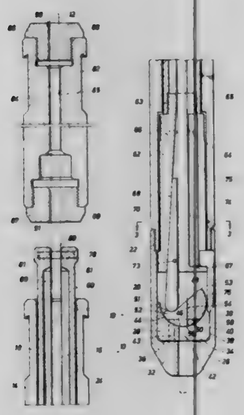
3,926,252
LINE CUTTING DEVICES

Jean-Paul Ribeyre, and Claude Marty, both of Cesson, France, assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Sept. 19, 1974, Ser. No. 507,183
Int. Cl.² E21B *29/00*
U.S. Cl. 166—54.6 **13 Claims**

1. A cutting device adapted for cutting a flexible line on which a well tool is suspended in a well, comprising: an elongated body having a longitudinally extending channel adapted

to slidably receive the line to be cut; a first blade member fixedly mounted in said body and having a first surface defining a first cutting edge with a recessed middle portion, said first cutting edge being disposed around one side of said channel; a second blade member having a second surface slidably mounted on said first surface, said second surface defining a second cutting edge having a recessed middle portion, said second cutting edge being movable from a position around the opposite side of said channel along a path intersecting said



channel substantially perpendicularly to the longitudinal axis thereof; and an actuating member engageable with said second blade member responsive to longitudinal force for causing sliding movement of said second blade member to cut the line, said first and second surfaces being coaxially disposed cylindrical surfaces with their common axes extending perpendicularly through the longitudinal axis of said channel, thereby producing a rotation of said second blade member about said common axis during said sliding movement.

3,926,253

WELL CONDUIT CEMENTING ADAPTER TOOL

John A. Duke, 1311 Beaumont St., Apt. 44, Baytown, Tex. 77520

Filed May 28, 1974, Ser. No. 473,487
Int. Cl.² E21B *33/05*
U.S. Cl. 166—88 **17 Claims**

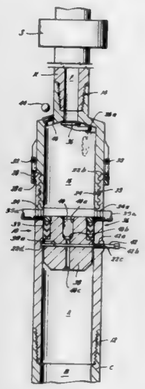
1. A well conduit adapter for use during cementing of a well conduit in a well, including:

a substantially tubular adapter housing having an upper end and a lower end;

means mounted with said lower end of said adapter housing for connecting said adapter housing with the well conduit to be cemented;

means mounted with said upper end of said adapter housing for connecting said adapter housing with a drilling kelly; said housing having a flow passage extending therethrough for communicating the flow passage of the drilling kelly with bore of the well conduit; and

plug means releasably disposed in said housing and having a closable opening formed therethrough for enabling circulation through said opening and said flow passage when said plug means is disposed in said housing and operable when actuated to move from said housing to



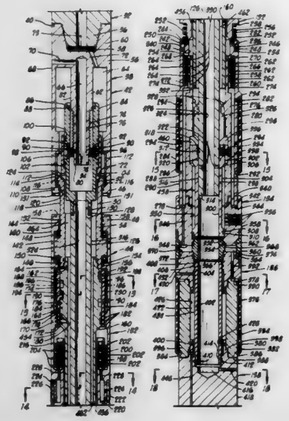
reduce contamination of cement moving through said flow passage from said housing.

3,926,254

DOWN-HOLE PUMP AND INFLATABLE PACKER APPARATUS

Robert T. Evans; Alonzo E. Cummins, and Merlin F. Anderson, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 20, 1974, Ser. No. 534,702
Int. Cl.² E21B *43/00, 33/127*
U.S. Cl. 166—106 **20 Claims**



1. A down-hole pump and inflatable packer tool adapted to be lowered on a tubular member into a well for isolating at least one zone in the well, comprising:

a tubular upper housing assembly having an upper end portion and a lower end portion and positioned below the tubular member;

means for securing the upper end portion of said upper housing to the tubular member in communication therewith;

a tubular lower housing assembly positioned below said upper housing assembly and having an upper end portion and a lower end portion;

a tubular mandrel assembly having an upper end portion and a lower end portion with the upper end portion thereof secured in communication with the lower end portion of said upper housing assembly in nonrotatable, longitudinal sliding engagement therewith, and with the lower end portion thereof in communication with the upper end portion of said lower housing assembly in rotatable engagement therewith;

an annular pump cavity formed within said tubular lower housing intermediate the inner periphery thereof and the outer periphery of said tubular mandrel assembly;

an annular pump piston longitudinally slidably disposed within said annular pump cavity;

a pump intake passageway in said lower housing assembly communicating between said annular pump cavity and the exterior of said lower housing assembly;

intake check valve means disposed in said pump intake passageway for permitting fluid flow from the exterior of said lower housing assembly through said intake passageway to said annular pump cavity and, alternately, preventing fluid flow through said intake passageway in the opposite direction;

inflatable packer means carried by said lower housing assembly for expanding to seal against the wall of the well to isolate at least one zone in the well in response to the application of fluid pressure to the interior thereof;

a pump exhaust passageway in said lower housing assembly communicating between said annular pump cavity and the interior of said inflatable packer means;

exhaust check valve means disposed in said pump exhaust passageway for permitting fluid flow from said annular pump cavity through said exhaust passageway to the interior of said packer means and, alternately, preventing fluid flow through said exhaust passageway in the opposite direction; and

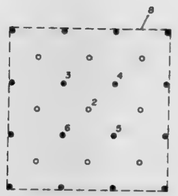
means mutually interconnecting said tubular mandrel assembly, said annular pump piston and said lower housing assembly for inparting longitudinal reciprocal motion to said annular pump piston within said annular pump cavity in response to rotation of said upper housing assembly relative to said lower housing assembly by the tubular member to pump fluid from the well into said inflatable packer means through said pump intake passageway and intake check valve means and said pump exhaust passageway and exhaust check valve means to expand said inflatable packer means against the wall of the well to isolate at least one zone in the well.

3,926,255

WATERFLOODING EMPLOYING SURFACTANTS DERIVED FROM METALLIC SOAPS

Sherrod A. Williams, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 7, 1974, Ser. No. 521,595
Int. Cl.² E21B *43/22*
U.S. Cl. 166—270 **4 Claims**



1. In the recovery of oil from a subterranean oil reservoir penetrated by spaced injection and production systems, the method comprising:

a. contacting a petroleum oil containing divalent metal soaps with an aqueous mineral acid solution to convert said soaps to organic acids,

b. injecting said organic acids into said reservoir via said injection system,

c. injecting into said reservoir via said injection system an aqueous alkaline solution to neutralize said organic acids to surface-active monovalent metal soaps,

d. thereafter introducing into said reservoir via said injection system an aqueous flooding medium to displace oil to said production system, and

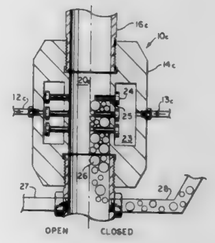
e. recovering oil from said production system.

3,926,256

METHODS AND APPARATUSES FOR CONTROLLING AND PREVENTING BLOW-OUTS IN WELLS

Richard H. McCall, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 383,867, July 30, 1973, abandoned. This application Dec. 9, 1974, Ser. No. 530,782
Int. Cl.² E21B *33/035, 35/00*
U.S. Cl. 166—285 **10 Claims**



1. A method for controlling fluid flow and preventing blowouts in offshore well including a well tubing extending from the bottom up to the surface of a body of water comprising the method steps of,

a. forming a chamber in a housing for interconnecting two ends of the well tubing,

b. forming actuatable pins in the housing for being extendible into the chamber and for being retractable from the chamber,

c. inserting sealer material below the pins for catching and lodging on the extended pins for forming an impermeable plug for sealing the well tubing fluid tight, and

d. retracting the pins from the chamber for opening the wall tubing to free full fluid flow.

3,926,257

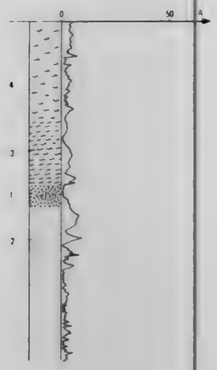
WELL CEMENTING PROCESSES

Jacques Marrast, Marly-le-Roi; Louis Minssieux, Rueil-Malmaison, and Eric Blondin, Montesson, all of France, assignors to Gaz de France and Institut Francais du Petrole, both of, France

Filed May 14, 1974, Ser. No. 469,822
Claims priority, application France, May 18, 1973, 73.18124
Int. Cl.² E21B *33/13, 43/00*
U.S. Cl. 166—293 **26 Claims**

1. In a process for cementing a casing in a well traversing at least one gas-containing formation in which cement is placed in the annulus formed between the wellbore and the casing, the improvement wherein cementing is effected by injecting a

cement slurry containing a foaming agent which by cooperating with the gas of the formation produces a foam barrier



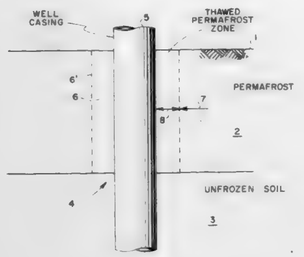
which prevents any subsequent migration of gas through the cement slurry during the setting of the cement slurry.

3,926,258
METHOD FOR REDUCING FORMATION PERMEABILITY WITH GELLED POLYMER SOLUTION HAVING DELAYED GEL TIME
James E. Hessert, and Chester C. Johnston, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Continuation-in-part of Ser. No. 318,847, Dec. 27, 1972, abandoned. This application Feb. 12, 1974, Ser. No. 441,848
Int. Cl.² E21B *33/138, 43/22*
U.S. Cl. 166—294 **14 Claims**

1. A method for altering the permeability of a subterranean formation with a gelled solution of a polymer having an increased gel time, which method comprises:
- mixing (a) one of a polyacrylamide, a polysaccharide, a cellulosic polymer, or mixtures thereof, (b) a compound of a multivalent metal capable of furnishing multivalent metal ions, and (c) water, to form a first mixture;
- thereafter mixing a complexing agent with said first mixture to form a second mixture;
- thereafter forming a third mixture by mixing with said second mixture a reducing agent capable of reducing at least a portion of said multivalent metal ions to a reduced valence state and cause gelation of said solution;
- said complexing agent being capable of complexing with at least a portion of said reduced multivalent metal ions to provide said increased gel time; and
- passing said third mixture having an increased gel time into said formation.

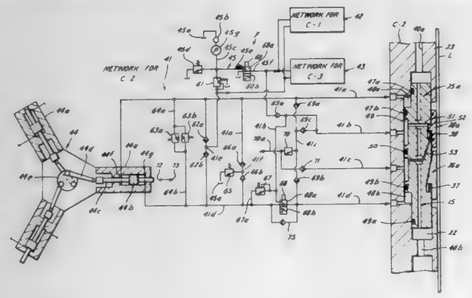
3,926,259
METHOD FOR NORMALIZING STRESSES AND STRAINS IN A WELL CASING IN A PERMAFROST ZONE
Thomas K. Perkins, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Mar. 31, 1975, Ser. No. 563,598
Int. Cl.² E21B *43/00;* **E02B** *3/00;* **E21B** *7/00*
U.S. Cl. 166—302 **7 Claims**

1. A method for rendering stresses and strains more uniform throughout a length of well casing that is adjacent an at least partially thawed permafrost zone, said thawed zone containing thawed soil and liquid in the pores thereof, said thawing having been caused by one or more well operations, said method comprising at least limiting said well operations so that refreezing can occur in at least part of said thawed zone, allowing said refreezing to occur in said thawed zone until said



casing can physically move relative to said thawed soil, and thereafter continuing said well operations.

3,926,260
WIRELINE CONTROL SYSTEM AND METHOD
Damon T. Slator, Houston, Tex., assignor to Bowen Tools, Inc., Houston, Tex.
Filed May 28, 1974, Ser. No. 474,029
Int. Cl.² E21B *19/08*
U.S. Cl. 166—315 **34 Claims**

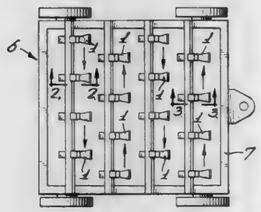


1. A wireline control unit for moving a wireline in a well, comprising:
- a housing adapted for mounting on a well tubing extending downhole in a well and pressure control means for maintaining said housing substantially at well pressure;
- an actuator assembly mounted in said housing for movement longitudinally thereof between first and second positions;
- gripping means for grippingly engaging said wireline, said gripping means being mounted for longitudinal movement with said actuator assembly and for relative movement with respect thereto for alternately gripping and releasing said wireline; and
- a fluid system connected with said actuator assembly for movement thereof for feeding said wireline longitudinally into the well with said gripping means or for braking movement of said wireline when the wireline is coming out of the well.

20. A method for sequentially moving a wireline into and out of a well, comprising the steps of:
- gripping said wireline with a first gripping means and moving said wireline through a first stroke portion;
- gripping said wireline with a second gripping means and moving said wireline through a second stroke portion;
- releasing said first gripping means from said wireline after said wireline is gripped by said second gripping means whereby said wireline is sequentially gripped and released to move said wireline into or out of said well;

gripping said wireline with a third gripping means and moving said wireline through a third stroke portion; and
releasing said second gripping means for said wireline after said wireline is gripped by said third gripping means.

3,926,261
HARROW DEVICE
Jonas F. Kjellberg, Frielsberg, Sweden, assignor to SKF Industrial Trading and Development Company B.V., Jutphaas, Netherlands
Filed Nov. 14, 1974, Ser. No. 523,907
Claims priority, application Sweden, Nov. 30, 1973, 7316192
Int. Cl.² A01B *23/02, 23/04, 19/02*
U.S. Cl. 172—688 **6 Claims**

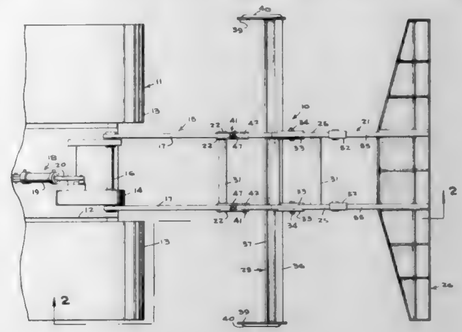


1. Harrow tooth for spring harrows comprising an elongated generally trapezoidally shaped member having a central section of semicircular form and two leaf-shaped parts extending in opposite directions from said central section and being the mirror image of one another, the leaf-shaped parts being angularly offset to one side of a transverse plane through said central section so that they project forwardly in the running direction of the harrow, the side edges of each leaf-shaped part being twisted about its longitudinal axis and the outer transverse edge of each leaf-shaped part defining an angle of less than 90° with one of its side edges and an angle of greater than 90° with its other side edge.

6. An assembly comprising a plurality of harrow teeth as claimed in claim **4** arranged in rows wherein every second row is oriented in a predetermined manner to balance the side oriented forces acting on the teeth during operation.

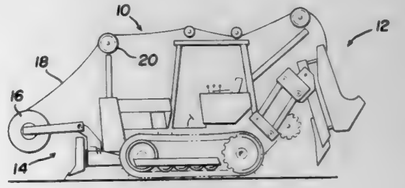
3,926,262
PIGGYBACK MOGUL GRADER
Merle H. Brooks, Star Rte., Stevens Pass Ski Area, Leavenworth, Wash. 98826
Filed May 7, 1974, Ser. No. 467,813
Int. Cl.² E02F *3/12*
U.S. Cl. 172—780 **2 Claims**

1. In a piggyback mogul grader, a vehicle including a body portion having a reversing mechanism thereon, a boom connected to said reversing mechanism and said boom including a pair of spaced parallel side members, plates secured to said side members, a frame including a pair of spaced parallel arms pivotally connected to said plates, a compactor mounted on the outer ends of said arms, blade depth adjustment control members on said frame, a grader unit connected to said frame including a pair of spaced parallel support members connected to said arms, a pair of mounting members adjustably connected to said support members, said grader unit including a blade having a stiffener extending longitudinally across the rear surface thereof, end plates on the ends of said grader blade, a cutting bit on the lower edge of the grader blade, and



ribs on the outer surfaces of the last named end plates providing stiffeners.

3,926,263
POWER TILT DOZER AND REEL CARRIER
Claude M. Frisbee, and John M. Baylor, both of Bettendorf, Iowa, assignors to J. I. Case Company, Racine, Wis.
Filed June 6, 1974, Ser. No. 477,120
Int. Cl.² E02F *3/76*
U.S. Cl. 172—801 **14 Claims**

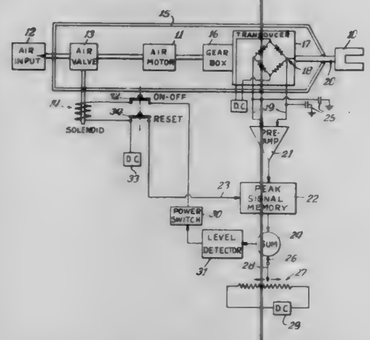


1. A bulldozing and reel carrier assembly for a bulldozer, or the like, said bulldozer having a bulldozing blade mounted across the front of a U-shaped push frame assembly, means for tilting said blade about an axis parallel to the longitudinal axis of said bulldozer and means for raising and lowering said frame, wherein the improvement comprises:
- a pair of parallel, spaced support arms mounted on said push frame adjacent the blade, said arms projecting upwardly and forwardly from said push frame to overly the blade;
- a support beam mounted between the pair of support arms vertically above said bulldozing blade; and
- a pair of spaced parallel reel support arms rigidly connected to said support beam and extending forwardly from said bulldozing blade to support a cable reel, or the like, ahead of and above said blade to enable simultaneous bulldozing and cable dispensing.

3,926,264
CONTROL CIRCUIT FOR A POWER TOOL
Francis G. Bardwell, Elmhurst, and Edmund C. Dudek, St. Charles, both of Ill., assignors to Thor Power Tool Company, Aurora, Ill.
Filed Nov. 23, 1973, Ser. No. 418,762
Int. Cl.² B25B *23/14*
U.S. Cl. 173—12 **8 Claims**

1. A handheld torque applying power tool, comprising a power output shaft, a drive motor connected to said shaft,

means for sensing the torque output of said shaft and for providing a torque signal having a characteristic which represents the torque output level, means for providing a maximum torque reference level signal, reactive reference signal means providing a reference signal of a desired value below said maximum torque level signal, means for comparing said reactive reference signal and said torque level signal being operable to turn said motor on and off a plurality of times until the maximum torque is achieved, means for comparing said torque signal and said maximum torque reference signal and providing an output signal when said maximum outut torque level is attained, and motor control switch means connected to control energization of said motor, said switch means being responsive to said maximum torque comparing means for turning said motor off when said maximum output torque level is attained.

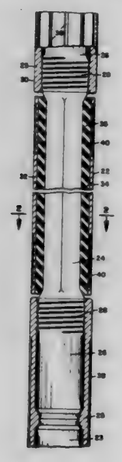


3,926,265

DRILL STEEL FOR PERCUSSIVE DRILLING DEVICES

John V. Bouyoucos, Brighton, N.Y., assignor to Hydroacoustics, Inc., Rochester, N.Y.

Filed June 10, 1974, Ser. No. 477,738
Int. Cl.² E21C 7/00; E21B 17/00
U.S. Cl. 173—80 29 Claims



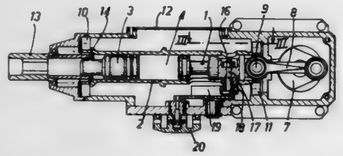
1. Drill steel for use with percussive tools which generate force pulses at a certain repetition frequency comprising:
   a. a force pulse transmission member,
   b. a sheathing surrounding said member, said sheathing being spaced from said transmission member to define a chamber separating said member from said sheathing, and
   c. means in said chamber connecting said sheathing and said transmission member to cause said sheathing to have a resonant frequency for motion of said sheathing in the direction of force pulse transmission along said transmission member which resonant frequency is below the force pulse transmission frequency whereby said sheathing is dynamically isolated from said transmission member, said means comprising a resilient member of elastic material located in said chamber and connecting said sheathing and said transmission member, said sheathing having a certain mass and said resilient member having a certain compliance related to the mass of said sheathing together to constitute a mass spring system which is resonant at said resonant frequency.

3,926,266

ELECTROPNEUMATIC HAMMER

Roger Dorgnon, Saint-Peray, France, assignor to Societe de Prospection et d'Inventions Techniques SPIT, Bourg-les-Valence, France

Filed July 30, 1974, Ser. No. 493,660
Claims priority, application France, Aug. 10, 1973, 73.29404
Int. Cl.² B25D 9/04
U.S. Cl. 173—110 10 Claims



1. An electropneumatic hammer of the type including a rotatable sleeve member having an axis, a driving piston mounted in said sleeve member for reciprocating movement along the axis of the sleeve member, an electric motor for effecting the reciprocating movement, a tool-holder spindle, and a striking piston mounted in said sleeve member and driven by said driving piston, the striking piston being disposed in such a manner as to impart a strike to a tool mounted in the tool-holder spindle, the improvement comprising:
   means for causing reciprocal rotational movement of said sleeve member about its axis upon reciprocation of said driving piston in a direction parallel to the axis of said sleeve member,
   means for causing reciprocal rotational movement of said driving piston about the axis of said sleeve member upon the reciprocating movement of said driving piston which can add to or subtract from the reciprocal rotational movement of the sleeve member imparted to it by the reciprocation of the driving piston, and
   means for translating the reciprocal rotational movements of the sleeve member into unidirectional rotation of the toolholder spindle.

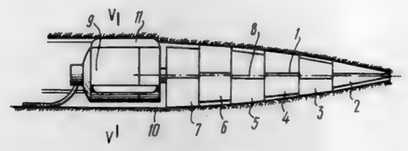
3,926,267

DEVICE FOR DRIVING HOLES IN THE GROUND

Valentin Konstantinovich Svirschevsky, Krasny prospekt, 98, kv. 103; Anatoly Alexandrovich Orekhov, ulitsa Zorge, 257, kv. 13; Boris Grigorievich Tregubov, ulitsa Cheljuskintsev, 44, kv. 37, and Andrei Alexeevich Trofimuk, ulitsa Zolotodolinskaya, 87, all of Novosibirsk, U.S.S.R.

Filed July 31, 1974, Ser. No. 493,733
Int. Cl.² E21B 11/02
U.S. Cl. 175—19 8 Claims

1. A device for rolling holes in the ground and said device having a longitudinal axis comprising: a crankshaft; substantially tapered rollers having a smooth surface, said tapered rollers being essentially the transverse parts of a conically-shaped body and mounted in succession on said crankshaft; said tapered rollers having axes, the axes of the tapered rollers being arranged at an angle to the longitudinal axis of the device and disposed in planes essentially parallel to the longitudinal axis; and a drive having a casing, said drive imparting rotary motion to the crankshaft and axially displacing the device in the hole.

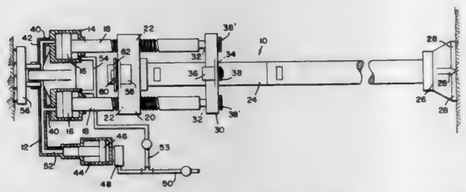


3,926,268

METHOD OF BORING ROCK

William D. Coski, Seattle, Wash., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Feb. 19, 1975, Ser. No. 550,931
Int. Cl.² E21B 7/00, 19/08
U.S. Cl. 175—62 9 Claims



9. A method of boring rock along an axis, comprising the steps of:
   positioning rock cutter means in contacting engagement with a surface of rock; and
   applying only an axially-directed thrust force to said rock cutter means, to cause localized failure to said surface; wherein
   said force-applying step comprises applying a force taken from a range of from one-half million pounds to three million pounds of thrust to said rock cutter means.

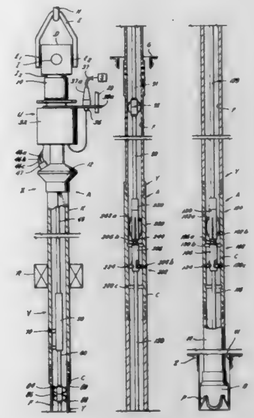
3,926,269

METHOD AND APPARATUS FOR EARTH BORING

Ray H. Cullen, and Jimmie R. Aker, both of Houston, Tex., assignors to Roy H. Cullen Research, Houston, Tex.

Filed Mar. 7, 1974, Ser. No. 448,975
Int. Cl.² E21B 7/00, 3/10
U.S. Cl. 175—104 34 Claims

1. Apparatus for earth boring with a rotary drilling rig, including:
   a drilling string supported by the drilling rig and having a longitudinal bore formed therethrough to enable desired circulation of drilling fluids;
   a rotary drilling bit mounted on a lower end of said drilling string for penetrating earth formations when rotated;
   motor means mounted with said drilling string and operably connected with said drilling bit to effect desired earth formation penetrating rotation of the drilling bit when electrical power is supplied to said motor means;
   electrical power conductor means disposed in said bore of said drilling string for communicating electrical power to said motor means;
   means for providing controllable electrical power disposed exteriorly of said drilling string;
   means associated with said drilling string for electrically disconnecting and connecting said electrical power conductor means with said means for providing controllable electrical power, said means for electrically disconnecting and connecting having a member movable in said bore of said drilling string for effecting electrical disconnection and connection with said electrical power conductor means positioned in said bore; and
   means for moving said member to effect said electrical disconnection and connection.

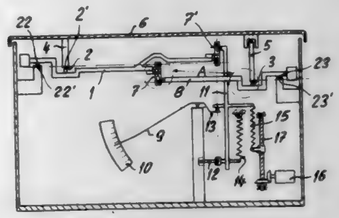


3,926,270

FORCE MEASURING DEVICE

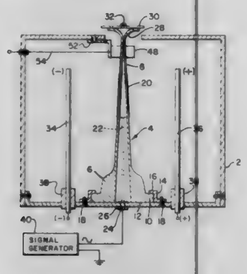
Johann Meier, Brione sopra Minusio, Switzerland, assignor to Precisa AG Rechenmaschinenfabrik, Zurich, Switzerland

Filed Aug. 12, 1974, Ser. No. 496,846
Claims priority, application Switzerland, Aug. 14, 1973, 11665/73
Int. Cl.² G01G 1/18
U.S. Cl. 177—251 6 Claims



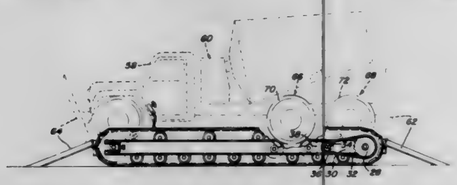
1. A force measuring device in which a force to be measured is transmitted from a measuring position to an indicating device to be displayed thereon, said measuring device comprising: leverage means operably responsive to the force to be measured applied thereto at said measuring position, said leverage means including at least two levers coupled to said indicating device; coupling means for interconnecting said levers, said coupling means having two adjacently disposed end members which are respectively adjustably mounted on said levers at the point of interconnection therebetween for longitudinal movement relative thereto, and housing means provided with a grooved recess for flexibly and securely accomodating said adjustable end members therein, said two levers being orthogonal to the plane of said grooved recess, and said end members being located in said plane.

3,926,271
MICROBALANCE
Harvey Patashnick, Albany, N.Y., assignor to Georg Ruprecht, Englewood, Calif., a part interest
Filed Feb. 3, 1975, Ser. No. 546,273
Int. Cl.² G01G *3/14*
U.S. Cl. 177—210 **21 Claims**



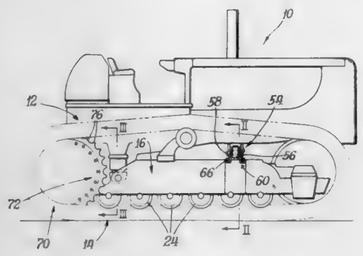
18. A mass measuring device comprising an elongate elastic element having a first end which is adapted to support a mass to be measured and a second larger end which is anchored so that said first end and the mass carried thereby are free to oscillate, said element being tapered from said second end to said first end in a predetermined manner so that said element will have a substantially constant curvature when it is flexed dynamically relative to said second end, drive means for dynamically flexing said element so that its said first end will oscillate at a resonant frequency, and means for sensing the resonant frequency of oscillation of said element with and without said mass, whereby the magnitude of said mass can be determined by measuring the difference in the resonant frequency of said element with and without said mass.

3,926,272
CRAWLER TRACK EQUIPPED VEHICLE PALLET WITH WHEEL SUPPORT DRIVE ROLLERS
Alman A. Weber, 14926 Broadgreen, Houston, Tex. 77024
Filed Oct. 30, 1974, Ser. No. 519,284
Int. Cl.² B62D *55/08*
U.S. Cl. 180—1 C **8 Claims**



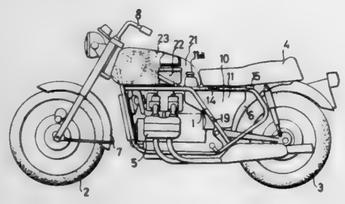
1. An elongated vehicle pallet including opposite side longitudinally arranged crawler track assemblies for support of said pallet from a soft ground surface, said pallet including at least one pair of opposite side sets of journaled transverse rollers with each set of rollers including a pair of transverse rollers spaced apart longitudinally of said pallet and defining an upwardly opening cradle recess for cradling the lower peripheral portions of an associated drive wheel therein with said drive wheel supported from and disposed in driving engagement with said rollers, means drivingly connecting at least one roller of each set of rollers to the corresponding crawler track assembly, said crawler track assemblies each having an independently operable brake assembly operatively associated therewith, said pallet including upper surface portions adapted to support a wheeled vehicle therefrom including a pair of opposite side drive wheel assemblies driven from a differential assembly and with said drive wheel assemblies cradled by said sets of rollers and, said brake assemblies including hydraulic cylinder actuators each operatively connected to the corresponding brake assembly by means of a flexible hydraulic hose for portability of said actuators and to enable the latter to be supported in the operator's cab of a wheeled vehicle supported on said pallet.

3,926,273
TRACK MOUNTING ARRANGEMENT HAVING DUAL GAUGE SETTINGS
Gary D. Blomstrom, Waverly, Nebr.; Victor Randour, Aurora, and Lyle E. York, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 9, 1974, Ser. No. 504,054
Int. Cl.² B62D *55/00*
U.S. Cl. 180—9.48 **12 Claims**



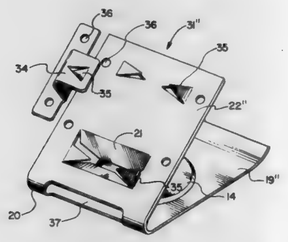
1. A crawler tractor comprising:
main frame means;
at least one longitudinally-extending track frame on one side of the main frame;
connecting means between the rearward end of said track frame and the main frame means, said connecting means comprising a member defining a first arm associated with said track frame, said member further comprising a remaining arm associated with the main frame means, the member being movable to a first position wherein the first arm defines a first position of the rearward end of the track frame laterally of the main frame means, the member being movable to a second position to determine a second position of the rearward end of the track frame generally laterally of the first-defined position of the rearward end of the track frame.

3,926,274
FUEL TANK APPARATUS FOR A MOTORIZED TWO-WHEELED VEHICLE
Minoru Morioka, Niiza, and Tetuo Mikami, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 31, 1974, Ser. No. 519,698
Claims priority, application Japan, Nov. 2, 1973, 48-122716
Int. Cl.² B62D *63/04*
U.S. Cl. 180—35 **6 Claims**



1. In a motorized two-wheeled vehicle having a vehicle body composed of a pipe frame, a front wheel, a rear wheel, driver's seat in the frame, an internal combustion engine mounted at the front lower portion of the frame, and a fender for the rear wheel at the rear portion of the frame, an improvement wherein a fuel tank is mounted on said body, said pipe frame, seat, engine and fender defining a substantially enclosed chamber in which said fuel tank is fixedly secured, said fuel tank having a shape substantially conforming to the shape of said chamber; said pipe frame comprising a pair of left and right side frames having a space therebetween, said chamber being defined within said space, support means mounting said fuel tank from said side frames, said support means comprising a pair of spaced brackets secured to said side frames, and means suspending said fuel tank from said brackets, said fuel tank having a concavity therein at the front thereof, and resilient means supported from said side frames and engaged in said concavity.

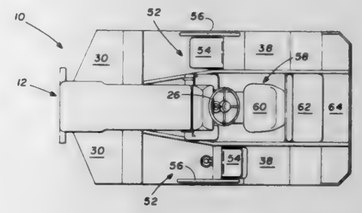
3,926,275
ACCELERATOR PEDAL SNAP ACTING SIGNALING DEVICE FOR ESTABLISHING A PREDETERMINED FORCE-DISTANCE CHARACTERISTIC
Leonard S. Nersesian, 7138 Scarborough Peak Drive, Canoga Park, Calif. 91304
Filed June 24, 1974, Ser. No. 482,369
Int. Cl.² G05G *01/14;* **B60K** *31/00*
U.S. Cl. 180—77 R **18 Claims**



1. A device for establishing a predetermined force-distance characteristic for an accelerator pedal, said device comprising:
an elastic member shaped so as to have a first force-distance characteristic at relatively short distances, and a second force-distance characteristic at relatively long distances, said characteristics defined graphically by applied force as an ordinate and distance of movement as an abscissa, the slope of said first characteristic being substantially greater than that of said second characteristic, said member including means exhibiting a snap action from said first characteristic to said second characteristic at a predetermined distance of movement, the ratio of applied force to corresponding distance of movement being within the elastic limit of said member; and
mounting means for mounting said elastic member in relation to said accelerator pedal, whereby movement of said pedal in the direction of increased acceleration increases an applied force applied to said elastic member to effect said snap action.

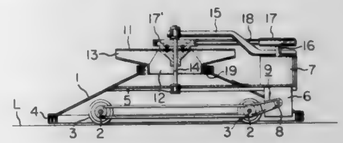
3,926,276
FIVE MAN MINE PERSONNEL CARRIER
Gerald Bruce Sien, Carlsbad, N. Mex., assignor to Sien Equipment Company, Carlsbad, N. Mex.
Filed June 6, 1974, Ser. No. 476,917
Int. Cl.² B62D *47/00*
U.S. Cl. 180—89 R **10 Claims**

1. A mine personnel carrier comprising:
a frame;
an engine mounted on the frame;
transmission means mounted on the frame behind the engine and operatively connected thereto;
a pair of front steering wheels mounted on opposite sides of the front end of the frame;
a pair of rear drive wheels mounted on opposite sides of the rear end of the frame and operatively connected to the engine through the transmission means to propel the vehicle;
a pair of front fenders mounted on the frame and each extending over one of the front steering wheels;
a pair of rear fenders mounted on the frame and extending over the rear wheels;
a pair of normally generally horizontally disposed members mounted on opposite sides of the frame and each extending between the rear end of one of the front fenders and the front end of the corresponding rear fender;



seat means mounted over the transmission means to define an operator's compartment including means for manipulating the front wheels to effect steering of the vehicle, means for regulating the operation of the engine, and means for regulating the operation of the transmission means; and
seat means mounted on the front portion of each rear fender whereby personnel may be transported on each side of the vehicle in the area extending over the horizontally disposed members between the front and rear fenders;
the areas extending between the seat means and the front fenders and over the horizontally disposed members being open to receive the legs of personnel sitting on the seat means and facing forwardly.

3,926,277
VEHICLE DRAWN BY SUCTION AGAINST THE SURFACE OF TRAVEL
Makoto Shino, Asaka, and Mitsuo Saito, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 23, 1974, Ser. No. 463,377
Claims priority, application Japan, Apr. 25, 1973, 48-46073
Int. Cl.² B60B *37/00*
U.S. Cl. 180—115 **4 Claims**



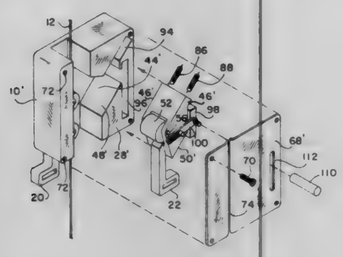
1. A vehicle comprising a hollow body of truncated cone formed to define an interior space, with an opening at the bottom; a plurality of travelling wheels suspended on said body; a labyrinth packing extending downwardly from the bottom peripheral edge of said body to near the surface over which the vehicle travels so as to serve the packing function in cooperation therewith; wheel drive means for driving at least one of said travelling wheels; a fan having a suction port opening into said body and a delivery port opening to the atmosphere and operable to reduce the air pressure in said

body; and fan drive means for driving said fan whereby said vehicle can travel freely over a surface with said body held drawn against the surface.

3,926,278
EMERGENCY ESCAPE SLING

Albert E. Molnar, R.R. No. 1, Box 22, Ringtown, Pa. 17967, and William J. Molnar, 5246 N. 2nd St., Phoenix, Ariz. 85012

Filed Jan. 8, 1974, Ser. No. 431,748
Int. Cl. A62b 1/14; B65h 59/14
U.S. Cl. 182—7 **24 Claims**



1. In an emergency escape system to permit the emergency egress of occupants from a building of the type including a flexible cable affixed to the building wherein the cable is vertically positioned relative to the building, the combination of

A. a blocking device removably associated with the cable,
1. said blocking device having a fixed body and a floating friction unit vertically movable within the body from a first position to a second position, the first position being above the second position,
2. said body including first means to contact the cable,
3. said floating friction including second means to contact the cable,
4. said fixed body including a first sling connection,
5. said floating friction unit including a second sling connection, whereby the weight of an occupant is applied to the blocking device at the first and second sling connections,
6. the weight of the occupany pulling the floating friction unit to the said second position,
7. the second means being urged into contact with the cable when the floating friction unit is pulled to the second position.

3,926,279
LUBRICATING APPARATUS

George E. Thrasher, Pontiac, Mich., assignor to Master Pneumatic-Detroit, Inc., Sterling Heights, Mich.

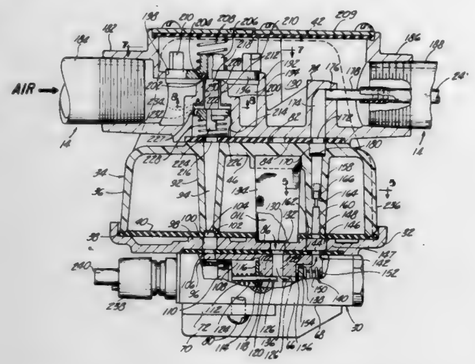
Filed Aug. 30, 1974, Ser. No. 502,203
Int. Cl.² F16N 13/16
U.S. Cl. 184—29 **30 Claims**

1. In a lubricator having a pump with an inlet and an outlet and being operable upon actuation to deliver a substantially predetermined quantity of lubricant through the outlet, a body which defines a passageway having an inlet and an outlet adapted for respective connection with upstream and downstream portions of an airline, a sensing element in said passageway movable to one position in response to starting of a flow of air in said passageway and being retained in said one position under the influence of said air flow for so long as it continues, and being returnable to another position in response to stopping of the air flow, said passageway having a branch through which pump actuating air is valved in response to each movement of said element to said one position, improved structure which comprises,

a lubricant reservoir having a top, a bottom, and a hollow interior for containing lubricant,

said body being mounted on said top and said pump being mounted on said bottom,

said bottom having a lubricant delivery port which communicates with said pump inlet,



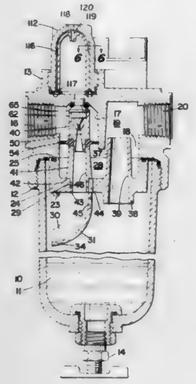
said branch including a portion which extends through the bottom of said body, and means forming a continuation of said branch having portions which extend through the top, hollow interior, and bottom of said reservoir,

said continuation being effective to conduct pump actuating air to said pump.

3,926,280
AIRLINE LUBRICATOR

Robert K. Hoffman, Plainwell, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed June 21, 1974, Ser. No. 481,497
Int. Cl.² F16N 7/34
U.S. Cl. 184—55 A **14 Claims**

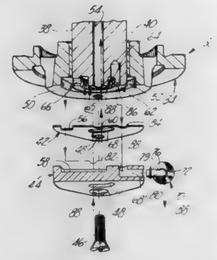


9. An airline lubricator comprising a bowl containing liquid lubricant, a housing attached to the bowl and having an inlet for air and an outlet for mixed air and atomized lubricant, and a main passage that connects the inlet directly to the outlet separately of the bowl, an atomizer nozzle assembly in said passage with internal means for atomizing a portion of the lubricant and for mixing it with a portion of said air, means for delivering a portion of said air and a portion of said lubricant to the interior of said nozzle assembly, and means for discharging said mixed air and atomized lubricant to the interior of said bowl, and additional means forming another passage in said housing connecting the interior of the bowl with said main passage, said additional means including a tubular portion projecting from a wall of the housing into said main passage and radially spaced from the wall of said main passage to form an annular chamber therebetween that constitutes a portion of said main passage.

3,926,281
COMPRESSOR OIL PUMP WITH FILTER

Billy B. Hannibal, Tecumseh, Mich., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Mar. 21, 1974, Ser. No. 453,279
Int. Cl.² F04B 17/00; F01M 9/00
U.S. Cl. 184—6.16 **12 Claims**

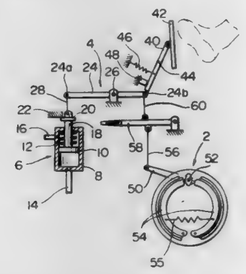


11. An oil pump and filter device for a gas compressor comprising in combination a crankshaft with a lubricating oil passage extending therein from one end thereof to conduct oil for the lubrication of the gas compressor, a sump for lubricating oil disposed adjacent the crankshaft, a centrifugal impeller fixed to said crankshaft for rotation therewith and communicating with both lubricating oil in the sump and said oil passage for discharging lubricating oil drawn from the sump into said oil passage in response to rotation of said impeller by the crankshaft, filter means adapted to receive oil from said impeller and to remove solid contaminants from such oil and retain such solid contaminants while returning filtered oil to said sump, and a valve communicating with said impeller and said filter means and responsive to rotation of said impeller to intermittently bypass a portion of the lubricating oil from said impeller via said filter means to said sump at least once per revolution of said impeller.

3,926,282
EMERGENCY BRAKING SYSTEM

Hiroshi Tanaka, Musashino, and Isao Morita, Tokyo, both of Japan, assignors to Caterpillar Mitsubshi Ltd., Tokyo, Japan

Filed Sept. 16, 1974, Ser. No. 506,398
Claims priority, application Japan, Sept. 19, 1973, 48-108824
Int. Cl.² F16D 65/32
U.S. Cl. 188—106 F **4 Claims**



1. In a vehicle provided with a pressurized hydraulic system, having a brake pedal, a pivotally mounted brake lever associated with said brake pedal and service brakes operatively controlled by depressing said brake pedal and activated by said hydraulic system, an emergency brake system comprising:

separate brake means operable for stopping said vehicle independently of said service brakes;

detector and actuator means connected to the hydraulic system for sensing a loss of pressure in said hydraulic system;

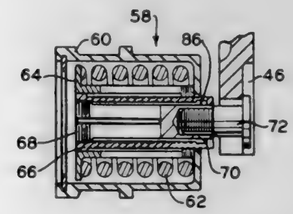
linkage means connecting said separate brake means to said detector and actuator means for operating said separate brake means when said detector and actuator means senses a loss of hydraulic pressure; and

mechanical interlock means associated with said linkage means and operable to prevent application of said separate brake system until said brake pedal is at least partially depressed.

3,926,283
TELESCOPIC PISTON FOR ADDED BRAKE WEAR ADJUSTMENT

Richard L. Crossman, Tallmadge, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Division of Ser. No. 318,882, Dec. 27, 1972, Pat. No. 3,828,894. This application May 6, 1974, Ser. No. 467,396
Int. Cl.² F16D 65/54
U.S. Cl. 188—196 B **8 Claims**



1. A telescopic brake piston return mechanism, contained within a casing, comprising three interengaging tubular members, two such members receivably engaged within immediately larger tubular members, the largest such tubular member being a spring follower receivably engaged with the housing of the return mechanism and the smallest tubular member being adapted to engage the pressure plate of the brake disk stack, the largest and smallest of the tubular members being characterized by the presence of longitudinal slots therein and the other tubular member being a tubular sleeve.

3,926,284
ADJUSTING DEVICE FOR ACTIVATING BRAKE SHOES

Luis Iturriaga Notario, Picos de los Artilleros 160, Moratalaz, Madrid, Spain

Filed June 27, 1974, Ser. No. 483,798
Claims priority, application Spain, July 2, 1973, 193192[U]
Int. Cl.² F16D 65/60
U.S. Cl. 188—196 BA **2 Claims**

1. An automatic adjusting device for automatically adjusting vehicle brakes of the type including a drum, a pair of shoes having lining thereon and moveable against a biasing force into braking contact with said drum, a camshaft having a cam thereon and mounted such that rotation of said camshaft causes said cam to move said shoes into contact with said drum, and a braking drive device operatively connected to said cam shaft for selectively causing rotation thereof; said automatic adjusting device comprising:

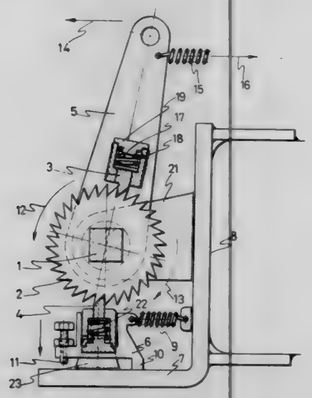
at least one ratchet wheel rigidly mounted on said cam shaft;

an activating lever freely rotatably mounted at a first end thereof about said cam shaft and connected at a second end thereof to said braking drive device;

at least one first ratchet cog mounted on said activating lever and radially biased into engagement with teeth of said at least one ratchet wheel, said first ratchet cog comprising means for rotating said ratchet wheel and said camshaft when said activating lever is moved by said braking drive device;

a rocking lever mounted for rotation, adjacent the periphery of said ratchet wheel, about an axis parallel to the axis of said camshaft;

at least one second ratchet cog mounted on said rocking lever and radially biased into engagement with teeth of



said ratchet wheel at a position diametrically opposite said first ratchet cog, rotation of said ratchet wheel causing rotation of said rocking lever;

first abutment element means on a first side of said rocking lever for limiting the extent of rotation of said rocking lever in a first direction;

second abutment element means on a second side of said rocking lever for limiting the extent of rotation of said rocking lever in a second direction; and

adjustment means for adjusting the position of at least said second abutment element means.

3,926,285

MOUNTING DEVICE FOR A BRAKE DISK

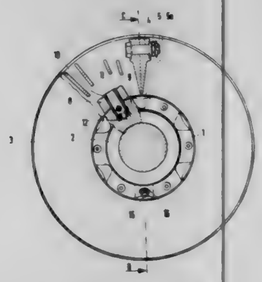
Fritz Preller, and Franz Prahl, both of Munich, Germany, assignors to Knorr-Bremse GmbH, Munich, Germany

Filed Feb. 6, 1975, Ser. No. 547,740

Claims priority, application Germany, Feb. 13, 1974, 7404882

Int. Cl.² F16D *65/12*

U.S. Cl. 188—218 XL **8 Claims**



1. A brake disk for a disk brake for vehicles comprising a hub for mounting on an axle, a brake annular element detachably connected to said hub, said annular element comprising a pair of spaced brake rings with radial cooling ribs therebetween, a plurality of radial extensions on said annular element and there being a radial bore through each said extension, a corresponding plurality of radial extensions on said hub and each hub radial extension having a radial hole therein aligned with a corresponding radial bore in said annular element radial extensions, a threaded nut on the bottom of each said hub radial hole, and a sleeve passing through each said radial bore into an aligned said hole to contact a said nut on the bottom thereof, said nut having a greater outside diameter than the inside diameter of said sleeve.

3,926,286

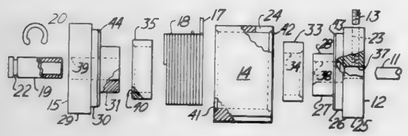
SPRING GRIP CLUTCH

Lee W. Johnson, Lake Elmo, Minn., assignor to Reell Precision Manufacturing Corporation, St. Paul, Minn.

Continuation-in-part of Ser. No. 329,352, Feb. 5, 1973, abandoned. This application Sept. 23, 1974, Ser. No. 508,069

Int. Cl.² F16O *11/06*

U.S. Cl. 192—41 S **6 Claims**



1. A one-way helical spring clutch comprising a tubular shaft or sleeve having an outside and an inside diameter, first and second hub members, each having an axial bore, supported on said shaft in axial alignment and having adjoining peripheral surfaces, and an expandable spring member grippingly encircling said surfaces, one of said hub members being rigidly attached to, and extending axially beyond, said shaft, the axial bore in the extended portion being of approximately the same diameter as the inside diameter of said shaft.

3,926,287

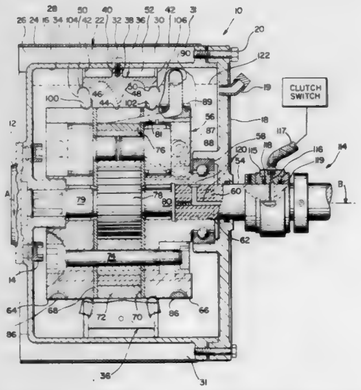
HYDRAULIC TRANSMISSION

Scott V. E. Taylor, 7516 Eton Ave., Canoga Park, Calif. 91302

Filed Aug. 22, 1973, Ser. No. 390,429

Int. Cl.² F16D *31/04*

U.S. Cl. 192—61 **12 Claims**



1. An improved transmission having a rotor supported on a drive shaft, a rotatable rotor casing supporting a driven shaft,

the rotor casing sealably surrounding, coaxial with and spaced from the rotor for containing fluid therebetween, the rotor including gear pump means and fluid inlet and outlet passage means leading to and from the pump means, the improvement comprising:

fluid stream splitter means fixed to the casing interiorly thereof for rotation therewith and for dividing fluid from the pump outlet passage means into first and second components,

first and second efficiency vane means each comprising a plurality of separate efficiency booster vanes fixed to the rotor circumferentially thereof in adjacently spaced relation from said splitter means on either side thereof and shaped to receive the respective fluid component redirected thereby, capture its energy and transfer it into the rotor, and

fluid scoop means fixed to the rotor extends over the major distance between the rotor and the casing, includes bidirectional fluid intake means, fluid turning means, and communicates with the fluid inlet passage means, said fluid scoop means being axially displaced from said fluid stream splitter means, the fluid inlet passage means being disposed in said rotor at a double acute angle in relation to said pump means.

3,926,288

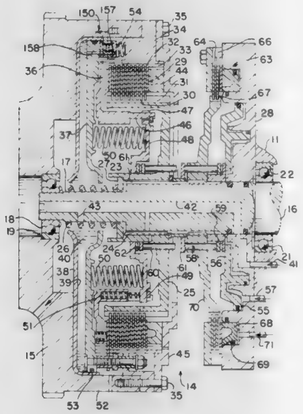
CENTRIFUGAL CLUTCH WITH OVERSPEED RELIEF VALVE

Karl A. Nerstad, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 3, 1974, Ser. No. 502,828

Int. Cl.² F16D *43/284*

U.S. Cl. 192—104 F **6 Claims**



1. In a clutch for transmitting torque from an engine to the input shaft of a transmission, said clutch including

a rotatable input member having means for connection to said engine and having means defining an annular fluid retaining chamber whereby centrifugal force generates fluid pressure in said chamber which is a function of engine speed and thereby the rate of rotation of said input member,

a driven hub disposed coaxially with respect to said input member and being drivingly coupled to said transmission input shaft,

a clutch pack of annular input clutch plates disposed coaxially with respect to said input member, said pack having at least one driving plate constrained for rotation with said input member and having at least one driven plate constrained for rotation with said driven hub,

an annular pressure plate disposed coaxially with respect to said clutch plates for exerting a force thereon tending to engage said driving and driven plates,

an annular clutch capacity modifying member disposed in said chamber of said input member and exposed to said fluid pressure therein, said input clutch capacity modifying member being movable axially in response to changes of said fluid pressure,

at least one engagement spring acting between said capacity modifying member and said pressure plate for exerting a force on said pressure plate tending to engage said input clutch plates,

at least one disengagement spring acting on said capacity modifying member in opposition to the force of said fluid pressure thereon whereby said engagement spring is ineffective to engage said input clutch plates until said fluid pressure reaches a first predetermined level, and further including

centrifugal overspeed relief means for automatically disengaging said clutch when engine speed has reached a second, higher predetermined level and for automatically re-engaging said clutch when speed drops below said second level whereby damage due to overspeeding is prevented.

3,926,289

VARIABLE SPEED TURNING CHUTE FOR RAW MATERIAL TO BE DISCHARGED

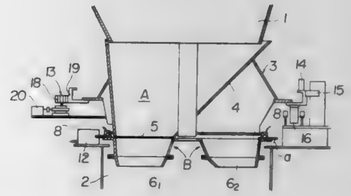
Kengo Yoshioka, and Teruhiko Shiraishi, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 20, 1973, Ser. No. 426,812

Claims priority, application Japan, Dec. 25, 1972, 48-2665[U]

Int. Cl.² B65G *11/12*

U.S. Cl. 193—23 **9 Claims**



1. A variable speed turning chute for raw materials to be discharged, comprising an upper part rotatable about an axis having means for guiding the raw material therethrough, a rotatable lower part mounted below said upper part and coaxial therewith, said lower part having two outlets formed therein, one of said outlets discharging the raw material guided to it by said means for guiding the raw material, driving means operatively connected to one of said upper and lower parts, and means interconnected between said upper and lower parts for maintaining said parts freely rotatable relative to each other for a predetermined angle and thereafter effecting engagement between said upper and lower parts for rotation thereof in unison so that one of said outlets of said lower part may be selectively aligned with said means for guiding the raw material, whereby raw material of different flow characteristics may be discharged through one of said outlets designed specifically therefor.

3,926,290
LOADING CHUTE FOR CARGO VESSEL

Imao Isojima; Yuzuru Doi, and Shinji Hara, all of Tamanoshi, Japan, assignors to Mitsui Shipbuilding & Engineering Co. Ltd., Tokyo and Kawasaki Steel Corporation, Kobe, both of, Japan

Filed Feb. 27, 1975, Ser. No. 553,691
Claims priority, application Japan, Mar. 4, 1974, 49-25045; Mar. 4, 1974, 49-25046
Int. Cl.² B65G *11/08, 11/14*
U.S. Cl. 193—27 **3 Claims**

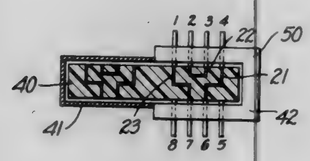


1. A loading chute for cargo vessel comprising a telescopically constructed duct which comprises a plurality of unit ducts of successively enlarged horizontal cross sections, the uppermost unit duct being provided with trays which are fixed in said unit duct so as to form a zigzag ladder structure therein, each of the second and other lower unit ducts being respectively provided with trays which are suspended by rope means from the adjacent upper unit duct so as to form a zigzag ladder structure, and each of the second and other lower unit ducts being respectively provided with engaging means at the lower end thereof so that, when a unit duct is retracted over the adjacent upper unit duct, said engaging means engage with the rear portion of each tray located above said engaging means thereby moving said tray in a downward folded position.

3,926,291
CODED TOKEN AND ACCEPTOR

William F. Burke, Westminster; Lee T. Crowell, Whittier; Robert C. Greenwood, Cypress, and Thomas E. Jones, Costa Mesa, all of Calif., assignors to Pan-Nova, Inc., Santa Fe Springs, Calif.

Filed May 6, 1974, Ser. No. 467,088
Int. Cl.² G07F *1/06*
U.S. Cl. 194—4 F **15 Claims**

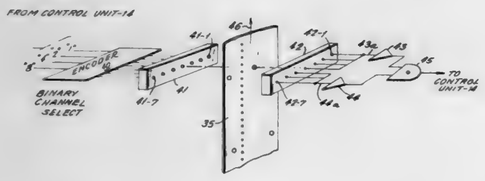


1. A coded token for token operated dispensers and the like, comprising:
- a disc of electrical insulating material having opposed surfaces;
- separate concentric and spaced circles of electrically conductive material on at least one of said surfaces; and
- an electrical conductor separate from and extending through said insulating material and electrically connecting selected ones of said circles.

3,926,292
FORMAT CONTROL TECHNIQUE AND APPARATUS THEREFOR

Paul S. Ramsden, Jr., Hudson, N.H., assignor to Centronics Data Computer Corporation, Hudson, N.H.

Filed Aug. 22, 1974, Ser. No. 499,633
Int. Cl.² B41J *5/36, 25/00*; G06K *7/14*
U.S. Cl. 197—1 R **13 Claims**



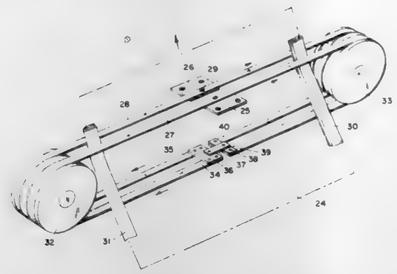
1. Format control apparatus for printers having means for advancing a paper document and printing means movable relative to said paper document, said format control apparatus comprising:
- a data storage medium for storing format data words representing the desired printing format, said medium having a plurality of information channels;
- said channels being assigned to first and second groups, each format data word being comprised of one and only one data bit located in a selected channel of said first information channel group and one and only one data bit located in a selected channel of said second information channel group;
- scanning means for reading said medium;
- means coupled to said paper document advancing means for advancing said medium through said scanning means whenever said advancing means is energized; said scanning means including means for receiving a format control command;
- said scanning means including means for comparing the code words in said medium with said format control command;
- means responsive to said comparing means for terminating said advancing means whenever a code word in said medium passing said scanning means corresponds to said format control command.

3,926,293
DUAL CARRIAGE IMPACT PRINTER WITH BELT DRIVE

John Erik Ljungberg, Solna, Sweden, assignor to Facit Aktiebolag, Atvidaberg, Sweden

Filed Dec. 19, 1974, Ser. No. 534,363
Int. Cl.² B41J *19/00*
U.S. Cl. 197—1 R **5 Claims**

1. An impact printing device comprising in combination two spaced carriages provided with printing means, a recording medium passing between said spaced carriages, an elongated driving means for each carriage, means securing the respective driving means to each carriage, said carriages being movable in the length direction of said driving means, said recording means being adapted to be moved incrementally in a direction substantially perpendicular to the direction of movement of said carriages, said drive members being a pair of belts, coupling means interconnecting the free ends of said belts, one of said coupling means being a fixed coupling member interconnecting respective free ends of said belts and the other coupling means being a yoke interconnecting second respective free ends of said belts, and a link arm connecting

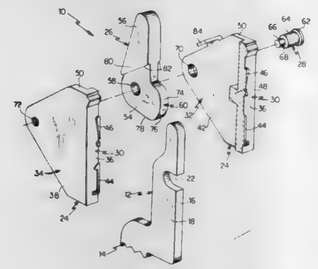


said fixed coupling member and said yoke whereby variations in lengths of the two belts can be compensated for.

3,926,294
CHANGEABLE TYPE HEAD

Donald G. Bastian, Homer, N.Y., assignor to SCM Corporation, New York, N.Y.

Filed Oct. 10, 1973, Ser. No. 405,248
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B41J *1/04*
U.S. Cl. 197—36 **7 Claims**

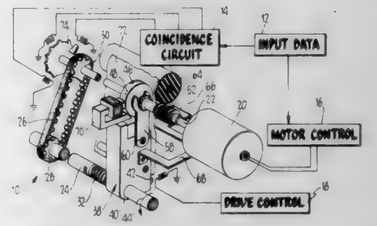


1. In a changeable type head of the type having rear and side walls for enveloping rear and side surfaces, respectively, of a typebar; at least one type character on an exterior surface of the rear wall of the changeable type head; and means for blocking longitudinal movement of the changeable type head on the typebar; the improvement comprising, in combination:
a. a pivot spanning the side walls of the changeable type head, substantially perpendicular to the side walls, and in front of the typebar;
b. a lever on the pivot;
c. a lock surface on the lever, the lock surface farther than a mating front surface of the typebar from the pivot when the typebar is against the rear wall of the changeable type head;
d. a release surface on the lever, the release surface closer than the mating front surface of the typebar to the pivot when the typebar is against the rear wall of the changeable type head; and
e. a handle on an opposite end of the lever from the lock surface for pivoting the lever so that the lock surface faces the typebar to lock the changeable type head on the typebar in cooperation with the blocking means and for pivoting the lever so that the release surface faces the typebar to release the changeable type head from the typebar; and
f. an overcenter surface on the lever, the overcenter surface farther than the lock surface from the pivot and located between the release and lock surface to provide an overcenter effect.

3,926,295
HAMMERLESS IMPACT PRINTER

Carmeli Adahan, Berkeley, Calif., assignor to The Singer Company, New York, N.Y.

Filed July 29, 1974, Ser. No. 492,952
Int. Cl.² B41J *1/32*
U.S. Cl. 197—55 **6 Claims**



1. In a high-speed on-the-fly hammerless impact printing apparatus for printing characters on the surface of a sheet of record media comprising:
- a rotatable font wheel having character types disposed on the outer periphery thereof; and
- means for continually rotating said font wheel about its axis, said axis being substantially parallel with the surface of the record media;
- means for moving said font wheel in a path of travel along said axis while said font wheel is being rotated about said axis;
- means for urging said font wheel and selected ones of said character types into printing engagement with said record media and retracting same from said printing engagement while said font wheel is being rotated, about and moved along, said axis;
- said last-mentioned means comprising an electromagnet located adjacent said font wheel and acting magnetically on the font wheel itself so as to influence the font wheel away from the record media and means which, upon de-energization of the electromagnet, move the font wheel toward the record media.

3,926,296
PASSENGER CONVEYOR SYSTEM

Gerald L. Woodling, Akron; John H. Hewitt, Suffield, and Ernest D. Johnson, Tallmadge, all of Ohio, assignors to Westmont Industries, Santa Fe Springs, Calif.

Filed Dec. 7, 1973, Ser. No. 422,675
Int. Cl.² B66B *9/12*
U.S. Cl. 198—16 R **17 Claims**



1. A terminal end assembly for an endless passenger conveyor having a pit with a bottom and sides comprisng an endless belt, a supporting structure hingedly connected at one

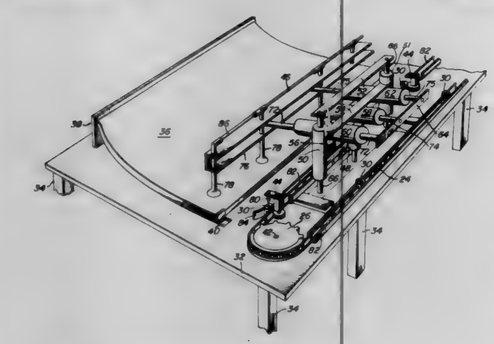
side of said pit for swinging movement of said supporting structure about a horizontal axis, said supporting stucture including a central structural member extending in a generally horizontal position across said pit in the operating condition of said conveyor, end components of said assembly mounted on said central structural member with a least some of said components including a pulley for said belt mounted on the underside of said structural member and extending downwardly into said pit and balustrades mounted on the top side of said structural member at the edges of said belt, said balustrades having handrail guide members for endless handrails movable over said balustrades, said handrail guide members being discontinuous and said balustrades having removable sections to provide clearance for swinging movement of said supporting structure and all of said end components as a unit about said horizontal axis.

3,926,297

PLATE CONVEYING APPARATUS

William C. Guenst, Jr., and Gerold Litschi, both of Ambler, Pa., assignors to W. R. Grace & Co., New York, N.Y.

Filed Apr. 1, 1974, Ser. No. 456,841
Int. Cl.² B23Q 5/22
U.S. Cl. 198—19 **7 Claims**



1. Plate conveying apparatus comprising:
1. a platform;
2. an endless chain with means to drive same on the platform;
3. a plurality of anvils on the chain, each anvil having a top and a vertical shaft with a constricted neck;
4. means to pull a plate over the top of at least two anvils;
5. staker means including a staking pin and means to drive the staking pin down into the anvil shaft and to bring it up again thereby to affix the plate to the anvil for conveying the plate along the platform.

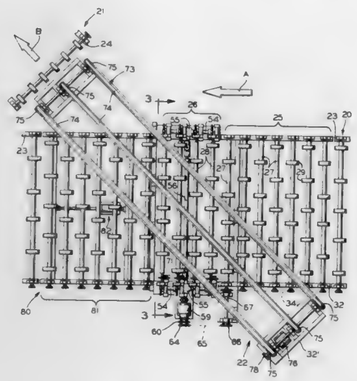
3,926,298

SHEET ARTICLE TRANSFER APPARATUS

Alfred H. Miller, and Lawrence C. Wheat, both of Toledo, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed May 31, 1974, Ser. No. 475,135
Int. Cl.² B65G 47/64
U.S. Cl. 198—20 R **8 Claims**

1. In a transfer apparatus of the type including a primary conveyor and a secondary conveyor extending angularly therefrom and set at a lower level than the primary conveyor and having a first group of longitudinally spaced fixedly supported driven rolls arranged in line with and at the same level as the primary conveyor, a second group of longitudinally spaced movably supported driven rolls arranged in line with and at the same level as said first group of rolls, the rolls of said second group being movable in a substantially vertical direction with respect to the rolls of said first group, a plurality of parallelly spaced driven endless belts arranged between said second group of rolls and in line with and at the same level as the secondary conveyor, the improvement comprising:
a. a number of rotary means corresponding to the number of vertically movable rolls wherein a said rotary means is operatively connected to a said vertically movable roll for moving said roll in the vertical direction, and



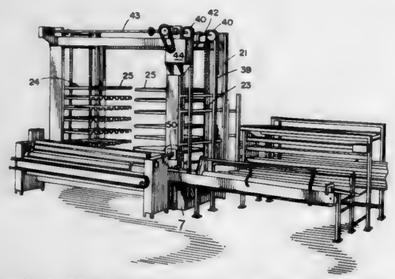
b. a clutch for operating said rotary means one revolution whereby said rotary means simultaneously lower said rolls of said second group below the level of said belt to deposit an article thereon and individually and sequentially raise said rolls of said second group to the level of said first group after the trailing edge of the article has passed therebeyond.

3,926,299

METHOD FOR STORAGE OF WOUND ROLLS OF PAPER

John J. Bradley, and Ernst Daniel Nystrand, both of Green Bay, Wis., assignors to Paper Converting Machine Company, Green Bay, Wis.

Filed July 29, 1974, Ser. No. 492,761
Int. Cl.² B65G 47/00
U.S. Cl. 198—20 R **1 Claim**



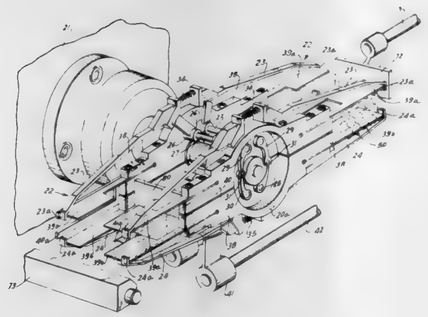
1. A method of log storage comprising advancing logs along a first path toward a log saw system, sensing the system requirements and when no further logs are required, advancing successive logs along a second path generally perpendicular to said first path and in a generally horizontal plane until a predetermined number of logs are accumulated, moving said predetermined number of logs as a group along a generally vertical path, thereafter advancing additional unrequired logs along said first path and continuing the advancement to reach accumulation and vertical movement seriatim until said system requires a log from said first path and thereupon retracting logs in said first path and after the log accumulation therein has been exhausted, reversely moving a group of logs in said vertical path to position the same in said said first path, and continuing the retraction and reverse movement seriatim so long as said system requires a log from said first path.

3,926,300

DEVICE FOR TRANSFERRING BATCHES OF CIGARETTES FROM A FORMATION LINE TO A PACKING LINE FOR THEM TO BE PACKETED

Ariosto Seragnoli, deceased, late of Bologna, Italy; by Leonina Ricci Seragnoli, heir and legal representative, Bologna, Italy; by Giorgio Seragnoli, heir and legal representative, Bologna, Italy, and by Daniela Seragnoli, heir and legal representative, Bologna, Italy, assignors to G.D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Seragnoli, Italy

Filed Dec. 10, 1973, Ser. No. 423,222
Claims priority, application Italy, Mar. 5, 1973, 3346A-73
Int. Cl.² B65G 37/00
U.S. Cl. 198—20 C **6 Claims**



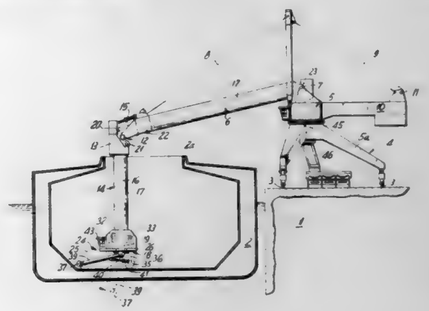
1. A device for transferring batches of cigarettes from a conveyor to packaging device, comprising;
a transferring head having an axis of intermittent rotation; first and second guiding strip means, each for guiding a batch of cigarettes, said first and second strip means being secured to said head on mutually opposite sides of said axis and each comprising a first pair of coplanar guiding strips and a second pair of coplanar guiding strips the strips of each first pair being parallel to, symmetrical with and, spaced from the strips of the respective second pair and disposed to enable a batch of cigarettes to be moved into and from position wherein the cigarettes of the batch are generally held between the strips; means for effecting intermittent rotation of the head and of the first and second guiding strip means secured thereto, between a first position wherein the first guiding strip means is disposed for receiving a batch of cigarettes and the second guiding strip means is disposed for releasing a batch of cigarettes, and a second position wherein the second and first guiding strip means are, respectively, so disposed;
a first pusher disposed on one side of said axis, for movement parallel to said axis to push a batch of cigarettes from a conveyor to said position of the batch;
a second pusher disposed on the opposite side of said axis between the several coplanar guiding strips for pushing a batch of cigarettes from said portion thereof; and
two parallel vertical walls disposed at sides of the latter pusher and of the guiding strip means to move with the latter pusher and thereby to keep the cigarettes in proper positions while the batch of cigarettes is being transferred from the respective guiding strip means to a packaging device.

3,926,301

CONVEYOR ASSEMBLY

Heinrich Herms, Sindorf, Germany, assignor to O & K Orenstein & Koppel Aktiengesellschaft, Germany

Filed Aug. 16, 1974, Ser. No. 498,282
Claims priority, application Germany, Aug. 22, 1973, 2342322
Int. Cl.² B65G 63/00
U.S. Cl. 198—90 **6 Claims**



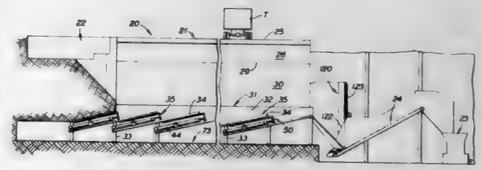
1. A conveyor assembly, comprising a support structure, a first conveyor mounted on said support structure and being positionable in a substantially vertical position, a supporting frame mounted around said first conveyor adjacent the lower end thereof, said frame and said first conveyor being relatively rotatably movable in respect to each other so that there is a relative rotation about the axis of the first conveyor in respect to said frame, a second conveyor comprising a bucket chain conveyor having an endless chain with a plurality of buckets therealong and being carried on said supporting frame and including a lower reach extending laterally of said first conveyor and below said frame, a guide roller for said second conveyor carried by said supporting frame and being located below and on one side of said first conveyor, and a pivot arm rotatably supporting said deflecting roller and pivoted on said supporting frame to extend outwardly from said frame on the opposite side of said frame from said guide roller, said second conveyor chain being guided over said guide roller and said deflecting roller through a path which may be shifted laterally and vertically by adjustment of the angular position of said pivot arm by pivoting said pivot arm, and means on said supporting frame for pivoting said pivot arm, said second conveyor also including an upper portion located above said supporting frame, and a receiving conveyor located on said supporting frame below the upper portion of said second conveyor in a position to receive material from said buckets and to deliver the material to said first conveyor.

3,926,302

MATERIAL HANDLING AND CONVEYING DEVICE

Gordon C. Smith, Richfield, Ohio, assignor to Glaus, Pyle, Schomer, Burns & DeHaven, Inc., Akron, Ohio

Filed Aug. 2, 1973, Ser. No. 385,088
Int. Cl.² B65G 47/18, 25/08
U.S. Cl. 198—53 R **9 Claims**



1. In a system for handling refuse material and the like, a pit for storing the material, said pit having an open top, downwardly converging side walls, and a trough meeting said side

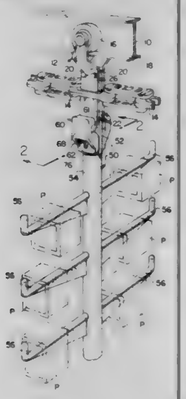
walls at their closest point of convergence; said trough including two generally vertical side plates; columns supporting said side plates; a plurality of adjacent upwardly angled support members each supported by said columns and defining the bottom of said trough; a cylinder mounted on each said support member; a piston and piston rod in each said cylinder; a carriage having wheels riding on each said support member; and pusher means mounted on said carriage and connected to said piston rod for moving material from one said support member to an adjacent said support member in an upwardly angled direction to avoid bridging of the material between the generally vertical side plates of said trough.

3,926,303

CONVEYOR TROLLEY CLEVIS HANGER SAFETY ATTACHMENT DEVICE

John W. McCall, Birmingham, Mich., assignor to Formall, Inc., Warren, Mich.

Filed Sept. 23, 1974, Ser. No. 508,276
Int. Cl.² B65G *17/20*
U.S. Cl. 198—177 R **18 Claims**



1. A parts-carrying safety hanger device for removable securement to an overhead conveyor trolley clevis by a headed clevis pin, said device comprising

a proximal pad portion having

a body,

a bearing opening transversely through said body for the shaft portion of said clevis pin,

and a pair of lugs extending laterally, one from each side of said body,

a rod portion connected to said proximal pad portion and depending therefrom, and having one or more parts-carrying arms connected thereto,

and a pair of safety retaining members movably conjoined to said lugs, one on each side of said proximal pad portion, to overlie the outer ends of said clevis pin when said members are aligned with said proximal pad portion.

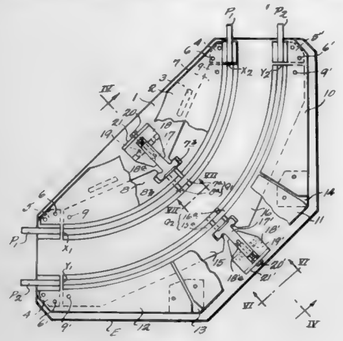
3,926,304

STRETCH ADJUSTING DEVICE FOR A CONVEYOR IN A CONVEYOR-LINE WORKING SYSTEM

Ken Watabe, Hiroshima, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1974, Ser. No. 520,903
Int. Cl.² B65G *15/30*
U.S. Cl. 198—208 **1 Claim**

1. A stretch adjusting device for a conveyor in a conveyor-line working system, characterized in that said device comprises a pair of inside conveyor guide members, which are rotatably pivoted on an inside portion of an upper surface of a corner base at their respective outer end portions, and which have stepwise engaging sections at their respective inner end portions and also have arcuated channels for forming an inside conveyor track on their respective upper surfaces; a pair of outside guide members, which are rotatably pivoted on an outside portion of the upper surface of said corner base at their respective outer end portions, and which have stepwise



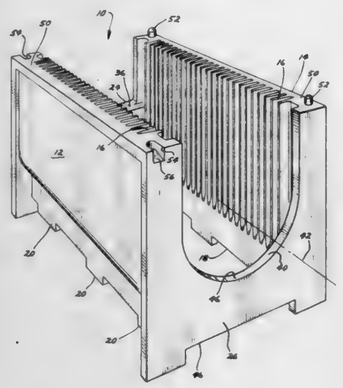
engaging sections at their respective inner end portions and also have arcuated channels for forming an outside conveyor track on their respective upper surfaces; and means for simultaneously rocking said pair of inside conveyor guide members and said pair of outside conveyor guide members by an equal distance about their respective pivotal points.

3,926,305

WAFER BASKET

Victor C. Wallestad, Chaska, Minn., assignor to Fluoroware, Inc., Chaska, Minn.

Filed July 12, 1973, Ser. No. 378,686
Int. Cl.² B65D *1/34, 85/30*
U.S. Cl. 206—73 **10 Claims**



1. In a wafer basket having opposed side walls adapted to carry axially aligned wafers therebetween, an open top through which wafers may be inserted and ejected and free of obstructions interfering with insertion and ejection of wafers, an open bottom, and end supports joining the side walls at their respective ends,

the improvement wherein one end support joins said side walls adjacent bottom edges thereof and has a horizontal bottom edge and a recessed, upwardly concave, U-shaped upper edge with the bottom-most point of the U-midway between the side walls and below the axis of wafers in the basket to allow endwise access to wafers axially of the wafers, and the other end support comprises a horizontal

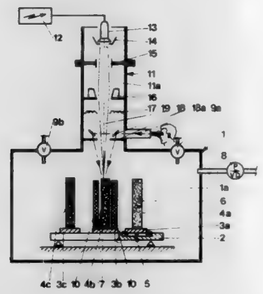
bar joining said side walls substantially midway their heights.

3,926,306

METHOD FOR SEALING A FILLED CONTAINER UNDER VACUUM, AND VACUUM-SEALED FILLED CONTAINERS

Hans Bertil Van Nederveen, Bosch en Duin, Netherlands, assignor to SKF Industrial Trading and Development Company B.V., Jutphaas, Netherlands

Filed June 15, 1973, Ser. No. 370,513
Claims priority, application Netherlands, June 28, 1972, 7208731
Int. Cl.² B65D *81/00;* **B65B** *31/02*
U.S. Cl. 206—84 **16 Claims**



1. A closed and sealed container containing a stored material at a pressure less than 10^{-1} torr within said container, the container comprising a plurality of walls which surround and define an enclosure, one of said walls comprising a solid and generally flat outer layer of said stored material fused and sealed to adjacent walls of said remaining walls.

3,926,307

BOTTLE CARRIER

Mindaugas Julius Klygis, Evergreen Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation of Ser. No. 292,268, Sept. 25, 1972. This application Dec. 12, 1973, Ser. No. 424,060
Int. Cl.² B65D *75/00, 85/62*
U.S. Cl. 206—153 **5 Claims**



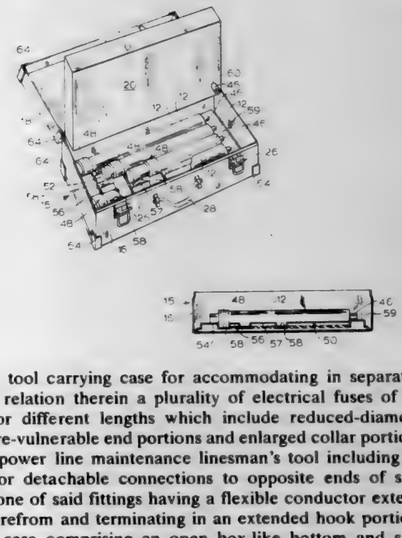
1. A package of a plurality of bottles and a carrier, each of said bottles comprising an enlarged crown portion and a neck portion divering downwardly from said crown portion, said carrier comprising a folded blank of a resilient plastic material arranged to define a pair of elongated downwardly diverging side walls, an elongated bottom wall integrally interconnected between the longitudinally extending lower marginal edges of said side walls, and an elongated top wall integrally interconnected between the longitudinally extending upper marginal edges of said side walls, upper openings formed through said top wall in a longitudinally spaced apart relationship, lower openings formed through said bottom wall in registry with respective ones of said openings in said top wall, said carrier mounted on said plurality of bottles with said lower openings engaging said neck portions of said bottles and said upper openings engaging said neck portions of said bottles immediately below said crown portions of said bottles, and the distance between the junctions of said top wall with said side walls down to the junctions of said side walls with said bottom wall in said package being less than the vertical length dimension of said side walls, said side walls being compressed into convex surfaces which are curvilinear about axes extending longitudinally of said package to resiliently urge said bottom and top walls apart and to resiliently stabilize said bottles in said carrier in a parallel spaced apart relationship.

3,926,308

TOOL CARRYING CASE

Lyle L. Sullivan, Olean, N.Y., assignor to Olean Case Corporation, Olean, N.Y.

Filed Feb. 11, 1974, Ser. No. 441,120
Int. Cl.² B65D *85/30, 85/54, 25/12*
U.S. Cl. 206—223 **4 Claims**



1. A tool carrying case for accommodating in separately nested relation therein a plurality of electrical fuses of the same or different lengths which include reduced-diameter pressure-vulnerable end portions and enlarged collar portions, and a power line maintenance linesman's tool including fittings for detachable connections to opposite ends of such fuses, one of said fittings having a flexible conductor extending therefrom and terminating in an extended hook portion;

said case comprising an open box-like bottom and side-walled body portion and a hingedly connected cover portion and a hingedly connected inner tray portion adapted to nest interiorly of said case in predetermined spaced relation between the bottom wall of said body portion and said cover portion;

said bottom wall of said body portion including a plurality of parallel ridge portions defining valleys between each adjacent pair of ridge portions to receive an assortment of such aforesaid fuses in parallel nested relation therein to positionally locate such fuses within said body portion against sidewise dislocations thereof, said bottom wall having an upstanding ledge at one end of said ridge portions to present a transverse abutment surface engaging the ends of said fuses while clearing said end portions thereof and each adjacent pair of ridge portions having transversely aligned interrupted portions presenting channels snugly receiving said collar portions of a particular fuse, said channels being located at fixed distances from said abutment surface whereby said channels and said abutment surface both individually and collectively positionally locate said fuses against longitudinal dislocations thereof, and at least some of said ridge portions having plural channel interruptions therein whereby fuses of different lengths may be accommodated;

said predetermined spacing of said inner tray portion from said bottom wall being selected to cause said inner tray portion to bear downwardly at its bottom surface upon such nested fuses when said tray portion is lowered into

the interior of said body portion and including means for holding said linesman's tool in compactly nested and positionally restrained relation when resting upon the upper surface of said tray portion so as to preclude dislocations of said fuses from their securements within said body portion and/or positional dislocations of said tool relative to said tray portion such as when said case is being in-field carried and/or otherwise handled;

said cover portion being disposed in predetermined spaced relation to said inner tray portion when the cover is closed so as to bear downwardly against said tool when carried by said tray portion and restrain said tool in compactly nested relation upon said tray portion;

said case including releasable latching means for holding said cover portion securely in closed relation to said tray portion and said body portion to maintain said predetermined spacings;

whereby upon placement of one or more fuses within said valley/ridge means said inner tray portion may then be moved into position so as to positionally secure said fuses, and said linesman's tool may then be nested upon the upper surface of said tray portion and said cover portion may then be lowered and releasably secured to said body portion, thereby rendering said case suitable to in-field handling without hazards to said pressure-vulnerable end portions of said fuses.

3,926,309

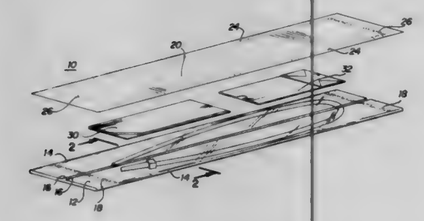
TWO LAYER STERILE PACKAGING

John L. Center, Dallas, Tex., assignor to Vicra Sterile, Inc., Dallas, Tex.

Filed Aug. 1, 1973, Ser. No. 384,697

Int. Cl. B65d *83/10*; **A61b** *19/02*; **B65d** *31/17*

U.S. Cl. 206—364 **7 Claims**



1. Two layer sterile packaging for separate articles comprising:

a plastic sheet folded along two fold lines generally parallel to the two side edges of the sheet, the folded layers of the sheet being sealed together across each end to form a first pouch to which access may be had between the two side edges of the sheet,

a closure sheet overlying the area in which the two opposite side edges of the plastic sheet are disposed to form a second pouch adjacent the plastic sheet, such closure sheet being sealed to the plastic sheet around a perimeter encompassing at least a portion of said two opposite side edges to complete sealing of the first and second pouches from the atmosphere;

at least one sterile article lying in the first pouch; and

at least one sterile article lying in the second pouch whereby the package may be opened by tearing away the closure sheet so that an article in the second pouch may be readily removed from the second pouch without contacting the interior or side edges of the first pouch, and the contents of the first pouch may thereafter be removed between the adjacent side edges of the first pouch.

3,926,310

CONTAINER FOR 8-TRACK TAPE CARTRIDGES

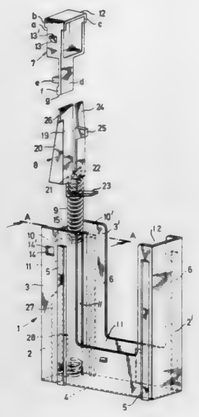
Peter Ackeret, Kusnacht, Switzerland, assignor to IISI Products AG, Chur, Switzerland

Filed Sept. 19, 1974, Ser. No. 507,336

Claims priority, application Germany, June 5, 1974, 2427108

Int. Cl.² B65D *85/672*; **E05B** *65/46*

U.S. Cl. 206—387 **18 Claims**



1. A cassette storage container comprising:

a housing adapted to receive and store a cassette; ejector means mounted in the housing;

spring means cooperating with said ejector means to bias said ejector means to an ejection position; and

a releasable locking member cooperating with said ejector means to lock said ejector means in an insertion position against the bias of said spring means;

two-movement-allowing mounting and guide means mounting said ejector means for guided movement in the ejection direction and also mounting said ejector means for movement in another manner;

a guide means engaging portion on said ejector means engaging said two-movement-allowing mounting and guide means;

a cassette engaging portion on said ejector means to engage a cassette and move it in the ejection direction;

a mating portion on said ejector means adapted to engage a corresponding mating portion on a correctly inserted cassette by movement of said ejector means in said another manner; and

said locking member cooperating with movement in said another manner of said ejector means to releasably lock said ejector means in the insertion position when said mating portion is engaged and to provide an eject condition when said mating portion is disengaged.

3,926,311

PEEL-SEAL CONTAINERS

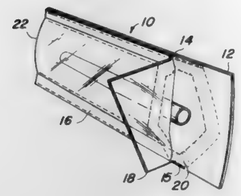
Louis Lawrence Laske, Grayslake, Ill., assignor to Vonco Products, Inc., Lake Villa, Ill.

Filed Aug. 22, 1974, Ser. No. 499,621

Int. Cl.² A61B *19/02*

U.S. Cl. 206—439 **7 Claims**

1. A peel-seal container comprising a first layer of uncoated spunbonded olefin material and a second layer of synthetic polymeric thermoplastic material, said two layers being peelably joined together in an area along the longitudinal edges of the said container and across at least one end portion at an area removed from that one end, a peel flap formed at said one end by said layers overlying each other without being joined together, said first uncoated spunbonded olefin layer having its surface modified in the area of said peelable seal by



pretreatment with heat and pressure to eliminate the high spots and internal weaknesses to render said sealing area susceptible to having said second layer peelably joined thereto by conventional heat-pressure sealing.

3,926,312

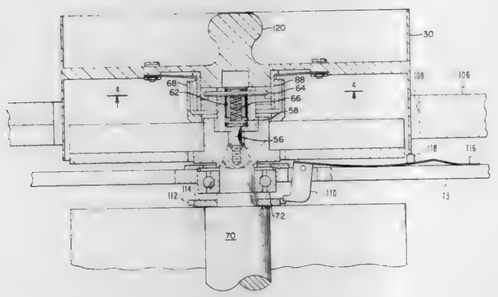
DISK PACK ENCLOSURE

James Francis Elliott, Rochester, and Joel Swenum Johnson, Millville, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 9, 1974, Ser. No. 504,398

Int. Cl.² B65D *85/02*; **G11B** *1/02*

U.S. Cl. 206—444 **5 Claims**



1. In combination, a magnetic disk support means for holding a plurality of magnetic disks in the form of a stack, a screw carried by and having a nonrotatable connection with said disk support means and adapted to be screwed into a threaded opening in the end of a disk stack drive shaft, a cover for covering the stack of disks, and connecting means connecting said cover and said disk support means whereby the cover is fixed with respect to the disk support means, said connecting means including connection making means of such construction to provide a relatively low torsional force on said screw in the direction tending to unscrew the screw from said threaded opening when said cover is rotated in one direction to affix the cover with respect to said disk support means and including connection breaking means which is of such construction as to break said connection between said cover and said disk support means upon a relatively higher torsional force being applied onto said cover in the direction tending to move said screw farther into said threaded opening.

3,926,313

CIRCULAR MAGAZINE FOR PHOTOGRAPHIC TRANSPARENCIES

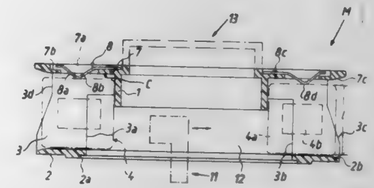
Alfred Winkler, Munich, Germany, assignor to Agfa-Gevaert AG, Leverkusen, Germany

Continuation-in-part of Ser. No. 435,995, Jan. 23, 1974, abandoned. This application Apr. 17, 1974, Ser. No. 461,737

Claims priority, application Germany, Apr. 19, 1973, 2320028

Int. Cl.² B65D *85/48*; **G03B** *23/06*

U.S. Cl. 206—455 **11 Claims**



1. A circular magazine for slides having a predetermined height, comprising an annular top wall; and annular bottom wall coaxial with and axially spaced from said top wall; a plurality of substantially radially extending partitions extending between and being integral with said walls and defining therewith slide-receiving compartments, each of said compartments having an outer open end whose height between said walls equals or slightly exceeds said predetermined height so that the slides are insertable and removable through said outer open ends of the respective compartments, each of said partitions having the shape of an inverted L having one leg extending along said top wall and another leg substantially normal thereto and having an outer edge portion aligned with the outer edge of said bottom wall; and abutment means for limiting the extent of radially inward insertion of slides into the respective compartment.

3,926,314

VACUUM MOLDED COLUMN-TYPE DISPLAY DEVICE FOR PARALLELEPIPED-SHAPED OBJECTS

Amilcare Dogliotti, Neive (Cuneo), Italy, assignor to P. Ferrero & C. S.p.A., Alba, Italy

Filed Jan. 28, 1975, Ser. No. 544,743

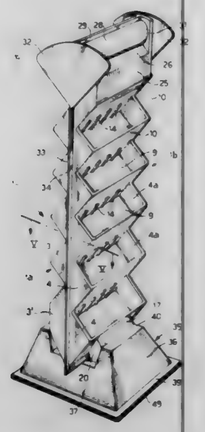
Claims priority, application Italy, Feb. 8, 1974, 52920/74

Int. Cl.² A47F *5/04*, *7/03*

U.S. Cl. 211—71 **3 Claims**

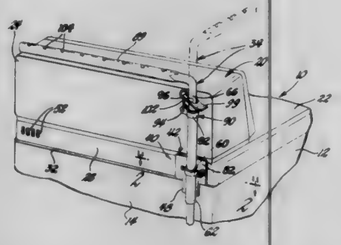
1. A display device for parallepiped-shaped objects comprising a vertically disposed display column having identical zig-zag shaped side walls and a central portion, the opposite faces of which are formed into a plurality of inclined open recesses adapted to receive groups of parallelepipedic objects disposed adjacent to each other, said column comprising two separate complementary vacuum molded plastic shells having peripheral connecting flanges and means for securing said flanges together, and a vacuum molded plastic supporting base having a molded recess in the upper surface thereof in which the lower end of the vertical column engages in a form-

fitting manner, the molded recess of the base having two opposed teeth adapted to releasably engage in two recesses



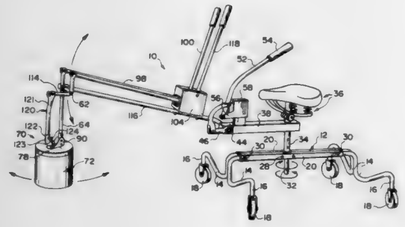
provided on the lower end of the column to stabilize the column with respect to the base.

3,926,315
ADD-ON CLOTHES HANGER FOR APPLIANCE
James A. Bernard; Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 10, 1975, Ser. No. 540,155
Int. Cl.² A47F *5/08, 7/24*
U.S. Cl. 211—102 **1 Claim**



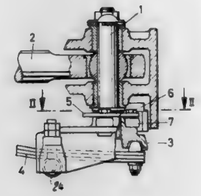
1. A major appliance cabinet, said cabinet including a rear wall portion flush with a rear cabinet panel having a plurality of vertically elongated parallel vent slots therein, bracket means for removably mounting a clothes hanger assembly upon said rear wall portion; said hanger assembly including a vertically extending mounting sleeve member, said bracket means including a mounting plate, means for securing said plate in flush relation with said wall portion, said plate having a pair of vertically elongated slots arranged to coincide with a pair of said wall portion slots defining first and second sets of aligned slots, a strap member closely conforming to a portion of the cross section of said sleeve, said strap having a leg on one end disposed normal to said plate so as to extend through said first set of slots, said strap having a first foot portion extending at right angles outwardly from said leg a defined distance beyond the adjacent second set of slots, a threaded opening in said first foot aligned with said second set of slots, a first threaded fastener extending through said second set of slots into threaded engagement with said first foot opening, said strap having a second foot extending outwardly from its other end in parallel offset relation with said first foot so as to be substantially aligned in the plane of the vertical axis of said sleeve, a threaded receptacle on said plate, a second threaded fastener extending through said second foot into threaded engagement with said receptacle for urging said second foot toward said plate to clamp said sleeve between said strap member and said plate, said hanger assembly including a vertical tube shaped for telescopic reception into said mounting sleeve, said tube including a right angled clothes rack portion located on the upper end of said tube, one-way catch means positioned on said mounting sleeve for releasably gripping said tube whereby said tube may be adjusted to a plurality of vertical clothes hanging positions or a retracted position, and said wall portion formed by the flange of a top deck of said cabinet, said top deck flange having a return flange juxtaposed to the cabinet panel top flange to define a clearance space between said deck return flange and said panel top flange, and said plate securing means including flange fingers struck from said mounting plate at substantially right angles thereto adapted for a press horizontally adjustable fit in the clearance space.

3,926,316
MOBILE SIT-ON TOY CRANE
Argil W. Luttrell, 304 W. Livingston St., Fairbury, Ill. 61739
Filed Feb. 14, 1975, Ser. No. 549,986
Int. Cl.² B66C *23/06*
U.S. Cl. 212—59 R **9 Claims**



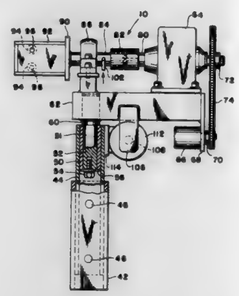
1. A sit-on toy crane comprising a universally directionally mobile carriage which is floor-supported on casters, said carriage including a forwardly projecting fixed beam and a forwardly facing operator's saddle disposed above the rear end of the beam at a level sufficiently low as to enable the operator to straddle the beam and propel the carriage in any direction by foot contact with the floor, a forwardly projecting boom having its proximate end pivoted to the forward end of the beam for swinging movements of the beam in a vertical plane, a boom control lever pivoted to the beam forwardly of said saddle and capable of fore and aft swinging movements, a crank arm on said boom, a link extending between the lever and crank arm for translating the swinging movements of the former into raising and lowering movements of the boom, a dipperstick pivoted adjacent its upper end to the forward end of the boom and depending therefrom in pendulous fashion for fore and aft swinging movements, a dipperstick-operating lever effectively pivoted to the beam adjacent the rear end of the latter and capable of fore and aft swinging movements, a thrust link connecting said latter lever and the dipperstick for translating the swinging movements of such lever into swinging movements of the dipperstick, a pick-up unit carried by the lower end of said dipperstick, a second control lever pivoted to the beam forwardly of said saddle and capable of fore and aft swinging movements, and linkage mechanism connecting said latter lever and pick-up unit and effective to translate the swinging movements of such lever into actuating movements of the pick-up unit.

3,926,317
RAIL VEHICLE DEVICE FOR RETURNING A CENTRAL BUFFER COUPLING HORIZONTALLY TO ITS MID-POSITION
Walter Ernst Gustav Scharfenberg, Salzgitter-Thiede, and Friedrich Wilhelm Günther, Wolfenbuttel, both of Germany, assignors to Scharfenbergkupplung GmbH, Salzgitter, Germany
Filed Apr. 15, 1975, Ser. No. 568,321
Claims priority, application Germany, Apr. 20, 1974, 2419184
Int. Cl.² B61G *7/12*
U.S. Cl. 213—20 **8 Claims**



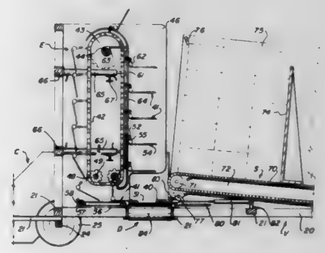
1. A central buffer coupling return device, comprising a fixed housing, a coupling pin journalled in said housing, a coupling rod pivotally connected to said coupling pin, a guide plate pivotal on said coupling pin and having respective opposite side faces, a pair of rollers journalled in said guide plate to project outwardly from each side face, and reaction biasing means acting on said guide rollers on each side including a ram on each side mounted in said housing for sliding movement in directions substantially perpendicular to the axis of said coupling pin, each ram having a first oblique surface applying against said rollers, a second surface guided in said housing, and a third surface forming a lateral biasing surface, and bias means acting on said biasing surface urging said rams in directions toward said coupling pin.

3,926,318
PANEL HANDLING DEVICE AND METHOD
Ronald R. Kister, 7358 Scenic Drive, Ashtabula, Ohio 44004
Filed Apr. 22, 1974, Ser. No. 463,050
Int. Cl.² B66C *1/02*
U.S. Cl. 214—1 H **15 Claims**



1. A handling device for generally flat structural panels comprising generally horizontally extending separable connecting means on said device for cooperation with connecting means on the panel inwardly of the panel edges for carrying and manipulating the panel with its flat faces extending generally vertically, and power means for rotating said connecting means on said device about a generally horizontal axis for proper orientation of the panel carried thereby, said connecting means on said device comprising a projection having a non-circular cross-sectional shape and said connecting means on said panel comprising a similarly shaped socket having its axis extending substantially perpendicular to the flat panel faces for receiving said projection, and laterally extensible and retractable locking means carried by said projection for releasably locking the panel thereto.

3,926,319
BALE HANDLING APPARATUS
Allan B. Neely, Jr., 12991 E. Nevada, Aurora, Colo. 80010
Continuation-in-part of Ser. No. 335,547, Feb. 26, 1973, Pat. No. 3,817,405. This application June 17, 1974, Ser. No. 479,827
Int. Cl.² A01D *87/12;* **B65G** *57/32*
U.S. Cl. 214—6 B **10 Claims**



1. Apparatus to load hay bales upon the deck of a vehicle to form a longitudinally extended, horizontally disposed stack which consists of a longitudinal array of transversely disposed, vertical bale tiers, with each tier consisting of a vertical array of transversely disposed bale layers, the loading apparatus, in combination with the vehicle and a bale pick-up means at one side of the vehicle, being located at one end of the vehicle and comprising:

a. a bale-shifting means at the base of the apparatus including a transverse plate means across the vehicle to receive bales from the bale pick-up means and shift the same to form a transversely disposed bale layer upon the plate means;

b. an upright bale elevator above the plate means having a plurality of bale-height spaced, transverse, horizontally-extended, vertically-shiftable, bale-layer-holding groups of tines which will extend, vertically, at least to the height of a bale tier of the stack with the several groups of tines being shifted to be positioned with respect to the vehicle deck so that bale layers carried upon the groups of tines will form a tier at the vehicle deck level;

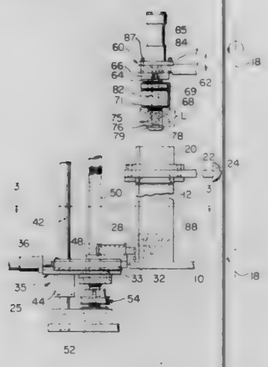
c. a stepper means adapted to move each group of tines from the bottom of the bale elevator first horizontally and longitudinally from one side of the transverse bale holding plate means and underneath a bale layer upon said plate means and then upwardly a distance sufficient to permit another bale layer to be formed on the plate means and thereafter upwardly in a stepped sequence as other groups of tines move across the bale holding plate means; and

d. a pusher means associated with the bale elevator to push a completed bale tier from the elevator and onto the deck when a bale tier is formed by repeated cycles of forming bale layers on the plate means and moving the layers upwardly on the elevator by repeated operation on the stepper means.

3,926,320
APPARATUS AND METHOD FOR SELECTING AND TRANSFERRING A STACK OF LAMINATIONS FOR AN ELECTRIC MOTOR OR THE LIKE

Lawrence A. Shively, and Robert P. Hoy, both of Dayton, Ohio, assignors to Mechaneer, Inc., Dayton, Ohio

Filed June 6, 1974, Ser. No. 477,056
Int. Cl.² B65G *59/02*
U.S. Cl. 214—8.5 C **14 Claims**

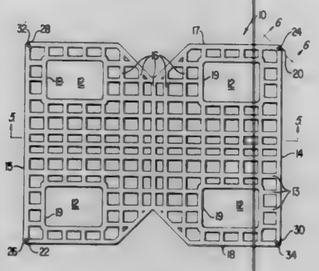


1. Apparatus for selecting a predetermined stack of laminations for a motor or the like, comprising guide means adapted to receive a supply stack of laminations, a pick-off unit positioned adjacent said guide means and including means forming a surface, a pick-off member projecting from said surface and having movable means positioned a predetermined distance from said surface for engaging the supply stack of laminations, means for compressing the supply stack of laminations against said surface with a predetermined pressure, said pick-off unit including means for actuating said pick-off member after the supply stack of laminations is compressed against said surface for retaining a selected stack of compressed laminations on said pick-off unit, and means supporting said pick-off unit for predetermined movement to transfer the selected stack of laminations.

3,926,321
STACKING AID

Lionel F. Trebilcock, 1788 Pleasant Valley Road, Girard, Ohio 44420

Filed May 18, 1973, Ser. No. 361,406
Int. Cl. B65g *1/14*
U.S. Cl. 214—10.5 R **3 Claims**

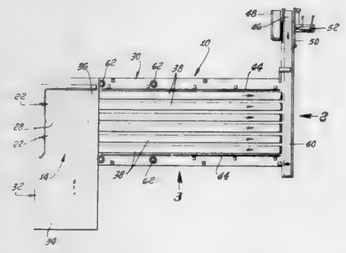


1. A support for stacking cylindrical containers laying on their sides comprised of a framework having a top surface identical to the bottom surface, said framework comprising sidewalls and endwalls, a first plurality of ribs extending between said sidewalls, a second plurality of ribs extending between said endwalls forming openings therebetween, said endwalls, sidewalls, and ribs being molded as an integral unit from a plastic material and having rectangular cross sections with the long axis thereof extending perpendicular to the top and bottom surfaces, and means adjacent each corner defining a rectangular opening substantially larger than the openings between said ribs adapted to receive a portion of the sidewall of a container to maintain the container stationary relative to the support, locking means adjacent each corner thereof for locking a plurality of said supports together when stacked one on top of the other, and said locking means comprises a series of immovable posts and bores alternately positioned around the framework corners.

3,926,322
APPARATUS FOR REMOVING CONTAINERS FROM PACKAGES

Billy Joe Scott, Etiwanda, Calif., assignor to Stewart/Walker Company, LaPalma, Calif.

Filed July 29, 1974, Ser. No. 492,882
Int. Cl.² B65G *65/04*
U.S. Cl. 214—305 **6 Claims**



1. An apparatus for unpackaging containers from a two-portion envelope the two portions of which are hinged together, the containers being disposed in upright positions in two groups respectively within the envelope portions, including:

a. cutting means for making a plurality of cuts thus cutting the two portions of the envelope open on a forward vertical side of the envelope in four cutting zones respectively adjacent the corners of such side and adjacent and on opposite sides of the hinge;

b. means for displacing the groups of containers horizontally in a first direction forwardly through said forward side of the envelope; and

c. means for restraining the envelope against forward displacement during container displacement from said envelope portions.

3,926,323
METHOD OF AND APPARATUS FOR VIAL TRANSFERRING AND CHANGING

Edmund Frank, Chicago, and Edward F. Polic, Lisle, both of Ill., assignors to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed Apr. 10, 1970, Ser. No. 27,406
Int. Cl.² B65G *65/04*
U.S. Cl. 214—310 **14 Claims**

1. A method of indexing sample vials to a predetermined point from a rectangular array of vials disposed in columns and rows along respective X and Y cartesian coordinates, comprising the steps of:

A. indexing the entire array along the X-axis to position one of the rows of vials at a transfer station disposed on a Y-axis coordinate aligned with said point;

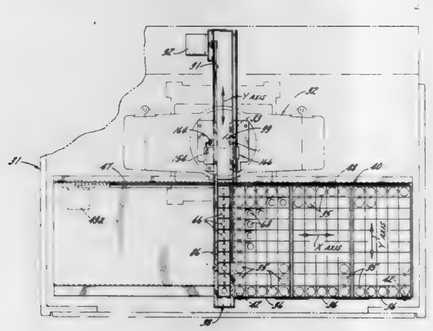
B. indexing each row of vials along a Z-axis to shift said row out of the plane of said array;

C. incrementally indexing each row of vials received in said transfer station from said station along the Y-axis coordinate aligned with said point to successively position, in

seriatim order, each vial in said row at said point; and thereafter

D. again indexing the entire array along the X-axis to position successive rows of the vials in said array in the transfer station in seriatim order after all of the vials in the preceding row have been indexed along the Y-axis to said point.

6. A test sample changing apparatus for use with at least one rectangular array of sample vials disposed in columns and rows along respective X and Y cartesian coordinates of said array and for transferring all of said vials one at a time to a predetermined point, said apparatus comprising, an apparatus frame, means on said frame defining said point, a transfer

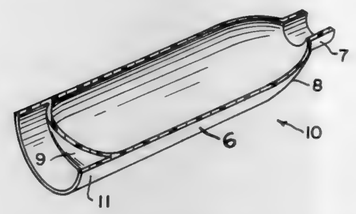


station on said frame spaced from said point along a Y-axis coordinate, and means for holding at least one rectangular array of vials on said frame at a location spaced from said station, characterized in that first indexing means are provided for incrementally indexing an entire one of said arrays along the X-axis for sequentially aligning each Y-oriented row of vials with said station, second indexing means are provided for shifting each row of vials aligned with said transfer station along a Z-axis to shift said row of vials out of the plane of said array, third indexing means are provided for incrementally indexing each row of vials aligned with said station along said Y-axis coordinate to sequentially position each vial contained in each said row at said predetermined point in seriatim order.

3,926,324
PLASTIC CONTAINER FOR PRESSURIZED LIQUID

Fred J. Zavasnik, Justice, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Continuation of Ser. No. 197,750, Nov. 11, 1971, abandoned. This application May 2, 1974, Ser. No. 466,193
Int. Cl. B65d *23/00*
U.S. Cl. 215—1 C **6 Claims**



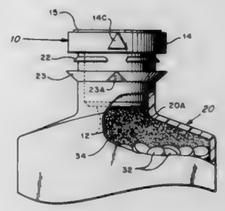
1. A hollow article comprising a unitary thermoplastic material free of bonds of a weld type defining a line of juncture and defining:

a. a hollow cylindrical member having a reduced shoulder portion at one end and terminating in a neck portion defining a mouth adapted to receive a closure, and an internally concave projecting closure at the other end of said cylindrical member, said projecting closure being entirely recessed within a cylindrical depending portion of said cylindrical member.

3,926,325
MULTI-POSITIONABLE BOTTLE CLOSURE FOR SELECTIVE SAFETY OR GENERAL USE

Louis Benson, 1075 Old Ford Road, Huntingdon Valley, Pa. 19006

Filed Dec. 11, 1974, Ser. No. 531,624
Int. Cl.² B65D *55/02, 85/56*
U.S. Cl. 215—206 **4 Claims**



1. A multi-positionable closure for a container, the container having an access opening formed thereon, the improvement comprising:

a first cap means on said closure having formed thereon a securing surface for sealingly mating with said access opening;

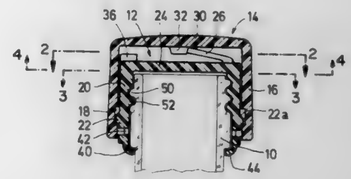
a second cap means extending from said first cap means having formed thereon a securing surface foor lockingly mating with said access opening;

an elongated gripping surface on said first cap means cooperating with the securing surface on said second cap means by providing leverage capability to assist in unlocking said second cap means from said access opening.

3,926,326
SAFETY CLOSURE

Hermann Grau, Schwabenstrasse 296, 7071 Lindach, Germany

Continuation of Ser. No. 239,565, March 30, 1972. This application June 14, 1974, Ser. No. 479,463
Claims priority, application Germany, Mar. 31, 1971, 2115741
Int. Cl.² B65D *55/02*
U.S. Cl. 215—218 **9 Claims**



1. A safety closure for containers, comprising an outer cap as a first closure element and an inner cap as a second closure element, for sealing the opening of a container neck, said outer cap being arranged to substantially concentrically encompass the inner cap and further being capable of relative rotary and axial movement with respect to the inner cap, the inner part of the inner cap and the outer part of the container neck being provided with means for mounting the inner cap onto the container neck by relative rotation therebetween in a first direction and for dismounting by relative rotation therebetween in the opposite direction, one of said closure elements having at least one flexible cantilever arm integral

therewith and having a free end contacting the other closure member, the outer and inner caps being provided with first coupling means being engageable by an axial approach of both closure elements against the biasing effect of said at least one flexible arm, and unidirectional second coupling means on the outer and inner caps adapted for positively coupling the outer cap to the inner cap when being rotated in said first direction for sealing the container neck and permitting continuous relative rotation of the outer cap with respect to the inner cap when being rotated in the opposite direction, said second coupling means comprising at least two interengaging stop means for coupling the inner cap to the outer cap when the latter is rotated in said first direction, one of said stop means being provided at the free end of said at least one flexible arm, said flexible arm, said flexible arm also including inclined ramp means slidingly engageable with said stop means for preventing coupling when the outer cap is rotated in the opposite direction.

3,926,327

SAFETY AND SECURITY CLOSURE

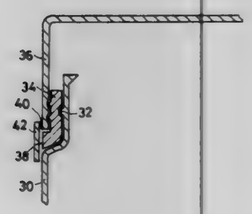
Gerhard Schickedanz, Kreuzwertheim, Germany, assignor to Adolf Hofmann Metall- u. Kunstoffwarenfabrik GmbH, Germany

Filed Jan. 23, 1975, Ser. No. 543,357

Claims priority, application Germany, Jan. 26, 1974, 2403826

Int. Cl.² B65D *55/02*

U.S. Cl. 215—218 **9 Claims**



1. A safety closure for a receptacle having an access opening, comprising:

a ring for surrounding the access opening, said ring having means for mounting it on the receptacle so as to be freely rotatable about said access opening and secured against freely moving off of the receptacle, said ring including a gripping surface positioned to be gripped during opening of the closure,

a cap covering said access opening and in screw threaded engagement with said ring such that turning movement of the cap relative to the ring results in removal of the cap from the ring for opening the closure to expose the access opening, said cap also including a gripping surface positioned to be gripped during opening of the closure,

and a sleeve, attaching means for removingly attaching the sleeve to the cap with the sleeve positioned to cover the gripping surface of the ring, whereby removal of the sleeve is necessary to expose the gripping surface of the ring, so that this gripping surface can be gripped along with that of the cap, to effect turning of the cap relative to the ring to open the closure.

3,926,328

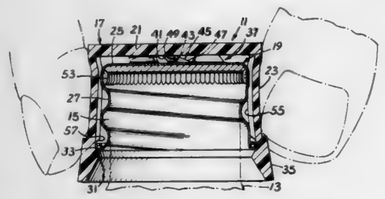
SAFETY CLOSURE

David R. Cistone, Lancaster, Pa., assignor to Kerr Glass Manufacturing Corporation, Los Angeles, Calif.

Filed Sept. 28, 1972, Ser. No. 294,833

Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*

U.S. Cl. 215—220 **5 Claims**



1. A safety closure for a container comprising: an inner cap having an upper end and a generally cylindrical skirt extending downwardly from the periphery of the outer edge of the upper end, said inner cap being adapted to be threadably secured on said container for effectuating a closure thereof, said upper end having a plurality of upstanding lugs located on the upper surface thereof and an outer cap coaxially aligned with and generally overlaying said inner cap, said outer cap having an upper end and a generally cylindrical skirt extending downwardly from the periphery of the outer edge of its upper end, a plurality of downwardly projecting lugs located on the inner surface of said outer cap, said lugs on said inner and outer caps being aligned in a substantially common plane and having substantially vertically extending drive surfaces for abutting and for causing said inner cap and said outer cap to rotate in unison when said outer cap is rotated in a closure direction, said lugs having inclined ramp surfaces for abutting and sliding over each other when said outer cap is rotated in an unlocking direction so that rotation of said outer cap in an unlocking direction does not rotate said inner cap, said lugs on at least one of said caps touching the end wall of said other cap to hold said flat end portion of said outer cap against downward movement, said drive lugs riding over each other to flex said flat end portion upwardly when said outer cap is turned in said reverse direction, cooperable drive surfaces formed on said skirts of said inner and outer caps, said outer cap skirt being made of a resilient material and adapted to be resiliently deformed inward by hand applied compression for causing said drive surface on said outer cap skirt to move from an ineffective position to an effective position for driving engagement with the drive surface on said inner cap skirt, said inner and outer caps rotating in unison when a torque is applied in the unlocking direction and said outer cap skirt is deformed inwardly to said effective position to cause driving engagement between said drive surfaces.

3,926,329

STOPPER OF PLASTICS HAVING AN EXPANSIBLE PORTION FOR BOTTLES FOR SPARKLING WINES AND THE LIKE

Piergiacomo Guala, Alessandria, Italy, assignor to Angelo Guala di Piergiacomo e Roberto Guala & C. S.A.S., Alessandria, Italy

Filed Mar. 26, 1974, Ser. No. 454,892

Claims priority, application Italy, Mar. 28, 1973, 67896/73

Int. Cl.² B65D *39/12*

U.S. Cl. 215—361 **4 Claims**

1. A stopper for bottles of sparkling wine and the like comprising:

a body member,

an actuating member housed within said body member and axially slidable with respect thereto,

a plurality of radially movable inner parts, and means interconnecting said radially movable inner parts to said actuating member such that relative axial movement of said actuating member with respect to said body member in a first direction causes radially outward movement of said movable inner parts thereby causing radial expansion of a part of said stopper whereby to clamp said stopper to the inside of the neck of a bottle when positioned therein, and axial movement of said actuating member with respect to said body member in a second direction permits radially inward movement of said movable inner parts whereby to release said stopper for withdrawal,

said body member is formed as an outer tubular body,

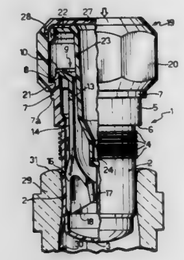
a transverse wall closing the bottom of said tubular body,

a plurality of annular sealing fins extending circumferentially around said body,

said body having an upper part of larger diameter and a lower part of smaller diameter, an annular shoulder separating said upper part from said lower part, said annular shoulder providing an abutment which, when said tubular body is inserted into the neck of a bottle, rests on the mouth of said bottle to define the maximum distance said tubular body can be inserted into said bottle,

upper and lower circumferentially extending, axially separated, annular ridges on said upper part of said tubular body, said lower annular ridge having a larger diameter than said upper annular ridge,

said radially movable inner parts being carried by an intermediate element having an upper part and,



a plurality of strips extending axially downwardly from said upper part, the lower ends of said strips constituting said radially movable inner parts,

said actuating member being formed as a movable member having;

an enlarged head including an annular skirt, said annular skirt surrounding said upper part of said tubular body,

an annular ridge projecting radially inwardly from the lower edge of said skirt, said inwardly directed annular ridge cooperating with said two outwardly directed annular ridges of said tubular body to hold said movable member in position thereon,

an axially extending stem the lower end of which engages said lower ends of said strips of said intermediate element which are so shaped that when said movable member is fully inserted into said tubular body the ends of said strips of said intermediate element are caused to move radially outwardly to clamp said stopper to the inside of the neck of a bottle, when inserted therein, and when said movable member is partly withdrawn from said tubular body, to the limit imposed by engagement of said inwardly directed annular ridge at the bottom of said skirt of said movable member with said lower annular ridge of said tubular body, said strips are free to move radially inwardly to permit extraction of said stopper from the bottle.

3,926,330

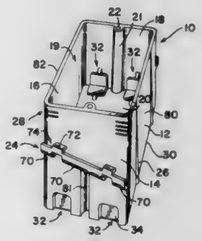
KNOCKOUT ARRANGEMENT FOR MOLDED PLASTIC ELECTRICAL BOXES

Dale R. Deming, and Arthur E. Datschefski, both of South Bend, Ind., assignors to All-Steel Inc., Aurora, Ill.

Filed Mar. 13, 1974, Ser. No. 450,851

Int. Cl.² H02G *3/12*

U.S. Cl. 220—3.9 **4 Claims**



1. In a plastic molded electrical wiring box for use with a non-metallic, sheathed cable, wherein one end of the cable is to be received in the box, with the box including a side wall structure integrally connected to a back wall, with the side and back wall structures defining a chamber within the box that is open at the front of the box, and the side and back wall structures merging at a marginal corner about the rear of the box, a knockout arrangement therefor through which the cable end is to extend into the box, said knockout arrangement comprising:

a corner segment at said marginal corner comprising a first leaf integral with the side wall structure and a second leaf integral with the back wall structure,

said leaves being integral with each other and being respectively offset within said chamber and inwardly of their respective wall structures and said marginal corners, and being integrally connected to the respective wall structures by marginal portions of film thickness proportions, said leaves merging into each other at their adjacent ends adjacent but spaced from and inwardly of said marginal corner and having their respective opposite ends extend away from their respective adjacent ends,

said leaves being respectively offset within said chamber a distance equivalent to their respective thicknesses minus the thickness of their respective marginal portions,

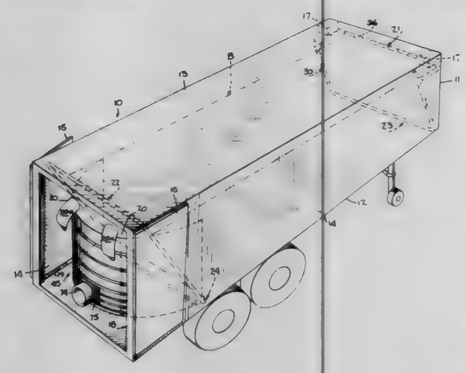
said marginal portions being integral with each other and defining about said corner segment a marginal edge portion that is continuous and uninterrupted about said corner segment and that is indented into the box and integrally connects said corner segment with said wall structures in a continuous and uninterrupted manner thereabout,

with each corner segment leaf having a tapered molding spline integral with said opposite end of same and with the box wall adjacent same on the inside of the box, with said splines respectively being tapered to increase in thickness in the direction of the respective leaf opposite ends,

said leaves being identical in outline configuration,

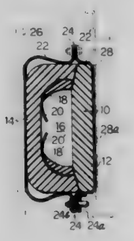
whereby said corner segment as a whole is recessed within the box and is thereby protected from accidental dislodgement, and said corner segment may be removed from the box to form a knockout opening therein by fracturing said marginal edge portion utilizing a hand tool from either inside or outside the box, and the cable end may be inserted into the box chamber through the knockout opening from either the side or the back of the box in normal relation thereto.

3,926,331
LINING OF CONTAINERS FOR BULK CARGO
Ronald W. Bjelland, Valley Stream; Charles A. Narwicz, Greenlawn, both of N.Y., and Casimir Hetmanski, Westfield, N.J., assignors to United States Lines, Inc., New York, N.Y.
Filed Nov. 16, 1973, Ser. No. 416,580
Int. Cl.² B65D *25/14*; B65G *65/34*; B60P *1/00*
U.S. Cl. 220—63 R **34 Claims**



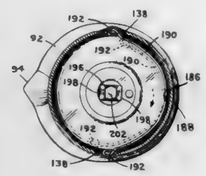
1. In a cargo container of the type having a floor, side walls, a roof, and a front wall, and wherein the roof structure includes downwardly projecting structural members, a liner bag adapting the container for receiving bulk cargo, and means for supporting said liner bag within the container comprising front frame means including a bottom cross member on and extending transversely across the container floor, a pair of substantially parallel side members extending upwardly and rearwardly from the respective ends of said bottom cross member, said side members having upper end portions engaging forwardly facing surface portions on one of said downwardly projecting structural members, and means bracing said side members apart adjacent to their said upper end portions and including a top cross member extending between said side members and generally parallel to said bottom cross member, said liner bag having a transversely extending bottom front end area connected to said front frame bottom cross member and a transversely extending upper front end area connected to said front frame top cross member.

3,926,332
SEALING STRUCTURE FOR A LIQUID STORAGE VESSEL HAVING A FLOATING HEAD
Chikashi Okamoto, Yokkaichi, Japan, assignor to Nippon Kakokicompany, Limited, Tokyo, Japan
Filed Dec. 10, 1973, Ser. No. 423,532
Claims priority, application Japan, Feb. 14, 1973, 48-17497
Int. Cl.² B65D *87/20*, *87/18*
U.S. Cl. 220—226 **6 Claims**



1. A sealing structure for use in a liquid storage vessel having a floating head, said sealing structure comprising a core including an elongated inner core member of elastic material having a substantially rectangular cross section and substantially parallel inner and outer longitudinal surfaces and an elongated outer core member of elastic material having a substantially arcuate cross section projecting outwardly away from the outer longitudinal surface of the inner core member, said outer core member having substantially parallel upper and lower longitudinal ends respectively secured to the upper and lower longitudinal ends of the outer longitudinal surface of the inner core member to form a continuous cavity throughout the length of said core, said outer core member being initially formed separately from said inner core member as a substantially flat elongated strip and being thereafter forcibly deformed into a configuration having said arcuate cross section, and a flexible covering member hermetically enclosing said core therewithin and slidably pressed between the inner longitudinal surface of said inner core member and an outer peripheral surface of said floating head and partly between the projecting outer longitudinal surface of said outer core member and an inner peripheral surface of said liquid storage vessel.

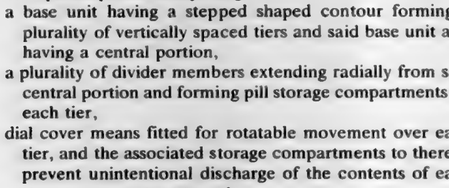
3,926,333
PERCOLATOR TOP FASTENING MEANS
John Littell Eaton, Jr., Delanco, N.J.; Richard Henry Brill, and Walter E. Myers, both of Philadelphia, Pa., assignors to SCM Corporation, New York, N.Y.
Division of Ser. No. 451,336, March 18, 1974. This application May 12, 1975, Ser. No. 576,412
Int. Cl.² B65D *45/32*
U.S. Cl. 220—320 **7 Claims**



1. A quick-release latch mechanism for holding the cover of a vessel, comprising:
at least two sockets in the wall of said vessel;
each of said sockets having a horizontal camming surface to provide a camming action upon horizontal movement relative to said horizontal camming surface;
socket engaging means on said cover adapted to engage said sockets in said wall of said vessel;
spring means in said cover urging said socket engaging means against said horizontal camming surface to engage said socket.

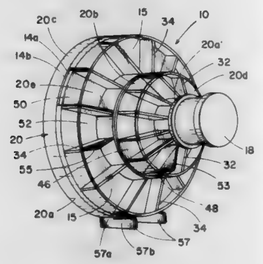
3,926,334
COUNTING AND SEGREGATING MECHANISM FOR INDIVIDUAL ARTICLES
Charles E. Brocklehurst, Honea Path, S.C., assignor to Riegel Textile Corporation, New York, N.Y.
Filed July 24, 1974, Ser. No. 491,389
Int. Cl.² B65H *33/10*
U.S. Cl. 221—7 **9 Claims**

1. A counting and segregating mechanism for individual articles including disposable diapers and the like and characterized by the ability to count and segregate a group of a predetermined number of such articles for packaging and the like; said mechanism comprising:
elongate compartmented means defining sequentially along a horizontally and longitudinally extending path an area for receiving the articles to be counted, an area for receiving the articles from said receiving area and holding the articles as they are being counted, and an area for receiving a counted group of a predetermined number of the articles from said counting area for removal from said mechanism;
means operatively connnected with said compartmented means for longitudinally and horizontally moving the articles sequentially from said receiving area to said counting area;



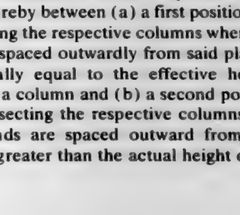
means operatively connected with said compartmented means for longitudinally and horizontally moving a counted group of a predetermined number of the articles from said counting area to said removal area; and
control and actuating means connected with both of said moving means for sequentially operating said article moving means a predetermined number of times and then operating said counted group moving means so that a predetermined number of individual articles will be counted and segregated into a group of such articles.

3,926,335
CAPSULE OR PILL DISPENSER-SURE WAY DIAL A PILL
Thomas C. Dangles, and Elsie R. M. Dangles, both of 10424 Lavergne, Oak Lawn, Ill. 60453
Filed Mar. 18, 1974, Ser. No. 451,978
Int. Cl.² G07F *11/00*
U.S. Cl. 221—82 **7 Claims**



1. A pill dispenser comprising:
a base unit having a stepped shaped contour forming a plurality of vertically spaced tiers and said base unit also having a central portion,
a plurality of divider members extending radially from said central portion and forming pill storage compartments on each tier,
dial cover means fitted for rotatable movement over each tier, and the associated storage compartments to thereby prevent unintentional discharge of the contents of each storage compartment, and
each dial cover means including a top pill loading opening and also including a side discharge opening to thereby provide means for loading pills into the compartments upon selected indexing of said rotatable dial cover means, and also to thereby provide means for selectively discharging pills from said compartments, and
said base unit including an annular vertical rim encircling the bottom of the base unit,
pedestal means mounted on said vertical rim and having a support surface means at an acute angle to the base rim surface for mounting said pill dispenser in a generally upright position but at a slight inclination whereby said upper end of the central opening is tilted for holding an associated pill bottle therein with the base rim being generally horizontal but slightly inclined for balancing of the pill dispenser in an on-end position in a generally vertical but slightly inclined to the vertical plane,
said support surface adapted to lie on a horizontal surface and support said base unit in a generally perpendicular relationship to the base unit bottom surface.

3,926,336
ESCAPEMENT MECHANISM FOR CASE PACKING MACHINES
Robert H. Graham, and Duane Sanders, both of Spokane, Wash., assignors to R. A. Pearson Company, Spokane, Wash.
Filed Apr. 5, 1974, Ser. No. 458,106
Int. Cl.² G07F *11/16*
U.S. Cl. 221—296 **6 Claims**



1. An escapement mechanism for handling articles of equal height in successive groups wherein the articles each include a reduced end and an enlarged end, and are initially stacked vertically one against another with the reduced end of one article engaged against the enlarged end of an adjacent article to form a plurality of elongated columns, the effective height of each article in the columns being equal, said columns being arranged parallel to each other and in a rectangular array to form rectangular groups of articles within a hopper and being urged toward a hopper discharge end, said escapement mechanism comprising:
first abutment means mounted to the hopper for movement between a first position intersecting the article columns and engaging the enlarged end of each article in a rectangular group along a plane located across the hopper discharge end and a second position laterally clear of the article columns, for intermittently permitting single groups of articles to move outward from the hopper discharge end;
first drive means operatively connected to said first abutment means for moving said first abutment means between said first and second positions;
second abutment means in line with said columns and spaced outwardly from the hopper discharge end for receiving and supporting the rectangular groups of articles released by said first abutment means along their enlarged ends and for vertically moving the groups engaged thereby between (a) a first position in line with and intersecting the respective columns wherein said enlarged ends are spaced outwardly from said plane by a distance substantially equal to the effective height of a single article in a column and (b) a second position in line with and intersecting the respective columns wherein the enlarged ends are spaced outward from the plane by a distance greater than the actual height of a single article;

second drive means operatively connected to said second abutment means for moving said second abutment to move successive groups of articles from the first to the second position;

sensing means for detecting engagement of a prescribed number of articles on said second abutment means and operatively communicating with said first drive means to affect movement of the first abutment means upon sensing engagement of a prescribed number of articles on said second abutment means; and

transfer means for moving the groups of articles while they are supported by the second abutment means at the second position along a path to a location laterally clear of the elongated columns.

3,926,337

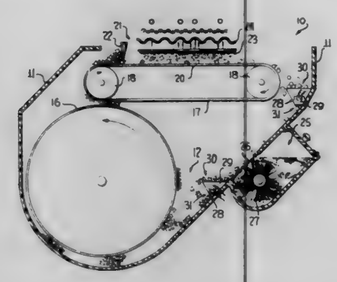
METHOD OF MEASURING CONCENTRATION RATIOS OF A MIXTURE OF MATERIALS

Roger M. O'Neill, Oak Lawn, and John B. Kennedy, Jr., Chicago, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 140,573, May 5, 1971, Pat. No. 3,802,381, which is a continuation of Ser. No. 748,754, July 30, 1968, abandoned. This application Sept. 17, 1973, Ser. No. 397,575

Int. Cl.² B67D *5/14*

U.S. Cl. 222—1 **8 Claims**



7. An electrostatic printing or coating process involving detecting the ratio of larger carrier particles of a first solid material to smaller toner particles of a second solid material which adhere to said carrier particles by triboelectric forces in a mix of carrier and toner particles comprising establishing a field in a predetermined position, accommodating a predetermined volume of said mix in said position while transporting mix through said position, detecting the magnitude of said field within said predetermined volume including detecting variations in said field for determining the ratio of carrier particles to toner particles in said volume, and adding toner particles to said mix prior to introducing said mix into the printing or coating zone, the addition of toner particles being governed in accordance with data derived from said detecting step.

3,926,338

THERMALLY INSENSITIVE PARTICLE CONCENTRATION CONTROLLER

Noel L. Reyner, Hilton, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 5, 1973, Ser. No. 413,108

Int. Cl.² G03G *15/08*

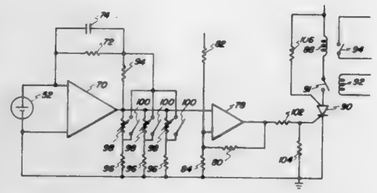
U.S. Cl. 222—56 **14 Claims**

1. An apparatus for controlling the concentration of particles in a mix, including:

electrode means biased electrically to attract particles thereto as said electrode means passes through the mix;

means for illuminating said electrode means having the particles deposited thereon with light rays;

a thermally insensitive photodiode for detecting the intensity of the light rays transmitted from said electrode means, said photodiode being adapted to generate a substantially thermally insensitive electrical output signal indicative of the density of particles deposited on said electrode means; and



amplifying circuit means, in electrical communication with said photodiode, for stably amplifying the thermally insensitive electrical output signal from said photodiode to at least a preselected level.

3,926,339

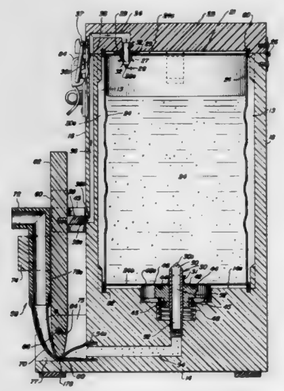
LIQUID DISPENSING APPARATUS HAVING PLURAL CAN PIERCING TOOLS

Richard A. Openchowski, Woodridge, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed June 21, 1974, Ser. No. 481,553

Int. Cl.² B67B *7/26, 7/28*

U.S. Cl. 222—83 **9 Claims**



1. A liquid dispenser unit adapted for use in the gravity dispensing of liquids held with can type containers which comprises:

a. a frame means for holding a can type container in a liquid dispensing situation, said frame comprising a base, front and rear walls and a top hingedly connected to the rear wall;

b. a first can piercing means mounted on the interior surface of said frame base between said front and rear walls and located to pierce the bottom of a container held in said frame, said piercing means having a fluid conducting passageway formed therein;

c. a second can piercing means mounted on the lower surface of the top of said frame located to pierce the top of a container held in the frame when the top is closed, said piercing means having a central passageway formed therein;

d. a valve means mounted on the front wall of said frame, including means for simultaneously separately closing and opening first and second valve passageways;

e. a first conduit means between said first valve passageway and said fluid conducting passageway, said first conduit being formed in the base of the frame means;

f. a second conduit means between said second valve passageway and said central passage formed in the front wall and top of the frame means; and

g. a pressure exerting means associated with said first piercing means, said means exerting a positive upward sealing pressure on the bottom of a can held in the frame to effectuate a seal between the said can and first and second piercing means when the top member is closed.

3,926,340

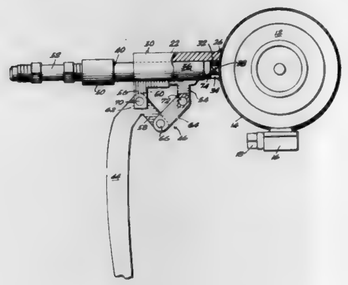
PRESSURIZED CAN PIERCING TOOL

Charles Tygenhof, 212 Curtiss Parkway, Miami Springs, Fla. 33166

Filed Feb. 22, 1974, Ser. No. 444,748

Int. Cl.² B67B *7/24*

U.S. Cl. 222—83.5 **3 Claims**



1. A tool for opening and administering the contents of a pressurized cylindrical can having top, bottom and side walls, said tool comprising, ring means for fitting circumferentially about the can wall between the top and bottom walls and including adjustment means to snugly fit the ring about the can wall, a support member extending radially from one side of and rigidly fixed on the ring means and longitudinally extending guide means on the support member, a piercing sleeve member having a proximal end and a distal end and means slidably captivating said sleeve member on the support member and engaged in the guide means, said sleeve member having a longitudinally extending through bore, a piercing means extending radially from the proximal end of the sleeve member and with a through opening in fluid communication with the through bore, said piercing means being normally spaced radially outwardly of said ring means and adapted to be slidably moved radially inwardly past the ring means and into piercing engagement with the can for providing a flow path for pressurized contents in the can through the piercing means through opening and sleeve;

a lever connected to the sleeve member,

toggle means connecting the lever to the sleeve member and to the support member to releasably lock the piercing means in piercing engagement with the can wall, and nipple means connected to the distal end of said sleeve member for conducting material through the tool when the can has been pierced, said support member comprising a housing having a longitudinally extending passageway therethrough and a longitudinally extending slot means in the housing communicating with said passageway, said sleeve member including a rigid arm projecting intermediately from said sleeve and through said slot means, clevis means integral with said housing and disposed outwardly of said rigid arm of said sleeve member, said clevis means and rigid arm each including pivot portions in substantially longitudinal alignment along the path of movement of said sleeve member in said housing, said toggle means comprising a foot on said lever pivoted on said clevis means and extending angularly away from a line passing through said pivot portions, a link pivotally connected to said foot and the pivot portions of said rigid arm so that movement of said lever away from said ring means causes the sleeve member to move away from said ring means and the foot and link to project angularly away from housing outwardly of the line passing through the pivot portions, and movement of the lever toward the ring means causes the lever and link to pivot inwardly beyond the line passing through said pivot portions when the piercing means projects beyond the inner periphery of said ring means and the can is pierced.

3,926,341

BOTTLES IN SEMI-RIGID PLASTIC MATERIAL

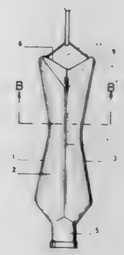
Willy Lhoest, Rixensart, Belgium, assignor to Recherche et Industrie Therapeutiques, Belgium

Filed Nov. 28, 1973, Ser. No. 419,847

Claims priority, application Belgium, Dec. 8, 1972, 125060

Int. Cl.² B65D *35/28*

U.S. Cl. 222—95 **2 Claims**



1. An improved collapsible semi-rigid plastic bottle for containing and dispensing physiological liquids for intravenous administration of the type having four sidewalls joined at their respective ends by two opposed transversal walls to form a base and a narrowing top surface, said top surface containing at least one access device to the inside volume of said bottle, with two opposite sidewalls containing a bellows-shaped groove extending substantially the entire length of said sidewalls and said base also containing a bellows-shaped groove joined at each end to the bellows-shaped grooves of the attached sidewalls such that when under an internal-external pressure differential the remaining two flat sidewalls of said bottle collapse toward each other, wherein the improvement comprises a flexible hanging means oppositely attached to two edges formed by the joining of said base to said flat sidewalls so that, when said bottle is hanging in an inverted position, the weight of said bottle exerts a force on said flexible hanging means which, as a result of the positioning and flexing of said hanging means, materially aids in the collapse of said flat sidewalls.

3,926,342

CARBONATED WATER PRODUCING APPARATUS

Ray E. Selvia, and Allan D. Barden, both of Terre Haute, Ind., assignors to All State Vending Equipment, Inc., Terre Haute, Ind.

Filed Aug. 1, 1974, Ser. No. 493,495

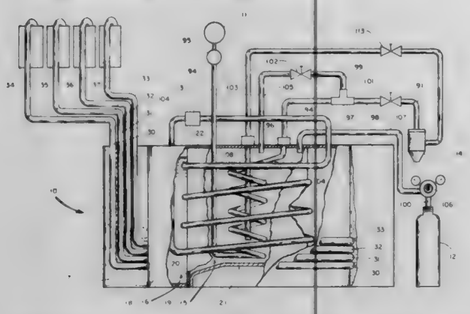
Int. Cl.² B67D *5/62*

U.S. Cl. 222—129.1 **5 Claims**

1. A carbonator comprising:

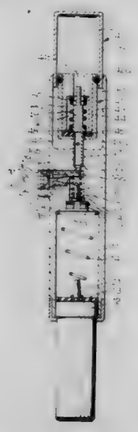
a sealed first pressure vessel;

a sealed second pressure vessel containing liquid and said first pressure vessel;
a tap water carrying coiled tube extending into and out of said first pressure vessel being connectable to a source of tap water;
a carbonated water outlet tube extending into said first pressure vessel;
a carbon dioxide carrying tube opening into said first pressure vessel;
a tap water inlet tube connected to said coiled tube and opening into said first pressure vessel;



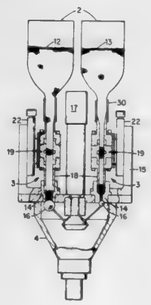
refrigeration means including a coolant tube extending into said second pressure vessel and adjacent said first pressure vessel operable to cool liquid within said second pressure vessel;
conduit means mounted adjacent and to said second pressure vessel operable to carry syrup adjacent said second pressure vessel; and,
insulation surrounding said second pressure vessel and securing said conduit means to said second pressure vessel.

3,926,343
ATOMIZED SPRAY DISPENSER WITH IMPROVED ATOMIZATION
Eduard K. Kleiner, New York, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Mar. 26, 1974, Ser. No. 454,917
Int. Cl.² B67D *5/54*
U.S. Cl. 222—145 **12 Claims**



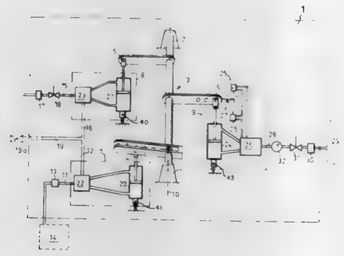
1. A dispenser for dispensing a measured dose of a spray of liquid in finely atomized form in compressed air, comprising a dispenser body having a nozzle means opening out of said dispenser body and having a through passage ending in an outwardly diverging portion, an air compressing piston-cylinder means mounted on said body and having a fixed member and a movable member movable relative to the fixed member through a compression stroke to compress the air, the body having a compressed air flow path therethrough from the air compressing piston-cylinder means to the nozzle means for conducting compressed air from the air compressing piston-cylinder means to the nozzle means, a valve member in the body normally obturating the compressed air flow path, actuating pin means operatively associated with the movable member of the air compressing piston-cylinder means and said valve member for positively actuating the valve member to open the compressed air flow path near the end of the compression stroke when the air compressing piston-cylinder means has compressed air to a predetermined pressure, a liquid product supply means on said dispenser body including means for mechanically pressurizing the liquid product and for dispensing a measured amount of a liquid product under pressure, said dispenser body having a product supply passage extending thereinto from said product supply means and intersecting said compressed air flow path upstream of said nozzle means.

3,926,344
VOLUMETRIC DISPENSER FOR SMALL PARTICLES FROM PLURAL SOURCES
Ronnie A. Bradley, Oak Ridge; William H. Miller, and John D. Sease, both of Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.
Filed June 20, 1974, Ser. No. 481,422
Int. Cl.² G01F *11/28*
U.S. Cl. 222—145 **1 Claim**



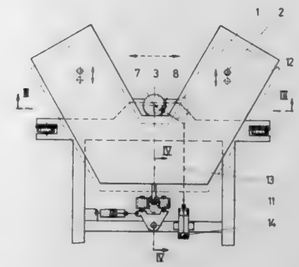
1. Apparatus for accurately and contemporaneously dispensing measured volumes of a plurality of different small spherical or spheroidal particles from respective supply hoppers into a common receiver comprising:
a. a support frame;
b. a plurality of orifice members defining vertically oriented passageways mounted within and supported by said frame, said passageways terminating in respective discharge ports at the lower ends of said orifice members;
c. ball plug valves respectively engaging said discharge ports;
d. means for simultaneously actuating said ball plug valves to simultaneously open and close said discharge ports;
e. vertically oriented, vertically individually adjustable measuring tubes having lower ends respectively slidably engaging said passageways in said orifice members; said measuring tubes and passageways respectively defining dispensing volumes for said different particles; said discharge ports being sized to contemporaneously discharge the respective particle contents of said measuring tubes and passageways;
f. pneumatically actuated compression valves respectively disposed immediately above and in flow communication with said measuring tubes for selectively admitting said different particles into said tubes and said passageways; and
g. means for respectively permitting gravity transfer of said different particles from said supply hoppers to the upstream sides of said compression valves.

3,926,345
DEVICE FOR THE BATCHING OF MEDIA
Elgas Pulk, deceased, late of Stockholm, Sweden, by Carlgustaf Hallsenius, Administrator, Uppsala, Sweden, and John Paul Noren, Upplands Vasby, Sweden, assignors to Stabilator AB, Bromma, Sweden
Continuation of Ser. No. 327,313, Jan. 29, 1973, abandoned. This application Mar. 24, 1975, Ser. No. 561,426
Claims priority, application Sweden, Feb. 3, 1972, 1276/72
Int. Cl.² F04B *9/08*
U.S. Cl. 222—145 **3 Claims**



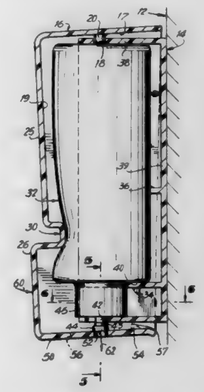
1. A device for batching at least two liquid media in mutually predetermined proportions by volume comprising
a power source including a double acting cylinder with associated control valves adapted for operation by an air pressure source connected to an input line thereof,
an adjustable pressure regulator in the input line of the power source,
a pair of pump units each including a double acting cylinder and a flow controlling valve unit suitably connected to an input line and a delivery line of each pump unit,
a rocker element pivotally connected to the power source and the pump units,
means for varying the distance between the rocking axis of the rocker element and the pivot connection to at least one pump unit,
means for varying the distance between the rocking axis of the rocker element and the pivot connection to the power source,
a common porportioning line into which the delivery lines from the pair of pump units terminate,
a valve controlling the outlet of the common proportioning line,
said rocker element being such that torque generated by the power source around the rocking axis of the rocker element is balanced when the valve in the common proportioning line is in a closed position by counter torque generated around the rocking axis of the rocker element by the pump units thereby enabling the pump units to be stopped by closing the valve,
said inlet line of a first of the pair of pump units supplying a non-pressurized medium,
said input line of the second of the pair of pump units supplying pressurized medium, and
a pressure regulator in the input line of the second pump unit by means of which the head of the pressurized medium to be mixed is reduced to a lower level in the input line of the second pump unit to a pressure lower than the lowest feed pressure that occurs in the input line of the second pump unit on account of pressure variations thereof.

3,926,346
APPARATUS FOR ADJUSTING THE POSITION OF A V-SHAPED TUNDISH IN TWO-STRAND CONTINUOUS CASTING PLANTS
Karl Dub, Vienna, and Stefan Biricz, Linz, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft
Filed Feb. 18, 1975, Ser. No. 550,607
Claims priority, application Austria, Feb. 19, 1974, 1300/74
Int. Cl.² B22D *37/00, 41/12*
U.S. Cl. 222—160 **7 Claims**



1. An apparatus for position-adjusting a V-shaped tundish in three directions perpendicular relative to each other, in particular when exchanging the tundish, in two-strand continuous casting plants, comprising:
a liftable and lowerable carrier connected to said tundish, a column arranged close to the center of gravity of said tundish and liftably and lowerably supporting said carrier, a movable car with a platform,
a pedestal, rotatably arranged in said platform and supporting said column in a position eccentrical of the axis of said pedestal,
a fixable pivot-mechanism connected to the tundish for horizontal pivoting thereof around the axis of said column.

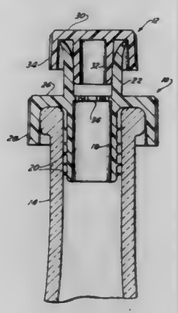
3,926,347
FLOWABLE MATERIAL DISPENSER WITH RESILIENT CONTAINER
Jack B. Low, Brooklyn, N.Y.; Buckley Crist, Plainfield, and Thomas J. Zoltner, Morris Plains, both of N.J., assignors to Jaclo, Inc., Brooklyn, N.Y.
Filed July 10, 1974, Ser. No. 487,257
Int. Cl.² B65D *37/00*
U.S. Cl. 222—185 **3 Claims**



1. A hand operated dispenser for controlling the flow of flowable material from a flexible, shape retaining container

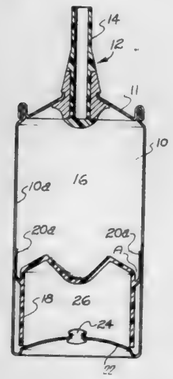
having a spout, comprising supporting means for retaining the container in an inverted position with the spout of the container maintained substantially stationary relative to said supporting means, a hand actuated outer cover having an outwardly exposed hand-receiving portion, a floor fixed to the cover and located at the bottom of the dispenser, said floor including a separated portion adapted to flex toward and away from spout of the container, means for providing a seal between the flexible floor portion and the spout of the container, a hole defined within the flexible floor portion and communicating with the outside of the dispenser at the bottom thereof, means for mounting the cover for movement of the floor beneath the spout of the container in a substantially horizontal plane from a first position where the flexible floor portion and the sealing means prevent flow of flowable material from said container to a second position where the hole of the floor is positioned beneath the spout of the container to permit flowable material in the container to flow through the hole into the hand of a user placed below the dispenser, said cover further including a bumper bearing against a portion of the side wall of the container for squeezing the container upon hand actuation of the cover and for moving the floor from said first position to said second position, the natural expansion of the container moving the side wall of the container to return the floor from said second position back to said first position, and means for adjusting the pressure applied by the bumper to said side wall by varying the position of the bumper relative to said cover.

3,926,348
POURING FITMENT WITH FILTER
Robert S. Lutzker, 21 Lee Ave., East Williston, N.Y. 11596
Filed Jan. 14, 1975, Ser. No. 540,876
Int. Cl.² B65D *25/48*
U.S. Cl. 222—189 **4 Claims**



1. Resealer for wine bottles including a pouring fitment for extending across and sealing engagement with the neck of the bottle, the fitment including an upper end and a lower end, the lower end having means for securing and sealing the fitment to the neck of the bottles, the means at the lower end of the fitment for securing the fitment to the neck of the bottle including a downwardly extending tube having a series of radial lips that engage with the internal surfaces of the neck for cooperating in securing the fitment thereto, said means at the lower end of the fitment including a radial flange that rests on the top of the neck for providing an additional sealing zone therewith, an apron extending downwardly from the outer periphery of the flange and being adapted to engage with outer surfaces of the bottle neck for cooperating in providing an additional sealing zone and additional securement of the fitment to the neck of the bottle, a tubular extension projecting upwardly at the upper end of the fitment and including an outwardly flared dripless pouring lip, the pouring lip being an integral extension of the tubular extension and the pouring lip being defined by a tapered edge that reduces to a feathered edge, the cap extending across the upper end of the fitment for engaging with the tubular extension and pouring lip for sealing the bottle contents, the cap including a top circular plate, a downwardly depending tube and a concentric outer downwardly depending apron, the tube engaging with internal surfaces of the tubular extension for providing a sealing zone and securement of the cap to the fitment, the bottom of the top plate engaging with the pouring lip to provide an additional sealing zone of the cap with the fitment.

3,926,349
VALVE CONSTRUCTION FOR A PRESSURE OPERATED CONTAINER
Robert S. Schultz, 7 Heusted Drive, Old Greenwich, Conn. 06870
Continuation-in-part of Ser. No. 290,977, Sept. 21, 1972, Pat. No. 3,827,607, which is a continuation-in-part of Ser. No. 175,253, Aug. 26, 1971, abandoned. This application Mar. 28, 1974, Ser. No. 455,892
Int. Cl.² B65D *83/14*
U.S. Cl. 222—402.22 **16 Claims**

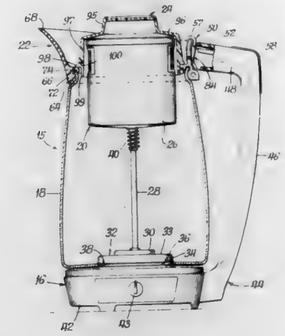


1. In combination, for use in a pressurized container, a rigid centrally apertured container closure member having a substantial conical taper in the direction of the aperture, an elastomeric bushing fitted to the concave taper and extending through the aperture, the lower end of said bushing being in axial proximity to the bushing fit to said taper, said bushing having a central longitudinal bore extending axially through the aperture region of the closure member, and a tiltable valve member having a substantially flat seating surface seated in axial abutment with said lower end of said bushing and including a cylindrical dispensing stem fitted to and extending through and beyond the outer end of the bore of the bushing; whereby in the presence of internal pressure within a container of which said closure member forms a part, said valve member and bushing are pressure-loaded against the convergent taper, thus enhancing seal engagement of said bushing to said taper and of said bushing to said stem.

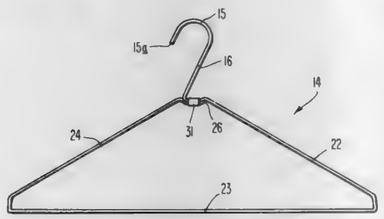
3,926,350
PLASTIC COLLAR PERCOLATOR
Herbert N. Muehlhausen, and John J. Unger, both of Elmhurst, Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed July 9, 1974, Ser. No. 486,923
Int. Cl.² A47G *19/14*
U.S. Cl. 222—475 **6 Claims**

5. A vessel for serving coffee or the like comprising, a glass member having a bottom wall and a side wall terminating at its upper end with a concave annular groove and a beaded upper edge, a non-breakable plastic split collar member sealingly mounted on the upper end of said glass member, said collar member being characterized by a vertical slot which extends from its upper edge to its lower edge whereby to define a pair of spaced-apart split ends and by a pouring spout

formation which is disposed diametrically opposite said split ends of said collar member, a downwardly opening groove formed in the underside of said collar member and defined in part by a depending skirt portion having a convexly curved inner annular surface, an elongated solid sponge rubber sealing member seated in the upper end of said downwardly opening groove, said collar member being mounted on said upper end of said glass member with said beaded upper edge being received in said downwardly opening groove in sealing engagement with said sealing member and with said convexly curved inner surface being received in said concave annular groove formed at the upper end of said glass member, a pair of outwardly projecting embossments formed one on each of the adjacent split ends of said collar member at the lower edges thereof and having alignable horizontally disposed bores formed therein, and nut and bolt fastening means extending through said bored embossments for tightening said collar member on said glass member.

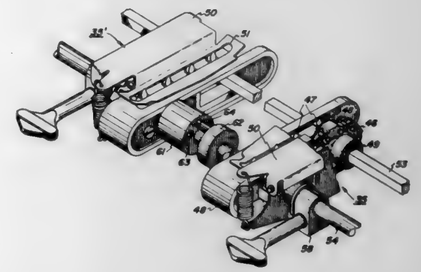


3,926,351
GARMENT HANGER
John S. Baer, Schooner Head, Bay Harbor, Maine 04609
Filed Oct. 24, 1974, Ser. No. 517,650
Int. Cl.² A47J *51/097*
U.S. Cl. 223—88 **9 Claims**



1. A garment hanger composed of a single continuous-length rigid wire of uniform cross-section formed into a generally triangular body portion with suspension means extending outwardly from the apex of the triangle, the triangle having side element converging toward the apex and having a stretcher run extending between the remote ends of said side elements, the improvement wherein said side elements are formed from the wire, each side element terminating at the apex in a U-shaped connecting piece having a pair of spaced-apart legs interconnected by an intermediate base portion, the connecting pieces of the two side elements nesting one within the other at the apex of the triangular body portion with the base portions thereof disposed flush against one another in a line along the length thereof, said connecting portions being all coplanar with said side elements and positioned in nesting relation without crossovers, said base portions when in nested relation serving to complete the triangular body intermediate the side elements, the connecting piece more remote from the stretcher run being on the exterior side of the body, and the other connecting piece being on the interior side of the body, the wire at the far end of said exterior connecting piece opposite its associated side element being formed into an open suspension hook projecting from the triangular body portion within the plane of said body portion, the wire at the far end of the interior connecting piece terminating closely adjacent the side element associated with the exterior connecting piece, and uniting means positioned intermediate said spaced-apart legs uniting said base portions in nested relation along the length thereof to prevent lateral or transverse separation of the connecting pieces.

3,926,352
QUICK CHANGE LABELING HEAD
Dean S. Kercher, Woodstock, and Trygve R. Rod, Mundelein, both of Ill., assignors to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 372,877, June 25, 1973, Pat. No. 3,854,351, which is a division of Ser. No. 153,313, June 15, 1971, Pat. No. 3,774,489. This application Apr. 11, 1974, Ser. No. 459,997
Int. Cl.² B65H *17/38*
U.S. Cl. 226—79 **3 Claims**



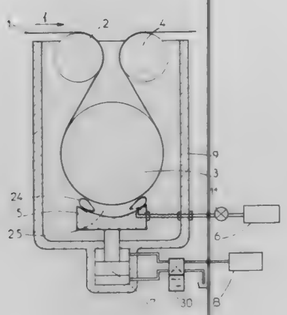
1. As a means to facilitate changeover of an addressing machine labeling head from one size label form to another size label form, said labeling head including a form feeder pair cooperable with the label form margins to feed said forms to said labeling head, the combination of:

means supporting at least one of said form feeders for adjusting movement relative to the other of said form feeders whereby to enable the relative spacing between said form feeder pair to be adjusted for the label form being handled;

locating means disposed adjacent said one form feeder in a preset locating position; and

indexable gauge means adjacent said locating means and engageable therewith to position said one form feeder relative to said locating means and thereby locate said one form feeder relative to the other form feeder, said gauge means having spacing surfaces of predetermined dimension at each index position thereof corresponding to different ones of said label forms for engagement with said locating means whereby to enable said one form feeder to be expediously set for the specific label form being handled.

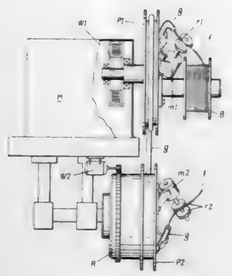
3,926,353
APPARATUS ADAPTED FOR DRIVING OR BRAKING A METALLIC BAND
Pierre Guy, La Tour En Jarez, France, assignor to Creusot-Loire Enterprises, Paris, France
Filed Jan. 7, 1975, Ser. No. 539,224
Claims priority, application France, Jan. 11, 1974, 74.00917
Int. Cl.² B65H *17/28*
U.S. Cl. 226—95 **8 Claims**



1. In a system for driving a strip comprising a roller for receiving a strip, a shoe movable radially with respect to the roller in the region in which the strip is received, means for injecting compressed air radially inwards of said shoe against said strip, a fixed frame movably supporting said shoe, a jack acting on said shoe in said frame whereby when compressed air is applied between said shoe and said strip on said roller, said strip is applied against said roller with a force equal to that exerted by said jack on said shoe, the compressed air forming a very thin fluid cushion and providing a very small clearance between said shoe and said strip preventing rubbing of said shoe on said strip, an improvement comprising an annular hollow joint of flexible material on said shoe surrounding a chamber formed in said shoe and into which said compressed air is introduced to apply the strip against said roller, said joint having an orifice which opens into said chamber so that when the chamber is pressurized by the compressed air the joint will simultaneously be pressurized and inflated.

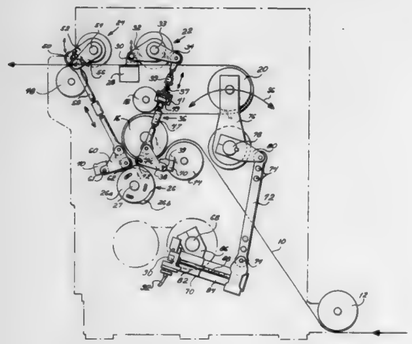
3,926,354
CONTINUOUS FEED DEVICE FOR FILIFORM BODIES PARTICULARLY FOR ROTATING WELDING MACHINES FOR PIPES
Sergio De Santis, No. 55, Via A. Traversari; Giovanni Farello, No. 4, Via dei Tizii, both of Rome, and Roberto Torrani, No. 40, Via Strada Lanzo, Borgaro Torinese Turin, all of Italy
Filed May 22, 1974, Ser. No. 472,509
Claims priority, application Italy, May 29, 1973, 50273/73
Int. Cl.² B65H *17/18*
U.S. Cl. 226—108 **7 Claims**

1. A device for continuously feeding filiform bodies from a source of supply to a rotary user device comprising in combination first and second pulleys rotatably mounted on first and second shafts, respectively, a supply spool mounted on a shaft on said first pulley for rotation relative to said first pulley, a flexible and inextensible sliding sheath having its one end fastened to said first pulley and its other end to said second pulley and being wound on both said pulleys, said second pulley being fastened to the rotary user device, means for causing the filiform body to slide inside the sheath at a predetermined speed, and means for rotating said second pulley to



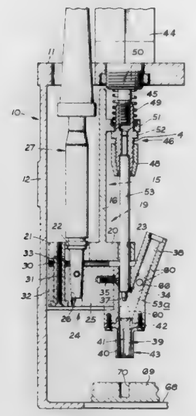
cause said sheath to unwind tangentially from said first pulley and to wind up tangentially on said second pulley.

3,926,355
APPARATUS FOR INTERMITTENTLY FEEDING LENGTHS OF CONTINUOUS SHEET MATERIAL AT A CONSTANT VELOCITY
George N. Bonnell, Summerville, N.J., assignor to Bobst Champlain, Inc., Roseland, N.J.
Filed Oct. 21, 1974, Ser. No. 516,371
Int. Cl.² B65H *17/42*
U.S. Cl. 226—114 **12 Claims**



1. Apparatus for handling a continuous sheet material comprising a metering roll, a feed roll intermittently engaging and disengaging the material, reciprocating brake means for stopping the movement of the material during each disengagement of the material by said feed roll, a looper roll located along the material between said metering roll and said feed roll and means for cyclically moving said looper roll, said moving means comprising a shaft, means for oscillating said shaft and mechanical linkage operatively connecting said shaft to said looper roll, said linkage comprising a first and a second member, said members being operatively connected together by a pivotal joint, said first member comprising a first part mounted to said shaft and a second part connected to said pivotal joint and means for adjusting the position of said second part relative to said first part such that the distance between said shaft and said joint may be varied.

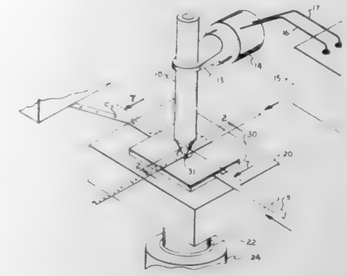
3,926,356
INSERTS
Leslie Ernest Still, Wolverhampton, England, assignor to The Precision Screw & Manufacturing Company Limited, Willenhall, England
Filed June 24, 1974, Ser. No. 482,375
Claims priority, application United Kingdom, July 19, 1973, 34443/73
Int. Cl.² B27F *7/02*
U.S. Cl. 227—114 **6 Claims**



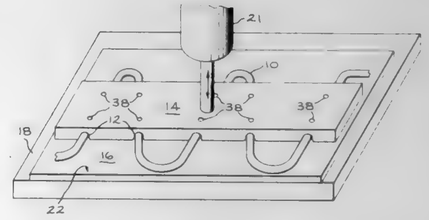
1. Apparatus for installing metallic inserts into a thermoplastic workpiece, comprising a fixed workpiece support bed, a fixed supporting frame, a mandrel reciprocably mounted on the frame, having a tip shaped to fit and carry an insert to be driven thereby, an insert-receiving member reciprocably mounted on the frame, having a passage which is open at both ends and is axially aligned with the mandrel, means for supplying inserts one at a time to said passage, means for heating the insert-receiving member to transmit heat therefrom to the inserts, means for reciprocating the mandrel axially relative to the frame to engage a metallic insert in said passage and to carry and drive the insert into a workpiece supported on the bed, and mechanism for moving the insert-receiving member toward the workpiece before each insert is thus driven into the workpiece, to increase the length of time during which the insert remains in thermal contact with the insert-receiving member.

3,926,357
PROCESS FOR APPLYING CONTACTS
Robert Michael Matrisian, New Cumberland, Pa., assignor to c/o E. I. Du Pont de Nemours & Co., Wilmington, Del.
Filed Oct. 9, 1973, Ser. No. 404,791
Int. Cl.² B23K *1/06, 21/02*
U.S. Cl. 228—110 **5 Claims**

1. A process for attaching an element to a member comprising,
- supplying a member on one side of a plate to a welding zone,
- supplying an element on the opposite side of the plate to the welding zone,
- superposing the element with the member in the welding zone through an opening in the plate,
- welding a selected portion of the element to the member through the opening in the plate, and
- stripping the unwelded portion of the element from the welded portion by advancing the element and the member on opposite sides of the plate from the opening in the plate in the welding zone.



3,926,358
APPARATUS AND METHOD FOR DEFORMING TUBING FOR ULTRASONIC WELDING OF THE TUBING TO A PLANAR STRUCTURE
William F. Hester, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Jan. 7, 1975, Ser. No. 539,245
Int. Cl.² B23K *19/04*
U.S. Cl. 228—111 **8 Claims**

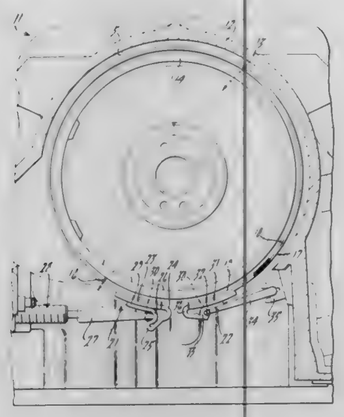


6. A method for deforming tubing and maintaining tubing in forcible contact with the structure for ultrasonically welding the tubing to the structure, comprising:
- inserting the tubing in a groove of a pressure block;
- urging the tubing in the block against the structure;
- deforming a first side of the tubing into a planar surface in contact with the structure while deforming other portions of the tubing into a preselected curvilinear configuration by urging the tubing in the block against the structure with a preselected force; and
- maintaining the deformed tubing in forcible contact with the structure for ultrasonically welding the planar surface of the deformed tubing to the structure.

3,926,359
METHOD OF CONVERTING BRAKE BAND END CONNECTION
Thomas J. Victory, 25167 Harcourt, Farmington, Mich. 48024
Continuation of Ser. No. 256,447, May 24, 1972, Pat. No. 3,785,042. This application Oct. 29, 1973, Ser. No. 410,708
Int. Cl.² B23K *1/20*
U.S. Cl. 228—170 **2 Claims**

1. A method of converting a brake band end connection of the type having a strut seat formed by a double-folded end plate, the juncture uniting said two folds being radially outermost, to an end connection of narrower radial dimensions for

installation between a drum and housing, comprising the steps of cutting off said juncture to thereby reduce the radial dimen-



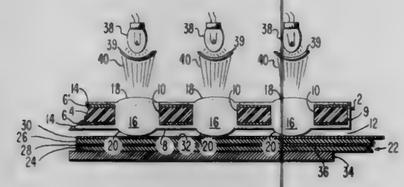
sion of said end connection, and relieving one corner of said end connection to facilitate entry into said housing.

3,926,360

METHOD OF ATTACHING A FLEXIBLE PRINTED CIRCUIT BOARD TO A RIGID PRINTED CIRCUIT BOARD

Douglas E. Moister, Jr., Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 28, 1974, Ser. No. 473,698
Int. Cl.² H01R *43/00*
U.S. Cl. 228—180 **7 Claims**



1. A method for solderably joining a selected terminal of a flexible printed circuit board to a selected terminal of a rigid printed circuit board comprising the steps of:

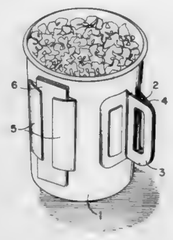
a. providing one or more apertures in the rigid printed circuit board through its said selected terminal,
b. plating the surfaces of said selected terminals,
c. pre-heatably filling each of said apertures with a globule of solder of sufficient size to produce a protruding convex upper and lower meniscus thereof as a byproduct of said plating,
d. bringing the selected terminal of said flexible printed circuit board into compressible contact with each of said lower convex meniscuses of solder in the apertures of said rigid printed circuit board,
e. arranging an infrared heating source and focusing means therefor in aligned focusing relationship relative to each of said upper meniscuses of solder, and
f. controllably activating each of said infrared heating sources such that an infrared beam of controlled intensity and time-duration is directed upon each of said upper convex meniscuses to bring each of said solder globules to a molten state and to thereby capillarily transform each of said lower convex meniscuses to a radially formed solder joint between said selected terminals when said molten solder solidifies.

3,926,361

DISPOSABLE CONTAINER WITH NAPKIN HOLDER

Henry R. Hilderbrand, Los Angeles, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Aug. 9, 1974, Ser. No. 496,039
Int. Cl.² B65D *3/28*
U.S. Cl. 229—1.5 B **2 Claims**



1. The combination of a disposable container and a napkin, said combination comprising

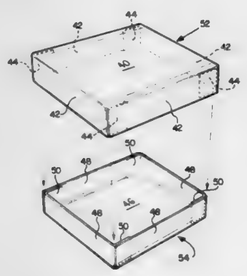
a disposable container;
a handle member affixed to the outside of the container and movable from a position substantially juxtaposed with the container to a position extending substantially radially from the container and utilizable as a handle; and
a napkin holder affixed to the outside of the container spaced from the handle member for releasably supporting a napkin, said napkin holder comprising a pair of substantially identical halves, each affixed to the container in spaced relation with the other and opening toward the other, said halves clamping the napkin, between them, to the container.

3,926,362

TELESCOPIC CONTAINER MEMBERS

Herman D. Beck, Los Angeles, and Thomas H. Cook, La Puente, both of Calif., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed June 10, 1974, Ser. No. 477,628
Int. Cl.² B65D *13/04*
U.S. Cl. 229—23 BT **4 Claims**



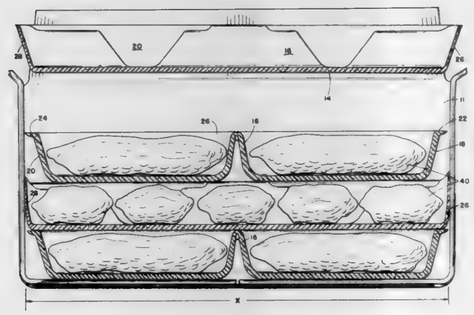
1. A blank of foldable Material adapted to be separated into two portions which may be folded to form separate, complementary body and cover members of a telescopic container, said blank having a pair of outer longitudinal fold lines formed on a first side thereof and a pair of inwardly offset longitudinal fold lines formed on a second side thereof, said longitudinal fold lines terminating at the longitudinal extremities of said blank, a transverse separation means formed therein and terminating at the transverse extremities of said blank for separating the blank into bodyforming and cover-forming portions, opposed transverse slots extending inwardly at least to said inwardly offset longitudinal fold lines and interrupting the continuity of said outer longitudinal fold lines in the body-forming portion of said blank, transverse fold lines disposed intermediate the inner margins of said opposed transverse slots in said body-forming portion and formed on said second side of said blank, opposed transverse slots extending inwardly at least to said outer longitudinal fold lines in the cover-forming portion of said blank and transverse fold lines disposed intermediate the inner margins of said opposed transverse slots in said cover-forming portion and formed on said first side of said blank, whereby when said body-forming portion is separated from said cover-forming portion along said transverse separations means and is folded about said inwardly offset longitudinal fold lines and said transverse fold lines, respectively, on said second side of said blank a body member is formed, and when said cover-forming portion is folded about said outer longitudinal fold lines and said transverse fold lines, respectively, on said first side of said blank, a complementary cover member is formed.

3,926,363

STACKING TRAYS AND CONTAINER FOR PERSIHABLE ITEMS

Marvin C. Catron, 2983 E. 69th St., Tulsa, Okla. 73111

Filed Sept. 20, 1974, Ser. No. 507,688
Int. Cl.² B65D *1/00*
U.S. Cl. 229—2.5 **5 Claims**



1. Apparatus for transporting perishable goods comprising in combination

a plurality of plastic trays;
a container having a square opening of side dimension X to receive said trays;
each of said trays comprising: an essentially rectangular bottom portion having a first pair and a second pair of upwardly and outwardly sides extending from said bottom and open at the top thereof to receive said perishable goods;
said first pair of sides being opposed, each extending upwardly from the bottom and terminating at a desired height with a horizontal outwardly extending lip, the outside dimension of said lips being equal to or slightly less than said dimension X;
said second pair of sides being opposed and extending outwardly such that the free outside dimension of the upper termination of said sides is greater than said dimension X, said second pair of sides being flexible and pivotal inwardly from said bottom to a position such that said outside dimension is substantially equal to said dimension X; and;
said trays stacked one on top of another in said container opening alternately having said first pair of sides of one tray transverse to the said second pair of sides of the next tray.

3,926,364

BRACING PACKAGE

Veikko Janhohen, Viikinmaentie 19, 00560 Helsinki 56, Finland

Filed Nov. 16, 1973, Ser. No. 416,371
Claims priority, application Finland, Nov. 20, 1972, 3255/72
Int. Cl.² B65D *33/00*
U.S. Cl. 229—55 **7 Claims**



1. A bracing package comprising

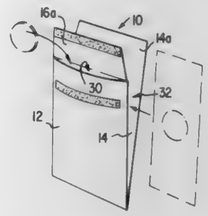
a folded over bracing plate having a pair of sides and a stressed bend for urging said sides apart,
a bag-like part for receiving flat goods disposed between said sides of said plate in secured relation to said sides said bag-like part being wholly within said plate and having an open mouth within said plate for opening when said sides of said bracing plate are urged apart, and
fastening means mounted on said sides for securing said sides together about said tubular part.

3,926,365

RECEPTACLE FOR COINS, CURRENCY AND THE LIKE

Harvey D. Sandstrom, Duluth, Minn., assignor to Sklaris II, Inc., Duluth, Minn.

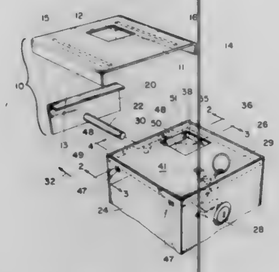
Filed June 10, 1974, Ser. No. 478,144
Int. Cl.² B65D *27/08*
U.S. Cl. 229—72 **12 Claims**



1. A receptacle for currency, coins and the like, said receptacle comprising a single blank comprising a substantially rectangular central panel and first and second substantially rectangular side panels located on opposite sides of said central panel, said receptacle including a first, generally rectangular pocket formed between said central panel and said second side panel, said second side panel being located behind said central panel, a second pocket which is open at the top and on one side and is formed between said second side panel and said first side panel, said first side panel being located behind said second side panel, said central panel including a flap which extends outwardly from said central panel and which lies rearwardly of and is secured to said first side panel at a lower portion thereof, said second side panel including an upper portion which extends beyond the upper edge of said central panel and which is capable of serving as a closing flap for said first pocket, the shape of the upper edge portion of the single blank being the reciprocal of that of the lower edge portion thereof so that a plurality of said blanks can be laid out

seriatim along a rectangular sheet of stock material without any material being left over.

3,926,366
PILFER-PROOF LOCKING COVER FOR A COIN BOX
August M. Sciortino, 1838 Weeg Way, Park Ridge, Ill. 60068
Filed Mar. 1, 1974, Ser. No. 447,156
Int. Cl.² G07B *15/00*
U.S. Cl. 232—15 **9 Claims**



1. A coin box cover which is detachably lockable to the open top of a coin box having a bar receiving hole in one side thereof and which is cooperable with a coin box receiving bracket having a coin passageway and a bar that extends from the bracket generally parallel to said cover, the bar being receivable through the bar receiving hole, said cover having a coin receiving window which registers with the passageway when said coin box is brought into mating engagement with the bracket, and said cover comprising:

A. shutter means movable across said window and resiliently biased to a window closed position,

B. tab means on said shutter means engagable by the bar received through the hole for moving said shutter means to a window open position as said window is brought into registry with the passageway,

C. resiliently biased hole covering means movable across an inner-facing surface of said one side to cover the hole when said cover is mounted to the coin box and after said tab means have been moved a short distance by the bar and the bar is then withdrawn, said hole covering means initially being held in a hole open position by said tab means, and

D. latch means operative to lock said shutter means in said window closed position after said shutter means have been moved a short distance towards said window open position and then returned to said window closed position,

whereby when said coin box is brought into mating engagement with the coin box receiving bracket, said window is initially closed and the hole is open and when said coin box is removed from the bracket, said window is closed, said shutter means are locked in said window closed position and the hole is covered by said hole covering means to prevent insertion of a probe through the hole.

3,926,367
COMPLEX FILTERS, CONVOLVERS, AND MULTIPLIERS
James W. Bond, and Jeffrey M. Speiser, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sept. 27, 1974, Ser. No. 509,755
Int. Cl.² G06F *15/34;* **G06G** *7/19*
U.S. Cl. 235—181 **6 Claims**

2. A complex filter, which utilizes only real filters, to which the two components of a complex input signal A + jB may be applied, the complex filter giving the same output which would result from a complex multiplication of the applied input signal A + jB with a complex signal C + jD, comprising:

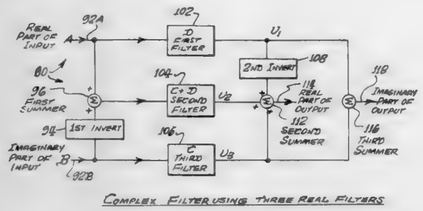
a first means for inverting an input signal, for example signal B;

a first signal summer, at one of whose inputs is applied the signal A, the other input being connected to the signal −B, the output of the inverting means;

a first filter, whose impulse response is D, to which the signal A is also applied;

a second filter, whose impulse response is C + D, whose input is the output of the first signal summer;

a third filter, whose impulse response is C, and whose input is the applied signal B;



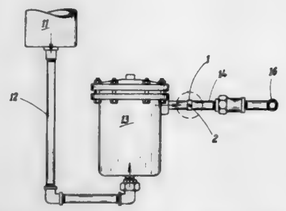
COMPLEX FILTER USING THREE REAL FILTERS

a second means for inverting an input signal, whose input is connected to the output of the first filter;

a second signal summer, whose three inputs are connected to the output of the second inverting means and the outputs of the second and third filters, and whose output comprises the real part of the complex product of the complex numbers A +jB and C + jD; and

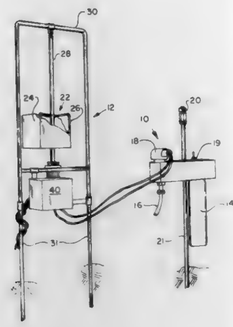
a third signal summer, whose two inputs are connected to the outputs of the first and third filters and whose output comprises the imaginary part of the complex product of A + jB and C + jD.

3,926,368
STEAM TRAP TEMPERATURE INDICATING ARRANGEMENT
Wesley C. Geen, Addison, Ill., assignor to Reliance Brooks, Inc., Cleveland, Ohio
Filed Aug. 19, 1974, Ser. No. 498,711
Int. Cl.² G05D *23/12;* **G08B** *23/00*
U.S. Cl. 236—41 **23 Claims**



1. An arrangement including: a) heater means adapted to receive steam at a selected pressure; b) heater outlet means connected with said heater means to provide for emission of condensate from said heater means; c) a steam trap means having inlet means connected with said heater outlet means and trap outlet means to provide for emission of condensate from said trap means; and d) a temperature actuated indicator element fastened in heat transfer relation with a condensate return pipe means from said trap outlet means including a temperature sensitive material preselected to change color at a selected temperature between 10 and 35 degrees centigrade lower than the saturated steam temperature of said steam in said heater means where the pressure of said saturated steam varies from 0 PSIG to 300 PSIG and wherein said temperature actuated indicator is fastened on the condensate pipe means so as to give an indication of when the steam trap means is leaking.

3,926,369
CONTROLLED SPRAYING
George W. Pearce, 32 Monument St., Wenham, Mass. 01984
Filed Nov. 30, 1973, Ser. No. 420,453
Int. Cl.² B05B *17/00*
U.S. Cl. 239—1 **27 Claims**

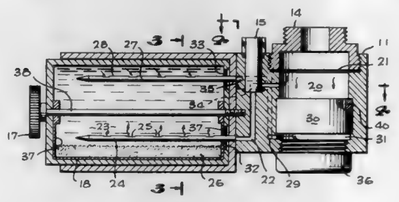


1. A method of controlled spraying comprising.

sensing each occurrence of the wind exceeding a predetermined velocity from a predetermined plurality of directions at a predetermined location,

intermittently providing a spray into said wind for a predetermined time interval from said predetermined location upon sensing only predetermined ones of said occurrences.

3,926,370
FLUORIDATION APPARATUS
Cornelius Keith Vandervelden, Kansas City, Mo., assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.
Filed Sept. 16, 1974, Ser. No. 506,260
Int. Cl.² E03B *9/20;* **B05B** *7/28, 7/12*
U.S. Cl. 239—25 **15 Claims**



1. An apparatus for connection to a liquid source, said apparatus comprising:

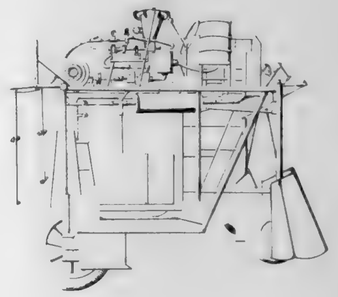
a main chamber having an inlet in its upper portion adapted for coupling to the liquid source, and an outlet in its lower portion;

a reservoir chamber located adjacent said main chamber, said reservoir chamber having a quantity of chemical releasing substance disposed therein;

first and second by-pass conduits interconnecting the interiors of the main and reservoir chambers; and

means located within said main chamber for proportioning the ratio of the liquid flowing through said reservoir chamber with respect to liquid flowing only through the main chamber under all pressure, temperature and flow conditions, said proportioning means separating said main chamber into an inlet compartment and an outlet compartment, said first by-pass conduit interconnecting the interiors of the inlet compartment and the reservoir chamber, said first by-pass conduit being sufficiently small to enable the liquid flow therethrough to be laminar, and said second by-pass conduit interconnecting the interiors of the outlet compartment and the reservoir chamber.

3,926,371
APPARATUS AND SYSTEM FOR MIXING PESTICIDE WITH WATER CONCURRENTLY WITH SPRAYING
Edsel A. Harrell; Woodrow W. Hare, and John R. Young, all of Tifton, Ga., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Sept. 17, 1974, Ser. No. 506,932
Claims priority, application Germany, Sept. 18, 1973, 2346818
Int. Cl.² A01G *25/09;* **B05B** *9/02, 1/20;* **A62C** *13/60*
U.S. Cl. 239—146 **8 Claims**



1. A system for mixing pesticides with water concurrently with spraying and comprising in combination:

a. a means of storing water for mixing with pesticide

b. a means for storing pesticide connected to

c. a mixing chamber for mixing pesticide with water into a homogeneous sprayable solution of proper concentration comprising:

1. a positive water level control apparatus capable of controlling the water level in the mixing chamber to a preset condition and communicating with the said water storage means through a flexible connection

d. a means of dispensing the pesticide in accurately measured continuous quantity and a means of transferring said pesticide to said mixing means

e. a means of transferring the mixed pesticide solution from said mixing means to

f. a pressure regulator comprising:

1. a pressure control apparatus

2. an inlet

3. a dual outlet comprising:

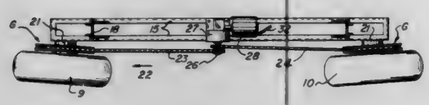
a. a recycle means communicating between the pressure regulator and the mixing means

b. an outlet means communicating between the pressure regulator and a set of spray nozzles, said outlet having an on-off positive control means located to function between the pressure regulator and the spray nozzles to allow for flow control of the pesticide solution and the material of the said outlet means possessing a flexible characteristic.

3,926,372
GUARD FOR SELF-PROPELLED SPRINKLING APPARATUS

H. Gordon Johnson, 3502 Rangeview Road, Greeley, Colo. 80631

Filed Oct. 2, 1974, Ser. No. 511,165
Int. Cl.² B05B 3/12
U.S. Cl. 239—177 10 Claims

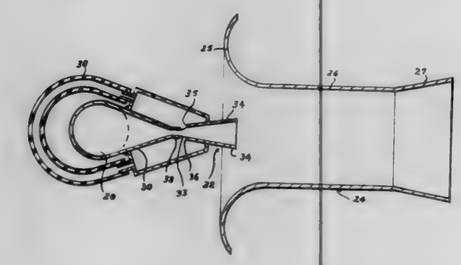


1. In an elongated sprinkler having a series of substantially aligned, connected pipe sections and spaced supports therefor, means for sprinkling an area of land during movement of said sprinkler thereover, motorized drive means and means for controlling said drive means in response to a support moving ahead or behind an adjacent support, the improvement comprising:
- a drive wheel at each of the front and rear of a support, said motorized drive means being mounted on said support intermediate said drive wheels;
- a chain sprocket mounted on each drive wheel;
- a separate chain extending from said drive means to each wheel and engaging the sprocket thereof; and
- guard means associated with each sprocket for limiting the entry of foreign objects between said chain and the respective sprocket formed as a circular member affixed to each side of said sprocket.

3,926,373
THRUST AUGMENTATION SYSTEM WITH OSCILLATING JET NOZZLES

Hermann Viets, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 26, 1974, Ser. No. 492,078
Int. Cl.² B64C 15/10
U.S. Cl. 239—265.17 3 Claims

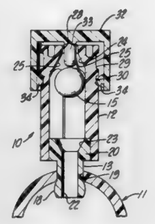


1. A thrust augmentation system comprising; a thrust chamber having an inlet region, a mixing region and a diffuser region; at least one nozzle for directing an oscillating gas jet into said inlet region in a substantially longitudinal direction through said thrust chamber to thereby entrain a secondary flow of air through said thrust chamber; said nozzle including a converging section, a straight section, a sudden expansion section and wall members extending forward of said sudden expansion section; means for directing a flow of gas through said nozzle; a pair of opposed control ports in said nozzle adjacent the inlet to said sudden expansion section; means for forming a feedback loop interconnecting said control ports.

3,926,374
METHOD FOR IRRIGATING TERRAIN

Wilbur C. Reeder, 1961 Midwick Drive, Altadena, Calif. 91001, and Norman D. Batterson, 3870 Shadow Grove Road, Pasadena, Calif. 91007

Division of Ser. No. 323,638, Jan. 15, 1973, Pat. No. 3,873,031, which is a continuation-in-part of Ser. No. 131,355, April 5, 1971, Pat. No. 3,746,263. This application Nov. 1, 1974, Ser. No. 519,803
Int. Cl.² B05B 17/00; B44D 1/08
U.S. Cl. 239—1 6 Claims

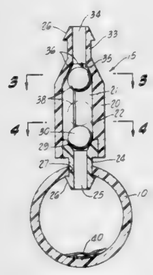


1. That method of purging a weeper flow control device of sediment and the like while connected to a pressurized irrigating system utilizing a temporary augmented water flow from that device for purging, said weeper device being of the type having a tubular housing equipped interiorly thereof with a captive flow-responsive member normally held by water pressure in a flow restricting position adjacent an outlet for said device and automatically movable away from flow restricting upon cessation of water flow through said weeper device, said method comprising manually blocking flow from the outlet of said weeper device while the irrigating system remains pressurized and allowing the resulting equalization of water pressure around said captive member to permit said captive member to move away from said flow restricting position, and thereafter abruptly restoring the flow of water from the outlet of said device whereby the resulting sudden flow of pressurized water past said captive member is effective to purge sediment and the like from said seat.

3,926,375
WEEPER IRRIGATION DEVICE

Wilbur C. Reeder, 1961 Midwick Drive, Altadena, Calif. 91001, and Norman D. Batterson, 3870 Shadow Grove Road, Pasadena, Calif. 92507

Filed Feb. 3, 1975, Ser. No. 546,218
Int. Cl.² B05B 15/00
U.S. Cl. 239—542 7 Claims

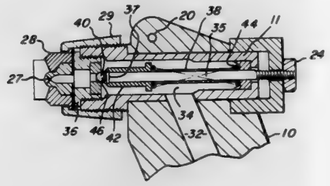


1. A weeper irrigating device comprising a tubular housing having an inlet passage at the lower end thereof connectable to a source of pressurized water at one end and an outlet passage at the upper end thereof, a valve seat embracing the inner end of the each of said passages, said seat on the inner end of said outlet passage having a minute flow passage thereacross, first and second flow responsive freely movable valve members held captive between said valve seats, said first valve member being seatable on the valbe seat at the inner end of said outlet passage to restrict the escape of water from said weeper device so long as said inlet passage is connected to a source of pressurized water, and said second valve member being held slightly ajar from said valve seat at the inner end of said inlet passage by water flow therepast so long as there is a flow of pressurized water past said first valve member via said minute flow passage.

3,926,376
SPRAY GUN VALVE

Bernard Siczek, La Grange Park, Ill., assignor to Graco Inc., Minneapolis, Minn.

Filed May 19, 1975, Ser. No. 578,542
Int. Cl.² B05B 1/30; F16K 31/00
U.S. Cl. 239—583 10 Claims

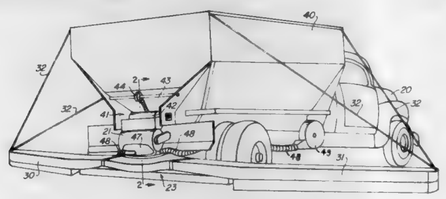


1. A safety spray gun apparatus for accepting hydraulically pressurized fluid and for emitting an atomized fluid spray through an orifice under control of an actuating trigger, comprising:
- a. an internal valve interposed in the path between said pressurized fluid and said orifice;
- b. a valve opening and closing member attached to said valve and projecting externally in actuating contact with said actuating trigger;
- c. a resilient and deformable member enclosing said valve opening and closing member in sealing relationship, and urging against said valve to bias said valve in closure position to block fluid flow to said orifice.

3,926,377
APPARATUS FOR SPREADING GRANULATED AND PULVERIZED MATERIAL

Arvid B. Johnson, 8016 S. Telford Way, Sandy, Utah 84070

Filed Jan. 2, 1975, Ser. No. 537,929
Int. Cl.² A01C 15/04
U.S. Cl. 239—655 13 Claims

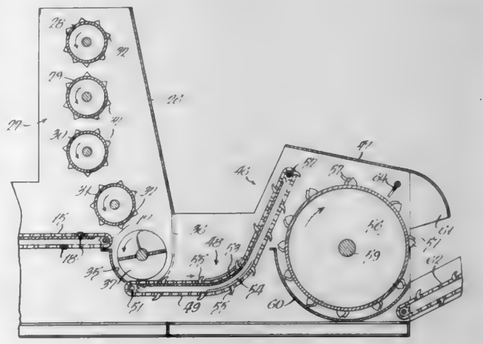


1. Spreading apparatus adapted to be attached to a vehicle to receive granular or pulverized material from a supply of said material on the vehicle and to spread said material substantially uniformly over the ground, said spreading apparatus comprising air-lock feeder means and a distributor unit closely coupled in communication with each other through flow passage means extending therebetween, said air-lock feeder means being adapted to receive said material from the supply thereof on the vehicle and to continuously feed said material to the distributor unit through the flow passage means, said distributor unit comprising a distributor disc which is rotatably mounted within a distributor body for rotation about a substantially vertical axis, said distributor disc having an axial opening therein in direct flow communication with said flow passage means, said distributor disc also having a delivery passage therein which is in flow communication with said axial opening, said distributor body having a plurality of passageways therein adapted for sequentially registering with said delivery passage as said distributor disc rotates; a plurality of distribution tubes whose discharge ends are disposed in one or more groups extending from said distributor body with the respective discharge openings of the tubes in each group being substantially equally spaced therealong, the other ends of said tubes being in flow communication with respective passageways in said distributor body; means for rotating said distributor disc; and means for supplying a stream of air to said distributor unit, whereby said stream of air entrains said material and carries it through said delivery passage in said distributor disc and projects it sequentially into the respective passageways of said distributor body as said distributor disc rotates, said air stream and entrained material then flowing through the respective distribution tubes to discharge through said discharge openings.

3,926,378
HAY STACK DISINTEGRATING APPARATUS

Kelly P. Ryan, Blair, Nebr., assignor to Blair Manufacturing Company, Blair, Nebr.

Filed Jan. 30, 1975, Ser. No. 545,619
Int. Cl.² B02C 13/20
U.S. Cl. 241—154 5 Claims



1. Apparatus of the character described comprising,
a bed of a size sufficient to receive and support a hay stack; a conveyor on the bed; a vertical array of horizontally arranged toothed rolls rotatably mounted at one end of the bed, said array being of hay stack height and extending transversely substantially the width of the bed; a hay chopper at said end of the bed; means for rotating the rolls; means for operating the conveyor to feed a hay stack on the bed into the rolls to disintegrate the stack; and means for feeding hay disintegrated by the rolls into the hay chopper.

3,926,379
SYRINGE DISINTEGRATOR

Gale E. Dryden, and Derrick Harris, both of Indianapolis, Ind., assignors to Dryden Corporation, Indianapolis, Ind.

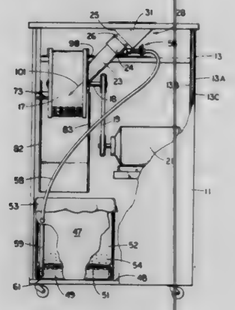
Filed Oct. 4, 1973, Ser. No. 403,343
Int. Cl.² B02C 9/04, 19/12; F24H 1/00
U.S. Cl. 241—69 8 Claims

1. Disintegrator apparatus comprising:
- a mill for milling objects fed thereto into particles and having a plurality of openings in the bottom thereof;
- a motor driving the mill;
- a feeding tube associated with the mill for conveying syringes and the like to the mill;

particle collecting means associated with said mill and positioned to receive from the mill, the particles derived from milling the items fed to the mill through said tube, and

fluid storage means communicating with said collecting means for contact of said particles therein with a fluid to disinfect said particles,

said collecting means including a drawer having a portion open at the top and disposed below said mill directly under said openings in the bottom thereof and collecting



particles which have fallen through said openings in the bottom of said mill and are received through the open top portion of said drawer from said mill; and wherein:

said storage means include a liquid container connected to said drawer and containing liquid communicating with particles in the interior of the drawer through apertures in a wall of said container,

said mill has a horizontal input shaft; and

said motor is behind the mill and drives said input shaft.

3,926,380

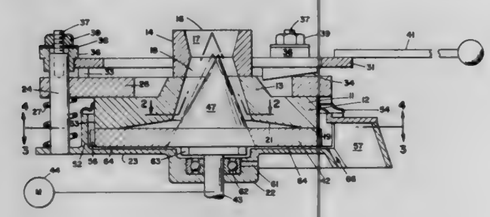
GRAIN MILLING DEVICE

Ronald R. Musgrove, and Lloyd E. Connelly, both of San Leandro, Calif., assignors to Emcee Corporation, San Leandro, Calif.

Filed May 24, 1974, Ser. No. 473,203

Int. Cl.² B02C *7/08, 7/14*

U.S. Cl. 241—248 **12 Claims**



1. A machine for grinding grain and the like, comprising:

a non-rotating grinding implement,

a rotating grinding implement opposed to said non-rotating grinding implement and spaced apart therefrom, and rotating about a fixed axis, including a nutating member, extending from said rotating implement toward said non-rotating implement;

feed means for introducing the grain between said rotating and non-rotating grinding implement, and said nutating member comprising a conical member joined coaxially to said fixed axis of said rotating grinding implement.

3,926,381

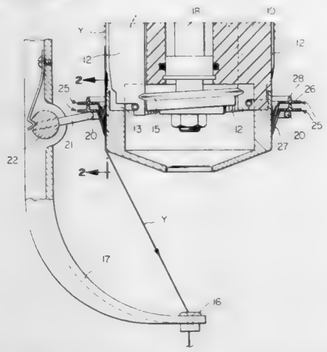
YARN TENSIONING MEANS

John B. Lawson, Providence, R.I., and Charles S. Cooper, Attleboro, Mass., assignors to Lawson-Hemphill, Inc., Central Falls, R.I.

Continuation-in-part of Ser. No. 431,478, Jan. 7, 1974. This application Apr. 18, 1974, Ser. No. 461,909

Int. Cl.² B65H *51/20, 59/00*

U.S. Cl. 242—47.01 **4 Claims**



1. A yarn tension ring for a yarn storing device having a yarn storage drum, said tension ring including:

a. a base ring for surrounding the storage drum,

b. a plurality of bristle-like flexible elements extending from the base ring axially beyond the base ring and inwardly toward the axis of the ring, whereby the tips of the flexible elements are contiguous with the surface of the drum when the tension ring is mounted relative thereto, and

c. means for locating a second yarn tensioning ring surrounding the storage drum at a selected, axially spaced, distance from said tension ring to space the tips of the flexible elements of of a second yarn tension ring from the tips of the flexible elements of said tension ring a distance sufficient to avoid contact between the respective flexible elements of said tension ring and a second ring,

d. said locating means comprising spacer means mounted on the base ring and extending from the base ring in a direction generally opposed to the direction toward which the flexible elements extend from the base ring.

3,926,382

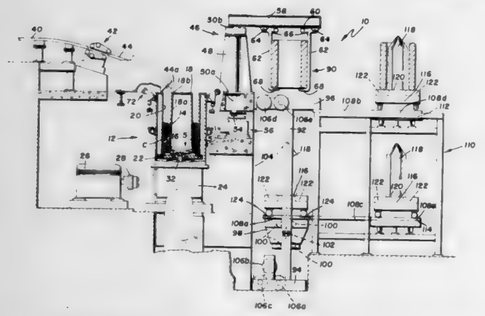
COIL FORMING AND TRANSFER APPARATUS

Donald Sieurin, Northboro, and Roger Kinnicutt, Jr., Holden, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Nov. 8, 1974, Ser. No. 522,087

Int. Cl.² B21C *47/24*

U.S. Cl. 242—79 **10 Claims**



1. Apparatus for forming a longitudinally moving elongated product length into an upstanding cylindrical coil, and for

transferring the thus formed coil to another location, comprising:

a pouring reel having a coil support plate, an inner core means fixed to and extending vertically from said support plate, and an outer wall means surrounding said support plate and said core means and cooperating therewith to define a chamber, the combination of said support plate, core means and outer wall means being rotatable whereby the introduction of the longitudinally moving elongated product length into said chamber will result in the product length being formed into an upstanding cylindrical coil;

means for elevating said support plate and said core means relative to said outer wall means to vertically remove the coil to an elevated position above said pouring reel; transfer means overlying said pouring reel, said transfer means being adapted to engage the coil at said elevated position, whereby when said support plate and said core means are lowered towards said pouring reel, the coil will remain supported at said elevated position on said transfer means; and means for moving said transfer means to another lateral location.

3,926,383

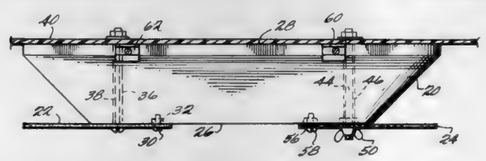
WATER SKI ROPE HOLDER

Vince McConnell, 5615 O St., Lincoln, Nebr. 68510

Filed Nov. 29, 1974, Ser. No. 528,580

Int. Cl.² B65H *75/36*

U.S. Cl. 242—85.1 **6 Claims**



1. A water ski tow rope holder comprising:

a base member having a cross-sectional area which decreases from a first side adapted for attachment to a boat to a second side,

first and second rope retainer member each attached adjacent one end thereof to said second side and each extending outwardly from the point of attachment, at least one of said retainer members being pivotably attached to said second side,

manually releasable means cooperating with said one retainer member for releasably holding that retainer member in a fixed position, and

clip means mounted on said base member for releasably holding a water ski tow bar.

3,926,384

LOCKING MECHANISM FOR AUTOMOBILE SAFETY BELT RETRACTOR

Per Olof Weman, Alber Kirchweg 85, 2081 Haslah, Germany

Filed July 26, 1973, Ser. No. 382,971

Int. Cl.² A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107.4 **8 Claims**

1. A locking mechanism operated by inertia and adpated for use with one or more safety belts of the type wherein the safety belt is wound around a spool, said spool having one or more ratchet wheels connected thereto, said locking mechanism comprising:

an inertia member adapted to be disposed in a rest position when said locking mechanism is inoperative and adapted to be displaced from said rest position by inertia;

a retaining base for said inertia member, said inertia member being supported on said retaining base;

a substantially conical actuation member having an open bottom, sides and a top, said actuation member disposed above said inertia member and centered over said rest position of said inertia member, said actuation member movable by said inertia member; and

a locking dog affixed to said actuation member, whereby displacement of said inertia member from said rest position causes said locking dog to engage said ratchet wheel to restrain said safety belt against movement in the withdrawal direction; wherein:

at least a portion of said inertia member extends into said open bottom of said actuation member, a portion of said sides of said actuation member extending at least partially over and around at least a portion of said inertia member; said locking dog engages said ratchet wheel at one end of



said locking dog and said locking dog has a pivot point at the opposite end of said locking dog from the end which engages said ratchet wheel, said actuation member affixed between said ends of said locking dog; and

said actuation member is slightly tilted, thereby providing uniform sensitivity to the engaging action of the locking dog to the ratchet wheel; and the angle formed by the side of said actuation member adjacent the end of said locking dog having said pivot point with a vertical plane through the top of said actuation member being greater than the angle formed by the side of said actuation member adjacent the end of said locking dog which engages said ratchet wheel with the vertical plane.

3,926,385

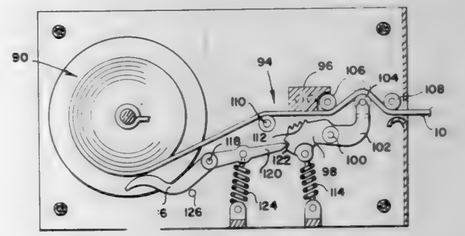
RETRACTABLE SAFETY BELTS

Richard G. Board, 3000 Connecticut Ave., Washington, D.C. 20008, and Nelson H. Shapiro, 640 Washington Bldg., Washington, D.C. 20005

Division of Ser. No. 409,266, Nov. 5, 1964, Pat. No. 3,817,473, and a continuation-in-part of Ser. No. 377,344, June 23, 1964, Pat. No. 3,289,970. This application Mar. 18, 1974, Ser. No. 452,351

Int. Cl. B65h *75/48*

U.S. Cl. 242—107.4 **14 Claims**



1. A retractable seat belt comprising a retraction reel, a strap connected to said reel for retraction and extension, clamp means for preventing extension of said strap, said clamp means comprising a pair of clamp elements, one of said elements being movable relative to the other, said one element comprising a slider, said strap being trained from said reel between said clamp elements and around said slider reversely whereby tension in said strap exerts a force upon said slider tending to move said one clamp element toward the other,

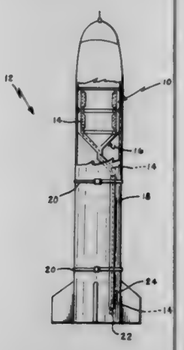
means responsive to the amount of strap wound upon said reel for moving said one clamp element away from the other, and means for maintaining said one clamp element away from the other until said strap is extended to a desired length.

3,926,386

SPOOL FOR WIRE DEPLOYMENT

James R. Stahmann, Miramar, Fla., and Charles B. Kalakowsky, Dorchester, Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 9, 1974, Ser. No. 486,804
Int. Cl.² B65H *75/02, 49/00*
U.S. Cl. 242—118 **9 Claims**



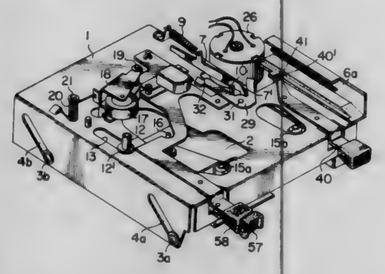
1. A spool utilized for the deployment of wire comprising a body about which said wire is wound, said body being formed of a first and second section, means operably connected to said body for applying a braking force to said wire during unwinding thereof from said first section, said braking means being formed of a first braking ring located about said body separating said first and second sections and a second braking ring adjustably mounted on said body adjacent said first braking ring whereby said wire passes through a space formed between said first and second braking rings and means operably connected to said second section for guiding the unwinding of said wire therefrom.

3,926,387

MAGNETIC REPRODUCING DEVICE

Nobuhiro Hirabayashi, Iwakura, Japan, assignor to Shin-Shirasuma Electric Corporation, Nagoya, Japan

Filed Apr. 11, 1974, Ser. No. 460,178
Int. Cl.² G03B *1/04*; **G11B** *15/32, 23/04*
U.S. Cl. 242—198 **3 Claims**



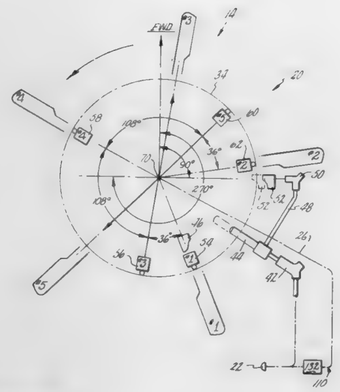
1. In a magnetic reproducing device having means for receiving a cassette, first means for transporting a magnetic tape contained in said cassette at a first speed and rendered operable when said cassette is inserted in said means for receiving same, second means for transporting said magnetic tape at a second speed substantially higher than said first speed, and means for reproducing sound pre-recorded on said magnetic tape, a slide chassis having means engageable by said cassette when inserted in said means for receiving same and movable from a first position to a second position, an actuator on said slide chassis for engaging said first transporting means and rendering same operable when said slide chassis is moved to said second position, a fast-forward mechanism comprising a manually operable lock means movable to operate said second transporting means, a lock pin on said slide chassis, said lock means being movable into locking engagement with said lock pin when said slide chassis is in said second position, and indicating means on said lock means for confirming by sense of touch the position of said manually operable lock means.

3,926,388

SEQUENTIAL HELICOPTER BLADE EJECTION SYSTEM

John W. Johnson, Cromwell, and Robert A. Selleck, Trumbull, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 207,813, Dec. 14, 1971, abandoned.
This application June 13, 1973, Ser. No. 369,691
Int. Cl.² B64C *27/00*
U.S. Cl. 244—17.11 **34 Claims**



1. In combination:
A. a helicopter,
B. a helicopter rotor adapted to be mounted for rotation about an axis of rotation,
C. a plurality of helicopter blades connected to said rotor for rotation therewith, and
D. means for sequentially separating said blades from said rotor such that the separated blades will travel in a predetermined direction with respect to the helicopter.

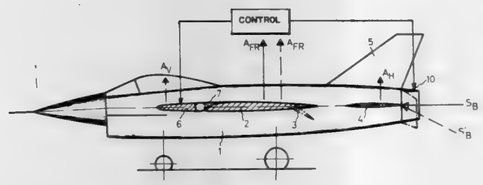
3,926,389

AIRCRAFT OF A CONTROLLABLE STABILITY

Andreas Mederer, Markt Schwaben, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Continuation of Ser. No. 362,854, May 22, 1973, abandoned.
This application Aug. 9, 1974, Ser. No. 496,119
Claims priority, application Germany, May 24, 1972, 2225169
Int. Cl.² B64C *5/04*; **B64B** *1/36*
U.S. Cl. 244—45 A **4 Claims**

1. An apparatus for use on an aircraft to maintain a stabilized flight of an aircraft about a center of gravity thereon, comprising:
propulsion means for propelling a gaseous jet rearwardly from the aft end of said aircraft;
movable nozzle means mounted in the flow path of said gaseous jet to control the direction of discharge of said gaseous jet along a variable flow axis relative to the longitudinal axis of said aircraft, said movable nozzle means being movable between a first position wherein the controlled discharge flows along said flow axis to thereby develop solely a thrust force for propulsion of said aircraft and a second position wherein the controlled discharge flows along a flow axis inclined downwardly to said longitudinal axis of said aircraft to thereby develop both a thrust force for propulsion of said aircraft and a first lifting moment about said center of gravity of said aircraft at the tail end thereof;
a fixed wing for aerodynamic support of said aircraft and having extendible flap means movably mounted thereon;
a vertical tail surface;
a horizontal tail surface, said horizontal tail surface developing, during flight, a second moment about said center of gravity of said aircraft at the tail end of said aircraft;
a movable fore-wing shorter in length than said fixed wing mounted forwardly of said fixed wing and adapted to move about means defining a vertical pivot axis secured to means defining the fuselage for said aircraft between first and second positions, said fore-wing having first leading edge surface means and said fixed wing having second leading edge surface means, said first leading edge surface means, when said fore-wing is in said first position, forming a continuation of said second leading edge surface means on said fixed wing so that said first and second leading edge surface means together define a single leading edge surface, said fore-wing in said first position and said fixed wing together developing, during flight, a third lifting moment about said center of gravity, said third lifting moment being located just slightly in front of said center of gravity, said second lifting moment and said third lifting moment being generally equal to each other when said movable nozzle means is in said first position to thereby achieve a first stabilized flight characteristic, said fore-wing, in said second position, being spaced forwardly of said fixed wing and defining a separate auxiliary wing and separate first and second leading edge surface means, and said fixed wing, with said flap means in the extended position, each generating separate fourth and fifth moments, respectively, about said center of gravity, the sum of said fourth and fifth moments defining a sixth lifting moment located forwardly of said center of gravity and being greater in magnitude than said second lifting moment, the sum of said second lifting moment and said first lifting moment developed by said movable nozzle means in said second position being generally equal to said sixth moment to thereby achieve a second stabilized flight characteristic; and
control means for relating the movement of said movable nozzle means and the movement of said fore-wing to develop said first and second stabilized flight characteristics.

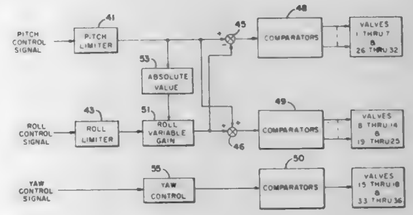


3,926,390

CONTROL VALVE LOGIC

Roland E. Teuber, Huntington Beach; John L. Pearson, Culver City, and Charles D. Brown, Pacific Palisades, all of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 308,614, Nov. 21, 1972, abandoned.
This application June 25, 1974, Ser. No. 482,939
Int. Cl.² F42B *15/18*
U.S. Cl. 249—3.22 **3 Claims**

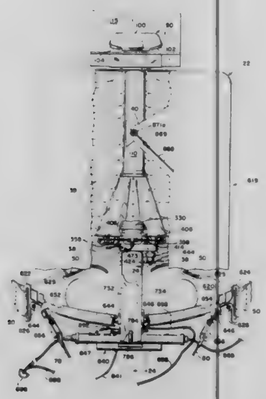


1. A control system for use in controlling fluid flow regulating means comprising:
a. first and second signal means;
b. variable gain means having an input, control, and output, with said first signal means being connected to said control of said variable gain means to control the gain thereof inversely in accordance with the value of said first signal means, and said second signal means being connected to said input of said variable gain means;
c. a first mixer having first and second inputs and an output, said first mixer combining its inputs in an additive fashion, with said output of said variable gain means connected to said first input of said first mixer and said first signal means being connected to said second input of said first mixer;
d. a second mixer having first and second inputs and an output, said second mixer combining its inputs in a subtractive fashion, with said output of said variable gain means being connected to said first input of said second mixer and said first signal means being connected to said second input of said second mixer;
e. first and second sets of comparators with said first set of comparators being connected to said output of said first mixer, and said second set of comparators being connected to said output of said second mixer;
f. said first and second sets of comparators having a plurality of at least four units making up each of said sets of comparators, each said comparator unit having an input and an output, said input of each of said comparator units connected to said output of said associated mixer, with each said comparator unit being set such that it will not have an output until the voltage on its input exceeds a predetermined set value, and with half of said individual comparator units of each of said set of comparators being set such that they will have predetermined set values in stepped sequence as the output of the associated mixer increases positively in voltage and the other half of said individual comparator units of said set of comparators having predetermined set values in stepped sequence as the output of the associated mixer increases negatively in voltage; and
g. fluid flow regulating means each having an input connected to said output of said individual comparator units whereby each said fluid flow regulating means is activated only when said first and second signal means results in said input of said comparator unit to which said fluid flow regulating means is connected, receiving the proper amount and polarity of voltage thereby allowing multiple selective activation of said fluid flow regulating means by the variation of only said first and second signal means.

3,926,391
FAIL-SAFE BALLISTIC PARACHUTE SPREADER APPARATUS

Louis R. Nordine, Aurora, Colo., assignor to Stanley Aviation Corporation, Denver, Colo.

Filed July 7, 1965, Ser. No. 470,111
Int. Cl. B64d *17/72*
U.S. Cl. 244—149 **19 Claims**



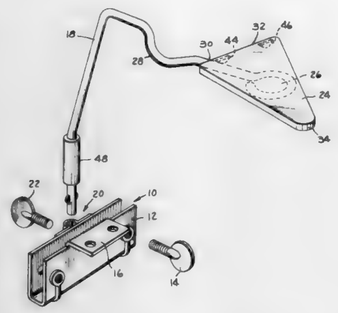
1. In a parachute assembly, a parachute having a canopy, a canopy spreading apparatus comprising a plurality of projectiles, means securing said projectiles to said canopy, a spreader head, retainer means releasably retaining said projectiles in unprojected positions on said spreader head, gas generator means for supplying gas under pressure to the interior of said to effect the powered projection of said projectiles away from said head, said projectiles being effective upon being projected away from said head by said gas to spread said canopy, and means responsive to a pre-selected parachute suspension line stretch to release said retainer means in the event said projectiles are not projected away from said head, said projectiles being freed for displacement away from said head when said retainer means is released, and said canopy being freed from said head for aerodynamic opening upon freeing said projectiles from said head.

3,926,392
IRON MINDER

William E. Davidson, Ontario, Calif., assignor to General Electric Company, Bridgeport, Conn.

Filed June 28, 1974, Ser. No. 484,296
Int. Cl.² D06F *75/40*
U.S. Cl. 248—117.1 **4 Claims**

1. An iron minder attachment for an ironing board to controllably position and support an iron such as a steam iron having a handle opening and comprising,
an adjustable foot means for securement to a board,
a flexible arm fastened at one end to said foot for universal adjustment,
said arm directed upwardly and including a side extension directed outwardly to extend generally parallel over a board,
an inclined triangular plane means at the other end of said arm,
said arm extending from one end position of a base of the triangle with the opposite apex directed to the handle opening of a board-supported iron,
a bend in the arm adjacent the plane,
the lower end of the triangular plane disposed to enter the handle opening of said iron



whereby the iron, when pushed onto said plane, is simultaneously cammed up and forced by the arm side extension to drop into said bend nose up for storage with no more than the heel touching the board.

3,926,393
COLLAPSIBLE BOW AND ARROW STAND

Thomas R. Tainsh, 7224 E. Jenan Drive, Scottsdale, Ariz. 85260

Filed May 30, 1974, Ser. No. 474,816
Int. Cl.² F16M *11/32;* **A45F** *3/44*
U.S. Cl. 248—165 **6 Claims**

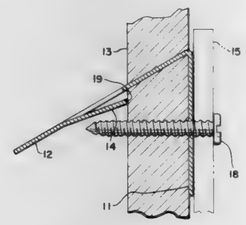
1. A collapsible stand formed of three detachable components for supporting an archer's equipment, said stand comprising in combination:
a. a detachable upper member, said upper member including a laterally extending hook for supporting at least one bow;
b. a detachable central member, said central member including support means for supporting a quiver, said support means comprising:
1. a rod attached to said central member in non-alignment therewith;
2. a receiver secured to the lower end of said rod for receiving the bottom of the quiver; and
3. a U-shaped bracket extending from the upper end of said rod for supporting the upper end of said quiver;
c. stud means disposed intermediate said upper member and said central member for selectively attaching and detaching said upper member and said central member;
d. a detachable tripod for supporting said central member and said upper member, said tripod including:
1. a stanchion;

2. three legs; and
3. bracket means for pivotally attaching said legs to one end of said stanchion, said bracket means accommodating pivotal movement of said legs from a juxtaposed position with said stanchion to a locked position;
e. further stud means disposed intermediate said central member and said tripod for selectively attaching and detaching said central member and said tripod, and
f. strap means for securing said upper member, said central member and said tripod to one another to form a bundle; whereby, said stand is erected by attaching respective ones of said upper member, said central member and said tripod and privotally positioning said legs to a depending position from said stanchion and said stand is collapsed for storage and transportation by detaching said upper member, said central member and said tripod from one another, pivotally positioning said legs to a juxtaposed position with said stanchion and bundling said upper member, said central member and said tripod together with said strap means.

3,926,394
WALLBOARD FASTENER

Albert Mauceri, 69 Bretton Road, Hauppauge, N.Y. 11787, and Carl Mirarchi, 7 Dorchester Road, Smithtown, N.Y. 11788

Filed Oct. 3, 1974, Ser. No. 511,551
Int. Cl.² E04G *3/00*
U.S. Cl. 248—217 **9 Claims**



1. A wall fastener for attachment to a wallboard surface of a predetermined thickness comprising:
a substantially flat mounting surface for mounting on the front surface of the wallboard;
a prong coupled to the mounting surface and having a point directed at an acute angle with respect to the plane of the mounting surface; and
spring retaining means formed within the prong having an edge for engagement with the back surface of the wallboard.

3,926,395
BRACKETS

Georges Felix Lallement, 115, rue Pelleport, 75020 Paris, France

Filed June 21, 1973, Ser. No. 372,287
Claims priority, application France, June 27, 1972, 72.24185; July 31, 1972, 72.28144
Int. Cl.² A47F *5/00*
U.S. Cl. 248—223 **4 Claims**

1. A dynamically stable article-supporting bracket assembly for perforated panels, comprising:
a pivot pin;
prong means, fixedly attached to said pivot pin;
bracket means, securely attached to said pivot pin and said prong means;
support arm means pivotally firmly attached to said bracket means;
said pivot pin rotoatably positioned within said bracket means such that said prong means may be partially inserted into a perforated panel perpendicular to the panel when said bracket means are in a final position of said bracket means, with subsequent pivoting of said prong means with said pivot pin while said bracket means remain unmoved, to a non-forced locking position of said prong means parallel to the panel; and

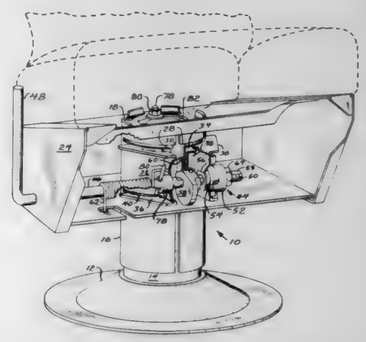


said pivot pin and said bracket means being mutually slidable with respect to each other, and said prong means and said bracket means being mutually relatively sized, such that after said prong means have been inserted in the panel and then pivoted to the non-forced locking position of said prong means, said bracket means may be slid over a portion of the prong means to firmly secure the prong means against the perforated panel.

3,926,396
LOCKING MECHANISM FOR PEDESTAL SEAT

Garth O. Hall, New Berlin, and Paul H. Unangst, Brookfield, both of Wis., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed June 12, 1974, Ser. No. 478,555
Int. Cl.² A47C *3/00*
U.S. Cl. 248—418 **8 Claims**



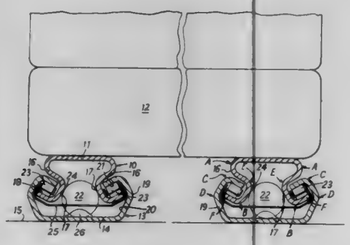
1. In a rotatable seat for a motor vehicle having an outer longitudinally slotted tubular member attached to the seat frame and a telescoped inner tubular member attached to a base, the improvement comprising bracket means affixed to a longitudinal portion of said outer tubular member on opposite sides of the longitudinal slot; shaft means carried by said bracket means; cam means and detent means carried by said shaft means; handle means on said shaft means for rotating said shaft means, said cam means and said detent means; an aperture means formed in said inner tube, said aperture means being positioned relative to said longitudinal slot so that when the seat is in its driving position the aperture means is aligned with the longitudinal slot and with said detent means whereby rotation of said handle means will cause said detent means, which is mounted for rotation with said shaft means, to move into or out of said aperture means and will cause said cam

means to cooperate with said bracket means on said opposite sides of said slot to cause said bracket means to be moved toward each other so as to compress said longitudinal portion of said outer tubular member to reduce its diameter and force its inner surface into binding frictional contact with the outer surface of said inner tubular member.

3,926,397
VEHICLE SEAT SLIDES

Alec Alfred Hunwicks, Northampton, England, assignor to Brown Brothers Engineering Limited, Northampton, England

Filed Aug. 2, 1974, Ser. No. 494,372
Claims priority, application United Kingdom, Aug. 13, 1973, 38323/73
Int. Cl.² B60M 1/08
U.S. Cl. 248—430 **8 Claims**

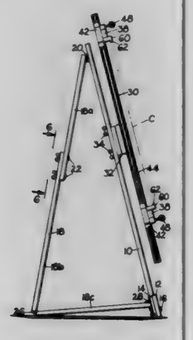


1. A slide mechanism comprising a first channel having a base adapted to be secured to a movable member, a second channel in sliding engagement with said first channel and having a base adapted to be secured to a stationary member, and central roller means between said channels and having convex end faces, one of said channels having limbs which extend inwardly to bear on said convex faces and then outwardly to terminate in ends and provide a pair of recesses which are angled to open away from said other channel, and the other of said channels having limbs which provide abutment faces adjacent said ends of the recessforming limbs and then extend inwardly to enter said recesses and interlock to resist separation of said channels.

3,926,398
EASEL

Melvin C. Vincent, 2545 Washington St., Eugene, Oreg. 97405

Filed June 12, 1974, Ser. No. 478,457
Int. Cl.² A47B 97/04
U.S. Cl. 248—448 **1 Claim**



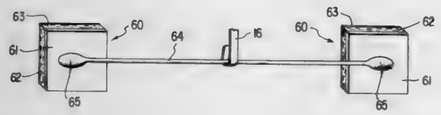
1. An easel for supporting a picture blank facewise to a person positioned in front of it comprising

a. an upright standard,
b. a rear leg assembly on said standard for supporting the latter in upright position,
c. said leg assembly including a rearwardly extending segment hingedly connected at one of its ends to said standard and hingedly connected at its other end to one end of an upright segment,
d. the other end of said upright segment being connected with one end of a second upright segment in a releasable slidable joint,
e. said second upright segment having its other end hingedly connected to said standard above the hinge connection of said rearwardly extending segment with the standard, whereby said leg segments can be folded up against the back of said standard by releasing said slidable joint between said two upright segments and pivoting the rearwardly extending segment and said second upright segment toward the standard,
f. a cross arm on said standard,
g. connecting means rotatably connecting said cross arm on said standard with the axis of rotation extending from front to rear of said easel whereby said cross arm and picture blank thereon can be rotatably positioned in front of the person,
h. said rotatable connecting means comprising a friction connection whereby said holder will remain in its rotatably adjusted position except when intentionally rotated,
i. said rotatable connecting means between said cross arm and said standard being vertically adjustable on said standard to position said cross arm at the desired height,
j. a pair of brackets on said cross arm between which a picture blank can be clamped for firmly holding it on said arm,
k. at least one of said brackets being adjustable along the length of said cross arm to adjust to different dimensioned picture blanks,
l. and releasable connecting means between said movable bracket and said cross arm for anchoring said latter bracket in a selected position.

3,926,399
WALL HANGER

Robert Kanof Tendler, Buckridge Drive, Amherst, N.H. 03031

Continuation-in-part of Ser. No. 400,622, Sept. 25, 1973, which is a continuation-in-part of Ser. No. 235,174, March 16, 1972, Pat. No. 3,788,588. This application Feb. 27, 1974, Ser. No. 446,394
Int. Cl.² A47F 7/14
U.S. Cl. 248—467 **9 Claims**

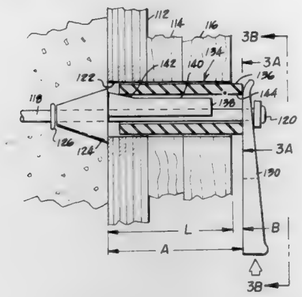


1. A hanger for mounting structures on a wall comprising in combination: an elongated flexible member having flat end pieces fixedly attached at the ends of said elongated flexible member and adhesive means (at either end thereof) for securing (the ends of said member) said end pieces to said structure in spaced apart relationship; and hook means for engaging said elongated member at an intermediate portion thereof, thereby to facilitate balancing of said structure on said wall by movement of said hook means along said intermediate portion to change the fulcrum.

3,926,400
TIE ROD AND SEAL ASSEMBLY

Eugene K. Franc, San Anselmo, Calif., assignor to Construction Engineering Products, San Rafael, Calif.

Filed Dec. 3, 1973, Ser. No. 421,398
Int. Cl.² E04G 17/08
U.S. Cl. 249—40 **5 Claims**

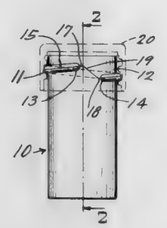


1. A tie rod and seal assembly in combination with a pair of spaced-apart wall forms for use in temporarily positioning said pair of spaced-apart wall forms, said tie rod and seal assembly comprising a generally elongated tie rod defining an axis and opposite ends, each of said rod ends being adapted to project through a respective bore in said spaced-apart wall forms, spreader means on said tie rod exterior to said form bores and adapted to contact the interior surfaces of the wall forms adjacent to said form bores for positioning said wall forms, and generally cylindrical seal means on each of said rod ends for positioning within and sealing against each said bore in said wall forms for preventing ingress and egress of fluid, said seal means including a generally cylindrical collar of resilient material mounted on the tie rod end and further including expansion means for radially expanding said collar in each said bore, and wherein said expansion means comprises a seal element mounted on the tie rod end adapted to be positioned within each said bore in said wall forms and having a smaller diameter portion and a larger diameter portion joined by an intermediate tapered frustoconical surface portion.

3,926,401
THREAD MOLD

John D. Northup, 2460 Underhill Road, Toledo, Ohio 43615

Filed Feb. 28, 1975, Ser. No. 554,232
Int. Cl.² B29C 1/14
U.S. Cl. 249—59 **1 Claim**



1. A mold for forming an article having a male thread, comprising:

a lower mold section comprised of a cavity having a neck portion of a cylindrical shape, the upper end of said lower section having a peripheral edge defining a helically shaped portion subtending an angle of less than 360° and including a pair of end points obliquely spaced from one another, said peripheral edge further including a portion extending between said end points, said helically shaped portion having a larger diameter than the surrounding areas to form a half male thread; and

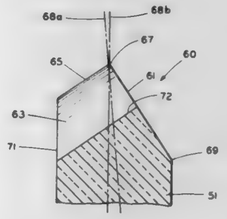
an upper mold section adapted to close in registry with the lower mold section, comprising a cavity having a neck portion shaped according to the neck portion of the lower mold section, the lower end of said upper mold section having a peripheral edge similar to and complementary with the peripheral edge of the lower mold section;

said first and second mold sections, when together in registry, forming a helical male thread mold subtending an angle of less than 3600° and having a parting line following the maximum diameter of the helical male thread.

3,926,402
PIN HAVING NONALIGNED CUBE AXIS AND PIN AXIS AND BUNDLE OF SUCH PINS

Sidney A. Heenan, Park Ridge, Ill., assignor to Amerace Corporation, New York, N.Y.

Division of Ser. No. 354,153, April 24, 1973. This application Feb. 18, 1975, Ser. No. 550,475
Int. Cl.² B29C 1/00; B29D 11/00
U.S. Cl. 249—117 **30 Claims**



1. A pin for use in making cube-corner reflectors capable of reflecting light back to the source thereof over a wide angle, said pin comprising an elongated shank being of regular polygon outline and having a longitudinally extending pin axis, and a cube-corner formation at one end of said shank and having a cube axis at an angle to said pin axis of other than zero degrees, said cube-corner formation having three mutually perpendicular faces symmetrically arranged with respect to said cube axis and respectively intersecting in three mutually perpendicular edges.

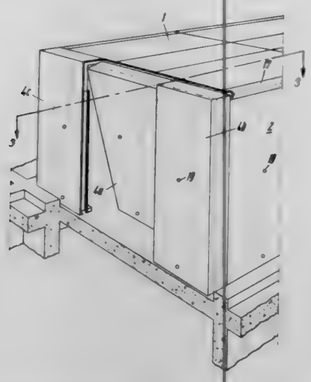
3,926,403
COLLAPSIBLE CARE MEANS FOR FORMING A THREE SIDED ENCLOSURE WITH A ROOF

Wolfgang Markewitz, Hilden, and Dieter Bolduan, Lintorf, both of Germany, assignors to Messrs. Huennebeck GmbH, Lintorf, Germany

Filed Oct. 15, 1973, Ser. No. 406,618
Claims priority, application Germany, Oct. 13, 1972, 2250214
Int. Cl.² E04G 9/08
U.S. Cl. 249—185 **3 Claims**

1. A room shuttering assembly for pouring rooms in concrete and steel reinforced concrete buildings, consisting of a ceiling shuttering, end-wall shuttering, and two opposed side-wall shuttering sections, connected as a unit, which side-wall shuttering sections are movable, during stripping, towards each other and the interior of the room, characterised in that the end-wall shuttering has a section which is pivoted about an axis towards said room interior such that the end-wall section, after pivoting permits movement towards each other and the

center of the room of the side-wall shuttering sections and the remaining sections of said end-wall shuttering which are



linked to the side-wall shuttering sections permitting the assembly to be withdrawn from the poured room.

3,926,404

TIE ROD FOR USE WITH AN INTERNAL SPREADER MEANS

Peter R. Lovisa, Pelham, and Dusan Tausanovitch, Northport, both of N.Y., assignors to Peter R. Lovisa, Pelham; Dausan Tausanovitch, Northport and Tullio Lovisa, Huntington Station, all of, N.Y., part interest to each

Division of Ser. No. 232,450, March 7, 1972, Pat. No. 3,822,860. This application May 13, 1974, Ser. No. 469,421

Int. Cl.² E04G *17/08*

U.S. Cl. 249—213 **2 Claims**



1. A continuous reusable tie rod adapted to receive an internal spreader means for maintaining concrete forms a predetermined distance apart comprising a continuous rod having opposed ends and coupling means disposed adjacent each end for cooperating in releasably mounting the tie rod in fixed position on the concrete forms, engaging means intermediate the rod ends defining surfaces for cooperating in engaging surfaces of the spreader means so that the tie rod and spreader are disengagable from each other while the forms are still in place whereby the tie rod is retractable and removable from the concrete without damage to the tie rod or concrete, the tie rod including a cammming head, a tubular member having opposed ends slidably mounted on the rod and disposed between the engaging means defining the surfaces adapted to engage the surfaces formed on the spreader means and the camming head, one end of the tubular member being adjacent the camming head and having thereon one of the coupling means, the other end of the tubular member being formed with means for coupling to the spreader means.

3,926,405

SOLENOID OPERATED PROPORTIONAL VALVE

Kurt Arnold, West Caldwell, N.J., assignor to Valcor Engineering Corporation, Kenilworth, N.J.

Filed Aug. 21, 1974, Ser. No. 499,202

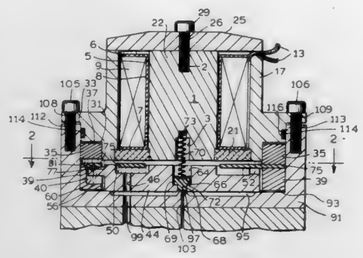
Int. Cl.² F16K *31/06*

U.S. Cl. 251—129 **11 Claims**

1. In a solenoid activated proportional valve having an inlet, outlet and valve means movable between an open and closed position for controlling flow of a medium from the inlet through the outlet, the improvement comprising:

electromagnetic force means acting on said valve means to move said valve means between said open and closed positions;

spring force means also acting on said valve means and biased against the electromagnetic force means acting on said valve means; and



means varying the spring constant of said spring means in response to the movement of said valve means, whereby the spring force opposing the electromagnetic force varies dependent on the position of said valve means, such forces being balanced when said valve means is in its open position.

3,926,406

CASTING OF METALS

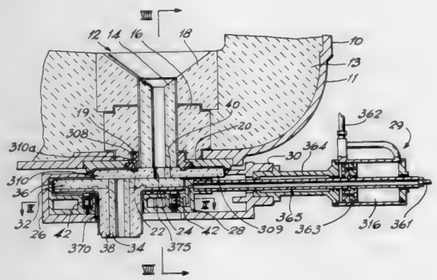
Robert Duncan Hind, Rotherham, England, assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1973, Ser. No. 387,570

Claims priority, application United Kingdom, Aug. 25, 1972, 39618/72

Int. Cl.² F16K *51/00*

U.S. Cl. 251—144 **11 Claims**



1. In a sliding gate valve assembly for controlling flow of molten metal, which assembly comprises a sliding gate member, a seating for said gate member, and resilient devices urging said gate member into sealing engagement with said seating, the improvement in which each of said devices comprises:

a core member;

two spaced-apart pad members mounted on said core member for relative movement in directions longitudinal of said core member;

a sleeve member slidably mounted on said core member intermediate said pad members and extending longitudinally of said core member;

spring means around said core member acting to urge said pad members apart; and

means including said sleeve member acting to restrict severely relative movement of said pad members toward each other to restrict correspondingly movement of said gate member away from said seating in the event of failure of said spring means.

3,926,407

COCK WITH SHUTOFF MEMBER MOUNTED ECCENTRICALLY AND ROTATABLY IN A HOUSING

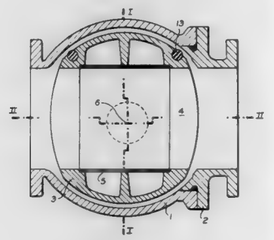
Siegmar Förster, and Walrath Von Klipstein, both of Heidenheim (Brenz), Germany, assignors to Firma Johannes Erhard, H. Waldenmaier Erben Suddeutsche Armaturenfabrik, Heidenheim, Germany

Filed Sept. 12, 1973, Ser. No. 396,531

Claims priority, application Germany, Apr. 26, 1973, 2321072

Int. Cl. F16k *5/12*

U.S. Cl. 251—315 **1 Claim**



1. A cock comprising a valve body substantially symmetric about an axis and having an inlet and outlet aligned axially perpendicular to said axis; shutoff member of substantially axially symmetric external configuration rotatable about an axis parallel to and offset from the axis of said body within the latter, said member having a main flow passage extending perpendicular to said axis and alignable with said inlet and said outlet in an open position of said member; sealing means on said member engageable with said body upon rotation of said member into a closed position of said member blocking flow from said inlet to outlet, said member defining with said body in positions of said member intermediate said open position and said closed position free cross sections collectively having a flow area of greater than 10% of the flow area of said main flow passage and extending uniformly and without sharp flow cross section variation in all intermediate positions between said inlet and said outlet while being symmetric with respect to the axis of said body, said member being of barrel external shape and being defined by two equal radii having centers equidistant from the axis of said member and offset to opposite sides of a common axial plane.

3,926,408

GATE VALVE FOR CONTROLLING FLUID FLOW

Ernst Vogeli, Wiesendange, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

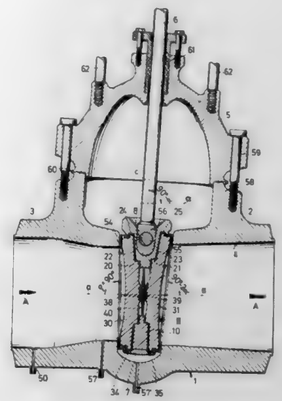
Filed Nov. 6, 1973, Ser. No. 413,380

Claims priority, application Switzerland, Nov. 7, 1972, 16226/72

Int. Cl.² F16K *3/12*

U.S. Cl. 251—327 **13 Claims**

11. A gate valve for controlling fluid flow having an inlet body end including an exit of predetermined cross-section for the fluid flow, an outlet body end including an inlet of a cross-section at least 5% larger than said exit cross-section and a valve gate adjacent and between said inlet and said outlet, said valve gate including two sealing discs, each disc carrying a gate sealing surface, one of said discs having a domed protuberance on a surface facing the other disc and a central disc located between said sealing discs and having a surface facing



said protuberance of a material softer than that of said protuberance and engageable with said protuberance.

3,926,409

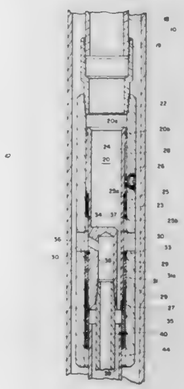
SELECTIVE WELL TREATING AND GRAVEL PACKING APPARATUS

Dave L. Abney; Robert C. Williams, both of Dallas, Tex., and Horace E. Gilbert, Gretna, La., assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 194,228, Nov. 1, 1971, Pat. No. 3,818,986. This application Mar. 18, 1974, Ser. No. 452,234

Int. Cl.² F16K *31/44*

U.S. Cl. 251—344 **4 Claims**



1. A crossover valve apparatus adapted for use in a well bore having a first tubing string and a second tubing string inside a portion of the first tubing string comprising:

a housing having

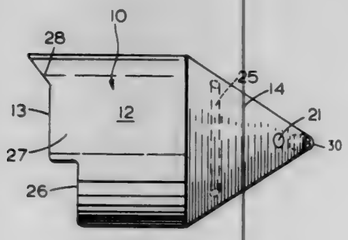
a first seal bore,

a second seal bore spaced axially from said first seal bore, at least one lateral opening located between said first and said second seal bores;

a tubular mandrel in said housing and movable axially from a first position to a second position in said housing and rotatable in said housing and having

a first seal engaging said first seal bore in both said first and said second positions,
a third seal spaced axially from said first seal and engaging said second seal bore in said second position,
a second seal located between said first seal and said third seal, and engaging said second seal bore in said second position, and
at least one side port located between said second seal and said third seal, and communicating with said at least one lateral opening in said first position; and
releasable means
for locking said mandrel and said housing in one of said first or second positions, and
for permitting said mandrel and said housing to move to the other of said first or second positions.

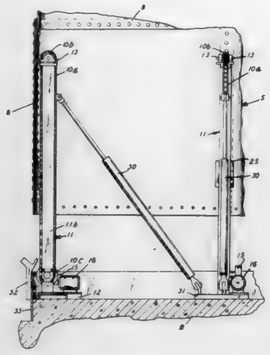
3,926,410
LOG SKIDDING CONE
Donald A. McLeod, St. Stephen, New Brunswick, Canada (E0G3A0)
Filed Feb. 19, 1975, Ser. No. 551,297
Claims priority, application Canada, Mar. 7, 1974, 194296
Int. Cl.² B60P 1/00; A01G 23/08; B66C 1/34; B25B 29/00
U.S. Cl. 254—1 **6 Claims**



1. An end guard for use in skidding a log, the guard comprising a cylindrical body open at one end to receive a log to be skidded, the other end of said body being axially convergent to define an aperture of a size sufficient to allow a flexible member to pass therethrough for engaging said log, the open end of said body including a semi-cylindrical extension projecting longitudinally therefrom.

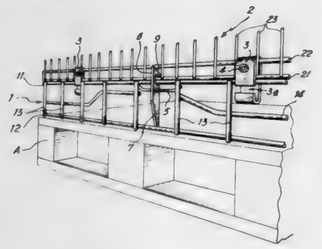
3,926,411
LIFTING JACK
Sheldon D. Tegtmeier, Colfax, N. Dak., assignor to Tegtmeier & Sons, Inc., West Fargo, N. Dak.
Filed Apr. 2, 1975, Ser. No. 564,470
Int. Cl.² B66F 7/12
U.S. Cl. 254—89 R **3 Claims**

1. An elevating jack system for erecting storage silos comprising
a plurality of elevating mechanisms adapted to be supported by the base platform of the silo structure and including means for laterally stabilizing said mechanisms during the erection operation,
each elevating mechanism including:
a jack attaching lift plate which includes a plurality of inclined cam slots,
a plurality of attaching pins slidably mounted in said cam slots and removably connecting each lift plate to assembled portion of the silo structure, and
means for attaching said lift plate to the respective elevating mechanisms to simultaneously lift all portions of the silo into elevating position while simultaneously rotating the



same through a predetermined arc to permit assembly of the next row of silo panels thereunder.

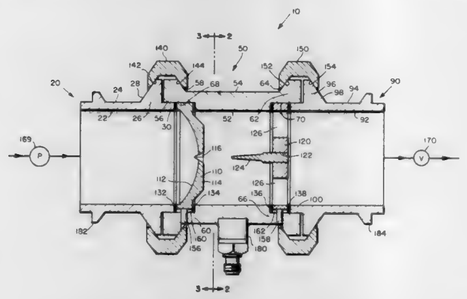
3,926,412
GRAVITY CATCH FOR HINGED GUARD FENCES
Oscar Beretta, Neuilly-sur-Seine, France, assignor to Technifil S.A., Neuilly-sur-Seine, France
Continuation-in-part of Ser. No. 438,992, Feb. 4, 1974, abandoned. This application Sept. 26, 1974, Ser. No. 509,660
Int. Cl.² B21F 27/00
U.S. Cl. 256—46 **5 Claims**



1. A guard fence construction comprising upper and lower fence portions, tie piece means hingeably connecting said fence portions together for relative pivotable and translating movement while allowing complete separation of the fence portions, at least one catch member securely connected to one of said fence portions and pivotable relative thereto about a horizontal axis for selectively locking said fence portions both against relative pivotable and translatory movement, said catch member having a center of gravity disposed below the horizontal pivot axis thereof so that the catch member is urged to an active position under the effect of gravity, said catch member including a working part which in said active position engages the other of said fence portions to hold the same and prevent relative pivotable and translatory movement of said fence portions, said working part of the catch member having an outer sloping ramp portion positioned for engaging said other of the fence portions when said fence portions are moved in translation towards one another for engagement to pivot said catch member and allow such engagement whereafter the catch member is free to pivot under the effect of gravity such that said working part lockably engages said other fence portion, said working part of the catch member including a concave portion which in said active position at least partly encloses said other of said fence portions and prevents relative displacement of the fence portions in a direction for separation thereof, and an extension which forms a lever

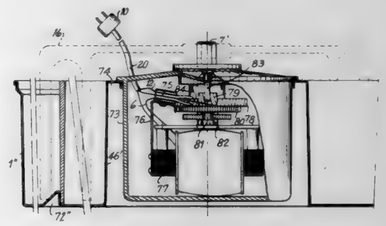
which is operable to move said catch member to a withdrawn inoperative position.

3,926,413
APPARATUS FOR PRODUCING ACOUSTIC VIBRATIONS IN LIQUIDS
Anthony M. D'Urso, New Canaan, Conn., assignor to Sonic Corporation, Stamford, Conn.
Filed Jan. 20, 1975, Ser. No. 542,640
Int. Cl.² B01F 5/06, 11/00
U.S. Cl. 259—4 R **7 Claims**



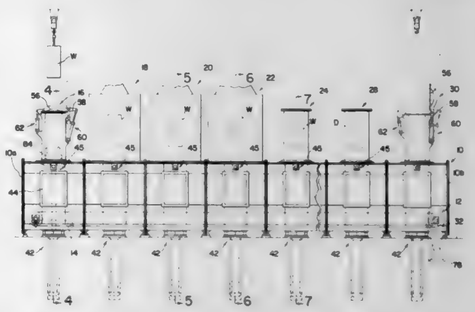
1. An apparatus for producing acoustic vibrations in a flowing liquid comprising an inlet section, a body section, and an outlet section,
each of said sections having a substantially cylindrical inner surface and having an outer surface,
a first flange extending radially outwardly from an inlet end of said body section and a second flange extending radially outwardly from an outlet end of said body section,
a first counterbore at the inlet end of said body section and a second counterbore at the outlet end of said body section,
said inlet section being adjacent to said inlet end of said body section and having an axially extending cylindrical flange extending into said first counterbore,
said outlet section being adjacent to said outlet end of said body section and having an axially extending flange extending into said second counterbore,
an orifice plate mounted in said first counterbore and having one face that is substantially spherical and another face that is substantially flat, said orifice plate having an eye-shaped orifice at its approximate midpoint,
a blade plate mounted in said second counterbore, said blade plate having a blade-like vibratory element aligned with said orifice,
an annular sealing ring on each side of said orifice plate in said first counterbore, and annular sealing ring on each side of said blade plate in said second counterbore, each of said annular sealing rings having a substantially cylindrical inner surface,
a flange extending radially outwardly from the inlet section adjacent to the body section,
a flange extending radially outwardly from the outlet section adjacent to the body section,
a first clamping means surrounding the radially extending flanges of the inlet section and the inlet end of the body section to mount said inlet section to said body section, and a second clamping means surrounding the radially extending flanges of the outlet section and the outlet end of the body section to mount said outlet section to said body section,
means for preventing rotation of the orifice plate in the first counterbore,
means for preventing rotation of the blade plate in the second counterbore,
and the inner surfaces of the inlet section, the body section, the outlet section, and the annular sealing rings being substantially equal in diameter and free of any crevices to minimize the possibility of bacteria buildup as the liquid flows through the apparatus.

3,926,414
ICE-BOX
Pierre Tanguy, Daix, France, assignor to Etud, Dijon, France
Filed Jan. 2, 1974, Ser. No. 429,820
Claims priority, application France, Jan. 4, 1973, 73.00210
Int. Cl.² A23G 9/12
U.S. Cl. 259—108 **7 Claims**



1. In an appliance for making water ices and the like having a motor, an electrical circuit for said motor including a power cable extending from said appliance, reduction gearing and retractable mixing blades driven by said motor, the improvement comprising:
means responsive to retraction of said blades to open said circuit to said motor and connect said circuit to an alarm device, said alarm device being in said power cable and in a position therein remote from said motor whereby it may be positioned externally of the region in which said appliance is located.

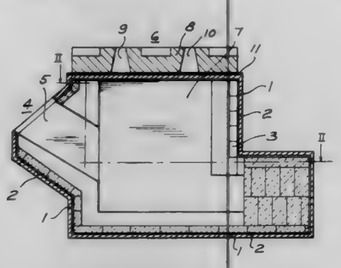
3,926,415
METHOD AND APPARATUS FOR CARBONIZING AND DEGASSING WORKPIECES
William W. Konas; Paul L. Day, both of Parma, and Roger R. Budzinski, Seven Hills, all of Ohio, assignors to Park-Ohio Industries Inc., Cleveland, Ohio
Filed Jan. 23, 1974, Ser. No. 435,677
Int. Cl.² C21D 9/00, 1/74
U.S. Cl. 266—5 E **16 Claims**



1. A heat treating furnace comprising an input station, a heating station, a cooling station and an output station, a vertically fixed carriage movable along a horizontal path relative to said stations, enclosure means for said carriage and including top wall means spaced above said carriage and overlying said path, chamber means at each of said stations supported on said top wall means and opening therethrough, means to heat said chamber means at said heating station, means to position said carriage along said path at each of said stations in alignment with the opening into the chamber means at the corresponding station, workpiece support and chamber closure means separate from and movable with said carriage

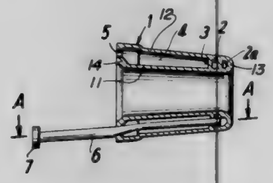
and displaceable vertically from said carriage at each of said stations between a first position on said carriage and a second position spaced from said carriage and closing the opening into the chamber means at the corresponding station, means at each of said stations separate from said carriage and displaceable relative thereto to move said support and closure means relative to said carriage between said first and second positions, and means separate from said carriage to hold said support and closure means in said second position.

3,926,416
ALUMINUM HOLDING FURNACE
Hudson G. Pendry, Chicago, Ill., assignor to The Raymond Lee Organization Inc., New York, N.Y., a part interest
Filed June 3, 1974, Ser. No. 475,845
Int. Cl.² F27B 17/00
U.S. Cl. 266—33 R **1 Claim**



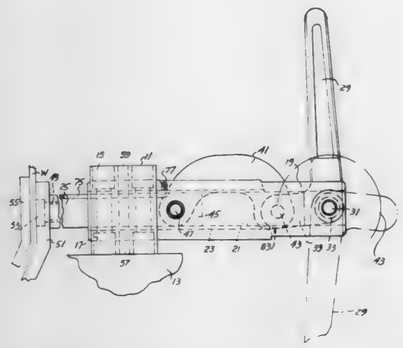
1. An aluminum holding furnace, comprising
a steel housing having a front and a chute-type part extending at an angle downward into the housing from the front, and a top and an opening at the top;
an asbestos lining on the steel in the housing;
heat insulating bricks lining the asbestos in the housing;
burner means for heating the furnace, said burner means comprising a removable top cover for the furnace removably affixed to the housing and covering the opening at the top thereof, the top cover having burner holes formed therethrough flaring outward as they progress toward the inside from the outside; and
an asbestos gasket between the top cover and the housing for making the furnace pressure-tight.

3,926,417
TUYERE FOR BLOWING GAS INTO A MELTING FURNACE
Takehiro Horio, Kitakyushu; Katsuhisa Tsuda, Nakama; Tadashi Imai; Masashi Mitsutsuka, both of Kitakyushu, and Heiji Morise, Fukuoka, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Jan. 10, 1974, Ser. No. 432,203
Int. Cl.² C21B 7/16
U.S. Cl. 266—41 **6 Claims**



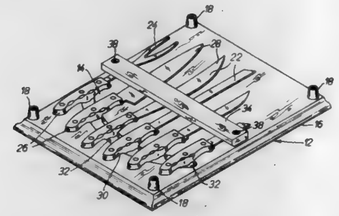
1. A tuyere for blowing gas into a melting furnace comprising an annular inner wall, an annular outer wall laterally enclosing and spaced radially outwardly from said inner wall, a first end wall extending between said inner and outer walls at one end thereof and a second end wall extending between the opposite ends of said inner and outer walls for forming a closed space therebetween, a first partition wall located within the closed space and extending radially between said inner and outer walls transversely of the axis thereof for dividing the closed space into a front cooling chamber adjacent said first end wall and a back cooling chamber extending between said first partition wall and said second wall, wherein the improvement comprises a helically arranged second partition wall located within said front cooling chamber and extending between said inner and outer walls transversely of the axis of said inner and outer walls and forming a flow passage with a plurality of helical turns extending between said first end wall and said first partition wall, said flow passage having a dimension transversely of the axial direction of said inner and outer walls equal to the dimension between said inner and outer walls for the full extent of said flow passage from said first end wall to said first partition wall, first conduit means connected to said front cooling chamber for circulating a cooling liquid therethrough, second conduit means independent of said first conduit means and connected to said back cooling chamber for circulating a cooling liquid therethrough and said first conduit means includes a supply conduit and a discharge conduit with said supply conduit extending from said second end wall through said back cooling chamber, said first partition wall and the turns of said flow passage closer to said first partition wall and opening into the turn of said flow passage closest to said first end wall, and said discharge conduit extending from said second end wall through said back cooling chamber and said first partition wall and opening into the turn of said flow passage closest to said first partition wall.

3,926,418
ROTATING DETENTED PUSH-PULL PLUNGER CLAMP
Leland F. Blatt, 31915 Groesbeck Highway, Fraser, Mich. 48026
Filed May 8, 1974, Ser. No. 468,019
Int. Cl.² B25B 1/14
U.S. Cl. 269—13 **6 Claims**



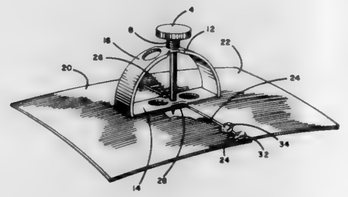
1. A push-pull clamp for anchoring a work piece against a fixture comprising:
a base mounted on a support and having a longitudinal bore;
an elongated cylindrical body projected through said bore and rotatively adjustable upon said base;
said body having a longitudinal bore therethrough of square cross section;
there being an outwardly opening radial slot through said body;
a plunger of square cross section slidably and guidably reciprocated within one end of said body and at one end projecting from the body adapted to retainingly engage a workpiece;
a handle at one end guidably nested in said slot and pivotally mounted upon said body;
a link at one end pivotally connected to said plunger and at its other end pivotally connected to said handle;
and cooperating means on said base and body retaining said body against longitudinal movement relative to said base and detent means on said base and body for restraining said body against rotation when in extreme rotative positions, said body being at all times free to rotate with respect to said base between its detented positions when the plunger is in unclamped position, said cooperating means including an annular groove on said body, and a key nested in said base and extending into said groove.

3,926,419
COMBINATION CUTLERY AND CUTTING BOARD
Edwin J. Kenny, 2661B N. Fratney, Milwaukee, Wis. 53212
Filed June 12, 1974, Ser. No. 478,638
Int. Cl.² B25B 11/00
U.S. Cl. 269—16 **2 Claims**



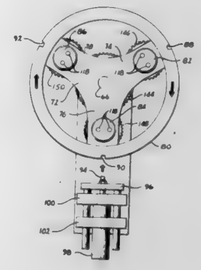
1. A storage assembly for a cutlery set, the cutlery set including a number of knives and a fork, each having a handle and a blade, said assembly comprising a board, a number of recesses in said board for receiving the handles of the cutlery set, a transverse bar mounted on said board in a transverse position with respect to the blades of the knives and fork, openings in each end of said bar, a pair of spring coils positioned in said openings, and a mounting screw extending through each opening into said board for retaining the coil springs in the openings, said springs being compressed by said screws for biasing the bar against the blades whereby the knives and fork can be easily removed from and replaced in the recesses of the board, and a leg at each corner of said board for supporting said board on a surface at a distance sufficient to provide clearance on the bottom of said board for said cross bar.

3,926,420
SHEET METAL SECURING DEVICE
Edwin S. Raymond, 1001 N. Main, Las Vegas, Nev. 89101
Filed July 8, 1974, Ser. No. 486,504
Int. Cl.² B25B 5/00
U.S. Cl. 269—47 **4 Claims**



1. A clamp for securing sheet metal comprising:
a shaft having handle means for manually rotating the shaft at one end thereof and thread means for engaging a bore in the sheet metal at the other end thereof,
brace means adapted to receive the shaft comprising a substantially flat member and an arcuate member structurally spaced from each other, each member having axially aligned holes therein to permit said shaft to pass therethrough, and
biasing means associated with said shaft for urging the sheet metal toward the brace means when the threaded end of the shaft engages the sheet metal.

3,926,421
TURRET FOR WORKPIECE
Arthur C. Reiger, Jr., and Hyman B. Finegold, both of Dayton, assignors to The Globe Tool and Engineering Company, Dayton, Ohio
Filed July 5, 1973, Ser. No. 376,518
Int. Cl.² B23Q 7/02; H02K 15/10
U.S. Cl. 269—57 **3 Claims**



1. Stator frame supporting apparatus for use with a machine for inserting insulators into stator frames wherein there are to be two insulators spaced apart by 180° in the stator frames, said support apparatus comprising a turret rotatable about a predetermined axis and having three stator frame receiving mandrels equally spaced from said axis and spaced circumferentially apart by 120°, unidirectional drive means for indexing said turret in successive increments of 120° each to sequentially position said mandrels at a predetermined position to receive an insulator fed to a stator frame mounted thereon by said machine, and means driven by said drive means for rotating each said mandrel relative to said turret through an odd integral multiple of 180° for each 360° rotation of said turret whereby each stator frame received upon a mandrel is rotated through 180° during the interval it first is moved away from said predetermined position and it next arrives at said predetermined position.

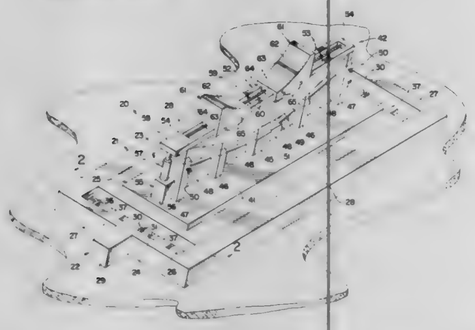
3,926,422
APPARATUS FOR SUPPORTING AND POSITIONING OF A WORK-PIECE DURING WELDING
Bobby R. Wilson, 423 Kline Ave., Akron, Ohio 44305
Filed Oct. 16, 1974, Ser. No. 515,224
Int. Cl.² B23Q 3/18
U.S. Cl. 269—60 **1 Claim**

1. Apparatus for supporting and positioning of a work-piece during welding, including a base plate having a transverse drive means, a secondary plate carried by said base plate and having at least one drive element engaged by said transverse drive means and a vertically and laterally adjustable mechanism carried by said secondary plate and providing means for engaging a work-piece during welding,
said base plate having opposed guide rails with slots for mating engagement with rib areas on said secondary plate to slidably secure said secondary plate on said base plate and to prevent vertical movement of said secondary plate relative to said base plate,
said transverse drive means comprising an elongate drive screw rotatably supported by said base plate,

each drive element being located on the underside of said secondary plate and having a threaded bore therethrough for threaded engagement by said drive screw, whereby said secondary plate will slide relative to said base plate upon actuation of said drive screw,

said secondary plate having therebeneath dual guide ways for slidably receiving guide keys on said base plate and guiding the sliding movement of said secondary plate relative to said base plate,

said base plate having dual elongated tracks thereon in aligned relation to bearings housed beneath said secondary plate for rolling movement of said secondary plate on said base plate,



said mechanism comprising a saddle carried above said secondary plate, said saddle having an upper portion telescopically received by a lower portion, said upper portion being vertically adjustable by a lifting means housed within said lower portion,

the upper portion of said saddle including a track for slidably carrying the work-piece engaging means and rotatably carrying a second elongate drive screw having double and opposite hand threaded portions,

said work-piece engaging means comprising opposed movable jaws positioned for sliding movement on said track, each jaw having therethrough a threaded bore for engagement by the threaded portions of said second drive screw, whereby said opposed jaws will slide laterally toward or away from one another on said track upon actuation of said second drive screw.

3,926,423

HIGH SPEED IN-LINE PAPER INSERTING APPARATUS AND METHOD

George Merker, Fair Lawn, N.J.; Joseph Krupp, Bangor, Pa.; Charles R. Ricards, Belvidere, N.J., and Thomas A. Ward, Whitehall, Pa., assignors to American Newspaper Publishers Association, Easton, Pa.

Filed Dec. 26, 1973, Ser. No. 427,763

Int. Cl.² B65H *5/30*

U.S. Cl. 270—55 **9 Claims**

1. A method of high speed in-line inserting of a supplement insert into a newspaper comprising the steps of:

A. folding a newspaper to provide an extending lap on the top half of said folded newspaper with respect to the bottom half, conveying said folded newspaper as a folded jacket with the folded edge forwardly disposed to a speed up station, and

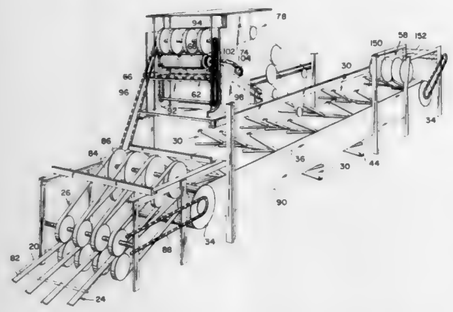
B. accelerating said folded jacket forwardly and downwardly for a rectilinear series of steps wherein said folded edge is rectilinearly conveyed forwardly and downwardly with respect to said extended lap, said rectilinear conveying steps further comprising in sequence:

i. forwardly pivoting said folded jacket relative to said folded edge while rectilinearly conveying and,

ii. maintaining the top half of said jacket in said pivoted position, while rectilinearly conveying and,

iii. backwardly pivoting only said bottom half of said jacket to thereby define a rearwardly and upwardly opening pocket which is rectilinearly conveyed, and

C. impelling an insert forwardly and downwardly into said rearwardly opening pocket, said insert impelling speed



being substantially greater than the rectilinearly conveying speed of said jacket to thereby seat said insert into said pocket, and;

D. backwardly pivoting said top half of said jacket onto said bottom half and rectilinearly conveying a folded composite of said jacket and said supplement insert.

3,926,424

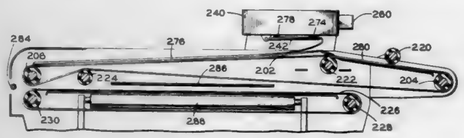
FOLDING APPARATUS

Roland W. Gerstenberger, and William E. Field, both of Fort Lauderdale, Fla., assignors to Jensen Corporation, Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 266,604, June 27, 1972, abandoned, which is a continuation-in-part of Ser. No. 190,812, Oct. 20, 1971, Pat. No. 3,714,459. This application Dec. 13, 1973, Ser. No. 424,479

Int. Cl.² B65H *45/12*

U.S. Cl. 270—62 **6 Claims**



1. A folding apparatus for folding laundry articles and comprising:

means for transporting a laundry article along a predetermined path,

a pick up and drop folder positioned along said path, for folding the article, said folder having a blade for lifting and retaining the leading edge of the article and thereafter dropping said leading edge on the trailing edge of the article as it moves past, and means to raise said blade for lifting and retaining the leading edge of the article and to lower said blade for dropping and releasing the leading edge of the article,

a roll folder positioned along said path beyond said pick up and drop folder for folding the article again,

timer means controlling the operation of said roll folder, and

sensor means at said pick up and drop folder for sensing successively the movement of the leading and trailing edges of the article past it, said sensor means being operably coupled to both said pick up and drop folder and said timing means for the roll folder:

a. to cause said blade in the pick up and drop folder to be raised in response to the movement of the leading edge of the article past said sensor means;

b. to cause said blade to be lowered in response to the movement of the trailing edge of the article past said sensor means; and

c. in response to the movement of the leading and trailing edges of the article in succession past said sensor means, to actuate said timer means to cause said roll folder to fold the article as it moves past;

said sensor means comprising a leading sensor positioned to sense the leading edge of the article before it reaches said blade, and a trailing sensor positioned to sense the leading edge of the article after it reaches said blade, and further comprising relay means responsive to both the leading sensor and the trailing sensor to cause the blade in the pick up and drop folder to be raised when both sensors have sensed the leading edge of the article.

said relay means including contacts for automatically disconnecting the same from said trailing sensor after the latter senses the leading edge of the article and for atuomatically reconnecting the same to said trailing sensor after the leading sensor senses the trailing edge of the article, said relay means having further contacts;

said timer means including capacitance means adapted to be electrically charged and discharged, and control circuit means actuated by said further contacts of said relay means for charging said capacitance means at a slow rate beginning with the movement of the leading edge of the article past the trailing sensor and at a quadrupled rate beginning with the movement of the trailing edge of the article past the leading sensor so as to time the operation of said roll folder for folding the once-folded article again at the middle.

3,926,425

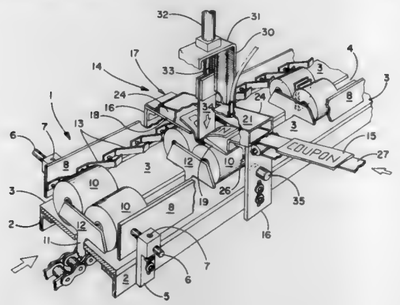
METHOD OF COUPON POSITIONING AND MECHANISM THEREFOR

Allan A. Pierce, New Milford; Christian M. Peterson, Brookfield, both of Conn., and Jerry G. Kunde, Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed June 27, 1974, Ser. No. 483,640

Int. Cl.² B65H *45/18*

U.S. Cl. 270—83 **3 Claims**



1. In coupon positioning mechanism for inserting coupons between roll products, support means for a coupon, said support means having a slot therein, means for moving a pair of roll products with their peripheries in contact and their axes parallel beneath the support means so that the zone of contact of the roll product peripheries is in vertical alignment with and extends parallel to the slot of the support means, means for delivering coupons one at a time to said support means to extend transversely across said slot, a reciprocable plunger mounted above said support means operably positioned in alignment with said slot to tuck a coupon on said support means through said slot and between said roll products at the zone of contact of the roll peripheries, means to drive said plunger vertically in reciprocation, said support means for the coupon having a first generally horizontal portion and a second portion also generally horizontal and nearer the means for delivery of coupons which second portion at said slot projects slightly above said first portion so that coupons delivered to said support means slide smoothly across said slot.

3,926,426

SHEET INSERTION AND REMOVING DEVICE

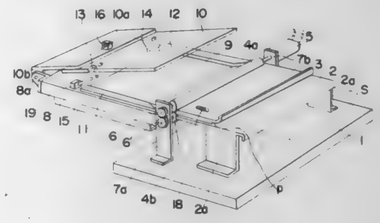
Shiro Toriumi, and Seiichi Yamagishi, both of Tokyo, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 27, 1974, Ser. No. 527,767

Claims priority, application Japan, Dec. 3, 1973, 48-136296; Mar. 4, 1974, 49-25443

Int. Cl.² B65H *5/04*

U.S. Cl. 271—3 **11 Claims**



1. In a sheet insertion and removing device for use in microfilm readers or the like apparatus which comprises a sheet carrier including means for positioning a sheet supplied thereon in a required position and means for holding said sheet on said carrier for retrieval of data stored on said sheet, an improvement thereof for automatic insertion and removing of the sheet into or from said carrier comprises feeding means for sheet feeding, a guide member forming a passage for said sheet, a carrier member provided thereon with sheet positioning means and sheet holding means and adapted to reciprocate relative to said guide member, an upper surface of said carrier member being adapted to be level with that of said guide member, first switch means provided in said passage on said guide means and actuated by insertion of said sheet into said passage for causing said feeding means to feed said sheet onto said carrier member, second switch means for driving said carrier member forward away from a starting position to a predetermined position which second switch means is disposed on said carrier member and actuated when said sheet has been positioned on said carrier member, said carrier member being adapted to stop at said predetermined position during retrieval of said data stored on said sheet and to subsequently return back to said starting position, third switch means disposed between said carrier member and said guide member so as to be actuated when said carrier member has returned to said starting position for causing said feeding means to discharge said sheet back onto said guide member.

3,926,427

APPARATUS FOR SEPARATING SHEETS FROM A STACK

Stephen L. Moksnes, 970 W. Highland St., and F. Leslie Moksnes, 125 S. Fourth St., both of Whitewater, Wis. 53190

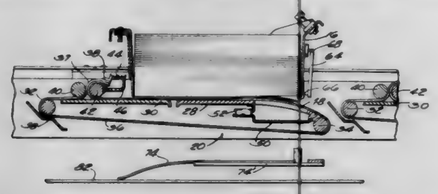
Filed Feb. 14, 1974, Ser. No. 442,527

Int. Cl.² B65H *3/12*

U.S. Cl. 271—9 **6 Claims**

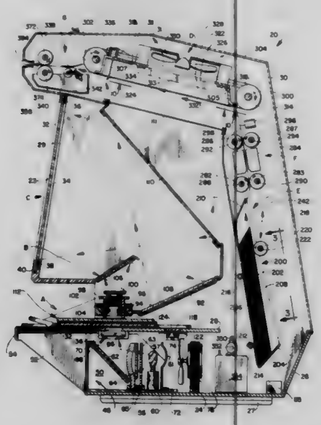
5. Apparatus for separating sheets from a stack comprising a fixed hopper for a stack of sheets, a shuttle mounted for movement below said hopper and having a transverse gap therein, belt means having opposite loop portions forming an anti-friction support for the sheets of the stack extending over and around said shuttle and having a portion secured in fixed position above the shuttle and adjacent the hopper, means connected with said shuttle and responsive to movement of the shuttle for causing downward deflection of an end portion of the bottommost sheet in the stack into said transverse gap, roller means in each of the opposite loop portions of said belt

means, and means for reciprocating the shuttle in a direction to cause the roller means to shift the belt means from a position where the major portion of the length of the belt means is beneath the hopper to a position where the major portion



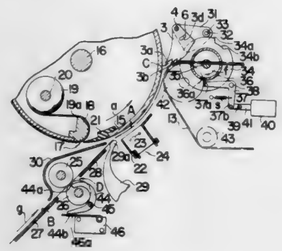
of its length is forwardly of the hopper, said means for causing said downward deflection comprising suction cups mounted on said belt means for shifting movement with the belt as the belt means is shifted.

3,926,428
SHEET FEEDING APPARATUS
Stanley W. Heldenbrand; David L. Johnson, both of Dallas, and Neil H. Mote, Richardson, all of Tex., assignors to Seaco Computer-Display Incorporated, Garland, Tex.
Division of Ser. No. 166,953, July 28, 1971, Pat. No. 3,811,769. This application Sept. 28, 1973, Ser. No. 401,820
Int. Cl.² B65H *1/02, 3/06*
U.S. Cl. 271—109 **1 Claim**



1. Apparatus for feeding individual sheets of paper of the type having an electrically conductive coating on one side thereof from a stack of such paper, said apparatus comprising:
a. tray means supporting and containing said stack and including a base, rear wall, and side walls,
b. said rear wall being inclined at an acute angle with respect to said base, thereby to position the top sheet of said stack forwardly from the remainder of said stack,
c. roller means for frictionally engaging the top sheet of said stack and urging said top sheet in a forward direction away from said rear wall and parallel to the plane of said stack,
d. deflector means intersecting said base at an obtuse angle thereto and forward of said roller means, said deflector means having an electrically conductive portion adapted to be engaged by the conductively coated side of said top sheet when it is urged in said forward direction for discharging electrostatic charges on said coated side of said top sheet, said electrically conductive portion being sufficiently forwardly spaced from said stack to be out of physical contact with any of the sheets of said stack prior to said urging,
e. means electrically grounding said electrically conductive portion, and
f. electrically insulating material disposed on the inside surfaces of said tray electrically isolating said electrically conductive portion of said deflector means from said stack.

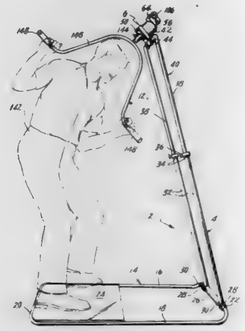
3,926,429
COPY SHEET STRIPPING DEVICE
Toyokazu Satomi, Yokohama; Yasumori Nagahara, Yokosuka, and Teruo Narita, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan
Filed Nov. 21, 1973, Ser. No. 417,934
Claims priority, application Japan, Dec. 2, 1972, 47-120829
Int. Cl.² B65H *29/56*
U.S. Cl. 271—174 **4 Claims**



1. A copy sheet stripping device for use with an electrophotographic apparatus of the type comprising a movable member adapted to carry an intermediate image thereon and move through a transfer-printing station where the intermediate image is printed on a copy sheet by transfer-printing, such device comprising:
a. sheet pick-off claw means disposed in a sheet stripping station for picking off from said movable member the copy sheet on which the intermediate image has been printed;
b. sheet pick-off claw means control means for moving said sheet pick-off claw means to a sheet pick-off position before the leading end of the copy sheet reaches the sheet stripping station so that the copy sheet may be stripped off the movable member, said control means comprising a rotatable cam and a pick-off claw means control member adapted to be moved in pivotable motion by said cam after the lapse of a predetermined time interval; and
c. sheet detection means disposed in the path of movement of the copy sheet for detecting the presence of the copy sheet and actuating said sheet pick-off claw means control means as the copy sheet moves along the path of its movement, said sheet detection means comprising a lever having one end extending into the path of movement of the copy sheet and another end positioned against said rotatable cam for controlling cam rotation by the pivotable movement of said lever.

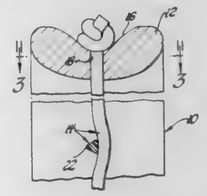
2. A copy sheet stripping device for use with an electrophotographic apparatus of the type comprising a movable member adapted to carry an intermediate image thereon and move through a transfer-printing station where the intermediate image is printed on a copy sheet by transfer-printing, said device comprising:
a. sheet pick-off claw means disposed in a sheet stripping station for picking off from said movable member the copy sheet on which the intermediate image has been printed, said claw means comprising:
i. a plurality of claw members, each having a free end formed in sawtooth fashion;
ii. means for supporting each of said claw members for individual pivotal movement about a common axis; and
iii. means for urging said claw members in pivotal movement about said common axis toward their respective sheet pick-off positions whereat the leading end of the transfer-printed copy sheet on the movable member is received in one of the valleys of the sawteeth on each of the claw members so as to move said claw members in pivotal motion against the action of said urging means;
b. cam means for normally inhibiting said claw members from assuming their sheet pick-off positions until immediately before the leading end of the copy sheet reaches the sheet stripping station and for thereupon releasing said claw members to permit them to assume their sheet pick-off positions so that the copy sheet may be stripped off the movable member, said cam means comprising:
i. a rotatable cam; and
ii. drive means for rotating said cam through a frictional force at a predetermined rate;
c. means for locking said rotatable cam in a predetermined angular position against the action of said frictional force;
d. sheet detection means, including an actuator disposed in the path of movement of the copy sheet at a position before the sheet stripping station, for producing a detection signal when said actuator is engaged and pushed by the leading end of the copy sheet; and
e. means for actuating said locking means in response to said detection signal to release said rotatable cam thereby permitting said claw members to assume their respective sheet pick-off positions.

3,926,430
GOLF EXERCISER DEVICE
Lewis B. Good, Jr., 145 Johnson, East Peoria, Ill.
Continuation-in-part of Ser. No. 169,701, Aug. 6, 1971, abandoned. This application Nov. 15, 1973, Ser. No. 416,239
Int. Cl.² A63B *21/22, 23/02*
U.S. Cl. 272—79 C **22 Claims**



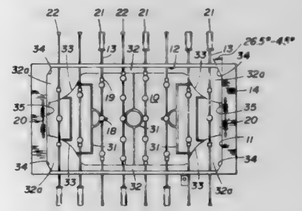
1. An exercise device for use by golfers to exercise and strengthen all of the principal muscle groups utilized in making a golf swing, comprising: a hydraulic resistance unit including an operating shaft, and designed to produce resistance torque smoothly and in proportion to the speed of the operating shaft; support means for supporting said hydraulic resistance unit generally at or above shoulder height of a golfer using said device; and force transmitting means attachable to said operating shaft, and arranged to be engaged by said golfer for transmitting muscular force to said operating shaft, said force transmitting means comprising: a generally L-shaped handle attachable at its upper end to said operating shaft generally at shoulder height, and including grip means on its lower end that is graspable by said golfer, said L-shaped handle being mainly used for exercising the hands, arms and upper body muscles; and a cross-bar member that is attachable at the middle portion thereof to said operating shaft above shoulder height for rotation about a downwardly directed axis of rotation, and including means on the opposite ends thereof engageable by said golfer, said cross-bar member being mainly used for exercising the legs and lower body muscles, said L-shaped handle and said cross-bar member being attached alternatively to said operating shaft, and together providing for full exercising of all the principal muscle groups utilized in playing golf.

3,926,431
RACKET
John Z. DeLorean, Bloomfield Hills, Mich., assignor to John Z. DeLorean Corporation, Bloomfield Hills, Mich.
Filed July 5, 1974, Ser. No. 486,252
Int. Cl.² A63B *51/02*
U.S. Cl. 273—73 D **9 Claims**



1. A racket including a frame and a plurality of string elements supported upon said frame in a taut open weave pattern, each string element including first and second discrete portions extending substantially throughout the length thereof, the first discrete portions of said string elements coacting to form a first ball-engaging surface, the second discrete portions of said string elements coacting to form a second ball-engaging surface, said first ball-engaging surface having a high coefficient of friction relative to said second ball-engaging surface.

3,926,432
TABLE SOCCER OR FOOTBALL GAME STRUCTURE
Robert L. Furr, and Robert I. Hayes, Jr., both of 4215 Oaklawn Ave., Dallas, Tex. 75219
Filed June 18, 1973, Ser. No. 370,915
Int. Cl.² A63F *7/06*
U.S. Cl. 273—85 D **16 Claims**



1. A table soccer or football game structure of the type having a playing field portion surrounded by raised opposite side walls and raised end walls, a plurality of actuating rods extending through said opposite side walls spaced transversely of and above said playing field portion and supporting game figures thereon depending adjacent said playing field portion and adapted to contact a ball thereon, said actuating rods being rotatively and axially movable relative to said side walls, the improvement comprising a solid layer of material covering said playing field portion, said layer of material having an upper playing surface formed with a multiplicity of raised pebbles arranged in a fixed, selected, regular pattern throughout the entire playing field to increase the speed and linearity of the playing field ball thereon in at least three directions.

16. An improved table soccer or football game structure of the type having a playing field portion bounded by raised opposite side walls and raised opposite end walls, a plurality of spaced, parallel actuating rods rotatively and axially movable with respect to said side walls above said playing field portion for supporting a plurality of game figures thereon, the center of gravity of each game figure being offset from the axis of its associated actuating rod, wherein the improvement comprises:

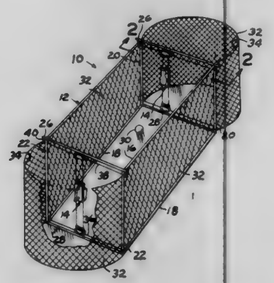
means associated with each game figure for positioning its center of gravity coincidently with the axis of its associated actuating rod.

3,926,433

PADDLE BALL GAME APPARATUS

Paul E. Jacques, 215 East St., North Attleboro, Mass. 02760

Filed Jan. 20, 1975, Ser. No. 542,536
Int. Cl.² A63F *7/00*
U.S. Cl. 273—85 F **5 Claims**



1. A paddle ball game apparatus, comprising:

a three dimensional open frame defined by a pair of vertically upstanding and spaced apart parallel side members and a pair of vertically upstanding and spaced apart parallel end members;

means enclosing each of said side members and each of said end members, respectively, to define a paddle ball game court having a goal at each end located behind the said end members;

a game ball; and,

a paddle means supported by said end members in front of each said goals for striking said ball, each of said paddle means being mounted for selective reciprocative movement vertically and for selective reciprocative movement horizontally within the vertical plane defined by each of said end members.

3,926,434

REMOTE CONTROLLED VEHICLE SYSTEMS

Thomas C. Cannon, Jr., Dunwoody, Ga., assignor to Thomas C. Cannon, Jr., Dunwoody, Ga. and Brent E. Coy, Morristown, N.J., part interest to each

Filed Apr. 19, 1974, Ser. No. 462,334
Int. Cl.² A63H *18/12*
U.S. Cl. 273—86 B **23 Claims**

1. In a remotely controlled vehicle system comprising in combination at least one electrically powered vehicle including driving means which is continuously energized from a remote source of power through oppositely polarized contacts,

track means comprising a repetitive pattern of conductors superimposed along a surface on which said vehicle travels, and including:

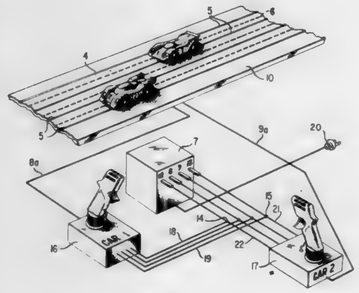
a first set comprising a plurality of said conductors uniformly spaced apart on said surface,

a second set comprising conducting means interposed between and electrically isolated from successive conductors of said first set along said surface,

the conductors of said first set and the second conducting means being connected to opposite terminals of said remote source of power for oppositely polarizing said first set relative to said second set,

first and second contacting means fastened on said vehicle in circuit relation to opposite terminals of said driving means, said contacting means constrained to move relative to said vehicle only in a direction substantially normal to the surface of said track,

said first contacting means connected to one said terminal comprising a contacting surface constructed to make slidable electrical contact with one or more conductors of



said first set simultaneously without making electrical contact with the intervening conducting means of said second set, and

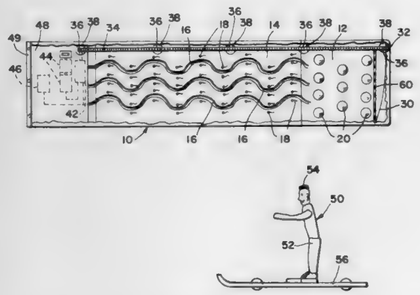
said second contacting means connected to the other said terminal, constructed to make slidable electrical contact with the intervening conducting means of said second set without being electrically responsive to the conducting means of said first set, each of said second contacting means so disposed relative to said first contacting means that when said first contacting means is in contact with one or more conductors of said first set at least one of said second contacting means is in contact with the intervening conducting means of said second set.

3,926,435

SKI RACE GAME

Valentine Nacci, Richmond Hill, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed July 18, 1974, Ser. No. 489,569
Int. Cl.² A63F *9/14*; **A63H** *15/02*
U.S. Cl. 273—86 C **3 Claims**



1. A game having a plurality of playing elements, each said playing element being a representation of a human figure carried by a pair of elongated skis of approximately the same

scale as said figure, each of said skis having a pair of wheels disposed along the longitudinal axis of said ski and in aligned relationship thereto, one of said skis of each pair being substantially heavier than the other, and a game board having a first playing surface substantially horizontal and a second playing surface inclined upwardly therefrom, said second surface having a plurality serpentine tracks disposed thereon, each of said tracks being sized for accommodating a pair of said skis.

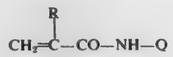
3,926,436

SILVER HALIDE ELEMENT CONTAINING POLYMERIC COLOUR FORMING COUPLERS

Marcel Jacob Monbaliu, Neuris 9; Jan Jozef Priem, Kapellelei 27, both of B 2510 Mortsel, and Roger Henri Vrydaghs, Hertogenlaan 35, B 2070 Ekeren, all of Belgium

Filed Feb. 15, 1974, Ser. No. 443,118
Claims priority, application United Kingdom, Feb. 26, 1973, 9421/73
Int. Cl.² G03C *1/40*, *1/72*
U.S. Cl. 96—67 **9 Claims**

1. A photographic colour element comprising a support and at least one light-sensitive silver halide emulsion layer wherein the element comprises a copolymer latex containing recurring units derived from a first ethylenically unsaturated monomer which will undergo oxidative coupling with an aromatic primary amino compound corresponding to the formula:

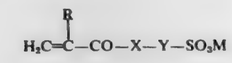


wherein:

R is hydrogen, C_1–C_4 alkyl or chlorine, and

Q is a moiety which will undergo oxidative coupling with an aromatic primary amino compound,

and recurring units derived from a second monomer corresponding to the formula:



wherein:

R is hydrogen, C_1–C_4 alkyl or chlorine,

X is —O— or —N(R′)— wherein R′ is hydrogen or lower alkyl,

Y is a divalent hydrocarbon group which may be interrupted by oxygen and/or sulphur, and

M is a cation.

9. A photographic element according to claim 1, wherein the said polymeric compound is a polymeric competing coupler and is present in an intermediate non-light-sensitive water-permeable colloid layer of the photographic element.

3,926,437

VERTICAL GAME BOARD AND PLAYING PIECES INCLUDING MOVE SETTING MECHANISMS

Walter Moe, Huntington Station, Long Island, and Michael Meyers, Fort Salonga, both of N.Y., assignors to Aurora Products Corporation, West Hempstead, N.Y.

Filed Dec. 20, 1973, Ser. No. 426,550
Int. Cl.² A63F *3/00*
U.S. Cl. 273—131 B **18 Claims**

1. A game apparatus comprising a playing board common to the players and playing pieces adapted to be mounted for movement across said playing board, each of said playing pieces including player controlled means for presetting said playing piece in a selected direction of movement and means for selectively concealing said playing piece to prevent premature discovery of the preset selected direction of movement for the playing piece.

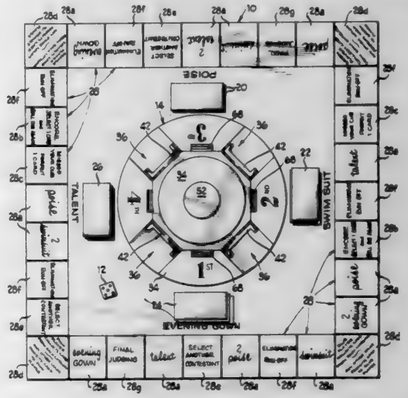


3,926,438

BOARD GAME APPARATUS UTILIZING TWO CHANCE DEVICES

Jeffrey D. Breslow, Highland Park, and Bette M. Kaelin, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Division of Ser. No. 385,397, Aug. 3, 1973, Pat. No. 3,861,686.
This application Nov. 27, 1974, Ser. No. 527,631
Int. Cl.² A63F *3/00*
U.S. Cl. 273—134 C **7 Claims**



1. In a board game including a plurality of playing pieces, one for each player of the game, a game board having a plurality of playing stations thereon defining a playing piece path of travel, each playing station having indicia thereon, and a first chance device for determining the number of playing stations a particular playing piece is to advance on the game board, whereon the improvement is a second chance device comprising:

a housing adapted to be supported on said game board;

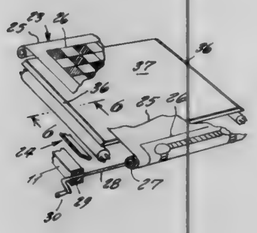
means defining a plurality of chance stations formed on the outside of said housing, at least one chance station for each player of the game;

a plurality of chance pieces, at least one for each player of the game, adapted to be positioned at said chance stations; and

random selection means mounted on said housing operably associated with said chance stations and engageable with said chance pieces when positioned at chance stations for

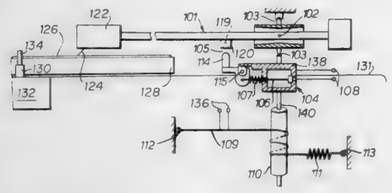
randomly and physically altering the disposition of one chance piece at one station thereby signifying the attainment or failure to reach a predetermined goal.

3,926,439
LUMINATED TABLE TOP WITH MULTIPLE GAMES ROLL CHART
Albert L. Chao, and Ethel Chao, both of 407 Glendale Road, Northvale, N.J. 07647
Filed Nov. 29, 1974, Ser. No. 528,249
Int. Cl.² A63F 3/02
U.S. Cl. 273—136 A **1 Claim**



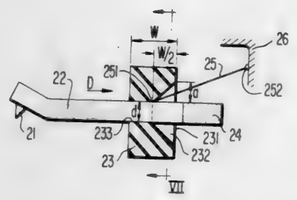
1. In a luminated table top with multiple game roll chart device, the combination of a square frame and a pair of square, clear, plastic panels upon said frame, a lower of said panels having a transluscent, decorative outer border area on an underside thereof, an opague, white inner border area adjacent an inner edge of said outer border area, and a central square clear area surrounded by said white inner border area, and interengagable snap fastener elements being mounted on both said plastic panels, said snap fastener elements being located near the peripheries of said panels for detachably attaching said panels together, a perforated panel secured to an underside of said frame defining a central chamber surrounded by said frame, a plurality of blocks mounted on an underside of said perforated panel, said chamber containing a multiple game roll chart assembly and an illumination assembly, said roll chart assembly comprising an elongated chart on transluscent, rollable material imprinted with a plurality of playing fields of various games, opposite ends of said chart being rolled up on a pair of spaced apart rollers, each said roller being secured on a rod rotatably supported in bearings in said frame, one end of each said rod extending externally of said chamber and being bent into a crank handle, said illumination assembly comprising four fluorescent lamps underneath said opaque white inner border area, an elongated, flat mirror along a side of each said lamp, each said mirror being located underneath said edge between said transluscent, decorative outer border area and said opaque, white inner border area, each said mirror being angularly inclined respective to a flat plane of said frame, light from said lamps being reflected by said mirrors upwardly against an underside of said transluscent, outer border area, a light transmitting panel under an unrolled portion of said chart that is located between said rollers, two opposite edges of said light transmitting panel being angularly inclined and coated with a mirror silver, said silver coated edges each being above one said lamp, said lamps being in an electric circuit with a switch and a power source.

3,926,440
RECORD PLAYERS
John Pelham Wren, Swindon, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland
Filed Aug. 19, 1974, Ser. No. 498,812
Claims priority, application United Kingdom, Aug. 21, 1973, 39452/73
Int. Cl.² G11B 17/06
U.S. Cl. 274—14 **3 Claims**



1. A record player comprising a record turntable for receiving a record, a motor for driving said record turntable, a pickup for engaging said record, and a pickup arm which supports said pickup, said pickup arm being movable in a first mode backwards and forwards across said record turntable and in a second mode up and down so that said pickup can be moved into and out of engagement with a said record on said record turntable, said movement of said pickup arm in at least one of said first and second modes being effected by electromechanical means including an elongate conductive element, connection means for operationally connecting said conductive element with said pickup arm and means for enabling an electric current to be applied to said conductive element, said conductive element being such that it becomes hot and elongates under the effect of said electric current and cools and contracts when said electric current is discontinued, and said pickup arm being caused by said connection means to move one way consequent upon said elongation of said conductive element and said pickup arm being caused by said connection means to move the other way consequent upon said contraction of said conductive element.

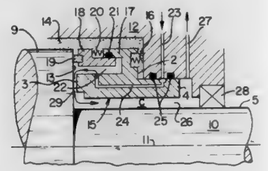
3,926,441
STYLUS SHOE SUSPENSION ARRANGEMENT FOR A PHONOGRAPH PICKUP CARTRIDGE
Tadatoshi Hibi, and Keniti Okura, both of Fukuroi, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed May 14, 1974, Ser. No. 469,725
Claims priority, application Japan, May 15, 1973, 48-56831
Int. Cl.² G11B 3/02
U.S. Cl. 274—37 **4 Claims**



1. In a suspension arrangement for a stylus shoe for a phonograph pickup cartridge including a fixed support, said suspension arrangement including an elastic bearing having a circular cross section aperture which receives a rod-like stylus shoe extending therethrough, the improvement wherein:
said circular aperture extends approximately one-half the thickness of the elastic bearing at the center thereof from the front of the elastic bearing member in terms of the stylus tip, towards the rear surface thereof,

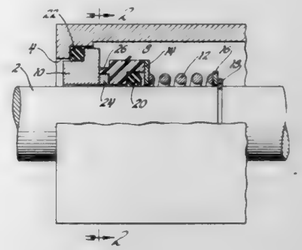
a star-shaped recess is provided within the rear surface of the elastic bearing member emanating from and coaxial with said circular aperture and having points tapering radially outwardly toward the rear face of said elastic bearing member, the radially inside corners of said star-shaped recess contact and support said stylus shoe from said circular aperture to the rear end face of the bearing member, and
a wire coupled at one end to said fixed support rearwardly of the elastic bearing member and to the side of the rod-like stylus shoe and the other end fixed to said shoe at a point where the star-shaped recess merges with the circular aperture with said wire inclined relative to the axis of the rod-like stylus shoe and aligned with one apex of said star-shaped recess such that the resulting wire tension maintains the vibration fulcrum of the stylus shoe at the center of the elastic bearing to effectively prevent the resonant vibration of said stylus shoe.

3,926,442
SLIDING RING SEAL
Heinz Konrad Müller, Stuttgart, Germany, assignor to Sealol, Inc., Warwick, R.I.
Filed Oct. 16, 1973, Ser. No. 406,880
Claims priority, application Germany, Oct. 28, 1972, 2253512
Int. Cl.² F16J 15/34
U.S. Cl. 277—3 **7 Claims**



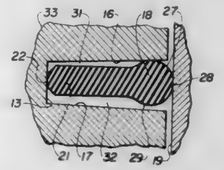
1. A sliding ring seal for sealing an operatively rotating shaft within a fixed housing against pressure fluid loss, said rotating shaft having an increased diameter portion, provided with a radial face, and a lesser diameter, said housing having a chamber an inlet duct and an outlet duct connecting said chamber with the outside of said housing, said shaft rotatably mounted in said housing, a buffer-fluid pressure control ring, located in said chamber and around said lesser diameter, having a body provided with a radially outwardly extending flange, having a rear surface and a tail portion, said flange forming a pressurized fluid space within said body, and an internal passage in said body connecting said inlet duct with said pressurized fluid space, and a radial end face opposite said radial face providing a control clearance therebetween, fluid sealing means between said tail portion and said housing on opposite sides of said inlet duct connected with said internal passage, an annular primary face seal in telescopic sliding engagement with said flange having a sealing face, a resilient means urging said sealing face into fluid tight relationship with said radial face, a secondary fluid tight seal between said flange and said annular primary face seal, said annular primary face seal and said buffer-fluid pressure control ring dividing said chamber into a pressure fluid space and a pressurized fluid space, whereby, pressurized fluid passing through said inlet duct and internal passage to said pressurized fluid space, flows through said control clearance to and through said outlet duct, pressurized fluid being operatively fed to said control clearance at a constant flow rate in opposition to the pressure of the pressure fluid acting axially on said buffer-fluid pressure control ring whereby the pressure of the buffer-fluid pressure control ring is regulated in direct proportion to the pressure on the pressure fluid by variation in the effective width of the control clearance.

3,926,443
COMPOSITE SEAL RING AND ASSEMBLY
Michael J. Fenerty, Boulder, and David L. Mustoe, Wheatridge, both of Colo., assignors to Coors Porcelain Company, Golden, Colo.
Filed Mar. 5, 1974, Ser. No. 448,328
Int. Cl.² F16J 15/34
U.S. Cl. 277—96 **7 Claims**



1. A seal ring assembly comprising a pair of seal rings having axial end faces in abutting slidable engagement with each other, each of said end faces being formed at least in part of substantially non-porous hard ceramic material selected from the group consisting of alumina ceramic and magnesia-alumina spinel and at least one of said end faces being formed in part of a softer solid material selected from the group consisting of the organic resins, amorphous carbon, graphite, and mixtures thereof, the hard ceramic of one axial end face being in continuous contact with the hard ceramic and with the softer solid material of the other axial end face.

3,926,444
SEAL RING
William B. Gripe, Concord, and Melvin H. Norman, Oakland, both of Calif., assignors to Amot Controls Corporation, Richmond, Calif.
Filed Aug. 27, 1973, Ser. No. 391,679
Int. Cl.² F16J 9/00
U.S. Cl. 277—177 **2 Claims**



1. A seal ring structure comprising:
telescopically mounted axially displaceable parts; one of said parts being formed with a ring groove having a root wall and opposed side walls divergently tapered from said root wall; the other of said parts being formed with a cylindrical surface opposed to said groove;
a seal ring of elastomeric material mounted in said groove and comprising a torus portion of segmental circular cross section having a diameter less than the width of said groove between said side walls and juxtaposed to said side walls and extending from said groove for engagement with said cylindrical surface, and an annular flexible and compressible web secured concentrically to and integrally formed with said torus portion and extending radially therefrom; said web having a thickness less than the diameter of said torus portion and being joined to said torus portion at its center plane thereby leaving a free torus portion at its center plane thereby leaving a free

torus portion periphery comprising a circular segment greater than 180° to provide three perpendicularly related arcuate sealing surfaces providing line contacts with said groove side walls and said cylindrical surface, the radial extension of said web from said torus portion being at least equal to the diameter of said torus portion, the elastomeric material forming said torus portion and web having a durometer of about 60 to 80 Shore A hardness; said ring defining with said groove side walls chambers on opposite sides of said web;

lubricant mounted in said chambers;

said web co-functioning with said groove side walls to displace lubricant to said arcuate sealing surfaces; and

the ring diameters of said torus portion and said web providing simultaneous pressure set against said cylindrical surface and said root wall respectively.

3,926,445

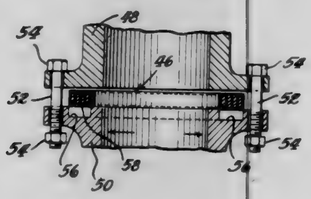
CONVOLUTELY WOUND GASKET

Robert G. Farnam, New Lisborn, Wis., assignor to F. D. Farnam Co., Lyons, Ill.

Division of Ser. No. 250,193, May 4, 1972, Pat. No. 3,890,183, which is a continuation-in-part of Ser. No. 840,171, July 9, 1969, Pat. No. 3,697,348. This application Sept. 26, 1973, Ser. No. 401,116

Int. Cl.² F16J *15/02*

U.S. Cl. 277—204 **6 Claims**



1. A washer type gasket comprising:

a planar body of closed marginal configuration defining an open center, and inner marginal rim in circumambient relation about the body center and an outer marginal rim in circumambient relation about the body,

said body comprising:

a layer of gasket material convoluted in multiply form about the body center to define a gasket material convolution having one end of the layer adjacent the body inner rim and the other end of the layer adjacent the body outer rim, with the convolution being disposed so that the width dimension of said layer extends normally of the plane of said body, the thickness dimension of said layer extends in the plane of said body, and the length dimension of said layer between said ends thereof lies about and coincident with said convolution,

said layer between its said ends being continuous and uninterrupted about said convolution and defining opposed side surfaces facing respectively inwardly and outwardly of the body relative to its center, in the plane of said body, and opposed side edges facing normally of the plane of said body,

and a continuous and uninterrupted layer of fluid impermeable polymeric material between and bonding together the juxtaposed side surfaces of said gasket material layer, said layer of fluid impermeable polymeric material coating and being in sealing relation to said gasket material layer side surfaces uniformly thereacross for the length of said gasket material layer between said ends thereof,

with said gasket material layer between said side surfaces thereof and across its said thickness dimension being free of impregnation with said polymeric material for the length of said gasket material layer whereby said polymeric layer is discrete relative to said gasket material layer,

and with said layer of fluid impermeable material being of uniform thickness across said gasket material side surfaces of the length of said gasket material layer,

said layer of polymeric material comprising adjacent stratums of said polymeric material extending congruently with and respectively adhered to the respective juxtaposed gasket layer side surfaces and uniformly bonded together,

said layer of gasket material including therein, between said ends thereof and across the width dimension thereof reinforcing fibers some of which extend longitudinally of said gasket material layer length dimension and others of which extend laterally of said gasket material layer along said gasket material layer width dimension and in the direction of said side edges thereof,

with said longitudinally extending fibers and said laterally extending fibers being in a ratio of approximately 2 to 1, respectively.

3,926,446

MULTIPLE-JAW POWER CHUCK

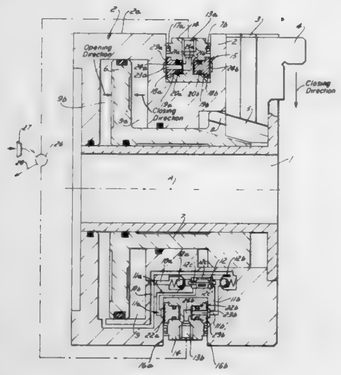
Gunter Horst Rohm, Heinrich-Rohm-Str. 50, 7927 Sontheim, Germany

Filed June 12, 1974, Ser. No. 478,683

Claims priority, application Germany, June 22, 1973, 2331863

Int. Cl.² B23B *31/30*

U.S. Cl. 279—4 **8 Claims**



1. A chuck comprising

a housing adapted to be rotated about an axis and formed with at least one fluid chamber having two sides, a circumferential groove having a pair of axially spaced confronting side faces, and at least one housing passage having one end opening at one of said sides into said chamber and another end opening at one of said side faces of said groove;

a plurality of angularly spaced jaws radially displaceable on said housing;

an axially displaceable piston in said chamber between said sides subdividing said chamber into a pair of compartments;

cam means between said piston and said jaws for radial displacement of said jaws by axial displacement of said piston,

a distributing ring rotatably received in said circumferential groove and having a pair of opposite axial ends each confronting a respective side face, at least one of said axial ends being formed with an annular seal groove confronting said one side face, said ring being formed with at least one passage having one end opening at the base of said seal groove and having another end adapted to be connected to an external source of pressurized fluid; and

at least one annular seal received in and limitedly axially displaceable in said seal groove and formed with at least one axially throughgoing hole, said seal having an end face turned toward and paired with said one side face, one of the faces of said pair being formed with an annular feed groove, whereby pressurized fluid in said seal groove behind said seal forces same toward said one side face for fluid flow through said respective axial hole and through said respective housing passage into the respective compartment.

3,926,447

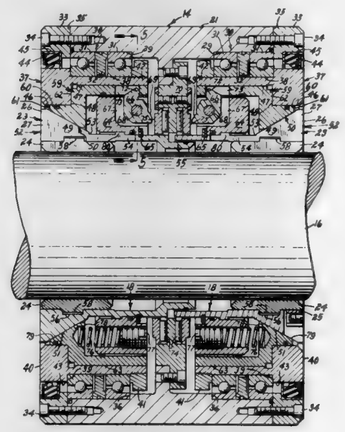
COLLET-TYPE WORK HOLDER

Joseph Henry Cox, Jr., Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Jan. 14, 1975, Ser. No. 540,910

Int. Cl.² B23B *31/20*

U.S. Cl. 279—57 **3 Claims**



1. A collet chuck having a substantially reduced self-locking tendency when a workpiece slides through the collet, comprising:

a. housing;

b. first and second collet carriers, rotatably mounted within said housing;

c. first and second collet sets, slidable within said collet carrier, each comprising an inner member having a locating taper and an outer member having a locating taper cooperating with said inner member;

d. collect biasing means to urge said inner and outer members in a preferred direction for clamping;

e. a thrust flange within said housing and stationary with respect thereto;

f. a reaction ring carried by said inner member and a reaction surface defined in said outer member of said collet sets; and

g. a plurality of cams, pivotal on said reaction ring, and engageable with said thrust flange and the reaction surface of said outer member of said collet sets and further wherein movement of said reaction ring carrying said cams causes the reaction of cam forces impressed on said thrust flange to be used to relieve the load of said collet biasing means.

3,926,448

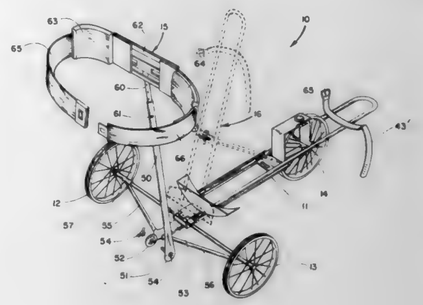
GOLF CART PULLING APPARATUS

Kenneth Reichard, 2601 NW. 23rd Blvd., Apt. 131, Gainesville, Fla. 32605

Filed May 30, 1974, Ser. No. 474,798

Int. Cl.² B62D *51/04*

U.S. Cl. 280—1.5 **5 Claims**



1. A golf cart comprising:

a main frame with a front end and a back end;

at least three wheels rotatably mounted to said main frame, two of said three wheels rotatably mounted to said front end and another of said three wheels pivotally mounted to said back end;

a golf bag holding means movably mounted on said frame being erectable when in use and collapsible when not in use; and,

connecting means secured to said main frame and adapted to be attached to the hips of a human for pulling the golf cart;

said holding means includes an elongated frame having a bottom end pivotally mounted to said main frame adjacent said front end;

said holding means further includes a support frame with a bottom end pivotally mounted to said main frame, said support frame has an upper end and is pivotable upward toward said elongated frame with said upper end of said support frame lockingly engageable with said elongated frame, said main frame includes a channel with at least two of said wheels mounted thereto, said channel includes a pair of opposed vertical walls joined together with said bottom end of said elongated frame pivotally mounted to said opposed vertical walls.

3,926,449

FOOT ROLLER MEANS

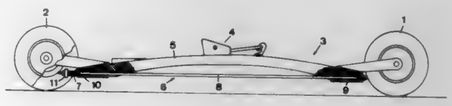
Sven Oscar Eric Wilje, Sturegatan 44, 791 00 Falun, Sweden

Filed Nov. 6, 1974, Ser. No. 521,528

Claims priority, application Sweden, Nov. 7, 1973, 7308937

Int. Cl.² A63C *17/06*

U.S. Cl. 280—11.23 **6 Claims**



1. A resilient foot roller comprising:

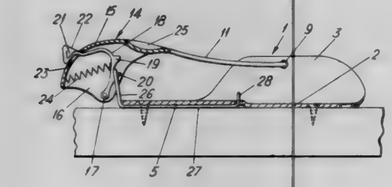
a front wheel unit;

a rear wheel unit;

a frame connected to said front wheel unit and said rear wheel unit, said frame having a continuous elastically resilient, downwardly curving, arcuate portion longitudinally extending between said front and rear wheel units

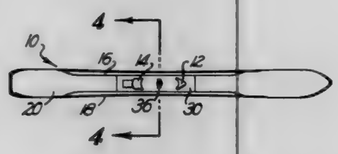
and having two opposite end portions, said arcuate portion for permitting resilience of the foot roller;
clamping means attached to said frame for retaining the foot of a user of said foot roller;
spring means connected to said frame for decreasing the radius of said arcuate portion of said frame; and
adjusting means connected to said spring means for varying the spring force of said spring means.

3,926,450
SKI BINDINGS
Per Guttulsrud, Havnabakken 12b, Oslo 8, Norway
Filed Jan. 20, 1975, Ser. No. 542,419
Claims priority, application Norway, Oct. 7, 1974, 743612/74
Int. Cl.² A63C *9/18*
U.S. Cl. 280—11.35 B **5 Claims**



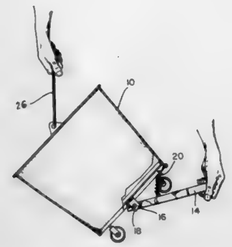
1. In a ski binding of the type having a forwardly directed clamping bail pivotally mounted on a toe iron having a foot plate, said foot plate including means for engaging the sole of a ski boot, a locking member comprising a one-armed lever having at least one tooth and pivotally mounted on the forward end of said clamping bail, and a complementary locking member comprising an upwardly directed bail on the forward portion of said foot plate for engaging a tooth on said lever to maintain a ski boot pressed in firm contact with the upper face of said foot plate with said means for engaging in engagement with the sole of the boot, said lever extending upwardly from its pivotal axis on one side of the forward end of said clamping bail and having its free end formed as an actuating lug located on the other side of said clamping bail.

3,926,451
SKI BINDING APPARATUS
William H. Guild, P.O. Box 31, Hingham, Mass. 02043
Continuation of Ser. No. 351,580, April 16, 1973, abandoned. This application Dec. 23, 1974, Ser. No. 535,345
Int. Cl.² A63C *9/08*
U.S. Cl. 280—11.35 C **7 Claims**



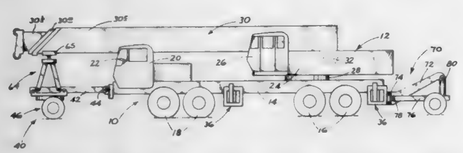
1. Ski apparatus comprising a ski composed of a core encased by top, bottom and side walls, each side wall formed of a single element and having a groove, the groove in the two side walls being in alignment with and facing each other, a heel and toe binding mounting plate, the plate slidably received and captured in the grooves, and means to lock the plate in a desired adjusted position.

3,926,452
INDUSTRIAL BUCKET IMPROVEMENT
John A. Goines, 412 W. Chestnut St., West Chester, Pa. 19380
Filed Aug. 21, 1974, Ser. No. 499,110
Int. Cl.² B62B *5/06;* **B65D** *25/28*
U.S. Cl. 280—79.2 **6 Claims**



1. A bucket comprising:
a bucket body including side wall structure and a base member;
upper lift means disposed near the top of the bucket for grasping the bucket;
a lever means extended below said base member when said bucket is in an upright position and secured to said base member at a centrally disposed position and extending outwardly of said side wall structure;
means of pivotally securing said lever member to said base member; and
restraining means for urging said lever member toward a position parallel with said base member so that when said bucket is grasped simultaneously by the upper means and by the lever means and tilted, said restraining means will provide controlled restraint as contents of said buckets are emptied, with said upper lift means and said lever means being able to be grasped, lifted and tilted in one motion.

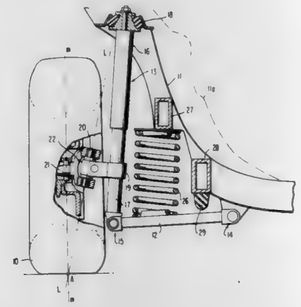
3,926,453
CARRIER VEHICLE WITH PUSHER-TYPE DOLLY
Craig A. Leslie, Milwaukie, Oreg., assignor to Pierce Pacific Mfg. Inc., Portland, Oreg.
Filed Aug. 30, 1974, Ser. No. 502,008
Int. Cl.² B62D *61/12*
U.S. Cl. 280—81 R **5 Claims**



1. In combination with a carrier vehicle including a vehicle frame and wheel support for said frame, said wheel support including dirigible wheels at the forward end for steering the vehicle,
an elongate structure supported by said carrier vehicle extending longitudinally thereof and having the forward end thereof disposed forwardly of the forward end of said carrier vehicle and the dirigible wheels supporting said forward end,
a cradle supporting the underside of the forward end of said structure,
a dolly mounting said cradle disposed forwardly of the vehicle and pushed by the vehicle, said dolly including a dolly frame and swiveled wheel structure supporting the dolly frame and riding on the ground, and

means securing the dolly frame to the vehicle frame accommodating relative vertical displacement of the dolly frame relative to the vehicle frame with the dolly frame maintained as a longitudinally aligned extension of the vehicle frame.

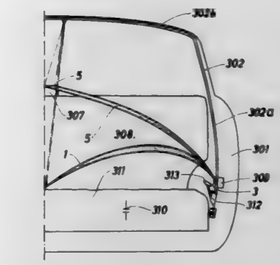
3,926,454
SUSPENSION OF STEERABLE VEHICLE WHEELS, ESPECIALLY FRONT WHEELS OF MOTOR VEHICLES
Friedrich H. Van Winsen, Kirchheim, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany
Filed Oct. 12, 1973, Ser. No. 405,898
Claims priority, application Germany, Oct. 12, 1972, 2249971
Int. Cl.² B60G *3/00*
U.S. Cl. 280—124 A **31 Claims**



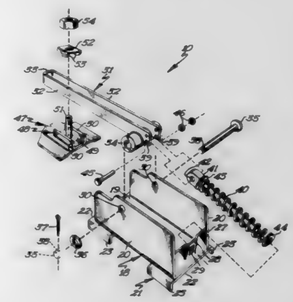
1. A suspension for steerable vehicle wheels by means of a cross guide means and an essentially vertical support strut means adpated to be telescopically changed in length, said strut means being pivotally connected at its lower end with the cross guide means and being pivotally supported at its upper end at the vehicle superstructure, characterized in that said support strut means includes a lower telescopic part and an upper telescopic part, and the suspension further comprises support arm means for supporting a vehicle wheel, said support arm means being at least essentially rigidly connected with the lower telescopic part above the lower end of the strut means, and pivotal means for pivotally connecting said wheel to said support arm means, said pivotal means being connected to said support arm means entirely inside the wheel cross section at a distance from the axis of the support strut means, and said pivotal means defining a steering axis which passes at least in proximity to the point of contact of the wheel with the road surface and at least through the pivotal support at the upper end of said strut means such that the steering axis extends essentially within the wheel cross-section and said steering axis intersects the axis of the strut means at an acute angle at the pivotal support at the upper end of said strut means, wherein said cross-guide means is pivotally connected to the lower end of said strut means below said pivotal means and outside the wheel cross-section.

3,926,455
SAFETY BELT ARRANGEMENT FOR INDIVIDUALS
Oskar Lennart Lindblad, Hedasgatan 16, 44020 Vargarda, Sweden
Division of Ser. No. 179,134, Sept. 9, 1971, Pat. No. 3,822,760. This application Apr. 5, 1974, Ser. No. 458,289
Claims priority, application Sweden, Sept. 9, 1970, 12225/70; Sept. 25, 1970, 13045/70; Nov. 2, 1970, 14714/70; Dec. 30, 1970, 17726/70; Feb. 10, 1971, 1694/71
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 SB **5 Claims**

1. A safety belt arrangement for vehicles comprising in combination a vehicle having seats, side walls and a roof, a safety belt, a guide rail extending as well in the vertical direction along one of said side walls of the vehicle as the transverse direction of said vehicle along the roof of said vehicle, a slide connected to said belt and being displaceably mounted on said guide rail, an electric drive motor operatively connected to said slide, an electric circuit for said electric motor, a switch in said circuit capable of sensing the load on one seat of said vehicle, an attachment means which being provided comparatively far to the middle of said seat in said transverse direction of said vehicle, and at least one belt part of said safety belt extending between said slide and said attachment means, whereby said belt part is placed across the person sitting on said seat provided with the safety belt arrangement when said attachment slide is displaced from the upper, inner portion of said guide to the outer, lower portion thereof by said drive motor which in turn is activated by said load sensing switch.



3,926,456
DRAW PIN SAFETY LOCK DEVICE
Kenneth A. Lundebrek, Rte. 1, Benson, Minn. 56215
Filed Feb. 20, 1975, Ser. No. 551,272
Int. Cl.² B60D *1/02*
U.S. Cl. 280—515 **4 Claims**



1. A draw pin safety lock device for the vertically disposed draw pin between the drawbar of a towing vehicle and the tongue of a towed implement, the draw pin having an enlarged head at its upper end and extending vertically through openings in the lapped end portions of the drawbar and tongue to define an articulated hitch connection between the towing vehicle and implement, said device comprising:
a mounting member adapted to be rigidly mounted on the drawbar or tongue adjacent the draw pin,
an elongate keeper arm,
means pivotally mounting said keeper arm on said mounting member for pivotal movement about a substantially horizontal transverse axis between a locking position and a release position, said keeper arm having one end portion thereof adapted to overlie and engage the upper surface of the draw pin when the keeper arm is in the locking position,

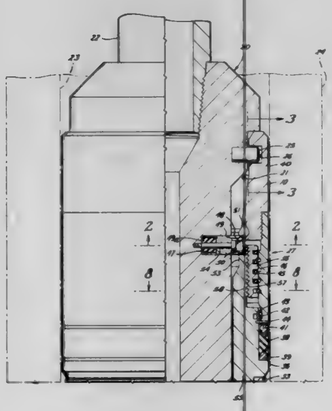
yieldable means interconnected with the keeper arm and said mounting member and yieldably urging the keeper arm into engaging relation with the draw pin when the keeper arm is in the locking position, said keeper arm being pivotal through an overcenter relation against the bias of said yieldable means when shifted to the release position.

3,926,457

WELL COMPLETION APPARATUS

Leonard E. Williams, Jr., and William B. Aiken, both of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Apr. 19, 1974, Ser. No. 462,302
Int. Cl.² F16L *35/00*
U.S. Cl. 285—39 **10 Claims**



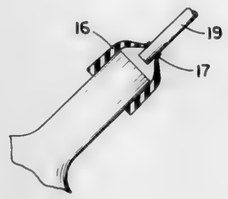
1. A seal assembly for closing off an annular space between the bore of a casing head and a casing hanger supported in the bore, said seal assembly comprising a first tubular member having means adapted to be supported on and connected to the hanger, said first member having first seal means carried thereon for sealably engaging between the first member and the hanger, when said first member is so supported and connected, and an upwardly facing shoulder on its outer side, second seal means supported on the upwardly facing shoulder on the first member, a second tubular member having a downwardly facing shoulder above the second seal means and being movable downwardly with respect to said first member, whereby the shoulders on said members may be moved toward one another to expand said second seal means into engagement between the first member and the bore of the casing head, ratchet means on the first and second member for carrying said first member from said second member and latching said second member in a plurality of vertically spaced positions as it is moved downwardly with respect to said first member, said ratchet means comprising grooves in one and radially expandible and contractible rings on the other of said members, and said grooves being equally vertically spaced apart distance different than the equal vertical spacing between the rings, and means on the second member connectible to a tool for transmitting a downward force thereto for causing it to move downwardly with respect to the first member, when said first member is supported on the hanger.

3,926,458

TUBING ADAPTOR

Gale E. Dryden, 5835 N. Tacoma Ave., Indianapolis, Ind. 46220

Filed Jan. 8, 1974, Ser. No. 431,626
Int. Cl.² F16L *25/00*
U.S. Cl. 285—177 **1 Claim**



1. An adapter for connections between two tubes of different sizes comprising:

a generally circular cup-shaped body of flexible resilient material, said body in its relaxed condtition having a top and bottom, with a large open end at the top, and an aperture in the bottom, said aperture having a flange extending axially from the bottom in a direction away from the open end of the cup;

the material thickness at the aperture being less than the thickness at the open end;

the bottom varying in thickness from a minimum at the aperture to a maximum at the outer circumference of the bottom;

said bottom being generally funnel-shaped, and

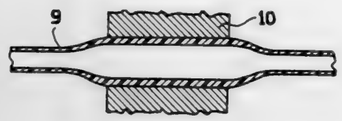
the bottom, including the flange, being invertible upon insertion of a tube therein having an outside diameter greater than the inside diameter of the flange, and returnable to its normal direction of extension upon removal of the tube.

3,926,459

DILATABLE TUBE, METHOD FOR ITS PRODUCTION AND APPLICATIONS THEREOF

Jacques Pontigny, 14, Rue E. Legendre, 95 Margency, France

Filed Dec. 13, 1973, Ser. No. 426,723
Claims priority, application France, Dec. 22, 1972, 72.46071
Int. Cl.² F16L *47/00*
U.S. Cl. 285—381 **9 Claims**



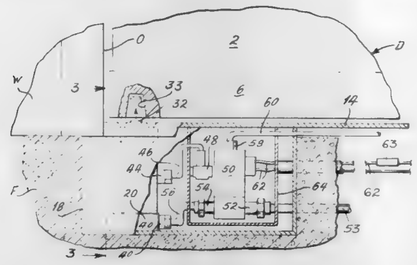
1. Process for the realization of a junction between a thermoplastic tube and an element surrounding a part of this tube comprising irradiating the tube with electrons to yield a tube having elastic memory, heating the tube and stretching it along its entire length so as to reduce its diameter by 50% or more, cooling the tube thus stretched, inserting the tube into said surrounding element following by heating the tube to its memory activation temperature to bring about its expansion and securement with the surrounding element.

3,926,460

LOCKING DEVICE FOR DOORS

Francis C. Peterson, St. Louis County, Mo., assignor to C. Hager & Sons Hinge Manufacturing Company, St. Louis, Mo.

Filed July 15, 1974, Ser. No. 488,655
Int. Cl.² E05B *51/02*
U.S. Cl. 292—144 **7 Claims**



1. In combination with a movable closure structure such as a door and a surrounding structure containing an opening which is blocked by the closure structure when the closure structure is in its closed position, an improved locking device for securing the closure structure in its closed position, said locking device comprising: a fluid cylinder barrel mounted firmly on one of the structures and having a bore; a piston in the bore of the barrel and movable between the ends thereof; a locking element connected to the piston and projected through one end of the barrel, the locking element being movable with the piston between retracted and extended positions, the locking element when in its retracted position being located beyond the other structure so as not to obstruct movement of the closure structure, the locking element when in its extended position being capable of engaging said other structure to prevent movement of the closure structure away from its closed position; return means for urging the piston to the position in which the locking element is in its retracted position; a fluid line connected to a source of pressurized fluid and to the barrel for admitting the pressurized fluid to the end of the barrel so as to cause a force to be applied to the piston in the direction which moves the locking element to its extended position; an electrically operated valve in the fluid line to isolate the bore of the barrel from the source of pressurized fluid so that the return means will move the locking element to its retracted position; a pressure sensitive electrical switch communicating with the bore of the barrel intermediate the ends of the bore, the location being such that the switch is exposed to and actuated by pressurized fluid in the barrel when the locking element is in its extended position but not when it is in its retracted position, the switch controlling a signal to indicate when the locking element is extended; and electrical switch means responsive to the position of the door and connected with the electrically operated valve to prevent operation of the valve except when the closure structure is in its closed position, whereby when the bore is supplied with pressurized fluid through the electrically operated valve, the locking element will engage said other structure and prevent the closure structure from leaving its closed position.

3,926,461

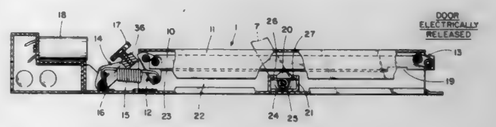
ELECTRICALLY ACTUATED DOOR HOLDER AND RELEASE

Richard E. D'Hooge, Wood Dale, Ill., assignor to Rixson-Firemark, Inc., Franklin Park, Ill.

Filed Aug. 1, 1974, Ser. No. 493,685
Int. Cl.² E05C *17/04*
U.S. Cl. 292—275 **8 Claims**

1. An electrically actuated door holder for the multi-point holding of a pivoted door through a range of opening angles, comprising a holder element, an adjustable linkage of a generally parallelogram configuration including an elongated hold-open bar and a pair of links each individually coupling a different end of the hold-open bar to the holder element, hold-open bar engaging means moved lengthwise relative the hold-open bar in response to variations in door opening angles to thereby engage the hold-open bar at any selected lengthwise point corresponding to the desired angular door opening, and electro-mechanical means including an electromagnet and an armature coupled to the parallelogram linkage and in which the energization of the electromagnet and the resulting armature action moves the hold-open bar into frictional engagement with the hold-open bar engaging means.

8. An electrically actuated door holder for the multi-point holding of a door throughout a range of door opening angles, comprising a holder frame, an elongated hold-open bar adjustably supported by the frame, an elongated friction engaging means affixed to or an integral part of a surface of the elongated hold-open bar, hold-open bar engaging means movable lengthwise in a linear path relative the hold-open bar in response to variations in door opening angles, adjustable linkage means coupling the hold-open bar to the holder frame to provide a plurality of generally parallel spaced positions between the hold-open bar and the linear path followed by the hold-open bar engaging means, and electromechanical means including an electromagnet and an armature coupled to the hold-open bar and in which energization of the electromagnet and the resulting armature action moves the hold-open bar into a closer generally parallel spacing with respect to the linear path followed by the hold-open bar engaging means, thereby enabling the hold-open bar engaging means to frictionally engage the hold-open bar and further in which the deenergization of the electromagnet releases the armature enabling the hold-open bar engaging means to increase the spacing between the linear path and the hold-open bar by moving the hold-open bar away from the linear path thus effecting release of any door that is held in an open position.

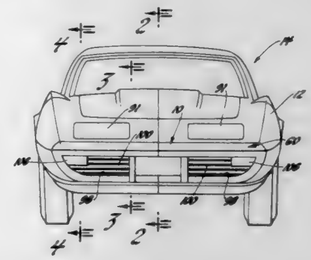


3,926,462

SHOCK ABSORBING BUFFER ASSEMBLY

Ronald N. Burns, Utica, Mich.; Dewayne A. Landwehr, Anderson, Ind.; Roger H. Schroeder, Rochester; Robert A. Vogelei, Lathrup Village, both of Mich., and Gary P. Zeller, Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 11, 1974, Ser. No. 514,079
Int. Cl.² B60R *19/08, 21/14;* **B61F** *19/04;* **B62D** *29/04*
U.S. Cl. 293—63 **3 Claims**



1. An energy absorbing system to provide impact protection for a vehicle comprising a vehicle body, an elongated support

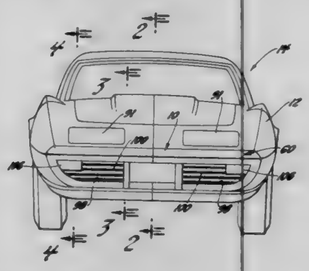
beam extending substantially across the width of said body and secured within the walls of said body, said support beam having a laterally extending channel therein, a plastic one-piece energy absorbing unit coextensive with said beam and seated in said channel and extending longitudinally from said support beam to a position outside of said body, a rigid impact force spreader plate mounted on said energy absorbing unit and in front of a predetermined portion thereof, a flexible plastic facia covering said spreader plate and said energy absorbing unit, means attaching the periphery of said facia directly to a front portion of said body, said energy absorbing unit comprising a grid of longitudinally extending cells which respond to an impact force imparted to said energy absorber system moving said spreader plate by deflecting to absorb the energy of impact, and said grid when deflected up to a predetermined limit possessing a force of recovery to move said spreader plate and said flexible facia to a free state position in response to removal of the impact force.

3,926,463

SHOCK ABSORBING BUFFER ASSEMBLY

DeWayne A. Landwehr, and Gary P. Zeller, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 11, 1974, Ser. No. 514,080
Int. Cl.² B60R *19/08, 21/14*; B61F *19/04*; B62D *29/04*
U.S. Cl. 293—63 **5 Claims**



1. A resilient one piece energy absorbing grid for a vehicle for absorbing the energy of predetermined impacts of the vehicle comprising a central portion having a plurality of rows of longitudinally-extending cells each rectilinear in cross section and first and second wing portions respectively extending laterally from opposite sides of said central portion, each of said wing portions having a height less than the height of said central portion and having a row of longitudinally-extending cells rectilinear in cross section, a plurality of said cells of said central portion and said wing portions being open at both ends thereof, rear wall means integrally formed at the end of first cell means of said grid being in each of said wing portions, a support for said grid extending laterally of said vehicle and coextensive with said grid, fastener means extending from said support through said rear wall means to secure said grid to said support, second cell means of said grid being in said central portion, said second cell means having integral front wall means, separate plate means mounted on the front of said central portion of said grid for spreading impact loads applied to said central portion, and fastener means projecting from said plate means through said front wall means to secure said plate means to said energy absorbing grid.

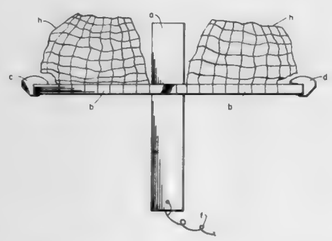
3. In combination with a vehicle, a laterally extending rigid support on said vehicle, a one-piece resilient cellular grid of resilient material mounted on said support for absorbing the energy of vehicle impact, said grid being coextensive with the lateral extent of said rigid support, said grid comprising a plurality of cell means extending longitudinally a predetermined distance from the body of said vehicle, each of said cell means being rectilinear in cross section and having side wall means disposed generally at right angles to each other, a plurality of said cell means being fully open at the front and rear ends thereof, a first number of said plurality of said cell means being substantially identical in cross sectional area and length to form first buckling columns to absorb predetermined impact forces applied thereto, a second number of said plurality of said cell means being substantially larger in cross sectional area than said first number of said cell means to form second buckling columns to absorb impact forces lower than said predetermined impact forces.

3,926,464

FLOATING GOLF BALL RETRIEVER

John Alexander, Box 152-4B, Rte. 1, Kitty Hawk, N.C. 27949

Filed July 23, 1973, Ser. No. 382,041
Int. Cl.² A63B *57/00*
U.S. Cl. 294—19 A **2 Claims**



1. A floating golf ball retriever comprising a keel of buoyant material having attached thereto and extending transversely on respective sides thereof a frame member provided with buoyancy means, each said frame member being disposed to be partially submerged below a water surface in a floating position of said keel and being provided with a bag-like mesh retrieving net having an opening peripherally attached at its edge to the periphery of the respective frame member to extend rearwardly to sweep inn floating golf balls when said keel is moved forwardly through water;

said frame members being pivotally attached to said keel so as to be foldable toward the keel when said retriever is not in use and pivotal outwardly from the keel to a plane generally normal to said keel when said retriever is in use; said frame members having respective outer legs in generally vertical planes to which respective buoyancy means are attached substantially at midsections thereof to permit said nets to dip substantially half their height below a water surface;

and a tow means secured to said keel.

3,926,465

BALL RETRIEVING AND STORAGE DEVICES

Amos N. Hoagland, 1062 N. Vinedo Ave., Pasadena, Calif. 91107, and Jens S. Jensen, 9618 Sante Fe Springs Road, Santa Fe Springs, Calif. 90670

Continuation-in-part of Ser. No. 364,370, May 29, 1973, abandoned. This application Jan. 28, 1974, Ser. No. 437,525
Int. Cl.² A47F *13/06*; B65F *3/00*
U.S. Cl. 294—19 A **16 Claims**

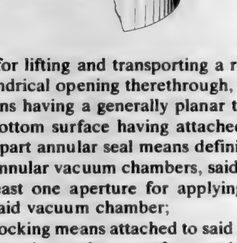
1. A tennis ball retrieving and storage device comprising:

a container having an open top and a bottom for holding a substantial number of tennis balls in the container;

a portion of the container bottom including a substantially fixed bottom member extending in a generally horizontal position across the bottom of the container;

support means on opposite sides of the container extending in a substantially upright position above the container bottom;

a vertically movable elongated lifting rod being normally in a substantially horizontal rest position extending across the bottom of the container generally parallel to the fixed bottom member and providing a spacing between it and the bottom member which is less than the diameter of a tennis ball so as to normally retain the tennis balls in the container; the opposite ends of the lifting rod being supported for guided vertical travel above the container bottom by the opposite support means so the lifting rod travels upwardly into the container away from the container bottom under the pressure of the container bottom being forced down over a tennis ball to provide a sufficient spacing between the lifting rod and the fixed bottom member to allow the ball to enter the container; and



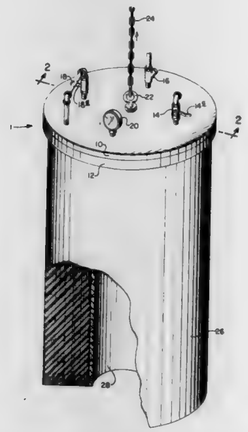
stop means on the container above the bottom thereof for engaging the lifting rod to limit upward vertical travel of the lifting rod to an amount which allows entry of the ball into the container and for instantly allowing the lifting rod to release from engagement with the stop means and travel downwardly to its normal rest position in the bottom of the container for retaining the ball in the container.

3,926,466

APPARATUS FOR HANDLING ROLLS

Kenneth B. Carpenter, Terre Haute, Ind., assignor to Ethyl Corporation, Richmond, Va.

Filed Oct. 1, 1973, Ser. No. 402,575
Int. Cl.² B66C *1/02*
U.S. Cl. 294—64 R **1 Claim**



1. An apparatus for lifting and transporting a roll of goods having an axial cylindrical opening therethrough, comprising:

a. a rigid plate means having a generally planar top and bottom surface, said bottom surface having attached thereto at least three spaced apart annular seal means defining therebetween at least two annular vacuum chambers, said plate being provided with at least one aperture for applying at least a partial vacuum to said vacuum chamber;

b. a plurality of blocking means attached to said plate means between said annular seal means for restricting movement towards said plate of that portion of said goods between said seals when said at least partial vacuum is applied,

c. a centrally mounted cup means attached to the underside of said plate and adapted to be received in said axial opening in said roll of goods, and

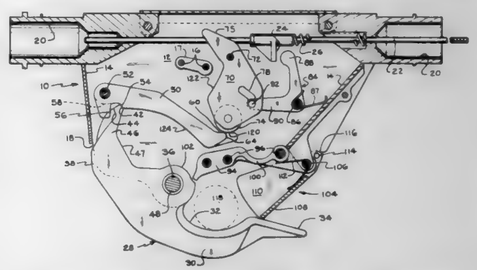
d. a connecting means centrally attached to said plate and extending above said top surface for applying a lifting force thereto.

3,926,467

AIRCRAFT CARGO HOOK

Charles F. Crissy, Jackson; Owen W. Sherwin, Spring Arbor, and Christopher L. T. Corbin, Jackson, all of Mich., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Mar. 4, 1974, Ser. No. 447,643
Int. Cl.² B66C *1/34*
U.S. Cl. 294—83 R **7 Claims**



1. A self resetting cargo hook comprising, in combination, a support, a load arm pivotally mounted on said support pivotal about an axis between a closed load supporting position and an open load releasing position, a first abutment surface defined on said load arm radially spaced from said axis, a latch arm lever pivotally mounted at one end on said support on an axis parallel to said load arm axis and having a free end, a second abutment surface defined on said latch arm adjacent said pivotally mounted end, said latch and load arms having a coincident plane of operative movement, said latch arm being pivotal between a first position whereby said first abutment engages said second abutment preventing pivoting of said load arm from said closed load supporting position to said open load releasing position, and a second position disengaging said first and second abutments permitting said load arm to pivot to said open position, a latch pivotally mounted on said support selectively engageable with said latch arm free end selectively maintaining said latch arm in said first position thereof and releasing said latch arm for movement to said second position thereof, a first reset abutment defined on said load arm, a second reset abutment defined on said latch arm adjacent said pivotally mounted end, said first reset abutment engaging said second reset abutment upon said load arm pivoting from said open position to said closed position to align said first and second abutments and position said latch arm to its said first position, and latch operating means connected to said latch controlling the position of said latch with respect to said latch arm free end.

3,926,468

GRIPPER FOR USE WITH A LIFTING APPARATUS FOR GRIPPING AN ARTICLE DESIRED TO BE LIFTED

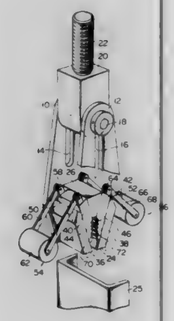
Yoshizi Kondo, 2923-11, Togasaki, Misato, Saitama, Japan

Filed Jan. 14, 1975, Ser. No. 540,892
Int. Cl.² B66C *1/48*
U.S. Cl. 294—102 R **10 Claims**

1. A gripper for use with a lifting apparatus for gripping an article desired to be lifted comprising:

a pair of support plates arranged in parallel with each other and having at one end along their longitudinal or first

direction a connection means connected to said lifting apparatus, and extending toward the other end;
a trapezoidal column extending in a second direction at right angles to the flat surface of said support plates and integrally connected at both ends, respectively, to said support plates and presenting in cross section an isosceles trapezoid arranged with its bottom surface turned up;
a pair of guide members disposed with said trapezoidal column interposed therebetween and extending in said second direction and integrally connected at both ends, respectively, to said support plates, said guide members having side surfaces opposing, respectively, both inclination side surfaces of said trapezoidal column in parallel and spaced relation thereto and defining with said both inclination side surfaces a pair of elongate void spaces separated from each other at said one end side and united into one space at said other end side, said void spaces and said one space being respectively opened to the exterior;
a pair of clamping members slidably inserted, respectively, into said pair of elongate void spaces and having at their tip end portions, respectively, a pair of grip surfaces which, when allowed to slide toward said other end, approach each other to grip said article; and
a pair of sliding means for moving said pair of clamping members through said void spaces, respectively.

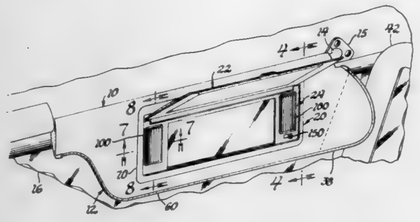


3,926,469
CAB ROOF TO BOTTOM OF COMPARTMENT SEAL
George Ulics, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed May 13, 1974, Ser. No. 469,581
Int. Cl.² B60P *3/32*
U.S. Cl. 296—23 R **2 Claims**



1. In combination, a motor vehicle cab roof, a forward extension compartment supported above the cab roof, and flexible sealing strip interposed between the cab and the compartment,
the cab roof having an exterior panel with an arcuate marginal portion adjacent the perimeter thereof,
the forward extension compartment having a base wall with a marginal strip overlying in spaced relation the arcuate marginal portion of the cab roof exterior panel,
the base wall marginal strip having a cylindrical recess paralleling the perimeter thereof,
the sealing strip comprising:
a semi-cylindrical body portion having a diametrical base wall,
the curved side of the body portion being complementarily fitted within the marginal strip semi-cylindrical recess and adhesively secured therein,
and a plurality of longitudinally extending sealing ribs symmetrically spaced across the diametrical base wall and biased against the arcuate marginal portion of the cab roof exterior panel in sealing relationship thereto, the outermost of the ribs extending laterally of the base wall at an acute angle to the latter in a direction to contact the surface of the arcurate marginal portion of the cab roof exterior panel; interposed between the outermost ribs are a pair of substantially shorter ribs extending at a greater acute angle than the outer ribs to the surface of the exterior panel, each shorter rib when in contact with the exterior panel surface being flexed substantially in the same direction as the proximate outer rib.

3,926,470
VISOR ASSEMBLY
Konrad H. Marcus, Holland, Mich., assignor to Prince Corporation, Holland, Mich.
Filed Mar. 21, 1973, Ser. No. 343,198
Int. Cl.² B60J *3/00*
U.S. Cl. 296—97 B **6 Claims**

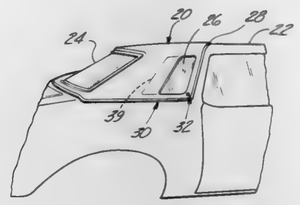


1. A visor assembly for a vehicle or the like comprising a visor movably joined to the vehicle at the upper end thereof and having a recess, a frame supported by the recess, a vanity mirror supported by the frame, a vanity mirror cover, hinge means supporting said cover for hinging movement on the frame within the recess about an axis at the upper end of the visor between an open position and a closed position relative to said mirror, said hinge means including an offset portion disposed to one side of said axis when said cover is in an open position and at an opposite side of said axis when said cover is in a closed position, and bias means so connected to the offset portion so as to impose on the cover a force acting at one side of said axis for retaining the cover in the open position and a force at the opposite side of said hinge axis to maintain said cover in a closed position.

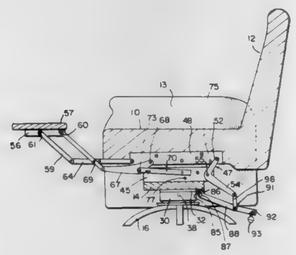
3,926,471
CONSTRUCTION AND PROCESS FOR ORNAMENTAL CAR TOP
Laszlo Nadasi; Marton Nadasi, both of Flushing; John Zelenko, Flint, and Donald E. Pero, Swartz Creek, all of Mich., assignors to City Auto Upholstering Co., Flint, Mich.
Filed May 15, 1974, Ser. No. 470,219
Int. Cl.² B62D *25/06*
U.S. Cl. 296—137 R **5 Claims**

1. An ornamental top for use on a car with a metallic roof, side windows, and a rear window comprising:

a preformed body having an internal contour complementary with the rear portion of the car roof, said top further having side window portions on each side and an open window portion at its rear, said side window portions contain window openings which are of a size substantially less than the windows at the rear portion of the car body and wherein at least one inwardly extending crimping edge is cast in said car top, said edge engageable in tight holding engagement with said windows of said car, and wherein the rear open window portion of said ornamental car top includes a margin portion extending inwardly and operable to overlap at least a portion of an opposed chrome rim portion on the car body;
a magnetic holding strip mounted on the inner surface of said top protimate its forward margin and engageable with the upper surface of the metallic car body for holding it securely thereon; and
a plurality of fastening means, each insertable through said top and into holding engagement with openings in the body of the car, said fastening means comprise a pair of fasteners, each located at opposite sides of said car top, each of said fasteners extending through the forward lower edge portion of the car top.

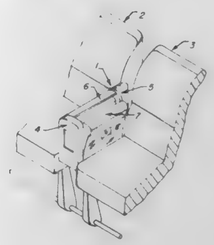


3,926,472
RECLINER CHAIR
Glenn A. Evans, Route 7, Reeds Chapel Road, Morristown, Tenn. 37814
Filed Nov. 9, 1973, Ser. No. 414,270
Int. Cl. A47c *1/02*
U.S. Cl. 297—88 **11 Claims**



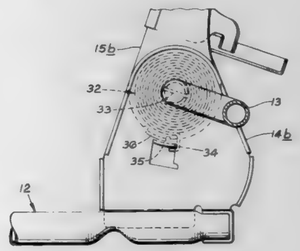
1. A recliner chair, comprising a floor-engaging pedestal, a frame mounted on said pedestal, a seat, a backrest fixedly connected to said seat, recliner means interconnecting said seat to said frame, stop means swingably mounted on said frame for movement with respect to said frame about a horizontal axis, a pair of wheels interconnected to said stop means, link means swingably interconnected to said recliner means and stop means, said recliner means permitting said seat and backrest to be moved between a normal upright position and a reclining position and swingably moving said link means to cause said stop means to dispose said wheels into and out of engagement with the floor rearwardly of said pedestal when said seat and backrest are moved into said reclining and upright positions, respectively.

3,926,473
ADJUSTABLE TYPE OF ARMREST UNIT
Gerard T. Hogan, Southington, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Dec. 23, 1974, Ser. No. 535,601
Int. Cl.² A47C *13/00*
U.S. Cl. 297—115 **5 Claims**



1. An adjustable armrest means for use between adjacent seating units in a multiple seat arrangement, which comprises in combination, fixed position armrest support framing that is attachable to adjacent seating units and will extend upwardly between them, a movable armrest section including a longitudinal cap portion positioned each side of said support framing, with each such section being hingedly connected to said support framing from its lower portion to thereby permit arcuate movement for the upper cap portion of each armrest section and individual adjustability for the positioning of each armrest cap portion for each seat occupant on each side of the armrest support framing.

3,926,474
VEHICLE SEATS
John Paul Johndrow, Stafford, and Joseph Pallant, Albrighton, near Wolverhampton, both of England, assignors to H. R. Turner (Willenhall) Limited, Walsall, England
Filed Aug. 16, 1974, Ser. No. 497,906
Claims priority, application United Kingdom, Aug. 22, 1973, 39721/73
Int. Cl.² A47C *1/025*
U.S. Cl. 297—355 **4 Claims**



1. A reclining seat comprising a seat base part, a back rest part, a pivot member which is fixed to one of said parts and is rotatable relative to the other part, and which connects the two parts together, a mechanism operable to releasably retain the back rest part in selected angular position with respect to the base part, and a coil spring encircling the pivot member for biasing the back rest part forwardly relative to the seat base part, said spring having an inner end which is secured to the pivot member that is fixed to one of said parts, and an outer end which bears against an abutment carried by the

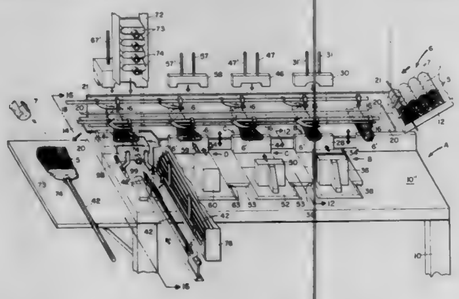
other part, whereby the spring is increasingly stressed as the back rest part is pivoted rearwardly from an upright position relative to the seat base part, characterized in that a further abutment is provided on the part to which the pivot member is fixed, and is located at a distance from the pivot member corresponding to the spacing between the pivot member and said outer end of the spring, in a position to engage said outer end of the spring during pivoting of the back rest part forward from said upright position, to displace said outer end of the spring out of engagement with the first-mentioned abutment, thereby disabling the biasing action of the spring.

3,926,475

MACHINE AND METHOD FOR MANUFACTURING BROOMS FROM PLASTIC FIBERS

Edmund McCaffray, Jr., 2 McKim Ave., Baltimore, Md. 21212

Filed Aug. 28, 1974, Ser. No. 501,331
Int. Cl.² A46D *7/00*
U.S. Cl. 300—21 **10 Claims**



9. A method for automatically producing brooms from elongated plastic fibers, comprising the steps:

a. forming the fibers in cylindrical bundles of a size to make a single broom;

b. melting the end of the bundle of fibers to form a melted mass to support the free ends of the fibers;

c. molding the melted mass into a predetermined rectangular form to provide a shoulder on the bundle of fibers;

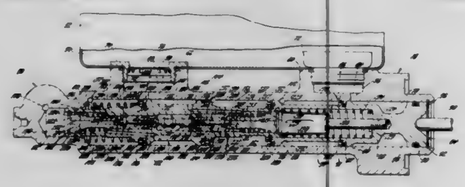
d. allowing the melted mass to partly cool at least on the outer surface and forming a recess extending through the outer surface of the melted mass to a predetermined depth therein.

3,926,476

DUAL MASTER CYLINDER INCLUDING A PLURALITY OF PROPORTIONING VALVES LOCATED WITHIN PRESSURIZING PISTONS

Thomas P. Mathues, Miamisburg, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 10, 1975, Ser. No. 548,355
Int. Cl.² B60T *13/00, 17/18*
U.S. Cl. 303—6 C **3 Claims**



1. In a vehicle brake system having a master cylinder assembly and front and rear wheel brakes and brake lines fluid connecting the master cylinder assembly and the vehicle wheel brakes to transmit brake actuating pressures therebetween, the master cylinder assembly comprising:

a housing having bore means therein and pressurizing piston means sealingly and reciprocably received in said bore means and cooperating therewith to define a plurality of brake fluid pressurizing chambers for pressurizing brake fluid when said master cylinder assembly is actuated to actuate the vehicle front wheel brakes through the brake lines connected therewith and additional pressurizing chambers for pressurizing brake fluid to actuate the vehicle rear wheel brakes through the brake lines connected therewith;

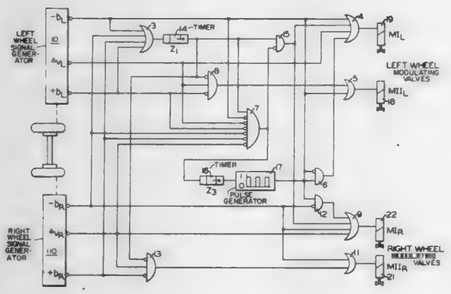
and a plurality of proportioning valve means mounted in said pressurizing piston means and responsive to some brake fluid pressures generated in said brake fluid pressurizing chambers when said master cylinder assembly is actuated to proportion the brake actuating pressures transmitted to the vehicle rear wheel brakes in relation to other brake fluid pressures generated in said brake fluid pressurizing chambers whereby the vehicle rear wheel brakes receive proportionately less brake actuating pressures than do the vehicle front wheel brakes above an effective predetermined pressure.

3,926,477

ANTI-LOCKING VEHICLE BRAKE SYSTEM FOR INDIVIDUAL WHEEL CONTROL

Alfred Klatt, Ronnenberg, Germany, assignor to WABCO Westinghouse GmbH, Hannover, Germany

Filed Feb. 7, 1974, Ser. No. 440,347
Claims priority, application Germany, Apr. 19, 1973, 2319862
Int. Cl.² B60T *8/08*
U.S. Cl. 303—21 P **8 Claims**



1. A fluid pressure actuated anti-skid brake control system for a vehicle having a pair of brake equipped wheels that are independently rotatable on a common axle of the vehicle, said system comprising:

a. signal generator means for providing a plurality of wheel behavior signals according to the dynamic conditions of each respective wheel of said axle;

b. valve means at each wheel for modulating the brake pressure thereat; and

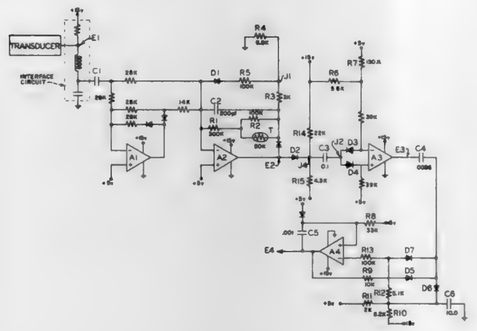
c. evaluation circuit means subject to said wheel behavior signals of the respective wheels for contr >lling said valve means, said evaluation circuit means being arranged so that when one of said wheel behavior signals of either one of said wheels is shifted in time relative to the corresponding one of said wheel behavior signals of the other of said wheels, the brake pressure of the faster rotating wheel is influenced, by said at least one of said wheel behavior signals of the slower rotating wheel, in such sense as to be held constant.

3,926,478

FREQUENCY QUADRUPLER FOR ANTI-SKID WHEEL SPEED SENSOR

Edgar J. Ruof, Akron, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed July 1, 1974, Ser. No. 484,412
Int. Cl.² B60T *8/00;* **H03K** *21/00, 5/00*
U.S. Cl. 303—21 R **6 Claims**



1. In an anti-skid system, the improvement of a circuit for increasing the amount of information obtainable from a sinusoidal wheel speed transducer output, comprising

a full wave rectifier connected to the transducer for producing a full wave rectified signal from the sinusoidal output signal of the transducer, the rectifier having a feed back capacitor in shunt with a resistive feed back network to dampen the gain of the rectifier when high frequency signals are received thereby, the resistive feed back network including a thermistor causing the characteristic gain of the rectifier to vary inversely with changes in the ambient temperature;

means connected to the resistive feed back network for reducing the gain of the rectifier when the amplitude of the signals received thereby exceeds a particular level;

an operational amplifier connected to the rectifier and having one input biased with respect to the other, and receiving the rectified signal at the inputs thereof; and

a one-shot circuit connected to the circuit means and receiving the output pulses therefrom and creating pulses of fixed amplitude and duration in response to the output pulses.

4. A circuit for creating a plurality of uniform pulses in time-spaced relationship to a reference sinusoidal signal, comprising:

a full wave precision rectifier receiving said sinusoidal signal and creating a full wave rectified signal therefrom, said precision rectifier including a resistive feed back network providing a characteristic gain for said rectifier and a capacitor in shunt with said resistive feed back network for diminishing the gain of said rectifier at high frequency operation, said resistive feed back network including a thermistor for making the gain of said rectifier temperature variable;

an operational amplifier receiving said rectified signal, one input of the amplifier being biased with respect to another input with both inputs receiving said rectified signal, the operational amplifier producing an output pulse on each transition of said rectified signal through a particular level;

a voltage divider interposed between said rectifier and said operational amplifier to limit the level of the negative going transitions of the full wave rectified signals; and

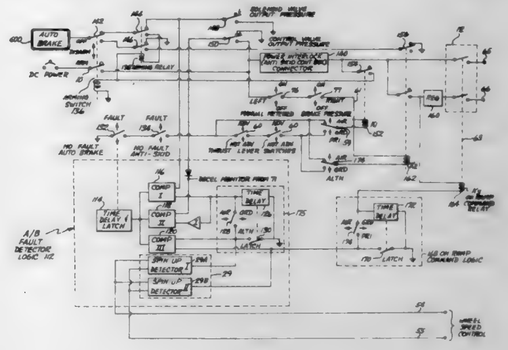
a monostable multivibrator receiving said output pulses from said operational amplifier and responsive thereto to produe output signals of fixed amplitude and pulse width.

3,926,479

AIRCRAFT AUTOMATIC BRAKING SYSTEM HAVING AUTO-BRAKE CONTROL LOGIC

Sherman M. Bissell; Garrett H. De Vlieg, both of Bellevue, and Johan N. Hopland, Renton, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 415,058, Nov. 12, 1973, Pat. No. 3,847,445. This application Oct. 11, 1974, Ser. No. 514,057
Int. Cl.² B60T *8/08*
U.S. Cl. 303—21 AF **1 Claim**



1. In an automatic brake control system, fault detector circuit means comprising:

first means for developing a signal representative of control valve output pressure;

second means for providing a deceleration monitor signal;

third means for providing an ON-RAMP signal; and

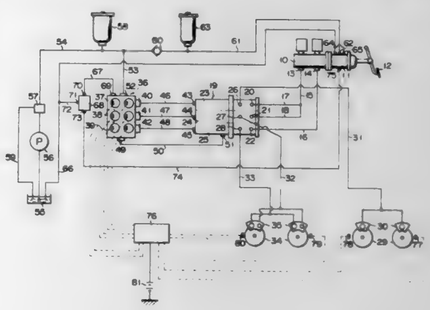
comparator circuit means responsive to said first, second, and third means for indicating a fault condition when said third means for providing an ON-RAMP signal is not ON and both a control valve output pressure signal representative of a control valve output pressure below a predetermined value and a deceleration monitor signal representative of a deceleration level below a predetermined value are present.

3,926,480

ANTI-SKID BRAKE CONTROL SYSTEM FOR VEHICLES

Juichi Shibatani, and Toshiyuki Kondo, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Dec. 23, 1974, Ser. No. 535,370
Claims priority, application Japan, Dec. 21, 1973, 49-875[U]
Int. Cl.² B60T *8/08*
U.S. Cl. 303—21 F **10 Claims**



1. An anti-skid brake control system for vehicles comprising:

a. a master cylinder for generating a hydraulic brake pressure;
b. wheel brake cylinders;
c. a hydraulic braking circuit connecting said master cylinder to said wheel cylinders, for supplying, during a braking operation, the hydraulic brake pressure from said master cylinder into said wheel cylinder;
d. cut-off valve means disposed in said hydraulic braking circuit and interposed between said master cylinder and said wheel cylinders to control the hydraulic communication therebetween;
e. a hydraulic brake pressure reducing means disposed in said hydraulic braking circuit and interposed between said cut-off valve means and said wheel cylinders and cooperatively connected to said cut-off valve means;
f. a pump-powered hydraulic pressure source;
g. a reservoir hydraulically connected to said pump-powered hydraulic pressure source;
h. means for generating a skid sensing signal;
i. a first hydraulic line for permitting said pump-powered hydraulic pressure source to hydraulically communicate with said hydraulic brake pressure reducing means;
j. a control valve assembly disposed in said first hydraulic line, for controlling the hydraulic communication between said pump-powered hydraulic pressure source and said hydraulic brake pressure reducing means in response to said skid sensing signal;
k. a second hydraulic line for permitting said control valve assembly to hydraulically communicate with said reservoir; and
l. a leak oil flow-preventing valve assembly disposed in said second hydraulic line and hydraulically operated, in accordance with the condition of the braking operation, to open said second hydraulic line so as to render effective the hydraulic communication between said control valve assembly and said reservoir only during the braking operation and to close said second hydraulic line during the non-braking operation;

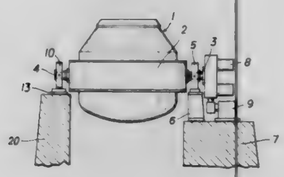
wherein, during the non-braking operation, a leak oil flowing into said second hydraulic line from said control valve assembly is prevented by said leak oil flow-preventing valve assembly from flowing further into said reservoir.

3,926,481

BEARING CONSTRUCTION FOR HEAVY MACHINES, IN PARTICULAR FOR STEEL WORKS CONVERTERS

Ernst Riegler, Enns, and Manfred Schmidt, Linz, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Nov. 27, 1974, Ser. No. 527,535
Claims priority, application Austria, Dec. 7, 1973, 10248/73
Int. Cl.² F16C *17/00, 21/00, 33/02*
U.S. Cl. 308—6 R **12 Claims**



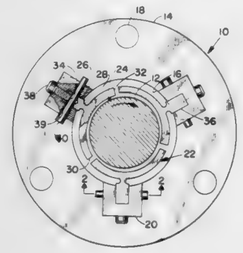
1. A bearing construction for heavy machines, in particular for steel works converters, which comprises
— a bearing housing,
— two trunnions borne in a self-aligning bearing each, one bearing being fixed in relation to a foundation and the other bearing being a movable bearing,
— a lower housing part provided with a cylindrical roll-off surface and carrying out a roll-off movement, with which lower housing part the movable bearing rests on a horizontal foundation plate.

3,926,482

FLUID JOURNAL BEARINGS

Frederick T. Schuller, and Warren A. Moore, both of Cleveland, Ohio, assignors to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Division of Ser. No. 346,483, March 30, 1973, Pat. No. 3,830,552, which is a division of Ser. No. 238,264, March 27, 1972, Pat. No. 3,804,472. This application Feb. 25, 1974, Ser. No. 445,178
Int. Cl.² F16C *7/04, 19/04, 27/00, 1706*
U.S. Cl. 308—9 **4 Claims**



1. In combination with a lightly loaded shaft rotating at high speed having a film of lubricants thereon, and improved bearing comprising
a housing having a bore extending therethrough for receiving said shaft,
a plurality of sectors positioned around said shaft forming lobes for shaping the geometry of said film, each of said sectors comprising
a base portion, and
a pad portion flexibly mounted on said base portion at a neck, said pad portion having a partial cylindrical configuration with a radius greater than that of said shaft thereby forming a first surface facing said shaft and spaced therefrom varying distances so that the film geometry converges and diverges, said pad portion having a trailing edge at the end thereof in the direction of rotation of said shaft and a leading edge at the end in the direction opposite the rotation of said shaft, said neck being located between said trailing edge and said leading edge of said pad portion to form a flexure point therefor, and
means for securing the base portion of each of said sectors to said housing and maintaining the same spaced from adjacent sectors about said shaft.

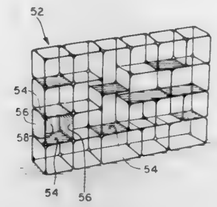
3,926,483

MODULAR FURNITURE STRUCTURE ASSEMBLY

Donald M. Hentrich, 2615 - 35th Ave., Rock Island, Ill. 61201

Filed Oct. 2, 1974, Ser. No. 511,239
Int. Cl.² A47B *3/06, 87/00*
U.S. Cl. 312—107 **1 Claim**

1. A modular furniture structure assembly of generally rectilinear, planar loops of elongated, substantially rigid material, the outer peripheral edge of each leg of each loop being formed of two elongated planar surfaces angularly disposed to the plane of the loop and to each other, so that the line of intersection of said surfaces forms the outer peripheral edge of said leg, said loops being assembled so that at least one of said planar surfaces of each leg of each loop is disposed in abutting, complimentary relationship to a corresponding planar surface on the leg of an adjacent loop and clamping means for securing said surfaces, so disposed, against lateral displacement relative to each other so that said loops are held in



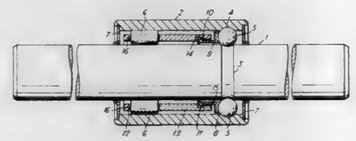
alignment against load generated forces to form a plurality of rigid, three-dimensional, rectilinear, open frame members interconnected in stacked relation to provide a load bearing structure suitable for shelving.

3,926,484

SPINDLE AND BEARING ASSEMBLIES

Derek Ray Parkins, Barton-le-Clay, England, assignor to SKF Industrial Trading and Development Company B.V., Jutphaas, Netherlands

Filed Oct. 23, 1973, Ser. No. 408,893
Claims priority, application United Kingdom, Oct. 23, 1972, 48746/72
Int. Cl.² F16C *19/04*
U.S. Cl. 308—174 **10 Claims**



1. A spindle and bearing assembly comprising, a row of balls and a row of rollers which are spaced apart from each other axially along the spindle, said balls and rollers having a common outer bearing ring, the balls being arranged to roll between a first fixed radial groove about said spindle and a second fixed radial groove in said outer bearing ring, said balls and said rollers having a ball cage and a roller cage respectively, each of said cages being interconnected such that said roller cage has no substantial freedom of movement in an axial direction relative to said ball cage, whereby said roller cage and hence said rollers are axially located within the outer bearing ring.

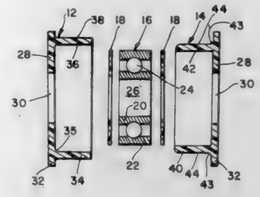
3,926,485

BEARING HOUSING ASSEMBLY

Charles C. Frost, Newaygo, and Siegfried K. Weis, Grand Rapids, both of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Division of Ser. No. 355,598, April 30, 1973, Pat. No. 3,844,010. This application Aug. 19, 1974, Ser. No. 498,381
Int. Cl.² F16C *33/00*
U.S. Cl. 308—193 **4 Claims**

1. A bearing housing comprising: a pair of thermoplastic flange members each said member having a flat planar bottom wall portion and an annular outwardly extending side wall portion, said side wall portions having an inner wall surface and an outer wall surface, the inner wall surface on one of said members being slightly larger than the outer wall surface on the other of said members, the inner wall surface of said other of said members being adapted to receive the outer race of a bearing; said other of said members being telescopically received within said one of said members; said one of said members being fused to the other of said members to thereby form an integral housing about said bearing.



3,926,486

MODULAR FURNISHINGS

Russell M. Sasnett, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

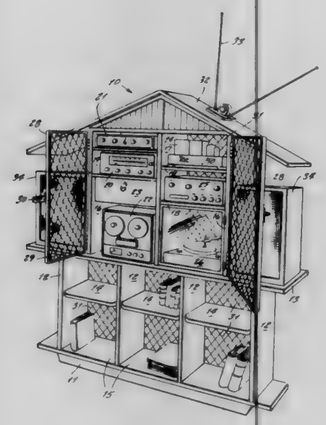
Continuation of Ser. No. 221,190, Jan. 27, 1972, abandoned. This application Jan. 23, 1974, Ser. No. 435,758
Int. Cl.² A47B *53/00*
U.S. Cl. 312—198 **7 Claims**



1. A modular furnishing assembly comprising a corner module and at least two additional modules laterally and transversely connected adjacent thereto, respectively, each of said modules being free-standing and having: (1) a base cabinet portion including parallel side walls and a counter top; (2) storage means having a top, a bottom, side walls coplanar with the side walls of said base cabinet, and doors providing access thereto, said storage means being integral with said base cabinet portion through column means and panel structure so that no portion of the kitchen wall behind a module is exposed, said integral column means providing support independently for each module and said storage means further being located above and rearwardly offset from said base portion to define a raceway extending upwardly substantially above the counter top of said base cabinet portion to provide for electrical wiring and plumbing to be installed behind said module, said rearward offset also providing that said doors of said storage means do not swing outwardly beyond the front plane of said module, said module being further characterized by at least one of said column means being spaced inwardly from the common plane of the side walls of the adjacent storage means and base cabinet portion, thereby defining, in conjunction with said counter top of said base portion and said bottom of said storage means, an inset bounded on three sides only and opening on the fourth side for cooperation with a like inset of an adjacent module in abutting association therewith to provide a tunnel for receiving electrical distribution means; connector means for connecting adjacent modules together along abutting side walls thereof, said connector means being acces-

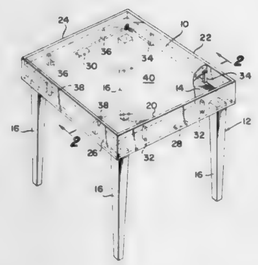
sible from the front of said units; and lighting means located above the top of and attached to said storage means for illuminating the surroundings and providing a molding between said storage means and the ceiling when the module is installed in the room, said lighting means including an upwardly projecting housing portion below the ceiling and adjustable means attached to said housing portion to extend upwardly and abut the ceiling, thereby forming a complete floor-to-ceiling module.

3,926,487
STEREOPHONIC CABINET
Daniel Reyes, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007
Filed Mar. 18, 1974, Ser. No. 451,899
Int. Cl.² A47B *77/08, 81/06*
U.S. Cl. 312—223 **1 Claim**



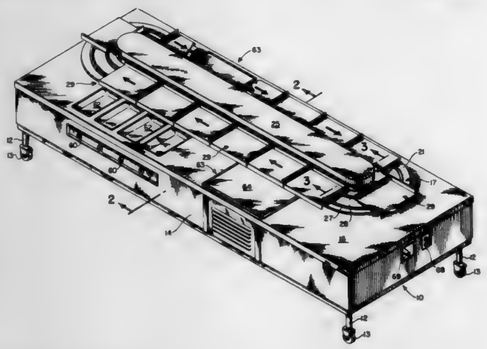
1. A stereophonic cabinet comprising a lower unit having a horizontal base adapted to rest on a support surface, including vertical side walls capped with a horizontal platform extending symmetrically outwardly beyond the side walls, in combination with an upper unit mounted removably on said platform, said lower unit having compartments between the side walls, wherein said upper unit comprises vertical end walls with compartments having various stereophonic components therein, said compartments being symmetric relative to the vertical axis of said cabinet including similar speaker compartments with speakers therein adjacent to each side wall in combination with a sloping roof at the top of the upper unit, said roof having an apex along the vertical center line of the cabinet, said apex being vertically spaced from said compartments providing a chamber therebetween, including a pair of screen doors pivoted on the end walls having inner edges disposed in close adjacency when closed provided with locking means at said edges including an electric burglar alarm housed in said chamber, wherein the speaker compartments are defined by the exterior of the end walls, overhanging portions of said roof, and the portion of the platform which extends beyond the side walls of the lower unit, including an antennae pivotally mounted on each screen door.

3,926,488
STORAGE ATTACHMENT FOR TABLES, WALL PICTURES, AND THE LIKE
Paul E. Amos, 1132 Pennsylvania Ave., McKeesport, Pa. 15122
Filed Nov. 11, 1974, Ser. No. 522,984
Int. Cl.² A47B *85/00*
U.S. Cl. 312—241 **12 Claims**



1. A storage attachment for a member having a planar surface of polygonal shape, the attachment including:
a. a polygonal collar comprising a plurality of sides of predetermined height in contiguous relation with the peripheral edges of the planar surface of the member,
b. said collar being constructed of a semiflexible material to permit relative movement of the component parts thereof,
c. internal ribs extending transversely of the sides of said collar and spaced from the longitudinal edges thereof, and
d. supporting tabs engaged with a plurality of the sides of said collar and extending inwardly thereof,
e. each of said supporting tabs being substantially coplanar with a longitudinal edge of a side of said collar, whereby edges of the planar surface may be positioned between said supporting tabs and transverse ribs by flexing one of the sides of said collar,
f. the height of the sides of said collar being greater than that of the planar surface to provide a storage area defined by the planar surface and collar.

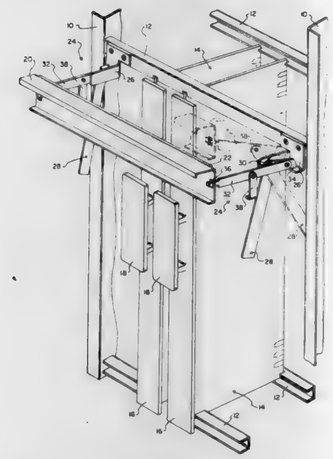
3,926,489
APPARATUS FOR USE IN ASSEMBLING FOOD ON TRAYS
Max Gerald Futch, 332 Wilton Drive, Baton Rouge, La. 70815
Filed Oct. 4, 1974, Ser. No. 512,001
Int. Cl.² B65G *15/00;* **A47B** *91/00*
U.S. Cl. 312—250 **10 Claims**



1. A device for use in making up serving trays with food portions comprising:

a. a cabinet assembly having two spaced apart, longitudinally extending, generally flat top counter surfaces;
b. a hollow, narrow, elongated, serving tray conveyer assembly centrally and longitudinally fixedly positioned between said two top surfaces and extending upwardly a substantial distance therefrom,
i. said tray conveyer assembly having end and sidewalls extending upwardly from said top surface, a continuous shelf projecting outwardly from said end and sidewalls adjacent their upper ends, a plurality of tray support means supported by said shelf for movement thereover, and means located in the upper portion of said tray conveyer assembly for moving said plurality of tray support means around a closed path; and
c. each of said two top surfaces of said cabinet providing means for accommodating a plurality of bulk or individually portioned food containers for placement of individual portions on each of said serving trays by an attendant.

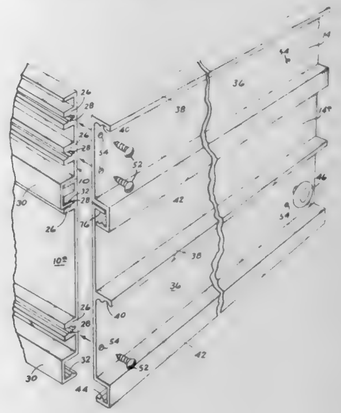
3,926,490
LOCKING BAR FOR PRINTED WIRING CARD FILE
Ansano Bertellotti, Addison, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Apr. 18, 1973, Ser. No. 352,156
Int. Cl.² H05K *5/00*
U.S. Cl. 312—319 **5 Claims**



1. Apparatus for retaining horizontal arrays of printed wiring cards in a printed wiring card file, said apparatus comprising:
a locking bar disposed transversely across said printed wiring card array, said locking bar having disposed on the card engaging surface a layer of resilient material;
retaining means affixed to said printed wiring card file and adapted to engage each end of said locking bar; whereby said locking bar is held under compression against the edges of said printed wiring cards when said retaining means is engaged.

3,926,491
KNOCK-DOWN DRAWER ASSEMBLY
Philip A. Greer, 156 Milliken Creek Drive, Napa, Calif. 94558
Filed Apr. 17, 1974, Ser. No. 461,526
Int. Cl.² A47B *45/00, 88/00, 88/14, 96/06*
U.S. Cl. 312—330 R **3 Claims**

1. A knock-down drawer assembly comprising:
a. a pair of drawer side panels of like and uniform cross section,
b. a pair of drawer end panels of like and uniform cross section extending between and abutting the inner surfaces of the side panels,
c. each of said end panels having on its outer face at least one integral slotted rib extending the length thereof,
d. self-threading screw means extending through openings through said side panels aligned with said slotted ribs and removably connected therewith in the assembled condition of the drawer,
e. drawer bottom mounting means on the lower inner margins of the panels of at least one of said pairs of panels,
f. a drawer bottom mounted removably in said drawer bottom mounting means in the assembled condition of the drawer.
g. an integral track member on the outer face of each drawer side panel, and



h. a pair of track mounting members adapted for attachment to structural supports adjacent the sides of the drawer and including roller means engaging said track member for supporting the drawer for in and out movement relative to the track mounting members.

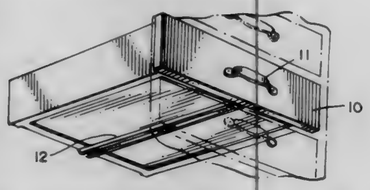
2. The knock-down drawer assembly of claim 1 wherein each side and end panel includes a pair of longitudinal segments adapted to be interconnected edgewise to provide a panel of increased depth, wherein the drawer bottom mounting means comprises inwardly directed channel means integral with the bottom margin of each of said end panel segments, each channel means including an inwardly directed terminal flange, wherein a slotted rib is located adjacent the upper end of each lower end panel segment and wherein the slotted ribs are provided with slots dimensioned for reception of said terminal flanges of the upper segments, thereby enabling assembling the end panel segments into end panels of increased depth by telescoping the terminal flanges of the upper segments into the slots of the lower segments.

3,926,492
DRAWER SLIDE ASSEMBLY
Kenneth H. Gutner, 3285 Dato, Highland Park, Ill. 60035
Filed Sept. 25, 1974, Ser. No. 509,313
Int. Cl.² F16C *29/00*
U.S. Cl. 312—348 **3 Claims**

1. A drawer slide assembly for guiding a drawer during movement in and out of a furniture piece and for indicating when the drawer is almost withdrawn therefrom, comprising: an elongated guide adapted to be mounted in said furniture piece with the length thereof extending generally from the front to the back of said furniture piece, said guide having a portion of its cross section in the form of a T to be partially embraced by a drawer slide, and

an elongated slide adapted to be mounted against the drawer under side in sliding, embracing relation to said guide, said slide having a top wall with side walls depending therefrom and inwardly extending side flanges located a spaced distance below said top wall whereby said embracing relation is achievable,

said guide having a top surface equipped with a step extending transversely thereof and positioned adjacent to but spaced from the front end of said guide,



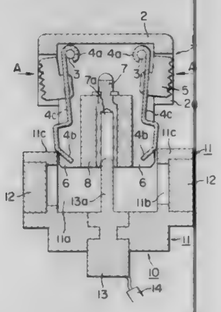
said slide having a depressed portion in the top wall thereof positioned adjacent to but spaced from the slide front end to engage said step during drawer withdrawal movement, said depressed portion being sized and arranged in conjunction with said step to give a perceptible restraint to the person withdrawing the drawer that further withdrawing movement will disengage the drawer from the furniture piece but which restraint is readily overcome by slight additional pulling force, said depressed portion also being arranged with sufficient cross sectional area to distribute the drawer weight on said guide top surface with limited resistance.

3,926,493

CONNECTING DEVICE

Hiroshi Wakabayashi, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 26, 1974, Ser. No. 527,418
Claims priority, application Japan, Dec. 4, 1973, 48-138313[U]
Int. Cl.² H01R *11/30*
U.S. Cl. 339—12 R **10 Claims**



1. A connecting device using a magnet to accomplish a connection, comprising:

an insert member;

restraining means having a restraining portion and pivotally supported at one end on said insert member;

receptor means;

an engaging portion formed on said receptor means to face said restraining portion of said restraining means upon insertion of said insert member into said receptor means;

a magnetic member provided on one of said means;

a magnet provided on the other of said means and adapted to face said magnetic member upon insertion of said insert member into said receptor means, said magnet being capable of attracting said magnetic member to pivot said restraining means to bring the restraining portion of said restraining means into engagement with the engaging portion of said receptor means and retaining the connection between said insert member and said receptor means; and

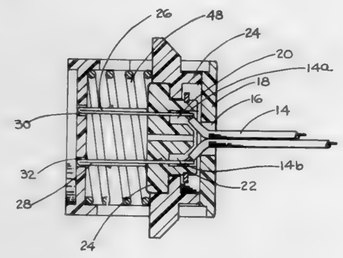
a member for pivoting said restraining means to release the engagement between the restraining portion of said restraining means and the engaging portion of said receptor means.

3,926,494

SAFETY ELECTRICAL MALE PLUG HAVING NORMALLY RECESSED MANUALLY EXTENDABLE CONTACTS

Felix Maillaro, Suffern, N.Y., assignor to Michael C. Narducci, Corona, N.Y.

Filed Dec. 12, 1973, Ser. No. 424,167
Int. Cl.² H01R *13/44, 13/62*
U.S. Cl. 339—34 **5 Claims**



1. In a safety plug of the class described, in combination,

a. an insulated housing having an opening in one end thereof, and adapted to receive electrical conductors through said opening; a pair of electrical conductors disposed in said opening; a cylindrical wall extending longitudinally from said one end to an opposite end of said housing; an integrally formed wall extending normal to and substantially closing the portion of the housing adjacent to said opposite end, said integrally formed wall being recessed from said opposite end toward said one end; a pair of spaced openings disposed in said integrally formed wall;

b. a pair of spaced metallic prongs disposed in recessed relation within each of said respective openings in said integrally formed wall and connected to said electrical conductors and electrically insulated one from the other;

c. biasing means urging said metallic prongs within the housing to position the ends of the respective prongs within the pair of openings in the integrally formed wall; and

d. means projecting externally of the housing for moving the recessed metallic prongs from their recessed relation within the integrally formed wall of the housing to an extended relation wherein the metallic prongs extend through the integrally formed wall openings and substantially beyond said opposite end of said housing, said means being manually operable.

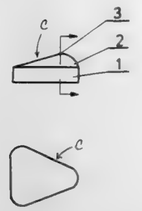
3,926,495

ELECTRICAL CONTACT BODY

Angel Nikolaev Pissarev, Sofia; Maria Pancheva Müeva, Plovdiv; Ivan Velev Balabanov, Plovdiv, and Lyubomir Dimov Peychev, Plovdiv, all of Bulgaria, assignors to DSO "ELPROM", Sofia, Bulgaria

Filed Nov. 15, 1974, Ser. No. 524,084
Claims priority, application Bulgaria, Nov. 22, 1973, 25040
Int. Cl.² H01R *3/00, 25/00*
U.S. Cl. 339—48 **3 Claims**

1. An electrical contact body for a contact commutation apparatus, said contact body having a base in the form of a triangular prism having an isosceles triangular section with rounded-off peaks, a triangular pyramid with rounded-off edges disposed on said base, the uppermost portion of the



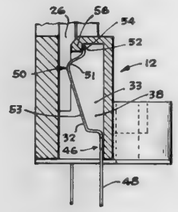
contact body having a spherical surface disposed near the peak formed by the equal legs of the triangular prism base, the remaining walls of the triangular pyramid being tangents to the spherical surface.

3,926,496

CONNECTOR RECEPTACLE

Carl Occhipinti, Melrose Park, Ill., assignor to Bunker Ramo Corporaation, Oak Brook, Ill.

Continuation of Ser. No. 250,710, May 5, 1972, abandoned. This application Jan. 22, 1974, Ser. No. 435,416
Int. Cl.² H01R *13/62*
U.S. Cl. 339—65 **5 Claims**



1. A receptacle for a flat circuit-bearing element having contact pads adjacent at least one edge thereof comprising:

a one-piece body of insulating material having a slot for receiving the edge of the element having said contact pads, the slot having opposite ends and a pair of vertical uprights integral with the body and positioned adjacent the opposite ends of the slot, one of the uprights including reference means for receiving and locating the element in a predetermined position in the slot and the other upright including resilient means for receiving the element and forcibly positioning it against the reference means, said other upright including side means for laterally directing said element resiliently against said resilient means when said edge of said element is in said slot, said resilient means including a pair of spaced-apart arms and an upper bow joining said arms, one of said arms facing and resiliently restrained from movement towards said reference means, said resilient means including spring means having a lateral ear portion and said other vertical upright including a restraining abutment in juxtaposition with the ear portion for retaining the spring means in the upright.

3,926,497

CONNECTOR SHROUD AND ASSEMBLY

George Thomas Eigenbrode, Mechanicsburg, Pa., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Mar. 12, 1974, Ser. No. 451,081
Int. Cl.² H01R *13/54*
U.S. Cl. 339—91 R **15 Claims**

1. A shroud for an electrical connector assembly comprising a unitary housing having a generally rectangular cavity, a pair of opposing side walls of said cavity having recessed openings therein, and an elongated member extending from each side wall longitudinally in each recessed opening, each elongated member having a latch surface on the free end thereof, each latch surface extending from the member toward a side of the recessed opening, and each member being flexible in axial



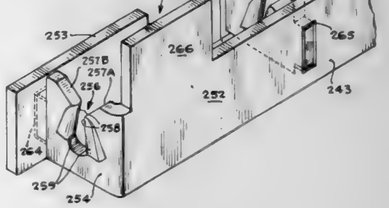
alignment with each recessed opening and toward a side of said recessed opening to receive a flange member on each side of a connector block inserted in the shroud and to engage the latch surface on each elongated member with a mating latch surface on a trailing end of each flange member and releasably secure the connector block in the shroud.

3,926,498

ELECTRICAL CONNECTOR AND INSULATION-PIERCING CONTACT MEMBER

Paul Peter Hoppe, Jr., Arlington Heights, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Sept. 14, 1972, Ser. No. 288,998
Int. Cl.² H01R *9/08, 13/58*
U.S. Cl. 339—97 R **22 Claims**



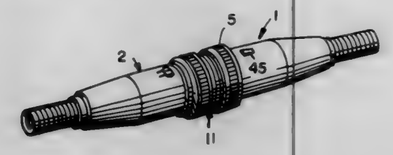
13. An electrical connector unit comprising: insulating means including a plurality of parallel longitudinally extending passages with inner and outer end portions each outer end portion having an upper longitudinal side open for receiving an insulation-covered electrical conductor, and

a plurality of contact members mounted in said passages, including terminal elements disposed in said outer end portions, each of said terminal elements including at least one pair of opposed, transverse flange elements forming an upwardly opening notch for receiving said conductor, said notch including an upper portion having thin edges converging downwardly to afford an insulation cutting section and a lower portion having smooth, curved thickened edges to afford a conductor engaging terminal section, said flange elements being formed of thin, conductive sheet metal and including portions of multiple thicknesses of said sheet metal forming said thickened edges.

3,926,499
ELECTRICAL CONNECTORS WITH INTERCHANGEABLE COMPONENTS

James R. Bailey, Chicago, and Vernon W. Lavigne, Rolling Meadows, both of Ill., assignors to Switchcraft, Inc., Chicago, Ill.

Division of Ser. No. 339,050, March 8, 1973, Pat. No. 3,885,849. This application Dec. 13, 1974, Ser. No. 532,590
Int. Cl.² H01R 13/46
U.S. Cl. 339—136 R 8 Claims



1. An insert for the housing of an electrical connector having a side opening and a tubular front to rear opening to receive said insert, said insert comprising a plurality of either male or female electrical contact components embedded in a self-supporting molded electrical insulating material with terminals connected to said contact components projecting rearwardly from said insert, and latch means comprising a bent resilient strip fixed to a side of said insert and adapted to exert resilient pressure in a plane perpendicular to the longitudinal axis of said insert, said resilient strip being an elongated strip bent at an intermediate section to provide an upwardly extending portion to project into said side opening in said housing and a flat portion to connect to said insert, said insert comprising a channel with undercut sides on the surface thereof sized to receive said flat portion, said channel being open at both ends and extending from the terminal end of said insert toward the electrical contactor end of said insert, an abutment on the surface of said insert spaced from the contactor end of said channel, outwardly extending portions on opposite sides of said flat strip adjacent said bent portion sized to be received by said undercut portions of said sides and a T-shaped configuration on the end of said flat portion sized to fit in said space between said abutment and the inner end of said channel whereby said flat strip can be inserted into said channel from the terminal end of said insert with said outwardly extending portions in the undercut area and said T-shaped end above said channel and moved forwardly until said T-shaped end snaps into said space at the end of said channel.

3,926,500
METHOD OF INCREASING THE DEPTH OF FOCUS AND OR THE RESOLUTION OF LIGHT MICROSCOPES BY ILLUMINATING AND IMAGING THROUGH A DIAPHRAGM WITH PINHOLE APERTURES

Albert Frosch, Herrenberg-Affstaett, and Hans Erdmann Korth, Stuttgart, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

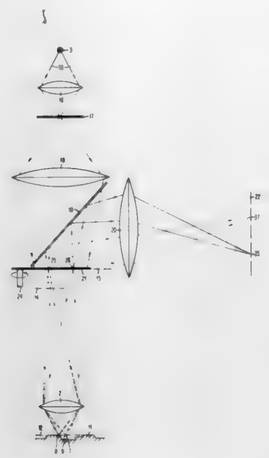
Filed Dec. 2, 1974, Ser. No. 528,965
Int. Cl.² G02B 21/06; G05D 25/00
U.S. Cl. 350—17 8 Claims

1. Apparatus for producing magnified images of non-flat object surface areas with enhanced depth contrast and resolution of detail comprising:

an objective lens;

means containing plural co-planar pinhole apertures, each pinhole aperture for transmitting a beam of light thru said lens to be incident on an object surface and for re-transmitting a spot-imaged beam of light returned by said lens after scattering reflection of said incident beam from said surface;

means for shifting focal coordinates of each incident beam in three dimensions relative to said surface; and

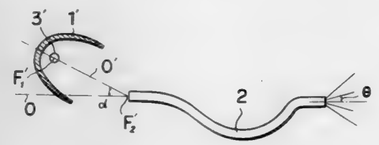


means for utilizing light returned through said apertures to form said magnified images.

3,926,501
DEVICE FOR DIRECTING LIGHT TO ILLUMINATING FIBER OPTICAL SYSTEM

Hiroyuki Hama, Fuchu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1971, Ser. No. 190,132
Claims priority, application Japan, Oct. 20, 1970, 45-92291
Int. Cl.² G02B 5/16
U.S. Cl. 350—96 B 3 Claims



1. An illuminiating device comprising:

a. a fiber optical system having a light receiving first end face, a light emitting second end face, and an axis perpendicular to said first end face substantially in the center of said first end face;

b. a light source having a spot of greatest brightness; and

c. mirror means for focusing the light of said source on said first end face,

1. said mirror means having a reflecting face in the form of an ellipsoid of revolution about an axis of revolution and having two focal points spaced along said axis of revolution,

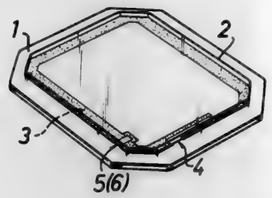
2. said focal points substantially coinciding with said spot of greatest brightness and with said first end face respectively, whereby light of said source is emitted from said second end face for illuminating an adjacent area,

3. said axis of revolution being inclined relative to said axis of said fiber optical system at an angle of inclination of approximately 20°, whereby the distribution of light over said area is more uniform than at an angle of inclination smaller than 20° and the light transmitting efficiency of said system is greater than at an angle of inclination greater than 20°.

3,926,502
LIQUID-CRYSTAL DISPLAY CELL AND METHOD OF MAKING SAME

Eiichiro Tanaka, Kawagoe; Katsuo Nishimura, Tokyo; Hiroshi Shimizu, Kawagoe, and Masao Koshi, Higashikurume, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed July 18, 1973, Ser. No. 380,281
Claims priority, application Japan, July 21, 1972, 47-72468; Jan. 29, 1973, 48-10987; May 8, 1973, 48-50966
Int. Cl.² G02F 1/13
U.S. Cl. 350—160 LC 5 Claims



1. A liquid-crystal display cell comprising:

a pair of glass substrates disposed parallel to one another and defining between them a space for a liquid crystal substance of the TWIST type;

transparent electrode films on the confronting surfaces of said substrates;

a vapor-deposited heat-resistant orienting layer on each of said electrode films, said orienting layers being deposited obliquely on the respective electrode films with the directions of orienting of said layers lying substantially at right angles to one another;

a low-melting-point glass layer interposed between said substrates and sealing them together along confronting marginal edge portions of the substrates to enclose said substance;

a single opening formed in said cell and communicating between the exterior of said cell and said space for evacuating air from said cell and injecting said substance into said space, said opening being defined by a metalized wall; and

a plug composed in part of a low-melting point metal bonded to said metallized wall and closing said opening.

4. A method of making a liquid-crystal display cell comprising the steps of:

polishing and washing a respective surface of a pair of glass substrates;

vapor-depositing on each of said surfaces a respective transport electrically conductive thin film;

removing part of each of said films to impart a given pattern to the electrode formed by the remainder of the film on the respective substrates;

obliquely vapor-depositing on each of said electrodes respective heat-resistant orienting layers with respective molecule-orienting directions;

disposing said substrates in spaced-apart parallel relation with said surfaces juxtaposed and the molecule-orienting directions of said orienting layers at right angles to one another to define a space;

bonding said substrates together with a low-melting-point glass layer along marginal edges of said surfaces around said space;

forming an opening communicating between the exterior and said space and metallizing the wall defining said opening;

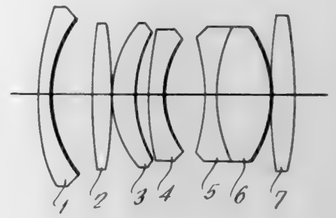
evacuating gas from said space and injecting a TWIST mode liquid crystal substance into said space through said opening under a reduced pressure condition; and

sealing said opening under a reduced pressure condition with a low-melting point metal bonded to the metallized wall.

3,926,503
LARGE APERTURE SEMI-WIDE ANGLE LENS

Yasuo Takahashi, and Michiro Oishi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 15, 1974, Ser. No. 497,605
Claims priority, application Japan, Aug. 24, 1973, 48-95502
Int. Cl.² G02B 9/62
U.S. Cl. 350—215 2 Claims



1. A lens system comprising seven successively designated lenses arranged in six groups and possessing the following dimensions and relationships:

r_1	83.826	d_1	4.78	n_1/ν_1	1.55671/58.7
r_2	50.446	d_2	19.85		
r_3	304.333	d_3	7.39	n_2/ν_2	1.79952/42.3
r_4	−203.478	d_4	0.24		
r_5	46.739	d_5	11.00	n_3/ν_3	1.80610/40.8
r_6	74.000	d_6	3.65		
r_7	141.304	d_7	7.11	n_4/ν_4	1.68893/31.1
r_8	43.465	d_8	18.33		
r_9	−64.330	d_9	3.28	n_5/ν_5	1.80518/25.4
r_{10}	93.478	d_{10}	21.74	n_6/ν_6	1.80610/40.8
r_{11}	−62.391	d_{11}	0.22		
r_{12}	239.129	d_{12}	10.87	n_7/ν_7	1.78590/44.2
r_{13}	−214.129				

$F_1 = -239.8$
$F_{1.2.3} = 90.8$
$F_{1.2.3.4} = 458.6$

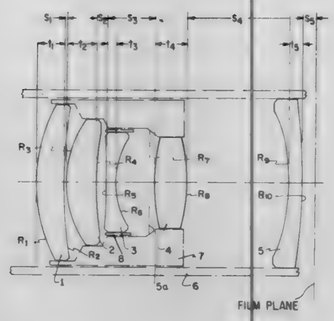
wherein $F_{1 \ldots i}$ is the composite focal length of the first to the ith lens; ν is the Abbe's number of the ith lens, N_i is the refractive index in the d-line of the ith lens, r_j is the radius of curvature of the jth lens face and d_j is the distance between the jth lens face and the $j+1$ lens face, the lens faces being successively designated from the front to the rear face as the first to the thirteenth, the mating confronting surfaces of the fifth and sixth lenses defining a single face.

3,926,504
PHOTOGRAPHIC OBJECTIVE

Andor A. Fleischman, Northbrook, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed June 21, 1974, Ser. No. 481,946
Int. Cl.² G02B 3/04, 9/60
U.S. Cl. 350—189 9 Claims

1. A photographic objective for focusing light from an object onto a receiving medium, comprising mounting structure, and first, second, third, fourth, and fifth lens elements being fixedly attached in use to said mounting structure, said third lens element being movably carried by said mounting structure and being movable with respect thereto along said lens axis for focusing light from the object onto the receiving medium, constructed substantially in accordance with the following specifications:



Lens Element	N	V	Radii	Thicknesses	Air Spaces
1	1.69	54.8	$R_1 = +.742F$ $R_2 = -2.192F$	$t_1 = .133F$	$s_1 = .005F$
2	1.691	54.8	$R_3 = +.499F$ $R_4 = -1.195F$	$t_2 = .150F$	
3	1.755	276	$R_5 = -7.374F$ $R_6 = -.379F$	$t_3 = .046F$	$s_2+s_3 = .189F$
4	1.691	54.8	$R_7 = +.922F$ $R_8 = +.868F$	$t_4 = .147F$	$s_4 = .479F$
5	1.492	57.8	$R_9 = -.856F$ $R_{10} = +.2917F$	$t_5 = .058F$	$s_5 = .057F$

in which the first column lists the lens elements from front to rear, the second column lists the refractive indices respectively for said lens elements, the third column lists the dispersion values respectively for said lens elements, the fourth column lists the radii of curvature R_1–R_{10} of the surfaces of said lens elements numbered front to rear, the + and − values of the radii R denoting surfaces convex and concave to the front, and wherein the value for R_9 is the vertex radius of curvature for an aspheric surface, the fifth column lists the thicknesses t_1–t_5 respectively of said lens elements, the sixth column lists the air spaces s_1–s_5 between said lens elements numbered front to rear, and F is the effective focal length of said photographic objective.

3,926,505

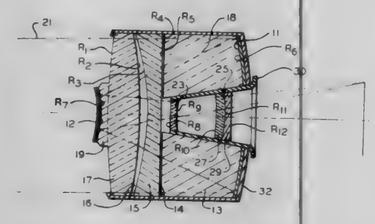
ALL SPHERICAL SOLID CATADIOPTRIC SYSTEMS

Juan L. Rayces, Santa Ana, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed July 22, 1974, Ser. No. 490,524

Int. Cl.² G02B *17/06*

U.S. Cl. 350—201 **17 Claims**



1. A compact catadioptric system comprising, in axial alignment:

a. a front solid refractive support element **17** having a generally convex front surface and a convex rear surface and including, on the central portion of its front surface, a concave portion;

b. an intermediate refractive support element **15** separated from said front support element by a first axial air space in the shape of a positive meniscus, said intermediate support element having a front concave surface;

c. a rear solid refractive support element **13** separated from said intermediate support element by a second axial air space, said rear support element having a rear convex surface;

d. a first spherical internal reflecting surface comprising an annular convergent reflecting surface on the rear end of said rear support element; and

e. a second spherical internal reflecting surface in the form of a circular divergent surface on the concave portion of said front support element to receive light from the convergent reflecting surface and reflect said light through an opening in said annular reflecting surface.

3,926,506

RETROFOCUS TYPE WIDE ANGLE LENS SYSTEM

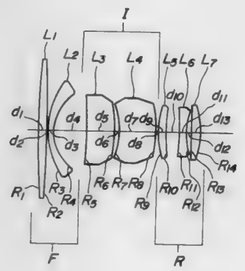
Haruo Maeda, Fuchu, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Jan. 27, 1975, Ser. No. 544,662

Claims priority, application Japan, Jan. 31, 1974, 49-13327

Int. Cl.² G02B *11/34*

U.S. Cl. 350—214 **1 Claim**



1. A retrofocus type wide angle lens system with a front lens group and a rear lens group separated by an intermediate lens group, said front lens group consisting of a biconvex lens followed by a negative meniscus lens turning its convex surfaces toward the object side of the system, said intermediate lens group consisting of a positive meniscus lens turning its concave surfaces toward the object side and followed by a negative meniscus lens turning its concave surfaces toward the object side, and said rear lens group consisting of a positive meniscus lens turning its convex surfaces toward the object side, a biconcave lens and a positive lens, said system conforming substantially to the following conditions:

$f = 100$, F 4.0

Lens	Radii	Thicknesses and Separations		n		ν	
	R_1	865.02					
L_1	R_2	−1424.08	d_1	6.83	n_1	1.67003	ν_1 47.3
	R_3	72.62	d_2	1.05			
L_2	R_4	35.36	d_3	3.82	n_2	1.61800	ν_2 63.4
	R_5	−463.53	d_4	27.33			
L_3	R_6	−114.16	d_5	22.75	n_3	1.66892	ν_3 45.0
	R_7	−68.35	d_6	2.67			
L_4	R_8	−77.90	d_7	31.42	n_4	1.67790	ν_4 55.3
	R_9	67.11	d_8	0.88			
L_5	R_{10}	238.28	d_9	6.78	n_5	1.72600	ν_5 53.6
			d_{10}	10.35			

L_6	R_{11}	−370.33	d_{11}	6.97	n_6	1.75520	ν_6	27.5
	R_{12}	70.66	d_{12}	2.75				
L_7	R_{13}	∞	d_{13}	7.90	n_7	1.72600	ν_7	53.6
	R_{14}	−64.98						

3,926,507

TELEPHOTO LENS SYSTEM

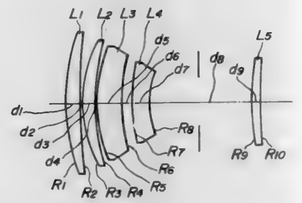
Jihei Nakagawa, Higashi-Murayama, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Jan. 30, 1975, Ser. No. 545,706

Claims priority, application Japan, Feb. 4, 1974, 49-14217

Int. Cl.² G02B *9/60, 13/02*

U.S. Cl. 350—216 **1 Claim**



1. A telephoto lens system which consists of five single air-spaced lenses which are optically aligned with each other in succession from the object side and convex toward the object side, respectively, the first three lenses being positive meniscus lenses, respectively, the fourth lens being a negative meniscus lens and the fifth lens being a positive meniscus lens which is lengthily air-spaced from said fourth lens, and constructed according to the constructional data given herebelow:

$f = 100$, F:4.5

Lens	Radii	Thicknesses and separations		n		ν	
	R_1	39.42					
L_1	R_2	192.88	d_1	4.72	n_1	1.58913	ν_1 61.1
	R_3	31.58	d_2	0.42			
L_2	R_4	54.73	d_3	3.36	n_2	1.56873	ν_2 63.1
	R_5	36.24	d_4	0.25			
L_3	R_6	45.79	d_5	6.39	n_3	1.70154	ν_3 41.1
	R_7	91.23	d_6	2.61			
L_4	R_8	19.10	d_7	3.89	n_4	1.7847	ν_4 26.2
	R_9	63.30	d_8	25.78			
L_5	R_{10}	174.15	d_9	2.55	n_5	1.7847	ν_5 26.2

wherein R_1 to R_{10} inclusive designate the lens curvatures, d_1 to d_9 inclusive designate the refractive index and ν_1 to ν_5 inclusive designate the Abbe number of said lenses numbering from the object side to the image side of said system.

3,926,508

MANUFACTURING A COLD LIGHT MIRROR BY EVAPORATING ZNS AND SIO ALTERNATELY IN AN O_2 ATMOSPHERE

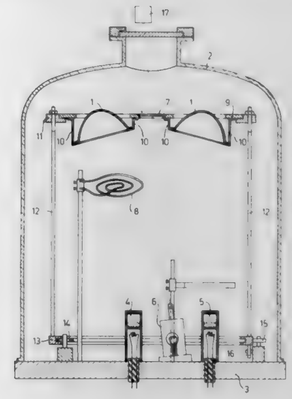
Jan Willem Harmsen, and Augustinus Petrus Jozephus Swinkels, both of Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Dec. 4, 1972, Ser. No. 311,937

Claims priority, application Netherlands, Dec. 7, 1971, 7116766

Int. Cl.² B29D *11/00*; **B44D** *5/06*; **C03C** *17/00, 17/12*

U.S. Cl. 350—296 **2 Claims**



1. A method of manufacturing a concave cold light mirror by coating a curved surface of a transparent support with a plurality of ¼ λ-layers of alternately a material having a relatively high refractive index and a material having a relatively low refractive index by means of vapour deposition in an atmosphere having a pressure such that the vapour jet is dispersed in the space between the vapour source and the surface to be coated, characterized in that a curved surface is alternately provided with layers having a relatively high refractive index and a relatively low refractive index by means of vapour deposition with alternately ZnS and SiO in an oxygen atmosphere at a pressure at which the vapour jets are dispersed between the surface to be coated by vapour deposition and the vapour sources said pressure being about 10^{-3} Torr.

3,926,509

DOUBLE REFLECTION VIEWING INSTRUMENT

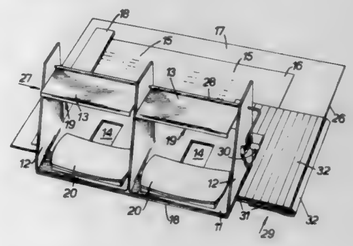
George Davies, and Hedda Wertheimer, both of 36½ David Place, St. Helier, Jersey, Guernsey (Channel Is.)

Filed Feb. 5, 1974, Ser. No. 439,728

Claims priority, application United Kingdom, Feb. 9, 1973, 6450/73; May 21, 1973, 24135/73

Int. Cl.² G02B *5/08, 27/24*

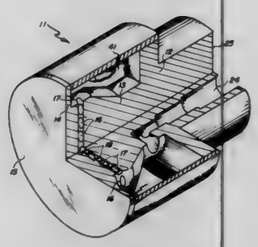
U.S. Cl. 350—301 **13 Claims**



1. A viewing instrument comprising:

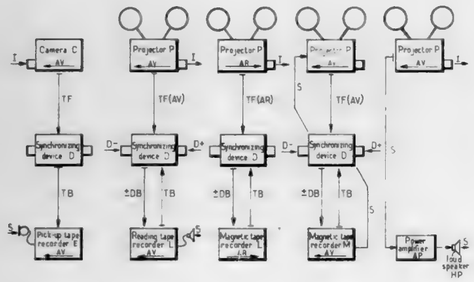
a base for mounting a sheet upon which material to be viewed is disposed;
a first mirror mounted above said base to reflect light from said sheet;
a second mirror mounted upon said base for reflecting light to the user's eye from said sheet and said first mirror, one of said mirrors being a curved magnifying mirror; and
an adjustable mounting means for said first mirror for enabling said user to continuously manually pivot said first mirror about an axis through the center of curvature of said curved mirror so as to enable said viewing instrument and said user to continuously scan said sheet.

3,926,510
MIRROR FOR HIGH POWER LASERS
Edward V. Locke, Rockport, and Richard A. Hella, Andover, both of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.
Division of Ser. No. 322,783, Jan. 11, 1973, Pat. No. 3,817,606. This application Mar. 20, 1974, Ser. No. 452,975
Int. Cl.² G02B *5/08*
U.S. Cl. 350—310 **6 Claims**



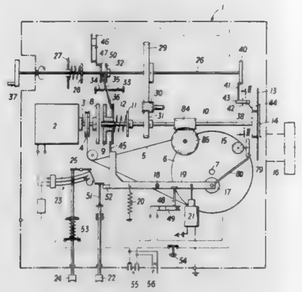
1. In a mirror for use in a laser, the combination comprising:
a. a thick integral metal block member having a hardness greater than about Rockwell B 30 , a rear surface and an exposed surface, said exposed surface being adapted to define a laser mirror surface, and block member having a plurality of co-planar intersecting passages, said passages in combination with said exposed surface defining a face portion, said passages in combination with said rear surface defining a rear portion, and a plurality of spaced connector members extending between and integral with said face and rear portions defined by said passages;
b. metal wall member means sealably attached to said block to define coolant manifold means in communication with the ends of each passage; and
c. baffle means between said wall member means and said block member separating said manifold means into an inlet coolant manifold and an outlet coolant manifold whereby coolant introduced in said inlet coolant manifold flows substantially only through said passages and into said outlet coolant manifold, said block member having a coolant inlet passage in communication with said inlet coolant manifold and a coolant outlet passage in communication with said coolant outlet manifold.

3,926,511
METHOD AND DEVICE FOR SYNCHRONIZING THE DISPLACEMENTS OF TWO MOVING BODIES
Andre Jean-Claude Gendrot, 102 rue Anatole France, 93 - Drancy, and Jean Lucien Yves Chartrin, 2, Quai Villebois-Mareuil, 41 - Bloise, both of France
Continuation of Ser. No. 208,350, Dec. 15, 1971, abandoned. This application Jan. 2, 1974, Ser. No. 429,757
Claims priority, application France, Dec. 16, 1970, 70.45422
Int. Cl.² G03B *31/04*
U.S. Cl. 352—5 **14 Claims**



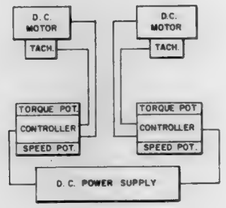
1. A method for recording and reproducing in synchronism pictures and sounds of a filmed scene, said method comprising a first step which consists in simultaneously recording the pictures and sounds, respectively, on a photographic film and on a magnetic tape, each being driven independently of the other by independent drive means, while generating recurrent pulses, in synchronism with the driving of said film, and recording said pulses on a separate track of said magnetic tape, and thereafter developing said film, said tape being provided with a blank sound track
- a second step which consists in projecting the scenes of the developed film and playing back said tape for simultaneously reproducing the pictures and the sound characteristic of said scene in proximate time correspondence, generating control pulses in synchronism with said film drive while reading said recurrent pulses recorded on said tape, counting said control pulses and recorded recurrent pulses and automatically controlling one of the drive means for adjusting the respective counts of said control pulses and recorded pulses so as to be substantially equal whereby to improve the picture synchronization with sound, ideal synchronization of the picture and sound being achieved by selectively and momentarily manually discontinuing either of said counts,
a third step which consists in reversely driving said film and tape to the beginning of said scene while preserving said ideal synchronization by counting said control pulses and recorded pulses and automatically controlling one of said drive means as in said second step,
and a fourth step which consists in again driving said film and tape in the normal forward direction for simultaneously reproducing said pictures and said sound from the beginning to the end of said scene while preserving said ideal synchronization as in said third step, and transferring the sound recorded on the tape in the first step to the blank sound track on the tape.

3,926,512
SOUND PROJECTOR
Otto Freudenschuss, Vienna, Austria, assignor to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria
Filed Jan. 25, 1974, Ser. No. 436,597
Claims priority, application Austria, Feb. 19, 1973, 1425/73
Int. Cl.² G03B *31/00*
U.S. Cl. 352—25 **17 Claims**



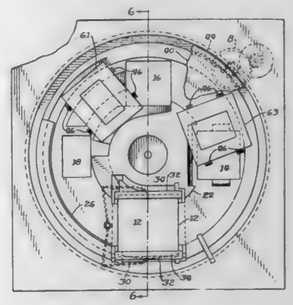
1. A sound-film projector comprising: a motor provided with a shaft; a flywheel driven by the motor; a sound spindle rotatated by the flywheel; a pinch roller defining with the spindle nip for driving a sound strip; a deactivating device operable to prevent the rotation of the flywheel-driven spindle from entraining the sound strip between the roller and the spindle; a film-projection window; an intermittently operating traction element normally connected with said shaft for imparting indexing motion to a film aligned with the window; a decoupling member operable to disconnect said shaft from said traction element; and quick-start means controlling said deactivating device and said decoupling member in their operated positions and operable, while the flywheel is being driven at a normal speed by the motor, to restore the nip drive to the strip while simultaneously reconnecting the traction element with said shaft.

3,926,513
BIDIRECTIONAL WEB MEDIUM DRIVE
Edward S. Silver, Hackensack, and Robert E. Tucker, Passaic, both of N.J., assignors to Computer Specialties Corporation, Hackensack, N.J.
Filed May 9, 1974, Ser. No. 468,353
Int. Cl.² G03B *23/12*; **H02P** *7/68*, *7/00*
U.S. Cl. 353—26 **9 Claims**



1. A bidirectional web medium drive for moving a web of material between two reels comprising:
first and second reversible motors;
drive means each having an input coupled to the output of each of said motors, and an output which is restricted from rotation unless the input is driven;
first and second spindles each connected to each output of said irreversible drive means, said spindles adapted to receive and support the reels;
a torque controller coupled to one of said motors for maintaining an output torque to that motor;
a variable speed controller coupled to the other of said motors for controlling the output speed of that motor; and
switch means coupled to said torque and speed controllers for running said first and second motors in the same direction, said switch means having at least two positions so that when said switch means is in a first position, the torque controller is connected to said first motor to apply a torque to said first spindle causing its associated reel to be the web take-up reel, and the speed controller is connected to said second motor to apply a selected speed to the second spindle causing its associated reel to be the web supply reel, and when said switch means is in a second position, said torque controller is connected to said second motor and said speed controller is connected to said first motor and the direction of rotation of said motors is reversed so that the reel on said first spindle becomes the supply reel and the reel on said second spindle becomes the take-up reel.

3,926,514
SLIDE PROJECTOR LOADING-UNLOADING STATION
Carl C. Costanza, Chicago; Walter W. Weber, Des Plaines; Frank W. Betlejewski, Chicago, and Richard Frystak, Park Ridge, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.
Division of Ser. No. 860,384, Sept. 23, 1969, Pat. No. 3,659,934. This application July 6, 1971, Ser. No. 160,069
Int. Cl. G03l *23/02*
U.S. Cl. 353—113 **1 Claim**

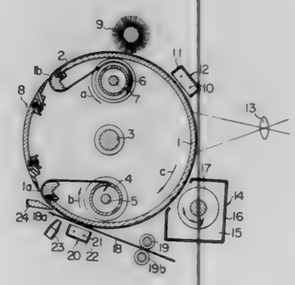


1. In a slide projector the combination comprising:
means for supporting a magazine containing a horizontally oriented stack of slides to be projected;
a collection chamber, having an open end underlying said support means, for collecting said stack of slides after projection in said projector;
pivoted retaining means disposed between said magazine and said open end of said collection chamber;
elastic means for urging said retaining means into a position such that the lowermost slide in said stack is supported by said retaining means during projection of said stack and the slides in said stack are prevented from passing directly from said magazine to said collection chamber;
means for transporting the slides in said stack to a projection station and then to said collection chamber; and
means within said collection chamber for returning the projected slides to said magazine by moving said retaining means in opposition to said elastic means to permit the passage of said projected slides.

3,926,515
PHOTORECEPTOR CHANGING APPARATUS FOR ELECTROPHOTOGRAPHIC COPYING MACHINES

Yasumori Nagahara, Yokosuka, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed July 19, 1973, Ser. No. 380,550
Claims priority, application Japan, July 31, 1972, 47-76718; July 31, 1972, 47-76719; Aug. 3, 1972, 47-78131; Aug. 3, 1972, 47-78132
Int. Cl.² G03G 5/10
U.S. Cl. 355—3 R 14 Claims

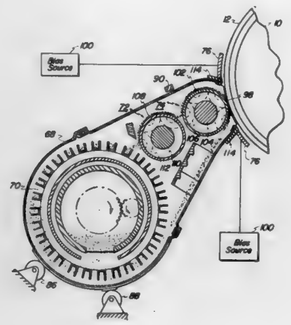


1. A photoreceptor changing apparatus comprising a supply reel rotatably mounted in the interior of a cylindrical supporter and having mounted thereon in roll form a photoconductive strip made of a pliable material and adapted to be paid out and applied to the outer periphery of said cylindrical supporter to serve as a photoreceptor on which an image of an original to be duplicated is formed for transfer printing on copy sheets, a take-up reel rotatably mounted in the interior of said cylindrical supporter and adapted to have said photoconductive strip wound thereon, and a photoconductive strip advance device disposed outside said cylindrical supporter and operated by a drive for rotating the cylindrical supporter to rotate said take-up reel and advance the photoconductive strip so that a portion thereof serving as a photoreceptor on the outer periphery of the photosensitive drum can be replaced by the next following portion thereof to thereby change the photoreceptors, wherein said photoconductive strip advance device comprises a drive gear for rotating said take-up reel secured to a drive shaft for said photosensitive drum, a transmission gear in meshing engagement with said drive gear, a connection gear coaxially mounted with said transmission gear, clutch means interposed between said transmission gear and said connection gear, a sun gear mounted on said drive shaft and maintained in meshing engagement with said connection gear, and a photoconductive strip advance gear secured to said take-up reel and maintained in meshing engagement with said sun gear, said strip advance gear normally revolving around said sun gear as said photosensitive drum is rotated, rotation of said transmission gear being transmitted through said connection gear to said sun gear when said clutch is engaged to produce a difference in the number of revolutions between said sun gear and said photosensitive drum, so that said strip advance gear is made to revolve on its own axis by said differential rotation to thereby advance the photoconductive strip and wind on the take-up reel the portion of the photoconductive strip on the outer periphery of the photosensitive drum.

3,926,516
DEVELOPMENT APPARATUS FOR AN ELECTROSTATOGRAPHIC PRINTING MACHINE

Charles A. Whited, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 20, 1974, Ser. No. 444,089
Int. Cl.² G03G 15/09
U.S. Cl. 355—3 DD 3 Claims



1. An electrophotographic printing machine of the type having a photoconductive member, means for charging the photoconductive member to a substantially uniform charge potential, and an exposure mechanism for projecting a light image corresponding to the original document being reproduced onto the charged photoconductive member to record thereon an electrostatic latent image thereof, wherein the improvement includes:

a developer housing defining an open ended chamber for storing charged particles;

magnetic field producing means mounted internally of said developer housing and positioned closely adjacent to the photoconductive member, said magnetic field producing means forming a brush-like array of charged particles extending outwardly from the open end of the chamber of said developer housing in brushing contact with the electrostatic latent image recorded on the photoconductive member;

at least one conductive plate having one end portion secured to said developer housing, said plate extending in an outwardly direction from the region of the brush-like array of charged particles extending from the open end of the chamber of said developer housing and being closely spaced from and substantially parallel to the photoconductive member; and

means for electrically biasing said conductive plate to suppress the effects of local contrast enhancement during the development of the electrostatic latent image recorded on the photoconductive member.

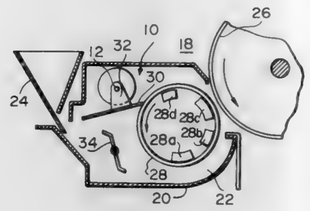
3,926,517
RESIDUAL POWERED DEVELOPER HOMOGENIZER FOR ELECTROPHOTOGRAPHIC DEVICE

Yasumori Nagahara, Tokyo, Japan, assignor to Ricoh Company Ltd., Tokyo, Japan

Filed July 22, 1974, Ser. No. 490,814
Claims priority, application Japan, Oct. 26, 1973, 48-124195
Int. Cl.² G03G 15/00, 21/00
U.S. Cl. 355—3 DD 8 Claims

1. In an electrophotographic device having a photoconductive member adapted to produce an electrostatic image of a document, an applicator for applying powdered developer to the photoconductive member to develop the image and a cleaner for removing residual developer from the applicator, the cleaner having an inclined flat surface down which residual developer moves after being removed from the applicator, wherein the improvement comprises a homogenizer to homogenize the residual developer as the same moves down the flat surface, said homogenizer comprising:

a shaft rotatably mounted above and in a plane parallel to the flat surface the axis of said shaft being substantially transverse to the direction of movement of the residual developer; and



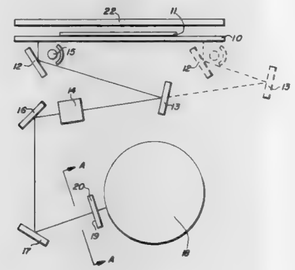
a plurality of substantially elliptical plates mounted for rotation with said shaft, the minor axes of said plates perpendicularly intersecting the axis of said shaft and the major axes of said plates intersecting the axis of said shaft at an acute angle, the edges of said plates being closely adjacent to the flat surface at all rotational positions of said shaft; whereby

residual developer moving down the flat surface is deflected by said plates and thereby homogenized.

3,926,518
OPTICAL SCANNING SYSTEM

Peter J. Berry, Glasgow, Scotland, and Gerald J. Maguire, Stevenage, England, assignors to Xerox Corporation, Stamford, Conn.

Filed May 21, 1974, Ser. No. 472,023
Claims priority, application United Kingdom, May 23, 1973, 24563/73
Int. Cl.² G03G 15/28
U.S. Cl. 355—8 1 Claim



1. An optical scanning system for scanning a document to be copied providing an optical path and including document illuminating means, light intensity detector means having a line of sight adjacent to said optical path, and control means arranged to respond to signals from said light intensity detector means to adjust the intensity of illumination passing along said optical path,

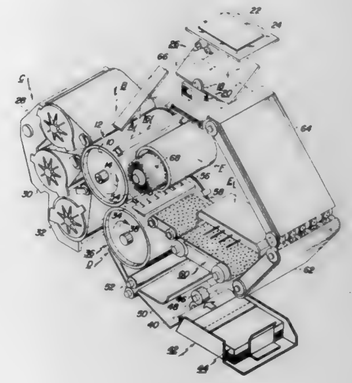
a xerographic photoreceptor having an electrical bias voltage impressed thereon, and

means to vary said bias voltage on said photoreceptor in response to said control means.

3,926,519
CONTROL DEVICE FOR AN ELECTROPHOTOGRAPHIC PRINTING MACHINE

Robert P. Rebres, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 3, 1974, Ser. No. 475,689
Int. Cl.² G03G 15/00
U.S. Cl. 355—14 9 Claims



1. An electrophotographic printing machine of the type having a fusing apparatus to substantially permanently affix a powder image to a sheet of support material, including:

means for separating and advancing successive sheets of support material from a stack thereof;

means for supporting a first stack of sheet material in said separating and advancing means;

removable means for supporting a second stack of sheet material in said separating and advancing means; and

means, responsive to insertion of said second stack supporting means in said separating and advancing means, for automatically switching the fuser temperature set-point from a first temperature for the first stack of sheet material to a second temperature for the second stack of sheet material.

3,926,520
SYSTEM FOR ELECTRONIC ADJUSTMENT OF EFFECTIVE CONTRAST RATIO IN PHOTOGRAPHIC REPRODUCTION

Irving Kaufman, Tempe, Ariz., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 12, 1974, Ser. No. 488,084
Int. Cl.² G03B 27/76
U.S. Cl. 355—80 9 Claims

1. A system for controlling contrast of light passing through a transparency to a photosensitive surface comprising:

a. a source of polarized light directed to the transparency;

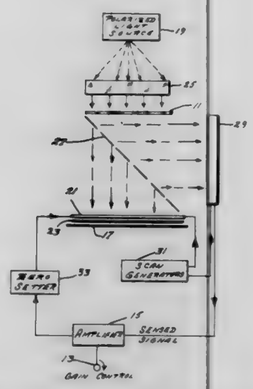
b. a plate of transparent ferroelectric material segmented into a multiplicity of elements positioned to receive the light emitted through the transparency;

c. a polarizer interposed between the transparent ferroelectric material and the photosensitive surface said polarizer being adapted to intercept the light passing through the transparent ferroelectric material;

d. a plane surface partially reflective and partially transparent positioned between the transparency and the ferroelectric material;

e. an array of photosensors aligned to intercept the reflective light from the plane surface, the electrical output of the array being fed to the elements of the ferroelectric material; and

f. a scan generator connected between the photosensitive array and the ferroelectric material for simultaneously



scanning the output of the photosensors and the corresponding elements of the plate of ferroelectric material.

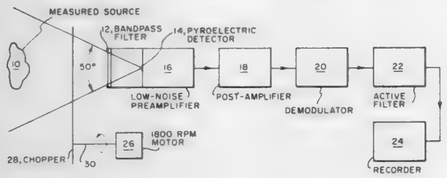
3,926,521
BLOOD COLLECTING AND PROCESSING MEANS
Byron E. Ginzel, R.R. 1, Lucerne, Ind. 46950
Filed Feb. 21, 1973, Ser. No. 334,488
Int. Cl. G01n *33/16*
U.S. Cl. 356—39 **8 Claims**



1. Blood collecting and processing means comprising:
a container member having a storage chamber and an open ended capillary tube; the bore of said storage chamber being of substantially greater size than the bore of said capillary tube;
said container means including a tapered hollow neck portion extending outwardly of said storage chamber and connecting said capillary tube to said storage chamber;
said container member being closed at the end thereof remote from said capillary tube;
means on said container member for providing easy separation of said capillary tube and neck portion from said storage chamber;
opening means in the side wall of said container member for forming a vent;
said opening means being located in said container member at a point farther remote from said closed end than is said separation means.

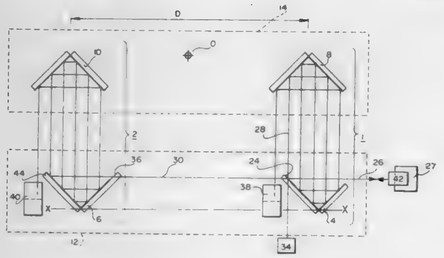
3,926,522
FAR-INFRARED RADIANT INTENSITY METER
John R. Andreotti, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 27, 1973, Ser. No. 419,316
Int. Cl.² G01N *21/34*
U.S. Cl. 356—51 **2 Claims**

1. A radiometer for measuring the entire infrared radiation response of a black body source for a narrow band of infrared frequencies at short range comprising:
means for modulating said infrared radiation;
optical filter means mounted in an aperture of a sensing device for passing said infrared radiation through said aperture having a frequency response falling in a narrow band of frequencies in the infrared spectrum;
pyroelectric detection means mounted in said sensing means behind said aperture for sensing said infrared radiation over a conical field of view having an apex angle of not less than 50° to produce an electrical signal representative of a uniform response of said pyroelectric detection means over said conical field of view;



means for variably amplifying said electrical signal;
nonlinear feedback means for demodulating said electrical signal;
active electronic means for filtering said electrical signal;
means for recording said electrical signal to detect its magnitude which is indicative of the intensity of said infrared radiation.

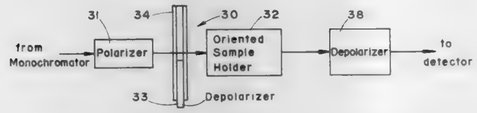
3,926,523
OPTICAL SYSTEM FOR ANGLE MEASUREMENT BY INTERFEROMETRY
George D. Chapman, Ottawa, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada
Filed Aug. 26, 1974, Ser. No. 500,364
Claims priority, application Canada, July 22, 1974, 205272
Int. Cl.² G01B *9/02*
U.S. Cl. 356—110 **4 Claims**



1. An optical system for angle measurement by interferomety comprising:
a. two, similar beam pathlength multipliers each consisting of a fixed retroreflector and a movable retroreflector in the reflecting path of the corresponding fixed retroreflector to form the beam pathlength multiplier therewith,
b. fixed mounting means mounting both of the fixed retroreflectors with their inversion planes in a common plane which is normal to beams to be reflected back and forth between each fixed retroreflector and the corresponding movable retroreflector,
c. rotatable mounting means mounting both of the movable retroreflectors for rotation together about a single axis at right angles the said beams, and with the movable retroreflectors at a predetermined distance apart,
d. a beam splitter adjacent a first one of the fixed, retroreflectors, for splitting a primary beam of electromagnetic energy, from a source thereof, into two secondary beams, and directing one secondary beam into the reflecting path of the beam pathlength multiplier containing the said first fixed retroreflector, and the other secondary beam in front of the reflecting faces of a second one of the fixed retroreflectors,
e. a beam folder adjacent the said second, fixed retroreflectors for reflecting the said other secondary beam to beam

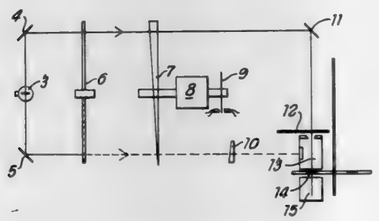
pathlength multiplier consisting of the said second, fixed retroreflector and the corresponding movable, retroreflector thereto,
f. two retroreflectors each adjacent one of the fixed retroreflectors, and each for reflecting one of the said secondary beams back along paths between the adjacent, fixed retroreflector and the corresponding movable retroreflector towards the beamsplitter where interference between the secondary beams will occur, forming patterns of fringes, whereby,
g. when a primary beam of electromagnetic energy is directed from a source thereof to the beam splitter, angular displacements of the rotatable mounting means about said axis of rotation can be deduced from the pre-determined distance that the ridges of the movable retroreflectors are apart and a count of the number of fringes generated at the beam splitter by rotation of the rotatable mounting means.

3,926,524
METHOD OF AND MEANS FOR OBTAINING A PAIR OF ORTHOGONAL LINEAR DICHROIC PARAMETERS
Leon Margulies, Rehovot; Yehuda Mazur, Tel Aviv; Jacob Sagiv, and Amnon Yogev, both of Rehovot, all of Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel
Filed Apr. 8, 1974, Ser. No. 459,167
Claims priority, application Israel, May 3, 1973, 42186
Int. Cl.² G01N *21/40*
U.S. Cl. 356—114 **13 Claims**



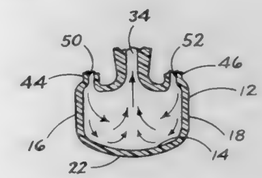
11. An optical system according to claim 10 including a light source, and a variable wavelength monochromator for converting light from the source to a beam whose wavelength changes periodically with time, means mounting the source and the monochromator so that said beam passes through the linear polarizer, and a detector for detecting the intensity of light passed by said one de-polarizer.

3,926,525
PHOTOMETRIC APPARATUS INCLUDING A ROTATABLE OPTICAL DENSITY WEDGE
George Edward Sheldrick, Ilford, England, assignor to Ilford Limited, Essex, England
Filed May 8, 1974, Ser. No. 468,157
Claims priority, application United Kingdom, May 16, 1973, 23401/73
Int. Cl.² G01J *1/40;* **G01N** *21/22*
U.S. Cl. 356—205 **3 Claims**



1. A photometric apparatus comprising:
a light source;
means for producing from the light emitted by said light source a measuring beam of light and a reference beam of light, said beams of light following different paths;
a common light modulation system for both said beams positioned in the paths thereof;
a photodetector and means for directing said beams of light on to said photodetector, said photodetector comprising means for determining and comparing the intensity of said measuring beam and said reference beam;
said light modulating system comprising an optical density wedge having parallel isopaques which are contours of constant density; and
said density wedge being rotatable about an axis perpendicular to the plane of said wedge and which is so located in the photometric apparatus that rotation of said wedge in a first direction increases the optical transmission of said reference beam and decreases the optical transmission of said measuring beam, and rotation of said wedge in a second direction decreases the optical transmission of said reference beam and increases the optical transmission in said measuring beam.

3,926,526
FLOW CELL
Gunther Weiss, 2025 SW. Briggs Court, Beaverton, Oreg. 97005
Filed May 28, 1974, Ser. No. 473,359
Int. Cl.² G01N *1/10*
U.S. Cl. 356—246 **5 Claims**

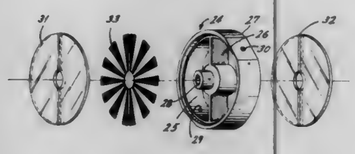


1. A flow cell for containing fluid during the making of an analysis thereof comprising
means defining a chamber including windows provided at a set of opposed extremities of said chamber, and
flow-through supply conduit means and exhaust conduit means for the supplying and exhausting of fluid to and from said chamber during flow of fluid through the cell, said chamber having opposed walls bounding another set of opposed extremities of said chamber lying in a dimension transverse to the dimension having said windows, said supply and said exhaust conduit means communicating with said chamber through one wall of said other set of opposed walls, whereby fluid entering the chamber enters while flowing counter to the flow of fluid leaving said chamber, said supply conduit means comprising branched conduit portions with one conduit portion communicating with said chamber at one location which is adjacent one window and another conduit portion communicating with said chamber at another location adjacent the other window, said exhaust conduit means communicating with said chamber at a third location intermediate said one and said other locations.

3,926,527
ROTATING GAS CORRELATION CELL
John D. Pembrook, Costa Mesa; Darrell E. Burch, Orange City, and Francis J. Gates, Costa Mesa, all of Calif., assignors to Philco-Ford Corporation, Blue Bell, Pa.
Filed June 5, 1974, Ser. No. 476,373
Int. Cl.² G01N *1/10;* **G01J** *3/48*
U.S. Cl. 356—246 **7 Claims**

1. A rotating gas correlation cell for use in a nondispersive gas analyzer, said cell comprising:

a cylindrical housing having an outer rim and an axial collar, said collar including means for attaching said housing to a shaft operative to rotate said cylinder about its axis of symmetry, a plurality of apertures extending through said housing parallel to and on opposite sides of the axis of said cylinder, window means sealed to the end faces of said housing to close said apertures off into sealed compartments, said compartments being adapted to contain



a quantity of gas through which radiant energy can be passed by way of said windows, at least one of said windows having associated therewith a series of radial sectors of high optical attenuation material, said sectors acting periodically to interrupt said radiant energy as said cell is rotated, fill means extending into said compartments and through said outer rim whereby said gas can be injected into said compartments and means for selectively opening and closing said fill means.

3,926,528

CARPET SHAMPOO APPARATUS

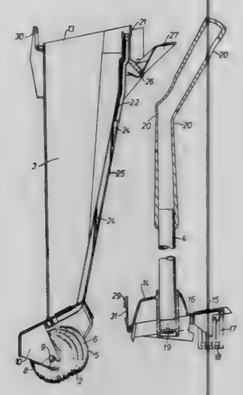
Donald Nation Smyth, South Plympton, Australia, assignor to S. A. Brush Company Limited, Albert Park, Australia

Filed Aug. 28, 1974, Ser. No. 501,053

Claims priority, application Australia, Dec. 5, 1973, 5876/73

Int. Cl.² A46B *11/04*

U.S. Cl. 401—274 **8 Claims**



1. A liquid shampoo apparatus for shampooing surfaces such as carpets and the like, the apparatus comprising an elongated body member, cleaning members at one end of the body member, the body member including a liquid reservoir adapted to contain the shampoo liquid, characterized by a feed reservoir in the upper end of the body member remote from the cleaning members to supply liquid to the cleaning members, and feed means comprising spaced reservoirs along a wall of the liquid reservoir whereby the surge of liquid produced by the to and fro motion during operation transfers the liquid along the spaced reservoirs to the feed reservoir.

3,926,529

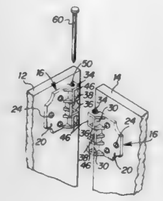
SELECTIVELY REPOSITIONABLE FASTENER

Cecil M. Brooks, Dallas, Tex., assignor to BLS Associates, Dallas, Tex.

Filed Aug. 21, 1974, Ser. No. 499,214

Int. Cl.² F16B *1/00;* **F16D** *1/00;* **F16L** *25/00*

U.S. Cl. 403—4 **4 Claims**



1. A fastener for rigidly connecting a pair of abutting structural members comprising:

a. a first fastener member having a support flange with a planar mounting surface contacting and attached to one of said structural members, an enlarged connecting portion extending from one end of said member, said connecting portion having two parallel spaced legs defining a slot therebetween, each of said legs having planar opposing sides defining two walls of said slot, said opposing sides extending transverse to said mounting surface, a primary locking surface connecting and extending between said opposing sides, said primary locking surface being transverse to said mounting surface and transverse to said opposing sides, a plurality of secondary locking surfaces formed on each of said legs, one of said locking surfaces being formed on the extremity of each of said legs, said one secondary locking surface extending transverse to said mounting surface and transverse to said opposing surfaces, a second secondary locking surface being formed on each of said legs in a spaced parallel relationship to said mounting surface, said legs having a width corresponding to the width of said slot, first and second aligned bores passing respectively through said legs and extending through said first and second opposing surfaces;

b. a second fastener member identical in construction to said first fastener member with the support flange of said second fastener member attached to a second structural member, one of the legs of said second fastener member inserted into the slot on said first fastener member while one of the legs of said first fastener member is inserted into the slot of said second fastener member, one of the secondary locking surfaces of said second fastener member abutting the primary locking surface of said first fastener member and one of the secondary locking surfaces of said first fastener member abutting the primary locking surface of said second fastener member, the aligned bores of said first fastener member being aligned with the bores of said second fastener member; and

c. a locking pin means inserted through said bores on said first and second fastener members thereby holding said first and second members in a fixed immovable relationship.

3,926,530

INTEGRAL CLIP CROSSMEMBER

Robert J. Deller, Cincinnati, Ohio, assignor to Pullman Incorporated, Chicago, Ill.

Filed Aug. 19, 1974, Ser. No. 498,807

Int. Cl.² B62D *27/00*

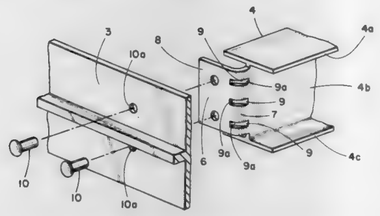
U.S. Cl. 403—167 **2 Claims**

1. For an over-the-highway trailer chassis having longitudinally extending side members,

a crossmember extending transversely therebetween and connecting with each side member,

said crossmember including an upright transverse web and a clip member at each end of the web for connecting with a respective side member,

each clip member extending outwardly from the web and including a connecting portion joining with a respective end of the crossmember and an outer end attachment portion couplable with a respective side member being joined to the connecting portion,



said connecting portion including a plurality of substantially horizontally extending and vertically spaced strengthening ribs,

said attachment portion including fastening means attaching said attachment portion to the respective side member,

said connecting portion being a radially formed and smoothly curved bent portion and said attachment portion being substantially perpendicular to said web,

said bent portion having substantially a 90° curved bend with said ribs being formed within the arcuate limits of said bend curve and generally intersecting said attachment portion and said web generally at 45°.

3,926,531

BUILDERS SCAFFOLDING

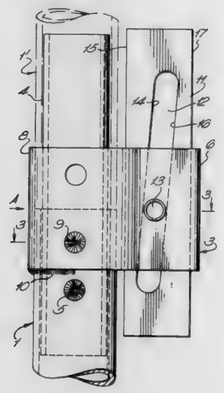
Peter Eric Gostling, Sutton Coldfield, England, assignor to C. Evans & Sons Limited, Gants Hill, England

Filed Aug. 8, 1974, Ser. No. 495,889

Claims priority, application United Kingdom, Aug. 13, 1973, 38211/73

Int. Cl.² F16B *7/04*

U.S. Cl. 403—293 **5 Claims**



1. A standard for builders scaffolding which comprises a length of tube having one plain end and a head fitting fixedly secured to the other end thereof, said head fitting being adapted to receive the plain end of a second length of tube to join said tube and said second tube together in end-to-end relationship with one another, and wherein said head fitting comprises a male adaptor element fixed in and projecting coaxially from said other end of said tube to be received in said plain end of said second tube, a bracket member secured to said tube in overlapping relationship with said other end of said tube, said bracket member being formed with a narrow open slot extending radially outwards from said tube, and a wedge element positioned, and held captive, in said open slot so that, in use, said wedge element is movable between an inoperative position where one side edge thereof is spaced from the outer peripheries of said tube and said second tube being joined, and an operative position where said one side edge thereof is in direct engagement with said outer peripheries of said tube and said second tube.

3,926,532

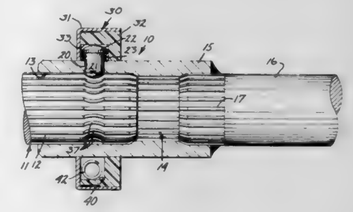
QUICK RELEASABLE COUPLING

Harold Oscar Schlenker, Aberdeen, and Fay W. Glover, Frederick, both of S. Dak., assignors to Safeguard Automotive Corporation, Aberdeen, S. Dak.

Filed Aug. 5, 1974, Ser. No. 494,792

Int. Cl.² F16B *7/00*

U.S. Cl. 403—322 **1 Claim**



1. Means for quickly securing and releasing the axial engagement between a pair of coaxial members, one being hollow and having an open end to receive the other, comprising:

a plurality of radial passages extending through the hollow member at locations displaced from said open end;

a pin slidable radially in each said passage between an inward position and an outward position;

resilient means urging said pins towards said outward positions;

an annular member rotatable about said hollow member at the location of said pins and including camming surfaces operative on said pins in a first rotated position of said annular member to force said pins into said inward positions, and in a second rotated position of said member to enable said pins to be displaced by said resilient means into said outward position;

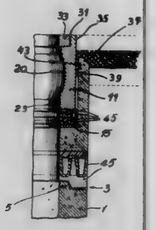
means carried by said other member for engagement by said pins in the inward positions thereof to oppose axial movement between said members;

and means limiting the extent of rotation of said annular member, including further pins projecting radially outwardly from said hollow member within said annular member, arcuate passages of limited angular and axial extent in said annular member for traversal by said further pins, and further resilient means contained in said arcuate passages and engaging said annular member and said further pins to urge said annular member into the first position thereof, said radial passages and further pins being located alternatively about the axis of said outer and inner members.

3,926,533
MANHOLE

Andre Binette, 27 rue Principale, Saint-Joseph-Du-Lac, Comte des Deux-Montagnes, Quebec, Canada

Filed July 15, 1974, Ser. No. 488,803
Int. Cl.² E02D 29/14
U.S. Cl. 404—26 9 Claims

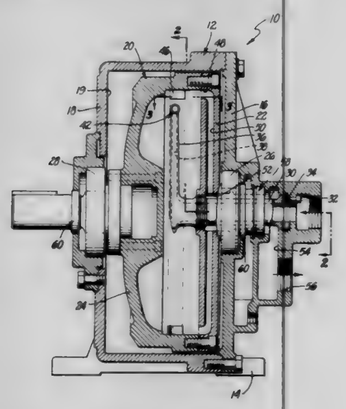


1. A system for adjusting the level of the upper edge of a manhole installed in a roadbed, comprising:
a vertical housing, adapted to be embedded in the ground, with an upper edge at a level below the level of the roadbed surface;
a first element removably mounted on the upper edge of said vertical housing;
a second element removably placed within said first element;
a flexible adjusting element, removably placed within said first element, inserted between an upper surface of said first element and a lower surface of said second element, being of a configuration having good resistance to compression forces, and provided with a cut in its whole thickness, said flexibility and said cut permitting said adjusting element to bend for said insertion between said first and second element as said second element is lifted a predetermined distance insufficient for complete removal from its place within said first element for adjusting the level of the upper edge of the manhole.

3,926,534
TURBINE

John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., Huntington Park, Calif.

Filed Jan. 2, 1974, Ser. No. 430,150
Int. Cl.² F04B 1/14, 1/12
U.S. Cl. 415—89 7 Claims

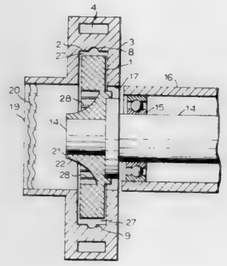


1. In a turbine, the combination of:
a. an outer housing having axially spaced ends and having an inlet for power fluid under pressure in one of said ends thereof;
b. a rotary casing in said housing and rotatable about the axis thereof and having axially spaced ends;
c. said casing having an inner peripheral surface carrying circumferentially spaced turbine blades;
d. a stationary, generally radial arm within said casing and carried by said housing;
e. said arm having a generally radial passage therein;
f. said arm having an inlet at its inner end in communication with the inner end of said radial passage;
g. inlet passage means connecting said inlet in said arm to said inlet in said one end of said housing;
h. nozzle means at the outer end of said arm, and communicating with the outer end of said radial passage, for directing a jet of power fluid under pressure at said turbine blades;
i. circumferentially spaced discharge passages in one of said ends of said casing and having outer ends in communication with the interior of said casing adjacent said inner peripheral surface thereof;
j. an outlet in said housing; and
k. discharge passage means connecting the inner ends of said discharge passages to said outlet in said housing.

3,926,535
GAS TURBINE

Jacques Morf, Ecully, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed June 19, 1974, Ser. No. 480,818
Claims priority, application France, July 17, 1973, 73.26439
Int. Cl.² F01D 1/08
U.S. Cl. 415—203 6 Claims

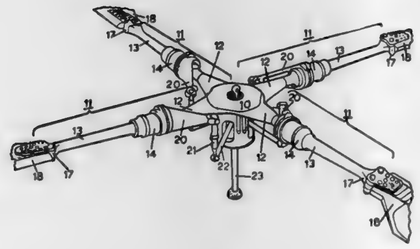


1. A high-speed gas turbine comprising:
a casing having
a rotor chamber therein,
a turbine rotor,
compressed gas injection means including
at least one injector opening to said rotor chamber and aligned generally tangentially therewith,
a supply channel in the periphery of said rotor chamber and said supply channel being tapered from a maximum dimension adjacent said injector to a terminal point remote from said injector,
said rotor having
a plurality of blades, said blades defining
a plurality of slots between adjacent blades, said slots each having
an inlet zone on the periphery of the rotor and
an outlet spaced radially inwardly from said inlet zone, each said blade including
a convex side and
a concave side, said slots being formed by adjacent pairs of concave and convex sides, each convex side having
an inlet curved surface generally tangential to the axis of said injector at the point where said axis meets the periphery of the turbine rotor, each concave side having
an inlet convex area converging toward the inlet surface of the respective convex side at an angle of less than 20°.

3,926,536
SEMI-RIGID ROTOR SYSTEMS FOR ROTARY WING AIRCRAFT

Tadeusz Leopold Ciastula, Yeovil; Victor Alfred Baden Rogers, and David Ernest Hall Balmford, both of Sherborne, all of England, assignors to Westland Aircraft Ltd., Yeovil, England

Continuation of Ser. No. 188,329, Oct. 12, 1971, abandoned. This application Jan. 18, 1974, Ser. No. 434,482
Claims priority, application United Kingdom, Oct. 15, 1970, 49006/70
Int. Cl.² B64C 27/38
U.S. Cl. 416—135 7 Claims

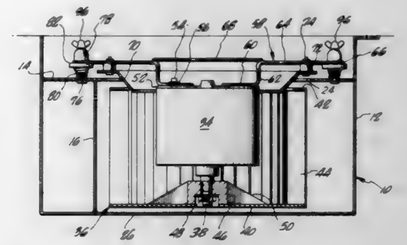


1. A semi-rigid rotor system devoid of mechanical flap and lead-lag hinges for a rotary wing aircraft including a rotor hub, and a plurality of flexure members rigidly fixed thereto and extending outwardly therefrom, each said flexure member comprising inboard and outboard parts connected through a feathering hinge, each said inboard part being rigidly fixed to said hub and being resilient relative to its outboard part in a plane generally normal to the plane of rotation of the members and extending between the rotor hub and the feathering hinge such that the major portions of blade flapping movements are accommodated by the flexure members, the majority of which accommodated flapping movements are accommodated by resilient flexing of the inboard parts of the flexure members, each said outboard part being substantially equally resilient in a plane generally coincident with the plane of rotation of the member and in a plane generally normal to the plane of rotation of the members, but being resilient relative to its inboard part in a plane generally coincident with the plane of rotation of the members and extending from the feathering hinge to terminate in an outer end adapted for the attachment of a rotor blade such that the major portions of blade lead/lag movements are accommodated by the flexure members, the majority of which accommodated lead/lag movement is accommodated by resilient flexing of said outboard parts of the flexure members, each feathering hinge being adapted to effect rotation of the outboard part about its longitudinal axis.

3,926,537
AIR BLOWER

James Piper, 1159 Fountain Way, Anaheim, Calif. 92806

Filed May 14, 1973, Ser. No. 359,705
Int. Cl.² F04B 17/00
U.S. Cl. 417—353 8 Claims

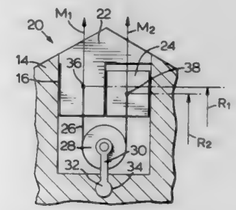


1. An air blower comprising
a housing assembly;
mounting posts extending from said housing assembly;
an impeller positioned within said housing assembly;
a motor operably coupled with said impeller;
extended support means for supporting said motor, said extended support means extending outwardly from said motor to said mounting posts;
mounting blocks slidably positioned on said mounting posts and supporting said extended support means;
springs positioned about said mounting posts and supporting said mounting blocks; and
a Venturi plate suspended from said support means.

3,926,538
APEX SEAL

Dennis Welt, P.O. Box 314, Kitimat, B.C., Canada

Filed Apr. 17, 1973, Ser. No. 351,873
Claims priority, application Canada, Apr. 17, 1972, 139780
Int. Cl.² F01C 19/02
U.S. Cl. 418—115 1 Claim



1. In a mechanism having a rotary piston mounted for rotation in a chamber about a central axis of the chamber, the piston having a plurality of apexes for dividing the chamber into a plurality of compartments, each apex being disposed on a radial axis generated from said central axis, the piston being formed to provide U-shaped slots having a bottom wall and a pair of oppositely disposed side walls, said side walls being uniformly spaced on opposite sides of one of said radial axes, the improvement of, an apex seal assembly mounted in each slot comprising;
a. an apex seal member having a pair of oppositely disposed side walls, an upper face having an apex ridge extending longitudinally thereof, a lower face and a pair of oppositely disposed end faces, said apex seal member being proportioned to fit within said apex slot such that said oppositely disposed side walls of said seal member fit in a close fitting sliding relationship within said side walls of said slot, said apex ridge being disposed on said radial axis of said apex groove, the lower face of said apex seal

member being notched to provide a recess extending upwardly upwardly into said apex seal member and extending longitudinally thereof,

b. an inertia counterbalancing weight member mounted within said slot and proportioned to project into said notch of said apex seal member, to underly a portion of said apex seal member, said inertia counterbalancing weight member being slidable within said slot in the direction of said radial axis,

c. a base member fixedly secured with respect to said bottom wall of said U-shaped slot,

d. connector means mounted on said base member for angular movement about a centre of rotation disposed within said U-shaped slot, and directly underlying said apex seal member, said connector means having opposite ends disposed within said U-shaped slot on opposite sides of said centre of rotation, one end of said connector means being connected to said apex seal member and the other end of said connector means being connected to said counterbalancing weight whereby upon rotation of said piston the centrifugal forces generated by the movement applied by said inertia counterbalancing weight member substantially balances the movement generated by said apex seal member.

3,926,539

ROTARY PISTON INTERNAL COMBUSTION ENGINE

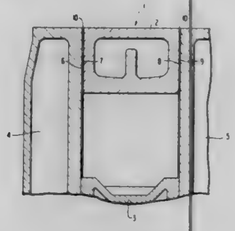
Heinz Lamm, Esslingen-St. Bernhardt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed May 8, 1973, Ser. No. 358,319

Claims priority, application Germany, May 9, 1972, 2222632

Int. Cl.² F01C *19/00*; **F02F** *11/00*; **F16J** *15/14*

U.S. Cl. 418—149 **17 Claims**



1. A rotary piston internal combustion engine including several rotary piston internal combustion engine housing parts having at least two mutually abutting contact surfaces and consisting of at least one housing casing means and two lateral parts, characterized in that at least one of said mutually abutting contact surfaces of the rotary piston internal combustion engine housing parts is provided with a synthetic plastic coating which coating provides a seal between said contact surfaces, which seal contacts both of said mutually abutting contact surfaces.

3,926,540

STEAM ENGINE

Bernard J. Grenier, Garden, Mich.

Filed Nov. 25, 1974, Ser. No. 527,021

Int. Cl.² F04C *17/04*

U.S. Cl. 418—197 **12 Claims**

1. In a steam engine, a base;

a pair of end plates thereon;

a driven shaft spanning and journalled upon said end plates;

a main rotor including a pair of spaced helicoid gears of opposite hand mounted on and secured to said shaft;

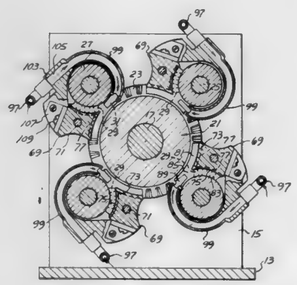
a series of spaced axles spanning and journalled upon said end plates, arranged around, outwardly of and parallel to said shaft;

a chambering rotor including a pair of spaced helicoid gears of corresponding opposite hand mounted on and secured to each of said axles;

with the spiral gear teeth of each chambering rotor in mesh with the corresponding spiral gear teeth of said main rotor;

an elongated bonnet adjacent and parallel to each chambering rotor interposed between and secured to said end plates;

said bonnet having a pair of intersecting elongated transversely arcuate surfaces adjacent said rotors providing a close running fit with the peripheries of both mating rotors throughout their length and extending circumferentially both sides of a central longitudinal plane wherein the peripheries of both rotors coincide, thence through arcs equal to those spanned by the helixes of each rotor; each bonnet sealing off the respective expansion chambers defined between and along the adjacent intermeshing chambering rotors and main rotor;



an arcuate bulkhead projecting outwardly of each bonnet arcuate surface intermediate its ends nested with a running fit within the annular space between the inner ends of the helical gears of the chambering rotor and main rotor, closing off the corresponding expansion chambers on opposite sides of the bulkhead;

said bulkheads merging at one end and terminating in a tang, chamferred upon its opposite sides defining a knife edge;

an arcuate steam duct mounted on each bonnet intermediate its ends extending around the chambering rotor and nested with a running fit between the inner ends of its helical gears and the helical gears of said main rotor;

the end of said steam duct receiving said knife edge so that steam under pressure delivered thereto is deflected laterally from both sides thereof into the ends of the said expansion chambers;

a steam manifold connected to a source of steam under pressure;

and a plurality of conduits interconnecting said manifold and the respective steam ducts.

3,926,541

EXTRUDER WITH INTERACTING AUGER AND CARE MEANS

Frederick M. Hewitt, 2913 N. Harrington, San Bernardino, Calif. 92402

Continuation-in-part of Ser. No. 50,491, June 29, 1970, abandoned. This application Jan. 11, 1973, Ser. No. 322,811

Int. Cl. B28b *1/08*

U.S. Cl. 425—64 **6 Claims**

1. Apparatus for forming concrete aricles, comprising:

a hopper, a conveyor section, a consolidation section and a molding station;

said molding station including form surfaces;

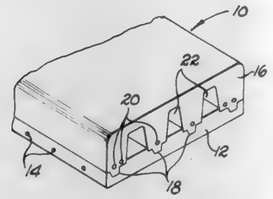
at least one auger for conveying concrete mix along said conveyor section, said auger having flights for extruding said mix through said consolidation section and into said molding station;

at least one mandrel formed by walls having external surfaces in the path of extrusion from said auger flights;

said auger being rotationally independent from said mandrel;

said auger and said mandrel being relatively disposed so that the longitudinal axis of said auger is lateral of the longitudinal axis of said mandrel;

said hopper including means for introducing concrete mix to said auger;



means for rotating said auger to convey said mix to the form surfaces of said molding station with sufficient force to consolidate said mix and extrude the consolidated mix relative to said form surface;

means for slideably securing said molding station form surfaces whereby to permit reciprocal movement along their planes; and

means for reciprocally vibrating said form surfaces along their planes at a frequency greater than 22,000 vibrations per minute, during the extrusion, to reduce friction between said form surfaces and said mix.

3,926,542

CONTINUOUS PRESS

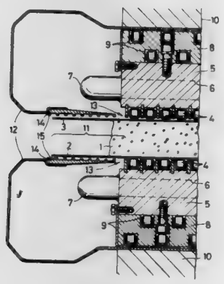
Karl-Heinz Ahrweiler, Krefeld, Germany, assignor to Eduard Kusters, Krefeld-Forstwald, Germany

Filed Sept. 4, 1973, Ser. No. 394,105

Claims priority, application Germany, Sept. 4, 1972, 2243465

Int. Cl.² B29J *5/04*; **B29C** *15/00*

U.S. Cl. 425—174.4 **8 Claims**



1. An improved continuous press including endless loops formed by conveyor belts which form opposed substantially linear spans defining a pressing zone, press platens applying pressure and heat through said travelling spans to work carried therebetween and anti-friction means interposed between said platens and said spans, said anti-friction means transmitting pressure and heat between said platens and said spans, the spans having edge portions extending laterally beyond the lateral edges of said platens and said anti-friction means; the improvement comprising means for independently regulating the temperature of said edge portions of said spans.

3,926,543

METHOD OF HEATING THE INTERIOR AND STRUCTURE OF LARGE VESSELS OR ENCLOSURES

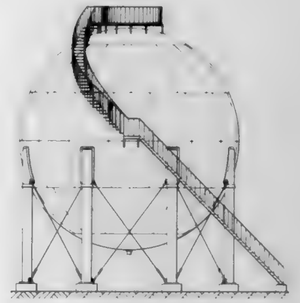
Maurice Hemingway, Mirfield, and Trevor Ward, Dewsbury, both of England, assignors to Hotwork Limited, Dewsbury, England

Filed Dec. 14, 1972, Ser. No. 314,980

Claims priority, application United Kingdom, Dec. 15, 1971, 58277/71

Int. Cl.² F23B *7/00*

U.S. Cl. 431—9 **4 Claims**



1. A method of heating the interior and structure of large enclosures utilizing the hot exhaust gases formed as the result of combustion in a burner which is externally removable with respect to the enclosure being heated, comprising injecting as a divergent stream into the interior of the enclosure at high velocity and thereby causing to be circulated within and through the interior of the enclosure, the hot gases of combustion along with diluent air or other gas so that the gas current has a total volume flow greater than that of the products of combustion alone, thereby producing and maintaining uniform elevated temperatures over at least part of the interior surface of the enclosure.

3,926,544

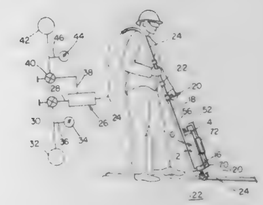
BURNER SYSTEM

Merle L. Thorpe, R.F.D. 1, Concord, N.H. 03301

Filed Dec. 30, 1974, Ser. No. 537,451

Int. Cl.² F23R *1/02*; **F23D** *11/44*

U.S. Cl. 431—114 **14 Claims**



1. A burner system comprising a source of pressurized air, a source of pressurized gaseous fuel,

a combustion chamber having an uncooled tubular wall member, and end wall structure secured to said tubular wall member at each end thereof, inlet port means in one of said end wall structures, outlet port means in the other end wall structure, the area of said outlet port means being at least 25 percent greater than the area of said inlet port means,

conduit structure for supplying a mixture of air and gaseous fuel from said sources for flow through said inlet port means to said combustion chamber at a steady state velocity in the range of 500–1500 feet per second,

and restriction structure spaced from said combustion chamber and connected to said conduit structure for restricting the flow of transient pressure waves from said combustion chamber towards said sources and damping acoustical oscillations within said combustion chamber.

3,926,545

SELF-CLEANING ELECTRICALLY IGNITED LIGHTER

Henri Gujer, Reinach, Switzerland, assignor to Diplomat AG, Birrwil, Sweden

Filed Nov. 18, 1974, Ser. No. 524,495

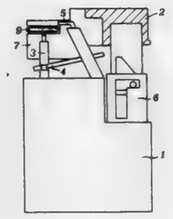
Claims priority, application Switzerland, Nov. 30, 1973, 16865/73

Int. Cl.² F23D *11/38*

U.S. Cl. 431—122 **8 Claims**

1. Lighter comprising: a controllable gas jet burner (**3**) and electric ignition means (**5, 6**) therefor,

manually operable actuating means (**2, 4**) for causing fuel gas to be released to said gas jet burner and for producing an electric spark in said ignition means to ignite said fuel gas at said burner; cleaning means (**9, 10**) movable relative to said burner for cleaning the burner surfaces



thereof, and means (**7, 8**) linking said actuating means and said cleaning means for operating said cleaning means.

3,926,546

POLYHYDROXYALKYLAMINE SALTS OF ANIONIC DYESTUFFS

Horst Nickel, Leverkusen, and Karl-Heinz Schündehütte, Opladen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Division of Ser. No. 191,076, Oct. 20, 1971, abandoned. This application Oct. 4, 1973, Ser. No. 403,465

Claims priority, application Germany, Oct. 20, 1970, 2051303

Int. Cl.² D06P *1/68*

U.S. Cl. 8—12 **2 Claims**

1. In a process for dyeing and printing textile fiber materials of native or regenerated cellulose, wool, silk, leather, synthetic polyamides or/ and polyurethanes, the improvement comprising applying concentrated, liquid dyeing preparations in diluted form to the textile fiber materials wherein the preparation contains a salt of a dyestuff containing sulphonic acid groups with 2-amino-2-hydroxymethylpropanediol-(1,3).

3,926,547

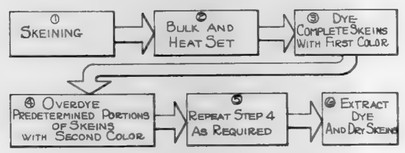
METHOD AND APPARATUS FOR SPACE DYEING YARN

Gerard M. O'Mahony, Dalton, Ga., and James G. T. Paterson, Chattanooga, Tenn., assignors to Interdye Technology Corporation, Dalton, Ga.

Filed Jan. 2, 1974, Ser. No. 429,934

Int. Cl.² D06B *11/00*

U.S. Cl. 8—14 **16 Claims**



1. A method of producing space dyed yarns suitable for use in fabricating multi-colored tufted carpets and the like, and characterized by deep, bright colors, high bulk, and the substantial elimination of streaks on the face of the resulting carpet caused by a similar repeating color pattern on the yarns, and comprising the steps of

arranging a plurality of skeins of textile yarn to form a bank of side by side, downwardly hanging skeins,

completely immersing the bank in a first dye bath to apply a first color to the entire skeins, and then

partially immersing the bank in a second dye bath of a color different from that of the first dye bath and so that some of the skeins are partially immersed further than others to thereby apply a second color only to the immersed portions of the skeins and such that the skeins have varying color patterns.

3,926,548

SULFONATED PHENYLAMINO-HALOTRIAZINE OR-DIAZINE SURFACE MODIFIED AMINATED HYDROPHOBIC FIBERS AND BLENDS THEREOF WITH UNMODIFIED AMINATED HYDROPHOBIC FIBERS

Kazuo Moriyama; Takashi Iwato, and Morihiko Ohno, all of Takatsuki, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

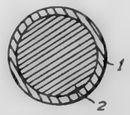
Filed Oct. 10, 1972, Ser. No. 296,207

Claims priority, application Japan, Oct. 8, 1971, 46-79786

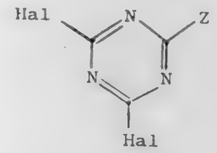
Int. Cl.² D06P *5/12*

U.S. Cl. 8—115.5 **9 Claims**

1. Hydrophobic fibers having a dye-reserving layer only on the surface of each individual fiber, produced by a method which comprises subjecting hydrophobic fibers containing amino groups to the action of a turbulent gas stream to cause exposure of the individual filaments thereof, and simultaneously therewith depositing a dye-reserving agent in mist form on the fibers, and subsequently fixing the dye-reserving



agent on the fibers by subjecting the resultant fibers to a dry heat treatment, to form said dye-reserving layer, said dye-reserving agent being a compound selected from the group consisting of compound of the formulae:



wherein Hal is fluorine, chlorine or bromine, Z is —NR-phenyl sulfonate, B is hydrogen, chlorine or fluorine and R is hdyrogen or lower alkyl.

3,926,549

CELLULOSE TERPOLYMER TEXTILES

Trinidad Mares, and Jett Clinton Arthur, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 10, 1973, Ser. No. 404,978

Int. Cl.² D06M *1/00*; **C08L** *1/00, 5/00*

U.S. Cl. 8—116 R **21 Claims**

1. A process for preparing a cellulose-terpolymer fibrous textile with wash-wear properties, the process comprising:

a. impregnating a fibrous cellulosic textile which has been dried to a moisture content below 0.5% and irradiated with gamma radiation to a dosage of about 0.5 megarad for about 60 minutes at room temperature, with an aqueous-methanolic reagent solution, respectively 80% and 20% by volume, containing a vinyl (A) monomer selected from the group consisting of acrylonitrile, methacrylonitrile, methacrylic acid, acrylic acid, and hexafluoroisopropyl acrylate, said monomer impregnation comprising a reaction condition wherein the charge comprises a part of dried and irradiated cellulosic textile, 1 part of vinyl monomer, and 8 parts of aqueous-methanol, said impregnation constituting a reaction which yields polymer add-ons of about from 2.6% to 9.4%,

b. washing the unreacted reagents off the formed cellulose copolymer with aqueous-methanol,

c. drying the cellulose copolymer to a moisture content of below about 0.5%,

d. irradiating the dried cellulosic copolymer textile product from step (c) with gamma radiation to a dosage of about 0.5 megarad,

e. impregnating the irradiated textile product of (d) with an aqueous-methanolic reagent solution, respectively 80% and 20% by volume, containing a vinyl monomer (B) different than that employed in step (a) and selected from the group consisting of acrylonitrile, methacrylonitrile, methacrylic acid, acrylic acid, and hexafluoroisopropyl acrylate, said monomer impregnation comprising a reaction condition wherein the charge comprises 1 part of dried and irradiated cellulosic textile, 1 part of vinyl

monomer, and 8 parts of aqueous-methanol, said impregnation constituting a reaction which yields (B) polymer add-ons of about from 0.44% to 20%, and

f. washing the unreacted reagents off the formed cellulose terpolymer with aqueous-methanol.

3,926,550

COTTON-TUNG OIL DURABLE-PRESS TEXTILES WITH HIGH FLEX ABRASION RESISTANCE

James A. Harris, Pearl River, and Jett C. Arthur, Jr., Metairie, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 26, 1974, Ser. No. 527,399
Int. Cl.² D06M *13/02, 13/20*
U.S. Cl. 8—116 R **13 Claims**

1. A process for imparting to cotton fabrics improved durable-press properties, the process comprising:

a. impregnating a cotton fabric with a 10–30% solution of tung oil in an organic solvent selected from the group consisting of N,N-dimethylformamide, methyl ethyl ketone, a 50—50 mixture of N,N-dimethylformamide and acetone, and a 50—50 mixture of N,N-dimethylformamide and petroleum ether, to a wet pickup of about from 80 to 120%,

b. drying the impregnated fabric of (a) with heat applied at about 140°F. for about 3 minutes,

c. curing the dried fabric at about from 200° to 300°F. for about from 2 to 8 minutes,

d. washing the cured fabric in organic solvent selected from the group consisting of N-N-dimethylformamide, methyl ethyl ketone, or a mixture thereof, and

e. drying the cured and washed cotton-tung oil fabric thus produced.

3,926,551

METHOD OF MAKING DURABLE ANTISTATIC AND HYGROSCOPIC POLYESTER FIBERS

Toshio Okada, Kadoma; Yasunao Shimano, Takatsuki, and Ichiro Sakurada, Kyoto, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Nov. 27, 1972, Ser. No. 309,686
Claims priority, application Japan, Nov. 26, 1971, 46-94533; Nov. 26, 1971, 46-94534
Int. Cl. D06m *13/20*
U.S. Cl. 8—115.5 **6 Claims**

1. A method of imparting durable antistatic and hygroscopic properties to a polyester fiber material comprising ethylene terephthalate component, which comprises treating the fiber material with a mixture of one weight part of poly (ethylene glycol) dimethacrylate and/or diacrylate, the molecular weight of said poly (ethylene glycol) group being about 300–10,000, and 1 part or less by weight of an alkali metal salt and/or ammonium salt of an ethylenically unsaturated organic acid and then forming a water-insoluble polymer on the surface and inside of the fiber material.

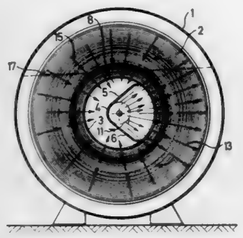
3,926,552

WET TREATMENT PROCESS FOR TEXTILES

Kurt Bruckner, Berggartenstr. 30, 6123 Bad Konig, Odenwald, Germany

Filed Aug. 17, 1973, Ser. No. 389,359
Claims priority, application Germany, Aug. 22, 1972, 2241121
Int. Cl.² D06B *5/16*
U.S. Cl. 8—155.1 **12 Claims**

1. A process for the wet treatment of a roll of textile material comprising passing a liquid from a source thereof in a substantially radially outward direction through a first segment zone of said roll; relatively rotating said source and said roll to cause said first zone to traverse the entire circumferential confines of said roll; and returning liquid passed through



said roll at said first zone substantially radially inwardly of said roll at a second segment zone.

3,926,553

METHOD OF RENDERING POLYOLEFINS DYEABLE WITH ANIONIC DYES

Ronald W. Fuest, Kinnelon, N.J., assignor to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 8,086, Feb. 2, 1970, Pat. No. 3,744,968. This application Oct. 13, 1972, Ser. No. 297,544
Int. Cl.² D06P *5/04*
U.S. Cl. 8—169 **49 Claims**

1. A method of selectively controlling the degree of dyeability with anionic dyes of a shaped article comprising:

A. between about 93 and 99% of a polyolefin

B. between about 1 and 7% of a thermoplastic, thermostable, extra-or intralinear polymeric alkyl or aralkyl amine having a K_b value between 10^{-3} and 10^{-6}, said amine-containing polymer being capable of binding anionic and disperse dyes; said method comprising contacting said composition prior to absorption of an anionic dye by said shaped article with an anionic surfactant selected from the group consisting of

D. a strong acid water soluble anionic surfactant having the general formula (R—A), wherein R is an alkyl, aryl, alkylaryl or polyoxyalkylene group having from about 6 to 40 carbon atoms per A group, and A is an anionic group, the acid form of which has an acid dissociation constant greater than about 10^{-3}, said surfactant treatment resulting in inhibition of dyeability and

E. a weak acid anionic surfactant which is water soluble at a pH less than 7 and which has the general formula (R—A) wherein R is an alkyl, aryl, alkylaryl or polyoxyethylene group having from about 6 to 40 carbon atoms per A group, and A is an anionic group the acid form of which has an acid dissociation constant of between about 10^{-4} and 10^{-6}, said treatment resulting in increased dyeability with anionic dyes.

3,926,554

METHOD OF DYEING TEXTILE MATERIAL MADE OF SYNTHETIC FIBRES

Manfred Schuierer, Zell, Germany, assignor to Bruckner Apparatebau GmbH, Erbach, Odenwald, Germany

Filed Oct. 11, 1973, Ser. No. 405,665
Claims priority, application Germany, Nov. 10, 1972, 2254983
Int. Cl.² D06P *5/00, 1/90*
U.S. Cl. 8—174 **14 Claims**

1. A method of dyeing textile material made of synthetic fibres, comprising the step of contacting the material with an aqueous dye liquor containing 20 to 50 ml. of methylene chloride per liter of dye liquor.

3,926,555

MODIFICATION OF COTTON TEXTILES AND COTTON/POLYESTER TEXTILE BLENDS BY PHOTO-INITIATED POLYMERIZATION OF VINYLIC MONOMERS

Alden H. Reine, New Orleans; Jett C. Arthur, Jr., Metairie, both of La., and Norman A. Portnoy, Parsippany, N.J., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 16, 1973, Ser. No. 342,133
Int. Cl.² D06M *13/34*
U.S. Cl. 8—189 **8 Claims**

1. A method of imparting improved physical properties to cellulosic textiles, the method comprising:

a. impregnating a cellulosic textile with an aqueous 7 to 20% by weight vinyl monomer solution, and

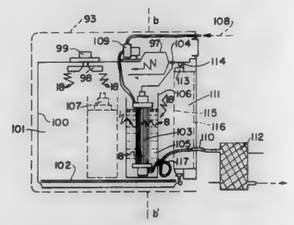
b. irradiating with near-ultraviolet light of a wavelength of about from 3000 to 4000 Angstroms for about from 3 to 90 minutes.

3,926,556

BIOCIDAL ELECTROMAGNETIC SYNERGISTIC PROCESS

Raymond Marcel Gut Boucher, 200 E. 64th St., New York, N.Y. 10021

Filed May 30, 1973, Ser. No. 365,287
Int. Cl.² A61L *13/00;* **A23C** *3/06;* **A23L** *3/28, 3/32*
U.S. Cl. 21—54 R **8 Claims**



1. A rapid biocidal synergistic method of sterilizing or pasteurizing liquid containing living microorganisms such as pathogenic gram positive and gram negative bacteria, hydrophilic and lipophilic viruses and pathogenic fungi while maintaining the temperature below about 100°C, comprising establishing a thin body of liquid to be sterilized having a thickness in the range of from about 0.05 mm to about 13 mm, and subjecting the body of liquid to simultaneous irradiation with ultraviolet energy having a wave length of from about 40 Angstroms to about 3100 Angstroms and an intensity at liquid interface greater than 1 milliwatt/sec./cm², and with microwave energy having a density not greater than about 0.025 watt/cm³ and a wave length of from about 1 cm to about 35 cm.

3,926,557

IGNITION DEVICE FOR INTERNAL COMBUSTION ENGINES

Dieter Callies, Jugenheim; Gunter Frank, and Siegbert Graf vom Hagen, both of Bensheim, all of Germany, assignors to Kyberna GmbH, Germany

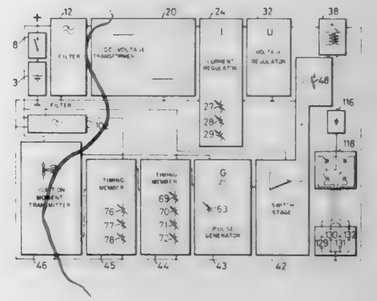
Filed Aug. 20, 1973, Ser. No. 389,516
Claims priority, application Austria, Aug. 21, 1972, 7180/72; Mar. 6, 1973, 1982/73
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 E **24 Claims**

1. In combination with an internal combustion engine having a crank shaft and a cylinder containing a piston, an ignition device comprising:

a. an ignition transformer;

b. a timing member for providing an output which is a function of the position of said piston in said engine cylinder;

c. a pulse generator, coupled to said timing member, including an astable multivibrator having first and second NAND gates each having first and second inputs and an output, a first inverter and a first capacitor coupled between the first input of said first NAND gate and the second input of said second NAND gate, second and third inverters and a second capacitor coupled between the output of said first NAND gate and the second input of said second NAND gate, first and second resistors coupled between the input of said first inverter and the input



of said third inverter, and a fourth inverter and third capacitor coupled between the first input of said second NAND gate and the second input of said first NAND gate, said timing member turning on and off said pulse generator;

d. a switching transistor coupled to said pulse generator, said switching transistor coupling said ignition transformer to a source of d.c. voltage, the switching frequency of said transistor being determined by said pulse generator to control the start, end and duration of the production of ignition arc energy; and

e. a half-wave rectifier circuit including a rectifier coupled with a secondary winding of said ignition transformer.

3,926,558

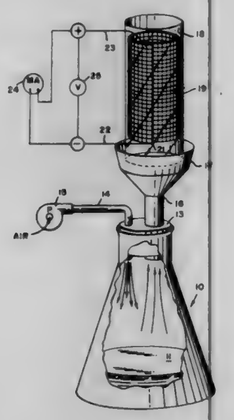
METHOD FOR MEASURING CONVERSION EFFICIENCY OF CATALYSTS

Robert E. Davis, 125 Hillside, Hinsdale, Ill. 60521

Filed July 5, 1973, Ser. No. 376,371
Int. Cl.² G01N *31/10, 31/12, 33/22;* **H01M** *8/22*
U.S. Cl. 23—230 R **4 Claims**

1. A method of measuring the hydrocarbon conversion efficiency of a catalyst system on a substrate comprising: passing a gaseous hydrocarbon fuel mixture along said cata-

lyst-bearing substrate; and measuring an electrical signal at spaced locations of different temperature on said substrate,



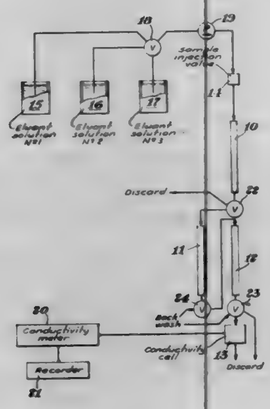
said signal being representative of the hydrocarbon conversion efficiency of said catalyst.

3,926,559

METHOD AND APPARATUS FOR QUANTITATIVE CHROMATOGRAPHIC ANALYSIS OF CATIONIC SPECIES

Timothy S. Stevens, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 6, 1973, Ser. No. 386,262
Int. Cl.² G01N *27/08, 31/04, 31/08*
U.S. Cl. 23—230 R **17 Claims**



1. The method of chromatographic quantitative analysis of a plurality of species of cations in sample solution, which comprises:

adding a predetermined amount of said sample solution to a cation exchange resin bed means, said resin bed means containing a cation exchange resin, and chromatographically separating said plurality of species of cations on eluting said cation species from the said resin bed means with an aqueous solution of a mixture of developing reagents, said mixture being selected from the group consisting of (1) soluble silver salt and highly dissociated acid; the anion of said acid not forming an aqueous-insoluble ion pair with silver ion and neither the anion of said silver salt nor the anion of said acid forming an aqueous-insoluble ion pair with any of the cation species at the concentration thereof in said sample solution, said mixture providing Ag^+ and H^+ and (2) soluble barium salt and highly dissociated acid, the anion of said acid not forming an aqueous-insoluble ion pair with barium ion and neither the anion of said barium salt nor the anion of said acid forming an aqueous-insoluble ion pair with any of the cation species at the concentration thereof in said sample solution, said mixture providing Ba^{++} and H^+, the cation exchange resin and the mixture of developing reagent being preselected to cooperatively facilitate chromatographic separation of said cation species;

passing the effluent from the cation exchange resin bed means through a first anion exchange resin bed means, said first anion exchange resin bed means containing an anion exchange resin in a form capable of precipitating whichever metal ion is provided by the developing reagent, the form being selected from the group consisting of chloride and sulfate, the exchange capacity of the anion exchange resin being at least sufficient to substantially precipitate all of the metal ion contained in the solution of developing reagents, the nature of the first anion exchange resin and the configuration of the bed thereof being preselected to not destroy the said chromatographic separation;

passing the effluent from the first anion exchange resin bed means through a second anion exchange resin bed means containing an anion exchange resin in the hydroxide form, the exchange capacity of the resin in said second bed being at least sufficient to neutralize all of the hydrogen ion in the effluent from the first anion exchange resin bed and derived from the solution of developing reagents used in the chromatographihc separation in the cation exchange resin bed means, the nature of the second anion exchange resin and the configuration of the bed thereof being preselected to not destroy the said chromatographic separation, thereby in said two anion exchange resin bed means effectively converting all of said mixture of developing reagents to weakly ionized form;

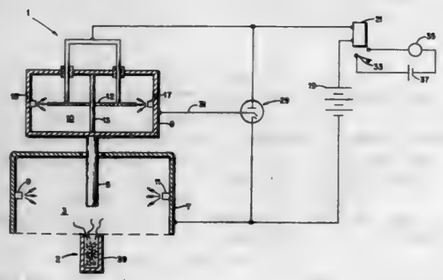
and quantitatively detecting each separated cation species exiting from said second anion exchange resin bed means.

3,926,560

SYSTEM FOR DETECTING GASEOUS CONTAMINANTS IN AIR

William O. Gentry, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Oct. 30, 1973, Ser. No. 411,128
Int. Cl.² G01N *27/62, 33/00;* **G08B** *21/00*
U.S. Cl. 23—254 E **10 Claims**



1. A system for detecting the presence, in an air atmosphere, of particulate combustion products and a selected gaseous contaminant, said system comprising the combination

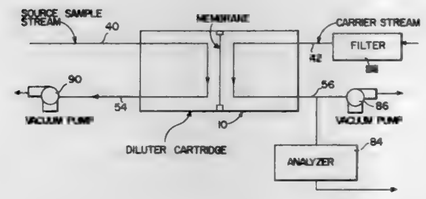
of a first electrode and a second perforate electrode defining a chamber within which said first electrode is disposed and which is open to ambient atmosphere; a radioactive source for dissociating air molecules within said chamber; circuit means connected across said electrodes for establishing current flow therebetween when air molecules are dissociated within said chamber; and means for introducing to said chamber a vapor having the property of chemcially reacting with said gaseous contaminant to form particles.

3,926,561

GAS ANALYSIS EMPLOYING SEMI-PERMEABLE MEMBRANE

Daniel P. Lucero, Triangle, Va., assignor to Meloy Laboratories, Inc., Springfield, Va.

Filed May 13, 1974, Ser. No. 469,467
Int. Cl.² G01N *31/08, 1/22;* **B01D** *53/22*
U.S. Cl. 23—232 R **32 Claims**



1. Fluid sample analysis apparatus comprising means defining first and second fluid flow paths separated by a wall saturable to different sample constituents at different rates, means for alternately supplying to said first flow path a fluid sample to be analyzed and a flush fluid, means for supplying a carrier fluid to said second flow path, whereby said sample constituents which permeate said wall are introduced to said carrier fluid to form a fluid mixture, and detector means for detecting the presence of sample constituents in said mixture at different times dependent upon the corresponding saturation rates.

3,926,562

VERTICAL TUBE COMBUSTION REACTOR

Frederick W. Williams, Oxon Hill, and Ronald S. Sheinson, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 287,328, Sept. 8, 1972, abandoned. This application Aug. 23, 1974, Ser. No. 500,208
Int. Cl.² G01N *31/12;* **H05B** *1/00;* **F23D** *21/00*
U.S. Cl. 23—253 PC **12 Claims**

1. An apparatus for the study of combustion comprising:

an upright hollow transparent cylinder having a restricted lower opening and a restricted upper opening;

a chimney within said upper opening;

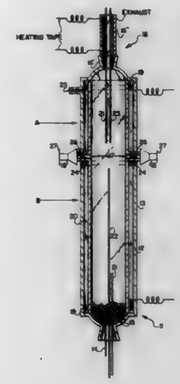
an outer transparent jacket sealingly engaged to said cylinder thereby permitting the pressurization or evacuation between said cylinder and said jacket;

an electrically conductive semi-transparent coating substantially covering said cylinder for resistive heating of said cylinder;

a first electrical contact on said cylinder above said lower opening whereby electrical contact is made with said coating;

a second electrical contact on said cylinder below said upper opening whereby electrical contact is made with said coating;

an inert retaining means located inside said cylinder and



above said lower opening; and

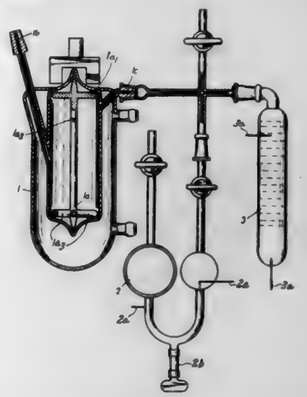
a quantity of porous inert material on said retaining means.

3,926,563

APPARATUS FOR MEASUREMENT OF VOLUMETRIC CHANGES DURING CHEMICAL REACTIONS, NAMELY OXIDATION REACTIONS

Ludovít Kotulák, Prague and Jiří Svantner, Unhost, both of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed June 10, 1974, Ser. No. 477,843
Claims priority, application Czechoslovakia, June 12, 1973, 4248-73
Int. Cl.² G01N *7/18, 27/44, 31/06*
U.S. Cl. 23—255 E **7 Claims**



1. An apparatus for measurement of volumetric changes at constant pressure, which comprises

a. a closed reaction chamber where a chemical reaction occurs;

b. a pressure equalizer joined to said chamber through a tube;

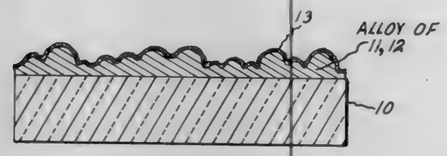
c. a pressure sensor joined to said chamber through tube;

d. an electronic switching device joined to an input of said pressure equalizer and to an output of said pressure sensor; and

e. said electronic switching device electrically communicating with an input of an integrating unit which measures an

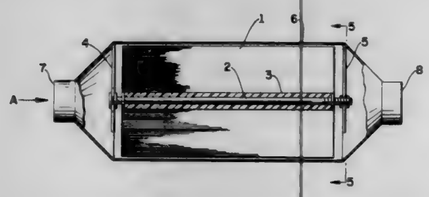
integral function of gas consumption in dependence on time.

3,926,564
SUBSTRATE FOR IMMUNOLOGICAL TESTS AND METHOD OF FABRICATION THEREOF
Ivar Giaever, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Feb. 25, 1974, Ser. No. 445,204
Int. Cl.² G01N *21/06, 33/16*
U.S. Cl. 23—259 **26 Claims**



1. A medical diagnostic device comprising:
a substrate member and
a composite metallized coating attached to the surface of said substrate member, said coating containing an alloy having a noble metal constituent and an oxidizable metallic constituent and having present in the outer surface thereof oxide content derived from said oxidizable metallic constituent, said coating being free of oxide of said noble metal constitutent.

3,926,565
APPARATUS FOR CLEANING EXHAUST GASES
Gerhard Birtigh, Frankfurt; Horst Paebel, Gelnhausen, and Heinrich Sauer, Grossauheim, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany
Filed Mar. 12, 1974, Ser. No. 450,518
Claims priority, application Germany, Mar. 16, 1974, 2313156
Int. Cl.² B01J *8/02, 35/04;* **F01N** *3/15*
U.S. Cl. 23—288 FC **9 Claims**



1. An apparatus for cleaning an exhaust gas comprising an elongated metal housing capable of receiving a catalyst ceramic monolith, said housing provided at one end with an exhaust gas entry opening, and provided at the other end with an exhaust gas discharge opening, at least two bridge means spaced apart within said housing and attached to said housing, at least one supporting rod for said monolith, said rod secured to one of said bridge means and movably mounted on another of said bridge means, a ceramic monolith catalyst element having flow channels for conveying the exhaust gas from the entry opening to the discharge opening and at least one bore for receiving said at least one support rod and the largest cross-sectional dimension of said ceramic being smaller than the adjacent respective internal cross-sectional dimension of said housing to form a space therebetween, said bore being provided in the direction of said flow channels, and an elastic, intermediate layer surrounding said at least one supporting rod and held thereon by said layer being under pressure.

3,926,566
PROCESSING ALKALI METAL HALIDE SALTS FOR GROWING INTO CRYSTALS IN ACCORDANCE WITH STOCKBARGER PROCESS
Richard W. Spurney, Solon, Ohio, assignor to Bicron Corporation, Newbury, Ohio
Continuation-in-part of Ser. No. 361,656, May 18, 1973, abandoned. This application Sept. 12, 1974, Ser. No. 505,475
Int. Cl.² B01D *9/00;* **C01D** *3/12;* **B01J** *17/08*
U.S. Cl. 23—301 SP **4 Claims**

1. In the growing of alkali metal halide salt crystals by the Bridgeman-Stockbarger process, the steps of purifying the halide salt to obtain a hot slurry, drawing off most of the mother liquor from the purified halide salt slurry by a vacuum filtration process to leave a hot damp salt, placing the damp salt in contamination-proof metal trays of identical but slightly smaller cross-sectional shape than that of the crystal-growing crucible, putting the trays in an oven and holding them there for at least 15 hours at a temperature in excess of 212°F., long enough to drive off all of the water from the salt cakes, lowering the oven temperature to not less than 200°F. so that the salt cakes thus formed can be handled, removing the cakes from the trays, breaking up into a powder some of the cakes and filling up the cone portion of the crucible, placing the remaining hot cakes in the crucible and filling the cracks and interstices with the remaining powder to obtain as much salt in the crucible as feasible, and thereafter growing the crystal.

3,926,567
CERMET COMPOSITION AND METHOD OF FABRICATION
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Wayne M. Phillips, La Crescenta, Calif.
Filed Apr. 5, 1973, Ser. No. 348,422
Int. Cl.² C04B *35/70*
U.S. Cl. 29—182.5 **15 Claims**

1. A high strength cermet composition comprising a sintered body consisting of high temperature resistant metal or metal alloy particles coated with and dispersed in a continuous matrix of ceramic oxide, said metal or metal alloy particles comprising two different metals, one of said metals being present in a small amount, said last mentioned metal corresponding to the metal of at least one metal oxide of said ceramic oxide.

3. A high strength cermet composition comprising a sintered body consisting of high temperature resistant metal or metal alloy particles coated with and dispersed in a continuous matrix of ceramic oxide, said metal and metal alloy particles being selected from the group consisting of niobium, niobium alloys containing a small amount of metal of the group consisting of zirconium, aluminum and yttrium; nickel, iron, chromium, cobalt, tantalum, tungsten, molybdenum, aluminum and magnesium, said ceramic oxide being selected from the group consisting of alumina, yttria, zirconia, and mixtures thereof, zirconia in combination with an oxide of the group consisting of calcium oxide and magnesium oxide; titanium dioxide, tantalum oxide, vanadium oxide, niobium oxide and chromium oxide.

3,926,568
HIGH STRENGTH CORROSION RESISTANT NICKEL-BASE ALLOY
John Stanwood Benjamin, and Jay Ward Schultz, both of Suffern, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.
Continuation-in-part of Ser. Nos. 375,530, July 2, 1973, abandoned, and Ser. No. 302,201, Oct. 30, 1972, abandoned. This application Aug. 28, 1974, Ser. No. 501,052
Int. Cl.² C22C *29/00, 19/05*
U.S. Cl. 29—182.5 **12 Claims**

1. A mechanically alloyed dispersion strengthenable, precipiation hardenable powder consisting essentially of about 13 to 17% chromium, about 2.5 to 6% aluminum, about 2 to 4.25% titanium, about 1.75 to 4.5% molybdenum, about 3.75 to 6.25% tungsten, about 0.02 to 0.5% zirconium, about 0.001 to 0.025% boron, yttria in a small but effective amount to enhance high temperature strength characteristics, up to 4% tantalum, up to 0.2% carbon and the balance essentially nickel.

3,926,569
MULTIPLE METALLIC LAYERS INCLUDING TIN-COBALT-CONTAINING ALLOY LAYER
Jacob M. Hage, Farmington, Mich., assignor to Midwest Chrome Process Company, Detroit, Mich.
Division of Ser. No. 249,850, May 3, 1972, Pat. No. 3,884,116, which is a continuation-in-part of Ser. No. 208,080, Dec. 15, 1971, abandoned. This application Jan. 14, 1974, Ser. No. 432,862
Int. Cl.² B32B *15/02, 15/00, 15/18, 15/20*
U.S. Cl. 29—194 **19 Claims**

16. The invention of claim 15 wherein,
the base metal is a material selected from the group consisting of steel, brass, titanium, aluminum, zinc, or stainless steel.

3,926,570
ELECTRICALLY CONDUCTIVE COMPOSITIONS OF MATTER
Alan D. Wilks, Mount Prospect, and Karl J. Youtsey, Chicago, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Mar. 4, 1974, Ser. No. 448,113
Int. Cl.² B32B *15/04*
U.S. Cl. 29—195 **8 Claims**

1. A metallized conductive pigment comprising a particulate refractory oxide substrate having a surface area greater than 10 square meters per gram and up to about 500 square meters per gram and a particle radius size of less than 10 microns, said substrate having a base metal selected from the group consisting of copper, nickel, tin and aluminum deposited thereon, the surface of said base metal being coated with a noble metal.

3,926,571
METALLIZED ISOTROPIC BORON NITRIDE BODY
William H. Labossier, Billerica, and Hartmut Schilling, Acton, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Division of Ser. No. 320,044, Jan. 2, 1973, abandoned, which is a division of Ser. No. 217,656, Jan. 13, 1972, Pat. No. 3,853,582, which is a continuation of Ser. No. 8,053, Feb. 2, 1970, abandoned. This application Sept. 3, 1974, Ser. No. 502,684
Int. Cl.² B32B *15/04*
U.S. Cl. 29—195 **7 Claims**

1. A transition zone between a metal and an isotropic boron nitride body consisting of a portion of the surface of said isotropic boron nitride body and an alloy consisting of measurable amounts of a first material selected from at least one of the group consisting of zirconium, titanium, and hafnium, dissolved in measurable amounts of a second material selected from at least one of the group consisting of nickel, platinum, copper, gold, and silver.

3,926,572
ALUMINIZED STEEL
Frank C. Dunbar, Monroe, and Kasimir Oganowski, Middletown, both of Ohio, assignors to Armco Steel Corporation, Middletown, Ohio
Continuation of Ser. No. 320,523, Jan. 2, 1973, abandoned. This application Aug. 29, 1974, Ser. No. 501,765
Int. Cl.² B32B *15/18*
U.S. Cl. 29—196.2 **7 Claims**

1. A steel base sheet hot dip coated with a coating consisting essentially of substantially pure aluminum, said aluminum coated sheet having excellent reverse bend coating adherence and exhibiting no coating delamination during heating to a temperature on the order of 1,000°F., said coated sheet being characterized by an interface iron-aluminum alloy layer having a weight less than 0.45 ounces per square foot of coated sheet, and a continuous layer of unalloyed aluminum above said alloy layer, said unalloyed aluminum layer having a weight in the range of 0.10 to 0.25 ounces per square foot of coated sheet, the total weight of said interface iron-aluminum alloy layer and said unalloyed aluminum layer being less than about 0.60 ounces per square foot of coated sheet, whereby to provide an aluminized steel base sheet particularly suitable for enamel coating.

3,926,573
COMPOSITE WIRE AND METHOD OF MAKING
Peter Sexton, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Sept. 18, 1970, Ser. No. 73,671
Int. Cl.² B32B *15/02, 15/20*
U.S. Cl. 29—197 **2 Claims**

1. A composite metal wire comprising a core of aluminum material having a selected annealing temperature and a cladding of a copper material having an annealing temperature which is relatively higher than the lowest annealing temperature of said aluminum material, said core material being in substantially fully annealed condition, said cladding material being metallurgically bonded to said core and being in substantially fully work-hardened condition.

3,926,574
MOLYBDENUM BASED SUBSTRATE COATED WITH HOMOGENEOUS MOLYBDENUM TRIALUMINIDE
Seymour Priceman, Seaford, N.Y., assignor to DeWiant Corporation, Detroit, Mich.
Filed June 21, 1971, Ser. No. 155,228
Int. Cl.² B32B *15/00*
U.S. Cl. 29—197 **5 Claims**

1. A composite consisting essentially of a molybdenum based substrate and metallurgically bonded to said substrate a relatively thin, metallurgically homogeneous layer of molybdenum trialuminide.

3,926,575
REMOVAL OF PYRITIC SULFUR FROM COAL
Robert A. Meyers, Encino, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed July 19, 1971, Ser. No. 164,006
Int. Cl.² C10L *9/00;* **C10B** *17/00, 57/00*
U.S. Cl. 44—1 R **6 Claims**

1. A process for reducing the pyrite sulfur content in coal which comprises:
reacting the coal containing FeS_2 with an effective amount of an aqueous solution of sulfurous acid at about 100°C to 140°C and hydrochloric acid to form free sulfur in the coal matrix;

filtering the solution from the coal;
washing the coal; and
removing the free sulfur from the coal.

3,926,576
PROCESS FOR PRODUCING HOT BRIQUETTES

Paul Schmalfeld, Bad Homburg; Dieter Sauter, Frankfurt am Main; Werner Peters, Wattenscheid; Erwin Ahland, Essen; Burkhard Bock, Duisburg, and Joachim Lehmann, Essen-Haarzopf, all of Germany, assignors to Bergwerksverband GmbH, Essen-Kray and Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, both of, Germany

Filed May 7, 1973, Ser. No. 358,199
Claims priority, application Germany, May 12, 1972, 2223078; Mar. 8, 1973, 2311348
Int. Cl.² C10L *5/00, 5/16, 5/40*
U.S. Cl. 44—10 H **29 Claims**

1. Process for producing hot briquettes which comprises:
a. forming a premixture of caking coal with tar pitch,
b. mixing the premixture of step (a) with hot coke forming a mixture having a temperature in the range of 420°–550°C. and containing 2–10 weight percent tar pitch and 20–50 weight percent of caking coal, and
briquetting the mixture of step (b) in a double-roll press to form said hot briquettes.

20. Process for producing hot briquettes which comprises mixing fine-grained hot coke or anthracite having a temperature in the range of 600°–900°C solely with 10–30 percent by weight tar pitch to produce a mixture having a temperature in the range of 400°–550°C. and briquetting said mixture on a double-roll press.

3,926,577
CORROSION INHIBITOR FOR VANADIUM-CONTAINING FUELS

Michael J. Zetlmeisl; Walter R. May, and Robert R. Annand, all of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Aug. 6, 1973, Ser. No. 386,228
Int. Cl.² C10L *1/32, 1/12, 1/30*
U.S. Cl. 44—51 **10 Claims**

1. A composition of matter consisting essentially of calcium and aluminum in a weight ratio of Ca/Al of about $^1/_3 \pm 2$ calculated as metal weights.

2. The composition of claim 1 which also contains silicon.

3,926,578
HYDROCARBYL AMINE SUBSTITUTED PROPIONIC ESTER AND MOTOR FUEL COMPOSITION CONTAINING SAME

William M. Cummings, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 18, 1974, Ser. No. 533,909
Int. Cl.² C10L *1/22*
U.S. Cl. 44—58 **6 Claims**

1. A motor fuel composition comprising a mixture of hydrocarbons in the gasoline boiling range containing from about 0.001 to 0.1 wt. percent of a hydrocarbylamine ester represented by the formula:

$$RR'NCH_2CH_2COOR''$$

in which R is an aliphatic hydrocarbon radical having from about 12 to 22 carbon atoms, R' is hydrogen or a lower aliphatic hydrocarbon radical having from 1 to 2 carbon atoms and R'' is hydrocarbon radical having from 8 to 22 carbon atoms.

3,926,579
PETROLEUM CRUDE OILS CONTAINING POLYMERS COMPRISED OF C_{18}–C_{40} ALPHA-OLEFINS HAVE REDUCED TENDENCY TO DEPOSIT WAX

Albert Rossi, Jersey City; Norman Jacobson, East Brunswick, and Harold N. Miller, Millington, all of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation of Ser. No. 762,368, Sept. 16, 1968, abandoned. This application Mar. 23, 1973, Ser. No. 344,428
Int. Cl. C10l *1/16*
U.S. Cl. 44—62 **4 Claims**

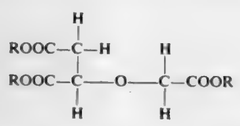
1. An oil composition consisting essentially of a petroleum crude oil containing in the range of 0.0005 to 0.45 wt. % of a flow improving, oil-soluble copolymer prepared by using a Ziegler type polymerization catalyst and consisting essentially of 60 to 80 wt. % of a higher alpha mono-olefin selected from the group consisting of eicosene, docosene, and mixtures of C_{22} to C_{28} olefin; and 40 to 20 wt. % of a lower alpha mono-olefin having 4 to 6 carbon atoms, said copolymer being substantially free of diene monomers, and having a number average molecular weight in the range of about 500 to 125,000.

3,926,580
FUEL COMPOSITIONS AND ADDITIVE MIXTURES FOR ALLEVIATION OF EXHAUST GAS CATALYST PLUGGING

Marcelian F. Gautreaux, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed June 27, 1974, Ser. No. 483,641
Int. Cl.² C01L *1/18*
U.S. Cl. 44—68 **40 Claims**

1. As a composition of matter, a gasoline for an internal combustion engine comprising
i. about 0.005 – 10 grams of manganese per gallon as a cyclopentadienyl manganese tricarbonyl wherein said cyclopentadienyl group is a hydrocarbon group containing 5–17 carbon atoms, and
ii. amount sufficient to reduce the plugging of an exhaust gas catalyst of a compound having the general formula:



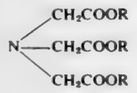
wherein R is independently selected from hydrogen and hydrocarbyl radicals.

3,926,581
FUEL COMPOSITIONS AND ADDITIVE MIXTURES FOR REDUCING THE PLUGGING OF EXHAUST GAS CATALYSTS

Larry Plonsker, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed June 27, 1974, Ser. No. 483,642
Int. Cl.² C10L *1/22*
U.S. Cl. 44—68 **40 Claims**

1. As a composition of matter, a gasoline for an internal combustion engine comprising
i. about 0.005–10 gms of manganese per gallon as a cyclopentadienyl manganese tricarbonyl wherein said cyclopentadienyl group is a hydrocarbon group containing 5–17 carbon atoms, and
ii. amount sufficient to reduce the plugging of an exhaust gas catalyst of a compound having the general formula:

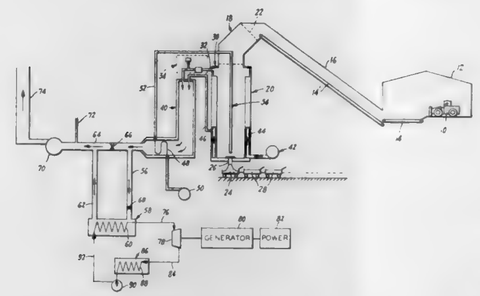


wherein R is independently selected from hydrogen and hydrocarbyl radicals.

3,926,582
METHOD AND APPARATUS FOR PYROLYTIC TREATMENT OF SOLID WASTE MATERIALS

Orlo A. Powell, Jr., Wethersfield, and Angelo J. Roncari, East Granby, both of Conn., assignors to Urban Research & Development Corporation, East Granby, Conn.

Filed Jan. 5, 1973, Ser. No. 321,449
Int. Cl. C10b *51/00, 57/04*
U.S. Cl. 48—62 **36 Claims**



1. In a method for disposing of and converting solid waste material, the steps comprising:
A. providing a substantially vertical pyrolysis chamber;
B. charging solid waste material having organic and inorganic components into the upper region of said pyrolysis chamber, said solid waste material containing as minimum weight values, about 2.0 per cent of glass and ceramics, 18.0 per cent of paper products, 3.0 per cent of metals and 6.0 per cent of food waste and other organic materials;
C. charging under pressure an oxygen-rich gas into said chamber at a plurality of vertically spaced points along the length thereof so as to produce combustion of said organic components and generate heat while controlling the charging of said oxygen-rich gas at said plurality of points to maintain a plurality of different and downwardly increasing temperature zones adjacent said plurality of vertically spaced points along the length of said chamber so as to effect incomplete combustion of said organic component and form a combustible gas in the upper zones and to melt and oxidize the inorganic components of said waste material into an organic-free molten refractory material in the lowermost zone, the temperature of said molten refractory material at the lower region of said pyrolysis chamber being at least about 1075° Centigrade; and
D. removing said combustible gas from said upper region of said pyrolysis chamber and said molten refractory material from said lower region thereof.

22. Apparatus for disposing of solid waste comprising:
A. a reactor having a shell providing a substantially vertical pyrolysis chamber, a charging inlet and a gas outlet in the upper region thereof and a liquid outlet in the lower region thereof;
B. means for charging solid waste material having organic and inorganic components through said charging inlet;
C. gas-feed means for charging an oxygen-rich gas into said chamber under pressure at a plurality of vertically spaced points along the length thereof so as to produce combustion of the waste organic components and gnerate heat, said gas-feed means including a substantially vertical coaxial core member within said chamber to receive the oxygen-rich gas, said core member having ports adjacent said plurality of vertically spaced points for charging of the oxygen-rich gas therethrough said gas-feed means further including conduit means communicating between said core member and a source of oxygen-rich gas for supplying oxygen-rich gas under pressure to said plurality of vertically spaced points; and
D. means for controlling the charges of the oxygen-rich gas at each of said plurality of vertically spaced points to maintain a plurality of different temperature zones along the length of said chamber so as to effect incomplete combustion of the waste organic component and form a combustible gas and an organic-free molten refractory material whereby the combustible gas is removed through said gas outlet and the molten refractory material is removed through said solids outlet, said control means including plurality of vertically spaced thermal sensors, said control means being responsive to temperatures sensed by said thermal sensors for controlling the oxygen-rich gas being charged at each of said plurality of vertically spaced points;
E. and means for preheating the oxygen rich gas at said source of oxygen rich gas prior to passage into said conduit.

3,926,583
PROCESS FOR THE CATALYTIC STEAM REFORMING OF HYDROCARBONS

Jens Richard Rostrup-Nielsen, Copenhagen, Denmark, assignor to Haldor Topsoe A/S, Soborg, Denmark

Division of Ser. No. 81,534, Oct. 16, 1970, Pat. No. 3,791,993, which is a continuation of Ser. No. 734,232, June 4, 1968, abandoned. This application Nov. 8, 1973, Ser. No. 413,961
Claims priority, application United Kingdom, June 12, 1967, 27066/67The portion of the term of this patent subsequent to Feb. 12, 1991, has been disclaimed.
Int. Cl.² C01B *2/14*
U.S. Cl. 48—214 **6 Claims**

1. A process for the catalytic steam reforming of hydrocarbons in the gaseous phase in a reactor at elevated temperatures and pressures which comprises using a catalyst made by the process comprising the sequential steps of:
a. preparing a first aqueous solution of a soluble salt of a metal selected from the group consisting of nickel, iron and cobalt, said solution further containing a substance selected from the group consisting of soluble salts of magnesium and dispersed, finely divided, reactive magnesium oxide;
b. preparing a second aqueous solution containing a member selected from the group consisting of sodium aluminate and potassium aluminate and also containing an excess of base not chemically combined in the aluminate;
c. mixing said first aqueous solution with said second aqueous solution to cause simultaneous and differential coprecipitation of a fine sludge of intimately mixed fine particles of aluminum hydroxide, a hydroxide of an element selected from the group consisting of nickel, iron and cobalt, and a member of the group consisting of magnesium hydroxide and magnesium oxide;
d. washing said sludge substantially free from sodium and potassium in any form;
e. drying and dehydrating said sludge at a temperature of 300°–750°C. to form an intimate mixture of oxides of magnesium, aluminum and of an element selected from the group consisting of nickel, iron and cobalt;
f. calcining said mixture at a temperature of 850°–1100°C.;
g. wherein the starting materials are used in proportions so as to give the oxides mixture prior to calcination a content of 5–50 percent of an oxide selected from the class consisting of nickel, iron and cobalt oxides, 10–75 percent of magnesium oxide and 5–60 percent of aluminum oxide, the percentages being calculated on the total weight of the said compounds; and then
h. reducing at least part of the oxide of the metal selected from the group consisting of nickel, iron and cobalt to the corresponding free metal.

3,926,584

CATALYST AND CATALYTIC PROCESS

John Robert Adsetts, Norton, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 22, 1974, Ser. No. 463,141

Claims priority, application United Kingdom, Apr. 30, 1973, 20420/73

Int. Cl.² C01B 2/14

U.S. Cl. 48—214 3 Claims

1. A process for the reaction at temperatures in the range 200°–650°C of steam with a feedstock containing at least one hydrocarbon having a higher molecular weight than methane or is methanol comprising reacting said steam and feedstock in the presence of a catalyst, said catalyst being the product of reducing a precursor composition consisting essentially of a nickel compound in a proportion in the range 25–90 percent by weight calculated as nickel oxide NiO, alumina, an alkaline earth metal compound in a proportion in the range 0.1 to 10 percent by weight calculated as equivalent magnesium oxide, and an alkali metal compound in a proportion in the range 0.05 to 3.5 percent calculated as equivalent potassium oxide K_2O, the nickel oxide and alumina having been brought together by co-precipitation of water-insoluble compounds of nickel and aluminum with said alkaline earth compound, the space velocity being low enough to permit the methane forming reaction of hydrogen with carbon oxides or feedstock to proceed near equilibrium so as to produce a gas containing 50–70 percent of methane after removal of excess steam.

3,926,585

ABRASIVE SHEET CONTAINING A GRAIN-SIZE BINDER WITH WAX PARTICLES

Heinz Lukowski, Wesseling, Germany, assignor to Feldmuhle Anlagen- und Produktions- gesellschaft mit beschrankter Haftung, Duesseldorf-Oberkassel, Germany

Filed Mar. 4, 1974, Ser. No. 447,789

Claims priority, application Germany, Mar. 10, 1973, 2312052

Int. Cl.² B24D 11/02; C08J 5/14

U.S. Cl. 51—295 9 Claims

1. In a grinding or polishing material having a flexible base of sheet material, a layer of a first binder material on one of the major faces of said base, and a multiplicity of abrasive grains secured by said binder material to said base, the improvement which comprises a covering layer covering said grains and said first binder material and essentially consisting of an intimate mixture of a second binder material and a wax, said wax being present in said mixture in the form of particles having an average size of less than 500 microns, said second binder material being solid and shape-retaining at 25°C when traveling at 10,000 ft./min. in a circular arc of 4 inch diameter, the weight ratio of said second binder material to said wax in said mixture being between 1:5 and 2:1, said second binder material securing said particles to said grains, said first binder material, and said base, said binder materials being members of the group consisting of phenol formaldehyde resin, urea formaldehyde resin, epoxy resin, polyester resin, polyurethane resin, alkyd resin, and water soluble glue.

3,926,586

METHOD AND APPARATUS FOR COOLING A GAS WITH WATER DROPLETS

Sigvard Matts, Vaxjo, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed Dec. 21, 1973, Ser. No. 427,060

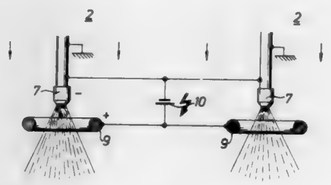
Int. Cl.² B03C 3/16

U.S. Cl. 55—10 9 Claims

1. In a method for cooling a hot gas as it flows along a path extending from a gas inlet of a generally-vertical cooling chamber to a gas outlet thereof spaced downstream of said gas inlet, by injecting droplets of coolant water into the gas in said chamber at a position adjacent said gas inlet, the gas being cooled by the resultant heating and vaporization of the water droplets in said chamber, the improvement comprising the steps of

electrically charging said droplets with a single common polarity of electrical charge; and

inducing a repetitive back-and-forth component of motion of said charged droplets in said chamber without producing substantial precipitation of them, by providing first and second spaced-apart electrode means extending along respective substantially-parallel planes on opposite sides of said gas-flow path in said chamber downstream of



said droplet-injecting position and applying an alternating voltage between said first and second electrode means alternately to attract and repel said charged droplets, the frequency of said alternating voltage being sufficiently high that for most of said droplets said component of motion is repetitively reversed and said droplets vaporized before they are deflected sufficiently to be precipitated by striking any of said electrode means;

whereby the speed of motion of said droplets with respect to said gas is increased and the rate of cooling of said gas by said charged droplets thereby accelerated.

3,926,587

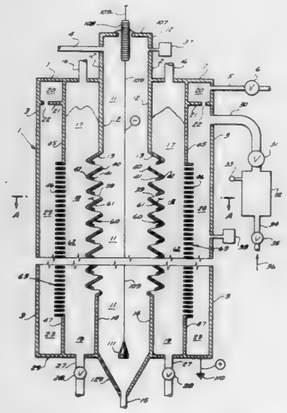
ELECTROSTATIC FILTRATION IN PANEL BED

Arthur M. Squires, 245 W. 104 St., New York, N.Y. 10025

Filed Sept. 19, 1974, Ser. No. 507,387

Int. Cl.² B03C 3/12

U.S. Cl. 55—12 16 Claims



1. The method of treating a gas involving the separation and removal of particulate material by means of a filter of granular material which comprises:

a. arranging an electrically conducting granular material in a panel bed having a plurality of transversely disposed upwardly spaced gas entry portions separated by interposed electrically conducting grounded supporting members having outer and inner edges with respect to the bed wherein said gas entry portions have gas entry faces substantially contiguous with said outer edges and wherein said bed has gas exit portions spaced from said inner edges;

b. producing a corona discharge of electricity outside of said panel bed and in proximity to said gas entry portions;

c. forwardly flowing gas to be treated in a substantially continuing flow during its treatment in proximity to said corona discharge of electricity to charge electrically the particulate material in the gas and thereby to create a force of attraction between said particulate material and said granular material, and forwardly flowing the gas through said gas entry portions of the granular material bed and outwardly from the gas exit portions to separate anad accumulate particulate material at said gas entry faces;

d. stopping the flow of said gas;

e. causing a transient flow of gas to move in the direction in reverse to the flow of said gas in (c);

f. said transient reverse flow producing first a rise at a given rate of rise and subsequently a fall in the pressure difference between said gas exit portions and said gas entry portions, said difference produced by said transient reverse flow remaining greater than a first critical minimum difference for a time interval less than about 150 milliseconds, said first critical difference being that difference at which a steady flow of gas in said reverse direction just produces a localized spill of granular material from said gas entry faces, and said difference produced by said transient reverse flow peaking to a top value beyond a second critical minimum difference, which is the pressure difference at which a transient flow of gas in said reverse direction producing said pressure difference at said rate of rise just initiates a body movement of the granular material toward said gas entry faces to spill a portion of the granular material from the bed.

3,926,588

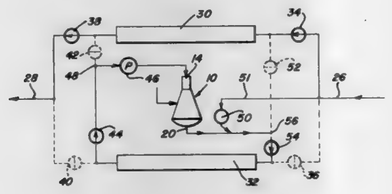
PRESSURIZED GAS TRANSFER SYSTEM

Richard E. Speece, 4516 Verplanck Place, N.W., Washington, D.C. 20016

Filed Nov. 28, 1973, Ser. No. 419,493

Int. Cl.² B01D 19/00; C02B 1/34

U.S. Cl. 55—52 20 Claims



1. In combination with a gas transfer device for introducing a gas into a relatively incompressible fluent material conducted between inlet and outlet conduits, a low energy fluid pressurizing system including flow chamber means, flow circulating means for recirculating a body of the fluent material through a closed loop between the gas transfer device and said chamber means, conduit means for conducting flow of the fluent material under a predetermined pressure head between said inlet and outlet conduits through said chamber means independently of said closed loop, flow control valve means connected to the conduit means and the flow circulating means for separately establishing said recirculation in the closed loop through the chamber means and said flow through the chamber means between the inlet and outlet conduits to respectively gasify the fluent material accumulated in the chamber means and to permit displacement of the gasified fluent material from the chamber means, and valve operating means connected to the flow control valve means for alternating said recirculation of the fluent material through the chamber means and said displacement of the gasified fluent material from the chamber means.

3,926,589

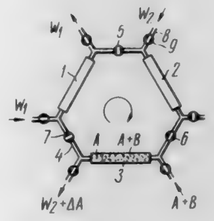
DEVICE AND METHOD FOR SEPARATION OF FLUID MIXTURE INTO FRACTIONS IN A CHROMATOGRAPH

Toe Jokhannesovich Klementi, ulitsa Pukhkekodu tee, 46, kv. 1; Henn-Jaak Eerovich Herem, ulitsa Ekhte, 3, kv. 14, both of Tallin, and Eduard Petrovich Skornyakov, Kronshtadsky bulvar, 49, kv. 66, Moscow, all of U.S.S.R.

Filed Dec. 21, 1973, Ser. No. 427,409

Int. Cl.² B01D 15/08

U.S. Cl. 55—67 1 Claim



1. A method of chromatographic separation using at least three chromatographic separating columns connected in a circulation loop, each column during a plurality of cycles successively acting as an enriching column as a stripping column and as a regenerating column, the steps for each cycle comprising: continuously introducing the mixture to be separated at constant flow rate into a pipe for connecting the stripping column to the enriching column; recovering a fraction of the mixture enriched in more strongly adsorbed components at the outlet of the regenerating column; recovering a fraction of the mixture enriched in less strongly adsorbed components at the outlet of the enriching column, the separation and recovering of the fraction enriched in less strongly adsorbed components being carried out by means of a first carrier gas stream, the recovering of the fraction enriched in more strongly adsorbed components and regeneration of the separating column being carried out by means of second carrier gas stream; shifting of the inlet point of the mixture and the inlet and outlet points of the carrier gas streams along the columns in the direction of gas flow periodically and simultaneously, each time the inlet of the separating column previously regenerated being connected to the outlet of the separating column into which formerly the mixture was introduced, the duration of the cycle between two successive shiftings of gas streams, the introducing rate of the mixture to be separated and carrier gas flow rate into the stripping column being related so that at the moment of the subsequent shifting of gas streams when more adsorbed components to be removed from the outlet of a regenerating column have reached the outlet of the enriching column less adsorbed components to be removed from the outlet of an enriching column have already left the stripping column wholly entering the enriching column.

3,926,590

PROCESS FOR TREATMENT OF WASTE GASES

Toshio Aibe; Seiji Mochida, both of Osaka, and Kiyoshi Itoga, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed Oct. 17, 1973, Ser. No. 407,287

Claims priority, application Japan, Oct. 24, 1972, 47-106473

Int. Cl.² B01D 53/04

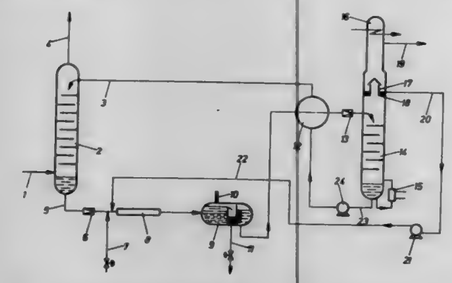
U.S. Cl. 55—68 7 Claims

1. A process of treating waste gas which comprises contacting a modified activated carbon which is prepared by contacting activated carbon with gaseous ammonia at 300° to 1,300°C, with a waste gas containing sulfur oxide and/or nitrogen oxide at room temperature to 200°C to remove the sulfur oxide and/or nitrogen oxide from the said waste gas.

3,926,591
REGENERATION OF SCRUBBING AGENT USED FOR THE REMOVAL OF CO_2 AND H_2S FROM GASES CONTAINING POLYMERIZABLE HYDROCARBONS

Alfred Wildmoser, Haar, and Erich Dannhorn, Munich, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Dec. 6, 1973, Ser. No. 422,562
Claims priority, application Germany, Dec. 6, 1972, 2259803
Int. Cl.² B01D 50/00, 53/14
U.S. Cl. 55—68 7 Claims



1. In a process for the purification of gas containing a major portion of hydrocarbon, a thermally polymerizable diolefin and at least one acidic component selected from the group consisting of carbon dioxide and hydrogen sulfide, which process comprises:

a. scrubbing said gas with normally liquid, alkaline, heat-regenerated scrubbing means capable of removing the acidic component and dissolving at least a portion of said polymerizable diolefin to form loaded scrubbing means containing said acidic component and said polymerizable diolefin;

b. contacting said loaded scrubbing means with liquid hydrocarbon solvent to extract out a major quantity, but less than 100% of said thermally polymerizable diolefin, and separating resultant loaded hydrocarbon solvent from resultant hydrocarbon treated loaded scrubbing means; and

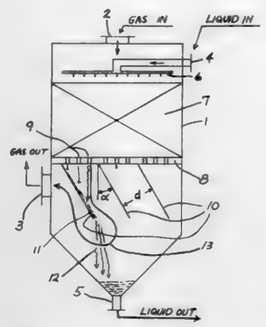
c. thermally regenerating said resultant hydrocarbon treated loaded scrubbing means in a regenerating column to form a gaseous overhead containing said at least one acidic component and residual thermally polymerizable diolefin, and a bottoms of regenerated scrubbing means, the improvement wherein said gaseous overhead is cooled to form a condensate containing said residual thermally polymerizable diolefin, and preventing resultant condensate from being refluxed into said regenerating column thereby mitigating the extent of polymerization of said thermally polymerizable diolefin within said regeneration column and wherein said condensate is recycled to the loaded scrubbing means immediately prior to the contacting thereof with said hydrocarbon solvent.

3,926,592
ENTRAINMENT SEPARATOR IN CO-CURRENT FLOW

Max Leva, 10 Hodgson Ave., Pittsburgh, Pa. 15205

Filed Sept. 3, 1974, Ser. No. 502,786
Int. Cl.² B01D 47/00
U.S. Cl. 55—84 14 Claims

1. The method of separating entrained liquids from gases, comprising introducing separate streams of liquid and gas at the top portion of a tower, forming the liquid into a dispersed state entrained by gas, passing the gas and entrained liquid through a contacting zone, allowing the gas and entrained liquid to leave the contact zone and allowing the combined streams of gas and entrained liquid to be directed towards slanted baffle plates disposed below said contacting zone, causing the dispersed liquid to wet said baffle plates, thus forming a liquid layer on top of said baffle plates which runs downwardly toward the lower edge of said baffle plates and

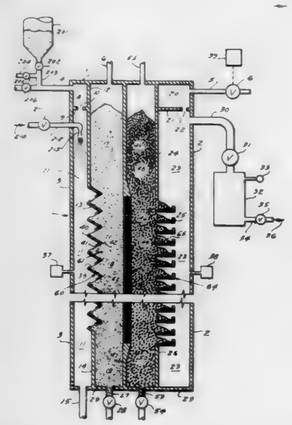


empties into a sump of the tower, to form at least one concentrated liquid stream, and diverting the gas now substantially freed of liquid around said lower edge and away from said baffle plates and out of said tower.

3,926,593
PRECOATING PANEL BED FOR FILTERING AEROSOL OF MICRON-SIZE PARTICULATES

Arthur M. Squires, New York, and Kun-Chieh Lee, Bronx, both of N.Y., assignors to Arthur M. Squires, New York, N.Y.

Filed Sept. 19, 1974, Ser. No. 507,403
Int. Cl.² B01D 46/04
U.S. Cl. 55—96 43 Claims



10. The method of treating a gas including the separation and removal of micron-size particulate matter by means of a filter of granular material which comprises:

a. arranging granular material in a panel bed having a plurality of transversely disposed upwardly spaced gas entry portions separated by interposed supporting members having outer and inner edges with respect to the bed wherein said gas entry portions have gas entry faces substantially contiguous with said outer edges and wherein said bed has gas exit portions spaced from said inner edges;

b. forwardly flowing gas through the gas entry portions of the granular material bed and outwardly from the gas exit portions while adding to said gas a element selected from the group consisting of granular or fibrous medium substantially smaller than about 120 mesh to separate and accumulate said medium in surface layer deposits at said gas entry faces wherein said gas enters said gas entry faces at a velocity greater than about 16 feet per minute during at least a part of this step (b);

c. thereafter causing a transient flow of gas to move in the direction in reverse to the flow of said gas in (b);

d. said transient reverse flow producing first a rise at a given rate of rise and subsequently a fall in the pressure difference between said gas exit portions and said gas entry portions, said difference remaining greater than a first critical minimum difference for a time interval less than about 150 milliseconds, said first critical difference being that difference at which a steady flow of gas in said reverse direction just produces a localized spill of said granular material from said gas entry faces, and said difference produced by said transient reverse flow peaking to a top value beyond a second critical minimum difference, which is the pressure difference at which a transient flow of gas in said reverse direction producing said pressure difference at said rate of rise just initiates a body movement of said granular material toward said gas entry faces to spill a portion of the granular material from the bed;

e. supplying fresh granular material to replace material spilled from said gas entry portions;

f. repeating the cycle of said steps (b), (c), (d), and (e) at least two times and then repeating step (b);

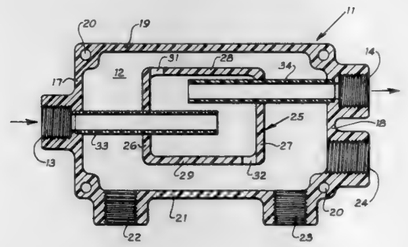
g. forwardly flowing gas to be treated through the gas entry portions of the granular material bed and outwardly from the gas exit portions to treat said gas by contact with said surface layer deposits and thereby to separate and accumulate micron-size particulate matter on said surface layer deposits of said granular or fibrous medium and wherein either at least a first part of this step (g) occurs simultaneously with a said step (b), the gas in (b) comprising the gas to be treated, or this step (g) is wholly subsequent to said step (b); and

h. thereafter repeating steps (c) (d), (e), (b), and (g) in a cyclic manner.

3,926,594
WATER TRAP FOR PITOT STATIC SYSTEM

James N. Seib, Williams, Ind., and Harry G. Willis, Plainfield, Ill., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 6, 1975, Ser. No. 538,659
Int. Cl.² B01D 45/00
U.S. Cl. 55—159 4 Claims



1. A water separator for a pitot static system comprising,

a first enclosed chamber having an inlet for receiving air and water from a pitot tube and an outlet for providing air to an instrumentation gauge,

a second enclosed chamber positioned within said first enclosed chamber,

a first tubular pipe connecting said inlet and said second enclosed chamber, and a second tubular pipe connecting said outlet and said second enclosed chamber, the axes of said first and second tubular pipes being displaced from one another with the ends of said pipes extending into said second enclosed chamber overlapping one another,

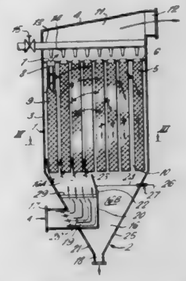
at least one drain opening in said second enclosed chamber for draining water from said second enclosed chamber into said first enclosed chamber, and

at least one drain opening in said first enclosed chamber for draining water from said first enclosed chamber.

3,926,595
DUST FILTER APPARATUS

Ole Kristian Bockman, Oslo, Norway, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed Jan. 18, 1974, Ser. No. 434,420
Claims priority, application Norway, Jan. 22, 1973, 250/73
Int. Cl.² B01D 46/04, 51/00
U.S. Cl. 55—302 9 Claims



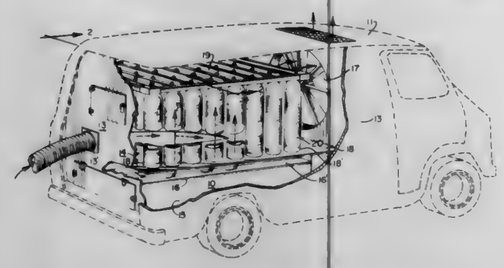
1. In appparatus for filtering raw gas containing fine particulate matter, and of the type comprising a filter chamber having a top wall, side walls and an open lower end and containing a set of filter bags substantially vertically suspended from said top wall and horizontally spaced apart by passages to permit free passage of said gas through said bag set on the outside of said bags in the vertical direction and in at least one horizontal direction within said chamber, said filter bags having openings at their upper ends and being closed at their lower ends substantially adjacent said open lower end of said filter chamber, at least one outlet chamber above said top wall and communicating with the interiors of said bags through openings in said top wall and through said upper-end openings for receiving gas filtered through the walls of said bags, means for reverse flushing said bags from the inside to separate deposited fine particulate matter from their exterior surfaces, at least one bottom chamber having side walls and arranged beneath said filter chamber and closing said open lower end of said filter chamber and having at least one inlet for said gas whereby a gas pressure difference applied between said gas inlet and said outlet chamber and having its lowermost pressure value at said outlet chamber will establish a flow of gas from said bottom chamber into said bags and therethrough to said outlet chamber, said bottom chamber having an outlet for particulate matter separated from said filter bags by said reverse flushing, the improvement comprising:

partition means separating said bottom chamber into at least one inlet compartment and at least one outlet compartment, said inlet compartment communicating with said gas inlet to establish an initial upward flow of said gas through the passages located substantially above said inlet compartment, said outlet compartment communicating with said particulate-matter outlet for receiving said separated fine particules, said inlet compartment communicating with said filter chamber through a limited portion of said open lower end of said filter chamber, said outlet compartment communicating with said filter chamber through a remaining portion of said open lower end of said filter chamber, whereby said initial upward flow of said gas from said inlet compartment progressively diverges laterally and then downwardly in said passages above said outlet compartment to carry said separated particulate matter from the passages above said inlet compartment into the passages above said outlet compartment, said partition means establishing substantially no flow conditions in said outlet compartment to allow said particulate matter to settle by gravity within said outlet compartment.

3,926,596
AGITATING BAG RACK AND BAFFLE STRUCTURE FOR FURNACE CLEANERS

Claude M. Coleman, 1001 S. 11th Ave., Yakima, Wash. 98902

Filed Sept. 26, 1974, Ser. No. 503,997
Int. Cl.² B01D 41/04
U.S. Cl. 55—304 4 Claims



1. A mobile-vacuum-furnace cleaner, being mounted on a vehicle chassis having a sealed body, a fan and means for powering said fan, and a vacuum inlet mounted centrally in one of the side walls of said body, comprising:

a bag assembly comprising a bag platform having a horizontally disposed plate-like deck mounted horizontally in the lower portion of said body below said vacuum inlet, said bag platform having a multiplicity of tunnels and bag collars, a bag rack including a framework having means suspending said framework by springs from said body, and vacuum bags being mounted at their tops to said bag rack framework, and with their mouths mounted at said bag collars; and

a baffle assembly comprising a multiplicity of plates being mounted on pivots which are aligned with the horizontal plane to said body, said plates being juxtaposed at intervals permitting said plates, when oriented with their width dimensions aligned, to form a floor distally below said bag platform, and below said vacuum inlet, said baffles having downwardly disposed capstans being pivotally connected to a connector rod having means for actuating said rod to pivot said plates on said pivots.

3,926,597
CABINET FOR BIOHAZARDOUS MATERIALS

Jerome J. Landy, 13700 SW. 78th Court, Miami, Fla. 33131

Filed Jan. 26, 1973, Ser. No. 326,608
Int. Cl.² B08B 15/02
U.S. Cl. 55—338 10 Claims

1. A cabinet for biohazardous materials having a rectangular housing comprising, in combination,

vertical tube defining a portion of said cabinet,

a blower mounted interiorly of said housing,

a plenum chamber in open communication with said blower for directing contaminated air upwardly in the rear portion of said tube,

a recirculating filter and an exhaust filter in airflow communication with said plenum chamber,

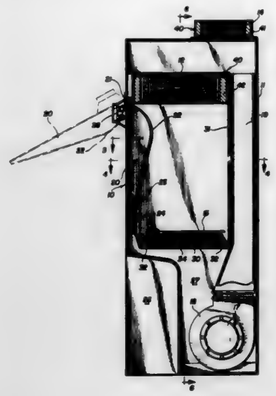
a work tray positioned in a midportion of said tube,

an opening having upper, lower, and side edges in said vertical tube the major portion of which is above the work tray,

a curvilinear viewing panel secured to said upper edge of the opening and depending downwardly and inwardly therefrom and thence forwardly thereby defining an airfoil recess with its deepest penetration in the upper half of said viewing panel,

said recirculating filter being positioned adjacent to and above said viewing panel,

a slot at the lower portion of said viewing panel permitting operator access to the work tray and for admitting make up air laterally spaced from said work tray, whereby interiorly recirculating laminar flow air passes over the viewing panel thereby further directing the makeup air

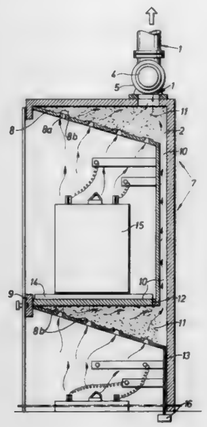


through the makeup air slot and inhibiting the outward flow of the contaminated air.

3,926,598
APPARATUS FOR SEPARATING, COLLECTING AND REMOVING SULPHURIC ACID FUMES AND THE LIKE FROM EVACUATION AIR

Björn G. O. Filén, Stockholm, Sweden, assignor to AB Essve Produkter, Stockholm, Sweden

Filed Oct. 24, 1974, Ser. No. 517,607
Claims priority, application Sweden, Nov. 5, 1973, 7314995
Int. Cl.² B01D 46/00
U.S. Cl. 55—385 4 Claims

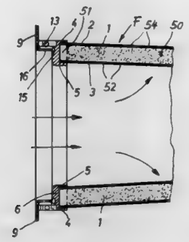


1. Apparatus for separating, collecting and removing sulphuric acid fumes from air evacuated from battery-charging cabinets, consisting of a closed container having a bottom surface, long, unbroken, sharp-edged turnings of polyvinyl chloride filling said container, duct means to cause the evacuation air having sulphuric acid fumes therein to flow turbulently through said container whereby the sharp edges of the turnings are impinged by the sulphuric acid fumes and cause these fumes to agglomerate and form drops on the surface of the turnings, means to collect and lead off the drops of sulphuric acid from the bottom surface of the container, and a receptacle for receiving the collected drops from said collection means.

3,926,599
FILTER CARTRIDGE

Ernst Rudin, Arboldswil, and Heinz Weisskopf, Oberrohrdorf, both of Switzerland, assignors to H. Gertsch & Co. Aktiengesellschaft, Zurich, Switzerland

Filed Jan. 25, 1974, Ser. No. 436,777
Claims priority, application Switzerland, Feb. 2, 1973, 1485/73; Sept. 14, 1973, 13232/73
Int. Cl.² B01D 53/04
U.S. Cl. 55—387 14 Claims

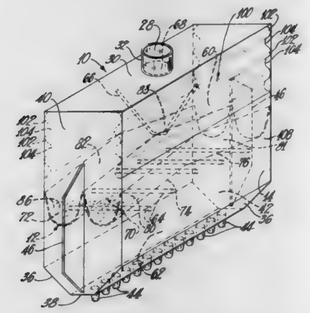


1. A filter cartridge comprising a hood-like frame having a mouth portion and a filler of adsorption material in the form of pourable material housed in the frame, said frame comprising an outer hood member and an inner hood member which is arranged within the outer hood member in spaced relationship therewith, the two hood members each having a perforated wall and the space defined between the two hood members containing said adsorption material in the form of a substantially hood-like shell, and said hood-like frame having hood edge means located at the region of the mouth portion.

3,926,600
GLASS FIBER STREAM FEEDER

Charles J. Stalego, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 28, 1974, Ser. No. 474,114
Int. Cl.² C03B 37/02
U.S. Cl. 65—1 17 Claims



1. A feeder for supplying molten glass streams in producing glass filaments comprising:

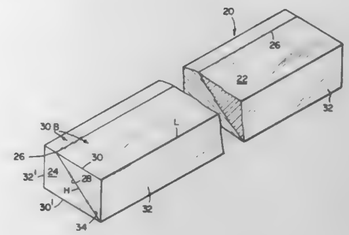
a bottom wall having openings through which molten glass in the feeder is discharged as streams for attenuation into glass filaments, joined together opposed walls extending generally normally away from the bottom wall, at least one of the walls having a corrugated region to provide an increased surface area in such region for heat transfer; and

means for heating the feeder.

3,926,601
METHOD FOR MAKING GLASS BLADES

John Wilbur Hicks, Jr., Apple Hill Road, Sturbridge, Mass. 01566

Division of Ser. No. 224,533, Feb. 8, 1972, Pat. No. 3,831,466.
This application June 10, 1974, Ser. No. 478,053
Int. Cl.² C03C 15/00, 23/20
U.S. Cl. 65—31 9 Claims



1. The method of producing glass blades comprising the steps of

a. forming a first vitreous material resistant to chemical etching with a sharp edge configuration, said material being of a cross-section having a perimeter with first and second sides intersecting at an acute angle to form said sharp edge configuration,

b. forming a combination glass blank comprising

1. said first vitreous material and

2. a second vitreous material susceptible to chemical etching including a perimeter, part of which is in contact with at least a portion of one of said sides of said sharp edge configuration of said first material,

c. heating such combination blank to a temperature corresponding to the softening points of the vitreous materials and sufficient to draw and attenuate same,

d. drawing the heated combination blank and attenuating the same down to a desired size while protecting the sharp edge configuration by means of said contact,

e. then removing the second vitreous material from the drawn and attenuated combination blank by means of a chemical etching process to which the second material is susceptible and to which the first material is resistant.

3,926,602
GLASS-CERAMIC ARTICLES WITH REFLECTIVE SURFACES

Ronald L. Andrus, Elmira, and Richard F. Reade, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed June 19, 1974, Ser. No. 480,961
Int. Cl.² C03B 32/00; G02B 5/20
U.S. Cl. 65—33 7 Claims

1. A method for making a glass-ceramic article composed of a body portion and a highly-durable, integral surface layer exhibiting a reflective, metallic luster, said body portion consisting essentially of beta-quartz solid solution crystals dispersed within a glassy matrix and said integral surface layer consisting essentially of hematite (alpha-Fe_2O_3) crystals dispersed within a glassy matrix, comprising the steps of:

a. melting a batch for a glass consisting essentially, in weight percent on the oxide basis, of about 0.5–3.5% FeO, 3–6% Li_2O, 16–21% Al_2O_3, 65–75% SiO_2, and 1.5–7% RO_2, wherein RO_2 consists of 1.5–6% TiO_2 and 0–3% ZrO_2;

b. simultaneously cooling the melt to at least within the transformation range and forming a glass article of a desired configuration therefrom;

c. exposing said glass article to a temperature between about 850°–1025°C. for a period of time sufficient to cause the growth of beta-quartz solid solution crystals in situ in said

body portion and the growth of hematite (alpha-Fe_2O_3) crystals in situ in said surface layer; and

d. cooling to room temperature.

3,926,603

METHOD OF MANUFACTURING A GLASS CERAMIC MATERIAL WHICH IS RESISTANT TO SODIUM VAPOUR

Gertraud Agnes Anna Plesslinger, Eindhoven, Netherlands; Frank Berthold, and Erwin Roeder, both of Aachen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. Nos. 340,218, March 12, 1973, abandoned, and Ser. No. 813,029, April 3, 1969, abandoned. This application Nov. 18, 1974, Ser. No. 524,703

Claims priority, application Germany, Apr. 10, 1968, 1771143

Int. Cl.² C03C *3/22*

U.S. Cl. 65—33 **2 Claims**

1. A method for manufacturing a translucent glass ceramic body shaped of a glass produced by melting a mixture consisting of a composition in percentage by weight calculated as an oxide within ranges

CaO	30 – 50
Al_2O_3	35 – 55
MgO	2 – 7
BaO	4 – 16
Y_2O_3	0 – 10
B_2O_3	3 – 9
ZrO_2	0 – 10

comprising devitrifying said glass body by heating it at temperatures between 700° and 900°C for time periods between 30 and 120 minutes to form 3 $CaO.B_2O_3$ nuclei; then heating said body to a temperature between 900° and 1000°C and maintaining said temperature between 900° and 1000°C for a time period of 30 to 120 minutes, then heating said body to a temperature between 1000° and 1200°C and maintaining said temperature between 1000° and 1200°C for a time period between 60 and 240 minutes to crystallize $CaO.Al_2O_3$ compound on said nuclei, said compound having a high resistance to the action of sodium vapor at high temperatures, and finally cooling said body.

3,926,604

METHOD FOR APPLYING AN INORGANIC TITANIUM COATING TO A GLASS SURFACE

Gary Lynn Smay, Butler; Ronald Van Caporali, West Sunbury, and Russell Duty Southwick, Butler, all of Pa., assignors to Glass Container Manufacturers Institute, Inc., Washington, D.C.

Filed Feb. 19, 1974, Ser. No. 443,227

Int. Cl.² C03C *17/22*; **B05D** *1/36, 3/02, 1/02*

U.S. Cl. 65—60 **8 Claims**

1. In a method for applying an in-organic titanium-containing coating to a glass surface comprising exposing said surface to a thermally-decomposable titanium compound at an elevated temperature sufficient to cause thermal decomposition of said compound to form said coating, the improvement wherein said coating is formed by spraying onto said surface a finely divided dilute aqueous solution of a titanium oxychloride of the formula $Ti(OH)_xCl_{(4-x)}$, wherein x is 1, 2, or 3, said temperature ranging from about 300°F. to about 800°F.

4. In a method for imparting improved scratch resistance and lubricity to a glass container comprising applying an inorganic titanium-containing coating and a lubricous organic coating to the outer surface of said container, said titanium-containing coating being formed by applying a thermally-decomposable compound to the surface of said container at an elevated temperature sufficient to cause thermal decomposition of said compound to form said coating, the improvement wherein said inorganic coating is formed by spraying a finely divided dilute aqueous solution of a titanium oxychloride of the formula $Ti(OH)_xCl_{(4-x)}$, wherein x is 1, 2 or 3, onto said container, said temperature ranging from about 300°F. to about 800°F.

3,926,605

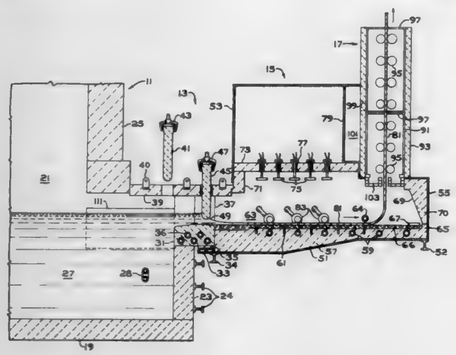
METHOD AND APPARATUS FOR FORMING A RIBBON OF GLASS ON A MOLTEN METAL BATH

Gerald E. Kunkle, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 27, 1974, Ser. No. 483,508

Int. Cl.² C03B *18/02*

U.S. Cl. 65—65 A **29 Claims**



1. A method of making a sheet of glass comprising the steps of

a. delivering a layer of molten glass onto the surface of a pool of molten metal along a substantially horizontal path and maintaining the surface of the pool of molten metal at substantially the elevation of glass delivery;

b. advancing the glass along the surface of the pool of molten metal while cooling it and applying forces to it to advance it and to form a continuous sheet of glass, wherein said cooling is adjusted and maintained at a plurality of discrete locations along the path of advance of the glass such that the temperature of the advancing glass is progressively decreased sufficiently to cause the glass, while yet advancing along the surface of the pool of molten metal, to be sufficiently viscous to maintain dimensional stability of its width and thickness;

c. lifting the cooled viscous glass substantially vertically upwardly from the surface of the pool of molten metal and conveying it substantially vertically upwardly therefrom at a speed substantially equal to the speed of glass advance along the surface of the pool of molten metal in a region where the advancing glass is sufficiently viscous to maintain dimensional stability such that the lifted glass retains the width and thickness achieved prior to lifting; and

d. progressively cooling the dimensionally stable sheet of glass while conveying it substantially vertically upwardly at substantially constant speed.

26. An apparatus for making flat glass comprising a glass-making furnace for supplying molten glass for forming, means for delivering molten glass for forming from the furnace, a glass forming chamber for forming a continuous sheet of glass connected to the glassmaking furnace through the molten glass delivery means; and means for lifting and conveying a formed continuous sheet of glass upwardly from the forming chamber; wherein

said forming chamber comprises an enclosed chamber having in its upper portion a space for containing a protective non-oxidizing atmosphere and having in its bottom portion a pool of molten metal for supporting glass during forming, the pool of molten metal having an upper glass-supporting surface at substantially the same elevation as a glass supporting member of said molten glass delivery means; means for advancing the glass along the surface of the pool of molten metal and a plurality of edge rolls for applying sufficient outward transverse forces to the glass during its advance to cause it to develop a desired width and thickness; means for adjusting and maintaining the temperature of the advancing glass at a plurality of locations along its path of advance, said means being suited to cool the glass to a temperature at which it is sufficiently viscous to maintain the developed width and thickness as dimensionally stable width and thickness and means for cooling the continuous sheet of glass sufficiently substantially immediately prior to lifting to maintain it sufficiently viscous during lifting so that its dimensional stability is maintained as it is lifted; and wherein

said glass conveying means comprises means for conveying the continuous sheet of glass substantially vertically upwardly at the speed of glass advance substantially immediately prior to lifting; and means for uniformly cooling the glass to its annealing point while conveying it upwardly.

3,926,606

GLASS MELTING TANK

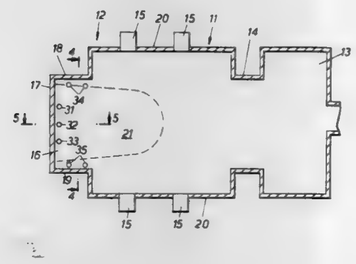
Donald Charlesworth, Northwich, England, assignor to Pilkington Brothers Limited, Lancashire, England

Filed July 2, 1974, Ser. No. 485,143

Claims priority, application United Kingdom, July 4, 1973, 31866/73

Int. Cl.² C03B *3/00*

U.S. Cl. 65—135 **9 Claims**



1. A glass melting tank comprising an elongated tank body for containing molten glass, said tank having a feeding end with a filling pocket for receiving the glass forming material, said pocket being adjacent an end wall of the tank and of less width than the body of the tank, said filling pocket being generally centrally located transversely of the tank and being operable to establish a blanket of batch material extending forwardly on the molten glass, and auxiliary heating means at the filling end, which auxiliary heating means comprises at least three heating electrodes located within said filling pocket, and means for selectively controlling passage of heating current between different pairs of electrodes to control the lateral position of said forwardly extending blanket.

7. A method of melting glass forming material which method comprises feeding batch material into a filling pocket at one end of a glass melting tank, applying heat to the material within the tank to form molten glass while retaining a blanket of unmolten material on the surface of the glass at said one end of the tank extending forwardly of said filling pocket on the molten glass, and controlling the lateral position of said forwardly extending blanket within the tank by applying selectively localised heat in the filling pocket below the blanket.

3,926,607

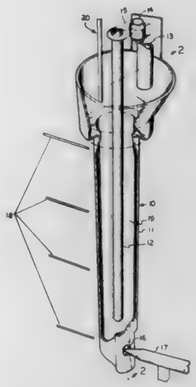
METHOD FOR REFINING MOLTEN GLASS-MAKING MATERIALS

Fred G. Pellett, Maumee, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 439,604, Feb. 4, 1974, abandoned. This application Feb. 10, 1975, Ser. No. 548,414

Int. Cl.² C03B *5/18*

U.S. Cl. 65—136 **2 Claims**



1. A method of refining molten glassmaking materials comprising the steps of: forming a passage between a cylindrically shaped surface and a tubular stirring device of about the same length as the cylindrically shaped surface; introducing molten glass containing gaseous inclusions into the passage and downwardly passing the molten glass between the tubular surfaces; rotating at least one of the cylindrical surfaces at a speed of between 30 and 810 revolutions per minute; maintaining the glass temperature between 2550°F and 2700°F; controlling the residence time of molten glass in the annulus to an equivalent flow rate between 60 and 150 grams of molten glass per hour and thereby causing gaseous inclusions to coalesce and to flow upwardly in a direction opposite to the downward flow of molten glass-forming material in the passage; and discharging molten glass having a controlled number of gaseous inclusions.

3,926,608

COMPOSITIONS FOR SOIL IMPROVEMENT AND PROCESS FOR THEIR PRODUCTION

Luigi Piccolo, and Antonio Paolinelli, both of Milan, Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Mar. 8, 1974, Ser. No. 449,565

Claims priority, application Italy, Mar. 8, 1973, 21319/73

Int. Cl.² A01N *7/02*

U.S. Cl. 71—1 **5 Claims**

2. A process for preparing soil-improving compositions characterized in that an ammonium iron alum solution in a concentration of 30 to 55 percent by weight is sprayed on foamed polystyrene particles, the temperature being kept at between 100° and 125°C, said polystyrene particles having a particles size of 0.01 to 3 mm and an apparent density of 8 to 30 kg/m³, the weight ratio of ammonium iron alum to the polystyrene particles being in the range of 3:1 to 30:1.

3,926,609

GRANULAR MGO-CONTAINING POTASSIUM SALT FERTILIZERS AND PROCESS FOR THEIR MANUFACTURE

Alexander Effmert, Hannover, and Ulrich Neitzel, Heringen, both of Germany, assignors to Kali und Salz Aktiengesellschaft, Kassel, Germany

Filed Apr. 18, 1974, Ser. No. 462,088
Int. Cl.² C05D 9/02
U.S. Cl. 71—31 **14 Claims**

1. A process for manufacturing granulated MgO-containing fertilizers based on potassium chloride or sulfate salts, and having a high abrasion resistance and high compression resistance comprising

1. mixing dry, hot technical potassium chloride or sulfate or mixture thereof, recycled material with a hot, moist langbeinite having a temperature of between approximately 75° and 100°C. and a moisture content of approximately 15 to 25% with the addition of sufficient water, to adjust the total moisture content of the mixture to between approximately 3 to 10% based on the dry components, said mixing being effected at a temperature of the mixture between approximately 75° and 110°C. under constant agitation to form a moist granulate,
2. cooling the moist granulate under agitation to below 60°C., whereby the granulate is solidified,
3. removing the desired size granular material and
4. recycling the finer size material into the mixing step.

3,926,610

REMOVAL OF FERTILIZER PRECIPITATE

Joseph R. Kenton, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 10, 1974, Ser. No. 477,992
Int. Cl.² C05B 1/00
U.S. Cl. 71—34 **3 Claims**

1. A process for treating the slurry precipitate of a liquid fertilizer consisting essentially of an aqueous solution of ammonium polyphosphate containing 10 weight percent of nitrogen, 34 weight percent of P_2O_5 and no potash, said process comprising

a. mixing said slurry precipitate with an acid selected from the group consisting of the acids of phosphorus and nitric acid,
b. adjusting the quantity of acid employed with respect to the quantity of liquid precipitate employed so that a solution having a pH of 3 is obtained,
c. neutralizing said solution by the addition of ammonia to a pH in the range of about 5 to about 6.6.

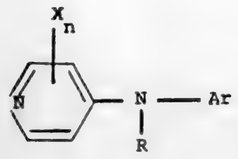
3,926,611

4-ARYLAMINOPYRIDINE HERBICIDES

Clive Dudley Spencer Tomlin, Maidenhead; Charles Brian Barlow, Camberley, and Brian Graham White, Crowthorne, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 29, 1972, Ser. No. 230,514
Claims priority, application United Kingdom, Mar. 19, 1971, 7291/71
Int. Cl.² A01N 9/22
U.S. Cl. 71—94 **3 Claims**

1. A method of inhibiting the growth of unwanted vegetation, which comprises applying to the locus of the vegetation a herbicidally effective amoung of a 4-arylaminopyridine of the formula:



or a salt thereof, wherein R is hydrogen; Ar is phenyl, or substituted phenyl bearing a substituent selected from the group consisting of chlorine, bromine, fluorine, nitro, cyano, alkyl of 1–4 carbons and trifluoromethyl, X is selected from the group consisting of chlorine, bromine and fluorine; and *n* is 3 or 4.

3,926,612

HERBICIDAL COMPOSITION CONTAINING S-(2-CHLOROBENZYL)-N,N-DI-ISOPROPYLTHIOCARBAMATE

Makoto Konnai, Shizuoka; Hiroshi Kamata, and Masaru Kado, both of Shimizu, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 70,502, Sept. 8, 1970, Pat. No. 3,822,124, Continuation of Ser. No. 868,900, Oct. 23, 1969, abandoned, which is a continuation-in-part of Ser. No. 651,148, July 5, 1967, Pat. No. 3,582,314. This application Apr. 22, 1974, Ser. No. 462,933The portion of the term of this patent subsequent to June 1, 1988, has been disclaimed.
Int. Cl.² A01N 9/12
U.S. Cl. 71—100 **1 Claim**

1. A method of selectively killing undesirable weeds in lawn by spreading thereon a herbicidally effective amount of S-(2-chlorobenzyl)-N,N-di-isopropylthiocarbamate, in combination with an inert diluent.

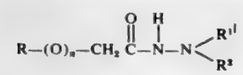
3,926,613

1-(NAPHTHYL AND NAPHTHYLOXY-ACETYL-2,2-DIALKYL HYDRAZINE ACIDS AND THEIR USE AS HERBICIDES

Gerhard H. Alt, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 214,382, Dec. 30, 1971, Pat. No. 3,767,623. This application July 2, 1973, Ser. No. 375,397
Int. Cl.² A01N 9/20
U.S. Cl. 71—118 **6 Claims**

1. Herbicidal composition comprising an inert carrier and a herbicidally effective amount of a compound of the formula



wherein R is a naphthyl group, R^1 and R^2 are each independently an alkyl group of from 1 to 6 carbon atoms and *n* is 0 or 1.

3,926,614

ILMENITE BENEFICIATION WITH $FeCl_3$

Hans Hellmut Glaeser, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Apr. 19, 1974, Ser. No. 462,535
Int. Cl.² C21B 1/00; C01G 49/02
U.S. Cl. 75—1 **14 Claims**

1. Cyclic process for selectively chlorinating the iron constituent of titaniferous material comprising passing an oxidizing agent to a first reaction zone, said first reaction zone containing ferrous chloride, thereby oxidizing the ferrous chloride to ferric chloride, the temperature in said first reaction zone being maintained above the boiling point of ferric chloride, passing said ferric chloride to a second reaction zone, said second reaction zone containing said titaniferous material and a reductant, said reductant being selected from at least one of the group consisting of solid carbonaceous material and gaseous carbon monoxide, the amount of carbon in said solid carbonaceous material being greater than the stoichiometric amount for conversion of the oxygen bound to said iron constituent to carbon dioxide and less than or about equal to the stoichiometric amount for conversion of said oxygen to carbon monoxide, the amount of said gaseous carbon monoxide being at least sufficient to convert the balance of said oxygen to carbon dioxide, the temperature in said second reaction zone being at least 950°C., thereby chlorinating the iron constituent in said titaniferous material to form ferrous chloride, and recycling ferrous chloride to said first reaction zone.

3,926,615

PRETREATMENT OF TITANIUM-IRON ORES

Günter Lailach, and Jakob Rademachers, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 9, 1973, Ser. No. 377,863
Claims priority, application Germany, July 15, 1972, 2234844
Int. Cl.² C22B 1/14, 34/12; C01G 23/08
U.S. Cl. 75—3 **12 Claims**

1. In the production of a titanium dioxide concentrate from a titanium-iron ore wherein the ore is oxidized in a pretreatment, thereafter reduced to form a metallic iron in association with titanium dioxide or activated ilmenite and thereafter leached to remove iron and leave a titanium dioxide concentrate, the improvement which comprises first forming unhardened agglomerates of the titanium-iron ore, heating the unhardened agglomerates to a temperature of up to about 900°C, at least the heating from about 600° to 900°C being effected under non-oxidizing conditions thereby to avoid formation of hematite, and thereafter effecting said oxidation of the ore by heating said agglomerates at a temperature in the range of about 900° to 1200°C under oxidizing conditions until substantially all the iron has been converted into a ferro pseudobrookitepseudobrookite mixed phase.

3,926,616

LUMP ORE PRODUCTS AND METHODS OF MAKING THE SAME

Louis George Imperato, Jr., Tenafly, N.J., assignor to Blocked Iron Corporation, Montrose, N.Y.

Continuation-in-part of Ser. No. 797,825, Feb. 10, 1969, Pat. No. 3,827,876. This application Apr. 24, 1974, Ser. No. 463,728The portion of the term of this patent subsequent to Aug. 6, 1991, has been disclaimed.
Int. Cl.² C22B 1/14
U.S. Cl. 75—3 **3 Claims**

1. A low temperature method of making ore aggregates having high strength at elevated temperatures comprising the steps of:

a. admixing finely divided metal containing ore with one of the group consisting of oxides and hydroxides of an alkaline earth metal, between about 0.005 and 0.5 percent by weight of free sulfur and sufficient water to form the mass into aggregates;
b. forming the mixture into aggregates;
c. reducing the moisture level in the aggregates below 10 percent;
d. subjecting the formed aggregates to an atmosphere of carbon dioxide until a substantial portion of the alkaline earth metal is converted to alkaline earth carbonate in situ; and
e. removing the formed aggregates to the atmosphere for storage and use.

3,926,617

PASSIVATION OF METALLIZED PELLETS IN BULK

Donald Beggs, Toledo, Ohio, and William A. Ahrendt, Lambertville, Mich., assignors to Midrex Corporation, Charlotte, N.C.

Continuation of Ser. No. 334,228, Feb. 21, 1973, abandoned. This application Sept. 6, 1974, Ser. No. 503,601
Int. Cl.² B22F 9/00
U.S. Cl. 75—.5 BA **4 Claims**

1. In a method of passivating metallized iron pellets, a substantial portion of which have a particle size greater than 0.02 cubic inches, the steps comprising:

placing a bulk mass of metallized iron pellets in a sealable container having a gas inlet opening, a gas outlet opening and means for supplying gas to the inlet opening;
purging the container with a gas containing oxygen for a discrete period of time sufficient to replace the gas previously contained within said container; sealing the container and maintaining the bulk mass in a quiescent state wherein no wind drafting is permitted across the bulk mass for a time sufficient for said bulk mass to consume substantially all the available oxygen within the sealed container;
and repeating said purging and quiescent steps until the bulk mass substantially ceases to consume the oxygen supplied or until the bulk mass substantially ceases to heat; the number of said purging and quiescent steps and said predetermined time period of said quiescent state being selected to optimize the retained metallization of said pellets.

3,926,618

PROCESS FOR REFINING LOW-PHOSPHORUS PIG IRON TO MAKE STEEL

Helmut Knüppel; Karl Brotzmann, and Hans-Georg Fassbinder, all of Sulzbach-Rosenberg, Germany, assignors to Eisenwerk-Gesellschaft Maximilianshutte mgH, Sulzbach-Rosenberg, Germany

Continuation-in-part of Ser. Nos. 821,802, May 5, 1969, Pat. No. 3,771,998, and Ser. No. 119,258, Jan. 18, 1971, Pat. No. 3,774,894. This application Sept. 22, 1972, Ser. No. 291,434
Int. Cl.² C21C 5/34
U.S. Cl. 75—60 **9 Claims**

1. A process for refining low-phosphorus pig iron containing in percentage by weight 0.1–3% Mn, 0.1–2% Si, and between 0.02 and 0.5% P, in a convertor in which below the surface of a bath of said pig iron and in the refractory brickwork at least one composite tuyere is disposed comprising a central tube through which a stream of oxygen is introduced into said pig iron and an outer tube through which a liquid or gaseous protective agent is introduced into said pig iron surrounding said oxygen stream which process comprises: introducing lime powder into said pig iron in said stream of oxygen, and in which process 30 to 60% of said lime powder is injected during the desiliconizing of said pig iron.

3,926,619

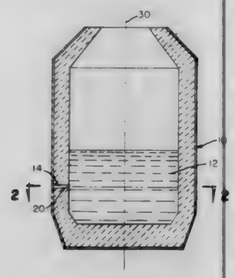
REFINING PROCESS

Arlette Therese Etienne, Boncelles, Belgium, assignor to Centre de Recherches Metallurgiques, Liege, Belgium

Filed July 2, 1974, Ser. No. 485,198
Claims priority, application Belgium, July 10, 1973, 802163
Int. Cl.² C21C 5/34
U.S. Cl. 75—60 **6 Claims**

1. An iron refining process carried out in an iron refining converter having two tuyeres for blowing oxidising gas into the hot metal below its upper surface, in which, assuming the axis of the converter to be vertical, the two tuyeres have substantially horizontal axes inclined in opposite directions with respect to the diametral plane of the converter which is equidistant from the respective zero points (as defined hereinbefore) of the tuyeres, the projection of the axis of each tuyere in a horizontal plane forming an angle of 5° to 20° with the diame-

ter passing through its zero point, the intersection, if any, of the projections of the tuyere axes in a common horizontal plane being remote from the straight line joining the zero points with respect to the converter axis, the projection of the



zero points in a common horizontal plane being separated by an arc whose angle is 40° to 135°, wherein oxidizing gas is blown into the molten iron to be refined through the two tuyeres simultaneously.

3,926,620

LOW CARBON NI-CR ALLOY STEEL HAVING AN IMPROVED RESISTANCE TO STRESS CORROSION CRACKING

Masamichi Kowaka, Toyonaka, and Hisao Fujikawa, Nishinomiya, both of Japan, assignors to Sumitomo Metal Industries Ltd., Japan

Continuation-in-part of Ser. No. 161,289, July 9, 1971, abandoned. This application Feb. 7, 1974, Ser. No. 440,470
Claims priority, application Japan, July 14, 1970, 45-62463
Int. Cl.² C22C *38/46, 38/54, 38/34*
U.S. Cl. 75—122 **3 Claims**

1. A low carbon Ni-Cr alloy steel being substantially in the single phase of austenite and improved in resistance to stress corrosion cracking, consisting essentially of, by weight, less than 0.03% of carbon, 1.5 to 4.0% silicon, 0.1 to 3.0% of manganese, 25 to 45% of nickel, 24 to 35% of chromium, 0.9 to 4.0% of vanadium and the balance essentially of iron.

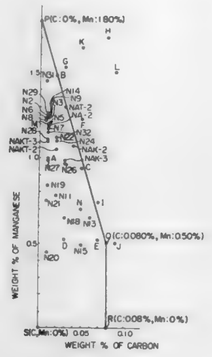
3,926,621

COLD WORKABLE AND AGE-HARDENABLE STEEL

Chiaki Asada, Nagoya, and Toshiyuki Watanabe, Nishio, both of Japan, assignors to Daido Seiko Kabushiki Kaisha, Nagoya, Japan

Division of Ser. No. 187,825, Oct. 8, 1971, Pat. No. 3,856,514. This application May 2, 1974, Ser. No. 466,512
Claims priority, application Japan, Oct. 19, 1970, 45-91150
Int. Cl.² C22C *38/06, 38/16*
U.S. Cl. 75—124 **5 Claims**

1. A cold workable and age-hardenable steel, characterized in that it consists essentially of the weight percentages of carbon and manganese within the area enclosed by the line connecting points P, Q and R to the point S as shown in the accompanying FIG. 1; an effective amount up to 0.6 weight % of silicon, and, as age-hardenability improving alloying metals, more than 2.5 weight % of nickel, more than 0.6 weight % of aluminum, more than 0.5 weight % of copper and more than 0.5 weight % of titanium, the total amount of nickel, aluminum, copper and titanium being in the range of from 4.5 to 6.5 weight %, said point P indicating zero weight % of carbon and 1.8 weight % of manganese, said point Q indicating 0.08 weight % of carbon and 0.5 weight % of manganese, said point R indicating 0.08 weight % of carbon and zero weight % of manganese and said point S indicating zero weight % of carbon and zero weight % of manganese, and further consisting of as machinability improving alloying metals, at least one element selected from the group consisting of an effective amount up to 0.3 weight % of sulphur, an effective amount up to 0.4 weight % of lead, an effective amount up to 0.5 weight % of selenium, an effective amount up to 0.3 weight % of



tellurium and an effective amount up to 0.3 weight % of bismuth.

3,926,622

PITTING RESISTING ALLOY STEELS

Kingo Kiyonaga, Yonago, and Yoshiyuki Murakawa, Yasugi, both of Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Sept. 30, 1974, Ser. No. 510,542
Claims priority, application Japan, Oct. 3, 1973, 48-110512
Int. Cl.² C22C *38/18*
U.S. Cl. 75—126 G **12 Claims**

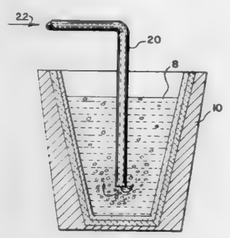
10. Pitting resisting alloy steels consisting essentially of by weight 0.01 to 2.0 % cerium, 0.6 to 1.0 % carbon, 8.0 to 13.0 % chromium, less than 2.0 % silicon, less than 2.0 % manganese, and the balance iron and impurities.

3,926,623

PROCESS FOR PURIFICATION OF MANGANESE ALLOYS

Naaman H. Keyser, Hinsdale, and Akgun Mertdogan, Homewood, both of Ill., assignors to Interlake, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 317,044, Dec. 20, 1972, abandoned, which is a continuation of Ser. No. 46,010, June 15, 1970, abandoned. This application Dec. 4, 1974, Ser. No. 529,682
Int. Cl.² C22C *35/00*
U.S. Cl. 75—129 **12 Claims**



1. A method for producing ferro-alloys from a manganese containing ore for use in steel production, the steps comprising,

providing an input melt from manganese containing ore with said input melt comprising a manganese-containing material selected from a group consisting of:

a. a silico-manganese ferro-alloys,

b. a manganese-silicon ferro-alloy,

c. a low carbon ferro-manganese, and

d. a massive manganese,

said input melt containing a molten impurity content selected from the group consisting of:

a. lead,

b. arsenic, and

c. zinc

providing the impurity content in an amount in excess of 0.01 by weight,

providing a carrier gas of the type which does not generally react or combine with the materials of said input melt or said impurity content at a temperature above the melting temperature of said impurity content, but below the vaporization temperature thereof,

blowing said carrier gas entirely through said input melt so that it will pass out of the input melt,

maintaining the temperature of said input melt above the melting temperature of said impurity content while blowing said carrier gas therethrough and,

separating said impurity content from said input melt by said carrier gas to cause said impurity content to be evaporated and removed as a gaseous vapor in substantially its elemental state along with said carrier gas as it passes out of said input melt to reduce the impurity content in said melt to an amount less than 0.01% by weight.

3,926,624

PRODUCTION OF FERRITIC STAINLESS STEELS CONTAINING ZIRCONIUM

Arthur H. Aronson, Pittsburgh, and Charles R. Rarey, Eighty-Four, both of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Mar. 17, 1972, Ser. No. 235,849
Int. Cl.² C22C *33/00*
U.S. Cl. 75—130.5 **3 Claims**

1. The process of making a fully ferritic stainless steel slab characterized by its ability to resist surface cracking during grinding and thus be suitable for rolling into strip consisting essentially of preparing a melt of steel consisting essentially of carbon, nitrogen, approximately 1% maximum manganese and silicon, approximately 0.04% maximum phosphorus, approximately 0.03% maximum sulfur, ferrite forming elements including a minimum of approximately 16% chromium to render the resulting steel ferritic at all temperatures below its melting point, zirconium in percentage by weight between about seven times and about fourteen times the combined carbon and nitrogen percentages by weight to effectively suppress the formation of cracks during surface grinding of a slab formed from the melt, balance iron, processing the melt into a slab, and grinding at least one surface thereof.

3,926,625

PHOTOCONDUCTIVE BELT DEVICE AND ELECTROPHOTOGRAPHIC PROCESS AND APPARATUS UTILIZING THE SAME

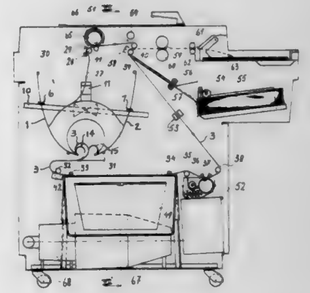
Martin Leonard van der Sterren, Horst, Netherlands, assignor to Oce-van der Grinten N.V., Venlo, Netherlands

Continuation of Ser. No. 226,413, Feb. 15, 1972, abandoned. This application June 18, 1973, Ser. No. 370,680
Claims priority, application Netherlands, Apr. 29, 1971, 7105941
Int. Cl.² G03G *13/22, 15/22*
U.S. Cl. 96—1 R **18 Claims**

6. A process of indirect electrophotographic copying which comprises:

storing in the dark most of the length of a long endless belt of flexible photoconductive sheet material that exhibits memory effect and that has been pre-folded zigzag on transverse fold lines at regular intervals throughout its length so as to be subdivided by the successive fold lines into individual belt sections each slightly larger than the largest copy to be produced, said stored belt length being in a stack composed of a great number of said belt sections folded zigzag one upon another on the respective fold lines bordering them and the remaining, minor portion of the length of said belt being extended lengthwise from one end of said stack through a processing path passing a series of electrophotographic processing stations and thence onto the other end of said stack;

for each copying operation: imagewise exposing one of said belt sections at one of said stations to light from an original so as to form on the exposed belt section a latent image of the original, transporting said extended belt portion lengthwise through said path so as to move said exposed belt section past further of said stations, thus correspondingly drawing from said one stack end into said path aforesaid belt sections trailing said exposed section and depositing onto said other stack end aforesaid belt sections leading said exposed section, and at another



of said stations transferring from said exposed section to a receiving material said latent image or a toner image developed on said latent image; said depositing being effected by folding the belt zigzag on the respective preformed fold lines bordering said leading belt sections;

continuing copying operations by subjecting to respective exposing, transporting and transferring steps as aforesaid individual belt sections aforesaid drawn from said stack into said path, thus in the course of continued copying operations transporting the entire length of said belt repeatedly through said path and said stack;

and maintaining in the dark in said stack such a great number of said belt sections that any one of them which has been exposed in said path will become substantially rid of memory effect during storage in said stack, before being again drawn from said stack for another exposure.

3,926,626

CIRCULATION IMAGING METHOD

Lloyd Bean, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 29, 1973, Ser. No. 327,543
Int. Cl.² G03G *13/22*
U.S. Cl. 96—1 R **27 Claims**

1. A method for imaging comprising:

a. providing an imaging member comprising on an about 1 to about 12 micron thick softenable circulation layer a softenable photoconductive layer of about 0.5 to about 5 micron thickness; each of said layers comprising electrically insulating softenable material and said photoconductive layer comprising a volume ratio of about 1:8 to about 7:1 photosensitive particles dispersed in softenable material; said softenable layers capable of having their viscosity reduced so as to allow circulation of material therein in response to a charge density, of from about 10 to about 80 volts per micron and cast from materials sufficiently dissimilar wherein mixing of imaging member layers in bulk in the absence of circulation is prevented;

b. charging the surface of said imaging member at least at said charge density;

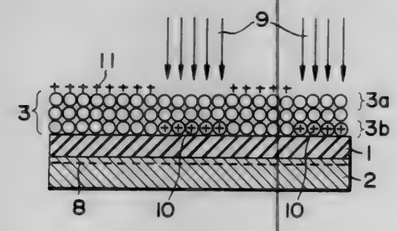
c. imagewise exposing said imaging member to activating electromagnetic radiation; and
d. softening said softenable layers by reducing their viscosity wherein circulation of said softenable layers occurs sufficiently to effect bulk mixing of said softenable layers in non-imagewise-exposed portions of said imaging member; the resultant mixture of said layers having at least one chemical or physical property that is distinct from that of at least one of said softenable layers in unmixed portions of said imaging member.

3,926,627

PROCESS FOR MAKING AN ELECTROPHOTOGRAPHIC IMAGE BY USE OF PHOTOCONDUCTIVE PARTICLES

Masakazu Iwasa, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Mar. 21, 1974, Ser. No. 453,421
Claims priority, application Japan, May 7, 1973, 48-50428
Int. Cl.² G03G *13/22*
U.S. Cl. 96—1 R **29 Claims**



1. A process for making an electrophotographic image by use of photoconductive particles comprising the steps of:
providing a plurality of layers of photoconductive particles on a substrate having at least an insulating upper surface, providing a uniform charge to the upper part of the layer of said photoconductive particles,
exposing the layers of photoconductive particles to imagewise light to move the charges in the upper part of the layers to the lower part thereof in the area exposed to the light,
neutralizing from a charging means external to the substrate the charges on the outer surface of the layers in the area not exposed to the light, and
removing said photoconductive particles from the surface of said recording medium to leave the particles which received the charge moved from the upper part of the layers.

3,926,628

USING PHOTOCONDUCTIVE AND NON-PHOTOCONDUCTIVE POWDERS

Satoru Honjo, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 2, 1974, Ser. No. 466,451
Claims priority, application Japan, May 2, 1973, 48-49327
Int. Cl.² G03G *13/22*
U.S. Cl. 96—1 R **7 Claims**

1. An electrostatic powder coating method comprising, exposing a layer of charged photoconductive toner particles formed on an electrically conductive substrate to an optical image, the photoconductive toner particles having a main resinous component;
selectively attempting to remove all of the irradiation discharged toner particles from said toner layer at the irradiated areas to form a toner image corresponding to said optical image where a small amount of the toner particles undesirably remain in the irradiation discharged area;
then, while the remaining charged toner layer still retains a sufficient amount of electrical charge, electrostatically spraying a second powder having a main resinous component and having the same charge polarity as that of said toner layer over the toner image bearing surface whereby said second powder is preferentially deposited on the irradiated areas of said image bearing surface;
fusing said photoconductive toner particles and said second powder particles by heating to form a continuous film, wherein the affinity between a main resinous component of said photoconductive toner and that of said second powder is high and both main resinous components are compatible with each other when fused by heating; and
discharging the charged toner particles of said charged toner layer by uniform irradiation and removing said discharged toner particles from the substrate, after electrostatically spraying said second powder over the toner image bearing surface so that all of the removed toner particles may be reused.

3,926,629

ELECTROPHOTOGRAPHIC METHOD AND PLATE EMPLOYING A PHTHALDCYANINE POLYMER

John W. Weigl, W. Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 18,754, March 11, 1970, abandoned, which is a continuation-in-part of Ser. No. 468,983, July 1, 1965, abandoned. This application Dec. 17, 1973, Ser. No. 425,653
Int. Cl.² G03G *5/07, 13/00, 17/04*
U.S. Cl. 96—1.5 **12 Claims**

9. A xerographic plate comprising an electrophotographic film of a polymer in which at least one of the recurring molecular units includes the phthalocyanine molecule, said polymer comprising at least one recurring molecular unit in addition to the unit including phthalocyanine, said additional unit being characterized in that it imparts flexibility and toughness to the interpolymer which it forms with said phthalocyanine including unit.

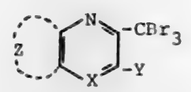
3,926,630

PRODUCTION OF POSITIVE COLOUR IMAGES UTILIZING A PHOTOGRAPHIC MATERIAL CONTAINING A SPIROPYRAN COMPOUND AND A POLYHALOGEN COMPOUND

Jozef Willy Van den Houte, Berchem, Belgium, assignor to Agfa-Gevaert, Mortsel, Belgium

Division of Ser. No. 334,247, Feb. 21, 1973, abandoned. This application Sept. 26, 1974, Ser. No. 509,338
Claims priority, application United Kingdom, Feb. 22, 1972, 8164/72
Int. Cl.² G03C *5/04, 5/24*
U.S. Cl. 96—27 E **10 Claims**

1. A photographic process in which a positive color image is produced by the steps of:
1. imagewise exposing a photosensitive recording material containing a photosensitive dye-forming composition comprising:
a. as dye precursor compound at least one spiropyran compound of the group consisting of a spirodibenzopyran, a spirodinaphthopyran, a spirobenzonaphthopyran, a 1,3,3-trimethylindolinobenzospiropyran, a 1,3,3-trimethylindolinonaphthospiran or a spiropyran that contains an anthracene or phenanthrene nucleus,
b. at least one ultraviolet sensitive polyhalogen compound corresponding to the following general formula:



in which:
X represents a methine group or nitrogen,
Y represents hydrogen, a lower alkyl group or $—CBr_3$, and
Z represents the necessary atoms to close a benzene nucleus,
to ultraviolet radiation of an intensity sufficient to produce at least a colored image in the exposed areas,
2. heating the recording material until the colored image has been bleached, and
3. overall exposing the recording material to active electromagnetic radiation of an intensity sufficient to produce a color image in the initially unexposed areas thereof.

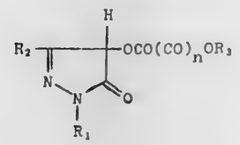
3,926,631

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

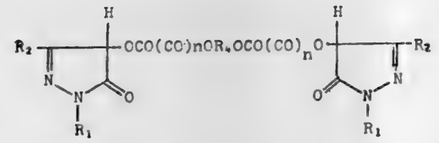
Atsuaki Arai; Yasushi Oishi; Minoru Yamada; Nobuo Furutachi, and Kotaro Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 15, 1974, Ser. No. 461,204
Claims priority, application Japan, Apr. 13, 1973, 48-41869
Int. Cl.² G03C *5/54, 1/40*
U.S. Cl. 96—29 D **20 Claims**

20. A process of forming a color image which comprises developing a light-sensitive material comprising a support having thereon a silver halide photographic emulsion layer in combination with a magenta-forming coupler having the General Formula (I) or (II)



(I)



(II)

wherein *n* is 0 or 1 R_1 is a hydrogen atom or a group having 1 to about 50 carbon atoms selected from the group consisting of a straight chain or branched chain alkyl group; an alkenyl group; a cycloalkyl group; a substituted alkyl or substituted cycloalkyl group containing as a substituent, a halogen atom or a nitro, cyano, aryl, alkoxy, aryloxycarboxy, alkoxycarbonyl, aryloxycarbonyl, sulfo, sulfamoyl, carbamoyl, acylamino, ureido, heterocyclic, arylsulfonyloxy or oxo group; a substituted aryl group containing at least one of an alkyl, alkoxy, aryloxy, carboxy, alkoxycarbonyl, acylamino, carbamoyl, alkylcarbamoyl, dialkylcarbamoyl, arylcarbamoyl, alkylsulfonamido, arylsulfonamido, sulfamoyl, alkylsulfamoyl, cyano and nitro groups or halogen atoms as a substituent; a heterocyclic group containing, as a hetero-atom, a nitrogen, oxygen and/or sulfur atom; a substituted heterocyclic group with the substituents above described for the aryl group; a carbamoyl group and a thiocarbamoyl group;
R_2 represents a group having 1 to about 50 carbon atoms selected from the group consisting of the same alkyl, substituted alkyl, aryl, substituted aryl, heterocyclic or substituted heterocyclic groups as described for R_1; an alkoxycarbonyl group; an aryloxycarbonyl group; an aralkyloxycarbonyl group; an alkoxy group; an aryloxy group; an alkythio group; an arylthio group; a carboxy group; an amino group; an alkylamino group; a cycloalkylamino group, an N,N-dialkylamino group; an N-alkyl-N-arylamino group; an N-arylamino group; an amido group; an N-alkylacylamino group; an N-arylacylamino group; a ureido group; an N-arylureido group; an N-alkylureido group; a thioureido group; an N-alkylthioureido; an N-arylthioureido group; a carbamoyl group; a sulfamoyl group; a piperidino group; a pyrrolidino group; a guanidino group; an N-alkylguanidino group; and an N-arylguanidino group;
R_3 represents a group having 1 to about 30 carbon atoms selected form the group consisting of a straight chain or branched chain alkyl group; an alkenyl group; a cycloalkyl group; an alkyl or cycloalkyl group substituted with a halogen atom or a nitro, cyano, aryl, alkoxy, carboxy-ester, sulfoester, amido, sulfonamido, ureido, carbamyl or sulfamyl group; an aryl group substituted with one or more halogen atoms, or nitro, cyano, alkyl, aryl, alkoxy, aryloxy, alkoxycarbonyl, acyl, arylcarbonyl, alkylsulfonyl, arylsulfonyl, sulfoester, amido, sulfonamido, ureido, carbamyl and sulfamyl groups; a heterocyclic group containing, as a hetero-atom, a nitrogen, oxygen and/or sulfur atom, and a substituted heterocyclic group containing substituents above described for the aryl group;
R_4 represents a divalent group having from 1 to 30 carbon atoms selected from the group consisting of as an alkylene group and an arylene group;
wherein either R_1 or R_2 may form a divalent group of about 30 or less carbon atoms linking two 5-pyrazolone moieties of the General Formula (I) and/or (II); and in which at least one of R_1 and R_2 contains a water-solubilizing sulfo, carboxyl or sulfonamido group and R_3 is a hydrophobic group of either or more carbon atoms with an alkaline aqueous solution containing an aromatic primary amine color developing agent and then transferring the resultant magenta dye to a receiving layer containing a basic polymer.

3,926,632

PHOTOGRAPHIC SILVER HALIDE LITH MATERIAL

Emiel Alexander Hofman, Mortsel; Jules Robert Berendsen, Deurne, and Robert Joseph Pollet, Vremde, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Aug. 11, 1972, Ser. No. 279,795
Claims priority, application United Kingdom, Sept. 13, 1971, 42562/71
Int. Cl.² G03C *5/30, 1/34*
U.S. Cl. 96—66.5 **10 Claims**

1. Method of producing a high contrast image by development in a developer which contains hydroquinone or a hydro-

quinone drivative having a low sulphite ion content and at a temperature above 30°C. of an exposed photographic light-sensitive lithmaterial which will provide a characteristic curve with a short toe and high gamma and which will produce sharply defined images with high density extending to the edges of lines and dots comprising a support having thereon at least one light-sensitive high contrast silver halide emulsion having a fine grain, which comprises at least 50 mole percent of silver chloride and at least 5 mole percent of silver bromide, wherein the said material comprises a disulphide compound of the formula:

$$X - A_1 - S - S - A_2 - Y$$

wherein:

each of A_1 and A_2 represents an alkylene group, an arylene group, or a benzthiazolyl group, and

each of X and Y represents a water-solubilizing group in acid or salt form, or a substituent carrying a water-solubilizing group, said substituent forming a bridging group between the water-solubilizing group and A_1 and A_2 selected from a saturated or unsaturated aliphatic group, an aromatic group and a benzimidazolylene group.

3,926,633

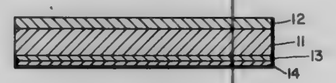
MOTION PICTURE FILM SOUNDTRACK AND METHOD FOR PRODUCTION THEREOF

Peter Anderson Custer, Newtown, Bucks County, Pa. 18940

Filed July 2, 1973, Ser. No. 375,812

Int. Cl.² G03C *1/76, 7/24, 5/14*

U.S. Cl. 96—68 **5 Claims**



1. A photographic film comprising a base, a visible light sensitive silver halide emulsion layer and an infra-red sensitive silver halide emulsion soundtrack layer, said soundtrack layer containing an ultra-violet fluorescent compound.

3,926,634

COLOR SILVER HALIDE PHOTOGRAPHIC MATERIALS CONTAINING COUPLERS HAVING AN OLEOPHILIC GROUP

Atsushi Sugizaki; Takeshi Hirose; Yukio Yokota; Akio Okumura; Yasushi Oishi, and Atsuaki Arai, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

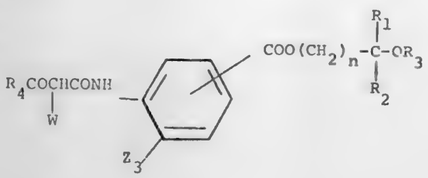
Filed Mar. 27, 1974, Ser. No. 455,090

Claims priority, application Japan, Mar. 27, 1973, 48-35379

Int. Cl.² G03C *1/40*

U.S. Cl. 96—100 **7 Claims**

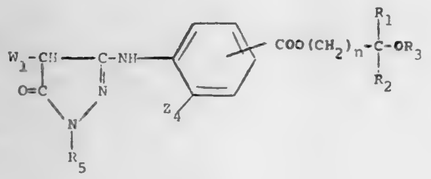
1. A color photographic material comprising a support having thereon at least one silver halide emulsion layer containing at least one coupler capable of forming a dye by an oxidative coupling reaction with the oxidation product of an aromatic primary amino developing agent, wherein said coupler is selected from the group consisting of couplers represented by the general formulae (IV), (V), (Va), (VI) or (VIa) below:



(IV)

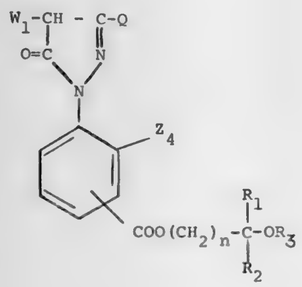
where n represents an integer from 1 to 7,

R_1 and R_2 each represents a hydrogen atom or an alkyl group; R_3 represents an aryl group; R_4 represents an aliphatic residue, an aromatic residue, or a heterocyclic residue, W represents a hydrogen atom or a coupling residue capable of being released by oxidative coupling with the oxidation product of an aromatic primary amino developing agent, and Z_3 represents a hydrogen atom, an alkyl residue, an alkoxyl residue, an aryloxy residue, an amino residue, or a halogen atom, said alkoxycarbonyl group being at the 4- or 5-position of the anilide ring;



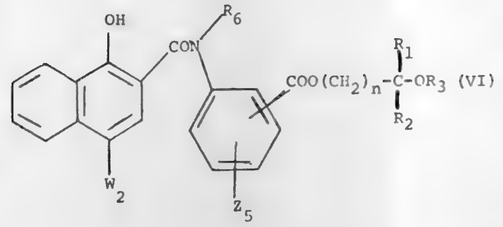
(V)

wherein R_1, R_2, R_3 and n have the same meaning as in general formula (IV); R_5 represents an aromatic residue or a heterocyclic residue, W_1 represents a hydrogen atom or a coupling residue capable of being released by oxidative coupling with the oxidation product of an aromatic primary amino developing agnet, and Z_4 represents a hydrogen atom, an alkyl residue, an alkoxyl residue, an aryloxy residue, or a halogen atom, the alkoxycarbonyl group being at the 4- or 5-position of the anilino ring;



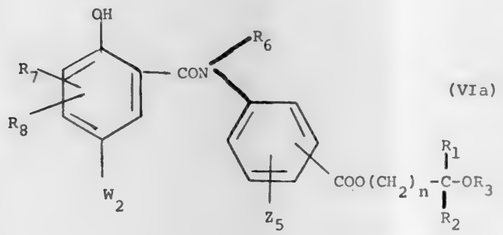
(Va)

wherein R_1, R_2, R_3, W_1, Z_4 and n have the same meaning as described with respect to general formula (V), Q represents an alkyl residue, an alkoxy residue, a N-alkylamino residue, an anilino residue or an acylamino residue;



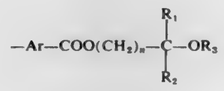
(VI)

wherein R_1, R_2, R_3 and n have the same meaning as in general formula (IV), R_6 represents a hydrogen atom or an alkyl group having less than 5 carbon atoms, W_2 represents a hydrogen atom or a coupling residue capable of being released by oxidative coupling with the oxidation product of an aromatic primary amino developing agent, and Z_5 represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxyl group, and aryl group, an aryloxy group, an amino group, or an acylamino group; or

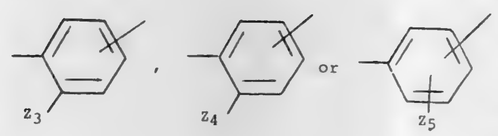


(VIa)

wherein R_1, R_2, R_3, R_6, W_2, Z_5 and n have the same meaning as described with respect to general formula (VI), R_7 and R_8 each represents a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group; wherein the alkoxycarbonylarylene group of said couplers has from about 15 to 50 carbon atoms, said group being representable by the formula:



wherein -Ar- is



for couplers of the general formula IV, (V) +(Va) and (VI) + (VIa), respectively.

3,926,635

PHOTOGRAPHIC MATERIAL WITH POLYMERIC STABILIZERS

Wilhelm Saleck, Schildgen; Helmut Engelhard, Dormagen; Wolfgang Himmelmann, Opladen; Francis Bentz, Cologne, and Helmut Mader, Odenthal-Hahnenberg, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

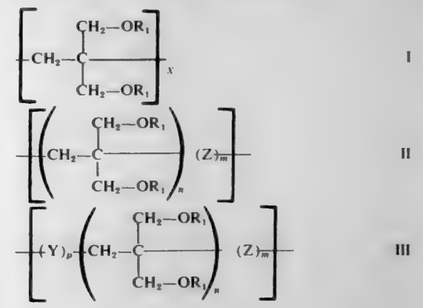
Filed June 20, 1974, Ser. No. 481,187

Claims priority, application Germany, June 27, 1973, 2332562

Int. Cl.² G03C *1/04, 1/34*

U.S. Cl. 96—114 **5 Claims**

1. A light-sensitive photographic material containing at least one silver halide emulsion layer, said emulsion layer containing at least one compound of the formulae:



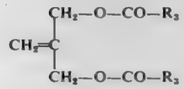
in which

R_1 represents H, alkyl, aryl, cyanoalkyl or -CO-NHR₂,

R_2 represents H, alkyl, cycloalkyl, aryl or alkoxy alkyl,

Z represents acrylic, methacrylic, fumaric or maleic acid groups, optionally in a salt form, an N-alkyl-, N-hydroxyalkyl- or N-oxoalkyl acrylamide or methacrylamide group, fumaric or maleic acid semiamide optionally in a salt form, mono- or dihydroxyalkyl acrylate or methacrylate, sulphoalkyl acrylate or methacrylate, or vinyl-pyrrolidone, -caprolactam, -piperidine or -imidazole,

Y = polymerisable group selected from styrene, acrylic acid esters or



wherein R_3 represents methyl or ethyl,

$X = 3 - 17$

$n = 5 - 99.5$ mols-% and

$m = 95 - 0.5$ mols-% when p = 0 and

$n = 5 - 80$ mols-%,

$m = 50 - 10$ mols-% and

$p = 45 - 10$ mols-% when p 0.

3,926,636

PHOTOCURABLE COMPOSITIONS

Helmut Barzynski; Matthias Marx, both of Bad Durkheim; Gerhard Storck, Ruchheim, and Dietrich Saenger, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Aug. 28, 1973, Ser. No. 392,242

Claims priority, application Germany, Aug. 29, 1972, 2242394

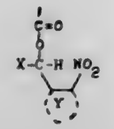
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² G03C *1/70*

U.S. Cl. 96—115 R **12 Claims**

1. A composition curable under the action of light which consists of:

A. at least one substance containing at least two aromatic or heteroaromatic o-nitrocarbinol ester groups of the general formula:



in which Y is an aromatic or pyridine ring system of five to 14 ring members and X is hydrogen or alkyl of one to eight carbon atoms or an aryl or aralkyl of up to 12 carbon atoms; and

B. at least one compound with at least two aziridine groups or isocyanate groups in the molecule.

9. A process for the production of moldings, impregnations, bonds, coatings, printing inks and printing plates which comprises exposing to light of a wavelength of from 200 to 500 nm a composition as claimed in claim **1.**

11. A molding, impregnation, bond, coating, printing ink or printing plate prepared using a photocurable composition as claimed in claim **1.**

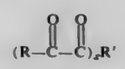
3,926,637

PERMANENT ORGANIC VOLUME PHASE HOLOGRAPHIC RECORDING MEDIUM

Robert Alfred Bartolini, Trenton, and Allen Bloom, East Windsor, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 4, 1973, Ser. No. 403,403
Int. Cl.² G03C *1/76, 3/00, 5/04*
U.S. Cl. 96—115 R **5 Claims**

1. A medium for recording permanent volume phase holograms consisting essentially of a cured, transparent acrylic polyester polymer containing an α-diketone which is soluble in said polyester and is capable of intermolecular hydrogen atom abstraction with said polyester and which has the formula



wherein R and R′ independently are selected from the group consisting of methyl, branched chain alkyl and cyclic hydrocarbon groups wherein the carbon atoms are part of an aromatic or aliphatic ring and R and R′ together can form part of an aromatic or aliphatic ring; and *x* is 2; said α-diketone being present in an amount sufficient to cause a permanent change in the index of refraction of said medium when illuminated by a spatially modulated coherent light beam having a wavelength corresponding to the absorption band wavelength tail of said α-diketone.

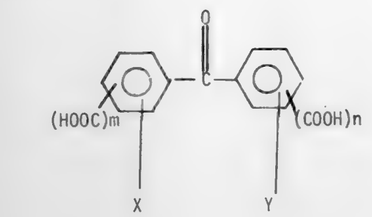
3,926,638

PHOTOPOLYMERIZABLE COMPOSITIONS COMPRISING MONOCARBOXYL-SUBSTITUTED BENZOPHENONE REACTION PRODUCTS

George Rosen, Wayne; Daniel J. Carlick, Livingston, and Ralph H. Reiter, Wayne, all of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 200,174, Nov. 18, 1971, abandoned. This application Oct. 11, 1973, Ser. No. 405,515
Int. Cl.² G03C *1/68*
U.S. Cl. 96—115 R **7 Claims**

1. A photopolymerizable element comprising a support and a coating thereon consisting of the product of the reaction of (1) a resin selected from the group consisting of polyamide, alkyd, oil-modified alkyd, isocyanate-modified alkyd, polester, polyether, epoxy, carbamate, phenolic, and urethane resins and (2) a monocarboxy-substituted benzophenone having the formula



wherein *m* and *n* is each 0 or 1 and the sum of *m* and *n* is 1; and X and Y is each 1 to 4 halogen atoms or dialkylamino groups having 1 to 4 carbon atoms; X and Y may be the same or different and either or both may be omitted.

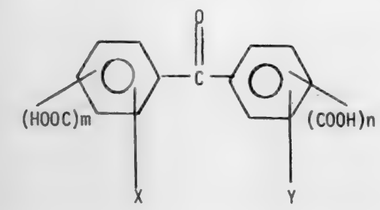
3,926,639

PHOTOPOLYMERIZABLE COMPOSITIONS COMPRISING POLYCARBOXYSUBSTITUTED BENZOPHENONE REACTION PRODUCTS

George Rosen, Wayne; Daniel J. Carlick, Livingston, and Ralph H. Reiter, Wayne, all of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 200,174, Nov. 18, 1971, abandoned. This application Oct. 11, 1973, Ser. No. 405,516
Int. Cl.² G03C *1/68*
U.S. Cl. 96—115 R **8 Claims**

1. A photopolymerizable element comprising a support and a coating thereon consisting of the product of the reaction of (1) a resin selected from the group consisting of polyamide, alkyd, oil-modified alkyd, isocyanate-modified alkyd, polyester, polyether, epoxy, carbamate, phenolic, and urethane resins and (2) a polycarboxy-substituted benzophenone having the formula



wherein *m* and *n* is each an integer from 0 to 3 and the sum of *m* plus *n* is in the range of 2 to 6; and X and Y is each 1 to 4 halogen atoms or dialkylamino groups having 1 to 4 carbon atoms; X and Y may be the same or different and either or both may be omitted.

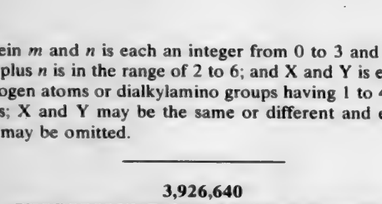
3,926,640

PHOTOPOLYMERIZABLE COMPOSITIONS COMPRISING BENZOPHENONE REACTION PRODUCTS

George Rosen, Wayne, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 200,174, Nov. 18, 1971, abandoned. This application Oct. 11, 1973, Ser. No. 405,517
Int. Cl.² G03C *1/68*
U.S. Cl. 96—115 P **6 Claims**

1. A photopolymerizable element comprising a support and a coating thereon consisting essentially of the product of the reaction of (1) a hydroxy-containing polyethylenically unsaturated ester or an isocyanate-modified hydroxy-containing polyethylenically unsaturated ester which is the product of the reaction of (a) an ethylenically unsaturated acid and (b) a polyhydric alcohol and (2) a monocarboxy-substituted benzophenone having the formula



wherein *m* and *n* is each 0 or 1 and the sum of *m* plus *n* is 1; and X and Y is each 1 to 4 halogen atoms or dialkylamino groups having 1 to 4 carbon atoms; X and Y may be the same or different and either or both may be omitted.

3,926,643

PHOTOPOLYMERIZABLE COMPOSITIONS COMPRISING INITIATOR COMBINATIONS COMPRISING THIOXANTHENONES

Catherine Teh-lin Chang, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed May 16, 1974, Ser. No. 470,637
Int. Cl.² G03C *1/68, 1/70*
U.S. Cl. 96—115 P **9 Claims**

1. In a photopolymerizable composition the improvement comprising the combination of a thioxanthenone photoinitiator and at least one other photoinitiator selected from the group consisting of a lophine dimer, a polynuclear quinone compound, 2,3-bornanedione, 4,4′-bis(dimethylamino) benzophenone, and benzoin methyl ether.

9. In a photopolymerizable composition the improvement comprising a photoinitiating mixture of thioxanthenone and 3,6-bis(dimethylamino) thioxanthenone.

3,926,644

TREATMENT OF ORGANIC BIODEGRADABLE MATERIALS WITH MONOCHLOROACETATE ESTERS OF CHLORINATED PHENOLS

Saul Kaye, Evanston, Ill., assignor to Ferro Corporation, Cleveland, Ohio

Filed Aug. 8, 1974, Ser. No. 495,563
Int. Cl.² C08J *3/20*
U.S. Cl. 106—15 AF **22 Claims**

1. In the combination of an organic biodegradable polymeric material and a biostatic agent comprising a chlorinated phenol normally adversely affecting desirable properties of said material, the improvement comprising a biostatic amount of a biostatic agent consisting essentially of a chlorinated, esterified phenol selected from the group consisting of a 2,2′ methylene bis (ester of chlorinated phenol) and an ester of chlorinated phenol in which each ester group consists of —$OCOCH_2Cl$, said agent being adapted to reduce the susceptibility of said material to degradation by microorganisms without appreciably deteriorating other desirable physical properties of the material.

3,926,645

SYMPATHETIC INK

Walter Strahl, 185 W. End Ave., New York, N.Y. 10023

Filed Jan. 25, 1974, Ser. No. 436,646
Int. Cl.² C09D *11/00, 11/14*
U.S. Cl. 106—21 **5 Claims**

1. A sympathetic ink which is invisible when applied to paper or other materials having an absorbent surface and which becomes visible on wetting said paper or other material, said ink consisting of a halogenated hydrocarbon solvent consisting essentially of methylene chloride having dissolved therein between about 0.25% and about 1% of a substantially colorless, substantially water insoluble cellulose ether of a degree of substitution of at least 2.42 and an ethoxyl content of at least 47.5%.

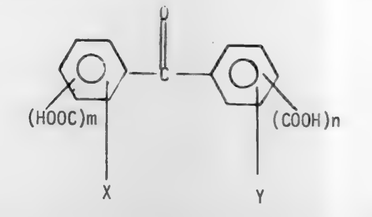
3,926,641

PHOTOPOLYMERIZABLE COMPOSITIONS COMPRISING POLYCARBOXYSUBSTITUTED BENZOPHENONE REACTION PRODUCTS

George Rosen, Wayne, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 200,174, Nov. 18, 1971, abandoned. This application Oct. 11, 1973, Ser. No. 405,518
Int. Cl.² G03C *1/68*
U.S. Cl. 96—115 P **6 Claims**

1. A photopolymerizable element comprising a support and a coating thereon of the product of the reaction of (1) a hydroxyl-containing polyethylenically unsaturated ester or an isocyanate-modified hydroxyl-containing polyethylenically unsaturated ester which is the product of the reaction of (a) an ethylenically unsaturated acid and (b) a polyhydric alcohol and (2) a polycarboxy-substituted benzophenone acid or anhydride having the formula



wherein *m* and *n* is each 0 or 1 and the sum of *m* plus *n* is 1; and X and Y is each 1 to 4 halogen atoms or dialkylamino groups having 1 to 4 carbon atoms; X and Y may be the same or different and either or both may be omitted.

3,926,642

PHOTOPOLYMER LITHOGRAPHIC PLATE ELEMENT

David S. Breslow, and David A. Simpson, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 305,209, Nov. 9, 1972, Pat. No. 3,847,609. This application Mar. 25, 1974, Ser. No. 454,624
Int. Cl.² G03C *1/68*
U.S. Cl. 96—115 R **2 Claims**

1. A lithographic plate element comprising a support and a layer of a composition comprising a photooxygenation sensitizer and a cross-linked polymer containing extralinear olefinic unsaturation of the type in which there is no more than one hydrogen atom on each of the double bond carbons and in which there is at least one allylic hydrogen on at least one of the carbons adjacent to the double bond carbons.

3,926,646

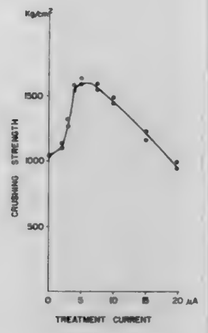
PREPARATION OF DENTAL CEMENTS

Kiyoshi Inoue, No. 16-8 3-chome, Kami-Yoga, Setagaya-ku, Tokyo, Japan

Continuation of Ser. No. 873,204, Nov. 3, 1969, abandoned, which is a continuation-in-part of Ser. No. 731,258, May 22, 1968, abandoned. This application Apr. 26, 1974, Ser. No. 464,367
Int. Cl.² C09K *3/00*
U.S. Cl. 106—35 **12 Claims**

1. In the method of making a settable dental cement in paste form wherein finely divided oxide material is mixed with a liquid containing phosphoric acid and water to form a dental paste admixture, the improvement consisting essentially of preparing such admixture, incorporating from 0 to 20% fluo-

ride compound therein, spatulating the resultant admixture for from 0.5 to 5 minutes to form said paste, and applying an electric field by low-power electrical energy across said admixture to cause an electric current of microampere order to pass therethrough during spatulation for a time sufficient to form a dental cement of enhanced crushing strength when set, as compared with that of such cement not so treated.



3,926,647

PROCESS FOR THE PRODUCTION OF SYNTHETIC WOLLASTONITE AND DIOPSIDE

Josef Wuhrer, Wulfrath, Germany, assignor to Rheinische Kalksteinwerke GmbH, Germany

Continuation-in-part of Ser. No. 102,895, Dec. 30, 1970, abandoned. This application Aug. 2, 1973, Ser. No. 384,923
Claims priority, application Germany, Aug. 2, 1972, 2237906
Int. Cl.² C04B *35/16*
U.S. Cl. 106—39.5 **13 Claims**

1. A process for the production of a synthetic material selected from the group consisting of wollastonite, diopside and mixtures thereof which comprises preparing a mixture of grains having a maximum particle size of about 0.5 mm. with not more than about 10% by weight of said grains having a particle size above 0.2 mm. of basic materials consisting essentially of a member selected from the group consisting of calcium oxide and a mixture of calcium oxide with up to an equimolar proportion of magnesium oxide, and silica in an amount of from 4 to 15% by weight in excess of the stoichiometric amount necessary to produce said synthetic material, the impurities in said basic materials consisting essentially of aluminum oxide and iron oxide in a total amount of less than 1.0% and alkalis in an amount of less than 0.1%, both related to the produced synthetic material, and sintering said mixture free from fluxing agents and without prior compacting at a temperature of from about 1200° to 1500°C. for a time sufficient to substantially completely sinter and convert said basic materials to said synthetic material substantially free from free calcium oxide, free magnesium oxide, dicalcium silicate and dimagnesium silicate.

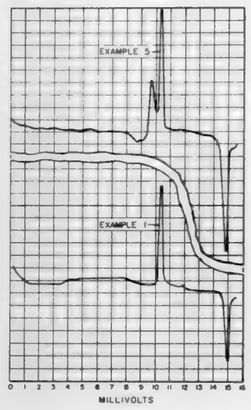
3,926,648

SINTERED CORDIERITE GLASS-CERAMIC BODIES

David M. Miller, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed June 7, 1974, Ser. No. 477,197
Int. Cl.² C03C *3/22*
U.S. Cl. 106—39.6 **2 Claims**

1. A sintered glass-ceramic body containing hexagonal cordierite as the crystalline phase, exhibiting a coefficient of thermal expansion (25°–1000°C.) between about 13–18 × 10^{-7}/°C., and demonstrating a use temperature up to 1300°C. consisting essentially, by weight on the oxide basis, of about



11–16.5% MgO, 31–41% Al_2O_3, 47–55% SiO_2, and 0.5–2.5% K_2O and/or Cs_2O.

3,926,649

BOROSPHOSPHATE GLASS COMPOSITIONS WITH HIGH WATER RESISTANCE AND LOW SOFTENING POINT

Neil Hunter Ray; John Nicholas Clayton Laycock, and William Derek Robinson, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 293,538, Sept. 29, 1972, abandoned. This application Mar. 3, 1975, Ser. No. 554,693
Claims priority, application United Kingdom, Oct. 15, 1971, 48105/71
Int. Cl.² C03C *3/16*
U.S. Cl. 106—47 R **9 Claims**

1. Inorganic oxide glasses having the following compositions

(P_2O_5 + B_2O_3) − 75 ± 2.5

at least one oxide selected from alkali metal oxides alkaline earths and zinc oxide − 25 ± 2.5,

the total of the foregoing components being at least 99 mole % of the total composition, excluding water, and the molar ratio P_2O_5 : B_2O_3 being from 15:1 to 6:1, wherein said glasses have a transformation temperature between 125° and 225°C. and a water solubility between 0.0 and 5.5% per minute at 100°C.

3,926,650

FOAMING AGENT FOR PLASTER AND CEMENT COMPOSITIONS

Jost Lange, Naurod; Gerhart Schneider, Frankfurt am Main, and Albert Zeh, Niederwalluf, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 199,302, Nov. 16, 1971, abandoned. This application Feb. 26, 1974, Ser. No. 445,980
Claims priority, application Germany, Nov. 16, 1970, 2056255
Int. Cl.² C04B *7/02*
U.S. Cl. 106—90 **2 Claims**

1. A foamable composition comprising water, calcined gypsum or hydraulic cement and, as a foaming agent, about 0.01 to 5 parts by weight per 100 parts by weight of calcined gypsum or hydraulic cement, of the sodium salt of an α-olefin sulfonate of an olefin having 14 to 20 carbon atoms in the molecule.

3,926,651

METHOD AND APPARATUS FOR USE IN FIRING RAW MATERIAL FOR CEMENT

Yoshihiro Ichikawa; Tetsuo Fujisawa, both of Nishinomiya, and Yoshiro Seo, Kobe, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Dec. 5, 1973, Ser. No. 421,804
Claims priority, application Japan, Dec. 8, 1972, 47-123069
Int. Cl.² C04B *7/44*
U.S. Cl. 106—100 **4 Claims**

1. A method for use in firing raw material for use in the production of cement, utilizing a combination of a counter-flow type preheating device with an upwardly divergent configuration for preheating raw material of cement, a rotary kiln for firing the raw material preheated in said preheating device and a cooling device for cooling burnt clinker produced as the result of firing the preheated raw material in said rotary kiln, in which air acts as a coolant in a cooling device and is subsequently heated, comprising the steps of:

withdrawing and further heating said heated air from said cooling device;

mixing said further heated air with hot gas being directly exhausted from said rotary kiln, thereby adjusting the temperature of said mixed gas being so formed so as to be higher than that of the raw material heated in said preheating device;

introducing said mixed gas into the bottom of said upwardly divergent preheating device in an ascending manner;

feeding powdery raw material into said preheating device from above so as to flow downwardly in a counter-flow manner with respect to said ascending mixed gas; and

supplying fuel into said preheating device to burn the same with said mixed gas, whereby coment raw material in a powder form flowing therein and carried on the gas flow therein may be calcinated and caused to flow downwardly against the ascending flow of said mixed gas for being fed into said rotary klin.

3,926,652

PERLITE ACETYLENE CYLINDER FILLER COMPOSITION

Willie J. Sisco, Jr., Southaven, Miss.; Cecil L. Long, West Memphis, Ark., and James M. Kifer, Memphis, Tenn., assignors to Coyne Cylinder Company, South San Francisco, Calif.

Filed Apr. 26, 1974, Ser. No. 464,380
Int. Cl.² C04B *13/12, 15/06, 21/00*
U.S. Cl. 106—118 **8 Claims**

1. In an acetylene container filler composition consisting essentially of lime, perlite, fibrous asbestos, and water, the improvement wherein substantially all of said perlite is of a particle size which passes through a 16 mesh screen.

3,926,653

METHOD OF BUILDING AND MAINTAINING SLURRY CONSISTENCY

Richard F. Shannon, Lancaster, and Jerry L. Helser, Hebron, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Feb. 21, 1974, Ser. No. 444,460
Int. Cl.² C04B *1/00*
U.S. Cl. 106—119 **7 Claims**

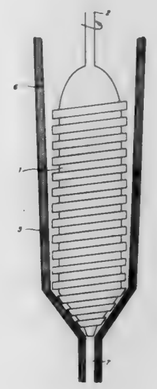
1. A method of building and maintaining the consistency of a hydrous calcium silicate insulation product forming aqueous slurry of calcareous and siliceous materials stabilized with reinforcing fibers, the method comprising allowing the slurry to quiesce for a period of time ranging from 15 to 30 minutes after initial formation of the slurry, and then subjecting the slurry to alternate periods of mixing and quiescing wherein, in the alternate periods of mixing and quiescing, each mixing period ranges from 30 seconds to 10 minutes and each quiescing period ranges from 20 minutes to 2 hours.

3,926,654

METHOD OF PREPARING A POLYPHASE SYSTEM

Frans Henri Claes, Edegem, Belgium, assignor to Agfa-Gevaert, Mortsel, Belgium

Division of Ser. No. 129,664, March 31, 1971, Pat. No. 3,801,326. This application Nov. 7, 1973, Ser. No. 413,458
Claims priority, application United Kingdom, Apr. 3, 1970, 15948/70
Int. Cl.² G03C *1/02*; C09H *11/00*
U.S. Cl. 106—137 **8 Claims**



1. A method of preparing an aqueous dispersion of a water-immiscible solvent-soluble organic polymer by mixing together (a) a solution of said polymer in a water-immiscible organic solvent and (b) an aqueous liquid, said method comprising the steps of simultaneously and continuously introducing said solution and said liquid at a substantially controlled rate into one end of an annular passageway defined by generally closely spaced surfaces of revolution, continuously removing the resultant admixture of liquids from the other end of said passageway at a rate to produce a continuous flow of said admixture through said passageway from said one end to said other end while maintaining the passageway filled with said admixture, said passageway being elongated in the general direction of said flow therethrough and gradually tapering from said one end to the other, and producing relative rotational movement between said surfaces whereby at least one of said surfaces moves substantially obliquely to the general direction of flow through said passageway, the velocity of such rotational movement being sufficient to induce a turbulent flow condition in substantially the entirety of said admixture within said passageway.

3,926,655

CLEAR PERFUMED POLYAMIDE RESIN AND METHOD OF MAKING IT

Jeffrey M. Miles, Middletown, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 328,425, Jan. 31, 1973, abandoned. This application Sept. 23, 1974, Ser. No. 508,120
Int. Cl.² C11B *9/00*; C08L *91/06*
U.S. Cl. 106—243 **4 Claims**

1. A clear thermoplastic resin body consisting essentially of a thermoplastic polyamide resin containing about 1 to 30% perfume oil and being substantially free of cosolvent, said thermoplastic polyamide being a fatty polyamide which softens in a range of 10 to 15°C. on being heated within the range of about 100°–200°C. and has a sharp decrease in viscosity at temperatures above its softening range and which has a molecular weight within the range between about 6000 and 9000.

3,926,656
IMPROVED FLOWMOLDING COMPOSITION
John Anthony Mangels, Allen Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 30, 1974, Ser. No. 519,158
Int. Cl.² C08L *91/06*; **C04B** *35/58*
U.S. Cl. 106—272 **4 Claims**

1. An improved flowmolding composition which comprises:
65–77% by volume of a granular refractory material;
0.1–1.0% by volume of a deflocculant;
the remainder of volume being a 90/10 ratio by weight mixture of a 135°F melting paraffin wax and a 195°F microcrystalline wax.

3,926,657
PAPER TUBE ADHESIVE AND PAPER TUBE
William G. McConnell, P.O. Box 266, Dalton, Ga. 30720
Filed Oct. 18, 1974, Ser. No. 515,893
Int. Cl.² C09D *1/02*; **B31C** *1/00*; **F16L** *9/14*; **C09J** *1/02*
U.S. Cl. 106—286 **2 Claims**

1. Paper tube adhesive consisting essentially of a mixture of from 10 to 40% by weight calcium carbonate, and the remainder sodium silicate and solvent, the percentages being based upon the total weight of the mixture.

3,926,658
COATING COMPOSITION
Susan Margaret Cole; David Robert Mason, and Roger Norman Rothon, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England
Filed June 12, 1973, Ser. No. 369,200
Claims priority, application United Kingdom, June 22, 1972, 29335/72
Int. Cl.² C09K *11/30*, *11/20*
U.S. Cl. 106—287 **8 Claims**

1. A liquid composition comprising a mixture of an ionic aluminum compound and an ionic titanium compound dissolved in a solvent for said compounds, the ratio of aluminum: titanium in the composition being in the range 20:1 to 1:20 parts by weight of the metals and in the composition there being present phosphate ions to the extent of at least one atom of phosphorus per 20 atoms of metal.

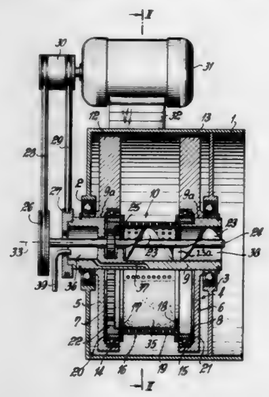
3,926,659
IRON-CONTAINING MICA FLAKE PIGMENTS
Horst Bernhard; Reiner Esselborn; Reiner Hesse, and Horst Russmann, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschraenkter Haftung, Darmstadt, Germany
Filed Mar. 15, 1974, Ser. No. 451,387
Claims priority, application Germany, Mar. 17, 1973, 2313331
Int. Cl.² C09C *1/00*
U.S. Cl. 106—291 **31 Claims**

1. A mica flake pigment of improved lightfastness consisting essentially of translucent mica flakes coated with a coating comprising up to 90% of the weight of the pigment of a continuous uniform layer of up to 500 nm thickness consisting of one only of α-, β- or γ-FeOOH or magnetite.

3,926,660
TITANIUM DIOXIDE PIGMENT COATED WITH LAYERS OF ALUMINUM OXIDE AND METAL PHOSPHATE
Bernd Holle, and Gerhard Winter, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Oct. 24, 1973, Ser. No. 409,212
Claims priority, application Germany, Nov. 15, 1972, 2255826
Int. Cl.² C09C *1/36*
U.S. Cl. 106—300 **7 Claims**

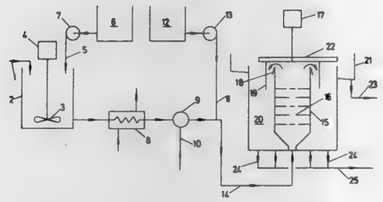
1. In the production of a non-aftercalcined titanium dioxide pigment of high greying stability when used in resin compositions, wherein the pigment is suspended in an aqueous medium, aluminum oxide and a metal phosphate are precipitated onto said pigment from the aqueous medium, the pigment is separated from the medium, washed and dried, the improvement which comprises effecting the precipitation by including in the aqueous medium a basic aluminum salt selected from the group consisting of a nitrate, chloride or mixtures thereof, adding alkali thereby to precipitate aluminum oxide onto the pigment as a layer of aluminum oxide aquate, and thereafter adding to the solution a water-soluble phosphate and a soluble compound of a metal having a valence of at least two, the phosphate of said metal being colorless and water insoluble, thereby to precipitate on said pigment a metal phosphate.

3,926,661
CENTRIFUGE CONSTRUCTION
Werner Steprath, Gohr, Germany, assignor to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Germany
Filed Feb. 1, 1974, Ser. No. 438,606
Claims priority, application Germany Feb. 3, 1973, 2305326
Int. Cl. B04b *5/00*, *9/08*; **C13f** *1/06*
U.S. Cl. 127—19 **10 Claims**



1. In a centrifuge, a combination comprising a rotor mounted for rotation about a first axis; a screen drum mounted on said rotor for rotation about a second axis parallel to but laterally offset from said first axis; a conveying screw mounted in said screen drum for rotation jointly with said rotor about said first axis, said conveying screw having screw flights which extend close to an inner circumferential surface of said screen drum; drive means for rotating said screen drum at a first circumferential speed, and for rotating said rotor and conveying screw at a different second circumferential speed; and admitting means for admitting a liquid-containing mass into said screen drum, so that during centrifuging the liquid can escape from the latter whereas the retained centrifuged material forms on said inner circumferential surface which, due to the difference between said first and second speeds, moves incrementally towards said conveying screw for engagement by the same and conveyance out of said screen drum.

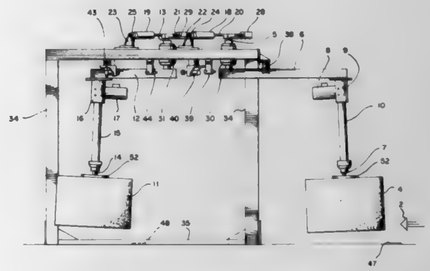
3,926,662
PRODUCTION OF CANE SUGAR
John Trethowan Rundell, Keston, and Paul Richmond Pottage, Bromley, both of England, assignors to Tate & Lyle Limited, London, England
Continuation-in-part of Ser. No. 263,784, June 19, 1972, Pat. No. 3,853,616. This application Sept. 23, 1974, Ser. No. 508,195
Claims priority, application United Kingdom, Sept. 28, 1973, 45516/73
Int. Cl.² C13D *3/00*
U.S. Cl. 127—48 **10 Claims**



1. In a process for removing suspended solid impurities from a calcium-containing sugar liquor selected from the group consisting of cane sugar evaporated juice and cane sugar affination syrup, which comprises: forming therein an insoluble calcium phosphate primary floc containing said suspended impurities; aerating the liquor containing the primary floc, with agitation; distributing uniformly throughout the aerated liquor from 1 to 40 parts by weight of anionic flocculating agent per million parts by weight of sugar in the liquor, to initiate the formation of a secondary floc therein, retaining the resulting mixture for from 15 seconds to 5 minutes in a flocculator vessel with non-turbulent agitation preventing the segregation of the secondary floc from the liquor and allowing the secondary floc to grow; transferring the liquor containing the secondary floc with minimal agitation and shear from the flocculator vessel to a separator vessel; allowing the secondary floc to segregate by flotation from the liquor in the separator vessel; and separately removing clarified liquor and flocculated solids from the separator vessel; the improvement which comprises forming said insoluble calcium phosphate primary floc by adding a soluble phosphate salt to said sugar liquor and employing as said anionic flocculating agent a polymer with a molecular weight of from one million to ten million containing from 50 to 80 mole percent of acrylamide units and from 50 to 20 mole percent of anionic units selected from the group consisting of acrylic acid and acrylate units.

3,926,663
METHOD AND APPARATUS FOR SCRUBBING THE ENDS AND SIDES OF A MOTOR VEHICLE
James H. Gray, 3411 E. Gold Dust Ave., Phoenix, Ariz. 85028
Filed Oct. 11, 1973, Ser. No. 405,329
Int. Cl.² B08B *1/02*
U.S. Cl. 134—6 **8 Claims**

1. A method for scrubbing the front, rear and side surfaces of a vehicle as it moves relative to a washing installation, said installation having first and second pairs of independently pivoted side mounted brushes, said method including the sequentially initiated steps of:
a. engaging each side surface of said vehicle with one brush in said first pair of brushes;
b. transposing each brush in said first pair of brushes along the corresponding side surface of said vehicle from the front surface of said vehicle to the rear surface of said vehicle;
c. engaging the front surface of said vehicle with said second pair of brushes;
d. transposing each brush in said second pair of brushes across the front surface of said vehicle:
i. from one side of the vehicle to at least the center of said vehicle and thereafter
ii. from the center of said vehicle back to the side of said vehicle;
e. engaging each side surface of said vehicle with one brush in said second pair of brushes;
f. transposing each brush in said second pair of brushes along the corresponding side surface of said vehicle from the front surface of said vehicle to the rear surface of said vehicle;
g. engaging the rear surface of said vehicle with said first pair of brushes;
h. transposing each brush in said first pair of brushes across the rear surface of said vehicle:



i. from one side of the vehicle to at least the center of said vehicle and thereafter;
ii. from the center of said vehicle back to the side of the said vehicle.

6. Apparatus for scrubbing the front, rear and side surfaces of a vehicle as the vehicle moves through a path relative to a washing installation, said apparatus comprising in combination:
a. a first pair of brushes for scrubbing the opposite side surfaces and the rear surface of said vehicle;
b. a first pair of unitary support arms for separately mounting each brush in said first pair of brushes for independent pivotal translation through the path of said vehicle;
c. a second pair of brushes for scrubbing the front surface and the opposite side surfaces of said vehicle;
d. a second pair of unitary support arms for separately mounting each brush in said second pair of brushes for independent translation through the path of said vehicle;
e. means for engaging each side surface of said vehicle with one brush in said first pair of brushes;
f. means for transposing each brush in said first pair of brushes along the corresponding side surface of said vehicle from the front surface of said vehicle to the rear surface of said vehicle;
g. means for engaging the front surface of said vehicle with said second pair of brushes;
h. means for transposing each brush in said second pair of brushes across the front surface of said vehicle: (i) from one side of the vehicle to at least the center of said vehicle and thereafter, (ii) from the center of said vehicle back to the side of said vehicle;
i. means for engaging each side surface of said vehicle with one brush in said second pair of brushes;
j. means for transposing each brush in said second pair of brushes along the corresponding side surface of said vehicle from the front surface of said vehicle to the rear surface of said vehicle;
k. means for engaging the rear surface of said vehicle with said first pair of brushes;
l. means for transposing each brush in said first pair of brushes across the rear surface of said vehicle:
i. from one side of the vehicle to at least the center of said

vehicle and thereafter;

ii. from the center of said vehicle back to the side of said vehicle;

whereby the front, rear and side surfaces of said vehicle are at least twice subjected to brushing while said vehicle only once passes said washing installation.

3,926,664

METHOD FOR DEAERATING A CIRCUIT FOR THE TRANSPORT OF LIQUIDS

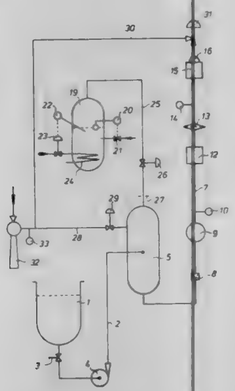
Jan Baptist Verreydt, Edegem, Belgium, assignor to Agfa-Gevaert, a naamloze vennootschap, Mortsel, Belgium

Filed Aug. 30, 1973, Ser. No. 393,210

Claims priority, application United Kingdom, Aug. 31, 1972, 40476/72

Int. Cl.² B08B *5/04*

U.S. Cl. 134—21 **7 Claims**



1. Method for deaerating a circuit for the transport of liquids, in particular of photographic suspensions, comprising the steps of:

a. establishing a reduced pressure in said circuit for rarefying air or other gases present therein,

b. producing a saturated vapor at a pressure which is higher than said reduced pressure under (a) but lower than the atmospheric pressure, and passing a current of said vapor through said circuit for expelling said rarefied air or other gases from said circuit, and

c. thereafter pumping a deaerated liquid through the circuit for expelling the vapor therefrom.

3,926,665

METHOD AND APPARATUS FOR COLLECTING FIBER WASTE FROM OPEN-END SPINNING MACHINES

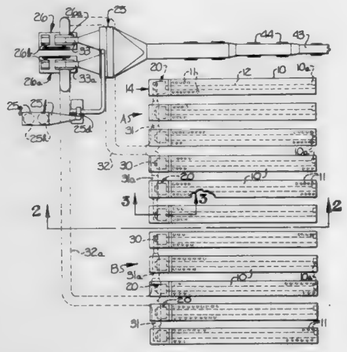
John Harrap, Prestbury, and Richard Gordon Stewart, Heaton Mersey, both of England, assignors to Parks-Cramer (Great Britain), Ltd., Oldham, England

Continuation-in-part of Ser. No. 366,963, June 4, 1973, abandoned. This application Oct. 24, 1973, Ser. No. 409,055

Int. Cl.² B08B *5/04*; **A62C** *1/00*; **D01H** *7/00*

U.S. Cl. 134—18 **33 Claims**

1. A method of collecting fiber waste generated as an incident of the operation of a plurality of rotor-type spinning units of each of a plurality of open-end spinning machines while normally maintaining adequate spinning air flow therethrough, and for preventing a conflagration in the event of a fire in the fiber waste being collected, said method comprising effecting a suction spinning air flow at the spinning units of each machine and into a respective duct communicating therewith by producing a suction airstream at an area downstream of and communicating with all of the respective ducts so that air flows along the ducts toward such area and through a separate primary filter for each duct, while entrapping fiber waste from the spinning units against the respective primary filters, periodically dislodging the entrapped fiber waste from the primary filters and causing the fiber waste being dislodged to be entrained in the air flow downstream of each respective primary filter, directing the thus dislodged and entrained fiber waste downstream to and against the upstream side of a secondary filter common to and downstream of all of the primary filters as the air flows through the secondary filter, removing the collected fiber waste from the secondary filter, sensing the occurrence of a fire in the fiber waste while it is being entrapped by any of the primary filters and in response thereto interrupting the air flow through the duct and the primary filter of the respective machine without interrupting the air flow through the ducts and primary filters of the remaining machines so that the burning fiber waste will be prevented from being borne downstream to the secondary filter by the air flow during the operation of the remaining machines.



11. A method of collecting fiber waste generated as an incident of the operation of a plurality of rotor-type yarn spinning units of each of a plurality of open-end spinning machines, said method comprising effecting a suction spinning air flow at the spinning units of each machine and into a respective duct communicating therewith by producing a suction airstream at an area downstream of and communicating with all of the respective ducts so that air flows along the ducts toward such area and through a separate primary filter for each duct, while entrapping fiber waste from the spinning units against the respective primary filters, periodically dislodging the entrapped fiber waste from the primary filters and causing the fiber waste being dislodged to be entrained in the airflow downstream of each respective primary filter without significant reduction in the spinning air flow, directing the thus dislodged and entrained fiber waste downstream to and against the upstream side of a secondary filter common to and downstream of all of the primary filters as the air flows through the secondary filter, and removing the collected fiber waste from the secondary filter.

3,926,666

METHOD AND APPARATUS FOR CLEANING AND PLATING ARTICLES WITHIN A PLURALITY OF ROTATING BARRELS

Robert McInnes, Flint, Mich., assignor to Harry P. Bowman; Clifford J. Millhouse and Russell E. Bowers, all of Flint, Mich., part interest to each

Division of Ser. No. 252,313, May 10, 1972, Pat. No. 3,855,107, which is a continuation-in-part of Ser. No. 89,409, Nov. 13, 1970, abandoned. This application Aug. 29, 1973, Ser. No. 392,479

Int. Cl.² B08B *3/04*

U.S. Cl. 134—25 R **53 Claims**

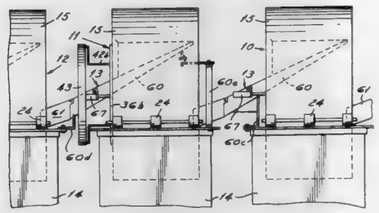
1. The method of cleaning and plating articles which comprises

providing a plurality of separate substantially identical containers adapted to contain liquid treating material,

providing a barrel in partially submerged relation to the liquid in each said container,

supporting each said barrel rotatably about a fixed generally horizontal axis so that a portion of the barrel is submerged in the liquid in its respective container,

each said barrel having both ends open and having a plurality of baffles on the inner periphery thereof,



rotating each barrel for a predetermined interval of time individual to said barrel in one direction such that the baffles agitate the articles,

thereafter rotating each said barrel in the opposite direction to cause said baffles to elevate the articles and permit them to fall solely by gravity freely downwardly,

and providing a fixed guide path from the interior of one said barrel to the interior of a successive barrel for receiving the articles falling by gravity and thereby guiding the articles as they move solely by gravity during the rotation of said barrel in said opposite direction into the succeeding barrel.

3,926,667

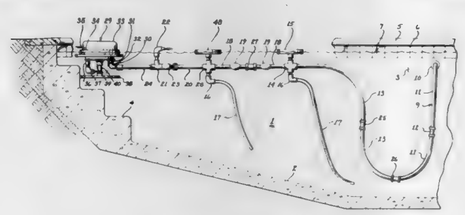
POOL CLEANING APPARATUS

Michael C. Gibellina, Scottsdale, Ariz., assignor to Airwick Industries, Inc., Carlstadt, N.J.

Filed Jan. 7, 1974, Ser. No. 431,023

Int. Cl.² B08B *9/08*

U.S. Cl. 134—167 R **18 Claims**



12. A swimming pool cleaning apparatus for washing the bottom and side walls of a pool that includes a water supply outlet disposed in one of its side walls, said apparatus comprising, a buoyant cleaning head movable about the surface of water within the pool and including a water manifold for receiving and distributing a flow of water; hose means operatively connectable to the water supply outlet of the pool for supplying a flow of water under pressure to said water manifold, said hose means including means for connecting the hose in fluid communication to the manifold and means for allowing relative horizontal movement between the hose and manifold; first jet means on said hose, upstream of said means for allowing horizontal movement, for forming a first water jet from water flowing in said hose; second jet means operatively associated with said manifold for forming a second jet of water from water under pressure in said manifold, said first and second jets being normally located in a predetermined angular relation to each other to produce a combined reaction force propelling said cleaning head forwardly along and laterally against the sidewalls of the pool; said means for allowing horizontal movement allowing the angular relation of said jet means to be varied under the influence of said first jet means should forward movement of the cleaning head become stalled, thereby to change the angle at which the combined reaction force is applied to the cleaning head and unstall the head.

3,926,668

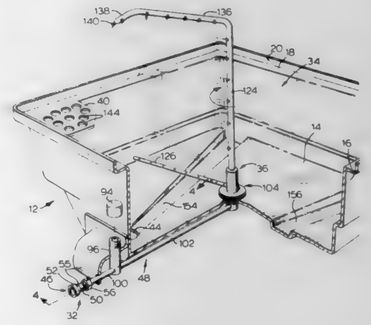
WATER POWERED DISHWASHER

Jack Ross, 230 Richmond St. East, Toronto 2, Ontario, Canada

Filed May 2, 1974, Ser. No. 466,198

Int. Cl.² B08B *3/02*

U.S. Cl. 134—179 **10 Claims**



1. A water-powered dishwasher comprising a container shell, a top adapted to seat on said container shell to define therewith a washing cavity within said shell and top; water inlet and outlet means, a portion of said water inlet means extending into the washing cavity and being secured by securing means adjacent the bottom of the container shell in substantially perpendicular relation to said bottom at all times to discharge a column of water substantially perpendicular to said bottom proximate the center thereof through a first aperture disposed proximate the upper end of said portion of the water inlet means extending into the washing cavity and a laterally directed stream of water through at least one second aperture of lesser cross-sectional area than the water column, disposed in said portion of the water inlet means below said first aperture; rotatable spray means, having a housing at the base thereof of an internal surface configuration to seat over at least a portion of the outer surface of said portion of the water inlet means in substantially perpendicular relation to said bottom, secured for rotation about said portion by retaining means extending through the housing of the rotatable spray means to ride in a channel substantially parallel to the bottom of the container in the outer wall of said portion, the portion of the retaining means which projects into the channel having a smooth surface to contact a downwardly facing ledge defining the upper extent of said channel to act as a thrust bearing thereagainst when the rotatable spray means and therefore the retaining means is moved upwardly by the force of the column of water discharged, the housing of said rotatable spray means having a lower tube disposed substantially parallel to the bottom of said container shell and in communication with said at least one second aperture to receive a flow of water therefrom; said lower tube having apertures disposed in the wall of said tube to effect outflow of jets of water therefrom, each jet having horizontal and vertical force components; said rotatable spray means further comprising a perpendicularly disposed tube relative to said container shell bottom and in communication with said first aperture to receive said column of water and to discharge the water through apertures in the wall of said tube as jets of water, each jet having at least a horizontal force component.

3,926,669

ELECTROCHEMICAL CELLS HAVING AN ELECTROLYTIC SOLUTION COMPRISING A COVALENT INORGANIC OXYHALIDE SOLVENT

James J. Auborn, Groton, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Continuation-in-part of Ser. Nos. 305,811, Nov. 13, 1972, abandoned, and Ser. No. 305,812, Nov. 13, 1972, abandoned. This application Aug. 2, 1973, Ser. No. 385,127

Int. Cl. H01m *17/00*

U.S. Cl. 136—6 LN 15 Claims

1. An electrochemical cell consisting essentially of an oxidizable active anode material; a solid, non-consumable, electrically conducting, inert cathode current collector selected from the group consisting of the alkaline earth metals, the Group III A metals, the Group IV A metals, the Group V A metals, the transition metals, the rare earth metals, and semiconductors; said anode material being more electropositive than said cathode current collector and thus said anode material is oxidized during operation of said cell; and an electrolytic solution between and in contact with said anode and said cathode current collector, said electrolytic solution consisting essentially of a liquid, electrochemically reducible, covalent inorganic oxyhalide or thiohalide solvent and a solute dissolved therein, said inorganic solvent being the sole oxidant material and sole solvent material in said electrolytic solution; said inorganic solvent being electrochemically reduced upon the surface of said cathode current collector, whereby said inorganic solvent in conjunction with said oxidizable anode material serves as a source of electrical energy during operation of said cell.

3,926,670

LEAD-ACID STORAGE BATTERY PASTE

Dale F. Taylor, Schenectady, and Erwin G. Siwek, Ballston Spa, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 23, 1973, Ser. No. 408,298

Int. Cl.² H01M *4/36*

U.S. Cl. 136—26 6 Claims

1. A battery lead oxide mixture adapted to form a cohesive paste for use in the preparation of lead-acid storage batteries comprising at least one battery lead oxide and lithium sulfate.

3,926,671

METHOD OF MANUFACTURING POSITIVE NICKEL HYDROXIDE ELECTRODES

Manfred A. Gutjahr, Wendlingen (Neckar), Germany; Rudolf Schmid, Vienna, Austria, and Klaus D. Beccu, Geneva, Switzerland, assignor to Battelle Memorial Institute, Switzerland

Filed June 5, 1974, Ser. No. 476,724

Claims priority, application Switzerland, June 7, 1973, 8239/73

Int. Cl.² H01M *43/04*

U.S. Cl. 136—29 11 Claims

1. A method of manufacturing a positive storage battery electrode having an active mass of nickel hydroxide incorporated in a consolidated, porous, nickel electrode support, comprising the steps of:

a. intimately contacting a highly porous, fibrous or open-pore reticular, organic core structure, having a large internal surface, with a mass of dry powder particles consisting essentially of nickel and having a mean grain size less than 10 microns, so that said particles are brought into contact with said internal surface and adhere thereon to form a substantially uniform powder coating covering the organic core structure;

b. subjecting the resulting powder-coated organic core structure to a thermal treatment such as to cause sintering of the particles of said powder coating, with removal of the underlying organic core structure, so as to thereby produce a strongly consolidated nickel electrode support structure having substantially the same structure and porosity as the said organic core structure; and

c. incorporating the active electrode mass in the resulting nickel support structure by depositing nickel hydroxide in the pores thereof.

3,926,672

REACTIVE MIXTURE FOR FABRICATING AMALGAMALED CHLORIDE FREE ZINC ANODE

Edward J. Curelop, Brockton, and Nikola Marincic, Winchester, both of Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Division of Ser. No. 114,349, Feb. 10, 1971, Pat. No. 3,713,891. This application Oct. 20, 1972, Ser. No. 299,529

Int. Cl. H01m *43/02*

U.S. Cl. 136—30 2 Claims

1. A reactive mixture for fabricating a highly porous amalgamated chloride free zinc anode for a current producing device, said mixture consisting essentially of zinc powder, mercuric oxide, and a chloride free filler material which is selected from the group consisting of sodium acetate, sodium borate and sodium oxalate.

3,926,673

METHOD AND APPARATUS FOR CHARGING ZINC ELECTRODES IN GALVANIC CELLS

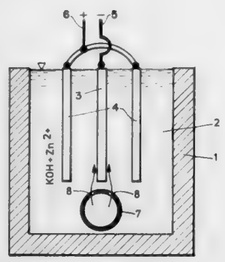
Nikolaus Saridakis, Braunschweig, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed July 29, 1974, Ser. No. 492,694

Claims priority, application Germany, Aug. 23, 1973, 2342579

Int. Cl.² H01M *41/00*

U.S. Cl. 136—31 9 Claims



1. A process for charging a zinc electrode utilized as an anode immersed in a zinc-containing electrolyte in a galvanic cell, comprising the steps of:

a. applying a voltage to the zinc electrode; and

b. simultaneously flushing the surface of said zinc electrode with a gaseous agent that is introduced from outside the galvanic cell.

5. Apparatus for charging a zinc electrode utilized as an anode immersed in a zinc-containing electrolyte in a galvanic cell, said apparatus comprising, in combination:

a. means for applying a voltage to said zinc electrode;

b. source means for supplying a gaseous agent to the galvanic cell from outside the cell; and

c. means, connected to said source means, for flushing the surface of said zinc electrode with said gaseous agent.

3,926,674

METHOD OF MANUFACTURING ELECTRICAL CONNECTION ELEMENTS FOR SUPPORTING ELECTRODES FOR STORAGE CELLS

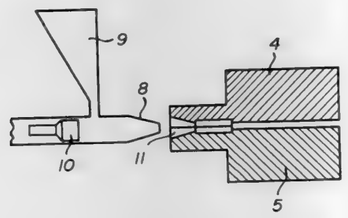
Pierre Jonville; Helmut Stöhr, both of Plan-les-Ouates, Geneva; Klaus D. Beccu, Troinex, Geneva, and René Baronnet, Grand-Lancy, Geneva, all of Switzerland, assignors to Battelle Memorial Institute, Switzerland

Filed Feb. 12, 1974, Ser. No. 441,853

Claims priority, application Switzerland, Feb. 12, 1973, 1959/73; June 18, 1973, 8848/73

Int. Cl.² H01M *35/08*

U.S. Cl. 136—36 4 Claims



1. A method of forming electrical connecting members having a desired configuration and forming an integral part of a felted fiber-glass electrode support structure comprising, providing a felt of glass fibers to function as an electrode support, and locally injecting molten lead or lead alloy under pressure into said fiber-glass structure within a given zone thereof in a desired configuration to simultaneously form and incorporate a desired connecting member in said support structure.

3,926,675

PROCESS FOR MAKING ELECTRODES CONTAINING RANEY NICKEL AND A THIOCYANATE

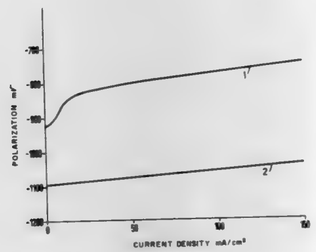
Hans Kohlmüller, and Gerlind Kohlmüller, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 17, 1973, Ser. No. 397,923

Claims priority, application Germany, Sept. 27, 1972, 2247391

Int. Cl. H01m *27/08*

U.S. Cl. 136—86 E 9 Claims



1. In a process of generating electricity in a fuel cell wherein the fuel comprises hydrazine, the improvement of employing a fuel electrode comprising Raney nickel and an alkali metal thiocyanate in the amount of between about 5 to 25 weight % based on said nickel.

3,926,676

BATTERY COMPRISING A PLURALITY OF CELLS

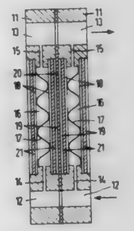
Wolfgang Frie; Burghard Grave; Karl Strasser, and Heinrich Gutbier, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Gerlin, Erlangen, Germany

Continuation of Ser. No. 227,948, Feb. 22, 1972, abandoned. This application Feb. 11, 1974, Ser. No. 441,339

Claims priority, application Germany, Feb. 25, 1971, 2109034

Int. Cl.² H01M *4/86*

U.S. Cl. 136—86 R 5 Claims



1. In a battery utilizing an electrolyte, comprising means defining a plurality of tightly interconnected electrochemical cells or water removal cells, each of said cells having an electrolyte chamber connected to a supply passage and a discharge passage, a main inlet channel communicating with each of said supply passages, a main outlet channel communicating with each of said discharge passages whereby electrolyte flow is effected in parallel to each of said electrolyte chambers; said main inlet channel and said main outlet channel each having a constant uniform cross-sectional area along its length, said main outlet channel having a larger cross-sectional area than said main inlet channel, so that substantially the same operational pressure difference prevails between the supply passage and the respective discharge passage of each of said electrolyte chambers.

3,926,677

ELECTRIC PRIMARY CELLS

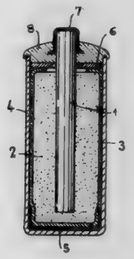
Jean-Yves Machat, Grenoble, and Jean-Claude Sohm, La Tronche, both of France, assignors to Anvar, Agence National de Vaolirsation de la Recherche, Neuilly-sur-Seine, France

Continuation-in-part of Ser. No. 333,322, Feb. 6, 1973, abandoned. This application Oct. 11, 1974, Ser. No. 514,167

Claims priority, application France, Feb. 25, 1972, 72.06464

Int. Cl.² H01M *21/00*

U.S. Cl. 136—107 4 Claims



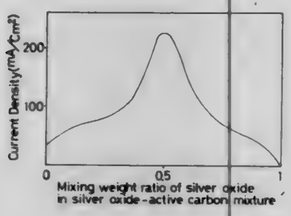
1. A primary electric cell which can be fully sealed because of negligible quantity of gas evolved, comprising:

a. a solid anode consisting essentially of zinc;
b. an uncorrodible cathode;
c. a paper separator in direct contact with the zinc anode;
d. a depolarizor of mercuric oxide and carbon black operatively associated with said cathode;
e. an electrolyte interposed between the cathode and the paper separator and in direct contact with the paper, the electrolyte consisting essentially of an aqueous solution of zinc perchlorate containing zinc oxide or zinc hydroxide in quantity sufficient to minimize the corrosive effect on the anode of the electrolyte; and
f. means for sealing the cell gas-tight.

3,926,678
METHOD OF MANUFACTURING FUEL CELL ELECTRODES

Takashi Tsuchida, Shizuoka; Kenichi Shinoda, Aichi; Kohei Yamamoto, Shizuoka; Tomoya Murata, Shizuoka, and Yoshihiro Maeda, Shizuoka, all of Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan

Filed July 2, 1973, Ser. No. 375,830
Claims priority, application Japan, Aug. 31, 1972, 47-86669
Int. Cl. H01m *13/04*
U.S. Cl. 136—122 **3 Claims**



1. A method of manufacturing an electrode for a fuel cell comprising the steps of kneading a mixture of silver oxide powder and active carbon powder with a water-repellent binder, the weight ratio of said silver oxide powder to said active carbon powder being within a range of 1:2 to 2:1, molding the kneaded mixture to a thin layer to produce a thin catalyst layer, heating said thin catalyst layer under pressure using a heating temperature of 300°C to 400°C to effect drying and activation of the catalyst simultaneously, and integrating said thin catalyst layer with a metallic collector net and a gas-permeable film by the application of heat and pressure.

3,926,679
PHENOLIC RESIN AND BATTERY SEPARATOR IMPREGNATED THEREWITH

Robert T. Jones, Pelham, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 9, 1974, Ser. No. 432,111
Int. Cl.² H01M *2/14*
U.S. Cl. 136—146 **11 Claims**

1. A cellulosic permeable battery separator which comprises a cellulosic substrate thoroughly impregnated with a resin composition to impart improved oxidation resistance, wherein the resin composition comprises a resole of number average molecular weight in the range of 130 to 300 and an aldehyde to phenol molar ratio in the range of 1.94 to 2.45 and an anti-migratory agent for reducing the degree of migration of the resin composition in the cellulosic substrate during drying and curing, wherein the anti-migratory agent is selected from the group consisting of ethylene glycol, glycerol, and sorbitol, wherein the weight ratio of resole to anti-migratory agent is in the range of 100:7 to 100:32, and wherein the resole is advanced to an infusible state.

3,926,680
PRIMARY MAGNESIUM ELEMENT

Jakob Bauer, Ellwangen, and Winfried Krey, Neunheim, Kr. Aalen, both of Germany, assignors to Varta Batterie AG, Germany

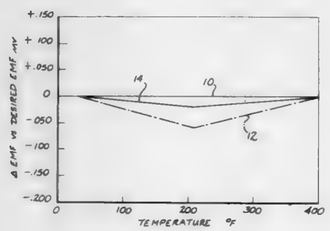
Filed Jan. 21, 1974, Ser. No. 435,191
Claims priority, application Germany, Jan. 19, 1973, 2302469
Int. Cl.² H01M *6/04*
U.S. Cl. 136—154 **7 Claims**

1. In a primary galvanic element comprising conventional components including a chromate inhibitor the electrolyte which comprises concurrently, as a chromate buffer system, barium, strontium, chromate and sulphate ions in equilibrium with solid phase barium chromate, barium sulphate and strontium sulphate.

3,926,681
TYPE R AND S THERMOCOUPLE SYSTEMS HAVING COPPER-NICKEL-MANGANESE WIRE AS PLATINUM COMPENSATING LEAD WIRE

Teh Po Wang, North Caldwell, N.J., assignor to Wilbur B. Driver Company, Newark, N.J.

Continuation of Ser. No. 293,063, Sept. 28, 1972, abandoned, which is a division of Ser. No. 129,460, March 30, 1971, which is a continuation-in-part of Ser. No. 822,786, April 1, 1969, abandoned. This application Dec. 10, 1973, Ser. No. 423,267
Int. Cl.² H01L *35/20*
U.S. Cl. 136—241 **1 Claim**

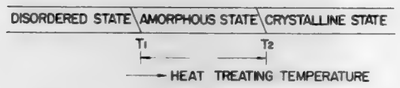


1. A thermocouple system consisting essentially of a positive thermal element consisting essentially of an alloy of platinum and rhodium, a negative thermal element consisting essentially of platinum, said positive and negative thermal elements being electrically joined to form a thermocouple selected from the group consisting of Type R and Type S thermocouples, wherein the positive thermal element of said Type R thermocouple is a platinum rhodium alloy containing 13 percent rhodium, balance platinum and wherein the positive thermal element of said Type S thermocouple is a platinum rhodium alloy containing 10 percent rhodium, balance platinum, a positive lead wire consisting essentially of copper, electrically connected to said positive thermal element and a negative lead wire of an alloy consisting essentially of 0.5 percent to 1.5 percent nickel, 0.25 percent to 0.40 percent of manganese, balance copper, said negative lead wire being electrically connected to said negative thermal element.

3,926,682
METHOD FOR PRODUCING SOLID MATERIAL HAVING AMORPHOUS STATE THEREIN

Toshikazu Shimada, Tokyo; Kiichi Komatsubara, Tokorozawa; Susumu Hasegawa, Aomori, and Yoshiki Kato, Tokyo, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 15, 1974, Ser. No. 514,926
Claims priority, application Japan, Oct. 17, 1973, 48-115811; May 22, 1974, 49-56570
Int. Cl.² H01L *21/263*
U.S. Cl. 148—1.5 **10 Claims**



1. A method for producing a solid material comprising the steps of:
irradiating a starting material with at least one beam selected from among ionic, atomic and molecular beams in excess of an amount to saturate lattice defects in said starting material at least partially into a disordered state; and
heating said starting material at a temperature higher than a transition temperature to an amorphous state, but lower than a crystallizing temperature of said starting material.

3,926,683
METHOD OF MANUFACTURING SUPERCONDUCTORS OF β-TUNGSTEN STRUCTURE

Christianus Antonius Maria van Beijnen, Alkmaar, Netherlands, assignor to Reactor Centrum Nederland (Stichting), The Hague, Netherlands

Filed Mar. 22, 1974, Ser. No. 453,952
Claims priority, application Netherlands, Apr. 9, 1973, 7304947
Int. Cl.² H01L *39/02*
U.S. Cl. 148—11.5 R **14 Claims**

1. A method of manufacturing a superconductor comprising at least one wire constructed from different materials which comprises providing a hole in a bar of conductive metal, inserting a first component selected from the elements of Group VB of the Periodic Table into said hole, introducing into said first component a second component consisting essentially of an alloy or a compound of said Group VB element and an element selected from the group consisting of Group IIIA and Group IVA of the Periodic Table, and thermally treating said wire to produce a superconductor having a superconductive boundary layer.

3,926,684
HIGH CRITICAL CURRENT SUPERCONDUCTORS AND PREPARATION THEREOF

David G. Howe, Greenbelt, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 25, 1974, Ser. No. 527,000
Int. Cl.² H01L *39/00*
U.S. Cl. 148—11.5 R **6 Claims**

1. A composite superconductor which comprises:
a core selected from the group consisting of a vanadium-gallium alloy with a gallium content between 8 at. percent and 12.5 at. percent, a niobium-tin alloy with a tin content between 2 and 12 at. percent, and a vanadium-silicon alloy with a silicon content between 4.5 at. percent and 10 at. percent;
a matrix selected from the group consisting of copper-gallium alloy with a gallium content from about 16 to about 22 at. percent, a copper-tin alloy with a tin content from about 1 to about 11 at. percent, a copper-silicon alloy with a silicon content from about 5 to 14 at. percent, so that the matrix alloy has the same metal solute as the core alloy; and
an intermediate layer of an A-15 compound produced by a solid state reaction between said core rod and said matrix sheath.

3,926,685
SEMI-FERRITIC STAINLESS MANGANESE STEEL

Andre Gueussier, 6 rue Claude Genoux; Roland Tricot, 14 rue du Val des Roses, and Jean Lefevre, 3 bis rue de Ripaille, all of Albertville (Savoie), France

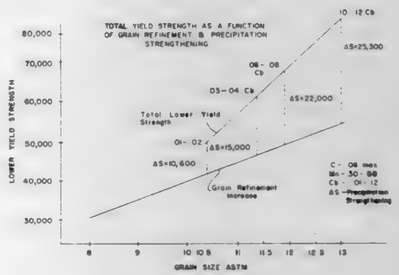
Continuation of Ser. No. 42,037, June 1, 1970, abandoned. This application Dec. 1, 1972, Ser. No. 311,111
Claims priority, application France, June 3, 1969, 69.18142
Int. Cl. C21d *9/48*
U.S. Cl. 148—12 EA **11 Claims**

1. A process for treating a semi-ferritic stainless steel having an in-use structure of alpha and delta ferrite and carbides, characterized by high strength properties, good bending characteristics, good micro-hardness, good fusion weld resilience and good corrosion resistance, both in the presence and absence of chlorine and acid media, comprising:
A. Preparing a steel having a composition selected from the group consisting of by weight 0.1% max. C, 3–6% Mn, 1% max. Si, 1% max. Ni, 18–22% Cr, 1.5% max. Mo, 1% max. Cu, 0.1% max. N_2 and the balance Fe and incidental impurities, .1% mac. C, 3–6% Mn, 1% max. Si, 1% max. Ni, 15–18% Cr, 1.5–3.0% Mo, 1% max. Cu, .1% max. N_2 and the balance Fe and other incidental impurities and 0.1% max. C, 3–6% Mn, 1–2% Si, 1% max. Ni, 15–18% Cr, 0.5–2.0% Mo, 1% max. Cu, 0.1% max. N_2 and the balance Fe and other incidental impurities, said steel characterized by chromium and nickel equivalents falling within the pentagon on the graph of the sole FIGURE, said pentagon having as its ordinates, A (15, 4.5) B (18.5, 8), C (24, 8), D (24, 6), E (20, 2);
B. Hot working said steel so as to maintain an austenite content while hot of from 10 to 50%, the balance being delta ferrite;
C. Cooling said steel to retain said austenite at room temperature;
D. Treating said steel to transform the austenite into martensite; and
E. Tempering the martensite to transform the martensite into alpha ferrite and carbides.

3,926,686
HIGH-STRENGTH LOW-ALLOY STEEL

William E. Creswick, and Patrick J. Hunt, both of Sault Sainte Marie, Canada, assignors to The Algoma Steel Corporation, Limited, Ontario, Canada

Filed Jan. 9, 1974, Ser. No. 432,030
Int. Cl.² C21D *1/02*
U.S. Cl. 148—12 F **4 Claims**



1. A method of making a high strength low alloy steel strip having a minimum yield strength of 50,000 psi and good formability properties which comprises subjecting a slab of

steel having a composition consisting essentially of, by weight, 0.10 percent maximum carbon, 0.30 to 0.80 percent manganese 0.02 percent maximum sulphur, 0.02 to 0.06 percent aluminum, 0.01 to 0.02 columbium, 0.06 percent maximum cerium, the balance being iron and incidental impurities, to a hot-rolled finishing temperature in the range of 1620° to 1670°F and collecting the strip in a temperature range of 1325° to 1375°F.

3,926,687

METHOD FOR PRODUCING A KILLED STEEL WIRE ROD

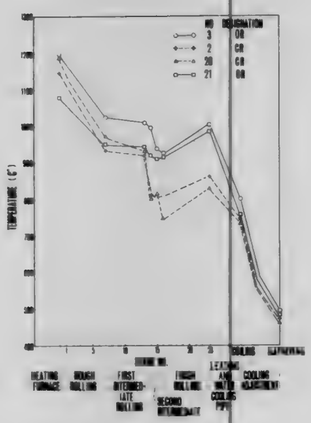
Hisashi Gondo, Kisarazu; Naoki Eguchi, Narashino; Takafumi Yoshimura, and Masaki Araki, both of Kisarazu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sept. 9, 1974, Ser. No. 504,270

Claims priority, application Japan, Sept. 10, 1973, 48-101875

Int. Cl.² C21D *7/14, 9/52*

U.S. Cl. 148—12 B **4 Claims**



1. A method for producing high tensile strength steel wire rods and bars having a basic composition comprising;

C 0.02 to **0.20** percent
Si 0.03 to **0.90** percent
Mn 1.00 to **1.85** percent

together with one or more selected from the group consisting of

Nb	0.05 percent
V	0.08 percent
Ti	0.25 percent
Zr	0.30 percent
Cr	0.40 percent
B	0.005 percent

with the balance being the iron and unavoidable impurities, which comprises heating a steel having above composition at a temperature not lower than 1,150°C, conducting intermediate rolling and/or finish rolling at a temperature between 700° and 1050°C, controlling the cooling rate from finish of the hot rolling to a coiling to 40° to 350°C/sec., and controlling the cooling rate from the coiling to gathering to 1° to 15°C/sec. to obtain hot rolled steel wire rods and bars having excellent workability and spot weldability and having a tensile strength not lower than 50 kg/mm² and a reduction of area not lower than 50 percent.

3,926,688

METHOD OF MANUFACTURING A FLAT STEEL PRODUCT HAVING AN OXIDATION-RESISTANT COATING

Roland Cesar Amand Liesenborghs, Sclessin, and Vincent Marguerite Leroy, Liege, both of Belgium, assignors to Societe Anonyme Cockerill-Ougree-Providence et Esperance-Longdoz, Seraing, Belgium

Filed Jan. 30, 1974, Ser. No. 437,917

Claims priority, application Belgium, Jan. 30, 1973, 794758

Int. Cl.² C21D *7/14*

U.S. Cl. 148—12.1 **4 Claims**

1. A method of manufacturing a steel product having an oxidation-resistant coating, comprising the steps of: depositing on a mild steel sheet a coating of an oxidation-resistant material selected from the group consisting essentially of the metals Cr, Ni, Co, and Mo, alloys of at least two of the metals with each other, and alloys of at least one of the metals with iron, the coating having an oxgen content of 1.5%; tightly winding the coated sheet to form a compact coil or stack of the coated sheet; and heat treating the compact coil or stack of the coated sheet at a temperature of 950–1300°C for ½ hour to 48 hours under a vacuum so as to cause diffusion of the sheet and coating, the vacuum being sufficient so that the coating is de-oxidized and decarburized.

3. The method as claimed in claim **1**, further comprising rolling the coated sheet.

3,926,689

METHOD OF PRODUCING HOT ROLLED STEEL RODS OR BARS

Yves Jean Respen, Herstal; Paul Andre Cosse, Bellaire, and Mario Economopoulos, Liege, all of Belgium, assignors to Centre de Recherches Metallurgiques - Centrum voor Research in de Metallurgie, Brussels, Belgium

Filed Oct. 31, 1973, Ser. No. 411,227

Claims priority, application Belgium, Oct. 31, 1972, 790867

Int. Cl.² B21B *3/00*

U.S. Cl. 148—12.4 **5 Claims**

1. A process for the production of a steel rod or bar in a hot rolling mill, comprising: superficially quenching the rod or bar at the exit of a finishing stand to form bainite or martensite in the surface layer of the rod or bar, with the core of the rod or bar having a temperature of approximately 850°C at the end of the quenching step; and subsequently cooling the rod or bar at such a rate that the core transforms to ferrite and carbides while the surface layer of the rod or bar is tempered by the heat transferred from the core to the surface layer.

3,926,690

ALUMINIUM ALLOYS

Larry Roy Morris, Yarker, and Frederick Barry Miners, Kingston, both of Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed Aug. 9, 1973, Ser. No. 386,992

Claims priority, application United Kingdom, Aug. 23, 1972, 39355/72

Int. Cl.² C22C *21/02*

U.S. Cl. 148—32 **7 Claims**

1. An as-cast aluminium magnesium silicide alloy extrusion ingot containing Al-Fe-Si, said alloy consisting essentially of 0.3–1.2% Mg, 0.2–1.2% Si, up to 0.4% Cu and up to 0.1% each Zn, Mn, 0.05–0.3% Fe as impurity and 0.15% total (0.05% each) other impurities, balance aluminum, characterized by the presence of Sr and/or Ca in a total amount of 0.01–0.5% for causing at least a major proportion of the Al-Fe-Si in the as-cast ingot to be in the α phase, thereby to reduce pickup upon extrusion of the ingot.

3,926,691

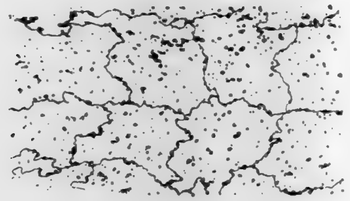
DISPERSION STRENGTHENED METALS AND ALLOYS

David A. W. Fustukian; Bud W. Kushnir, both of Edmonton; Leon F. Norris, and Robert W. Fraser, both of Fort Saskatchewan, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Division of Ser. No. 302,807, Nov. 1, 1972, Pat. No. 3,847,680. This application May 8, 1974, Ser. No. 468,040

Int. Cl.² B22F *3/12;* **C22F** *1/10*

U.S. Cl. 148—32 **7 Claims**



1. A dispersion strengthened wrought product having a matrix consisting essentially of at least one of (a) nickel, (b) cobalt and (c) alloys of nickel and cobalt with each other and with chromium, said matrix having up to about **30%** by volume submicron refractory oxide particles uniformly dispersed therethrough and said matrix having a microstructure characterized by large grains which are defined by irregular grain boundaries, said grains being in the size range of 50 to 1000 millimicrons and being equi-axed in the sense that the ratio of the diameter of a sphere inscribed within any grain to the diameter of a sphere circumscribed about the same grain is not less than about 0.2 as measured from the ratio of the diameters of the inscribed and circumscribed circles on any such grain in a random planar section of said matrix.

3,926,692

DRAWABILITY OF DEOXIDIZED STEELS BY THE ADDITION OF PHOSPHORUS AND SILICON

David C. Ludwigson, Hempfield Township, Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 30, 1974, Ser. No. 510,844

Int. Cl.² C22C *38/00*

U.S. Cl. 148—36 **2 Claims**

1. A deep drawable killed-steel sheet product exhibiting an *R* value of at least about 2.0, the composition of which consists essentially of, in weight percent,

C	0.010 – 0.1
Mn	0.22 max.
P	0.03 – 0.05
Si	0.02 – 0.06
oxygen	0.02 max.

balance Fe and incidental steelmaking impurities, said product having been produced from a steel melt which was killed in order to reduce the oxygen content thereof to said maximum percentage.

3,926,693

METHOD OF MAKING A DOUBLE DIFFUSED TRAPATT DIODE

Hirohisa Kawamoto, Kendall Park; Hans John Prager, Belle Mead, and John Joseph Risko, Cranbury, all of N.J., assignors to RCA Corporation, New York, N.Y.

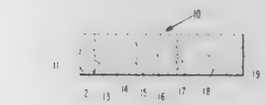
Filed Apr. 29, 1974, Ser. No. 464,765

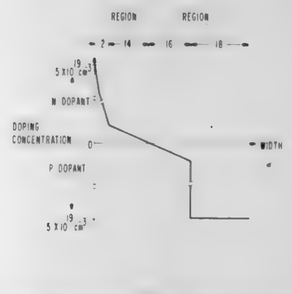
Int. Cl.² H01L *21/20, 21/225, 29/90*

U.S. Cl. 148—175 **5 Claims**

1. A method of fabricating a TRAPATT diode from a substrate having high dopant concentration of a given conductivity type comprising the steps of:

a. epitaxially growing on said substrate an epitaxial region of the same conductivity type as said substrate but of lower doping concentration than the doping concentration of said substrate, said epitaxial region having a surface opposed to said substrate;
b. depositing on said opposed surface a dopant of the opposite conductivity type as said substrate, and of lower doping concentration than the dopant concentration of said substrate,
c. diffusing said opposite conductivity type dopant into said epitaxial region such that a portion of said epitaxial region contiguous to said opposed surface forms a region of said opposite conductivity type and such that said high





dopant in said substrate diffuses into the remaining portion of said epitaxial region, to thereby form in said epitaxial region a P-N junction, and a graded doping concentration, having a predetermined gradient, extending through said junction;
d. depositing a further dopant of said opposite conductivity type on said opposed surface, said further dopant having a higher concentration than said firstmentioned dopant of said opposite conductivity type;
e. diffusing said further dopant into said opposite conductivity type region, such that a portion of said opposite conductivity type region contiguous to said opposed surface forms a heavily doped region of said opposite conductivity type, said heavily doped region having a doping concentration decreasing from said opposed surface with a gradient steeper than said predetermined gradient.

3,926,694

DOUBLE DIFFUSED METAL OXIDE SEMICONDUCTOR STRUCTURE WITH ISOLATED SOURCE AND DRAIN AND METHOD

Thomas P. Cauge, Mountain View, and Joseph Kocsis, Sunnyvale, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Division of Ser. No. 274,442, July 24, 1972, abandoned. This application May 14, 1973, Ser. No. 359,858

Int. Cl.² H01L *21/22*

U.S. Cl. 148—187 **8 Claims**

1. In a method for forming a metal insulator semiconductor structure, providing a semiconductor body having at least a portion thereof with an impurity of one conductivity type, forming a layer of semiconductor material of opposite conductivity type on said body to form a first PN junction between said body and said layer of semiconductor material, said layer having a substantially planar surface, forming a mask on said surface of the semiconductor layer having an edge overly-

ing said surface, diffusing with an impurity of said one conductivity type through said surface utilizing said mask to provide a first region of said one conductivity type having a depth which extends from said surface through said layer of semiconductor material to said semiconductor body and being defined by a PN junction which extends from the surface beneath the mask through the layer to the semiconductor body, diffusing with heat an impurity of opposite conductivity type through said surface using the same edge of the mask to form a second region in said first region which is offset in said first region and with a surface area substantially less than the surface area of said first region and which is defined by a



second PN junction which extends to the surface below the mask, said second region having a depth substantially less than the depth of said first region, said last named diffusion of said impurity of opposite conductivity type causing movement of said second PN junction so that the line along which it extends to the surface is beneath said mask, controlling the diffusion of said first and second regions whereby said first and second PN junctions define a channel underlying the mask having a precisely controlled length, providing a layer of insulating material on the surface, and providing metalization on said layer of insulating material for forming gate, source and drain contacts.

3,926,695

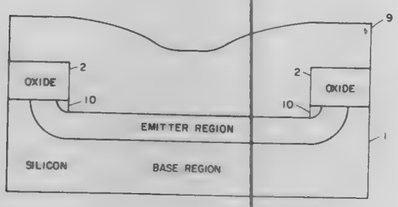
ETCHED SILICON WASHED EMITTER PROCESS

Aung San U, Rangoon, Burma, assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Dec. 27, 1974, Ser. No. 537,045

Int. Cl.² H01L *21/223*

U.S. Cl. 148—187 **8 Claims**



1. A method for providing a shallow diffused emitter region in the base region of an integrated circuit element, said base region having deposited thereon a masking layer having windows therein for exposing a portion of the surface of said base region such that an emitter region can be diffused into said base region comprising the steps of:

etching away some of the exposed base region in the intended emitter areas resulting in an underetching of said base region beneath the masking layer;

diffusing an emitter region into said base region; and

depositing a metal contact layer on the surface of said masking layer and that portion of the diffused exposed emitter region not beneath the masking layer such that a closed loop cavity around the periphery of said emitter is produced, said closed loop cavity bounded by said metal contact layer, said masking layer, and said emitter region.

3,926,696

EXPLOSIVE COMPOSITION AND EUTECTIC MIXTURE THEREFOR

Maximilian Klunsch, Opladen; Paul Lingens, Leverkusen, and Heinz Ratz, Bonn-Ippendorf, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Cologne, Germany

Continuation of Ser. No. 259,353, May 26, 1972, abandoned. This application Nov. 7, 1973, Ser. No. 413,720

Claims priority, application Germany, May 29, 1971, 2126921; May 29, 1971, 2126922

Int. Cl.² C06B *45/00*

U.S. Cl. 149—2 **19 Claims**

1. A flowable liquid explosive liquid composition free of water insoluble brisant explosives and free of uncombined water consisting essentially of ammonium nitrate, metallic fuel and a eutectic mixture which eutectic mixture comprises an oxygen supplying salt and a combustible compound selected from the group consisting of a nitrate of an amine, a perchlorate of an amine, a derivative of ammonia, a primary alkyl amine, a primary aryl amine, a secondary alkyl amine, a secondary aryl amine, a tertiary alkyl amine, a tertiary aryl amine, an alkanolamine, a quaternary ammonium compound, an amide of formic, acetic or sulfamic acid, an ammonium salt of an aliphatic carboxylic acid, an ammonium salt of a sulfonic acid, ammonium thiocyanate, ammonium hypophosphite, ammonium thiosulfate, anhydrous sodium acetate, a monosaccharide, an oligosaccharide, coal dust, vegetable flour, wood meal, a wax, a fat, a solid hydrocarbon, a vegetable oil and a mineral oil, said eutectic composition capable of reducing the solidification point of the entire explosive composition to a temperature below +10°C.

3,926,697

SOLID BLOCK OF PROPELLANT WITH A PLURALITY OF PROPULSION STAGES AND METHODS OF MANUFACTURE

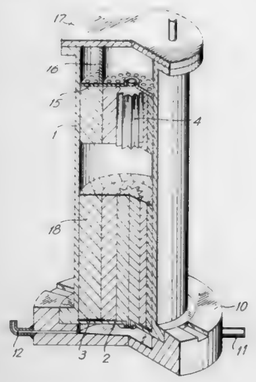
Jean Jacques Humbert; Jean Pierre Francis Thomas; Gerard Yvan Brut, and Jean Marie Joseph Elie Gounou, all of Paris, France, assignors to Societe Nationale des Poudres et Explosifs, France

Filed Oct. 15, 1969, Ser. No. 866,621

Claims priority, application France, Oct. 15, 1968, 68.169952

Int. Cl.² C06B *45/12*

U.S. Cl. 149—14 **15 Claims**



1. A method of producing a solid propellant block comprising a plurality of successive concentric adjacent layers of different compositions adapted to burn in sequence to provide successive stages of lift, each layer being bonded to adjacent layers by gelatinized nitrocellulose, which comprises forming a plurality of contacting adjacent layers of different compositions in a mold, each layer consisting of a propellant composition comprising nitrocellulose as the principal ingredient, at least one of said adjacent layers consisting of granules of a base powder of a propellant composition the principal ingredient thereof being nitrocellulose, introducing a molding agent comprising nitroglycerine or a polyalcohol nitrate as the principal ingredient, under vacuum into at least said layer consisting of said base powder to cause at first flow of said nitroglycerine or said polyalcohol nitrate into the interstices between the granules of said base powder and heating in the mold at a temperature and for a period of time sufficient to cause molding of said base powder in situ and gelatinization of the nitrocellulose of said base powder and at the contact surface of the adjacent layers thereof, whereby said layer formed from said base powder is sealed to its adjacent layers by means of said gelatinized nitrocellulose.

3,926,698

EXPLOSIVE COMPOSITIONS CONTAINING METALLIC FUEL PARTICLES AND METHOD OF PREPARATION THEREOF

Melvin A. Cook, Salt Lake City, and Mark J. Hagmann, Summit Park, both of Utah, assignors to Ireco Chemicals, Salt Lake City, Utah

Filed Feb. 21, 1974, Ser. No. 444,691

Int. Cl.² C06B *33/02*

U.S. Cl. 149—44 **12 Claims**

1. A method for preventing the loss of sensitivity of a gas-containing blasting composition upon being worked which composition comprises a continuous thickened solution phase having dissolved therein at least one inorganic oxidizer salt and metallic particles as fuel and/or sensitizer dispersed throughout the solution phase which method includes incorporating into the solution phase a small amount of a miscible, liquid collector, which is capable of causing floatation of the metallic particles in the solution phase when such phase is not thickened and which retains its liquidity and miscibility at intended temperatures of working.

8. In an explosive composition comprising a thickened solution phase of at least one oxidizing salt and metallic particles as fuel and/or sensitizer dispersed throughout the solution phase the improvement comprising, in the solution phase, a small amount of a miscible, liquid collector, which is capable of causing flotation of the metallic particles in the solution phase when such solution phase is not thickened and which retains its liquidity and miscibility at intended temperatures of working, to prevent the metallic particles from becoming wetted upon working thereby causing the composition to lose its sensitivity.

3,926,699

METHOD OF PREPARING PRINTED CIRCUIT BOARDS WITH TERMINAL TABS

Charles H. Dixon, Waukesha, Wis., assignor to RBP Chemical Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 479,705, June 17, 1974, abandoned, which is a division of Ser. No. 322,040, Jan. 8, 1973, Pat. No. 3,841,905. This application Dec. 18, 1974, Ser. No. 534,034

Int. Cl.² C23F *1/02*

U.S. Cl. 156—3 **7 Claims**



1. The method of rapidly stripping a layer of metal selected from the group consisting of lead-tin solder and tin from a layer of copper on a fiberglass circuit board without adversely affecting the copper and fiberglass, said process comprising the steps of: exposing the solder to a composition comprising ammonium bifluoride in the range of 10% to 25% by weight, hydrogen peroxide in the range of 1% to 5% by weight, and water in the range of 89% to 70% by weight for a time sufficient to remove the solder, and rinsing the said composition from the copper after the solder has been effectively stripped and before the copper and plastic have been adversely affected.

3,926,700

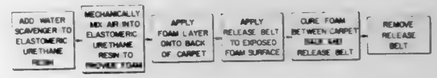
CELLULAR-URETHANE BACKED CARPET

Henry S. Hopkins, Jr., Ashland, Ohio, and Philip L. Gordon, Lexington, Mass., assignors to General Latex and Chemical Corporation, Cambridge, Mass.

Division of Ser. No. 163,017, July 15, 1971, abandoned, which is a continuation of Ser. No. 878,330, Nov. 20, 1969, abandoned. This application Apr. 13, 1973, Ser. No. 350,694

Int. Cl.² B32B *5/18*; **D04H** *11/00*

U.S. Cl. 428—95 **17 Claims**



1. A sheet material which comprises in combination:

a fibrous backing sheet and a layer of a cured, flexible, elastomeric, cellular urethane resin securely and directly bonded to the fibers on one surface of the backing sheet, the urethane resin containing in combination:

a. a silicone fluid surfactant in an amount to aid in uniform cell structure;

b. a catalyst to control the rate of cure; and

c. from about **0.1** to **5.0** percent by weight of a moisture-scavenging agent, the cellular layer characterized by being composed of essentially uniform, open and interconnecting cells, the exposed foam surface characterized by a smooth thin skin resin layer substantially free of craters, pimples and ridges therein.

3,926,701

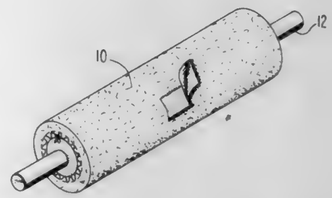
METHOD AND COVERING FABRIC FOR A DAMPING FORM ROLLER OF AN OFFSET PRINTING MACHINE

Hiroshi Nishiwaki, Osaka, Japan, assignor to Unitika Ltd., Amagasaki and Katsura Roller Mfg. Co., Ltd., Osaka, both of, Japan

Continuation-in-part of Ser. No. 143,607, May 14, 1971, abandoned. This application Sept. 26, 1973, Ser. No. 400,991

Int. Cl.² B21B *31/08*; **B60B** *7/00*

U.S. Cl. 156—86 **2 Claims**



1. In cylindrical damping form covers which are water-shrinkable over damping form rollers, the improvement wherein a damping form cover comprises

pile yarns composed of hydrophilic vegetable or regenerated fibers and

ground yarns composed of lightly heat-treated and nonacetalized multifilament polyvinyl alcohol fibers, said multifilament polyvinyl alcohol fibers being capable of shrinking by **27-40%** in the direction of the length thereof when moistened with water in the absence of previous stretching.

whereby said damping form cover may be fixed firmly on a damping form roller 5% or less smaller in diameter than said damping form cover due to the shrinkage of the ground yarns when the roller is inserted therein, both ends of the damping form cover are fixed with fibers, and the roller and cover are moistened.

2. A method of covering a damping form roller for an offset printing machine comprising the steps of:

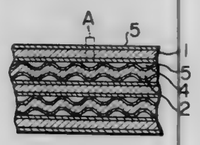
1. forming a cylindrical cover from a fabric comprising:
   a. pile yarns composed of hydrophilic vegetable or regenerated fibers and
   b. ground yarns composed of lightly heat-treated and nonacetalized multifilament polyvinyl alcohol fibers, said multifilament polyvinyl alcohol fibers being capable of shrinking by 27–40% in the direction of the length thereof when moistened with water in the absence of previous stretching;
2. inserting the roller into the cylindrical cover; and
3. wetting the roller and cylindrical fabric with water until the cylindrical fabric has shrunk sufficiently to firmly position the cylindrical fabric on the roller.

3,926,702

CERAMIC STRUCTURES AND PROCESS FOR PRODUCING THE SAME

Masami Oki, Nagoya; Ryuzo Hori, Toyota, and Naoto Miwa, Kariya, all of Japan, assignors to Asamura Patent Office, Japan

Filed Mar. 27, 1973, Ser. No. 345,456
Claims priority, application Japan, Mar. 29, 1972, 47-32039; Mar. 29, 1972, 47-32041
Int. Cl.² C04B *37/00, 39/12, 41/06;* **B32B** *3/12*
U.S. Cl. 156—89 **6 Claims**



1. A process for producing a ceramic structure which comprises forming in a first step optional-shaped substrates with a mixture of a ceramic material, an organic material and a solvent capable of dissolving said organic material and then firing said substrate; in a second step laminating said substrates to form a structure having fluid passages between said substrates; in a third step dipping said structure in a slurry consisting of the same ceramic material as the ceramic material in the first step, the organic material being present in a greater amount than that employed in the first step and a solvent capable of dissolving said organic material; in a fourth step firing said dipped structure to form a porous ceramic layer on the internal and external surfaces of said structure; in a fifth step dipping said structure having said porous ceramic layer in a liquid containing an aluminum compound which can be transformed to γ- or δ-Al_2O_3 by thermal decompostion to fill the pores in said layer with said aluminum compound and then firing said structure to thermally decompose said aluminum compound to γ- or δ-Al_2O_3. O

5. A process for producing a ceramic structure which comprises forming in a first step optional-shaped substrates with a mixture of a ceramic material, an organic material and a solvent capable of dissolving said organic material and then firing said substrate; in a second step dipping said structure in a slurry consisting of the same ceramic material same as the ceramic material in the first step, the organic material being present in a greater amount than that employed in the first step and a solvent capable of dissolving said organic material; in a third step laminating said substrates to form a structure having fluid passages between said substrates; in a fourth step firing said dipped structure to form a porous ceramic layer on the internal and external surfaces of said structure; and in a fifth step dipping said structure having said porous ceramic layer in a liquid containing an aluminum compound which can be transformed to γ- or δ-Al_2O_3 by thermal decomposition to fill the pores in said layer with said aluminum compound and then firing said structure to thermally decompose said aluminum compound to γ- or δ-Al_2O_3.

3,926,703

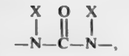
METAL-RUBBER ADHESION SYSTEM

Stephen E. Cantor, Cheshire, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 319,273, Dec. 29, 1972, Pat. No. 3,862,883. This application June 11, 1974, Ser. No. 478,411
Int. Cl.² B29H *17/00;* **C09J** *3/12;* **C08L** *7/00*
U.S. Cl. 156—124 **11 Claims**

1. In the method of adhering a metallic reinforcing element having a surface of brass to rubber by applying a vulcanizable rubber composition to the element and heating the assembly to vulcanize the rubber, the steps comprising:

Incorporating in the rubber composition before vulcanization a halogen donor selected from the group consisting of 1) N,N-dihalogenated aromatic sulfonamides wherein the sulfonamide nitrogen is bonded to two atoms of chlorine, bromine or iodine and the sulfonyl sulfur is bonded directly to the aromatic nucleus and 2) cyclic N-halogenated amides wherein a carbonyl carbon in the ring is bonded to two nitrogen atoms, each of said nitrogen atoms in turn being bonded to a halogen atom thereby forming the grouping



wherein X is chlorine, bromine or iodine and,

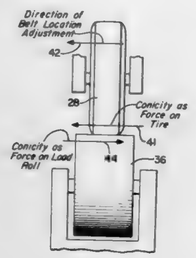
B. Incorporating in the rubber composition a member selected from the group consisting of resorcinol, m-aminophenol, m-phenylene diamine, resorcinol monoacetate, resorcinol diacetate, 1,5-naphthalenediol, partially reacted resorcinol-formaldehyde resins, condensation products of resorcinol and acetone, and condensation products of resorcinol and acetaldehyde.

3,926,704

FORCE VARIATION MEASUREMENTS ON UNVULCANIZED TIRES

William J. Sharp, Jr., Union City, Tenn., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 2, 1974, Ser. No. 528,748
Int. Cl.² B29H *17/02;* **G01M** *17/02*
U.S. Cl. 156—126 **14 Claims**



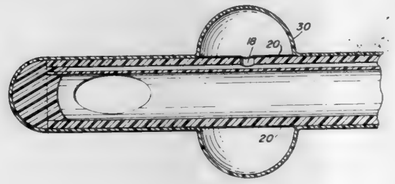
1. In a process of manufacturing a belted pneumatic tire on a tire building machine of the type having means to position an uncured belt structure on an uncured carcass structure in a predetermined location on said carcass structure relative to axial directions, the improvement comprising: after said belt structure is placed on said carcass structure but before said tire is vulcanized determining the conicity of said tire, comparing said conicity with a predetermined maximum allowable conicity for the unvulcanized tire and adjusting the predetermined location on said carcass structure relative to axial directions to reduce the conicity in subsequent tires built on said machine to within the maximum allowable conicity.

3,926,705

SILICONE CATHETER AND PROCESS FOR MANUFACTURING SAME

Donald A. Todd, Elk Grove Village, Ill., assignor to Western Acadia, Incorporated, Chicago, Ill.

Filed July 25, 1974, Ser. No. 491,623
Int. Cl.² B65H *81/00*
U.S. Cl. 156—155 **9 Claims**



1. A method for forming a catheter comprising the steps of:

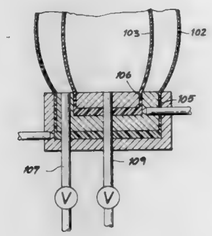
1. forming a tubular body comprising a primary lumen and an inflation lumen;
2. forming a first hole in said tube to permit communication between said inflation lumen and the exterior of said tube;
3. applying a thin layer of thermoplastic material around the exterior of said tube to overlap said first hole;
4. applying an outer layer of covering material, which does not adhere to the thermoplastic material, to the exterior of said tube to form a covered tube;
5. forming a second hole in the covered tube to permit communication between said primary lumen and the exterior of said covered tube; and
6. forming a third hole in said thermoplastic material adjacent said first hole.

3,926,706

FILM BLOWING METHOD

Fritz Reifenhäuser, Troisdorf, and Herbert Rahlfs, Troisdorf-Sieglar, both of Germany, assignors to Reifenhauser KG, Troisdorf, Germany

Continuation-in-part of Ser. No. 86,214, Nov. 2, 1970, Pat. No. 3,726,743. This application Dec. 11, 1972, Ser. No. 314,040
Claims priority, application Germany, Oct. 31, 1969, 1954824
Int. Cl.² B32B *1/08;* **B29D** *23/04*
U.S. Cl. 156—229 **3 Claims**



1. A method of producing a multilayer foil, comprising the steps of:

coaxially extruding an inner thermoplastic tube within an outer thermoplastic tube from outlets lying in a common plane; blowing each tube independently of and out of contact with the other from different blowing sources to stretch the outer tube independently of the inner tube and impart different degrees of orientation in the direction of extrusion and transversely thereto; and collectively pinching said tubes downstream of said blowing step with their surfaces bonding together.

3,926,707

USE OF TEMPORARY PRINTING CARRIERS

Heinz Glaser, Kandern, and Vassil Zlatareff, Fullinsdorf, both of Switzerland, assignors to Societe d'Etudes du Procede NORIDEM, Glarus, Switzerland

Division of Ser. No. 297,032, Oct. 4, 1972, Pat. No. 3,870,539. This application Nov. 11, 1974, Ser. No. 522,864
Claims priority, application Switzerland, Oct. 6, 1971, 11481/71; July 28, 1972, 11293/72
Int. Cl.² B32B *31/20, 27/08;* **B44C** *1/16*
U.S. Cl. 156—239 **4 Claims**

1. A process for the transfer of a vinyl resin film onto a definitive A.B.S., polycarbonate, polyvinyl chloride or polystyrene surface which comprises

bringing the said A.B.S., polycarbonate, polyvinyl chloride or polystyrene surface into contact with the adhesive surface of a temporary carrier comprising, as the base, paper, aluminum, regenerated cellulose, polyester terephthalate, or polyolefine sheets or laminates thereof said base carrying on one of its surfaces a detachable film of pigmented vinyl resins, having an underlying layer between the base and said detachable film consisting of a mixture of nitrocellulose and an aminoplast or of nitrocellulose and an alkyd resin, the said detachable film having an overlying thin adhesive layer containing resins which are soluble in organic solvents and which possess a pendulum hardness according to Konig (DIN 53157) of at least 85 seconds,

exposing the surfaces while in contact to the action of heat, pressure or both to cause the adhesive layer and detachable film to transfer onto the said A.B.S., polycarbonate, polyvinyl chloride or polystyrene surface, and

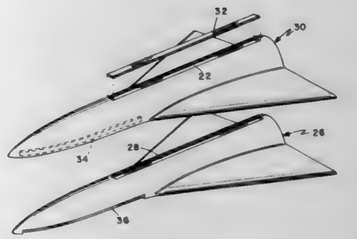
removing the said temporary carrier base with the said underlying layer.

3,926,708

METHOD OF MANUFACTURING HIGH STRENGTH FIBER REINFORCED THERMO PLASTIC PARTS

Roger A. Long, Escondido, Calif., assignor to Teledyne Ryan Aeronautical a Division of Teledyne Industries, Inc., San Diego, Calif.

Filed Oct. 25, 1972, Ser. No. 300,846
Int. Cl. B29b *23/00*
U.S. Cl. 156—242 **6 Claims**



1. A method of forming high-strength fiber-reinforced thermo plastic parts comprising the steps of,

heating thermo plastic material to a temperature at which it is readily formable,
forming said material to the desired final configuration by drawing said material by a vacuum onto a mold,
permitting said plastic material to cool and harden,
applying an elongated fiber reinforcing to selective locations on at least one of said surfaces of said material by placing tapes of elongated high strength, and high modulus fibers in a matrix of thermo plastic material onto the surface of the formed thermo plastic part,
bonding said tapes at said selective locations by heating said thermo plastic matrix material in said tapes.

3,926,709
GLASSY MATERIALS FROM PLUMBITES AND CELLULOSICS

Truman L. Ward; Ruth R. Benerito, both of New Orleans, and Jacques J. Hebert, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

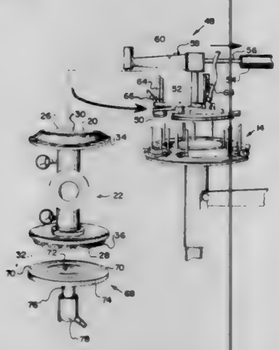
Filed Aug. 22, 1974, Ser. No. 499,689
Int. Cl.² C09J *5/02, 7/00*
U.S. Cl. 156—309 **1 Claim**

1. A process for bonding high silicon content surfaces with each other, the process comprising . . .
a. placing a polysaccharide premodified by reaction with sodium plumbite to a lead content of about from 8% to 37%, between high silicon content surfaces to be joined,
b. placing or otherwise securing the component parts to provide an immobile assembly,
c. heating the immobile assembly in a closed oven or other low oxygen atmosphere, from a temperature below 200°C to temperatures of about from 600° to 700°C., and maintaining that temperature for about at least 60 minutes, and
d. cooling the immobile heated assembly gradually to avoid fracturing the original silicon surfaces.

3,926,710
APPARATUS FOR APPLYING DECALCOMANIA

Saul Weingrad, Hillsdale, N.J.; Albert J. Wahl, Fredonia; Richard C. Mucha, Brocton, both of N.Y., and Robert E. Gould, Washington, D.C., assignors to Commercial Decal, Inc., Mount Vernon, N.Y.

Filed Oct. 16, 1972, Ser. No. 297,631
Int. Cl.² B65C *9/06, 9/14, 9/36, 9/40*
U.S. Cl. 156—362 **8 Claims**

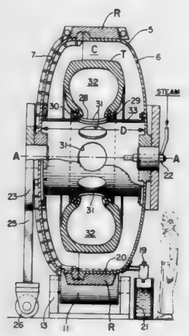


1. Apparatus for applying at least two decals to a piece of ware in a single decal transfer step; said apparatus comprising; first means for holding a supply of decals, said first means comprising at least two storage bins;
second means for temporarily holding at least two preselectively shaped decals in a predetermined position with respect to the piece of ware to be decorated, said second means including a resilient porous decal seating surface for said decals, and vacuum means for applying a reduced pressure behind said porous decal seating surface;
third means for transferring said decals from said first means to said second means, said third means comprising at least two pick-up heads aligned above said stacks of decals, suction means applied to said pick-up heads for transferring the top-most decal from each of said stacks to a respective pick-up surface, position change means for moving said pick-up heads between an initial position above said stacks and a final position above said second means, and pick-up head movement means for moving said pick-up heads into contact with said second means, said pick-up head movement means including drive means for pivotally moving said pick-up heads between positions in a common plane and positions in engagement with said porous seating surface;
fourth means for holding the piece of ware to be decorated in a predetermined position with respect to said second means; and
fifth means for moving said fourth means and said second means into decal transfer position with respect to one another whereby said decals may be simultaneously transferred from said second means to said piece of ware.

3,926,711
PORTABLE ROTATING KETTLE USED IN RETREADING TIRES

Merritt W. Wolfe, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 5, 1972, Ser. No. 286,382
Int. Cl.² B29H *5/04*
U.S. Cl. 156—394 **14 Claims**

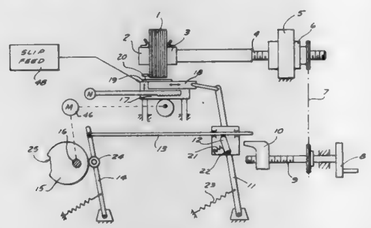


1. A kettle used in repairing or retreading tires, comprising:
a. at least two opposing sections forming a chamber for receiving a tire;
b. means for mounting the sections for unitary rotation about an axis angularly disposed to a vertical plane; and
c. means for mounting a tire in the chamber for unitary rotation with the sections and rotation about the rotational axis of the sections.

3,926,712
APPARATUS FOR BINDING PILES OF SHEETS OR LEAVES

Josef Wetzler; Wilhelm Neumann, both of Rosenheim, and Karlheinz Hesselman, Au b. Bad Aibling, all of Germany, assignors to Fa. Planatolwerk Willy Hesselmann, Rosenheim, Germany

Continuation-in-part of Ser. No. 284,862, Aug. 30, 1972, abandoned. This application Jan. 30, 1974, Ser. No. 437,886
Claims priority, application Germany, Sept. 2, 1971, 2144101
Int. Cl.² B42C *13/00*
U.S. Cl. 156—477 B **5 Claims**

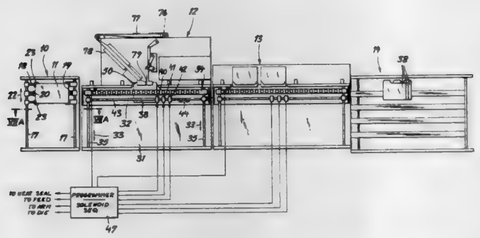


1. In an apparatus for the adhesive binding of a stack of sheets with a foil coated with a thermally activatable adhesive by depositing the foil upon a hot plate having a stationary member horizontally fixed but vertically movable and a movable member horizontally displaceable relative to the stationary member to receive an edge of the stack between said members and, upon vertical displacement of said hot plate, to fold the foil around said edge, the improvement which comprises:
clamping means engageable with said stack and including two parts separable by the width of said stack; and
means for coupling at least one of said parts with said movable member for positioning said movable member in spaced relation relative to said stationary member in dependence upon the spacing of said parts.

3,926,713
APPARATUS FOR PRODUCING AND ASSEMBLING TABBED CARDS

William F. Lowe, Bridgehampton, and Harry L. Bondy, Plainview, both of N.Y., assignors to E-Z Machine Corporation, Plainview, N.Y.

Filed Aug. 30, 1973, Ser. No. 392,994
Int. Cl.² B32B *31/20;* **B65C** *9/06;* **B30B** *15/34*
U.S. Cl. 156—510 **5 Claims**

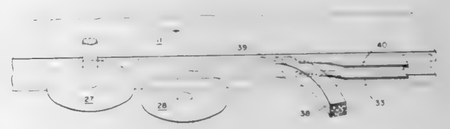


1. An apparatus for producing tabbed sheet elements comprising:
means for forming a succession of tabs, said tabs being generally channel-shaped with shanks adapted to straddle an edge of a respective sheet element
means for feeding said tabs to a tab-applying station;
means at said station for affixing each of said tabs to a respective sheet element disposed at said station;
means for controlling the position of the bight of each tab relative to said edge of the respective sheet element,
means for feeding a succession of sheet elements to said station, to enable said sheet elements to receive respective tabs; and
selectively operable stop means engageable with said sheet elements for locating the successive sheet elements at different positions with respect to said station whereby the tabs are applied to the successive sheet elements at locations along said edge thereof varying in accordance with the stopped positions of said sheet elements, said means for feeding said tabs to said station including an arm swingable substantially in the plane of said sheet elements and having a free end successively receiving said tabs, each tab carried by said arm describing an orbit, said edge of each sheet element extending along a secant of said orbit, and s slide carrying said arm and shiftable perpendicularly to said edge at said station, said means for controlling the relative position of the bight of each tab with respect to said edge of each sheet element including means for limiting the advance of said slide, said arm being provided with a slot open in the direction of said sheet elements and receiving the bight of said tabs.

3,926,714
METHOD AND APPARATUS FOR PRODUCING FOAMED THERMOPLASTIC INSULATION BOARDS

Dikrun Der Marderosian, Sudbury, and Paul Albert Tremblay, Billerica, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed June 24, 1974, Ser. No. 482,141
Int. Cl.² B32B *31/00*
U.S. Cl. 156—516 **3 Claims**



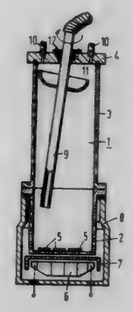
1. An apparatus for the production of a continuous length of grooved, laminated, foamed thermoplastic resin insulation board from discontinuous lengths thereof, said apparatus comprising a frame; means supported by said frame for moving said board relative to said frame; means for laminating a continuous sheet of flexible material to the upper surface of said board; means for laminating a continuous sheet of flexible material to the lower surface of said board; a pair of spaced, rotatable, smooth-edged circular knives positioned to form two spaced continuous slits in a surface of said board; a tool positioned to work between said slits and to remove resinous board material from therebetween and thereby form a groove in said board, said tool having a flat, elongated rectangular bottom having a chisel-shaped leading knife edge tapered on one side to direct board material away from said board and a width corresponding to the distance between said knives, said tool further having upstanding side walls rearward of said leading edge and perpendicular to said bottom; and means to heat said tool to at least the softening temperature of the resinous board.

3,926,715

METHOD OF EPITACTIC PRECIPITATION OF INORGANIC MATERIAL

Erhard Süssmann, Poing, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation of Ser. No. 219,880, Jan. 21, 1972, abandoned, which is a continuation of Ser. No. 848,971, Aug. 11, 1969, abandoned. This application Jan. 21, 1974, Ser. No. 435,084
Claims priority, application Germany, Aug. 14, 1968, 1769968
Int. Cl.² B01D 9/00, 7/02
U.S. Cl. 156—612 4 Claims



1. A method of epitactic precipitation of a silicon layer on the surface of a wafer of silicon monocrystal from which surface impurities and dislocations have been removed, which consists sequentially in oxidizing the surface of said silicon monocrystal having surface impurities and dislocations, for a time to produce from the silicon in said surface a SiO_2 layer sufficient to encompass said surface impurities and dislocations of from about 10 A thick on the surface of the silicon monocrystal wafer, removing completely the resultant SiO_2 layer by annealing said silicon wafer in hydrogen or inert gas thereby producing a surface on the silicon monocrystal free of surface impurities and dislocations, thereafter subjecting said newly produced silicon surface out of contact with an oxidizing medium to epitactic precipitation by a reaction gas which effects the epitactic precipitation on said surface free of surface impurities and dislocations.

3,926,716

TRANSFER AND ADHERENCE OF RELATIVELY DRY PAPER WEB TO A ROTATING CYLINDRICAL SURFACE

Gregory A. Bates, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 19, 1974, Ser. No. 452,610
Int. Cl.² B31F 1/12
U.S. Cl. 162—113 32 Claims

1. A process for manufacturing a soft and absorbent tissue paper web having a uniform basis weight of about 5 to about 40 pounds per 3000 square feet, said process comprising the steps of

a. drying without compacting a moist paper web to provide a fiber consistency exceeding about 68% and ranging up to about 98% while said web is on a patterned imprinting fabric;

b. imprinting the resulting relatively dry web with the pattern of the imprinting fabric;

c. applying an aqueous polyvinyl alcohol solution to cause transfer and adherence of the imprinted web to a rotating cylindrical surface, said polyvinyl alcohol being characterized by a degree of hyrolysis ranging from about 80% to about 90% and a viscosity as a 4% aqueous solution at 20°C. exceeding about 20 centipoises.

3,926,717

PROCESS FOR FORMING A POLYMERIC FILM INSIDE A CELLULOSIC MATRIX AND PRODUCT OBTAINED THEREFROM

Robert H. Marchessault, Mount Royal, and Bohuslav Fisa, Montreal, both of Canada, assignors to Her Majesty, The Queen, in Right of Canada, as represented by the Minister of Nat. Defence

Filed Oct. 29, 1973, Ser. No. 410,560
Claims priority, application Canada, Jan. 22, 1973, 162457
Int. Cl.² D21F 11/00
U.S. Cl. 162—157 C 13 Claims

1. A process for preparing a shaped fibrous cellulosic material having deposited therein a complementary matrix of a polymer which is continuous and preferentially surrounds the non-bonded portions of fibers which comprises forming a two component organometallic-transition metal catalyst system by treating a fibrous cellulosic matrix with a catalyst component selected from a transition metal or an organometallic compound in a hydrocarbon solvent having a vapor pressure higher than that of the selected catalyst component, evaporating the solvent thereby to cause a deposit of the selected catalyst component inside the matrix, reacting said selected catalyst component with the other catalyst component to form an organometallic-transition metal polymerization catalyst inside the matrix and treating said matrix containing the polymerization catalyst with a monomer which is an aliphatic 1-olefin monomer having less than 6 carbon atoms, methyl methacrylate or styrene to form a continuous complementary polymeric matrix inside the shaped fibrous cellulosic matrix, the product formed being characterized by having a continuous and papillary coating of said polymeric matrix throughout the interstitial spaces of the fiberous cellulose matrix.

8. A shaped, fibrous, cellulosic matrix having a continuous complementary polymer matrix distributed inside said cellulosic matrix in the interstitial spaces thereof conforming substantially to the internal and external shape of said cellulosic matrix and surrounding the non-bonded portions of the fibers constituting the cellulosic matrix whereby the original interfiber bonding of the cellulosic matrix is retained, said complementary polymer matrix not being visibly distinguishable but chemically separable from the cellulosic matrix and said polymer being a polymerized aliphatic 1-olefin monomer having less than six carbon atoms.

3,926,718

PROCESS OF IMPROVING WATER DRAINAGE FROM PAPER WEBS BY ADDITION OF A WATER SOLUBLE BLOCK POLYMER TO A CELLULOSIC PULP SLURRY

Lawrence James Guilbault, McMurray, and James Richard Zakrzewski, Brackenridge, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Apr. 30, 1974, Ser. No. 465,717
Int. Cl.² D21D 3/00
U.S. Cl. 162—168 8 Claims

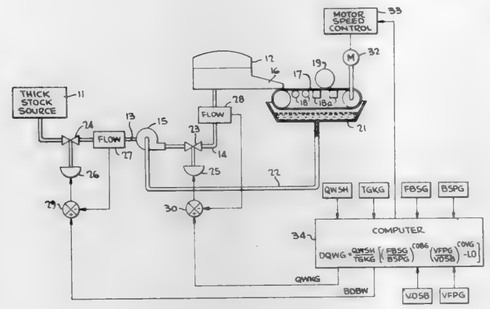
1. A process of improving water drainage from paper webs comprising adding to a cellulosic pulp slurry about 0.001 to about 1%, based on the dry weight of pulp fibers, of a polymer of the formula A-B-A wherein the A block represents from 10 to 100,000 mer units of a water-soluble monomer selected from the group consisting of 3-acrylamido-3-methyl butyl trimethyl ammonium chloride, 2-acrylamido-2-methyl propane sulfonic acid, dimethyl diallyl ammonium chloride, methacryloyloxyethyl trimethyl ammonium chloride, methacryloyloxyethyl trimethyl ammonium methosulfate and acrylamide and the B block represents from 10 to 5,000 mer units of N-vinylpyrrolidone, depositing the pulp onto a forming surface and draining the water from the fiber network.

3,926,719

DRY LINE CONTROLLER

David A. Spitz, Columbus, Ohio, assignor to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Jan. 25, 1972, Ser. No. 220,635
Int. Cl.² D21F 1/06, 1/08
U.S. Cl. 162—253 2 Claims



1. A system for maintaining the position of a dry line on a Fourdrinier wire at substantially the same location after a change in a fibrous product grade formed on the wire as before the change, said wire being responsive to the same type of thick stock throughout the change, said fibrous product being formed in response to a fiber water slurry fed to the wire and that is relatively dilute compared to the thick stock, comprising a first control for changing the fibrous product grade, said first control comprising means for deriving signals indicative of values for bone dry basis weight of the product before and after said change by said first control and indicative of values for wire speed before and after said change, said changes in bone dry basis weight and wire speed resulting in said change in the fibrous product grade, means responsive to said bone dry basis weight signals for incrementally controlling bone dry basis weight of the product, and means responsive to said wire speed signals for incrementally controlling the speed of the wire, a second control comprising means for incrementally controlling the flow rate of the fiber water slurry being fed to the wire in response to the signals indicative of the wire speed and bone dry basis weight before and after the change, all of said incremental control means being activated concomitantly and with such magnitude that the dry line position before the change is substantially the same as after the change, said second control for incrementally controlling the fiber flow rate includes means for computing:

$$DQWG = \frac{QWSH}{TGKG} \cdot \frac{FBSG}{BSPG}^{COBG} \cdot \frac{VFPG}{VDSB}^{COVG} - 1.0$$

where:

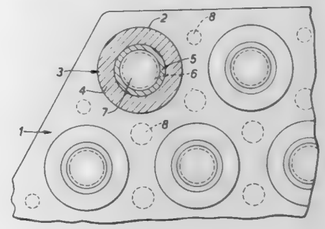
DQWG = stream flow change during each step,
QWSH = stream flow set point prior to the change,
TGKG = the number of increments required to make the change,
FBSG = bone dry basis weight set point prior to the change,
BSPG = bone dry basis weight set point subsequent to the change,
VFPG = wire speed set point after the change,
VDSB = wire speed set point prior to the change,
COVG = a constant determined from a curve fit of the vacuum profile between the table rolls and wire, as a function of wire velocity; and
COBG = a constant determined from a curve fit of the vacuum profile between the table rolls and the wire, as a function of bone dry basis weight.

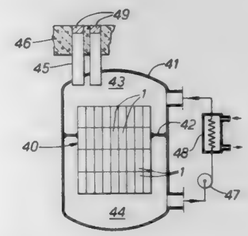
3,926,720

GAS COOLED NUCLEAR REACTOR FUEL ELEMENTS

Samuel Brittan Hosegood, Wareham, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed May 24, 1973, Ser. No. 363,567
Claims priority, application United Kingdom, June 9, 1972, 27053/72
Int. Cl.² G21C 3/08; G21G 1/02
U.S. Cl. 176—18 7 Claims





1. A nuclear fuel unit for the reactor core of a gas-cooled nuclear reactor of the thermal type comprising a block of moderating material having an array of parallel holes formed therein, disposed in each hole a fissile material region formed from fissile plutonium, a fertile material region enclosing and surrounding each fissile material region in such manner that in a nuclear reactor the neutron flux thermalized by the block of moderating material must before reaching a fissile material region, encounter fertile material, and coolant channels for permitting gas coolant to remove heat from the fissile material regions.

3,926,721

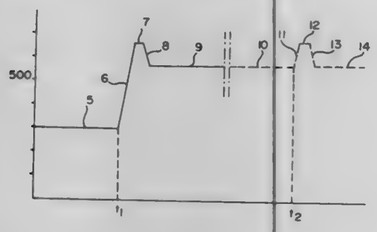
METHOD OF OPERATING A WATER-COOLED NUCLEAR REACTOR

Gunnar Lysell, Nykoping, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed June 15, 1973, Ser. No. 370,206
Claims priority, application Sweden, June 29, 1972, 8579/72
Int. Cl. G21b 3/06, 7/00, 17/00
U.S. Cl. 176—19 R 3 Claims

1. In a water-cooled nuclear reactor comprising fuel rods of the type containing oxidic nuclear fuel enclosed by a covering of a zirconium alloy, the method of operating the reactor so that the stress corrosion caused in the covering at least in part by the production of fission products is avoided, comprising the steps of operating the nuclear reactor at a desired power output, rapidly increasing the power output of the reactor at a rate not less than 0.2 W per cm of fuel rod length and per second to a power output in the range of 20 – 200 W per cm of fuel rod length above the desired power output, maintaining the increased power output for a period of time so that the

temperature at the center of the fuel rods is in the range of 10° to 100° C. below the equilibrium temperature at the increased power output, and returning the reactor to the desired power output so that during the period of the increased power output



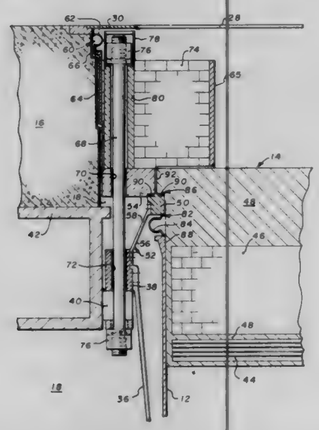
the thermal expansion caused by the increased temperature in the nuclear fuel produces a pressure on the interior of the covering which exceeds the yield limit of the zirconium alloy covering whereby the stress peaks are evened out and all temperature stresses are reduced below the critical level.

3,926,722

REACTOR VESSEL HEAD SUPPORT ARRANGEMENT

Clive Frederick George Dupen, Weatogue, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed June 29, 1973, Ser. No. 374,856
Int. Cl. G21c *13/04*
U.S. Cl. 176—87 8 Claims



1. A nuclear reactor head support arrangement comprising:
a containment structure providing a vessel cavity;
a reactor vessel vertically disposed and supported within said vessel cavity;
a first support ring supported from said containment structure in said cavity, said first support ring being concentrically disposed with respect to and spaced from said vessel;
a plurality of flexible struts spaced about said reactor vessel, said flexible struts each having one end connected to said first support ring;
a seoond support ring concentrically disposed with respect to said reactor vessel, said second support ring being connected to the other ends of said flexible struts;
a vessel head for said reactor vessel, said vessel head being aligned with said vessel and supported by said second support ring at the upper end of said vessel; and
a first sealing means for preventing fluid communication between the interior of said reactor vessel and said cavity.

3,926,723

METHOD OF CONTROLLABLY RELEASING GLUCOSE TO A CELL CULTURE MEDIUM

Howard Green, Brookline, and James G. Rheinwald, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 8, 1974, Ser. No. 495,609
Int. Cl.² C12K *9/00*; C12B *3/08*
U.S. Cl. 195—1.8 23 Claims

1. In the method of culturing mammalian cells in a culture medium which supplies nutrients including glucose to said mammalian cells:
The improvement of maintaining the glucose concentration in said culture medium at a desired concentration by providing sustained release of glucose at a controlled rate by including in the culture medium a compound containing an enzymatically-releasable glucosyl moiety and an enzyme activity capable of releasing glucose from said glucosyl-containing compound, said glucosyl-containing compound being present in an amount sufficient to provide sustained release of glucose and said enzyme activity being present at a level sufficient to maintain the glucose at the desired concentration.

3,926,724

PROCESS FOR THE PRODUCTION OF CITRIC ACID

Kenichiro Takayama, Machida; Tetsuo Adachi, Tokyo; Mamoru Kohata, Kawasaki; Kiyoji Hattori, Machida, and Tomoko Tomiyama, Tokyo, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1974, Ser. No. 452,405
Claims priority, application Japan, Mar. 24, 1973, 48-33089
Int. Cl. C12b *1/00*
U.S. Cl. 195—28 R 6 Claims

1. A process for the production of citric acid which comprises culturing a nutrition-requiring mutant yeast strain of the genus Candida in a culture medium containing assimilable sources of carbon and nitrogen and up to 500 mg/L of a source of iron ion or iron-containing ion, said mutant being characterized by requiring a higher amount of iron ion or iron-containing ion than its parent strain for comparable growth, accumulating citric acid in said culture medium and recovering said citric acid.

3,926,725

PROCESS FOR PRODUCING CYCLIC-3,5-CYTIDYLIC ACID BY FERMENTATION

Jiro Ishiyama, Noda, and Tamotsu Yokotsuka, Nagareyama, both of Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda, Japan

Filed June 7, 1974, Ser. No. 477,456
Claims priority, application Japan, June 8, 1973, 48-63918[U]
Int. Cl.² C12D *13/06*
U.S. Cl. 195—28 N 17 Claims

1. A process for producing cyclic-3′, 5′-cytidylic acid by fermentation, comprising culturing a microorganism belonging to the genus Corynebacterium, Arthrobacter or Microbacterium and having an ability of producing cyclic-3′, 5′-cytidylic acid in a medium containing a carbon source, a nitrogen source and inorganic nutrients under aerobic conditions at a pH of 5 to 9 at a temperature of 20° to 40°C for a period until cyclic-3′, 5′-cytidylic acid is produced and accumulated in the medium and isolating said cyclic-3′, 5′-cytidylic acid.

3,926,726

METHOD FOR CARRYING OUT ENZYMIC REACTIONS BY MEANS OF THE USE OF BIPHASIC AQUEOUS-ORGANIC SYSTEMS

Eraldo Antonini, Rome, Italy, and I.S.F. Societa per Azioni, 03, Trezzano Sul Naviglio, both of Italy, assignors to Snam Progetti S.p.A., Milan and I.S.F. Societa per Azioni, Trezzano Sul Naviglio, both of, Italy

Filed Jan. 11, 1974, Ser. No. 432,564
Claims priority, application Italy, Jan. 26, 1973, 19642/73
Int. Cl.² C12B *1/00*
U.S. Cl. 195—30 8 Claims

1. A method for carrying out enzymic conversions of water-insoluble substrates, wherein the enzyme is selected from the group consisting of laccase, hydroxosteroid dehydrogenase, lipase, lactic dehydrogenase and alcohol dehydrogenase, the operation is performed in aqueous organic biphasic systems in the presence of an organic solvent which is immiscible with water but is miscible with, and is, a solvent for the substrate.

3,926,727

UROKINASE PREPARATIONS

Edmond G. Vairel, Paris; Jean Goulay, Oissel, and Jean Choay, Paris, all of France, assignors to Choay S.A., Paris, France

Filed Sept. 25, 1972, Ser. No. 292,139
Claims priority, application France, Sept. 24, 1971, 71.34345; June 30, 1972, 72.23867; June 30, 1972, 72.23868
Int. Cl.² C07G *7/02*
U.S. Cl. 195—63 14 Claims

1. A urokinase-heparine complex comprising heparine complexed with highly purified urokinase, the complex having retained essentially the urokinase activity.

3,926,728

NEW PROCESS FOR THE PREPARATION OF 6-AMINOPENICILLANIC ACID

Eiji Kondo, Ikeda, and Takashi Mitsugi, Takaishi, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Aug. 19, 1974, Ser. No. 498,540
Claims priority, application Japan, Sept. 3, 1973, 48-99106[U]
Int. Cl.² C12D *9/22*
U.S. Cl. 195—36 P 11 Claims

1. A process for preparing 6-aminopenicillanic acid or a salt thereof which comprises (A) subjecting a penicillin or salt thereof to the penicillin amidase action of (1) a penicillin amidase-producing fungus of the genus *Phialomyces*, the genus *Leptosphaerulina* or the genus *Robillarda* or (2) the mycelium preparation resulting from said fungus, and (B) isolating the resultant 6-aminopenicillanic acid or salt thereof.

3,926,729

METHOD FOR PRODUCING DEACETYLCEPHALOSPORIN C

Toshihiko Kanzaki, Hyogo; Yukio Fujisawa, Osaka; Hideo Shirafuji; Kiyoshi Nara, both of Kyoto, and Masahiko Yoneda, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed Apr. 10, 1973, Ser. No. 349,849
Claims priority, application Japan, Apr. 15, 1972, 47-38071
Int. Cl.² C12D *9/04*
U.S. Cl. 195—36 C 6 Claims

1. A method for producing deacetylcephalosporin C which comprises cultivating a microorganism which belongs to the genus *Cephalosporium* and is capable of producing directly deacetylcephalosporin C in a culture medium until deacetylcephalosporin C is accumulated in substantial amounts, and recovering deacetylcephalosporin C from the culture broth.

3,926,730

SEPARATION AND PURIFICATION OF ALPHA-AMYLASE

Fritz Hüper, and Erich Rauenbusch, both of Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Feb. 19, 1974, Ser. No. 443,723
Claims priority, application Germany, Feb. 24, 1973, 2309280
Int. Cl.² C07G *7/02*
U.S. Cl. 195—66 R 14 Claims

8. A process for the removal of α-amylase as an impurity in an enzyme preparation which comprises adsorbing the α-amylase from the enzyme preparation onto a carrier-bound α-amylase inhibitor to form an enzyme inhibitor complex, separating the complex, washing the complex, and recovering the desired enzyme from the solution substantially free from α-amylase as an impurity, the inhibitor being derived from wheat and bound to a carrier selected from the group consisting of a bead copolymer carrier of 70 mol % of tetraethylene glycol dimethacrylate, 20 mol % methacrylic acid, and 10 mol % maleic acid anhydride, an agarose activated with cyanogen bromide, and a copolymer of 4.7% N,N′-methylene-bis-acrylamide, 71.5% acrylamide and 23.8% maleic acid in anhydride form or the inhibitor being derived from a microbe of the genus Actinomyces and being bound to amino groups of an insoluble polymeric carrier by reaction with reactive groups introduced into the inhibitor by reaction with cyanogen bromide.

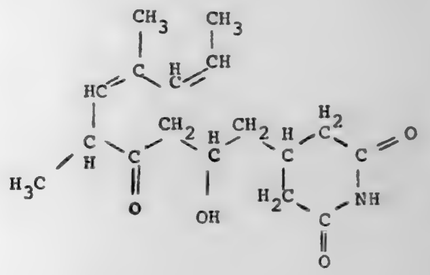
3,926,731

3-(5,7-DIMETHYL-2-HYDROXY-4-OXO-6,8-DECADIENYL)-GLUTARIMIDE FERMENTATION

Nakao Ishida, Sendai; Tsutomu Okada, and Akira Kamata, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Company, Ltd., Tokyo, Japan

Division of Ser. No. 391,996, Aug. 27, 1973. This application Nov. 19, 1974, Ser. No. 525,222
Claims priority, application Japan, Aug. 25, 1972, 47-85074
Int. Cl.² C12D *9/00*
U.S. Cl. 195—80 R 4 Claims

1. The process of preparing 3-(5,7-Dimethyl-2-hydroxy-4-oxo-6, 8-decadienyl)-glutarimide , which has the structure:



which comprises cultivating *Streptomyces pluricolorescens* var. *yamashitaensis* (S-885) ATCC No. 21956 in an aqueous nutrient broth containing a carbohydrate source and a source of organic nitrogen until said broth achieves substantial antiviral activity, and recovering said antibiotic from said culture broth.

3,926,732
METHOD FOR ASSAYING CATALASE IN MILK AND OTHER LIQUIDS

Ernst Anders Carl-Gustaf Rosen, and Helena Mariana Rosen, both of Huddinge, Sweden, assignors to Alfa-Laval AB, Tumba, Sweden

Filed Feb. 14, 1974, Ser. No. 442,346
Claims priority, application Sweden, Feb. 16, 1973, 22014
Int. Cl.² C12K 1/04
U.S. Cl. 195—103.5 R 16 Claims

1. A method for qualitative and quantitative determination of catalase in a liquid, said method comprising the steps of adding to the liquid a first reagent comprising a substance which releases hydrogen peroxide in the presence of another substance in said liquid, adding to the liquid a second reagent oxidizable by hydrogen peroxide to yield a color reaction, said oxidation by hydrogen peroxide being inhibited by the presence of catalase, whereby said color reaction is stronger with a smaller catalase content of the liquid, and determining the catalase content with the aid of the hue of the color thus produced.

3,926,733
METHOD OF CONTINUOUS AUTOMATIC INCUBATION OF BACTERIA AND DETERMINATION OF GROWTH THEREOF, AND APPARATUS THEREFOR

Ichiro Chibata, Suita; Hiroshi Ito, Itami; Tomoaki Morimoto, Suita; Yukio Taniguchi, Toyonaka, and Tsuneo Fujimoto, Amagasaki, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Sept. 21, 1973, Ser. No. 399,309
Claims priority, application Japan, Sept. 27, 1972, 47-96734; Sept. 27, 1972, 47-96735
Int. Cl.² C12B 1/00
U.S. Cl. 195—103.5 5 Claims

3. A method for continuous bacterial culture and the determination of the growth thereof, wherein sample solution, culture medium, and inoculum are automatically supplied to test tubes freely suspended inholders which are rotatable around a horizontal axis, the holders being supported by and slidable on a guide rail within an aseptic, constant temperature chamber, sliding said holders holding said test tubes around said guide rail by suitable drive means, cyclically striking said test tubes by striking there against at least one bar by moving the bar reciprocally on a certain level for imparting an oscillatory motion to said test tubes and shaking the contents thereof, and repeatedly determining the bacterial growth in said test tubes at a certain location along said guide rail without removal of said holders from said guide rail or removal of said contents from said test tubes.

5. An apparatus for continuous bacterial culture comprising a zig-zag guide rail, an aseptic constant temperature chamber within which said guide rail is mounted, test tube holders slidably positioned on said guide rail, said holders being oscillatable around a horizontal axis for permitting test tubes suspended therefrom to oscillate freely, advance means provided at suitable locations adjacent to said guide rail for advancing said holders along said guide rail one at a time and at regular intervals, means adjacent one point along said guide rail for automatic supply of sample solution and culture medium to said test tubes and for injection of said sample solution and culture medium with inoculum, a holding station at a further point along said guide rail having means for holding test tubes stationary and determining the bacterial growth in the test tubes without removal of said contents from said test tubes, bars extending parallel to certain portions of said guide rail, and drive means connected to said bars for driving said bars in a reciprocating motion along a certain level for cyclically striking test tubes freely suspended in said holders along said guide rail, whereby contents of said test tubes are shaken and bacterial growth therein is accelerated.

3,926,734
UREA ANALYSIS

Don N. Gray; Melvin H. Keyes, both of Sylvania, and Frank E. Semersky, Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 21, 1973, Ser. No. 427,322
Int. Cl.² C12K 1/04
U.S. Cl. 195—103.5 R 13 Claims

1. A method for determining urea in an aqueous specimen containing urea, comprising the sequential steps of:
- passing said specimen into a hydrolysis zone containing immobilized urease,
- retaining said specimen in said hydrolysis zone for a time sufficient to hydrolyze said urea to ammonium ions,
- removing the resulting hydrolysis mixture from said hydrolysis zone,
- raising the pH of said hydrolysis mixture to at least about 11 to convert substantially all of said ammonium ions to an aqueous ammonia solution,
- contacting said aqueous ammonia solution with a hydrophobic, ammonia permeable membrane for a time sufficient to allow gaseous ammonia to permeate said membrane,
- determining the gaseous ammonia permeating said membrane by dissolving said ammonia in an electrolyte and potentiometrically determining the resulting increase in pH of said electrolyte, and
- converting said ammonia determination to the urea equivalent of said specimen.

3,926,735
ALKALINE PHOSPHATASE ASSAY

Alexander A. Monte, and Ching Chiang, both of Glendora, Calif., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Division of Ser. No. 200,552, Nov. 19, 1971, Pat. No. 2,816,262, which is a continuation-in-part of Ser. No. 190,883, Oct. 20, 1971, abandoned. This application May 6, 1974, Ser. No. 467,319
Int. Cl.² C01N 31/14
U.S. Cl. 195—103.5 R 12 Claims

7. The method of assaying a biological specimen for alkaline phosphatase using a plurality of solid, water-soluble, substantially anhydrous, storage-stable reagent formulations respectively comprising:
1. a chromogenic reagent formulation containing:
   a. sodium molybdate;
   b. sodium lauryl sulfate; and
   c. a nitrogen-containing polyoxyalkylene nonionic surfactant obtained by the sequential reaction of ethylenediamine with propylene oxide and ethylene oxide in the presence of a catalyst, said surfactant containing polyoxypropylene chains having an average molecular weight of between about 750 and about 6750 and polyoxyethylene chains constituting between about 10 and about 80 weight percent of said surfactant;
2. a reducer quench reagent formulation containing:
   a. L-ascorbic acid;
   b. sulfamic acid; and
   c. said nitrogen-containing polyoxyalkylene nonionic surfactant; and
3. a buffer substrate reagent formulation containing:
   a. β-glycerophosphoric acid disodium salt;
   b. tris-(hydroxymethyl)-aminomethane;
   c. succinic acid;
   d. sodium lauryl sulfate; and
   e. said nitrogen-containing polyoxyalkylene nonionic surfactant;

the method comprising the steps of:
   i. dissolving each of said reagent formulations in separate portions of water to produce a plurality of liquid reagents;
   ii. preheating an aliquot of predetermined volume of the liquid reagent containing said buffer substrate reagent formulation for a predetermined period of time;
   iii. mixing the preheated aliquot of said liquid reagent containing said buffer substrate reagent formulation with a biological specimen to form a specimen/reagent test system;
   iv. maintaining the specimen/reagent test system at a predetermined elevated temperature for a predetermined period of time;
   v. adding both the liquid reagent containing said chromogenic reagent formulation and the liquid reagent containing said reduced quench reagent formulation to said system;
   vi. thereafter maintaining said system at a predetermined elevated temperature for a further predetermined period of time; and
   vii. measuring the optical density of said system resulting from the interaction between said reagents and said specimen.

3,926,736
ENZYMATIC ETHANOL ASSAY

Giovanni Bucolo, Irvington, N.Y., assignor to Calbiochem, La Jolla, Calif.

Filed Aug. 30, 1974, Ser. No. 502,210
Int. Cl.² C12K 1/04
U.S. Cl. 195—103.5 R 7 Claims

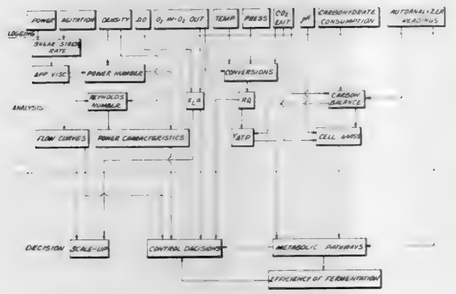
1. A composition of matter useful as a reagent in determining the ethanol content of body fluids consisting essentially of:
a. the enzyme alcohol dehydrogenase;
   b. the coenzyme nicotinamide adenine dinucleotide;
   c. a buffer/acetaldehyde-trapping agent selected from the group consisting of 2-amino-2-hydroxymethyl-1,3-propanediol, 2-amino-2-methyl-1,3-propanediol and mixtures thereof;
   d. an acid in quantity sufficient to lower the pH of an aqueous solution of said mixture to within the range of about 8.8 to 9.2;

said mixture being free of any other acetaldehyde trapping agent.

3,926,737
METHOD AND APPARATUS FOR CONTROL OF BIOCHEMICAL PROCESSES

John D. Wilson, Mertztown; Laszlo K. Nyiri, Bethlehem; Arthur E. Humphrey, Media, and Clyde S. Harmes, III, Schnecksville, all of Pa., assignors to New Brunswick Scientific Co., Inc., New Brunswick, N.J.

Division of Ser. No. 251,959, May 10, 1972. This application Sept. 24, 1973, Ser. No. 399,036
Int. Cl.² C12B 1/00
U.S. Cl. 195—108 7 Claims

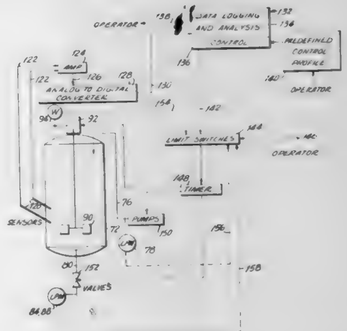


1. A method for analysis and control of biochemical processes comprising detecting the values of selected controllable and dependent variables at at least periodic intervals in said biochemical process; calculating by means of a computer at least one further, not directly measurable dependent variable on a real-time, on-line basis from said plurality of selected controllable and dependent variables, said further, not directly measurable dependent variable being representative of the stage of the biochemical process; and interactively regulating the values of said controllable variables in response to said calculated values of said further dependent variable to bring said further dependent variable to predetermined levels to create the desired environmental conditions for the biochemical process.

3,926,738
METHOD AND APPARATUS FOR CONTROL OF BIOCHEMICAL PROCESSES

John D. Wilson, Mertztown; Laszlo P. Nyiri, Bethlehem; Arthur E. Humphrey, Media, and Clyde S. Harmes, III, Schnecksville, all of Pa., assignors to New Brunswick Scientific Co., Inc., New Brunswick, N.J.

Filed May 10, 1972, Ser. No. 251,959
Int. Cl.² C12B 1/00
U.S. Cl. 195—127 9 Claims



1. An apparatus for control of biochemical processes comprising vessel means within which said process is to be performed; means for adding controlled amounts of substances required for said process into said vessel means; means for monitoring a plurality of predetermined controllable and dependent variables in said process; calculating means for calculating at least one further, not directly measurable dependent variable representative of the status of the biochemical process on a real-time, on-line basis from said detected controllable and dependent variables; and control means for interactively regulating the values of said controllable variables in response to said calculated values of said further dependent variable to bring said further dependent variable to predetermined levels to create the desired environmental conditions for the biochemical process.

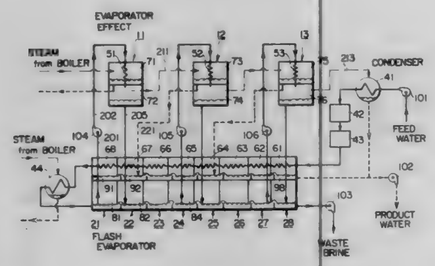
3,926,739
MULTIPLE-EFFECT MULTI-STAGE FLASH EVAPORATION PROCESS AND APPARATUS FOR DEMINERALIZING WATER

Kenkichi Izumi, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 15, 1974, Ser. No. 497,624
Claims priority, application Japan, Aug. 15, 1973, 48-90878
Int. Cl.² B01D 1/28, 1/26, 3/02, 3/00
U.S. Cl. 202—173 10 Claims

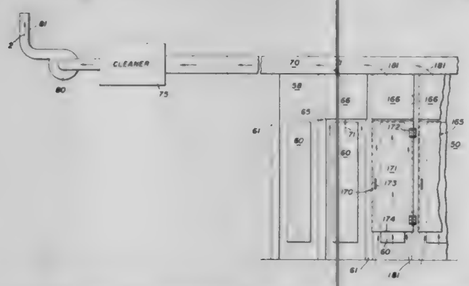
1. A desalting process for feed saline water containing scale forming materials including calcium sulfate, wherein saline water fed to multiple evaporator effects is preheated in multi-stage flash evaporators having flash chambers, and is evaporated and concentrated in the multiple evaporator effects to produce desalted water, which process comprises: flashing feed salt water in a first flash evaporator under a reduced

pressure to product vapor and brine, while transferring the latent heat of the vapor to the feed saline water by indirect heat exchange therewith and simultaneously condensing the vapor to produce product desalted condensate, all at a temperature above which anhydrite calcium sulfate precipitates; evaporating a portion of the brine from the first flashing step in a first evaporator effect by the latent heat of condensation of other vapor to produce further vapor from said portion of the first brine to produce enriched brine, while condensing the other vapor to produce other condensate, all at a temperature above which anhydrite calcium sulfate precipitates; introducing the enriched brine produced in said evaporating step directly into the flashing chamber of a second flash evaporator



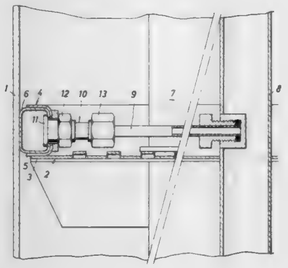
without passing through the first flash evaporator; additionally flashing at least the enriched brine in the second flash evaporator separate from the first flash evaporator under a reduced pressure that is lower than the reduced pressure of the first flashing step to produce additional vapor and further enriched brine and by indirect heat exchange with the feed saline water condensing the thus produced additional vapor into product desalted condensate; and directing the further vapor produced in said evaporating effect step into a subsequent evaporator effect maintained at a pressure and temperature lower than the first evaporator effect and transferring the vapor produced in said first effect along with its latent heat of condensation into indirect heat exchange with brine from a flash evaporator other than the first flash evaporator.

3,926,740
CONTROL OF COKE OVEN DOOR EMISSIONS
Frederick G. Krikau, Dolton, Ill., assignor to Interlake, Inc., Chicago, Ill.
Filed Mar. 22, 1974, Ser. No. 453,679
Int. Cl.² C10B *33/00*
U.S. Cl. 202—261 **5 Claims**



1. A pollution control system for collecting emissions from coke ovens through the doors thereof produced during the coking of coal, said system comprising a plurality of chimneys corresponding in number to the number of coke ovens, each chimney being positioned outside of the associated coke oven and having as part of one wall thereof the associated coke oven door and having spaced-apart buckstays generally normal and fixed to the coke oven wall door as side walls thereof and a wall maintained on said buckstays parallel and separated from the coke oven door, the bottom of the chimney being open to create a draft flowing upwardly adjacent to the coke oven door, a manifold connected to each of said chimneys to collect emissions from the coke ovens conveyed by the drafts flowing upwardly through said chimneys and into said manifold, and a cleaner connected to a source of reduced pressure and to said manifold for treating the emissions flowing upwardly through said chimneys and into said manifold to remove pollutants therefrom, whereby emissions escaping from the coke ovens through the doors flow upwardly through said chimneys into said manifold and into said cleaner to be treated therein thereby preventing pollution of the atmosphere.

3,926,741
COLUMN DEVICE
Erich Bertsch, Lorrach (Baden), Germany, assignor to Lonza Ltd., Gampel/Valais, Basel, Switzerland
Filed Jan. 30, 1974, Ser. No. 437,940
Int. Cl.² C10B *29/00, 45/00*
U.S. Cl. 202—269 **10 Claims**

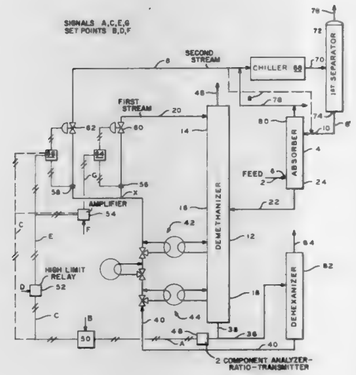


1. An assembly comprising a cylindrical column having an interior wall, a plurality of removable axially spaced separating floors extending laterally across the interior of said column adjacent said wall, seal retaining means fixed to said floors at a location thereon proximate said wall, sealing means compressed between said interior wall and said seal retaining means to provide a fluid tight seal therebetween, said sealing means comprising a hollow ring formed of material capable of being inflated and deflated by introduction of fluid under pressure thereinto extending circumferentially completely about the interior of said column, and fluid supply means for inflating said sealing means to an internal pressure greater than pressure existing against the exterior of said sealing means, and for deflating said means to facilitate removal of said floors from within said column.

3,926,742
CONTROLLED FRACTIONATION METHOD AND APPARATUS
John E. Anderson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Continuation of Ser. No. 231,813, March 6, 1972, abandoned.
This application Aug. 1, 1974, Ser. No. 493,916
Int. Cl.² B01D *3/42*
U.S. Cl. 203—3 **15 Claims**

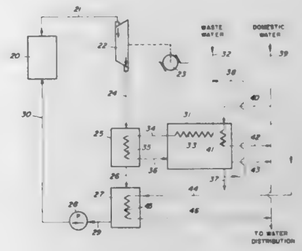
1. A controlled fractionation system comprising:
a fractionation means;
an absorber;
first means for passing an absorber feed stream into said absorber;
second means for passing a second absorption medium stream into said absorber;
third means for removing an absorber overhead stream from said absorber;
fourth means for removing an absorber bottoms product stream from said absorber and passing said absorber

bottoms product stream into the intermediate portion of said fractionation means as feed to be fractionated;
fifth means for passing a first absorption medium stream into the upper portion of said fractionation means;
sixth means for removing a fractionator overhead product stream from the upper portion of said fractionation means;
seventh means for removing a fractionator bottoms product stream from the lower portion of said fractionation means;
analyzing-ratioing-transmitting means for measuring the concentration of first and second components in said fractionator bottoms product stream and delivering a signal A responsive to the ratio of one of said components to the other;



eighth means for dividing said fractionator bottoms product stream into an end product stream, said first absorption medium stream, and said second absorption medium stream;
ninth means for measuring the flow rate of said first absorption medium stream and delivering a first flow rate signal responsive thereto;
tenth means for measuring the flow rate of said second absorption medium stream and delivering a second flow rate signal responsive thereto;
eleventh means for producing a control signal, said eleventh means comprising an analysis controller having a set point B representative of the desired value of said ratio and being connected to the analyzing-ratioing-transmitting means for receiving signal A, comparing said signal A to the set point B, and delivering said control signal in response to said comparison;
twelfth means for receiving said control signal and one of said first and second flow rate signals and controlling the flow rate of the respective first or second absorption medium stream associated with said one of said first and second flow rate signals in response to a comparison of said control signal and said one of said first and second control signals;
a ratio relay having a set point F and being adapted for receiving said control signal, multiplying said control signal by a set point F and delivering a signal G in response to said multiplication; and
thirteenth means for receiving said signal G and the remaining one of said first and second flow rate signals not received by said twelfth means and controlling the flow rate of the remaining first or second absorption medium stream not controlled by said twelfth means in response to a comparison of said signal G with said remaining one of said first and second flow rate signals.

3,926,743
DISPOSAL OF WASTE HEAT
Allen Cywin, Alexandria, Va., assignor to The United States of America as represented by the United States Environmental Protection Agency, Washington, D.C.
Division of Ser. No. 110,430, Jan. 28, 1971, Pat. No. 3,760,868. This application Sept. 24, 1973, Ser. No. 400,106
Int. Cl.² B01D *3/00, 3/10*
U.S. Cl. 203—10 **3 Claims**

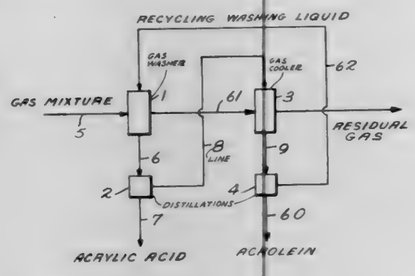


1. A process for reducing thermal pollution of surface waters which comprises:
extracting waste heat from a thermal power generation process by passing a relatively cold, nonpotable waste water stream in indirect contact heat exchange with a hotter stream comprising low pressure turbine exhaust stream to thereby cool and condense at least a portion of the exhaust steam and to heat the nonpotable water stream;
distillating the heated, nonpotable waste water stream to recover a hot, potable water product stream and a concentrated waste stream;
rejecting heat from the waste water distillation by passing a relatively cold, potable, domestic water stream in indirect contact heat exchange with the distilling waste water at the lowest temperature level of the distillation step, thereby warming the domestic water stream;
passing the warmed domestic water stream into a domestic water distribution system which comprises a substantial length of underground mains and laterals, and
discharging by indirect heat exchange at least a portion of the extracted waste process heat to the soil mass surrounding the mains and laterals.

3,926,744
PROCESS FOR THE RECOVERY OF ACRYLIC ACID AND ACROLEIN
Ewald Noll, Grosskrotzenburg; Hans Schaefer, Grossauheim; Horst Schmid, Wesseling, and Wolfgang Weigert, Offenbach, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany
Filed Dec. 26, 1973, Ser. No. 428,304
Claims priority, application Germany, Dec. 27, 1972, 2263496
Int. Cl.² B01D *3/34, 3/00*
U.S. Cl. 203—55 **7 Claims**

1. In a process for the recovery of acrylic acid and acrolein from the gas mixture resulting from the catalytic gas phase oxidation of propylene or acrolein by washing the gas mixture with a liquid in which at first the acrylic acid is dissolved at higher temperature and then the acrolein is dissolved at lower temperature, the improvement comprising:
1. washing the gas mixture for the separation of the acrylic acid at temperatures from 60° to 130° C. with a washing liquid which is a mixture of water and organic liquid; and then
2. washing the gas mixture with a washing liquid which is water or a mixture of water and organic liquid at temperatures between 0° and 30° C., said organic liquid in steps

(1) and (2) having a higher boiling point than acrylic acid, forming an azeotrope with water alone, but not forming as axeotrope with acrolein or a mixture of water



and acrolein, having slight miscibility with water and forming a solution with acrylic acid in which the acrylic acid has an activity coefficient of less than about 1.5.

3,926,745

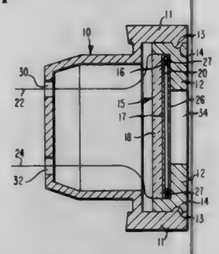
DEPOSITION OF P_2O_5 IN AN ELECTROLYTIC MOISTURE CELL

Michael Czuha, Jr., San Gabriel, Calif., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 281,859, Aug. 18, 1972, abandoned. This application Apr. 9, 1974, Ser. No. 459,324

Int. Cl.² H01M *4/86*

U.S. Cl. 204—1 T **16 Claims**



1. A method of depositing phosphorus pentoxide on an electrically nonconductive substrate disposed between two electrodes comprising the steps of:

a. contacting said electrodes and said substrate, in the presence of water vapor, with gaseous phosphorus; and

b. applying an electric potential between said electrodes of sufficient strength to electrolyze the water vapor and form phosphorus pentoxide on said substrate only in the region between said electrodes.

3,926,746

ELECTRICAL INTERCONNECTION FOR METALLIZED CERAMIC ARRAYS

Billy M. Hargis, Cleveland, Tenn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 4, 1973, Ser. No. 403,404

Int. Cl.² B41M *3/08*

U.S. Cl. 204—15 **7 Claims**

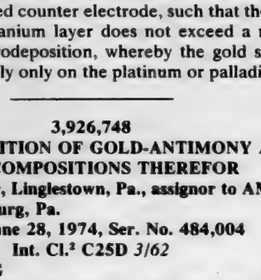
1. The process for providing uniform gold plating to ceramic substrates having multiplicities of internal and external terminals and internal pads comprising the steps of

I. constructing an array of said substrates having an at least partial margin of ceramic from at least one sheet of fired or unfired ceramic having desired patterns of metallization for said substrates thereon, said array comprising;

A. spaces at least between said substrates and between substrates and margins for separation of said substrates from one another and from margins of said array along predetermined lines of separation, said array further comprising

B. at least one metallized collector and

C. interconnections between external terminals of adjacent substrates and between pads of adjacent substrates and between external terminals and pads of substrates



adjacent said metallized collector and said metallized collector, said interconnections crossing lines of separation,

II. firing said array to maturity of the ceramic and

III. electroplating said array with gold whereby a ceramic array uniformly gold plated on all receptive surfaces is obtained.

3,926,747

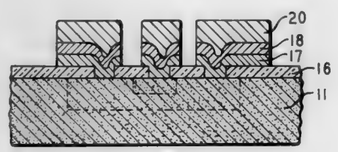
SELECTIVE ELECTRODEPOSITION OF GOLD ON ELECTRONIC DEVICES

Kenneth Russ Newby, Greensboro, N.C., and Earl Dallas Winters, Quakertown, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 19, 1974, Ser. No. 443,624

Int. Cl.² C25D *5/02, 5/10*

U.S. Cl. 204—15 **9 Claims**



1. A method of electrodepositing from solution a gold layer onto a platinum of palladium layer, where the platinum or palladium layer covers portions of a titanium layer, leaving portions of the titanium layer exposed to the solution, characterized in that the titanium layer is biased cathodic with respect to an immersed counter electrode, such that the cathode potential at the titanium layer does not exceed a maximum value during electrodeposition, whereby the gold selectively deposits substantially only on the platinum or palladium layer.

3,926,748

ELECTRODEPOSITION OF GOLD-ANTIMONY ALLOYS AND COMPOSITIONS THEREFOR

Lewis Brian Lerner, Linglestown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 28, 1974, Ser. No. 484,004

Int. Cl.² C25D *3/62*

U.S. Cl. 204—43 G **4 Claims**

1. An electrolyte for electrodeposition of a gold antimony alloy from an aqueous solution at a pH of 6.8 to 7.3 consisting essentially of (a) dibasic potassium phosphate, from 100 to 200 grams/liter, (b) monobasic potassium phosphate, from 30 to 60 grams/liter, potassium tartrate, from 5 to 50 grams/liter, gold as KAu_2, from 8 to 17 grams/liter, and antimony potassium tartrate, from .1 to 1 grams/liter and wherein *a* to *b* is 70 to 75% on hydrous basis to anhydrous basis, by weight, respectively.

3,926,749

TIN-LEAD ALLOY PLATING

Frank Passal, Detroit, Mich., assignor to M&T Chemicals Inc., Greenwich, Conn.

Continuation of Ser. No. 210,148, Dec. 20, 1971, abandoned. This application Jan. 16, 1975, Ser. No. 541,432

Int. Cl.² C25D *3/56, 3/60*

U.S. Cl. 204—43 S **28 Claims**

15. A composition for providing white, continuous, fine-grained tin-lead alloy electrodeposits which comprises an aqueous acidic bath composition consisting of at least one water soluble stannous tin salt, at least one water soluble lead salt providing about 1.0 gram per liter to 85.0 grams per liter of lead and containing as cooperating additives 4 grams per liter to 12 grams per liter of at least one polyether surfactant and 0.5 gram per liter to 1.0 gram per liter of at least one aryl hydroxy (—OH) compound selected from the group consisting of naphthols and substituted phenols, in the absence of other brightening agents.

3,926,750

DETECTION SYSTEM FOR PROTECTING ANODES IN FLOWING MERCURY CATHODE ELECTROLYTIC CELLS

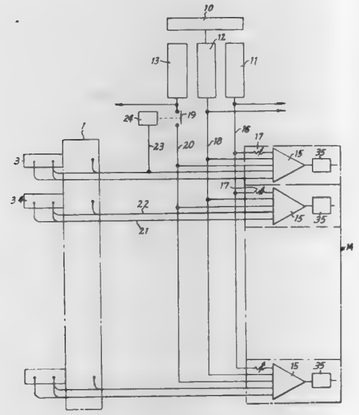
Yoichi Adachi, and Yoshiharu Harada, both of Tokyo, Japan, assignors to Mitsui & Co. Ltd., Tokyo, Japan

Filed Sept. 8, 1972, Ser. No. 287,490

Claims priority, application Japan, Sept. 13, 1971, 46-71019

Int. Cl.² C25B *1/40, 15/04, 15/06*

U.S. Cl. 204—99 **7 Claims**



1. Method for protecting anodes in a horizontal mercury cell by adjusting the distance between a plurality of anodes and the flowing mercury cathode in the cell for electrolyzing a conductive solution wherein each of said anodes are adjustably suspended in said solution, which method comprises detecting the flow of current in a bus line of each anode to provide a first output signal, detecting voltage between each anode and the flowing mercury cathode to provide a second output signal, combining said first and second signals to generate a summation signal, generating an output signal when said summation signal exceeds a predetermined value, and energizing means for adjusting the distance between said anode and the cathode.

2. In an electrolytic cell for electrolyzing a conducting solution, said cell comprising a plurality of anodes having bus bars and a flowing mercury cathode, the improvement wherein control means are present for adjusting the anode-cathode spacing for each anode, said control means comprising means for detecting the flow of current in a bus line of each anode to provide a first output signal, means for detecting a voltage between each anode and the flowing mercury cathode to provide a second output signal, means for combining said first and second signals to generate a summation signal, means for generating a reference signal, means for comparing said summation signal and said reference signal, means for generating an output signal signal when the difference between said summation signal and said reference signal exceeds a predetermined amount, and means energized by said output signal for either signaling or adjusting the anode-cathode spacing.

3,926,751

METHOD OF ELECTROWINNING METALS

Oronzio De Nora; Giuseppe Bianchi; Antonio Nidola, and Giovanni Trisoglio, all of Milan, Italy, assignors to Electronor Corporation, Panama City, Panama

Division of Ser. No. 361,022, May 17, 1973, Pat. No. 3,878,083. This application Jan. 31, 1975, Ser. No. 546,112

Claims priority, application Italy, May 18, 1972, 24526/72

Int. Cl.² C25C *1/00;* **C25B** *11/08*

U.S. Cl. 204—105 R **6 Claims**

1. A method of electrowinning metals comprising passing an electric current through an anode having an electro-conductive base provided with a coating over at least a portion of its outer surface of a mixed material of tantalum oxide and iridium oxide, then an acid aqueous electrolyte containing the metal to be electrowinned and then the cathode on which the electrowinned metal is deposited, the ratio of tantalum or iridium calculated as metal is 7:1 to 0.34 to 1.

3,926,752

DIRECT RECOVERY OF METALS FROM SULPHIDE ORES BY LEACHING AND ELECTROLYSIS

John C. Loretto, 4649 - 248th St., Aldergrove, British Columbia, and Kenneth E. N. Hanney, 1402 Evelyn St., North Vancouver, British Columbia, both of Canada

Filed Apr. 4, 1974, Ser. No. 457,898

Claims priority, application United Kingdom, Apr. 9, 1973, 16920/73

Int. Cl. C25c *1/12, 1/06*

U.S. Cl. 204—107 **6 Claims**

1. A process for the direct recovery of copper from its ores and concentrates which comprises agitating a slurry of finely ground copper sulfide-containing ore or concentrate in a solution of ferric chloride and hydrochloric acid in the anode compartment of an electrolytic cell, said cell having first and second cathode compartments and an anode compartment, the cathode compartments being separated from the anode compartment by diaphragms preventing the movement of solids and liquids but allowing the passage of ions therethrough, removing and filtering the leached slurry to remove sulfur-containing solids therefrom and leaving a filtrate containing cuprous chloride and ferrous chloride, feeding the filtrate to the first cathode compartment in the cell and depositing copper metal from the filtrate on to a first cathode, releasing chloride ions in the first cathode compartment and forming a copper-poor spent electrolyte, substantially eliminating residual copper and any ferric iron from the copper-poor electrolyte to form a solution containing ferrous chloride, feeding the ferrous chloride solution to the second cathode compartment in the cell, depositing iron metal from the solution on to a second cathode, forming an iron-poor spent electrolyte and releasing chloride ions in the second cathode compartment, the chloride ions released in the cathode compartments migrating therefrom to the anode compartment to be liberated as chlorine gas at the anode, oxidizing ferrous

iron with said chlorine gas in the anode compartment, returning the iron-poor electrolyte to the anode compartment, recovering copper metal from the first cathode and recovering iron metal from the second cathode.

3,926,753

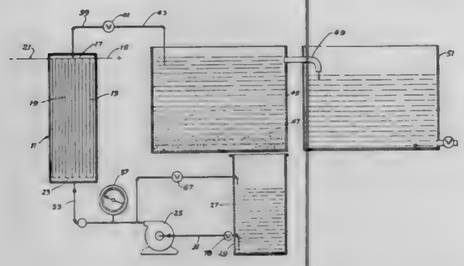
ELECTROCHEMICAL REMOVAL OF FLUORIDE ION FROM AQUEOUS MEDIA

Sung Ki Lee, E. Amherst, N.Y., assignor to Andco Incorporated, Buffalo, N.Y.

Continuation-in-part of Ser. No. 332,884, Feb. 16, 1973, which is a continuation-in-part of Ser. No. 225,417, Feb. 11, 1972, Pat. No. 3,766,037. This application Mar. 11, 1974, Ser. No. 449,825

Int. Cl.² C02B *1/82*

U.S. Cl. 204—149 **6 Claims**



1. A method for electrochemically removing from an ionizing medium a fluoride ion which is capable of forming an insoluble aluminum compound or complex, which comprises passing an electric current between an anode which has a surface or a portion of a surface thereof of aluminum, aluminum alloy or insoluble aluminum compound, and a cathode, through the ionizing medium containing the fluoride ion to be removed, so as to produce an insoluble aluminum compound or complex with the fluoride ion, and removing such insoluble material from the ionizing medium.

3,926,754

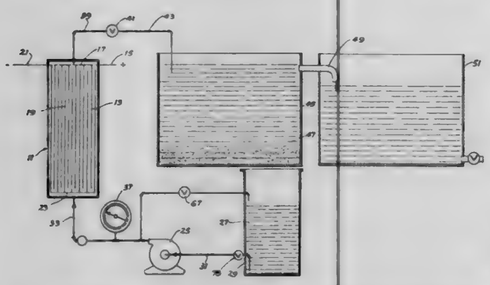
ELECTROCHEMICAL CONTAMINANT REMOVAL FROM AQUEOUS MEDIA

Sung Ki Lee, Amherst, N.Y., assignor to Andco Incorporated, Buffalo, N.Y.

Continuation-in-part of Ser. No. 225,417, Feb. 11, 1972, Pat. No. 3,776,037. This application Feb. 16, 1973, Ser. No. 332,884

Int. Cl. C02c *5/12;* **B01k** *1/00*

U.S. Cl. 204—152 **20 Claims**



1. A method for electrochemically removing from an ionizing medium a contaminant ion which is capable of forming an insoluble iron compound or complex, which comprises passing an electric current through the ionizing medium containing the ion to be removed between an anode which has a surface or a portion of a surface thereof of iron, iron alloy or insoluble iron compound, and a cathode so as to produce anodically an insoluble iron compound, species or complex in said ionizing medium while cathodically reacting said contaminant ion with the ionizing medium to generate an insoluble hydroxide thereof and whereby an insoluble iron compound or complex with the contaminant ion is produced, and removing said insoluble iron compound or complex with the contaminant ion from the ionizing medium.

3,926,755

RADIATION POLYMERIZABLE POLYESTER COMPOSITION

Nelson S. Marans, and Alfred Gluecksman, both of Silver Spring, Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 398,317, Aug. 17, 1973, abandoned. This application June 21, 1974, Ser. No. 481,732

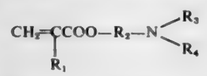
Int. Cl.² C08F *2/48;* **C08L** *67/06, 67/00*

U.S. Cl. 204—159.15 **14 Claims**

1. A process for curing a radiation curable composition consisting essentially of an intimate mixture of;

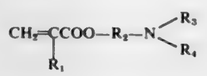
a. 35–85 parts of a polyester of an ethylenically unsaturated polycarboxylic acid and a polyhydric alcohol; and

b. 15–65 parts of an amino compound having the formula



in which R_1 is hydrogen or a lower alkyl group, R_2 is an alkylene group having 2–8 carbon atoms, and R_3 and R_4 are lower alkyl groups, the polyester plus the amino compound totaling 100 parts, said process comprising irradiating said composition with 0.05–2 Mrads of high energy ionizing radiation.

7. A process for curing a radiation curable composition consisting essentially of an intimate mixture of; (a) 35–85 parts of polyester of an ethylenically unsaturated polycarboxylic acid and a polyhydric alcohol; (b) 15–65 parts of an amino compound having the formula



in which R_1 is hydrogen or a lower alkyl group, R_2 is an alkylene group having 2–8 carbon atoms, and R_3 and R_4 are lower alkyl groups, the polyester plus the amino compound totaling 100 parts; and (c) 0.1–5 parts of a photocuring rate accelerator per 100 parts of the polyester plus the amino compound, said process comprising irradiating a film of said composition with actinic light for 0.001–60 minutes at a rate to provide about 0.0001–20 watts per square centimeter of film surface.

3,926,756

PROCESS FOR PREPARING HIGH MOLECULAR-WEIGHT, WATER SOLUBLE VINYL POLYMERS BY IRRADIATION

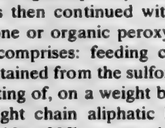
Alfred J. Restaino, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 781,975, Dec. 6, 1968, abandoned. This application Nov. 18, 1971, Ser. No. 200,195

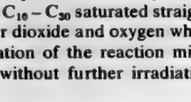
Int. Cl. C08f *13/00, 1/16, 3/44*

U.S. Cl. 204—159.22 **12 Claims**

1. A process for preparing an aqueous gel of a water-soluble, high molecular weight copolymer, wherein the copolymer has an intrinsic viscosity of at least 6 deciliters per gram as measured in 2 normal sodium chloride solution at 25.5°C., which comprises irradiating with high energy ionizing radiation at an intensity of from 250 rads to 200,000 rads per hour to a dose of from 1,000 to 200,000 rads, an ammonia free aqueous solution having a pH from about 3 to about 13 and containing from 10% to 45% concentration by weight of (1) at least two monomers conforming to the formula



(2) a mixture of at least one of said monomers with at least one of acrylic acid, vinyl sulfonic acid, water-soluble salt of acrylic acid, or water-soluble salt of vinyl sulfonic acid, said mixture containing at least 15% by weight of said monomer; (3) a mixture of at least one of said monomers with up to 25% of its own weight of acrylonitrile; or (4) a mixture of at least one of said monomers, acrylic acid, or a water-soluble salt thereof, and acrylonitrile containing at least 15% by weight of said monomer and no more than 25% by weight of acrylonitrile, wherein Y is $-NH_2$ or



wherein R is hydrogen or methyl, R_1, R_2, and R_3 are 1 to 4 carbon alkyl radicals and X^- is an anion, to form an aqueous gel of a water-soluble, high molecular weight copolymer having an intrinsic viscosity of at least 6 deciliters per gram in 2 normal sodium chloride solution at 25.5°C.

3,926,757

PROCESS FOR PREPARING STRAIGHT-CHAIN ALIPHATIC AND CYCLO-ALIPHATIC SULFONIC ACIDS

Sigurd Rosinger, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 105,545, Jan. 11, 1971, abandoned, which is a continuation-in-part of Ser. Nos. 651,785, July 7, 1967, abandoned, Ser. No. 663,749, Aug. 28, 1967, abandoned, Ser. No. 673,061, Oct. 5, 1967, abandoned, and Ser. No. 721,370, April 15, 1968, abandoned. This application Aug. 29, 1973, Ser. No. 392,485

Claims priority, application Germany, July 21, 1966, 49753; Sept. 9, 1966, 50173; Oct. 14, 1966, 50432; Sept. 6, 1967, 53418

Int. Cl. B01j *1/10;* **C07c** *13/02*

U.S. Cl. 204—162 HE **10 Claims**

1. In a continuous process for the production of sulfonic acids by reaction of $C_{10}-C_{30}$ saturated straight chain aliphatic hydrocarbons, sulfur dioxide and oxygen wherein the reaction is started by introduction of ozone into the reaction mixture or introduction of an organic peroxy compound into the reaction mixture and is then continued with or without further introduction of ozone or organic peroxy compound, the improvement which comprises: feeding continuously a liquid reaction mixture obtained from the sulfoxidation to an extraction mixture consisting of, on a weight basis, 25 to 45% $C_{10}-C_{30}$ saturated, straight chain aliphatic hydrocarbons, 20 to 40% sulfonic acids, 10 to 30% water and 4 to 8% sulfuric acid; mixing the reaction mixture with the extraction mixture and then feeding water to said extraction zone to keep constant the ratio of components of the extraction mixture and removing from said extraction zone as a heavy phase an extract having the same ratios and ingredients as given for the extraction mixture, and as a light phase C_{10}–C_{30} saturated straight chain aliphatic hydrocarbons containing not more than 0.02 weight percent of water and recycling these hydrocarbons without further treatment to the reaction zone.

2. In a continuous process for the production of sulfonic acids by reaction of $C_{10}-C_{30}$ saturated straight chain aliphatic hydrocarbons, sulfur dioxide and oxygen wherein the reaction is started by irradiation of the reaction mixture and is then continued with or without further irradiation, the improvement which comprises: feeding continuously a liquid reaction mixture obtained from the sulfoxidation to an extraction mixture consisting of, on a weight basis, 25 to 45% $C_{10}-C_{30}$ saturated, straight chain aliphatic hydrocarbons, 20 to 40% sulfonic acids, 10 to 30% water and 4 to 8% sulfuric acid; mixing the reaction mixture with the extraction mixture and then feeding water to said extraction zone to keep constant the ratio of components of the extraction mixture and removing from said extraction zone as a heavy phase an extract having the same ratios and ingredients as given for the extraction mixture, and as a light phase C_{10}–C_{30} saturated straight chain aliphatic hydrocarbons containing not more than 0.02 weight percent of water and recycling these hydrocarbons without further treatment to the reaction zone.

3,926,758

PREPARATION OF 1,1,2,3-TETRACHLOROPROPENE FROM 2,3-TRICHLOROPROPANE

Lowell R. Smith, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 212,742, Dec. 27, 1971, Pat. No. 3,823,195. This application Apr. 4, 1974, Ser. No. 457,952

Int. Cl.² E01J *1/10*

U.S. Cl. 204—163 R **6 Claims**

1. A process which comprises feeding a stream consisting essentially of 1,2,3-trichloropropane to a liquid-phase chlorinator, chlorinating the feed stream with chlorine gas in the presence of actinic light so that from about 20 to about 60 percent by weight of the chlorinator effluent remains as unreacted 1,2,3-trichloropropane, passing the chlorinator effluent to a fractionating column, fractionating said chlorinator effluent into a 1,2,3-trichloropropane fraction, a 1,2,2,3-tetrachloropropane fraction, a 1,1,2,3-tetrachloropropane fraction, a 1,1,1,2,3- and 1,1,2,2,3-pentachloropropanes fraction, and a 1,1,2,3,3-pentachloropropane and heavy ends fraction, recycling the 1,2,3-trichloropropane fraction from the fractionating column to the chlorinator, passing the 1,1,2,3-tetrachloropropane fraction from the fractionating column to a caustic dehydrochlorinator, dehydrochlorinating the 1,1,2,3-tetrachloropropane, passing the dehydrochlorinator effluent which comprises mixed trichloropropenes to a second liquid-phase chlorinator, adding chlorine in the presence of actinic light to the carbon/carbon double bond of the trichloropropenes contained in the dehydrochlorinator effluent, passing the second chlorinator effluent which comprises 1,1,1,2,3-pentachloropropane and 1,1,2,2,3-pentachloropropane to a second caustic dehydrochlorinator, passing the 1,1,1,2,3- and 1,1,2,2,3-pentachloropropanes fraction from the fractionating column to the second caustic dehydrochlorinator, dehydrochlorinating the second chlorinator effluent and the 1,1,1,2,3- and 1,1,2,2,3-pentachloropropanes fraction from the fractionating column, passing the second dehydrochlorinator effluent which comprises 1,1,2,3-tetrachloropropene, and 2,3,3,3-tetrachloropropene to an isomerizer packed with clay granules, and isomerizing 2,3,3,3-tetrachloropropene to 1,1,2,3-tetrachloropropene by heating the second dehydrochlorinator effluent in contact with said clay granules to a temperature of from about 150°C. to about 200°C. for from about 0.4 to about 2 hours and removing the isomerizer effluent comprising the product 1,1,2,3-tetrachloropropene.

3,926,759

PROCESS FOR RECOVERING TIN SALTS FROM THE WASTE RINSE WATER OF A HALOGEN TIN PLATING PROCESS

Richard E. Horn, Pittsburgh, and David W. Grenda, Houston, both of Pa., assignors to Pitt Metals and Chemicals, Inc., Pittsburgh, Pa.

Filed Feb. 6, 1975, Ser. No. 547,728

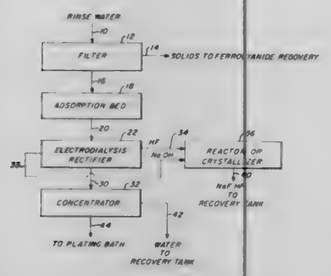
Int. Cl.² C23G *1/32;* **B01D** *13/02*

U.S. Cl. 204—180 P **17 Claims**

1. A process for recovering tin salts from the waste rinse water of a halogen tin plating process comprising,

introducing the rinse water into a depletion compartment of an electrodialytic cell,

introducing an electrolyte solution into an anode compartment and a cathode compartment of said electrodialytic cell, said cathode compartment separated from said depletion compartment by a cationic membrane, said depletion compartment separated from the anode compartment by an anionic membrane,



passing a current through said electrodialytic cell and reducing the mole ratio of fluoride to tin in the rinse water in said depletion compartment, and

thereafter removing a substantial portion of the water from the rinse water solution and forming a concentrated solution having the reduced mole ratio of fluoride to tin.

3,926,760

PROCESS FOR ELECTROPHORETIC DEPOSITION OF POLYMER

James S. Allen, Wilmington, Del., and John D. Craig, Jr., Medford Lakes, N.J., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Sept. 28, 1973, Ser. No. 403,264
Int. Cl.² C25D *13/06, 13/12*
U.S. Cl. 204—181 **24 Claims**

1. In the process of coating, by electrophoretic process, a film-forming polymer on an electrode, wherein the electrode is aluminum or an aluminum alloy, and using in the process, a composition that comprises a continuous phase containing polymer, the improvement comprising:

a. using a polymer that
   1. has a glass transition temperature of at least 25°C.,
   2. is ccapable of being coated onto a suitable substrate by electrophoretic process,
   3. is selected from the group consisting essentially of polymer formed from unsaturated monomers, polyesters, polyurethanes, polyamides polyesterimides, polyamic acids, polyamide-imides, epoxies and mixtures of the foregoing and
   4. has a molecular weight of at least about 100,100,

b. using a continuous phase comprising water and at least one organic liquid, said organic liquid
   1. having a solubility parameter of about 8.5 to 16,
   2. having such solvency that it will at least swell the polymer described in (a), and
   3. being present in an amount of about 1–13 parts by weight organic liquid per part by weight of polymer, and

c. maintaining the electrode that is being coated with a polymer at a temperature at least above that of the continuous phase for a time that is sufficient to produce a polymer film coating the electrode, that after baking at a temperature and for a time that is sufficient to harden the film, has a greater resistivity than a polymer film that is coated under the same conditions with the exception that an elevated temperature is not maintained and whereby the polymer film is substantially free of cracks and blisters caused by evolution of gas at the electrode.

3,926,761

AQUEOUS ELECTROPHORETIC COATING COMPOSITIONS COMPRISED OF POLYCARBOXYLIC ACID BINDER RESIN AND SPARINGLY SOLUBLE ALKALINE EARTH METAL MOLYBDATE

Katsuya Sera, and Akira Kasari, both of Hiratsuka, Japan, assignors to Kansai Paint Company, Limited, Japan

Filed Apr. 4, 1974, Ser. No. 458,045
Claims priority, application Japan, Apr. 9, 1973, 48-40604
Int. Cl.² C25D *13/06*
U.S. Cl. 204—181 **10 Claims**

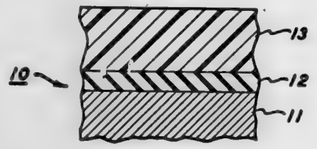
1. An electrophoretic coating composition consisting essentially of an aqueous medium having dispersed therein a polycarboxylic acid binder resin and at least one sparingly water-soluble alkaline earth metal molybdate.

3,926,762

RF SPUTTERING OF TRIGONAL SELENIUM FILMS

Irving S. Goldstein, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 24, 1974, Ser. No. 508,950
Int. Cl.² C23C *15/00;* **H01G** *9/20;* **G03G** *5/04*
U.S. Cl. 204—192 **6 Claims**



1. A method of making a photoconductive imaging device which comprises:

directly depositing a thin layer of trigonal selenium onto a supporting conductive substrate, said deposition comprising RF sputtering said film at an RF input power of up to about 1 to 3 Watts/cm² while maintaining a corresponding elemental selenium flux density up to about 10^{16} atoms/cm²/sec. in an inert atmosphere under vacuum conditions, said deposition being carried out while maintaining the conductive substrate at a temperature in the range of about 70° to 130°C, said substrate being of a material which is electrically blocking with respect to trigonal selenium or is covered with a thin electrically blocking layer to prevent charge injection and which has an adequate number of heterogeneous nucleation centers for trigonal selenium growth but not so many sites so that the process gives rise to a form of trigonal selenium which is too conductive in the dark to be of xerographic utility and such material having a sufficiently high substrate-vapor tension and a sufficiently low substrate-selenium interfacial tension to permit the effective application of the trigonal selenium to its surface by RF sputtering.

3,926,763

METHOD FOR FABRICATING A GAS DISCHARGE PANEL STRUCTURE

Arnold Reisman, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

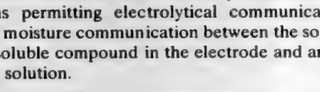
Filed Nov. 30, 1972, Ser. No. 311,022
Int. Cl.² C23C *15/00;* **B44D** *1/18*
U.S. Cl. 204—192 **8 Claims**

1. A method for fabricating one panel of a gas discharge display structure comprising the steps of:

a. providing a supporting base of glass having a top surface,

b. etching uniform parallel grooves in said top surface, said grooves having a depth of 0.0001 to 0.0002 inches,

c. filling said grooves with electrically conducting material, and



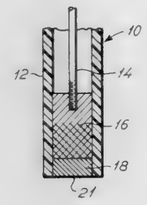
d. applying a thin uniform planar layer of dielectric material over said top surface to cover said electrically conducting material.

3,926,764

ELECTRODE FOR POTENTIOMETRIC MEASUREMENTS

Jaromir Ruzicka, Naerum, and Carl Goran Lamm, Charlottenlund, both of Denmark, assignors to Radiometer A/S, Denmark

Filed May 19, 1972, Ser. No. 255,236
Claims priority, application Denmark, May 19, 1971, 2411/71
Int. Cl. G01n *27/30, 27/46*
U.S. Cl. 204—195 F **10 Claims**



1. An electrode for potentiometric measurements comprising,

A. An electrically conductive body which comprises a mixture of graphite and a thermoplastic polymer hydrophobizing said graphite,

B. A solid electrochemically active ion-sensitive redox system in contact with said hydrophobized graphite,

C. A solid water-soluble compound which is dissociable with liberation of an ionic specie to which the redox system is sensitive, said solid compound being humid and being present in contact with said system, and

D. Means permitting electrolytical communication and limited moisture communication between the solid humid water-soluble compound in the electrode and an exterior sample solution.

3,926,765

ELECTROCHEMICAL ELECTRODE STRUCTURE

Ihsan A. Haddad, Bedford, Mass., assignor to Instrumentation Laboratory, Inc., Lexington, Mass.

Continuation-in-part of Ser. No. 350,774, April 13, 1973, Pat. No. 3,855,100. This application Dec. 20, 1973, Ser. No. 426,513The portion of the term of this patent subsequent to Dec. 17, 1991, has been disclaimed.
Int. Cl.² G01N *27/30*
U.S. Cl. 204—195 F **17 Claims**

1. An electrochemical electrode system including a sensing electrode system that includes a first chamber adapted to contain a sample to be analyzed,

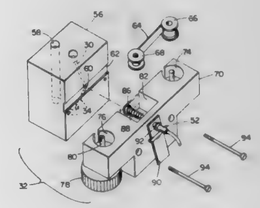
a reference electrode system that includes a second chamber adapted to contain an electrolyte,

and an ionic junction structure including first structure connected to said first chamber, said first structure having an opening therein, second structure connected to said second chamber, said second structure having an opening therein, said openings being in juxtaposed relation, a porous flow control member disposed between said openings, guide structure for establishing a path of straight line motion of one opening defining structure toward the other opening defining structure and alignment of the two openings with said flow control member disposed between said openings for providing a controlled liquid flow path for establishing an ionic junction between the electrolyte and the sample material to be measured by the electrode system, biasing structure for maintaining surfaces of said opening defining structures in juxtaposed clamping relation while not imposing shear force on the said flow control member interposed between said surfaces and lever structure operable to move said one opening defining structure away from said other opening defining structure along said path of straight line motion to release the clamping force imposed by said biasing structure on said flow control member.

9. For use with an electrochemical electrode system including a sensing electrode system that includes a first chamber adapted to contain a sample to be analyzed, and

a reference electrode system that includes a second chamber adapted to contain an electrolyte,

an ionic junction structure including first structure defining a first passage adapted to be connected to said first chamber, said first passage having an orifice therein, second structure defining a second passage adapted to be connected to said second chamber, said second passage having an orifice therein, said orifices being in juxtaposed relation, and an elongated strip having a plurality of porous flow control sections arranged in series along said



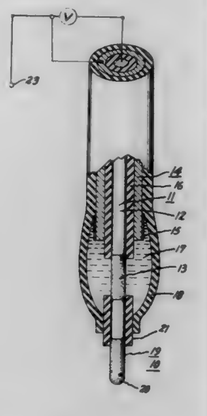
strip, one of said sections being disposed between said orifices to permit restricted flow between said orifices, said strip being movable to remove said one section from between said juxtaposed orifices and concurrently to place another one of said sections between orifices to change the flow control section between said orifices.

17. An electrode system for electrochemical analysis of a sample comprising structure defining a first chamber adapted to contain an electrolyte, structure defining a second chamber adapted to contain the material to be analyzed, each said chamber having opening defining structure in communication therewith, a flow control member carried by one of said opening defining structures and disposed over the opening of said one opening defining structure, guide structure for establishing a path of straight line motion of one of said opening defining structures toward the other of said opening defining structures and alignment of the two said openings with said flow control member disposed between said openings for providing a controlled liquid flow path for establishing an ionic junction between the electrolyte and the sample material to be measured by the electrode system, biasing structure for maintaining surfaces of said opening defining structures in juxtaposed flow control member clamping relation while not imposing shear force on the said flow control member interposed between said surfaces and lever structure operable to move said one opening defining structure away from said other opening defining structure along said path of straight line motion to release the clamping force imposed by said biasing structure on said flow control member.

3,926,766
MINIATURE PROBE CONTAINING MULTIFUNCTIONAL ELECTROCHEMICAL SENSING ELECTRODES

Leonard W. Niedrach, and William H. Stoddard, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1974, Ser. No. 519,795
Int. Cl.² G01N 27/30, 27/46
U.S. Cl. 204—195 P **8 Claims**



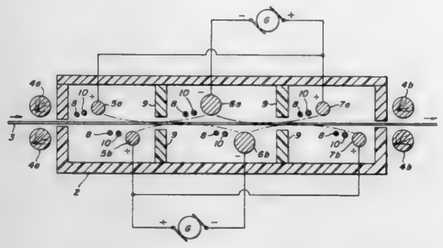
1. A miniature probe comprising a carbon dioxide sensor and a pH electrode, the carbon dioxide sensor comprising a flexible, elongated first electrode wire, a first electrochemically active material adhering tightly to and in electrical contact with at least a portion of the first electrode lead wire, the first electrochemically active material responsive to changes in pH, a second electrode lead surrounding at least partially and spaced from the first electrode lead wire, a second electrochemically active region of silver and a silver halide except fluoride on a portion of the second electrode lead, a layer of electrical insulating disposed between the first electrode lead wire and the second electrode lead, an electrolyte contacting both electrochemically active materials, and an outer sheath of carbon dioxide permeable, ion-impermeable diffusion barrier material encapsulating at least the electrochemically active regions and the electrolyte; and a second pH electrode comprising a separate second portion of the first electrode lead wire which is exposed exteriorly of the outer sheath for contact with a sample to be tested for carbon dioxide content and hydrogen ion activity, a third electrochemically active region adhering tightly to and in electrical contact with the exposed portion of the first electrode lead wire, the third electrochemically active material responsive to changes in pH, and the third electrochemically active region insulated electrically from the second electrochemically active region.

3,926,767
ELECTROLYTIC TREATING APPARATUS

Edward C. Brendlinger, Pitcairn; Richard F. Higgs, Monroeville, and Issa J. Kharouf, Pittsburgh, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jan. 21, 1975, Ser. No. 542,757
Int. Cl.² C25F 7/00
U.S. Cl. 204—206 **7 Claims**

1. An apparatus for the electrolytic treatment of metal strip within an electrolyte bath, comprising:
a. means for guiding said strip in a substantially horizontal plane, through said bath,
b. a number, n, of electrode pair configurations, n being at least 2, in which the electrodes forming each of said pairs are,
i. in an electrotreating position, with one electrode of said pair above said substantially horizontal plane and the other electrode of said pair below said substantially horizontal plane,
ii. offset from each other so that the distance between their respective vertical cross-sectional axes is greater than the sum of their cross-sectional widths/2, and
iii. the portion of those electrodes facing the top surface of the strip, exhibits a convex shape with respect to said top surface;

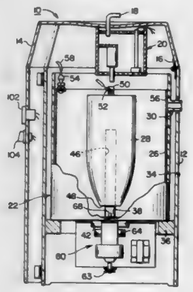


c. a d-c source of EMF, adapted to supply a current density within the range of 500 to 10,000 Amps/ft² to said strip, and connected so as to make the electrodes in each pair approximately the same potential and of a polarity opposite to that of the pair configurations adjacent thereto; and
d. separating each said pair configuration, insulative baffles positioned for the unencumbered passage of said strip, whereby the major portion of the current passing between oppositely charged electrodes is caused to flow through the strip.

3,926,768
SILVER RECOVERY SYSTEM

Kenneth G. Burgess, Derby, N.Y., assignor to Hydrospace Industries, Inc., Buffalo, N.Y.

Filed Apr. 12, 1973, Ser. No. 350,464
Int. Cl.² C25C 7/00
U.S. Cl. 204—229 **18 Claims**

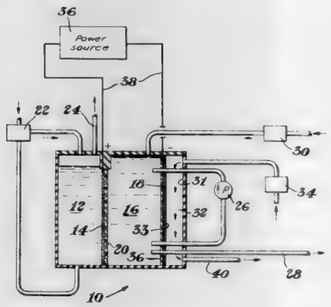


1. An apparatus for recovering silver from spent photographic solutions comprising:
a. an electrolysis vessel having an electrolysis chamber therein;
b. an electrode removably positioned in said vessel adjacent a wall thereof;
c. an electrode of opposite sign positioned at or near the center of said vessel;
d. an impeller located within said vessel adjacent to or near the bottom thereof;
e. means for rotating said impeller;
f. a pre-collecting vessel positioned above the electrolysis chamber and including means for receiving spent photographic solution to be fed into said chamber and siphon means for dispensing a predetermined volume of said solution into said chamber; and
g. means for passing an electric current between said electrodes and through the solution in said electrolysis chamber for a predetermined period of time in response to the dispensing of said volume of solution from the pre-collecting vessel into the chamber.

3,926,769
DIAPHRAGM CELL CHLORINE PRODUCTION

Gerhard Gritzner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 361,744, May 18, 1973. This application Aug. 1, 1974, Ser. No. 493,811
Int. Cl.² C25B 9/00
U.S. Cl. 204—237 **10 Claims**



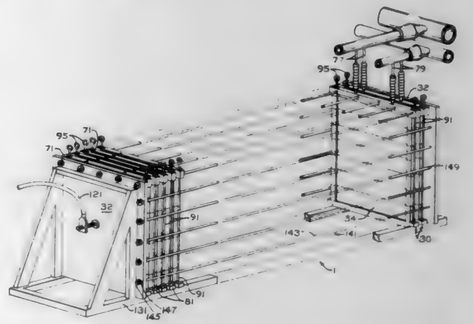
1. An electrolytic cell to produce chlorine and an alkali metal hydroxide comprising
an anode compartment adapted to contain an anolyte containing an alkali metal chloride;
a cathode compartment adapted to contain a catholyte containing an alkali metal hydroxide, said cathode compartment being spaced apart from said anode compartment by a cation exchange diaphragm;
a cation exchange diaphragm suited to pass alkali metal ions from said anode compartment to said cathode compartment, said diaphragm adapted to separate said anode compartment from said cathode compartment;
an anode positioned in said anode compartment;
a cathode positioned in said cathode compartment and spaced apart from said diaphragm, said cathode having a wall portion adapted to be in contact with the catholyte and another wall portion substantially simultaneously adapted to be in contact with an oxidizing gas;
an oxidizing gas compartment at least partially defined by a surface portion of said cathode and adapted to contain an oxidizing gas;
a means to control the moisture content of the oxidizing gas in combination with an oxidizing gas supply means and said cathode;
a means to circulate the catholyte at least within said cathode compartment in combination with said cathode compartment;
a means to control at least the alkali metal ion concentration of the anolyte;
a means to control the alkali metal hydroxide concentration of the catholyte;
a catholyte head control means adapted to maintain the catholyte upper surface level at least equal to the anolyte upper surface level;
a means to remove the chlorine from said anode compartment;
a means to remove the alkali metal hydroxide from said cathode compartment; and
a means to supply electrical energy to said anode and said cathode.

2. The electrolytic cell of claim 1 wherein said cathode is a foraminous body having at least the surface composed of a substantially inert material selected from the group consisting of Ru, Rh, Pd, Ag, Os, Ir, Pt, Au and Ni with a coating of a mixture of particulate inert metal and an organic component selected from the group consisting of polytetrafluoroethylene and fluorinated copolymers of hexafluoropropylene and tetrafluoropropylene.

3,926,770
ELECTROLYTIC CELL HAVING SILICON BIPOLAR ELECTRODES

Howard H. Hoekje, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. Nos. 260,790, June 8, 1972, abandoned, and Ser. No. 336,288, Feb. 27, 1973, Pat. No. 3,852,175, and Ser. No. 356,972, May 3, 1973, abandoned, said Ser. No. 336,288, and Ser. No. 356,972, is a continuation-in-part of Ser. No. 260,790, , said Ser. No. 356,972, is a continuation-in-part of Ser. No. 336,288,. This application Dec. 4, 1973, Ser. No. 421,706
Int. Cl.² C25B 11/04
U.S. Cl. 204—256 **56 Claims**



29. A bipolar electrolyzer having a plurality of individual electrolytic cells mechanically and electrically in series, at least one of said cells comprising:
a first silicon cell unit having an anodic surface thereon;
a second silicon cell unit spaced from said first cell unit and having a cathodic surface thereon facing the anodic surface of the first silicon cell unit;
said first cell unit and second cell unit defining an electrolyte chamber therebetween; and
each of said silicon cell units comprising at least 45 weight percent silicon and sufficient dopant to provide an electrical conductivity of at least 100 (ohm-centimeters)$^{-1}$.

48. The electrolyzer of claim 29 wherein:
a. said first cell unit comprises:
1. peripheral wall spacing means on the vertical sides thereof;
2. gas header means on top of and extending beyond the anodic surface of said first cell unit;
3. liquid header means on the bottom of and extending beyond the anodic surface of said first cell unit; and
4. the leading edges of said peripheral walls, gas header means, and liquid header means are substantially in a first single plane;
b. said second cell unit comprises:
1. peripheral wall spacing means on the vertical sides thereof;
2. gas header means on top of and extending beyond the cathodic surface of said second cell unit;
3. liquid header means on the bottom of and extending beyond the cathodic surface of said second cell unit; and

4. the leading edges of said peripheral walls, gas header means, and liquid header means are substantially in a second single plane; and

c. gasket means are interposed between said first cell unit and said second cell unit.

3,926,771

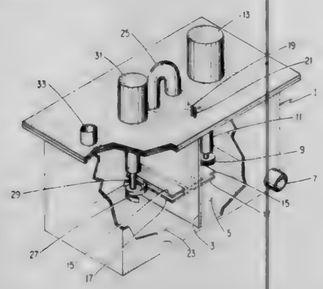
APPARATUS FOR ELECTROSANITIZING WASTE WATER

Donald F. Lieb, Mentor, and Neil W. Stillman, Madison, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Division of Ser. No. 372,085, June 21, 1973, Pat. No. 3,856,642. This application Oct. 3, 1974, Ser. No. 511,764

Int. Cl.² C25B *9/00*

U.S. Cl. 204—268 **7 Claims**



1. An apparatus for the treatment of waste water comprising:

a. a primary treatment container adapted for receipt of waste water and an alkali metal chloride and having separately disposed therein,

1. a combination agitator and macerator for any solids suspended in said waste water and

2. an electrode pack containing at least one horizontally disposed anode and cathode and connected to a direct current source external said container;

b. a discrete secondary treatment container having disposed therein an agitator, an electrode pack containing at least one horizontally disposed anode and cathode connected to a direct current source external said container, and an outlet for treated water; and

c. fluid communication means for transferring partially-treated waste water from said primary container to said secondary container.

3,926,772

MAKING AN ANODE ASSEMBLY

Leonard G. Cordone, Allen Park; William A. Donakowski; John R. Morgan, both of Dearborn Heights, and Karl Roeming, Detroit, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 413,154, Nov. 5, 1973, Pat. No. 3,891,534. This application July 1, 1974, Ser. No. 484,727

Int. Cl.² C25D *17/10, 7/04, 3/12*

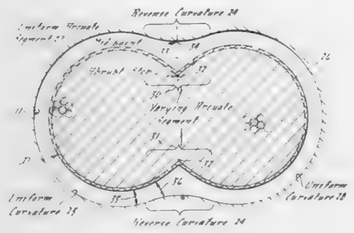
U.S. Cl. 204—283 **4 Claims**

1. A method for fabricating an anode assembly for an electroplating process, comprising:

a. preparing a pair of flat impervious titanium end plates with a continuous groove in each defining an epitrochoid configuration except adjacent the minor axis of said configuration whereat said groove is progressively displaced toward the major axis of the configuration to define a pair of inwardly directed apices,

b. provide a flat flexible perforate wall of titanium sheet metal and assemble said flexible wall with the edges thereof in the grooves of said end plates, the seam of said wall being secured by titanium stitching, and

c. locating a pair of spaced posts between said end walls to maintain a predetermined spacing therebetween independent of said flexible wall and for securing said flexible



wall in said grooves so that any section of said flexible wall is maintained as a straight line between grooves in the opposing end walls.

3,926,773

METAL ANODE FOR ELECTROCHEMICAL PROCESSES AND METHOD OF MAKING SAME

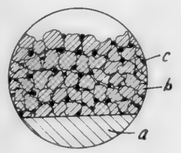
Konrad Koziol; Hans-Carl Rathjen, both of Rothenbach, Pegnitz, and Karl-Heinz Sieberer, Zirndorf near Nuremberg, all of Germany, assignors to Firma C. Conradty, Germany

Continuation of Ser. No. 163,256, July 16, 1971, abandoned. This application Sept. 27, 1973, Ser. No. 401,542

Claims priority, application Germany, July 16, 1970, 2035212

Int. Cl.² C25B *11/02, 11/08, 11/10*

U.S. Cl. 204—290 F **10 Claims**



1. In an anode, for electrolytical processes, particularly for chlorine-alkali electrolysis, having a solid core of valve metals selected from the group consisting of titanium, tantalum, niobium, zirconium, hafnium, tungsten, molybdenum, and alloys thereof, and having a covering layer containing activating substances counteracting passivation of the anode, selected from the group consisting of metals and oxides of the platinum metal group, mixed oxides of noble and ignoble metals, and oxides of ignoble metals alone: the improvement in which the activating substances are anchored in a porous covering layer consisting of powdered valve metal which is sintered to the solid valve metal core of the anode.

3,926,774

ELECTRIC TREATER SYSTEM

Frederick D. Watson, and Joseph D. Winslow, Jr., both of Houston, Tex., assignors to Petrolite Corporation

Filed Nov. 13, 1974, Ser. No. 523,289

Int. Cl.² C10G *33/02;* **H01B** *17/26*

U.S. Cl. 204—308 **20 Claims**

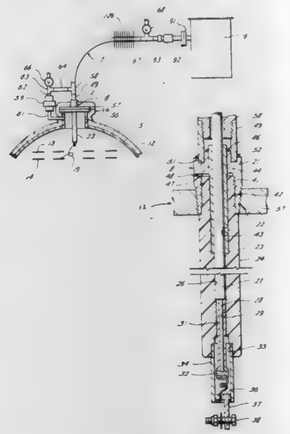
1. A system for electrically treating an oil - continuous emulsion containing dispersed phase contaminating substances comprising:

a. a vessel for containing said emulsion while subjected to resolution forces;

b. electrode means for creating an electric field for promoting emulsion resolution within said vessel;

c. said electrode means including an energizable electrode mounted in electrical isolation from said vessel;

d. a high voltage entrance bushing mounted within a sidewall of said vessel, said entrance bushing having projecting within said vessel an elongated tubular member with an external sidewall surface for immersion within said emulsion, said tubular member being formed of a high electrical resistance plastic material subject to plastic flow upon increase in temperature and pressure, a conductor extending through said tubular member and connected at its vessel interior end to said energizable electrode, said tubular member at its other end being carried in a metal adapter mounted in the sidewall of said vessel for supporting said tubular member in operative position within said vessel, heat sink means associated with said metal adapter for maintaining said tubular member and vessel at substantially the same temperature during operation of said vessel in resolving the emulsion, said metal adapter having an aperture through which said conductor extends to the exterior of said vessel;



e. an external power source with a high-voltage output;

f. a pressure conduit extending in fluid-tight relationship from said metal adapter to said external power source;

g. a high-pressure, high-voltage feedthrough insulator means sealing said pressure conduit at said external power source;

h. an interconnecting high-voltage conductor within a dielectric liquid carried in electrical isolation in said pressure conduit and connecting said conductor in said entrance bushing with said high voltage output of said external power source via said feedthrough insulator means;

i. system means for maintaining the dielectric liquid within said high pressure conduit at substantially the same pressure as the emulsion within said vessel, and said system including a dynamic fluid barrier for preventing intermingling of the emulsion and dielectric liquid; and

j. heat exchanger means associated with the pressure conduit for maintaining said high-pressure, high-voltage feedthrough insulator means at substantially the same temperature at its pressure conduit and power source terminals.

3,926,775

HYDROGENATION OF COAL

Wilburn C. Schroeder, 7316 Radcliffe Drive, College Park, Md. 20740

Filed Nov. 1, 1973, Ser. No. 412,026

Int. Cl.² C10G *1/06*

U.S. Cl. 208—10 **11 Claims**

1. A process for hydrogenating coal comprising: continuously circulating a stream of hydrogen-containing gases including CO and steam at coal hydrogenation pressure between about 1000 to 5000 psi through a closed cyclic system including a hydrogenation zone and an oxygen-steam reforming zone, adding coal in the substantial absence of a pasting medium under system pressure to the hydrogenation zone and hydrogenating the coal in said zone at a temperature in the range of about 750°F to 1250°F by contact with said gases to produce liquid and gaseous hydrocarbons in the circulating stream, removing liquid hydrocarbons from the circulating stream without substantially reducing the pressure of such stream, introducing the resulting gaseous stream containing gaseous hydrocarbons and hydrogen into the reforming zone, introducing oxygen and steam at system pressure into said reforming zone for reaction with the gaseous hydrocarbon components of the gaseous stream to produce carbon monoxide and hydrogen and to raise the temperature of the gaseous stream sufficiently to bring the coal to coal hydrogenation temperature in said range, the amount of steam introduced into the reforming zone being in excess of that required for the reforming raction, and introducing the hot gaseous stream from the reforming zone into the hydrogenation zone to complete the closed cycle, heat the coal, and provide steam, carbon monoxide and hydrogen for reaction in the hydrogenation zone.

3,926,776

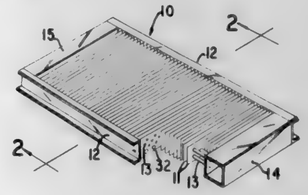
METHOD AND APPARATUS FOR WAX DEOILING

Roy E. Irwin, 1456 Lakeshore Highway East, Oakville, Ontario, Canada, and Alfred Aufhauser, 8 E. 83rd St., New York, N.Y. 10028

Filed June 28, 1974, Ser. No. 484,217

Int. Cl.² C10G *43/04*

U.S. Cl. 208—32 **10 Claims**



1. A method of separating lower melting point components from higher melting point components of a wax composition which comprises confining in the solid state between opposed surfaces a body of wax about 1/16 to about ½ inch in thickness with an upper margin disposed above its lower margin for permitting selective drainage of melted components of said wax composition to drain toward said lower margin, said body of wax being from about 4 to about 24 inches in depth from said upper margin toward said lower margin, gradually raising the temperature of said surfaces through a temperature range during which lower melting point constituents selectively drain from said body of wax leaving residual higher melting point wax in the solid state in the space between said surfaces, recovering the drained lower melting point constituents and thereafter melting and recovering said higher melting point constituents separated from said lower melting point constituents.

3,926,777

PROCESS FOR PRODUCING A COLORLESS MINERAL OIL HAVING GOOD HAZING PROPERTIES

Roland L. Menzl, Hammond, Ind., assignor to Standard Oil Company, Chicago, Ill.

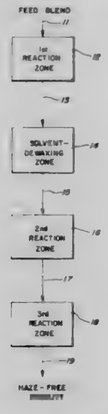
Filed June 21, 1974, Ser. No. 481,685

Int. Cl.² C10G *23/04*

U.S. Cl. 208—57 **19 Claims**

1. A process for producing a colorless mineral oil having good hazing properties from a mineral lubricating oil distillate,

which process comprises contacting said distillate with a first hydrogenation catalyst comprising a metal of Group VIB of the Periodic Table of Elements and a metal of Group VIII of the Periodic Table of Elements deposed on a non-acidic or weakly-acidic support in a first hydrogenation reaction zone under first hydrogenation conditions and in the presence of hydrogen to obtain a first hydrogenated product; subjecting said first hydrogenated product to a solvent-dewaxing treatment to obtain a dewaxed, hydrogenated product; contacting said dewaxed, hydrogenated product with a second hydrogenation catalyst comprising a metal of Group VIB of the Periodic Table of Elements and a metal of Group VIII of the Periodic Table of Elements deposed on a non-acidic or weak-



ly-acidic support in a second hydrogenation reaction zone under second hydrogenation conditions and in the presence of hydrogen to obtain a second hydrogenated product; and contacting said second hydrogenated product with a third hydrogenation catalyst comprising a Group VIII noble metal deposited on a non-acidic or a weakly-acidic support in a third hydrogenation reaction zone under third hydrogenation conditions and in the presence of hydrogen to obtain said colorless mineral oil, said metals of said first hydrogenation catalyst and said metals of said second hydrogenation catalyst being present in the elemental form, as the oxides thereof, as the sulfides thereof, or as mixtures thereof.

3,926,778
METHOD AND SYSTEM FOR CONTROLLING THE ACTIVITY OF A CRYSTALLINE ZEOLITE CRACKING CATALYST

Hartley Owen, Belle Mead, and Edward J. Demmel, Pitman, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 19, 1972, Ser. No. 316,632
Int. Cl.² C10G *37/02, 11/04;* **B10J** *8/24, 29/12*
U.S. Cl. 208—74 **5 Claims**

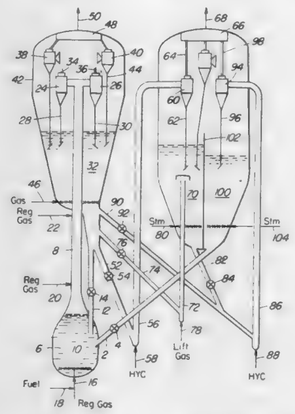
1. A method for converting hydrocarbons by cracking in the presence of a crystalline zeolite containing cracking catalyst which comprises

a. passing a first hydrocarbon feed in admixture with a crystalline zeolite cracking catalyst obtained from a catalyst regeneration zone through a first cracking zone at an elevated cracking temperature in the range of 1000°F. up to about 1300°F. at a hydrocarbon residence time less than about 10 seconds,

b. separating the first hydrocarbon feed catalyst suspension product of the first cracking zone into a hydrocarbon phase and a catalyst phase,

c. combining sufficient hot regeneration catalyst with the separated catalyst phase to provide a mix catalyst temperature of at least 1000°F. and heat soaking said mixed catalyst at said catalyst mix temperature for at least about 5 minutes in the presence of a gas substantially inert to the environment so as to substantially improve the used cracking catalyst component activity,

d. passing catalyst subjected to said heat soaking step through an additional hydrocarbon conversion step maintained at a temperature of at least 1000°F., and



e. separating catalyst from said additional hydrocarbon conversion step for return after stripping thereof to a catalyst regeneration step.

3,926,779
UPGRADING OF PARAFFINIC GASOLINE BLENDING COMPONENTS BY CYCLIZATION WITH A PLATINUM/MAGNESIUM OXIDE ALUMINA MATRIX CATALYST

Raymond F. Wilson; Reese A. Peck, both of Fishkill; John H. Estes, Wappingers Falls, and John T. Brandenburg, Hopewell Junction, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Jan. 21, 1974, Ser. No. 435,363
Int. Cl.² C10G *39/00*
U.S. Cl. 208—65 **9 Claims**

1. A process for increasing the octane number of a paraffin containing gasoline blending component boiling within the gasoline boiling range and having a paraffin content of from about 70 percent or higher which comprises the steps of (1) cyclizing the paraffins in the blending component by contacting said component under reforming conditions with hydrogen in the presence of a catalyst comprising a noble metal on magnnesium oxide in an alumina gel matrix, to obtain a cyclized blending component, and (2) catalytically reforming said cyclized blending component in the presence of a conventional platinum or platinum bi-metallic reforming catalyst of an alumina or alumina containing support.

3,926,780
HYDROCARBON CONVERSION PROCESS UTILIZING STABILIZED ZEOLITE CATALYSTS

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 191,123, Oct. 20, 1971, abandoned. This application Oct. 15, 1973, Ser. No. 406,679
Int. Cl.² C10G *13/02;* **B01J** *8/24, 29/28*
U.S. Cl. 208—111 **11 Claims**

1. In a hydrocarbon conversion process wherein a hydrocarbon feedstock is contacted with a catalyst under hydrocarbon conversion conditions, the improvement which comprises utilizing as said catalyst a particle-form aggregate of a stabilized crystalline aluminosilicate zeolite component and an amorphous refractory inorganic oxide component selected from the class consisting of alumina, silica, magnesia, beryllia, zirconia, titania, thoria, chromia, and combinations thereof, said catalyst having been prepared by:

a. ion exchanging a crystalline alkali metal aluminosilicate zeolite with ammonium ions under exchange conditions adjusted to reduce the alkali metal content of said zeolite to less than about 3 weight percent determined as the metal and replace between about 20 and 95 percent of the original alkali metal content of said zeolite with ammonium ions;

b. steaming the resultant exchanged zeolite at a temperature of about 800° to about 1650°F in the presence of at least about 0.5 psi water vapor partial pressure for at least about 10 minutes, sufficient to convert said exchanged zeolite to the corresponding hydrogen form and stabilize said zeolite;

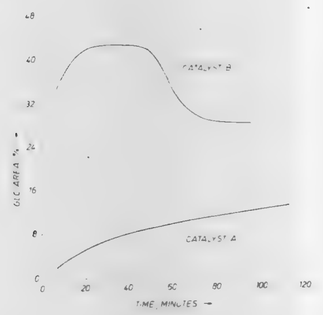
c. re-exchanging the resultant stabilized zeolite with ammonium ions under conditions sufficient to further reduce said alkali metal content to less than about 2 weight percent determined as the corresponding oxide and to introduce into said zeolite by exchange with zeolitic alkali metal ions an amount of ammonium ions corresponding to at least about 5 percent of the original ion exchange capacity of said zeolite; and

d. calcining the re-exchanged zeolite as a particle-form aggregate containing said refractory oxide intimately admixed therein at a temperature of at least about 600°F

3,926,781
CATALYTIC CRACKING OF PARAFFINIC NAPHTHA

Laird H. Gale, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 9, 1973, Ser. No. 404,541
Int. Cl.² C10G *11/08;* **B01J** *27/12, 23/08;* **C07C** *11/02*
U.S. Cl. 208—117 **8 Claims**



1. A catalyst cracking process which comprises contacting a hydrocarbon feedstock containing 40 to 100%v paraffins and boiling substantially in the range C_6-450°C, at cracking conditions, with a catalyst consisting essentially of alumina containing from about 1 to 40% wt. gallia, and recovering a product having a major portion of hydrocarbons boiling below the boiling range of the feedstock and containing substantial amounts of normally gaseous olefins and gasoline boiling range aromatics.

3,926,782
HYDROCARBON CONVERSION

Charles J. Plank, Woodbury; Edward J. Rosinski, Almonesson, both of N.J., and Albert B. Schwartz, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

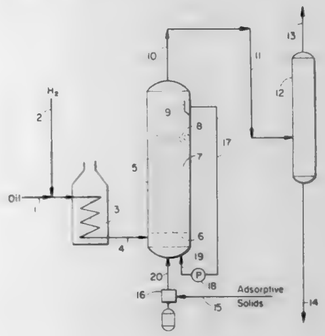
Filed Feb. 9, 1973, Ser. No. 330,925
Int. Cl.² C10G *35/06, 13/02;* **C07C** *3/50*
U.S. Cl. 208—135 **12 Claims**

1. A process for hydrocarbon conversion which comprises contacting a hydrocarbon charge under conversion conditions with a catalyst comprising a ZSM-5 type crystalline zeolite characterized by an ultimate crystallite diameter of 0.005 to 0.1 micron as crystallized.

3,926,783
EBULLATED BED PROCESS

Ronald H. Wolk, Trenton, N.J., assignor to Hydrocarbon Research, Inc., Morristown, N.J.

Continuation-in-part of Ser. No. 245,469, April 19, 1972, abandoned. This application Mar. 13, 1974, Ser. No. 450,804
Int. Cl.² C10G *23/10*
U.S. Cl. 208—157 **1 Claim**



1. A process for avoiding the loss of fluidization of an ebullated catalyst bed resulting from the formation of two mutually insoluble liquid phases during the catalytic hydroconversion of heavy asphaltene containing residual oils wherein the catalyst is of a size between 60 mesh and one-half inch diameter and the hydroconversion is carried out in a reaction zone at temperatures between 700° and 900°F, at pressures between 500 and 3000 psig with a space velocity of the residual oil between 0.2 and 2.0 volumes of feed per hour per volume of reaction zone and wherein one of the liquid phases has the heaviest and largest molecules and is insoluble in the other liquid phase, said liquid phase having the heaviest and largest molecules being a minor portion of the total liquid in the reaction zone:

a. adding a second particulate solid which is alumina to said ebullated bed at a rate to absorb the liquid phase that defluidizes the catalyst wherein said second particulate solid has a diameter of less than 10 percent of the diameter of said catalyst and has more than 0.2 cc/gram of its pore volume in pores with diameters of at least 10,000 angstroms; and

b. passing said second solid upwardly through said catalyst and out of said bed with the liquid phase that would defluidize the ebullated catalyst bed.

3,926,784
PLURAL STAGE RESIDUE HYDRODESULFURIZATION PROCESS WITH HYDROGEN SULFIDE ADDITION AND REMOVAL

Robert D. Christman, Pittsburgh, and Stephen J. Yanik, Gibsonia, both of Pa., assignors to Gulf Research & Development Co., Pittsburgh, Pa.

Filed Aug. 22, 1973, Ser. No. 390,361
Int. Cl.² C10G *34/00*
U.S. Cl. 208—210 **3 Claims**

1. A process for hydrodesulfurizing a feed residual petroleum oil containing asphaltenes, metals and sulfur without a distillation or a solvent extraction step for removal of asphaltenes comprising passing said feed oil through a plurality of hydrodesulfurization stages in series including an initial stage and a final stage each operating at a temperature between about 650° and 800°F., each stage employing a catalyst com-

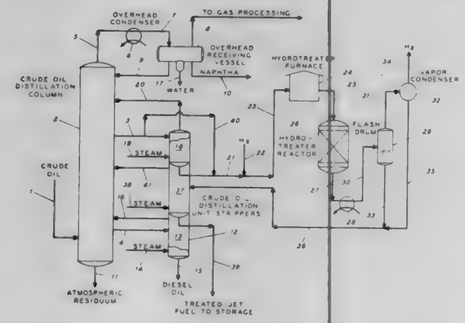
prising Group VI and Group VIII metals on alumina, increasing the temperature in each stage with increasing catalyst age to compensate for catalyst activity aging loss, maintaining a lower hydrogen pressure in said final stage than in said initial stage, removing asphaltenes, mteals and sulfur from the feed oil in said initial and final stages with a greater amount of metals and sulfur being removed from the feed oil in said initial stage than in said final stage, operating said final stage at a hydrogen pressure between 1,300 and 1,900 psi and operating said initial stage at a hydrogen pressure up to 2,300 psi which is higher than the pressure in said final stage so that the ratio of percent demetallization to percent desulfurization is higher in the final stage than in the initial stage, including gaseous hydrogen sulfide or an added hydrogen sulfide precursor in the stream entering the final stage, the catalyst in said final stage comprising a higher weight percent of Group VI and Group VIII metals than the catalyst in said initial stage so that there is a greater percentage reduction in asphaltenes in said final stage than in said initial stage, and recovering a hydrodesulfurized effluent from said final stage comprising more than 80 volume percent yield boiling above the gasoline range based on said feed residual oil.

3,926,785

INTEGRATED DISTILLATION AND HYDRODESULFURIZATION PROCESS FOR JET FUEL PRODUCTION

Jack W. Siegel, El Segundo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 194,440, Nov. 1, 1971, abandoned.
This application Feb. 11, 1974, Ser. No. 441,074
Int. Cl.² C10C *23/00*
U.S. Cl. 208—211 **3 Claims**



1. An integrated crude oil distillation and oil hydro-desulfurizing process for jet fuel production which comprises:

a. withdrawing a stripped side cut fraction having a boiling range between 300°F. and 700°F. from a first stripper in a crude distillation unit at a temperature above 300°F., said unit including a crude oil distillation column having an associated overhead system, said system comprising an overhead condenser and an overhead receiving vessel,

b. feeding the withdrawn fraction from said first stripper to a hydrodesulfurizing reactor before cooling said fraction below 250°F.,

c. hydrodesulfurizing said fraction in said hydrodesulfurizer reactor by contacting the fraction with a hydrodesulfurizing catalyst and hydrogen at a temperature between 600° and 900°F. and a pressure between 400 and 5,000 psig and withdrawing a hydrodesulfurized reaction effuent from the reactor, said contacting being sufficient to sweeten the jet fuel fraction by removing mercaptans,

d. passing the hydrodesulfurized liquid phase separated from step (c) to a second stripper in the crude distillation unit before cooling said liquid phase below 400°F.,

e. stripping H_2, H_2S and light hydrocarbons from said liquid phase in said second stripper, said light hydrocarbons boiling below the lower cut point of said side cut fraction,

f. passing a stream comprising said H_2, H_2S and light hydrocarbons from said second stripper to an upper portion of said distillation column, and separating normally liquid hydrocarbon components in said stream from said overhead receiving vessel, and

g. withdrawing from said second stripper said hydrodesulfurized jet fuel poroduct.

3,926,786

PRODUCTION OF LUBRICATING OILS

Richard L. Coleman, Port Arthur; Billy H. Cummins, and William B. Ashton, both of Nederland, all of Tex., assignors to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 308,068, Nov. 20, 1972, abandoned.
This application Dec. 21, 1973, Ser. No. 427,155
Int. Cl.² C10G *23/02*
U.S. Cl. 208—264 **5 Claims**

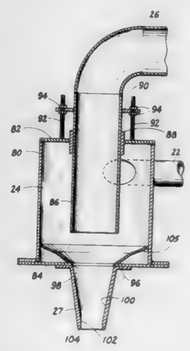
1. A process for improving the viscosity index of a lubricating oil stock which comprises contacting said lubricating oil stock in the presence of hydrogen under hydrotreating conditions with a catalyst comprising from 1 to 8 wt. % cobalt as the oxide and from 7 to 20 wt. % molybdenum as the oxide on a support comprising alumina, said catalyst containing from about 5 to 30 wt. % mordenite in hydrogen form and also containing from 0.1 to 5 wt. % halogen.

3,926,787

METHOD AND APPARATUS FOR REDUCING SULPHUR AND ASH CONTENT OF COAL

Larry T. Gay, Frostburg, Md., assignor to C-G Process Coal Company, Tulsa, Okla.

Filed Mar. 2, 1973, Ser. No. 337,590
Int. Cl.² B04C *9/00*
U.S. Cl. 209—3 **8 Claims**



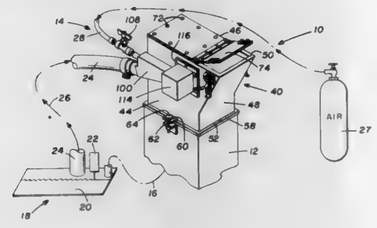
1. A method of separating a salable coal product from a solid material containing coal therein comprising the steps of introducing a pre-crushed and pre-screened quantity of said solid material of particle size 1¼ × 0 inch into a mixing zone located centrally within a mixing chamber, said mixing zone being open at the top and the bottom and communicating at said bottom with said mixing chamber, introducing a first stream of water downwardly and centrally into said mixing zone at about 65 p.s.i. to create a condition of turbulence within said zone and within said mixing chamber, introducing a second stream of water into said mixing chamber at about 2 to 5 p.s.i. under substantially quiescent conditions and adjacent the bottom of said mixing chamber, withdrawing a stream of a solids-water mixture from the bottom of said mixing chamber, introducing said solids-water mixture tangentially into a cyclone separator at about 4 to 6 p.s.i., said cyclone separator having inner and outer vortex established by the tangential introduction of said solids-water mixture passing the tangentially moving solids-water mixture downwardly from the outer vortex into contact with a first conical member located above the bottom of said cyclone separator and adjacent the outer surface thereof, said first conical member having a cone angle of generation approximately equal to 68°, passing the tangentially moving solids-water mixture further downwardly into contact with a second conical member extending from said first conical member to the bottom of said cyclone separator and having a cone angle of generation approximately equal to 53°, passing the tangentially moving solids-water mixture still further downwardly into contact with a third conical member located below said bottom of said cyclone separator and having an upper opening of substantially the same size and mating with an opening provided at the bottom of said second conical member, said third conical member having a cone angle of generation approximately equal to 7°, withdrawing a solids-water mixture from the top of said inner vortex and treating the mixture to remove water therefrom and to recover a solid coal product, withdrawing a solids-water mixture from the bottom of said cyclone separator below said third conical member and treating the mixture to remove water therefrom and to obtain a refuse, and recycling the water removed from said mixtures.

3,926,788

FLUX RECOVERY UNIT

Galen H. Stephens, 108 J.J. Lemon, Hutchins, Tex. 75141, and Charles L. Revill, 1102 Falcon, Irving, Tex. 75060

Filed May 31, 1974, Ser. No. 474,917
Int. Cl.² B07B *13/16*
U.S. Cl. 209—3 **15 Claims**



2. A flux recovery apparatus comprising:

a housing defining a chamber and having an inlet port for receiving a mixture of flux and gas and having separate discharge ports for said flux and said gas;

means for directing the flow of said mixture through said inlet port and into said chamber in a first direction;

a first baffle means in the path of flow of said mixture and transverse to the direction of flow; and

a second baffle means at a right angle to said first baffle means transverse to the direction of flow of said mixture.

3,926,789

MAGNETIC SEPARATION OF PARTICULAR MIXTURES

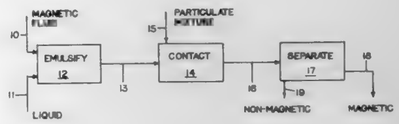
Roland H. Shubert, Reston, Va., assignor to Maryland Patent Development Co., Inc., Silver Spring, Md.

Filed July 5, 1973, Ser. No. 376,335
Int. Cl.² B03O *1/00*
U.S. Cl. 209—8 **26 Claims**

1. A method of recovering a mineral from the gangue constituents of its ore which comprises:

comminuting the ore to a size range whereat there is achieved substantial physical liberation of the mineral from the gangue constituents of the ore;

rendering the surfaces of the mineral particles magnetic by selectively wetting the surfaces of said mineral particles with a magnetic fluid, said magnetic fluid comprising an ultra-stable colloidal suspension of magnetic particles in a liquid carrier, said liquid carrier being selected from the group consisting of hydrocarbons, fluorocarbons, silicone oils, water and esters, said magnetic fluid being capable of reacting with an external magnetic field and displaying the behavior of a homogeneous Newtonian liquid, and



subjecting the comminuted ore to a magnetic separation whereby a magnetic concentrate comprising magnetic fluid-wetted mineral particles is recovered.

3,926,790

FLOTATION METHOD FOR SEPARATION OF MIXTURE OF PLASTICS

Sumio Izumi, Kokubunji, Japan, assignor to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1974, Ser. No. 443,937
Claims priority, application Japan, Feb. 19, 1973, 48-19308
Int. Cl.² B03B *1/04*; B03D *1/02*
U.S. Cl. 209—9 **15 Claims**

1. A method for the separation of a particulate mixture of plastics comprising a polyacrylate and polyvinyl chloride into each of said plastics which comprises conditioning said plastic mixture in an aqueous liquid medium using an alkali metal or alkaline earth metal salt of lignin sulfonic acid as a conditioning agent to render the surfaces of said polyvinyl chloride more hydrophilic than said polyacrylate and subjecting the resulting mixture to a froth flotation, in the presence of a frothing agent,, and simultaneously separating the polyvinyl chloride together with said aqueous liquid medium, said polyacrylate being recovered as a float and said polyvinyl chloride being recovered as a tailing.

3,926,791

FLOTATION METHOD OF SEPARATION OF MIXTURE OF PLASTICS

Sumio Izumi, and Hiroshi Tanaka, both of Tokyo, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1974, Ser. No. 443,574
Claims priority, application Japan, May 22, 1973, 48-57012
Int. Cl.² B03D *1/02, 1/00*
U.S. Cl. 209—9 **16 Claims**

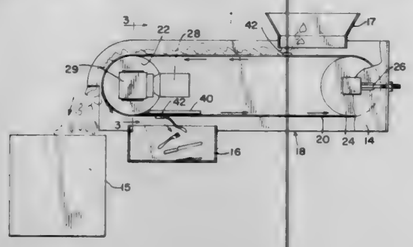
1. A method for the separation of a particulate mixture of plastics comprising a polyacrylate and polyvinyl chloride into each of said plastics which comprises conditioning said mixture of plastics in an aqueous liquid medium using at least one hydrophilic organic colloid as a conditioning agent to render the surfaces of said polyvinyl chloride more hydrophilic than said polyacrylate and subjecting the resulting mixture to a froth flotation in the presence of a frothing agent, to float the polyacrylate and simultaneously separate the polyvinyl chloride together with said aqueous liquid medium, said polyacrylate being recovered as a float and sad polyvinyl chloride being recovered as a tailing.

3,926,792

APPARATUS AND METHOD FOR AUTOMATICALLY SEPARATING MAGNETIC FROM NON-MAGNETIC SUBSTANCES

J. Philip Buford, Park Ridge, Ill., assignor to Recon Corporation, Park Ridge, Ill.

Filed Aug. 23, 1973, Ser. No. 390,958
Int. Cl.² B03C 1/16
U.S. Cl. 209—215 20 Claims



20. A method of automatically separating magnetically attracted, reusable tableware and the like, from non-magnetic food and paper waste in a quick and efficient manner including the steps of:

placing the unseparated tableware and food and paper waste on a conveyor means;

establishing a magnetic field by magnet means positioned adjacent said conveyor means to radiate said magnetic field generally transversely to the surface of said conveyor means;

moving said conveyor means and said unseparated tableware and waste carried thereon into said magnetic field such that said tableware is positively attracted toward said magnet means and thereby magnetically separated from said non-magnetic substances;

extending said magnetic field by magnetically induced means in order to transport said tableware beyond the point to which it would be transported by the effects of said magnet means alone; and

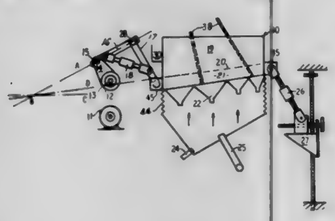
automatically shunting the extended magnetic field through keeper means periodically brought adjacent said induced means, such that said tableware is thereby positively released at a desired point.

3,926,793

MINERAL SEPARATION APPARATUS

James Charles Wise, 25 Third Ave., Epping West, New South Wales 2121, Australia

Filed Apr. 11, 1973, Ser. No. 350,241
Claims priority, application Australia, Apr. 12, 1972, 8578/72
Int. Cl.² B03B 5/12
U.S. Cl. 209—426 10 Claims



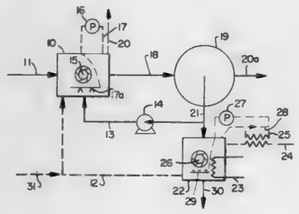
1. A mineral separating apparatus comprising a housing containing therein a substantially elongated planar porous means, said porous means being inclined relative to the horizontal and vertical planes such that there is an upper and lower lateral and longitudinal side, means for adjustably controlling the said incline of the said porous means, oscillating means to oscillate said porous means in a direction parallel to the lateral side, a power means connected to said oscillating means whereupon initiation of said power means said porous means oscillates in a substantially sinusoidal or arcuate path, said porous means being further immersed in a body of liquid such that by the action of the oscillations and said body of liquid mineral feed which is introduced onto said porous means travels upwardly on the porous means in a direction substantially parallel to the lateral side whereby the coarsest highest density particles of the feed are arranged substantially along the upper longitudinal side whilst the fine least dense particles are arranged along the lower longitudinal side, and whereby the material product travels downwardly in a direction substantially transverse to the direction of oscillation to discharge at a product outlet.

3,926,794

WARM SLUDGE DIGESTION WITH OXYGEN

Nathan P. Vahldieck, Snyder, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 28, 1974, Ser. No. 484,255
Int. Cl.² C02C 1/06
U.S. Cl. 210—5 10 Claims



1. In a method for BOD-removal from wastewater in a covered aeration zone and activated sludge in a covered digestion zone by aeration with oxygen gas, the improvement comprising:

a. introducing first gas comprising at least 40% oxygen (by volume) and mixing same as the aeration gas with the wastewater and recycled sludge in said covered aeration zone to form mixed liquor and simultaneously continuously recirculating one of such fluids against the other fluids in the aeration zone in sufficient quantity and rate to maintain the dissolved oxygen content (DO) of the mixed liquor at least at 0.5 mg/l, with the mixed liquor temperature at least 15°C, separating the mixed liquor into purified liquid and activated sludge, and discharging unconsumed oxygen-containing gas from the aeration zone at rate such that its oxygen content is not more than 40% of the total oxygen introduced to the digestion zone;

b. returning at least about 85% by weight of the activated sludge to the aeration zone as said recycled sludge;

c. providing second gas comprising at least 80% oxygen (by volume) and including part of said first gas;

d. introducing said second gas and the unreturned activated sludge from step (b) to the digestion zone, mixing same and simultaneously recirculating one of such fluids against the other fluids in the digestion zone in sufficient quantity and rate to maintain the dissolved oxygen content of sludge at least at 2 mg/l and the total suspended solids content (MLSS) of the sludge at least at 15,000 mg/l.

e. maintaining the sludge in the digestion zone during step (d) at temperature of at least 25°C and also at least 10°C warmer than the mixed liquor temperature in step (a) but below 75°C;

f. continuing step (e) for sufficient solids retention time (duration) to oxidize at least 60% of the biodegradable volatile suspended solids content of the sludge introduced to the digestion zone, and thereafter separately discharging stabilized sludge residue and oxygen-partially depleted digestion gas of at least 40% oxygen purity at rate such at its oxygen content is at least 35% of the oxygen content of said second gas entering the digestion zone; and

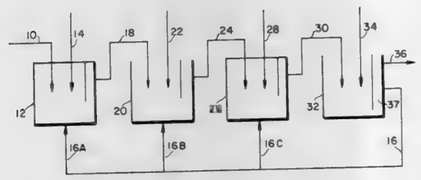
g. providing said oxygen-partially depleted digestion gas from step (g) as at least the major part of said first gas introduced step (a).

3,926,795

BIOLOGICAL TREATMENT OF PLANT WASTE STREAMS TO REMOVE CYANURIC ACID

Jerome Saldick, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed May 23, 1974, Ser. No. 472,836
Int. Cl. C02c 5/10
U.S. Cl. 210—11 2 Claims



1. The method of rapidly decomposing cyanuric acid contained in an aqueous mixture which comprises holding the aqueous mixture at a pH of about 5.0 to 8.5 in contact with an active biomass containing bacteria derived from natural water, sewage or soil, at least a portion of which biomass is under anaerobic conditions, for a time sufficient to hydrolyze the cyanuric acid to CO_2 and ammonia, maintaining enough nutrient in the mass to feed the bacteria, while maintaining the mass at a temperature above freezing and below 50°C.

3,926,796

PREPARATION OF ACTIVATED SLUDGE AND TREATMENT OF WASTE WATER THEREWITH

Yukio Fujita, Yamadanishi; Iwao Kawasaki, Kurashiki, and Hideo Nishikawa, Toyonaka, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sept. 23, 1974, Ser. No. 508,142
Claims priority, application Japan, Sept. 25, 1973, 48-108182
Int. Cl.² C02C 1/06
U.S. Cl. 210—11 5 Claims

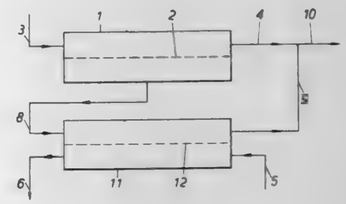
1. A process for the preparation of an activated sludge capable of assimilating a solution of polyvinyl alcohol resins which comprises subjecting an ordinary activated sludge to acclimation under conditions of 15° to 35°C. in temperature, 7.0 to 8.5 in pH and 1 to 6 p.p.m. in dissolved oxygen for 5 to 15 hours with agitation in a prepared by dissolving at least one member selected from the group consisting of polyvinyl alcohol having not less than 70% by mole of a degree of hydrolysis, water-soluble acetalizated polyvinyl alcohol, water-soluble urethanated polyvinyl alcohol, water-soluble hydrolyzed copolymer of vinyl acetate and ethylene or propylene water-soluble hydrolyzed copolymer of vinyl acetate and maleic acid, crotonic acid, acrylic acid or acrylic amide, partially acetalizated one of the above hydrolyzed copolymers and urethanated one of the above hydrolyzed copolymers in an amount of 0.005 to 0.6 kg./kg. mixed liquor suspended solid/day and at least one solution selected from the group consisting of acetic acid, propionic acid, potassium, sodium, calcium or ammonium salts thereof, methyl, ethyl, propyl or butyl esters thereof, amides thereof, malic acid, citric acid, fumaric acid, oxalic acid and lactic acid, in the range of biochemical oxygen demand loading of 0.05 to 0.3 kg./kg. mixed liquor suspended solid/day.

3,926,797

SEPARATION APPARATUS USING ULTRAFILTRATION

Claude Gigou, Vernaison, and Jean-Pierre Quentin, Lyon, both of France, assignors to Rhone-Poulenc, S.A., Paris, France

Filed Mar. 15, 1972, Ser. No. 234,941
Claims priority, application France, Mar. 17, 1971, 71.09359
Int. Cl.² B01D 31/00, 13/00
U.S. Cl. 210—22 9 Claims



1. Apparatus for the purification of a liquid, which comprises:

a. an ultrafiltration cell and an ultrafiltration membrane, dividing said cell into two compartments, an inlet and an outlet for said first compartment for the liquid to be treated and an outlet for the ultrafiltered liquid for said second compartment;

b. means for establishing in the first compartment of said ultrafiltration cell a pressure higher than that prevailing in the second compartment of the cell; and

c. a dialyser and an ionic membrane separating said dialyser into two compartments, an inlet for said first compartment connected to the outlet from the second compartment of the ultrafiltration cell and an outlet for said first compartment connected to the outlet of the first compartment of the ultrafiltration cell, the second compartment of said dialyser being itself equipped with an inlet and an outlet, said ionic membrane having a selective permeability greater than 50% and a urea/NaCl selectivity greater than 5.

3,926,798

REVERSE OSMOSIS MEMBRANE

John E. Cadotte, St. Paul, Minn., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 17, 1974, Ser. No. 515,725
Int. Cl.² B01D 31/00, 13/00
U.S. Cl. 210—23 6 Claims

1. A process for preparation of a composite reverse osmosis membrane comprising:

coating a microporous support with an aqueous solution of furfuryl alcohol and an acid catalyst capable of polymerizing the furfuryl alcohol;

heating to polymerize the furfuryl alcohol; and

curing at a temperature of about 110° to 160°C for a period of about 1 to 30 minutes.

3,926,799
SUPPORT FOR DYNAMIC MEMBRANE

David G. Thomas; William R. Mixon, and Phil H. Hayes, all of Oak Ridge, Tenn., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

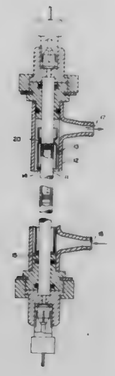
Continuation of Ser. No. 383,234, Oct. 3, 1972, abandoned. This application Sept. 24, 1974, Ser. No. 508,782
Int. Cl.² B01D *31/00, 13/00*
U.S. Cl. 210—23 6 Claims

1. A method for preparation of a composite support for a dynamic hyperfiltration membrane comprising coating a porous substrate with an essentially uniform layer of zirconium oxide by applying to the substrate a layer of an aqueous slurry of zirconium oxide, the particle size of the zirconium oxide being about 1.5 to 30 microns and the concentration of the zirconium oxide in the slurry being about 30 to 60 weight percent; drying at room temperature; and firing at a temperature of 900° to 1400°C to form a durable layer of zirconium oxide on the substrate.

3,926,800
TEMPERATURE STABILIZED WATER JACKET CHROMATOGRAPHIC COLUMN

Donald E. Stephens, Palo Alto, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 25, 1974, Ser. No. 436,437
Int. Cl.² B01D *15/08*
U.S. Cl. 210—31 C 8 Claims



1. In an analysis system having an analytical chromatography column, the improvement which comprises, in conjunction with means for avoiding fluctuations of column temperature which have long time cycles:

spaced tubes which include an inner tube surrounding the column but spaced therefrom with a relatively high thermal capacity medium between the column and the inner tube,

a water jacket constituting the means for avoiding temperature fluctuations which have long time cycles, and located around the column encompassed by the tube, whereby water from the water jacket is maintained between the column and the tubes to form the relative high thermal capacity medium, and

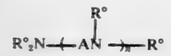
means for limiting flow of water between the column and the inner tube to retain a relatively high thermal capacity medium between the column and the inner tube to supplement the thermal capacity of the column and minimize temperature-induced variations in volume of the column, and thus minimizing temperature-induced variation in rate of flow from the column.

3,926,801
METHYLENE PHOSPHONATES OF GLYCIDYL REACTED POLYALKYLENE POLYAMINES AND USE IN SCALE AND CHELATION

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 129,955, March 31, 1971, Pat. No. 3,799,893. This application Dec. 11, 1973, Ser. No. 423,671
Int. Cl.² C02B *5/06*
U.S. Cl. 210—58 8 Claims

1. A process for inhibiting scale formation in aqueous systems by chelation or sequestration which comprises adding to said system a methylene phosphonate of glycidyl compound reacted polyalkylene polyamine, said methylene phosphonate of glycidyl compound reacted polyalkylene polyamine having nitrogen-bonded methylene phosphonate units and nitrogen-bonded glycidyl compound reacted units, said methylene phosphonate being of the formula



where n is 1–100, A is $(CX_2)_m$ where m is 2–10 and X is hydrogen or alkyl, with the proviso that A is the same or different when n is 2 or more, and R° is a methylene phosphonate unit, glycidyl compound reacted unit or hydrogen.

3,926,802
METHOD FOR REMOVING BOTH ORGANIC MATTER AND BACTERIA FROM A BODY OF WATER

Joel Hedgpeth, Clovis, Calif., assignor to Water Science Inc., Calif.

Filed May 28, 1974, Ser. No. 473,577
Int. Cl.² C02B *1/36*
U.S. Cl. 210—62 1 Claim

1. In a method of treating a body of water substantially confined in a swimming pool with iodine, the improvement comprising the steps of:

introducing into a selected body of water substantially confined in a swimming pool, upstream of the filter medium for a filtration system provided for the pool, a suitable quantity of a mixture of complexes including substantially equal parts by weight of cuprous iodide and copper carbonate for establishing in the body of water a concentration of copper ions above 0.015 parts per million but less than 2.0 parts per million copper ions and adding to the body of water a sufficient quantity of an oxidant selected from a class of oxidants, including chlorine, for causing elemental iodine to be released from the cuprous iodide in quantities sufficient for maintaining in solution in said body a concentration of free iodine above 0.1 parts per million but less than 5.0 parts per million, whereby free iodine is slowly released from the cuprous iodide in the presence of chlorine unattended by discoloration of the water for thus rendering the body of water safe and pleasing in appearance.

3,926,803
CYANIDE ENHANCEMENT OF THE PHOTOOXIDATION OF ACETIC ACID

Craig B. Murchison, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 6, 1975, Ser. No. 538,696
Int. Cl.² C02B *3/08*
U.S. Cl. 210—63 6 Claims

1. In a method of oxidizing carboxylic acids present in an aqueous solution of pH 4 or less by exposure to light waves ranging in length from about 2000 A to 5800 A in the presence of oxygen and a catalytic quantity of from about 1 to about 15 parts per million of ferric ions, whereby carbon dioxide is released and the total organic carbon of the solution is thereby reduced, the improvement which comprises: further catalyzing said oxidation by introducing into said solution a quantity of cyanide ions sufficient to provide, in said solution, a mole ratio of cyanide ions to ferric ions of at least about 5 to 1.

3,926,804
FLUID FILTRATION AND SAMPLING

Charles Laird McClure, Malvern, Pa., assignor to Pro-Tech Inc., Malvern, Pa.

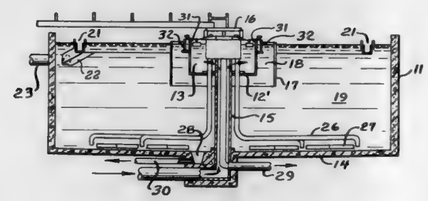
Division of Ser. No. 262,221, June 13, 1972, Pat. No. 3,840,123. This application Oct. 7, 1974, Ser. No. 512,515
Int. Cl.² B01D *33/06*
U.S. Cl. 210—76 6 Claims

1. Liquid sampling comprising withdrawing liquid from a body thereof, filtering the withdrawn liquid through cylindrical foraminous means by establishing therewithin at least one influx compartment and at least one efflux compartment, admitting the withdrawn liquid radially into the influx compartment through a portion of the foraminous means intermediate the body of liquid and the influx compartment and thereby filtering the admitted liquid, exhausting such filtered liquid in an axis-paralleling direction from the influx compartment, collecting a sample of the filtered withdrawn liquid, recirculating withdrawn liquid in the opposite direction through the foraminous means by admitting into the efflux compartment in an axis-paralleling direction withdrawn filtered liquid not so collected, exhausting such liquid radially from the efflux compartment through a portion of the foraminous means intermediate the efflux compartment and the body of liquid, and interchanging the respective compartments and their contiguous portions of the foraminous means and thereby backflushing such means.

3,926,805
DISTRIBUTION INLET SYSTEM WITH AUTOMATIC TANGENTIAL-GATE ADJUSTMENT

James Donald Walker, Aurora, Ill., assignor to Peabody Galion Corporation, New York, N.Y.

Filed Mar. 9, 1973, Ser. No. 339,900
Int. Cl.² B01D *21/24*
U.S. Cl. 210—101 12 Claims

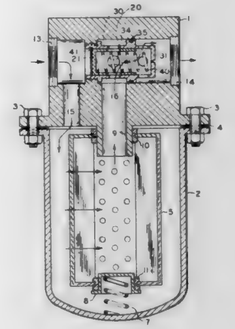


1. A distribution inlet system for a flocculation chamber and the like and which may be used with varying rates of liquid inflow into the inlet system, including an entry chamber provided with means for supplying the inflow liquid to be distributed, and connected to a flocculation chamber through a plurality of ports controlled by angularly disposed adjustable gates for constricting the flow area for flow through the ports and past the gates to ensure an effective velocity and for deflecting the flow to set up an over-all rolling action in the flocculation chamber; and automatic means for adjusting the gates to increase the flow area and decrease the angularity of deflection with increased inflow into the entry chamber.

3,926,806
NO-BYPASS FILTER SYSTEM

Ronald M. Gaudet, Cheshire, Conn.; Samuel S. Michell, Monroeville, and Michael J. Kozy, Pittsburgh, both of Pa., assignors to Schroeder Brothers Corporation, McKees Rocks, Pa.

Filed June 10, 1974, Ser. No. 477,982
Int. Cl.² B01D *33/40*
U.S. Cl. 210—137 4 Claims



1. In a filter system for a fluid activated system comprising a filter head, canister and filter element, said filter element arranged to divide the canister into an inlet and outlet side, said filter head having an inlet port for directing fluid to the inlet side of said canister and an outlet port for delivering fluid from the outlet side of the said canister, the improvement comprising a means for maintaining the pressure drop across the filter element constant comprising a piston cylinder having an open and closed end, a hollow cylindrical piston positioned in said piston cylinder having a closed end disposed generally at the open end of the cylinder and an open end disposed generally at the closed end of the cylinder, means for biasing the closed end of the hollow piston away from the closed end of the cylinder, openings being provided in the sidewall of the cylinder and the hollow piston for permitting flow into the piston and cylinder and openings being provided in the sidewall of the piston near the closed end for permitting flow out of the cylinder, said piston and cylinder arranged such that the outside of the closed end of the piston cylinder is in communication with the inlet port and the piston and cylinder form part of the flow path between the outlet side of the filter element and the outlet port such that as the filter collects contaminants the pressure at the inlet port increases and the pressure drop across the filter element also increases until the cylindrical piston moves within the piston cylinder to restrict the flow of fluid from the outlet side of the filter element to the outlet port, thus preventing further pressure drop across the filter element.

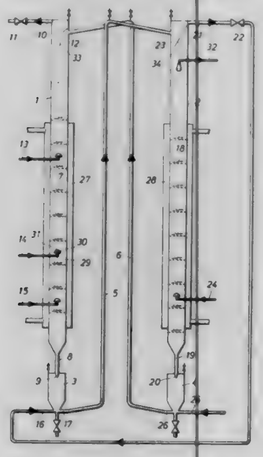
3,926,807
DEVICE FOR THE CONTINUOUS TREATMENT OF LIQUID STREAMS

Heinz Evers, Linkenheim, and Werner Knoch, Walzbachtal, both of Germany, assignors to Gesellschaft zur Wiederaufarbeitung von Kernbrennstoffen m.b.H., Leopoldshafen, Germany

Filed June 22, 1973, Ser. No. 372,583
Claims priority, application Germany, June 23, 1972, 2230714
Int. Cl. B01d *35/18*
U.S. Cl. 210—177 23 Claims

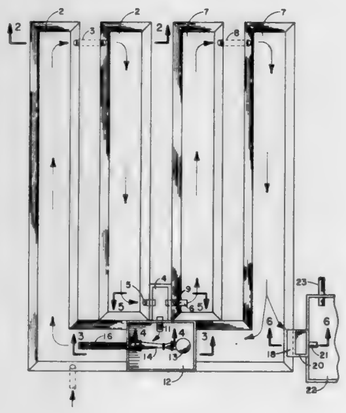
1. A device for the continuous treatment of a liquid stream with solids that are continuously circulated from top to bottom in a treatment column in countercurrent flow to the liquid stream comprising:

a. a treatment column having:
1. at least one plate;
2. a heating and cooling jacket;
3. means for finely dispersed feeding of a solution into the upper part of the treatment column for conditioning the solids carried from top to bottom in the treatment column prior to the contact of the solids with the liquid stream to be treated;
4. means for finely dispersed feeding of the liquid to be treated to the central part of the treatment column;
5. means for finely dispersed feeding of a washing solution to the bottom of the treatment column for removing residues of the liquid stream that is treated from the solids;
6. an inlet for regenerated solids at the top of the treatment column;



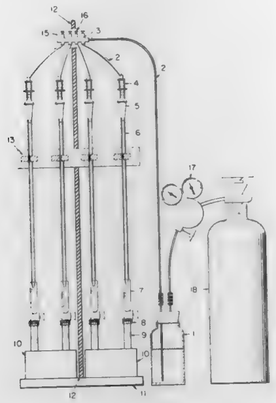
7. an outlet at the top of the treatment column for removing treated liquid;
b. a first counterpressure chamber connected to the bottom of the treatment column for receiving washed and loaded solids from the treatment column, said first counterpressure chamber including:
1. an inlet at its bottom for receiving a transport liquid required for circulation of the solids out of said first counterpressure chamber;
2. an outlet at its bottom for removal of loaded and washed solids;
c. a regeneration column for regenerating the solids used in the treatment column, said regeneration column including:
1. at least one plate;
2. a heating and cooling jacket;
3. means in the bottom of the column for finely dispersed feeding of a regeneration solution for regenerating the solids;
4. an inlet at the top of the regeneration column for receiving loaded and washed solids;
5. an outlet at the upper end of the regeneration column for the regenerating solution;
6. an outlet for transport liquid at the top of the regeneration column;
d. a second counterpressure chamber connected to the bottom of the regeneration column for receiving regenerated solids from the regeneration column, said second counterpressure chamber including:
1. an inlet at its bottom for receiving a transport liquid which circulates the regenerated solids from the second counterpressure chamber to the treatment column;
2. an outlet at its bottom for removal of the regenerated solids;
e. a first valveless connection line connecting the outlet for regenerated solids at the bottom end of the counterpressure chamber of the regeneration column with the inlet for the solids at the top of the treatment column; and
f. a second valveless connection line connecting the outlet for removing solids at the bottom end of the counterpressure chamber of the treatment column with the inlet for the loaded and washed solids at the top of the regeneration column.

3,926,808
SEWAGE TREATMENT SYSTEM
Clarence C. Goddard, 902 21st St., N.W., Albuquerque, N. Mex. 87104
Filed Sept. 7, 1973, Ser. No. 395,253
Int. Cl.² C02C *1/08*
U.S. Cl. 210—195 **3 Claims**



1. An aerobic, aeration, ultraviolet ray, sewage treatment system to be installed in any size or type of housing, single or community, comprising in combination:
a plurality of imperviously lined influent, recirculation, aeration channels, connected in series;
a raw sewage inlet to the first of said influent channels;
a divider box;
an inlet from the final influent channel to said divider box;
a plurality of imperviously lined effluent, aeration channels, connected in series;
an outlet from the divider box to the first of said effluent aeration channels;
a recirculating sump;
an outlet from the divider box to said recirculating sump;
a recirculating sump pump;
a venturi tube aspirator with an aspirator air inlet tube for receiving the discharge from said sump pump and for discharging into the first influent recirculation, aeration channel, to diffuse air and seeding aerobic bacteria into the raw and recirculated sewage;
a screened opening from the final effluent aeration channel into the recirculation sump to dilute the recirculated and raw sewage;
a discharge trough;
an outlet weir to permit the effluent to be discharged from the final effluent channel into said discharge trough;
a scum skimmer for blocking discharge of scum through said outlet weir into said discharge trough; and
a discharge pipe from the discharge trough for connection with natural drainage.

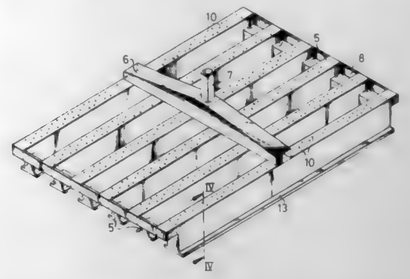
3,926,809
MULTI-COLUMN FRACTIONATOR
Roosevelt J. Jones, 3854 Blodgett, Houston, Tex. 77004
Filed Oct. 10, 1973, Ser. No. 396,356
Int. Cl.² B01D *15/08*
U.S. Cl. 210—198 C **3 Claims**



1. In an apparatus for analyzing samples of nucleotides using a plurality of chromatograpic columns the improvement comprising in combination:
interchangeable reservoir means, each said reservoir holding an elution solvent of a different ph concentration;
a set of four chromatographic columns; a four-way multivalve control which disperses equally elution solvent of the same pH concentration on to each of said four chromatography columns at the same moment;
said columns containing ion-exchange resin capable of separating a micture of nucleotides; means connecting said valve between said reservoir and said columns;
a burette for measuring eluent volume collected from each of said chromatographic columns;
a set of collecting tubes held upright in test tube holder means;
pressure means connected to said reservoir means for forcing said elution solvent through said valve means and into each of said columns.

3,926,810
APPARATUS FOR THE AERATION OF EFFLUENT WITH OXYGEN-CONTAINING GAS
Hugo Gudernatsch; Gerhart Jaekel, both of Hermulheim; Wolfgang Kroll, Gross-Konigsdorf; Volker Oden, Cologne, and Konrad Reinhardt, Erftstadt Kierdorf, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed June 21, 1974, Ser. No. 481,810
Claims priority, application Germany, Sept. 8, 1973, 2345405
Int. Cl.² B01F *3/04*; **C02C** *1/12*
U.S. Cl. 210—220 **6 Claims**

1. An apparatus for aerating effluents in an aeration basin, the basin being comprised of a plurality of aeration boxes placed parallel to each other, spaced apart from each other and connected together by a manifold, said aeration boxes having flattened horizontal upper sides and said upper sides being penetrated by a plurality of gas outlets, the apparatus being characterized in that the aeration boxes having a rectangular cross-sectional area and terminal surface areas, said aeration boxes comprise plastic material and are open at their bottoms; in that the aeration boxes are formed with outwardly directed flanges; in that weld seams are disposed upon said terminal surface area; in that each of the gas outlets is provided from below with a central counterbore including an



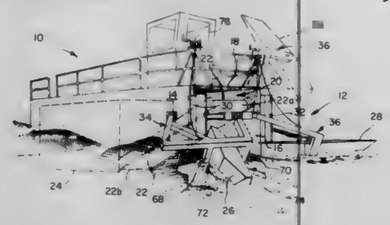
angle α of at least 90°; and in that each counterbore leaves a residual wall thickness for the plastic material between 0.5 and 2 mm.

3,926,811
FILTER-PLATE ASSEMBLY FOR FILTER PRESS
Wolfgang Ramsteck, Staig-Weinstetten, Germany, assignor to Lenser Verwaltungs-GmbH, Senden, Germany
Filed Oct. 2, 1974, Ser. No. 511,184
Claims priority, application Germany, Nov. 24, 1973, 2358578
Int. Cl.² B01D *25/12*
U.S. Cl. 210—231 **10 Claims**



1. A filter-plate assembly for a filter press comprising a pair of like parallel plates each unitarily formed with:
a generally rigid and planar central panel having an outer peripheral edge, the panels of said pair each having opposite faces turned toward respective filter chambers and adjacent faces in face-to-face relationship;
rigid frames each substantially coplanar with and surrounding the respective peripheral edge of each panel, said frames being in sealing relationship with one another;
fluid inlet means within said frames and in fluid communication with a space adapted to be formed between said faces in face-to-face relationship whereby fluid introduced into said space through said fluid inlet means can displace said rigid panels oppositely toward the respective filter chambers; and
flexible web structures sealingly connected to peripheral edges of each of said generally rigid and planar central panels and to inner peripheral edges of the respective rigid frame surrounding each panel, said flexible web structures being constructed and arranged to flexibly yield upon introduction of a fluid into said space to define between said plates a substantially closed actuation chamber.

3,926,812
FLOATAGE CONCENTRATING EQUIPMENT FOR NAUTICAL FLOATAGE RECOVERY APPARATUS
Robert W. Neal, Watertown, Mass., assignor to JBF Scientific Corporation, Burlington, Mass.
Filed Sept. 3, 1974, Ser. No. 502,393
Int. Cl.² E02B *15/04*
U.S. Cl. 210—242 **9 Claims**



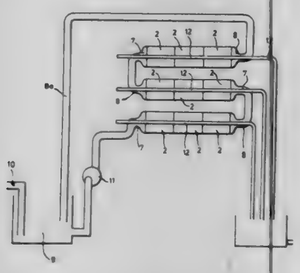
8. In buoyant nautical apparatus for the concentration and recovery of floatage from a body of water and having a vessel with a floatage-receiving bow opening and having a pair of buoyant elongated sweeps deployed forward of the vessel bow in a divergent configuration for concentrating floatage toward such opening, the improvement comprising

A. a pair of mounting booms, each of which

1. is associated with one such sweep and is mountingly affixed thereto with a pivotal connection for relative sweep-boom rotation about an axis transverse to the elongation of that sweep,
2. is mountingly affixed to said vessel with a pivotal connection for relative boom-vessel rotation about a further axis parallel to, and spaced vertically above, the associated axis of sweep-boom rotation,
3. disposes the associated boom aligned along the elongation thereof with the vessel bow opening,

so that relative sweep-vessel motion of each such sweep is constrained about said axes associated therewith and moves such sweep relative to the vessel opening along a path that extends into such opening without sweep-vessel interference.

3,926,813
DEVICE FOR MEMBRANE FILTRATION
Warner Jan de Putter, Hardenberg, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands
Filed June 20, 1974, Ser. No. 481,251
Claims priority, application Netherlands, June 21, 1973, 738670
Int. Cl.² B01D *31/00*
U.S. Cl. 210—321 **7 Claims**



1. Apparatus for membrane filtration comprising:

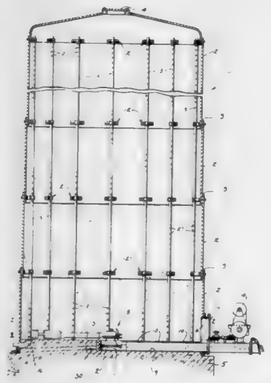
a plurality of resin blocks arranged in spaced relation to each other, said blocks having a plurality of continuous holes disposed therethrough, the holes of each block being longitudinally aligned with the holes of the blocks adjacent thereto, the walls of said continuous holes being liquid impermeable;

a tubular membrane disposed in each of said holes and supported by said blocks for filtering a liquid passing therethrough;

sealing means associated with said blocks for enclosing the space between adjacent blocks and forming a purified liquid collecting zone therein; and

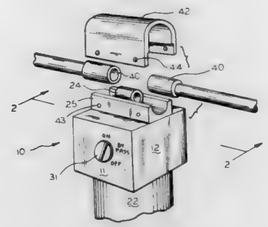
tubular means extending through said blocks for removably interconnecting said blocks and for discharging purified liquid collected, said tubular means having a plurality of openings disposed through the wall thereof whereby the purified liquid collected is withdrawn.

3,926,814
HIGH MOISTURE MATERIAL DRAINAGE STRUCTURE AND METHOD
Robert E. Hogarth, Apopka, Fla., assignor to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.
Filed Apr. 24, 1974, Ser. No. 463,528
Int. Cl.² E04H *7/30*
U.S. Cl. 210—323 **1 Claim**



1. In a container for the storage and drainage of high moisture material, a foundation providing a floor, a generally high tank having a metal wall secured to the foundation upon said floor and a normally closed opening at the top of the tank for entry of the material into the storage chamber provided by the tank, a plurality of circumferentially spaced thermoplastic drain pipes extending vertically of the inside of the wall of the tank for substantially the full heighth of the tank, means securing said pipes to said wall to be carried thereby, each of said pipes having vertically spaced apertures therein provided substantially from the top to the bottom of each pipe for the passage of liquid from the stored material into said pipes, a manifold extending around the tank at the bottom thereof, separate elbows at the bottom of the tank disposed to receive liquid from each of said vertical pipes, said elbows being cast in the foundation and extending substantailly flush with the top of the floor and connected to said manifold, and said elbows being of a greater diameter than the drain pipes and each drain pipe being freely received within an elbow and the diameter of each elbow being selected so that there is sufficient clearance for drainage liquid to pass from the lower portion of the tank but insufficient for silage to seep between each respective elbow and pipe.

3,926,815
READILY ATTACHABLE WATER FILTER WITH CUTOFF VALVE
Robert M. McClory, Los Angeles, Calif., assignor to Aqua-Chem, Inc., Milwaukee, Wis.
Continuation of Ser. No. 402,291, Oct. 1, 1973, abandoned. This application Feb. 19, 1975, Ser. No. 550,999
Int. Cl.² B01D *35/02, 29/42*
U.S. Cl. 210—424 **5 Claims**



1. A fluid filtering system comprising:

a filter housing including a filter means,

a mounting block coupled to said filter housing, said mounting block including conduit means for directing supply fluid to said filter means and for directing filtered fluid from said filter means,

elongate trough means disposed on said mounting block, said trough means being generally semi-circular in cross-section,

generally tubular supply pipe sealing means disposed at one end of said trough means,

generally tubular filtered fluid exhaust pipe sealing means disposed at the opposite end of said trough means,

manifold means disposed intermediate said pipe sealing means, said manifold means including an inlet coupling said supply pipe sealing means and said supply fluid conduit means of said mounting block and an outlet coupling said exhaust pipe sealing means and said filtered fluid conduit means of said mounting block,

means within said manifold means for preventing fluid flow from said manifold inlet to said manifold outlet other than through said conduit means, and

cover means for said trough means which when attached to said trough means forms a leakproof seal around said supply and exhaust pipe sealing means and said manifold means.

3,926,816
TEXTILE FIBER LUBRICANTS
Norman R. Cohen, Charlotte, N.C., and Demosthenes S. Syrmopoulos, Cohasset, Mass., assignors to George A. Goulston Company, Scituate, Mass.
Continuation-in-part of Ser. No. 39,852, May 22, 1970, abandoned. This application July 23, 1973, Ser. No. 381,762
Int. Cl.² D06M *13/32;* **C10M** *1/46*
U.S. Cl. 252—8.9 **10 Claims**

1. A coning oil consisting essentially of from about 50 to about 95% of an inert carrier liquid and from about 5 to about 50% of a textile-fiber lubricant base, said lubricant base consisting essentially of:

A. from about 2 to about 20% of sodium or potassium ethoxylated alkyl phosphate ester, said alkyl radical having 6–18 carbon atoms said ester being ethoxylated with from about 2 to about 6 moles of ethoxy groups per mole of ester;

B. from about 15 to about 50% alkyl ester of a fatty acid, said alkyl radical having 10–18 carbon atoms and said fatty acid containing 6–22 carbon atoms;

C. from about 25 to about 45% polyoxyethylene lauryl ether comprising a reaction product of lauryl alcohol with from 3–6 moles of ethoxy groups per mole of lauryl alcohol; and,

D. from about 5 to about 25% polyoxyethylene tridecyl ether comprising a reaction product of tridecyl alcohol with from 3–9 moles of ethoxy groups per mole of tridecyl alcohol.

3,926,817
GLIDANTS AND PROCESS FOR PREPARING THE SAME
Eiichi Nakajima; Tadashi Morioka; Kozo Kurihara, and Takashi Kobayashi, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan
Continuation of Ser. No. 336,372, Feb. 27, 1973, abandoned. This application July 29, 1974, Ser. No. 492,786
Claims priority, application Japan, Mar. 27, 1970, 45-25756
Int. Cl.² C10M *1/40, 3/34, 5/16, 7/22*
U.S. Cl. 252—11 **9 Claims**

1. A glidant comprising a major amount of a glidant substance selected from the group consisting of a higher fatty acid, a calcium salt thereof, a magnesium salt thereof, and a solid hydrogenated vegetable oil, treated with a solvent solution containing a surface active agent in an amount sufficient to improve dissolution of the glidant substance, said solvent being a solvent for said surface active agent and a non-solvent for said glidant substance, followed by drying and pulverization.

3,926,818
COMPOSITE BEARING MATERIALS
Clarence E. Albertson, Villa Park, and Robert H. Krueger, Palatine, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Dec. 16, 1974, Ser. No. 532,781
Int. Cl.² C10M *5/00, 7/00*
U.S. Cl. 252—12.4 **5 Claims**

1. A pre-form composite useful for making bearing structures consisting of a core or center comprising a fiber glass filled resin and at least one outer surface comprising milled fiber glass and solid lubricant filled resin.

2. The pre-form composite of claim 1 wherein the core is comprised of a phenolic resin and glass fiber, and the outer surface is comprised of a phenolic resin and milled glass fiber and solid lubricant selected from the group graphite, poly(tetrafluoroethylene), molybdenum disulfide, and mixtures thereof.

3,926,819
LIQUID LUBRICANTS CONTAINING CRYSTALLINE SULFUR AND A SULFURIZED FAT
Edwin N. Ladov, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 343,612, March 21, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 518,312
Int. Cl.² C10M *3/06, 1/38, 3/32, 5/28*
U.S. Cl. 252—31 **10 Claims**

1. A sulfurized oil containing a major proportion of a liquid lubricant, between about 0.1 and about 5% by weight of crystalline sulfur and a sufficient amount of a sulfurized fat to effectively disperse the crystalline sulfur in the liquid lubricant, said sulfur being introduced into said liquid lubricant, in the presence of said sulfurized fat, at a temperature within the range of about 180°F. to about 220°F and the resulting mixture being maintained at said temperature until substantially complete dissolution of the sulfur has occurred.

5. A process for treating a liquid lubricant composition selected from the group consisting of oils of lubricating viscosity and greases thereof, which comprises heating amorphous sulfur to the crystalline hydrocarbon-soluble form and incorporating crystalline sulfur thus produced into said liquid lubricant composition at a temperature between about 180°F to

about 220°F. in the presence of a dispersing agent comprising a sulfurized fat.

3,926,820

GREASE COMPOSITIONS

Joseph J. Dickert, Jr., Lower Makefield Township, Pa., and El-Ahmadi I. Heiba, Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sept. 23, 1974, Ser. No. 507,024
Int. Cl.² C10M 1/40, 3/34, 5/22, 7/38
U.S. Cl. 252—33 12 Claims

1. A grease composition comprising a major proportion of an oil of lubricating viscosity and a thickening amount of a salt of a C-alkyl or alkenyl succinimidoarylsulfonic acid having from about 14 to about 30 carbon atoms in the alkyl or alkenyl group.

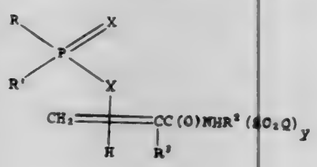
3,926,821

PHOSPHORUS, NITROGEN AND SULFO-CONTAINING ADDITIVES

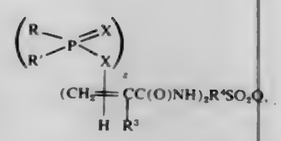
William Monroe LeSuer, Cleveland, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Filed Dec. 12, 1973, Ser. No. 424,246
Int. Cl.² C10M 1/48
U.S. Cl. 252—46.7 8 Claims

1. A lubricating oil comprising a major amount of oil and a minor amount of at least one additive sufficient to impart improved load-carrying properties thereto wherein said additive is a sulfo-, nitrogen- and phosphorus-containing additive selected from those corresponding to the formulae:



and



and mixtures of two or more such additives wherein z is one or two, each X is independently oxygen or divalent sulfur, R is hydrogen or a hydrocarbyl, hydrocarbyloxy, or hydrocarbyl mercapto group of about one to about 30 carbon atoms, and R′ is XM or R, M being a hydrogen, an equivalent of a metal or ammonium cation, with the proviso that the total number of carbon atoms in both R and R′ is at least two, y is one or two, each R^3 is independently hydrogen or lower alkyl group of one to seven carbon atoms, R^2 is di- or trivalent hydrocarbyl group having one to 18 carbon atoms, R^4 is a trivalent hydrocarbyl group having one to 18 carbon atoms, and Q is selected from the group consisting of —OH, —OR^3, —OM, —O(Alkylene—O)$_n$—R^3, —$N(R^3)_2$, —NR^3 (Alkylene-NR^3)$_n$$R^3$, —$OH(R^3)_4$, and —$ONR_3^3$- (Alkylene-$NR^3$)$_n$ R^3, wherein n has an average value of about one to about 10, M is as defined above and the alkylene group has from one to 10 carbon atoms.

3,926,822

NOVEL SULFUR-CONTAINING COMPOSITIONS

Emile Najib Habiby, Willowick, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Continuation of Ser. No. 178,803, Sept. 8, 1971, abandoned. This application Jan. 14, 1974, Ser. No. 433,338
Int. Cl.² C10M 1/38, 3/32, 5/28, 7/36
U.S. Cl. 252—48.6 11 Claims

1. A lubricating composition comprising a major amount of a lubricating oil and a minor amount, effective to improve extreme pressure or "slip" properties or inhibit rust formation, of a sulfurized composition of matter prepared by reacting, at about 100°–250°C., sulfur with a mixture comprising (A) 100 parts by weight of at least one fatty acid ester of a polyhydric alcohol, (B) about 2–50 parts by weight of at least one fatty acid, and (C) about 25–400 parts by weight of at least one aliphatic α-olefin containing about 8–36 carbon atoms.

3,926,823

TURBINE OIL COMPOSITIONS

Albert M. Durr, and Robert A. Krenowicz, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 7, 1974, Ser. No. 512,766
Int. Cl.² C10M 1/10, 3/02, 5/02, 7/02
U.S. Cl. 252—49.9 17 Claims

1. A turbine oil composition comprising a major amount of a mineral or synthetic hydrocarbon base lubricating oil and the following combination of materials in the amounts specified, as weight percent of total composition:

a. about 0.1 to about 1.0 — copolymer of 1 mole N-vinyl-2-pyrrolidone and 0.5 to 12 moles of an α-olefin containing 8 to 30 carbon atoms;
b. about 0.05 to about 1.5 — triphenyl phosphite or trialkyl-substituted phenyl phosphite, wherein the phenyl moiety has 1 or 2 alkyl groups, each of which contains 1 to 12 carbon atoms; and
c. about 0.002 to about 0.1 — benzotriazole or alkyl-substituted benzotriazole having 1 or 2 alkyl groups containing 1 to 10 carbon atoms.

3. The turbine oil composition of claim 2 wherein it contains from about 1 to about 15 weight percent tricresyl phosphate.

3,926,824

ELECTROSTATOGRAPHIC DEVELOPER COMPOSITION

Anthony F. Lipani, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 214,491, Dec. 30, 1971, abandoned. This application July 24, 1972, Ser. No. 274,394
Int. Cl.² G03G 9/00, 13/14, 9/02
U.S. Cl. 252—62.1 9 Claims

1. An electrostatographic developer, comprising: finely-divided toner particles of a single type and carrier therefor of a single type, the carrier particles being larger than the toner particles, at least the surface of the carrier being formed of at least two incompatible materials one of which is triboelectrically negative with respect to said toner and the other of which is triboelectrically positive with respect to said toner, and said incompatible materials are capable of imparting both a negative and a positive charge to said toner, whereby said toner electrostatically adhering to said carrier is both negatively and positively charged on said carrier, the toner of one polarity capable of being deposited in the image area during development and the toner of the other polarity capable of being deposited in at least the background area immediately adjacent the image area during development.

3,926,825

LIQUID DEVELOPER COMPOSITION AND PROCESS FOR PREPARING SAME

Satoru Honjo; Yasuo Tamai, and Nobuo Tsuji, all of Tokyo, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed May 29, 1973, Ser. No. 364,848
Int. Cl.² G03G 9/12
U.S. Cl. 252—62.1 12 Claims

1. A liquid developer composition for use in developing a recording surface bearing an electrostatic latent image, said developer composition consisting essentially of finely divided colored marking particles substantially homogenously dispersed in a carrier liquid, said colored marking particles being substantially completely covered with a positive charge adjusting agent which is substantially insoluble in said carrier liquid, said charge adjusting agent consisting essentially of a solid terpolymer of (1) from about 5 to about 94.5% by weight of a polymerizable styrene composition, (2) from about 94.5 to about 5% by weight of a composition selected from the group consisting of polymerizable acrylate and methacrylate esters, and (3) from about 0.5 to about 50% by weight of a polymerizable organo silicone composition selected from the group consisting of organo silanes, silanols, and siloxanes having from 1) to 3 hydrolyzable groups and an organic group attached directly to a silicone atom containing an unsaturated carbon-to-carbon linkage, said terpolymer having a weight average molecular weight of at least about 5,000.

10. A process for preparing a liquid developer composition for use in developing a recording surface bearing an electrostatic latent image, said process comprising the steps of mixing colored marking particles with a positive charge adjusting agent which is insoluble in a carrier liquid, the amount of said positive charge adjusting agent being sufficient to substantially completely cover said colored marking particles, and said charge adjusting agent consisting essentially of a solid terpolymer of (1) from about 5 to about 94.5% by weight, of a polymerizable styrene composition, (2) from about 94.5 to about 5% by weight of a composition selected from the group consisting of polymerizable acrylate and methacrylate esters, and (3) from about 0.5 to about 50% by weight of a polymerizable organo silicone composition selected from the group consisting of organo silanes, silanols, and siloxanes having from 1 to 3 hydrolyzable groups and an organic group attached directly to a silicone atom containing an unsaturated carbon-to-carbon linkage, said terpolymer having a weight average molecular weight of at least about 5,000, and dispersing said mixture in a carrier liquid having an electrical resistance greater than about 10^{10} ohms-cm and a dielectric constant less than about 3.5.

3,926,826

MAGNETIC TAPE BINDER FROM A POLYURETHANE, A POLYOL AND AN ISOCYANATE

Boynton Graham, Wilmington, and H. Gilbert Ingersoll, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed June 18, 1973, Ser. No. 370,714
Int. Cl.² H01F 1/113, 1/28
U.S. Cl. 252—62.54 13 Claims

1. In a magnetic recording composition of the type comprising a plurality of ferromagnetic particles dispersed in a polymeric resin binder, the improvement wherein said binder is formed by the reaction of a polyol and a polyfunctional isocyanate in the presence of a preformed, non-reactive polyurethane, said non-reactive polyurethane being selected from the group consisting of polyetherpolyurethane and polyesterpolyurethane and said polyol being selected from the group consisting of linear or branched aliphatic diols and triols, polymeric carboxylic esters having a molecular weight greater than 200 and hydroxyl numbers in the range 1 to 500, and addition polymers having available pendant reactive hydroxyl groups, the total binder composition comprising 1 to 50% by weight of the polyol constituent, 2 to 30% by weight of the polyfunctional isocyanate constituent, and 25 to 85% by weight of the polyurethane constituent.

3,926,827

METHOD FOR MAKING DETERGENT COMPOSITIONS

John Kilolo Mangeli, Kalama Location, Kenya, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 29, 1973, Ser. No. 346,067
Int. Cl.² C11D 11/00, 7/18, 7/38
U.S. Cl. 252—99 5 Claims

1. In a process for the preparation of a particulate detergent composition wherein about 15–40% water, about 2–65% organic detergent, less than about 20% hydrotrope, about 9–26% of aqueous inorganic silicate solution, about 2–20% of inorganic salt filler, about 10–75% of a hydratable salt selected from the group consisting of Form II pentasodium tripolyphosphate and Form I pentasodium tripolyphosphate and about 0.25–1% of an oxygen-liberating percompound are mixed to form a paste capable of retaining small oxygen bubbles without substantial coalescence thereof, liberating oxygen from said percompound into said paste in an amount sufficient to bleach said paste and to expand said paste to a final volume at least two times the initial volume thereof, setting the expanded paste under quiescent conditions to a friable mass of substantially said final volume, and granulating said friable mass to form particles of a bleached detergent composition, the improvement comprising adding said hydratable salt prior to the addition of said filler whereby the hydratable salt is more effectively hydrated resulting in more uniform particles having less fines and having an apparent density of less than about 0.32 gram per cubic centimeter.

3,926,828

METHOD OF MAKING TRANSPARENT SOAP BARS

John J. O'Neill, Cresskill; Joseph A. Komor, Ramsey; Thomas E. Babcock, Mahwah, all of N.J.; Robert J. Edmundson, Cornwall, and Edward G. Shay, Suffern, both of N.Y., assignors to Avon Products, Inc., Suffern, N.Y.

Division of Ser. No. 191,794, Oct. 22, 1971, Pat. No. 3,793,214. This application Sept. 11, 1973, Ser. No. 396,230
Int. Cl.² C11D 7/32, 13/16, 17/00
U.S. Cl. 252—117 4 Claims

1. The method of making transparent soap bars comprising the steps of admixing at a temperature of from about 130°F to 210°F about 25 to 75 parts by weight based on the total weight of the combined components of a C_{12}–C_{18} saturated straight chain fatty acid and about 10 to 20 parts by weight based on the total of the combined components of a branch chain C_5–C_{18} saturated unsubstituted aliphatic monocarboxylic acid to form a substantially homogeneous mixture, neutralizing said acids of said mixture, while maintaining the mixture at said temperature, by adding thereto a neutralizing agent in an amount at least sufficient to neutralize said acid, and cooling said mixture; said neutralizing agent consisting essentially of an alkaline sodium compound present in an amount sufficient to neutralize from about 40 to 80 percent of the acids and an ethanolamine selected from diethanolamine, triethanolamine and mixtures thereof in an amount above that required for neutralization.

3,926,829

SUPERFATTED SOAP AND PROCESS OF PRODUCING IT

Brian Robson Smith, Chadderton, and Kenneth Tomlinson, Bramhall, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 366,546, June 3, 1973, abandoned, which is a continuation of Ser. No. 167,877, July 30, 1971, abandoned, which is a continuation of Ser. No. 730,634, May 20, 1968, abandoned. This application Mar. 20, 1974, Ser. No. 453,166

Int. Cl.[2] C11D *9/48, 11/04, 13/00*

U.S. Cl. 252—132 3 Claims

1. The process of producing soap characterized by a higher ratio of saturated fatty acids to unsaturated fatty acids in a neat soap phase than in a nigre phase comprising:

1. adding to an alkali metal soap selected from the group consisting of sodium soap and a mixture of sodium soap and up to 15% potassium soap, said soap being obtained by saponifying a fatty mixture of 40–90% tallow and 10–60% coconut oil with sodium hydroxide and precipitating with salt, just prior to the fitting stage a sufficient quantity of hydrochloric acid to produce a free fatty acid content of about 4% to about 15% based on the total fatty acid content of said soap and to form a salt by neutralizing any remaining sodium hydroxide and
2. separating the acidified soap into neat soap and nigre, and working up the neat soap into bars.

3,926,830

DETERGENT COMPOSITION HAVING POLYMER BONDED INDICATOR

Shojiro Horiguchi, Hoya; Michiei Nakamura, Soka; Keiji Nakajima, and Yoshio Seino, both of Tokyo, all of Japan, assignors to Dainichiswika Color & Chemicals Mfg. Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 194,036, Oct. 29, 1971. This application Mar. 5, 1973, Ser. No. 338,278

Claims priority, application Japan, Nov. 25, 1970, 45-103279

Int. Cl.[2] C11D *3/37*

U.S. Cl. 252—135 7 Claims

1. A detergent composition consisting essentially of a synthetic organic detergent selected from the group consisting of anionic, nonionic, cationic and amphoteric surface active agents and mixtures thereof and 0.1–50% by weight of a pH indicative polymer, based on the weight of said detergent, wherein said pH indicative polymer consists of a pH indicator bonded to a polymer and which is soluble or dispersable in an aqueous solution of the detergent.

3,926,831

DRY-CLEANING AGENT

Erhard Sonnengrüber, Eigerstrasse 46, 8000 Munich 82, Germany

Continuation-in-part of Ser. No. 271,035, July 12, 1972, abandoned. This application June 18, 1974, Ser. No. 480,492

Int. Cl.[2] C11D *7/50*

U.S. Cl. 252—171 4 Claims

1. A dry-cleaning agent consisting essentially of a chlorinated hydrocarbon containing an effective amount of a surfactant,

I. said effective amount of surfactant containing as a mixture at least 75% by weight of an exthoxylate component having the general formula:

$$A—O—(CH_3—CH_2—O)_n—OH$$

wherein $n = 2$ to 30

wherein A is a member of the group consisting of:

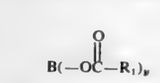
a. naphthyl or phenyl, optionally substituted with from 1 to 3 C_1—C_{16}-alkyl groups with the proviso that the number of total substituents carbon atoms does not exceed 18,

b. branched C_3—C_{12}-alkyl groups,

c. straight chain C_4—C_{12}-alkyl groups,

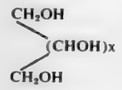
d. C_4—C_{17}-acyl groups

e. the residue of a fatty acid ester of the formula



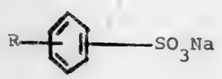
$$B(—OC—R_1)_y$$

wherein $y = 1$ to 3; $R_1 = C_8$—C_{17}-alkyl or -alkenyl groups (branched or straight chain), and B is derived from



wherein $x = 1$ to 4 or an anhydride of this compound with the proviso that if $x = 1$, y is 1 or 2 and that at least one OH is esterified with ethylene oxide to form the ethoxylate component whereas at least one of the remaining OH groups is etherified with the fatty acid residue

II. said surfactant having a sulfonate component ranging up to about 25% by weight of the mixture having the general formula:



wherein $R = C_8$—C_{18} of branched or straight chain alkyl groups, said component acting as a solubilizer;

said ethoxylate component and said sulfonate component together having an HLB-value of 13 to 18 and being free of water.

3,926,832

GETTERING STRUCTURE

Aldo Barosi, Milan, Italy, assignor to S.A.E.S. Getters S.p.A., Milan, Italy

Filed July 30, 1973, Ser. No. 383,677

Claims priority, application Italy, Aug. 10, 1972, 28053/72

Int. Cl. H01J *7/18, 35/20, 1/50*

U.S. Cl. 252—181.6 5 Claims

1. A gettering structure comprising:

A. a sintered particulate non-evaporable getter metal selected from the group consisting of Zr, Ta, Hf, Nb, Ti, Th and U,

B. a particulate zirconium-aluminum alloy comprising 5 to 30 weight percent aluminum balance zirconium wherein the particles of the zirconium-aluminum alloy are larger than the particles of the non-evaporable getter metal and are distributed throughout the non-evaporable getter metal wherein the weight ration A:B is from 19:1 to 2:3 **and wherein said particles of zirconium-aluminum alloy are generally spaced out of contact with each other.**

3,926,833

PREPARATION OF MIXED CHLOROHYDRIDES OF ALUMINUM

Doyt K. Hoffman, and Ricardo O. Bach, both of Gastonia, N.C., assignors to Lithium Corporation of America, New York, N.Y.

Filed Mar. 21, 1973, Ser. No. 343,266

Int. Cl.[2] C01B *6/06;* C01F *7/56*

U.S. Cl. 252—188 16 Claims

1. In a method of preparing liquid solutions of aluminum compounds corresponding to the formula AlH_xHal_{3-x} where x is 0 and up to but not including 3, the steps which comprise reacting an alkali metal hydride with $AlHal_3$, where Hal is halogen selected from the group consisting of chlorine, bromine and iodine, in a mole ratio of about 1 to 4 moles of said alkali metal hydride to 1 mole of said $AlHal_3$, in a liquid medium comprising a dialkyl ether of a glycol selected from the group consisting of ethylene glycol, propylene glycol and their polyglycols, said glycol containing from 2 to 8 carbon atoms, the alkyls of said dialkyl radical containing from 1 to 3 carbon atoms, whereby to produce a final concentration between about 0.1 and 2 moles of the AlH_xHal_{3-x} per liter in said solutions.

8. In a method of preparing liquid aromatic hydrocarbon solutions of mixed chlorohydrides of aluminum, the steps which comprise:

a. providing a slurry of LiH in a dialkyl ether of a member selected from the group consisting of ethylene glycol, diethylene glycol, triethylene glycol and tetraethylene glycol and in which each alkyl contains from 1 to 2 carbon atoms,

b. providing a solution of $AlCl_3$ in at least one liquid aromatic hydrocarbon selected from the group consisting of benzene and toluene, said solution also containing dimethyl ether, the volume ratio of said dialkyl ether to said hydrocarbon being from 1 to 4 of said dialkyl ether to 1 of said hydrocarbon,

c. the ingredients being proportioned so that the mole ratio of LiH to $AlCl_3$ in the (a) and (b) compositions is about 1 to 4 of LiH to 1 of $AlCl_3$, and

d. gradually adding the (b) solution to the (a) slurry, whereby to produce a final concentration between about 0.1 and 2 moles per liter of the mixed chlorohydrides of aluminum in said solutions.

3,926,834

LOW MELTING POINT DISUBSTITUTED-P,P'-PHENYL CINNAMATE LIQUID CRYSTALS

Freeman B. Jones, Jr., Westlake Village, and Joseph J. Ratto, Thousand Oaks, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

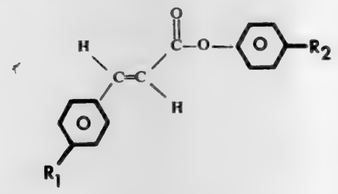
Filed Oct. 1, 1973, Ser. No. 402,531

Int. Cl.[2] C09K *3/34;* C07C *69/76*

U.S. Cl. 252—299 10 Claims

1. A nematic liquid crystal,

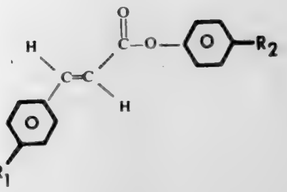
selected from the group consisting of cinnamic acid esters of the formula



wherein R_1 can be C_xH_{2x+1}, $C_xH_{2x+1}O$, $C_xH_{2x+1}CO_2$; and R_2 can be C_yH_{2y+1}, $C_yH_{2y+1}O$ and $C_yH_{2y+1}CO_2$ and where x and y are integers with $1 \leq x \leq 10$ and $1 \leq y \leq 10$, and

said nematic liquid crystal having a melting point of less than 95°C.

3. A nematic liquid crystal composition comprising a mixture of a plurality of nematic liquid crystal selected from the group consisting of cinnamic acid esters of the formula



wherein R_1 can be C_xH_{2x+1}, $C_xH_{2x+1}O$, and $C_xH_{2x+1}CO_2$; and R_2 can be C_yH_{2y+1}, $C_yH_{2y+1}O$, and $C_yH_{2y+1}CO_2$, where x and y are integers with $1 \leq x \leq x \leq 11$ and $1 \leq y \leq 11$.

3,926,835

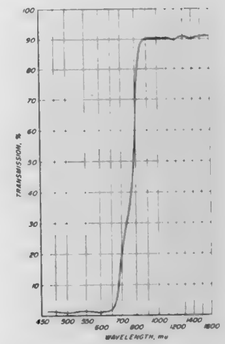
INFRARED TRANSMITTING FILTER CONTAINING 1,4,5,8-TETRACYCLOHEXYLAMINOANTHRAQUINONE

Robert Jerome Tucker, Hackettstown, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 120,237, March 2, 1971. This application June 8, 1973, Ser. No. 368,385

Int. Cl.[2] G02B *5/22*

U.S. Cl. 252—300 2 Claims



1. An optical filter which is substantially opaque to radiation in the visible region but which permits high transmission in the near infrared region comprising a plastic film having incorporated therein a mixture of organic dyes which provide absorption of substantially all visible light up to about 650 mu and the compound 1,4,5,8-tetracyclohexylaminoanthraquinone, the weight percent concentration of said compound in said film being such that said concentration multiplied by the thickness of the film equals a constant falling within the range of from 0.25 to 3.5 corresponding to a degree of opacity in the visible region of from 98% to 100%.

3,926,836

PROCESS FOR PREPARING PHOSPHOR FOR THERMOLUMINESCENT RADIATION DOSIMETER

Naohiro Nada, Nishinomiya, and Tadaoki Yamashita, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 28, 1971, Ser. No. 138,118

Claims priority, application Japan, May 29, 1970, 45-46730**The portion of the term of this patent subsequent to Jan. 25, 1989, has been disclaimed.**

Int. Cl. C09k *1/10*

U.S. Cl. 252—301.4 R 2 Claims

1. A process for producing a phosphor for a thermoluminescent radiation dosimeter, which comprises mixing a raw material beryllium oxide with at least one activator selected from the group consisting of sulfates, carbonates and hydroxides of

lithium, sodium and potassium in an amount capable of producing said phosphor wherein the lithium, sodium or potassium is present in an amount of more than 0.5% and up to 10% by mole per mole of beryllium oxide and then sintering the mixture in a covered crucible in a sintering furnace at a temperature of 1,500°C to 2,100°C for 3 to 24 hours.

3,926,837

METHOD FOR THE PREPARATION OF EUROPIUM ACTIVATED YTTRIUM OXYSULFIDE

Eugene A. Graff, Cedar Grove, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 29, 1974, Ser. No. 518,914
Int. Cl.² C09K *11/14, 11/46*
U.S. Cl. 252—301.4 S **3 Claims**

1. Method for preparing a europium activated yttrium oxysulfide phosphor of the formula $Y_{2-x}O_2S$: Eu_x, wherein x has a value between about 0.001 and about 0.1 using a raw mix containing all phosphor constituents in solid form and using a single firing in double covered trays, said method comprising:
a. preparing a raw mix containing yttrium oxide and europium oxide in amounts stoichiometric to produce yttrium oxysulfide phosphor and also containing sodium thiosulfate in an amount at least five times the amount stoichiometric for yttrium oxysulfide phosphor; and
b. singly firing said raw mix, at a temperature of about 900°–1300°C in double covered trays.

3,926,838

TRANSPARENT, CRYSTALLINE, CATHODOLUMINESCENT MATERIALS

Richard F. Reade, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 9, 1974, Ser. No. 530,812
Int. Cl.² C09K *11/08*
U.S. Cl. 252—301.4 F **2 Claims**

1. A transparent glass body exhibiting cathodoluminescence having at least an integral surface layer comprising divalent manganese doped mu-cordierite crystals homogeneously dispersed within a glassy matrix, said glass body consisting essentially, by weight on the oxide basis, of about 8–16% MgO, 27–40% Al_2O_3, 44–63% SiO_2, and 0.25–2% MnO, wherein said crystals are visually indistinguishable from the parent glass and constitute at least 50% by volume of the crystallized surface portion of said body.

3,926,839

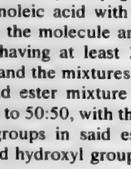
HYDROCARBON SOLUTION CONTAINING A SURFACTANT AND AN ALKYL PHENOL USED IN AN ALKYLATION PROCESS

Frederic C. McCoy, Beacon, and Edward L. Cole, Fishkill, both of N.Y., assignors to Texaco, Inc., New York, N.Y.

Division of Ser. No. 370,195, June 14, 1973, Pat. No. 3,870,765. This application July 1, 1974, Ser. No. 484,366
Int. Cl.² B01F *17/26, 17/16, 17/18, 3/08*
U.S. Cl. 252—355 **4 Claims**

1. A liquid solution useful in a strong acid catalyzed alkylation reaction for improving alkylate quality and for reducing acid catalyst consumption, which liquid solution comprises:
a. about 5 to 15 percent of an alkylation aid selected from the group consisting of primary aliphatic amines having from 12 to 24 carbon atoms in the aliphatic radical, ammonium salts having at least one aliphatic radical of from 12 to 24 carbon atoms, phosphonium salts having at least one aliphatic radical of about 12 to 20 carbon atoms and sulfonium salts having at least one aliphatic radical of from about 12 to 20 carbon atoms;
b. about 40 to 90 percent hydrocarbon solvent boiling in the gasoline boiling range; and
c. alkyl phenol solubilizing agent, in a weight ratio to alkylation aid of from about 1:1 to about 10:1, wherein said alkyl phenol is selected from the group consisting of mono- and di-nuclear aromatics having at least one phenolic hydroxyl group and having at least one aliphatic side chain of 6 to 50 carbon atoms.

3. A liquid solution useful in a strong acid catalyzed alkylation reaction for improving alkylate quality and for reducing acid catalyst consumption, which liquid solution comprises:
a. about 5 to 15 percent of a sulfonamide alkylation aid having the formula:



Wherein R_1 is selected from alkyl, aromatic, and alkyl aromatic, and wherein R_2 is alkyl of from about 8 to 30 carbon atoms;
b. about 40 to 90 percent hydrocarbon solvent boiling in the gasoline boiling range; and
c. alkyl phenol solution aid, in a weight ratio to alkylation aid of from about 1:1 to about 10:1 wherein said alkyl phenol is selected from the group consisting of mono- and di-nuclear aromatics having at least one phenolic hydroxyl group and having at least one aliphatic side chain of 6 to 50 carbon atoms.

3,926,840

EMULSIFIERS OF WATER-IN-OIL CREAMS

Ingrid Wendler, Dusseldorf-Wersten, and Jurgen Malaszkiewicz, Dusseldorf, both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

Filed Aug. 15, 1973, Ser. No. 388,557
Claims priority, application Germany, Aug. 21, 1972, 2241016
Int. Cl.² B01F *17/34*
U.S. Cl. 252—356 **10 Claims**

1. An emulsifier combination for use in preparing creams of the water-in-oil type consisting of (A) vegetable sterols and (B) an ester mixture selected from the group consisting of (1) monoesters of oleic acid with polyols having at least 3 hydroxyl groups in the molecule and polyesters of oleic acid with polyols having at least 3 hydroxyl groups in the molecule, (2) monoesters of ricinoleic acid with polyols having at least 3 hydroxyl groups in the molecule and polyesters of ricinoleic acid with polyols having at least 3 hydroxyl groups in the molecule, and (3) and the mixtures of (1) and (2) above, the weight ratio of said ester mixture to said vegetable sterols ranging from 90:10 to 50:50, with the proviso that the amount of free hydroxyl groups in said ester mixture exceeds the amount of esterified hydroxyl groups in said ester mixture.

3,926,841

ANTI-CAKING COMPOSITION

Werner Habasko, and Rudolf Syrovatka, both of Vienna, Austria, assignors to Lever Brothers Company, New York, N.Y.

Filed June 1, 1973, Ser. No. 365,885
Claims priority, application United Kingdom, June 5, 1972, 26048/72; Jan. 15, 1973, 1995/73
Int. Cl.² C05G *3/00;* **C09K** *3/00*
U.S. Cl. 252—383 **6 Claims**

1. a composition for reducing caking of fertilizer particles comprising:
1. 1 to 20 percent by weight of a cationic aliphatic amine selected from the group consisting of amines having the formulae RR_1R_2N and $RNHCH_2CH_2CH_2NH_2$, wherein R is an aliphatic hydrocarbon radical containing from 8 to 22 carbon atoms and R_1 and R_2 are selected from the group consisting of H and alkyls containing 1 to 22 carbon atoms;
2. 3 to 80 percent by weight of a carboxylic acid selected from the group consisting of aliphatic and cycloaliphatic carboxylic acids having from 8 to 22 carbon atoms in the molecule;
3. 0.1 to 5 percent by weight of an alkali selected from the group consisting of lower alkanol amines wherein the alkanol moiety has from 2 to 4 carbon atoms and hydroxides selected from the group consisting of magnesium, zinc, nickel and aluminium hydroxide; and,
4. up to 90 percent by weight of an inert organic solvent selected from the group consisting of mineral oils, waxes, polyethylene glycols and mixtures thereof.

3,926,842

METHOD OF REGENERATING SPENT HYDROALKYLATION CATALYST CONTAINING AN OXIDIZABLE GROUP VIII METAL

Robert M. Suggitt, Wappingers Falls, and John M. Crone, Jr., Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,215
Int. Cl.² B01J *23/94;* **C07C** *5/10, 15/00;* **B01J** *29/38*
U.S. Cl. 252—411 R **6 Claims**

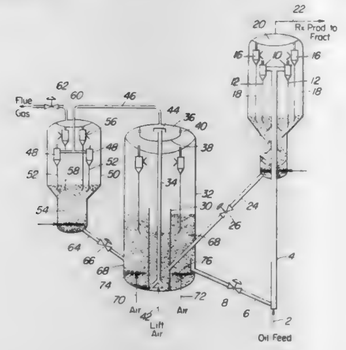
1. The method of regenerating a spent hydroalkylation catalyst, intially treated with hydrogen at temperatures above about 400°C, which has been used in hydroalkylation and which is characterized by a level of activity which is less than the initial level of activity, said spent catalyst containing (a) at least one oxidizable Group VIII metal selected from the group consisting of nickel and cobalt, and (b) zeolite dispersed in a silica-alumina matrix which comprises heating said spent catalyst, in the presence of gas containing at least 30 mole percent hydrogen and being substantially free of active components which are capable of reacting with any of the materials in the system, to regeneration temperature of 310°C–650°C for 1–24 hours thereby regenerating said spent hydroalkylation catalyst.

3,926,843

FCC — MULTI-STAGE REGENERATION PROCEDURE

Hartley Owen, Belle Mead, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 345,053
Int. Cl.² B01J *29/38, 21/20*
U.S. Cl. 252—417 **4 Claims**



1. A method for regenerating a hydrocarbon cracking catalyst comprising crystalline aluminosilicate containing carbonaceous deposits which comprises,
a. passing hydrocarbon cracking catalyst containing carbonaceous deposits as a first suspension in oxygen containing regeneration gas through a first riser regeneration zone,
b. combining the suspension after traverse of said first regeneration zone with gaseous products of combustion obtained from at least a third catalyst regeneration zone under conditions to convert available carbon monoxide to carbon dioxide and heat the catalyst therewith to a further elevated temperature by direct heat exchange in a segregated heat exchange zone and then cyclonically separating catalyst with carbon residue from gaseous products of combustion,
c. passing heated catalyst with carbon residue separated after said direct heat exchange step to a second regeneration zone,
d. further combusting said heated catalyst with carbon residue in a second regeneration zone under conditions to further remove carbon residue by burning in oxygen containing gas,
e. passing catalyst from said second regeneration zone to a dense fluid bed of catalyst retained in a third catalyst regeneration zone,
f. contacting said dense fluid bed of catalyst in a third regeneration zone with additional oxygen containing gases under elevated temperature catalyst regeneration conditions sufficient to produce gaseous products of combustion,
g. combining the gaseous products thus produced with the suspension of said first regeneration zone as recited above and
h. withdrawing catalyst from said third regeneration zone at an elevated temperature for use in cracking hydrocarbons.

3,926,844

CATALYSTS FOR THE CATHODIC HYDROGEN DEVELOPMENT

Gabor Benczur-Urmossy, Stuttgart, Germany, assignor to Deutsche Automobilgesellschaft mbH, Hannover, Germany

Filed Feb. 19, 1974, Ser. No. 443,195
Claims priority, application Germany, Feb. 17, 1973, 2307852
Int. Cl.² B01J *21/02*
U.S. Cl. 252—432 **19 Claims**

1. A process for the production of catalysts for the cathodic hydrogen evolution in alkaline electrolytes, which comprises growing onto surfaces suitable as an electrode base an X-ray amorphous metallic boride compound of nickel, cobalt or iron containing 5 to 8 percent by weight of boron by a reducing deposition in an aqueous solution at a temperature of below 60°C., said solution initially consisting essentially of water, metallic ions selected from the group consisting of nickel ions, cobalt ions and iron ions in an amount of from 0.02 to 0.2 mole/liter, a complexing agent for the metallic ions in a concentration of from 1 to 10 mole/liter and water-soluble boranate or borazane as reducing agent in a concentration of from 0.02 to 0.2 mole/liter, said solution having a concentration of free metallic ion of below 10^{-10} mole/liter during said growth.

3,926,845

CATALYSTS COMPOSITIONS

Robert S. Cichowski, San Luis Obispo, Calif., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 215,147, Jan. 3, 1972, Pat. No. 3,810,953. This application Feb. 7, 1974, Ser. No. 440,483
Int. Cl.² B01J *21/02, 27/18*
U.S. Cl. 252—432 **8 Claims**

1. A catalyst composition consisting essentially of a calcined mixture of cobalt, phosphorus and a metal promoter, Me, selected from the group consisting of indium, aluminum, yttrium, cadmium, zinc, lead and boron, characterized by the formula

$$Me_xCoP_yO_z$$

wherein x and y are numbers in the range of about 0.01 to about 5, except when Me is aluminum or lead, then x is a number in the range of about 0.1 to 1 and y is a number in the range of about 0.1 to about 0.5, and z is a number determined by the valence requirements of the calcined Me, Co and P mixture.

3,926,846

CATALYSTS FOR THE PREPARATION OF PHTHALIC ANHYDRIDE

Tetsuji Ono, Amagasaki; Yoshiyuki Nakanishi, Ikeda; Takehiko Suzuki, Takatsuki, and Yukio Okuda, Toyonaka, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan

Continuation-in-part of Ser. No. 300,656, Aug. 25, 1972, abandoned. This application Oct. 15, 1973, Ser. No. 406,285

Int. Cl.² B01J *27/18*

U.S. Cl. 252—435 **8 Claims**

1. A supported catalyst for the preparation of phthalic anhydride by vapor phase catalytic oxidation of either ortho-xylene or naphthalene with molecular oxygen-containing gas consisting essentially of a catalytically active substance and a porous inert carrier, said catalytically active substance consisting essentially of 1 to 20 parts by weight of V_2O_5 and, correspondingly, 99 to 80 parts by weight of TiO_2 and, based on the total weight of the V_2O_5 and TiO_2, 0.02 to 5.0% by weight of Nb_2O_5, 0.1 to 5.0% by weight of P_2O_5, 0 to 0.25 % by weight of K_2O and 0 to 0.5% by weight of Ca_2O, the total amount of the K_2O and Cs_2O being at least 0.05% by weight, said porous inert carrier having an aluminum compound content, calculated as Al_2O_3, of at most 10% by weight, SiC content of at least 50 % by weight and an apparent porosity of at least 10%, and in the supported catalytically active layer at least 50% of the total pore volume in pores of diameters less than 10 microns being in pores of diameters between 0.10 micron and 0.45 micron.

3,926,847

CATALYSTS COMPRISING A METAL HALIDE SALT ON AN INTERSTRATIFIED SYNTHETIC ALUMINOSILICATE CARRIER AND CHLORINATION PROCESSES, ETC.

William Q. Beard, Jr.; Patricia H. Moyer, and Siegfried E. Penner, all of Wichita, Kans., assignors to Vulcan Materials Company, Birmingham, Ala.

Filed June 4, 1973, Ser. No. 366,278

Int. Cl.² B01J *27/10*

U.S. Cl. 252—441 **11 Claims**

1. A catalyst composition useful for oxychlorination, the catalyst composition consisting essentially of a variable valence metal halide catalyst component deposited on a synthetic aluminosilicate carrier component, the variable valence metal halide consisting of a copper halide, the synthetic aluminosilicate having a mixed layer crystal structure with randomly alternating layers of montmorillonite-like and mica-like structure, the copper halide being present in the catalyst composition in an amount between about 2% and about 15% calculated as uncombined copper.

3,926,848

PROCESS FOR INCREASING ACTIVITY OF HEAVY TRANSITION METAL HALIDE STEREOSPECIFIC CATALYSTS

Harry Jan Wristers, and Herschel Claude Williams, both of Baytown, Tex., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Apr. 19, 1973, Ser. No. 352,666

Int. Cl.² B01J *27/10*; **C08F** *4/00, 11/06*

U.S. Cl. 252—442 **9 Claims**

1. A process for increasing the activity of a cocrystallized $TiCl_3$-⅓ $AlCl_3$, obtained by aluminum reduction of $TiCl_4$, which is an already effective catalyst which comprises the sequential steps of dry ball milling and a heat soak treatment to remove trace quantities of materials detrimental to polymerization selected from the group consisting of: $TiCl_4$, $AlCl_3$ and combinations thereof from active catalyst sites of said catalyst by contacting said catalyst with an inert and selective solvent selected from the group consisting of benzene and heptane having a solvation affinity for said detrimental materials for ½ to 60 minutes and at a temperature of 100° to 160°C sufficient to result in a treated catalyst with increased activity, decreased waxy polymer and increased C_7-insolubles with respect to propylene polymerized with said treated catalyst, as compared to propylene polymerized with an identical catalyst that is untreated by the process hereof.

3,926,849

METHOD OF CATALYST MANUFACTURE

Edward Michalko, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 10, 1974, Ser. No. 478,115

Int. Cl.² B01J *37/00, 21/04, 23/14*

U.S. Cl. 252—448 **7 Claims**

1. A method of catalyst manufacture which comprises:

a. commingling sufficient ammonia with an acid salt of tetravalent tin in aqueous solution to effect from about 50 to about 87 percent neutralization of said acid salt;

b. admixing the resultant neutralization product with an alumina sol;

c. commingling the tin-containing sol with hexamethylenetetramine;

d. dispersing the mixture as droplets in a hot oil bath effecting hydrolysis of said hexamethylenetretamine and the formation of spheroidal gel particles and aging said gel particles in said oil bath at a temperature of from about 90° to about 150°C. for a period of from about 1 to about 24 hours; and

e. washing, drying and calcining said particles in an oxidizing atmosphere to yield a spheroidal SnO_2-Al_2O_3 composite.

3,926,850

CATALYST AND PROCESS FOR THE CONVERSION OF HIGHER HYDROCARBONS

Hana Kostka, Grossgrundlach, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 26, 1973, Ser. No. 336,062

Claims priority, application Germany, Mar. 3, 1972, 2210401

Int. Cl.² B01J *29/06*

U.S. Cl. 252—455 R **18 Claims**

1. A catalyst for converting higher hydrocarbons into gas mixtures containing carbon monoxide, hydrogen, methane and carbon dioxide comprising γ-aluminum oxide, η-aluminum oxide, kaolinite containing titanium dioxide and an active component selected from the group consisting of platinum and the oxides of lanthanum and cobalt.

3,926,851

POROUS CERAMICS-EXHAUST OXIDATION CATALYST

Francis J. Sergeys, Kensington, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 82,918, Oct. 22, 1970, Pat. No. 3,755,204. This application July 17, 1973, Ser. No. 380,032

Int. Cl. B01j *11/40, 11/50*

U.S. Cl. 252—455 R **3 Claims**

1. A process for preparing an engine exhaust catalyst comprising the following steps:

a. homogeneously blending a composition consisting essentially of 15–80 volume percent of a polyolefin having a molecular weight of at least 150,000 and a standard load melt index of substantially zero, 5–67 volume percent of a ceramic filler, selected from the group consisting of alumina, mullite, zircon mullite, magnesium aluminate spinel, and cordierite, and 15–80 volume percent of a plasticizer selected from the group consisting of mineral oils, diethylene glycol, proplylene glycol, dipropylene glycol glycerin, and a glycerol monoacetate, trimethylene glycol, tetramethylene glycol, 2, 3-butylene glycol, triethyl phosphate, polyvinyl alcohol, and polyvinyl pyrrolidone,

b. heating said composition to about 125° to 175°C., molding to form a plastic sheet and impressing ribs thereon,

c. rolling said plastic sheet so that said ribs contact said sheet, heating to 150°C. to just below the burn off point to fuse the contacting areas together thermoplastically,

d. extracting said plasticizer with water or an organic solvent,

e. removing said polyolefin by heating to 240° to 700°C. to form a porous ceramic structure, and to burn off the polyolefin and,

f. firing said porous ceramic structure at a temperature of 1300° to 1450°F. for about 2 hours to sinter said porous ceramic structure,

g. coating the ceramic structure with solutions of salts of metals selected from the group consisting of the noble metals and copper, chromium and manganese and heating to reduce the noble metal salts to the metal or convert the copper chromium and manganese salts to the oxides.

3,926,852

OXIDATION CATALYSTS

Raymond M. Cahen, Brussels; Henri R. Debus, Meise, and Jacques M. J. G. Andre, Brussels, all of Belgium, assignors to Labofina S. A., Brussels, Belgium

Filed Oct. 26, 1973, Ser. No. 410,276

Claims priority, application Belgium, May 4, 1973, 130731

Int. Cl.² B01J *29/16*

U.S. Cl. 252—456 **14 Claims**

1. A process for producing catalysts which are used for the vapor-phase oxidation of olefinic hydrocarbons comprising impregnating a refractory carrier under substantially anhydrous conditions with a liquid oxytrihalide of vanadium selected from the group consisting of oxytrichloride and oxytribromide, removing the excess of said oxytrihalide of vanadium, hydrolyzing said oxytrihalide of vanadium and thereafter calcining the catalyst.

3,926,853

CATALYTIC OXIDATION OF AMMONIA

Michel Senes, Saint Nazaire; Pierre Lhonore, Douai; Michel Pottier, Saint Nazaire, and Jacques Quibel, Maisons Laffitte, all of France, assignors to Societe Chimique de la Grande Paroisse et Produits Chimiques, Paris, France

Division of Ser. No. 112,879, Feb. 5, 1971, abandoned. This application Mar. 28, 1973, Ser. No. 345,685

Claims priority, application France, Feb. 9, 1970, 70.04454

Int. Cl.² B01J *29/16, 29/12*; **C01B** *21/26*

U.S. Cl. 252—456 **8 Claims**

1. A stable catalytic composition for the catalytic oxidation of ammonia to nitrogen oxides, comprising:

a complex catalyst of limited porosity, containing no members of the platinum group, with a specific surface area of between 0.02 and 2 m^2/g,

said catalyst consisting essentially of metallic oxides consisting of iron oxide, vanadium oxide and at least one further metallic oxide selected from the group consisting of oxide of nickel, cobalt and bismuth, and a refractory material consisting of magnesia, silica, zirconia or a mixture thereof, all combined by mixing the powdered constituents, compressing at 1,000 – 10,000 bars and sintering at 1300°C or higher.

4. A stable catalytic composition for the catalytic oxidation of ammonia to nitrogen oxides, comprising:

a complex catalyst of limited porosity with a specific surface area between 0.02 and 2.0 m^2/g,

said catalyst consisting essentially of 0.1 to 10% of an active material selected from the group consisting of the metals of the platinum group, and a refractory oxide carrier comprising, in the composition, 10–60% MgO, 0.2–10% SiO_2, and 5–50% ZrO_2,

said active material being intimately combined in solid solution with said carrier by ceramic-type bonds formed by mixing said active material and said carrier, compressing at 1,000 to 10,000 bars pressure and sintering at a temperature of at least 1300°C.

3,926,854

OXIDATION CATALYST

James M. Whelan, La Canada, Calif., and Richard J. Brook, Didcot, England, assignors to University of Southern California, Los Angeles, Calif.

Filed Dec. 17, 1970, Ser. No. 99,239

Int. Cl.² B01J *23/10*

U.S. Cl. 252—462 **9 Claims**

1. A ceramic, nonstoichiometric, electrically neutral oxidation catalyst for treating exhaust gases from the combustion of fossil fuels, comprising a homogeneous mixed oxide compound having a unitary crystal structure and having the following empirical formula:

$$X_nJ_{(1-n)}Z_{O(3+m)}$$

wherein:

X is an alkaline earth metal or mixture thereof;

J is scandium, yttrium, a rare earth element, or mixture thereof;

Z is titanium, vanadium, chromium, iron, cobalt, nickel, or a mixture thereof, at least 0.01% of Z having an oxidation state other than +3;

m is a number having a value between 0 and about 0.11, with the understanding that when m is 0 there is no readily measurable concentration of ionic defects in the compound and that when *m* is a value greater than 0 the compound is characterized by the presence of readily measurable ionic defects; and

n is a number other than 0 having a value up to about 0.51.

3,926,855

METHOD OF CATALYST MANUFACTURE

Kenneth D. Vesely, Arlington Heights, Ill., assignor to Universal Oil Products, Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 310,500, Nov. 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 124,575, March 15, 1971, abandoned. This application Jan. 21, 1974, Ser. No. 435,370

Int. Cl.² B01J *21/04*

U.S. Cl. 252—465 **6 Claims**

1. A method of manufacturing a catalytic composite of from about 1 to about 10 wt. % iron group metal oxide, from about 4 to about 30 wt. % Group VIB metal oxide, and alumina which comprises preparing a dry powdered blend of an alumina monohydrate, a compound of an iron group metal and a compound of a Group VIB metal, said compounds providing their respective oxides upon subsequent calcination in an oxidizing atmosphere, discharging the dry powdered blend in a continuous and uniform stream onto a rotating pelletizing disc and rolling the blend into spheroidal pellets in contact with from about a 5 to about a 15 wt. % aqueous solution of a strong mineral acid sprayed on said rotating disc, and drying the spheroidal pellets and calcining the same in an oxidizing atmosphere.

3,926,856

CATALYST FOR THE PRODUCTION OF AROMATIC HETERO-AROMATIC NITRILES AND PROCESS OF PREPARING THE CATALYST

Theodor Lussling; Hans Schaefer, both of Grossauheim, and Wolfgang Weigert, Offenbach, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Division of Ser. No. 74,829, Sept. 23, 1970, abandoned. This application June 22, 1973, Ser. No. 372,674

Claims priority, application Germany, Sept. 26, 1969, 1948715

Int. Cl.² B01J *23/16, 23/84*

U.S. Cl. 252—470 **15 Claims**

1. A process of preparing a catalyst, said process consisting essentially of heating with oxygen at 650° to 1100°C. (1)(a)

antimony oxide and (b) tungsten oxide, the atomic ratio of antimony to tungsten being from 1.1 to 1 up to 50 to 1 or (2)(a) antimony oxide (b) tungsten oxide and (c) an oxide of a member of the group consisting of manganese, chromium, iron, cobalt, nickel and copper wherein the atomic ratio of antimony to tungsten is from 1.1 to 1 up to 50 to 1, the atomic ratio of antimony to the total of manganese, chromium, iron, cobalt, nickel and copper does not exceed the atomic proportion of tungsten and the atomic ratio of antimony to the total of manganese chromium, iron, cobalt, nickel and copper is from 4 to 1 up to 20 to 1.

3,926,857

ELECTRICALLY CONDUCTING MATERIAL CONTAINING SILICON CARBIDE IN A MATRIX OF SILICON NITRIDE

Derek Ivan Matkin, Wantage; Ian William Cavell, Harewell, and John Raymond Dyson, Newbury, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 303,347, Nov. 3, 1972, abandoned. This application Dec. 13, 1974, Ser. No. 532,633

Claims priority, application United Kingdom, Nov. 8, 1971, 51878/71

Int. Cl.² H01B *1/02;* **H01C** *1/02*

U.S. Cl. 252—516 **3 Claims**

2. A method of producing a silicon nitride ceramic artefact having reduced electrical resistivity which comprises forming a mixture of carbon particles having a particle size of not greater than 50 microns and silicon particles and subjecting the mixture to nitriding conditions to nitride the silicon under which conditions the silicon and carbon react to form an electrically conductive interconnecting network silicon carbide phase in a matrix of silicon nitride, the relative proportions of silicon and carbon in the mixture and the conditions of nitriding being such that free silicon and free carbon are absent in the silicon nitride ceramic artefact, said silicon nitride artefact having an electrical resistivity not greater than 140 ohm-cm and having a silicon carbide content not greater than 37 percent by weight.

3,926,858

MOISTURE SENSITIVE ELEMENT

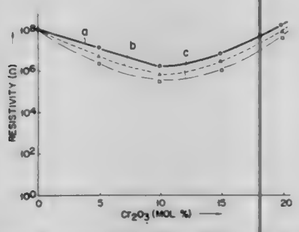
Noboru Ichinose, Yokohama; Yuhji Yokomizo, and Masaki Katsura, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed July 11, 1974, Ser. No. 487,533

Claims priority, application Japan, July 13, 1973, 48-78476; July 13, 1973, 48-78477; Aug. 13, 1973, 48-78478; Sept. 20, 1973, 48-105455; Sept. 20, 1973, 48-105456

Int. Cl.² H01B *1/00*

U.S. Cl. 252—517 **8 Claims**



1. A moisture sensitive element formed of an oxide complex semiconductor comprising 89.9 to 20 mol% of ZnO, 0.1 to 20 mol% of Cr_2O_3 and 10 to 60 mol% of at least one of the third metal oxides selected from the group consisting of Li_2O, Na_2O, K_2O, Rb_2O, Cu_2O, BaO, SrO, CaO, PbO, MnO, NiO, CoO, MgO, CdO, CuO, FeO, BeO, TiO_2, GeO_2, ZrO_2, MnO_2, TeO_2, SnO_2, SiO_2, CeO_2, ThO_2, HfO_2, Nb_2O_5, Ta_2O_5, Sb_2O_5, V_2O_5, WO_3, MoO_3 and TeO_3.

3,926,859

SUBSTITUTED 2-[3′-METHYL-2′-BUTEN]YL-4-HEXENAL ODORANT COMPOSITIONS

Dietmar Lamparsky, Wangen-Dubendorf, and Jean-Pierre Calame, Fallanden, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

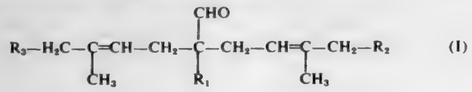
Division of Ser. No. 323,190, Jan. 12, 1973, abandoned. This application July 30, 1974, Ser. No. 493,002

Claims priority, application Switzerland, Jan. 21, 1972, 907/72

Int. Cl.² C11B *9/00;* **A61K** *7/00*

U.S. Cl. 252—522 **8 Claims**

1. An odorant composition which contains as an essential odour-imparting ingredient an olfactorily-effective amount of an aldehyde of the general formula:



(I)

wherein R_1, R_2 and R_3 each represent a hydrogen atom or a methyl group.

3,926,860

FRAGRANCE MATERIALS CONTAINING CIS-2-N-PENTYL CYCLOPROPANE-1-CARBOXYLIC ACID

Robert L. Chappell, Moorestown, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 436,846, Jan. 28, 1974, abandoned. This application Dec. 17, 1974, Ser. No. 533,637

Int. Cl.² A61K *7/46;* **C11B** *9/00;* **C07C** *61/04*

U.S. Cl. 252—522 **6 Claims**

6. An olfactory sense affecting composition of matter comprising (1) a product produced by a process comprising the steps of:

i. Treating cis-2-octen-1-ol with methylene diiodide in the presence of a copper-zinc couple to produce cis-2-n-pentylcyclopropane-1-methanol;

ii. Oxidizing said cis-2-n-pentylcyclopropane-1-methanol to form a mixture of cis and trans-2-n-pentylcyclopropane-1carboxaldehydes;

iii. Oxidizing said mixture of cis and trans-2-n-pentylcyclopropane-1-carboxaldehydes to form a mixture of cis and trans-n-pentylcycloproane-1-carboxylic acid; and

iv. Separating the cis and trans isomers of 2-n-pentylcyclopropane-1-carboxylic acid thereby obtaining a material having a high proportion of cis-2-n-pentylcyclopropane-1-carboxylic acid;

and (2) a composition of matter selected from the group consisting of natural perfume oils, synthetic perfume oils, alcohols, aldehydes, ketones, esters, lactones, a detergent, soap, bath preparation, hair preparation, cosmetic preparation or powder.

3,926,861

DETERGENT COMPOSITIONS CONTAINING AMINE OXIDES

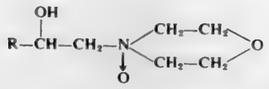
John Fred Gerecht, Somerville, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 166,253, July 26, 1971, Pat. No. 3,809,659, which is a division of Ser. No. 677,723, Oct. 24, 1967, Pat. No. 3,637,682. This application Nov. 9, 1973, Ser. No. 414,586The portion of the term of this patent subsequent to May 7, 1991, has been disclaimed.

Int. Cl.² C11D *3/28, 3/04*

U.S. Cl. 252—542 **8 Claims**

1. A detergent composition consisting essentially of a water-soluble organic detergent selected from the group consisting of anionic, nonionic, cationic and amphoteric detergents and mixtures thereof and a morpholine oxide of the formula



wherein R is alkyl of 6 to 20 carbon atoms, the weight ratio of said morpholine oxide to said other detergent being in the range of 100:1 to 1:100.

3,926,862

DETERGENT SOLVENT COMPOSITIONS

Francis J. Figiel, Boonton, and Roland W. Anderson, Sparta, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,201

Int. Cl.² C11D *1/12, 3/43*

U.S. Cl. 252—545 **13 Claims**

1. A detergent solvent composition comprising from about 0.2 to about 91% by weight of composition of a detergent comprising a mixture of linear alkylbenzene sulfonic acid isopropylamine salts, the alkyl groups of which contain from 7 through 14 carbon atoms, a predominant amount of the alkyl groups in said linear alkylbenzene isopropylamine salts containing 11 through 12 carbon atoms, from about 19 to about 24 numerical percent of said linear alkylbenzene sulfonic acid isopropylamine salts having the benzene sulfonic acid group located on the two position of the linear alkyl group; and at least 9 percent by weight of said composition being essentially an organic cleaning solvent selected from the group consisting of Stoddard solvent; 1,1,2-trichloro-1,2,2-trifluoroethane; sym. or assym. tetrachlorodifluoroethane; trichloromonofluoromethane; and mixtures thereof.

3,926,863

METHOD FOR PRODUCING DETERGENT CAKES

Giulio Perla, Rome, and Giuseppe Mattiello, Nettuno, both of Italy, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 204,297, Dec. 2, 1971, abandoned. This application July 9, 1973, Ser. No. 377,676

Claims priority application, Italy, Dec. 7, 1970, 55234/70

Int. Cl.² C11D *1/12, 11/04, 17/00*

U.S. Cl. 252—557 **5 Claims**

1. A process for the production of cleansing cakes comprising reacting approximately stoichrometric quantities of a butenedioic acid or anhydride and a compound having therein a reactive hydroxyl group and an acyclic chain at least predominately of 12 carbon atoms at a temperature between the melting point of said acid or anhydride and about 100°C to produce a monoalkyl ester of butenedioic acid, reacting stoichiometirc quantities of said monoalkyl ester with a sulfite chosen from the group consisting of alkali metal, ammonium and alkaline earth metal sulfites and bisulfites in the presence of from 5 to 60% by weight of a molten plasticizer chosen from the group consisting of fatty acid esters of polyhydric alcohols and paraffin wax and mixtures thereof and from about 15 to 20% by weight of water at a temperature from about 90°C to about 100°C to form a water-soluble monoalkylsulfosuccinate, cooling the resulting product, drying the resulting product, and forming the cooled product into cakes, said cakes including at least about 40% of said monoalkylsulfosuccinate by weight.

3,926,864

ION EXCHANGE MEMBRANES HAVING A MACROPOROUS SURFACE AREA

Russell B. Hodgdon, Jr., Sudbury, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Division of Ser. No. 155,357, June 21, 1971, Pat. No. 3,749,655. This application Feb. 20, 1973, Ser. No. 333,570

Int. Cl.² B01D *39/16*

U.S. Cl. 260—2.1 E **11 Claims**

1. A method of preparing a substantially insoluble cross-linked, polymeric non-laminated, one piece board suitable for the manufacture of ion-selective membranes, the boards having at least two dimensions in excess of one centimeter with both major surfaces having a macroporous structure of pore diameter sizes between about 500–1500 angstroms with the interior portion of said board substantially comprising a microporous structure having pore diameter sizes in the range of about 10–30 angstroms, the method comprising preparing a monomeric mixture of at least one monovinyl aromatic monomer and at least one polyvinyl aromatic cross-linking monomer, said cross-linking compound being present between about 20–80 mole % of the total polymerizable monomers of said mixture, said mixture further containing dissolved therein between about 15 to 75% by volume of an inert, non-polymerizable, organic solvent pair, said solvent pair comprising at least one good solvent and at least one poor solvent and polymerizing said monomeric mixture under conditions to substantially prevent the escape of said poor solvent from the monomer mixture during the formation of said polymerized board structure, said poor solvent being present in an amount of between about 15 to 55% by volume based on the total volume of said solvent pair.

3,926,865

PROCESS FOR POLYMERIZING LACTAMS IN THE PRESENCE OF AZODICARBOXYLATE AND ISOCYANATE

Norman Stewart Anderson, Blackley, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 357,652, May 7, 1973, abandoned, which is a continuation-in-part of Ser. No. 229,458, Feb. 25, 1972, abandoned. This application Aug. 27, 1974, Ser. No. 500,883

Claims priority, application United Kingdom, May 4, 1971, 6026/71

Int. Cl.² C08J *9/00*

U.S. Cl. 260—2.5 N **9 Claims**

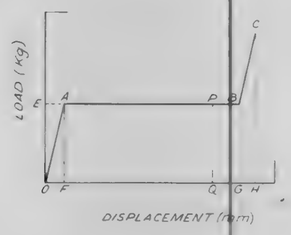
1. A process for the manufacture of a polyamide comprising forming a mixture of (1) a lactam having at least seven ring members which is associated with 0.01 to 0.5 percent by weight of water, (2) and alkali metal salt of azodicarboxylic acid, wherein the metal salt of azodicarboxylic acid is present in an amount at least equimolar with the amount of water present, and (3) an isocyanate or blocked isocyanate which, together with a portion of said alkali metal salt of azodicarboxylic acid, constitutes a catalyst species, and polymerizing said lactam under anoinic polymerization conditions, whereby said metal salt of azodicarboxylic acid enables polymerization to take place even though said lactam is initially associated with a considerable amount of water.

3,926,866

PROCESS FOR PRODUCTION OF RIGID POLYURETHANE FOAM AND PRODUCT FOR USE AS ENERGY ABSORBING MATERIAL

Noboru Komatsu, Toyoakeshi; Toshio Kurauchi, Nagoya; Makoto Murase, Nagoya, and Kazuhiko Negi, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan

Filed June 6, 1974, Ser. No. 477,111
Claims priority, application Japan, June 6, 1973, 48-63546
Int. Cl.² C08G *18/14*
U.S. Cl. 260—2.5 AH **7 Claims**



1. A process for producing a rigid polyurethane foam for absorbing maximum kinetic energy in a collision with a human body without injury to same, comprising mixing a polyol for rigid foam as a resin, an isocyanate as a cross-linking agent, a chlorofluorocarbon as a blowing agent, a catalyst for promoting the reaction of said polyol with said isocyanate, a bubble-stabilizing agent for aiding in uniform bubble formation, and an additive comprising a diorganosilicone oil and silica in a ratio ranging from 1.1 to 1.2, said diorganosilicone oil including a member selected from the group consisting of substituted and unsubstituted hydrocarbon groups, said additive being used in an amount from 0.003 – 0.02 parts by weight per 100 parts by weight of said polyol and foaming the resultant mixture to produce rigid polyurethane foam having closed cells with a cell diameter ranging from 3 mm to 13 mm.

3,926,867

HIGH RESILIENCY FLEXIBLE URETHANE FOAMS

Billy Quock, Richwood; Don Howard Kelley, Lake Jackson; Sehon Lester Warneke, Brazoria, and Arthur E. Gurgiolo, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 410,135, Oct. 26, 1973, abandoned. This application Mar. 4, 1974, Ser. No. 448,164
Int. Cl.² C08G *18/14, 18/32*
U.S. Cl. 260—2.5 AM **9 Claims**

1. A flexible polyurethane foam having a resiliency greater than about 50%, a modulus of at least about 2.3 and a density of less than about 5 lbs/ft³ resulting from subjecting to foaming conditions, a composition which comprises

A. 1. from about 50 to 100 percent by weight of a polyether triol having an average hydroxyl equivalent weight of from about 900 to about 2500, said triol having been end-capped with at least 1 mole of ethylene oxide per hydroxyl group to provide the triol with primary hydroxyl groups,

2. from 0 to about 50 percent by weight of a polyol selected from a diol, a triol, or mixtures thereof wherein said diols and and triols have an average hydroxyl equivalent weight of from about 900 to about 2500;

B. an organic polyisocyanate consisting of

1. from about 50% to 100% by weight of 2,4-toluene diisocyanate, 2,6-toluene diisocyanate, NCO-containing prepolymers thereof, or mixtures thereof, and

2. from 0 to about 50% by weight of an organic polyisocyanate having an average NCO functionality of at least 2;

C. from about 1.0 to about 5 parts by weight of water per 100 parts by weight of component (A);

D. from about 0 to about 20 parts of a low boiling auxiliary blowing agent per 100 parts by weight of component (A);

E. from about 0.6 to about 10 parts per 100 parts by weight of component (A) of a crosslinker composition consisting essentially of

1. from 5 to 100 percent by weight of a primary crosslinker component selected from the group consisting of 1-amino-2-hydroxybutane; 2-amino-1-hydroxybutane; 2-amino-1-hydroxy-2-methylpropane; bis(2-hydroxybutyl)amine; tris(2-hydroxybutyl)amine; 3-phenoxy-2-hydroxypropyl amine; 2-phenyl-2-hydroxyethylamine; 3-phenoxy-2-hydroxypropyl-N-phenylamine; 2-hydroxybutyl-N-phenylamine; bis(3-phenoxy-2-hydroxypropyl)amine; 2-hydroxyethyl-N-(3-phenoxy-2-hydroxypropyl)amine; 1-amino-2-hydroxycyclopentane; 1-amino-2-hydroxycyclooctane; 2-hydroxyethyl-N-(2-hydroxybutyl)amine, and mixtures thereof; and

2. from 0 to about 95 percent by weight of an auxiliary crosslinker component;

F. from about 0.5 to about 4 parts by weight per 100 parts by weight of Component (A) of a catalyst for the urethane reaction;

G. from about 0.005 to about 2.5 parts by weight per 100 parts by weight of Component (A) of a silicone oil cell control agent;

and wherein Components (A), (B), (C) and (E) are present in quantities so as to provide an NCO:active hydrogen ratio of from about 0.8:1.0 to about 1.3:1.0.

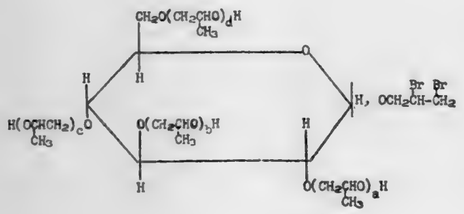
3,926,868

FLAME-RETARDANT POLYURETHANE FOAMS

Felix H. Otey; Richard P. Westhoff, and Charles L. Mehltretter, all of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 161,312, July 9, 1971, Pat. No. 3,823,132. This application Jan. 16, 1974, Ser. No. 433,647
Int. Cl.² C08G *18/14, 18/50*
U.S. Cl. 260—2.5 AS⁻ **1 Claim**

1. A flame-retardant polyurethane foam comprising the reaction product of an organic polyisocyanate, a blowing agent, a catalyst, and a brominated propoxylated allyl glucoside composition comprising a mixture of from 70 to 90 percent of a compound having the following general structure:



where *a*, *b*, *c*, and *d* are any integer including zero and *a* + *b* + *c* + *d* = from 4 to 8; and from 10 to 30 percent dimers and oligosaccharides which differ from said compound only in that said dimers and oligosaccharides consist of a plurality of anhydroglucose units connected through hemiacetal linkages; said composition being characterized as having hydroxyl numbers of from 260 to 380, as being a liquid, and as containing from 19 to 26 percent bromine.

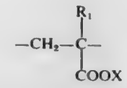
3,926,869

PROCESS FOR HARDENING GELATIN IN PHOTOGRAPHIC LAYERS WHICH CONTAIN A THICKENER AND HARDENER BY UTILIZING ACRYLIC ACID-ACRYLAMIDE COPOLYMERS

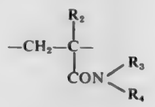
Ikutaro Horie; Taksuhi Miyazako, and Takeo Shimada, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed June 7, 1974, Ser. No. 477,236
Claims priority, application Japan, June 7, 1973, 48-64041
Int. Cl.² C08L *89/00*
U.S. Cl. 260—8 **8 Claims**

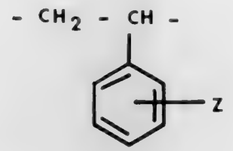
1. A process for hardening gelatin which comprises incorporating an acrylic acid-acrylamide copolymer into the system containing gelatin, a thickener and a hardener; said acrylic acid-acrylamide copolymer being a copolymer containing about 5 to 95 mol % of the following repeating unit (A):



and about 5 to 95 mol % of the following repeating unit (B)



wherein R_1 and R_2 are each a hydrogen atom or a methyl group, R_3 and R_4 are each a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms, or wherein R_3 and R_4 can combine to form a non-metal atom containing 5-, 6- or 7-membered ring, and X is a hydrogen atom, a sodium atom, a potassium atom, a lithium atom, or an ammonium group, said acrylic acid-acrylamide copolymer being present in said system at about 0.001 to about 0.1 parts by weight per part by weight of gelatin, and having a limiting viscosity ranging from about 0.3 to about 6.0 measured at 30°C using a 1 % by weight aqueous solution of sodium chloride; and said thickener being a high molecular weight polymer comprising the following repeating unit:



wherein Z is a sulfonic acid group or a sulfonic acid salt group, said thickener being capable of increasing the viscosity of a gelatin solution to about 30 to about 100 centipoises at about 40°C.

3,926,870

DENTURE ADHESIVE PREPARATION CONTAINING AN ANIONIC PROTEIN MATERIAL

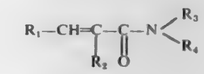
James J. Keegan, Bloomfield; Girish Patel, Mine Hill, and Howard Rubin, Rockaway, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 406,529, Oct. 15, 1973, Pat. No. 3,878,135. This application Jan. 15, 1975, Ser. No. 541,304
Int. Cl.² A61K *31/785*; **C08L** *89/00*
U.S. Cl. 260—8 **16 Claims**

1. A denture adhesive comprising a dry mixture of:

A. from about 1.0% to about 80% by weight, based on the total weight of the denture adhesive, of at least one cationic polymeric material selected from the group consisting of:

1. a copolymer of an acrylamide having the Formula (I)



(I)

wherein R_1 is methyl or hydrogen; and R_2, R_3, and R_4 are each hydrogen or 1 to 7 carbon lower alkyl, with a vinyl quaternary ammonium salt selected from the group consisting of trialkylaminoalkyl acrylate salts, trialkylaminoalkyl methacrylate salts, and vinyloxyalkyltrialkylammonium salts, wherein the alkyl group contains from 1 to 7 carbon atoms; and

2. a copolymer of an acrylamide having the Formula (I) above with a vinyl or alkyl-substituted vinyl pyridinium salt, wherein the alkyl group is 1 to 7 carbon lower alkyl; and

B. from about 10% to about 90% by weight, based on the total weight of the denture adhesive, of at least one anionic protein material which is casein or its alkali metal salts.

3,926,871

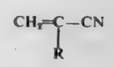
POLYMERIZATES OF OLEFINIC NITRILES

Linda W. Hensley, Bainbridge Township, Geauga County, and George S. Li, Aurora, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Nov. 20, 1974, Ser. No. 525,377
Int. Cl.² C08F *244/00*
U.S. Cl. 260—80.72 **4 Claims**

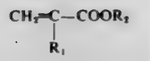
1. The terpolymer composition resulting from the copolymerization of

A. from about 60 to 90% by weight of at least one nitrile having the structure



wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen,

B. from about 10 to 39% by weight of an ester having the structure



wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms, and

C. from about 1 to 15% by weight of at least one member selected from the group consisting of indene and coumarone

wherein the given percentages of (A), (B), and (C) are based on the combined weight of (A), (B), and (C).

3,926,872

FLAME-RETARDANT CELLULOSICS CONTAINING GRAFT COPOLYMERIZED ACRYLIC ESTERS OR AMIDES

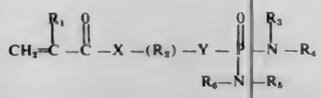
Nathan Allen Edelson, Cynwyd, and Robert W. Faessinger, Media, both of Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 325,101, Jan. 19, 1973, abandoned. This application Sept. 23, 1974, Ser. No. 508,724

Int. Cl.² C08L *1/02*; **D06M** *13/44*

U.S. Cl. 260—17.4 GC **4 Claims**

1. Flame retardant cellulosic fibers graft copolymerized with sufficient compound having the general formula:



wherein R_1 is hydrogen or methyl; R_2 is a substituted or unsubstituted lower alkylene group, R_3, R_4, R_5 and R_6 are independently selected from either methyl and ethyl; X is oxygen or — NH —; and Y is oxygen or — NH — to result in at least 0.5% phophorus content on the graft copolymerized cellulosic fibers based upon the total weight of the graft copolymerized fibers.

3,926,873

THERMOPLASTIC MATERIAL COMPOSITIONS

Itsuho Aishima, Kurashiki; Atsushi Kitaoka, Kawashaki; Toshinori Koseki, Tokyo; Sachio Suzuki, Yokohama; Kenji Arimoto, and Koichi Matsumoto, both of Kurashiki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1972, Ser. No. 316,314

Claims priority, application Japan, Dec. 20, 1971, 46-102598; Dec. 20, 1971, 46-102600; Dec. 20, 1971, 46-102602; Apr. 18, 1972, 47-38287; Dec. 20, 1971, 46-102599; Dec. 20, 1971, 46-102601; Apr. 5, 1972, 47-33442; Oct. 16, 1972, 47-102635

Int. Cl.² C08K *9/04*; **C08L** *91/00*

U.S. Cl. 260—18 R **37 Claims**

1. A thermoplastic material composition comprising (A) about 15 to 90 percent by weight of thermoplastic material and (B) about 85 to 10 percent by weight of at least one reactive inorganic filler,

said reactive filler having been prepared by effecting reaction between a mixture consisting essentially of

a. an inorganic material substantially comprising at least one compound selected from the group consisting of metal carbonates, metal hydroxides and metal oxides, said metal being selected from the group consisting of beryllium, magnesium, calcium, barium, zinc, cadmium and aluminum, said compound having a number average particle diameter of about 10 μ, and

b. at least one unsaturated aliphatic or aromatic carboxylic acid having from 3 to 11 carbon atoms, one or two ethylenic unsaturations, and one or two carboxylic groups the proportion of said unsaturated aliphatic or aromatic carboxylic acid being from about 0.05 to 20 percent by weight of the total weight of said inorganic material,

with stirring and removal of water from the reaction system at a temperature up to the temperature at which said aliphatic or aromatic carboxylic acid begins to decompose.

3,926,874

WATER REDUCIBLE PAINT COMPOSITION CONTAINING ALUMINUM METAL OR THE LIKE

John Lee Petty, and George Minoru Amano, both of Detroit, Mich., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Mar. 25, 1974, Ser. No. 454,582

Int. Cl.² C09D *3/52*, *3/56*, *3/66*, *3/76*

U.S. Cl. 260—22 A **16 Claims**

1. A water based coating composition which is stabilized to include water reactive metallic pigment, comprising in weight percent.

a. about 0.1% to about 80% of a particulated reactive metallic pigment selected from at least one of the group consisting of aluminum, zinc, bronze, or reactive titanium containing pigments,

b. about 3% to about 40%, by weight of the metallic pigment, of a modifying agent means for preferentially wetting the metallic pigment so that it does not react with aqueous material in the composition, said modifying agent being water insoluble, non-ionizable, and having a surface tension of at least about 4 dynes per centimeter less than the aqueous phase of the composition, said modifying agent being selected from at least one of the group consisting of a polyamide, fatty amide, a fluorochemical surfactant, or a silicone surfactant, and said aqueous phase being as follows,

c. about 10% to about 75%, based on resin solids, of water reducible resin vehicle,

d. zero to about 45% solvent material for dissolving the resin vehicle,

e. and balance water.

3,926,875

THERMOSETTING POLYMER DISPERSIONS AND PROCESS FOR PRODUCTION THEREOF

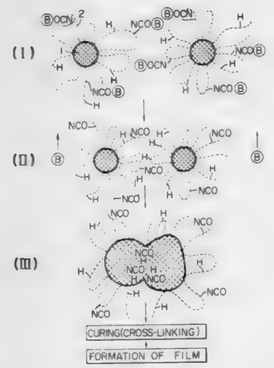
Hideyoshi Tsugukuni, Sakai; Masafumi Kano, Kyoto, and Mitsuhiro Matsuda, Tondabayashi, all of Japan, assignors to Dai Nippon Toryo Co. Ltd., Osaka, Japan

Filed June 28, 1973, Ser. No. 374,656

Claims priority, application Japan, July 3, 1972, 47-66432

Int. Cl.² C08G *18/80*

U.S. Cl. 260—23 TN **17 Claims**



1. A thermosetting synthetic polymer dispersion comprising a non-polar organic liquid or an organic liquid having a low polarity as a disperion medium and particles of a copolymer

formed by copolymerization of copolymerizable unsaturated monomers, said copolymer particles having around the periphery thereof a protective layer of an unsaturated fatty acid-containing oil modified resin having a molecular weight of about 500 to 10,000 an acid value of less than 75 and an hydroxy value of at least 10 (a) having a component compatible with said copolymer or being chemically bonded to said copolymer and (b) being solvated in said organic liquid and containing blocked isocyanate and active hydrogen groups, and formed by reacting a partially blocked isocyanate compound having a free isocyanate group and a blocked isocyanate group with an active hydrogen-containing, polymer compound wherein the sum of the number of the free and blocked isocyanate groups in one molecule of the partially blocked isocyanate compound and the number of the active hydrogen groups in one molecule of the active hydrogen-containing, polymer compound is at least five, and they are reacted at such a ratio that the amount of the active hydrogen groups of the active hydrogen-containing, polymer compound is at least equivalent to the amount of the free isocyanate groups of the partially blocked isocyanate compound; the ratio of the active hydrogen groups in the active hydrogen group-containing, polymer compound to the free isocyanate groups in the partially blocked isocyanate compound being 1.0 to 3, and the ratio of the active hydrogen groups in the active hydrogen-containing, polymer compound to the sum of the free and blocked isocyanate groups in the partially blocked isocyanate compound being 0.5 to 1.5; and the amount of stabilizer being from 30 to 80% by weight of the total dispersed solids, said copolymer being made in the form of particles of a size 0.1 to 10μ stably dispersed in said organic liquid by said protective layer.

3,926,876

FLAME-RESISTANT RESINOUS MOLDING

Mitio Fukushima, Suita, and Teruo Iwanami, Takatsuki, both of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 21, 1974, Ser. No. 481,901

Int. Cl.² C18L *91/00*

U.S. Cl. 260—23 R **5 Claims**

1. A flame-resistant resinous molding composition comprising

a. ethylene-vinyl alcohol copolymer,

b. 5 to 50 parts of at least one halo-organocompound selected from the group consisting of hexabromobenzene, perchloropentacyclodecane and derivatives thereof, tetrabromobisphenol A, tetrachlorobisphenol A, tetrabromophthalic anhydride, tetrachlorophthalic anhydride and di(tetrabromophenyl)imide,

c. 0.2 to 10 parts of a metallic soap, and

d. 0 to 30 parts of antimony trioxide, said parts of (b), (c) and (d) being parts by weight per 100 parts of (a).

3,926,877

PROCESS FOR ISOLATING POLYCHLOROPRENE

Sidney George Fogg, Ashstead, England; Peter Graham King, Peterston Super Ely, and Elfed Yeoman, Barry, both of Wales, assignors to BP Chemicals International Limited, London, England

Filed Nov. 23, 1973, Ser. No. 418,385

Claims priority, application United Kingdom, Dec. 6, 1972, 56236/72

Int. Cl.² C08J *3/20*; **C08L** *11/02*, *91/00*

U.S. Cl. 260—23.7 A **10 Claims**

1. A process for the isolation of a polychloroprene rubber from an aqueous latex which comprises blending the latex of the polychloroprene rubber with an aqueous dispersion of from about 20–400 parts of carbon black to 100 parts of said rubber, mixing a coagulant with the mixture, treating the coagulated rubber particles with a water dispersible finely divided solid having anti-tack properties and a particle size less than 100μ either during and/or after coagulation, when treating said rubber particles during coagulation any surfactant present with said antitack solid is effective at a pH of 4–5 and when treating said rubber particles after coagulation substantially preventing agglomeration of said rubber particles so that they do not form particles above about 30mm diameter, and separating the coagulated product from the aqueous phase.

3,926,878

HOT-MELT COMPOSITIONS COMPRISING E/VA COPOLYMER AND HYDROGENATED PETROLEUM RESIN

Katsuhisa Shimizu, Kyoto, and Norio Minami, Kawachinagano, both of Japan, assignors to Arakawa Rinsan Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 16, 1973, Ser. No. 324,224

Claims priority, application Japan, Jan. 24, 1972, 47-9187

Int. Cl.² C08L *23/08*

U.S. Cl. 260—27 EV **6 Claims**

1. A hot-melt composition comprising 10 to 100 weight parts of a hydrogenated aromatic petroleum resin and 100 weight parts of an ethylene-unsaturated ester copolymer, said hydrogenated aromatic petroleum resin being prepared by polymerizing a cracked petroleum fraction boiling between −10° and 280°C and containing unsaturated hydrocarbons at least 50 percent by weight of which is polymerizable aromatic hydrocarbon and hydrogenating the resulting aromatic hydrocarbon resin to a hydrogenation degree of aromatic ring of 5 to 80 percent, and said ethylene-unsaturated ester copolymer being ethylene-unsaturated ester copolymer containing 60 to 90 weight percent of ethylene, said unsaturated ester being a member selected from the group consisting of vinyl acetate, methylacrylate and ethylacrylate.

3,926,879

AQUEOUS SEALANT COMPOSITIONS

Walter A. Fourier, Crystal Lake, Ill., and Daniel J. Dickmann, Appleton, Wis., assignors to M&T Chemicals Inc., Greenwich, Conn.

Filed Apr. 1, 1974, Ser. No. 456,604

Int. Cl.² C08L *93/00*

U.S. Cl. 260—27 R **6 Claims**

1. In an improved sealant composition for metal containers, said composition consisting essentially of an aqueous dispersion comprising 100 parts by weight of a dispersed elastomeric polymer selected from the group consisting of natural rubbers and synthetic rubbers; between 30 and 75 parts of a tackifying resin; between 5 and 20 parts of a thickener; and between 30 and 100 parts of a filler selected from the group consisting of hydrated alumina, silica, and zinc oxide, wherein the concentration of dissolved and dispersed solids in the sealant composition constitutes between 35 and 70 percent by weight of said composition, the improvement which resides in selecting the thickener from the group consisting of copolymers wherein between 25 and 60 percent by weight of the repeating units are derived from the ammonium salt of acrylic or methacrylic acid, any remaining repeating units being derived from esters of acrylic acid or methacrylic acid with alcohols containing between 1 and 20 carbon atoms.

3,926,880

LATEX-RESIN MIXTURES

Heinz Esser, Burscheid, and Jürgen Boldt, Opladen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 294,954, Oct. 4, 1972, abandoned. This application June 24, 1974, Ser. No. 482,349

Claims priority, application Germany, Oct. 7, 1971, 2149999

Int. Cl.² C08L *93/00*

U.S. Cl. 260—27 BB **3 Claims**

1. A process for producing a stable aqueous dispersion which comprises mixing (1) a preformed aqueous dispersion of a chloroprene polymer which is a homopolymer thereof or a copolymer of chloroprene with up to 20 percent by weight, based on chloroprene, of 2,3-dichlorobutadiene-(1,3), acrylonitrile, methacrylic acid, acrylic acid or an ester or hydroxy ester of acrylic acid or methacrylic acid with a polyhydric alcohol and (2) a solution of a natural or synthetic resin which improves the adhesive power of adhesive mixtures, in chloroprene or a mixture of said monomers of said chloroprene copolymer, there being from 5 to 30 percent by weight of said natural or synthetic resin in resulting mixture based on said chloroprene polymer, and subsequently removing the chloroprene monomer or said mixture of monomers from said mixture of (1) and (2) to obtain said stable aqueous dispersion.

3,926,881

FLEXIBLE POLYVINYL CHLORIDE PLASTICS HAVING IMPROVED FLAME RETARDANCY AND REDUCED SMOKE GENERATING

John J. Kracklauer, Boulder, Colo., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 6, 1974, Ser. No. 467,534

Int. Cl.² C08L *91/00*

U.S. Cl. 260—28.5 D **11 Claims**

1. A flexible polyvinyl chloride plastic having improved flame retardancy and smoke suppression properties, containing in chemically uncombined form, per 100 parts, by wt., of polyvinyl chloride resin, about from 5 to 30 parts of a chlorinated paraffin having a chlorine content of from 35 to 75%, by wt., and a viscosity, at 20°C, of about from 1 to 200 poise; and about from 0.01 to 1 part, by wt., of a dicyclopentadienyl iron derivative having a molecular weight of at least 360.

3,926,882

ALPHA-METHYL STYRENE/TERTIARY BUTYL STYRENE/OLEFIN TEREPOLYMER RESINS AND HOT MELT ADHESIVES CONTAINING THE SAME

Michael G. Henk, Wheaton, and Gary P. Sartler, Downers Grove, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 418,563, Nov. 23, 1973. This application Aug. 12, 1974, Ser. No. 496,867

Int. Cl.² C08L *91/06*

U.S. Cl. 260—28.5 AV **10 Claims**

1. A composition comprising a terpolymer consisting of:
   a. one part by weight tertiary-butylstyrene;
   b. from 1 to 10 parts by weight alpha-methylstyrene; and
   c. from 0.005 to 0.5 parts by weight of olefin having a ring and ball softening point of 200° to 350°F. and, per 100 parts by weight of said terpolymer, 10 to 1200 parts of an ethylenevinyl acetate copolymer having a vinyl acetate content within the range of 15 to 40 weight percent, and 10 to 1800 parts of a paraffin wax having a melting point of 125° to 200°F.

3,926,883

FLAME RETARDANT COMPOSITIONS

Irving Touval, Edison, N.J., assignor to M&T Chemicals Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 68,538, Aug. 31, 1970, abandoned. This application Sept. 11, 1974, Ser. No. 504,863

Int. Cl.² C08K *3/20, 3/24, 5/02*

U.S. Cl. 260—28.5 A **9 Claims**

1. A polymer composition exhibiting enhanced flame retardancy, wherein the polymer is selected from the group consisting of polyvinyl chloride, polyvinylidene chloride and copolymers of vinyl chloride and vinylidene chloride with one another and with ethylenically unsaturated monomers, wherein said polymer composition contains between 0.5 and 10 parts by weight per 100 parts of said polymer of a flame retardant containing 20 percent by weight of hydrated stannic oxide and 80 percent by weight of a second component selected from the group consisting of colemanite, zinc oxide and mixtures of zinc oxide and magnesium oxide.

3,926,884

ABS RESIN COMPOUNDS

John M. McColgan, 1623 Roscomare Road, Los Angeles, Calif. 90024

Filed Oct. 18, 1974, Ser. No. 515,860

Int. Cl.² C08L *91/00*

U.S. Cl. 260—28.5 AS **8 Claims**

1. An extended ABS type resinous plastic composition comprising:
   polymerized acrylonitrile, butadiene and styrene constituting together at least about 50 percent of the composition by weight; and
   a material intimately mixed with said polymerized acrylonitrile, butadiene and styrene and selected from the group consisting of air blown asphalt, gilsonite, and mixtures thereof, and constituting not more than about 20 percent of the composition by weight.

3,926,885

SILOXANE-MODIFIED EPOXY RESIN COMPOSITIONS

Joseph W. Keil, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 23, 1974, Ser. No. 535,623

Int. Cl.² C08L *63/00*

U.S. Cl. 260—29.1 SB **13 Claims**

1. A homogeneous polymeric dispersion comprising
   a. 55 to 95 weight percent of a curable epoxy resin composition;
   b. 4 to 35 weight percent of a fluid lubricant which is incompatible with the epoxy resin composition, said fluid having a viscosity in the range of 20 to 20,000,000 cs. at 25°C.;
   c. 1 to 10 parts weight percent of a dispersing agent capable of maintaining (b) dispersed in (a), said dispersing agent being a siloxane copolymer selected from the group consisting of
      1. polydimethylsiloxane-organic copolymers in which the polydimethylsiloxane portion has a molecular weight of at least 1,500 and the organic portion consists essentially of a polyoxyethylene polymer, a polyoxypropylene polymer, or a polyoxyethylene-polyoxypropylene copolymer said organic portion having a molecular weight of at least 500 and said organic portion being attached to silicon atoms via silicon-carbon bonds, and 2. polydimethylsiloxane-organic copolymers which are reaction products produced by heating a mixture of a polydimethylsiloxane containing silicon bonded hydrogen atoms having a molecular weight of at least 1500, and a hydroxylated polyoxyethylene polymer, a hydroxylated polyoxypropylene polymer, or a hydroxylated polyoxyethylene-polyoxypropylene copolymer, said hydroxylated polyoxyalkylene polymer having a molecular weight of at least 500.

3,926,886

EPOXY RESIN-AMINE SALT EMULSION COMPOSITION

John Joseph Kelley, Willingboro, N.J., and Alan Edward Varker, Philadelphia, Pa., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Mar. 27, 1974, Ser. No. 455,070

Int. Cl.² C08G *51/24*

U.S. Cl. 260—29.2 EP **7 Claims**

1. An epoxy resin-amine salt in water emulsion composition essentially of water, a liquid epoxy resin comprising a condensation product of epichlorohydrin with a polyhydric alcohol or phenol and an amine salt reaction product obtained by reacting a carboxylic acid selected from formic acid and acetic acid with a liquid aliphatic ether diamine having the formula

$$R_1-O-R_2-NH-R_3-NH_2$$

wherein R_1 is a branched or linear higher alkyl radical having at least 8 carbon atoms, and R_2 and R_3 are linear lower alkylene radicals having from 2 to 4 carbon atoms, with the amine salt present in an amount sufficient to react with about 40–80percent of the reactive epoxy groups present in the liquid epoxy resin.

3,926,887

PROCESS FOR PREPARING SPINNING SOLUTIONS

Frank Dobinson, Gulf Breeze, and Chris A. Pelezo, Pensacola, both of Fla., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 363,456, May 24, 1973, Pat. No. 3,842,026, which is a continuation-in-part of Ser. No. 273,069, July 19, 1972, abandoned. This application June 17, 1974, Ser. No. 480,089

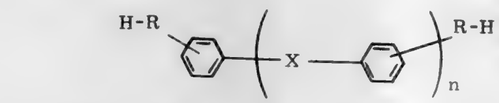
Int. Cl.² C08J *3/06;* **C08K** *5/20, 5/34;* **C08L** *79/06*

U.S. Cl. 260—29.2 N **8 Claims**

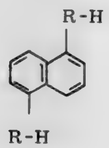
1. A process for preparing a polymer spinning solution comprising:
   a. forming a polymer gel by reacting and mixing substantially equimolar amounts of (1) terephthaloyl chloride and terephthalic dihydrazide or (2) terephthaloyl chloride and a mixture of terephthalic dihydrazide and up to 10 mole percent of the terephthalic dihydrazide reactant of at least one other monomer at a temperature between −15°C. and 100°C. and in the presence of a solvent for said polymer, said mixing is sufficient to keep said polymer in solution with said solvent until said gel is formed, wherein said other monomer is selected from the group consisting of



;



and

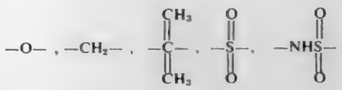


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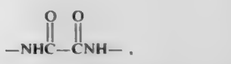
wherein the bonds of each phenylene ring are meta or para oriented to one another, R is



n is zero or one and X is a covalent bond or a divalent radical selected from the group consisting of



and



wherein said solvent contains from 2 to 7% by weight of lithium chloride dissolved therein and is selected from the group consisting of N,N-dimethylacetamide, N-methylpyrrolidone-2 and mixtures thereof;

   b. adding a small amount of water or organic hydroxyl compound selected from the group consisting of methyl alcohol, ethyl alcohol, isopropyl alcohol and ethylene glycol to said gel; and
   c. further mixing of said gel until a clear polymer solution is obtained;

said process being characterized in that sufficient amounts of reactants are employed to provide a polymer spinning solution having a viscosity between 1,000 and 40,000 poise and containing at least 3.0 percent by weight of polymer having an inherent viscosity of at least 3.0.

3,926,888

METHOD OF MAKING AQUEOUS COATING COMPOSITIONS OF ACRYLIC POLYMER LATEX, ACRYLIC POLYMER SOLUTION, AMINOPLAST AND ACRYLIC STABILIZER POLYMER

Mo-Fung Cheung, Warren, and Ray A. Dickie, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 3, 1974, Ser. No. 476,115

Int. Cl.² C08L *29/02, 33/02, 61/24, 61/28*

U.S. Cl. 260—29.4 UA **2 Claims**

1. In a method for producing an aqueous dispersion of paint in which a carboxy-functional polymer is at least partially neutralized with a water-soluble amine and dispersed with an amino resin crosslinking agent selected from melamine-formaldehyde resins and urea-formaldehyde resins in an aqueous solution of water and water-soluble amine, the improvement wherein the aqueous dispersion is produced by intimately dispersing with said water, said amino resin cross-linking agent and said water-soluble amine:
   I. about 5 to about 50 parts by weight of a solution polymer which is carboxy-functional copolymer of acrylic monomers that:
      A. is at least partially neutralized with water-soluble amine,
      B. is soluble in said aqueous solution,
      C. has average molecular weight (M_n) in the range of about 3,000 to about 20,000, and
      D. has Tg in the range of −15°C. to 50°C., and
   II. an aqueous emulsion consisting essentially of water, water-soluble amine, and about 50 to about 95 parts by weight of an emulsion polymer having functionality selected from carboxy functionality and hydroxy functionality and is a copolymer of acrylic monomers that:
      A. is essentially insoluble in said aqueous solution,
      B. has average molecular weight (M_n) in the range of about 3,000 to about 20,000, and
      C. has Tg in the range of −15°C. to 50°C., and
   III. about 0.025 to about 5 parts by weight of a stabilizer polymer which is a carboxy-functional copolymer of

acrylic monomers that is soluble in said aqueous solution, has average molecular weight ($\overline{M}_n$) lower than that of said solution polymer and is introduced into said dispersion intimately mixed with at least one of said solution polymer and said emulsion polymer.

3,926,889

PREPARATION OF PLASTICIZED LATEXES USING HIGH-DENSITY VIBRATIONAL ENERGY

Eugene A. Duchesneau, Jr., and Donald F. Boudreau, both of Worcester, Mass., assignors to Borden, Inc., Columbus, Ohio

Continuation of Ser. No. 153,005, June 14, 1971, abandoned. This application Mar. 1, 1973, Ser. No. 337,068

Int. Cl.² C08J *3/28*; **C08K** *5/12*; **C08F** *214/06*, *218/08*

U.S. Cl. 260—29.6 PM **8 Claims**

1. A method for plasticizing solid polyvinyl chloride particles contained in a polymeric latex material comprising treating a mixture of plasticizer and solid polyvinyl chloride particles contained in the polymer latex, the latex polymer particles of which have an average diameter of 0.01 micron to 1.00 micron and the mixture has a solids content of from 45 to 67% by weight, with ultrasonic energy having a frequency of at least about 15,000 cycles per second.

3,926,890

PROCESS FOR PRODUCING CATIONIC SYNTHETIC LATEX INVOLVING EMULSION POLYMERIZATION OF HALOALKYL ESTERS OF ACRYLIC AND METHACRYLIC ACID FOLLOWED BY QUARTERNIZATION WITH TERTIARY AMINE

Ching Yun Huang, Minoo; Senzo Shimizu, Suita, and Hiroyuki Adachi, Amagasaki, all of Japan, assignors to Mitsubhishi Gas Chemical company, Inc., Tokyo, Japan

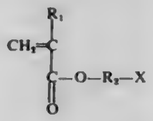
Continuation-in-part of Ser. No. 143,654, May 14, 1971, abandoned. This application Dec. 4, 1972, Ser. No. 311,478

Int. Cl.² C08F *22/18*

U.S. Cl. 260—29.6 H **13 Claims**

1. A process for producing a cationic synthetic latex, wherein copolymer particles have cationic charges in themselves and are dispersed in an aqueous medium, which comprises:

1. copolymerizing by emulsion polymerization a haloalkyl ester of acrylic or methacrylic acid of the formula:



1. wherein R_1 is a hydrogen atom or a methyl group; R_2 represents a linear or branched alkylene group having 1 to 12 carbon atoms; and X represents a chlorine, bromine or iodine atom, with at least one comonomer selected from the group consisting of styrene, alkyl esters of acrylic or methacrylic acid, vinyl chloride, vinylidene chloride and conjugated diene compounds, the amount of said haloalkyl ester being 1 to 40 percent by weight and the amount of said comonomer being 60 to 99 percent by weight based on the entire amount of the monomeric composition, in the presence of at least one emulsifier selected from the group consisting of nonionic and cationic surface active agents by use of a conventional emulsion polymerization initiator at a temperature of −5° to 100°C, and then

2. adding to the aqueous dispersion of said copolymer at least one basic nitrogen-containing compound selected from the group consisting of ammonia, primary amines, secondary amines and tertiary amines to form an ammonium salt of said copolymer, said basic nitrogen-containing compound being used in such an amount that the cation-formation ratio based on the amount of the haloalkyl ester of acrylic or methacrylic acid becomes at least 75 percent.

3,926,891

METHOD FOR MAKING A CROSSLINKABLE AQUEOUS SOLUTION WHICH IS USEFUL TO FORM SOFT, WATER-SWELLABLE POLYACRYLATE ARTICLES

James R. Gross, Lake Jackson, and Russell T. McFadden, Freeport, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 13, 1974, Ser. No. 450,650

Int. Cl.² C08L *31/02*, *33/02*

U.S. Cl. 260—29.6 E **9 Claims**

1. A method for making a crosslinkable aqueous solution which is useful to form soft water-swellable polyacrylate articles which comprises

A. forming a polyacrylate solution having about 30 to about 70 weight percent alkali metal carboxylates by dissolving in an aqueous alkali metal hydroxide solution containing sufficient alkali metal hydroxide to saponify some of the acrylate esters and to neutralize the carboxylic acid groups a polyacrylate comprising

1. about 30 to about 92 percent by weight of an alkyl acrylate wherein the alkyl group has 1–10 carbon atoms, an alkyl methacrylate wherein the alkyl group has 4–10 carbon atoms, or mixtures thereof,
2. about 8 to about 50 percent by weight of an olefinically unsaturated carboxylic acid, and
3. about 0 to about 15 percent by weight of an omega hydroxy-alkyl acrylate having 1–4 carbon atoms in the hydroxy alkyl group

B. heating the solution until saponification is complete, and

C. adding to said solution about 0.1 to about 10 weight percent, based on the dissolved polymer, of a water soluble crosslinking agent which is reactive with carboxylate salt groups.

3,926,892

HYDROPHILIC CONTACT LENSES AND LENS POLYMER

Frank O. Holcombe, Jr., Beltsville, Md., assignor to Burton, Parsons & Company, Inc., Washington, D.C.

Filed June 6, 1974, Ser. No. 476,896

Int. Cl.² C08F *216/04*

U.S. Cl. 260—29.6 TA **7 Claims**

1. A hydrophilic gel polymer consisting essentially of the addition copolymer of hydroxyethyl methacrylate and, based on the weight of said hydroxyethyl methacrylate, about 5 to 15 weight percent iso-butyl methacrylate, about 1 to 5 weight percent cyclohexyl methacrylate, and about 0.01 to 0.50 weight percent trimethylolpropane trimethacrylate.

3,926,893

POLISH CONTAINING A C_{21} -CYCLOALIPHATIC DICARBOXYLIC ACID

Fred E. Woodward, West Palm Beach, Fla., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 26, 1974, Ser. No. 500,569

Int. Cl.² C08L *91/06*

U.S. Cl. 260—29.6 R **7 Claims**

1. An aqueous polish composition having a solids content between 8 percent and 45 percent comprising,

a. 10 to 100 parts by weight of a water-insoluble addition polymer obtained by the emulsion polymerization of at least one monoethylenically unsaturated monomer,

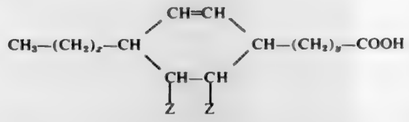
b. 0 to 90 parts by weight of a wax emulsion.

c. 0 to 50 parts by weight of a leveling agent, with parts (a), (b) and (c) equaling 100,

d. wetting, emulsifying, and dispersing agents in an amount of 0.5 percent to 20 percent by weight of the sum of parts (a), (b) and (c), and

e. plasticizing agents in the amount of 5 to 35 percent by weight of the sum of parts (a), (b) and (c),

the improvement wherein at least one of said plasticizing agents is the ammonium salt of a C_{21}-cycloaliphatic dicarboxylic acid having the formula



wherein x and y are integers from 3 to 9, x and y together equal 12, and Z is hydrogen or a carboxyl group with one Z of each moiety.

3,926,894

HARDENABLE, WATER-BASED COATING COMPOSITION FROM AQUEOUS LATICES OF ACRYLIC AND VINYL COMPOUNDS

Vincent de Paul Clark, Heath, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

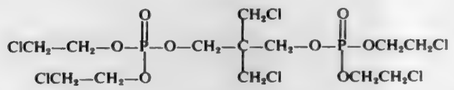
Continuation-in-part of Ser. No. 368,156, June 8, 1973, abandoned. This application Dec. 12, 1974, Ser. No. 532,073

Int. Cl.² C08L *35/00*, *33/00*; **C04B** *43/00*

U.S. Cl. 260—29.6 MP **7 Claims**

1. A coating composition for use on fibrous glass thermal insulation comprising an aqueous dispersion of coating solids, the solids consisting essentially of, by weight:

a. 5 to 15 percent of a plasticizer of at least one halogenated organophosphorus compound of tris (haloalkyl) phosphate or a chlorinated phosphate ester having a molecular weight of 583 and the formula:



b. 55 to 85 percent of at least one filler wherein the filler has a particle size distribution ranging from 5 to 30 microns; and

c. 10 to 30 percent of a binder of an aqueous latex of a copolymer of an acrylic resin and a vinyl compound or a copolymer of an acrylic resin and polyethylene, wherein the filler is calcium carbonate, talc wollastonite, clay, barytes or silica.

3,926,895

LIQUID PLASTIC REPAIR COMPOSITION AND METHOD

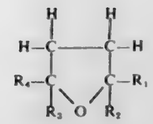
Cecil E. Britain, Wichita, Kans., assignor to Muriel M. Britain; Charles F. Dickinson; Ryta M. Dickinson and Norva M. Bump, all of Wichita, Kans.

Filed Nov. 29, 1973, Ser. No. 419,139

Int. Cl.² C08K *5/07*, *5/09*, *5/10*, *5/15*

U.S. Cl. 260—30.4 R **12 Claims**

1. A plastic repair composition of matter comprising a major proportion of a first solvent selected from the group consisting of methyl ethyl ketone, methyl isobutyl ketone, acetone, cyclohexanone, isophorone, ethyl acetate, butyl acetate, xylol, toluol, amyl acetate, and mixtures thereof, and a minor proportion of a mixture including a second solvent having the formula:



wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of hydrogen, alkyl hydrocarbons containing from between 1 to 6 carbon atoms, and mixtures thereof, a plasticizer selected from the group consisting of tricresyl phosphate, dioctyl phthalate, dibutyl phthalate, and mixtures thereof, a synthetic vinyl copolymer resin product comprising about 90 percent weight vinyl chloride, about 10 percent weight vinyl acetate, and has a molecular weight of about 34,800, and dibutyl tin dilaurate having between about 17 and 20 percent weight tin, said first solvent comprises from between about 9 to about 31 parts by volume per 37 parts by volume of said plastic repair composition, said second solvent comprises from between about 5 to about 15 parts by volume per 37 parts by volume of said plastic repair composition, said dibutyl tin dilaurate comprises from between about 1 part to about 4 parts by volume per 37 parts by volume of said repair composition, said synthetic vinyl copolymer resin product comprises from between approximately 45 pounds to about 65 pounds per 37 gallons of said plastic repair composition, and said repair composition is characterized by a clear and transparent finish.

3,926,896

ORGANOSILICON COMPOSITIONS FOR THE NON-STICK COATING OF CELLULOSIC OR SYNTHETIC MATERIALS

Jean Dumoulin, Villeurbanne, France, assignor to Rhone-Poulenc, S.A., Paris, France

Filed Mar. 18, 1974, Ser. No. 452,388

Claims priority, application France, Mar. 21, 1973, 73.10098

Int. Cl.² C08K *5/10*

U.S. Cl. 260—31.2 R **5 Claims**

1. A non-stick coating composition produced by mixing the following ingredients, parts and percentages being by weight:

i. 100 parts of a dimethylpolysiloxane which is:

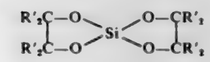
a. an α-ω-dihydroxydimethylpolysiloxane gum having a viscosity of at least about 1 million centipoises at 25°C, or

b. a mixture consisting of at least 75% of a said gum and a low molecular weight dimethylpolysiloxane polymer formed during the preparation of a said gum by polymerisation of a dimethyl-cyclopolysiloxane in the presence of an alkaline or acid catalyst,

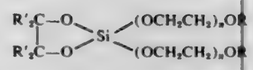
ii. 1 to 15 parts of a silicate ester which is selected from

c. an alkoxyalkyl silicate of the formula: $Si[(OCH_2CH_2)_aOR]_4$ in which R represents an alkyl radical with 1 to 4 carbon atoms and a is 1 or 2, and

d. a cyclic silicate of the formula:



or

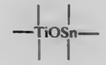


in which each R', which may be identical or different, represents an alkyl group with 1 to 5 carbon atoms or a vinyl group, n is zero or 1 and R is as defined above.

iii. 5 to 25 parts of an organic derivative of titanium which is selected from:

e. an alkyl polytitanate which is soluble in hydrocarbon solvents, having the average general formula $Ti_bO_c.(OR'')_d$ in which R'' represents an alkyl group with 3 to 8 carbon atoms, b represents an integer of at least 2, c represents an integer of at least 1 and d represents an integer of at least 4, and

f. a mixture consisting of at least 5 percent of a said alkyl polytitanate with an alkyl titanate, the alkyl group having 3 to 10 carbon atoms, and/or a titanium chelate: iv. 0.3 to 8 parts of an organic derivative of tin, a metal salt of a carboxylic acid or a polymer possessing recurring units of the formula·



as catalyst, and

v. 500 to 5,000 parts of an organic solvent.

3,926,897

THERMOSETTING COMPOSITIONS CONTAINING POLY(ARYLACETYLENES) AND AN AROMATIC RING COMPOUND HAVING THE RINGS JOINED THROUGH A KETO GROUP

Lawrence C. Cessna, Jr., Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 316,332, Dec. 18, 1972. This application June 3, 1974, Ser. No. 476,123

Int. Cl.² C08F *138/02*

U.S. Cl. 260—32.8 R **9 Claims**

1. A thermosetting composition comprising a blend of (1) a prepolymer of at least one polyacetylenically substituted aromatic compound, said prepolymer having a number average molecular weight from about 900 to about 12,000, a ratio of aromatic protons to olefinic protons greater than about 2.4 and containing from about 5 to about 20 percent acetylenic groups by weight of the prepolymer, with (2) from about 2 to about 200 percent, by weight of the prepolymer, of at least one aromatic organic compound containing at least two six-membered aromatic rings, said rings being coupled with each other through a keto group, said compound or mixtures thereof having a melting point less than about 220°C. and a boiling point greater than about 240°C.

3,926,898

PIGMENTED PRIMER COMPOSITION

Jae Hong Choi, Dayton, and Stephen Allen Miller, Fairborn, both of Ohio, assignors to DAP, Inc., Dayton, Ohio

Filed Nov. 28, 1973, Ser. No. 419,758

Int. Cl.² C08K *5/05, 3/22;* **C08L** *67/00*

U.S. Cl. 260—33.4 R **20 Claims**

1. A composition useful for priming porous surfaces comprising a thermoplastic polyester resin

characterized physically by a melting point in the range of 100°–120°C, a viscosity in 35 percent ammoniacal solution of about 30–50 cps, solubility at alkaline pH, solubility in alkanols having 1 to 4 carbon atoms, and characterized chemically as the polymerization product of trimellitic anhydride and isophthalic acid in a molar ratio of about 4-8 to 1, a glycol having 3 to 6 carbon atoms in an amount of 0.7 to 1.2 moles per mole of trimellitic anhydride, and an alkanol having 6 to 16 carbon atoms in an amount sufficient to impart to the resin an acid number of about 190–210;

dissolved in a lower alkanol having 1 to 4 carbon atoms, the weight ratio of said lower alkanol to said resin being in the range of 0.5-4 to 1, and having dispersed therein 5 to 60 percent by weight of at least one pigment; the pH of said composition being in the range of 3 to 6.5.

3,926,899

PROCESS FOR PRODUCING NON-AQUEOUS POLYMER DISPERSIONS

Kurt Nordberg, Graz, Austria, assignor to Vianova-Kunstharz, A. G., Vienna, Austria

Filed July 17, 1973, Ser. No. 379,918

Claims priority, application Austria, July 26, 1972, 6422/72

Int. Cl.² C08K *5/01, 5/05;* **C08L** *27/00, 31/02*

U.S. Cl. 260—33.4 R **10 Claims**

1. Process for producing non-aqueous acrylic dispersions from monomers of acrylic or methacrylic acid, or a mixture of said acrylic monomers and subordinate amounts of other alpha, beta-ethylenically unsaturated monomers in organic liquids, in the presence of stabilizers, characterized in that the said monomers are polymerized in the presence of from about 4 – 15 percent by weight, based on the total monomer weight of the dispersion of a stabilizer which is a reaction product of

I. homopolymers of glycidyl(meth)acrylate with a molecular weight of from 10,000 to 50,000;

II. 0.5 – 8 mol percent acrylic acid chloride or methacrylic acid chloride per mol of each glycidyl group of I;

III. 92 – 99.5 mol percent of chlorides of saturated fatty acids with 10 – 24 carbon atoms per mol of each glycidyl group of I;

said polymerization occurring in inert organic liquid comprising aliphatic hydrocarbons with a boiling range of from 60° – 210°C., and in the presence of polymerization initiators.

3,926,900

OIL-RESISTANT BLENDS FOR ELECTRICAL INSULATION

Raymond L. Guzy, Morton Grove, and Rajesh N. Sheth, Chicago, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 13, 1973, Ser. No. 424,262

Int. Cl.² C08K *5/01*

U.S. Cl. 260—33.6 AQ **2 Claims**

1. A curable electrical insulation composition exhibiting improved oil and water resistance when cured comprising

a. about 60 to 80 percent by weight of a blend consisting of an ethylene, propylene non-conjugated diene terpolymer having an ethylene/propylene ratio in the range 20/80 to 80/20 and from 2 to about 20% by weight of the terpolymer of non-conjugated diene and a hydrocarbon oil, in a ratio of from about 2:3 to about 3:1 respectively,

b. about 40 to 20 percent by weight of a polybutadiene having greater than 50% 1,2-polymerized units and having a molecular weight between 1,500 and 25,000 g/mole,

c. as a curing agent, about 2 to 6% by weight of a peroxide compound selected from the group dicumyl peroxide and α,α'-bis(t-butylperoxy)-di-isopropyl benzene, and

d. as a curing co-agent, about 1 to 3% by weight of a compound selected from the group m-phenylene dimaleimide and trimethylolpropane trimethylacrylate.

3,926,901

PREPARATION OF SULFUR VULCANIZABLE OIL EXTENDED ELASTOMERIC MATERIAL AND VULCANIZATES THEREFROM

Charles E. Boozer, Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.

Division of Ser. No. 278,350, Aug. 7, 1972, abandoned, which is a continuation of Ser. No. 64,141, Aug. 3, 1970, abandoned, which is a continuation of Ser. No. 847,505, July 16, 1969, abandoned. This application Sept. 17, 1973, Ser. No. 398,092

Int. Cl.² C08K *5/01*

U.S. Cl. 260—33.6 AQ **4 Claims**

2. The oil extended sulfur vulcanizable elastomeric EPDM in which an extender oil is admixed with an EPDM prepared by interpolymerizing a monomeric mixture of ethylene, at least one monoethylenically unsaturated hydrocarbon having from 3–16 carbon atoms and 5-ethylidene-2-norbornene present in an amount to provide an initial unsaturation level of 5–25 C=C groups per 1,000 carbon atoms in the unextended sulfur vulcanizable EPDM and in which the unextended EPDM is also reacted to a high Mooney value of at least 80 ML_8 — 250°F, the extender oil being added in an amount within the range of 25–400 phr and is so adjusted to the original Mooney of at least 80 that the Mooney of the oil extended elastomeric material ranges between 40 and about 80.

3,926,902

CROSSLINKABLE THERMOPLASTIC COMPOSITIONS AND PROCESSES THEREFOR

Stephen T. Bowen, Evansville, Ind., assignor to Dart Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 206,507, Dec. 9, 1971, abandoned. This application Feb. 4, 1974, Ser. No. 439,479

Int. Cl.² C08L *67/06*

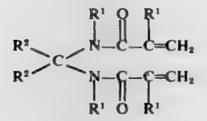
U.S. Cl. 260—40 R **16 Claims**

1. A reinforced polyester molding composition which is a dry, free-flowing, self-feeding solid at room temperature, fusible and injection moldable at temperatures between about 65°C and about 107°C and crosslinkable to the thermoset state upon heating at substantially higher temperatures, comprising:

a. a polyunsaturated polyester resin having a melting point above about 65°C;

b. in proportions by weight of from about 5/95 to about 70/30 based upon said polyester resin, an acrylic crosslinking agent of one of the following types:

(i)

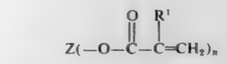


wherein each R^1 independently is H or CH_3; and each R^2 independently is H; C_1 to C_4 alkyl; phenyl; phenyl substituted with any one or more of C_1 to C_4 alkyl, halogen, hydroxy and nitro groups; C_4 to C_8 cycloalkyl; or a radical corresponding to the structure

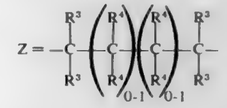


wherein each R^{11} independently is H or CH_3 and R^{12} is a straight or branched chain C_1 to C_8 alkylene group;

(ii)



wherein n is an integer from 2 to 10 and Z is a polyvalent aliphatic, cycloaliphatic or aromatic nuclei; the aliphatic nuclei being defined by



wherein each R^3 and R^4, independently, is H or C_1 to C_4 alkyl; the cycloaliphatic nuclei being cyclohexylene or bismethylene cyclohexane; and the aromatic nuclei being phenylene or phenylene substituted with up to 4 methyl groups, or bismethylene benzene or bismethylene benzene substituted with up to 4 methyl groups; and

iii. the condensation product of hydroxymethyl diacetone acrylamide having a molecular weight in the range of 400 to 3000;

c. from about 0.01 to about 5% based upon the combined weight of (a) + (b) of an organic peroxide initiator having a 10 hour half-life temperature above about 93°C;

d. from about 5 to 75% by weight based upon the total composition of reinforcing fibers; and

e. from about 5 to 75% by weight based upon the total composition of solid filler material, provided that the combined weight of (a) + (b) amounts to at least 20% of the total composition.

3,926,903

CURABLE CRACK-RESISTANT EPOXY RESIN

Daniel A. Scola, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sept. 30, 1974, Ser. No. 510,256

Int. Cl.² C08K *5/15;* **C08L** *63/00*

U.S. Cl. 260—42.28 **2 Claims**

1. A curable resin composition characterized by crack resistance in the temperature range of −65° to 300°F., high tensile strength at room temperature, and a shear strength of at least 5000 p.s.i. at 300°F. consisting essentially of approximately, in weight percent referring to the total weight of components (a) and (b): (a) 92–94% of a glycerol modified bicyclopentadiene ether epoxy resin, (b) 6–8% of a reactive elastomer selected from the group consisting of a hydroxyl terminated homopolymer of butadiene, a carboxyl terminated homopolymer of butadiene, a hydroxyl terminated butadiene-acrylonitrile copolymer, a carboxyl terminated butadiene-acrylonitrile copolymer, a hydroxyl terminated butadiene-styrene copolymer and a carboxyl terminated butadiene-styrene copolymer, and (c) an aromatic polyamine curing agent in an amount sufficient to provide 0.5–2.0 amino hydrogen atoms of the amine for each epoxy group.

3,926,904

CURABLE CRACK-RESISTANT EPOXY RESIN

Daniel A. Scola, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sept. 30, 1974, Ser. No. 510,259
Int. Cl.² C08L 63/00; C08K 5/15
U.S. Cl. 260—42.28 3 Claims

1. A curable resin composition characterized by a high 300°F. and a high room temperature tensile strength and 0°–300°F. crack resistance comprising approximately, in weight percent referring to the total weight of components (a) through (c): (a) 35–75% of a glycerol-modified bicyclopentadiene ether epoxy resin, (b) 25–55% of a polyglycidyl ether of phenol-formaldehyde novolac resin having an epoxy equivalent weight of 170–210 and a viscosity at 52°C of 1,400–90,000 centipoises, (c) 1–15% of a reactive elastomer selected from the group consisting of a hydroxyl or carboxyl terminated butadiene homopolymer, a hydroxyl or carboxyl terminated butadiene-acrylonitrile copolymer and a hydroxyl or carboxyl terminated butadiene-styrene copolymer and (d) an aromatic polyamine curing agent in an amount sufficient to provide 0.5–2.0 amino hydrogen atoms of the amine for each epoxy group.

3,926,905

FLAME RETARDANT HARDENABLE COMPOSITION OF WATER GLASS AND DECORATIVE PRODUCTS MADE BY USING THE SAME

Shinji Nose, Kobe; Shingo Tokuda, Nishinomiya; Motomu Tanaka, Kobe, and Hideaki Tsujimura, Takatsuki, all of Japan, assignors to Osaka Soda Co., Ltd., Osaka, Japan

Filed June 7, 1974, Ser. No. 477,459
Claims priority, application Japan, June 13, 1973, 48-66688; July 13, 1973, 48-79563
Int. Cl.² C08K 3/34
U.S. Cl. 260—42.43 7 Claims

1. A flame retardant hardenable composition comprising water glass and a hardener therefor, said composition being incorporated with a resin consisting of a polymer of at least 40% by weight of a diallyl phthalate and not more than 60% by weight of comonomers copolymerized therewith, said resin being incorporated in the composition in an amount of 5–50% based on the total weight of the solids content of said water glass and said resin.

3,926,906

DENTAL FILLING PACKAGE

Henry Lawrence Lee, II, San Marino; Francis Fabian Smith, Los Angeles, and Michael Lawrence Swartz, Encino, all of Calif., assignors to Johnson & Johnson, New Brunswick, N.J.

Continuation of Ser. No. 736,950, June 14, 1968, abandoned.
This application Oct. 15, 1970, Ser. No. 81,156
Int. Cl.² C08K 3/36
U.S. Cl. 260—42.53 11 Claims

1. A method of filling a tooth comprising the steps of:

a. providing a first quantity of paste-like material consisting essentially of: a premixed unpolymerized resin binder system containing active polyfunctional monomer having a central portion which contains at least one aromatic ring and at least two acrylic end groups; a finely-divided, organosilane keying agent-treated, inorganic filler constituting at least 65 percent by weight of said paste-like material; and a free radical generating catalyst for said binder system in which the free radicals when generated in sufficient quantities will produce relatively rapid polymerization of said system;

b. providing a second quantity of paste-like material consisting essentially of: substantially the same premixed unpolymerized resin binder system which is in said first quantity of material; a finely-divided, organosilane keying agent-treated, inorganic filler constituting at least 65 percent by weight of said second quantity of paste-like material; and an activator for said catalyst to cause the aforesaid generation of free radicals in sufficient quantities to produce relatively rapid polymerization of said binder system;

c. extracting from each of said quantities of material approximately equal amounts of the same sufficient to effect the desired tooth restoration;

d. mixing said extracted quantities so that said activator of said second quantity of material reacts with said catalyst of said first quantity of material causing the generation of sufficient free radicials to inititate relatively rapid polymerization of said resin binder system; and

e. promptly filling a tooth with said mixture before it hardens due to polymerization so that after said mixture is in a tooth it will harden in a known and substantially uniform time to form a hard dental filling.

3,926,907

STABILIZED THERMOSET RESINS FROM POLY(ARYLACETYLENES)

Edward Jacob Engle, III, Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jan. 22, 1973, Ser. No. 325,777
Int. Cl. C08f 45/58, 45/28
U.S. Cl. 260—45.7 P 13 Claims

1. A thermosetting composition comprising a blend of (1) a prepolymer of at least one polyacetylenically substituted aromatic compound, said prepolymer having a number average molecular weight from about 900 to about 12,000, a ratio of aromatic protons olefinic protons greater than about 2.4 and containiing from about 5 to about 20% acetylenic groups by weight of the prepolymer with (2) from about 0.1 to about 20%, by weight of the prepolymer, of at least one thermal stabilizer selected from the group consisting of the inorganic oxyacids of phosphorous, the ammonium and amine salts of said oxyacids, the alkyl and aryl esters of said oxyacids, and the ammonium and amine salts of said esters which are partial esters, the alkyl group in said alkyl esters containing from 1 to 12 carbon atoms and the aryl group in said aryl esters containing from 6 to 10 carbon atoms.

3,926,908

FLAME RETARDANT POLYCARBONATE COMPOSITION

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 28, 1973, Ser. No. 429,642
Int. Cl.² C08K 5/04
U.S. Cl. 260—45.7 S 8 Claims

1. A flame retardant aromatic carbonate polymer composition comprising in admixture an aromatic carbonate polymer and a minor amount of an additive selected from the group consisting of the metal salt of substituted and unsubstituted sulfonic acids of aromatic ketones, and mixtures thereof, wherein said metal salts thereof are selected from the group consisting of alkali metals and alkaline earth metals, and mixtures of these metal salts, and said substituent on the metal salt of the substituted sulfonic acids of aromatic ketones is selected from the group consisting of an electron withdrawing radical and mixtures of electron withdrawing radicals.

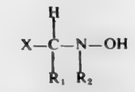
3,926,909

DIBENZYL HYDROXYL AMINE STABILIZER FOR SPANDEX

Peter Wei, Barrington, R.I., assignor to Globe Manufacturing Co., Fall River, Mass.

Filed Aug. 16, 1974, Ser. No. 498,217
Int. Cl.² C08G 6/00
U.S. Cl. 260—45.85 A 16 Claims

1. Polyurethane stabilized against fume discoloration having incorporated therein a substituted hydroxylamine of the formula



where X is a phenyl or naphthyl group or such a group substituted with alkyl of 1 to 12 carbon atoms, halogen, aryl, aryloxy, alkoxy, hydroxy, carboxy, ester or amide and R_1 and R_2 are X, H or benzyl, the amount of substituted hydroxylamine being sufficient to effectively stabilize against fume discoloration.

3,926,910

REDUCTION OF REACTOR FOULING AND IMPROVEMENT IN THE THERMAL STABILITY OF PVC USING NITRITES

Syed K. Mowdood, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 331,435, Feb. 12, 1973, abandoned. This application Aug. 16, 1974, Ser. No. 498,162
Int. Cl.² C08K 5/05
U.S. Cl. 260—45.95 R 7 Claims

1. The process of making a resinous, thermoplastic polymer from a vinyl monomer polymerizable in a mass polymerization system to said polymer in a reactor which comprises adding from 0.001 to 1.00 part per 100 parts of monomer of an alkali or an alkaline earth metal nitrite at the reactor surface which is in contact with the reaction medium prior to formation of less than 10 percent of said polymer by weight from said monomer.

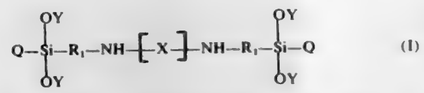
3,926,911

CROSSLINKED POLYMERS CONTAINING SILOXANE GROUPS

Gerd Greber, Binningen; Roland Darms, Therwil, and Dieter Lohmann, Prattein, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

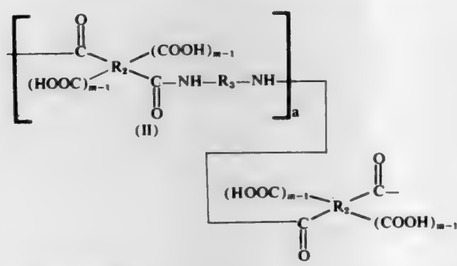
Filed May 24, 1974, Ser. No. 473,047
Claims priority, application Switzerland, June 7, 1973, 8259/73; Aug. 2, 1973, 11230/73
Int. Cl.² C08G 77/04, 77/26
U.S. Cl. 260—46.5 E 12 Claims

1. Crosslinked polyamides, polyimides or polyamide-imides containing siloxane groups, with a silicon content of 0.1 to 17.0% by weight, which are obtainable by heating silicon-modified polyamide, polyamide-acid or polyamide-amide-acid prepolymers with an inherent viscosity of 0.04 to 4.0, which have the formula I



(I)

wherein X represents a structural element of the formula II



(II)

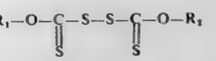
3,926,912

POLYMERIZING CHLOROPRENE IN THE PRESENCE OF XANTHOGEN DISULPHIDES WITH FUNCTIONAL GROUPS

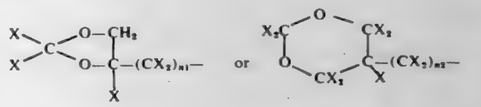
Rudolf Mayer-Mader, and Wilhelm Göbel, both of Cologne, Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Feb. 6, 1974, Ser. No. 440,014
Claims priority, application Germany, Feb. 10, 1973, 2306610; May 23, 1973, 2352937
Int. Cl.² C08F 136/16
U.S. Cl. 260—92.3 6 Claims

1. A process for producing a chloroprene polymer which comprises polymerizing 60 to 100 parts by weight of chloroprene and 40 to 0 parts by weight of a member selected from the group consisting of a diene in which the hydrogen atoms may be partially or completely substituted by halogen atoms, an monoethylenically unsaturated copolymerizable monomer or a mixture thereof in the presence of 0.05 to 30 parts by weight of an xanthogen disulphide of the formula



wherein R_1 and R_2 are the same or different and are of the formula



wherein X may be the same or different and is selected from the group consisting of hydrogen, alkyl having 1 to 6 carbon atoms, phenyl, naphthyl, benzyl, chlorine, bromine and iodine and n_1 and n_2 are the same or are different and are each an integer of from 1 to 20.

3,926,913

LOW TEMPERATURE CURING POLYIMIDES

Robert J. Jones, Hermosa Beach, and Howard N. Cassey, Long Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Feb. 15, 1974, Ser. No. 443,058
Int. Cl.² C08G 73/10
U.S. Cl. 260—47 CP 8 Claims

1. A process for the preparation of a low temperature curing polyimide comprising:

A. blending an organic compound selected from the group consisting of dianhydride and tetraacid and a free radical catalyst with diaminostilbene not in excess of 50 mole percent and the remainder a nitrogen compound selected from the group consisting of organic diisocyanate and organic primary diamines whereby a mixture of an amide-acid with the catalyst dispersed therethrough is formed;

B. subsequently heating the mixture in a temperature range of from 150° to 200°C to imidize said amide-acid fully; and

C. heating said imide-catalyst in a temperature range of from 150° to 250°C to activate said catalyst whereby a compliant polyimide is formed.

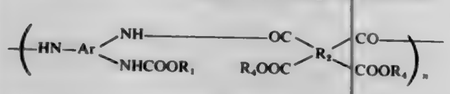
3,926,914

POLYMERS PREPARED FROM AROMATIC DIAMINOALKOXYCARBOXYLAMINE COMPOUNDS AND DIANHYDRIDES AND METHOD FOR THEIR PREPARATION

Yasuo Miyadera, and Hisao Yokokura, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 6, 1973, Ser. No. 413,232
Int. Cl.² C08G 73/06
U.S. Cl. 260—47 CP 43 Claims

1. A polymer including groups having the formula:



wherein Ar is an aromatic radical; R_1 is a monovalent alkyl group having 4 or less carbon atoms, an aryl group having 6 to 12 carbon atoms, a cycloalkyl group having 6 to 12 carbon atoms, and aralkyl group having 7 to 12 carbon atoms or an alkaryl group having 7 to 12 carbon atoms; R_2 is a tetravalent radical of a tetracarboxylic acid; R_4 is hydrogen or the above-defined R_3; and n is a positive integer.

3,926,915

PROCESS FOR PRODUCTION OF ACRYLIC ACID

Yoshihisa Watanabe; Makoto Imanari; Naohiro Nojiri, and Nobuhiko Fuga, all of Ami, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Oct. 10, 1973, Ser. No. 405,140
Claims priority, application Japan, Oct. 16, 1972, 47-102648
Int. Cl.² C07C 51/26, 57/04
U.S. Cl. 260—530 N 3 Claims

1. A process for producing acrylic acid which comprises subjecting acrolein to catalytic vapor phase oxidation with molecular oxygen over an oxidation catalyst at a temperature of from 200°C to 350°C and under a pressure of from 0.5 atmosphere to 10 atmosphere, gauge wherein said oxidation catalyst consists essentially of the oxides of (1) molybdenum (2) vanadium (3) niobium and (4) silica and wherein said catalyst consists of:

	gram atomic percent
(1) molybdena	10 – 90
(2) vanadia	0.01 – 60
(3) niobium oxide	0.01 – 70
and (4) silica	up to 200%

based on the total atomic atoms of molybdenum, vanadium and of niobium.

3,926,916

DIELECTRIC COMPOSITION CAPABLE OF ELECTRICAL ACTIVATION

Sebastian Vito Rocco Mastrangelo, Hockessin, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Dec. 22, 1972, Ser. No. 317,381
Int. Cl.² H01B 3/12, 3/30
U.S. Cl. 252—63.5 8 Claims

1. Dielectric composition comprising a dielectric organic polymeric binder and normally dielectric filler particles of aluminum having a tarnish film of aluminum oxide as a dielectric surface coating thereon dispersed therein, at least 30 weight % of said filler particles having smooth rounded edges and the polymer of said organic polymeric binder having a glass transition temperature of at least 40°C., which composition is useful as a dielectric material and, in layered form, upon electrical activation, provides a multiplicity of closely spaced, mutually isolated electrically conductive paths.

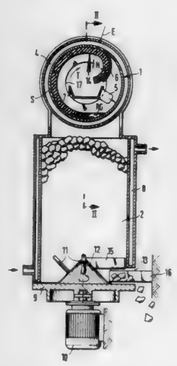
8. The structure of claim 3 wherein the amount of binder is 15–55 volume % and the amount of filler particles is 45–85 volume %.

3,926,917

PROCESS FOR PERFORMING REACTIONS INVOLVING THE FORMATION OF A SOLID PHASE FROM LIQUID PHASE

Roland Jaccard; Paul Hostettler, both of Basel, and Rudolf Siegrist, Hofstetten, SO, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 155,481, June 22, 1971, Pat. No. 3,819,332. This application Dec. 11, 1973, Ser. No. 423,795
Claims priority, application Switzerland, June 26, 1970, 9707/70
Int. Cl.² C08G 12/32, 12/36
U.S. Cl. 260—67.6 R 4 Claims



1. A process for the manufacture of a condensation polymer based on urea and/or melamine and formaldehyde, comprising the steps of mixing an aqueous solution of a precondensate of urea and/or melamine and formaldehyde in the presence of a protective colloid with a solution of sulphamic acid or a water-soluble ammonium hydrogen sulphate of the formula: $[R\text{-}NH_3](^+) \cdot [SO_4H](^-)$ wherein R is a hydrogen atom or an organic radical that does not adversely affect the water solubility, admitting and depositing this mixture still in a liquid state on an internal surface of a drum rotating about a substantially horizontal axis, controlling the mixture supply and the rotational speed of the drum as a function of the velocity of polymerization so as to maintain a sump of liquid mixture in the drum, peeling the layer of polymer that forms on the surface of the drum and is drawn continuously out of the sump at a point above the sump, and leading the detached layer of polymer out of the drum through a central opening in one of the end walls of the drum.

3,926,918

PROCESS FOR PRODUCING POLYVINYL ACETAL

Yutaka Shibata; Yoshiaki Kodera; Mitsuru Tanaka, all of Shiga; Fumio Kamiyama, Ohyamazaki, and Nakatan, Ohtsu, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 27, 1973, Ser. No. 428,741
Claims priority, application Japan, Dec. 30, 1972, 48-2815
Int. Cl.² C08F 8/28
U.S. Cl. 260—73 L 13 Claims

1. A process for preparing polyvinyl acetals by condensing polyvinyl alcohol with an aldehyde in the aqueous phase in the presence of a catalytic amount of an acid catalyst which comprises the following steps:

1. reacting the polyvinyl alcohol with not more than 0.25 mol per 1.0 mol of the $—CH_2—CHOH—$ bond of the polyvinyl alcohol, of an aldehyde at a temperature in excess of 20°C. so as not to precipitate the reaction product,
2. cooling the reaction system at a temperature of not more than 20°C. and further adding an aldehyde while maintaining the reaction system at a temperature of not more than 20°C. thereby to precipitate the reaction product, and
3. heating the reaction system to a temperature of at least 30°C. and continuing the reaction at this temperature for at least 1 hour.

3,926,919

POLYURETHANES CHAIN-EXTENDED WITH 2,2'-DIAMINODIPHENYLDISULFIDE

Anthony F. Finelli, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 23, 1973, Ser. No. 381,464
Int. Cl.² C08G 18/28, 18/32, 18/62
U.S. Cl. 260—75 NH 5 Claims

1. A cured polyurethane prepared by the method which comprises curing a composition derived by the method which comprises mixing an excess of a polyisocyanate having an isocyanate functionality of 2 to 3 with a polymeric polyol having an hydroxyl functionality of 2 to 3 and a molecular weight in the range of about 500 to about 6000 by reacting therewith, the primary diamine, 2,2'-diaminodiphenyldisulfide at a temperature in the range of about 20°C to about 150°C, where the ratio of isocyanato groups of the polyisocyanate to the hydroxyl groups of the polymeric polyol is in the range of about 1.3 to about 12 and where the ratio of amine groups of said 2,2'-diaminodiphenyldisulfide to excess isocyanato groups of said polyisocyanate over hydroxyl groups of said polymeric polyol is in the range of about 0.5 to about 1.1.

3,926,920

HOT MELT ADHESIVE BASED ON LOW VISCOSITY HEAT STABLE COPOLYESTERS

Paul C. Georgoudis, Dunellen; Dilip K. Ray-Chaudhuri, Somerville, and Thomas P. Flanagan, Green Brook, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 337,638, March 2, 1973, abandoned. This application Dec. 20, 1974, Ser. No. 534,725
Int. Cl.² C08G 63/16
U.S. Cl. 260—75 R 5 Claims

1. A hot melt adhesive copolyester derived from the reaction of a mixture consisting essentially of:

A. at least one aliphatic primary glycol having from 2-6 carbon atoms and

B. a mixture totaling 100 mole per cent of the following dicarboxylic acids or their dicarboxylic acid functioning derivatives: 25–65 mole per cent of terephthalic acid, 25–65 mole per cent of isophthalic acid, and 5–20 mole per cent of phthalic acid; said glycol component A being chosen such that any copolyester obtained has a melting point no greater than 150°C.

3,926,921

PHARMACEUTICAL COMPOSITIONS COMPRISING MIXED SALTS OF SULFOGLYCOPEPTIDES WITH METAL AND ORGANIC BASES

Adriano Butti, Como, and Giuseppe Prino, Milan, both of Italy, assignors to Crinos Industria Farmacobiologica SpA, Guardia, Italy

Filed Mar. 22, 1974, Ser. No. 453,764
Claims priority, application Italy, Mar. 27, 1973, 22212/73
Int. Cl.² A61K 37/00; A01N 9/00, 9/22
U.S. Cl. 424—177 16 Claims

1. An orally administrable pharmaceutical composition, comprising:

an amount effective for the treatment of gastroduodenal diseases of a mixed salt, wherein the anionic moiety is a sulfoglycopeptide polyanion and the cationic moiety is:

a. a metal cation selected from the group consisting of the alkali and alkaline-earth metal cations, and

b. the cation of a nitrogen-containing organic base having spasmolytic and anticholinergic activities; and

a pharmaceutically acceptable carrier or coating.

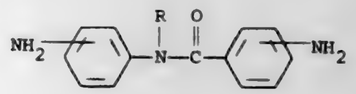
3,926,922

POLYURETHANE ELASTOMERS PREPARED FROM DIAMINE CURING AGENTS

Richard C. Baron, North Andover; Leon D. Cerankowski, Carlisle, and Neil Mattucci, Billerica, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 14, 1974, Ser. No. 451,078
Int. Cl.² C08G 18/06
U.S. Cl. 260—77.5 AM 20 Claims

1. A polyurethane product prepared by reacting an isocyanate terminated urethane prepolymer and a curing agent of the formula:



wherein R is hydrogen or alkyl.

3,926,923
AROMATIC POLYESTER-AMIDES

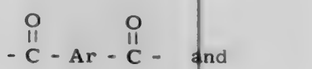
Jack Preston, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 352,846, April 19, 1973, abandoned. This application Mar. 7, 1974, Ser. No. 448,846
Int. Cl.² C08G 69/44
U.S. Cl. 260—78 R 9 Claims

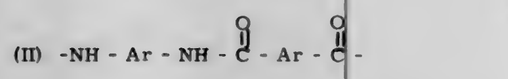
1. A high molecular weight fiber-forming polymer composed of recurring units selected from the group consisting of



(I) -NH- Ar -C(=O)-O-R-O-C(=O)- Ar -NH-

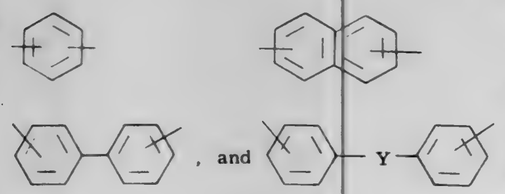


-C(=O)-Ar-C(=O)- and

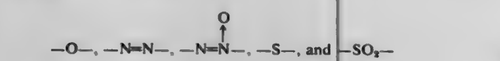


(II) -NH-Ar-NH-C(=O)-Ar-C(=O)-

wherein R is a branched or linear C_2–C_8 alkylene radical and each Ar is individually selected from the group consisting of



wherein Y is selected from the group consisting of a branched or linear C_1–C_4 alkylene radical



—O—, —N=N—, —N=N—, —S—, and —SO_2—

and wherein at least 35% by weight of the polymer is composed of units (I).

3,926,924
POLYAMIDE COPOLYMERS FROM HEXAMETHYLENE DIAMMONIUM ADIPATE/TEREPHTHALATE AND A THIRD POLYAMIDE FORMING REACTANT

Owen Burchell Edgar, Manchester, and Michael Richard Yates, Leeds, both of England, assignors to Imperial Chemical Industries Ltd., London, England

Continuation of Ser. No. 201,966, Nov. 24, 1971, abandoned, which is a continuation of Ser. No. 578,521, Sept. 12, 1966, abandoned. This application Oct. 18, 1973, Ser. No. 407,679
Claims priority, application United Kingdom, Sept. 16, 1965, 39587/65
Int. Cl.² C08G 69/26, 69/14, 69/08
U.S. Cl. 260—78 R 3 Claims

1. A fibre forming copolyamide consisting essentially of the polymeric condensation product of (1) at least 50% by weight, based on the weight of the copolyamide, of hexamethylene diammonium adipate, (2) 20 – 40% by weight of hexamethylene diammonium terephthalate and (3) 2 – 20% by weight of epsilon caprolactam.

3,926,925
NOVEL POLYMERS OF OLEFINS AND POLAR MONOMERS

Irving Kuntz, Linden, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed July 27, 1973, Ser. No. 383,093
Int. Cl.² C08F 4/14, 220/14, 220/18
U.S. Cl. 260—78.5 R 8 Claims

1. A composition of matter comprising an interpolymer of from 20 to 60 mole % of one or more monoolefins of from 4 to 24 carbon atoms wherein said monoolefin is selected from the group consisting of branched 2-substituted-1-olefins and vinyl ethers, from 80 to 40 mole % of an acrylic acid ester where the ester moiety has from 1–20 carbon atoms, and from 0.05 to 35 mole % of a monomer selected from the group consisting of (a) diesters of fumaric acid, (b) diamides of fumaric acid, (c) derivatives of maleic acid selected from the group consisting of diesters, diamides, imides, and the anhydride, (d) C_1–C_8 alkyl substituted maleic acid derivatives selected from the group consisting of diesters, diamides, imides, and the anhydride, the interpolymer having an inherent viscosity greater than 0.3 when measured in benzene at 25°C.

3,926,926
THERMOPLASTIC ACRYLONITRILE COPOLYMERS

George S. Li, Aurora, and Gerald P. Coffey, Cleveland Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Nov. 20, 1974, Ser. No. 525,376
Int. Cl.² C08F 244/00
U.S. Cl. 260—85.5 B 3 Claims

1. The composition resulting from the copolymerization of (A) from 50 to 90% by weight of acrylonitrile and (B) from 10 to 50% by weight of at least one member selected from the group consisting of indene and coumarone.

3,926,927
STRIPPING MONOMERS FROM A SLURRY OF COPOLYMERIZED ACRYLONITRILE

Donald J. Stookey, Decatur, Ala., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 25, 1974, Ser. No. 526,665
Int. Cl.² C08F 124/00
U.S. Cl. 260—85.5 S 4 Claims

1. The method of stripping unreacted monomers from a slurry containing about 8 to 50 weight percent solids of a polymer composed of at least 35 weight percent acrylonitrile copolymerized with up to 65 percent of one or more other mono-olefinic monomers copolymerizable with acrylonitrile and up to about 70 weight percent unreacted monomers, based on slurry weight,

a. feeding the slurry downward through a treatment zone having a sequence of surfaces each having therein perforations through which the slurry can flow downward onto the next surface in the sequence,
b. forcing steam upward through the perforations in countercurrent flow to the slurry to strip unreacted monomers from said slurry, and
c. repeatedly cycling the steam flow rate back and forth from a first flow rate to a second flow rate, said first flow rate being such that the slurry will not flow downward through the perforations while the steam is flowing at said first flow rate, said second flow rate being such that the slurry flows downward through the perforations in the surfaces during the time period of said second flow rate, said first flow rate being carried out for a first time period of 5 to 15 seconds, said second flow rate being carried out for a second time period of 1 to 10 seconds.

3,926,928
CATALYST AND PROCESS FOR THE POLYMERIZATION OF ALPHA-OLEFINS

Nicholas M. Karayannis, Hinsdale; Missak Khelghatian, Naperville, and Sam S. Lee, Hoffman Estates, all of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Aug. 27, 1973, Ser. No. 391,608
Int. Cl.² B01J 31/02; C08F 210/00, 212/00, 110/02
U.S. Cl. 260—88.2 14 Claims

1. A composition which comprises:
a. a material selected from the group consisting of a trialkyl aluminum, a mixture of trialkyl aluminum and an alkylaluminum dichloride or dibromide, a mixture of a trialkyl aluminum and a dialkylaluminum chloride or bromide and a dialkylalumimum chloride or bromide,
b. titanium trichloride,
c. an alkyltin sulfide, and
d. a trihydrocarbylphosphite.

2. A composition which comprises:
a. a material selected from the group consisting of a trialkyl aluminum, a mixture of a trialkyl aluminum and an alkylaluminum dichloride, a mixture of a trialkyl aluminum and a dialkylaluminum chloride, and a dialkyl-aluminum chloride,
b. titanium trichloride,
c. an alkyltin sulfide, and
d. a trihydrocarbylphosphite.

3. A composition which comprises:
a. a dialkylaluminum chloride, and
b. titanium trichloride, and
c. an alkyltin sulfide, and
d. a trihydrocarbylphosphite.

8. A process wherein propylene or propylene and at least 1 other alpha-olefin of from 2 to about 8 carbon atoms is contacted by at least a catalytic amount of a composition to form highly-crystalline polypropylene or copolymer wherein the polypropylene is still substantially crystalline comprising:
a. a compound selected from the group consisting of a trialkyl aluminum, a mixture of a trialkyl aluminum and an alkylaluminum dichloride or dibromide, a mixture of a trialkyl aluminum and a dialkylaluminum chloride or bromide, and a dialkylaluminum chloride or bromide,
b. titanium trichloride,
c. an alkyltin sulfide, and
d. a trihydrocarbylphosphite.

9. A process wherein propylene or propylene and at least 1 alpha-olefin of from 2 to about 8 carbon atoms is contacted by at least a catalytic amount of a composition to form highly-crystalline polypropylene or copolymer wherein the polypropylene is still substantially crystalline comprising:
a. a compound selected from the group consisting of a trialkyl aluminum, a mixture of a trialkyl aluminum and an alkylaluminum dichloride, a mixture of trialkyl aluminum and a dialkyl-aluminum chloride and a dialkylaluminum chloride,
b. titanium trichloride,
c. an alkyltin sulfide, and
d. a trihydrocarbylphosphite.

3,926,929
PROCESS FOR POLYMERIZATION OF OLEFIN

Nobuo Enokido; Atsushi Murakami, both of Kawasaki; Kazuo Yamaguchi, Tokyo; Natsuki Kanoh, Yokohama; Toru Tanaka, Kawasaki; Shigeaki Okano, Yokohama, and Masatoshi Suzuki, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 244,939, April 17, 1972, abandoned. This application Mar. 7, 1974, Ser. No. 448,885
Claims priority, application Japan, Apr. 16, 1971, 46-24358; June 18, 1971, 46-43786
Int. Cl.² C08F 4/14, 10/00, 10/02
U.S. Cl. 260—85.3 R 5 Claims

1. A process for the polymerization of an olefin which comprises reacting said olefin in contact with a catalyst system comprising (a) an organo-aluminum compound of the formula AlR_nX_{3-n} wherein R represents a hydrocarbon group of 1–14 carbon atoms; X represents a hydrogen atom, halogen atom or an alkoxy group; and n represents an integer of 1–3; and (b) a solid catalyst reaction product of an organo-tin compound of the formula

$$SnR_3Y$$

wherein R represents a hydrocarbon group of 1–14 carbon atoms; Y represents a halogen atom or an alkoxy group having 1–14 carbon atoms, and a Group III metal halide selected from the group consisting of aluminum trihalide and boron trihalide with a mixture or reaction product of a titanium compound having the formula

$$Ti(OR)_nX_{4-n}$$

wherein R represents an alkyl group; X represents halogen atom; and n represents an integer of 0–4 titanyl dichloride, titanyl dibromide or titanium acetylacetonate and a vanadium compound having the formula

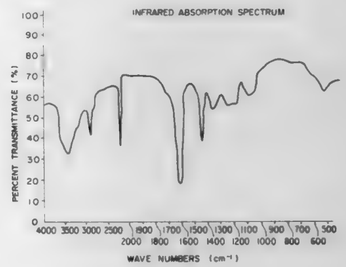
$$V(OR)_{4-n}X_n,\ VO(OR)_{3-m}X_m$$

wherein R represents an alkyl group; X represents a halogen atom and n represents an integer of 0–4 and m represents an integer of 0–3 or vanadium acetylacetonate wherein said reaction product (b) is formed at a temperature of 0°–150°C wherein the atomic ratio of the organo-tin compound to the Group III metal halide is 0.01 – 100, and the atomic ratio of the Group III metal halide to the titanium compound and the vanadium compound is 0.1 – 10.

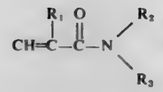
3,926,930
HYGROSCOPIC ACRYLIC SYNTHETIC FIBERS AND METHOD FOR PREPARING THE SAME

Toshio Ohfuka; Yoshihisa Schichijo; Yasushi Ichikawa, and Katsuo Yamamoto, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushika Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 138,875, April 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 30,540, April 20, 1970, abandoned. This application Sept. 6, 1973, Ser. No. 394,937
Claims priority, application Japan, May 8, 1969, 44-34782
Int. Cl.² C08F 220/48, 224/00, 226/06
U.S. Cl. 260—85.5 S 2 Claims



1. A polymer hydrolyzate produced by hydrolyzing with nitric acid a polymer comprising at least 85% by weight of acrylonitrile, 0.5 – 10% by weight of N,N-substituted acryl- or methacryl-amide having the general formula of



(wherein R_1 represents a hydrogen atom or a methyl group; R_2 and R_3 represent alkyl groups having 1 to 3 carbon atoms, the sum total of carbon atoms of R_2 and R_3 being not more than 4, or R_2 and R_3 being cyclically connected to each other to form a pyrrolidine or morpholine structure) and 0 – 15% by weight of a compound selected from the group consisting of methyl acrylate, ethyl acrylate, methyl methacrylate, ethyl methacrylate, vinyl acetate, methyl vinyl ketone, styrene, vinyl chloride, vinyl fluoride, vinyl bromide, vinylidene chloride, 2-vinylpyridine, 2-methyl-5-vinylpyridine, N,N-diethylaminoethyl methacrylates, allysulfonic acid and styrene sulfonic acid, the hydrolysis being carried out to such a degree that an amide group of 1680 cm^{-1} is formed in the infrared absorption spectrum and the ODR of 1680 cm^{-1} to 1450 cm^{-1} is in the range of 1.2 – 1.8, said polymer hydrolyzate having a moisture regain of 3.0 % to 10% at a relative humidity of 65% at 20°C.

3,926,931
METHOD FOR SUSPENSION-POLYMERIZING VINYL CHLORIDE

Shunichi Koyanagi, Naoetsu; Shigeru Arai, Yachiyo; Shigenobu Tajima, Naoetsu, and Kazuhiko Kurimoto, Shimoyo-Shinden, all of Japan, assignors to Shinetsu Chemical Company, Tokyo, Japan

Continuation-in-part of Ser. No. 127,768, March 24, 1971, abandoned. This application July 25, 1973, Ser. No. 382,458
Claims priority, application Japan, Apr. 13, 1970, 45-31755
Int. Cl.² C08F *1/11, 3/30, 15/00*
U.S. Cl. 260—92.8 W **4 Claims**

1. In a method for suspension-polymerizing at least one monomer taken from the class consisting of vinyl chloride and a mixture of vinyl monomers having vinyl chloride as a main component in the presence of a suspending agent and a polymerization catalyst in an aqueous medium under agitation and with primary cooling in a vessel, said vessel having a condenser for auxiliary cooling, a passageway between said vessel and said condenser for flow of fluid from said vessel to said condenser, the improvement which comprises isolating said condenser from said vessel by keeping said passageway closed until a conversion of at least 5% is obtained, then opening said passageway and maintaining said auxiliary cooling when said passageway is open.

3,926,932
PLATABLE POLYPROPYLENE

Ismat A. Abu-Isa, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 238,464, Nov. 27, 1972, abandoned, which is a division of Ser. No. 66,127, Aug. 21, 1970, Pat. No. 3,695,917. This application Jan. 28, 1974, Ser. No. 436,881
Int. Cl. C08f *29/02*
U.S. Cl. 260—93.7 **1 Claim**

1. Plating grade polypropylene flakes for forming into rigid articles destined to be metal plated, said flakes comprising principally high molecular weight polypropylene and methyl abietate in which the methyl abietate comprises about 5 to about 7% by weight of the combined polypropylene and methyl abietate, said high molecular weight polypropylene having a heat deflection of at least about 94°C. under a 66 psi load test according to ASTM standard (ASTM D648).

3,926,933
CATALYSTS FOR PRODUCING HIGH TRANS-POLYBUTADIENE

Floyd E. Naylor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 1, 1974, Ser. No. 447,201
Int. Cl.² C08D *3/08, 1/14*
U.S. Cl. 260—94.3 **6 Claims**

1. A method for polymerizing 1,3-butadiene to produce high trans-polybutadiene comprising:
   contacting 1,3-butadiene under polymerization conditions with a catalyst comprising three components;
   wherein the first component of said catalyst is an oxyether solution of $LiAlH_4$;
   wherein the second component of said catalyst is a titanium halide component selected from the group consisting of titanium tetrachloride plus molecular iodine, titanium tetrabromide plus molecular iodine, and titanium tetraiodide; and
   wherein the third component of said catalyst is at least one thioether represented by the general formula

R-S-R'

wherein R and R' are hydrocarbon radicals selected from the group consisting of alkyl and cycloalkyl radicals containing from about 1 to 12 carbon atoms, or R and R' are hydrocarbon radicals selected from the group consisting of alkylene groups joined to the sulfur atom and to each other to form a saturated heterocyclic thioether containing from about 4 to 10 carbon atoms.

3,926,934
POLYETHYLENE POWDERS

Joseph A. Lasswell, Orange, Tex., and Francis E. Brown, Shawnee, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 5,141, Jan. 22, 1970, abandoned. This application Aug. 9, 1971, Ser. No. 170,326
Int. Cl.² C08F *2/16, 6/00, 10/02, 110/02*
U.S. Cl. 260—94.9 A **5 Claims**

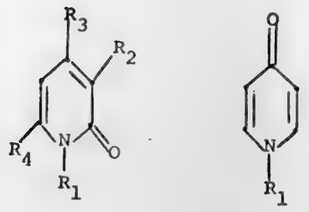
1. A process for the manufacture of free-flowing polyethylene powders containing substantial concentrations of adsorbed water which consists essentially of introducing a water-soluble initiator and a dispersing agent selected from the group consisting of polyvinyl alcohol and polyvinyl pyrrolidone into a polymerization zone, introducing ethylene into said polymerization zone, introducing water into said polymerization zone at a rate so as to maintain a weight ratio of water to ethylene in said polymerization zone in the range of 2:1 to 6:1, maintaining a polymerization temperature in the range of 60° to 90°C. in said polymerization zone, maintaining a polymerization pressure above 10,000 psig in said polymerization zone, continuing the polymerization for a perid of time sufficient so that the formed polyethylene solids constitute about 20–35 percent by weight of the combined weight of polyethylene and water, venting the reaction mixture, and recovering polyethylene powders containing substantial concentrations of adsorbed water.

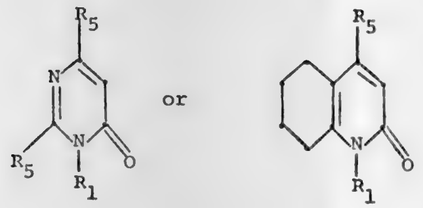
3,926,935
ANTICOCCIDIAL COMPLEXES

Edward F. Rogers, Middletown; Richard A. Dybas, Edison, and John Hannah, Matawan, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 316,180, Dec. 18, 1972, abandoned. This application Sept. 26, 1974, Ser. No. 509,381
Int. Cl.² C07C *127/00*
U.S. Cl. 260—96.5 R **6 Claims**

1. A complex of 4,4'-dinitrocarbanilide and one of the heterocyclic compounds having the formula:





wherein R_1 is methyl or ethyl; R_2 is hydrogen or lower alkoxy; R_3 and R_4 are the same and are (a) lower alkyl when R_2 is hydrogen and (b) hydrogen when R_2 is lower alkoxy; and R_5 is lower alkyl.

3,926,936
PROCESS FOR MANUFACTURING VALUABLE PRODUCTS FROM TALL OIL PITCH

Timo Pellervo Lehtinen, Oulu, Finland, assignor to Oulo Osakeyhtio, Oulu, Finland

Filed Nov. 15, 1973, Ser. No. 416,101
Claims priority, application Finland, Nov. 17, 1972, 3237/72
Int. Cl.² C09F *1/04*
U.S. Cl. 260—97.5 **14 Claims**

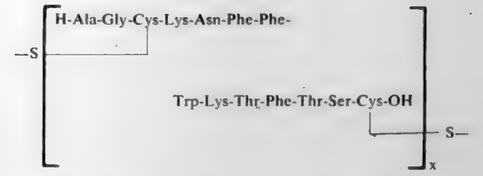
1. A process for the manufacture of products from tall oil pitch produced in the distillation of tall oil, comprising:
   a. saponifying tall oil pitch by heating it at a temperature in the range 200°–300°C. together with an alkali saponification agent, the amount of said agent comprising 5–25% of the amount of pitch until a main portion of the sterols liberated from fatty and rosin acid esters have been converted to hydrocarbons by dehydration,
   b. acidifying the reaction product thereby obtained to form an oil having an acid value in the range 50–150,
   c. distilling the obtained oil under a pressure of less than 50 mm Hg to obtain a distillate, 10–70%, of which the acid value is 100–190, and a distillation residue of which the softening point (ball and ring) is not lower than 50°C.

3,926,937
POLYMERIC SOMATOSTATIN

Norman H. Grant, Wynnewood, and Dimitrios Sarantakis, Audubon, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Apr. 18, 1974, Ser. No. 462,149
Int. Cl. C07c *103/52;* **C08h** *1/00;* **A61k** *37/00*
U.S. Cl. 260—112.5 **1 Claim**

1. Polymeric reduced somatostatin containing from about 0.090 to about 1.0 milliequivalents free sulfhydryl groups per millimole of polymer, of molecular weight from 3,636 to about 182,000, bonded by Cys 3-3, Cys 3-14 and Cys 14-14 disulfide linkages, presenting the formula:



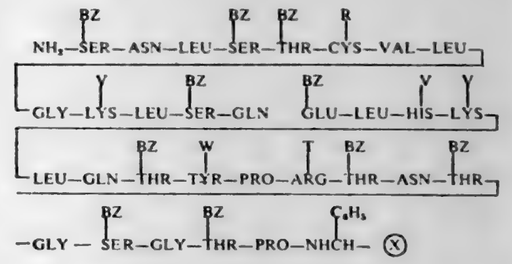
in which each of the amino acid units containing an asymmetric α-carbon atom is in the L-configuration, *x* is an integer from 2 to 100, inclusive; protamine zinc complexes, protamine aluminum complexes and mixtures thereof.

3,926,938
SYNTHESIS OF SALMON CALCITONIN

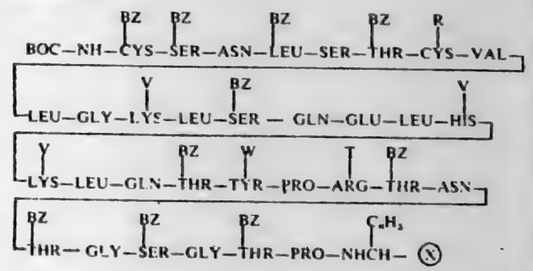
John Lawrence Hughes, Kankakee; Jay Kenneth Seyler, Bourbonnais, and Robert Chung-Huang Liu, Kankakee, all of Ill., assignors to Armour Pharmaceutical Company, Phoenix, Ariz.

Filed Aug. 12, 1974, Ser. No. 496,539
Claims priority, application Japan, Dec. 7, 1972, 47-121973
Int. Cl.² C07C *103/52;* **C07G** *7/00*
U.S. Cl. 260—112.5 **23 Claims**

12. In a process for synthesizing salmon calcitonin the step of mixing



with the reactant BOC-BZ-L-cysteine or an active ester, an azide or an anhydride thereof and unless said reactant is an active ester, an azide or an anhydride, in the presence of a diimide, to obtain



where X
is divinylbenzene crosslinked polystyrene resin,
BZ is benzyl, 4-methoxybenzyl, 3,4-dimethylbenzyl, 4-chlorobenzyl, 2,6-dichlorobenzyl, 4-nitrobenzyl, or benzylhydryl,
T is nitro or tosyl,
W is BZ, benzyloxycarbonyl, 2-chlorobenzyloxycarbonyl, 2-bromobenzyloxycarbonyl or hydrogen,
V is benzyloxycarbonyl, 2-bromobenzyloxycarbonyl or 2-chlorobenzyloxycarbonyl,
BOC is tertiary-butyloxycarbonyl
and
R is an n-alkylthio group.

3,926,939

METHOD OF EXTRACTING PURE SERUM ALBUMIN FROM BIOLOGICAL FLUIDS USING A SALT OF A CARBOXYLIC ALIPHATIC ACID

Mikhail Ivanovich Ivanov, Kuzminki, Moskovskaya Veterinarnaya Akademia, 10, kv. 9; Anatoly Alexandrovich From, ulitsa Flotskaya 28, korpus 1, kv. 84; Anatoly Efimovich Kiseley, ulitsa Kostyakova, 8/6, kv. 182, all of, Moscow; Alexandr Alexandrovich Nikitenko, Krasnogorsky raion, Petrovo-Dalnee, Institut, dom 5, kv. 47, Moskovskaya oblast; Valentin Mikhailovich Rusanov, Slavyansky bulvar, 27, kv. 192, Moscow, and Leonid Ivanovich Skobelev, Prospekt Mira, 169, kv. 32, both of Moscow, all of U.S.S.R.

Filed Aug. 24, 1973, Ser. No. 391,312

Int. Cl.² A23J 1/06; C07G 7/00

U.S. Cl. 260—122 **7 Claims**

1. A method of extracting pure serum albumin from biological fluids, which comprises the steps of treating biological fluids with a lower aliphatic alcohol at a volume concentration of 15 to 35% in the presence of 0.1 to 0.6 weight percent of the solution of a salt of a carboxylic aliphatic acid with a non-toxic cation and anion containing from 6 to 12 carbon atoms at a temperature of from 1° to 30°C. and a pH of from 3.3. to 3.5, whereby the concomitant proteins are at least partly denatured; precipitating the denatured and native concomitant proteins at a pH from 4 to 5 and at a temperature of from 1° to 35°C, whereby the non-protein impurities which form complexes with the albumin are split off therefrom and adsorbed by the resulting precipitate; and separating the solution containing pure serum albumin from said precipitate at a temperature of from 1 to 30°C and at pH of from 4 to 5.

3,926,940

PROTEIN RECOVERY PROCESS FROM DEFATTED SOYBEANS USING WATER TO REDUCE AMOUNT OF MISCIBLE SOLVENT

Sidney Joseph Circle; Richard Raymond Fergle, both of Richardson; Leslie Ray Watkins, Houston, and Daniel Edwards Hooton, Dallas, all of Tex., assignors to Anderson, Clayton & Co., Houston, Tex.

Continuation of Ser. No. 189,505, Oct. 15, 1971, abandoned. This application Jan. 14, 1974, Ser. No. 432,886

Claims priority, application United Kingdom, Nov. 5, 1970, 52578/70; Nov. 5, 1970, 52579/70; Nov. 5, 1970, 52580/70

Int. Cl.² A23J 1/14

U.S. Cl. 260—123.5 **20 Claims**

1. In a process for recovery of protein from an aqueous solution having a pH between about 6 and 12, the protein in said solution having been derived from soybeans from which substantially all oil has been removed, in which process acid is added to the solution to reduce its pH sufficiently to cause the protein to precipitate as a curd and the protein is treated with a water-miscible organic solvent to remove undesirable color and flavor constituents, said solvent being added either before or after the precipitation of the curd, the improvement comprising providing a series of N zones wherein N is an integer of at least 1 and in each of which zones the solvent-treated curd is intimately mixed with water forming a mixture of liquid and curd, the mixture is passed to a separator and the curd separated from the liquid, said zones being sufficient to reduce the amount of solvent in the curd to less than about 10% by weight of the liquid portion of the curd without appreciable denaturation of protein of the curd.

3,926,941

AZO DYES HAVING A TRIAZOLIUM DIAZO COMPONENT RADICAL WITH A FUSED CYCLOALKYL RING

Beat Henzi, Neuallschwil, Switzerland, assignor to Sandoz, Ltd., Basel, Switzerland

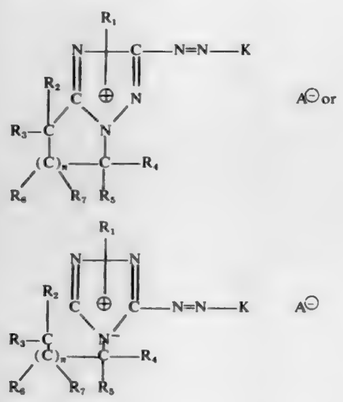
Filed Aug. 8, 1973, Ser. No. 386,775

Claims priority, application Switzerland, Aug. 10, 1972, 11843/72

Int. Cl.² C09B 29/36; D06P 1/41

U.S. Cl. 260—146 R **26 Claims**

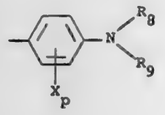
1. A dye of the formula

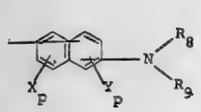
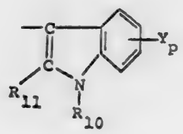


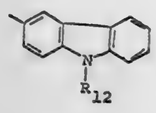
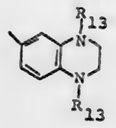
wherein

R_1 is alkyl, alkyl monosubstituted by hydroxy, phenyl, alkoxy or carbamoyl, alkenyl of 2 to 4 carbon atoms, alkoxy or cycloalkyl of 5 to 7 carbon atoms,

each R_2, R_3, R_4, R_5, R_6 and R_7 is independently hydrogen, alkyl, cycloalkyl of 5 to 7 carbon atoms or phenyl,

K is  ,

 ,  ,

 ,  ,

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3,926,942

METALLIZED FORMAZAN COMPOUNDS CONTAINING A REACTIVE GROUP

Michael Yelland, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Aug. 13, 1973, Ser. No. 387,727

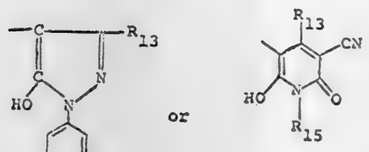
Claims priority, application United Kingdom, Aug. 31, 1972, 40320/72

Int. Cl.² C09B 62/08; D06P 1/382; C09B 62/24

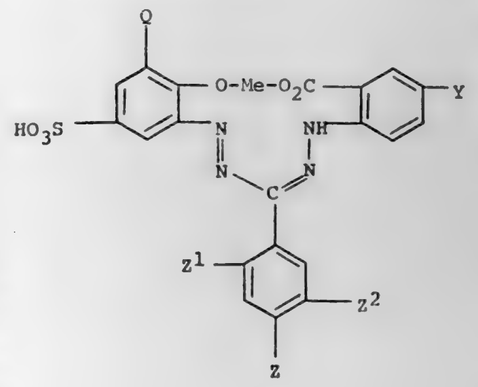
U.S. Cl. 260—146 T **6 Claims**

1. A dyestuff having the formula

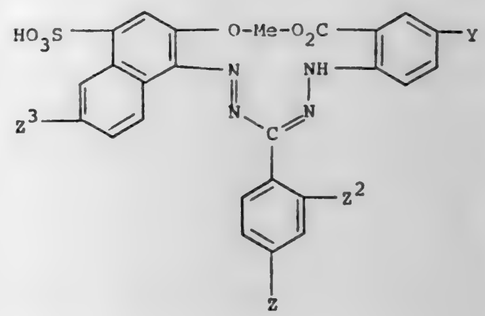




or



or



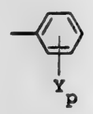
wherein each of

R_8 and R_9 is independently hydrogen, alkyl, phenyl, cycloalkyl of 5 to 7 carbon atoms, alkylphenyl or alkyl monosubstituted by halo, phenyl, alkoxy, phenoxy, phenylcarbamoyloxy, alkylcarbonyloxy, alkoxycarbonyl, hydroxy, benzoyloxy or cyano, with the proviso that when R_8 or R_9 is phenyl, cycloalkyl of 5 to 7 carbon atoms or alkylphenyl, the other is other than phenyl, cycloalkyl of 5 to 7 carbon atoms or alkylphenyl, or

R_8 and R_9 taken together and with the nitrogen atom to which they are joined are pyrrolidino, piperidino, morpholino or piperazino,

R_{10} is hydrogen or alkyl

R_{11} is alkyl or



R_{12} is hydrogen or alkyl, each R_{13} is independently hydrogen or alkyl,

R_{14} is hydroxy, amino, anilino or anilino monosubstituted or disubstituted by alkyl,

R_{15} is hydrogen, alkyl or alkoxyalkyl,

each X is independently halo, alkyl or alkoxy,

each Y is independently halo, nitro, amino, cyano, thiocyano, hydroxy, alkyl, alkoxy, trifluoroalkyl, trichloroalkyl, phenyl, phenoxy, alkylamino, dialkylamino, alkylcarbonyl, alkylcarbonyloxy, alkylcarbonylamino, alkylsulfonyl, phenylsulfonyl, sulfamoyl, alkylsulfonylamino or phenylsulfonylamino, and

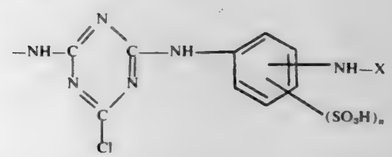
each p is independently 0 to 2,

A^- is an anion, and

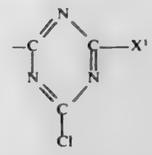
n is 1 to 10,

wherein each alkyl, alkoxy, alkyl moiety and alkoxy moiety independently has 1 to 4 carbon atoms.

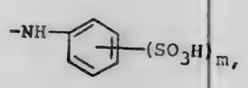
wherein one of Q, Y and Z is

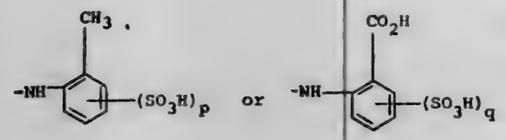


wherein n is 1 or 2 and X is β-sulphatoethylsulphonyl, 2,4-dichloropyrimid-6-yl, 2,4,5-trichloropyrimid-6-yl, 2,4-dichloropyrimid-5-yl carbonyl, 2,3-dichloroquinoxalin-6-yl carbonyl, β-chloropropionyl or



wherein X^1 is Cl, OCH_3, $OCH(CH_3)_2$, NH_2,





wherein *m* is 0, 1 or 2, p is 1 or 2 and q is 0 or 1, Q otherwise being H, Cl or SO_3H, Y otherwise being SO_3H and Z otherwise being H or SO_3H, Z^1 is H, Cl or SO_3H, Z^2 is H or SO_3H, Z^3 is H or SO_3H and Me is copper, nickel, cobalt or chromium.

3,926,943

AZO PIGMENTS WITH AN ANTHRAQUINONYL COMPONENT AND A β-HYDROXYNAPHTHOIC ACID COMPONENT SUBSTITUTED BY A TRIMELLITIC ACID IMIDE VIA AN O-PHENYLENEDIAMINE

Peter Dimroth, Ludwigshafen; Manfred Gaeng, Bobenheim-Roxheim, and Guenther Ruider, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

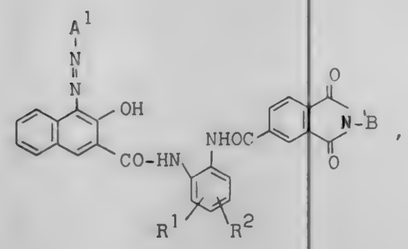
Filed Oct. 19, 1973, Ser. No. 408,057

Claims priority, application Germany, Sept. 21, 1973, 2251747

Int. Cl.² C09B *29/36, 43/12*

U.S. Cl. 260—152 **2 Claims**

1. An azo pigment of the formula



wherein:

A^1 is anthraquinonyl-1;

R^1 is hydrogen, chlorine, methyl or methoxy; and

B is hydrogen, methyl, ethyl, t-butyl, phenyl or phenyl substituted by chlorine, bromine, methyl, ethyl, isopropyl, methoxy, ethoxy, cyano, carbomethoxy, carboethoxy, carbamoyl or sulfamoyl.

3,926,944

WATER-SOLUBLE CELLULOSE REACTIVE AZO DYESTUFFS CONTAINING 3-AZO-2-HYDROXY-N-SUBSTITUTED PYRID-6-ONE RADICAL

Alistair Howard Berrie, and Richard Budziarek, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

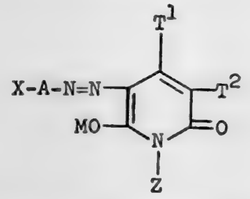
Continuation of Ser. No. 100,413, Dec. 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 860,033, Sept. 22, 1969, abandoned. This application Aug. 10, 1973, Ser. No. 387,334

Claims priority, application United Kingdom, Dec. 22, 1969, 60322/69; July 27, 1970, 36199/70

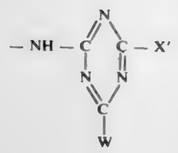
Int. Cl.² C09B *29/36;* **D06P** *1/38, 3/66*

U.S. Cl. 260—153 **9 Claims**

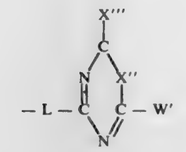
1. An azo dyestuff having the formula



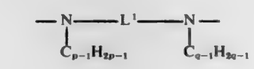
wherein X is a cellulose-reactive group selected from the class consisting of 5-chloro-6-methyl-2-methylsulphonyl-pyrimid-4-ylamino, 2,3-dichloroquinoxalin-6-ylcarbonylamino, β-(4,5-dichloropyridaz-6-on-1-yl)propionylamino, β-acetoxypropionylamino, acryloylamino, β-phenylsulphonylpropionylamino, 3,6-dichloropyridazin-4-ylcarbonylamino, 2,4-dichloropyrimid-6-ylamino, 2,6-dichloropyrimid-4-ylamino, 2,4-dichloropyrimid-5-ylcarbonylamino, 2,4,5-trichloropyrimid-6-ylamino, 2,5,6-trichloropyrimid-4-ylamino, 2,4-dichloro-5-bromopyrimid-6-ylamino, 2,6-dichloro-5-bromopyrimid-4-ylamino, 2,4-dichloro-5-cyanopyrimid-6-ylamino, 2,6-dichloro-5-cyanopyrimid-4-ylamino, 2,4-dichloropyrimid-5-ylsulphonylamino, 2-chlorobenzthiazol-6-ylcarbonylamino, 1,4-dichlorophthalazin-6-ylcarbonylamino, β-bromopropionylamino, 4-(4',5'-dichloropyridaz-6on-1-yl)benzoylamino, 2,3-dibromopropionyl, tetrafluorocyclobutylcarbonylamino, trifluorocyclobutenylcarbonylamino, tetrafluorocyclobutylacryloylamino, trifluorocyclobutenylacryloylamino, 2,4-dichloroquinazolin-5-ylcarbonylamino, and s-triazinyl amino groups of the formula:



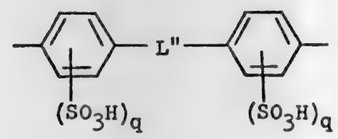
wherein X' is selected from the class consisting of Cl, Br, SO_3H, benzthiazol-2-ylthio, N,N-diethyldithiocarbamyl, pyridinium-1-yl, trimethylammonium, diazabicyclooctaniumyl, N',N'-dimethylhydraziniumyl, and N-methylpyrrolidinium-1-yl, and W is selected from the class consisting of Cl, Br, N,N-diethyldithiocarbamyl, lower alkoxy, lower alkoxy alkoxy, sulphophenoxy, NH_2, lower alkylamino, hydroxy-lower alkylamino, sulpho-lower alkylamino, lower alkoxy lower alkylamino, di(lower alkyl) amino, di(hydroxy lower alkyl) amino, morpholino, cyclohexylamino, benzylamino, hydrazinyl, anilino, N-methylanilino, N-(sulphomethyl) anilino, sulphoanilino, disulphoanilino, sulphotoluidino, carboxyanilino, sulphocarboxyanilino, anisidino, methoxytoluidino, sulphoanisidino, sulphochloroanilino, N-methylsulphoanilino, sulphonaphthylamino, disulphonaphthylamino, trisulphonaphthylamino and diamine of the formula:



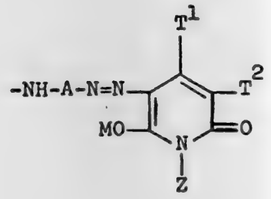
wherein L is selected from the class consisting of piperazinylene and



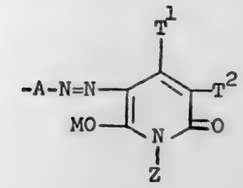
wherein p and q each independently represents 1 or 2 and L^1 is a direct link or a member selected from the class consisting of lower alkylene, phenylene, sulphophenylene, disulphophenylene, diphenylene, disulphodiphenylene, disulphonaphthylene and



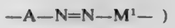
wherein L'' is NHCONH, CH=CH, OCH_2CH_2O, CH_2, SO_2 or O and q is 0 or 1, X'' is N, C-H, or C-Cl, X''' is Cl, or SO_3H, and W^1 is selected from the class consisting of lower alkoxy, sulphophenoxy, NH_2 lower alkylamino, Cl, lower (hydroxyalkyl) amino, anilino, N-methylanilino, sulphoanilino, disulphoanilino, N-methylsulphoanilino, sulphotoluidino, sulphocarboxyanilino, sulphonaphthylamino, disulphonaphthylamino, trisulphonaphthylamino, and



in which case both moieties of the formula:



are identical, Z is selected from lower alkyl, hydroxy lower alkyl, lower alkoxy lower alkyl, lower alkylamino lower alkyl, cyclohexyl, phenyl and anisyl, T^1 is selected from H, lower alkyl, phenyl, anisyl and amino, T^2 is selected from H, cyano, lower alkyl, aminocarbonyl, N-lower alkylaminocarbonyl, N-phenylaminocarbonyl, N,N-di(lower alkylamino carbonyl) and N-lower alkyl-N-phenylaminocarbonyl, M is selected from H, Co and Cr, and when M is H, A is selected from monosulphophenylene, disulphophenylene, sulphonaphthylene and



wherein A is monosulphophenylene or disulphophenylene and M^1 is monosulpho-1,4-naphthylene or 1,4-phenylene in which the benzene nucleus carries 0-2 substituents selected from CH_3 and CH_3O, and when M is Co or Cr, A is sulpho-hydroxyphenylene linked through the oxygen to M.

3,926,945

2,4-DICYANO BUTYLAMINO-SUBSTITUTED MONOAZO DYESTUFFS

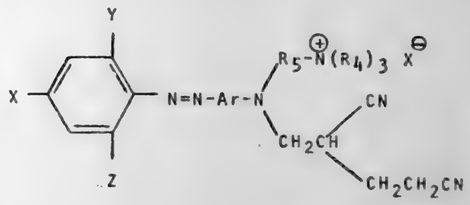
Stiles M. Roberts, Loudonville, and Lester N. Stanley, Delmar, both of N.Y., assignors to GAF Corporation, New York, N.Y.

Filed May 16, 1972, Ser. No. 253,808

Int. Cl.² C09B *29/06, 29/08, 29/26*

U.S. Cl. 260—205 **4 Claims**

1. A dyestuff of the following formula:



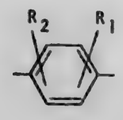
wherein

X is selected from the group consisting of NO_2, lower alkyl sulfonyl, CN, CF_3, lower carboalkoxy, sulfonamide, lower alkyl sulfonamide, di-lower alkyl sulfonamide, carboxamide, lower alkyl carboxamide and di-lower alkyl carboxamide;

Y is selected from the group consisting of H, Cl, Br and F or the same as X;

Z is selected from the group consisting of H, Cl, Br, F, CN, CF_3 and lower carbalkoxy;

Ar is bonded to the depicted diazo and adjacent N atom in para position and is selected from the group consisting of naphthyl and a radical of the formula:



wherein

R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl of 1–7 C atoms, alkoxy of 1–7 C atoms, Cl, Br, F, CF_3, R_3CONH- and R_3OCO- wherein R_3 is selected from the group consisting of alkyl of 1–7 C atoms and phenyl;

R_6 is a straight or branch chain alkylene group of 1–7 C atoms;

R_4 is alkyl of 1–5 C atoms or aralkyl of 7-14 C atoms; and

X^- is the cation of a mineral acid.

3,926,946
WATER SOLUBLE MONOAZO DYESTUFFS CONTAINING A DIPHENYLAMINE GROUP CARRYING A SULPHAMOYL SUBSTITUENT AND A SULPHO OR SULPHATO SUBSTITUENT

Denis Robert Annesley Ridyard, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

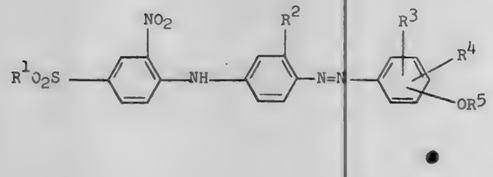
Filed Oct. 3, 1972, Ser. No. 294,608

Claims priority, application United Kingdom, Oct. 12, 1971, 47452/71

Int. Cl.² C07C *107/06*

U.S. Cl. 260—206 **2 Claims**

1. A water-soluble monoazo dyestuff having the formula:



wherein

R^1 represents hydroxyl, amino, mono(lower alkyl) amino, di(lower alkyl) amino, anilino or sulphatoethylamino,

R^2 represents hydrogen, sulphamoyl or sulpho,

R^3 represents hydrogen, chlorine, lower alkyl or lower alkoxy,

R^4 represents hydrogen or lower alkyl and

R^5 represents hydrogen, lower alkyl, acetyl, benzoyl or p-toluenesulphonyl, the $—OR^5$ group being in the 2- or 4-position relative to the azo group and substituents R^1 and R^2 being so chosen that the dyestuff contains only one sulphamoyl and only one of sulpho or sulphato.

3,926,947
CONTROLLED PYROLYSIS OF CELLULOSIC MATERIALS FOR PRODUCTION OF CHEMICALS

Anne E. Lipska, Palo Alto, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Continuation-in-part of Ser. No. 200,514, Nov. 19, 1971, abandoned. This application June 17, 1974, Ser. No. 480,107

Int. Cl.² C07H *3/08*

U.S. Cl. 260—209 R **3 Claims**

1. 1,5-anhydro-3,4-dideoxy-Δ^3-β-D-pyranosen-2-one.

3,926,948
ANTIBIOTICS DESTOMYCIN A AND B AND A METHOD FOR PRODUCING SAME USING STREPTOMYCES RIMOFACIENS

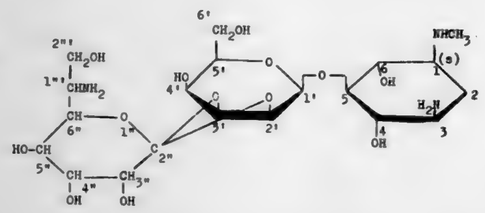
Shinichi Kondo, Yokohama; Masaji Sezaki; Makiko Koike, both of Tokyo; Masaru Shimura, Yokohama; Eiichi Akita, Tokyo; Kimio Satoh, Kawasaki; Kazuko Hamamoto, Kokubunji; Taro Niida, Yokohama, and Takeshi Hara, Tokyo, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Apr. 11, 1967, Ser. No. 630,084

Int. Cl.² A61K *35/00*; **C07H** *15/20*

U.S. Cl. 260—210 AB **9 Claims**

1. An antibiotic substance, destomycin A, effective in inhibiting the growth of Gram-positve bacteria, Gram-negative bacteria and molds, which is white powder, decomposes gradually at 180°– 190°C, the elemental analysis: C:44.70%, H:7.42%, N:7.73%, 0:39.41%, $N—CH_3$:3.06%, amino N:4.67, exhibits titration equivalent of 182 (in aqueous solution), exhibits $[\alpha]_D^{22} = +7°$ (C 2, in water), exhibits no characteristic absorption of ultraviolet absorption spectrum at 210 – 400 m μ but only end absorption, gives a positive reaction to ninhydrin, anthrone, ehrlich reaction and after hydrolsis red tetrazolium reaction, 5-methyl- β - naphthalene sulfonate of destromycin A being whitle needle crystals, being decomposed at 186° – 189°C, elemental analysis being C:51.67%, H:6.21%, N:3.52%, S:74.9%, 0:30.63%, N-acetyl destomycin A being white crystals, being decomposed gradually at 240° – 260°C, elemental analysis being C:46.36%, H:7.11%, N:6.14%, 0:39.39%, the chemical structure of destomycin A being 5-0-[2′, 3′-0-[3″, 4″, 5″-trihydroxy-6″-(1‴-amino-2‴-hydroxymethyl)-tetrahydropyran-2″-ylidene] β -D-talopyranoryl]-1-methylamino-3-amino-1,2,3 -trideoxy-myoinositol ($C_{20}H_{37}N_3O_{13}.H_2O$).



3. A process for producing a biologically active substance, identified as destomycins A and B, which comprises cultivating a destomycins A and B-producing strain of *Streptomyces rimofaciens* ATCC No. 21066 under submerged aerobic conditions in an aqueous carbohydrate solution containing nitrogenous nutrient until the substantial amount of said antibiotics is produced in said medium and recovering destomycins A and B thus produced from the cultured broth.

3,926,949
CYTOKININ-3-NUCLEOSIDE COMPOUNDS

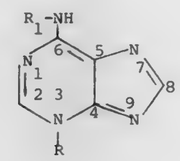
J. Eugene Fox, and James D. McChesney, both of Lawrence, Kans., assignors to Kansas University Endowment Association, Lawrence, Kans.

Filed Sept. 9, 1974, Ser. No. 504,267

Int. Cl.² C07H *19/16*

U.S. Cl. 260—211.5 R **10 Claims**

1. A novel cytokinin-3-nucleoside compound of the formula:



wherein R_1 represents a member selected from the group consisting of $—CH_2—C_6H_5$, $—C_2H_4—C_6H_5$, and $—CH_2Y$, wherein Y represents a member selected from the group consisting of furfuryl, pyridyl, thiophene, C_5–C_7 cycloalkyl, and C_5–C_7 cycloalkenyl, and $—CH_2—C_6H_4—X$, wherein X represents a member selected from the group consisting of alkyl of from one to three carbon atoms, a branched alkyl of three carbon atoms, an alkenyl of from one to three carbon atoms, a branched alkenyl of three carbon atoms, halogen, and CF_3; and wherein R represents a monosaccharide.

3,926,950
METHOD FOR REACTING ORGANIC HALIDES

Michael F. Farona, Cuyahoga Falls, and James F. White, Akron, both of Ohio, assignors to The University of Akron, Akron, Ohio

Division of Ser. No. 339,637, March 9, 1973, Pat. No. 3,832,403, which is a continuation-in-part of Ser. No. 119,908, March 1, 1971, abandoned. This application Apr. 10, 1974, Ser. No. 459,481

Int. Cl.² C08G *61/02*

U.S. Cl. 260—2 H **8 Claims**

1. The polymerization of an aromatic substrate monomer to form a branched polymer comprising the steps of: charging a reaction vessel with a metallic hexacarbonyl compound having the general formula $M(CO)_6$ where M is selected from the group consisting of Cr, Mo and W, adding aromatic substrate monomers having the general formula $R—(R'—X)_n$ wherein R is an aryl radical and R′ is selected from the group consisting of alkyl groups having from one to about six carbon atoms, alkoxide groups having from one to about four carbon atoms, and haloalkyl, and X is selected from the group consisting of bromine, chlorine and fluorine, and n is an integer from 1 to 5, reacting said metallic hexacarbonyl compound with part of said aromatic substrate monomer to yield an arene metal tricarbonyl catalyst having the general formula



heating said reaction vessel from ambient temperatures to a temperature sufficient to cause said catalyst to polymerize said aromatic substrate monomers by removing the halide from said aromatic substrate monomers to form active aromatic substrate monomers having a carbonium ion which said active monomers initiate and continue said polymerization to form the branched polymers.

3,926,951
NONIONIC CELLULOSE ETHERS

Sven Georg Lindenfors, and Sven-Olof Johan Westberg, both of Domsjoverken, Sweden, assignors to MoDoKemi AB, Stenungsund, Sweden

Filed Mar. 11, 1974, Ser. No. 450,132

Claims priority, application Sweden, Mar. 14, 1973, 7303582

Int. Cl.² C08B *11/193*

U.S. Cl. 260—231 A **14 Claims**

1. Nonionic cellulose ethers having attached to the cellulose molecule hydroxyethyl groups in a molecular substitution within the range from about 0.1 to about 2.5, hydroxyalkyl groups selected from the group consisting of hydroxypropyl and hydroxybutyl in a molecular substitution within the range from about 0.1 to about 4, and alkyl groups having from 2 to 4 carbon atoms in a degree of substitution within the range from about 0.05 to about 1.5.

3,926,952
1,4-BENZODIAZEPIN-2-ONES AND THEIR SYNTHESIS

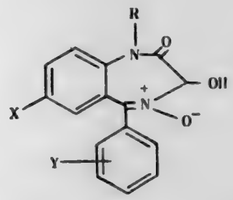
Ronald J. McCaully, Malvern, Pa., assignor to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 294,724, Oct. 3, 1972, Pat. No. 3,873,604. This application Jan. 30, 1974, Ser. No. 438,115

Int. Cl.² C07D *243/26, 243/28*

U.S. Cl. 260—239.3 D **6 Claims**

1. A compound of the formula



wherein R is hydrogen, or alkyl of from 1 to 6 carbon atoms, and X and Y may be the same or different and are selected from the group consisting of hydrogen, halogen, nitro, trifluoromethyl, thiomethyl, cyano, alkyl of from 1 to 6 carbon atoms, and alkoxy of from 1 to 6 carbon atoms.

3,926,953
PROCESS FOR PRODUCING 1,5-DIACETYL-3,7-DINITRO-1,3,5,7-TETRAAZACYCLOOCTANE

Michael D. Coburn, Los Alamos, and Theodore M. Benziger, Santa Fe, both of N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Dec. 5, 1974, Ser. No. 529,988

Int. Cl.² C07D *257/02*

U.S. Cl. 260—239 BC **4 Claims**

1. In a method for preparing 1,5-diacetyl-3,7-dinitro-1,3,5,7-tetraazacyclooctane by the nitrolysis in mixed HNO-

$_3$—H_2SO_4 of diacetyl pentamethylenetetramine in solution in acetic acid, the improvement comprising the addition of urea to said acetic acid solution of diacetyl pentamethylenetetramine before said nitrolysis.

3,926,954

PREPARATION OF SALTS OF CARBOXYLIC ACIDS CONTAINING A BETA-LACTAM GROUP

Erwin Kiesewetter, Obere Donnerbergstr. 57, and Siegfried Herrling, Auf der Liester 8, both of 519 Stolberg, Rhld., Germany

Filed May 27, 1971, Ser. No. 147,677
Int. Cl.² C07D *499/16*
U.S. Cl. 260—239.1 29 Claims

1. In the process for preparing a sodium, potassium or calcium salt of a penicillin, a cephalosporin, a 6-aminopenicillanic acid, wherein there is reacted a silyl derivative of the penicillin, the cephalosporin, or the 6-aminopenicillanic acid in which derivative at least the carboxyl group is linked, through the silicium atom, to a trimethylsilyl or a dimethylsilyl group, the improvement which comprises using as a reactant a salt which is a member of the group consisting of a sodium, a potassium or a calcium salt of 2-ethyl-hexanoic acid, butyric acid, alpha-ethyl-butyric acid, isobutyric acid, dimethylmalonic acid, isoamyl ethyl acetic acid phenyl acetic acid, ethanol, of a propanol, a butanol, an amylalcohol, of phenol, trimethylsilanol or of triphenylsilanol, and forming said salt directly from said silyl derivative, without intermediate saponification of the ester to the free acid.

2. In the process of claim 1 for preparing a sodium, potassium or calcium salt of a penicillin, selected from the group consisting of alpha-phenoxy-acetyl-, alpha-phenoxypropionyl-, alpha-phenoxybutyryl-, phenylacetyl-, alpha-amino phenyl acetyl-, 1-amino-cyclohexan-1-carbonyl-, alpha-amino-thienylacetyl-, alpha-guanylureido-phenylacetyl- and alphacarboxy-thienylacetyl-6-amino-penicillanic acid, where there is reacted under anhydrous conditions, a silyl derivative of said penicillin in which derivative at least the carboxyl group is linked through the silicium atom to a trimethylsilyl or a dimethylsilyl group, the improvement which comprises using as a reactant a salt which is a member of the group consisting of a sodium, a potassium or a calcium salt of 2-ethylhexanoic acid, butyric acid, alpha-ethyl-butyric acid, isobutyric acid, dimethylmalonic acid, isoamyl ethyl acetic acid phenyl acetic acid, ethanol, of a propanol, a butanol, an amylalcohol, of phenol, trimethylsilanol or of triphenylsilanol and forming said penicillin salt directly from said silyl derivative.

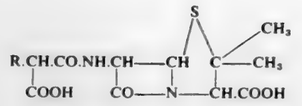
3,926,955

CARBENICILLIN ANALOGUES

George Burton, Coulsdon; John Sydney Davies, Reigate, and Ann Frances Hubbard, Redhill, all of England, assignors to Beecham Group Limited, United Kingdom

Filed Sept. 25, 1972, Ser. No. 291,798
Claims priority, application United Kingdom, Oct. 8, 1971, 46929/71
Int. Cl.² C07D *499/46*
U.S. Cl. 260—239.1 5 Claims

1. A penicillin of formula (I):-



(I)

or a non-toxic salt or non toxic ester which is hydrolyzable in vivo to the free acid, thereof, in which formula R is cyclopropyl.

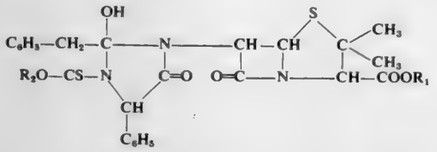
3,926,956

PROCESS FOR THE PREPARATION OF AMPICILLIN

Jean Bouchaudon, Morsang-sur-Orge; Pierre Le Roy, Thiais, and Mayer Naoum Messer, Bievres, all of France, assignors to Rhone-Poulenc, S.A., Paris, France

Filed Feb. 14, 1974, Ser. No. 442,430
Claims priority, application France, Feb. 16, 1973, 73.05667
Int. Cl.² C07D *499/04*
U.S. Cl. 260—239.1 10 Claims

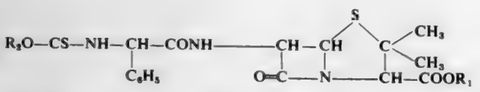
1. Process for the preparation of ampicillin which comprises contacting a penicillin G derivative of the formula:



wherein R_1 is a radical selected from the class consisting of benzyl, p-nitrobenzyl, 2,2,2-trichloroethyl, trityl, dimethylsilyl, trimethylsilyl, phenacyl, p-bromophenacyl, acetyl, propionyl, butyryl, benzoyl, succinyl, methanesulphonyl, p-toluenesulphonyl, methylphosphinyl, methoxyphosphinyl, dimethylphosphinyl, dimethoxyphosphinyl, chloroethoxyphosphinyl, dichloroethoxyphosphinyl, phenylphosphinyl, phenoxyphosphinyl, diphenylphosphinyl, diphenoxyphosphinyl, 4-methyl-1,3,2-dioxaphosphoranyl, 1,3,2-dioxaphosphiranyl and 1,3,2-benzodioxaphospholyl, and R_2 is a group of the formula:

$$Y_{3-n}CH_n—CH(R)—$$

wherein Y is halogen, *n* is zero, 1 or 2, and R is hydrogen or phenyl, with an inorganic or organic base to open the imidazolidine ring and give an intermediate product of the formula:



wherein R_1 and R_2 are as hereinbefore defined, and removing the groups $—R_1$ and $R_2O—CS—$ which protect the carboxy radical and amine functions respectively to yield ampicillin.

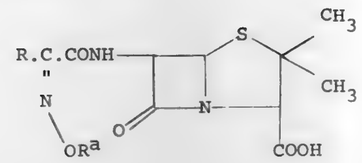
3,926,957

PENICILLIN ANTIBIOTICS

Michael Gregson, London; Martin Christopher Cook, and Gordon Ian Gregory, both of Chalfont St. Peter, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

Division of Ser. No. 274,602, July 24, 1972, which is a continuation-in-part of Ser. No. 221,057, Jan. 26, 1972, abandoned. This application May 3, 1974, Ser. No. 466,780
Int. Cl.² C07D *499/44*
U.S. Cl. 260—239.1 2 Claims

1. A compound selected from the group consisting of a penicillin antibiotic of the formula



wherein R is furyl or furyl substituted by chloro, bromo, hydroxy, lower alkyl, nitro, amino, lower alkylamino, di(lower alkyl)amino, lower alkanoyl, lower alkanoylamido, lower alkoxy, lower alkylthio or carbamoyl; and R^a is hydrogen or



wherein R^c is C_1–C_4 alkyl, C_1–C_4 chloroalkyl, C_1–C_4 alkoxy, phenyl, nitrophenyl, C_1–C_4 alkylamino or C_1–C_4 chloroalkylamino; and a physiologically acceptable salt thereof, said penicillin antibiotic being in the form of the syn isomer free of the corresponding anti isomer to the extent of at least 75%.

3,926,958

PREPARATION OF PENICILLIN SALTS

Sidney Edward Callander, Worthing, England, assignor to Beecham Group Limited, England

Filed May 13, 1974, Ser. No. 469,679
Claims priority, application United Kingdom, May 15, 1973, 22982/73
Int. Cl.² C07D *499/44*
U.S. Cl. 260—239.1 5 Claims

1. A process for the preparation of a crystalline solvate of an alkali metal or alkaline earth metal salt of amoxycillin, which process comprises adding a source of alkali metal or alkaline earth metal cations selected from sodium, potassium, calcium or magnesium 2-ethylhexanoate, methoxide, iodide, phenoxide, thiocyanate or ethyl acetoacetate to a solution of amoxycillin or an ethylamine salt thereof, said solution containing a pharmaceutically acceptable amide of the formula $RCONR_1R_2$, wherein R is a hydrogen atom or a methyl group, and R_1 and R_2 are each a hydrogen atom or a methyl or ethyl group.

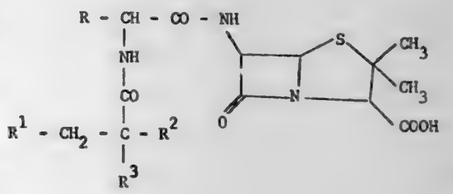
3,926,959

PENICILLINE DERIVATIVES

Kiyoaki Nitanai; Atsuo Okubo, and Hideo Yamazaki, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Chiyoda-ku, Tokyo, Japan

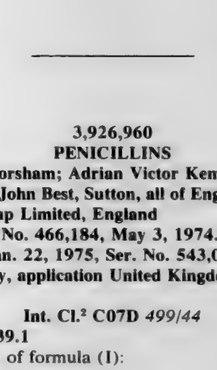
Filed May 16, 1974, Ser. No. 470,600
Claims priority, application Japan, May 21, 1973, 48-55580; May 21, 1973, 48-55582
Int. Cl.² C07D *499/62*
U.S. Cl. 260—239.1 5 Claims

1. Penicillin derivatives of the general formula:



(I)

wherein: X is



R_1 is phenyl or benzyl R_2 is hydrogen or methyl, provided that when R_1 is benzyl and X is

R_2 is methyl; provided further, that when X is



R_1 is benzyl and nontoxic, pharmaceutically acceptable salts thereof.

3,926,960

PENICILLINS

Harry Ferres, Horsham; Adrian Victor Kemmenoe, Westcott, and Desmond John Best, Sutton, all of England, assignors to Beecham Group Limited, England

Division of Ser. No. 466,184, May 3, 1974. This application Jan. 22, 1975, Ser. No. 543,070
Claims priority, application United Kingdom, May 4, 1973, 21203/73
Int. Cl.² C07D *499/44*
U.S. Cl. 260—239.1 9 Claims

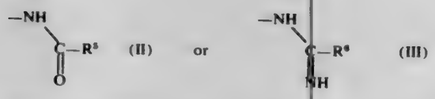
1. A penicillin of formula (I):

wherein

R is phenyl, hydroxyphenyl, halophenyl, nitrophenyl, alkoxyphenyl having 1–3 carbon atoms in the alkoxy part, aminophenyl, 2- or 3-thienyl, cycloalkyl having 3–7 carbon atoms in the cyclo part, cycloalkenyl having 5–7 carbon atoms in the cyclo part, or alkyl having 1–4 carbon atoms;

R^1 is hydrogen, methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, tert.-butyl, n-pentyl, methoxy, ethoxy, n-propoxy, isopropoxy, methylthio, ethylthio, n-propylthio, isopropylthio, methoxymethyl, methylthiomethyl, ethoxymethyl, n-propoxymethyl,

R^2 is



(II) or

(III)

in which R^5 is amino, mono- or di-alkylamino having 1–4 carbon atoms in the alkyl part, cyclohexylamino, hydrogen, alkyl of 1–4 carbon atoms or phenyl, and R^6 is amino, mono- or di-alkylamino having 1–4 carbon atoms in the alkyl part or cyclohexylamino;

R^3 is hydrogen or alkyl of 1–3 carbon atoms; or a pharmaceutically acceptable salt or a pharmaceutically acceptable hydrolyzable ester which converts to the free acid form in vivo.

3,926,961

SULPHAMOYLBENZOIC ACID AMIDES

Pier Giorgio Ferrini, Binningen; Georges Haas, and Alberto Rossi, both of Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

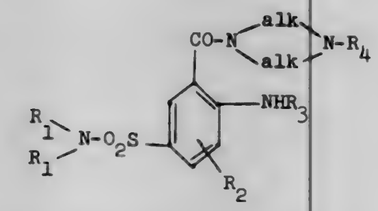
Filed June 27, 1974, Ser. No. 483,741

Claims priority, application Switzerland, July 10, 1973, 10019/73

Int. Cl.² C07D *237/00, 239/00, 251/00, 265/00*

U.S. Cl. 260—239.7 **17 Claims**

1. A 2-amino-5-sulphamoyl-benzoic acid amide of the formula



wherein R_1 denotes lower alkyl of 1–4 carbon atoms, R_2 denotes hydrogen, halogen, trifluoromethyl, lower alkyl of 1–4 carbon atoms or lower alkoxy of 1–4 carbon atoms, R_3 denotes hydrogen, hydroxyl or lower alkyl of 1–4 carbon atoms, R_4 denotes R_5-C_1-C_6-alkyl, R_5-C_2-C_4-alkenyl, R_5 denotes phenyl, phenyl monosubstituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen or trifluoromethyl, pyridyl or pyridyl monosubstituted by C_1–C_4-alkyl or C_1–C_4-alkoxy, and alk denotes 1,2-alkylene having up to 4 carbon atoms.

3,926,962

6α-CARBOXYMETHYL-17-HYDROXY-3-OXO-17α-PREGN-4-ENE-21-CARBOXYLIC ACID γ-LACTONE AND INTERMEDIATES THERETO

George R. Lenz, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed July 15, 1974, Ser. No. 488,446

Int. Cl.² C07J *19/00*

U.S. Cl. 260—239.57 **6 Claims**

1. 6α-Carboxymethyl-17-hydroxy-3-oxo-17α-pregn4-ene-21-carboxylic acid γ-lactone.

3,926,963

NEW BENZOXAZOLYLSTILBENES AS OPTICAL BRIGHTENERS

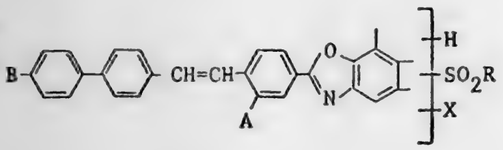
Hans Rudolf Meyer, Binningen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Apr. 20, 1973, Ser. No. 353,181

Int. Cl.² C09D *23/00*

U.S. Cl. 260—240 CA **4 Claims**

1. A benzoxazolylstilbene of the formula



wherein R denotes unsubstituted or non-chromophorically substituted alkyl with 1 to 18 carbon atoms, alkenyl with 2 to 4 carbon atoms, cycloalkyl, aryl or aralkyl, X denotes hydrogen, halogen or alkyl with 1 to 4 carbon atoms, A denotes hydrogen, sylphamyl or halogen and B denotes hydrogen, halogen, alkyl or alkoxy with 1 to 4 carbon atoms.

3,926,964

NEW OXAZOLE COMPOUNDS, PROCESS FOR THEIR MANUFACTURE, AND THEIR USE AS OPTICAL BRIGHTENERS FOR ORGANIC MATERIALS

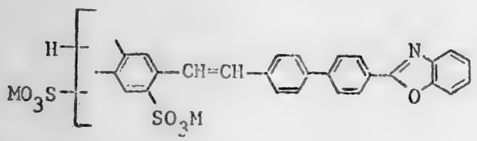
Peter Liechti, Arisdorf, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed July 30, 1973, Ser. No. 383,737

Int. Cl.² C07D *263/56*

U.S. Cl. 260—240 CA **2 Claims**

1. Oxazole compounds of the formula



wherein M represents hydrogen or a salt-forming cation.

3,926,965

PHTHALIMIDO DERIVATIVES AND PROCESSES

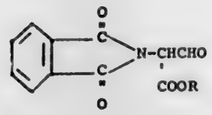
Narindar N. Girotra, Fords, and Norman L. Wendler, Summit, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 274,389, July 24, 1972, Pat. No. 3,840,534. This application Feb. 12, 1974, Ser. No. 441,779

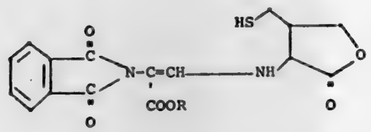
Int. Cl.² C09B *23/00*

U.S. Cl. 260—240 R **25 Claims**

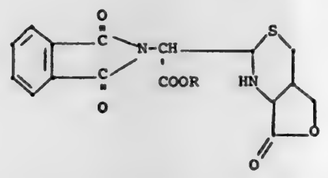
1. The process which comprises reacting a compound of the formula



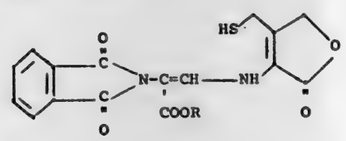
wherein R represents lower alkyl, with an acid salt of dihydro-3-amino-4-(mercaptomethyl)-2(3H)-furanone in the presence of a mild base to produce a mixture of the cis and trans isomers of



reacting said mixture with acid to produce a compound of the formula



and treating this product with N-halosuccinimide in the presence of base to produce



wherein R is the same as defined above.

3,926,966

5-NITROFURAN COMPOUNDS

Helmut Hagen, and Helmut Fleig, both of Frankenthal, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

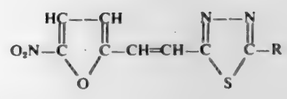
Filed June 6, 1974, Ser. No. 477,055

Claims priority, application Germany, June 9, 1973, 2329653

Int. Cl.² C07D *417/06*

U.S. Cl. 260—240 A **3 Claims**

1. A 5-nitrofuran compound of the formula;



(I)

in which

R is alkyl of one to four carbon atoms.

3,926,967

2-(HETEROCYCLICMETHYLIDENEAMINO)BENZIMIDAZOLES AND DERIVATIVES THEREOF

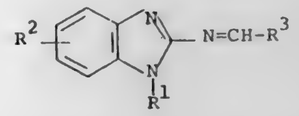
Rudiger D. Haugwitz, Titusville, and Venkatachala L. Narayanan, Hightstown, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 303,887, Nov. 6, 1972, abandoned. This application Oct. 7, 1974, Ser. No. 512,385

Int. Cl.² C07D *405/12, 405/14, 409/12*

U.S. Cl. 260—240 A **10 Claims**

1. A compound of the formula



wherein R^1 is thiazoline or 5,6-dihydro-4H-1,3-thiazine; R^2 is hydrogen, nitro, or chloro; and R^3 is thienyl or furyl; and the pharmaceutically acceptable salts thereof.

3,926,968

SUBSTITUTED PYRAZOLO[4,3-C]PYRIDINE COMPOUNDS

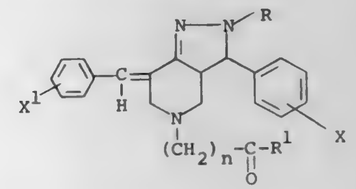
John Krapcho, Somerset, and Chester Frank Turk, Kendall Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 19, 1974, Ser. No. 525,148

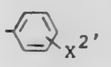
Int. Cl.² C07D *471/02*

U.S. Cl. 260—240 R **11 Claims**

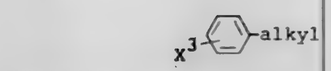
1. A compound of the formula:



wherein R^1 is selected from the group consisting of alkyl of 1 to 4 carbons,



pyridyl, thienyl, and furyl; R is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbons, hydroxy-alkyl of 1 to 4 carbons, alkanoyl of 2 to 5 carbons, and



wherein alkyl is of 1 to 3 carbons; n is an integer from 1 to 4; X, X^1, X^2 and X^3 are independently selected from the group consisting of hydrogen, Cl, F, alkyl of 1 to 4 carbons, alkoxy of 1 to 4 carbons, and CF_3; and the pharmaceutically acceptable acid-addition salts, N-oxides, and quaternary ammonium salts thereof.

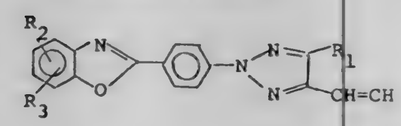
3,926,969

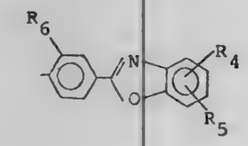
TRIAZOLE-BIS(BENZOXAZOLE) OPTICAL BRIGHTENERS

Fritz Fleck, Bottmingen; Horst Schmid, Munchenstein, and Salvatore Valenti, Bottmingen, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Nov. 19, 1973, Ser. No. 417,373
Claims priority, application Switzerland, Nov. 24, 1972, 17180/72; Dec. 18, 1972, 18381/72
Int. Cl.² C07D *413/14*
U.S. Cl. 260—240.1 **26 Claims**

1. A compound of formula I,





I

in which R_1 is a hydrogen or chlorine atom or a (C_{1-6}) alkyl radical,
each of R_2 and R_4, which may be the same or different, is a hydrogen or a chlorine atom, a cyano group, a (C_{1-12}) alkyl, phenyl, phenyl (C_{1-6}) alkyl, benzyloxy, phenoxy, (C_{1-6}) alkoxy or a naphthotriazolyl-2 radical, and
each of R_3 and R_5, which may be the same or different, is a hydrogen atom, a cyano group or a (C_{1-12}) alkyl or (C_{1-6}) alkoxy radical,
or, R_2 and R_3 together, and/or
R_4 and R_5 together, form a benzene ring, and
R_6 is a hydrogen atom or a cyano group.

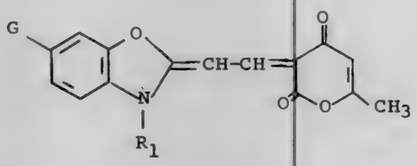
3,926,970

MEROCARBOCYANINE FILTER DYES

Frederick J. Sauter, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 266,028, June 26, 1972, Pat. No. 3,840,375. This application May 7, 1973, Ser. No. 357,961
Int. Cl.² C09D *23/10*
U.S. Cl. 260—240.4 **10 Claims**

1. A merocyanine filter dye selected from those having the formula



wherein R_1 represents a lower alkyl, phenyl, methylphenyl, chlorophenyl, cyanoalkyl, or acylalkyl group and G represents hydrogen or a sulfamoyl group, with at least one of the groups R_1 and G being a cyanoalkyl, acylalkyl, or sulfamoyl group.

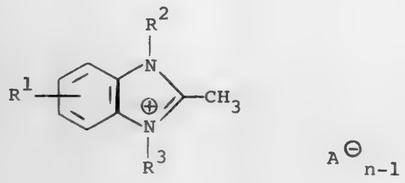
3,926,971

NOVEL CHEMICAL SYNTHESIS

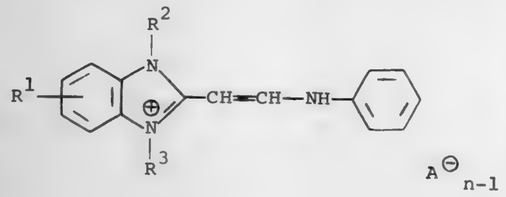
Alan L. Borror, Lexington; Ruth Linda Hill, Cambridge, and Paulina P. Garcia, Arlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 22, 1974, Ser. No. 472,273
Int. Cl.² C07D *233/24, 417/06, 421/06*
U.S. Cl. 260—240.6 **9 Claims**

1. A method which comprises:
condensing a benzimidazolium salt of the formula:



with an alkyl isoformanilide in a glycol ether medium to form a 2-β-anilinovinyl derivative represented by the formula:



wherein R^1 represents hydrogen or one or more cyanine dye nuclear substituents; R^2 is lower alkyl; R^3 is lower alkyl, carboxyalkyl or sulfoalkyl; A is an anion customary in the cyanine dye art; and *n* is 1 or 2.

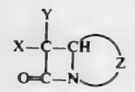
3,926,972

7-HYDRAZONO AND HYDRAZINO CEPHALOSPORINS

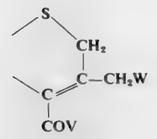
Gordon Lowe, Abingdon, England, assignor to National Research Development Corporation, England

Filed Feb. 5, 1973, Ser. No. 329,875
Int. Cl.² C07D *501/18, 499/42*
U.S. Cl. 260—243 C **12 Claims**

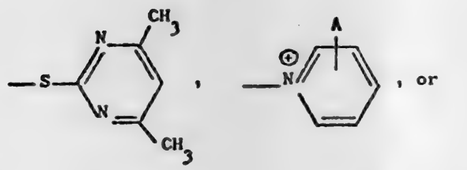
1. A compound of the formula



wherein X and Y together are hydrazono or X is hydrazino, Y is hydrogen, and Z is a group of the formula



in which COV is carboxy or a lower alkyl, halo(lower alkyl) or aralkyl ester thereof and W is hydrogen, a free hydroxy group, an acetoxy group, or the residue of the nucleophile of the formula



and A is hydrogen or a fused benzo group, or COV and W together are a lactone or a lactam group, the sulphur atom being bonded to the carbon rather than the nitrogen atom of the 2-azetidone ring, or a metallic salt thereof.

3,926,973

METHOD FOR SEPARATING CEPHALOSPORIN C

Kiyoshi Nara, Kyoto; Kazuhiko Ohta, Ikeda; Kazuyoshi Katamoto, Suita; Nariakira Mizokami, Suita, and Hideo Fukuda, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed Mar. 2, 1973, Ser. No. 337,473
Claims priority, application Japan, Mar. 2, 1972, 47-22157
Int. Cl.² C07D *501/12*
U.S. Cl. 260—243 C **11 Claims**

1. In a method for separating cephalosporin C from a culture broth of a cephalosporin C-producing microrganism or its processed fluid containing cephalosporin C, the improvement which comprises contacting said broth or processed fluid containing cephalosporin C with activated carbon to allow cephalosporin C to be adsorbed on the carbon and subjecting the carbon to fractional elution with a mixture of water and a hydrophilic organic solvent adjusted to a pH of from about 7.5 to about 13.0 to collect fractions containing cephalosporin C.

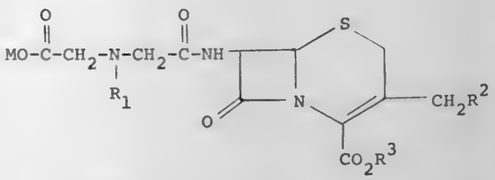
3,926,974

CEPHALOSPORIN DERIVATIVES

Abraham Nudelman, Bala Cynwyd, and Ronald J. McCaully, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed May 24, 1973, Ser. No. 363,469
Int. Cl.² C07D *501/20*
U.S. Cl. 260—243 C **3 Claims**

1. A compound selected from the group consisting of



II

wherein M is selected from the group consisting of hydrogen and a pharmaceutically acceptable cation;
R^1 is selected from the group consisting of lower alkyl, phenyl and naphthyl;
R^2 is selected from the group consisting of hydrogen, hydroxyl, (lower)alkanoyloxy, benzoyloxy, and pyridinyl
R^3 is selected from the group consisting of hydrogen and a pharmaceutically acceptable cation.

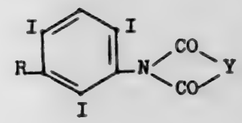
3,926,975

CYCLIC IMIDES OF 3-SUBSTITUTED 2,4,6-TRIIODOANILINES

James H. Ackerman, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 181,248, Sept. 16, 1971, Pat. No. 3,780,041, which is a continuation-in-part of Ser. No. 841,604, July 14, 1969, Pat. No. 3,660,408, which is a continuation-in-part of Ser. No. 715,583, March 25, 1968, abandoned. This application May 29, 1973, Ser. No. 364,290
Claims priority, application Canada, Mar. 18, 1969, 046086
Int. Cl. C07d *87/34, 93/10*
U.S. Cl. 260—243 B **4 Claims**

1. A compound of the formula



wherein Y is a 1,3-propylene group wherein the 2-carbon atom is replaced by O, S, SO or SO_2; and R is (lower-alkanoyl)NH, (lower-alkanoyl)$NHCH_2$, (lower-alkanoyl)N(-lower-alkyl), (lower-alkoxy-lower-alkanoyl)NH, or (lower-alkoxy-lower-alkanoyl)N(lower-alkyl).

3,926,976
3,4-DIHYDRO-1,2,3-OXATHIAZINE-4-ONES AND A PROCESS FOR THEIR PREPARATION

Karl Clauss, Eppenhain, Taunus; Harald Jensen, and Erich Luck, both of Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

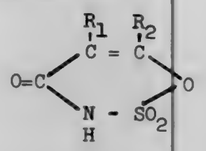
Filed June 7, 1973, Ser. No. 367,888

Claims priority, application Germany, June 10, 1972, 2228423

Int. Cl.² C07D *291/06*

U.S. Cl. 260—243 R **5 Claims**

4. A compound of the formula



wherein R_1 is hydrogen, alkyl having 1 to 10 carbon atoms, or aromatic hydrocarbon having up to 10 carbon atoms, and R_2 is hydrogen.

3,926,977
1,2,4-BENZOTHIADIAZINES

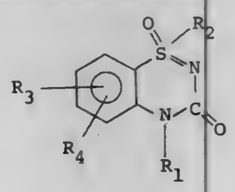
Francis Alexander Sowinski, Edison, N.J., and B. Richard Vogt, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 31, 1973, Ser. No. 411,547

Int. Cl.² C07D *285/22*

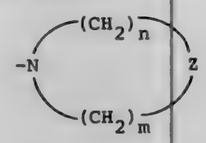
U.S. Cl. 260—243 D **11 Claims**

1. A compound having the structure:



wherein

R_1 is lower alkyl, amino-lower alkyl, mono- or di-lower alkyl amino-lower alkyl, or imino-lower alkyl wherein the imino group has the formula:

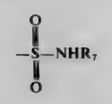


wherein Z is oxygen, >CH-R_5 or >N-R_6, n is 2 or 3, m is 2 or 3, R_5 is hydrogen, phenyl, or benzyl and R_6 is hydrogen, lower alkyl, phenyl, or phenyl substituted with halogen, lower alkyl, lower alkoxy, or trifluoromethyl;

R_2 is phenyl or phenyl substituted with halogen, nitro, trifluoromethyl, lower alkyl or lower alkoxy;

R_3 is hydrogen, halogen, nitro, cyano, trifluoromethyl, lower alkyl or lower alkoxy; and

R_4 is hydrogen, or 8n



where R_7 is hydrogen or lower alkyl; and pharmaceutically acceptable acid-addition salts thereof.

3,926,978
PROCESS FOR PREPARING 3-FLUOROCEPHALOSPORINS

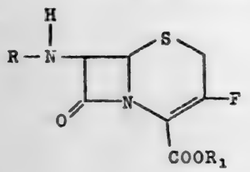
Gary A. Koppel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 6, 1974, Ser. No. 439,206

Int. Cl.² C07D *501/20*

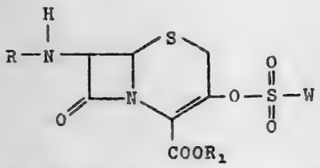
U.S. Cl. 260—243 C **11 Claims**

1. A process for preparing a compound of the formula



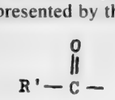
(I)

which comprises the step of reacting under substantially anhydrous conditions a 3-sulfonate ester cephalosporin of the formula

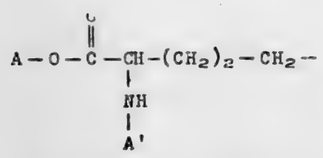


(II)

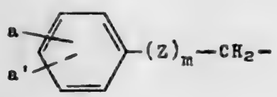
with an inorganic fluoride of the formula M^+F^- in which M is potassium, sodium, or silver in the presence of an 18-crown-6 ether and an inert solvent selected from the group consisting of a nitrile and a nitroalkane at a temperature of from about −20° C. to about +25° C., in which, in the above formulae, W is C_1-C_6 alkyl, phenyl, tolyl, halophenyl, or nitrophenyl, R is an acyl group derived from a carboxylic acid and represented by the formula



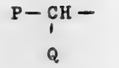
wherein R′ is C_1-C_6 alkyl, C_1-C_3 haloalkyl, C_1-C_3 cyanoalkyl, phenyl, methylphenyl, hydroxyphenyl, halophenyl, nitrophenyl, methoxyphenyl, or a 5-substituted-amino-5-carboxybutyl ester group of the formula



wherein A is diphenylmethyl, p-nitrobenzyl, benzyl, 2,2,2-trichloroethyl, t-butyl, or p-methoxybenzyl and A′ is C_2-C_4 alkanoyl, C_2-C_4 haloalkanoyl, benzoyl, halobenzoyl, 2,4-dinitrophenyl, or phthaloyl; or R′ is a group of the formula



wherein a and a. independently are hydrogen, C_1-C_4 lower alkyl, C_1-C_4 lower alkoxy, halogen, hydroxy, or nitro; Z is 0 or S; and m is 0 or 1; or R′ is a group of the formula



wherein P is 2-thienyl, 3-thienyl, or a phenyl group of the formula



wherein a and a' are as defined above, Q is hydroxyl, formyloxy, acetoxy, or protected amino; or R′ is a group of the formula



wherein R″ is 2-thienyl, 3-thienyl, 2-furyl, 2-oxazyl, 2-thiazyl, or 1-tetrazyl; and R_1 is benzyl, p-methoxybenzyl, p-nitrobenzyl, diphenylmethyl, 2,2,2-trichloroethyl, or t-butyl.

3,926,979
DITHIOCARBONYLTHIOACETYL CEPHALOSPORINS

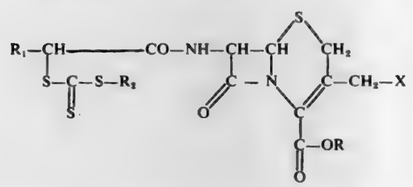
Uwe D. Treuner, Regensburg, and Hermann Breuer, Burgweinting, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 272,228, July 17, 1972, Pat. No. 3,846,418, which is a continuation-in-part of Ser. No. 180,523, Sept. 14, 1971, abandoned. This application Apr. 29, 1974, Ser. No. 465,013

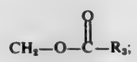
Int. Cl.² C07D *501/28;* **A61K** *31/545*

U.S. Cl. 260—243 C **8 Claims**

1. A compound of the formula



wherein R is hydrogen, lower alkyl, trimethylsilyl, alkali metal or



R_1 is hydrogen, lower alkyl or C_4-C_6 cyclolower alkyl; R_2 is aluminum, alkali metal or alkaline earth metal, lower alkyl or C_4-C_6 cyclo-lower alkyl; R_3 is lower alkyl or phenyl-lower alkyl; and X is hydrogen, hydroxy or lower alkanoyloxy.

3,926,980
DITHIOCARBONYLTHIOACETYL CEPHALOSPORINS

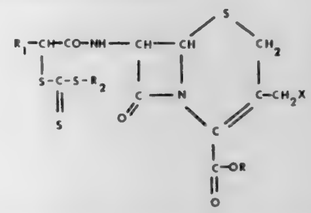
Uwe D. Treuner, Regensburg, and Hermann Breuer, Burgweinting, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 272,228, July 17, 1972, Pat. No. 3,846,418, which is a continuation-in-part of Ser. No. 180,523, Sept. 14, 1971, abandoned. This application May 24, 1974, Ser. No. 473,123

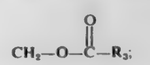
Int. Cl.² C07D *501/34;* **A61K** *31/545*

U.S. Cl. 260—243 C **6 Claims**

1. A compound of the formula



wherein R is hydrogen, lower alkyl, trimethylsilyl, alkali metal or



R_1 is thienyl; R_2 is lower alkyl; R_3 is lower alkyl or phenyl-lower alkyl; and X is hydrogen, hydroxy or lower alkanoyloxy.

3,926,981
PROCESS FOR PREPARING 3,4-DIHYDRO-1,2,3-OXATHIAZINE-4-ONES

Karl Clauss, Rossert; Horst Schnabel, Steinbach, Taunus, and Harald Jensen, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt (Main), Germany

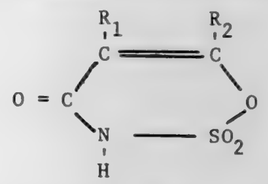
Filed May 30, 1974, Ser. No. 474,658

Claims priority, application Germany, June 1, 1973, 2327804

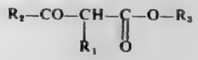
Int. Cl.² C07D *291/06*

U.S. Cl. 260—243 R **10 Claims**

1. A process for preparing an oxathiazinone that is a 3,4-dihydro-1,2,3-oxathiazine-4-one of the formula



wherein R_1 is hydrogen or an alkyl of 1 to 4 carbon atoms and $R_2$is an alkyl group of 1 to 4 carbon atoms, or a salt of said oxathiazinone, which comprises: reacting chlorosulfonylisocyanate and a β-ketocarboxylic acid-t-alkyl ester of the formula



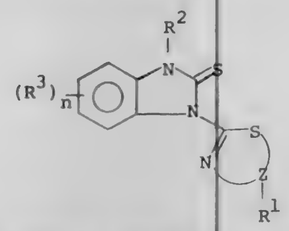
wherein R_3 is a tertiary alkyl of 4 to 10 carbon atoms, to form an addition product thereof; cleaving said addition product into CO_2, an alkene and β-ketocarboxylic acid amide-N-sulfochloride by heating at a temperature between about 40°C. and about 100°C.; and cyclizing said sulfochloride in an aprotic diluent by splitting off hydrogen chloride.

3,926,982
SUBSTITUTED BENZIMIDAZOLINETHIONES

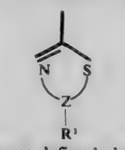
George Rovnyak, Hopewell; Venkatachala L. Narayanan, Hightstown; Rudiger D. Haughwitz, Titusville, and Christopher M. Cimarusti, Hamilton, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed July 3, 1974, Ser. No. 485,419
Int. Cl.² C07D *235/28*
U.S. Cl. 260—243 R 11 Claims

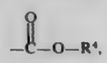
1. A compound of the formula:



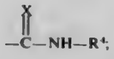
wherein Z is ethylene or propylene; R^1 is hydrogen, methyl, ethyl, phenyl, nitrophenyl, benzyl, phenethyl, tolyl, or xylyl; R^2 is hydrogen, alkyl of 1 to 5 carbons, benzyl, nitrobenzyl, phenethyl, nitrophenethyl, alkoxycarbonylalkylene wherein alkoxy is of 1 to 5 carbons and alkylene is of 1 to 3 carbons, dialkylaminoalkylene wherein each alkyl is of 1 to 3 carbons and alkylene is of 2 or 3 carbons, alkanoyl of from 2 to 18 carbons, benzoyl, substituted benzoyl wherein said substituent is halogen, alkyl of 1 to 3 carbons, or phenyl,



wherein R^1 and Z are as defined above,



or



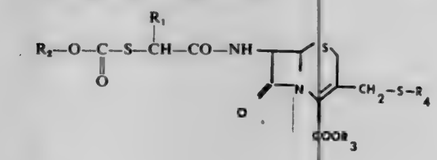
X is oxygen or sulfur; R^4 is alkyl of 1 to 3 carbons, phenyl, benzyl, or phenethyl; R^3 is hydrogen, halogen, nitro, amino, cyano, trifluoromethyl, alkyl of 1 to 3 carbons, alkoxy of 1 to 3 carbons, dialkylamino wherein each alkyl is of 1 to 3 carbons, alkanoyl of 2 to 6 carbons, or benzoyl; and n is one of two; and when R^2 is dialkylaminoalkylene or R^3 is amino or dialkylamino the pharmaceutically acceptable acid-addition salts.

3,926,983
3-HETEROTHIO[(ALKOXYCARBONYL)THIOACETYL]-CEPHALOSPORANIC DERIVATIVES

Uwe D. Treuner, and Hermann Breuer, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 30, 1974, Ser. No. 501,905
Int. Cl.² C07D *501/50*; A61K *31/545*
U.S. Cl. 260—243 C 10 Claims

1. A compound of the formula



wherein R_1 is hydrogen, lower alkyl, phenyl, thienyl, furyl or pyridyl; R_2 is lower alkyl, phenyl-lower alkyl or diphenylmethyl; R_3 is hydrogen, lower alkyl, phenyl-lower alkyl, diphenylmethyl, tri(lower alkyl)silyl, tri(lower alkyl)stannyl, alkali metal, alkaline earth metal, mono (lower alkyl-)amine salt, tri(lower alkyl)-amine salt or



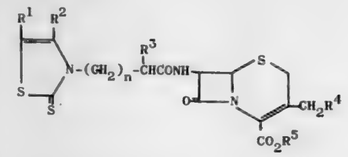
R_4 is R_5-isoxazole, R_5-isothiazole, R_5-oxadiazole, R_5-thiadiazole, R_5-tetrazole or R_5-1-oxopyridine; R_5 is hydrogen or lower alkyl; and R is lower alkyl, phenyl, phenyl-lower alkyl or diphenylmethyl; said lower alkyl groups having up to 8 carbon atoms.

3,926,984
7-[2-(2-THIOXO-4-THIAZOLIN-3-YL)-ACETAMIDO] CEPHALOSPORANIC ACID DERIVATIVES

Daniel M. Teller, Devon; John H. Sellstedt, Pottstown, and Charles J. Guinosso, King of Prussia, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Oct. 2, 1974, Ser. No. 511,155
Int. Cl.² C07D *501/34*, *501/46*
U.S. Cl. 260—243 C 13 Claims

1. A compound of the formula:

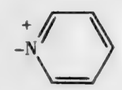


in which

R^1 and R^2 are independently —H or alkyl of 1 to 6 carbon atoms, and when taken together, R^1 and R^2 are trimethylene;

R^3 is —H, alkyl of 1 to 6 carbon atoms or methylthioethyl;

R^4 is —H, (lower)alkanoyloxy, or



,

R^5 is —H, an alkali metal or the ammonium ion;

and

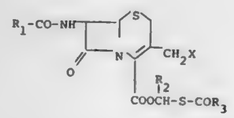
n is 0 or 1, with the proviso that when *n* is 1, R^3 is —H.

3,926,985
ACYLTHIOMETHYL ESTERS OF CEPHALOSPORINS

Hermann Breuer, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 277,700, Aug. 3, 1972, Pat. No. 3,860,591, and Ser. No. 516,566, Oct. 21, 1974. This application Nov. 25, 1974, Ser. No. 527,107
Int. Cl.² C07D *501/22*, *501/24*
U.S. Cl. 260—243 C 16 Claims

1. A compound of the formula



wherein R_1 is thienylmethyl or thienylmethyl bearing on the α-carbon hydroxy, amino, carboxy or ureido; R_2 is hydrogen

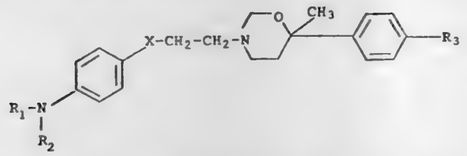
or lower alkyl; R_3 is lower alkyl; X is hydrogen, lower alkanoyloxy, lower alkylthio, thiadiazolylthio, (lower alkyl)-thiadiazolylthio, tetrazolylthio or (lower alkyl)tetrazolylthio, and acid addition salts of the basic members thereof.

3,926,986
TETRAHYDROOXAZINE DERIVATIVES

Albrecht Edenhofer, Riehen, Switzerland, assignor to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 362,636, May 21, 1973, Pat. No. 3,879,405, which is a division of Ser. No. 148,119, May 28, 1971, Pat. No. 3,758,483. This application Jan. 13, 1975, Ser. No. 540,622
Claims priority, application Switzerland, June 19, 1970, 9318/70
Int. Cl.² C07D *87/00*
U.S. Cl. 260—244 1 Claim

1. A compound of the formula



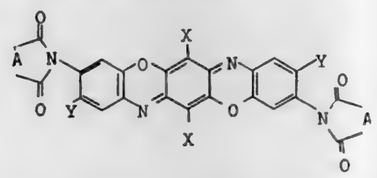
wherein R_1 signifies hydrogen, lower alkyl, lower alkanoyl, lower alkylsulfonyl, C_3 to C_6 cycloalkyl or C_3 to C_6 cycloalkyl-lower alkyl; R_2 signifies hydrogen, lower alkyl, C_3 to C_6 cycloalkyl or C_3 to C_6 cycloalkyl-lower alkyl; R_3 signifies fluorine, chlorine or lower alkoxy; X signifies an oxygen atom or a sulfur atom.

3,926,987
DIOXAZINE DYES

Peter Dimroth, Ludwigshafen, and Volker Radtke, Frankenthal, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Aug. 1, 1974, Ser. No. 493,780
Claims priority, application Germany, Aug. 24, 1973, 2342815
Int. Cl.² C07D *265/00*, *273/00*, *295/00*
U.S. Cl. 260—246 R 5 Claims

1. A dioxazine dye of the formula



in which A is o-phenylene, o-phenylene substituted 1 to 4 times by chloro or bromo, or o-phenylene substituted once by phenyl, benzoyl or N-phenylcarbamoyl,

Y is methoxy or ethoxy and

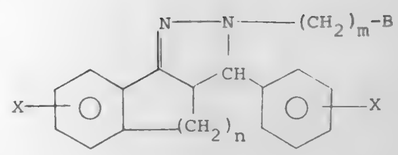
X is chloro or bromo.

3,926,988
SUBSTITUTED PYRAZOLES

John Krapcho, Somerset, and Chester Frank Turk, Kendall Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 6, 1974, Ser. No. 467,047
Int. Cl.² C07D *231/54*
U.S. Cl. 260—247.5 EP 10 Claims

1. A compound of the formula



wherein X is H, halogen, alkyl of from 1 to 3 carbons, alkoxy of from 1 to 3 carbons or CF_3, *n* is 1, 2 or 3, *m* is 2, 3 or 4, and B is lower alkylamino wherein the alkyl group has from 1 to 3 carbons, dilower alkylamino wherein each alkyl group has from 1 to 3 carbons, piperidino, pyrrolidino, morpholino, N-lower alkylpiperazino wherein the alkyl radical has from 1 to 3 carbons, or N-(2-hydroxyethyl)piperazino; and N-oxides and pharmaceutically acceptable acid-addition salts thereof.

3,926,989
PROCESS FOR THE PREPARATION OF ARYL-1,1,2,2-TETRAFLUOROETHYL ETHERS

Siegfried Rebsdat, Altotting, and Helmut Hahn, Burghausen, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed June 14, 1971, Ser. No. 152,600
Claims priority, application Germany, June 16, 1970, 2029556
Int. Cl.² C07C *41/06*
U.S. Cl. 260—247.7 C 9 Claims

1. In a process for the preparation of an aryl-1, 1,2, 2-tetrafluoroethyl ether by reacting a phenol with tetrafluorethylene in an organic solvent in the presence of an alkaline catalyst at elevated temperatures, the improvement comprising reacting a phenolic compound selected from thee group consisting of phenol, naphthol and phenol substituted by 1 to 3 substituents selected from the group consisting of alkyl of 1 to 20 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxy, formyl, amino, monoalkylamino of 1 to 4 carbon atoms, dialkylamino of 1 to 4 carbon atoms in each alkyl moiety, piperidino, morpholino and alkanoylamino of 1 to 5 carbon atoms in the alkane moiety, with tetrafluoroethylene in a water-miscible polar inert solvent with about 0.05 to about 0.5 mol of potassium hydroxide per each equivalent of phenolic hydroxy group at a temperature of about 50° to about 150°C and a pressure varying between atmospheric pressure and slightly subatmospheric pressure.

3,926,990
PROCESS FOR PREPARING AMIDE POLYPHOSPHATES

Kozo Fukuba; Yasutomo Ogushi, and Minematsu Miyazaki, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Oct. 15, 1973, Ser. No. 406,416
Claims priority, application Japan, Oct. 16, 1972, 47-103780
Int. Cl.² C07D *251/70*; C07C *127/00*, *129/00*
U.S. Cl. 260—249.6 6 Claims

1. A process for preparing a substantially water insoluble amide polyphosphate which comprises heat-condensing together at least one phosphoric acid source selected from the group consisting of ammonium orthophosphate, urea phosphate, melamine phosphate, phosphoric anhydride, polyphosophoric acid and orthophosphoric acid and at least one cyanamide derivative as a nitrogen source selected from the group consisting of melamine, dicyanadiamide, guanidine and guanylurea in contact with a condensing agent selected from the group consisting of urea and urea phosphate and a mixture thereof in a molar ratio of urea/phosphoric acid (as H_3PO_4)/cyanamide derivative of 0.8 to 1.5/1/0.05 to 1 at a temperature of from 150° to 350°C for a period sufficient to provide the desired water insolubility to the amide polyphosphate product.

3,926,991
PROCESS FOR PRODUCING QUINOXALINE-DI-N-OXIDES

Donald E. Kuhla, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Mar. 7, 1973, Ser. No. 338,906
Int. Cl.² C07D *241/36*
U.S. Cl. 260—250 Q **2 Claims**

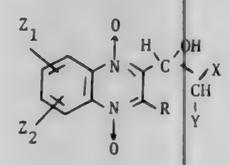
1. A process for the preparation of methyl-3-(2-quinoxalinylmethylene)carbazate-N¹,N⁴-dioxide which comprises the step of reacting methyl-3-(2-quinoxalinylmethylene)carbazate with about two equivalents of peracetic acid in a reaction inert solvent at a temperature of from about 20° up to 100°C. until reaction is substantially complete.

3,926,992
ALDOL PRODUCTS OF 2-QUINOXALINECARBOXALDEHYDE-1.4-DIOXIDES

James W. McFarland, Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,490
Int. Cl.² C07D *241/52*
U.S. Cl. 260—250 QN **10 Claims**

1. A compound of the formula



wherein

R is selected from the group consisting of hydrogen and methyl;

X is selected from the group consisting of —CN, —$COCH_3$, —$CONR_1R_2$, —CONH—$(CH_2)_n$—R_3 and —$COOR_4$;

Y is selected from the group consisting of hydrogen and X; each of R_1, R_2 and R_4 is selected from the group consisting of hydrogen, methyl and ethyl;

R_3 is selected from the group consisting of —OH and —$N(CH_3)_2$;

n is 2 or 3;

Z_1 is a 6- or 7-position substituent and is selected from the group consisting of H, —Cl, —CH_3—, OCH_2, —SO_2NH_2, —$SO_2NH(CH_3)$ and —$SO_2N(CH_3)_2$;

Z_2 is a 7- or 6-position substituent and is selected from the group consisting of H, —Cl and —CH_3;

with the proviso that when z_2 is —Cl or —CH_3, Z_1 is also —Cl or —CH_3;

and the pharmaceutically acceptable alkali metal, ammonium and amine salts of those compounds wherein at least one of X and Y is —COOH;

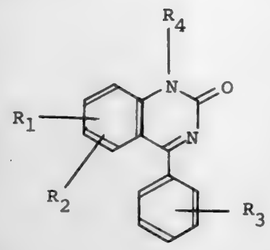
and the pharmaceutically acceptable acid addition salts of these compounds wherein R_3 is —$N(CH_3)_2$.

3,926,993
PROCESS FOR PRODUCTION OF QUINAZOLINE DERIVATIVES

Kikuo Ishizumi, Toyonaka; Kazuo Mori, Kobe; Michihiro Yamamoto, Nishinomiya; Masao Koshiba, Amagasaki; Shigeho Inaba, Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

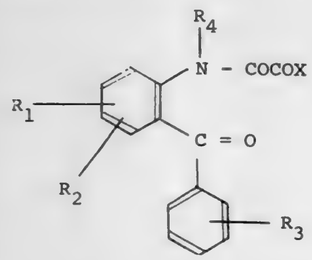
Filed Sept. 5, 1973, Ser. No. 394,542
Claims priority, application Japan, Sept. 7, 1972, 47-90225
Int. Cl.² C07D *239/82*
U.S. Cl. 260—251 QB **4 Claims**

1. A process for preparing a quinazolinone of the formula,



[I]

wherein R_1, R_2 and R_3 are independently hydrogen, halogen, trifluoromethyl, nitro, lower alkylsulfonyl, lower alkyl, lower alkoxy or lower alkylthio; and R_4 is hydrogen, lower alkyl, phenyl C_1-C_3 alkyl, chlorobenzyl, fluorobenzyl, (C_2-C_3 alkanoyl) -C_1-C_4 alkyl, (C_1-C_4 alkoxy)C_1-C_4 alkyl, polyhalo C_1-C_3 alkyl, C_3-C_6 cycloalkyl, (C_3-C_6 cycloalkyl)C_1-C_4 alkyl, tetrahydrofurfuryl, tetrahydropyranylmethyl, pyridylmethyl, furylmethyl or thienylmethyl, which comprises the step of reacting an oxamyl halide of the formula,



[III]

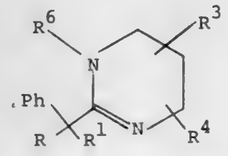
wherein R_1, R_2, R_3 and R_4 are as defined above; and X is a halogen atom, with sodium azide.

3,926,994
HETEROCYCLIC COMPOUNDS

Alan Chapman White, Windsor, and Robin Michael Black, Iver Heath, both of England, assignors to John Wyeth & Brother, Ltd., Taplow, England

Continuation-in-part of Ser. No. 309,580, Nov. 24, 1972, abandoned. This application May 23, 1974, Ser. No. 472,759
Claims priority, application United Kingdom, May 31, 1973, 26079/73
Int. Cl.² C07D *239/00*
U.S. Cl. 260—251 R **5 Claims**

1. A compound selected from the group consisting of bases having the formula



and the pharmaceutically acceptable acid addition salts thereof wherein R^3 and R^4 which may be the same or different each represent a member of the group consisting of hydrogen, lower alkyl and hydroxy with the proviso that when one of R^3 and R^4 is hydroxy, the other of R^3 and R^4 is hydrogen, Ph represents a phenyl group optionally monosubstituted by lower alkyl, lower alkoxy, or halogen, R is a member of the group consisting of hydroxyl, lower alkanoyloxy, lower alkoxy and halogen, R^1 is a member of the group consisting of phenyl, halophenyl, lower alkoxyphenyl, lower alkylphenyl di-(lower alkyl)phenyl and naphthyl and R^6 is a member of the group consisting of hydrogen, lower alkyl, and lower alkanoyl.

3,926,995
THEOPHYLLINE DERIVATIVES

Ferdinand Dengel, Wilhelmsfeld; Oskar Ehrmann, Mannheim; Ludwig Friedrich, Mannheim, and Frank Zimmermann, Mannheim, all of Germany, assignors to Knoll A.G. Chemische Fabriken, Ludwigshafen (Rhine), Germany

Filed Aug. 3, 1973, Ser. No. 385,320
Claims priority, application Germany, Aug. 8, 1972, 2239012
Int. Cl.² C07D *473/08*
U.S. Cl. 260—256 **2 Claims**

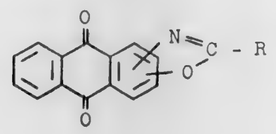
1. 7-[N-methyl-N-(β-3,4-dichlorophenylethyl)-3-aminopropyl]-theophylline.

3,926,996
PRODUCTION OF ANTHRAQUINONEOXAZOLES

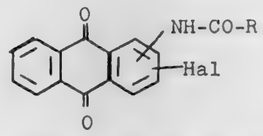
Alfred Schuhmacher, Ludwigshafen, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Nov. 30, 1973, Ser. No. 420,702
Claims priority, application Germany, Dec. 4, 1972, 2259329
Int. Cl.² C07D *263/62*
U.S. Cl. 260—256.4 Q **9 Claims**

1. In a process for the production of an anthraquinoneoxazole of the formula:



in which R is 1-amino-anthraquinonyl-(2), 1-amino-4-nitroanthraquinonyl-(2), 1-anthraquinonyl, 2-anthraquinonyl or 1,9-anthrapyrimidyl-(2), by condensation of an o-haloacylaminoanthraquinone of the formula



in which Hal is chloro or bromo and the substituents —NH—CO—R and Hal are in the ortho-position to one another, at elevated temperature and in the presence of a salt of a weak acid with a strong base, said salt being selected from the group consisting of alkali metal carbonate, alkaline earth metal carbonate and alkali metal salts of formic acid, acetic acid and benzoic acid, the improvement which comprises:

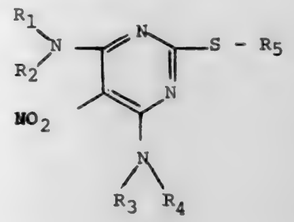
carrying out the condensation in a water-miscible polar aprotic solvent selected from the group consisting of N,N-dimethylformamide, N,N-dimethylacetamide, N,N-dimethylpropionamide, N,N-diethylformamide, N,N-diethylacetamide, N,N-diethylpropionamide, N-methylpyrrolidone, N-methylcaprolactam, dimethyl sulfoxide, tetramethylene sulfone, or N,N,N',N'-tetramethylurea.

3,926,997
2-ALKYLTHIO-4,6-BIS(SUBSTITUTED AMINO)-5-NITROPYRIMIDINES

Hanspeter Fischer, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 252,385, May 11, 1972, abandoned. This application Mar. 5, 1974, Ser. No. 448,301
Claims priority, application Switzerland, May 17, 1971, 7229/71
Int. Cl.² C07D *239/00*
U.S. Cl. 260—256.5 R **7 Claims**

1. A 5-nitropyrimidine of the formula:



wherein

R_1 represents alkyl having 2 to 6 carbon atoms; alkenyl or alkinyl having 3 to 5 carbon atoms; alkoxyalkyl, alkylaminoalkyl, or trialkyl ammonioalkyl having one to six carbon atoms in the alkyl groups thereof; hydroxyalkyl or cyanoalkyl having 1 to 4 carbon atoms; or cycloalkyl having 3 to 6 carbon atoms;

R_2 and R_3 each independently represent hydrogen, or lower alkyl;

R_4 represents hydrogen, lower alkyl, or cycloalkyl having 3 to 6 carbon atoms;

or R_3 and R_4 together with the adjacent nitrogen atom form a heterocycle selected from the group consisting of aziridino, pyrrolidino, piperidino, hexahydroazepino, piperazino, N-methylpiperazino, N-phenylpiperazino and morpholine; and

R_5 represents lower alkyl;

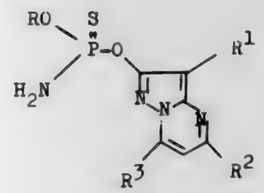
or an acid addition or quaternary ammonuim salt thereof.

3,926,998
O-ALKYL-O-PYRAZOLOPYRIMIDINE-THIONO-PHOSPHORIC ACID ESTER AMIDES

Reimer Cölln, Wuppertal, and Ingeborg Hammann, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 17, 1974, Ser. No. 515,795
Claims priority, application Germany, Oct. 23, 1973, 2352995
Int. Cl.² C07D *239/00*
U.S. Cl. 260—256.5 R **7 Claims**

1. An 0-alkyl-0-pyrazolopyrimidine-thionophosphoric acid ester-amide of the formula



in which

R is alkyl with 1 to 6 carbon atoms,
R^1 is hydrogen or halogen, and
R^2 and R^3 each independently is hydrogen or methyl.

3,926,999

4-(PHENYL)-PIPERAZINO HALO ALKENONES AND ALKANONES

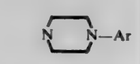
Eike Poetsch, Darmstadt, Germany, assignor to Merck Patent Gesellschaft Mit Beschraenkter Haftung, Darmstadt, Germany

Filed Jan. 9, 1973, Ser. No. 322,184
Claims priority, application Germany, Jan. 15, 1972, 2201889
Int. Cl.² C07D *295/12*
U.S. Cl. 260—268 PH **14 Claims**

1. An arylpiperazine of the formula



wherein R_2 is H or alkyl of 1–4 carbon atoms; Q is $—CX_1=CH—CO—$, $—CH=CX_1—CO—$, $—CHX_1—CHX_1—CO—$, $—CO—CH=CX_1—$, $—CO—CX_1=CH—$ or $—CO—CHX_1—CHX_1—$, in which X_1 is Cl, Br or



wherein Ar is phenyl or phenyl substituted by one of alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms, trifluoromethyl and halogen, or a physiologically acceptable acid addition salt thereof.

3,927,000

1(OR 3) PERFLUOROALKYL-3,4-DIHYDRO-2(1H)-ISOQUINOLINECARBONITRILES AND INTERMEDIATES

Denis M. Bailey, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 282,266, Aug. 21, 1972, Pat. No. 3,855,288. This application Mar. 22, 1974, Ser. No. 453,592
Int. Cl.² C07D *217/02*
U.S. Cl. 260—283 R **8 Claims**

1. A compound selected from the group consisting of 1,2,3,4-tetrahydro-1-(pentafluoroethyl)isoquinoline, 1-(heptafluoropropyl)-1,2,3,4-tetrahydroisoquinoline and 1,2,3,4-tetrahydro-3-(trifluoromethyl)isoquinoline.

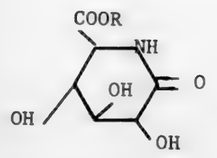
3,927,001

D-GLUCARO-1,5-LACTAM DERIVATIVES

Takashi Tsuruoka; Tomizo Niwa, both of Kawasaki; Uichi Shibata, Tokyo; Shigeharu Inouye, and Taro Niida, both of Yokohama, all of Japan, assignors to Meiji Seika Company Ltd., Japan

Filed Nov. 12, 1973, Ser. No. 414,628
Claims priority, application Japan, Nov. 17, 1972, 47-114735; Nov. 29, 1972, 47-118918
Int. Cl.² C07D *211/40*
U.S. Cl. 260—293.86 **5 Claims**

1. A D-glucaro-1,5-lactam ester represented by the structural formula,



wherein R is selected from the group consisting of methyl, ethyl, n-propyl and n-butyl.

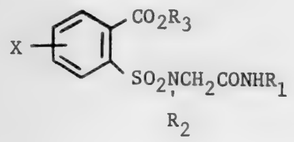
3,927,002

N-(PYRIDYL)-N′-ALKYL-N′-(2-ALKOXYCARBONYL-BENZENESULFONYL)-GLYCINEAMIDES AND DERIVATIVES

Joseph G. Lombardino, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 353,607, April 23, 1973, Pat. No. 3,853,862. This application Apr. 19, 1974, Ser. No. 462,212
Int. Cl.² C07D *213/56*
U.S. Cl. 260—294.8 F **4 Claims**

1. A compound of the formula



wherein R_1 is selected from the group consisting of 2-pyridyl and 6-methyl-2-pyridyl;
R_2 is alkyl having from 1 to 3 carbon atoms;
X is selected from the group consisting of hydrogen, methyl, methoxy, fluoro, chloro and bromo and
R_3 is alkyl having from 1 to 3 carbon atoms.

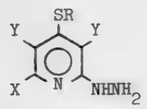
3,927,003

6-HYDRAZINO-2,3,5-TRIHALO-4-ALKYLTHIO PYRIDINES

Sven H. Ruetman, Walnut Creek, and Richard N. Watson, Antioch, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 27, 1974, Ser. No. 536,790
Int. Cl.² C07D *213/77*
U.S. Cl. 260—294.8 G **4 Claims**

1. A 6-hydrazino-2,3,5-trihalo-4-(alkylthio)pyridine of the formula



wherein R is an alkyl group of from one to five carbons; X is Cl or Br; and Y, which is the same in each occurrence, is Cl or Br, except that Y cannot be Br when X is Cl.

3,927,004

SUBSTITUTED PYRIDINE PHOSPHONOTHIOATES

Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 1, 1974, Ser. No. 457,023
Int. Cl.² C07D *213/56*
U.S. Cl. 260—294.8 K **10 Claims**

1. A compound selected from the group consisting of 0-(3,5-dichloro-6-propoxy-2-pyridinyl) 0-methyl phenylphosphonothioate; 0-(6-methyl-2-pyridinyl) 0-methyl phenylphosphonothioate, 0-(5-methyl-2-pyridinyl) 0-methyl phenylphosphonothioate, 0-(5-chloro-3-methyl-2-pyridinyl) 0-methyl phenylphosphonothioate and 0-(6-chloro-2-pyridinyl) P-phenyl N-methylphosphonamidothioate.

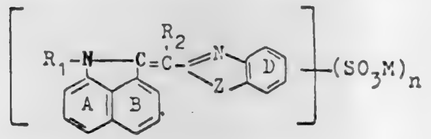
3,927,005

NAPHTHOLACTAM DYESTUFFS

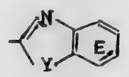
Horst Harnisch, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Feb. 27, 1974, Ser. No. 446,479
Claims priority, application Germany, Feb. 27, 1973, 2309612; Nov. 17, 1973, 2357442
Int. Cl.² C07D *263/56, 277/64*
U.S. Cl. 260—294.8 B **3 Claims**

1. Naphtholactam dyestuffs of the formula



wherein
R_1 = hydrogen, C_1–C_4-alkyl, allyl, cyclohexyl, benzyl, phenethyl, phenyl, or C_1–C_4-alkyl substituted by C_1–C_4-alkoxy, chloro, bromo, cyano, carboxyl, carbo-C_1–C_4-alkoxy, sulfo; carbonamido, or acetoxy;
R_2 = COOM, CN, $CONH_2$, $COOR_7$, SO_2R_4, or



R_4 = C_1–C_4-alkyl, benzyl, phenethyl, or phenyl substituted by C_1–C_4-alkyl, halogen or C_1–C_4-alkoxy;
R_7 = C_1–C_5-alkyl, phenyl-C_1–C_3-alkyl, or C_1–C_5-alkyl substituted by C_1–C_4-alkoxy or cyano;
M = H, alkali metal cation, ammonium, C_1–C_4-monoalkylammonium, C_1–C_4-dialkylammonium, or pyridinium;
Z = —O— or —S—;
Y = —O—, —S—, or



R_3 = hydrogen or C_1–C_4-alkyl;
n = 0, 1, or 2;
A and B are as shown in the above formula or additionally are substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen, nitro, C_1–C_4-alkylmercapto, carboxy, C_1–C_4-alkylsulfonyl, phenylsulfonyl, C_1–C_4-alkylcarbonylamino, C_1–C_4-alkylsulfonylamino, carbonamido, sulfonamido, or either of carbonamido or sulfonamido monosubstituted or disubstituted by C_1–C_4-alkyl; and
D and E are as shown in the above formulas or additionally are substituted by a fused benzene ring, C_1–C_4-alkyl, cyanoethyl, trifluoromethyl, C_1–C_4-alkoxy, halogen, cyano, cyclohexyl, phenyl-C_1–C_3-alkyl, phenyl, C_1–C_4-alkylsulfonyl, phenylsulfonyl, sulfonamido, or sulfonamido monosubstituted or disubstituted by C_1–C_4-alkyl.

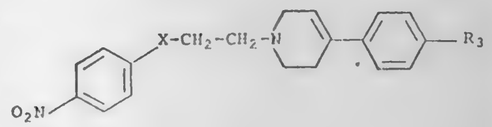
3,927,006

TETRAHYDROPYRIDINE DERIVATIVES

Albrecht Edenhofer, Riehen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 362,636, May 21, 1973, Pat. No. 3,879,405, which is a division of Ser. No. 148,119, May 28, 1971, Pat. No. 3,758,483. This application Jan. 13, 1975, Ser. No. 540,755
Claims priority, application Switzerland, June 19, 1970, 9318/70
Int. Cl.² C07D *213/69*
U.S. Cl. 260—294.8 G **1 Claim**

1. A compound of the formula



wherein R_3 signifies fluorine, chlorine or lower alkoxy and X signifies an oxygen atom or a sulfur atom.

3,927,007

CATALYSTS FOR THE PRODUCTION OF AROMATIC AND HETEROAROMATIC NITRILES

Theodor Lüssling; Hans Schaefer, both of Grossauheim, and Wolfgang Weigert, Offenbach, all of Germany, assignors to Deutsche God- und Silber-Scheideanstalt vormals Roessler, Germany

Division of Ser. No. 167,878, July 30, 1971, abandoned. This application Aug. 23, 1973, Ser. No. 390,775
Claims priority, application Germany, Aug. 8, 1970, 2039497
Int. Cl.² C07D *213/00;* **C07C** *120/14*
U.S. Cl. 260—294.9 **13 Claims**

1. In a process of preparing o-phthalodinitrile or nicotinonitrile from o-xylene or beta-picoline and ammonia and a large excess of oxygen in the gas phase the improvement comprising carrying out the reaction employing as the catalyst a catalyst consisting essentially of the product prepared by heating at 650° to 1000°C in the presence of oxygen a mixture made of (A) the elements (1) Sb, (2) V and (3) an element of the group consisting of Fe, Cu, Ti, Co, Mn or Ni or (B) compounds of such elements (1), (2) and (3) which are oxides or (C) compounds of such elements (1), (2) and (3) which are convertible to oxides by oxygen, wherein the atomic ratio of antimony to vanadium is from 1.1:1 to 50:1 and the atomic ratio of antimony to the total of Fe, Cu, Co, Mn and Ni is from 2:1 to 20:1 and the atomic amount of said other element does not exceed that of vanadium and the atomic ratio of antimony to titanium is from 1:3 to 8:1, said nitrile being formed by replacing an alkyl group of said o-xylene or beta-picoline by a nitrile group.

3,927,008

5-(3-PYRIDYL)-2-FUROIC ACID

Denis M. Bailey, East Greenbush, N.Y.

Division of Ser. No. 392,936, Aug. 30, 1973, Pat. No. 3,890,335. This application Oct. 29, 1974, Ser. No. 518,856

Int. Cl.² C07D *213/55*

U.S. Cl. 260—295.5 R **1 Claim**

1. 5-(3-Pyridyl)-2-furoic acid.

3,927,009

PROCESS FOR MANUFACTURE OF BIPYRIDYLS

Sheila Antoinette Potter, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 171,349, Aug. 12, 1971, Pat. No. 3,787,427. This application July 16, 1973, Ser. No. 379,308

Claims priority, application United Kingdom, Aug. 17, 1970, 39481/70

Int. Cl.² C07D *213/22*

U.S. Cl. 260—296 D **12 Claims**

1. A process for the manufacture of a 2,2′-bipyridyl, a 2,4′-bipyridyl or a 4,4′-bipyridyl which consists essentially of heating pyridine in the liquid phase under substantially anhydrous conditions with a member selected from the group consisting of a 1-(4-pyridyl)-pyridinium halide and the hydrohalide addition salts thereof at a temperature of at least 150°C and up to 400°C.

3,927,010

DIARYLMETHANE DERIVATIVES AND PROCESSES FOR THEIR PREPARATION

Joseph Hellerbach, and André Szente, both of Basel, Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

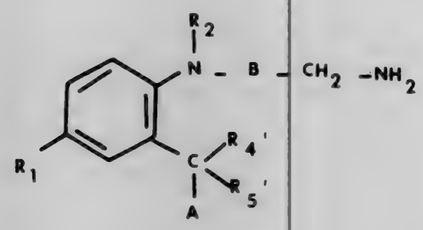
Division of Ser. No. 78,938, Oct. 7, 1970, abandoned. This application Aug. 8, 1973, Ser. No. 386,666

Claims priority, application Switzerland, Oct. 17, 1969, 15533/69; Jan. 27, 1970, 1103/70

Int. Cl.² C07D *213/74*

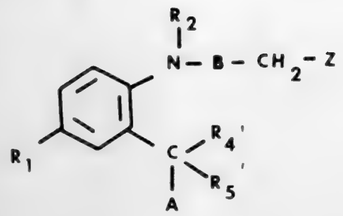
U.S. Cl. 260—296 R **2 Claims**

1. A process for the preparation of a compound of the formula



wherein R_1 represents halogen, nitro or trifluoromethyl; R_2 represents hydrogen, lower alkyl, hydroxy-lower alkyl, or di-lower alkylamino-lower alkyl; R_4' and R_5' each independently signify lower alkoxy; A represents phenyl, halophenyl or pyridyl; and B represents a methylene group,,

which comprises reacting a compound of the formula



wherein R_1, R_2, R_4, R_5, A and B are as described above and Z represents a member selected from the group consisting of chlorine, bromine, iodine, a lower alkyl sulphonyloxy group and a phenyl or tolylsulphonyloxy group with ammonia in the presence of an inert organic solvent.

3,927,011

2-AMINOALKYL-1-(PYRIDYLCARBONYLPHENYL-)IMIDAZOLE COMPOUNDS

Michio Nakanishi, Oita; Tetsuo Yokobe, Fukuoka; Tomio Arai, Fukuoka, and Masao Abe, Fukuoka, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed Jan. 9, 1974, Ser. No. 432,115

Claims priority, application Japan, May 10, 1973, 48-52232; May 14, 1973, 48-53826; June 16, 1973, 48-68116; July 7, 1973, 48-76945

Int. Cl.² C07D *213/36*

U.S. Cl. 260—296 R **1 Claim**

1. The compound:
1-[4-Nitro-2-(2-pyridylcarbonyl)phenyl]-2-(dimethylaminomethyl)imidazole and the pharmaceutically acceptable acid addition salts thereof.

3,927,012

YELLOW SULFUR DYESTUFF AND PREPARATION THEREOF

Artur Meyer, Schoneck; Ulrich Gotsmann, Bergen-Enkheim, and Ernst Meyer, Frankfurt am Main-Fechenheim, all of Germany, assignors to Cassella Farbwerke Mainkur AG, Germany

Filed June 21, 1974, Ser. No. 481,705

Claims priority, application Germany, June 27, 1973, 2332558

Int. Cl.² C07D *277/66*

U.S. Cl. 260—304 **9 Claims**

1. A process for preparing ayellow sulfur dyestuff which comprises heating a mixture of

A. a member selected from the group consisting of
   i. 2-(p-aminophenyl)-6-methylbenzothiazole,
   ii. the by-product distillate obtained at about 135°C. and at a pressure of 5–6 mm Hg from the product of heating p-toluidine and sulfur to produce (i), said by-product distillate comprising 1-amino-2-mercapto-4-methylbenzene, bis-(2-amino-4-methylphenyl)sulfide and bis-(2-amino-4-methylphenyl)disulfide,
   iii. a mixture of (i) and (ii);

B. sulfur and

C. phenylene diamine at a temperature of from about 180° to about 400°C., the molar ratio of (A) to (C) being about 2:1 and the molar ratio of (B) to (A) being about 5–7:1.

3,927,013

CERTAIN 4,7-DIAZA-6-OXO-2-THIABICYCLO[3,2,0]HEPT-3-ENES

Derek Harold Richard Barton, London; William George Elphinstone Underwood, Stoke Poges; Brian Edgar Looker, Greenford, and Graham Hewitt, Northolt, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

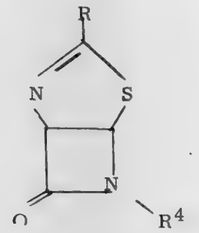
Filed July 30, 1971, Ser. No. 167,849

Claims priority, application United Kingdom, Nov. 3, 1970, 52290/70

Int. Cl.² C07D *513/04*

U.S. Cl. 260—306.7 C **11 Claims**

1. A compound of the formula:



where R is phenyl, fluorophenyl, nitrophenyl, aminophenyl, phenoxymethyl, acetoxyphenyl, methoxyphenyl, methylphenyl, hydroxyphenyl, N,N-bis (2-chloroethyl)amino-phenyl, thien-2-yl, thien-3-yl, isoxazol-4-yl, pyridyl, tetrazolyl, 3-phenyl-5-methyl isoxazol-4-yl, or 3-chlorophenyl or 3-bromophenyl-5-methyl isoxazol-4-yl; R^4 is a benzyl, p-nitrobenzyl, diphenylmethyl, or alkyl of up to 4 carbon atoms ester of carboxymethyl, dicarboxymethyl, (bromo)(carboxy)ethyl or (benzoyl)(carboxy)methyl.

3,927,014

SUBSTITUTED MERCAPTO BENZIMIDAZOLES

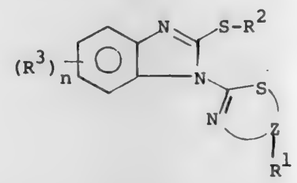
George Rovnyak, Hopewell; Venkatachala L. Narayanan, Hightstown; Rudiger D. Haugwitz, Titusville, and Christopher M. Cimarusti, Hamilton, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed July 29, 1974, Ser. No. 492,644

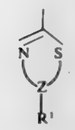
Int. Cl.² C07D *235/28*

U.S. Cl. 260—306.7 T **8 Claims**

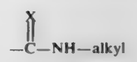
1. A compound of the formula:



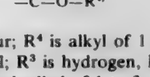
wherein Z is ethylene or propylene; R^1 is hydrogen, methyl, ethyl, phenyl, nitrophenyl, benzyl, phenethyl, tolyl, or xylyl; R^2 is alkyl of 1 to 5 carbons, benzyl, nitrobenzyl, phenethyl, nitrophenethyl, alkoxycarbonylalkylene wherein alkoxy is of 1 to 5 carbons and alkylene is of 1 to 3 carbons, dialkylaminoalkylene wherein each alkyl is of 1 to 3 carbons and alkylene is of 2 or 3 carbons, alkanoyl of from 2 to 18 carbons, benzoyl, substituted benzoyl wherein said substituent is halogen, alkyl of 1 to 3 carbons, or phenyl, phenylmethylcarbonyl, phenethylcarbonyl,



wherein R^1 and Z are as defined above,



wherein alkyl is of 1 to 5 carbons, or



X is oxygen or sulfur; R^4 is alkyl of 1 to 3 carbons, phenyl, benzyl, or phenethyl; R^3 is hydrogen, halogen, nitro, amino, cyano, trifluoromethyl, alkyl of 1 to 3 carbons alkoxy of 1 to 3 carbons, dialkylamino wherein each alkyl is of 1 to 3 carbons, alkanoyl of 2 to 6 carbons, or benzoyl; and *n* is 1 or 2; and when R^2 is dialkylaminoalkylene or R^3 is amino or dialkylamino the pharmaceutically acceptable acid-addition salts.

3,927,015

2-(3-HYDROXYAMINOMETHYL-S-TRIAZOL-4-YL)BENZOPHENONES

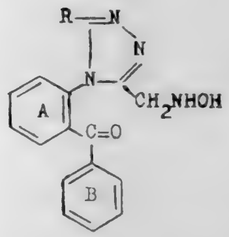
Yutaka Kuwada; Kanji Meguro, both of Hyogo, and Hiroyuki Tawada, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 255,993, May 23, 1972, abandoned. This application June 24, 1974, Ser. No. 482,798

Int. Cl.² C07D *249/08, 487/04*

U.S. Cl. 260—308 R **7 Claims**

1. A compound of the formula



wherein R represents hydrogen or lower alkyl, and the rings A and B, independently of each other, are each unsubstituted or substituted by one member selected from the group consisting of halogen, nitro, trifluoromethyl, lower alkyl and lower alkoxy.

3,927,016

6-SUBSTITUTED 4H-IMIDAZO (1,2-A) (1,4)-BENZODIAZEPINE-1-CARBOXALDEHYDES AND PROCESSES FOR THEIR PRODUCTION

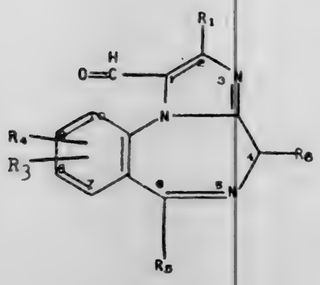
Jackson B. Hester, Jr., Galesburg, Mich., and Arthur R. Hanze, deceased, late of Kalamazoo, Mich. (by Janice W. Hanze, administratrix), assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 169,091, Aug. 4, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 395,512

Int. Cl.² C07D *487/04*

U.S. Cl. 260—309 **6 Claims**

1. A compound of the formula:



wherein R_1 and R_6 are each selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, inclusive; R_3 and R_4 are each selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, halogen, nitro, cyano, amino, trifluoromethyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoylamino and dialkylamino in which the carbon chain moieties are of 1 to 3 carbon atoms, inclusive; and R_5 is selected from the group consisting of pyridyl, 2-pyrimidyl, furyl, pyrryl, thienyl, alkyl of 1 to 3 carbon atoms, inclusive, alkenyl of 2 to 3 carbon atoms, inclusive, cycloalkyl of 5 to 7 carbon atoms, inclusive, cycloalkenyl of 5 to 7 carbon atoms, inclusive, and a phenyl radical of the formula



in which R_8 and R_9 each have the same meanings as given above for R_3 and R_4, and the pharmacologically acceptable acid addition salts thereof.

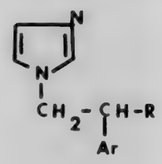
3,927,017

1-(β-ARYL-β-R-ETHYL)IMIDAZOLES

Jan Heeres, Vosselaar; Leo J. J. Backx, Geel, and Joseph H. Mostmans, Antwerp, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Filed June 27, 1974, Ser. No. 483,587
Int. Cl.² C07D *233/60*
U.S. Cl. 260—309 **7 Claims**

1. A chemical compound selected from the group consisting of an imidazole derivative having the formula:



and the therapeutically active non-toxic acid addition salts thereof, wherein:

Ar is a member selected from the group consisting of phenyl, mono-, di- and tri-halophenyl, loweralkylphenyl, loweralkyloxyphenyl, nitrophenyl, cyanophenyl and trifluoromethylphenyl; and

R is a member selected from the group consisting of cycloalkyl, lower alkenyl, aryl-loweralkyl, aryl-loweralkenyl, said aryl being a member selected from the group consisting of phenyl, mono-, di- and tri-halophenyl, loweralkylphenyl, loweralkyloxyphenyl, nitrophenyl, cyanophenyl and trifluoromethylphenyl.

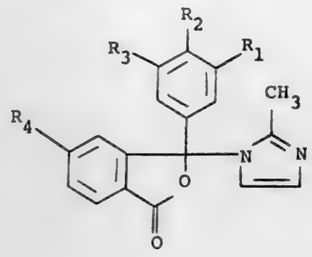
3,927,018

3-(2-METHYL-1-IMIDAZOLYL)-3-PHENYL-1-(3H)ISOBENZOFURANONES

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Dec. 23, 1974, Ser. No. 535,438
Int. Cl.² C07D *405/04*
U.S. Cl. 260—309 **5 Claims**

1. A compound of the formula



where

R_1, R_2 and R_3 each independently represent hydrogen, halo having an atomic weight of about 19 to 36, lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, trifluoromethyl, or

R_1 and R_2 or R_2 and R_3 together on adjacent carbon atoms may represent methylenedioxy,

R_4 represents hydrogen, halo having an atomic weight of about 19 to 36, or lower alkyl having 1 to 4 carbon atoms, provided that R_2 is trifluoromethyl or t-butyl only when R_1 and R_3 are other than trifluoromethyl or t-butyl, or a pharmaceutically acceptable acid addition salt thereof.

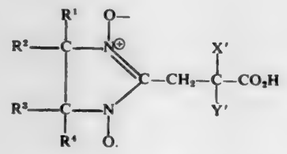
3,927,019

1-OXYLIMIDAZOLINYL COMPOUNDS USED AS STABLE FREE RADICAL PH INDICATORS

Jan Becher, Grindlose, and Edwin F. Ullman, Atherton, both of Calif., assignors to Synvar Associates, Palo Alto, Calif.

Division of Ser. No. 117,669, Feb. 22, 1971, Pat. No. 3,706,537, which is a continuation-in-part of Ser. No. 794,008, Jan. 27, 1969, abandoned. This application June 29, 1972, Ser. No. 267,345
Int. Cl.² C07D *233/22*
U.S. Cl. 260—309.6 **2 Claims**

1.



wherein R^{1-4} are the same of different and are lower alkyl of from 1 to 6 carbon atoms;

X′ is hydrogen or lower alkyl of from 1 to 6 carbon atoms; and

Y′ is different from X′ and is lower alkyl, lower alkoxycarbonyl or carboxylic acid.

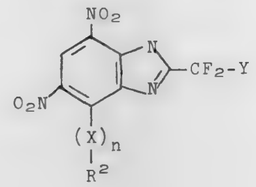
3,927,020

4-SUBSTITUTED-5,7-DINITRO-2-(α,α-DIFLUOROALKYL)BENZIMIDAZOLE COMPOUNDS

John L. Miesel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 221,809, Jan. 28, 1972, Pat. No. 3,790,595, which is a continuation-in-part of Ser. No. 833,685, June 16, 1969, abandoned. This application Sept. 10, 1973, Ser. No. 415,099
Int. Cl.² C07D *235/10*
U.S. Cl. 260—309.2 **4 Claims**

1. A compound of the formula



wherein

Y represents

a. hydrogen,
b. chlorine,
c. fluorine,
d. trifluoromethyl, or
e. pentafluoroethyl,

and wherein X represents oxygen or sulfur; *n* represents 0 or 1; and R^2 represents

1. alkyl of C_1–C_8, both inclusive, carbon atoms;
2. alkenyl of C_3–C_8, both inclusive, carbon atoms;
3. cycloalkyl of C_5–C_7, both inclusive;
4. cycloalkylmethyl, wherein cycloalkyl is as defined in the preceding candidate moiety;
5. loweralkylcycloalkyl, wherein loweralkyl is of C_1–C_4, both inclusive, and cycloalkyl is as defined in the preceding candidate moiety;
6. 2-norbornyl; or
7. decahydronapthyl.

3,927,021

ALLANTOIN GLYCINE COMPLEX

Sebastian B. Mecca, Abington, Pa., assignor to Schuylkill Chemical Company, Philadelphia, Pa.

Filed Feb. 24, 1975, Ser. No. 552,315
Int. Cl.² C07D *49/32*
U.S. Cl. 260—309.5 **1 Claim**

1. Allantoin glycinate.

3,927,022

2-AMINO-1-(2-IMIDAZOLIN-2-YL)-2-IMIDAZOLINES

Raymond R. Wittekind, Morristown, and John Shavel, Jr., Mendham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 253,074, May 15, 1972, Pat. No. 3,798,232, and a continuation-in-part of Ser. No. 6,639, Jan. 28, 1970, Pat. No. 3,666,767. This application Nov. 7, 1973, Ser. No. 414,561
Int. Cl.² C07D *49/34*
U.S. Cl. 260—309.6 **1 Claim**

1. 1-(2-Imidazolin-2-yl)-2- [2-(4-imidazolyl)ethyl]amino - 2-imidazoline Hydrochloride.

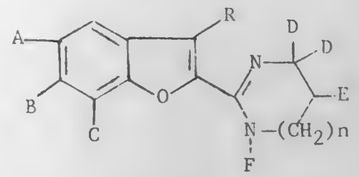
3,927,023

IMIDAZOLYL BENZOFURANS

Richard E. Brown, Hanover, and John Shavel, Jr., Mendham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 24, 1974, Ser. No. 473,253
Int. Cl.² C07D *233/04*
U.S. Cl. 260—309.6 **17 Claims**

1. A compound of the formula



in which A, B, and C are hydrogen or lower alkyl of 1 to 6 carbon atoms, halogen, lower alkoxy of 1 to 6 carbon atoms, or an aromatic ring; R is hydrogen, lower alkyl of 1 to 6 carbon atoms, hydroxy, amino or an aromatic ring; D is hydrogen or lower alkyl of 1 to 6 carbon atoms, E is hydrogen, lower alkyl of 1 to 6 carbon atoms, or hydroxy; F is hydrogen, lower alkyl of 1 to 6 carbon atoms, or β-hydroxyethyl and *n* is 0 and the pharmaceutically acceptable acid addition salts thereof.

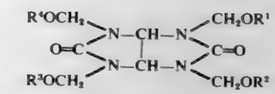
3,927,024

GLYCOLURILE DERIVATIVES

Dimitri Savostianoff, Asnieres, and Denise Dubos, Paris, both of France, assignors to Nobel Hoechst Chimie, Puteaux, France

Filed Jan. 30, 1973, Ser. No. 328,061
Claims priority, application France, Feb. 1, 1972, 72.03355; Dec. 18, 1972, 72.45091
Int. Cl. C07d *49/30*
U.S. Cl. 260—309.7 **4 Claims**

1. A compound of the formula



or isomeric mixtures thereof, wherein one of R^1, R^2, R^3, or R^4 is alkyl of 10–18 carbons, alkanoyl of 10–18 carbons or $(CH_2)_r$-R_4 in which r is one and R_4 is a perfluorinated alkyl of 7 carbons; one of R^1, R^2, R^3, or R^4 is $(AO)_mR_5$ wherein A is ethylene or propylene, m is 5–30 and R_5 is alkyl of 1–4 carbons; and the remaining two of R^1, R^2, R^3, and R^4 are the same and are alkyl of 1–3 carbons.

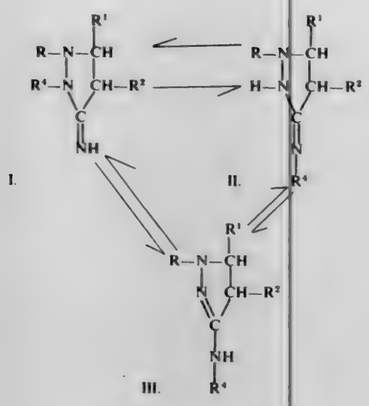
3,927,025

3-AMINO-Δ²-PYRAZOLINE DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

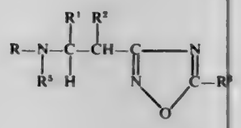
Dezső Korbonits, 27d, Verhalom u., Budapest II; Kálmán Hársanyi, 19-21, Egri J.u., Budapest XI; Erzsébet Molnár née Bakó, 58, Cservenka utca, Budapest XV; Kálmán Takács, 12, Vass u., Budapest VIII; Gergely Héja, 27, Soltner utca, Budapest XIII; János Bodnár, 17b, Menesi ut, Budapest XI; István Bodrogi, 36, Zoltan utca, Budapest XIX, and Judit Erődi, 20/d, Hungaria korut, Budapest VIII, all of Hungary

Continuation-in-part of Ser. No. 61,841, Aug. 6, 1970, abandoned. This application Jan. 7, 1972, Ser. No. 216,252
Claims priority, application Hungary, Aug. 7, 1969, CI 913
Int. Cl.² C07D *231/06*
U.S. Cl. 260—310 D **11 Claims**

1. A process for preparing a compound having the tautomeric formulae:



wherein R is a C_1–C_7 alkyl or a C_1–C_7 alkyl substituted with at least one member of the group consisting of halogen, amino, nitro, hydroxy, C_1–C_7 alkylamino, C_1–C_7 dialkyl amino and phenyl; a C_3–C_8 cycloalkyl; an aryl group selected from the group consisting of phenyl, naphthyl and pyridyl or said aryl group substituted with a member selected from the group consisting of halogen, amino, nitro, C_1–C_7 alkyl, alkoxy, alkylamino and dialkylamino; an aralkyl group wherein the alkyl moiety has 1 to 5 carbon atoms and the aryl moiety is as defined above; R^1 and R^2 may each be hydrogen, a C_1–C_7 alkyl or a C_1–C_7 alkyl substituted with at least one member of the group consisting of halogen, amino, nitro, hydroxy, C_1–C_7 alkylamino, C_1–C_7 dialkyl amino and phenyl; an aryl group selected from the group consisting of phenyl, naphthyl and pyridyl or said aryl group substituted with a member selected from the group consisting of halogen, amino, nitro, C_1–C_7 alkyl, alkoxy, alkylamino and dialkylamino; and R^4 is hydrogen, an acyl radical of an aliphatic organic carboxylic acid having 1–20 carbon atoms or an aromatic carboxylic acid having 6–10 carbon atoms; and salts thereof, which process comprises reacting a compound having the formula IV:



IV.

or a salt thereof wherein R, R^1 and R^2 have the same meaning as stated above; R^3 is a C_1–C_7 alkyl group or a C_1–C_7 alkyl substituted with at least one member of the group consisting of halogen, amino, nitro, hydroxy, C_1–C_7 alkylamino, C_1–C_7 dialkylamino and phenyl; an aryl group selected from the group consisting of phenyl, naphthyl and pyridyl or said aryl group substituted with a member selected from the group consisting of halogen, amino, nitro, C_1–C_7 alkyl, alkoxy, alkylamino and dialkylamino; an aralkyl group wherein the alkyl moiety has 1 to 5 carbon atoms and the aryl moiety is as defined above; and R^5 is hydrogen or an acyl group selected from the group consisting of C_1–C_{20} alkanoyl, C_6–C_{20} aroyl, C_1–C_7 alkylsulfonyl, and arylsulfonyl wherein the aryl is phenyl, naphthyl or pyridyl, with a base.

3,927,026
PROCESS OF MAKING X-FORM METAL PHTHALOCYANINE

Paul J. Brach, Rochester, N.Y., and Hugh A. Six, Los Altos, Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 830,116, June 3, 1969, abandoned. This application Apr. 23, 1973, Ser. No. 353,838The portion of the term of this patent subsequent to Apr. 18, 1989, has been disclaimed.

Int. Cl.² C09B *47/04*

U.S. Cl. 260—314.5 **11 Claims**

1. A method of preparing X-form metal phthalocyanine comprising the steps of:

a. mixing phthalonitrile in an alkylalkanolamine solvent;
b. adding ammonia to the mixture;
c. terminating the ammonia addition
d. adding a catalytic amount of an X-form phthalocyanine;
e. adding a metal salt; and
f. refluxing.

3,927,027
BIS(FURFURYL) IMIDE

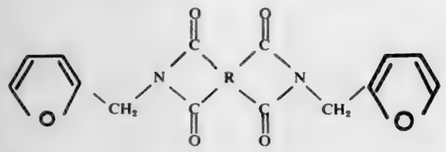
Robert J. Jones, Hermosa Beach, and Howard E. Green, Los Angeles, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 31, 1973, Ser. No. 411,516

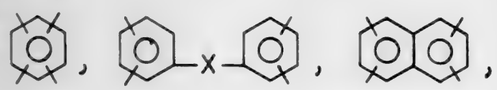
Int. Cl.² C07D *487/04*

U.S. Cl. 260—326 S **1 Claim**

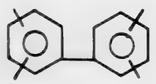
1. A bis(furfuryl) imide having the structure:



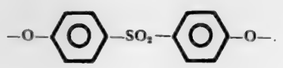
wherein R is a tetrafunctional radical selected from the group consisting of



and



wherein X is —O—, —S—, —SO_2—, —CO—, —CH_2—, —C_2H_4—, —C_3H_6—, and



3,927,028
SULTONE EXTRACTION PROCESS

William A. Sweeney, Larkspur, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 874,421, Nov. 5, 1969, abandoned. This application Sept. 5, 1974, Ser. No. 502,999

Int. Cl.² C07D *327/02*

U.S. Cl. 260—327 S **11 Claims**

1. A process for recovering sultones from the reaction mixture produced by reacting sulfur trioxide with a monoolefinic hydrocarbon containing a total of 8 to 30 carbon atoms, said process comprising the steps of:

1. adding water to said reaction mixture in a weight ratio relative to the weight of the reaction mixture of from 1:3 to 3:1;
2. adding to said reaction mixture a water-soluble polar, organic cosolvent having from 1 to 4 carbon atoms in a weight ratio relative to water of from 4:1 to 1:1;
3. extracting the mixture resulting from Steps (1) and (2) with a hydrocarbon solvent; and
4. removing the hydrocarbon solvent from the product of Step (3) to produce a hydrocarbyl sultone;

wherein Steps (1) and (2) may be performed in any order or simultaneously and wherein the temperature of the reaction mixture during Steps (1), (2) and (3) is from about 10° to 80°C.

3,927,029
XANTHEN DERIVATIVES

Stuart Sanders Adams; Bernard John Armitage; Norman William Bristow, and Bernard Vincent Heathcote, all of Nottingham, England, assignors to The Boots Company Limited, England

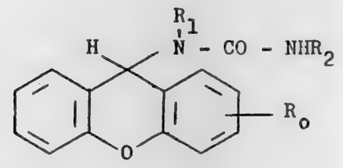
Continuation of Ser. No. 191,112, Oct. 20, 1971, abandoned, which is a continuation-in-part of Ser. No. 662,587, Aug. 23, 1967, Pat. No. 3,644,420. This application Oct. 23, 1973, Ser. No. 408,378

Claims priority, application United Kingdom, Sept. 2, 1966, 39384/66; Apr. 5, 1967, 15692/67

Int. Cl.² C07D *311/88*

U.S. Cl. 260—335 **3 Claims**

1. A compound represented by the formula I



. . . I

in which

R_0 is selected from the group consisting of hydrogen, halogen, alkyl and alkoxy;
R_1 is alkyl;
and R_2 is selected from the group consisting of hydrogen, alkyl, hydroxyalkyl, alkanoyloxyalkyl, alkoxyalkyl and alkanoyl;
and wherein the terms "alkyl", "alkoxy", "alkanoyloxy" and "alkanoyl" indicate such groups containing up to 7 carbon atoms.

3,927,030
6,8-DIOXA-BICYCLO [3.2.1] OCTANE AND 2,9-DIOXA-BICYCLO [3.3.1] NONANE DERIVATIVES

Edouard P. Demole, Coppet, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

Filed Mar. 15, 1974, Ser. No. 451,423

Claims priority, application Switzerland, Apr. 10, 1973, 5122/73; Apr. 12, 1973, 5274/73

Int. Cl.² C07D *317/08*, *319/08*

U.S. Cl. 260—340.3 **1 Claim**

1. A compound selected from the group consisting of:

a. 2-isopropyl-5-methyl-6,8-dioxa-bicyclo[3.2.1.]octan-7-yl-methyl-ketone,
b. 2-(2-isopropyl-5-methyl-6,8-dioxa-bicyclo[3.2.1]octan-7-yl)-propan-2-ol,
c. 6-isopropyl-1,3,3-trimethyl-2,9-dioxa-bicyclo[3.3.1]nonan-4-ol, and
d. 1-(2-isopropyl-5-methyl-6,8-dioxa-bicyclo[3.2.1]octan-7-yl)-ethan-1-ol.

3,927,031
STEREOSPECIFIC TOTAL STEROIDAL SYNTHESIS VIA SUBSTITUTED C/D-TRANS INDANONES

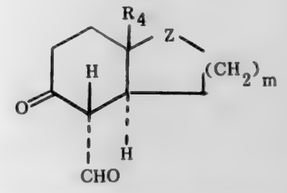
Zoltan George Hajos, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 765,023, Oct. 4, 1968, Pat. No. 3,897,460. This application June 24, 1974, Ser. No. 482,714

Int. Cl.² C07C *49/27*; C07D *317/26*

U.S. Cl. 260—340.9 **2 Claims**

1. A compound of the formula:



wherein R_4 is hydrogen or lower alkyl; Z is carbonyl, lower alkylenedioxy methylene or $CH(OR_2)$; R_2 is hydrogen, lower alkyl, lower alkoxy-lower alkyl, phenyl-lower alkyl, tetrahydropyranyl, lower alkanoyl, benzoyl, nitrobenzoyl, carboxy-lower alkanoyl, carboxy-benzoyl, trifluoroacetyl, or camphorsulfonyl and m is an integer having the value of 1 or 2,

its optical enantiomer and the racemate thereof.

3,927,032
INTERMEDIATES FOR BENZINDENES

Andor Furst, Basel; Paul Buchschacher, Arlesheim; Dieter Kagi, Allschwil; Werner Meier, Bottmingen; Marcel Müller, Frenkendorf, and Erich Widmer, Munchenstein, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

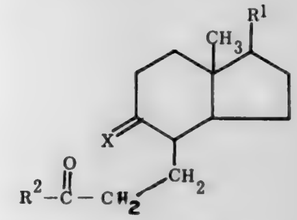
Division of Ser. No. 256,555, May 24, 1972, Pat. No. 3,810,915. This application Mar. 27, 1974, Ser. No. 455,084

Claims priority, application Switzerland, Nov. 19, 1968, 17224/68

Int. Cl.² C07D *317/30*

U.S. Cl. 260—340.9 **5 Claims**

1. A compound of the general formula



wherein X is a C_{1-6} alkylidene group; R^2 is hydroxy, lower alkoxy or halogen and R^1 151,1-ethylenedioxyethyl.

3,927,033
LASING DYE AND METHOD OF PREPARATION

Peter R. Hammond, China Lake, Calif., assignor to Peter R. Hammond, China Lake, Calif. and The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 25, 1974, Ser. No. 526,760

Int. Cl.² C07D *311/16*

U.S. Cl. 260—343.2 R **3 Claims**

1. 4-Trifluoromethyl-7-hydroxycoumarin.

3,927,034
3,4-DIHYDRO-2H-PYRANE-2,4-DIONES

Mikio Sawaki; Isao Iwataki, both of Odawara; Yoshihiko Hirono, Hiratsuka; Hisao Ishikawa, Kanagawa; Shozo Yamada, Hiratsuka; Yasushi Yasuda, Hiratsuka, and Mitsuo Asada, Hiratsuka, all of Japan, assignors to Nippon Soda Company, Limited, Tokyo, Japan

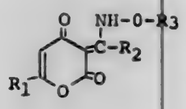
Filed Oct. 15, 1973, Ser. No. 406,621

Claims priority, application Japan, Oct. 20, 1972, 47-104962; Dec. 25, 1972, 47-2526; Dec. 25, 1972, 47-2527

Int. Cl.² C07D *309/30*

U.S. Cl. 260—343.5 **9 Claims**

1. A compound of the formula



wherein

R_1 is alkyl of 2 to 3 carbon atoms,

R_2 is alkyl of 2 to 3 carbon atoms and

R_3 is selected from the group consisting of ethyl and allyl.

3,927,035
PRODUCTION OF 2,2-DISUBSTITUTED PROPIOLACTONES

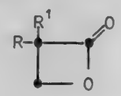
Jerry D. Holmes, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,568

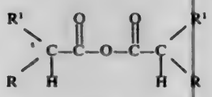
Int. Cl.² C07D *305/12*

U.S. Cl. 260—343.9 **22 Claims**

1. A process for producing a 2,2-disubstituted propiolactone having the formula



which comprises the steps of reacting an isoanhydride having the formula



wherein R and R^1 individually is straight or branched chain alkyl having 1 to 10 carbon atoms, with formaldehyde or a formaldehyde yielding material at a temperature of from about 190°C. to about 400°C. in the presence of a catalyst consisting essentially of the calcined reaction product of the complex obtained when a tin salt selected from the group consisting of stannous chloride, stannic chloride, stannous bromide, stannic bromide, stannous isobutyrate, stannous acetate, and stannous benzoate is reacted with silica gel at a temperature of from about 60°C. to about 250°C.

3,927,036
BASIC CARBONATES AND CARBAMATES OF BENZOPYRANS

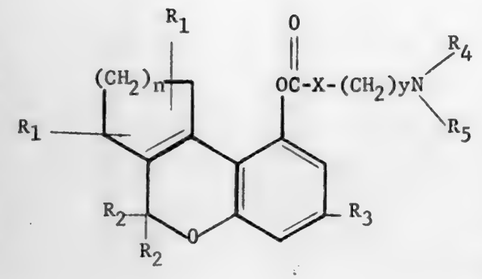
Cheuk Man Lee, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed May 25, 1972, Ser. No. 256,954

Int. Cl.² C07D *311/80, 311/94*

U.S. Cl. 260—345.3 **11 Claims**

1. A compound of the formula



wherein n is 1 or 2; each R_1 is hydrogen or loweralkyl; R_2 is loweralkyl; R_3 is alkyl of from 1 to 20 carbon atoms or cycloalkyl of from 3 to 8 carbon atoms; X is O or NH; y is an integer from 2–6; and R_4 and R_5 each are hydrogen or loweralkyl, or a pharmaceutically acceptable acid addition salt thereof.

3,927,037
ALKOXY-SUBSTITUTED-2-NITRO-3-PHENYLBENZOFURANS

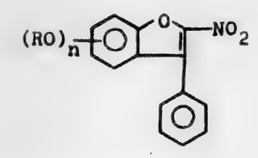
Robert A. Scherrer, White Bear Lake, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Filed Feb. 26, 1974, Ser. No. 446,006

Int. Cl.² C07D *307/82*

U.S. Cl. 260—346.2 R **7 Claims**

1. A compound of the formula



wherein each R is alkyl of one to six carbon atoms and n is 1–3.

3,927,038
METHOD OF PRODUCING ISOMERS OF METHYLTETRAHYDROPHTHALIC ANHYDRIDE

Alexandr Grigorievich Liakumovich, prospekt Lenina, 23, kv. 4; Jury Ivanovidh Michurov, ulitsa Khudaiberdina, 125, kv. 36; Nina Vasilievna Zakharova, prospekt Lenina, 23, kv. 4, all of Sterlitamak; Mikhail Afanasievich Golubenko, Bolshaya Filevskaya ultisa, 45, korpus 2, kv. 27, Moscow; Genrikh Alexandrovich Tolstikov, ulitsa Dostoevskogo, 102/3, kv. 61, Ufa; Rakhil Samoilovna Kholodovskaya, Krasnoarmeiskaya ulitsa, 5, kv. 53, Moscow; Zoya Stepanovna Shalimova, ulitsa Volochaevskaya, 16-a, kv. 19, Sterlitamak; Taisia Vasilievna Legostaeva, prospekt Lenina, 30, kv. 19, Obninsk Kaluzhskoi oblasti; Vasily Dmitrievich Popov, ulitsa Revoljutsionnaya, 15, kv. 13, and Vladimir Romanovich Dolidze, ulitsa Kurchatova, 30, kv. 6, both of Sterlitamak, all of U.S.S.R.

Filed Dec. 1, 1971, Ser. No. 203,820

Int. Cl.² C07D *307/89*

U.S. Cl. 260—346.3 **4 Claims**

1. A method of producing a liquid mixture of isomers of methyltetrahydrophthalic anhydride, consisting essentially of condensing trans-piperylene and maleic anhydride in an organic solvent at 40°–90°C., distilling off the solvent and unreacted reactants with subsequent thermal treatment of the solid residue consisting essentially of the condensation products at a temperature of 150°–250°C. to form a liquid product.

3,927,039
PURIFICATION OF PYROMELLITIC DIANHYDRIDE

Emmanuel R. E. G. Draguez Tripels De Hault, Waterloo; Marcel Van Tongelen, Diegem, and Henri R. Debus, Meise, all of Belgium, assignors to Labofina S. A., Brussels, Belgium

Filed Nov. 1, 1974, Ser. No. 519,806

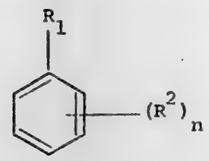
Claims priority, application Belgium, Nov. 16, 1973, 137812

Int. Cl.² C07D *307/89*

U.S. Cl. 260—346.3 **9 Claims**

1. The process for the purification of impure pyromellitic dianhydride produced from the oxidation of tetraalkyl benzene wherein said purified pyromellitic anhydride exibits the characteristics of having a saybolt color value of at least about 13, an acid index value of at least about 18.20 and a percentage yield based on weight of at least about 93.5%, said process consisting essentially of the steps of:

a. contacting solid impure pyromellitic anhydride with a solvent consisting essentially of an alkyl benzene having the general formula:



wherein R_1 is a saturated aliphatic hydrocarbon radical containing from two to 20 carbon atoms, R^2 is a saturated aliphatic radical containing from one to 20 carbon atoms and n is an integer between 0 and 5, the total number of the carbon atoms in R_1 and R^2 being less than 25, said solvent being selective for said impurities to form a solid phase containing pyromellitic anhydride and a liquid phase containing said alkyl benzene solvent and impurities;

b. separating said solid phase containing purified pyromellitic anhydride from said liquid phase containing said alkyl benzene solvent and impurities; and

c. evaporating from said purified pyromellitic dianhydride any residual alkyl benzene remaining therein.

3,927,040
METHOD OF SIMULTANEOUS PRODUCTION OF PHTHALIC ANHYDRIDE AND ANTHRAQUINONE

Evgeny Iosifovich Andreikov, ultisa Belinskogo, 152, korpus 2, kv. 83; Alexandr Stepanovich Kostromin, ulitsa Kraulya, 61, korpus 1, kv. 152, and Natalya Dmitrievna Rusyanova, ulitsa 8 Marta 7, kv. 3, all of Sverdlovsk, U.S.S.R.

Filed Aug. 9, 1973, Ser. No. 387,035

Claims priority, application U.S.S.R., Jan. 1, 1971, 1604520

Int. Cl.² C07D *307/89;* **C07C** *49/68*

U.S. Cl. 260—346.4 **6 Claims**

1. A method of simultaneously producing phthalic anhydride and anthraquinone comprising oxidizing a mixture of anthracene and naphthalene in the vapor phase with a molecular oxygen-containing gas in a stationary vanadium catalyst bed at a temperature of from 340° to 400°C.

3,927,041
PROCESS OF MAKING ALKENYL SUCCINIC ANHYDRIDE

John A. Cengel, Wheaton, and Imre Puskas, Glen Ellyn, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Oct. 1, 1973, Ser. No. 402,487

Int. Cl.² C07D *307/60*

U.S. Cl. 260—346.8 **2 Claims**

1. The method of preparing an alkenyl-succinic anhydride which comprises reacting at a temperature in the range of 150° to 300°C from 0.8 to 5.0 moles maleic anhydride per mole of butene polymer in the composition comprising butene polymer having a M_n in the range of 300–3,000 and 5–200 ppm of 1,3-dibromo-5, 5-dialkyl-substuted hydantoin based on said butene polymer, wherein such hydantoin the alkyl-substituents have a total of 2 to 21 carbon atoms.

3,927,042
ALKOXYSILYL-SUBSTITUTED EPOXIDIZED UREA DERIVATIVES

Hans Dietrich Gölitz, deceased, late of Cologne, Germany (by Ingrid Irene Klärchen Gölitz, heiress); Kuno Wagner, Leverkusen, Germany; Bernd Quiring, Leverkusen, Germany, and Walter Noll, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

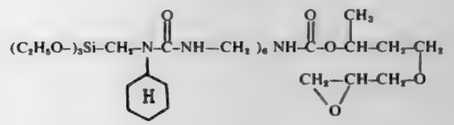
Continuation-in-part of Ser. No. 164,910, July 21, 1971, abandoned. This application May 29, 1973, Ser. No. 364,776

Claims priority, application Germany, July 29, 1970, 2037617

Int. Cl.² C07D *303/46*

U.S. Cl. 260—348 SC **3 Claims**

1. An epoxidized organo-alkoxysilane of the formula:



3,927,043
BIS-(POLYHALOGENOANILINO)-ANTHRAQUINONES

Arnold Wick, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

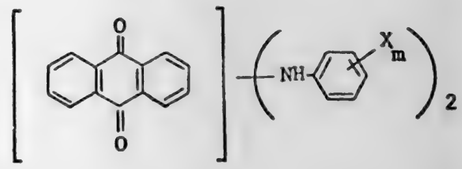
Filed Apr. 17, 1974, Ser. No. 461,567

Claims priority, application Switzerland, Apr. 19, 1973, 5756/73

Int. Cl.² C07C *97/25;* **C09B** *1/16*

U.S. Cl. 260—381 **7 Claims**

1. Bis-(polyhalogenoanilino)-anthraquinones of the formula



wherein X denotes a halogen atom and m denotes the number 3, 4 or 5.

3,927,044
ALKALINE STABLE FUGITIVE TINTS

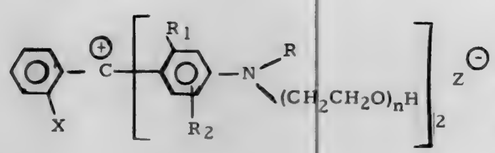
Larry R. Foster, and Hans H. Kuhn, both of Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Continuation-in-part of Ser. No. 47,573, June 18, 1970, abandoned. This application Mar. 19, 1973, Ser. No. 342,485

Int. Cl.² C09B *11/10*

U.S. Cl. 260—394 **9 Claims**

1. An alkaline stable fugitive tint compound having the formula



wherein

R is an alkyl or aryl radical containing up to 10 carbon atoms or

$H(OCH_2CH_2)_n-$

X is an electron withdrawing group selected from halogen, nitro and sulfonyl radicals

Z = anion moiety of an acid

R_1 and R_2 are H-, halogen, alkyl or alkoxy radicals having up to 10 carbon atoms, and

n is an integer between about 10 and 100.

3,927,045

PROCESS FOR THE PREPARATION OF TRIMETHYL-PARA-BENZAQUINONE

Daniel Michelet, Tassin-La-Demi-Lume, and Michel Razoutz, Ouillon, both of France, assignors to Rhone-Poulenc, Paris, France

Filed Jan. 14, 1974, Ser. No. 432,984

Claims priority, application France, Jan. 15, 1973, 73.01302

Int. Cl.² C07C *45/16, 37/00*

U.S. Cl. 260—396 R **9 Claims**

1. A process for the preparation of trimethyl-para-benzoquinone which comprises oxidising 2,3,6-trimethyl-phenol with hydrated manganese dioxide in an acid medium containing a saturated aliphatic carboxylic acid containing 1–3 carbon atoms at least about a fourfold excess of the carboxylic acid being present with respect to the phenol.

3,927,046

NOVEL 11,11-ALKYLIDENE STEROIDS

Albertus Joannes van den Broek, Oss, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

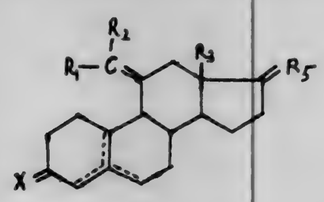
Filed Dec. 3, 1973, Ser. No. 420,823

Claims priority, application Netherlands, Dec. 9, 1972, 7216767; Nov. 15, 1973, 7315704

Int. Cl.² C07J *1/00*

U.S. Cl. 260—397.3 **3 Claims**

1. An 11,11-alkylidene steroid of the formula:



wherein R_1 and R_2 are selected from the group consisting of hydrogen and methyl; R_3 is selected from the group consisting of methyl and ethyl; R_5 is selected from the group consisting of oxygen, αH (βR_6) and α R_7 (βR_6), wherein R_6 is selected from the group consisting of hydroxy and acylated hydroxy, the acyl group of which is derived from a saturated or unsaturated organic carboxylic acid having 1–18 carbon atoms; R_7 is saturated or unsaturated alkyl having 1–4 carbon atoms; X is selected from the group consisting of H_2, oxygen and $H(R_8)$, where H_8 is selected from the group consisting of hydroxy and acetoxy; and a double bond is present starting from carbon atom 5.

3,927,047

NOVEL N-LONG CHAIN ACYL-ACIDIC AMINO ACID DIESTER

Tomomichi Ichikawa, Tokyo, and Sigetosi Fukami, Shinza, both of Japan, assignors to Ajinomoto Co., Inc. and Nihon Emulsion Co., Inc., both of Tokyo, Japan

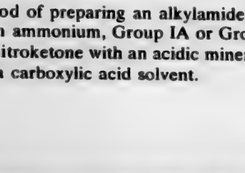
Filed Oct. 19, 1973, Ser. No. 407,813

Claims priority, application Japan, Oct. 23, 1972, 47-106018

Int. Cl.² C07C *101/22*

U.S. Cl. 260—404 **28 Claims**

1. An N-long chain acyl-acidic amino acid diester expressed by the general formula



wherein R^1CO- consists essentially of a residue of a straight-chain or branched-chain saturated or unsaturated aliphatic acid having 7 to 21 carbon atoms; R^2O and R^3O consist essentially of (1) a residue of a straight-chain or branched-chain saturated or unsaturated aliphatic alcohol having 8 to 30 carbon atoms, (2) a residue of a polyoxyalkylene higher alcohol ether composed of a straight-chain or branched-chain saturated or unsaturated monohydric alcohol having 8 to 30 carbon atoms and a polyoxyalkylene containing 1 to 20 oxyalkylene units with 2 to 4 carbon atoms, or (3) residue of a polyoxyalkylene higher fatty acid ester composed of a straight-chain or branched-chain saturated or unsaturated monovalent aliphatic acid and a polyoxyalkylene containing 1 to 20 polyoxyalkylene units with 2 to 4 carbon atoms; and *n* is 1 or 2.

3,927,048

PREPARATION OF ALKYLAMIDES

Roger George Duranleau, Ardonia, and Richard F. Love, Fishkill, both of N.Y., assignors to Texaco, Inc., New York, N.Y.

Filed Dec. 12, 1974, Ser. No. 532,267

Int. Cl.² C07C *103/02*

U.S. Cl. 260—404 **10 Claims**

1. A method of preparing an alkylamide which comprises contacting a nitroketone with formic acid.

3,927,049

PREPARATION OF ALKYLAMIDES

Mahmoud S. Kablaoui, Wappingers Falls, and Roger G. Duranleau, Ardonia, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 12, 1974, Ser. No. 532,266

Int. Cl.² C07C *103/02*

U.S. Cl. 260—404 **27 Claims**

1. A method of preparing an alkylamide which comprises contacting an ammonium, Group IA or Group IIA metal salt of an alpha-nitroketone with an acidic mineral acid salt in the presence of a carboxylic acid solvent.

3,927,050

PREPARATION OF ALKYLAMIDES

Roger G. Duranleau, Ardonia, and John M. Larkin, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 12, 1974, Ser. No. 532,268

Int. Cl.² C07C *103/02*

U.S. Cl. 260—404 **17 Claims**

1. A method of preparing an alkylamide which comprises contacting a nitroketone with nitric acid, sulfuric acid or phosphoric acid as catalyst in the presence of a carboxylic acid solvent.

3,927,051

PROCESS FOR THE PREPARATION OF AN UNSATURATED CARBOXYLIC ACID

Willem J. de Klein, Dieren, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Filed Sept. 4, 1973, Ser. No. 394,267

Claims priority, application Netherlands, Sept. 8, 1972, 7212205

Int. Cl. C08h *17/36*

U.S. Cl. 260—413 **9 Claims**

1. A process for the preparation of an ethylenically unsaturated carboxylic acid comprising reacting an ethylenically unsaturated hydrocarbon with a lower carboxylic acid or anhydride thereof in the presence of a manganese compound which is at least trivalent and in the presence of a bivalent copper compound and hydrolyzing the thus obtained reaction product.

3,927,052

CATALYST

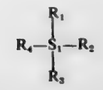
Luis R. Vizurraga, Charlotte, N.C., assignor to Fiber Industries Inc., Charlotte, N.C.

Division of Ser. No. 86,302, Nov. 2, 1970, Pat. No. 3,758,535, which is a continuation-in-part of Ser. No. 879,618, Nov. 24, 1969, abandoned. This application May 11, 1973, Ser. No. 360,241

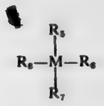
Int. Cl.² C07F *7/22*

U.S. Cl. 260—429.7 **4 Claims**

1. As a catalyst suitable for use in the preparation of polyester polymers, a viscous liquid or paste product of the process of reacting a first compound of the formula



with a second compound of the formula



in quantities of from about 1.1 to about 20 moles of said second compound per mole of said silicon compound, wherein:

a. M is tin;

b. R_2 and R_4 are selected from the group consisting of chlorine and hydroxy;

c. the reacting R substituents are selected from the group consisting of alkyl of 1 to about 18 carbon atoms, aryl of 6 to about 18 carbon atoms, alkoxy of 1 to about 18 carbon atoms, and aryloxy of 6 to about 16 carbon atoms;

d. in said reaction said first compound and said second compound are reacted for from about 2 to about 6 hours; and

e. after said first compound and said second compound have been reacted with each other for from about 2 to about 6 hours, the reaction mixture is subjected to a vacuum of less than about 600 millimeters of mercury absolute for at least 30 minutes.

3,927,053

MONOMERCURY ORGANO CATALYST

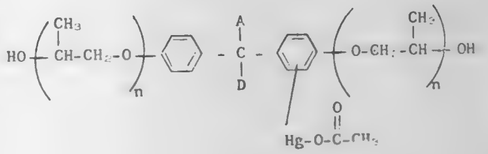
James A. Gallagher, Grosse Ile, and Bernardas Brizgys, Southgate, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Mar. 4, 1974, Ser. No. 447,884

Int. Cl.² C07F *3/12*

U.S. Cl. 260—433 **8 Claims**

1. A liquid monomercury organo catalyst for polyurethanes having the formula



wherein:

A is hydrogen or methyl;

D is hydrogen, methyl, ethyl or propyl;

n is a number from 0 to 6;

provided that the sum of carbon atoms present in A and D is 2 or 3, otherwise both A and D are hydrogen.

3,927,054

PROCESS FOR PRODUCING β-PHENYLSERINE COPPER COMPLEX

Hisao Tobiki, Toyonaka; Tadashi Okamoto, Ashiya, and Hisao Akiyama, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Oct. 5, 1973, Ser. No. 403,906

Int. Cl.² C07F *1/08*

U.S. Cl. 260—438.1 **4 Claims**

1. A process for producing DL-threo-β-p-methylsulfonylphenylserine copper complex which comprises

reacting p-methylsulfonylbenzaldehyde with glycine copper complex in an amount of at least one mole of complex per mole of p-methylsulfonylbenzaldehyde under basic condition

in the presence of a solvent selected from the group consisting of water, a lower alcohol or a mixed solvent of water and a lower alcohol

at a temperature within a range between room temperature and 100° C.

3,927,055

PHOTOSENSITIVE COPPER (I) COMPLEXES

Henry L. Gysling, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 365,376, May 30, 1973, Pat. No. 3,860,501. This application Oct. 25, 1974, Ser. No. 518,657

Int. Cl.² C07F 1/08

U.S. Cl. 260—438.1 **4 Claims**

1. A copper (I) complex having the formula

$$Cu[P(OR)_3]_4BAr_4$$

wherein R is alkyl containing from 1 to 6 carbon atoms or aryl containing from 6 to 12 carbon atoms and Ar is aryl containing from 6 to 12 carbon atoms.

3,927,056

HYDRIDO(NITRILE)TRIS(TRIARYL PHOSPHITE)COBALT COMPLEXES

Lawrence Wayne Gosser, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Apr. 4, 1974, Ser. No. 457,913

Int. Cl.² C07F 15/06

U.S. Cl. 260—439 R **8 Claims**

1. A cobalt hydride complex of the formula $HCo[R(CN)_x][P(OAr)_3]_3$ wherein:

x is 1 or 2;

when x is 1, R is alkyl, alkenyl, aryl or alkaryl of up to 18 carbons;

when x is 2, R is alkylene, alkenylene, arylene or alkarylene of up to 18 carbons, and

the Ar's alike or different, are phenyl or alkylphenyl of up to 18 carbons.

3,927,057

METHOD FOR THE PREPARATION OF ORGANOSILYLAMINES

Minoru Takamizawa; Toshio Shinohara, and Masatoshi Takita, all of Annaka, Japan, assignors to Shinetsu Chemical Company, Tokyo, Japan

Filed May 22, 1974, Ser. No. 472,357

Claims priority, application Japan, May 29, 1973, 48-59974

Int. Cl.² C07F 7/8, 7/10, 7/18

U.S. Cl. 260—448.2 E **14 Claims**

1. A method for the preparation of organosilylamines which comprises reacting triorganohalosilanes represented by the general formula $R^1R^2R^3SiX$ where; R^1, R^2 and R^3 are the same or different hydrocarbon groups having 1 to 18 carbon atoms, and X is a halogen atom, with a nitrogen-containing compound selected from the group consisting of ammonia and amines represented by the general formula R^4R^5NH where R^4 and R^5 are selected from the group consisting of hydrogen and monovalent hydrocarbon groups in an inert organic solvent, then after completion of the reaction, contacting the reaction mixture with an aqueous alkali solution containing an alkali hydroxide selected from the group consisting of sodium hydroxide, potassium hydroxide, and lithium hydroxide in an amount in excess of the equivalent amount to the halide salts present in said reaction mixture, dissolving said halide salts in said aqueous alkali solution, and separating said reaction mixture from said aqueous alkali solution.

3,927,058

METHOD OF PRODUCING ALKYLTRIFLUOROSILANE COMPOUNDS

William J. Libbey, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

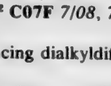
Continuation-in-part of Ser. No. 431,516, Jan. 7, 1974, abandoned, Continuation of Ser. No. 224,961, Feb. 9, 1972, abandoned. This application Feb. 10, 1975, Ser. No. 548,857

Int. Cl.² C07F 7/08, 7/12

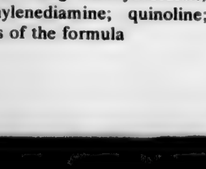
U.S. Cl. 260—448.2 E **8 Claims**

1. A method for producing alkyltrifluorosilanes comprising

a. forming a reaction mixture of SiF_4 and an aluminum trialkyl complex; said aluminum trialkyl complex being derived from the addition of a complexing agent to aluminum trialkyl in a molar ratio of 0.4:3/1, respectively; said aluminum trialkyl being defined by AlR_3 wherein each R is an alkyl group containing at least 3 carbon atoms; said complexing agent being tetrahydrofuran; m-dioxane; p-dioxane; triethylenediamine; quinoline; isoquinoline; aliphatic amines of the formula



wherein each R° is a straight chain alkyl group having 1 to 6 carbon atoms; and cyclic amines of the formula



wherein R′ is hydrogen or methyl, and each R″ is hydrogen or an alkyl group having 1 to 10 carbon atoms provided that any two adjacent R″ groups together with the nuclear carbon atoms to which they are attached may represent a single ring having 5 to 7 carbon atoms; the mole ratio of SiF_4 to aluminum trialkyl content in the complex being at least 3; and

b. subjecting said reaction mixture to reaction at elevated temperatures under a substantially anhydrous and oxygen-free atmosphere.

3,927,059

METHOD OF PRODUCING DIALKYLDIFLUOROSILANE COMPOUNDS

William J. Libbey, and Allan J. Lundeen, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

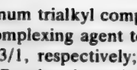
Continuation-in-part of Ser. No. 431,181, Jan. 7, 1974, abandoned, which is a continuation of Ser. No. 235,002, March 15, 1972, abandoned. This application Feb. 10, 1975, Ser. No. 548,858

Int. Cl.² C07F 7/08, 7/12

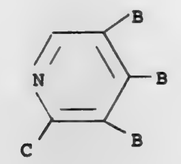
U.S. Cl. 260—448.2 E **7 Claims**

1. A method for producing dialkyldifluorosilanes comprising

a. forming a reaction mixture of SiF_4 and an aluminum trialkyl complex, said reaction mixture having a molar ratio of SiF_4 to aluminum trialkyl content in the complex of at least 3; said aluminum trialkyl complex being derived from the addition of a complexing agent to aluminum trialkyl in a molar ratio of 0.4–3/1, respectively; said aluminum trialkyl being defined by $Al(R)_3$ wherein each R is an alkyl group containing 3 to 20 carbon atoms; said complexing agent being tetrahydrofuran; m-dioxane; p-dioxane; triethylenediamine; quinoline; isoquinoline; aliphatic amines of the formula



wherein each A is a straight chain alkyl group having 1 to 6 carbon atoms; or cyclic amines of the formula

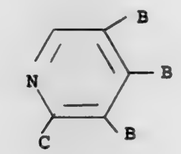


wherein C is hydrogen or methyl, and each B is hydrogen or an alkyl group having 1 to 10 carbon atoms provided that any two adjacent B groups together with the nuclear carbon atoms to which they are attached may represent a single ring having 5 to 7 carbon atoms;

b. subjecting said reaction mixture to reaction at temperatures in the range of 25° to 300°C at pressures of atmospheric to 3000 psi under a substantially anhydrous and oxygen-free atmosphere to form an alkyltrifluorosilane having the formula $RSiF_3$ wherein R is as defined in (a);

c. forming a reaction mixture of the alkyltrifluorosilane of step (b) and an aluminum trialkyl complex or aluminum trialkyl, said reaction mixture having a molar ratio of alkyltrifluorosilane to aluminum trialkyl in the range of 1:0.25–1; said aluminum trialkyl being defined by $Al(R')_3$ wherein each R′ is an alkyl group containing 2 to 20 carbon atoms; said aluminum trialkyl complex being derived from the addition of a complexing agent to the above aluminum trialkyl in a molar ratio of 0.4–3:1, said complexing agent being tetrahydrofuran; m-dioxane; p-dioxane; triethylenediamine; quinoline; isoquinoline; aliphatic amines of the formula

wherein each A is a straight chain alkyl group having 1 to 6 carbon atoms; or cyclic amines of the formula



wherein C is hydrogen or methyl, and each B is hydrogen or an alkyl group having 1 to 10 carbon atoms provided that any two adjacent B groups together with the nuclear carbon atoms to which they are attached may represent a single ring having 5 to 7 carbon atoms;

d. subjecting the reaction mixture of step (c) to reaction at temperatures in the range of 180° to 300°C at pressures of atmospheric to 3000 psi under a substantially anhydrous and oxygen-free atmosphere to form a dialkyldifluorosilane having the formula $R(R')SiF_2$ wherein R is as defined in (a) and R′ is as defined in (c); and

e. recovering the dialkyldifluorosilane.

3,927,060

METHOD OF PRODUCING DIETHYLDIFLUOROSILANE

William J. Libbey, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 431,190, Jan. 7, 1974, abandoned, which is a continuation of Ser. No. 235,003, March 15, 1972, abandoned. This application Feb. 10, 1975, Ser. No. 548,859

Int. Cl.² C07F 7/08, 7/12

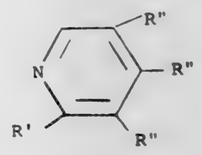
U.S. Cl. 260—448.2 E **5 Claims**

1. A method for producing diethyldifluorosilane comprising

a. forming a reaction mixture of SiF_4 and an aluminum triethyl complex, said reaction mixture having a molar ratio of SiF_4 to aluminum triethyl content in the complex in the range of 0.5–1.6/1, said aluminum triethyl complex being derived from the addition of a complexing agent to aluminum triethyl in a molar ratio of 0.4–3/1, respectively, said complexing agent being tetrahydrofuran; m-dioxane, p-dioxane; triethylenediamine; quinoline; isoquinoline; aliphatic amines of the formula



wherein each R is a straight chain alkyl group having 1 to 6 carbon atoms; and cyclic amines of the formula



wherein R′ is hydrogen or methyl, and each R″ is hydrogen or an alkyl group having 1 to 10 carbon atoms provided that any two adjacent R″ groups together with the nuclear carbon atoms to which they are attached may represent a single ring having 5 to 7 carbon atoms; and

b. subjecting the reaction mixture to reaction at temperatures in the range of 190°–300°C, under a substantially anhydrous, oxygen-free atmosphere, at pressures of up to 3000 psi, with agitation to produce diethyldifluorosilane.

3,927,061

PHOSPHATE-FREE CARBOXYLATE-SULFATE DETERGENTS

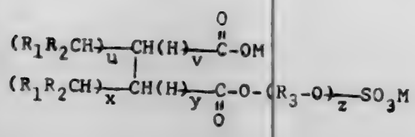
Mitchell Danzik, Pinole, and Ralph House, El Sobrante, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 259,924, June 5, 1972, Pat. No. 3,843,707. This application July 11, 1974, Ser. No. 483,496

Int. Cl.² C07C 141/02

U.S. Cl. 260—458 **4 Claims**

1. A surface active compound of the formula



in which R_1 and R_2 are substantially linear alkyl or alkenyl groups of 3 to 19 carbon atoms, R_3 is alkylene of 2 to 4 carbon atoms, u, v, x and y are 0 or 1, z is an integer 1 to 4, M is H or an alkali metal, alkaline earth metal, or ammonium cation, the sum of the carbon atoms in R_1 and R_2 is 13 to 21, the sum of the unsaturated sites in R_1 and R_2 is 1, the sum of u and v is 1, the sum of x and y is 1, and the sum of u and x is 1.

3,927,062

PLANT GROWTH REGULATORS

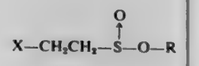
Kurt H. G. Pilgram; Earl K. Jackson, and Willy D. Kollmeyer, all of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 253,356, May 15, 1972, Pat. No. 3,876,678, which is a continuation-in-part of Ser. No. 162,709, July 14, 1971, abandoned. This application Dec. 10, 1974, Ser. No. 531,257

Int. Cl.² C07C *145/00*

U.S. Cl. 260—456 NS **5 Claims**

1. A compound of the formula



wherein X is chlorine or bromine and R is ZR′ in which Z is alkylene of up to 4 carbon atoms and R′ is alkoxy of up to 4 carbon atoms, or hydroxy.

3,927,063

WATER-INSOLUBLE STYRYL DYESTUFFS

Richard Peter, and Hansjoerg Angliker, both of Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

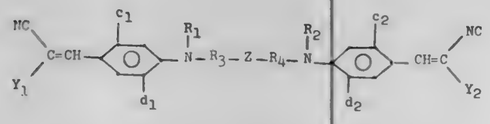
Continuation-in-part of Ser. No. 665,738, Sept. 6, 1967, abandoned. This application May 1, 1970, Ser. No. 33,934

Claims priority, application Switzerland, Sept. 9, 1966, 13089/66

Int. Cl.² C07C *121/78*

U.S. Cl. 260—465 D **5 Claims**

1. A dyestuff of the formula



in which

Y_1 and Y_2 each is cyano, carbamoyl, phenylsulfonyl or -COOR where R is lower alkyl,

c_1, c_2, d_1 and d_2 each independently is hydrogen, halogen, lower alkyl, lower alkoxy, thiophenoxy or phenoxy, and c_1 and c_2 can each independently also be CF_3, lower alkanoylamino, lower alkylsulfonyl, lower alkylsulfonamido,

R_1 and R_2 each independently is hydrogen, lower alkyl, and lower alkyl substituted by phenyl, halogen, cyano, lower alkoxy, hydroxy, lower alkanoyloxy, lower alkanoylamino, lower alkylcarbamoyloxy, phenoxy, cyanoloweralkoxy, and lower alkoxycarbonyl,

R_3 and R_4 each independently is alkylene, alkanoyloxyalkylene, alkylcarbamoyloxyalkylene, alkoxyalkylene or hydroxyalkylene, each containing up to 6 carbon atoms

Z is —O—R_5—O—where R_5 is phenylene or C_2-C_4 alkylene, or Z is —O—or



where R_7 is lower alkyl.

3,927,064

BENZYLIDENE-AMINOBENZONITRILES

Arthur Boller, Binningen, and Hanspeter Scherrer, Therwil, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 21, 1973, Ser. No. 334,292

Claims priority, application Switzerland, Feb. 23, 1972, 2585/72; Jan. 11, 1973, 355/73

Int. Cl.² C07C *121/78*

U.S. Cl. 260—465 E **9 Claims**

1. A compound of the formula



wherein R is ethyl, n-propyl, n-butyl, n-pentyl, n-hexyl, isohexyl, n-heptyl or n-octyl.

3,927,065

DISPERSE BISANIL DYES DERIVED FROM DIAMINOMALEONITRILE AND THEIR PREPARATION

John Fred Neumer, Hockessin, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Jan. 3, 1974, Ser. No. 430,416

Int. Cl.² C07C *119/00;* **C07D** *333/04, 209/14*

U.S. Cl. 260—465 E **36 Claims**

1. Bisanil dye of the formula

Ar_1—CH=N—C(CN)=C(CN)—N=CH—Ar_2

wherein each of Ar_1 and Ar_2 is independently selected from phenyl and naphthyl groups containing 0–3 substituents selected from NO_2, halogen, CN, C_{1-4} alkyl, C_{1-4} alkoxy, OCH_2-phenyl, phenyl, CF_3, OH, OC_{1-4} alkylene-$N(C_{1-4}$ alkyl$)_2$, C_{2-4} alkylene-Cl, $NHCONH_2$, NHCOA, $NHSO_2A$, SR_8, SO_2R_8, NHR_1, $NHCOC_{1-4}$ alkylene-B and -NR_1R_2 wherein:

a. R_1 is C_{1-4} alkyl or C_{2-4} alkylene-R_3;

b. R_2 is C_{1-4} alkyl, C_{2-4} alkylene-R_4 or, if Ar_1 or Ar_2 is phenyl, C_3 alkylene attached to a phenyl position which is ortho to the position to which the nitrogen is attached;

c. R_3 is CN, halogen, OH, phenyl, C_{1-4} alkoxy, OC_{1-4} alkylene-CN, CO_2A, OCOA, OCONHA or CO_2C_{1-4} alkylene-OCOA;

d. R_4 is CN, halogen, OH, phenyl, OC_{1-4} alkylene-CN, CO_2A, OCOA, CO_2C_{1-4} alkylene-OCOA, SO_2A, phthalimido, succinimido, glutarimido, $OCOCH=CH_2$, CH_2-CH(OCOA)CH_2OA or $CH_2CH(OCONHA)CH_2OA$;

e. A is C_{1-4} alkyl or R_8;

f. B is halogen, C_{1-4} alkoxy or R_8;

g. R_8 is phenyl containing 0–2 substituents selected from C_{1-4} alkyl, C_{1-4} alkoxy, halogen, NO_2, CN, C_{1-4} alkyl-CONH and NR_6R_7 wherein each of R_6 and R_7 is independently selected from H and C_{1-4} alkyl, with at least one of R_6 and R_7 being C_{1-4} alkyl; and

h. R_8 is C_{1-4} alkyl, C_2H_4OH, C_{5-6} cycloalkyl or R_5.

3,927,066

LIQUID CRYSTALLINE CINNAMIC ACID ESTERS

Hanspeter Scherrer, Therwil, and Arthur Boller, Binningen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

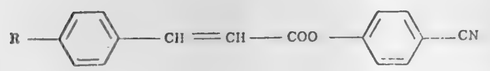
Filed Dec. 4, 1974, Ser. No. 529,436

Claims priority, application Switzerland, Dec. 17, 1973, 17626/73

Int. Cl.² C07C *121/60*

U.S. Cl. 260—465 D **18 Claims**

1. A cinnamic acid ester of the formula



wherein R is straight-chain alkyl of 1 to 8 carbon atoms.

3,927,067

POLYOLS CONTAINING CYANOALKYL ETHER GROUPS

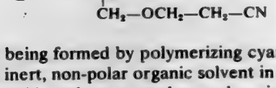
Stephen E. Cantor, and Thomas J. Brett, Jr., both of Cheshire, Conn., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 227,647, Feb. 18, 1972, Pat. No. 3,816,425. This application Feb. 25, 1974, Ser. No. 445,728

Int. Cl.² C07C *121/34*

U.S. Cl. 260—465.6 **4 Claims**

1. A polyol having a molecular weight of from 250 to 4500, an hydroxyl number of from 25 to 600, a cyano content of from 1 to 20% by weight, and containing a group having the structure of the formula



said polyol being formed by polymerizing cyanoethyl glycidyl ether in an inert, non-polar organic solvent in the presence of boron trifluoride, etherate catalyst and an initiator selected from the group consisting of ethylene glycol and propylene glycol and, optionally, tetrahydrofuran, the combined molar ratio of cyanoethyl glycidyl ether and tetrahydrofuran to said catalyst being from 7.9 to 43:1, said polymerization comprising the steps of

a. adding cyanoethyl glycidyl ether and said initiator to said solvent,

b. adjusting the mixture of (a) to a temperature of from −20° to +20°C.,

c. adding a solution of said catalyst while stirring,

d. maintaining the reaction profile mixture over a period of from 4 to 30 hours at the above temperature, and at a pressure of from 1 to 2 atmospheres,

e. deactivating the catalyst, and

f. recovering the polyol from the reaction mixture.

3,927,068

PESTICIDAL CYCLOPROPANE DERIVATIVES

Robert J. G. Searle, Rodmersham Green, near Sittingbourne, and Roger E. Woodall, Borden, near Sittingbourne, both of England, assignors to Shell Oil Company, Houston, Tex.

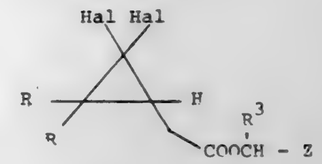
Filed Feb. 15, 1974, Ser. No. 442,994

Claims priority, application United Kingdom, Feb. 16, 1973, 7685/73

Int. Cl.² C07C *69/74*

U.S. Cl. 260—468 H **10 Claims**

1. A cyclopropane derivative of the formula:



wherein each R represents alkyl of 1 to 6 carbon atoms; each Hal represents a halogen atom; R^3 represents alkyl, cycloalkyl, cyanoalkyl or alkenyl of up to 6 carbon atoms, alkynyl of up to 8 carbon atoms, or a phenyl group; and Z represents phenoxyphenyl or propynyloxyphenyl.

3,927,069

ALKYL 4-[O-(SUBSTITUTED AMINO)PHENYL]-3-THIOALLOPHANATES

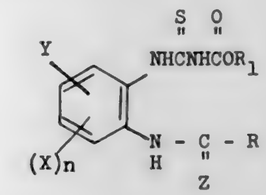
Charles D. Adams, Newark, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Oct. 13, 1969, Ser. No. 865,984

Int. Cl.² C07C *157/09*

U.S. Cl. 260—470 **6 Claims**

1. A compound of the formula:



wherein

X is hydrogen, fluorine, chlorine, or bromine;

Y is hydrogen or alkyl of 1 to 4 carbon atoms;

R_1 is alkyl of 1 to 12 carbon atoms;

Z is oxygen, or sulfur

R is



R_2 is hydrogen or methyl;

R_3 is hydrogen or alkyl of 1 to 4 carbon atoms;

When Y is alkyl, n is 0 and when Y is hydrogen, n is 1, 2, or 3; and the sodium, potassium, lithium, calcium, barium, copper, zinc and manganese salts of these compounds.

3,927,070
M-(3,3-DISUBSTITUTED UREIDO) PHENYL [(SUBSTITUTED)METHYL] CARBAMATES

Karoly Szabo, Stiegengasse 4/16, A-1060 Vienna, Austria

Filed May 8, 1972, Ser. No. 251,481
Int. Cl.² C07C *127/19*
U.S. Cl. 260—479 C 5 Claims

1. A compound: m-(3-methoxy-3-methyl ureido)phenyl [(methoxy)methyl]carbamate.

3,927,071
SALICYLANILIDES

Bruce Adam Forsyth, Croydon, and David Ernest Pryor, Balwyn, both of Australia, assignors to ICI Australia Limited, Melbourne, Australia

Filed Apr. 30, 1973, Ser. No. 355,813
Claims priority, application Australia, May 12, 1972, 8942/72; Aug. 3, 1972, 9940/72; Dec. 5, 1972, 1505/72
Int. Cl.² C07C *103/76*, *69/14*
U.S. Cl. 260—479 R 2 Claims

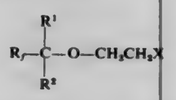
1. A compound 3,5-diiodo-2'-trifluoromethyl-4'-chlorosalicylanilide.

3,927,072
FLUORINATED β-(ALKOXY)-PROPIONATES

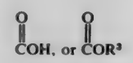
Adrian Samuel Fox, Lower Providence, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 4, 1974, Ser. No. 439,510
Int. Cl.² C07C *69/66*
U.S. Cl. 260—484 R 9 Claims

1. A compound of the fomula



wherein R_f is CF_3, CF_3CFHCF_2, or $H(CF_2CF_2)_n$ where n is an integer of 1 to 3; R^1 and R^2 are independently hydrogen or CH_3; and X represents



where R^3 is alkyl or alkylene having 1 to 8 carbon atoms.

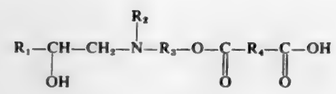
3,927,073
ESTERS OF DICARBOXYLIC ACIDS AND POLYHYDROXY TERTIARY AMINES AS NEW DETERGENT SOFTENER COMPOUNDS

Bjorn Sundby, Piscataway, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 205,408, Dec. 6, 1971, abandoned. This application Oct. 24, 1973, Ser. No. 409,027
Int. Cl.² C07C *69/44*, *69/60*, *69/76*
U.S. Cl. 260—485 G 3 Claims

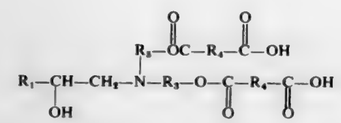
1. A compound having in the free acid form a formula selected from the group consisting of

(A)



and

(B)



and mixtures of (A) and (B)
wherein
1. R_1 is C_8 to C_{24} *alkyl*,
2. R_2 is C_1 to C_6 alkyl or C_2–C_6 alkylol,
3. R_3 and R_5 are alkylene of C_2 to C_8, and
4. R_4 represents the residue of a dicarboxylic acid and selected from the group consisting of maleic, succinic, glutaric, tartaric, malic, adipic, diphenic and naphthalic acids.

3,927,074
PREPARATION OF HALOBUTYRATE ESTERS

John A. Wojtowicz, Chesire, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed June 19, 1974, Ser. No. 476,347
Int. Cl.² C07C *69/63*
U.S. Cl. 260—487 9 Claims

1. A method for preparing halobutyrate esters of the formula $X—CH_2—CH_2—CH_2—COOR$, wherein R is an alkyl group of 1 to 4 carbon atoms and X is a halogen selected from the group consisting of chlorine, bromine, iodine and fluorine, consisting essentially of reacting γ-butyrolactone with from about 1 to about 2 moles of an inorganic halide, per mole of γ-butyrolactone, in the presence of from about 1 to about 10 moles of an alkanol having 1 to 4 carbon atoms, per mole of γ-butyrolactone, at a temperature of about 10° to about 150°C. and a pressure of about 0.1 to about 10 atmospheres, the inorganic halide being selected from the group consisting of:
   a. the halides and oxyhalides of sulfur, phosphorous, arsenic, antimony, bismuth, selenium, and tellurium;
   b. the halides of boron, silicon, germanium, titanium, tin, aluminum, and iron and
   c. the oxyhalides of chromium

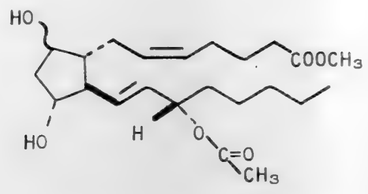
the halogen in said inorganic halide being selected from the group consisting of chlorine, bromine, iodine, and fluorine with the proviso that when aluminum and iron are used, said halogen is selected from the group consisting of chlorine, bromine, and iodine.

3,927,075
$PGF_2\alpha$ AND $PGF_2\beta$, 15-ACETATE, METHYL ESTERS

John E. Pike, and William P. Schneider, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 159,478, July 2, 1971, Pat. No. 3,772,350, which is a continuation-in-part of Ser. No. 71,390, Sept. 11, 1970, abandoned. This application Oct. 25, 1973, Ser. No. 404,962
Int. Cl.² C07C *177/00*
U.S. Cl. 260—488 R 3 Claims

1. A compound of the formula



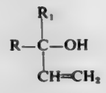
wherein ~ indicates attachment to the ring in alpha or beta configuration.

3,927,076
METHOD OF REARRANGING TERTIARY VINYL CARBINOLS

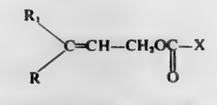
James H. Babler, Evanston, Ill., assignor to Research Corporation, New York, N.Y.

Filed Dec. 26, 1973, Ser. No. 427,450
Int. Cl.² C07C *29/00*, *67/08*
U.S. Cl. 260—488 R 9 Claims

1. A method of rearranging a tertiary vinyl carbinol having the structure:



comprising reacting said vinyl carbinol with a liquid lower alkanoic acid, anhydride thereof or a mixture thereof at from about 0°C to about room temperature in the presence of a catalytic amount of a strong acid having an ionization constant above about 1×10^{-4} for a time sufficient to produce a rearranged compound having the structure:



substantially uncontaminated with non-rearranged compound wherein:
R and R_1, which may be the same or different, represent alkyl, vinyl, phenyl, cycloalkyl, cycloalkenyl, lower alkylphenyl, lower alkylcycloalkyl, lower alkylcycloalkyenyl or taken together with the carbon atom to which they are attached form a cycloalkyl group, all being optionally substituted with halogen and
X is the lower alkyl residue of said lower alkanoic acid.

3,927,077
ANHYDRIDES TO IMPROVE OXIDATIVE COUPLING REACTIONS

Herman L. Finkbeiner, Rexford, and John B. Bush, Jr., Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 274,670, July 24, 1972, Pat. No. 3,845,116, which is a continuation-in-part of Ser. No. 814,157, April 7, 1969, which is a continuation-in-part of Ser. No. 742,544, July 5, 1968, abandoned. This application July 18, 1974, Ser. No. 489,679
Int. Cl.² C07C *67/00*
U.S. Cl. 260—488 R 3 Claims

1. The process whereby a C_{2-3} alkanoic acid selected from the group consisting of acetic acid and propionic acid is coupled through the α-carbon atom to a C_{3-8} alkane or cycloalkane having at least one carbon atom that has one but not more than two hydrogens to produce an ester using a manganic salt of the alkanoic acid as an oxidative coupling agent, said process being carried out in the presence of a sufficient amount of the anhydride of the alkanoic acid present as the reactant to provide an excess over the amount required to react with any water present in the initial reaction mixture.

3,927,078
METHYLENE AND OXYMETHYLENE BIS-ESTER PRODUCTION

Seymour J. Lapporte, Orinda, and William G. Toland, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 282,623, Aug. 21, 1972, abandoned. This application Sept. 19, 1973, Ser. No. 398,732
Int. Cl.² C07C *67/36*
U.S. Cl. 260—494 15 Claims

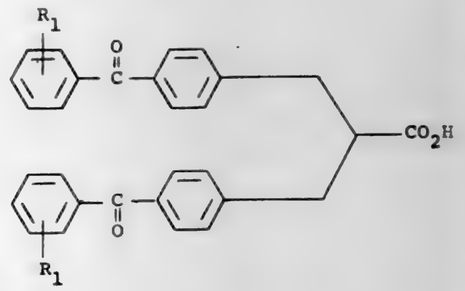
1. A process for producing methylene and oxymethylene di- or bis-esters by reacting in liquid phase or gaseous phase
   1. a carboxylic acid ester of the formula $R^2CO_2R^1$, wherein R^1 is alkyl of 1 to 10 carbon atoms and R^2 is hydrogen, alkyl of 1 to 10 carbon atoms, phenyl, alkylphenyl of 7 to 10 carbon atoms or phenylalkyl of 7 to 10 carbon atoms,
   2. formaldehyde, and
   3. carbon monoxide in the presence of a catalytic amount of a transition metal compound selected from a rhodium compound and a palladium compound, an iodide or bromide promoter and a proton donor which is water or a Bronsted acid, the molar ratio of carboxylic acid ester to carbon monoxide being from about 10:1 to 1:10, the molar ratio of formaldehyde to carboxylic acid ester being from 1:1.5 to 5:1, at a temperature of about 50°C to 300°C and at an initial carbon monoxide pressure of from 1 psia to 5000 psia.

3,927,079
BIS-SUBSTITUTED OR UNSUBSTITUTED-P-BENZOYLBENZYL ACETIC ACIDS

William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Feb. 25, 1974, Ser. No. 445,266
Int. Cl.² C07C *65/20*
U.S. Cl. 260—501.1 3 Claims

1. A compound of the formula



where
R_1 represents hydrogen, halo having an atomic weight of about 19 to 36 or straight chain lower alkoxy,
or a pharmaceutically acceptable salt thereof.

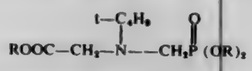
3. The compound of claim 1 which is bis-(p-benzoylbenzyl-)acetic acid methylamine salt.

3,927,080
PROCESS FOR PRODUCING N-PHOSPHONOMETHYL GLYCINE

Van R. Gaertner, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Sept. 3, 1974, Ser. No. 502,706
Int. Cl.² C07F 9/38
U.S. Cl. 260—502.5 6 Claims

1. A process for producing N-(phosphonomethyl)glycine which comprises forming an admixture of N-t-butyl-N-(phosphonomethyl)glycine compound of the formula



wherein each R is individually hydrogen or an organic group containing up to 18 carbon atoms, with an aqueous hydrohalic acid consisting of hydrochloric, hydrobromic or hydriodic, the concentration of said aqueous hydrohalic acid being at least 20% by weight and heating said admixture to a temperature sufficiently elevated so as to remove said t-butyl group.

3,927,081
PURIFICATION OF CRUDE SULFONIC ACIDS

Samuel Charles Thomas, Jr., Prospect Park, and Vincent Jay Cease, Aston, both of Pa., assignors to Continental Oil Company, Ponca City, Okla.

Filed Feb. 26, 1973, Ser. No. 333,857
Int. Cl.² C07C 143/24
U.S. Cl. 260—505 P 12 Claims

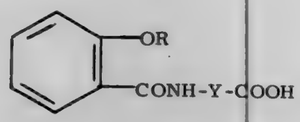
1. A method for purifying crude oil-soluble sulfonic acids, whereby sulfuric acid and sulfur oxides are removed therefrom, wherein the method comprises contacting a volatile, non-aromatic hydrocarbon solution of crude oil-soluble sulfonic acids with an effective amount, in the range of from about 0.25 to about 5 volume percent, based on the hydrocarbon solution of crude sulfonic acid, of 2-methoxyethanol or a mixture of 2-methoxyethanol and water which mixture contains from about 15 to about 85 volume percent 2-methoxyethanol, said volatile hydrocarbon boiling below about 150°C.

3,927,082
2-ALKOXYBENZOYLAMINO ACIDS

Tatsuhiko Katori, Tone; Giichi Sato, Chiba; Takashi Kihara, Narita; Norio Yumoto, Tomisato; Shigeru Makino, Narashino, and Juntaro Harada, Yachiyo, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1974, Ser. No. 439,693
Claims priority, application Japan, Feb. 14, 1973, 48-17483; Apr. 17, 1973, 48-43451
Int. Cl.² C07C 103/22
U.S. Cl. 260—519 6 Claims

1. Alkoxybenzoylamino acid represented by the general formula:



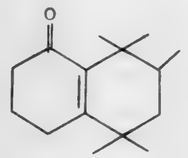
wherein R represents an alkyl group having 5 to 12 carbon atoms, and Y represents a methylene or propylene group.

3,927,083
BICYCLIC COMPOUNDS AND PROCESSES FOR MAKING AND USING SAME

John B. Hall, Rumson; Lekhu Kewalram Lala, Edison, both of N.J.; Muus G. J. Beets, Hilversum, Netherlands, and William I. Taylor, Summit, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 263,219, June 15, 1972, abandoned. This application Nov. 1, 1973, Ser. No. 411,789
Int. Cl.² A61K 7/46
U.S. Cl. 252—522 4 Claims

1. A perfume composition containing as an essential fragrance ingredient 1,2,3,4,5,6,7,8-octahydro-1,1,2,4,4-pentamethyl-8-naphthalenone having the formula



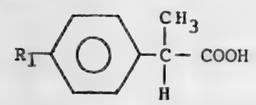
and an auxiliary perfume adjuvant selected from the group consisting of perfume modifiers, fixatives and top-notes.

3,927,084
PROCESS FOR THE PRODUCTION OF 2(4-ALKYLPHENYL)PROPIONIC ACID

Katsura Kogure, Kawagoe; Hiroyasu Koyama, Ohi, and Kunio Nakagawa, Kawagoe, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

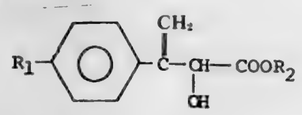
Filed Jan. 25, 1974, Ser. No. 436,632
Claims priority, application Japan, Jan. 29, 1973, 48-11164; Jan. 29, 1973, 48-11165
Int. Cl.² C07C 51/26
U.S. Cl. 260—523 A 8 Claims

1. A process for preparing a 2-(4-alkylphenyl-propionic acid of the formula

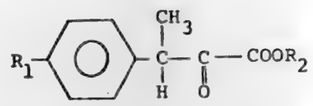


wherein R_1 is alkyl of 2–4 carbon atoms, or a pharmaceutically acceptable salt thereof, which comprises:

a. reacting a 2-hydroxy-3-(4-alkylphenyl)-3-butenoic acid ester of the formula

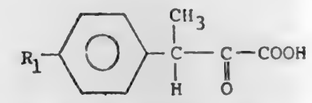


wherein R_1 has the above-indicated values and R_2 is alkyl of 1–3 carbon atoms, with an alkali metal alcoholate of 1–4 carbon atoms dissolved in an alkanol of 1–4 carbon atoms to form a 3-methyl-3-(4-alkylphenyl)-pyruvate of the formula



wherein R_1 and R_2 have the above-indicated values;

b. hydrolyzing the resultant pyruvate under alkaline hydrolysis conditions to form a 3-methyl-3-(4-alkylphenyl)-pyruvic acid of the formula



wherein R_1 has the above-indicate values, or a salt thereof; and

c. oxidizing the resultant acid or a salt thereof with aqueous alkaline hydrogen peroxide to form said 2-(4-alkylphenyl)-propionic acid or said salt thereof.

3,927,085
PROCESS FOR THE PRODUCTION OF A MERCAPTOCARBOXYLIC ACID

Hans-Georg Zengel, Kleinwallstadt; Anton Toth, Obernburg; Helmut Magerlein, Obernburg, and Gerhard Meyer, Obernburg, all of Germany, assignors to Akzo N. V., Arnhem, Netherlands

Filed Oct. 15, 1974, Ser. No. 514,463
Claims priority, application Germany, Oct. 29, 1973, 2354098
Int. Cl.² C07C 148/00
U.S. Cl. 260—526 S 9 Claims

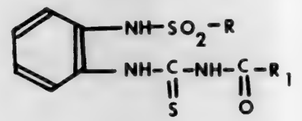
1. A process for the production of mercaptoacetic acid or β-mercaptopropionic acid which comprises reacting hydrogen sulfide at a partial pressure of at least 2 atm. and at a temperature of about 60°C. to 140°C. in admixture with an aqueous solution of a chlorocarboxylic acid of the formula $Cl-(CH_2-)_n-COOH$ or the corresponding ammonium or sodium salt thereof, *n* being the integer 1 or 2, in the presence of aqueous ammonium or sodium hydroxide and subsequently acidifying the reaction product, the initial reaction mixture consisting essentially of said chlorocarboxylic acid or said salt thereof in water in a concentration amounting to about 4.0 – 12 mol percent.

3,927,086
THIOUREIDO SULFONANILIDE COMPOSITIONS

Alexander Mihailovski, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 217,697, Dec. 29, 1971, Pat. No. 3,832,384. This application June 12, 1974, Ser. No. 478,490
Int. Cl.² C07C 143/833
U.S. Cl. 260—552 R 9 Claims

1. Compounds corresponding to the generic formula:



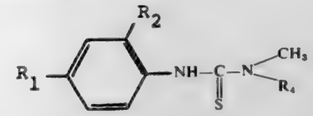
wherein R can be selected from lower alkyl, lower haloalkyl, phenyl, substituted phenyl wherein said substituents can be selected from halogen and lower alkyl; and R_1 is lower alkyl.

3,927,087
NEW THIOUREA DERIVATIVES

Dieter Dürr, Bottmingen, and Marcus von Orelli, Munchenstein, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 16, 1973, Ser. No. 379,536
Claims priority, application Switzerland, July 24, 1972, 11003/72
Int. Cl.² C07C 157/02
U.S. Cl. 260—552 R 11 Claims

1. A thioruea of the formula



wherein
R_1 represents halogen or methyl,
R_2 represents C_1–C_4 alkyl, and
R_4 represents C_2–C_5 alkyl.

3,927,088
SULFONYL UREAS AND PROCESS FOR PREPARING THEM

Helmut Weber, Frankfurt am Main; Walter Aumuller, Kelkheim, Taunus; Rudi Weyer, Frankfurt am Main; Karl Muth, Kelkheim, Taunus, and Volker Hitzel, Lorsbach, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 20, 1972, Ser. No. 308,002
Claims priority, application Germany, Nov. 20, 1971, 2157607
Int. Cl.² C07C 127/16
U.S. Cl. 260—553 DA 1 Claim

1. N-[4-(β-<5-chloro-2-methoxy-benzamido>-ethyl)-benzenesulfonyl]-N'-cyclopentyl-methyl-urea.

3,927,089
PROCESS FOR THE MANUFACTURE OF LOW MOLECULAR REACTIVE SURFACE-ACTIVE AGENTS FROM CARBAMIDES

Luzius Schibler, Riehen, and Jurg Merz, Therwil, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Mar. 26, 1973, Ser. No. 344,820
Claims priority, application Switzerland, Mar. 28, 1972, 4633/72
Int. Cl.² C07C 127/16
U.S. Cl. 260—553 R 8 Claims

1. A process for the manufacture of reactive surface-active compounds of the formula

$$R-O-CH_2-NH-CO-NH-CH_2-O-X$$

wherein R represents alkyl or alkenyl each with 6 to 22 carbon atoms, cycloalkyl with 8 to 14 carbon atoms, alkylcyclohexyl or alkylphenyl each with 2 to 12 carbon atoms in the alkyl part, and X represents the residue of a polyalkylene glycol of average molecular weight at most 2000, which comprises the steps of,

a. etherifying or transetherifying a compound of the formula $H_2N-CO-NH-CH_2-O-Z$

wherein X represents hydrogen or alkyl having 4 to 7 carbon atoms, with a hydrophobic hydroxy compound of the formula R—OH or a hydrophilic hydroxy compound of the formula X—OH, thereafter

b. introducing a second methylol group into the resulting monomethylolether compound by reaction with formaldehyde, trioxane, paraformaldehyde or hexamethylenetetramine in dilute alcoholic alkaline solution at temperatures of 40° to 100°C, and

c. etherifying this product with a compound X—OH or R—OH to obtain an end product of the above formula.

wherein X and R have the same meaning given above and wherein steps (a) and (c) are carried out in the presence of an alkane carboxylic acid with 1 to 3 carbon atoms at a temperature of 80° to 120°C and a pressure of 1 to 30 mm Hg.

3,927,090
1,1-DIHALO-1-(METHYLSUFONYL)METHANESULFONAMIDES

Christian T. Goralski, and Thomas C. Klingler, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 322,434, Jan. 10, 1973, Pat. No. 3,865,822. This application Apr. 1, 1974, Ser. No. 456,942
Int. Cl.² C07C *143/75*
U.S. Cl. 260—556 A **4 Claims**

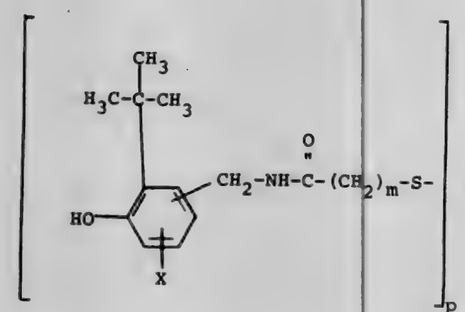
1. A compound represented by the formula $CH_3SO_2CX_2SO_2NR_1R_2$ wherein X represents chloro or bromo and R_1 and R_2 independently represent hydrogen, 1 to 16 carbon atom alkyl, phenyl or substituted phenyl having lower alkyl, of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, chloro or bromo substitution at least one of which is phenyl or substituted phenyl.

3,927,091
CARBOXYLIC ACID AMIDES

Helmut Huber-Emden; Karl Eschle, both of Basel, and Arthur Maeder, Therwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 737,832, June 18, 1968, abandoned. This application Sept. 4, 1970, Ser. No. 69,886
Claims priority, application Switzerland, June 23, 1967, 8947/67
Int. Cl.² C07C *103/38*
U.S. Cl. 260—559 T **10 Claims**

1. Carboxylic acid amide of the formula



[Q]

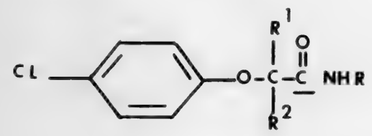
in which X is methyl or tertiary butyl, m is the integer 1 or 2, O is alkylidene having 1 to 20 carbon atoms, cycloalkylidene having 5 or 6 carbon atoms, methylene substituted by phenyl or furyl, alkylene having 1 to 10 carbon atoms, alkenylene having 1 to 6 carbon atoms, or a 3, 4, 5 or 6 valent saturated aliphatic hydrocarbon radical having 1 to 6 carbon atoms and p is an integer which is equal to the valency of the radical.

3,927,092
AMIDES OF 2-[HALOPHENOXY (OR HALOPHENYLTHIO)]-ALKANOIC ACIDS

William A. Bolhofer, Frederick, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed June 24, 1968, Ser. No. 739,147
Int. Cl.² C07C *103/82*
U.S. Cl. 260—559 B **3 Claims**

1. A compound of the formula:



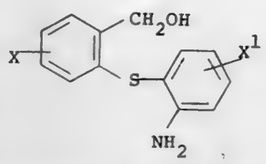
wherein R is N^1,N^1-diloweralkylamidino or N^1-loweralkylamidino and R^1 and R^2 are lower alkyl.

3,927,093
2-(O-AMINOPHENYLTHIO)BENZYL ALCOHOLS

Harry Louis Yale, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation of Ser. No. 296,508, Oct. 10, 1972, abandoned. This application Sept. 30, 1974, Ser. No. 510,856
Int. Cl.² C07C *91/40*
U.S. Cl. 260—571 **3 Claims**

1. A compound of the formula:



wherein X is selected from the group consisting of hydrogen, chlorine, and methoxy and X^1 is selected from the group consisting of chlorine and trifluoromethyl; and pharmaceutically acceptable acid addition salts thereof.

3,927,094
ALKALI METAL POLYMETAPHOSPHATE COMPLEXES OF DOXYCYCLINE AND PREPARATION THEREOF

Ivan Villax, Travessa do Ferreiro, 3, Lisbon 3, Portugal

Continuation-in-part of Ser. No. 353,528, April 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 194,049, Oct. 29, 1971, abandoned. This application July 3, 1973, Ser. No. 376,149
Claims priority, application Portugal, Oct. 30, 1970, 54708
Int. Cl.² C07C *103/19*
U.S. Cl. 260—559 AT **16 Claims**

1. A complex of α-6-deoxy-5-hydroxytetracycline and an alkali metal salt of polymetaphosphoric acid having at least one free acid group, said α-6-deoxy-5-hydroxytetracycline being present in 1 to 5 moles per mole of complex, and said complex having a solubility in water of 4.5 to about 300 mg/ml.

3,927,095
PRODUCTION OF AURAMINE SALTS AND AURAMINE SALT SOLUTIONS

Manfred Eisert, Ludwigshafen, and Karl Schmeidl, Frankenthal, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed July 12, 1973, Ser. No. 378,775
Claims priority, application Germany, July 15, 1972, 2234836; Nov. 29, 1972, 2258344; Dec. 14, 1972, 2261064
Int. Cl.² C07C *119/00*
U.S. Cl. 260—566 R **6 Claims**

1. In a process for the production of methyl auramine or ethyl auramine or solutions thereof by reaction of 4,4′-bisdimethylaminodiphenylmethane or 4,4′-bisdiethylaminodiphenylmethane with urea in the presence of sulfur with or without the addition of an ammonium salt to form a crude auramine melt, the improvement which comprises:
liberating the free auramine base by drowning the crude melt in an aqueous alkaline solution;
taking up said auramine base in an organic water-immiscible solvent added to said aqueous alkaline solution used for drowning the crude melt; and extracting said solvent with an acid containing water, formamide or glycol with the formation of an auramine salt, said acid being selected from the group consisting of sulfuric acid, hydrochloric acid and a low molecular weight carboxylic acid and with the proviso that the solvent (when using the acid in formamide or glycol) is not miscible with the latter.

3,927,096
SUBSTITUTED BENZYLIDENEAMINO GUANIDINES

William J. Houlihan, and Robert E. Manning, both of Mountain Lakes, N.J., assignors to Sandoz Inc., East Hanover, N.J.

Division of Ser. No. 765,739, Aug. 16, 1968, Pat. No. 3,637,849. This application Aug. 5, 1971, Ser. No. 169,555
Int. Cl.² C07C *133/12*
U.S. Cl. 260—564 F **1 Claim**

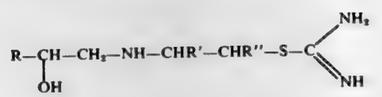
1. 1-amino-3-hydroxy-3-methylguanidine or hydrohalide acid addition salts thereof.

3,927,097
2-THIOPSEUDOUREAS

Asbjorn Baklien, Kingsbury, and Jan Kolm, Kew, both of Australia, assignors to ICI Australia Limited, Melbourne, Australia

Division of Ser. No. 565,092, July 14, 1966, Pat. No. 3,759,937. This application Dec. 8, 1971, Ser. No. 206,155
Claims priority, application Australia, July 19, 1965, 61653/65; July 26, 1965, 61931/65; Aug. 31, 1965, 63415/65; Sept. 8, 1965, 63786/65
Int. Cl.² C07C *123/00*
U.S. Cl. 260—564 E **3 Claims**

1. A compound of the formula



or a salt thereof of a pharmaceutically acceptable acid wherein R is phenyl, 2- or 3- or 4-chlorophenyl, 3-bromophenyl, 4-fluorophenyl, 2-nitrophenyl, 3-nitrophenyl, 4-nitrophenyl, 4-tolyl, 3-trifluoromethylphenyl or 2,3,4-trichlorophenyl and R′ and R″ are hydrogen.

3,927,098
PROCESS FOR THE PREPARATION OF 2-AMINO-4-NITRO-ANISOLE

Bernhard Spiess, Offenbach (Main), Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 12, 1973, Ser. No. 414,633
Claims priority, application Germany, Nov. 16, 1972, 2256169
Int. Cl.² C07C *91/40, 91/42, 93/14*
U.S. Cl. 260—575 **1 Claim**

1. In the process for the preparation of 2-amino-4-nitroanisole by nitration of 2-aminoanisole with subsequent isolation of the 2-aminoanisole by means of a base, the improvement which comprises diluting the nitration mixture with water after the nitration process, heating the diluted solution to about 50°–100°C, subsequently adjusting the solution with ammonia to a pH value of 0.6 to 1.6 and isolating the 2-amino-4-nitroanisole after clarifying filtration without intermediate isolation of an intermediate salt.

3,927,099
PROCESS OF PREPARING CATALYST FREE AROMATIC DIAMINES

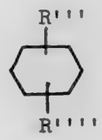
William S. Hollingshead, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 1, 1974, Ser. No. 519,968
Int. Cl.² C07C *87/28, 87/50*
U.S. Cl. 260—576 **3 Claims**

1. In the process of preparing aromatic diamines comprising reacting
(1) a primary amine having the structural formuala

$$R - NH_2$$

wherein R is selected from the group consisting of primary alkyl radicals containing from 1 to 20 carbon atoms, secondary alkyl radical containing from 1 to 20 carbon atoms, aralkyl radical containing from 7 to 12 carbon atoms, cycloalkyl radical containing from 5 to 8 carbon atoms, and aryl radical conforming to the following structure



wherein R‴ and R⁗ are selected from the group consisting of hydrogen, primary alkyl radicals containing from 1 to 20 carbon atoms, secondary alkyl radicals containing from 1 to 20 carbon atoms, aralkyl radicals containing from 7 to 12 carbon atoms, cycloalkyl radicals containing from 5 to 8 carbon atoms and alkoxy radicals containing from 1 to 9 carbon atoms with
(2) a polyhydroxy aromatic compound selected from the group consisting of hydroquinones, resorcinols and catechols at a temperature between 100° and 350° C. in the presence of an iron halide condensation catalyst, the improvement
which comprises adding calcium hydroxide in dry form to the hot reaction mixture in an amount sufficient to precipitate essentially all of said iron in the form of an insoluble iron salt and thereafter filtering the molten reaction mixture to remove said insoluble iron salt from the resulting diamine.

3,927,100
PROCESS FOR PRODUCING AMINO PHENYL IODOMETHYL SULFONES

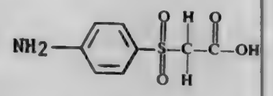
Aldo Joseph Crovetti, Lake Forest; Artur Blank, and Richard Paul Germann, both of Waukegan, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 215,956, Dec. 20, 1971, abandoned, which is a division of Ser. No. 845,097, July 25, 1969, Pat. No. 3,657,353. This application Feb. 25, 1974, Ser. No. 445,715

Int. Cl.² C07C *147/13*

U.S. Cl. 260—578 **5 Claims**

1. A method of iodinating a sulfonyl acetic acid of the formula



comprising adding the sulfonyl acetic acid to be iodinated to glacial acetic acid, buffering the mixture to a pH of between 2.5 and 6 by addition thereto of a basic compound selected from the group consisting of sodium hydroxide, ammonium hydroxide and dibasic ammonium phosphate, adding iodine to the mixture and stirring at a temperature of from 12° to 25°C. until the iodine is in solution, bubbling one mole of chlorine per mole of acid into the reaction mixture until precipitation of the desired product stops and evolution of carbon dioxide ceases, and recovering the iodinated product.

3,927,101
PROCESS FOR THE PREPARATION OF HYDROXYLAMINES BY HYDROGENATION OF AROMATIC NITRO DERIVATIVES

Joel Le Ludec, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

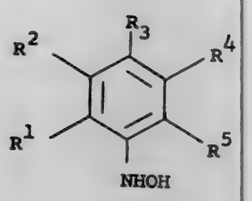
Continuation-in-part of Ser. No. 364,757, May 29, 1973. This application Jan. 15, 1974, Ser. No. 433,560

Claims priority, application France, Nov. 21, 1973, 73.41444

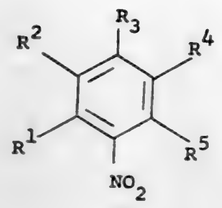
Int. Cl.² C07C *83/02*

U.S. Cl. 260—580 **6 Claims**

1. In a process for the preparation of an aromatic hydroxylamine of the formula:



in which each of R^1, R^2, R^3, R^4 and R^5 represents a hydrogen atom, a straight or branched alkyl radical of 1 to 6 carbon atoms, a cyclopentyl or cyclohexyl radical or a phenyl, phenylalkyl or alkylphenyl radical where the alkyl radical contains 1 to 6 carbon atoms, at least two of R^1, R^2, R^3, R^4 and R^5 representing hydrogen or wherein two of the radicals R^1, R^2, R^3, R^4 or R^5, attached to adjacent carbon atoms of the benzene ring together with the two carbon atoms of the benzene ring to which they are attached form a second benzene ring which is ortho-condensed with the first benzene ring, by hydrogenating an aromatic nitro derivative of the formula:



in which R^1, R^2, R^3, R^4 and R^5 are as defined above in the presence of a platinum catalyst, the improvement which consists of effecting the hydrogenation in the presence of a nitrogen-containing organic base selected from the group consisting of secondary and tertiary alkylmonoamines containing 1 to 6 carbon atoms in each alkyl group, cyclopentylamine and cyclohexylamine, pyrrolidine and piperidine, and pyrrolidines and piperidines substituted by 1 or 2 alkyl groups each containing up to 4 carbon atoms, bonded to a ring atom; N-alkyl and N-cycloalkyl anilines where the N-alkyl group contains 1 to 4 carbon atoms, the N-cycloalkyl group is cyclopentyl or cyclohexyl and the aniline ring is unsubstituted or substituted by an alkyl group of 1 to 4 carbon atoms, pyridine, alkyl and dialkyl pyridines where the alkyl group contains 1 to 4 carbon atoms, quinoline and isoquinoline, the ratio by weight of the organic base to the nitro compound being from 0.5:1 to 5:1.

3,927,102
SEPARATION AND RECOVERY OF SECONDARY ALKYL PRIMARY AMINES

Jackson K. S. Chiou, Fishkill, and Ronald E. Jones, Glenham, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Aug. 21, 1974, Ser. No. 499,372

Int. Cl.² C07C *76/06, 85/26*

U.S. Cl. 260—583 N **21 Claims**

1. A process for the separation and recovery of a secondary alkyl primary amine having from 14 to 30 carbon atoms from a crude hydrogenated nitroparaffin composition containing said amine and a C_{14} to C_{30} alcohol, ketone and paraffin hydrocarbon which comprises:

a. treating said crude composition with an acid, water and a low molecular weight alcohol thereby forming an aqueous and a hydrocarbon layer the parts by weight of water and alcohol per part by weight of amine in the crude composition in (a) being from about 1.5 to 25 and the weight ratio of water to alcohol in (a) ranges from about 1:0.4 to 1:20;

b. separating said aqueous layer of (a) and removing low molecular weight alcohol from said aqueous layer;

c. treating said aqueous layer of (b) with a base; and

d. separating said secondary alkyl primary amine from said treated aqueous layer of (c).

3,927,103
DIFLUOROAMINO COMPOUNDS

Robert J. Koshar, Lincoln Township, Washington County; Donald R. Husted, St. Paul; Charles D. Wright, White Bear Lake, and Joseph La Mar Zollinger, Woodbury Township, Washington County, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 425,113, Jan. 8, 1965, Pat. No. 3,758,555. This application May 4, 1972, Ser. No. 250,196

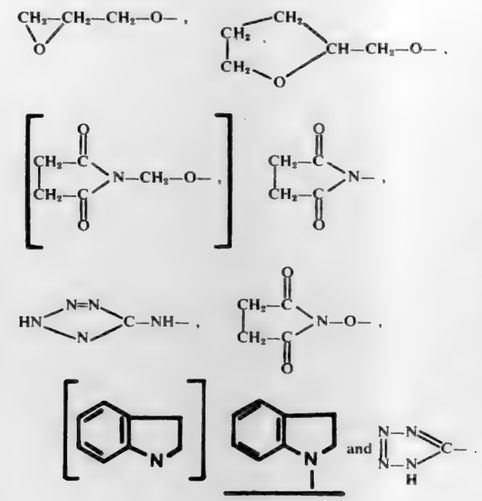
Int. Cl. C07c *87/22, 101/00*

U.S. Cl. 260—584 C **4 Claims**

1. A compound having the formula

$$R-C(NF_2)_3$$

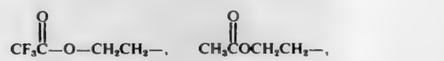
wherein R is a radical of the group consisting of



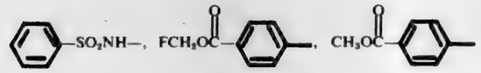
2. A compound having the formula

$$Z-O-C(NF_2)_3$$

wherein Z is a radical of the group consisting of alkyl having from 1 to 12 carbon atoms, cyclohexyl, fluoromethyl, 2,2,2-trifluoroethyl, difluoromethyl, allyl, 2-propynyl,



2,3-di(difluoramino)-propyl, ethoxy, butoxy, acrylyl, acetyl, butyryl, benzyl, benzoyl,



and p-nitrophenyl.

4. The compound 1,2,3-tris(tris-difluoramino-methoxy)-propane.

3,927,104
POLYBUTENYL-ALKYLENE POLYAMINE-POLYALKANOL LUBRICANT ADDITIVE

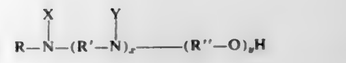
Edward F. Miller, Wappingers Falls, and Walter W. Hellmuth, Hopewell Junction, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 408,226, Oct. 19, 1973, which is a continuation-in-part of Ser. No. 155,286, June 21, 1971, abandoned. This application Dec. 18, 1974, Ser. No. 533,910

Int. Cl.² C07C *87/20*

U.S. Cl. 260—584 B **8 Claims**

1. An oil-soluble, ashless polybutenyl-alkylene polyamine-polyalkanol dispersant represented by the formula:



in which R is a polybutenyl radical having a molecular weight ranging from 900 to 10,000, X and Y are H or $(R''-O)_yH$ at least one of X or Y being $(R''O)_yH$, R' is a divalent hydrocarbyl radical having from 2 to 8 carbon atoms, R'' is a divalent hydrocarbyl radical having from 2 to 4 carbon atoms, x has a value from 1 to 6, and y has a value from 1 to 5.

3,927,105
PROCESS FOR THE PREPARATION OF MIXTURES OF CYCLOALKANOLS AND CYCLOALKANONES

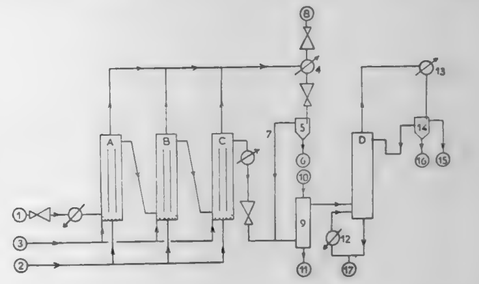
Jean-Claude Brunie, and Noel Crenne, both of Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

Continuation of Ser. No. 814,082, April 7, 1969, abandoned. This application Feb. 16, 1973, Ser. No. 333,374

Claims priority, application France, Apr. 8, 1968, 68.147364

Int. Cl.² C07C *27/04, 29/00, 45/00*

U.S. Cl. 260—586 P **6 Claims**



1. In a process for the continuous preparation of a mixture of cycloalkanone and cycloalkanol by decomposition of a solution of cycloalkyl hydroperoxide in the corresponding cycloalkane, said solution being obtained by oxidation of the cycloalkane in the liquid phase with molecular oxygen, said decomposition being carried out in the liquid phase by heating the solution in the presence of a catalyst which is a chromium compound soluble in the cycloalkane at ambient temperature, the improvement comprising decomposing said hydroperoxide by heating said solution containing 2–15 percent by weight hydroperoxide at 80° – 150° C. in the presence of a chromium compound having a solubility of at least 0.1 g/liter in the cycloalkane at ambient temperature, the heating carried out in a series of separate reaction zones, in each of which the hydroperoxide concentration is maintained at an essentially uniform value throughout the zone, and from each of which the water formed during the deperoxidization is separated, thereby producing a mixture of cycloalkanol and cycloalkanone rich in cycloalkanone.

3,927,106
PREPARATION OF TETRACHLOROCYCLO-HEXANONE

Eugene C. Gilbert, Hanover Park; Robert E. Jones, Arlington Heights; Donald C. McLean, Barrington, all of Ill., and Edward Sherman, Genoa City, Wis., assignors to The Quaker Oats Company, Chicago, Ill.

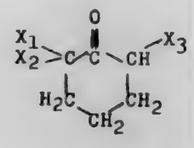
Continuation-in-part of Ser. No. 115,771, Feb. 16, 1971, abandoned. This application Mar. 4, 1974, Ser. No. 447,910

Int. Cl.² C07C *45/00*

U.S. Cl. 260—586 R **13 Claims**

1. A process for the preparation of 2,2,6,6-tetrachlorocyclohexanone comprising contacting under substantially anhydrous conditions and in the liquid phase a mixture of chlorine and a substrate in the presence of a catalyst selected from the group consisting of collidines, pyridine, quinoline, lutidines,

picolines, pyrazine, N,N-dimethylacetamide, N,N-diethylacetamide, N,N-dimethylpropionamide, N,N-diethylpropionamide, tetramethylurea, tetraethylurea, dimethyldiethylurea, monomethyltriethylurea, trimethylethylurea, tri-n-butylamine, trimethylamine, tripropylamine, and the hydrochloric acid and acetic acid salts of the aforementioned amines at a temperature between 60°C. or the temperature at which the reaction mixture is a liquid, whichever is higher, and 120°C.; said substrate being of the general formula:



wherein X_1, X_2, and X_3 are selected from the group consisting of chlorine radicals and hydrogen radicals; said chlorine being in a ratio to said substrate of in excess of three molar equivalents based on the number of moles of said substrate minus one molar equivalent for each equivalent of said chlorine radicals in said substrate to one.

3,927,107

2,6,6-TRIMETHYL-1-ALKENOYL-CYCLOHEXENONES

Karl-Heinrich Schulte-Elte, and Henri Jindra, both of Geneva, Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

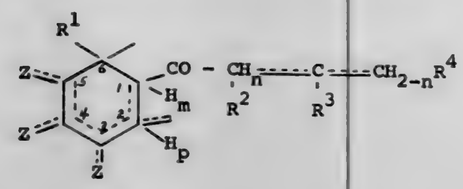
Filed Oct. 23, 1973, Ser. No. 408,919

Claims priority, application Switzerland, Oct. 26, 1972, 15691/72; Mar. 21, 1973, 4096/73

Int. Cl.² C07C *49/44*

U.S. Cl. 260—586 R **4 Claims**

1. Oxygenated alicyclic compounds of the formula



wherein the symbols R^1, R^2, R^3 and R^4 represent alkyl radicals containing from 1 to 6 carbon atoms or hydrogen atoms, provided that the total number of hydrogen atoms represented by the symbols R^2, R^3 and R^4 equals at least two; and containing a first double bond in one of the dotted line positions of the keto side chain and a second double bond in one of the endocyclic or the number two exocyclic dotted line positions of the ring; the indexes *m* and *p* represent the integers zero or one when the hydrogen atoms for which they are multipliers are connected to a double bonded or single bonded cyclic carbon respectively; one of the symbols Z represents an oxygen atom when connected to an otherwise single bonded carbon and the other Z symbols represent one or two hydrogen atoms when connected to a double bonded or single bonded carbon respectively; and the index n represents the integers zero or one when the hydrogen for which it is a multiplier is connected to a double bonded or single bonded carbon atom, respectively.

3,927,108

PROCESS FOR THE PREPARATION OF CYCLOALKANONES AND/OR CYCLOALKANOLS

Cornelis G. M. van de Moesdijk, Elsloo, and Andreas M. J. Thomas, Kerkrade, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Nov. 20, 1973, Ser. No. 417,635

Claims priority, application Netherlands, Nov. 23, 1972, 7215854; Nov. 3, 1973, 7315102

Int. Cl.² C07C *27/04, 45/00, 29/00*

U.S. Cl. 260—586 P **14 Claims**

1. A process for the preparation of cycloalkanones and/or cycloalkanols by liquid phase catalytic hydrogenation of cycloalkane hydroperoxides, comprising mixing cycloalkane hydroperoxides in an inert reaction medium comprising a distributing agent which is an inert liquid aromatic, aliphatic or naphthenic hydrocarbon, wherein the hydroperoxide concentration is 1 to 30 weight percent,

with a finely divided catalyst, said catalyst comprising a noble metal of Group VIII of the Periodic System of Elements, that is suspended in the reaction medium to form a mixture;

introducing hydrogen into the mixture maintained at temperatures between 20° to 180°C, wherein the hydrogen partial pressure is between 0.1 to 50 atmospheres;

and removing water continuously from the hydrogenation reaction mixture in the form of a vaporous azeotrope with the distributing agent.

3,927,109

PROCESSES FOR THE PREPARATION OF CYCLIC ALDEHYDES

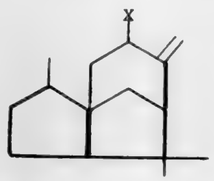
Wilhelmus J. Wiegers, Middletown, and John B. Hall, Rumson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 260,537, June 7, 1972, Pat. No. 3,869,516. This application Aug. 26, 1974, Ser. No. 500,280

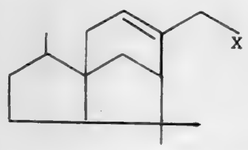
Int. Cl.² C07C *47/44*

U.S. Cl. 260—598 **8 Claims**

1. A process for the production of cyclic carbonyl compounds which comprises reacting alpha-cedrene with a halogen at temperatures of 0° to 75°C in the presence of a basic material to provide an alpha-halo methylene derivative having the structure



isomerizing the alpha-halo methylene derivative by heating to a temperature of from 75° to 175°C to form a halo derivative having the structure



and oxidizing the halo derivative with an alkali metal salt of 2-nitropropane to obtain cedrenal, wherein X is chloro, bromo, or iodo.

3,927,110

THERMOLYSIS OF STYRENE OXIDE

James M. Watson, Big Spring, Tex., assignor to Cosden Oil & Chemical Company, Big Spring, Tex.

Filed Jan. 18, 1974, Ser. No. 434,675

Int. Cl.² C07C *45/22*

U.S. Cl. 260—599 **19 Claims**

1. The process of thermolysis of styrene oxide comprising heating styrene oxide in the presence of a member selected from the group consisting of aryl and alkyl aryl sulfonates of an alkaline earth metal at a temperature of between about 125°C and 450°C to obtain a reaction product comprising phenylacetaldehyde.

3,927,111

PRODUCTION OF CARBONYL COMPOUNDS

James V. Robinson, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Dec. 8, 1971, Ser. No. 206,127

Int. Cl.² C07C *45/04, 27/16, 51/32, 67/00*

U.S. Cl. 260—604 AC **7 Claims**

1. In a Wacker-type process for the production of a carbonyl compound from olefinically unsaturated hydrocarbon gas in which said hydrocarbon gas is oxidized in the presence of an aqueous catalyst, the improvement comprising:

a. introducing said aqueous catalyst into a reaction chamber containing a bed of wetproofed solid particulate material selected from the group consisting of wetproofed carbon particles and wetproofed activated carbon particles,

b. introducing said hydrocarbon gas and a gaseous oxidant into said reaction chamber and into contact with said wetproofed solid material and said catalyst to form a reaction mixture of said hydrocarbon gas, catalyst and oxidant,

c. maintaining said reaction chamber at a sufficiently low temperature and pressure to prevent formation of vapor phase conditions,

d. maintaining at least a portion of said catalyst and at least a portion of said hydrocarbon gas and oxidant in said reaction mixture simultaneously in contact with each other and simultaneously in contact with said wetproofed solid material to effect production of said carbonyl compound, and

e. separating said carbonyl compound from said reaction mixture.

3,927,112

PROCESS FOR THE PREPARATION OF BIS-HYDROXYMETHYL-METHYLPHOSPHINE

Martin Reuter, Kronberg, Taunus, and Claus Beermann, Wildsachsen, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 11, 1974, Ser. No. 460,151

Claims priority, application Germany, Apr. 14, 1973, 2319043

Int. Cl.² C07D *105/02*

U.S. Cl. 260—606.5 P **9 Claims**

1. A process for the preparation of bis-(hydroxymethyl)-methyl phosphine oxide which comprises contacting tris-(hydroxymethyl)-phosphine with at least about 1% by weight of carbon tetrachloride or carbon tetrabromide at a temperature between about −10° and about 120°C. substantially in the absence of oxygen, water and alcohol, and after reaction distilling off the carbon tetrahalide to isolate said bis-(hydroxymethyl)-methyl phosphine oxide, the percent being based on the weight of said tris-(hydroxymethyl)-phosphine.

3,927,113

PROCESS FOR THE PREPARATION OF METHYLPHOSPHINE OXIDES

Martin Reuter, Kronberg, Taunus, and Walter Rupp, Konigstein, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

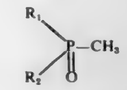
Filed Apr. 11, 1974, Ser. No. 460,153

Claims priority, application Germany, Nov. 16, 1973, 2357276

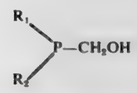
Int. Cl.² C07D *105/02*

U.S. Cl. 260—606.5 P **14 Claims**

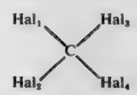
1. A process for the preparation of methyl phosphine oxide of the formula



wherein R_1 and R_2 each is alkyl having up to 20 carbon atoms, alkyl having up to 20 carbon atoms and substituted by a group inert under the conditions of the process, or $—CH_2OH$, which comprises contacting a hydroxymethyl-phosphine of the formula



with at least about 1% by weight of a carbon tetrahalide of the formula



wherein Hal_1 is fluorine, chlorine or bromine, Hal_2, Hal_3 and Hal_4 each is chlorine or bromine and only three of Hal_1 to Hal_4 are the same, at a temperature between about −10° and about 120°C. substantially in the absence of oxygen, water and alcohol, and after reaction distilling off said carbon tetrahalide to isolate said methyl phosphine oxide, the percent being based on the weight of said hydroxymethyl-phosphine.

3,927,114

PROCESS FOR SEPARATING HYDROPEROXIDES

Hideaki Suda, Takaishi; Iwao Dohgane, Nishinomiya; Takashi Chinuki, Toyonaka; Kenji Tanimoto; Hirokazu Hosaka, both of Minoo; Yukimichi Nakao, Kobe; Yuji Ueda, Izumiotsu; Seiya Imada, Sakai; Hideki Yanagihara, Toyonaka, and Kunihiko Tanaka, Ibaragi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

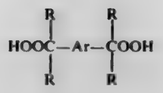
Filed July 9, 1973, Ser. No. 377,656

Claims priority, application Japan, July 19, 1972, 47-72852

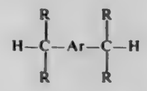
Int. Cl.² C07C *179/02*

U.S. Cl. 260—610 A **7 Claims**

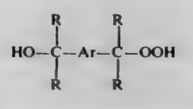
1. A process for separating dihydroperoxides of the formula,



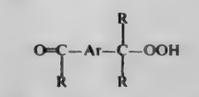
wherein R is a C_1–C_3 alkyl group and Ar is an aromatic phenylene group, from oxidation product of dialkylaromatic hydrocarbons of the formula,



wherein R and Ar have the same meanings as above, the oxidation product containing monohydroperoxides, dihydroperoxides, carbinol type hydroperoxides of the formula,



wherein R and Ar are as defined above, and ketone type hydroperoxides of the formula,



wherein R and Ar are as defined above, which comprises contacting the oxidation product with a basic ion exchange resin in microporous or gel state to adsorb the dihydroperoxides on the ion exchange resin, and eluting the dihydroperoxides adsorbed on the ion exchanger with an eluting agent said eluting agent is one member selected from aqueous alkaline solutions, ketones having 3 to 10 carbon atoms, alcohols having 1 to 8 carbon atoms and ethers having 2 to 5 carbon atoms.

3,927,115

PRODUCTION OF HYDROPEROXIDES

Edward G. Guetens, Glendora, N.J., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 124,973, March 16, 1971, Pat. No. 3,741,907. This application Dec. 26, 1973, Ser. No. 427,596

Int. Cl.² C07C *179/02, 31/13, 45/16*

U.S. Cl. 260—610 B **10 Claims**

1. A method for preparing cyclohexyl hydroperoxide comprising contacting cyclohexane in the liquid phase with molecular oxygen at a temperature in the range of from 80°C. to 180°C. in the presence of a branched chain alkane hydrocarbon having a tertiary carbon atom and containing from 4 to 6 carbon atoms.

3,927,116

BICYCLO[2.2.1] HEPT-5(6)-YL COMPOUNDS

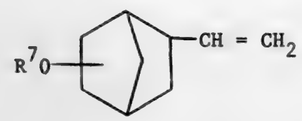
Edward A. Rick, Charleston, W. Va., and Samuel W. Tinsley, Darien, Conn., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 677,741, Oct. 24, 1967, Pat. No. 3,646,113, which is a continuation-in-part of Ser. No. 404,477, Oct. 16, 1964, Pat. No. 3,459,775. This application May 27, 1971, Ser. No. 147,650

Int. Cl.² C07C *35/28, 43/18*

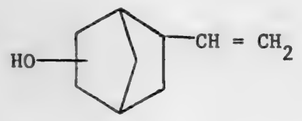
U.S. Cl. 260—611 F **3 Claims**

1. Ethers of 2-vinylbicyclo[2.2.1]hept-5(6)-ol of the formula:



R^7 is selected from the group consisting of alkyl of from 1 to 18 carbon atoms, alkenyl of from 2 to 20 carbon atoms, cycloalkyl of from 5 to 12 carbon atoms and cycloalkenyl of from 5 to 12 carbon atoms.

2. 2-Vinylbicyclo[2.2.1]hept-5(6)-hydroxyl compounds of the formula:



3,927,117

SUBSTITUTED STYRENES

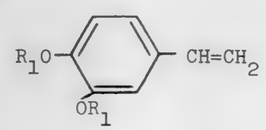
Thomas A. Bianchi, Irondequoit, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 237,902, March 24, 1972, abandoned. This application Aug. 24, 1973, Ser. No. 391,180

Int. Cl.² C07C *41/00*

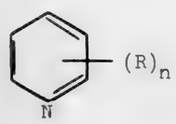
U.S. Cl. 260—613 D **10 Claims**

1. A method for making a substituted styrene represented by the formula:



wherein each R_1 is an alkyl radical of 1 to 4 carbon atoms, comprising:

mixing (i) a halogenating agent selected from thionyl chloride, hydrogen bromide, thionyl bromide, phosphorous tribromide and iodine, (ii) an amine acceptor of the generic formula:



wherein R is an alkyl group of 1 to 6 carbon atoms, n is an integer having a value of from 1 to 5, and at least one alkyl group is attached to a carbon atom adjacent to the nitrogen atom and when n is more than 1, the alkyl groups may be the same or different groups, and (iii) a 1-(3,4-dialkoxyphenyl)ethanol wherein each alkoxy moiety has 1 to 4 carbon atoms, and

heating the resulting mixture for a sufficient period of time and at a temperature sufficient to obtain said substituted styrene.

3,927,118

PROCESS FOR MONOETHERIFICATION OF POLYHYDRIC BENZENES

Thomas M. Ozretich, Vancouver, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Dec. 21, 1973, Ser. No. 427,200

Int. Cl.² C07C *43/22*

U.S. Cl. 260—613 D **16 Claims**

1. In a process for converting an aromatic compound having at least two hydroxyl groups on a benzene ring to the corresponding monoether by reacting the compound with an alkylating agent in the presence of a base in a reaction medium, the improvement wherein the reaction is carried out in a single phase in which the reaction medium comprises a dipolar aprotic solvent having a sulfoxide, sulfone or amide group, and the base is an alkaline earth hydroxide or alkaline earth oxide.

3,927,119

BIS-STILBENE COMPOUNDS

Christian Luethi, Muenchenstein, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

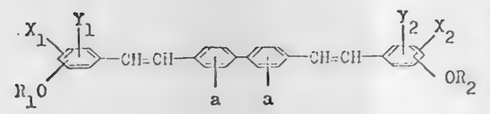
Division of Ser. No. 230,931, March 1, 1972, Pat. No. 3,843,718. This application May 22, 1974, Ser. No. 472,391

Claims priority, application Switzerland, Mar. 5, 1971, 3235/71; Feb. 3, 1972, 1608/72

Int. Cl.² C07C *43/20*

U.S. Cl. 260—613 A **1 Claim**

1. Bis-stilbene compounds of the formula



wherein R_1 and R_2 are identical or different and denote alkyl with 5 to 18 carbon atoms, substituted alkyl with a total of 2 to 20 carbon atoms of which the substituents are phenyl or phenyl substituted by lower alkyl or halogen, or alkenyl with 3 to 4 carbon atoms, X_1 and X_2 are identical or different and denote hydrogen, alkoxy with 1 to 4 carbon atoms, halogen, alkenyl with 3 to 4 carbon atoms or alkyl with 1 to 4 carbon atoms, Y_1 and Y_2 are identical or different and denote hydrogen, halogen, alkenyl with 3 to 4 carbon atoms or alkyl with 1 to 4 carbon atoms, a represents hydrogen, halogen, alkoxy with 1 to 4 carbon atoms or alkyl with 1 to 4 carbon atoms, and the parapositions are free of alkoxy groups or R_1O—and R_2O— groups.

3,927,120

PREPARATION OF PHENYL METHYL CARBINOL

Henry R. Grane, and Thomas S. Zak, both of Springfield, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sept. 3, 1974, Ser. No. 502,583

Int. Cl.² C07C *29/00*

U.S. Cl. 260—618 H **3 Claims**

1. In a method in which a liquid stream of acetophenone and a molar excess of hydrogen is subjected to a solid bed of particles of catalyst comprising copper distributed in a zinc oxide matrix as a hydrogenation catalyst at an elevated pressure and temperature within a range from about 90° to 150°C., at a space velocity of about 0.2 to about 10 weight of acetophenone per weight of catalyst per hour, the improvement which consists of employing a catalyst in which the copper to zinc atom unit ratio in the catalyst particles is within the range from 2 to 8, and preparing the liquid stream to be a solution containing between about 20 percent and about 80 percent of a mononuclear aromatic hydrocarbon selected from the group consisting of benzene, ethyl benzene and toluene, and between about 80 percent and 20 percent feedstock consisting essentially of a plant grade of acetophenone and directing said solution of acetophenone feedstock in mononuclear aromatic hydrocarbon solvent through the catalyst bed at hydrogenation conditions to achieve a better combination of yield, conversion and selectivity for phenyl methyl carbinol than in the absence of said mononuclear aromatic hydrocarbon solvent.

3,927,121

PHENYL METHYL CARBINOL MANUFACTURE BY HYDROGENATION OF ACETOPHENONE

Henry R. Grane, and Thomas S. Zak, both of Springfield, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 5, 1974, Ser. No. 494,573

Int. Cl.² C07C *29/00*

U.S. Cl. 260—618 H **2 Claims**

1. In the method in which acetophenone is hydrogenated by reaction with hydrogen in the presence of a catalyst to form phenyl methyl carbinol, the improvement which consists of utilizing as the catalyst for the catalytic hydrogenation granular catalyst particles consisting essentially of copper metal in a zinc oxide matrix, the ratio of zinc atoms to copper atoms being 2:1, said hydrogenation being conducted by directing a stream of liquid acetophenone and hydrogen through a fixed bed of said granular catalyst particle at a temperature within the range from 113° to 138°C. at a pressure of 1200 psig at a hydrogen to acetophenone mol ratio of from 1:1 to 30:1 and a weight hourly space velocity within a range from 1 to 2 weight of acetophenone per weight of catalyst per hour.

3,927,122

PROCESS FOR THE PREPARATION OF ALKYLPHENOLS

Francois Bourdin, Lyon; Francois Chizat, Bron; Michel Costantini, Lyon, and Michel Jouffret, Francheville Le Bas, all of France, assignors to Rhone-Poulenc S.A., Paris, France

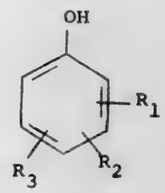
Filed Dec. 20, 1971, Ser. No. 210,207

Claims priority, application France, Dec. 22, 1970, 70.46219

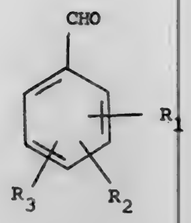
Int. Cl.² C07C *27/00, 37/00, 67/44*

U.S. Cl. 260—621 G **13 Claims**

1. In a process for the preparation of an alkylphenol of general formula



wherein R_1 to R_3 are selected from the group consisting of hydrogen and straight-chain or branched chain alkyl of 1 to 10 carbons with the proviso that not more than two of the symbols R_1, R_2 and R_3 represent hydrogen, by oxidizing an alkyl benzaldehyde of general formula



wherein R_1 to R_3 are as defined above, by means of an organic peracid, the improvement which comprises using an organic percarboxylic acid, the parent carboxylic acid of which has a pK_a in water of at least 4, in the presence of a carboxylic acid of pK_a in water less than 4 whereby an oxidation product is obtained containing more alkylphenol than alkylbenzoic acid.

3,927,123

PROCESS FOR THE PREPARATION OF ALKYLPHENOLS

Francois Bourdin, Lyon; Francois Chizat, Bron; Michel Costantini, Lyon, and Michel Jouffret, Francheville Le Bas, all of France, assignors to Rhone-Poulenc S.A., Paris, France

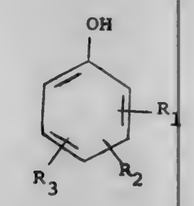
Filed Dec. 20, 1971, Ser. No. 210,208

Claims priority, application France, Dec. 22, 1970, 70.46218The portion of the term of this patent subsequent to Dec. 16, 1992, has been disclaimed.

Int. Cl.² C07C *27/00, 37/00, 67/44*

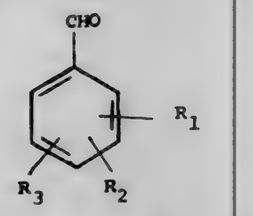
U.S. Cl. 260—621 G **12 Claims**

1. In a process for the preparation of an alkylphenol of general formula



I

in which R_1 to R_3 are selected from the group consisting of hydrogen and straight-chain or branched chain alkyl of 1 to 10 carbons with the proviso that not more than 2 of R_1, R_2 and R_3 represent hydrogen, by oxidizing an alkyl benzaldehyde of general formula



II

wherein R_1 to R_3 are defined above, by means of an organic peracid, the improvement which comprises using an organic peracid, the parent carboxylic acid of which has a pK_a in water of less than 4, whereby an oxidation product is obtained containing more alkylphenol than alkylbenzoic acid.

3,927,124

PROCESS FOR THE NEUTRALIZATION OF ALKYL AROMATIC HYDROPEROXIDE REARRANGEMENT REACTION PRODUCTS

Ward J. Burkholder, Houston, Tex., assignor to The Goodyear Tire and Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 16,853, March 5, 1970, abandoned. This application Jan. 3, 1973, Ser. No. 320,807

Int. Cl.² C07C *37/08, 37/42, 37/22*

U.S. Cl. 260—621 A **17 Claims**

1. In a process for the production of a hydroxy aromatic compound wherein an alkyl aromatic hydroperoxide is rearranged in a substantially non-aqueous solvent using a sulfuric acid catalyst to produce a rearrangement product mixture containing said hydroxy aromatic compound, the improvement comprising:

a. introducing into the rearrangement product mixture an amount of a basic anhydrous gas selected from the class consisting of ammonia, methyl amine, and triethyl amine in excess of that necessary to convert said sulfuric acid to a solid, substantially insoluble bisulfate compound but less than that necessary to convert all of said sulfuric acid to the corresponding sulfate,

b. separating said bisulfate compound from said rearrangement product mixture and recovering a liquid product substantially free of said solid bisulfate compound,

c. introducing into said liquid product an amount of a basic anhydrous gas selected from the class consisting of ammonia, methyl amine, and triethyl amine at least sufficient to convert any dissolved bisulfate compound to a substantially insoluble sulfate and to maintain a hydrogenion concentration in said rearrangement product mixture corresponding to an aqueous solution consisting of the neutralized product mixture diluted with an equal volume of water having a pH of from 3 to 6, and

d. separating any solid sulfate compound from said liquid product.

3,927,125

METHOD OF PREPARING 2,4,6-TRIIODORESORCINOL

Alexei Nikolaevich Grinev, ulitsa Volgina, 15, korpus 2, kv. 57; Vasily Ivanovich Shvedov, ulitsa M. Ulyanovoi, 9, korpus 3, kv. 11; Evgenia Nikolaevna Sytina, 5 Parkovaya ulitsa, 4, korpus 2, kv. 93; Nadezhda Sergeevna Bogdanova, ulitsa 26 Bakinskikh komissarov, 1, korpus 1, kv. 26; Irina Sergeevna Nikolaeva, Matveevskaya ulitsa, 1, kv. 179; Grigory Nikolaevich Pershin, Novopeschanaya ulitsa, 19/10, kv. 75, and Tatyana Anatolievna Guskova, ulitsa Usievicha, 25, korpus 3, kv. 396, all of Moscow, U.S.S.R.

Filed June 3, 1974, Ser. No. 476,043

Int. Cl.² C07C *39/27*

U.S. Cl. 260—623 H **4 Claims**

1. Method of producing 2,4,6-triiodoresorcinol, which comprises reacting resorcinol with iodine chloride in a medium consisting essentially of dilute aqueous hydrochloric acid at a temperature of 0 to 60°C., whereby the resorcinol is directly iodinated to 2,4,6-triiodoresorcinol.

3,927,126

PROCESS FOR THE MANUFACTURE OF POLYFLUOROALCOHOLS AND THEIR USE

Helmut Huber-Emden, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

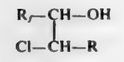
Filed Feb. 16, 1973, Ser. No. 333,246

Claims priority, application Switzerland, Feb. 22, 1972, 2552/72

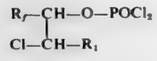
Int. Cl.² C07C *31/34*

U.S. Cl. 260—633 **7 Claims**

1. A process for the manufacture of polyfluoroalcohols of the formula



in which R_f represents perfluorinated alkyl of 1 to 22 carbon atoms and R represents hydrogen, methyl or hydroxymethyl, wherein phosphorus-containing polyfluoro compounds of the formula



in which R_f has the meaning given hereinabove and R_1 represents hydrogen, methyl or the radical of the formula

$$-CH_2-O-POCl_2$$

are hydrolysed in a high boiling water donating compound selected from the group consisting of ethylene glycol, dihydroxy propane-1,2 and glycerol at temperatures of 100° to 180°C.

3,927,127

NITRATION PROCESS

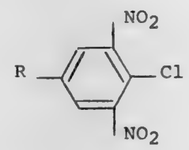
John Joseph Damiano, Springfield, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Continuation-in-part of Ser. No. 300,063, Oct. 24, 1972, abandoned. This application Aug. 15, 1974, Ser. No. 497,802

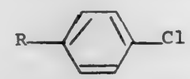
Int. Cl.² C07C *79/12*

U.S. Cl. 260—646 **10 Claims**

1. A process for preparing 4-R-2,6-dinitrochlorobenzene compounds of the formula:



wherein R is selected from the group consisting of branched chain hydrocarbons containing from 3 to 7 carbon atoms, comprising the step of treating a compound of the formula:



with a mixture of concentrated sulfuric acid of at least 98% concentration by weight and concentrated nitric acid of greater than 70 percent concentration by weight at a temperature of from about 15°C to about 115°C for at least 1 hour, whereby the reaction is carried to substantial completion.

3,927,128

TRICYCLIC AMINES AND PROCESSES FOR THE PREPARATION THEREOF

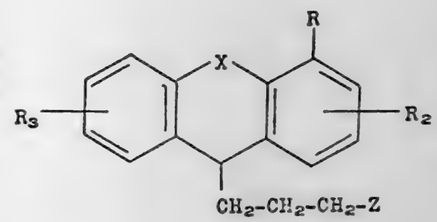
Emilio Kyburz, Reinach, and Hans Spiegelberg, Basel, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 107,499, Jan. 18, 1971, abandoned, Continuation of Ser. No. 679,644, Nov. 1, 1967, abandoned. This application Mar. 8, 1974, Ser. No. 449,303

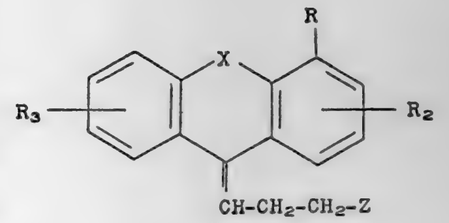
Int. Cl.² C07C *25/18, 25/26*

U.S. Cl. 260—649 R **6 Claims**

1. A compound selected from the group consisting of compounds of the formulas

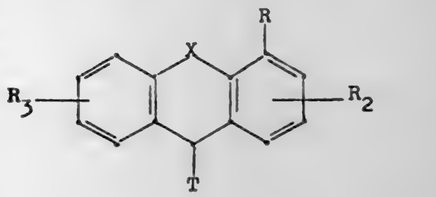


and



wherein R is chlorine or fluorine, R_2 and R_3 are hydrogen, chlorine or fluorine, X is ethylene, vinylene or halosubstituted vinylene, and Z is halogen.

6. A compound of the formula



X

wherein R is chlorine or fluorine, R_2 and R_3 are hydrogen, chlorine or fluorine, X is ethylene, vinylene or a halo-substituted vinylene and T is an alkalimetal atom.

3,927,129

PROCESS FOR INSERTION OF HEXAFLUOROPROPENE AT THE ALIPHATIC CARBON-HYDROGEN BOND OF A FUNCTIONALLY SUBSTITUTED HYDROCARBON

Robert Neville Haszeldine, Disley, and Ronald Rowland, Padgate, both of England, assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jan. 5, 1973, Ser. No. 321,162
Claims priority, application United Kingdom, Jan. 14, 1972, 1989/72
Int. Cl.² C07C *17/26, 19/08*
U.S. Cl. 260—653.1 R 3 Claims

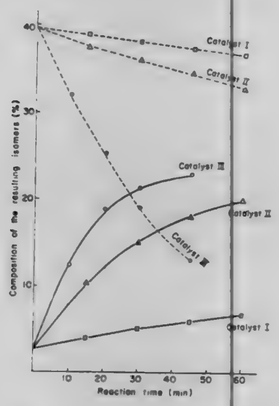
1. A process for inserting hexafluoropropene into the structure of a substituted hydrocarbon compound free of acetylenic and terminal ethylenic unsaturation, and containing at least one aliphatic carbon-hydrogen bond and at least one functional moiety inert under the conditions of reaction selected from the class consisting of halogens, said insertion of hexafluoropropene being at said carbon-hydrogen bond, which comprises contacting said substituted hydrocarbon compound with hexafluoropropene monomer at a temperature in the range of about 160°C to about 350°C, and at a pressure of about 1 to about 250 atmospheres, in the absence of free oxygen-containing gases and free-radical catalyst.

3,927,130

METHOD OF ISOMERIZING DICHLOROBUTENES

Takashi Kadowaki; Takao Iwasaki, and Hideki Matsumura, all of Ohmi, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 30, 1969, Ser. No. 862,217
Claims priority, application Japan, Oct. 9, 1968, 43-73359
Int. Cl. C07c *21/00*
U.S. Cl. 260—654 R 3 Claims



1. In a method of isomerizing 3,4-dichlorobutene-1 and 1,4-dichlorobutene-2 mutually, the improvement which comprises conducting said isomerization reaction by using as a catalyst, a mixture of an organic amine hydrochloride and at least one substance selected from the group consisting of copper, cuprous chloride, anhydrous cupric chloride, anhydrous cupric sulfate, cupric acetate, basic copper carbonate, anhydrous ferric chloride, anhydrous aluminum chloride, titanium chloride, zinc chloride, anhydrous tin chloride, and bismuth chloride under substantially anhydrous conditions at a temperature of from 60° to 120°C, wherein said organic amine hydrochloride is at least one of the hydrochlorides of an amine selected from the group consisting of diethylamine, triethylamine, triethanolamine, ethylenediamine, monomethylamine, dimethylamine, trimethylamine, di-n-propylamine, tributylamine, aniline, α -naphthylamine, β -naphthylamine, diphenylamine, p-phenylenediamine, m-phenylenediamine, N,N-dimethylaniline, and benzidine, wherein said one substance is used in an amount of from 0.01 to 10.0% by weight, based on the weight of said dichlorobutenes to be isomerized and wherein said organic amine hydrochloride is used in an amount of from 0.01 to 5% by weight based on the weight of the dichlorobutenes to be isomerized.

3,927,131

DEHYDROHALOGENATION OF HALOGENATED HYDROCARBONS

Joe Arthur Ward, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 10, 1974, Ser. No. 477,577
Int. Cl.² C07C *21/00*
U.S. Cl. 260—654 D 9 Claims

1. In the method for thermally dehydrochlorinating a chlorinated aliphatic hydrocarbon containing from two to about 12 carbon atoms and from two to six chlorine atoms by contacting the chlorinated aliphatic hydrocarbon in the vapor phase with a catalyst at an elevated temperature to produce an unsaturated chlorinated hydrocarbon containing the same number of carbon atoms as said reactant chlorinated hydrocarbon, the improvement which comprises employing as the catalyst a material consisting essentially of a rare earth oxide in combination with a platinum group metal on a support.

3,927,132

PROCESS FOR PRODUCING 1,1,1-TRICHLOROETHANE

Gordon G. Willis; John B. Ivy; Theodore S. Boozalis, and Darryl E. Cragar, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 22, 1974, Ser. No. 462,702
Int. Cl.² C07C *17/10*
U.S. Cl. 260—658 R 1 Claim

1. In a method for chlorinating ethyl chloride and 1,1-dichloroethane to produce 1,1,1-trichloroethane, 1,1-dichloroethane, vinylidene chloride and numerous by-products and in which process the 1,1-dichloroethane is recycled to the chlorination reaction along with cis- and trans- 1,2-dichloroethylene the improvement which comprises separating the trans-1,2-dichloroethylene away from the cis-1,2-dichloroethylene and 1,1-dichloroethane, the recycled cis-1,2-dichloroethylene being isomerized to an isomeric mixture of about 60% cis- and 40% trans-1,2-dichloroethylene during the chlorination of the 1,1-dichloroethane and ethyl chloride.

3,927,133

PROCESS FOR SYNTHESIZING STYRENE TYPE COMPOUNDS

Masato Satomura, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Dec. 26, 1973, Ser. No. 427,867
Claims priority, application Japan, Dec. 26, 1972, 48-2839
Int. Cl.² C07C *15/10, 1/20*
U.S. Cl. 260—669 QZ 30 Claims

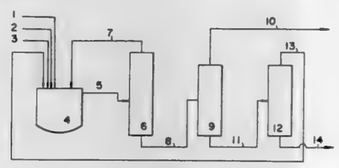
1. A process for synthesizing styrene comprising reacting at least one compound selected from the group consisting of acetophenone, an acetophenone derivative, and a propiophenone derivative having one or more substituents in the aromatic nucleus with an aluminum compound having at least one aluminum-oxygen-carbon bond, wherein said acetophenone derivative and said propiophenone derivative has one or more substituents selected from the group consisting of halogen atoms, alkyl groups, aralkyl groups, aryloxy groups, haloalkyl groups, allyl groups, allyloxy groups, alkoxyalkyl groups, alkoxy-alkoxy groups, alkoxy groups, haloalkoxy groups, nitro groups and a dimethyl amino group.

3,927,134

PROCESS FOR PREPARATION OF DIISOPROPYLBENZENE

Tadahisa Yanagihara, and Kentaro Fukahori, both of Shinnanyo, Japan (09181975), assignors to Toyo Soda Manufacturing Co., Ltd., Shin-nanyo, Japan

Filed Apr. 15, 1974, Ser. No. 460,929
Int. Cl.² C07C *3/52*
U.S. Cl. 260—671 P 12 Claims



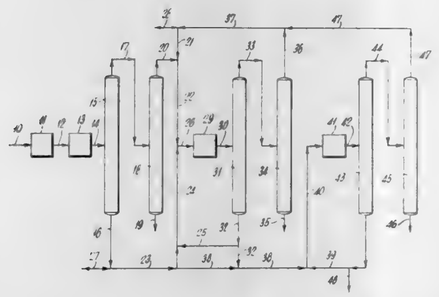
1. A process for the preparation of diisopropylbenzene from crude diisopropylbenzene containing as impurities 2-methyl-2-phenylpentane, 2-phenylhexane and 3-phenylhexane, a by-product formed in the preparation of cumene from benzene and propylene, which comprises reacting said impurities in said crude diisopropylbenzene with propylene in the presence of an alkylation catalyst while isomerizing all o-diisopropylbenzene in said crude diisopropylbenzene to m- and p-diisopropylbenzene; and distilling said diisopropylbenzene from the reaction mixture.

3,927,135

PREPARATION OF HYDROCARBONS

Robert M. Suggitt, Wappingers Falls, and John D. Odle, Poughkeepsie, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed July 5, 1974, Ser. No. 485,859
Int. Cl.² C07C *3/58*
U.S. Cl. 260—672 R 11 Claims



1. The method of treating a charge monocyclic aromatic hydrocarbon stream containing (i) a monocyclic middle component, (ii) a monocyclic heavier component having a larger number of carbon atoms than does said middle component, and (iii) a lighter component having a smaller number of carbon atoms than does said middle component which comprises:

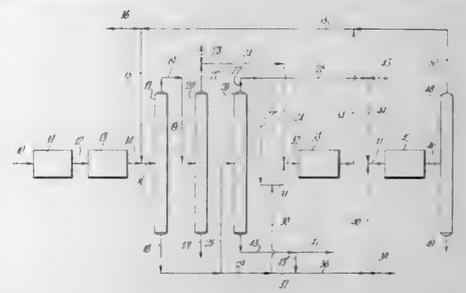
a. separating said charge monocyclic aromatic hydrocarbon stream into (i) a first stream containing said lighter component, (ii) a second stream containing said middle component, and (iii) a third stream containing said heavier component.
b. dividing said third stream containing said heavier component into (i) first portion containing an amount of said heavier component substantially equivalent to said first stream containing said lighter component and (ii) a second portion containing the remainder of said third stream;
c. transalkylating said first stream containing said lighter component with said first portion of said third stream containing an amount of said heavier component substantially equivalent to said first stream containing said lighter component — thereby forming a transalkylate stream containing said middle component;
d. recovering said middle component from said transalkylate stream;
e. dealkylating said second portion of the third stream containing said heavier component thereby forming a dealkylate stream containing a heavier component, a middle component, and a lighter component; and
f. recovering said middle component from said dealkylate stream.

3,927,136

TREATMENT OF HYDROCARBONS

Robert M. Suggitt, Wappingers Falls, and John D. Odle, Poughkeepsie, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed July 5, 1974, Ser. No. 485,857
Int. Cl.² C07C *3/58*
U.S. Cl. 260—672 R 13 Claims



1. A method of treating a charge monocyclic aromatic hydrocarbon stream containing (i) a middle component, (ii) a heavier component containing more carbon atoms than does said middle component, (iii) a lighter component containing a smaller number of carbon atoms than does said middle component, and (iv) a fused polycyclic hydrocarbon component containing at least as many carbon atoms as does said heavier component which comprises

a. fractionating said charge monocyclic aromatic hydrocarbon stream to form at least (i) a stream containing said lighter component, (ii) a stream containing said middle component, and (iii) a stream containing said heavier component and said fused polycyclic hydrocarbon component;
b. separating fused polycyclic hydrocarbon component from at least a portion of said fractionated stream containing said heavier component and said polycyclic hydrocarbon component thereby forming (i) an enriched stream of said heavier component containing a greater amount of said fused polycylic hydrocarbon component than said fractionated stream containing said heavier component and said fused polycylic component and (ii) a denuded stream of said heavier component containing a lesser amount of said fused polycyclic hydrocarbon

component than said fractionated stream containing said heavier component and said fused polycyclic component;
c. combining (i) said fractionated stream containing said lighter component, (ii) at least a portion of said denuded stream, and (iii) less than all of said fractionated stream containing said heavier component and said fused polycyclic hydrocarbon component thereby forming a transalkylation charge stream containing (i) lighter component, (ii) heavier component in amount substantially equivalent to said lighter component, and (iii) fused polycyclic hydrocarbons in amount of less than about 0.3% by weight based upon the content of heavier component in said transalkylation charge stream;
d. transalkylating, at transalkylating conditions in the presence of heterogenous transalkylating catalyst, said transalkylation charge stream thereby forming a transalkylate product stream containing (i) a middle component, (ii) a heavier component containing more carbon atoms than does said middle component, and (iii) a lighter component containing a smaller number of carbon atoms than does said middle component; and
e. withdrawing said transalkylate product stream.

3,927,137
METHOD OF PREPARING NONCONJUGATED DIOLEFINS
Jay G. Bryson, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 18, 1974, Ser. No. 452,242
Int. Cl.² C07C *3/21, 11/12*
U.S. Cl. 260—680 B **8 Claims**

1. A method of codimerizing conjugated diolefin selected from the group consisting of butadiene and 2,3-dimethyl-1,3-butadiene with lower α-olefins to nonconjugated diolefins which comprises contacting said diolefins and lower α-olefins with a ternary catalyst system consisting essentially of (1) an iron compound selected from the group consisting of iron salts of carboxylic acids containing from 2 to 40 carbon atoms and iron complexes of 1,3-diketones, (2) trialkyl aluminums, lithium tetraethyl aluminate and diethyl aluminum ethoxide, and (3) a bidentate nitrogen compound selected from the group consisting of glyoxal-bis-(2,6-dimethylanil), biacetyl-bis-(2,6-dimethylanil), glyoxal-bis-(4-methylanil), biacetyl-bis-(4-methylanil), glyoxal-bis-(2-methylanil), biacetyl-bis-(4-methylanil), glyoxal-bis-(2-methylanil), biacetyl-bis-(2-methylanil), glyoxal-bis-anil, biacetyl-bisanil, glyoxal-bis-(4-ethoxyanil), biacetyl-bis-(4-ethoxyanil), glyoxal-bis-(3-methoxyanil), biacetyl-bis-(3-methoxyanil), glyoxal-bis-(3-methoxyanil), biacetyl-bis-(3-methoxyanil), glyoxal-bis-(4-dimethylaminoanil), biacetyl-bis-(4-dimethylaminoanil), glyoxal-bis-(2,6-dimethyl-4-ethoxyanil), biacetyl-bis-(2,6-dimethyl-4-ethoxyanil), 2-pyridine carboxaldehydeanil, 2-pyridine carboxaldehyde-2-methylanil, 2-pyridinecarboxaldehyde-4-methylanil, 2-pyridinecarboxaldehyde-2-isopropylanil, 2-pyridinecarboxaldehyde-2-ethylanil, 2-pyridinecarboxaldehyde-4-methoxyanil, 2-pyridinecarboxaldehyde-4 -dimethylaminoanil, 2-pyridinecarboxaldehyde-2,6-dimethyl-4-methoxyanil, 2-pyridinecarboxaldehyde-2,6-dimethyl-4-dimethylaminoanil, 2-acetylpyridine-2-methylanil, 2-acetylpyridine-4-methylanil, 2-acetylpyridine-2-isopropylanil, 2-acetylpyridine-4-methoxyanil and 2-acetylpyridine-4-dimethylaminoanil.

3,927,138
PROCESSES FOR DEHYDROGENATION OF HYDROCARBONS
Darrell W. Walker, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Continuation-in-part of Ser. No. 374,649, June 28, 1973, abandoned, which is a division of Ser. No. 140,967, May 6, 1971, Pat. No. 3,790,501. This application Aug. 14, 1974, Ser. No. 497,290
Int. Cl.² C07C *5/48*
U.S. Cl. 260—680 E **7 Claims**

1. A process for the dehydrogenation of a hydrocarbon feedstock having 2 to 12 carbon atoms and at least one



grouping which comprises contacting said feedstock in the vapor phase under dehydrogenation conditions in the presence of molecular oxygen with a catalyst comprising
from 20 to 75 weight percent of at least one ferrous metal selected from the group consisting of nickel, cobalt and iron;
from about 1 to about 50 weight percent of tin;
from about 0.5 to about 12 weight percent of phosphorus; and
at least one alkali metal in an amount equivalent, on an atomic basis, to about 0.5 to about 6 weight percent of potassium;
wherein at least one of said ferrous metal, said tin, said phosphorus and said alkali metal is associated with oxygen.

3,927,139
METHOD OF FABRICATION OF FURAN RESIN BONDED FIBER REINFORCED ARTICLES BY SPRAY-UP TECHNIQUE
Keith B. Bozer, and Lloyd H. Brown, both of Crystal Lake, Ill., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Nov. 26, 1973, Ser. No. 418,904
Int. Cl.² C08G *2/38, 6/00, 12/46;* **C08L** *61/26*
U.S. Cl. 260—829 **9 Claims**

1. A method of making a catalyzed furan binder mixture suitable for spray-up applications, said method comprising: continuously advancing a first liquid binder stream consisting essentially of a furan binder, and a second liquid catalyst stream comprising a catalyst selected from the group o-phthaloyl chloride and lauroyl chloride, and mixtures thereof, said furan binder consisting essentially of a preresinified liquid furan resin having a viscosity between about 500 and 25,000 cps. diluted with furfural in an amount of from about 5–25 percent inclusive by weight based on the weight of the binder, said liquid furan resins having been prepared from ingredients including compounds having one or more furan rings therein, and in which there is no more than one mole of any other respective polymerizable ingredient per mole of furan ring in the furan-ring-containing ingredients, said furan binder having a viscosity in the range between 200 cps. and 1,000 cps inclusive at 25°C.; continuously admixing the binder stream and catalyst stream in relative amounts such that a catalytically effective amount of the catalyst is admixed with said binder whereby a catalyzed binder mixture is formed; immediately discharging the catalyzed binder mixture as a spray into a discharging zone, said catalyst being admixed in an amount of at least 0.5 percent expressed as percent hydrolyzable chloride, based on the weight of the catalyzed binder mixture.

3,927,140
ADHESIVE COMPOSITION
James T. Rice, and Chia M. Chen, both of Athens, Ga., assignors to Research Corporation, New York, N.Y.
Filed Oct. 24, 1973, Ser. No. 409,312
Int. Cl.² C08L *61/06*
U.S. Cl. 260—838 **5 Claims**

1. A method for forming an aldehyde-phenolic condensation copolymer, which comprises:
forming an essentially linear and non-cross-linkable aldehyde condensation prepolymer having a viscosity of 5 cps to 75 cps at 25°C by reacting an aldehyde selected from the group consisting of formaldehyde acetaldehyde, benzaldehyde, propionaldehyde, butyraldehyde, furfuraldehyde, and mixtures thereof with a phenolic compound selected from the group consisting of phenol, resorcinol, xylenol and cresol in a mole ratio of aldehyde to phenolic compound of 0.5 : 1 to 1.5 : 1 in water in amounts of 25% to 75% based on the total weight of materials in the presence of a catalyst of the hydroxide or carbonate compounds of alkali metals or alkaline earth metals, ammonium hydroxide or ammonium carbonate;
forming a highly thermosettable and cross-linkable aldehyde condensation aldehyde condensation prepolymer having a viscosity of 5 cps to 75 cps at 25°C, by reacting said aldehyde with said phenolic compound in a mole ratio of aldehyde to phenolic compound of 2.0 : 1 to 3.0 : 1 in water in amounts of 25% to 75% based on the total weight of materials in the presence of said catalyst;
admixing from 90% – 10% by weight of said linear aldehyde prepolymer with 10% – 90% by weight of said highly thermosettable prepolymer; and
copolymerizing said admixture at a temperature of 60°C to the reflux temperature in the presence of said base in amounts of 0.05 to 0.8 moles per mole of phenolic compound which results in a copolymer having a viscosity of 30 to 3,000 cps at 25°C.

3,927,141
POLYAMIDE BASE POWDER COATING MATERIAL CONTAINING AN AMINOPLAST CARRYING ALKOXYALKYL GROUPS
Rainer Feldman; Uwe Biethan; Karl Adolf Müller, all of Marl, and Hans Joachim Panoch, Hullern, all of Germany, assignors to Chemische Werke Huls Aktiengesellschaft
Filed Apr. 24, 1973, Ser. No. 354,072
Claims priority, application Germany, May 5, 1972, 2222123
Int. Cl.² C08L *61/20*
U.S. Cl. 260—849 **14 Claims**

1. Polyamide base powder compositions consisting essentially of a plurality of finely divided particles, said plurality of finely divided particles being uniform, or a mixture of distinct particles, said plurality of finely divided particles having therein on an average:
a. about 95 to 99.8 percent by weight of polyamide with an average of 8 to 11 aliphatically linked carbon atoms per amide group;
b. about 0.2 to 5 percent by weight of an aminoplast bearing alkoxyalkyl groups; and
c. about 0.01 to 2 percent by weight, relative to the sum of (a) and (b), of a catalyst which has an acidic reaction at the film forming temperature.

3,927,142
PROCESS FOR THE PREPARATION IMPACT RESISTANT STYRENE POLYMERS
Wolfgang Strobel, Hofheim, Taunus; Ottokar Jaenicke, Schafbruck, Saar; Horst-Dieter Schüddemage, Weilbach, Taunus, and Horst Jastrow, Niederhochstadt, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed Dec. 19, 1973, Ser. No. 425,974
Claims priority, application Germany, Dec. 21, 1972, 2262610
Int. Cl.² C08L *23/16;* **C08F** *255/06*
U.S. Cl. 260—878 R **7 Claims**

1. Process for the preparation of impact resistant styrene graft copolymers by polymerization of
a. 98 to 80 percent by weight of a mixture of
aa. 90 to 70 percent by weight of at least one monomer selected from the group consisting of styrene, vinyl toluene, vinyl xylene, chloro-styrene, bromo-styrene, vinylcyclohexane, methylvinylcyclohexane and halogenvinyl cyclohexane with
ab. 10 to 30 percent by weight of at least one monomer selected from the group consisting of acrylonitrile, methacrylonitrile, a low aliphatic alcohol ester of acrylic acid, methacrylic acid, itaconic acid, maleic acid, and fumaric acid in admixture with
b. 2 to 20 percent by weight of an ethylenepropylene-ter-component-rubber, (aa) and (ab) being calculated, in percent by weight, on the total quantity of the monomers (aa) + (ab) and (a) and (b) on the total quantity of monomers a) [(=aa) + (ab)] + rubber (b),
in the presence of at least one monomer soluble, organic peroxide in the mass or in mass/suspension, wherein the mixture of (aa) and (ab) with (b) is polymerized, after dissolving the ethylene-propylene-ter-component-rubber in at least one member of said group recited in (aa), and thereafter adding at least one member of said group recited in (ab) within an (aa) / (ab) ratio, in percent by weight, of 6/1 to 4/1 at a temperature of 85° to 115°C, until the end of the phase transition, and the polymerization is completed after a further addition of
i. at least one monomer from the group consisting of monomers, recited in (aa) or (ab) or
ii. a mixture of (aa) and (ab) for the polymerization mass to fall within the recited ratio of aa) to ab).

3,927,143
THERMOPLASTIC BLOCK COPOLYMERS
Henry S. Makowski, Scotch Plains, and Donald J. Buckley, Sr., Plainfield, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.
Filed Oct. 12, 1973, Ser. No. 405,920
Int. Cl.² C08L *25/08, 25/16;* **C08K** *5/01, 5/12*
U.S. Cl. 260—886 **27 Claims**

1. Thermoplastic copolymers wherein said copolymer is selected from the group consisting of block copolymers having the general formulae (I) A—B—A, (II) A—B—A—B—A and (III) xB—[A—B]$_n$—yA, and graft copolymers having the general formula (IV)



wherein *m* and *n* are integers greater than or equal to 2; *x* and *y* are 0 or 1, and *y* is 0 when *n* is 2; and A and B are mutually incompatible vinyl aromatic polymer blocks having a solubility parameter difference of greater than 0.7.

3,927,144

ELASTOMER COMPOSITION

Noriyuki Hayashi; Kenji Sasaki, both of Kodaira; Hideaki Inaba, and Koushi Nonaka, both of Higashimurayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of Ser. No. 117,824, Feb. 22, 1971, abandoned. This application Mar. 1, 1973, Ser. No. 337,929

Claims priority, application Japan, Feb. 20, 1970, 45-14179

Int. Cl.² C08F *240/00;* **C08L** *9/06, 23/20*

U.S. Cl. 260—888 **7 Claims**

1. A vulcanized composition in the form of a tire tread comprising (A) 100 parts by weight of a styrene-butadiene elastomeric copolymer and (B) 5 to 40 parts by weight of a petroleum resin which is a copolymer of (1) a cyclic diene monomer selected from the group consisting of cyclopentadiene, dicyclopentadiene and mixtures thereof, (2) a copolymerizable vinyl substituted aromatic hydrocarbon monomer having up to 12 carbon atoms and optionally (3) another copolymerizable olefinic monomer having 4–12 carbon atoms and selected from the group consisting of mono-and di-olefinic aliphatic hydrocarbons, said cyclic diene monomer content of said petroleum resin copolymer being at least 30 weight % and said petroleum resin copolymer having a softening resin of 50 to 200°C. and a bromine value of 40 to 150.

3,927,145

FLAME RESISTANT POLYOLEFINS

Bruno L. Gaeckel, Westmount, and Hans R. Larsen, Montreal, both of Canada, assignors to Union Carbide Canada Limited, Toronto, Canada

Filed Oct. 29, 1974, Ser. No. 518,644

Int. Cl.² C08L *23/08*

U.S. Cl. 260—897 B **7 Claims**

1. A polyolefin composition having improved flame resistant characteristics which comprises polyethylene blended with from 5 to 15% by weight of hexabromobiphenyl; from 2 to 15% by weight of antimony trioxide and from 5 to 50% by weight of a copolymer of ethylene and one selected from the group consisting of vinyl acetate, acrylic acid and ethyl acrylate, the weight percentages based on the weight of the polyethylene.

3,927,146

COMPOSITIONS COMPRISING MIXTURES OF HYDROGENPHOSPHONATES AND METHYLPHOSPHONATES

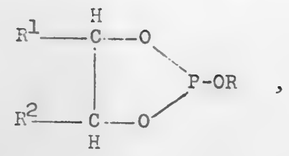
Wadim Batorewicz, New Haven, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 440,411, Feb. 7, 1974, abandoned. This application Dec. 23, 1974, Ser. No. 535,749

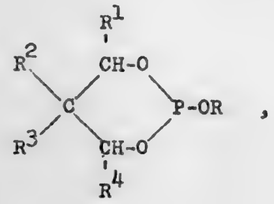
Int. Cl.² C07F *9/40*

U.S. Cl. 260—921 **4 Claims**

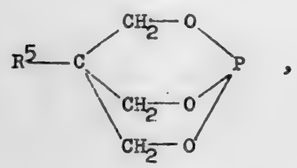
1. A mixture of hydrogenphosphonates and methylphosphonates obtained by reacting a cyclic phosphite selected from the group having the structure

I 

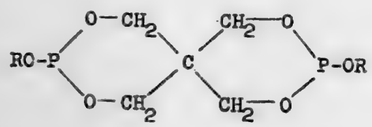
wherein R^1 and R^2 may be the same or different and are hydrogen, alkyl or haloalkyl having from 1 to 6 carbon atoms, and R is alkyl or haloalkyl having from 1 to 10 carbon atoms, aryl or haloaryl having from 6 to 10 carbon atoms, alkaryl or aralkyl having from 7 to 12 carbon atoms wherein the alkaryl and aralkyl groups can also contain halogen substituents, or alkylene having from 2 to 6 carbon atoms linking two cyclic phosphites of said structure I;

II 

wherein R^1, R^2, R^3 and R^4 have the same meaning as R^1 and R^2 above, and R is alkyl or haloalkyl having from 1 to 10 carbon atoms, aryl or haloaryl having from 6 to 10 carbon atoms, or alkaryl or aralkyl having from 7 to 12 carbon atoms wherein said alkaryl and aralkyl groups may also contain halogen substituents;

III 

wherein R^5 is alkyl or hydroxyalkyl having from 1 to 4 carbon atoms; and

IV 

wherein R has the same meaning as set forth under structure II; with 2 to 5 moles of methanol per cyclic phosphite equivalent at a temperature of from 50° to 130° C. in the presence of an acid catalyst selected from the group consisting of sulfuric acid, alkylsulfonic acids and arylsulfonic acids, said catalyst being present in an amount of from 0.1 to 10 percent per mole of said cyclic phosphite.

3,927,147

HALOALKOXY DERIVATIVES OF THE CYCLOPHOSPHONITRILIC CHLORIDE-HEXAMETHYLPHOSPHORAMIDE ADDUCT

Robert M. Murch, Ashton, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 25, 1974, Ser. No. 436,778

Int. Cl.² C07F *9/141, 9/50*

U.S. Cl. 260—927 N **1 Claim**

1. An additive for enhancing the fire retardance characteristics of general purpose polyester resins comprising an alkoxy derivative formed by the reaction of an alcohol selected from the group consisting of β-chloroethanol, 3,3,3-trichloroethanol, 2,3-dibromopropanol and 1,3-dichloro-2-propanol with the adduct of $(PNCl_2)_3$ and $(Me_2N)_3PO$.

3,927,148

O,S'-DIALKYL-S-HYDROCARBYLTHIOALKYL DITHIOPHOSPHATES

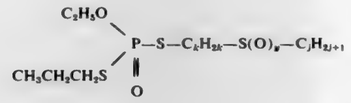
Alexis A. Oswald, Mountainside, and Paul L. Valint, Jr., Woodbridge, both of N.J., assignors to Exxon Research & Engineering Company, Linden, N.J.

Division of Ser. No. 173,267, Aug. 19, 1971, abandoned, which is a continuation of Ser. No. 821,117, May 1, 1969, abandoned. This application July 9, 1973, Ser. No. 377,874

Int. Cl.² C07F *9/165;* **A01N** *9/36*

U.S. Cl. 260—948 **10 Claims**

1. A compound of the general formula:



wherein *k* and *j* are from 1 to 4, and *y* is 0 to 2.

3,927,149

O-(METHYL OR ETHYL)-O(S) LOWER ALKYL-O-(4-PHENOXYPHENYL)PHOSPHATES

Odd Kristiansen, Mohlin, Switzerland, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

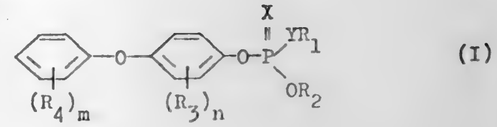
Filed May 6, 1974, Ser. No. 466,923

Claims priority, application Switzerland, May 11, 1973, 6721/73

Int. Cl.² C07F *9/165;* **A01N** *9/36*

U.S. Cl. 260—951 **15 Claims**

1. A compound of the formula



(I)

wherein R_1 represents alkyl with 1 to 7 carbon atoms, R_2 represents methyl or ethyl, R_3 and R_4 each represents hydrogen, nitro or halogen, $m = 1$ to 5 and $n = 1$ to 4, and X and Y each represents oxygen or sulphur.

3,927,150

BICYCLIC PHOSPHORUS COMPOUNDS

Kurt Schwarzenbach, Aesch, and Siegfried Rosenberger, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

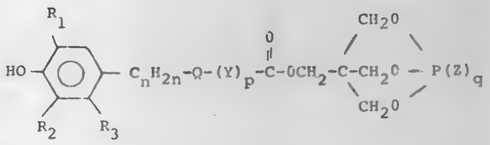
Filed Sept. 21, 1973, Ser. No. 399,787

Claims priority, application Switzerland, Sept. 26, 1972, 14119/72

Int. Cl.² C07F *9/15;* **C08K** *5/53*

U.S. Cl. 260—937 **12 Claims**

1. A compound of the formula



wherein

R_1 denotes alkyl of 1 to 5 carbon atoms,

R_2 denotes hydrogen or alkyl of 1 to 5 carbon atoms,

R_3 denotes hydrogen or methyl,

Q denotes —O—, —NH—, —NHCO—, —OCO— or —NHCONH—,

Y denotes $—CH_2—$ or $—CH_2CH_2SCH_2—$,

Z denotes oxygen or sulfur,

n denotes 0 to 4,

p denotes 0 or 1, and

q denotes 0 or 1.

3,927,151

PROCESS FOR THE PREPARATION OF PHOSPHORUS-ONTAINING COMPOUNDS

Roshdy Ismail, Neunkirchen; Arnold Lenz, Cologne-Stammheim, and Erich Termin, Niederkassel, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Cologne, Germany

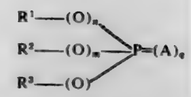
Continuation of Ser. No. 7,990, Feb. 2, 1970, abandoned. This application Feb. 1, 1973, Ser. No. 328,799

Claims priority, application Germany, Feb. 1, 1969, 1905095

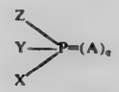
Int. Cl.² C07F *9/08, 9/16, 9/40*

U.S. Cl. 260—975 **20 Claims**

1. Process for the preparation of phosphorus-containing compounds of the general formula



in which A is oxygen or sulfur; q, m and n are 0 or 1; R^1, R^2 and R^3, which may be the same or different, are straight-chained or branched chain alkyl, cycloalkyl or aryl wherein R^1 may be substituted with one or more halogen atoms, which process comprises reacting a phosphorus compound of the general formula



in which A and q have the same meanings as above, Z and Y can be chlorine or bromine or Z and Y can be R^1, or R^2 as defined above or R^1O— or R^2O—, respectively, where R^1 and R^2 are defined as above and X can be chlorine or bromine, with a compound of the general formula

D — OH

in which D is R^1, R^2 or R^3as defined above, wherein the temperature at the commencement of the reaction is between 0°C and the boiling points of the reactants and where the temperature is increased during the reaction up to the boiling point of the reaction product formed and wherein the reaction pressure is simultaneously lowered to 200–10 mm.Hg. in the presence of an organo oxy compoud catalyst which catalyst is either

a. a compound having the formula $Me(OR)_x$ wherein Me is a metal of Groups II or V of the Periodic Table having an atomic number between 12 and 83 or zirconium, silicon, germanium or hafnium, R is alkyl or aminoalkyl having up to 18 carbon atoms, a cycloaliphatic group or aryl having up to 7 carbon atoms, x is the valence of Me, or
b. a compound selected from the group consisting of titanium acetylacetonate, vanadium-III acetylacetonate, zirconium acetylacetonate, vanadium oxy diacetyl acetonate, vanadium triacetyl acetonate, vanadium-IV-acetylacetonate, arsenic acetylacetonate, vanadylisopropylate, vanadyl n-butylate, vanadyl propylate, magnesium methyl glycolate, calcium methyl glycolate, zirconium oleate and manganese acetylacetonate

the catalyst concentration being from 0.001 to 2percent by weight based on the weight of the phosphorus reactant used.

3,927,152

METHOD AND APPARATUS FOR BUBBLE SHEARING

Gilbert M. Kyrias, Littleton, Colo., assignor to FMC Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 123,693, March 12, 1971, abandoned. This application Feb. 11, 1974, Ser. No. 441,573

Int. Cl.² B01F *3/04*

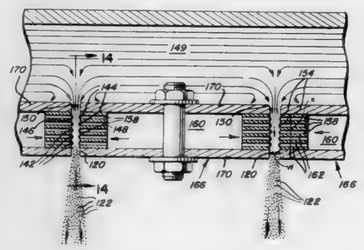
U.S. Cl. 261—122 **127 Claims**

1. Bubble shearing apparatus for diffusing fine gas bubbles into a body of liquid which comprises:

a gas transmitting body having a plurality of gas transmitting passages extending therethrough, each of said passages terminating in a capillary opening at a gas diffusing surface of said body, substantially all said capillary openings having a diameter of no more than about 100 microns;

means for providing a flow of gas through said gas transmitting passages and out said plurality of capillary openings to form nascent gas bubbles;

a slot-defining member spaced from said gas diffusing surface to form with said surface a shearing liquid transmitting slot having an inlet end, and a discharge end out of which shearing liquid may be discharged into said body of liquid, the shape, dimensions and spacing of said gas transmitting body and said slot-defining member being adapted, when water at 20°C. flowing through said slot with a mean entrance velocity of 10 feet per second is employed as the shearing liquid and no gas is flowing through said gas transmitting passages, to establish laminar flow in said water that is substantially parallel to the contour of said gas diffusing surface, including a partially developed laminar boundary layer immediately adjacent said gas diffusing surface with a free stream above said layer over at least a substantial portion of said capillary openings, the water over any remaining portion of said



capillary openings being substantially free of any type of flow other than fully developed substantially parallel laminar flow; and

means for providing a flow of liquid through said slot at a velocity to produce in water substantially parallel laminar flow as described above, to shear said nascent gas bubbles from said capillary openings as the liquid in said flow that is in contact with said gas diffusing surface moves past said openings, the flow of liquid through said slot carrying said sheared gas bubbles out of said slot at its discharge end and into said body of liquid.

3,927,153

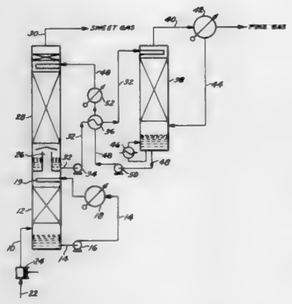
PROCESS FOR DIRECT COOLING OF CORROSIVE INDUSTRIAL CASES

Mehmet Orhan Tarhan, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Aug. 14, 1973, Ser. No. 388,504

Int. Cl.² B01F *3/04*

U.S. Cl. 261—128 **3 Claims**



1. A method of cooling, in a cooling unit, a hot industrial gas having an acid gas component and an initial temperature of not less than about 100° C comprising:

a. providing a liquid coolant chemically inert to said acid gas component,
b. passing said gas at said initial temperature and at a controlled flow rate upwardly through said cooling unit,
c. introducing said coolant at a first temperature of below about 50° C and at a controlled flow rate into said cooling unit adjacent the upper end thereof,

d. passing said coolant downwardly through said cooling unit in a manner to cause direct contact between said coolant and said gas,
e. adjusting the controlled flow rate of said gas and of said coolant in a manner to cool said gas in said chamber from said initial temperature to a final temperature of about 20° to 50° C and to heat said coolant liquid from said first temperature to a second temperature not lower than about 90° C so that absorption of corrosive amounts of the said acid gas component by the liquid coolant is inhibited,
f. cooling said heated coolant from said second temperature to said first temperature, and
g. recycling said coolant to said upper end of said cooling unit of step (c).

3,927,154

PROCESS FOR PREPARING SINTERED URANIUM DIOXIDE NUCLEAR FUEL

Ralph E. Carter, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 85,727, Oct. 30, 1970, abandoned, which is a continuation-in-part of Ser. No. 749,994, Aug. 5, 1968, abandoned. This application Feb. 26, 1973, Ser. No. 336,022

Int. Cl.² G21C *21/00*

U.S. Cl. 264—.5 **7 Claims**

1. A sintering control process wherein the sintering atmosphere contains substantially contantly a predetermined monitored oxygen partial pressure which maintains a body consisting essentially of uranium dioxide at a preselected oxygen to uranium ratio during sintering of such body in the production of a urnanium dioxide nuclear fuel body having said preselected oxygen to uranium ratio comprising the steps of providing uranium dioxide particles having an oxygen to uranium atomic ratio of 1.7 to 2.25 and a surface area ranging from about 2 to 12 square meters per gram, pressing said uranium dioxide particles to form a green body, heating said green body to a sintering temperature ranging from about 1000°C to 1400°C in a chemically buffered sintering gas atmosphere consisting essentially of a gas mixture of at least two gases, which are maintained in a ratio which in equilibrium at said sintering temperature provides said predetermined monitored oxygen partial pressure to maintain the uranium dioxide at said preselected oxygen to uranium ratio during sintering, and sintering said body at said temperature, said oxygen partial pressure being solely predetermined by said preselected oxygen to uranium ratio and said sintering temperature, said preselected oxygen to uranium ratio being a minimum of 2.005, and said sintering being carried out to produce a sintered body of uranium dioxide having a density of at least about 92 percent of theoretical.

3,927,155

METHOD FOR PRODUCING PARTICULATE MATERIAL AND CERAMIC BODIES THEREFROM

Raymond Edward Jaeger, Basking Ridge, and Thomas John Miller, Greenbrook, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 180,504, Sept. 14, 1971, abandoned. This application Dec. 17, 1973, Ser. No. 425,183

Int. Cl.² B01J *2/06*

U.S. Cl. 264—6 **4 Claims**

1. The method of forming a metal oxide ceramic body avoiding any intermediate hydroxide state, comprising

a. preparing a metal salt solution, consisting of a first liquid and a metal salt which can be transformed to a metal oxide by heating,
b. forming droplets of the said solution,
c. introducing the said droplets into a body of a drying liquid, which drying liquid is miscible with the said first liquid, but in which drying liquid the metal salt is less than one percent soluble, the relative proportions of metal salt, first liquid and drying liquid being such that a substantial quantity of the metal salt is insoluble in the resulting solution of first and drying liquids, and the metal salt being one which upon interdiffusion of said first and drying liquids crystallizes in the form of metal salt particles avoiding any intermediate hydroxide state,
d. recovering the crystallized metal salt particles,
e. heating the recovered crystallized metal salt particles to convert them to metal oxide particles,
f. pressing said metal oxide particles into a compact unitary body, and
g. firing said compact unitary body at a sintering temperature to convert said body into a metal oxide ceramic body.

3,927,156

PRODUCTION OF INK-FEEDING AND WRITING CORE FOR WRITING INSTRUMENT

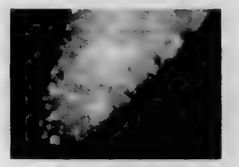
Shinsuke Yoshikawa; Hiroyuki Endo, and Shuji Terasaki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonba, Japan

Continuation-in-part of Ser. No. 75,327, Sept. 25, 1970, abandoned. This application Feb. 15, 1973, Ser. No. 332,757

Claims priority, application Japan, Sept. 30, 1969, 44-77385; Oct. 8, 1969, 44-79954; Oct. 8, 1969, 44-79955; May 22, 1970, 45-43262

Int. Cl.² B29C *1/14*

U.S. Cl. 264—15 **2 Claims**



1. A method for producing a porous ink-feeding writing instrument core from polyvinylidene fluoride spherical particles having an inherent viscosity of 1.0 to 4.0 when measured in 0.4g/100 cc solution of N,N'-dimethylformamide, a bulk density of 0.5–1.0 g/ml and a size range of 10–300 microns, comprising:

a. placing said particles in a metal mold having the shape of a pen core;
b. heating said particles in a pressure free state to a temperature between the melting point and 350°C, wherein said particles, due to their inherent viscosity, retain their general shape with interstices therebetween;
c. cooling said molten particles to solidify same into the shape of said pen core;
d. removing said pen core from said mold;
e. placing the pen core in a furnace;
f. heating said pen core in the furnace at a temperature between the melting point and 70°C for more than 3 hours; and
g. cooling said pen core to produce therein a porosity of 30–50%.

3,927,157

HIGH TEMPERATURE RESISTANT PRODUCTS AND METHODS FOR MAKING THE SAME

Paul F. Vasterling, Westminster, Calif., assignor to HITCO, Irvine, Calif.

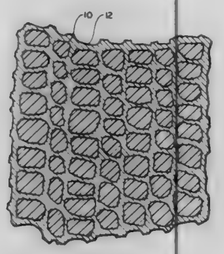
Continuation-in-part of Ser. No. 851,946, Aug. 21, 1969, abandoned. This application July 26, 1971, Ser. No. 165,971

Int. Cl. C01b *31/07*

U.S. Cl. 264—29 **4 Claims**

1. A method for producing carbon fibers suitable for molding compositions comprising leaching *Larix occidentalis* fibers to remove soluble carbohydrates and form small porous cellular fibrous structures of substantially non-uniform size and

shape, the fibrous structures being between about 1/8 and 1 inch and between about 0.02 inch and 0.25 inch in diameter, initially carbonizing the fibers at temperatures reaching between about 1800° and 2400° F. and thereafter stabilizing the



leached carbonized fibers at temperatures between about 3800° and 5500° F. in a non-oxidizing atmosphere while retaining the original shapes of the porous cellular fibrous structures.

3,927,158

METHOD OF RESEALING PIPE JOINTS

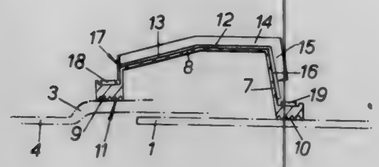
Robert Croft, Bradford-on-Avon, and Raymond Lippiatt, Trowbridge, both of England, assignors to Avon Rubber Company Limited, Melksham, England

Filed Mar. 19, 1973, Ser. No. 342,333

Claims priority, application United Kingdom, Mar. 20, 1972, 12982/72

Int. Cl.² B29F *1/06*

U.S. Cl. 264—36 **8 Claims**



1. In a method of encapsulating a joint between hollow members for conducting a fluid under pressure, wherein a mould is fitted externally around the joint to define a mould cavity of greater transverse section than any part of the joint and a fluent encapsulant is injected into the mould, the improvement consisting of sealing the mould in gas-tight fashion to the hollow members at each axial side of the joint, applying a pressure within the mould before the completion of injection of encapsulant which is at least as great as the pressure within the hollow members, at least maintaining such a pressure until hardening of the encapsulant, the pressure within the mould being controlledly applied and maintained by gas under pressure supplied from outside the mould before, during and after injection of encapsulant and until hardening of the encapsulant, and removing the mould to leave a sealed joint surrounded externally by hardened encapsulant.

3,927,159

METHOD OF FORMING A DIMENSIONALLY ACCURATE FOAMED POLYETHYLENE RESIN PRODUCTS

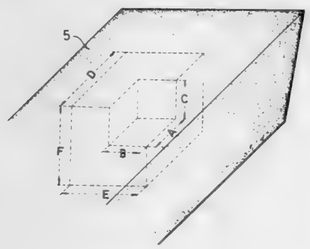
Masami Tomikawa; Hideo Ohkawa, and Akiji Tsunoda, all of Chiba, Japan, assignors to Idemitsu Kosan Company Limited, Japan

Filed Oct. 29, 1973, Ser. No. 410,335

Claims priority, application Japan, Nov. 9, 1972, 47-111640

Int. Cl.² B29D *27/00*

U.S. Cl. 264—45.3 **6 Claims**



1. Method of preparing a foamed polyethylene resin product which accurately conforms to the dimensions of a mold cavity, which comprises the steps of:

a. mixing together 100 weight parts of polyethylene resin, from 30 to 70 weight parts of an inorganic calcium compound selected from the group consisting of calcium sulfite, calcium sulfate and calcium carbonate, from 1.5 to 6.0 weight parts of a foaming agent and from 0.15 to 0.5 weight parts of a cross-linking agent,

b. charging the mixture resulting from step (a) to a closed mold with a predetermined shape;

c. foaming said mixture in the mold under a pressure at an elevated temperature; and

c. subsequently opening the mold instantaneously.

3,927,160

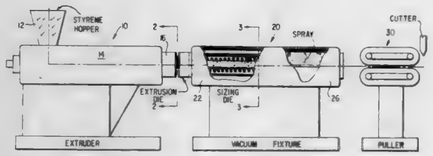
FORMAL PROFILE EXTRUSION PROCESS

Ronald D. Medley, Big Spring, Tex., assignor to Cosden Oil & Chemical Company, Big Spring, Tex.

Filed July 17, 1973, Ser. No. 380,009

Int. Cl.² B29D *27/00*; **B29F** *3/06*

U.S. Cl. 264—45.5 **5 Claims**



1. A process for the manufacture of profiled products having a specific gravity of from about 0.3 to 0.6 by extruding in a substantially non-expanded state an expandable styrene polymer composition through a die orifice having the desired profile and subsequently passing the extruded material through a sizing member wherein said material expands to the desired profile and cross-section to produce an article having a non-foamed outer layer of stryene polymer and a foamed interior cross-section, said styrene polymer composition consists essentially of a styrene polymer and a blowing agent consisting essentially of about 180 grams of sodium bicarbonate and from about 50 to 100 grams of citric acid per 100 pounds of styrene polymer.

3,927,161

PROCESS FOR MANUFACTURING FOAM PADDED SKINNED ARM RESTS AND CRASH PADS

Richard E. Powell, Milford, and Robert W. Starck, Sears, both of Mich., assignors to Sheller-Globe Corporation, Toledo, Ohio

Filed Nov. 12, 1973, Ser. No. 415,213

Int. Cl.² B29D *27/04, 7/00, 9/00*

U.S. Cl. 264—46.6 **3 Claims**

1. A process of manufacturing foam padded, skinned flexible products suitable for use on automotive vehicles and the like,

comprising the steps of,

providing a vinyl plastic resin in the form of fine particles operative to provide a finished product with good appearance and flexibility,

said vinyl plastic resin particles being formed from a formulation comprised of (a) a polyvinyl chloride resin, at least one liquid plasticizer, a stabilizer, and a coloring material, and (b) a polyvinyl chloride drying resin, and said particles being prepared by the process of introducing a substantial portion of said part (a) into a mix and heating same, adding the balance of said part (a) to said mix under high agitation and heat conditions, then cooling said mix and adding a polyvinyl chloride drying resin under agitation conditions,

placing the vinyl plastic particles in a fluidized bed apparatus,

fluidizing the bed of vinyl plastic particles by passing a gas upwardly therethrough,

preheating and masking a mold shaped to a desired form of a skin which is to be formed therein,

immersing and rotating the masked mold in the bed to form the vinyl plastic skin in the mold, removing the mold and subjecting same to a post heating operation to cure the skin,

cooling the mold,

stripping the skin from the mold,

filling the skin in a second molding operation with a urethane foam forming material,

foaming said material to provide a product which is a urethane foam formed adherently within said vinyl plastic skin, and wherein, said preheating is to a temperature of about 450° to about 650° F.

3,927,162

METHOD OF MOLDING A POLYURETHANE FOAM INVOLVING USE OF A FAN-LIKE SPRAY NOZZLE

Robert J. Stalter, Sr., Bowling Green, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 20, 1973, Ser. No. 426,762

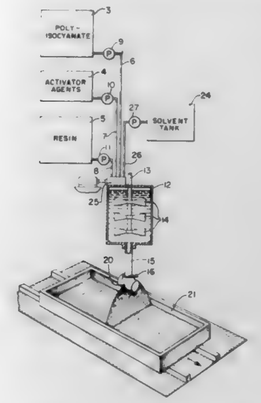
Int. Cl. B29d *27/04*

U.S. Cl. 264—51 **3 Claims**

1. A method of producing polyurethane foam comprising the steps of

1. forming a liquid foamable polyurethane reaction mixture comprising an organic polyisocyanate, a reactive hydrogen containing polymeric material having a molecular weight of about 550 to 6500 and blowing agent under a pressure of at least 0.5 to 200 pounds per square inch above atmospheric pressure; and

2. spraying the foamable polyurethane reaction mixture in a fan-like planular pattern of desired width across a mold



cavity while moving the mold and pouring head relative to each other to cover the surface of the mold cavity.

3,927,163

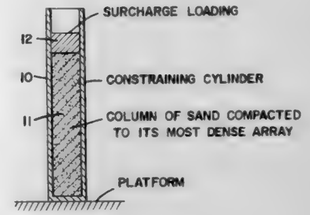
ALTERING THE PROPERTIES OF CONCRETE BY ALTERING THE QUALITY OR GEOMETRY OF THE INTERGRANULAR CONTACT OF FILLER MATERIALS

Lester H. Gabriel, Sacramento, and Wilfred Ernest Willis, San Francisco, both of Calif., assignors to Gabriel-Willis Associates, San Francisco, Calif.

Continuation-in-part of Ser. No. 792,370, Jan. 21, 1969, abandoned. This application Dec. 19, 1969, Ser. No. 886,556

Int. Cl.² B28B *1/08, 3/00*

U.S. Cl. 264—71 **34 Claims**



1. A method for preparing concrete comprising

dry mixing graded dry aggregate with dry cement composition in a preparation such that (1) the individual particles of the cement composition are uniformly smaller than the individual particles of the aggregate and are smaller than the individual void spaces between the adjacent aggregate particles of the cement free dry compacted aggregate, and (2) the bulk volume of dry compacted cement composition in the finished concrete is approximately equal to the bulk volume of total void space in the dry compacted cement-free aggregate,

filling the mold with the resultant dry mixture,

compacting the dry mixture in the mold to reduce substantially the volume of void space and to force the aggregate particles into direct contact with each other and the cement composition particles into the spaces between the aggregate particles,

providing a positive escape path for the air present in the compacted dry mixture,

adding water and distributing it with the aid of the inherent capillary action, of the mixture while preventing the water from blocking the escape path as long as there is air to escape by it, so that the water sweeps the air from the

remaining voids and ejects that air by means of the positive escape path into the atmosphere, the amount of water added being determined by the inherent capillary action which ceases when the initially remaining voids have had their air replaced with the water, and

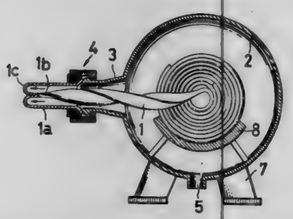
curing the resultant wet compact mixture in the mold until it has gained sufficient strength for safe removal, said curing resulting in preloading of the points of contact between the aggregate particles by virtue of shrinkage of the hydrating cement.

3,927,164

METHOD FOR TURNING A FLEXIBLE TUBE INSIDE OUT

Seiki Shimabukuro, c/o Ashimori Kogyo Kabushiki Kaisha, No. 15, 4-chome, Yokobori, Higashiku, Osaka, Osaka, Japan

Filed July 25, 1973, Ser. No. 382,366
Claims priority, application Japan, July 25, 1972, 47-74341
Int. Cl.² B29C *17/00, 17/02*
U.S. Cl. 264—95 **9 Claims**



1. A method of manufacturing a flexible tube provided with an inner lining having a uniform thickness substantially free of imperfections which comprises applying a coating to the external surface of the flexible tube, placing the flexible tube which has been wound into a coil and which has one closed terminal end thereof into a confined chamber containing an exhaust nozzle, drawing out said other terminal end from the core of the coiled flexible tube without permitting any rotation of the coil, thereby inherently producing a twist in the flexible tube, turning the end portion of said other terminal end of the flexible tube inside out and fixing said other terminal end portion having been turned inside out to said exhaust nozzle, introducing a pressurizing fluid into said confined chamber, thereby inflating and evaginating the flexible tube to an almost circular cross-sectional shape as it is propelled from the chamber, while at the same time compressing that portion of the flexible tube still remaining unevaginated said evaginated portion and said unevaginated portion being separated by a turning point which continually shift from the fixed terminal end to its closed terminal end over the entire length of the flexible tube, wherein the drawing of the flexible tube through the exhaust nozzle in a twisted state reduces the size of the flexible tube which in turn reduces the frictional resistance of the flexible tube as it passes through the inside of the evaginated tube and as it is evaginated through the exhaust nozzle.

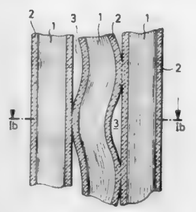
3,927,165

NON-CORROSIVE REGULAR PACKING MEMBER AND A METHOD OF MAKING SAME

Jan Grochol, Winterthur, and Werner Meier, Elgg, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 16, 1974, Ser. No. 470,446
Claims priority, application Switzerland, May 23, 1973, 7304/73
Int. Cl.² 264 *134;* **B29H** *9/02;* **B32B** *17/02*
U.S. Cl. 264—129 **3 Claims**

1. A method of making a regular packing member for material exchange columns and heat exchangers, the said regular packing member having walls defining flow channels therein, each said wall including a non-self-supporting base material of glass fibers, comprising the steps of wetting a flat structure of said glass fibers with a glass-forming ionotropic sol consisting of charged colloidal particles and containing at least one glass



forming oxide selected from the compounds of silicon, aluminum, zirconium, and titanium which enters into a chemical compound with the glass fibers of the fabric layer, thereafter shaping and drying the wetted structure at a temperature of 300°C or less to form an irreversible stiffened packing member structure.

3,927,166

METHOD FOR PELLETIZING COMPOSITIONS COMPRISING A NON-CRYSTALLINE OLEFINIC POLYMER OR COPOLYMER, AND A SURFACTANT

Sadamichi Tomoda, Kanagawa, and Nobuo Nagao, Yokohama, both of Japan, assignors to Chiba Fine Chemical Co. Ltd., Ichihara, Japan

Filed Apr. 3, 1970, Ser. No. 25,563
Claims priority, application Japan, Apr. 11, 1969, 44-28121
Int. Cl.² B01J *2/00*
U.S. Cl. 264—144 **7 Claims**

1. An improved method for producing pellets of a material selected from the group consisting of non-crystalline olefinic polymers and non-crystalline olefinic copolymers and mixtures thereof, said material being a by-product of the production of crystalline olefinic polymers and having an average molecular weight of 10,000 to 40,000 which consists essentially in mixing said material with a surfactant selected from the group consisting of anionic, cationic, nonionic or ampholytic surfactants in an amount of 1 to 30% by weight based upon the total weight of the resultant mixture, melt-extruding the resulting mixture and cooling, solidifying and pelletizing the resulting melt-extrudate, the temperature of the melt at the exit of the melt-extruding means being within the range of 90° to 220°C.

3,927,167

PRODUCTION OF MIXED SHRINKAGE POLYESTER YARN

Cecil E. Reese, Kinston, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 26, 1972, Ser. No. 292,300
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² D01D *5/12*
U.S. Cl. 264—210 F **4 Claims**

1. In the production of continuous-filament textile yarns, wherein polyester filaments are melt-spun from spinneret orifices, quenched, combined into a yarn, drawn to at least the natural draw ratio and heat-set, the improvement for preparing mixed-shrinkage, heat-bulkable yarn, wherein the improved process comprises forming filaments having a relative viscosity of 14 to 19 by melt-spinning a polyester, wherein 95 to 100 mole percent of the repeating structural units are ethylene terephthalate and 5 to 0 mole percent of the structural units are ethylene 5-(alkali metal sulfo)-isophthalate, simultaneously forming filaments having a relative viscosity between 27 and 40 by melt-spinning under the same conditions a different type of polyester of ethylene terephthalate which includes other ester units to retard crystallization of the polyester, from 85 to 95 mole percent of the polyester structural units being ethylene terephthalate, quenching the 14 to 19 and 27 to 40 relative viscosity filaments under the same conditions and combining them into a yarn, then drawing the yarn about 4X and heat-setting the yarn at a temperature within the range of 130° to 160°C. to produce 14 to 19 relative viscosity filaments having a density of at least 1.3800, and 27 to 40 relative viscosity filaments having a density of less than 1,3840, a boil-off shrinkage greater than 7.5 percent and a break elongation within 15 percentage units of the 14 to 19 relative viscosity filaments.

3,927,168

OSMIUM RECOVERY FROM GLYCOL SOLUTIONS

William F. Whitehead, Lansdowne, and Ralph L. Rogers, Norwood, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 18, 1972, Ser. No. 316,184
Int. Cl. C01g *55/00*
U.S. Cl. 423—22 **5 Claims**

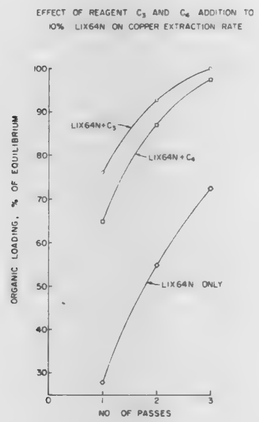
1. The method of separating osmium from an organic oxidation reaction mixture containing a polyhydric alcohol and obtained by the osmium catalyzed oxidation of an olefin which method comprises contacting the oxidation reaction mixture with an ozone containing gas which contains between about 1 and about 12 per cent by weight of ozone said ozone containing gas being a mixture of ozone and oxygen or a mixture of ozone and air and distilling the oxidation reaction mixture to recover osmium present in that mixture.

3,927,169

ION EXCHANGE PROCESS FOR THE RECOVERY OF COPPER

Mayer B. Goren, Denver, and Enzo L. Coltrinari, Arvada, both of Colo., assignors to Hazen Research, Inc., Golden, Colo.

Filed Mar. 11, 1974, Ser. No. 450,058
Int. Cl.² C01G *3/00*
U.S. Cl. 423—24 **17 Claims**



17. A process for recovering copper values from an aqueous medium comprising contacting the aqueous medium with a water-immiscible organic solvent having dissolved therein an extractant comprising:

a substituted hydroxy benzophenoxime having a solubility of at least 2% by weight in the organic solvent and as a copper extraction accelerating agent for the substituted hydroxy benzophenoxime a compound selected from the group consisting of thioglycolic acids and oxidation products of thioglycolic acids.

3,927,170

HYDROMETALLURGICAL RECOVERY OF COPPER NICKEL OR ZINC FROM SULPHIDE ORES BY OXIDATION IN AMMONIACAL CHLORIDE OR NITRATE SOLUTIONS

Percy Dixon, Glen Osmond, and David C. Madigan, Blackwood, both of Australia, assignors to Charles Harold Warman, New So. Wales, Australia

Filed Dec. 17, 1973, Ser. No. 425,062
Claims priority, application Australia, Dec. 18, 1972, 1663/72; Apr. 10, 1973, 2954/73
Int. Cl.² C01G *3/14, 9/00, 53/12;* **C01B** *17/02*
U.S. Cl. 423—33 **2 Claims**

1. A process for recovering from a sulfide ore or concentrate a metal selected from the group consisting of copper, nickel and zinc consisting essentially of passing oxygen through a suspension of the sulfide contained in aqueous ammonium chloride or ammonium nitrate of at least 1.5 molar concentration at or near atmospheric pressure and at or near ordinary atmospheric temperatures, the suspension having a pH at least 9.5.

3,927,171

ZEOLITE PRODUCTION

Louis D. Rollmann, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,566
Int. Cl.² C01B *33/28*
U.S. Cl. 423—118 **14 Claims**

1. The process for manufacture of a synthetic crystalline aluminosilicate molecular sieve zeolite which comprises contacting montmorillonite with an amount of water between about 9 and about 150 percent of the weight of montmorillonite, injecting the moisture-loaded montmorillonite into a zone maintained at an initial temperature of at least about 300°C. but not in excess of about 1100°C. with subsequent immediate heating to a temperature in the approximate range of 800° to 1100°c. where said initial temperature is below 800°C., maintaining the montmorillonite at a temperature within said approximate range of 800° to 1100°C. for at least about 1 hour, aging the thus treated montmorillonite in an alkali metal hydroxide solution until crystals of said zeolite form and removing said crystals from the reaction mixture.

3,927,172

METHOD OF CONCENTRATING GALLIUM

Harry M. Stevens, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 20, 1973, Ser. No. 333,928
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C01G *15/00*
U.S. Cl. 423—129 **5 Claims**

1. A method of concentrating gallium from phosphorus furnace treater dust comprising:

A. contacting the treater dust with an aqueous slurry of an alkaline earth compound, the solution having a pH of greater than 11;

B. separating the alkaline liquid containing the gallium from the treater dust; and

C. recovering the gallium from the liquid.

3,927,173

TREATMENT OF ACID WASTE WATERS TO PRODUCE FERROMAGNETIC SLUDGES

Stephen F. Melzer, Fairfield, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Feb. 22, 1974, Ser. No. 445,315
Int. Cl.² C01G *1/00*
U.S. Cl. 423—142 **26 Claims**

1. A process of treating at ambient temperature acid waste water containing iron values, said waste water being chosen

from the class consisting of hydrochloric acid waste waters, hydrochloric-hydrofluoric acid waste waters, sulfuric acid waste waters, sulfuric-hydrofluoric acid waste waters, hydrochloric-sulfuric acid waste waters and hydrochloric-sulfuric-hydrofluoric acid waste waters to produce hydrated magnetite, said process comprising the steps of adding to said waste water a neutralizing agent to achieve and maintain a final pH of the waste water of at least about 8 such that precipitation of the iron values will be substantially complete, aerating said waste, stopping said aeration when about two-thirds of the total of said iron values are oxidized, stirring said waste water at least during said aeration step.

3,927,174

METHOD FOR PRODUCING AMMONIA-BASE PULPING LIQUOR FROM SPENT LIQUOR

George G. Copeland, Western Springs, Ill., assignor to Copeland Systems Inc., Oak Brook, Ill.

Division of Ser. No. 209,861, Dec. 20, 1971, Pat. No. 3,864,192. This application Mar. 12, 1974, Ser. No. 450,329
Int. Cl.² D21C *11/02*
U.S. Cl. 423—155 10 Claims

1. The process which comprises:
combining an ammonia-base bisulfite spent pulping liquor with magnesia thereby freeing ammonia and forming a dilute spent liquor containing magnesium-base bisulfite spent liquor;
concentrating said dilute spent liquor containing magnesium-base bisulfite spent liquor by directly contacting said spent liquor with hot exhaust gases from a fluidized bed reactor to form a concentrated spent liquor containing magnesium-base bisulfite spent liquor;
feeding the concentrated spent liquor containing magnesium-base bisulfite spent liquor into the fluidized bed reactor, in which the bed contains magnesia, and burning the said liquor therein; and
recovering the hot exhaust gases from the fluidized bed reactor and feeding them into direct contact with additional dilute spent liquor containing magnesium-base bisulfite spent liquor formed as described to concentrate the same.

3,927,175

PURIFICATION OF CARBONATE PROCESS SOLUTIONS

Norman R. Garofano, Geddes, and Eugene B. Port, Solvay, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 771,598, Oct. 29, 1968, abandoned. This application May 24, 1971, Ser. No. 146,443
Int. Cl.² C01D *7/26*; B01D *15/06*
U.S. Cl. 423—206 12 Claims

1. A process for the reduction of organic contaminants in a carbonate process solution which comprises passing said process solution through a bed of activated carbon until the adsorption efficiencies of said bed for the removal of said organic contaminants is reduced to at least 75% of the original adsorptive capacity of the activated carbon bed prior to regeneration, regenerating said bed by subjecting said bed to an aqueous wash cycle which comprises passing a plurality of aqueous wash liquors through said bed until at least 60% of said adsorbed organic contaminants have been desorbed, wherein each succeeding aqueous wash liquor has an organic contaminant level lower than the previous aqueous wash liquor and the first aqueous wash liquor has an organic contaminant level lower than the carbonate process solution, and said aqueous wash liquors are maintained at a temperature between 50° to 95°.

3,927,176

PROCESS FOR THE REMOVAL OF WATER FROM GAS STREAMS

Roy Glen Turnbo, Deer Park, and Donald A. Keyworth, Houston, both of Tex., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Sept. 19, 1973, Ser. No. 398,606
Int. Cl.² B01D *53/34*
U.S. Cl. 423—210 8 Claims

1. The process for the removal of carbon monoxide and water from a gas stream that contains carbon monoxide and less than 1 mole percent of water that comprises the steps of
a. contacting said gas stream with a liquid sorbent that is a solution of $CuAlCl_4$.toluene in toluene at a temperature between about −10°C. and the boiling point of toluene at a pressure between about 0.5 atmosphere and 30 atmospheres, said sorbent containing sufficient $CuAlCl_4$.toluene to react with all of the carbon monoxide and water in the gas stream, thereby forming a solution containing CO:$CuAlCl_4$, $CuAlCl_4$.AlOCl.toluene, and $CuAlCl_4$.toluene in toluene;
b. separating said solution from the gas stream;
c. heating said solution at a temperature between 40° and 180°C. at a pressure of 0.1 atmosphere to 30 atmospheres to separate carbon monoxide from a solution that contains $CuAlCl_4$.toluene and $CuAlCl_4$.AlOCl.toluene in toluene;
d. cooling the solution that contains $CuAlCl_4$.toluene and $CuAlCl_4$.AlOCl.toluene to precipitate the $CuAlCl_4$.AlOCl.toluene;
e. separating the precipitated $CuAlCl_4$.AlOCl.toluene from the solution that contains $CuAlCl_4$.toluene, and
f. recycling the solution that contains $CuAlCl_4$. toluene to Step a).

3,927,177

REMOVAL OF NITROGEN OXIDES FROM GASEOUS MIXTURES USING AQUEOUS ALKALINE MANGANATE OR PERMANGANATE SOLUTIONS

Taijiro Okabe; Akitsugu Okuwaki, both of Sendai, and Shigetoshi Nakabayashi, Shinminato, all of Japan, assignors to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha, Ote and Nippon Chemical Industrial Co., Ltd., Tokyo, both of, Japan

Filed Oct. 5, 1973, Ser. No. 403,974
Claims priority, application Japan, Oct. 6, 1972, 47-100512
Int. Cl.² C01B *21/00*
U.S. Cl. 423—235 4 Claims

1. A process for the removal of nitrogen oxides from a gaseous mixture containing such nitrogen oxides which comprises the steps of
1. contacting a gaseous mixture containing nitrogen oxide with an aqueous absorbent solution at a solution temperature of 0°C to 80°C, said aqueous absorbent solution consisting essentially of 0.1 to 20% by weight of a manganate or a permanganate of sodium or potassium, whereby the nitrogen oxides are absorbed into said aqueous absorbent solution and converted into a nitrate or nitrite and wherein the manganate or permanganate is converted into a manganese oxide,
2. separating the manganese oxide from the absorbent solution,
3. subjecting the manganese oxide to oxidation along with at least a stoichiometric amount of a nitrate by roasting in air at a temperature of 300° to 800°C to convert the manganese oxide into a manganate or permanganate, and
4. circulating the manganate or permanganate thus-regenerated to step 1.

3,927,178

SULFUR DIOXIDE REMOVAL FROM STACK GASES

John E. Jordan, Sheffield, Ala., and George M. Newcombe, Clifton, N.J., assignors to The United States of America as represented by the Tennessee Valley Authority and the Environmental Protection Agency, Washington, D.C.

Continuation of Ser. No. 313,251, Dec. 8, 1972, abandoned, which is a continuation of Ser. No. 243,636, April 13, 1972, now Defensive Publication No. T909,017. This application Nov. 8, 1974, Ser. No. 522,372
Int. Cl.² C01B *17/00*
U.S. Cl. 423—242 1 Claim

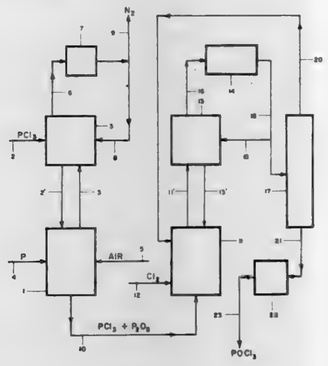
1. A closed loop process for removing SO_2 from waste gases comprising the steps of:
A. scrubbing said waste gases in a scrubber with a liquor comprosing a solution of ammonium sulfite, ammonium bisulfite, and ammonium sulfate;
b. transferring liquor that results from the scrubbing in step (a) supra to a stripper means;
c. adding to the liquor in said stripper ammonium bisulfate in sufficient quantity to cause removal of SO_2 from said liquor and formation of an ammonium sulfate slurry;
d. mixing said ammonium sulfate slurry formed in step (c) with gaseous ammonia evolved as described in step (h), infra, and a portion of the scrubber liquor, in an absorber means, so as to depress the solubility of ammonium sulfate in the resultant liquor and cause ammonium sulfate precipitate to form, said formation of said ammonium sulfate precipitate being effected without the addition of substantial amounts of external heat energy applied thereto for purposes of evaporating water therefrom;
e. cooling the resultant slurry to further depress the solubility of ammonium sulfate in the resultant liquor from step (d);
f. separating the cooled slurry into solid ammonium sulfate and liquid component;
g. recycling the liquid component to the scrubber;
h. converting the solid ammonium sulfate to ammonium bisulfate and gaseous ammonia;
i. recycling a portion of said ammonia to said absorber in step (d), and a portion to said scrubber.

3,927,179

PROCESS FOR MANUFACTURING PHOSPHORUS OXYCHLORIDE

George I. Klein, Larchmont, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation of Ser. No. 702,650, Feb. 2, 1968, abandoned. This application Nov. 9, 1970, Ser. No. 88,099
Int. Cl. C01b *25/10*
U.S. Cl. 423—300 8 Claims



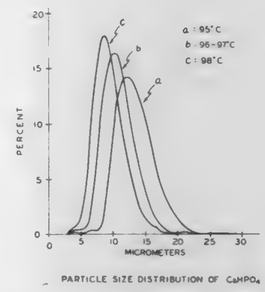
1. A continuous process for producing phosphorus oxychloride, comprising the steps of:
a. providing liquid phosphorus trichloride in a first reaction zone;
b. introducing phosphorus and air into said first reaction zone to form phosphorus pentoxide in the presence of said phosphorus trichloride; and
c. passing the phosphorus pentoxide and phosphorus trichloride mixture from the first reaction zone to a second reaction zone, and reacting the mixture with chlorine fed into said second reaction zone to form phosphorus oxychloride.

3,927,180

METHOD OF CONVERTING BRUSHITE TO MONETITE CRYSTALS WITH CONTROLLED VARIATION IN CRYSTAL HABIT

Charles F. Chenot, Towanda, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Continuation of Ser. No. 313,356, Dec. 8, 1972, abandoned. This application Nov. 29, 1974, Ser. No. 528,140
Filed Nov. 29, 1974, Ser. No. 528,140
Int. Cl.² C01B *25/32*; B01D *9/02*
U.S. Cl. 423—308 4 Claims



1. A method of converting brushite to monetite crystals of substantially a single crystal habit, said method including isothermal and iso-pH control and consisting of the steps of: forming a brushite slurry containing about 10% solids by weight and having a first pH adjusted to about 4.5; placing said slurry in a container having stirring provision; adjusting said slurry to a second pH of about 9; heating said slurry to a final temperature of substantially 85°C while adjusting and maintaining said slurry at a third pH of 5.5 ± 0.2 and maintaining said pH and said temperature for 2 to 3 minutes with continuous stirring; adjusting said slurry to a fourth pH of 3.0 ± 0.1; digesting said slurry for about 20 minutes with gentle stirring to form a precipitate of said substantially single crystal habit, said single crystal habit being rhombohedral (diamond) monetite crystal having a basal plane acute angle of approximately 83°.

3,927,181

PROCESS FOR PREPARING HOLLOW BALLS OF SILICON CARBIDE AND PRODUCT FORMED THEREBY

Itaru Niimi, Nagoya; Yasuhisa Kaneko, Toyota; Fumiyoshi Noda, Toyota, and Yoshihiro Tsuzuki, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed June 26, 1973, Ser. No. 373,876
Claims priority, application Japan, July 6, 1972, 47-067784
Int. Cl.² C01B *31/36*
U.S. Cl. 423—345 11 Claims

6. A process for preparing hollow balls of silicon carbide which comprises the step of covering hollow balls of carbon with particles of a material selected from the group consisting of silicon and a slurry comprising metallic silicon, an aqueous sodium alginate solution, and an acrylic acid polymer, and then heating the covered balls in a non-oxidizing atmosphere at a temperature between 1100°C and 1200°C for a time

sufficient to form silicon carbide balls from said silicon and carbon.

9. Hollow balls of silicon carbide obtained by covering hollow balls of carbon with a material cosisting essentially of silicon and then heating the covered bodies in a non-oxidizing atmosphere at a temperature between 1100°C and 1200°C for a time sufficient to form silicon carbide balls from said silicon and carbon.

11. Hollow balls of silicon carbide obtained by covering hollow balls of carbon with a slurry comprising metallic silicon, a solution of an acrylic acid polymer and an aqueous sodium alginate solution, and then heating the covered balls in a non-oxidizing atmosphere at a temperature between 1100°C and 1200°C for a time sufficient to form silicon carbide balls from said silicon and carbide.

3,927,182

PROCESS FOR MAKING NITRIC ACID BY THE AMMONIA OXIDATION-NITRIC OXIDE OXIDATION-WATER ABSORPTION METHOD

James Basil Powell, 1410 Ellison Lane, Lakeland, Fla. 33801

Continuation-in-part of Ser. No. 118,676, Feb. 25, 1971, abandoned. This application June 14, 1973, Ser. No. 370,158

Int. Cl.² C01B *21/38*

U.S. Cl. 423—392 **9 Claims**

1. In a process for making nitric acid in an oxidation-absorption system by the ammonia oxidation-nitric oxide oxidation-water absorption procedure, in which ammonia is oxidized with an oxygen-containing gas to form nitric oxide, the nitric oxide is further oxidized with an oxygen-containing gas to form NO_2, and the NO_2 is absorbed in water to form a solution of nitric acid, and in which nitrogen oxides are discharged from the oxidation-absorption system in a purge gas stream from said water absorption, the improvement comprising charging to the ammonia oxidation reaction zone ammonia and as recycle at least about 40 volume percent of the unabsorbed gas exiting from said water absorption, said unabsorbed gas having a major amount of nitrogen and a minor amount of oxygen and nitrogen oxides, and charging make-up oxygen to the oxidation system as a molecular oxygen-containing gas having a molecular oxygen content of more than about 30 percent by volume to provide a total amount of molecular oxygen in the oxidation system of up to about 20 volume percent in excess of the stoichiometric amount required for complete oxidation of the ammonia to nitrogen peroxide and form nitric acid, said chargings of ammonia, recycle unabsorbed gas and make-up, oxygen-containing gas being such to maintain the concentration of ammonia below the explosive limit, and purging from the oxidation-absorption system a minor portion of the unabsorbed gas from said water absorption containing a major amount of nitrogen and a minor amount of oxygen and nitrogen oxides, said purging being in an amount sufficient to prevent nitrogen build-up in the oxidation-absorption system.

3,927,183

METHOD FOR OXIDIZING NITROGEN OXIDES

Takashi Oushiba, Tokyo, Japan, assignor to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 185,513, Oct. 1, 1971, abandoned, which is a division of Ser. No. 819,514, April 23, 1969, Pat. No. 3,661,512. This application Apr. 6, 1973, Ser. No. 348,608

Claims priority, application Japan, July 4, 1968, 43-46213; May 6, 1968, 43-29819; Apr. 26, 1968, 43-27696

Int. Cl.² C01B *21/36, 21/40*

U.S. Cl. 423—393 **8 Claims**

1. A process for the production of nitric acid having a concentration of over 68% comprising passing a contact medium through a first zone by introducing the contact medium at the top of the first zone, bubbling nitrogen oxides and oxygen through said contact medium by introducing said nitrogen oxides and said oxygen at the bottom of the first zone, said nitrogen oxides being selected from the group consisting of nitrogen monoxide, dinitrogen trioxide and nitrogen peroxide, maintaining the first zone at a temperature between ambient temperature and about 60°C and at a pressure between ambient pressure and about 15 kg/cm², said contact medium comprising nitric acid, potassium nitrate and water, said nitric acid having a concentration less than the concentration of nitric acid produced in the process, said potassium nitrate being present in at least 10% by weight, said water being present in an amount sufficient to completely convert, together with the oxygen, the nitrogen oxides to nitric acid, withdrawing the contact medium from the first zone and feeding the contact medium now containing a more concentrated nitric acid to a second zone, heating the contact medium in the second zone to about 80°C to liberate NO_2 gas, transferring the contact medium to a third zone and vaporizing nitric acid to obtain said acid having a concentration of over 68%.

5. A method for the oxidation of nitrogen oxide comprising passing a contact medium through a first zone by introducing the contact medium at the top of the first zone, bubbling nitrogen oxides and oxygen through the contact medium by introducing the nitrogen oxides and oxygen at the bottom of the first zone, said nitrogen oxides being selected from the group consisting of nitrogen monoxide and dinitrogen trioxide, maintaining the first zone at a temperature between ambient temperature and about 60°C and at a pressure between ambient pressure and about 15 kg/cm² so that the contact medium absorbs the nitrogenoxides and oxygen, said contact medium comprising nitric acid and potassium nitrate, said potassium nitrate being present in at least 10 percent by weight, withdrawing the contact medium now enriched by oxidized nitrogen oxides from the first zone and feeding the now enriched medium to a second zone, and heating the enriched contact medium in the second zone to about 80°C to liberate the oxidized nitrogen oxides gas.

3,927,184

PROCESS FOR PRODUCING HYDROXY-ALUMINUM NITRATE POLYMER

Clive Hodgson, Forest Knolls, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 8, 1974, Ser. No. 458,632

Int. Cl.² C01B *21/40*

U.S. Cl. 423—394 **8 Claims**

1. A process for producing hydroxy-aluminum nitrate having an aluminum to hydroxyl ratio of from 1:1 to 1:2.6 by reacting aluminum nitrate and powdered aluminum metal, wherein the molar ratio of aluminum nitrate to aluminum varies from about 1:0.1 to 1:1.85, in an aqueous reaction medium of about 1 mol to 1000 mols water per mol of aluminum nitrate, at a temperature of 50° to 150°C.

3,927,185

PROCESS FOR PRODUCING CARBON DISULFIDE

Morton Meadow, Trenton, and Sidney Berkowitz, Highland Park, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Apr. 30, 1973, Ser. No. 355,991

Int. Cl.² C01B *33/06*

U.S. Cl. 423—443 **26 Claims**

1. Continuous process for producing carbon bisulfide by reaction of sulfur and hydrocarbon gas containing a multi-carbon hydrocarbon having at least 3 carbon atoms which comprises continuously feeding, into a reaction zone having solid walls, a stream of sulfur vapor having a temperature of at least 650°C and a stream of said gas, to mix therewith in said zone, the temperatures and rates of flow of said vapor and gas being such that the calculated mixing temperature thereof is in the range of about 585° to 700°C., and the flow conditions and mixing conditions of said gas and vapor streams being such that said gas becomes substantially completely mixed with said vapor before said gas comes into contact with a wall of said zone, and thereby effecting non-catalytic reaction between substantially all said multi-carbon hydrocarbon and sulfur prior to such contact, said reaction being effected at a pressure of at least 3.5 atmospheres.

3,927,186

METHOD FOR THE PREPARATION OF CARBON STRUCTURES

Clarence S. Vinton, and Charles H. Franklin, both of Ann Arbor, Mich., assignors to Chemotronics International, Inc., Ann Arbor, Mich.

Filed Feb. 28, 1973, Ser. No. 336,636

Int. Cl. C01b *31/07*

U.S. Cl. 423—447 **11 Claims**

3. The method of forming a vitreous carbon structure which comprises

a. infusing a reticulated flexible polyurethane structure formed of thin cross-section strands with a liquid thermo-setting furan resin or resin precursor so as to cause th strands to swell by infusion of the liquid furan resin or resin precursor completely through the strands;

b. removing substantially all of the non-infused resin or resin precursor from the surfaces of the strands;

c. polymerizing the resin or resin precursor in the structure to form a polymerized, thermoset and hardened structure wherein the infusing, removing and polymerizing of the resin or resin precursor produces a resulting weight up to about six times the weight of the structure alone; and

d. heating the polymerized hardened pretreated structure under neural or reducing gas or vacuum conditions in an oven which rapidly heats the structure to a temperature of at least about 1000°C so as to form the vitreous carbon structure, whereby crack free carbonization is achieved in less than about 5 hours at a rate of temperature change of the structure which causes cracking of pretreated strands with non-infused thermoset resin coated on the surfaces.

3,927,187

METHOD OF MAKING SHAPED CARBONACEOUS BODIES

Hartmut Luhleich, Duren; Hubertus Nickel, and Francesco Dias, both of Julich, all of Germany, assignors to Kernforschungsanlage JULICH GmbH, Julich, Germany

Filed June 29, 1972, Ser. No. 267,479

Claims priority, application Germany, June 2, 1971, 2133044

Int. Cl. C01b *31/04*

U.S. Cl. 423—448 **1 Claim**

1. A method of making a graphitic body, comprising the steps of:

a. coating particles with a particle size of 50 to 100 microns of petroleum coke, electrically produced graphite, natural graphite or carbon black with a binder selected from the group which consists of pitch, tar or synthetic resin in a liquid mixture consisting of methanol as a solvent for said binder and water, thereby producing a slurry of binder-coated particles;

b. drying the slurry of binder-coated particles and comminuting the dried slurry to produce a powdered mass of binder-coated particles;

c. shaping said powder mass of binder-coated particles in a mold;

d. treating the mass in said mold with methanol vapor;

e. thereafter drying the shaped mass of binder-coated particles; and

f. cokefying the dried shaped mass.

3,927,188

ZIRCONIUM COMPLEXES OF BASIC ALUMINUM BROMIDES AND METHODS OF MAKING SAME

John L. Jones, North Plainfield; Andrew M. Rubino, New Providence, both of N.J., and Charles B. Lindahl, Sand Springs, Okla., assignors to Armour Pharmaceutical Company, Chicago, Ill.

Filed July 20, 1971, Ser. No. 164,433

Int. Cl.² C01G *25/04;* **C01F** *7/00, 7/48*

U.S. Cl. 423—463 **7 Claims**

1. A method of preparing alcohol soluble solid complexes of 5/6 basic aluminum bromides comprising the steps of providing an aqueous solution of 5/6 basic aluminum bromide having the general empirical formula:

$$Al_2(OH)_{6-x}Br_x$$

in which x equals about 0.9 to 1.2; adding to said aqueous solution a substance selected from the group consisting of zirconyl hydroxychloride, zirconyl hydroxybromide, a combination of zirconyl hydroxychloride and zirconyl hydroxybromide, and a combination of any of the above zirconyl hydroxyhalides with zirconyl chloride and/or zirconyl bromide; said substance being added in an amount sufficient to yield an Al/Zr mole ratio of about 3:1 to 20:1; and drying the resulting mixture to a substantially friable solid.

3,927,189

METHOD FOR MAKING PEROXYDISULFURIC ACID AND SALTS THEREOF

Madhusudan D. Jayawant, Hockessin, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Apr. 12, 1974, Ser. No. 460,610

Int. Cl.² C01B *15/06, 15/08*

U.S. Cl. 423—513 **7 Claims**

1. A method for making peroxydisulfuric acid comprising the steps

a. forming a dispersion of sulfur trioxide and active oxygen precursors selected from the group consisting of hydrogen peroxide, peroxymonosulfuric acid and mixtures thereof in which the ratio by weight of the sulfur trioxide to the sum of the weight of the active oxygen precursors and any water present corresponds to from about $X - 0.015A - 0.0046B$ to about 1.5X, wherein X is defined by the relationship $(0.00264A - 0.03741B + 4.4434)$, wherein A is the % by weight hydrogen peroxide B is the % by weight peroxymonosulfuric acid, the basis of the above relationships being predicated upon the sum of the weight of the active oxygen precursors and any water which is present; and (b) maintaining the dispersion in the liquid phase at a temperature no higher than about 45°C until the active oxygen distribution of the final reactant mixture therefrom is less than about 67 mole % active oxygen precursors and more than about 33 mole % peroxydisulfuric acid.

3,927,190

METHOD FOR PRODUCING ANHYDROUS HYDROSULFITE

Yoshio Yoshikawa, Ushiku; Akitoshi Sugio; Tomotake Kato, both of Tokyo, and Heizo Okazaki, Osaka, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 429,685, Dec. 28, 1973, abandoned, which is a continuation of Ser. No. 201,319, Nov. 23, 1971, abandoned, which is a continuation-in-part of Ser. No. 637,062, May 9, 1967, abandoned. This application July 12, 1974, Ser. No. 487,573

Claims priority, application Japan, May 16, 1966, 41-30689; May 16, 1966, 41-30690; Nov. 17, 1966, 41-75237

Int. Cl.² C01B *17/66*

U.S. Cl. 423—515 **2 Claims**

1. A method of producing an anhydrous alkali metal hydrosulfite from an alkali metal formate, and alkali metal compound and sulfur dioxide, which comprises:

a. adding an aqueous solution of an alkali metal compound and a methanolic solution of sulfur dioxide to an alcohol-water solution or suspension of an alkali metal formate, said alcohol being selected from the group consisting of methanol and ethanol, said addition carried out at a temperature of at least about 75°C; and

b. thereafter maintaining the temperature of the reaction mixture up to about 80° to 90°C to foster the reaction, wherein the pressure of the reaction system is superatmospheric up to about 10 kilograms per square centimeter gauge.

3,927,191
PROCESS FOR RECOVERY OF SULPHUR FROM SULPHUR DIOXIDE

Jacques Olivier Archambault, and John Douglas McIrvine, both of Mont-Saint-Hilaire, Canada, assignors to Canadian Industries Limited, Montreal, Canada

Filed Jan. 21, 1971, Ser. No. 108,281
Claims priority, application Canada, Feb. 11, 1970, 074603
Int. Cl.² C01B *17/04*
U.S. Cl. 423—570 **4 Claims**

1. In a process for the reduction of sulphur dioxide with hydrocarbon gas in molar ratio of sulphur dioxide to hydrocarbon calculated as methane of 2:1 employing three reaction stages in the presence of catalyst, wherein during the first stage, at 800°C. to 1000°C., sulphur dioxide is reduced to hydrogen sulphide, carbonyl sulphide and carbon disulphide; in the second stage, at 350°C. to 450°C. and in the presence of a catalyst, sulphur dioxide reacts with the carbonyl sulphide and carbon disulphide to form elemental sulphur; and in the third stage, at 200°C. to 275°C. and in the presence of a catalyst, sulphur dioxide and hydrogen sulphide in 1:2 molar ratio react to form additional elemental sulphur, the improvement which comprises introducing the sulphur dioxide in two separate portions of which the first portion in amount sufficient to provide a mole ratio of sulphur dioxide to hydrocarbon calculated as methane in the range 1.0 to 1.2 is introduced in the first reaction stage, and the second portion in amount sufficient with addition of the first portion to provide a total mole ratio of sulphur dioxide to hydrocarbon calculated as methane of 2.0 is introduced in the second reaction stage.

3,927,192
CHEMICAL CYCLE FOR THERMOCHEMICAL PRODUCTION OF HYDROGEN FROM WATER

Carlos E. Bamberger, and Donald M. Richardson, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 29, 1975, Ser. No. 545,042
Int. Cl.² C01B *1/02*
U.S. Cl. 423—648 **4 Claims**

1. A substantially closed thermochemical process for decomposing water, comprising the steps of:

reacting chromic oxide with an alkali metal hydroxide selected from the group consisting of potassium hydroxide, rubidium hydroxide, and cesium hydroxide to produce alkali metal hypochromate, water and hydrogen as reaction products;

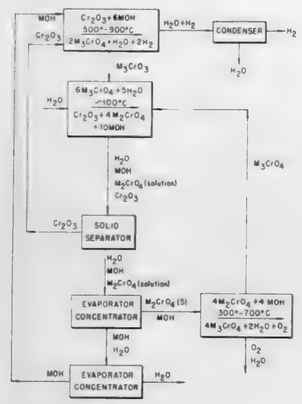
separating said hydrogen as a product;

reacting said alkali metal hypochromate with water to produce chromic oxide, alkali metal chromate and alkali metal hydroxide as reaction products;

reusing said chromic oxide and a portion of said alkali metal hydroxide products from said second mentioned step of reacting in said first mentioned step of reacting;

reacting said alkali metal chromate and the remaining portion of said alkali metal hydroxide from said second mentioned step of reacting to produce alkali metal hypochromate, water, and oxygen as reaction products;

separating said oxygen as a product; and



reusing said alkali metal hypochromate from said third mentioned step of reacting in said second mentioned step of reacting.

3,927,193
LOCALIZATION OF TUMORS BY RADIOLABELLED ANTIBODIES

Hans John Hansen, Allendale, and Frederick James Primus, Waldwick, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 18, 1973, Ser. No. 361,718
Int. Cl.² A61K *43/00;* **G01T** *1/161*
U.S. Cl. 424—1 **3 Claims**

1. A method for determining the location of a tumor which either produces or is associated with carcinoembryonic antigen which comprises injecting a subject parenterally with an antibody radiolabelled with a pharmacologically inert radioisotope having a half-life up to about 8 days and a gamma emission of 10 to 5000 Kev said antibody being specific to carcinoembryonic antigen and subsequently scanning the subject with a photoscanning device to determine the location of the resulting uptake of radiolabelled antibody by said tumor.

3,927,194
TABLET FORMULATION

Ehud Geller, King of Prussia, Pa., assignor to Ives Laboratories Inc., New York, N.Y.

Division of Ser. No. 312,469, Dec. 6, 1972, Pat. No. 3,883,647. This application Dec. 4, 1974, Ser. No. 529,423
Int. Cl.² A61J *3/10;* **A61K** *9/00*
U.S. Cl. 424—15 **9 Claims**



1. A chewable pharmaceutical tablet which is adequately imprinted with indicia or embossing and scored to form a groove which is ⅛ to ⅜ the depth of the total tablet thickness to facilitate separation into subdivisions containing substantially equal amounts of pharmaceutically active ingredient

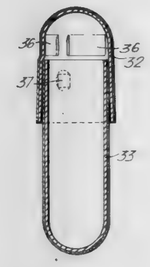
comprising a directly compressed formulation of:

A. Active ingredient	5 to 10 milligrams
B. Microcrystalline Cellulose	20 to 25 percent by weight
C. Dextrose and corn syrup solids granulation	30 to 55 percent by weight
D. Mannitol	20 to 30 percent by weight
E. Magnesium stearate	0.9 to 1.0 percent by weight
F. The remainder being pharmaceutically acceptable fillers, extenders, flavoring and the like.	

3,927,195
PRODUCTION OF CAPSULES

Edoardo Messora, Rome, Italy, assignor to Lilly Industries Limited, London, England

Filed Jan. 31, 1974, Ser. No. 438,490
Int. Cl.² A61K *9/48*
U.S. Cl. 424—21 **5 Claims**



1. An empty and reclosable two-piece capsule comprising, assembled together, unsealed, a body having a closed end wall and a side wall having a generally cylindrical open end portion, and a cap having a closed-end wall and a generally cylindrically side wall closely telescopically received in conforming gripping engagement over the open end of the body, said body and cap being free from conforming gripping engagement lands or circumferential seals or bands at the junction of the cap and body composed of two layers, the material constituting the inner of the two layers being gelatin and the outer of the two layers being a material which is only soluble at a pH greater than 3.5.

3,927,196
SOLUBLE CAPSULES

Marvin Hersh, Strafford, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 159,568, July 2, 1971, abandoned. This application Mar. 7, 1974, Ser. No. 449,142
Int. Cl.² A61J *3/07;* **A61K** *9/48*
U.S. Cl. 424—37 **6 Claims**

1. A unit dosage form comprising a two-piece, hard-walled, telescopically joined soluble gelatin capsule containing a powdered solid which comprises a conventional solid encapsulating lubricant composition consisting essentially of micropellets of finely divided particles of solid hydrophobic encapsulating lubricant selected from the group consisting of magnesium stearate, calcium stearate, stearic acid, talcum, and powdered vegetable stearine, a substantial proportion of the particles of said lubricant being enrobed in a hydrophilic friable sheath, said sheathing material being selected from the group consisting of mannitol, polyethylene glycol 4000, 6000, and 20,000, gelatin, methyl cellulose, carboxymethylcellulose, gum arabic, and polyvinyl alcohol; said enrobed encapsulating lubricant imparting a reduction in dissolution time to said dosage form when incorporated in said dosage form, as compared to said lubricant when not enrobed.

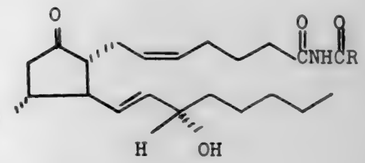
3,927,197
TERTIARY ALCOHOL STABILIZED E-SERIES PROSTAGLANDINS

Donald C. Monkhouse, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 19, 1974, Ser. No. 462,213
Int. Cl.² A61K *9/12, 31/19;* **C07C** *19/74, 103/37*
U.S. Cl. 424—45 **8 Claims**

1. A stabilized pharmaceutical composition comprising a biologically active prostaglandin of the E-series and a saturated aliphatic tertiary alcohol having from 4 to 10 carbon atoms, said prostaglandin being present in the amount of from about 0.005 to 0.500% by weight.

4. The composition of claim 1 wherein said prostaglandin is a PGE_2 carboxamide of the formula:



wherein R is methyl or phenyl.

8. The composition of claim 1 also containing from about 1 to 10 parts by volume, based on said alcohol, of a halogenated hydrocarbon propellant of up to 2 carbon atoms.

3,927,198
METHYLOLATED 5,5-DIALKYLHYDANTOIN FILM FORMING SYNTHETIC RESIN AS A HAIR FIXATIVE

Hans-Albrecht Meyer-Stoll, Rheinkamp; Johannes Wollner, Kapellen Kreis, Moers, and Hans-Heinz Schittek, Rheinkamp, all of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Division of Ser. No. 827,984, May 26, 1969, abandoned. This application Dec. 28, 1970, Ser. No. 102,161
Claims priority, application Germany, May 29, 1968, 1770518
Int. Cl.² A61K *7/11*
U.S. Cl. 424—47 **8 Claims**

1. A hair fixative composition containing from 1 to about 10% by weight of a film-forming synthetic resin and a solvent for said resin, said film-forming synthetic resin having a molecular weight in the range of from about 700 up to about 3,000 and being obtained by reacting at an elevated temperature in the range of about 70°C. to about 115°C., a methylolated, 5,5-dialkylhydantoin wherein each alkyl group thereof contains from 1 to 5 carbon atoms, in the presence of a reactant member selected from the group consisting of

a. from about 0.2 to about 2.5 moles of urea per mole of said hydantoin and from about 0.2 to about 1.0 mole of a low molecular weight ketone per mole of urea;

b. from about 0.2 to about 2.5 moles of salicylic acid amide per mole of said hydantoin;

c. from about 0.2 to about 2.5 moles of a mixture of urea and a diamine per mole of said hydantoin;

d. from about 0.2 to about 1 mole of a diamine per mole of said hydantoin;

e. from about 0.2 to about 2.5 moles of urea per mole of said hydantoin, from about 0.2 to about 1.0 mole of a low molecular weight ketone per mole of urea, and from about 0.2 to about 1 mole of a diamine per mole of said hydantoin; and

f. from about 0.2 to about 2.5 moles of salicyclic acid amide per mole of said hydantoin, and from about 0.2 to about 1 mole of a diamine per mole of said hydantoin.

8. A hair fixative composition in an aerosol spray can, said composition consisting essentially of an admixture of from about 3 to 6% by weight of the film-forming synthetic resin of claim 1 in a latent solvent selected from the group consisting of an anhydrous alcohol, a halogenated hydrocarbon and a mixture of said anhydrous alcohol and halogenated hydrocarbon, and as the propellant an admixture of fluorochlorinated hydrocarbons.

3,927,199

HAIR FIXING COMPOSITIONS CONTAINING N-ALKYL ACRYLAMIDE OR METHACRYLAMIDE INTERPOLYMER

Albert L. Micchelli, Middletown; Gerard J. Legato, Stirling; Stuart H. Ganslaw, Piscataway, and Lawrence D. Schuler, North Brunswick, all of N.J., assignors to National Starch and Chemical Corporation, Clifton, N.J.

Continuation-in-part of Ser. No. 244,264, April 14, 1972, abandoned. This application Aug. 13, 1973, Ser. No. 388,325

Int. Cl.² A61K *7/11*

U.S. Cl. 424—47 **10 Claims**

1. A hair fixing composition containing a solvent selected from the group consisting of 1,1,1-trichloroethane, methylene chloride, ethanol, isopropanol, and water, and from 0.25 to 7%, by weight, of an interpolymer of (1) 30–60% of a comonomer selected from the group consisting of N-alkyl acrylamide and N-alkyl methacrylamide wherein the alkyl group thereof contains from 2 to 12 carbon atoms, (2) 12–18% of an acidic copolymerizable comonomer selected from the group consisting of acrylic acid, methacrylic acid, crotonic acid, itaconic acid, maleic acid, fumaric acid, and the (C_1–C_4) alkyl half esters of maleic and fumaric acids, and (3) 20–55% of at lest one copolymerizable comonomer selected from the group consisting of (C_1–C_{12}) alkyl acrylates, (C_1–C_{12}) alkyl methacrylates, (C_2–C_4) hydroxyalkyl acrylates, hydroxystearyl acrylate, hydroxyalkyl methacrylates, hydroxystearyl methacrylate, (C_1–C_4) alkyl (C_2–C_4) amino alkyl acrylates, (C_1–C_4) alkyl (C_2–C_4) aminoalkyl methacrylates, vinyl acetate, vinyl propionate, diacetone acrylamide, styrene, and alpha-methyl styrene; said interpolymer being sufficiently neutralized with an alkaline reagent to effect its solubility in water.

5. The hair fixing composition of claim 1, wherein the composition is in an aerosol container and also contains an aerosol propellant therefor.

3,927,200

STABILIZATION OF MICROORGANISM CELLS LYTIC ENZYME

Yoshio Yoshimura, Nishinomiya; Kanae Yokogawa, Nara, and Shigeo Kawata, Kobe, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Filed Apr. 20, 1973, Ser. No. 353,570

Claims priority, application Japan, Apr. 22, 1972, 47-40805

Int. Cl.² A61K *7/28;* **C12D** *13/10*

U.S. Cl. 424—50 **9 Claims**

9. A stable composition for preventing and treating dental caries comprising as an essential active ingredient an enzyme which is capable of lysing cells of cariogenic streptococci which is obtained by cultivating a microorganism selected from the group consisting of *Streptomyces diastatochromogenes* (ATCC No. 21481), *Streptomyces farinosus* (ATCC No. 21482), *Streptomyces griseus var. H*-402 (ATCC No. 21483) and *Streptomyces globisporus* (ATCC No. 21533) and as a stabilizer at least one of stabilizers selected from the group consisting of carboxymethyl cellulose or its sodium salt, glycerin and monoethanolamine in admixture with a carrier selected from water, toothpaste, tooth powder or ointment.

3,927,201

DENTIFRICES

Eric Baines, Manchester; Edwin Cropper, Shaw, and Sydney James Forshaw, Manchester, all of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 23, 1974, Ser. No. 435,898

Claims priority, application United Kingdom, Jan. 29, 1973, 4335/73

Int. Cl.² A61K *7/16*

U.S. Cl. 424—54 **11 Claims**

1. A visually clear dentifrice comprising about 5 to 50% by weight of a dentally acceptable water-soluble sodium phosphate salt polishing agent having a refractive index between about 1.435 and about 1.465, a water-soluble biguanidohexane antimicrobial agent in amount to provide about 0.001–5% by weight of the free base thereof and a dentifrice gel vehicle comprising (1) about 20% up to about 80% by weight of said dentifrice of a liquid phase including humectant having a refractive index of about 1.44 to 1.47, said humectant consisting essentially of a member selected from the group consisting of sorbitol, glycerine and mixtures thereof and 0 up to an amount of said visually clear dentifrice of free water in which not more than about 30% by weight of said polishing agent is soluble at 40°C., and (2) about 0.5 to 20% by weight of a gelling agent selected from the group consisting of sodium carboxymethyl cellulose, Irish moss and hydroxyethyl cellulose, the refractive index of said dentifrice gel vehicle being between about 1.36 and about 1.47, said polishing agent and said antibacterial agent being homogeneously and invisibly distributed in said visually clear dentifrice gel vehicle.

3,927,202

DENTIFRICES

Kenneth Harvey, Prestwich, and Sydney Lee, Worsley, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 23, 1974, Ser. No. 435,899

Claims priority, application United Kingdom, Jan. 29, 1973, 4338/73

Int. Cl.² A61K *7/16*

U.S. Cl. 424—57 **8 Claims**

1. A visually clear dentifrice comprising about 5 to 50% by weight of a dentally acceptable water-soluble sodium phosphate salt polishing agent having a refractive index between about 1.435 and about 1.465 and a dentifrice gel vehicle comprising (1) about 20% up to about 80% by weight of said dentifrice of a liquid phase including humectant having a refractive index of about 1.44 to 1.47 said humectant consisting essentially of a member selected from the group consisting of sorbitol, glycerine and mixtures thereof and O up to amount of free water in which not more than about 30% by weight of said polishing agent is soluble at 40°C and (2) about 0.5–10% by weight of a gelling agent, the refractive index of said visually clear dentifrice gel vehicle being between about 1.36 and 1.47, said phosphate salt being homogeneously and invisibly distributed in said dentifrice gel vehicle.

3,927,203

COSMETIC COMPOSITIONS EMPLOYING CERTAIN COMPOLYMERS

Donald Edwin Seymour, London; Nicholas Mario da Costa, Harlow, and William Thomas Charville, Ware, all of England, assignors to Hydron Limited, London, England

Continuation-in-part of Ser. No. 867,378, Oct. 17, 1969, abandoned. This application Oct. 26, 1973, Ser. No. 409,821

Claims priority, application United Kingdom, Oct. 22, 1968, 50043/68; Dec. 20, 1968, 60755/68

Int. Cl.² A61K *7/04, 7/021, 31/78*

U.S. Cl. 424—61 **16 Claims**

1. A film-forming composition for application to the nail or epidermis of a human being as a nail varnish, a wound dressing or a cosmetic preparation, which comprises (i) a copolymer obtainable by copolymerizing a reaction mixture comprising

from 80 to 20 parts by volume of ethoxy ethyl methacrylate with from 20 to 80 parts by volume of methoxy ethyl methacrylate, said copolymer contained in said composition being present in an amount sufficient to form a film on the epidermis of said human being, and (ii) a suitable carrier.

3,927,204

USE OF α,β-POLY-(ASPARTIC ACID)-HYDROXYALKYLAMIDES AS A PLASMA EXPANDER

Paolo Neri; Guido Antoni, and Franco Benvenuti, all of Siena, Italy, assignors to Instituto Sieroterapico e Vaccinogeno Toscano "Sclavo" S.p.A., Siena, Italy

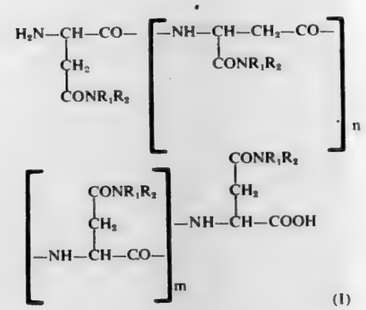
Continuation-in-part of Ser. No. 51,771, July 2, 1970. This application Aug. 21, 1974, Ser. No. 499,580

Claims priority, application Italy, July 3, 1969, 4667/69

Int. Cl.² A61K *31/74, 35/14, 37/00*

U.S. Cl. 424—78 **5 Claims**

1. A method for the treatment of a patient with a diminished plasma volume level and microcirculatory impairment due to septic or traumatic shock, said method comprising intravenously administrating to the patient a therapeutically effective plasma expanding dose of a compound of a hydroxyalkylamide of α,β-polyaspartic acid having the formula



(I)

wherein: R_1 is hydrogen, an alkyl group, or a hydroxyalkyl group; R_2 is a hydroxyalkyl group; n is the number of beta-linked residues; m is the number of alpha-linked residues, and the sum of $n + m$ is within the range of 100 to 300 (calculated from viscosity measurements in DMF according to Doty's curve, J. Am. Chem. Soc. 78, 947, 1956) or from 75 to 550 (calculated from ultracentrifuge measurements).

3,927,205

AQUEOUS SUSPENSION OF PHARMACEUTICALS

Yoshitomo Ohno, Nara; Yasuko Takigawa; Katsuo Aoki, both of Osaka, and Takatsuka Yashiki, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 9, 1974, Ser. No. 459,359

Claims priority, application Japan, Apr. 9, 1973, 48-40264

Int. Cl.² A61K *31/79, 47/00*

U.S. Cl. 424—80 **15 Claims**

1. In an aqueous suspension containing up to 8 percent by weight per volume of a pharmaceutically active ingredient(s) which is insoluble or sparingly soluble in water having an average size particle size smaller than about 100 μ and a suspending agent, the improvement, wherein the suspending agent consists essentially of

1. Crystalline cellulose
2. at least one component selected from the group consisting of methyl cellulose, sodium carboxymethyl cellulose and polyvinyl alcohol having a molecular weight of 8,000 to 180,000; and
3. at least one component selected from the group consisting of polyvinyl pyrrolidone having a molecular weight of 10,000 to 3000,000, propylene glycol alginate, sodium pectinate, tragacanth gum and gelatin, the amount of component (1) being 0.3 to 5 weight/volume percent of the aqueous suspension, the amount of component (2) plus the component (3) being 0.1 to 4 weight/volume percent of the aqueous suspension and wherein the weight ratio of component (2) relative to component (3) being in the range of from 15/85 to 80/20.

3,927,206

COPOLYMER CONTAINING MEDICAMENTS

Izhak Blank, and Joseph Fertig, both of Haifa, Israel, assignors to Hydrophilics International, Inc., New York, N.Y.

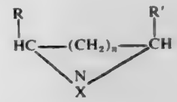
Continuation-in-part of Ser. No. 246,831, April 24, 1972. This application July 12, 1974, Ser. No. 487,871

Claims priority, application United Kingdom, Aug. 12, 1971, 37936/71

Int. Cl.² A61K *31/78*

U.S. Cl. 424—81 **3 Claims**

1. A pharmaceutical composition having slow release properties containing a copolymer comprising from 10 to 30 parts, by volume, of a member selected from the class consisting of acrylic and methacrylic acid and from 50 to 90 parts, by volume, of a member selected from the class consisting of alkyl acrylates and methacrylates, wherein the alkyl group has from 1 to 4 carbon atoms, the acid groups of said copolymer having been neutralized with an alkylene imine having the formula:



where R and R′ are each selected from the class consisting of hydrogen and lower alkyl radicals, X is hydrogen or hydroxyl, and n is a number from 0 to 4; said copolymer having absorbed or adsorbed therein a small, but effective amount of a watersoluble medicinal agent.

3,927,207

METHOD FOR COMBATING INSECTS EMPLOYING CERTAIN KETONES

Wittko Francke, Reinbek, and Volker Heemann, Hamburg, both of Germany, assignors to Amchem Products, Inc., Ambler, Pa.

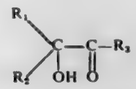
Filed Nov. 6, 1973, Ser. No. 413,386

Claims priority, application Germany, Nov. 9, 1972, 2254697

Int. Cl.² A01N *17/14*

U.S. Cl. 424—84 **19 Claims**

1. A method of attracting beetles of the families *scolytidae* and *platypodidae* within the order *coleoptera* comprising applying to an area contaminated with said beetles an attractant having the formula



where R_1 is alkyl of 1 to 6 carbon atoms, R_2 is alkyl of 1 to 6 carbon atoms and R_3 is alkyl of 1 to 6 carbon atoms, said attractant being applied to said area in an amount sufficient to attract said beetles.

3,927,208
LIVE BOVINE ADENOVIRUS VACCINES, PREPARATION THEREOF AND METHOD OF VACCINATION USING THEM

Nathan Zygraich, Brussels, and Constant Huygelen, Huldenberg, both of Belgium, assignors to Recherche et Industrie Therapeutiques (R.I.T.), Belgium

Continuation-in-part of Ser. No. 360,219, May 14, 1973, abandoned. This application Jan. 31, 1974, Ser. No. 438,503

Int. Cl.² A61K *39/12*

U.S. Cl. 424—89 **6 Claims**

1. A live virus bovine adenovirus intranasal vaccine protective against bovine adenovirus type 3 infection comprising an effective intranasal dose of a temperature-sensitive nitrous acid mutant of the pathogenic bovine adenovirus, said mutant having a cut-off temperature of from about 39° to 40°C and being able to multiply in the upper respiratory tract of a bovine animal but having inhibited replication in the lower respiratory tract and internal organs of the body, and a pharmaceutical intranasal diluent.

3,927,209
PARA-INFLUENZA-3-VIRUS

Otto Christian Straub, Teubingen, Germany, assignor to Bayer Aktiengesellschaft, Germany

Filed May 6, 1974, Ser. No. 467,479

Claims priority, application Germany, May 11, 1973, 2323847

Int. Cl.² A61K *39/12, 39/34*

U.S. Cl. 424—89 **7 Claims**

1. A vaccine which comprises an amount of para-influenza-3-virus strain ATCC VR-739 sufficient to be effective against para-influenza-3-virus in combination with a diluent or carrier suitable for vaccination of bovines.

3,927,210
ANTIBIOTIC ENSANCHOMYCIN

Edward O. Stapley, Metuchen, N.J., and Justo Martinez Mata, Madrid, Spain, assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 415,185, Nov. 12, 1973. This application June 7, 1974, Ser. No. 477,251

Int. Cl. H61k *21/00*

U.S. Cl. 424—118 **4 Claims**

2. A method of treating bacterial infections in animals which comprises the administration to said animal of an antibacterially effective amount of the antibiotic Ensanchomycin, said antibiotic being characterized by the following properties: an ultraviolet absorption peak at 247 mμ in an acid solution and an ultraviolet absorption peak at 258 mμ in a basic solution having an infrared spectrum in a Nujol mull as shown in FIG. 1, and an elemental analysis of its ammonium salt as follows: C = 47.11 percent; H = 6.90 percent; N = 7.67 percent; phosphorus = 1.93 percent; and O = 36.39 percent (by difference) with the said ammonium salt having an approximate empirical formula of: $C_{63}H_{116}N_9O_{36}P$ and a measured equivalent weight of 1477, and a pK_a of 4.6, or its pharmaceutically acceptable salts.

3,927,211
ANTIBIOTIC MYC 8003 AND PROCESS FOR PRODUCING SAME

Cornelis Vos, Pijnacker, and Jacobus Den Admirant, Delft, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Continuation-in-part of Ser. No. 170,516, Aug. 10, 1971, abandoned. This application Mar. 26, 1973, Ser. No. 344,610

Claims priority, application United Kingdom, Aug. 14, 1970, 39367/70

Int. Cl. A61k *21/00*

U.S. Cl. 424—122 **3 Claims**

1. A member of the group consisting of the antibiotic MYC 8003, which is a yellow, salt-forming weak acid solid having the analysis: carbon, 63.8%; hydrogen, 7.6%; nitrogen, 3.5%; and oxygen, 25.1%; consisting of equilibrium-forming components, with an optical rotation $[\alpha]_D^{22}$ of −60° (1% methanolic solution), poorly soluble in carbon tetrachloride and benzene, soluble in chloroform, methyl isobutyl ketone, butyl acetate, ethyl acetate, methanol and alkaline solutions, insoluble in diethyl ether, petroleum ether, water and acid solutions, showing a slightly positive reaction in the aromate test, forming a red color with concentrated sulfuric acid, a dark brown color in the Pauly reaction, a dark red color and turbidity with ferric chloride, and precipitation with bromine water, showing gas production at 135°C, showing further gas production at about 152°C and showing a decomposition at 164°–174°C, showing in the ultraviolet region of the spectrum absorption maxima at 233, 276, 286, and 327 nm as in FIG. 1, and in the infrared region, in KBr, absorption bands at 812, about 860, 940, 985, 1092, 1215, 1340–1380, 1460, 1540, 1640, 2933, 2969 and about 3370 cm^{-1} as in FIG. 3 and an Rf-value of 0.10 of the chief component, when chromatographed with a mixture of benzene, ethanol and 33% ammonia in the ratio of 65:40:9 and having the PMR spectrum of FIG. 4, and its non-toxic, pharmaceutically acceptable salts.

3,927,212
METHOD FOR ALLEVIATING GASTRIC MUCOSAL BLEEDING

Tsung-Min Lin, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed June 7, 1974, Ser. No. 477,213

Int. Cl.² A61K *37/00*

U.S. Cl. 424—177 **6 Claims**

1. A method for alleviating gastric mucosal bleeding which comprises parenterally administering to a mammal a therapeutically effective amount of glucagon.

3,927,213
PROSTAGLANDIN E_2 AND DERIVATIVES FOR REDUCING THE SIDE EFFECTS OF ANTI-INFLAMMATORY AGENTS

Wilbur Lippmann, Montreal, Canada, assignor to American Home Products Corporation, New York, N.Y.

Filed July 10, 1973, Ser. No. 378,113

Int. Cl.² A61K *31/19, 31/40, 31/415, 31/61*

U.S. Cl. 424—234 **8 Claims**

1. A method of reducing the incidence of gastrointestinal side effects in a mammal during the treatment of inflammatory conditions with an antiinflammatory agent, which comprises administering to said mammal a gastrointestinal side effect inhibiting amount within the range of about 0.01 microgram to about 1 milligram per kilogram of a prostaglandin substance selected from the group consisting of 15-methylprostaglandin E_2, 16-methylprostaglandin E_2 and 16,16-dimethylprostaglandin E_2, the corresponding lower alkyl esters thereof and the pharmaceutically acceptable salts thereof.

3,927,214
METHOD OF PREVENTING ASTHMATIC SYMPTOMS

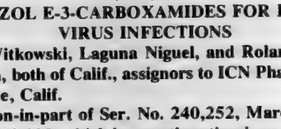
Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 299,871, Oct. 24, 1972. This application Jan. 14, 1975, Ser. No. 541,008

Int. Cl.² A61K *31/505*

U.S. Cl. 424—251 **4 Claims**

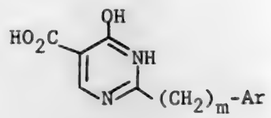
1. The method of preventing asthmatic symptoms in a mammal subject to bronchoconstriction which comprises administering to said mammal an asthmatic symptom preventing amount of a compound selected from the group consisting of the formula:



and the pharmaceutically acceptable basic salts thereof wherein

Ar is pyridyl and

m is an integer of 0 or 1.



and the pharmaceutically acceptable basic salts thereof wherein

Ar is pyridyl and

m is an integer of 0 or 1.

3,927,215
METHOD OF PREVENTING ASTHMATIC SYMPTOMS

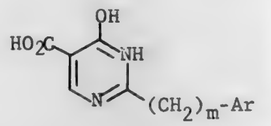
Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 299,871, Oct. 24, 1972. This application Jan. 14, 1975, Ser. No. 541,018

Int. Cl.² A61K *31/505*

U.S. Cl. 424—251 **4 Claims**

1. The method of preventing asthmatic symptoms in a mammal subject to bronchoconstriction which comprises administrating to said mammal an asthmatic symptom preventing amount of a compound selected from the group consisting of the formula:



and the pharmaceutically acceptable basic salts thereof wherein

Ar is thienyl and

m is an integer of 0 or 1.

3,927,216
1,2,4-TRIAZOL E-3-CARBOXAMIDES FOR INHIBITING VIRUS INFECTIONS

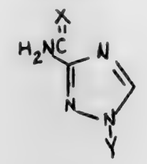
Joseph T. Witkowski, Laguna Niguel, and Roland K. Robins, Santa Ana, both of Calif., assignors to ICN Pharmaceuticals, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 240,252, March 31, 1972, Pat. No. 3,798,209, which is a continuation-in-part of Ser. No. 149,017, June 1, 1971. This application Mar. 12, 1973, Ser. No. 340,332

Int. Cl.² A61K *31/41*

U.S. Cl. 424—269 **11 Claims**

1. A process of inhibiting the development of influenza, parainfluenza and herpes virus infections in warm blooded animals comprising administering to said warm blooded animals an effective amount of a composition containing from about 0.001 to about 10% by weight, based on the total weight of the composition of a compound of the structure:



wherein X is O or S, and Y is H or an alkalai metal.

3,927,217
COMBATING ANIMAL ACARID ECTOPARASITES WITH 2-PHENYLIMINOPYRROLIDINES

Edgar Enders, Cologne-Flittard, and Wilhelm Stendel, Wuppertal-Vohwinkel, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

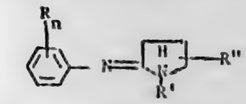
Division of Ser. No. 151,516, June 9, 1971, Pat. No. 3,787,576, which is a division of Ser. No. 834,537, June 21, 1968, abandoned. This application July 19, 1973, Ser. No. 380,774

Claims priority, application Germany, June 21, 1968, 1770681

Int. Cl.² A01N *9/22*

U.S. Cl. 424—274 **6 Claims**

1. The method of combating animal acarid ectoparasites which comprises applying to at least one of (a) such ectoparasites and (b) their animal habitat an ectoparasiticidally effective amount of a 2-phenylimino-pyrrolidine of the formula



in which R is chloro, *n* is a whole number from 2–3, and R′ is alkyl of 3 carbon atoms, and R″ is hydrogen.

3,927,218
3,4-BISAMINO-5-SULFAMOYLBENZOIC ACIDS USEFUL AS DIURETIC AGENTS

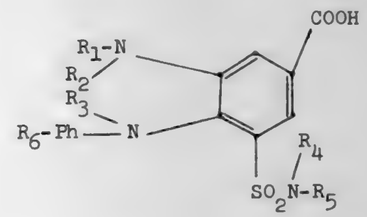
Lincoln Harvey Werner, Summit, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 13, 1972, Ser. No. 297,531

Int. Cl.² A61K *31/34;* **A61K** *31/38*

U.S. Cl. 424—285 **4 Claims**

1. A pharmaceutical composition comprising a diuretically effective amount of a compound corresponding to the formula



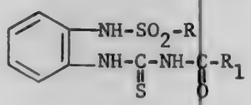
in which R_1 is Hc-lower alkyl or -alkenyl wherein Hc is furyl or thienyl, unsubstituted or substituted by one or two lower alkyl groups, Ph is phenylene, unsubstituted or substituted by one or two substituents selected from lower alkyl, hydroxy, mercapto, lower alkoxy, lower alkylenedioxy, lower alkylmercapto, halogeno, (hydroxy or halogeno)- lower alkyl or -alkoxy, nitro, amino, di-lower alkylamino, carboxy, sulfo, lower carbalkoxy, cyano, carbamyl or sulfamoyl, each of R_2, R_3 and R_4 is hydrogen or lower alkyl R_5 is hydrogen, lower alkyl or R_7-Ph and one of R_6 and R_7 is amino and the other hydrogen, or a lower alkyl ester or the ammonium, sodium, potassium, magnesium or calcium salt or acid addition salt thereof derived from a therapeutically useful acid, together with a pharmaceutical excipient.

3,927,219
METHOD OF CONTROLLING PESTS WITH THIOUREIDO CARBAMATES COMPOUNDS

Alexander Mihailovski, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 217,697, Dec. 29, 1971, Pat. No. 3,832,384. This application June 12, 1974, Ser. No. 478,485
Int. Cl.² A01N 9/12
U.S. Cl. 424—300 **29 Claims**

1. A method of controlling pests selected from the group consisting of fungi and bacteria consisting of adding to the habitat thereof a fungicidally and bactericidally effective amount of a compound having the generic formula:



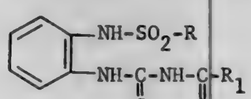
wherein R can be selected from lower alkyl, lower haloalkyl, phenyl, substituted phenyl wherein said substituents can be selected from halogen and lower alkyl; R_1 can be selected from lower alkoxy and lower thioalkyl.

3,927,220
METHOD OF CONTROLLING PESTS WITH THIOUREIDO SULFONANILIDE COMPOUNDS

Alexander Mihailovski, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 217,697, Dec. 29, 1971, Pat. No. 3,832,384. This application June 12, 1974, Ser. No. 478,489
Int. Cl.² A01N 9/16
U.S. Cl. 424—321 **9 Claims**

1. A method of controlling pests selected from the group consisting of fungi and bacteria consisting of adding to the habitat thereof a fungicidally and bactericidally effective amount of a compound having the generic formula:



wherein R can be selected from lower alkyl, phenyl, substituted phenyl wherein said substituents can be selected from halogen and lower alkyl; R_1 is lower alkyl.

3,927,221
COLD WATER-SOLUBLE GELATIN COMPOSITION AND PROCESS OF PREPARING SAME

Nicholas J. Kalafatas, Arlington; Harold Rosenthal, Newtonville, and George A. Consolazio, Burlington, all of Mass., assignors to General Foods Corporation, White Plains, N.Y.

Filed May 7, 1973, Ser. No. 358,204
Int. Cl.² A23L 1/06
U.S. Cl. 426—576 **10 Claims**

1. A process of preparing a cold water-soluble gelatin composition which comprises admixing a sugar and gelatin, adjusting the moisture content of the admixture to from about 2.5 to about 6 percent by weight, subjecting the admixture to heat and pressure while applying shearing forces to the admixture in a closed system and extruding the admixture to obtain a cold water-soluble gelatin composition.

3,927,222
METHOD OF PRODUCING EXPANDED CEREAL PRODUCTS OF IMPROVED TEXTURE

Allen H. Rosenquest, New Canaan, Conn.; Aloysius J. Knipper, Ramsey, and Robert W. Wood, West Milford, both of N.J., assignors to Nabisco, Inc., New York, N.Y.

Filed Jan. 15, 1975, Ser. No. 541,130
Int. Cl.² A23L 1/18
U.S. Cl. 426—621 **8 Claims**

1. The method of preparing an expanded ready to eat cereal product having a cellular structure wherein the cells are substantially all of uniform small size comprising the steps of mixing with a quantity of milled grain between about 0.2 and 2% of finely divided, insoluble, inert material selected from the group consisting of titanium dioxide, calcium silicate, aluminum oxide, silicon dioxide, or mixtures thereof, heating the mixture to a temperature above the boiling point of water and mechanically working the heated mixture at a pressure substantially above atmospheric, and expanding the mixture by suddenly releasing the pressure to form cells of uniform small size.

3,927,223
METHOD OF FORMING REFRACTORY OXIDE COATINGS

Mitsuo Takabatake, Tokyo, and Kikuo Tsuji, Yokohama, both of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed May 10, 1973, Ser. No. 358,867
Claims priority, application Japan, May 11, 1972, 47-45840
Int. Cl.² B05B 7/22; B05D 1/08
U.S. Cl. 427—34 **13 Claims**

1. A method of forming a refractory metal oxide coat on a substrate, which comprises:

applying a $MgO—MgO.Al_2O_3$ refractory metal oxide containing 5–30% periclase and 95–75% spinel oxide by a flame spraying technique to the surface of said substrate thereby depositing said refractory metal oxide on a surface of said substrate as a coated membrane.

3,927,224
LUMINESCENT AND/OR PHOTOCONDUCTIVE MATERIALS

Leon Levene, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 208,393, Dec. 15, 1971, Pat. No. 3,816,328. This application Oct. 18, 1973, Ser. No. 407,713
Int. Cl. H01b 1/04
U.S. Cl. 427—64 **2 Claims**

1. A process for producing a luminescent or photoconductive device which comprises: applying a luminescent or photoconductive oxide product onto an inorganic substrate wherein said product is made by a process which comprises:

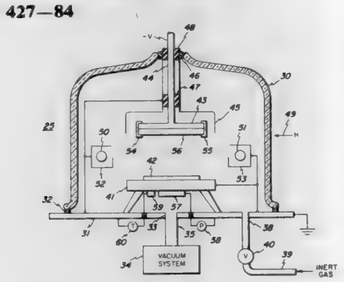
1. reacting a silicon alkoxide of the formula $Si(OR)_4$, wherein R is an alkyl of 1 to 6 carbon atoms with about 0.3 to about 1.5 equivalents of water per equivalent of said silicon alkoxide in the presence of an effective catalytic amount of an acid hydrolysis catalyst so as to prepare a clear solution of a partially hydrolyzed silicon alkoxide,
2. combining said solution of a partially hydrolyzed silicon alkoxide with a metal alkoxide of the formula $M(OR')_X$, wherein M represents a cation, R′ is an alkyl of 1 to 6 carbon atoms, and X is an integer dependent upon the valence of the cation, and allowing said combined ingredients to react so as to form a clear solution of a soluble, further hydrolyzable metallosiloxane having residual OR and OR′ groups,
3. reacting said solution of a soluble metallosiloxane with a water solution of a metal compound that decomposes to a metal oxide below about 600°C., sufficient water being employed to react with said residual OR groups and OR′ groups so as to obtain a clear solution which subsequently converts to a clear gel structure,

and wherein, prior to the formation of said gel structure, there is added in any of Steps 1 to 3, an effective photoconductive amount of an inorganic photoconductive material or an effective luminescent amount of an inorganic luminescent material; 4. heating said gel structure at a temperature and for a time sufficient to convert said gel structure to an oxide product; heating said oxide product to a temperature and for a time sufficient to convert said product to a homogeneous glass containing said luminescent or photoconductive material.

3,927,225
SCHOTTKY BARRIER CONTACTS AND METHODS OF MAKING SAME

Linus F. Cordes, and Marvin Garfinkel, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 318,394, Dec. 26, 1972. This application Aug. 15, 1974, Ser. No. 497,528
Int. Cl.² B05D 5/12
U.S. Cl. 427—84 **9 Claims**



1. A method of forming a contact of platinum silicide to a body of silicon semiconductor material comprising

exposing a face of said body,

heating said body to a temperature greater than 400°C and less than 700°C,

depositing platinum on said face to form a conductive layer of a platinum silicon compound thereon while maintaining said body of silicon semiconductor material at a temperature in said range of greater than 400°C and less than 700°C.

3,927,226
METHOD OF TREATING COPIED PLANS

Yahiko Kadono, and Yanosuke Kadono, both of Suita, Japan, assignors to Kadono Chemical Laboratory Co., Ltd., Suita, Japan

Filed Oct. 19, 1973, Ser. No. 407,983
Claims priority, application Japan, May 30, 1973, 48-61352
Int. Cl.² B05D 1/38; B32B 25/06
U.S. Cl. 427—140 **4 Claims**

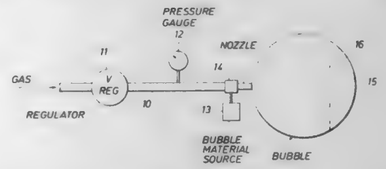
1. A method of coating the surface of copied plans to prevent staining and to make them more durable, which comprises the steps of first, applying to the surface of the copied plans, an aqueous creamy mixture of glue or gelatine as the principal ingredient, which has been compounded with effective amounts of a surface active agent, a polyethylene glycol, paraoxybutyl benzoate and further cetyl alcohol, stearyl alcohol or spermaceti; drying the surface to form a first film thereon, and applying a second aqueous solution of ammonium alum, iron alum, chromium alum or aluminum alum on the surface of the first film to form a second film on the copied plans.

2. A method according to claim 1, wherein the thus-coated copied plans are corrected by erasing and wherein the corrected portion thereof, is further coated by forming a first and second film on the surface thereof, according to the steps of claim 3.

3,927,227
METHOD FOR MANUFACTURING MIRRORS IN ZERO GRAVITY ENVIRONMENT

David E. Pitts, Houston, Tex., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Feb. 27, 1974, Ser. No. 446,560
Int. Cl.² B32B 3/00; C23C 11/00
U.S. Cl. 427—162 **3 Claims**



1. A method for manufacturing a mirror surface in a zero gravity environment comprising the steps of

locating a structure defining a concave surface in the form of a spherical segment or paraboloid of revolution in a space orbit having a zero gravity environment,

providing a vaporizable metal at the focus of said surface in an amount calculated to provide a thin layer of metal on said surface, and

orienting the central axis of said surface toward the sun thereby vaporizing said metal by solar heat and

depositing the vaporized metal on said surface.

3,927,228
METHOD OF DEPOSITING TITANIUM DIOXIDE LAYERS BY EVAPORATION OF A MOLTEN TITANTIUM-OXYGEN PHASE

Hans K. Pulker, Triesen, Liechtenstein, assignor to Balzers Patent-und Beteiligungs-Aktiengesellschaft, Liechtenstein

Filed May 6, 1974, Ser. No. 467,572
Claims priority, application Switzerland, May 21, 1973, 7233/73
Int. Cl.² C23C 11/08; B29O 11/00
U.S. Cl. 427—162 **5 Claims**

1. A method of producing TiO_2 layers on a layer support, comprising evaporating a melt containing titanium and oxygen having a composition corresponding to a proportion of the number of oxygen atoms to the number of titanium atoms of from 1.6 to 1.8, and condensing the vapor on a layer support in the presence of oxygen.

4. A method of producing TiO_2 layers on a layer support, according to claim 1, wherein the melt comprises Ti_3O_5.

5. A method of producing TiO_2 layers on a layer support, according to claim 1, wherein said melt comprises Ti_4O_7.

3,927,229
METHOD FOR THE PRODUCTION OF POROUS WEBS WITH A LEATHER-LIKE GRAIN

Ulrich Rall, Langenfeld; Karl Mahall, Monheim-Baumberg, and Wilfried Kuper, Dusseldorf-Nord, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

Filed Nov. 13, 1972, Ser. No. 305,804
Claims priority, application Germany, Dec. 27, 1971, 2164852
Int. Cl.² B05D 1/00, 3/02, 3/12, 5/00
U.S. Cl. 427—171 **16 Claims**

1. A method for the production of textile webs having high porosity and absorbency, with a leather-like surface grain consisting essentially of the steps of roughening a basic fabric of shrinkable fibers having a thread density of 10 to 20 threads

per centimeter in warp and weft directions and having a shrinking capacity of 2 to 15% in warp and weft directions, on at least one side in order to raise the height of the pile above the surface of the fabric from about 0.4 to 5 mm; optionally stretching the fabric in warp or weft direction up to 7%; impregnating at least one side of the fabric with an aqueous fluid foam containing a dispersion of a polymeric compound hardenable at a temperature above 120°C, until the foam penetrates at least completely through the pile with said fluid foam being worked into the basic fabric until the fibers are saturated with and covered by said fluid foam to a substantial degree; drying the impregnated fabric; heating the dried impregnated fabric at 120° to 160°C for a time sufficient to harden said polymeric compound; shrinking the dried impregnated fabric by treatment with hot water or steam; and recovering said textile webs having a high porosity and absorbency with a leather-like surface grain.

3,927,230

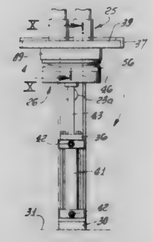
METHOD OF DECORATING A SURFACE OF AN ARTICLE

William E. MacDonald, Los Angeles, and Robert C. Harris, Jr., Glendale, both of Calif., assignors to Interpace Corporation, Parsippany, N.J.

Division of Ser. No. 408,200, Oct. 19, 1973, Pat. No. 3,885,522. This application Sept. 6, 1974, Ser. No. 503,844

Int. Cl.² B05D *1/30*

U.S. Cl. 427—282 **12 Claims**



1. In a method of applying a thick film of flowable colorant composition material on a ceramic body in accordance with a selected design, the combination of the steps of:

providing pattern defining means comprising an opening to a mold chamber, edge margins of said mold chamber being resilient and non-porous;

sealingly engaging said edge margins against the surface of an article to be decorated;

flowing a thick fluid composition material by gravity from said chamber directly to said pattern defining means onto areas of the article surface exposed within said pattern defining means;

maintaining said fluid composition material in contact with said article surface for a preselected time period;

reversing the position of said pattern defining means and article while maintaining sealed engagement thereof for removing by gravity flow fluid composition material which has not been applied to said article surface from the vicinity of said pattern defining means;

and separating said article surface and said pattern defining means.

3,927,231

FLAMEPROOFING OF LINEAR POLYESTERS

Gerard Desitter, Ternay, and Gilbert Vivant, Lyon, both of France, assignors to Rhone-Poulenc S.A., Paris, France

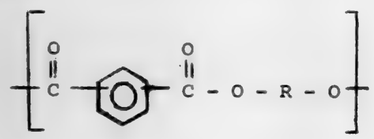
Filed Feb. 25, 1974, Ser. No. 445,546

Claims priority, application France, Feb. 28, 1973, 73.07092

Int. Cl.² C08J *7/02*; **C08L** *67/00*

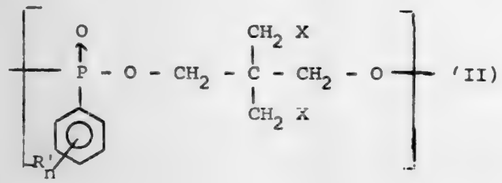
U.S. Cl. 427—390 **11 Claims**

1. A flameproof composition which comprises at least one linear polyester possessing a plurality of units of the general formula:



(I)

in which R′ represents a linear or branched alkylene group containing 2 to 6 carbon atoms, and 0.5 to 40% by weight, based on the weight of the polyester, of at least one polyphosphonate possessing a plurality of units of the general formula:



(II)

in which R′ represents a hydrogen atom, a halogen atom or an alkyl radical containing 1 to 4 carbon atoms optionally substituted by one or more halogen atoms, *n* represents an integer from 1 to 3 and X represents a chlorine or bromine atom.

3,927,232

LUBRICATING COMPOSITIONS CONTAINING METAL PHOSPHONATES

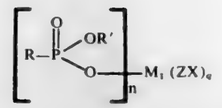
Joseph J. Dickert, Jr., and Carleton N. Rowe, both of Lower Makefield Township, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 280,604, Aug. 14, 1972, Pat. No. 3,798,162, which is a continuation-in-part of Ser. No. 70,901, Sept. 9, 1970, abandoned. This application Oct. 1, 1973, Ser. No. 402,238

Int. Cl. C23f *7/08*

U.S. Cl. 427—401 **13 Claims**

1. A method of depositing a free metal upon a lubricated metal surface comprising contacting said metal surface with a lubricant composition comprising a lubricant and from about 0.001 to about 10% of a compound of the formula



wherein R is a hydrocarbyl containing from 14 to about 30 carbon atoms, R′ is a hydrocarbyl containing from 1 to about 6 carbon atoms, X is a basic nitrogen-containing compound, Z is 1 to 4, *q* is 0 or 1, M is a metal selected from the group consisting of copper, silver and gold and *n* is the valence of M, *q* being 1 and *n* being 3 when M is gold wherein reduced metal is obtained, which metal is deposited on the lubricated surface.

3,927,233

WELDED POLYMERIC ARTICLES AND PROCESS

Robert J. Naidoff, Mountain View, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 25, 1974, Ser. No. 436,674

Int. Cl.² B32B *3/10*

U.S. Cl. 428—58 **12 Claims**

1. A method of integrally joining abutting surfaces of crosslinked polymeric articles which comprises disposing between said surfaces an insert consisting essentially of a melt processable thermoplastic polymeric composition capable of being crosslinked by heat-activated systems containing an effective cross-linking amount of a heat-activated cross-linking agent, and heating said surfaces and insert under compression for a time at a temperature sufficient to cause said insert to flow and wet said surfaces and to activate said cross-linking agent, effecting formation of covalent cross-links between each of said surfaces and the polymeric constituent of said insert, the modulus of the resulting cross-linked butt weld being at least equal to that of said articles.

3,927,234

IMPREGNATING COMPOUND FOR FIBER GLASS MATS

Heinz-Joachim Lindner, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 25, 1972, Ser. No. 291,935

Claims priority, application Germany, Sept. 29, 1971, 2148692

Int. Cl.² B32B *17/00*, *27/04*, *17/04*

U.S. Cl. 428—273 **5 Claims**

1. An impregnated fiber glass mat comprising:

a. a fiber glass mat material and

b. an impregnating composition for said mat material comprising a mixture of:

1. repurified epoxy resin based on bis-phenol A having a maximum chlorine content of 0.1 percent by weight; and 2. at least one hardenable hydrocarbon polymer comprising a polybutadiene base having at least 60 percent of the 1,2 adduct, the weight ratio of said epoxy resin to said polymer being between 6 to 4 and 9 to 1.

3,927,235

RECONSTITUTED BOARD PRODUCTS FROM PLANT-FIBER RESIDUES

Poo Chow, 907 Shurts St., Urbana, Ill. 61801

Filed Mar. 18, 1974, Ser. No. 452,191

Int. Cl.² B32B *27/42*, *23/04*, *29/00*

U.S. Cl. 428—302 **9 Claims**

1. A particle board panel comprising a sandwich, laminate-like structure formed in a one-step pressing and heating step, having (a) an inner core layer containing as a major ingredient exo-s-plant fibers predominantly smaller than 30 mesh, Tyler screen size, and a minor amount of heat-sensitive adhesive, said heat-sensitive adhesive comprising a thermosetting adhesive as the primary binder for said exo-s-plant fibers, said inner core layer being formed in said one-step heating and pressing step from a mat comprising at least 50% exo-s-plant fibers, total fiber dry weight basis and having a moisture content of from about 6 to about 18%, total weight basis, for said exo-s-plant fibers and (b) two face layers, enclosing said inner core layer, each of said face layers containing as a major ingredient s-plant fibers bonded with an adhesive.

3,927,236

RESIN COMPOSITIONS, METHODS OF APPLYING THE SAME TO POROUS MATERIALS, AND THE RESULTING PRODUCTS

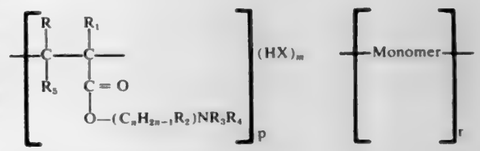
Jay S. Shultz, Little Rock, Ark., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed May 16, 1973, Ser. No. 360,717

Int. Cl.² D06M *15/12*

U.S. Cl. 428—304 **6 Claims**

1. A method of applying a stable, colloidal, aqueous resin composition to porous materials and controlling its migration thereon or penetration thereinto which comprises: mixing the following ingredients in the sequence set forth to form an aqueous synthetic resin composition having a pH value between 2.5 and 10: (1) 0.1% to 60% by weight of a synthetic resin; and (2) adding to said synthetic resin 0.01% to 8% by weight, based on the weight of the synthetic resin of a water-soluble, cationic polyelectrolyte polymer having a molecular weight of at least 20,000 and having the following structural formula:



wherein:

R and R_1 are hydrogen, methyl, or ethyl;

R_2 and R_3 and R_4 and R_6 are hydrogen or alkyl from 1 to 4 carbon atoms;

R_5 is hydrogen, $-COOR_6$ or $-COO(C_nH_{2n-1}R_2)NR_3R_4$;

m is a number from ½ to 2;

n is a number from 2 to 4;

x is nitrate, chloride, bromide, iodide, phosphate, formate, propionate, citrate, butyrate, sulfate, acetate, or an acidic anionic group derived from an organic or inorganic acid;

p and *r* are the percentages of the two reacting monomers, in which $p + r = 100\%$ and *p* is at least about 50 mole percent and *r* is less than about 50 mole percent down to 0 mole percent; and "Monomer" is acrylamide, diacetone acrylamide, t-butyl acrylamide, methacrylamide, methyl, vinyl, ether, ethyl vinyl ether, lower alkyl esters of acrylic and methacrylic acids, hydroxyethyl acrylate, hydroxyethyl methacrylate, hydroxypropyl acrylate, hydroxymethyl methacrylate, vinyl acetate, vinyl chloride, ethylene, and other ethylenically unsaturated monomers capable of copolymerizing with the aminoalkylated monomer on the left hand side in the structural formula to form copolymers therewith; and applying said aqueous resin composition to porous materials to control migration thereon and penetration thereinto.

3,927,237

TYPING SHEET FOR THERMAL DUPLICATING PROCESSES

Joseph Tat-Hin Sund, Los Angeles, Calif., assignor to Bell & Howell Co., Chicago, Ill.

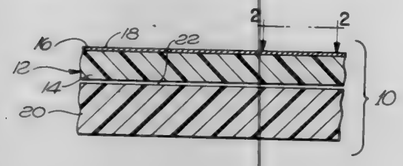
Filed Oct. 25, 1973, Ser. No. 409,529

Int. Cl.² B32B *5/16*, *19/04*

U.S. Cl. 428—325 **8 Claims**

1. An improved image control means for a thermal duplicating process, comprising, in combination:

an original compliant typing sheet having a thickness of about 1.5–2.5 mils, said sheet having a typing surface receptive to typing ink and resistant to ink transfer therefrom, said surface being coated with a substantially uniform mixture of oil receptive particles having an average diameter of less than 4 microns and having an oil absorption of at least 30 weight percent, and oil resistive particles having an average diameter of at least 8 microns and



having an oil absorption of less than 20 weight percent, said particles being selected from the group consisting of inorganic salt, inorganic oxide and mixtures thereof dispersed in a dry adhesive binder, the volume ratio of said oil receptive particles to said oil resistive particles being about 0.5:1 to about 8:1; and

a smooth resilient backing sheet abutted against the back of said typing sheet, said backing sheet having a thickness of about 2–5 mils.

3,927,238

LEAD-FREE GLAZE FOR HIGH DENSITY ALUMINA

Frank Vincent DiMarcello, Clinton Township, Hunterdon County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 7, 1973, Ser. No. 358,004
Int. Cl.² B32B 17/06; C03C 5/02, 3/04
U.S. Cl. 428—336 **5 Claims**

1. Article comprising a high density alumina substrate and a fired glaze covering at least a portion of a surface of said substrate characterized in that said glaze has a thickness not exceeding 1 mil and further characterized in that said glaze consists essentially of the following components in the amounts indicated:

	Percent by Wt.
SiO_2	50–65
Al_2O_3	2–6
SrO	15–30
CaO	3–10
BaO	3–10.

3,927,239

FLEXIBLE STRIP COATED WITH A PRESSURE-SENSITIVE ADHESIVE COMPOSITION TACKIFIED WITH PHENOL-DIENE-PHENOL RESIN ADDUCT

Ramsis Gobran, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 23, 1973, Ser. No. 408,590
Int. Cl.² C09J 7/02
U.S. Cl. 428—355 **4 Claims**

1. A pressure-sensitive adhesive article comprising a flexible self-supporting strip coated over one major surface with a thin layer of a pressure-sensitive adhesive composition comprising: 1. 5 to 200 parts by weight of a phenol-diene-phenol adduct wherein the diene portion is essentially free of ethylenic unsaturation having a molecular weight of at least 400, said adduct being produced by reacting, in an inert atmosphere, in the presence of a Friedel-Crafts catalyst and at a temperature in the range of 20°C–135°C, 1 mole of non-conjugated diene with 2 moles of a phenolic compound having only one ring carbon atom which is susceptible to alkylation, and

2. about 100 parts by weight cis-polybutadiene or natural rubber polymer.

3,927,240

HAZE RESISTANT CATHODE LUMINESCENT SULFIDE PHOSPHORS AND METHOD OF PREPARING SAME

Michael J. Hammond, Ulster, and Raymond F. Herner, Towanda, both of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed June 12, 1974, Ser. No. 478,696
Int. Cl.² C09K 11/42, 11/02
U.S. Cl. 428—403 **11 Claims**

1. A cathodoluminescent phosphor composition consisting essentially of from about 99.6 percent to about 99.9 percent by weight of discrete particles of an activated host of a divalent metal sulfide and, as a coating over the surfaces of said particles, from about 0.1 percent to about 0.4 percent by weight on a P_2O_7 basis of a pyrophosphate selected from the group consisting of calcium pyrophosphate and strontium pyrophosphate.

3,927,241

FRICTION ELEMENTS RUNNING IN OIL

Wilfried Augustin, Wittenkamp, Germany, assignor to Jurid Werke GmbH, Glinde near Hamburg, Germany

Filed Aug. 8, 1974, Ser. No. 495,807
Claims priority, application Germany, Aug. 10, 1973, 2340464
Int. Cl.² F16D 55/36; D04H 3/02
U.S. Cl. 428—408 **4 Claims**



1. A friction member for friction engaging mechanisms adapted to operate in oil comprising a support plate and a friction facing bonded to the support plate, said friction facing consisting essentially of a web of carbon filaments impregnated with a cured duroplast organic resin bonding agent.

2. A friction member for use in wet clutches adapted to operate in connection with bringing two rotating parts into synchronism, comprising a steel support plate, an intermediate layer of asbestos fibers bonded to the steel member and a friction facing bonded to the layer of asbestos fibers, said friction facing consisting essentially of a web of carbon filaments impregnated with a cured duroplast organic resin bonding agent.

3. A friction member for use in wet clutches and automatic transmission comprising a metal support plate and a surface lining of a web of carbon filaments compacted with a cured duroplast organic resin binder and bonded between the support plate and the surface lining, an intermediate layer of a fibrous material other than carbon fibers.

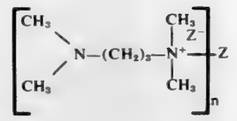
3,927,242

SUBSTRATE COATED WITH A LAYER OF POLYQUATERNARY POLYELECTROLYTES

Alan Rembaum, and Shiao-Ping Siao Yen, both of Altadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 280,649, Aug. 14, 1972. This application Dec. 26, 1973, Ser. No. 427,916
Int. Cl.² B32B 21/04, 21/06, 23/08, 27/10
U.S. Cl. 428—411 **9 Claims**

1. An article of manufacture comprising an inert substrate sheet containing from 0.1 to 5 pounds per 1,000 square feet of substrate surface of a layer of a water-soluble, conductive polyelectrolyte of the formula:



where Z is bromo, chloro or iodo and n is an integer such that the intrinsic viscosity is at least 0.20 dl/g as determined by means of light scattering in 0.4 molar KBr according to the relationship:

$$\eta = (2.94 \times 10^{-4})M^{0.61}$$

where η = intrinsic viscosity and M is molecular weight.

3,927,243

ALUMINIUM ENAMELS

Gunter Theisen, Riedlingen, Wurttemberg, Germany, assignor to Oberschwabische Metallwarenfabrik GmbH & Co. K.G., Riedlingen, Wurttemberg, Germany

Continuation of Ser. No. 92,682, Nov. 25, 1970, abandoned. This application Apr. 11, 1973, Ser. No. 349,947
Claims priority, application Germany, Nov. 27, 1969, 1959613
Int. Cl.² C22D 5/00
U.S. Cl. 428—433 **8 Claims**



1. A method for producing improved enameled aluninium food handling articles comprising:

preparing an aluminium enamel coating composition consisting essentially of SiO_2, TiO_2, at least one R_2O compound, wherein R is an alkali metal and a quantity of Bi_2O_3 sufficient to dissolve the TiO_2; and

coating a food contacting surface of an aluminium food handling article with said composition.

3,927,244

COMPOSITE FILM

Shuichi Ogura; Hirotsura Chow, and Toshio Kawamata, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 6, 1973, Ser. No. 385,770
Claims priority, application Japan, Aug. 7, 1972, 47-78874
Int. Cl.² B32B 27/20, 27/36
U.S. Cl. 428—483 **15 Claims**

1. A composite film comprising a polyester film and coated on one or both surfaces thereof, a composition containing at least one member selected from the group consisting of:

a. a polyethylene terephthalate oligomer,

b. a polyglycol terephthalate copolymer,

c. a composition comprising a blend of a polyglycol terephthalate copolymer with a linear thermoplastic polyurethane elastomer;

d. a composition comprising a blend of a polyglycol terephthalate copolymer with a mixture of a linear thermoplastic polyurethane elastomer and a polyisocyanate; and

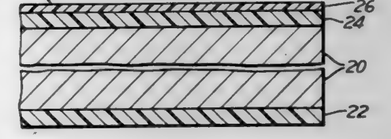
e. a composition comprising a blend of a polyglycol terephthalate copolymer with at least one of poly(vinyl acetate), an ethylene/vinyl acetate copolymer and a tacky polyolefin, said member permitting said composite film to be heat-bondable at a temperature of 110°–120°C.

3,927,245

RESIN-COATED CARTON BLANK

Clarence Edward Roth, Jr., Orange; Robert L. Hughes, Houston, both of Tex., and Kenneth F. Thompson, Canton, N.C., assignors to Gulf Oil Corporation, Pittsburgh, Pa., by said Clarence Edward Roth and Robert L. Hughes and Champion International Corporation, New York, N.Y., by said Kenneth F. Thompson

Filed July 5, 1974, Ser. No. 486,224
Int. Cl.² B65D 5/56; C08F 29/12; D21H 1/36
U.S. Cl. 428—513 **4 Claims**



1. A scored, resin-coated, fiber board blank for a liquid carton, consisting essentially of:

1. a fiber board core having a thickness of about 15 to 30 mils,

2. a first ethylene polymer coating directly bonded to the side of the blank that will form the interior of the ultimate carton, said coating being about 0.5 to 1.2 mils thick,

3. a second ethylene polymer coating directly bonded to the side of the blank that will form the exterior of the ultimate carton, said coating being about 0.2 to 0.5 mil thick, and

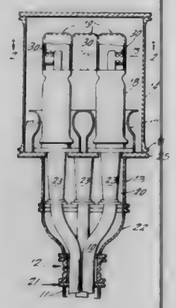
4. an olefin polymer coating directly bonded to said second ethylene polymer coating, said olefin polymer coating being less than about 0.1 mil thick;

the ethylene polymer contained in said first and second ethylene polymer coatings being an ethylene polymer having a density of less than about 0.93 gram/cm³ and a melt point of less than about 108°C., the olefin polymer contained in said olefin polymer coating being either an ethylene polymer having a density of at least about 0.96 gram/cm³ or a highly crystalline propylene polymer which has a solubility of less than 5% in boiling heptane; each of the three polymer coatings being free of any added slip agent; the coefficient of friction between the olefin polymer coated surface of the blank and polished stainless steel being from about 0.2 to about 0.4.

3,927,246
THREE-PHASE CABLE TERMINATION FOR METAL ENCLOSED COMPRESSED GAS-INSULATED SUBSTATION

Vasu H. Tahiliani, New Stanton, and Howard W. Graybill, Greensburg, both of Pa., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Aug. 26, 1974, Ser. No. 500,407
Int. Cl.² H02G 15/22
U.S. Cl. 174—19 **4 Claims**



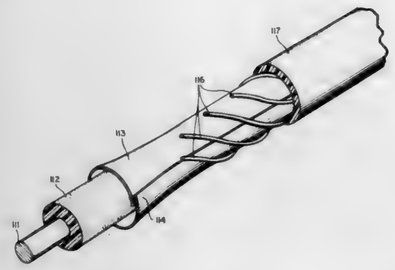
1. A multi-phase cable termination structure for a metal enclosed compressed gas insulated substation, comprising:
a first and second chamber,
a multi-phase pipe-type cable introduced into said first chamber, said first chamber including a flared housing portion to permit spreading of said cable to wider spacing,
a terminal member on each phase conductor of said multi-phase cable;
said second chamber containing compressed gas,
said second chamber being located adjacent said first chamber,
a gas tight seal between said first and second chamber,
said terminal members each extending from said first chamber through said gas tight seal into said second chamber, and a plurality of tubular members extending from said second chamber;
a single phase conductor in each said tubular member;
and an electrical connection from each said terminal member to each said conductor;
said terminal member being sealed at the point of passage thereof through said gastight seal,
each tubular member communicating with said second chamber and being filled with the same type of compressed gas used in said second chamber,
each of said single phase conductors electrically insulated from its respective said tubular member by said compressed gas.

3,927,247
SHIELDED COAXIAL CABLE

Frank E. Timmons, Richmond, Ind., assignor to Belden Corporation, Chicago, Ill.

Continuation of Ser. No. 765,286, Oct. 7, 1968, abandoned. This application Oct. 30, 1970, Ser. No. 85,810
Int. Cl.² H01B 11/06
U.S. Cl. 174—36 **3 Claims**

1. A bendable, flexible coaxial cable for carrying RF signals such as high frequency TV signals comprising an elongated central flexible conductor for carrying the RF signals, a flexible insulating layer of low loss cellular material surrounding said conductor, an elongated, longitudinally extending foil strip encircling and engaging said insulating layer and having its opposite longitudinally extending marginal portions overlapped to form an elongated longitudinally extending seam along the length of the cable, said foil strip having an inductance compatible with the carrying of high frequency RF signals by said central conductor, said foil strip having a flexible polymeric tape layer and a layer of metal on at least one side of said polymeric layer whereby said conductor may be shielded by said metal layer, said polymeric layer engaging said layer of insulating layer of cellular material, a plurality of flexible drain conductors wrapped generally helically around and along and in electrical contact with said metal layer of said foil strip, said drain wires being spaced from said central conductor by said insulating layer and said foil strip, said drain

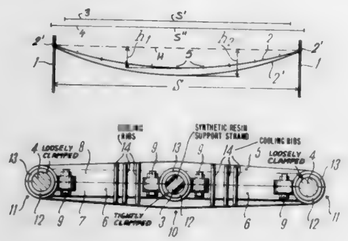


conductors being helically wrapped with a predetermined periodicity and spaced from each other uniformly, said portions of the drain wires on the side of the cable under compression during flexure of the cable being free to move toward each other axially along the spaces between drain wires and along the cable, during flexure of the cable said drain wire portions under tension being free to move away from each other axially along the cable, said drain wires providing tensile strength for said cable while allowing said cable to bend, and an outer tubular jacket of flexible insulating material surrounding said helically wrapped drain wires and holding the same against said metal layer of said foil strip, said cable having a substantially right circular cross section.

3,927,248
OVERHEAD CABLE SYSTEM FOR POWER OR INFORMATION TRANSMISSION

Günter Schöll, Casa Rosina, CH 6549 Pianezzo, Paudo, Switzerland, and Joachim Pauls, Meisenweg 3, 7441 Wolfschlugen, Wurtt., Germany

Filed Apr. 8, 1974, Ser. No. 459,056
Claims priority, application Germany, Apr. 10, 1973, 2317894
Int. Cl.² H02G 7/06, 7/12; H01B 17/54
U.S. Cl. 174—41 **10 Claims**



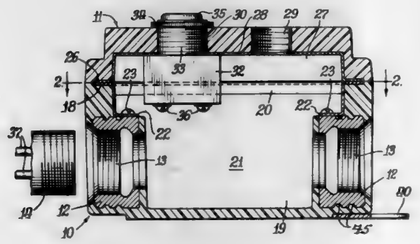
1. An overhead system for transmitting electricity comprising:

a pair of upright towers spaced apart by a predetermined distance;
at least one synthetic-resin support strand extending between said towers and having a length in an unstressed condition less than said distance;
at least one conductive strand extending between said towers next to said support strand and having a length in an unstressed condition greater than said distance; and
means securing said strands together between said towers.

3,927,249
EXPLOSION PROOF PLASTIC ELECTRICAL ENCLOSURE

James N. Pearse, Libertyville, Ill., assignor to Appleton Electric Company, Chicago, Ill.

Filed Sept. 16, 1974, Ser. No. 506,247
Int. Cl.² H02G 3/14
U.S. Cl. 174—51 **9 Claims**



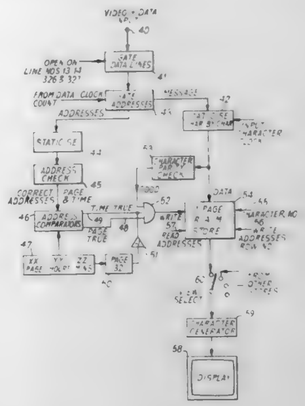
1. In an explosion proof electrical enclosure comprising a box and a cover releasably attached to the box which box and cover have internal walls defining an internal opening for electrical wiring, said box and cover have mating faces at the juncture therebetween, the improvement comprising:
said box and cover being mainly formed of plastic and each including a metal flange at the respective face and circumscribing said opening at the face, said flanges being in immediate juxtaposition when said cover is on said box, said flanges being formed of an erosion resistant metal.

3,927,250
TELEVISION SYSTEM WITH TRANSMISSION OF AUXILIARY INFORMATION

Peter Rainger, Pinner, England, assignor to British Broadcasting Corporation, London, England

Filed Feb. 11, 1974, Ser. No. 441,502
Claims priority, application United Kingdom, Feb. 15, 1973, 7569/73
Int. Cl.² H04N 7/00
U.S. Cl. 178—5.6 **14 Claims**

1. A television transmission system for broadcasting a television signal and comprising means for multiplexing with said television signal in at least one time slot different blocks of digitally coded data at different times of day, each of which blocks includes a code addressing the block and comprising a

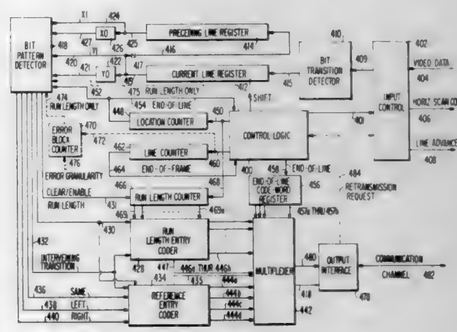


time code representing the time of day at which the block is transmitted.

3,927,251
METHOD AND APPARATUS FOR THE DETECTION AND CONTROL OF ERRORS IN TWO-DIMENSIONALLY COMPRESSED IMAGE DATA

Hugh Edward White, Pennington, and Michael David Lippman, Hightstown, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 361,451, May 18, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 513,038
Int. Cl. H04n 7/12
U.S. Cl. 178—6 **13 Claims**



1. In a compressed image data facsimile system incorporating an encoder for encoding the respective locations of transitions between tones in a current scanned line of copy, said current scanned line having a predetermined length defined by initial and terminal points having given locations, said encoder utilizing run-length code-words manifesting the distance between transitions on said current scanned line and arranging said code-words serially in a group manifesting said current scanned line; and a decoder responsive to encoded signals transmitted thereto, said decoder detecting code-words and decoding said group of code-words to reconstruct the locations of the transitions, the improvement comprising therewith:
a. means including said encoder for encoding as a code-word the location of said terminal point of said scanned line as an additional transition;
b. means including said encoder for generating an end-of-line code-word to identify said additional-transition code-

word, thereby distinguishing said additional-transition code-word from other transition code-words;

c. means including said decoder for accumulating distances between successive transitions and generating a complete line signal when the manifested length of a decoded line corresponds to the predetermined length of a completely scanned line;

d. means including said decoder for generating an end-of-line signal when said end-of-line code-word is detected; and

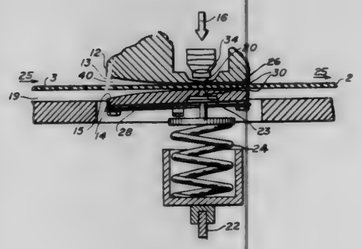
e. error detecting means responsive to said end-of-line signal and to said complete line signal for generating an error signal manifesting the occurrence of an error when either of said end-of-line signal or said complete line signal occurs without the simultaneous occurrence of the other.

3,927,252

BIASED VIDEO DISC STABILIZER SYSTEM

Eugene J. Polley, Lombard, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Apr. 2, 1974, Ser. No. 457,289
Int. Cl.² G11B *15/64, 7/08*
U.S. Cl. 179—6.7 R **9 Claims**



9. In a player of the type in which a record disc having a surface bearing recorded information is rotated between a displaceable stabilizer block and a fixed stabilizer having a stationary reference surface mutually confronting and spaced from each other, for presentation to an optical detection system,

a method for stabilizing the plane of rotation of said information-bearing surface with respect to a predetermined focal plane of said optical detection system projected upon said information-bearing surface despite undesired thickness nonuniformities of said record disc, which method comprises:

spinning said disc through said space separating said displaceable stabilizer block and said stationary reference surface to generate aerodynamic forces in a predetermined gap between said information-bearing surface of said disc and said reference surface; and

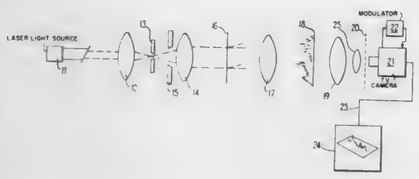
biasing said displaceable stabilizer block for movement toward or away from said reference surface in response to said generated aerodynamic force variations attributable to such undesired disc non-uniformities, to effect changes in the stabilizer block and reference surface spacing to maintain said predetermined gap substantially constant despite such undesired disc non-uniformities.

3,927,253

OPTICAL DIFFRACTOMETERS

John Jungles, Thurmaston; David John Whitehouse, Melton Mowbray, and Eric Gordon Nightingale, Leicester, all of England, assignors to The Rank Organisation Ltd., London, England

Filed Mar. 22, 1974, Ser. No. 454,009
Claims priority, application United Kingdom, Mar. 22, 1973, 13831/73
Int. Cl.² H04N *7/18*
U.S. Cl. 178—6.8 **3 Claims**



1. In an optical diffractometer system of the type comprising:

a laser as light source,

holder means for supporting an object,

an image transformation unit for providing a Fourier transform of an object carried by said object holder means, and

an image reconstruction unit including means for focusing an image transform at a transform plane and a reconstructed image at an image plane,

the improvement wherein:

said laser is a multimode device, and

said image transformation unit includes

a condenser lens,

a first adjustable aperture stop positioned in the focal plane of said condenser lens, such that adjustments to the size of said aperture stop effect adjustments to said image transform quality,

a collimator lens from which substantially plane parallel light is directed towards an object carried by said object holder means, and

a second adjustable aperture stop located at the entrance pupil of said collimator lens, between said first adjustable aperture stop at the rear focal plane of said condenser lens and said collimator whereby adjustments to the size of said further adjustable aperture stop effect adjustments to one or both of said transform image at said transform plane and said reconstructed image at said image plane.

3,927,254

OPTICAL SEEKER SCANNING SYSTEM

Gerhard Lessman, Chino, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Filed Mar. 13, 1975, Ser. No. 558,093
Int. Cl.² H04N *3/16, 3/00;* **F41G** *7/00;* **G02B** *5/20*
U.S. Cl. 178—7.1 **8 Claims**

1. In a seeker scanning system of the type comprising:

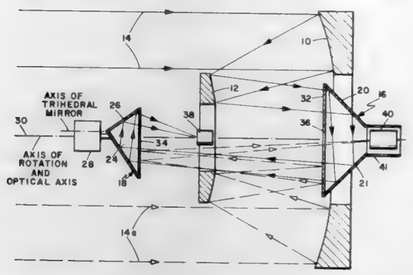
imaging means on a system optical axis, and means for directing an input ray bundle to the imaging means, the imaging means comprises,

dihedral reflector means disposed for rotation about the optical axis and effective to rotate the ray bundle at an angular rate twice its own,

trihedral reflector means disposed for rotation about the optical axis and adapted to intercept the ray bundle rotated by the dihedral reflector means and effective to invert and revert the ray bundle,

means for rotating dihedral and trihedral reflectors about the optical axis, and filter means associated with each of

said dihedral and trihedral reflectors for dissociating infrared wavelengths from visable wavelengths of the ray



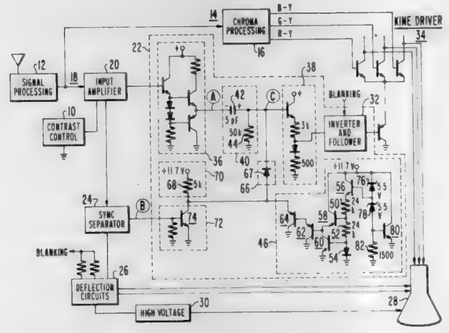
bundle by transmitting the infrared wavelengths and reflecting the visable wavelengths.

3,927,255

BLACK LEVEL CLAMPING CIRCUIT FOR A TELEVISION SIGNAL PROCESSOR

Bernard Joseph Yorkanis, South Plainfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 1, 1974, Ser. No. 465,891
Int. Cl.² H04N *5/44*
U.S. Cl. 178—7.3 DC **10 Claims**



1. A circuit for processing a television video signal, said video signal including periodic blanking pulses, each of said blanking pulses formed by a pedestal level and a sync pulse superimposed on said pedestal level, signals representative of image information disposed between said blanking pulses, and undesired noise components, said circuit operative to clamp said pedestal level to a reference level representative of the black tone of an image reproducing device, said circuit comprising:

a source of said video signals;

means for providing said video signals at a first circuit point at a low impedance;

means for utilizing said video signals coupled to a second circuit point;

capacitive means for capacitively coupling said video signals between said first and second circuit points;

a source of reference voltage;

a voltage follower amplifier having an input and an output terminal, said input terminal coupled to said source of reference voltage;

a current source coupled to said output terminal of said follower amplifier;

a unidirectional coupling device direct coupled between said output terminal of said follower amplifier and said second circuit point and poled to charge, when conducting, said capacitive means towards said pedestal level;

said current source including inpedance means for limiting the current for charging said capacitive means to inhibit charging said capacitive means in response to said noise components, said follower amplifier being rendered conductive to provide said reference voltage at said output terminal at a relatively low output impedance when a current above a predetermined value is supplied by said current source to said output terminal, said follower amplifier being rendered substantially nonconductive when said current supplied to said output terminal falls below said predetermined value, said impedance means having a value such that the current supplied to said output terminal of said follower amplifier falls below said predetermined value in response to said noise components; and

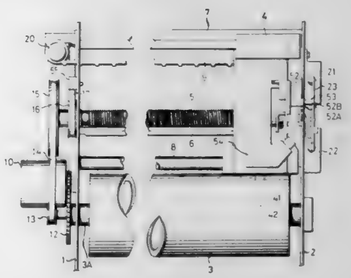
means coupled to said output terminal of said follower amplifier for rendering said unidirectional coupling device non-conductive and for diverting current from said output terminal of said follower amplifier such that the current supplied to said output terminal of said follower amplifier falls below said predetermined value in response to said sync pulses.

3,927,256

VARIABLE-RATE DRIVE MECHANISM FOR A FACSIMILE HEAD OR THE LIKE

Sakae Fujimoto, Chofu, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1974, Ser. No. 536,390
Claims priority, application Japan, Dec. 29, 1973, 48-3659
Int. Cl.² H04N *1/06*
U.S. Cl. 178—7.6 **6 Claims**



1. A device for moving an article along a feed direction comprising:

a rotatable threaded feed shaft extending along said feed direction;

frame means supporting said article and comprising a first and a second frame member moveable between a spaced-apart position and a close-together position with respect to the feed direction and biased toward one of said positions;

a first and a second half nut pivotally connected to the first and second frame member respectively, each half nut having a threaded portion behind the pivot point thereof as viewed in the feed direction and the pivot point of each half nut being radially outwardly of the shaft in the pivot plane, the threaded portion of each half nut being biased to threadably engage the feed shaft and to move in the feed direction together with the frame member connected thereto as the shaft rotates but pivoting away from the feed shaft when the frame member connected thereto is moved in the feed direction at a rate faster than the feed rate of an engaged half nut; and

activating means connecting the frame members to each other and energizable to move the frame members from their biased position to their other position and deenergizable thereafter to allow the frame members to return

to their biased position, wherein the distance between the two positions of the frame members corresponds to moving one of the half nuts along a distance of at least one shaft thread;

whereby, when the activating means is energized the frame members move from their bias position to their other position along the feed direction and one of the half nuts skips at least one shaft thread along the feed direction and again engages the feed shaft, and upon subsequently deenergizing the activating means the biasing force between the frame members causes the other half nut to disengage from the feed shaft and to similarly skip at least one shaft thread as the frame members return to their biased position, thereby allowing for moving the article at a steady speed upon steady rotation of the feed shaft and for selectively moving the article faster by selectively energizing and deenergizing the activating means.

3,927,257

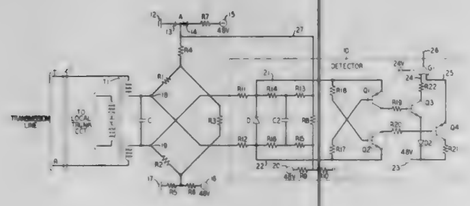
DUPLEX SIGNALING CIRCUIT

Dennis Lee Copenhafer, Cherry Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 5, 1974, Ser. No. 485,821

Int. Cl.² H04L *5/14*

U.S. Cl. 178—60 **6 Claims**



1. A signaling arrangement having an input from a transmission line and a receiver for detecting signaling voltages on said line that are summed with spurious voltages thereon, said receiver comprising

a first and a second source of potential,

first circuit means connected to said input for detecting ones of said signaling voltages that are within a range between said potentials and for further detecting others of said signaling voltages that have been shifted by said spurious voltages outside said range in a positive direction, and

second circuit means connected to said input for detecting said ones of said signaling voltages within said range and for further detecting others of said signaling voltages that have been shifted by said spurious voltages outside said range in a negative direction.

3,927,258

COMPATIBLE SCANNING SYSTEM

Eugene H. Dryden, San Marino, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 320,796, Jan. 3, 1973, abandoned. This application Oct. 21, 1974, Ser. No. 516,840

Int. Cl.² H04N *7/18*

U.S. Cl. 178—6.8 **2 Claims**

1. A system for displaying a plurality of sensors on a television monitor comprising:

a. a plurality of sensor channels;

b. a clock;

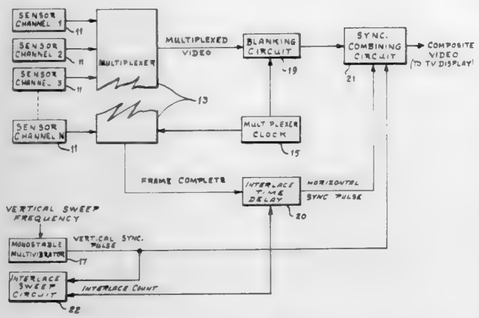
c. a multiplexer fed by the plurality of sensors and the clock;

d. a blanking circuit fed by the multiplexing clock and the multiplexer;

e. means for generating vertical synchronization pulses;

f. means for generating an interlace count fed by the vertical synchronization pulse generating means;

g. means for counting the vertical synchronization pulses;



h. a time delay circuit fed by the multiplexer upon completion of the final channel and by the counting means, the output of the time delay circuit representing horizontal synchronization pulses; and

i. a combining circuit fed by the blanking circuit, the time delay circuit, and the counting circuit.

3,927,259

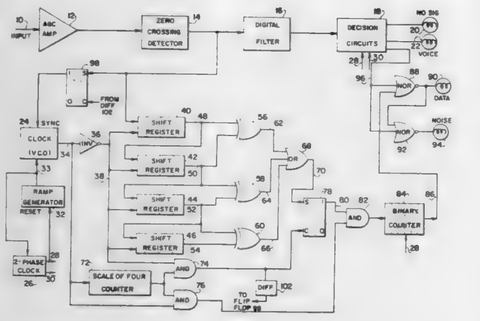
SIGNAL IDENTIFICATION SYSTEM

Robert M. Brown, Woodbridge, Va., assignor to Atlantic Research Corporation, Alexandria, Va.

Filed Feb. 13, 1974, Ser. No. 442,237

Int. Cl.² H04M *3/22*

U.S. Cl. 179—1 MN **42 Claims**



1. A system for distinguishing between noise and data signals in a communication line comprising:

a. means for providing a pulse train in response to excursions from a predetermined amplitude level in the signal applied to said communication line,

b. means for sampling the pulse train at a varying rate and retaining temporarily the pulses which are sampled,

c. means for selectively comparing the pulses retained in said sampling means during the sampling of the pulse train to determine whether there is an occurrence of predetermined digital states of the selected sampled pulses, said pulse comparison occurring repetitively,

d. means for measuring the occurrences of said predetermined digital states of said selected sampled pulses as determined by said comparing means, and

e. means responsive to said measuring means for providing an output indicative of the presence of data or noise in the communication line as determined by a predetermined magnitude of occurrences of predetermined digital states of said selected sampled pulses.

3,927,260

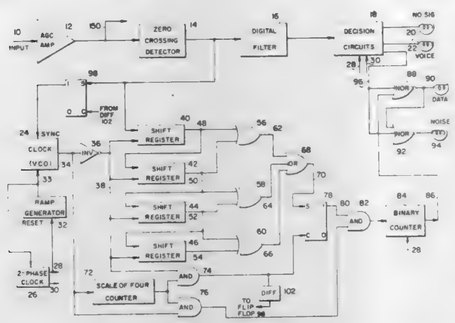
SIGNAL IDENTIFICATION SYSTEM

Robert M. Amundson, Bluefield, W. Va., and Robert M. Brown, Woodbridge, Va., assignors to Atlantic Research Corporation, Alexandria, Va.

Filed May 7, 1974, Ser. No. 468,007

Int. Cl.² H04M *3/22*

U.S. Cl. 179—1 MN **10 Claims**



1. A system for distinguishing between noise and data signals in a communication line comprising:

a. means for providing a pulse train in response to excursions from a predetermined amplitude level in the signals applied to said communication line,

b. means for sampling the pulse train at a varying rate and retaining temporarily the pulses which are sampled,

c. means for selectively comparing the pulses retained in said sampling means during the sampling of the pulse train to determine whether there is an occurrence of predetermined digital states of the selected sampled pulses, said pulse comparison occurring repetitively,

d. means for measuring the occurrences of said predetermined digital states of said selected sampled pulses as determined by said comparing means,

e. means responsive to the signal in the communication line for detecting the energy contained in said signals at a plurality of spaced frequencies in the frequency band of the data signals,

f. means for comparing the level of the detected energy with a predetermined energy level, and

g. means responsive to said measuring means and said energy level comparing means for providing an output indicative of the presence of data or noise in the communication line as determined by a predetermined magnitude of occurrences of predetermined digital states of said selected sampled pulses and a predetermined energy level in said detected energy.

3,927,261

MULTIPLE DRIVER DYNAMIC LOUD SPEAKER

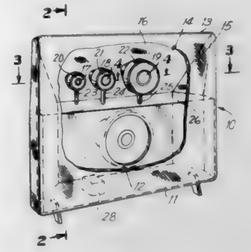
Jon G. Dahlquist, 500 East 85th St., New York, N.Y. 10028

Continuation-in-part of Ser. No. 310,535, Nov. 29, 1972, Pat. No. 3,824,343. This application May 14, 1974, Ser. No. 469,767

Int. Cl.² H04R *1/02*

U.S. Cl. 179—1 E **7 Claims**

1. A multi-driver dynamic loud speaker assembly comprising a frame including an acoustically transparent front face, an enclosure within said frame, a base radiator transducer mounted within said enclosure, at least two additional direct radiator dynamic transducers positioned within said frame, each said dynamic transducer having acoustically associated therewith a baffle member supported within said frame externally of said enclosure, said baffle members being substantially completely surrounded by free space, the effective dimension of each said baffle member measured in a direction normal to the radiating axis of its acoustically associated transducer being not greater than about one half of the wave length of a sound wave at the frequency of the lower nominal crossover frequency of the signal fed to the transducer acoustically associated with said baffle, the area within said frame rearwardly of said at least two transducers being substantially



free of sound reflective surfaces facing the front of said loud speaker assembly, and a frequency divider network means for dividing the electrical signals fed to said loud speaker assembly into at least three discrete frequency bands, and applying an appropriate said band to each said transducer.

3,927,262

HEADSET FOR REPRODUCING QUADRAPHONICALLY RECORDED INFORMATION

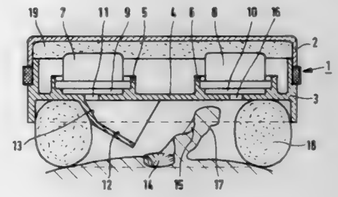
Helmut Goeckel, Liebenau-Weser, Germany, assignor to Neckermann Versand KGaA, Frankfurt am Main, Germany

Filed June 11, 1974, Ser. No. 478,378

Claims priority, application Germany, June 12, 1973, 2329851

Int. Cl.² H04R *1/10, 5/00*

U.S. Cl. 179—1 GQ **12 Claims**



1. A headset for accurately reproducing quadraphonically recorded information, said headset including headset earpieces, acoustic transmitters for respectively the front sound and the rear sound being located in each said headset earpiece, a supporting wall having a sound opening of predetermined configuration, said wall covering said transmitters, and the earpiece including a rim, a cushioned ring being located on said rim and having a depth such that when the headset is in position on the head of a wearer, the ear occupies its unchanged natural position on the head, characterized in that the supporting wall includes two acoustic exit orifices spaced apart in predetermined relationship, but equidistant from the auditory canal opening of the ear, said orifices being of dissimilar sizes, the front orifice being associated with the front acoustic transmitter whilst the slightly larger orifice is associated with the rear acoustic transmitter; a mounting being provided in each of the two acoustic transmitters so as to act as a pressure chamber, on the supporting wall proximate the acoustic exit orifice for the front sound there being formed an acoustic guide for directing this sound onto the auditory canal of the ear; and the acoustic exit orifice of the rear acoustic transmitter being arranged at a point on the supporting wall so

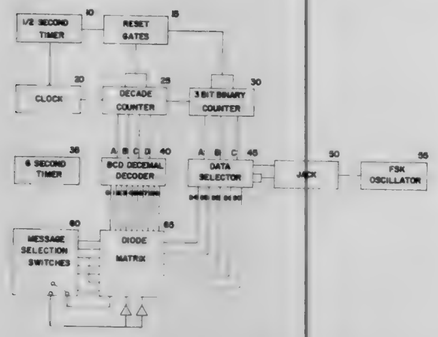
that the rear sound is directed into the zone between the cushioned ring and the rear of the auricle.

3,927,263

PROGRAMMABLE FREQUENCY-SHIFT-KEYING ACOUSTIC TRANSMITTER TO TRANSMIT REPEATED BIT DIGITAL MESSAGE VIA TELEPHONE LINES

Richard D. Fretwell, Grove City, Ohio, assignor to MI² Columbus, Ohio

Filed Mar. 21, 1973, Ser. No. 343,207
Int. Cl.² H04M 11/06
U.S. Cl. 179—2 DP **9 Claims**



1. A programmable acoustic transmitter operable to transmit a repeated digital message over conventional telephone lines into a digital computer using audio frequency-shift-keying transmission techniques, comprising:
- a first timing circuit operable to apply power to said transmitter for a fixed period of time,
- a clock generator for generating a predetermined bit per second baud rate with logic clock pulses,
- a decade counter having said clock pulses connected thereto,
- a decimal decoder having the two state logic pulses from said decade counter connected thereto,
- a 3 -bit binary counter incremented one count per 10 clock pulses of said decade counter,
- a diode matrix,
- a data selector having said 3-bit binary counter and said diode matrix connected thereto to generate said mark signal and a space signal,
- an oscillator connected to the output of said data selector to generate a frequency signal indicative of a mark and a space signal for transmission on said telephone lines,
- said diode matrix having the outputs of said decimal decoder connected thereto for determining the bit pattern of said transmission having a first vertical column of diodes grounded during each count of said clock and a horizontal row of diodes connected to said data selector during ten of each of said clock pulses,
- a plurality of switches connected to said diode matrix for programming certain ones of said bits,
- reset means for resetting said counters.

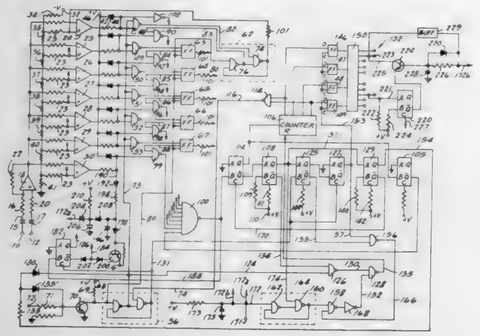
3,927,264

DIAL PULSE DETECTOR AND METHOD

Leonard A. Fish, 21 W. Goethe, Chicago, Ill. 60601; Harvey A. Brodsky, 9440 Lincolnwood Drive, Evanston, Ill. 60203, and Bruce A. Weitzel, 8315 Rte. 53, Woodridge, Ill. 60515

Filed Aug. 17, 1973, Ser. No. 389,340
Int. Cl.² H04M 11/06, 11/10
U.S. Cl. 179—2 A **23 Claims**

1. For use with a remote control device for controlling electrically operated apparatus, using a telephone transmission line interconnected between said electrically operated apparatus and a dial-type telephone instrument, said transmission line constituting an a.c. coupling between said device and said instrument while isolating the d.c. potential of said transmission line at said instrument from said device, the combination comprising: detecting means including means for establishing a series of different discrete threshold levels and a plurality of detector means, one for each said discrete level, for separately detecting on said transmission line the presence of dial pulses generated by a dial-type telephone instrument



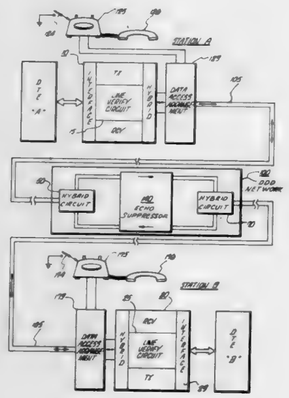
exceeding any of said discrete levels, in response to an instantaneous potential on said line of greater than a discrete level, counting means for counting the number of said pulses within a train of said pulses, output means for manifesting one of a plurality of output signals in response to the number of pulses in said train, and means connected to said output means and responsive to one of said output signals for disabling the detector means for the discrete levels below the highest discrete level which was exceeded during the counted train of pulses.

3,927,265

DATA MODEM HAVING LINE VERIFICATION AND AUTOMATIC DISCONNECT FEATURES

Charles W. Roedel, Miami Shores, and Richard Borysiewicz, Miami, both of Fla., assignors to Milgo Electronics Corporation, Miami, Fla.

Filed Jan. 31, 1974, Ser. No. 438,386
Int. Cl.² H04M 11/06
U.S. Cl. 179—2 DP **18 Claims**



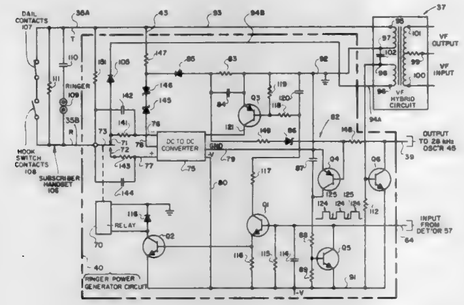
1. In a data communication system wherein a call is placed through a direct distance dialed network, which call seeks to establish a telephone line which includes echo suppressors between a first and second data modem adapted for two-wire/-half-duplex operation, line verification circuitry for said modems which comprises:
- first tone generating means at said first modem emitting a first unique tone for disabling the echo suppressors in said telephone line;
- means at said second modem enabled by said first tone being received for a predetermined time duration sufficient to disable said echo suppressors, for emitting a second tone; said second tone being distinct from said first tone, and characterized as incapable of disabling said echo suppressors but capable of transmission through said telephone line when said echo suppressors are disabled; and
- means at said second modem responsive to the enablement of said second tone emitting means for indicating that a two-way telephone line with disabled echo suppressors has been established between said first and second modems.

3,927,266

RINGER POWER GENERATOR CIRCUIT FOR SUBSCRIBER CARRIER STATION TERMINAL

James A. Stewart, Menlo Park, and Neale A. Zellmer, Belmont, both of Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 16, 1974, Ser. No. 433,984
Int. Cl.² H04J 1/14
U.S. Cl. 179—2.5 R **30 Claims**



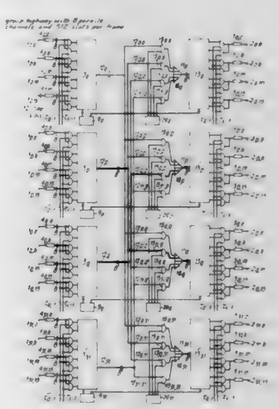
1. A ringer power generator circuit for use in a subscriber carrier telephone system comprising a carrier subscriber station terminal that includes a carrier subscriber handset, the system producing pulses of station terminal ringing signal at the carrier subscriber station terminal in response to a central office ringing signal wherein a cycle of the station terminal ringing signal comprises a ringing period including a series of pulses of ringing voltage followed by a silent period during which a constant voltage is present and these ringing pulses are absent and including a two-wire drop associated with the carrier subscriber handset and a VF hybrid circuit of the carrier subscriber station terminal; one drop wire being connected between one of the tip and ring leads of the handset and a first drop side lead on the hybrid circuit; said ringer power generator circuit requiring only a two-wire drop for connection to a handset and comprising:
- first means for producing both positive and negative DC ringer voltages on associated output lines thereof, the magnitudes of said ringer voltages being greater than that of the pulses of ringing voltage;
- second means which is a control means responsive to the ringing pulses for causing said first means to produce said ringer voltages throughout a ringing period of a ringing cycle;
- third means for coupling one of the positive and negative output lines of said first means through the other drop wire to the second drop side lead on the hybrid during the absence of a station terminal ringing signal, said third means decoupling the hybrid from the one output line of said first means during generation of a ringer voltage thereby;
- fourth means responsive to operation of said second means for alternately electrically connecting the positive and negative ringer voltage output lines of said first means to the other one of the tip and ring leads of the handset during and between ringing pulses of a ringing period received from the central office for energizing a ringer of the handset; said fourth means continuously electrically connecting the other one of the tip and ring leads of the handset to the one output line of said first means except during a ringing period; and,
- fifth means which is a ring trip means responsive to a transient signal on the drop wires for sensing an off-hook condition in the handset for initiating ring trip and for de-energizing said first means.

3,927,267

TIME DIVISION SWITCHING SYSTEM OF THE "TIME-PACE-TIME" TYPE

Paul Voyer, Rue des Carrieres, La Clarte, 22700 Perros-Guirec; Jean-Marc B. Pitié, 106, Rue Blaise pascal, 86300 Poitiers; Olivier F. Louvet, 82, Residence Corlay, 22300 Lannion, and Alain Y. Roche, 41, Rue du Sergent L'Heveder, 22700 Perros-Guirec, all of France

Filed Apr. 8, 1974, Ser. No. 458,881
Claims priority, application France, Apr. 6, 1973, 73.12517
Int. Cl.² H04J 3/00
U.S. Cl. 179—15 AT **4 Claims**



1. A time division switching system of the time-space-time division type comprising:
- a plurality of incoming time division switching networks;
- a plurality of outgoing time division switching networks;
- a plurality of incoming time division multiplex circuits divided into identical incoming multiplex circuit groups respectively connected to the inputs of said incoming time division switching networks, each of said incoming multiplex circuits defining incoming multiplex circuit time slots;
- a plurality of outgoing time division multiplex circuits divided into identical outgoing multiplex circuit groups respectively connected to the outputs of said outgoing time division switching networks, each of said outgoing multiplex circuits defining outgoing multiplex circuit time slots;
- said incoming and outgoing time slots having a given duration and conveying P.C.M. words having a given number of bits;

incoming time division group highways connected to the outputs of said incoming time division switching networks:

outgoing time division group highways connected to the inputs of said outgoing time division switching networks; said incoming and outgoing group highways respectively defining incoming group highway time slots and outgoing group highway time slots conveying said P.C.M. words;

an incoming buffer store in each of said incoming time division switching networks adapted for having stored therein P.C.M. words;

means for cyclically transferring the P.C.M. words conveyed by said incoming multiplex circuit time slots into words of said incoming buffer stores permanently associated with said incoming multiplex circuit time slots;

an outgoing buffer store in each of said outgoing time division switching networks adapted for having stored therein P.C.M. words;

means for cyclically transferring the P.C.M. words stored in said outgoing buffer stores into outgoing multiplex circuit time slots permanently associated with said outgoing buffer store words;

a space division switching network having inputs and outputs respectively connected to said incoming and outgoing time division group highways and including gate means for selectively connecting the concomitant time slots in each incoming and each outgoing group highway; and

a single control store means for, during a first time slot, transferring a first P.C.M. word stored in a word of a first incoming buffer store permanently associated with a first incoming multiplex circuit time slot into a time slot of a first incoming group highway, enabling the gate means connecting said first incoming group highway time slot to a first outgoing group highway time slot and transferring the first P.C.M. word conveyed in said first outgoing group highway time slot into a word of a first outgoing buffer store permanently associated with a first outgoing multiplex circuit time slot and, in a second time slot following said first time slot, transferring a second P.C.M. word stored in a word of a second incoming buffer store permanently associated with a second incoming multiplex circuit time slot into a time slot of a second incoming group highway, enabling the gate means connecting said second incoming group highway time slot to a second outgoing group highway time slot and transferring the second P.C.M. word conveyed in said second outgoing group highway time slot into a word of a second outgoing buffer store permanently associated with a second outgoing multiplex circuit time slot.

3,927,268

SPEECH PREDICTIVE ENCODING COMMUNICATION SYSTEM

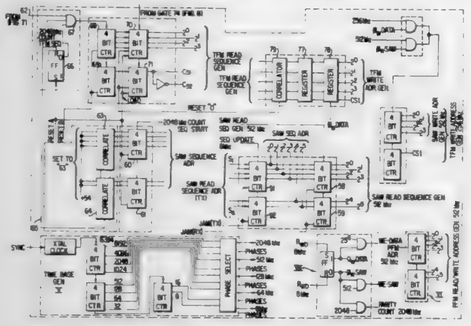
Joseph A. Sciulli, Derwood; Samuel Joseph Campanella, Gaithersburg, and Rene Costales, Rockville, all of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Continuation of Ser. No. 139,106, April 30, 1971, abandoned. This application Feb. 28, 1973, Ser. No. 336,589
Int. Cl. H04j *3/04*
U.S. Cl. 179—15 BW **16 Claims**

1. In a digital communications system wherein information from a maximum number (M) of voice circuits at a transmitting station may be transmitted to a receiving station via a transmission path of given power level, bit rate and bandwidth, apparatus for enable the transmission of information from a number (N) greater than said maximum number (M) of voice circuits over said transmission path comprising:

a. means at said transmitting station for periodically sampling the amplitude of voice signals on each circuit of said N voice circuits;

b. means for comparing for each of said N circuits, a present amplitude sample with a prior amplitude sample which had been transmitted to said receiving station, said comparing means generating N signals in response to said comparisons and storing said N signals as a control word;



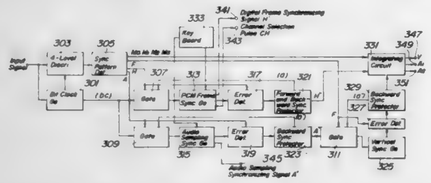
c. means for generating a transmission frame comprising a digital representation of those present amplitude samples which differ from the corresponding prior amplitude samples by a predetermined amount and said control word from said comparing means.

3,927,269

TIME DIVISION MULTIPLEXING TRANSMISSION SYSTEM

Takehiko Yoshino, Yokohama; Akio Yanagimachi, Kawasaki; Takashi Uehara, Inagi; Teruhiro Takezawa, Komae; Masaaki Fukuda, Kodaira, and Tatsuo Kayano, Hachioji, all of Japan, assignors to Nippon Hoso Kyokai Hitachi Ltd. and Hitachi Electronics Ltd., both of Tokyo, Japan

Filed Dec. 21, 1973, Ser. No. 427,219
Claims priority, application Japan, Dec. 29, 1972, 48-3227
Int. Cl.² H04J *3/06*
U.S. Cl. 179—15 BS **23 Claims**



1. A time division multiplexing transmission system for transmitting video signals and a plurality of channels of PCM-TDM audio signals alternately, said video and audio signals being divided into video and audio frames, each of which has an equal time duration of a predetermined unit frame period and the video and audio signals being transmitted in a sequence of one video frame and subsequently first and second audio frames, said transmission system comprising at a transmitter end

means for producing video signals under control of horizontal and vertical synchronizing signals having predetermined periods, respectively;

a gate means for alternately passing said audio and video signals at a time rate of a given integer ratio;

a digital synchronizing signal generator for producing audio and video digital synchronizing signals which are composed of a synchronizing information signal having a first pulse chain of a given repetition frequency and of audio and video control signals, respectively, each having a second pulse chain, the pulses of said first and second pulse chains appearing at given time slots, said audio and video digital synchronizing signals being produced at the video signal period, said synchronizing information signal of the given repetition frequency being of common waveform in both of the audio and video frame periods, and the contents of said audio and video control signals, both of which are produced in the video signal period, being different from one another;

first and second PCM multiplexing means for receiving respective groups of audio channel signals, each receiving half of said plurality of channels of audio signals, and for multiplexing said groups of audio channel signals in time division in the form of PCM signals, respectively, so as to form first and second signal series of PCM-TDM signals, respectively, each signal series containing a plurality of PCM frames, each of which has a PCM frame period equal to an integer ratio of the predetermined period of the horizontal synchronizing signal and includes a plurality of PCM time slots to which said audio channel signals are allotted interruptedly in a predetermined PCM time slot sequence in which a real signal to be reproduced directly and a memory signal to be reproduced after temporary storage are presented alternately, under control of a PCM synchronizing signal having a period equal to an integer ratio of the predetermined period of the horizontal synchronizing signal;

first and second delay means, having first and second delay times equal to first and second integer multiples of said unit frame period, respectively, for delaying said first and second series of PCM-TDM signals, respectively;

an electronic switching means coupled to said first and second PCM multiplexing means, changeable alternately at every frame period, for selectively deriving said first and second series of PCM-TDM signals therefrom;

first memory means, coupled to said first delay means, for storing the delayed first series of PCM-TDM signals during a time duration equal to an integer multiple of said PCM frame period and for reading out the delayed first series at a first repeating interval of the time slot during every first PCM synchronizing period within the PCM frame periods;

second memory means, coupled to said second delay means, for storing the delayed second series of PCM-TDM signals during a time duration equal to said integer multiple of said PCM frame period and for reading out the delayed second series at a second repeating interval of said time slot during every second PCM synchronizing period within the PCM frame periods;

third memory means, coupled to said switching means, for storing either one of the first or second series of PCM-TDM signals selectively derived from said switching means during a time duration equal to an integer multiple of said PCM frame period at a third repeating interval of said time slot during every third PCM synchronizing period within the PCM frame periods, so as to change said PCM time slot sequence in which a group of real signals and a group of memory signals are gathered separately;

third multiplexing means, coupled to said first, second and third memory means, for multiplexing read out signals therefrom together with said audio and video digital synchronizing signals;

and said transmission system further comprises at a receiver end

first means for extracting said pulse chain having the given repetition frequency from said synchronizing information signal of the common waveform inserted in multiplexed audio and video information signals which are transmitted alternately in said sequence and for producing clock pulses having a repetition frequency which is equal to said repetition frequency of said extracted pulse chain;

second means for extracting said audio and video control signals on the basis of the reproduced clock pulses;

means for forming audio and video synchronizing signals, respectively, from the reproduced clock pulses, said audio and video synchronizing signals and said extracted audio and video control signals being collated to each other and said means for forming said audio and video synchronizing signals being controlled by a collation output so as to produce said audio and video synchronizing signals, respectively, in synchronism with a transmitted signal, and said audio and video information signals being reproduced by means of the formed audio and video synchronizing signals; and

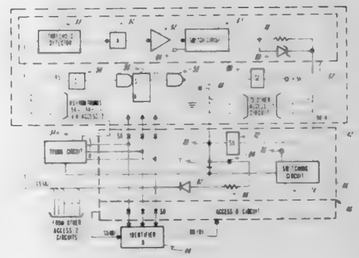
means for reproducing an audio information signal divided at the audio signal period from said multiplexed audio information signal divided at said video signal period by rearranging the time positions of the time slots in said multiplexed audio information signal.

3,927,270

AUTOMATIC NUMBER IDENTIFICATION HAVING FOUR-PARTY DETECTION

Gordon H. Davis, Canandaigua, and Klaus Joehler, Penfield, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed June 26, 1974, Ser. No. 483,478
Int. Cl.² H04Q *3/74*
U.S. Cl. 179—17 A **4 Claims**



1. In a telephone system having a central office, a plurality of two-conductor subscriber lines connected to said central office, first and second subscriber stations connected to one of said plurality of subscriber lines, an outgoing trunk circuit in said central office, and a sleeve lead in said central office associated with said one subscriber line, apparatus for automatically determining a directory number of one of said subscriber stations off-hook initiating a call, comprising:

A. a first unidirectional current device in said first station connected between ground and said one line when said first station is off-hook;

B. a second unidirectional current device in said second station connected oppositely poled of said first unidirectional current device between ground and said one line when said second station is off-hook;

C. a plurality of number elements, two of said number elements associated on a one-to-one basis with said first and second subscriber stations, said two number elements connected to said sleeve lead; and

D. an identifier unit including:

1. a plurality of directory number digit buses, said plurality of number elements each so connected through isolation means to said digit buses that a signal issuing from any one of said number elements appears simultaneously on preselected ones of said digit buses to form signals representative of a unique directory number associated with said any one number element,

2. a pulse detector connected to each of said digit buses,

3. a pulse generator connected through said trunk circuit to said sleeve lead,

4. a control means,

5. a party detector circuit including

a. means responsive to said control means for shorting together the two conductors of said one subscriber line during a first time period,

b. first means connected through said trunk circuit to said one subscriber line in response to said control means during a first portion of said first time period for detecting current through said first unidirectional device when said first subscriber station is off-hook,

said first detecting means unresponsive to said second subscriber station off-hook,

c. second means connected through said trunk circuit to said one subscriber line in response to said control means during a second portion of said first time period for detecting current through said second unidirectional device when said second subscriber station is off-hook, said second detecting means unresponsive to said first subscriber station off-hook,

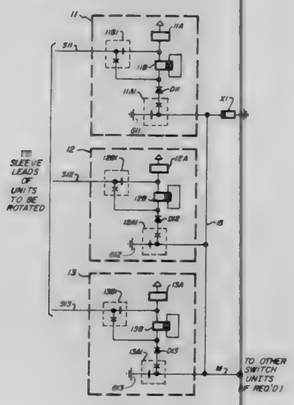
d. means responsive to said first and second detecting means, respectively, during said first and second portions of said first time period for storing an indication of current detected in said one subscriber line, and

6. means responsive to said storage means during a second time period for disabling said number element associated with said subscriber station on-hook, said pulse generator responsive to said control means during said second time period to apply a pulse to said sleeve lead, said pulse detectors responsive to said pulse traversing said number element associated with said subscriber station off-hook to generate signals representative of the directory number of said off-hook station.

3,927,271
SEQUENCE CONTROL CIRCUIT FOR TELEPHONE SYSTEMS

Generoso Acevedo, Milan, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sept. 16, 1974, Ser. No. 506,354
Int. Cl.² H04M *3/22*
U.S. Cl. 179—18 AB **5 Claims**

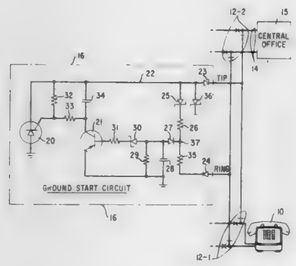


1. A sequence control network for plural switches of a group within a telephone system, said network comprising a plurality of control units, each representing one of said switches, a first lead in each of said units over which the switch may be tested for availability and seized, a first and a second relay in each unit, said first relay of a unit responsive to seizure of said unit for enabling a path to the second relay of said unit, a source of potential at each unit of said group, a common lead from the potential source to all said units, means in a unit responsive to operation of the first relay of that unit for disconnecting said potential source from said common lead, and means for completing a path through any idle one of said units for operation of an enabled second relay of a busy unit for holding said second relay operated to artificially busy said unit, said disconnecting means of a last idle one of said units opening the path to the second relay of all other units to release all second relays of said units.

3,927,272
AUTOMATIC CIRCUIT FOR PROVIDING EMERGENCY GROUND START SIGNALS ON PBX TRUNKS

Glen Lee Bloxham, Murray, and Don Charles Wells, Midvale, both of Utah, assignors to American Telephone and Telegraph Co., New York, N.Y.

Filed June 19, 1974, Ser. No. 480,726
Int. Cl.² H04M *7/00*
U.S. Cl. 179—18 AD **15 Claims**



1. In a private branch exchange telephone system arranged for connecting a station directly to a central office trunk for providing outward emergency telephone service during trouble periods of the private branch exchange, the invention comprising circuitry connected to said trunk for notifying a central office of a request for service from said station, said circuitry comprising

timing means operated in response to a request for service from said station for generating a prescribed time interval, and

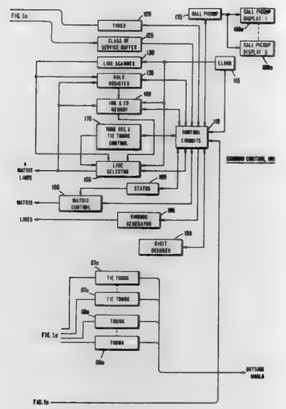
means responsive to said operated timing means upon an expiration of said time interval for applying a start signal to said trunk to inform the central office of the request for service.

3,927,273
JUNCTOR MEMORY

Uwe A. Pommerening, Webster, and Glenn L. Richards, Caledonia, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed June 13, 1974, Ser. No. 478,960
Int. Cl.² H04Q *3/56*
U.S. Cl. 179—18 J **10 Claims**

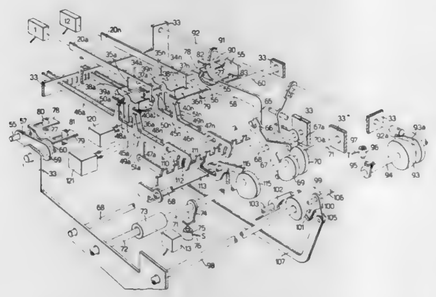
1. In an electronic private automatic branch exchange having a plurality of line circuits and junctors, switching means for selectively connecting one or more line circuits to a selected junctor, a digit decoder, a hold register and a line selector, the improvement consisting of a junctor memory system comprising a memory having a plurality of storage locations, clock means connected to said memory for sequentially scanning said storage locations during respective junctor times, gating means for selectively gating data to said memory from a selected one of said digit decoder, hold register and line selector, logic control means responsive to said clock means and selected command signals for actuating said gating means, and means responsive to the data stored in said memory for controlling said switching means.



3,927,274
CONTROL FOR PRINTING AND SERVICE FUNCTIONS OF AN ACCOUNTING MACHINE

Adriano Zambolin, Ivrea, and Gianfranco De Falco, Samone, both of Italy, assignors to Ing. C. Olivetti & Co., S.p.A., Ivrea, Italy

Filed June 21, 1974, Ser. No. 481,558
Claims priority, application Italy, July 12, 1973, 69083/73
Int. Cl.² B41J *5/30, 5/44*
U.S. Cl. 197—19 **9 Claims**



1. Apparatus for governing the printing and service functions for an accounting machine and the like, comprising:

a plurality of elements for decoding in succession code combinations,

a printing mechanism for printing characters,

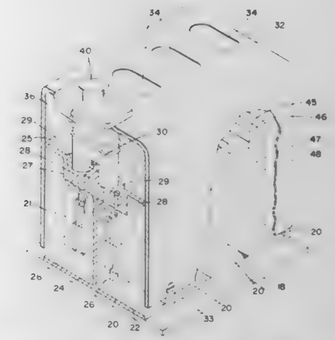
an actuating mechanism for actuating said service functions according to corresponding code combinations, and

a switching device controlled by an element of said plurality of elements for switching the following code combination selectively to said printing mechanism or to said actuating mechanism.

3,927,275
TELEPHONE ISOLATION JACK PANEL

James C. Deitch, Bloomington, and Lawrence A. Robert, Minneapolis, both of Minn., assignors to Magnetic Controls Company, Minneapolis, Minn.

Filed Nov. 5, 1974, Ser. No. 520,964
Int. Cl.² H04Q *1/02*
U.S. Cl. 179—97 **5 Claims**



1. A telephone jack panel for use in telephone circuits where high voltage may be present comprising in combination:

a plurality of jacks;

a base;

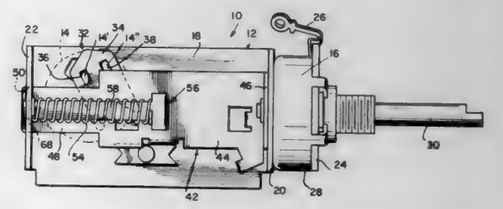
a plurality of electrically insulating jack support means on said base, each of said support means including at least one cavity for holding the jack, said support means completely surrounding the jack on top, bottom, and sides except for one side, the missing side allowing the cavity to open in a direction away from the other jack cavities so as to provide maximum electrical isolation between the jacks;

an electrically insulating cover enclosing said jack support means and closing said one side, said cover spaced from the entrance ends of said jacks in said support means, and said cover having a plurality of holes aligned with the entrance ends of the jacks, said jack panel adapted to receive insulated plugs which plugs are shaped to fit through the holes in the cover and extend into the entrance ends of the jacks.

3,927,276
SWITCH ASSEMBLY WITH LIMIT STOP STRUCTURE ALLOWING ALTERNATE MAKE AND BREAK OPERATIONAL SWITCH STATES

Ellis P. Lipp, Frankfort, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed May 3, 1974, Ser. No. 466,621
Int. Cl.² H01H *9/20;* **H01C** *10/36*
U.S. Cl. 200—327 **4 Claims**



1. A switch assembly comprising:

a. a frame,

b. a switch carried by said frame,

c. a pivotal switch actuator carried by said frame and connected to said switch to selectively actuate same,

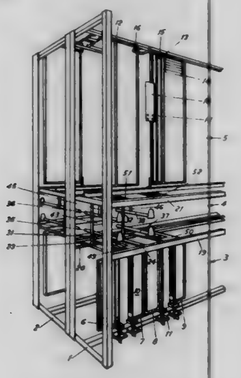
d. a slider slideably carried by said frame and engaging said pivotal switch actuator,
e. shaft means connected to said slider to slideably move same,
f. a spring guide slideably carried by said frame and connected to said slider,
g. a slot in the shape of a parallelogram provided in said slider,
h. a coil spring surrounding said spring guide and biased between said frame and a tang extending from said spring guide and engaging said slot, and
i. a bar pivotly mounted between ends of said bar on said frame, and first and second V-shaped notches at opposed ends of said bar engaging first and second tangs extending from said slider and disposed to provide a space for said bar to pivot therebetween,

movement of said slider from a first position in a first direction engaging said first V-shaped notch with said first tang to pivot said bar into an interference path with said first tang, movement of said slider in a second opposite direction engaging said second tang with said second V-shaped notch to lock said slider in a second position, subsequent movement of said slider in said first direction engaging said first tang with said first V-shaped notch to pivot said bar and release said second V-shaped notch from said second tang, said pivoting of said bar permitting said slider to return to said first position.

3,927,277
DISTRIBUTING FRAME

Oscar Wuyts, Beveren-Waas; Felix Joanna Petrus Carpentier, Ekeren, and Ludovicus Josephus Albertus Wouters, Wijnegem, all of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 6, 1974, Ser. No. 467,440
Claims priority, application Netherlands, May 10, 1973, 7306556
Int. Cl.² H04Q *1/14*
U.S. Cl. 179—98 **5 Claims**

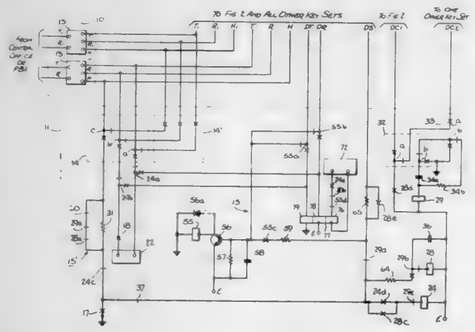


1. A distributing frame for a telecommunication exchange of the type having a plurality of first and second groups of terminals, together with a jumpering section containing a series of jumper wires for interconnecting said first and second groups of terminals, the improvement comprising:
first jumper wire separating means located between said first and second groups of terminals within said jumpering section and including a plurality of first subsections defined by a first plurality of interconnecting vertical and horizontal support members, each of said first subsections located one over the other in the vertical plane and separated from each other by means of at least one of said horizontal support members; and
second jumper wire separating means with said jumpering section said second separating means including a pair of second subsections defined by a second plurality of vertical support members and extending in a plane perpendicular to each of said first subsections, one of said second subsections being larger than the other of said second subsections, and separated therefrom said other second subsection by at least one of said second plurality of vertical support members,
whereby said jumper wires located within said jumpering section are accessible when a pair of said distributing frames are connected together.

3,927,278
DIRECT-STATION-SELECTION INTERCOMMUNICATION AND AUTOMATIC HOLDING CIRCUIT IN A KEY TELEPHONE SYSTEM

Fumio Tsutsumi, Yokohama, Japan, and Stephen Kerman, Merrick, N.Y., assignors to Nippon Tsu Shin Kogyo K.K., Kanagawa, Japan and TIE/communications, Inc., Stamford, Conn.

Filed Mar. 23, 1973, Ser. No. 344,219
Int. Cl.² H04M *1/00*
U.S. Cl. 179—99 **4 Claims**

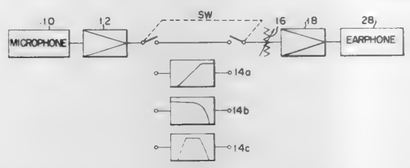


1. A circuit for a first key telephone set in a key telephone system having a plurality of line keys for connecting the transmission network thereof to a like plurality of office line circuits wherein the improvement comprises, in combination,
a pair of intercom line conductors;
at least one intercom station selection key associated with at least one other key telephone set having a transmission network;
means, including first and second normally released relays, for holding an office line connected to said first key telephone set and for supplying a calling signal to said other key telephone set upon operation of said intercom key;
means, responsive to said operation of said key, including normally released third and fourth relays, for establishing a talking path between said transmission networks over said pair of intercom line conductors, said third relay operating in response to the release after operation of said second relay, and said fourth relay operating in response to a switch hook status indication from said other key telephone set;
first capacitor means connected in series with an operating winding of said first relay;
second capacitor means, including a make contact of said first relay, for storing electrical energy during the period of operation of said first relay; and
means, including a break contact of said first relay, for supplying said electrical energy to an operating winding of said second relay;
the enumerated means being so proportioned and the combination being so constructed and arranged that said first relay operates for a period of time determined primarily by said first capacitor, and said second relay operates for a period of time determined primarily by said second capacitor.

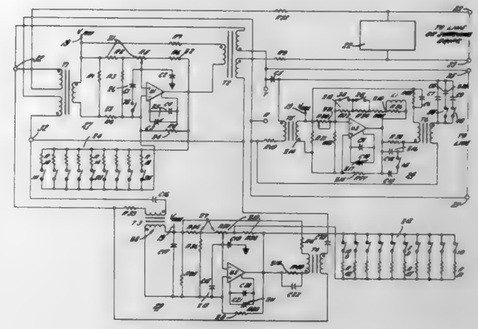
3,927,279
HEARING AID

Kenji Nakamura, Chigasaki; Kunihiko Fukuyama, and Takuo Yamamoto, both of Tokyo, all of Japan, assignors to Rion . Kabushiki Kaisha, Kokubunji, Japan

Filed Apr. 24, 1973, Ser. No. 354,145
Claims priority, application Japan, Oct. 16, 1972, 47-103466
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² H04R *25/00*
U.S. Cl. 179—107 FD **8 Claims**



1. A hearing aid device comprising in combination, a pair of microphones each picking up acoustic energy to convert it to a corresponding electrical energy, a control generator circuit connected to one of the microphones to generate a control voltage in response to that portion of the electric energy generated by said one microphone having a predetermined frequency spectrum, a first control circuit connected to both the other microphone and to the control generator circuit to decrease the lower frequency portions of the electrical energy from the other microphone in response to the control voltage from the control generator circuit, and a second control circuit connected to the first control circuit and also to the control generator circuit to decrease the higher frequency portion of the electrical energy from the other microphone in response to the control voltage from the control generator circuit, whereby acoustic energy reconverted from the electrical energy has a frequency characteristic suitable for the auditory characteristic of a person having difficulty in hearing.
5. A hearing aid device comprising in combination, a single microphone for picking up acoustic energy to convert it to a corresponding electric energy, a control generator circuit connected to the microphone to generate a control voltage in response to that portion of the electric energy generated by said one microphone having a predetermined frequency spectrum, a first control circuit connected to the microphone and to the control generator circuit to decrease the lower frequency portions of the electric energy in response to the control voltage from the control generator circuit, and a second control circuit serially connected to the first control circuit and to the control generator circuit to decrease the higher frequency portions of the electric energy in response to the control voltage from the control generator circuit, whereby acoustic energy reconverted from the electric energy has a frequency characteristic suitable for the auditory characteristic of a person having difficulty in hearing.
which is frequency dependent for establishing a crossover frequency and lowering the apparent impedance of the facility below said crossover frequency and increasing the apparent impedance of the facility above said crossover frequency

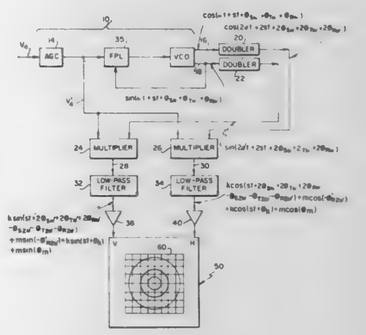


thereby to yield a corrected impedance having a characteristic attenuation vs. frequency slope, said gain unit including means for providing a gain vs. frequency characteristic which complements the corrected attenuation vs. frequency slope.

3,927,281
INSTRUMENT FOR MEASURING HARMONIC DISTORTION IN TELEPHONE TRANSMISSION

Frank R. Bradley, 9 Dash Place, Bronx, N.Y. 10463

Filed Dec. 3, 1974, Ser. No. 529,223
Int. Cl.² H04B *3/46*
U.S. Cl. 179—175.3 R **23 Claims**



12. An instrument for displaying harmonic distortion in a transmission system by operating on a received signal having test tone and disturbance components therein comprising means for deriving from the received signal a pair of single-frequency quadrature signals whose frequency is that of the test tone multiplied by a harmonic factor of interest, a pair of means each responsive to a respective one of said quadrature signals to extract harmonic information of interest contained in the received signal and for generating a pair of display signals, display means having first and second orthogonal input circuits responsive to the application of signals thereto for generating a display, and a pair of low-pass filter means for coupling a respective one of said display signals to a respective one of said orthogonal input circuits.

3,927,280
NEGATIVE IMPEDANCE REPEATER

Shanti S. Gupta, Naperville, and Robert G. Pershing, Glen Ellyn, both of Ill., assignors to Wescom, Inc., Downers Grove, Ill.

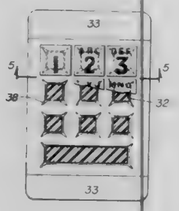
Filed May 13, 1974, Ser. No. 469,643
Int. Cl.² H04B *3/18, 3/36*
U.S. Cl. 179—170 G **21 Claims**

1. A negative impedance repeater for use with non-loaded transmission facilities comprising in combination, a gain unit having a substantially constant image impedance, impedance corrector means shunted across the transmission facility for correcting the impedance thereof to match the image impedance of the gain unit, said impedance corrector means including amplifier means having feedback paths at least one of

3,927,282
BUTTONS FOR ATTACHMENT TO PUSH-BUTTON TELEPHONE KEYS

Harold S. Firstenberg, 131 Townsend St., San Francisco, Calif. 94107

Filed Oct. 18, 1973, Ser. No. 407,533
Int. Cl.² H04M *1/23*
U.S. Cl. 179—178 **3 Claims**



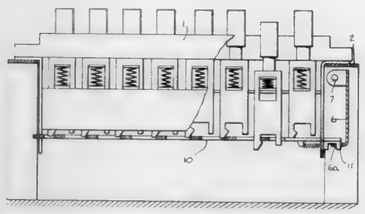
1. For use with keys of the type having a rectangular shape which are positioned on a keyboard in an array of columns and rows with a first gap between the adjacent margins of said keys, a plurality of buttons each having a body having a top and a bottom, said bottom formed with a recess complementary in shape to the upper end of one of said keys, said top being rectangular in plan and dimensioned substantially larger than the tops of said keys so that when said buttons are installed on said keys the distance between adjacent margins of said buttons is substantially less than said first gap, each said top provided with a large, highly visible numeral, the top of each said key being concave and the bottom of said recess being convex with pressure-sensitive adhesive on the bottom of said recess to cause each said button to adhere to an individual key, the recesses in the bottoms of some of said buttons being centered, the recesses in others of said buttons being offset laterally and the recesses in others of said buttons being offset longitudinally, tops of said buttons being wholly exposed and unobstructed by any structure located above said tops of said buttons, the contiguous edges of adjacent buttons being disposed in close proximity to each other whereby the tops of all said buttons when positioned on said entire array of keys are disposed with minimal gaps between buttons, a thin card having dimensions greater than said array of keys, said card being formed with a plurality of substantially rectangular apertures corresponding in number to said buttons, each said button having rectangular sides, each said side formed with a groove of a breadth at least equal to the thickness of said card plus the extent of movement of one of said keys when said key is activated, the grooves on all said sides extending continuously around the periphery of said button, the margins of said apertures being within said grooves, said card being dimensioned larger than said array of keys and being formed with at least one marginal panel for display of information of the character of emergency telephone numbers, advertising matter or the like.

3,927,283
INTERLOCKING BAR ALLOWING OPERATION OF ONE SWITCH ASSEMBLY IN A PLURAL COLUMN, ROW MATRIX SWITCH ASSEMBLY

Isao Kunimine, Kawasaki, Japan, assignor to Nippon Tsu Shin Kogyo K.K., Kanagawa, Japan and TIE/communications, Inc., Stamford, Conn.

Filed Mar. 14, 1973, Ser. No. 341,200
Claims priority, application Japan, Jan. 31, 1973, 48-12877
Int. Cl.² H01H *9/26*
U.S. Cl. 200—5 R **1 Claim**

1. An interlocking pushbutton key switch mechanism for a key telephone comprising
a box shaped mounting frame;
a plurality of switch modules mounted on said frame each module having a plurality of pushbutton keys and associated switching means including printed circuit board means mounted to each of said modules, and said frame;
a horizontally movable interlocking lower bar mounted in each said module and connected to each row of keys;
said interlocking bars being movable in a horizontal direction upon depressing one of said keys in each of said rows, said interlocking bar having a notched portion on one end thereof; and
a rotatably mounted rectangular coupling plate pivotally mounted at one end to said frame and being substantially

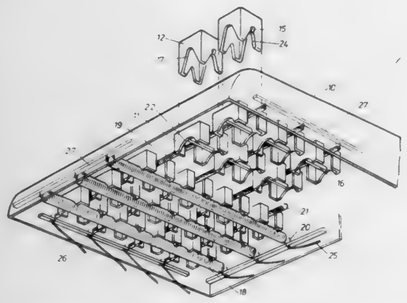


perpendicular to the interlocking bars, said coupling plate having an opening at the other end of said plate, on a portion of said plate projecting out from the coupling plate at a distance below the pivot point of the coupling plate and in juxtaposition to the notched portion of said bars, for engaging the notched portion of each of said interlocking bars so that horizontal movement of one of said bars pivots said coupling plate and causes interlocking horizontal movement of all other rows of keys in substantially the same manner to thereby interlock all the rows of keys.

3,927,284
KEYBOARD SWITCH ASSEMBLY HAVING COIL SPRING CONTACTS PROVIDING POINT CONTACTS ENGAGEMENT

Leif Helmer Anderson, Atvidaberg, Sweden, assignor to Facit Aktiebolag, Atvidaberg, Sweden

Filed Nov. 5, 1974, Ser. No. 521,100
Claims priority, application Sweden, Nov. 7, 1973, 73150955
Int. Cl.² H01H *13/28*
U.S. Cl. 200—5 R **9 Claims**

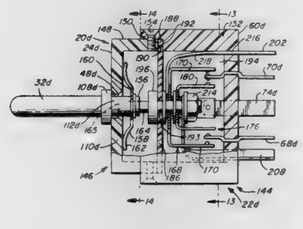


1. The combination of a keyboard, a key-operated switch and an electrical circuit comprising at least one elongated resilient member forming a first switch contact, an elongated second switch contact positioned substantially perpendicular to said first switch contact, a stationary support located adjacent to and over said second switch contact, a generally rectangularshaped key provided with a pair of notches on one set of opposed sides of said key and when said key is depressed the upper edges of each of said pair of opposed notches engage said first switch contact on opposite sides of said stationary support and stresses said first switch contact thereagainst whereby the first switch contact is forced into engagement with said second switch contact at two spaced points to thereby close said electrical circuit, said first switch contact additionally functioning as a return spring for said key when the electrical circuit is open.

3,927,285
MULTIDIRECTIONAL SWITCH WITH UNIVERSALLY PIVOT ACTUATOR FOR ACTIVATING PLURAL CIRCUITS

Louis H. Frost, Grand Rapids, and Walter H. Powers, Jackson, both of Mich., assignors to L. H. Frost and Company, Inc., Grand Rapids, Mich.

Filed July 8, 1974, Ser. No. 486,507
Int. Cl.² H01H *21/24, 25/00*
U.S. Cl. 200—6 A **71 Claims**

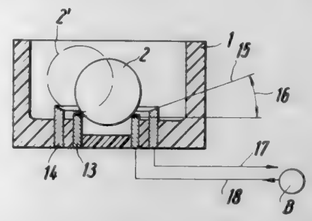


1. Switch structure for controlling the direction of operation of a plurality of electric motors which comprises,
support means, a plurality of pairs of electric contacts on said support means,
the contacts of each pair being adapted to be connected in current conducting relation to an electric motor,
a control member on said support means selectively movable in a plurality of directions relative to said pairs of contacts,
a positive and a negative terminal mounted for movement with said member and being electrically insulated from each other,
conductors on said support means electrically connected with said terminals and being adapted for connection with a source of electric current,
each of said terminals having a portion adjacent to but spaced from each of said contacts in one position of said control member,
first and second of said portions of each of said positive and negative terminals being engageable respectively with alternate ones of one pair of said contacts responsive to movement of said member in first and second directions with respect to said one position,
third and fourth of said portions of each of said positive and negative terminals being engageable respectively with alternate ones of another pair of said contacts responsive to movement of said member in third and fourth directions with respect to said one position,
said first and third portions being engageable respectively with the contacts of said one pair and other pair responsive to movement of said member in a fifth direction with respect to said one position,
said second and fourth portions being engageable respectively with the contacts of said one pair and other pair responsive to movement of said member in a sixth direction with respect to said one position.

3,927,286
INERTIA TYPE SWITCH HAVING BRIDGING BALL CONTACTOR AND PLURAL, CONCENTRIC CONDUCTIVE RING ARRAY

Artur Föhl, Schelmenwasenstr. 68, 7061 Haubersbronn, Germany

Filed June 11, 1973, Ser. No. 368,972
Claims priority, application Germany, June 13, 1972, 2228683
Int. Cl.² H01H *35/02, 35/14*
U.S. Cl. 200—61.45 R **14 Claims**

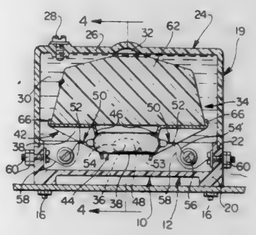


1. An acceleration responsive electric control device in combination comprising a mass inertia element in the form of a ball having a surface of conductive material, a support member having a seat supporting said ball seated thereon, said member comprising a first fixed contact device having a circular internal periphery of substantially less diameter than said ball normally lying in a horizontal plane, the top of said device forming a ring surrounding the lower portion of the ball resting thereon, said contact device having conductive material on its surface to contact the ball in engagement with said ring, a second fixed contact device having a second circular periphery forming a second ring coaxial with said first ring and spaced radially outwardly and upwardly of said first ring, a distance less than the diameter of said ball, and normally lying in a horizontal plane, said second contact device having conductive material on its surface to contact a ball in engagement with said second ring, said ball being displaced from said first ring by acceleration to span the space between said two contact devices and engage said two rings, the lines of contact of said rings engageable by said ball lying in a surface inclined downwardly toward the axis of said rings, so that the ball returns to its seat on said first ring when said acceleration ceases, and means to retain said ball in association with said contact devices.

3,927,287
SENSOR UNIT

Charles E. Hopwood, 1108 Sunnydale Drive, Clearwater, Fla. 33515

Continuation-in-part of Ser. No. 344,196, March 23, 1973, Pat. No. 3,846,748. This application Aug. 2, 1974, Ser. No. 489,516
Int. Cl.² H01H *29/20, 35/14*
U.S. Cl. 200—61.47 **16 Claims**



9. In a signal system for a vehicle, a sensor unit for actuating a signal responsive to movement of the vehicle, the sensor unit comprising, a body adapted to be operatively fixed to the

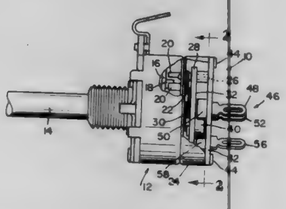
vehicle and including a container and a liquid in said container, said container having a centering concavity for cooperation with the liquid in positioning a centering bubble when leveling the body, a sensor substantially immersed in said liquid and mounted on said body for swinging movement about a generally level axis to permit relative movement between the sensor and said body, said sensor including control means adapted to be connected with a source of electrical power and the signal and operable between a normal first position and a second position for operating the signal, said control means being mounted substantially level with said generally level axis and operable from the first position to the second position responsive to a change of velocity of the vehicle, and said sensor further including retaining means above said axis and retaining said control means in substantially said first position as said body moves relative to said sensor.

3,927,288

ELECTRICAL SWITCH HAVING A MOVABLE CONTACT ROLLING BETWEEN STATIONARY CONTACTS

Jay Utken, and Edgar F. Hauenstine, both of Frankfort, Ind., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Feb. 1, 1973, Ser. No. 328,869
Int. Cl. H01h *1/16*
U.S. Cl. 200—277 **6 Claims**



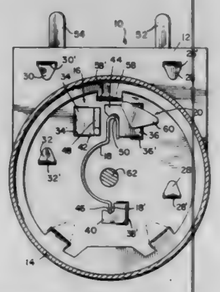
1. In an electrical switch wherein a self-centering round movable contact engages at least three rectangular shaped stationary contacts, two of said contacts disposed in tandem relationship with a space therebetween, the third contact spaced from said first two contacts and overlapping said space, said contacts further being disposed lengthwise directionally substantially parallel to a path of movement of said movable contact, and means rolling said round movable contact between said stationary contacts.

3,927,289

SNAP SWITCH

Edgar F. Hauenstine, Frankfort, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Sept. 12, 1974, Ser. No. 505,464
Int. Cl.² H01H *1/58*
U.S. Cl. 200—284 **4 Claims**



1. A switch assembly comprising;

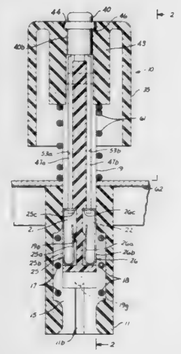
a. a terminal board having opposed surfaces,
b. electrically conductive means providing electrical contact seats at at least three positions,
c. means integral with one of said seats pivotly receiving an end of a switch blade, movement of said blade selectively engaging another end of said blade with one of the other of the remaining two seats,
d. apertures in said terminal board, said electrically conductive means further including tangs extending through selected ones of said apertures and crimped over against the other of said opposed surfaces,
e. electrical terminals electrically connected to electrically conductive means, and
f. actuator means pivoting said switch blade.

3,927,290

SELECTIVELY ILLUMINATED PUSHBUTTON SWITCH

Ronald S. Denley, Woodstock, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Nov. 14, 1974, Ser. No. 523,776
Int. Cl.² H01H *13/14*
U.S. Cl. 200—314 **19 Claims**



1. An electrical pushbutton switch of the type including a stationary housing with a longitudinal passageway formed therein, a plurality of spaced stationary contacts extending across and disposed in at least one array along said passageway, and a reciprocally movable assembly, including a slider adapted for movement within the housing passageway, a pushbutton mounted at the upper end of said slider, and conductor means carried by the slider within said passageway and positioned to engage selective ones of the spaced contacts in response to said slider being moved within the passageway, characterized in that said combination further includes;

at least one channel formed in and extending longitudinally externally along the length of said slider;

a receiving cavity formed in said pushbutton, and

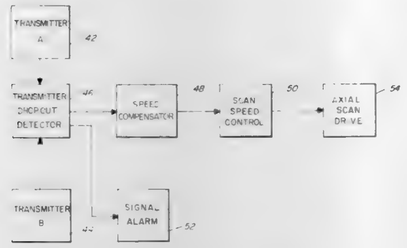
a light source at least partially mounted within the cavity of said pushbutton, and having at least one elongated lead attached thereto, said lead being dimensioned so as to extending longitudinally within said slider channel, with the free end thereof being conductively coupled to at least an associated portion of said conductor means carried by said slider, and through said conductor means to selective ones of said array of stationary contacts, while another lead attached to said light source is simultaneously conductively coupled to at least one other stationary contact so as to complete circuit continuity to said light source through different selective ones of said array of contacts and said other contact.

3,927,291

REDUCED SPEED COMPENSATOR FOR MICROWAVE HEATING APPLICATOR

Robert A. Peterson, Canton, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 374,832, June 29, 1973, abandoned.
This application June 19, 1974, Ser. No. 480,657
Int. Cl.² H05B *9/06*
U.S. Cl. 219—10.55 R **4 Claims**



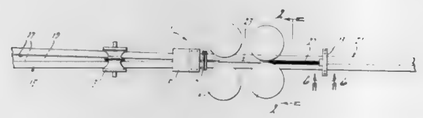
1. Microwave heating apparatus comprising:
an enclosure;
plural interconnected sources of electromagnetic energy;
means for radiating said energy within said enclosure;
means for positioning an article to be heated within said enclosure;
said positioning means having a programmed rate of movement controlled by a speed control electrical circuit to heat said article to obtain a desired temperature profile; and
electrical circuit means including a drop-out detector circuit to detect the failure of at least one of said sources to operate and generate an output signal and a speed compensator circuit energized by said output signal interconnected to said speed control circuit to reduce movement of said article positioning means by a factor commensurate with the reduction of power resulting from said source failure.

3,927,292

WELD BEAD FORM ROLLS

Donald P. Worden, Union Grove, Wis., assignor to Tenneco Inc., Racine, Wis.

Filed Oct. 15, 1974, Ser. No. 514,432
Int. Cl.² B23K *7/08*
U.S. Cl. 219—67 **11 Claims**



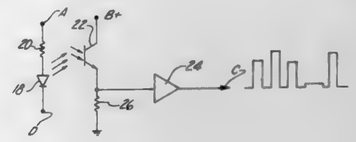
1. In a tube mill for making tubing by forming a skelp from strip metal and welding the edges of the skelp together, the combination of means for continuously moving the strip along a path extending longitudinally of the length of the tubing being formed, heating means for continuously heating the edges of the skelp to be welded together, first pressure means to continuously apply welding pressure to the skelp to weld the edges together into a weld having an outside bead, second continuous pressure means for transversely compressing the outside weld bead into a cross section that is substantially thinner at juncture of the outside bead and the tubing than is the weld, and scarfing means for continuously severing the compressed outside weld bead from the tubing along a plane that is substantially flush with the outer surface of the tubing.

3,927,293

FUNCTION CONTROL CIRCUIT FOR EDM POWER SUPPLY

Oliver A. Bell, Jr., Mooresville, N.C., assignor to Colt Industries Operating Corporation, New York, N.Y.

Division of Ser. No. 251,352, May 8, 1972, Pat. No. 3,825,713.
This application Mar. 5, 1974, Ser. No. 448,351
Int. Cl.² B23P *1/08*
U.S. Cl. 219—69 C **20 Claims**



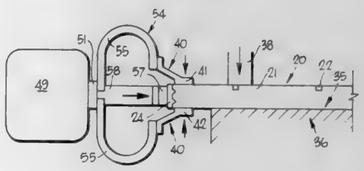
1. In an electrical discharge machining apparatus for machining a conductive workpiece by passing machining power pulses from an electrode tool across a dielectric coolant-filled gap, a servo feed system for providing relative movement between said electrode tool and workpiece as material is removed, said servo feed system including reversible motive means, an electrically energized element operably connected to said motive means for controlling its operation responsive to current flow through said element, means for providing a signal output for said element comprising a light-emitting device connected in series with said gap and effective to provide a light output signal of an energy level magnitude representative of gap current level and hence of gap spacing, and a light responsive device operably linked to said light-emitting device for receiving and converting said light signal to an electrical signal for controlling said electrically energized element and said motive means.

3,927,294

WELDING METAL GRATING ENDS

Peder John Andersen, Brookvale, Australia, assignor to P.M. Andersen Manufacturing Pty. Limited, Brookvale, Australia

Filed Mar. 6, 1974, Ser. No. 448,512
Claims priority, application Australia, Mar. 8, 1973, 2516/73
Int. Cl.² B23K *11/02*
U.S. Cl. 219—107 **11 Claims**



1. A method of welding a transverse end bar to the ends of longitudinal members of a metal grating, wherein the transverse end bar comprises two welding beads, comprising the steps:

a. clamping the longitudinal members near one end of the grating against a grating support surface on a first frame,
b. positioning the end bar welding beads adjacent the clamped ends of the longitudinal members,
c. positioning a first electrode comprising two copper alloy blocks at a first welding locality into firm contact engagement with a said longitudinal member near its clamped end, said blocks having respective flexible jumper leads of equal length and resistance positioned respectively above and below the medial horizontal plane of the end bar

connecting said blocks with a first secondary terminal of a transformer,

d. driving a second electrode against the end bar to bring it into firm welding contact with the end of said contacted longitudinal member, the second electrode having a flexible jumper lead lying in said medial horizontal plane and connecting it with a second secondary terminal of said transformer, said jumper leads between them defining two secondary loops of equal impedance, said electrodes and transformer being carried on a second frame,

e. energizing said transformer to effect resistance welds between the end of that said contacted member only and respective said welding beads of said end bar, while at the same time collapsing the weld metal,

f. releasing the electrodes respectively from engagement with the then welded longitudinal member and end bar, and

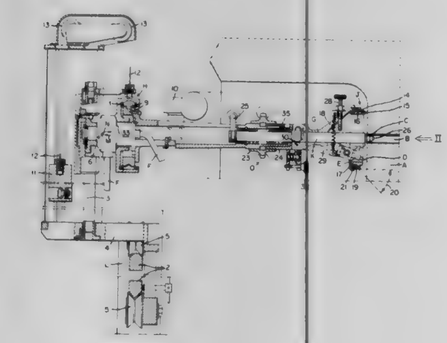
g. effecting relative movement between said frames to position the electrodes at a second welding locality, similarly effecting a resistance weld at the second welding locality and straightening any bend in the end bar caused by collapse of weld metal during the previous weld, and repeating until all welds have been effected, by welding the end bar to the longitudinal members one at a time.

3,927,295

WELDING SYSTEM

Joachim Schuster, and Hermann Seien, both of Oberhausen, Germany, assignors to Babcock & Wilcox, Limited, London, England

Filed Feb. 1, 1974, Ser. No. 438,833
Int. Cl.² B23K *9/12*
U.S. Cl. 219—125 R **4 Claims**



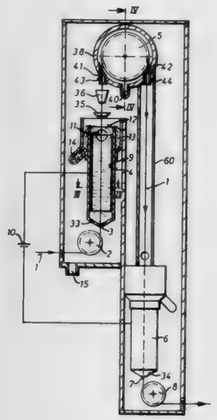
1. A welding apparatus for use in making orbital welds at the junction of a tube and tube sheet and having a rotatable welding head, the improvement comprising means for positively positioning the welding head with respect to the intended welding path, said means including rotatable and stationary members, and each of said members having a bearing surface disposed in spaced surrounding relation to the welding head, one of said surfaces being inclined with respect to the central axis of the rotating member, bearing means interposed between said surfaces, and means for mounting the welding head on said rotatable member, said stationary member having means projecting therefrom for contacting the tube sheet, and said rotatable member including a hollow spindle, a normally retracted centering pin housed in said spindle, means for inserting the pin into said tube when aligning the rotatable member therewith, means for applying pressure through the rotatable member, and means independent of said stationary member and adapted for supporting the rotatable member during alignment and thereafter sustaining the pressure therethrough, said pressure giving rise to a centering action between the rotatable and stationary members while maintaining the projecting means engaged with said tube sheet.

3,927,296

APPARATUS FOR THE HEATING OR ANNEALING OF MATERIALS IN ELONGATED FORM

Heinrich Zettl, Lohnberg, and Klaus Decker, Rehe, both of Germany, assignors to Firma Henrich KG, Horbach, Germany

Filed Nov. 4, 1974, Ser. No. 520,750
Claims priority, application Germany, Nov. 9, 1973, 2356003
Int. Cl.² C21D *9/62*
U.S. Cl. 219—155 **29 Claims**



1. In an apparatus for the heating of aluminum wire and other elongated materials by electrical resistance heating, the combination of first and second electrolyte containers through which the elongated material to be treated is passed, electrode means in each container for making an electrical connection through an electrolyte with the elongated material passing therethrough, means for defining a substantially vertical path for the elongated material through the first and second container, and overflow means on each of said electrolyte containers.

3,927,297

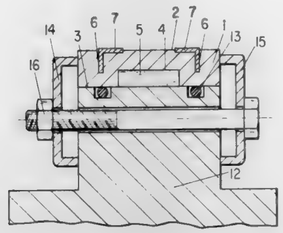
SEALING JAW

Wilhelm Reil, Bensheim-Auerbach, Germany, assignor to Altstädter Verpackungs-Vertriebs GmbH, Pfungstadt am Hintergraben, Germany

Filed July 29, 1974, Ser. No. 492,584
Claims priority, application Germany, Aug. 8, 1973, 2340078
Int. Cl.² H05B *1/00*
U.S. Cl. 219—243 **9 Claims**

1. A sealing jaw comprising a mounting, an electrically insulating, thermally conductive carrier of strip form, the carrier being detachably secured to the mounting, at least one groove in a surface of the carrier, an electrical heating element of angular cross section, a limb of said element being

received in the groove, and the element extending above said surface of the carrier, wherein said one limb of the element is



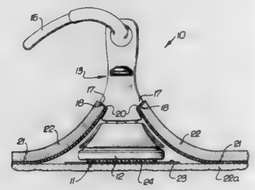
inserted into the groove and clamped fast and substantially immovable therein by a single pressing.

3,927,298

CARPET SEAMING IRON

Earle F. Prater, Long Beach, Calif., assignor to Roberts Consolidated Industries, Inc., City of Industry, Calif.

Filed Apr. 28, 1975, Ser. No. 572,388
Int. Cl.² D06F *75/08*
U.S. Cl. 219—245 **3 Claims**



1. In an electric iron for simultaneously heating a heat sensitive adhesive tape and carpet edges to be joined in abutting relation by the tape, the combination of:

a. elongated, generally rectangular sole plate means being insertable between and movable longitudinally of the tape and the carpet edges;

b. electrical heating means for heating the upper and lower sides of the sole plate means; and

c. a dorsal superstructure mounted on the upper side of said sole plate means, and extending upwardly therefrom,

said superstructure extending a major portion of the length of said sole plate means, from a point adjacent the leading edge of said sole plate means to a point adjacent to the trailing end thereof, and its sides being spaced inwardly of the side edges of said sole plate means,

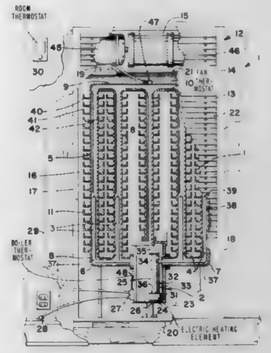
said superstructure having on its outer surface a pair of outwardly extending and generally parallel longitudinal ridges spaced upwardly from said sole plate means, each engageable with a carpet edge and limiting upward movement of said edge relative to the iron as the iron is moved longitudinally relative to said edges, and said superstructure including a handle by which the iron may be moved longitudinally relative to such carpet edges.

3,927,299

SELF-CONTAINED ELECTRIC STEAM SPACE HEATING UNIT

Clifford M. Sturgis, 1213 Westmoreland, Colorado Springs, Colo. 80907

Filed Mar. 18, 1974, Ser. No. 452,421
Int. Cl.² H05B *1/00*; **F24H** *3/06*
U.S. Cl. 219—365 **5 Claims**



1. A self-contained closed system steam heating unit comprising:

a. a boiler unit containing liquid to be vaporized and having inner and outer chambers with communicating passages at lower portions thereof for flow of liquid from the outer chamber to the inner chamber;

b. a heating element in the boiler and operative to heat the liquid and form steam in the inner chamber;

c. a radiator unit having a plurality of spaced apart upright tubular risers and an upper manifold connecting upper ends of the risers and communicating therewith;

d. a lower tubular manifold connecting lower ends of the risers and an upper portion of said boiler outer chamber for communication therebetween;

e. an upright tubular condenser member having an upper end communicating with the upper manifold in spaced relation to said risers and having a lower end communicating with an upper portion of said boiler outer chamber;

f. said lower manifold and upright condenser member forming flow passages for condensate to flow from the radiator unit to the outer chamber of the boiler;

g. an elongate steam discharge pipe having one end communicating with an upper portion of the boiler inner chamber and extending therefrom longitudinally within said lower tubular manifold and having discharge portions extending upwardly in lower portions of each of said risers with each discharge portion having an orifice discharging steam upwardly into the respective riser;

h. and means moving air around said upper manifold, risers and condenser tube to receive heat therefrom.

3,927,300

ELECTRIC FLUID HEATER AND RESISTANCE HEATING ELEMENT THEREFOR

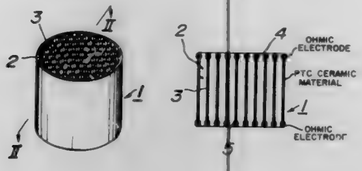
Shigetaka Wada, Kuwana, and Noboru Yamamoto, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Mar. 4, 1974, Ser. No. 447,513
Claims priority, application Japan, Mar. 9, 1973, 48-26934
Int. Cl.² H05B *3/14*; **H01C** *7/02*; **F24H** *1/10, 3/04*
U.S. Cl. 219—381 **8 Claims**

1. A heating element consisting essentially of:

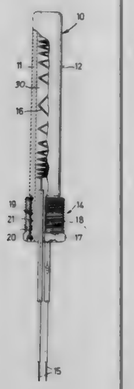
a. a column-shaped honeycomb structural body of electrically conductive ceramic material, said body having a multiplicity of substantially uniform parallel channels extending therethrough with each of said channels being

bounded by a partition wall which is substantially uniform in thickness, said structural body also having a surface-to-volume ratio in the range of 10 to 60 cm^2/cm^3 and having



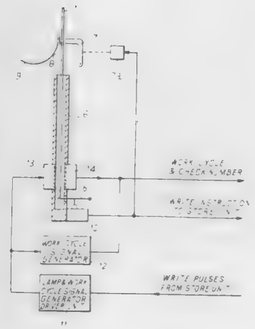
a positive temperature coefficient of electrical resistance;
b. a pair of ohmic electrodes mounted on the opposite surfaces of the body and in electrical contact therewith;
c. Means for feeding fluid through said channels.

3,927,301
ELECTRICAL HEATING CARTRIDGE
Otto Heuel, and Heinz Emmerichs, both of Ludenscheid, Germany, assignors to HASCO-Normalien Hasenclever & Co., Ludenscheid, Germany
Filed Sept. 17, 1974, Ser. No. 506,888
Claims priority, application Germany, Sept. 19, 1973, 2347090
Int. Cl.² H05B *3/06*
U.S. Cl. 219—523 **4 Claims**



1. A heating cartridge comprising:
a thermally conductive shell having a frustoconical outer surface tapering from a larger end to a smaller end thereof with a conicity on the order of 50:1, said shell being closed at said smaller end and being provided at said larger end with a cylindrically tubular extremity;
a pair of axially spaced-apart, substantially nondeformable annular abutments on the outer surface of said extremity;
an externally threaded rigid sleeve freely rotatable on said extremity between said abutments in an axially fixed relative position, said sleeve having an inner diameter slightly exceeding the outer diameter of said extremity whereby an annular clearance is formed between said extremity and said sleeve;
a heating coil insulatedly received in said shell and provided with a supply lead passing through said shell and provided with a supply lead passing through said extremity; and
a thermally conductive dielectric mass in the interior of said shell, said heating coil consisting of resistance wire imbedded in said mass.

3,927,302
RECORD CARD SYSTEMS
Kenneth Lamb, Shiremoor, and Roderick Wilson Froud, Durham, both of England, assignors to International Time Recording Company Ltd., London, England
Filed Feb. 5, 1973, Ser. No. 329,385
Int. Cl.² G06K *1/12, 7/10, 19/00*
U.S. Cl. 235—61.9 R **4 Claims**



1. A time recording system, comprising:
a plurality of time recorder-payroll cards;
at least two time recorder units; and
a data processing unit;
wherein:
each time recorder-payroll card comprises a first region on which visible alpha-numeric information is applied representing day and time, and a second region carrying prerecorded data in punched form corresponding to an individual to whom the respective card relates;
each time recorder unit comprises:
solenoid-actuable print means positioned to apply alpha-numeric information to said first region of said record cards;
a plurality of solid-state light source elements positioned adjacent said second region of said cards;
a plurality of solid-state light sensor elements positioned opposed to said respective light source elements to generate respective electrical signals in response to activation thereof by said respective light source elements when a record card is in a fixed position in said recorder unit, said signals being representative of said pre-recorded punched data on a record card;
means responsive to the presence of a record card in said time recorder unit to a maximum permitted extent which is less than complete insertion for sequentially activating said solid-state light source elements and actuating said print means; and
said data processing unit comprises:
at least two data stores each coupled to the solid-state light sensor elements of a respective time recorder unit;
means for continuously scanning said data stores to determine which if any of said data stores contains data from said respective time recorder;
a time signal generator to generate time signals; and
means responsive to said data store scanning means to read said date from said data stores, said data being applied to an output together with said time signals.

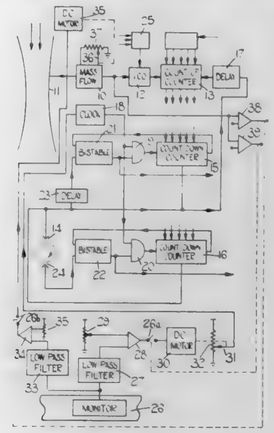
3,927,303
INFORMATION EVALUATION MEANS
Norbert Wefers; Uwe Militz; Uwe Unglaube, all of Berlin, and Joachim Schwarzkopf, Oldenburg, all of Germany, assignors to Nixdorf Computer AG, Paderborn, Germany
Filed Feb. 22, 1973, Ser. No. 334,643
Claims priority, application Germany, Feb. 22, 1972, 2208309
Int. Cl.² G06K *7/10, 19/06*
U.S. Cl. 235—61.11 E **19 Claims**



1. A method of evaluating data in the form of parallel data lines of varying width printed serially on a data carrier and of width varied in accordance with a predetermined coding, said method comprising the steps of:
a. moving a transducer, said transducer sensitive to the alternating contrast between the data carrier and the data lines and adapted to produce an output corresponding to said alternating contrast, across said data lines and generally perpendicular thereto wherein said transducer output corresponds in a time sequence to the distribution of said data lines,
b. comparing said transducer output with a fixed frequency reference signal,
c. storing the result of said comparison for a predetermined time period at least equal to the time required to move the transducer over a predetermined number of said data line or lines,
d. identifying the character of the scanned data line or lines as to its or their width encoding, and
e. utilizing the character identification in conjunction with said stored comparison to restore a new comparison for said character identification of succeeding data lines this rendering said character identification substantially independent of scanning speed variation.

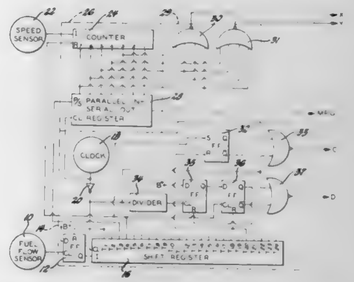
3,927,304
FUEL CONTROL SYSTEMS
Philip Rossell Wentworth, Birmingham, and Michael Murray Bertioli, Lichfield, both of England, assignors to The Lucas Electrical Company Ltd., Birmingham, England
Filed Feb. 19, 1974, Ser. No. 443,847
Claims priority, application United Kingdom, Feb. 20, 1973, 8214/73; Mar. 31, 1973, 15595/73
Int. Cl.² G06F *15/20*
U.S. Cl. 235—150.21 **6 Claims**

1. A fuel control system comprising means for producing an electrical output pulse, the length of which determines the quantity of fuel to be fed to the engine, in response to at least one engine parameter, means for monitoring the exhaust emission of the engine, means responsive to the monitoring means for deriving a signal representative of the nature of the exhaust emission, at least two independent means for adjusting the length of the electrical output in accordance with the derived signal, and means for selectively operating at least one of said two independent means, said means for producing an electrical output pulse, comprising, a transducer sensitive to said at least one engine parameter, a variable frequency oscillator the frequency of which is controlled by said transducer, a count-up counter for receiving pulses from said variable frequency oscillator, for a predetermined fraction of an engine cycle, so as to produce in said count-up a count state representative of said at least one engine parameter, a count-down counter connected to the count-up counter for the transfer of said count state at the end of said fraction of the engine cycle,



and a variable frequency clock pulse generator for supplying pulses to said count-down counter to determine the length of said output pulse, said two independent means for adjusting said output pulse length comprising means for adjusting the clock pulse frequency and means for modifying the output of said transducer respectively.

3,927,305
FUEL ECONOMY INDICATOR HAVING RANGE SELECTED FILTERS
Frederick Gruhl, Almont, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 3, 1975, Ser. No. 554,742
Int. Cl.² G01M *15/00*
U.S. Cl. 235—150.21 **2 Claims**



1. A vehicle fuel economy indicator having range selected filters comprising: means for generating a signal representing vehicle speed; means for generating a fuel consumption signal representing vehicle fuel consumption; means responsive to the speed signal and the fuel consumption signal for generating a fuel economy signal representing the instantaneous vehicle fuel economy, the instantaneous vehicle fuel economy being variable over a specified number of ranges in response to vehicle operating parameter variations; a plurality of signal filters, each signal filter having a respective time constant associated with a respective one of the ranges of vehicle fuel economy; means for coupling the fuel economy signal to each of the signal filters, each of the signal filters supplying an

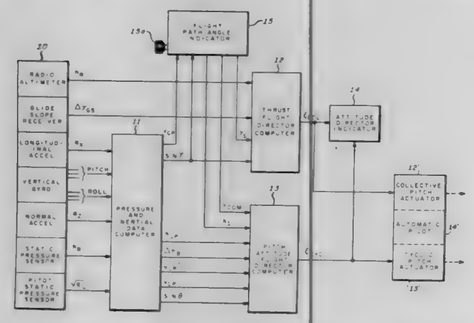
output signal whose time response to variations in the instantaneous vehicle fuel economy is determined by the time constant of said signal filter; indicating means; and gate means responsive to the fuel economy signal for coupling the output signal from the signal filter having the time constant associated with the range of fuel economy embracing the instantaneous fuel economy to the indicating means, the indicating means being responsive to the output of the signal filter coupled thereto for providing an indication of vehicle fuel economy, whereby the time response of the indication of vehicle fuel economy to variations in the instantaneous vehicle fuel economy is varied as a function of vehicle fuel economy range.

3,927,306

HELICOPTER FLIGHT PATH CONTROL

Harry Miller, Scottsdale, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,321
Int. Cl.² G06G 7/70; B64C 13/50
U.S. Cl. 235—150.22 **17 Claims**



1. Apparatus by means of which an aircraft may be controlled so as to follow a selectable flight path relative to the horizontal at a programmed acceleration therealong to a predetermined constant velocity through adjustment of the thrust and pitch attitude controls of said aircraft, the combination comprising:

means for selecting a desired flight path angle and providing a flight path angle reference signal in accordance therewith,

means for providing a signal in accordance with the actual flight path angle,

means responsive to the algebraic sum of said flight path angle reference and actual flight path angle signals for providing a thrust control command signal,

means for providing an acceleration reference signal,

means for providing a signal in accordance with the actual acceleration of said aircraft along said selected flight path,

means for providing a signal proportional to a predetermined function of the velocity of said aircraft along said flight path,

means responsive to the algebraic sum of said reference acceleration signal, said actual acceleration signal, and said signal proportional to a predetermined function of said velocity for providing a pitch control command signal, and

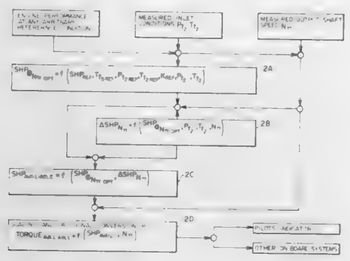
utilization means responsive to said command signals adapted to govern the adjustment of said thrust and pitch controls of said aircraft whereby if the thrust and pitch of said aircraft are simultaneously controlled in accordance with the operation of said utilization means such as to maintain said command signals zero, said aircraft will follow said selectable flight path at said programmed acceleration along said selectable flight path to said predetermined constant velocity.

3,927,307

POWER AVAILABLE INDICATOR

Robert J. Reschak, Hurst, Tex., assignor to Textron Inc., Providence, R.I.

Filed Mar. 1, 1974, Ser. No. 447,072
Int. Cl.² G06G 7/70
U.S. Cl. 235—151.3 **6 Claims**



1. A system for calculating while in flight the maximum power available from an aircraft turbine engine, which comprises:

a. sensors for generating signals continuously representative of the compressor inlet temperature, the compressor inlet pressure and the output shaft speed of the engine;

b. a storage means for engine performance reference signals including only standard day sea level pressure and temperature, shaft horsepower at standard sea level static conditions for a particular engine power rating, and controlled turbine inlet gas temperature;

c. means responsive to said reference signals and said signals from said sensors to generate an output signal representing available power; and

d. means for displaying said output signal.

3,927,308

MONITOR AND RESULTS COMPUTER SYSTEM

William A. Summers, North Haledon; Betty L. Christy, Radburn, both of N.J., and Joseph V. Sweeney, Manhasset, N.Y., assignors to Ebasco Services Incorporated, New York, N.Y.

Division of Ser. No. 308,770, Nov. 22, 1972, Pat. No. 3,855,456. This application June 3, 1974, Ser. No. 475,987
Int. Cl.² G06G 7/12; G06F 7/04
U.S. Cl. 235—151.3 **21 Claims**

1. A method of producing a value which is most representative of a condition determined by a plurality of physical measurement input devices which are responsive to the condition which can change, the method comprising the steps of:

a. receiving signals from a plurality of input devices, the signals representing the values which are responsive to the condition;

b. averaging the value represented by each of the received signals with the value represented by each of the other received signals to derive a set of averages;

c. selecting a predetermined non-linear factor which corresponds to the probable disagreement between the received signals;

d. forming a normalized average for each of the set averages by dividing each average by the non-linear factor;

e. subtracting from the value represented by each of the received signals the value represented by each of the other signals to derive a set of absolute differences:

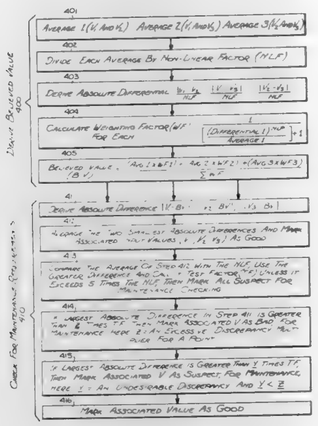
f. dividing each of the absolute differences by the non-linear factor to provide a first set of normalized differentials;

g. selecting a predetermined non-linear power which controls the degree of weighting for each signal as a function of its deviation from the other received signals;

h. raising each of the first normalized differentials by the selected non-linear power;

i. deriving a weighting factor for each average whose value is a function of its normalized average and its normalized differential raised by the selected non-linear power;

j. weighting each average by the weighting factor derived for that average; and



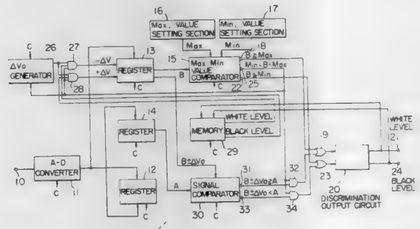
k. forming a composite of the weighted averages to thereby derive a value which is most representative of the condition.

3,927,309

SIGNAL LEVEL DISCRIMINATION CIRCUIT

Susumu Fujiwara, Fujisawa; Takao Okada, Yokohama; Masao Koyama, Hatano; Hiromitsu Akashi, and Yoichi Nishikawa, both of Hiratsuka, all of Japan, assignors to The Yokohama Rubber Company, Ltd., Japan

Filed Oct. 4, 1974, Ser. No. 512,164
Claims priority, application Japan, Oct. 9, 1973, 48-112850
Int. Cl.² H03K 5/153, 5/18
U.S. Cl. 235—151.31 **2 Claims**



1. A signal level discrimination circuit which comprises:

a. an analog-to-digital converter (**11**) for converting an input analog signal, whose level is to be discriminated, into a digital signals;

b. a first register (**13**) for storing the digital signal introduced thereinto by the analog-to-digital converter;

c. a second register (**14**) storing a preceding digital signal which has been stored in the first register immediately before a present digital signal is stored in the first register;

d. a first comparator (**30**) in which the present digital signal stored in the first register and the preceding digital signal stored in the second register are compared with each other to produce an output signal indicative of whether the absolute value of difference between the present digital signal and the preceding digital signal is greater or less than a predetermined value; and

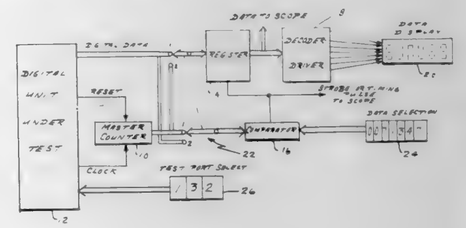
e. a signal level discrimination output circuit (**20**) which receives the output signal from the comparator, and discriminates that the level of the present digital signal stored in the first register is the same as that of the preceding digital signal stored in the second register when the output signal from the comparator indicates that the absolute value is less than the predetermined value and that the level of the present digital signal store in the first register is different from that of the preceding digital signal stored in the second register when the output signal from the comparator indicates that the absolute value is greater than the predetermined value.

3,927,310

DIGITAL TEST APPARATUS

Ronald F. D'Anna, Baltimore, and Richard E. Llewellyn, Laurel, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 25, 1974, Ser. No. 436,562
Int. Cl.² G06F 11/00; G01R 15/00
U.S. Cl. 235—153 AC **7 Claims**



1. A digital test apparatus for the test of digital equipment utilizing multiplexed data ports comprising in combination:

test port selecting means connected to the unit under test for selecting the test port to be tested,

data selecting means connected to said unit under test for selecting preselected data within said unit under test, said preselected data having a predetermined time within the time cycle of the unit under test,

means for synchronizing the timing of said test apparatus with said unit under test connected to said test apparatus and said unit under test, said synchronizing means receiving clock and reset signals from said unit under test, said synchronizing means providing timing signals to said test apparatus,

means for acquiring said preselected data from said unit under test, said acquiring means acquiring said preselected data when said synchronizing means' timing coincides with preselected time, and

means for displaying said preselected data from said acquiring means.

3,927,311

ARITHMETIC SYSTEM FOR HALVING AND DOUBLING DECIMAL NUMBERS

Tien C. Chen, San Jose, Calif., and Irving T. Ho, Poughkeepsie, N.Y., assignors to International Business Machines, Corporation, Armonk, N.Y.

Filed Aug. 20, 1974, Ser. No. 498,898
Int. Cl.² G06F 7/52
U.S. Cl. 235—159 **6 Claims**

1. An arithmetic system for halving or doubling a decimal number, comprising:

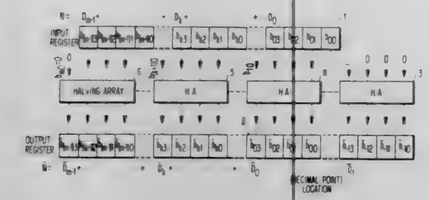
an input register for temporarily storing said decimal number in binary coded decimal form,

an output register for receiving an output decimal number in binary coded decimal form, and

a plurality of logic arrays connected to receive in parallel the bits in said input register and to generate a parallel output which is connected to said output register, each of said logic arrays including

first decoder/driver means receiving two bits in a sequence of four bits and providing a plurality of column outputs;

second decoder/driver means receiving the remaining two bits in said sequence four bits and providing a plurality of row outputs;



a read only memory matrix of column and row conductors connected respectively to said column outputs and to said row outputs and having actuaable switches at selected matrix intersections, each said switch being actuated by simultaneous outputs on the column and row conductors forming the intersection at which said switch is located;

sensing means connected to said read only memory matrix for combining outputs from said matrix to generate an output sequence of four bits which comprise part of said output decimal number in binary coded decimal form.

3,927,312

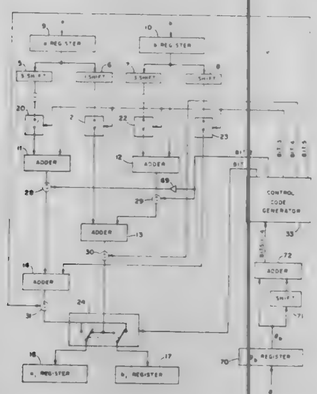
VECTOR ROTATOR

Warren D. Dickinson, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 31, 1974, Ser. No. 519,735

Int. Cl.² G06F *7/38*

U.S. Cl. 235—189 **7 Claims**



1. A method for determining the vector components of a vector to be rotated $\theta°$ comprising the steps of:

determining the components of the vector rotated $\theta_1°$ in even 30° increments such that θ_1 equal θ within a ± 15° error;

selecting rotation angles from 0 to 15° in steps to represent $\theta_2°$ such that $\theta_1 \pm \theta_2$ can be selected such that any error between the algebraic sum of them and θ is within ± one half of one of said steps;

rotating $\theta_2°$ the vector components of the vector already rotated $\theta_1°$; and

selecting θ_2 such that the combination of θ_1 and $\pm \theta_2$ is most nearly equal to θ.

3,927,313

SURGICAL OPERATING LAMP WITH INDIVIDUAL SPOT-LIGHTS

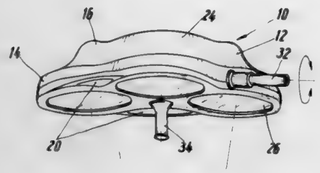
Franz Dieter Herold, Worfelden, Germany, assignor to Original Hanau Quarzlampen GmbH, Hanau, Germany

Filed Jan. 23, 1974, Ser. No. 435,797

Claims priority, application Germany, Feb. 6, 1973, 2305665

Int. Cl.² A61G *13/00;* **F21V** *33/00*

U.S. Cl. 240—1.4 **2 Claims**



1. In a surgical operating lamp having a lighting body with individual, adjustable spotlights within the lighting body, the light rays of said spot-lights meeting approximately on the central axis at a distance from the lighting body, the improvements comprising:

a. said individual lights are three in number and are disposed 120° from each other about the central axis of the lighting body,

b. said lighting body tightly encloses said three individual lights and consists of an upper and lower portion attached together, said lower portion being attached to a lamp support means, wherein body said upper and said lower portions are generally triangular in plan view having convex vertices surrounding said three individual lamps and concave sides joining said vertices and,

c. handles attached to the lower portion of the body at two of the concave sides to enable adjustment of the position of the lamp.

3,927,314

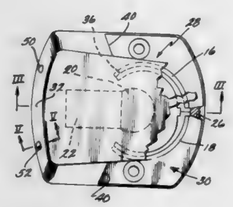
BOW LIGHT FOR WATER CRAFT

Ronald E. Wiggerman, Grand Rapids, Mich., assignor to Attwood Corporation, Lowell, Mich.

Filed Nov. 14, 1974, Ser. No. 523,691

Int. Cl.² B63B *45/04*

U.S. Cl. 240—7.5 **4 Claims**



1. In a bow light for water craft having a housing; lens means in said housing viewable forwardly and from the sides of said housing, said lens means including a pair of lenses adapted to emit light beams of different colors forwardly at opposite sides of said bow light; a wall on said housing obstructing viewing of said lens means from the rear thereof; and a light source in said housing adapted to emit light through said lens means, the improvement comprising: light transmitting means positioned in and extending through said wall, said light transmitting means being responsive to operation of said source to transmit light rays from said light source to the rear of said housing to thereby provide an indication at said wall when said light source is operative, said light transmitting means including a pair of light transmitting elements positioned in said wall and at generally opposite sides thereof, each said transmitting element being of the same color as the color emitted by said lens on its side.

3,927,315

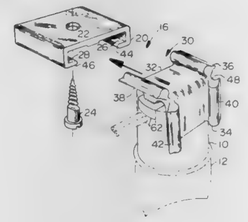
LIGHT SOCKET MOUNTING

Arthur W. Werry, Menlo Park, Calif., assignor to Dale-Jones Corporation, San Jose, Calif.

Filed Nov. 14, 1974, Ser. No. 523,572

Int. Cl.² F21V *21/08*

U.S. Cl. 240—52.1 **8 Claims**



1. In a light socket having a body portion forming a socket opening and base portion having means disposed for effecting an electrical connection with a pair of wires, the improvement comprising:

a. a base element disposed for attachment to a supporting structure and including means defining a pair of slideways at opposite sides of said base in opposed relationship to one another; and

b. a slide member formed integrally with the base portion of the socket and including a pair of portions each having means forming a pair of runners, with each of the runners on each portion being disposed for being slidably received in a respective one of said slideways for releasable attachment of said slide member with said base element, said portions of said slide member being disposed at an angle with respect to one another, such that the body portion of the light socket can be mounted in either of two positions with respect to a supporting structure which is disposed for receiving said mounting member thereon.

3,927,316

WIRELESS SPEAKER SYSTEM USING INFRA-RED LINK

Richard W. Citta, Oak Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed June 7, 1974, Ser. No. 477,535

Int. Cl.² H04B *9/00*

U.S. Cl. 250—199 **10 Claims**

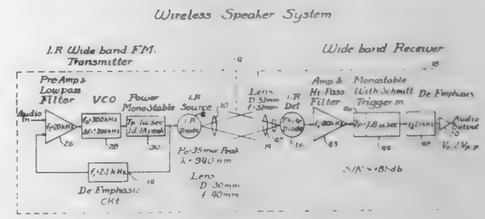
1. A communication system for developing and translating an information signal to an information reproducer, said system comprising:

a transmitter comprising an oscillator, for developing a carrier signal of a predetermined center frequency,

means for coupling said information signal to said oscillator for frequency modulating said carrier signal in accordance with said information signal to deviate said carrier over a super wide band of frequencies such that the peak deviation of the carrier is of the same order of magnitude as the frequency of the carrier itself and the modulation index of said transmitter is substantially greater than the modulation index of a standard FM broadcasting service, means responsive to the modulated output of said oscillator for generating a train of pulses of substantially constant width and height,

a light source, responsive to said train of pulses, for producing and transmitting a modulated beam of light energy, and

a negative feedback system coupled between the output of said pulse generating means and the input of said oscillator, said feedback system comprising a de-emphasis network for stabilizing the center frequency of the oscillator and for linearizing the voltage v. frequency characteristic



of the oscillator over said super wide range of frequency deviation;

receiver means comprising a photodetector responsive to said modulated beam of light energy for deriving an electrical signal,

means responsive to said electrical signal for reconstituting a replica of said original train of pulses,

demodulation means responsive to said reconstituted train of pulses for deriving said information signal therefrom, and

means for applying said information signal to said information reproducer.

3,927,317

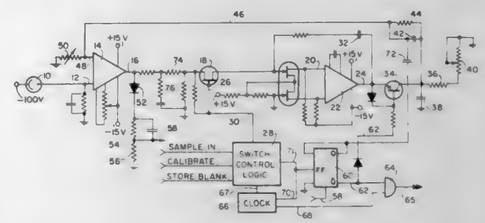
BLANK VALUE STORING PHOTOMETER CIRCUITRY

Gerhard A. Liedholz, Miami, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Continuation of Ser. No. 242,049, April 7, 1972, Pat. No. 3,752,995. This application June 29, 1973, Ser. No. 374,874The portion of the term of this patent subsequent to Aug. 14, 1990, has been disclaimed.

Int. Cl.² H01J *39/12*

U.S. Cl. 250—214 R **15 Claims**



1. Blank storing photometer circuitry comprising: first and second multi-function amplifiers having inputs and outputs, a first switch coupling the output of said first amplifier to an input of said second amplifier, voltage rundown circuit means, a second switch coupling the output of said second amplifier to said rundown circuit means, blank value storing means coupled to said second amplifier, a path coupling said rundown circuit means to one input of said first amplifier, a second input of said first amplifier connected to receive photometrically transduced signals, and control circuits for controlling the operation of said first and second switches and thereby defining three operating modes as well as generating a measurement of the photometrically transduced signals based upon their voltage rundown, said three operating modes

being: a blank storage mode during which both said amplifiers act as amplifiers, both said switches are in a first stage and said blank storing means stores the blank value; a calibration mode during which said first amplifier acts as a comparator between the stored blank value and a then being applied calibration value to which the blank value is being rundown, the second amplifier and blank storing means coact to define a blank storage circuit, and said switches are in a second state; and a sample measuring mode which is substantially the same as said calibration mode, except that the comparison is between the stored blank value and one of a plurality of sample values then being applied.

3,927,318

CROSS-SECTIONAL FLUORESCENT IMAGING SYSTEM

Albert Macovski, 4100 Mackay Drive, Palo Alto, Calif. 94306

Filed May 6, 1974, Ser. No. 467,446
Int. Cl. G01N *23/20*
U.S. Cl. 250—272 **13 Claims**



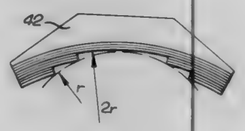
1. Apparatus for imaging fluorescent radiation from a specific material in a cross section of an object comprising:
an x-ray beam directed through the cross section of the object;
means for translating the x-ray beam so that all regions of the cross section are excited at a plurality of angles;
means for detecting the integrated fluorescent radiation emitted along the entire x-ray beam at each position of the x-ray beam and forming a plurality of integrated emission signals;
a computer for reconstructing the fluorescent radiation information of the cross section of the object from the plurality of integrated emission signals; and
means for displaying the reconstructed fluorescent radiation information.

3,927,319

CRYSTAL FOR X-RAY CRYSTAL SPECTROMETER

David B. Wittry, Pasadena, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed June 28, 1974, Ser. No. 484,165
Int. Cl.² G01N *23/20*
U.S. Cl. 250—273 **9 Claims**



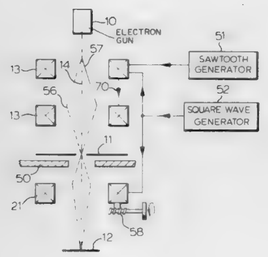
1. A crystal for an x-ray crystal spectrometer and the like, comprising:
a cylindrical curved crystal comprising a plurality of separate strips of bulk single crystal material joined in a sandwich form having a plurality of substantially parallel surfaces in a stepped configuration,
with the steps substantially on a focal circle of radius *r*, and with the crystal atomic planes on circles of radius substantially *2r*.

3,927,320

METHOD AND APPARATUS FOR DERIVING FROM A SCANNING ELECTRON MICROSCOPE SIGNALS THAT CAN BE DISPLAYED STEREOSCOPICALLY

Eric John Chatfield, and Verner Henrick Nielsen, both of Oakville, Ontario, Canada, assignors to Ontario Research Foundation, Ontario, Canada

Filed Aug. 2, 1974, Ser. No. 493,878
Claims priority, application United Kingdom, Aug. 14, 1973, 38483/73
Int. Cl.² G01N *23/00*
U.S. Cl. 250—307 **22 Claims**



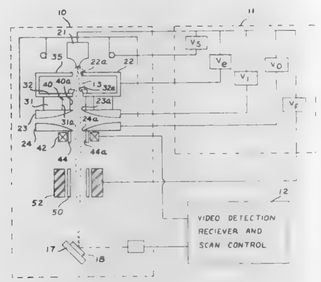
16. A method for operating a scanning electron microscope of the type having an electron gun, a final aperture through which at least a part of said beam passes prior to impingement on an object being scanned by said electron beam and a longitudinal axis extending from said electron gun through said final aperture and through the object being scanned by said electron beam to enable said scanning electron microscope to generate signals that enable an image of the object being scanned by said electron beam to be viewed in three dimensions, said method comprising: (a) scanning said electron beam across the object being scanned in adjacent parallel lines, (b) between said electron gun and said final aperture and in addition to any deflection of said electron beam by said scanning (i) providing a field during the scanning of a first set of said lines which deflects an electron beam that is travelling from said electron gun through said final aperture on said longitudinal axis in a first path firstly away from said longitudinal axis and to one side of said longitudinal axis and lastly towards said longitudinal axis to intersect said longitudinal axis in the immediate vicinity of said final aperture and then to proceed away from said longitudinal axis but on the opposite side thereof and (ii) providing a field during the scanning of a second set of said lines which deflects an electron beam that is travelling from said electron gun through said final aperture on said longitudinal axis in a second path firstly away from said longitudinal axis and to said opposite side thereof and lastly toward said longitudinal axis to intersect said longitudinal axis in the immediate vicinity of said final aperture and then to proceed away from said longitudinal axis but on said one side thereof, and (c) between said final aperture and the object being scanned by said electron beam, and in addition to any deflection of said electron beam by said scanning, during said scanning of said respective sets of lines providing fields which are of such a nature that, when acting upon electron beams travelling in the portions of said first and second paths that are beyond said final aperture, deflect electron beams travelling in the portions of said first and second paths respectively that are beyond said final aperture back towards said longitudinal axis to intersect said longitudinal axis at the object being scanned by said electron beam from both said one and said opposite sides thereof.

3,927,321

ELECTRON MICROSCOPE BEAM TUBE

Leonard M. Welter, Saratoga, Calif., assignor to American Optical Corporation, Southbridge, Mass.

Filed Apr. 24, 1974, Ser. No. 463,630
Int. Cl.² H01J *37/26*
U.S. Cl. 250—311 **4 Claims**



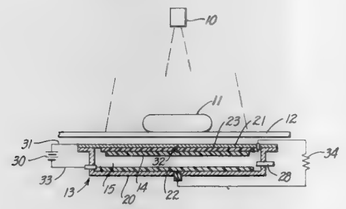
1. In a charged particle microprobe system including
a housing defining a vacuum chamber;
a source of charged particles disposed in said chamber;
apertured means disposed in said housing for establishing focusing and accelerating fields for forming a beam of said charged particles;
means for deflecting said beam in a predetermined raster pattern;
the improvement comprising a tube, being generally physically and electrically symmetrical about an axis, said tube being disposed in said microprobe with its axis substantially aligned with said beam and in electrical contact with a voltage source, said tube being formed of a non-magnetic material having a substantially uniform cross-sectional conductivity and a predetermined value of resistance of 10^3 to 10^9 ohms/cm over its axial length whereby said tube is electrically conductive yet free of high eddy currents.

3,927,322

ELECTRODE FOR ELECTRONRADIOGRAPHY IMAGING CHAMBER

Teodoro Azzarelli, Los Angeles; Eric P. Muntz, Pasadena, and Paul B. Scott, Topanga, all of Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Filed Nov. 8, 1974, Ser. No. 522,086
Int. Cl.² G03B *41/16*
U.S. Cl. 250—315 **6 Claims**



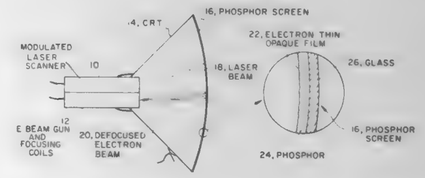
1. In an imaging chamber for an *x*-ray system, the combination of:
first and second substantially planar electrodes, each of said electrodes including a spiral resistor and a low conductivity layer in contact with said spiral resistor;
means for mounting sid electrodes in the chamber in spaced relation defining a gap therebetween;
means for connecting a power supply to an end of said first electrode spiral resistor and to an end of said second electrode spiral resistor; and
a third resistor connected between the other ends of said spiral resistors completing a current path across the power supply to produce an electrostatic field in the gap with electrostatic potentials along the gap surfaces corresponding to the electrostatic potentials for concentric spherical metal electrodes so that extensions of the electric field lines in said gap converge substantially to a point.

3,927,323

VIDEO PHOSPHOR MOTION PERCEPTION DISPLAY

Paul M. Koloc, College Park, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 20, 1973, Ser. No. 399,029
Int. Cl. G11b *7/04*
U.S. Cl. 250—329 **7 Claims**



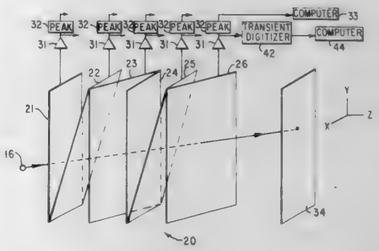
1. A method of displaying moving objects in a stationary scene on a phosphorous screen comprising the steps of:
exciting said phosphorous screen at a constant excitation rate;
modulating a thermal laser source with image information of said scene;
scanning said thermal laser source across said phosphorous screen to impress a thermal image of said scene on said phosphorous screen to cause varying thermal states and thereby varying intensities on phosphors corresponding to moving objects.

3,927,324

MICROMETEOROID VELOCITY AND TRAJECTORY ANALYZER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Siegfried O. Auer, Lanham, Md.

Filed Aug. 30, 1974, Ser. No. 502,135
Int. Cl.² G01T *1/16*
U.S. Cl. 250—336 **14 Claims**



13. Apparatus for enabling the position of a charged particle to be detected comprising: an array of detectors pervious to the particle and positioned to be in a line of flight of the particle; each of said detectors including an electrode for deriving an output voltage pulse in response to a charge varia-

tion induced therein resulting from a charge transfer between the particle and the electrode as the particle passes through the electrode; and means responsive to the pulses derived from all of the detectors of the array for deriving a signal enabling the position of the particle as it traverses the array to be determined.

3,927,325

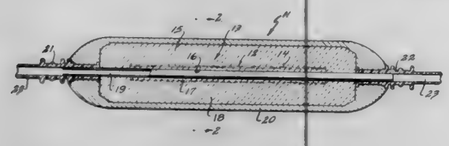
TISSUE IRRADIATOR

Frank Porter Hungate, Kennewick; William Frederic Riemath, Pasco, and Lee Roy Bunnell, Kennewick, all of Wash., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed July 10, 1974, Ser. No. 487,327

Int. Cl.² A61N 5/12; G01N 21/24; G21G 4/00

U.S. Cl. 250—435 **10 Claims**



1. A tissue irradiator comprising:
a radioisotope material contained in, dispersed through, and encapsulated by a first portion of vitreous carbon, which portion is surrounded and encapsulated by a containment portion of vitreous carbon.

3,927,326

X-RAY EXAMINING APPARATUS

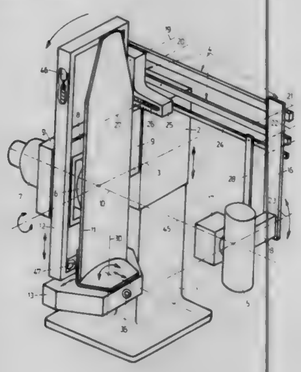
Kurt Kunne, Erlangen, and Fritz Wittkopp, Weiher, both of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Sept. 23, 1974, Ser. No. 508,469

Claims priority, application Germany, Sept. 24, 1973, 2348039

Int. Cl.² A61B 6/00

U.S. Cl. 250—447 **12 Claims**



1. In an X-ray examining apparatus having a pedestal base; a vertically displaceable support block mounted on said base; a carrier supported on said support block for rotation about a horizontal pivot axis; a picture target mounted on said carrier and being oriented in parallel with said pivot axis; an X-ray tube being focused on said picture target; and patient support means interposed between said X-ray tube and said picture target, the improvement comprising: said carrier for said X-ray tube and picture target being dually offset in a U-shape in a plane oriented perpendicular to said picture target, said U-shape forming a first and a second arm, said first arm supporting said picture target and being fastened to said support block for rotation about said horizontal pivot axis, said X-ray tube being fastened to said second arm having the central X-ray beam thereof directed towards said picture target; a carrying frame for a patient support rotatable about an axis parallel to the surface of said picture target; and a subframe rotatable about the median perpendicular of said picture target supporting said first arm, said subframe being longitudinally movably mounted on said carrying frame.

3,927,327

EXCHANGE MECHANISM FOR FILM PLATES IN AN X-AY RECORDING OR DISPLAYING APPARATUS

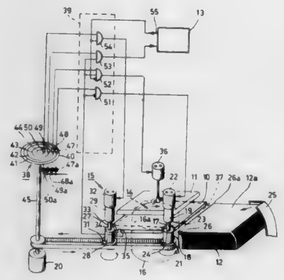
Gunnar Valfrid Bermas, Stockholm, Sweden, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Mar. 18, 1974, Ser. No. 451,781

Claims priority, application Sweden, Mar. 16, 1973, 7303710

Int. Cl.² G11B 1/00

U.S. Cl. 250—470 **4 Claims**



1. An X-ray film plate exchanger mechanism for moving individual unexposed x-ray film plates of rectangular shape into an active position where exposure thereof may occur and for removing film plates from said active position, comprising:
a feeding-in mechanism comprising gripping apparatus for releasably gripping a corner of a film plate urged thereto, said gripping apparatus being mounted adjacent a corner of said active position for rotation about an axis perpendicular to the gripped film plate, swinging the film plate within its own plane about the gripped corner into said active position;
means for urging a corner of an exposed film plate toward said gripping apparatus of said feeding-in mechanism;
a feeding-out mechanism substantially the same as said feeding-in mechanism, but positioned adjacent a separate corner of said active position for releasably gripping a separate corner of a film plate in said active position, swinging the film plate within its own plane about said separate gripped corner out of said active position.

3,927,328

DOSIMETRY METHOD

Hidetsugu Kawabata, Neyagawa, and Tadaoki Yamashita, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 195,082, Nov. 2, 1971, abandoned. This application Nov. 20, 1973, Ser. No. 417,574

Claims priority, application Japan, Nov. 18, 1970, 45-102281; Nov. 18, 1970, 45-102282

Int. Cl. G01t 1/11; C09r 11/14, 11/46

U.S. Cl. 250—473 **2 Claims**

1. A dosimetry method comprising
exposing a thermoluminescent dosimeter including a thermoluminescent phosphor comprising sodium sulfate as the host material and at least one activator selected from the group consisting of dysprosium, holmium, thulium and terbium in an amount of 3×10^{-5} to 1×10^{-2} gram-atoms with respect to 1 mol of sodium sulfate to gamma radiation,
heating the radiated dosimeter to about 300°C,
measuring the luminescence emission and quantitatively relating the radiation incident thereon.

3,927,329

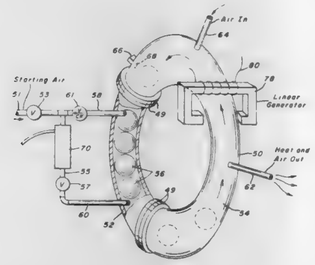
METHOD AND APPARATUS FOR CONVERTING ONE FORM OF ENERGY INTO ANOTHER FORM OF ENERGY

Sherwood L. Fawcett, Columbus, and James N. Anno, Cincinnati, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Division of Ser. No. 323,770, Jan. 15, 1973, Pat. No. 3,859,789, which is a continuation-in-part of Ser. No. 222,220, Jan. 31, 1972, abandoned. This application Apr. 11, 1974, Ser. No. 460,187

Int. Cl.² H02P 9/04; F15B 21/00

U.S. Cl. 290—1 **10 Claims**



1. In the method for converting the kinetic energy of moving bodies into electrical energy, the steps of:
a. providing a closed, continuous loop passageway formed from non-magnetically permeable material and containing a plurality of freely movable, mechanically unrestrained bodies;
b. applying a force to successive ones of said bodies in a first region of said passageway to thereby propel successive ones of the bodies in one direction around the passageway;
c. permitting said bodies, after being propelled, to essentially freely accelerate in a second region of the passageway;
d. at a point beyond said first and second regions in the passageway providing lines of flux which intersect the path of travel of said freely movable bodies passing through said passageway whereby the propelled bodies will intersect the lines of flux thus produced to generate an electrical current; and
e. then returning successive ones of said bodies through a third region back to said first region where they are again propelled in said one direction, the bodies being further decelerated in said third region.

3,927,330

WATER POWER MACHINE AND UNDER SEA, UNDER WATER GENERATOR STATION

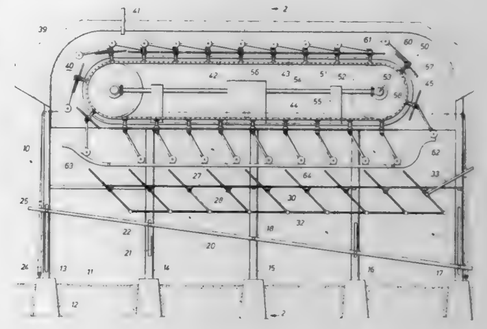
Roy E. Skorupinski, 6402 Jim, Houston, Tex. 77018

Filed Apr. 29, 1974, Ser. No. 464,961

Int. Cl.² F03B 13/00; E02B 9/08

U.S. Cl. 290—54 **20 Claims**

1. A power generator which comprises:
an endless conveyor;
a pair of spaced rollers supporting said conveyor for movement along a specified path between said rollers;
at least a pair of individually openable containers carried on said conveyor along the path and having an exposed face which intercepts flowing water to impart a water created force to said conveyor to cause it to move along the specified path;
said conveyor comprising
a set of plates located along its length;
hinged paddles extending outwardly at an angle relative to said plates to intercept current flow in water to create a force acting on said paddles, said plates and said paddles comprising said containers on said conveyor which are spaced lengthwise from one another on said conveyor;
an endless chain which engages said rollers and supports said containers;
an oval housing which encloses said chain and rollers therein;
a lengthwise slot in said housing adjacent to and parallel to the path of said chain;



container supports extending from said chain outwardly from said chain to support said containers;
an elongate flexible band overlying said slot and encircling said housing, said band slidably moving along and over said slot;
a groove adjacent to said slot on each side thereof;
a resilient elongate seal carried by said band sealing and slidably engaged with said grooves to exclude water from entry into said housing through said slot, said seal being located on one side of said band and said containers being on the opposite side of said band;
relatively fixed means for directly flowing water toward said conveyor to impinge on it at the portion extending along the specified path; and,
electric generator means in said housing connected to one of said rollers for generating electric power.

3,927,331

SIGNAL PHASE DETECTOR

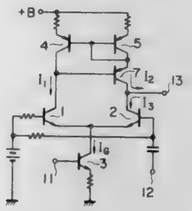
Akio Nakashima, and Yoshihiro Arakawa, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed May 3, 1974, Ser. No. 466,852

Claims priority, application Japan, May 5, 1973, 48-50067

Int. Cl.² H03K 5/20

U.S. Cl. 307—232 **2 Claims**



1. A phase detecting circuit comprising a differential amplifier with a pair of transistors, a first transistor with its collector connected to the emitters of said pair of transistors and with

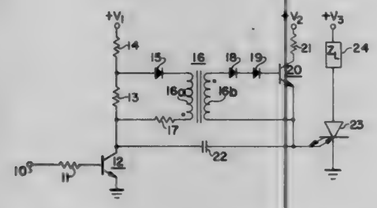
its emitter connected to a first point of reference potential, a second transistor with its collector connected to the collector of one of the transistors of said differential amplifier and with its emitter connected to a second point of reference potential, a third transistor with its emitter connected to said second point of reference potential and with its base connected to the base of said second transistor, the base and collector of said third transistor being short-circuited, a fourth transistor with its emitter connected to the collector of said third transistor and with its base connected to the collector of said second transistor, the collector of said fourth transistor being connected to the collector of the other said transistors of said differential amplifier, means for supplying a reference signal to the base of said first transistor, means for applying a signal to be compared with said reference signal to the base of a selected one of the one and the other of said transistors of said differential amplifier, and means of collecting an output signal from the collector of the nonselected one of the one and the other of said transistors of said differential amplifier.

3,927,332

DRIVE CIRCUIT FOR CONTROLLING CONDUCTION OF A SEMICONDUCTOR DEVICE

Edward Francis Thomas McKeon, Short Hills, and Michael Ray Martin, Somerville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 24, 1975, Ser. No. 552,581
Int. Cl.² H03K 17/72
U.S. Cl. 307—252 C **5 Claims**



1. A drive circuit for a gated semiconductor device, comprising:

first and second active current conducting devices;

a transformer including a first winding coupled to be energized by said first active device and a second winding coupled to control the conduction of said second active device;

a gated semiconductor device;

capacitance means coupled to said first active device and to a gate electrode of said gated semiconductor device for effecting turn-off of said gated semiconductor device in response to a first conduction state of said first active device;

said second active device being coupled to said gate electrode for providing drive current to enable conduction of said gated semiconductor device in response to a second conduction state of said first active device.

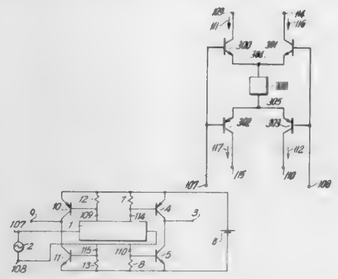
3,927,333

ELECTRONIC CIRCUIT COMPRISING COMPLEMENTARY SYMMETRICAL TRANSISTORS

Tokio Furuhashi, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Mar. 29, 1974, Ser. No. 456,176
Claims priority, application Japan, Apr. 7, 1973, 48-39911
Int. Cl.² H03K 17/60; H03F 3/18
U.S. Cl. 307—255 **2 Claims**

1. An electronic circuit comprising a power supply having first and second terminals, first and second and third impedance means, a first NPN transistor and a first PNP transistor having their bases connected in common at a first junction, a second NPN transistor and a second PNP transistor having their bases connected in common at a second junction, the emitters of said first NPN transistor and said second PNP transistor being connected to each other through said first impedance means, the emitters of said second NPN transistor and said first PNP transistor being connected to each other through said first impedance means, the collector of said first NPN transistor being connected to said first terminal of said power supply through said second impedance means, the collector of said first PNP transistor being connected to said second terminal of said power supply through said third impedance means, the collectors of said second NPN transistor and



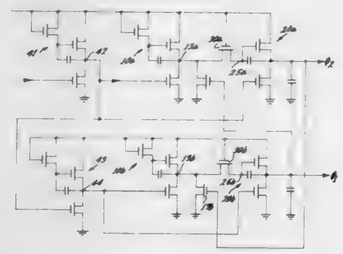
said second PNP transistor being connected to said first and second terminals of said power supply, respectively, an output terminal, a third NPN transistor and a third PNP transistor having their collectors connected in common at said output terminal, the bases of said third NPN transistor and said third PNP transistor being connected to the collectors of said first PNP transistor and said first NPN transistor, respectively, the emitters of said third NPN transistor and said third PNP transistor being connected to said second and first terminals of said power supply, respectively, and input signal supplying means connected between said first junction and said second junction, whereby sink and source currents are obtained at said output terminal.

3,927,334

MOSFET BISTRAP BUFFER

John Callahan, Mountain View, Calif., assignor to Electronic Arrays, Inc., Mountain View, Calif.

Filed Apr. 11, 1974, Ser. No. 460,027
Int. Cl.² H03K 5/15, 17/56, 19/08, 19/40
U.S. Cl. 307—269 **4 Claims**



1. A MOSFET buffer system, comprising:

a first bootstrap inverter and a first bootstrap push-pull amplifier each having an output and two inputs, one input of each of said first bootstrap inverter and said first bootstrap push pull amplifier being connected for receiving an input signal, the respective other input of the first inverter connected for receiving a permanent bias;

a first, permanently gated-on MOSFET interconnecting the other input of the first push-pull amplifier and the output of the first inverter;

a second bootstrap inverter and a second bootstrap push-pull amplifier, each having an output and two inputs, one input of each of said second bootstrap inverter and said second strap push pull amplifier being connected for receiving an input signal, the respective other input of the second inverter connected for receiving a permanent bias;

a second permanently gated-on MOSFET interconnected to the other input of the second push-pull amplifier and the output of the second inverter;

means for providing the input signal to the one input in each of said first inverter and first push pull amplifier; and

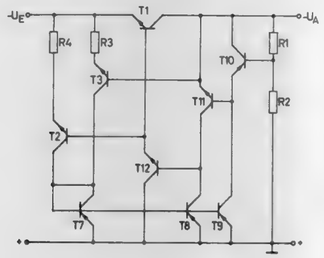
a third inverter, receiving the input signal as applied to the first inverter and inverting it and connected to apply the inverted input signal as an input signal to the second inverter and the second push pull amplifier.

3,927,335

MONOLITHIC INTEGRABLE SERIES STABILIZATION CIRCUIT

Hans Keller, and Herbert Elmis, both of Gundelfingen, Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed June 27, 1974, Ser. No. 483,486
Claims priority, application Germany, Aug. 2, 1973, 2339150
Int. Cl.² H03K 17/00
U.S. Cl. 307—296 **4 Claims**



1. A monolithic integrable series stabilization circuit for generating a constant stabilized output voltage in the order of one volt, from an unstabilized input voltage, particularly wherein the voltage of dry-cell batteries serve as the supply voltage of a temporarily connected load, in which the emitter of a series transistor is connected to an input terminal, and the collector thereof to an output terminal of the series stabilization circuit and wherein the base current of said series transistor is controlled by a regulating amplifier by comparing a portion of the stabilized output voltage as taken off an ohmic voltage divider with a reference voltage, wherein said regulating amplifier is a three-stage amplifier including first and second transistors forming an asymmetrical differential amplifier stage, a third transistor forming the first stage and a fourth transistor forming the third stage, wherein the improvement comprises:

a first additional transistor of the same conductivity type as said series transistor having base, emitter and collector terminals, said base terminal coupled to the base of said series transistor and said collector terminal coupled to said regulating amplifier for supplying said regulating amplifier with current;

a first resistor coupled between the emitter of said first additional transistor and the emitter of said series transistor;

a second additional transistor of a conductivity type opposite to that of said series transistor having base, emitter and collector terminals, said collector terminal coupled to the bases of said series transistor and said first additional transistor and said emitter terminal coupled to the collector of said series transistor and to said regulating amplifier;

a second resistor coupled between the base of said second additional transistor and the emitter of said series transistor;

an emitter-follower transistor having conductivity type complementary to that of said series transistor, said emitter-follower transistor having a base coupled to the tapping point of said voltage divider, a collector coupled to the collector of said series transistor, and an emitter coupled to the base of said third transistor; and

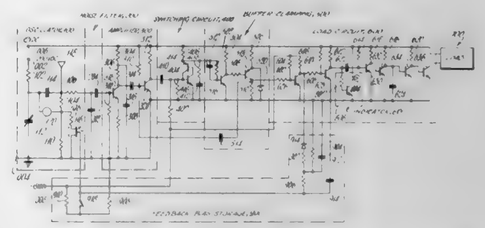
a third additional transistor having a collector coupled to the emitters of said first and second transistor for supplying emitter current to said asymmetrical differential amplifier, said third additional transistor having a base coupled to the base of said series transistor and having an emitter coupled to the emitter of said series transistor, the base of said third transistor and the base of said first transistor supplied with current via a current mirror circuit.

3,927,336

SELF-ADJUSTING CONDITION-RESPONSIVE CONTROL CIRCUIT

Paul A. Carlson, New Providence, N.J., and Arthur F. Cake, Greenwich, Conn., assignors to Wagner Electric Corporation, Parsippany, N.J.

Filed Mar. 27, 1974, Ser. No. 455,064
Int. Cl.² H01L 31/00; G05D 23/19
U.S. Cl. 307—308 **20 Claims**



1. A self-adjusting condition responsive control circuit comprising:

a. first circuit means operative in response to a control signal to provide a continually varying signal to compensate for slow variations from a reference level of a monitored parameter, and further operative to further vary said continually varying signal responsive to rapid variation from said reference level of said monitored parameter;

b. second circuit means operative to generate first and second signals in response to predetermined limits of said continuously varying signal;

c. third circuit means operative to clamp said first signal at a predetermined value; and

d. fourth circuit means operative to receive said clamped signal and provide said control signal for said first circuit means.

3,927,337

MAGNETO HYDRODYNAMIC GENERATOR

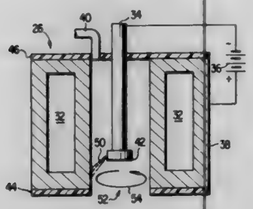
Milton T. Dooley, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 458,341, April 5, 1974. This application Dec. 12, 1974, Ser. No. 532,061
Int. Cl.² H02K 45/00
U.S. Cl. 310—11 **17 Claims**

1. An MHD system of the type including means for directing a hot fluid through a Hall-type duct comprised of a plurality

of electrically conductive sections separated by electrically insulating sections, and means for applying a magnetic field across said duct, said system further including:

a plasma jet electrode located in one of said conductive sections;



said plasma jet electrode having an orifice, an emitter, a collector, and means for passing an ionizable gas between said emitter and collector and out of said orifice; and

circuit means for electrically biasing said emitter with respect to said collector and striking an arc between said emitter and collector, said arc being rotatable about said orifice by influence of said magnetic field.

3,927,338

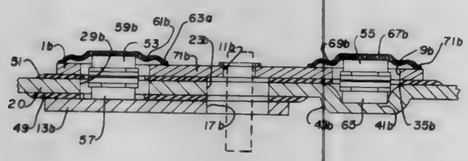
AUTOMOTIVE BRIDGE ASSEMBLY

Henry Vieilleribiere, Colomiers, France, assignor to Motorola, Inc., Chicago, Ill.

Filed Jan. 2, 1975, Ser. No. 538,230

Int. Cl.² H02K *11/00*

U.S. Cl. 310—68 D **11 Claims**



1. A rectifier bridge assembly, comprising:

a positive heat sink member having at least one aperture and one recessed region and being formed as a single unit with a first side and a second side;

a negative heat sink member positioned under said aperture, and said negative heat sink being attached to the first side of said positive heat sink member and being insulated therefrom;

a phase input plate having at least a pair of apertures, one of said apertures being in registration with said aperture carried by said positive heat sink member, the second of said apertures being in registration with said recessed region carried by said positive heat sink member, and said phase input plate being attached to the second side of said positive heat sink member and being insulated therefrom;

a rectifying diode being positioned in each aperture carried by said phase input plate; and

sealing means for individually holding each of said diodes in contact with its respective heat sink and for individually holding each of said diodes away from the other heat sink.

3,927,339

FREQUENCY TRANSMITTERS FOR PRODUCING CONTROL SIGNALS CONTROLLING THE BRAKE FORCE IN MOTOR VEHICLE WHEELS

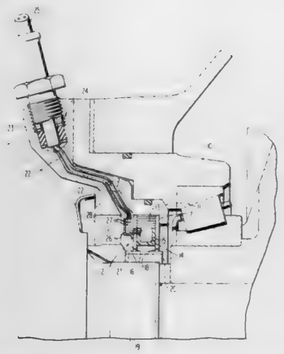
Jurgen Paul; Walter Kostelezky, both of Stuttgart, and Paul Schwerdt, Schnait, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Continuation of Ser. No. 312,512, Dec. 6, 1972. This application Aug. 28, 1974, Ser. No. 501,359

Claims priority, application Germany, Dec. 7, 1971, 2160536

Int. Cl.² H02K *21/38*

U.S. Cl. 310—155 **34 Claims**



1. A frequency transmitter for the generation of signals which is combined with a differential gear assembly, characterized in that a bearing cover means is provided at each output shaft of the differential gear assembly, an annular insert means is non-rotatably inserted along the axis of each output shaft from the outside of the differential gear assembly into the bearing cover means, said annular insert means including a coil carrier as well as two stationary toothed means and a permanent magnet of high energy yield, and in that a rotating toothed means is secured at the circumference of each output shaft of the differential gear assembly and cooperates with said two stationary toothed means to generate signals representative of the rotational speed of each output shaft.

3,927,340

IMAGING TARGET FOR PHOTOCONDUCTION TYPE IMAGE PICKUP DEVICE

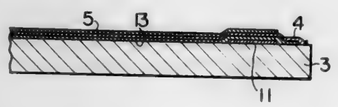
Hirofumi Suzuki, Mobara, Japan, assignor to Hitachi, Ltd., Japan

Filed Jan. 21, 1974, Ser. No. 434,780

Claims priority, application Japan, Feb. 9, 1973, 48-15652; Feb. 9, 1973, 48-15653

Int. Cl.² H01J *29/36, 31/38*

U.S. Cl. 313—371 **24 Claims**



1. An imaging target for a photoconduction type image pickup device, comprising a transparent face plate, a light-shielding material film provided on at least a part of the portion of the inner surface of said face plate excepting the effective imaging section of said face plate, a transparent conductive film provided over said face plate and said light-shielding material film, a photoconductive film provided on said transparent conductive film at least over the effective imaging section of said face plate, and a light-permeable protection film of a material non-corrodible to a treating solution corroding said photoconductive film, said light-permeable protection film being provided at least between said light-shielding material film and said transparent conductive film and being provided directly on said light shielding material film.

3,927,341

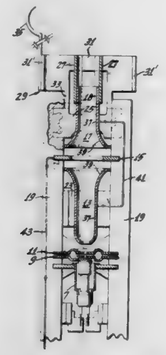
CATHODE RAY TUBE GUN HAVING NESTED ELECTRODE ASSEMBLY

Richard Henry Hughes, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 857,371, Sept. 12, 1969, abandoned. This application Sept. 9, 1971, Ser. No. 179,154

Int. Cl.² H01J *29/51, 31/20*

U.S. Cl. 313—412 **10 Claims**



1. In a unitary plural gun assembly, each gun comprising a plurality of axially-aligned electrodes mounted in spaced relation along elongated insulating support means for projecting an electron beam along a beam path in a forward direction, and a pair of magnetic pole pieces disposed primarily in a region beyond the forward end of the forwardmost electrode and on opposite sides of the beam path through said gun; the improvement wherein said pole pieces of each gun are disposed entirely outside of the last electrode, the major portions of said pole pieces extend along the beam path in the region located beyond said forwardmost electrode, and each gun includes a combination magnetic shield and electrode support member comprising a single piece of magnetic metal mounted on at least one of said support means and having a first portion attached to said last electrode, and a second portion spaced axially from said first portion, disposed in said region and extending between said pole pieces of that gun and the pole pieces of the other gun or guns for partially shielding the pole pieces of adjacent guns from each other.

3,927,342

CAPILLARY TUBE GAS DISCHARGE DEVICE

Wolfgang W. Bode, Sylvania; Glenn H. Dunlap, Maumee; Anthony M. Kobylak, Rossford; Raymond S. Richards, and Lawrence V. Pfaender, both of Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 819,641, April 28, 1969, Pat. No. 3,602,754. This application Nov. 2, 1970, Ser. No. 86,094

Int. Cl.² H01J *61/16, 61/30*

U.S. Cl. 313—188 **11 Claims**

6. A gas discharge element consisting essentially of an elongated redrawn glass capillary tube,

said tube having an internal diameter under about 10 mils, a wall thickness of about 1 mil,

means sealing the ends of said capillary tube, a gas discharge medium in said tube at a pressure sufficient to confine charges produced during discharges to a discrete volume of gas and permit side-by-side discrete discharges in said gas, and

a first conductor means on an exterior wall of said capillary tube, said conductor extending substantially the length of said capillary tube, said discharge element being adapted for assembly with a plurality of similar capillary tubes in



parallel coplanar relation and to have applied thereto, when in said parallel coplanar relation, a plurality of second conductor means, each common to a plurality of said tubes in said parallel relation.

3,927,343

WALL-STABILISED HIGH-PRESSURE MERCURY VAPOUR DISCHARGE LAMP CONTAINING IODIDE

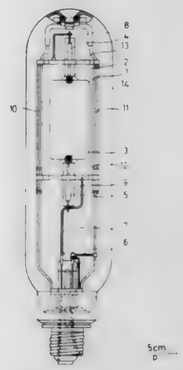
Louis Benjamin Beijer; Antonius Jozephus Gerardus Cornelis Driessen, and Cornelis Adrianus Joannes Jacobs, all of Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Mar. 23, 1971, Ser. No. 127,256

Claims priority, application Netherlands, Apr. 13, 1970, 7005294

Int. Cl.² H01J *61/073, 61/20, 61/30*

U.S. Cl. 313—214 **2 Claims**



1. In a wall-stabilised high-pressure mercury vapour discharge lamp having a lamp voltage of from 50 to 300 volts which in addition to mercury and a rare gas in a cylindrical discharge space contains iodide of at least one of the elements sodium, lithium, thallium, indium, tin and dysprosium, the improvement comprising that the distance between the electrodes and the diameter of the cross-section of the discharge space have dimensions such that the equations:

1) $$6 \leq \frac{V}{L} \leq 39 - 6.5\frac{L}{D}$$

2) $$1 \leq \frac{L}{D} \leq 4$$

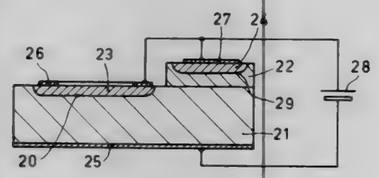
are satisfied, wherein V is the lamp voltage in Volts, L is the distance in centimeters between the electrodes and D is the internal diameter in centimeters of the discharge space.

3,927,344

MONOLITHIC SEMICONDUCTOR DEVICE INCLUDING A PROTECTED ELECTROLUMINESCENT DIODE

Jacques Lebailly, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 2, 1974, Ser. No. 485,202
Claims priority, application France, July 3, 1973, 73.24413
Int. Cl.² H01L *33/00;* **H05B** *33/02*
U.S. Cl. 313—499 **13 Claims**



1. A monolithic semiconductor device comprising an electroluminescent diode and a parallel diode electrically connected in the same direction as said electroluminescent diode and parallel therewith, the p-n junction of said parallel diode having an internal potential difference substantially greater than the voltage corresponding to the minimum energy of the radiation recombination junction of said electroluminescent diode and the dynamic admittance of said parallel diode being substantially greater than the dynamic admittance of said electroluminescent diode, at least in the operating region of maximum desired light power, whereby the current passed by said parallel diode relative to the current passed by said electroluminescent diode during forward biasing of said diodes is not significant except in the operating region of maximum desired light power where said substantially greater dynamic admittance of said parallel diode results in said parallel diode passing an increasing percentage of the current at higher bias levels protecting said electroluminescent diode from overloading.

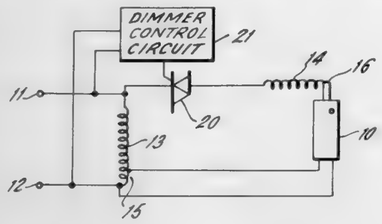
3,927,345

FLUORESCENT DIMMING CIRCUIT WITH D-C FLICKER ELIMINATION

Joseph Licata, Schnecksville; George S. Bartley, Allentown, and John E. Longenderfer, Orefield, all of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Aug. 16, 1973, Ser. No. 388,978
Int. Cl.² H05B *37/00*
U.S. Cl. 315—DIG. 5 **5 Claims**

1. A controlled energizing circuit for a gas discharge lamp; said energizing circuit including an a-c power source, an inductive ballast, a bidirectional controllably conductive device, and a phase control circuit for controlling the points in the positive and negative half waves of said a-c power source at which said bidirectional controllably conductive device begins to conduct; said ballast coupling said a-c power source to said gas discharge lamp; said bidirectional controllably conductive device being connected in series with said lamp and permitting current flow to said lamp only after said bidirectional controllably conductive device is fired; said phase control circuit including trigger circuit means for applying a firing signal to said bidirectional controllably conductive device; a charging circuit coupled to said trigger circuit means for operating said trigger circuit means when said charging circuit is charged to a given voltage, and an input reference voltage circuit for driving said charging circuit; said input reference voltage circuit including an adjustable resistor means having a wiper arm and first and second oppositely poled diodes having first terminals connected to the opposite ends of said adjustable



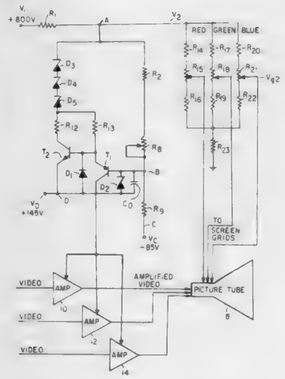
resistor means; second terminals of said oppositely poled diodes and said wiper arm, respectively, being connected to said a-c power source; said input reference voltage circuit defining separate reference voltages to said charging circuit for positive and negative half waves, respectively, of said a-c power source, whereby adjustment of said wiper arm of said adjustable resistor means is adjustable to compensate against the asymmetric firing of said bidirectional controllably conductive device.

3,927,346

SYSTEM FOR STABILIZATION OF WORKING POINT IN PICTURE TUBES

Dieter Spannhake, Darmstadt, Germany, assignor to Robert Bosch Fernsehanlagen GmbH, Darmstadt, Germany

Filed Oct. 5, 1973, Ser. No. 403,987
Claims priority, application Germany, Oct. 11, 1972, 2249703
Int. Cl.² H01J *29/52*
U.S. Cl. 315—30 **6 Claims**



1. A system for stabilization of the working point of a picture tube including a cathode and a screen grid, comprising

A. a video amplifier (**10**) powered from a high-tension direct voltage source (V_D) and amplifying a video signal for control of the cathode of a picture tube (**8**),

B. an adjustable voltage divider (R_{14}–R_{23}) driven by a second direct voltage source (V_2) for providing a divided direct voltage (V_{g2}) for application to screen grids of the picture tube, and

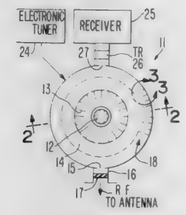
C. adjusting means (T_1,T_2) directly responsive to change in the magnitude of the voltages from the high-tension voltage source (V_D) and from the second voltage source (V_2) with respect to a reference voltage (V_c) for adjusting the direct voltage level of the second direct voltage source, whereby changes in the high-tension direct voltage source are compensated for by the effect on the picture tube of the change in throughgrip which results from adjustment of the second direct voltage source.

3,927,347

MICROWAVE TUBE USING ELECTRONICALLY TUNABLE CAVITY RESONATOR

George K. Farney, Boxford, Mass., assignor to Varian Associates, Palo Alto, Calif.

Filed Mar. 22, 1974, Ser. No. 453,667
Int. Cl.² H01J *25/50*
U.S. Cl. 315—39.55 **15 Claims**



1. An electronically tunable microwave coaxial magnetron including:

a cavity resonator dimensioned and arranged to support a circular electric mode of resonance,

a curved array of discrete reactive loading elements coupled to said circular electric mode of said cavity resonator, each of said discrete reactive loading elements having a reactance which is selectively variable between a minimum reactance and a maximum reactance,

means for exciting said cavity with microwave energy in said circular electric mode,

means for electronically varying said reactance of respective individual ones of said loading elements for tuning the resonant frequency of said cavity resonator in a stepwise fashion.

3,927,348

CONTROL CIRCUITS FOR AUXILIARY LIGHT SOURCE FOR USE WITH HIGH INTENSITY DISCHARGE LAMPS

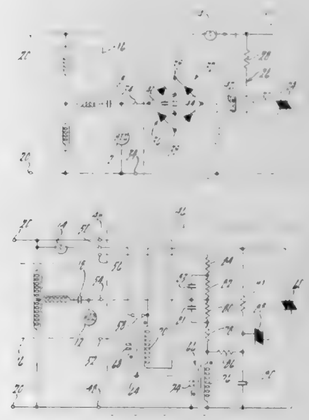
Andrzej Zawadski, Birmingham, Mich., assignor to Ram Meter, Inc., Ferndale, Mich.

Filed July 17, 1973, Ser. No. 379,935
Int. Cl.² H05B *39/10*
U.S. Cl. 315—88 **49 Claims**

1. A control system for an auxiliary lamp for providing supplemental lighting for a high intensity discharge lamp, said discharge lamp being connectable to a source of electric power to establish a voltage thereacross and having a normal mode of operation in which the luminescence of said high intensity discharge lamp is at a high level and the voltage thereacross is at an intermediate level and start-up and cool-down modes of operation in which the luminescence of said high intensity discharge lamp is at a reduced level relative to said high level of luminescence and the voltage thereacross is at low and high levels, respectively, comprising:

controlled conduction means having a control terminal for receiving a control signal for connecting said auxiliary lamp to an electric power source for said auxiliary lamp to light said auxiliary lamp; and

single control means connected to receive the voltage across said high intensity discharge lamp so as to be responsive to said start-up and said cool-down modes of operation of said high intensity discharge lamp for providing said control signal to said control terminal of said controlled conduction means to light said auxiliary lamp during at least portions of said start-up and said cool-down modes of operation of said high intensity discharge lamp whereby said auxiliary lamp provides supplemental lightening when the level of said luminescence of said high intensity discharge lamp is reduced, said single control means including switch means connected to said control terminal of said controlled conduction means which provides said control signal when closed and terminates said control signal when opened, and means for operating said switch including a first source of magnetic flux which has a flux magnitude which is effective to close said switch means during said start-up mode of operation, and a second source of magnetic flux which receives the voltage across said high intensity discharge lamp to provide a magnetic flux which is in opposition to said magnetic flux of said first source and which has a low flux magnitude which is ineffective to overcome said switch closing flux magnitude of said first source in response to said low voltage level across said high intensity discharge lamp representative of said start-up mode of operation of said high intensity discharge lamp so that said switch remains closed, which has an intermediate flux magnitude which is effective to overcome said switch closing flux magnitude of said first source to open said switch means in response to said intermediate voltage level across said high intensity discharge lamp representative of said normal mode of operation of said high intensity discharge lamp, and which has a high flux magnitude which is effective to close said switch means in response to said high voltage across said high intensity discharge lamp representative of said cool-down mode of operation of said high intensity discharge lamp.



3,927,349

ZERO CROSSING SCR LIGHT DIMMER

Glen D. Suhren, Dallas, and Charles W. True, III, Garland, both of Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 11, 1974, Ser. No. 460,230
Int. Cl.² H05B *37/00*
U.S. Cl. 315—205 **11 Claims**

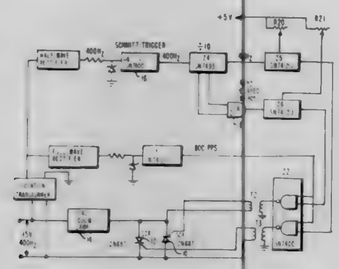
1. A zero crossing SCR light dimmer apparatus comprising in combination:

a power source connected to a high wattage lamp to supply power thereto, said power source having a frequency of 400 Hz, said lamp having a parallel pair of silicon controlled rectifiers in series with said power source, said

silicon controlled rectifiers being connected in opposite directions, one of said silicon controlled rectifiers being a positive SCR and the other a negative SCR,

means for controlling the positive half cycles of power being connected to said positive SCR, said positive controlling means turning said positive SCR on at a predetermined time,

means for controlling the negative half cycles of power being connected to said negative SCR, said negative controlling means turning said negative SCR on at a predetermined time,



means for synchronizing the application of power from said positive and negative controlling means connected to said positive and negative controlling means, said synchronizing means providing a synchronizing signal to said positive and negative controlling means, and,

a control unit connected to said positive and negative controlling means, said control unit providing a control signal to said positive and negative controlling means, said positive and negative controlling means respectively providing a positive half cycle of power and a negative half cycle of power when said synchronizing signal and said control signal coincide.

3,927,350

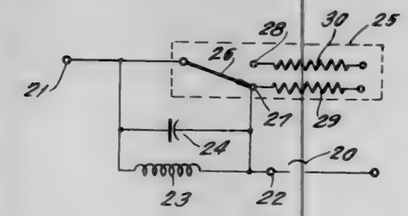
SELF-SWITCHED INDUCTIVE FAULT CURRENT LIMITER

Lorne D. McConnell, Chalfont, Pa., assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed Apr. 22, 1974, Ser. No. 462,781

Int. Cl.² H02H *7/22*

U.S. Cl. 317—11 C **7 Claims**



1. A fault current limiter for connection in an electric power circuit, and in series with a circuit breaker in said electric power circuit; said fault current limiter comprising an inductor, a capacitor, and a switching device; said switching device having interrupting capability; said inductor, capacitor and switching device being connected in parallel with one another; said switching device being operable between an open circuit condition and a closed circuit condition; operating means associated with said switching device and coupled to the current in said electric power circuit for maintaining said switching device in its said closed circuit condition when a circuit parameter in said electric power circuit is at or below a given value, and for operating said switching device to its said open circuit condition when said circuit parameter exceeds said given value; said electric power circuit having a given frequency; said capacitor and said inductor being resonant at a frequency substantially higher than said given frequency; said electric power circuit frequency being from 50 to 60 hertz; said capacitor having a capacitive reactance of about 10 times or more than the inductive reactance of said inductor.

3,927,351

INSULATED PIPE SYSTEMS WITH MOISTURE DETECTING MEANS

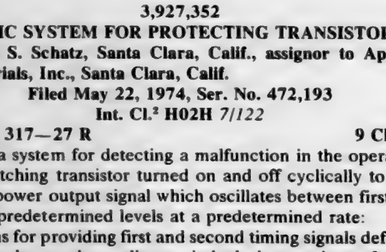
Ejvind Lambertsen, Fredericia, Denmark, assignor to A/S E. Rasmussen, Denmark

Filed Mar. 26, 1974, Ser. No. 454,952

Claims priority, application United Kingdom, Mar. 26, 1973, 14316/73

Int. Cl.² H02H *3/38*

U.S. Cl. 317—27 R **10 Claims**



1. An insulated pipe system such as a subterranean district heating pipe system comprising a conductor pipe surrounded by a normally dry and electrically non-conducting, but hygroscopic material in which there is enclosed elongated electric conductor elements connected to means for detecting the occurrence of an electric conductivity in the hygroscopic material due to intrusion of moisture therein, characterized in that the conductor elements between which the conductivity should be detected are connected to an alternate voltage source and are mutually connected so as to form a complex impedance, the real part of which is constituted by the resistance between the conductor elements through the hygroscopic material, the detecting means comprising a phase comparator connected so as to compare the phase of the output signal from the alternate voltage source with the phase of the signal through the complex impedance and to actuate a detector unit in response to the phase difference between the compared signals changing beyond a predetermined value.

3,927,352

LOGIC SYSTEM FOR PROTECTING TRANSISTORS

Douglas S. Schatz, Santa Clara, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed May 22, 1974, Ser. No. 472,193

Int. Cl.² H02H *7/122*

U.S. Cl. 317—27 R **9 Claims**

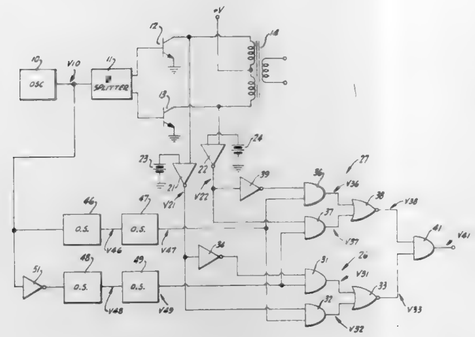
1. In a system for detecting a malfunction in the operation of a switching transistor turned on and off cyclically to produce a power output signal which oscillates between first and second predetermined levels at a predetermined rate:

A. means for providing first and second timing signals defining first and second sampling periods during portions of alternate half cycles of the output signal; and

B. logic gate means for monitoring the level of the output signal and providing a fault signal in the event that the level differs from the first or second predetermined level during the first and second sampling periods, respectively, said logic gate means comprising:

1. a first AND gate receiving inputs corresponding to the first timing signal and the output signal;

2. a second AND gate receiving inputs corresponding to the second timing signal and the inverse of the output signal; and



3. an additional gate having inputs connected to the outputs of the AND gates.

3,927,353

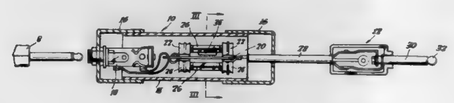
PROTECTIVE DEVICE AND METHOD FOR USE WITH AUDIO AMPLIFICATION EQUIPMENT

John S. Reid, 10 Boston Ave., Benton Lodge, Newcastle upon Tyne, and Christopher W. J. Hayes, 8 Hector St., Shiremoor, both of England

Filed June 29, 1973, Ser. No. 375,091

Int. Cl.² H02H *3/08*

U.S. Cl. 317—40 A **2 Claims**



1. A means for protecting a user of audio amplification equipment against electric shock, said equipment comprising an amplifier, apparatus producing a signal to be amplified, and coaxial cable means for electrically connecting said amplifier to said apparatus, the coaxial cable means having a core circuit and a sheath circuit, and the protecting means comprising fuses, located respectively in said core and said sheath circuits between said amplifier and said apparatus, for isolating the user of the apparatus from the amplifier so that any current passing from the amplifier through the user to ground must pass through said fuses said fuses being such as will be broken by a current less than likely to cause more than superficial injury to a person, both said fuses being mounted in a single separable unit having two ends, there being a jack socket at one end and a first jack plug at the other, said jack plug being rotationally symmetrical and having a tip contact connected through one of said fuses to a contact of the jack socket in contact with the tip contact of a second jack plug, similar to the first, inserted into said jack socket, and a cylindrical sleeve contact connected through the other of said fuses to a contact of the jack socket in contact with the sleeve contact of said second jack plug, said second jack plug being connected by said coaxial cable means to said apparatus, and said first jack plug being inserted into a matching jack socket in said amplifier.

3,927,354

DEVICE FOR GENERATING ELECTRIC SPARKS FOR IGNITING FLAMMABLE VAPORS CONTAINING GAS AND AIR

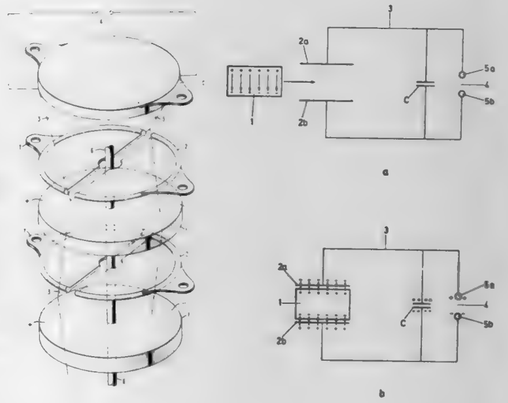
Herbert Bauser, Friedrichsdorf, and Dieter Fischer, Frankfurt am Main, both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 19, 1974, Ser. No. 490,213

Claims priority, application Germany, July 23, 1973, 2337347

Int. Cl.² F23Q *3/01*

U.S. Cl. 317—81 **1 Claim**



1. A device for generating an electric spark for the ignition of gas-air mixtures comprising a circuit including a condenser, a pair of electrodes connected between terminals of said condenser forming a spark gap, a pair of conductive plates connected between said terminals, a plurality of electrets in the form of thin disks rotatably supported on a shaft, each disk having a segment of one polarity and another segment of a polarity opposite thereto comprising two sets of semi-circular disk members insulated from each other, one of said sets being connected to one terminal of said condenser and the other set to the other terminal thereof whereby, upon 90° rotation of said electrets, said sets of disk members receive a charge of opposite polarity, causing a cumulative charge transfer on said condenser, resulting in a spark discharge between said pair of electrodes.

3,927,355

DIODE STACK WITH SEGMENTED MOUNTING PLATE

Frank S. Parker, Bay City, Mich., assignor to Newcor, Inc., Bay City, Mich.

Filed Feb. 25, 1974, Ser. No. 445,481

Int. Cl.² H01L *23/34*

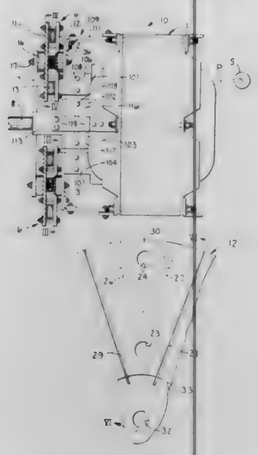
U.S. Cl. 317—100 **10 Claims**

1. A rectifier unit, comprising:

a spaced pair of substantially parallel mounting plates having a plurality of diode stacks positioned therebetween, one of said plates comprising slots through the thickness thereof and between adjacent diode stacks, and interconnected, substantially axially flexible segments facing said diode stacks and having edges separated by said slots;

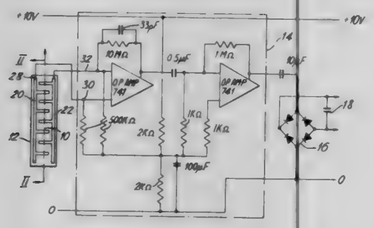
means clamping said plates fixedly with respect to each

stack of diodes;
whereby the flexing of the segments of the segmented plate



will accommodate the same to varying axial dimensions of the several diode stacks.

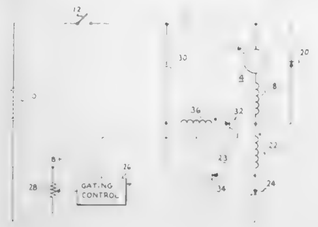
3,927,356
YARN DETECTION DEVICES
David George Hodson, Sherwood, and Derek Peat, Aspley, both of England, assignors to National Research Development Corporation, London, England
Filed July 11, 1974, Ser. No. 487,759
Claims priority, application United Kingdom, July 13, 1973, 33564/73
Int. Cl.² H01H 47/00
U.S. Cl. 317—123 **12 Claims**



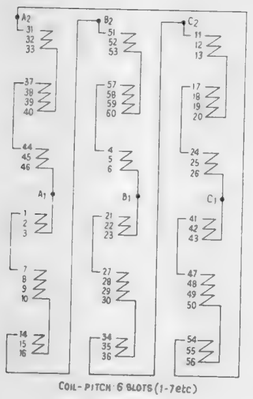
1. A detection apparatus comprising a multi-electrode detector for detecting static charge on a moving yarn or the like, an amplifier for amplifying signals produced by the detector on detection of said charge, and a cut-off unit adapted to pass signals from the amplifier in excess of some predetermined amplitude which is greater than that associated with electronic noise in the cut-off unit input signal.

3,927,357
ELECTRIC VEHICLE POWER CIRCUIT
Charles Edward Konrad, Roanoke, Va., assignor to General Electric Company, Salem, Va.
Filed Apr. 1, 1974, Ser. No. 456,466
Int. Cl.² H02P 5/16
U.S. Cl. 318—139 **9 Claims**

1. A pulse control system for controlling the power applied to a dc load from a dc source, comprising:
switching means for periodically coupling the dc load to the dc source, the mark-space ratio of conductivity of said switching means determining the percentage of source voltage which appears across the load;
the series combination of a capacitor, inductive means and first unidirectional conducting means;
means for coupling said series combination across the load;
second unidirectional conducting means coupled in parallel with said inductive means and said first unidirectional conducting means, said first and said second unidirectional conducting means being poled inversely with respect to each other; and
control means for sequentially enabling said switching means and at least one of said first or said second unidirectional conducting means.

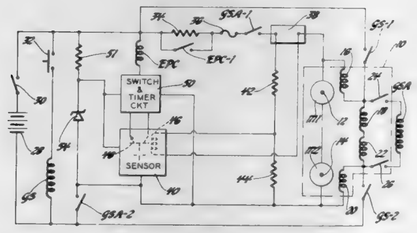


3,927,358
ELECTRIC MOTORS
Alexander Richard William Broadway; William Fong, and Gordon Hindle Rawcliffe, all of Bristol, England, assignors to National Research Development Corporation, London, England
Filed Apr. 1, 1974, Ser. No. 456,857
Claims priority, application United Kingdom, Apr. 13, 1973, 17943/73
Int. Cl.² H02K 17/14
U.S. Cl. 318—224 **13 Claims**



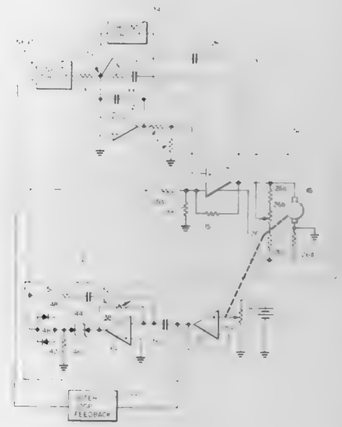
1. A three-phase alternating current, speed-changing rotary machine, comprising an electric motor or generator, wherein speed-changing from a first operating pole-number to a second operating pole-number is effected by the method of pole amplitude modulation, said machine having a stator winding comprising three phase-windings wound on a stator frame in a layout defining said first operating pole-number, said layout defining a pole-amplitude modulation wave extending around the circumference of each phase-winding wherein the poles in alternate half-cycles of the said wave are reversed in polarity to provide the said second operating pole-number, the phase-winding coil-group distribution providing the poles of the said first pole-number comprising substantially equi-angularly spaced-apart coil-groups of sequentially varying amplitude which approximates a sinusoidal amplitude distribution within each modulating wave half-cycle, the said distribution including coil-group locations, substantially equi-angularly spaced-apart from adjacent coil-groups comprising zero-number coil groups positioned substantially at the zero-amplitude positions defined by the said sinusoidal amplitude distribution of the said modulating wave.

3,927,359
ENGINE STARTER MOTOR CONTROL FOR PREVENTING DAMAGE DURING HYDRAULIC LOCK
Stephen S. Chen, Downers Grove, Ill., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 15, 1973, Ser. No. 415,977
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² H02P 7/14
U.S. Cl. 318—434 **2 Claims**



2. An engine starter motor control for preventing damage to an engine when said engine experiences a hydraulic lock due to fluid contained in a cylinder thereof, comprising: a starter motor effective for cranking the engine; a starter motor energizing circuit including a DC power source, a parallel circuit comprised of an impedance and a speed control contacter, and a starter contacter series coupled with the starter motor, the starter motor being coupled directly to the DC power source when the starter contacter and the speed control contacter are closed so as to crank the engine at maximum speed with maximum applied torque and being coupled to the DC power source through the starter contacter and the impedance when the speed control contacter is opened so as to crank the engine at a rate below a specified speed at which the applied torque is insufficient to rotate the engine when said engine experiences a hydraulic lock; means for generating a first signal directly related to the magnitude of current through the starter motor; means for generating a second signal directly related to the magnitude of the voltage across the starter motor; means responsive to the first and second signals for generating a third signal having a magnitude directly related to the speed of the starter motor; means responsive to the third signal for closing the contacter when the magnitude of said signal represents a speed of the starter motor less than specified speed and opening the contacter when the speed is greater than the specified speed; and timer means for disabling the last mentioned means from opening the contacter when the speed of the starter motor is greater than the specified speed after a predetermined time duration from the closing of the starter contacter, said time duration being at least equal to the time required for the starter motor when operating at the specified speed to rotate the engine through one complete revolution, whereby the starter motor cranks the engine at or below the specified speed for the specified time duration with an applied torque insufficient to rotate the engine when said engine experiences a hydraulic lock.

3,927,360
NULL-BALANCE SERVO SYSTEM
Samuel Jay MacMullan, Newtown, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.
Filed Nov. 30, 1972, Ser. No. 310,819
Int. Cl.² G05B 5/01
U.S. Cl. 318—619 **7 Claims**



1. A null-balance servo system for measuring an unknown electrical quantity as an input signal comprising:
an adjustable circuit element for generating a position feedback signal representing the adjustable position of said adjustable circuit element;
an input circuit responsive to an input signal and said position feedback signal applied thereto for generating an error signal representing the unbalance of said system;
signal processing amplifier means having an input coupled to the output of said input circuit;
power amplifier means having an input coupled to the output of said signal processing amplifier means and an output;
a motor coupled to said output of said power amplifier means for adjusting said adjustable circuit element in a direction to restore balance to said system;
means for reducing said error signal by small signal acceleration feedback and small signal velocity feedback signals, said small signal acceleration feedback signal being applied to the input of said signal processing amplifier;
means for reducing said error signal by large signal velocity feedback when said rate of change of said adjustable circuit element exceeds a predetermined threshold so as to establish a velocity controlled mode of operation for said system, said large signal velocity feedback signal being applied to the input of said power amplifier in proper phase relationship; and
means for decreasing the effect of at least one of said small signal feedback signals on said error signal relative to the effect of said large signal velocity feedback signal on said error signal when said large signal velocity feedback exceeds said threshold so as to permit the large signal velocity feedback to dominate said at least one small signal feedback thereby constraining the effective bandwidth of the system during said velocity controlled mode of operation, said means for decreasing the effect of said small signal feedback signals substantially limiting the small signal acceleration feedback that is applied to said signal processing amplifier when said rate of adjustment exceeds said threshold.

3,927,361
BATTERY CHARGERS

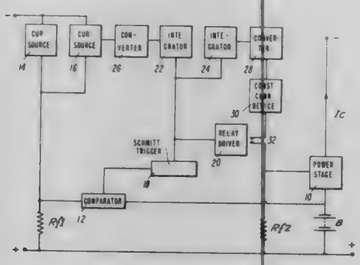
James Adrian Macharg, 16, Elmfield Park, Gosforth, Newcastle Upon Tyne, 3, England

Continuation-in-part of Ser. No. 827,182, May 23, 1969, Pat. No. 3,624,481. This application Jan. 21, 1971, Ser. No. 108,317

Claims priority, application United Kingdom, Jan. 27, 1970, 400170/70

Int. Cl.² H02J 7/10

U.S. Cl. 320—39 21 Claims



1. A battery charger, comprising reference means for deriving a reference voltage; comparator means for comparing the reference voltage with the actual voltage of the battery being charged; sensing means operable from said comparator means for sensing when the difference between the reference voltage and the battery terminal voltage is above or below a given value, said sensing means producing either a zero signal or a signal of a given value according to the result of the comparison between the reference voltage and the battery terminal voltage; integrator means operable from the output of the sensing means; battery charging circuit means; current control means in the battery charging circuit means, for varying the magnitude of the charging current as a function of the integrated output from said integrator means; reference voltage varying means responding to said integrator means for varying the value of the reference voltage between predetermined upper and lower limits as a function of the integrated output from the integrator means.

3,927,362
RECTIFIER CIRCUIT FOR PROVIDING SIX-PHASE RECTIFICATION OF THREE-PHASE ALTERNATING CURRENT

Roger F. Brewster, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

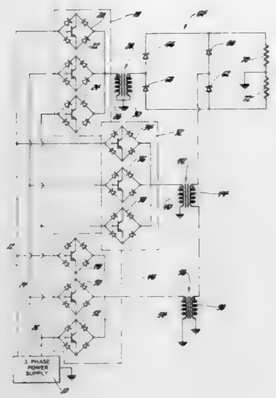
Filed Oct. 25, 1973, Ser. No. 409,657

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² H02M 7/155

U.S. Cl. 321—5 4 Claims

1. A rectifier circuit for converting a three-phase alternating signal output from a three-phase supply to a six-phase rectified unidirectional signal comprising: first, second and third phase selector means coupled to the three-phase supply, each of the phase selector means sequentially coupling each phase of the three-phase alternating signal to its output in 60 electrical degree segments, each phase of the three-phase alternating signal being coupled to the output of a respective one of the phase selector means at any instant in time and means coupled to the outputs of the first, second and third phase selector means for combining the positive 60 electrical degree segments coupled to the outputs of the first, second and third phase selector means and combining the negative 60 electrical degree segments coupled to the outputs of the first, second and third phase selector means, whereby the combined positive and negative segments comprise a six-phase unidirectional signal.



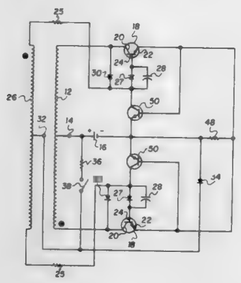
3,927,363
CURRENT LIMITED SELF-SATURATING DC/DC CONVERTER

Daniel M. Mitchell, and Robert H. Ternowski, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 10, 1975, Ser. No. 548,309

Int. Cl.² H02M 1/18

U.S. Cl. 321—11 4 Claims



1. A current limited self-saturating DC/DC converter comprising:

a transformer having a control winding and an input winding with a center tap for connection to one terminal of a DC power supply;

current sensing means for providing a cutoff signal whenever the current therethrough attains some predetermined level;

a pair of switching transistors, each having its collector-emitter path connected between a different end of the input winding of said transformer and the other DC power supply terminal via said current sensing means for passing current when enabled;

circuit means for connecting the bases of said switching transistors to opposite ends of the control winding of said transformer for alternately enabling said transistors via the DC power supply and said current sensing means, and cutoff circuit means connected to the bases of said switching transistors for inhibiting the passage of current therethrough in response to said cutoff signal.

3,927,364
VOLTAGE MULTIPLIER ARRANGEMENT WITH CAPACITOR ROLLS SURROUNDED BY DIODES

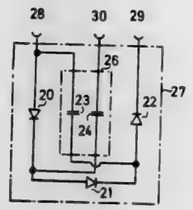
Werner Bauer, Nurnberg, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 17, 1974, Ser. No. 470,881

Claims priority, application Germany, June 4, 1973, 2328290

Int. Cl.² H02M 3/06; H01G 4/38

U.S. Cl. 321—15 8 Claims



1. A voltage multiplier comprising a plurality of series connected diodes and a plurality of capacitors, each capacitor being connected between opposite ends of a pair of said diodes and including an intermediate thermoplastic dielectric layer and a pair of metal foil electrode layers on opposite sides of said dielectric layer, said electrode and dielectric layers being rolled into a plurality of overlapping layers including said plurality of capacitors within a common roll, said diodes being connected to said electrode layers and being disposed about opposite outer sides of said roll.

3,927,365
SWITCH OPERATING DEVICE

Koji Kodama, Tokyo, and Yujiro Kasai, Ohme, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

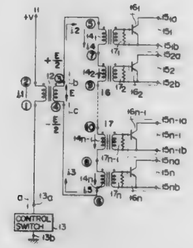
Filed Mar. 28, 1973, Ser. No. 345,527

Claims priority, application Japan, Mar. 31, 1972, 47-32465

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² G05F 5/00

U.S. Cl. 323—48 8 Claims



4. A switch operating device comprising a driving transformer having the input side thereof supplied with switching current; a first plurality of switching transformers whose primary sides are serially connected between one inout terminal of said driving transformer and the source of said switching current, a second plurality of switching transformers whose primary sides are serially connected between the output terminals of said driving transformer; and a plurality of switching circuits connected to the secondary sides of said first and second plurality of switching transformers.

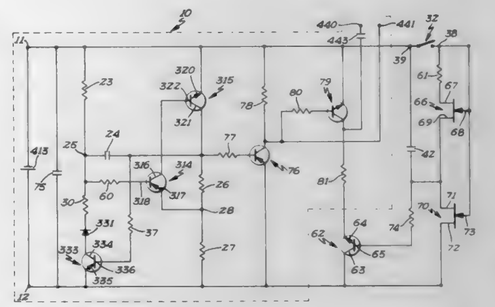
3,927,366
METHOD FOR DETERMINING THE END OF LIFE OF A PULSE GENERATOR POWER SOURCE

Pieter M. J. Mulier, St. Paul; Thomas L. Jirak, Plymouth, and Lawrence M. Kane, Roseville, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 256,330, May 24, 1972, Pat. No. 3,857,085. This application Aug. 20, 1973, Ser. No. 390,174

Int. Cl. G01n 27/42

U.S. Cl. 324—29.5 6 Claims



1. A method for determining the end of life of a pulse generator power source which comprises the steps of: providing an output regulating circuit means for the pulse generator; initiating the operating of the output regulating circuit means such that the voltage amplitude decreases in substantially constant decrements from one pulse to the next; sensing the effects of the decrease in voltage amplitude; counting the number of pulses from the time of initiating until the occurrence of a critical event; and determing the useful life remaining in the pulse generator power source.

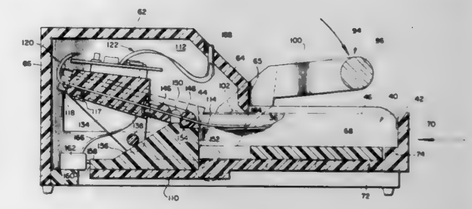
3,927,367
BATTERY TESTING APPARATUS

David M. Franklin, Lexington, and William P. Lane, Taunton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 21, 1974, Ser. No. 516,645

Int. Cl.² G01N 27/42

U.S. Cl. 324—29.5 25 Claims



1. Apparatus for testing the condition of a battery located within a multi-walled package and having spaced terminal defining surfaces of opposed polarity in predetermined orientation within said package, comprising:

probe means insertable through a select wall of said package for establishing electrically conducting contact with said terminal surfaces;

receiver means for removably receiving said package in a predetermined orientation aligning said select wall for said probe means insertion;

actuator means for providing relative movement between said multi-walled package means and said probe means to effect said probe means contact; and

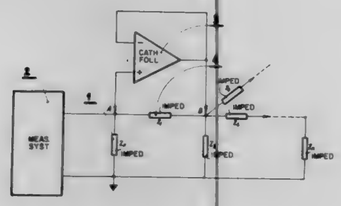
means electrically connectable with said probe means for indicating the condition of a said battery, the said terminal defining surfaces of which have been contacted by said probe means.

3,927,368

METHOD OF BREAKING ELECTRIC NETWORKS FOR MEASUREMENT OF PARAMETERS OF NETWORK COMPONENTS

Romuald Zielonko, Sopot; Jerzy Hoja, Gdansk-Wrzeszcz, and Henryk Wojciechowski, Gdansk, all of Poland, assignors to Politechnika Gdanska, Gdansk, Poland

Filed Apr. 4, 1974, Ser. No. 458,359
Claims priority, application Poland, Apr. 7, 1973, 161757
Int. Cl.² G01R *27/02*
U.S. Cl. 324—57 R **4 Claims**



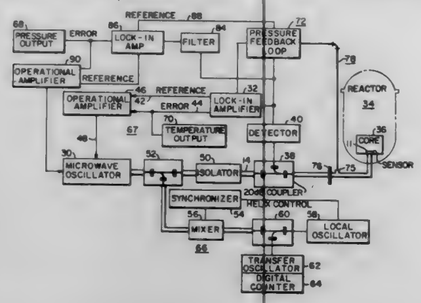
1. A method of isolating a network impedance element connected between two terminals in said network, said method comprising creating a virtual open circuit in said electrical network by transmitting a potential at one of said terminals by means of a high-input-impedance voltage follower whose amplification factor is close to unity to the other terminal.

3,927,369

MICROWAVE FREQUENCY SENSOR UTILIZING A SINGLE RESONANT CAVITY TO PROVIDE SIMULTANEOUS MEASUREMENTS OF A PLURALITY OF PHYSICAL PROPERTIES

Thomas R. Billeter, and Lee D. Philipp, both of Richland, Wash., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 31, 1973, Ser. No. 328,220
Int. Cl. G01r *27/04*
U.S. Cl. 324—58.5 C **16 Claims**



1. Apparatus for providing the simultaneous measurement of a plurality of physical properties of a given environment including:

a high frequency electromagnetic energy source capable of transmitting energy having a frequency varying within a given range of frequencies;

cavity resonator means comprising a single hollow member having a wall section responsive to one of the physical properties to be measured to move in a manner to change the effective dimension of the hollow cavity along a prescribed axis, said resonator means being designed to have a plurality of coexisting resonant frequency modes, within the given range of frequencies, corresponding to the plurality of physical properties being measured, said resonant frequency modes being respectively dependent upon a unique combination or permutation and collectively dependent on all of the properties being measured; means for communicating said energy from said source to said cavity to excite said cavity to resonate at said plurality of resonant frequency modes, said communication means further transmitting any reflected energy resulting thereby; and

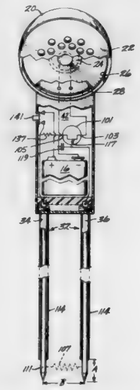
detection means responsive to said reflected energy to provide respective outputs each representative of one of the plurality of properties measured.

3,927,370

AUDIO SIGNALLING SYSTEM HAVING PROBES FOR MONITORING THE CHARACTERISTICS OF A MATERIAL

Bjorn N. De Bough, 8011 First N.E., Seattle, Wash. 98115

Filed July 11, 1972, Ser. No. 270,706
Int. Cl.² G01R *27/02*
U.S. Cl. 324—65 R **9 Claims**



5. A system for detecting the moisture content of soil at a predetermined depth comprising:

first and second insulated probes having exposed electrically conductive tip portions for positioning at said predetermined depth for detecting the path resistance of said soil at said predetermined depth between said tip portions;

an audio pulse signalling system coupled to said first and second probes for providing audio pulses at an increasing rate in response to decrease in resistivity of said soil and providing a zero audio pulse rate when said soil resistance between said probes is greater than about four kilohms.

3,927,371

TEST SYSTEM FOR LARGE SCALE INTEGRATED CIRCUITS

Jehoshua Naphtali Pomeranz, Suffern, and Henri Daniel Schnurmann, Monsey, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 19, 1974, Ser. No. 443,284
Int. Cl.³ G01R *15/12, 31/30;* **G06F** *11/00*
U.S. Cl. 324—73 R **16 Claims**

1. A system for testing a complex logic circuit which may be characterized as a partially functional circuit comprising:

a source of a functional test pattern;

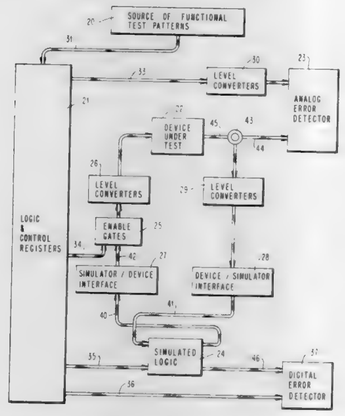
a logic simulator having functional properties complementary to said partially functional circuit;

means for selectively applying said test pattern to input terminals of said partially functional circuit and said logic simulator;

first interface means resonsive to signals from predetermined output terminals of said partially functional circuit for applying said output signals to related input terminals of said logic simulator;

second interface means responsive to signals from predetermined output terminals of said logic simulator for applying said output signals to related input terminals of said partially functional circuit;

said partially functional circuit and said logic simulator being interconnected by said first and second interface means to form a fully functional circuit; and



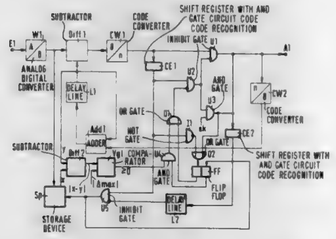
means responsive to output signals from the output terminals of both said partially functional circuit and said logic simulator for generating indications of the output signal pattern generated by said partially functional circuit and said logic simulator in response to said functional test pattern.

3,927,372

ARRANGEMENT FOR IMPROVING THE REPRODUCTION OF AMPLITUDE JUMPS DURING TRANSMISSION USING DIFFERENTIAL PULSE CODE MODULATION

Willmut Zschunke, Stuttgart, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 15, 1974, Ser. No. 514,862
Claims priority, application Germany, Nov. 7, 1973, 2355676
Int. Cl.² H04B *1/00*
U.S. Cl. 325—38 B **3 Claims**



1. An arrangement for improving the reproduction of amplitude jumps in a differential pulse code modulation (DPCM) system comprising:

a transmitter including

a source of digital input signals,

a transmitter output,

a DPCM modulator having

a first subtractor having one input coupled to said source to provide a first output signal equal to the difference value between a present sample value and a preceding sample value, said first subtractor providing at least maximum difference value code words during said amplitude jumps for transmission, the output of said first subtractor being coupled to said transmitter output,

a first delay means having its output coupled to the other input of said first subtractor, said first delay means having a delay equal to one sampling interval, and

a first adder having one input coupled to the output of said first subtractor, the other input coupled to the output of said first delay means and its output coupled to the input of said first delay means,

a first means coupled to the output of said first subtractor, to provide a second output signal when said maximum difference value code words are detected,

a second means coupled to the output of said first subtractor to provide a third output signal when said maximum difference value code words are detected,

an inhibit gate coupled to the output of each of said first and second means,

said first and second means and said INHIBIT gate cooperating to provide a write instruction at the output of said INHIBIT gate for the condition "value to be transmitted equal to maximum difference value and previously transmitted value unequal to said maximum difference value",

a storage device coupled to said source and said INHIBIT gate responsive to said write instruction to store the value of the present one of said input signals,

a second subtractor coupled to said storage device and the output of said first delay means to subtract said stored value of the present one of said input signals from the value at the output of said first delay means to produce a remaining difference value,

a comparator coupled to said second subtractor to compare said remaining difference value with said maximum difference value, said comparator providing a fourth output signal when said remaining difference value is equal to or greater than said maximum difference value,

first logic circuitry coupled to said comparator and said first subtractor to enable transmission from said first subtractor of said maximum difference value code words when said fourth output signal is present, and

second logic circuitry coupled to said first logic circuitry and said transmitter output to cause transmission of a special code word rather than the value actually provided for transmission by said first subtractor when said fourth output signal is not present; and

a receiver including

a DPCM demodulator having

a second adder having a serial output and one input coupled to said transmitter output, and

a second delay means coupled between said serial output of said second adder and the other input of said second adder, said second delay means having a delay equal to said one sampling interval

a delay arrangement having several delay devices,

a third means coupled to said transmitter output to provide a fifth output signal when said maximum difference value code words are detected,

third logic circuitry coupled to said third means responsive to said fifth output signal to provide a control signal,

a counter coupled to said third logic circuitry, said counter being advanced one count position whenever

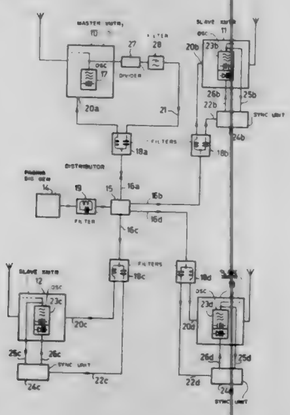
said control signal indicates two successive maximum difference value code words have been detected by said third means and being reset to its initial count position when said control signal indicates at least one code word representing value different that said maximum difference value has been detected by said third means, and

fourth logic circuitry coupled to said counter, each of said delay devices and said serial output to connect the first n of said delay devices to said serial output as a function of the count position n of said counter, where n is an integer greater than one, said fourth logic circuitry also preventing the value stored at all but the last one of said first n of said delay devices from being passed to the output of said delay arrangement.

3,927,373
PAGING SYSTEM

Abraham Janssens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 20, 1973, Ser. No. 417,550
Claims priority, application Netherlands, Nov. 23, 1972, 7215855
Int. Cl.² H03B *3/08*
U.S. Cl. 325—58 **2 Claims**

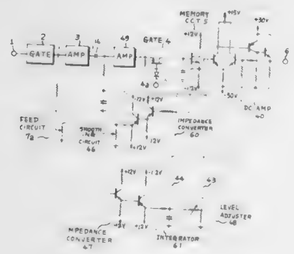


1. A paging system comprising a plurality of controlled transmitters each having an main oscillator means for generating carriers in the same frequency channel, the carriers being modulated by the same information, a controlling transmitter coupled to apply a synchronization signal to the controlled transmitters, the controlled transmitters each having a synchronization unit means for synchronizing the transmitter frequency to a multiple of the frequency of the synchronization signal, the synchronization unit of each of said controlled transmitters comprises an auxiliary oscillator, the frequency of which is lower by a factor *n* than the transmitter main oscillator frequency and is higher by a factor *m* than the frequency of the synchronization signal, a first frequency control circuit means coupled to said auxiliary oscillator for synchronizing the frequency of the auxiliary oscillator to the *m*-tiple of the frequency of the synchronization signal, said first control circuit comprising a first frequency divider which has the dividing factor *m* coupled to the output of said auxiliary oscillator, a first phase detector having a first input means for receiving the synchronization signal and a second input coupled to the first frequency divider output, and a first low pass filter coupled between the output of the phase detector and a control input of the auxiliary oscillator, and a second frequency control circuit means cascaded and independent with respect to said first control circuit means and coupled to said main oscillator for synchronizing the transmitter main oscillator frequency to the *n*-tiple of the frequency of the auxiliary oscillator, said second control circuit comprising a second frequency divider having the dividing factor *n* coupled to said main oscillator, a second phase detector which is coupled to the auxiliary oscillator and to said second divider, and a second low pass filter coupled between the output of the second phase detector and a frequency control input of the transmitter main oscillator, *m* and *n* being integer numbers larger than one.

3,927,374
SAMPLING OSCILLOSCOPE CIRCUIT

Naohisa Nakaya, Komae, Japan, assignor to Iwasaki Tsushinki Kabushiki Kaisha, Japan

Filed Nov. 27, 1972, Ser. No. 309,681
Claims priority, application Japan, Nov. 29, 1971, 48-95236
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G11C *11/24*; H03K *5/00*; Ho3K *17/60*
U.S. Cl. 328—151 **6 Claims**



1. A sampling circuit for a sampling oscilloscope comprising:

a. a sampling gate circuit provided with input means for receiving an input signal to be sampled;

b. a sampling pulse generator connected to said sampling gate circuit for applying narrow sampling pulses thereto whereupon said sampling gate circuit gates the input signal to provide input signal samples as an output signal thereof;

c. an amplifier receptive of the input signal samples from said sampling gate circuit;

d. another gate circuit AC-coupled with an output of said amplifier for receiving the input signal samples;

e. a gate pulse generator receptive of sampling pulses developed by said sampling pulses generator for developing gate pulses in synchronism with the sampling pulses and applying said gate pulses to said another gate circuit for enabling said another gate circuit;

f. a memory circuit receptive of an input signal sample from said another gate circuit when said other gate circuit is enabled for storing the input signal sample until a subsequent input signal sample is applied thereto;

g. An output amplifier receptive of an input signal sample from said memory circuit and having output means for providing an output signal thereat;

h. feed circuit means receptive of the input signal sample from said memory circuit for developing a first signal proportional to the input signal sample and for developing a second signal proportional to the input signal sample where the first signal and the second signal are of the same proportion of the input signal sample;

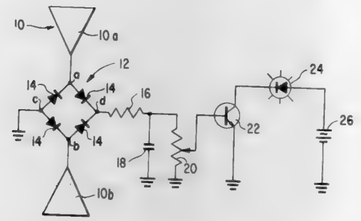
i. means for applying the first signal to said another gate circuit when a subsequent input signal sample is applied to said memory circuit; and

j. means for subtracting the second signal from an input signal sample applied to said output amplifier.

3,927,375
ELECTROMAGNETIC RADIATION DETECTOR

Bernard Lanoe, and Elisabeth de Metz, both of 65, boulevard Pasteur, Bruz, France

Filed Feb. 4, 1974, Ser. No. 439,123
Claims priority, application France, Feb. 16, 1973, 73.05457
Int. Cl.² H04B *17/00*
U.S. Cl. 325—363 **6 Claims**

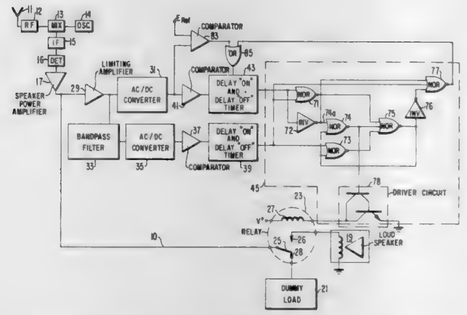


1. An electromagnetic radiation detector including an alarm device, the improvement comprising a receiving antenna for detecting radiation, a voltage detector connected to said antenna, a threshold amplifier switch connected to the output of said voltage detector, and a suitably polarized electroluminescent diode, connected to the output of said amplifier switch, serving as said alarm device, said receiving antenna comprising a dipole antenna including radiation receiving dipole elements, the components of said detector including said dipole elements being formed on a printed circuit card, said card including a first hole for housing said DC source, and a second hole for mounting said diode, said components being carried by the back of said card and printed circuit connections for said components being located on the front of said card, the device further comprising a cover located on the front of said card including an aperture therein through which said diode extends, said cover for said card including identity and work identification indicia thereon.

3,927,376
SPEAKER MUTING SYSTEM

Ronald Gilbert Ferrie, Pittsburgh, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 536,004
Int. Cl.² H04B *1/10*
U.S. Cl. 325—478 **10 Claims**



1. In a receiver system including an audio detector to detect voice audio intelligence signals and data audio tone intelligence signals at a given frequency within the voice band of frequencies, and means to provide the receiver output to an audio speaker wherein said data signals cause highly objectional noise in the output of said speaker, the improvement therewith comprising:

first means coupled to the audio detector of said receiver for providing after a first time period a first control signal during the presence of either said voice audio intelligence signals or said data audio tone intelligence signals,

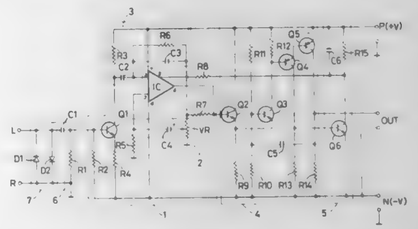
second means coupled to the audio detector of said receiver for providing after a second time period a second control signal during the presence of signals at or very near said given frequency over a time period, and

third means coupled to said speaker and responsive to said first and second control signals for coupling the output of said detector to said speaker in response to the initially received control signal at said third means being said first control signal only, and for muting said speaker in response to the initially received control signal at said third means being said second control signal only.

3,927,377
NONLINEAR FILTER FOR DETECTING ELECTROCARDIOGRAM R-WAVES AND OTHER PHYSIOLOGICAL SIGNALS

Tatsuo Iwazumi, 6548 39th Ave., NE., Seattle, Wash. 98115

Filed Mar. 1, 1974, Ser. No. 447,328
Claims priority, application Japan, Mar. 2, 1973, 48-25885
Int. Cl.² H03D *13/00*; A61B *5/04*; H03B *1/00*
U.S. Cl. 328—167 **1 Claim**



1. A nonlinear filter system for detecting a signal of a particular waveform, such as an electrocardiogram R-wave, in the presence of loud noise, said filter system comprising:

a high Q band-pass filter for detecting spectral energy of the signal of interest and producing an output indicative thereof;

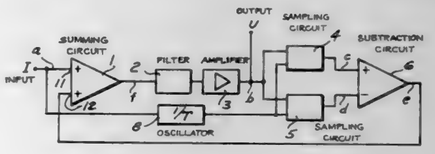
a one-shot trigger circuit connected to said band-pass filter and driven by the output thereof; and

a delay circuit means connected to said trigger circuit and said band-pass filter for reducing the Q of said band-pass filter for a short prescribed period in response to an output from said trigger circuit.

3,927,378
DEMODULATOR

Tore Torstensson Fjällbrant, Hovas, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation-in-part of Ser. No. 195,332, Nov. 3, 1971, abandoned. This application Aug. 10, 1973, Ser. No. 387,363
Claims priority, application Sweden, Nov. 23, 1970, 15810/70
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² H03D *1/06*; H03K *5/18*
U.S. Cl. 329—145 **6 Claims**



1. A demodulator for demodulating input signals which resulted from the variably sampled in a periodic manner of an analog signal comprising: a demodulator input being adapted

to receive the input signals; a demodulator output; a summing circuit having two inputs and an output, first connecting means for connecting said demodulator input to one of the inputs of said summing circuit; second connecting means for connecting the output of said summing circuit to said demodulator output; and sampling means, said sampling means comprising a subtraction circuit having first and second inputs and an output, said output being connected to said other input of said summing circuit, a first sampling circuit connected between said demodulator output and the first input of said subtraction circuit for uniformly sampling signals, and a second sampling circuit connected between said demodulator output and the second input of said subtraction circuit for sampling signals according to the same sampling pattern associated with the input signals.

4. A demodulator for demodulating input signals which resulted from the variably sampled in a periodic manner of an analog signal comprising a demodulator input being adapted to receive the input signals, a demodulator output, a summing circuit having two inputs and an output, first connecting means including a signal delay means for connecting said demodulator input to one of the inputs of said summing circuit, second connecting means for connecting the output of said summing circuit to said demodulator output, sampling means connected to the other input of said summing circuit, said sampling circuit means including means for feeding to the said other input sampled signals corresponding to excluded samples in the sampling patterns associated with the sampling patterns of uniformly sample signals, and low-pass filter means connecting said demodulator input to said sampling means.

6. A demodulator for demodulating input signals which resulted from the variably sampled in a periodic manner of an analog signal comprising: a demodulator input being adapted to receive the input signals; a demodulator output, a summing circuit having two inputs and an output; first connecting means for connecting said demodulator input to one of the inputs of said summing circuit; a digital filter means connecting the output of said summing circuit to said demodulator output, and sampling circuit means including gating means connected between said demodulator output and the other input of said summing circuit, said sampling circuit means including means for feeding to the said other input sampled signals corresponding to excluded samples in the sampling patterns associated with the sampling patterns of uniformly sample signals.

3,927,379

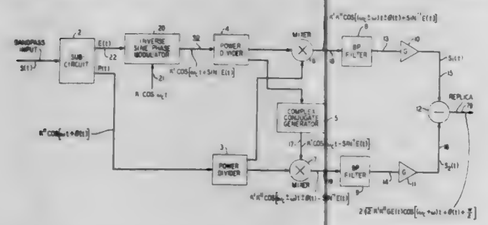
LINEAR AMPLIFICATION USING NONLINEAR DEVICES AND INVERSE SINE PHASE MODULATION

Donald Clyde Cox, New Shrewsbury; Rollin Edward Langseth, Colts Neck; Douglas Otto John Reudink, Sea Girt, and Anthony Joseph Rustako, Jr., Colts Neck, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 8, 1975, Ser. No. 539,263

Int. Cl.[2] H03F *3/38*

U.S. Cl. 330—10 **7 Claims**



1. Apparatus for bandpass amplifying an input signal having amplitude and phase variations comprising:

means for producing from the input signal a constant amplitude component and a low-pass envelope signal;

means for processing the envelope signal to produce a constant amplitude signal whose phase variations are proportional to the inverse sine of the envelope signal;

means for generating a complex conjugate signal of the constant amplitude signal from the constant amplitude signal;

first means for mixing the complex conjugate signal with the constant amplitude component to produce a first mixed output;

second means for mixing the constant amplitude signal with the constant amplitude component to produce a second mixed output; and

means for combining the mixed outputs to produce an amplified replica of the original input signal.

3,927,380

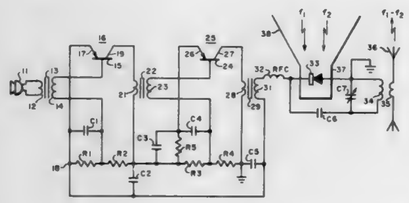
TRANSFORMER COUPLED TRANSISTOR AMPLIFIER

John F. Zaleski, Pleasantville, N.Y., assignor to The Singer Company, Little Falls, N.J.

Filed Aug. 19, 1960, Ser. No. 50,804

Int. Cl. H03f *3/04*

U.S. Cl. 330—21 **5 Claims**



1. A two stage cascaded transistor amplifier in which the stages are transformer coupled utilizing a transformer having an impedance ratio of the order of magnitude of 1/20 characterized by the fact that the low impedance winding of the transformer is connected to the output of the first stage and the high impedence winding of the transformer is connected to the input of the second stage.

3,927,381

NON SIGNAL DETECTION TYPE AGC SYSTEM

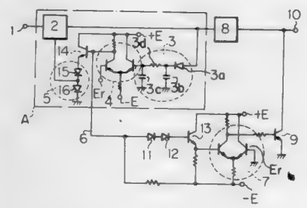
Yashuhiro Sato, and Chikao Hirabara, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd. and Nippon Telegraph and Telephone Public Corporation, both of Tokyo, Japan

Filed Aug. 15, 1974, Ser. No. 497,623

Claims priority, application Japan, Sept. 7, 1973, 48-100259

Int. Cl.[2] H03G *3/30*

U.S. Cl. 330—29 **9 Claims**



1. An AGC amplifier circuit comprising:

an amplifier circuit means, having an input signal applied thereto,

a buffer circuit connected to the output of said amplifier,

a signal detector circuit connected to the output of said amplifier, for producing a DC control signal, the level of which is proportional to the output level of said amplifier,

a variable impedance circuit, connected to the output of said signal detector, the output of said variable impedance circuit being connected to said amplifier circuit to control the gain of said amplifier circuit according to the level of said DC control signal,

a comparator circuit connected to the output of the signal detector for comparing the level of said DC control signal with a predetermined value, and

a clamping circuit connected between the output of said comparator and the output of said buffer circuit for clamping the output signal of said buffer circuit in response to the output of said comparator.

3,927,382

AMPLIFYING CIRCUIT

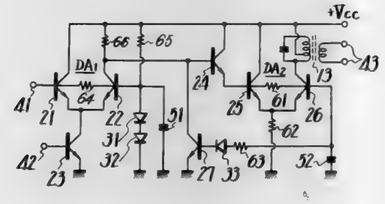
Ryuji Oki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 24, 1974, Ser. No. 509,020

Claims priority, application Japan, Oct. 2, 1973, 48-115042[U]

Int. Cl.[2] H03G *3/30*

U.S. Cl. 330—29 **3 Claims**



1. An amplifying circuit comprising a source of operating potential; a source of reference potential; a first amplifier stage including at least one transistor having a base electrode for receiving an input signal, a collector electrode connected to said source of operating potential and an emitter electrode; means for effecting automatic gain control of said first amplifier stage including a transistor having a base electrode adapted to receive a gain control signal and an emitter-collector path connected between said emitter of said transistor of the first amplifier stage and said source of reference potential; a second amplifier stage including an emitter-follower transistor and at least one additional transistor having a base electrode connected to the emitter of said emitter-follower transistor and collector and emitter electrodes respectively connected to said source of operating voltage and to said source of reference potential; a direct connection between said collector electrode of said one transistor of the first amplifier stage and the base electrode of said emitter-follower transistor for DC-coupling of said first and second amplifier stages; detecting means connected with said base electrode of said one additional transistor of the second amplifier stage for detecting changes in the DC level of said second amplifier stage resulting from changes in the gain of said first amplifier stage and for providing an output signal corresponding to the detected DC level change; and means for cancelling said changes in the DC level of said second amplifier stage including a transistor having a base electrode connected to said detecting means for receiving said output signal from the latter and collector and emitter electrodes respectively connected to said base electrode of the emitter-follower transistor and to said source of reference potential for varying the impedance therebetween in accordance with said output signal.

3,927,383

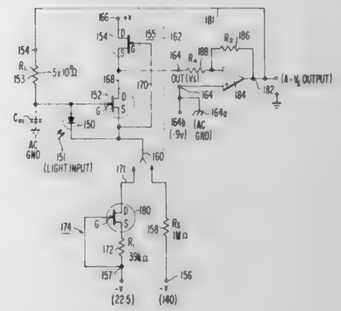
LOW NOISE WIDE BAND TRANSDUCER SYSTEM

Earl John Fjarlie, Dollard des Ormeaux; Thomas Doyle, Montreal, and Melvin John Teare, Pierrefonds, all of Canada, assignors to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 246,469, April 21, 1972, abandoned. This application Aug. 20, 1974, Ser. No. 498,965

Int. Cl.[2] H03F *17/00*

U.S. Cl. 330—59 **8 Claims**



1. A system for amplifying wave energy signals comprising:

a field effect semiconductor device having a gate, drain, and source electrode,

a two terminal transducer for generating an electrical current in response to receipt of said wave energy, one terminal being connected to said gate electrode and the other terminal being connected to said source electrode of said device, said transducer having inherent capacitance,

a biasing impedance connected between a substantially constant voltage source and said source electrode of said device, said biasing impedance and said constant voltage source being arranged to operate said field effect semiconductor device in an unconditionally stable state at a gain approaching but less than unity, whereby, in response to said electric current, an electrical potential is developed at said gate electrode that is substantially the same as the electrical potential at the source of said device and said inherent capacitance of said transducer is significantly neutralized to a substantially negligible value.

an amplifier coupled to said source electrode of said device for generating a negative feedback voltage in response to said electric current of said transducer,

a two terminal load impedance having one terminal connected directly to said gate electrode of said device and the other terminal coupled to said negative feedback amplifier, said two terminal load impedance having an appropriately large ohmic value to maintain a large signal-to-nose ratio, whereby said negative feedback voltage effectively reduces the ohmic value of said two terminal load impedance, and

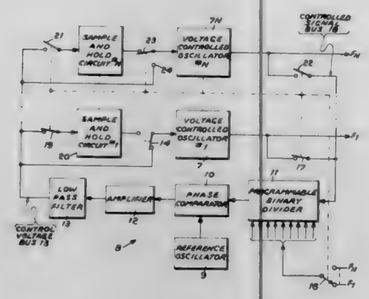
output means coupled to said negative feedback amplifier for providing a system output signal in response to the receipt of said wave energy by said transducer,

whereby said system is responsive with a substantially constant signal-to-noise ratio to said wave energy signals by neutralizing substantially said capacitance of said transducer while effectively reducing the ohmic value of said load impedance, said wave energy having a significant bandwidth.

3,927,384
FREQUENCY SYNTHESIZER

Maurice Leon Jean Jezo, Cedar Grove, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 20, 1974, Ser. No. 498,908
Int. Cl.² H03B 3/04
U.S. Cl. 331—2 **11 Claims**



1. A phase locked loop type of frequency synthesizer to generate simultaneously N output signals each having a different one of N different frequencies, where N is an integer greater than one, comprising:

N voltage controlled oscillators each capable of generating simultaneously a different one of said N signals;

first means to produce N control signals at different times, each of said N control signals being for a different one of said N oscillators;

second means to selectively couple the output of said N oscillators at different times to the input of said firt means;

N third means each associated with a different one of said N oscillators to store that one of said N control signals controlling the associated one of said N oscillators; and

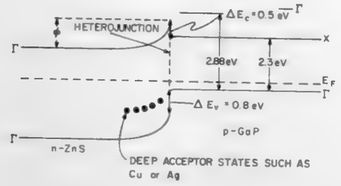
fourth means to selectively couple the output of said first means to the control input of that one of said N oscillators whose output is coupled to the input of said first means, to disconnect the output of that one of said N third means associated with said one of said N oscillators from the control input of said one of said N oscillators, to couple the output of said first means to the input of said one of said N third means, to disconnect the control input of said one of said N oscillators from said first means when the output of said first means has been connected to another of said N oscillators and its associated one of said N third means, and to connect the output of said one of said N third means to the control input of said one of said N oscillators to enable simultaneous generation of said N output signals.

3,927,385
LIGHT EMITTING DIODE

George W. Pratt, Jr., Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 277,710, Aug. 3, 1972, abandoned, which is a continuation-in-part of Ser. No. 5,088, Jan. 22, 1970, abandoned. This application June 3, 1974, Ser. No. 475,697
Int. Cl.² H01S 3/19; G02F 1/17
U.S. Cl. 331—94.5 H **11 Claims**

1. A semiconductor device adapted to emit electromagnetic radiation in at least one of the infrared, visible or ultraviolet region of the spectrum, that comprises, a diode structure that includes a p-n heterojunction between single crystal materials, the material on the n-side being doped to provide deep-lying impurity states in the gap and further doped to provide electrons in the conduction band, the heterojunction being disposed along a particularly oriented plane such that the law of conservation of components of momentum perpendicular to the normal to the heterojunction plane inhibits electron injection from the n-side to the p-side and enhances hole injection from the p-side into the deep-lying impurity states on the n-side to allow transitions of electrons of the conduction band of the n-side into the deep-lying impurity states and the consequent emission of radiation.



3,927,386
METHOD AND APPARATUS FOR CIRCULARLY MAGNETIZING A HELICAL CONDUCTIVE ROD

Ivan J. Garshelis, 61 Oleander Way, Clark, N.J. 07066

Filed July 12, 1974, Ser. No. 488,220
Int. Cl.² H01F 13/00
U.S. Cl. 335—284 **8 Claims**



1. A method for circularly magnetizing a helical conductive rod comprising the steps of:

forming the conductive rod into a helix;

enveloping the outer surface of said helical rod with an electrical insulator;

enveloping said electrical insulator with a tubular conductor;

electrically connecting one end of said tubular conductor to the corresponding end of said helical rod;

and electrically connecting the other ends of said coiled rod and said tubular conductor to a d.c. source.

3,927,387
CONTROL APPARATUS

Robert Geoffrey Birthwright, 61, Normanton Ave., Wimbledon Park, London, SW19, England

Filed Nov. 20, 1973, Ser. No. 417,599
Claims priority, application United Kingdom, July 17, 1973, 34059/73
Int. Cl.² H01H 37/36
U.S. Cl. 338—317 **2 Claims**

1. Control apparatus comprising

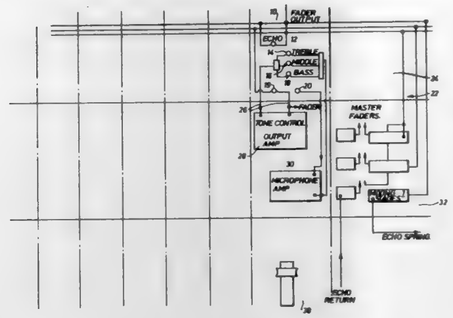
a control panel,

an electrical circuit board adjacent the panel,

a plurality of potentiometers each having a body from which extends an arm bearing at its free end means for operating the potentiometer and each electrically connected to a circuit on the circuit board on the solder side remote from the panel,

a plurality of manual control knobs each removably attached to one of said operating means for operating the potentiometer from which that arm extends, and

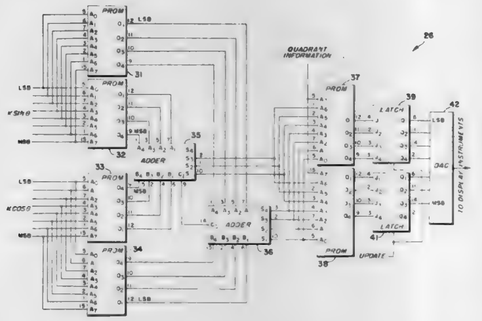
means for securing said potentiometers, panel and board together with said arms passing through both the circuit board and the control panel including removable fastener means between each of said knobs and said panel for holding said panel and board in firm contact.



3,927,388
DIVERS NAVIGATION DISPLAY

Alfred M. Medrano, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 30, 1974, Ser. No. 510,347
Int. Cl.² G01S 3/80
U.S. Cl. 340—6 R **4 Claims**



1. In a beacon-homing navigation system, a signal processing circuit for converting digital sine and cosine values of a bearing angle into an analog value of said bearing angle comprising:

a first programmed read-only-memory connected to receive said digital sine values to function as an addressable look-up table and storing the logrithmic value of the address;

a second programmed read-only-memory connected to receive said digital cosine values to function as an addressable look-up table and storing the two's compliment of the logrithmic value of the address;

an adder connected to said first and second programmed read-only memories to receive the output signals thereof for summing said output signals;

a third programmed read-only memory connected to said adder to receive the summed output therefrom as addresses so as to function as a look-up table and storing the arc tangent values of the addresses;

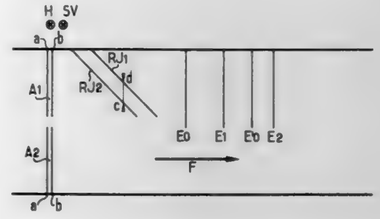
latch means connected to said third programmed read-only memory for holding the output of said third read-only memory until a different address signal is applied to said first and second read-only memories; and

digital-to-analog converter means connected to said latch means for supplying an analog voltage corresponding to the arc tangent output of said third programmed read-only-memory.

3,927,389
DEVICE FOR DETERMINING, DURING OPERATION, THE CATEGORY OF A VEHICLE ACCORDING TO A PRE-ESTABLISHED GROUP OF CATEGORIES

Victor Neeloff, Paris, France, assignor to Compagnie Generale d'Automatisme, Paris, France

Filed Dec. 6, 1974, Ser. No. 530,097
Claims priority, application France, Dec. 7, 1973, 73.43750
Int. Cl.² G08G 1/015
U.S. Cl. 340—38 R **6 Claims**



1. Device for determining the category of a vehicle according to a pre-established group of categories, comprising: counting detector means for detecting the passing or presence of axles and arranged traversally to the roadway, logic means connected to said counting detector means for determining the direction of movement, a reversible counter controlled by said logic means for counting the number of axles crossing said counting detector means, vehicle separating means placed near said counting detector means and having a first transducer element providing an electric signal when no vehicle is placed in front of the vehicle separating means, reset detector means for detecting the passing or presence of axles arranged traversally on the roadway and situated at a distance from said counting detector means which is less than the minimum wheel base which is required to be determined, a second transducer connected to said reset detector means and providing an electric signal when said reset detector means is actuated, a logic OR circuit receiving as one input the output of said second transducer, a delay circuit connected between said first transducer and the other input of said logic OR circuit, and at least one wheel base detector means for detecting the passing or presence of axles placed transversally on the roadway and downstream from said reset detector means in relation to the direction of movement of the vehicles, a third transducer connected to said wheel base detector means, a logic AND gate receiving as a gated input the output of said third transducer, decoder means connected to said reversible counter for enabling said logic AND gate only when a single axle of a vehicle has passed said counting detector means, said reversible counter having an input for resetting the zero connected, through the said delay circuit to the said first transducer a wheel base memory device receiving the output of said logic AND gate and having an input for resetting to zero connected to the output of the said logic OR circuit.

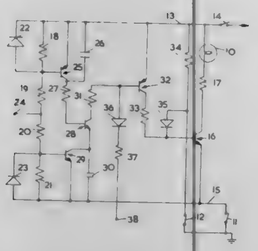
3,927,390
VEHICLE WARNING SYSTEMS

William Frank Hill, Stafford, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Jan. 24, 1974, Ser. No. 436,114
Claims priority, application United Kingdom, Feb. 2, 1973, 5306/73
Int. Cl.² G08B 19/00
U.S. Cl. 340—60 **11 Claims**

1. A vehicle warning system comprising a single warning device, means responsive to engine oil pressure for energizing

said warning device only when said engine is running and the oil pressure falls below a threshold value, said means comprising a switch which opens when the engine oil pressure achieves a threshold value and which together with said warning device is connected in series with an electronic switch which is arranged to be turned on in use when the switch



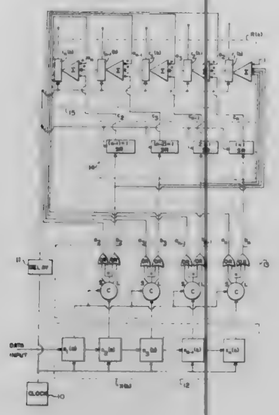
closes and when the engine is running, current to turn on the electronic switch being supplied in use from a network responsive to an engine running condition, and means responsive to engine oil level for energizing said warning device only when the engine is stationary and the engine oil level falls below a predetermined value.

3,927,391

TECHNIQUE FOR RANKING DATA OBSERVATIONS

Ben H. Cantrell, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1975, Ser. No. 561,966
Int. Cl.² G06F *7/02*
U.S. Cl. 340—146.2 **10 Claims**



1. An apparatus for computing the rank of each data observation in sets of data using the redundancy of rank information comprising:

control means for providing first and second control signals;

data means responsive to said first control signal for sequentially reading and storing a series of data observations;

first means coupled to said data means for providing an indication of the magnitude of each new data observation relative to previously stored data observations of said series;

second means coupled to said providing means and responsive to said second control signal for storing said magnitude indications and providing delayed outputs; and

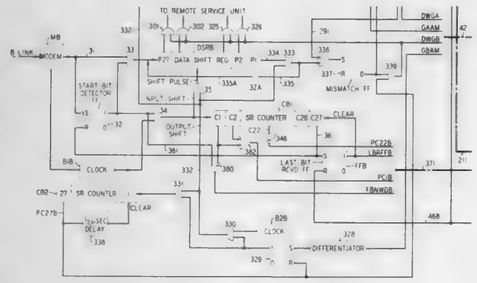
rank means coupled to said first means and to said second means and responsive to said second control signal for summing said magnitude indications from said first means and said delayed outputs from said second means to provide a rank for all stored data observations after each new data observation is read.

3,927,392

CONDITIONAL SKEW COMPENSATION ARRANGEMENT

Lionel Caron, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 17, 1974, Ser. No. 479,891
Int. Cl. H04m *3/22*
U.S. Cl. 340—146.1 BE **18 Claims**



1. In a duplicated transmission system wherein a word comprising a fixed number of bits is transmitted over a first transmission path and stored in first storage means as received over said first path, and is transmitted over a second transmission path and stored in second storage means as received over said second path, a skew compensation arrangement comprising

first counting means for indicating the number of bits of said word received over said first path;

second counting means for indicating the number of bits of said word received over said second path;

generating means jointly responsive to the number indicated by said second counting means and to said first counting means indicating a number equal to said fixed number for alternatively

1. generating a first gating signal if the number indicated by said second counting means is less than an allowable number, said allowable number being less than said fixed number, or

2. generating a second gating signal when the number indicated by said second counting means is equal to said fixed number;

first gating means responsive to said first gating signal for gating out the word stored in said first storage means; and second gating means responsive to said second gating signal for gating out the word stored in said first storage means and the word stored in said second storage means.

3,927,393

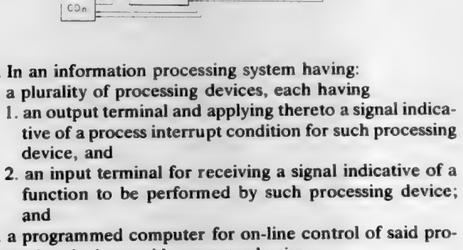
MAGNETIC RECORD MEDIUM AUTHENTICATION SYSTEM

Richard E. Fayling, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 2, 1973, Ser. No. 356,602
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G11B *5/02, 5/09*
U.S. Cl. 340—149 A **4 Claims**

1. A system for authenticating a record medium having a magnetic recording layer containing uniformly dispersed magnetizable material having magnetic anisotropy wherein the magnetizable material at a plurality of selected locations is differently aligned from the alignment of the magnetizable material at a reference location to provide a magnetically detectable permanent fixed information pattern, which system comprises

means for applying a substantially unidirectional magnetic field to said magnetic recording layer to magnetize said



magnetizable material to different intensities depending upon the alignment thereof,

means for sensing the magnetization of said differently magnetized material to produce a signal representative of said fixed information pattern, and

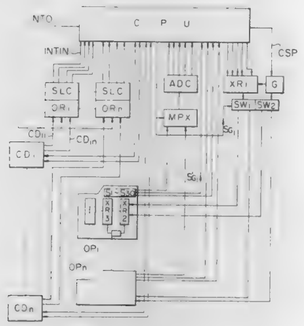
means for comparing said produced signal with a predetermined signal pattern to authenticate the record medium.

3,927,394

CONTROL SYSTEM FOR COMPUTER USED FOR ON-LINE CONTROL

Tetuya Sugai; Hiromu Soga, both of Tokyo; Masayosi Motegi, and Hideo Kanno, both of Kawasaki, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 335,762, Feb. 26, 1973, abandoned. This application Sept. 20, 1974, Ser. No. 507,673
Claims priority, application Japan, Feb. 29, 1972, 47-20177; Feb. 29, 1972, 47-20178
Int. Cl.² G06F *3/04*
U.S. Cl. 340—172.5 **8 Claims**



1. In an information processing system having:

a. a plurality of processing devices, each having

1. an output terminal and applying thereto a signal indicative of a process interrupt condition for such processing device, and

2. an input terminal for receiving a signal indicative of a function to be performed by such processing device; and

b. a programmed computer for on-line control of said processing devices, said computer having

1. a first output terminal and applying thereto a signal indicative of a program interrupt condition for said computer,

2. second output terminals and applying separately thereto signals indicative of functions to be performed by said processing devices, and

3. first input terminals for separate receipt of signals indicative of device process interrupt conditions; the improvement comprising:

c. OR circuit means in number equal to the number of said processing devices, each said OR circuit means having first and second input terminals and an output terminal;

d. first circuit means for connecting said computer first output terminal in common to said OR circuit means first input terminals;

e. second circuit means for connecting each said processing device output terminal to a distinct one of said OR circuit means second input terminals;

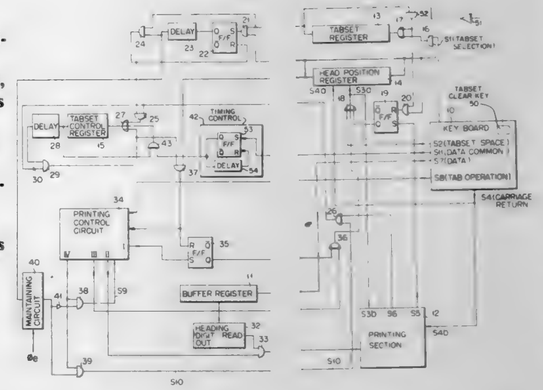
f. third circuit means for connecting said OR circuit means output terminals in common to an exclusive one of said computer first input terminals.

3,927,395

CONTROL DEVICE FOR TABULATION PRINTING

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Higashiyamato, Japan

Filed June 21, 1973, Ser. No. 371,954
Claims priority, application Japan, June 22, 1972, 47-62672
Int. Cl.² G06C *23/06*
U.S. Cl. 340—172.5 **6 Claims**



1. A control device for tabulation printing on a printing sheet comprising:

a. an input device (**10**) including data input means (**S7**) for supplying data to be printed on said printing sheet and tabset signal input means for supplying column defining tabset position signals (**S2**) and tabset control signals (**S1, S8**);

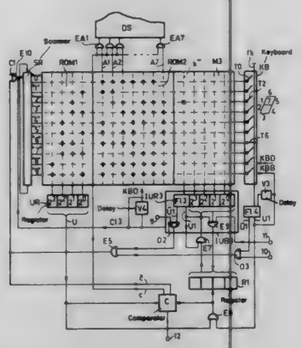
b. first storage means (**11**) coupled to said data input means (**S7**) of said input device (**10**) and temporarily storing said printing data supplied from said data input means (**S7**);

c. a printing section (**12**) including printing means coupled to said first temporary storage means (**11**) and adapted to print the temporarily stored data in a column defined by said tabset position signals of the printing sheet to be printed, said printing section (**12**) further including means for causing a laterally relative sequential movement of the printing means and said printing sheet through a plurality of print positions associated therewith;

d. a tabset register (**13**) coupled to said tabset signal input means of said input device (**10**) and responsive to said tabset control signals (**S1**) for storing tabset position signals corresponding to at least one tabset position defining a respective printing column of the data;

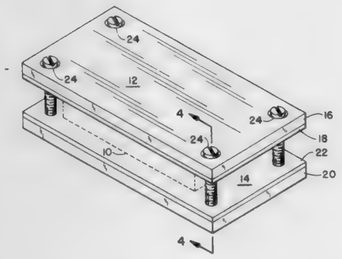
e. means (34) coupled to said printing section (12) for generating printing position signals (III) corresponding to printing positions relative to said printing sheet;
f. second storage means (14) coupled to said printing position signal generating means (34) and adapted to store said generated printing position signals;
g. timing means (S5, 19, 18) coupled to said second storage means (14) and to said printing means of said printing section (12) and for synchronizing the operation thereof;
h. reading means (21–25, 27) coupled to said tabset register (13) and to said second storage means (14) for reading a lower tabset position signal, which defines a lower tabset position of a column on which said data is to be printed, from said tabset register (13) in response to a printing position signal (S3*a*) stored in said second storage means (14);
i. a tabset control register (15) coupled to said reading means (21–25, 27) for storing said lower tabset position signal read out from said tabset register (13), the stored signal defining a lower tabset position of a column of said printing sheet on which said data is to be printed;
j. first control means (42, 43, 28, 29) coupled to said tabset control register (15) for storing in said tabset control register (15) a signal representative of a position left shifted from the storing position of said lower tabset position signal to an extent equal to the number of digits or orders of said data where the highest digit or order of said data is to be printed; and
k. a second control means (34, 40, 41, 38, 39, 33) coupled to said printing means of said printing section (12) and to said first control means (42, 43, 28, 29) and adapted to print the highest digit or order of said data from said first temporary storage means (11) in the selected column of the printing sheet corresponding to the signal representative of that position which is stored in said tabset control register (15).

3,927,396
STORAGE DEVICE WITH ROW FLAG ELEMENTS FOR ROW SCANNING
Claude Jan Principe Frederic Le Can, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 27, 1974, Ser. No. 509,782
Claims priority, application Netherlands, Oct. 3, 1973, 7313573
Int. Cl.² G11C *8/00, 15/00*
U.S. Cl. 340—173 R **13 Claims**



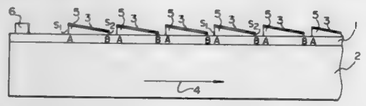
1. A storage device cmprising
a plurality of information storage elements organized as a matrix of conductive rows and columns;
at least one flag storage element in each of said rows of said matrix for indicating an external flagged condition;
a scanning register having a plurality of outputs each connected to a respective row conductor for scanning said flag storage elements in each of said rows, and being operatively responsive to said flagged condition in one of said flag storage elements; and
data transfer means for effecting the transfer of at least some of the stored information in said information storage elements in response to a transfer command.

3,927,397
BIAS FIELD APPARATUS FOR MAGNETIC DOMAIN MEMORY DEVICE
Ling George Chow, and David S. Bartran, both of Oklahoma City, Okla., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed May 2, 1974, Ser. No. 466,359
Int. Cl.² G11C *11/14*
U.S. Cl. 340—174 TF **10 Claims**



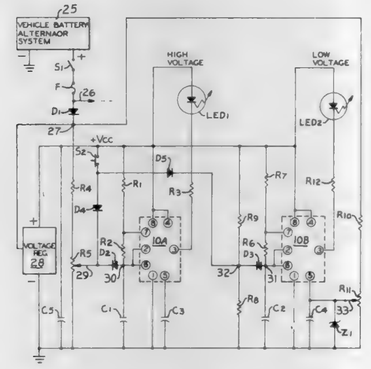
1. An improved magnetic bias field apparatus comprising:
a. a first assembly including
i. a first magnet means for establishing a magnetic pole over a first planar area, and
ii. a first magnetically permeable plate contiguous to and generally coextensive with the first planar area;
b. a second assembly including
i. a second magnet means for establishing a magnetic pole over a second planar area, and
ii. a second magnetically permeable plate contiguous to and generally coextensive with the second planar area; and
c. spacing means for holding said first and said second assemblies in generally parallel relationship with said first and said second magnetically permeable plates being between said first magnet means and said second magnet means.

3,927,398
MAGNETIC BUBBLE PROPAGATION CIRCUIT
Magid Y. Dimyan, Fords, N.J., assignor to Canadian Patents & Development Limited, Ottawa, Canada
Filed Oct. 21, 1974, Ser. No. 516,484
Int. Cl.² G11C *11/14*
U.S. Cl. 340—174 TF **4 Claims**



1. A bubble domain propagating circuit for moving bubbles along a predetermined path in a film of magnetic bubble material comprising:
an overlay of bars of magnetic material positioned over the film of magnetic bubble material, said bars defining the bubble propagation path;
means adapted to space said bars from the bubble material to maintain a uniform gradient between each of said bars and the bubble material in the direction of said propagation path; and
means for generating a periodic magnetic field in the plane of said bubble material and parallel to said propagation path, said field being capable of magnetizing said bars.

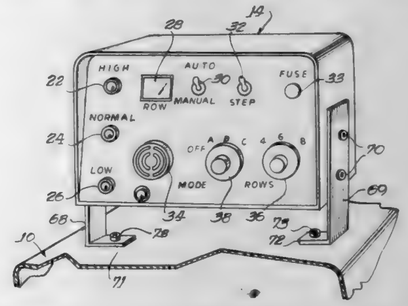
3,927,399
BI-LEVEL CONDITION MONITOR USING REVERSE-BIASED CONTROL DIODES
Joe E. Fuzzell, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 2, 1974, Ser. No. 528,754
Int. Cl.² G08B *19/00*
U.S. Cl. 340—248 D **11 Claims**



1. A circuit for monitoring a changing condition and for indicating when said condition has changed from one side of a predetermined level to the other side thereof, said circuit comprising:
an astable oscillator means having a threshold level for initiation of oscillation and including a series-connected capacitor and resistor across a regulated supply voltage, said capacitor being chargeable through said resistor and said oscillator means being activated into oscillation in response to the charging of said capacitor to said threshold level,
an indicator means energized in response to oscillation of said oscillator means,
a current bypass path connected across said capacitor and having a diode therein,
means for reverse-biasing said diode at a level less than said threshold level when said condition being monitored is on one side of said predetermined level and for reverse-biasing said diode at a level higher than said threshold level when said condition is on the other side of said predetermined level.

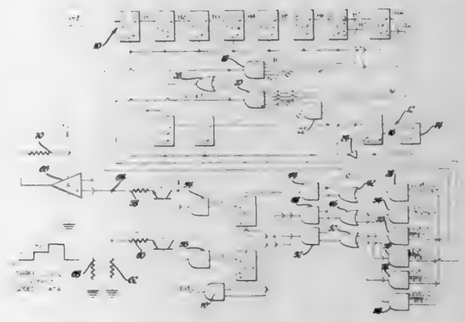
3,927,400
EFFICIENCY MONITORING SYSTEM FOR SEED PLANTING APPARATUS
John T. Knepler, Auburn, Ill., assignor to Dickey-john Corporation, Auburn, Ill.
Filed July 16, 1973, Ser. No. 379,711
Int. Cl.² G08B *21/00*
U.S. Cl. 340—276 **9 Claims**

1. An efficiency monitoring system for seed planting apparatus, comprising in combination: first signal producing means adapted to be connected to the seed planting apparatus to produce first signal information which corresponds to the desired number of seeds to be planted during a planting operation, second signal producing means adapted to be connected to the seed planting apparatus to produce second signal information which corresponds to the actual number of seeds being planted during said planting operation, comparison circuit means coupled to said first and second signal producing means for receiving and comparing said first signal information with said second signal information, and readout means coupled to said comparitor circuit means, said readout means includes three indicating lights, a first indicating light to give a normal indication wherein the number of seeds actually planted corresponds substantially to the number of seeds intended to be planted, a second indicating light to give a high indication when the number of seeds actually planted exceeds the number of seeds intended to be planted by a predetermined percentage, and a third indicating light to give a low indication



when the number of seeds acutally planted is less than the number of seeds intended to be planted by a predetermined percentage, circuit means for effecting simultaneous energization of said first and second indicating lamps to indicate the number of seeds actually being planted is more than the number of seeds desired to be planted but less than said predetermined percentage in excess thereof, said circuit means also effecting simultaneous energization of said first and third indicating lamps to indicate that the number of seeds actually planted is less than the number of seeds desired to be planted, but more than said predetermined percentage of seeds less than the number of seeds intended to be planted.

3,927,401
METHOD AND APPARATUS FOR CODING AND DECODING DIGITAL DATA
Duane E. McIntosh, Santa Ynez, Calif., assignor to General Motors Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 309,355, Nov. 24, 1972, abandoned. This application Oct. 10, 1973, Ser. No. 405,070
Int. Cl.² H04L *3/00*
U.S. Cl. 340—347 DD **17 Claims**



1. A method of encoding binary data comprising the steps of:
1. detecting the bit configuration of adjacent bits in data;
2. upon detection of a first of the four possible two bit configurations producing a level change in an output signal from the existing level to a first level unless the existing level of said output signal is said first level in

which event producing a level change from said first level to a third level;

3. upon detection of a second of said four possible two bit configurations, the second bit of which is the complement of the second bit of said first of said four possible two bit configurations, producing a level change in said output signal from the existing level to a second level unless the existing level of said output signal is said second level in which event producing a level change from said second level to said third level;

4. upon detection of either of the other two of said four possible two bit configurations maintaining the level of said output signal at the level existing prior to detection of either of said other two of said four two bit configurations;

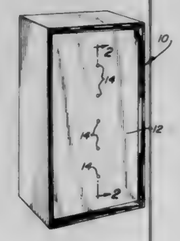
5. inhibiting a level change in said output signal for one bit cell time upon detection of either of said first or second of said four possible two bit configuration.

3,927,402

AUDIO RESPONSIVE LIGHT DISPLAY SYSTEM

Marion E. Thompson, Colorado Springs, Colo., assignor to Maytronics, Inc., Colorado Springs, Colo.

Filed Dec. 9, 1974, Ser. No. 531,045
Int. Cl.² G08B *5/36*
U.S. Cl. 340—366 B **8 Claims**



1. An audio responsive light display system comprising in combination;

a speaker responsive to an audio signal for producing a feedback impulse;

a displayed light emitting diode;

an external low voltage dc source for lighting said light emitting diode and connected thereto; and

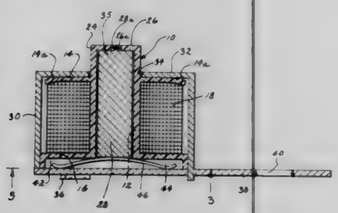
means for modulating the current flow from said dc source to said light emitting diode in response to said feedback impulse.

3,927,403

ELECTRIC BUZZER

Spencer C. Schantz, 16608 W. Rogers Drive, New Berlin, Wis. 53151

Filed Feb. 6, 1975, Ser. No. 547,411
Int. Cl.² G08B *3/10*
U.S. Cl. 340—396 **9 Claims**



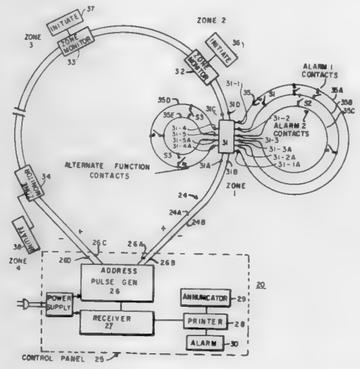
1. An electric buzzer comprising a bobbin of non-magnetic material having a central sleeve portion with a bore, an electric coil wound on said bobbin around said sleeve portion, one end of said sleeve portion projecting beyond an end of the coil and being closed to close said end of the bore, and the other end being open, a magnetic core slideably mounted in the bore of said sleeve portion and having an end projecting into the projecting portion of the sleeve, a bracket of magnetic material attached to the end of the bobbin opposite the end having the projecting sleeve portion and closing the open end of the sleeve bore, and spring means normally urging said core toward the closed end of the sleeve bore.

3,927,404

TIME DIVISION MULTIPLE ACCESS COMMUNICATION SYSTEM FOR STATUS MONITORING

Glenn F. Cooper, West Springfield, Mass., assignor to Standard Electric Time Corporation, Springfield, Mass.

Filed Oct. 18, 1973, Ser. No. 407,660
Int. Cl.² G08B *19/00*; H04Q *3/00*
U.S. Cl. 340—413 **57 Claims**



1. In a communication system for reporting information from a plurality of remote locations to a control location over a common communication channel, monitoring means at each of said remote locations including signal generating means operable to provide an information signal representing the condition of at least one variable monitored by said monitoring means for transmission over said communication channel to said control location, the signal generating means of different monitoring means being operable to provide an information signal during a different preassigned time slot, and master control means at said control location, including means for generating a synchronizing signal for defining the time slots for said monitoring means, and at least one slave control means connected in a local loop with at least certain ones of said monitoring means, said slave control means being connected to said common communication channel to receive said synchronizing signal and to responsively provide a further synchronizing signal for transmission over said local loop for controlling the operation of said certain monitoring means.

3,927,405

SYSTEM FOR PROCESSING THE SIGNAL RECEIVED BY A SIDEWAYS LOOKING AIRBORNE RADAR SYSTEM

Henri Poinsard, and Jean Lemoing, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 17, 1973, Ser. No. 361,443
Claims priority, application France, May 19, 1972, 72.18033
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G01S *9/02*
U.S. Cl. 343—5 CM **7 Claims**

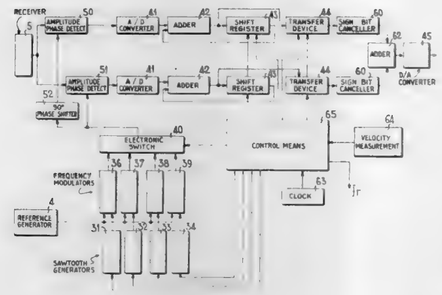
7. A system for processing the signals received by a sideways looking airborne pulse radar system, used in combination with a device for measuring the velocity of the aircraft comprising:

first generating means for providing a reference signal;

second generating means for providing a plurality of sawtooth signals, each sawtooth signal having a repetition period and a slope depending on both the velocity of the aircraft and the distance of a determined target region;

distance gating means for successively selecting portions of said sawtooth signals at determined instants of each repetition period of the radar pulses;

modulating means for modulating said reference signal with the output signal of said distance gating means thereby providing a sawtooth frequency modulated signal;



comparing means for comparing said received signals with said sawtooth frequency modulated signal, providing output signals in response to said comparison;

range-gated integrating filtering means for integrating each output signal of the comparing means during a period equal to the repetition period of the corresponding sawtooth signal used for providing said output signal; and

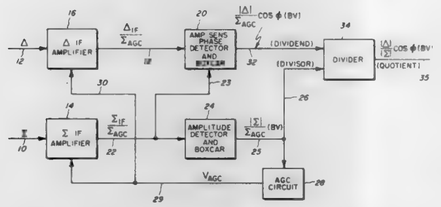
control means fed by said velocity measuring device and coupled to said second generating means for controlling the periods and slopes of said sawtooth signals and to said integrating means for controlling their integration time.

3,927,406

METHOD AND APPARATUS FOR OFF-BORESIGHT ANGLE CORRECTION FOR MONOPULSE RADARS WITH SLOW AGC NORMALIZATION

Joseph Albert Bruder, Snyder, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Mar. 30, 1973, Ser. No. 346,487
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G01S *9/22*
U.S. Cl. 343—16 M **10 Claims**



1. A method for off-boresight angle correction in a 2-horn monopulse radar employing a slow AGC normalization including the steps of:

receiving a first signal representing the vector sum of the signals in the two horns;

receiving a second signal representing the vector difference of the signals in the two horns;

amplifying said first and second signals;

detecting and boxcarring said amplified first signal;

using said boxcarred first signal in an AGC circuit to control the gain in the amplifying of said first and second signals;

detecting and boxcarring said amplified second signal responsive to the phase of said amplified first signal; and

dividing said boxcarred second signal by said boxcarred first signal whereby the off-boresight angle is determined independent of the influence of said AGC circuit.

2. A method for off-boresight angle correction in a 4-horn monopulse radar employing a slow AGC normalization including the steps of:

receiving a first signal representing the vector sum of the signals in the four horns;

receiving a second signal representing the vector sum of the signals in the two horns on the left side minus the vector sum of the signals in two horns on the right side;

receiving a third signal representing the vector sum of the signals in the top two horns minus the vector sum of the signals in the bottom two horns;

amplifying said first, second and third signals;

detecting and boxcarring said amplified first signal;

using said boxcarred first signal in an AGC circuit to control the gain in amplifying said first, second and third signals;

detecting and boxcarring said amplified second and third signals responsive to the phase of said amplified first signal;

dividing said boxcarred second signal by said boxcarred first signal; and

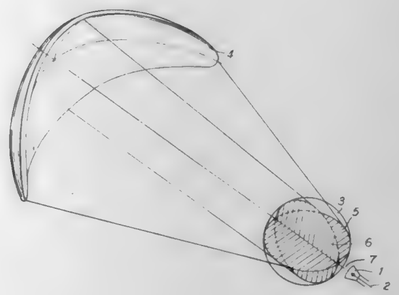
dividing said boxcarred third signal by said boxcarred first signal, whereby the azimuth and elevation off-boresight angles are determined independent of the influence of said AGC circuit.

3,927,407

REFLECTOR ANTENNA WITH FOCUSING SPHERICAL LENS

Gerhard Beck, and Siegfried Zeininger, both of Flensburg, Germany, assignors to Eltro GmbH Gesellschaft fur Strahlungstechnik, Heidelberg, Germany

Filed Sept. 6, 1974, Ser. No. 503,912
Claims priority, application Germany, Sept. 7, 1973, 2345222
Int. Cl.² H01Q *19/06*
U.S. Cl. 343—754 **4 Claims**



1. In a reflector antenna providing for asymmetrical beam focusing or collimating for shortwave radar transmitting and receiving operation, including a multiple curved reflector rotating at a constant velocity; and a stationary primary radiation source, the improvement comprising: said reflector in-

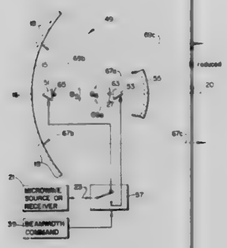
cluding an elliptical reflector aperture, a spherical lens of relatively wide frequency band width being interposed between said reflector and said primary energy source, said spherical lens constituting a rotary coupling for transfer of radiation from said primary energy source and concurrently forming a condenser for illuminating said elliptical reflector aperture, said spherical lens rotating in unison with said reflector, said beam extending through said spherical lens in circularly bound transverse planes intersecting the rotational axis thereof whereby said reflector antenna is adapted to generate an asymmetrical tracking pattern with elliptical cross-section relative to the reflector axis of said reflector antenna evincing a relatively large focusing in the azimuth plane and a relatively small focusing in the elevational plane predicated on the application of said antenna.

3,927,408

SINGLE FREQUENCY, TWO FEED DISH ANTENNA HAVING SWITCHABLE BEAMWIDTH

Richard F. Schmidt, Seabrook, Md., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Oct. 4, 1974, Ser. No. 512,825
Int. Cl.² H01Q *19/12*
U.S. Cl. 343—779 **2 Claims**



2. An electronically selectable beamwidth antenna comprising:

a concave paraboloid main reflector having an axis and a focal point, and where said main reflector has a central circular region and an outer annular region bordering the central region;

a concave ellipsoid subreflector coaxial with and facing the concave main reflector, the subreflector having a first focus substantially coincident with the main reflector focal point for directly exciting the main reflector and a second focus on the axis for exciting the main reflector via the subreflector, the subreflector being of such size that only the central portion of the main reflector can be viewed via the subreflector;

first feed means, located at the first focus of the subreflector for directly exciting the main reflector at a predetermined frequency;

second feed means, located at the second focus of the subreflector for exciting, via the subreflector, only the central portion of the main reflector at said predetermined frequency; and

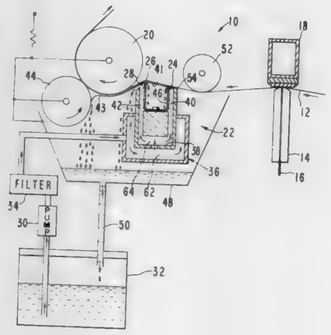
switch means for operatively selecting the first or second feed means.

3,927,409

MULTISTAGE THIN FILM TONING SYSTEM FOR DEVELOPING CHARGED IMAGES

Heino Kase, Walnut Creek; Edward W. Marshall, Saratoga, and Survrat Kirtikar, Stanford, all of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed May 1, 1972, Ser. No. 249,258
Int. Cl.² B05B *5/02*
U.S. Cl. 346—74 ES **7 Claims**



1. A recording device for forming a charge image on the charge retentive surface of a recording medium and toning the charge image with toner particles dispersed in a carrier liquid, comprising the combination:

means for moving the recording medium relative to the recording device along a path of motion;

means for forming a charge image on the charge retentive surface of the recording medium;

a plurality of liquid toner applying means spaced from one another along the path of motion of said recording medium, each of said toner applying means arranged to apply a thin film of toner to the charge image on the recording medium;

a. liquid toner squeegee means positioned between each of the spaced toner applying means to remove the thin film of toner from the charge retentive surface before the toner becomes substantially depleted of toner particles; and

final liquid toner squeegee means positioned subsequent to the last toner applying means along the path of motion to remove the thin film of toner applied by the last toner applying means.

3,927,410

INK JET NOZZLE

Walter T. Pimbley, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1974, Ser. No. 465,632
Int. Cl.² G01D *15/18*
U.S. Cl. 346—140 **6 Claims**

1. In an ink jet printer apparatus,

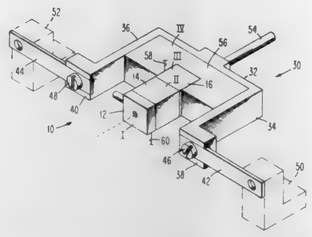
a support member,

a substantially flat ink jet nozzle structure disposed for connection to a source of ink,

a reaction mass,

damping means resiliently connecting said reaction mass to said support member, and

transducer means operating in a thickness mode connecting said nozzle structure to said reaction mass for producing resonant periodic bodily vibration of said nozzle and reaction mass independently of said support member to produce periodic drops of ink from said nozzle.

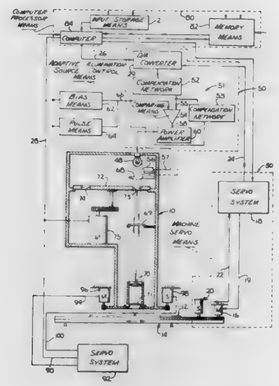


3,927,411

ADAPTIVE ILLUMINATION CONTROL DEVICE

Barry T. Lee, 22715 Clarendon St., Woodland Hills, Calif. 91364; Gunther W. Wimmer, 19633 Goodvale Road, Saugus, Calif. 91350, and Gilbert P. Hyatt, 11101 Amigo Ave., Northridge, Calif. 91324

Division of Ser. No. 152,105, June 11, 1971, Pat. No. 3,738,242. This application Jan. 22, 1973, Ser. No. 325,792
Int. Cl.² G03B *41/00*
U.S. Cl. 354—4 **21 Claims**



1. An illumination control system for selectively exposing an illumination sensitive medium to provide a desired exposure pattern, said system comprising:

illumination means for providing controlled illumination in response to an illumination control signal;

an illumination sensitive medium for providing illumination exposures in response to the controlled illumination;

translation means for providing translation between said illumination means and said illumination sensitive medium in response to a translation control signal;

translation control means for generating the translation control signal;

illumination control means for generating the illumination control signal in response to an illumination feedback signal and a translation feedback signal;

illumination feedback means for generating the illumination feedback signal in response to the controlled illumination; and

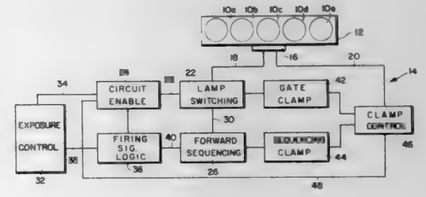
translation feedback means for generating the translation feedback signal in response to the translation between said illumination means and said illumination sensitive medium.

3,927,412

ADAPTER FOR USE WITH A PACKAGED FLASHLAMP ARRAY

Seymour Ellin, Chestnut Hill, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 26, 1973, Ser. No. 383,465
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G03B *15/03, 15/02*
U.S. Cl. 354—143 **36 Claims**



1. An adapter for mountably receiving a packaged linear flashlamp array having a plurality of discrete igniting signal input contact surfaces, said adapter being operative in association with photographic apparatus of a variety including a housing, a taking lens mounted thereon, mounting means for supporting non-linear flash means, said mounting means including igniting output terminals connectable in igniting relationship with said flash means, and a shutter mechanism having a synchronization switch actuable in response to shutter actuation to effect an ignition of said flash means from said output terminals, said adapter comprising:

means mountable upon said housing for receiving and supporting said packaged linear flash array and including contact means discretely connectable in circuit completing relationship with select ones of said contact surfaces; a flash firing circuit coupled in operative relationship with said receiving and supporting means, said circuit having an actuating input and further having an activating input for selective energization from a power supply and being operative in the presence of said selective energization to ignite said flashlamps within said array through said contact means in response to receipt at said actuating input of a firing signal of predetermined voltage characteristic;

means for establishing said electrical power supply when connected to a battery source; and

control means coupled with said activating input, said actuating input, said power supply means and said synchronization switch, for effecting the said energization of said firing circuit and for deriving said firing signal at said actuating input in response to said actuation of said synchronization switch.

3,927,413

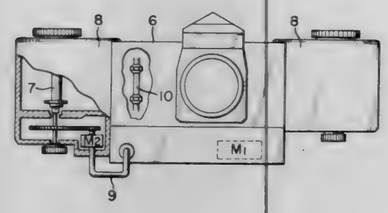
MOTOR-DRIVEN DEVICE FOR USE IN A LONG FILM STRIP MAGAZINE

Shuji Kimura, and Kouichi Takahata, both of Tokyo, Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Filed May 23, 1974, Ser. No. 472,676
Claims priority, application Japan, May 25, 1973, 48-57684
Int. Cl.² G03B *1/00, 19/04*
U.S. Cl. 354—173 **4 Claims**

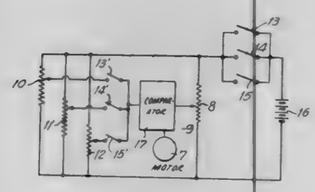
1. In an electrically-operated photographic camera adapted for use with a long film strip magazine, the combination comprising:

a. a camera body having film transfer means and a first prime mover for operation of said film transfer means and for simultaneously charging a shutter;
b. a long strip photographic film magazine adapted to be mounted on said camera body and having therein film winding means and a second prime mover for operating said film winding means;



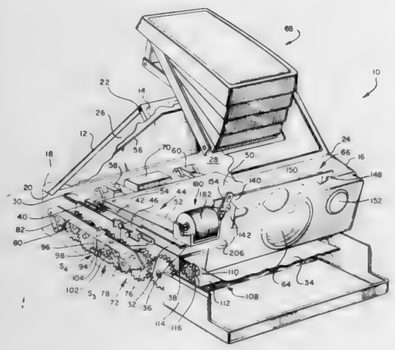
c. electric power supply for said prime movers; and
d. electric control means for stopping said second prime mover and for stopping said first prime mover a predetermined time after stoppage of said second prime mover, whereby a slight degree of slack or relaxation is imparted to the photographic film extending between said film transfer means and said film winding means.

3,927,414
AUTOMATIC CAMERA SETTING APPARATUS
Itsuki Moriyama, and Shigeo Enomoto, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Japan
Filed Nov. 29, 1973, Ser. No. 420,148
Claims priority, application Japan, Nov. 30, 1972, 47-120008
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G03B *3/00, 13/02, 27/52*
U.S. Cl. 354—195 **10 Claims**



1. In a photographic apparatus for photographing an object automatically with at least one predetermined camera setting when a camera has its optical axis displaced from a location out of line with to a location in alignment with the object, a pair of means consisting of a reference means and a movable means movable with respect to said reference means, said movable means carrying the camera for moving the camera with said movable means to displace the optical axis of the camera from a location out of line with an object to be photographed to a location where said optical axis is in line with the object to be photographed, manually adjustable detecting means, connected in part to one and in part to the other said pair of means, for automatically providing an operating signal when the camera is displaced to a position where its optical axis is aligned with the object, and camera control means for storing said predetermined setting, said control means being operatively connected with the camera and said detecting means for responding to said signal to automatically set the camera with said predetermined setting.

3,927,415
ELECTROMAGNETICALLY REGULATED EXPOSURE CONTROL SYSTEM
Christian C. Petersen, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Apr. 11, 1973, Ser. No. 350,025
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G03B *7/08, 9/02*
U.S. Cl. 354—230 **31 Claims**

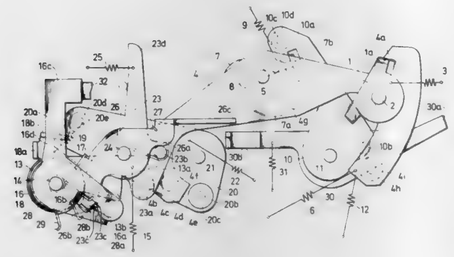


2. A method of operating a photographic exposure control system to define a controlled exposure value, said system including means responsive to a given level of electrical energization for effecting the displacement of said exposure mechanism from one of its said positions into the other of its said positions, said method including the steps of energizing said displacement effecting means at said given level of electrical energization to effect the displacement of said exposure mechanism means from its said one position into its said other position and displacing said exposure mechanism means from its said other position into its said one position by urging said exposure mechanism means towards its said one position while substantially continuously energizing said displacement effecting means at a level of electrical energization less than said given level of electrical energization so as to retard but not preclude the displacement of said exposure mechanism means from its said other position into its said one position.

14. In an exposure control system of a variety wherein a solenoid including an excitation winding and a plunger is employed to be energized at one current level to cause said plunger to be retracted toward a position providing a high flux linkage condition within the magnetic circuit of said solenoid, said plunger being driveably associated with an exposure mechanism and spring means such that said mechanism is moved to block a scene light entrance opening when said plunger is retracted and is moved with said plunger by a bias of said spring means to define a variation of aperture values over said opening upon de-energization of said winding, the improvement comprising:

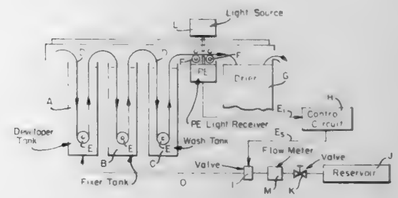
control means for energizing said winding at another current level selected below said one current level substantially throughout said movement under said bias for selectively regulating the rate of said plunger movement under said spring means bias.

3,927,416
SHUTTER FOR CAMERAS
Nobuyoshi Inoue, Kawagoe, Japan, assignor to Copal Company Limited, Tokyo, Japan
Filed May 3, 1974, Ser. No. 466,893
Claims priority, application Japan, May 9, 1973, 48-51436
Int. Cl.² G03B *9/08, 17/18*
U.S. Cl. 354—235 **1 Claim**



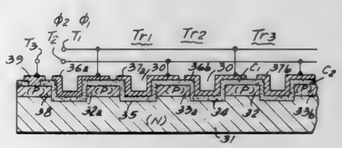
1. An electronic shutter for cameras comprising:
a control lever adapted to be relieved of its locked state by a shutter release operation,
a front blade release lever engageable with said control lever and rotated by the motion of said control lever,
a front blade driving lever engageable with said front blade release lever and released by the motion of said front blade release lever,
a holding lever engageable with said control lever and rotated by the motion of said control lever;
a magnet lever engageable with said holding lever and rotatable by following the rotation of said holding lever,
an electromagnet positioned adjacent to said magnet lever and capable of attracting said magnet lever thereto,
a rear blade release lever engageable with said magnet lever and rotated by said magnet lever in the final stage of motion of this magnet lever,
a rear blade driving lever engageable with said rear blade release lever and released by the motion of said rear blade release lever,
a signaling lever engageable with said control lever and pivotable by the motion of said control lever, to indicate that the exposure time has been mechanically controlled, a lever engageable with said signaling lever and with said magnet lever, to lock said signaling lever in its pivoted position,
a mechanical exposure control lever urged to engage with said signaling lever and capable of entering in the path of motion of said magnet lever, and
a release lever engageable with said front blade driving lever and with said mechanical exposure control lever,
said shutter being arranged so that only when said magnet lever is not attracted to said electromagnet at the time of a shutter release, said magnet lever is locked by said mechanical exposure control lever and at the same time said signaling lever is locked by said signal lever locking lever in its pivoted position, whereby the state of locking of said magnet lever and said signaling lever is released when said mechanical exposure control lever is moved by said release lever.

3,927,417
AUTOMATIC FILM PROCESSOR REPLENISHMENT SYSTEM
Minoru Kinoshita, and Osami Taniuchi, both of Kyoto, Japan, assignors to LogEtronics Inc., Springfield, Va.
Filed Nov. 2, 1973, Ser. No. 412,516
Claims priority, application Japan, Mar. 7, 1973, 48-26197
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² G03D *13/00*
U.S. Cl. 354—298 **7 Claims**



1. A control circuit for controlling chemical replenishment in an automatic film processor, comprising sensor means responsive to the image density in a sheet of film being processed for producing a sensing signal proportional to said density, means coupling said sensing signal to the input of an integrator means, said integrator means being operative to integrate said signal during a predetermined time interval, a reference source having a polarity opposite that of said sensing signal, means responsive to elapse of said predetermined time interval for coupling said source to the input of said integrator means to cause the sensing signal already integrated by said integrator means and any further sensing signal subsequently applied to the input of said integrator means to be differentially integrated and the output of said integrator means reduced in value toward a predetermined reference level, means responsive to elapse of said predetermined time interval for initiating flow of said replenishment chemical, and means responsive to reduction of the output of said integrator means to said reference level for terminating flow of said replenishment chemical.

3,927,418
CHARGE TRANSFER DEVICE
Tetsuo Ando, Ebina, and Yoshimi Hirata, Hatano, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Division of Ser. No. 312,332, Dec. 5, 1972, Pat. No. 3,848,328.
This application Sept. 5, 1974, Ser. No. 503,372
Claims priority, application Japan, Dec. 11, 1971, 46-100410
Int. Cl.² H01L *27/10, 29/78*
U.S. Cl. 357—24 **7 Claims**



1. A charge transfer device comprising: a semiconductor substrate of a first conductivity having an uneven surface formed of square cornered notches; at least two semiconductor switches each having a source, drain, channel and gate region; said drain and source regions being positioned higher than said channel region and being of opposite conductivity such that P-N junctions are formed above the surface of said substrate between said drain and source regions; an insulating layer covering said source, drain and channel regions of each

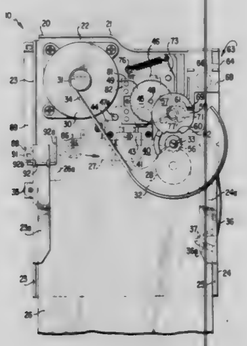
semiconductor switch and forming a capacitor in parallel with said gate and drain regions.

3,927,419

CARTRIDGE TAPE PLAYER

Minoru Tozawa, Kyoto, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1973, Ser. No. 350,589
Claims priority, application Japan, Apr. 20, 1972, 47-39839
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.[2] G11B *23/18, 21/08, 23/04*
U.S. Cl. 360—94 **1 Claim**



1. A cartridge tape player for reproducing a first cartridge having four programs with two tracks per program and for reproducing a second cartridge having two programs with four tracks per program comprising:
a first magnetic head,
a first pre-amplifier connected to said first magnetic head,
first volume control means connected to said first pre-amplifier,
a first power amplifier connected to said first volume control means,
a first speaker connected to said first power amplifier,
a second magnetic head,
a second pre-amplifier connected to said second magnetic head,
second volume control means connected to said second pre-amplifier,
a second power amplifier connected to said second volume control means,
a second speaker connected to said second power amplifier,
a third magnetic head,
a third pre-amplifier connected to said third magnetic head,
third volume control means connected to said third pre-amplifier,
a third power amplifier connected to said third volume control means,
a third speaker connected to said third power amplifier,
a fourth magnetic head,
a fourth pre-amplifier connected to said fourth magnetic head,
fourth volume control means connected to said fourth pre-amplifier,
a fourth power amplifier connected to said fourth volume control means,
a fourth speaker connected to said fourth power amplifier,
a first display lamp to indicate when a first program of the first or second cartridge is being reproduced,
a second display lamp to indicate when a second program of the first or second cartridge is being reproduced,
a third display lamp to indicate when a third program of the first cartridge is being reproduced.
a fourth display lamp to indicate when a fourth program of the first cartridge is being reproduced,
first selection means for selecting reproduction of the first program of the first or second cartridge,
second selection means for selecting reproduction of the second program of the first or second cartridge,
third selection means for selecting reproduction of the third program of the first cartridge,
fourth selection means for selecting reproduction of the fourth program of the first cartridge,
said first, second, third and fourtth magnetic heads being arranged in a four head assembly wherein each head is spaced from adjacent heads by substantially a two track distance,
means responsive to the detection of the end of the each program of the first or second cartridge to displace said magnetic head assembly in a direction perpendicular to the track length for reproduction of successive programs,
means to detect the presence of and identify the first cartridge,
means to detect the presence of and identify the second cartridge,
first, second, third, fourth and fifth switches ganged together so that said first, second, third, fourth and fifth switches operate simultaneously,
means to simultaneously position said first, second, third, fourth and fifth switches in a first position in response to detection of the identification of the second cartridge,
means to simultaneously position said first, second, third, fourth and fifth switches in a second position in response to the detection of and identification of the first cartridge,
said first switch when in its first position functioning to prohibit illumination of said third and fourth display lamps,
said first switch when in its second position functioning to permit selective lighting of said third and fourth display lamps,
said second switch when in its first position functioning to prohibit selection for reproduction of the third program of the second cartridge,
said second switch when in its second position functioning to permit selection for reproduction of the third program of the first cartridge,
said third switch when in its first position functioning to prohibit selection for reproduction of the fourth program of the second cartridge,
said third switch when in its second position functioning to permit selection for reproduction of the fourth program of the first cartridge,
said fourth switch when in its first position functioning to permit the second speaker to reproduce the signal picked up by the second magnetic head,
said fourth switch when in its second position functioning to disconnect the second magnetic head from said second speaker and functioning to connect the first magnetic head to said second speaker,
said fifth switch when in its first position functioning to permit the fourth speaker to reproduce the signal picked up by said fourth magnetic head,
said fifth switch when in its second position functioning to disconnect the fourth magnetic head from said fourth speaker and functioning to connect the third magnetic head to said fourth speaker whereby,
the first program of the first cartridge is reproduced from the first and fifth tracks by the first and third heads which are coupled to the first and second speakers, and third and fourth speakers respectively while the first display lamp is illuminated,
the second program of the first cartridge is reproduced from the second and sixth tracks by the first and third heads which are coupled to the first and second speakers, and third and fourth speakers respectively while the second display lamp is illuminated,
the third program of the first cartridge is reproduced from the third and seventh tracks by the first and third heads which are coupled to the first and second speakers, and third and fourth speakers respectively while the third lamp is illuminated,
the fourth program of the first cartridge is reproduced from the fourth and eighth tracks by the first and third heads which are coupled to the first and second speakers, and third and fourth speakers respectively while the fourth display lamp is illuminated,
the first program of the second cartridge is reproduced from the first, third, fifth and seventh tracks by the first, second, third and fourth heads respectively which are coupled to the first, second, third and fourth speakers respectively while the first display lamp is illuminated, and
the second program of the second cartridge is reproduced from the second, fourth, sixth and eighth tracks by the first, second, third, and fourth heads respectively which are coupled to the first, second, third and fourth speakers respectively while the second display lamp is illuminated.

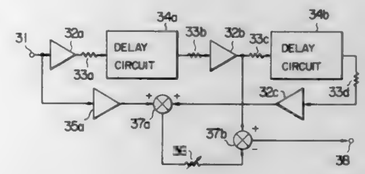
3,927,420

FREQUENCY DEPENDENT COMPENSATING CIRCUIT FOR MAGNETIC RECORDING SIGNALS

Kenji Hayashi, Kamakura; Yasufumi Yumde, and Kotaro Kawamura, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 2, 1973, Ser. No. 412,153
Claims priority, application Japan, Nov. 6, 1972, 47-110330
Int. Cl.[2] G11B *5/45;* **H03F** *3/45*
U.S. Cl. 360—65 **3 Claims**

1. A magnetic recording apparatus for audio signals including means for correcting for the reduction in amplitude of a signal with the increasing of the frequency thereof on recording the signal on a recording medium, said means for correcting comprising:
a delay circuit having input and output terminals and adapted to delay a signal passed therethrough by a delay time of τ,
means for providing said delay circuit with impedance matching at only one of said input and output terminals, means for applying an input signal to be recorded to said input terminal of said delay circuit, thereby producing a first delay signal delayed by τ from said input signal at said output terminal thereof,



means for applying said input signal to be recorded to the one impedance-matched terminal to have said input signal reflected at the other terminal, thereby providing at said one terminal a second delay signal delayed by 2τ from said input signal,
means for adding said input signal to said second delay signal, and
means for producing a difference between said first delay signal and the addition of said input signal and said second delay signal.

DESIGNS

DECEMBER 16, 1975

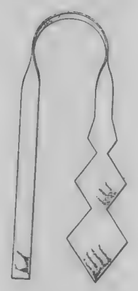
238,016
SKI BOOT
Alden B. Hanson and Chris A. Hanson, Boulder, Colo., assignors to Hanson Industries Inc., Boulder, Colo.
Filed Mar. 14, 1974, Ser. No. 451,235
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—276



238,017
SPORT SHOE
William J. Cohen, Boston, Mass., assignor to CITC Industries, New York, N.Y.
Filed Oct. 24, 1972, Ser. No. 300,130
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310



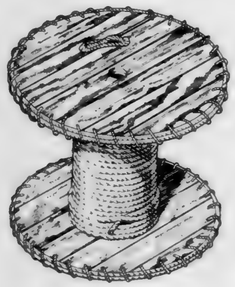
238,018
NECKTIE
Don A. Mackie, 47 Cottleville, St. Peters, Mo. 63376
Filed Feb. 21, 1973, Ser. No. 334,659
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D2—351



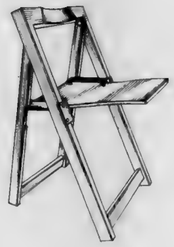
238,019
TREATMENT CHAIR
Dennis Frank Leffler, 2313 Vineyard Lane, Charlotte, N.C. 28201, and Danny Michael Truette, Rte. 1, Box 341-F, Harrisburg, N.C. 28075
Filed June 11, 1973, Ser. No. 368,859
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—22



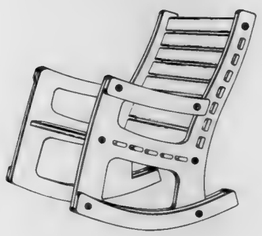
238,020
COCKTAIL TABLE
Donald B. Gold, San Rafael, Calif., assignor to K.I.S.S. Industries, Inc., San Rafael, Calif.
Filed Sept. 3, 1974, Ser. No. 502,602
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—27



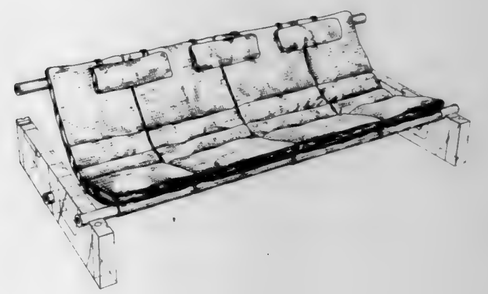
238,021
FOLDING CHAIR
Lawrence D. Minsker, 102 Pleasant View Drive, Jamestown, N.Y. 14701
Filed Aug. 19, 1974, Ser. No. 498,314
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—41



238,022
ROCKING CHAIR
C. Lee Payne, Jr., and Vincent J. Gambello, Hastings-on-Hudson, N.Y., assignors to Sea Pines Company, Hilton Head Island, S.C.
Filed Mar. 4, 1974, Ser. No. 448,066
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—49



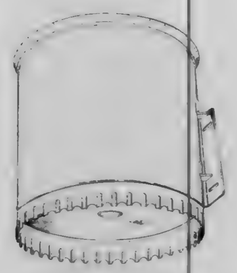
238,023
DIVAN
Vittorio Mazzucconi, Milan, Italy, assignor to ICF de Padova S.r.l., Vimodrone, Milan, Italy
Filed Feb. 26, 1973, Ser. No. 336,999
Claims priority, application Italy Aug. 26, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—62



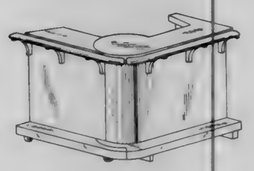
238,024
SEAT
Stanley P. Nash, Rte. 1, Riverhill Drive, Johnson Creek, Wis. 53038
Filed Feb. 11, 1974, Ser. No. 441,164
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



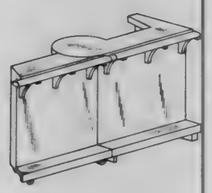
238,025
CONTAINER FOR PAPER ROLLS
Roger Persson, Mariestad, Sweden, assignor to Kooperativa Forbundet Fack, Stockholm, Sweden
Filed Nov. 14, 1974, Ser. No. 523,820
Claims priority, application Sweden May 15, 1974
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—96



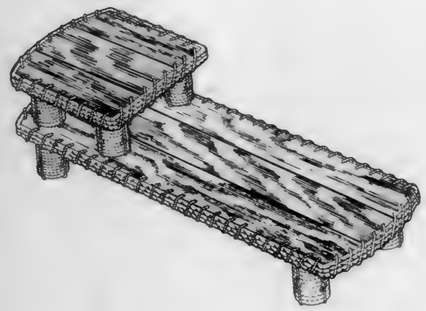
238,026
COMBINED ROOM DIVIDER AND CLOSABLE BAR
Maurice L. Lorge, 12167 69th Ave., Seminole, Fla. 33540
Filed June 29, 1973, Ser. No. 374,938
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—144



238,027
COMBINED ROOM DIVIDER AND CLOSABLE BAR
Maurice L. Lorge, 12167 69th Ave., Seminole, Fla. 33540
Filed Aug. 24, 1973, Ser. No. 391,218
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—144



238,028
END TABLE
Donald B. Gold, San Rafael, Calif., assignor to K.I.S.S. Industries, Inc., San Rafael, Calif.
Filed Sept. 3, 1974, Ser. No. 502,624
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179

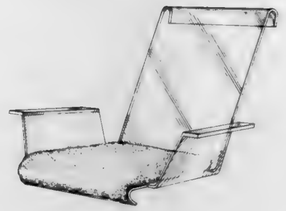


238,029
CARPET SAMPLE DISPLAY STAND
Fred Howard, New York, N.Y., assignor to Howard Displays, Inc., New York, N.Y.
Filed Feb. 5, 1973, Ser. No. 329,552
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186

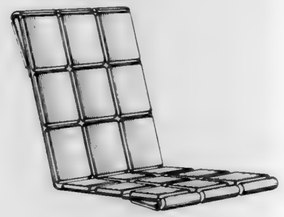




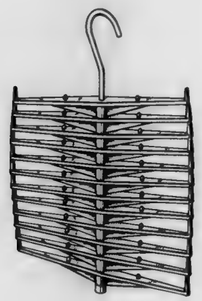
238,030
STACKABLE CHAIR BODY
Gerry D. Welton, 910 E. Tripp, Peoria, Ill. 61603
Filed May 1, 1973, Ser. No. 356,107
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—197



238,031
SLING CHAIR BODY
Gerry D. Welton, 910 E. Tripp, Peoria, Ill. 61603
Filed Oct. 12, 1973, Ser. No. 405,930
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—197



238,032
TIE RACK
Thomas W. Duncan, 800 Tulip Lane, Connersville, Ind. 47331
Filed Jan. 6, 1975, Ser. No. 538,608
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—251



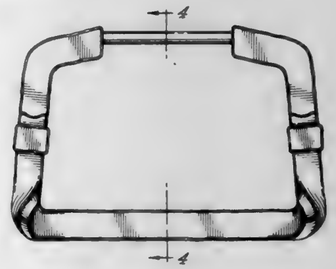
238,033
ARMCHAIR
Cesare Cassina, Carimate, Italy, assignor to Centro Cassina S.r.l., Copreno di Lentate sul Seveso, Milan, Italy
Filed Feb. 5, 1974, Ser. No. 440,129
Claims priority, application Italy Aug. 30, 1973
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



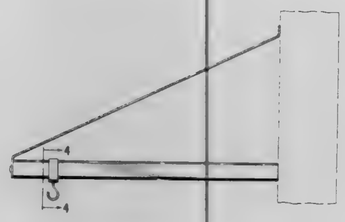
238,034
CHAIR
Leonard Eisen, 14 Lomas Lane, Montvale, N.J. 07645
Filed Mar. 25, 1974, Ser. No. 454,735
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—74



238,035
TOWEL RING
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Original design application Jan. 4, 1974, Ser. No. 430,939. Divided and this application Sept. 3, 1974, Ser. No. 502,526
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—99



238,036
HANGER FOR A PLANT CONTAINER
Leonard Entin and Leon A. Gainsboro, Wayland, Mass., assignors to Opus, Incorporated, Boston, Mass.
Filed Oct. 9, 1974, Ser. No. 513,457
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—137



238,037
COFFEE TABLE
Donald B. Gold, San Rafael, Calif., assignor to K.I.S.S. Industries, Inc., San Rafael, Calif.
Filed Sept. 3, 1974, Ser. No. 502,603
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—147

238,038
HIGH CHAIR TRAY
Raymond A. Lo Turco, Columbus, Inc., assignor to Cosco, Inc., Columbus, Ind.
Filed Jan. 24, 1974, Ser. No. 436,100
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—199



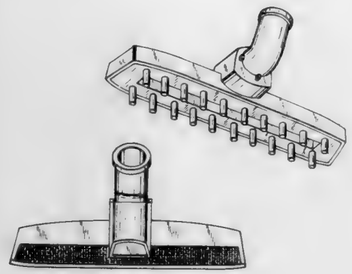
238,039
COMBINED CHILD'S DISH AND BASE THEREFOR
Sven-Eric Juhlin, Gustavsberg, Sweden, assignor to AB Gustavsbergs Fabriker
Original design application June 19, 1972, Ser. No. 264,251, now Patent No. 233,972. Divided and this application Feb. 14, 1974, Ser. No. 442,487
Claims priority, application Sweden Dec. 21, 1971
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—23





238,040
TABLE FOR BARBECUE GRILL
Richard D. Hardy, 135 Meadowview Drive, Buchanan, Mich. 49107
Filed June 28, 1974, Ser. No. 483,947
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D7—107

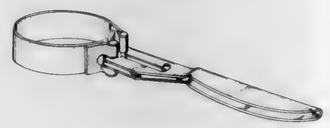
238,041
SHAG RUG CARPET CLEANER HEAD
Sam G. Cox, P.O. Box 480, Hoyt Lakes, Minn. 55750
Filed Jan. 2, 1973, Ser. No. 320,559
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—173



238,042
BLADE FOR MULTIPURPOSE GARDENING TOOL
Johann Frederick Anker, 39 Neeron Road, Blairgowrie, Randburg, Republic of South Africa
Filed Nov. 19, 1973, Ser. No. 417,098
Claims priority, application Republic of South Africa Aug. 1, 1973
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—9



238,043
ADJUSTABLE OIL FILTER WRENCH
Donald J. Shanklin, Granada Hills, Calif., assignor to Orion Industries, Inc., Torrance, Calif.
Filed Nov. 18, 1974, Ser. No. 524,637
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—22



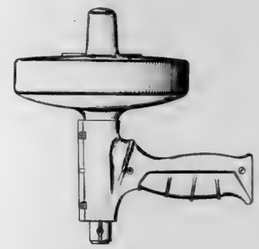
238,044
TOOL USED IN SEPARATING A TIRE BEAD FROM ITS SEAT ON A WHEEL
Mieczyslaw Majek, Birmingham, England, assignor to Dunlop Limited, London, England
Filed Dec. 14, 1973, Ser. No. 424,828
Claims priority, application Great Britain June 15, 1973
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—31



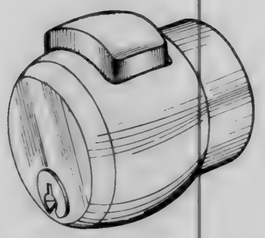
238,045
TIRE CHAINING TOOL
John R. Hutton, 837 Morning Glory St., West Sacramento, Calif. 95691
Filed Oct. 24, 1974, Ser. No. 517,479
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—31



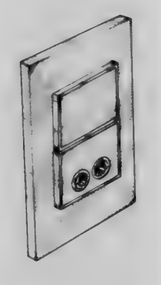
238,046
PLUMBING CLEANOUT DEVICE
Aaron J. Levine, 3147 N. Cambridge Ave., Chicago, Ill. 60657
Filed Aug. 28, 1974, Ser. No. 501,049
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—68



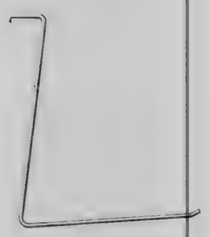
238,047
DOOR HANDLE WITH A LOCK-ACTUATING PUSH BUTTON OR SIMILAR ARTICLE
Giuliandrea Meroni, Via Diaz 21, Nova Milanese, Milan, Italy
Filed Feb. 4, 1974, Ser. No. 439,136
Claims priority, application Italy Sept. 21, 1973
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—147



238,048
SWITCH COVER
Anton Bertoncel, Rua 9 de Julho 545, Sao Paulo, Brazil
Filed Apr. 18, 1973, Ser. No. 352,297
Term of patent 7 years
Int. Cl. D8—*09*
U.S. Cl. D8—181



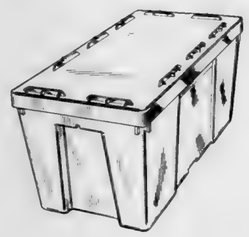
238,049
WINDOW BOX SUPPORT
Richard R. Hertzel, 19 Bruen Court, Rensselaer, N.Y. 12144
Filed Feb. 21, 1974, Ser. No. 444,214
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—242



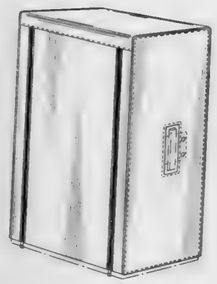
238,050
COMBINED CRUET AND STOPPER
Peter L. Schweizer, Liberty Center, Ohio, assignor to Owens-Illinois, Inc.
Continuation-in-part of design application Ser. No. 458,132, Apr. 5, 1974. This application Apr. 24, 1974, Ser. No. 463,665
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—156



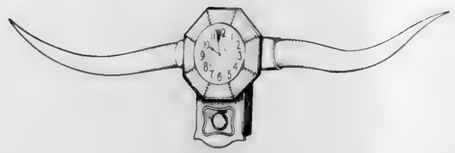
238,051
CONTAINER
Edward J. Fier, Jr., 572 Killarney Pass, Mundelein, Ill. 60060
Filed Nov. 12, 1973, Ser. No. 415,228
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—240



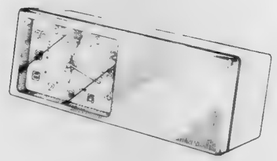
238,052
CABINET COVER
Charles C. Boris, 228 Glen Oaks Ave., Temple Terrace, Fla. 33617
Filed Dec. 8, 1972, Ser. No. 313,401
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—259



238,053
CLOCK
Seward W. Johnson and John Moore, both of 1506 Oakley Park Road, Walled Lake, Mich. 48088
Filed Oct. 12, 1973, Ser. No. 406,313
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—7



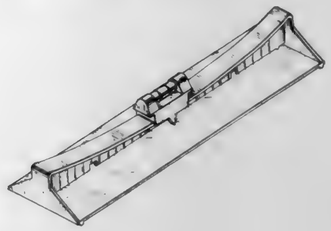
238,054
CLOCK
Yukinobu Funahashi, Mitaka, Japan, assignor to Citizen Watch Co., Tokyo, Japan
Filed May 17, 1974, Ser. No. 471,052
Claims priority, application Japan Nov. 21, 1973
Term of patent 7 years
Int. Cl. D10—*01*
U.S. Cl. D10—24



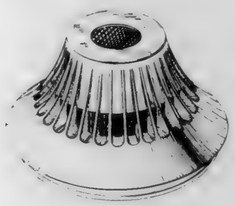
238,055
WATCH CASE
Norio Seshimo, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha Japan
Filed Nov. 30, 1973, Ser. No. 420,467
Claims priority, application Japan June 7, 1973
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38



238,056
SPIRIT LEVEL INCLINOMETER
Jack B. Foster and Jack E. Antes, Santa Ana, Calif., assignors to Super Seer Corporation, Evergreen, Colo.
Filed Sept. 10, 1973, Ser. No. 396,005
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—69



238,057
FIRE DETECTOR
Duane D. Pearsall and Alvin A. Mayer, Littleton, Colo., assignors to Statitrol Corporation, Lakewood, Colo.
Filed Oct. 10, 1973, Ser. No. 405,147
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



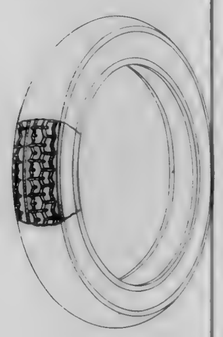
238,058
HANDTRUCK
Georg L. Weyrauch, Philadelphia, Pa., assignor to Gulf + Western Manufacturing Company (Systems)
Filed Oct. 9, 1973, Ser. No. 404,476
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—34



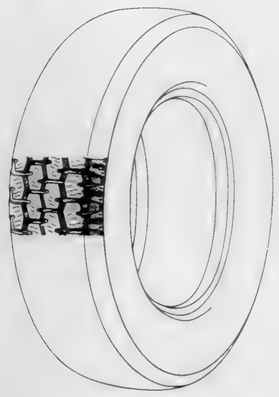
238,059
BOAT HULL
Fern Lee Cook, 8124 E. 124th St., Bixby, Okla. 74008
Filed Jan. 28, 1974, Ser. No. 437,357
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—62



238,060
TIRE FOR A VEHICLE WHEEL
Nobuyuki Sakaki, Kobe, Japan, assignor to Dunlop Limited, London, England
Filed Feb. 8, 1974, Ser. No. 440,776
Claims priority, application Japan Aug. 10, 1973
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146

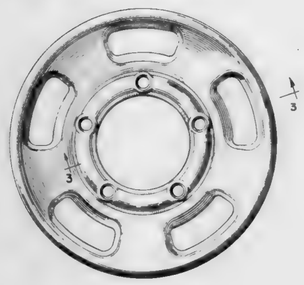


238,061
TIRE
Andre E. J. Baus, Welsdorf, Luxembourg, assignor to The Goodyear Tire & Rubber Company
Filed Feb. 28, 1974, Ser. No. 446,995
Claims priority, application Great Britain Nov. 9, 1973
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—148

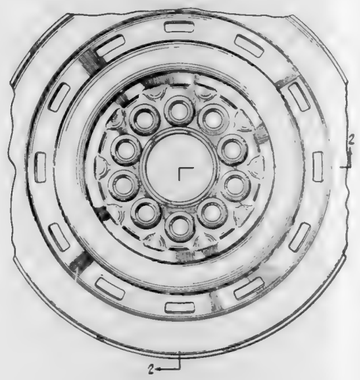


238,062
WINDSHIELD WIPER BLADE UNIT
Joseph R. Bourassa, Trumbull, and Manuel Lopez, Huntington, Conn., assignors to Parker Hannifin Corporation, Shelton, Conn.
Filed Sept. 13, 1974, Ser. No. 505,736
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155

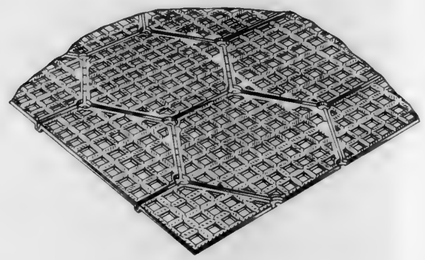
238,063
WHEEL CENTER
Richard H. Clement, 10900 Jann Court, La Grange, Ill. 60525
Filed Nov. 5, 1973, Ser. No. 412,805
Term of patent 14 years
The term of this patent subsequent to Jan. 9, 1987, has been disclaimed
Int. Cl. D12—*16*
U.S. Cl. D12—209



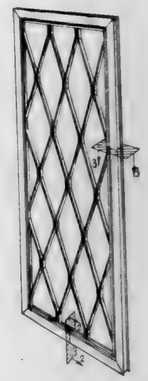
238,064
WHEEL
James L. Brainard, Temple City, and Robert J. Palm, Brea, Calif., assignors to Whittaker Corporation
Continuation-in-part of abandoned design application Ser. No. 191,579, Oct. 21, 1971, and a division of design application Ser. No. 262,948, June 15, 1972, now Patent No. 229,558. This application Mar. 16, 1973, Ser. No. 342,220
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—210



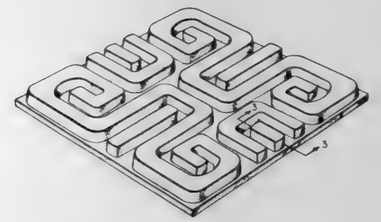
238,065
PLAYING SURFACE MODULE FOR ATHLETIC ACTIVITIES SUCH AS TENNIS COURTS, SWIMMING POOL AREAS, AND THE LIKE
Wilfred G. Harvey, 42 Sullivan Way, East Brunswick, N.J. 08816
Filed Sept. 29, 1972, Ser. No. 293,406
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 J



238,066
DOOR
Ronald McKenzie Howells, Yennora, New South Wales, Australia, assignor to Comalco (J & S) Pty. Limited
Filed Nov. 6, 1972, Ser. No. 303,852
Claims priority, application Australia June 8, 1972
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 M



238,067
PANEL FOR A DOOR
Frederick V. Caropresi, Pittsburgh, Pa., assignor to Pease Company, Fairfield, Ohio
Filed Dec. 11, 1972, Ser. No. 314,258
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 J



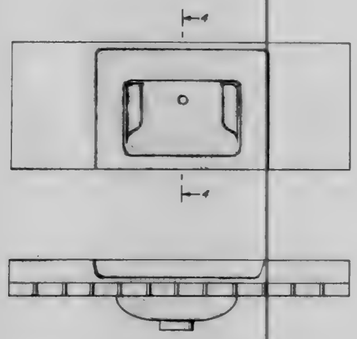
238,068
MARKING INSTRUMENT
William E. Maryynissen, Old Greenwich, Conn., assignor to Bic Pen Corporation, Milford, Conn.
Filed Mar. 13, 1974, Ser. No. 450,687
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—45



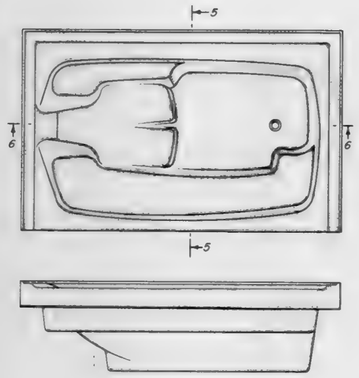
238,069
PRESSURE PUMP FOR TENNIS BALL CANNISTERS OR SIMILAR ARTICLE
Robert B. Dubner, 40 Dogwood Ave., and Harold Bienenfeld, 145 Dogwood Ave., both of Roslyn Harbor, N.Y. 11576
Filed May 23, 1974, Ser. No. 472,721
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—15



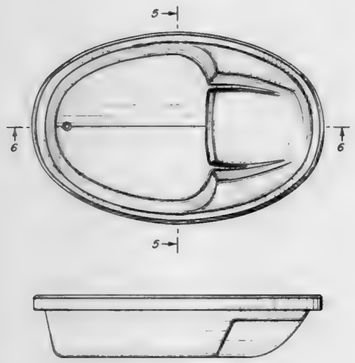
238,070
COMBINED VANITY TOP AND BASIN
Richard J. Ganger, Los Angeles, Calif., assignor to Dimensionetix, Inc.
Filed Oct. 4, 1974, Ser. No. 512,051
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



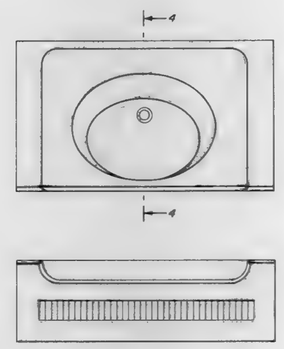
238,071
BATH TUB
Richard J. Ganger, Los Angeles, Calif., assignor to Dimensionetix, Inc.
Filed Oct. 4, 1974, Ser. No. 512,052
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



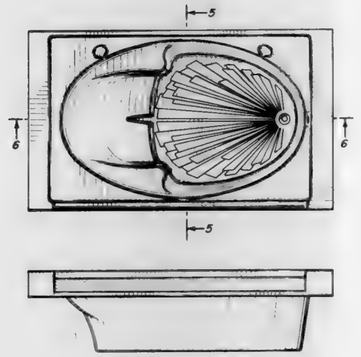
238,072
BATHTUB
Richard J. Ganger, Los Angeles, Calif., assignor to Dimensionetix, Inc.
Filed Oct. 4, 1974, Ser. No. 512,053
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



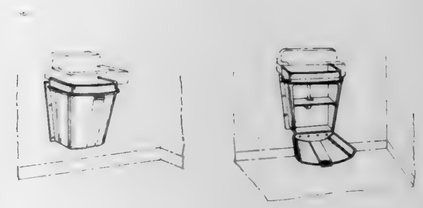
238,073
LAVATORY
Richard J. Ganger, Los Angeles, Calif., assignor to Dimensionetix, Inc.
Filed Oct. 4, 1974, Ser. No. 512,056
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



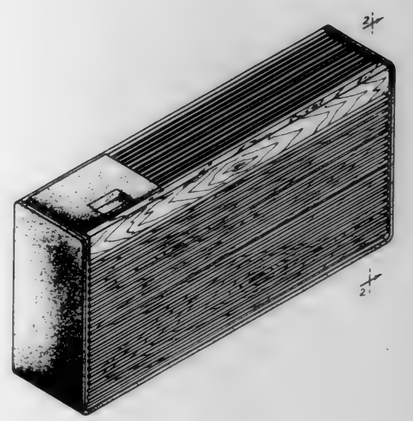
238,074
BATH TUB
George S. Gruber, Hidden Hills, Calif., assignor to Dimensionetix, Inc.
Filed Oct. 4, 1974, Ser. No. 512,213
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



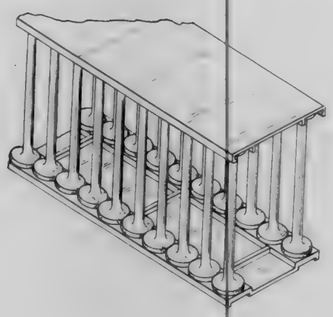
238,075
CABINET FOR COVERING LAVATORY PIPES
Ulysses Harris, Westfield, N.J., assignor to Ten-O-Feb., Inc., Westfield, N.J.
Filed Dec. 20, 1973, Ser. No. 426,803
Term of patent 3½ years
Int. Cl. D6—*04;* D23—*02*
U.S. Cl. D23—59



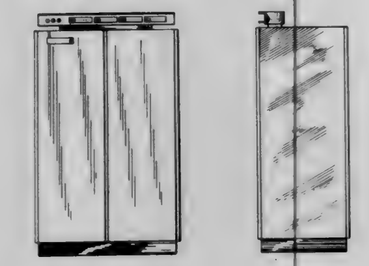
238,076
WALL MOUNTED HOUSING FOR AN AIR CONDITIONER OR SIMILAR ARTICLE
Jon M. Newgard and Charles F. Schultz, Louisville, Ky., assignors to General Electric Company
Filed Oct. 15, 1974, Ser. No. 514,375
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—141



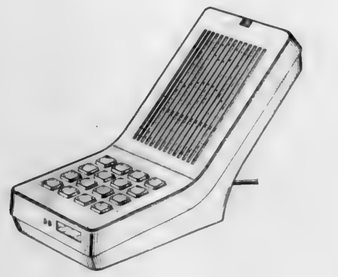
238,077
WIRING DUCT
Philip W. Taylor, Howell, Mich., assignor to Taylor Industries, Inc., Howell, Mich.
Filed Feb. 6, 1974, Ser. No. 440,147
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 R

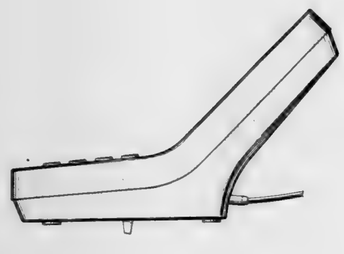


238,078
TAPE CONTROLLER FOR MAGNETIC TAPE DECKS
John H. Wilson, 6422 E. 41st St., Tulsa, Okla. 74135
Filed June 27, 1973, Ser. No. 374,246
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



238,079
TELEPHONE SET
Per Erik Edward Heribertson, Lidingo, and Rolf Bertil Andren, Bandhagen, Sweden, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Jan. 2, 1974, Ser. No. 430,278
Claims priority, application Sweden July 5, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

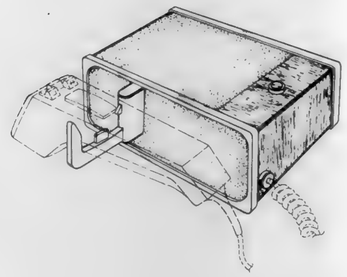


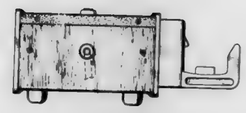


238,080
ELECTROMECHANICAL STORAGE AND RETRIEVAL UNIT
Paul W. Porter, Phoenixville, Pa., assignor to Sperry Univac Division, Sperry Rand Corporation, Blue Bell, Pa.
Filed Mar. 13, 1974, Ser. No. 450,643
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

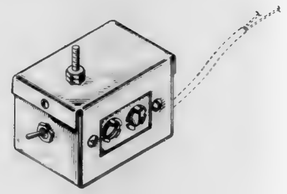


238,081
REMOTE STATION FOR DICTATING EQUIPMENT
James C. Sturrock, Atlanta, Ga., assignor to Robert N. Fink, Decatur, Ga.
Filed Mar. 14, 1974, Ser. No. 451,123
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

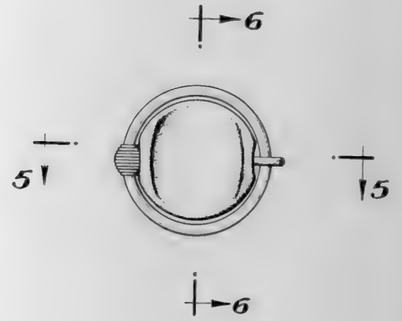




238,082
SWITCH FOR TV CABLE AND ANTENNA
James C. Matthews, 115 Harding Drive, Washington, N.J. 07882
Filed July 19, 1974, Ser. No. 490,135
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R

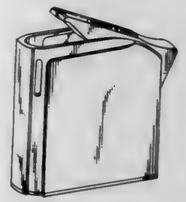


238,083
COMBINED CIGARETTE HOLDER AND REMOVABLE SUPPORT
Eugene R. Cuthbertson, 116 "B" Surfside Colony, Surfside, Calif. 90743
Filed Dec. 10, 1973, Ser. No. 423,300
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—7

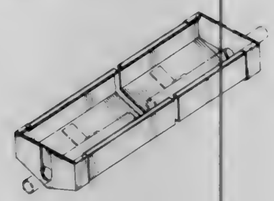




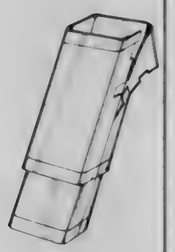
238,084
CIGARETTE LIGHTER
Kenjiro Goto, 28–13, 5-chome, Setagaya-ku, Sakurajosui, Tokyo, Japan
Filed Dec. 13, 1973, Ser. No. 424,480
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



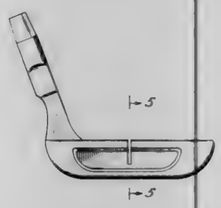
238,085
POULTRY FEEDER TROUGH
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Continuation of design application Ser. No. 160,245, July 6, 1971, now Patent No. 229,030, dated Nov. 6, 1973. This application Oct. 23, 1973, Ser. No. 408,373
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



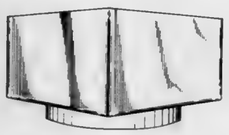
238,086
COVER FOR GOLF CLUB CARRYING CASE
John L. Findeisen, 11026 S. Avenue L, Chicago, Ill. 60617
Filed Oct. 12, 1973, Ser. No. 405,931
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GB

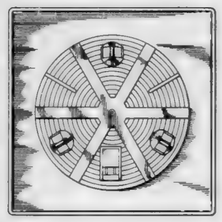


238,087
GOLF PUTTER HEAD
Raymon W. Cook, 406 Top Hill, San Antonio, Tex. 78209
Continuation of abandoned design applications Ser. No. 293,532, and Ser. No. 293,533, both Sept. 29, 1972, and Ser. No. 343,388, Mar. 21, 1973. This application June 14, 1974, Ser. No. 479,455
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



238,088
VAT FOR AN INDOOR GARDEN
Raymond Grosfillex, Arbent, France, assignor to Grosfillex S.A.R.L., Arbent, France
Filed Oct. 5, 1972, Ser. No. 295,106
Claims priority, application France Apr. 20, 1972
Term of patent 7 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A

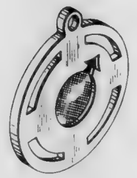




238,089
PENDANT OR SIMILAR ARTICLE
Eugene A. Poulin, 85 Royal Oak Road, New Britain, Conn. 06053
Continuation-in-part of abandoned design application Ser. No. 344,471, Mar. 26, 1973. This application June 12, 1974, Ser. No. 478,641
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—17



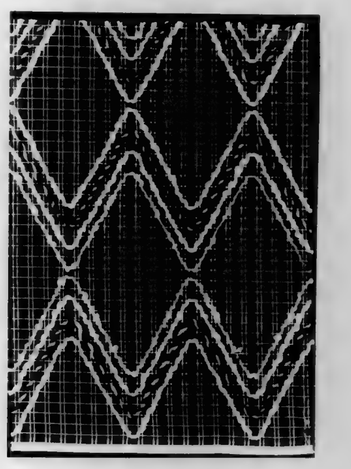
238,090
PENDANT OR SIMILAR ARTICLE
Eugene A. Poulin, 85 Royal Oak Road, New Britain, Conn. 06053
Continuation-in-part of abandoned design application Ser. No. 344,472, Mar. 26, 1973. This application June 12, 1974, Ser. No. 478,642
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—17



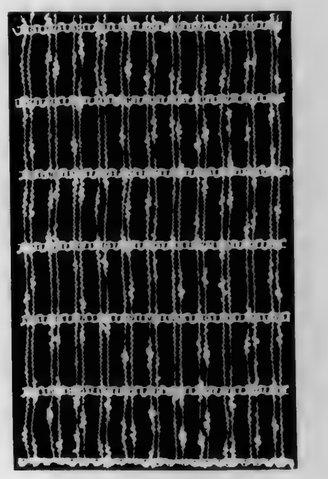
238,091
PENDANT OR SIMILAR ARTICLE
Hugh H. Harding, 1306 N. Scouller, Wichita, Kans. 67212
Filed July 22, 1974, Ser. No. 490,878
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—19 V



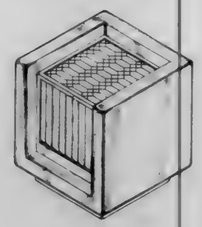
238,092
CURTAIN PATTERN
Peter Eric Schroeder, Oberwil, near Brenngarten, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 10, 1974, Ser. No. 469,014
Claims priority, application Germany Nov. 12, 1973
Term of patent 14 years
Int. Cl. D5—*02*
U.S. Cl. D47—6 E



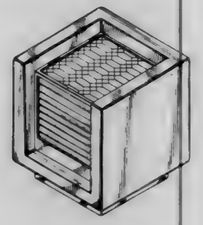
238,093
CURTAIN PATTERN
Peter Eric Schroeder, Oberwil, near Brenngarten, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 10, 1974, Ser. No. 469,022
Claims priority, application Germany Nov. 12, 1973
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D47—6 E



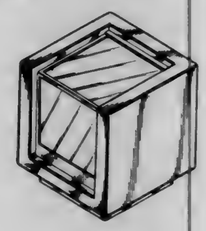
238,094
LIGHTING FIXTURE
Roger N. Ervin, 9647 Leaside Drive, Dallas, Tex. 75238
Filed Oct. 24, 1973, Ser. No. 409,071
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



238,095
LIGHTING FIXTURE
Roger N. Ervin, 9647 Leaside Drive, Dallas, Tex. 75238
Filed Oct. 24, 1973, Ser. No. 409,072
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



238,096
LIGHTING FIXTURE
Fred O. Delin, 5656 Celestial Road, Dallas, Tex. 75240
Filed Oct. 24, 1973, Ser. No. 409,143
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



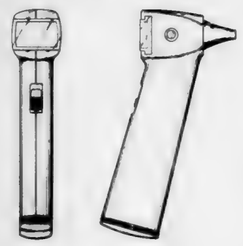
238,097
COMBINED TAIL LIGHT AND SUPPORT BRACKET FOR BOAT TRAILERS
James A. Driscoll, 1219 Garfield, Sand Springs, Okla. 74063
Filed Apr. 22, 1974, Ser. No. 462,607
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 R



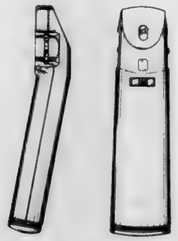
238,098
PORTABLE RADIO
David H. Fink, 52 Fox Lane, Dix Hills, N.Y. 11746
Filed Mar. 4, 1974, Ser. No. 447,658
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



238,099
OTOSCOPE
Arthur J. Pulos, Fayetteville, N.Y.
Filed Jan. 7, 1974, Ser. No. 431,476
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D57—1 E



238,100
OPHTHALMOSCOPE
Arthur J. Pulos, Fayetteville, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.
Filed Jan. 7, 1974, Ser. No. 431,477
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D57—1 E



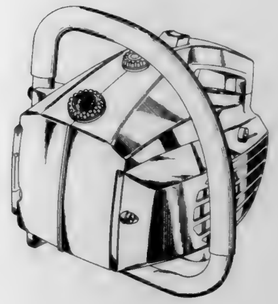
238,101
COMBINED LABEL PRINTER AND APPLICATOR
Robert P. Mulholland, Centerville, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio
Filed June 5, 1974, Ser. No. 476,485
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—10



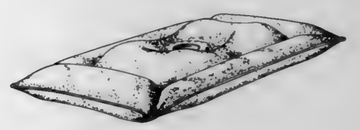
238,102
NUMERAL FONT OR SIMILAR ARTICLE
William S. Dolan, Middlebury, Conn., assignor to Gruen Industries, Inc., New York, N.Y.
Filed July 24, 1974, Ser. No. 491,334
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B



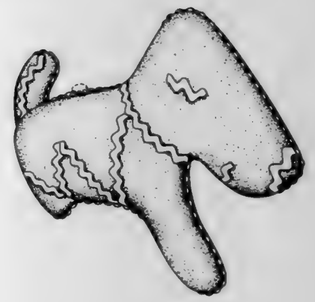
238,103
POWER CHAIN SAW ENGINE ASSEMBLY
Lloyd H. Tuggle, Shreveport, La., assignor to Emerson Electric Company, St. Louis, Mo.
Filed Oct. 12, 1973, Ser. No. 406,035
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D77—1 R



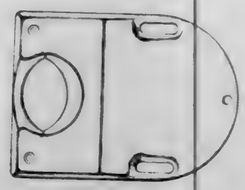
238,104
COMBINED VIBRATOR AND CUSHION
Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co., Kansas City, Mo.
Filed July 23, 1973, Ser. No. 381,679
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1 S



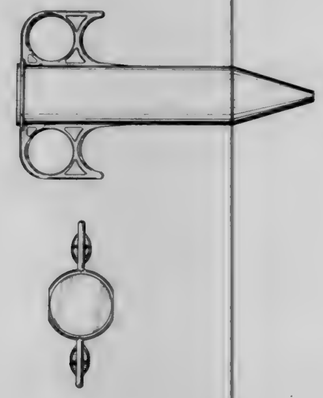
238,105
REFILLABLE FLUID CONTAINER USED TO APPLY HEAT OR COLD FOR THERAPEUTIC PURPOSES
Edith C. Amend, 10 Maher Ave., Greenwich, Conn. 06830
Filed Sept. 17, 1973, Ser. No. 397,795
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D83—1 P



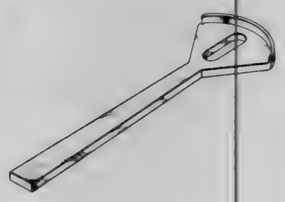
238,106
RESUSCITATION BOARD
Dennis Arblaster, 34081 La Serena, Dana Point, Calif. 92629
Filed Mar. 15, 1974, Ser. No. 451,461
Term of patent 14 years
Int. Cl. D21—*02*; D24—*02*
U.S. Cl. D83—1 G



238,107
CEMENT INJECTION GUN FOR USE IN TOTAL JOINT SURGERIES
Ricardo J. Heros, Memphis, Tenn., assignor to Richards Manufacturing Company, Inc., Memphis, Tenn.
Filed Mar. 29, 1974, Ser. No. 456,274
Term of patent 7 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 A



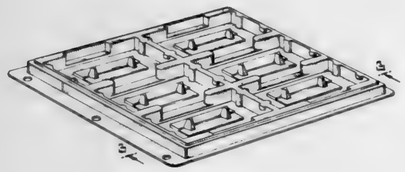
238,108
TONGUE CLEANER
Gladys E. Cooke, 11246 S. Post Oak, Suite 218, Houston, Tex. 77035
Filed Mar. 3, 1975, Ser. No. 554,918
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—12 R



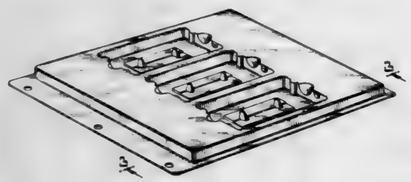
238,109
COMBINED NOZZLE AND COMB FOR HAIR DRYERS
Michael G. Vitetta, 311 Fenimore Road, Mamaroneck, N.Y. 10543
Filed Nov. 12, 1973, Ser. No. 415,014
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



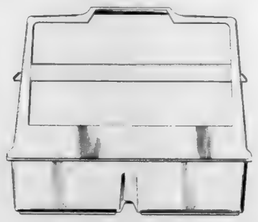
238,110
HOLDER FOR MAGNETIC TAPE CASSETTES
Richard Shyers, 737 Evergreen Parkway, Union, N.J. 07083
Filed Nov. 12, 1973, Ser. No. 414,703
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 D



238,111
MAGNETIC TAPE CASSETTE HOLDER
Richard Shyers, 737 Evergreen Parkway, Union, N.J. 07083
Filed Nov. 12, 1973, Ser. No. 414,712
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 D



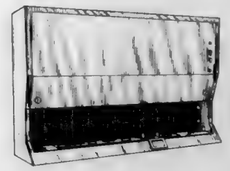
238,112
UTILITY CASE
Ralph M. Nowak, Wilbraham, Mass., assignor to Tucker Cosco, Inc., Columbus, Ind.
Filed Dec. 26, 1973, Ser. No. 427,923
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



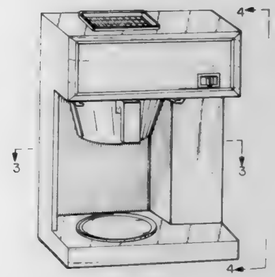
238,113
TOOL BOX
Donald G. Hart, R.R. 1, Geneseo, Ill. 61254
Filed Nov. 8, 1973, Ser. No. 413,877
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



238,114
LIQUOR DISPENSER
David R. Jones, R.R. 4, Box 21B, Little Cub Road, Evergreen, Colo. 80439
Filed Sept. 7, 1973, Ser. No. 395,356
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D94—3 B



238,115
COFFEE BREWER
Vincent G. Marotta, Shaker Heights, Ohio, assignor to North American Systems, Inc., Shaker Heights, Ohio
Filed Oct. 19, 1973, Ser. No. 407,932
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D94—3 B



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF DECEMBER, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A & A Engineering Co.: *See—*
Neff, Frederick R., 3,926,062.

A. O. Smith Harvestore Products, Inc.: *See—*
Hogarth, Robert E., 3,926,814.

A/S E. Rasmussen: *See—*
Lambertsen, Ejvind, 3,927,351.

AB Essve Produkter: *See—*
Filen, Bjorn G. O., 3,926,598.

AB Fodervavnader: *See—*
Broms, Bengt; and Wager, Oleg, 3,925,994.

AB Svedieselt: *See—*
Engwall, Bertil, 3,926,250.

Abbott Laboratories: *See—*
Crovetti, Aldo Joseph; Blank, Artur; and Germann, Richard Paul, 3,927,100.
Lee, Cheuk Man, 3,927,036.

Abe, Masao: *See—*
Nakanishi, Michio; Yokobe, Tetsuo; Arai, Tomio; and Abe, Masao, 3,927,011.

Abex Corporation: *See—*
Frank, Earl E., 3,926,124.

Abney, Dave L.; Williams, Robert C.; and Gilbert, Horace E., to Dresser Industries, Inc. Selective well treating and gravel packing apparatus. 3,926,409, Cl. 251-344.000.

Abson, David J.; and Gurney, Ferdinand J., to United States of America, Air Force. Heated die assembly. 3,926,029, Cl. 72-342.000.

Abu-Isa, Ismat A., to General Motors Corporation. Platable polypropylene. 3,926,932, Cl. 260-93.700.

Acevedo, Generoso, to International Telephone and Telegraph Corporation. Sequence control circuit for telephone systems. 3,927,271, Cl. 179-18.0AB.

Ackeret, Peter, to IISI Products AG. Container for 8-track tape cartridges. 3,926,310, Cl. 206-387.000.

Ackerman, James H., to Sterling Drug Inc. Cyclic imides of 3-substituted 2,4,6-triiodoanilines. 3,926,975, Cl. 260-243.00B.

Acre, Leon R.: *See—*
Kurichh, Sham L.; and Acre, Leon R., 3,926,094.

Adachi, Hiroyuki: *See—*
Huang, Ching Yun; Shimizu, Senzo; and Adachi, Hiroyuki, 3,926,890.

Adachi, Tetsuo: *See—*
Takayama, Kenichiro; Adachi, Tetsuo; Kohata, Mamoru; Hattori, Kiyoji; and Tomiyama, Tomoko, 3,926,724.

Adachi, Yoichi; and Harada, Yoshiharu, to Mitsui & Co. Ltd. Detection system for protecting anodes in flowing mercury cathode electrolytic cells. 3,926,750, Cl. 204-99.000.

Adahan, Carmeli, to Singer Company, The. Hammerless impact printer. 3,926,295, Cl. 197-55.000.

Adams, Charles D., to Du Pont de Nemours, E. I., and Company. Alkyl 4-[o-(substituted amino)phenyl]-3-thioallophanates. 3,927,069, Cl. 260-470.000.

Adams, James D. Truss assembly jig. 3,925,870, Cl. 29-200.00J.

Adams, Kenneth D.: *See—*
Herron, William; Adams, Kenneth D.; and Petronchak, John, 3,926,133.

Adams, Stuart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, to Boots Company Limited, The. Xanthen derivatives. 3,927,029, Cl. 260-335.000.

Admirant, Jacobus Den: *See—*
Vos, Cornelis; and Admirant, Jacobus Den, 3,927,211.

Adolf Hofmann Metall- u. Kunstoffwarenfabrik GmbH: *See—*
Schickedanz, Gerhard, 3,926,327.

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Bastenhof, Dirk, to Societe d'Etudes de Machines Thermiques. Method and device for stopping an internal combustion engine with fuel injection in case of overspeed. 3,926,163, Cl. 123-139.0AZ.
Bastian, Donald G., to SCM Corporation. Changeable type head. 3,926,294, Cl. 197-36.000.
Bates, Gregory A., to Procter & Gamble Company, The. Transfer and adherence of relatively dry paper web to a rotating cylindrical surface. 3,926,716, Cl. 162-113.000.
Batorewicz, Wadim, to Uniroyal, Inc. Compositions comprising mixtures of hydrogenphosphonates and methylphosphonates. 3,927,146, Cl. 260-921.000.
Battelle Development Corporation: *See—*
Fawcett, Sherwood L.; and Anno, James N., 3,927,329.
Battelle Memorial Institute: *See—*
Gutjahr, Manfred A.; Schmid, Rudolf; and Beccu, Klaus D., 3,926,671.
Jonville, Pierre; Stohr, Helmut; Beccu, Klaus D.; and Baronnet, Rene, 3,926,674.
Batterson, Norman D.: *See—*
Reeder, Wilbur C.; and Batterson, Norman D., 3,926,374.
Reeder, Wilbur C.; and Batterson, Norman D., 3,926,375.
Bauer, Jakob; and Krey, Winfried, to Varta Batterie AG. Primary magnesium element. 3,926,680, Cl. 136-154.000.
Bauer, Werner, to International Standard Electric Corporation. Voltage multiplier arrangement with capacitor rolls surrounded by diodes. 3,927,364, Cl. 321-15.000.
Bauser, Herbert; and Fischer, Dieter, to Braun Aktiengesellschaft. Device for generating electric sparks for igniting flammable vapors containing gas and air. 3,927,354, Cl. 317-81.000.
Bayer Aktiengesellschaft: *See—*
Colln, Reimer; and Hammann, Ingeborg, 3,926,998.
Enders, Edgar; and Stendel, Wilhelm, 3,927,217.
Ersfeld, Heinrich; Nadolski, Klaus; Schneider, Walter; Schulte, Klaus; and Boden, Heinrich, 3,926,219.
Esser, Heinz; and Boldt, Jurgen, 3,926,880.
Golitz, Hans Dietrich, deceased; Wagner, Kuno; Quiring, Bernd; and Noll, Walter, 3,927,042.
Harnisch, Horst, 3,927,005.
Holle, Bernd; and Winter, Gerhard, 3,926,660.

Huper, Fritz; and Rauenbusch, Erich, 3,926,730.
Lailach, Gunter; and Rademachers, Jakob, 3,926,615.
Mayer-Mader, Rudolf; and Gobel, Wilhelm, 3,926,912.
Nickel, Horst; and Schundehutte, Karl-Heinz, 3,926,546.
Straub, Otto Christian, 3,927,209.

Baylor, John M., to J.I. Case Company. Multi-cable laying blades or chutes. 3,926,004, Cl. 61-72.600.

Baylor, John M.: *See—*
Frisbee, Claude M.; and Baylor, John M., 3,926,263.

Bean, Lloyd, to Xerox Corporation. Circulation imaging method. 3,926,626, Cl. 96-1.00R.

Beard, William Q., Jr.; Moyer, Patricia H.; and Penner, Siegfried E., to Vulcan Materials Company. Catalysts comprising a metal halide salt on an interstratified synthetic aluminosilicate carrier and chlorination processes, etc. 3,926,847, Cl. 252-441.000.

Beaumont, Peter W. Hand tool. 3,925,871, Cl. 29-239.000.

Beccu, Klaus D.: *See—*
Gutjahr, Manfred A.; Schmid, Rudolf; and Beccu, Klaus D., 3,926,671.
Jonville, Pierre; Stohr, Helmut; Beccu, Klaus D.; and Baronnet, Rene, 3,926,674.

Becher, Jan; and Ullman, Edwin F., to Synvar Associates. 1-Oxylimidazolinyl compounds used as stable free radical pH indicators. 3,927,019, Cl. 260-309.600.

Becht, Carl T., to Senco Products, Inc. Staple for light gauge metal piercing. 3,925,955, Cl. 52-758.00D.

Bechtel, Jon Harold, to Johnson Service Company. Relative humidity computer. 3,926,052, Cl. 73-336.500.

Beck, Gerhard; and Zeininger, Siegfried, to Eltro GmbH Gesellschaft fur Strahlungstechnik. Reflector antenna with focusing spherical lens. 3,927,407, Cl. 343-754.000.

Beck, Herman D.; and Cook, Thomas H., to Owens-Illinois, Inc. Telescopic container members. 3,926,362, Cl. 229-23.0BT.

Beck, Louis: *See—*
Kelley, Zar W., 3,925,988.

Becker, Kunibert: *See—*
Harmsma, Guenter; Rosenberg, Harry; Laabs, Johannes; and Becker, Kunibert, 3,925,995.

Beckman Instruments, Inc.: *See—*
Stephens, Donald E., 3,926,800.

Beecham Group Limited: *See—*
Burton, George; Davies, John Sydney; and Hubbard, Ann Frances, 3,926,955.
Callander, Sidney Edward, 3,926,958.
Ferres, Harry; Kemmenoe, Adrian Victor; and Best, Desmond John, 3,926,960.

Beermann, Claus: *See—*
Reuter, Martin; and Beermann, Claus, 3,927,112.

Beets, Muus G. J.: *See—*
Hall, John B.; Lala, Lekhu Kewalram; Beets, Muus G. J.; and Taylor, William I., 3,927,083.

Beggs, Donald; and Ahrendt, William A., to Midrex Corporation. Passivation of metallized pellets in bulk. 3,926,617, Cl. 75-.5BA.

Beijer, Louis Benjamin; Driessen, Antonius Josephus Gerardus Cornelis; and Jacobs, Cornelis Adrianus Joannes, to U. S. Philips Corporation. Wall-stabilised high-pressure mercury vapour discharge lamp containing iodide. 3,927,343, Cl. 313-214.000.

Belden Corporation: *See—*
Timmons, Frank E., 3,927,247.

Bell Helmets Inc.: *See—*
Lewicki, Lester R., 3,925,821.

Bell & Howell Company: *See—*
Costanza, Carl C.; Weber, Walter W.; Betlejewski, Frank W.; and Frystak, Richard, 3,926,514.
Fleischman, Andor A., 3,926,504.
Sund, Joseph Tat-Hin, 3,927,237.

Bell, Oliver A., Jr., to Colt Industries Operating Corporation. Function control circuit for EDM power supply. 3,927,293, Cl. 219-69.00C.

Bell, Ralph E. Fireplace structure. 3,926,174, Cl. 126-121.000.

Bell Telephone Laboratories, Incorporated: *See—*
Caron, Lionel, 3,927,392.
Copenhafer, Dennis Lee, 3,927,257.
Cox, Donald Clyde; Langseth, Rollin Edward; Reudink, Douglas Otto John; and Rustako, Anthony Joseph, Jr., 3,927,379.
DiMarcello, Frank Vincent, 3,927,238.
Jaeger, Raymond Edward; and Miller, Thomas John, 3,927,155.
Newby, Kenneth Russ; and Winters, Earl Dallas, 3,926,747.

Belliveau, Ronald L.: *See—*
Saari, George W.; and Belliveau, Ronald L., 3,925,960.

Beloit Corporation: *See—*
Chance, James L.; and Han, Shu Tang, 3,925,906.

Benczur-Urmossy, Gabor, to Deutsche Automobilgesellschaft mbH. Catalysts for the cathodic hydrogen development. 3,926,844, Cl. 252-432.000.

Bendix Corporation, The: *See—*
Haase, Elmer A.; and Kirwin, James M., 3,926,162.
McCombs, Howard L., 3,925,980.
Meyers, Robert E., 3,926,092.
Reddy, Junuthula N., 3,926,153.
Sollami, Blase J., 3,926,011.
Wertheimer, Harry P., 3,926,161.

Benerito, Ruth R.: *See—*
Ward, Truman L.; Benerito, Ruth R.; and Hebert, Jacques J., 3,926,709.

Benjamin, John Stanwood; and Schultz, Jay Ward, to International Nickel Company, Inc., The. High strength corrosion resistant nickel-base alloy. 3,926,568, Cl. 29-182.500.

Benson, Louis. Multi-positionable bottle closure for selective safety or general use. 3,926,325, Cl. 215-206.000.

Bentz, Francis: *See—*
Saleck, Wilhelm; Engelhard, Helmut; Himmelmann, Wolfgang; Bentz, Francis; and Mader, Helmut, 3,926,635.

Benvenuti, Franco: *See—*
Neri, Paolo; Antoni, Guido; and Benvenuti, Franco, 3,927,204.

Benziger, Theodore M.: *See—*
Coburn, Michael D.; and Benziger, Theodore M., 3,926,953.

Berendsen, Jules Robert: *See—*
Hofman, Emiel Alexander; Berendsen, Jules Robert; and Pollet, Robert Joseph, 3,926,632.

Beretta, Oscar, to Technifil S.A. Gravity catch for hinged guard fences. 3,926,412, Cl. 256-46.000.

Berger, Raymond D. Snake venom milker. 3,926,149, Cl. 119-1.000.

Bergwerksverband GmbH: *See—*
Schmalfeld, Paul; Sauter, Dieter; Peters, Werner; Ahland, Erwin; Bock, Burkhard; and Lehmann, Joachim, 3,926,576.

Berkowitz, Sidney: *See—*
Meadow, Morton; and Berkowitz, Sidney, 3,927,185.

Bermanseder, Norbert: *See—*
Bermanseder, Robert; and Bermanseder, Norbert, 3,926,100.

Bermanseder, Robert; and Bermanseder, Norbert, to Daimler-Benz AG. Bus. 3,926,100, Cl. 98-2.140.

Bermas, Gunnar Valfrid, to U. S. Philips Corporation. Exchange mechanism for film plates in an X-ray recording or displaying apparatus. 3,927,327, Cl. 250-470.000.

Bernard, James A., to General Motors Corporation. Add-on clothes hanger for appliance. 3,926,315, Cl. 211-102.000.

Bernhard, Horst; Esselborn, Reiner; Hesse, Reiner; and Russmann, Horst, to Merck Patent Gesellschaft mit beschraenkter Haftung. Iron-containing mica flake pigments. 3,926,659, Cl. 106-291.000.

Bernhardt, Helmut: *See—*
Deusing, Erich; Bernhardt, Helmut; and Durth, Wilfried, 3,926,106.

Berrie, Alistair Howard; and Budziarek, Richard, to Imperial Chemical Industries Limited. Water-soluble cellulose reactive azo dyestuffs containing 3-azo-2-hydroxy-N-subnstituted pyrid-6-one radical. 3,926,944, Cl. 260-153.000.

Berry, Peter J.; and Maguire, Gerald J., to Xerox Corporation. Optical scanning system. 3,926,518, Cl. 355-8.000.

Bertellotti, Ansano, to GTE Automatic Electric Laboratories Incorporated. Locking bar for printed wiring card file. 3,926,490, Cl. 312-319.000.

Berthold, Erich: *See—*
Kurth, Harald; Laube, Dieter; and Berthold, Erich, 3,926,013.

Berthold, Frank: *See—*
Plesslinger, Gertraud Agnes Anna; Berthold, Frank; and Roeder, Erwin, 3,926,603.

Bertioli, Michael Murray: *See—*
Wentworth, Philip Rossell; and Bertioli, Michael Murray, 3,927,304.

Bertsch, Erich, to Lonza Ltd., Gampel/Valais. Column device. 3,926,741, Cl. 202-269.000.

Best, Desmond John: *See—*
Ferres, Harry; Kemmenoe, Adrian Victor; and Best, Desmond John, 3,926,960.

Bethlehem Steel Corporation: *See—*
Tarhan, Mehmet Orhan, 3,927,153.

Betlejewski, Frank W.: *See—*
Costanza, Carl C.; Weber, Walter W.; Betlejewski, Frank W.; and Frystak, Richard, 3,926,514.

Bettcher Industries, Inc.: *See—*
Bettcher, Louis A., 3,926,080.

Bettcher, Louis A., to Bettcher Industries, Inc. Apparatus for and method of processing meat products. 3,926,080, Cl. 83-15.000.

Bevans, Douglas L. Plastic hose clamp. 3,925,851, Cl. 24-20.0TT.

Bianchi, Giuseppe: *See—*
De Nora, Oronzio; Bianchi, Giuseppe; Nidola, Antonio; and Trisoglio, Giovanni, 3,926,751.

Bianchi, Thomas A., to Eastman Kodak Company. Substituted styrenes. 3,927,117, Cl. 260-613.00D.

Bicron Corporation: *See—*
Spurney, Richard W., 3,926,566.

Bieber, Rolf: *See—*
Wunning, Joachim; Bieber, Rolf; and Lustig, Heinz, 3,926,038.

Biermann, Arnold E. Constant velocity universal joints. 3,926,012, Cl. 64-19.000.

Biethan, Uwe: *See—*
Feldman, Rainer; Biethan, Uwe; Muller, Karl Adolf; and Panoch, Hans Joachim, 3,927,141.

Bigham, Carroll R.: *See—*
Atkinson, Lester M.; Bigham, Carroll R.; and Peed, James L., 3,925,956.

Billeter, Thomas R.; and Philipp, Lee D., to Westinghouse Electric Corporation. Microwave frequency sensor utilizing a single resonant cavity to provide simultaneous measurements of a plurality of physical properties. 3,927,369, Cl. 324-58.50C.

Binette, Andre. Manhole. 3,926,533, Cl. 404-26.000.

Binz & Co.: *See—*
Grunenwald, Karl, 3,926,099.

Biricz, Stefan: *See—*
Dub, Karl; and Biricz, Stefan, 3,926,346.

Birkenfeld, Richard; and Wieligmann, Friedrich, to E. Mollers, Maschinenfabrik, Firma. Arrangement for pulling a tube of heat-shrinkable plastic downwardly over a stack of goods. 3,925,964, Cl. 53-183.000.

Birthwright, Robert Geoffrey. Control apparatus. 3,927,387, Cl. 338-317.000.

Birtigh, Gerhard; Parbel, Horst; and Sauer, Heinrich, to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler. Apparatus for cleaning exhaust gases. 3,926,565, Cl. 23-288.0FC.

Bissell, Sherman M.; De Vlieg, Garrett H.; and Hopland, Johan N., to Boeing Company, The. Aircraft automatic braking system having auto-brake control logic. 3,926,479, Cl. 303-21.0AF.

Bizilia, Paul K., to Ingersoll-Rand Company. Signal valve. 3,926,212, Cl. 137-495.000.

Bjelland, Ronald W.; Narwicz, Charles A.; and Hetmanski, Casimir, to United States Lines, Inc. Lining of containers for bulk cargo. 3,926,331, Cl. 220-63.00R.

Black, Robin Michael: *See—*
White, Alan Chapman; and Black, Robin Michael, 3,926,994.

Blair Manufacturing Company: *See—*
Ryan, Kelly P., 3,926,378.

Blanchard, James S.; and Weaver, Robert F., to P.R. Mallory & Co. Inc. Clutch for gear trains. 3,926,067, Cl. 74-461.000.

Blank, Artur: *See—*
Crovetti, Aldo Joseph; Blank, Artur; and Germann, Richard Paul, 3,927,100.

Blank, Izhak; and Fertig, Joseph, to Hydrophilics International, Inc. Copolymer containing medicaments. 3,927,206, Cl. 424-81.000.

Blatt, Leland F. Rotating detented push-pull plunger clamp. 3,926,418, Cl. 269-13.000.

Blazer, Cedric W., to Zenith Cutter Company. Knife holding apparatus. 3,926,084, Cl. 83-698.000.

Blebea, Speranta: *See—*
Constantinescu, Petre; Hristea, Nicolae; Blebea, Speranta; Hristea, Ieronim; Huniadi, Mihai; and Gabureanu, Mircea, 3,925,928.

Bleier, Waldemar; and Gremmelspacher, Max, to Bleier, Waldemar. Clip, clamping jaw and assembly for the interruption of the urogenital system. 3,926,195, Cl. 128-346.000.

Blocked Iron Corporation: *See—*
Imperato, Louis George, Jr., 3,926,616.

Bloemhof, Jan. Product bagging machine. 3,925,967, Cl. 53-385.000.

Blomstrom, Gary D.; Randour, Victor; and York, Lyle E., to Caterpillar Tractor Co. Track mounting arrangement having dual gauge settings. 3,926,273, Cl. 180-9.480.

Blondin, Eric: *See—*
Marrast, Jacques; Minssieux, Louis; and Blondin, Eric, 3,926,257.

Bloom, Allen: *See—*
Bartolini, Robert Alfred; and Bloom, Allen, 3,926,637.

Bloxham, Glen Lee; and Wells, Don Charles, to American Telephone and Telegraph Co. Automatic circuit for providing emergency ground start signals on PBX trunks. 3,927,272, Cl. 179-18.0AD.

BLS Associates: *See—*
Brooks, Cecil M., 3,926,529.

Blue Ribbon Industries, Inc.: *See—*
Baillie, William R., 3,926,030.

Board, Richard G.; and Shapiro, Nelson H. Retractable safety belts. 3,926,385, Cl. 242-107.400.

Bobst Champlain, Inc.: *See—*
Bonnell, George N., 3,926,355.
Santa Maria, Richard C.; and Anastasio, Frank J., 3,926,097.

Bock, Burkhard: *See—*
Schmalfeld, Paul; Sauter, Dieter; Peters, Werner; Ahland, Erwin; Bock, Burkhard; and Lehmann, Joachim, 3,926,576.

Bockman, Ole Kristian, to Aktiebolaget Svenska Flaktfabriken. Dust filter apparatus. 3,926,595, Cl. 55-302.000.

Bode, Wolfgang W.; Dunlap, Glenn H.; Kobylak, Anthony M.; Richards, Raymond S.; and Pfaender, Lawrence V., to Owens-Illinois, Inc. Capillary tube gas discharge device. 3,927,342, Cl. 313-188.000.

Boden, Heinrich: *See—*
Ersfeld, Heinrich; Nadolski, Klaus; Schneider, Walter; Schulte, Klaus; and Boden, Heinrich, 3,926,219.

Bodnar, Janos: *See—*
Korbonits, Dezso; Harsanyi, Kalman; Molnar nee Bako, Erzsebet; Takacs, Kalman; Heja, Gergely; Bodnar, Janos; Bodrogi, Istvan; and Erodi, Judit, 3,927,025.

Bodrogi, Istvan: *See—*
Korbonits, Dezso; Harsanyi, Kalman; Molnar nee Bako, Erzsebet; Takacs, Kalman; Heja, Gergely; Bodnar, Janos; Bodrogi, Istvan; and Erodi, Judit, 3,927,025.

Boeing Company, The: *See—*
Bissell, Sherman M.; De Vlieg, Garrett H.; and Hopland, Johan N., 3,926,479.

Bogdanova, Nadezhda Sergeevna: *See—*
Grinev, Alexei Nikolaevich; Shvedov, Vasily Ivanovich; Sytina, Evgenia Nikolaevna; Bogdanova, Nadezhda Sergeevna; Nikolaeva, Irina Sergeevna; Pershin, Grigory Nikolaevich; and Guskova, Tatyana Anatolievna, 3,927,125.

Bogomolov, Igor Vasilievich: *See—*
Orlov, Petr Nikolaevich; Nesterov, Jury Ivanovich; Kudashov, Vasily Yakovlevich; Zimnyakov, Alexandr Vasilievich; Ermakova, Irina Nikolaevna; Bogomolov, Igor Vasilievich; Nirman, Efim Matveevich; and Sokolov, Vladimir Dmitrievich, 3,925,936.

Bohm, Walter. Printing machine. 3,926,111, Cl. 101-116.000.

Boldt, Jurgen: *See—*
Esser, Heinz; and Boldt, Jurgen, 3,926,880.

Bolduan, Dieter: *See—*
Markewitz, Wolfgang; and Bolduan, Dieter, 3,926,403.

Bolhofer, William A., to Merck & Co., Inc. Amides of 2-[halophenoxy (or halophenylthio)]-alkanoic acids. 3,927,092, Cl. 260-559.00B.

Boller, Arthur; and Scherrer, Hanspeter, to Hoffmann-La Roche Inc. Benzylidene-aminobenzonitriles. 3,927,064, Cl. 260-465.00E.

Boller, Arthur: *See—*
Scherrer, Hanspeter; and Boller, Arthur, 3,927,066.

Bombardier Limited: *See—*
Lippitsch, Hans Heinz, 3,926,157.

Bond, James W.; and Speiser, Jeffrey M., to United States of America, Navy. Complex filters, convolvers, and multipliers. 3,926,367, Cl. 235-181.000.

Bondy, Harry L.: *See—*
Lowe, William F.; and Bondy, Harry L., 3,926,713.

Bonnell, George N., to Bobst Champlain, Inc. Apparatus for intermittently feeding lengths of continuous sheet material at a constant velocity. 3,926,355, Cl. 226-114.000.

Boots Company Limited, The: *See—*
Adams, Stuart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, 3,927,029.

Boozalis, Theodore S.: *See—*
Willis, Gordon G.; Ivy, John B.; Boozalis, Theodore S.; and Cragar, Darryl E., 3,927,132.

Boozer, Charles E., to Copolymer Rubber & Chemical Corporation. Preparation of sulfur vulcanizable oil extended elastomeric material and vulcanizates therefrom. 3,926,901, Cl. 260-33.6AQ.

Borden, Inc.: *See—*
Duchesneau, Eugene A., Jr.; and Boudreau, Donald F., 3,926,889.

Borg-Warner Corporation: *See—*
Albertson, Clarence E.; and Krueger, Robert H., 3,926,818.
Guzy, Raymond L.; and Sheth, Rajesh N., 3,926,900.

Borgman, Milton H.: *See—*
Trifunovic, Alexander L.; Hills, William H.; Borgman, Milton H.; and Mersereau, Emory P., 3,925,976.

Bornhorst, Walter J.; Coleman, Steven J.; and O'Brien, James W., to Thermo Electron Corporation. Airway. 3,926,196, Cl. 128-351.000.

Borror, Alan L.; Hill, Ruth Linda; and Garcia, Paulina P., to Polaroid Corporation. Novel chemical synthesis. 3,926,971, Cl. 260-240.600.

Borysiewicz, Richard: *See—*
Roedel, Charles W.; and Borysiewicz, Richard, 3,927,265.

Bost, Howard W. Emergency eye wash fountain apparatus. 3,925,829, Cl. 4-166.000.

Bouchaudon, Jean; Le Roy, Pierre; and Messer, Mayer Naoum, to Rhone-Poulenc, S.A. Process for the preparation of ampicillin. 3,926,956, Cl. 260-239.100.

Boucher, Raymond Marcel Gut. Biocidal electromagnetic synergistic process. 3,926,556, Cl. 21-54.00R.

Boudreau, Donald F.: *See—*
Duchesneau, Eugene A., Jr.; and Boudreau, Donald F., 3,926,889.

Bourdin, Francois; Chizat, Francois; Costantini, Michel; and Jouffret, Michel, to Rhone-Poulenc S.A. Process for the preparation of alkylphenols. 3,927,122, Cl. 260-621.00G.

Bourdin, Francois; Chizat, Francois; Costantini, Michel; and Jouffret, Michel, to Rhone-Poulenc S.A. Process for the preparation of alkylphenols. 3,927,123, Cl. 260-621.00G.

Bouyoucos, John V., to Hydroacoustics, Inc. Drill steel for percussive drilling devices. 3,926,265, Cl. 173-80.000.

Bowcott, Roy Price, to Lucas Electrical Company Limited, The. Method of making a face commutator. 3,925,881, Cl. 29-597.000.

Bowen, Stephen T., to Dart Industries, Inc. Crosslinkable thermoplastic compositions and processes therefor. 3,926,902, Cl. 260-40.00R.

Bowen Tools, Inc.: *See—*
Slator, Damon T., 3,926,260.

Bower, James C. Test apparatus for high pressure container. 3,926,036, Cl. 73-37.000.

Bowers, Russell E.: *See—*
McInnes, Robert, 3,926,666.

Bowman, Harry P.: *See—*
McInnes, Robert, 3,926,666.

Bozer, Keith B.; and Brown, Lloyd H., to Quaker Oats Company, The. Method of fabrication of furan resin bonded fiber reinforced articles by spray-up technique. 3,927,139, Cl. 260-829.000.

Bozsanyi, William G. Hair clipper for the nose and ears. 3,925,888, Cl. 30-29.500.

BP Chemicals International Limited: *See—*
Fogg, Sidney George; King, Peter Graham; and Yeoman, Elfed, 3,926,877.

Brach, Paul J.; and Six, Hugh A., to Xerox Corporation. Process of making X-form metal phthalocyanine. 3,927,026, Cl. 260-314.500.

Braden, Ralph S.; Pugh, Cecil C.; and Rigg, Ralph R., to General Motors Corporation. Ice level sensing arm retractor. 3,926,007, Cl. 62-137.000.

Bradley, Frank R. Instrument for measuring harmonic distortion in telephone transmission. 3,927,281, Cl. 179-175.30R.

Bradley, John J.; and Nystrand, Ernst Daniel, to Paper Converting Machine Company. Method for storage of wound rolls of paper. 3,926,299, Cl. 198-20.00R.

Bradley, Ronnie A.; Miller, William H.; and Sease, John D., to United States of America, Energy Research and Development Administration. Volumetric dispenser for small particles from plural sources. 3,926,344, Cl. 222-145.000.

Brandenburg, John T.: *See—*
Wilson, Raymond F.; Peck, Reese A.; Estes, John H.; and Brandenburg, John T., 3,926,779.
Braun Aktiengesellschaft: *See—*
Bauser, Herbert; and Fischer, Dieter, 3,927,354.
Brendling, Lennart. Container. 3,926,233, Cl. 150-2.500.
Brendlinger, Edward C.; Higgs, Richard F.; and Kharouf, Issa J., to United States Steel Corporation. Electrolytic treating apparatus. 3,926,767, Cl. 204-206.000.
Breslow, David S.; and Simpson, David A., to Hercules Incorporated. Photopolymer lithographic plate element. 3,926,642, Cl. 96-115.00R.
Breslow, Jeffrey D.; and Kaelin, Bette M., to Marvin Glass & Associates. Board game apparatus utilizing two chance devices. 3,926,438, Cl. 273-134.00C.
Brett, Thomas J., Jr.: *See—*
Cantor, Stephen E.; and Brett, Thomas J., Jr., 3,927,067.
Breuer, Hermann, to E. R. Squibb & Sons, Inc. Acylthiomethyl esters of cephalosporins. 3,926,985, Cl. 260-243.00C.
Breuer, Hermann: *See—*
Treuner, Uwe D.; and Breuer, Hermann, 3,926,979.
Treuner, Uwe D.; and Breuer, Hermann, 3,926,980.
Treuner, Uwe D.; and Breuer, Hermann, 3,926,983.
Brewer, Howell K.: *See—*
Petersons, Aivars V.; and Brewer, Howell K., 3,926,239.
Brewster, Roger F., to General Motors Corporation. Rectifier circuit for providing six-phase rectification of three-phase alternating current. 3,927,362, Cl. 321-5.000.
Breyer, Frederick; Davis, George T.; and Krusche, Edwin C., to Hollymatic Corporation. Apparatus for distributing particles. 3,926,146, Cl. 118-24.000.
Bridgestone Tire Company Limited: *See—*
Hayashi, Noriyuki; Sasaki, Kenji; Inaba, Hideaki; and Nonaka, Koushi, 3,927,144.
Brill, Richard Henry: *See—*
Eaton, John Littell, Jr.; Brill, Richard Henry; and Myers, Walter E., 3,926,333.
Brinly-Hardy Co., Inc.: *See—*
Doering, Charles W., 3,926,108.
Bristow, Norman William: *See—*
Adams, Stuart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, 3,927,029.
Britain, Cecil E., to Britain, Muriel M.; Dickinson, Charles F.; Dickinson, Ryta M.; and Bump, Norva M. Liquid plastic repair composition and method. 3,926,895, Cl. 260-30.40R.
Britain, Muriel M.: *See—*
Britain, Cecil E., 3,926,895.
British Broadcasting Corporation: *See—*
Rainger, Peter, 3,927,250.
Brizgys, Bernardas: *See—*
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Broadway, Alexander Richard William; Fong, William; and Rawcliffe, Gordon Hindle, to National Research Development Corporation. Electric motors. 3,927,358, Cl. 318-224.000.
Brocklehurst, Charles E., to Riegel Textile Corporation. Counting and segregating mechanism for individual articles. 3,926,334, Cl. 221-7.000.
Brodsky, Harvey A.: *See—*
Fish, Leonard A.; Brodsky, Harvey A.; and Weitzel, Bruce A., 3,927,264.
Broms, Bengt; and Wager, Oleg, to AB Fodervavnader. System of armouring earth. 3,925,994, Cl. 61-39.000.
Brook, Richard J.: *See—*
Whelan, James M.; and Brook, Richard J., 3,926,854.
Brooks, Cecil M., to BLS Associates. Selectively repositionable fastener. 3,926,529, Cl. 403-4.000.
Brooks, Leon E.; and White, James T., to Cap-Con International, Inc. Method and apparatus of freezing a plug in a pipe for pressure testing. 3,926,006, Cl. 62-66.000.
Brooks, Merle H. Piggyback mogul grader. 3,926,262, Cl. 172-780.000.
Brooks, Wayne D.; and Hendricks, Thomas L., to Magna Machine & Tool Co. Shuttle loader for press. 3,926,032, Cl. 72-419.000.
Brotzmann, Karl: *See—*
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans-Georg, 3,926,618.
Brown Brothers Engineering Limited: *See—*
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Brown, Lloyd H.: *See—*
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Brown, Neil L., to United States of America, Navy. Conductivity, temperature and pressure measuring system. 3,926,056, Cl. 73-398.0AR.
Brown, Richard E.; and Shavel, John, Jr., to Warner-Lambert Company. Imidazolyl benzofurans. 3,927,023, Cl. 260-309.600.
Brown, Robert M., to Atlantic Research Corporation. Signal identification system. 3,927,259, Cl. 179-1.0MN.
Brown, Robert M.: *See—*
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Bruckner Apparatebau GmbH: *See—*
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Bruckner, Kurt. Wet treatment process for textiles. 3,926,552, Cl. 8-155.100.
Bruder, Joseph Albert, to Calspan Corporation. Method and apparatus for off-boresight angle correction for monopulse radars with slow agc normalization. 3,927,406, Cl. 343-16.00M.
Bruderer, Werner: *See—*
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Brunie, Jean-Claude; and Crenne, Noel, to Rhone-Poulenc S.A. Process for the preparation of mixtures of cycloalkanols and cycloalkanones. 3,927,105, Cl. 260-586.00P.
Brut, Gerard Yvan: *See—*
Humbert, Jean Jacques; Thomas, Jean Pierre Francis; Brut, Gerard Yvan; and Gounou, Jean Marie Joseph Elie, 3,926,697.
Bryson, Jay G., to Goodyear Tire & Rubber Company, The. Method of preparing nonconjugated diolefins. 3,927,137, Cl. 260-680.00B.
Buchschacher, Paul: *See—*
Furst, Andor; Buchschacher, Paul; Kagi, Dieter; Meier, Werner; Muller, Marcel; and Widmer, Erich, 3,927,032.
Buck, Sheldon W., to Charles Stark Draper Laboratory, Inc., The. Gravity gradiometer. 3,926,054, Cl. 73-382.000.
Buckley, Donald J., Sr.: *See—*
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Bucolo, Giovanni, to Calbiochem. Enzymatic ethanol assay. 3,926,736, Cl. 195-103.50R.
Budziarek, Richard: *See—*
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Budzinski, Roger R.: *See—*
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Buford, J. Philip, to Recon Corporation. Apparatus and method for automatically separating magnetic from non-magnetic substances. 3,926,792, Cl. 209-215.000.
Bump, Norva M.: *See—*
Britain, Cecil E., 3,926,895.
Bunker, James W., to Hi-Shear Corporation. Separation nut. 3,926,090, Cl. 85-33.000.
Bunker Ramo Corporation: *See—*
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Bunker Ramo Corporation: *See—*
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Burch, Darrell E.: *See—*
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Burgers, August, to Europatent S.A. Door frame. 3,925,934, Cl. 49-504.000.
Burgess, Kenneth G., to Hydrospace Industries, Inc. Silver recovery system. 3,926,768, Cl. 204-229.000.
Burke, William F.; Crowell, Lee T.; Greenwood, Robert C.; and Jones, Thomas E., to Pan-Nova, Inc. Coded token and acceptor. 3,926,291, Cl. 194-4.00F.
Burkholder, Ward J., to Goodyear Tire and Rubber Company, The. Process for the neutralization of alkyl aromatic hydroperoxide rearrangement reaction products. 3,927,124, Cl. 260-621.00A.
Burns, Kenneth S.; Ferment, George R.; and Waugh, Roger C., to Cellanese Corporation. Carbonaceous tapes. 3,926,228, Cl. 139-420.00R.
Burns, Ronald N.; Landwehr, Dewayne A.; Schroeder, Roger H.; Vogelei, Robert A.; and Zeller, Gary P., to General Motors Corporation. Shock absorbing buffer assembly. 3,926,462, Cl. 293-63.000.
Burroughs Corporation: *See—*
Moister, Douglas E., Jr., 3,926,360.
Burton, George; Davies, John Sydney; and Hubbard, Ann Frances, to Beecham Group Limited. Carbenicillin analogues. 3,926,955, Cl. 260-239.100.
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Holcombe, Frank O., Jr., 3,926,892.
Bush, John B., Jr.: *See—*
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Busso, Giuseppe, to Alfa Romeo S.p.A. Rack-and-pinion steering gear box incorporating a damper for motor vehicles. 3,926,070, Cl. 74-498.000.
Butti, Adriano; and Prino, Giuseppe, to Crinos Industria Farmacobiologica SpA. Pharmaceutical compositions comprising mixed salts of sulfoglycopeptides with metal and organic bases. 3,926,921, Cl. 424-177.000.
C. Conradty, Firma: *See—*
Koziol, Konrad; Rathjen, Hans-Carl; and Sieberer, Karl-Heinz, 3,926,773.
C. Evans & Sons Limited: *See—*
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C. L. Frost & Son, Inc.: *See—*
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c/o E. I. Du Pont de Nemours & Co.: *See—*
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Cadotte, John E., to United States of America, Interior. Reverse osmosis membrane. 3,926,798, Cl. 210-23.000.
Cahen, Raymond M.; Debus, Henri R.; and Andre, Jacques M. J. G., to Labofina S. A. Oxidation catalysts. 3,926,852, Cl. 252-456.000.
Cake, Arthur F.: *See—*
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Caliendo, Joseph L. Rotary toothbrush. 3,925,841, Cl. 15-23.000.
California Institute of Technology: *See—*
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Callander, Sidney Edward, to Beecham Group Limited. Preparation of penicillin salts. 3,926,958, Cl. 260-239.100.
Callies, Dieter; Frank, Gunter; and Graf vom Hagen, Siegbert, to Kyberna GmbH. Ignition device for internal combustion engines. 3,926,557, Cl. 123-148.00E.
Calspan Corporation: *See—*
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Cam Gears Limited: *See—*
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Cameron Iron Works, Inc.: *See—*
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Camp, Lionel S., to Woods, M. Bruce; and Renfro, Julian C., part interest to each. Starting circuit for engine utilizing fuel injection pump. 3,926,167, Cl. 123-179.00L.
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Canadian Patents and Development Limited: *See—*
Chapman, George D., 3,926,523.
Dimyan, Magid Y., 3,927,398.
Cannon, Thomas C., Jr., to Cannon, Thomas C., Jr.; and Coy, Brent E. Remote controlled vehicle systems. 3,926,434, Cl. 273-86.00B.
Cantor, Stephen E., to Uniroyal, Inc. Metal-rubber adhesion system. 3,926,703, Cl. 156-124.000.
Cantor, Stephen E.; and Brett, Thomas J., Jr., to Uniroyal, Inc. Polyols containing cyanoalkyl ether groups. 3,927,067, Cl. 260-465.600.
Cantrell, Ben H., to United States of America, Navy. Technique for ranking data observations. 3,927,391, Cl. 340-146.200.
Cap-Con International, Inc.: *See—*
Brooks, Leon E.; and White, James T., 3,926,006.
Carder, Victor H. Flow control device. 3,926,213, Cl. 137-504.000.
Carlick, Daniel J.: *See—*
Rosen, George; Carlick, Daniel J.; and Reiter, Ralph H., 3,926,638.
Rosen, George; Carlick, Daniel J.; and Reiter, Ralph H., 3,926,639.
Carlson, Paul A.; and Cake, Arthur F., to Wagner Electric Corporation. Self-adjusting condition-responsive control circuit. 3,927,336, Cl. 307-308.000.
Caron, Lionel, to Bell Telephone Laboratories, Incorporated. Conditional skew compensation arrangement. 3,927,392, Cl. 340-146.1BE.
Carpenter, Kenneth B., to Ethyl Corporation. Apparatus for handling rolls. 3,926,466, Cl. 294-64.00R.
Carpentier, Felix Joanna Petrus: *See—*
Wuyts, Oscar; Carpentier, Felix Joanna Petrus; and Wouters, Ludovicus Josephus Albertus, 3,927,277.
Carter, Ralph E., to General Electric Company. Process for preparing sintered uranium dioxide nuclear fuel. 3,927,154, Cl. 264-.500.
Cartwright, Ronald Forrester: *See—*
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Case, Derek Frank. Method of manufacturing multi-track magnetic heads. 3,925,884, Cl. 29-603.000.
Casio Computer Co., Ltd.: *See—*
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Cassella Farbwerke Mainkur AG: *See—*
Meyer, Artur; Gotsmann, Ulrich; and Meyer, Ernst, 3,927,012.
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Caterpillar Tractor Co.: *See—*
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Fuzzell, Joe E., 3,927,399.
Nerstad, Karl A., 3,926,288.
Catron, Marvin C. Stacking trays and container for persihable items. 3,926,363, Cl. 229-2.500.
Cauge, Thomas P.; and Kocsis, Joseph, to Signetics Corporation. Double diffused metal oxide semiconductor structure with isolated source and drain and method. 3,926,694, Cl. 148-187.000.
Cavalear, Charles T., to Varian Associates. Method for making waveguide components. 3,925,883, Cl. 29-600.000.
Cavell, Ian William: *See—*
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Cellanese Corporation: *See—*
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Cengel, John A.; and Puskas, Imre, to Standard Oil Company. Process of making alkenyl succinic anhydride. 3,927,041, Cl. 260-346.800.
Center, John L., to Vicra Sterile, Inc. Two layer sterile packaging. 3,926,309, Cl. 206-364.000.
Centrax Limited: *See—*
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Centronics Data Computer Corporation: *See—*
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Ceskoslovenska akademie ved: *See—*
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Cessna, Lawrence C., Jr., to Hercules Incorporated. Thermosetting compositions containing poly(arylacetylenes) and an aromatic ring compound having the rings joined through a keto group. 3,926,897, Cl. 260-32.80R.
Champion International Corporation: *See—*
Roth, Clarence Edward, Jr.; Hughes, Robert L.; and Thompson, Kenneth F. (said Kenneth F. Thompson assors. to), 3,927,245.
Chance, James L.; and Han, Shu Tang, to Beloit Corporation. Hot wire drying. 3,925,906, Cl. 34-18.000.
Chang, Catherine Teh-lin, to Du Pont de Nemours, E. I., and Company. Photopolymerizable compositions comprising initiator combinations comprising thioxanthenones. 3,926,643, Cl. 96-115.00P.
Chao, Albert L.; and Chao, Ethel. Luminated table top with multiple games roll chart. 3,926,439, Cl. 273-136.00A.
Chao, Ethel: *See—*
Chao, Albert L.; and Chao, Ethel, 3,926,439.
Chapman, George D., to Canadian Patents and Development Limited. Optical system for angle measurement by interferometry. 3,926,523, Cl. 356-110.000.
Chappell, Robert L., to International Flavors & Fragrances Inc. Fragrance materials containing cis-2-n-pentyl cyclopropane-1-carboxylic acid. 3,926,860, Cl. 252-522.000.
Charles Stark Draper Laboratory, Inc., The: *See—*
Buck, Sheldon W., 3,926,054.
Charlesworth, Donald, to Pilkington Brothers Limited. Glass melting tank. 3,926,606, Cl. 65-135.000.
Chartrin, Jean Lucien Yves: *See—*
Gendrot, Andre Jean-Claude; and Chartrin, Jean Lucien Yves, 3,926,511.
Charville, William Thomas: *See—*
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Chatfield, Eric John; and Nielsen, Verner Henrick, to Ontario Research Foundation. Method and apparatus for deriving from a scanning electron microscope signals that can be displayed stereoscopically. 3,927,320, Cl. 250-307.000.
Chemie Linz Aktiengesellschaft: *See—*
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Chemische Werke Huls Aktiengesellschaft: *See—*
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Chemotronics International, Inc.: *See—*
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Chen, Chia M.: *See—*
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Chen, Stephen S., to General Motors Corporation. Engine starter motor control for preventing damage during hydraulic lock. 3,927,359, Cl. 318-434.000.
Chen, Tien C.; and Ho, Irving T., to International Business Machines, Corporation. Arithmetic system for halving and doubling decimal numbers. 3,927,311, Cl. 235-159.000.
Chenot, Charles F., to GTE Sylvania Incorporated. Method of converting brushite to monetite crystals with controlled variation in crystal habit. 3,927,180, Cl. 423-308.000.

Cheung, Mo-Fung; and Dickie, Ray A., to Ford Motor Company. Method of making aqueous coating compositions of acrylic polymer latex, acrylic polymer solution, aminoplast and acrylic stabilizer polymer. 3,926,888, Cl. 260-29.4UA.

Chevron Research Company: *See—*
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Chiba Fine Chemical Co. Ltd.: *See—*
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Chibata, Ichiro; Ito, Hiroshi; Morimoto, Tomoaki; Taniguchi, Yukio; and Fujimoto, Tsuneo, to Tanabe Seiyaku Co., Ltd. Method of continuous automatic incubation of bacteria and determination of growth thereof, and apparatus therefor. 3,926,733, Cl. 195-103.500.

Chinuki, Takashi: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,927,114.

Chiou, Jackson K. S.; and Jones, Ronald E., to Texaco Inc. Separation and recovery of secondary alkyl primary amines. 3,927,102, Cl. 260-583.00N.

Chizat, Francois: *See—*
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Choay S.A.: *See—*
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Choi, Jae Hong; and Miller, Stephen Allen, to DAP, Inc. Pigmented primer composition. 3,926,898, Cl. 260-33.40R.

Chow, Hirotsura: *See—*
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Chow, Ling George; and Bartran, David S., to Honeywell Information Systems Inc. Bias field apparatus for magnetic domain memory device. 3,927,397, Cl. 340-174.0TF.

Chow, Poo. Reconstituted board products from plant-fiber residues. 3,927,235, Cl. 428-302.000.

Christian, Donald K. Fabric bulking unit. 3,925,865, Cl. 26-18.500.

Christman, Robert D.; and Yanik, Stephen J., to Gulf Research & Development Co. Plural stage residue hydrodesulfurization process with hydrogen sulfide addition and removal. 3,926,784, Cl. 208-210.000.

Christy, Betty L.: *See—*
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Ciastula, Tadeusz Leopold; Rogers, Victor Alfred Baden; and Balmford, David Ernest Hall, to Westland Aircraft Ltd. Semi-rigid rotor systems for rotary wing aircraft. 3,926,536, Cl. 416-135.000.

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Ciba-Geigy Corporation: *See—*
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Ferrini, Pier Giorgio; Haas, Georges; and Rossi, Alberto, 3,926,961.
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Schwarzenbach, Kurt; and Rosenberger, Siegfried, 3,927,150.
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Cichowski, Robert S., to Phillips Petroleum Company. Catalysts compositions. 3,926,845, Cl. 252-432.000.

Cikalon-Vliesstoffwerk GmbH: *See—*
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Circle, Sidney Joseph; Fergle, Richard Raymond; Watkins, Leslie Ray; and Hooton, Daniel Edwards, to Anderson, Clayton & Co. Protein recovery process from defatted soybeans using water to reduce amount of miscible solvent. 3,926,940, Cl. 260-123.500.

Cistone, David R., to Kerr Glass Manufacturing Corporation. Safety closure. 3,926,328, Cl. 215-220.000.

Citizen Watch Co., Ltd.: *See—*
Ishizuka, Shinichi; and Mihara, Kuniyuki, 3,926,078.
Tanaka, Eiichiro; Nishimura, Katsuo; Shimizu, Hiroshi; and Koshi, Masao, 3,926,502.

Citta, Richard W., to Zenith Radio Corporation. Wireless speaker system using infra-red link. 3,927,316, Cl. 250-199.000.

City Auto Upholstering Co.: *See—*
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Claes, Frans Henri, to Agfa-Gevaert. Method of preparing a polyphase system. 3,926,654, Cl. 106-137.000.

Clauss, Karl; Jensen, Harald; and Luck, Erich, to Hoechst Aktiengesellschaft. 3,4-Dihydro-1,2,3-oxathiazine-4-ones and a process for their preparation. 3,926,976, Cl. 260-243.00R.

Clauss, Karl; Schnabel, Horst; and Jensen, Harald, to Hoechst Aktiengesellschaft. Process for preparing 3,4-dihydro-1,2,3-oxathiazine-4-ones. 3,926,981, Cl. 260-243.00R.

Closner, John J.; Marchaj, Tadeusz Josef; and Wichman, Sven Hjalmar, to Preload Technology, Inc. Prestressed concrete tanks for liquid natural gas tankers. 3,926,134, Cl. 114-74.00R.

Coburn, Michael D.; and Benziger, Theodore M., to United States of America, Energy Research and Development Administration. Process for producing 1,5-diacetyl-3,7-dinitro-1,3,5,7-tetraazacyclooctane. 3,926,953, Cl. 260-239.0BC.

Coffey, Gerald P.: *See—*
Li, George S.; and Coffey, Gerald P., 3,926,926.

Cohen, Norman R.; and Syrmopoulos, Demosthenes S., to George A. Goulston Company. Textile fiber lubricants. 3,926,816, Cl. 252-8.900.

Cole, Edward L.: *See—*
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Cole, Susan Margaret; Mason, David Robert; and Rothon, Roger Norman, to Imperial Chemical Industries Limited. Coating composition. 3,926,658, Cl. 106-287.000.

Cole, Sylvan: *See—*
Genest, Leonard J.; Feagin, Frederick E.; Cole, Sylvan; and Messner, Daryle, 3,926,021.

Coleman, Claude M. Agitating bag rack and baffle structure for furnace cleaners. 3,926,596, Cl. 55-304.000.

Coleman, Richard L.; Cummins, Billy H.; and Ashton, William B., to Texaco Inc. Production of lubricating oils. 3,926,786, Cl. 208-264.000.

Coleman, Steven J.: *See—*
Bornhorst, Walter J.; Coleman, Steven J.; and O'Brien, James W., 3,926,196.

Colgate-Palmolive Company: *See—*
Baines, Eric; Cropper, Edwin; and Forshaw, Sydney James, 3,927,201.
Gerecht, John Fred, 3,926,861.
Harvey, Kenneth; and Lee, Sydney, 3,927,202.
Mangeli, John Kilolo, 3,926,827.
Perla, Giulio; and Mattiello, Giuseppe, 3,926,863.
Smith, Brian Robson; and Tomlinson, Kenneth, 3,926,829.
Sundby, Bjorn, 3,927,073.
Taylor, Glenn N., 3,926,189.

Colli, J. Louise, to Lawrence Peska Associates, Inc. Sandal shoe. 3,925,915, Cl. 36-11.500.

Collins, William C. Injector for soil treating liquids. 3,926,131, Cl. 111-6.000.

Colln, Reimer; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. O-alkyl-O-pyrazolopyrimidine-thiono-phosphoric acid ester amides. 3,926,998, Cl. 260-256.50R.

Colt Industries Operating Corporation: *See—*
Bell, Oliver A., Jr., 3,927,293.

Coltrinari, Enzo L.: *See—*
Goren, Mayer B.; and Coltrinari, Enzo L., 3,927,169.

Combustion Engineering, Inc.: *See—*
Dupen, Clive Frederick George, 3,926,722.

Cominco Ltd.: *See—*
Geiger, Kenneth Daniel; Horvath, Steven Joseph; Kallay, Victor Paul; Seymour, Theodore Joseph; Watson, Thorpe Wesley; and Zervoudis, John, 3,926,247.

Commercial Decal, Inc.: *See—*
Weingrad, Saul; Wahl, Albert J.; Mucha, Richard C.; and Gould, Robert E., 3,926,710.

Communications Satellite Corporation: *See—*
Sciulli, Joseph A.; Campanella, Samuel Joseph; and Costales, Rene, 3,927,268.

Compagnie des Ateliers et Forges de la Loire (St Chamond, Firminy, St Etienne, Jacob-Holtzer): *See—*
Mornas, Jean Philippe, 3,926,024.

Compagnie Generale d'Automatisme: *See—*
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Computer Specialties Corporation: *See—*
Silver, Edward S.; and Tucker, Robert E., 3,926,513.

Concast AG: *See—*
Meier, Walter; Zeller, Josef; Koenig, Peter J.; Bruderer, Werner; and Schmid, Markus, 3,926,244.

Concha C, Teodosio Jose, to Ver-Con, Inc. Astrological apparatus. 3,925,917, Cl. 40-31.000.

Cone, Irwin C., to Gates Rubber Company, The. Fiber-loaded windshield wiper superstructure. 3,925,844, Cl. 15-250.420.

Connelly, Lloyd E.: *See—*
Musgrove, Ronald R.; and Connelly, Lloyd E., 3,926,380.

Conrad Pickel Studios, Inc.: *See—*
Pickel, Robert Paul, 3,925,944.

Consolazio, George A.: *See—*
Kalafatas, Nicholas J.; Rosenthal, Harold; and Consolazio, George A., 3,927,221.

Constantinescu, Petre; Hristea, Nicolae; Blebea, Speranta; Hristea, Ieronim; Huniadi, Mihai; and Gabureanu, Mircea, to Intreprinderea 30 Decembrie. Air conditioning, soil irrigation, fertilization and pest-fighting plant for use in greenhouses. 3,925,928, Cl. 47-17.000.

Construction Engineering Products: *See—*
Franc, Eugene K., 3,926,400.

Container Corporation of America: *See—*
Smith, Curtis J., 3,926,098.

Continental Can Company, Inc.: *See—*
O'Neill, Roger M.; and Kennedy, John B., Jr., 3,926,337.
Zavasnik, Fred J., 3,926,324.

Continental Oil Company: *See—*
Durr, Albert M.; and Krenowicz, Robert A., 3,926,823.
Libbey, William J., 3,927,058.
Libbey, William J.; and Lundeen, Allan J., 3,927,059.
Libbey, William J., 3,927,060.
Thomas, Samuel Charles, Jr.; and Cease, Vincent Jay, 3,927,081.

Cook, Martin Christopher: *See—*
Gregson, Michael; Cook, Martin Christopher; and Gregory, Gordon Ian, 3,926,957.

Cook, Melvin A.; and Hagmann, Mark J., to Ireco Chemicals. Explosive compositions containing metallic fuel particles and method of preparation thereof. 3,926,698, Cl. 149-44.000.

Cook, Thomas H.: *See—*
Beck, Herman D.; and Cook, Thomas H., 3,926,362.

Cooper, Charles S.: *See—*
Lawson, John B.; and Cooper, Charles S., 3,926,381.

Cooper, Glenn F., to Standard Electric Time Corporation. Time division multiple access communication system for status monitoring. 3,927,404, Cl. 340-413.000.

Coors Porcelain Company: *See—*
Fenerty, Michael J.; and Mustoe, David L., 3,926,443.

Copal Company Limited: *See—*
Inoue, Nobuyoshi, 3,927,416.

Copeland, George G., to Copeland Systems Inc. Method for producing ammonia-base pulping liquor from spent liquor. 3,927,174, Cl. 423-155.000.

Copeland Systems Inc.: *See—*
Copeland, George G., 3,927,174.

Copenhafer, Dennis Lee, to Bell Telephone Laboratories, Incorporated. Duplex signaling circuit. 3,927,257, Cl. 178-60.000.

Copolymer Rubber & Chemical Corporation: *See—*
Boozer, Charles E., 3,926,901.

Corbett, Paul M.; and Fedock, Michael P., to SCM Corporation. Flux for continuous casting of steel. 3,926,246, Cl. 164-56.000.

Corbin, Christopher L. T.: *See—*
Crissy, Charles F.; Sherwin, Owen W.; and Corbin, Christopher L. T., 3,926,467.

Cordes, Linus F.; and Garfinkel, Marvin, to General Electric Company. Schottky barrier contacts and methods of making same. 3,927,225, Cl. 427-84.000.

Cordone, Leonard G.; Donakowski, William A.; Morgan, John R.; and Roemming, Karl, to Ford Motor Company. Making an anode assembly. 3,926,772, Cl. 204-283.000.

Corning Glass Works: *See—*
Andrus, Ronald L.; and Reade, Richard F., 3,926,602.
Miller, David M., 3,926,648.
Reade, Richard F., 3,926,838.

Cosden Oil & Chemical Company: *See—*
Medley, Ronald D., 3,927,160.
Watson, James M., 3,927,110.

Coski, William D., to Ingersoll-Rand Company. Method of boring rock. 3,926,268, Cl. 175-62.000.

Cosse, Paul Andre: *See—*
Respen, Yves Jean; Cosse, Paul Andre; and Economopoulos, Mario, 3,926,689.

Costales, Rene: *See—*
Sciulli, Joseph A.; Campanella, Samuel Joseph; and Costales, Rene, 3,927,268.

Costantini, Michel: *See—*
Bourdin, Francois; Chizat, Francois; Costantini, Michel; and Joufret, Michel, 3,927,122.
Bourdin, Francois; Chizat, Francois; Costantini, Michel; and Joufret, Michel, 3,927,123.

Costanza, Carl C.; Weber, Walter W.; Betlejewski, Frank W.; and Frystak, Richard, to Bell & Howell Company. Slide projector loading-unloading station. 3,926,514, Cl. 353-113.000.

Costruba, Peter, to Angeles Metal Trim Co. Support structure for shelving. 3,925,939, Cl. 52-36.000.

Coulter Electronics, Inc.: *See—*
Liedholz, Gerhard A., 3,927,317.

Courtaulds Limited: *See—*
Flavell, John; and Jeffcoat, Keith, 3,926,016.

Cowell, Thomas E., to Rockwell International Corporation. Device for guiding sensor movement within a tube. 3,926,040, Cl. 73-67.80S.

Cox, Donald Clyde; Langseth, Rollin Edward; Reudink, Douglas Otto John; and Rustako, Anthony Joseph, Jr., to Bell Telephone Laboratories, Incorporated. Linear amplification using nonlinear devices and inverse sine phase modulation. 3,927,379, Cl. 330-10.000.

Cox, Joseph Henry, Jr., to Cincinnati Milacron Inc. Collet-type work holder. 3,926,447, Cl. 279-57.000.

Coy, Brent E.: *See—*
Cannon, Thomas C., Jr., 3,926,434.

Coyne Cylinder Company: *See—*
Sisco, Willie J., Jr.; Long, Cecil L.; and Kifer, James M., 3,926,652.

Cragar, Darryl E.: *See—*
Willis, Gordon G.; Ivy, John B.; Boozalis, Theodore S.; and Cragar, Darryl E., 3,927,132.

Craig, John D., Jr.: *See—*
Allen, James S.; and Craig, John D., Jr., 3,926,760.

Crane, Paul R. Portable saw mill. 3,926,086, Cl. 83-801.000.

Crenne, Noel: *See—*
Brunie, Jean-Claude; and Crenne, Noel, 3,927,105.

Creswick, William E.; and Hunt, Patrick J., to Algoma Steel Corporation, Limited, The. High-strength low-alloy steel. 3,926,686, Cl. 148-12.00F.

Creusot-Loire Enterprises: *See—*
Gay, Pierre, 3,926,353.

Crinos Industria Farmacobiologica SpA: *See—*
Butti, Adriano; and Prino, Giuseppe, 3,926,921.

Crissy, Charles F.; Sherwin, Owen W.; and Corbin, Christopher L. T., to Aeroquip Corporation. Aircraft cargo hook. 3,926,467, Cl. 294-83.00R.

Crist, Buckley: *See—*
Low, Jack B.; Crist, Buckley; and Zoltner, Thomas J., 3,926,347.

Croft, Robert; and Lippiatt, Raymond, to Avon Rubber Company Limited. Method of resealing pipe joints. 3,927,158, Cl. 264-36.000.

Crone, John M., Jr.: *See—*
Suggitt, Robert M.; and Crone, John M., Jr., 3,926,842.

Cropper, Edwin: *See—*
Baines, Eric; Cropper, Edwin; and Forshaw, Sydney James, 3,927,201.

Crossman, Richard L., to Goodyear Aerospace Corporation. Telescopic piston for added brake wear adjustment. 3,926,283, Cl. 188-196.00B.

Crovetti, Aldo Joseph; Blank, Artur; and Germann, Richard Paul, to Abbott Laboratories. Process for producing amino phenyl iodomethyl sulfones. 3,927,100, Cl. 260-578.000.

Crowell, Lee T.: *See—*
Burke, William F.; Crowell, Lee T.; Greenwood, Robert C.; and Jones, Thomas E., 3,926,291.

Crown Zellerbach Corporation: *See—*
Ozretich, Thomas M., 3,927,118.

Csicsery, Sigmund M., to Chevron Research Company. Single stage cold start and evaporative control system using a bimodal adsorbent bed. 3,926,168, Cl. 123-180.00R.

Cuccio, John D.: *See—*
La Fata, John E.; and Cuccio, John D., 3,925,923.

Cullen, Ray H.; and Aker, Jimmie R., to Roy H. Cullen Research. Method and apparatus for earth boring. 3,926,269, Cl. 175-104.000.

Culligan International Company: *See—*
Elliott, Eugene R., 3,926,071.

Cummings, William M., to Texaco Inc. Hydrocarbyl amine substituted propionic ester and motor fuel composition containing same. 3,926,578, Cl. 44-58.000.

Cummins, Alonzo E.: *See—*
Evans, Robert T.; Cummins, Alonzo E.; and Anderson, Merlin F., 3,926,254.

Cummins, Billy H.: *See—*
Coleman, Richard L.; Cummins, Billy H.; and Ashton, William B., 3,926,786.

Cupo, William J. Method of assembling carton blanks. 3,926,096, Cl. 93-49.00M.

Curelop, Edward J.; and Marincic, Nikola, to P. R. Mallory & Co. Inc. Reactive mixture for fabricating amalgamaled chloride free zinc anode. 3,926,672, Cl. 136-30.000.

Curtis, Donald A., to TRW Inc. Method of joining bolts or rivets to nuts. 3,925,876, Cl. 29-509.000.

Custer, Peter Anderson. Motion picture film soundtrack and method for production thereof. 3,926,633, Cl. 96-68.000.

Cywin, Allen, to United States of America, Environmental Protection Agency. Disposal of waste heat. 3,926,743, Cl. 203-10.000.

Czuha, Michael, Jr., to Du Pont de Nemours, E. I., and Company. Deposition of P_1O_5 in an electrolytic moisture cell. 3,926,745, Cl. 204-1.00T.

da Costa, Nicholas Mario: *See—*
Seymour, Donald Edwin; da Costa, Nicholas Mario; and Charville, William Thomas, 3,927,203.

Dahlmeier, Stanley W.: *See—*
Dean, Gerald R., 3,926,234.

Dahlquist, Jon G. Multiple driver dynamic loud speaker. 3,927,261, Cl. 179-1.00E.

Dai Nippon Toryo Co. Ltd.: *See—*
Tsugukuni, Hideyoshi; Kano, Masafumi; and Matsuda, Mitsuhiro, 3,926,875.

Daido Seiko Kabushiki Kaisha: *See—*
Asada, Chiaki; and Watanabe, Toshiyuki, 3,926,621.

Daimler-Benz AG: *See—*
Bermanseder, Robert; and Bermanseder, Norbert, 3,926,100.

Daimler-Benz Aktiengesellschaft: *See—*
Jantzen, Hermann; Kuffel, Karl; and Puchta, Herbert, 3,926,068.
Lamm, Heinz, 3,926,539.
Paul, Jurgen; Kostelezky, Walter; and Schwerdt, Paul, 3,927,339.
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Van Winsen, Friedrich H., 3,926,454.

Dainichiswika Color & Chemicals Mfg. Co., Ltd.: *See—*
Horiguchi, Shojiro; Nakamura, Michiei; Nakajima, Keiji; and Seino, Yoshio, 3,926,830.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Yoshimura, Yoshio; Yokogawa, Kanae; and Kawata, Shigeo, 3,927,200.

Dale-Jones Corporation: *See—*
Werry, Arthur W., 3,927,315.

Damiano, John Joseph, to Amchem Products, Inc. Nitration process. 3,927,127, Cl. 260-646.000.

Danfoss A/S: *See—*
De Lepeleire, Guido Amandus, 3,926,102.
Rasmussen, Ivar, 3,926,210.

Dangles, Elsie R. M.: *See—*
Dangles, Thomas C.; and Dangles, Elsie R. M., 3,926,335.

Dangles, Thomas C.; and Dangles, Elsie R. M. Capsule or pill dispenser-sure way dial a pill. 3,926,335, Cl. 221-82.000.

D'Anna, Ronald F.; and Llewellyn, Richard E., to United States of America, Air Force. Digital test apparatus. 3,927,310, Cl. 235-153.0AC.

Dannhorn, Erich: *See—*
Wildmoser, Alfred; and Dannhorn, Erich, 3,926,591.

Dantowitz, Philip; and Holmes, William A. Vehicle automatic transmission bicycle with alternate fixed ratio or variable ratio speed sensitive power paths. 3,926,020, Cl. 74-217.00B.

Danzik, Mitchell; and House, Ralph, to Chevron Research Company. Phosphate-free carboxylate-sulfate detergents. 3,927,061, Cl. 260-458.000.

DAP, Inc.: *See—*
Choi, Jae Hong; and Miller, Stephen Allen, 3,926,898.

Darms, Roland: *See—*
Greber, Gerd; Darms, Roland; and Lohmann, Dieter, 3,926,911.

Dart Industries, Inc.: *See—*
Bowen, Stephen T., 3,926,902.

Datschefski, Arthur E.: *See—*
Deming, Dale R.; and Datschefski, Arthur E., 3,926,330.

Davidson, William E., to General Electric Company. Iron minder. 3,926,392, Cl. 248-117.100.

Davies, George; and Wertheimer, Hedda. Double reflection viewing instrument. 3,926,509, Cl. 350-301.000.

Davies, John Sydney: *See—*
Burton, George; Davies, John Sydney; and Hubbard, Ann Frances, 3,926,955.

Davis, George T.: *See—*
Breyer, Frederick; Davis, George T.; and Krusche, Edwin C., 3,926,146.

Davis, Gordon H.; and Joehler, Klaus, to Stromberg-Carlson Corporation. Automatic number identification having four-party detection. 3,927,270, Cl. 179-17.00A.

Davis, Robert E. Method for measuring conversion efficiency of catalysts. 3,926,558, Cl. 23-230.00R.

Davis, Stephen A.; Dougherty, Keith H.; Levit, Alan D.; Hendrickson, Thomas A.; and Sanderson, Kenneth R., to International Business Machines Corporation. Apparatus for processing music as data. 3,926,088, Cl. 84-462.000.

Day, Paul L.: *See—*
Konas, William W.; Day, Paul L.; and Budzinski, Roger R., 3,926,415.

Dean, Gerald R., to Dahlmeier, Stanley W. Container for storing keys. 3,926,234, Cl. 150-40.000.

De Bough, Bjorn N. Audio signalling system having probes for monitoring the characteristics of a material. 3,927,370, Cl. 324-65.00R.

Debus, Henri R.: *See—*
Cahen, Raymond M.; Debus, Henri R.; and Andre, Jacques M. J. G., 3,926,852.
De Hault, Emmanuel R. E. G. Draguez Tripels; Van Tongelen, Marcel; and Debus, Henri R., 3,927,039.

Decker, Klaus: *See—*
Zettl, Heinrich; and Decker, Klaus, 3,927,296.

Deere & Company: *See—*
Wagenhals, Fred William, 3,925,968.

Deering Milliken Research Corporation: *See—*
Foster, Larry R.; and Kuhn, Hans H., 3,927,044.
Gilpatrick, Michael William, 3,925,864.

De Falco, Gianfranco: *See—*
Zambolin, Adriano; and De Falco, Gianfranco, 3,927,274.

De Gregorio, Paul V., to Stolt-Nielsen, Inc. Multipurpose pipeline system for handling fluids on liquid cargo vessels. 3,926,135, Cl. 114-74.00R.

De Hault, Emmanuel R. E. G. Draguez Tripels; Van Tongelen, Marcel; and Debus, Henri R., to Labofina S. A. Purification of pyromellitic dianhydride. 3,927,039, Cl. 260-346.300.

Deitch, James C.; and Robert, Lawrence A., to Magnetic Controls Company. Telephone isolation jack panel. 3,927,275, Cl. 179-97.000.

de Klein, Willem J., to Akzo N.V. Process for the preparation of an unsaturated carboxylic acid. 3,927,051, Cl. 260-413.000.

Delaney, Francis Bud. Foot shower and spray device. 3,925,830, Cl. 4-182.000.

De Lepeleire, Guido Amandus, to Danfoss A/S. Air injecting apparatus for air conditioners or the like. 3,926,102, Cl. 98-102.000.

Deller, Robert J., to Pullman Incorporated. Integral clip crossmember. 3,926,530, Cl. 403-167.000.

DeLorean, John Z., to John Z. DeLorean Corporation. Racket. 3,926,431, Cl. 273-73.00D.

Del Vecchio, Oscar. Shoe having a two-part vamp. 3,925,913, Cl. 36-11.500.

de Metz, Elisabeth: *See—*
Lanoe, Bernard; and de Metz, Elisabeth, 3,927,375.

Deming, Dale R.; and Datschefski, Arthur E., to All-Steel Inc. Knockout arrangement for molded plastic electrical boxes. 3,926,330, Cl. 220-3.900.

Demmel, Edward J.: *See—*
Owen, Hartley; and Demmel, Edward J., 3,926,778.

Demole, Edouard P., to Firmenich S.A. 6,8-Dioxa-bicyclo [3.2.1] octane and 2,9-dioxa-bicyclo [3.3.1] nonane derivatives. 3,927,030, Cl. 260-340.300.

Dengel, Ferdinand; Ehrmann, Oskar; Friedrich, Ludwig; and Zimmermann, Frank, to Knoll A.G. Chemische Fabriken. Theophylline derivatives. 3,926,995, Cl. 260-256.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Kadowaki, Takashi; Iwasaki, Takao; and Matsumura, Hideki, 3,927,130.

Denley, Ronald S., to Teletype Corporation. Selectively illuminated pushbutton switch. 3,927,290, Cl. 200-314.000.

De Nora, Oronzio; Bianchi, Giuseppe; Nidola, Antonio; and Trisoglio, Giovanni, to Electronor Corporation. Method of electrowinning metals. 3,926,751, Cl. 204-105.00R.

de Paul Clark, Vincent, to Owens-Corning Fiberglas Corporation. Hardenable, water-based coating composition from aqueous latices of acrylic and vinyl compounds. 3,926,894, Cl. 260-29.6MP.

de Putter, Warner Jan, to Wavin B.V. Device for membrane filtration. 3,926,813, Cl. 210-321.000.

Der Marderosian, Dikrun; and Tremblay, Paul Albert, to W. R. Grace & Co. Method and apparatus for producing foamed thermoplastic insulation boards. 3,926,714, Cl. 156-516.000.

De Santis, Sergio; Farello, Giovanni; and Torrani, Roberto. Continuous feed device for filiform bodies particularly for rotating welding machines for pipes. 3,926,354, Cl. 226-108.000.

Desitter, Gerard; and Vivant, Gilbert, to Rhone-Poulenc S.A. Flameproofing of linear polyesters. 3,927,231, Cl. 427-390.000.

Deusing, Erich; Bernhardt, Helmut; and Durth, Wilfried, to Burger Eisenwerke Aktiengesellschaft. Food-treatment apparatus with circulated hot combustion gas. 3,926,106, Cl. 99-447.000.

Deutsche Automobilgesellschaft mbH: *See—*
Benczur-Urmossy, Gabor, 3,926,844.

Deutsche God- und Silber-Scheideanstalt vormals Roessler: *See—*
Lussling, Theodor; Schaefer, Hans; and Weigert, Wolfgang, 3,927,007.

Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler: *See—*
Birtigh, Gerhard; Parbel, Horst; and Sauer, Heinrich, 3,926,565.
Lussling, Theodor; Schaefer, Hans; and Weigert, Wolfgang, 3,926,856.
Noll, Ewald; Schaefer, Hans; Schmid, Horst; and Weigert, Wolfgang, 3,926,744.

Deutsche Texaco Aktiengesellschaft: *See—*
Meyer-Stoll, Hans-Albrecht; Wollner, Johannes; and Schittek, Hans-Heinz, 3,927,198.

Devilbiss, Roy J., to Philip Morris Inc. Punch mechanism for modifying cigarette machine magazines. 3,925,891, Cl. 30-362.000.

De Vlieg, Garrett H.: *See—*
Bissell, Sherman M.; De Vlieg, Garrett H.; and Hopland, Johan N., 3,926,479.

DeWiant Corporation: *See—*
Priceman, Seymour, 3,926,574.

D'Hooge, Richard E., to Rixson-Firemark, Inc. Electrically actuated door holder and release. 3,926,461, Cl. 292-275.000.

Diamond Shamrock Corporation: *See—*
Lieb, Donald F.; and Stillman, Neil W., 3,926,771.

Dias, Francesco: *See—*
Luhleich, Hartmut; Nickel, Hubertus; and Dias, Francesco, 3,927,187.

Dickert, Joseph J., Jr.; and Heiba, El-Ahmadi I., to Mobil Oil Corporation. Grease compositions. 3,926,820, Cl. 252-33.000.

Dickert, Joseph J., Jr.; and Rowe, Carleton N., to Mobil Oil Corporation. Lubricating compositions containing metal phosphonates. 3,927,232, Cl. 427-401.000.

Dickey-john Corporation: *See—*
Knepler, John T., 3,927,400.

Dickie, Ray A.: *See—*
Cheung, Mo-Fung; and Dickie, Ray A., 3,926,888.

Dickinson, Charles F.: *See—*
Britain, Cecil E., 3,926,895.

Dickinson, Ryta M.: *See—*
Britain, Cecil E., 3,926,895.

Dickinson, Warren D., to United States of America, Army. Vector rotator. 3,927,312, Cl. 235-189.000.

Dickmann, Daniel J.: *See—*
Fourier, Walter A.; and Dickmann, Daniel J., 3,926,879.

Diehl: *See—*
Raab, Richard, 3,926,022.

DiMarcello, Frank Vincent, to Bell Telephone Laboratories, Incorporated. Lead-free glaze for high density alumina. 3,927,238, Cl. 428-336.000.

Dimroth, Peter; Gaeng, Manfred; and Ruider, Guenther, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Azo pigments with an anthraquinonyl component and a β-hydroxynaphthoic acid component substituted by a trimellitic acid imide via an O-phenylenediamine. 3,926,943, Cl. 260-152.000.

Dimroth, Peter; and Radtke, Volker, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Dioxazine dyes. 3,926,987, Cl. 260-246.00R.

Dimyan, Magid Y., to Canadian Patents & Development Limited. Magnetic bubble propagation circuit. 3,927,398, Cl. 340-174.0TF.

Diplomat AG: *See—*
Gujer, Henri, 3,926,545.

Dixon, Charles H., to RBP Chemical Corporation. Method of preparing printed circuit boards with terminal tabs. 3,926,699, Cl. 156-3.000.

Dixon, Jack R., to Indian Head, Inc. Football passer. 3,926,170, Cl. 124-8.000.

Dixon, Percy; and Madigan, David C., to Warman, Charles Harold. Hydrometallurgical recovery of copper nickel or zinc from sulphide ores by oxidation in ammoniacal chloride or nitrate solutions. 3,927,170, Cl. 423-33.000.

Dobinson, Frank; and Pelezo, Chris A., to Monsanto Company. Process for preparing spinning solutions. 3,926,887, Cl. 260-29.20N.

Doering, Charles W., to Brinly-Hardy Co., Inc. Debris collecting apparatus. 3,926,108, Cl. 100-177.000.

Dogliotti, Amilcare, to P. Ferrero & C. S.p.A. Vacuum molded column-type display device for parallelepiped-shaped objects. 3,926,314, Cl. 211-71.000.

Dohgane, Iwao: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,927,114.

Doi, Yuzuru: *See—*
Isojima, Imao; Doi, Yuzuru; and Hara, Shinji, 3,926,290.

Doke, Jack, to Angeles Metal Trim Co. Method of constructing a prefabricated wall module. 3,925,875, Cl. 29-509.000.

Dolezel, Milan: *See—*
Stloukal, Mojmir; Syrovatka, Zdenek; Dolezel, Milan; and Stripek, Karel, 3,926,130.

Dolidze, Vladimir Romanovich: *See—*
Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovidh; Zakharova, Nina Vasilievna; Golubenko, Mikhail Afanasievich; Tolstikov, Genrikh Alexandrovich; Kholodovskaya, Rakhil Samoilovna; Shalimova, Zoya Stepanovna; Legostaeva, Taisia Vasilievna; Popov, Vasily Dmitrievich; and Dolidze, Vladimir Romanovich, 3,927,038.

Dolza, John, Sr. Segregated lean-rich fed spark ignition engine. 3,926,158, Cl. 123-75.00B.

Donakowski, William A.: *See—*
Cordone, Leonard G.; Donakowski, William A.; Morgan, John R.; and Roemming, Karl, 3,926,772.

Donn H. Gross: *See—*
O'Connell, Harry P., Jr.; and Hopster, Eugene E., 3,925,940.

Dooley, Milton T., to Reynolds Metals Company. Magneto hydrodynamic generator. 3,927,337, Cl. 310-11.000.

Dorgnon, Roger, to Societe de Prospection et d'Inventions Techniques SPIT. Electropneumatic hammer. 3,926,266, Cl. 173-110.000.

Dorr-Oliver Incorporated: *See—*
Wall, Clarence J., 3,926,129.

Dougherty, Keith H.: *See—*
Davis, Stephen A.; Dougherty, Keith H.; Levit, Alan D.; Hendrickson, Thomas A.; and Sanderson, Kenneth R., 3,926,088.

Dover Corporation: *See—*
Madden, Michael J.; Murray, Robert L.; Lemon, Stephen C.; and Ostand, Paul R., 3,926,231.

Dow Chemical Company, The: *See—*
Goralski, Christian T.; and Klingler, Thomas C., 3,927,090.
Greenawalt, Eddie Lee; and Geren, Lorenzo Dow, 3,925,963.
Gritzner, Gerhard, 3,926,769.
Gross, James R.; and McFadden, Russell T., 3,926,891.
Murchison, Craig B., 3,926,803.
Pawloski, Chester E., 3,927,004.
Quock, Billy; Kelley, Don Howard; Warneke, Sehon Lester; and Gurgiolo, Arthur E., 3,926,867.
Ruetman, Sven H.; and Watson, Richard N., 3,927,003.
Stevens, Timothy S., 3,926,559.
Ward, Joe Arthur, 3,927,131.
Willis, Gordon G.; Ivy, John B.; Boozalis, Theodore S.; and Cragar, Darryl E., 3,927,132.

Dow Corning Corporation: *See—*
Keil, Joseph W., 3,926,885.

Doyle, Thomas: *See—*
Fjarlie, Earl John; Doyle, Thomas; and Teare, Melvin John, 3,927,383.

Dresser Industries, Inc.: *See—*
Abney, Dave L.; Williams, Robert C.; and Gilbert, Horace E., 3,926,409.

Driessen, Antonius Jozephus Gerardus Cornelis: *See—*
Beijer, Louis Benjamin; Driessen, Antonius Jozephus Gerardus Cornelis; and Jacobs, Cornelis Adrianus Joannes, 3,927,343.

Dryden Corporation: *See—*
Dryden, Gale E.; and Harris, Derrick, 3,926,379.

Dryden, Eugene H., to United States of America, Air Force. Compatible scanning system. 3,927,258, Cl. 178-6.800.

Dryden, Gale E.; and Harris, Derrick, to Dryden Corporation. Syringe disintegrator. 3,926,379, Cl. 241-69.000.

Dryden, Gale E. Tubing adaptor. 3,926,458, Cl. 285-177.000.

DSO "ELPROM": *See—*
Pissarev, Angel Nikolaev; Miteva, Maria Pancheva; Balabanov, Ivan Velev; and Peychev, Lyubomir Dimov, 3,926,495.

Dub, Karl; and Biricz, Stefan, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Apparatus for adjusting the position of a V-shaped tundish in two-strand continuous casting plants. 3,926,346, Cl. 222-160.000.

Dubos, Denise: *See—*
Savostianoff, Dimitri; and Dubos, Denise, 3,927,024.

Duchesneau, Eugene A., Jr.; and Boudreau, Donald F., to Borden, Inc. Preparation of plasticized latexes using high-density vibrational energy. 3,926,889, Cl. 260-29.6PM.

Dudek, Edmund C.: *See—*
Bardwell, Francis G.; and Dudek, Edmund C., 3,926,264.

Duke, John A. Well conduit cementing adapter tool. 3,926,253, Cl. 166-88.000.

Duke, Spencer E.; and Stevens, Gerald L., to Atlantic Richfield Company. Well production signal means. 3,926,047, Cl. 73-151.000.

Dumoulin, Jean, to Rhone-Poulenc, S.A. Organosilicon compositions for the non-stick coating of cellulosic or synthetic materials. 3,926,896, Cl. 260-31.20R.

Dunbar, Frank C.; and Oganowski, Kasimir, to Armco Steel Corporation. Aluminized steel. 3,926,572, Cl. 29-196.200.

Duncan, Ernest R. Teaching machine. 3,925,909, Cl. 35-9.00A.

Dunlap, Glenn H.: *See—*
Bode, Wolfgang W.; Dunlap, Glenn H.; Kobylak, Anthony M.; Richards, Raymond S.; and Pfaender, Lawrence V., 3,927,342.

Dunlap, Peter; and Sullivan, Daniel W. Apparatus for applying deodorizing chemicals to compacted refuse. 3,926,107, Cl. 100-45.000.

Dunn, Kirkley J. Paint brush and paint roller cleaning device. 3,925,908, Cl. 34-58.000.

Dupen, Clive Frederick George, to Combustion Engineering, Inc. Reactor vessel head support arrangement. 3,926,722, Cl. 176-87.000.

Du Pont de Nemours, E. I., and Company: *See—*
Adams, Charles D., 3,927,069.
Allen, James S.; and Craig, John D., Jr., 3,926,760.
Chang, Catherine Teh-lin, 3,926,643.
Czuha, Michael, Jr., 3,926,745.
Eigenbrode, George Thomas, 3,926,497.
Glaeser, Hans Hellmut, 3,926,614.
Gosser, Lawrence Wayne, 3,927,056.
Graham, Boynton; and Ingersoll, H. Gilbert, 3,926,826.
Jayawant, Madhusudan D., 3,927,189.
Mastrangelo, Sebastian Vito Rocco, 3,926,916.
Neumer, John Fred, 3,927,065.
Reese, Cecil E., 3,927,167.
Wiggill, John Bentley, 3,925,996.

Durand, Francois. Gear transmission reduction for division of power. 3,926,064, Cl. 74-421.00R.

Duranleau, Roger G.; and Larkin, John M., to Texaco Inc. Preparation of alkylamides. 3,927,050, Cl. 260-404.000.

Duranleau, Roger G.: *See—*
Kablaoui, Mahmoud S.; and Duranleau, Roger G., 3,927,048.

Duranleau, Roger George; and Love, Richard F., to Texaco, Inc. Preparation of alkylamides. 3,927,048, Cl. 260-404.000.

Durr, Albert M.; and Krenowicz, Robert A., to Continental Oil Company. Turbine oil compositions. 3,926,823, Cl. 252-49.900.

Durr, Dieter; and von Orelli, Marcus, to Ciba-Geigy Corporation. New thiourea derivatives. 3,927,087, Cl. 260-552.00R.

D'Urso, Anthony M., to Sonic Corporation. Apparatus for producing acoustic vibrations in liquids. 3,926,413, Cl. 259-4.00R.

Durth, Wilfried: *See—*
Deusing, Erich; Bernhardt, Helmut; and Durth, Wilfried, 3,926,106.

Dybas, Richard A.: *See—*
Rogers, Edward F.; Dybas, Richard A.; and Hannah, John, 3,926,935.

Dykes, Ralph E.; and Mitchell, Robert M., to General Foods Corporation. Tetrahedral packaging means and method of making same. 3,925,959, Cl. 53-28.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Ismail, Roshdy; Lenz, Arnold; and Termin, Erich, 3,927,151.
Klunsch, Maximilian; Lingens, Paul; and Ratz, Heinz, 3,926,696.

Dyson, John Raymond: *See—*
Matkin, Derek Ivan; Cavell, Ian William; and Dyson, John Raymond, 3,926,857.

E. Mollers, Maschinenfabrik, Firma: *See—*
Birkenfeld, Richard; and Wieligmann, Friedrich, 3,925,964.

E. R. Squibb & Sons, Inc.: *See—*
Breuer, Hermann, 3,926,985.
Haugwitz, Rudiger D.; and Narayanan, Venkatachala L., 3,926,967.
Krapcho, John; and Turk, Chester Frank, 3,926,968.
Krapcho, John; and Turk, Chester Frank, 3,926,988.
Rovnyak, George; Narayanan, Venkatachala L.; Haughwitz, Rudiger D.; and Cimarusti, Christopher M., 3,926,982.
Rovnyak, George; Narayanan, Venkatachala L.; Haugwitz, Rudiger D.; and Cimarusti, Christopher M., 3,927,014.
Sowinski, Francis Alexander; and Vogt, B. Richard, 3,926,977.
Treuner, Uwe D.; and Breuer, Hermann, 3,926,979.
Treuner, Uwe D.; and Breuer, Hermann, 3,926,980.
Treuner, Uwe D.; and Breuer, Hermann, 3,926,983.
Yale, Harry Louis, 3,927,093.

E-Z Machine Corporation: *See—*
Lowe, William F.; and Bondy, Harry L., 3,926,713.

Earl, Webster B., to Fairchild Industries, Inc. Pressure regulator. 3,926,204, Cl. 137-116.500.

Eastman Kodak Company: *See—*
Bianchi, Thomas A., 3,927,117.
Gysling, Henry L., 3,927,055.
Holmes, Jerry D., 3,927,035.
Sauter, Frederick J., 3,926,970.

Eaton, John Littell, Jr.; Brill, Richard Henry; and Myers, Walter E., to SCM Corporation. Percolator top fastening means. 3,926,333, Cl. 220-320.000.

Ebasco Services Incorporated: *See—*
Summers, William A.; Christy, Betty L.; and Sweeney, Joseph V., 3,927,308.

Economopoulos, Mario: *See—*
Respen, Yves Jean; Cosse, Paul Andre; and Economopoulos, Mario, 3,926,689.

Edelson, Nathan Allen; and Faessinger, Robert W., to Scott Paper Company. Flame-retardant cellulosics containing graft copolymerized acrylic esters or amides. 3,926,872, Cl. 260-17.4GC.

Edenhofer, Albrecht, to Hoffman-La Roche Inc. Tetrahydrooxazine derivatives. 3,926,986, Cl. 260-244.000.

Edenhofer, Albrecht, to Hoffmann-La Roche Inc. Tetrahydropyridine derivatives. 3,927,006, Cl. 260-294.80G.

Edgar, Owen Burchell; and Yates, Michael Richard, to Imperial Chemical Industries Ltd. Polyamide copolymers from hexamethylene diammonium adipate/terephthalate and a third polyamide forming reactant. 3,926,924, Cl. 260-78.00R.

Edmundson, Robert J.: *See—*
O'Neill, John J.; Komor, Joseph A.; Babcock, Thomas E.; Edmundson, Robert J.; and Shay, Edward G., 3,926,828.

Effmert, Alexander; and Neitzel, Ulrich, to Kali und Salz Aktiengesellschaft. Granular MgO-containing potassium salt fertilizers and process for their manufacture. 3,926,609, Cl. 71-31.000.

Eguchi, Naoki: *See—*
Gondo, Hisashi; Eguchi, Naoki; Yoshimura, Takafumi; and Araki, Masaki, 3,926,687.

Ehrmann, Oskar: *See—*
Dengel, Ferdinand; Ehrmann, Oskar; Friedrich, Ludwig; and Zimmermann, Frank, 3,926,995.

Eichler, Horst. Drive for hydrofoil boat. 3,926,138, Cl. 115-29.000.

Eigenbrode, George Thomas, to Du Pont de Nemours, E. I., and Company. Connector shroud and assembly. 3,926,497, Cl. 339-91.00R.

Eischen, Clement G., Sr. Cervical-dorsal relaxation pad. 3,926,181, Cl. 128-68.000.

Eisenwerk-Gesellschaft Maximilianshutte mgH: *See—*
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans-Georg, 3,926,618.

Eisert, Manfred; and Schmeidl, Karl, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of auramine salts and auramine salt solutions. 3,927,095, Cl. 260-566.00R.

Ekman, Willard J.: *See—*
Phillippi, Conrad M.; Stevison, Donald F.; and Ekman, Willard J., 3,926,034.

El Dorado, James H., to Midwest Mechanical Services, Inc. Industrial safety apparatus for disposing of welding fumes. 3,926,104, Cl. 98-115.0VM.

Electronic Arrays, Inc.: *See—*
Callahan, John, 3,927,334.

Electronor Corporation: *See—*
De Nora, Oronzio; Bianchi, Giuseppe; Nidola, Antonio; and Trisoglio, Giovanni, 3,926,751.

Eli Lilly and Company: *See—*
Koppel, Gary A., 3,926,978.
Lin, Tsung-Min, 3,927,212.
Miesel, John L., 3,927,020.

Ellicott Machine Corporation: *See—*
Turner, Thomas M.; and Scheid, Charles H., 3,926,050.

Ellin, Seymour, to Polaroid Corporation. Adapter for use with a packaged flashlamp array. 3,927,412, Cl. 354-149.000.

Elliott, Eugene R., to Culligan International Company. Control device. 3,926,071, Cl. 74-567.000.

Elliott, James Francis; and Johnson, Joel Swenum, to International Business Machines Corporation. Disk pack enclosure. 3,926,312, Cl. 206-444.000.

Elmis, Herbert: *See—*
Keller, Hans; and Elmis, Herbert, 3,927,335.

Eltro GmbH Gesellschaft fur Strahlungstechnik: *See—*
Beck, Gerhard; and Zeininger, Siegfried, 3,927,407.

Emcee Corporation: *See—*
Musgrove, Ronald R.; and Connelly, Lloyd E., 3,926,380.

Emmerichs, Heinz: *See—*
Heuel, Otto; and Emmerichs, Heinz, 3,927,301.

Enders, Edgar; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating animal acarid ectoparasites with -pheny liminopyrrolidines. 3,927,217, Cl. 424-274.000.

Enders, Max L. Self-locking vibration-proof lock washer and cooperating threaded fastener. 3,926,237, Cl. 151-34.000.

Endo, Hiroyuki: *See—*
Yoshikawa, Shinsuke; Endo, Hiroyuki; and Terasaki, Shuji, 3,927,156.

Engelhard, Helmut: *See—*
Saleck, Wilhelm; Engelhard, Helmut; Himmelmann, Wolfgang; Bentz, Francis; and Mader, Helmut, 3,926,635.

Engle, Edward Jacob, III, to Hercules Incorporated. Stabilized thermoset resins from poly(arylacetylenes). 3,926,907, Cl. 260-45.70P.

English, Jerome J., to Monsanto Company. Orifice structure for extruding molten metal to form fine diameter wire. 3,926,248, Cl. 164-273.00R.

Engwall, Bertil, to AB Svenska Dieselverken. Work cabin for unhealthy environments. 3,926,250, Cl. 165-48.000.

Enokido, Nobuo; Murakami, Atsushi; Yamaguchi, Kazuo; Kanoh, Natsuki; Tanaka, Toru; Okano, Shigeaki; and Suzuki, Masatoshi, to Mitsubishi Chemical Industries, Ltd. Process for polymerization of olefin. 3,926,929, Cl. 260-85.30R.

Enomoto, Shigeo: *See—*
Moriyama, Itsuki; and Enomoto, Shigeo, 3,927,414.

Erickson, John W., to Kobe, Inc. Turbine. 3,926,534, Cl. 415-89.000.

Eriksson, Curt: *See—*
Leander, Leif; and Eriksson, Curt, 3,925,847.

Erlebach, Richard, to Gertsch AG. Ski boot. 3,925,911, Cl. 36-2.5AL.

Ermakova, Irina Nikolaevna: *See—*
Orlov, Petr Nikolaevich; Nesterov, Jury Ivanovich; Kudashov, Vasily Yakovlevich; Zimnyakov, Alexandr Vasilievich; Ermakova, Irina Nikolaevna; Bogomolov, Igor Vasilievich; Nirman, Efim Matveevich; and Sokolov, Vladimir Dmitrievich, 3,925,936.

Erodi, Judit: *See—*
Korbonits, Dezso; Harsanyi, Kalman; Molnar nee Bako, Erzsebet; Takacs, Kalman; Heja, Gergely; Bodnar, Janos; Bodrogi, Istvan; and Erodi, Judit, 3,927,025.

Ersfeld, Heinrich; Nadolski, Klaus; Schneider, Walter; Schulte, Klaus; and Boden, Heinrich, to Bayer Aktiengesellschaft. Injection nozzle for foaming machines. 3,926,219, Cl. 137-625.490.

ESB Incorporated: *See—*
Kelley, John Joseph; and Varker, Alan Edward, 3,926,886.

Eschle, Karl: *See—*
Huber-Emden, Helmut; Eschle, Karl; and Maeder, Arthur, 3,927,091.

Eskeli, Michael. Rotary heat exchanger. 3,926,010, Cl. 62-401.000.

Esselborn, Reiner: *See—*
Bernhard, Horst; Esselborn, Reiner; Hesse, Reiner; and Russmann, Horst, 3,926,659.

Esser, Heinz; and Boldt, Jurgen, to Bayer Aktiengesellschaft. Latex-resin mixtures. 3,926,880, Cl. 260-27.0BB.

Estes, John H.: *See—*
Wilson, Raymond F.; Peck, Reese A.; Estes, John H.; and Brandenburg, John T., 3,926,779.

Etablissements Boutrait-Morin: *See—*
Gourlet, Gaston, 3,926,205.

Etessam, Alexander Hossen. Gas generator. 3,925,981, Cl. 60-39.770.

Ethicon, Inc.: *See—*
Greenberg, Jonathan Fred; and Quade, Robert T., 3,926,194.

Ethyl Corporation: *See—*
Carpenter, Kenneth B., 3,926,466.
Gautreaux, Marcelian F., 3,926,580.
LaBorde, Joseph N., 3,925,953.
Plonsker, Larry, 3,926,581.

Etienne, Arlette Therese, to Centre de Recherches Metallurgiques. Refining process. 3,926,619, Cl. 75-60.000.

Etud: *See—*
Tanguy, Pierre, 3,926,414.

Eugene H. Clement, Hi-Gene Laundry Co.: *See—*
Mazeika, Albert J., 3,926,019.

Europatent S.A.: *See—*
Burgers, August, 3,925,934.

Evankovich, Peter P.; Madden, Robert J.; and Peterson, Edward M., to Anaconda Company, The. Fitting structure for tire rim. 3,926,241, Cl. 152-415.000.

Evans, Glenn A. Recliner chair. 3,926,472, Cl. 297-88.000.

Evans, Leo G.; and Ruthel, Walter W., to Hooker Chemicals & Plastics Corporation. Novel cathode fingers. 3,925,886, Cl. 29-628.000.

Evans, Robert T.; Cummins, Alonzo E.; and Anderson, Merlin F., to Halliburton Company. Down-hole pump and inflatable packer apparatus. 3,926,254, Cl. 166-106.000.

Evers, Heinz; and Knoch, Werner, to Gesellschaft zur Wiederaufarbeitung von Kernbrennstoffen m.b.H. Device for the continuous treatment of liquid streams. 3,926,807, Cl. 210-177.000.

Exxon Nuclear Company Inc.: *See—*
Rushworth, George E., 3,925,965.

Exxon Research & Engineering Co.: *See—*
Kuntz, Irving, 3,926,925.
Makowski, Henry S.; and Buckley, Donald J., Sr., 3,927,143.
Oswald, Alexis A.; and Valint, Paul L., Jr., 3,927,148.
Rossi, Albert; Jacobson, Norman; and Miller, Harold N., 3,926,579.
Wristers, Harry Jan; and Williams, Herschel Claude, 3,926,848.

F. D. Farnam Co.: *See—*
Farnam, Robert G., 3,926,445.

Fa. Planatolwerk Willy Hesselmann: *See—*
Wetzler, Josef; Neumann, Wilhelm; and Hesselman, Karlheinz, 3,926,712.

Fabrique Nationale Herstal S.A. en brege: *See—*
Gevers, Georges A., 3,925,902.

Facit Aktiebolag: *See—*
Andersson, Leif Helmer, 3,927,284.
Ljungberg, John Erik, 3,926,293.

Faessinger, Robert W.: *See—*
Edelson, Nathan Allen; and Faessinger, Robert W., 3,926,872.

Fairchild Industries, Inc.: *See—*
Earl, Webster B., 3,926,204.

Faisandier, Jacques. Hydraulic control circuit. 3,925,987, Cl. 60-464.000.

Falzone, John, to Raymond Lee Organization, Inc., The, a part interest. Flushometer device. 3,925,832, Cl. 4-249.000.

Farello, Giovanni: *See—*
De Santis, Sergio; Farello, Giovanni; and Torrani, Roberto, 3,926,354.

Farnam, Robert G., to F. D. Farnam Co. Convolutely wound gasket. 3,926,445, Cl. 277-204.000.

Farney, George K., to Varian Associates. Microwave tube using electronically tunable cavity resonator. 3,927,347, Cl. 315-39.550.

Farona, Michael F.; and White, James F., to University of Akron, The. Method for reacting organic halides. 3,926,950, Cl. 260-2.00H.

Fassbinder, Hans-Georg: *See—*
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans-Georg, 3,926,618.

Fawcett, Sherwood L.; and Anno, James N., to Battelle Development Corporation. Method and apparatus for converting one form of energy into another form of energy. 3,927,329, Cl. 290-1.000.

Fayling, Richard E., to Minnesota Mining and Manufacturing Company. Magnetic record medium authentication system. 3,927,393, Cl. 340-149.00A.

Feagin, Frederick E.: *See—*
Genest, Leonard J.; Feagin, Frederick E.; Cole, Sylvan; and Messner, Daryle, 3,926,021.

Fedock, Michael P.: *See—*
Corbett, Paul M.; and Fedock, Michael P., 3,926,246.

Feldman, Rainer; Biethan, Uwe; Muller, Karl Adolf; and Panoch, Hans Joachim, to Chemische Werke Huls Aktiengesellschaft. Polyamide base powder coating material containing an aminoplast carrying alkoxyalkyl groups. 3,927,141, Cl. 260-849.000.

Feldmuhle Anlagen- und Produktions- gesellschaft mit beschrankter Haftung: *See—*
Lukowski, Heinz, 3,926,585.

Feldzamen, Alvin N. Apparatus for aiding the voluntary exercising of sphincter muscles. 3,926,178, Cl. 128-2.00S.

Fell, Ferol S.: *See—*
Goering, Lowell J.; and Fell, Ferol S., 3,925,971.

Fenerty, Michael J.; and Mustoe, David L., to Coors Porcelain Company. Composite seal ring and assembly. 3,926,443, Cl. 277-96.000.

Fergle, Richard Raymond: *See—*
Circle, Sidney Joseph; Fergle, Richard Raymond; Watkins, Leslie Ray; and Hooton, Daniel Edwards, 3,926,940.

Ferment, George R.: *See—*
Burns, Kenneth S.; Ferment, George R.; and Waugh, Roger C., 3,926,228.

Ferres, Harry; Kemmenoe, Adrian Victor; and Best, Desmond John, to Beecham Group Limited. Penicillins. 3,926,960, Cl. 260-239.100.

Ferri, Walter; and Grassotti, Giulio, to Officine Galileo S.p.A. Stereoplotting apparatus for air and earth photogrammetry. 3,925,897, Cl. 33-1.00A.

Ferrie, Ronald Gilbert, to RCA Corporation. Speaker muting system. 3,927,376, Cl. 325-478.000.

Ferrini, Pier Giorgio; Haas, Georges; and Rossi, Alberto, to Ciba-Geigy Corporation. Sulphamoylbenzoic acid amides. 3,926,961, Cl. 260-239.700.

Ferro Corporation: *See—*
Kaye, Saul, 3,926,644.

Fertig, Joseph: *See—*
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Fiber Industries Inc.: *See—*
Vizurraga, Luis R., 3,927,052.

Fibers Controls Corporation: *See—*
Lytton, Kenneth G., 3,925,850.

Field, William E.: *See—*
Gerstenberger, Roland W.; and Field, William E., 3,926,424.

Figiel, Francis J.; and Anderson, Roland W., to Allied Chemical Corporation. Detergent solvent compositions. 3,926,862, Cl. 252-545.000.

Filen, Bjorn G. O., to AB Essve Produkter. Apparatus for separating, collecting and removing sulphuric acid fumes and the like from evacuation air. 3,926,598, Cl. 55-385.000.

Filsinger, John F.; and Mueller, Roger P., to Texmark, Incorporated. Printing ribbon advancing means. 3,926,109, Cl. 101-90.000.

Finegold, Hyman B.: *See—*
Reiger, Arthur C., Jr.; and Finegold, Hyman B., 3,926,421.

Finelli, Anthony F., to Goodyear Tire & Rubber Company, The. Polyurethanes chain-extended with 2,2'-diaminodiphenyldisulfide. 3,926,919, Cl. 260-75.0NH.

Finkbeiner, Herman L.; and Bush, John B., Jr., to General Electric Company. Anhydrides to improve oxidative coupling reactions. 3,927,077, Cl. 260-488.00R.

Firmenich S.A.: *See—*
Demole, Edouard P., 3,927,030.
Schulte-Elte, Karl-Heinrich; and Jindra, Henri, 3,927,107.

Firstenberg, Harold S. Buttons for attachment to push-button telephone keys. 3,927,282, Cl. 179-178.000.

Fisa, Bohuslav: *See—*
Marchessault, Robert H.; and Fisa, Bohuslav, 3,926,717.

Fischer, Dieter: *See—*
Bauser, Herbert; and Fischer, Dieter, 3,927,354.

Fischer, Hanspeter, to Ciba-Geigy Corporation. 2-Alkylthio-4,6-bis(substituted amino)-5-nitropyrimidines. 3,926,997, Cl. 260-256.50R.

Fischer & Porter Co.: *See—*
Seebode, Albert; Appel, Eggert; and Geisler, Gottfried, 3,926,049.

Fish, Leonard A.; Brodsky, Harvey A.; and Weitzel, Bruce A. Dial pulse detector and method. 3,927,264, Cl. 179-2.00A.

Fish, Vernon R. Accelerometer. 3,926,059, Cl. 73-510.000.

Fitton, Nigel S.: *See—*
Lear, Edward C.; and Fitton, Nigel S., 3,926,132.

Fjallbrant, Tore Torstensson, to Telefonaktiebolaget L M Ericsson. Demodulator. 3,927,378, Cl. 329-145.000.

Fjarlie, Earl John; Doyle, Thomas; and Teare, Melvin John, to RCA Corporation. Low noise wide band transducer system. 3,927,383, Cl. 330-59.000.

Flanagan, Thomas P.: *See—*
Georgoudis, Paul C.; Ray-Chaudhuri, Dilip K.; and Flanagan, Thomas P., 3,926,920.

Flavell, John; and Jeffcoat, Keith, to Courtaulds Limited. Knitting machines. 3,926,016, Cl. 66-157.000.

Fleck, Fritz; Schmid, Horst; and Valenti, Salvatore, to Sandoz Ltd. Triazole-bis(benzoxazole) optical brighteners. 3,926,969, Cl. 260-240.100.

Fleig, Helmut: *See—*
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Fleischman, Andor A., to Bell & Howell Company. Photographic objective. 3,926,504, Cl. 350-189.000.

Fluoroware, Inc.: *See—*
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FMC Corporation: *See—*
Kyrias, Gilbert M., 3,927,152.
Meadow, Morton; and Berkowitz, Sidney, 3,927,185.
Saldick, Jerome, 3,926,795.

Fogg, Sidney George; King, Peter Graham; and Yeoman, Elfed, to BP Chemicals International Limited. Process for isolating polychloroprene. 3,926,877, Cl. 260-23.70A.

Fohl, Artur. Inertia type switch having bridging ball contactor and plural, concentric conductive ring array. 3,927,286, Cl. 200-61.45R.

Foik, Adolf, to Gewerkschaft Eisenhutte Westfalia. Tunnel driving apparatus. 3,926,005, Cl. 61-85.000.

Foltier, Pierre, to Fonderies & Alteliers des Sablons. Mole traps. 3,925,922, Cl. 43-66.000.

Fonderies & Alteliers des Sablons: *See—*
Foltier, Pierre, 3,925,922.

Fong, William: *See—*
Broadway, Alexander Richard William; Fong, William; and Rawcliffe, Gordon Hindle, 3,927,358.

Ford Motor Company: *See—*
Cheung, Mo-Fung; and Dickie, Ray A., 3,926,888.
Cordone, Leonard G.; Donakowski, William A.; Morgan, John R.; and Roemming, Karl, 3,926,772.
Ladd, Floyd N.; and Stacy, Donald G., 3,925,931.
Ladd, Floyd N.; and Stacy, Donald G., 3,925,932.
Ladd, Floyd N.; Raveschot, Marcel R.; and Stacy, Donald G., 3,926,066.
Mangels, John Anthony, 3,926,656.
Ulics, George, 3,926,469.

Forichon, Gaston, to Regie Nationale Des Usines Renault. Toggle-joint press. 3,926,033, Cl. 72-451.000.

Formall, Inc.: *See—*
McCall, John W., 3,926,303.

Forshaw, Sydney James: *See—*
Baines, Eric; Cropper, Edwin; and Forshaw, Sydney James, 3,927,201.

Forster, Siegmar; and Von Klipstein, Walrath, to Johannes Erhard, H. Waldenmaier Erben Suddeutsche Armaturenfabrik, Firma. Cock with shutoff member mounted eccentrically and rotatably in a housing. 3,926,407, Cl. 251-315.000.

Forsyth, Bruce Adam; and Pryor, David Ernest, to ICI Australia Limited. Salicylanilides. 3,927,071, Cl. 260-479.00R.

Foster, Larry R.; and Kuhn, Hans H., to Deering Milliken Research Corporation. Alkaline stable fugitive tints. 3,927,044, Cl. 260-394.000.

Fourier, Walter A.; and Dickmann, Daniel J., to M&T Chemicals Inc. Aqueous sealant compositions. 3,926,879, Cl. 260-27.00R.

Fox, Adrian Samuel, to Pennwalt Corporation. Fluorinated β-(alkoxy)-propionates. 3,927,072, Cl. 260-484.00R.

Fox, J. Eugene; and McChesney, James D., to Kansas University Endowment Association. Cytokinin-3-nucleoside compounds. 3,926,949, Cl. 260-211.50R.

Franc, Eugene K., to Construction Engineering Products. Tie Rod and seal assembly. 3,926,400, Cl. 249-40.000.

Francke, Wittko; and Heemann, Volker, to Amchem Products, Inc. Method for combating insects employing certain ketones. 3,927,207, Cl. 424-84.000.

Frank, Earl E., to Abex Corporation. Railroad car retarders. 3,926,124, Cl. 104-26.00A.

Frank, Edmund; and Polic, Edward F., to Packard Instrument Company, Inc. Method of and apparatus for vial transferring and changing. 3,926,323, Cl. 214-310.000.

Frank, Gunter: *See—*
Callies, Dieter; Frank, Gunter; and Graf vom Hagen, Siegbert, 3,926,557.

Franklin, Charles H.: *See—*
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Franklin, David M.; and Lane, William P., to Polaroid Corporation. Battery testing apparatus. 3,927,367, Cl. 324-29.500.

Franz Rubig & Sohne KG: *See—*
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Fraser, Robert W.: *See—*
Fustukian, David A. W.; Kushnir, Bud W.; Norris, Leon F.; and Fraser, Robert W., 3,926,691.

Freeman, Michael Alexander Reykers; and Swanson, Sydney Alan Vasey, to National Research Development Corporation. Endoprosthetic bone joint devices. 3,925,824, Cl. 3-1.912.

Frehn, Gunter, to W. Schlafhorst & Co. Weft storage device for warp knitting machines. 3,926,014, Cl. 66-84.00A.

Fretwell, Richard D., to MI². Programmable frequency-shift-keying acoustic transmitter to transmit repeated bit digital message via telephone lines. 3,927,263, Cl. 179-2.0DP.

Freudenschuss, Otto, to Vockenhuber, Karl; and Hauser, Raimund. Sound projector. 3,926,512, Cl. 352-25.000.
Frie, Wolfgang; Grave, Burghard; Stransek, Karl; and Gutbier, Heinrich, to Siemens Aktiengesellschaft. Battery comprising a plurality of cells. 3,926,676, Cl. 136-86.00R.
Friedrich, Ludwig: *See—*
Dengel, Ferdinand; Ehrmann, Oskar; Friedrich, Ludwig; and Zimmermann, Frank, 3,926,995.
Frisbee, Claude M.; and Baylor, John M., to J. I. Case Company. Power tilt dozer and reel carrier. 3,926,263, Cl. 172-801.000.
Frodsham, Vaughn D., to Huntington, Howard E. Spoon attachment for soda straw. 3,925,890, Cl. 30-141.000.
From, Anatoly Alexandrovich: *See—*
Ivanov, Mikhail Ivanovich; From, Anatoly Alexandrovich; Kiseley, Anatoly Efimovich; Nikitenko, Alexandr Alexandrovich; Rusanov, Valentin Mikhailovich; and Skobelev, Leonid Ivanovich, 3,926,939.
Frosch, Albert; and Korth, Hans Erdmann, to International Business Machines Corporation. Method of increasing the depth of focus and or the resolution of light microscopes by illuminating and imaging through a diaphragm with pinhole apertures. 3,926,500, Cl. 350-17.000.
Frost, Charles C.; and Weis, Siegfried K., to C. L. Frost & Son, Inc. Bearing housing assembly. 3,926,485, Cl. 308-193.000.
Frost, Louis H.; and Powers, Walter H., to L. H. Frost and Company, Inc. Multidirectional switch with universally pivot actuator for activating plural circuits. 3,927,285, Cl. 200-6.00A.
Froud, Roderick Wilson: *See—*
Lamb, Kenneth; and Froud, Roderick Wilson, 3,927,302.
Frystak, Richard: *See—*
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Fuel Injection Development Corporation: *See—*
Leshner, Ervin; and Leshner, Michael D., 3,926,169.
Fuest, Ronald W., to Uniroyal, Inc. Method of rendering polyolefins dyeable with anionic dyes. 3,926,553, Cl. 8-169.000.
Fuga, Nobuhiko: *See—*
Watanabe, Yoshihisa; Imanari, Makoto; Nojiri, Naohiro; and Fuga, Nobuhiko, 3,926,915.
Fuji Electrochemical Co., Ltd.: *See—*
Tsuchida, Takashi; Shinoda, Kenichi; Yamamoto, Kohei; Murata, Tomoya; and Maeda, Yoshihiro, 3,926,678.
Fuji Photo Film Co., Ltd.: *See—*
Arai, Atsuaki; Oishi, Yasushi; Yamada, Minoru; Furutachi, Nobuo; and Nakamura, Kotaro, 3,926,631.
Honjo, Satoru, 3,926,628.
Horie, Ikutaro; Miyazako, Taksuhi; and Shimada, Takeo, 3,926,869.
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Sugizaki, Atsushi; Hirose, Takeshi; Yokota, Yukio; Okumura, Akio; Oishi, Yasushi; and Arai, Atsuaki, 3,926,634.
Fujikawa, Hisao: *See—*
Kowaka, Masamichi; and Fujikawa, Hisao, 3,926,620.
Fujimoto, Sakae, to Ricoh Co., Ltd. Variable-rate drive mechanism for a facsimile head or the like. 3,927,256, Cl. 178-7.600.
Fujimoto, Tsuneo: *See—*
Chibata, Ichiro; Ito, Hiroshi; Morimoto, Tomoaki; Taniguchi, Yukio; and Fujimoto, Tsuneo, 3,926,733.
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Kanzaki, Toshihiko; Fujisawa, Yukio; Shimafuji, Hideo; Nara, Kiyoshi; and Yoneda, Masahiko, 3,926,729.
Fujita, Yukio; Kawasaki, Iwao; and Nishikawa, Hideo, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Preparation of activated sludge and treatment of waste water therewith. 3,926,796, Cl. 210-11.000.
Fujiwara, Susumu; Okada, Takao; Koyama, Masao; Akashi, Hiromitsu; and Nishikawa, Yoichi, to Yokohama Rubber Company, Ltd., The. Signal level discrimination circuit. 3,927,309, Cl. 235-151.310.
Fukahori, Kentaro: *See—*
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Fukami, Sigetosi: *See—*
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Fukuba, Kozo; Ogushi, Yasutomo; and Miyazaki, Minematsu, to Sumitomo Chemical Company, Ltd. Process for preparing amide polyphosphates. 3,926,990, Cl. 260-249.600.
Fukuda, Hideo: *See—*
Nara, Kiyoshi; Ohta, Kazuhiko; Katamoto, Kazuyoshi; Mizokami, Nariakira; and Fukuda, Hideo, 3,926,973.
Fukuda, Masaaki: *See—*
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Fukushima, Mitio; and Iwanami, Teruo, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Flame-resistant resinous molding. 3,926,876, Cl. 260-23.00R.
Fukuyama, Kunihiko: *See—*
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Furr, Robert L.; and Hayes, Robert I., Jr. Table soccer or football game structure. 3,926,432, Cl. 273-85.00D.
Furst, Andor; Buchschacher, Paul; Kagi, Dieter; Meier, Werner; Muller, Marcel; and Widmer, Erich, to Hoffmann-La Roche Inc. Intermediates for benzindenes. 3,927,032, Cl. 260-340.900.
Furuhashi, Tokio, to Nippon Electric Company, Ltd. Electronic circuit comprising complementary symmetrical transistors. 3,927,333, Cl. 307-255.000.
Furutachi, Nobuo: *See—*
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Furuya Kogyo Kabushiki Gaisha: *See—*
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Furuya, Toshitsugu, to Furuya Kogyo Kabushiki Gaisha. Snap button. 3,925,860, Cl. 24-208.00A.
Fustukian, David A. W.; Kushnir, Bud W.; Norris, Leon F.; and Fraser, Robert W., to Sherritt Gordon Mines Limited. Dispersion strengthened metals and alloys. 3,926,691, Cl. 148-32.000.
Futch, Max Gerald. Apparatus for use in assembling food on trays. 3,926,489, Cl. 312-250.000.
Fuzzell, Joe E., to Caterpillar Tractor Co. Bi-level condition monitor using reverse-biased control diodes. 3,927,399, Cl. 340-248.00D.
G. D. Searle & Co.: *See—*
Lenz, George R., 3,926,962.
G.D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Seragnoli: *See—*
Seragnoli, Ariosto, deceased; Seragnoli, Leonina Ricci, heir and legal representative; Seragnoli, Giorgio, heir and legal representative; and Seragnoli, Daniela, heir and legal representative, 3,926,300.
Gabriel, Lester H.; and Willis, Wilfred Ernest, to Gabriel-Willis Associates. Altering the properties of concrete by altering the quality or geometry of the intergranular contact of filler materials. 3,927,163, Cl. 264-71.000.
Gabriel-Willis Associates: *See—*
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Gabureanu, Mircea: *See—*
Constantinescu, Petre; Hristea, Nicolae; Blebea, Speranta; Hristea, Ieronim; Huniadi, Mihai; and Gabureanu, Mircea, 3,925,928.
Gaeckel, Bruno L.; and Larsen, Hans R., to Union Carbide Canada Limited. Flame resistant polyolefins. 3,927,145, Cl. 260-897.00B.
Gaeng, Manfred: *See—*
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Gaertner, Van R., to Monsanto Company. Process for producing N-phosphonomethyl glycine. 3,927,080, Cl. 260-502.500.
GAF Corporation: *See—*
Roberts, Stiles M.; and Stanley, Lester N., 3,926,945.
Gail, Josef; and Kauferle, Josef. Barrier device. 3,925,930, Cl. 49-124.000.
Gale, Laird H., to Shell Oil Company. Catalytic cracking of paraffinic naphtha. 3,926,781, Cl. 208-117.000.
Gale, Robert M.: *See—*
Baker, Richard W.; and Gale, Robert M., 3,926,188.
Gallagher, James A.; and Brizgys, Bernardas, to BASF Wyandotte Corporation. Monomercury organo catalyst. 3,927,053, Cl. 260-433.000.
Ganslaw, Stuart H.: *See—*
Micchelli, Albert L.; Legato, Gerard J.; Ganslaw, Stuart H.; and Schuler, Lawrence D., 3,927,199.
Garbuio, Carlo. Foot-fitting insert for ski boot or the like. 3,925,916, Cl. 36-71.000.
Garcia, Paulina P.: *See—*
Borror, Alan L.; Hill, Ruth Linda; and Garcia, Paulina P., 3,926,971.
Garfinkel, Marvin: *See—*
Cordes, Linus F.; and Garfinkel, Marvin, 3,927,225.
Garnett, Lawrence Taylor, to International Telephone & Telegraph Corporation. Mechanical span and zero adjustment apparatus for pressure transducers. 3,926,055, Cl. 73-398.0AR.
Garofano, Norman R.; and Port, Eugene B., to Allied Chemical Corporation. Purification of carbonate process solutions. 3,927,175, Cl. 423-206.000.
Garshelis, Ivan J. Method and apparatus for circularly magnetizing a helical conductive rod. 3,927,386, Cl. 335-284.000.
Gaston County Dyeing Machine Company: *See—*
Zeiffer, Dieter F., 3,925,905.
Gates, Francis J.: *See—*
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Gates Rubber Company, The: *See—*
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Vorih, William J., 3,926,238.
Gaudet, Ronald M.; Michell, Samuel S.; and Kozy, Michael J., to Schroeder Brothers Corporation. No-bypass filter system. 3,926,806, Cl. 210-137.000.
Gautreaux, Marcelian F., to Ethyl Corporation. Fuel compositions and additive mixtures for alleviation of exhaust gas catalyst plugging. 3,926,580, Cl. 44-68.000.
Gay, Larry T., to C-G Process Coal Company. Method and apparatus for reducing sulphur and ash content of coal. 3,926,787, Cl. 209-3.000.
Gay, Pierre, to Creusot-Loire Enterprises. Apparatus adapted for driving or braking a metallic band. 3,926,353, Cl. 226-95.000.
Gaz de France: *See—*
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Geen, Wesley C., to Reliance Brooks, Inc. Steam trap temperature indicating arrangement. 3,926,368, Cl. 236-41.000.

Gehl, Fred J. Penis encircling device. 3,926,184, Cl. 128-79.000.
Geiger, Kenneth Daniel; Horvath, Steven Joseph; Kallay, Victor Paul; Seymour, Theodore Joseph; Watson, Thorpe Wesley; and Zervoudis, John, to Cominco Ltd. Lead sheet casting machine. 3,926,247, Cl. 164-263.000.
Geisler, Gottfried: *See—*
Seebode, Albert; Appel, Eggert; and Geisler, Gottfried, 3,926,049.
Geller, Ehud, to Ives Laboratories Inc. Tablet formulation. 3,927,194, Cl. 424-15.000.
Gendrot, Andre Jean-Claude; and Chartrin, Jean Lucien Yves. Method and device for synchronizing the displacements of two moving bodies. 3,926,511, Cl. 352-5.000.
General Dynamics Corporation: *See—*
Lessman, Gerhard, 3,927,254.
General Electric Company: *See—*
Carter, Ralph E., 3,927,154.
Cordes, Linus F.; and Garfinkel, Marvin, 3,927,225.
Davidson, William E., 3,926,392.
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Hester, William F., 3,926,358.
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General Motors Corporation: *See—*
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Bernard, James A., 3,926,315.
Braden, Ralph S.; Pugh, Cecil C.; and Rigg, Ralph R., 3,926,007.
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Mathues, Thomas P., 3,926,476.
McIntosh, Duane E., 3,927,401.
Genest, Leonard J.; Feagin, Frederick E.; Cole, Sylvan; and Messner, Daryle, to Monitron Industries, Inc. Electronic combination lock and system. 3,926,021, Cl. 70-278.000.
Gentry, William O., to United States of America, Energy Research and Development Administration. System for detecting gaseous contaminants in air. 3,926,560, Cl. 23-254.00E.
Georg Spellmann Hannov.-Holz-Industrie: *See—*
Reuter, Manfred, 3,925,933.
George A. Goulston Company: *See—*
Cohen, Norman R.; and Syrmopoulos, Demosthenes S., 3,926,816.
Georgoudis, Paul C.; Ray-Chaudhuri, Dilip K.; and Flanagan, Thomas P., to National Starch and Chemical Corporation. Hot melt adhesive based on low viscosity heat stable copolyesters. 3,926,920, Cl. 260-75.00R.
Geoscience Ltd.: *See—*
Sabin, Cullen M., 3,926,139.
Gerecht, John Fred, to Colgate-Palmolive Company. Detergent compositions containing amine oxides. 3,926,861, Cl. 252-542.000.
Geren, Lorenzo Dow: *See—*
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Gerstenberger, Roland W.; and Field, William E., to Jensen Corporation. Folding apparatus. 3,926,424, Cl. 270-62.000.
Gertsch AG: *See—*
Erlebach, Richard, 3,925,911.
Gesellschaft zur Wiederaufarbeitung von Kernbrennstoffen m.b.H.: *See—*
Evers, Heinz; and Knoch, Werner, 3,926,807.
Gevers, Georges A., to Fabrique Nationale Herstal S.A. en brege. Adjustable sight for fire-arms. 3,925,902, Cl. 33-257.000.
Gewerkschaft Eisenhutte Westfalia: *See—*
Foik, Adolf, 3,926,005.
Harmsma, Guenter; Rosenberg, Harry; Laabs, Johannes; and Becker, Kunibert, 3,925,995.
Giaever, Ivar, to General Electric Company. Substrate for immunological tests and method of fabrication thereof. 3,926,564, Cl. 23-259.000.
Gibellina, Michael C., to Airwick Industries, Inc. Pool cleaning apparatus. 3,926,667, Cl. 134-167.00R.
Gigou, Claude; and Quentin, Jean-Pierre, to Rhone-Poulenc, S.A. Separation apparatus using ultrafiltration. 3,926,797, Cl. 210-22.000.
Gilbert, Eugene C.; Jones, Robert E.; McLean, Donald C.; and Sherman, Edward, to Quaker Oats Company, The. Preparation of tetrachlorocyclo-hexanone. 3,927,106, Cl. 260-586.00R.
Gilbert, Horace E.: *See—*
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Gillies, Barrie Andrew; and Simpson, Frederick Granville, to Sperry Rand Limited. Gyroscopic apparatus. 3,926,060, Cl. 74-5.100.
Gilpatrick, Michael William, to Deering Milliken Research Corporation. Loop pile fabric cutting apparatus with selvedge protector. 3,925,864, Cl. 26-9.000.
Ginzel, Byron E. Blood collecting and processing means. 3,926,521, Cl. 356-39.000.
Girotra, Narindar N.; and Wendler, Norman L., to Merck & Co., Inc. Phthalimido derivatives and processes. 3,926,965, Cl. 260-240.00R.
Gist-Brocades N.V.: *See—*
Vos, Cornelis; and Admirant, Jacobus Den, 3,927,211.
Givaudan Corporation: *See—*
Lamparsky, Dietmar; and Calame, Jean-Pierre, 3,926,859.
Glaeser, Hans Hellmut, to Du Pont de Nemours, E. I., and Company. Ilmenite beneficiation with $FeCl_3$. 3,926,614, Cl. 75-1.000.
Glancy, Walter P. Energy recovery system. 3,926,249, Cl. 165-3.000.
Glaser, Heinz; and Zlatareff, Vassil, to Societe d'Etudes du Procede NORIDEM. Use of temporary printing carriers. 3,926,707, Cl. 156-239.000.
Glass Container Manufacturers Institute, Inc.: *See—*
Smay, Gary Lynn; Van Caporali, Ronald; and Southwick, Russell Duty, 3,926,604.
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.: *See—*
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Glaxo Laboratories Limited: *See—*
Barton, Derek Harold Richard; Underwood, William George Elphinstone; Looker, Brian Edgar; and Hewitt, Graham, 3,927,013.
Gregson, Michael; Cook, Martin Christopher; and Gregory, Gordon Ian, 3,926,957.
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Glover, George M., to Starkey, Caroline J. Fruit picking apparatus. 3,925,973, Cl. 56-328.00R.
Gluecksman, Alfred: *See—*
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Gobel, Wilhelm: *See—*
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Gobran, Ramsis, to Minnesota Mining and Manufacturing Company. Flexible strip coated with a pressure-sensitive adhesive composition tackified with phenol-diene-phenol resin adduct. 3,927,239, Cl. 428-355.000.
Goddard, Clarence C. Sewage treatment system. 3,926,808, Cl. 210-195.000.
Goeckel, Helmut, to Neckermann Versand KGaA. Headset for reproducing quadraphonically recorded information. 3,927,262, Cl. 179-1.0GQ.
Goering, Lowell J.; and Fell, Ferol S., to Hesston Corporation. Gauging apparatus for implement head. 3,925,971, Cl. 56-208.000.
Goines, John A. Industrial bucket improvement. 3,926,452, Cl. 280-79.200.
Goldstein, Irving S., to Xerox Corporation. RF sputtering of trigonal selenium films. 3,926,762, Cl. 204-192.000.
Golitz, Hans Dietrich, deceased (by Golitz, Ingrid Irene Klarchen, heiress); Wagner, Kuno; Quiring, Bernd; and Noll, Walter, to Bayer Aktiengesellschaft. Alkoxysilyl-substituted epoxidized urea derivatives. 3,927,042, Cl. 260-348.0SC.
Golitz, Ingrid Irene Klarchen, heiress: *See—*
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Golubenko, Mikhail Afanasievich: *See—*
Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovidh; Zakharova, Nina Vasilievna; Golubenko, Mikhail Afanasievich; Tolstikov, Genrikh Alexandrovich; Kholodovskaya, Rakhil Samoilovna; Shalimova, Zoya Stepanovna; Legostaeva, Taisia Vasilievna; Popov, Vasily Dmitrievich; and Dolidze, Vladimir Romanovich, 3,927,038.
Gondo, Hisashi; Eguchi, Naoki; Yoshimura, Takafumi; and Araki, Masaki, to Nippon Steel Corporation. Method for producing a killed steel wire rod. 3,926,687, Cl. 148-12.00B.
Good, Lewis B., Jr. Golf exerciser device. 3,926,430, Cl. 272-79.00C.
Goodyear Aerospace Corporation: *See—*
Crossman, Richard L., 3,926,283.
Lovich, John W.; Meller, Oscar W.; and Sprick, Walter F., 3,926,243.
Ruof, Edgar J., 3,926,478.
Goodyear Tire & Rubber Company, The: *See—*
Bryson, Jay G., 3,927,137.
Burkholder, Ward J., 3,927,124.
Finelli, Anthony F., 3,926,919.
Hollingshead, William S., 3,927,099.
Mowdood, Syed K., 3,926,910.
Sharp, William J., Jr., 3,926,704.
Stalter, Robert J., Sr., 3,927,162.
Wolfe, Merritt W., 3,926,711.

Goralski, Christian T.; and Klingler, Thomas C., to Dow Chemical Company, The. 1,1-Dihalo-1-(methylsufonyl)methanesulfonamides. 3,927,090, Cl. 260-556.00A.

Gordon, Philip L.: *See—*
Hopkins, Henry S., Jr.; and Gordon, Philip L., 3,926,700.

Goren, Mayer B.; and Coltrinari, Enzo L., to Hazen Research, Inc. Ion exchange process for the recovery of copper. 3,927,169, Cl. 423-24.000.

Gosser, Lawrence Wayne, to Du Pont de Nemours, E. I., and Company. Hydrido(nitrile)tris(triaryl phosphite)cobalt complexes. 3,927,056, Cl. 260-439.00R.

Gostling, Peter Eric, to C. Evans & Sons Limited. Builders scaffolding. 3,926,531, Cl. 403-293.000.

Gotsmann, Ulrich: *See—*
Meyer, Artur; Gotsmann, Ulrich; and Meyer, Ernst, 3,927,012.

Goulay, Jean: *See—*
Vairel, Edmond G.; Goulay, Jean; and Choay, Jean, 3,926,727.

Gould, Robert E.: *See—*
Weingrad, Saul; Wahl, Albert J.; Mucha, Richard C.; and Gould, Robert E., 3,926,710.

Gounou, Jean Marie Joseph Elie: *See—*
Humbert, Jean Jacques; Thomas, Jean Pierre Francis; Brut, Gerard Yvan; and Gounou, Jean Marie Joseph Elie, 3,926,697.

Gourlet, Gaston, to Etablissements Boutrait-Morin. Quick coupling connectors. 3,926,205, Cl. 137-223.000.

Graco Inc.: *See—*
Siczek, Bernard, 3,926,376.

Graf vom Hagen, Siegbert: *See—*
Callies, Dieter; Frank, Gunter; and Graf vom Hagen, Siegbert, 3,926,557.

Graff, Eugene A., to Westinghouse Electric Corporation. Method for the preparation of europium activated yttrium oxysulfide. 3,926,837, Cl. 252-301.40S.

Graham, Boynton; and Ingersoll, H. Gilbert, to Du Pont de Nemours, E. I., and Company. Magnetic tape binder from a polyurethane, a polyol and an isocyanate. 3,926,826, Cl. 252-62.540.

Graham, Robert H.; and Sanders, Duane, to R. A. Pearson Company. Escapement mechanism for case packing machines. 3,926,336, Cl. 221-296.000.

Grane, Henry R.; and Zak, Thomas S., to Atlantic Richfield Company. Preparation of phenyl methyl carbinol. 3,927,120, Cl. 260-618.00H.

Grane, Henry R.; and Zak, Thomas S., to Atlantic Richfield Company. Phenyl methyl carbinol manufacture by hydrogenation of acetophenone. 3,927,121, Cl. 260-618.00H.

Grant, Norman H.; and Sarantakis, Dimitrios, to American Home Products Corporation. Polymeric somatostatin. 3,926,937, Cl. 260-112.500.

Grassotti, Giulio: *See—*
Ferri, Walter; and Grassotti, Giulio, 3,925,897.

Grau, Hermann. Safety closure. 3,926,326, Cl. 215-218.000.

Grave, Burghard: *See—*
Frie, Wolfgang; Grave, Burghard; Strasser, Karl; and Gutbier, Heinrich, 3,926,676.

Gray, Don N.; Keyes, Melvin H.; and Semersky, Frank E., to Owens-Illinois, Inc. Urea analysis. 3,926,734, Cl. 195-103.50R.

Gray, James H. Method and apparatus for scrubbing the ends and sides of a motor vehicle. 3,926,663, Cl. 134-6.000.

Graybill, Howard W.: *See—*
Tahiliani, Vasu H.; and Graybill, Howard W., 3,927,246.

Greber, Gerd; Darms, Roland; and Lohmann, Dieter, to Ciba-Geigy Corporation. Crosslinked polymers containing siloxane groups. 3,926,911, Cl. 260-46.50E.

Green, Frederic L.: *See—*
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Green, Howard; and Rheinwald, James G., to Massachusetts Institute of Technology. Method of controllably releasing glucose to a cell culture medium. 3,926,723, Cl. 195-1.800.

Green, Howard E.: *See—*
Jones, Robert J.; and Green, Howard E., 3,927,027.

Greenawalt, Eddie Lee; and Geren, Lorenzo Dow, to Dow Chemical Company, The. Form, fill and seal industrial bag machine. 3,925,963, Cl. 53-182.000.

Greenberg, Jonathan Fred; and Quade, Robert T., to Ethicon, Inc. Sutures with reduced diameter at suture tip. 3,926,194, Cl. 128-339.000.

Greenwood, Robert C.: *See—*
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Greer, Philip A. Knock-down drawer assembly. 3,926,491, Cl. 312-330.00R.

Gregory, Gordon Ian: *See—*
Gregson, Michael; Cook, Martin Christopher; and Gregory, Gordon Ian, 3,926,957.

Gregson, Michael; Cook, Martin Christopher; and Gregory, Gordon Ian, to Glaxo Laboratories Limited. Penicillin antibiotics. 3,926,957, Cl. 260-239.100.

Gremmelspacher, Max: *See—*
Bleier, Waldemar; and Gremmelspacher, Max, 3,926,195.

Grenda, David W.: *See—*
Horn, Richard E.; and Grenda, David W., 3,926,759.

Grenier, Bernard J. Steam engine. 3,926,540, Cl. 418-197.000.

Griffin, Anselm C., Jr.; and Watson, Harold, to United States of America, Agriculture. Fluid impact gin. 3,925,849, Cl. 19-48.000.

Griffis, Steven W. Computerized organ registration affecting system. 3,926,087, Cl. 84-345.000.

Grinev, Alexei Nikolaevich; Shvedov, Vasily Ivanovich; Sytina, Evgenia Nikolaevna; Bogdanova, Nadezhda Sergeevna; Nikolaeva, Irina Sergeevna; Pershin, Grigory Nikolaevich; and Guskova, Tatyana Anatolievna. Method of preparing 2,4,6-triiodoresorcinol. 3,927,125, Cl. 260-623.00H.

Gripe, William B.; and Norman, Melvin H., to Amot Controls Corporation. Seal ring. 3,926,444, Cl. 277-177.000.

Gritzner, Gerhard, to Dow Chemical Company, The. Diaphragm cell chlorine production. 3,926,769, Cl. 204-237.000.

Grochol, Jan; and Meier, Werner, to Sulzer Brothers Limited. Non-corrosive regular packing member and a method of making same. 3,927,165, Cl. 264-129.000.

Grolman, Bernard: *See—*
Richards, William; and Grolman, Bernard, 3,925,825.

Gross, James R.; and McFadden, Russell T., to Dow Chemical Company, The. Method for making a crosslinkable aqueous solution which is useful to form soft, water-swellable polyacrylate articles. 3,926,891, Cl. 260-29.60E.

Gross, Robert A., to United States of America, Air Force. Shock heated, wall confined fusion power system. 3,925,990, Cl. 60-644.000.

Gruhl, Frederick, to General Motors Corporation. Fuel economy indicator having range selected filters. 3,927,305, Cl. 235-150.210.

Grunenwald, Karl, to Binz & Co. Method of and device for disinfecting the air extracted from the isolated interior of an ambulance. 3,926,099, Cl. 98-2.050.

GTE Automatic Electric Laboratories Incorporated: *See—*
Bertellotti, Ansano, 3,926,490.
Stewart, James A.; and Zellmer, Neale A., 3,927,266.

GTE Laboratories Incorporated: *See—*
Auborn, James J., 3,926,669.

GTE Sylvania Incorporated: *See—*
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Hammond, Michael J.; and Herner, Raymond F., 3,927,240.

Guala, Piergiacomo, to Angelo Guala di Piergiacomo e Roberto Guala & C. S.A.S. Stopper of plastics having an expansible portion for bottles for sparkling wines and the like. 3,926,329, Cl. 215-361.000.

Gudernatsch, Hugo; Jaekel, Gerhart; Kroll, Wolfgang; Oden, Volker; and Reinhardt, Konrad, to Hoechst Aktiengesellschaft. Apparatus for the aeration of effluent with oxygen-containing gas. 3,926,810, Cl. 210-220.000.

Guenst, William C., Jr.; and Litschi, Gerold, to W. R. Grace & Co. Plate conveying apparatus. 3,926,297, Cl. 198-19.000.

Guetens, Edward G., to Atlantic Richfield Company. Production of hydroperoxides. 3,927,115, Cl. 260-610.00B.

Gueussier, Andre; Tricot, Roland; and Lefevre, Jean. Semi-ferritic stainless manganese steel. 3,926,685, Cl. 148-12.0EA.

Guilbault, Lawrence James; and Zakrzewski, James Richard, to Calgon Corporation. Process of improving water drainage from paper webs by addition of a water soluble block polymer to a cellulosic pulp slurry. 3,926,718, Cl. 162-168.000.

Guild, William H. Ski binding apparatus. 3,926,451, Cl. 280-11.35C.

Guinosso, Charles J.: *See—*
Teller, Daniel M.; Sellstedt, John H.; and Guinosso, Charles J., 3,926,984.

Gujer, Henri, to Diplomat AG. Self-cleaning electrically ignited lighter. 3,926,545, Cl. 431-122.000.

Gulf Oil Corporation: *See—*
Roth, Clarence Edward, Jr.; Hughes, Robert L.; and Thompson, Kenneth F. (said Clarence Edward Roth and Robert L. Hughes assors. to), 3,927,245.

Gulf Research & Development Co.: *See—*
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Lasswell, Joseph A.; and Brown, Francis E., 3,926,934.

Gunther, Friedrich Wilhelm: *See—*
Scharfenberg, Walter Ernst Gustav; and Gunther, Friedrich Wilhelm, 3,926,317.

Gupta, Shanti S.; and Pershing, Robert G., to Wescom, Inc. Negative impedance repeater. 3,927,280, Cl. 179-170.00G.

Gurgiolo, Arthur E.: *See—*
Quock, Billy; Kelley, Don Howard; Warneke, Sehon Lester; and Gurgiolo, Arthur E., 3,926,867.

Gurney, Ferdinand J.: *See—*
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Guskova, Tatyana Anatolievna: *See—*
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Gutbier, Heinrich: *See—*
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Gutjahr, Manfred A.; Schmid, Rudolf; and Beccu, Klaus D., to Battelle Memorial Institute. Method of manufacturing positive nickel hydroxide electrodes. 3,926,671, Cl. 136-29.000.

Gutner, Kenneth H. Drawer slide assembly. 3,926,492, Cl. 312-348.000.

Guttulsrud, Per. Ski bindings. 3,926,450, Cl. 280-11.35B.

Guzy, Raymond L.; and Sheth, Rajesh N., to Borg-Warner Corporation. Oil-resistant blends for electrical insulation. 3,926,900, Cl. 260-33.6AQ.

Gysling, Henry L., to Eastman Kodak Company. Photosensitive copper (I) complexes. 3,927,055, Cl. 260-438.100.

H. Gertsch & Co. Aktiengesellschaft: *See—*
Rudin, Ernst; and Weisskopf, Heinz, 3,926,599.

H. R. Turner (Willenhall) Limited: *See—*
Johndrow, John Paul; and Pallant, Joseph, 3,926,474.

H. W. Wallace & Company, Limited: *See—*
More, Arthur Rowlatt; and Whittington, Robert John, 3,926,042.

Haas, Georges: *See—*
Ferrini, Pier Giorgio; Haas, Georges; and Rossi, Alberto, 3,926,961.

Haase, Elmer A.; and Kirwin, James M., to Bendix Corporation, The. Fuel control apparatus. 3,926,162, Cl. 123-139.00A.

Habasko, Werner; and Syrovatka, Rudolf, to Lever Brothers Company. Anti-caking composition. 3,926,841, Cl. 252-383.000.

Habiby, Emile Najib, to Lubrizol Corporation, The. Novel sulfur-containing compositions. 3,926,822, Cl. 252-48.600.

Haddad, Ihsan A., to Instrumentation Laboratory, Inc. Electrochemical electrode structure. 3,926,765, Cl. 204-195.00F.

Hafskjold, Petter Sigvardt, to Ingenior F. Selmer A/S. Breakwater device for offshore submerged foundation structures. 3,925,997, Cl. 61-46.500.

Hage, Jacob M., to Midwest Chrome Process Company. Multiple metallic layers including tin-cobalt-containing alloy layer. 3,926,569, Cl. 29-194.000.

Hagel, John Louis; Pape, Robert Carl; and Reinwall, Ernest William, Jr., to Illinois Tool Works Inc. Panel support and attachment system. 3,925,952, Cl. 52-714.000.

Hagen, Helmut; and Fleig, Helmut, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. 5-Nitrofuran compounds. 3,926,966, Cl. 260-240.00A.

Hagmann, Mark J.: *See—*
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Hahn, Helmut: *See—*
Rebsdat, Siegfried; and Hahn, Helmut, 3,926,989.

Hajos, Zoltan George, to Hoffmann-La Roche Inc. Stereospecific total steroidal synthesis via substituted C/D-trans indanones. 3,927,031, Cl. 260-340.900.

Haldor Topsoe A/S: *See—*
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Hall, Garth O.; and Unangst, Paul H., to Universal Oil Products Company. Locking mechanism for pedestal seat. 3,926,396, Cl. 248-418.000.

Hall, John B.; Lala, Lekhu Kewalram; Beets, Muus G. J.; and Taylor, William I., to International Flavors & Fragrances Inc. Bicyclic compounds and processes for making and using same. 3,927,083, Cl. 252-522.000.

Hall, John B.: *See—*
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Halliburton Company: *See—*
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Hallsenius, Carlgustaf, Administrator: *See—*
Pulk, Elgas, deceased; Hallsenius, Carlgustaf, Administrator; and Noren, John Paul, 3,926,345.

Hama, Hiroyuki, to Olympus Optical Co., Ltd. Device for directing light to illuminating fiber optical system. 3,926,501, Cl. 350-96.00B.

Hamamoto, Kazuko: *See—*
Kondo, Shinichi; Sezaki, Masaji; Koike, Makiko; Shimura, Masaru; Akita, Eiichi; Satoh, Kimio; Hamamoto, Kazuko; Niida, Taro; and Hara, Takeshi, 3,926,948.

Hammann, Ingeborg: *See—*
Colln, Reimer; and Hammann, Ingeborg, 3,926,998.

Hammond, Michael J.; and Herner, Raymond F., to GTE Sylvania Incorporated. Haze resistant cathode luminescent sulfide phosphors and method of preparing same. 3,927,240, Cl. 428-403.000.

Hammond, Peter R., to Hammond, Peter R.; and United States of America, Navy. Lasing dye and method of preparation. 3,927,033, Cl. 260-343.20R.

Han, Shu Tang: *See—*
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Hancock Brick and Tile Company: *See—*
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Hanney, Kenneth E. N.: *See—*
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Hannibal, Billy B., to Tecumseh Products Company. Compressor oil pump with filter. 3,926,281, Cl. 184-6.160.

Hansen, Barton G.: *See—*
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Hansen, Hans John; and Primus, Frederick James, to Hoffmann-La Roche Inc. Localization of tumors by radiolabelled antibodies. 3,927,193, Cl. 424-1.000.

Hanze, Arthur R., deceased: *See—*
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Hanze, Janice W., administratrix: *See—*
Hester, Jackson B., Jr.; and Hanze, Arthur R., deceased, 3,927,016.

Hara, Shinji: *See—*
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Hara, Takeshi: *See—*
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Harada, Juntaro: *See—*
Katori, Tatsuhiko; Sato, Giichi; Kihara, Takashi; Yumoto, Norio; Makino, Shigeru; and Harada, Juntaro, 3,927,082.

Harada, Yoshiharu: *See—*
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Hardway, Edward V., Jr.; and Holtman, William H., to Cavitron Corporation. Activity and respiration monitor. 3,926,177, Cl. 128-2.00S.

Hare, Woodrow W.: *See—*
Harrell, Edsel A.; Hare, Woodrow W.; and Young, John R., 3,926,371.

Hargis, Billy M., to Minnesota Mining and Manufacturing Company. Electrical interconnection for metallized ceramic arrays. 3,926,746, Cl. 204-15.000.

Harmes, Clyde S., III: *See—*
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Wilson, John D.; Nyiri, Laszlo K.; Humphrey, Arthur E.; and Harmes, Clyde S., III, 3,926,737.

Harmsen, Jan Willem; and Swinkels, Augustinus Petrus Jozephus, to U.S. Philips Corporation. Manufacturing a cold light mirror by evaporating ZnS and SiO alternately in an O_2 atmosphere. 3,926,508, Cl. 350-296.000.

Harmsma, Guenter; Rosenberg, Harry; Laabs, Johannes; and Becker, Kunibert, to Gewerkschaft Eisenhutte Westfalia. Roof support frames for mining. 3,925,995, Cl. 61-45.00D.

Harnisch, Horst, to Bayer Aktiengesellschaft. Naphtholactam dyestuffs. 3,927,005, Cl. 260-294.80B.

Harrap, John; and Stewart, Richard Gordon, to Parks-Cramer (Great Britain), Ltd. Method and apparatus for collecting fiber waste from open-end spinning machines. 3,926,665, Cl. 134-18.000.

Harrell, Edsel A.; Hare, Woodrow W.; and Young, John R., to United States of America, Agriculture. Apparatus and system for mixing pesticide with water concurrently with spraying. 3,926,371, Cl. 239-146.000.

Harris, Derrick: *See—*
Dryden, Gale E.; and Harris, Derrick, 3,926,379.

Harris, James A.; and Arthur, Jett C., Jr., to United States of America, Agriculture. Cotton-tung oil durable-press textiles with high flex abrasion resistance. 3,926,550, Cl. 8-116.00R.

Harris, Robert C., Jr.: *See—*
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Harsanyi, Kalman: *See—*
Korbonits, Dezso; Harsanyi, Kalman; Molnar nee Bako, Erzsebet; Takacs, Kalman; Heja, Gergely; Bodnar, Janos; Bodrogi, Istvan; and Erodi, Judit, 3,927,025.

Harvey, Kenneth; and Lee, Sydney, to Colgate-Palmolive Company. Dentifrices. 3,927,202, Cl. 424-57.000.

HASCO-Normalien Hasenclever & Co.: *See—*
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Hasegawa, Susumu: *See—*
Shimada, Toshikazu; Komatsubara, Kiichi; Hasegawa, Susumu; and Kato, Yoshiki, 3,926,682.

Hasson, Harrith M. Surgical closure having ease of assembly. 3,926,193, Cl. 128-335.000.

Haszeldine, Robert Neville; and Rowland, Ronald, to Pennwalt Corporation. Process for insertion of hexafluoropropene at the aliphatic carbon-hydrogen bond of a functionally substituted hydrocarbon. 3,927,129, Cl. 260-653.10R.

Hattori, Kiyoji: *See—*
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Hatz, Ernst; and Schmuck, Johann, to Motorenfabrik Hatz KG. Internal combustion engine with silencing means. 3,926,155, Cl. 123-41.680.

Hauenstine, Edgar F., to P. R. Mallory & Co. Inc. Snap switch. 3,927,289, Cl. 200-284.000.

Hauenstine, Edgar F.: *See—*
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Haughwitz, Rudiger D.: *See—*
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Haugwitz, Rudiger D.; and Narayanan, Venkatachala L., to E. R. Squibb & Sons, Inc. 2-(Heterocyclicmethylideneamino)benzimidazoles and derivatives thereof. 3,926,967, Cl. 260-240.00A.

Haugwitz, Rudiger D.: *See—*
Rovnyak, George; Narayanan, Venkatachala L.; Haugwitz, Rudiger D.; and Cimarusti, Christopher M., 3,927,014.

Hauser, Raimund: *See—*
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Hayashi, Kenji; Yumde, Yasufumi; and Kawamura, Kotaro, to Hitachi, Ltd. Frequency dependent compensating circuit for magnetic recording signals. 3,927,420, Cl. 360-65.000.

Hayashi, Makoto; Hinata, Masanori; Yokota, Minoru; and Kondo, Takasi, to Sumitomo Electric Industries, Ltd. Hydrostatic extrusion process for producing fine gauge wires. 3,926,023, Cl. 72-60.000.

Hayashi, Noriyuki; Sasaki, Kenji; Inaba, Hideaki; and Nonaka, Koushi, to Bridgestone Tire Company Limited. Elastomer composition. 3,927,144, Cl. 260-888.000.

Hayes, Christopher W. J.: *See—*
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Hayes, Phil H.: *See—*
Thomas, David G.; Mixon, William R.; and Hayes, Phil H., 3,926,799.

Hayes, Robert I., Jr.: *See—*
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Hazen Research, Inc.: *See—*
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Heathcote, Bernard Vincent: *See—*
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Hebert, Jacques J.: *See—*
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Hedgpeth, Joel, to Water Science Inc. Method for removing both organic matter and bacteria from a body of water. 3,926,802, Cl. 210-62.000.

Heemann, Volker: *See—*
Francke, Wittko; and Heemann, Volker, 3,927,207.

Heenan, Sidney A., to Amerace Corporation. Pin having nonaligned cube axis and pin axis and bundle of such pins. 3,926,402, Cl. 249-117.000.

Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., to Janssen Pharmaceutica N.V. 1-(β-Aryl-β-R-ethyl)imidazoles. 3,927,017, Cl. 260-309.000.

Heiba, El-Ahmadi I.: *See—*
Dickert, Joseph J., Jr.; and Heiba, El-Ahmadi I., 3,926,820.

Heinemann, Otto, to Polysius AG. Process and apparatus for cooling of fired or sintered material. 3,925,907, Cl. 34-20.000.

Heisig, Wilhelm. Method of producing and packaging gloves formed of thermoplastic foil. 3,925,958, Cl. 53-21.0FW.

Heja, Gergely: *See—*
Korbonits, Dezso; Harsanyi, Kalman; Molnar nee Bako, Erzsebet; Takacs, Kalman; Heja, Gergely; Bodnar, Janos; Bodrogi, Istvan; and Erodi, Judit, 3,927,025.

Heldenbrand, Stanley W.; Johnson, David L.; and Mote, Neil H., to Seaco Computer-Display Incorporated. Sheet feeding apparatus. 3,926,428, Cl. 271-109.000.

Hella, Richard A.: *See—*
Locke, Edward V.; and Hella, Richard A., 3,926,510.

Hellerbach, Joseph; and Szente, Andre, to Hoffman-La Roche Inc. Diarylmethane derivatives and processes for their preparation. 3,927,010, Cl. 260-296.00R.

Hellmuth, Walter W.: *See—*
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Helser, Jerry L.: *See—*
Shannon, Richard F.; and Helser, Jerry L., 3,926,653.

Hemingway, Maurice; and Ward, Trevor, to Hotwork Limited. Method of heating the interior and structure of large vessels or enclosures. 3,926,543, Cl. 431-9.000.

Hemmelsbach, Richard J., to Space Age Industries, Inc. Modular structure formed of interconnected tubular members. 3,925,942, Cl. 52-86.000.

Hendricks, Thomas L.: *See—*
Brooks, Wayne D.; and Hendricks, Thomas L., 3,926,032.

Hendrickson, Thomas A.: *See—*
Davis, Stephen A.; Dougherty, Keith H.; Levit, Alan D.; Hendrickson, Thomas A.; and Sanderson, Kenneth R., 3,926,088.

Henk, Michael G.; and Sartler, Gary P., to Standard Oil Company. Alpha-methyl styrene/tertiary butyl styrene/olefin terepolymer resins and hot melt adhesives containing the same. 3,926,882, Cl. 260-28.5AV.

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Hentrich, Donald M. Modular furniture structure assembly. 3,926,483, Cl. 312-107.000.

Henzi, Beat, to Sandoz, Ltd. Azo dyes having a triazolium diazo component radical with a fused cycloalkyl ring. 3,926,941, Cl. 260-146.00R.

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Hodgson, Clive, to Chevron Research Company. Process for producing hydroxy-aluminum nitrate polymer. 3,927,184, Cl. 423-394.000.

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Holle, Bernd; and Winter, Gerhard, to Bayer Aktiengesellschaft. Titanium dioxide pigment coated with layers of aluminum oxide and metal phosphate. 3,926,660, Cl. 106-300.000.

Holleyman, John E. Compressed air power plant. 3,925,984, Cl. 60-370.000.

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Honjo, Satoru; Tamai, Yasuo; and Tsuji, obuo, to Xerox Corporation. Liquid developer composition and process for preparing same. 3,926,825, Cl. 252-62.100.

Honsel, Karl-Heinz. Application of adhesive to a moving web. 3,926,148, Cl. 118-247.000.

Hooker Chemicals & Plastics Corporation: *See—*
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Hopkins, Henry S., Jr.; and Gordon, Philip L., to General Latex and Chemical Corporation. Cellular-urethane backed carpet. 3,926,700, Cl. 428-95.000.

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Horie, Ikutaro; Miyazako, Taksuhi; and Shimada, Takeo, to Fuji Photo Film Co., Ltd. Process for hardening gelatin in photographic layers which contain a thickener and hardener by utilizing acrylic acid-acrylamide copolymers. 3,926,869, Cl. 260-8.000.

Horiguchi, Shojiro; Nakamura, Michiei; Nakajima, Keiji; and Seino, Yoshio, to Dainichiswika Color & Chemicals Mfg. Co., Ltd. Detergent composition having polymer bonded indicator. 3,926,830, Cl. 252-135.000.

Horio, Takehiro; Tsuda, Katsuhisa; Imai, Tadashi; Mitsutsuka, Masashi; and Morise, Heiji, to Nippon Steel Corporation. Tuyere for blowing gas into a melting furnace. 3,926,417, Cl. 266-41.000.

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Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz, Inc. Bis-substituted or unsubstituted-p-benzoylbenzyl acetic acids. 3,927,079, Cl. 260-501.100.

Houlihan, William J.; and Manning, Robert E., to Sandoz Inc. Substituted benzylideneamino guanidines. 3,927,096, Cl. 260-564.00F.

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Huber-Emden, Helmut, to Ciba-Geigy AG. Process for the manufacture of polyfluoroalcohols and their use. 3,927,126, Cl. 260-633.000.

Hughes, John Lawrence; Seyler, Jay Kenneth; and Liu, Robert Chung-Huang, to Armour Pharmaceutical Company. Synthesis of salmon calcitonin. 3,926,938, Cl. 260-112.500.

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Husband, Reed J. Accelerator damper. 3,926,160, Cl. 123-103.00E.

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Ichikawa, Yoshihiro; Fujisawa, Tetsuo; and Seo, Yoshiro, to Kobe Steel, Ltd. Method and apparatus for use in firing raw material for cement. 3,926,651, Cl. 106-100.000.

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Iglesias, Jose J. Urological bladder evacuator. 3,926,187, Cl. 128-232.000.

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Ilford Limited: *See—*
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Ishida, Nakao; Okada, Tsutomu; and Kamata, Akira, to Mitsubishi Chemical Company, Ltd. 3-(5,7-Dimethyl-2-hydroxy-4-oxo-6,8-decadienyl)-glutarimide fermentation. 3,926,731, Cl. 195-80.00R.

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Ishizuka, Shinichi; and Mihara, Kuniyuki, to Citizen Watch Co., Ltd. Numerical control lathe of sliding-headstock type. 3,926,078, Cl. 82-2.500.

Ishizumi, Kikuo; Mori, Kazuo; Yamamoto, Michihiro; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, to Sumitomo Chemical Company, Ltd. Process for production of quinazoline derivatives. 3,926,993, Cl. 260-251.0QB.

Ismail, Roshdy; Lenz, Arnold; and Termin, Erich, to Dynamit Nobel Aktiengesellschaft. Process for the preparation of phosphorus-containing compounds. 3,927,151, Cl. 260-975.000.

Isojima, Imao; Doi, Yuzuru; and Hara, Shinji, to Mitsui Shipbuilding & Engineering Co. Ltd.; and Kawasaki Steel Corporation. Loading chute for cargo vessel. 3,926,290, Cl. 193-27.000.

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Iturriaga Notario, Luis. Adjusting device for activating brake shoes. 3,926,284, Cl. 188-196.0BA.

Ivanov, Mikhail Ivanovich; From, Anatoly Alexandrovich; Kiseley, Anatoly Efimovich; Nikitenko, Alexandr Alexandrovich; Rusanov, Valentin Mikhailovich; and Skobelev, Leonid Ivanovich. Method of extracting pure serum albumin from biological fluids using a salt of a carboxylic aliphatic acid. 3,926,939, Cl. 260-122.000.

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Iwasaki, Takao: *See—*
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Iwazumi, Tatsuo. Nonlinear filter for detecting electrocardiogram R-waves and other physiological signals. 3,927,377, Cl. 328-167.000.

Izumi, Kenkichi, to Hitachi, Ltd. Multiple-effect multi-stage flash evaporation process and apparatus for demineralizing water. 3,926,739, Cl. 202-173.000.

Izumi, Sumio, to Mitsui Mining & Smelting Co., Ltd. Flotation method for separation of mixture of plastics. 3,926,790, Cl. 209-9.000.

Izumi, Sumio; and Tanaka, Hiroshi, to Mitsui Mining & Smelting Co., Ltd. Flotation method of separation of mixture of plastics. 3,926,791, Cl. 209-9.000.

J. Aichelin, Firma: *See—*
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Jaeger, Raymond Edward; and Miller, Thomas John, to Bell Telephone Laboratories, Incorporated. Method for producing particulate material and ceramic bodies therefrom. 3,927,155, Cl. 264-6.000.

Jaekel, Gerhart: *See—*
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Janhohen, Veikko. Bracing package. 3,926,364, Cl. 229-55.000.

Janiszewski, Kasimir. Die set with two-part leader pins. 3,926,083, Cl. 83-637.000.

Janssen Pharmaceutica N.V.: *See—*
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Janssens, Abraham, to U.S. Philips Corporation. Paging system. 3,927,373, Cl. 325-58.000.

Jantzen, Hermann; Kuffel, Karl; and Puchta, Herbert, to Daimler-Benz Aktiengesellschaft. Shifting linkage for shifting change-speed transmissions. 3,926,068, Cl. 74-473.00R.

Japan Atomic Energy Research Institute: *See—*
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Joersz, Donald F. Locking device. 3,926,018, Cl. 70-19.000.

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Johndrow, John Paul; and Pallant, Joseph, to H. R. Turner (Willenhall) Limited. Vehicle seats. 3,926,474, Cl. 297-355.000.

Johnson, Arvid B. Apparatus for spreading granulated and pulverized material. 3,926,377, Cl. 239-655.000.

Johnson, Clarence R.; Kidder, Jay T.; and Talarico, Orlando N., to Tilt-A-Bed Corporation, The. Bed and lounge unit. 3,925,834, Cl. 5-13.000.

Johnson, David L.: *See—*
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Johnson, Joel Swenum: *See—*
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Johnson, John W.; and Selleck, Robert A., to United Technologies Corporation. Sequential helicopter blade ejection system. 3,926,388, Cl. 244-17.110.

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Johnson, Norman F., to United States of America, Navy. Deep ocean parachute release. 3,926,137, Cl. 114-209.000.

Johnson, Reginald Francis; Potts, Thomas James; and Jennings, Gordon Bridgman, to Rolls-Royce (1971) Limited. Machine tools. 3,926,079, Cl. 82-36.00A.

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Jones, Freeman B., Jr.; and Ratto, Joseph J., to Rockwell International Corporation. Low melting point disubstituted-p,p'-phenyl cinnamate liquid crystals. 3,926,834, Cl. 252-299.000.

Jones, John L.; Rubino, Andrew M.; and Lindahl, Charles B., to Armour Pharmaceutical Company. Zirconium complexes of basic aluminum bromides and methods of making same. 3,927,188, Cl. 423-463.000.

Jones & Laughlin Steel Corporation: *See—*
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Jones, Robert J.; and Cassey, Howard N., to TRW Inc. Low temperature curing polyimides. 3,926,913, Cl. 260-47.0CP.

Jones, Robert J.; and Green, Howard E., to TRW Inc. Bis(furfuryl) imide. 3,927,027, Cl. 260-326.00S.

Jones, Robert T., to Monsanto Company. Phenolic resin and battery separator impregnated therewith. 3,926,679, Cl. 136-146.000.

Jones, Ronald E.: *See—*
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Jones, Roosevelt J. Multi-column fractionator. 3,926,809, Cl. 210-198.00C.

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Jonville, Pierre; Stohr, Helmut; Beccu, Klaus D.; and Baronnet, Rene, to Battelle Memorial Institute. Method of manufacturing electrical connection elements for supporting electrodes for storage cells. 3,926,674, Cl. 136-36.000.

Jordan, John E.; and Newcombe, George M., to United States of America, Tennessee Valley Authority and the Environmental Protection Agency. Sulfur dioxide removal from stack gases. 3,927,178, Cl. 423-242.000.

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Juillet, Jean-Marc G. Artificial tooth implant device. 3,925,892, Cl. 32-10.00A.

Jungles, John; Whitehouse, David John; and Nightingale, Eric Gordon, to Rank Organisation Ltd., The. Optical diffractometers. 3,927,253, Cl. 178-6.800.

Junike, Wilhelm August Karl; and Koch, Hans-Joachim, to Max Muller Brinker Maschinenfabrik Zweigniederlassung der Gildemeister Aktiengesellschaft. Apparatus for changing the tool holders carrying mounted tools on a machine tool. 3,925,877, Cl. 29-568.000.

Jurid Werke GmbH: *See—*
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Jury, Gene R. Furnace and cold air return systems. 3,926,173, Cl. 126-110.00R.

Kablaoui, Mahmoud S.; and Duranleau, Roger G., to Texaco Inc. Preparation of alkylamides. 3,927,049, Cl. 260-404.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
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Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
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Kalafatas, Nicholas J.; Rosenthal, Harold; and Consolazio, George A., to General Foods Corporation. Cold water-soluble gelatin composition and process of preparing same. 3,927,221, Cl. 426-576.000.

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Kanaby, Randel R., to General Motors Corporation. Method for producing directionally solidified cast alloy articles and apparatus therefor. 3,926,245, Cl. 164-53.000.

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Karayannis, Nicholas M.; Khelghatian, Missak; and Lee, Sam S., to Standard Oil Company. Catalyst and process for the polymerization of alpha-olefins. 3,926,928, Cl. 260-88.200.

Kareman, James. Combination saw and filing blade for use with jig or sabre saw. 3,925,867, Cl. 29-78.000.

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Kase, Heino; Marshall, Edward W.; and Kirtikar, Survrat, to Varian Associates. Multistage thin film toning system for developing charged images. 3,927,409, Cl. 346-74.0ES.

Kashio, Toshio, to Casio Computer Co., Ltd. Control device for tabulation printing. 3,927,395, Cl. 340-172.500.

Katamoto, Kazuyoshi: *See—*
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Katori, Tatsuhiko; Sato, Giichi; Kihara, Takashi; Yumoto, Norio; Makino, Shigeru; and Harada, Juntaro, to SS Pharmaceutical Co., Ltd. 2-Alkoxybenzoylamino acids. 3,927,082, Cl. 260-519.000.

Katsura, Masaki: *See—*
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Katz, Harry Selig. Method of making a disposable dental floss tooth pick. 3,926,201, Cl. 132-91.000.

Katzman, Oded. Frost protection plug for a water meter. 3,926,051, Cl. 73-277.000.

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Kawabata, Hidetsugu; and Yamashita, Tadaoki, to Matsushita Electric Industrial Co., Ltd. Dosimetry method. 3,927,328, Cl. 250-473.000.

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Kawamura, Kotaro: *See—*
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Kawasaki, Iwao: *See—*
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Kawasaki Steel Corporation: *See—*
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Kawata, Shigeo: *See—*
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Kaye, Saul, to Ferro Corporation. Treatment of organic biodegradable materials with monochloroacetate esters of chlorinated phenols. 3,926,644, Cl. 106-15.0AF.

Keegan, James J.; Patel, Girish; and Rubin, Howard, to Warner-Lambert Company. Denture adhesive preparation containing an anionic protein material. 3,926,870, Cl. 260-8.000.

Keil, Joseph W., to Dow Corning Corporation. Siloxane-modified epoxy resin compositions. 3,926,885, Cl. 260-29.1SB.

Keller, Hans; and Elmis, Herbert, to ITT Industries, Inc. Monolithic integrable series stabilization circuit. 3,927,335, Cl. 307-296.000.

Kelley, Don Howard: *See—*
Quock, Billy; Kelley, Don Howard; Warneke, Sehon Lester; and Gurgiolo, Arthur E., 3,926,867.

Kelley, John Joseph; and Varker, Alan Edward, to ESB Incorporated. Epoxy resin-amine salt emulsion composition. 3,926,886, Cl. 260-29.2EP.

Kelley, Zar W., to Beck, Louis. Pump having spring-loaded piston shaft assembly. 3,925,988, Cl. 60-539.000.

Kelly, James G., to American Brands, Inc. Method and apparatus for drying stillage. 3,925,904, Cl. 34-10.000.

Kemmenoe, Adrian Victor: *See—*
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Kennedy, John B., Jr.: *See—*
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Kennedy, Patrick Hayes. Inflatable life preserver. 3,925,838, Cl. 9-319.000.

Kenny, Edwin J. Combination cutlery and cutting board. 3,926,419, Cl. 269-16.000.

Kenton, Joseph R., to Phillips Petroleum Company. Removal of fertilizer precipitate. 3,926,610, Cl. 71-34.000.

Kercher, Dean S.; and Rod, Trygve R., to Xerox Corporation. Quick change labeling head. 3,926,352, Cl. 226-79.000.

Kerman, Stephen: *See—*
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Kernforschungsanlage JULICH GmbH: *See—*
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Kerr Glass Manufacturing Corporation: *See—*
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Keyes, Melvin H.: *See—*
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Keylwert, Johann, to Klockner-Humboldt-Deutz AG. Rotary piston combustion engine. 3,926,151, Cl. 123-8.050.

Keyser, Naaman H.; and Mertdogan, Akgun, to Interlake, Inc. Process for purification of manganese alloys. 3,926,623, Cl. 75-129.000.

Keyworth, Donald A.: *See—*
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Kharouf, Issa J.: *See—*
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Khelghatian, Missak: *See—*
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Kholodovskaya, Rakhil Samoilovna: *See—*
Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovidh; Zakharova, Nina Vasilievna; Golubenko, Mikhail Afanasievich; Tolstikov, Genrikh Alexandrovich; Kholodovskaya, Rakhil Samoilovna; Shalimova, Zoya Stepanovna; Legostaeva, Taisia Vasilievna; Popov, Vasily Dmitrievich; and Dolidze, Vladimir Romanovich, 3,927,038.

Kidder, Jay T.: *See—*
Johnson, Clarence R.; Kidder, Jay T.; and Talarico, Orlando N., 3,925,834.

Kiesewetter, Erwin; and Herrling, Siegfried. Preparation of salts of carboxylic acids containing a beta-lactam groups. 3,926,954, Cl. 260-239.100.

Kifer, James M.: *See—*
Sisco, Willie J., Jr.; Long, Cecil L.; and Kifer, James M., 3,926,652.

Kihara, Takashi: *See—*
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Kihara, Toshiyuki, to Yoshida Kogyo Kabushiki Kaisha. Slider for a slide fastener. 3,925,857, Cl. 24-205.15R.

Kikkoman Shoyu Co., Ltd.: *See—*
Ishiyama, Jiro; and Yokotsuka, Tamotsu, 3,926,725.

Kikuchi, Makoto, to Toyoda-Koki Kabushiki-Kaisha. Grinding machine with an automatic exchange device for grinding wheels. 3,925,878, Cl. 29-568.000.

Kim, Sunyong P. Portable shower. 3,925,828, Cl. 4-147.000.

Kimberly-Clark Corporation: *See—*
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Kimura, Shuji; and Takahata, Kouichi, to Nippon Kogaku K. K. Motor-driven device for use in a long film strip magazine. 3,927,413, Cl. 354-173.000.

King, Peter Graham: *See—*
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Kinnicutt, Roger, Jr.: *See—*
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Kinoshita, Minoru; and Taniuchi, Osami, to LogEtronics Inc. Automatic film processor replenishment system. 3,927,417, Cl. 354-298.000.

Kirtikar, Survrat: *See—*
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Kirwin, James M.: *See—*
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Kister, Ronald R. Panel handling device and method. 3,926,318, Cl. 214-1.00H.

Kitaoka, Atsushi: *See—*
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Kiyonaga, Kingo; and Murakawa, Yoshiyuki, to Hitachi Metals, Ltd. Pitting resisting alloy steels. 3,926,622, Cl. 75-126.00G.

Kjellberg, Jonas F., to SKF Industrial Trading and Development Company B.V. Harrow device. 3,926,261, Cl. 172-688.000.

Klatt, Alfred, to WABCO Westinghouse GmbH. Anti-locking vehicle brake system for individual wheel control. 3,926,477, Cl. 303-21.00P.

Klein, George I., to Stauffer Chemical Company. Process for manufacturing phosphorus oxychloride. 3,927,179, Cl. 423-300.000.

Kleiner, Eduard K., to Ciba-Geigy Corporation. Atomized spray dispenser with improved atomization. 3,926,343, Cl. 222-145.000.

Klementi, Toe Jokhannesovich; Herem, Henn-Jaak Berovich; and Skornyakov, Eduard Petrovich. Device and method for separation of fluid mixture into fractions in a chromatograph. 3,926,589, Cl. 55-67.000.

Kliment, Karel; and Tu, Robert S., to National Patent Development Corporation. Hydrophilic root canal filling material. 3,925,895, Cl. 32-15.000.

Klingler, Thomas C.: *See—*
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Klockner-Humboldt-Deutz AG: *See—*
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Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
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Klunsch, Maximilian; Lingens, Paul; and Ratz, Heinz, to Dynamit Nobel Aktiengesellschaft. Explosive composition and eutectic mixture therefor. 3,926,696, Cl. 149-2.000.

Klygis, Mindaugas Julius, to Illinois Tool Works Inc. Bottle carrier. 3,926,307, Cl. 206-153.000.

Knepler, John T., to Dickey-john Corporation. Efficiency monitoring system for seed planting apparatus. 3,927,400, Cl. 340-276.000.

Knipper, Aloysius J.: *See—*
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Knoll A.G. Chemische Fabriken: *See—*
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Knopf, Werner; and Liebscher, Harald, to VEB Kombinat Nagema. Apparatus for compacting contents of containers. 3,925,962, Cl. 53-124.00B.

Knorr-Bremse GmbH: *See—*
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Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans-Georg, to Eisenwerk-Gesellschaft Maximilianshutte mgH. Process for refining low-phosphorus pig iron to make steel. 3,926,618, Cl. 75-60.000.

Kobayashi, Takashi: *See—*
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Kobe, Inc.: *See—*
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Kobe Steel, Ltd.: *See—*
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Kobylak, Anthony M.: *See—*
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Kodama, Koji; and Kasai, Yujiro, to Tokyo Shibaura Electric Co., Ltd. Switch operating device. 3,927,365, Cl. 323-48.000.
Kodera, Yoshiaki: *See—*
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Koenig, Peter J.: *See—*
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Kogure, Katsura; Koyama, Hiroyasu; and Nakagawa, Kunio, to Nisshin Flour Milling Co., Ltd. Process for the production of 2(4-alkylphenyl)propionic acid. 3,927,084, Cl. 260-523.00A.
Kohata, Mamoru: *See—*
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Kohlmuller, Gerlind: *See—*
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Kohlmuller, Hans; and Kohlmuller, Gerlind, to Siemens Aktiengesellschaft. Process for making electrodes containing Raney nickel and a thiocyanate. 3,926,675, Cl. 136-86.00E.
Koike, Makiko: *See—*
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Kolenik, Steve A., to ARCO Medical Products Company. Cardiac pacer. 3,926,198, Cl. 128-419.0PG.
Kollmeyer, Willy D.: *See—*
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Kolm, Jan: *See—*
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Koloc, Paul M., to United States of America, Navy. Video phosphor motion perception display. 3,927,323, Cl. 250-329.000.
Komatsu, Noboru; Kurauchi, Toshio; Murase, Makoto; and Negi, Kazuhiko, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Process for production of rigid polyurethane foam and product for use as energy absorbing material. 3,926,866, Cl. 260-2.5AH.
Komatsubara, Kiichi: *See—*
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Komor, Joseph A.: *See—*
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Konas, William W.; Day, Paul L.; and Budzinski, Roger R., to Park-Ohio Industries Inc. Method and apparatus for carbonizing and degassing workpieces. 3,926,415, Cl. 266-5.00E.
Kondo, Eiji; and Mitsugi, Takashi, to Shionogi & Co., Ltd. New process for the preparation of 6-Aminopenicillanic acid. 3,926,728, Cl. 195-36.00P.
Kondo, Shinichi; Sezaki, Masaji; Koike, Makiko; Shimura, Masaru; Akita, Eiichi; Satoh, Kimio; Hamamoto, Kazuko; Niida, Taro; and Hara, Takeshi, to Meiji Seika Kaisha, Ltd. Antibiotics destomycin A and B and a method for producing same using streptomyces rimofaciens. 3,926,948, Cl. 260-210.0AB.
Kondo, Takasi: *See—*
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Kondo, Toshiyuki: *See—*
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Kondo, Yoshizi. Gripper for use with a lifting apparatus for gripping an article desired to be lifted. 3,926,468, Cl. 294-102.00R.
Konnai, Makoto; Kamata, Hiroshi; and Kado, Masaru, to Kumiai Chemical Industry Co., Ltd. Herbicidal composition containing S-(2-chlorobenzyl)-N,N-di-isopropylthiocarbamate. 3,926,612, Cl. 71-100.000.
Konrad, Charles Edward, to General Electric Company. Electric vehicle power circuit. 3,927,357, Cl. 318-139.000.
Kopito, Louis; Schuster, Samuel R.; and Kosasky, Harold, to Ovutime, Inc. Processes and devices for determining properties of bodily mucus. 3,926,037, Cl. 73-53.000.
Koppel, Gary A., to Eli Lilly and Company. Process for preparing 3-fluorocephalosporins. 3,926,978, Cl. 260-243.00C.
Korbonits, Dezso; Harsanyi, Kalman; Molnar nee Bako, Erzsebet; Takacs, Kalman; Heja, Gergely; Bodnar, Janos; Bodrogi, Istvan; and Erodi, Judit. 3-Amino-Δ^3-pyrazoline derivatives and process for the preparation thereof. 3,927,025, Cl. 260-310.00D.
Korth, Hans Erdmann: *See—*
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Koshar, Robert J.; Husted, Donald R.; Wright, Charles D.; and Zollinger, Joseph La Mar, to Minnesota Mining and Manufacturing Company. Difluoroamino compounds. 3,927,103, Cl. 260-584.00C.
Koshi, Masao: *See—*
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Kostka, Hana, to Siemens Aktiengesellschaft. Catalyst and process for the conversion of higher hydrocarbons. 3,926,850, Cl. 252-455.00R.
Kostromin, Alexandr Stepanovich: *See—*
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Kotulak, Ludovit; and Svantner, Jiri, to Ceskoslovenska akademie ved. Apparatus for measurement of volumetric changes during chemical reactions, namely oxidation reactions. 3,926,563, Cl. 23-255.00E.
Kowaka, Masamichi; and Fujikawa, Hisao, to Sumitomo Metal Industries Ltd. Low carbon Ni-Cr alloy steel having an improved resistance to stress corrosion cracking. 3,926,620, Cl. 75-122.000.
Kowal, Leonard J., to Imperial-Eastman Corporation. Tube bender. 3,926,028, Cl. 72-319.000.
Koyama, Hiroyasu: *See—*
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Koyama, Masao: *See—*
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Koyanagi, Shunichi; Arai, Shigeru; Tajima, Shigenobu; and Kurimoto, Kazuhiko, to Shinetsu Chemical Company. Method for suspension-polymerizing vinyl chloride. 3,926,931, Cl. 260-92.80W.
Koziol, Konrad; Rathjen, Hans-Carl; and Sieberer, Karl-Heinz, to C. Conradty, Firma. Metal anode for electrochemical processes and method of making same. 3,926,773, Cl. 204-290.00F.
Kozy, Michael J.: *See—*
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Kracklauer, John J., to Syntex (U.S.A.) Inc. Flexible polyvinyl chloride plastics having improved flame retardancy and reduced smoke generating. 3,926,881, Cl. 260-28.50D.
Krapcho, John; and Turk, Chester Frank, to E. R. Squibb & Sons, Inc. Substituted pyrazolo[4,3-c]pyridine compounds. 3,926,968, Cl. 260-240.00R.
Krapcho, John; and Turk, Chester Frank, to E. R. Squibb & Sons, Inc. Substituted pyrazoles. 3,926,988, Cl. 260-247.5EP.
Krenowicz, Robert A.: *See—*
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Krey, Winfried: *See—*
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Krikau, Frederick G., to Interlake, Inc. Control of coke oven door emissions. 3,926,740, Cl. 202-261.000.
Kristiansen, Odd, to Ciba Geigy Corporation. O-(methyl or ethyl)-O(S) lower alkyl-O-(4-phenoxyphenyl)phosphates. 3,927,149, Cl. 260-951.000.
Kroll, Wolfgang: *See—*
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Kronstadt, Victor, to Mack Trucks, Inc. Vehicle automatic transmission having push start capability. 3,926,075, Cl. 74-867.000.
Krueger, Robert H.: *See—*
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Krumme, Werner, to Wean United, Inc. Roll changing apparatus for a rolling mill or the like. 3,926,027, Cl. 72-239.000.
Krupp, Joseph: *See—*
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Kuhla, Donald E., to Pfizer Inc. Process for producing quinoxaline-di-N-oxides. 3,926,991, Cl. 260-250.00Q.
Kuhn, Hans H.: *See—*
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Kuhr, Albert F.: *See—*
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Kunimine, Isao, to Nippon Tsu Shin Kogyo K.K.; and TIE/communications, Inc. Interlocking bar allowing operation of one switch assembly in a plural column, row matrix switch assembly. 3,927,283, Cl. 200-5.00R.
Kunkle, Gerald E., to PPG Industries, Inc. Method and apparatus for forming a ribbon of glass on a molten metal bath. 3,926,605, Cl. 65-65.00A.
Kunne, Kurt; and Wittkopp, Fritz, to Siemens Aktiengesellschaft. X-ray examining apparatus. 3,927,326, Cl. 250-447.000.
Kuntz, Irving, to Exxon Research & Engineering Co. Novel polymers of olefins and polar monomers. 3,926,925, Cl. 260-78.50R.
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Kuwada, Yutaka; Meguro, Kanji; and Tawada, Hiroyuki, to Takeda Chemical Industries, Ltd. 2-(3-Hydroxyaminomethyl-S-triazol-4-yl)benzophenones. 3,927,015, Cl. 260-308.00R.
Kyberna GmbH: *See—*
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Kyburz, Emilio; and Spiegelberg, Hans, to Hoffmann-La Roche Inc. Tricyclic amines and processes for the preparation thereof. 3,927,128, Cl. 260-649.00R.
Kyowa Hakko Kogyo Co., Ltd.: *See—*
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Kyowa Kagakukogyo Kabushiki Kaisha: *See—*
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Laabs, Johannes: *See—*
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Laboratory Equipment Corporation: *See—*
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LaBorde, Joseph N., to Ethyl Corporation. Method of making a thermal break construction element. 3,925,953, Cl. 52-741.000.
Labossier, William H.; and Schilling, Hartmut, to Raytheon Company. Metallized isotropic boron nitride body. 3,926,571, Cl. 29-195.000.
LaBotz, Richard J., to United States of America, Air Force. Transpiration cooling washer assembly. 3,925,983, Cl. 60-265.000.
Ladany, Shaul P. Toy automobile. 3,925,925, Cl. 46-213.000.
Ladd, Floyd N.; and Stacy, Donald G., to Ford Motor Company. Vehicle window control system. 3,925,931, Cl. 49-227.000.
Ladd, Floyd N.; and Stacy, Donald G., to Ford Motor Company. Window regulator mechanism. 3,925,932, Cl. 49-227.000.
Ladd, Floyd N.; Raveschot, Marcel R.; and Stacy, Donald G., to Ford Motor Company. Power operated window regulator mechanism. 3,926,066, Cl. 74-435.000.
Ladouceur, Harold A.: *See—*
Pouch, Thomas M.; and Ladouceur, Harold A., 3,926,236.
Ladov, Edwin N., to Mobil Oil Corporation. Liquid lubricants containing crystalline sulfur and a sulfurized fat. 3,926,819, Cl. 252-31.000.
Laessig, Rudolf R., to General Electric Company. Vapor generator carburetion system. 3,926,150, Cl. 122-250.00R.
La Fata, John E.; and Cuccio, John D. Bubble gun toy. 3,925,923, Cl. 46-7.000.
Lailach, Gunter; and Rademachers, Jakob, to Bayer Aktiengesellschaft. Pretreatment of titanium-iron ores. 3,926,615, Cl. 75-3.000.
Lakso Company, Incorporated, The: *See—*
Saari, George W.; and Belliveau, Ronald L., 3,925,960.
Lala, Lekhu Kewalram: *See—*
Hall, John B.; Lala, Lekhu Kewalram; Beets, Muus G. J.; and Taylor, William I., 3,927,083.
Lallement, Georges Felix. Brackets. 3,926,395, Cl. 248-223.000.
Lamb, Kenneth; and Froud, Roderick Wilson, to International Time Recording Company Ltd. Record card systems. 3,927,302, Cl. 235-61.90R.
Lambertsen, Ejvind, to A/S E. Rasmussen. Insulated pipe systems with moisture detecting means. 3,927,351, Cl. 317-27.00R.
Lamm, Carl Goran: *See—*
Ruzicka, Jaromir; and Lamm, Carl Goran, 3,926,764.
Lamm, Heinz, to Daimler-Benz Aktiengesellschaft. Rotary piston internal combustion engine. 3,926,539, Cl. 418-149.000.
Lamparsky, Dietmar; and Calame, Jean-Pierre, to Givaudan Corporation. Substituted 2-[3'-methyl-2'-buten]yl-4-hexenal odorant compositions. 3,926,859, Cl. 252-522.000.
Lander, William M., to Index Packages, Inc. Tilt or inversion indicator. 3,926,144, Cl. 116-124.00R.
Landwehr, DeWayne A.; and Zeller, Gary P., to General Motors Corporation. Shock absorbing buffer assembly. 3,926,463, Cl. 293-63.000.
Landwehr, Dewayne A.: *See—*
Burns, Ronald N.; Landwehr, Dewayne A.; Schroeder, Roger H.; Vogelei, Robert A.; and Zeller, Gary P., 3,926,462.
Landy, Jerome J. Cabinet for biohazardous materials. 3,926,597, Cl. 55-338.000.
Lane, William P.: *See—*
Franklin, David M.; and Lane, William P., 3,927,367.
Lange, Jost; Schneider, Gerhart; and Zeh, Albert, to Hoechst Aktiengesellschaft. Foaming agent for plaster and cement compositions. 3,926,650, Cl. 106-90.000.
Langseth, Rollin Edward: *See—*
Cox, Donald Clyde; Langseth, Rollin Edward; Reudink, Douglas Otto John; and Rustako, Anthony Joseph, Jr., 3,927,379.
Lanoe, Bernard; and de Metz, Elisabeth. Electromagnetic radiation detector. 3,927,375, Cl. 325-363.000.
Lapporte, Seymour J.; and Toland, William g., to Chevron Research Company. Methylene and oxymethylene bis-ester production. 3,927,078, Cl. 260-494.000.
Larkin, John M.: *See—*
Duranleau, Roger G.; and Larkin, John M., 3,927,050.
Larsen, Hans R.: *See—*
Gaeckel, Bruno L.; and Larsen, Hans R., 3,927,145.
Laske, Louis Lawrence, to Vonco Products, Inc. Peel-seal containers. 3,926,311, Cl. 206-439.000.
Lasswell, Joseph A.; and Brown, Francis E., to Gulf Research & Development Company. Polyethylene powders. 3,926,934, Cl. 260-94.90A.
Laube, Dieter: *See—*
Kurth, Harald; Laube, Dieter; and Berthold, Erich, 3,926,013.
Lavarec, Martial: *See—*
Roche, Jean Claude; Lavarec, Martial; and Maurice, Jean, 3,926,073.
Lavigne, Vernon W.: *See—*
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Lawrence Peska Associates, Inc.: *See—*
Colli, J. Louise, 3,925,915.
Martineau, Florianne, 3,925,912.
Nacci, Valentine, 3,926,435.
Lawson-Hemphill, Inc.: *See—*
Lawson, John B.; and Cooper, Charles S., 3,926,381.
Lawson, John B.; and Cooper, Charles S., to Lawson-Hemphill, Inc. Yarn tensioning means. 3,926,381, Cl. 242-47.010.
Laycock, John Nicholas Clayton: *See—*
Ray, Neil Hunter; Laycock, John Nicholas Clayton; and Robinson, William Derek, 3,926,649.
Leander, Leif, to Arenco KM-AB. Method of removing the hard and soft roe sacks, respectively, from fishes and apparatus for carrying out this method. 3,925,846, Cl. 17-60.000.
Leander, Leif; and Eriksson, Curt, to Arenco-KM AB. Method and apparatus for measuring and positioning of fish at head cutting. 3,925,847, Cl. 17-63.000.
Lear, Edward C.; and Fitton, Nigel S., to Singer Company, The. Yarn feed roller assembly. 3,926,132, Cl. 112-79.00A.
Lebailly, Jacques, to U.S. Philips Corporation. Monolithic semiconductor device including a protected electroluminescent diode. 3,927,344, Cl. 313-499.000.
Lebocey Industrie: *See—*
Palencher, Jacques, 3,926,225.
Le Can, Claude Jan Principe Frederic, to U.S. Philips Corporation. Storage device with row flag elements for row scanning. 3,927,396, Cl. 340-173.00R.
LeCorgne, William R., to Interpile USA, Inc. Method for forming cast-in-place caseless concrete piles. 3,925,998, Cl. 61-53.640.
Lee, Barry T.; Wimmer, Gunther W.; and Hyatt, Gilbert P. Adaptive illumination control device. 3,927,411, Cl. 354-4.000.
Lee, Cheuk Man, to Abbott Laboratories. Basic carbonates and carbamates of benzopyrans. 3,927,036, Cl. 260-345.300.
Lee, Henry Lawrence, II; Smith, Francis Fabian; and Swartz, Michael Lawrence, to Johnson & Johnson. Dental filling package. 3,926,906, Cl. 260-42.530.
Lee, Kun-Chieh: *See—*
Squires, Arthur M.; and Lee, Kun-Chieh, 3,926,593.
Lee, Sam S.: *See—*
Karayannis, Nicholas M.; Khelghatian, Missak; and Lee, Sam S., 3,926,928.

Lee, Sung Ki, to Andco Incorporated. Electrochemical removal of fluoride ion from aqueous media. 3,926,753, Cl. 204-149.000.

Lee, Sung Ki, to Andco Incorporated. Electrochemical contaminant removal from aqueous media. 3,926,754, Cl. 204-152.000.

Lee, Sydney: *See—*
Harvey, Kenneth; and Lee, Sydney, 3,927,202.

Leeds & Northrup Company: *See—*
MacMullan, Samuel Jay, 3,927,360.

Lefevre, Jean: *See—*
Gueussier, Andre; Tricot, Roland; and Lefevre, Jean, 3,926,685.

Legato, Gerard J.: *See—*
Micchelli, Albert L.; Legato, Gerard J.; Ganslaw, Stuart H.; and Schuler, Lawrence D., 3,927,199.

Legostaeva, Taisia Vasilievna: *See—*
Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovidh; Zakharova, Nina Vasilievna; Golubenko, Mikhail Afanasievich; Tolstikov, Genrikh Alexandrovich; Kholodovskaya, Rakhil Samoilovna; Shalimova, Zoya Stepanovna; Legostaeva, Taisia Vasilievna; Popov, Vasily Dmitrievich; and Dolidze, Vladimir Romanovich, 3,927,038.

Lehmann, Joachim: *See—*
Schmalfeld, Paul; Sauter, Dieter; Peters, Werner; Ahland, Erwin; Bock, Burkhard; and Lehmann, Joachim, 3,926,576.

Lehtinen, Timo Pellervo, to Oulo Osakeyhtio. Process for manufacturing valuable products from tall oil pitch. 3,926,936, Cl. 260-97.500.

Leifeld & Co.: *See—*
Schroder, Paul B.; and Pollkotter, Gunter, 3,926,025.

Leland Stanford Junior University, The Board of Trustees of the: *See—*
Marsden, Sullivan S., Jr.; and Hooker, Phillip R., 3,926,203.

Le Ludec, Joel, to Rhone-Poulenc S.A. Process for the preparation of hydroxylamines by hydrogenation of aromatic nitro derivatives. 3,927,101, Cl. 260-580.000.

Lemoing, Jean: *See—*
Poinsard, Henri; and Lemoing, Jean, 3,927,405.

Lemon, Stephen C.: *See—*
Madden, Michael J.; Murray, Robert L.; Lemon, Stephen C.; and Ostand, Paul R., 3,926,231.

Lennox Industries Inc.: *See—*
Parker, Sidney A.; and Rothstein, Seymour, 3,926,009.

Lenser Verwaltungs-GmbH: *See—*
Ramsteck, Wolfgang, 3,926,811.

Lenz, Arnold: *See—*
Ismail, Roshdy; Lenz, Arnold; and Termin, Erich, 3,927,151.

Lenz, George R., to G. D. Searle & Co. 6α-Carboxymethyl-17-hydroxy-3-oxo-17α-pregn-4-ene-21-carboxylic acid γ-lactone and intermediates thereto. 3,926,962, Cl. 260-239.570.

Lerner, Lewis Brian, to AMP Incorporated. Electrodeposition of gold-antimony alloys and compositions therefor. 3,926,748, Cl. 204-43.00G.

Le Roy, Pierre: *See—*
Bouchaudon, Jean; Le Roy, Pierre; and Messer, Mayer Naoum, 3,926,956.

Leroy, Vincent Marguerite: *See—*
Liesenborghs, Roland Cesar Amand; and Leroy, Vincent Marguerite, 3,926,688.

Leshner, Ervin; and Leshner, Michael D., to Fuel Injection Development Corporation. Combined fuel vapor injector and igniter system for internal combustion engines. 3,926,169, Cl. 123-32.0SJ.

Leshner, Michael D.: *See—*
Leshner, Ervin; and Leshner, Michael D., 3,926,169.

Leslie, Craig A., to Pierce Pacific Mfg. Inc. Carrier vehicle with pusher-type dolly. 3,926,453, Cl. 280-81.00R.

Lesman, Gerhard, to General Dynamics Corporation. Optical seeker scanning system. 3,927,254, Cl. 178-7.100.

LeSuer, William Monroe, to Lubrizol Corporation, The. Phosphorus, nitrogen and sulfo-containing additives. 3,926,821, Cl. 252-46.700.

Leva, Max. Entrainment separator in co-current flow. 3,926,592, Cl. 55-84.000.

Levene, Leon, to Owens-Illinois, Inc. Luminescent and/or photoconductive materials. 3,927,224, Cl. 427-64.000.

Lever Bros. Co.: *See—*
Venables, Susan Mary; and Watson, Charles Andrew, 3,925,957.

Lever Brothers Company: *See—*
Habasko, Werner; and Syrovatka, Rudolf, 3,926,841.
Ward, James Patrick, 3,925,903.

Levit, Alan D.: *See—*
Davis, Stephen A.; Dougherty, Keith H.; Levit, Alan D.; Hendrickson, Thomas A.; and Sanderson, Kenneth R., 3,926,088.

Lewicki, Lester R., to Bell Helmets Inc. Air cooled helmet. 3,925,821, Cl. 2-3.00R.

Lewis, Robert E.: *See—*
Winchell, Harry S.; and Lewis, Robert E., 3,926,176.

Lhoest, Willy, to Recherche et Industrie Therapeutiques. Bottles in semi-rigid plastic material. 3,926,341, Cl. 222-95.000.

Lhonore, Pierre: *See—*
Senes, Michel; Lhonore, Pierre; Pottier, Michel; and Quibel, Jacques, 3,926,853.

Li, George S.; and Coffey, Gerald P., to Standard Oil Company, The. Thermoplastic acrylonitrile copolymers. 3,926,926, Cl. 260-85.50B.

Li, George S.: *See—*
Hensley, Linda W.; and Li, George S., 3,926,871.

Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovidh; Zakharova, Nina Vasilievna; Golubenko, Mikhail Afanasievich; Tolstikov, Genrikh Alexandrovich; Kholodovskaya, Rakhil Samoilovna; Shalimova, Zoya Stepanovna; Legostaeva, Taisia Vasilievna; Popov, Vasily Dmitrievich; and Dolidze, Vladimir Romanovich. Method of producing isomers of methyltetrahydrophthalic anhydride. 3,927,038, Cl. 260-346.300.

Libbey-Owens-Ford Company: *See—*
Miller, Alfred H.; and Wheat, Lawrence C., 3,926,298.

Libbey, William J., to Continental Oil Company. Method of producing alkyltrifluorosilane compounds. 3,927,058, Cl. 260-448.20E.

Libbey, William J.; and Lundeen, Allan J., to Continental Oil Company. Method of producing dialkyldifluorosilane compounds. 3,927,059, Cl. 260-448.20E.

Libbey, William J., to Continental Oil Company. Method of producing diethyldifluorosilane. 3,927,060, Cl. 260-448.20E.

Licata, Joseph; Bartley, George S.; and Longenderfer, John E., to Lutron Electronics Co., Inc. Fluorescent dimming circuit with D-C flicker elimination. 3,927,345, Cl. 315-.5G..

Lieb, Donald F.; and Stillman, Neil W., to Diamond Shamrock Corporation. Apparatus for electrosanitizing waste water. 3,926,771, Cl. 204-268.000.

Liebscher, Harald: *See—*
Knopf, Werner; and Liebscher, Harald, 3,925,962.

Liechti, Peter, to Ciba-Geigy AG. New oxazole compounds, process for their manufacture, and their use as optical brighteners for organic materials. 3,926,964, Cl. 260-240.0CA.

Liedholz, Gerhard A., to Coulter Electronics, Inc. Blank value storing photometer circuitry. 3,927,317, Cl. 250-214.00R.

Liesenborghs, Roland Cesar Amand; and Leroy, Vincent Marguerite, to Societe Anonyme Cockerill-Ougree-Providence et Esperance-Longdoz. Method of manufacturing a flat steel product having an oxidation-resistant coating. 3,926,688, Cl. 148-12.100.

Lilly Industries Limited: *See—*
Messora, Edoardo, 3,927,195.

Lin, Tsung-Min, to Eli Lilly and Company. Method for alleviating gastric mucosal bleeding. 3,927,212, Cl. 424-177.000.

Lindahl, Charles B.: *See—*
Jones, John L.; Rubino, Andrew M.; and Lindahl, Charles B., 3,927,188.

Lindblad, Oskar Lennart. Safety belt arrangement for individuals. 3,926,455, Cl. 280-150.0SB.

Linde Aktiengesellschaft: *See—*
Wildmoser, Alfred; and Dannhorn, Erich, 3,926,591.

Lindenfors, Sven Georg; and Westberg, Sven-Olof Johan, to MoDoKemi AB. Nonionic cellulose ethers. 3,926,951, Cl. 260-231.00A.

Lindner, Heinz-Joachim, to Siemens Aktiengesellschaft. Impregnating compound for fiber glass mats. 3,927,234, Cl. 428-273.000.

Lingens, Paul: *See—*
Klunsch, Maximilian; Lingens, Paul; and Ratz, Heinz, 3,926,696.

Linton, Thomas Harry. Herbicide roller for weed control. 3,925,927, Cl. 47-1.500.

Lipani, Anthony F., to Xerox Corporation. Electrostatographic developer composition. 3,926,824, Cl. 252-62.100.

Lipp, Ellis P., to P. R. Mallory & Co. Inc. Switch assembly with limit stop structure allowing alternate make and break operational switch states. 3,927,276, Cl. 200-327.000.

Lippiatt, Raymond: *See—*
Croft, Robert; and Lippiatt, Raymond, 3,927,158.

Lippitsch, Hans Heinz, to Bombardier Limited. Two-cycle engine with inlet porting by rotary valve. 3,926,157, Cl. 123-73.00D.

Lippman, Michael David: *See—*
White, Hugh Edward; and Lippman, Michael David, 3,927,251.

Lippmann, Wilbur, to American Home Products Corporation. Prostaglandin E_3 and derivatives for reducing the side effects of anti-inflammatory agents. 3,927,213, Cl. 424-234.000.

Lipska, Anne E., to Stanford Research Institute. Controlled pyrolysis of cellulosic materials for production of chemicals. 3,926,947, Cl. 260-209.00R.

Lithium Corporation of America: *See—*
Hoffman, Doyt K.; and Bach, Ricardo O., 3,926,833.

Litschi, Gerold: *See—*
Guenst, William C., Jr.; and Litschi, Gerold, 3,926,297.

Litton Industrial Products, Inc.: *See—*
Vandervelden, Cornelius Keith, 3,926,370.

Liu, Robert Chung-Huang: *See—*
Hughes, John Lawrence; Seyler, Jay Kenneth; and Liu, Robert Chung-Huang, 3,926,938.

Ljungberg, John Erik, to Facit Aktiebolag. Dual carriage impact printer with belt drive. 3,926,293, Cl. 197-1.00R.

Llewellyn, Richard E.: *See—*
D'Anna, Ronald F.; and Llewellyn, Richard E., 3,927,310.

Lochner, Herbert, to Cikalon-Vliesstoffwerk GmbH. Method and needle machine for the production of pile fabrics. 3,925,866, Cl. 28-4.00R.

Locke, Edward V.; and Hella, Richard A., to Avco Everett Research Laboratory, Inc. Mirror for high power lasers. 3,926,510, Cl. 350-310.000.

LogEtronics Inc.: *See—*
Kinoshita, Minoru; and Taniuchi, Osami, 3,927,417.

Lohmann, Dieter: *See—*
Greber, Gerd; Darms, Roland; and Lohmann, Dieter, 3,926,911.

Lombardino, Joseph G., to Pfizer Inc. N-(pyridyl)-N'-alkyl-N'-(2-alkoxycarbonylbenzenesulfonyl)-glycineamides and derivatives. 3,927,002, Cl. 260-294.80F.

Long, Cecil L.: *See—*
Sisco, Willie J., Jr.; Long, Cecil L.; and Kifer, James M., 3,926,652.

Long, Roger A., to Teledyne Ryan Aeronautical a Division of Teledyne Industries, Inc. Method of manufacturing high strength fiber reinforced thermo plastic parts. 3,926,708, Cl. 156-242.000.

Longenderfer, John E.: *See—*
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Lonza Ltd., Gampel/Valais: *See—*
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Looker, Brian Edgar: *See—*
Barton, Derek Harold Richard; Underwood, William George Elphinstone; Looker, Brian Edgar; and Hewitt, Graham, 3,927,013.

Loretto, John C.; and Hanney, Kenneth E. N. Direct recovery of metals from sulphide ores by leaching and electrolysis. 3,926,752, Cl. 204-107.000.

Losenno, Luigi G. Protection apparatus. 3,926,200, Cl. 132-9.000.

Louvet, Olivier F.: *See—*
Voyer, Paul; Pitie, Jean-Marc B.; Louvet, Olivier F.; and Roche, Alain Y., 3,927,267.

Love, Richard F.: *See—*
Duranleau, Roger George; and Love, Richard F., 3,927,048.

Lovich, John W.; Meller, Oscar W.; and Sprick, Walter F., to Goodyear Aerospace Corporation. Cargo container latches. 3,926,243, Cl. 160-328.000.

Lovisa, Peter R.; and Tausanovitch, Dusan, to Lovisa, Peter R.; Tausanovitch, Dausan; and Lovisa, Tullio, part interest to each. Tie rod for use with an internal spreader means. 3,926,404, Cl. 249-213.000.

Lovisa, Tullio: *See—*
Lovisa, Peter R.; and Tausanovitch, Dusan, 3,926,404.

Low, Jack B.; Crist, Buckley; and Zoltner, Thomas J., to Jaclo, Inc. Flowable material dispenser with resilient container. 3,926,347, Cl. 222-185.000.

Lowe, Gordon, to National Research Development Corporation. 7-Hydrazono and hydrazino cephalosporins. 3,926,972, Cl. 260-243.00C.

Lowe, Kenneth, to Simon-Carves Limited. Doors. 3,926,242, Cl. 160-89.000.

Lowe, William F.; and Bondy, Harry L., to E-Z Machine Corporation. Apparatus for producing and assembling tabbed cards. 3,926,713, Cl. 156-510.000.

Lubrizol Corporation, The: *See—*
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LeSuer, William Monroe, 3,926,821.

Lucas Electrical Company Limited, The: *See—*
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Hill, William Frank, 3,927,390.
Wentworth, Philip Rossell; and Bertioli, Michael Murray, 3,927,304.
Williams, Malcolm, 3,926,154.

Lucero, Daniel P., to Meloy Laboratories, Inc. Gas analysis employing semi-permeable membrane. 3,926,561, Cl. 23-232.00R.

Lucey, George K., Jr.: *See—*
Williams, David; and Lucey, George K., Jr., 3,926,120.

Luck, Erich: *See—*
Clauss, Karl; Jensen, Harald; and Luck, Erich, 3,926,976.

Ludvigsson, Birger. Device for excluding water from a working site located adjacent to a body of water. 3,926,002, Cl. 61-64.000.

Ludwigson, David C., to United States Steel Corporation. Drawability of deoxidized steels by the addition of phosphorus and silicon. 3,926,692, Cl. 148-36.000.

Luethi, Christian, to Ciba-Geigy AG. Bis-stilbene compounds. 3,927,119, Cl. 260-613.00A.

Luhleich, Hartmut; Nickel, Hubertus; and Dias, Francesco, to Kernforschungsanlage JULICH GmbH. Method of making shaped carbonaceous bodies. 3,927,187, Cl. 423-448.000.

Lukowski, Heinz, to Feldmuhle Anlagen- und Produktions- gesellschaft mit beschrankter Haftung. Abrasive sheet containing a grain-size binder with wax particles. 3,926,585, Cl. 51-295.000.

Lundebrek, Kenneth A. Draw pin safety lock device. 3,926,456, Cl. 280-515.000.

Lundeen, Allan J.: *See—*
Libbey, William J.; and Lundeen, Allan J., 3,927,059.

Lussling, Theodor; Schaefer, Hans; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Catalyst for the production of aromatic hetero-aromatic nitriles and process of preparing the catalyst. 3,926,856, Cl. 252-470.000.

Lussling, Theodor; Schaefer, Hans; and Weigert, Wolfgang, to Deutsche God- und Silber-Scheideanstalt vormals Roessler. Catalysts for the production of aromatic and heteroaromatic nitriles. 3,927,007, Cl. 260-294.900.

Lustig, Heinz: *See—*
Wunning, Joachim; Bieber, Rolf; and Lustig, Heinz, 3,926,038.

Lutron Electronics Co., Inc.: *See—*
Licata, Joseph; Bartley, George S.; and Longenderfer, John E., 3,927,345.

Luttrell, Argil W. Mobile sit-on toy crane. 3,926,316, Cl. 212-59.00R.

Lutzker, Robert S. Pouring fitment with filter. 3,926,348, Cl. 222-189.000.

Lysell, Gunnar, to Aktiebolaget Atomenergi. Method of operating a water-cooled nuclear reactor. 3,926,721, Cl. 176-19.00R.

Lytton, Kenneth G., to Fibers Controls Corporation. Density sensing and controlling equipment. 3,925,850, Cl. 19-98.000.

M.A.J.: *See—*
Orliaguet, Maurice, 3,925,961.

M&T Chemicals Inc.: *See—*
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Passal, Frank, 3,926,749.
Touval, Irving, 3,926,883.

MacDonald, William E.; and Harris, Robert C., Jr., to Interpace Corporation. Method of decorating a surface of an article. 3,927,230, Cl. 427-282.000.

Machacek, Oldrich: *See—*
Hurst, Gerald L.; and Machacek, Oldrich, 3,926,119.

Macharg, James Adrian. Battery chargers. 3,927,361, Cl. 320-39.000.

Machat, Jean-Yves; and Sohm, Jean-Claude, to Anvar, Agence National de Vaolirsation de la Recherche. Electric primary cells. 3,926,677, Cl. 136-107.000.

Mack Trucks, Inc.: *See—*
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MacLarty, Bernard Graham, to Phoenix Valve Manufacturers Limited. Fluid flow control valve. 3,926,211, Cl. 137-494.000.

Macleod, Norman, to National Research Development Corporation. Fluid control valves. 3,926,215, Cl. 137-527.800.

MacMullan, Samuel Jay, to Leeds & Northrup Company. Null-balance servo system. 3,927,360, Cl. 318-619.000.

Macovski, Albert. Cross-sectional fluorescent imaging system. 3,927,318, Cl. 250-272.000.

Madden, Michael J.; Murray, Robert L.; Lemon, Stephen C.; and Ostand, Paul R., to Dover Corporation. System for loading liquid into a container or the like. 3,926,231, Cl. 141-192.000.

Madden, Robert J.: *See—*
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Mader, Helmut: *See—*
Saleck, Wilhelm; Engelhard, Helmut; Himmelmann, Wolfgang; Bentz, Francis; and Mader, Helmut, 3,926,635.

Madigan, David C.: *See—*
Dixon, Percy; and Madigan, David C., 3,927,170.

Maeda, Haruo, to Olympus Optical Company Limited. Retrofocus type wide angle lens system. 3,926,506, Cl. 350-214.000.

Maeda, Yoshihiro: *See—*
Tsuchida, Takashi; Shinoda, Kenichi; Yamamoto, Kohei; Murata, Tomoya; and Maeda, Yoshihiro, 3,926,678.

Maeder, Arthur: *See—*
Huber-Emden, Helmut; Eschle, Karl; and Maeder, Arthur, 3,927,091.

Maezawa, Shuji, to Kabushiki Kaisha Suwa Seikosha. Display system for showing the days of the week in an electrical timepiece. 3,925,977, Cl. 58-4.00A.

Magerlein, Helmut: *See—*
Zengel, Hans-Georg; Toth, Anton; Magerlein, Helmut; and Meyer, Gerhard, 3,927,085.

Magna Machine & Tool Co.: *See—*
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Magnetic Controls Company: *See—*
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Maguire, Gerald J.: *See—*
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Mahall, Karl: *See—*
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Mahrer, Francois-Regis, to Kugler Fonderie et Robinetterie S.A. Mixer for hot and cold liquids. 3,926,220, Cl. 137-636.100.

Maillaro, Felix, to Narducci, Michael C. Safety electrical male plug having normally recessed manually extendable contacts. 3,926,494, Cl. 339-34.000.

Makino, Shigeru: *See—*
Katori, Tatsuhiko; Sato, Giichi; Kihara, Takashi; Yumoto, Norio; Makino, Shigeru; and Harada, Juntaro, 3,927,082.

Makowski, Henry S.; and Buckley, Donald J., Sr., to Exxon Research & Engineering Co. Thermoplastic block copolymers. 3,927,143, Cl. 260-886.000.

Malaszkiewicz, Jurgen: *See—*
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Mallinckrodt, Inc.: *See—*
Monte, Alexander A.; and Chiang, Ching, 3,926,735.

Mangeli, John Kilolo, to Colgate-Palmolive Company. Method for making detergent compositions. 3,926,827, Cl. 252-99.000.

Mangels, John Anthony, to Ford Motor Company. Improved flow-molding composition. 3,926,656, Cl. 106-272.000.

Manning, Robert E.: *See—*
Houlihan, William J.; and Manning, Robert E., 3,927,096.

Marans, Nelson S.; and Gluecksman, Alfred, to W. R. Grace & Co. Radiation polymerizable polyester composition. 3,926,755, Cl. 204-159.150.

Marchaj, Tadeusz Josef: *See—*
Closner, John J.; Marchaj, Tadeusz Josef; and Wichman, Sven Hjalmar, 3,926,134.

Marchessault, Robert H.; and Fisa, Bohuslav, to Canada, Her Majesty, The Queen, in Right of, as represented by the Minister of Nat. Defence. Process for forming a polymeric film inside a cellulosic matrix and product obtained therefrom. 3,926,717, Cl. 162-157.00C.

Marcoux, Emery. Sandal. 3,925,914, Cl. 36-11.500.

Marcus, Konrad H., to Prince Corporation. Visor assembly. 3,926,470, Cl. 296-97.00B.

Mares, Trinidad; and Arthur, Jett Clinton, to United States of America, Agriculture. Cellulose terpolymer textiles. 3,926,549, Cl. 8-116.00R.

Margulies, Leon; Mazur, Yehuda; Sagiv, Jacob; and Yogev, Amnon, to Yeda Research and Development Co., Ltd. Method of and means for obtaining a pair of orthogonal linear dichroic parameters. 3,926,524, Cl. 356-114.000.

Marincic, Nikola: *See—*
Curelop, Edward J.; and Marincic, Nikola, 3,926,672.

Mark, Victor, to General Electric Company. Flame retardant polycarbonate composition. 3,926,908, Cl. 260-45.70S.

Markewitz, Wolfgang; and Bolduan, Dieter, to Messrs. Huennebeck GmbH. Collapsible care means for forming a three sided enclosure with a roof. 3,926,403, Cl. 249-185.000.

Marrast, Jacques; Minssieux, Louis; and Blondin, Eric, to Gaz de France; and Institut Francais du Petrole. Well cementing processes. 3,926,257, Cl. 166-293.000.

Marsden, Sullivan S., Jr.; and Hooker, Phillip R., to Leland Stanford Junior University, The Board of Trustees of the. Method of transporting crude oil at low temperatures by dispersion in methanol. 3,926,203, Cl. 137-13.000.

Marshall, Edward W.: *See—*
Kase, Heino; Marshall, Edward W.; and Kirtikar, Survrat, 3,927,409.

Marshall, Richard A.; and Miller, Edward F., to Laboratory Equipment Corporation. Road simulator system with provision for engine degradation compensation. 3,926,043, Cl. 73-117.000.

Martin Marietta Corporation: *See—*
Mueller, Heinz E., 3,925,982.

Martin, Michael Ray: *See—*
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Martineau, Florianne, to Lawrence Peska Associates, Inc., a part interest. Ventilated boot. 3,925,912, Cl. 36-3.00R.

Marty, Claude: *See—*
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Marvin Glass & Associates: *See—*
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Massachusetts Institute of Technology: *See—*
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Pratt, George W., Jr., 3,927,385.

Master Pneumatic-Detroit, Inc.: *See—*
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Mastrangelo, Sebastian Vito Rocco, to Du Pont de Nemours, E. I., and Company. Dielectric composition capable of electrical activation. 3,926,916, Cl. 252-63.500.

Mata, Justo Martinez: *See—*
Stapley, Edward O.; and Mata, Justo Martinez, 3,927,210.

Mathues, Thomas P., to General Motors Corporation. Dual master cylinder including a plurality of proportioning valves located within pressurizing pistons. 3,926,476, Cl. 303-6.00C.

Matkin, Derek Ivan; Cavell, Ian William; and Dyson, John Raymond, to United Kingdom Atomic Energy Authority. Electrically conducting material containing silicon carbide in a matrix of silicon nitride. 3,926,857, Cl. 252-516.000.

Matrisian, Robert Michael, to c/o E. I. Du Pont de Nemours & Co. Process for applying contacts. 3,926,357, Cl. 228-110.000.

Matsubara, Masaki, to Olympus Optical Company Limited. Objective lens systems for use in microscopes. 3,925,910, Cl. 350-218.000.

Matsuda, Mitsuhiro: *See—*
Tsugukuni, Hideyoshi; Kano, Masafumi; and Matsuda, Mitsuhiro, 3,926,875.

Matsuda, Yoshio, to Yoshida Kogyo Kabushiki Kaisha. Warp knitted tape for slide fasteners. 3,926,017, Cl. 66-195.000.

Matsumoto, Koichi: *See—*
Aishima, Itsuho; Kitaoka, Atsushi; Koseki, Toshinori; Suzuki, Sachio; Arimoto, Kenji; and Matsumoto, Koichi, 3,926,873.

Matsumura, Hideki: *See—*
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Matsushita Electric Industrial Co., Ltd.: *See—*
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Mattiello, Giuseppe: *See—*
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Matts, Sigvard, to Aktiebolaget Svenska Flaktfabriken. Method and apparatus for cooling a gas with water droplets. 3,926,586, Cl. 55-10.000.

Mattucci, Neil: *See—*
Baron, Richard C.; Cerankowski, Leon D.; and Mattucci, Neil, 3,926,922.

Matuschke, Walter E. S. Rotary lithographic printing press with ink and dampening fluid separator. 3,926,114, Cl. 101-142.000.

Mauceri, Albert; and Mirarchi, Carl. Wallboard fastener. 3,926,394, Cl. 248-217.000.

Maunsell & Partners Pty. Limited: *See—*
Andrew, Paul Hugh Finden; and Moxham, Kenneth Ewing, 3,925,999.

Maurice, Jean: *See—*
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Max Muller Brinker Maschinenfabrik Zweigniederlassung der Gildemeister Aktiengesellschaft: *See—*
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May, Walter R.: *See—*
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Mayer-Mader, Rudolf; and Gobel, Wilhelm, to Bayer Aktiengesellschaft. Polymerizing chloroprene in the presence of xanthogen disulphides with functional groups. 3,926,912, Cl. 260-92.300.

Mayfield, Leonard E. Floating idler pulley apparatus. 3,926,063, Cl. 74-242.11A.

Maytronics, Inc.: *See—*
Thompson, Marion E., 3,927,402.

Mazeika, Albert J., to Eugene H. Clement, Hi-Gene Laundry Co. Locking system. 3,926,019, Cl. 70-85.000.

Mazur, Yehuda: *See—*
Margulies, Leon; Mazur, Yehuda; Sagiv, Jacob; and Yogev, Amnon, 3,926,524.

McCaffray, Edmund, Jr. Machine and method for manufacturing brooms from plastic fibers. 3,926,475, Cl. 300-21.000.

McCall, John W., to Formall, Inc. Conveyor trolley clevis hanger safety attachment device. 3,926,303, Cl. 198-177.00R.

McCall, Richard H., to Texaco Inc. Methods and apparatuses for controlling and preventing blow-outs in wells. 3,926,256, Cl. 166-285.000.

McCaully, Ronald J., to American Home Products Corporation. 1,4-Benzodiazepin-2-ones and their synthesis. 3,926,952, Cl. 260-239.30D.

McCaully, Ronald J.: *See—*
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McChesney, James D.: *See—*
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McClory, Robert M., to Aqua-Chem, Inc. Readily attachable water filter with cutoff valve. 3,926,815, Cl. 210-424.000.

McClure, Charles Laird, to Pro-Tech Inc. Fluid filtration and sampling. 3,926,804, Cl. 210-76.000.

McColgan, John M. ABS Resin compounds. 3,926,884, Cl. 260-28.5AS.

McCombs, Howard L., to Bendix Corporation, The. Control apparatus particularly for a plurality of compressor bleed valves of gas turbine engine. 3,925,980, Cl. 60-39.290.

McConnell, Lorne D., to ITE Imperial Corporation. Self-switched inductive fault current limiter. 3,927,350, Cl. 317-11.00C.

McConnell, Vince. Water ski rope holder. 3,926,383, Cl. 242-85.100.

McConnell, William G. Paper tube adhesive and paper tube. 3,926,657, Cl. 106-286.000.

McCormick, Eugene C. Engine dampener means. 3,926,156, Cl. 123-41.690.

McCormick, James B. System for measuring growth and health characteristics. 3,925,901, Cl. 33-137.00R.

McCoy, Frederic C.; and Cole, Edward L., to Texaco, Inc. Hydrocarbon solution containing a surfactant and an alkyl phenol used in an alkylation process. 3,926,839, Cl. 252-355.000.

McCracken, Robert H., to United States of America, Army. Time remaining until encounter computer for a fuze system. 3,926,121, Cl. 102-70.20P.

McCrosky Tool Corporation: *See—*
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McDaniel, Lloyd B. Timing cover replacement tool. 3,925,872, Cl. 29-267.000.

McDonnell Douglas Corporation: *See—*
Steube, Kenneth E., 3,926,147.

McDowell, James A. Method and apparatus for encoding dental work. 3,925,896, Cl. 32-40.00R.

McFadden, James D. Alignment clamp. 3,925,854, Cl. 24-81.0PE.

McFadden, Russell T.: *See—*
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McFarland, James W., to Pfizer Inc. Aldol products of 2-quinoxalinecarboxaldehy-1,4-dioxides. 3,926,992, Cl. 260-250.0QN.

McInnes, Robert, to Bowman, Harry P.; Millhouse, Clifford J.; and Bowers, Russell E., part interest to each. Method and apparatus for cleaning and plating articles within a plurality of rotating barrels. 3,926,666, Cl. 134-25.00R.

McIntosh, Duane E., to General Motors Corporation. Method and apparatus for coding and decoding digital data. 3,927,401, Cl. 340-347.0DD.

McIrvine, John Douglas: *See—*
Archambault, Jacques Olivier; and McIrvine, John Douglas, 3,927,191.

McKeon, Edward Francis Thomas; and Martin, Michael Ray, to RCA Corporation. Drive circuit for controlling conduction of a semiconductor device. 3,927,332, Cl. 307-252.00C.

McLean, Donald C.: *See—*
Gilbert, Eugene C.; Jones, Robert E.; McLean, Donald C.; and Sherman, Edward, 3,927,106.

McLean, Robert E., to Rival Manufacturing Company. Can opener with removable hand lever and pivotal latch. 3,925,887, Cl. 30-4.00R.

McLeod, Donald A. Log skidding cone. 3,926,410, Cl. 254-1.000.

Mead Corporation, The: *See—*
Robinson, James V., 3,927,111.

Meadow, Morton; and Berkowitz, Sidney, to FMC Corporation. Process for producing carbon disulfide. 3,927,185, Cl. 423-443.000.

Mecca, Sebastian B., to Schuylkill Chemical Company. Allantoin glycine complex. 3,927,021, Cl. 260-309.500.

Mechaneer, Inc.: *See—*
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Mecum, Robert C. Bicycle frame alignment apparatus. 3,925,873, Cl. 29-271.000.

Mederer, Andreas, to Messerschmitt-Bolkow-Blohm GmbH. Aircraft of a controllable stability. 3,926,389, Cl. 244-45.00A.

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Medley, Ronald D., to Cosden Oil & Chemical Company. Formal profile extrusion process. 3,927,160, Cl. 264-45.500.

Medrano, Alfred M., to United States of America, Navy. Divers navigation display. 3,927,388, Cl. 340-6.00R.

Medtronic, Inc.: *See—*
Mulier, Pieter M. J.; Jirak, Thomas L.; and Kane, Lawrence M., 3,927,366.

Medvinsky, Moisei Davidovich: *See—*
Zhukov, Oleg Nikolaevich; Medvinsky, Moisei Davidovich; and Ryk, Vladimir Izidorovich, 3,926,039.

Meguro, Kanji: *See—*
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Mehltretter, Charles L.: *See—*
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Meier, Johann, to Precisa AG Rechenmaschinenfabrik. Force measuring device. 3,926,270, Cl. 177-251.000.

Meier, Walter; Zeller, Josef; Koenig, Peter J.; Bruderer, Werner; and Schmid, Markus, to Concast AG. Method of controlling the cooling rate of narrow side walls of plate molds as a function of the casting taper during continuous casting. 3,926,244, Cl. 164-4.000.

Meier, Werner: *See—*
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Meiji Seika Company Ltd.: *See—*
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Meiji Seika Kaisha, Ltd.: *See—*
Kondo, Shinichi; Sezaki, Masaji; Koike, Makiko; Shimura, Masaru; Akita, Eiichi; Satoh, Kimio; Hamamoto, Kazuko; Niida, Taro; and Hara, Takeshi, 3,926,948.

Meller, Oscar W.: *See—*
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Meloy Laboratories, Inc.: *See—*
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Melzer, Stephen F., to Armco Steel Corporation. Treatment of acid waste waters to produce ferromagnetic sludges. 3,927,173, Cl. 423-142.000.

Menzl, Roland L., to Standard Oil Company. Process for producing a colorless mineral oil having good hazing properties. 3,926,777, Cl. 208-57.000.

Merck & Co., Inc.: *See—*
Bolhofer, William A., 3,927,092.
Girotra, Narindar N.; and Wendler, Norman L., 3,926,965.
Rogers, Edward F.; Dybas, Richard A.; and Hannah, John, 3,926,935.
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Bernhard, Horst; Esselborn, Reiner; Hesse, Reiner; and Russmann, Horst, 3,926,659.
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Merker, George; Krupp, Joseph; Ricards, Charles R.; and Ward, Thomas A., to American Newspaper Publishers Association. High speed in-line paper inserting apparatus and method. 3,926,423, Cl. 270-55.000.

Merrick, James Walter, to Autotronic Controls Corporation. Multiple spark discharge system. 3,926,165, Cl. 123-148.00E.

Merrill Manufacturing Company, Inc.: *See—*
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Messer, Mayer Naoum: *See—*
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Messora, Edoardo, to Lilly Industries Limited. Production of capsules. 3,927,195, Cl. 424-21.000.

Messrs. Huennebeck GmbH: *See—*
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Meyer, Arnfried. Apparatus for the continuous wrinkling of web shaped flat materials. 3,925,863, Cl. 26-1.000.

Meyer, Artur; Gotsmann, Ulrich; and Meyer, Ernst, to Cassella Farbwerke Mainkur AG. Yellow sulfur dyestuff and preparation thereof. 3,927,012, Cl. 260-304.000.

Meyer, Ernst: *See—*
Meyer, Artur; Gotsmann, Ulrich; and Meyer, Ernst, 3,927,012.

Meyer, Gerhard: *See—*
Zengel, Hans-Georg; Toth, Anton; Magerlein, Helmut; and Meyer, Gerhard, 3,927,085.

Meyer, Hans Rudolf, to Ciba-Geigy AG. New benzoxazolylstilbenes as optical brighteners. 3,926,963, Cl. 260-240.0CA.

Meyer, Josef: *See—*
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Meyer-Stoll, Hans-Albrecht; Wollner, Johannes; and Schittek, Hans-Heinz, to Deutsche Texaco Aktiengesellschaft. Methylolated 5,5-dialkylhydantoin film forming synthetic resin as a hair fixative. 3,927,198, Cl. 424-47.000.

Meyers, Michael: *See—*
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Meyers, Robert A., to TRW Inc. Removal of pyritic sulfur from coal. 3,926,575, Cl. 44-1.00R.

Meyers, Robert E., to Bendix Corporation, The. Concentric hydraulic brake boost mechanism with system by-pass on piston o.d. 3,926,092, Cl. 91-378.000.

Meyers, Robert M.; Kutch, Edward F.; and Sitter, Matthew M., to Novagard Corporation. Automobile window sealing. 3,925,947, Cl. 52-208.000.

Micchelli, Albert L.; Legato, Gerard J.; Ganslaw, Stuart H.; and Schuler, Lawrence D., to National Starch and Chemical Corporation. Hair fixing compositions containing N-alkyl acrylamide or methacrylamide interpolymer. 3,927,199, Cl. 424-47.000.

Micco, Alexander J.: *See—*
Sodal, Ingvar E.; Hoivik, Lars; Micco, Alexander J.; Weil, John V.; and Baer, Norman W., 3,926,209.

Michalko, Edward, to Universal Oil Products Company. Method of catalyst manufacture. 3,926,849, Cl. 252-448.000.

Michelet, Daniel; and Razoutz, Michel, to Rhone-Poulenc. Process for the preparation of trimethyl-para-benzaquinone. 3,927,045, Cl. 260-396.00R.

Michell, Samuel S.: *See—*
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Midrex Corporation: *See—*
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Midwest Chrome Process Company: *See—*
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Miesel, John L., to Eli Lilly and Company. 4-Substituted-5,7-dinitro-2-(α,α-difluoroalkyl)benzimidazole compounds. 3,927,020, Cl. 260-309.200.

Mihailovski, Alexander, to Stauffer Chemical Company. Thioureido sulfonanilide compositions. 3,927,086, Cl. 260-552.00R.

Mihailovski, Alexander, to Stauffer Chemical Company. Method of controlling pests with thioureido carbamates compounds. 3,927,219, Cl. 424-300.000.

Mihailovski, Alexander, to Stauffer Chemical Company. Method of controlling pests with thioureido sulfonanilide compounds. 3,927,220, Cl. 424-321.000.

Mihara, Kuniyuki: *See—*
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Mikulin, Tom T. Structural member and method of making the same. 3,925,949, Cl. 52-581.000.

Miles, Jeffrey M., to Hercules Incorporated. Clear perfumed polyamide resin and method of making it. 3,926,655, Cl. 106-243.000.

Milgo Electronics Corporation: *See—*
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Miller, Alfred H.; and Wheat, Lawrence C., to Libbey-Owens-Ford Company. Sheet article transfer apparatus. 3,926,298, Cl. 198-20.00R.

Miller, David M., to Corning Glass Works. Sintered cordierite glass-ceramic bodies. 3,926,648, Cl. 106-39.600.

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Miller, Edward F.; and Hellmuth, Walter W., to Texaco Inc. Polybutenyl-alkylene polyamine-polyalkanol lubricant additive. 3,927,104, Cl. 260-584.00B.
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Miller, Gerald K., to Nartron Corporation. Flow sensor and system. 3,926,045, Cl. 73-114.000.
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Miller, Harry, to Sperry Rand Corporation. Helicopter flight path control. 3,927,306, Cl. 235-150.220.
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Minnesota Mining and Manufacturing Company: *See—*
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Nadasi, Laszlo; Nadasi, Marton; Zelenko, John; and Pero, Donald E., to City Auto Upholstering Co. Construction and process for ornamental car top. 3,926,471, Cl. 296-137.00R.
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Neely, Allan B., Jr. Bale handling apparatus. 3,926,319, Cl. 214-6.00B.

Neff, Frederick R., to A & A Engineering Co. Linear measuring apparatus. 3,926,062, Cl. 74-89.000.

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Neri, Paolo; Antoni, Guido; and Benvenuti, Franco, to Instituto Sieroterapico e Vaccinogeno Toscano "Sclavo" S.p.A. Use of α,β-poly-(aspartic acid)-hydroxyalkylamides as a plasma expander. 3,927,204, Cl. 424-78.000.

Nersesian, Leonard S. Accelerator pedal snap acting signaling device for establishing a predetermined force-distance characteristic. 3,926,275, Cl. 180-77.00R.

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Nickel, Horst; and Schundehutte, Karl-Heinz, to Bayer Aktiengesellschaft. Polyhydroxyalkylamine salts of anionic dyestuffs. 3,926,546, Cl. 8-12.000.

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Nicklin, John Mills, to John Edward Butler (New Zealand) Ltd. Belt couplings. 3,925,853, Cl. 24-75.000.

Nidola, Antonio: *See—*
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Nikitenko, Alexandr Alexandrovich: *See—*
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Nirschl, Robert P. Muscular support. 3,926,186, Cl. 128-165.000.

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Nisshin Flour Milling Co., Ltd.: *See—*
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Noll, Walter: *See—*
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Nordberg, Kurt, to Vianova-Kunstharz, A. G. Process for producing non-aqueous polymer dispersions. 3,926,899, Cl. 260-33.40R.

Nordgren, Simon Nils. Combined adjustable spanner and ratchet wrench. 3,926,077, Cl. 81-126.000.

Nordine, Louis R., to Stanley Aviation Corporation. Fail-safe ballistic parachute spreader apparatus. 3,926,391, Cl. 244-149.000.

Noren, John Paul: *See—*
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Nose, Shinji; Tokuda, Shingo; Tanaka, Motomu; and Tsujimura, Hideaki, to Osaka Soda Co., Ltd. Flame retardant hardenable composition of water glass and decorative products made by using the same. 3,926,905, Cl. 260-42.430.

Novagard Corporation: *See—*
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Wilson, John D.; Nyiri, Laszlo K.; Humphrey, Arthur E.; and Harmes, Clyde S., III, 3,926,737.

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O'Connell, Harry P., Jr.; and Hopster, Eugene E., to Donn H. Gross. Building. 3,925,940, Cl. 52-81.000.

Oden, Volker: *See—*
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Ohfuka, Toshio; Schichijo, Yoshihisa; Ichikawa, Yasushi; and Yamamoto, Katsuo, to Asahi Kasei Kogyo Kabushika Kaisha. Hygroscopic acrylic synthetic fibers and method for preparing the same. 3,926,930, Cl. 260-85.50S.

Ohishi, Masateru, to Konan Electric Company, Ltd. Fluid logic programmer. 3,926,217, Cl. 137-596.180.

Ohkawa, Hideo: *See—*
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Okada, Takao: *See—*
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Okada, Toshio; Shimano, Yasunao; and Sakurada, Ichiro, to Japan Atomic Energy Research Institute. Method of making durable antistatic and hygroscopic polyester fibers. 3,926,551, Cl. 8-115.500.

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Okamoto, Chikashi, to Nippon Kakokicompany, Limited. Sealing structure for a liquid storage vessel having a floating head. 3,926,332, Cl. 220-226.000.

Okamoto, Keiji, to Yazaki Sogyo Kabushiki Kaisha. Meter. 3,926,142, Cl. 116-116.000.

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Oki, Masami; Hori, Ryuzo; and Miwa, Naoto, to Asamura Patent Office. Ceramic structures and process for producing the same. 3,926,702, Cl. 156-89.000.

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O'Mahony, Gerard M.; and Paterson, James G. T., to Interdye Technology Corporation. Method and apparatus for space dyeing yarn. 3,926,547, Cl. 8-14.000.

O'Neill, John J.; Komor, Joseph A.; Babcock, Thomas E.; Edmundson, Robert J.; and Shay, Edward G., to Avon Products, Inc. Method of making transparent soap bars. 3,926,828, Cl. 252-117.000.

O'Neill, Roger M.; and Kennedy, John B., Jr., to Continental Can Company, Inc. Method of measuring concentration ratios of a mixture of materials. 3,926,337, Cl. 222-1.000.

Ono, Tetsuji; Nakanishi, Yoshiyuki; Suzuki, Takehiko; and Okuda, Yukio, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Catalysts for the preparation of phthalic anhydride. 3,926,846, Cl. 252-435.000.

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Original Hanau Quarzlampen GmbH: *See—*
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Orliaguet, Maurice, to M.A.J. Device for packaging and preserving sterilized products under vacuum in plastic packs, in particular linen. 3,925,961, Cl. 53-89.000.

Orlov, Petr Nikolaevich; Nesterov, Jury Ivanovich; Kudashov, Vasily Yakovlevich; Zimnyakov, Alexandr Vasilievich; Ermakova, Irina Nikolaevna; Bogomolov, Igor Vasilievich; Nirman, Efim Matveevich; and Sokolov, Vladimir Dmitrievich. Lapping machine. 3,925,936, Cl. 51-118.000.

Orwin, Olaf John Barclay, to Redman Fisher Engineering Limited. Power and free conveyor. 3,926,125, Cl. 104-94.000.

Osaka Soda Co., Ltd.: *See—*
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Otey, Felix H.; Westhoff, Richard P.; and Mehltretter, Charles L., to United States of America, Agriculture. Flame-retardant polyurethane foams. 3,926,868, Cl. 260-2.5AS.

Otten, Leonard J., III, to United States of America, Air Force. System for measuring unsteady aerodynamic torques. 3,926,046, Cl. 73-133.00R.

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Anderson, Noel M.; and Otto, Arlin W., 3,926,207.

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Cushiba, Takashi, to Showa Denko Kabushiki Kaisha. Method for oxidizing nitrogen oxides. 3,927,183, Cl. 423-393.000.

Ovutime, Inc.: *See—*
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Owen, Hartley; and Demmel, Edward J., to Mobil Oil Corporation. Method and system for controlling the activity of a crystalline zeolite cracking catalyst. 3,926,778, Cl. 208-74.000.

Owen, Hartley, to Mobil Oil Corporation. FCC — multi-stage regeneration procedure. 3,926,843, Cl. 252-417.000.

Owens-Corning Fiberglas Corporation: *See—*
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Ozretich, Thomas M., to Crown Zellerbach Corporation. Process for monoetherification of polyhydric benzenes. 3,927,118, Cl. 260-613.00D.

P. Ferrero & C. S.p.A.: *See—*
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Palencher, Jacques, to Lebocey Industrie. Gripper point for loom projectiles with an external feed. 3,926,225, Cl. 139-125.000.

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Parker, Sidney A.; and Rothstein, Seymour, to Lennox Industries Inc. Hermetic compressor with insulated discharge tube. 3,926,009, Cl. 62-296.000.

Parkins, Derek Ray, to SKF Industrial Trading and Development Company B.V. Spindle and bearing assemblies. 3,926,484, Cl. 308-174.000.

Parks-Cramer (Great Britain), Ltd.: *See—*
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Paterson, James G. T.: *See—*
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Paul, Jurgen; Kostelezky, Walter; and Schwerdt, Paul, to Daimler-Benz Aktiengesellschaft. Frequency transmitters for producing control signals controlling the brake force in motor vehicle wheels. 3,927,339, Cl. 310-155.000.

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Pawloski, Chester E., to Dow Chemical Company, The. Substituted pyridine phosphonothioates. 3,927,004, Cl. 260-294.80K.

Peabody Galion Corporation: *See—*
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Pearce, George W. Controlled spraying. 3,926,369, Cl. 239-1.000.

Pearce, Peter J., to Synestructics, Inc. Modular curved surface space structures. 3,925,941, Cl. 52-82.000.

Pearse, James N., to Appleton Electric Company. Explosion proof plastic electrical enclosure. 3,927,249, Cl. 174-51.000.

Pearson, John L.: *See—*
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Pelezo, Chris A.: *See—*
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Pelin, Charles. Dashboard-mounted automatic route information display device. 3,925,918, Cl. 40-42.000.

Pellett, Fred G., to Owens-Illinois, Inc. Method for refining molten glass-making materials. 3,926,607, Cl. 65-136.000.

Pembrook, John D.; Burch, Darrell E.; and Gates, Francis J., to Philco-Ford Corporation. Rotating gas correlation cell. 3,926,527, Cl. 356-246.000.

Pendry, Hudson G., to Raymond Lee Organization Inc., The, a part interest. Aluminum holding furnace. 3,926,416, Cl. 266-33.00R.

Penner, Siegfried E.: *See—*
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Pennington, William; and Pennington, William, III. Frameless safety water bed. 3,925,835, Cl. 5-348.0WB.

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Pennwalt Corporation: *See—*
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Perkins, Roger S. Safety panel for bathtubs. 3,925,831, Cl. 4-183.000.

Perkins, Thomas K., to Atlantic Richfield Company. Method for normalizing stresses and strains in a well casing in a permafrost zone. 3,926,259, Cl. 166-302.000.

Perla, Giulio; and Mattiello, Giuseppe, to Colgate-Palmolive Company. Method for producing detergent cakes. 3,926,863, Cl. 252-557.000.

Pero, Donald E.: *See—*
Nadasi, Laszlo; Nadasi, Marton; Zelenko, John; and Pero, Donald E., 3,926,471.

Pershin, Grigory Nikolaevich: *See—*
Grinev, Alexei Nikolaevich; Shvedov, Vasily Ivanovich; Sytina, Evgenia Nikolaevna; Bogdanova, Nadezhda Sergeevna; Nikolaeva, Irina Sergeevna; Pershin, Grigory Nikolaevich; and Guskova, Tatyana Anatolievna, 3,927,125.

Pershing, Robert G.: *See—*
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Peter, Richard; and Angliker, Hansjoerg, to Ciba-Geigy AG. Water-insoluble styryl dyestuffs. 3,927,063, Cl. 260-465.00D.

Peters, Werner: *See—*
Schmalfeld, Paul; Sauter, Dieter; Peters, Werner; Ahland, Erwin; Bock, Burkhard; and Lehmann, Joachim, 3,926,576.

Petersen, Christian C., to Polaroid Corporation. Electromagnetically regulated exposure control system. 3,927,415, Cl. 354-230.000.

Peterson, Carl R., to Rapidex, Inc. Impact actuator. 3,925,985, Cl. 60-371.000.

Peterson, Christian M.: *See—*
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Peterson, Edward M.: *See—*
Evankovich, Peter P.; Madden, Robert J.; and Peterson, Edward M., 3,926,241.

Peterson, Francis C., to C. Hager & Sons Hinge Manufacturing Company. Locking device for doors. 3,926,460, Cl. 292-144.000.

Peterson, Robert A., to Raytheon Company. Reduced speed compensator for microwave heating applicator. 3,927,291, Cl. 219-10.55R.

Petersons, Aivars V.; and Brewer, Howell K. Studded replaceable tread tire. 3,926,239, Cl. 152-210.000.

Petrie, John David. Portable structural framing member. 3,925,943, Cl. 52-108.000.

Petrolite Corporation: *See—*
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Watson, Frederick D.; and Winslow, Joseph D., Jr., 3,926,774.
Zetlmeisl, Michael J.; May, Walter R.; and Annand, Robert R., 3,926,577.

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Petty, John Lee; and Amano, George Minoru, to Sherwin-Williams Company, The. Water reducible paint composition containing aluminum metal or the like. 3,926,874, Cl. 260-22.00A.

Petzetakis, Aristovoulos George. Large diameter hollow bodies of helical thermoplastic strip. 3,926,223, Cl. 138-129.000.

Petzke, Jeffrey C.; and Bahr, Dennis E., to Wisconsin Alumni Research Foundation. Blood pressure measuring apparatus. 3,926,179, Cl. 128-2.05N.

Peychev, Lyubomir Dimov: *See—*
Pissarev, Angel Nikolaev; Miteva, Maria Pancheva; Balabanov, Ivan Velev; and Peychev, Lyubomir Dimov, 3,926,495.

Pfaender, Lawrence V.: *See—*
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Barth, Wayne E., 3,927,215.
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Philco-Ford Corporation: *See—*
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Philip Morris Inc.: *See—*
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Philipp, Lee D.: *See—*
Billeter, Thomas R.; and Philipp, Lee D., 3,927,369.

Phillippi, Conrad M.; Stevison, Donald F.; and Ekman, Willard J. Device for measuring laser beam penetration time. 3,926,034, Cl. 73-15.00R.

Phillips Petroleum Company: *See—*
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Hessert, James E.; and Johnston, Chester C., Jr., 3,926,258.
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Piccolo, Luigi; and Paolinelli, Antonio, to Societa' Italiana Resine S.I.R. S.p.A. Compositions for soil improvement and process for their production. 3,926,608, Cl. 71-1.000.

Pickel, Robert Paul, to Conrad Pickel Studios, Inc. Niches. 3,925,944, Cl. 52-134.000.

Pierce, Allan A.; Peterson, Christian M.; and Kunde, Jerry G., to Kimberly-Clark Corporation. Method of coupon positioning and mechanism therefor. 3,926,425, Cl. 270-83.000.

Pierce Pacific Mfg. Inc.: *See—*
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Pike, John E.; and Schneider, William P., to Upjohn Company, The. PGF_3 and PGF_3 , 15-acetate, methyl esters. 3,927,075, Cl. 260-488.00R.

Pilgram, Kurt H. G.; Jackson, Earl K.; and Kollmeyer, Willy D., to Shell Oil Company. Plant growth regulators. 3,927,062, Cl. 260-456.0NS.

Pilkington Brothers Limited: *See—*
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Pimbley, Walter T., to International Business Machines Corporation. Ink jet nozzle. 3,927,410, Cl. 346-140.000.

Pioneer Electronic Corporation: *See—*
Hibi, Tadatoshi; and Okura, Keniti, 3,926,441.

Piper, James. Air blower. 3,926,537, Cl. 417-353.000.

Pissarev, Angel Nikolaev; Miteva, Maria Pancheva; Balabanov, Ivan Velev; and Peychev, Lyubomir Dimov, to DSO "ELPROM". Electrical contact body. 3,926,495, Cl. 339-48.000.

Pitie, Jean-Marc B.: *See—*
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Pitney-Bowes, Inc.: *See—*
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Pitt Metals and Chemicals, Inc.: *See—*
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Pitts, David E., to United States of America, General Counsel-Code GP. Method for manufacturing mirrors in zero gravity environment. 3,927,227, Cl. 427-162.000.

Plank, Charles J.; Rosinski, Edward J.; and Schwartz, Albert B., to Mobil Oil Corporation. Hydrocarbon conversion. 3,926,782, Cl. 208-135.000.

Plasser, Erna, heir: *See—*
Plasser, Franz, deceased; Plasser, Erna, heir; Theurer, Josef; Schubert, Egon; and Riessberger, Klaus, 3,926,123.

Plasser, Franz, deceased; by Plasser, Erna, heir; Theurer, Josef; Schubert, Egon; and Riessberger, Klaus. Track surfacing apparatus. 3,926,123, Cl. 104-7.00R.

Plessey Handel und Investments A.G.: *See—*
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Plesslinger, Gertraud Agnes Anna; Berthold, Frank; and Roeder, Erwin, to U.S. Philips Corporation. Method of manufacturing a glass ceramic material which is resistant to sodium vapour. 3,926,603, Cl. 65-33.000.

Plonsker, Larry, to Ethyl Corporation. Fuel compositions and additive mixtures for reducing the plugging of exhaust gas catalysts. 3,926,581, Cl. 44-68.000.

Plummer, Walter A.: *See—*
Plummer, Walter A., III, 3,925,856.

Plummer, Walter A., III, to Plummer, Walter A. Self locking seam forming members. 3,925,856, Cl. 24-201.00C.

Poche, John M. Floating oil fence. 3,925,991, Cl. 61-1.00F.

Poetsch, Eike, to Merck Patent Gesellschaft Mit Beschraenkter Haftung. 4-(Phenyl)-piperazino halo alkenones and alkanones. 3,926,999, Cl. 260-268.0PH.

Poinsard, Henri; and Lemoing, Jean, to Thomson-CSF. System for processing the signal received by a sideways looking airborne radar system. 3,927,405, Cl. 343-5.0CM.

Polaroid Corporation: *See—*
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Borror, Alan L.; Hill, Ruth Linda; and Garcia, Paulina P., 3,926,971.
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Politechnika Gdanska: *See—*
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Pollet, Robert Joseph: *See—*
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Polley, Eugene J., to Zenith Radio Corporation. Biased video disc stabilizer system. 3,927,252, Cl. 179-6.70R.

Pollkotter, Gunter: *See—*
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Polysius AG: *See—*
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Pomeranz, Jehoshua Naphtali; and Schnurmann, Henri Daniel, to International Business Machines Corporation. Test system for large scale integrated circuits. 3,927,371, Cl. 324-73.00R.

Pommerening, Uwe A.; and Richards, Glenn L., to Stromberg-Carlson Corporation. Junctor memory. 3,927,273, Cl. 179-18.00J.

Pontigny, Jacques. Dilatable tube, method for its production and applications thereof. 3,926,459, Cl. 285-381.000.

Popov, Vasily Dmitrievich: *See—*
Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovidh; Zakharova, Nina Vasilievna; Golubenko, Mikhail Afanasievich; Tolstikov, Genrikh Alexandrovich; Kholodovskaya, Rakhil Samoilovna; Shalimova, Zoya Stepanovna; Legostaeva, Taisia Vasilievna; Popov, Vasily Dmitrievich; and Dolidze, Vladimir Romanovich, 3,927,038.

Port, Eugene B.: *See—*
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Porter, Allan William Henry, to Aktiengesellschaft Adolph Saurer. Guide member support and device for beating up weft yarn in the shed of a loom. 3,926,226, Cl. 139-190.000.

Portnoy, Norman A.: *See—*
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Pottage, Paul Richmond: *See—*
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Potter, Sheila Antoinette, to Imperial Chemical Industries Limited. Process for manufacture of bipyridyls. 3,927,009, Cl. 260-296.00D.
Pottier, Michel: *See—*
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Potts, Thomas James: *See—*
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Pouch, Thomas M.; and Ladouceur, Harold A., to Multifastener Corporation. Self-fastening nut, panel assembly and apparatus. 3,926,236, Cl. 151-41.730.
Powell, James Basil. Process for making nitric acid by the ammonia oxidation-nitric oxide oxidation-water absorption method. 3,927,182, Cl. 423-392.000.
Powell, Orlo A., Jr.; and Roncari, Angelo J., to Urban Research & Development Corporation. Method and apparatus for pyrolytic treatment of solid waste materials. 3,926,582, Cl. 48-62.000.
Powell, Richard E.; and Starck, Robert W., to Sheller-Globe Corporation. Process for manufacturing foam padded skinned arm rests and crash pads. 3,927,161, Cl. 264-46.600.
Powers, Walter H.: *See—*
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PPG Industries, Inc.: *See—*
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Kunkle, Gerald E., 3,926,605.
Prager, Hans John: *See—*
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Prahl, Franz: *See—*
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Prater, Earle F., to Roberts Consolidated Industries, Inc. Carpet seaming iron. 3,927,298, Cl. 219-245.000.
Pratt, George W., Jr., to Massachusetts Institute of Technology. Light emitting diode. 3,927,385, Cl. 331-94.50H.
Precisa AG Rechenmaschinenfabrik: *See—*
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Precision Screw & Manufacturing Company Limited, The: *See—*
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Preload Technology, Inc.: *See—*
Closner, John J.; Marchaj, Tadeusz Josef; and Wichman, Sven Hjalmar, 3,926,134.
Preston, Jack, to Monsanto Company. Aromatic polyester-amides. 3,926,923, Cl. 260-78.00R.
Preuss, Friedrich, to Roland Offsetmaschinenfabrik Faber & Schleicher. Rotary printing press impression cylinder having clamping and sheet gripping devices. 3,926,118, Cl. 101-246.000.
Priceman, Seymour, to DeWiant Corporation. Molybdenum based substrate coated with homogeneous molybdenum trialuminide. 3,926,574, Cl. 29-197.000.
Pridonoff, Eric L.: *See—*
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Priem, Jan Jozef: *See—*
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Pro-Tech Inc.: *See—*
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Pryor, David Ernest: *See—*
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Puchta, Herbert: *See—*
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Pugh, Cecil C.: *See—*
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Pulk, Elgas, deceased; by Hallsenius, Carlgustaf, Administrator; and Noren, John Paul, to Stabilator AB. Device for the batching of media. 3,926,345, Cl. 222-145.000.
Pulker, Hans K., to Balzers Patent-und Beteiligungs-Aktiengesellschaft. Method of depositing titanium dioxide layers by evaporation of a molten titantium-oxygen phase. 3,927,228, Cl. 427-162.000.
Pullman Incorporated: *See—*
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Puskas, Imre: *See—*
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Pustelnik, Roy J., to J. I. Case Company. Turbocharger exhaust gas recirculation system. 3,925,989, Cl. 60-602.000.
Quade, Robert T.: *See—*
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Quaker Oats Company, The: *See—*
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Quinlan, Patrick M., to Petrolite Corporation. Methylene phosphonates of glycidyl reacted polyalkylene polyamines and use in scale and chelation. 3,926,801, Cl. 210-58.000.
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Quock, Billy; Kelley, Don Howard; Warneke, Sehon Lester; and Gurgiolo, Arthur E., to Dow Chemical Company, The. High resiliency flexible urethane foams. 3,926,867, Cl. 260-2.5AM.
R. A. Pearson Company: *See—*
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Raab, Richard, to Diehl. Device for use in connection with metal extrusion presses along a press path. 3,926,022, Cl. 72-24.000.
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Radiometer A/S: *See—*
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Radtke, Volker: *See—*
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Raffensparger, John H. Counter system for step-and-repeat drafting arm. 3,925,900, Cl. 33-81.000.
Rahlfs, Herbert: *See—*
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Rainger, Peter, to British Broadcasting Corporation. Television system with transmission of auxiliary information. 3,927,250, Cl. 178-5.600.
Rall, Ulrich; Mahall, Karl; and Kuper, Wilfried, to Henkel & Cie GmbH. Method for the production of porous webs with a leather-like grain. 3,927,229, Cl. 427-171.000.
Ram Meter, Inc.: *See—*
Zawadski, Andrzej, 3,927,348.
Ramsden, Paul S., Jr., to Centronics Data Computer Corporation. Format control technique and apparatus therefor. 3,926,292, Cl. 197-1.00R.
Ramsteck, Wolfgang, to Lenser Verwaltungs-GmbH. Filter-plate assembly for filter press. 3,926,811, Cl. 210-231.000.
Randour, Victor: *See—*
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Rank Organisation Ltd., The: *See—*
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Rauenbusch, Erich: *See—*
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Raveschot, Marcel R.: *See—*
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Ray, Neil Hunter; Laycock, John Nicholas Clayton; and Robinson, William Derek, to Imperial Chemical Industries Limited. Borosphosphate glass compositions with high water resistance and low softening point. 3,926,649, Cl. 106-47.00R.
Rayces, Juan L., to Perkin-Elmer Corporation, The. All spherical solid catadioptric systems. 3,926,505, Cl. 350-201.000.
Raychem Corporation: *See—*
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Raymond, Edwin S. Sheet metal securing device. 3,926,420, Cl. 269-47.000.
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Rebsdat, Siegfried; and Hahn, Helmut, to Hoechst Aktiengesellschaft. Process for the preparation of aryl-1,1,2,2-tetrafluoroethyl ethers. 3,926,989, Cl. 260-247.70C.
Recherche et Industrie Therapeutiques: *See—*
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Recherche et Industrie Therapeutiques (R.I.T.): *See—*
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Redman Fisher Engineering Limited: *See—*
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Reeder, Wilbur C.; and Batterson, Norman D. Method for irrigating terrain. 3,926,374, Cl. 239-1.000.
Reeder, Wilbur C.; and Batterson, Norman D. Weeper irrigation device. 3,926,375, Cl. 239-542.000.
Reell Precision Manufacturing Corporation: *See—*
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Sodal, Ingvar E.; Hoivik, Lars; Micco, Alexander J.; Weil, John V.; and Baer, Norman W., 3,926,209.
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Roche, Jean Claude; Lavarec, Martial; and Maurice, Jean, 3,926,073.
Reichard, Kenneth. Golf cart pulling apparatus. 3,926,448, Cl. 280-1.500.
Reid, John S.; and Hayes, Christopher W. J. Protective device and method for use with audio amplification equipment. 3,927,353, Cl. 317-40.00A.
Reifenhauser, Fritz; and Rahlfs, Herbert, to Reifenhauser KG. Film blowing method. 3,926,706, Cl. 156-229.000.
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Reiger, Arthur C., Jr.; and Finegold, Hyman B., to Globe Tool and Engineering Company, The. Turret for workpiece. 3,926,421, Cl. 269-57.000.
Reil, Wilhelm, to Altstadter Verpackungs-Vertriebs GmbH. Sealing jaw. 3,927,297, Cl. 219-243.000.
Reine, Alden H.; Arthur, Jett C., Jr.; and Portnoy, Norman A., to United States of America, Agriculture. Modification of cotton textiles and cotton/polyester textile blends by photo-initiated polymerization of vinylic monomers. 3,926,555, Cl. 8-189.000.
Reinhardt, Konrad: *See—*
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Reinwall, Ernest William, Jr.: *See—*
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Reisman, Arnold, to International Business Machines Corporation. Method for fabricating a gas discharge panel structure. 3,926,763, Cl. 204-192.000.
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Rosen, George; Carlick, Daniel J.; and Reiter, Ralph H., 3,926,639.
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Rembaum, Alan; and Yen, Shiao-Ping Sino, to California Institute of Technology. Substrate coated with a layer of polyquaternary polyelectrolytes. 3,927,242, Cl. 428-411.000.
Renata A.G.: *See—*
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Reschak, Robert J., to Textron Inc. Power available indicator. 3,927,307, Cl. 235-151.300.
Research Corporation: *See—*
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Rice, James T.; and Chen, Chia M., 3,927,140.
Research Homes, Inc.: *See—*
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Respen, Yves Jean; Cosse, Paul Andre; and Economopoulos, Mario, to Centre de Recherches Metallurgiques - Centrum voor Research in de Metallurgie. Method of producing hot rolled steel rods or bars. 3,926,689, Cl. 148-12.400.
Restaino, Alfred J., to Hercules Incorporated. Process for preparing high molecular-weight, water soluble vinyl polymers by irradiation. 3,926,756, Cl. 204-159.220.
Reudink, Douglas Otto John: *See—*
Cox, Donald Clyde; Langseth, Rollin Edward; Reudink, Douglas Otto John; and Rustako, Anthony Joseph, Jr., 3,927,379.
Reuter, Manfred, to Georg Spellmann Hannov.-Holz-Industrie. Structural members for mounting and guiding sliding doors. 3,925,933, Cl. 49-409.000.
Reuter, Martin; and Beermann, Claus, to Hoechst Aktiengesellschaft. Process for the preparation of bis-hydroxymethyl-methylphosphine. 3,927,112, Cl. 260-606.50P.
Reuter, Martin; and Rupp, Walter, to Hoechst Aktiengesellschaft. Process for the preparation of methylphosphine oxides. 3,927,113, Cl. 260-606.50P.
Revill, Charles L.: *See—*
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Reyes, Daniel. Stereophonic cabinet. 3,926,487, Cl. 312-223.000.
Reyner, Noel L., to Xerox Corporation. Thermally insensitive particle concentration controller. 3,926,338, Cl. 222-56.000.
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Ribeyre, Jean-Paul; and Marty, Claude, to Schlumberger Technology Corporation. Line cutting devices. 3,926,252, Cl. 166-54.600.
Ricards, Charles R.: *See—*
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Richards, Glenn L.: *See—*
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Richards, William; and Grolman, Bernard, to American Optical Corporation. Supporting system for artificial intraocular lens. 3,925,825, Cl. 3-13.000.
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Richardson, Walter Lorne, to Northern Eelectric Company Limited,. Planetary differential transmission. 3,926,072, Cl. 74-665.00N.
Rick, Edward A.; and Tinsley, Samuel W., to Union Carbide Corporation. Bicyclo[2.2.1] Hept-5(6)-yl compounds. 3,927,116, Cl. 260-611.00F.
Ricklefs, Robert U. Abrading system. 3,925,935, Cl. 51-8.0HD.
Ricoh Co., Ltd.: *See—*
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Ridyard, Denis Robert Annesley, to Imperial Chemical Industries Limited. Water soluble monoazo dyestuffs containing a diphenylamine group carrying a sulphamoyl substituent and a sulpho or sulphato substituent. 3,926,946, Cl. 260-206.000.
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Roberts, Verne W. Back gauge warning system for shears and the like. 3,926,081, Cl. 83-96.000.

Robins, Lenford L. Dual purpose tooth aligner. 3,925,894, Cl. 32-14.00B.

Robins, Roland K.: *See—*
Witkowski, Joseph T.; and Robins, Roland K., 3,927,216.

Robinson, James V., to Mead Corporation, The. Production of carbonyl compounds. 3,927,111, Cl. 260-604.0AC.

Robinson, William Derek: *See—*
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Roblin Hope's Industries, Inc.: *See—*
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Roche, Alain Y.: *See—*
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Roche, Jean Claude; Lavarec, Martial; and Maurice, Jean, to Regie Nationale des Usines Renault; and Societe dite: Automobiles Peugeot. Automatic transmissions with planetary gears having a braking mechanism capable of being pre-assembled. 3,926,073, Cl. 74-753.000.

Rockwell International Corporation: *See—*
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Jones, Freeman B., Jr.; and Ratto, Joseph J., 3,926,834.
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Roedel, Charles W.; and Borysiewicz, Richard, to Milgo Electronics Corporation. Data modem having line verification and automatic disconnect features. 3,927,265, Cl. 179-2.0DP.

Roeder, Erwin: *See—*
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Rogers, Edward F.; Dybas, Richard A.; and Hannah, John, to Merck & Co., Inc. Anticoccidial complexes. 3,926,935, Cl. 260-96.50R.

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Rohm, Gunter Horst. Multiple-jaw power chuck. 3,926,446, Cl. 279-4.000.

Roland Offsetmaschinenfabrik Faber & Schleicher: *See—*
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Rolls-Royce (1971) Limited: *See—*
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Roncari, Angelo J.: *See—*
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Rosen, Ernst Anders Carl-Gustaf; and Rosen, Helena Mariana, to Alfa-Laval AB. Method for assaying catalase in milk and other liquids. 3,926,732, Cl. 195-103.50R.

Rosen, George; Carlick, Daniel J.; and Reiter, Ralph H., to Sun Chemical Corporation. Photopolymerizable compositions comprising monocarboxyl-substituted benzophenone reaction products. 3,926,638, Cl. 96-115.00R.

Rosen, George; Carlick, Daniel J.; and Reiter, Ralph H., to Sun Chemical Corporation. Photopolymerizable compositions comprising polycarboxysubstituted benzophenone reaction products. 3,926,639, Cl. 96-115.00R.

Rosen, George, to Sun Chemical Corporation. Photopolymerizable compositions comprising benzophenone reaction products. 3,926,640, Cl. 96-115.00P.

Rosen, George, to Sun Chemical Corporation. Photopolymerizable compositions comprising polycarboxysubstituted benzophenone reaction products. 3,926,641, Cl. 96-115.00P.

Rosen, Helena Mariana: *See—*
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Rosenberg, Harry: *See—*
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Rosenberger, Siegfried: *See—*
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Rosenkaimer GmbH: *See—*
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Rosenquest, Allen H.; Knipper, Aloysius J.; and Wood, Robert W., to Nabisco, Inc. Method of producing expanded cereal products of improved texture. 3,927,222, Cl. 426-621.000.

Rosenthal, Harold: *See—*
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Rosinger, Sigurd, to Hoechst Aktiengesellschaft. Process for preparing straight-chain aliphatic and cyclo-aliphatic sulfonic acids. 3,926,757, Cl. 204-162.0HE.

Rosinski, Edward J.: *See—*
Plank, Charles J.; Rosinski, Edward J.; and Schwartz, Albert B., 3,926,782.

Ross, Jack. Water powered dishwasher. 3,926,668, Cl. 134-179.000.

Rossi, Albert; Jacobson, Norman; and Miller, Harold N., to Exxon Research & Engineering Co. Petroleum crude oils containing polymers comprised of C_{18}–C_{40} alpha-olefins have reduced tendency to deposit wax. 3,926,579, Cl. 44-62.000.

Rossi, Alberto: *See—*
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Rostrup-Nielsen, Jens Richard, to Haldor Topsoe A/S. Process for the catalytic steam reforming of hydrocarbons. 3,926,583, Cl. 48-214.000.

Rosvold, Warren C., to Signetics Corporation. Semiconductor assembly with beam lead construction and method. 3,925,880, Cl. 29-578.000.

Roth, Clarence Edward, Jr.; Hughes, Robert L.; and Thompson, Kenneth F., to Gulf Oil Corporation, by said Clarence Edward Roth and Robert L. Hughes; and Champion International Corporation, by said Kenneth F. Thompson. Resin-coated carton blank. 3,927,245, Cl. 428-513.000.

Roth, Wolfgang, to Chemie Linz Aktiengesellschaft. Process for the prevention of frost heaves in fine-grained soils. 3,925,993, Cl. 61-36.00A.

Rothon, Roger Norman: *See—*
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Rothstein, Seymour: *See—*
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Rovnyak, George; Narayanan, Venkatachala L.; Haughwitz, Rudiger D.; and Cimarusti, Christopher M., to E. R. Squibb & Sons, Inc. Substituted benzimidazolinethiones. 3,926,982, Cl. 260-243.00R.

Rovnyak, George; Narayanan, Venkatachala L.; Haugwitz, Rudiger D.; and Cimarusti, Christopher M., to E. R. Squibb & Sons, Inc. Substituted mercapto benzimidazoles. 3,927,014, Cl. 260-306.70T.

Rowe, Carleton N.: *See—*
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Rudin, Ernst; and Weisskopf, Heinz, to H. Gertsch & Co. Aktiengesellschaft. Filter cartridge. 3,926,599, Cl. 55-387.000.

Ruebig, Helmut: *See—*
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Ruebig, Herbert; and Ruebig, Helmut, to Franz Rubig & Sohne KG. Safety pin. 3,926,089, Cl. 85-5.0CP.

Ruetman, Sven H.; and Watson, Richard N., to Dow Chemical Company, The. 6-Hydrazino-2,3,5-trihalo-4-alkylthio pyridines. 3,927,003, Cl. 260-294.80G.

Ruider, Guenther: *See—*
Dimroth, Peter; Gaeng, Manfred; and Ruider, Guenther, 3,926,943.

Rulcker, Carl-Edvard Jan, to Saab-Scania Aktiebolag. Arrangement of check valves. 3,926,216, Cl. 137-527.800.

Rundell, John Trethowan; and Pottage, Paul Richmond, to Tate & Lyle Limited. Production of cane sugar. 3,926,662, Cl. 127-48.000.

Ruof, Edgar J., to Goodyear Aerospace Corporation. Frequency quadrupler for anti-skid wheel speed sensor. 3,926,478, Cl. 303-21.00R.

Rupp, Walter: *See—*
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Rusco, Easborn. Lawnmower. 3,925,970, Cl. 56-14.700.

Rushworth, George E., to Exxon Nuclear Company Inc. Fuel rod pellet loading assembly. 3,925,965, Cl. 53-112.00R.

Russmann, Horst: *See—*
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Rustako, Anthony Joseph, Jr.: *See—*
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Rusyanova, Natalya Dmitrievna: *See—*
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Ruti-Te Strake B.V.: *See—*
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Ruzicka, Jaromir; and Lamm, Carl Goran, to Radiometer A/S. Electrode for potentiometric measurements. 3,926,764, Cl. 204-195.00F.

Ryan, Kelly P., to Blair Manufacturing Company. Hay stack disintegrating apparatus. 3,926,378, Cl. 241-154.000.

Ryk, Vladimir Izidorovich: *See—*
Zhukov, Oleg Nikolaevich; Medvinsky, Moisei Davidovich; and Ryk, Vladimir Izidorovich, 3,926,039.

S. A. Brush Company Limited: *See—*
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S.A.E.S. Getters S.p.A.: *See—*
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Saab-Scania Aktiebolag: *See—*
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Saari, George W.; and Belliveau, Ronald L., to Lakso Company, Incorporated, The. Article counting and filling machine. 3,925,960, Cl. 53-78.000.

Sabin, Cullen M., to Geoscience Ltd. Self storing protest flag used in boat races. 3,926,139, Cl. 116-26.000.

Saenger, Dietrich: *See—*
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Safeguard Automotive Corporation: *See—*
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Sagiv, Jacob: *See—*
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Saito, Mitsuo: *See—*
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Sakurada, Ichiro: *See—*
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Saldick, Jerome, to FMC Corporation. Biological treatment of plant waste streams to remove cyanuric acid. 3,926,795, Cl. 210-11.000.

Saleck, Wilhelm; Engelhard, Helmut; Himmelmann, Wolfgang; Bentz, Francis; and Mader, Helmut, to Agfa-Gevaert Aktiengesellschaft. Photographic material with polymeric stabilizers. 3,926,635, Cl. 96-114.000.

Sambrook, David John, to Imperial Metal Industries (Kynoch) Limited. Composite materials. 3,925,882, Cl. 29-599.000.

Sanders, Duane: *See—*
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Sanderson, Kenneth R.: *See—*
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Sandoz, Inc.: *See—*
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Sandoz Ltd.: *See—*
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Henzi, Beat, 3,926,941.

Sandstrom, Harvey D., to Sklaris II, Inc. Receptacle for coins, currency and the like. 3,926,365, Cl. 229-72.000.

Sangiacomo, Fulvio. Controlled cutter for circular hosiery machines. 3,926,015, Cl. 66-147.000.

Sankyo Company Limited: *See—*
Nakajima, Eiichi; Morioka, Tadashi; Kurihara, Kozo; and Kobayashi, Takashi, 3,926,817.

Santa Maria, Richard C.; and Anastasio, Frank J., to Bobst Champlain, Inc. Rotary die mechanism with variable sheet velocity means for forming different sized blanks. 3,926,097, Cl. 93-58.20R.

Saponara, Domenick, to Raytheon Company. Electric igniter for gas burners. 3,926,172, Cl. 126-39.00E.

Sarantakis, Dimitrios: *See—*
Grant, Norman H.; and Sarantakis, Dimitrios, 3,926,937.

Saridakis, Nikolaus, to Volkswagenwerk Aktiengesellschaft. Method and apparatus for charging zinc electrodes in galvanic cells. 3,926,673, Cl. 136-31.000.

Sartler, Gary P.: *See—*
Henk, Michael G.; and Sartler, Gary P., 3,926,882.

Sasaki, Kenji: *See—*
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Sasnett, Russell M., to General Electric Company. Modular furnishings. 3,926,486, Cl. 312-198.000.

Sato, Giichi: *See—*
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Sato, Yashuhiro; and Hirabara, Chikao, to Oki Electric Industry Co., Ltd.; and Nippon Telegraph and Telephone Public Corporation. Non signal detection type AGC system. 3,927,381, Cl. 330-29.000.

Satoh, Kimio: *See—*
Kondo, Shinichi; Sezaki, Masaji; Koike, Makiko; Shimura, Masaru; Akita, Eiichi; Satoh, Kimio; Hamamoto, Kazuko; Niida, Taro; and Hara, Takeshi, 3,926,948.

Satomi, Toyokazu; Nagahara, Yasumori; and Narita, Teruo, to Ricoh Co., Ltd. Copy sheet stripping device. 3,926,429, Cl. 271-174.000.

Satomura, Masato, to Fuji Photo Film Co., Ltd. Process for synthesizing styrene type compounds. 3,927,133, Cl. 260-669.0QZ.

Sauer, Gale E.; and Hansen, Barton G., to Roblin Hope's Industries, Inc. Modular wall construction. 3,925,948, Cl. 52-481.000.

Sauer, Heinrich: *See—*
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Sauter, Dieter: *See—*
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Sauter, Frederick J., to Eastman Kodak Company. Merocarbocyanine filter dyes. 3,926,970, Cl. 260-240.400.

Savostianoff, Dimitri; and Dubos, Denise, to Nobel Hoechst Chimie. Glycolurile derivatives. 3,927,024, Cl. 260-309.700.

Sawaki, Mikio; Iwataki, Isao; Hirono, Yoshihiko; Ishikawa, Hisao; Yamada, Shozo; Yasuda, Yasushi; and Asada, Mitsuo, to Nippon Soda Company, Limited. 3,4-Dihydro-2H-pyrane-2,4-diones. 3,927,034, Cl. 260-343.500.

Sawyer, John H. Safety harness for a helmet. 3,925,822, Cl. 2-3.00R.

Schaefer, Hans: *See—*
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Noll, Ewald; Schaefer, Hans; Schmid, Horst; and Weigert, Wolfgang, 3,926,744.

Schantz, Spencer C. Electric buzzer. 3,927,403, Cl. 340-396.000.

Scharfenberg, Walter Ernst Gustav; and Gunther, Friedrich Wilhelm, to Scharfenbergkupplung GmbH. Rail vehicle device for returning a central buffer coupling horizontally to its mid-position. 3,926,317, Cl. 213-20.000.

Scharfenbergkupplung GmbH: *See—*
Scharfenberg, Walter Ernst Gustav; and Gunther, Friedrich Wilhelm, 3,926,317.

Schatz, Douglas S., to Applied Materials, Inc. Logic system for protecting transistors. 3,927,352, Cl. 317-27.00R.

Scheid, Charles H.: *See—*
Turner, Thomas M.; and Scheid, Charles H., 3,926,050.

Scherenberg, Hans O., to Daimler-Benz Aktiengesellschaft. Rotary piston internal combustion engine. 3,926,152, Cl. 123-8.090.

Scherrer, Hanspeter; and Boller, Arthur, to Hoffmann-La Roche Inc. Liquid crystalline cinnamic acid esters. 3,927,066, Cl. 260-465.00D.

Scherrer, Hanspeter: *See—*
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Scherrer, Robert A., to Riker Laboratories, Inc. Alkoxy-substituted-2-nitro-3-phenylbenzofurans. 3,927,037, Cl. 260-346.20R.

Schibler, Luzius; and Merz, Jurg, to Ciba-Geigy AG. Process for the manufacture of low molecular reactive surface-active agents from carbamides. 3,927,089, Cl. 260-553.00R.

Schichijo, Yoshihisa: *See—*
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Schickedanz, Gerhard, to Adolf Hofmann Metall- u. Kunstoffwarenfabrik GmbH. Safety and security closure. 3,926,327, Cl. 215-218.000.

Schilling, Hartmut: *See—*
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Schittek, Hans-Heinz: *See—*
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Schlatter, Gerald Lance, to International Telephone & Telegraph Corporation. Gravitometer. 3,926,035, Cl. 73-32.00A.

Schlenker, Harold Oscar; and Glover, Fay W., to Safeguard Automotive Corporation. Quick releasable coupling. 3,926,532, Cl. 403-322.000.

Schlumberger Technology Corporation: *See—*
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Schmalfeld, Paul; Sauter, Dieter; Peters, Werner; Ahland, Erwin; Bock, Burkhard; and Lehmann, Joachim, to Bergwerksverband GmbH; and Metallgesellschaft Aktiengesellschaft. Process for producing hot briquettes. 3,926,576, Cl. 44-10.00H.

Schmeidl, Karl: *See—*
Eisert, Manfred; and Schmeidl, Karl, 3,927,095.

Schmid, Erich: *See—*
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Schmid, Horst: *See—*
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Schmid, Markus: *See—*
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Schmidt, Manfred: *See—*
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Schmidt, Richard F., to United States of America, General Counsel-Code GP. Single frequency, two feed dish antenna having switchable beamwidth. 3,927,408, Cl. 343-779.000.

Schmuck, Johann: *See—*
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Schmunk, John: *See—*
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Schnabel, Horst: *See—*
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Schneider, Gerhart: *See—*
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Schneider, Walter: *See—*
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Schneider, William P.: *See—*
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Schnurmann, Henri Daniel: *See—*
Pomeranz, Jchoshua Naphtali; and Schnurmann, Henri Daniel, 3,927,371.

Schoenfield, Palmer J., to Marvin Glass & Associates. Aerial back pack for use with a figure toy. 3,925,924, Cl. 46-201.000.

Scholl, Gunter; and Pauls, Joachim. Overhead cable system for power or information transmission. 3,927,248, Cl. 174-41.000.

Scholle Corporation: *See—*
Scholle, William R., 3,926,229.

Scholle, William R., to Scholle Corporation. Viscous material filling device. 3,926,229, Cl. 141-1.000.

Schroder, Paul B.; and Pollkotter, Gunter, to Leifeld & Co. Method of producing special wheel rims. 3,926,025, Cl. 72-84.000.

Schroeder Brothers Corporation: *See—*
Gaudet, Ronald M.; Michell, Samuel S.; and Kozy, Michael J., 3,926,806.

Schroeder, Roger H.: *See—*
Burns, Ronald N.; Landwehr, Dewayne A.; Schroeder, Roger H.; Vogelei, Robert A.; and Zeller, Gary P., 3,926,462.

Schroeder, Wilburn C. Hydrogenation of coal. 3,926,775, Cl. 208-10.000.

Schubert, Egon: *See—*
Plasser, Franz, deceased; Plasser, Erna, heir; Theurer, Josef; Schubert, Egon; and Riessberger, Klaus, 3,926,123.

Schuddemage, Horst-Dieter: *See—*
Strobel, Wolfgang; Jaenicke, Ottokar; Schuddemage, Horst-Dieter; and Jastrow, Horst, 3,927,142.

Schuhmacher, Alfred, to BASF Aktiengesellschaft. Production of anthraquinoneoxazoles. 3,926,996, Cl. 260-256.40Q.

Schuierer, Manfred, to Bruckner Apparatebau GmbH. Method of dyeing textile material made of synthetic fibres. 3,926,554, Cl. 8-174.000.

Schuler, Lawrence D.: *See—*
Micchelli, Albert L.; Legato, Gerard J.; Ganslaw, Stuart H.; and Schuler, Lawrence D., 3,927,199.

Schuller, Frederick T.; and Moore, Warren A., to United States of America, General Counsel-Code GP. Fluid journal bearings. 3,926,482, Cl. 308-9.000.

Schulte-Elte, Karl-Heinrich; and Jindra, Henri, to Firmenich S.A. 2,6,-6-Trimethyl-1-alkenoyl-cyclohexenones. 3,927,107, Cl. 260-586.00R.

Schulte, Klaus: *See—*
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Schultz, Jay Ward: *See—*
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Schultz, Robert S. Valve construction for a pressure operated container. 3,926,349, Cl. 222-402.220.

Schundehutte, Karl-Heinz: *See—*
Nickel, Horst; and Schundehutte, Karl-Heinz, 3,926,546.

Schurrer, Josef; and Meyer, Josef, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Apparatus for non-contact, accurate and continuous determination of surface temperature on a part. 3,926,053, Cl. 73-351.000.

Schuster, Joachim; and Seien, Hermann, to Babcock & Wilcox, Limited. Welding system. 3,927,295, Cl. 219-125.00R.

Schuster, Samuel R.: *See—*
Kopito, Louis; Schuster, Samuel R.; and Kosasky, Harold, 3,926,037.

Schuylkill Chemical Company: *See—*
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Schwartz, Albert B.: *See—*
Plank, Charles J.; Rosinski, Edward J.; and Schwartz, Albert B., 3,926,782.

Schwarzenbach, Kurt; and Rosenberger, Siegfried, to Ciba-Geigy Corporation. Bicyclic phosphorus compounds. 3,927,150, Cl. 260-937.000.

Schwarzkopf, Joachim: *See—*
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Schwerdt, Paul: *See—*
Paul, Jurgen; Kostelezky, Walter; and Schwerdt, Paul, 3,927,339.

Sciortino, August M. Pilfer-proof locking cover for a coin box. 3,926,366, Cl. 232-15.000.

Sciulli, Joseph A.; Campanella, Samuel Joseph; and Costales, Rene, to Communications Satellite Corporation. Speech predictive encoding communication system. 3,927,268, Cl. 179-15.0BW.

SCM Corporation: *See—*
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Corbett, Paul M.; and Fedock, Michael P., 3,926,246.
Eaton, John Littell, Jr.; Brill, Richard Henry; and Myers, Walter E., 3,926,333.

Scofield, Carlie D. Automotive air conditioner and method of operating the same. 3,926,000, Cl. 62-121.000.

Scola, Daniel A., to United Technologies Corporation. Curable crack-resistant epoxy resin. 3,926,903, Cl. 260-42.280.

Scola, Daniel A., to United Technologies Corporation. Curable crack-resistant epoxy resin. 3,926,904, Cl. 260-42.280.

Scott, Billy Joe, to Stewart/Walker Company. Apparatus for removing containers from packages. 3,926,322, Cl. 214-305.000.

Scott Paper Company: *See—*
Edelson, Nathan Allen; and Faessinger, Robert W., 3,926,872.

Scott, Paul B.: *See—*
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Seaco Computer-Display Incorporated: *See—*
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Searle, Robert J. G.; and Woodall, Roger E., to Shell Oil Company. Pesticidal cyclopropane derivatives. 3,927,068, Cl. 260-468.00H.

Sease, John D.: *See—*
Bradley, Ronnie A.; Miller, William H.; and Sease, John D., 3,926,344.

Seebode, Albert; Appel, Eggert; and Geisler, Gottfried, to Fischer & Porter Co. Quadrature-voltage balancing circuit or electromagnetic flowmeter. 3,926,049, Cl. 73-194.0EM.

Seib, James N.; and Willis, Harry G., to United States of America, Navy. Water trap for pitot static system. 3,926,594, Cl. 55-159.000.

Seien, Hermann: *See—*
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Seino, Yoshio: *See—*
Horiguchi, Shojiro; Nakamura, Michiei; Nakajima, Keiji; and Seino, Yoshio, 3,926,830.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
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Selinder, Bjorn P.; and Selinder, Bo Eric, to Semo Incorporated. Power eraser. 3,925,842, Cl. 15-3.530.

Selinder, Bo Eric: *See—*
Selinder, Bjorn P.; and Selinder, Bo Eric, 3,925,842.

Selleck, Robert A.: *See—*
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Sellstedt, John H.: *See—*
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Selvia, Ray E.; and Barden, Allan D., to All State Vending Equipment, Inc. Carbonated water producing apparatus. 3,926,342, Cl. 222-129.100.

Semersky, Frank E.: *See—*
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Semo Incorporated: *See—*
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Senco Products, Inc.: *See—*
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Senes, Michel; Lhonore, Pierre; Pottier, Michel; and Quibel, Jacques, to Societe Chimique de la Grande Paroisse et Produits Chimiques. Catalytic oxidation of ammonia. 3,926,853, Cl. 252-456.000.

Sensor Technology, Inc.: *See—*
Weinstein, Harold, 3,925,879.

Seo, Yoshiro: *See—*
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Sera, Katsuya; and Kasari, Akira, to Kansai Paint Company, Limited. Aqueous electrophoretic coating compositions comprised of polycarboxylic acid binder resin and sparingly soluble alkaline earth metal molybdate. 3,926,761, Cl. 204-181.000.

Seragnoli, Ariosto, deceased; by Seragnoli, Leonina Ricci, heir and legal representative; by Seragnoli, Giorgio, heir and legal representative; and by Seragnoli, Daniela, heir and legal representative, to G.D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Seragnoli. Device for transferring batches of cigarettes from a formation line to a packing line for them to be packeted. 3,926,300, Cl. 198-20.00C.

Seragnoli, Daniela, heir and legal representative: *See—*
Seragnoli, Ariosto, deceased; Seragnoli, Leonina Ricci, heir and legal representative; Seragnoli, Giorgio, heir and legal representative; and Seragnoli, Daniela, heir and legal representative, 3,926,300.

Seragnoli, Giorgio, heir and legal representative: *See—*
Seragnoli, Ariosto, deceased; Seragnoli, Leonina Ricci, heir and legal representative; Seragnoli, Giorgio, heir and legal representative; and Seragnoli, Daniela, heir and legal representative, 3,926,300.

Seragnoli, Leonina Ricci, heir and legal representative: *See—*
Seragnoli, Ariosto, deceased; Seragnoli, Leonina Ricci, heir and legal representative; Seragnoli, Giorgio, heir and legal representative; and Seragnoli, Daniela, heir and legal representative, 3,926,300.

Sergeys, Francis J., to W. R. Grace & Co. Porous ceramics-exhaust oxidation catalyst. 3,926,851, Cl. 252-455.00R.

Sexton, Peter, to Texas Instruments Incorporated. Composite wire and method of making. 3,926,573, Cl. 29-197.000.

Seyler, Jay Kenneth: *See—*
Hughes, John Lawrence; Seyler, Jay Kenneth; and Liu, Robert Chung-Huang, 3,926,938.

Seymour, Donald Edwin; da Costa, Nicholas Mario; and Charville, William Thomas, to Hydron Limited. Cosmetic compositions employing certain compolymers. 3,927,203, Cl. 424-61.000.

Seymour, Theodore Joseph: *See—*
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Sezaki, Masaji: *See—*
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Shalimova, Zoya Stepanovna: *See—*
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Shannon, Richard F.; and Helser, Jerry L., to Owens-Corning Fiberglas Corporation. Method of building and maintaining slurry consistency. 3,926,653, Cl. 106-119.000.

Shapiro, Justin J.: *See—*
Hesse, Sarah; and Shapiro, Justin J., 3,925,899.

Shapiro, Nelson H.: *See—*
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Sharp, William J., Jr., to Goodyear Tire & Rubber Company, The. Force Variation measurements on unvulcanized tires. 3,926,704, Cl. 156-126.000.

Shatzel, Mary P., administratrix: *See—*
Shatzel, Norman W., deceased, 3,926,085.

Shatzel, Norman W., deceased (by Shatzel, Mary P., administratrix), to American Optical Corporation. Specimen feed for a microtome. 3,926,085, Cl. 83-718.000.

Shavel, John, Jr.: *See—*
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Wittekind, Raymond R.; and Shavel, John, Jr., 3,927,022.

Shaw, Robert B., to Shell Oil Company. Portable hardness inspection tool. 3,926,041, Cl. 73-85.000.

Shay, Edward G.: *See—*
O'Neill, John J.; Komor, Joseph A.; Babcock, Thomas E.; Edmundson, Robert J.; and Shay, Edward G., 3,926,828.

Sheinson, Ronald S.: *See—*
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Sheldrick, George Edward, to Ilford Limited. Photometric apparatus including a rotatable optical density wedge. 3,926,525, Cl. 356-205.000.

Shell Oil Company: *See—*
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Pilgram, Kurt H. G.; Jackson, Earl K.; and Kollmeyer, Willy D., 3,927,062.
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Sheller-Globe Corporation: *See—*
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Sherman, Edward: *See—*
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Sherwin, Owen W.: *See—*
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Sherwin-Williams Company, The: *See—*
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Sheth, Rajesh N.: *See—*
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Shibata, Uichi: *See—*
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Shibata, Yutaka; Kodera, Yoshiaki; Tanaka, Mitsuru; Kamiyama, Fumio; and Nakatan, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Process for producing polyvinyl acetal. 3,926,918, Cl. 260-73.00L.

Shibatani, Juichi; and Kondo, Toshiyuki, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Anti-skid brake control system for vehicles. 3,926,480, Cl. 303-21.00F.

Shigeo, Nozawa, to Kyowa Kagakukogyo Kabushiki Kaisha. Method and apparatus for water and air culture of plants. 3,925,926, Cl. 47-1.200.

Shima, Seisuke, to Sumitomo Metal Industries Limited. Railway axle friction snubber assembly. 3,926,127, Cl. 105-224.00R.

Shimabukuro, Seiki. Method for turning a flexible tube inside out. 3,927,164, Cl. 264-95.000.

Shimada, Takeo: *See—*
Horie, Ikutaro; Miyazako, Taksuhi; and Shimada, Takeo, 3,926,869.

Shimada, Toshikazu; Komatsubara, Kiichi; Hasegawa, Susumu; and Kato, Yoshiki, to Hitachi, Ltd. Method for producing solid material having amorphous state therein. 3,926,682, Cl. 148-1.500.

Shimano, Yasunao: *See—*
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Shimizu, Hiroshi: *See—*
Tanaka, Eiichiro; Nishimura, Katsuo; Shimizu, Hiroshi; and Koshi, Masao, 3,926,502.

Shimizu, Katsuhisa; and Minami, Norio, to Arakawa Rinsan Kagaku Kogyo Kabushiki Kaisha. Hot-melt compositions comprising E/VA copolymer and hydrogenated petroleum resin. 3,926,878, Cl. 260-27.0EV.

Shimizu, Senzo: *See—*
Huang, Ching Yun; Shimizu, Senzo; and Adachi, Hiroyuki, 3,926,890.

Shimura, Masaru: *See—*
Kondo, Shinichi; Sezaki, Masaji; Koike, Makiko; Shimura, Masaru; Akita, Eiichi; Satoh, Kimio; Hamamoto, Kazuko; Niida, Taro; and Hara, Takeshi, 3,926,948.

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Shino, Makoto; and Saito, Mitsuo, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle drawn by suction against the surface of travel. 3,926,277, Cl. 180-115.000.

Shinoda, Kenichi: *See—*
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Shinohara, Toshio: *See—*
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Shionogi & Co., Ltd.: *See—*
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Shirafuji, Hideo: *See—*
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Shiraishi, Teruhiko: *See—*
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Shively, Lawrence A.; and Hoy, Robert P., to Mechaneer, Inc. Apparatus and method for selecting and transferring a stack of laminations for an electric motor or the like. 3,926,320, Cl. 214-8.50C.

Showa Denko Kabushiki Kaisha: *See—*
Oushiba, Takashi, 3,927,183.

Shroy, Robert E.; and Schmunk, John, to Hancock Brick and Tile Company. Corrugated tubing with integral coupling means thereon. 3,926,222, Cl. 138-122.000.

Shroyer, Milton B. Removable outrigger float and mounting device. 3,926,136, Cl. 114-123.000.

Shubert, Roland H., to Maryland Patent Development Co., Inc. Magnetic separation of particular mixtures. 3,926,789, Cl. 209-8.000.

Shultz, Jay S., to Johnson & Johnson. Resin compositions, methods of applying the same to porous materials, and the resulting products. 3,927,236, Cl. 428-304.000.

Shunichi, Okamura. Sugar cane harvesting machine. 3,925,969, Cl. 56-13.900.

Shvedov, Vasily Ivanovich: *See—*
Grinev, Alexei Nikolaevich; Shvedov, Vasily Ivanovich; Sytina, Evgenia Nikolaevna; Bogdanova, Nadezhda Sergeevna; Nikolaeva, Irina Sergeevna; Pershin, Grigory Nikolaevich; and Guskova, Tatyana Anatolievna, 3,927,125.

Siczek, Bernard, to Graco Inc. Spray gun valve. 3,926,376, Cl. 239-583.000.

Sieberer, Karl-Heinz: *See—*
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Siegel, Jack W., to Chevron Research Company. Integrated distillation and hydrodesulfurization process for jet fuel production. 3,926,785, Cl. 208-211.000.

Siegrist, Rudolf: *See—*
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Sien Equipment Company: *See—*
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Sien, Gerald Bruce, to Sien Equipment Company. Five man mine personnel carrier. 3,926,276, Cl. 180-89.00R.

Sieurin, Donald; and Kinnicutt, Roger, Jr., to Morgan Construction Company. Coil forming and transfer apparatus. 3,926,382, Cl. 242-79.000.

Signetics Corporation: *See—*
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Silver, Edward S.; and Tucker, Robert E., to Computer Specialties Corporation. Bidirectional web medium drive. 3,926,513, Cl. 353-26.000.

Simmonds, Harold V. Transom mounted ski rack and tow rope reel support. 3,925,836, Cl. 9-1.00D.

Simon-Carves Limited: *See—*
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Simpson, David A.: *See—*
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Simpson, Frederick Granville: *See—*
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Singer Company, The: *See—*
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Singh, Kanwar J., to McCrosky Tool Corporation. Clamping assembly for cutter bits. 3,925,868, Cl. 29-96.000.

Sisco, Willie J., Jr.; Long, Cecil L.; and Kifer, James M., to Coyne Cylinder Company. Perlite acetylene cylinder filler composition. 3,926,652, Cl. 106-118.000.

Sitter, Matthew M.: *See—*
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Siwek, Erwin G.: *See—*
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Six, Hugh A.: *See—*
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SKF Industrial Trading and Development Company B.V.: *See—*
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Van Nederveen, Hans Bertil, 3,926,306.

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Skobelev, Leonid Ivanovich: *See—*
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Klementi, Toe Jokhannesovich; Herem, Henn-Jaak Eerovich; and Skornyakov, Eduard Petrovich, 3,926,589.

Skorupinski, Roy E. Water power machine and under sea, under water generator station. 3,927,330, Cl. 290-54.000.

Slator, Damon T., to Bowen Tools, Inc. Wireline control system and method. 3,926,260, Cl. 166-315.000.

Sloane, Clifford, to Cam Gears Limited. Manufacture of toothed workpieces. 3,926,091, Cl. 90-1.400.

Smay, Gary Lynn; Van Caporali, Ronald; and Southwick, Russell Duty, to Glass Container Manufacturers Institute, Inc. Method for applying an inorganic titanium coating to a glass surface. 3,926,604, Cl. 65-60.000.

Smith, Brian Robson; and Tomlinson, Kenneth, to Colgate-Palmolive Company. Superfatted soap and process of producing it. 3,926,829, Cl. 252-132.000.

Smith, Curtis J., to Container Corporation of America. Winding convolute can bodies. 3,926,098, Cl. 93-81.00R.

Smith, Everett C., to American Glass Research, Inc. Recovery system for spraying apparatus. 3,926,103, Cl. 98-115.0SB.

Smith, Francis Fabian: *See—*
Lee, Henry Lawrence, II; Smith, Francis Fabian; and Swartz, Michael Lawrence, 3,926,906.

Smith, Gordon C., to Glaus, Pyle, Schomer, Burns & DeHaven, Inc. Material handling and conveying device. 3,926,302, Cl. 198-53.00R.

Smith, James W. Survival suit. 3,925,839, Cl. 9-331.000.

Smith, Leonard S., to Century Mfg. Co., Inc. Method for making and insulating a coil tap. 3,925,885, Cl. 29-605.000.

Smith, Lowell R., to Monsanto Company. Preparation of 1,1,2,3-tetrachloropropene from 2,3-trichloropropane. 3,926,758, Cl. 204-163.00R.

Smyth, Donald Nation, to S. A. Brush Company Limited. Carpet shampoo apparatus. 3,926,528, Cl. 401-274.000.

Snam Progetti S.p.A.: *See—*
Antonini, Eraldo; and I.S.F. Societa per Azioni, 3,926,726.

Snow, Kenneth T.; and Snow, Kenneth T., Jr. Corner bracket with hip saddle. 3,925,954, Cl. 52-752.000.

Snow, Kenneth T., Jr.: *See—*
Snow, Kenneth T.; and Snow, Kenneth T., Jr., 3,925,954.

Societa' Italiana Resine S.I.R. S.p.A.: *See—*
Piccolo, Luigi; and Paolinelli, Antonio, 3,926,608.

Societe Anonyme Cockerill-Ougree-Providence et Esperance-Longdoz: *See—*
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Societe Chimique de la Grande Paroisse et Produits Chimiques: *See—*
Senes, Michel; Lhonore, Pierre; Pottier, Michel; and Quibel, Jacques, 3,926,853.

Societe de Prospection et d'Inventions Techniques SPIT: *See—*
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Societe d'Etudes de Machines Thermiques: *See—*
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Societe d'Etudes du Procede NORIDEM: *See—*
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Societe dite: Automobiles Peugeot: *See—*
Roche, Jean Claude; Lavarec, Martial; and Maurice, Jean, 3,926,073.

Societe Industrielle Generale de Mecanique Appliquee S.I.G.M.A.: *See—*
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Societe Nationale des Poudres et Explosifs: *See—*
Humbert, Jean Jacques; Thomas, Jean Pierre Francis; Brut, Gerard Yvan; and Gounou, Jean Marie Joseph Elie, 3,926,697.

Sodal, Ingvar E.; Hoivik, Lars; Micco, Alexander J.; Weil, John V.; and Baer, Norman W., to Regents of the University of Colorado. Method and inlet control system for controlling a gas flow sample to an evacuated chamber. 3,926,209, Cl. 137-487.500.

Soga, Hiromu: *See—*
Sugai, Tetuya; Soga, Hiromu; Motegi, Masayosi; and Kanno, Hideo, 3,927,394.

Sohm, Jean-Claude: *See—*
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Sokolov, Vladimir Dmitrievich: *See—*
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Sollami, Blase J., to Bendix Corporation, The. Head assembly for a cryogenic cooler. 3,926,011, Cl. 62-514.000.

Sonic Corporation: *See—*
D'Urso, Anthony M., 3,926,413.

Sonnengruber, Erhard. Dry-cleaning agent. 3,926,831, Cl. 252-171.000.

Sony Corporation: *See—*
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Southwick, Russell Duty: *See—*
Smay, Gary Lynn; Van Caporali, Ronald; and Southwick, Russell Duty, 3,926,604.

Sowinski, Francis Alexander; and Vogt, B. Richard, to E. R. Squibb & Sons, Inc. 1,2,4-Benzothiadiazines. 3,926,977, Cl. 260-243.00D.

Space Age Industries, Inc.: *See—*
Hemmelsbach, Richard J., 3,925,942.

Spannhake, Dieter, to Robert Bosch Fernsehanlagen GmbH. System for stabilization of working point in picture tubes. 3,927,346, Cl. 315-30.000.

Spector, George: *See—*
Tucker, John L.; and Spector, George, 3,925,921.

Speece, Richard E. Pressurized gas transfer system. 3,926,588, Cl. 55-52.000.

Speiser, Jeffrey M.: *See—*
Bond, James W.; and Speiser, Jeffrey M., 3,926,367.

Sperry Rand Corporation: *See—*
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Sperry Rand Limited: *See—*
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Spiegelberg, Hans: *See—*
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Spiess, Bernhard, to Hoechst Aktiengesellschaft. Process for the preparation of 2-amino-4-nitro-anisole. 3,927,098, Cl. 260-575.000.

Spiro, Irving, to All Orthopedic Appliances Inc. Dorsal lumbo sacral support. 3,926,183, Cl. 128-78.000.

Spitz, David A., to Industrial Nucleonics Corporation. Dry line controller. 3,926,719, Cl. 162-253.000.

Sprick, Walter F.: *See—*
Lovich, John W.; Meller, Oscar W.; and Sprick, Walter F., 3,926,243.

Spurney, Richard W., to Bicron Corporation. Processing alkali metal halide salts for growing into crystals in accordance with stockbarger process. 3,926,566, Cl. 23-301.0SP.

Squires, Arthur M. Electrostatic filtration in panel bed. 3,926,587, Cl. 55-12.000.

Squires, Arthur M.; and Lee, Kun-Chieh, to Squires, Arthur M. Precoating panel bed for filtering aerosol of micron-size particulates. 3,926,593, Cl. 55-96.000.

SS Pharmaceutical Co., Ltd.: *See—*
Katori, Tatsuhiko; Sato, Giichi; Kihara, Takashi; Yumoto, Norio; Makino, Shigeru; and Harada, Juntaro, 3,927,082.

Stabholz, Ludvig M., to Meditrac. Lumbar traction apparatus. 3,926,182, Cl. 128-75.000.

Stabilator AB: *See—*
Pulk, Elgas, deceased; Hallsenius, Carlgustaf, Administrator; and Noren, John Paul, 3,926,345.

Stacy, Donald G.: *See—*
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Ladd, Floyd N.; and Stacy, Donald G., 3,925,932.
Ladd, Floyd N.; Raveschot, Marcel R.; and Stacy, Donald G., 3,926,066.

Stahlecker, Fritz; and Stahlecker, Hans. Apparatus for piecing a thread in an open-end spinning unit. 3,925,975, Cl. 57-34.00R.

Stahlecker, Hans: *See—*
Stahlecker, Fritz; and Stahlecker, Hans, 3,925,975.

Stahmann, James R.; and Kalakowsky, Charles B., to United States of America, Air Force. Spool for wire deployment. 3,926,386, Cl. 242-118.000.

Stalego, Charles J., to Owens-Corning Fiberglas Corporation. Glass fiber stream feeder. 3,926,600, Cl. 65-1.000.

Stalter, Robert J., Sr., to Goodyear Tire & Rubber Company, The. Method of molding a polyurethane foam involving use of a fan-like spray nozzle. 3,927,162, Cl. 264-51.000.

Stamicarbon, B.V.: *See—*
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Standard Electric Time Corporation: *See—*
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Standard Oil Company: *See—*
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Henk, Michael G.; and Sartler, Gary P., 3,926,882.
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Stanley Aviation Corporation: *See—*
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Stanley, Lester N.: *See—*
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Stapley, Edward O.; and Mata, Justo Martinez, to Merck & Co., Inc. Antibiotic Ensanchomycin. 3,927,210, Cl. 424-118.000.

Starck, Robert W.: *See—*
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Starkey, Caroline J.: *See—*
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Stary, Marvin L.; Brown, Edward L.; and Pridonoff, Eric L. Recovery of flammable vapors. 3,926,230, Cl. 141-45.000.

Stauffer Chemical Company: *See—*
Klein, George I., 3,927,179.
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Steel Web Corporation: *See—*
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Steidinger, Donald J., to Wallace Business Forms, Inc. Thin frame stencil assembly. 3,926,113, Cl. 101-128.100.

Stendel, Wilhelm: *See—*
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Stephens, Donald E., to Beckman Instruments, Inc. Temperature stabilized water jacket chromatographic column. 3,926,800, Cl. 210-31.00C.

Stephens, Galen H.; and Revill, Charles L. Flux recovery unit. 3,926,788, Cl. 209-3.000.

Steprath, Werner. Centrifuge construction. 3,926,661, Cl. 127-19.000.

Sterling Drug Inc.: *See—*
Ackerman, James H., 3,926,975.
Bailey, Denis M., 3,927,000.

Steube, Kenneth E., to McDonnell Douglas Corporation. Glow discharge-tumbling vapor deposition apparatus. 3,926,147, Cl. 118-49.100.

Stevens, Arthur Royden; and Cartwright, Ronald Forrester, to Centrax Limited. Copying machine tools. 3,925,937, Cl. 51-145.00R.

Stevens, Gerald L.: *See—*
Duke, Spencer E.; and Stevens, Gerald L., 3,926,047.

Stevens, Harry M., to Monsanto Company. Method of concentrating gallium. 3,927,172, Cl. 423-129.000.

Stevens, Timothy S., to Dow Chemical Company, The. Method and apparatus for quantitative chromatographic analysis of cationic species. 3,926,559, Cl. 23-230.00R.

Stevison, Donald F.: *See—*
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Stewart, James A.; and Zellmer, Neale A., to GTE Automatic Electric Laboratories Incorporated. Ringer power generator circuit for subscriber carrier station terminal. 3,927,266, Cl. 179-2.50R.

Stewart, Richard Gordon: *See—*
Harrap, John; and Stewart, Richard Gordon, 3,926,665.

Stewart/Walker Company: *See—*
Scott, Billy Joe, 3,926,322.

Still, Leslie Ernest, to Precision Screw & Manufacturing Company Limited, The. Inserts. 3,926,356, Cl. 227-114.000.

Stillman, Neil W.: *See—*
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Stloukal, Mojmir; Syrovatka, Zdenek; Dolezel, Milan; and Stripek, Karel, to Prvni Brnenska strojirna. Incineration of hospital refuse. 3,926,130, Cl. 110-10.000.

Stoddard, William H., Jr.: *See—*
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Stohr, Helmut: *See—*
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Stolt-Nielsen, Inc.: *See—*
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Stookey, Donald J., to Monsanto Company. Stripping monomers from a slurry of copolymerized acrylonitrile. 3,926,927, Cl. 260-85.50S.

Storck, Gerhard: *See—*
Barzynski, Helmut; Marx, Matthias; Storck, Gerhard; and Saenger, Dietrich, 3,926,636.

Strachan & Henshaw Limited: *See—*
Alsop, Arthur Graham, 3,926,115.

Strahl, Walter. Sympathetic ink. 3,926,645, Cl. 106-21.000.

Strasser, Karl: *See—*
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Straub, Otto Christian, to Bayer Aktiengesellschaft. Para-influenza-3-virus. 3,927,209, Cl. 424-89.000.

Stripek, Karel: *See—*
Stloukal, Mojmir; Syrovatka, Zdenek; Dolezel, Milan; and Stripek, Karel, 3,926,130.

Strobel, Wolfgang; Jaenicke, Ottokar; Schuddemage, Horst-Dieter; and Jastrow, Horst, to Hoechst Aktiengesellschaft. Process for the preparation impact resistant styrene polymers. 3,927,142, Cl. 260-878.00R.

Stromberg-Carlson Corporation: *See—*
Davis, Gordon H.; and Joehler, Klaus, 3,927,270.
Pommerening, Uwe A.; and Richards, Glenn L., 3,927,273.

Sturgis, Clifford M. Self-contained electric steam space heating unit. 3,927,299, Cl. 219-365.000.

Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, to Sumitomo Chemical Company, Ltd. Process for separating hydroperoxides. 3,927,114, Cl. 260-610.00A.

Sugahara, Eisuke, to Nippon Piston Ring Co., Ltd. Resonance preventive system for power transmission systems of internal combustion engines. 3,926,074, Cl. 74-857.000.

Sugai, Tetuya; Soga, Hiromu; Motegi, Masayosi; and Kanno, Hideo, to Nippon Steel Corporation. Control system for computer use for on-line control. 3,927,394, Cl. 340-172.500.

Suggitt, Robert M.; and Crone, John M., Jr., to Texaco Inc. Method of regenerating spent hydroalkylation catalyst containing an oxidizable group VIII metal. 3,926,842, Cl. 252-411.00R.

Suggitt, Robert M.; and Odle, John D., to Texaco Inc. Preparation of hydrocarbons. 3,927,135, Cl. 260-672.00R.

Suggitt, Robert M.; and Odle, John D., to Texaco Inc. Treatment of hydrocarbons. 3,927,136, Cl. 260-672.00R.

Sugio, Akitoshi: *See—*
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Sugizaki, Atsushi; Hirose, Takeshi; Yokota, Yukio; Okumura, Akio; Oishi, Yasushi; and Arai, Atsuaki, to Fuji Photo Film Co., Ltd. Color silver halide photographic materials containing couplers having an oleophilic group. 3,926,634, Cl. 96-100.000.

Suhren, Glen D.; and True, Charles W., III, to United States of America, Air Force. Zero crossing SCR light dimmer. 3,927,349, Cl. 315-205.000.

Sullivan, Daniel W.: *See—*
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Sulzer Brothers Limited: *See—*
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Sumitomo Chemical Company, Ltd.: *See—*
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Sumitomo Metal Industries Ltd.: *See—*
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Summers, Robert S.; and Summers, William R. Bevel and ring gear drive. 3,926,065, Cl. 74-424.000.

Summers, William A.; Christy, Betty L.; and Sweeney, Joseph V., to Ebasco Services Incorporated. Monitor and results computer system. 3,927,308, Cl. 235-151.300.

Summers, William R.: *See—*
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Sun Chemical Corporation: *See—*
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Rosen, George; Carlick, Daniel J.; and Reiter, Ralph H., 3,926,639.
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Sunbeam Corporation: *See—*
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Sund, Joseph Tat-Hin, to Bell & Howell Co. Typing sheet for thermal duplicating processes. 3,927,237, Cl. 428-325.000.

Sundby, Bjorn, to Colgate-Palmolive Company. Esters of dicarboxylic acids and polyhydroxy tertiary amines as new detergent softener compounds. 3,927,073, Cl. 260-485.00G.

Sussmann, Erhard, to Siemens Aktiengesellschaft. Method of epitactic precipitation of inorganic material. 3,926,715, Cl. 156-612.000.

Suzuki, Hirofumi, to Hitachi, Ltd. Imaging target for photoconduction type image pickup device. 3,927,340, Cl. 313-371.000.

Suzuki, Masatoshi: *See—*
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Svirschevsky, Valentin Konstantinovich; Orekhov, Anatoly Alexandrovich; Tregubov, Boris Grigorievich; and Trofimuk, Andrei Alexeevich. Device for driving holes in the ground. 3,926,267, Cl. 175-19.000.

Swanson, Sydney Alan Vasey: *See—*
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Szabo, Karoly. M-(3,3-disubstituted ureido) phenyl [(substituted)-methyl] carbamates. 3,927,070, Cl. 260-479.00C.

Szente, Andre: *See—*
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Szumacher, Bolesław. Cork puller. 3,926,076, Cl. 81-3.410.

Tabiliani, Vasu H.; and Graybill, Howard W., to I-T-E Imperial Corporation. Three-phase cable termination for metal enclosed compressed gas-insulated substation. 3,927,246, Cl. 174-19.000.

Tainsh, Thomas R. Collapsible bow and arrow stand. 3,926,393, Cl. 248-165.000.

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Tanaka, Hiroshi; and Morita, Isao, to Caterpillar Mitsubshi Ltd. Emergency braking system. 3,926,282, Cl. 188-106.00F.

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Tarhan, Mehmet Orhan, to Bethlehem Steel Corporation. Process for direct cooling of corrosive industrial cases. 3,927,153, Cl. 261-128.000.

Tate & Lyle Limited: *See—*
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Tausanovitch, Dausan: *See—*
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Taylor, Dale F.; and Siwek, Erwin G., to General Electric Company. Lead-acid storage battery paste. 3,926,670, Cl. 136-26.000.

Taylor, Glenn N., to Colgate-Palmolive Company. Selectively positionable diaper assembly. 3,926,189, Cl. 128-287.000.

Taylor Industries, Inc.: *See—*
Taylor, Philip W., 3,926,141.

Taylor, Philip W., to Taylor Industries, Inc. Modular wire guard. 3,926,141, Cl. 116-114.00R.

Taylor, Scott V. E. Hydraulic transmission. 3,926,287, Cl. 192-61.000.

Taylor, William I.: *See—*
Hall, John B.; Lala, Lekhu Kewalram; Beets, Muus G. J.; and Taylor, William I., 3,927,083.

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Teller, Daniel M.; Sellstedt, John H.; and Guinosso, Charles J., to American Home Products Corporation. 7-{2-(2-Thioxo-4-thiazolin-3-yl)-acetamido} cephalosporanic acid derivatives. 3,926,984, Cl. 260-243.00C.

Tendler, Robert Kanof. Wall hanger. 3,926,399, Cl. 248-467.000.

Tenneco Chemicals, Inc.: *See—*
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Texaco Inc.: *See—*
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Thaeler, Bruce K., to Textron Inc. Adhesively securable slide fastener. 3,925,858, Cl. 24-205.16D.

Theisen, Gunter, to Oberschwabische Metallwarenfabrik GmbH & Co. K.G. Aluminium enamels. 3,927,243, Cl. 428-433.000.

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Thomas, Leonard L. Tobacco smoke filter. 3,926,199, Cl. 131-187.000.

Thomas, Samuel Charles, Jr.; and Cease, Vincent Jay, to Continental Oil Company. Purification of crude sulfonic acids. 3,927,081, Cl. 260-505.00P.

Thompson, Fredrick W., to United States of America, Air Force. Method of making tension indicator-turnbuckle. 3,925,869, Cl. 29-175.000.

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Thorpe, Merle L. Burner system. 3,926,544, Cl. 431-114.000.

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Tomikawa, Masami; Ohkawa, Hideo; and Tsunoda, Akiji, to Idemitsu Kosan Company Limited. Method of forming a dimensionally accurate foamed polyethylene resin products. 3,927,159, Cl. 264-45.300.

Tomiyama, Tomoko: *See—*
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Tomlin, Clive Dudley Spencer; Barlow, Charles Brian; and White, Brian Graham, to Imperial Chemical Industries Limited. 4-Arylaminopyridine herbicides. 3,926,611, Cl. 71-94.000.

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Toriumi, Shiro; and Yamagishi, Seiichi, to Minolta Camera Kabushiki Kaisha. Sheet insertion and removing device. 3,926,426, Cl. 271-3.000.

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Tozawa, Minoru, to Mitsubishi Denki Kabushiki Kaisha. Cartridge tape player. 3,927,419, Cl. 360-94.000.

Trebilcock, Lionel F. Stacking aid. 3,926,321, Cl. 214-10.50R.

Tregubov, Boris Grigorievich: *See—*
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Treuner, Uwe D.; and Breuer, Hermann, to E. R. Squibb & Sons, Inc. Dithiocarbonylthioacetyl cephalosporins. 3,926,979, Cl. 260-243.00C.

Treuner, Uwe D.; and Breuer, Hermann, to E. R. Squibb & Sons, Inc. Dithiocarbonylthioacetyl cephalosporins. 3,926,980, Cl. 260-243.00C.

Treuner, Uwe D.; and Breuer, Hermann, to E. R. Squibb & Sons, Inc. 3-Heterothio[(alkoxycarbonyl)thioacetyl]cephalosporanic derivatives. 3,926,983, Cl. 260-243.00C.

Tricot, Roland: *See—*
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Trifunovic, Alexander L.; Hills, William H.; Borgman, Milton H.; and Mersereau, Emory P., to Indian Head, Inc. Method and apparatus for texturing continuous filament yarn. 3,925,976, Cl. 57-140.00R.

Triprint Pty. Ltd.: *See—*
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Trisoglio, Giovanni: *See—*
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Tritsch, Ludwig, to Johnson & Johnson. Disposable diaper with twist tab fastener. 3,926,190, Cl. 128-287.000.

Tritsch, Ludwig, to Johnson & Johnson. Disposable diaper having adhesive tabs and release strips therefor permanently attached at marginal edges of diaper. 3,926,191, Cl. 128-287.000.

Trofimuk, Andrei Alexeevich: *See—*
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Tsugukuni, Hideyoshi; Kano, Masafumi; and Matsuda, Mitsuhiro, to Dai Nippon Toryo Co. Ltd. Thermosetting polymer dispersions and process for production thereof. 3,926,875, Cl. 260-23.0TN.

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Tsuruzawa, Teruya; and Ueda, Muneyuki. Cleaning brush device. 3,925,843, Cl. 15-184.000.

Tsutsumi, Fumio; and Kerman, Stephen, to Nippon Tsu Shin Kogyo K.K.; and TIE/communications, Inc. Direct-station-selection intercommunication and automatic holding circuit in a key telephone system. 3,927,278, Cl. 179-99.000.

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Tucker, John L.; and Spector, George. Fishing sinker. 3,925,921, Cl. 43-43.120.

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Turk, Chester Frank: *See—*
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Turner, Thomas M.; and Scheid, Charles H., to Ellicott Machine Corporation. Method and apparatus for determining solids delivered from moving slurry. 3,926,050, Cl. 73-205.00D.

Tygenhof, Charles. Pressurized can piercing tool. 3,926,340, Cl. 222-83.500.

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Uebelhart, Heinrich; Schmid, Erich; and Wyser, Paul, to Renata A.G. Device for the digital indication of the accuracy of a mechanical clockwork. 3,926,048, Cl. 73-6.000.

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National Aeronautics and Space Administration; administrator; with respect to an invention of:
Auer, Siegfried O. Micrometeoroid velocity and trajectory analyzer. 3,927,324, Cl. 250-336.000.
Phillips, Wayne M. Cermet composition and method of fabrication. 3,926,567, Cl. 29-182.500.

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Ushio, Masatoshi, to Glory Kogyo Kabushiki Kaisha. Coin packaging apparatus. 3,925,966, Cl. 53-212.000.

Uthemann, Wolfgang; and Hofman, Josef, to Rosenkaimer GmbH. Collapsible and tiltable umbrella. 3,926,202, Cl. 135-20.00M.

Utken, Jay; and Hauenstine, Edgar F., to P. R. Mallory & Co., Inc. Electrical switch having a movable contact rolling between stationary contacts. 3,927,288, Cl. 200-277.000.

Vahldieck, Nathan P., to Union Carbide Corporation. Warm sludge digestion with oxygen. 3,926,794, Cl. 210-5.000.

Vairel, Edmond G.; Goulay, Jean; and Choay, Jean, to Choay S.A. Urokinase preparations. 3,926,727, Cl. 195-63.000.

Valcor Engineering Corporation: *See—*
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Valenti, Salvatore: *See—*
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Valint, Paul L., Jr.: *See—*
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van Beijnen, Christianus Antonius Maria, to Reactor Centrum Nederland (Stichting). Method of manufacturing superconductors of β-tungsten structure. 3,926,683, Cl. 148-11.50R.

Van Caporali, Ronald: *See—*
Smay, Gary Lynn; Van Caporali, Ronald; and Southwick, Russell Duty, 3,926,604.

van de Moesdijk, Cornelis G. M.; and Thomas, Andreas M. J., to Stamicarbon, B.V. Process for the preparation of cycloalkanones and/or cycloalkanols. 3,927,108, Cl. 260-586.00P.

van den Broek, Albertus Joannes, to Akzona Incorporated. Novel 11,11-alkylidene steroids. 3,927,046, Cl. 260-397.300.

Van den Houte, Jozef Willy, to Agfa-Gevaert. Production of positive colour images utilizing a photographic material containing a spiropyran compound and a polyhalogen compound. 3,926,630, Cl. 96-27.00E.

van der Sterren, Martin Leonard, to Oce-van der Grinten N.V. Photoconductive belt device and electrophotographic process and apparatus utilizing the same. 3,926,625, Cl. 96-1.00R.

Vandervelden, Cornelius Keith, to Litton Industrial Products, Inc. Fluoridation apparatus. 3,926,370, Cl. 239-25.000.

Van Duynhoven, Adrianus Henricus: *See—*
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Van Maren, Harold B. Atraumatic uterine director. 3,926,192, Cl. 128-303.00R.

Van Nederveen, Hans Bertil, to SKF Industrial Trading and Development Company B.V. Method for sealing a filled container under vacuum, and vacuum-sealed filled containers. 3,926,306, Cl. 206-84.000.

Van Tongelen, Marcel: *See—*
De Hault, Emmanuel R. E. G. Draguez Tripels; Van Tongelen, Marcel; and Debus, Henri R., 3,927,039.

Van Winsen, Friedrich H., to Daimler-Benz Aktiengesellschaft. Suspension of steerable vehicle wheels, especially front wheels of motor vehicles. 3,926,454, Cl. 280-124.00A.

Varian Associates: *See—*
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Farney, George K., 3,927,347.
Kase, Heino; Marshall, Edward W.; and Kirtikar, Survrat, 3,927,409.

Varker, Alan Edward: *See—*
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Varta Batterie AG: *See—*
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Vasterling, Paul F., to HITCO. High temperature resistant products and methods for making the same. 3,927,157, Cl. 264-29.000.

VEB Kombinat Nagema: *See—*
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VEB Wirkmaschinenbau Karl-Marx-Stadt: *See—*
Kurth, Harald; Laube, Dieter; and Berthold, Erich, 3,926,013.

Venables, Susan Mary; and Watson, Charles Andrew, to Lever Bros. Co. Toothpastes. 3,925,957, Cl. 53-6.000.

Ver-Con, Inc.: *See—*
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Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft: *See—*
Dub, Karl; and Biricz, Stefan, 3,926,346.
Riegler, Ernst; and Schmidt, Manfred, 3,926,481.

Vermeulen, Geert Jan; and Van Duynhoven, Adrianus Henricus, to Ruti-Te Strake B.V. Weft selecting, measuring and storing apparatus. 3,926,224, Cl. 139-122.00H.

Verreydt, Jan Baptist, to Agfa-Gevaert, a naamloze vennootschap. Method for deaerating a circuit for the transport of liquids. 3,926,664, Cl. 134-21.000.

Vesely, Kenneth D., to Universal Oil Products, Company. Method of catalyst manufacture. 3,926,855, Cl. 252-465.000.

Vianova-Kunstharz, A. G.: *See—*
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Vicra Sterile, Inc.: *See—*
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Victory, Thomas J. Method of converting brake band end connection. 3,926,359, Cl. 228-170.000.

Vieilleribiere, Henry, to Motorola, Inc. Automotive bridge assembly. 3,927,338, Cl. 310-68.00D.

Viets, Hermann, to United States of America, Air Force. Thrust augmentation system with oscillating jet nozzles. 3,926,373, Cl. 239-265.170.

Villax, Ivan. Alkali metal polymetaphosphate complexes of doxycycline and preparation thereof. 3,927,094, Cl. 260-559.0AT.

Vincent, Melvin C. Easel. 3,926,398, Cl. 248-448.000.

Vinton, Clarence S.; and Franklin, Charles H., to Chemotronics International, Inc. Method for the preparation of carbon structures. 3,927,186, Cl. 423-447.000.

Vivant, Gilbert: *See—*
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Vockenhuber, Karl: *See—*
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Vogelei, Robert A.: *See—*
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Vogeli, Ernst, to Sulzer Brothers Ltd. Gate valve for controlling fluid flow. 3,926,408, Cl. 251-327.000.

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Volkswagenwerk Aktiengesellschaft: *See—*
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Vonco Products, Inc.: *See—*
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von der Ley, Jurgen. Building block assembly. 3,925,950, Cl. 52-585.000.

Von Klipstein, Walrath: *See—*
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von Langendorff, Vitmar G., to Houdaille Industries, Inc. Punching device having adjustable guide retainer. 3,926,082, Cl. 83-140.000.

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Vorih, William J., to Gates Rubber Company, The. Modulating noise produced by rotating bodies. 3,926,238, Cl. 152-209.000.

Vos, Cornelis; and Admirant, Jacobus Den, to Gist-Brocades N.V. Antibiotic MYC 8003 and process for producing same. 3,927,211, Cl. 424-122.000.

Voss, Karl Heinz. Vehicle diverting apparatus. 3,926,126, Cl. 104-130.000.

Voyer, Paul; Pitie, Jean-Marc B.; Louvet, Olivier F.; and Roche, Alain Y. Time division switching system of the "time-space-time" type. 3,927,267, Cl. 179-15.0AT.

Vrydaghs, Roger Henri: *See—*
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Vuaille, Andre, to Societe Industrielle Generale de Mecanique Appliquee S.I.G.M.A. Regulating devices for the flow of fuel for internal combustion engines. 3,926,164, Cl. 123-140.0FG.

Vulcan Materials Company: *See—*
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W. R. Grace & Co.: *See—*
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Wada, Shigetaka; and Yamamoto, Noboru, to NGK Insulators, Ltd. Electric fluid heater and resistance heating element therefor. 3,927,300, Cl. 219-381.000.

Wagenhals, Bruce E., to Monogram Industries, Inc. Waste products incineration system for a vehicle or the like. 3,925,827, Cl. 4-114.000.

Wagenhals, Fred William, to Deere & Company. Power lawn mower and mulcher-bagger combination. 3,925,968, Cl. 56-13.300.

Wager, Oleg: *See—*
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Wagner, Kuno: *See—*
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Wahl, Albert J.: *See—*
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Wakabayashi, Hiroshi, to Nippon Kogaku K.K. Connecting device. 3,926,493, Cl. 339-12.00R.
Walker, Darrell W., to Phillips Petroleum Company. Processes for dehydrogenation of hydrocarbons. 3,927,138, Cl. 260-680.00E.
Walker, James Donald, to Peabody Galion Corporation. Distribution inlet system with automatic tangential-gate adjustment. 3,926,805, Cl. 210-101.000.
Walker, William S., to Pacific-Atlantic Products, Ltd. Releasable line-holding device. 3,925,920, Cl. 43-43.120.
Wall, Clarence J., to Dorr-Oliver Incorporated. Evaporative concentration of waste sludges with incinerator exhaust gases. 3,926,129, Cl. 110-7.00B.
Wallace Business Forms, Inc.: *See—*
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Wallestad, Victor C., to Fluoroware, Inc. Wafer basket. 3,926,305, Cl. 206-73.000.
Wang, Teh Po, to Wilbur B. Driver Company. Type R and S thermocouple systems having copper-nickel-manganese wire as platinum compensating lead wire. 3,926,681, Cl. 136-241.000.
Ward, Hubert. Shrimp deheader. 3,925,848, Cl. 17-71.000.
Ward, James Patrick, to Lever Brothers Company. Reducing the moisture content of a foodstuff by immersing a frozen foodstuff in thanol maintained at a temperature in the range of −20° to 0°C. 3,925,903, Cl. 34-9.000.
Ward, Joe Arthur, to Dow Chemical Company, The. Dehydrohalogenation of halogenated hydrocarbons. 3,927,131, Cl. 260-654.00D.
Ward, John W., to Union Oil Company of California. Hydrocarbon conversion process utilizing stabilized zeolite catalysts. 3,926,780, Cl. 208-111.000.
Ward, Thomas A.: *See—*
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Ward, Trevor: *See—*
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Ward, Truman L.; Benerito, Ruth R.; and Hebert, Jacques J., to United States of America, Agriculture. Glassy materials from plumbites and cellulosics. 3,926,709, Cl. 156-309.000.
Warman, Charles Harold: *See—*
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Keegan, James J.; Patel, Girish; and Rubin, Howard, 3,926,870.
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Warning, Walter B., Sr., to Automation Development & Engineering Corporation. Cooking apparatus. 3,926,105, Cl. 99-423.000.
Watabe, Ken, to Mitsubishi Jukogyo Kabushiki Kaisha. Stretch adjusting device for a conveyor in a conveyor-line working system. 3,926,304, Cl. 198-208.000.
Watanabe, Toshiyuki: *See—*
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Watson, Charles Andrew: *See—*
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Watson, Richard N.: *See—*
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Webb, William M. Movable deck for a top-opening freezer. 3,926,001, Cl. 62-378.000.
Webber, Robert C. Building cooling and pool heating system. 3,926,008, Cl. 62-200.000.
Webcrafters, Inc.: *See—*
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Weber, Alman A. Crawler track equipped vehicle pallet with wheel support drive rollers. 3,926,272, Cl. 180-1.00C.
Weber, Helmut; Aumuller, Walter; Weyer, Rudi; Muth, Karl; and Hitzel, Volker, to Hoechst Aktiengesellschaft. Sulfonyl ureas and process for preparing them. 3,927,088, Cl. 260-553.0DA.
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Wehner, William C., to Multifastener Corporation. Nut, clip and panel assembly. 3,926,235, Cl. 151-21.00C.
Wei, Peter, to Globe Manufacturing Co. Dibenzyl hydroxyl amine stabilizer for spandex. 3,926,909, Cl. 260-45.85N.
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Weigl, John W., to Xerox Corporation. Electrophotographic method and plate employing a phthaldcyanine polymer. 3,926,629, Cl. 96-1.500.
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Weingrad, Saul; Wahl, Albert J.; Mucha, Richard C.; and Gould, Robert E., to Commercial Decal, Inc. Apparatus for applying decalcomania. 3,926,710, Cl. 156-362.000.
Weinstein, Harold, to Sensor Technology, Inc. Process of fabricating photosensitive Darlington device. 3,925,879, Cl. 29-572.000.
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Welt, Dennis. Apex seal. 3,926,538, Cl. 418-115.000.
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Weman, Per Olof. Locking mechanism for automobile safety belt retractor. 3,926,384, Cl. 242-107.400.
Wendler, Ingrid; and Malaszkiewicz, Jurgen, to Henkel & Cie GmbH. Emulsifiers of water-in-oil creams. 3,926,840, Cl. 252-356.000.
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Werner, Lincoln Harvey, to Ciba-Geigy Corporation. 3,4-Bisamino-5-sulfamoylbenzoic acids useful as diuretic agents. 3,927,218, Cl. 424-285.000.
Werry, Arthur W., to Dale-Jones Corporation. Light socket mounting. 3,927,315, Cl. 240-52.100.
Wertheimer, Harry P., to Bendix Corporation, The. Exhaust gas recirculation flow control system. 3,926,161, Cl. 123-119.00A.
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Wildmoser, Alfred; and Dannhorn, Erich, to Linde Aktiengesellschaft. Regeneration of scrubbing agent used for the removal of CO_2 and H_2S from gases containing polymerizable hydrocarbons. 3,926,591, Cl. 55-68.000.
Wilje, Sven Oscar Eric. Foot roller means. 3,926,449, Cl. 280-11.230.
Wilks, Alan D.; and Youtsey, Karl J., to Universal Oil Products Company. Electrically conductive compositions of matter. 3,926,570, Cl. 29-195.000.
Williams, David; and Lucey, George K., Jr., to United States of America, Army. Rain impact sensing proximity fuze. 3,926,120, Cl. 102-70.20P.
Williams, Frederick W.; and Sheinson, Ronald S., to United States of America, Navy. Vertical tube combustion reactor. 3,926,562, Cl. 23-253.0PC.
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Willis, Gordon G.; Ivy, John B.; Boozalis, Theodore S.; and Cragar, Darryl E., to Dow Chemical Company, The. Process for producing 1,1,1-trichloroethane. 3,927,132, Cl. 260-658.00R.
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Wilson, John D.; Nyiri, Laszlo K.; Humphrey, Arthur E.; and Harmes, Clyde S., III, to New Brunswick Scientific Co., Inc. Method and apparatus for control of biochemical processes. 3,926,737, Cl. 195-108.000.
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B 266,195	3,923,599	Dec. 2, 1975	B 314,049	3,920,588	Nov. 18, 1975
B 269,673	3,914,377	Oct. 21, 1975	B 314,255	3,923,764	Dec. 2, 1975
B 270,089	3,923,875	Dec. 2, 1975	B 314,271	3,921,845	Nov. 25, 1975
B 271,104	3,925,400	Dec. 9, 1975	B 314,489	3,925,016	Dec. 9, 1975
B 274,945	3,924,992	Dec. 9, 1975	B 314,977	3,923,459	Dec. 2, 1975
B 275,426	3,925,168	Dec. 9, 1975	B 315,363	3,920,673	Nov. 18, 1975
B 276,271	3,916,028	Oct. 28, 1975	B 315,397	3,923,963	Dec. 2, 1975
B 276,560	3,916,030	Oct. 28, 1975	B 315,731	3,914,108	Oct. 21, 1975
B 277,449	3,924,048	Dec. 2, 1975	B 316,014	3,920,861	Nov. 18, 1975
B 278,491	3,921,170	Nov. 18, 1975	B 316,239	3,913,546	Oct. 21, 1975
B 278,991	3,914,469	Oct. 21, 1975	B 316,917	3,925,494	Dec. 9, 1975
B 279,583	3,923,749	Dec. 2, 1975	B 317,080	3,925,324	Dec. 9, 1975
B 280,015	3,925,378	Dec. 9, 1975	B 317,347	3,923,552	Dec. 2, 1975
B 280,395	3,919,604	Nov. 11, 1975	B 317,624	3,925,167	Dec. 9, 1975
B 281,341	3,920,643	Nov. 18, 1975	B 318,195	3,915,699	Oct. 28, 1975
B 281,943	3,924,013	Dec. 2, 1975	B 318,618	3,915,365	Oct. 28, 1975
B 282,081	3,913,483	Oct. 21, 1975	B 318,640	3,925,186	Dec. 9, 1975
B 282,252	3,924,997	Dec. 9, 1975	B 318,745	3,916,571	Nov. 4, 1975
B 283,124	3,923,512	Dec. 2, 1975	B 319,226	3,925,082	Dec. 9, 1975
B 283,300	3,925,011	Dec. 9, 1975	B 319,339	3,916,056	Oct. 28, 1975
B 284,297	3,913,722	Oct. 21, 1975	B 319,402	3,919,568	Nov. 11, 1975
B 285,200	3,923,680	Dec. 2, 1975	B 320,261	3,924,033	Dec. 2, 1975
B 285,796	3,914,303	Oct. 21, 1975	B 320,452	3,925,083	Dec. 9, 1975
B 286,499	3,914,129	Oct. 21, 1975	B 320,603	3,915,571	Oct. 28, 1975
B 286,614	3,924,696	Dec. 9, 1975	B 321,018	3,921,623	Nov. 25, 1975
B 287,164	3,914,139	Oct. 21, 1975	B 321,101	3,917,163	Nov. 4, 1975
B 287,270	3,924,825	Dec. 9, 1975	B 321,938	3,923,889	Dec. 2, 1975
B 287,275	3,925,141	Dec. 9, 1975	B 322,182	3,925,390	Dec. 9, 1975
B 287,373	3,918,568	Nov. 11, 1975	B 322,239	3,920,973	Nov. 18, 1975
B 288,018	3,925,239	Dec. 9, 1975	B 322,564	3,914,373	Oct. 21, 1975
B 288,627	3,916,179	Oct. 28, 1975	B 322,611	3,920,863	Nov. 18, 1975
B 288,638	3,925,132	Dec. 9, 1975	B 322,777	3,924,382	Dec. 9, 1975
B 289,175	3,924,309	Dec. 9, 1975	B 323,127	3,923,967	Dec. 2, 1975
B 289,471	3,917,184	Nov. 4, 1975	B 323,191	3,914,566	Oct. 21, 1975
B 289,523	3,921,166	Nov. 18, 1975	B 323,203	3,916,165	Oct. 28, 1975
B 289,883	3,925,063	Dec. 9, 1975	B 323,568	3,920,536	Nov. 18, 1975

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DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 323,666	3,924,568	Dec. 9, 1975	B 350,589	3,927,419	Dec. 16, 1975
B 324,505	3,925,294	Dec. 9, 1975	B 350,708	3,923,871	Dec. 2, 1975
B 324,739	3,924,990	Dec. 9, 1975	B 350,843	3,915,461	Oct. 28, 1975
B 324,879	3,923,538	Dec. 2, 1975	B 351,055	3,914,074	Oct. 21, 1975
B 325,102	3,924,355	Dec. 9, 1975	B 351,218	3,914,186	Oct. 21, 1975
B 325,262	3,921,304	Nov. 25, 1975	B 351,222	3,921,179	Nov. 18, 1975
B 326,514	3,925,080	Dec. 9, 1975	B 351,348	3,923,563	Dec. 2, 1975
B 327,109	3,925,350	Dec. 9, 1975	B 351,421	3,914,733	Oct. 21, 1975
B 327,363	3,923,504	Dec. 2, 1975	B 351,493	3,914,758	Oct. 21, 1975
B 327,612	3,925,620	Dec. 9, 1975	B 351,535	3,915,239	Oct. 28, 1975
B 327,674	3,918,540	Nov. 11, 1975	B 351,665	3,919,701	Nov. 11, 1975
B 327,899	3,925,674	Dec. 9, 1975	B 351,672	3,914,000	Oct. 21, 1975
B 328,164	3,914,703	Oct. 21, 1975	B 351,735	3,913,385	Oct. 21, 1975
B 328,200	3,916,031	Oct. 28, 1975	B 351,863	3,914,700	Oct. 21, 1975
B 328,205	3,914,106	Oct. 21, 1975	B 351,883	3,924,657	Dec. 9, 1975
B 328,210	3,914,275	Oct. 21, 1975	B 351,926	3,914,133	Oct. 21, 1975
B 328,870	3,916,486	Nov. 4, 1975	B 351,939	3,913,480	Oct. 21, 1975
B 329,115	3,924,727	Dec. 9, 1975	B 352,934	3,913,692	Oct. 21, 1975
B 329,476	3,920,562	Nov. 18, 1975	B 352,950	3,922,590	Nov. 25, 1975
B 329,612	3,925,128	Dec. 9, 1975	B 352,965	3,921,926	Nov. 25, 1975
B 329,787	3,920,688	Nov. 18, 1975	B 353,317	3,916,446	Nov. 4, 1975
B 329,816	3,923,947	Dec. 2, 1975	B 353,387	3,924,404	Dec. 9, 1975
B 330,536	3,925,452	Dec. 9, 1975	B 353,546	3,913,273	Oct. 21, 1975
B 330,828	3,913,589	Oct. 21, 1975	B 354,008	3,925,081	Dec. 9, 1975
B 331,417	3,914,157	Oct. 21, 1975	B 354,098	3,925,547	Dec. 9, 1975
B 331,557	3,916,577	Nov. 4, 1975	B 354,145	3,927,279	Dec. 16, 1975
B 331,895	3,916,403	Oct. 28, 1975	B 354,296	3,914,580	Oct. 21, 1975
B 332,527	3,924,017	Dec. 2, 1975	B 354,889	3,913,204	Oct. 21, 1975
B 332,811	3,924,359	Dec. 9, 1975	B 354,979	3,914,251	Oct. 21, 1975
B 333,876	3,921,208	Nov. 18, 1975	B 355,095	3,925,656	Dec. 9, 1975
B 333,928	3,927,172	Dec. 16, 1975	B 355,269	3,914,561	Oct. 21, 1975
B 334,251	3,924,719	Dec. 9, 1975	B 355,510	3,913,704	Oct. 21, 1975
B 334,868	3,919,469	Nov. 11, 1975	B 355,595	3,925,649	Dec. 9, 1975
B 334,985	3,923,912	Dec. 2, 1975	B 355,876	3,925,685	Dec. 9, 1975
B 335,741	3,925,615	Dec. 9, 1975	B 356,253	3,925,025	Dec. 9, 1975
B 335,773	3,920,953	Nov. 18, 1975	B 356,602	3,927,393	Dec. 16, 1975
B 336,129	3,923,606	Dec. 2, 1975	B 356,724	3,924,586	Dec. 9, 1975
B 336,243	3,925,422	Dec. 9, 1975	B 357,039	3,924,406	Dec. 9, 1975
B 336,345	3,925,179	Dec. 9, 1975	B 357,057	3,913,738	Oct. 21, 1975
B 336,652	3,914,211	Oct. 21, 1975	B 357,131	3,924,453	Dec. 9, 1975
B 336,902	3,918,897	Nov. 11, 1975	B 357,402	3,914,180	Oct. 21, 1975
B 336,946	3,919,425	Nov. 11, 1975	B 357,682	3,924,973	Dec. 9, 1975
B 336,978	3,923,968	Dec. 2, 1975	B 357,803	3,919,470	Nov. 11, 1975
B 337,235	3,919,386	Nov. 11, 1975	B 358,174	3,924,958	Dec. 9, 1975
B 337,409	3,925,258	Dec. 9, 1975	B 358,244	3,913,411	Oct. 21, 1975
B 337,442	3,913,658	Oct. 21, 1975	B 358,311	3,923,561	Dec. 2, 1975
B 337,703	3,914,690	Oct. 21, 1975	B 358,939	3,924,713	Dec. 9, 1975
B 337,787	3,923,506	Dec. 2, 1975	B 359,174	3,914,117	Oct. 21, 1975
B 339,057	3,924,822	Dec. 9, 1975	B 359,187	3,924,525	Dec. 9, 1975
B 339,218	3,925,121	Dec. 9, 1975	B 359,540	3,915,235	Oct. 28, 1975
B 340,212	3,922,645	Nov. 25, 1975	B 359,825	3,921,344	Nov. 25, 1975
B 340,833	3,925,208	Dec. 9, 1975	B 359,946	3,914,132	Oct. 21, 1975
B 341,579	3,913,363	Oct. 21, 1975	B 359,947	3,914,653	Oct. 21, 1975
B 342,423	3,925,334	Dec. 9, 1975	B 360,208	3,923,750	Dec. 2, 1975
B 342,886	3,923,507	Dec. 2, 1975	B 360,296	3,916,720	Nov. 4, 1975
B 343,136	3,919,453	Nov. 11, 1975	B 360,719	3,915,715	Oct. 28, 1975
B 343,240	3,925,693	Dec. 9, 1975	B 360,910	3,925,696	Dec. 9, 1975
B 343,506	3,916,021	Oct. 28, 1975	B 361,265	3,923,569	Dec. 2, 1975
B 343,577	3,921,165	Nov. 18, 1975	B 361,443	3,927,405	Dec. 16, 1975
B 344,479	3,924,042	Dec. 2, 1975	B 361,569	3,914,554	Oct. 21, 1975
B 345,060	3,916,018	Oct. 28, 1975	B 361,604	3,922,702	Nov. 25, 1975
B 345,384	3,916,146	Oct. 28, 1975	B 361,734	3,915,764	Oct. 28, 1975
B 345,422	3,914,392	Oct. 21, 1975	B 362,589	3,914,012	Oct. 21, 1975
B 345,527	3,927,365	Dec. 16, 1975	B 363,205	3,923,744	Dec. 2, 1975
B 345,567	3,913,985	Oct. 21, 1975	B 363,457	3,922,595	Nov. 25, 1975
B 346,165	3,913,293	Oct. 21, 1975	B 363,892	3,913,395	Oct. 21, 1975
B 346,210	3,916,142	Oct. 28, 1975	B 363,962	3,921,826	Nov. 25, 1975
B 346,350	3,915,824	Oct. 28, 1975	B 364,022	3,913,499	Oct. 21, 1975
B 346,487	3,927,406	Dec. 16, 1975	B 364,163	3,916,092	Oct. 28, 1975
B 346,585	3,913,820	Oct. 21, 1975	B 364,241	3,916,668	Nov. 4, 1975
B 346,613	3,923,545	Dec. 2, 1975	B 364,334	3,924,670	Dec. 9, 1975
B 346,901	3,915,583	Oct. 28, 1975	B 364,528	3,919,510	Nov. 11, 1975
B 348,083	3,923,774	Dec. 2, 1975	B 364,786	3,921,673	Nov. 25, 1975
B 348,383	3,923,452	Dec. 2, 1975	B 364,910	3,925,335	Dec. 9, 1975
B 348,495	3,914,654	Oct. 21, 1975	B 365,490	3,918,527	Nov. 11, 1975
B 348,558	3,914,109	Oct. 21, 1975	B 365,834	3,914,702	Oct. 21, 1975
B 349,141	3,915,363	Oct. 28, 1975	B 365,841	3,925,628	Dec. 9, 1975
B 349,177	3,914,033	Oct. 21, 1975	B 365,855	3,917,258	Nov. 4, 1975
B 349,231	3,915,831	Oct. 28, 1975	B 366,287	3,924,946	Dec. 9, 1975
B 349,321	3,916,103	Oct. 28, 1975	B 366,589	3,914,719	Oct. 21, 1975
B 349,948	3,914,557	Oct. 21, 1975	B 367,021	3,914,752	Oct. 21, 1975
B 350,025	3,927,415	Dec. 16, 1975	B 367,040	3,924,775	Dec. 9, 1975
B 350,143	3,924,419	Dec. 9, 1975	B 367,661	3,914,158	Oct. 21, 1975
B 350,219	3,917,802	Nov. 4, 1975	B 367,739	3,923,648	Dec. 2, 1975
B 350,245	3,914,331	Oct. 21, 1975	B 367,812	3,924,789	Dec. 9, 1975
B 350,523	3,924,726	Dec. 9, 1975	B 368,081	3,924,691	Dec. 9, 1975

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JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 368,387	3,924,923	Dec. 9, 1975	B 393,163	3,914,535	Oct. 21, 1975
B 368,392	3,913,812	Oct. 21, 1975	B 393,970	3,914,638	Oct. 21, 1975
B 368,397	3,914,677	Oct. 21, 1975	B 394,088	3,914,740	Oct. 21, 1975
B 368,862	3,925,549	Dec. 9, 1975	B 394,188	3,924,591	Dec. 9, 1975
B 369,563	3,924,449	Dec. 9, 1975	B 394,300	3,914,159	Oct. 21, 1975
B 369,607	3,923,786	Dec. 2, 1975	B 394,712	3,916,306	Oct. 28, 1975
B 369,997	3,913,533	Oct. 21, 1975	B 395,478	3,922,577	Nov. 25, 1975
B 370,706	3,925,242	Dec. 9, 1975	B 395,496	3,919,435	Nov. 11, 1975
B 371,085	3,923,783	Dec. 2, 1975	B 395,671	3,920,418	Nov. 18, 1975
B 371,787	3,921,217	Nov. 18, 1975	B 395,889	3,913,190	Oct. 21, 1975
B 371,805	3,914,433	Oct. 21, 1975	B 396,025	3,913,869	Oct. 21, 1975
B 371,836	3,923,541	Dec. 2, 1975	B 396,551	3,921,929	Nov. 25, 1975
B 372,823	3,924,660	Dec. 9, 1975	B 397,027	3,923,736	Dec. 2, 1975
B 373,297	3,924,436	Dec. 9, 1975	B 397,527	3,913,488	Oct. 21, 1975
B 373,326	3,920,433	Nov. 18, 1975	B 397,990	3,914,848	Oct. 28, 1975
B 373,428	3,915,511	Oct. 28, 1975	B 398,262	3,913,481	Oct. 21, 1975
B 375,220	3,920,417	Nov. 18, 1975	B 398,551	3,924,924	Dec. 9, 1975
B 375,652	3,921,303	Nov. 25, 1975	B 398,597	3,913,743	Oct. 21, 1975
B 376,504	3,914,570	Oct. 21, 1975	B 398,625	3,920,996	Nov. 18, 1975
B 376,654	3,922,513	Nov. 25, 1975	B 399,292	3,914,810	Oct. 28, 1975
B 376,742	3,924,392	Dec. 9, 1975	B 399,304	3,919,567	Nov. 11, 1975
B 376,799	3,913,955	Oct. 21, 1975	B 399,349	3,925,694	Dec. 9, 1975
B 377,172	3,918,255	Nov. 11, 1975	B 399,766	3,915,667	Oct. 28, 1975
B 377,683	3,924,433	Dec. 9, 1975	B 400,080	3,925,163	Dec. 9, 1975
B 377,833	3,913,884	Oct. 21, 1975	B 400,293	3,923,719	Dec. 2, 1975
B 377,869	3,917,002	Nov. 4, 1975	B 400,310	3,915,507	Oct. 28, 1975
B 378,621	3,923,840	Dec. 2, 1975	B 401,133	3,924,443	Dec. 9, 1975
B 379,038	3,923,994	Dec. 2, 1975	B 401,992	3,924,898	Dec. 9, 1975
B 379,172	3,914,379	Oct. 21, 1975	B 402,065	3,925,413	Dec. 9, 1975
B 379,282	3,913,462	Oct. 21, 1975	B 402,555	3,914,688	Oct. 21, 1975
B 379,955	3,913,157	Oct. 21, 1975	B 403,140	3,913,486	Oct. 21, 1975
B 380,014	3,921,915	Nov. 25, 1975	B 403,355	3,913,352	Oct. 21, 1975
B 380,141	3,925,161	Dec. 9, 1975	B 403,990	3,914,684	Oct. 21, 1975
B 380,310	3,921,048	Nov. 18, 1975	B 403,996	3,916,016	Oct. 28, 1975
B 380,312	3,913,953	Oct. 21, 1975	B 404,290	3,924,918	Dec. 9, 1975
B 380,338	3,924,873	Dec. 9, 1975	B 404,437	3,915,200	Oct. 28, 1975
B 380,446	3,923,836	Dec. 2, 1975	B 405,136	3,915,565	Oct. 28, 1975
B 380,900	3,913,307	Oct. 21, 1975	B 405,137	3,915,566	Oct. 28, 1975
B 380,926	3,925,095	Dec. 9, 1975	B 405,160	3,924,821	Dec. 9, 1975
B 381,074	3,919,583	Nov. 11, 1975	B 405,248	3,926,294	Dec. 16, 1975
B 381,632	3,914,732	Oct. 21, 1975	B 405,305	3,922,111	Nov. 25, 1975
B 381,847	3,921,152	Nov. 18, 1975	B 405,360	3,913,403	Oct. 21, 1975
B 382,021	3,913,212	Oct. 21, 1975	B 405,495	3,924,577	Dec. 9, 1975
B 382,261	3,914,991	Oct. 28, 1975	B 405,938	3,920,109	Nov. 18, 1975
B 382,290	3,924,717	Dec. 9, 1975	B 406,065	3,914,199	Oct. 21, 1975
B 382,783	3,919,527	Nov. 11, 1975	B 406,357	3,924,529	Dec. 9, 1975
B 382,798	3,924,435	Dec. 9, 1975	B 407,736	3,924,463	Dec. 9, 1975
B 382,840	3,922,007	Nov. 25, 1975	B 407,357	3,924,614	Dec. 9, 1975
B 383,465	3,927,412	Dec. 16, 1975	B 407,728	3,925,240	Dec. 9, 1975
B 383,532	3,914,246	Oct. 21, 1975	B 408,487	3,924,046	Dec. 2, 1975
B 383,581	3,925,318	Dec. 9, 1975	B 408,749	3,914,116	Oct. 21, 1975
B 384,499	3,925,135	Dec. 9, 1975	B 409,026	3,925,497	Dec. 9, 1975
B 384,658	3,913,452	Oct. 21, 1975	B 409,220	3,915,648	Oct. 28, 1975
B 384,773	3,915,416	Oct. 28, 1975	B 409,251	3,922,620	Nov. 25, 1975
B 385,210	3,913,406	Oct. 21, 1975	B 409,657	3,927,362	Dec. 16, 1975
B 386,403	3,924,895	Dec. 9, 1975	B 409,816	3,921,317	Nov. 25, 1975
B 386,592	3,925,305	Dec. 9, 1975	B 410,062	3,923,855	Dec. 2, 1975
B 387,039	3,924,510	Dec. 9, 1975	B 410,168	3,914,717	Oct. 21, 1975
B 387,331	3,913,701	Oct. 21, 1975	B 411,145	3,914,168	Oct. 21, 1975
B 387,363	3,927,378	Dec. 16, 1975	B 411,356	3,919,649	Nov. 11, 1975
B 387,687	3,918,151	Nov. 11, 1975	B 411,483	3,925,196	Dec. 9, 1975
B 387,761	3,914,245	Oct. 21, 1975	B 411,633	3,914,741	Oct. 21, 1975
B 387,790	3,925,380	Dec. 9, 1975	B 412,516	3,927,417	Dec. 16, 1975
B 387,818	3,918,935	Nov. 11, 1975	B 412,619	3,925,292	Dec. 9, 1975
B 388,580	3,923,712	Dec. 2, 1975	B 412,867	3,924,587	Dec. 9, 1975
B 389,070	3,914,171	Oct. 21, 1975	B 413,006	3,914,850	Oct. 28, 1975
B 389,285	3,914,631	Oct. 21, 1975	B 413,546	3,924,314	Dec. 9, 1975
B 389,327	3,924,504	Dec. 9, 1975	B 414,129	3,925,484	Dec. 9, 1975
B 389,639	3,914,626	Oct. 21, 1975	B 414,288	3,925,537	Dec. 9, 1975
B 389,726	3,921,010	Nov. 18, 1975	B 415,113	3,915,717	Oct. 28, 1975
B 389,807	3,922,623	Nov. 25, 1975	B 415,124	3,915,944	Oct. 28, 1975
B 389,932	3,913,268	Oct. 21, 1975	B 415,845	3,925,076	Dec. 9, 1975
B 389,933	3,913,267	Oct. 21, 1975	B 415,847	3,914,208	Oct. 21, 1975
B 390,679	3,913,668	Oct. 21, 1975	B 415,957	3,925,635	Dec. 9, 1975
B 390,732	3,913,878	Oct. 21, 1975	B 415,977	3,927,359	Dec. 16, 1975
B 391,184	3,914,214	Oct. 21, 1975	B 416,598	3,923,473	Dec. 2, 1975
B 391,210	3,914,220	Oct. 21, 1975	B 416,832	3,924,975	Dec. 9, 1975
B 391,437	3,915,416	Oct. 28, 1975	B 416,710	3,923,746	Dec. 2, 1975
B 391,509	3,925,175	Dec. 9, 1975	B 416,933	3,924,968	Dec. 9, 1975
B 391,675	3,916,017	Oct. 28, 1975	B 417,299	3,918,235	Nov. 11, 1975
B 392,154	3,923,809	Dec. 2, 1975	B 418,121	3,925,023	Dec. 9, 1975
B 392,242	3,926,636	Dec. 16, 1975	B 418,153	3,925,251	Dec. 9, 1975
D 392,696	3,916,175	Oct. 28, 1975	B 418,302	3,913,252	Oct. 21, 1975
B 392,732	3,914,903	Oct. 21, 1975	B 419,327	3,921,197	Nov. 18, 1975
B 392,753	3,916,341	Oct. 28, 1975	B 419,481	3,924,970	Dec. 9, 1975
B 392,894	3,914,763	Oct. 21, 1975	B 420,016	3,914,572	Oct. 21, 1975

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DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 420,148	3,927,414	Dec. 16, 1975	B 435,343	3,919,244	Nov. 11, 1975
B 420,514	3,923,929	Dec. 2, 1975	B 435,844	3,925,170	Dec. 9, 1975
B 420,568	3,925,069	Dec. 9, 1975	B 437,173	3,924,627	Dec. 9, 1975
B 421,026	3,914,785	Oct. 21, 1975	B 437,172	3,913,251	Oct. 21, 1975
B 421,362	3,924,817	Dec. 9, 1975	B 437,195	3,914,618	Oct. 21, 1975
B 421,383	3,925,047	Dec. 9, 1975	B 437,450	3,922,479	Nov. 25, 1975
B 421,797	3,914,023	Oct. 21, 1975	B 438,053	3,916,013	Oct. 28, 1975
B 422,467	3,924,804	Dec. 9, 1975	B 438,706	3,925,050	Dec. 9, 1975
B 422,949	3,921,873	Nov. 25, 1975	B 439,168	3,919,676	Nov. 11, 1975
B 424,415	3,919,458	Nov. 11, 1975	B 439,669	3,921,499	Nov. 25, 1975
B 424,462	3,920,522	Nov. 18, 1975	B 440,898	3,921,789	Nov. 25, 1975
B 424,572	3,924,979	Dec. 9, 1975	B 441,024	3,913,629	Oct. 21, 1975
B 424,748	3,924,395	Dec. 9, 1975	B 441,416	3,913,851	Oct. 21, 1975
B 425,035	3,914,025	Oct. 21, 1975	B 442,280	3,914,054	Oct. 21, 1975
B 425,345	3,922,015	Nov. 25, 1975	B 442,859	3,918,570	Nov. 11, 1975
B 425,470	3,923,796	Dec. 2, 1975	B 442,919	3,925,483	Dec. 9, 1975
B 425,539	3,916,742	Nov. 4, 1975	B 445,471	3,914,711	Oct. 21, 1975
B 425,541	3,914,051	Oct. 21, 1975	B 445,740	3,923,612	Dec. 2, 1975
B 425,572	3,923,822	Dec. 2, 1975	B 448,571	3,924,760	Dec. 9, 1975
B 427,631	3,921,433	Nov. 25, 1975	B 449,647	3,916,797	Nov. 4, 1975
B 428,177	3,914,624	Oct. 21, 1975	B 450,499	3,920,526	Nov. 18, 1975
B 428,795	3,921,056	Nov. 18, 1975	B 450,546	3,924,417	Dec. 9, 1975
B 429,442	3,923,485	Dec. 2, 1975	B 450,927	3,913,844	Oct. 21, 1975
B 430,106	3,918,941	Nov. 11, 1975	B 455,520	3,922,543	Nov. 25, 1975
B 430,140	3,922,084	Nov. 25, 1975	B 455,775	3,914,356	Oct. 21, 1975
B 430,798	3,918,204	Nov. 11, 1975	B 456,346	3,914,531	Oct. 21, 1975
B 430,944	3,922,096	Nov. 25, 1975	B 461,872	3,919,586	Nov. 11, 1975
B 432,373	3,919,670	Nov. 11, 1975	B 467,684	3,915,119	Oct. 28, 1975
B 433,587	3,914,567	Oct. 21, 1975	B 468,198	3,925,340	Dec. 9, 1975

LIST OF REISSUE PATENTEES

TO WHOM

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Austin, George K., Jr. Dental handpiece control. Re. 28,649, Cl. 32-22.000.
Bell Telephone Laboratories, Incorporated: *See*—
Murphy, Bernard Thomas, Re. 28,653.
Bildfell, Johann T., to Trail-Air Scoop Limited. Aerodynamic deflector. Re. 28,652, Cl. 296-1.00S.
Carlson, Gordon S.: *See*—
Crowley, George C.; and Carlson, Gordon S., Re. 28,656.
Crowley, George C.; and Carlson, Gordon S., to Northern Electric Company. Thermostatless blanket control circuit. Re. 28,656, Cl. 219-212.000.
FMC Corporation: *See*—
Welborn, Robert E., Re. 28,651.
Haldor Topsoe A/S: *See*—
Rostrup-Nielsen, Jens Richard, Re. 28,655.
Helmes, Christiaan T.: *See*—
Helmes, Gerardus P.; Helmes, P. M.; Helmes, Christiaan T.; Helmes, Johan P. H.; and Helmes, Franciscus J., Re. 28,654.
Helmes, Franciscus J.: *See*—
Helmes, Gerardus P.; Helmes, P. M.; Helmes, Christiaan T.; Helmes, Johan P. H.; and Helmes, Franciscus J., Re. 28,654.
Helmes, Gerardus P.; Helmes, P. M.; Helmes, Christiaan T.; Helmes, Johan P. H.; and Helmes, Franciscus J., to Helmes Machinefabriek N.V. Method for gluing a strip of material against the side of a flat work piece, like a table leaf, and a device for performing this method. Re. 28,654, Cl. 156-212.000.
Helmes, Johan P. H.: *See*—
Helmes, Gerardus P.; Helmes, P. M.; Helmes, Christiaan T.; Helmes, Johan P. H.; and Helmes, Franciscus J., Re. 28,654.
Helmes Machinefabriek N.V.: *See*—
Helmes, Gerardus P.; Helmes, P. M.; Helmes, Christiaan T.; Helmes, Johan P. H.; and Helmes, Franciscus J., Re. 28,654.
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Helmes, Gerardus P.; Helmes, P. M.; Helmes, Christiaan T.; Helmes, Johan P. H.; and Helmes, Franciscus J., Re. 28,654.
Koleszar, Frank: *See*—
Sisk, George W., Jr.; Miller, Arthur W.; and Koleszar, Frank, Re. 28,650.
Miller, Arthur W.: *See*—
Sisk, George W., Jr.; Miller, Arthur W.; and Koleszar, Frank, Re. 28,650.
Murphy, Bernard Thomas, to Bell Telephone Laboratories, Incorporated. Method of fabricating semiconductor devices. Re. 28,653, Cl. 148-175.000.
Northern Electric Company: *See*—
Crowley, George C.; and Carlson, Gordon S., Re. 28,656.
Rostrup-Nielsen, Jens Richard, to Haldor Topsoe A/S. Process for the production of a reforming catalyst. Re. 28,655, Cl. 252-466.00J.
Sisk, George W., Jr.; Miller, Arthur W.; and Koleszar, Frank, to Whirlpool Corporation. Adjustable speed air drive-air sweep for air conditioner. Re. 28,650, Cl. 98-94.000.
Trail-Air Scoop Limited: *See*—
Bildfell, Johann T., Re. 28,652.
Welborn, Robert E., to FMC Corporation. Stump removal machine. Re. 28,651, Cl. 144-2.00N.
Whirlpool Corporation: *See*—
Sisk, George W., Jr.; Miller, Arthur W.; and Koleszar, Frank, Re. 28,650.

LIST OF PLANT PATENTEES

Flemer, William III, to Treesearch. Flowering pear tree. 3,815, 12–16–75, Cl. 36.
Flemer, William III, to Treesearch. Maple tree. 3,817, 12–16–75, Cl. 51.
Treesearch: *See*—
Flemer, William III. 3,815.
Flemer, William III. 3,817.
Van Staaveren, Maurits C. Carnation plant "Bellita." 3,816, 12–16–75, Cl. 70.

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AB Gustavsbergs Fabriker: *See*—
Juhlin, Sven-Eric. 238,039.
Amend, Edith C. Refillable fluid container used to apply heat or cold for therapeutic purposes. 238,105, 12–16–75. Cl. D83—1.
Amerock Corp.: *See*—
Tegner, Raymond U. H. 238,035.
Anker, Johann F. Blade for multi purpose gardening tool. 238,042, 12–16–75, Cl. D8—9.
Arbiaster, Dennis. Resuscitation board. 238,106, 12–16–75. Cl. D83—1.
Baus, Andre E. J., to The Goodyear Tire & Rubber Co. Tire. 238,061, 12–16–75, Cl. D12—148.
Bertoncel, Anton. Switch cover. 238,048, 12–16–75, Cl. D8—181.
Bic Pen Corp.: *See*—
Marynissen, William E. 238,068.
Boris, Charles C. Cabinet cover. 238,052, 12–16–75, Cl. D9—259.
Bourassa, Joseph R., and M. Lopez, to Parker Hannifin Corp. Windshield wiper blade unit. 238,062, 12–16–75, Cl. D12—155.
Brainard, James L., and R. J. Palm, to Whittaker Corp. Wheel. 238,064, 12–16–75, Cl. D12—210.
Caropresi, Frederick V., to Pease Co. Panel for a door. 238,067, 12–16–75, Cl. D13—1.
Cassina, Cesare, to Centro Cassina S.r.l. Armchair. 238,033, 12–16–75, Cl. D6—71.
Citic Industries: *See*—
Cohen, William J. 238,017.
Citizen Watch Co.: *See*—
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Clement, Richard H. Wheel center. 238,063, 12–16–75, Cl. D12—209.
Cohen, William J., to Citic Industries. Sport shoe. 238,017 12–16–75, Cl. D2—310.
Cook, Fern L. Boat hull. 238,059, 12–16–75, Cl. D12—62.

Cook, Raymon W. Golf putter head. 238,087, 12–16–75, Cl. D34—5.
Cooke, Gladys E. Tongue cleaner. 238,108, 12–16–75, Cl. D83—12.
Comalco (J & S) Pty. Ltd.: *See*—
Howells, Ronald McK. 238,066.
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Cox, Sam G. Shag rug carpet cleaner head. 238,041, 12–16–75, Cl. D7—173.
Cuthbertson, Eugene R. Combined cigarette holder and removable support. 238,083, 12–16–75, Cl. D27—7.
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Delin, Fred O. Lighting fixture. 238,096, 12–16–75, Cl. D48—31.
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Ganger, Richard J. 238,072.
Ganger, Richard J. 238,073.
Gruber, George S. 238,074.
Dolan, William S., to Gruen Industries, Inc. Numeral font or similar article. 238,102, 12–16–75, Cl. D84—12.
Driscoll, James A. Combined tail light and support bracket for boat trailers. 238,097, 12–16–75, Cl. D48—32.
Dubner, Robert B., and H. Bienenfeld. Pressure pump for tennis ball cannisters. 238,069, 12–16–75, Cl. D23—15.
Duncan, Thomas W. Tie rack. 238,032, 12–16–75, Cl. D6—251.
Dunlop Ltd.: *See*—
Majek, Mieczyslaw. 238,044.
Sakaki, Nobuyuki. 238,060.
Eisen, Leonard. Ornamental design for chair. 238,034, 12–16–75, Cl. D6—74.
Emerson Electric Co.: *See*—
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Entin, Leonard, and L. A. Gainsboro, to Opus Inc. Hanger for a plant container. 238,036, 12–16–75, Cl. D6—137.
Ervin, Roger N. Lighting fixture. 238,094, 12–16–75, Cl. D48—31.
Ervin, Roger N. Lighting fixture. 238,095, 12–16–75, Cl. D48—31.
Fier, Edward J., Jr. Container apparatus. 238,051, 12–16–75, Cl. D9—240.
Findeisen, John L. Cover for golf club carrying case. 238,086, 12–16–75, Cl. D34—5.
Fink, David H. Portable radio. 238,098, 12–16–75, Cl. D56—4.
Foster, Jack B., and J. E. Antes, to Super Seer Corp. Spirit level inclinometer. 238,056, 12–16–75, Cl. D10—69.
Funahashi, Yukinobu, to Citizen Watch Co. Clock. 238,054, 12–16–75, Cl. D10—24.
Ganger, Richard J., to Dimensionetix, Inc. Combined vanity top and basin. 238,070, 12–16–75, Cl. D23—58.
Ganger, Richard J., to Dimensionetix, Inc. Bath tub. 238,071, 12–16–75, Cl. D23—55.
Ganger, Richard J., to Dimensionetix, Inc. Bathtub. 238,072, 12–16–75, Cl. D23—55.
Ganger, Richard J., to Dimensionetix, Inc. Lavatory. 238,073, 12–16–75, Cl. D23—58.
Gardisette International AG.: *See*—
Schroeder, Peter E. 238,092.
Schroeder, Peter E. 238,093.
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Gold, Donald B., to K.I.S.S. Industries, Inc. Cocktail table. 238,020. 12–16–75, Cl. D6—27.
Gold, Donald B., to K.I.S.S. Industries, Inc. End table. 238,028, 12–16–75, Cl. D6—179.
Gold, Donald B., to K.I.S.S. Industries, Inc. Coffee table. 238,037, 12–16–75, Cl. D6—147.
Goodyear Tire & Rubber Co., The: *See*—
Baus, Andre E. J. 238,061.
Goto, Kenjiro. Cigarette lighter. 238,084, 12–16–75, Cl. D27—42.
Grosfillex S.A.R.L.: *See*—
Grosfillex, Raymond. 238,088.
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Gruber, George S., to Dimensionetix, Inc. Bath tub. 238,074, 12–16–75, Cl. D23—55.
Gruen Industries, Inc.: *See*—
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Hanson, Alden B., and C. A., to Hanson Industries, Inc. Ski boot. 238,016, 12–16–75, Cl. D2—276.
Harding, Hugh H. Pendant or similar article. 238,091, 12–16–75, Cl. D45—19.
Hardy, Richard D. Table for barbecue grill. 238,040, 12–16–75, Cl. D7—107.
Harris, Ulysses, to Ten-O-Feb., Inc. Cabinet for covering lavatory pipes. 238,075, 12–16–75, Cl. D23—59.
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Hart, Donald G. Tool box. 238,113, 12–16–75, Cl. D87—1.
Harvey, Wilfred G. Playing surface module for athletic activites such as tennis court, swimming pool areas, and the like. 238,065, 12–16–75, Cl. D13—1.
Heribertson, Per Erik Edward, and R. B. Andrew, to International Standard Electric Corp. Telephone set. 238,079, 12–16–75, Cl. D26—14.
Heros, Ricardo J., to Richards Mfg. Co., Inc. Cement injection gun for use in total joint surgeries. 238,107, 12–16–75, Cl. D83—12.
Hertzel, Richard R. Window box support. 238,049, 12–16–75, Cl. D8—242.
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Hutton, John R. Tire chaining tool. 238,045, 12–16–75, Cl. D8—31.
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Johnson, Seward W., and J. Moore. Clock. 238,053, 12–16–75, Cl. D10—7.
Jones, David R. Liquor dispenser. 238,114, 12–16–75, Cl. D94—3.
Juhlin, Sven-Eric, to AB Gustavsbergs Fabrier. Combined child's dish and base therefor. 238,039, 12–16–75, Cl. D7—23.
K.I.S.S. Industries, Inc.: *See*—
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Kitson, Gerald L. Poultry feeder trough. 238,085, 12–16–75, Cl. D30—13.
Leffler, Dennis F., and D. M. Truette. Treatment chair. 238,019, 12–16–75, Cl. D6—22.
Levine, Aaron J. Plumbing cleanout device. 238,046, 12–16–75, Cl. D8—68.
Lorge, Maurice L. Combined room divider and closable bar. 238,026, 12–16–75, Cl. D6—144.
Lorge, Maurice L. Combined room divider and closable bar. 238,027, 12–16–75, Cl. D6—144.
Loturco, Raymond A., to Cosco, Inc. High chair tray. 238,038, 12–16–75, Cl. D6—199.
Mackie, Don A. Necktie. 238,018, 12–16–75, Cl. D2—351.
Majek, Mieczyslaw, to Dunlop Ltd. Tool used in separating a tire bead from its seat on a wheel. 238,044, 12–16–75, Cl. D8—31.
Marotta, Vincent G., to North American Systems, Inc. Coffee brewer. 238,115, 12–16–75, Cl. D94—3.
Marynissen, William E., to Bic Pen Corp. Marking implement. 238,068, 12–16–75, Cl. D19—45.
Matthews, James C. Switch for TV cable and antenna. 238,082, 12–16–75, Cl. D26—13.
Mazzucconi, Vittorio, to ICF de Padova S.r.l. Divan. 238,023, 12–16–75, Cl. D6—62.
McNair, Samuel L., to Dazey Products Co. Combined vibrator and cushion. 238,104, 12–16–75, Cl. D83—1.
Meroni, Giullandrea. Door handle with a lock-actuating push button or similar article. 238,047, 12–16–75, Cl. D8—147.
Minsker, Lawrence D. Folding chair. 238,021, 12–16–75, Cl. D6—41.
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Mulholland, Robert P., to Monarch Marking Systems, Inc. Combined label printer and applicator. 238,101, 12–16–75, Cl. D64—10.
Nash, Stanley P. Seat. 238,024, 12–16–75, Cl. D6—63.
Newgard, Jon M., and C. F. Schultz, to General Electric Company. Wall mounted housing for an air conditioner or similar article. 238,076, 12–16–75, Cl. D23—141.
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Pearsall, Duane D., and A. A. Mayer, to Statitrol Corp. Fire detector. 238,057, 12–16–75, Cl. D10—106.
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Caropresi, Frederick V. 238,067.
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Porter, Paul W., to Sperry Univac Division, Sperry Rand Corp. Electromechanical storage and retrieval unit. 238,080, 12–16–75, Cl. D26—5.
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Shanklin, Donald J., to Orion Industries, Inc. Adjustable oil filter wrench. 238,043, 12–16–75, Cl. D8—22.
Shyers, Richard. Holder for magnetic tape cassettes. 238,110, 12–16–75, Cl. D87—1.
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1R 3,926,575
10H 3,926,576
51 3,926,577
58 3,926,578
62 3,926,579
68 3,926,580
3,926,581

CLASS 46
7 3,925,923
201 3,925,924
213 3,925,925

CLASS 47
1.2 3,925,926
1.5 3,925,927
17 3,925,928

CLASS 48
62 3,926,582
214 3,926,583
3,926,584

CLASS 49
35 3,925,929
124 3,925,930
227 3,925,931
3,925,932
409 3,925,933
504 3,925,934

CLASS 51
8HD 3,925,935
118 3,925,936
145R 3,925,937
295 3,926,585

CLASS 52
22 3,925,938
36 3,925,939
81 3,925,940
82 3,925,941
86 3,925,942
108 3,925,943
134 3,925,944
171 3,925,945
180 3,925,946
208 3,925,947
481 3,925,948
581 3,925,949
585 3,925,950
693 3,925,951
714 3,925,952
741 3,925,953
752 3,925,954
758D 3,925,955
3,925,956

CLASS 53
6 3,925,957
21FW 3,925,958
28 3,925,959
78 3,925,960
89 3,925,961
112R 3,925,965
124B 3,925,962
182 3,925,963
183 3,925,964
212 3,925,966
385 3,925,967

CLASS 55
10 3,926,586
12 3,926,587
52 3,926,588
67 3,926,589
68 3,926,590
3,926,591
84 3,926,592
96 3,926,593
159 3,926,594
302 3,926,595
304 3,926,596
338 3,926,597
385 3,926,598
387 3,926,599

CLASS 56
13.3 3,925,968
13.9 3,925,969
14.7 3,925,970
208 3,925,971
320.2 3,925,972
328R 3,925,973
346 3,925,974

CLASS 57
34R 3,925,975
140R 3,925,976

CLASS 58
4A 3,925,977
23R 3,925,978

CLASS 60
39.07 3,925,979
39.29 3,925,980
39.77 3,925,981
242 3,925,982
265 3,925,983
370 3,925,984
371 3,925,985
398 3,925,986
464 3,925,987
539 3,925,988
602 3,925,989
644 3,925,990

CLASS 61
.5 3,925,992
1F 3,925,991
36A 3,925,993
39 3,925,994
45B 3,925,996
45D 3,925,995
46.5 3,925,997
53.64 3,925,998
64 3,925,999
3,926,002
72.4 3,926,003
72.6 3,926,004
85 3,926,005

CLASS 62
66 3,926,006
121 3,926,000
137 3,926,007
200 3,926,008
296 3,926,009
378 3,926,001
401 3,926,010
514 3,926,011

CLASS 64
19 3,926,012

CLASS 65
1 3,926,600
31 3,926,601
33 3,926,602
3,926,603
60 3,926,604
65A 3,926,605
135 3,926,606
136 3,926,607

CLASS 66
40 3,926,013
84A 3,926,014
147 3,926,015
157 3,926,016
195 3,926,017

CLASS 70
19 3,926,018
85 3,926,019
278 3,926,021

CLASS 71
1 3,926,608
31 3,926,609
34 3,926,610
94 3,926,611
100 3,926,612
118 3,926,613

CLASS 72
8 3,926,024
24 3,926,022
60 3,926,023
84 3,926,025
90 3,926,026
239 3,926,027
319 3,926,028
342 3,926,029
368 3,926,030
407 3,926,031
419 3,926,032
451 3,926,033

CLASS 73
6 3,926,048
15R 3,926,034
32A 3,926,035
37 3,926,036
53 3,926,037
61.1R 3,926,038
67.7 3,926,039
67.8S 3,926,040
85 3,926,041
88A 3,926,042
104 3,926,044
114 3,926,045
117 3,926,043
133R 3,926,046
151 3,926,047
194EM 3,926,049
205D 3,926,050
277 3,926,051
336.5 3,926,052
351 3,926,053
382 3,926,054
398AR 3,926,055
3,926,056
401 3,926,057
432R 3,926,058
510 3,926,059

CLASS 74
5.1 3,926,060
22R 3,926,061
89 3,926,062
217B 3,926,020
242.11A 3,926,063
421R 3,926,064
424 3,926,065
435 3,926,066
461 3,926,067
473R 3,926,068
492 3,926,069
498 3,926,070
567 3,926,071
665N 3,926,072
753 3,926,073
857 3,926,074
867 3,926,075

CLASS 75
.5BA 3,926,617
1 3,926,614
3 3,926,615
3,926,616
60 3,926,618
3,926,619
122 3,926,620
124 3,926,621
126G 3,926,622
129 3,926,623
130.5 3,926,624

CLASS 81
3.41 3,926,076
126 3,926,077

CLASS 82
2.5 3,926,078
36A 3,926,079

CLASS 83
15 3,926,080
96 3,926,081
140 3,926,082
637 3,926,083
698 3,926,084
718 3,926,085
801 3,926,086

CLASS 84
345 3,926,087
462 3,926,088

CLASS 85
5CP 3,926,089
33 3,926,090

CLASS 90
1.4 3,926,091

CLASS 91
378 3,926,092
391R 3,926,093

CLASS 92
63 3,926,094
157 3,926,095

CLASS 93
49M 3,926,096
58.2R 3,926,097
81R 3,926,098

CLASS 96
1R 3,926,625
3,926,626
3,926,627
3,926,628
1.5 3,926,629
27E 3,926,630
29D 3,926,631
66.5 3,926,632
67 3,926,436
68 3,926,633
100 3,926,634
114 3,926,635
115P 3,926,640
3,926,641
3,926,643
115R 3,926,636
3,926,637
3,926,638
3,926,639
3,926,642

CLASS 98
2.05 3,926,099
2.14 3,926,100
33R 3,926,101
94 Re.28,650
102 3,926,102
115SB 3,926,103
115VM 3,926,104

CLASS 99
423 3,926,105
447 3,926,106

CLASS 100
45 3,926,107
177 3,926,108

CLASS 101
90 3,926,109
92 3,926,110
116 3,926,111
123 3,926,112
128.1 3,926,113
142 3,926,114
148 3,926,115
3,926,116
211 3,926,117
246 3,926,118

CLASS 102
24R 3,926,119
70.2P 3,926,120
3,926,121
79 3,926,122

CLASS 104
7R 3,926,123
26A 3,926,124
94 3,926,125
130 3,926,126

CLASS 105
26R 3,926,128
224R 3,926,127

CLASS 106
15AF 3,926,644
21 3,926,645
35 3,926,646
39.5 3,926,647
39.6 3,926,648
47R 3,926,649
88 3,926,650
100 3,926,651
118 3,926,652
119 3,926,653
137 3,926,654
243 3,926,655
272 3,926,656
286 3,926,657
287 3,926,658
291 3,926,659
300 3,926,660

CLASS 110
7B 3,926,129
10 3,926,130

CLASS 111
6 3,926,131

CLASS 112
79A 3,926,132
158R 3,926,133

CLASS 114
74R 3,926,134
3,926,135
123 3,926,136
209 3,926,137

CLASS 115
29 3,926,138

CLASS 116
26 3,926,139
85 3,926,140
114R 3,926,141
116 3,926,142
118R 3,926,143
124R 3,926,144

CLASS 118
7 3,926,145
24 3,926,146

49.1 3,926,147
247 3,926,148

CLASS 119
1 3,926,149

CLASS 122
250R 3,926,150

CLASS 123
8.05 3,926,151
8.09 3,926,152
32EA 3,926,153
3,926,154
32SJ 3,926,169
41.68 3,926,155
41.69 3,926,156
73D 3,926,157
75B 3,926,158
90.11 3,926,159
103E 3,926,160
119A 3,926,161
139AZ 3,926,163
139A 3,926,162
140FG 3,926,164
148E 3,926,165
3,926,557
179L 3,926,167
180R 3,926,168
193P 3,926,166

CLASS 124
8 3,926,170

CLASS 126
21A 3,926,171
39E 3,926,172
110R 3,926,173
121 3,926,174

CLASS 127
19 3,926,661
48 3,926,662

CLASS 128
1R 3,926,175
1.2 3,926,176
2S 3,926,177
3,926,178
2.05N 3,926,179
32 3,926,180
68 3,926,181
75 3,926,182
78 3,926,183
79 3,926,184
132D 3,926,185
165 3,926,186
232 3,926,187
260 3,926,188
287 3,926,189
3,926,190
3,926,191
303R 3,926,192
335 3,926,193
339 3,926,194
346 3,926,195
351 3,926,196
419PG 3,926,198
419PT 3,926,197

CLASS 131
187 3,926,199

CLASS 132
9 3,926,200
91 3,926,201

CLASS 134
6 3,926,663
18 3,926,665
21 3,926,664
25R 3,926,666
167R 3,926,667
179 3,926,668

CLASS 135
20M 3,926,202

CLASS 136
6LN 3,926,669
26 3,926,670
29 3,926,671
30 3,926,672
31 3,926,673
36 3,926,674
86E 3,926,675
86R 3,926,676
107 3,926,677
122 3,926,678
146 3,926,679
154 3,926,680
241 3,926,681

CLASS 137
13 3,926,203
116.5 3,926,204
223 3,926,205
281 3,926,206
3,926,207
484.8 3,926,208
487.5 3,926,209
491 3,926,210
494 3,926,211
495 3,926,212
504 3,926,213

525.3 3,926,214
527.8 3,926,215
3,926,216
596.18 3,926,217
625.27 3,926,218
625.49 3,926,219
636.1 3,926,220
819 3,926,221

CLASS 138
122 3,926,222
129 3,926,223

CLASS 139
122H 3,926,224
125 3,926,225
190 3,926,226
383R 3,926,227
420R 3,926,228

CLASS 141
1 3,926,229
45 3,926,230
192 3,926,231

CLASS 144
2N Re.28,651
136J 3,926,232

CLASS 148
1.5 3,926,682
11.5R 3,926,683
3,926,684
12EA 3,926,685
12B 3,926,687
12F 3,926,686
12.1 3,926,688
12.4 3,926,689
32 3,926,690
3,926,691
36 3,926,692
175 Re.28,653
3,926,693
187 3,926,694
3,926,695

CLASS 149
2 3,926,696
14 3,926,697
44 3,926,698

CLASS 150
2.5 3,926,233
40 3,926,234

CLASS 151
21C 3,926,235
34 3,926,237
41.73 3,926,236

CLASS 152
209 3,926,238
210 3,926,239
226 3,926,240
415 3,926,241

CLASS 156
3 3,926,699
86 3,926,701
89 3,926,702
124 3,926,703
126 3,926,704
155 3,926,705
212 Re.28,654
229 3,926,706
239 3,926,707
242 3,926,708
309 3,926,709
362 3,926,710
394 3,926,711
477B 3,926,712
510 3,926,713
516 3,926,714
612 3,926,715

CLASS 160
89 3,926,242
328 3,926,243

CLASS 162
113 3,926,716
157C 3,926,717
168 3,926,718
253 3,926,719

CLASS 164
4 3,926,244
53 3,926,245
56 3,926,246
263 3,926,247
273R 3,926,248

CLASS 165
3 3,926,249
48 3,926,250
165 3,926,251

CLASS 166
54.6 3,926,252
88 3,926,253
106 3,926,254
270 3,926,255
285 3,926,256
293 3,926,257
294 3,926,258
302 3,926,259

315 3,926,260

CLASS 172
68B 3,926,261
780 3,926,262
801 3,926,263

CLASS 173
12 3,926,264
80 3,926,265
110 3,926,266

CLASS 174
19 3,927,246
36 3,927,247
41 3,927,248
51 3,927,249

CLASS 175
19 3,926,267
62 3,926,268
104 3,926,269

CLASS 176
18 3,926,720
19R 3,926,721
87 3,926,722

CLASS 177
210 3,926,271
251 3,926,270

CLASS 178
5.6 3,927,250
6 3,927,251
6.7R 3,927,252
6.8 3,927,253
3,927,258
7.1 3,927,254
7.3DC 3,927,255
7.6 3,927,256
60 3,927,257

CLASS 179
1GQ 3,927,262
1MN 3,927,259
3,927,260
1E 3,927,261
2DP 3,927,263
3,927,265
2A 3,927,264
2.5R 3,927,266
15AT 3,927,267
15BS 3,927,269
15BW 3,927,268
17A 3,927,270
18AB 3,927,271
18AD 3,927,272
18J 3,927,273
97 3,927,275
98 3,927,277
99 3,927,278
107FD 3,927,279
170G 3,927,280
175.3R 3,927,281
178 3,927,282

CLASS 180
1C 3,926,272
9.48 3,926,273
35 3,926,274
77R 3,926,275
89R 3,926,276
115 3,926,277

CLASS 182
7 3,926,278

CLASS 184
6.16 3,926,281
29 3,926,279
55A 3,926,280

CLASS 188
106F 3,926,282
196BA 3,926,284
196B 3,926,283
218XL 3,926,285

CLASS 192
41S 3,926,286
61 3,926,287
104F 3,926,288

CLASS 193
23 3,926,289
27 3,926,290

CLASS 194
4F 3,926,291

CLASS 195
1.8 3,926,723
28N 3,926,725
28R 3,926,724
30 3,926,726
36P 3,926,728
63 3,926,727
3,926,729
66R 3,926,730
80R 3,926,731
103.5R 3,926,732
3,926,734
3,926,735
3,926,736
103.5 3,926,733
108 3,926,737

127 3,926,738

CLASS 197
1R 3,926,292
3,926,293
19 3,927,274
36 3,926,294
55 3,926,295

CLASS 198
16R 3,926,296
19 3,926,297
20C 3,926,300
20R 3,926,298
3,926,299
53R 3,926,302
90 3,926,301
177R 3,926,303
208 3,926,304

CLASS 200
5R 3,927,283
3,927,284
6A 3,927,285
61.45R 3,927,286
61.47 3,927,287
277 3,927,288
284 3,927,289
314 3,927,290
327 3,927,276

CLASS 202
173 3,926,739
261 3,926,740
269 3,926,741

CLASS 203
3 3,926,742
10 3,926,743
55 3,926,744

CLASS 204
1T 3,926,745
15 3,926,746
3,926,747
43G 3,926,748
43S 3,926,749
99 3,926,750
105R 3,926,751
107 3,926,752
149 3,926,753
152 3,926,754
159.15 3,926,755
159.22 3,926,756
162HE 3,926,757
163R 3,926,758
180P 3,926,759
181 3,926,760
3,926,761
192 3,926,762
3,926,763
195F 3,926,764
3,926,765
195P 3,926,766
206 3,926,767
229 3,926,768
237 3,926,769
256 3,926,770
268 3,926,771
283 3,926,772
290F 3,926,773
308 3,926,774

CLASS 206
73 3,926,305
84 3,926,306
153 3,926,307
223 3,926,308
364 3,926,309
387 3,926,310
439 3,926,311
444 3,926,312
455 3,926,313

CLASS 208
10 3,926,775
32 3,926,776
57 3,926,777
65 3,926,779
74 3,926,778
111 3,926,780
117 3,926,781
135 3,926,782
157 3,926,783
210 3,926,784
211 3,926,785
264 3,926,786

CLASS 209
3 3,926,787
3,926,788
8 3,926,789
9 3,926,790
3,926,791
215 3,926,792
426 3,926,793

CLASS 210
5 3,926,794
11 3,926,795
3,926,796
22 3,926,797
23 3,926,798

3,926,799
31C 3,926,800
58 3,926,801
62 3,926,802
63 3,926,803
76 3,926,804
101 3,926,805
137 3,926,806
177 3,926,807
195 3,926,808
198C 3,926,809
220 3,926,810
231 3,926,811
242 3,926,812
321 3,926,813
323 3,926,814
424 3,926,815

CLASS 211
71 3,926,314
102 3,926,315

CLASS 212
59R 3,926,316

CLASS 213
20 3,926,317

CLASS 214
1H 3,926,318
6B 3,926,319
8.5C 3,926,320
10.5R 3,926,321
305 3,926,322
310 3,926,323

CLASS 215
1C 3,926,324
206 3,926,325
218 3,926,326
3,926,327
220 3,926,328
361 3,926,329

CLASS 219
67 3,927,292
69C 3,927,293
105.55R 3,927,291
107 3,927,294
125R 3,927,295
155 3,927,296
212 Re.28,656
243 3,927,297
245 3,927,298
365 3,927,299
381 3,927,300
523 3,927,301

CLASS 220
3.9 3,926,330
63R 3,926,331
226 3,926,332
320 3,926,333

CLASS 221
7 3,926,334
82 3,926,335
296 3,926,336

CLASS 222
1 3,926,337
56 3,926,338
83 3,926,339
83.5 3,926,340
95 3,926,341
129.1 3,926,342
145 3,926,343
3,926,344
3,926,345
160 3,926,346
185 3,926,347
189 3,926,348
402.22 3,926,349
475 3,926,350

CLASS 223
88 3,926,351

CLASS 226
79 3,926,352
95 3,926,353
108 3,926,354
114 3,926,355

CLASS 227
3,926,356

CLASS 228
110 3,926,357
111 3,926,358
170 3,926,359
180 3,926,360

CLASS 229
1.5B 3,926,361
2.5 3,926,363
23BT 3,926,362
55 3,926,364
72 3,926,365

CLASS 232
15 3,926,366

CLASS 235
61.11E 3,927,303
61.9R 3,927,302
150.21 3,927,304

3,927,305
150.22 3,927,306
151.3 3,927,307
3,927,308
151.31 3,927,309
153AC 3,927,310
159 3,927,311
181 3,926,367
189 3,927,312

CLASS 236
41 3,926,368

CLASS 239
1 3,926,369
3,926,374
25 3,926,370
146 3,926,371
177 3,926,372
265.17 3,926,373
542 3,926,375
583 3,926,376
655 3,926,377

CLASS 240
1.4 3,927,313
7.5 3,927,314
52.1 3,927,315

CLASS 241
69 3,926,379
154 3,926,378
248 3,926,380

CLASS 242
47.01 3,926,381
79 3,926,382
85.1 3,926,383
107.4 3,926,384
3,926,385
118 3,926,386
198 3,926,387

CLASS 244
3.22 3,926,390
17.11 3,926,388
45A 3,926,389
149 3,926,391

CLASS 248
117.1 3,926,392
165 3,926,393
217 3,926,394
223 3,926,395
418 3,926,396
430 3,926,397
448 3,926,398
467 3,926,399

CLASS 249
40 3,926,400
59 3,926,401
117 3,926,402
185 3,926,403
213 3,926,404

CLASS 250
199 3,927,316
214R 3,927,317
272 3,927,318
273 3,927,319
307 3,927,320
311 3,927,321
315 3,927,322
329 3,927,323
336 3,927,324
435 3,927,325
447 3,927,326
470 3,927,327
473 3,927,328

CLASS 251
129 3,926,405
144 3,926,406
315 3,926,407
327 3,926,408
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251QB 3,926,993
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33	3,927,170	447	3,927,186	50	3,927,200	251	3,927,214	34	3,927,223	304	3,927,236
118	3,927,171	448	3,927,187	54	3,927,201		3,927,215	64	3,927,224	325	3,927,237
129	3,927,172	463	3,927,188	57	3,927,202	269	3,927,216	84	3,927,225	336	3,927,238
142	3,927,173	513	3,927,189	61	3,927,203	274	3,927,217	140	3,927,226	355	3,927,239
155	3,927,174	515	3,927,190	78	3,927,204	285	3,927,218	162	3,927,227	403	3,927,240
206	3,927,175	570	3,927,191	80	3,927,205	300	3,927,219		3,927,228	408	3,927,241
210	3,927,176	648	3,927,192	81	3,927,206	321	3,927,220	171	3,927,229	411	3,927,242
235	3,927,177		CLASS 424	84	3,927,207		CLASS 425	282	3,927,230	433	3,927,243
242	3,927,178			89	3,927,208	64	3,926,541	390	3,927,231	483	3,927,244
300	3,927,179	1	3,927,193		3,927,209	174.4	3,926,542	401	3,927,232	513	3,927,245
308	3,927,180	15	3,927,194	118	3,927,210		CLASS 426		CLASS 428		CLASS 431
345	3,927,181	21	3,927,195	122	3,927,211	576	3,927,221	58	3,927,233	9	3,926,543
392	3,927,182	37	3,927,196	177	3,926,921	621	3,927,222	95	3,926,700	114	3,926,544
393	3,927,183	45	3,927,197		3,927,212			273	3,927,234	122	3,926,545
394	3,927,184	47	3,927,198								

CLASSIFICATION OF DESIGNS

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	310	238,017	186	238,029		240	238,051	D19— 45	238,068	D30— 13	238,085	D64— 10	238,101
	351	238,018	197	238,030		259	238,052	D23— 15	238,069	D34— 5GB	238,086	12B	238,102
D6—	22	238,019		238,031	D10—	7	238,053	55	238,071	GH	238,087	D77— 1R	238,103
	27	238,020	199	238,038		24	238,054		238,072	D35— 3A	238,088	D83— G	238,106
	41	238,021	251	238,032		38	238,055		238,074	D45— 17	238,089	P	238,105
	49	238,022	D7— 23	238,039		69	238,056	58	238,070		238,090	S	238,104
	62	238,023	107	238,040		106	238,057		238,073	19V	238,091	12A	238,107
	63	238,024	173	238,041	D12—	34	238,058	59	238,075	D47— 6E	238,092	R	238,108
	71	238,033	D8— 9	238,042		62	238,059	141	238,076		238,093	D86— 10F	238,109
	74	238,034	22	238,043		146	238,060	D26— 1R	238,077	D48— 31	238,094	D87— 1D	238,110
	96	238,025	31	238,044		148	238,061	5C	238,078		238,095		238,111
	99	238,035		238,045		155	238,062		238,080		238,096	R	238,112
	137	238,036	68	238,046		209	238,063	13R	238,082	32R	238,097		238,113
	144	238,026	147	238,047		210	238,064	14A	238,079	D56— 4B	238,098	D94— 3B	238,114
		238,027	181	238,048	D13—	1J	238,065	B	238,081	D57— 1E	238,099		238,115
	147	238,037	242	238,049			238,067	D27— 7	238,083				

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

	3,926,164	3,926,140	3,926,906	3,926,372	3,926,131	3,926,316
	3,926,241	3,926,143	3,926,913	3,926,391	3,926,146	3,926,323
	3,926,389	3,926,159	3,926,947	3,926,443	3,926,167	3,926,324
1 :	3,925,871	3,926,160	3,927,003	3,926,881	3,926,183	3,926,335
	3,926,927	3,926,168	3,927,019	3,927,152	3,926,340	3,926,337
	3,927,178	3,926,175	3,927,027	3,927,169	3,926,386	3,926,339
	3,927,312	3,926,176	3,927,028	3,927,299	3,926,424	3,926,350
	3,927,337	3,926,192	3,927,033	3,927,402	3,926,448	3,926,352
2 :	3,925,854	3,926,199	3,927,061	9 : 3,926,110	3,926,597	3,926,366
4 :	3,925,856	3,926,203	3,927,062	3,926,129	3,926,814	3,926,368
	3,925,896	3,926,213	3,927,078	3,926,349	3,926,887	3,926,376
	3,926,393	3,926,229	3,927,086	3,926,388	3,926,893	3,926,402
	3,926,520	3,926,230	3,927,157	3,926,413	3,927,182	3,926,416
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	3,927,306	3,926,237	3,927,184	3,926,582	3,927,317	3,926,461
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6 :	Re.28,651	3,926,287	3,927,219	3,926,722	3,926,371	3,926,490
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42 : 238,058
238,067
238,080
47 : 238,107
48 : 238,087
238,094
238,095
238,096
238,108
55 : 238,024
238,035

PLANT PATENTS

34 3,815
3,817

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Vol. 941 Number 4

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

December 23, 1975

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UNITED STATES PATENT and TRADEMARK OFFICE

December 23, 1975 Volume 941 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

National Inventor's Day

The 4th Annual National Inventor's Day Exhibit will be held on Saturday and Sunday, February 7 and 8, 1976 at the Patent and Trademark Office in Arlington, Virginia.

Limited space is available for appropriate display and demonstration of patented materials, devices or methods.

Inventors or firms interested in participating in this public exhibit are urged to contact the National Inventor's Day Committee of the Patent and Trademark Office (phone 703 557–3428). Communications should be directed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231. Attn: Oscar Mastin, Office of Information Services.

I. J. ROTKIN,
Chairman.

Dec. 1, 1975.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

1,643,646, G. W. Swift, Jr., SHEET FEEDING MEANS; **2,737,388,** I. S. Gottscho, FEEDING MECHANISMS FOR MARKING MACHINES; **3,279,786,** Fliegner and Hinz, PNEUMATIC APPARATUS FOR INDIVIDUALLY SEPARATING FLAT ITEMS; **3,588,095,** Ward, Ward and Bachmann, SUCTION TABLE SYSTEM FOR FEEDING OF WARPED SHEETS, **filed** July 20, 1972, D.C.N.J. (Camden), Doc. C–1256–72, *The Ward Machinery Company (formerly The Ward-Turner Machinery Company)* v. *The Langston Company.*

2,737,388. (See 1,643,646.)

2,972,349, R. A. De Wall, CAPILLARY OXYGENATOR; **3,228,876,** R. J. Harmstorf, SYSTEM AND APPARATUS TO PLACE FLEXIBLE PIPES AND CABLES UNDER GROUND BELOW WATER; **3,546,209,** B. J. Lipps, Jr., PROCESS FOR THE FABRICATION OF A CELLULOSE HOLLOW FIBER SEPARATORY CELL, **filed** Mar. 6, 1975, D.C. Del. (Wilmington), Doc. 75–67, *Cobe Laboratories, Inc. and Abcor, Inc.* v. *The Dow Chemical Co., Cordis Dow Corp. and The Regents of the University of Minnesota.*

2,978,213, B. H. Kass, VIBRATION ISOLATION ARRANGEMENTS, **filed** Aug. 26, 1975, D.C., N.D.N.Y. (Utica), Doc. 75–CV–425, *G. A. Braun, Inc.* v. *Machinery Mountings, Inc.*

3,033,988, H. E. Edgerton, METHOD OF AND APPARATUS FOR THE CONTROL OF ELECTRIC IMPULSES; **3,519,879,** F. T. Ogawa, FLASH APPARATUS WITH AUTOMATIC LIGHT TERMINATION HAVING GATING AND ANTICIPATION MEANS; **Re. 26,998,** N. F. Brown, LOW FRICTION SEALED AND LOW TORQUE ACTUATED TRUNNION MOUNTED VALVE, **filed** Feb. 26, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c515, *Honeywell, Inc. and EG & G Inc.* v. *Metz Apparatewerke et al.* Enter order of dismissal, Apr. 2, 1975.

3,047,196, Levine and Phillips, GARMENT HANGER, **filed** Sept. 12, 1974, D.C.N.J. (Trenton), Doc. C–74–1414, *Warbern Packaging Industries, Inc.* v. *The Horwood Company, Inc.* Action administratively terminated by order of United States District Judge, as it is stayed pending disposition of similar or related litigation in Southern District of New York, Sept. 4, 1975.

3,198,043, P. K. Davis, PIPE CUTTING AND HANDLING APPARATUS; **3,247,692,** same, PIPE MAKING MACHINE AND METHOD; **3,257,881,** same, PIPE CUTTING AND HANDLING METHOD, **filed** June 30, 1975, D.C., N.D. Calif. (San Francisco), Doc. C–75–1353–SC, *Ironside's Machine & Welding Ltd.* v. *Pacific Roller Die Co., Inc.*

3,228,876. (See 2,972,349.)

3,241,876, W. S. Saunders, APPARATUS FOR REDUCING LINEAR AND LATERAL WIND RESISTANCE IN A TRACTOR-TRAILER COMBINATION VEHICLE, **filed** Feb. 27, 1975, D.C. Conn. (New Haven), Doc. N–75–51, *Uniroyal, Inc.* v. *Rudkin-Wiley Corporation.*

3,241,876, W. S. Saunders, APPARATUS FOR REDUCING LINEAR AND LATERAL WIND RESISTANCE IN A TRACTOR-TRAILER COMBINATION VEHICLE; **3,309,131,** same, MEANS FOR REDUCING LINEAR WIND RESISTANCE IN SINGLE CHASSIS TYPE VEHICLES, **filed** Feb. 5, 1975, D.C., N.D. Ala. (Birmingham), Doc. CA 75–G–0143–S, *W. Selden Saunders and Rudkin-Wiley Corporation* v. *Avondale Mills and W. W. Murphree.*

3,247,692. (See 3,198,043.)

3,257,881. (See 3,198,043.)

3,279,786. (See 1,643,646.)

3,309,131. (See 3,241,876.)

3,323,437, J. V. Knab, FILTER SYSTEM; **3,465,666,** same, CLEAN ROOM FILTERING METHOD; **3,522,724,** same, METHOD AND APPARATUS FOR TESTING CLEAN ROOM FILTRATION EFFICIENCY, **filed** Apr. 2, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c1060, *The Robert Irsay Company, etc.* v. *The Jade Corporation et al.*

3,353,528, D. E. Robinson, HEATER CONSTRUCTION; **Re. 27,392,** same, **filed** July 11, 1975, United States Court of Appeals, Sixth Circuit, Ohio (Cincinnati), Doc. 74–1841, *Philips Industries, Inc. and Mobil Temp, Inc.* v. *State Stove & Manufacturing Co., Inc.* Decision reversed, holding the patent to be invalid, and therefore, do not reach the infringement issue, July 11, 1975.

3,403,484, G. Redey, ADJUSTABLE CONSTRUCTION JOINT STRIPS; **3,518,801,** same; **3,603,025,** W. Heubel, ELEMENTS WITH PLURAL SURFACES HAVING UNIFORMLY SPACED INTERFITTABLE PROJECTIONS, **filed** July 18, 1975, D.C., S.D.N.Y., Doc. 75–C–3536, *George Redey* v. *Hasbro Industries, Inc. and Propper-Werk GmbH.*

3,424,496, W. A. Prough, VEHICLE PASSENGER SAFETY DEVICES, **filed** Feb. 15, 1974, D.C., S.D. Ind. (Indianapolis), Doc. IP74–100–C, *Wendell Arthur Prough* v. *Borg-Warner Corporation.*

3,465,666. (See 3,323,437.)

3,499,302, Spain, Oliver, Flora and Powell, CYLINDER LOCK; **Reg. No. 878,843** (GREAT LEGS AND DESIGN), Richmar Products, Inc., **filed** Apr. 22, 1975, D.C., N.D.N.Y. (Utica), Doc. 75–CV–191, *Medeco Security Locks, Inc.* v. *Dominion Lock-USA, Inc. and Dominion Lock Company Ltd.*

3,518,800, H. G. Tank, FLOORING SYSTEM, **filed** Sept. 19, 1974, D.C., W.D. Tenn. (Memphis), Doc. C–74–506, *Connor Forest Industries* v. *Robbins Flooring Company.* Consent decree, patent is valid, defendant is enjoined from infringing said patent except as provided in the settlement agreement between the parties, Sept 10, 1975.

3,518,801. (See 3,403,484.)

3,519,879. (See 3,033,988.)

3,522,724. (See 3,323,437.)

3,546,209. (See 2,972,349.)

3,574,070, C. Sahely, METAL PLATING OVER PLASTIC; **3,615,732,** Shipley, Shipley, Gulla and Dutkewych, ELECTROLESS COPPER PLATING; **3,728,137,** same, **filed** Sept. 12, 1974, D.C. Conn. (Hartford), Doc. H–74–282, *Shipley Co. Inc.* v. *MacDermid Corporation.* Stipulated that action be dismissed without prejudice, June 19, 1975.

3,588,095. (See 1,643,646.)

3,603,025. (See 3,403,484.)

3,615,732. (See 3,574,070.)

3,682,076, I. Erlichman, SUPPORT MEMBER FOR PREVENTING INVERTED INSERTION OF A FILM CASSETTE; **3,705,537,** R. Paglia, APPARATUS FOR INTERFACING PHOTOGRAPHIC CAMERA AND FILM CARTRIDGE; **3,709,122,** Blinow and Leduc, FILM ADVANCING APPARATUS; **3,766,842,** J. M. Whall, PHOTOGRAPHIC FILM PROCESSING APPARATUS; **3,776,118,** Driscoll and Whall, PHOTOGRAPHIC FILM PROCESSING APPARATUS; **3,779,144,** R. Paglia, PHOTOGRAPHIC FILM PROCESSING APPARATUS AND CAMERA SYSTEM EMPLOYING SAME; **3,810,211,** Wareham and Paglia, SELF-DEVELOPING CAMERA SYSTEM; **3,810,220,** R. Paglia, DETACHABLE SPREAD ROLLER HOUSING SECTION; **3,854,809,** J. J. Driscoll, PHOTOGRAPHIC APPARATUS; **Re. 28,054,** A. J. Bachelder, PHOTOGRAPHIC APPARATUS AND METHOD, **filed** July 3, 1975, D.C. Del. (Wilmington), Doc. 75–179, *Polaroid Corporation* v. *Berkey Photo, Inc.*

3,705,537. (See 3,682,076.)

3,709,122. (See 3,682,076.)

3,709,623, H. N. Stephan and L. C. Seager, COMBINED BORING, DRILLING AND MILLING MACHINE, **filed** Aug. 29, 1975, D.C., E.D. Mich. (Detroit), Doc. 75–71654, *Ex-Cell-O-Corporation* v. *Litton Industrial Products Inc.*

3,716,992, J. F. Stahl, ADAPTOR FOR EXHAUST MANIFOLD, **filed** Sept. 15, 1975, D.C., E.D. Pa. (Philadelphia), Doc. 75–2603, *Jere F. Stahl* v. *Hooker Industries.*

3,728,137. (See 3,574,070.)

3,766,842. (See 3,682,076.)

3,776,118. (See 3,682,076.)

3,779,144. (See 3,682,076.)

3,810,211. (See 3,682,076.)

3,810,220. (See 3,682,076.)

3,854,809. (See 3,682,076.)

3,859,215, G. A. Milne, SEWAGE TREATMENT SYSTEM, **filed** July 7, 1975, D.C. Hawaii (Honolulu), Doc. CV–75–0232, *Hanna Enterprises, Inc.* v. *George A. Milne.*

Re. 26,998. (See 3,033,988.)

Re. 27,392. (See 3,353,528.)

Re. 28,054. (See 3,682,076.)

Reg. No. 878,843. (See 3,499,302.)

PATENT NOTICES

Certificates of Correction for the Week of Dec. 23, 1975

R. 28,392	3,878,196	3,897,943	3,905,809
Re. 28,443	3,878,218	3,898,637	3,905,879
Re. 28,520	3,878,579	3,898,914	3,905,910
3,617,472	3,878,656	3,898,928	3,906,134
3,631,161	3,879,339	3,899,230	3,906,338
3,639,411	3,880,656	3,899,532	3,906,382
3,657,011	3,881,855	3,899,534	3,906,513
3,733,150	3,883,107	3,899,598	3,906,701
3,736,940	3,884,763	3,900,182	3,907,054
3,777,908	3,884,902	3,900,349	3,907,076
3,791,887	3,884,988	3,900,485	3,907,158
3,796,910	3,886,767	3,900,515	3,907,160
3,797,678	3,887,087	3,900,601	3,907,211
3,804,340	3,887,198	3,900,630	3,907,299
3,803,401	3,888,621	3,900,763	3,907,431
3,827,048	3,888,896	3,900,902	3,907,481
3,836,502	3,889,137	3,901,077	3,907,533
3,841,497	3,889,494	3,901,150	3,907,548
3,842,169	3,889,504	3,901,522	3,907,566
3,844,992	3,890,144	3,901,585	3,907,691
3,846,483	3,890,287	3,901,678	3,908,099
3,849,278	3,890,384	3,901,691	3,908,190
3,851,068	3,890,432	3,902,202	3,908,340
3,853,525	3,890,492	3,902,422	3,908,765
3,853,716	3,890,605	3,902,474	3,909,189
3,856,124	3,891,366	3,903,065	3,909,320
3,857,780	3,892,107	3,903,147	3,909,420
3,860,567	3,892,521	3,904,439	3,909,569
3,863,008	3,893,988	3,904,581	3,909,706
3,865,187	3,894,084	3,904,640	3,910,873
3,865,606	3,894,941	3,904,660	3,911,188
3,866,110	3,895,744	3,904,664	3,911,629
3,867,271	3,896,105	3,904,817	3,912,086
3,868,699	3,896,373	3,904,835	3,912,119
3,871,598	3,896,670	3,905,229	3,912,265
3,873,846	3,896,926	3,905,368	3,912,302
3,873,877	3,896,935	3,905,369	3,912,388
3,877,165	3,897,491	3,905,552	3,912,808
3,877,554	3,897,502	3,905,732	

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 22, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds: Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry: Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	2-21-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur: Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-13-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-13-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products: Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-6-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-21-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures: Illumination: Horology; Acoustics; Recorders; Weighing Scales.	12-23-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-2-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-11-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-5-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-13-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	7-10-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-25-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-26-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-18-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-17-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures: Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	4-23-75

Expiration of patents: The patents within the range of numbers indicated below expire during December 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,862,205 to 2,866,972 inclusive
Plant Patents..... Numbers 1,775 to 1,791 inclusive

REISSUES

DECEMBER 23, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

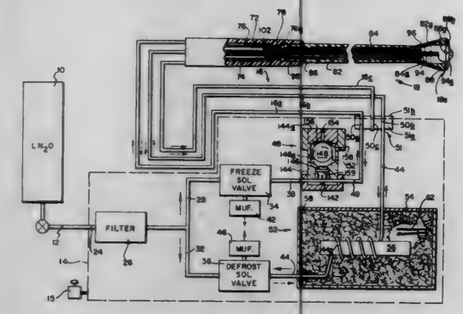
Re. 28,657
CRYOSURGICAL APPARATUS

J. P. Barger, Winchester; William H. Crandell, Lexington, and Thomas W. Gardner, Dearborn Heights, all of Mich., assignors to Dynatech Corporation, Burlington, Mass.

Original No. 3,782,386, dated Jan. 1, 1974, Ser. No. 251,433, May 8, 1972. Application for reissue July 12, 1974, Ser. No. 487,880

Int. Cl.[2] A61B *17/36*

U.S. Cl. 128—303.1 22 Claims



19. Cryosurgical apparatus comprising

A. a probe having a hollow thermally conductive tip,

B. a single fluid refrigerant path extending through the tip, said path having a relatively restrictive part communicating with the interior of the tip and a less restrictive part communicating with the interior of the tip,

C. means for flowing refrigerant at a selected temperature above 0°C along said path so that the refrigerant flows along the more restrictive part of the path into the tip and exhausts from the tip along the less restrictive part of the path so that the refrigerant cools the tip to a first temperature sufficiently low to freeze human tissue, and

D. means for subsequently reversing flow of refrigerant so that the refrigerant flows along the less restrictive part of the path into the tip and exhausts from the tip along the more restrictive part of the path so that the refrigerant warms the tip to a second temperature above 0°C.

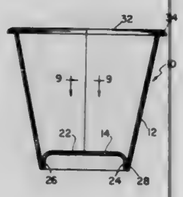
Re. 28,658
INSULATED PLASTIC BUCKET

Gene D. MacDaniel, Lithonia, Ga., assignor to Sweetheart Plastics, Inc., Wilmington, Del.

Original No. 3,664,568, dated May 23, 1972, Ser. No. 879,448, Nov. 24, 1969. Application for reissue Oct. 30, 1973, Ser. No. 410,991

Int. Cl. B65d *3/00, 5/64, 3/10*

U.S. Cl. 229—1.5 B 16 Claims



1. A container comprising:

a wrapped side wall made from generally rigid foam sheet material having a lapped side seam, defining openings at opposite ends thereof;

a preshaped bottom wall made from generally rigid foam sheet material, said bottom wall having its central portion lying generally perpendicular to the axis of the side wall and an annular shirt extending [away from the general plane of the] *outwardly of said* central portion *into proximity with one end of said side wall*, said skirt defining an outer diameter [slightly] *no* less than the inner diameter of [one of] *the* said opening [s] in said container *at said one end of said side wall* whereby said bottom wall may be fitted snugly into said opening *at said one end of said side wall;*

and a heat-sealed seam joining the skirt to said one end of the side wall.

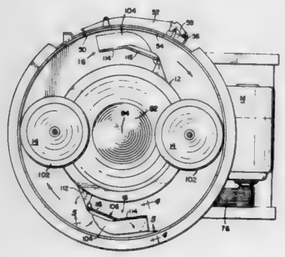
Re. 28,659
SAND-MULLING APPARATUS

Clifford E. Wenninger, deceased, late of Berwyn, Ill., assignor to Pettibone Corporation, Chicago, Ill.

Original No. 3,602,442, dated Aug. 31, 1971, Ser. No. 19,445, Mar. 13, 1970. Continuation of Ser. No. 684,192, Nov. 20, 1967, abandoned. Application for reissue May 17, 1974, Ser. No. 470,751

Int. Cl. B02c *15/00, 23/00*

U.S. Cl. 241—110 7 Claims



4. In a mulling apparatus of the type that embodies a bowl adapted to receive therein a predetermined amount of granular material to be mulled and including a bottom wall and an upstanding cylindrical sidewall, a mulling assembly mounted for rotation in one direction about a vertical axis within the bowl and including a hub and a mulling plow construction fixedly connected to and disposed outwards of the hub, arranged below the level of the hub, and adapted for rotation bodily with the hub, said plow construction including a [platelike] *plate-like* sand-scooping lift plow presenting an upper surface which is inclined downwardly and forwardly with respect to the direction of movement of the plow construction and having inner and outer side edges, said outer side edge being disposed in close proximity to said upstanding sidewall of the bowl, a [platelike] *plate-like* wing structure having an outer side face which opposes the inner face of the cylindrical wall of the bowl adjacent to the lower region of the latter, and embodying leading and trailing sections with respect ot the direction of rotation of the mulling assembly, the trailing section extending upwards from the rear region of the inner edge of the lift plow, the leading section of said wing structure extending upwards from the front region of the inner portion of the [left] *lift* plow, being inclined upwardly and inwardly with respect to the bowl bottom, and being disposed for the most part at a greater distance from said sidewall than

the trailing section to the end that it extends at an obtuse angle with respect to said training section, a side plow having its outer end connected to the front portion of said leading section of the wing structure and its inner end fixedly secured to the hub, said side plow lying close to the botton wall of the bowl and extending in a direction which is generally tangential with respect to the hub, whereby the side plow functions in the manner of a deflector for urging the granular material radially outwardly of the bowl and into the path of movement of the leading section of said wing structure, and means for rotating said mulling assembly in said one direction.

Re. 28,660
DISCRIMINATING APPARATUS FOR MOVING TRANSLUCENT SHEETS

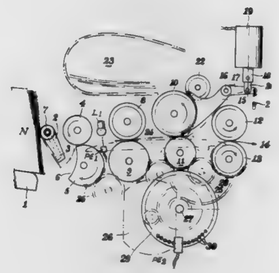
Ronald Sidney Pettet, Portsmouth, England, assignor to De La Rue Instruments Limited, London, England

Original No. 3,731,916, dated May 8, 1973, Ser. No. 148,744, June 1, 1971. Application for reissue Sept. 17, 1973, Ser. No. 397,622

Claims priority, application United Kingdom, June 4, 1970, 26,940/70

Int. Cl.[2] B65H *7/14*

U.S. Cl. 271—263 17 Claims



1. Apparatus for discriminating between moving translucent sheets comprising a sheet transportation means for conveying the sheets in spaced relationship along a flow-line, a single photoelectric detection device positioned on one side of the flow-line and an associated light source positioned on the other side of the flow-line, a first differential amplifier means for producing a first output signal every time the photoelectric detection device detects attenuation of the light source in excess of a first predetermined value and having an input in circuit with the said detection device, and a second differential amplifier means for producing a second output signal every time the photoelectric detection device detects attenuation of the light source in excess of a second different predetermined value greater than said first predetermined value and having an input also in circuit with the said detection device *and means for receiving and utilizing said output signals to discriminate between sheets which produce solely said first output signal and sheets which produce both said first and second output signals.*

Re. 28,661
GOLF SWING TRAINING GLOVE INCLUDING LIGHT PROJECTING DEVICE

Wynn B. Tredway, Sr., P.O. Box 130, Freeport, Pa. 16259

Original No. 3,811,684, dated May 21, 1974, Ser. No. 368,812, June 11, 1973. Application for reissue Jan. 28, 1975, Ser. No. 544,822

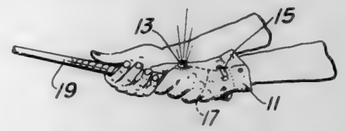
Int. Cl.[2] A63B *69/36*

U.S. Cl. 273—183 B 5 Claims

4. The combination comprising:

a. a [golf] glove adapted to be worn on one hand of a person during a training program: and

b. a light [removably] mounted to said glove at the second metacarpal phalangeal joint of said hand and so



constructed and arranged thereon that when a person wearing said glove properly grips a [golf] club-*like device* at *a starting* [the address] position rays from said light impinge upon an adjacent wall at a preselected *initial* spot thereon.

Re. 28,662
QUICK-CHANGE CHUCK WITH ADJUSTABLE TOOL-HOLDING SOCKET

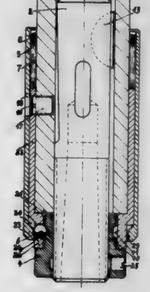
Otto Bilz, Nellingen, and Otto Fauth, Esslingen, both of Germany, assignors to Firma Otto Bilz, Germany

Original No. 3,473,815, dated Oct. 21, 1969, Ser. No. 652,602, July 11, 1967. Application for reissue June 14, 1972, Ser. No. 262,732

Claims priority, application Germany, Apr. 27, 1967, 92267

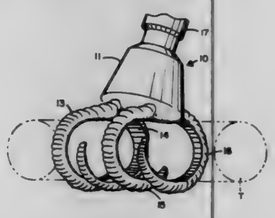
Int. Cl.[2] B23B *31/22*

U.S. Cl. 279—75 8 Claims



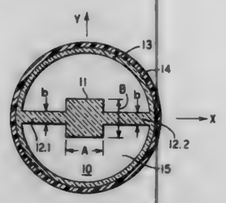
1. A quick-change chuck comprising a cylindrical shank having a tubular wall, a tool socket axially slidable within said shank and adapted to receive a tool, an adjusting nut adapted to be screwed upon the front end of said socket for shifting said socket in its axial direction relative to said shank, said nut having a cylindrical neck portion and a peripheral groove within said neck portion, said groove having outwardly inclined flanks, a plurality of locking balls movable substantially radially into and out of said groove, and a spring-biased control sleeve guiding the radial motion of said balls, and further comprising a guide sleeve fitted over said shank and, in turn, surrounded by said control sleeve, said guide sleeve having on its front end, an annular neck, of a smaller diameter, forming an inner shoulder adapted to abut against the front end of said shank, wherein said balls are disposed.

Re. 28,663
FLUID MOTOR AND MATERIAL HANDLING APPARATUS AND THE LIKE UTILIZING SAME
James I. Baer, Lakeland, Fla., assignor to Baka International Marketing Corporation, New York, N.Y.
Original No. 3,343,864, dated Sept. 26, 1967, Ser. No. 493,758, Oct. 7, 1965. Application for reissue Sept. 22, 1969, Ser. No. 871,809
Int. Cl. B66c *1/46*
U.S. Cl. 294—99 R 21 Claims



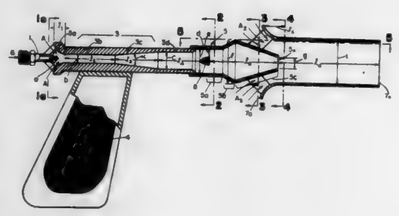
[1. An apparatus for gripping objects and the like comprising a base member, a pair of tubular members each supported at one end to said base member and normally extending relatively straight, each of said tubular members being closed at its extended end and each comprising a yieldable extendable side wall connected along the edges thereof with a relatively non-extendable side of said member, and means to direct fluid into said tubular members under pressure for causing extension of said extendable walls thereof thereby curving said non-extendable sides facing towards the other whereby said members curve in response to fluid pressure therein toward one another.]

Re. 28,664
SINGLE MATERIAL OPTICAL FIBER STRUCTURES INCLUDING THIN FILM SUPPORTING MEMBERS
Stewart Edward Miller, Locust, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Original No. 3,813,141, dated May 28, 1974, Ser. No. 308,833, Nov. 22, 1972. Application for reissue Feb. 3, 1975, Ser. No. 546,293
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96 WG 10 Claims



1. An optical fiber structure for waveguiding optical radiation which comprises a filament of a unitary optically transparent structure whose cross section is characterized by a relatively thick [cross section] *cross-sectional* area portion of a fiber optical material at a central portion thereof and by relatively thin cross-sectional area portions of the same material contacting at least two extremities of the central portion, said thin portions *having thicknesses larger than the wavelength of the optical radiation and* providing mechanical support for the central portion, and said thin portions extending in a direction away from the central portion for distances which are at least an order of magnitude larger than the wavelength of the optical radiation, whereby the optical radiation can be propagated in at least one mode through the optical fiber.

Re. 28,665
HEAT GUN
Dimiter S. Zagoroff, 4 Brighman St., East Boston, Mass. 02128
Original No. 3,779,694, dated Dec. 18, 1973, Ser. No. 197,207, Nov. 10, 1971. Application for reissue Oct. 29, 1974, Ser. No. 518,241
Int. Cl.[2] F23D *13/12*
U.S. Cl. 431—347 7 Claims



1. A hand held gun for providing a flow of heated air in the 250° F to 1,000° F range against a work object relying upon fuel alone without assistance of blowers or compressors, said gun comprising the combination of a gaseous fuel jet adapted for connection to a conventional fuel gas source such as propane having a stoichiometric burning temperature above 3,000° F, a jet pump activated by said gas jet and having an opening for drawing atmospheric air for combustion into a sub-atmospheric pressure region produced by said jet, said jet pump constructed to impart velocity to said combustion air by mixing, an enlarged pressure recovery passage into which the mixture of gaseous fuel and combustion air proceeds, said recovery passage constructed to convert velocity head of said gases to a pressure head exceeding atmospheric pressure, an internal combustion chamber, said chamber having an entry into which said pressure recovery passage discharges, a flame holding means at said entry and an outlet discharging combustion gases, the effective wetted perimeter of the flow cross-section of said outlet being at least 25 percent greater in length than the perimeter of a single circle of identical cross-sectional area, providing an extended interface between combustion gases discharging from said outlet and atmospheric air, and a temperature-limiting structure extending downstream of said outlet, said structure preventing direct access of the work object to said outlet and to the combustion gases emitting therefrom and defining an ambient air propelling and mixing zone through which said combustion gases flow preceding said work object, said temperature-limiting structure being open to admit atmospheric air freely, progressively to the stream of combustion gases as they proceed through said structure, the respective parts of said gun constructed to burn said fuel in substantially stoichiometric conditions and discharge said combustion gases through said outlet at a temperature exceeding 3,000° F and a velocity in excess of 4,000 feet per minute, said gun, through the cooperation of said extended combustion gas-air interface, effectively producing a flow comprised in major part of ambient air propelled and heated by said combustion gases, the effective length of said temperature-limiting structure downstream of said outlet determining the temperature of the resultant flow at the output end.

PLANT PATENTS

GRANTED DECEMBER 23, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,818
ROSE PLANT
Dorothy Jean Searles Bailey, Bakersfield, Calif., assignor to San Joaquin Rose Co., McFarland, Calif.
Filed May 10, 1973, Ser. No. 359,094
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—18 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a moderately tall, well-shaped bush having upright and well-branched canes; abundant, medium large, dark green foliage; continuous abundant bloom throughout the growing season, with flowers borne mostly singly on strong, long and medium stems; pointed buds of approximately 1¼ inches in length, opening into a large high-centered bloom of regular petal conformation, very double with 50 to 55 petals, and when fully opened, from 4 to 5 inches across the whole bloom; a distinctive color range chiefly in the range of RHS 62B gradually lightening to RHS 62C and 62D and a strong Centifolia fragrance.

3,819
ROSE PLANT
Dorothy Jean Searles Bailey, Bakersfield, Calif., assignor to San Joaquin Rose Co., McFarland, Calif.
Filed May 10, 1973, Ser. No. 359,095
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—19 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a neat upright plant of good vigor and typical hybrid tea habit of growth, good adjustability to a wide range of soil and climatic conditions, medium large, Dark Green foliage which is essentially disease resistant; abundant bloom production throughout the growing season, borne usually singly on long strong stems but also in loose clusters of two or three; oval, pointed buds which open to high-centered blooms that are distinctively regular and well-imbricated, with 40–50 long-lasting petals; a distinctive and stable petal coloration in the bright pink range, the general color effect of the opening bud being slightly redder than RHS 52a, the newly opened bloom RHS 52a, and the bloom three days open, slightly lighter than RHS 52a; and a moderate tea fragrance.

3,820
ROSE PLANT
Dorothy Jean Searles Bailey, Bakersfield, Calif., assignor to San Joaquin Rose Co., McFarland, Calif.
Filed May 10, 1973, Ser. No. 359,097
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—20 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a moderately tall, well-shaped vigorous plant having upright and well-branched canes; abundant, medium large, heavy dark green foliage that has markedly superior resistance to mildew and rust; continuous abundant bloom production from early spring until fall dormancy, with flowers borne single on long stems or two or several on a branch, each on strong, medium long stem; urn-shaped buds of approximately one inch length, of a bright red color, Orient Red $8^{1/2}$, with two or three foliaceous sepals; a high-centered bloom when half-opened, of a bright orange red color, general effect Signal Red $7^{1/2}$; a graceful mature coloration of Geranium Lake 20, shading to Geranium Lake 20/1; a medium sized bloom consisting of from 40 to 50 petals arranged regularly; and a light spicy fragrance.

3,821
KALANCHOE PLANT
Roy N. Pittman, Amarillo, Tex., assignor to J and L Plants, Incorporated, Canyon, Tex.
Filed May 13, 1974, Ser. No. 469,700
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of kalanchoe plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a short, self-branching, upright and compact habit of growth, attractive, flexible foliage of medium size and Fern Green color; an early blooming habit, ranging from about 7 to 10 days earlier than its pollen parent, as well as earlier than most other hybrid varieties; the profusion of its blooms which are borne on short, sturdy flower stems above the foliage; a distinctive and attractive cinnamon flower color when the flowers first open, becoming lighter and more golden, between apricot and burnt orange as the flowers mature; a pleasant and distinctive lemon fragrance of the flowers; an adaptability to photoperiod manipulation for year around flowering; and especial suitability for potted plant use.

3,822
ROSE PLANT
Samuel D. McGredy, P.O. Box 14–100, Panmure, Auckland, New Zealand
Filed Oct. 16, 1974, Ser. No. 514,771
Int. Cl. A01h *3/00*
U.S. Cl. Plt.—12 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by flowers of unique bicolor tonality combining red obverse coloring of the petals with yellow, silver-white and red tones on the reverse and high center, spiral formation of petals that unfurl spirally during the development period and by a plant of tall, upright habit of growth having an abundance of large, leathery, lustrous leaves which are reddish to purple when young and dark green when mature.

3,823
PLUM TREE
Caroline Payne Harris, Bakersfield, Calif., assignor to Plumwood Associates, Bakersfield, Calif.
Filed Dec. 9, 1974, Ser. No. 531,091
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—38 1 Claim

1. A new and distinct variety of plum tree, substantially as illustrated and described, which is vigorous, spreading, dense, round-topped, hardy, freely-suckering, foliated with oblanceolate leaves having an acuminate tip, blooming early with white, uniform flowers borne in small clusters on evenly dispersed spurs, and a productive bearer of large, substantially globose, clingstone fruit having purple skin with a silver-grey bloom, and deep red flesh; the tree being characterized, in addition to its profuse suckering and ease of asexual reproduction from rooted suckers and hardwood cuttings, by bearing fruit—of excellent quality—having a general exterior appearance similar to the Santa Rosa, but ripening a few days later and having distinctive deep red flesh.

PATENTS

GRANTED DECEMBER 23, 1975

ERRATA

For CLASS	See PATENT NO.
052–183	3,927,518
104–148	3,927,735
339–278 C	3,927,841
426–573	3,928,252
427–358	3,928,627
427–387	3,928,629
428–378	3,928,666
235–061.11 E	3,928,827
235–153 AK	3,928,830
340–172.5	3,928,857

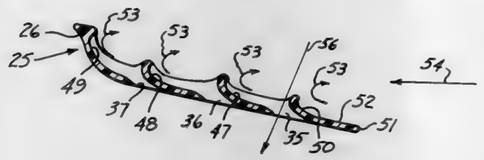
PATENTS

GRANTED DECEMBER 23, 1975

NOTE—A cross reference listing of applications published under Trial Voluntary Protest Program on January 28, 1975 is located in the back of this Issue. These entries will be in numerical order by document publication number.

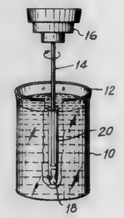
GENERAL AND MECHANICAL

3,927,421
HELMET VISOR
Alan A. Simon, 1333 N. Martel Ave., Los Angeles, Calif. 90046
Filed Aug. 23, 1974, Ser. No. 500,044
Int. Cl.² A61F 9/04
U.S. Cl. 2—12 **12 Claims**



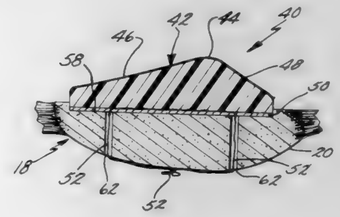
1. A visor for a rigid helmet, said helmet including a smooth crown section having a cavity to receive a head and protect its top, back and sides, a face aperture facing forwardly and opening into the cavity, and a brow surface extending laterally above the face aperture, said visor comprising: an attachment member for attachment to said brow surface; and a shield member integral with, and projecting forwardly from, the attachment member, the shield member, except where contiguous to the attachment member, being bounded by a peripheral edge, a spoiler slot passing through the shield member extending transversely, and being bounded at the lower surface of the shield member by a forward and a rearward slot edge, said slot edges being spaced apart from each other, and a laterally-extending wind deflector surface adjacent to the rearward slot edge at the upper surface of the shield member, said wind deflector surface extending rearwardly and upwardly and terminating in a curl, whereby upwardly and swirlingly to deflect air which flows through the slot and impinges upon it so as to cause an eddying turbulent condition at the confluence of airstreams flowing directly upon the upper surface of the shield member and through the slot upon the wind deflector surface, the slot being formed in a plurality of laterally disposed portions, and a reinforcement rib between each pair of said portions extending between and interconnecting the forward and rearward edges of the slot.

3,927,422
PROSTHESIS AND METHOD FOR MAKING SAME
Philip Nicholas Sawyer, 603 Third St., Brooklyn, N.Y. 11215
Filed Dec. 12, 1973, Ser. No. 424,062
Int. Cl.² A61F 01/24
U.S. Cl. 3—1 **13 Claims**



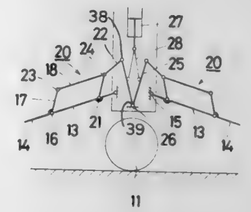
1. A method of improving the performance of a graft prosthesis comprising making the prosthesis of collagen and increasing the negative surface charge of the intimal surface thereof by a succinylation reaction.

3,927,423
PATELLAR IMPLANT AND METHOD
Alfred B. Swanson, 2949 Bonnell S.E., Grand Rapids, Mich. 49506
Filed June 7, 1974, Ser. No. 477,260
Int. Cl.² A61F 1/24
U.S. Cl. 3—1.91 **12 Claims**



1. A surgically implantable prosthesis for replacing the underlying cartilage on the posterior surface of the patella, the posterior surface of the patella having a recess provided therein, said prosthesis comprising: a body of flexible inert material, said body having a first compound articular surface corresponding generally to that of the posterior surface of a normal patella for gliding engagement with the femoral condyles; a second surface of said body opposite saaid first surface being adapted for positioning in the recess formed in the posterior surface of the patella; and means for securing said body in the recess.

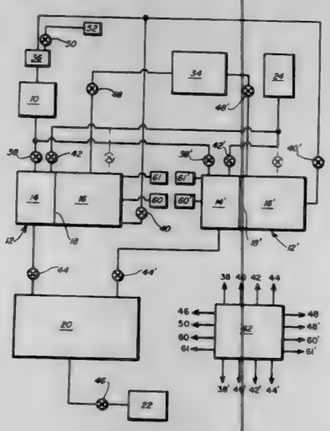
3,927,424
MECHANICAL HAND
Hideyo Itoh, Tokyo, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan
Filed Jan. 21, 1974, Ser. No. 435,214
Claims priority, application Japan, Jan. 19, 1973, 48-8431
Int. Cl.² A61F 1/06
U.S. Cl. 3—12.6 **6 Claims**



1. A mechanical hand comprising:
a first free rotation joint;
a second free rotation joint;
a third free rotation joint;
a fourth free rotation joint;
a fifth free rotation joint;
a sixth free rotation joint;
a seventh free rotation joint;
a first rod;
a second rod;
a third rod;
a projecting rod;

a projecting bar;
a first finger element;
a second finger element;
a first stationary surface;
a second stationary surface;
said second finger element and said projecting bar being rigidly joined at a predetermined angle;
said first joint joining said first finger element to said first stationary surface;
said second joint joining said first finger element to the junction of said second finger element and said projecting bar;
said third joint joining said first rod and said projecting bar;
said fourth joint joining said second rod, said first rod and said projecting rod;
said fifth joint joining said first finger element and said projecting rod;
said sixth joint joining said second rod to said third rod;
said seventh joint joining said third rod to said second stationary surface;
whereby an object may be gripped upon the application of pressure to said third rod.

3,927,425
SEWERAGE TREATMENT SYSTEM
R. Edward Delaney, New Britain, and Alan H. Cornish, Newington, both of Conn., assignors to Koehler-Dayton, Inc., New Britain, Conn.
Continuation of Ser. No. 304,760, Nov. 8, 1972, Pat. No. 3,815,159. This application Apr. 22, 1974, Ser. No. 462,945The portion of the term of this patent subsequent to June 11, 1991, has been disclaimed.
Int. Cl.² E03D *5/14*
U.S. Cl. 4—10 **8 Claims**

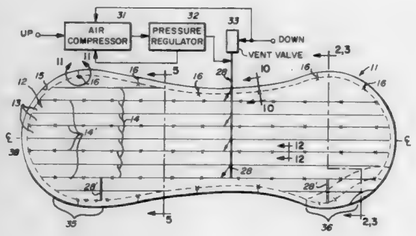


1. A sewerage treatment system comprising
water closet means,
bathing facility means,
first and second filtrate compartments,
means including filtering media for selectively directing at least a portion of the liquid component of the effluent flushed from said water closet means into either of said first or second filtrate compartments,
means for selectively directing at least a portion of the effluent discharge from said bathing facility means into either of said first or second filtrate compartments,
means for selectively recirculating the liquid in either of said first or second filtrate compartments to said water closet means for flushing same,
means for operating the system in a first mode of operation wherein
at least a portion of the liquid component of the effluent flushed from said water closet means is directed into one of said filtrate compartments,
the liquid in said one filtrate compartment is selectively recirculated to said water closet means, and
at least a portion of the effluent discharged from said bathing facility means is directed into the other one of said filtrate compartments, and
means for alternately operating the system in a second mode of operation wherein
at least a portion of the liquid component of the effluent flushed from said water closet means is directed into the other filtrate compartment,
the liquid in said other filtrate compartment is selectively recirculated to said water closet means, and
at least a portion of the effluent discharged from said bathing facility means is directed into said one filtrate compartment.

3,927,426
MALE AND FEMALE URINAL
Paul E. Geddes, Sturgis, Mich., assignor to GNP Plastics Corporation, Grand Rapids, Mich.
Filed Mar. 3, 1975, Ser. No. 554,639
Int. Cl.² E03D *13/00*
U.S. Cl. 4—110 **10 Claims**

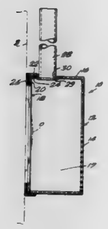
1. A plastic blow molded container adapted as a urinal including a body, a neck extending from the body and tapering to a smaller cross section at one end thereof and formed inclinedly to the body of said container, an elongated handle formed integrally with said neck and separated therefrom by an integral sealed portion, a smaller diameter end of said neck forming the terminous of said neck, and replaceable adapter means for one or the other of female and male usage and including a portion adapted to form a press fitting connection with the end of said neck, and a hinged closure means proportioned to fit into and form a seal over the open end of said adapter means whereby the interior of the urinal is sealed.

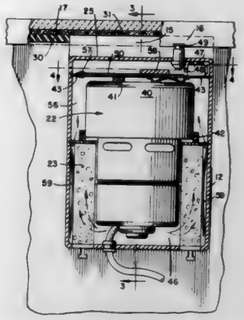
3,927,427
SWIMMING POOL COVER
Harry Eugene Aine, 1804 Stierlin Road, Mountain View, Calif. 94040
Continuation-in-part of Ser. No. 367,198, June 5, 1973, abandoned. This application Oct. 21, 1974, Ser. No. 516,204
Int. Cl.² E04H *3/16, 3/19, 3/18*
U.S. Cl. 4—172.14 **27 Claims**



1. In a swimming pool cover:
cover means for floatation in a swimming pool, said cover means being bendable and having positive buoyancy relative to the pool water when in use for overlaying a region of the pool;
sinking means operatively coupled to said cover means for selectively sinking within the pool liquid, when actuated, a selectively sinkable portion of said cover to a lower level than other portions of said cover means which have a positive buoyancy to cause said cover means to bend and thus to be folded within the pool, thereby opening a region of the pool for swimming.

3,927,428
ADJUSTABLE BATHTUB OVERFLOW LIQUID CONTROL
Emile Jette, 1328 N.E. 110 Terrace, Miami, Fla. 33161, and Maxwell Guldin, 8361 Allison Road, Miami Beach, Fla. 33141
Filed June 26, 1975, Ser. No. 590,613
Int. Cl.² E03C *1/244*
U.S. Cl. 4—206 **6 Claims**





1. An adjustable bathtub overflow liquid control comprising:
an adapter comprising a ring sized to fit about the drain opening of a conventional bathtub overflow drain and including a smooth surface and including means for attachment of the smooth surface of the adapter to the bathtub surface; and
a housing including means connecting the housing to the ring adapter, said housing and ring adapter being effective to block liquid flow through the drain opening, and said housing including an opening to permit fluid to flow through the opening and out the drain opening,
a snorkle tube having a first end and a second end, said first end being snugly received in the opening and said second end being spaced from said first end and being open to permit water to flow through the snorkle tube and housing.

3,927,429
TOILET DEODORIZING ACCESSORY INCLUDING LEAK PROOF CONNECTION
Raymond H. Pearson, 627 Sherwood Drive, Richardson, Tex. 75080
Filed Jan. 18, 1974, Ser. No. 434,519
Int. Cl. E03d *9/05, 9/04;* **A47k** *3/22*
U.S. Cl. 4—213 **1 Claim**

1. A ventilator accessary for toilets, said accessary comprising the combination of a multi-layer seal between the water tank and the water tank cover of said toilet, a hollow flat nozzle located within a gap in said seal, and an electrically driven suction means in communication with said nozzle whereby elimination odors may be drawn through the water distribution channel and overflow pipe of said toilet in seriatim with said nozzle and blower, said multi-layer seal comprised of a relatively firm lower portion contacting the top rim of said water tank and having a gap so as to receive said nozzle, and a relatively compressible upper portion contacting the inner periphery of said water tank cover and also contacting the lower portion of said seal or integral therewith.

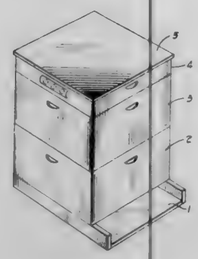
3,927,430
PATIENT SELF-TRANSPORTER
Ira R. Allen, 4521 S. Dogwood Place, Tucson, Ariz. 85704
Filed Nov. 26, 1973, Ser. No. 419,125
Int. Cl. A47b *83/04*
U.S. Cl. 5—81 R **1 Claim**

1. A patient self-transfer device comprising:
a. a rigid, planar surface structure to support the surface thereof in a horizontal plane between two juxtaposed objects such as bed and wheelchair;
b. two downhanging members each of which is attached rigidly and normal to the supporting surface structure, said members being arranged to contact said objects to secure the structure in position for self-transfer of a patient over said surface from one object to the other object;
c. wherein the width of the planar surface is equal to one-fourth its length;
d. wherein the included angle between the planes of the downhanging members is 40°, and the angle formed on either side of said 40° angle by the major axis of the planar surface structure is 70°; and
e. wherein a compression strut is secured to the middle lower portions respectively of the downhanging members therebetween to strengthen the structure because the forces against the outside faces of said members force them inwardly.

3,927,431
VENTILATING SPACER FOR BEEHIVE
Henry L. Wallace, 214 E. Main St., West Union, Ohio 45603
Filed Apr. 13, 1973, Ser. No. 350,758
Int. Cl.² A01K *47/00*
U.S. Cl. 6—1 **9 Claims**

1. A ventilating spacer for a beehive having a plurality of vertically stacked supers defining upstanding sidewalls and a shallow, flat cover defining a roof for the hive, and having

flanges extending downwardly, outwardly of daid sidewalls, respectively, said spacer comprising a respectively, said spacer comprising a relatively shallow, rectangular spacer frame of four sidewalls, open both at the top and bottom, and unobstructed within its said spacer frame sidewalls, said spacer frame sidewalls being adapted to be in vertical alignment with



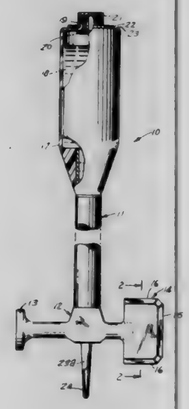
said upstanding sidewalls of said supers and within said flanges of said cover and being further adapted to be removably disposed intermediate the said uppermost super and said cover and in sealing relationship with said upstanding sidewalls and said spacing frame having oppositely disposed ventilation openings selectively permeable to insects smaller than honey bees and bee moths.

3,927,432

HAMMER, KNIFE AND GLUE GUN COMBINATION

Leif B. Dahl, 3123 49 Ave., NE., Portland, Oreg. 97213

Filed Feb. 24, 1975, Ser. No. 552,139
Int. Cl.² B25F *1/00*
U.S. Cl. 7—8.1 R **3 Claims**



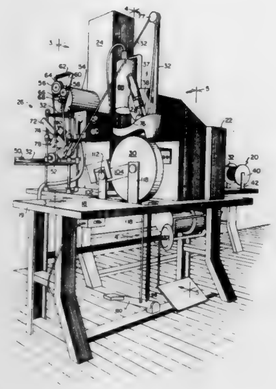
1. A hammer, knife, and glue gun combination device, comprising a metal handle, a head with a flanged portion and a knife portion secured to said handle, a nozzle extending from said head and a squeeze bottle secured to said handle having removable cap means.

3,927,433

WELT APPLICATION PROCESS FOR UNIT SOLES AND WEDGE PLATFORMS

John DeCoulos, Peabody, Mass., assignor to Boston Machine Works Company, Lynn, Mass.

Division of Ser. No. 374,508, June 28, 1973, Pat. No. 3,824,643. This application Apr. 8, 1974, Ser. No. 458,903
Int. Cl.² A43D *9/00*
U.S. Cl. 12—142 D **1 Claim**



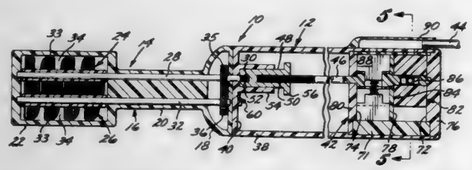
1. A process for applying welting to a variable thickness shoe component, said process comprising the steps of advancing from a supply spool a length of said welting, applying cement to a surface of said welting, drying said cement on said surface to provide a coating, metering predetermined increments of said welting, feeding said welting together with said shoe component between a drive wheel and an adaptor wheel defining a nip therebetween with said shoe component in contact with said adaptor wheel and said welt in contact with said drive wheel, heat activating portions of said coating as said welting advances in said nip, severing said welting at said nip, the diameter of said drive wheel being less than one-tenth the diameter of said adaptor wheel, and accomodating the distance between said adaptor wheel and said drive wheel to the varying combined thickness of said shoe component and said welt as they pass through said nip without jamming.

3,927,434

WATER POWDERED ROTARY BRUSH

Fred M. Burgess, P.O. Box 70, San Fernando, Calif. 91340

Filed May 14, 1973, Ser. No. 360,048
Int. Cl.² A46B *13/06*
U.S. Cl. 15—24 **7 Claims**



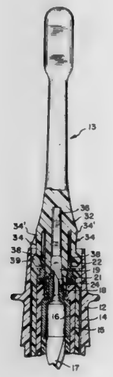
1. A water powered rotary brush which comprises housing means; a pair of generally cylindrical brushes rotatably mounted in said housing means in a generally parallel array with one side of the brush pair exposed outside of said housing means and the other side of the brush pair recessed in said housing means; drive means in said housing means, said drive means including a fluid motor having fluid inlet and outlet conduit means, and drive connection means from said fluid motor to said brushes arranged to drive said brushes in opposite directions of rotation so that the exposed portions of said brushes move toward each other; and drive control means associated with said drive means for selectively actuating said drive means between on and off drive conditions, said drive control means comprising clutch means in said drive connection.

3,927,435

TOOTHBRUSH STEM ATTACHMENT

Michel A. Moret, and Jean-Pierre Musy, both of Geneva, Switzerland, assignors to Les Produits Associes, SA, Geneva, Switzerland

Filed Dec. 20, 1972, Ser. No. 316,980
Int. Cl.² A46B *13/02*
U.S. Cl. 15—176 **3 Claims**



1. A toothbrush stem attachment adapted to be attached to and driven by a hand appliance having an opening for receiving said toothbrush stem and an annular projection for retaining the toothbrush stem to said appliance, which attachment comprises

a. a molded stem having an integral coupling at the rear end thereof and laterally-extending bristles forming a brush at the front end thereof,

b. said coupling including a flared section flaring three-dimensionally outwardly and rearwardly, a driving socket section extending rearwardly beyond said flared section, and a pair of narrow longitudinally-extending resilient cantilever detent fingers radially spaced from the socket section and terminating between the rearward ends of the flared and socket sections,

c. said socket section having a rotationally symmetrical exterior surface and an interior surface which is cylindrical at the open end thereof and is of non-circular cross-section deeper in the socket,

d. a portion of said flared section overlapping a portion of said socket section in spaced relationship therewith and the inside of the socket section extending into the stem beyond the region of said overlapping,

e. said resilient fingers being on opposite sides of the stem with the fixed ends of the fingers integral with said flared section and forward of the rear end of the flared section,

f. the sides of said fingers being spaced from the adjacent portions of the flared section,

g. the free ends of said fingers having respective detent grooves on the inside thereof which are curved in arcs which are rotationally symmetrical about the axis of said socket section, said fingers being adapted to extend over said annular projection, and

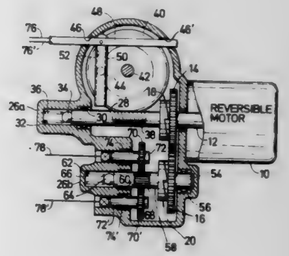
h. the free ends of said fingers having respective outward projections opposite said detent grooves with the outer faces curved in arcs which are rotationally symmetrical about the axis of said socket section.

3,927,436

MULTIPLE-SHAFT DOUBLE-MOTION DRIVE MECHANISM

Naohiko Inoue, and Youichi Moori, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., and Jidosha Denki Kogyo Kabushika Kaisha, both of Yokohama, Japan

Filed Feb. 15, 1974, Ser. No. 442,824
Claims priority, application Japan, Feb. 19, 1973, 48-19209
Int. Cl.² B60S *1/08, 1/20, 1/44*
U.S. Cl. 15—250.17 **8 Claims**

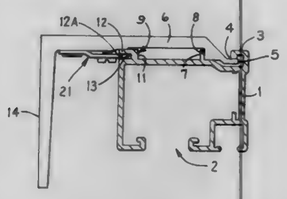


1. A combination of a double-motion drive mechanism and a wiper assembly for a lamp of a lighting device, in which said drive mechanism comprises a reversible motor having an output shaft rotatable in first and second directions depending upon the polarity of a current energizing the motor, a first gear rotatable with the output shaft of the motor, a second gear in mesh with the first gear, first power output means to be driven by said first gear for producing a power output in the form of a linear reciprocating motion, second power output means to be driven by said second gear for producing a power output in the form of a rotary motion, a first one-way clutch connected between said first gear and said first power output means for transmitting to the first power output means the rotation of the output shaft of the motor in said first direction, and a second one-way clutch connected between said second gear and said second power output means for transmitting to the second power output means the rotation of the output shaft of the motor in said second direction and in which said wiper assembly comprises a wiper arm pivotally movable over said lamp between an operative position having its leading end located substantially over a center of the lamp and an inoperative position away from the lamp, a blade carrying arm carrying thereon a wiper arm and connected at one end to said wiper arm and rotatable about said leading end of the wiper arm, a first flexible line connected at one end to said first power output means of the drive mechanism and at the other end to said wiper arm for moving the wiper arm between said operative and inoperative positions as said first power output means produces said linear reciprocating motion, and a second flexible line which is connected at one end to said second power output means of the drive mechanism and at the other end to said blade carrying arm for driving the blade carrying arm to rotate about said leading end of the wiper arm as said second power output means produce said rotary motion.

3,927,437
POSITIVELY SUPPORTED CAM FOR ENGAGING A TRAVERSE ROD

James A. Ford, Sherman Township, St. Joseph County, Mich., assignor to Kirsch Company, Sturgis, Mich.

Filed Feb. 14, 1974, Ser. No. 442,378
Int. Cl.² A47H *1/04*
U.S. Cl. 16—94 R 11 Claims



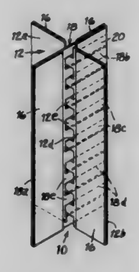
1. In combination with a bracket having a rod receiving surface and a traverse rod having a rod portion defining thereon a clamping surface which is substantially parallel with and facing in the same direction as said receiving surface when the rod is in an installed position thereagainst, said clamping surface being spaced from said receiving surface, a fastening clip comprising:

a pivoting portion including means for pivoting said clip to said bracket at a point spaced from the traverse rod, and a holding portion which is substantially parallel to said receiving surface but spaced therefrom for engaging said clamping surface when the rod portion is positioned between said receiving surface and said holding portion; an opening through said holding portion of said clip, and threaded means extending through said opening and threadably engaged with said bracket for causing the holding portion of said clip to bear against said clamping surface for urging said rod snugly against said receiving surface, said threaded means being independent of and spaced from said pivoting means.

3,927,438
FLEXIBLE TAPE FASTENER OR HINGE

Melvyn Blake, Framingham, Mass., assignor to Norton Company, Worcester, Mass.

Filed Nov. 22, 1974, Ser. No. 526,103
Int. Cl.² E05D *7/00*
U.S. Cl. 16—150 7 Claims



1. A flexible tape having an X-like configuration, in cross section, a central axis and four legs providing a longitudinally continuous structure adapted to extend along, be secured to and join a plurality of adjacent members together so that the central axis of the X-like configuration coincides generally with a juncture formed by the members to be joined, comprising:

a first flexible perforated strip of predetermined width forming a first half of the X having

opposite side edges,

opposite side portions adjacent the side edges forming first and second legs of the X and adapted to be fastened to the members to be joined,

a central portion between the opposite side portions and through which the central axis of the X passes,

a plurality of apertures in the central portion spaced longitudinally along the central axis, a plurality of longitudinally spaced connecting portions between the apertures in the central portion integral with and connecting the opposite side portions;

a second slotted flexible strip of predetermined width forming a second half of the X having

opposite side edges,

opposite side portions adjacent the side edges forming third and fourth legs of the X, and adapted to be fastened to the members to be joined,

a plurality of longitudinally spaced elongated slots in one of the opposite side portions of the second strip extending inwardly a predetermined distance from one of the side edges interrupted by entrances to the slots to the other one of the opposite side portions of the second strip,

a plurality of longitudinally spaced elongated integral connecting portions between the slots in a slotted one of the opposite side portions and extending from the other one of the opposite side portions through the apertures and beyond the central portion in the first perforated strip;

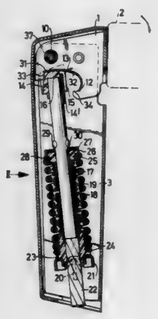
a continuous flexible elongated backing strip of a transverse width less than the length of the slots adhesively secured to at least one side face of the slotted side portion and elongated connecting portions therein,

whereby the first and second flexible strips are locked and hingedly connected together in an intermeshing and crossing relationship to form the continuous X-like tape structure.

3,927,439
HINGE

Wilhelm Gronbach, Dr. Fritz Huber-Strasse No. 73, 8090 Wasserburg, Germany

Filed Feb. 20, 1974, Ser. No. 444,116
Claims priority, application Germany, Feb. 20, 1973, 2308361; Apr. 6, 1973, 2317397; May 7, 1973, 2322967
Int. Cl.² A47H *15/00*
U.S. Cl. 16—190 8 Claims



1. A hinge adapted to balance covers or flaps or refrigerating chests, comprising:

a stationary leaf hinge member;

a movable leaf hinge member pivotally mounted on said stationary leaf hinge member;

a bearing surface on one of said hinge members displaced from the pivotal axis of said leaf hinge members;

a bearing element mounted on the other of said hinge members and riding on said bearing surface;

a guiding-rod having an abutment stop means thereon;

first means pivotally mounting one end of said guiding-rod on the stationary leaf hinge member and including nut means fixed to said stationary leaf hinge member with said one end of the rod being rotatably engaged with said nut means;

second means connecting the other end of said guiding-rod to said bearing element so that, upon opening or closing said hinge, said bearing element, in following said bearing surface, causes said guiding-rod to move axially through said nut means while pivoting about said one end of said guiding-rod;

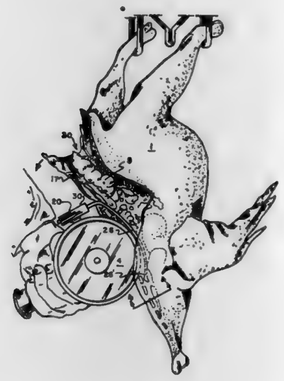
a pre-stressed compression spring mounted on said guiding-rod and bearing on one end against said abutment stop means and on the other end against said nut means imposing an axial force on said guiding-rod;

said guiding-rod and said nut means defining mutually coacting means for braking movement of said guiding-rod during opening and closing of said hinge comprising a first set of coarse pitch screw threads defined on the outer periphery of the one end of said guiding-rod, and a second set of coarse pitch screw threads defined on the internal surface of said nut means, said sets being complementary and of the type having a helix angle in the order of 20° and being threadedly engaged forcing said guiding-rod to undergo a rotational braking movement when moving through said nut means.

3,927,440
METHOD OF EVISCERATING ANIMALS AND FOWL

Millard S. Sindler, 3701 Twin Lakes Court, Randallstown, Md. 21133, and Russell Sindler, 2413 Hal Circle, Pikesville, Md. 21209

Division of Ser. No. 242,341, April 10, 1972, abandoned. This application Oct. 10, 1973, Ser. No. 404,998
Int. Cl.² A22C *25/18*
U.S. Cl. 17—52 1 Claim

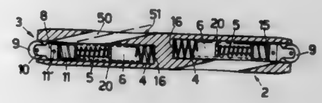


1. A method of extracting the vertebrae and viscera from fowl wherein the viscera is attached to the cavity lining of the fowl adjacent the vertebrae, comprising, the steps of forming an opening in the fowl and the cavity lining in the vicinity of the cloaca, extending means for supporting the cavity lining along the inner surface of the lining adjacent each side of the vertebrae, moving a cutting blade over the outside surface of the fowl along each side of the vertebrae through the length of the fowl and to the depth of the lining support, thereby severing the vertebrae and a portion of the cavity lining to which the viscera is attached from the remainder of the fowl.

3,927,441
ROPE STRETCHER PROVIDED WITH IMPROVED UNCLAMPING DEVICE

Renato Anzini, Minusio, Switzerland, assignor to Ampaglas S.p.A., Italy

Filed Feb. 26, 1974, Ser. No. 445,979
Claims priority, application Italy, Feb. 26, 1973, 20832/73
Int. Cl.² F16G *11/00*
U.S. Cl. 24—136 4 Claims



1. A rope stretcher for clamping cables comprising: a casing having a bore and a cable clamping passage defined therein in intersecting relation; a plunger including a rod extending longitudinally in said bore; a clamping member rotatably mounted at a first end of said plunger closest to the intersection of said bore and said passage; and a first spring positioned to bias said plunger in said bore toward said intersection of said bore and said passage; said rope stretcher being characterized by:

a short annular cylinder slidably encircling a portion of said plunger rod;

stop means adjacent said first end of said plunger for preventing said cylinder from sliding beyond said first end;

shoulder means on said plunger rod at a location spaced from said first end;

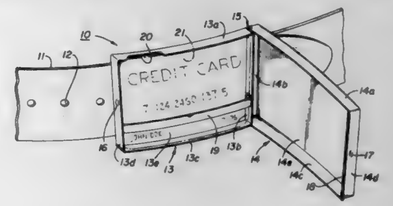
auxiliary spring means encircling said plunger rod between said cylinder and said shoulder means for biasing said cylinder toward said first end of said plunger; and

actuating means for selectively displacing said cylinder along said plunger rod against the bias of said auxiliary spring means.

3,927,442
CLOTHING BELT BUCKLES

James W. Foster, 1267 2nd St., Sarasota, Fla. 33577

Filed Nov. 5, 1974, Ser. No. 520,933
Int. Cl.² A44B *11/00*; A41D *25/04*
U.S. Cl. 24—163 K 1 Claim



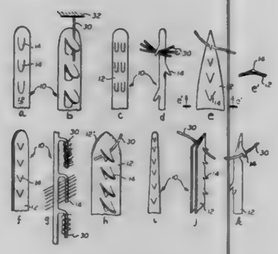
1. A buckle for a belt comprising: a body comprising a rear wall surface, a plurality of side walls integrally formed with said rear wall and depending therefrom to form a receptacle for credit cards and the like, adjacent ends of said side walls joined one to the other to form a continuous wall for said receptacle, one of said side walls having at least one recess therein to expose a portion of the volume of the receptacle whereby credit cards and the like stored in said receptacle may be readily removed; a narrow strap joining two opposing ones of said depending side walls to partially enclose said receptacle and spaced apart from the remaining opposing walls, which remaining walls include said wall having at least

one recess therein, whereby credit cards and the like are securely retained but easily removable from said receptacle; and a cover formed complementary to said body to fully cover said receptacle and said depending walls, hinge means connecting said body and said cover, a strap depending from said body and adapted to engage a looped end of a belt and a hook depending from said body and adapted to engage perforations in said belt.

3,927,443
MULTI-ELEMENT SELF-GRIPPING DEVICES WITH LINGUIFORM GRIPPING TABS

George C. Brumlik, Montclair, N.J., assignor to Ingrip Fasteners, Inc., New York, N.Y.

Continuation-in-part of Ser. Nos. 171,701, Aug. 13, 1971, abandoned, and Ser. No. 171,668, Aug. 13, 1971, Continuation of Ser. No. 295,637, Oct. 6, 1972. This application Sept. 10, 1973, Ser. No. 395,781
Int. Cl. A44b *17/00*
U.S. Cl. 24—204 **16 Claims**



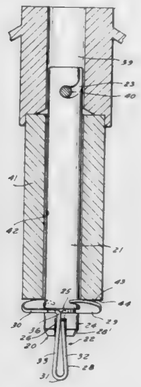
1. Self-gripping device comprising a multiplicity of upright gripping elements stiffly attached to and distributed in all directions over a base, each of said gripping elements comprising elongated member having a flat longitudinal face section, said flat section having a plurality of integral linguiform tabs struck out from within the periphery and spaced from the edges thereof thereby forming openings in said member, said tabs and said openings forming substantially V-shaped configurations between the edge of the tabs and the edge of the openings, said tabs being bent out so as to be downwardly inclined relative to said base, said gripping elements being adapted to penetrate and become lodged in a fibrous receiving material.

3,927,444
SPRING WING STUD

Peter Schenk, West Islip, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed June 24, 1974, Ser. No. 482,139
Int. Cl.² A44B *17/00*
U.S. Cl. 24—221 K **6 Claims**

1. A stud adapted for removable interengagement with a rigid receptacle to form a fastener assembly, the stud comprising:
an elongated body member with an enlarged head on one end;
a gripping surface on the head to facilitate gripping and rotation of the stud;
said stud having a spiral cam slot terminating in a locking detent thereon and the receptacle being adapted to receive the stud, said receptacle having at least one laterally extending cam follower so that when the stud and receptacle are positioned and brought into interengagement, the cam slot will be aligned with each cam follower whereupon relative rotation between the stud and receptacle will cause the cam follower to enter the cam slot until seated in the locking detent with the assistance of the spring permitting axial movement of the stud with respect to the rigid receptacle adapted to receive the stud thereby locking the two members together, and relative rotation between the stud and receptacle in the opposite direction will move each cam follower from the locking detent and along the cam slot until disengagement occurs whereupon the stud and receptacle can be separated and the two members released with the assistance of the spring permitting axial movement and removal of the stud with respect to the rigid receptacle adapted to receive the stud; and the head including a slot diametrically across the head end of the stud, and annular groove adjacent the



slotted head end of the stud and spaced from the slot, a wing portion with an end thereof positioned in the slot of the head and the sides extending axially and laterally therefrom so as to form an enlarged gripping surface for the stud, a helical projection extending from each side of the wing portion and around opposing circumferential portions of the stud, a portion of each projection located in the annular groove, and the free end of each opposing projection positioned along the axial length of the stud spaced from the groove and slot so as to form a resilient spring-like engaging surface on the underside of the head of the stud.

3,927,445
REFUSE BAG RETAINER

Allen T. Pavlish, 6574 Annandale Road, Mayfield Heights, Ohio 44124

Filed Feb. 21, 1974, Ser. No. 444,499
Int. Cl.² B65B *67/12*
U.S. Cl. 24—243 K **8 Claims**



1. An adjustable loop retainer comprising an elongated flexible member formed into a loop, a handle of substantial size for easy grasping connected to said loop, and an adjustable sleeve member having a through opening and material engaging means disposed around one axially directed end thereof and projecting generally in the axial direction, wherein the improvement comprises, said loop being disposed through said sleeve from the end thereof opposite said material engaging means whereby said material engaging means are directed toward the portion of the loop to be adjusted; said material engaging means being comprised of pointed projections extending from an end of said sleeve and angled slightly toward the axis of said sleeve member; and said flexible member comprising thin flat elastic material in strip form having a width greater than the through opening in said sleeve whereby at any adjusted position of said sleeve member, spreading said loop to engage an object causes said material engaging means to engage said elastic material at opposite sides of said one end of said sleeve and retain said loop at its adjusted size.

3,927,446
LEA MAKING APPARATUS

Tomokiyo Baba, 117, Yagisawa, Ohaza, Ueda, Nagano, Japan

Division of Ser. No. 395,843, Sept. 10, 1973. This application July 26, 1974, Ser. No. 492,148
Int. Cl.² B65H *54/62*
U.S. Cl. 28—21 **1 Claim**



1. An apparatus for tying threads comprising:
a tubular body having a bent portion and an open end,
a hollow box supporting an axially rotatable base portion of said tubular body, a rotating mechanism to which the base portion of said tubular body is connected, said base portion of said tubular body being inserted into said box and provided with an air hole, and
a suction pipe open within said box and connected to said open end of said tubular body through said hollow box and said air hole,
whereby when said threads having free ends are hooked and the tubular body is rotated, the threads are wound around the bent portion, while the free ends of the threads are sucked into said open end of said bent portion before the tubular body completes one revolution.

3,927,447
TIRE RASP

Karl Willinger, Vienna, Austria, assignor to Firma Hans Ehgartner, Vienna, Austria

Filed Oct. 3, 1974, Ser. No. 511,619
Claims priority, application Austria, Oct. 5, 1973, 8525/73; Mar. 18, 1974, 2203/74; Mar. 18, 1974, 2204/74; May 10, 1974, 3890/74
Int. Cl.² B23D *71/00, 1/00*
U.S. Cl. 29—79 **28 Claims**

1. A tire rasp comprising a generally cylindrical body with a pair of end disks and a multiplicity of sheet-metal blades sandwiched between said disks, each of said blades having at least one toothed side circularly curved with a common radius substantially equaling that of said disks, said blades adjoining each other with said toothed sides thereof centered on the axis of said body to define part of a peripheral cutting surface; the teeth of said blades being each bounded by four concave arcuate edges meeting at three sharp points including a middle

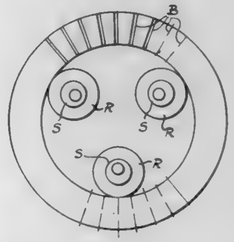


point and two flanking points, said middle point projecting radially beyond said flanking points.

3,927,448
PELLETIZING MACHINES

Herbert Jones, and Michael Thomas Dorn, both of Gloucester, England, assignors to Simon-Barron Limited, Gloucester, England

Filed Nov. 22, 1974, Ser. No. 526,241
Claims priority, application United Kingdom, Dec. 20, 1973, 59265/73
Int. Cl.² B21B *13/02*
U.S. Cl. 29—116 R **11 Claims**



1. A pelletizing roller of the kind referred to and comprised by a roller shell, mounted on a shaft by means of two axially spaced roller bearing arrangements each comprised of an inner race, an outer race and a plurality of rollers therebetween, characterized by the provision of spacing means located between said bearing arrangements, said spacing means comprising a groove on the interior surface of said roller shell at a position between said bearing arrangements, a complete ring divided into plural parts circumferentially seated in said groove, and means holding said ring parts in position in said groove when the pelletizing roller is fully assembled.

3,927,449
FORMED ONE-PIECE HOLLOW ROLLER SHAFT

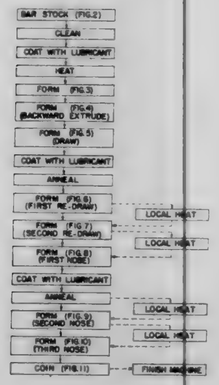
Lawrence W. Gibbie, and Dennis Lee Keesey, both of York, Pa., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 3, 1973, Ser. No. 421,120
Int. Cl.² B21H *1/14*; B21K *1/02*
U.S. Cl. 29—148.4 D **18 Claims**

1. A method of manufacturing a member in the form of a generally cylindrical roller having an enlarged generally cylindrical center portion defining a first diameter, and necked down end portions extending from opposite ends of said center portion, said end portions each being of generally cylindrical configuration and defining a second diameter smaller than said first diameter, and further defining an internal cavity, and

relatively thick walls between the cavity and the roller exterior comprising in sequence the steps of:

a. providing a blank,
b. heating the blank, and
c. forming the blank by pressing it in a die into a preform shape having an enlarged center portion, a first necked down end portion, and a cavity in the blank opposite said first necked down end portion,



d. further forming by pressing to elongate the enlarged center portion and enlarge the cavity,
e. forming by pressing the end of the blank opposite the first necked down end into a second necked down end portion, thereby defining an enlarged central body portion intermediate the necked down end portions having an enlarged internal cavity therein.

3,927,450

METHOD OF MANUFACTURING HOLLOW, CIRCULAR-SHAPED WORKPIECES

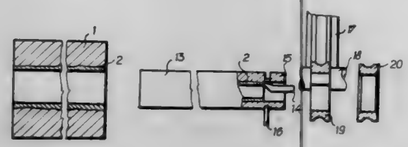
Karel Sommer; Jiri Zdrazil; Milan Kubinek, all of Brno; Jaroslim Bahna, Illava; Stanislav Kyselica, Trencianska Tepla; Frantisek Habrovec, and Jiri Skarek, both of Brno, all of Czechoslovakia, assignors to ZKL Zavody na valiva loziska a traktory, narodni podnik, Brno, Czechoslovakia

Filed Aug. 1, 1974, Ser. No. 493,752

Claims priority, application Czechoslovakia, Dec. 4, 1973, 8331-73

Int. Cl.² B21D *53/12*; B21H *1/12*

U.S. Cl. 29—148.4 R **18 Claims**



1. A method of manufacture of hollow, circular-shaped workpieces, comprising centrifugally casting hollow ingots from a bearing steel, reducing the ingot to form a tube, dividing the tube into sections, profile-forming the sections, then machining the formed sections by metal cutting methods, subsequently heat-treating the machined formed sections to obtain optimum hardness, and after tempering finishing the product by at least one of the steps of grinding, superfinishing, lapping and polishing.

3,927,451

METHODS OF FITTING FLUID PRESSURE OPERATED DEVICES INTO PIPELINES

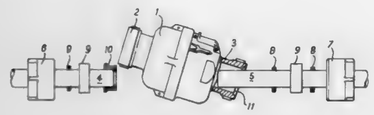
Ivor Thomas Rogers, Luton, England, assignor to George Kent, Limited, Luton, England

Filed June 24, 1974, Ser. No. 481,986

Claims priority, application United Kingdom, July 5, 1973, 32193/73

Int. Cl.² B21D *39/03*

U.S. Cl. 29—157 R **3 Claims**



1. The method of fitting a fluid pressure operated device into a pipeline the device having coaxial inlet and outlet connections of substantially larger internal diameter than the external diameter of the pipeline, which comprises the steps of removing a straight section of the pipeline of length less than the overall length of the fluid pressure device to afford spaced coaxial pipeline ends between which the device is to be fitted; mounting union couplings on the respective ends of the pipeline; mounting annular sealing means on each end of the pipeline inwardly of the associated union coupling; tilting the axis of the device connections to a substantial extent relatively to the pipeline axis, passing one of the inlet or outlet connections of the device on to an end of the pipeline to an extent as to enable the device connections to be brought into a position coaxial with the pipeline; moving the device into said coaxial position; moving the device coaxially with respect to the pipeline to a position in which both inlet and outlet connections of the device extend over the respective ends of the pipeline; and tightening the annular couplings on to the inlet and outlet connections respectively of the device, thereby to clamp the sealing means between each coupling and the device so as to afford a seal between each connection of the device and the associated pipeline end.

3,927,452

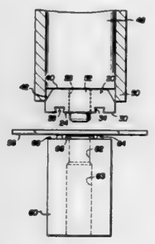
APPARATUS FOR ASSEMBLING SELF-FASTENING NUT TO A PANEL

Thomas M. Pouch, Farmington, and Harold A. Ladouceur, Livonia, both of Mich., assignors to Multifastener Corporation, Detroit, Mich.

Division of Ser. No. 454,656, March 25, 1974, Pat. No. 3,926,236, which is a division of Ser. No. 302,312, Jan. 30, 1972, Pat. No. 3,829,957. This application Jan. 6, 1975, Ser. No. 538,832

Int. Cl.² B23P *19/00*, *11/00*

U.S. Cl. 29—200 B **2 Claims**



1. An apparatus adapted to secure a nut to a panel, said nut having a planar end face, a central bore and a pair of grooves in said end face on either side of said bore, comprising: a punch member having a cylindrical punch portion and a nut

retainer means surrounding said punch portion adapted to releasably retain a nut telescopically assembled on said punch portion having an external diameter substantially equal to the internal diameter of said nut bore and having an axial extent greater than the axial extent of said nut bore to extend beyond said planar end face of the nut with the nut assembled on said punch portion, and a die member having a generally planar end face, said die end face having an opening in registry with said punch portion to receive the punch portion and a pair of upstanding lips, on either side of said opening in registry with said nut grooves, whereby a panel, interposed between said nut and said die will, upon relative movement of said punch and die members, be sequencially punched to form a hole in registry with said nut bore and deformed into said nut grooves by said upstanding lips, in one continuous movement.

3,927,453

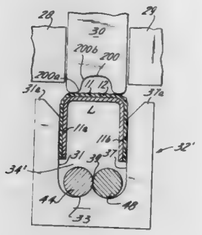
APPARATUS FOR FORMING INSULATED SPLICES

Irwin Zahn, New York, and Feroz Husain, Rego Park, both of N.Y., assignors to General Staple Company, New York, N.Y.

Continuation-in-part of Ser. No. 335,417, Feb. 23, 1973, abandoned. This application Jan. 17, 1974, Ser. No. 434,185

Int. Cl.² H01R *43/04*

U.S. Cl. 29—203 D **11 Claims**



1. Apparatus for connecting two elements for forming terminals comprising:

means for feeding a composite supply strip formed from an elongated layer of non-conductive material and an elongated layer of electrically conductive material;
means for servering a predetermined length of said supply strip from the remaining supply of said strip and
crimping means for crimping said length about elements to be joined until said electrically conductive material is in contact with said elements, said crimping means including a die, wherein said die comprises:
a body portion having a generally U-shaped receptacle defined by a bottom wall, and a pair of side walls, and
an elongated ridge in said bottom wall, said ridge and bottom wall defining a pair of concavely arcuate circular segments, each of said circular segments extending from said ridge to said side walls, the imaginary circles of which said segments form a portion being disposed tangentially with respect to one another so as not to overlap one another.

3,927,454

APPARATUS FOR PRODUCING LAMINATED MAGNETIC CORES FOR INDUCTIVE ELECTRIC APPARATUS

Kazuhiro Kobayashi; Hiroshi Saito, both of Hitachi; Yukio Ogawa, Katsuta; Koki Yoshida, and Isamu Kondo, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

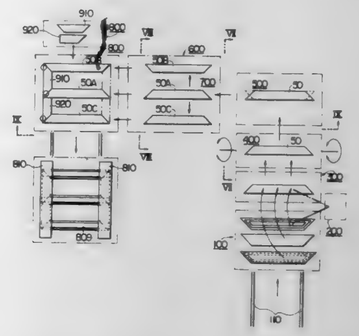
Division of Ser. No. 350,970, April 13, 1973, Pat. No. 3,875,660. This application Sept. 11, 1974, Ser. No. 505,011

Int. Cl.² H01F *41/02*

U.S. Cl. 29—203 L **13 Claims**

1. An apparatus for producing a laminated magnetic core for use in an inductive electric apparatus, comprising:

a bogie on which a plurality of silicon steel plates for composing the core leg portions are placed in a stack conversely to the order of lamination in the finished core, said bogie being movable in one direction;
a sucking and transferring means provided at the end of the one-way movement of said bogie for sucking said stacked silicon steel plates one by one from the topmost plate of the stack, carrying the sucked-up one of said plates to the first conveyor adjacent said bogie, and, upon reaching said conveyor, releasing said plate onto said conveyor;
a reversing means provided at the end of said first conveyor and arranged turnable about 180° in the direction of transfer of the plate in response to a reversal instruction while keeping housed therein the silicon steel plate transferred thereinto from said first conveyor;
a second conveyor provided adjacent said reversing means and adapted to receive and carry each silicon steel plate transferred thereonto from said reversing means;



means for separating the silicon steel plates transferred from said second conveyor, whereby said plates are separated in substantially parallel relation and at fixed intervals successively and in a given order such that the longitudinal direction of said plates will correspond to the direction of the position where the core leg portions are composed;
a third conveyor for further transferring said separated silicon steel plates in one direction and in a given order; and
a core stacking mechanism whereby the respective silicon steel plates transferred from said third conveyor are detained and laminated successively at each leg portion composing position according to a selected core lamination pattern, said core stacking mechanism being lowered correspondingly to the number of layers of the core to be formed.

3,927,455

APPARATUS FOR MAKING FERRITE MATRICES

Jury Emelyanovich Seleznev, Vesenny proezd,4a,kv.16; Jury Alexandrovich Burkin, Tsvetnoi proezd,29,kv.24, and Sergei Vladimirovich Kuzmin, ulitsa Akademicheskaya,19,kv.54, all of Novosibirsk, U.S.S.R.

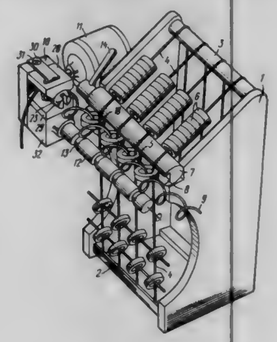
Division of Ser. No. 319,053, Dec. 27, 1972, Pat. No. 3,858,310. This application Oct. 18, 1974, Ser. No. 516,039

Int. Cl.² H01F *41/08*

U.S. Cl. 29—203 MM **9 Claims**

1. An apparatus for making ferrite matrices from ferrite cores that have been arranged in at least one stack received about at least one wire, the number of the ferrite cores in a stack being equal to the number of the lines in a matrix to be made, the apparatus comprising: a framework adapted to support wires with stacks of ferrite cores received thereabout; a core feeding member having at least one longitudinal guide means adapted to separate single ones of the cores and to

support therein a row of the ferrite cores, the core feeding member having the wires with the stacks of the cores passing thereover at one side thereof, the core feeding member spacing the wires at uniform intervals; at least one mechanism for winding an additional wire into a helix, mounted adjacent to a face end of the core feeding member, the mechanism, in order to thread the additional wire, winding the same into the helix having a pitch equal to the spacing between the centers of the ferrite cores supported in the row in the guide means of the core feeding member; a drive of the mechanism for winding the additional wire into the helix, adapted to effect rotation of the helix, with simultaneous forwarding of same longi-



tudinally of the core feeding member; at least one auxiliary roller extending parallel to the core feeding member and contacting the helix, the additional roller having a plurality of annular grooves uniformly spaced therealong, the spacing being equal to the pitch of the helix; the auxiliary roller being mounted so that the annular grooves thereof are staggered with respect to the centers of the ferrite cores, supported in the guide means of the core feeding member, by a distance corresponding to the helix angle of the helix; the auxiliary roller being associated with the drive and is being rotated thereby in a direction opposite to the direction of the winding of the helix.

3,927,456

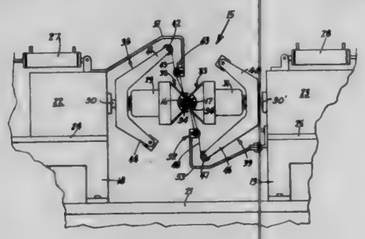
COIL WINDING MACHINE WITH IMPROVED WIRE GRIPPING AND CUTTING MEANS

Raymon H. Dammar, Minneapolis, Minn., assignor to Possis Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 721,805, April 16, 1968, abandoned. This application Apr. 2, 1971, Ser. No. 130,649

Int. Cl.³ H02K *15/09*

U.S. Cl. 29—205 C **34 Claims**



1. In an armature winding machine for winding a continuous length of wire into a series of connected coils onto the slotted cores of armature core assemblies, each of which includes in addition to the slotted core a commutator with tangs on its circumferentially spaced bars with the wire forming the ending lead of one coil continuing uninterruptedly to form the starting lead of another coil and with said uninterrupted leads as well as the starting lead and ending lead of the entire series of coils attached to tangs of the commutator, the combination of:

A. core gripping means to hold an armature core assembly in winding receiving position;

B. a rotatable flyer to draw wire from a source thereof and wind it into a series of connected coils onto the slotted core of an armature core assembly in the grasp of said core gripping means with the leads connecting successive coils unbroken and attached to the commutator tangs;

C. mounting means for said rotatable flyer by which the same is constrained to rotation about an axis transversely intersecting an armature core assembly in the grasp of said core gripping means;

D. means to sever the stretch of wire leading from the flyer to an armature core assembly in the grasp of said core gripping means, said last named means comprising

1. wire gripping means operable to grip said stretch of wire,

2. wire cutting means operable to sever said stretch of wire, said wire cutting means comprising

a. a knife element having a cutting edge, and

b. mounting means for said knife element so disposed with respect to the wire gripping means that the cutting edge of the knife element is transverse to the wire extending from the wire gripping means to the armature core assembly in the grasp of said core gripping means, to sever the same at a point between the wire gripping means and the armature core assembly;

3. mounting means for said wire gripping means and for said wire cutting means, so disposed with respect to the axis about which the flyer rotates that at the time the wire cutting means severs the wire, the wire cutting means is no farther from the axis about which the flyer rotates than the circular orbit defined by the flyer; and

4. means for actuating the wire gripping means and the wire cutting means to effect severance of the wire while the wire gripping means has the wire in its grip; and

E. means for so timing the operation of the wire gripping means and the wire cutting means with respect to one another and the operation of the flyer that the wire gripping means grips said stretch of wire only upon cessation of wire winding rotation of the flyer at the completion of the armature being wound, and retains its grip thereon after the cutting means has severed the same and until the wound armature has been removed and replaced by an unwound armature core assembly and the winding thereof by the rotating flyer is begun.

3,927,457

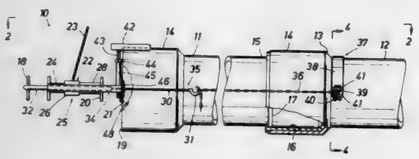
PIPE-SEATING APPARATUS

Alton H. Bickle, 2135 Shadowdale, No. 141, Houston, Tex. 77043

Filed Nov. 6, 1974, Ser. No. 521,455

Int. Cl.² B23P *19/04*

U.S. Cl. 29—237 **52 Claims**



1. A pipe-seating apparatus for seating the spigot end of a first pipe section into the hub or receiving end of a second pipe section against a flexible seal, comprising

pipe-engaging means for securely engaging the second pipe section,

driving means having a first member for engaging the other open end of the first pipe section and a second member spaced and axially displaceable therefrom in a direction generally axially of said pipe sections,

force-exerting means disposed between and interconnecting said first and second members of said driving means for exerting a generally axial force for laterally displacing said first and second members,

connecting means for interconnecting said pipe-engaging means and said second member of said driving means, said connecting means being substantially non-extensible under tension for preventing displacement of said second member, said displacing force exerted by said force-exerting means between said first and second members laterally displacing said first member and axially driving the first pipe section spigot end into the hub or receiving end of the second pipe section, and

guide means cooperating with said first and second beam members and said connecting means for preventing rotational movement of said first beam member with respect to said second beam member during displacement.

3,927,458

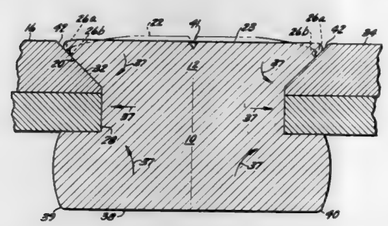
CROWNED HEAD RIVET METHOD

Eugene R. Speakman, Fullerton, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Continuation-in-part of Ser. No. 291,669, Sept. 25, 1972. This application June 3, 1974, Ser. No. 475,793

Int. Cl.² B23Q *17/00*; B21D *39/00*; B23P *11/00*

U.S. Cl. 29—407 **8 Claims**



1. A method for joining a plurality of structural members comprising the steps of:

forming a uniformly flared countersunk opening having maximum and minimum diameters in one of said structural members;

forming axially aligned cylindrical openings of a predetermined diameter similar to the minimum diameter of said countersunk opening and in registration therewith in said structural members;

inserting a rivet through said registered openings, said rivet having a shank and a head of shapes complementary to said openings and a shank end, said rivet head having an upper surface shaped generally similar to the minor portion of a filled torus to form a crown having a generally planar central portion, the planar central portion extending above the plane of the maximum diameter periphery of said countersunk opening by a distance of at least .002 inch, said generally planar central portion and said shank end having similar areas; and

deforming said rivet in response to compressive force applied to said generally planar central portion and said shank end to the extent that material in said rivet flows axially inwardly and radially outwardly to apply outward force along said cylindrical openings, thereby altering said rivet head shape and said shank end shape so that said generally planar central portion is no further than .003 inch above the plane of the maximum diameter periphery of said countersunk opening.

3,927,459

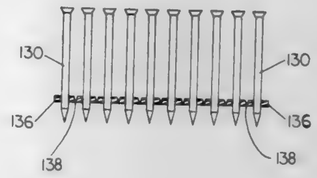
PROCESS FOR FEEDING AND DRIVING NAILS

Harry M. Haytayan, Sunnyside Lane, Lincoln, Mass. 01773

Division of Ser. No. 312,665, Dec. 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 68,423, Aug. 31, 1970, Pat. No. 3,711,008. This application Aug. 12, 1974, Ser. No. 496,458

Int. Cl.³ B23P *17/00*

U.S. Cl. 29—413 **5 Claims**



1. In a process for feeding and driving a plurality of flanged-head nails, the improvement comprising the steps of:

1. feeding said nails serially to a nailing device while supported in series by a strip of preformed nail flanges that are connected to one another only at points of mutual tangency; and

2. successively driving each nail lengthwise so that its flanged-head is driven flush with the flange which supports it and separates that flange from said strip.

3,927,460

PRETREATING PROCESS FOR VITREOUS ENAMELLING

Shunichi Harada, and Hideo Abe, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Aug. 7, 1972, Ser. No. 278,194

Int. Cl.³ B23P *17/00*; B22D *11/126*

U.S. Cl. 29—424 **10 Claims**



1. A vitreous enamelling process for a steel sheet, comprising roughening the steel sheet by electrolysis, applying an aqueous solution of water glass on the roughened surface and drying the solution to form a water glass layer thereon, press shaping the steel sheet having the water glass layer thereon, washing away the water glass layer with water and applying a vitreous enamel layer on the roughened surface of the steel sheet after the water glass layer is washed away.

3,927,461

METHOD OF MAKING RANDOMLY DIFFERENT DISPLAY DEVICES

Adam Peiperl, 1135 Loxford Terrace, Silver Spring, Md. 20901

Filed Oct. 5, 1973, Ser. No. 404,009

Int. Cl.² B29C *25/00*

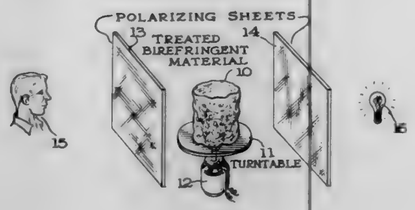
U.S. Cl. 29—424 **4 Claims**

1. A method of preparing birefringent material which is subject to fusing and warping from the heat of a flame, for use in display devices for viewing in polarized light, comprising the steps of

forming the birefringent material to a desired shape,

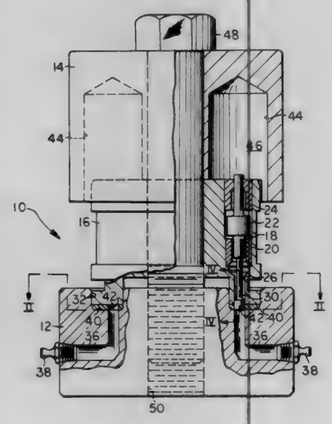
spraying said birefringent material with non-flammable, non-volatile liquid droplets distributed to provide a random effect,

applying a flame to various areas having droplets thereon wherein the areas under the droplets are protected



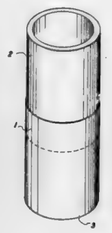
thereby from direct heat of said flame and causing areas around the droplets to fuse partially and warp.

3,927,462
METHOD AND APPARATUS FOR REMOVING PLUNGERS FROM PISTON ASSEMBLIES
William H. Freeman, and Herschel M. Williamson, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Mar. 3, 1975, Ser. No. 555,003
Int. Cl.² B23P *19/02*
U.S. Cl. 29—427 10 Claims



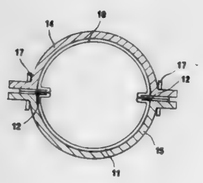
1. A method for removing plungers and press fit inserts from a piston assembly, said method comprising:
positioning a piston assembly on a complementally formed base member;
aligning the piston assembly so that the plunger bores are axially aligned with corresponding supply bores in the base member;
securing the piston assembly on the base member; and
injecting a hydraulic medium through the base member bore and into the piston assembly plunger bore wherein the hydraulic pressure generated by the hydraulic medium on the plunger and insert will urge the plunger and insert out of the piston assembly.

3,927,463
METHOD OF MAKING A CYLINDRICALLY SHAPED, HOLLOW ELECTROFORMING MANDREL
Donald G. Dupree, Alta Loma, Calif.; Raymond E. Bailey, and Chester H. K. Ling, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 265,918, June 23, 1972, which is a continuation-in-part of Ser. No. 89,215, Nov. 13, 1970, abandoned. This application July 12, 1974, Ser. No. 488,138
Int. Cl.² B23P *11/02*
U.S. Cl. 29—447 7 Claims



1. A method of making a cylindrically shaped, hollow, permanent mandrel suitable for surficial electrodeposition of a xerographic belt substrate of nickel comprising;
a. providing a cylindrical, hollow metal core member,
b. providing a metal sleeve having a thickness of between about 10 and 60 mils and consisting essentially of nickel,
c. mounting said sleeve on said core member,
d. coating the outer surface of said sleeve with chromium.

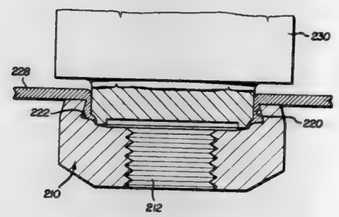
3,927,464
METHOD OF MANUFACTURING MEANS FOR STORING AND TRANSPORTING LIQUIDS, GASES OR FLUIDIZED SOLID PARTICLES UNDER PRESSURE
Hans Ivar Wallsten, Saffle, Sweden, assignor to AB Inventing, Sweden
Filed Jan. 9, 1974, Ser. No. 431,882
Claims priority, application Sweden, Feb. 12, 1973, 7301929
Int. Cl.² B23P *19/04*
U.S. Cl. 29—454 8 Claims



1. A method for manufacturing tubular means for storing and transporting liquids, gases and fluidized solid particles under pressure, comprising the steps of:
a. arranging a pair of thin, flexible, stretchable, liquid tight inner wall sheet portions in abutting surface relationship;
b. joining the pair of inner wall sheet portions to each other along at least one free edge contour to form a continuous inner wall channel network, the inner wall channels in the unexpanded state having a normally flat cross-section and expandable under internal pressure to have a circular cross-section;
c. arranging each of a pair of flexible outer wall sheet portions upon each of a pair of opposed outwardly directed surfaces of the normally flat inner wall, the outer wall sheet having a strength relatively greater than the inner wall sheet and sufficient to withstand the expansion pressure within the inner wall channel network; and
d. joining the pair of outer wall sheet portions to each other along at least one edge contour outwardly positioned beyond the periphery of the inner wall channel network to form a continuous, normally flat outer wall network unattachedly enclosing the inner wall channel network, the outer wall assuming a substantially circular cross-section responsive to the expansion of the enclosed inner wall, thereby limiting the expansion of the inner wall channel network.

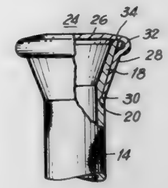
8. A method as set forth in claim 6, wherein steps (d) and (e) further include the step of continuously heat-sealing the opposed edge contours of the inner wall pair of sheets along their entire length simultaneous with the step of joining the pair of outer wall material sheets.

3,927,465
METHOD OF FORMING A NUT AND PANEL ASSEMBLY
Harold A. Ladouceur, Livonia, and John H. Steward, Bloomfield Hills, both of Mich., assignors to Multifastener Corporation, Detroit, Mich.
Division of Ser. No. 397,559, Sept. 14, 1973, Pat. No. 3,878,599, which is a continuation-in-part of Ser. No. 63,316, Aug. 12, 1970, abandoned, which is a division of Ser. No. 841,037, July 11, 1969, abandoned. This application Oct. 21, 1974, Ser. No. 516,317
Int. Cl.² B21D *39/00*; B23P *11/00*
U.S. Cl. 29—509 4 Claims



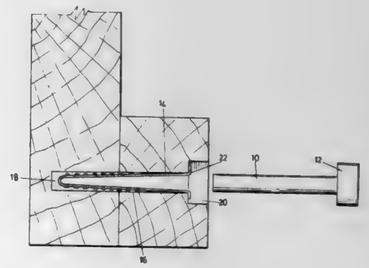
1. A method of forming a nut and panel assembly, said nut having a panel supporting surface and a central bore generally perpendicular to said nut surface, said surface having an annular groove defined therein surrounding said bore, said groove having an outer wall inclined inwardly from the bottom wall of said groove and said groove bottom wall spaced farther from the plane of said surface adjacent said bore then at said inclined outer wall to define an annular tool receiving recess adjacent said bore, including the steps of:
a. disposing said nut surface aginst one face of the panel,
b. advancing a punch against the opposed side of said panel, said punch having an annular end portion conforming to said nut groove tool receiving recess and said panel having an aperture generally aligned with said nut bore,
c. further advancing said punch, into said nut groove, to deform the edge of said panel aperture into said nut groove, over said inclined outer groove wall, and
d. continuing to advance said punch into said nut groove, beyond said panel edge and into said tool receiving recess, to (1) deform said panel edge against said bottom groove wall, adjacent said outer wall, and (2) deform and compress said panel edge beneath said inclined outer groove wall to securely retain said nut on said panel.

3,927,466
METHOD OF MAKING METAL BALL-BAT
Ivan Rosalsky, Montclair, N.J., assignor to Airlite Aluminum Corporation, Kearny, N.J.
Filed Feb. 28, 1974, Ser. No. 446,933
Int. Cl.² B21D *39/00*; B23P *11/00*
U.S. Cl. 29—511 4 Claims



1. The method of making a metal ball-bat which comprises deforming the metal at one end of a hollow cylinder to close off said end, reducing the diameter of the cylinder at the other and open end of said cylinder to extend the length thereof thereby to form a handle portion of uniform diameter, forming an annular peripheral recess in the handle spaced from the open end of the cylinder, applying an inverted side-walled cap of metal over the said other end and crimping the side walls of the cap against the open end of the cylinder and forcing the ends of the side walls into the recess to lock the cap against rotary and longitudinal movement with respect to the bat.

3,927,467
LOCATING AND SECURING OF WOOD JOINTS
Musgrave Schoeman, P.O. Westville, Natal, South Africa
Filed July 16, 1974, Ser. No. 489,793
Int. Cl.² F16B *13/06*
U.S. Cl. 29—526 2 Claims

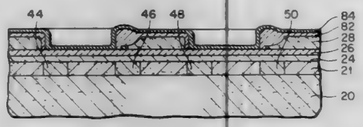


1. A method of joining pieces of wood or the like including the steps of forming registering holes in the pieces, at least one of the holes being countersunk, locating therein a strip of material extending through both holes, the strip having a width less than the diameter of the holes with formations for gripping both pieces of wood and having a turned over locating portion adapted to rest on the bottom of the countersink, and then inserting a headed dowel of substantially the same diameter as the holes, into the two holes, and against the strip, the dowel having a head complementing the countersink and received therein.

3,927,468
SELF ALIGNED CCD ELEMENT FABRICATION METHOD THEREFOR

Michael P. Anthony, San Carlos; Kamleshwar Gunsagar, Cupertino; Choong-Ki Kim, Sunnyvale, and Lloyd R. Walsh, San Jose, all of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Dec. 28, 1973, Ser. No. 429,329
Int. Cl.² B01J *17/00*
U.S. Cl. 29—578 **5 Claims**



1. A process for fabricating a self-aligned charge-coupled semiconductor structure comprising the steps of:

a. forming at least one insulating layer on one surface of a semiconductor substrate;

b. forming a layer of electrically conducting material on said at least one insulating layer;

c. forming an overlying insulating layer on said layer of electrically conducting material;

d. removing portions of said overlying insulating layer at regular intervals to demarcate the location of barrier regions to be formed in underlying registration in said substrate;

e. forming implanted barrier regions in the top-most portion of said semiconductor substrate at regular intervals along said substrate;

f. forming filled-in insulating regions within said removed portions, wherein said filled-in insulating regions are of a material different from said overlying insulating layer;

g. removing alternating remaining portions of said overlying insulating layer and those said filled-in insulating regions above a first series of alternate barrier regions to expose portions of said conducting material;

h. removing the exposed portions of said conducting material using those still remaining portions of said overlying insulating layer and said filled-in insulating regions as a mask wherein the remaining portions of said layer of conducting material constitute a first set of gate electrodes which have edges in substantial alignment with leading edges of the other alternate series of implanted barrier regions;

i. forming insulating material over said first set of gate electrodes; and

j. applying a further layer of electrically conducting material over the exposed areas of said at least one layer of insulating material, said further layer of conducting material forming a second set of gate electrodes having edges in alignment with the leading edges of a second alternate series of said implanted barrier regions.

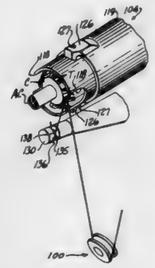
3,927,469
METHOD OF WINDING ARMATURES

Raymon H. Dammar, Minneapolis, Minn., assignor to Possis Corporation, Minneapolis, Minn.

Division of Ser. No. 130,649, April 2, 1971, which is a continuation-in-part of Ser. No. 721,805, April 16, 1968, abandoned. This application Mar. 22, 1973, Ser. No. 342,551
Int. Cl.² H02K *15/09*
U.S. Cl. 29—597 **25 Claims**

1. In the winding of armatures by means of an automatic winding machine wherein an armature core assembly having a slotted core to receive the coils comprising the armature winding and a commutator with lead receiving tangs is held in winding receiving position while a rotating flyer winds wire drawn from a source thereof into a series of coils onto the slotted core and the ends of the individual coils as well as the beginning and end of the series of coils are attached to the tangs, the method of handling the wire at the termination of the winding of the last coil in the series and at the start of the winding of an unwound armature core assembly that has replaced the wound and removed armature, said method comprising the steps of:

A. at the conclusion of the winding of the last coil in the series and while the just wound armature is still in winding receiving position, by means of a wire gripper gripping the stretch of wire that extends from the flyer to the armature;



B. while said stretch of wire is thus gripped, severing the same at a point between its gripped portion and the armature to thereby free the just wound armature for removal from the machine;

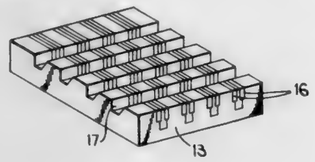
C. retaining the grip on the stretch of wire while the wound armature is removed from the machine and replaced with an unwound armature core assembly and at least until the winding of the first coil in the series to be wound onto said armature core assembly is begun; and

D. releasing the grip which the wire gripper has on the severed stretch of wire in time to free the wire gripper for use in gripping the stretch of wire leading from the flyer at the completion of the winding of the last coil wound onto said armature coil assembly.

3,927,470
METHOD OF MAKING MULTI TRACK MAGNETIC TRANSDUCING HEADS

Derek Frank Case, 122 Cadbury Road, Sunbury on Thames, England

Filed Dec. 7, 1973, Ser. No. 422,685
Claims priority, application United Kingdom, Dec. 29, 1972, 60151/72
Int. Cl. H01f *7/06*
U.S. Cl. 29—603 **7 Claims**

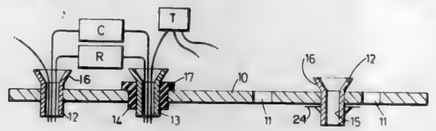


1. A method of manufacturing a plurality of magnetic heads including the steps of; providing a support of non-magnetic material; forming a plurality of spaced parallel grooves in the support; bonding ferrite strip elements in said groves thereby to provide an assembly including a plurality of strips of non-magnetic material alternating with strips of ferrite in spaced parallel relationship; machining a plurality of spaced groves in the support parallel to the length of the elements so as to remove material from at least one side wall of each ferrite element; and subsequently dividing the assembly transversely of the length of the strip elements into a plurality of shaped ferrite pieces in said spaced relationship.

3,927,471
ELECTRONIC CIRCUITS

Keith Arthur Tricker, High St., Cavendish, Sudbury, Suffolk, England

Filed Jan. 28, 1974, Ser. No. 437,305
Claims priority, application United Kingdom, Feb. 2, 1973, 5289/73
Int. Cl.² H05K *3/32*
U.S. Cl. 29—625 **8 Claims**



1. The method of fabricating an electrical circuit without the use of solder to a rigid conductive panel having a multiplicity of apertures extending therethrough, which method comprises the steps of:

inserting a plurality of sleeves of insulating material into the apertures of the panel in a predetermined array;

inserting from one side of the panel a like plurality of conductive collars in the said array through the sleeves of insulating material to provide a portion of each collar projecting upon the other side of the panel.

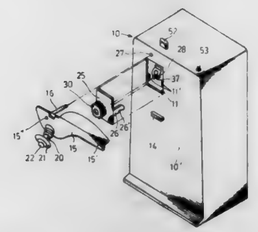
inserting wires in the required pattern through the collars from the said one side of the panel to make up the required electrical circuit;

uniting each collar with the wires passing therethrough by means of an inwardly crimping operation effected on said projecting portion of each collar thereby clamping the wires inserted into each collar into electrical connection with each other and mechanically retaining the wires and collars in position in the panel.

3,927,472
CAN OPENER WITH CUTTER AND FEED WHEEL RELEASE MEANS

Osamu Yamamoto, Nagoya, Japan, assignor to Kabushiki Kaisha Aichidenkikosakusho, Japan

Filed Jan. 30, 1975, Ser. No. 545,469
Claims priority, application Japan, Mar. 12, 1974, 49-28242; May 10, 1974, 49-52675
Int. Cl.² B67B *7/38*
U.S. Cl. 30—4 R **10 Claims**



1. In an electrically powered can opener having a housing, a driving shaft rotatably supported in said housing and an electric motor for rotating said driving shaft, a combination therewith of a front member of said housing, a cutter base having a grip at one end portion, a circular cutter rotatably carried by said cutter base, a pivotal shaft attached to said cutter base at its one end, said pivotal shaft being inserted rotatably through said front member so as to position said cutter base right before said front member, a base closely mounted on said front member and provided with an aperture, a feed wheel holder inserted loosely in said aperture, a feed wheel carried rotatably by said feed wheel holder, latching members secured vertically on said base, said latching members extending in the interior of said housing through slots bored through said front member, said feed wheel holder and said driving shaft being connected so that rotation may be transmitted from the latter to the former and both may be separable axially from each other, a locking member operable from the exterior of said housing and movable vertically, said locking member having such a form that at a certain position thereof it cooperates with said pivotal shaft and said latching members to preclude the separation of said cutter base and said base from said front member, a spring for biasing said locking member to a position where said locking member engages with said pivotal shaft and said latching members, the engagement between said locking member and said pivotal shaft being released by depressing said locking member against said spring by a certain distance and the engagement between said locking member and said latching member being released by depressing said locking member against said spring by a larger distance.

6. In an electrically powered can opener having a housing, a driving shaft rotatably supported in said housing and an electric motor for rotating said driving shaft, a combination therewith of a front member, a cutter base having a grip at one end portion, a circular cutter rotatably carried by said cutter base, a pivotal shaft attached to said cutter base at its one end, said pivotal shaft being inserted rotatably through said front member so as to position said cutter base right before said front member, a base closely mounted on said front member and provided with an aperture, a feed wheel holder inserted loosely in said aperture, a feed wheel carried rotatably by said feed wheel holder, latching members secured vertically on said base, said latching members extending in the interior of said housing through slots bored through said front member, said feed wheel holder and said driving shaft being connected so that rotation may be transmitted from the latter to the former and both may be separable axially from each other, a locking member operable from the exterior of said housing and movable vertically, said locking member having such a form that at a certain position thereof it cooperates with said pivotal shaft to preclude the separation of said cutter base from said front member, a spring for biasing said locking member to a position where said locking member engages with said pivotal shaft, the engagement between said locking member and said pivotal shaft being released by depressing said locking member against said spring, a base locking member movable vertically and adapted to be operated by said locking member not engaging with said pivotal shaft, said base locking member having such a form that at a certain position thereof it cooperates with said latching members to preclude the separation of said base from said front member, and a second spring for biasing said base locking member to a position where said base locking member engages with said latching member, the engagement between said base locking member and said latching members being released by depressing said locking member, which is not engaging with said pivotal shaft, against said second spring.

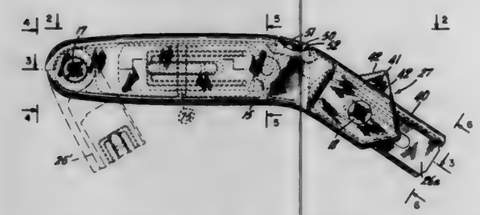
3,927,473
REPLACEABLE BLADE KNIFE

Paul A. Braginetz, Staunton, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Apr. 18, 1974, Ser. No. 461,887
Int. Cl.² B26B *5/00*
U.S. Cl. 30—125 **8 Claims**

1. A knife having an elongated handle with opposed side walls and a cavity therebetween and a blade removably mounted at one end of the handle for replacement by a new blade, a tray for new blades normally positioned within said cavity and mounted for movement into a closed position

within said cavity and outwardly thereof through an opening in an edge of the handle for removal of a blade, said tray having a supporting platform for a stack of blades, a rib extending upwardly from said surface transversely of the direction of said movement adapted to receive thereover the slots

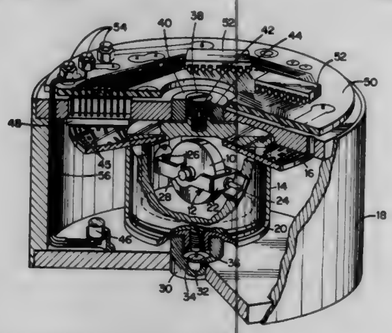


of a stack of slotted blades, said rib having end lug portions extending above the stack of blades with a depression between the lugs, and the corresponding handle wall having a downwardly projecting fixed rib extending into said depression in closed position of the tray transversely of said tray rib to maintain the top blade below the top of said lug portions.

3,927,474
INTERNALLY GIMBALLED COMPASS

James M. Lapeyre, New Orleans, La., and John T. Fowler, Winthrop, Mass., assignors to The Laitram Corporation, New Orleans, La.

Filed Aug. 7, 1973, Ser. No. 386,303
Int. Cl. G01c *17/18*; **G16m** *1/272*
U.S. Cl. 33—356 **7 Claims**



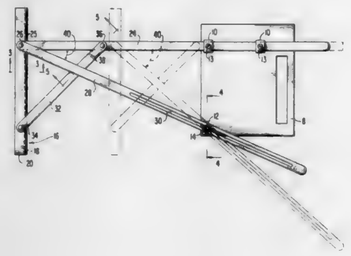
1. A magnetic compass comprising:
a first housing;
a compass card having indicia on a surface thereof representative of compass heading;
a second housing affixed to said compass card and rotatably mounted in said first housing for rotation about the axis of said compass card;
at least one magnet coupled to said compass card and having a magnetic axis orthogonal to one rotational axis thereof; and
a gimbal assembly supported within said second housing and operative to suport said at least one magnet for independent rotation throughout 360° about orthogonal axes transverse to the axis of said compass card.

3,927,475
SAW GUIDE

Kenneth Chang, 47-425-A Mahakea Road, Kaneohe, Hawaii 96744

Filed Jan. 2, 1975, Ser. No. 538,022
Int. Cl.² B43I *13/02*
U.S. Cl. 33—42 **5 Claims**

1. A guide for a saw, wherein the saw has a base plate,
means on one end of the base plate forming a guideway running traversely to the fore-and-aft direction of the base plate, and a clamp member spaced from the guideway towards the other end thereof, said guide comprising,
an elongate gauge member adapted to engage and slide along a straight edge associated with work to be sawed,
a first arm having an inner end joined to the gauge member and an outer end portion engageable at a selected location along the length thereof in the guideway on the saw base plate,

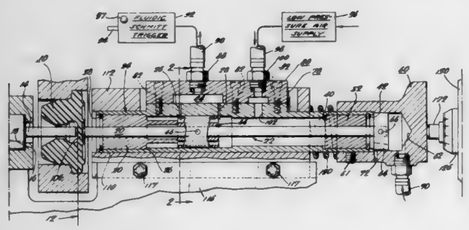


means for maintaining the first arm at right angles to the length of the gauge member, and a second arm,
pivot means connected an inner end of the second arm to the gauge member at the juncture of the inner end of the first arm with said gauge member,
the second arm having an outer end portion engageable at a selected point therealong by the clamp means on the saw base plate, whereby said arms and said base plate form a rigid right triangle when the other end portion of said second arm is clamped to said base plate.

3,927,476
APPARATUS FOR CHECKING A DIMENSION OF AN OBJECT

Frederick W. Martin, Pottstown, Pa., assignor to The West Company, Phoenixville, Pa.

Filed May 31, 1974, Ser. No. 475,113
Int. Cl.² G01B *7/02, 7/06*
U.S. Cl. 33—143 L **12 Claims**



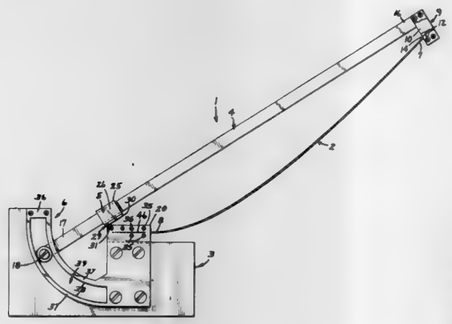
1. Apparatus for providing indications of whether a linear dimension of an object is within or outside a predetermined range of values, comprising:
hollow tubular means having port means in the wall thereof, the axially opposite extremes of said port means being spaced apart along the longitudinal axis of said tubular means by a predetermined distance;
piston means axially reciprocable along said longitudinal axis in said tubular means and having land regions the axial extremes of which are spaced apart along said longitudinal axis by a distance substantially equal to said predetermined distance plus the extent of said range of dimension values, said piston means being axially positionable along said longitudinal axis so that said land regions block said port means only over a predetermined range of axial positions of said piston means substantially equal in extent to said predetermined range of dimension values;

positioning means for removably positioning an object whose linear dimension is to be measured so that one surface thereof corresponding to one terminus of said dimension is in a predetermined reference axial position with respect to the longitudinal dimension of said tubular means, and so that another surface corresponding to the other terminus of said dimension determines the axis position of said piston means along said longitudinal axis, said reference axial position being such that an object having a value of said dimension at the center of said range of dimension values causes said piston means to assume an axial position at the center of said range of axial positions of said piston means;
means for applying fluid under pressure to the interior of said tubular means so as to cause a flow of said fluid through said port means when said port means is not blocked by said land regions; and
fluid-flow detecting means responsive to the flow of fluid through said port means for producing a first output signal when the rate of said flow is below a small threshold level and for producing a second output signal discretely different from said first output signal whenever said rate of flow exceeds said threshold level.

3,927,477
CURVE-DRAWING APPARATUS

Timothy L. Harris, 1304 Bidwell, West St. Paul, Minn. 55118

Filed Mar. 27, 1975, Ser. No. 562,479
Int. Cl.² B43L *13/22*
U.S. Cl. 33—177 **6 Claims**

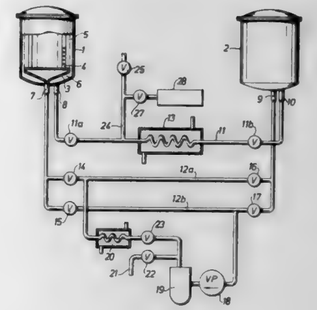


1. Apparatus for use in drawing exponential type curves on a coordinate system, comprising:
a. a base member selectively positionable on the coordinate system;
b. a thin, elongated elastic tracing member having a base end and a movable end, said elastic member generally assuming a planar exponential curve shape along which one side of a parabolic like curve can be drawn when said ends are selectively positioned;
c. attachment means for attaching the base end of said elastic member to said base member such that the base end of said curved elastic member remains generally tangent to a selected line in the coordinate system as the position of said movable end is varied;
d. a support arm for guiding said elastic member and having first and second ends, said second end pivotally connected to the movable end of said elastic member;
e. support arm connecting means for pivotally and slideably connecting said support arm to said base member;
f. a guide track attached to said base member, said guide track having a pre-selected planar curved shape, in which the first end of said support arm is guided by said track to control the positioning of the first end of said support arm, said curve being generally coplanar with said flexible strip;
g. guide means for operably connecting said support arm first end to said guide track to control the positioning of said support arm; whereby movement of said first end of said support arm along said track will cause movement of said second end of said support arm along with sliding and pivoting meovement of said support arm with respect to said base by said support arm connecting means such that the movable end of said tracing member will be moved to cause said tracing member to assume a different curved shape.

3,927,478
METHOD AND APPARATUS FOR DRYING FIBROUS MATERIAL

Friedrich Wilhelm Johann Karrer, Stockholm, and Per Gustaf Mellgren, Vaxjo, both of Sweden, assignors to Karrer System AG, Zollikon, Switzerland

Filed Oct. 15, 1974, Ser. No. 514,774
Int. Cl.² F26B *3/00*
U.S. Cl. 34—20 **6 Claims**



1. An apparatus for drying fibrous material, comprising two closed containers each of which has a support for said fibrous material to be dried, said material being positioned on said support in a manner such as to divide the interior of each container into an inner and an outer chamber which communicate with each other solely via said material, a circulation system for serially interconnecting said containers by connecting said inner chambers to each other and said outer chambers to each other and containing a pump and a heat exchanger arranged in said circulation system in front of each container.

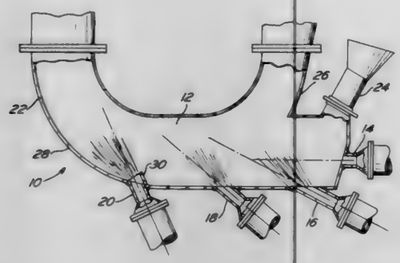
3,927,479
DRYING MILL FOR WET GRANULAR PARTICLES

Nicholas N. Stephanoff, Haverford, Pa., assignor to Fluid Energy Processing & Equipment Co., Hatfield, Pa.

Filed Nov. 26, 1974, Ser. No. 527,251
Int. Cl.² F26B *17/00, 17/10*
U.S. Cl. 34—57 E **3 Claims**

1. In a dryer for drying wet particles wherein there is an inlet chamber, an upstack leading from one end of said inlet chamber, a downstack leading back into the inlet chamber, a classifier section connecting the upstack and downstack, an exhaust port between the classifier section and downstack, a particle feed inlet leading into the inlet chamber, a gas inlet nozzle at the upstream end of the inlet chamber opposite to said upstack, and a plurality of tangential gas inlet nozzles leading into the floor of said inlet chamber, the improvement which comprises a deflector within said inlet chamber in alignment with the last gas inlet nozzle downstream from said upstream end, said deflector and the portion of said floor surrounding said last gas inlet nozzle defining a nozzle orifice within said

inlet chamber which extends angularly from the plane of said floor at the downstream peripheral portion of said orifice to



an elevated position relative to said floor at the upstream peripheral portion of said orifice.

3,927,480

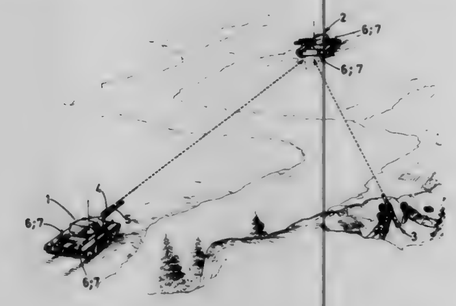
GUNNERY TRAINING SCORING SYSTEM WITH LASER PULSES

Hans R. Robertsson, Molndal, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

Continuation of Ser. No. 318,008, Dec. 26, 1972, Pat. No. 3,832,791. This application Mar. 26, 1974, Ser. No. 454,941The portion of the term of this patent subsequent to Sept. 3, 1991, has been disclaimed.

Int. Cl.² F41G *3/26*

U.S. Cl. 35—25 **3 Claims**



1. A method of evaluating the results of target practice with a weapon which has a barrel and which is located at a weapon position, firing at a target at a target position which is remote from the weapon position and which may be changing due to target motion, wherein firing from the weapon of a round of a selected type of ammunition is simulated by emitting radiation substantially coaxially with the weapon barrel from a directional radiation emitter such as a laser at the instant when the weapon is fired, and wherein a relationship between target location and the point of impact of said simulated round is calculated at the weapon position on the basis of detected radiation returned to the weapon position from reflector means at the target, said method being characterized by:

A. after a delay interval following said instant of simulated firing, which interval substantially corresponds to the time required for a real round of said ammunition to arrive at its point of impact, producing a further radiation emission from said radiation emitter that comprises a train of pulses in which is encoded information concerning selected ammunition type and relationship of said point of impact to target position, the directionality of the emitter ensuring that said information is delivered substantially only to a target at which the weapon is effectively aimed; and

B. at the target, combining said information with other information which relates to the vulnerability of the target, to produce an output signifying the hit effectiveness against that target of the simulated round as fired.

3,927,481

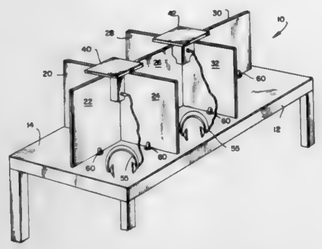
PORTABLE COLLAPSIBLE PARTITION FOR A TABLE

Nathan N. Safranek, 2 Morris Road, Bethpage, N.Y. 11714

Filed July 5, 1974, Ser. No. 485,824

Int. Cl.² A47G *5/00*

U.S. Cl. 35—60 **4 Claims**



1. A portable, collapsible partition for forming carrels on a table top comprising:

a. a multiplicity of panels;

b. hinge means for securing said panels to each other to enable said panels to be manipulated in a plurality of different positions to create enclosed areas on said table top when said partition is unfolded;

c. separating means for positioning said panels in a predetermined relationship to create said enclosed areas; and

d. access means integral with said separating means for making available communication media in each of said enclosed areas.

3,927,482

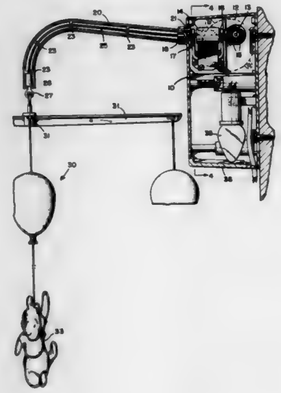
DECORATIVE NURSERY ACCESSORY

Kenneth N. Marcus, Tipp City, Ohio, assignor to The Dolly Toy Company, Tipp City, Ohio

Filed July 1, 1974, Ser. No. 484,686

Int. Cl.² G09F *11/00*

U.S. Cl. 40—28.1 **2 Claims**



1. A decorative nursery accessory comprising a housing adapted to be mounted on a wall, a motor on said housing, a music box in said housing driven by said motor via a drive shaft, a flexible shaft coupled to said drive shaft and driven by said motor, a guide for said shaft directing the free end thereof

in a downward direction, a multiple unit mobile having a plurality of individual figures attached to the free end of said shaft and adapted to rotate adjacent the lower part of said housing in a horizontal plane, a translucent window in the lower part of said housing, and means on said housing for illuminating through said window less than all of said plurality of individual figures to cause said individual figures to be successively illuminated as said mobile is rotated.

3,927,483

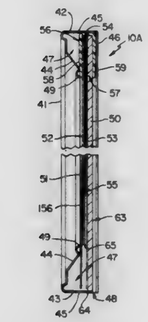
FRAME CONSTRUCTION FOR A PLURAL PAGE DOCUMENT

James T. Candor, 5440 Cynthia Lane, Dayton, Ohio 45429

Division of Ser. No. 336,989, March 1, 1973, Pat. No. 3,807,071, which is a continuation-in-part of Ser. No. 271,925, July 14, 1972. This application Apr. 15, 1974, Ser. No. 460,745. The portion of the term of this patent subsequent to Apr. 30, 1991, has been disclaimed.

Int. Cl.² G09F *1/12*

U.S. Cl. 40—102 **7 Claims**



1. A picture-like frame construction exhibiting a plural page document comprising a plural page document, and a framing means disposed to define an open area therewithin as well as to define a channel means facing into said open area and in communication therewith, said frame construction having a plurality of flexible pocket members respectively receiving and holding said pages of said document in a serial manner and supporting the same in stacked hinged relation in said open area with the hinged part of at least said pocket members being hiddenly disposed in said channel means so that the outermost page appears to be the only page in the open area but permitting all of said pages to be manually fanned out through said open area thereof for individual viewing thereof, said open area defined by said framing means being substantially rectangular and thereby having two pairs of opposed sides, said pocket members for said pages of said document and said pages each having a substantially rectangular configuration and thereby having two pairs of opposed sides disposed adjacent said two pairs of opposed sides of said open area, only one side of one pair of opposed sides of at least said pocket members being disposed in said stacked hinged relation, the other pair of opposed sides of said pocket members disposed inboard of the respective pair of opposed sides of said open area of said framing means.

3,927,484

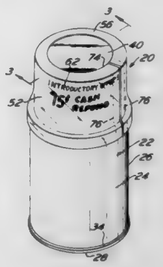
DIE-CUT COUPON SHRINK LABEL

William Spiegel, Southampton; Jacob Spiegel, Philadelphia both of Pa., and Albert Miller, Somerdale, N.J., assignors to Gilbreth Company, Cornwells Heights, Pa.

Filed Feb. 4, 1974, Ser. No. 439,463

Int. Cl.² G09F *3/00*

U.S. Cl. 40—307 **4 Claims**



1. A label for disposition on the cap of a container, said cap having a chime about the lower edge thereof, said label being a heat shrinkable tube and including advertising indicia thereon, said label including a peripheral edge having two opposed recessed portions cut therein and forming tapered extending portions which readily slide over said chime to facilitate the placement of the label on the cap prior to the shrinkage thereof.

3,927,485

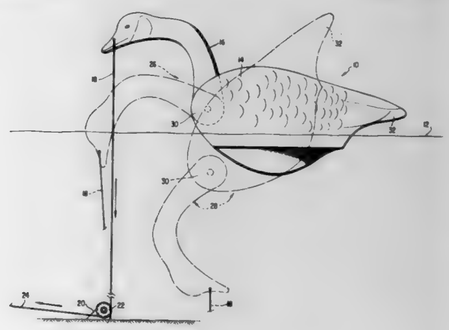
WATER FOWL DECOY

John Thorsnes, Jr., 2416 N. Florida St., Arlington, Va. 22207

Filed Sept. 13, 1974, Ser. No. 505,897

Int. Cl.² A01M *31/06*

U.S. Cl. 43—3 **7 Claims**



2. A water fowl decoy, comprising:

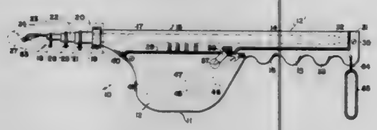
a buoyant body member simulating the appearance of a natural water fowl's body when at rest on the surface of a body of water;

a neck and head portion pivoted to said body member for forward rotation about an essentially horizontal axis to a position in which at least a portion of said neck and head portion passes beneath said surface, said neck and head portion simulating the appearance of a natural water fowl's neck and head; and

a resilient member connected to said body member and said neck and head portion whereby said neck and head portion is normally restrained in a elevated position yet said neck and head portion alone may be rotated forward relative to said body member until the limit of the stretching capability of said resilient member is reached, and thereafter said body member and said neck and head

portion may be pivoted together forwardly into said body of water.

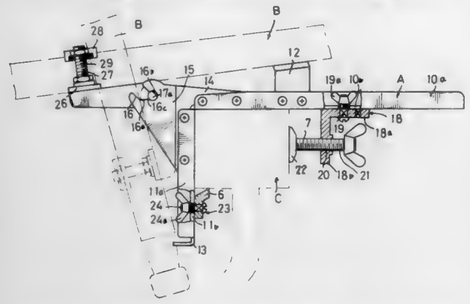
3,927,486
PORTABLE ANGLING ASSEMBLY
Kerry Yuen, 17 Crawson Bay, Winnipeg, Manitoba, Canada
Filed June 28, 1974, Ser. No. 484,125
Int. Cl.² A01K *87/00, 89/00*
U.S. Cl. 43—20 **7 Claims**



1. An angling assembly comprising in combination an enclosure including a reel carrying portion, a handle portion extending rearwardly from one end of said enclosure, a rod carrying portion on the upperside of said enclosure and a telescopic rod assembly in said rod carrying portion adapted to be moved from the fully extended position to an enclosed and stored position within said rod carrying portion and vice-versa, a spinning reel component mounted within said reel carrying portion, a winding handle mechanism operatively connected to said reel component and extending through the wall of said enclosure from one side thereof, and reel release means in said enclosure and also extending through the wall of said enclosure and being operatively connected to said reel component, said reel component including a reel release pin, said reel release means including a member pivoted by one end thereof in said enclosure and engaging the distal end of said reel release pin adjacent the other end of said member, and a lever mechanism extending through the wall of said enclosure, said lever mechanism comprising a finger operated lever portion exteriorly of said enclosure and a member engaging portion within said enclosure for moving said member and hence said release pin to the reel released position, said member of said reel release means comprising a substantially triangular member being pivoted to said enclosure by one corner thereof and including a release pin engaging side extending down from said one corner with a further side extending down from said one corner at an angle to said first side and being engageable by said lever mechanism whereby said release pin is moved substantially perpendicular to the plane of said reel.

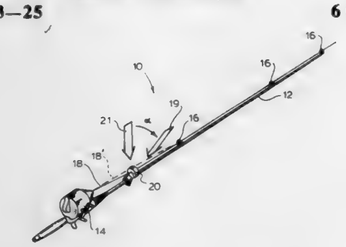
3,927,487
FISHING ROD HOLDING LEVERAGE DEVICE
Toshiaki Miyamae, 2-16, 2-chome, Nishi-Iwata, Higashi-Osaka, Osaka, Japan
Filed July 2, 1974, Ser. No. 485,217
Int. Cl.² A01K *97/10*
U.S. Cl. 43—21.2 **1 Claim**

1. A fishing rod holding device comprising
A. anchoring means comprising a vertical plate and joined thereto at substantially right angles a horizontal plate, adjustable means disposed on both said vertical plate and said horizontal plate for anchoring said device, said anchoring means further comprising a fishing rod support means;
B. a pair of vertically disposed holding plates attached to said anchoring means at the juncture of said vertical and horizontal plates, said holding plates each having a hole of a first diameter aligned with each other and a larger diameter opening interconnected by a passageway having a width smaller than said diameter of said holes, the axis of said holes being located above the plane of said horizontal plate of said anchoring means;
C. receiving means comprising a pair of receiving elements shaped suitably to fit a fishing rod handle therebetween, a pair of adjustable bolt means, and means for engaging with said holding plates, said pair of adjustable bolt means connected to said means for engaging and holding fixedly said receiving elements with said fishing rod handle fit therebetween, said means for engaging comprising a structure means and a fulcrum shaft means having an axis alignable with said axis of said holes of said holding plates and having at each end thereof portions of a diameter substantially equal to the said diameter of said holes, and a portion thereof cut axially with the remaining diameter width substantially similar to the width of said passageway of said holding means, whereby said receiving means is



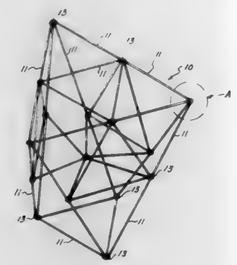
readily engageable with said holding plate by suitable vertical rotation and fitting of said cut portion of said shaft means through said opening and through said passageway and placement of said shaft means within said holes, thereby locking said shaft means within said hole for rotation to any radial position and thereby enabling removal by the reverse operation of rotating and passage of the cut portion through said passageway and whereby said fishing rod held by said receiving means is easily locked and rested on said fishing rod support means of said anchoring means in a rest position and readily rotated about said shaft means to another position.

3,927,488
DEVICE FOR PREVENTING TWISTS IN FISHING LINES
Aubrey R. Peddy, Rte. No. 1, Box 104, Groveland, Fla. 32736
Continuation-in-part of Ser. No. 503,646, Sept. 6, 1974, abandoned. This application Mar. 17, 1975, Ser. No. 558,930
Int. Cl.² A01K *87/00*
U.S. Cl. 43—25 **6 Claims**



1. A fishing rod and reel combined with a device for preventing twist in fishing lines, said combination comprising:
a member having an opening extending therethrough, said opening having a substantially V-shape and tapered toward a central portion of said member;
said V-shaped opening in said member extending in a substantially sideward direction with respect to a plane defined by said fishing line and said rod;
said member further including a central slot defined by roughened surfaces communicating with said V-shaped opening at said central portion thereof;
means for attaching said member to said fishing rod at a point intermediate between said reel and the extremity of said rod with fishing line extending from said reel through said V-shaped opening of said member to the extremity of said rod, said attaching means comprises a shaft extending substantially perpendicular to the center line of said V-shaped opening; and wherein
said fishing line moves across said surfaces of said member defining said V-shaped opening and into said slot when operation of said reel draws said fishing line taut.

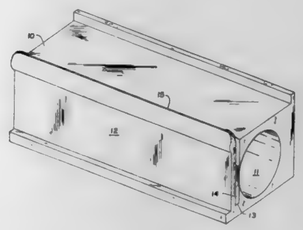
3,927,489
RING ELEMENTS, CHANNEL ELEMENTS, AND CONNECTORS FOR JOINING SAME
Lawrence A. Bernstein, P.O. Box 651, Frederick, Md. 21701
Filed May 16, 1973, Ser. No. 360,785
Int. Cl.² A63H *33/10*
U.S. Cl. 46—29 **10 Claims**



1. A construction toy comprising:
A. a plurality of substantially rigid construction elements each comprising at least one hollow channel;
B. a plurality of connectors each comprising:
1. a stem at one end capable of extending into one of said channels and having a cross-section defined by surfaces that intersect to form longitudinal edges and being broader in one direction than in the direction perpendicular thereto, the maximum cross-sectional dimension of said stem being greater than the maximum cross-sectional dimension of said one of said channels to be frictionally held by the wall defining that channel, and
2. a head at the other end extending from the channel and formed with a circular aperture extending therethrough and opening at a margin of the respective head by way of a restricted slot that extends and opens laterally with respect to said stem, said head including a portion extending to one side of the longitudinal direction of said stem beyond one side of said channel in the same direction relative to said stem as said slot to form an abutment surface that engages said element to allow only said stem to enter said channel; and
C. a ring for joining at least two of said elements, said ring being forceable through said restricted slots into said apertures of the connectors attached to said elements to be joined, said ring having a cross-section dimensioned to be larger than said slots but both slidable and rotatable in said apertures so that the angular relationships of elements joined by said ring are universally variable.

3,927,490
TURKEY CALL
John T. Grayson, 103 Mount Vernon Drive, Bristol, Va. 24201
Filed Feb. 12, 1975, Ser. No. 549,292
Int. Cl.² A63H *5/00*
U.S. Cl. 46—189 **2 Claims**

1. A turkey call comprising
A. a portion of appalachian red cedar, at least a part of the portion of appalachian red cedar comprised of red type wood,
B. the portion of appalachian red cedar having a cylindrical amplifying recess therein, the axis of symmetry of the amplifying recess being positioned substantially parallel to the grain of the appalachian red cedar, the amplifying recess having a diameter in the range of ⅝ to 15/16 inches and a depth in the range of 3-½ to 4-½ inches,
C. the portion of appalachian red cedar having a plannar surface oriented parallel to the axis of symmetry of the amplifying recess,
D. the portion of appalachian red cedar having a slot therein, the slot being disposed between the amplifying recess and the plannar surface, the wall of the slot remote from the amplifying recess being defined by a first plane oriented parallel to the plannar surface and disposed from 0.070 to 0.090 inches from the plannar surface, the wall of the slot adjacent the amplifying recess being defined by a second plane oriented parallel to the plannar surface, the second plane being disposed from 0.080 to 0.106 inches from the first plane and a suitable distance from the axis of symmetry of the amplifying recess such that

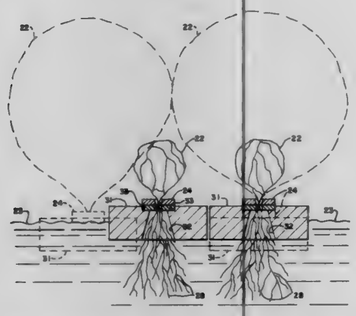


the intersection of the cylinder defining the amplifying recess and the second plane define a rectangular passageway having a long dimension parallel to the axis of symmetry of the amplifying recess and a short dimension from 7/32 to ⅝ inches, the appalachian red cedar between the first and second plane being comprised of substantially red type wood,
E. the portion of appalachian red cedar having a striking region adjacent the region between the first plane and the parallel surface, the striking region being defined on one side by the first plane, the striking region being comprised of substantially red type wood,
F. first and second wood damping spacers bonded into the slot disposed between the amplifying recess and the plannar surface, the first and second damping spacers being disposed at opposite ends of the slot, the grain of the wood of the damping spacers being oriented substantially perpendicular to the grain of the portion of appalachian red cedar, and
G. an elongated piece of chalk adapted to strike the striking region and generate a turkey-attracting sound.

3,927,491
PROCESS AND APPARATUS FOR GROWING PLANTS
Robert S. Farnsworth, 1200 Lakeshore, No. 15H, Oakland, Calif. 94606
Filed Dec. 30, 1974, Ser. No. 537,198
Int. Cl.² A01G *31/02*
U.S. Cl. 47—1.2 **11 Claims**

1. A process for growing plants, which plants require a substantial lateral area relative to the plant stem for growth during mature plant stages and relatively insubstantial lateral area during seedling plant stages, comprising the steps of:
floating a plurality of plants by means of a plurality of separate raft means on a nutrient solution, each said raft means having sufficient buoyancy and stability for floating support of said plants and being adapted for communication of nutrient solution to said plants for growing of the same, said floating step including positioning of said

plurality of raft means in said nutrient solution in close proximity to each other for substantially maximum plant density per unit area of nutrient solution as determined by the larger of the lateral area of said raft means and the lateral area of said plants; and



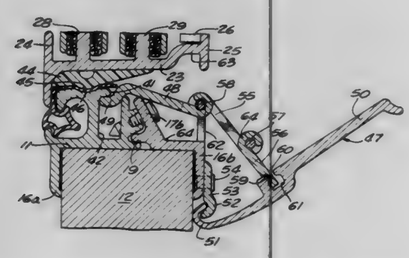
laterally displacing said raft means and said plants while increasing the total effective area of said nutrient solution in an amount corresponding to the increase of the lateral area required by said plants during growth while maintaining substantially maximum plant density per unit area of nutrient solution.

3,927,492

QUICK RELEASE HINGED VEHICLE WINDOW

Lawrence E. Carson, West Covina, Calif., assignor to Le Van Specialty Company, Inc., City of Industry, Calif.

Filed Sept. 16, 1974, Ser. No. 506,235
Int. Cl.² E05C *15/02, 11/00*; E05B *65/10*
U.S. Cl. 49—141 **15 Claims**



1. The combination in a quick release hinged vehicle window, comprising:

a. a fixed outer frame structure adapted to be mounted in a wall window opening;

b. an inner window supporting frame structure having a top hinged connection with a top portion of said fixed outer frame for permitting swinging movement of the inner frame structure between a position substantially coplanar with said outer frame structure and an angular position with its bottom outwardly spaced from the bottom of said outer frame structure;

c. a manually operable articulated latching mechanism mounted on a bottom portion of said outer frame structure including a swingable latch bar having an outermost end movable into latching and non-latching positions with respect to a bottom portion of said inner frame structure in said coplanar position thereof; and

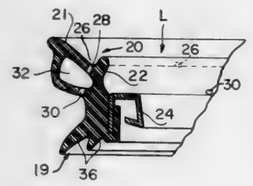
d. a separate swingable mounted actuating lever having an operative connection with said outermost end of said latch bar.

3,927,493

AUTOMOBILE COMPARTMENT DOOR WEATHERSTRIP

Norihiro Tsuneishi, and Yoshiyuki Miyabayashi, both of Tokyo, Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Jan. 8, 1974, Ser. No. 431,610
Claims priority, application Japan, Jan. 9, 1973, 48-5993
Int. Cl.² E06B *7/23*
U.S. Cl. 49—476 **2 Claims**



1. A weatherstrip for an automotive trunk structure, comprising:

a loop-shaped body extending in generally horizontal direction when in use, said body having a bottom surface disposed to sealingly fix the body to a flange of a door frame of a trunk, opposite a door for the trunk;

a tongue extending outwardly-upwardly from the loop-shaped body, integral therewith, and hollow so as to provide a cavity running longitudinally of the body and tongue, for sealingly contacting an inner panel of the trunk door, when in use and when the trunk door is closed; and

bulge means integral with the body and tongue and extending inwardly-upwardly from the tongue to define therewith, in use, a gutter running longitudinally of the body and cavity, with passageways distributed along the gutter, said passageways extending from said gutter into said cavity and therefrom to the outside of the loop, whereby water gathered in said gutter drains to locations outside of the loop-shaped body.

3,927,494

TENSIONABLE HOLD-DOWN ANCHORAGE APPARATUS

Francis L. Struben, Jarrettsville, Md., assignor to Silver Top Manufacturing Co. Inc., White Marsh, Md.

Filed Nov. 1, 1974, Ser. No. 519,952The portion of the term of this patent subsequent to Oct. 28, 1992, has been disclaimed.
Int. Cl.² E04B *7/00*
U.S. Cl. 52—23 **7 Claims**



1. Apparatus for tensionably securing an object to the earth or the like, comprising:

rod means fixedly engageable with the earth and having a portion thereof extending thereabove;

sleeve means slidable onto that portion of the rod means which extends above the surface of the earth, the sleeve means further being rotatable about the vertical axis of the rod means;

bracket means carried on the sleeve means;

said bracket means comprising a U-shaped channel having the longitudinal axis thereof parallel to the longitudinal axis of said rod means;

mounting means disposed in the bracket means;

securing means engageable at a first end thereof with the object to be secured and attachable at a second end thereof to the mounting means in said bracket means;

means for adjustably positioning the sleeve means on the rod means to tension the securing means between the object and the mounting means;

spring means disposed on the rod means between the sleeve means and the means for adjustably positioning the sleeve means acting to accommodate vertical motions of the object to be secured; and

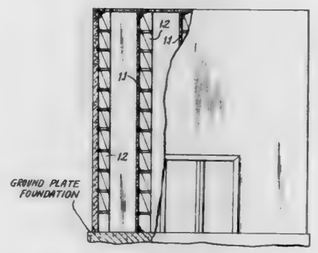
earth anchoring means disposed on the rod means for engaging the earth and anchoring the rod means thereto, said anchoring means including a bottom base attached to the lower end of said rod means, and a plurality of spaced anchoring means disposed on said rod means in spaced fashion above said base and spreadable about the periphery of said rod means for anchoring said rod means in said earth.

3,927,495

WAREHOUSE WITH HIGH SHELVES

Walter Flosser, Schopfheim, Germany, assignor to Oehler-Wyhlen-Lagertechnik A.G., Aarau, Switzerland

Continuation-in-part of Ser. No. 307,876, Nov. 20, 1972, abandoned. This application Aug. 23, 1974, Ser. No. 499,921
Claims priority, application Switzerland, Nov. 24, 1971, 535687/71
Int. Cl.² A47D *1/00*
U.S. Cl. 52—36 **2 Claims**



1. A high stack warehouse building consisting essentially of:

a ground floor foundation;

a roof;

concrete wall sections forming high stack storage shelves on said ground floor foundation;

storage shelves of steel construction connected to said concrete wall sections;

said concrete wall sections being separated from each other to form narrow alleys;

said concrete wall sections provided with lateral stiffening ribs supporting said roof and the wall taking up loads on the high stack storage shelves;

said wall sections being secured rigidly on all sides of said roof and said ground floor foundation;

said shelves taking up the individual loads of the goods stored thereon without providing any structural support for the building;

frames securing said wall sections;

each of said frames consisting of said ground floor foundation, said stiffening ribs for said wall sections and a portion of the roof;

said shelves including load carriers having an overhang and oblique struts to connect the associated wall section to the carriers;

projecting plates on said carriers which are secured by way of gussets to the carrier which carry the shelves on which pallets are supported;

a head plate arranged on each carrier which is secured on both sides of said carrier by screw-bolts in bores in the carrier for fastening said load carriers to the wall; and,

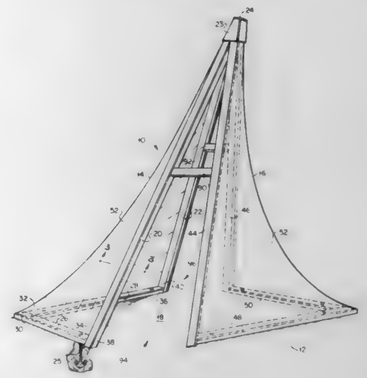
an intermediate plate which is inserted between the head-plate and the wall section.

3,927,496

METHOD FOR CONSTRUCTING A TENSILE-STRESS STRUCTURE AND RESULTANT STRUCTURES

Joseph A. Kersavage, 4022 Sequoyah Ave., S. W., Knoxville, Tenn. 37401

Filed Mar. 18, 1974, Ser. No. 452,363
Int. Cl.² E04B *1/32*
U.S. Cl. 52—80 **10 Claims**



1. A method for fabricating a tensile-stress structure having a surface of double-opposed curvature comprising the steps of erecting a substantially rigid open frame means defining the perimeter of said surface and comprising a terminal support for the respective ends of a plurality of elongated screen members spanning the space within said perimeter,

positioning an elongated screen member comprising a plurality of longitudinal strands, across said space defined by said terminal support,

aligning said screen member across said space with individual ones of said longitudinal strands thereof disposed along a substantially straight line,

tensioning said screen member in the direction of the length of said longitudinal strands,

anchoring the opposite ends of said screen member to said frame means,

applying successive elongated screen members across said space defined by said frame means with their respective adjacent side edges overlapping until said screen members collectively define said surface of double opposed curvature and,

closing the openings between the strands of said screen members with a semi-rigid material.

5. A tensile-stress structure having a surface of double-opposed curvature and comprising

a substantially rigid open frame member defining the perimeter of said curved surface,

a plurality of elongated screen members disposed across said space defined by said frame means in side by side relation with their adjacent side edges disposed in overlapping relation with each other and collectively defining said surface of double-opposed curvature, each of said screen members including a plurality of longitudinal and transverse strands, each of said screen members being tensioned in the direction of said longitudinal strands whereby each of said longitudinal strands extends in a

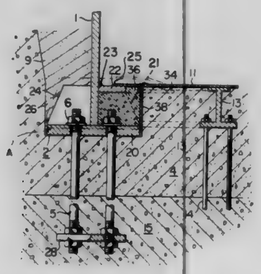
substantially straight line between spaced apart locations on said frame member,
means anchoring the ends of each of said screen members to said frame member, and
semi-rigid means closing the openings between said strands of each of said screen members.

3,927,497

SUPPORTING STRUCTURE OF PRESSURE VESSEL

Toshiaki Yoshinaga; Takanao Wada, and Kenji Matsuo, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 12, 1973, Ser. No. 414,747
Claims priority, application Japan, Nov. 15, 1972, 47-113898
Int. Cl. E02d 27/00; E04b 1/92
U.S. Cl. 52—169 15 Claims



1. A supporting structure of a pressure vessel comprising:
footing means secured to a lower edge of a side wall of said pressure vessel for installing the vessel on a concrete foundation,
said footing means including a base plate fixed on the lower edge of the side wall of said pressure vessel and a lining plate support member joined to the inner surface of said side wall so as to project therefrom,
liner support means installed in the concrete foundation inside the side wall of said pressure vessel,
a lining plate mounted on the liner support means and fixed to the lining plate support member at the edge thereof to form the bottom surface of the pressure vessel,
said lining plate and said lining plate support member having thereunder concrete for reinforcing them, and
a first means disposed adjacent to an inner edge of the base plate at an end thereof and to an under surface of the lining plate at the other opposite end thereof for permitting the concrete on the base plate inside the side wall of the vessel to be moved with the base plate, when an unusual pressure increase occurs in the pressure vessel,
said liner support means having means for relieving the stress produced in the lining plate when an unusual pressure increase occurs in the pressure vessel said relieving means being disposed at ends thereof facing said first means.

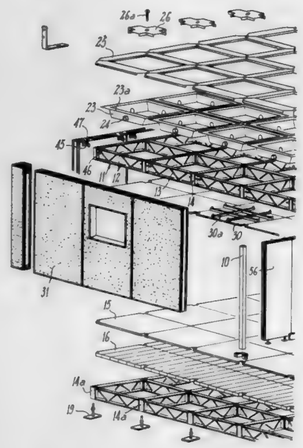
3,927,498

DEVICE FOR BUILDING CONSTRUCTION

Pierre Benedetti, Sarcelles, France, assignor to Sylvette Kirnisky, Sarcelles, France

Filed Nov. 28, 1973, Ser. No. 419,484
Claims priority, application France, Dec. 8, 1972, 72.43733
Int. Cl.² E04H 1/00; E04B 1/19
U.S. Cl. 52—236 19 Claims

1. A building structure for forming buildings of any plan configuration and of single or multiple stories by use of prefabricated elements forming modular space units, said building structure comprising:
at least two horizontally extending lattice networds, said lattice networks being vertically spaced from each other by a distance equal to a story of a building being constructed, the uppermost of said lattice networks forming roof supporting means for said building, the lowermost of said lattice networks forming floor supporting means for said building, each of said lattice networks comprising:
a plurality of vertically extending short posts;
a plurality of horizontally extending trussed beams, each having a height substantially equal to the height of said short posts; and
means for removably connecting opposite ends of said trussed beams to said short posts, said trussed beams extending from said short posts at substantially right angles to each other, thereby forming said lattice network;
a plurality of vertically extending main posts, each having a height equal to said distance, each said main post being



vertically aligned with and positioned between short posts of vertically adjacent of said lattice networks;
means for removably fixing opposite ends of each of said main posts to ends of respective of said aligned short posts;
said main posts and said trussed beams of said lattice networks forming modular space units of said building being constructed; and
a roof structure supported on said uppermost of said lattice networks; said roof structure comprising a plurality of tub-shaped elements each having flanged edges, said flanged edges being fitted over said trussed beams of said uppermost lattice network; channel members positioned over said flanged edges and secured to said trussed beams; sealing strips positioned between said channel members and said flanged edges; and means on said tub-shaped elements for collecting rain water.

3,927,499

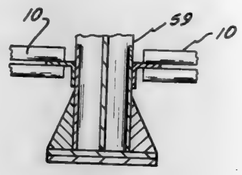
SPACE FRAME FLOOR COLUMN SYSTEM

Hristo V. Papayoti, Ann Arbor, Mich., assignor to Unistrut Corporation, Wayne, Mich.

Filed May 24, 1973, Ser. No. 363,365
Int. Cl.² E04B 5/43
U.S. Cl. 52—263 10 Claims

1. The combination of vertically spaced load carrying floor and roof frameworks with an upright support column structure, each framework comprising a plurality of elongated stress and load transmitting struts interconnected by stress and load distributing connecting fixtures to define upper and lower gridlike chord frame structures disposed in spaced parallel planes, a plurality of elongated stress and load transmitting struts each connecting respectively with connecting fixtures of

the upper and lower chord frame structures to define a web structure intermediate said chord frame structures, and fastening means for connecting said struts to said connecting fixtures; said column structure extending from a lower support base through said floor framework to said roof framework and supportingly connected to said frameworks and being fastened to at least one connecting fixture in said floor framework and at least one connecting fixture in said roof framework to transmit loads of said frameworks directly to the base through said column structure while maintaining the load and stress transmitting and distributing characteristics of each framework independently unaffected, said column structure comprising:



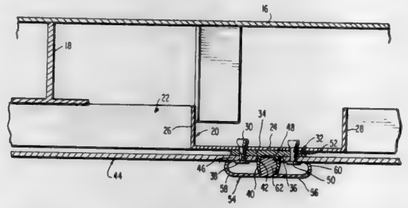
at least one vertical column means;
a framework support assembly carried by said column means and extending substantially horizontally intermediate said upper and lower chord frame structures,
said framework support assembly comprising a horizontally extending arm, a pair of pedestals, means mounting one of said pedestals to the upper portion of said arm and means mounting said pedestal to a connecting fixture in said upper chord frame structure and means mounting the other of said pedestals to the lower portion of said arm and means mounting said pedestal to a connecting fixture in said lower chord frame structure.

3,927,500

FIRE RESISTANT PANELING SYSTEM

Oscar M. Plumlee, Norfolk, Va. 23501

Filed Sept. 16, 1974, Ser. No. 506,539
Int. Cl.² E04B 1/92; E04F 19/04; E04C 1/34
U.S. Cl. 52—460 4 Claims



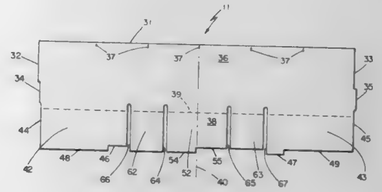
1. In a paneling system for application to an area having a series of walls, said walls meeting at corners, the walls having a substructure, a floor, and a ceiling with a depending coaming at spaced intervals:
a plurality of channel form cribbing members secured in substantially vertical condition at spaced locations along said walls, with end cribbing members adjacent each of the corners, and horizontal floor cribbing members;
the cribbing members each having a bight portion and side arms, with the arms connected to the substructure of the walls at their distal extremities, and the bight portions disposed in parallel, outwardly spaced relation to the walls;
the bight portions having openings formed therein at selected locations;
back members extending vertically on the bight portions of the cribbing members, the back members each comprising a plate having plate openings therein aligned with the openings in the bight portions, and having a pair of outwardly projecting prongs;
said prongs having first sections outwardly angled from the plate relative to one another and second sections angled toward one another and together comprising a spring clip;
a series of panels comprising metallic plates with a laminated, fire resistant coating thereon, said panels having ends which abut the first sections of the prongs and extend between adjacent back members;
the panels having holes formed therein in alignment with the openings and the plate openings; rivets extended through said aligned openings, plate openings and holes, clampingly engaging the panel ends and back members to the bight portions; and
a face member for each back member, the face members comprising a cover having a flat, vertically elongated section and curved side sections, and a central plug engaged by the spring clip, said plug having side walls with outer portions angled to conform to the first sections of the prongs and inner portions angled to conform to the second sections of the prongs.

3,927,501

RANDOM PATTERN SHINGLE

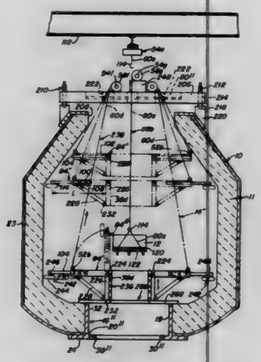
Herman C. Allen, Cumberland, R.I., and Clifford J. Patenaude, Plainville, Mass., assignors to Bird & Son, Inc., East Walpole, Mass.

Filed Jan. 15, 1975, Ser. No. 541,283
Int. Cl.² E04D 1/26, 1/36
U.S. Cl. 52—555 12 Claims



1. A strip shingle adapted to be laid on a roof with other identical strip shingles in overlapping superposed courses in a predetermined assembly with adjacent superposed courses laterally offset to simulate the appearance of random width and multiple length wood shingles
said strip shingle having
side butt edges
an upper unexposed area and
a lower exposed area with a lower edge
said strip shingle having in said exposed area and said lower edge at least two slots defining at least three tabs including outer tabs and at least one intermediate tab therebetween
said outer tabs being of width greater than said intermediate tab
the lower edges of at least some of said tabs including said outer tabs being defined by two discrete long and short tab lengths
one of said outer tabs, at its end adjacent a said intermediate tab, having a narrow width tab portion of long length with the remainder of said outer tab being of short length and the other of said outer tabs, at its end adjacent a said intermediate tab, having a narrow width tab portion of short length with the remainder of said outer tab being of long length
said slots in a plurality of said courses being out of vertical alignment with one another.

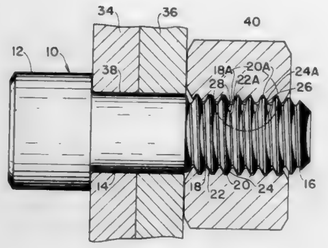
3,927,502
METHOD OF LINING A FURNACE
Joe H. Smith, Bluff Park, Ala., assignor to United States Steel Corporation, Pittsburgh, Pa.
Division of Ser. No. 253,217, May 15, 1972, Pat. No. 3,853,204. This application Feb. 15, 1974, Ser. No. 443,055
Int. Cl.² E04G 21/00
U.S. Cl. 52—747 31 Claims



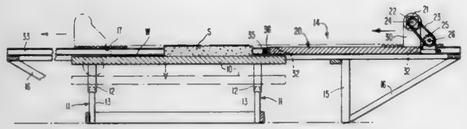
1. A method of lining a furnace, provided with a bottom aperture in its bottom and a top aperture in its top, with an inner lining of a refractory material, said method including the steps of:
a. securing a table support member to said furnace adjacent said top aperture of said furnace;
b. moving a work platform through said bottom aperture in said furnace to a desired work position within said furnace;
c. moving said work platform from a storage position, where said work platform passes through said bottom aperture in said furnace, to a work position where a workman is able to stand on said work platform;
d. moving said refractory material through a refractory material aperture in said work platform into alignment with said work platform so that said refractory material can be transferred to said work platform;
e. transferring said refractory material to said work platform;
f. rotating said work platform and a turntable on said table support member to align said work platform with an inner portion of said furnace where said inner lining of said refractory material is to be applied; and
g. applying said refractory material to said inner portion of said furnace.

3,927,503
PREVAILING TORQUE FASTENER
Charles A. Wilson, Williamstown, N.J., assignor to Standard Pressed Steel Co., Jenkintown, Pa.
Filed Dec. 26, 1973, Ser. No. 428,112
Int. Cl.² F16B 5/02, 39/30
U.S. Cl. 52—758 F 30 Claims

10. A joint assembly comprising a plurality of workpieces having an opening extending therethrough, a threaded fastener including a shank portion having an external thread formed thereon with a normally load bearing flank and a normally non-load bearing flank and an internal thread configuration having a mating thread generally complementary to said external thread, the improvement comprising:
a locking portion formed on said external thread including an axially displaced thread segment relative to the remainder of said external thread having an axially displaced root and an entire crest being axially displaced adjacent said displaced root, wherein said displaced crest is axially thicker than the crest of said external thread, and wherein the surface of said locking portion includes a first surface flank portion adjacent said displaced crest for bearing on a portion of said mating thread causing a deformation of said internal thread adjacent its minor diameter without substantially deforming said mating thread between its pitch diameter and its major diameter, and a second surface flank portion relieved from said first surface flank portion intermediate said displaced root and said first surface flank portion, said locking portion being non-symmetrically disposed on the circumference of one segment of said external thread.

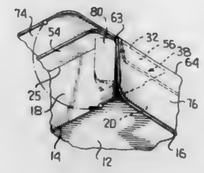


3,927,504
APPARATUS AND METHOD FOR PRODUCING A COMPRESSED, ROLLED PACKAGE OF RESILIENT MATERIAL
John J. Forrister, 6348 E. Gage Ave., Bell Gardens, Calif. 90201
Filed Sept. 4, 1974, Ser. No. 503,482
Int. Cl.² B65B 11/56, 63/02
U.S. Cl. 53—21 FW 9 Claims



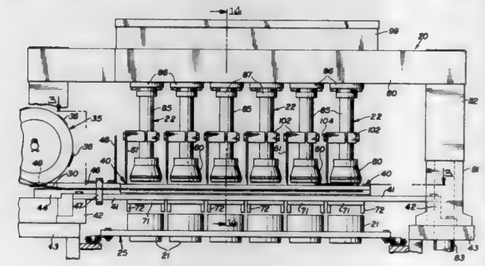
6. In a method of making a compressed, rolled package of resilient, compressible foamed sheet material, the steps which comprise:
a. supporting said material on a substantially flat support,
b. advancing a cylindrical roller from a remote position along said support toward and into rolling pressure engagement over the front portion of said material, compressing said front portion of said material under said roller and causing the compressed front portion of said material behind said roller to curl up against the trailing surface of said roller,
c. advancing behind said roller toward said material and into pressurized engagement therewith a carrier having a leading edge that is spaced above the level of said support at a distance less than the thickness of said material,
d. folding over upon itself the curled up compressed front portion of said material under said front edge of said carrier, and
e. continuing the advancement of said carrier to compress said material beneath said leading edge and then roll up said material to form a compressed rolled package.

3,927,505
METHOD OF FORMING, FILLING AND CLOSING CARTONS, AND SPECIFIC CARTONS THEREFOR
Robert P. Bemiss, 925 Vista Road, Hillsborough, Calif. 04010
Division of Ser. No. 347,411, April 3, 1973, Pat. No. 3,812,612. This application Mar. 20, 1974, Ser. No. 453,087
Int. Cl.² B65B 7/00
U.S. Cl. 53—37 3 Claims



1. A packaging method comprising the steps of providing a carton blank defined by a bottom panel, four upstanding side panels and a flange carried by each side panel, setting up the carton blank into a carton body with the side panels generally normal to the bottom panel and the flanges, conveying the carton body along a predetermined path in a predetermined direction, packaging a product within the carton body, spanning the carton body including the flanges thereof with a cover having a top panel and a flange overlying and projecting beyond each carton body flange, folding all flanges directly against associated side panels of the carton body, and adhesively securing the cover flanges directly to, against and entirely covering the associated side panels at an area below each body flange whereby the body flanges are thereby held in direct sandwiched relationship between the associated cover flanges and carton body side panels.

3,927,506
FEEDER, SHEARER AND APPLICATOR FOR A STRIP OF CONNECTED PAPER CAPS
Ahmed M. E. Abd-Alla, Westerville, Ohio, assignor to Big Drum, Inc., Columbus, Ohio
Filed Apr. 17, 1974, Ser. No. 461,529
Int. Cl.² B65B 7/28
U.S. Cl. 53—41 14 Claims



1. The method of capping a plurality of containers siumultaneously which comprises providing a series of caps in strip form in which the individual caps are connected to each other at successive transverse lines, supporting a plurality of the containers as a row of successive containers with their mouths exposed for receiving the caps, feeding the strip of caps into association with the mouths of the containers with the center line of the strip aligned with the centers of the container mouths and with tranverse lines of the strip disposed in leading and trailing relationship to each of the successive container mouths of the row so that the respective caps of the strip are in alignment with the mouths, shearing the strip at the successive connecting lines between the caps after they are aligned with the container mouths by first impaling the strip at each successive transverse line and at the center line of the strip to stabilize it laterally and longitudinally and then shearing it simultaneously laterally in both directions from the impaling point gradually and progressively outwardly to the opposed outer edges of the strip at said transverse lines while concurrently displacing the cap perpendicularly to the plane of the strip prior to completely separating the cap, and applying the separated caps to the aligning mouths of the containers.

3,927,507
PACKAGING APPARATUS
Laurie M. Reid, Birmingham, Ala., assignor to Master Packaging Equipment, Inc., Trussville, Ala.
Filed Jan. 23, 1974, Ser. No. 435,731
Int. Cl.² B65B 9/12
U.S. Cl. 53—182 8 Claims

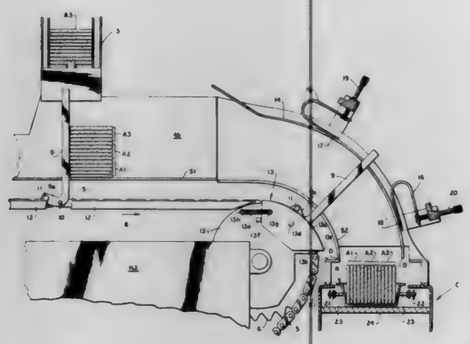


1. Packaging apparatus comprising means for feeding forward units to be wrapped and flexible packaging material for wrapping the units, with the units spaced apart in the direction of feed, means for effecting intermittent operation of the feeding means intermittently to feed forward the units and the packaging material, with a dwell interval between successive feed cycles, and means for forming a seal across the width of the material between two successive units during each dwell interval, wherein said means for operating the feeding means comprises a chain and sprocket drive including a crank rotatable about a predetermined axis, means for continuously rotating the crank in one direction about its said axis, a first sprocket secured to the crank with the axis of said first sprocket offset from the crank axis for rotation of said first sprocket about the crank axis without rotation of said first sprocket about its own axis, a second sprocket connected to said feeding means, a chain trained around said first and second sprockets, said first sprocket acting to pull a reach of the chain in a forward direction to effect rotation of the second sprocket in a forward direction for driving said feed means during a first portion of a revolution of said first sprocket about the crank axis, and to discontinue froward drive of the chain during a second portion of said revolution for a feed and dwell of the feed means during each revolution of the crank, means for maintaining the chain relatively taut around said sprockets, and means driven in timed relation to said first sprocket for operating said seal forming means to form a seal as the first sprocket rotates through said second portion of a revolution.

3,927,508
ARTICLE LOADING MACHINE
William A. Campbell, III, Athens, Ga., assignor to Quality Food Machinery Inc., Athens, Ga.
Filed Apr. 10, 1975, Ser. No. 566,784
Int. Cl.² B65B 5/06, 35/50
U.S. Cl. 53—251 13 Claims

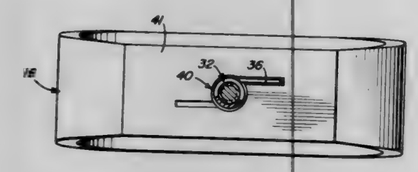
1. A machine for manipulating a vertical stack of articles into horizontal disposition said machine comprising support means having a generally horizontal article supporting portion and a downwardly projecting article manipulating portion, a flexible endless element arranged to move along a path a part of which is generally parallel to and adjacent said article manipulating portion of said support means, a feeder lug

pivotally mounted on said endless element, a cam follower mounted on said feeder lug, a cam having a cam surface adjacent said endless element and generally parallel to the article manipulating portion of said support means, said cam surface being engageable by said cam follower so as to hold said feeder lug approximately normal to said article manipulating portion of said support means for engaging and moving



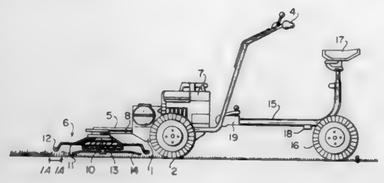
the articles therealong, said cam being configured to allow said feeder lug to swing about its pivotal mounting from its normal disposition relative to said manipulating portion of said support means to a position approximately tangent thereto and means yieldably mounting said cam so as to accomodate predetermined swinging movement of said lug about its pivotal mounting which is in a direction generally opposite to article feeding movement thereof.

3,927,509
AUTOMATIC IN-PLACE STIRRUP
Fred A. Riebold, P.O. Box 314, Central, N. Mex. 88026
Filed May 30, 1974, Ser. No. 474,861
Int. Cl.² B68C *3/00*
U.S. Cl. 54—48 **10 Claims**



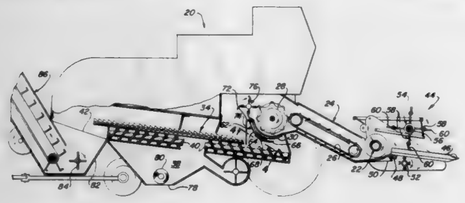
1. A stirrup assembly comprising, in combination:
a. a stirrup;
b. pin means for attachment to the loop of a stirrup leather; and
c. revolving means connecting the pin means to the stirrup for normally retainingly biasing the stirrup into a predetermined position, the revolving means including:
i. a substantially U-shaped member having an elongated back element and a pair of substantially parallel legs connected to ends of and extending codirectionally from the back element; and
ii. resilient means including a torsion spring connected to the back element and the stirrup for rotatably biasing the stirrup and the back element toward a predetermined stable relationship with respect to one another.

3,927,510
GRASS-CUTTING DEVICES
Lennart Oswald Arnblock, Vellinge, Sweden, assignor to Flymo Societe Anonyme, Zug, Switzerland
Filed Mar. 14, 1974, Ser. No. 451,109
Claims priority, application United Kingdom, Mar. 27, 1973, 14591/73
Int. Cl.² A01D *35/264*
U.S. Cl. 56—12.8 **3 Claims**



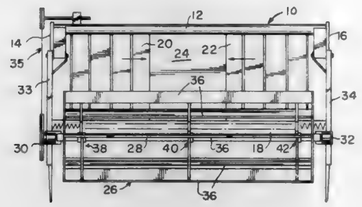
1. A grass-cutting device with a self-propelling drive unit having two wheels on a common axis, comprising in combination, drive unit structure providing a center of gravity located substantially in a vertical plane extending through the common axis of the wheels, a two-wheeled trailer unit for carrying a person with structure adapted to distribute substantially the entire weight of the trailer unit and the person to the wheels of the trailer unit, means pivotably attaching the trailer unit to the drive unit to allow vertical relative movement between the trailer unit and the drive unit, a cutter unit supportable on a cushion of air, and means attaching the cutter unit to said drive unit at a horizontal distance forward of said drive unit wheel axis with a member allowing the weight of the cutter unit to tilt said drive unit forwardly tending to carry the cutter unit toward the ground.

3,927,511
METHOD AND APPARATUS FOR HARVESTING COTTON
James D. Burris, P.O. Box 72, and Bobby V. Burris, P.O. Box 164, both of Muleshoe, Tex.
Filed Oct. 23, 1973, Ser. No. 408,411
Int. Cl.² A01D *46/12*
U.S. Cl. 56—33 **7 Claims**



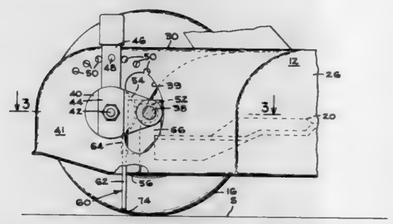
1. The method of harvesting cotton by the use of a combine of conventional construction having a platform, a feeder house and separation means including a cylinder-concave thresher straw-walker-blower combination, said method comprising the steps of stripping cotton bolls from the stalks onto the platform and feeding the stripped bolls through the feeder house to the separating means, operating the separating means to pulverize the stem portions and other trash stripped with the boll into relatively small grain sized particles, feeding said grain sized particles into a first discharge system of the combine while feeding the cotton fibers into a second discharge system of the combine, and collecting the cotton fibers as they are discharged from the second discharge system of the combine.

3,927,512
HARVESTER REEL
Herbert W. Molzahn, Hamilton, Canada, assignor to International Harvester Company, Chicago, Ill.
Filed Aug. 2, 1972, Ser. No. 277,183
Int. Cl.² A01D *57/02*
U.S. Cl. 56—220 **12 Claims**



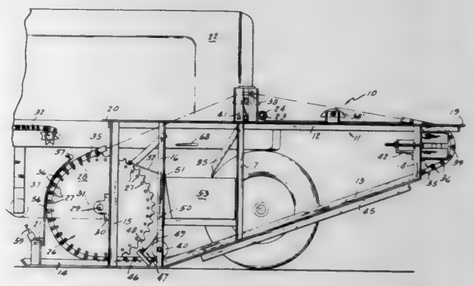
1. A harvester reel for engaging a standing crop and having a longitudinally extending rotatable shaft of polygonal cross section and a plurality of crop-engaging bats circumferentially spaced about the shaft for revolving about the longitudinal axis of the shaft as the shaft is rotated, wherein the improvement resides in means for supporting the bats from the shaft, comprising:
first and second disk assemblies adapted for mounting on said shaft and each including a pair of disk sections secured together in diametrically opposed relation about said shaft with a fit complementary to the polygonal cross section of said shaft, said disk assemblies being disposed in closely axially spaced relation on said shaft;
bat-support structure secured between said disk assemblies and extending radially outwardly from said shaft; and
means coupling said bats to said bat-support structure.

3,927,513
SAFETY SHIELD FOR ROTARY MOWER
Dudley D. Ramaker, Cedar Grove, and Roger W. Keller, Port Washington, both of Wis., assignors to FMC Corporation, San Jose, Calif.
Filed May 20, 1974, Ser. No. 471,270
Int. Cl.² A01D *75/20*
U.S. Cl. 56—320.1 **4 Claims**



1. In a rotary lawnmower of the type including a cutting blade within a mower housing which is vertically adjustable relative to two laterally opposed rearward ground support wheels mounted on opposite ends of transverse axle means defining the axis of rotation of said wheels, the improvement comprising:
a safety shield disposed between said opposed support wheels for blocking movement of objects therepast toward and away from the cutting blade,
a rearwardly extending portion of said mower housing disposed behind said blade,
means mounting said safety shield in depending relation from said axle means for pivotal movement about said axis of rotation, said safety shield having a lower edge closely spaced from the ground and maintaining said spacing regardless of the adjusted height of the mower housing by reason of its pivotal mounting on said axle means, and,
said mounting means comprising a bracket rigidly secured to each end portion of said safety shield and freely pivotally mounted on said axle means, said safety shield being connected to said brackets at positions rearwardly offset from a vertical plane having said axis of rotation therein for overbalancing said safety shield causing the lower edge thereof to pivot about said rotational axis toward the cutting blade and into contact with said rearwardly extending portion of said housing disposed between said cutter blade and said shield, thereby to resist intrusion of an object toward said cutting blade and likewise said shield in being weighted toward said housing resists outward deflection by objects thrown rearwardly by said cutter blade.

3,927,514
SELECTIVE ASPARAGUS HARVESTING UNIT
Aaron F. Sammet, Princeville, Ill., assignor to Martin Farms Partnership and Joan of Arc Company, both of Princeville, Ill., part interest to each
Filed Mar. 28, 1974, Ser. No. 455,782
Int. Cl.² A01D *45/00*
U.S. Cl. 56—327 A **17 Claims**



1. A unit for selectively harvesting asparagus shoots as the unit is transported across an asparagus plant, said unit comprising:
a frame having a plurality of members interconnected to form a front end, a rear end, a lower frame portion adjacent the rear end, and means for supporting the frame on a transporting device with the lower frame portion adjacent the ground surface;
means disposed on the frame for selectively snapping shoots from their plants;
means disposed on the frame for receiving the snapped shoots; and
means disposed on the frame for conveying the snapped shoots from the snapping means to the receiving means; said means for selectively snapping including a plurality of rod members interconnected in a closed loop with the rod members being substantially equally spaced and being substantially parallel, means for supporting and moving the closed loop in a continuous path, said path having an inclined portion extending from adjacent the front end downward toward the lower frame portion and a segment extending upward from the lower frame portion, and said means for selectively snapping including means disposed on the frame within the loop adjacent the segment and the inclined portion of the path for engaging an asparagus shoot which extends at least a predetermined distance between and beyond the rod members, said means for engaging coacting with the rod members to snap the shoot from the plant without snapping any shoot which does not extend to said predetermined distance so that the shoots of at least a predetermined height are harvested while shorter shoots are left unharvested as the unit moves thereover.

3,927,515

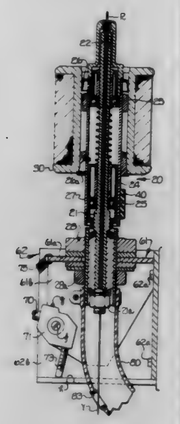
APPARATUS FOR PRODUCING WRAPPED YARNS

Francis B. Northup, and Donald R. Hart, both of Sanford, N.C., assignors to Spanco Industries, Inc., Sanford, N.C.

Continuation-in-part of Ser. No. 279,944, Aug. 11, 1972, Pat. No. 3,831,369. This application July 15, 1974, Ser. No. 488,809

Int. Cl.² D02G 3/28; D01H 1/241

U.S. Cl. 57—18 13 Claims



1. Apparatus for producing helically wrapped staple fiber yarns comprising a frame, a drafting unit carried by said frame and having a pair of delivery rolls defining a nip therebetween for delivering therefrom at least one drafted strand of staple fibers, a rotatable spindle having a free end and also having an axially extending passageway therethrough communicating with said free end for guiding the drafted strand through the spindle, a driving belt for rotating said spindle, said spindle being adapted to receive thereon for rotation therewith a spool having a binder strand wound thereon for wrapping the binder strand around the drafted strand being delivered to the spindle by the delivery rolls, spindle mounting means carried by said frame and normally supporting said spindle in a predetermined operative rotating position in engagement with said driving belt and with the free end of said spindle located closely adjacent the nip of said delivery rolls for facilitating directing the drafted strand through said spindle passageway and for wrapping the drafted strand closely adjacent the delivery rolls, and means operatively associated with said mounting means to selectively move said spindle relative to said delivery rolls and between said predetermined operative rotating position and a predetermined inoperative non-rotating position in which said spindle is spaced away from said driving belt and away from the delivery rolls to permit doffing and donning spools over the free end of the spindle.

3,927,516

MACHINE FOR CONTINUOUS SPINNING BY MEANS OF SPINNING ROTORS

Fritz Stahlecker, Bad Uberkingen, Germany, assignor to Fritz Stahlecker and Hans Stahlecker, both of, Germany

Filed Mar. 21, 1974, Ser. No. 453,500

Claims priority, application Germany, Mar. 22, 1973, 2314229

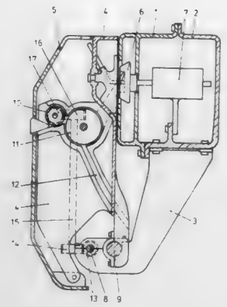
Int. Cl.² D01H 1/12

U.S. Cl. 57—58.89 14 Claims

1. A spinning machine comprising:

at least one spinning unit, each of said spinning units including spinning means, a drivable supply roller for assisting in supplying fibrous material to said spinning means, and a swivel housing which is pivotable about a swivel axle and which carries said supply roller,

a longitudinal drive shaft extending adjacent said at least one spinning unit and including a driving gear for each of said at least one spinning units, said drive shaft being spaced from the respective swivel axles of said swivel housings,



and supply roller drive transmission means for transmitting rotational movement of said drive shaft to respective ones of said supply rollers, said transmission means including a driven gear carried by each of said swivel housings which is selectively drivingly engageable with said driving gear in dependence on the position of the respective swivel housing.

3,927,517

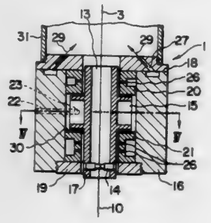
TWISTER DEVICE FOR PRODUCING CRIMPED FILAMENTARY YARNS

Hisashi Kimoto, Osaka, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed June 27, 1974, Ser. No. 483,618

Int. Cl.² D01H 7/92; D02G 1/04

U.S. Cl. 57—77.45 5 Claims



1. A twister device for producing crimped yarns comprising a turbine blade rotary member including a twister pin for an introduced filamentary yarn disposed in the interior of a hollow shaft thereof and blades projected stepwise on the circumference at the middle portion thereof and a casing disposed to enclose the outer periphery of the rotary member, wherein a gas-projecting opening for supplying a compressed gas to the blades of the rotary member and imparting a rotating power to the rotary member and another gas-projecting opening for supplying a compressed gas to both the ends of the stepped portion of the hollow shaft and supporting the rotary member in the floating state are mounted in the interior of the casing separately from each other, and further including a plurality of gas-projecting openings opened with an inclination with respect to the filamentary yarn to be crimped provided on the yarn introducing side of the casing.

3,927,518

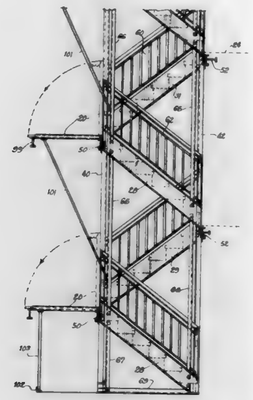
SITE ASSEMBLED MULTI-STORY STAIR

Smith H. Simmons; Otho A. William, both of Largo, and Arthur E. Miller, Tampa, all of Fla., assignors to Metal Service Company, Inc., Clearwater, Fla.

Filed Aug. 29, 1974, Ser. No. 501,804

Int. Cl.² E04F 11/02

U.S. Cl. 52—183 5 Claims



1. A prefabricated stair unit shipped disassembled to a construction site for field assembly and installation on a field jig, comprising:

a. at least one pair of prefabricated stair flights;

b. headers for bolting to the ends of each flight of stairs and dimensioned to provide an anchoring portion for permanently anchoring said unit in an installed position;

c. newels field bolted to said pair of stair flights and extending vertically to provide permanent internal support for said unit;

d. a platform for each pair of stair flights mounted by field bolting and movable between a vertical position maintained during installation and a horizontal position for permanent use as a landing; and

e. a plurality of temporary supports field bolted to said pair of stair flights during field assembly and removed after installation, said supports located wholly within the stair unit and extending vertically between the outer extremities thereof for temporarily supporting the stair flights in their assembled relation to permit permanent installation, said supports maintaining the flights in a laterally spaced opposite running relation with the upper end of one flight and the lower end of the other flight alongside one another at about midway between the height spanned by the flights.

3,927,519

TIMEPIECE MOVEMENT WITH A TIMER MECHANISM

Francois Berthoud, Le Lieu, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services SA, Bienne, Switzerland

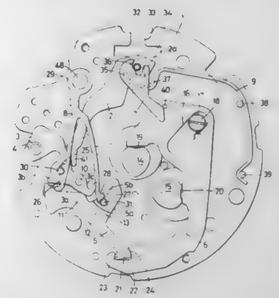
Filed Dec. 9, 1974, Ser. No. 531,074

Claims priority, application Switzerland, Dec. 7, 1973, 17226/73

Int. Cl.² G04F 7/04

U.S. Cl. 58—76 15 Claims

1. A time piece movement comprising a frame, a time-recording member, a timing element with a balance and a balance-spring, and a mechanism for starting, stopping, and returning said time-recording member to zero, said mechanism comprising a control part connected to said frame by a sliding link and having a control finger, two controlled parts consisting of a balance flirt and a navette for actuating the return-to-zero of said time-recording member, a control spring, a push piece acting onto said link for sliding it, thereby displacing said control part from a resting position into an active position against the action of said spring, and force



applying means for applying the force of said spring to said control part along a line which in said resting position passes alongside said link, said control part being subjected by said spring and by said push-piece to a torque which presses said control finger against one of said controlled parts.

3,927,520

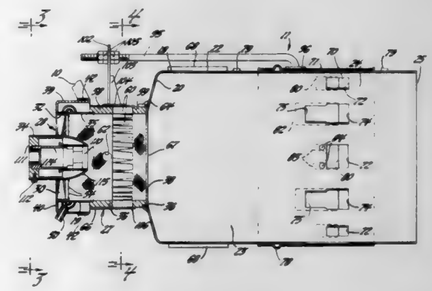
COMBUSTION APPARATUS WITH COMBUSTION AND DILUTION AIR MODULATING MEANS

John R. Arvin, Indianapolis; Robert E. Sullivan, and Dennis L. Troth, both of Speedway, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 4, 1974, Ser. No. 439,647

Int. Cl.² F02C 9/00; F02G 3/00

U.S. Cl. 60—39.23 4 Claims



1. A combustion apparatus adapted for use in a gas turbine engine characterized by substantially complete combustion of liquid hydrocarbon fuel and by a low output of nitrogen oxides, the apparatus comprising a combustion liner having a discharge outlet for combustion products at the downstream end of the liner; the liner having an upstream end and liner wall means extending from the upstream end to the downstream end, the wall means enclosing, in sequence from the upstream end to the downstream end, a prechamber, a reaction zone, and a dilution zone; the prechamber including first air entrance means at its upstream end effective to direct combustion air with a substantial transverse velocity component downstream over the inner surface of the prechamber wall means, liquid fuel introduction means downstream of the swirler means disposed to lay a film of liquid fuel on the said inner surface for evaporation by and mixture with the said combustion air, and second air entrance means through the prechamber wall means near the downstream end of the prechamber adapted to introduce air to dilute the fuel-air mixture, wherein the improvement comprises a structure of the

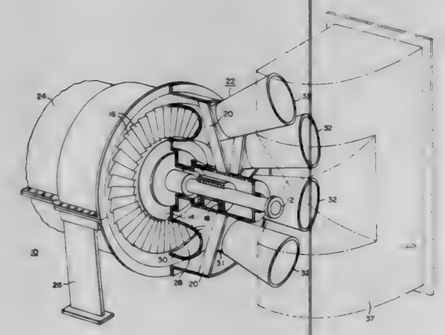
second air entrance means providing a ring of air entrance ports extending radially through the prechamber wall means distributed around the prechamber, the ports having a configuration including lateral walls substantially inclined to the radial direction such as to introduce the air radially into the prechamber with a substantial circumferential component of motion in the same direction as the transverse velocity component of the air flowing from the first entrance means and no significant axial component of velocity relative to the axial component of velocity of the fuel-air mixture, the ports being tapered axially of the prechamber, and comprises means for varying the flow capacity of the second air entrance means including a sleeve surrounding and reciprocable axially of the prechamber wall, the sleeve having V-notched edge portions cooperating with at least some of the ports so as to provide graduated modulation of the flow area during initial opening and final closing movement of the sleeve.

3,927,521

MULTICONE EXHAUST DIFFUSER SYSTEM FOR A GAS TURBINE

Birger O. Hugoson, Wallingford, and Carl A. Rohr, Springfield, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 16, 1974, Ser. No. 433,960
Int. Cl.² F02C 7/20; F01D 25/24
U.S. Cl. 60—39.31 **5 Claims**



1. In a gas turbine installation including: a housing, a shaft rotatably mounted in said housing by means including a downstream bearing, alternating annular arrays of stationary and rotatable blades, said rotatable blades being attached to said shaft, a hot motive fluid flow path within said housing, the hot motive fluids driving said rotatable blades, an inlet in said turbine for the hot motive fluid, and a hot motive fluid exhaust outlet arrangement for the hot motive fluid, said hot motive fluid exhaust outlet arrangement comprising:
an annular chamber downstream of the last array of said rotatable blades,
a plurality of generally axially disposed transition members in registration with said annular chamber,
an annular array of a plurality of tubular-shaped generally axially directed hot motive fluid exhaust ducts, each in fluid communication with one of said transition members, said ducts being generally comprised of truncated diffuser cones, the smaller diameter of said truncated cones mating with said transition members,
a plurality of downstream bearing support members disposed between adjacent exhaust ducts, said bearing support members extending between said bearing and said housing,
said hot motive fluid exhaust ducts being detachable from said transition members, to permit access to the bearing and blade assemblies, said bearing support members being free from contact with the hot motive fluid exhaust to limit any thermal effects therein,
a pair of exhaust hoods attached to the downstream ends of said diffuser cones with an expansion joint therebetween, each of said exhaust hoods directing the flow of the hot motive fluid exhaust away from the gas turbine, each of said exhaust hoods having an array of half of said plurality of diffuser cones attached thereto.

3,927,522

AIRCRAFT GAS TURBINE NOISE SUPPRESSION

William Dean Bryce; Richard Alfred Pinker, both of Farnham, and Brian Arthur Turner, Aldershot, all of England, assignors to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain & Northern Ireland, London, England

Filed Dec. 17, 1973, Ser. No. 425,235
Claims priority, application United Kingdom, Dec. 18, 1972, 58304/72
Int. Cl.² F02K 3/04, 3/02; E04B 1/99; B64D 33/04
U.S. Cl. 60—264 **4 Claims**



1. A gas turbine engine comprising a turbine; a jet pipe extending downstream of the turbine and terminating in a primary nozzle, conditions at which affect the operation and efficiency of the engine in normal flight conditions, the length of the jet pipe downstream of the turbine being at least equal to the primary nozzle diameter; and a plurality of members adjacent the turbine upstream of said primary nozzle and moveable between positions corresponding to normal flight conditions where they lie parallel to the centerline of gas flow through the pipe and positions where they extend at an angle to the gas flow to form a serrated restriction to flow through the pipe, said members when not extended forming a secondary nozzle of larger area normal to flow therethrough than the area normal to flow through said primary nozzle and when extended forming a secondary nozzle of smaller area normal to flow therethrough than the area normal to flow through said primary nozzle so that conditions at the secondary nozzle and not conditions at the primary nozzle affect the operation and efficiency of the engine and so that the gas flow through the secondary nozzle is substantially divided into a plurality of separate flow streams, the jet pipe downstream of the secondary nozzle becoming a shield for noise emanating from the secondary nozzle.

3,927,523

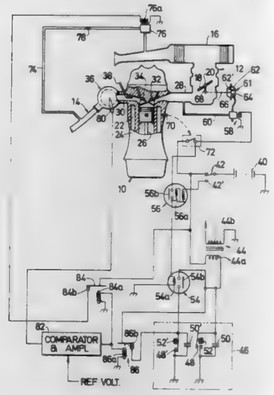
EXHAUST CLEANING SYSTEM FOR AUTOMOTIVE INTERNAL COMBUSTION ENGINE

Giichi Shioyama, Yokosuka; Kenji Masaki, Yokohama, and Shuya Nambu, Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Mar. 6, 1974, Ser. No. 448,638
Claims priority, application Japan, Mar. 13, 1973, 48-29220
Int. Cl.² F02B 75/10
U.S. Cl. 60—278 **4 Claims**

1. In an automotive internal combustion engine having an air inlet and exhaust outlet; exhaust cleaning means connected to said exhaust outlet for reducing toxic compounds in the exhaust gases; and a rapid engine warming system including delayed spark advance breaker points in an ignition distributor and control means for establishing connection between said delayed spark advance breaker points and an ignition

power source when the engine temperature is lower than a first predetermined level; the improvement which comprises:
an exhaust recirculation passageway leading from the outlet of said exhaust cleaning means to said air inlet;
electrically energizable valve means disposed in said exhaust recirculation passageway for opening the passageway when energized;
sensing means responsive to the temperature of said exhaust cleaning system for producing an electrical signal when



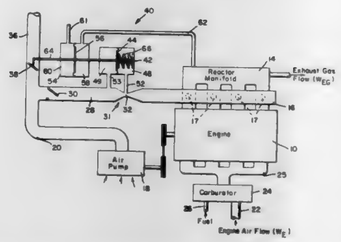
the temperature of said exhaust cleaning system is lower than a second predetermined level;
first switch means for energizing said valve means in response to said electrical signal; and
second switch means responsive to said electrical signal for providing a circuit between said delayed spark advance breaker points and said ignition power source to render said delayed spark advance breaker points effective to retard the ignition timing of said internal combustion engine.

3,927,524

ENGINE EXHAUST REACTOR AIR FLOW RATIO CONTROL METHOD AND APPARATUS

Robert L. Cholvin, Santa Monica, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Feb. 22, 1974, Ser. No. 445,000
Int. Cl.² F02B 75/10; G05D 11/00
U.S. Cl. 60—289 **15 Claims**



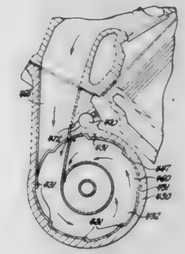
1. Air flow control apparatus for an internal combustion engine having an exhaust manifold reactor comprising:
pump means adapted to be driven by the engine for supplying secondary pressurized air to the reactor;
conduit means connected to said pump means for conveying the pressurized air, said conduit means having a portion for venting the pressurized air to atmosphere;
air passage means connected to said conduit means intermediate said pump means and said portion and adapted for connection to convey a portion of the pressurized air as secondary air to the exhaust manifold reactor;
valve means positioned in said conduit means portion for regulating flow of the pressurized air to atmosphere;
a venturi positioned in said air passage means;
a first housing;
a first diaphragm positioned in said first housing to provide first and second chambers, said first chamber being connected to the throat of said venturi and said second chamber being connected to said air passage means immediately upstream of said venturi:
a second housing; and
a second diaphragm positioned in said second housing to provide third and fourth chambers, said second diaphragm being connected to said first diaphragm and said valve means for simultaneous movement, said third chamber being adapted for connection to the exhaust manifold reactor, and said fourth chamber being connected to the atmosphere.

3,927,525

ENGINE WITH EXHAUST MANIFOLD CONVERTER-REACTOR

James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 25, 1973, Ser. No. 364,154
Int. Cl.² F01N 3/16
U.S. Cl. 60—301 **1 Claim**



1. An exhaust converter-reactor for an internal combustion engine, said converter-reactor comprising
a cast generally tubular housing defining internally an elongated cylindrical chamber having at one end an end wall with a central opening
means at said one end of the housing defining a downwardly directed outlet passage connected through said end wall opening with the end of said chamber and providing means for connecting an exhaust conduit thereto,
a removable cap secured to the other end of said cast housing from said outlet passage and closing the adjacent end of said chamber,
a tubular ceramic insulating liner within and extending longitudinally the length of said chamber, said liner having a plurality of ribs engaging the inner walls of said housing and maintaining the main body of said liner in closely spaced relation with the housing walls to reduce heat transfer thereto,
a tubular catalytic element for NO_x reduction extending longitudinally through said chamber within said liner and spaced therefrom to divide said chamber longitudinally into generally concentric inner and outer sections, said catalytic element extending into said central opening at said housing one end and being supported therein by said end wall, and means on said cap receiving and supporting said catalytic element at said housing other end, said chamber inner section being connected with said outlet passage through said central opening at said one end, said catalytic element being perforated over the length of said

chamber and over a portion of its circumference, the remainder of its circumference being nonperforated,

means defining a plurality of gas inlet ports extending laterally from said chamber through the side of said housing, said inlet ports connecting tangentially with said chamber outer section through inlet openings provided in said insulating liner such that gas admitted to said outer section through said ports is directed in a unidirectional swirling motion within said outer section,

nonperforated baffle means extending tangentially from the nonperforated portion of said catalytic element to said insulating liner at said liner inlet openings to force entering gas flow through an extended path to the perforated portion of said catalytic element and then radially therethrough to said chamber inner section,

primary reaction air distribution means including a longitudinal manifold passage integrally formed in said cast housing adjacent said chamber and said inlet ports, a plurality of runners extending from said manifold passage and merging with each of said inlet ports adjacent their respective liner inlet openings to direct air into the exhaust gases passing from each of said ports into said outer chamber section,

secondary reaction air distribution means in said housing and including a distribution tube extending longitudinally through said inner chamber section and generally concentric with said catalytic element, said tube being supported in said housing at one end and in said removable cap at said other end, said tube being perforated over the length of said chamber to permit fluid flow radially from said tube interior to said chamber inner section to mix and react with gas entering said inner chamber section through said catalytic element,

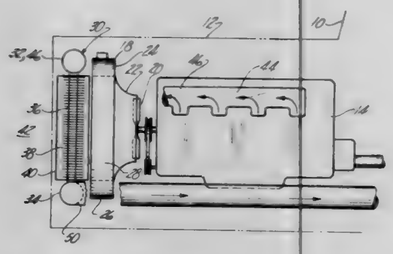
said tube, said catalytic element and said insulating liner being removable from said housing for inspection or replacement upon removal of said cap.

3,927,526

EXHAUST MOISTURE REDUCTION BY PROTOTYPE HEAT EXCHANGER

Jack V. Tedrow, U.S. Army Cold Regions Research and Engineering Laboratory, Alaskan Div., Fort Wainwright, AK, APO, Seattle, Wash. 98731

Filed Dec. 4, 1973, Ser. No. 421,571
Int. Cl.² F01N *3/02*
U.S. Cl. 60—320 **1 Claim**



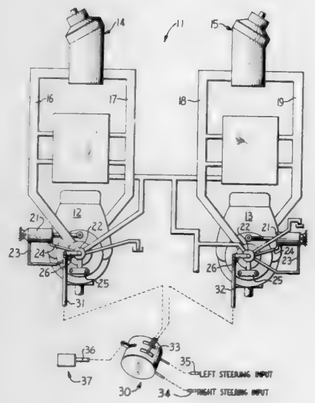
1. A land vehicle adapted for use in winter environments comprising a propulsion engine of the liquid-cooled type; means for cooling the engine including a radiator for reducing the temperature of the coolant, and a fan for drawing air through the radiator; duct means for exhausting combustion products from the engine; said exhaust duct means comprising a multi-tube heat exchanger located upstream from the radiator in near adjacency to the radiator and directly in the airstream developed by the fan, whereby both the radiator and heat exchanger are air-cooled by said fan; said heat exchanger having sufficient tube surface area so that the gases discharged to the winter atmosphere have insufficient condensibles to form a fog visible beyond sight of the vehicle; the radiator and heat exchanger occupying spaced vertical planes forward of the fan; the heat exchanger comprising an inlet header for receiving gases from the engine, an outlet header directly below the inlet header, and a number of heat transfer tubes extending vertically between the headers in the airstream developed by the fan, said heat transfer tubes being arranged in parallel flow relation to receive component gas streams from the inlet header for individual cooling by the airstream; said heat exchanger and radiator having approximately the same face area so that each face area is entirely exposed to fan action.

3,927,527

MECHANICAL MULTIPLIER-DESIGN II

William Karl Engel, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 17, 1975, Ser. No. 541,818
Int. Cl.² F16H *39/46*
U.S. Cl. 60—427 **6 Claims**



1. A mechanical multiplier mechanism comprising,

a linearly movable input member slidable along a first line and including means forming a linear slot therein normal to said first line,

a cylindrical rotatable input member including means forming a diametrical slot therein,

a linearly movable output member slidable along a second line normal to said first line, and including means forming a linear slot therein normal to said second line, and

pin assembly means disposed mutually in all of said slots.

3,927,528

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE AND VARIABLE TRANSMISSION POWER TRAIN

Hans-Jürgen van der Kolk, Sersheim; Reinhard Mindner, Gutenberg; Tilman Kiess, Stuttgart; Peter Mühlich, Esslingen; Ulrich Aldinger, Stuttgart, all of Germany, and Karl-Heinz Adler, Maisons-Laffitte, France, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhoehe, Germany

Filed Aug. 14, 1974, Ser. No. 497,361
Claims priority, application Germany, Aug. 13, 1973, 2340841
Int. Cl.² F16D *31/02*; F02D *11/10*; G05G *21/00*; B60K *41/18*
U.S. Cl. 60—431 **37 Claims**

1. Control system for an internal combustion engine power train to provide drive output power to a load shaft (**43**) having an internal combustion engine (**21**) and a variable ratio transmission (**32, 37**);

fuel injection pump means (**48, 22**) injecting fuel for use by the internal combustion engine;

an operator controller (**25**);

means (**46, 49**) connected to the fuel injection pump and controlled by the operator controller (**25**) to control the amount of fuel being injected;

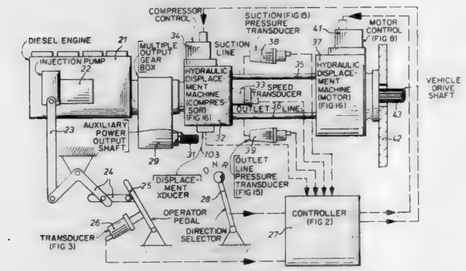
a transmission control means (**34, 41**) connected to the transmission and controlling the transmission ratio thereof;

characterized by

a command signal transducer means (**26**) connected to and controlled by the operator controller (**25**) and providing an engine command signal;

engine torque transducer means providing a transmission input torque (M_1) signal connected to and controlled by the input to the transmission (**32, 37**);

transmission output torque transducer means providing a transmission output torque (M_2) signal connected to and controlled by the output of the transmission (**32, 37**);



tachometer generator means (**33**) providing an engine speed (n_1) signal and in rotation transmitting relation to the engine;

transmission operating sensing means (**103**) providing a transmission operation signal and sensing the transmission ratio of the transmission (**32, 37**);

and a control unit (**27**) including electrial logical circuit means, connected to and controlled by said command signal transducer means (**26**), the engine torque transducer means, the transmission output torque transducer means, the tachometer generator means (**33**) and the transmission operating sensing means (**103**), and logically combining the signals provided by all said means and providing output signals connected to and controlling the transmission control means (**34, 41**) to control the transmission ratio in accordance with the signals from all said means, as modified by characteristic transfer functions stored in said control unit, and as logically combined in said control unit.

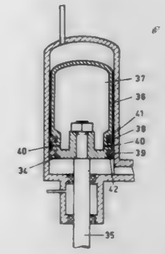
3,927,529

MULTI-CYLINDER DOUBLE-ACTING STIRLING CYCLE ENGINES

Sven Anders Samuel Hakansson, Varberg, Sweden, assignor to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Filed July 31, 1974, Ser. No. 493,390
Claims priority, application United Kingdom, Aug. 22, 1973, 39694
Int. Cl.² F01B *29/10*
U.S. Cl. 60—521 **2 Claims**

1. A multi-cylinder double-acting Stirling cycle engine of the kind in which each cylinder contains a piston which separates a low temperature working space from a high temperature working space in the cylinder and each piston separates from each other two different charges of working gas operating in respective working cycles by means of at least two axially spaced piston rings and having working gas conveyance means connected to each said cylinder with working gas therein maintained at minimum cycle pressure, characterized in that each piston is provided with a cavity having a volume greater than the swept volume of the cylinder for receiving therein said working gas that may leak through one of said piston rings into the space between said two piston rings, at



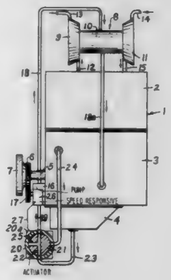
least one passage defined in said piston connecting said cavity at the outer surface of the piston to the space between said two piston rings thereby to permit entry of leakage gas into said cavity, and means permitting passage of working gas from said space between said two piston rings into said two charges for thereby maintaining said minimum cycle pressure in said cavity.

3,927,530

SUPERCHARGED INTERNAL COMBUSTION ENGINE

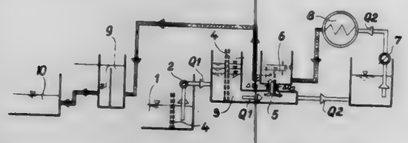
Anton Braun, 6421 Warren Ave., Minneapolis, Minn. 55435

Filed May 28, 1974, Ser. No. 473,416
Int. Cl.² F02B *33/44*
U.S. Cl. 60—607 **14 Claims**



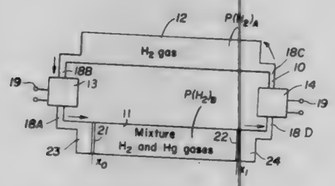
1. Hydraulic switching apparatus for a hydraulic motor driven device for delivering condition altering means to a power generator comprising a hydraulic pump that is connected to and constantly driven by said generator when said generator is operating, a first fluid flow passageway between said pump and the hydraulic motor of said device, a selector valve having an outlet connected to said pump, a reservoir with liquid therein and having a chamber above the liquid and containing gas or vapor, a second fluid flow passageway extending from said pump and arranged to receive liquid from the reservoir from a point below the level of the liquid therein, a third fluid flow passageway extending between said valve and said chamber above said liquid, valving means in said valve that in one position thereof permits liquid to flow therethrough to said pump and in another position thereof permits vapor or gas to flow to said pump so as to prevent liquid flow to the pump, and means for moving said valving means to and from said positions.

3,927,531
COOLING WATER SUPPLY SYSTEM WITH SELF ADJUSTING HYDRAULICS
Sándor Mikolics; Károly Ziegler, and Viktor Homola, all of Budapest, Hungary, assignors to Novex Talalmanyfejleszto es Ertekesito Kulkereskedelmi Rt., Budapest, Hungary
Filed July 15, 1974, Ser. No. 488,773
Claims priority, application Hungary, July 25, 1973, MI 541
Int. Cl.² F01K 9/00
U.S. Cl. 60—690 4 Claims



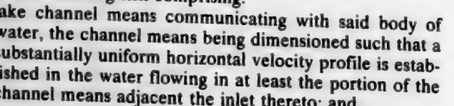
1. A method of operating a cooling supply system for the condenser of a power plant which comprises the steps of:
pumping cooling water from a source through a cooling water channel at a first location;
pumping water from said channel at a second location through said condenser and through a warm-water channel;
bypassing said channels into one another; and
controlling the flow of water from one channel into the other at the bypass solely by the relative rates pumped at said location.

3,927,532
THERMOMOLECULAR RECTIFIER
Antonio M. C. de Figueiredo, Hartford, Conn., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Nov. 26, 1974, Ser. No. 527,211
Int. Cl.² F03G 7/00
U.S. Cl. 60—721 4 Claims



1. Apparatus for the generation of power based on the difference of partial pressures of a fluid mixture in a force field, where the fluid mixture consists of a mixture of two sets of molecules with the molecules of one set being acted upon by the force field in a discriminatory fashion to the molecules of the other field, said apparatus comprising a diffusion chamber in which the mixture of molecules is placed, with the said diffusion chamber being bounded on two opposing walls of the chamber by a membrane which is relatively permeable to the molecules of the fluid of the mixture in the diffusion chamber which is least affected by the force field and impermeable to the molecules of the fluid of the mixture in the diffusion chamber most affected by the force field, with said apparatus placed in a said force field with the opposing membrane walls of the diffusion chamber located in planes at right angles to the direction of the force field,
with two external chamber, each bounding an opposed membrane wall of the diffusion chamber, linked together by means of tubing which leads through a fluid pressure-operated power generator and to a reservoir chamber containing molecules of the fluid in the mixture that is permeable to the membrane, such that when the force field is applied to the diffusion chamber, the partial pressure of the permeable fluid is greater inside the diffusion chamber against one membrane wall then is said partial pressure against the opposing membrane wall, with the pressure of the permeable fluid in the external chambers bounding the membrane being of a magnitude between said partial pressures.

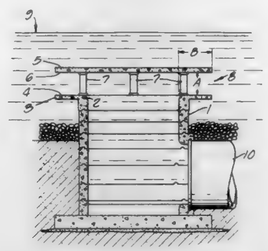
3,927,533
UNDERWATER WALL STRUCTURE
Robert Newman Hebel, Jr., 5306 Bowling Green Drive, Fort Pierce, Fla. 33450
Filed Aug. 13, 1974, Ser. No. 496,935
Int. Cl.² E02B 3/04
U.S. Cl. 61—4 7 Claims



1. For use in the process of shoreline accretion along a beach having an offshore bar, located no further than 150 feet offshore from said beach, and a longshore trough, immediately adjacent to said offshore bar;
A. a permanent underwater wall structure located between said bar and said beach at a point shoreward of where the waves normally break; said wall structure comprising a series of individual pilings in side-by-side relation,
1. each of said pilings being embedded at one end in the ocean floor, at such a depth that the top of each of the offshore pilings is below the water level at mean low tide, and is no higher than the highest point of said offshore bar;
B. said underwater wall structure comprising two end sections and a connecting middle section,
1. said end sections located in spaced apart relation, extending seawardly no more that 150 feet, from the vicinity of said beach and through said trough to said offshore bar,
2. said middle section extending along said bar, between said longshore trough and said offshore bar and connecting each of said end sections to form a contiguous, unitary, underwater wall structure;
3. said underwater wall structure serving to allow an unimpeded flow of water shoreward, but impeding the offshore and littoral currents sufficiently to allow deposition of suspended particles within the are bounded by said wall structure.

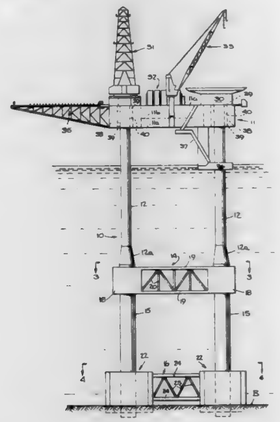
3,927,534
WATER INTAKE STRUCTURE
Lory E. Larson, Garden Grove, and Dallas I. Downs, Montrose, both of Calif., assignors to Southern California Edison Company, Rosemead, Calif.
Filed Jan. 21, 1974, Ser. No. 435,128
Int. Cl.² E02B 9/04, 5/08
U.S. Cl. 61—17 17 Claims

1. A water intake system for withdrawing water from a body of water containing fish comprising:
intake channel means communicating with said body of water, the channel means being dimensioned such that a substantially uniform horizontal velocity profile is established in the water flowing in at least the portion of the channel means adjacent the inlet thereto; and
conduit means including an intake orifice communicating with said intake channel,
said intake orifice being positioned relative to the inlet of said intake channel means such that fish entering into said intake channel means are permitted a sufficient time



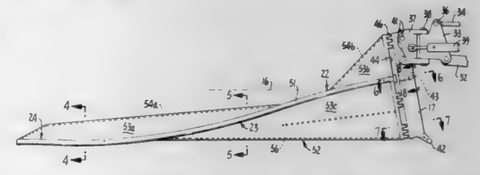
to react to the flow of the water therein and exit therefrom before being drawn through said intake orifice.

3,927,535
JACK-UP TYPE OFFSHORE OIL PRODUCTION PLATFORM APPARATUS AND METHOD
Robert P. Giblon, Shrewsbury, N.J., assignor to George G. Sharp, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 287,256, Sept. 8, 1972, Pat. No. 3,797,256. This application Mar. 18, 1974, Ser. No. 452,465
Int. Cl.² E02B 17/00; B63B 35/44
U.S. Cl. 61—46.5 22 Claims



1. Jack-up type offshore platform apparatus comprising a floatable upper platform structure, at least one horizontal lower support platform structure below and substantially aligned with said upper platform structure for disposition in vertically spaced tandem relation thereto when said apparatus is in erected condition, means defining corresponding pluralities of laterally spaced apart vertical support leg openings through each of said upper and lower support platform structures, the respective of said vertical openings through any one platform structure being vertically aligned with the respective of said openings through the other of said platform structures, a corresponding plurality of elongated lower support legs respectively extending through said vertical openings through the lowermost of said lower support platform structures and projecting downwardly therefrom, said lower support legs being rigidly attached at their upper ends to, and secured in vertically non-slidable and fixed relation to, said lowermost lower support platform structure, whereby said lowermost lower support platform structure provides lateral structural support for said support legs, and a corresponding plurality of elongated upper support legs respectively aligned with, and attached substantially to said upper ends of said lower support legs, said upper support legs respectively extending upwardly through said aligned vertical openings of any of said platform structures thereabove, and at least said upper platform structure being vertically slidable with respect to said upper support legs at least prior to the erection of said platform apparatus.

3,927,536
DEVICE FOR BURYING RIGID WALL PIPE
Roger L. Sprenkel, Pleasanton, Calif., assignor to American Tractor Equipment Corporation, Oakland, Calif.
Filed July 31, 1974, Ser. No. 493,233
Int. Cl.² F16L 1/00
U.S. Cl. 61—72.4 12 Claims



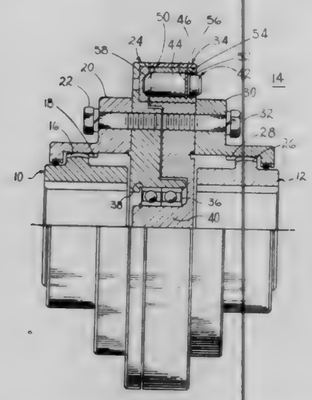
1. A tractor supported apparatus for burying a continuous length of rigid wall pipe below the surface of the ground, comprising: an upstanding shank having a tooth at the lower end thereof and constructed to rip a pipe burial trench in the ground; pivot means mounting the shank to the tractor for side-to-side swinging movement, up and down movement, and side-to-side pivotal movement of the shank; an elongate, substantially flat, planar pipe guide member having a forward end and a trailing end, said forward end pivotally connected to the shank for trailing movement of the guide member after the shank in a trench; an elongate, generally S-shaped, open-ended pipe guiding passageway in the guide member and extending throughout the length of the guide member, said S-shaped passageway including a pipe receiving portion at the forward end of the guide member extending upwardly at an angle of about 10° relative to the horizontal to receive a length of rigid wall pipe therein at an angle to the horizontal, a first curved section curving downwardly from the pipe receiving portion for bending and depressing a length of pipe into the trench, a second curved section connected to the first curved section and having a curvature inverse to the curvature of the first section and having a trailing end portion which ascends relative to the bottom of the trench for bending the pipe and disposing it near the bottom of the trench, and a third section connected to the second section and including a straight portion extending substantially parallel to the bottom of the trench to bend and straighten the pipe and discharge the pipe into the bottom of the trench, so that the pipe will lie straight in the trench free of residual bending stresses.

3,927,537
OVERLOAD COUPLING
Norman J. Anderson, Fairview, and Jon R. Mancusco, Erie, both of Pa., assignors to Zurn Industries, Inc., Erie, Pa.
Filed Aug. 1, 1974, Ser. No. 493,556
Int. Cl.² F16D 7/00
U.S. Cl. 64—28 7 Claims

7. An overload protection coupling for interconnecting a driving source of power with a driven load comprising, in combination:
a. A first, rotatable clutch member and a second rotatable clutch member; means for mounting said first clutch member adjacent said second clutch member on the same axis of rotation; means for connecting said first clutch member to a shaft connected to said driving source of power; and means for connecting said second clutch member to a shaft connected to said driven source of power;

b. One of said clutch members having a plurality of apertures spaced about its circumference; a coupling pin slidably mounted in each of said apertures; the other of said clutch members having a plurality of recesses about its circumference which is equal to said plurality of apertures with said recesses being so positioned that each of said recesses is engageable by a first end of one of said coupling pins;

c. Said first end of each of said coupling pins having a truncated conical shape; each of said recesses having a corresponding shape for receiving said first end of said coupling pin to connect said first clutch member to said second clutch member during the normal operation of said coupling; said coupling pins being disengagable from said recesses under overload conditions to disconnect



said first clutch member from said second clutch member;

d. Each of said coupling pins having at least one pin groove about its circumference; uniform force detent ring means of varying width; said clutch member having said plurality of apertures also includes at least one groove for each of said detent ring means; said detent ring means being of such a size that it can simultaneously engage a pin groove on at least one of said coupling pins and a groove on the last mentioned clutch member; said at least one pin groove and said groove on the last mentioned clutch member being so positioned that said detent ring engages them simultaneously when said first end of said coupling pins engages said recesses; and said detent ring means being disengagable from one of said grooves when an overload condition occurs and said first ends of said coupling pins are disengaged from said recesses; and

e. Said detent ring being mounted in said pin groove and the structure of said detent ring and shape of said one of said grooves from which said detent ring is disengageable causing the axial force F_a at which said first end of said coupling pin is disengaged from said recess to substantially comprise:

$$F_a = 5P[\text{Tan } \alpha + \text{Tan } \theta]$$

where,

$P = Efbh^3/2.36\ D_m3$ = radial force produced,

E is Youngs modulous for the material used for said detent ring,

f is an amount said detent ring must collapse to free said detent ring from said one of said grooves to cause said coupling pin to disengage from said recess,

D_m is the mean diameter of said detent ring, the dimension measured from the middle of a width h of said detent ring opposite a gap between ends of said detent ring to what would be the middle of the width at the gap if said ends of said detent ring were extended to the gap,

b is the thickness of said detent ring, uniform about the circumference in the preferred embodiment,

Tan θ is the coefficient of friction between said detent ring and said one of said grooves, and

α is the angle between the side of said one of said grooves and the portion of said groove opposite said detent ring.

3,927,538
KNITTING AND CROCHET NEEDLE AND SEWING NEEDLE COMBINATION

Amelia Martella, Camel Hollow Road, Huntington, N.Y. 11743

Filed July 5, 1974, Ser. No. 486,190
Int. Cl.² D04B 35/02
U.S. Cl. 66—117 4 Claims

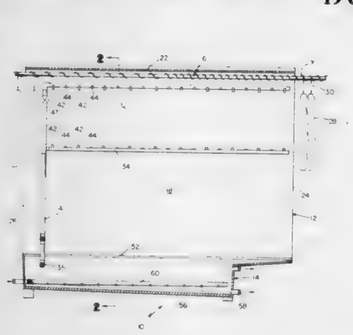


1. A needle assembly comprising a relatively large needle which at one end has an elongated opening along an axis of said needle, said opening forming a chamber, a removable end cap attachable on said needle end for selectively closing said chamber, said chamber containing a removable yarn sewing needle, an inner end of said end cap having an axial opening, said yarn sewing needle having an eye at one end thereof, said eye being received within said end cap opening so that said end cap carries said yarn sewing needle.

3,927,539
SPRAYING

Norman W. Harkison, Taylor Ridge, Ill., assignor to A-T-O Inc., Willoughby, Ohio

Filed Apr. 1, 1974, Ser. No. 456,724
Int. Cl.² D06F 35/00
U.S. Cl. 68—3 R 19 Claims



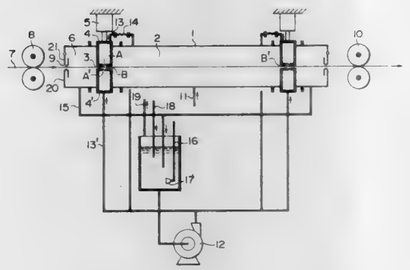
1. In a system for washing garments while hung on hangers and including a spray soak station comprising a spray chamber, a conveyor extending longitudinally through said station and arranged for transporting garments on hangers through said chamber with the broad sides thereof generally parallel to each other and perpendicular to said conveyor, two sets of nozzles mounted within said chamber in a first generally horizontal plane below said conveyor, one of said sets being mounted on each side of the vertical plane including said conveyor, each of said sets including a plurality of nozzles mounted along a respective line extending generally parallel to said conveyor, and each of said nozzles being arranged to direct spray fluid against said garments on hangers being transported through said chamber on said conveyor, that improvement wherein:

each of said sets includes a plurality of conical spray nozzles and a plurality of flat spray nozzles, and the nozzles of said each of said sets are arranged such that at least some of the conical nozzles of said each set are intermediate respective pairs of flat spray nozzles of said each set.

3,927,540
APPARATUS FOR CONTINUOUSLY HEAT-TREATING FIBROUS MATERIALS UNDER PRESSURE

Kazue Tanaka; Katsuo Yamamoto; Hisao Nakamura, and Elichi Wakita, all of Fujishi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 19, 1974, Ser. No. 480,859
Claims priority, application Japan, June 27, 1973, 48-71633
Int. Cl.² D06B 23/18
U.S. Cl. 68—5 E 10 Claims



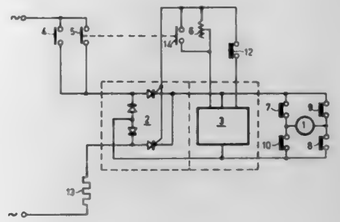
1. An apparatus for continuously heat-treating fibrous materials with a pressurized fluid, which apparatus is capable of continuously passing knot parts or parts of varied thickness of fibrous materials therethrough and in which sealing parts and sealing fluid overflow chambers adjacent thereto are provided at each end of a heat-treating pressure chamber, each of said sealing parts being positioned between the heat-treating chamber and a respective overflow chamber, comprising

1. a chamber for treating fibrous materials with a pressurized fluid,
2. each of said sealing parts comprising a pair of sealing boxes each of said sealing boxes being provided with
   a. a nozzle for injecting a sealing fluid into said sealing box in contact with the fibrous materials to be treated which are passing through a clearance between said pair of sealing boxes, said nozzle having a linear slit opened perpendicularly to a travelling direction of the fibrous materials so as to inject the sealing fluid uniformly in a transverse direction and being inclined to the fibrous materials at an angle of 30° to 90° in a direction from a position remote from the heat-treating pressure chamber toward a position close thereto, and
   b. a sealing fluid inlet on a side opposite to said nozzle, sealing fluid being injected through said nozzle and being overflown into each of said overflow chambers while preventing the pressurized fluid from leaking out of the heat-treating chamber,
3. a means for sliding at least one of said sealing boxes in each pair to permit the clearance between the sealing boxes in contact with the fibrous material to be adjusted to correspond to a sudden change in the thickness of the travelling fibrous materials, and
4. an individual casing for housing each slidable sealing box through a small clearance between the slidable sealing box and the casing, each casing having a lateral width differing from that of the heat-treating pressure chamber to provide a non-linear channel against the passage of the pressurized fluid.

3,927,541
DEVICE FOR CONTROLLING THE SPIN-DRYING SPEED IN A WASHING MACHINE

Yves Albert Daniel Thibaut, Amiens, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 2, 1974, Ser. No. 485,224
Claims priority, application France, July 5, 1973, 73.24693
Int. Cl.² D06F 33/00
U.S. Cl. 68—12 R 2 Claims

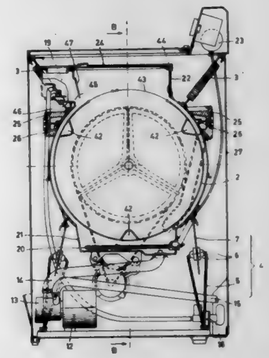


1. In a washing machine of the type comprising a tub, a drum mounted for rotation within the tub, a d.c. motor for driving the drum at least at a low washing and a high spin-drying speed, a water level control device, switching means for changing from washing speed to spin-drying speed while the tub is filled with water, means for setting a maximum spin-drying speed, a motor supply control device, and electric speed regulator means responsive to the setting means for controlling said motor supply control device, an improved spin-drying control device comprising a switch contact responsive to the level of water in the tub, and wherein said setting means comprises a variable resistor, said speed regulator being responsive to the setting of a circuit comprising said switch contact connected to said variable resistor.

3,927,542
LAUNDRY WASHING AND DRYING MACHINE

Philippe de Hedouville, Feuquieres-en-Vimeu, France, assignor to U.S. Philips Corporation, New York, N.Y.

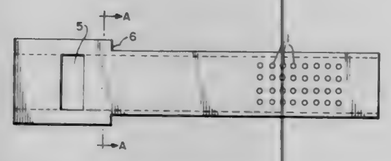
Filed Feb. 13, 1974, Ser. No. 441,972
Claims priority, application France, Feb. 19, 1973, 73.05802
Int. Cl.² D06F 23/02, 39/02
U.S. Cl. 68—17 R 1 Claim



1. A laundry machine of the top loading type comprising a housing having an opening in a top surface for loading and removing articles, lid means for covering the opening, a tub, a drum mounted in the tub for rotation about a horizontal axis, means for suspending said tub within said housing by shock absorbing devices and for positioning said tub by friction devices, means for driving the drum in different directions and

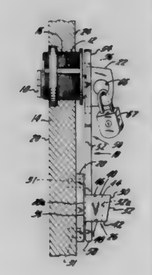
at different speeds, and means for supplying and removing water from the tub, wherein said tub comprises a loading funnel portion extending toward said opening and having an open end aligned with said opening, a door hingedly connected to the funnel at an upper end thereof for covering said open end, and means for dispensing detergent disposed adjacent a free edge of said open end, said dispensing means having a first side constituted by a wall of the funnel forming one side of a passage opening into the tub, said passage comprising a second side formed by one surface of a partition whose other surface constitutes a wall of the actual clothes-guiding portion of the funnel.

3,927,543
DESINTEGRATING KEY
Ivan Krestev Anastasov, Sofia, Bulgaria, assignor to Glavna Directzia Kbumkp Pri Sgns, Bulgaria
Filed Jan. 28, 1974, Ser. No. 437,243
Int. Cl.² E05B *19/00*
U.S. Cl. 70—395 **5 Claims**



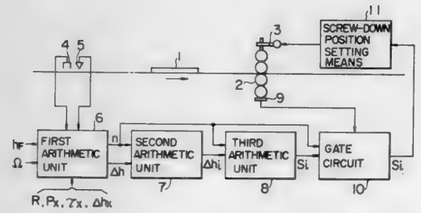
1. A disintegrating key comprising two perforated flat plates disposed in spaced parallel relationship to one another so that their respective perforations are aligned and adapted to receive a third plate inserted between said parallel plates, said third plate also being perforated with holes capable of being aligned with the perforations of the parallel plates, said perforations and holes being further adapted to engage when properly aligned the pins of a lock when inserted therein.

3,927,544
LOCK SECURING ASSEMBLY
Jack Klein, South Orange, N.J., assignor to S.S.B. Industries, Inc., South Orange, N.J.
Filed Nov. 6, 1974, Ser. No. 521,360
Int. Cl.² E05B *13/00*
U.S. Cl. 70—416 **10 Claims**



1. A lock securing assembly comprising, in combination, bar anchor means adapted to be secured to a door or in close proximity to a door in which the cylinder portion of a lock is disposed, said bar anchor means comprising a base member adapted to be secured to said door, and a guide member connected to said base member and including an inclined passageway having a relatively wide end connected to a relatively narrow end; said relatively wide end being positioned so as to be in closer proximity to said lock than said relatively narrow end; and bar means comprising an elongated bar having first and second end portions, said first end portion including a slot which is adapted to be engaged over a knob extending from said lock, and the second end portion of which is adapted to be positioned and retained in said passageway of said bar anchor means, said slot of said bar means when positioned over said knob and in said passageway of said bar anchor means preventing rotation of said cylinder and knob of said lock, said bar means being adapted to be removed from said knob and said bar anchor means by lifting said first end out from engagement with said knob while pivoting said second end in said passageway.

3,927,545
ROLLING METHOD FOR ROLLING MILLS
Yasuo Morooka, Hitachi, Japan, assignor to Hitachi, Ltd., Japan
Filed Apr. 15, 1975, Ser. No. 568,193
Claims priority, application Japan, Apr. 17, 1974, 49-42148
Int. Cl.² B21B *37/00*
U.S. Cl. 72—6 **12 Claims**



1. A rolling method for rolling mills comprising the steps of: obtaining a mean rolling reduction Δh and the number n of passes for carrying out rolling in a minimum period of time from the rolling specifications and by detecting the temperature and thickness of a material to be rolled at the entrance side of the rolling mill, and

determining the rolling schedule, such that the value of rolling reduction selected for each pass in initial and terminating stages of the rolling operation is smaller than that of the mean rolling reduction and yet the total rolling reduction is equal to the product of the mean rolling reduction Δh and the number n of passes.

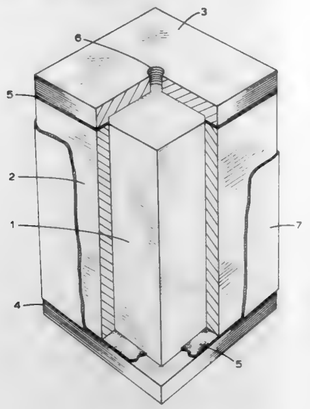
3,927,546
MOLD FOR CONTINUOUS CASTING OF METAL
Lorne Russell Shrum, 820 Manchester Road, London, Ontario, Canada
Filed Oct. 15, 1974, Ser. No. 515,072
Int. Cl.² B21D *26/08*
U.S. Cl. 72—56 **10 Claims**

1. A method of forming a tubular copper mould for the continuous casting of metals, comprising the steps of:

forming an arbor having an external surface having the profile and finish required of the finished mould,

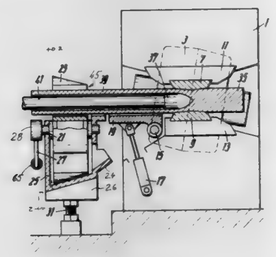
fitting a copper sleeve of the same general shape as the finished mould on the arbor,

surrounding the sleeve with a charge of high explosive material providing a detonation path extending longitudinally of the sleeve, fully immersing the sleeve and its surrounding charge in a liquid,



detonating the charge so as to apply a pressure to the sleeve sufficient to cause plastic flow in the material thereof, and withdrawing the arbor from the sleeve.

3,927,547
MANDREL EXCHANGE FOR DIAGONAL ROLLING MILL
Wolfram Schonfeld, Meerbusch-Osterath; Armin Philipps, Dusseldorf; Hans Eversberg, Monchen-Gladbach; Karl-Heinz Hausler, Korschenbroich, and Robert Samans, Dusseldorf, all of Germany, assignors to Mannesmannrohren-Werke Aktiengesellschaft, Dusseldorf, Germany
Filed Sept. 12, 1974, Ser. No. 505,270
Claims priority, application Germany, Sept. 12, 1973, 334948[U]
Int. Cl.² B21B *25/06*
U.S. Cl. 72—97 **6 Claims**



1. In a diagonal rolling unit having rolls cooperating with a mandrel removably disposed on a retractible mandrel rod and onto which the rolls roll a hollow billet, the improvement comprising:

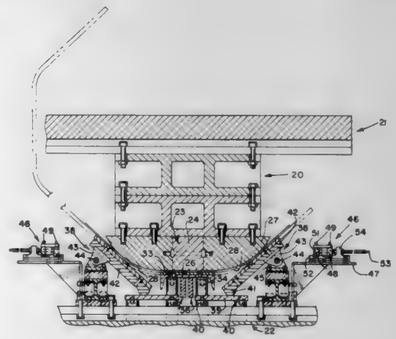
a drum-like mandrel holder having a plurality of peripheral, axial extending compartments each having a bottom contour matching the periphery of a rolled billet, the drum disposed along the line of rolling so that one compartment of generally upward orientation is in line to receive the rolled hollow billet as emerging from the mill during rolling and in tight slidable fit on the bottom of the one compartment, and being held thereon and guided along during rolling;

means disposed between the drum and the rolls for holding a mandrel to remain outside of said one compartment without passing through when the mandrel rod and rolled billet are retracted;

means for rotating the drum when the mandrel rod with hollow billet has been completely withdrawn for placing another compartment holding a new mandrel in line with the mandrel rod and the line of rolling; and

guide means at the exit side of the mill and adjacent the drum for guiding the mandrel, which was removed from the mandrel rod out of the line of rolling in down direction and into an empty compartment of the drum, the empty compartment being open at least to some extent and having orientation in a more down direction, there being holding means for retaining the mandrel therein once having been guided into that compartment.

3,927,548
APPARATUS FOR FORMING ARCHED ROOF SHEETS FOR AUTOMOTIVE CARRIER VEHICLE
William W. Lannin, Hammond, Ind., assignor to Stanray Corporation, Chicago, Ill.
Filed Dec. 28, 1973, Ser. No. 429,377
Int. Cl.² B21D *11/20, 37/06*
U.S. Cl. 72—321 **3 Claims**

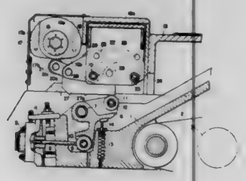


1. Apparatus for forming an arched roof sheet from a flat sheet including a plurality of spaced longitudinally extending corrugations, said apparatus comprising an upper die and a lower die movable relative to each other between an open position and a closed position, said upper die including a flat upper central section and convexly curved side sections on the opposite ends of said central section, spaced resilient strip means longitudinally extending across said flat central section and said curved side sections, said strips being fastened only to said central section, said lower die including a lower central channel, a pair of pivotally mounted planar end sections adapted to progressively and tangentially engage said convex surfaces when said upper central section depresses said lower central channel, and longitudinally extending strip means in staggered relationship to said resilient strip means on said upper central section, and detachably underlying said curved side sections.

3,927,549
EJECTING DEVICE FOR USE IN METAL FORGING MACHINE
Norbert Dycke, Baden-Wurttemberg, Germany, and Hiroshi Sakai, Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Japan
Filed Oct. 24, 1974, Ser. No. 517,745
Claims priority, application Japan, Oct. 24, 1973, 48-118895
Int. Cl.² B21D *45/00*
U.S. Cl. 72—345 **1 Claim**

1. An ejecting device for use in a metal forging machine including therein an ejector pin slidably inserted into the distal end of a slide of the machine, said slide being reciprocated in response to rotation of a crank shaft provided within the

machine, and a L-shaped rocking arm having upper and lower guide rollers at each end thereof and rockably mounted on the slide through a pivotal shaft so as to exert an ejecting motion on said ejector pin, which comprises a pair of rotary cams rotatably mounted on a cam shaft, which is rotatably supported by a frame of the device and is rotated by receiving rotation of said crank shaft, a pair of first and second triangular rocking members, each being rockably supported by said frame through a pivotal shaft at each first apex portion thereof, which are connected with each other through a link at their respective second apex portions and are arranged in such a manner that the respective four pivotal shafts for supporting said rocking members and said link are positioned at respective four corners of a parallelogram, a guide roller



rotatably mounted on said first rocking member through an integral bracket extending from the third apex portion of said first rocking member so that said guide roller is guided by the respective outer peripheries of said pair of rotary cams when said pair of rotary cams are rotated, and an up and down moving element movably suspended between said first and second triangular rocking members at their respective third apex portions and coming into contact with the rocking arm at the underside flat surface thereof through said upper guide roller of said rocking arm, wherein the rocking motion of said rocking arm exerting the ejecting motion on said ejector pin is caused by the action of said pair of rotary cams, thereby causing ejecting motion of said ejector pin regardless of the reciprocation of said slide.

3,927,550

DEVICE FOR STRAIGHTENING DEFORMED VEHICLES OR VEHICLE PARTS

Mokjas Erik Samuel Samuelsson, Rattvik, Sweden, assignor to Finmekano Erik Samuelsson AB, Rattvik, Sweden

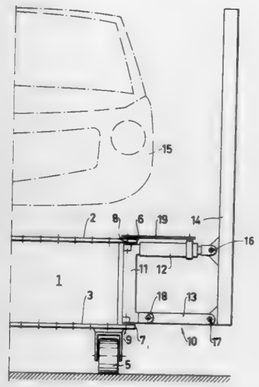
Filed Nov. 30, 1973, Ser. No. 420,384

Claims priority, application Sweden, Dec. 13, 1972, 16266/72

Int. Cl.² B21D *1/12, 37/06*

U.S. Cl. 72—447 **4 Claims**

1. Apparatus for straightening a vehicle component comprising, a platform for supporting a vehicle component, said platform having a side edge, a vertically extending support arm having opposite ends connected to said platform adjacent said side edge for pivotal movement of said support arm about a generally vertical arm axis, a vertically extending force transmitting member spaced outwardly from said support arm and having upper and lower ends, a link member extending between said support arm and the lower end of said force transmitting member and having opposite ends pivotally interconnected with said support arm and force transmitting member at horizontal axes generally parallel to one another, extendable and retractable jack means between said support arm and said lower end of said force transmitting member and generally parallel to and vertically spaced from said link member, said jack means having one end rigidly connected with said support arm and the other end pivotally interconnected with said force transmitting member at a horizontal axis parallel to said axes at said link member ends, whereby extension and retraction of said jack means pivotally displaces said upper end of said force transmitting member in a vertical plane toward and away from said platform edge, said support arm, said link member and said jack means supporting said



force transmitting member for pivotal movement along an arcuate path about said vertical arm axis and relative to said platform edge, thus to vary the angle of said vertical plane with respect to said platform edge, and means on said force transmitting member for connection with said vehicle component.

3,927,551

FRACTURED GLASS TESTING PANEL FOR DYED LIQUID PENETRANTS

James R. Alburger, 5007 Hillard Ave., La Canada, Calif. 91011

Filed Mar. 20, 1974, Ser. No. 452,757

Int. Cl.² G01N *19/08*

U.S. Cl. 73—1 R **4 Claims**

1. In a test method for evaluating the flaw detection performance capabilities of dyed liquid inspection penetrants in which a test penetrant is applied to the surface of a cracked testing panel, excess penetrant is removed by application of a remover, and the testing panel is examined for the presence of entrapments of penetrant in any surface cracks which may be present, the improvement wherein said testing panel consists of a glass panel having at least one surface grit-blasted to a roughness corresponding to a grit mesh in the range of from about 10 mesh up to about 250 mesh.

3,927,552

UNDERWATER STRAIN SENSOR

Joel A. Sinsky, Randallstown, Md., and Dorsey J. G. Gregan, Arlington, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 20, 1974, Ser. No. 525,707

Int. Cl.² H04R *29/00*

U.S. Cl. 73—1 DV **2 Claims**

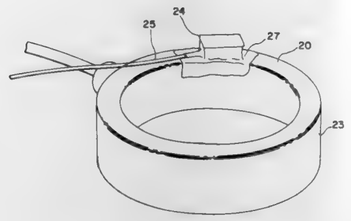
1. A method of monitoring output parameters of a magnetostrictive type ring transducer which comprises:

securing a piezoceramic strain sensor element onto said ring transducer on an edge surface centered about the mean radius with its long dimension approximately tangent to the circle of said ring;

enclosing said strain sensor element within a waterproof

housing; and

electrically connecting said strain sensor element to a



charge amplifier and voltage measuring device which indicates activity of said ring transducer.

3,927,553

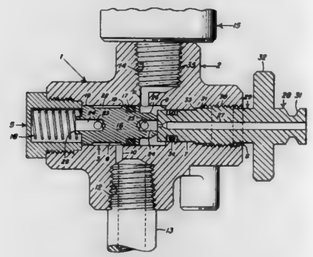
TESTING FITTING FOR PRESSURE-RESPONSIVE DEVICES

Lanier Frantz, 972 Stonegate Drive, Salem, Va. 24153

Filed Oct. 18, 1973, Ser. No. 407,488

Int. Cl.² G01L *27/00*; F16K *11/20*

U.S. Cl. 73—4 R **4 Claims**



1. A testing fitting for a pressure-responsive device, comprising a body having an aperture and a testing port in an outer end of said aperture, plug means and testing means alternately insertable in said testing port for respectively closing said port and admitting testing pressure therethrough, a pressure chamber in said aperture inwardly of and connectable through an outer end to said testing port, inlet and outlet ports opening at axially spaced positions onto said pressure chamber respectively remote from and adjacent said outer end thereof and connecting respectively to a pressure line and said pressure-responsive device, valve means in and shiftable longitudinally of said chamber between outer and inner positions for alternately connecting said outlet port respectively to said inlet and testing ports, yieldable means acting on and normally holding said valve means in said outer position, said testing means on insertion in said testing port acting directly on said valve means to exert a force in opposition to the force of said yieldable means and independently of said testing pressure for shifting said valve means to said inner position to admit said testing pressure to said pressure-responsive device, said valve means on removal of said testing means shifting to said outer position under force of said yieldable means, and said plug means being insertable in said testing port without disturbing said valve means from said outer position.

3,927,554

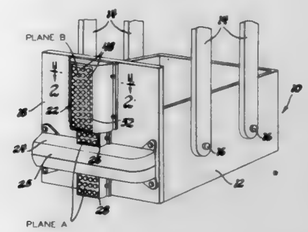
BUMPER TEST DEVICE

Fred E. Langhorst, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 1, 1974, Ser. No. 484,651

Int. Cl.² G01M *17/00*

U.S. Cl. 73—11 **3 Claims**



1. A device for testing a resilient impact receiving portion of a motor vehicle under simulated impact conditions comprising: a rigid impact bar for contacting a first area of the resilient portion of the motor vehicle to impart an impact force thereagainst, means for contacting a second area of the resilient portion of the motor vehicle adjacent the first area and including a plurality of force transmitting elements movable relative the rigid impact bar upon being contacted by the second area of the motor vehicle, and means including a plurality of discrete frangible elements supporting the plurality of force transmitting elements against movement and being individually broken when a predetermined impact force is applied thereagainst by the force transmitting means to thereby record the occurrence of such predetermined impact force.

3,927,555

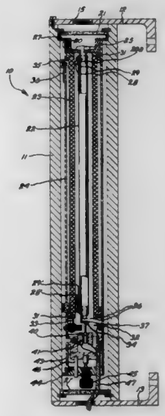
HYDROGEN DETECTOR SYSTEM

Stanley J. Godwin, Newtonville, and Robert V. Klint, Rexford, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,163

Int. Cl. G01n *31/06*

U.S. Cl. 73—23 **11 Claims**



1. An improved hydrogen sensor unit comprising

a palladium alloy tubular sensing element open at both ends which exhibits a reversible change in volume dependent upon the partial pressure of hydrogen in an ambient atmosphere being analyzed and which has a thickness selected to obtain a desired speed of response,

supporting means for mounting said tubular sensing element for substantially unconstrained volumetric change in all directions over its entire length,

a housing and heater assembly surrounding said tubular sensing element and supporting means and forming a chamber and passageways so that both the inner and outer surfaces of said tubular sensing element are contacted by the ambient atmosphere, and

indication means responsive to the change in length of said tubular sensing element for indicating the presence of known concentrations of hydrogen.

3,927,556

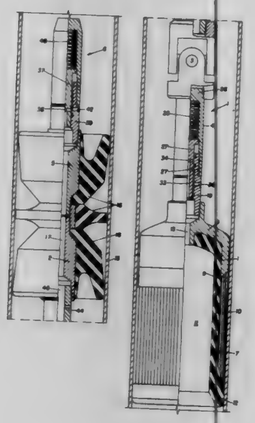
EXPANDABLE PIPELINE PLUG LEAK LOCATION METHOD

Walter E. Hyde, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 240,071, March 31, 1972. This application Nov. 15, 1973, Ser. No. 415,947

Int. Cl.² G01M *3/28*; F16L *55/12*

U.S. Cl. 73—40.5 R **16 Claims**



1. A method of locating a leak in a pipeline, comprising:

a. placing an unexpanded separation plug in a section of pipeline to be tested;

b. pumping fluid into one end of said section so as to pressurize a first portion of said section;

c. moving said unexpanded plug toward the other end of said section in response to the pressure of said fluid pumped into said one end of said section;

d. stopping said unexpanded plug at a desired location within said section;

e. filling a second portion of said section between the unexpanded plug and the other end of said section with fluid;

f. applying at least a predetermined fluid pressure to the entire section of said pipeline;

g. expanding said separation plug in response to the existence of said predetermined fluid pressure so as to isolate said first portion from said second portion and fix the location of said plug within said section;

h. measuring one of constant pressure or pressure decrease in each of said first and second portions to determine if either portion contains a leak;

i. contracting said expanded plug;

j. moving said contracted plug into one of said portions in response to measurement of pressure decrease therein; and

k. repreating steps (d) through (j) until the leak location is narrowed down sufficiently for repair.

3,927,557

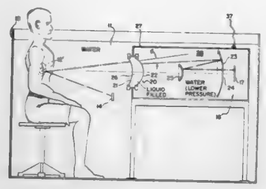
ACOUSTIC IMAGING APPARATUS WITH LIQUID-FILLED ACOUSTIC CORRECTOR LENS

John R. M. Viertl, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 30, 1974, Ser. No. 474,613

Int. Cl.² G01N *29/04*

U.S. Cl. 73—67.5 R **6 Claims**



1. An acoustic imaging apparatus comprising

a transmitting transducer immersed in a first liquid for generating a train of incident acoustic pulses that are directed toward an object to be examined,

an acoustic focusing system immersed in said first liquid for focusing on an image plane the acoustic energy emanating from a planar region of the object,

said acoustic focusing system being comprised by a meniscus corrector lens filled with a second liquid at a selected adjustable pressure and having flexible membrane front and back surfaces that respectively assume a curvature dependent on the pressure difference thereacross, one of said flexible membrane surfaces being enclosed exteriorly by a pressure-tight container filled with said first liquid at a different pressure than the pressure of said first liquid engaging the other flexible membrane surface, said acoustic focusing system further including other reflector system components mounted within said pressure-tight container for forming a magnified image at said image plane,

an acoustic image converter also mounted within said pressure-tight container immersed in said first liquid for converting the acoustic energy focused periodically at said image plane into electrical output data, and

means for controlling said transmitting transducer and acoustic image converter to periodically generate said electrical output data from which visual images can be obtained.

3,927,558

DETERMINATION OF PROPERTIES OF METALS

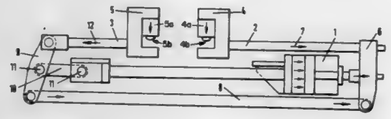
Leon Jean Philippe; Rene Charles Defraye, and Lucien Paul Renard, all of Liege, Belgium, assignors to Centre de Recherches Metallurgiques - Centrum voor Research in de Metallurgie, Brussels, Belgium

Filed Oct. 11, 1973, Ser. No. 405,435

Claims priority, application Belgium, Oct. 11, 1972, 789963

Int. Cl.² G01N *3/08*, *3/28*

U.S. Cl. 73—95 **19 Claims**



1. A process for determining mechanical properties of a metal in the form of a flat tensile test specimen, using a tensile testing machine of the horizontal type, having detectors for measuring the load and variations in length and width of a flat measurement base of the specimen, in combination with a computer for processing of the measurement data, the process comprising the steps of: applying an identical tensile stress simultaneously from both ends of the specimen by means of two clamps engaged at opposite ends of the specimen and displacing them simultaneously at the same speed in opposite directions; and simultaneously measuring both the change in length and the change in width of the measurement base simultaneously by means of two extensometric systems which are movable independently of each other, locating and maintaining the center of symmetry of these two systems so that they are the same and are continuously coincident, until the end of the test, with the center of symmetry of the specimen and on which the specimen is centered upon placing these two systems in contact with the specimen, whereby the tensile test sequence is performed by the tensile testing machine without direct intervention of an operator, except for placing the specimen in the clamps at the beginning of the test and for withdrawing the specimen after fracture.

3,927,559

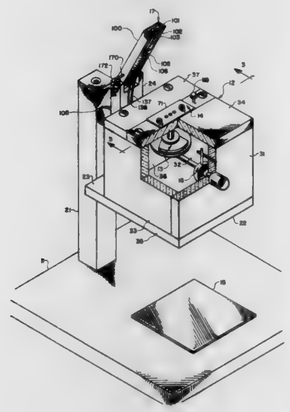
TORQUE MEASURING MEANS FOR MINIATURE WATCH MOTORS OR THE LIKE

Harry Da Costa, and Victor W. Foster, both of Scottsdale, Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed Nov. 13, 1974, Ser. No. 523,287

Int. Cl.² G01L *3/18*

U.S. Cl. 73—134 **17 Claims**



1. An apparatus for measuring the torque of a miniature motor or the like, the motor having an axle, which comprises:

a base plate;

a first pedestal member attached to said base plate;

a transparent box-like structure pivotally mounted to said first pedestal;

means for measuring and visually indicating the torque of said miniature motor, said torque indicating means being disposed within said box-like structure;

means engaging said torque indicating means for operatively coupling said miniature motor to said torque indicating means such that substantially no radial and axial load forces are applied to said miniature motor, said coupling means being attached to and disposed within said box-like structure, said coupling means being attached to said torque indicating means; and

means for electrically connecting said miniature motor to an external power source.

3,927,560

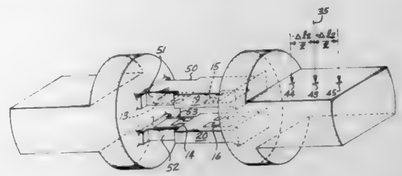
MOMENT DESENSITIZATION OF LOAD CELLS

Emory W. Farr, West Covina, Calif., assignor to Transducers, Inc., Whittier, Calif.

Filed Dec. 20, 1973, Ser. No. 426,895

Int. Cl.² G01L *1/22*

U.S. Cl. 73—141 A **13 Claims**



10. A process of moment desensitization of a parallelogram beam-type load cell, which load cell includes a pair of spaced, substantially parallel beams, the adjacent ends of which terminate in common planes, with first means capable of accepting a mechanical mount for supporting a load rigidly connecting a first pair of adjacent beam ends, and second means capable of being connected to a fixed support structure rigidly connecting the opposing pair of adjacent beam ends, the process including the steps of:

positioning at least two strain gauges on strain sensitive portions of each of said beams;

connecting said strain gauges from both beams in a bridge, wherein said bridge, when energized, produces an electrical output signal response which is representative of a load force applied on the mechanical mount;

determining the response of the bridge and any changes therein in response to movement of the load on said mechanical mount; and

removing a portion of each of said pair of beams in the vicinity of one and not the other of said strain gauges on each of said pair of beams, said removed portions having a position and volume dependent on the polarity of and quantity of change in the response of the bridge resulting from a known change in the position of said load on said mechanical mount.

3,927,561

METHOD AND APPARATUS FOR DETERMINING TIRE QUALITY

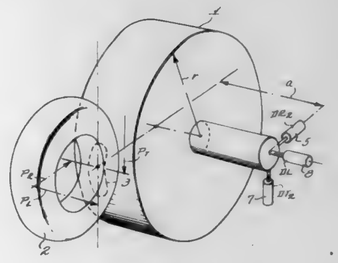
Peter Schleimann, Steinenbruck, Germany, assignor to Gebr. Hofmann KG, Darmstadt, Germany

Filed May 9, 1974, Ser. No. 468,581

Claims priority, application Germany, May 22, 1973, 2326046

Int. Cl.² G01M *17/02*

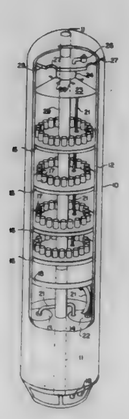
U.S. Cl. 73—146 **11 Claims**



5. Device for producing an indication of tire quality comprising:

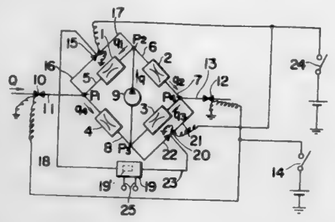
a test drum having a roll-off surface for rotatably engaging the tire to be tested,
a plurality of force pick-ups to measure the magnitude of the forces originating from the rotating tire,
two pick-ups each mounted for measuring the tangential and radial forces and at least one pick-up mounted for the lateral forces, and
an analysing circuit connected to send pick-ups for producing an output indicating the quality including means for producing an indication of the total lateral moment and means for producing an indication of radial moment.

3,927,562
ENVIRONMENTAL PROFILER
George F. Hickey, Jr., Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 4, 1974, Ser. No. 520,818
Int. Cl.² G01W *1/00*
U.S. Cl. 73—170 A **5 Claims**



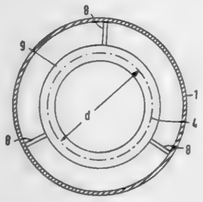
1. A self descending and ascending water parameter detection device; which comprises,
a normally negative buoyant assembly including instrumentation for detecting different water parameters during ascent and descent;
a housing,
said housing including therein a gas accumulator,
a plurality of gas generators within said housing for individually generating gas within said housing,
means for programming sequential activation of said gas generators for separately generating a gas which accumulates in said accumulator for raising said detection device,
means for releasing gases from said gas accumulator subsequent to being raised to permit descent of said detection device,
whereby said detector device is raised each time a gas generator is activated and subsequently lowered each time by releasing gases from said gas accumulator.

3,927,563
FLOW RATE MEASURING SYSTEM WITH CALIBRATION MEANS
Toshiaki Konomi, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan
Filed May 29, 1974, Ser. No. 474,188
Claims priority, application Japan, June 6, 1973, 48-62880
Int. Cl.² G01F *1/00*
U.S. Cl. 73—205 D **4 Claims**



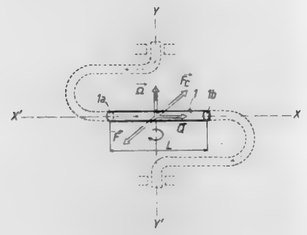
1. A method for calibrating a fluid flow rate measuring system which includes a bridge circuit having four interconnected flow orifices and four flow points each located between a different pair of said four orifices, said four flow points consisting of a first and a second pair of diagonally opposed flow points, fluid flow passage means through which fluid flow whose rate is to be measured is passed, means connecting said first pair of flow points within said passage means as inlet and outlet, respectively, to said bridge circuit, constant capacity pump means connected in flow communication across said second pair of flow points, a pressure converter adapted to generate a signal representative of fluid flow rates in response to fluid pressure applied thereacross, means for calibrating said pressure converter, first valve means for opening and closing fluid flow to and from said first pair of flow points, respectively, and means for connecting said pressure converter across said second pair of points, said method comprising the steps of operating said calibration means to calibrate said pressure converter while maintaining said pressure converter connected across said second pair of flow points and simultaneously closing fluid flow to and from said first pair of flow points with said constant capacity pump means in operation.

3,927,564
VORTEX TYPE FLOWMETER
Broder Ketelsen, Settmarshausen, Germany, assignor to Fischer & Porter Co., Warminster, Pa.
Filed Jan. 24, 1974, Ser. No. 436,368
Claims priority, application Germany, Feb. 7, 1973, 2305813
Int. Cl.² G01F *1/32*
U.S. Cl. 73—194 B **2 Claims**



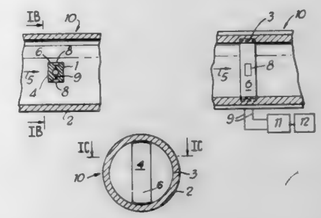
1. A flowmeter of the type operating on the principle of Karman's vortex streets, comprising a flow conduit through which gaseous or liquid fluids to be measured are conducted with an axially symmetrical velocity distribution; an obstacle assembly fixedly disposed in said conduit around which the fluid circulates to shed vortex streets, and a sensor to detect the shedding vortices, said vortex shedding obstacle assembly being positioned in said conduit and shaped to initiate vortex shedding in those points only where the local flow velocity is equal to the mean velocity of the flowing fluid.

3,927,565
APPARATUS AND METHOD FOR MEASURING THE MASS FLOW OF A FLUID STREAM
Cyrille Francois Pavlin, Septeuil; Gerard Mantoux, Bois D'Arcy; Adrien Giraud, Neuilly-sur-Seine, and Michele Grossin, Rueil-Malmaison, all of France, assignors to Bertin & Cie, Plaisir and Compagnie Francaise des Petroles, Paris, both of, France
Filed Jan. 29, 1974, Ser. No. 437,742
Claims priority, application France, Jan. 30, 1973, 73.03196
Int. Cl.² G01F *1/84*
U.S. Cl. 73—194 M **23 Claims**



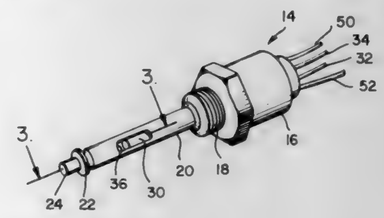
1. In an apparatus for measuring the mass-flow of a stream of single-phase or polyphase fluid, comprising:
a stator;
a rotor mounted for rotation relatively to said stator about a rotational axis, said rotor including:
a support structure;
a substantially rectilinear monochanneled pipe segment presenting a longitudinal axis substantially perpendicular to said rotational axis, said pipe segment having two open ends and being traversed in operation by said fluid stream, from one end thereof to the other;
means for suspending said rectilinear pipe segment on said support structure substantially symmetrically about said rotational axis and with a degree of freedom such that said rectilinear pipe segment can perform as a whole a translational movement relatively to said support structure in a direction perpendicular to both the longitudinal axis of said rectilinear pipe segment and said rotational axis;
means for reciprocatingly rotating said rotor relatively to said stator about said rotational axis; and
means for measuring in operation the force which said fluid stream applies to said rectilinear pipe segment as a result of Coriolis effect in said direction in which said pipe segment has translational freedom relatively to said support structure;
in combination, the improvement comprising an inlet system for admitting said fluid stream into and an outlet system for discharging said fluid stream out of said rectilinear pipe segment, said inlet and outlet systems each comprising:
a two-ended rotor tube rigidly fixed to said support structure and comprising a 180° bend, said rotor tube having a first open end in register with an open end of said rectilinear pipe segment, and a second open end;
a stationary stator duct having an open end; and
coupling means sealingly interconnecting said second open end of the rotor tube with said open end of the stator duct and simultaneously articulating said rotor tube with said stator duct for rotation about said rotational axis;
whereby allowing said rotor to perform a reciprocating rotation such that the total linear displacement of each end of said rectilinear pipe segment is at least equal to the diameter of said pipe segment.

3,927,566
FLOWMETERS
Klaus Joachim Zanker, Luton, England, assignor to Kent Instruments Limited, Luton, England
Continuation of Ser. No. 263,173, June 15, 1972, abandoned.
This application July 12, 1974, Ser. No. 488,234
Claims priority, application United Kingdom, June 17, 1971, 28510/71
Int. Cl.² G01F *1/00*; G01P *5/10*
U.S. Cl. 73—194 VS **11 Claims**



1. A flowmeter comprising a conduit for receiving a flow of fluid, an elongated bluff body of rectangular cross section, means for mounting the bluff body so that the body extends across the conduit and causes vortices to be generated in fluid flowing along the conduit past the body, and sensing means responsive to the formation of the vortices and adapted to generate an electrical signal representative of the rate of generation of the vortices, and hence of the rate of flow of fluid, said sensing means comprising a pair of sensors mounted on the body on opposite sides thereof downstream of a side of the body which faces the flow of fluid.

3,927,567
FLUID FLOW SENSING METHOD AND APPARATUS
Edward A. Novak, Downsview, and George F. Paclik, Mississauga, both of Canada, assignors to The Garrett Corporation, Los Angeles, Calif.
Filed Aug. 16, 1974, Ser. No. 498,287
Int. Cl.² G01F *1/00*
U.S. Cl. 73—204 **2 Claims**



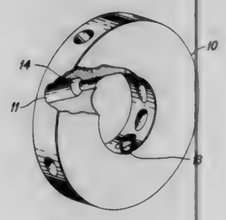
1. A fluid flow sensor comprising:
a generally tubular body exposed to a flow of fluid to be sensed;
a heated sensing element disposed at one end of said generally tubular body and extending into the flow of fluid;
an unheated sensing element disposed within said generally tubular body intermediate the ends thereof, said generally tubular body including at least one opening intermediate the ends thereof to permit the flow of fluid around said unheated sensing element; and
baffle means disposed on said generally tubular body intermediate said at least one opening and said heated sensing element to substantially isolate said heated sensing element from fluid flow disturbances and turbulence resul-

tant from the flow of fluid through said at least one opening in said generally tubular body.

3,927,568
MEANS FOR IMPROVING LINEARITY OF BEARINGLESS FLOWMETER HAVING RING-SHAPED ROTOR OPERATING IN COMBINATION WITH A VORTEX CHAMBER BY CONTROLLING TURBULENCE PRODUCED BY JET PATHWAYS

David E. Hoppe, 294 Beacon St., Boston, Mass. 02116

Filed Nov. 20, 1973, Ser. No. 417,508
Int. Cl.² G01F *1/06*
U.S. Cl. 73—229 **8 Claims**



1. In a bearingless flowmeter having a chamber with a rotor positioned therein and having a plurality of jets located around the periphery of said chamber and each jet being adapted to direct fluid into said chamber and each jet being angularly oriented to produce a fluid vortex having an axial component of flow through said chamber and around said rotor, the improvement comprising

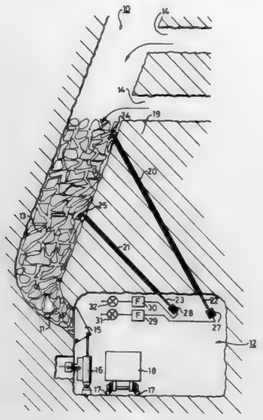
means to increase the turbulence of said fluid flowing through at least some of said jets into said chamber and with said means being applied to said at least some of said jets in a balanced disposition about the periphery of said chamber so that in the operation of said rotor in response to said fluid passing through said chamber improved linearity of flowmeter operation is thereby obtained.

3,927,569
METHOD OF SUPERVISING THE FILLING LEVEL IN HOPPERS, SHAFTS, SILOS AND THE LIKE FOR MISCELLANEOUS MATERIALS AND MEANS FOR PERFORMING THE METHOD

Sven-Gunnar Bergdahl, Jarfalla, and Erik Torsten Wangdahl, Ammeberg, both of Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Mar. 21, 1974, Ser. No. 453,389
Claims priority, application Sweden, Mar. 21, 1973, 7303961
Int. Cl.² G01F *23/00*
U.S. Cl. 73—290 V **13 Claims**

1. Method of supervising the filling level and downward movement of granular material in a vertically elongated space, which comprises pouring said material into said space past and in engagement with at least one sensing mechanism placed at a level substantially above the bottom of said space located in the downward path of said material, transforming the movement of the material engaging said sensing mechanism when falling down into said space into vibrations, converting said vibrations into indication signals denoting the falling of material past said sensing mechanism, whereby, when material in

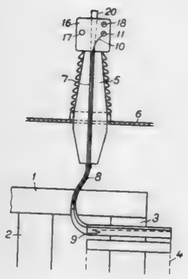


the space has reached a level above said sensing mechanism, substantially no vibration is transmitted.

3,927,570
MEANS FOR MEASURING THE TEMPERATURE IN ELECTRICAL MACHINES

Per Hedvall, Vasteras; Wolfgang Lampe, and Erich Spicar, both of Ludvika, all of Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 8, 1974, Ser. No. 440,871
Claims priority, application Sweden, Mar. 1, 1973, 7302868
Int. Cl.² G01K *1/14*, *7/08*
U.S. Cl. 73—350 **2 Claims**

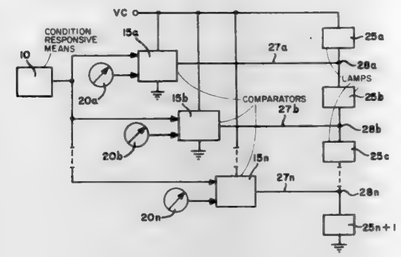


1. In an electric machine having a casing (**6**), a winding (**4**) inside the casing, and an outer terminal (**20**) outside the casing, means for measuring the temperature of said winding comprising a thermocouple having a hot junction (**9**), a cold junction and two thermocouple conductors (**10**) connecting said two junctions, at least one bushing (**5**) arranged on said casing, supporting said outer terminal, a connection lead (**8**) passing through said bushing and connecting the winding and the outer terminal, said hot junction being the measuring point of the thermocouple and being positioned on the winding conductor at a point where the temperature is to be measured, said cold junction being located adjacent the top of the bushing, said thermocouple conductors (**10**) following said winding conductor and connection lead (**8**) through the bushing to the cold junction, a temperature measuring instrument (**11**) connected to the thermocouple and positioned on the top of the bushing to said cold junction, said thermocouple having two thermocouple conductors, one of said conductors being constituted by said connection lead (**8**), the second of said thermocouple conductors (**10**) being soldered to the winding conductor at the hot junction (**9**).

3,927,571
TEMPERATURE INDICATING DEVICE

Stuart E. Athey, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Jan. 18, 1974, Ser. No. 434,557
Int. Cl.² G01K *7/00*; G01R *13/02*
U.S. Cl. 73—362 **8 Claims**



1. A temperature indicating apparatus for indicating whether a temperature under observation is under, over, or within a predetermined range of temperatures, said apparatus including

a single temperature responsive means providing an electrical output which varies in response to the temperature sensed thereby,

first and second comparator circuits, each having an input connected to the output of said temperature responsive means, and an input connected respectively to a first and a second adjustable electrical reference source representing first and second reference temperature levels,

each of said comparator circuits providing an output which is either a source of current or ground depending upon the magnitude of the input from said temperature responsive means relative to its respective reference source,

first, second and third indicator elements connected in series between a source of current and ground,

the outputs from said first and second comparator circuits being connected to the junction between said first and second and said second and third indicator lamps, respectively,

whereby only said first element is illuminated when the temperature being observed is below the first reference level,

only said second lamp is illuminated when the temperature being observed is in the range between the first and second reference levels, and

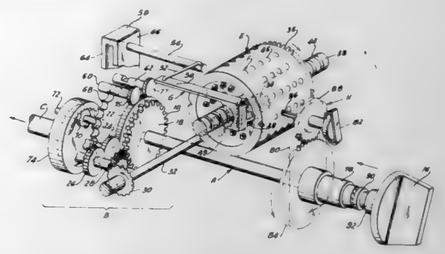
only said third element is illuminated when the temperature being observed exceeds the second reference level.

3,927,572
UHF TUNER DRIVE ASSEMBLY WITH MEMORY FINE TUNING

Carroll R. Miner, Wilbraham, Mass., assignor to General Instrument Corporation, Clifton, N.J.

Filed Nov. 23, 1973, Ser. No. 418,168
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.80 **16 Claims**

1. A tuner drive assembly for use with a tuner mechanism having a control shaft comprising a tuner shaft, a rotationally and axially movable hollow cylinder operably connected to said tuning shaft to be driven thereby, a plurality of adjustable position elements helically arranged on said cylinder so as to extend inwardly into the hollow of said cylinder, means extending into said cylinder for sequentially sensing the radial position of each of said elements as said cylinder is moved, said sensing means being operably connected to said control

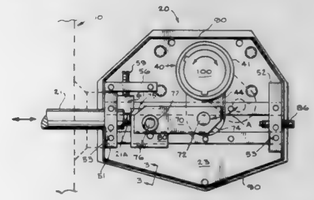


shaft to move the latter in accordance with the radial position of the element being sensed.

3,927,573
ARTICULATED ACTUATOR

John M. Sheesley, Houston, and Ronald A. Gulick, Sugarland, both of Tex., assignors to Research Engineering Co., Houston, Tex.

Filed June 24, 1974, Ser. No. 482,377
Int. Cl.³ F16H *21/18*
U.S. Cl. 74—50 **5 Claims**



1. In an actuator having a housing, a rotatable yoke member, mounted for rotation in said housing, a reciprocatable piston rod member mounted for reciprocation on said housing, and means for connecting said reciprocatable member to said rotatable member, the improvement comprising:

said housing including upper and lower pairs of track members;

said connecting means includes; traveling block member fixed to said piston rod member, at least one link pivotally connected to said traveling block member and to said rotatable yoke member, said pivotal connection to said traveling block includes a pin passing through said traveling block and said link, said pin including at each end thereof a low friction member, said low friction members each being of such size and shape as to be adapted to slide between and be guided by said pairs of track members on said housing.

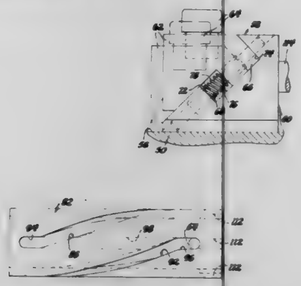
3,927,574
INDEXING MECHANISM

Daniel L. Rice, Lapeer, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 13, 1974, Ser. No. 469,091
Int. Cl.³ F16H *25/12*
U.S. Cl. 74—57 **3 Claims**

1. A mechanism for converting reciprocal movement into rotary movement comprising, a driver member supported for movement along a straight line between a first position and a second position, a driven member in the form of a sleeve encircling the driver member and having a series of circumferentially spaced helical grooves formed in the inner surface thereof, each helical groove having a tapered surface adjacent one end thereof and located along a line that is parallel to said

straight line and that connects one end of one helical groove to the other end of the adjacent helical groove, said driver member including a cam member normally located in one of said helical grooves, means including a spring supporting said cam member on said driver member for movement along an axis extending transversely to said straight line, a linear actuator connected to the driver member for moving the latter along said straight line from the first position to the second



position so as to cause the cam member to move within a helical groove and rotate the driver member a predetermined distance, and a lock member responsive to the movement of the driver member for temporarily locking the driven member in position so as to allow said cam member to be depressed by said surface along said axis extending transversely to said straight line and return along said straight line to said first position wherein the cam member enters the next helical groove.

3,927,575

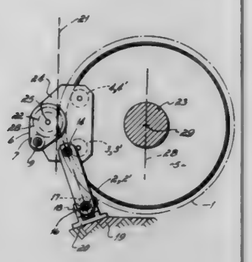
GEAR REDUCTION DEVICE WITH FLOATING PINION

Francois Durand, 11 rue du Bateau, Antibes, France

Filed Jan. 2, 1974, Ser. No. 429,760

Int. Cl.² F16H *57/00, 35/00*

U.S. Cl. 74—410 **4 Claims**



1. Carriage support structure for a gear reduction device having a floating pinion adapted to mate with a main gear, said pinion being mounted in a carriage adapted to roll along the periphery of the main gear, said carriage support structure including

at least one roller connected to said carriage, said roller being adapted to roll along an inside guide defined by said main gear to hold said pinion to mesh with said main gear, a coupler bar located exteriorly of each side of the main gear, each of said coupler bars being connected with said carriage at one end, and

a universal type joint fixed to ground, the other end of each of said coupler bars being connected with said universal type joint, said universal joint being positioned between a first line tangent to said main gear at that point where said pinion mates with said main gear and a second line parallel to said first line that passes through the center axis of said main gear, thereby reducing the forces exerted on said carriage's roller during driving engagement of said pinion with said main gear.

3,927,576

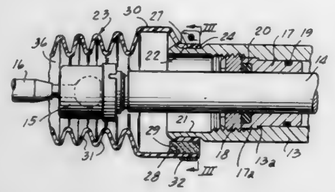
BOOT SEAL FILTER VENT

John Benjamin Colletti, Grosse Pointe Park, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Aug. 1, 1974, Ser. No. 493,554

Int. Cl.² B62D *3/12;* **F16J** *15/52*

U.S. Cl. 74—498 **7 Claims**



4. A steering gear having a tube with a bar projecting from opposite ends thereof, ball joint housings on the ends of said bar, ball studs extending from said housings in tiltable relationship, elastomeric boots having large diameter ends sealed on the ends of the tube and small diameter ends sealed on the ball studs, said boots providing expansible and contractible sealed chambers at the ends of the tube, said tube having nipples on the ends thereof defining elongated passageways venting the sealed boot chambers with the atmosphere, and elongated porous metal filter plugs tightly fitted in said passageways having exposed first end portions communicating with the sealed boot chambers and exposed second end portions communicating with the atmosphere together with elongated intermediate portions between said end portions effective to trap lubricants as air is expelled from the sealed boot chambers during contraction of the boots and for trapping contaminants from the atmosphere as air flows into the sealed boot chambers during expansion of the boots with the trapped lubricants being purged from the plugs during inflow of air into the sealed boot chambers and with contaminants being purged from the plugs upon outflow of air from the sealed boot chambers.

3,927,577

REGULATOR APPARATUS

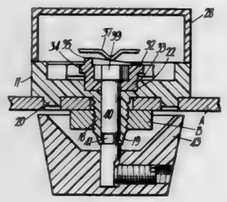
Robert Speedie, Carnegie, Australia, assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed May 17, 1974, Ser. No. 470,878

Claims priority, application Australia, May 23, 1973, 3418/73

Int. Cl. F16h *53/00*

U.S. Cl. 74—567 **13 Claims**



1. In a regulator apparatus having a base block, a bush member formed integrally with the base block as an extension from the underside thereof and having an external screw thread engageable by a nut to secure the base block in its

operating position, a cam means and a spindle, the cam means being mounted on the spindle and the spindle being mounted in the base block and further being rotatable about its central longitudinal axis; the improvement wherein the cam means is mounted in the same direction as the force applied to it when in operation such that the force tends to hold the cam means in a seating in the base block.

3,927,578

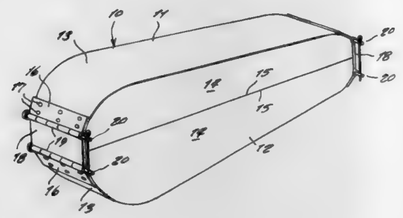
E-Z REMOVABLE BELT GUARD HINGE

I. W. Mattila, 1361 Azalea Ave., McKinleyville, Calif. 95521

Filed May 2, 1974, Ser. No. 466,398

Int. Cl.² F16P *1/02*

U.S. Cl. 74—608 **1 Claim**



1. A removable belt guard for enclosing endless belts or chains running around pulleys or sprockets in a machine, said guard comprising a pair of half sections, one of said sections constituting an upper section and the other a lower section, each one of said half sections including a peripheral wall, a side wall on at least one side of said peripheral wall, and a hinge plate secured to each opposite end of said peripheral wall, at least one end wall plate configured for coaction with said hinge plates, pins means for releasably securing said hinge plates to said wall plate, the edges of said side walls of said two half sections abutting each other when said guard is assembled, said wall plate affording mounting of said guard to the machine.

3,927,579

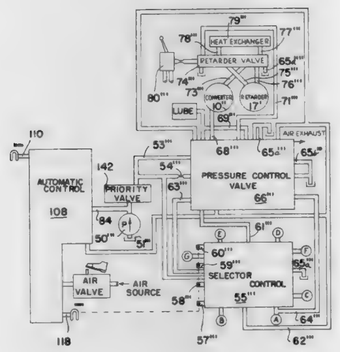
DOWN SHIFT INHIBITOR SYSTEM FOR AUTOMATIC TRANSMISSION CONTROL

Kenneth Frank Golan, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 14, 1974, Ser. No. 451,012

Int. Cl. F16h *3/74;* **B60k** *41/18*

U.S. Cl. 74—752 C **2 Claims**



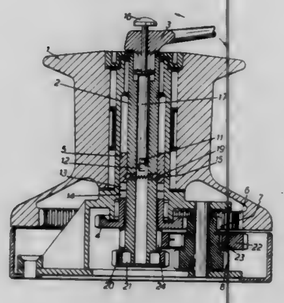
1. A hydraulic control system for a multispeed transmission having drive components associated to produce a preselected group of gear ratios in an automatic range of operation, said control system comprising: a manual control valve; a group of automatic selector valves; a power control valve; fluid conduit connections interconnecting said manual control valve with both said group of automatic selector valves and said power control valve; said power control valve connected to gear ratio control means for producing a selected gear ratio in the automatic range; governor means for simultaneously establishing plural governor pressures dependent upon transmission output speed, means for applying each of the governor pressures to a different one of the automatic selector valves, means for applying a reference pressure to each of the last-mentioned selector valves in opposition to the governor pressure, means including the selector valves responsive to variations in transmission output speed and governor pressure to automatically up shift and down shift the transmission within the automatic range of operation and up to the highest gear selected by positioning of said manual control valve; and means for inhibiting a forced down shift of said transmission as demanded by positioning of the manual control valve at a lower gear setting until a predetermined transmission output speed is reached, including a first valve member of a selector valve subjected at opposite ends thereof to said reference pressure and said governor pressure, respectively, and additional parts of a selector valve adjacent the first valve member which are inactive in said automatic up shift and down shift operation and having a first selected area against which a forced down shift pressure is applied by movement of the manual control valve to urge the first valve member in a direction opposed by said governor pressure and a larger second area which is subjected to the forced down shift pressure only after a forced down shift of the first valve member to hold the particular selector valve in downshifted position.

2. A hydraulic control system for a multispeed transmission having drive components associated to produce a preselected group of gear ratios in an automatic range of operation, said control system comprising: a manual control valve; a group of automatic selector valves; a power control valve; fluid conduit connections interconnecting said manual control valve with both said group of automatic selector valves and said power control valve; said power control valve connected to gear ratio control means for producing a selected gear ratio in the automatic range; means including the selector valves responsive to variations in transmission output speed to automatically up shift and down shift the transmission within the automatic range of operation and up to the highest gear selected by positioning of said manual control valve; governor means for simultaneously establishing plural governor pressures dependent upon transmission output speed; means for applying each of the governor pressures to a different one of the automatic selector valves; means for applying a reference pressure to each of the last-mentioned selector valves in opposition to the governor pressure to obtain said automatic up shift and down shift operation; each of the selector valves having a first valve member subject at opposite ends thereof to said opposing reference pressure and governor pressure for said automatic up shift and down shift operation and having a second valve member adjacent the first valve member and which is inactive in said automatic up shift and down shift operations and having a selected area and a larger area with said larger area selectively acted upon by the forced down shift pressure signal to hold the selector valve in a down shift position after a forced down shift has been effected; means responsive to movement of the manual control valve for selectively applying a forced down shift pressure to said selected area of one or more of the selector valves in opposition to the governor pressure whereby forced down shift occurs when the force resulting from down shift pressure exceeds an opposing force including a force from governor pressure; and means responsive to the value of governor pressure for preventing application of the forced down shift pressure signal to said larger area of the second valve member as demanded by positioning of the manual control valve until a predetermined transmission output speed is reached whereby down shift of the transmission is inhibited.

3,927,580
DISENGAGING CLUTCH SYSTEMS FOR A THREE-SPEED WINCH

Derek James Fawcett, Havant, England, assignor to Lewmar Marine Limited, Havant, England

Continuation-in-part of Ser. No. 267,948, June 30, 1972, abandoned. This application Nov. 6, 1973, Ser. No. 413,254
Claims priority, application United Kingdom, July 2, 1971, 31197/71
Int. Cl.² F16H 5/52; B66D 1/30
U.S. Cl. 74—812 12 Claims



1. A winch in which there are more than two drive trains between a drive shaft and the winch drum offering respectively different drive ratios of drive of the drum in one sense of rotation, at least one of the driving trains having a disconnectable drive means, the ratios being successively engageable by successively opposite directions of rotation of the drive shaft, a preselector operable to determine which one of two of the said drive ratios engageable upon a given said direction of rotation of the drive shaft will be engaged, the preselector being thus operable by causing connection or disconnection of the disconnectable drive means in one of the said drive trains, and means automatically to disconnect the disconnectable drive means only upon reversal of the drive shaft from the given said direction of rotation.

2. A multispeed winch having a static body, a drum, bearing means supporting the drum on the body for rotation about an axis of rotation, a drive shaft, bearing means supporting the drive shaft in the body for rotation about the same axis of rotation, a plurality of drive linkages between the shaft and the drum operable to drive the drum in a single sense of rotation at different speeds upon successive rotation of the drive shaft at the same speed in successively opposite senses of rotation, one of the drive linkages including a manually engageable coupling means having engageable driving and driven members whose engagement constitutes engagement of the coupling, in which condition the driving member is arranged to drive the driven member unidirectionally in a driving sense of rotation upon relative rotation of the driving and driven members in one direction of rotation, the driving member, at least when the coupling means is engaged being operatively connected to the drive shaft for rotation when the drive shaft rotates in either sense, and means for automatically disengaging the coupling only when the drive shaft rotates in one sense of rotation relative to the static body of the winch, the drive linkage in at least the highest of the drive ratios including a unidirectional drive means oriented to prevent relative rotation of the driving and driven members in the sense opposite to the said one direction of rotation by the drum through that linkage.

3,927,581
METHOD FOR MANUFACTURING DRY SHAVER-CUTTER UNIT

Alojzy Antoni Kolodziej, Stobhill, Northcumberland, England, assignor to Ronson Products Limited, England

Filed Mar. 28, 1974, Ser. No. 455,535
Claims priority, application United Kingdom, Apr. 2, 1973, 15759/73
Int. Cl.² B21K 11/00; B26B 19/04
U.S. Cl. 76—104 R 12 Claims



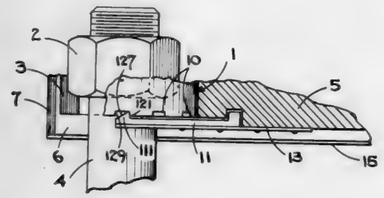
1. A method for making a cutter unit for a dry shaver assembly comprising the steps of providing an elongated strip of cutter material, forming in said strip undulations extending in a longitudinal direction of said strip, winding said strip edgewise into a helical configuration, providing a longitudinal support member for said strip, and embedding portions of said strip in said longitudinal support member to mount said strip thereupon.

4. A cutter unit for a dry shaver assembly comprising an elongated strip of cutter material, said strip being wound edgewise in a helical configuration, undulations extending in a longitudinal direction of said strip, and a longitudinal support member having parts of said strip embedded therein for mounting said strip upon said support member.

3,927,582
OPEN END ONE-DIRECTION RATCHET WRENCH

Nicholas L. Hertelendy, and Nicholas A. Hertelendy, both of P.O. Box 104, Folsom, Calif. 95630

Division of Ser. No. 356,938, May 3, 1973. This application May 1, 1975, Ser. No. 573,469
Int. Cl.² B25B 13/46
U.S. Cl. 81—58.2 2 Claims



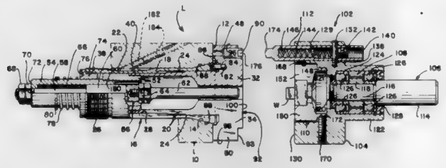
1. A wrench comprising:
a wrench handle having a socket member on at least one end thereof to surround an item to be torqued;
a gripping member within said socket member to turn with said handle in one direction of rotation and to index relative to said handle in the other direction of rotation of said handle;
said gripping member having circumferentially positioned radially directed notches thereon forming ratchet teeth; a pair of diametrically positioned ratchet pawls engaging said notches, and positioned to block relative rotation in one direction between said gripping member and said handle while allowing relative rotation in the other direction between said gripping member and said handle;

said socket member and said gripping member each having an opening in their peripheries to receive an item to be torqued;
said gripping member having an indentation around its outer periphery;
a substantially radially directed member, spring biased and positioned adjacent said indentation within said handle to hold said gripping member in position.

3,927,583
APPARATUS FOR LOADING A WORKPIECE INTO A ROTATING COLLET OR CHUCK

Parsons, Hubert J., Horseheads, and Anders Adolf Peterson, Elmira, both of N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Jan. 11, 1974, Ser. No. 432,611
Int. Cl.² B23B 13/02
U.S. Cl. 82—2.5 16 Claims



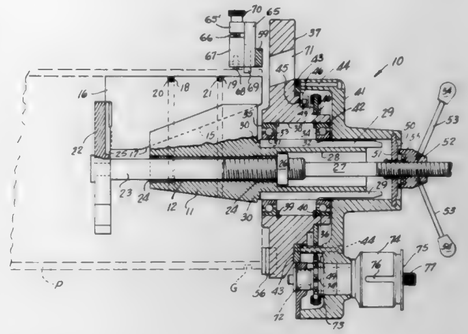
1. Apparatus for loading a workpiece into a rotating collet or chuck wherein the collet or chuck includes a projection on the face thereof offset from its axis of rotation, said apparatus comprising:
a. a loading head.
b. means for rotatably supporting said loading head coaxially with the collet or chuck,
c. said loading head including a face substantially perpendicular to the axis of rotation of said loading head,
d. means on said loading head face for mounting work gripping means thereto,
e. pin means for engaging the projection on the face of the collet or chuck as it rotates,
f. said pin means being mounted on said loading head and projecting beyond said loading head face at a point offset from the axis of rotation thereof,
g. means associated with said loading head for yieldably supporting said pin means against a force acting thereon in a direction substantially normal to said loading head face, and
h. means associated with said pin means and said loading head for adjusting the distance said pin means projects beyond said loading head face.

3,927,584
PIPE END FACING AND GROOVING MACHINE

Johnny W. Mayfield, 4505 Greenstone Road, Placerville, Calif. 95667

Filed Mar. 5, 1975, Ser. No. 555,345
Int. Cl.² B23B 3/22
U.S. Cl. 82—4 C 5 Claims

1. A pipe end facing and grooving machine comprising a mandrel, means on said mandrel for engaging the inner face of a pipe adjacent one end thereof, a head plate journalled on said mandrel and adapted to rotate thereabout, means connected to said mandrel and engaging said head plate for moving said head plate axially with respect to said mandrel, a power driven hub secured to said last named means, and means extending between said power driven hub and said head for rotating said head from said power driven hub, a facing tool secured to said head adjacent the bottom thereof on the side thereof toward said mandrel for engaging and dressing the end of a pipe, a grooving tool for engaging and cutting a groove in the end portion of said pipe with said tool adjustably mounted on the upper portion of said head and resilient means between said head and said grooving tool for

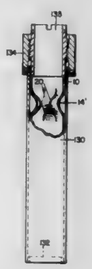


maintaining said tool in contact with the outer face of said pipe.

3,927,585
ADJUSTABLE LINER

Richard Arnold Austin, 35 Ohio Ave., West Springfield, Mass. 01089

Filed Feb. 21, 1975, Ser. No. 551,597
Int. Cl.² B23B 25/00
U.S. Cl. 82—38 A 10 Claims



1. An adjustable support for supporting bar or tube stock concentrically within a turning machine spindle, or feeder or stock support tube, comprising a liner having a plurality of collapsible sections, and means for collapsing the collapsible sections for movement into gripping relation to the bar or tube stock, the sections defining a fixed centerline coincident with the centerline of the turning machine spindle, or feeder, or stock support tube.

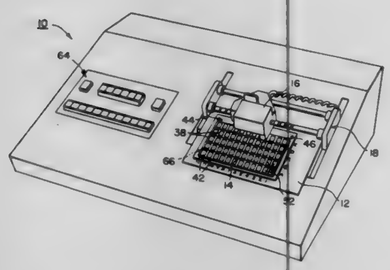
3,927,586
MICROFICHE DELETER APPARATUS

Augustus W. Griswold, 2 Pine Tree Trail, Rush, N.Y. 14543, and Boris W. Haritonoff, Pole Bridge Road, Geneseo, N.Y. 14454

Filed Jan. 29, 1973, Ser. No. 327,499
Int. Cl.² B26D 3/08
U.S. Cl. 83—8 14 Claims

1. Apparatus for preparing an updated microfiche, wherein said microfiche is of the type including a base and a plurality of microfilm frames removably mounted on the base, comprising:
a. a support including a deck on which a microfiche can be mounted;
b. a knife carriage, including a knife blade;

c. an X-Y detented slide system for movably mounting said carriage on said support for X-Y movement of said knife blade above said deck;
d. means for mounting said knife blade in said knife carriage for movement toward a microfiche mounted on said deck, said X-Y detented slide system including detents such that said blade can be detent positioned to cut through each side edge of each microfilm frame mounted on said microfiche;



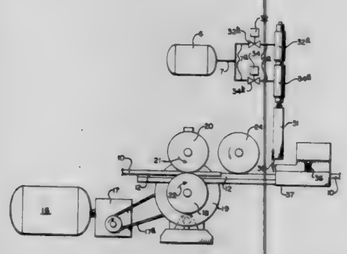
e. said knife carriage including a solenoid connected to said knife blade for, when energized, pushing said knife blade completely through only the entire thickness of the microfilm mounted on said base, and not completely through the base, and
f. said deck including a plurality of registration pins for use in mounting a microfiche on said deck in a predetermined registration, whereby a microfilm frame to be removed can be cut away, at each side edge thereof, from the adjoining microfilm frames by said knife blade for removal from the microfiche base.

3,927,587

GASKET CUTTING APPARATUS

James C. Jackson, and Loyd D. Harberson, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Apr. 15, 1974, Ser. No. 461,015
Int. Cl.² B26D *3/08, 5/20, 5/40*
U.S. Cl. 83—8 **11 Claims**



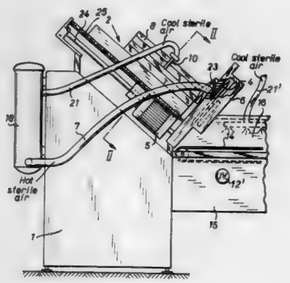
1. An apparatus for notching and severing a flexible gasket means comprising:
a. motor means;
b. clutch means;
c. drive wheel means connected to said motor means by said clutch means for moving said gasket means;
d. idler wheel means adjacent to said drive wheel means for forcing said gasket means against said drive wheel means;
e. guide means located between said idler wheel means and said drive wheel means for guiding said gasket means between said idler wheel means and said drive wheel means;
f. measuring wheel means located adjacent to said guide means for measuring said gasket means at a first series of preset intervals and at a second series of preset intervals as said gasket means is driven along said guide means;
g. knife means located adjacent to said guide means for notching said gasket means at said first series of preset intervals and for severing said gasket means at said second series of said preset intervals after said gasket means has been notched in accordance with said first series of preset intervals;
h. counter means connected to said clutch means and said measuring wheel means for (i) measuring the length of said gasket means traveling beneath said measuring wheel means and (ii) for de-energizing said clutch means to engage and disengae said clutch means at preset intervals; and,
i. air cylinder means connected to said knife means and said counter means for actuating said knife means for notching said gasket material at said first series of preset intervals and for severing said gasket means at said second series of said preset intervals after said gasket means has been notched in accordance with said first series of preset intervals.

3,927,588

ASEPTIC SLICING MACHINE FOR FOOD PRODUCTS, AND METHOD

Hans Rudolf Laderach, Basenheid, Switzerland, assignor to Micarna AG Fleischwarenfabrik, Bazenheid, Switzerland

Filed July 22, 1974, Ser. No. 490,518
Int. Cl.² A23B *4/06;* **B26D** *4/22*
U.S. Cl. 83—15 **11 Claims**



1. Method of aseptically severing meat products, sausage products, cold cuts, and the like, utilizing a slicing machine having a moving cutting knife sequentially severing slices of said meat products from a bulk supply
comprising the step of
continually blowing air at a temperature in excess of 100° C against said cutting knife to continuously maintain the cutting knife (4) of the slicing machine during the cutting operation at a temperature which is at least the minimum sterilization temperature and to heat the cutting knife to a temperature in excess of 100°C.

3,927,589

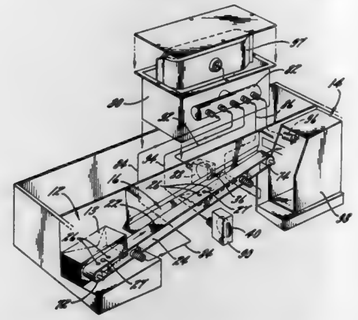
METHOD AND APPARATUS FOR OPENING LETTER ENVELOPES

Erwin J. Emkjer, Boca Raton, and L. Kenneth Tucker, Miami Lakes, both of Fla., assignors to Kenematic Company Inc., Plantation, Fla.

Continuation-in-part of Ser. No. 275,560, July 27, 1972, abandoned. This application July 9, 1973, Ser. No. 377,427
Int. Cl.³ B43M *7/02*
U.S. Cl. 83—23 **16 Claims**

1. Apparatus for opening letter envelopes or the like, comprising, in combination:

a feed hopper adapted to receive a stack of unopened envelopes lying on one another;
an output hopper adapted to receive said envelopes after they have been opened;
a flexible transport belt movable around a loop, the upper portion of which extends from beneath the upstream side of said feed hopper to a point adjacent said output hopper for successively transporting individual envelopes from the bottom of said stack in said feed hopper to said output hopper;
means for guiding said envelopes as they are transported to said output hopper, said guide means including a support transport guide portion lying substantially in the same plane as said upper portion of said belt and a generally vertical rear transport guide portion intersecting said support guide portion for accurately positioning said envelopes for engagement with said cutting means during movement of said envelopes, said generally vertical rear transport guide portion having a portion near said support guide portion that is positioned at an acute angle relative



to said support guide portion so that said envelopes are restrained from moving upwardly from said support guide portion during transport thereof;
means for cutting a longitudinal edge of said envelopes as they are transported to said output hopper, said cutting means being located adjacent said guide means;
means for urging said longitudinal edge of said envelope to firmly abut against said guide means during transport to insure substantially complete cutting of said longitudinal edge; and
a vacuum manifold and a vacuum supply connected thereto, said manifold being positioned immediately below the upper portion of said loop and extending longitudinally from a point below said stack in said feed hopper to a point beyond said cutting means, said belt including at least one aperture therein for communicating vacuum to said envelopes for holding said envelopes to said belt during transport thereof from said feed hopper stack, past said cutting means, and to a point beyond said cutting means.

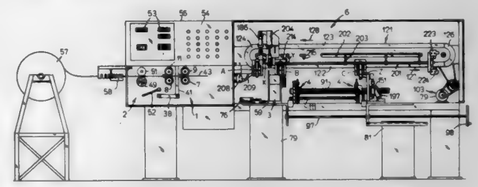
3,927,590

APPARATUS FOR PRODUCING ELECTRICAL CONDUCTORS OF MEASURED LENGTH

Ragnar Gudmestad, West Allis, and Sven O. Sandblom, Greendale, both of Wis., assignors to Artos Engineering Company, New Berlin, Wis.

Filed Oct. 10, 1974, Ser. No. 513,937
Int. Cl.² B26D *7/14, 5/20*
U.S. Cl. 83—151 **9 Claims**

1. An apparatus for producing electrical conductors of measured length from a continuous supply wire, comprising:
a frame;
an endless elongated track mounted on said frame in a fixed position presenting laterally spaced track stretches extending between front and rear ends thereof;
a plurality of wire transfer clamps movable in series around said track and each comprising a pair of complementary wire gripping jaws adjustable to closed and open positions;
drive means for intermittently and successively circulating said clamps forwardly along one of said track stretches and rearwardly along the other;
a clamp holding gate at the rear end of said track;
a clamp starting gate spaced forwardly from said holding gate along said one track stretch;
a clamp intercepting gate spaced forwardly of said starting gate along said one track stretch;



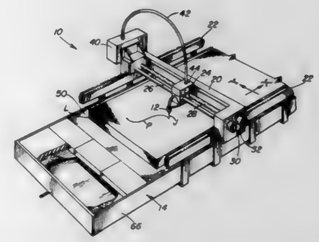
control means for said wire gripping jaws of said clamps and for said holding, starting and intercepting gates operable in timed relation to each other so that one of said clamps will advance a leading end of said supply wire from said starting gate toward said intercepting gate while another of said clamps advances idly from said intercepting gate toward said holding gate, and still another of said clamps advances idly from said holding gate toward said starting gate; and
wire cutting means operable after said leading end of said supply wire has been advanced to said intercepting gate to sever said supply wire between said starting and intercepting gates in proximity to said starting gate.

3,927,591

SUPPORT BED FOR SHEET MATERIAL CUT BY A FLUID JET

Heinz Joseph Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed July 15, 1974, Ser. No. 488,319
Int. Cl.² B32B *3/12*
U.S. Cl. 83—177 **15 Claims**



1. In combination in a cutting apparatus having a high velocity fluid cutting jet issuing from a nozzle translated in parallel relationship relative to and above sheet material in a cutting operation, an improved bed for supporting sheet material under the jet comprising:
a laminated structure penetrable by the jet and having:
an upper layer defining a support surface on which the sheet material is spread;
a lower layer spaced from and underlying the upper layer; and
an intermediate layer between the upper and lower layers and formed from a severable and self-healing material, the upper and lower layers being formed from a barrier material for holding the self-healing material of the intermediate layer in place between the upper and lower layers; and

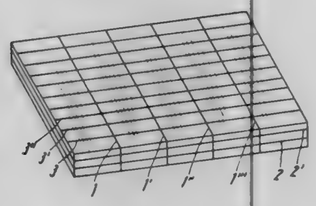
means disposed below the laminated structure and defining a fluid collection chamber for receiving the spent fluid from the jet.

3,927,592

APPARATUS FOR SAWING UP FLAT, RECTANGULAR BLOCKS, IN PARTICULAR DEEP-FROZEN BLOCKS OF FISH

Heinz Nienstedt, Zum Nonnenberg 8a, 435 Recklinghausen, Germany

Filed Jan. 30, 1974, Ser. No. 437,956
Claims priority, application Germany, Feb. 9, 1973, 2306343
Int. Cl.² B26D *5/00, 4/00*
U.S. Cl. 83—404.2 **4 Claims**



1. An apparatus for sawing up flat, rectangular blocks into rectangular sticks, consisting of several saws which divide the blocks into smaller and smaller rectangular units by vertical cuts, and transport devices between the individual saws for the smaller units, an indented block saw having a saw table; transport devices on said saw table for transporting the blocks during cutting, a slab saw for concurrently dividing the smaller units coming from the block saw into even smaller units; a stick saw for dividing the units coming from the slab saw into sticks, and an apparatus placed after the block saw for turning over and separating the slabs, from which the slabs are carried on their sides by means of one of the transport devices to the later saws, characterized in that the indented block saw (4) dividing the blocks (25) into individual bars with individual consecutive cuts, the said transport device (6) sequentially conveying the bars to the slab saw (5), said one transport device having a change-over table divided into three parts in the direction of transporting including front, middle and back parts; means for moving the front and the back parts (13, 11) into a position outside the transport path of the middle part (12) and into the transport path of the saw table (17) and back into the transport path of the middle part (12) for repeatedly carrying the blocks (25) on the saw table (17) for them to be divided into bars, a buffer guide 26 being mounted on the middle part (12) of the saw table, said buffer guide being set to the width of the bar to be sawn off, and the one transport device (6) being fastened to the front part (13) of the change-over table which is movable in the transport path of the saw table (17), and the turning and slab separating apparatus (30, 7) being positioned between the slab saw (5) and the stick saw (8).

3,927,593

AFTER-CONTROL SIGNAL DETECTING SENSOR FOR KEYBOARD OF ELECTRONIC MUSICAL INSTRUMENT

Kiyoshi Kawamura, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

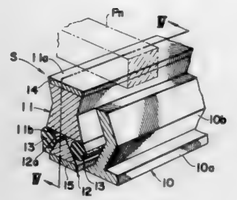
Filed Dec. 26, 1974, Ser. No. 536,480
Claims priority, application Japan, Dec. 28, 1973, 49-4230
Int. Cl.² G10H *1/00*
U.S. Cl. 84—1.01 **7 Claims**

1. An after-control signal detecting sensor positioned at a distance below keyboard of an electronic musical instrument to correspond to the respective depressable keys and connected to a circuit of said musical instrument, comprising:

an electrically insulated open-top casing having a bottom wall and opposing holding side walls extending from said bottom wall,

a flexible, elastic first conductive member slidably fitted in the opening of said casing and having a flexible first electrode and capable of varying its resistance in accordance with its compression and deformation caused when pressed by each key,

a second conductive member having a second electrode and being supported on the bottom wall of said casing therein



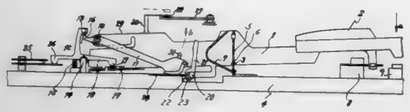
and separated with a gap from said first conductive member in the non-compressed normal state of the first conductive member, said first conductive member being brought into area contact with said second conductive member under forces applied by each key depressed, and electrically insulated pressor-stopper members provided inside said casing at opposite sides of the second conductive member and so positioned as to maintain said gap between the first and second conductive members in said non-compressed normal state of the first conductive member.

3,927,594

PIANO ACTION

Masanori Morita, Osaka, Japan, assignor to Roland Corporation, Osaka, Japan

Filed Oct. 21, 1974, Ser. No. 516,218
Claims priority, application Japan, Oct. 26, 1973, 48-121127; Aug. 5, 1974, 49-90118
Int. Cl.² G10C *3/18*
U.S. Cl. 84—237 **9 Claims**



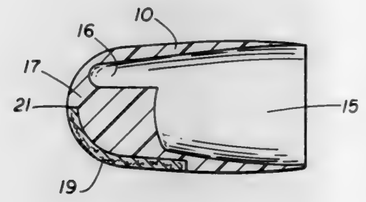
1. In a musical instrument having at least one key adapted to move from a first to a second position upon external activation and further having sensor means for creating a sound when struck, a key action comprising, in combination, a base; a key extension member pivotally supported on said base and having a first end portion connected to said key whereby said key extension member moves in correspondence to the movement of said key, a projecting portion, and a second end portion; striking means pivotally mounted on said second end portion and having a free end portion adapted to receive a restraining force and a striking portion adapted to rotate from a rest position to a striking position striking said sensor means upon movement of said second end portion of said key extension member while said free end portion is acted upon by said restraining force; and restraining means mounted on said base and having a restraining portion for applying said restraining forces to said free end portion of said striking means while said key moves from said first to said second position, and an activating portion adapted to cooperate with said projecting portion of said key extension member to disengage said restraining portion of said restraining means from said free end portion of said striking means after striking of said sensor means, whereby said striking means rotates back toward said rest position following the striking of said sensor means.

3,927,595

GUITAR FINGER SHIELD

Laureen M. Ferguson, Pierrefonds, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 10, 1975, Ser. No. 556,903
Int. Cl.² G10D *3/16*
U.S. Cl. 84—322 **1 Claim**



1. A finger shield, in the form of a cap, for use in playing a guitar which permits a finger enclosed in the shield to finger the strings of the guitar in conventional fashion comprising

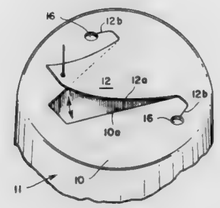
a cap shaped member formed of flexible material with an internal recess, open at one end, of a size to enclose the tip of a finger, said recess formed with a further recess in the closed section of the cap of a size to fit about the nail of a finger enclosed by the cap shaped member, with an insert of semi-rigid properties integrally fastened on the external portion of the cap adjacent to the tip of an enclosed finger, in the installed position.

3,927,596

VOLUME CONTROL FOR REED ORGAN

Harold B. Martin, 19 Rosemere Ave., West Caldwell, N.J. 07006, and Herman O. Rogg, 94 Brook Drive, Watchung, N.J. 07060

Filed Mar. 10, 1975, Ser. No. 556,731
Int. Cl.² G10B *1/08, 3/02*
U.S. Cl. 84—355 **8 Claims**



1. In combination with a reed organ having an air chamber, an air moving means, a reed and reed actuating means, a volume control, which comprises:

a temporarily deformable tongue cut out from a portion of the reed chamber and having a root portion integral with said reed chamber, and

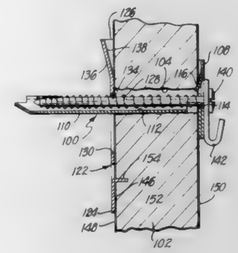
means for flexing the tongue from said reed chamber portion to permit any desired amount of air to be drawn into the chamber for pressurizing same and permitting a reed to be actuated by said activating means.

3,927,597

BLIND FASTENER

Allan C. Stults, 424 Prospect St., Newport Beach, Calif. 92660; Raymond H. Powell, 11871 Simon Ranch Road, Santa Ana, Calif. 92705, and Edward D. O'Brian, 910 Iroquois Ave., Anaheim, Calif. 92801

Filed Aug. 30, 1974, Ser. No. 502,149
Int. Cl.² F16B *35/04*
U.S. Cl. 85—3 R **6 Claims**



1. A blind fastener capable of being mounted on a support member from one side of said member for use in mounting an elongated screw on said member which comprises:

an elongated shank,

a head located on one end of said shank so as to extend outwardly therefrom,

a holder located on the other end of said shank so as to extend outwardly from said shank generally in alignment with said shank,

said holder comprising a single elongated arm, said arm having an enlarged head positioned on the extremity thereof remote from said shank,

an elongated clamp associated with said holder, said clamp being provided with a centrally located opening capable of being engaged by said screw,

said head, shank and holder being shaped so as to accommodate said screw being inserted relative to said fastener so as to extend from said head along said shank and said holder,

co-acting mounting means on said clamp and said holder (1) for positioning said clamp in an insertion position in which said clamp is generally in alignment with said shank and extends from said holder outwardly away from said shank, (2) for supporting said clamp so that it can be rotated from said insertion position to a position in which it is transverse to said shank, (3) for limiting movement of said clamp on said holder away from said shank and (4) for preventing rotation of said clamp in a plane transverse to said shank and said holder,

said co-acting mounting means comprising a hole formed in said clamp and the edges of said arm and the portions of said enlarged head adjacent to said arm, said clamp being positioned on said arm with said arm extending through said hole, said head being sufficiently large so as to prevent movement of said clamp off of said arm during the normal operation of said fastener, and

deflecting means on one end of said clamp, said end of said clamp containing said deflecting means being adapted to be positioned adjacent to said shank when said clamp is in said insertion position,

said deflecting means being capable of being engaged by said screw when said screw is inserted so as to extend from said head and said shank into said holder so as to cause said clamp to be rotated from said insertion position to a sufficient extent so that said screw is further inserted, the contact of said screw with said opening in said clamp during such further insertion serving to push said clamp away from said shank until further movement of said clamp is arrested by said holder when said screw

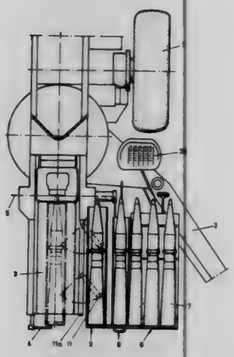
will engage the interior of said opening, further rotation of said screw upon such engagement serving to draw said clamp toward said shank.

3,927,598

DEVICE FOR LOADING AN ARTILLERY PIECE

Carl-Erik Eriksson, Karlskoga, Sweden, assignor to AB Bofors, Bofors, Sweden

Filed Mar. 25, 1974, Ser. No. 454,499
Claims priority, application Sweden, Apr. 2, 1973, 7304589
Int. Cl.² F41F 9/06
U.S. Cl. 89—45 **6 Claims**



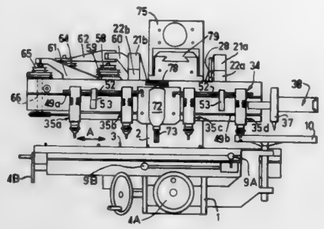
1. A loading device for loading an artillery piece, particularly a heavy artillery piece, comprising a loading table, a feeding mechanism, and transferring means, said loading table comprising means for carrying a number of rounds thereon, said feeding mechanism being operative to feed the rounds, one at a time, from said table to said transferring means to transfer the rounds from the loading table to a ramming position at the barrel of the piece, the loading table being connected with the traversing parts of the piece and being located at the rear at the side of the barrel with the plane of said table being inclined towards said side of the barrel, the feeding mechanism comprising a plurality of selectively movable cams disposed in spaced relation to one another adjacent said table and arranged to keep the rounds oriented on said table substantially parallel to a vertical plane through the axis of the bore of the piece, and an actuating member operative to move said cams to achieve a controlled rolling of the rounds laterally along said inclined table towards the transferring means, said feeding mechanism including two shafts arranged parallel to each other for rotation by means of said actuating member, said shafts being oriented at right angles to said vertical plane, each shaft carrying a first series of said cams equally distributed at fixed positions along the shaft and a second series of said cams equally distributed at fixed positions along the shaft, the cams of the second series being displaced at an angle and displaced in the longitudinal direction of the shaft in relation to the cams of the first series, said loading table having a plurality of slots therein through which the cams protrude, the distance between said slots for the cams of the first series and the cams of the second series, respectively, being greater than the diameter of the round.

3,927,599

UNIVERSAL ENGRAVING MACHINE

Jean-Louis Raymond, 5 rue de l'Hopital Saint-Louis, 75010 Paris, France

Filed Nov. 14, 1973, Ser. No. 415,562
Claims priority, application France, Nov. 24, 1972, 72.41892; Oct. 9, 1973, 73.36051
Int. Cl.² B23Q 35/121
U.S. Cl. 90—13.2 **8 Claims**



1. A universal engraving machine comprising, in combination:
- a horizontal work table for supporting work pieces to be engraved;
- tool-carrying means;
- means for displacing said tool carrying means in a longitudinal horizontal direction, a transverse horizontal direction, a vertical direction and an angular direction about a longitudinal horizontal axis;
- a plurality of mandrels slideably arranged in a tubular body mounted on said tool-carrying means, a plurality of engraving tools, each mounted in one of said mandrels, each mandrel being provided at a location at close proximity to the associated tool, an endless driving belt, belt-engaging means adapted to engage said endless driving belt means for rotating said mandrel and the tool mounted therein;
- driving means acting on said belt for rotatively driving said mandrels and tools through said endless driving belt means at a comparatively high rotational speed;
- at least one follower adapted to translationally and angularly explore a master pattern, and
- adjustable pantograph means connecting said follower to said tool-carrying means for transmitting to the latter the exploring translational and angular motions of said follower with a preselected reduction ratio.

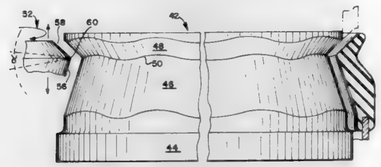
3,927,600

METHOD OF FORMING A MOLDING CORE FOR USE IN FORMING A SEAL UNIT

Glenn W. Peisker, Barrington, Ill., assignor to Chicago Rawhide Manufacturing Company, Elgin, Ill.

Division of Ser. No. 246,865, April 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 213,693, Dec. 29, 1971, abandoned. This application Nov. 8, 1974, Ser. No. 522,101
Int. Cl.² B23C 1/027, 1/16, 3/34
U.S. Cl. 90—11 C **5 Claims**

3. A method of forming a molding core for use in molding a seal unit having a sinuously extending annular seal band, said method including providing a core blank, and cutting therein a pair of generally oppositely directed, radially undulating surfaces therein by moving radially inwardly of the axis of said core blank to a predetermined depth a cutting tool having a pair of oppositely directed, generally frusto-conical cutting surfaces thereon which meet to define a peripheral annular cutting edge, said method also including rotating said tool about its own axis, moving the center of said tool about the axis of said blank at said predetermined depth and reciprocating said cutting tool axially through a predetermined path as said tool is moved about said center of said blank whereby a pair of axially undulating surfaces which meet along an annular line are formed in said blank.

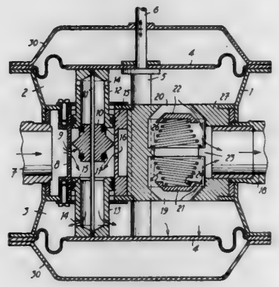


3,927,601

DEVICE FOR MEASURING LIQUIDS OR GASSES

Guido Ivo Van de Moortele, Bribel, Belgium, assignor to Unitas S.A., Luxemburg

Filed Jan. 23, 1974, Ser. No. 435,766
Claims priority, application Belgium, Jan. 29, 1973, 52482; Apr. 19, 1973, 52705
Int. Cl.² F01L 15/18; G01F 3/20
U.S. Cl. 91—329 **3 Claims**



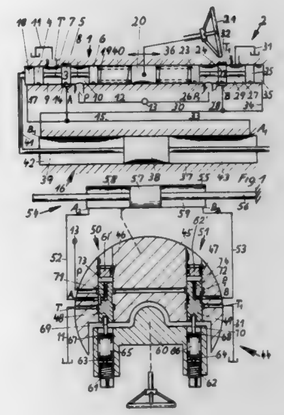
1. Device for measuring a liquid or gas, comprising two separate chambers with a determinated content, a common inlet for both said chambers, a common outlet for both said chambers, a hollow cylinder with radial inlet openings, being solidly fitted transversally in front of the inlet of the device, an axially sliding guide bushing positioned in each end of said cylinder and extending into the adjacent one of said chambers, each bushing being provided with a through opening interconnecting said hollow cylinder with its adjacent chamber, a rod connecting both bushings, a valve being mounted on said rod and slidable between both guide bushings from one side of said radial openings in said cylinder to the other side and closing alternately the through opening of one of said guide bushings, means in each of said chambers for expelling alternately the medium out of each chamber, said means being interconnected and adapted to move alternately said guide bushings and the valve closing one of said bushings to the other side of the radial openings of said cylinder, closing means between the outlet of the device and both of said chambers and adapted to receive actuating pressure of the expelled medium.

3,927,602

PRESSURE FOLLOW-UP CONTROL SYSTEM FOR SERVO STEERING GEARS OR SIMILAR DEVICES

Gunther Strauff, Kaarst, Germany, assignor to Langen & Co., Dusseldorf, Germany

Filed Aug. 24, 1973, Ser. No. 391,272
Claims priority, application Germany, Aug. 26, 1972, 2242022
Int. Cl.² F15B 9/10
U.S. Cl. 91—372 **2 Claims**



1. A fluid-pressure-responsive follow-up control system for servo-systems comprising, in combination: fluid-operated servo-motor means (**16, 54**) including two operational areas (**42, 43 & 58, 59**);
- a fluid pressure source (**13**);
- fluid outlet means (T, T_1);
- an output member (**40, 45**) including mechanical feedback means operably connected to said servo-motor means (**16, 54**);
- an input member (**20, 60**) having relative movement to said output member (**40, 45**);
- a pair of control pistons (**1, 2 and 50, 51**) in said output member (**40, 45**);
- fluid connection means (**15, 33 & 52,53**) between said operational areas (**43, 42 & 58, 59**) of said fluid-servo-motor means (**16, 54**) and said control pistons; (**1, 3, 50, 51**)
- said control pistons (**1, 3, 50, 51**) including control portions selectively connecting via said fluid connection means (**15, 33, 51, 53**) said operational areas (**42, 43, 48, 49**) with said fluid pressure source (**13**) or said fluid outlet means (T, T_1) in response to slight relative movements between said input (**20,60**) and output member (**40, 45**) or blocking said fluid connection means (**15, 33, 42, 53**) from said fluid pressure source (**13**) and said outlet means (T, T_1) in a neutral position;
- each control piston (**1, 2, 50, 51**) including at least one fluid pressure reaction area (**18, 35, 33, 74**) in communication with said fluid connection means (**15, 33, 52, 43**);
- spring means (**65,66,14,36**) interposed between said input member (**10,60**) and said control pistons (**1, 3, 50, 51**); said spring means (**14,36,65,66**) imposing residual biasing forces on said control pistons (**1,2,50,51**) contrary to the force caused by fluid pressure on said reaction areas (**18,35,73,74**).

3,927,603

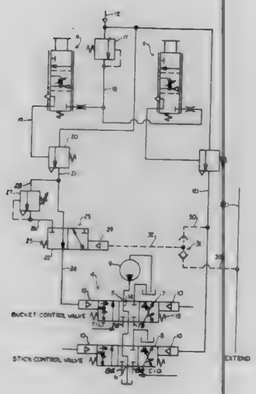
CONTROL MEANS FOR A PAIR OF FLUID MOTORS

Gerald W. Bernhoft, Milwaukee, Wis., assignor to Koehring Company, Milwaukee, Wis.

Division of Ser. No. 262,024, June 12, 1972, Pat. No. 3,883,023. This application May 24, 1974, Ser. No. 473,283

Int. Cl.[2] F15B *13/08*

U.S. Cl. 91—412 5 Claims



1. A fluid pressure system of the type wherein pressure fluid from a source is directed to a fluid motor in consequence of pilot actuation by a pilot valve of the valve element of one control valve to an operating position provided the valve element of another pilot operated control valve is in either a neutral position or has been displaced from neutral in one direction, against spring bias, partway toward a full flow operating position characterized by:

A. means providing a pair of fluid pressure actuators, one for each control valve and operatively connected with the valve element thereof;

B. a pilot circuit for each actuator, the pilot circuit for said other control valve having a fluid pressure supply duct with a branch leading therefrom;

C. a valve instrumentality normally occupying a position connecting the actuator for said other control valve with said duct, said valve instrumentality being movable to another position to communicate said last named actuator with said duct through said branch thereof;

D. a pressure control instrumentality in said branch rendered operative in said other position of said valve instrumentality effect subjection of the actuator for said other control valve to pressure at a value less than that present in said supply duct and so preselected that said pressure control instrumentality is cooperable with the spring bias on the valve element of said other control valve to hold the valve element thereof in a position between its said neutral and full operating positions;

E. and means for effecting actuation of said valve instrumentality to said other position thereof in response to a signal produced as a consequence of actuation of said pilot valve for said one control valve.

3,927,604

POWER STEERING SYSTEM WITH REACTION FORCE LIMITING MEANS

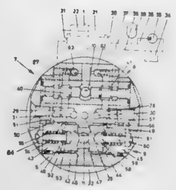
Erich Jablonsky, Bobingen, Rems, Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Continuation-in-part of Ser. No. 266,053, June 26, 1972, Pat. No. 3,855,904. This application May 7, 1973, Ser. No. 357,603

Claims priority, application Germany, May 6, 1972, 2222334

Int. Cl. F15b *13/14*

U.S. Cl. 91—434 15 Claims



1. In combination with a fluid power steering device having a source (38) of fluid medium under a storage pressure, a fluid motor (1) having a pressure chamber (21 or 22) and control valve means (8) displaceable from a neutral position for supply of the fluid medium to the pressure chamber under an operating pressure, said control valve means including means operative in said neutral position for blocking flow of the fluid medium from the source, and operating pressure responsive means for producing reaction force to resist said displacement of the control valve means from the neutral position including a force limiting piston (43 or 45) having opposed pressure faces (50 or 56) respectively exposed to said storage and operating pressures to limit the reaction force and force transmitting means (42 or 44) connected to the forces limiting piston and operatively engageable with the control valve means for exerting said reaction force thereon.

3,927,605

LINKAGE-DRIVE PUMP

Bernard W. Siczek, Chicago, Ill., assignor to Graco Inc., Minneapolis, Minn.

Filed Feb. 25, 1974, Ser. No. 445,711

Int. Cl.[2] F01B *31/14*; F15B *15/24*; F04B *14/00*

U.S. Cl. 92—13.1 6 Claims

1. A fluid pumping apparatus of the type driven by a rotating shaft wherein fluid is delivered at an elevated pressure through a delivery means and fluid pressure is controlled by adjusting the pumping stroke, comprising:

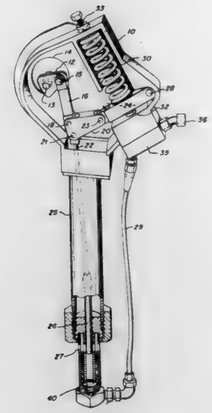
a. crank and connecting rod means attached to said shaft for translating said rotating shaft motion to reciprocating motion;

b. a pressure transducer connected to said delivery means, said pressure transducer having a movable element which activates in response to pressure in said delivery means, and a pivotal actuating member contacting said movable element, and adjustable spring biasing means contacting said pivotal actuating member for opposing the motion of said movable element;

c. fluid pumping means, connected to said delivery means, for pumping fluid into said delivery means in response to a reciprocating motion drive;

d. a fluid pump connecting rod attached to said fluid pumping means, for imparting reciprocating motion drive thereto; and

e. a triangular link having first, second, and third bearing connections near respective corners thereof, and having its first bearing connection attached to said connecting rod means, and having its second bearing connection attached to said pressure transducer actuating member, and having its third bearing connection attached to said



fluid pump connecting rod, said first and third bearing connections being in substantial reciprocating drive alignment when said pressure transducer actuating member is in a first position, and said first and third bearing connections being in substantial transverse drive alignment when said pressure transducer actuating member is in a second position.

3,927,606

METHOD FOR MAKING A CROSS-BOTTOM BAG HAVING A PLASTICS LINER INCORPORATED IN THE FOLDING OF THE END CLOSURE

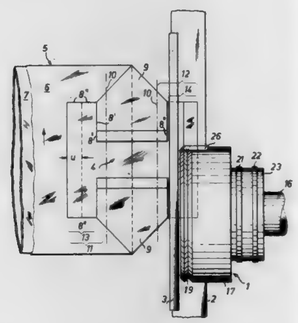
Friedrich Franz Brockmuller; August Schwarzkopf, and Richard Feldkamper, all of Lengerich, Germany, assignors to Windmoller & Holscher, Lengerich, Germany

Filed Feb. 26, 1974, Ser. No. 445,842

Claims priority, application Germany, Mar. 2, 1973, 2310605

Int. Cl.[2] B31B *1/22*

U.S. Cl. 93—35 SB 4 Claims



1. A method of making a multi-layer cross-bottom bag consisting of an outer layer of at least one ply and an inner layer having adhesion properties different from those of the outer layer, wherein a longitudinally fed flattened tubular web consisting of the material for the inner and outer layers is produced in a tube-forming machine and divided into individual bag sections, two longitudinal incisions are applied through both layers at least near one end of the bag sections at least on the side of the section adjacent to the side flap that is to be folded over last of all, whereby the corner folds of the end closure are at least partially separated from the side flaps of the end closure to define rectangular tongue portions on the side flaps, and wherein a cross-bottom is formed on at least one end of each bag section whilst being fed transversely in a base-forming machine by opening up the or each end of the bag section, foreshortening the outer edge of the tongue portion on the side flap of the inner layer that is to be folded over last of all in comparison with the corresponding edge of the innermost ply of the outer layer by severing a correspondingly wide strip from the tongue portion, leading the leading edge of the strip being severed out of the plane of movement of the bag section whilst the latter is passing a severing element disposed at a fixed location, applying a suitable adhesive to the faces of the inner and outer layers that are to be stuck together, and turning over the side flaps that are to be folded over first of all and last of all.

3,927,607

DEFROSTER OUTLET

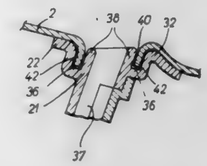
Wolfgang Jobst, Sudring, Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed May 17, 1974, Ser. No. 470,831

Claims priority, application Germany, Aug. 11, 1973, 2340749

Int. Cl.[2] B60H *1/00*

U.S. Cl. 98—2.09 2 Claims



1. A defroster outlet nozzle assembly to direct a flow of air through an instrument panel having an opening therethrough formed by a relatively rigid and depending edge portion; said nozzle having parallel, elongated side walls defining a constant flow area along its length for the passage of air to be discharged against a windshield; means adjacent said side walls and operably connected to said side walls for engaging the edge portion of the instrument panel and preventing movement of said side walls toward one another caused by heat distortion; said means including a flange portion generally extending in a direction transverse to the flow of air through said nozzle; elongated groove means formed in said flange and parallel to said side walls defining a cavity presenting an upward-facing opening adapted to operatively receive said depending edge portion of said instrument panel thereby providing lateral support for said side walls to prevent relative movement therebetween which may be caused by thermal stresses.

3,927,608

BEVERAGE MAKING DEVICE

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

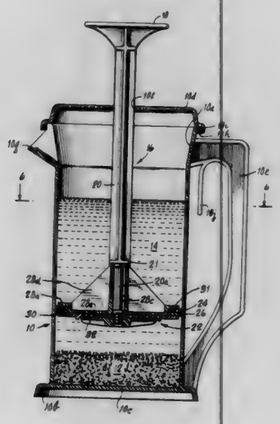
Filed June 14, 1974, Ser. No. 479,521

Int. Cl.[2] A47J *31/38*, *31/06*

U.S. Cl. 99—297 20 Claims

10. A device for filtering solid particulate material from a liquid comprising: a container for the liquid and the solid particulate material, said container having an axially extending, tubular sidewall; a piston means for moving said piston axially within the container; a first solid ring which is secured to the piston in a plane transverse to the container axis and

whose outer circumferential edge has radially extending projecting portions which contact the container sidewall and are circumferentially spaced from each other by indentations spaced inwardly from the container sidewall to form thereby a first clearance between the sidewall and the first ring which allows flow of said liquid therethrough but is smaller than a first selected particle size of said solid particulate material, said first ring being C-shaped, with a gap between the two circumferentially facing edges; whereby when the piston is moved axially in the container said liquid passes through said clearance but the solid particulate material over said first



selected size does not and remains ahead of the first ring in the direction of said axial movement.

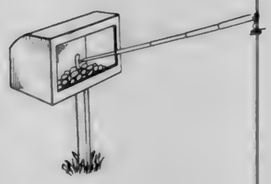
17. A plunger for a beverage making device comprising: a rod having a first end and a second end; a handle connected to the first end of said rod; a piston connected to the second end of the rod; and a pair of annular, solid inserts mounted on said piston, extending radially outwardly from at least a major portion thereof and having radially outer circumferential edges which are formed with circumferential rows of projecting portions spaced circumferentially from each other by indentations extending radially inwardly and having a selected size.

3,927,609

WIENIE WIGGLER ROASTING IMPLEMENT

Ronald J. Scott, 3783 Creekview Drive, Cincinnati, Ohio 45241

Filed Mar. 14, 1974, Ser. No. 450,988
Int. Cl.² A47J *37/04*
U.S. Cl. 99—419 **2 Claims**



1. A culinary implement for the roasting of wienies, marshmallows, and the like, comprising:

a plurality of elongated cylindrical tubular segment members telescopically disposed relative to each other and moveable between a collapsed storage and carrying position and an extended telescopic operative position, said segments including a back handle segment and a front fork carrying segment, each segment being defined by an elongated cylindrical configuration having a closed disc shaped back end, depending cylindrical type walls, and an open front end, and wherein each segment is of a different diameter to permit the telescopic collapsing and extension of said segments relative to each other, wherein said front fork segment further comprises a passageway extending through the front open end thereof, a wall surface disposed normal to the longitudinal axis of said passageway and afixed in said passageway in a position inwardly of said segment front end, an L-shaped slot disposed in said side wall, said L-shaped slot comprising a ledge portion extending longitudinally along said side wall from a position adjacent said open front end to a position outwardly of said inner wall, and a foot portion extending circumferally of said side wall, a disc member of a diameter adapted to be received in said passageway disposed normal to the longitudinal axis of said passageway, an operating member afixed to the peripheral edge of said disc member and adapted to pass through said side wall slot for engagement exteriorly of said side wall, a coiled spring disposed intermediate a back surface of said disc member and a confronting surface of said inner wall, a clip afixed to a front surface of said disc member, and a generally V-shaped resilient fork member having its apex afixed to said clip member with its legs defining prong members, said fork member being of a length to be completely received in said fork segment when said operating member is in said slot put portion;

means adapted to retain the telescopic extended positions between adjacent segments; and

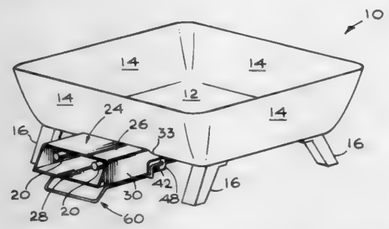
a spring loaded fork assembly disposed in said fork segment and adapted to be moved between a collapsed storage position disposed inwardly of said front fork segment and an operative position extending outwardly of said front fork segment.

3,927,610

AUXILIARY COOKING UTENSIL LEG

Norman C. Minsky, and Russell D. Hiatt, both of West Bend, Wis., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Apr. 24, 1975, Ser. No. 571,127
Int. Cl.² A47J *36/34, 37/10*
U.S. Cl. 99—425 **6 Claims**



1. In a cooking vessel having a bottom and sidewalls, an auxiliary leg assembly comprising:

an electrical terminal housing located adjacent said bottom, said housing including a top and bottom wall and opposing sidewalls having an inner aperture located therein;

a generally U-shaped pivot bracket having opposing sidewall portions and an elongated base, said bracket including an outer aperture on each sidewall portion thereof and being positioned to locate said outer apertures over a corresponding inner aperture in each of said housing sidewalls; and,

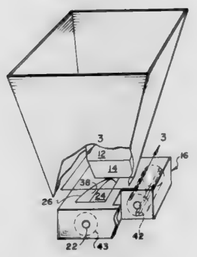
a leg structure having a base portion and inwardly directed opposing upper end portions each having a terminal end resiliently engaging each of said apertures for rotation about a line defined by the center axis of said apertures.

3,927,611

DOUGH DEGASSER AND DEVELOPER

Gregory C. Papalexis, Cambridge Way, Alpine, N.J. 07620, and Richard I. Elliott, 103 Penfield Ave., Croton On Hudson, N.Y. 10520

Filed Feb. 15, 1973, Ser. No. 332,683
Int. Cl.² A21C *3/00, 11/00;* **A23G** *1/22, 3/00*
U.S. Cl. 99—472 **9 Claims**



1. An integrate dough degasser and developer control system for automatic processing of yeast raised dough comprising in combination

a hopper having an upper section and a narrow bottom end, and at least three sides: an anti-wedge for rapid dough flow integrally connected to one of said sides and within the inner surface of said hopper for receiving dough by gravity action;

a dough degassing and developing control unit having a top surface connected to the narrow end of said hopper for removing excess gas from yeast raised dough and homogeneously mixing said dough prior to further processing; wherein said control unit further comprises:

a bottom surface;

an entry port located on said top surface and in juxtaposition to the narrow end of said hopper for receiving said dough, and an exit port located on said bottom surface;

a first chamber having entrance and exit ends, said entrance end connected to said entry port for degassing and compressing said dough;

a second chamber having entrance and exit ends, said entrance of said second chamber connected to the exit end of said first chamber, said exit end of said second chamber connected to the exit port on bottom surface of said control unit; and;

a vacuum port located at entrance of said first chamber for removing excess gas from said dough and sucking dough into said entry port for rapid dough flow.

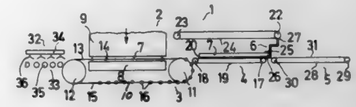
3,927,612

APPARATUS FOR CHARGING PANELS INTO A PRESS

Helmut A. Friz, and Dieter Grube, both of Stuttgart, Germany, assignors to Adolf Friz Gesellschaft mit beschrankter Haftung, Stuttgart, Germany

Filed Dec. 13, 1973, Ser. No. 424,447
Claims priority, application Germany, Dec. 15, 1972, 2261622
Int. Cl.² B30B *15/30*
U.S. Cl. 100—215 **8 Claims**

1. A charging device for feeding panels into a press having opposed pressing members for pressing a cover layer on the panel, said device comprising an endless first conveyor in the press having panel supporting members distributed along a portion only of the length thereof and having one position wherein the supporting members are outside the range of the pressing members, second conveyor means outside the press along which the panels move into the range of said pressing members while said first conveyor is operating to move said supporting members in the range of said pressing members in



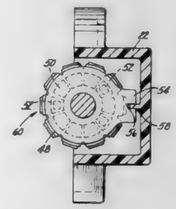
supporting relation to the panel, and a reciprocable holding member operable to engage the trailing end of a panel moving into the press and halt the panel in working position within the range of said pressing members while said first conveyor moves into said one position thereof and releases the panel for engagement with the lower pressing member.

3,927,613

IMPRINT WHEEL ASSEMBLY

Jack George Nantz, Euclid, Ohio, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Feb. 4, 1974, Ser. No. 439,328
Int. Cl.² B41K *1/12*
U.S. Cl. 101—110 **6 Claims**



1. An imprint wheel assembly for use with a data recorder, said assembly comprising:

a frame;

a shaft mounted to said frame;

a plurality of imprint wheels each rotatably mounted to said shaft for selective rotation about the axis of said shaft to selected positions, said imprint wheels being axially disposed of each other and axially movable relative to said shaft;

means yieldably biasing said wheels axially toward each other; and

detent means associated with each of said wheels for axially detenting said wheels to maintain such in selected positions under the influence of said axial biasing means;

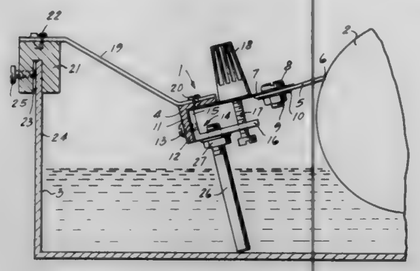
said detent means comprising a plurality of detent members each axially disposed adjacent a corresponding one of said plurality of wheels and normally retentively engaging said one wheel, each detent member separating the axially adjacent wheels from each other and including means for preventing rotation of the detent member about said shaft and allowing axial movement relative to said shaft against the influence of said biasing means, each said wheel and each adjacent said detent member including cooperating surfaces sloped at an angle to said axis and in sliding engagement while the associated wheel is rotated to a said selected position.

3,927,614

WATER CONTROL DEVICE FOR OFFSET LITHOGRAPHIC PRINTING PRESSES

Theodore C. Malek, 390 We Go Court, Deerfield, Ill. 60015

Filed May 2, 1974, Ser. No. 466,135
Int. Cl.² B41L 25/02; B41F 7/24
U.S. Cl. 101—148 **8 Claims**



1. A control device for the water cylinder of an offset lithographic printing press, having a plate cylinder and a water cylinder from which water from a cooperable supply is to be transferred to the plate cylinder, comprising an elongated support structure having an upper leg and a lower leg connected by an intermediate portion of generally U-shape in transverse cross-section, adapted to be disposed laterally adjacent such a water cylinder at the side thereof exiting from such a supply, the upper leg of said U-shaped support structure being of less length, in transverse cross section, than the lower leg thereof, with the open end of said U-shaped configuration facing such cylinder, a plurality of resilient strip-like metallic elements, each having a corresponding end disposed in a common plane and mounted on the intermediate portion of said support structure, with such elements extending in generally parllel relation toward said cylinder but spaced therefrom, a plurality of cylinder-engaging members, each carried by a respective resilient element at the opposite free end thereof, said members being formed from a pliable rubber-like material and disposed in a row in substantially side-by-side relation and having their outer edges in substantially aligned relation for engagement with the surface of such a water cylinder substantially throughout its operative length, to effect a squeegee action with respect to water disposed on the face thereof, a manually actuatable screw for each resilient element and cooperable member, extending through the associated element and threaded into the lower leg of said support structure, each screw including a manually actuatable knob rigidly connected thereto, by means of which the screw may be rotated, each knob being adapted to apply pressure on the upper face of the associated resilient element for flexing the same to control the pressure of the associated resilient member on the surface of the cylinder and thereby control the amount of water thereafter retained on the cylinder and thus ultimately transferred therefrom to the plate cylinder of such a press.

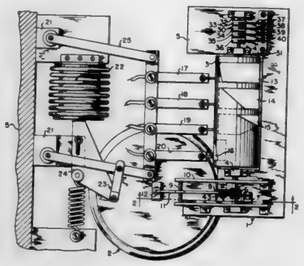
3,927,615

PRESSURE-TIME RESPONSIVE ELECTRONIC DEVICE

Joseph F. Keithley, Cleveland Heights, Ohio, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 12, 1950, Ser. No. 184,506
Int. Cl.² F42B 22/26
U.S. Cl. 102—18 **15 Claims**

1. A pressure-time responsive integrating device operable in response to a negative pressure differential signal to integrate said signal under varying magnitude conditions through a predetermined time interval, which comprises pressure sensitive means operative in response to a change in negative pressure, an electrical circuit including a power source and a plurality of sequentially connected switch elements constructed and arranged to operate in sequential order in response to actuation by said pressure sensitive means, said circuit also including a gas tube having a starter anode therein and arranged to be fired after a predetermined pressure differential signal is detected by the pressure sensitive means and after closing of one or more of the switch elements of the circuit, said circuit also including a resistance-capacitance filter circuit therein, said filter circuit including a capacitor and a plurality of resistances of varying values with one each of said resistances connected through one of the plurality of



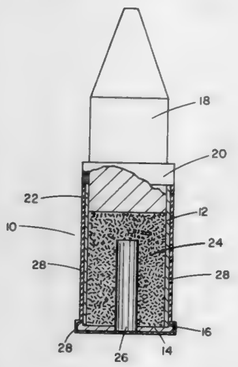
switches in a series relationship with the capacitor whereby upon closing of the switch elements by the pressure sensitive means, a current is caused to flow from said power source through a first resistance to produce a charge on the capacitor and in which upon closing of one or more additional switch elements the current flow is through the additional switch elements to a resistance of less value than said first resistance to thus produce capacitor charging at a higher rate, the capacitor being connected to the starting anode of the gas tube in a manner whereby the building up of sufficient charge on the capacitor will produce firing of the gas tube.

3,927,616

COMBUSTIBLE CARTRIDGE CASE

Sydney Axelrod, New York, N.Y., and Walter Brenner, Teaneck, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 23, 1974, Ser. No. 463,237
Int. Cl.² F42B 9/16, 5/18
U.S. Cl. 102—43 R **5 Claims**



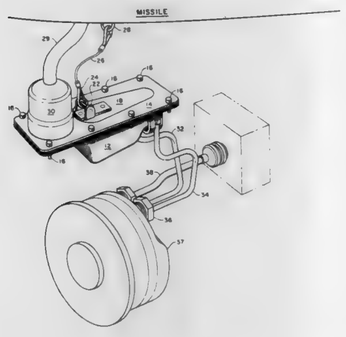
1. A porous, combustible cartridge case comprising nitrocellulose, reinforcing fibers and a resinous binder, wherein at least the exterior surface of the case is covered with a substantially water-impermeable, consumable coating consisting essentially of finely divided particles of a solid high energy explosive of the group consisting of cyclotrimethylenetrinitramine, cyclotetramethylenetetranitramine and pentaerythritol tetranitrate, dispersed in a thermally depolymerizable, solid polymeric resin of the group consisting of alkyl methacrylate polymers, methacrylonitrile polymers and alpha methyl styrene polymers.

3,927,617

POST-LAUNCH DUAL PRESSURE SENSITIVE ARMING DEVICE

Warren R. Hoelzen, Ontario; Charles R. Hamilton, Riverside, and James E. Warnock, La Mirada, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 22, 1969, Ser. No. 795,771
Int. Cl.² F42C 9/00
U.S. Cl. 102—82 **7 Claims**



1. In an aircraft launched guided missile fuze sensitive to a post launch environment for arming, the combination comprising:

a. arming mechanism means normally in an unarmed position and having an armed position,
b. pressure sensing means being exposed to the atmosphere after the launch of the missile for sensing at least two different dynamic ram air pressures,
c. at least two pressure sensitive actuating means coupled to said arming mechanism means and to said pressure sensing means for actuating said arming mechanism means from the unarmed position to the armed position in response to a predetermined different in the level of said sensed dynamic ram air pressures.

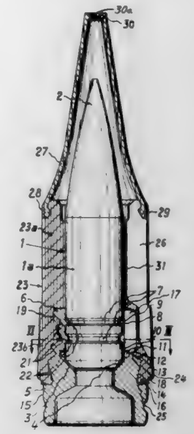
3,927,618

SABOT PROJECTILE

Walter Engel, Dubendorf, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Division of Ser. No. 231,867, March 6, 1972, Pat. No. 3,837,057. This application Nov. 15, 1973, Ser. No. 416,208
Int. Cl.² F42B 13/16
U.S. Cl. 102—93 **5 Claims**

1. A sabot projectile comprising a sabot rear part having a substantially sleeve-shaped extension, said sleeve-shaped extension being subdivided into a plurality of segments by slots uniformly distributed about the periphery of the sleeve-shaped extension, each segment being provided at its outside surface with a blindhole bore having a base surface by means of which there is formed a thin-walled zone at each segment, and a stamped recess provided at the base surface of each segment wherein opposite each such recess there is formed a radially inwardly directed projection, a projectile body mounted at the sabot rear part, said projectile body having a peripheral groove at its rear portion which extends into the sleeve-shaped



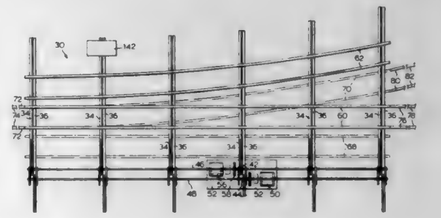
extension, said radially inwardly directed projections engaging with said peripheral groove of said projectile body.

3,927,619

DOUBLE TIERED CONVEYOR TRACK AND SAFETY SWITCH

Robert Auldom Bradley, 18 Ralston Ave., Toronto, Ontario, Canada (M4C 3L5)

Filed Nov. 15, 1974, Ser. No. 523,986
Claims priority, application Canada, Jan. 18, 1974, 190632
Int. Cl.² E01B 25/06
U.S. Cl. 104—130 **7 Claims**



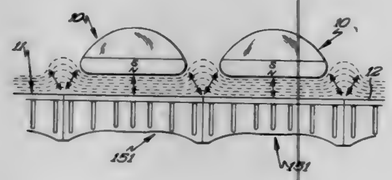
1. An elevated railway system comprising

a. main line track means,
b. branch line track means,
c. track switch means,
d. a first section of said main line extending from a first end of said track switch means, and a second section of said line extending from a second end of said track switch means, said branch line means extending from said second end of said track switch means, said main line and said branch line each having first track means for supporting and guiding a rail going vehicle and second track means for supporting and guiding a rail going vehicle and track support means for supporting said first and second track means in elevated planes wherein said second track is located directly below said first track,
e. said track switch means having first and second branch track means and first and second main track means,
f. first switch track support means for fixedly supporting said first branch track means and said first main line track means with respect to one another for transverse movement so as to selectively align said first track means of said main line track means of said switch means with said main line or to align said first track means of said first

branch track means of said switch means with said first section of said main line and said branch line means,

g. second switch track support means for fixedly supporting said second branch track means and said second main line track means with respect to one another for transverse movement so as to selectively align said second track means of said main line track means of said switch means with respect to said second main line track means or to align said second branch track means of said switch means with respect to said first section of said main line and said first section of said branch line and means for moving said first and second transverse support means independently of one another.

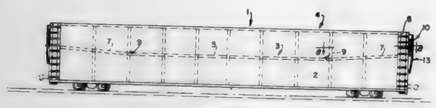
3,927,620
MAGNETIC PROPULSION SYSTEM
Thomas J. Clapham, 2823 18th Ave. N., Minneapolis, Minn. 55411
Filed Dec. 3, 1973, Ser. No. 421,393
Int. Cl.² B61B *13/08*
U.S. Cl. 104—148 LM **8 Claims**



1. A magnetic propulsion system comprising:
a vehicle,
a plurality of field-producing elements on said vehicle being operable when energized to produce magnetic fields,
signal-producing means on the vehicle being operable to produce ultrahigh-frequency signals,
means defining a roadway having a generally planar upper surface,
a plurality of field-producing thrust and levitation elements on said roadway adjacent the upper surface thereof, a plurality of field-producing partition elements on said roadway adjacent the upper surface thereof, signal receiving means on the roadway adapted to receive ultrahigh frequency signals from the signal-producing means when the latter is in close proximity to the signal receiving means are thereby energized the field-producing elements on the roadway, the magnetic fields produced by the field-producing elements on the roadway interacting with the magnetic fields produced by the thrust and levitation field-producing elements on the vehicle to produce levitation of the vehicle above the surface of the roadway, and cause thrust of the vehicle longitudinally with respect to the roadway, said partition field-producing elements when energized, producing repelling fields whose profiles maintain the vehicle in a predetermined generally longitudinal path of travel.

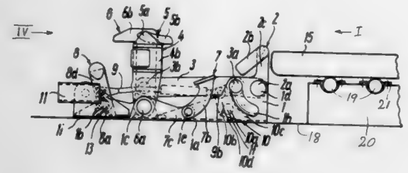
3,927,621
RAILWAY CAR HINGE-DECK LOCK
Anthony John Skeltis, Novi; Jaroslaw Joseph Rostafinski, Ferndale, and Chandrakant Dhanjibhai Ravani, Farmington, all of Mich., assignors to Portec, Inc., Oak Brook, Ill.
Filed Dec. 20, 1974, Ser. No. 536,621
Int. Cl.² B61D *3/02*
U.S. Cl. 105—368 R **11 Claims**

1. A multi-level auto rack car includes, a middle deck disposed between two vertical side walls, said middle deck including at least one end hinge deck section having a forward edge juxtaposed one end of the car and vertically displaceable between elevated and lowered positions, a locking mechanism disposed at the ends of said side walls adjacent said hinge deck forward edge, support means fixed relative said side walls and upon which said hinge deck section is disposed when in the lowered position, said locking mechanism including a lock rod having one end attached to said car, said rod having a main



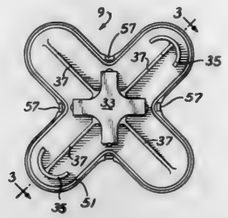
body overlying said deck section forward edge, locking means on said rod main body having alternate portions selectively engageable with said deck section to retain said deck section in either the elevated or lowered positions, and spring means between said deck section and car normally biasing said deck section upwardly from its lowered position.

3,927,622
FREIGHT LASHING APPARATUS, ESPECIALLY FOR AIRCRAFT
Werner Voigt, Weilheim, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany
Filed Dec. 16, 1974, Ser. No. 533,303
Claims priority, application Germany, Dec. 22, 1973, 2364270
Int. Cl.² B61D *45/00*
U.S. Cl. 105—463 **12 Claims**



1. A freight lashing apparatus for securing freight to a loading floor, comprising a frame structure, a first tilting axis (**2***a*) held in said frame structure, bell crank lever means tiltably supported on said first tilting axis and having normally vertically extending arm means and normally horizontally extending arm means, roll over bail means (**2**) held by said normally vertically extending arm means, said roll over bail means having two slanted contact surfaces extending normally toward said horizontally extending arm means, push rod means, bar means (**3***a*) connecting said normally horizontally extending arm means of said bell crank lever means to one end of said push rod means (**3**), said conneting bar means having free ends, guide slots in said frame structure, each of said free ends of said connecting bar means (**3***a*) riding in a respective one of said guide slots, a freight locking mechanism (**4,6**), a second tilting axis (**6***a*) also held in said frame structure and tiltably supporting said freight locking mechanism, means journaling the other end of said push rod means (**3**) to said freight locking mechanism above said second tilting axis, and unlocking means (**8**) operatively connected to said locking means, said roll over bail means being responsive to a forward and lateral freight movement and said unlocking means (**8**) being responsive to a reverse freight movement, whereby said bell crank lever means with the roll over bail means and the locking mechanism are tiltable into a retracted, lowered position below said loading floor in response to freight movement in any direction.

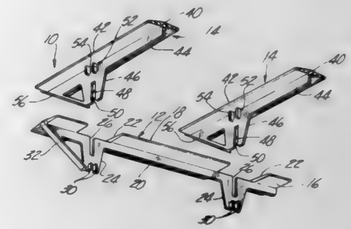
3,927,623
LASHING SOCKET COVER
Norman O. Caron, Braintree, Mass., assignor to General Dynamics Corporation, St. Louis, Mo.
Filed June 17, 1974, Ser. No. 479,661
Int. Cl.² A62B *35/00*
U.S. Cl. 105—475 **3 Claims**



1. A removable cover for a shipboard lashing socket having a flush deck portion wherein a generally cruciform access opening is provided having four lobes the outer ends of which are arcuate and having a bottom portion of generally bowl-like shape which is attached along its periphery to said deck portion, which cover comprises
a plate portion of dimension greater than said cruciform access opening which totally covers said opening,
the underside of said plate having a pair of depending locators which are arcuate in horizontal section and are proportioned to fit just within the arcuate outer ends of opposite lobes of said cruciform opening and thereby align said plate portion to totally cover said opening and prevent relative rotation of the installed cover,
said cover having a housing portion depending from the underside of said plate portion and centrally located thereupon,
said housing having at least two opposed, horizontal bores, each of said bores containing a rotatable ball detent and retainer means limiting the distance said ball detent can protrude from said bore,
seat means in each said bore in contact with a rear portion of each ball detent, and
spring means biasing said seat and ball detent to the protruding position,
said bores being located in said housing so that said ball detents in an installed cover latchingly engage the lower edge of the flush deck portion of the socket in a region thereof between adjacent lobes of the cruciform access opening,
whereby said removable cover is securely latched within said shipboard lashing socket and resists inadvertent removal.

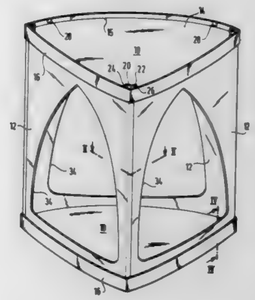
3,927,624
KNOCK DOWN PALLET
Kenneth E. Hewson, 626 Colony Drive, Troy, Mich. 48084
Filed Jan. 28, 1974, Ser. No. 436,876
Int. Cl.² B65D *19/26*
U.S. Cl. 108—56 **1 Claim**

1. A pallet comprising:
a plurality of first beam elements, each fabricated from a plastic material and of a selected length,
each of said first beam elements having a support surface and outwardly projecting support posts at selected spaced locations along the longitudinal length of each of said first beam elements said support surface having notches therein at positions located above each of said support posts;
a plurality of second beam elements, each fabricated from a plastic material and of a selected length, each of said second beam elements having a support surface and outwardly projecting support posts at selected spaced locations along the longitudinal length of each of said second beam elements, said first and second beam element support posts having mating slotted portions such that the support posts of said first beam elements engage the support posts of said second beam elements;
snap lock means carried at the projecting ends of said support posts of said first and second beam elements for interlocking said first and second beam element support posts;



first vertical flange means integrally formed on said first beam elements and extending laterally of said first beam element support posts to engage said second beam element support posts; and
second vertical flange means integrally formed on said second beam elements and extending laterally of said second beam element support posts to engage said first beam element support posts, said first and second vertical flange means respectively restraining said second and first beam element support posts from lateral movement with respect to one another.

3,927,625
SET OF PARTS FOR A DISPLAY RACK
Franz Josef Lang, Kelkheim, Germany, assignor to Display-Design GmbH fur moderne Verkaufsforderungsmittel und Raumausstattung, Kelkheim, Germany
Continuation-in-part of Ser. No. 298,955, Oct. 19, 1972, Pat. No. 3,834,324. This application July 15, 1974, Ser. No. 488,893
Claims priority, application Germany, Oct. 27, 1971, 2153603The portion of the term of this patent subsequent to Sept. 10, 1991, has been disclaimed.
Int. Cl.² A47B *47/04*
U.S. Cl. 108—91 **10 Claims**



1. A rack assembly comprising:
a. a plurality of identical base plate members having each a top surface, a bottom surface, and a circumferential edge elongated in a direction parallel to said surfaces and connecting said surfaces;
b. wall means defining a plurality of receptacles circumferentially spaced along said edge on each of said surfaces,

1. said receptacles projecting from said surfaces in opposite directions transverse to said surfaces respectively,
2. each receptacle including a first wall member and a second wall member,
3. respective substantially parallel faces of said wall members defining therebetween a slot open in a direction away from the associated base plate member and in a circumferential direction,
4. the length of said slot parallel to said surfaces being substantially greater than the width thereof between said faces,
5. a part of said first wall member projecting beyond said face of the second wall member longitudinally of said slot in said circumferential direction;

c. a plurality of identical supporting members,
1. each supporting member having two terminal portions spaced in a predetermined direction and shaped for being conformingly received in respective slots of two of said receptacles on respective base plate members in a position in which a part of each terminal portion projects from the receiving slot in the direction of elongation of said slot beyond the face of the second wall member defining said slot, and said predetermined direction is transverse to said surfaces; and

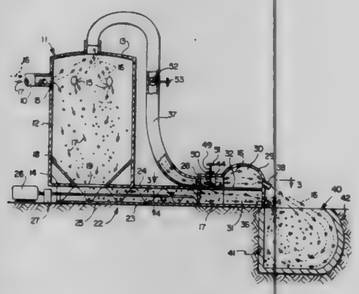
d. releasably interengageable locking means on the projecting part of the first wall member of each receptacle and on the projecting parts of the terminal portions of each supporting member for retaining said terminal portions in said two receptacles.

3,927,626

INCINERATOR SYSTEM FOR DRY WASTE MATERIAL

Nicholas J. Fokakis, 100 Mandelay Drive, Hattiesburg, Miss. 39401, and Paul S. Woods, 141 Princeton St., Jackson, Miss. 39203

Filed Jan. 31, 1975, Ser. No. 546,166
Int. Cl.² F23G 7/00
U.S. Cl. 110—18 R **5 Claims**



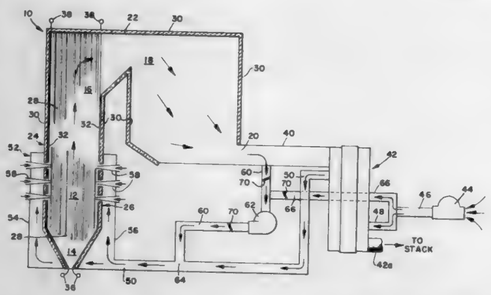
1. Apparatus for burning dry waste material within an open pit comprising a collector-separator, means for introducing dry waste material and air under pressure into said collector-separator, the dry waste material and the air being substantially separated from each other within said collector-separator, distributor means spaced from said collector-separator, conveyor means connecting the lower portion of said collector-separator with said distributor means for moving dry waste material from said collector-separator to said distributor means, first nozzle means on said distributor means for discharging waste material from the distributor means into the open pit, air duct means connecting the upper portion of said collector-separator with said distributor means for moving air under pressure from said collector-separator to said distributor means, second nozzle means on said distributor means for discharging air at high velocity from said distributor means into the open pit, said second nozzle means overlying said first nozzle means and extending substantially the full length of the pit, whereby the air discharged from said distributor means through said second nozzle means forms a curtain of air above the waste material in the pit and is diverted into the waste material to support combustion when the material is ignited as well as to substantially prevent the discharge of pollutants into the atmosphere.

3,927,627

STEAM GENERATING SYSTEM AND METHOD UTILIZING EXHAUST GAS RECIRCULATION

Frederick Milton Brunn, Sparta, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Nov. 29, 1974, Ser. No. 528,364
Int. Cl.² F23J 5/02
U.S. Cl. 110—49 R **12 Claims**



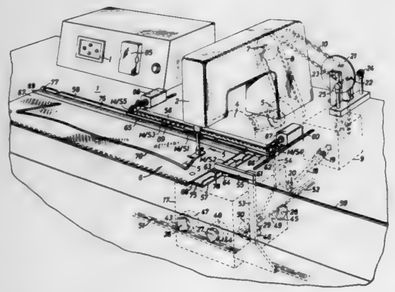
1. A steam generating system comprising a furnace, means for passing at least a portion of the exhaust gases from the outlet section of said furnace back into the combustion section of said furnace, said means including a duct connecting said sections and a fan disposed in said duct, means for passing air at ambient temperature directly into said duct upstream of said fan for cooling said exhaust gases before they enter said fan, and means for passing preheated air into said duct downstream of said fan for mixing with said cooled exhaust gases before they are passed to said combustion section.

3,927,628

PROFILE STITCHING MACHINES

George William Palmer, Sudbury, England, assignor to Stateside Machinery Co., London, England

Filed Feb. 21, 1974, Ser. No. 444,682
Int. Cl.² D05B 21/00
U.S. Cl. 112—121.12 **17 Claims**



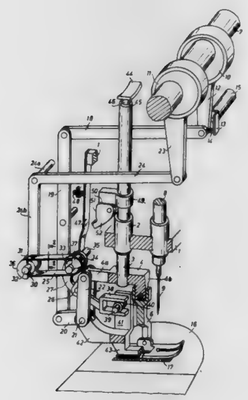
1. A profile stitching apparatus including a power driven sewing machine having a needle, a stitching tracker plate having a slotted profile arranged to be moved with its slot in register with said needle of said sewing machine to sew along said profile; and first and second transmission means arranged to couple said plate respectively to a first and to a second drive means to allow said plate to move relatively to said needle of said sewing machine, said first transmission means including a first gear assembly having a first pair of contra-rotatable pinions each of which engages a first idler gear meshed with a first rack means which, in turn, is operatively connected to a first carriage member and arranged to engage guide means arranged along one longitudinal edge of said tracker plate to permit said tracker plate to be moved in a direction transversely of said first longitudinal edge, and said second transmission means including a second gear assembly having a second pair of contra-rotating pinions each of which engages a second idle gear meshed with a second rack means which, in turn, is operatively connected to a second carriage member arranged to engage further guide means arranged along another lateral edge of said tracker plate to permit said tracker plate to be moved in a direction different from the first mentioned direction.

3,927,629

SEWING MACHINE PRESSER FOOT AND FEED DOG LIFTING MECHANISM

Kurt Vollmar, Weilerbach, Germany, assignor to Pfaff Industriemaschinen GmbH, Germany

Filed Sept. 18, 1974, Ser. No. 507,214
Claims priority, application Germany, Oct. 20, 1973, 2352731
Int. Cl.² D05B 27/04
U.S. Cl. 112—212 **10 Claims**



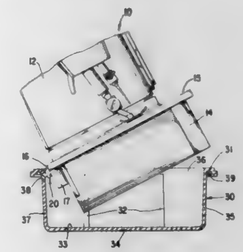
1. A sewing machine, comprising a presser foot engageable with a workpiece during the feeding thereof, spring means bising said presser foot toward engagement with the workpiece, feed dog means including an upper feed dog, a lift member connected to said upper feed dog and said presser foot and being movable to lift at least said upper feed dog therewith, a lifting mechanism including a movable arm, said arm and said lift member having roller means thereon, and and endless belt of constant length engageable over said roller means of said arm and said lift member and being movable in one direction of motion of said lift member to move said arm therewith to raise said upper feed dog, and being movable upon the movement of said lift member in another direction to loosen between said roller means of said lift member and said roller means of said arm.

3,927,630

SEWING MACHINE ATTACHMENT TO CARRYING CASE BASE

Francois Rene Andre Saintier, Bonnieres-sur-Seine, France, assignor to The Singer Company, New York, N.Y.

Filed Mar. 10, 1975, Ser. No. 557,150
Int. Cl.² D05B 75/00
U.S. Cl. 112—217.1 **2 Claims**



1. In combination, a sewing machine having a bed with a work supporting surface, said bed having at least one hinge hole; and a base receiving said bed, said base having a top surface substantially on a level with said sewing machine work-supporting surface; and means retaining said sewing machine to said base, said retaining means comprising:

a. At least one substantially rigid insert fixable in said at least one hinge hole and extending therefrom;

b. At least one aperture in said base opposite to and substantially aligned with said at least one hinge hole, said aperture receiving said insert; and

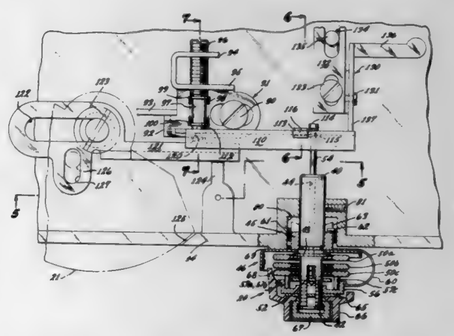
c. A latch means disposed substantially diametrically opposite said at least one aperture for retaining, with said insert in said aperture, said sewing machine work-supporting bed to said base.

3,927,631

THREAD TENSIONER WITH IMPROVED YAWN MECHANISM

Ludwig John Kuhar, Clark, N.J., assignor to The Singer Company, New York, N.Y.

Filed Mar. 25, 1975, Ser. No. 561,749
Int. Cl.² D05B 47/02
U.S. Cl. 112—254 **5 Claims**



1. A thread tension device for sewing machines comprising an arbor, at least one pair of thread engaging tension discs mounted on said arbor and between which needle thread is adapted to pass, one of said tension discs being formed of a non-magnetic material and a second of said tension discs being formed of magnetic material, spring means for biasing said tension discs together thereby to apply tension to the

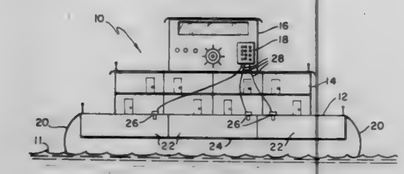
thread passing between them, means for releasing said spring means, and magnet means disposed in relation to said tension discs to cause said tension discs to separate upon actuation of the spring release means.

3,927,632

METHOD OF DETERMINING WATERTIGHT INTEGRITY IN HOVERCRAFT

Michael R. Terry, Mercer Island, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 26, 1974, Ser. No. 446,062
Int. Cl.² B63B *1/38*
U.S. Cl. 114—67 A **1 Claim**



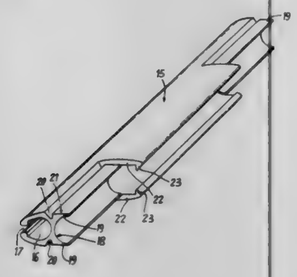
1. A method of determining the water-tight integrity of a hovercraft riding on a cushion of air over a surface of water and having a static differential pressure in a compartmented floatation hull, comprising the steps of:
operating a hovercraft on-cushion by providing a volume of air under pressure between a floatation hull and a surface of water;
detecting an operating pressure differential of a compartment in said hull from atmospheric pressure;
comparing said operating pressure differential to said static differential pressure; and
electrically indicating at a convenient place on said hovercraft said operating pressure differential to static pressure differential comparison;
whereby a violation of watertight integrity is indicated by cushion air pressure entering a compartment and increasing the pressure differential to above atmospheric.

3,927,633

SHEATH FOR A STAYSAIL OF A BOAT

Bernard Bernard, 10, rue Saint Exupery, 43200 Rosnne, France

Filed Sept. 10, 1974, Ser. No. 504,696
Claims priority, application France, Sept. 18, 1973, 73.33850
Int. Cl.² B63H *9/08*
U.S. Cl. 114—105 **8 Claims**



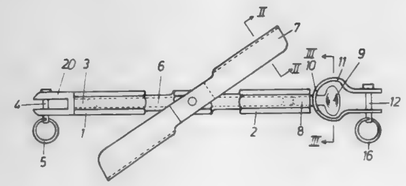
1. A sheath for a staysail, said sheath comprising
a plurality of identical sections each having end portions, a center portion between the end portions, and a central plane, each said section comprising
means defining a channel provided with a slot and forming a boltrope tunnel, said channel being located on one side of the section, and
clamp means on the opposite side of the section, said clamp means including
first arms of a first length at the end portion of the section, and
second arms of a second length at the center portion of the section, the second arms being longer than the first arms and being located at a greater distance from said central plane of the section, each said section mating with an adjacent section with the respective second arms of each section engaging on the first arms of the other section, said mating sections providing a passage for the stay and two boltrope tunnels parallel with the passage, with the passage being located between the tunnels and the axis of the passage and the tunnels lying in a common plane.

3,927,634

PIVOTALLY OPERATING SAIL AND LINE HOLDING AND TIGHTENING MEANS

Werner Stoerring, Ringstr. 20, 5604 Neviges, Germany

Filed Mar. 26, 1974, Ser. No. 454,840
Claims priority, application Germany, Dec. 22, 1973, 2364362
Int. Cl.² B63H *9/04*
U.S. Cl. 114—108 **1 Claim**



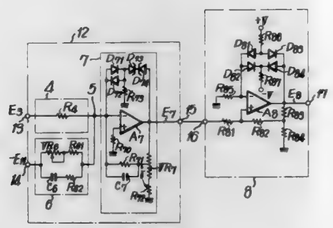
1. Pivotally operating sail and line holding and tightening means for shrouds on a boat comprising:
two outside lying connecting members;
two tensioned adapter sleeves, each sleeve bearing each time on one of said outside lying connecting members and the inside ends of each of said sleeves threadedly receiving or accomodating a bolt means;
a bolt means provided for the sleeves;
one half of the bolt means being provided with a right-hand thread and the other half of the bolt means being provided with a left-hand thread;
a centrally pivoted open ended double lever having a longitudinal middle in which is located the central pivot of the double lever and which is mounted on the middle of the bolt means;
The open ends of said centrally pivoted double lever each being generally U-shaped in its cross section and the double lever being mounted after swing-in to wrap the lever around the adapter sleeves so that it tightly presses to engage both edges of said two adapter sleeves;
said open ends of said levers being developed with flat edges each opening in an opposite direction to the other thereby securing the adapter sleeves against twisting;
at least one connecting member consisting of a U-shaped strip and a generally spherical peg in the deepest part of the U, which is pivotally connected to its corresponding adapter sleeve;
said peg being rigidly attached to the adapter sleeve on one side of said connecting member and said U-shaped bottom having a clearance for said peg to facilitate swing-in by an encircling action to hold the adapter sleeve and to also hold the shroud edges fast while securing these edges against twisting action;
means to attach and to release the bent U-shaped legs;
a stirrup-like member fixed at both ends of the stirrup to the hull of the boat for holding a shroud; said at least one connecting member consisting of a U-shaped strip being slidingly connected to said stirrup-like member for holding the shroud.

3,927,635

MARINE AUTOPILOT SYSTEM

Isao Masuzawa, Kuki; Tsuneo Awano, and Kazutoshi Onishi, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Tokyo Keiki, Japan

Continuation of Ser. No. 376,344, July 5, 1973, abandoned. This application Sept. 27, 1974, Ser. No. 509,854
Claims priority, application Japan, July 10, 1972, 47-68929
Int. Cl.² B63H *25/04*; G05B *11/01*
U.S. Cl. 114—144 E **2 Claims**



1. A marine autopilot system comprising, a first transducer for producing an electrical signal corresponding to the deviation of a ship's heading from a set course; a first means for producing an electrical signal corresponding to a rudder order receiving the output of said first transducer; a servo loop including a servo amplifier and a relay-like operation device for producing a rudder command receiving the electrical signal from said first means; a means provided in said relay-like operation device for making its off-voltage substantially zero and its on-voltage substantially equal to its hysteresis voltage, and an adjusting means provided in said servo amplifier for adjusting its gain, whereby the voltage of said signal applied to said servo loop which makes said relay-like operation device turn on, can be changed in accordance with a gain determined by said adjusting means and the voltage of said signal applied to said servo loop, which makes said relay-like operation device turn off, is kept at substantially zero irrespective of said adjusted gain, said relay-like operation device including a first operational amplifier and a circuit connected between the negative input terminal and the output terminal of said first operational amplifier for achieving relay-like operation, said means provided in said relay-like operation device being provided in a positive feedback circuit of said first operational amplifier for making off-voltage substantially zero, said servo amplifier including a second operational amplifier and said adjusting means connected in a negative feedback circuit of said second operational amplifier, said negative feedback circuit including a variable resistor and a feedback resistor and said variable resistor serving as a weather adjustment device.

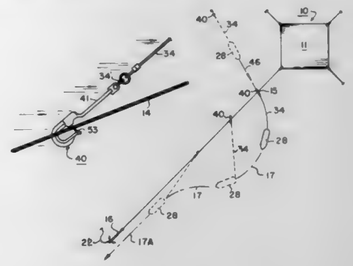
3,927,636

METHOD OF RETRIEVING ANCHORS

Mark A. Childers, and Enoch L. Dawkins, both of New Orleans, La., assignors to Ocean Drilling & Exploration Company, New Orleans, La.

Filed Sept. 26, 1974, Ser. No. 509,573
Int. Cl.² B63B *21/26*
U.S. Cl. 114—206 R **2 Claims**

1. The method of locating and retrieving an anchor, buried in the seabed and being attached to the bottom end of an inclined mooring line whose upper end is attached to a submerged member of a structure floating in a body of water, by utilizing a surface ship and equipment, said surface ship being on the surface of the body of the water and having a service line, and said equipment including a remote-operated catch hook on the service line, and a control unit on said ship for remotely controlling the opening of the catch on said hook; said method being characterized by utilizing the following steps:
moving the ship near the structure,
submerging the hook and a portion of the service line into the body of water;
towing the submerged hook in a direction intersecting the mooring line until the mooring line forcibly opens the catch and becomes hooked;



gradually swerving the service line in the direction of the mooring line toward the buried anchor;
progressively lowering the service line as the ship moves toward the anchor allowing the hook to slide down on the mooring line;
uplifting the service line to retrieve the anchor from the seabottom;
progressively taking in the mooring line into the structure; progressively taking in the service line into the ship, while supporting the anchor with the service line;
moving the ship toward the structure;
remotely releasing the hook's catch by actuating said control unit; and
bolstering the anchor onto the structure.

3,927,637

POSITIVE SUB-SURFACE UTILITY LINE AND THE LIKE INDICATOR

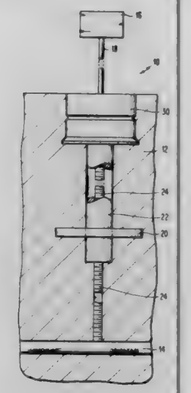
Michael Sammaritano, 1808 Vails Gate Heights Drive, Newburgh, N.Y. 12550

Filed Sept. 14, 1973, Ser. No. 397,607
Int. Cl.² G01D *21/00*
U.S. Cl. 116—114 R **1 Claim**

1. A device for providing at ground surface the location and depth of an underground conduit as well as the direction said conduit extends comprising:
a measuring tape adapted to be fastened at one end thereof to said conduit;
a housing adapted to be placed adjacent to said ground surface, said housing having a recessed portion at the top thereof and an orifice extending from the bottom of said recessed portion through the bottom of said housing with the other end of said tape extending through said orifice;
a container for fitting snugly within said recess, said container being generally dish shaped with an open top so as to be able to contain an envelope for holding information concerning said conduit;
a number of holes in the bottom of said container arranged in a circle and an equal number of corresponding holes at the bottom of said recess in said housing so that one or more pins can be placed in holes at the bottom of said recess to extend upward into corresponding holes in said container after said container has been oriented to a

desirable position with respect to said housing and placed down snugly within said recess and;

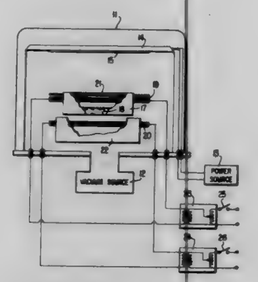
a cap serving as a closure for the open top of said container; whereby, when said housing has been placed adjacent to said ground surface, indicia on said container can indicate the direction of said conduit when said container has been properly oriented with respect to said housing and said container can be removed so that the other end of said measuring tape is visible to indicate the depth of said conduit when said one end of said measuring tape is fastened to said conduit.



3,927,638
VACUUM EVAPORATION PLATING APPARATUS

Fukumatsu Sakaue, Minami-ashigara, Japan, assignor to Fugi Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1974, Ser. No. 459,955
Claims priority, application Japan, June 4, 1973, 48-61799
Int. Cl.² B05C 19/02
U.S. Cl. 118—49.1 8 Claims



1. A vacuum evaporation plating apparatus for controlling fractional distillation of respective components of a photosensitive material, said apparatus comprising

a single container for said photosensitive material;

a first heating means for heating with radiation the evaporating surface of the photosensitive material, said first heating means being disposed above said material such that said electromagnetic radiations impinge directly on said evaporating surface;

a second heating means for heating the photosensitive material from either the interior or bottom thereof;

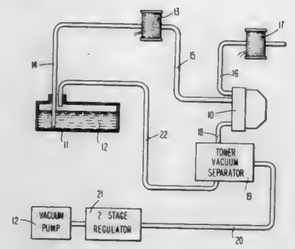
means for receiving the vapors of the heated photosensitive material for forming a photosensitive film; and

said first and second heating means controlling the deposition of said components to control the relative percentages of said components in the photosensitive film deposit through the thickness thereof.

3,927,639
APPARATUS FOR DEVELOPING AN ELECTROSTATIC LATENT IMAGE ON AN ELECTROPHOTOGRAPHIC FILM

John D. Plumadore, Westfield, Mass., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Apr. 8, 1974, Ser. No. 459,194
Int. Cl.² B05B 5/02
U.S. Cl. 118—637 6 Claims



1. In an apparatus for developing an electrostatic latent image on an electrophotographic film, comprising:

a developing chamber forming a passageway through which electrostatically charged toner particles in a carrier liquid are conducted to contact the film, the chamber having an opening bordered by a mask against which the film is placed to form a seal, an inlet through which toner particles and air enter the chamber, and an outlet through which toner particles and air leave the chamber;

toner supply means for providing liquid toner to be passed through the chamber;

toner flow control means for permitting a predetermined quantity of liquid toner to flow through the developing chamber at predetermined times;

air supply means for supplying drying air to the inlet of the chamber; and

vacuum means connected to the outlet of the chamber for drawing the liquid toner and the air through the chamber, the vacuum means creating sub-atmospheric pressure within the chamber to prevent leakage of liquid toner from the chamber around the film;

the improvement in the apparatus wherein the toner flow control means and the air supply means are provided by:

a conduit leading from the toner supply means to the inlet of the developing chamber;

a toner valve through which the conduit passes;

an orifice connected to the conduit and positioned in the inlet of the developing chamber, the orifice sized to permit liquid toner to be drawn by the vacuum means into the developing chamber only when the toner valve is opened;

an air valve through which passes the drying air which enters the developing chamber through the inlet; and

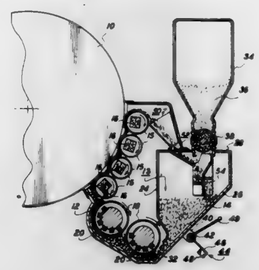
means for opening and closing alternately the toner valve and the air valve for predetermined periods of time.

3,927,640
DEVELOPER SHUT-OFF APPARATUS

Richard E. Smith, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 29, 1974, Ser. No. 464,862
Int. Cl.² G03G 15/08
U.S. Cl. 118—637 3 Claims

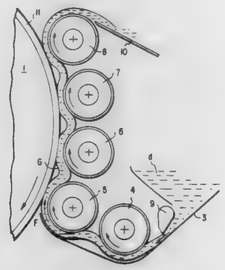
1. In a development system: A surface capable of having a developable image thereon, a developer housing including a developer sump, said sump having ferromagnetic developer therein, magnetic means located within said housing for presenting said developer to said surface, a developer outlet at the lowermost portion of said sump, said developer flowing through said outlet to said means for presenting said developer to said surface, and magnetic gate means located entirely exterior said housing for selectively either magnetically blocking the entire flow of developer through said outlet when in a closed position or for allowing flow of developer through said outlet when in an open position, said magnetic gate means comprising a member having permanent magnet means secured thereto at one end and pivotally mounted to said housing at the other end for pivotal movement between said open and closed positions, and means for pivoting said member in one direction to move said permanent magnet means into said closed position adjacent said outlet to block the entire flow of developer through said outlet and for pivoting said member in the opposite direction to move said magnet away from said outlet to said open position to allow flow of developer through said outlet.



3,927,641
DEVELOPING MECHANISM USING MAGNETIC BRUSH

Kenichi Handa, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 10, 1974, Ser. No. 468,974
Claims priority, application Japan, May 10, 1973, 48-51199
Int. Cl.² G03G 15/10
U.S. Cl. 118—637 3 Claims



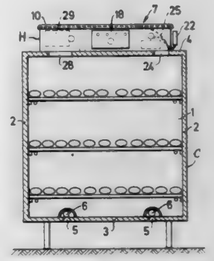
1. In a magnetic brush type developing mechanism having at least twc developing magnetic brush rolls, said developing mechanism developing a latent image on a moving recording material with magnetic toner, the improvement comprising means for applying to a first magnetic brush roll encountered by said latent image a first potential, the absolute value of which is substantially greater than the absolute value of the background potential of said latent image and means for applying to a second magnetic brush roll immediately adjacent to said first roll and encountered by said latent image prior to said first roll a second potential, the absolute value of which is less than said absolute value of the background potential

whereby development of the image portion of said latent image is enhanced due to the large potential difference between the potential of said image portion and said second potential while background fogging is lessened due to the large potential difference between said first potential and said background potential which attracts the magnetic toner from the space between said first and second magnetic rolls adjacent the recording material.

3,927,642
PROCESS AND APPARATUS FOR GASSING BROODING EGGS

Gerd Levin, Ernst-August Str. 13A, 2 Hamburg 54, Germany

Filed June 17, 1974, Ser. No. 479,778
Int. Cl.² A01K 49/00
U.S. Cl. 119—1 7 Claims



1. A process for freshly laid gassing brooding eggs in a gassing cabinet by means of formaldehyde, consisting in the following procedural steps:

a. heating the gassing cabinet,

b. introducing the freshly laid brooding eggs to be gassed,

c. evaporating crystalline formaldehyde and water into air,

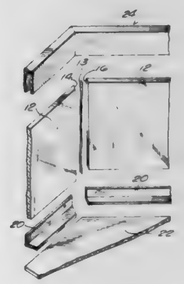
d. circulating the gas mixture in the gassing cabinet containing the brooding eggs, and

e. removing the gas mixture from the gassing cabinet.

3,927,643
AQUARIUM

Gerald R. Ritzow, 6300 Parkview Road, Greendale, Wis. 53129, and Roger C. Ritzow, S53 W23581 Big Bend Road, Waukesha, Wis. 53186

Filed July 31, 1974, Ser. No. 493,257
Int. Cl.² A01K 64/00
U.S. Cl. 119—5 5 Claims



1. A container comprising:

a plurality of glass side panels arranged in a hexagonal shape, said glass panels fastened together at the edges with a mitered joint using an adhesive applied to the adjacent surfaces of said panel edges;

a bottom hexagonal panel positioned adjacent the bottom edges of said side panels with the bottom edges of said side panels resting on the top peripheral edge surface of said bottom panel and with the areas of contact having an adhesive applied thereto;

a plurality of bottom molding members fastened to the bottom panel and side panels at the joint therebetween, said bottom molding members having an angle shape with one leg thereof adhered to the bottom panel by an adhesive and with the other leg thereof adhered to a side panel by an adhesive; and

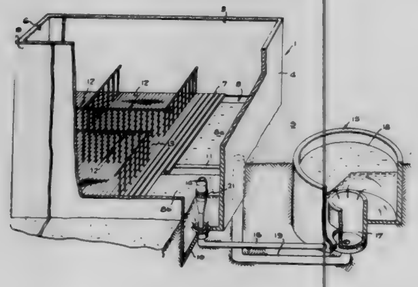
a single piece top molding strip fastened to the top edges of said side panels, said top molding strip being in the form of a single length of channel shaped material having a plurality of spaced notches in the sides thereof so that said top molding member can be folded into a hexagonal shape for installation on the top of the container, when so folded said notches will be closed to provide a molding having a continuous smooth surface on all sides of the molding member, said top molding member being held firmly in place on the container by an adhesive.

3,927,644

ANIMAL WASTE TREATMENT SYSTEM

Joel L. Nafziger, R.R. 1, Hopedale, Ill. 61747

Filed Jan. 3, 1974, Ser. No. 430,475
Int. Cl.² A01K *1/00*
U.S. Cl. 119—16 **10 Claims**



6. A waste treatment system for use in conjunction with a farm animal maintenance building in which animals are maintained on a floor, comprising the combination of a ditch disposed beneath the floor and operative to contain a slurry for the removal and disposal of animal waste, a trap having a bottom and wall means extending upwardly from the bottom to a selected level, means for introducing slurry from the ditch into the trap, a return sump positioned in the trap below the selected level, and means for returning slurry from the sump to the ditch whereby the slurry is recirculated from the ditch to the trap and returned to the ditch, said return sump including a trap for deposited solids so that a slurry substantially free of foam and solid materials is returned to the ditch.

3,927,645

SELECTIVE BIRD FEEDER

David E. Varner, 5302 Duvall Drive, Washington, D.C. 20016

Filed Mar. 27, 1975, Ser. No. 562,690
Int. Cl.³ A01K *5/00*
U.S. Cl. 119—51 R **10 Claims**

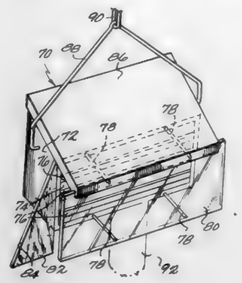
1. A selective bird feeder in which bird food is accessible to birds capable of clinging to a rough surface having a substantial angle from the horizontal but generally inaccessible to others, comprising:

means defining an enclosure for holding bird food;

at least a portion of the sides of said enclosure being of relatively open construction for enabling a bird to have access therethrough to bird food within said enclosure, the remainder of said enclosure-defining means being constructed to prevent such access therethrough;

shield means mounted exteriorly of said sides portion in position to prevent a bird from flying directly thereto, said shield means having at least a marginal edge portion disposed in generally coextensive spaced relation with said sides portion, the space between said shield means marginal edge portion and said sides portion being sufficient to permit a bird to enter therebetween by clinging movement but insufficient to permit a bird to fly directly thereinto and light therewithin, and

means defining a rough surface, substantially uninterrupted throughout its extent and having a substantial angle from the horizontal, supported adjacent to said sides portion but uncovered by said shield means, said surface-defining means being constructed and positioned to enable a bird capable of substantially clinging to said surface to light thereon, cling thereto, and clingingly move therealong toward said sides portion for access through the latter to bird food within said enclosure but not to enable perching birds to light and find support thereon.

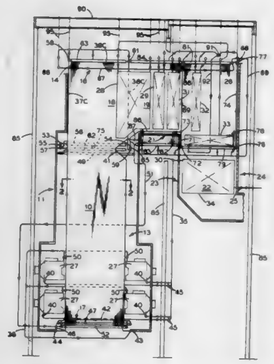


3,927,646

VAPOR GENERATOR

Harold J. Dungey, Barberton, and Arthur M. Frendberg, Akron, both of Ohio, assignors to Babcock & Wilcox Company, New York, N.Y.

Continuation of Ser. No. 447,699, April 13, 1965, abandoned. This application June 14, 1974, Ser. No. 479,588
Int. Cl.² F22B *29/06, 37/24*
U.S. Cl. 122—6 A **9 Claims**



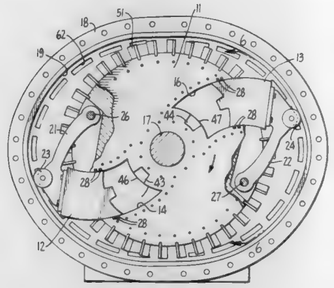
1. In a fluid heating unit, walls forming a furnace for flow of heating gases, means supplying high temperature heating gases to said furnace, one of said walls including a first group of upwardly extending fluid heating tubes forming a lower portion of said one wall and arranged for parallel flow of fluid therethrough, a second group of upwardly extending fluid heating tubes forming an upper portion of said one wall and arranged for parallel flow of fluid therethrough, means connecting the second group of tubes for series flow of fluid from the first group of tubes, means supplying fluid in parallel flow relation to the first group of tubes, said first and second groups of tubes being constructed and arranged to provide flow of fluid in the furnace only in an upward direction, some of the tubes of the second group having lower portions interlaced with upper portions of some of the tubes of the first group, means for supporting said one wall including means rigidly uniting said interlaced tube portions of the first and second groups of tubes and transmitting the load of the first group of tubes to the second group of tubes, and means for top supporting the second group of tubes.

3,927,647

ROTARY INTERNAL COMBUSTION ENGINE

William A. Blackwood, 295 Polaris Ave., Mountain View, Calif. 94040

Filed Aug. 16, 1973, Ser. No. 388,985
Int. Cl.² F02B *57/00, 57/04*
U.S. Cl. 123—43 C **38 Claims**



1. A rotary engine for two-cycle operation comprising,

a housing formed to provide an oblong inner cam surface,

a rotor carried for relative rotation in said housing,

walls in said rotor defining at least one arcuate combustion chamber,

a correspondingly arcuate piston mounted for curvilinear reciprocation in said combustion chamber inwardly toward the axis of rotation of said rotor and outwardly toward said cam surface such that the centerline of said chamber, if extended, would pass through the axis of said rotor,

and follower means for operatively connecting said piston to said oblong inner cam surface,

whereby said arcuate piston is urged outwardly to travel along said oblong inner cam surface and impart rotation to said rotor by combustion in said arcuate combustion chamber to provide the power stroke and is urged inwardly by travel along said inner cam surface to provide the compression stroke.

3,927,648

ELECTRONIC IGNITION TIMING CONTROL CIRCUIT FOR INTERNAL COMBUSTION ENGINE

Hisasi Kawai, Toyohashi, and Kazuo Iwase, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed June 4, 1974, Ser. No. 476,272
Claims priority, application Japan, June 5, 1973, 48-63471
Int. Cl.² F02P *5/08*
U.S. Cl. 123—117 R **8 Claims**

1. An electronic ignition timing control system for an internal combustion engine comprising:

revolution detecting means for detecting the number of revolutions per unit time of an internal combustion engine in digital value;

reference angular position detecting means for detecting a reference angular position of said engine to generate a reference angular position signal;

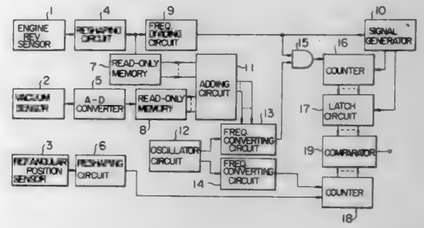
a revolution memory circuit connected to said revolution detecting means whereby in response to a revolution signal from said revolution detecting means, a revolution advance angle is read out, as a revolution retard angle from the reference angular position of said engine, from a predetermined ignition timing characteristic program;

advance angle-frequency converting means connected to said revolution memory circuit for converting said revolution retard angle into a frequency by generating the frequency which varies with a predetermined functional relationship in accordance with an output signal read out from said revolution memory circuit;

a gating circuit connected to said advance angle-frequency converting means and said revolution detecting means and adapted to be opened to pass the output frequency of said advance angle-frequency converting means therethrough while a predetermined number of digital signals is generated from said revolution detecting means to thereby inversely proportion said frequency with respect to the number of revolutions per unit time of said engine;

a counter connected to said gating circuit for outputting a digital value corresponding to a delay time from a moment at which a rotation of said engine passes said reference angular position by counting the output frequency of said gating circuit each time said gating circuit is opened; and

ignition timing signal generating means connected to said reference angular position detecting means and said counter for generating an ignition timing signal after a period of time corresponding to the count of said counter from a moment at which the reference angular position signal is generated in said reference angular position detecting means.

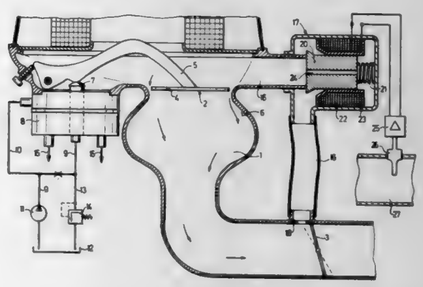


3,927,649

FUEL-METERING UNIT FOR INTERNAL COMBUSTION ENGINES

Gerhard Stumpp, Stuttgart, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed June 18, 1973, Ser. No. 370,826
Claims priority, application Germany, Aug. 25, 1972, 2241936
Int. Cl.² F02M *7/00, 69/00*
U.S. Cl. 123—119 R **8 Claims**



1. In a fuel-metering unit adapted for use in an internal combustion engine having an exhaust pipe which unit com-

prises an air-intake suction tube, a randomly adjustable throttle valve therein, an air-measuring device mounted in said suction tube upstream of said throttle valve, by-pass means connected with said suction tube both upstream and downstream of said air-measuring device thereby bypassing said air-measuring device and means for metering fuel in amounts substantially proportional to the amount of air flowing through said suction tube past said air-measuring device, the improvement comprising: a solenoid valve; control valve means associated with said by-pass means and adapted for controlling opening of said by-pass means and thereby the amount of air passing said air-measuring device thereby varying the proportionality of fuel and air in dependence on characteristic engine data; and an exhaust gas-measuring probe adapted to be mounted in said exhaust pipe and adapted for controlling said control valve means, wherein:

said control valve means comprises control conduit means opening into said suction pipe and a by-pass valve adapted for pneumatic actuation via said control conduit means; and

said solenoid valve is interposed in said control conduit means and is controlled by said exhaust gas-measuring probe.

3,927,650

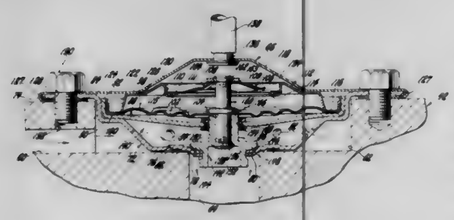
EXHAUST GAS RECIRCULATION VALVE

Claude A. Smith, Sandusky; David E. Taylor, Huron, and Donald L. Williams, Port Clinton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1973, Ser. No. 419,667

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **2 Claims**



1. An exhaust gas recirculation control valve assembly for an internal combustion engine having an induction passage for air flow to the engine, a throttle rotatably disposed in said induction passage for controlling air flow therethrough, a slot in said induction passage disposed adjacent and traversed by said throttle, an exhaust passage for exhaust gas flow from the engine, and a recirculation passage having a first portion extending from said exhaust passage and a second portion extending to said induction passage downstream of said throttle, said control valve assembly comprising a housing adapted for disposition in said recirculation passage, said housing having an inlet aperture for receiving exhaust gases from said first recirculation passage portion and an outlet orifice for discharging exhaust gases to said second recirculation passage portion, a valve seat formed in said housing about said orifice, a valve member associated with said valve seat for controlling the amount of exhaust gas recirculated, a resilient diaphragm partitioning said housing and secured to said said valve member and providing means for urging said valve member against said valve seat, one side of said diaphragm being exposed to an exhaust back pressure signal occurring in said housing upstream of said valve seat and tending to move said valve member away from said valve seat upon an increase in said signal, said housing defining a chamber on the other side of said diaphragm, and means for subjecting said chamber to the pressure signal created at said slot to cause said diaphragm to tend to move said valve member away from said valve seat upon a decrease in said slot pressure signal, whereby said valve member is moved away from said valve seat against the urging of said diaphragm by the complementary and superimposed effects of said pressure signals acting on said diaphragm to control the amount of exhaust gas recirculated through said recirculation passage to said induction passage.

3,927,651

DEVICE FOR VAPORIZING FUEL

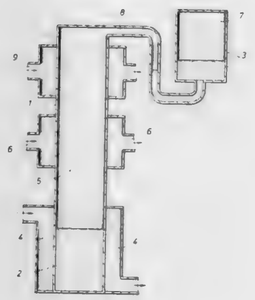
Geoffrey A. Harrow, Wirral, England, and Walter D. Mills, Mold, North Wales, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 13, 1975, Ser. No. 540,484

Claims priority, application United Kingdom, Jan. 23, 1974, 3171/74

Int. Cl.² F02M *31/00*

U.S. Cl. 123—122 A **7 Claims**



1. In the combination: (1) a combustion chamber-containing apparatus selected from the group consisting of an internal combustion engine and a gas turbine, and (2) a device for vaporizing liquid fuel prior to its introduction into the combustion chamber of said apparatus which device comprises a heat pipe which is in the form of a sealed vessel containing a heat transfer fluid comprising a vaporizable liquid having a boiling point at atmospheric pressure up to 400°C and a non-condensable gas, which heat pipe comprises:

a. a heat-receiving zone operatively engaging the exhaust system of said apparatus, for heating the heat transfer fluid and vaporizing said liquid with the heat from said exhaust system,

b. a heat-discharging zone operatively engaging the fuel inlet system of said apparatus for cooling and condensing the heat transfer liquid by transference of heat to said fuel to be evaporated, said heat discharging zone communicating with said heat receiving zone whereby condensed heat transfer liquid is directly returned to said heat receiving zone, and,

c. at least one heat transfer liquid storage zone in communication with the heat receiving zone or the heat discharge zone for storage of the heat transfer liquid,

the improvement comprising that the capacity of said storage zone is sufficient to store all of the heat transfer liquid and a portion of the non-condensable gas present in the device.

3,927,652

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Cormac G. O'Neill, Lafayette, Calif., assignor to Physics International Company, San Leandro, Calif.

Filed June 21, 1974, Ser. No. 481,666

Int. Cl.² F02M *39/00*

U.S. Cl. 123—139 AT **10 Claims**

1. In an internal combustion engine, a fuel injection system comprising

first fuel pump means for providing a supply of fuel at a first pressure,

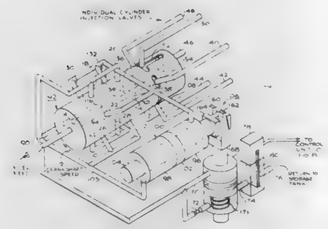
second fuel pump means for providing a supply of fuel at a second pressure, said second pressure being higher than said first pressure,

injection nozzle means for each cylinder for injecting fuel when open into a cylinder of said engine,

means for measuring the amount of fuel to be injected into said cylinder,

means for storing fuel to be injected into said cylinder by said injection nozzle means,

means for transferring said measured amount of fuel to said means for storing fuel for storage thereby at said first pressure,



means for applying fuel from said means for storing fuel to said injection nozzle means at said first pressure to apply an opening bias,

means for applying fuel from said second pump means at said second pressure to said injection nozzle means to maintain said injection nozzle closed against the pressure of said fuel at said first pressure,

timing means actuated responsive to operation of said internal combustion engine for producing a signal when the time for fuel injection by said injection nozzle means occurs, and

means responsive to said timing means signal for increasing the pressure of said stored fuel until it exceeds said second pressure thereby opening said injection nozzle means whereby said stored fuel is injected into said cylinder.

3,927,653

FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES

Brian Colin Pagdin, Sutton Coldfield, England, assignor to GKN Transmissions Limited, Birmingham, England

Filed Mar. 5, 1973, Ser. No. 338,681

Claims priority, application United Kingdom, Mar. 4, 1972, 9944/72

Int. Cl.² F02D *1/04*, *1/06*; F02M *39/00*

U.S. Cl. 123—140 MC **13 Claims**

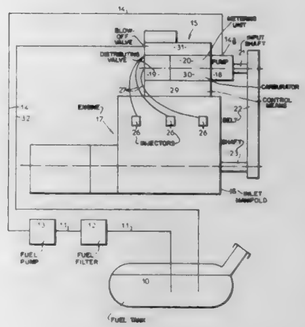
1. In fuel injection apparatus for an internal combustion engine said apparatus comprising means defining an air inlet duct, an adjustable throttle valve means controlling flow of air therethrough to the engine, fuel inlet means and fuel outlet means for connection to one or more injectors, pump means for establishing flow of fuel from said inlet means to said outlet means at an injecting pressure for delivery from said injector, metering means for delivering a measured quantity of fuel to said outlet means in each cycle of operation of the engine, and drive means for driving said metering means in timed relation with said engine, the improvement comprising the provision in combination of:

a. sensing means for controlling operation of the metering means and including

i. a single pressure sensing means for sensing absolute pressure of air in said air inlet duct,

ii. a temperature responsive sensing means for sensing air temperature in said air inlet duct, each of said pressure and temperature sensing means providing a mechanical output,

b. mechanism for receiving said mechanical outputs from said pressure sensing means and said temperature sensing means on the one hand and transmitting a mechanical output to said metering means on the other hand for imparting to the latter a setting which is a function of both absolute pressure and air temperature, representing air density, in said air inlet duct,



c. enclosure means having boundary walls defining a chamber in direct communication with the air flow path through said inlet duct, said chamber being common to and enclosing said pressure sensing means and said mechanism, for isolating said pressure sensing means and said mechanism from the influence of any pressure medium other than the air in said inlet duct, said apparatus being free of any mechanical inputs to said mechanism which traverse said boundary walls,

d. means directly mechanically connectiing said pressure sensing means and said mechanism within said chamber for transmitting said mechanical output from said pressure sensing means to said mechanism without traversing any of said boundary walls of said chamber.

3,927,654

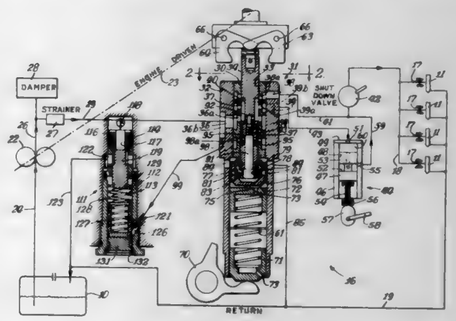
FUEL SUPPLY SYSTEM

Julius P. Perr, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Aug. 22, 1973, Ser. No. 390,605

Int. Cl.² F02D *1/04*, *1/06*

U.S. Cl. 123—140 FG **16 Claims**



1. A fuel supply system for an internal combustion engine, comprising an engine driven pump means for drawing fuel

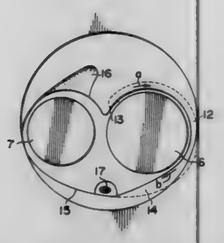
from a fuel supply and delivering the fuel to a fuel line leading to injectors of the engine, bypass pressure regulator module means connected to said line for regulating the pressure in said line by bypassing a portion of the pump output, engine speed responsive means separate from said pump means for producing a speed representative signal, said module means being connected to receive said signal and operating to adjust the amount of fuel bypassed as a function of said speed representative signal and thereby regulating the pressure in said line as a function of engine speed and independently of the output of said pump at an intermediate engine speed range, and governor means separate from said module means and connected to said line for regulating the fuel pressure in said line at maximum speed range, said module means and said governor means functioning independently of each other and said module means further functioning in said maximum speed range when said governor means is operative.

3,927,655

STRUCTURE OF THE COMBINATION CHAMBER OF INTERNAL COMBUSTION ENGINES

Kenji Goto, and Takao Niwa, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Mar. 26, 1974, Ser. No. 454,930
Claims priority, application Japan, Oct. 8, 1973, 48-113039
Int. Cl.² F02B *23/00*
U.S. Cl. 123—191 R **6 Claims**



1. The structure of a combustion chamber of an internal combustion engine comprising a cylinder head provided with an intake port and an intake poppet valve which selectively opens or closes said intake port, wherein a part of the inner surface of the cylinder head forming a peripheral portion of the intake port is provided with a dam portion adapted to cooperate with the peripheral edge portion of said intake valve when said valve is in its open position so as to define an arcuate channel extending along said peripheral edge portion, said arcuate channel having a gradually increasing cross sectional area from one end toward the other end thereof.

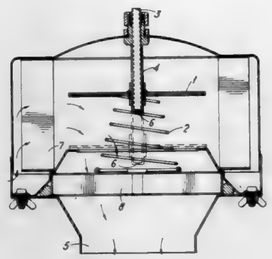
3,927,656

STOPPING INTERNAL COMBUSTION ENGINES

Alan Brydon Reed, Stockton-on-Tees, and William Stanley May, High Wycombe, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 171,425, Aug. 13, 1971, abandoned. This application Sept. 27, 1973, Ser. No. 401,174
Claims priority, application United Kingdom, Aug. 24, 1970, 40662/70
Int. Cl.² F02B *77/00*
U.S. Cl. 123—198 D **9 Claims**

1. In an internal combustion engine, an air intake, a source of inert gas under pressure and an emergency stopping device, said device including a stop valve movable between a normally open position in which atmospheric gases pass into said air intake and a closed position in which atmospheric gases are prevented from passing into said air intake, means for supplying inert gas to said stop valve from said source, and means forming part of said stop valve for passing the inert gas received from said source through said stop valve to said air intake when said stop valve is in its closed position.

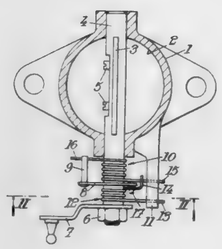


3,927,657

THROTTLE RETURN SYSTEMS FOR CARBURETTORS

Francois Mennesson, Nanterre, France, assignor to Societe Industrielle de Brevets et d'Etudes S.I.B.E., Neuilly-sur-Seine, France

Filed Mar. 26, 1974, Ser. No. 454,834
Claims priority, application France, Apr. 5, 1973, 73.12369
Int. Cl.² F02B *77/08*; **F02D** *11/04*
U.S. Cl. 123—198 D **2 Claims**



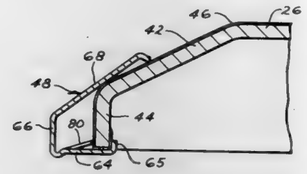
1. In a carburettor for an internal combustion engine having a throttle member secured to a rotary shaft and adapted to be angularly moved with respect to the carburettor body by control means, resilient return means for biasing said throttle member toward a minimum opening position, comprising: a first helical torsion return spring wound around the shaft and having a first end retained in fixed relation with respect to the carburettor body and its other end operatively connected to said shaft for exerting a return force on said shaft; a second helical torsion spring wound around the shaft and having a first end which is retained in fixed relation with respect to the carburettor body and its other end in abutting relation against said first end of the first spring which retains said second spring in stressed condition; a lever; and abutting means carried by said lever, said abutting means being non-rotatably connected to said throttle member and located on the path followed by said other end of the second spring when clear from abutment, whereby said second spring unwinds upon breakage of said first spring and exerts on said abutting means a force tending to move said throttle member toward its closed condition.

3,927,658

SELF-LOCKING TRIM FRAME FOR BUILT-IN COOKTOP

Eugene G. Olthuis, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 19, 1974, Ser. No. 534,580
Int. Cl.² F24C *15/10*; **H05B** *3/68*
U.S. Cl. 126—214 A **6 Claims**



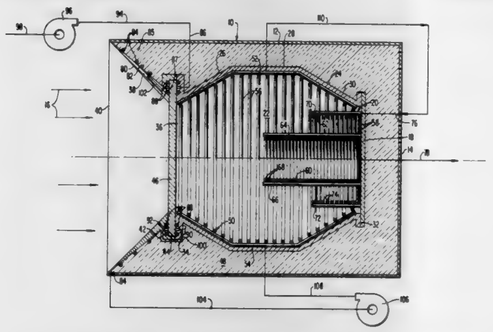
1. An appliance adapted to be supported in an opening in a supporting structure, said appliance having a peripheral rim adapted to overlie the peripheral edge of the said opening, at least some of the weight of the appliance being carried on said peripheral edge of the opening through the said peripheral rim, the said peripheral rim including a down-turned flange; the invention comprising a self-locking trim frame of flexible sheet material encircling the peripheral rim of the appliance, said trim frame having a bottom flange with locking means for engaging the down-turned flange of the said peripheral rim, said trim frame also having a top flange for overlying the top portion of the said peripheral rim, said trim frame being stretchable to slip over the said peripheral rim so when it is released in place it is held firmly therewith.

3,927,659

PEAK EFFICIENCY SOLAR ENERGY POWERED BOILER AND SUPERHEATER

Floyd A. Blake, Littleton, and Murlin T. Howerton, Denver, both of Colo., assignors to Martin Marietta Corporation, New York, N.Y.

Filed Sept. 21, 1973, Ser. No. 399,670
Int. Cl. F24j *3/02*
U.S. Cl. 126—271 **7 Claims**



1. In a solar energy powered steam boiler and superheater for converting concentrated solar radiation to thermal energy form, said boiler and superheater including: a tubular enclosure having one end closed defining an energy conversion chamber and being axially aligned with a solar energy radiation field, a first, superheater heat exchanger extending across the closed end of said enclosure chamber, said other end of said chamber being open to said radiation field and forming a solar radiation receiving aperture, a second, tubular, boiler heat exchanger within said enclosure and positioned between said aperture and said superheater heat exchanger, thermal insulation between said heat exchangers and the walls of said enclosure, means fluid coupling said heat exchangers to permit fluid flow from said second heat exchanger to said first heat exchanger and means for supplying water to said second heat exchanger and removing superheated steam from said first heat exchanger, the improvement comprising:

a light window in the form of a circular plate sealably overlying said aperture of said enclosure chamber and being opaque to infra-red radiant energy and which absorbs some of said infra-red radiation and being positionable in the focal plane of the concentrated solar radiation,

a frustoconical reflecting surface surrounding said window, extending axially toward the solar radiation field and being flared radially outward of said window to reflect fringe solar energy into said chamber through said light window,

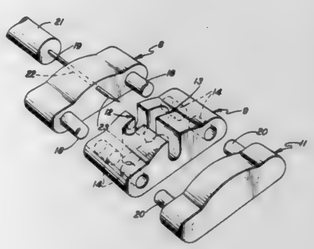
annular duct means position at the circular plate periphery for cooling said plate window to prevent self destruction thereof, said duct means comprising a third heat exchanger fluid coupled to said second heat exchanger and upstream thereof to preheat the boiler feed water and a fourth heat exchanger fluid coupled to said second heat exchanger and upstream thereof and mounted to said frusto conical reflecting surface to prevent its self destruction and to further preheat the boiler feed water.

3,927,660

LYMPH DUCT CANNULATOR AND METHOD

Charles John Tegtmeyer, Charlottesville, Va., assignor to North American Instrument Corporation, Hudson Falls, N.Y.

Filed Jan. 11, 1974, Ser. No. 432,733
Int. Cl.² A61B *6/00*
U.S. Cl. 128—2 A **15 Claims**



1. A small isolated vessel cannulator comprising

A. a rectangular vessel holder having proximal and distal end(s) surfaces, an open groove extending between said holder end(s) surfaces, and appropriately sized to receive and permit distension of said isolated vessel,

B. a rectangular needle inserter having proximal and distal end(s) surfaces, and a channel extending between said inserter end(s) surfaces and appropriately sized to permit a needle to pass therethrough without play.

and first means (to) slidably (secure) securing in a fixed position said inserter to said holder with said channel and said groove being in continuous longitudinal alignment and with one of said proximal end surfaces having facing contact with one of said distal end surfaces.

3,927,661
ULTRASONIC WAVE DIAGNOSIS APPARATUS WITH GALVANOMETER-DRIVEN PROBE

Yasuhiko Takemura, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Oct. 11, 1974, Ser. No. 514,181
Claims priority, application Japan, Oct. 15, 1973, 48-115616; Oct. 15, 1973, 48-119731[U]; Oct. 15, 1973, 48-119735[U]; Oct. 15, 1973, 48-119736[U]
Int. Cl.² A61B 5/00
U.S. Cl. 128—2 V 10 Claims

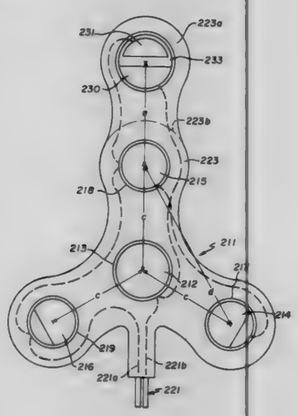


1. In a ultrasonic wave diagnosis apparatus of the class wherein a probe for transmitting and receiving ultrasonic wave to and from a portion of a patient to be diagnosed, is scanned in a sector shape, the improvement which comprises galvanometer means operatively connected to said probe, a triangular wave generator, and means for applying the output of said triangular wave generator to said galvanometer means to cause it to swing at a uniform angular speed.

3,927,662
ULTRASONIC TRANSDUCER ASSEMBLY

Janis Gunars Ziedonis, Cranbury, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 206,012, Dec. 8, 1971, Pat. No. 3,847,016. This application Nov. 8, 1974, Ser. No. 522,171
Int. Cl.² A61B 5/00
U.S. Cl. 128—2 V 47 Claims

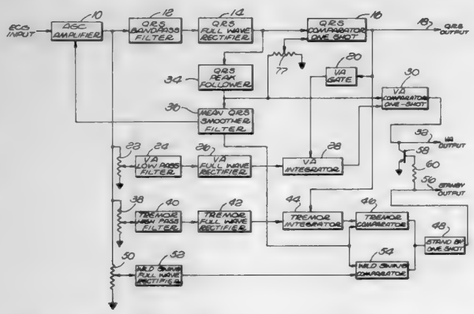


1. An ultrasonic multiple-element transducer assembly for use particularly in patient monitoring, comprising a substantially flattened base of homogeneous, flexible material composition, which includes a cloverleaf-like configured portion having a center area with at least three arms extending outwardly therefrom, the arrangement of said arms being such as to be independently flexible relative to each other and to the center area, with each arm having proximate said center area narrower width and thickness dimensions than the other arm area and said center area, for enabling the assembly to conform to varying body curvatures, each of said arms being provided proximate the end thereof remote from said center portion with at least one active element in the form of a transmitting means, said transmitting means being arranged and including lens means for providing overlapping direct beam illumination of a predetermined volume of the interior of the patient's body intended to be monitored, and said center area being provided with at least one active element in the form of an ultrasonic receiving means, said ultrasonic receiving means including lens means arranged to provide illumination of a substantially greater percentage of the portion of the patient intended to be monitored than that provided by the said transmitting means associated with any of said arms of said cloverleaf portion, for enabling detection by said receiver means of ultrasonic energy from whichever of said transmitting means is illuminating the portion of the patient's body intended to be monitored at any time, wherein the middle arm of said cloverleaf configured portion is extended to provide for at least one additional active element for predetermined greater longitudinal and/or transverse coverage.

3,927,663
METHOD AND APPARATUS FOR DETECTING CARDIAC ARRHYTHMIAS

Robert H. Russell, Pasadena, and Allan L. Wolff, San Marino, both of Calif., assignors to Phsiological Electronics Corporation, San Marino, Calif.

Filed May 2, 1974, Ser. No. 466,317
Int. Cl.² A61B 5/04
U.S. Cl. 128—2.06 A 21 Claims



10. In a method for continuous analysis of an electrocardiographic signal to detect ventricular abnormalities, which method includes filtering said electrocardiographic signal to detect QRS signal components in the frequency range of about 10 to 20 Hertz, comparing said detected QRS signal components with a first threshold reference level for generating a gating signal indicative of the initiation of a QRS complex whenever the amplitude of the detected components exceeds that of the first threshold reference level, said gating signal having an interval corresponding to a selected succeeding portion of a QRS complex, further filtering said electrocardiographic signal to detect low frequency signal components below about 10 Hertz, integrating said low frequency signal components during said gating signal interval, and comparing said integrated components with a second threshold reference level for generating an output signal indicative of ventricular abnormalities when said integrated signal level exceeds said threshold reference level, the improvement comprising:

further filtering said electrocardiographic signal to detect higher frequency artifact noise and electrical power interference signal components in a range above about 25 Hertz;

successively and separately integrating said higher frequency signal components during each interval between successive detections of QRS complexes to produce an integrated output indicative of the total high frequency noise signal energy present throughout each such interval;

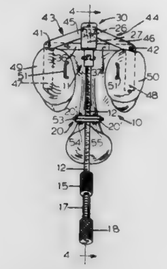
comparing the level of each said integrated output with a variable threshold reference level to generate a standby output signal whenever said integral exceeds said variable threshold reference level; and,

interrupting said output signal indicative of ventricular abnormalities in response to said standby output signal for a predetermined time interval extending over at least several successive QRS complexes.

3,927,664
APPARATUS FOR USE IN THE CORRECTION OF MAXILLARY AND PREMAXILLARY CONDITIONS IN INFANTS

Nicholas G. Georgiade, Durham, and Ralph A. Latham, Chapel Hill, both of N.C., assignors to University of North Carolina, Chapel Hill, N.C., by said Ralph A. Latham

Filed Nov. 20, 1974, Ser. No. 525,508
Int. Cl.² A61F 5/00
U.S. Cl. 128—76 R 7 Claims



1. A mouth cavity maxillary bone correction apparatus, comprising:

a. a pair of elongated laterally spaced arm members having outer end portions residing in a common plane and adapted for intra-oral placement and securement to corresponding laterally displaced maxillary bone and opposite inner end portions adapted to extend intra-orally from such securement;

b. a pair of plate means molded to conform and to be secured to said bone, said plate means being secured to respective said arm member outer end portions thereby adapting such outer end portions to be secured to said bone;

c. housing means adapted to be intra-orally placed and formed by connected walls and positioned between and rearwardly of said plate means, said housing providing integral outwardly extending portions for making pivotal connections with medial portions of said arm members enabling said arm members to be pivoted thereon, said housing walls being formed to receive the respective said arm member inner end portions within said housing and to allow corresponding reciprocal movements therein;

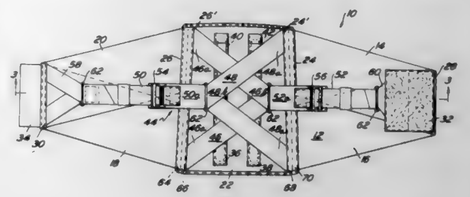
d. screw block positioning means adapted to be intra-orally placed and slidably mounted and confined within said housing such that said positioning means is isolated from any surrounding mucosal tissue during use thereof, said positioning means being between and having surfaces loosely engaged with said inner end portions of each of said arm members to control the positioning thereof, said positioning means having a shaft drive enabling said inner end portions to be moved in an extra-oral direction to effect corresponding outward pivotal movements of said arm member outer end portions; and

e. drive means including a drive shaft having one inner end adapted to be intra-orally placed and connected to drive said positioning means by the turning of said drive shaft and having the other outer end thereof adapted to be extra-orally placed and adapted for finger engagement to effect rotation thereof whereby as said drive shaft is rotated in an appropriate direction and with respective said arm member outer end portions secured to said bone through said plate means, the lateral spacing of said bone may be increased to effect appropriate correction thereof.

3,927,665
LUMBO-SACRAL SUPPORT

Jerome R. Wax, c/o Posturchek Orthopedic Products, Sharon Hill Industrial Park Calcon Hook Road, Sharon Hill, Pa. 19079

Filed June 21, 1974, Ser. No. 481,638
Int. Cl.² A61F 5/02
U.S. Cl. 128—78 15 Claims

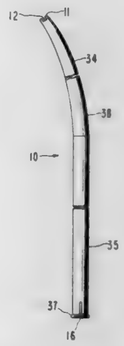


1. An orthopedic support comprising a substantially elastic band member adapted to encircle the body and to overlie the lumbo-sacral region of the back of a wearer, a pair of spaced substantially upright bars coupled to and extending transversely with respect to the circumferential axis of said band member and disposed on opposite sides of the spine of a wearer when the support is operatively disposed, and substantially inelastic tensioning means coupled to said band member and adapted to tension said band member so as to apply circumferential compression to the pelvis of a wearer, said tensioning means having end portions thereof anchored to respective zones of attachment on said band member disposed on opposite sides of the spine of a wearer and further portions thereof extending across the spine of a wearer when said support is operatively disposed, said end portions extending across and overlying said bars so as to apply distributed forces thereto to press said bars into supporting engagement with the lower back of the wearer.

3,927,666
INSERTER FOR INTRAUTERINE DEVICE

Seymour Hoff, San Jose, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 308,596, Nov. 21, 1972, Pat. No. 3,880,156. This application Jan. 20, 1975, Ser. No. 542,283
Int. Cl.² A61F 5/46
U.S. Cl. 128—130 11 Claims



1. An inserter for an intrauterine device comprising a transverse member and a leg member depending therefrom, the inserter comprising:

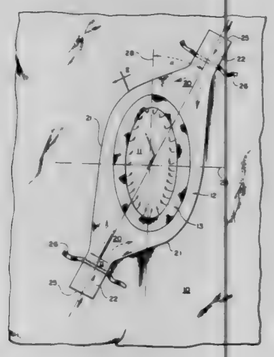
a. an elongated tapered tubular member having a leading section and a trailing section distant from the leading section;

b. a pair of notches in the terminus of the tubular member at its leading section, said notches adapted to orient and engage the transverse member of the device;
c. a hollowed area extended within the tubular member of dimension such that the leg portion of the device can be introduced and positioned therein; and
d. wherein the taper extends along the leading section of the member to exteriorly form a surface adapted to mate with the transverse member of the device when in collapsed configuration during the insertion of the device within the cervical canal and when the device is housed within the inserter.

3,927,667
DIFFUSER DRAPE

Ernest E. Criddle, and Pierrette L. Neals, both of Ottawa, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed May 21, 1974, Ser. No. 471,886
Claims priority, application Canada, May 16, 1974, 200154
Int. Cl.² A61F *13/00*
U.S. Cl. 128—132 D **3 Claims**



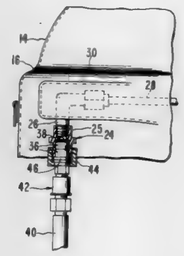
1. A diffuser drape comprising:
a. a drape member having a substantially elliptical aperature therein;
b. inflatable clean air duct means of substantially elliptical shape integral with said drape and surrounding said aperture;
c. diffuser means in said clean air duct means surrounding said aperture and shaped to diffuse, in operation, low velocity clean air radially through the diffuser means outwardly of the periphery thereof and inwardly across said aperture from opposite sides thereof to produce a resultant flow away therefrom; and
d. at least two opposed clean air inlets for said clean air duct means on the underside of said drape member, which clean air inlets are sleeve means flared to merge substantially tangentially into said duct means and inclined at an angle of between 22° and 35° to the longitudinal axis of said aperture.

3,927,668
DUAL PURPOSE AIR INLET METHOD FOR HEAD ENCLOSURE

Herbert A. Raschke, Greenbrae, Calif., assignor to E. D. Bullard Company, Sausalito, Calif.

Continuation of Ser. No. 237,310, March 23, 1972, abandoned. This application Oct. 10, 1974, Ser. No. 513,909
Int. Cl.² A62B *18/04*
U.S. Cl. 128—142.7 **1 Claim**

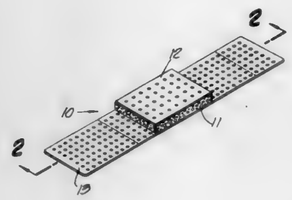
1. A method for selectively supplying either cooled or pressurized breathing air to a person exposed to a contaminated atmosphere comprising the steps of:
a. providing a head enclosure means defining a substantially closed air space area for surrounding the person's head and including an air inlet for directing breathing air into the interior of said enclosure means;
b. providing a source of relatively high pressure air;
c. providing a source of low pressure cooled air;
d. selectively connecting either said source of high pressure air or said source of low pressure cooled air to said head enclosure means inlet via a dual purpose air inlet connection having a chamber for receiving a sound absorbing member;
e. inserting a sound absorbing member into said chamber from a location outside of said chamber when said head enclosure means is connected to said source of relatively high pressure air and
f. removing said sound absorbing member from said chamber when said head enclosure means is connected to said source of low pressure cooled air.



3,927,669
BANDAGE CONSTRUCTION

Linda R. Glatt, Los Angeles, Calif.

Filed Nov. 16, 1973, Ser. No. 416,444
Int. Cl.² A61L *15/00*
U.S. Cl. 128—156 **8 Claims**

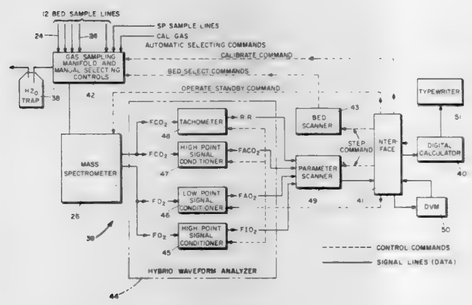


1. A bandage construction comprising:
a pliable strip;
a quantity of adhesive substantially covering one surface of said strip; and
a hydrophilic pad of a porous air permeable cellular material, the body portion surrounding the cells constituting a means for tenaciously holding body fluids, said pad adhering to said strip for being located in use over the wound and immediately adjacent areas.

3,927,670
AUTOMATIC RESPIRATORY GAS MONITORING SYSTEM

Stephen Z. Turney, 320 Morris Ave., Lutherville, Md. 21093; Walter Blumenfeld, 3934 Memphis Lane, Bowie, Md. 20715; R. Adams Cowley, 1010 St. Paul St., Baltimore, Md. 21202; Samuel Wolf; Charles McCluggage, both c/o University of Maryland Hospital, Baltimore, Md. 21201, and John W. Ashworth, III, 817 Fairway Drive, Towson, Md. 21204

Filed Jan. 5, 1973, Ser. No. 321,140
Int. Cl.² A61B *5/08*
U.S. Cl. 128—2.07 **29 Claims**



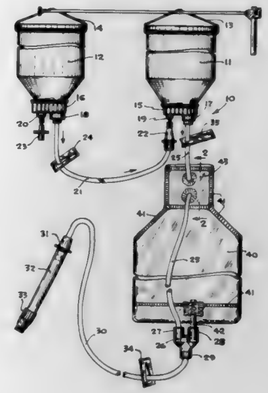
1. A system for monitoring respiratory gases, which comprises:
means for withdrawing respiratory gases from the airway of at least one patient,
means for rapidly analyzing the withdrawn gases and for developing analog waveforms in response to the analyzation of the withdrawn gases where the waveforms are representative of fractional concentrations of the withdrawn gases,
means responsive to the developed analog waveforms for developing voltage levels proportional to the maxima and minima of the developed analog waveforms where the maxima and minima of the waveforms are representative of monitored values of inspired and expired respiratory gases, and
means responsive to the developed voltage levels for displaying in visual form an indication of the maxima and minima values.

3,927,671
IRRIGATION SOLUTION ADMINISTRATION SYSTEM AND RESERVOIR THEREFOR

Richard Marion Chittenden, Grayslake, and Earl David Wilson, Ingleside, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 140,407, May 5, 1971, Pat. No. 3,756,237. This application Mar. 16, 1973, Ser. No. 341,807
Int. Cl.² A61M *3/00*
U.S. Cl. 128—227 **5 Claims**

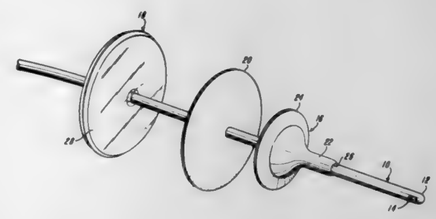
1. Apparatus for the administration of fluid in a surgical procedure comprising:
a container of fluid having an outlet port,
a reservoir for storage of fluid having a common inlet and outlet port allowing fluid to flow into and out of said reservoir,
said outlet port of said container and said common port of said reservoir connected in parallel to a manifold in communication with an instrument to be used in said procedure, whereby fluid from said container can flow through said manifold to fill said reservoir and a constant flow of fluid to said instrument can be provided.



3,927,672
DEVICE FOR SEALING BODY CAVITY DURING INTRODUCTION OF FLUID TO OR EXTRACTION OF FLUID FROM SAID CAVITY

Fe Garcia, Detroit, Mich., assignor to Saul A. Rosenblum, Detroit, Mich., a part interest

Filed Sept. 12, 1973, Ser. No. 396,485
Int. Cl.² A61M *3/00*
U.S. Cl. 128—245 **9 Claims**

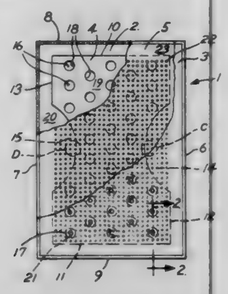


1. Apparatus for use in delivering fluid to and/or from a body cavity while maintaining a seal thereof comprising a catheter type tube, one end of which is adapted for insertion through an opening to said cavity, a first sealing member mounting on said tube, and a second sealing member mounting on said tube in following relation to the first said member, said sealing members being adjustable in a sense longitudinally of the tube following insertion of said tube end, to seal the opening to said body cavity about said tube, the first sealing member being contoured to enter said opening to bridge and form a seal between the outer surface of said tube and the edge of the body opening, the second said sealing member having a transverse dimension greater than that of the first and serving as a back-up for the first and including in connection therewith, a moisture absorbing medium.

3,927,673
QUILTED DIAPER

Glenn N. Taylor, Cary, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 12, 1974, Ser. No. 496,492
Int. Cl.² A61F 13/16
U.S. Cl. 128—287 23 Claims

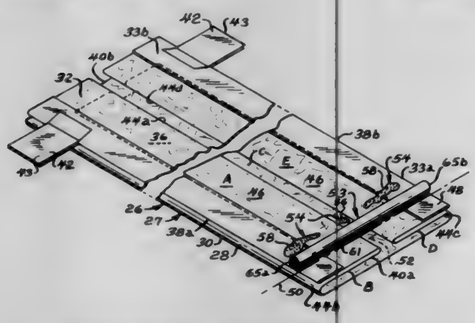


1. An absorbent article for use as a diaper or the like comprising in operative combination:
a. a first backing sheet of generally fluid resistant material, having marginal edges,
b. a second sheet of generally fluid resistant material,
c. said second sheet having a plurality of apertures therein,
d. an absorbent pad structure disposed between said first and said second sheets,
e. said absorbent pad having a plurality of apertures therein, said apertures being larger than the apertures in said second sheet,
f. said first and said second sheets being secured to each other in registry with said pad apertures in at least a part of the area defined by said pad apertures, and
g. the marginal edges of said first and second sheets being secured to each other to make a unitary absorbent article.

3,927,674
ABSORBENT ARTICLE WITH DISPOSAL MEANS

Charles H. Schaar, Lake Zurich, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 12, 1974, Ser. No. 531,960
Int. Cl.² A61F 13/16
U.S. Cl. 128—287 25 Claims

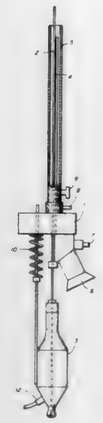


1. A disposable diaper, comprising:
an absorbent pad assembly having a pair of waistline portions, a front surface, and a back surface, and
a disposal bag having a cavity and opening means communicating with said cavity, said bag being formed into a configuration of reduced dimensions and being located and retained in one of said waistline portions of the pad assembly, whereby said bag may be extended to enlarged dimensions after use of the diaper for placement of the soiled diaper in the bag and retention therein.

3,927,675
DEVICE FOR FRAGMENTING URINARY CALCULUS

Reimar Pohlman, 33, Im Johannistal, and Manfred Cichos, 12, Weingartshof, both of 51 Aachen, Germany

Filed Nov. 8, 1973, Ser. No. 413,864
Claims priority, application Germany, Nov. 16, 1972, 2256127
Int. Cl.² A61B 17/00
U.S. Cl. 128—328 21 Claims

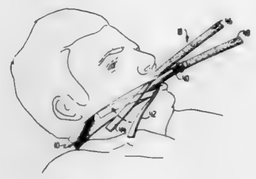


1. A device for fragmenting urinary calculus in combination with a cystoscope and comprising a liquid-tight flexible tubular probe means, said cystoscope having guide means for accommodating the probe means, said probe means slidably mounted in the cystoscope, a flexible, elongate sound conductor extending through the probe means from one end to the other end of the probe means, a rebound element disposed at the other end of the probe means having at least one cutting edge and loosely mounted in relationship to the conductor, said probe means including means at the other end of the probe means for slidably receiving said rebound element, and means for oscillating said sound conductor ultrasonically whereby said rebound element in response to the conductor is cyclically slidable and independently movable of the conductor to contact and fragment the urinary calculus.

3,927,676
ENDOTRACHEAL TUBE SECURING DEVICE AND METHOD

Kenneth E. Schultz, 7601 SW. 117th St., Miami, Fla. 33156

Filed Aug. 1, 1974, Ser. No. 493,920
Int. Cl.² A61M 25/02
U.S. Cl. 128—351 9 Claims

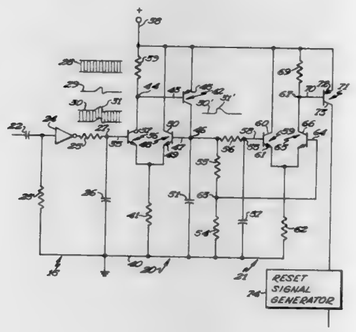


1. A disposable device for securing an in-service endotracheal tube to an intubated patient comprising an elongated strip of flexible tape of a predetermined width, the width of said strip being substantially greater than the thickness thereof, said strip having a non-adhesive central portion of sufficient length to be nonadheringly positioned about the patient's neck, end portions extending oppositely from the central portion, at least one of said end portions including means for facilitating bifurcation of said at least one end portion, said means being located substantially intermediate the width of said strip, each of said end portions having an adhesive coating on one side thereof for adhesively securing said end portions to said tube whereby when the central portion is positioned about the intubated patient's neck, the end portions can be drawn around and secured to the endotracheal tube to thereby prevent dislodgment of said tube.

3,927,677
DEMAND CARDIAC PACER

David H. Gobeli, St. Paul, and John M. Adams, Minneapolis, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed July 12, 1974, Ser. No. 488,045
Int. Cl.² A61N 1/36
U.S. Cl. 128—419 PG 15 Claims



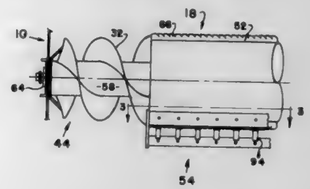
1. In a demand cardiac pacer of the type having input and output means adapted to be connected to the heart, the input means including means for sensing natural heart activity, having a resettable pulse generator and having means for generating a pulse generator reset signal in response to the sensing of natural heart activity, the improvement which comprises:
first means connected to said heart activity sensing means for establishing a reference level representative of sensed extraneous repetitive noise and a second level, said second level being greater in absolute value than said reference level by an amount representative of sensed heart activity; and
second means connected to said first means and differentially responsive to said reference level and said second level for generating a signal indicative of the sensing of heart activity when the difference between said reference level and said second level exceeds a predetermined value.

3,927,678
CONCAVE FOR AN AXIAL FLOW THRESHING AND SEPARATING MACHINE

Edward W. Rowland-Hill, Lancaster, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed May 2, 1974, Ser. No. 466,100
Int. Cl.² A01F 7/06
U.S. Cl. 130—27 T 8 Claims

1. An axial flow threshing and separating machine comprising:
A. a frame adapted to travel across a field,
B. at least one cylindrical casing mounted on the frame having top and sidewall portions,
C. means mounted on the forward portion of said frame to deliver material from the field to the casing,
D. rotor means extending longitudinally within said casing,
E. means mounted on the rotor and extending radially from said rotor to agitate and direct the material circumferentially and longitudinally through said casing,
F. concave means adjustably mounted to the sidewall portions, the concave means including a plurality of elongated beams having end and body portion the body portion containing a plurality of apertures therein,

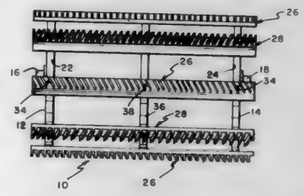


transverse members rigidly mounted to the ends of said beams to maintain said beams in spaced parallel relation to each other such that the appertures of said beams are in alignment with each other, spacing means positioned through said apertures and extending across the width of concave to form a grid through which threshed and separated material can pass, and
G. means rotatably mounted to the spacing means to facilitate the movement of said material over and through said concave.

3,927,679
THRESHING CYLINDER AND RASP BAR THEREOF

William S. Ausherman, 615 K St., Belleville, Kans. 66935

Continuation of Ser. No. 140,380, May 5, 1971, abandoned.
This application July 24, 1974, Ser. No. 491,326
Int. Cl.² A01F 12/22
U.S. Cl. 130—27 HA 2 Claims



1. A threshing cylinder having a direction of rotation comprising a plurality of mounting plates spaced along and extending radially from the axis of the cylinder, an even numbered plurality of elongated rasp bars circumferentially equally spaced about and equidistant from said axis, with said rasp bars being parallel to said axis, each of said mounting plates having radial extremities engaging the rasp bars, and means detachably securing the rasp bars to the radial extremities of the plates, each of said rasp bars consisting of a toothed and elongated web having a lateral extent that is entirely and solely defined by contiguous first and second portions thereof having an integral junction, said first portion trailing the second portion with respect to the direction of rotation of the cylinder and having a radially outward surface that is throughout its entire lateral extent substantially normal to a radial line from the web to the axis of the cylinder, said second portion of the web having a radially outward surface of approximately planar configuration constituting a merging forward continuation of

the surface of the first portion and which is inclined throughout its entire lateral extent substantially both radially inwardly and forwardly therefrom with respect to the direction of rotation of the cylinder, and a longitudinally extending row of teeth integral with the first portion of the web, said teeth projecting radially outward from the radially outward surface of the first portion of the web, with each of said teeth extending substantially the entire transverse extent of said first portion of the web and being inclined at an acute angle with respect to the longitudinal extent of the web and having a forward end portion with respect to the direction of rotation of the cylinder, said forward end portion of the tooth projecting radially outward from the web and being disposed adjacent the juncture of the first and second portions of the web, said forward end portion of the tooth being beveled to present a radially outward extending sharp edge that faces forwardly with respect to the direction of rotation of the cylinder, said teeth of each row being parallel to each other, with the rows of teeth circumferentially adjacent rasp bars being oppositely inclined, said first and second portions of the web being substantially flat and of substantially equal thickness with the radially outward surfaces thereof jointly defining a dihedral angle in the range of about 210° to 240°, and said forward end portions of the teeth projecting radially outward from the radially outward surface of the first portion of the web a distance that is in the range of about 15% to 55% of the transverse extent of radially outward surface of the second portion of the web, said rasp bar being defined entirely and solely by said toothed first portion and by said second portion of said web.

3,927,680

MACHINE FOR PICKING HOPS

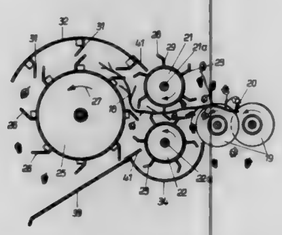
Johann Stefan, Geisenfeld, and Hermann Daum, Feucht near Nurnberg, both of Germany, assignors to Fella-Werke G.m.b.H., Nurnberg, Germany

Filed Feb. 26, 1974, Ser. No. 443,513

Claims priority, application Germany, Feb. 16, 1973, 2307614

Int. Cl.² A01D *46/02*

U.S. Cl. 130—30 D **12 Claims**



1. Apparatus for performing a secondary picking operation in a hop picking machine, such apparatus comprising separating means, said separating means being adapted to free umbels from other hop vine material, a pair of spaced draw-in rollers, said rollers being positioned downstream of the separating means, means providing hollows between said pair of rollers, for receiving the said other hop vine material, means for rotating the pair of draw-in rollers in opposite directions, a picking drum, said picking drum being provided with spaced apart picking fingers on its periphery and being arranged downstream of the draw-in rollers, a curved cover, said cover having a surface, fixed picking fingers, said fixed picking fingers being positioned on said surface of said cover, and being spaced from the said picking drum so that the fixed picking fingers and the picking fingers on the drum can cooperate to perform a picking operation and means for rotating the picking drum at a higher speed than the speed of rotation of the draw-in rollers.

3,927,681

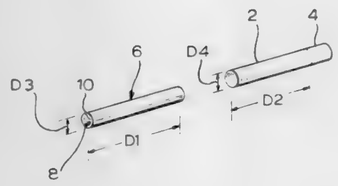
APPARATUS FOR MAKING CIGARETTES

Percy W. Bramhill, Dollard des-Ormeaux, Canada, assignor to H. H. Investments Limited, Montreal, Canada

Division of Ser. No. 334,983, Feb. 23, 1973, Pat. No. 3,822,710. This application July 3, 1974, Ser. No. 485,670

Int. Cl.² A24C *5/02, 5/22, 5/54*

U.S. Cl. 131—70 **2 Claims**



1. A method of making cigarettes, comprising:

1. inserting into an empty cigarette tube, of the kind having one end blocked by a filter tip, a tobacco cartridge consisting of compressed tobacco contained in a thin sheath of non-consumable low friction material, the length of said tobacco cartridge being slightly greater than the length of said cigarette tube, so that a portion of said tobacco cartridge projects beyond the other end of said cigarette tube;
2. compressing the tobacco in said tobacco cartridge back at least as far as said other end of said cigarette tube, so that a portion of said sheath alone extends past said other end of said cigarette tube;
3. gripping such projecting portion of said sheath;
4. and creating relative separating movement between said projecting portion of said sheath and said tobacco, whereby to strip said sheath from said tobacco, leaving said tobacco in said cigarette tube.

3,927,682

AIR-CURING PROCESS OF TOBACCO LEAF

Susumu Matsuyama; Seishiro Hirabayashi; Bunkichi Iida, and Hajime Miki, all of Yokohama, Japan, assignors to The Japan Tobacco and Salt Public Corporation, Japan

Filed Oct. 2, 1974, Ser. No. 511,162

Claims priority, application Japan, Oct. 27, 1973, 48-120392

Int. Cl.² A24B *03/12*

U.S. Cl. 131—140 R **4 Claims**

1. Air-curing process of tobacco leaf which comprises:

A. subjecting tobacco leaf selected from the group consisting of leaves of burley tobacco, domestic (Japanese) tobacco and cigar tobacco to the routine manner of the air-cure so as to prepare the leaf in which the yellowing is completed and the moisture content thereof is reduced to 40–70 percent,

B. bruising the yellowed leaf in step (A) mechanically to such an extent that the whole of the leaf tissue contains moisture uniformly and appears as if water has soaked therein,

C. heating the bruised leaf in step (B) at a temperature of 90°–130 °C so as to stop the enzymatic reaction in the leaf, and

D. drying the leaf treated in step (C) at 50°–60 °C while aeration is carried out.

3,927,683

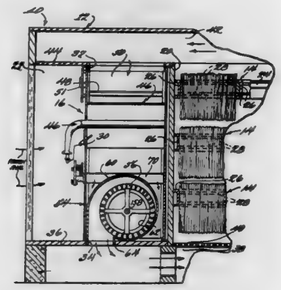
BULK CURING BURLEY TOBACCO WITH A SEVEN DAY CURING CYCLE

Robert W. Wilson, Charlotte, N.C., and Eugene T. Akins, Bennettsville, S.C., assignors to Powell Manufacturing Company, Inc., Bennettsville, S.C.

Filed Oct. 15, 1974, Ser. No. 515,092

Int. Cl.² A24B *1/02, 3/12, 9/00, 15/00*

U.S. Cl. 131—140 R **9 Claims**



1. A method of curing green primed burley tobacco leaves in a condition of whole leaves and/or parts thereof which comprises the steps of supporting a compacted bulk mass of primed burley leaves within a confined zone with the flat surfaces of the burley leaves disposed generally vertically at positions such that a flow of forced air within said confined zone will pass between the flat surfaces of the burley leaves of said compacted bulk mass, establishing a substantially continuous flow of forced air vertically between the flat surfaces of the burley leaves of said compacted bulk mass while said bulk mass is supported within said confined zone for a first time period at a temperature less than a predetermined level while controlling the relative humidity of the air sufficient to maintain a relatively high moisture content level in the burley leaves so that substantially all of the chlorophyll in the burley leaves is oxidized unmasking sequentially the yellow and brown pigments present in the burley leaves, substantially continuously maintaining a forced flow of air while maintaining said support of the bulk mass within said confined zone for a generally immediately following second time period at a temperature which is gradually increased and held at an intermediate elevated level while controlling the relative humidity of the air sufficient to initially arrest any chemical action taking place at the end of the first time period including the aforesaid chlorophyll oxidation and to dehydrate the burley leaves to an intermediate lower moisture content level at the end of the second time period, substantially continuously maintaining a forced flow of air while maintaining said support of the bulk mass within said confined zone for a generally immediately following third time period at a temperature which is gradually increased and held at an upper elevated level while controlling the relative humidity of the air sufficient to bring the burley leaves to a crisp and fragile condition at the end of the third time period, and maintaining air at a reduced temperature level in contact with the burley leaves while maintaining said support of the bulk mass for a generally immediately following fourth time period while controlling the relative humidity of the air sufficient to provide the burley leaves with a final moisture content permitting them to be handled without substantial breakage, the improvement in said procedural steps wherein said first time period does not exceed approximately 80 hours and the total of said first, second, third and fourth time periods does not exceed approximately 168 hours, and wherein the temperature of the air contacting the burley leaves during said first period is gradually increased at a rate not less than approximately ½° per hour and not greater than approximately 5° per hour until a temperature of approximately 105°F is reached which temperature is held until the desired brown color is reached.

3,927,684

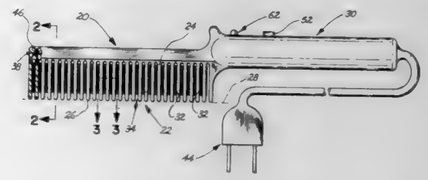
HAIR-GROOMING IMPLEMENT

Peter W. H. Lam, Los Angeles, Calif., assignor to R. W. Hodgson, Hollywood, Calif.

Filed Sept. 9, 1974, Ser. No. 504,566

Int. Cl.² A45D *24/00*

U.S. Cl. 132—11 R **11 Claims**



1. A hair-grooming implement, comprising: a comb-mounting base member provided with a plurality of substantially transversely directed teeth spaced therealong and similarly projecting outwardly from one side thereof and terminating at outer free comb teeth ends lying in a substantially brushing inner contact plane, at least certain adjacent spaced ones of said teeth being provided with heat-conductive, heat-transmissive, hair-contacting surface means positioned along inner surfaces of said teeth facing intervening hair-strand-receiving comb teeth spaces defined between said teeth and adapted to physically mechanically contact and be drawn along intervening hair strands during a hair-grooming operation while simultaneously applying heat to said groomed hair strands along the length thereof for softening and increasing the compliancy of said hair strands temporarily during a hair-grooming operation; heating means for the transmission of heat from a heat source to said heat-conductive and heat-transmissive hair-contacting surface means carried by said comb teeth when placed in operative condition, said heating means being effectively mounted within said comb-mounting base member and being provided with thermally conductive heat flow means connected therefrom and extending to the outer heat-conductive, and heat-transmissive hair-contacting, surface means positioned along inside surface portions of adjacent teeth; and thermal insulator means effectively completely surrounding said heating means carried within said comb base mounting member and also effectively surrounding and fully enclosing the heat flow means except for the inner adjacent hair-contacting surfaces thereof defined and comprised by said thermally conductive and thermally transmissive hair-contacting surface means positioned along facing adjacent inner surfaces of said comb teeth, thus providing a structure completely isolating the thermally conductive and transmissive hair-strand-contacting surface means from any possible external contact with a person using the hair-grooming implement, or with any other exterior physical surface, except to hair strand means passed between adjacent teeth during a hair-combing and hair-grooming operation.

3,927,685

HAIR CURLER

Jules Bontempi, 46-26 215th Place, Bayside, N.Y. 11361

Continuation-in-part of Ser. No. 504,195, Sept. 9, 1974. This application Mar. 27, 1974, Ser. No. 455,046The portion of the term of this patent subsequent to Sept. 16, 1992, has been disclaimed.

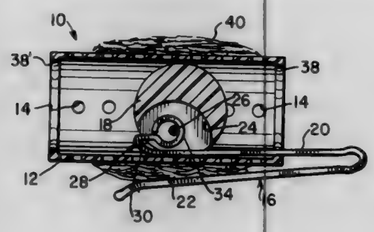
Int. Cl.² A45D *2/00*

U.S. Cl. 132—40 **8 Claims**

1. A device for use in curling a strand of hair comprising:

a hollow cylindrical member over which the strand of hair is wound, said cylindrical member having at least one open end and having a uniform internal diameter

throughout the length of said cylindrical member, a clip assembly including a spring clip defined by a pair of resilient opposed legs integrally connected at their trailing ends and separated at their leading ends, means freely rotatably connecting said clip assembly to said cylindrical member open end so that said spring clip legs are freely rotatable in a plane generally transverse to the cylindrical axis of said cylindrical member and located adjacent said



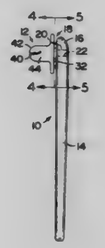
cylindrical member open end, said freely rotatably connecting means including a spherical member of slightly smaller diameter than said cylindrical member uniform internal diameter, said spherical member being axially slidably mounted within said cylindrical member and also being freely rotatably mounted within said cylindrical member at said cylindrical member open end, and means pivotally connecting the leading end of one of said spring clip legs to said spherical member.

3,927,686

DENTAL FLOSS HOLDER

James B. Zambito, 1504 S. Arrawana, Tampa, Fla. 33609

Continuation-in-part of Ser. No. 316,392, Dec. 18, 1972, abandoned. This application Nov. 12, 1973, Ser. No. 414,854
Int. Cl.² A61C *15/00*
U.S. Cl. 132—91 **7 Claims**



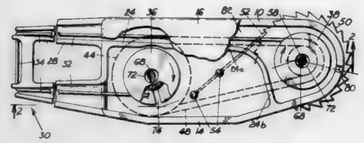
1. A dental floss holder comprising: a handle, a floss holding head attached to said handle, connecting means attached to said handle, both said head and said connecting means being dimensioned and configured to be detachably connected to one another, said head comprising a plurality of legs disposed in spaced relation to one another, whereby floss means is positionable between said legs; base means comprising indentation means formed thereon and dimensioned and configured to frictionally and removably engage said head, attachment means interconnected between said base and said handle and disposed to movably connect said head to said handle, said attachment means comprising detachment means including a plunger means movably mounted on said handle and positionable into engagement with said head, whereby said head may be dislodged from said indentation means within said base means.

3,927,687

COMBINATION SHAFT AND SPOOL STRUCTURE

I. Bruce Thierman, 8817 N. Swenson St., Portland, Oreg. 97203

Filed Apr. 18, 1974, Ser. No. 461,853
Int. Cl.² A61C *15/00*; B65H *75/28*
U.S. Cl. 132—92 A **8 Claims**



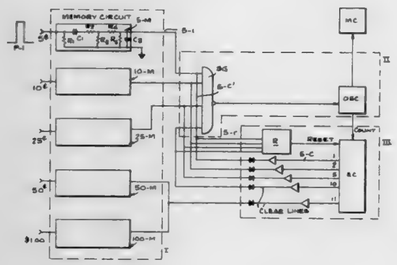
1. A combination shaft and spool structure comprising:
a. a shaft having a free end,
b. means defining a diametral slot in said free end of the shaft,
c. a spool having an outer surface drum portion for winding line thereon,
d. an axial bore in said spool arranged to receive said shaft from one end of said spool,
e. spline-like means on said shaft and spool establishing a locked drive connection therebetween,
f. and means defining a diametral slot in said spool leading from the said one end part way through the spool toward the other end in intersecting relation with said bore and terminating in an end wall in the plane of the outer surface drum portion whereby a line can be attached to the drum and wound on said drum portion by disposing it in the diametral slot in the shaft prior to installing the spool on the shaft and then rotating the shaft after installing the spool thereon.

3,927,688

ELECTRONIC COIN COUNTER

Alfred Cohn, Culver City, and James S. Reynolds, Canoga Park, both of Calif., assignors to Alfred Cohn, Culver City, Calif.

Filed Nov. 4, 1974, Ser. No. 520,308
Int. Cl.² G07F *5/16*
U.S. Cl. 133—8 R **20 Claims**



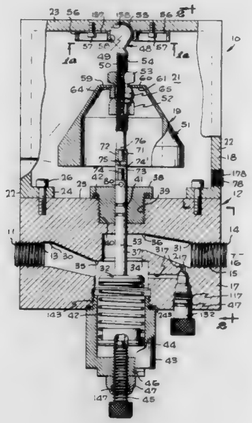
1. An electronic counting circuit for receiving a plurality of like input signals on a plurality of different respective input terminals, each terminal and associated signal representing a different coin denomination, the circuit comprising in combination therewith:
a plurality of input storage means, one provided coupled to each respective said terminal for storing input signals received at said respective terminal;
mechanical counter means;
free-running pulse generating means coupled in common to be energized by said storage means, said pulse generator being responsive to signals stored in said storage means for issuing output counting pulses until the signals stored in said storage means are cleared therefrom by applied clearing signals, each counting pulse representing the lowest coin denomination or a multiple thereof, said pulse generating means applying said output counting pulses to said counter to advance said mechanical counter means accordingly; and
electronic clearing means including a digital counting circuit having a prescribed number of counting states and associated output terminals which are successively driven to produce predetermined output signals in accordance with the counting state of said counting means, said terminals each being coupled to a respective one of said storage means through a prescribed coupling circuit; said counting circuit being coupled to said pulse generating means for receiving said counting pulses, said counting circuit being incremented thereby to responsively sequence itself through said counting states to successively apply said predetermined output signals to said respective storage means as clearing signals thereto whereby a clear signal is successively impressed, in turn, upon each of said associated storage means for clearing the storage means to reflect receipt of associated counting pulses corresponding to the coin denomination represented by the storage means.

3,927,689

EARTHQUAKE RESPONSIVE SAFETY VALVE

Mark B. Sharp, North Hollywood, and Robert E. Sharp, Thousand Oaks, both of Calif., assignors to Quake-Proof, Inc., Reseda, Calif.

Filed Feb. 25, 1974, Ser. No. 445,515
Int. Cl.² F16K *17/36*
U.S. Cl. 137—45 **15 Claims**



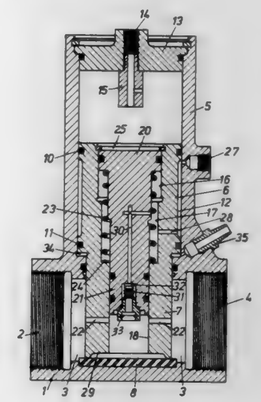
1. A safety device comprising a valve unit yieldingly urged toward closed position, a member movable in a lateral direction between a normal position of engagement with said valve unit for holding the valve unit open and a laterally deflected position releasing the valve unit for closing movement, a weight element carried by said member for movement in said lateral direction therewith and operable to move in said lateral direction and displace said member in that direction from said normal position in response to shock, and means mounting said weight element to said member for limited movement relative thereto in response to minor shock forces without release of the valve unit.

3,927,690

PRESSURE FLUID VALVE HAVING FULLY OPENED, FULLY CLOSED AND RESTRICTED FLOW POSITIONS

Nils Axel Agren, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed June 3, 1974, Ser. No. 475,499
Claims priority, application Sweden, June 18, 1973, 7308558
Int. Cl.² F16K *31/143*
U.S. Cl. 137—599.2 **10 Claims**



1. Pressure fluid valve for controlling the impact power of pneumatic rock drills by selectively establishing a closed, a substantially unobstructed fully open and a restricted flow passage, comprising:
a housing having a power cylinder **5** and a throughpassage **3** for pressure fluid;
an elongated main valve body **7** movably mounted in said housing and being transversely movable between a rear position in which said through-passage **3** is fully and substantially unobstructedly opened, and a forward position in which said through-passage **3** is blocked;
a control piston **6** reciprocably guided within said power cylinder **5** and coupled to said main valve body **7**;
said main valve body **7** being provided with a transverse, restricted flow passage **22** and a coaxial bore **18** extending axially throughout said main valve body **7**;
an auxiliary valve body **21** reciprocably guided within said coaxial bore **18** of said main valve body **7** for movement between a position covering said restricted flow passage **22** and a position uncovering said restricted flow passage **22**;
said control piston **6** having an opening at its rear end portion communicating with the rear end of said auxiliary valve body **21**; and
a pressure fluid inlet **14** at the rear portion of said power cylinder **5** through which pressure fluid is suppliable onto the rear end of said control piston **6** and the rear end of said auxiliary valve body **21** for moving said main valve body **6** into its through-passage **3** blocking position and said auxiliary valve body **21** into its restricted flow passage **22** covering position.

3,927,691

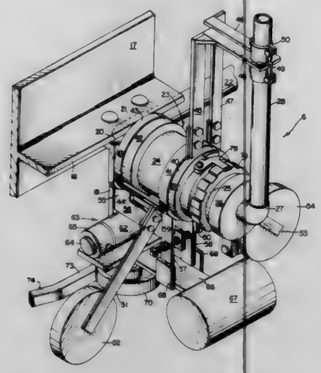
FLUID CONDUCTOR

David F. Bennett, 1100 Fleetwood Ave., Daytona Beach, Fla. 32014

Filed Oct. 10, 1974, Ser. No. 513,571
Int. Cl.² B65G *53/40*
U.S. Cl. 137—615 **7 Claims**

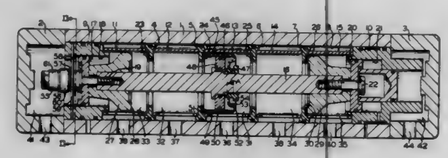
1. A fluid conductor comprising a first swivel having one end communicating with a vacuum source, a first rigid conduit section having a first end connected to the other end of said

swivel and disposed at substantially a right angle to the axis thereof, a second rigid conduit section disposed substantially parallel to said first conduit section, rigid conduit means including a second swivel interposed between and connecting a second end of said first conduit section to a first end of said second conduit section, a third rigid conduit section, a third swivel having one end connected to a second end of the sec-



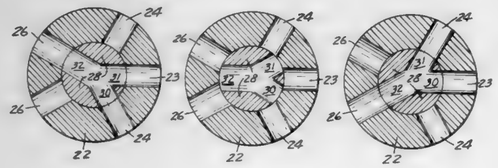
ond conduit section and an opposite end connected to a first end of said third conduit section, said third conduit section having a second inlet end connected to and movable with a reciprocally moving support, and counterbalancing means supported rotatably on said first swivel and releasably engaging said first rigid conduit section for returning said section to an upright position from an inclined position in either direction.

3,927,692
FOUR-WAY POPPET VALVE DEVICE
Tom C. Wenrich, Lexington, Ky., assignor to American Standard, Inc., New York, N.Y.
Filed June 28, 1974, Ser. No. 484,156
Int. Cl.² F16K *11/02*
U.S. Cl. 137—625.27 **6 Claims**



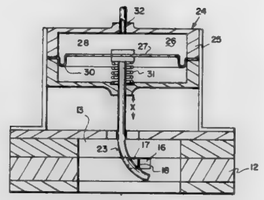
1. A poppet valve device comprising:
a. a casing having a plurality of fluid pressure inlet and outlet ports;
b. a plurality of annular valve seats coaxially fixed and axially spaced at certain intervals in said casing;
c. a valve stem coaxially disposed and axially reciprocably operable a predetermined axial distance in said casing between a first position and a second position; and
d. a plurality of annular valve members axially spaced apart on said valve stem for movement therewith, said valve members cooperating with said valve seats for controlling establishment and cut-off of communications between certain ones of said inlet and outlet ports in the first position of said valve stem, and between the others of said inlet and outlet ports in the second position of the valve stem,
e. a cup-like member having on the annular opposite ends thereof two adjacent ones of said valve members disposed at an axially spaced apart distance less than the axial distance between two adjacent ones of said valve seats to form a dual valve unit one or the other of whose valve members is alternatively seatable on one or the other of said two adjacent valve seats, respectively, depending upon the position of said valve stem; and
f. a cylindrical guide member coaxially fixed on the valve stem and on which said dual valve unit is coaxially slidably mounted to form a lost motion connection between the dual valve unit and the valve stem for providing a limited amount of relative axial movement therebetween and consequent axial positional adjustment of one or the other of the valve members of the dual valve unit relative to one or the other of said adjacent valve seats in either of said first or second positions, respectively, of the valve stem to compensate for wear or excessive manufacturing tolerance of any of the valve members.

3,927,693
HIGH-PRESSURE VALVE
Clyde P. Johnston, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 11, 1974, Ser. No. 514,125
Int. Cl.² F16K *11/00*
U.S. Cl. 137—625.47 **3 Claims**

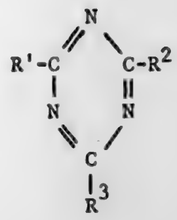


1. A high-pressure valve comprising a valve body having a cylindrical chamber therein, said chamber having an inlet port with an axis which is perpendicular to the axis of said chamber, a first set of two outlet ports having axes which are perpendicular to the axis of said chamber and which lie in a plane common to the axis of said inlet port, each of said first outlet ports having a cross-sectional area equal to said inlet port, said first set of outlet ports being disposed one on each side of said inlet port at equal angles from said inlet port, the angle between the axis of said first outlet ports and the axis of each said inlet port being less than 90°, and a second set of two outlet ports having axes which lie in said plane, each of said second set of outlet ports having a cross-sectional area greater than the area of said inlet port and being disposed at equal angles from said inlet port, the angle between each axis of said second set of outlet ports and the axis of said inlet port being greater than 90° but less than 180°;
a cylindrical valve core rotatably mounted in said chamber, said core having a Y-shaped configuration of three communicating passageways having axes disposed within said plane, two of said passageways being disposed so as to communicate simultaneously with said inlet and one of said first set of outlets while simultaneously the third passageway communicates with one of said second set of outlets; and
means attached to said core for rotating said core to align said passageways with said inlet and outlets;
the angles between the axes and the cross-sectional area relationships between said inlet port, said outlet ports and said passageways being selected such that when fluid under pressure is present in said valve the vector forces on said valve core due to the pressure of the fluid are essentially balanced to zero so said valve core can be easily rotated.

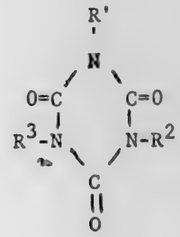
3,927,694
FLUIDIC COMPUTATIONAL DEVICE
Donald R. Struttmann, Tempe, and William F. Ryan, Scottsdale, both of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.
Filed July 11, 1974, Ser. No. 487,507
Int. Cl.² F15C *3/14*; F15D *1/14*
U.S. Cl. 137—829 **8 Claims**



1. A fluidic computational device comprising:
a. a fluidic amplifier having a body forming a reaction chamber with a jet nozzle at one side communicating with an inlet for fluid under predetermined pressure and at least one output port leading from the reaction chamber at the side opposite said jet nozzle, fluid under said predetermined pressure supplied to said inlet being formed by said nozzle into a fluid beam directed toward said output port;
b. a deflector element projecting into the reaction chamber between said jet nozzle and said output port, said element being of elongated form with a circular cross section and nonlinearly shaped in a longitudinal, nonaxial direction to traverse the path of the fluid beam at a predetermined nonlinear rate relative to linear movement of the deflector element in an axial direction in said reaction chamber; and
c. means for linearly moving said deflector element in said axial direction in said reaction chamber, said means having an actuator responsive to a variable input pressure, the portion of the path of the fluid beam traversed by said deflector element and the resulting pressure in said output port bearing a predetermined nonlinear relation to said linear movement of the deflector element in said axial direction.



wherein R′ and R² are hydrogen or a —O—R—CH=CH₂ radical and R³ is a —O—R—CH=CH₂ radical and R is an alkylene radical having from 1 to 4 carbon atoms, and isocyanurates of the formula



wherein R′ and R² are hydrogen or a —R—CH=CH₂ radical, R³ is a —R—CH=CH₂ radical and R is the same as defined above; and a catalyst.

3,927,695
SILICONE RUBBER HOSE
George Warren Crockwell, White Plains, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed May 21, 1973, Ser. No. 362,286
Int. Cl.² F16L *11/08, 11/06*
U.S. Cl. 138—137 **10 Claims**

1. In a silicone rubber hose consisting essentially of a liner, reinforcement and cover element, the improvement wherein said reinforcement is polyethylene terephthalate in film form having a cured crosslinked, olefinic triazine modified silicone rubber directly bonded to at least one of the surfaces of said film, said rubber being derived by curing a heat-curable silicone gumstock composition comprising a crosslinkable diorganopolysiloxane gum; an olefinic triazine compound selected from the class consisting of cyanurates of the formula

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3,927,696
PITCH-IMPREGNATED FIBER PIPE
Charles R. Gannon, Ashland, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.
Division of Ser. No. 277,290, Aug. 2, 1972, which is a continuation-in-part of Ser. No. 224,216, Feb. 7, 1972, abandoned. This application June 26, 1973, Ser. No. 373,626
Int. Cl.² F16L *9/14*
U.S. Cl. 138—243 **3 Claims**

1. An impregnated pipe having a uniform metallic exterior and interior aluminized surface and comprising a porous tubular body impregnated with an impregnant consisting essentially of:
a. unoxidized thermal petroleum pitch and,
b. leafing aluminum pigment of ASTM designation 926-66 in a concentration of at least 0.3 percent by weight of both pigment and pitch, said unoxidized thermal petroleum pitch at least partially permeating into the pore spaces of said tubular body and forming a film of pitch having a metallic aluminized surface of leafing aluminum pigment extending over the surface of said tubular body.

3,927,697
QUARTZ GLASS ELEMENTS

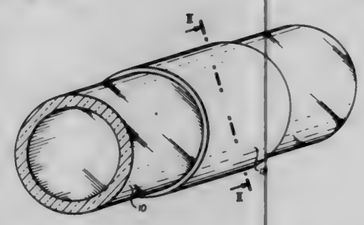
Peter Baumler, Dornigheim; Gerhard Hofer, Bruchkobel; Tassilo Korner, Erlensee; Heinrich Mohn, Hailer; Karl Seiler, Hanau-Hohe Tanne; Fritz Simmat, Meerholz, and Karl-heinz Rau, Hanau, all of Germany, assignors to Heraeus-Schott Quarzschmelze GmbH, Hanau, Germany

Division of Ser. No. 166,844, July 28, 1971, Pat. No. 3,776,809, Continuation-in-part of Ser. No. 793,775, Jan. 24, 1969, abandoned, Continuation-in-part of Ser. No. 810,713, March 26, 1969, abandoned. This application July 27, 1973, Ser. No. 383,432

Claims priority, application Germany, Feb. 22, 1968, 1696061; Mar. 30, 1968, 1771077; Mar. 30, 1968, 1988697The portion of the term of this patent subsequent to Dec. 4, 1990, has been disclaimed.

Int. Cl.² B32B *17/06*; F16L *9/14*

U.S. Cl. 138—145 **11 Claims**



1. Quartz glass element capable of forming an outer layer of uniformly fine crystalline silica when heated to a temperature at which such crystalline silica forms containing from about 4 to about 800 ppm of crystallization promoting nuclei having a rate of diffusion in quartz glass less than that of sodium at elevated temperatures, said nuclei being present in the entire volume of said glass element.

7. Quartz glass element consisting essentially of a quartz glass tube having an outer cohesive coating of uniformly fine crystalline silica.

3,927,698
INSTALLATION CHANNEL

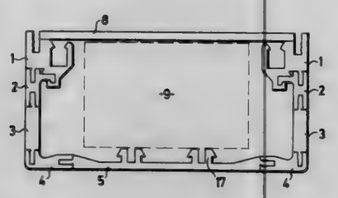
Rolf Johannsen, Traunreut, Germany, assignor to Intermercury Finance and Trading Co., Ltd., Grand Cayman, British W. Indies

Filed June 6, 1974, Ser. No. 476,771

Claims priority, application Germany, July 24, 1973, 2337628

Int. Cl.² F16L *9/22*

U.S. Cl. 138—162 **6 Claims**



1. A service installation channel comprising a plurality of elongated strip-like components interconnected in successive manner along their longitudinally extending peripheral edges with complementary tongue-and-groove joints that provide positive interlocking connection, there being at least two uppermost strip-like components forming each sidewall and with the two uppermost strip-like components of each side wall having a first tongue-and-groove joint similar to those between other adjacent pairs of interconnected strip-like components comprising the service installation channel and an additional interconnected tongue-and-groove joint extending laterally inwardly adjacent said first tongue-and-groove joint.

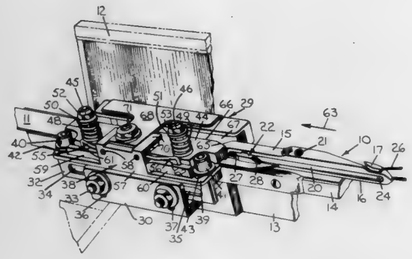
3,927,699
WEFT CARRIER CONTROL APPARATUS

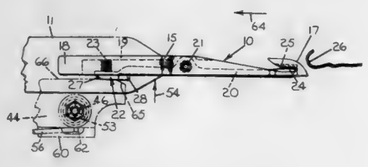
Richard Louis Volpe, Hopedale, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Oct. 29, 1974, Ser. No. 518,651

Int. Cl.² D03D *47/22*

U.S. Cl. 139—122 N **1 Claim**





1. In a shuttleless loom of the type for inserting single picks of weft into separate sheds of warp threads by opposed reciprocating carrier members carried on the free ends of flexible tapes, an improved apparatus for controlling the actuation of the gripper finger of the weft extending carrier comprising:

a. camming means mounted on said loom in a manner providing for movement between an operative position where it is contacted by the weft carrier to releast weft from the gripper finger and in inoperative position where no contact causing operation of the gripper finger is effected;

b. means defining an off set lip forming one end of the gripper finger disposed for operative engagement with said camming means having;

1. a forward vertical side defining a first cam engaging surface for actuating the gripper finger to release the weft as the carrier is being withdrawn from the shed;

2. an upper horizontal surface with a downwardly tapered leading end defining a second cam engaging surface for displacing said camming means to prevent actuation of the gripper finger during movement of the carrier into the shed, said camming means including:

A. a biasing means for returning said camming means to its operating position after being displaced by said second cam engaging surface; and

B. a further biasing means for continually urging said camming means toward its position of engagement with said first cam engaging surface.

3,927,700
BOTTLE FILLING MEANS AND METHOD

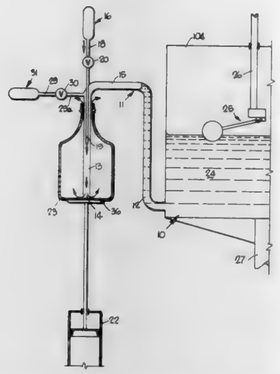
John Thomas Trinne, Box 197, Greenock Road, Nuriootpa, Australia (5355), and Leslie John Wilksch, King St., Stockwell, Australia (5350)

Filed June 12, 1974, Ser. No. 478,539

Claims priority, application Australia, June 25, 1973, 3818/73

Int. Cl.² B65B *3/04*

U.S. Cl. 141—5 **12 Claims**



11. A method of filling a bottle with liquid, wherein the bottle surrounds a depending outlet arm of a syphon tube which has its discharge opening at its lower end, the syphon tube having an inlet arm entering a reservoir and terminating below a liquid level therein and also having a bridge portion extending between the upper ends of the arms, there being a gas flow conduit connected to a supply of inert gas at pressure terminating at its discharge end in the syphon tube and directed in the direction of syphon induced flow, the method comprising maintaining liquid in the reservoir at said liquid level, injecting gas into the syphon tube to

a. displace at least some of the air contained in the bottle with gas, and

b. reduce the pressure in the syphon tube sufficiently to induce liquid flow,

and removing the bottle from the syphon tube after the liquid in the bottle has risen to said liquid level.

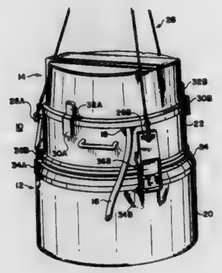
3,927,701
SAMPLE COLLECTOR

Louis Franklin Lederer, Lincoln, Nebr., assignor to Instrumentation Specialties Company, Lincoln, Nebr.

Division of Ser. No. 241,033, April 4, 1972, Pat. No. 3,838,719. This application Nov. 1, 1973, Ser. No. 411,683

Int. Cl.² B65B *3/04*; F25D *3/02*

U.S. Cl. 141—98 **13 Claims**



1. A liquid sampler for sampling liquids from within a sewerage system comprising:

a substantially cylindrical casing of small enough size to fit through a sewerage manhole;

said casing including at least a substantially cylindrical vertical outer wall and bottom wall defining a bottle holding compartment;

means for drawing fluid containing sewage into said casing and depositing it into at least one bottle;

a substantially cylindrical ice compartment centered within said bottle holding compartment;

said casing including first, second and third sections;

said means for drawing fluid including control programming means for automatically controlling the time said fluid is drawn in accordance with a predetermined program;

said first section containing said bottle holding compartment and means for distributing said fluid to a plurality of different bottles;

said second section being mounted on top of said first section and containing said control programming means; and said third section being an inverted cover fitting over said second section.

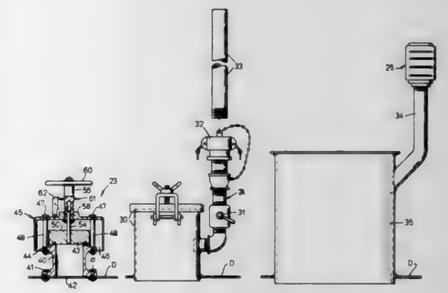
3,927,702
EMERGENCY OVER-FILL ASSEMBLY FOR MARINE VESSELS

James E. Ingle; Ralph W. Emerson, and John S. Megahan, all of Tell City, Ind., assignors to Maxon Marine Industries, Inc., Tell City, Ind.

Filed Nov. 1, 1974, Ser. No. 519,877

Int. Cl.² B65B *31/00*

U.S. Cl. 141—285 **7 Claims**

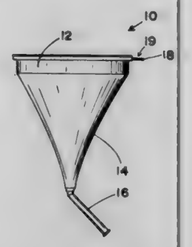


1. An emergency over-fill assembly for relieving excessive pressure or cargo build-up in a compartment in a marine vessel and securable to the deck of said vessel, said assembly comprising a part having an opening therethrough that communicates between the compartment to be filled and atmosphere, said part having an upper end which terminates above said deck, said assembly further including a cover at the upper end of said part, said cover having a passage through which said opening can communicate with atmosphere, a sealing member shiftably mounted within the cover between a compartment sealing position wherein it closes communication between said opening and atmosphere and a compartment open position wherein it permits communication between said opening and atmosphere, locking means adjustably mounted on said cover and having a locked position and an open position, said sealing member engagable by said locking means whereby said locking means when in said locked position acts to hold said sealing member in said compartment sealing position and when said locking member is adjusted to an open position, said sealing member can automatically raise from its compartment sealing position wherein it is maintained by gravity to a release position upon excessive pressure or cargo build-up in said compartment.

3,927,703
MOVABLE EXTENSION FOR A FUNNEL

Everett E. Beaubien, Lake Elmo, Minn., assignor to Twin Tool, Inc., St. Paul, Minn.

Filed July 15, 1974, Ser. No. 488,514
Int. Cl.² B65B *39/00*; B67C *11/02*
U.S. Cl. 141—333 5 Claims

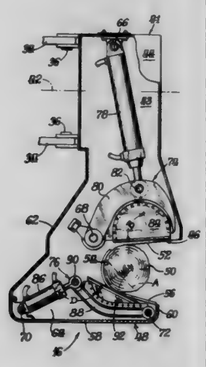


1. An articulated movable extension for a funnel which funnel has a large inlet end tapering down to a smaller outlet end, the improvement comprising a generally annular ledge about the inside of the outlet end of the funnel, said ledge projecting radially inward, and further comprising an extension with a connecting end adapted to fit snuggly inside the outlet end of the funnel and including a plurality of compressible tabs extending from the peripheral edge of the connecting end of the extension which tabs have annular ledge engaging projections thereon which comprise an angled surface extending radially outward and adapted to pull the extension into the funnel as the compressible tabs spring outward over said generally annular ledge so as to hold the extension in sealing relation with said outlet end and including risers molded just below the annular ledge engaging projections to keep the angled surface from locking too tightly over the annular ledge, and also including a cone shaped tapered surface on the inside of said funnel outlet end and a matching cone shaped tapered surface on the connecting end of said extension so as to provide a sealing joint, both tapered surfaces having a greater diameter nearer the outlet end of the funnel so as to be pulled into a sealing relationship under the action of said compressible tabs.

3,927,704
DUAL SHEAR BLADE ASSEMBLY

Leon A. Wirt, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 18, 1975, Ser. No. 550,329
Int. Cl.³ A01G *23/08*
U.S. Cl. 144—34 E 8 Claims



1. A dual shear blade assembly for cutting through an article, comprising;

a frame having an outwardly opening article receiving slot therein;

primary shear blade means pivotally mounted on said frame and movable between an open position outwardly adjacent one side of said slot to a closed position across a substantial portion of said slot;

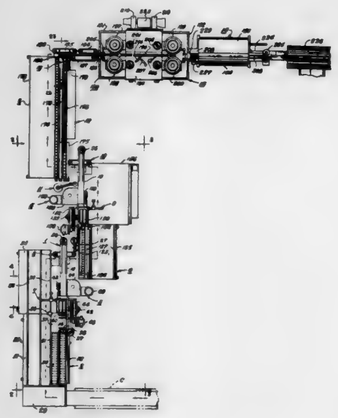
secondary shear blade means pivotally mounted on said frame and movable between an open position outwardly adjacent the opposite side of said slot to a closed position across a relatively small portion of said slot; and

motor means pivotally connected to said frame for swinging said primary and secondary shear blade means in the same rotational direction respectively from said open positions in an opposite endward manner towards said closed positions and so constructed and arranged as to cleanly sever an article disposed in said slot with disproportionate opposite forces in order to assure that the article is positively urged toward a fully retained position within said slot.

3,927,705
METHODS AND MEANS FOR CONTINUOUS VERTICAL FINGER JOINTING LUMBER

Jeff Y. Cromeens, and Thomas E. Clyce, both of Garland, Tex., assignors to Industrial Woodworking Machine Co., Inc., Garland, Tex.

Filed Aug. 16, 1973, Ser. No. 388,752
Int. Cl.² B27G *11/00*; B27F *1/08*
U.S. Cl. 144—317 10 Claims



1. The method of forming vertical finger jointed lumber from a plurality of short sticks having substantially uniform width and thickness and usually of nonuniform length comprising

positioning the sticks in a continuous sheet-like array in which said sticks are in side-by-side engagement and rest on their narrower surfaces with first ends thereof aligned in a first substantially straight edge,

effecting relative movement between the stick array and finger groove shaping means along the first substantially straight edge to cut serrations in the first end of each stick,

again reorganizing said array to again align the first ends of said sticks in a third substantially straight edge,

heating said first ends of said sticks while aligned in said third substantially straight edge,

applying adhesive to the second ends of said sticks,

stripping said sticks having heated first ends and adhesive coated second ends from said array serially and endwise, conveying said sticks in a substantially linear array away from said continuous sheet-like array,

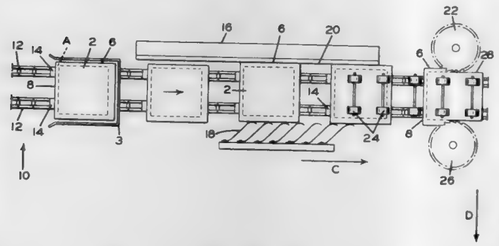
joining and pressing together successive sticks moving in the linear array to mate heated and adhesive coated serrated ends of contiguous sticks to form bonded joints therebetween,

and cutting finger jointed lumber of selected lengths from the portion of said moving linear array having bonded joints between contiguous sticks.

3,927,706
MANUFACTURING CEILING TILE

John R. Davey, Camp Hill, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 343,932, March 22, 1973, abandoned.
This application July 3, 1974, Ser. No. 485,493
Int. Cl.² B27C *1/08*
U.S. Cl. 144—326 R 1 Claim



1. The method for cutting the edge of an oversize board structure in a fixed relationship to a pattern on the surface thereof to form a ceiling tile, said board being oversize relative to the pattern placed on the board, said oversize board structure having a pattern on the surface thereof with the pattern placed at a certain fixed distance and parallel to a first edge of the oversize board and said pattern being placed on the oversize board structure relative to and parallel to a second edge of the oversize board structure, said second edge being at a 90° angle to said first board edge, the method comprising the steps of:

a. conveying the oversize board towards an edge-cutting means;

b. forcing said first edge of the board against a first fixed guide means so as to guide the first edge relative to the first fixed guide means;

c. holding the board relative to the means conveying the board once the board has established its relationship to the first fixed guide;

d. positioning the cutter structure of a first edgecutting means relative to the fixed guide so that, when the board structure passes from the fixed guide to the cutter structure, the cutter structure will cut the first edge of the board structure in a fixed relationship to the pattern on the board structure;

1. said cutter structure being composed of two cutting means which are spaced apart the distance desired for the width of the finished board and said first cutting means being positioned relative to the fixed guide so as to cut the edge of the board structure while said second cutting means is positioned relative to said first cutting means to cut the board to the desired width;

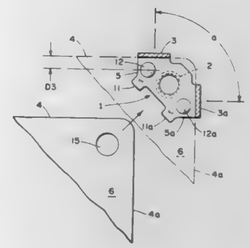
e. passing the oversize board structure adjacent a second fixed guide means and forcing said second edge of the board against the second fixed guide means so as to guide that edge relative to the fixed guide means, and

f. positioning a cutter structure of a second edgecutting means relative to the fixed guide so that, when the board structure passes from the second fixed guide means to the cutter structure, the cutter structure will cut the remaining two edges of the oversize board with said second certain edge being cut relative to the edge of the pattern on the board.

3,927,707
CLIP NUT

Thomas B. Wright, Diamond Bar, Calif., assignor to TRW Inc., Cleveland, Ohio

Filed Oct. 11, 1973, Ser. No. 405,321
Int. Cl.² F16B *37/04*
U.S. Cl. 151—41.75 15 Claims



1. A clip nut for attachment to a work panel in which converging edges define a corner with an aperture in the panel near the corner comprising:

a threaded nut element

a pair of lower arm portions integral with the nut element and extending in a plane normal to the longitudinal axis of the nut element at one end thereof, the arms extending divergently at a predetermined angle to each other;

a pair of upper arm portions spaced from the lower arm portions and extending substantially over the lower arm portions;

an upstanding portion integral with and connecting the respective upper and lower arm portions;

the upstanding portions comprising respectively means for contacting convergent edges of a work panel defining a corner therein and having an aperture at the corner alignable with the threaded nut element, whereby when the clip nut is fitted to such a work panel corner by contact of the upstanding portions substantially throughout their length with the convergent edges, the aperture will be aligned with the element.

3,927,708
AUTOMATIC TIRE PRESSURE CONTROL

Clement E. Hulme, 9947 S. Avenue N., Chicago, Ill. 60617

Filed Jan. 28, 1974, Ser. No. 437,065
Int. Cl. B60c *23/12*
U.S. Cl. 152—418 6 Claims

1. Air compressor apparatus for maintaining pressure in the tire of an automotive vehicle and comprising:

a crankshaft to be connected to the vehicle axle to rotate therewith;

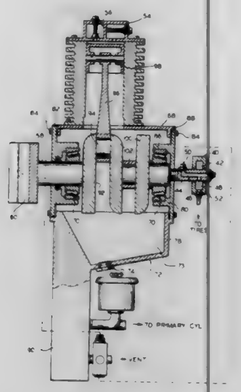
air compressor cylinder means having a piston connected to said crankshaft, said cylinder means comprising primary and secondary cylinders, a filter for supplying atmospheric air to the primary cylinder, and a first conduit between the output of the primary cylinder and the input of the secondary cylinder;

a housing encompassing said crankshaft and having bearing means for rotatably supporting said crank shaft;

an unloader valve settable to the desired tire pressure and effective to release compressed air to the atmosphere when the tire pressure is above a preset value;

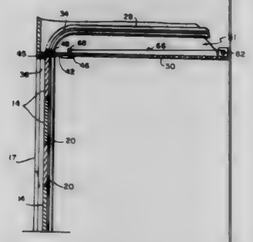
a second conduit connecting the output of the secondary cylinder to the unloader valve to supply air under pres-

sure to the unloader valve;
a third conduit for connecting the unloader valve to the



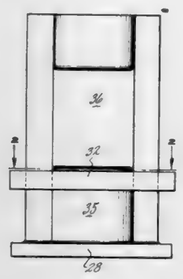
stem valve of a tire to be inflated; and
a rotary connector interposed in the third conduit.

3,927,709
OVERHEAD GARAGE DOOR
Wilbur R. Anderson, and Lydia H. Anderson, both of 2405 Nichol Ave., Anderson, Ind. 46011
Continuation-in-part of Ser. No. 379,220, July 16, 1973, abandoned. This application Jan. 2, 1975, Ser. No. 538,184
Int. Cl.² E05D *15/24, 15/38*
U.S. Cl. 160—37 **10 Claims**



1. A garage door assembly for a garage having a garage opening in one wall and a ceiling, comprising a plurality of panels hingedly interconnected at adjacent edges one on top of the other; first guide means mounted on said interconnected panels at opposed ends thereof; a pair of stationary generally L-shaped tracks each extending vertically along one side of the garage opening through a passage formed in the garage ceiling to a position above the ceiling and then horizontally away from the garage opening, said guide means on said panels being received in said pair of tracks to allow guidable movement of said panels along said tracks between a vertically extending position closing the garage opening and a horizontally extending position above the garage ceiling; a trap door hingedly connected to one of said panels and disposed to substantially close the passage in the ceiling when said panels are in a closed position; and second guide means mounted on said trap door and received in said tracks whereby said trap door is lifted by said panels upwardly out of the passage along said tracks when said panels are moved from a closed position to a open position.

3,927,710
JOINING OF MULTI-SECTION CERAMIC MOLDS
Douglas R. Hayes, Vernon, Conn., and Charles M. Phipps, Ridgewood, N.J., assignors to United Technologies Corporation, Hartford, Conn.
Filed Aug. 21, 1974, Ser. No. 499,224
Int. Cl.² B22C *9/24;* **B22D** *25/06, 33/04*
U.S. Cl. 164—25 **22 Claims**

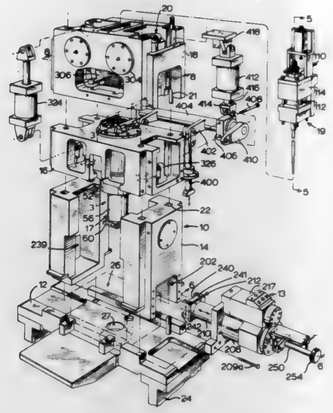


1. A holding device for use with a multi-part mold for the casting of high temperature metallic alloys, the mold including:
opposed precast ceramic mold sides having projecting mating edge flanges and having recesses therein to form an article cavity, the holding device being
a high strength ceramic ring tightly surrounding the opposed mold sides and engaging the edge flanges to hold the opposed sides together, said ring extending a part only of the length of the mold sides and said ring having a compatible thermal expansion to that of the mold sides.
5. In the attachment of preformed ceramic mold parts together, said mold parts having mating edge flanges, the steps of:
dipping at least a part of the assembled mold elements including a part of the edge flanges in a ceramic slurry of the shell mold type to form a coating in the form of a ring thereon;
drying the coating; and
repeating the dipping and drying until a holding ring of the desired thickness is obtained.

3,927,711
HIGH PRESSURE DIE CASTING APPARATUS
William Frederick Fisher, and Timothy Brian Hodgson, both of Peterborough, Canada, assignors to Fisher Gauge Limited, Peterborough, Canada
Filed Jan. 31, 1974, Ser. No. 438,420
Int. Cl.² B22D *17/12, 17/26*
U.S. Cl. 164—303 **10 Claims**

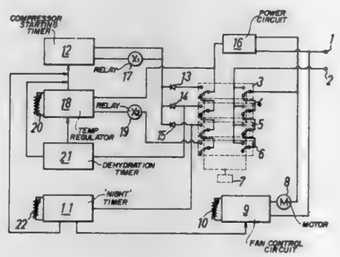
9. In pressure die casting apparatus, a device for moving and releasably locking a die part to close a die mounted on a die frame, comprising:
a main cylinder having a closed chamber and an hydraulically actuated piston reciprocally operable in the chamber, the piston having a piston rod carrying a die part mount;
an auxiliary cylinder having a closed chamber and an hydraulically actuated piston reciprocally operable in the chamber, the piston having a piston rod;
first and second ports opening into the auxiliary cylinder chamber forwardly and rearwardly of the auxiliary piston respectively;
a third port opening through a first passage into the main cylinder chamber rearwardly of the main piston;
a second passage connecting the main cylinder chamber forwardly of the main piston with the auxiliary cylinder

chamber rearwardly of the auxiliary piston;



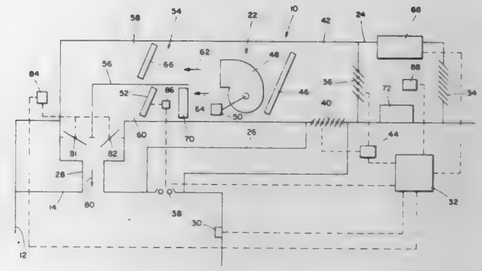
the auxiliary piston rod being constructed and arranged to open and close the first passage on movement of the auxiliary piston forwardly and rearwardly respectively.

3,927,712
ELECTRONIC CONTROL SYSTEM OF AN AIR CONDITIONING APPARATUS
Hiroshi Nakayama, Shizuoka, Japan, assignor to Iwatani & Co., Ltd., Osaka, Japan
Filed Oct. 11, 1974, Ser. No. 514,179
Int. Cl.² F25D *29/00*
U.S. Cl. 165—12 **8 Claims**



1. A control system for an air conditioning apparatus having a compressor and fan comprising:
compressor relay means for activating the compressor,
compressor starting timer circuit means connected to the compressor relay means for controlling the duration of operation of the compressor,
temperature regulating circuit means connected to said compressor starting timer circuit means for controlling the compressor operation in response to a sensed temperature,
dehydration timer circuit means connected to said temperature regulating circuit means and said compressor starting timer circuit means for controlling said compressor according to a timed cycle,
power circuit means, and
switch means for connecting said power circuit means to said compressor starting timer circuit means, said temperature regulating circuit means and dehydration timer circuit means.

3,927,713
ENERGY RECLAIMING MULTIZONE AIR PROCESSING SYSTEM
Theodore C. Gilles, Marshalltown, Iowa, assignor to Lennox Industries Inc., Marshalltown, Iowa
Filed Oct. 4, 1974, Ser. No. 512,100
Int. Cl.² F24F *3/00*
U.S. Cl. 165—16 **10 Claims**



1. A system for processing a volume of indoor air in an enclosure, said enclosure having at least a first and second thermal zone, said indoor air in said first and second thermal zone having a first and second zone temperature, respectively, said first zone temperature exceeding said second zone temperature, comprising, in combination:
thermostatic means for sensing said first and second zone temperatures, said thermostatic means having a predetermined cooling threshold and a predetermined heating threshold;
multizone air processing means for producing a first stream of cooling supply air having a first stream temperature and a second stream of heating supply air having a second stream temperature, said multizone air processing means including air heating means having a power input and air cooling means including evaporator means, compressor means and first condenser means, said air heating means and said first condenser means communicating directly with said second stream, said thermostatic means regulating said first and second air stream temperatures according to said first and second zone temperatures, respectively;
outdoor air duct means for supplying a first quantity of outdoor air having an enthalpy to said multizone air processing means, said outdoor air duct means including outdoor air damper means for regulating said first quantity;
return air duct means for supplying a second quantity of indoor air to said multizone air processing means, said return air duct means including return air damper means for regulating said second quantity;
first means for monitoring said enthalpy of said outdoor air, said first means having a predetermined enthalpy threshold;
second means for monitoring said power input to said air heating means, said second means having a predetermined power threshold; and
means for controlling said multizone air processing means, said outdoor air damper means and said return air damper means in response to said thermostatic means, said first means and said second means, said outdoor air duct means and said return air duct means cooperatively defining means for supplying a quantity of intake air to said multizone air processing means, said intake air being a mixture of outdoor and return air and having a predetermined intake temperature, said controlling means being operable in a first state whenever said first zone temperature exceeds said cooling threshold and said enthalpy exceeds said enthalpy threshold, a second state whenever said first zone temperature exceeds said cool-

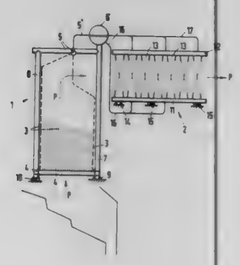
ing threshold and said power input exceeds said power threshold, and at least a third state whenever said first zone temperature exceeds said cooling threshold, said enthalpy threshold exceeds said enthalpy and said power threshold exceeds said power input, said air cooling means, said outdoor air damper means and said indoor air damper means being operative, closed and open, respectively, in said first state, said air heating means cooperating with said first condenser means in said first state to process said second stream, said air cooling means, said outdoor air damper means and said return air damper means being operative, closed and open, respectively, in said second state, said air heating means cooperating with said condenser means in said second state to process said second stream, said air cooling means, outdoor air damper means, return air damper means and air heating means bieng inoperative, variably open, variably open and operative, respectively, in said third state.

3,927,714

HEAT EXCHANGER ARRANGEMENT

Heinz Stogmuller, Greifensee, Zandbuel, Switzerland, assignor to Heinrich Vorkauf, Berlin, Germany

Filed Feb. 3, 1975, Ser. No. 546,421
Claims priority, application Germany, Feb. 1, 1974, 7403348
Int. Cl.² F28F *5/00*
U.S. Cl. 165—82 **6 Claims**



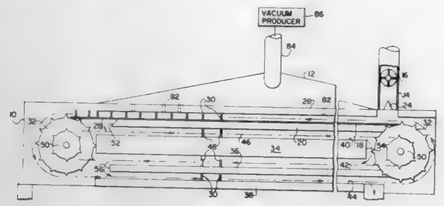
1. A heat exchanger arrangement comprising:
a. a support having two vertically spaced portions;
b. a first heat exchanger section including
   1. an upright frame mounted on the lower one of said portions, and
   2. a plurality of heat exchange tubes supported on said frame, respective outer faces of said tubes jointly defining a first part of a passage for a fluid heating medium;
c. a second heat exchanger section mounted on the higher one of said portions and including a plurality of hollow heat exchange elements having respective outer faces jointly defining a second part of said passage for flow of said medium through said second section in a predetermined direction;
d. a horizontally elongated collector vessel mounted on said frame;
e. a plurality of first conduits connecting said tubes to said vessel; and
f. a plurality of second, yieldably resilient conduits connecting said elements to said vessel to permit differential thermal expansion and contraction of said sections.

3,927,715

MULTIPLE DECK DRYING APPARATUS

Alder F. Castanoli, 1424 Fifteenth St., Huntington, W. Va. 25701

Filed Aug. 16, 1974, Ser. No. 498,029
Int. Cl.² F28F *7/00*
U.S. Cl. 165—120 **5 Claims**



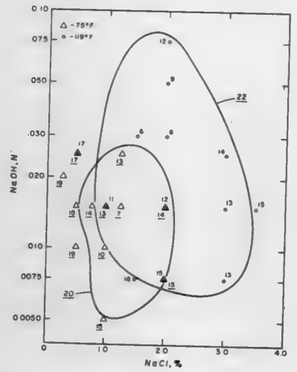
1. Apparatus for subjecting a material to indirect heat exchange comprising an enclosed casing, means defining a plurality of closed chambers containing a heat exchange medium disposed in said casing and spaced in a vertical direction from each other, each of said chambers being defined in part by an upper impervious deck along which the material being treated moves, said decks preventing direct contact between the material thereon and the heat exchange medium in said chambers, endless conveyor means having an upper pass disposed adjacent to a deck of one of said chambers and having a lower pass disposed between and adjacent the upper deck of another of said chambers and a lower impervious bottom of the superadjacent chamber, said endless conveyor means including a plurality of transversely extending blades spaced therealong, said blades being positioned to move the material along said decks, means for introducing a material to be treated onto one end of the uppermost deck, means to transfer material from a deck onto the next lower deck, means to discharge treated material from the lower deck, and means for maintaining a vacuum in said casing to exhaust vapor emanating from said material.

3,927,716

ALKALINE WATERFLOODING PROCESS

Ralph F. Burdyn; Harry L. Chang, and William R. Foster, all of Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sept. 25, 1974, Ser. No. 508,965
Int. Cl.² E21B *43/22, 43/27*
U.S. Cl. 166—270 **10 Claims**



1. In the recovery of oil from a subterranean oil reservoir penetrated by spaced injection and production systems and containing oil having an acid number of at least 0.167, the method comprising:

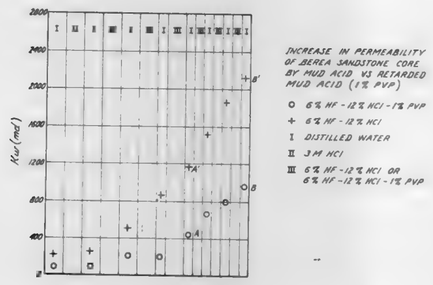
a. introducing into said reservoir via said injection system an aqueous alkaline solution in an amount within the range of 0.15 to 0.65 pore volume, said alkaline solution having a pH within the range of 11.5 to 13 and a monovalent salt salinity within the range of 0.5 to 2.0 weight percent,
b. thereafter introducing into said reservoir via said injection system an aqueous flooding medium to displace oil to said production system, and
c. recovering oil from said production system.

3,927,717

SECONDARY RECOVERY PROCESS UTILIZING POLYVINYLPYRROLIDONES

Jack F. Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 20, 1973, Ser. No. 427,002
Int. Cl.² E21B *43/26*
U.S. Cl. 166—271 **7 Claims**



1. A process for recovering hydrocarbons from a hydrocarbon-bearing formation containing acid-soluble components and having at least one injection well and at least one production well penetrating the said formation in fluid communication, which comprises displacing through the formation of a slug of a composition comprising an acidic aqueous polymer solution, thereafter injecting a slug of an aqueous drive fluid into the formation to drive the said polymer solution through said formation toward said production well and recovering hydrocarbons through the production well, said aqueous polymer solution comprising of from about 5 to about 12 percent by weight of a mineral acid selected from the group consisting of hydrochloric and sulfuric acid, from about 3 to about 7 percent by weight of hydrofluoric acid and having dissolved therein from about 0.5 to about 5 percent by weight of a vinylpyrrolidone polymer and wherein prior to the introduction of the acidic aqueous polymer solution there is first injected into the formation via said at least one injection well a slug of an aqueous solution containing about 2.5 to about 10 percent by weight of a fluorine-containing salt selected from the group consisting of (A) fluorides of the formula:

$$MF,$$

wherein M is selected from the group consisting of NH_4^+ and Li^+ and (B) acid fluorides of the formula:

$$MHF_2,$$

wherein M has the same meaning as described above.

3,927,718

SECONDARY RECOVERY METHOD

Jack F. Tate, and Jim Maddox, Jr., both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,486
Int. Cl.² E21B *43/22, 43/27, 43/26*
U.S. Cl. 166—271 **14 Claims**

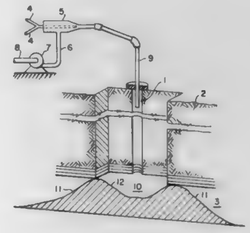
1. A method for the recovery of hydrocarbons from a hydrocarbon-bearing formation containing acid-soluble components having at least one injection well and at least one production well penetrating the said formation and a fluid communication, which comprises displacing through the formation and aqueous acidic solution of 0.5 to 15% by weight of a non-oxidizing mineral acid and from about 0.0005 to about 1% by weight of an admixture therein, and recovering hydrocarbons through the production well, said admixture being formed from about one part by weight of (A) a member selected from the group consisting of a sulfated/sulfonated polyethoxy alkyl phenol containing from about 8 to about 14 carbons atoms in the alkyl group and from about 4 to about 10 ethoxy groups, the corresponding alkali metal and ammonium salts and mixtures thereof, with (B) from about 1 to about 3 parts by weight of a member selected from the group consisting of a C_8–C_{14} alkyl benzene sulfonic acid, the corresponding alkali metal and ammonium salts and mixtures thereof.

3,927,719

REMOTE SEALING OF MINE PASSAGES

Kenneth R. Maser, Lexington, Mass., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 25, 1975, Ser. No. 572,496
Int. Cl.² A62C *1/00, 3/02;* **E21F** *15/08;* **E21B** *33/13*
U.S. Cl. 169—46 **6 Claims**



1. A method for remotely constructing a seal in a mine passage which comprises:
drilling a borehole from the surface to intersect the mine passage,
pneumatically injecting dry fly ash in dilute phase down said borehole to form a partial plug of fly ash within said mine passage, said plug obstructing more than 90% but less than 99% of the area of said passage and having a crater-like depression below said borehole, and
thereafter injecting an expanding foam into said crater-like depression to fill the depression and to complete the seal.

3,927,720

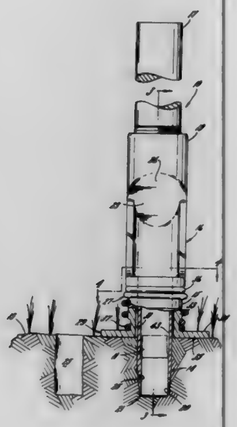
LAWN PLUGGER

Erwin I. Rauch, 1431 Monticello Lane, Rockford, Ill. 61107

Filed Mar. 20, 1974, Ser. No. 452,743
Int. Cl.² A01B *1/24*
U.S. Cl. 172—22 **10 Claims**

1. A hand-operated lawn plugger including an elongated, generally cylindrical body member, a hollow punch member connected to and extending downwardly from the lower end of said body, a foot telescoped over the lower end portion of said punch member and having a generally flat undersurface extending outwardly from adjacent said punch in a generally radial direction, said foot being slidable upwardly relative to said punch member as the latter is thrust by hand into the lawn to remove a plug of earth, and spring means fastened to one of said members and said foot and acting therebetween so as to urge said foot against the lawn and having sufficient

strength to provide an upward thrust to said plugger as to withdraw the punch substantially from the lawn so the plugger



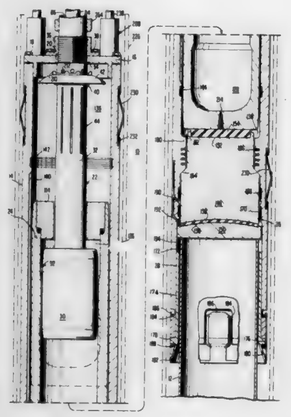
may be bounced in a rhythmic, reciprocating manner from place to place in the lawn to remove successive plugs of earth.

3,927,721
ADJUSTABLE WEEDING HOE
Alden D. Coppock, 1207 Peppertree Lane, Fallbrook, Calif. 92028
Filed Feb. 13, 1974, Ser. No. 442,047
Int. Cl.² A01B *1/08, 1/22*; B25G *1/02, 3/38*
U.S. Cl. 172—371 **4 Claims**



1. An implement for scraping the surface of the ground, comprising:
an elongate handle having an axis;
a blade including an edge designed to scrape the surface of the ground, said blade lying substantially in a plane;
means connected to one end of said handle for mounting said blade for pivotal movement about an axis perpendicular to the axis of said handle, said mounting means including guiding means for guiding movement of said one end of said handle in a direction toward and away from said blade, said guiding means including a spring for biasing said handle in a direction away from said blade;
a stabilizing arm having one end pivotally connected to said blade at a point removed from said pivotal axis; and
means for selectively pivotally connecting the other end of said stabilizing arm to said handle at a plurality of positions along the axis of said handle for adjusting the angle between the plane of said blade and the axis of said handle.

3,927,722
PILE DRIVING MOVING CYLINDER HAMMER WITH VALVED, FIXED PISTON
Leonard L. Frederick, 15 Crestview Terrace, Whippany, N.J. 07981
Filed Feb. 8, 1974, Ser. No. 440,861
Int. Cl.² E02D *7/10*
U.S. Cl. 173—125 **21 Claims**

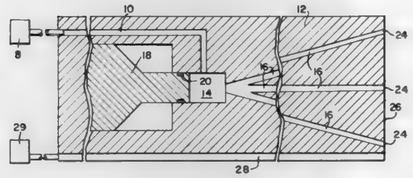


1. A pile driving hammer, comprising in combination:
a. an elongated housing member;
b. piston means;
c. closure plate means;
d. means mounting said closure plate means to one end of said housing member, said closure plate means including means for mounting said piston means thereto so that said piston means extends into said housing member and means for connecting the hammer to a device for supporting the hammer during use;
e. elongated ram means displaceable relative to said piston means;
f. load receiving anvil means, said ram means defining an internal space into which is received a portion of said piston means which extends into said housing member for defining therewith a loading chamber and a firing chamber which alternately receive from said piston means a pressurized working fluid for loading and then firing said ram means against said anvil means; and
g. means mounting said anvil means to said housing member at a point thereof longitudinally displaced from said closure plate means, with said ram means being supported by said anvil means when said ram means is at rest.

3,927,723
APPARATUS FOR DRILLING HOLES UTILIZING PULSED JETS OF LIQUID CHARGE MATERIAL
James M. Hall, Gaithersburg, Md., and Louis L. Clipp, McLean, Va., assignors to Exotech, Incorporated, Gaithersburg, Md.
Continuation of Ser. No. 153,582, June 16, 1971. This application June 11, 1973, Ser. No. 368,984
Int. Cl.² E21B *7/18*
U.S. Cl. 175—422 **9 Claims**

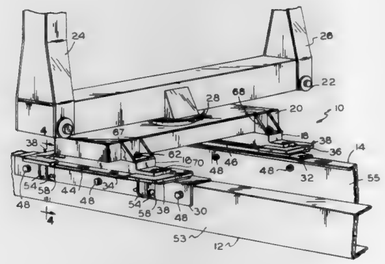
1. Apparatus for drilling holes comprising:
a housing with a first end and a second end and having a longitudinal bore passing therethrough and having at least one acceleration bore passing thereinto from said housing second end and at an angle with respect to the housing longitudinal axis and having at least one longitudinal groove extending the length thereof;

first means for generating a pulsed jet of charge material for passage through the at least one acceleration bore;
a pressurized gas source adjacent said housing first end and coupled to the longitudinal bore for impelling material from said housing second end through the longitudinal groove to the housing first end



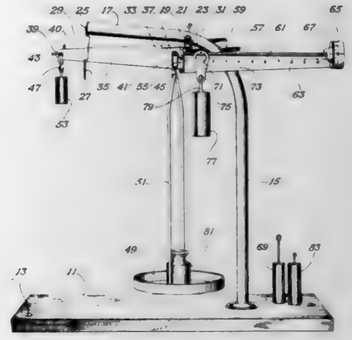
whereby as a hole is drilled in a formation adjacent said housing second end by pulsed jets of charge material expelled out the at least one acceleration bore, spent charge material and formation chips are impelled from the hole through the longitudinal groove for discharge at the housing first end.

3,927,724
LOAD CELL RETAINING APPARATUS FOR ON-BOARD VEHICLE WEIGHING SYSTEMS
Charles J. Baker, Portland, Oreg., assignor to Royal Industries, Inc., Pasadena, Calif.
Filed Feb. 26, 1975, Ser. No. 553,132
Int. Cl.² G01G *19/08, 21/10*
U.S. Cl. 177—136 **11 Claims**



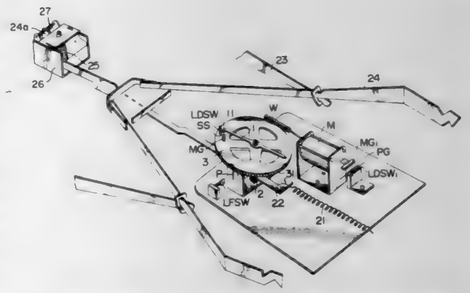
1. Apparatus for retaining an electronic load cell on the frame of a load carrying vehicle in an on-board weighing system in said vehicle, which comprises in combination:
a supporting base on said vehicle frame defining an upwardly facing, generally horizontally extending base surface for supporting said load cell;
a load cell;
a rigid load cell mounting plate fixed to a bottom portion of said load cell having a generally horizontally extending bottom surface adapted for normally resting on said base surface to support said load cell thereon; and
retainer means operatively arranged between said supporting base and said mounting plate permitting vertical and lateral movement of said mounting plate by a predetermined amount relative to said supporting base but positively restraining said plate from movement beyond said predetermined amount.

3,927,725
MULTIPLE WEIGHT SYSTEM WEIGHING MACHINE
Daniel R. Wood, 2832 Willing Ave., Fort Worth, Tex. 76110
Filed Mar. 24, 1975, Ser. No. 561,043
Int. Cl.² G01G *23/14, 1/18*
U.S. Cl. 177—171 **8 Claims**



1. A weighing machine comprising:
a stand;
a fulcrum carried by the stand in a selected vertical plane;
a beam carried by the fulcrum;
a weight carriage carried by the beam on one side of the fulcrum;
a poise carried by the beam on the opposite side of the fulcrum, said poise being movable along the beam;
conversion means supported by the beam to enable variation of the weight of the poise to correspond to other weight systems;
a graduated scale affixed to the beam on the side of the fulcrum opposite the weight carriage and having its zero in said vertical plane;
the beam having its resultant center of gravity in said vertical plane while the poise is at zero.

3,927,726
DIGITAL DISPLAY TYPE WEIGHING APPARATUS
Masanao Hanado, Kawasaki; Kensi Takamoku, Shimoigusa; Tsutomu Miyoshi, and Shien Tsai Jeng, both of Tokyo, all of Japan, assignors to Tanita Corporation, Tokyo, Japan
Filed June 13, 1974, Ser. No. 478,868
Claims priority, application Japan, June 18, 1973, 48-68886; Sept. 5, 1973, 48-99295
Int. Cl.² G01G *7/00*
U.S. Cl. 177—213 **15 Claims**



1. A digital display type weighing apparatus comprising: a pointer movable proportionally to applied weight, a control member attached to said pointer, a motor having a shaft, a disk rotatable by said motor shaft upon actuation of said

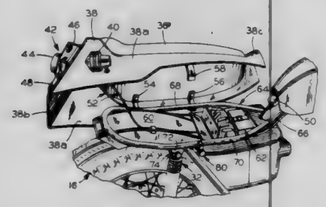
motor, a servo-sensor connected to said disk and oriented thereon with respect to said control member such that said servo-sensor is rotatable from and to a position opposite said control member, circuitry connecting said motor and said servo-sensor and including means for energizing said motor, and means for short-circuiting said motor to thereby stop the same, said control member actuating said short-circuiting means when said control member is in said position opposite said servo-sensor, said control member actuating said energizing means when said control member is moved from said position whereby, when said control member moves in response to application of weight to said apparatus said motor rotates said motor shaft and thereby said disk until said servo-sensor reaches again said position opposite said control member and is stopped, and contactless means cooperating with said motor shaft for converting the number of revolutions of said motor shaft into a corresponding number of electric pulses, a counter circuit for counting said pulses, and a digital display for receiving the output of said counter circuit and for displaying the applied weight in digital form.

3,927,727

VEHICULAR SEAT AND FAIRING ASSEMBLY

Michael W. Hanagan, Somers, Conn., assignor to Corbin Gentry Inc., Somersville, Conn.

Filed Apr. 17, 1974, Ser. No. 461,604
Int. Cl.² B62D *61/02*; B60R *11/06*
U.S. Cl. 180—30 **3 Claims**



1. A two-wheeled vehicle such as a motorcycle comprising:
a. a frame;
b. a pair of wheels supported on said frame for rotation relative thereto;
c. motor means supported on said frame operatively connected to at least one of said pair of wheels for imparting drive thereto and thereby to the vehicle;
d. electrical power supply means supported on said frame;
e. a fairing movable between a first position and a second position relative to said frame, said fairing including a top surface, a pair of side surfaces depending from said top surface, each of said pair of side surfaces having an edge thereof attached to an edge of said top surface, a rear surface depending from said top surface, said rear surface having an edge thereof attached to another edge of said top surface and another pair of edges thereof attached each to another edge of a corresponding one of said pair of side surfaces, said top surface, said pair of side surfaces and said rear surface cooperating together to provide therebetween an enclosure capable of receiving therewithin at least a portion of one of said pair of wheels;
f. a seat operable as a support for the driver of the vehicle, said seat being rigidly mounted on said top surface of said fairing for movement therewith;
g. a license plate assembly supported on said rear surface of said fairing for movement therewith;
h. a taillight assembly supported on said rear surface of said fairing for movement therewith in spaced relation to said license plate assembly;
i. electrical conductor means having one end thereof connected in circuit relation with said taillight assembly and the other end thereof connected in circuit relation with said electrical power supply means, said electrical conductor means being operable to permit electrical current to be drawn from said electrical power supply means and transmitted therethrough to said taillight assembly for powering said taillight assembly electrically, said electrical conductor means being flexible so as to permit relative movement to occur between said taillight assembly and said electrical power supply means;
j. hinge means pivotably mounting said fairing to said frame of the vehicle for movement between said first position thereof relative to said frame wherein said fairing is located so as to position said seat mounted thereon for use by the driver of the vehicle and with said portion of said one of said pair of wheels received within said enclosure formed by said top surface, said pair of side surfaces and said rear surface of said fairing and a second position thereof relative to said frame wherein said fairing is located so as to expose and render accessible said portion of said one of said pair of wheels and the other operating components housed below the fairing, said hinge means including a pair of hinge assemblies supported in spaced relation on said frame of the vehicle, each of said pair of hinge assemblies comprising a link having one end attached to said frame of the vehicle and a pivot pin extending outwardly from one side of said link adjacent the free end of said link substantially at right angles to the major axis of said link, said pivot pin of one of said pair of hinge assemblies extending outwardly of said link thereof in a first direction and said pivot pin of the other of said pair of hinge assemblies extending outwardly of said link thereof in the opposite direction, said hinge means further including a pair of members supported from the inside of said top surface of said fairing in spaced relation relative to each other, each of said pair of members including means provided at the free end thereof cooperable with said pivot pin of one of said pair of hinge assemblies to establish a pivotal connection therebetween; and
k. latching means cooperatively associated with said fairing and said frame of the vehicle operable for locking said fairing to said frame when said fairing is in the first position thereof, said latching means including a pair of members supported in spaced relation on said frame of the vehicle, each of said pair of members having an opening formed therethrough adjacent the free end thereof located so as to be aligned relative to each other, a spring biased latching pin positioned in said openings in said pair of members for movement between a locking position and a release position relative thereto, a washer received on said spring biased latching pin, a coil spring enveloping said latching pin having one end bearing against said washer and the other end against one of said pair of members operable for biasing said latching pin to the locking position thereof, and a member having one end thereof attached to the inside of said top surface of said fairing and having an opening formed therethrough adjacent the free end thereof operable for receiving the tip of said latching pin therewithin to lock said fairing relative to said frame of the vehicle.

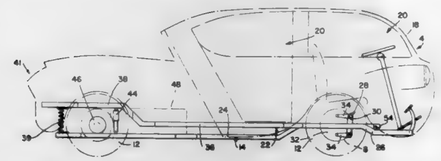
3,927,728

SUSPENSION SYSTEM FOR ELECTRICALLY POWERED VEHICLE

Roy O. Reime, San Jose, Calif., assignor to Richard Dorst, Atherton, Calif.

Continuation-in-part of Ser. No. 157,132, June 28, 1971, abandoned. This application Oct. 3, 1973, Ser. No. 403,131
Int. Cl.² B60K *11/18*
U.S. Cl. 180—60 **8 Claims**

1. An improved electric car of the type having electric motor means for driving traction wheels of the car, the motor means operating in a continuously alternating motor mode and generator mode for conserving energy, the car comprising a horizontal main frame having forward and aft ends, at least two traction wheels mounted directly to the main frame adjacent its aft end; means rigidly mounting the motor means to the main frame; electric storage batteries operatively coupled to the motor means and rigidly mounted to the main frame; means pivotally securing a passenger compartment to the main frame adjacent the forward end thereof, the pivot means permitting relative pivotal movements of the compartment at least about a horizontal axis which is perpendicular to a longitudinal axis of the car; spring means resiliently supporting a portion of the compartment on the frame and disposed adjacent the aft end of the main frame; and steering wheels for the



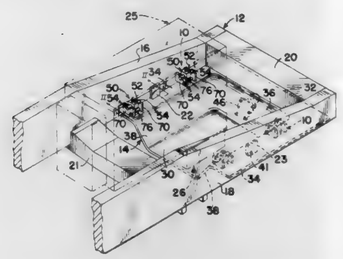
car mounted adjacent the forward end of the main frame; the combined weight of the main frame and of components rigidly mounted thereto substantially exceeding the weight of the compartment and components spring mounted to the main frame to minimize the surging of spring mounted car weight during driving maneuvers of the car and to facilitate the instantaneous deceleration of unspring weight in phase with the operation of the motor means in their generator mode to thereby maximize the recovery of electric energy from kinetic energy of the car when the car decelerates.

3,927,729

APPARATUS FOR DETACHABLY MOUNTING AN ENGINE BELLY GUARD TO A VEHICLE MAIN FRAME

Albert Gianessi, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 416,731, Nov. 19, 1973, Pat. No. 3,874,624. This application Jan. 20, 1975, Ser. No. 542,322
Int. Cl.² B62D *25/20*
U.S. Cl. 180—69.1 **7 Claims**



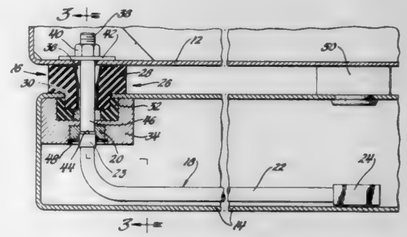
1. Apparatus for detachably mounting an engine belly guard to the bottom of a vehicle main frame, which belly guard has a bolt receiving opening therethrough disposed in spaced relation adjacent a generally upright sidewall of such main frame, comprising:
an elongated bolt upwardly extendable through said bolt receiving opening of the belly guard and positionable in retaining engagement thereagainst;
a connector nut having a threaded bore screw threadably engageable with said bolt;
means for mounting said connector nut to said sidewall of the main frame which effectively retains the connector nut against rotation about its threaded bore to facilitate the threaded engagement of the bolt for assembly therewith and which allows limited movement of the connector nut in directions other than the rotary movement about its threaded bore to permit the proper axial alignment of the connector with the bolt; means forming a generally rectangularly shaped, axially tapered opening through said belly guard; and
a generally rectangularly shaped shear block secured to the main frame and having a tapered end portion extending therebelow for close mating receipt within said tapered opening of the belly guard so that relatively large horizontal loads imparted on the belly guard are transmitted through the shear block to alleviate shearing forces on the bolt.

3,927,730

VEHICLE BODY DECELERATOR I

Gerald R. Winslow, Royal Oak, Mich., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 9, 1974, Ser. No. 504,147
Int. Cl.² B60R *21/02*; B62D *23/00*
U.S. Cl. 180—82 R **8 Claims**



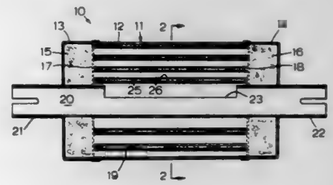
1. An automotive vehicle assembly comprising: a body, a supporting frame, a block of elastomeric material supporting said body on said frame, a rod and anvil interconnecting said body and said frame to urge said body against said block and said block against said frame whereby said block may absorb energy as said body and said frame move toward one another, said rod extending through said anvil to a free terminal end downstream of said anvil, said rod having an enlarged cross section downstream of said anvil, said rod having a bend therein downstream of said anvil, the end of said rod opposite to said free end and upstream of said anvil having a retaining nut threadedly disposed thereon to place said rod in tension between said retaining nut and said anvil to urge said body against said block and said block against said frame so that said rod will be pulled through said anvil to absorb energy as a result of a force moving said body away from said frame.

3,927,731

MUFFLER WITH SPIRAL DUCT AND DOUBLE INLETS

Arthur Lancaster, Winnipeg, Canada, assignor to James B. Carter Limited, Winnipeg, Canada

Filed Apr. 10, 1974, Ser. No. 459,840
Int. Cl.² F01N *1/08*
U.S. Cl. 181—58 **3 Claims**



1. Apparatus for silencing an engine and the like, the apparatus comprising:
a generally cylindrical housing disposed about a longitudinal axis and having two opposed end walls and a circumferential side wall;

two opposed inlets for conveying exhaust gases into said housing, said inlets being positioned at respectively opposite ends of said housing on a common axis substantially coincident with said longitudinal axis of the housing;

a spiral duct in said housing, said spiral duct having an inlet at the centre of the said duct and an outlet at the outer periphery of said duct, said spiral duct having an axis positioned substantially coincident with the longitudinal axis of the housing, and said spiral duct inlet being in communication with the said housing inlets through said end wall; and,

an outlet for conveying exhaust gases from said housing, said outlet being disposed at said circumferential side wall of the housing and communicating with said spiral duct outlet.

3,927,732

SCAFFOLD

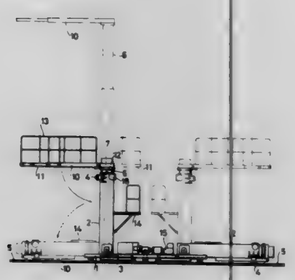
Takayuki Ooka, Ichihara, and Shinji Aihara, Osaka, both of Japan, assignors to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo and Osaka Jack Mfg. Co., Ltd., Osaka, both of, Japan

Filed Apr. 1, 1974, Ser. No. 456,875

Claims priority, application Japan, Apr. 5, 1973, 48-41274[U]

Int. Cl.² E04G *1/22*

U.S. Cl. 182—36 **1 Claim**



1. A movable scaffold system, comprising:

a movable supporting truck having a flat truck bed;

telescopic jack means having a lower section and at least one upper section, said lower section being pivotably mounted on said truck bed for pivoting about a horizontal axis between an upright position and a horizontal position, and erecting means on said bed for controlling said pivoting, said at least one upper section being telescopable into said lower section and said lower section having track-engaging means secured to said lower section for supporting said lower section on a track when said truck is moved along said track;

said jack means in its horizontal position lying along said bed with its upper side extending to a height no greater than that of the highest part of the remainder of said system not supported on said jack means, and having an overhanging portion extending beyond an end of said truck; and

foldable scaffold means mounted to said upper section of said jack means and pivotable between a horizontal position when said jack means is upright and a folded horizontal position beneath said overhanging portion of said jack means and between said track-engaging means when said jack means is horizontal.

3,927,733

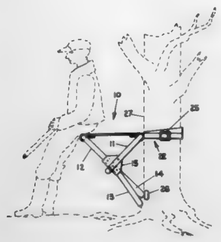
OUTDOORSMAN'S FOLDING CHAIR

Isadore T. Wurn, 436 Ruddiman Drive, and Louis J. Seguin, Box 5092, both of North Muskegon, Mich. 49445

Filed May 24, 1974, Ser. No. 473,202

Int. Cl.² A47C *9/10*

U.S. Cl. 182—187 **6 Claims**



1. In a portable sportsman's seat having a plurality of generally U-shaped frame members each having a base portion and a pair of legs extending therefrom, said frame members being pivotally mounted at the legs thereof, and a flexible seat surface stretchable between the base of an adjacent pair of said frame members; the improvement comprising:

a pair of bracket members rigidly secured to the legs of a first frame member, each said bracket member having a base portion and an elongated channel formed along one side of said base portion, said leg of said first frame member extending generally perpendicular to said base;

means for mounting said legs of second and third of said frame members in said channel of said bracket member, said second and said third frame members being pivotable between a first position generally parallel to and in abutment with said first frame member and a second position extending generally parallel to said channel in opposite directions from each other;

locking means in said mounting means and said second and third frame members for locking said second and said third frame members in said second position; and

means pivotally mounting said legs of a fourth one of said frame members to the other side of said bracket, said fourth frame member being pivotal between a first position generally parallel to said first frame member, a second position generally parallel to said third frame member, and a third position parallel to said first frame member and extending in the opposite direction therefrom.

3,927,734

SKYSCRAPER ESCAPER

Eugene J. Brunette, 237 Christiana Drive, Marrero, La. 70072, and Nathaniel D. Trosclair, 1151 Avenue D, Westwego, La. 70094

Filed Oct. 24, 1974, Ser. No. 517,751

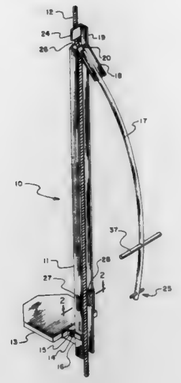
Int. Cl.² A62B *1/20*

U.S. Cl. 182—193 **8 Claims**

1. Skyscraper Escaper means comprising:

a. an elongated member shaped to house cable means which extends therethrough along its longitudinal axis and provided with a slot along its length through which the cable means passes;

b. elongated bowed hand brake means pivotally connected at one of its ends to said elongated brake member in a spaced apart relationship adjacent to said slot provided therein so as to provide a clamping action upon the cable means passing therethrough and its other end being operably attached to said elongated member during a descending operation whereby pressure upon said elongated bowed hand brake means releases the clamping action



exerted upon the cable means; and

c. seat means operably attached to said elongated member.

3,927,735

MAGNET SYSTEM FOR USE IN THE CONTACTLESS GUIDANCE OF A MOVING VEHICLE

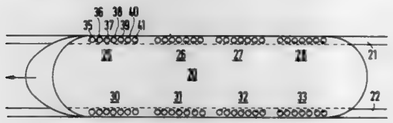
Jurgen Miericke, Nurnberg, and Laxmikant Urankar, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 24, 1974, Ser. No. 517,590

Claims priority, application Germany, Nov. 7, 1973, 2355697

Int. Cl.² B61B *13/08*

U.S. Cl. 104—148 MS **6 Claims**



1. A magnet system for the contactless guidance of a vehicle moving along a track, comprising a plurality of individual magnets connected to the vehicle and disposed one behind the other in the travel direction, wherein the improvement comprises a plurality of individual magnets each of which is approximately of circular cross-section with the total plurality of magnets divided into groups, with all individual magnets in a group disposed one behind the other and having the same current direction such that each group forms a magnet unit having a magnetic field corresponding approximately to that of a single, elongated rectangular magnet.

3,927,736

DISC BRAKE FOR A BICYCLE AND LIKE VEHICLE

Eduard Bergles, Graz, Austria, assignor to Fichtel & Sachs A.G., Schweinfurt am Main, Germany

Filed Feb. 20, 1974, Ser. No. 444,093

Claims priority, application Germany, Feb. 23, 1973, 2308909

Int. Cl.² B62L *1/00*

U.S. Cl. 188—26 **3 Claims**

1. A disc brake for a bicycle and like vehicle having a frame and a wheel mounted on said frame for rotation about an axis, said brake comprising:

a. a brake disc having an axis of rotation and two radially extending contact faces;

b. first securing means for coaxially securing said disc to said wheel for joint rotation;

c. a support;

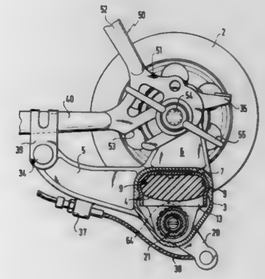
d. second securing means for releasably securing said support to said frame in an operative condition;

e. a brake shoe holder of substantially U-shaped cross section mounted on said support for movement in the direction of the common axis of said disc and said wheel in said operative condition,

1. said brake shoe holder having two flange portions and a web portion connecting said flange portions which extend from said web portion in a direction away from said common axis,

2. said web portion being formed with a slot,

3. said disc passing through said slot with little clearance so as to limit said movement of said brake shoe holder relative to said support in said operative condition,



4. a portion of said disc projecting through said slot in a direction away from said common axis in said operative condition of the support;

f. two brake shoes,

1. said portions of said brake shoe holder jointly enveloping a portion of each brake shoe,

2. respective parts of said brake shoe holder constituting guide means slidably engaging said brake shoes for movement of the engaged brake shoes relative to said brake shoe holder toward and away from a braking position,

3. said brake shoes, when in said braking position, receiving said projecting portion of said disc axially therebetween and frictionally engaging said contact faces when said support is in the operative condition; and

g. brake actuating means on said support for moving said brake shoes toward and away from said braking position.

3,927,737

ANNULAR DUAL PISTON BRAKE ARRANGEMENT

Peter F. M. Prillinger, Peoria Heights, and Paul C. Rosenberger, Decatur, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 11, 1974, Ser. No. 522,390

Int. Cl.² F16D *65/16*

U.S. Cl. 188—106F **10 Claims**

1. An annular dual piston brake arrangement for selective holding engagement of a rotatable member of a drive train, comprising;

a support structure;

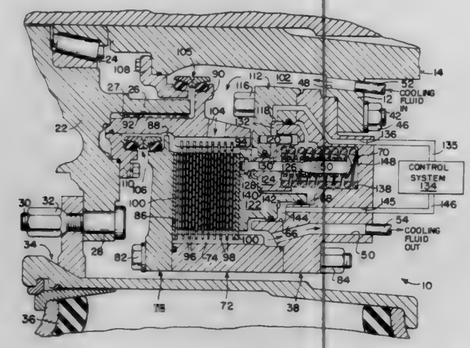
an annular service brake piston axially reciprocably and nonrotatably mounted within said support structure;

fluid actuating means for biasing said annular service brake piston concentrically toward a brake holding position with respect to such rotatable member;

an annular secondary brake piston axially reciprocably and nonrotatably mounted within said support structure in

axially telescoping, substantially radially aligned compact relation within said service brake piston;

fluid retracting means for holding said secondary brake piston in a disengaged condition, limitedly axially separated from said service brake piston; and



spring engagement means for biasing said secondary brake piston directly axially against said service brake piston for subsequent peripheral brake holding engagement of said rotatable member in the absence of a predetermined pressure in said fluid retraction means.

3,927,738

LOAD DEPENDENT ACTING BRAKE FOR CONVEYOR DEVICES

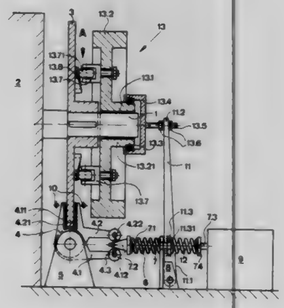
Werner Ernst, Rotkreuz, Switzerland, assignor to Inventio Aktiengesellschaft, Hergiswil, Switzerland

Filed Oct. 29, 1974, Ser. No. 518,604

Claims priority, application Switzerland, Nov. 2, 1973, 15493/73

Int. Cl.² B60T *8/16*

U.S. Cl. 188—187 **2 Claims**



1. A load dependent acting brake for a conveyor device, comprising a drive shaft provided for the conveyor device, a brake disk secured to said drive shaft of said conveyor device, brake lever means cooperating with said brake disk, at least one brake jaw mounted at said brake lever means, said brake jaw including a brake clamp, a brake rod cooperating with said brake lever means, a fixed bearing in which the brake rod is displaceably guided, a brake wedge secured to an end of the brake rod, brake spring means operatively engaging at the brake wedge and bearing against said fixed bearing, said brake spring means exerting a force upon said brake wedge secured to the brake rod for pressing said brake jaw against said brake disk, a brake vent device operatively connected with said brake rod, said brake jaw being in operative co-action by means of said brake rod with said brake vent device, said brake vent device in its switched-in state for venting the brake retracting the brake rod against the action of said brake spring means and said brake vent device in its switched-off state pressing the brake lever means and said brake jaw through the action of the force applied by the brake spring means upon the brake wedge of the brake rod into a brake closing position, a mechanically acting deceleration feeler device effective at the brake lever means, an adjustment lever rotatably mounted at the fixed bearing and cooperating with said brake rod, a disk secured to said brake rod, a prestressed pressure spring disposed between the fixed bearing and the brake vent device, said prestressed pressure spring bearing at said disk secured to the brake and exerting a force upon the adjustment lever, said adjustment lever acting by means of said prestressed pressure spring upon said brake rod, said mechanically acting deceleration feeler device cooperating with said adjustment lever in order to move said adjustment lever through a path substantially proportional to the deceleration occuring at the drive shaft of the conveyor device in the sense of reducing the braking force exerted by the brake jaw upon the brake disk.

3,927,739

DEVICE FOR MOUNTING RAIL-BRAKE MAGNETS

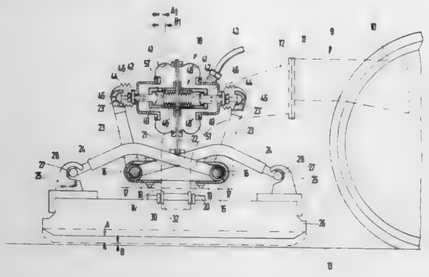
Ernst Katzer, and Pierre Baronnet, both of Munich, Germany, assignors to Knorr-Bremse GmbH, Munich, Germany

Filed Dec. 9, 1974, Ser. No. 531,189

Claims priority, application Germany, Dec. 8, 1973, 2361312

Int. Cl.² F16D *65/34*

U.S. Cl. 188—206 R **6 Claims**



1. In a device for mounting from a railway truck a pair of rail-brake magnets above the wheels, the combination of a pair of pressure medium actuated bellows means for acting in opposite directions, a pair of first lever arms acted upon by said bellows means, a pair of parallel pivotable torsion bars extending transversely of the rails and a said first lever arm attached rigidly to each of said bars, two pairs of second lever arms and each pair attached rigidly to said torsion bars on either side of said bellows means at an angle to said first lever arms and each second lever arm having a free end, one of said rail magnets being supported at the free ends of each pair of said second lever arms, said bellows means moving the brake magnets between a lower ready brake position and an upper rest position and including spring means to retain said brake magnets in the ready brake position.

3,927,740

BRAKE DISK WITH TAPERED KEY WAY

Robert L. Zarembka, Akron, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

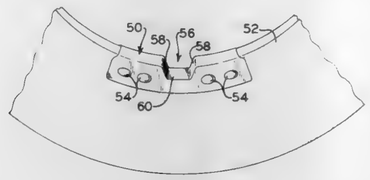
Filed July 1, 1974, Ser. No. 484,411

Int. Cl.² F16D *65/12*

U.S. Cl. 188—218 XL **1 Claim**

1. A brake disk made from a carbon based material having a plurality of evenly spaced slots formed around one periphery thereof, the slots, in the plane of the disk, having a bottom edge and two sides oblique thereto at an angle between 10° and 30°, and

a plurality of reinforcement clips fixedly secured to said disk at said slots, the clips having slots therein congruent with the sides of the slots of the disk and aligned therewith, said clips comprising a first side member adjacent to one side of the disk, a second side member adjacent to the other side of the disk, two cap members interconnecting



each of the side members on each side of the slot and extending therefrom substantially the full length of the clip, and facings interconnecting the side members and cap members within the slot of the clip to effect encapsulation of the carbon based material in the area of the clip, the clip being everywhere in flush contacting relation with such carbon based material.

3,927,741

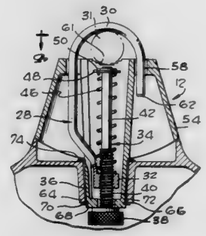
LATCHING MECHANISM FOR PORTABLE SECURITY CONTAINER

Morton K. Rubinstein, 14954 Corona Del Mar, Pacific Palisades, Calif. 90272

Filed Dec. 9, 1974, Ser. No. 531,180

Int. Cl.² A45C *13/18*

U.S. Cl. 190—61 **19 Claims**



1. A latching mechanism for a portable container of the type including an interior cavity that is enclosed by exterior walls and which is accessible through a door hingeably attached to said walls, and a latching mechanism for being affixed to an external fixture to prevent removal of said container therefrom, said latching mechanism comprising:

means for engaging an external fixture by being draped across said fixture, said means including:

a retractable hooking member for engaging said fixture and including a base ring having an interior threaded portion, and

an anchoring bolt to which said hooking member is movably connected, said bolt including a threaded portion with which said base ring is adapted to be threadably engaged,

jaw means for providing a receiving surface against which said fixture can be clamped by said hooking member, said jaw means having walls forming a central cavity in which said anchoring bolt is seated, said retractable hooking member extending from said central cavity and being partially retractable therefrom, said jaw means having a base portion that is movably attached to said container to permit swiveling thereof with respect to said latching mechanism.

3,927,742

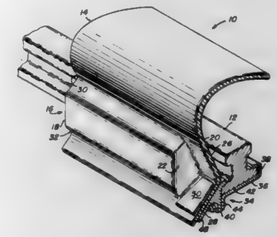
THIRD RAIL COVER BOARD

Clarke Reynolds, 535 Hillary Drive, Tiburon, Calif. 94920, and Richard J. Quigley, 2221 Via Maderos, Los Altos, Calif. 94022

Filed Oct. 23, 1974, Ser. No. 517,081

Int. Cl.² B60M *1/04*

U.S. Cl. 191—30 **7 Claims**



1. A cover for an electrified third rail, comprising

a. an electrically insulative cover board which is elongated in the direction of the longitudinal axis of such a rail and includes a top wall having a lateral cross sectional shape which is arcuate with the concavity thereof facing the top of such a rail and a side wall contiguous with said top wall; said side wall including

1. a pair of generally upstanding portions,

2. an arcuate portion with the convexity thereof facing the side of such a rail and located between said upstanding portions, and

3. a pair of supportive wall portions each extending from a respective edge of said arcuate portion to the edge of a respective one of said upstanding portions; and

b. means for attaching said arcuate portion to such a rail.

3,927,743

COASTER BRAKE FOR A BICYCLE

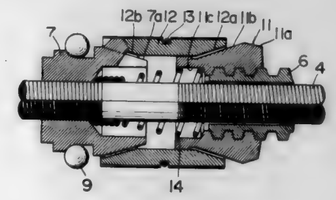
Kimihiro Tsuchiye, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

Filed May 28, 1974, Ser. No. 473,832

Claims priority, application Japan, May 31, 1973, 48-62211; Nov. 13, 1973, 48-127985

Int. Cl.² F16D *67/02*

U.S. Cl. 192—6 R **5 Claims**



1. A coaster brake hub for a bicycle comprising:

a. a hub shell,

b. a fixed member comprising a fixed hub shaft penetrating through the center of said hub shell and a brake cone which is located at one side internally of said hub shell and fixedly mounted to said hub shaft, said brake cone having an outer tapered face thereon,

c. a driving means at the other side internally of said hub shell and mounted to said hub shaft in a rotatable relation therewith, said driving means fixedly supporting a sprocket wheel of a bicycle to the same,

d. a cylindrical clutch cone, with an outer tapered face, screwably engaged with said driving means for transmit-

ting the rotary force from the driving means to said hub shell during normal rotation of said driving means,

e. a plurality of brake shoes having two inner tapered faces which are frictionally engagable with said tapered faces of said brake cone and said clutch cone respectively, and

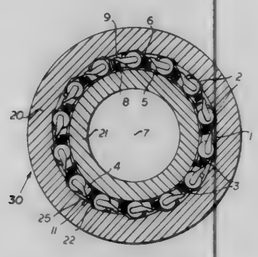
f. a coil-shaped clutch spring mounted between said fixed member and said clutch cone so as to apply a given rotary resistance to said clutch cone during reverse rotation of said driving means, said clutch spring having lengthwise one end connected to the outer periphery of one of said fixed member and said clutch cone and having lengthwise the other end connected to the other one of said fixed member and said clutch cone so that during normal rotation of said driving means said lengthwise one end of the clutch spring becomes slidable and the other end becomes fixed, and, during reverse rotation of said driving means, said lengthwise one end of the clutch spring becomes fixed and the other end thereof becomes slidable under the effect of torque in excess of a given amount.

3,927,744

CAGE FOR OVERRUNNING ROLLER CLUTCH

Karl Josef Hallerberg, Plankstadt, Germany, assignor to Borg-Warner, GmbH, Heidelberg, Germany

Filed Aug. 27, 1974, Ser. No. 501,106
Claims priority, application Germany, Sept. 6, 1973, 2344960
Int. Cl.² F16D *41/06*
U.S. Cl. 192—45 **8 Claims**



1. A cage for an overrunning roller clutch having an energizing spring for each roller, said cage including an annular side plate having axially extending tabs bent from the inner and outer rims thereof, an inner and outer tab together with a respective energizing spring providing retaining means for a roller, characterized in that the length (L) of said inner tab (**8**) corresponds approximately to the length (**1**) of a roller (**2**) and that said inner tab (**8**) has a lug (**12**) disposed on a center portion (**24**) thereof for mounting an energizing spring (**3**), said lug extending radially with respect to said annular side plate, and in that said outer tabs (**9**) are provided with legs (**16**) bent over at their ends which form guiding supports for the rollers (**2**) extending parallel to side plate (**4**).

3,927,745

TRACTION SYSTEM

Aaron C. Johnson, Ovid, Mich., assignor to Alfred E. Weekley, Birch Run; John Hatfield, Davison and Floyd Jones, Flint, all of, Mich., part interest to each

Filed May 23, 1974, Ser. No. 472,599
Int. Cl.² F16D *41/00*, *13/18*
U.S. Cl. 192—49 **9 Claims**

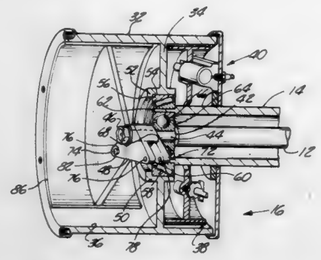
1. A traction system for a wheeled vehicle comprising:

a. an axle having a brake drum rotatably mounted on each end thereof, and

b. for each brake drum:

1. a fulcrum eccentrically journalled on the axle, and

2. a pair of clutch shoes interconnected to the fulcrum, the clutch shoes being free-falling, only one of the pair of clutch shoes being engageable by the fulcrum, at any one time, to drive a wheel associated therewith, the



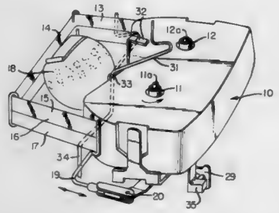
engageable shoe being determined by the direction of rotation of the wheel.

3,927,746

TYPING AND CORRECTING CARTRIDGE FOR SINGLE-LEMENT TYPEWRITERS

William H. Wolowitz, 6905 Persimmon Tree Road, Bethesda, Md. 20034

Filed Apr. 3, 1974, Ser. No. 457,532
Int. Cl.² B41J *35/14*, *33/54*
U.S. Cl. 197—151 **6 Claims**



1. A ribbon cartridge for use with a typewriter that employs a ribbon vibrator throw control that has a plurality of control positions, comprising

a casing adapted to be placed in operative relation to a typewriter,

said casing containing a two-color ribbon, one color being located above the other, said ribbon extending out of the casing and then extending back into the casing, and

adjusting means mounted on the casing for engaging said throw control and exercising control over it to enable the selection of either of two of said control positions.

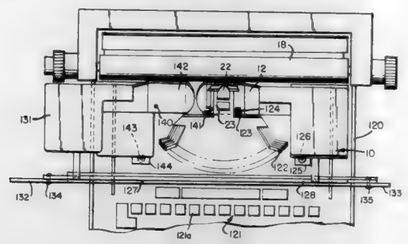
3,927,747

PRINTING MACHINE IN WHICH THE RIBBONS IN TWO DIFFERENT CARTRIDGES MAY BE SELECTIVELY USED

William H. Wolowitz, 6905 Persimmon Tree Road, Bethesda, Md. 20034

Filed Apr. 1, 1974, Ser. No. 457,293
Int. Cl.² B47J *30/14*
U.S. Cl. 197—151 **20 Claims**

1. In a printing machine adapted to receive an object to be printed, first and second separate printing mediums, first and second cartridge elements respectively supporting, mutually exclusively one from the other, said first and second separate printing mediums, a printing device operable to perform a printing operation by causing at least a portion of a printing medium to be moved from a given location and to contact the object to be printed, means for retaining a first and second socket means in spaced relation to each other, said first socket means carrying said first cartridge element to position its printing medium at said given location, and said second socket means carrying said second cartridge element and operable to move said second cartridge element to enable the printing medium of said second cartridge element to be moved to said



given location and means operable such that when said second cartridge element is so moved the said first cartridge element is moved to move its printing medium away from said given location.

3,927,748

ATTACHMENT FOR CONVERTING A STANDARD TYPEWRITER TO A SELF-CORRECTING TYPEWRITER

William H. Wolowitz, 6905 Persimmon Tree Road, Bethesda, Md. 20034

Filed May 16, 1974, Ser. No. 470,476
Int. Cl.² B41J *29/16*
U.S. Cl. 197—181 **8 Claims**

1. An attachment device for use with a typewriter of the type that has a keyboard, a backspace means and a ribbon selector, comprising first and second keys including control means for operating said backspace means of the typewriter when either of said first or second keys is depressed, and movable means which when said first key is depressed positions said ribbon selector in a first position and which when said second key is depressed positions said ribbon selector in a second position, and frame means for attaching said device to the typewriter to position the device external to the typewriter in a position such that said control means is in operative relation to said backspace means and said movable means is in operative relation to said ribbon selector.

3,927,749

APPARATUS FOR SUPPLEMENTING THE OPERATION OF THE RIBBON SELECTING AND BACKSPACING MEANS OF A TYPEWRITER

William H. Wolowitz, 6905 Persimmon Tree Road, Bethesda, Md. 20034

Filed Aug. 12, 1974, Ser. No. 496,602
Int. Cl.² B41J *29/16*
U.S. Cl. 197—181 **8 Claims**

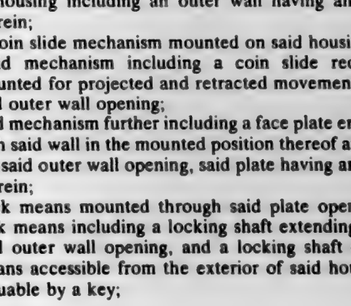
1. In a printing machine,

printing means including a printing medium having first, second and third printing fields,

selecting means for selecting which of said three printing fields will be used at any particular time,

said selecting means being movable in first and second opposite directions and having at least first, second and third positions to which it is movable, one for each of said ribbon fields, the second one of said three positions being a mid-position and the other two positions being in said first and second opposite directions respectively from the mid-position,

said printing means including operable means for performing the printing operation in steps across the object being printed and including backspace means for backspacing the operable means one step,



a first key for moving said selecting means in said first direction to said first position to select one of said three fields,

means for operating said backspace means when said first key is depressed, and

means for selecting either said second or said third position of said selecting means, said means comprising a second key for moving said selecting means in said second direction

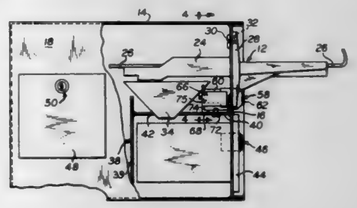
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3,927,750

LOCKABLE COIN SLIDE ASSEMBLY

Harry Greenwald, Whitestone, and Salvatore Iglio, Richmond Hills, both of N.Y., assignors to Walter Kidde & Co., Inc., Clifton, N.J.

Filed Dec. 5, 1973, Ser. No. 421,843
Int. Cl.² G07F *9/00*
U.S. Cl. 194—97 R **2 Claims**



1. A lockable coin slide assembly comprising:

a. a housing including an outer wall having an opening therein;

b. a coin slide mechanism mounted on said housing;

c. said mechanism including a coin slide reciprocally mounted for projected and retracted movement through said outer wall opening;

d. said mechanism further including a face plate engageable with said wall in the mounted position thereof and covering said outer wall opening, said plate having an opening therein;

e. lock means mounted through said plate opening, said lock means including a locking shaft extending through said outer wall opening, and a locking shaft operating means accessible from the exterior of said housing and actuable by a key;

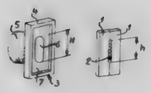
f. said locking shaft being selectively rotatable by said key received in said locking shaft operating means;
g. a bracket supported within said housing;
h. said bracket comprising an upstanding rear leg portion and a pair of upstanding side leg portions, said rear leg portion being spaced from said outer wall, and each one of said pair of side leg portions being connected to a separate side of said rear leg portion and projecting forwardly in substantially abutting relation to said outer wall;
i. selectively operable complementary formed engaging means on the rear leg portion of said bracket and on said shaft for engaging said shaft with said bracket upon rotation by said key for locking said mechanism on said housing;
j. said housing including a second wall having an access opening for servicing said coin slide mechanism; and
k. blocking means positioned between said lock means and service wall for preventing access to said locking shaft through said service opening.

3,927,751

PIN GUIDE FOR PRINTING HEAD

Claude-Michel Juvet, Les Brenets, Switzerland, assignor to Seitz S.A., Les Brenets, Switzerland

Filed July 5, 1974, Ser. No. 486,199
Claims priority, application Switzerland, July 6, 1973, 9863/73
Int. Cl.² B41J *3/04*
U.S. Cl. 197—1 R **1 Claim**



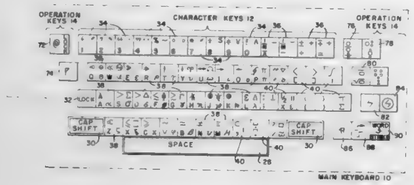
1. A support for a pin guide, and a head to which said support is secured, said support having a recess therein, a pair of plates cemented in said recess, said plates having opposed edges that define openings between said opposed edges, said support having a cylindrical rear projection that engages in a cylindrical opening in said head, said recess and said plates having a plurality of flat surfaces that are in area contact with each other and that are perpendicular to the axis of said cylindrical rear projection, said recess and said plates having further flat surfaces that are in area contact with each other and that are parallel to said axis, said recess being defined by said flat surfaces thereof, said support and said head having flat surfaces that are in area contact with each other and that are perpendicular to said axis, said support and said head having further flat surfaces that are in area contact with each other and that are parallel to said axis, said further flat surfaces of said support and said head including at least one flat surface on at least one projection that extends forwardly from said head, and a setscrew releasably securing said support in said head.

3,927,752

KEYBOARD AND ENCODING SYSTEM FOR PHOTOCOMPOSITION OF SCIENTIFIC TEXT INCLUDING MULTILINE MATHEMATICAL EQUATIONS

Roger W. Jones, Sayville, N.Y.; J. C. Fineman, Louisa, Va., and James R. Roesser, Brookhaven, N.Y., assignors to American Institute of Physics, New York, N.Y.

Filed Jan. 22, 1974, Ser. No. 435,477
Int. Cl.² B41J *5/30, 5/10*
U.S. Cl. 197—19 **10 Claims**



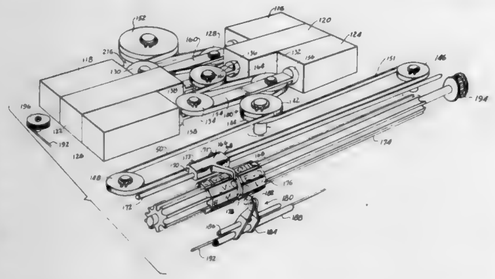
1. A system for typographic composition of scientific text, comprising a keyboard having character keys, a plurality of format keys indicating forms for different mathematical expressions, and two format delineator keys including a separator key for delineating the component parts for a plurality of mathematical expressions represented by said format keys and a terminator key indicative of the end of an expression with one of said formats, and digital means responsive to operation of said keyboard for producing an output in response to any one of said format keys indicating that subsequently keyed characters are to be printed in one location determined by the format represented by said one format key until a separator key strike, if any, whereupon subsequently keyed characters are to be printed in another location according to said format until said terminator key is struck ending the influence on said subsequently keyed characters of the format represented by the immediately preceding format key.

3,927,753

SOLENOID SYSTEM FOR MOVING A TYPE MEMBER

Timothy F. Donovan, Huntington, and William P. Ryan, Bethany, both of Conn., assignors to Mite Corporation, New Haven, Conn.

Filed Aug. 22, 1969, Ser. No. 852,168
Int. Cl.² B41J *1/32*
U.S. Cl. 197—49 **39 Claims**



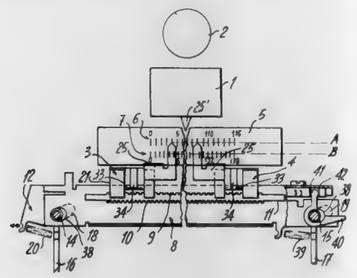
1. In a printer having a movable type body, a solenoid system to move the type body, said solenoid system comprising a plurality of pairs of opposing solenoids, a plurality of displacement means each operatively connected to a pair of solenoids, said displacement means being movable in a first direction, by one of said solenoids of a pair, to a first position and movable in a second direction, by the other solenoid of said pair, to a second position, said plurality of displacement means having different displacements which are interrelated in a predetermined ratio, means to sum the displacements of said displacement means, and means to transmit the sum of said displacements to the type body for selection of a position on the type body.

3,927,754

MARGIN STOP ARRANGEMENT FOR TYPEWRITERS

Ulrich Menzi, Yverdon, Switzerland, assignor to Hermes Precisa International S.A., Yverdon, Switzerland

Filed Sept. 18, 1974, Ser. No. 507,251
Claims priority, application Switzerland, Sept. 20, 1973, 13529/73
Int. Cl.² B41J *21/02, 21/18*
U.S. Cl. 197—63 **13 Claims**



1. A margin stop arrangement for typewriter having a type element intended for printing with at least two different spacings between the characters, rack means with at least two different sets of teeth of different pitch, a margin scale carrier graduated with at least two different scales corresponding to the different character spacings, at least one margin stop for cooperating with said sets of teeth, and wherein the improvement comprises that said rack means, has a longitudinal opening, first and second said sets of teeth, each set of a different pitch, being so incorporated in said opening that they face each other; means for vertically moving said margin stop between a first position and a second position, said margin stop in said first position cooperating with the first set of teeth and in said second position with the second set of teeth; and further wherein the scales of said scale carrier include first and second scales, the graduations of which correspond respectively to the pitches of said first and second sets of teeth, said first and second scales being spaced apart a vertical distance proportional to the vertical spacing between the first and second positions of said margin stop, whereby the vertical movement of said margin stop and the vertical spacing between said first moves said indicator an amount equal to second scales enables the typist to read the latter more easily and without confusion.

3,927,755

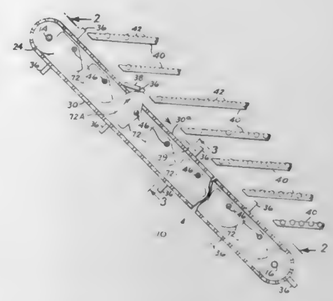
SORTING APPARATUS WITH ROTATING ARTICLE DIVERTER

Edward W. Ritola, Yacolt, Wash., assignor to Lumber Systems, Inc., Portland, Oreg.

Filed Mar. 6, 1974, Ser. No. 448,491
Int. Cl.² B65G *47/00*
U.S. Cl. 198—25 **17 Claims**

1. Sorting apparatus comprising an elongate conveyor for carrying articles along a path past a plurality of sorting stations spaced apart in the direction of movement for an article along said path, and

diverting means for diverting selected ones of said articles to selected sorting stations, said diverting means comprising a plurality of rotatable cams spaced longitudinally of said path, with one of said cams disposed adjacent each of said sorting stations, a cam having a projecting lobe thereon and being mounted adjacent said path for rotation between a nondiverting position in which said lobe is spaced from said path to permit articles to move therepast on said conveyor and a diverting position in which said lobe projects into said path to engage and divert an article from said path into a sorting station, and operating means for rotating said cam in one rotational direction



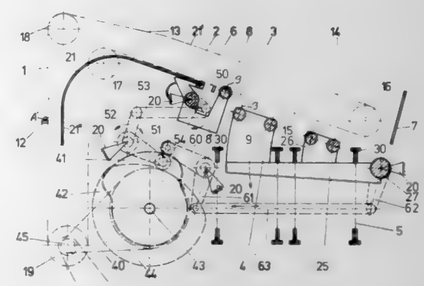
from a nondiverting position to a diverting position and thence continuing in said one rotational direction to a nondiverting position spaced from said path.

3,927,756

TRANSFER MECHANISM FOR LONG DRIED FARINACEOUS PRODUCTS

Werner Remund, Uzwil, Switzerland, assignor to Buhler Brothers, Ltd., Uzwil, Switzerland

Filed Sept. 3, 1974, Ser. No. 502,362
Claims priority, application Switzerland, Sept. 5, 1973, 12779/73
Int. Cl.² B65G *47/52*
U.S. Cl. 198—27 **12 Claims**

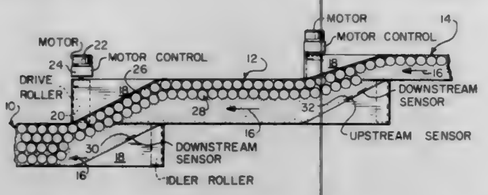


1. In transfer apparatus for elongated dried farinaceous products wherein the products are transported on rods in a powered rod advancer having an ejection loop where said products are removed from said rods and deposited on a belt conveyor located beneath the said ejection loop by means including a stripping mechanism, with a restraining nose and a stop plate, and a lowering mechanism, the improvement which comprises:

an initial tipping element in said apparatus arranged for movement between a raised position, in which it supports first ends of said products preparatory to removal of said rods, and a lowered position, in which it is displaced out of the path of movement of said products on said lowering mechanism;

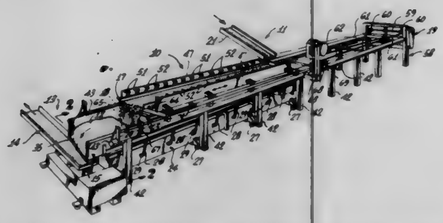
and means for individually controlling the movements of said tipping element and said lowering mechanism.

3,927,757
AUTOMATIC CONTROL SYSTEM FOR A MOTOR-DRIVEN CONVEYOR SECTION
Frederick E. Fauth, Baltimore, Md., assignor to American Bottlers Equipment Company, Baltimore, Md.
Filed Oct. 7, 1974, Ser. No. 512,609
Int. Cl.² B65G 43/08
U.S. Cl. 198—37 **8 Claims**



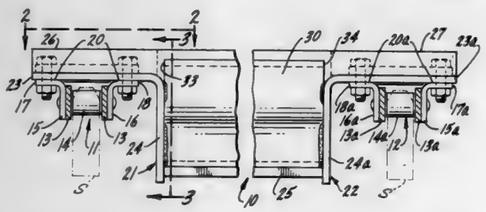
1. An automatic control system for a motor-driven conveyor section, said system comprising: speed control means operatively connected to the conveyor motor drive and responsive to the presence of a first control signal for automatically modulating the velocity of the article conveyor within a range of speeds defined by predetermined upper and lower limits; limit shift means coupled to said speed control means and actuable in response to the presence of a second control signal for automatically adjusting said predetermined upper and lower limits to shift said speed modulation range; first sensing means disposed in a downstream location with respect to the direction of conveyance for sensing an accumulation of articles thereat and generating said first control signal in response thereto; and second sensing means disposed in an upstream location with respect to the direction of conveyance for sensing an accumulation of articles thereat and generating said second control signal in response thereto.

3,927,758
AUTOMATIC MATERIAL-HANDLING APPARATUS
Vaughn Gregor, 465 Castle Place, Beverly Hills, Calif. 90210
Filed July 29, 1974, Ser. No. 492,466
Int. Cl.² B65G 37/00
U.S. Cl. 198—89 **17 Claims**



7. In an automatic material-handling apparatus for receiving bulk material at a supply station, storing the material for delivery to a using system, and discharging the material at a discharge station, the combination of:
- a first elongated storage and discharge conveyor having means for receiving and holding material and for discharging material at a discharge station at one end of the conveyor;
- means for operating said first conveyor selectively to discharge material at said discharge station;
- a second elongated conveyor mounted for back-and-forth endwise movement in parallel relation with said first conveyor, and having a distributing end movable along substantially the full length of said first conveyor during such endwise movement to distribute material in a layer along substantially the full length thereof;
- drive means for moving said second conveyor longitudinally relative to said first conveyor and independently thereof, between a first extreme position in which said conveyors are longitudinally overlapped and said distributing end is adjacent the end of said first conveyor opposite said one end, the range of movement of said second conveyor being less than its full length;
- means for supplying material to said second conveyor at the supply station, and located in general longitudinal alignment with said opposite end of said first conveyor and in overlying relation with said second conveyor whereby material can be supplied to the second conveyor in the area where the second conveyor always is in position to receive the material;
- and control means for operating said drive means to distribute material from said second conveyor along said first conveyor in a layer from said one end toward the other end thereof, and to add material to the layer from the end thereof opposite said one end of said first conveyor.

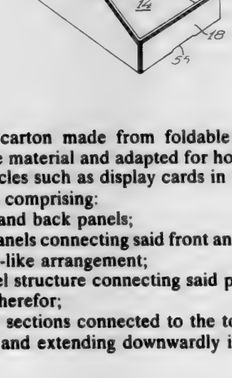
3,927,759
FLIGHT ASSEMBLY FOR ACHIEVING BALANCED REACTION FORCES IN ELEVATING-TYPE SCRAPER
John H. Hyler, and Clifford E. Johnson, both of Peoria, Ill., assignors to Westinghouse Air Brake Company, Pittsburgh, Pa.
Filed July 15, 1974, Ser. No. 488,523
Int. Cl.² B65G 19/00
U.S. Cl. 198—171 **5 Claims**



1. In an elevator for use in an earth moving machine, the combination comprising a pair of endless chains, means for supporting and driving the chains for movement in unison along parallel runs, the chains having respectively paired outer and inner links, at least one pair of such links having means defining aligned, flat platforms parallel to the runs of the chains, a transversely extending flight having bases at its ends in the form of end plates presenting aligned, flat surfaces dimensioned to mate with the platforms for seating thereon, pivot connections on the platforms generally centered thereon and oriented perpendicularly to the runs of the chains for pivotally securing the bases of the flight, a plurality of fasteners in the form of bolts in a two-dimensional pattern for maintaining the bases of the flight seated against the surfaces of the respective platforms, and means providing limited lateral lost motion at the bolts so that when the flight is bowed by striking an obstruction setting up a peak reaction force, the bowing is accommodated by limited free twisting movement of the flight bases relative to the platforms thereby to avoid twisting of the links and insuring equal division of the reaction force between the links of the chains.

3,927,760
CONVEYOR HANGER MODULAR CONSTRUCTION
John W. McCall, Birmingham, Mich., assignor to Formall, Inc., Warren, Mich.
Filed Sept. 23, 1974, Ser. No. 508,260
Int. Cl.² B65G 17/20
U.S. Cl. 198—177 T **21 Claims**

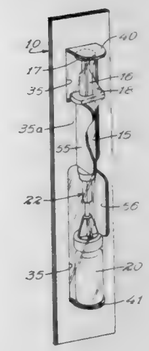
1. A parts-carrying hanger of modular construction for removable attachment to the clevis of a trolley in a trolley conveyor system, said hanger comprising
- a proximal hanger member having
  - a proximal end portion adapted to be secured to said trolley clevis by a clevis pin,
  - an intermediate rod portion,
  - and a distal end terminating in a first coupling section,
- one or more modular hanger members each having
  - a proximal end terminating in a complementary second coupling section,
  - an intermediate rod portion,



  - and a distal end terminating in a first coupling section,
- each modular hanger member being connected to the next preceding hanger member by their complementary coupling sections and by closure means encircling at least portions of said mated coupling sections,
- and one or more parts-carrying members each having
  - means for attachment to and disposed upon and about each said mated coupling sections,
  - and one or more parts-supporting arms connected to and extending outwardly from said attachment means.

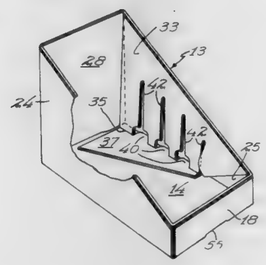
- said liner sections having a bottom edge juxtaposed with said bottom panel;
- said liner sections having vertical slots formed therein extending to the bottom edges thereof, said slots adapted to retain said rigid articles in parallel, spaced relation;
- a section hingedly attached along said bottom edge of each of said liner sections and folded inwardly to lie in flush relationship with said bottom panel;
- said hingedly attached sections having outwardly facing spacer tabs connected thereto extending between said bottom edges of said liner sections and said side panels;
- a front liner panel formed in size substantially equal to said front panel and hingedly attached to the top edge of said front panel and folded inwardly and downwardly into contact with said front panel; and
- a bottom liner hingedly connected to said front liner panel opposite said front panel and positioned in overlapping relationship with said bottom panel structure to serve as a liner therefor.

3,927,762
STACKABLE SYRINGE PACKAGE
Robert C. Zdarsky, Westchester, and Lawrence S. Wysocki, Chicago, both of Ill., assignors to Hoerner Waldorf Corporation, St. Paul, Minn.
Filed Nov. 1, 1974, Ser. No. 519,809
Int. Cl.² B65D 65/02, 71/00, 73/00
U.S. Cl. 206—45.31 **2 Claims**



1. A paperboard blank for a card package holding a combined syringe having a finger ledge and filler bottle, said syringe arranged with the needle end in contact with said bottle, said blank comprising:
- a first panel made of foldable paperboard;
- said first panel having an elongated die cut aperture formed therein, said aperture being formed in length substantially equal to said syringe and filler bottle;
- said aperture in said first panel being formed in width at its ends sufficient to allow said bottle and said finger ledge on said syringe to pass therethrough;
- a first side restraining flap positioned in said aperture and connected along a first fold line parallel to the lateral edges of said aperture, said first fold line defining one edge of a first extended area of said first panel protruding into said aperture, said finger ledge adapted to be positioned adjacent one end of said first flap;
- a second side restraining flap positioned in said aperture spaced longitudinally from said first flap and connected along a second fold line parallel to said first fold line, said second fold line defining one edge of a second extended area of said first panel protruding into said aperture along the lateral side opposite said first extended area;
- said first and second parallel fold lines spaced apart a distance equal to the diameter of said syringe;

3,927,761
DISPLAY CARTON
Daniel J. Boyle, Milwaukee, Wis., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.
Filed Nov. 29, 1974, Ser. No. 528,268
Int. Cl.² B65D 5/50
U.S. Cl. 206—45.14 **6 Claims**



1. A display carton made from foldable paperboard or similar sheet-like material and adapted for holding a plurality of thin rigid articles such as display cards in an upright position, said carton comprising:
- parallel front and back panels;
- parallel side panels connecting said front and back panels to form a tube-like arrangement;
- a bottom panel structure connecting said panels and forming a base therefor;
- a pair of liner sections connected to the top edges of said side panels and extending downwardly into said carton,

a plastic film covering said aperture and attached to said first panel; and

a second panel hingedly connected to one edge of said first panel substantially equal in size to said first panel.

3,927,763

INSTALLATION UNIT FOR A MULTISTAGE RADIAL COMPRESSOR

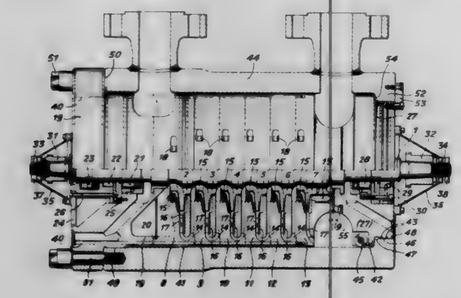
Rene Strub, and John Peter Naegeli, both of Winterthur, Switzerland, assignors to Brown Boveri - Sulzer Turbomachinery Ltd., Zurich, Switzerland

Continuation of Ser. No. 207,308, Dec. 13, 1971, abandoned. This application Aug. 20, 1973, Ser. No. 389,443

Claims priority, application Switzerland, Dec. 15, 1970, 18548/70

Int. Cl.² B65D *85/68*

U.S. Cl. 206—319 **10 Claims**



1. An installation unit for introduction into a casing of a multistage radial compressor comprising

a shaft,

a plurality of rotors mounted on said shaft,

a plurality of annular deflectors disposed about said shaft,

sealing means mounted in deflectors about said shaft,

a plurality of annular diffusors, each diffusor mounted in a respective deflector,

a high pressure cover disposed against said deflectors at an inner side thereof,

a bearing in said cover for rotatably supporting said shaft in said cover and centrally within said bearing,

a stuffing box in said cover for sealing said shaft relative to said cover,

a low pressure cover disposed against said deflectors at an opposite side thereof,

a bearing in said low pressure cover for rotatably supporting said shaft therein and centrally within said latter bearing,

a stuffing box in said low pressure cover for sealing said shaft relative to said low pressure cover, and

means removably mounted on said covers and said shaft for clamping said covers and said deflectors together and for clamping said shaft to said covers and said deflectors to prevent relative rotation between said shaft, said covers and said deflectors whereby said deflectors are pressed together and said shaft is placed under tension while being held centrally within said sealing means.

3,927,764

STACKING COLLAR FOR WAREHOUSING AND TRANSPORTING SHEET MATERIAL

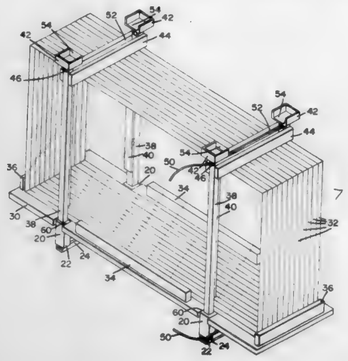
Murray J. Fox, Rte. 1, Pompeo Road, Wilsonville, Conn. 06255

Filed July 30, 1974, Ser. No. 493,175

Int. Cl.² B65D *19/26, 21/02, 85/48*

U.S. Cl. 206—451 **2 Claims**

1. A collapsible collar of the class described comprising a generally flat base, means forming pairs of sockets at certain edges thereof, a stack of sheet material positioned on said base, a pair of separable standards inserted into each said pair of sockets means at the tops of said standards securing the same together including strapping extending completely around said stack of sheet material on the base, under the base, and down along the standards at opposite sides of the base,



braces extending between each pair of standards, means in the braces receiving said strapping,

channel members under the base, each channel being connected at its ends to one of said pair of standards,

and sockets at the tops of the standards adapted to receive the channels of a similar collar stacked thereabove.

3,927,765

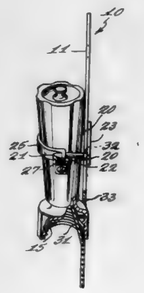
ARTICLE AND CARD PACKAGE AND FASTENING MEANS THEREFOR

Glenn I. Beal, Somerset, Pa., assignor to R. M. Smith, Inc., Somerset, Pa.

Filed Mar. 19, 1974, Ser. No. 452,648

Int. Cl.² B65D *73/00*

U.S. Cl. 206—481 **6 Claims**



1. A package comprising:

a. an article including two end portions with a middle mounting portion therebetween,

b. a display card of an area greater than the outline configuration of said article receiving said article on one surface thereof, and

c. fastening means distinct and separable from said card and said article for securing said article at said mounting portion thereof to said card, said fastening means comprising

i. a rivet member, said rivet member including at least two legs each having one free end having a cam portion and a locking portion adjacent said cam portion, and

ii. a clamp member, said clamp member having at least two holes therein for cooperation with said at least two legs of said rivet member, a camming portion and a locking portion of said clamp member associated with each said hole, said camming portions of a said clamp member for deflecting said legs by cooperation with said camming portion of said legs,

one of said members when fastening said article to said card having a portion operatively engaging said card, and the other member having a portion engaging said mounting portion of said article, whereby said legs are passed through said holes and are cammed by said camming portions of said clamp member until said locking portions of said legs engage said locking portions of said clamp member thereby fastening said article onto said card.

3,927,766

CUPS FOR HOLDING INGREDIENTS FOR DRINKS

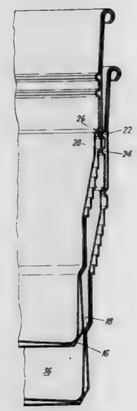
Robert H. Day, Bracknell, England, assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 4, 1974, Ser. No. 439,209

Claims priority, application United Kingdom, Feb. 7, 1973, 6057/73

Int. Cl.² B65D *21/02, 85/72*

U.S. Cl. 206—519 **1 Claim**



1. A double-walled container capable of nesting and interlocking with another identically formed container with a space for storage of a concentrate between the bottom walls of the containers when nested and interlocked, said double-walled container comprising an inner member secured within an outer member, each member being formed of a seamless thin-walled plastics-material and each member comprising a bottom wall and an integral side wall extending generally upwardly and outwardly to the upper end thereof, the inner member including an upper sealing surface spaced from the bottom wall thereof a distance sufficient to provide a space therebelow for storage of a concentrate, the outer member including a lower sealing surface at the junction of the bottom wall and side wall of said outer member, said upper and lower sealing surfaces being inclined to the axis of said container in a direction upwardly and outwardly of said container in a frusto-conical shape and cooperating to make a seal when two such containers are nested, a downwardly facing holding surface formed on said inner member to extend radially inwardly thereof, an upwardly facing holding surface formed in said outer member to extend radially inwardly thereof, said downwardly and upwardly facing holding surfaces formed in the side walls of said inner and outer members above the midheight of said container and with the vertical distance between said downwardly facing holding surface and said upwardly facing sealing surface of said inner member being sufficiently less than the distance between said upwardly facing holding surface and said lower sealing surface of said outer member to produce axial and hoop stresses in the side wall of an inner member between the holding and sealing surfaces thereof of one container and in the side wall of the outer member between the holding and sealing surfaces thereof of another of said containers when nested in said one container with said holding surfaces overlapping each other to interlock said another and said one containers.

3,927,767

PACKAGING UNIT

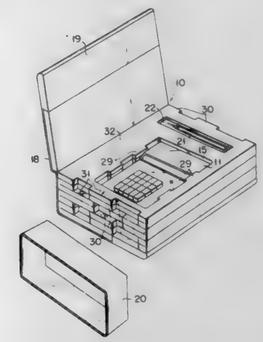
Masatoshi Sato; Katuo Umemura, and Yoshinori Kamata, all of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed May 30, 1973, Ser. No. 365,238

Claims priority, application Japan, June 1, 1972, 47-54522

Int. Cl.² B65D *81/16, 85/36*

U.S. Cl. 206—521 **16 Claims**



1. A packaging unit for wrapping an article comprising:

a single plate folded in zigzag fashion so as to form a plurality of superposed leaves;

said leaves being connected with each other along said folded edges;

the intermediate leaves being perforated with first vertically penetrating apertures so as to collectively form a single continuous bore for receiving said article;

the inner wall portion of each leaf defining said apertures being provided with inwardly extending projections spaced from each other for protecting said article from external shocks; and

the outer wall portion of each leaf being notched so as to form outwardly extending projections spaced from each other for additionally protecting said article from external shocks.

3,927,768

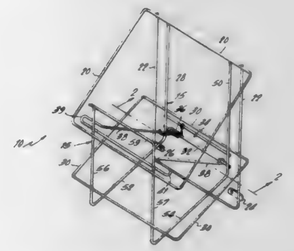
MAGAZINE RACK

Melvin Cohen, 58 Heights Road, Wayne, N.J.

Filed Jan. 8, 1973, Ser. No. 321,733

Int. Cl. A47f *1/06*

U.S. Cl. 211—49 D **1 Claim**



1. A rack comprising a back, upper and lower rectangular wire support members connected to said back and extending

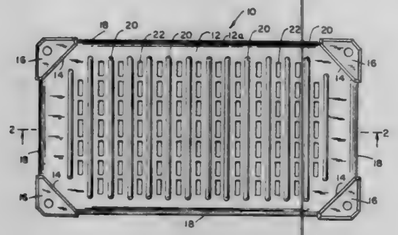
downwardly and forwardly therefrom, said back including an upright U-shaped member having an open end closed by said upper support member, a U-shaped spine open at the top including a pair of rear members extending downwardly from said upper support member and a pair of front members extending upwardly from a pair of members connecting said front and rear members and a connected member connecting said front members, said rear members being attached to the rear of said support members and said front members being attached to the front of said support members, said spine being located inwardly of said rectangular support members, and an upwardly and forwardly extending presser member pivotally connected to said spine at the rear thereof, and spring means for urging said presser member against said spine at the front thereof, said spine including a pair of cross members, said presser member being pivotally mounted on one of said cross members, said presser member being located substantially inwardly of said spine and including two diverging wings at the front thereof, said wings being engageable with said spine, said spring means being disposed on said one of said cross members at one side thereof.

3,927,769

SHELF STRUCTURE

Louis Maslow, deceased, late of Dallas, Tex.; by Frances Maslow, executor, Dallas, Tex., and by Richard Maslow, executor, Wilkes-Barre, Pa., assignors to Metropolitan Wire Goods Corporation, Wilkes-Barre, Pa.

Filed Apr. 29, 1974, Ser. No. 464,916The portion of the term of this patent subsequent to Apr. 1, 1992, has been disclaimed.
Int. Cl.² A47F *5/00*
U.S. Cl. 211—153 **10 Claims**



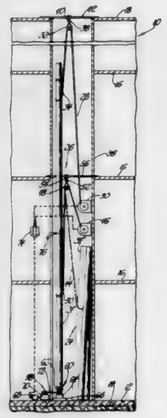
1. A shelf mountable on a shelf support structure, said shelf comprising a substantially flat, one-piece rectangular sheet of material having downwardly depending corner portions, said corner portions at each corner being disposed in a plane substantially normal to a plane defined by said flat sheet; connector means on said sheet for mounting said shelf on the support structure, said connector means including corner connectors at each corner, each connector including a corner structure disposed on one side of a respective corner portion and a clamping bar disposed on an opposing side of the respective corner portion, at least one of said corner structure and clamping bar being provided with a recess dimensioned to receive a corner portion when the latter is clamped between an associated corner structure and clamping bar, surfaces of said corner structure and clamping bar being substantially complementary to each other; fastening means for maintaining each corner structure and associated clamping bar in abutment against each other and against a respective corner portion with the latter being received within the respective recess, said corner structures further being provided with means for mounting the same on a shelf support post, each corner connector defining a substantially closed crevice-free structure which houses a corner portion; a plurality of spaced protuberances projecting above one major surface of said sheet; and a plurality of apertures provided between said spaced protuberances, whereby objects placed on said protuberances are maintained at a level above said one major surface and air is permitted to pass through said apertures and circulate around the objects including along supported surfaces thereof.

3,927,770

APPARATUS TO FACILITATE JOINING PIPE SECTIONS TOGETHER TO FORM A VERTICAL PIPE COLUMN

Janusz J. Rekawek, Clarkston, Mich., assignor to Darel Bennett, Royal Oak, Mich.

Filed Apr. 22, 1974, Ser. No. 462,843
Int. Cl.² B23K *37/04*
U.S. Cl. 214—1 P **8 Claims**



1. A pipe handling apparatus comprising:
means for supporting a first pipe section in a substantially vertical orientation;
means for suspending a second pipe section at a vertical height above the first pipe section, the second pipe section being suspended in a substantially vertical orientation;
means for controlling the relative positions of the first pipe section and the second pipe section such that the pipe sections are abutted end to end while in the vertical orientation and can be joined together; and
means for rotating the first pipe section and the second pipe section about a substantially vertical axis while the second pipe section is abutted to the first pipe section.

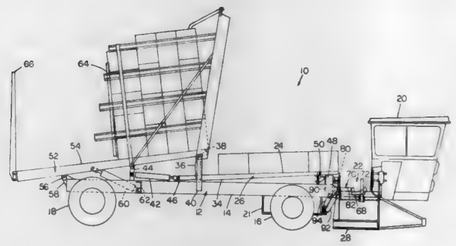
3,927,771

LOAD POSITION SENSING AND TIER PATTERN SELECTION FOR A BALE WAGON

Lee D. Butler, Kingsburg, and Edward J. Wynn, Fresno, both of Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 19, 1974, Ser. No. 498,834
Int. Cl.² A01D *87/12*; B65G *57/32*
U.S. Cl. 214—6 B **13 Claims**

1. In a bale wagon having means for accumulating tiers of bales into a stack, means for accumulating bales into a tier, and operable means for forming bales into a plurality of different tier patterns and for adding each tier to said tier-accumulating means, the improvement which comprises:
a memory element for storing a predetermined sequence of said plurality of tier patterns, said memory element defining a plurality of successive-displaced positions which each represent one of said tier patterns and being comprised by a rotatable cam having a peripheral arrangement of lobes which define said plurality of successive positions;
means coupled to said operable means and associated with said rotatable cam, said coupled and associated means including a cam follower disposed adjacent said cam and engaged with one of said lobes thereof and being responsive to each of said positions defined by said lobes of said cam to cause said operable means to form the bales into the one of said tier patterns corresponding to each of said cam positions and add said tier to said tier-accumulating means; and
means responsive to the addition of each of said tiers of bales to said tier-accumulating for successively disposing said cam follower of said coupled and associated means at each of said cam positions, said responsive means including means movably mounted on said tier-accumulating means for supporting said tiers on said tier-accumulating means as said tiers are successively added thereto, said supporting means being moved as at least some of said tiers are successively added to said tier-accumulating means, and means for transmitting the movement of said supporting means to said cam so as to rotate said cam and thereby dispose said cam follower at successive ones of said positions defined by said lobes of said cam.

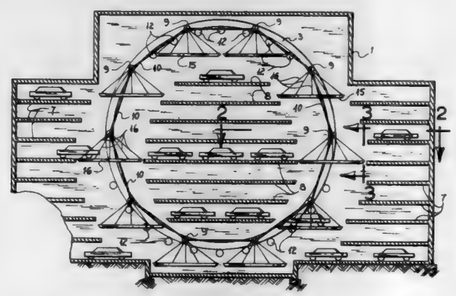


3,927,772

VEHICLE PARKING AND ROTARY ELEVATOR ASSEMBLY

Hans Borner, 4010 Cote St., Catherine Road, Apt. 14, Montreal, Quebec, Canada

Filed July 10, 1974, Ser. No. 487,255
Int. Cl.² E04H *6/16*
U.S. Cl. 214—16.1 BA **5 Claims**



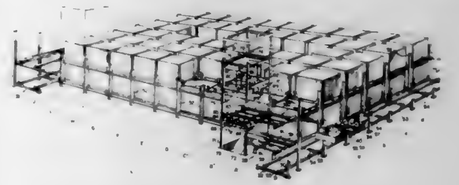
1. A vehicle parking and rotary elevator assembly comprising a pair of axially spaced-apart annular wheel flanges rotatably and peripherally supported for rotation about a common horizontal axis and defining an axial passage at said common axis, each of the wheel flanges including a ring gear having a channel shape cross-section and forming a pair of coaxial cylindrical flanges and gear teeth secured to one coaxial cylindrical flange of each pair of flanges and extending between the corresponding flanges, a pinion gear for meshing engagement with said gear teeth to rotate said elevator assembly, coupling devices transversely interconnecting the wheel flanges and holding the latter in axially spaced parallel relationship relative to each other, and vehicle carriers pivotally suspended to the axially spaced-apart wheel flanges, transversely extending between the latter and displaceable to edgewise registry with any one of a plurality of vehicle parking floors extending into edgewise adjoining relationship relative to the circumferential periphery of said wheel flanges and at different levels relative to the common horizontal axis.

3,927,773

LOAD STORAGE SYSTEM AND APPARATUS THEREFOR

Thomas John Robert Bright, 270 Sandridge Road, Rockcliffe, Ontario, Canada

Continuation of Ser. No. 263,765, June 19, 1972, abandoned. This application May 21, 1974, Ser. No. 472,055
Int. Cl.² B65G *47/00*
U.S. Cl. 214—16.4 C **1 Claim**



1. A load storage and retrieval system including:
A. at least one load transporting route;
B. at least one load storage unit having N storage locations which are formed within a rectangular area accessable from at least two of said load transporting routes;
C. at least N movable supporting members which are arranged in a series of at least two parallel rows;
D. means for circulating said movable load supporting members in a step-by-step sequential manner either clockwise or anti-clockwise, movable in a direction parallel to one axis of said at least one load storage unit, and movable in a direction normal to said axis on carrier members which move simultaneously along said at least one load transporting route on opposite sides of said rectangular area, in either opposite directions to one another or simultaneously in one direction from right to left or left to right, each of said carrier members having the means of imparting lineal movement for any required distance along the load transporting route or one movement at a time in either direction to act as a shuttle for circulating the movable load supporting members with all of said at least one load transporting routes being on one level together with said movable load supporting members with one or more levels as required, with the carrier members also having the means of imparting transverse motion along and back two parallel rows or a series of two parallel rows on one level as a self contained complete operation, or with a series of levels acting independently, there being a total of Y said carrier members, and a maximum of N + Y − 1 of said at least N movable load supporting members, the carrier members in every case engaging with a series of equally spaced co-operating members on the floor of each level, such co-operating members being composed of open ended channels and therebeing also open ended channnel one at each corner of each said N movable load supporting member, whereby transverse movement is imparted to one or more of said N movable load supporting members in a row, one at a time, or simultaneously, or where a movable load supporting member sitting astride said carrier member in "piggy-back" fashion is used to push a whole row forward one space at a time in one direction or the other, or two rows at a time moving in opposite directions, but simultaneously; said carrier members performing the dual function of acting as shuttle carriers to circulate said at least N movable load supporting members from side to side

one space or move along and back a load supporting route to any one of a series of adjoining rows, working in parallel; said carrier members being reciprocable along said at least one load transporting route extending in a direction normal to one axis at each end of said rectangular area, each of said carrier members being reciprocable simultaneously along said at least one load transporting routes in opposite directions to one another, or together simultaneously from one row to another by a distance substantially equivalent to the width of a row of storage locations, so as to be aligned alternatively with said parallel rows of movable load supporting members, the arrangement being such that the transfer of a load by any movable load supporting member, to or from said at least one load transporting route, respectively from or to a selected storage location is effected by circulatory movement of the movable load supporting members in conjunction with reciprocatory movement of the carrier members; there being at least one carrier member in each load transporting route and said carrier member being at least twice the width of a movable load supporting member, with integral means of imparting both lineal and transverse travel, with positive and precise indexing in lineal and transverse directions by mechanical means; said movable load supporting members travelling within one or more series of double rows, and never leaving this area until the desired movable load supporting member is required for unloading at a loading and unloading station;

E. locking means for each said row of load storage positions adapted to restrain at least the movable load supporting members at each end thereof against movement along the guideways of said rows;

F. means for releasing said locking means of a given row in respect to at least the movable load supporting member at the adjacent end of said row in response to the movement of a driven carrier member into registry with said adjacent end of said row; and

G. control means for the driven means for said driven carrier members for imposing thereon a selected program of synchronized sequential movements arranged to insert loads presented at a loading position into storage in said load storage positions and to present loads in said load storage positions at a selected one of said unloading stations for removal from said storage unit.

3,927,774

APPARATUS FOR DISCHARGING BULK MATERIAL FROM STORAGE TANKS

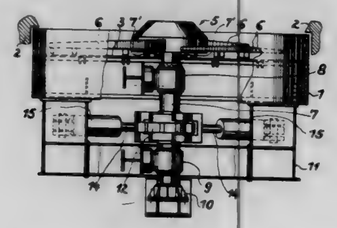
Fritz Teske, Industriestrasse 28, and Lothar Teske, Industriestrasse 30, both of D-505 Porz-Westhoven, Germany

Filed Dec. 24, 1974, Ser. No. 536,212

Claims priority, application Germany, Dec. 28, 1973, 2364830

Int. Cl.² B65G 65/48

U.S. Cl. 214—17 D **12 Claims**



1. In an apparatus for discharging bulk material from storage tanks, including a housing adjoining an open lower end of the storage tank; a housing floor disposed in the housing; means defining a discharge opening in the housing, the discharge opening being eccentric with respect to the housing floor; and an impeller wheel disposed in the housing above the discharge opening, the improvement comprising in combination:

a. a plurality of vanes forming part of said impeller wheel, the clearance between any two adjacent vanes measured along their path of travel being at least approximately equal to the dimensions of said discharge opening measured along said path of travel; and

b. a stepping mechanism for rotating said impeller wheel through angles of predetermined magnitude, said stepping mechanism having means for stopping said impeller wheel in a position in which said vanes are substantially clear of said discharge opening.

3,927,775

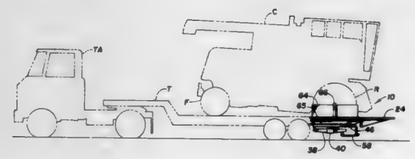
RAMP FOR TRANSPORTING WHEEL MOUNTED MACHINERY

Lloyd Earl Graupmann, Plato, Minn., assignor to Chromalloy American Corporation, Lester Prairie, Minn.

Filed Oct. 29, 1974, Ser. No. 518,464

Int. Cl.² B65G 67/02

U.S. Cl. 214—85 **14 Claims**



1. A ramp for use with a trailer of the type used to transport wheel mounted machinery, the ramp comprising:

a main ramp member having a first end and a top surface and including load bearing means and means for mounting said first end to the trailer for rotation of said main ramp member between a loading position and a transporting position;

receiving ramp means for receiving thereon a wheel of the machinery to be transported, said receiving ramp means having a first end pivotally mounted to said main ramp member below the plane of said top surface and proximate to said first end of said main ramp member and a foot member for contacting the ground to support said receiving ramp means when said main ramp member is in said loading position, wherein said receiving ramp means is supported below the plane of said top surface by said load bearing means when said main ramp member is in said transporting position; and

restraining means cooperating with said receiving ramp means to form a wheel receptacle for restraining the wheel received thereon against rotation when said main ramp member is in said transporting position.

3,927,776

SAFETY LOCK DEVICE FOR THE CONTROL LEVERS OF A FRONT END LOADER

Douglas W. Steiger, Box N, Thief River Falls, Minn. 56701

Filed Mar. 4, 1974, Ser. No. 447,943

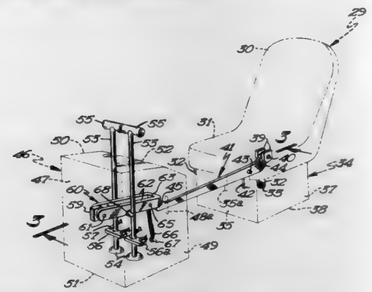
Int. Cl.² E02F 3/34

U.S. Cl. 214—140 **7 Claims**

1. A front-end loader vehicle, including a body having ground engaging wheels, power means for driving the wheels, elongate arms pivotally mounted on the body for a vertical swinging movement relative thereto, implement pivotally mounted on the arms for vertical swinging movement relative thereto, a seat pivotally connected adjacent its front end to the body for vertical swinging movement between a raised inoperative position and a lowered operative position in response to a person sitting on said seat, a pair of generally vertically disposed control levers positioned in side-by-side relation forwardly of said seat and each being pivotal in a fore and aft direction, and also pivotal about its vertical longitudinal axis, to control operation and steering of the vehicle and operation of the arms and implement,

lock engaging means on said levers,

a locking member pivotally connected with said body and being spaced forwardly of said seat for movement relative to said body between locking and released positions, said locking member when in the locking position engaging said locking engaging means to lock the levers against movement, and when in the released position, releasing said levers for movement,



yieldable means engaging said locking member to yieldably urge the locking means towards the locked position and urging the seat to the raised inoperative position, an elongate actuating lever pivotally mounted on said body intermediate its ends and being connected with said seat and projecting forwardly therefrom, said actuating lever engaging said locking member and shifting the same to the released position when the seat is shifted to the lowered position in response to a person sitting on the seat.

3,927,777

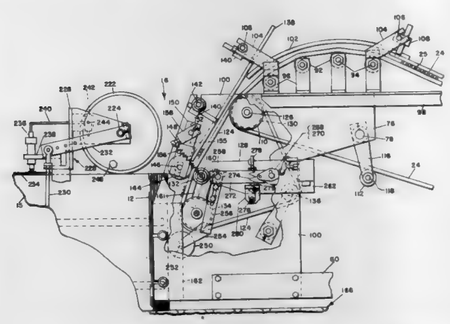
METHOD OF LOADING MAGAZINE WITH CARTONS

Arthur F. Newell, South Weymouth, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Division of Ser. No. 253,613, May 15, 1972, Pat. No. 3,831,784. This application Feb. 14, 1974, Ser. No. 442,363

Int. Cl.² B65G 60/00

U.S. Cl. 214—152 **14 Claims**



1. The method of maintaining a horizontal column of stiff prefolded glued cartons in which the cartons rest on one edge faced to back with one end of the column arranged to receive cartons from a prefolding and gluing apparatus from which the cartons are delivered in a horizontal position and the other end arranged to give up cartons to opening and bottom forming apparatus to which cartons are required to be delivered in vertical position, comprising advancing the horizontally disposed cartons from the prefolding and gluing apparatus one carton at a time in uniformly spaced non-overlapping relation upwardly along a relatively gradual slope and then downwardly along a relatively steep slope without bending of the carton as it reverses its direction to present the leading edge into engagement with the rear face of the last carton in the column substantially mid-way between the top and bottom edges at an acute angle to the vertical plane of the last carton in the column, forcing the carton downwardly into facial engagement with said last carton in the column and maintaining the column of cartons substantially constant in length by substantially simultaneously removing a carton from the foremost end of the column and adding a carton to the rearmost end of the column.

3,927,778

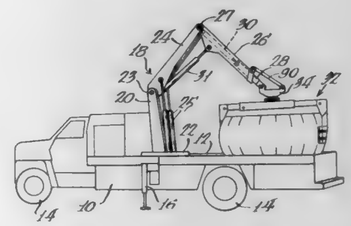
TIRE CHANGING APPARATUS

Francis L. Zrostlik, Garner, Iowa, assignor to Iowa Mold Tooling Co., Inc., Garner, Iowa

Filed Apr. 16, 1973, Ser. No. 351,776

Int. Cl.² B65G 7/00

U.S. Cl. 214—333 **6 Claims**



1. Tire changing apparatus comprising: a motorized boom adapted to be mounted on the bed of a truck or the like, said boom including two pivotally interconnected, elongated arms, one of said arms including at least two relatively movable elements, one of said elements being telescopingly received by the other of said elements, and reciprocal motor means within said other element and connected to said one element for selectively extending or retracting said one element relative to said other element; a tire gripping fixture including at least two opposed tire gripping members movably mounted for movement towards and away from each other to grip the periphery of a tire and hold the same and pivotally connected to said one element for rotation about two mutually perpendicular axes; a link of fixed length pivotally connected to said other element; means pivotally connecting said link to said fixture at a location spaced from the pivotal connection of said fixture to said one element whereby the attitude of said fixture, and thus said tire gripping members, may be selectively altered through selective operation of said motor means to extend or retract said one element within said other element.

3,927,779

CAR TOP CARRIER FOR BOATS AND THE LIKE

Ferris L. Johnson, 14427 Elmport Lane, Poway, Calif. 92064

Filed July 10, 1974, Ser. No. 487,301

Int. Cl.² B60R 9/00

U.S. Cl. 214—450 **2 Claims**

1. A vehicle top-mounted load carrier comprising,

guide rails,

means to mount the guide rails longitudinally on the top of the vehicle,

ramp rails corresponding to said guide rails,

detachable means to mount said ramp rails in registry with said guide rails inclined downwardly from the vehicle top,

a carriage on said guide rails movable along said ramp rails from and to said guide rails and being adapted to carry a load,

hoisting means on said vehicle to hoist said carriage and said load from and to said guide rails on said ramp rails,

longitudinal sides of said carriage riding on said rails,

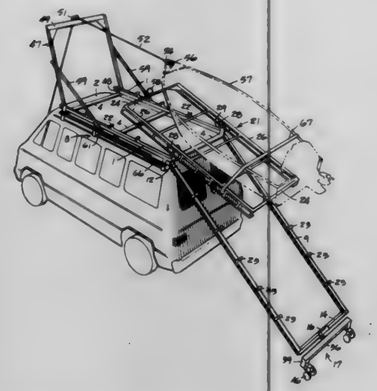
freely pivotable guide means at the end of said guide rails adjacent to said ramp rails,

rollers on said pivotable guide means engageable by said longitudinal sides so that said carriage rides over said rollers whereby said carriage tilts toward and onto said guide rails and toward and onto said ramp rails respectively according to when the center of gravity of said carriage and the load thereon is offset toward said guide rails and toward said ramp rails,

said hoisting means comprising,

a pivoted winch frame pivotable at the ends of said guide rails farthest from said ramp rails,

means to hold said pivoted winch frame in elevated position,



a winch adapted to be secured to the vehicle,

a cable from said winch extending over said winch frame and adapted to be connected selectively either to the adjacent end of said carriage or the adjacent end of said load for hoisting said load and said carriage,

said pivoted winch frame being foldable over the load on said carrier on the guide rails,

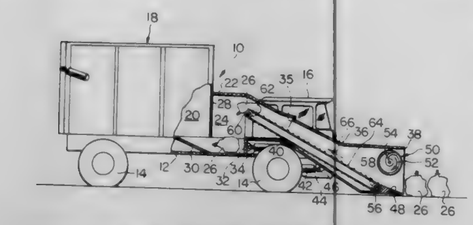
and said means to hold said winch frame in position being adjustable from the elevated position of said winch frame to the folded position of said winch frame.

3,927,780

LOADING APPARATUS FOR A COLLECTION VEHICLE

William E. Dearlove, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 1, 1974, Ser. No. 511,100
Int. Cl.² B60P *1/36*
U.S. Cl. 214—519 **4 Claims**



1. Refuse collecting apparatus comprising,

a vehicle having a frame, a front end, a rear end, and means defining a refuse accumulating compartment on said frame;

a chute movably mounted on said frame and having an inlet end extending forwardly of said front end and an outlet end in communication with said compartment;

means for moving said chute on said frame to and from a position wherein said inlet end is in substantial abutment with the underlying terrain over which said vehicle may travel whereby said inlet end may be disposed to receive refuse resting on the underlying terrain;

conveying means including a driven endless belt within said chute for engaging refuse adjacent said inlet end and transporting said refuse to said compartment, said belt having a conveying surface provided with a plurality of spikes adapted to puncture plastic refuse containing bags; and

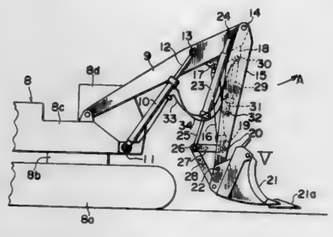
a rotatable, flexible drum mounted in said chute extending transversely across said inlet end, and means for rotating said drum whereby said drum will flexibly urge refuse containing plastic bags or the like against said spikes to be ripped thereby to allow air to freely enter the bags.

3,927,781

EXCAVATOR

Nobuya Okabe, Ibaraki, Japan, assignor to Hitachi Construction Machinery Co., Ltd., Japan

Filed July 31, 1973, Ser. No. 384,299
Claims priority, application Japan, Aug. 28, 1972, 47-85352
Int. Cl.² B66F *9/00*
U.S. Cl. 214—763 **13 Claims**



1. An excavator of the bucket type comprising an excavator proper including movable body means, rotary body means and swivel body means, boom means pivotally supported at a forward end portion of said swivel body means of the excavator proper for movement between a lying position and an upright position, boom hydraulic cylinder means for moving the boom means, arm means pivotally supported at a forward end of said boom means for oscillating motion, arm hydraulic cylinder means for operating said arm means, bucket means pivotally supported at a forward end of said arm means, bucket hydraulic cylinder means for operating said bucket means pivotally connected through linking means to an end portion of said arm means for moving the bucket means horizontally forwardly away from the excavator proper in oscillating motion, and levelling hydraulic cylinder means connected at one end to the boom means and at another end to the arm means, said levelling hydraulic cylinder means having a first fluid chamber on a piston rod push-out side thereof maintained in fluid communication with a fluid chamber on a piston rod push-out side of the boom hydraulic cylinder means for operating the boom means, said levelling hydraulic cylinder means also having a second fluid chamber on a piston rod pull-in side maintained in fluid communication with a fluid chamber on a piston rod pull-in side of the boom hydraulic cylinder means for operating the boom means whereby the bucket means can be pushed out horizontally forwardly as the arm means is moved in oscillating motion by the action of the arm hydraulic cylinder means.

3,927,782

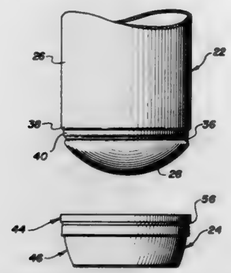
PLASTIC CONTAINER AND BASE CONSTRUCTION

Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed July 2, 1974, Ser. No. 484,631
Int. Cl.² B65D *23/00*
U.S. Cl. 215—100 R **7 Claims**

1. A base made of thin wall and substantially uniform thickness material for round bottomed containers comprising:

bottom panel means having a radially outwardly and upwardly directed shallow frusto-conical shape for substantially circular contact of the radially outward upper edge portion of said bottom panel means with the bottom of a round bottomed container, connecting ring means for coupling said base to a said container; and annular support channel means joining said bottom panel means to said connecting ring means, said annular support channel means comprising substantially radially spaced-apart inner and outer annular channel wall portions and an annular foot portion interconnecting the lower ends of said channel wall portions, said connecting ring means comprising an annular shoulder at the lower end thereof which extends radially inwardly and is integrally connected to the upper end of said outer annular channel wall portion, the radially outward upper edge of said bottom panel means integrally connected to the upper end of said inner annular channel wall portion, said inner channel wall portion having an upwardly converging frusto-conical and radially outwardly convex shape and having a substantially lesser dimension



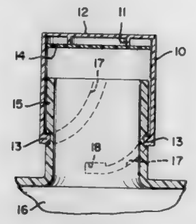
axially of said base than said outer channel wall portion, said outer annular channel wall portion having a radially outwardly continuously curvilinear convex shape and a height sufficient to engage the bottom of a round bottomed container in substantially circular line contact therewith radially outwardly and upwardly of said circular contact of said radially outward upper edge of said bottom panel means with said container, said annular foot portion comprising a substantially flat planar ring with the plane of said ring perpendicular to the axis of said base, coupling means integrally connected to the radially outward edge of said annular shoulder of said connecting ring means for coupling said base to a round bottomed container, whereby the relative radial positioning and axial dimensioning of said bottom panel means and said channel wall portions causes said inner channel wall portion to deform convexly outwardly to a greater degree than said outer channel wall portion under axial loading whereby to insure stable, vertical placement of an assembled base and a round bottomed container.

3,927,783

SAFETY CLOSURE FOR CONTAINERS

Clayton Bogert, 118 Lowell Road, Glen Rock, N.J. 07452

Filed Jan. 28, 1974, Ser. No. 437,071
Int. Cl.² B65D *55/02*
U.S. Cl. 215—222 **6 Claims**



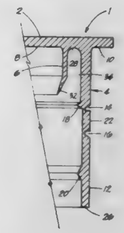
1. A leak-proof safety closure for containers comprising a cap provided with a top and sides and a container having a neck portion, said cap having a protrusion near the bottom of the sides of the cap, said neck being provided with an integral recessed relatively elongated, gradually sloping track having a notch near the terminus of the track adapted to accommodate the protrusion of the cap pressure means disposed below the top of the cap and whereby when said cap is placed on the neck of the container the top of the said protrusion will engage the track and upon rotation of the cap said protrusion is accommodated on said notch under the pressure exerted by said pressure means.

3,927,784

TAMPER-PROOF BOTTLE CAP AND CONTAINER

Ben A. Cochrane, 210 E. Linda Mesa Ave., Danville, Calif. 94526

Filed Feb. 13, 1975, Ser. No. 549,512
Int. Cl.² B65D *49/12, 41/32*
U.S. Cl. 215—256 **7 Claims**



1. A deformable plastic cap comprising (1) a top disk, (2) a cylindrical thin-walled outer skirt integrally attached to and extending substantially perpendicularly from said disk and (3) a cylindrical inner skirt integrally attached to and substantially perpendicular to said disk positioned inward and enclosed within said outer skirt and substantially co-axial therewith and extending for a shorter distance than said outer skirt; said outer skirt scored and weakened along a circumferential first score line downwardly spaced from said disk, and score and weakened along a circumferential second score line spaced downwardly from said first score line to form a weakened cylindrical band within said outer skirt, a tab attached to said cylindrical band and extending from said band and outwardly from said outer skirt, a weakened area extending between said first score line and said second score line immediately adjacent said tab, a narrow radial first bead extending circumferentially around the inside and integrally attached to said outer skirt between said first score line and said disk, and a narrow radial second bead extending circumferentially around the inside and intergrally attached to said outer skirt below said second score line.

3,927,785

ELECTRICAL WIRING BOX STRUCTURE

David W. Kinney, Parkersburg, and William E. Baxter, Walker, both of W. Va., assignors to Union Insulating Company, Parkersburg, W. Va.

Filed Oct. 24, 1974, Ser. No. 517,622
Int. Cl.² H02G *3/08*
U.S. Cl. 220—3.8 **16 Claims**

1. An electrical wiring box structure comprising:

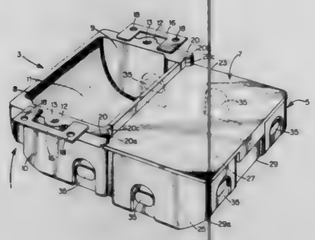
a plurality of walls arranged to form a first box portion having an opening and a second box portion laterally extending from the first box portion and in open communication with the first box portion and having an opening, the second box portion being offset with respect to the first box portion and the opening of the second box portion being offset with respect to the opening of the first box portion;

a retaining member extending from one of the box portions and adjacent to the opening of the second box portion, said retaining member having a confinement surface

spaced from the plane of the opening of the second box portion; and

cover means for the second box portion, said cover means comprising:

a first member covering the opening of the second box portion and having a portion with a thickness approximately equal to the distance between the confinement surface of the retaining member and the plane of the



opening of the second box portion and disposed between the confinement surface of the retaining member and the plane of the opening of the second box portion, said portion of the first member thereby being confined between the confinement surface of the retaining member and the second box portion; and

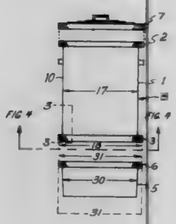
attachment means mechanically and physically securing the first member to one of the walls of the second box portion.

3,927,786

CONTAINERS FOR WASTE FOR USE WITH TRASH BAGS

Fred George Aboud, 3812 Taylorsville Road, Louisville, Ky. 40220

Filed July 11, 1973, Ser. No. 379,544
Int. Cl.² B65D *7/00*
U.S. Cl. 220—4 R **2 Claims**



1. For use with replaceable trash bags, a trash container conprising:

A. an upper, vertical support member comprising:

1. an open-ended tubular portion, and
2. an upper open-end peripheral engagement rim at the bottom of said tubular portion, said upper engagement rim being of enlarged diameter relative to the diameter of said tubular portion and comprising
   a. a radially extending flange
   b. a flexible inner bight portion contiguous with said radially extending flange and the bottom of said tubular portion,
   c. an upper depending annular skirt,
   d. an outer bight portion contiguous with the outer circumference of said flange and the upper edge of said skirt, and
   e. equidistantly spaced engagement fasteners at the bottom of said depending annular skirt, which comprises,
      1. a tab, and
      2. a flexible bight portion contiguous with the bottom of said annular depending skirt and the outer edge of said tab and serving as a flexible hinge for said tab,
      3. said tab projecting inwardly and in its natural unflexed position being generally aligned parallel with said radially extending flange and
      4. said tab in its fully flexed position, being aligned generally parallel with said upper depending annular skirt;

B. a lower receiving and supporting tub which comprises:

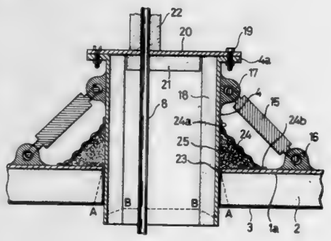
1. a bottom,
2. an upwardly extending annular wall for supporting a loaded bag, and
3. a lower open-ended peripheral engagement rim at the top of said wall, said lower engagement rim being of enlarged diameter relative to the diameter of said tub, and said lower engagement time comprising:
   a. a radially extending flange,
   b. an inner bight portion contiguous with the top of said annular wall and the inner circumference of said flange,
   c. a lower depending skirt in spaced relation to said wall,
   d. an exterior bight portion at the outer portion of said flange and contiguous with the upper portion of said lower depending skirt,
   e. the outer diameter of said lower depending skirt of said tub being less than the interior diameter of said upper depending skirt of said upper member to allow for snug fit between said upper and lower skirts,
   f. the lower depending skirt being inwardly flexible in response to the downward pressure of said upper engagement rim to allow for the upward and outward flexure of said inwardly projecting tabs of said upwardly depending skirt;
   g. the tabs of said equidistantly spaced engagement fasteners snapping downwardly and inwardly to detachably engage the bottom of the lower depending skirt upon lateral flexure of said skirt and thereby holding the upper vertical supporting member in detachable engagement with said lower receiving tub.

3,927,787

HATCH CONSTRUCTION IN A LOW TEMPERATURE LIQUID TANK

Kihei Katsuta; Tsutomu Matsumoto, both of Nagasaki, and Chiaki Matsuyama, Tokyo, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed June 7, 1974, Ser. No. 477,420
Claims priority, application Japan, June 22, 1973, 48-70553
Int. Cl.² B65D *25/18*
U.S. Cl. 220—9 LG **5 Claims**



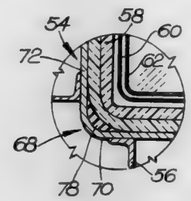
1. A hatch construction for a low temperature liquid tank having a tank wall with heat insulation on its interior and a hatch opening through said tank wall, comprising a tubular hatch dome extending through the opening and having an outer upper end, supporting means for supporting the hatch dome on said tank connected between said tank wall and said dome at a location on said dome spaced above said tank wall, and heat insulation seal means connected between said tank wall and said hatch dome at a spaced location above said wall and below the connection of said support to said hatch dome and extending around the periphery of said hatch dome and sealing and insulating between said hatch dome and said plate.

3,927,788

CRYOGENIC LIQUID CONTAINMENT SYSTEM

Theodore C. Zinniger, Livermore, and Phillip J. Burke, San Jose, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed July 12, 1974, Ser. No. 487,959
Int. Cl.² B65D *87/24*; **B63B** *25/08*
U.S. Cl. 220—9 LG **25 Claims**



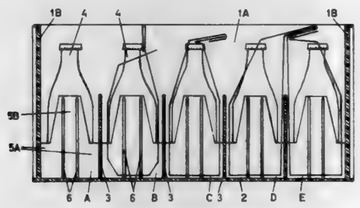
1. In a cryogenic liquid container system the combination of a containment structure provided with at least two converging walls defining a corner section of the containment structure, at least one layer or a cryogenic foam-type insulating material covering the said walls and bridging the area of intersection of said walls, the portion of the insulating material layer which bridges the area of intersection of the walls being of selectively less thickness than adjacent portions of the insulating material layer covering said converging walls so as to produce a substantially uniform stressing of the various portions of the said insulating material layer when the said insulating material layer is subjected at various times to dynamic and static loads and filler means disposed intermediate the thinner portion of the insulating material layer and said converging walls and in supporting relationship to said insulating material layer.

3,927,789

BOTTLE PACKING

Ulrich Heinrich Prodel, Grunstrasse 13, D 4902 Bad Salzuflen, Germany

Filed Nov. 4, 1974, Ser. No. 520,918
Claims priority, application Germany, Nov. 21, 1973, 2357979
Int. Cl.² B65D *1/24*
U.S. Cl. 220—21 **12 Claims**



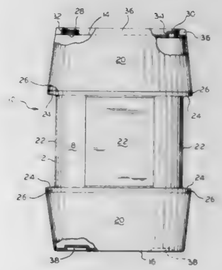
1. A bottle packing comprising a plastic case having side walls and a bottom, a plurality of parallel primary partitions dividing the interior of said case into a plurality of sections each of which is of a width to receive a bottle and a plurality of parallel secondary partitions perpendicular to said primary partitions dividing each of said sections into a plurality of individual bottle compartments, a central portion of each of said secondary partitions being higher than opposite end portions adjacent said primary partitions or said side walls, and bottle carriers adapted to be received in said sections of said case and each holding a plurality of bottles, each of said carriers having side walls and a bottom, said bottom and lower portions of said side walls of the carrier being slotted to receive said secondary partitions when a carrier containing bottles is placed in said case, whereby said secondary partitions extend between and separate adjacent bottles in a carrier and also extend between and separate adjacent bottles when placed in said case without a carrier.

3,927,790

MOLDED CONTAINER

Edward J. Chase, and William R. Topper, both of Newark, Del., assignors to Container Corporation of America, Chicago, Ill.

Filed Jan. 20, 1975, Ser. No. 542,241
Int. Cl.² B65D *7/42*
U.S. Cl. 220—72 **1 Claim**



1. A unitary molded container comprising:

a. a tubular body having a continuous wall closed at its top and bottom ends by respective top and bottom closure members integrally formed with said wall;

b. said wall having a central portion and a pair of frustoconically shaped end portions diverging axially outwardly from said closure members toward said central portion;

c. a pair of apertures in said top closure member to facilitate filling and emptying said container;

d. said wall having at least a pair of substantially flat indentations in said central portion forming shoulders with each of said end portions to facilitate lifting said container;

e. said indentations of a pair being disposed in the planes separated by 180° from each other and paralleling the major axis of said container.

3,927,791

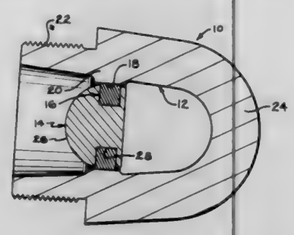
FUSIBLE PLUG

Welcome D. Hershberger, 16135 Petro Drivel, Miswaka, Ind. 46544

Filed Aug. 5, 1974, Ser. No. 494,482
Int. Cl.² B65D *25/00*; **F22B** *37/46*
U.S. Cl. 220—89 B **4 Claims**

1. A fusible plug assembly that is thermally responsive to ambient temperature so that a portion thereof will melt to provide a vent opening when a preselected temperature is reached, said assembly comprising a plug including a portion having a cylindrical bore defining a through passageway of uniform diameter throughout its length, an insert positioned in said bore and having around its periphery a radially outwardly directed groove facing the inner wall of said bore, and fusible material in said groove and extending into said bore in sealing relationship therewith, said material adapted to fuse at said

preselected temperature to permit said insert to pass through said bore, said insert being contoured so that its outermost surfaces conform to the shape of a sphere that has a radius



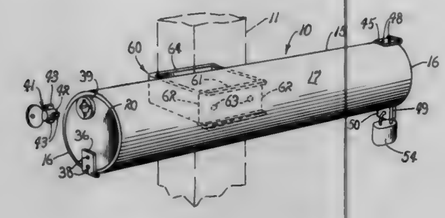
smaller than the radius of said bore so that when said material fuses the insert can pass freely out of either end of said passageway.

3,927,792

CONTAINER HAVING CONTROLLED ACCESS TO THE INTERIOR THEREOF

Eugen J. Andrade, 7511 W. Doverwood Ave., Fresno, Calif. 93705, and Eugene J. Andrade, 1511 W. Doverwood Ave.

Filed Aug. 29, 1974, Ser. No. 501,815
Int. Cl.² B65D *55/14*
U.S. Cl. 220—210 **7 Claims**



1. A container having controlled access to the interior thereof comprising a housing enclosing an article receiving compartment with a pair of entrance openings communicating therewith, a first closure mounted on the housing for movement to and from a position in sealing relation to one of said entrance openings, a lock operable by a preselected stimuli mounted on the first closure for controlled locking engagement with the housing, a second closure secured on the housing for movement to and from a position in sealing relation to the other entrance opening, and a lock operable by a preselected stimuli mounted on the second closure for controlled locking engagement with the housing.

3,927,793

TAMPER PROOF SEAL FOR A CONTAINER

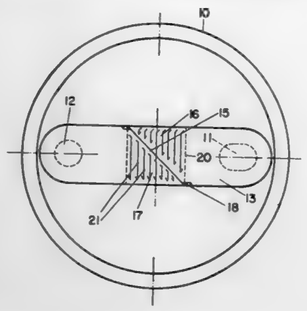
Hanno Langen, Gottmadingen, Germany, assignor to Swiss Aluminum Ltd., Chippis, Switzerland

Filed Apr. 10, 1974, Ser. No. 459,475
Claims priority, application Germany, Apr. 13, 1973, 2318668
Int. Cl.² B65D *41/32*, *41/00*
U.S. Cl. 220—266 **6 Claims**

1. A lid for a container holding fluid contents, including a body having an opening for pouring and an opening for admitting air, and a strip of foil connected to said body and disposed for sealing said openings on the side of said body facing out from said container,

the improvement comprising,

said strip of foil consisting of sections divided by a line of weakness to exhibit a feature of originality to show that



said container has not been opened in any way at said openings.

3,927,794

CONTAINER AND CAP WITH DEPRESSIBLE SECTION FOR DRINKING ACCESS

Frank H. Erdman, Holmes Beach, Fla., assignor to Tropicana Products, Inc., Bradenton, Fla.

Filed Sept. 20, 1974, Ser. No. 507,974
Int. Cl.² B65D *41/32*
U.S. Cl. 220—268 **22 Claims**



1. A container comprising:

a. a bottom wall portion, and a sidewall portion extending from said bottom wall portion and terminating at an open upper end defining an upper container edge; and

b. a cap covering said open upper end, said cap including:

a cover section comprising:

i. a central portion,

ii. an edge portion extending downwardly from the periphery of said central portion for embracing the sidewall portion of the container adjacent the upper container edge,

iii. a depressible tab on said central portion defined by a generally U-shaped groove of diminished cross section and operable to form an opening of adequate dimensions to provide access to the contents of said container when the tab is depressed,

iv. a raised block integral with said depressible tab adjacent said U-shaped groove, and

v. frictional block engagement means disposed on the underside of said cover section for engaging said block and retaining said block and tab in a depressed position.

3,927,795

MOLDED ARTICLE

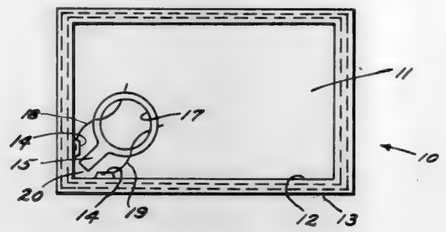
William H. Robinson, New Vienna, Ohio, assignor to Buckeye Molding Co., New Vienna, Ohio

Filed Mar. 12, 1973, Ser. No. 339,997
Int. Cl.² B65D *41/32*
U.S. Cl. 220—269 **4 Claims**

1. In a closure having a skirt portion for sealing engagement with a container, the combination comprising

a wall portion joined to other portions of the closure and defining weakened sections in said wall portion and forming marginal edges of a severable and re-closable spout-like tab including a crisp portion and additionally including a retention tab adjacent said crisp and joined to other portions of the closure,

rupture-producing means including a member joined to said wall portion and having a distal end spaced apart from said wall portion and readily graspable by a user, and



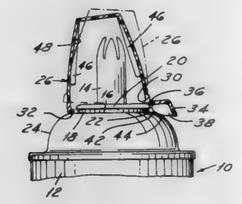
stress concentration means adjacent each of said weakened sections and augmenting and transferring force from said rupture-producing means to cause rupture of said wall portion along said weakened sections and thereby form and open said tab when a force is applied to said member.

3,927,796

CONTAINER AND CLOSURE THEREFOR

Harvey B. Whitehouse, 26050 Avondale, Inkster, Mich. 48141

Filed Apr. 16, 1975, Ser. No. 568,662
Int. Cl.² B65D *43/04*
U.S. Cl. 220—281 **4 Claims**



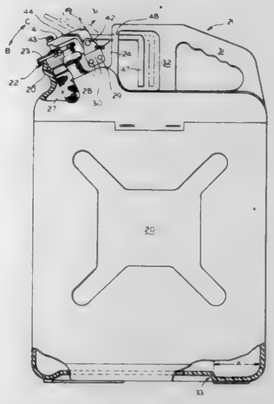
1. A container and closure therefore, said container comprising a body having opening means at the top thereof, said top of the container including an upper surface and an upper member spaced thereabove defining a slot therebetween, said container having a downwardly and outwardly directed surface portion extending from said upper surface, a closure received on the top of the container to cover said opening means, said closure having a lower edge portion, first and second diametrically opposed lips extending radially inwardly from said lower edge portion, a tab, a flexible hinge member connecting said tab to the lower edge portion of the closure at substantially the location of said first lip, said tab having a first cam portion on the underside thereof, a second cam portion contiguous with said first cam portion, said first cam portion contacting said downwardly and outwardly directed surface portion of the container adjacent said slot upon downward movement of the tab (assuming the container to be in a generally vertical position), said first cam portion having a configuration applying a generally upward force against the hinge member and lower edge portion of the closure to which the hinge is attached upon downward movement of the tab thereby resulting in upward movement of said lower edge portion of the closure and release of said first lip from the slot, said first cam portion being of a length whereby movement of the tab downwardly to a position where the first cam portion has entirely cammed over said surface of the container adjacent said slot results in said first lip being positioned above said upper member, said first cam portion, when in said latter position, being spaced from said upper member a distance at least equal to the width of said second lip, said second cam portion contacting the surface of the container adjacent said slot upon further downward movement of said tab, said second cam portion having a configuration applying a generally horizontal force against the hinge and lower edge portion of the closure to which the hinge is attached upon such further downward movement of said tab thereby resulting in horizontal movement of the closure and release of said second lip from the slot and freeing the closure from the container.

3,927,797

PLASTIC JERRY CAN

Frank S. Flider, Chicago, Ill., assignor to Justrite Manufacturing Company, Chicago, Ill.

Filed Jan. 21, 1974, Ser. No. 434,939
Int. Cl.² B65D *45/00*
U.S. Cl. 220—318 **3 Claims**



1. An all plastic blow-molded can,

said can having an integral fin located at the top thereof,

a two position handle upwardly disposed from said fin and integral thereto,

said can having a single neck opening at one side of the top thereof for dispensing fluid from said can,

means comprising a substantially horizontal bar having an end thereof disposed downward to the top of said can at the side of the can opposite to said necked opening,

a vertical post extending upward from the top of said can to meet said horizontal bar,

said vertical post means being substantially centrally located on the top of said can and being spaced apart from the portion of said horizontal bar extending downward to the top of said can whereby the person can grasp the horizontal bar between the downward extending portion and said vertical post,

fluid flow control hardware means attached to said fin on the top of the can,

said control hardware means including a saddle bracket attached to said fin by fasteners passing through said bracket and the fin without piercing the walls of the can, said hardware comprising a cap for closing said necked opening on the end of a bracket pivotally attached to said saddle bracket,

hook lever means attached to said pivotal bracket,

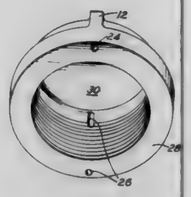
the hook on said lever being positioned adjacent to said vertical post to enable the manipulation of said cap, while holding said vertical post, and

bottom grip means held by the user when said can is in a horizontal position, whereby the user of the can can hold the post with one hand while manipulating said control hardware means and using the other hand on the bottom grip means to hold the can in a horizontal position, while dispensing fluid therefrom.

3,927,798
VENTED CAP

Lyon K. Loomis, P.O. Box 618, Coconut Grove Station, Miami, Fla. 33133

Filed Jan. 23, 1975, Ser. No. 543,627
Int. Cl.² B65D 51/16
U.S. Cl. 220—374 7 Claims

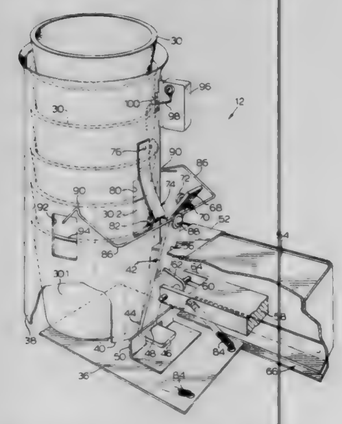


1. A vented cap for a tank containing volatile liquids, such as a fuel and the like, comprising a dome-like housing having a hollow inner portion and adapted to be securely engaged on pipe means of a tank, shoulder means disposed at the bottom periphery of said housing, vertical finger grip means integral with said housing, hole means disposed through said finger grip means, said hole means communicating between said hollow upper inner portion of said housing and an exterior part of said cap.

3,927,799
CUP DISPENSING DEVICE

Ronald John Tindley, Uxbridge, Canada, assignor to Gilron Holdings Limited, Scarborough, Calif. Canada

Filed Dec. 2, 1974, Ser. No. 528,704
Int. Cl.² B65G 59/06
U.S. Cl. 221—223 10 Claims

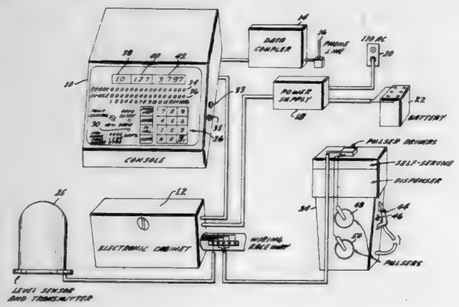


1. A dispensing device for dispensing articles such as beverage cups and the like, comprising:
- a sliding tongue adapted to move from a first position to a second position;
- a dispensing tube open at both ends and adapted to accommodate a plurality of stacked articles; said sliding tongue being arranged to underlie at least a portion of the bottom end of said dispensing tube when said tongue is in its first position, and to be substantially clear from the bottom end of said dispensing tube when said tongue is in its second position; the direction of sliding motion of said tongue being substantially perpendicular to the axis of said dispensing tube;
- a pivot arm attached at its lower end to said sliding tongue, and arranged to extend through a slot formed in a pivot bracket so as to pivot about an edge of said slot;
- a solenoid having a solenoid arm connected to said pivot arm and adapted to pivot said pivot arm from a first position to a second position upon actuation of said solenoid, and to retain said pivot arm in said second position for as long as said solenoid remains actuated; said first position of said pivot arm being when said sliding tongue is in its first position;
- a detent arm adapted to extend through an opening in the side of said dispensing tube upon interference therewith by the upper end of said pivot arm as said pivot arm moves towards its second position, so that when said pivot arm is in its second position said detent arm extends into said dispensing tube to engage the outer surface of the article therein which was second from the bottom before actuation of said solenoid began; said detent arm being biased outwardly so as not to engage the outer surface of any cup in said dispensing tube except when interfered with by said pivot arm;
- said pivot arm being arranged to move said sliding tongue from its first position to its second position when said arm is pivoted from its respective first position to its second position upon actuation of said solenoid and movement of said solenoid arm;
- and means for causing the return of said sliding tongue from its second position to its first position when actuation of said solenoid is completed, and also to cause return of said pivot arm from its second position to its first position,

3,927,800
CONTROL AND DATA SYSTEM

Herbert G. Zinsmeyer; Rodney L. Johnson, both of Austin; Ralph H. Genz, Leander, and James E. Setliff, Austin, all of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 398,287, Sept. 20, 1973, abandoned. This application Jan. 17, 1974, Ser. No. 434,196
Int. Cl.² B67D 5/06
U.S. Cl. 222—26 42 Claims



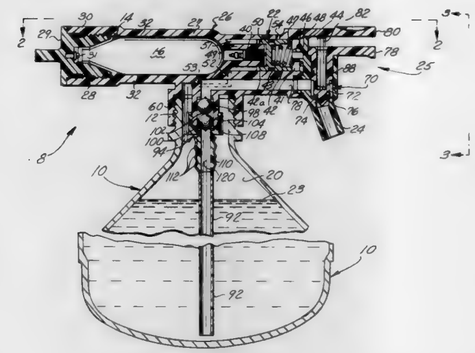
1. In a self-service gasoline station having a station operator for controlling the operation of the station comprising
- a plurality of gasoline dispensers and a plurality of gasoline storage tanks connected to dispense gasoline in individual transactions by means of each of said dispensers said dispensers being provided with visual indicators of volume and dollar amount of each such transaction, a dispenser control and data system which comprises
- a data storage device having a first plurality of addresses corresponding to the number of dispensers in the plurality,
- means responsive to the dispensing of gasoline by each dispenser in each individual transaction to produce in the corresponding address signals indicative of the volume and dollar amount of liquid dispensed in that individual transaction,

- means responsive to signals indicating the level or volume of gasoline remaining in each storage tank to receive signals indicative of such remaining volume of gasoline, means for displaying and transferring data indicative of such level or volume to an individual address in said data storage device different from the addresses in the first plurality,
- display means displaced from the gasoline dispensers and constructed to provide a visual display of the volume and dollar amount of liquid dispensed in an individual dispenser in an individual transaction, and
- means operable by the station operator for interrogating individual data storage addresses in the first plurality to obtain a generation by the display means of displays representative of the volume and dollar amount of liquid dispensed in the individual dispenser in the individual transaction.

3,927,801
DISPENSER FOR CARBONATED BEVERAGE OR THE LIKE

Richard E. Martin, Willoughby, and Anthony M. Gildone, Euclid, both of Ohio, assignors to GMF Inc., Cleveland, Ohio

Filed June 28, 1974, Ser. No. 484,122
Int. Cl.² B67D 5/14; F15D 1/02
U.S. Cl. 222—61 4 Claims

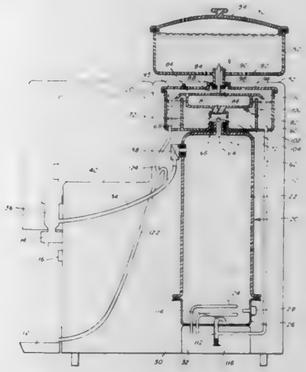


1. In a carbonated beverage dispenser having means for defining a flow path for the carbonated beverage from a container thereof to an outlet opening, a valve means for selectively opening and closing the outlet and a foam inhibiting means in the flow path upstream from said valve means for defining a passage portion of varying cross-section over a finite distance within the path for retarding foaming of the carbonated beverage over said flow path, said flow inhibiting means including means for reducing the flow area along the path from a first relatively large area to a second relatively small area, for increasing the flow area along the path from the second relatively small area to a third relatively large area, for reducing the flow area along the path from the third relatively large area to a fourth relatively small area, and for increasing the flow area along the path from the fourth relatively small area to a fifth relatively large area, the improvement wherein the finite distance of said flow path is defined by a member having a chamber, said foam inhibiting means comprising first and second ball members of equal diameter located in said chamber, chamber inlet means defining a seat for said first ball member and defining with said first ball member a passage therebetween for flow of fluid into said first relatively large area of said chamber, chamber outlet means defining a seat for said second ball member and defining with said second ball member a passage therebetween for flow of fluid from said fifth relatively large area of said chamber toward said valve, the difference between the diameter of said balls and the diameter of said chamber being 0.012 inches so that said balls are free to shift laterally in said chamber while fluid flows therethrough, and the difference between the sum of the diameters of both balls and the distance between said seats being 0.01 inches so that said balls are free to shift vertically in said chamber while fluid flows therethrough.

3,927,802
MANUAL FILL HOT BEVERAGE DISPENSER

Ronald B. Lavochkin, Burlington, and John Gardner, Tewksbury, both of Mass., assignors to Jet Spray Cooler, Inc., Waltham, Mass.

Filed Mar. 5, 1974, Ser. No. 448,352
Int. Cl.² B67D 5/62
U.S. Cl. 222—67 14 Claims



1. A hot liquid food dispenser comprising
- a housing and a discharge spout on the housing,
- a hot water tank within the housing including a heating element for heating water in said tank,
- a duct connected to the tank adjacent the top and to the spout for carrying water from the top of the tank to the discharge spout and a valve for controlling flow of water through the duct,
- a water reservoir on the housing which may be manually filled and located above the tank,
- means connected between the reservoir and the bottom of the tank for directing water from the reservoir to the bottom of the tank,
- said means including an auxiliary chamber and a transfer duct connecting the reservoir to the chamber,
- a passage connecting the chamber to the tank whereby water in the tank may flow into the chamber when the tank is full,
- and a second valve in said means for controlling flow from the reservoir to the tank and including a float disposed in said chamber causing the second valve to close when the water in the chamber reaches a selected level.

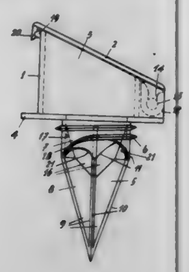
3,927,803
PIERCING SPOUT

Alwin Weber, Uetlibergstrasse 178, 8003 Zurich, Switzerland

Continuation of Ser. No. 329,215, Feb. 2, 1973, abandoned. This application Aug. 16, 1974, Ser. No. 498,074
Claims priority, application Switzerland, Feb. 10, 1972, 1948/72
Int. Cl.² B67B 7/26
U.S. Cl. 222—91 7 Claims

1. In a piercing spout, for use in connection with thin walled containers, said spout including a cup that is open on top, a flange connected at its upper side to the bottom of said cup for defining a discharge opening, a piercing member including an axially elongated collar having one end thereof connected to the underside of the flange, a tapered, pointed member secured to the other end of the collar and an external threading on said collar extending from a first thread near said pointed member towards said flange including a plurality of intersect-

ing blades having cutting edges, the blades converging from the collar towards a common piercing point, said blades having end edges which, in combination with said collar, define apertures, said apertures communicating interiorly with said discharge opening, a plurality of free rims formed on the end of the collar opposite the flange, each said free rim comprising



an inner wall surface and a corresponding outer wall surface, the improvement comprising, each free rim defining a recessed edge portion between said wall surfaces in the areas between adjacent blades and the first thread, each recessed edge portion being inclined in a direction counter to the incline of the thread.

3,927,804

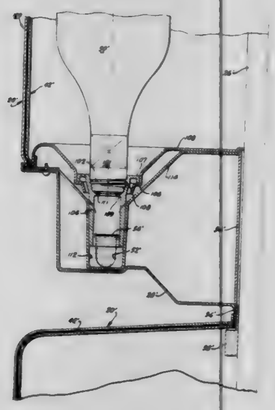
LIQUID DISPENSER WITH MULTI-CONTAINER RESERVES

Heiko T. DeMan, 435 Cola Ballena, Alameda, Calif. 94501

Continuation-in-part of Ser. No. 355,665, April 30, 1973, abandoned. This application Mar. 7, 1974, Ser. No. 449,038

Int. Cl.² B67D *5/52*

U.S. Cl. 222—136 **5 Claims**



1. A liquid dispensing apparatus for a variety of kinds of liquids from a multi-container source of each kind, comprising means for supporting a plurality of containers arranged by the distinctive character of their contents so that containers of the same content are disposed in a group, pump means, means permitting fluid interconnection between at least one group of said containers and said pump means, dispensing faucet means including means for selectively activating said pump means, tube means fluidly interconnecting said dispensing faucet means and said pump means, said container support means for each group including a liquid receptacle for each container in the group such liquid container being maintained with respect to said support means in an open-mouthed, inverted, position, permitting gravity flow of liquid from each container into a receptacle, said receptacles in each group being fluidly interconnected so as to permit a common liquid level in the receptacles for the group, said container support means including means serving to support individual containers in the group so that their outlets are disposed above the common liquid level in their respective receptacles and including tubular means extending from the container outlet to below the common liquid level, the containers being arranged on said support means so that the bodies of liquid in the respective containers are at different elevations permitting the containers in the group to empty sequentially affording long continuous supply to said pump means.

3,927,805

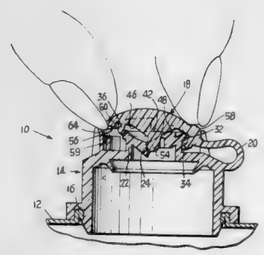
TILT/LIFT SAFETY CLOSURE

Morton B. Stull, 221-223 Banta Ave., Garfield, N.J. 07026

Filed Oct. 15, 1973, Ser. No. 406,671

Int. Cl.² B67D *5/32*

U.S. Cl. 222—153 **23 Claims**



1. A safety cap construction for hand-held dispensers, comprising in combination:

a. a tubular cap body having a top discharge opening,

b. a captive closure cap adapted to fit the opening of the cap body so as to seal the same,

c. cooperable yieldable detent means on the cap body and cap, tending to hold the latter firmly on said body, said yieldable detent means extending through an angle of substantially greater than 180° about the cap body,

d. a flexible hinge web structure connecting said cap body and closure cap for holding the latter captive while enabling it to be swung from a sealing position closing off the opening of the body to a discharge position removed from the opening of the body, said web structure comprising an elongate loop extending through a semi-circle when the cap is disposed on the cap body,

e. said cap body having an upstanding flange extending at least partially around the juncture of the cap body and cap when the latter is assembled thereto in the closed, sealing position, thereby bearing access to the juncture and normally preventing the cap from being directly pryed off by the fingers, said cap body having an upstanding spout portion disposed within the confines of the upstanding flange,

f. said cap having a normally inaccessible lifting edge on its underside,

g. cooperable pivot bearing means on the upstanding spout portion of the cap body and cap and including a fulcrum disposed substantially diametrically across the underside of the cap, for raising one portion of the lifting edge higher than other portions thereof and above adjacent portions of the flange in response to depressing movement of an off-center portion of the cap, said edge moving upward to a position exposing it to enable engagement thereof by the fingers of the user for prying the cap off of the cap body, and

h. means for stiffening the closure cap against flexing during such depressing movement to prevent deformation

thereof and thus insure adequate raising of the lifting edge.

3,927,806

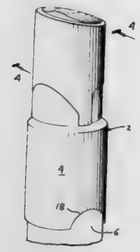
APPLICATOR FOR ATTACHMENT TO A SPRAY MIST DISPENSER

Philip Meshberg, 85 Old Oaks Road, Fairfield, Conn. 06604

Continuation-in-part of Ser. No. 286,916, Sept. 7, 1972, abandoned. This application Dec. 20, 1973, Ser. No. 426,478

Int. Cl.² B65D *83/14*

U.S. Cl. 222—402.12 **4 Claims**



1. An applicator for attachment to a container for dispensing spray mist, the container being of the type having a dispensing valve provided with a projecting stem which releases a jet of spray upon limited axial motion of the stem in a direction relatively inward of the container, the applicator comprising,

a housing adapted to at least partially enclose the container, said housing further including,

a tubular sidewall adapted to surround the stem of the dispensing valve, said sidewall having an axial outer end spaced remotely from the container and an axial inner end,

a radial port extending through said sidewall,

means mounted within said sidewall adapted to grip the stem of the dispensing valve and to direct the jet of spray released thereby through said radial port,

two aligned, axially extending, closed slots through said sidewall at opposite extremities of a diameter thereof which is disposed perpendicularly to the axis of sid radial port, each having an enlarged opening at its inner axial end,

a sleeve telescopically mounted on said sidewall for axial sliding motion between a retracted position overlying said radial port, and an extended position in which at least a major portion of said sleeve is positioned beyond the outer end of said sidewall, with cooperable abutting portions of said sleeve and said sidewall at a position directly above said radial port when said sleeve is in an extended position thereby insuring that pivoting of the sleeve is only possible in a direction which will align it with said radial port, and the end of said sleeve, when said sleeve is in said retracted position, terminating such that it does not extend above the top of said tubular side wall thereby preventing dust or dirt collection on the inside of said sleeve,

two ears extending from an axially inner end of said sleeve in partially overlapping relation to said slots,

two bosses projecting from said ears slidingly received in said slots, said bosses abutting against the closed outer ends of said slots in the extended position of said sleeve and enabling pivoting motion thereof into generally concentric alignment with said radial port, each said boss having,

an enlarged head, of a size permitting said enlarged head to freely pass through the enlarged opening in said slots, positioned internally of said sidewall, said head overlapping the adjacent edges of said slot to prevent motion of said boss out of said slot except when in a fully retracted position, and

a raised surface at the lower end of said sidewall below said radial port, said surface acting as a stop to prevent said sleeve from sliding in said slots when pivoted to a dispensing position.

3,927,807

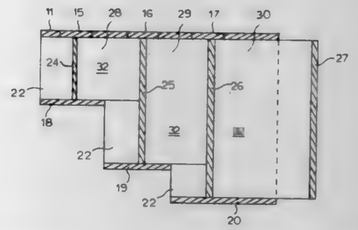
DISPENSER FOR FLOWABLE PARTICULATE MATERIAL

Michael L. Austin, 1132 Cedar St., Berkeley, Calif. 94702

Filed Nov. 18, 1974, Ser. No. 524,574

Int. Cl.² G01F *11/28*

U.S. Cl. 222—430 **3 Claims**



1. A dispenser for permanent attachment to a container of flowing particulate material comprising an outer element fixed with respect to the container and an inner element which is slidable with respect to the outer element between open and closed positions; and where, in closed position, the inner element and outer element cooperate to form a plurality of closed compartments of predetermined volume, said outer element including for each of said plurality of closed compartments an upper wall, a lower wall and two side walls but no front or back walls, with the distance between the upper wall and the lower wall for each compartment being different and with one of the upper wall and the lower wall of each closed compartment having a closable opening to dispense particulate material, said inner element including for each of said plurality of closed compartments a front wall, a back wall and side walls, but no upper wall and no lower wall, an operating means disposed to extend outside of said container and, when operated, to slide said inner element with respect to said outer element between open and closed positions, and means for attaching said dispenser to a container for particulate material.

3,927,808

DEVICE FOR FIREARM

Aron Albin Steen, Vitsand, Sweden, assignor to Elektro-Mekanik, Vitsand, Sweden

Filed June 4, 1974, Ser. No. 476,261

Int. Cl.² F41C *29/00*

U.S. Cl. 224—1 A **6 Claims**



1. A gun steadying device in combination with a shoulder-held gun for steadying the same during aiming and firing, said device comprising in combination:

an elongate sling made of non-elastic pliable material, said sling being adapted to be slipped about the wrist for the hand on the arm of the gunner supporting the gun barrel when holding a gun in position for aiming and firing;

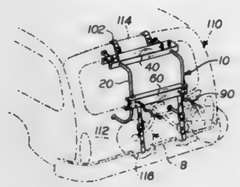
an elongate stretchable elastic member biased to contract to minimum length secured to one end of said sling;
a fastening means secured to the other end of said stretchable member; and
mounting means on the gun for releasably and pivotally attaching said fastening means to the gun, said mounting means being disposed for placing the assembly including said sling, said stretchable member and said fastening means in a position in a vertical plane including the gun barrel;
the location of said mounting means on the gun, said fastening means, the length of said sling and the length of said stretchable member in its relaxed state being such that placement of the respective hand of the gunner in the holding and aiming position requires stretching of said stretchable member, said stretching applying a force to said hand toward the muzzle of the gun thereby steadying the grip of said hand and thus the gun while being aimed and fired.

3,927,809
FILM CARTRIDGE CARRIER
Richard W. Klein, Sr., 101 S. Whiting St., Alexandria, Va. 22304
Filed Jan. 22, 1975, Ser. No. 542,988
Int. Cl.³ A45C *11/00, 11/38;* **B65D** *83/00*
U.S. Cl. 224—5 R **1 Claim**



1. A case for holding a plurality of generally flat, thin cartridges having a rectangular periphery and a depth comprising,
an elongated case having an open top and having a rectangular cross-section that is slightly larger and congruent to said periphery such that said case can receive a stack of said cartridges through said open top,
said case defined by a front panel, a back panel, a pair of side panels and a bottom,
said front panel terminating a distance from said bottom slightly greater than said depth to form an opening sufficiently large to remove the bottommost cartridge of said stack of cartridges,
a first finger notch formed in said front panel and a finger notch formed in said bottom and said notches forming a part of said opening,
a pivotal cover at said top for selectively opening and closing said open top,
a bottom cover having,
a first section having a pivot line along said bottom, said pivot line extending perpendicular to each of said side walls and approximately midway between said front and said rear panels,
a second section pivotally connected to said first section and foldable upwardly so as to close said opening,
interengaging means on the outer end of said second section and said front panel for securing said bottom cover thereto, and
a carrying strap circumscribing said case and traversing said bottom along said pivot line whereby said strap will give support to said pivot.

3,927,810
BICYCLE SUPPORT RACK
Michael Danon, New York, N.Y., assignor to Leisure Moments Incorporated, New York, N.Y.
Filed Mar. 26, 1973, Ser. No. 344,734
Int. Cl.² B60R *9/10*
U.S. Cl. 224—29 R **3 Claims**

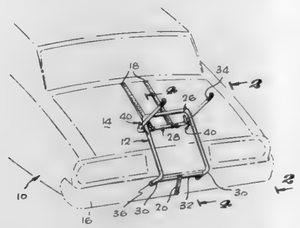


1. An article support rack for attachment to selected body portions of a vehicle; said rack comprising:
a. a pair of laterally spaced U-shaped side members;
b. each of said side members including a pair of leg portions of unequal length adapted to abut selected spaced body portions of the vehicle, and an intermediate portion interconnecting said leg portion;
c. a pair of brace members extending transversely of the side members; each of said brace members being of channel shape cross section having flange portions and an intermediate web portion;
d. the flange portions of said brace members having aligned open end slots at the opposite end portions thereof for receiving the side members and permitting the brace members to be slidably moved to selected positions on the side members;
e. one of the brace members being mounted on the intermediate portions of the laterally spaced side members and the other one of said brace members being mounted on one set of the laterally spaced leg portions of said side members;
f. means for securing the brace members to the selected positions on the side members;
g. article carrier means projecting outwardly from one of the brace members; and
h. additional means for securing the support rack to selected body portions of the vehicle;
i. whereby said side members are supported in spaced apart relation solely by said brace members, and whereby said brace members may be adjustably moved to selected positions on said side members to permit collapsing of the support rack for storage.

3,927,811
COLLAPSIBLE CARRIER FOR BICYCLES
Henry Nussbaum, Los Angeles, Calif., assignor to Henry Nussbaum
Filed May 6, 1974, Ser. No. 467,613
Int. Cl.² B60R *9/10*
U.S. Cl. 224—42.03 B **2 Claims**

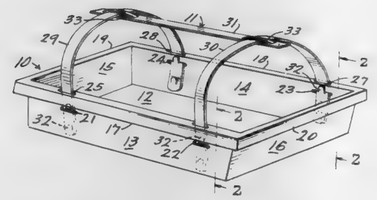
1. In a carrier for mounting on an automobile or the like, the combination comprising:
a. first u-shaped member having a base portion and leg members attached thereto and extending therefrom, a

substantially perpendicular leg interconnected with each extending leg member at the end of the leg opposite its connection to the base;
b. a second u-shaped member having a base portion and elongated leg members, acting as carrying members;
c. first cross means connecting said perpendicular legs near the interconnections of the extending legs to the perpendicular legs;
d. pivot means, rotatingly coupling the extending leg members and the elongated leg members of said first and second u-shaped members;
e. latching bracing means connecting the extending leg members and the elongated leg members of said u-shaped members, for rigidly configuring said u-shaped members at substantially right angles to each other with said perpendicular legs adapted to bear against a surface of said



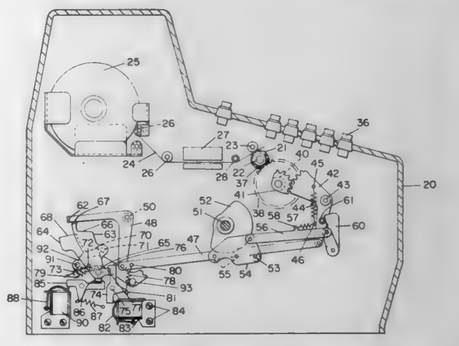
vehicle with said carrying members extending oppositely outward and for permitting said u-shaped members to rotate relative to each other to assume a substantially parallel configuration for compact storage;
f. said latching bracing means including an elongated bracing member having an elongated substantially J-shaped slot therein, and operable with a cooperating post slidable therein for locking said U-shaped members in the carrying configuration;
g. biasing means coupled to said latching bracing means for urging said bracing member slot into a locking engagement with the cooperating post; and
h. first and second attaching members connected to said first cross means and said second U-shaped member base portion, respectively, said attaching members being adapted to fasten to an automobile or the like.

3,927,812
CARRYING HANDLE
Russell M. Winters, and Frederick Sell, both of 1257 S. Crissey Road, Holland, Ohio 43528
Filed Jan. 25, 1974, Ser. No. 436,734
Int. Cl.² B65D *5/46*
U.S. Cl. 224—48 R **3 Claims**



3. A greenhouse flat for holding and protecting plants and flowers comprising a bottom, upwardly diverging side and end walls and an outwardly extending lip on at least said sidewalls, said lip and sidewalls having adjacent aligned slots, and a detachable lifting and carrying handle comprising a longitudinally extending central strap adapted to be carried by hand and a pair of parallel spaced crossmember straps extending transversely to said central strap and having ends received by such aligned pairs of said lip slots and said sidewall slots, and means on said straps adjacent said ends for retaining said cross-member straps in said slots, said central strap extending between and being attached to said cross-member straps.

3,927,813
RECORD FEED CONTROL MECHANISM
Yasuhiro Inagaki, Hiratsuka, Japan, assignor to NCR Corporation, Dayton, Ohio
Filed Aug. 5, 1974, Ser. No. 495,030
Int. Cl.² B65H *17/26*
U.S. Cl. 226—135 **12 Claims**

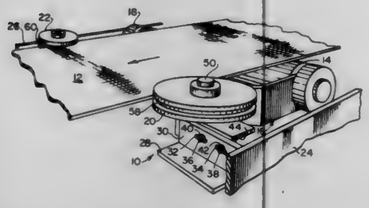


1. In a record material feeding mechanism for feeding a record material a plurality of predetermined lengths, the combination including:
a. a record material feeding means;
b. a sensing member mounted for movement in a sensing direction;
c. means for moving said sensing member in said sensing direction;
d. means interconnecting said sensing member and said feeding means to move said feeding means a length commensurate with the length of movement of the sensing member in a sensing direction;
e. a plurality of first blocking means mounted in the path of movement of said sensing member each selectively movable to a plurality of blocking positions for limiting the movement of said sensing means a different length when in each blocking position;
f. second blocking means mounted adjacent said first blocking means to position said first blocking means in one of said blocking positions upon movement of said first blocking means;
g. and selectively operated actuating means operatively associated with said first blocking means for positioning the first blocking means in one of said blocking positions when not actuated, said actuating means moving said first blocking means into engagement with said second blocking means upon operation of said actuating means whereby said sensing member will move a predetermined length in accordance with the blocking position of said first blocking means.

3,927,814
GUIDE FOR A MOVING BELT
William J. Holm, Springfield, Vt., assignor to Riggs & Lombard, Inc., Lowell, Mass.
Continuation of Ser. No. 304,247, Nov. 6, 1972, abandoned. This application Feb. 14, 1974, Ser. No. 442,561
Int. Cl.² B65H *23/32*
U.S. Cl. 226—199 **1 Claim**

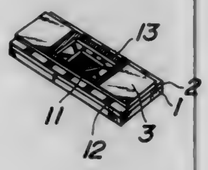
1. Apparatus for guiding a flat belt along a predetermined path, comprising

a. rigid bracket means mounted in fixed position adjacent opposite sides of said path,
b. a pair of peripherally grooved rollers rotatably mounted in fixed position to said bracket means one on each side of said path in position to engage opposing edges of said belt,
c. the grooves of said roller being co-planar with said belt whereby the edges of said belt pass through said grooves, the opposing annular side walls of each of said grooves being parallel to one another over a substantial portion of the depth of said groove and spaced from one another by



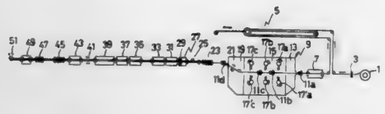
a distance substantially equal to the thickness of said belt,
d. a guide roll rotatably mounted in fixed position to said bracket means and extending transversely of said path and tangential to the plane of said belt and said grooves,
e. said bracket means including a fixed base portion and adjustable arm portions, said roll and rollers being mounted to said arm portions in fixed geometrical relation, said arm portions normally being rigid and fixed in operation to prevent displacement of said rollers by said belt, and,
f. a bearing mounted to each of said arm portions for engaging and supporting the ends of said roll.

3,927,815
METHOD FOR PRODUCING MULTILAYER METALLIZED BERYLLIA CERAMICS
Shunzo Mase, and Tetsuo Watanabe, both of Nagoya, Japan, assignors to NGK Insulators Ltd., Nagoya, Japan
Division of Ser. No. 307,147, Nov. 16, 1972, Pat. No. 3,889,041. This application Mar. 24, 1975, Ser. No. 561,477
Claims priority, application Japan, Nov. 22, 1971, 46-92997
Int. Cl.² B23K *31/02*
U.S. Cl. 228—121 **20 Claims**



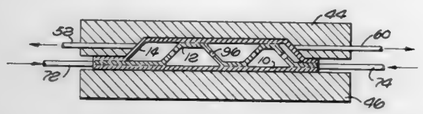
1. A method for producing multilayer metallized beryllia ceramics which comprises applying on a plurality of beryllia green sheets a metallizing paste consisting of 60–97% by weight of at least one metal selected from the group consisting of molybdenum and tungsten, 1.5–39.6% by weight of beryllia and 0.03–20% by weight of at least one rare earth metal oxide selected from the group consisting of lanthanum oxide, yttria and praseodymium oxide and a thermally volatile binder, provided that the amount of the rare earth metal oxide being not more than the amount of beryllia, laminating these sheets and firing the laminated sheets under a non-oxidizing atmosphere.

3,927,816
HOT DIPPED STEEL TUBE AND A METHOD FOR PRODUCING THE SAME
Matsuichi Nakamura, Osaka, Japan, assignor to Daiwa Steel Tube Industries Co., Ltd., Osaka, Japan
Filed Feb. 15, 1974, Ser. No. 442,860
Int. Cl.² B23K *31/06*
U.S. Cl. 228—147 **3 Claims**



1. A method of producing a hot galvinized steel tube in a continuous in-line process comprising:
continuously pulling a length of steel strip from a supply and moving the strip along its length through a predetermined path and maintaining tension in the strip as it is pulled from the supply;
continuously shot blasting at least one surface of the strip as the strip is moved along its path at a position along the path where the strip is in tension;
continuously cold-forming the strip into tubing after the strip has been shot blasted with the surface of the strip which has been shot blasted forming the outside surface of the tubing;
continuously hot welding the tubing closed along its length as the tubing continues to move along its length;
continuously cooling the welded tubing and controlling the heat distribution from the weld seam about the circumference of the tubing to maintain the welded seam warmer than the remaining portions of the tubing;
continuously acid pickling the exterior surface of the tubing to remove the oxide film from the surface of the tubing;
continuously applying a hot metal coating to the exterior surface of the tubing;
continuously quenching the tubing; and
continually cutting the tubing into lengths of tubing.

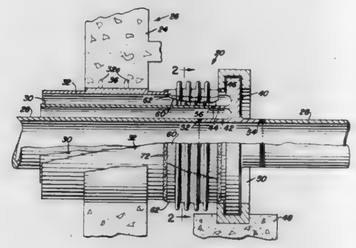
3,927,817
METHOD FOR MAKING METALLIC SANDWICH STRUCTURES
C. Howard Hamilton, San Pedro, and Leonard A. Ascani, Jr., Palos Verdes Estates, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Continuation-in-part of Ser. No. 511,900, Oct. 3, 1974. This application Mar. 20, 1975, Ser. No. 560,437
Int. Cl.² B23K *31/02*
U.S. Cl. 228—157 **38 Claims**



25. A method of making a metallic sandwich structure from a plurality of workpieces comprising:
providing a plurality of metal blank workpieces, each of said workpieces having two opposed principal surfaces, at least one of said workpieces having an effective strain rate sensitivity;
positioning said workpieces in a stack contacting at their principal surfaces, at least one of the outer workpieces of said stack having an effective strain rate sensitivity;
joining preselected areas of said stack of workpieces;

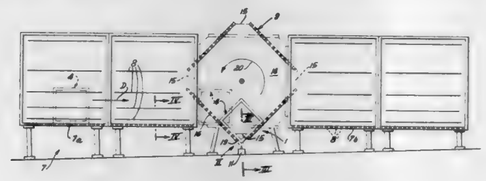
providing at least two shaping members;
enclosing at least one chamber by positioning said stack of workpieces relative to said shaping members;
heating said at least one outer workpiece to a temperature suitable for superplastic forming, and
inducing tensile stress in said at least one outer workpiece causing at least a portion of said at least one outer workpiece to expand superplastically into said at least one chamber and to form against, and into intimate contact with, at least one of said shaping members.

3,927,818
METHOD OF INSTALLING CYLINDRICAL BELLOWS
Edward F. Harrington, Jr., Louisville, Ky., assignor to Chemetron Corporation, Chicago, Ill.
Continuation of Ser. No. 315,047, Dec. 14, 1972, abandoned. This application Aug. 21, 1974, Ser. No. 499,342
Int. Cl.² B23K *31/02*
U.S. Cl. 228—189 **3 Claims**



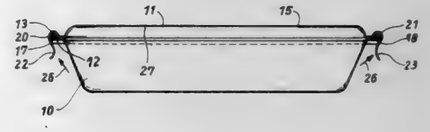
1. A method of installing around a pipeline a cylindrical bellows having spaced inner and outer plies in radial registry with each other along a series of circumferential convolutions comprising the steps of sectioning each ply into longitudinal sections, positioning the sections of said inner ply around said pipeline, welding the sections of said inner ply together, applying a welding back-up tape to the radially inner side of an outer ply section along each longitudinal edge, positioning the sections of said outer ply around said inner ply such that said outer ply sections are spaced from and are in radial registry along the series of circumferential convolutions with said inner ply, and welding the sections of said outer ply outward of said tape together.

3,927,819
METHOD OF TREATING THE CORNERS OF PLANAR POLYGONAL WORKPIECES
Joseph Lang, Wurttemberg, Upper Palatinate; Helmut Meckenstock, Waltrop, and Hans-Joachim Nopper, Oberkoplitz, all of Germany, assignors to Flachglas Aktiengesellschaft Delog-Detag, Gelsenkirchen, Germany
Division of Ser. No. 402,577, Oct. 1, 1973. This application July 15, 1974, Ser. No. 488,772
Int. Cl.² B23K *37/04*
U.S. Cl. 228—212 **1 Claim**



1. A method for treating a corner of a planar workpiece of polygonal outline comprising the steps of:
standing said workpiece on its edge in an upright position;
displacing the standing workpiece horizontally along a conveyor to a treatment location;
tilting the standing workpiece and a portion of the conveyor at the treatment location about a horizontal axis to position a corner thereof adjacent a treatment tool;
treating said corner with said tool by soldering the workpiece corner with said tool;
further tilting the workpiece after treatment thereof to stand same on the conveyor downstream of said tool on an edge different from the edge the workpiece stood on before treatment; and
displacing the workpiece in an upright condition along said portion of the conveyor back past said tool after treatment thereof.

3,927,820
CONTAINER
Ulrich Wagner, Esslinger, and Eugen Scherr, Ebersbach, both of Germany, assignors to Wilhelm Wagner, Esslingen, Germany
Filed Aug. 7, 1972, Ser. No. 278,359
Claims priority, application Germany, Aug. 6, 1971, 2139587
Int. Cl.³ B65D *1/00*
U.S. Cl. 229—3.5 MF **13 Claims**

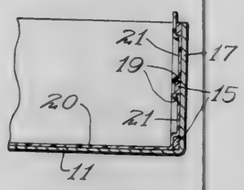


1. In a two-part thin-walled metal container for storing and serving prepared food, said container being of the type that has (a) a receptacle and (b) a lid removably secured to said receptacle for covering the same, the improvement comprising,
A. an external reinforcing flange having a smooth horizontally extending portion and a rolled portion at its outer edge, with two opposed sections of the flange forming retaining zones;
B. two opposed edge zones forming part of said lid, said edge zones corresponding in their extent to respective ones of the retaining zones, each said edge zone having a first portion which fits flat against the horizontally extending portion of its respective corresponding retaining zone and a second portion which extends outwardly from the first portion and is bent from above downwardly and inwardly about the rolled portion of its respective corresponding retaining zone, each said bent zone constituting a retaining clip
C. an integral grip tab adjoining at least one of said retaining clips for disengaging the latter from the corresponding retaining zone of said flange;
D. two further opposed sections of the flange; and
E. two further opposed edge zones of said lid, said further edge zones corresponding in their extent to respective ones of the further opposed sections of the flange, each said further edge zone having a first portion which fits flat against the horizontally extending portion of its respective corresponding flange section and a second portion which extends outwardly from the first portion and is bent to form a guide way for the outer edge of its respective corresponding flange section, wherein:
i. said lid is free of score lines; and
ii. said lid can be removed from the receptacle without severing and utlizing said guide ways.

3,927,821
LINED CARTON

Robert M. Dunning, St. Paul, Minn., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed Sept. 27, 1974, Ser. No. 509,847
Int. Cl.² B65D 5/56
U.S. Cl. 229—14 BL 6 Claims

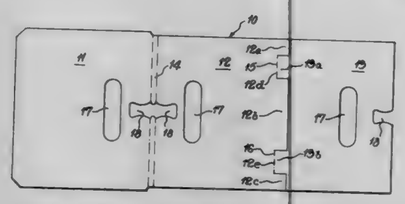


1. A paperboard carton corner in combination with a carton having a base panel, a pair of walls hinged to the base panel, and a corner flap hinged to one wall and overlapping the other wall to form an area of double thickness, the inner layer of the double thickness area having an aperture therethrough, and a plastic liner film attached to the inner surface of said paperboard, said film extending through said aperture and secured to the outer layer of said double thickness area to hold the overlapping portions in overlapping relation.

3,927,822
CARTON WITH IMPROVED ENDS

Buddy E. Giebel, Monroe, Mich., assignor to Union Camp Corporation, Wayne, N.J.

Filed Nov. 4, 1974, Ser. No. 520,644
Int. Cl.² B65D 13/00, 5/46
U.S. Cl. 229—23 R 5 Claims



1. A one-sheet blank made from a generally rectangular sheet of paperboard having three connected panels adapted to be folded into a triple end wall for a Bliss-type carton in which the bottom and side walls are secured to two individual end walls comprising:

a transverse score line connecting the inner and outer panels of said triple end wall, the said inner panel having a width and height equal respectively to the width and height of the carton;

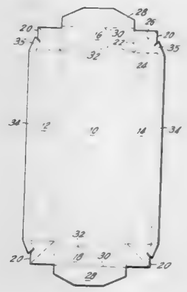
the outer and intermediate panels of said triple end wall being connected along separated hinged knife cuts each parallel to and equally spaced from the transverse score line and being disconnected along cut lines parallel to and intermediate the hinged knife cuts and cut lines extending from the parallel cut lines to the hinged knife cuts to provide thereby projections in the outer wall, located between the hinged knife cuts, the height of the outer panel from the transverse score line to the parallel cut lines of the projections being substantially equal to the height of the carton; and

the height of said intermediate panel when reversed folded 180° over the outer panel extending from the hinged knife cuts to approximately the transverse score line and being shorter than the height of the carton whereby, when the panels and hand-holes are superimposed to form an end wall for a carton, there will be a saving of board with ample areas in the projections to secure the bottom wall to the end walls and sufficient intermediate panel to the top of the carton to minimize any weakness in the upper portion of such wall.

3,927,823
BLANK OF A FOLDABLE MATERIAL SUCH AS CARDBOARD AND A TRAY ERECTED THEREFROM

Karl Rune Persson, Halmstad, Sweden, assignor to Sprinter Pack AB, Halmstad, Sweden

Filed Sept. 5, 1973, Ser. No. 394,443
Claims priority, application Sweden, Sept. 13, 1972, 11806/72
Int. Cl.² B65D 5/36
U.S. Cl. 229—31 R 7 Claims



1. A blank of foldable material for forming a folding tray comprising:

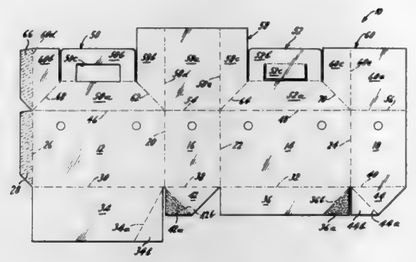
a bottom; opposite sidewalls articulated along a fold line at one side thereof to said bottom; an edge flange articulated along a fold line to another side of each sidewall and adapted to be folded to lie against an exterior surface of the associated sidewall; opposite endwalls articulated at one end thereof to said bottom along an arcuate-shaped folding line; an edge flap articulated to another end of each endwall along a substantially straight folding line; locking means extended from and articulated along a fold line at opposite ends of each sidewall; each sidewall and each endwall being adapted to be erected in a common direction relative to the bottom for assembly of the tray; each edge flap being folded over to lie against an adjacent endwall, each locking means being folded to lie between an adjacent endwall and the associated folded-over edge flap, whereby the curved shape of the erected edge flaps and endwalls retain the enclosed locking means therebetween to maintain the respective endwalls and sidewalls in the erected condition.

3,927,824
SELF-ERECTING BOX

Margot Razziano, Bethpage, N.Y., assignor to Blum Folding Paper Box Co., Inc., Valley Stream, N.Y.

Filed Nov. 21, 1973, Ser. No. 417,736
Int. Cl.² B65D 5/02
U.S. Cl. 229—37 R 6 Claims

1. A box adapted to be erected from a collapsed configuration to an erected configuration comprising hingedly connected side and end walls, side bottom members hingedly connected to respective side walls, said side bottom members dimensioned to overlap each other, and end bottom members hingedly connected to said respective end walls, means for connecting said side bottom members and said end bottom members to form overlapping bottom panel-forming units which are movable relative to each other between a collapsed configuration in which said bottom panel-forming units are in substantially coplanar engagement with said side walls and said end walls and an erected configuration in which said overlapping bottom panel-forming units are substantially perpendicular to said side walls and said end walls and form a bottom panel, having one side bottom member overlapping the other, side top members hingedly connected to said respective end walls, each of said end top members including a

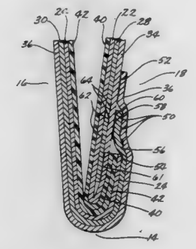


central top panel-forming member and side flaps hingedly connected thereto, said central top panel-forming members adapted to be folded into coacting relation to form a top panel and said side flaps adapted to maintain said top panel in position to securely close the top of said box.

3,927,825
BAG

Robert J. Stearley, Des Moines, Iowa, assignor to Great Plains Bag Corporation, Des Moines, Iowa

Continuation-in-part of Ser. No. 227,821, Feb. 22, 1972, abandoned. This application Jan. 24, 1974, Ser. No. 436,131
Int. Cl.² B65D 33/02
U.S. Cl. 229—55 3 Claims



1. A bag comprising

a tubular container having forward and rearward walls comprised of at least an inner plastic ply and first, second and outer paper plies;

each of said plies having front and rear panels with upper and lower edges;

said lower edges of said front and rear panels of said inner and first plies being coincident with one another;

said lower edge of said second ply front panel being spaced above said lower edges of said inner and first plies;

said lower edge of said outer ply front panel being spaced above said lower edge of said second ply front panel;

said lower edge of said second ply rear panel being below said lower edges of said inner and first plies when said plies are in an unfolded condition;

said lower edge of said outer ply rear panel being below said lower edge of said second ply rear panel when said plies are in an unfolded condition;

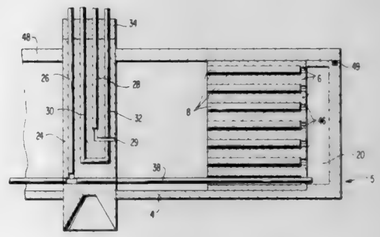
said bag being folded along a single straight fold imposed at a level below said lower edges of said second and outer ply forward panels and above said lower edges of said inner and first plies, said front first ply panel being in facing engagement with said front panel of said second ply and said rear panel of said outer ply being in facing engagement with said front panel of said outer ply, said rear panel of said second ply being in facing engagement with said front panel of said outer ply,

an adhesive material joining said folded over portions of said first ply front panel and said outer ply rear panel to said second ply front panel and said outer ply front panel respectively, said adhesive material also joining said folded over portion of said second ply rear panel to said outer ply front panel.

3,927,826
ROTOR FOR CENTRIFUGAL TESTING OF ELECTROPHORESIS GEL

Norman G. Anderson, and John E. Caton, Jr., both of Oak Ridge, Tenn., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed Aug. 27, 1974, Ser. No. 500,866
Int. Cl.² B04B 15/02, 1/04
U.S. Cl. 233—11 14 Claims



1. An apparatus for preparing identical electrophoresis gels comprising:

a rotor having a generally cylindrical body;

means for rotating said rotor;

a plurality of stacked plates, each plate having a multiplicity of radial grooves in its upper and lower surfaces each groove so sized and shaped as to form one half of a cylinder, each pair of said plates being in a juxtapositionally matchable plate-to-plate relationship so as to form a plurality of gel casting tubes therebetween, said plates having an outer radius smaller than that of said rotor so that a space is formed between said stack of plates and the inner surface of the outer wall of said rotor; and

means to feed a liquid solution to said space;

whereby as liquid is fed to said space while said rotor is rotated, said liquid solution is forced inwardly from said space into said gel casting tubes.

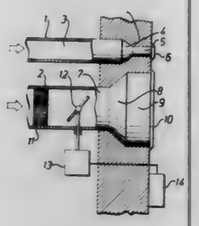
3,927,827
METHOD FOR CONTROLLING THE VENTILATION OF AN AIR-CONDITIONING SYSTEM

Ove Strindehag, Jonkoping, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed Apr. 5, 1974, Ser. No. 458,313
Claims priority, application Sweden, Apr. 13, 1973, 7305238
Int. Cl.² F24F 7/00
U.S. Cl. 236—49 7 Claims

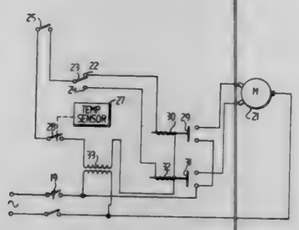
1. In an air-conditioning system in which the ventilation in a space is varied upon demand without substantially changing the temperature or humidity of the air supplied to the space by varying the volume of conditioned air, the method of ventilating the space which consists of supplying the air to the space in a plurality of partial flows and maintaining the total impulse of the supplied air relatively constant independent of the volume of air supply between a minimum volume and a maximum volume, said method comprising the steps of maintaining at least one of said partial flows supplied to the space with a constant velocity and volume flow to thereby maintain

the impulse of said one partial flow constant at a high impulse, and supplying at least one other of the partial flows at a velocity substantially below the velocity of said one partial flow to provide a low impulse, and controlling the ventilating by varying the volume of said low-velocity partial flow without substantially changing the temperature or humidity, said variation being between a minimum flow and a maximum flow,



the impulse of the maximum flow in said other partial flow being substantially less than the impulse of said one constant partial flow so as to permit variation of the impulse of said other partial flow without substantially affecting the total impulse provided by the total of said partial flows, the impulse being determined by multiplying the velocity of the flow by the volume of the flow.

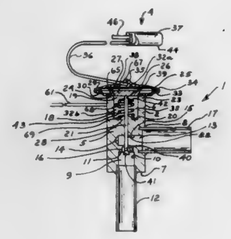
3,927,828
VENTILATION SYSTEMS
Herman W. Jones, Rte. 2, Box 84B, Albany, Ky. 42602
Filed Sept. 30, 1974, Ser. No. 510,177
Int. Cl.² F24F 7/00
U.S. Cl. 236—49 **6 Claims**



1. A ventilating system for a closed area having at least two vent openings therein comprising:
a fan within one of said vent openings;
a reversible electric motor coupled to said fan;
means mounted outside of said closed area for determining the direction of the prevailing wind;
a directional switch connected to and controlled by said means mounted outside of said closed area;
means coupling said switch to said motor for controlling the direction of the motor drive in accordance with the direction of said prevailing wind;
means for measuring the prevailing wind velocity; and
switch means coupled to said means for measuring said wind velocity, said switch means being in series with said directional switch and being deactivated at a predetermined wind velocity.

4. A ventilating system for an enclosed area having at least two vent openings comprising;
a fan within one of said vent openings;
a reversible electric motor coupled to and driving said fan;
means for determining the direction of the prevailing wind outside of said enclosure;
means connected between said last named means and said motor for controlling the direction of rotation of said motor in accordance with the direction of said prevailing wind;
means for measuring the prevailing wind velocity; and
means connected between said last named means and said motor for deactivating said motor at a predetermined wind velocity.

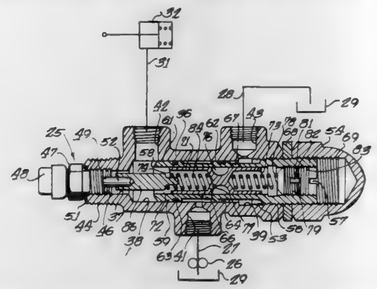
3,927,829
THERMOSTATIC EXPANSION VALVE
Richard Willner, St. Louis; Jude A. Pauli, Florissant, and Frank A. Latuda, Maryland Heights, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.
Filed July 5, 1974, Ser. No. 486,197
Int. Cl.² G05D 27/00
U.S. Cl. 236—92 B **13 Claims**



1. A thermostatic expansion valve comprising:
a valve body having an inlet port and an outlet port interconnected by an expansion port, said valve body having a cavity formed in it, said cavity including a bottom wall having an opening in it, said opening being aligned with said expansion port in said valve body;
a diaphragm actuated valve attached to said body and closing said cavity, said valve including an enclosure having a first section and a second section, said first and said second sections being joined to one another about said cavity to define a chamber therewith, a flexible diaphragm mounted between said first and said second sections along the outer periphery of said diaphragm, said diaphragm dividing said chamber into a first chamber portion and a second chamber portion, a valve pin having first and second ends, said valve pin being mounted in said opening so that said second end extends through said expansion port, said valve pin being operatively connected to said diaphragm and movable in response to said pressure differences between said first and said second chamber portions, a stop valve mounted to the second end of said valve pin and adapted to regulate the opening of said expansion port as said valve pin moves in response to said pressure differences, a spring completely enclosed by said valve body and said diaphragm valve so as to prevent mechanical connections to said spring for adjusting the force exerted by said spring, said spring being positioned in said second chamber portion and biased so as to exert a force on said diaphragm in a direction which tends to close said expansion port, the force of said spring being predetermined and nonadjustable; and
pressure generating means responsive to temperature operatively connected to the first chamber portion of said chamber, said pressure generating means being charged to a pressure to set the operating point of said valve.

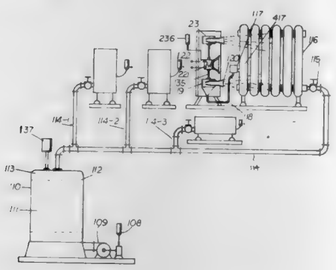
3,927,830
CONTROL VALVE
Michael Briski, Rockford, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Sept. 25, 1974, Ser. No. 508,976
Int. Cl.² G05D 23/12
U.S. Cl. 236—100 **7 Claims**

4. A control valve for regulating fluid pressure comprising:
a body member including a bore, a control port, an inlet port and a relief port, each of said ports intercepting said bore;
a tubular sleeve disposed for longitudinal adjustment within said bore having an open end arranged for communication with said control port and including a relief aperture and an inlet aperture communicating respectively with said relief port and said inlet port;
a shifting spool slidably disposed within said sleeve for movement with respect to said inlet and relief apertures,



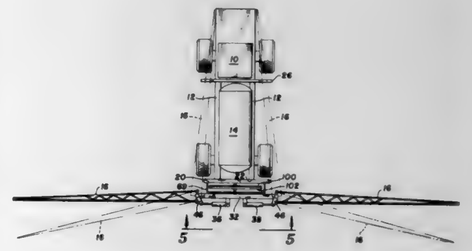
said spool having passage means including a circumferential groove communicable with said apertures and an opening communicating said groove with an end portion of said spool communicating with said open end of said sleeve;
bias means engaging said spool; and
a thermal sensing device operatively associated with said spool, said spool being shiftable in response to pressure in said control port and temperature sensed by said thermal sensing device.

3,927,831
HEATING SYSTEM
Edwin M. Bailey, 194 W. Ridgewood Ave., Ridgewood, N.J. 07450, and David Y. Bailey, 381 Western Ave., Cambridge, Mass. 02139
Filed Aug. 13, 1973, Ser. No. 387,960
Int. Cl.² F24D 1/02
U.S. Cl. 237—9 R **6 Claims**



1. A vapor heating system comprising:
a boiler normally containing water with a head space thereabove;
first means coupled to said boiler to heat the water therein in response to control means, thus producing heated vapor;
an arrangement of radiators interconnected by piping;
second conduit means communicating with the head space and connected to the arrangement for conducting the vapor thereto;
third means coupled through the arrangement to the head space for continuously or intermittently moving air from the atmosphere through all or part of said arrangement, the air entraining heated vapor as it passes through the space; and
fourth thermostatically controlled valve means coupled to at least one of the radiators for releasing said moved air therefrom as long as the temperature in the vicinity of the radiator is below the temperature setting of the thermostatic control, the entrained vapor carried by the air condensing in the radiator to release heat to the vicinity via the radiator itself.

3,927,832
HORIZONTAL BOOM LIFT ARMS
William G. Robison, Alpha, and Ronald D. Bieker, Jackson, both of Minn., assignors to Ag-Chem Equipment Co., Inc., Minneapolis, Minn.
Filed July 31, 1974, Ser. No. 493,386
Int. Cl.² B05B 1/20
U.S. Cl. 239—168 **8 Claims**

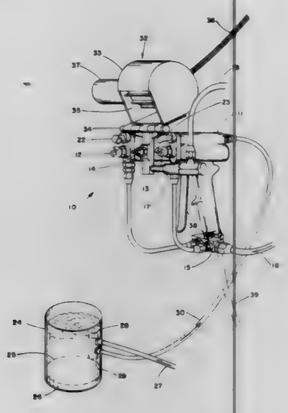


8. In an agricultural spray apparatus of the type including a vehicle having a fluid reservoir mounted thereon and a pair of booms which may be rotatably extended about a generally vertical axis from said vehicle for dispensing the fluid in said reservoir over a given area, a boom elevating mechanism comprising:
a. a first frame having first and second vertical members fixedly attached to the rear of said vehicle on opposite sides of the center line of said vehicle;
b. a second frame having a pair of extensible booms coupled thereto positioned rearward of said first frame with respect to said vehicle, said second frame comprising:
1. first and second cylindrical shafts held together in a vertical, parallel and spaced apart relationship by first and second horizontal cross members;
2. first and second cylindrical sleeve members disposed on the lower ends of each of said first and second shafts;
3. means connecting said booms individually to said first cylindrical sleeve on said first and second shafts; and
4. means for imparting a rotational motion to said second cylindrical sleeve on said first and second shafts;
c. coupling means slidably engaging said first and second vertical members on said first frame and coupled to said second frame;
d. means including a pair of lifting arms pivotally anchored at their respective inner ends to said first frame and each being coupled at their respective outer ends to one of said pair of extensible booms;
e. means for simultaneously displacing said coupling means substantially equal distances in a vertical direction;
f. third and fourth cylindrical sleeve members individually disposed on the upper ends of said first and second cylindrical shafts; and
g. linear motion producing means coupling said third and fourth sleeve members to said booms.

3,927,833
APPARATUS FOR FORMING MULTIPLE-COMPONENT COMPOSITE STRUCTURES

David Harrison, and Raul T. Sainz, both of Miami, Fla., assignors to Ransburg Corporation, Indianapolis, Ind.

Division of Ser. No. 464,994, April 29, 1974. This application July 25, 1975, Ser. No. 599,139
Int. Cl.² B05B 7/08, 7/14, 7/24
U.S. Cl. 239—306 **6 Claims**



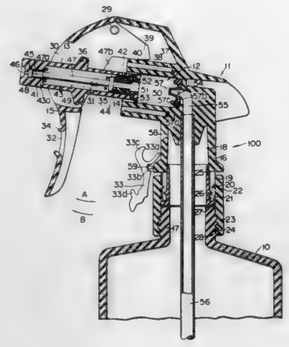
1. A spray gun for forming multiple-component composite structures comprising a housing forming a handle and carrying a trigger, a pair of spray-forming means carried at the forward portion of the housing at spaced-apart locations, each of said spray-forming means being adapted for connection with a source of plural component material, an atomizing nozzle carried by the housing at a location centrally located between the pair of spray-forming means and adapted for connection with a source of curing agent, a pair of granular emitting means carried by the forward portion of the housing, each of said granular emitting means being located closely adjacent one of said pair of spray-forming means, a pair of passageways formed by the housing and connected at the rear with the source of granular material, cutter means for cutting fibrous materials adjustably carried by the housing having an orifice for the ejection of cut fibers located above the granular emitting means and centrally located therebetween, a valve means within the housing operated by the trigger simultaneously causing the operation of the spray-forming means, the curing agent atomizing nozzle, and the cutter means.

3,927,834
SPRAYER

Tetsuya Tada, 1339 Nishitadadomari, Onoda, Yamaguchi, Japan

Filed Sept. 27, 1974, Ser. No. 509,909
Claims priority, application Japan, Feb. 12, 1974, 49-16942
Int. Cl.² A62C 11/04; B05B 11/06, 7/02; B67D 5/40
U.S. Cl. 239—359 **5 Claims**

1. A sprayer comprising a sprayer head having a cylindrical chamber opened at one end, passage means communicating with said chamber through the bottom thereof, for introducing a spray liquid into the chamber, valve means for permitting only the flow of the liquid from said passage means to the chamber, a piston member slidably inserted into the chamber from said opened portion thereof and having at its outer end portion a nozzle for ejecting the liquid, a lever for moving said piston member toward the bottom portion of the chamber, and a locking member for locking, when the sprayer is out of use, the lever with the piston member placed in the innermost position of the chamber to cause the inner end of the piston member to close said valve means, said locking member being rockably mounted on the sprayer head and having an engagement portion for being engaged with the lever, said sprayer further comprising a container for receiving a spray liquid

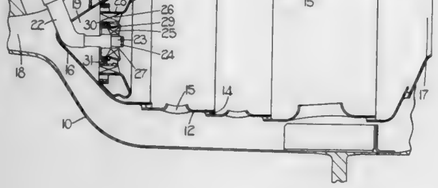


therein, and wherein said sprayer head is provided with an air port for preventing generation of a negative pressure within said container, and said locking member includes a closing portion for closing, when the lever is locked, said port simultaneously with the locking of the lever.

3,927,835
LIQUID ATOMISING DEVICES

Alan Joseph Gerrard, Blackburn, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed Nov. 5, 1973, Ser. No. 412,821
Int. Cl.² B05B 1/34
U.S. Cl. 239—400 **3 Claims**

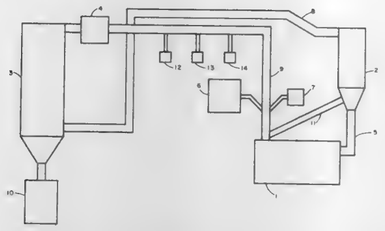


1. A liquid atomising device comprising a tubular body through which, in use, air is caused to flow, an air swirler within the downstream end of the body and formed of a plurality of blades, a passage within the body for a liquid and an elongated nozzle having a plurality of holes communicating with the said passage and arranged to inject liquid for atomisation into the airstream downstream of said swirler in a direction transverse to the air flow, each said hole being adjacent to the root of an associated blade of the swirler and being directed radially from the axis of said body, the tubular body extending substantially only over the axial length of the swirler and this being surrounded by a further swirler of different air flow characteristics, means permitting limited movement between the nozzle and the further swirler in a direction transversely with respect to the length of the nozzle and the body being formed by a ring on the outer periphery of the inner swirler and a further ring on the inner periphery of the further swirler, these rings being connected.

3,927,836
FINE FLAKED ALUMINUM MANUFACTURE

J. Rand Thurgood, West Jordan, and Robert B. Clay, Bountiful, both of Utah, assignors to Ireco Chemicals, Salt Lake City, Utah

Filed July 23, 1974, Ser. No. 491,028
Int. Cl.² B02C 17/04
U.S. Cl. 241—19 **9 Claims**

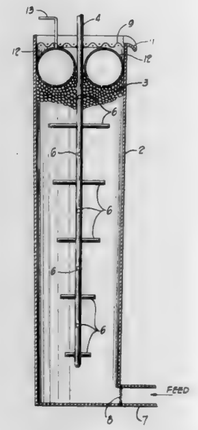


1. In a method for producing fine flaked aluminum particles comprising:
a. milling aluminum in granulated or atomized form in a ball mill,
b. continually supplying fresh amounts of the aluminum in granulated or atomized form to the ball mill,
c. continually withdrawing milled fine flaked particles from the ball mill by passing an inert gas through the mill with a flow rate sufficient to carry the milled fine flaked particles from the mill, and
d. sepafating the milled fine flaked particles from the inert gas;
the improvement which comprises milling the particles in a vibratory ball mill.

3,927,837
PRESSURIZED MILL AND PROCESS

Leroy P. Clark, Huron, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed July 5, 1974, Ser. No. 486,011
Int. Cl.² B02C 17/18
U.S. Cl. 241—46.11 **6 Claims**

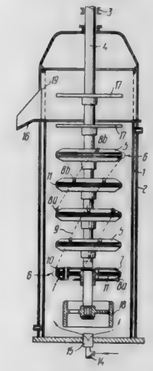


1. In a milling process wherein a body of solid particulate grinding medium is agitated in a milling zone, the improvement which comprises: pressurizing a surface of said body of particulate grinding medium by elastic inflatable means retained within said zone in contact with said surface, said pressurizing means transferring substantially uniform pressure to said surface in contact therewith.

3,927,838
WET GRINDER

Vladimir Pavlovich Soloviev, ulitsa Pervomaiskaya, 46, kv. 29, Dolgoprudny Moskovskoi oblasti; Viktor Vyacheslavovich Kafarov, ulitsa Vavilova, 48/4, kv. 247, Moscow; Alexandr Grigorievich Schus, ulitsa Mendeleeva, 20, kv. 4, Dolgoprudny Moskovskoi oblasti, and Gennady Pavlovich Stulnikov, Zhemchuzhny proezd, 3, kv. 6, Penza, all of U.S.S.R.

Filed May 20, 1971, Ser. No. 145,303
Int. Cl.² B02C 17/16
U.S. Cl. 241—46.15 **3 Claims**

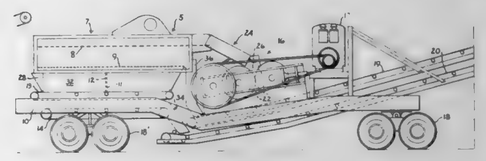


1. In a wet grinder the combination of a shell; a chamber formed within said shell and being adapted to receive a quantity of grinding bodies; a rotatable shaft extending through said chamber and a plurality of vanes secured to said shaft in axially spaced relationship, each said vane being trough-shaped and having a bottom and side walls defining interior concave surfaces, each said trough-shaped vane being disposed about said shaft with its concave surface facing the shaft; the improvement comprising: each said trough-shaped vane having a slot extending throuh the entire bottom length thereof, at least one of the side walls of said trough-shaped vane having through apertures; and external nozzles integrally formed with said trough-shaped vane, said through apertures communicating with said external nozzles, the nozzles being arranged from one vane to the next so as to aid in moving material being treated up through the grinder chamber.

3,927,839
CRUSHING APPARATUS

John N. Quinn, c/o Johnson Welding & Equipment Co., Inc., 2470 Pennsylvania Ave., Madison, Wis. 53704

Filed Aug. 5, 1974, Ser. No. 494,715
Int. Cl.² B02C 21/02; B07B 1/18
U.S. Cl. 241—76 **15 Claims**



13. Elongated crushing apparatus having an input station at its rear and having crusher means at a location between said input station and the front of the apparatus, characterized by: A. spaced apart elongated upper and lower conveyors extending forwardly and upwardly from a location forwardly adja-

cent to the input station, to delivery zones at different elevations at the front of the apparatus,

1. said upper conveyor being located to receive crushed materials issuing from said crusher means,
2. and the lower conveyor having its receiving end rearwardly of the upper conveyor;

B. a material receiving and classifying unit at the input station having upper and lower vibratory screens thereon for separating from the input material the two largest sizes thereof and for conducting the largest from the upper screen into the crusher means;

C. means for conducting the second largest size pieces of material from said lower screen onto the rear portion of the upper conveyor in bypass relation to said crusher means;

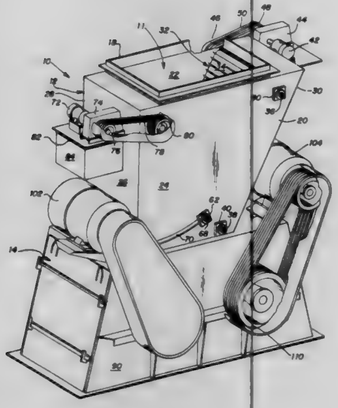
D. and conveyor means to receive final product size materials that pass through said screens and to conduct such final product size material onto the receiving end of the lower conveyor.

3,927,840

REFUSE SHREDDER

James C. Nash, Sulphur Springs, Tex., assignor to Longhorn Construction Co., Inc., Sulphur Springs, Tex.

Filed Sept. 4, 1973, Ser. No. 393,942
Int. Cl.² B02C *13/04*
U.S. Cl. 241—187 **2 Claims**



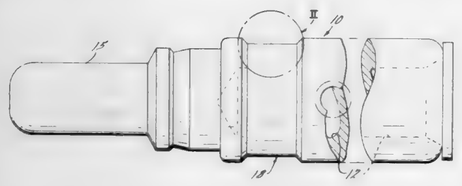
1. Apparatus for shredding materials for the subsequent processing of the shredded materials comprising in combination a pair of opposing shredding cylinders, means for rotating the cylinders, means for feeding the material to between the cylinders, means for removing shredded material from between the cylinders, and a plurality of flails attached to and radially protruding from the cylinders, each flail having no more than three links, means for pivotally connecting the links of each flail to each other and for pivotally connecting each flail to its corresponding cylinder, the pivot means permitting pivotal movements of the flails and the links about axes parallel to an axis rotation of the cylinder, each flail having an outermost link defined by a pair of spaced-apart independently pivotal segments, each segment having a first substantially straight surface facing in the direction of rotation of its associated cylinder, a second substantially straight surface which is substantially perpendicular to the first surface and which is substantially parallel to an axis of rotation of the cylinder, and an outermost cutting edge defined by the intersection of the first and second surfaces which is substantially perpendicular to the first mentioned cutting edges.

3,927,841

CONTACT

Cesidio R. Iacobucci, LaCrescenta, Calif., assignor to Flight Connector Corporation, Hawthorne, Calif.

Filed May 9, 1974, Ser. No. 468,467
Int. Cl.² H01R *3/02*
U.S. Cl. 339—278 C **6 Claims**



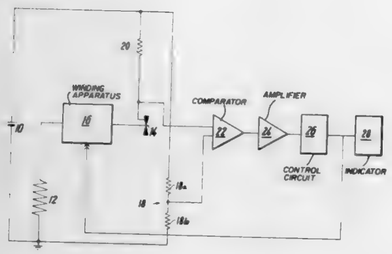
1. A metallic electrical terminal member having a body including a connection portion adapted to be attached to a conductor which is formed of a metal similar to that of the body, said body having a contact portion integral with and spaced from the connection portion, a continuous uninterrupted metallic plating covering said contact portion and extending therefrom on said body uninterruptedly toward and entirely around the body but terminating at a position spaced from the connection end of the body, and an inert plastic seal bonded to the body and to the plating and completely covering the juncture areas of the plating and body, the body being aluminum and the plating comprising an outer layer of a noble metal.

3,927,842

WIRE SUPPLY CONTROL ARRANGEMENT

Hans Dröll, An der Rosenhelle 4, 6369 Niederdorfelden, Germany

Filed Oct. 26, 1973, Ser. No. 410,027
Claims priority, application Germany, Oct. 28, 1972, 2253053
Int. Cl.³ G01R *27/14*; **B65H** *63/08*; **H02K** *15/085*
U.S. Cl. 242—1.1 R **4 Claims**



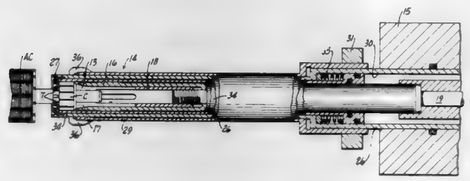
1. A wire supply control arrangement for a winding apparatus for stators of an electric machine wherein the wire from a wire supply is cut off each time after a stator is wound, said winding apparatus including a cutter device for cutting off said wire supply and said arrangement comprising an electrical circuit, connected to said cutter device and including the wire supply, for generating a first signal proportional to the resistance of the wire remaining in the wire supply, said circuit further comprising means for generating a second signal in accordance with a predetermined resistance value of the wire supply, comparator means for comparing said first and second signals and producing an output signal in accordance therewith, and utilization means connected to the output of said comparator means for utilizing said output signal.

3,927,843

ARMATURE WINDING MACHINE WITH IMPROVED LEAD RETAINING MEANS

Raymon H. Dammar, Minneapolis, Minn., assignor to Possis Corporation, Minneapolis, Minn.

Division of Ser. No. 130,649, April 2, 1971, which is a continuation-in-part of Ser. No. 721,805, April 16, 1968, abandoned. This application Oct. 1, 1973, Ser. No. 402,616
Int. Cl.² H02K *15/09*
U.S. Cl. 242—7.05 B **6 Claims**



1. In a machine for winding coils of wire onto slotted armature cores and looping the lead wires of the coils around the hook-like tangs of commutators associated with the armature cores, the combination of:

A. core gripping means to hold an armature core assembly while wire is being wound onto its core;

B. a tubular shield axially movable to and from a projected position in which an end portion thereof enshrouds and covers the hook-like tangs of the commutator associated with an armature core held by said core gripping means;

C. a tubular lead wire retaining member inside said tubular shield,

said lead wire retaining member having an inner end and an outer end and being axially movable with respect to said tubular shield to and from an operative position so positionally related to the core gripping means that while in said position its outer end portion receives the commutator of an armature core assembly held by said core gripping means;

D. means on the outer end portion of said tubular lead wire retaining member to project into the hook-like tangs of a commutator received in the retaining member to engage any wire lead that has been looped around a tang and by such engagement hold the lead against displacement from the tang; and

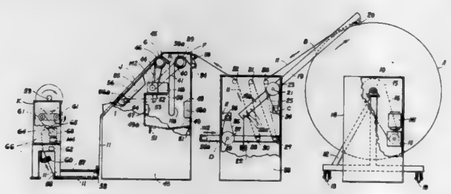
E. drive means operatively connected with said tubular retaining member for effecting movement thereof to and from its operative position.

3,927,844

CLOTH INSPECTION DEVICE

Robert W. Bond, Greenville, and William J. Alexander, III, Mauldin, both of S.C., assignors to Bond Transmission & Controls, Inc., Greenville, S.C.

Filed Feb. 13, 1973, Ser. No. 332,072
Int. Cl. B65h *17/00*, *25/22*
U.S. Cl. 242—55 **1 Claim**



1. In a cloth inspecting device, means supplying and delivering cloth to be inspected including:

A a motor driven cloth supply roll for delivering cloth therefrom;

B speed control means actuated responsive to tension in the cloth delivering from said supply roll for controlling the operation of the motor driven supply roll;

C means including a motor forming a freely suspended tensionless supply loop from cloth delivered from said supply;

D means including a motor for delivering cloth from said loop for inspection in tensionless condition;

E a power operated batcher including a motor for taking up cloth under controlled conditions of tension;

F a common means controlling the operation of the motor of said means for delivering cloth from said loop for inspection and the motor of said batcher; and

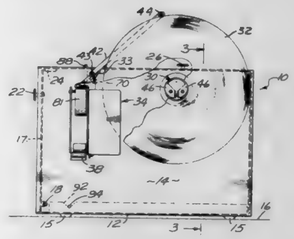
G means for reversing the direction of the batcher and said means for delivering cloth from said loop independently of said motor driven cloth supply, whereby disadvantages of reverse winding of the cloth supply are avoided.

3,927,845

TAPE HANDLING MEANS

Ralph E. Simpson, 2445 N. Highland Road, Upland, Calif. 91786

Filed Feb. 19, 1974, Ser. No. 443,390
Int. Cl.² B65H *17/02*; **F16G** *11/00*
U.S. Cl. 242—68.3 **5 Claims**



1. Hub means for supporting a wound roll of elongated materia on a support structure, comprising:

a hub body adapted for mounting at one end on said support structure to telescopically receive said wound roll, said hub body having an outer end face; and

two retainer levers pivotally mounted on said end face of the hub body to rotate on axes that are substantially parallel to the axis of the hub body,

one arm of each retainer lever being a latch arm and the other arm being an operating arm,

the two retainer levers being pivotally movable between effective positions extending beyond the outer circumference of the hub body to retain the wound roll on the hub body and retracted release positions inside the outer circumference of the hub body,

the two retainer levers lying on opposite sides of a diametrical line on said outer end face of the hub body with the two latch arms of the levers extending toward one end of the diametrical line and the two operating arms extending toward the other end of the diametrical line,

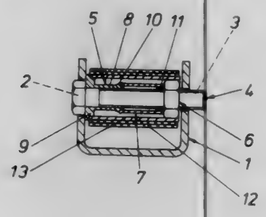
the latch arms of the retainer levers confronting each other across the diametrical line at the release positions of the levers and diverging from the diametrical line at the effective positions of the levers,

the operating arms confronting each other across the diametrical line at the effective positions of the levers and diverging from the diametrical line at the release positions of the levers,

the operating arms of the levers being equipped with respective fingerpieces that may be squeezed together between the thumb and forefinger of the operator to swing the

levers from their release positions to their effective positions.

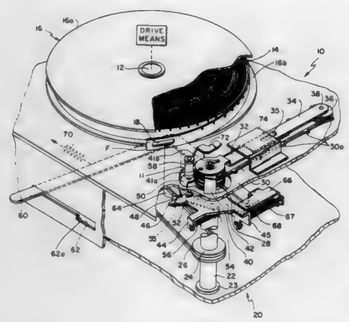
3,927,846
SAFETY BELT UNWINDING DEVICE WITH ENERGY DISSIPATOR
Wolfgang Meissner, Wengern, Ruhr, Germany, assignor to Gebr. Happich GmbH, Germany
Filed July 22, 1974, Ser. No. 490,885
Claims priority, application Germany, Sept. 6, 1973, 2344878
Int. Cl.² B65H 75/48
U.S. Cl. 242—107.4 **30 Claims**



1. Unwinding device with energy dissipator for a wound belt, comprising:
a belt;
a spool on which the belt that is to be unwound is wound; said spool having a first axis; means for supporting said spool for rotation about said first axis, thereby to unwind said belt;
a spindle separate from said spool; said spindle having a second axis; a support for said spindle;
energy dissipation means for dissipating the energy of unwinding of said belt from said spool; said dissipation means comprising a first abutment, a second abutment, and an energy dissipator element;
said first abutment being carried on said spindle and being engaged therewith in a manner such that rotation of said first abutment around said spindle also moves said first abutment along said spindle and along said second axis; said first abutment being connected with said spool such that said first abutment is rotated around said spindle upon rotation of said spool and that rotation of said spool to unwind said belt rotates said first abutment in a first direction;
said second abutment being near said spindle, being spaced from said first abutment and being supported axially non-shiftably with respect to said spindle such that rotation of said first abutment in said first direction moves said first abutment toward said second abutment;
said energy dissipator element extending across the space between said first and said second abutments and engaging both said abutments;
at least one part of said energy dissipation means being comprised of a relatively hard, yet deformable material such that movement together of said abutments causes deformation of the said deformable part and this absorbs the kinetic energy of unwinding of said spool without deforming said spool.

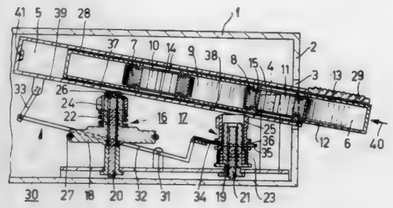
3,927,847
FILM THREADING DEVICE
Robert J. Roman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 9, 1974, Ser. No. 496,240
Int. Cl.² G03B 1/04; G11B 15/32
U.S. Cl. 242—192 **8 Claims**

1. For apparatus having a spindle adapted to support a roll of film having a leading end portion having an opening defined therein, said spindle being adapted to rotatably drive the roll in a take-up direction such that the leading end is separated from the roll, the improvement comprising:
a. an endless drive belt including at least one projection suitable for engaging said leading end of film through said opening as the roll is being rotatably driven by the spindle in the take-up direction;
b. means for supporting said endless drive belt to be driven in a threading direction opposed to said take-up direction, said support means being pivotally supported by the



projector for movement between (1) a first position wherein said belt is spaced from said leading end and (2) a second position wherein said projection on said belt is spaced from said roll and is engageable with said leading end through said opening; and
c. means for driving said endless belt in said threading direction and for rotatably driving the spindle in the take-up direction when said means for supporting said endless drive belt is in said second position for initiating threading of the leading end of the film from the roll.

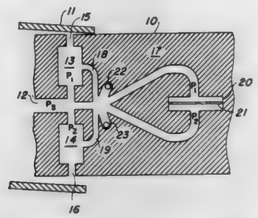
3,927,848
RECORDING AND/OR PLAYBACK APPARATUS
Istvan Hochbaum, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 1, 1973, Ser. No. 384,686
Claims priority, application Germany, Aug. 30, 1972, 7232077
Int. Cl.² G03B 1/04; G11B 15/32, 23/04
U.S. Cl. 242—198 **4 Claims**



1. A recording and/or playback apparatus for use with a cassette having at least one winding hub for a record carrier in the form of a tape, said apparatus comprising a cassette holder pivotably mounted in said apparatus for rotation between a loading and an operating position; a winding spindle having at least an end axially movable from an engaging position for engaging the hub of a cassette inserted in said holder, said holder being in the operating position, to a withdrawn position for being withdrawn from engagement with a cassette being inserted or removed from said holder, said holder being in the loading position; and means operable in direct response

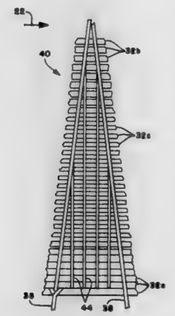
to movement of said holder for moving said spindle end between said positions.

3,927,849
FLUIDIC ANALOG RING POSITION DEVICE
Gerald E. Kovalenko, and Charles E. Woods, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 17, 1969, Ser. No. 882,409
Int. Cl.² F41G 7/00
U.S. Cl. 244—3.22 **3 Claims**



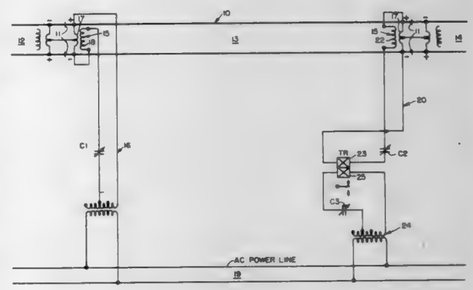
1. A position sensor for sensing the position of a body encircling member with respect to a body comprising;
a longitudinal body in the form of a cylindrical projectile;
said body having a central passageway therethrough;
at least one pair of exit ports in communication with and at right angles to said central passageway and spaced longitudinally from one end of said body;
a body encircling member comprising a ring longitudinally restrained on said longitudinal body in proximity to said exit ports;
indicator means connected to said exit ports for indicating an unbalance of fluid pressure between said ports;
said position sensor being arranged and operated such that fluid will flow through said central passageway under pressure and a portion thereof be metered through said exit ports;
said ring being adapted and arranged so that the proximity to said exit ports may vary under outside influence thereby varying the amount of fluid metered through said ports.

3,927,850
LIFTING PARACHUTE
Raymond E. Rychnovsky, Livermore, Calif., assignor to The United States of America as represented by The United States Energy Research and Development Administration, Washington, D.C.
Filed Dec. 31, 1974, Ser. No. 537,810
Int. Cl.² B64D 17/12
U.S. Cl. 244—145 **9 Claims**



1. A lifting parachute for high speed release from an aircraft at from about mach 0.45 to about mach 1.2 comprising a canopy having a plurality of concentric circumferentially arranged ribbons generally spaced a uniform distance from one another adjacent the apex of said canopy and disposed in generally edge to edge relationship adjacent the canopy skirt, said canopy being divided into a plurality of gores by radial lines, said plurality of gores including rearward gores, side gores, and forward gores, said rearward gores of said canopy having a central portion intermediate the apex and skirt of said canopy of greater porosity compared to the porosity of the forward gores and the side gores with ribbons spaced further apart than the ribbons of said forward gores and the side gores when said canopy is inflated.

3,927,851
ALTERNATING CURRENT TRACK CIRCUIT APPARATUS
Clinton S. Wilcox, Rochester, N.Y., assignor to General Signal Corporation, Rochester, N.Y.
Filed Jan. 13, 1975, Ser. No. 540,358
Int. Cl.² B61L 21/06
U.S. Cl. 246—37 **4 Claims**



1. Alternating current track circuit apparatus for a stretch of railway track divided by insulated joints into adjoining double rail track circuits and having impedance bonds at respective transmitting and receiving ends permitting power propulsion direct current to bypass the joints, wherein the improvement comprises:
a. an alternating current track feed for connection across the track rails at the transmitting end of each of the track circuits through a circuit tuned to resonance by a capacitor connected in series with a winding of the impedance bond at that end for energization of the associated track circuit from a source of alternating current, and
b. an alternating current receiver for connection across the track rails at the receiving end of each of the track circuits through a circuit tuned to resonance by a capacitor in series with a winding of another of the impedance bonds and a track winding of a receiving relay for sensing the presence of a vehicle in the associated track section,
c. the receiver comprising a local source of energy derived from said source and connected to a local winding of the relay in series with a variable capacitor for adjustment of the phase difference between energization of the track and local windings for providing optimum sensitivity of the relay,
d. whereby improved shunting sensitivity and broken joint protection is obtained over a wide range of lengths of alternating current track circuits.

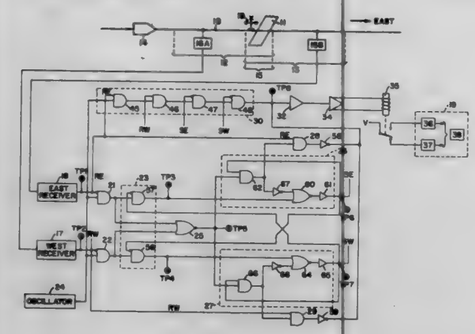
3,927,852
FAIL-SAFE LOGIC CIRCUITRY FOR VEHICLE TRANSPORTATION CONTROL

Henry C. Sibley, Adams Basin, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Continuation of Ser. No. 282,211, Aug. 21, 1972, abandoned. This application Apr. 1, 1974, Ser. No. 456,709

Int. Cl.² B61L 1/02

U.S. Cl. 246—126 **8 Claims**



1. A highway crossing control system for actuation of a warning indicator to provide a closure of the highway by a vehicle moving along a track crossing the highway, including a first track section across the highway and extending in a first direction from the highway,

a second track section overlapping said first track section across the highway and extending in a second direction from the highway,

a first and second track circuit corresponding to said first and second track section and sensing the occupancy and vacancy by a vehicle along the track in said corresponding first and second track sections,

a first and second control circuit to actuate the highway crossing warning indicator;

a first memory circuit included in said first control circuit, said first memory circuit being set by a vehicle proceeding from said first track section to said second track section and remaining set during the time such vehicle is detected in said first and second track sections,

a second memory circuit included in said second control circuit, said memory circuit being set by a vehicle proceeding from said second track section to said first track section and remaining set during the time such vehicle is detected in said first and second track sections;

said first control circuit responsive to said first and second memory circuits and providing means for actuating the highway crossing warning indicator when and only when a vehicle travelling in a direction from said first track secction to said second track section is sensed by said first track circuit in said first track section, and

said second control circuit responsive to said first and second memory circuits and providing means for actuating the highway crossing warning indicator when and only when a vehicle travelling in a direction from said second track section to said first track section is sensed by said second track circuit in said second track section.

3,927,853
HOUSEHOLD APPLIANCE LEVELING SYSTEM

Lauren W. Guth, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Aug. 2, 1974, Ser. No. 494,223

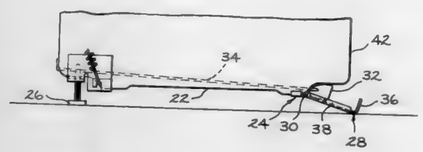
Int. Cl.² F16M 11/40

U.S. Cl. 248—188.2 **7 Claims**

1. An appliance having an adjustable leveling arrangement located beneath the bottom wall of said appliance comprising:

a leveling bracket of channel-shaped configuration for supporting said appliance, said leveling bracket being mounted at one end to the bottom wall of said appliance at a point foward of the rear wall of the appliance, the opposite end being a free end abuttable with the surface upon which the appliance rests, said leveling bracket having a notch adjacent said mounted end and intermediate said mounted end and said free end;

wedge means insertable in a forwardly direction between said bottom wall of said appliance and said leveling bracket from a position at the free end of said bracket



adjacent the rear wall of the appliance toward the mounted end of said leveling bracket to cause said leveling bracket to bend at said notch and to provide a downward thrust to the leveling bracket; and

a non-rotatable tension member attached to said wedge means extending along the bottom portion of the appliance and terminable at the front portion, said tension member being secured to the front portion of said appliance after adjustment of the rear of the appliance to the desired level has been accomplished.

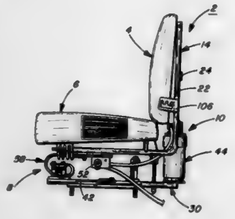
3,927,854
AUTOMOTIVE SEAT SUSPENSION SYSTEM

Milburn K. Carey, 51 Old Plank Lane, Chagrin Falls, Ohio 44022

Filed Feb. 27, 1974, Ser. No. 446,273

Int. Cl.² A45D 19/04

U.S. Cl. 248—372 **11 Claims**



1. An automotive seat including,

a resilient suspension system for pivotally supporting a seat, said system comprising,

a base frame assembly adapted for mounting on an automotive floor,

a seat frame assembly adapted for mounting a seat,

at least one loop-like spring means fixedly attached at one end to said seat frame assembly and operably connected at its other end to said base frame assembly for resiliently mounting said seat frame assembly in spaced apart relation relative to said base frame assembly,

fluid power means mounted on said base frame assembly adjacent the end opposite said spring means and operably connected to said seat frame assembly for generally vertically adjusting the latter relative to said base frame assembly,

said spring means comprises a pair of leaf spring members disposed in laterally spaced relation, each of

said spring members including upper and lower leg portions extending from a bight portion,

said upper leg portion fixedly attached to said seat frame assembly,

said lower leg portions connected to said base frame assembly,

said base frame assembly includes a pair of spaced rail members, a support bracket extending transversely between said rail members for connecting the same together at the end opposite said fluid power means, and

said lower leg portions fixedly attached to said support bracket.

3,927,855
FLUID-COOLED MOLD

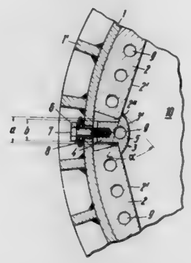
Otmar Kleinhagauer, Kapfenberg, Austria, assignor to Gebr. Bohler & Co. AG, Vienna, Austria

Filed Oct. 10, 1974, Ser. No. 513,538

Claims priority, application Germany, Oct. 25, 1973, 2353449

Int. Cl.² B22D 27/04, 35/06

U.S. Cl. 249—79 **5 Claims**



1. In a fluid-cooled mold for receiving electroslag remelted molten metal and defining a casting space,

a plurality of plates covering at least a part of the interior of the mold and having edge portions extending longitudinally relative to the mold which define gaps between adjacent plates; and

a plurality of substantially T-shaped members disposed intermediate each pair of the plates and each having a leg and a flange, the leg of each member extending into the gap between the associated plates, the flange of each member covering the edge portions of the associated plates which confront said casting space, the width of each leg being smaller than the minimum width of the gap between the associated plates.

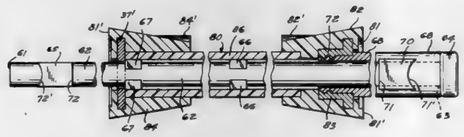
3,927,856
INTERNAL SPREADER MEANS FOR USE WITH A REUSABLE TIE ROD

Peter R. Lovisa, Pelham, and Dusan Tausanovitch, Northport, both of N.Y., assignors to Lovisa, Peter R., Pelham; Dusan Tausanovitch, Northport and Tullio Lovisa, Huntington Station, all of, N.Y., part interest to each

Division of Ser. No. 232,450, March 7, 1972, Pat. No. 3,822,860. This application Apr. 30, 1974, Ser. No. 465,530

Int. Cl.² E04G 17/06

U.S. Cl. 249—177 **10 Claims**



1. An internal spreader means adapted to be positioned on a retractable and reusable tie rod and adapted to be positioned between concrete forms to maintain the forms a predetermined distance apart, said spreader means including an elongatable elastomeric sleeve for providing a passage for the tie rod so that after the concrete has been poured the tie rod may be retracted and removed from the internal spreader while the forms are still in place, a frustro conical cone at each end of the sleeve, each cone having an outer larger base and an inner smaller end, each cone having releasable coupling means at its base for engaging the tie rod in one position and for disengaging the tie rod in a second position from each other while the forms are still in place whereby the spreader means is removable from the concrete without damage to the internal spreader means or the concrete, each cone having embedded therein at its base an annular metal ring defining the releasable coupling means, the annular metal ring being formed having diametrically opposed slots and depending from the base of each slot are stop means capable of engaging the means defining surfaces formed on the rod.

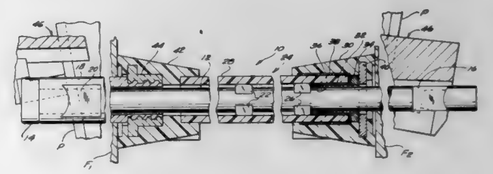
3,927,857
REUSABLE TIE ASSEMBLY FOR CONCRETE FORMS

Peter R. Lovisa, 1040 Pelhamdale Ave., Pelham, N.Y. 10803; Dusan Tausanovitch, 24 Crestwood Drive, Northport, N.Y. 11768, and Tullio E. Lovisa, 91 Whitson Road, Huntington Station, N.Y. 11746

Filed July 8, 1974, Ser. No. 486,365

Int. Cl.² E04G 17/08

U.S. Cl. 249—217 **10 Claims**



1. A retractable reusable tie assembly for concrete forms capable of being disassembled after use comprising:

internal spreader means adapted to be coupled with concrete forms to maintain the forms a predetermined distance apart and providing a passage therethrough, the spreader means including an elongatable, elastomeric sleeve cooperating in defining the passage, a first cone securely fastened to one end of the sleeve and also having a bore defining an extension of the passage, a second loose cone removably coupled to the other end of the sleeve and having a bore defining an extension of the passage, the first cone being mechanically interlocked with the associated end of the sleeve, the mechanical interlock including a metallic insert having an internal threaded portion mounted interiorly of this end of the sleeve and a deformable metal ferrule being disposed exteriorly of this end of the sleeve, said insert and ferrule frictionally engaging this end of the sleeve and means on the first cone for engaging with the insert and for completing the mechanical coupling;

a tie rod removably mounted in the passage of the spreader means, the tie rod supporting an elongated tubular pipe slidably mounted thereon and having coupling means at one end for releasably coupling to the loose cone of the spreader means; and

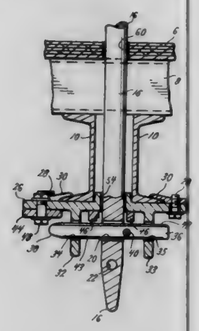
interengagable surfaces defined by the spreader means and the tie rod arranged and constructed for releasably coupling the spreader means to the tie rod so that the tie rod and spreader means are disengagable from the other while the forms are still in place and the tie assembly can be disassembled after use and removed from the concrete without damage to the concrete and tie assembly.

3,927,858

CLAMP FOR TIE ROD WITH STRESS-RELIEVING MEANS

Norman R. Underhill, 1933 Karlin Drive, Village of Town and Country, Mo. 63131

Filed Nov. 29, 1973, Ser. No. 420,273
Int. Cl.² E04G *17/08*
U.S. Cl. 249—219 R **14 Claims**



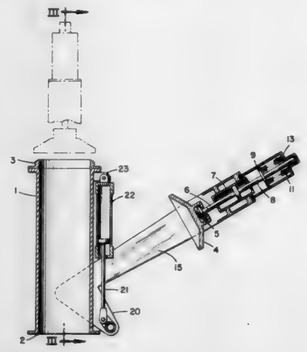
1. A tie rod clamp for a concrete form having a clamp base attachable to said concrete form, a tie rod holding means which can be moved into a position wherein a portion thereof extends through an opening in a tie rod that is used with said concrete form, at least one restraining projection on said clamp base which defines a space to receive another portion of said tie rod holding means whenever said tie rod holding means is in said position and thereby restrain said tie rod holding means, and hence said tie rod, against substantial rotational movement relative to said clamp base, and stress-relieving means pivotable about a point on said clamp base, said stress-relieving means being pivotable into a position in engagement with said tie rod holding means and also in engagement with said clamp base wherein said stress-relieving means and said tie rod holding means can coact to transmit forces from said clamp base to said tie rod, said tie rod holding means being movable into its said position wherein said other portion thereof is within said space in said one restraining projection and the first said portion thereof extends through said opening in said tie rod and said stress-relieving means being pivotable into its said position in engagement with said tie rod holding means and also in engagement with said clamp base prior to the placement of concrete in said concrete form, said form responding to said placement of concrete therein to tend to move said clamp base in a predetermined direction relative to said tie rod, said stress-relieving means cooperating with said tie rod holding means whenever said stress-relieving means and said tie rod holding means are in their said positions and said concrete form tends to move said clamp base in said predetermined direction relative to said tie rod to transmit forces from said clamp base to said tie rod, whereby said stress-relieving means and said tie rod holding means and said tie rod can coact to limit movement of said clamp base in said predetermined direction relative to said tie rod in response to said placement of concrete in said concrete form, said tie rod developing axially-directed stresses therein and said tie rod holding means and said stress-relieving means developing stresses therein as said stress-relieving means and said tie rod holding means coact to transmit said forces from said clamp base to said tie rod in response to the tendency of said clamp base to move in said predetermined direction relative to said tie rod in response to said placement of concrete in said concrete form, said stress-relieving means being pivotable out of its said position and hence being movable relative to said tie rod holding means and relative to said clamp base to relieve said axially-directed stresses in said tie rod and to relieve said stresses in said tie rod holding means and thereby facilitate movement of said tie rod holding means relative to said tie rod.

3,927,859

BLOW OFF VALVE FOR A BLAST FURNACE

Cornelis Raaphorst, Heerhugowaard, Netherlands, assignor to Hoogovens Ijmuiden, B.V., Ijmuiden, Netherlands

Filed Dec. 18, 1973, Ser. No. 425,822
Claims priority, application Netherlands, Dec. 22, 1972, 7217481
Int. Cl.³ F16K *1/24*
U.S. Cl. 251—147 **6 Claims**



1. Blow-off valve of a blast furnace closing an end of a conduit through which hot pressurized gas is vented on opening of the valve, the valve having,

a. a valve seat at the conduit end,

b. a closure member movable into and out of engagement with the seat,

c. biassing means resiliently biassing the closure member against the seat,

d. lifting means operable to move the closure member away from the seat against the force of the biassing means, and

e. a U-shaped yoke embracing the conduit and pivotally mounted for pivoting about an axis which is fixed in relation to the conduit and is spaced longitudinally along the conduit from the end, the closure member, biassing means and lifting means being carried by the yoke so that they can be moved out of the venting gas stream by pivoting of the yoke on opening of the valve, said lifting means comprise a hydraulic cylinder and piston assembly having a piston rod connecting the closure member to the piston, the cylinder being mounted on the yoke, said biassing means comprise a plurality of disc springs located in a spring box mounted on the yoke beyond the cylinder from the closure member, the springs acting to transmit the biassing force between the spring box and an abutment secured to an extension of the piston rod.

3,927,860

REMOTE CONTROL DRAIN VALVE

Franklin G. Smith, and Gerald M. Wilson, both of Portland, Oreg., assignors to Northwest Marine Products, Inc., Portland, Oreg.

Continuation of Ser. No. 456,536, April 1, 1974, abandoned, which is a continuation of Ser. No. 277,234, Aug. 2, 1972, abandoned. This application Jan. 10, 1975, Ser. No. 540,282
Int. Cl.² F16K *1/16*
U.S. Cl. 251—299 **5 Claims**

1. A drain valve comprising:

means defining a valve seat including a rim surrounding a drain passage,

a movable valve plug adapted for seated engagement with said rim to close said passage,

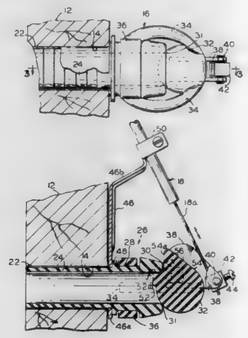
and plug-operating means selectively operable to roll said plug on said rim into and out of seated engagement to open and close said drain passage,

said valve seat including a tubular valve seat member defining an extension of said drain passage, said member including said rim and a neck portion axially inwardly of said rim, and resilient means interconnecting said plug and said neck portion in a manner urging said plug into engagement with said rim,

said valve plug comprising a generally spherical resilient elastomeric valve ball, said resilient means comprising a pair of resilient elastomeric arms extending from opposite sides of said ball to an elastomeric collar, said collar encircling said neck portion of said seat member at a position spaced axially inwardly from said rim so that said arms urge said ball into seated engagement with said rim to seal said passage,

said arms, collar and ball being integral with one another and said arms being connected to upper central portions of said ball so as to bias said ball both in a seated position and in an unseated over-center position upon movement of said ball to said positions by said operating means,

said valve ball having a projecting claw portion extending along an inner wall of said drain passage and a projecting ear portion extending over an outer surface of said rim when said ball is seated on said rim, said claw and ear



portions together projecting from a common quadrant of said ball and being positioned to act against a common sector of said rim, said claw and ear portions having intersecting shoulders for facilitating the pivoting of said ball between predetermined seated and unseated positions on said rim upon actuation of said operating means.

4. A drain valve comprising:

means defining a valve seat including a rim surrounding a drain passage,

a movable valve plug means adapted for seated engagement with said rim to close said passage,

and plug-operating means selectively operable to roll said plug means on said rim into and out of seated engagement to open and close said drain passage,

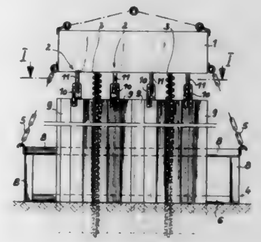
said means defining a valve seat including a tubular valve seat member having an adapter portion extending in a force fit within said drain passage to secure said seat member to a body defining said drain opening, and a neck portion extending axially outwardly of said passage between said rim and said adapter portion, said plug-operating means including a control cable means connected to said plug means, and cable-mounting means extending in surrounding relationship to said neck portion for swiveling movement about said seat member to enable proper operating alignment of said cable means with said plug means.

3,927,861

APPARATUS FOR DRIVING SHEET PILES INTO THE GROUND

Fritz Dumont, Dortmund-Persebeck, Germany, assignor to Baugesellschaft Klammt KG, Hagen, Germany

Division of Ser. No. 448,764, March 6, 1974. This application Oct. 29, 1974, Ser. No. 519,024
Claims priority, application Germany, Mar. 10, 1973, 2312032; Feb. 9, 1974, 2406237
Int. Cl.² E02D *5/22*
U.S. Cl. 254—29 R **13 Claims**



1. An apparatus for driving sheet pile planks or the like into the ground, comprising in combination:

a. a transverse head disposed above the ground where the planks are to be driven in, said transverse head having a length dimension along which the planks are driven in a row below the transverse head;

b. a plurality of plank pressing devices supported by and spacedly suspended from said transverse head;

c. means for connecting said pressing devices with the planks;

d. a framework disposed below said transverse head and extending along the ground beyond the length of said transverse head; and

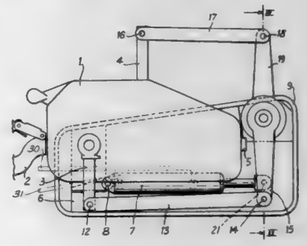
e. releasable coupling means carried by said framework for temporarily and selectively clamping individual planks to said framework; said coupling means including means for clampingly engaging the planks when they are urged out of the ground by pulling forces and for automatically releasing the planks when they are urged into the ground by plank pressing forces.

3,927,862

MANUAL OR POWERED SINGLE-LEVER HAUL-IN AND HAUL-OFF APPARATUS

Michel Cavalieri, Neuilly-sur-Marne, France, assignor to Sedit, Bagnolet, France

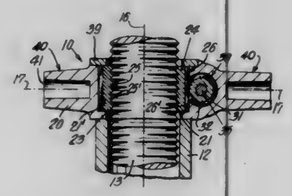
Filed Nov. 27, 1974, Ser. No. 527,872
Claims priority, application France, Dec. 18, 1973, 73.45223
Int. Cl.² B66F *3/00*
U.S. Cl. 254—76 **5 Claims**



1. In a cable hauling apparatus with actuating mechanism, wherein said hauling apparatus has a pair of oscillating actuat-

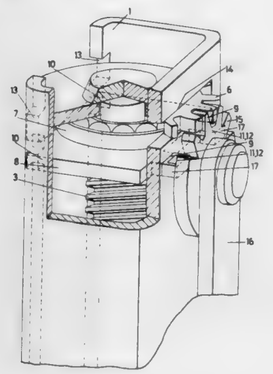
ing levers disposed in different planes with a first actuating lever of said pair controlling hauling in of a cable passing through the apparatus while the second actuating lever of said pair controls the hauling off of said cable, and wherein said actuating mechanism comprises a single control lever, a control shaft rigid with said control lever for receiving therefrom an alternative rotating movement, and a pair of crank arms pivotally mounted about said control shaft, mechanical means capable of transmitting the movement of said single control lever to said first and second actuating levers through said pair of crank arms, said mechanical means including a shift member slideably mounted on said control shaft between said pair of crank arms, said shift member being capable of selectively engaging one crank arm of said pair of crank arms and coupling said single control lever to said crank arm and consequently to the corresponding actuating lever of the hauling apparatus.

3,927,863
TRANSPORTABLE JACK
George Polsky, 6704 Merton Road, Cote St. Luc, Montreal, Quebec, Canada
Filed Sept. 3, 1974, Ser. No. 502,803
Int. Cl.² B66F 3/18
U.S. Cl. 254—103 8 Claims



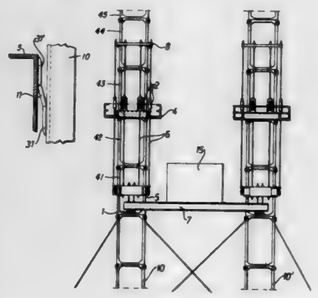
1. A transportable jack adapted to be positioned in frictional support engagement with an end of a hollow support shaft and for longitudinal displacement of a helical threaded bolt extending from said end of said hollow support shaft, said jack comprising a housing having a through bore therein, a ring gear movably retained in said housing concentrically with said through bore, said ring gear having a vertical inner and outer annular wall, said inner annular wall having a helical thread formed throughout, a drive gear retained in said housing and having at least one engageable end for imparting an axial rotational drive to said drive gear, said drive gear being in driving engagement with said outer wall of said ring gear to impart a circumferential drive to said ring gear, engaging means secured to said housing to prevent said housing from rotation about said bolt when an axial rotational drive is imparted to said drive gear, said ring gear helical thread being threadably engaged with said bolt whereby said jack rests on a circumferential end of said support shaft with said bolt freely extending within said hollow support shaft, said threaded bolt being displaced longitudinally with respect to said support shaft by rotating said engageable end of said drive gear whilst maintaining said housing substantially stationary by said engaging means.

3,927,864
LIFTING JACK
Jurgen Meierkort, Wiedenest, and Peter Schafer, Gummersbach, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed Jan. 24, 1975, Ser. No. 543,832
Claims priority, application Germany, Jan. 28, 1974, 2403853
Int. Cl.² B66F 3/18
U.S. Cl. 254—103 7 Claims



1. A jack comprising a guide housing, a nut, said guide housing including an inside adapted to secure the nut against twisting, a jack arm pivotally connected to the nut, a lifting spindle arranged in the guide housing in engagement with the nut, the nut including means enabling it to be axially moved in cooperation with the lifting spindle, a spur gear, means inside the guide housing supporting the spur gear, a pinion gear, means connecting the pinion gear to a crank handle, means connecting the spur gear to the lifting spindle inside the guide housing and means including slots in the guide housing through which the spur gear projects out of the guide housing to engage the pinion gear.

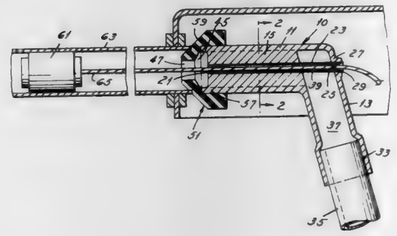
3,927,865
APPARATUS FOR LIFTING OF HEAVY LOADS
Carl-Heinrich Teodor Blankenburg, Trosa, Sweden, assignor to Wikstrom International AB, Stockholm, Sweden
Filed Jan. 23, 1974, Ser. No. 435,818
Claims priority, application Sweden, Jan. 29, 1973, 7301208
Int. Cl.² B66F 1/00
U.S. Cl. 254—105 11 Claims



1. Apparatus for lifting and/or lowering a heavy load (15) in a plurality of stages along at least one climbing mast (10,10'), comprising:

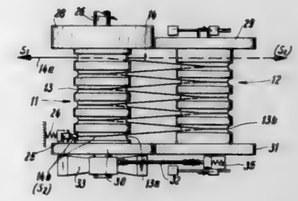
at least one climbing mast (10,10');
a plurality of climbing rods (6);
a climbing frame (4);
a plurality of climbing members (2) mounted to said climbing frame (4), each climbing member (2) cooperating with a respective climbing rod (6) for lifting and/or lowering said climbing frame (4) relative to said at least one climbing mast (10,10');
a load frame (5) carrying at least a part of the load (15) and being coupled to and below said climbing frame (4);
a stage support (8) cooperatively coupled via respective climbing rods (6) with said climbing frame (4);
at least one support cleat (31) mounted to said at least one climbing mast (10,10'); and
connecting means (11) for selectively engaging said at least one cleat (31) with at least one of said frames (4,5) and stage support (8) so as to carry the load on said at least one cleat (31) for at least a portion of a complete stage lifting period, a stage lifting period comprising the period for moving the load over a complete section of said at least one climbing mast (10,10'), thereby relieving the load from said climbing rods (6).

3,927,866
PNEUMATIC BLOW GUN FOR INSTALLING FISHING LINE, MEASURING TAPE AND POLYETHYLENE PULL LINE IN ELECTRICAL CONDUIT
Wayne A. Linquist, Rockford, Ill., assignor to Greenlee Bros. and Co., Rockford, Ill.
Filed Oct. 11, 1974, Ser. No. 513,989
Int. Cl.² E21C 29/16
U.S. Cl. 254—134.4 4 Claims



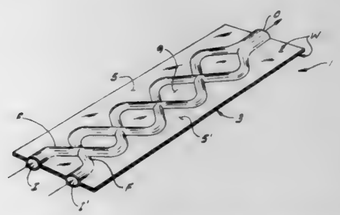
1. A pneumatic blow gun comprising:
a. a main body portion including
   1. a tubular wall;
   2. an outer end;
   3. an inner end; and
   4. a longitudinal axis extending through said main tubular body portion;
b. a leg portion extending from said main tubular body portion at said inner end;
c. rib means connecting the inner walls of said main tubular body portion, said rib means forming a channel means;
d. a guide tube extending through said axis of said main tubular body portion and said rib means, said guide tube extending through the wall at said inner end of the main body portion; and,
e. a centrally open adapter cone shaped and dimensioned to detachably encircle said outer end of said main body portion to form a seal therewith.

3,927,867
DOUBLE DRUM WARPING AND MOORING WINCH HAVING SELF-TAILING MEANS DRUM BIASING LINKAGE
Johannes Herchenroder, Varrelgraben, Germany, assignor to Friedrich Kocks GmbH, Bremen, Germany
Filed Aug. 21, 1974, Ser. No. 499,343
Claims priority, application Germany, Aug. 25, 1973, 2343073
Int. Cl.² B66D 1/76
U.S. Cl. 254—175.7 8 Claims



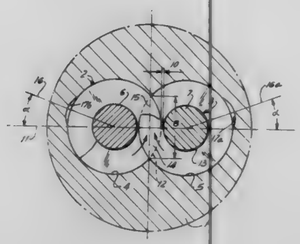
1. In a winch apparatus for warping and mooring ships including two grooved drums 11, 12 for hauling in and paying out a rope 14 on input and output sides, respectively, and having stowing means 16 for accommodating the rope end 14*b* which is paid off from the output side of the winching apparatus and which is distal with respect to the load or input side, and on which a tractive pull S_2 is applied, the improvement characterized by means incorporated directly in the winch apparatus for applying the tractive pull on the rope end at the output side, one of the drums being driven from the outside and the drive being transmitted by pairs of friction wheels to the other drum, the friction wheels being additionally thrust against each other by spring force, such that the friction wheels 28, 29, 30, 31 are joined to each other by tie bars 32 which are retained under stress in the sense of pressing the friction wheels 28–31 against each other by means of compressing springs 35.

3,927,868
STATIC-TYPE MIXER, AND RECEPTACLE AND METHOD OF PACKAGING UTILIZING SAME
Thomas B. Moore, 32 Progress Parkway, Maryland Heights, Mo. 63043
Filed May 28, 1974, Ser. No. 473,415
Int. Cl.² B01F 5/00
U.S. Cl. 259—4 11 Claims



1. Mixing means comprising a disposable static-type mixer having two opposed walls of sheet material, said walls being secured to one another in a pattern such as to establish a flow path therebetween having a plurality of inlets at one end thereof for entry of the materials to be mixed, an outlet at the other end thereof for exit of the mixture, and a plurality of flow passages between the inlets and the outlet with said flow passages crossing one another at a plurality of intersections between said inlets and said outlet for mixing of the materials flowing through said passages to the outlet.

3,927,869
MULTISCREW EXTRUDER
Wilhelm Hanslik, Vienna, Austria, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany
Filed Sept. 24, 1973, Ser. No. 400,059
Claims priority, application Germany, Sept. 27, 1972, 2247286
Int. Cl.² B29B *1/10*
U.S. Cl. 259—192 **8 Claims**



1. In an extruder for thermoplastic materials comprising a housing with a plurality of axially extending cylindrical chambers intercommunicating through a passage of a width less than the chamber diameter, and a like plurality of feed screws rotatable to drive a plastic mass in said chambers toward a discharge end of the housing, said feed screws intermeshing with one another at said passage and defining an entrance side and an exit side for said passage, the improvement wherein said housing is provided in the vicinity of said discharge end with at least one axially extending shallow peripheral recess in each of at least two of said chambers at a location remote from the entrance side of said passage for counteracting a lateral thrust exerted by said mass upon the corresponding feed screw, said recess being a single continuous groove spanning a multiplicity of turns of the threads of said corresponding feed screw and being of such shape and dimension that the thermoplastic material being extruded will flow easily into and out of said recess and will not lodge therein.

3,927,870
DEVICE FOR THE INDUCTIVE HARDENING OF WORKPIECES WHICH CAN BE ROTATED AROUND A REVOLVING AXIS
Gerhard Seulen; Friedhelm Reinke, both of Remscheid, and Edgar Stengel, Wuppertal-Hahnerberg, all of Germany, assignors to AEG-Elotherm G.m.b.H., Remscheid, Germany
Filed June 26, 1974, Ser. No. 483,452
Claims priority, application Germany, July 5, 1973, 2334126
Int. Cl.² C21D *9/30, 1/42*
U.S. Cl. 266—4 E **5 Claims**

1. An apparatus for inductively hardening workpieces of the type in which different parts of the surface are heated by different shaped inductors which partially surround the surface to be hardened comprising:

means for mounting a plurality of said workpieces for axial rotation and for indexing movement between a plurality of treating positions including a hardening position,

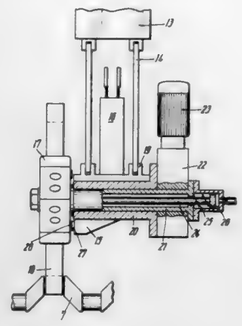
a plurality of different shaped inductors,

a carrier spider mounting said inductors for presenting one of said inductors to a workpiece mounted in said hardening position,

a transformer,

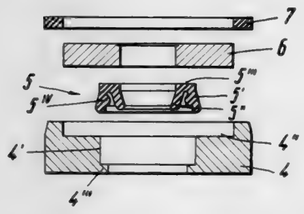
means for removably coupling said inductor in said hardening position to said transformer,

means for rotating said carrier spider about a given axis to sequentially present each of said inductors to a workpiece, and



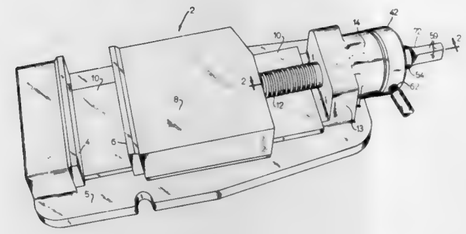
means for moving said carrier spider along said given axis to uncouple said inductor from said transformer.

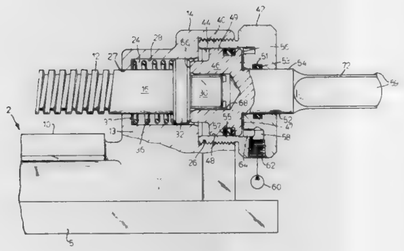
3,927,871
COVER PLATE FOR CYLINDERS HAVING SEALED PISTON ROD GUIDES
Johannes J. de Baan, Ennepetal-Ruggeberg, Germany, assignor to Firma August Bilstein, Ennepetal, Germany
Filed Oct. 4, 1974, Ser. No. 511,736
Claims priority, application Germany, Oct. 12, 1973, 2351309
Int. Cl.² F16F *5/00*
U.S. Cl. 267—65 R **7 Claims**



1. In a cover plate assembly particularly adapted for use in a hydropneumatic shock absorber, the combination comprising a cylinder having a reciprocally movable piston rod extending therefrom in fluid sealing relation and having an inwardly projecting support disposed on an inner peripheral wall portion; an inner temperature-resistant plastic disc supported on such support in said cylinder; a sealing element traversed by said piston rod and received in a central bore portion in said inner disc; an outer metal disc contiguous with a face portion of said inner disc and a face of said sealing element adapted to guide said piston rod and reinforce said plastic disc against bending forces in the normal course of piston rod movement; an outer, deformable annular sealing ring concentric with said piston rod and metal disc and supportingly disposed on an annular portion of said inner plastic disc; said supporting annular portion of said inner plastic disc initially being of lesser area than the surface of the outer annular sealing ring supported thereon; an inwardly projecting edge portion of said cylinder overlying peripheral portions of said metal disc; said outer sealing ring being urged by said cylinder edge portion against the outer periphery of said outer metal disc and the supporting annular portion of said inner plastic disc so as to be deformed and fill the annular volume defined by said inner plastic disc, said outer metal disc and the inwardly projecting cylinder edge portion; the interval between said inwardly projecting edge portion and said cylinder projecting support being such that said metal disc, sealing ring and inner plastic disc are urged into a close-packed, substantially fluid-tight relation.

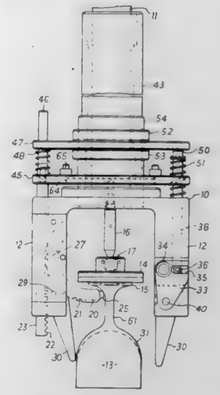
3,927,872
VISE INCLUDING FLUID PRESSURE CLAMPING MEANS
Donald W. Sessody, Brookfield, Wis., assignor to Applied Power Inc., Milwaukee, Wis.
Filed May 19, 1975, Ser. No. 578,640
Int. Cl.² B23Q *3/08*
U.S. Cl. 269—32 **7 Claims**





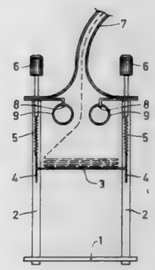
1. A workholding vise of the type having a base, a fixed jaw at one end of said base and a shiftable jaw slideably mounted on said base, a fixed thrust reaction member fixed to said base at the end thereof opposite to said fixed jaw, a threaded lead screw extending from said reaction member and engagable at one end with said shiftable jaw for positioning the latter relative to said fixed jaw, a housing attached to and extending from said reaction member and having a bore and a larger opening concentric therewith, a coupling securely engaged in said opening, said coupling having a bore therein which is concentric with said bore in said housing, said lead screw being slideable in said bore of said housing, and a piston located in said coupling and having an end extending therefrom, said end having means for attachment to an adjusting handle for rotating said piston, means for connecting said piston and said lead screw whereby rotation of said piston also rotates said lead screw and whereby said lead screw can move axially relative to said adjusting member, said piston slideably located in the bore of said coupling to thereby form an expansible fluid chamber therewith, passage means extending to said chamber and through said coupling for introducing a pressurized fluid to said chamber to thereby cause axial sliding movement of said piston in said coupling and consequent axial movement of said lead screw whereby said shiftable jaw can be brought into clamping engagement with said fixed jaw.

3,927,873
SELF-CENTERING CHUCK
Arnold Chambers, Chesterfield, England, assignor to Glass Tubes and Components Limited, Chesterfield, England
Filed July 22, 1974, Ser. No. 490,581
Claims priority, application United Kingdom, Aug. 9, 1973, 37846/73
Int. Cl.² B25B *1/20*
U.S. Cl. 269—154 **10 Claims**



1. A chuck comprising a body, a foot attached to the body, a first set of movable jaws for holding a workpiece against the foot, each of the jaws of the first set being of arcuate shape and carrying a series of gear teeth in its outer edge, a second set of movable jaws for centering the workpiece upon the chuck, said second of jaws being further from the foot than the first set of jaws, means coupled to said first and second sets of jaws for moving the jaws inwardly and outwardly, said means comprising a plurality of racks each engaging with the teeth of one of the jaws of the first set, and resilient biassing means urging the jaws of the first set resiliently towards the foot, whereby while the workpiece is resiliently held by said first set of jaws the workpiece is shifted into a centred position by said second set of jaws.

3,927,874
PAPER STACKER
Anthonius Theodorus Maria Buisman, Beekbergen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 347,805, April 4, 1973, abandoned. This application Oct. 18, 1974, Ser. No. 516,003
Claims priority, application Netherlands, Apr. 15, 1972, 7205113
Int. Cl.² B65H *45/00*
U.S. Cl. 270—61 F **2 Claims**



1. A paper stacker for feeding prefolded paper having a perforation track on both sides thereof to a paper collecting table comprising a guide which opens above the table and

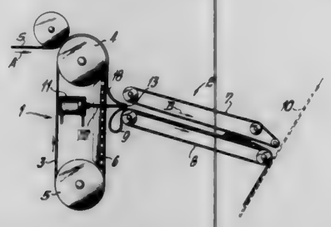
which feeds the paper to fold on the table during operation, means resiliently supporting and guiding said table so as to be movable with respect to said guide, said table having side portions parallel to the perforation tracks of the folded paper and a raised portion extending along the entire length of said table receiving said papers, said raised portion being located between and having a longitudinal axis substantially parallel to said side portions.

3,927,875

APPARATUS FOR LAYING A FILM WEB IN Z-SHAPED FOLDS OR FOR DEPOSITING PORTIONS OF FILM WEB IN OVERLAPPED CONFIGURATION

Aloys Winnemoller, Rhine, and Friedrich-Franz Brockmuller, Lengerich, both of Germany, assignors to Windmoller & Holscher, Lengerich, Germany

Filed May 8, 1974, Ser. No. 468,081
Claims priority, application Germany, May 9, 1973, 2323433
Int. Cl.² B65H *45/22*
U.S. Cl. 270—83 **8 Claims**



1. Device for laying a film web in Z-shaped folds and optionally for the overlapped positioning of sections cut from said film web, or for inserting sections of film, comprising: a first conveyor means conveying at a high speed; a second gripping conveyor means with clamping capacity operating at a conveying speed slower than that of the first conveyor means disposed to convey at an angle to the conveying direction of said first conveyor means and said angle having its intercept on the first conveyor means, the second conveyor means having an entry nip located at a distance from the first conveyor means and opening toward the first conveyor means; an extendable pusher means adapted to pass through the conveyor plane of the first conveyor means and reach as far as the opening of the entry nip of the second conveyor means, the first conveyor means having adhering means for adhering said film web to the first conveyor means in at least the region of its travel which is opposite the opening of the entry nip, the adhering means causing the film web to be held firmly on the first conveyor means until drawn away by the action of introducing the forward fold edge of the Z-shaped fold into the entry nip.

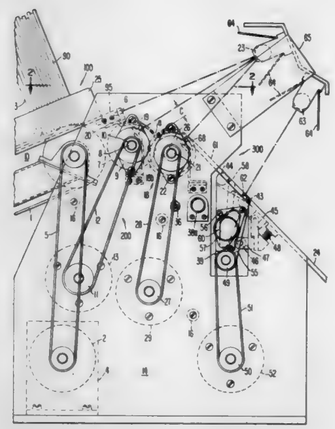
3,927,876

DEVICE FOR SINGULATING DOCUMENTS

Edward A. Wojtowicz, Bryn Mawr; S. James Lazzarotti, Broomall, and Paul E. Tartar, Chester, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 23, 1974, Ser. No. 535,731
Int. Cl.² B65H *1/02, 3/06, 3/10, 7/14*
U.S. Cl. 271—10 **18 Claims**

1. A document feeding device comprising:
drop ledge means for performing an initial separation on a stack of documents being pushed from said ledge means by moving transports means,
moving friction roller means positioned in proximity to said drop ledge means for receiving and transporting on its surface the documents which drop thereon,
vacuum roller means positioned in a proximate intersecting manner with said friction roller means and being adapted to perform a final separation on said documents, means for terminating the movement of said friction roller means at a predetermined point in the travel of a given document on its surface, said termination of movement permitting the leading edge of said last mentioned document to contact the periphery of said vacuum roller means at the roller means intersection point, said vacuum roller means being adapted to transport said document on its surface and being operatively connected to a vacuum source for exerting a vacuum force upon said document as it traverses a predetermined point on the circumference of said roller means,
a ramp including takeaway belt means positioned in proximity to said vacuum roller means and in tangential relationship with said predetermined point on the circumference



of said vacuum roller means, said ramp being adapted to receive documents exiting from the surface of said vacuum roller means, said takeaway belt means including means for exerting a vacuum force upon said document, means for terminating the movement of said vacuum roller means in response to the attainment of control of said document by said last mentioned vacuum force, said document being acted upon simultaneously by the respective vacuum forces of said vacuum roller means and said takeaway belt means, the vacuum force exerted by the latter means being of greater magnitude than that of the former means and being effective in stripping said document from the surface of the stationary vacuum roller means, said takeaway belt means accelerating said document along said ramp.

3,927,877

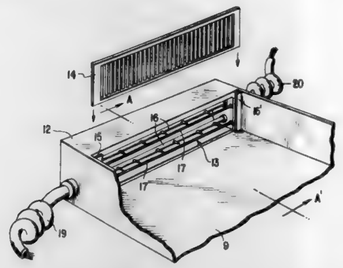
PAPER FEED TRAY FOR USE WITH COPYING MACHINE AND THE LIKE

Yasuhiko Terajima, Chigasaki, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1973, Ser. No. 419,331
Claims priority, application Japan, Apr. 20, 1973, 48-46576
Int. Cl.² B65H *3/18*
U.S. Cl. 271—11 **6 Claims**

1. A paper feed device for use with a copying machine or the like, said device comprising:
a tray for containing a stack of copy paper;
charging means for applying electric charge to at least the side of said stack to separate the sheets of copy paper from one another and thus lessen the probability of the sheets being double fed to the copying machine;

a potential source for said charging means;
feeding means for feeding said sheets from said tray to said copying machine; and



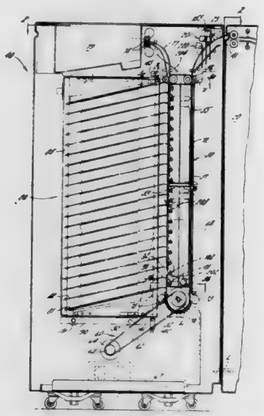
said tray being slideably disposed in said copying machine and the said potential source for said charging means being fixedly disposed in the copying machine, the potential source being connected to the charging means by wires of sufficient length to permit free sliding movement of said tray.

3,927,878

COLLATOR

Stanley J. Bolsenga, Evanston; Stephen S. Kotow, Franklin Park; Henry G. Reuter, Glenview, and Donald J. Volante, Chicago, all of Ill., assignors to Apeco Corporation, Evanston, Ill.

Filed Apr. 3, 1974, Ser. No. 457,440
Int. Cl.² B65H *31/24, 43/02*
U.S. Cl. 271—173 **2 Claims**



1. In a collator intended for close coupling into an office photocopy machine having means for delivery of multiple copies of an original document in a closely and evenly spaced series comprising, in combination, a frame, a tray assembly formed of a stacked tier of trays and set of commutated deflectors for deflecting copy sheets into the respective trays in sequence, a driven copy sheet conveyor for receiving copies from the photocopy machine and for conveying them to the tray assembly along an extended conveyance path in an evenly spaced series defining gaps between adjacent copy sheets and with the gaps having a reference spacing, a set of gap sensors arranged along the conveyance path for sensing the gaps, the sensors being spaced at reference spacing so that periodically all of the sensors will have momentary simultaneous response to presence of respective gaps thereby to indicate that the copy sheets are all being normally conveyed, and means triggered by failure of any gap sensor to have periodic response simultaneously with the other sensors for automatically shutting down the conveyor, the sensors being in the form of switches which are momentarily opened upon passage of gaps between adjacent sheets and in which all of the switches are connected in parallel, circuit means responsive to failure of the parallel connected circuit to periodically open for producing an output signal, and means responsive to the output signal for shutting down the conveyor.

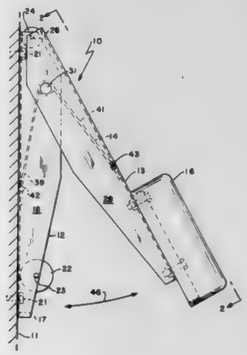
2. A collator intended for close coupling to an office photocopy machine having means for delivering multiple copies of an original document in a closely and evenly spaced series comprising, in combination, a housing having an inlet for registering with an outlet on the photocopy machine, a tray assembly formed of a stacked tier of trays with alined entrance lips, a copy sheet conveyor for conveying copies in a closely spaced series from the inlet of the collator along a conveyor path closely adjacent the lips of the trays, deflectors at the lips of respective trays and capable upon actuation of diverting an approaching copy sheet into the associated tray, means for commutating the deflectors so that successive copies are deposited in successive trays starting with the first, an automatic shut-off timer having a time delay on the general order of 52 seconds and having a reset line, a clearance timer having a time delay on the order of 8 seconds and having a reset line, the two timers being effectively connected in series with one another so that timing out of the shut-off timer initiates timing in the clearance timber, means controlled by timing out of the clearance timer for turning off the conveyor, a sensor adjacent the inlet and connected to the reset line of the shut-off timer for sensing arrival of a copy sheet at the inlet so that the shut-off timer is ineffective as long as the period of adjacent copy sheets is less than the time delay for which it is set, but with a period of greater duration serving to initiate timing by the clearance timer so that upon passage of an additional eight seconds the conveyor is turned off, and means including a manual "off" control effectively interposed between the shut-off timer and the clearance timer for directly initiating timing by the clearance timer so that the conveyor is turned off approximately 8 seconds after pressing of the "off" control thereby to insure that any copies being conveyed within the collator by the conveyor have an opportunity to clear the conveyor before the latter stops its motion.

3,927,879

PUNCHING BAG SIMULATOR

Leo E. Long, and Edward H. Phillips, both of Los Altos, Calif., assignors to American Fitness, Inc., Los Altos, Calif.

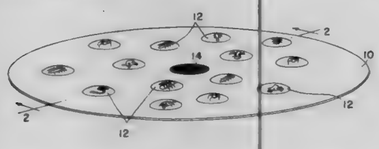
Filed Dec. 11, 1974, Ser. No. 531,520
Int. Cl.² A63B *69/00*
U.S. Cl. 272—76 **5 Claims**



5. A punching or speed bag simulator comprising a base member having provisions for mounting upon a stationary surface, a pivot arm, means serving to pivotally interconnect said pivot arm to said base member, return spring means

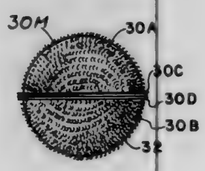
acting between said base member and said pivot arm and being positioned for biasing said pivot arm in a rest condition so that one end portion of said arm is disposed outwardly and away from said base, first and second bumper means being interposed between said pivot arm and said base member, said first bumper means being positioned between said one end portion of the pivot arm and said base member and being formed from a resilient material and sized to absorb the excess kinetic energy imparted to said pivot arm, said second bumper means being positioned between the other end portion of said pivot arm and said base member, and being formed of a material serving to dampen the tendency of said pivot arm to bounce and rebound from the punching action, a punching bag element secured to said pivot arm adjacent to said one end and being configurated to serve as a target for the human fists and means acting with said pivot means serving to maintain the movement of said pivot arm substantially entirely in a path normal to the pivot axis upon impact of said punching bag element with the fists.

3,927,880
STEP ON BUG GAME
Victor Petrusek, 18511 Gottschalk, Homewood, Ill. 60430
Filed Apr. 8, 1975, Ser. No. 566,522
Int. Cl.² A63B 67/00
U.S. Cl. 273—1 E **5 Claims**



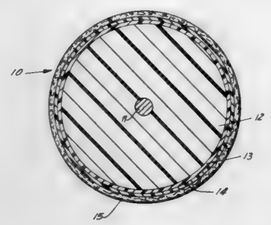
1. A game comprising in combination a portable flat sheet, having a plurality of integral bulges randomly formed about the surface of the sheet, an alarm under one of the bulges, circuit closing switch means under another bulge, electrically connected to said alarm, so that when the bulge having the switch thereunder is stepped on by a contestant, the alarm will sound.

3,927,881
INTEGRALLY FORMED PROJECTILE AND HOOK-LIKE FASTENERS
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840, and Allan M. Elfman, 219 E. 83rd St., New York, N.Y. 10028
Continuation-in-part of Ser. No. 436,045, Jan. 24, 1974, Pat. No. 3,857,566. This application May 20, 1974, Ser. No. 471,760
Int. Cl.² A63B 71/02
U.S. Cl. 273—58 K **3 Claims**



1. A missile for use in dart games and the like, which dart games employ a target composed of a material having a surface defined by a multitude of tiny plastic hook-like formations adapted to releasably retain said missile thereagainst comprising:
a lightweight hollow body having a thin wall defining a convex outer surface configuration and forming a self-supporting bulbous enclosure of plastic,
a multitude of filamentary formations formed of the same plastic as that which comprises said hollow body and integrally molded with the wall of said hollow body,
said filamentary formations being cantilever supported by said hollow body and protruding outwardly from said wall of said hollow body with which they are molded,
each of said filamentary formations having a narrow shank which extends upwardly and outwardly from said hollow body with which said filamentary formations are molded, the outer ends of each of said filamentary formations being formed with a hook-like portion which extends laterally of the shank thereof and backwardly in the direction of said wall of said hollow body,
said filamentary formations defining a multitude of engaging elements for the hook-like formations of the target material,
said filamentary formations molded integrally with the wall of said missile being provided in sufficient number and distributed around the surface of said wall of said missile in a manner to retain said missile against the surface of said target containing said plastic hook-like formations which it is directed against regardless of which portion of said missile containing said filamentary formations strikes said target.

3,927,882
INDOOR SOCCER BALL
Ernesto Felix Galarza, 120 S. Main St., South Toms River, N.J. 08753
Continuation-in-part of Ser. No. 370,598, June 18, 1973, abandoned. This application Jan. 6, 1975, Ser. No. 538,930
Int. Cl.² A63B 37/02
U.S. Cl. 273—65 E **6 Claims**



1. A soccer ball for use indoors comprising:
a. an inner substantially solid spherical core of aluminum foil,
b. an outer spherical core of a light, soft plastic material around the inner core,
c. at least two inner covers over the outer core, said covers being composed of a thin knitted material, and
d. an outer cover of a heavier material selected from wool, cotton, or leather.

3,927,883
BOXING APPARATUS FOR FIGURE TOYS
Denis Vernon Bosley, Palos Verdes Peninsula, and Alan Ralph Pitkanen, Manhattan Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 6, 1975, Ser. No. 538,699
Int. Cl.² A63F 9/14
U.S. Cl. 273—85 B **8 Claims**

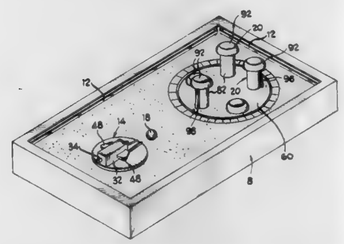
1. In a boxing apparatus toy for use with a boxer figure toy, the improvement which comprises:
a base member;
a platform member movably connected to said base member;
means for producing relative motion between said base member and said platform member;

upright pedestal means hingeably connected to said platform member for providing a support for a boxer figure toy; and
release means associated with said pedestal means and said base for preventing hinged motion of said hinged pedestal means when said platform is in a first range of positions with respect to said base and for permitting hinged motion of said pedestal means to a non-upright position



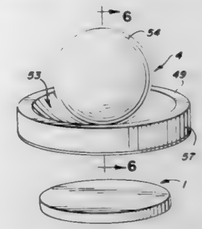
when said platform is in a second range of positions with respect to said base,
whereby a boxer figure toy supported by said pedestal means is rigidly supported in a substantially upright position when said platform is within said first range of positions and therefore is invulnerable if hit, and
whereby said figure toy may fall to a knocked-down position when said platform is within said second range of positions and therefore is vulnerable if hit.

3,927,884
SURFACE PROJECTILE AMUSEMENT DEVICE
Marvin I. Glass, Chicago; Howard J. Morrison, Deerfield, and Ira B. Gilford, Highland Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Continuation of Ser. No. 297,291, Oct. 13, 1972, abandoned. This application Aug. 19, 1974, Ser. No. 498,578
Int. Cl.² A63D 3/02
U.S. Cl. 273—119 R **6 Claims**



2. An amusement game device, comprising: means defining a playing surface upon which a playing object may be propelled, with bumper rail means bounding the playing surface substantially thereabout; a playing object to be propelled upon said playing surface; a playing object propelling device located in proximity to said playing surface so as to be capable of propelling a playing object upon said playing surface, said propelling device being pivotable about a predetermined arc whereby said propelling device can effect propelling of said playing object in various directions upon said playing surface; a cluster of target members mounted on a rotatable member pivotally mounted on said playing surface for selective rotation about a generally vertical axis spaced from the target member; scoring means extending in an arcuate pattern adjacent the path of movement of said target members for registry with the target members when said rotatable member comes to rest; and means for randomly stopping said rotatable member after rotation is initiated, including detent means so as to bring the target members to discrete rest, target positions in registry with discrete portions of said scoring means.

3,927,885
PUCK AND BAT FOR AN AIR CUSHION TABLE GAME
Phillip E. Crossman, Ada; Robert C. Kenrick, Grand Haven, and Robert W. Le Mieux, Spring Lake, all of Mich., assignors to Brunswick Corporation, Skokie, Ill.
Division of Ser. No. 179,659, Sept. 13, 1971, Pat. No. 3,773,325. This application Sept. 17, 1973, Ser. No. 397,697
Int. Cl.² A63F 3/00
U.S. Cl. 273—126 R **8 Claims**

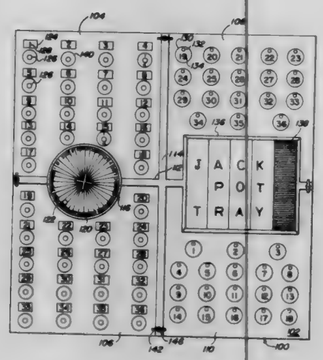


1. In combination, a bat and a puck for rapid play upon an air bed game table playing surface,
the puck being made of high-density plastic and comprising a first low profile right circular cylinder having substantially horizontally extending top and bottom surfaces an area to weight ratio sufficient to permit the puck to float on an air bed; and
the bat being made of high-density plastic and comprising:
a. a second low profile right circular cylinder having substantially horizontal extending top and bottom surfaces, said bottom surface of said second cylinder being adapted to slide upon the playing surface, the curved vertical surface of the second cylinder being adapted to hit the curved vertical surface of said first cylinder of said puck;
b. said top surface having a depression therein, said depression being substantially symmetrical about the vertical axis of said right circular cylinder; and
c. a handle attached to said second cylinder at the bottom center of said depression, the handle extending vertically out of said depression and being adapted to be held by a player for manipulation of said bat;
said depression being coaxial with said second cylinder and adapted to protect a player's fingers grasping the handle from contact with said puck or another player's bat and to lower said bat's center of gravity;
said bat and puck having the following relations:
a. said bat is substantially heavier than said puck;
b. said second cylinder is at least twice the height of said first cylinder;
c. the diameter of said second cylinder is larger than the diameter of said first cylinder.

3,927,886
BOARD GAME
Omar Day, 523 Elizabeth Road, Glen Burnie, Md. 21061
Filed Sept. 11, 1974, Ser. No. 505,095
Int. Cl.² A63F 3/00, 5/00
U.S. Cl. 273—135 R **11 Claims**

1. In a game having a board, random selection means, sequentially designated areas, directory tokens, reward tokens, and markers, the improvement comprising: the game board having thereon a plurality of squares raised above the board, first indicia for indicating sequence in the plurality of raised squares, a respective vertical peg adjacent each raised square, a respective game chip positionable by each vertical peg, the total number of game chips being the same as the total number of raised squares and the same as the total number of vertical pegs, means for dividing the game chips into first and second distinguishable subsets equal in number, means for dividing all said raised squares and vertical pegs into two groups, second concealable indicia for uniquely associating each game chip in

the first of said two subsets with a respective game chip in the second of said two subsets a plurality of circular areas, third indicia for indicating sequence in the plurality of circular areas corresponding to the sequence in the plurality of raised squares, a plurality of markers corresponding to number of players, and means at each circular area for holding a marker, whereby players can randomly distribute the first and second sub-sets among the respectively divided groups of pegs with



said second indicia concealed, select a game chip of the first subset by means of the random selection means and the means for indicating on the raised squares, estimate which game chip of the second subset corresponds with the game chip selected, placing a marker to indicate the game chip estimated, thereafter reveal the second indicia of the game chip estimated to correspond to verify the estimate, and then take up or pay playing chips in accordance with the correctness of the estimate.

3,927,887
RECORD STYLUS

Fujio Oda, Ashiya, and Hiroshi Otani, Shijonawate, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 26, 1973, Ser. No. 427,691
Claims priority, application Japan, Dec. 28, 1972, 47-3438; Dec. 28, 1972, 47-3439; Dec. 28, 1972, 47-3440
Int. Cl.² G11B 3/44
U.S. Cl. 274—38 3 Claims

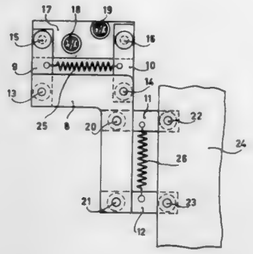


1. A record stylus comprising a supporting arm; a diamond substrate secured to an end of said supporting arm; and a thin film selected from the group consisting of silicon carbide and boron carbide formed on the surface of said diamond substrate to provide a smooth surface on said diamond substrate.

3,927,888
RECORD PLAYER

Piet van der Lely, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 26, 1974, Ser. No. 465,167
Claims priority, application Netherlands, May 5, 1973, 7306304
Int. Cl.² G11B 3/60
U.S. Cl. 274—39 A 5 Claims

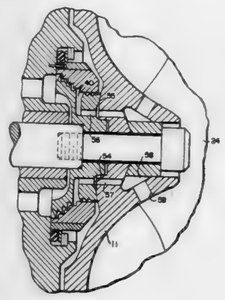


1. A record player comprising a main frame, a sub-frame movably connected to the main frame, a turntable mounted on the sub-frame for rotation about a first axis, a tone-arm, means for suspending the tone-arm with respect to the sub-frame, and means for preventing rotation of the sub-frame with respect to the frame about a second axis parallel to said first axis wherein said rotation preventing means comprises a joining body, a first pair of joining elements each having two ends, each pivotally connected about respective axes at one end to the main frame, each pivotally connected about respective axes at the other end to the joining body, and a second pair of joining elements each having two ends, each pivotally connected about respective axes at one end to the sub-frame, each pivotally connected about respective axes at the other end to the joining body, the pivot axes being parallel and the pivotal connections of the pairs of joining elements forming the vertices of respective parallelograms.

3,927,889
ROTATING ELEMENT FLUID SEAL FOR CENTRIFUGAL COMPRESSOR

Maurice L. Adams, Jr., Pittsburgh, and Albert A. Raimondi, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 18, 1973, Ser. No. 398,351
Int. Cl.² F16J 15/44
U.S. Cl. 277—25 7 Claims



1. In a seal arrangement for a centrifugal compressor having an impeller and in which the seal formed by the surfaces of an inner seal rotor and outer seal stator includes vent passage means formed in part at least in said rotor and extending from

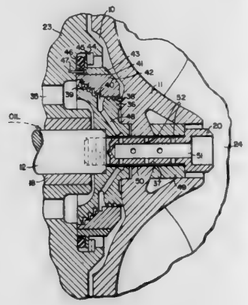
an intermediate location along the leakage path of the seal to an outlet located at the inlet side of the impeller, the improvement comprising:

said vent passage means includes as a part thereof radially outwardly directed bore means between said rotor and said outlet of said passage means at the inlet side of said impeller to promote movement of fluid through said passage means by providing a centrifugal pumping action of said fluid in said radially outwardly directed bore means.

3,927,890
ROTATING ELEMENT FLUID SEAL FOR CENTRIFUGAL COMPRESSOR

Maurice L. Adams, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 18, 1973, Ser. No. 398,352
Int. Cl.² F16J 9/00
U.S. Cl. 277—29 7 Claims



1. Apparatus including a casing, and a centrifugal impeller having an inlet side, the casing having an opening therein through which a shaft for driving the centrifugal impeller projects and a seal arrangement in said opening for restricting fluid leakage from an impeller discharge pressure space on one side of the seal arrangement to a second space on the opposite side of the seal arrangement maintained in normal operation of said apparatus at substantially the same pressure as the suction pressure at the inlet side of said impeller, said seal arrangement including:

a seal rotor rotating with said shaft and having an outer face;

an annular seal stator around said rotor and having a face opposing said outer face;

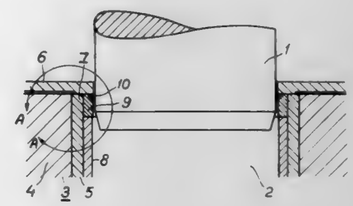
the opposing faces of said rotor and stator forming a dynamic seal having one end of the axial extent of the seal exposed to said discharge pressure space and the other end of the axial extent of the seal exposed to said second space;

means defining a venting passage from an intermediate location along said axial extent of said seal, said venting passage extending inwardly into said rotor and to said inlet side of said impeller, said venting passage having a lower resistance to fluid flow than the resistance to fluid flow between said intermediate location along the axial extent of said seal and either end of said seal.

3,927,891
HIGH PRESSURE SEAL

Hans Larker, and Jan Nilsson, both of Robertsfors, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Apr. 19, 1974, Ser. No. 462,402
Claims priority, application Sweden, May 7, 1973, 7306349
Int. Cl.² F16J 15/16
U.S. Cl. 277—190 7 Claims

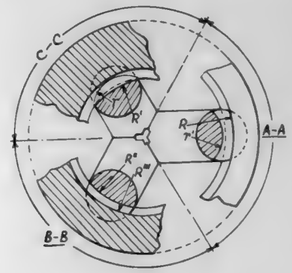


1. In a high pressure press, a seal assembly comprising a high pressure cylinder with a wall, a die or axially movable plunger projecting into the high pressure cylinder, a seal holder at the end of the high pressure cylinder, first and second sealing rings of metal, the first ring having an outer surface abutting the cylinder wall and an end surface abutting the seal holder, and the second ring having a cylindrical surface abutting the die or plunger and a surface abutting the seal holder, the first ring having grooves in the outer surface thereof forming draining channels therein extending generally longitudinally in the area nearest the seal holder.

3,927,892
MACHINE CHUCK JAWS AND THE METHOD OF MAKING THE SAME

Thaddeus T. Pradota, 6 N. 323 Andrene Lane, Itasca, Ill. 60143

Filed July 8, 1974, Ser. No. 486,387
Int. Cl.² B23B 31/04
U.S. Cl. 279—62 8 Claims



1. In a Jacobs-type machine chuck having a principal axis of rotation comprising a plurality of jaws each having a gripping portion and a guiding portion of cylindrical form slidably carried in the body of the chuck, the axis of the jaws being inclined to said principal axis and means to displace the jaws convergently and divergently to grip and release respectively a part to be seized in the chuck, said means comprising a ring gear having at least one tooth and rotatably carried on said body, the ring gear tooth conforming substantially to a conical helix, each jaw having a plurality of teeth to mesh with said ring gear tooth whereby rotation of the ring gear is translated into concurrent axial and radial displacement of the jaws, corresponding to convergent and divergent movement thereof, the improvement wherein the jaw teeth have a crest corresponding to a substantially frusto-conical surface having

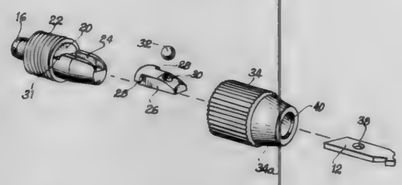
its larger radius greater than the radius of the guiding portion of the jaw and a root corresponding to a second substantially frusto-conical surface, the larger radius of the first frusto-conical surface being less at the end of the jaw which is innermost of the chuck and greater at the other end thereof, and the radius of the second frusto-conical surface being greater at the first mentioned end of the jaw than at the opposite end thereof.

3,927,893

COLLET ASSEMBLY FOR A RECIPROCATING TOOL

William Dillon, Chicago, and John A. Blachowski, Park Ridge, both of Ill., assignors to Skil Corporation, Chicago, Ill.

Filed Jan. 11, 1974, Ser. No. 432,634
Int. Cl.² B23B 31/22
U.S. Cl. 279—75 7 Claims



1. A quick change collet for holding flat reciprocating tool blades of various thicknesses having engaging means thereon comprising:

a. a main channel member defining a blade receiving channel and including a first planar surface for intimately engaging said blade;

b. a ball retaining member having an aperture therethrough communicating with said channel, said retaining member receivable in said channel and forming a second planar surface intimately engaging said blade;

c. a ball received in said aperture, a portion thereof extending into said channel to contact said engaging means of said blade;

d. a collet cap threadingly engaging said main channel member and having an internally tapered wall for camming engagement with said ball and said retaining member;

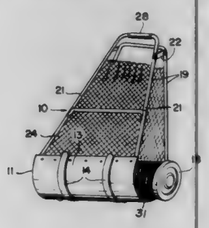
said tapered wall moving said ball and said retaining member into intimate contact with said blade as said cap is threaded onto said channel member, such that the ball and second planar surface firmly hold the blade in intimate contact with said first planar surface.

3,927,894

BEACH AND SNOW SLED

Phyllis D. Zawislak, Huntington, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jan. 14, 1975, Ser. No. 541,004
Int. Cl.² B62B 13/18
U.S. Cl. 280—8 3 Claims



1. A cart for sliding over sand or snow which may be alternately rolled over solid ground comprising

a cart section formed of sheet material, said cart section being shaped as an upwardly open-ended U-section,

a pair of tubular handle frame units each fastened to a respective upper end of said U-section, of the cart with netting fastened to the respective handle frame units to extend from the walls of the cart section,

a pair of wheels externally mounted to a first side of the cart section, and

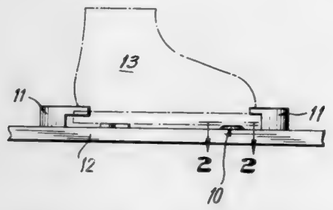
a skid mounted externally on the second side of the cart section.

3,927,895

ANTI-FRICTION RELEASE PLATE

I. Martin Spier, 50 Park Ave., New York, N.Y. 10016, and Frank B. Vener, 98 Westport Ave., Norwalk, Conn. 06851

Filed Jan. 28, 1974, Ser. No. 438,153
Int. Cl.² A63C 9/00
U.S. Cl. 280—11.35 C 6 Claims



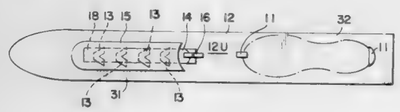
1. An anti-friction release plate for skiing comprising a plurality of rollers, roller support means including a one-piece support plate for supporting said rollers in side by side spaced relation and journal means cooperating between said rollers and roller support means for journalling said rollers for free rotation in said roller support means, each of said rollers having an external surface and said roller support means having an opening through which said external surfaces project to define a rolling surface for engagement by the sole of a ski boot.

3,927,896

SKI AND SNOW SHOE DEVICE

Vincent D. Detoia, Bronx, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed June 21, 1974, Ser. No. 481,650
Int. Cl.² A63C 7/10
U.S. Cl. 280—11.13 C 5 Claims



1. A ski fitted with slidable cleats which enables the assembly to be employed alternately as a ski or as a snow shoe, comprising

a ski fitted with open slots, extending through the ski from the top surface to the undersurface of the ski, said slots located forward of the shoe mounting position of the ski, and said slots located in a line along the longitudinal axis of the ski,

a shaped flat spring member, said spring member formed of a sheet of generally rectangular shape and of a length to extend beyond the extreme longitudinal ends of the slots in the ski, with the forward end of said spring member shaped to form a flange, which flange is fastened to the top surface of the ski forward of the most forward located

slot, so that the spring member extends over the slots at a distance from the ski, with the rear end of the spring member extending past the most rearward located slot, and with the undersurface of the spring member facing the top surface of the ski and the spring member projecting above the top surface of the ski, said spring member fitted with cleats that are each in the form of a shaped block of uniform cross-section of a size to freely fit into and through a slot of the ski, with each cleat mounted to the undersurface of the spring member, with each cleat being of a transverse width to serve as a fin, when extended through the ski, and each cleat being of a height to extend from the spring member mounting through a slot in the ski and to project beyond the undersurface of the ski when the spring member is in a first fixed position, said cleats each individually mounted to the spring member in line with an individual slot of the ski in which the individual cleat fits in either said first fixed position or in a second position of the spring member so that each cleat is transversely supported by the walls of the slots, with

the free end of the cleat shaped as a generally flat surface lying in a plane generally parallel to the undersurface of the attached ski, with each cleat mounted to the undersurface of the spring member to slidably project into a slot of the ski,

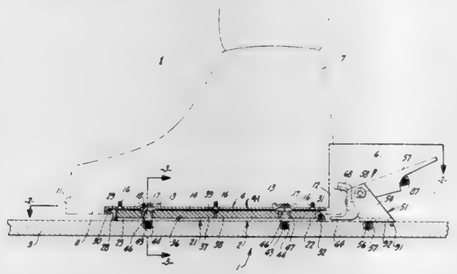
a spring retention device in the form of a clamp fastened to the top surface of the ski for holding the rear end of the spring member alternately in either a said first fixed position so that the cleats project through the slots and below the undersurface of the ski, or in a said second position in which the rear end of the spring member is held away from the ski so that the cleats are positioned in the slots, flush or above the undersurface of the ski, said clamp being in the shape of a shaped section of semi-rigid material formed with a recessed section into which an edge of the rear end of the spring member may latch in one of said positions.

3,927,897

MAGNETIC RELEASE SYSTEM FOR SNOW SKIS

Donald M. Olson, 317 Lee St., Oakland, Calif. 94610, and Michael A. McNeilly, 297 Mapache Road, Portola Valley, Calif. 94025

Filed June 24, 1974, Ser. No. 482,367
Int. Cl.² A63C 9/08
U.S. Cl. 280—11.35 M 16 Claims



1. A magnetic release system for snow skis comprising

A. an elongated keeper plate to be attached to the sole of a skier's boot,

B. an elongated permanent magnet structure generally coextensive with said keeper plate to be attached to a ski, and

C. separable indexing structure interposable between said plate and said magnet structure comprising

1. a low friction indexing button integral with said magnet structure and having a head portion projecting thereabove having the surface of an inclined plane exposed to said plate,

2. said head portion of said indexing button being of smaller size then said magnet structure and overlying only a limited portion thereof, and

3. a recess formed in said plate contoured in accordance with the size and configuration of said projecting head portion of said button,

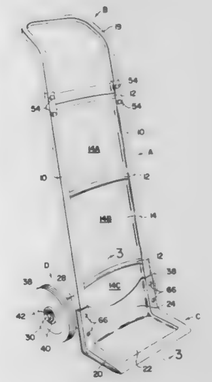
4. whereby said button and recess when interengaged resist lateral separation of said plate and magnet structure until predetermined release forces are encountered.

3,927,898

HAND TRUCK

George L. Weyrauch, Philadelphia, Pa., assignor to Gulf & Western Manufacturing Company, New York, N.Y.

Filed Mar. 25, 1974, Ser. No. 454,109
Int. Cl.² B62B 1/10
U.S. Cl. 280—47.27 11 Claims



1. In a hand truck having hand grip means, toe plate means, body means therebetween, and wheel means secured thereto, the improvement comprising: a closed unitary body member having channel shaped side rail portions formed integrally therein and a plurality of reinforcing rib portions formed integrally therein transverse to said rail portions to define imperforate panel areas therebetween; U-shaped hand grip means having free lower ends adapted to nest within the upper portions of said body member side rail portions; fastener means to secure said hand grip means to said side rail portions; a one piece toe plate member having side portions formed therein to nest with the lower ends of said body member side rail portions; fastener means to secure said toe plate member to said body member; axle bracket members adapted to nest with the lower ends of said body member side rail portions and adapted to be secured to said side rail portions by said toe plate fastener means; an axle non-rotatably secured to said axle bracket members and extending outboard therefrom to receive wheels thereon; and fastening means to secure said wheels on the outboard ends of said axle.

3,927,899

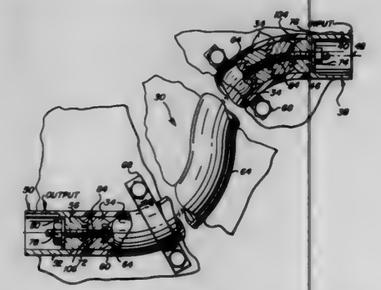
VEHICLE STEERING APPARATUS

Dale E. Bough, West Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed Mar. 22, 1974, Ser. No. 453,871
Int. Cl.² F16C 1/02; B62D 3/02
U.S. Cl. 280—87 A 8 Claims

1. An apparatus for use in steering a vehicle, said apparatus comprising a steering column, a rotatable steering shaft disposed within said steering column, a manually rotatable input member disposed at one end portion of said steering column

and connected with a first end portion of said steering shaft, said input member being rotatable to effect rotation of said steering shaft, drive means for turning at least one wheel of the vehicle in response to an input torque, said drive means being disposed forwardly and offset to one side of said steering shaft at a level lower than said input member, and torque transmitting means connected with a second end portion of said steering shaft for transmitting torque to said drive means along a path having both horizontally and vertically curved components in response to rotation of said steering shaft by said input member, said torque transmitting means comprising a series of adjacent torque transmitting bodies including a rotatable input body connected with said second end portion of said steering shaft, a rotatable output body connected with said drive means, a series of rotatable intermediate bodies disposed in a continuous row which extends between said input and output bodies along a nonlinear path having an arcuately curving portion of a length which is greater than the length of a plurality of said intermediate bodies, each one of said intermediate bodies having first surface means disposed in abutting engagement with a next preceding body for positively transmitting rotational motion between said preceding body and said one body without relative rotation between said



one body and said preceeding body upon rotation of said steering shaft and variations in the torque transmitted to said drive means and second surface means disposed in abutting engagement with a next succeeding body for positively transmitting rotational motion between said one body and said next succeeding body without relative rotation between said one body and said preceeding body upon rotation of said steering shaft and variations in the torque transmitted to said drive means, each of said intermediate bodies having an outer surface portion which has a smooth circular cross sectional configuration in a plane extending perpendicular to the central axis of said intermediate body, an elongated tubular casing having a longitudinally extending central passage with both horizontally and vertically curved components, said passage having a side surface with a generally circular cross sectional configuration in a plane extending perpendicular to the central axis of said casing, said side surface of said passage being disposed in circumscribing abutting engagement with the smooth circular outer surface portion of each of said intermediate bodies to at least partially support said intermediate bodies for rotation about their central axis, and means for holding said tubular casing against rotational movement during rotation of said intermediate bodies.

3,927,900

INDEPENDENT STEERING AXLE SUSPENSION

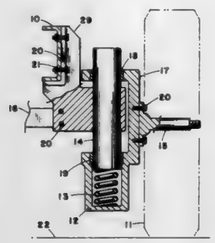
Thomas Harry Wischmeier, 4989 Countryside Road, Lyndhurst, Ohio 44124

Filed Aug. 5, 1974, Ser. No. 494,419

Int. Cl.² B60G *11/14*

U.S. Cl. 280—124 A **8 Claims**

1. An independent steering axle suspension adapted for attachment to a vehicle frame, comprising, in combination, a frame bracket attached to said vehicle frame; a pin rigidly attached to said frame bracket, said pin having upper and lower ends extending above and below said attachment point to said frame bracket; a support member disposed to rotate about and rectilinearly translate reciprically along the upper



and lower ends of said pin; a stub axle rigidly affixed to said support member; and a load spring placed below the lower end of said pin between said pin and said support member, said load spring contacting said support member at a position below the lower end of said pin.

3,927,901

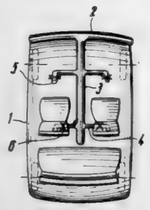
MOTOR VEHICLE EQUIPPED WITH INFLATABLE AIR BAGS FOR PASSENGER ACCIDENT PROTECTION

Per Olaf Weman, Haslah, Germany, assignor to Sigmatex, Basel, Switzerland

Filed Mar. 16, 1973, Ser. No. 342,124

Int. Cl.² B60R *19/10, 21/06*

U.S. Cl. 280—150 AB **10 Claims**



1. In a vehicle equipped with at least one inflatable air bag for protecting at least one passenger of the vehicle in case of an accident, wherein an inflation assembly for said bag comprises: a pressurized gas tank having a front portion and at least one branch portion in a continuous configuration extending from said front portion of said pressurized gas tank, said branch portion connecting said front portion to said at least one inflatable air bag, said front portion mounted in the front region of the vehicle and extending transversely of the vehicle longitudinal axis from one side to the opposite side of the vehicle; and at least one automatic valve, said one automatic valve connected between the pressurized gas tank and each associated inflatable air bag, said pressurized gas tank inflating said air bag upon impact during an accident, without the use of separate sensors, due to a sudden increase in pressure within the gas tank which causes said valve to open.

3,927,902

SAFETY BELT ARRANGEMENT FOR INDIVIDUALS

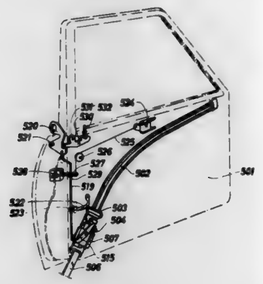
Oskar Lennart Lindblad, Hedasgatan 16, 440 20 Vargarda, Sweden

Division of Ser. No. 179,134, Sept. 9, 1971, Pat. No. 3,822,760. This application Apr. 5, 1974, Ser. No. 458,291

Claims priority, application Sweden, Sept. 9, 1970, 12225/70; Sept. 25, 1970, 13045/70; Nov. 2, 1970, 14714/70; Dec. 30, 1970, 17726/70; Dec. 31, 1970, 17858/70; Feb. 10, 1971, 1694/71

Int. Cl.² B60R *21/10*

U.S. Cl. 280—150 SB **5 Claims**



1. An emergency release mechanism in a passive restraint safety belt system comprising a vehicle having at least one door, a guide extending in a longitudinal direction of said vehicle on the inside of said door, a slide moveably mounted on said guide, a coupling means being positioned on and near the rear lower edge of said door, locking means being connected to said vehicle and detachably connected to said coupling means for at time locking said door closed, releasing means detachably connecting said coupling means, slide and belt, a second releasing means detachably connecting said coupling means and said locking means and means capable of operating both said releasing means and being accessible from the outside of said door.

3,927,903

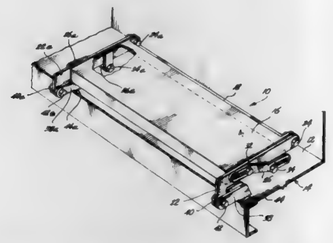
FOLDABLE STEP

George D. Jones, 19624 96th St. E., Sumner, Wash. 98390

Filed Aug. 28, 1974, Ser. No. 501,343

Int. Cl.² B60R *3/02*

U.S. Cl. 280—166 **3 Claims**



1. A foldable step unit for a truck having a bumper with a flat top surface comprising: a step; a pair of supports to span and to be pivotally connected near an end of each support to the step; means for linking between each of the supports and an adjacent side of the step for allowing the step to move from an in line position to a position normal with respect to the support, said means comprising an offset link having a pair of slots, and means for joining one of the slots to the support and for joining the other slot to the step; and a pair of bars each rigidly secured at one end thereof to the bumper and pivotally connected at the other end to a respective one of the supports to permit the supports with the step to move between a parallel folded position and a perpendicular use position with respect to the top surface of the bumper.

3,927,904

REAR DERAILLEUR FOR A BICYCLE

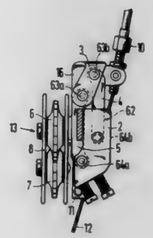
Eduard Bergles, Graz, Austria, assignor to Fichtel & Sachs A.G., Schweinfurt am Main, Germany

Filed Mar. 6, 1974, Ser. No. 448,619

Claims priority, application Germany, Mar. 23, 1973, 2314554

Int. Cl.² B62M *9/12*

U.S. Cl. 280—236 **5 Claims**



1. A vehicle comprising:

a. a frame;

b. a chain wheel mounted on said frame for rotation about a first axis;

c. a wheel shaft on said frame having a second axis spaced from and substantially parallel to said first axis;

d. a plurality of sprockets axially juxtaposed on said wheel shaft for rotation about said second axis;

e. a carrier member fastened to said frame in fixed spatial relationship to said second axis;

f. a guide wheel support;

g. first and second guide wheels mounted on said support in spaced relationship for rotation in a common plane fixed relative to said support;

h. linkage means movably connecting said support to said carrier member,

1. said first and second axes defining a plane intersecting the plane of rotation of said guide wheel along a line of intersection in each position of said support during said shifting of said support, the lines of intersection defined during said shifting converging in a direction from said second axis toward said first axis,

2. said linkage means including a four-member linkage constituted by said carrier member, said support, two guide links, and four pivots respectively connecting said guide links to said carrier member and to said support,

3. two pivots being associated with each member of said linkage,

4. each pivot having an axis,

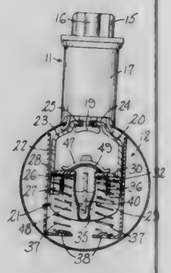
5. the spacing of the two axes of the pivots associated with one member of said four-member linkage being different from the corresponding spacing of axes of pivots associated with the other three members of said linkage,

6. said pivots defining a planar quadrangle perpendicular to said pivot axes, said quadrangle being inclined relative to said plane defined by said first and second axes at an angle of 45° to 60°;

i. a drive chain trained over said chain wheel, one of said sprockets, and said guide wheels; and

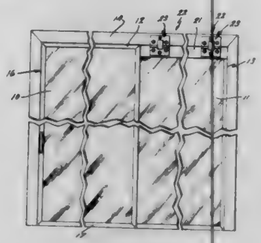
j. manually operable means for shifting said support relative to said carrier member about said axes of said pivots.

3,927,905
RETRACTOR MECHANISM FOR LATCH BOLT
Lars Erickson, Clinton, Conn., assignor to Walter Kidde & Co., Inc., Belleville, N.J.
Filed July 19, 1974, Ser. No. 490,134
Int. Cl.² E05B *3/08*; E05C *1/12*
U.S. Cl. 292—169.22 **3 Claims**



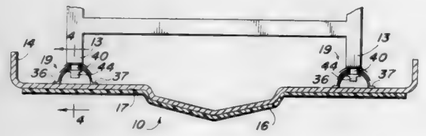
1. In a door lock having a latch bolt and inner and outer knob spindles provided with rollbacks, a two-part retractor comprising a forward part in engagement with the latch bolt and rear part loosely engaged with the forward part to be relatively movable between forward and rearward positions, the forward part being generally U-shaped and provided near its ends with rearwardly and forwardly facing spaced stop surfaces defining a lost motion gap said stop surfaces lying in planes perpendicular to the direction of retractor movement, the rear part of the retractor having portions adapted to bear alternatively against said stop surfaces, the size of the lost motion gap being a function of the spacing of said surfaces in said direction of retractor movement, and resilient means urging said rear part toward its forward position adjacent to both rollbacks and to said rearwardly facing stop surfaces, to open the said lost motion gap and enable the rear part to be moved rearward by either rollback without moving the forward part until said gap has been closed.

3,927,906
FLIP DOWN DOOR LOCK
Raymond J. Mieras, 1745 Ball, NE., Grand Rapids, Mich. 49505
Filed May 3, 1974, Ser. No. 466,521
Int. Cl.² E05C *17/04*
U.S. Cl. 292—262 **4 Claims**



1. A locking means for preventing opening of a sliding closure wherein the sliding closure is slidably mounted in a frame having a header above the sliding closure and two jambs, said header having at least one sliding channel on the header along which the closure slides, said locking means comprising: an elongated rigid bar member; and mounting means for suspending said bar member from said header in a first closed position in abutting engagement between the edge of said closure and an adjacent jamb, said mounting means including a spring lock-hinge assembly for permitting swinging movement of said bar member from said first closed position to a second open position in disengagement from between the edge of said closure and said adjacent jamb to allow sliding of said closure in said frame and biasing said locking bar into said first closed position when therein and supporting said bar member over the closure when in said second position without additional support.

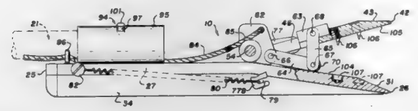
3,927,907
AUTOMOBILE BUMPER
Francis J. Bialek, 2536 N. Sawyer Ave., Chicago, Ill. 60647
Filed July 19, 1974, Ser. No. 490,092
Int. Cl.² B60R *19/02*
U.S. Cl. 293—71 R **2 Claims**



1. A bumper for attaching to the frame of moving vehicles comprising:
- a bumper bar constructed of a rigid material extending across the width of the vehicle and including outer ends;
- a first spring means and a second spring means, each of said spring means having a substantially "U" shape and including a hump portion between a pair of outer feet;
- the pair of feet of said first spring means being attached to one of the ends of said bumper bar so that said first spring means extends inward therefrom, and the pair of feet of said second spring means being attached to the other end of said bumper bar so that said second spring means also extends inward therefrom;
- said first and second spring means including a plurality of leaf springs laminated one on back of the other;
- a first and second hollow member each including a front side and a rear side, each of said plurality of leaf springs passing through one of said hollow members so that said hump portion of the corresponding spring means is positioned in the hollow member, each of said hollow members being attached to the frame at the rear side thereof for securing said hump portion of the corresponding spring means to the frame;
- a first cushioning means attached to the front side of the first hollow member and extending forward thereof spaced from the bumper bar and between the feet of said first spring means; and
- a second cushioning means attached to the front side of the second hollow member and extending forward thereof spaced from the bumper bar and between the feet of said second spring means.

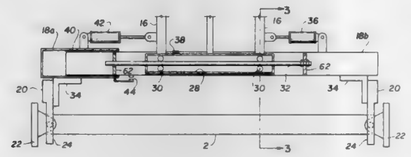
3,927,908
PULP SHEET GRIPPING TOOL
Harry Knelson, 1305 E. 6th Ave., Prince Rupert, B.C., Canada (V8J 1Y1)
Filed Jan. 22, 1975, Ser. No. 542,920
Claims priority, application Canada, Feb. 12, 1974, 192461
Int. Cl.² A47F *13/06*
U.S. Cl. 294—19 R **10 Claims**

1. A tool for gripping an edge of a remote piece of sheet material comprising a base plate, a handle secured to the base plate and extending rearwardly thereof, said base plate having a front portion enterable beneath an edge of the sheet material, a clamping jaw adjacent the front portion, hinge means securing the clamping jaw to the base plate for swinging movement between an open and a closed position with respect to the front portion, resilient means biasing the clamping jaw towards the closed position, linkage means including an upstanding lever pivotally connecting the clamping jaw to the base plate and adapted to support said jaw in the open position against pressure applied by the resilient means, a trip member



secured at one end to the upstanding lever and extending rearwardly of the base plate substantially parallel to the handle.

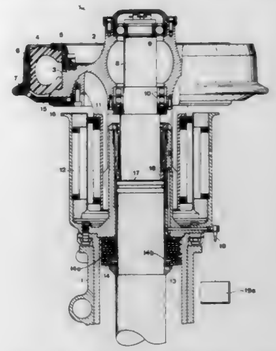
3,927,909
APPARATUS FOR TRANSPORTING AND ADJUSTING ROTATIVE WORKPIECES
Heinrich Hack, Spachbruecken, Germany, assignor to Firma Carl Schenck AG, Darmstadt, Germany
Continuation-in-part of Ser. No. 335,079, Feb. 23, 1974, abandoned. This application Sept. 23, 1974, Ser. No. 508,345
Claims priority, application Germany, May 6, 1972, 2222336
Int. Cl.² B66C *1/42*
U.S. Cl. 294—81 R **6 Claims**



1. An apparatus for handling and precisely positioning long, flexible workpieces or workpieces with portions which are pivotable relative to each other so that their longitudinal alignment is necessary for said positioning, comprising a rigid frame structure, first and second horizontally extending cross support arms having a common longitudinal axis and arranged to telescope one within the other, means movably securing said support arms to said frame structure, said securing means including rigid guide means for said cross support arms to keep said arms in longitudinal alignment with each other, said cross support arms having free ends longitudinally aligned with each other, and gripping tongs operatively secured to said aligned free ends of the cross support arms, whereby a longitudinally effective aligning force may be applied to said workpiece by simultaneously gripping said workpiece at both of its ends, and then extending said support arms longitudinally outwardly.

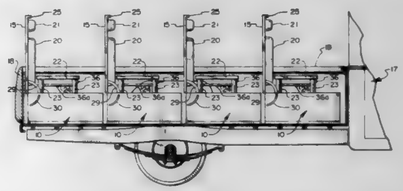
3,927,910
RESILIENTLY LATERALLY SHIFTABLE AXLE MOUNTING BOGIE
Roger Fagel, Marcinelle, Belgium, assignor to Ateliers de Constructions Electriques de Charleroi (ACEC)
Filed June 7, 1974, Ser. No. 477,290
Claims priority, application Belgium, June 15, 1973, 5161
Int. Cl.² B60B *35/00*, *37/10*; B61F *5/30*, *5/46*
U.S. Cl. 295—36 R **6 Claims**

1. An axle arrangement for a high speed railroad bogie comprising:
- a. a flanged wheel carried by a longitudinally displaceable axle supporting a bogie frame, said axle being displaceable with respect to said bogie frame;
- b. an abutment on said axle;
- c. a shoulder fixed to said bogie frame;
- d. resilient means coupled between said abutment and said shoulder;
- e. said resilient means including a plurality of separate, contiguous, resilient rings on a common axis, one portion of said rings being arranged in a first pattern, another



portion of said rings being arranged in a second pattern, whereby said resilient means exerts a non-linear resistance to longitudinal displacements of said axle.

3,927,911
VERTICAL ADJUSTABLE COLLAPSIBLE SEAT
Gerald L. Rosquist, 71 S. 3rd East, Salina, Utah 84654
Filed Apr. 21, 1975, Ser. No. 570,269
Int. Cl.² B60P *3/38*
U.S. Cl. 297—15 **10 Claims**

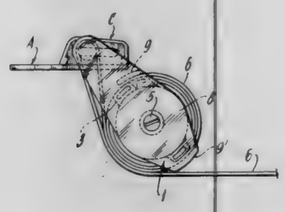


1. In combination with a vehicle bed, a vertically adjustable, collapsible seat being totally enclosed in the collapsed position forming a flat surface area comprising:
- a. an enclosure having a floor, a frontwall, a backwall, two endwalls and a cover pivotally attached to the backwall,
- b. two pairs of vertical telescoping legs attached to the floor of the enclosure, the legs of each pair containing interconnected airtight cylinder compartments which are vertically expandable by pneumatic means and,
- c. a seat fixedly attached at each end to the movable portions of the telescoping legs.

3,927,912
AUTOMATIC BRAKING SAFETY BELT REEL
Takezo Takada, deceased, late of Tokyo, Japan (by Juichiro Takada, legal authorized heir), assignor to Takata Kojyo Co., Ltd., Tokyo, Japan
Filed Apr. 29, 1974, Ser. No. 465,020
Claims priority, application Japan, May 2, 1973, 48-051206
Int. Cl.² A62B *35/00*; A44B *11/12*
U.S. Cl. 297—388 **6 Claims**

1. A vehicle safety belt device comprising a frame member including a cross piece and a pair of transversely spaced parallel side legs extending from said cross piece, a coupling member connected to and projecting forwardly from said frame member, a spool extending between and rotatably supported by said frame side legs, a safety belt having a first end connected to said spool and an opposite end extending to a vehicle anchor point, a spring resiliently biasing said spool to wind up said belt in a coil thereon in a belt retracted condition and

a brake bar extending between and rockably supported by the forward ends of said frame side legs, said frame cross piece and side legs being of widths less than the diameter of said coil in said belt retracted condition, said coupling member including a rear cross web having a transversely extending opening formed therein, and a pair of upstanding side walls projecting from said cross web and provided with longitudinal slots slidably engaging the ends of said brake bar, said coupling member being swingable with said brake bar, said belt extending from said spool forwardly through said cross web opening about said brake bar and back through said opening, whereby said coupling member is swingable between a longitudinally extending belt braking position and an angularly extending belt releasing position.



3,927,913

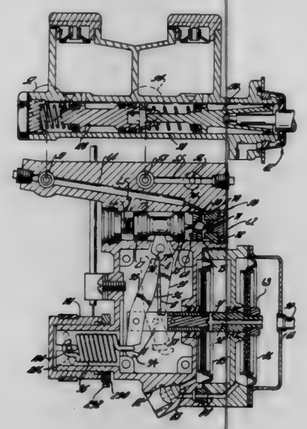
SKID CONTROL SYSTEM COMPONENTS

Edward A. Rockwell, 167 Ashdale Place, Los Angeles, Calif. 90049

Division of Ser. No. 168,683, Aug. 3, 1971, Pat. No. 3,829,171. This application Oct. 1, 1973, Ser. No. 402,143

Int. Cl.² B60T *8/12*

U.S. Cl. 303—6 C **15 Claims**



1. In a hydraulic brake system for a vehicle having front and rear wheel brakes, the combination comprising:

a power booster for assisting manual effort in operating said front and rear wheel brakes;

a variable proportioning device in said hydraulic brake system for varying the ratio of front to rear braking forces as a varying, non-linear function of tire-road coefficient of friction, which function approximately matches the non-linear function as defined by the Holland equation for S_f/S_r, the device being directly controlled responsive to variations of internal pressures in said power booster; and deceleration responsive means for detecting vehicle deceleration and for controlling said power booster in response to changes in deceleration reflecting impending wheel lockup, and to thereafter reestablish rolling contact of the wheel with the road, by modulating the braking forces at both front and rear wheels about their maximum to maintain maximum vehicle deceleration without wheel lockup.

3,927,914

HYDRAULIC ANTI-SKID CONTROL ARRANGEMENT INCLUDING A PLURALITY OF THROTTLES FOR SYNCHRONOUS AND ASYNCHRONOUS CONTROL OF THE WHEELS OF ONE AXLE OF A VEHICLE

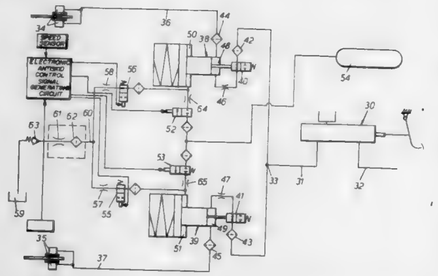
Werner Fink, and Dieter Kircher, both of Frankfurt am Main, Germany, assignors to ITT Industries, Inc., New York, N.Y.

Division of Ser. No. 290,293, Sept. 22, 1972, Pat. No. 3,819,236. This application Oct. 17, 1973, Ser. No. 407,123

Claims priority, application Germany, Nov. 4, 1971, 2154806

Int. Cl.² B60T *8/02*

U.S. Cl. 303—21 F **3 Claims**



1. A hydraulic control arrangement for an antiskid control system comprising:

a pair of wheel brake cylinders, each of said brake cylinders being associated with a different one of a pair of wheels of a single axle of a motor vehicle;

a master cylinder;

a reservoir;

a pressure medium accumulator;

a first hydraulically controlled plunger unit including a first chamber, a second chamber and a first plunger sealably separating said first and second chamber and movable in said first and second chambers;

a first normally open separating valve mechanically connected to said first plunger and hydraulically connected to said master cylinder;

a first throttle hydraulically connected in series with said first separating valve and said first chamber, said first chamber being hydraulically connected to one of said pair of brake cylinders;

a second hydraulically controlled plunger unit including a third chamber, a fourth chamber and a second plunger sealably separating said third and fourth chambers and movable in said third and fourth chambers;

a second normally open separating valve mechanically connected to said second plunger and hydraulically connected to said master cylinder;

a second throttle hydraulically connected in series with said second separating valve and said third chamber, said third chamber being hydraulically connected to the other of said pair of brake cylinders;

a first normally closed input valve hydraulically connected to said accumulator responsive to a first control signal indicating the state of motion of an associated one of said pair of wheels;

a third throttle hydraulically connected in series with said first input valve and said second chamber;

a first normally open output valve hydraulically connected to said second chamber responsive to said first control signal;

a fourth throttle hydraulically connected in series with said first output valve;

a second normally closed input valve hydraulically connected to said accumulator responsive to a second control signal indicating the state of motion of an associated one of said pair of wheels;

a fifth throttle hydraulically connected in series with said second input valve and said fourth chamber;

a second normally open output valve hydraulically connected to said fourth chamber responsive to said second control signal;

a sixth throttle hydraulically connected in series with said second output valve;

an emergency throttle hydraulically connected in common to said fourth and sixth throttles; and

a non-return valve hydraulically connected in series with said emergency throttle and said reservoir;

said first input valve and said first output valve responding to an incipient skid condition of said first control signal to actuate said first plunger by pressure medium from said accumulator operating in said second chamber, said first plunger in turn actuating said first separating valve to block pressure medium flow from said master cylinder to said one of said pair of brake cylinders and cause a volume expansion for said one of said brake cylinders in said first chamber; and

said second input valve and said second output valve responding to an incipient skid condition of said second control signal to actuate said second plunger by pressure medium from said accumulator operating in said fourth chamber, said second plunger in turn actuating said second separating valve to block pressure medium from said master cylinder to said other of said pair of brake cylinders and cause a volume expansion for said other of said brake cylinders in said third chamber.

3,927,915

VEHICLE ANTI-LOCK BRAKE SYSTEM WITH BOOSTER DEVICE

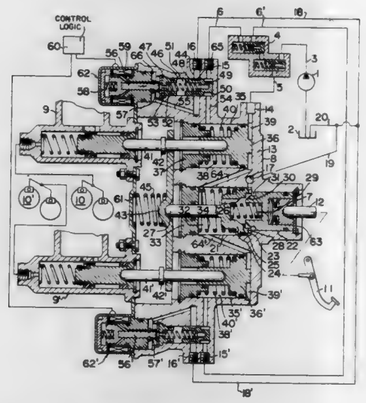
Yoshiharu Adachi, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 8, 1974, Ser. No. 495,809

Claims priority, application Japan, Aug. 18, 1973, 48-92711

Int. Cl.² B60T *8/06*

U.S. Cl. 303—21 F **15 Claims**



1. A vehicle brake system comprising:

a. master cylinder means for actuating at least one wheel brake;

b. means for multiplying the braking power applied to said master cylinder means including a power piston connected to said master cylinder means with a pressure chamber defined at one side of said power piston and a reaction chamber defined at the other side of said power piston;

c. means for introducing pressure into said pressure chamber to move said power piston in a brake-applying direction, said introducing means including a first fluid circuit;

d. means for controlling the introduction of pressure into said pressure chamber, said means including (i) a pressure flow return line, (ii) a piston having a first chamber defined at one side of the piston and connected to said pressure chamber and said first circuit, and a second chamber defined at the other side of the piston and connected to said pressure fluid return line, (iii) a passage formed in said piston connecting said first and second chambers with each other, and (iv) a manually-operated valve member for controlling the flow of fluid through the passage of said piston to thereby regulate the pressure in said first chamber;

e. means for introducing pressure into said reaction chamber to effect a release of said brake when wheel lock is detected, said means including a second fluid circuit independent of said first circuit;

f. means for controlling the pressure introduced into said reaction chamber including (i) a pressure fluid return line, (ii) a fluid flow control valve defining a chamber connecting the second fluid circuit to said pressure fluid return line and to said reaction chamber, and (iii) means for controlling the position of said fluid flow control valve so as to control the flow from said chamber to said return line;

g. electrical means for actuating said control valve position controlling means in response to the locking condition of the wheel brake; and

h. a fluid flow divider valve having an input from a pressurized fluid source and at least two outputs connected respectively with said first and second fluid circuits.

3,927,916

COMBINED LOAD-SENSING PROPORTION AND RELAY VALVE

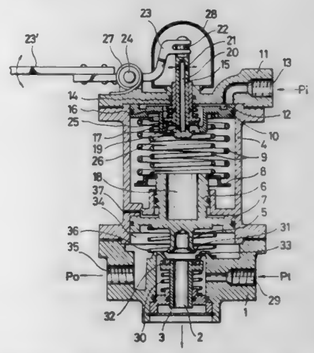
Daosuke Masuda, Higashimatsuyama, Japan, assignor to Jidosha Kiki Co., Ltd, Tokyo, Japan

Filed May 31, 1974, Ser. No. 475,301

Claims priority, application Japan, June 20, 1973, 48-69566

Int. Cl.² B60T *8/18*

U.S. Cl. 303—22 R **4 Claims**



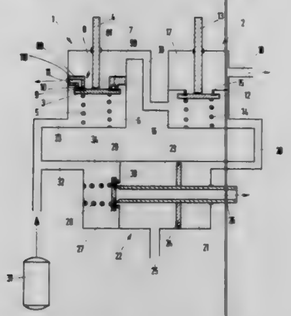
1. A combined load-sensing proportion and relay valve comprising a valve disk having a central axis with an exhaust passage on the central axis and held in a normally closed-valve condition, and a control piston assembly for adjustably moving the valve disk to open the valve disk, characterized in that the control piston assembly consists of three pressure-sensitive pistons, the third piston being formed in one piece with the first piston, said first piston having a downward projection extended from its underside, with the lower end of the projection serving as a valve seat opposite to and engageable with the valve disk, a load spring is disposed between the second

and third pressure-sensitive pistons, a regulated-pressure controller consisting of a regulated-pressure exhaust valve held in a normally-open condition and an indicated-pressure feed valve held in a normally closed condition is located with a part of the second pressure-sensitive piston serving as its valve seat, an indicated-pressure chamber is formed above the second piston, and a regulated-pressure chamber is formed between the underside of the second piston and the upper side of the third piston, said regulated-pressure exhaust valve that governs the opening and closing of the indicated-pressure feed valve and the exhausting of the regulated-pressure being located in such a manner that its position is adjustable according to the payload of the vehicle equipped with the relay valve.

3,927,917
OPERATOR'S BRAKE VALVE FOR A RAILWAY VEHICLE AIR BRAKING SYSTEM

Erich Falke, Munich, Germany, assignor to Knorr-Bremse GmbH, Munich, Germany

Filed Dec. 18, 1974, Ser. No. 533,835
Claims priority, application Germany, Dec. 20, 1973, 2363554
Int. Cl.² B60T *15/12, 15/18*
U.S. Cl. 303—68 **3 Claims**



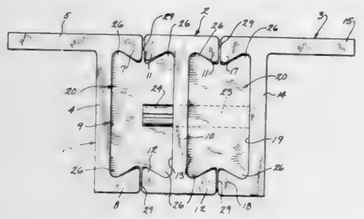
1. A selectively operable valve device for an operator's brake valve for an indirect air braking system on a railway vehicle for the direct or indirect control of the pressure in an air line by means of a relay valve, and comprising a brake valve and a release valve each having a valve member urged in the closing direction and each being manually displaceable in the open direction, means for defining a valve seat engageable by said release valve member when closed and comprising a pair of annular concentric seats to define an annular space therebetween, and means for defining a passage from said annular space to the atmosphere whereby any air leakage past said release valve member will escape to the atmosphere.

3,927,918
SLIDE ASSEMBLY

Edward J. Dobbratz, Watertown, Wis., assignor to Janet E. Dobbratz, Watertown, Wis., a part interest

Continuation-in-part of Ser. No. 300,773, Oct. 25, 1972, abandoned. This application Sept. 17, 1973, Ser. No. 397,784
Int. Cl.² F16C *17/00*
U.S. Cl. 308—3.6 **15 Claims**

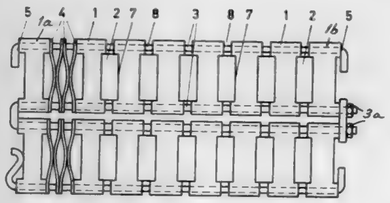
1. A slide assembly, comprising a first slide member, a second slide member disposed to slide relative to said first slide member between a retracted and an extended position, each slide member including a web and a pair of flanges extending outwardly from the ends of the web, the flanges of said first slide member being in proximate abutting relation to corresponding flanges of the second slide member, the flanges of each slide member in combination with the web defining a female dovetail groove extending longitudinally of the slide member, a first block secured with the groove of the first slide member and freely slidable within the groove of the second slide member, a second block secured within the groove of the second slide member and freely slidable within the groove of the first slide member, opposite sides of each block having opposed male dovetail portions mating with the female dovetail grooves of said slide members, each male dovetail portion including an inclined surface that intersects the inclined surface of a second male dovetail portion at a central groove, and a fin extending outwardly from each groove with each fin having a pair of generally flat opposed surfaces with one of said opposed surfaces being disposed flatwise against the flange of said first slide member and the other of said opposed surfaces being disposed flatwise against the flange of said second slide member, to prevent contact between said flanges.



3,927,919
SUPPORT AND GUIDE CAGE

Paul Bunzli, Bevaix, Switzerland, assignor to Hydrel A.G., Romanshorn, Switzerland

Filed Aug. 22, 1974, Ser. No. 499,846
Claims priority, application Switzerland, Aug. 25, 1973, 12348/73
Int. Cl.² F16C *29/04*
U.S. Cl. 308—6 R **7 Claims**



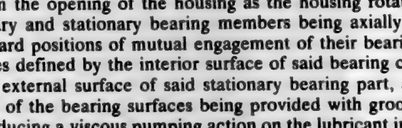
1. In a roller body guide cage for a roller bearing of a longitudinally displaceable carriage, such as a machine tool carriage, including a plurality of uniformly-shaped guide cage elements for retaining roller bodies therebetween; at least two parallel elongate elements, said guide cage elements being serially mounted on said elongate elements, the improvement comprising: said guide cage elements being supported in said elongate elements for longitudinal movement therealong; and at least one prestressed element being located at least at one end of said guide cage for exerting a force against said guide cage elements and roller bodies in the longitudinal direction of said cage.

3,927,920
MOVEMENT DEVICE

Frederick S. Falks, Comstock Park, Mich., assignor to Steelcase, Inc., Grand Rapids, Mich.

Division of Ser. No. 310,411, Nov. 29, 1972, Pat. No. 3,883,192. This application Feb. 6, 1974, Ser. No. 440,030
Int. Cl.² F16C *17/00*
U.S. Cl. 308—36 **7 Claims**

1. A bearing to be positioned between a shaft or the like and a bearing sleeve or the like for facilitating movement therebetween, said bearing comprising: a rigid generally rod-like support of a closed circuit configuration; a flexible sleeve slidably mounted on said support and entirely enclosing said support, said flexible sleeve also defining a closed circuit configuration; said shaft frictionally engaging said flexible sleeve on the inside of said closed circuit; said bearing sleeve frictionally engaging said flexible sleeve on the outside of said closed circuit whereby when one of said shaft or bearing sleeve is rotated, said flexible sleeve slides on said rigid support and allows said shaft and said bearing sleeve to rotate relative to one another.



3,927,921
LUBRICATED AXIAL THRUST BEARING

Ronald William Woolley, Poole, England, assignor to British Gas Corporation, London, England

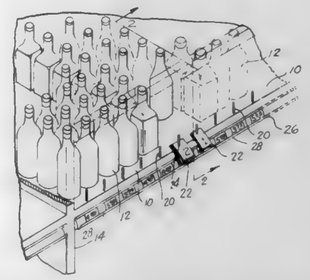
Filed May 31, 1974, Ser. No. 475,310
Claims priority, application United Kingdom, June 4, 1973, 26472/73
Int. Cl.² F16C *1/24, 17/08, 23/04, 35/10*
U.S. Cl. 308—134.1 **8 Claims**

1. A recirculatory lubricated bearing comprising a rotary member which includes a housing with an opening at one end and a bearing cup fixed in the housing with its mouth directed toward the said opening and with a lubricant space in the housing surrounding the cup and extending on both sides of a plane defined by the rim of the bearing cup, said cup having an aperture centrally located in the cup bottom, a stationary member having a bearing part fitting in the bearing cup for rotatably supporting the rotary member and a part extending from the bearing part and projecting from the housing through its opening, means for preventing the discharge of lubricant from the opening of the housing as the housing rotates, the rotary and stationary bearing members being axially biased toward positions of mutual engagement of their bearing surfaces defined by the interior surface of said bearing cup and the external surface of said stationary bearing part, at least one of the bearing surfaces being provided with grooves for producing a viscous pumping action on the lubricant in use of the bearing, the lubricant space within the housing being filled with lubricant to a level beyond the mouth of the cup such that during rotation of the housing the lubricant assumes a vortex within the housing causing it to adopt a tube-like shape as it is forced centrifugally outwardly against the peripheral wall of the housing, but such that it can be drawn via the viscous pumping action of the pumping grooves between the bearing surface of the cup and the bearing surface of the stationary bearing member and then discharged through the central aperture in the cup whence it is caused to recirculate into the mass of lubricant in the housing.

3,927,922
INVENTORY DEVICE FOR PACKAGED ITEMS

Askew Warren Gatewood, Jr., 1804 Edmondson Ave., Baltimore, Md. 21223

Filed Dec. 28, 1973, Ser. No. 429,675
Int. Cl.² A47B *81/00;* **B42F** *21/00*
U.S. Cl. 312—234 **6 Claims**

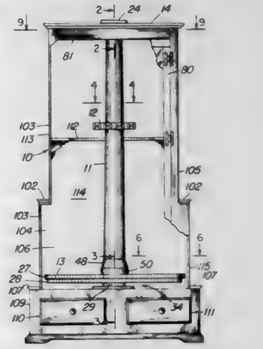


1. An inventory device for packaged items to be sold, including heavy and bulky items, comprising in combination, a generally horizontal, flat, shelf member forming a supporting seat for a designated number of packaged items to be held in a row on said shelf member from front to rear thereof, and an upstanding, straight pin secured to the front of said shelf substantially in alignment with the packaged items when seated on the shelf member, said pin being adapted to impale and hold a sales slip for each packaged item when it is sold and removed from the row on the shelf member, whereby a count of the sales slips on the pin and the remaining items in the row on the shelf member should total said designated number and yield a quick determination of theft when the total is less than the designated number.

3,927,923
GUN RACK

Ray D. Kimmel, R.D. No. 1, Box 257, Ashland, Pa. 17921

Filed July 28, 1972, Ser. No. 276,249
Int. Cl.² A47B *49/00;* **A47F** *7/00*
U.S. Cl. 312—252 **10 Claims**



1. In a gun rack comprising a cabinet having a floor and a top wall and a rotatable post therebetween, bearing means at the upper and lower end portions of the post to facilitate rotation thereof, an upper rotor on the post for supporting gun barrels, a lower rotor on the post for supporting gun butts, drive means for rotating the post, and power means beneath said floor for operating said drive means, the improvement comprising

a reduced lower end portion on the post which extends through and is engaged by the lower rotor, said lower

bearing means supporting said reduced lower post end portion and being supported by a stationary bearing support means which in turn rests on and is attached to said floor, said lower bearing means comprising a tapered roller bearing having inner and outer races, said outer race being engaged by said reduced lower post end portion and being rotatable therewith, said stationary bearing support means having a portion which engages said inner race to hold the latter stationary, and said post having a portion of increased diameter above the lower rotor to facilitate securing the latter to the post,

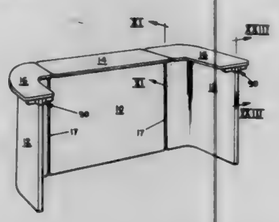
said upper rotor having a plurality of recesses in the peripheral edge thereof each of which receives and supports a gun barrel adjacent the muzzle thereof, a barrel-supporting recessed removable insert in the peripheral edge of the upper rotor between each pair of adjacent peripheral recesses, each of said peripheral and insert recesses having a cushion liner for soft engagement with a gun barrel, said lower rotor having a plurality of gun butt-receiving recesses, a butt-supporting piece in the floor of each said gun butt receiving recesses, each said piece being surrounded by the lateral walls of said recess, said piece and said walls helping to stabilize the position of a gun on said rack, and said lower rotor having between each pair of adjacent gun butt-receiving recesses an added removable gun butt-supporting piece having butt-retaining walls,

said inserts of the upper rotor and said added pieces of the lower rotor serving to increase the gun holding capacity of the rack,

said drive means for rotating the post extending through said floor and into the post to operatively engage the latter,

said cabinet having a transparent door through which guns on the rack may be examined, a headpiece over the door, a pair of spaced switches on the back side of the headpiece one of which energizes a lamp-containing circuit and the other of which energizes a circuit containing said power means, each switch having a switch-operating shank extending through the headpiece and terminating on the front side thereof in a button end, a pivoted manually movable actuator on the front side of the headpiece engageable with one button or the other and operative to actuate one switch or the other, and said switch which energizes the power means-containing circuit having spring means associated with the shank thereof so that the latter moves against the action of said spring means, whereby said actuator must be held in button end-engaging position in order to rotate the post.

3,927,924
PANEL JOINING AND WORK SURFACE SUPPORT APPARATUS
James O. Kelley, Spring Lake, Mich., assignor to Herman Miller Inc., Zeeland, Mich.
Filed May 28, 1974, Ser. No. 473,820
Int. Cl.² A47F 09/00; A47B 47/00
U.S. Cl. 312—263 **34 Claims**



1. In a space-dividing furniture system having a first component and a second component adapted to be affixed to said first component, each of said components including end edges, a top edge, and side surfaces extending between said end edges, and means for locking said components together at said end edges to form a space-dividing arrangement, said system also including a work surface panel; the improvement comprising:

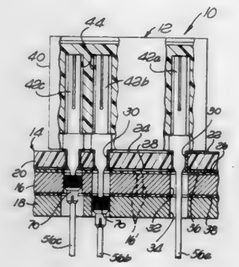
an integral bracket including joining means integral therewith for engaging said locking means and securing said components together and support means integral with said joining means for engaging the underside of said work surface panel and supporting said work surface panel along, over at least a portion of the top edge of, and outwardly of at least one of said side surfaces of at least one of said components;

said joining means engaging said locking means intermediate said end edges thereby securing said components together only from between said end edges;

said support means including at least one outward extension adapted to underly, contact, and support said work surface panel at points spaced outwardly from said top edge and outwardly of said one side surface of said one component to stabilize said work surface panel in a predetermined plane; and

attaching means on said bracket for affixing said bracket to said work surface panel to stabilize said work surface panel at a predetermined position within said predetermined plane, said bracket together with said attaching means preventing movement of said work surface panel in any two opposite directions.

3,927,925
CONNECTOR ASSEMBLY
Leslie M. Borsuk, 11622 Kensington Road, Los Alamitos, Calif. 91316
Filed Nov. 19, 1973, Ser. No. 417,295
Int. Cl. H01r 3/06
U.S. Cl. 339—14 P **18 Claims**



1. A connector assembly comprising:

upper and lower superposed metallic layers separated by an insulation layer and adapted to be maintained at different potentials, at least said lower layer being a self-supporting plate;

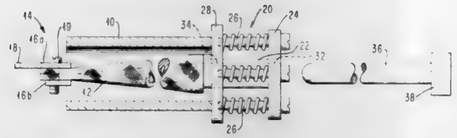
a printed circuit board superposed over said metallic layers; a plurality of holes in said printed circuit board;

a plurality of openings in said layers aligned with said holes; a plurality of contacts mounted in said aligned holes and openings, each said contact being press-fit into its corresponding hole and having a lower portion extending into its corresponding openings;

a metallic bushing on said lower portion of one of said contacts electrically and mechanically connecting said one contact to said lower layer; and

another of said contacts being a signal contact, at least the hole in which said signal contact is press-fit being a plated-through hole.

3,927,926
SPIRAL BRAID CONNECTOR
Jack B. Powell, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 26, 1974, Ser. No. 483,279
Int. Cl.² H01R 13/62
U.S. Cl. 339—74 R **2 Claims**



1. A quick connect-disconnect power connector comprising;

an elongated housing having a first and second end;

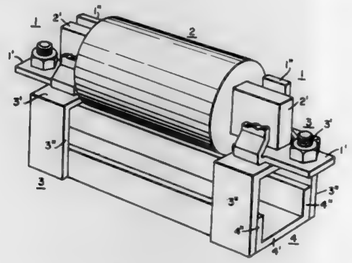
a spiral braid having a tubular form providing an opening therethrough at least at said second end of said housing; means for connecting a first end of said spiral braid to said first end of said housing;

means for providing a variable tension connection between the second end of said spiral braid and said housing which includes a pressure plate movably attached to the second end of said elongated housing by rods which extend from the second end of said elongated housing through openings in said pressure plate to provide sliding movement of said pressure plate towards and away from said housing; a plurality of springs, one attached to each of said rods, to provide the tension between said pressure plate and said second end of said housing and said second end of said spiral braid;

a connector pin adapted to fit tightly into said opening in said spiral braid at said second end of said braid so that the insertion force varies the tension on said variable tension means thereby relieving the tension on said spiral braid and causing the tubular form spiral braid length to diminish and the diameter thereof to enlarge for easier insertion of said connector pin;

said spiral braid increasing in length and decreasing its tubular form diameter when the spring tension is reapplied between said spiral braid and housing thereby frictionally grasping said connector pin preventing its removal and providing a multi-contact electrical connection between said spiral braid and connector pin.

3,927,927
COMPOSITE FUSE HOLDERS
Erwin Salzer, Waban, Mass., and Frederick J. Kozacka, South Hampton, N.H., assignors to The Chase-Shawmut Company, Newburyport, Mass.
Filed Nov. 1, 1974, Ser. No. 519,918
Int. Cl.² H01R 9/12
U.S. Cl. 339—125 R **12 Claims**



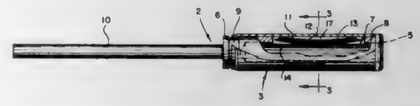
1. A fuse holder for electric fuses comprising

a. a pair of fuse-receiving contacts;

b. a pair of aligned spaced supports of synthetic resin for said pair of contacts each having a web portion supporting one of said pair of contacts, and each having lateral flange portions projecting at substantially right angles from said web portion thereof: and

c. a tie member of a synthetic resin having surfaces telescopically mating with, and adhesively affixed to, said lateral flange portions of said pair of supports.

3,927,928
MULTIPLE SPRING SOCKET FOR PIN CONNECTOR
Robert Algerd Pustell, Melrose, and Thomas Parker Haselton, Lynn, both of Mass., assignors to General Electric Company, Wilmington, Mass.
Filed June 5, 1974, Ser. No. 476,524
Int. Cl.² H01R 13/12
U.S. Cl. 339—256 R **2 Claims**



1. In a spring loaded pin and socket connector, the combination comprising:

a. a socket contact member including,

1. a socket member having a bore for receiving a pin,
2. a retaining slot in said socket member communicating with said bore for retaining a pin retaining means,
3. a spring assembly of tapered construction in the radial direction including a plurality of resilient leaf springs positioned together in said retaining slot to provide a spring loaded contact, each of said leaf springs being of a different width so that said leaf springs when nested together form said tapered spring assembly,
4. a retaining sleeve positioned on the socket to cover the retaining slot to limit deflection of said leaf springs to prevent deformation of said springs.

b. a pin member including a cylindrical pin portion adapted to engage the said spring assembly in said bore to provide firm mechanical and electrical contact between said pin and socket.

3,927,929
REJECTION-TYPE CARTRIDGE FUSE CLIP
Jordan F. Puetz, Milwaukee, Wis., assignor to Square D Company, Park Ridge, Ill.
Filed Oct. 3, 1974, Ser. No. 511,889
Int. Cl.² H01H 85/20, 85/24
U.S. Cl. 339—258 F **7 Claims**



1. A fuse clip for releasably engaging a cartridge fuse of the type having cylindrical ferrules at the opposite ends thereof with one of the ferrules having an annular groove comprising: a pair of spaced generally parallel flexible clamping arms providing a pair of spaced confronting curved contact surfaces for engaging opposite sides of the grooved ferrule and a wire-like member suspended between the arms, said member hav-

ing a curved portion positioned in the space between the pair of contact surfaces to be received in the groove when a grooved ferrule is positioned between the curved contact surfaces and providing an obstruction for preventing the insertion of any ferrule on a fuse not provided with an annular groove.

3,927,930

LIGHT POLARIZATION EMPLOYING MAGNETICALLY ORIENTED FERRITE SUSPENSIONS

Paul Goldberg, West Newton, and Pieter J. van Heerden, Concord, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 270,526, July 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 86,997, Nov. 4, 1970, abandoned. This application May 13, 1974, Ser. No. 469,373

Int. Cl.² G02F *1/09*

U.S. Cl. 350—151 **9 Claims**

1. Light polarization apparatus comprising:
a source of visible light;
a light polarizer exposed to said visible light and comprising finely divided ferrite particles suspended in an inert light-transmitting medium on a transparent support, said ferrite particles being magnetically oriented in said medium into line-shaped patterns which polarize said visible light transmitted through said suspension; and
means for detecting said transmitted polarized light.

6. A method of light polarization which comprises:
exposing to a source of visible light, a suspension of finely divided ferrite particles in an inert liquid medium on a transparent support;
subjecting said suspension to a magnetic field to orient said particles in said medium into line-shaped patterns which polarize said visible light transmitted through said suspension to form a light polarizer; and
detecting said transmitted polarized light by observing said light through conventional polarized light detection means.

3,927,931

VARIFOCAL OBJECTIVE

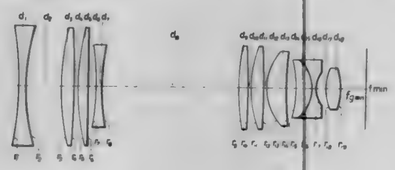
Trude Muszumanski, Vienna, Austria, assignor to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Dec. 28, 1973, Ser. No. 429,696

Claims priority, application Austria, Jan. 3, 1973, 45/73

Int. Cl.² G02B *15/00*

U.S. Cl. 350—184 **5 Claims**



1. A varifocal objective consisting of a fixed positive front component, an axially shiftable negative intermediate component and a fixed positive rear component; said front component consisting of a biconcave first lens, a biconvex second lens, and a nearly planoconvex third lens closely spaced from said second lens, said first lens being separated from said second lens by an air space close to half the axial length of said front component; said intermediate component being a single negative lens; said rear component consisting, from front to rear, of two biconvex positive lens members, a meniscus-shaped positive lens member, a biconcave lens member and another biconvex lens member; the individual focal lengths of said front component, said intermediate component and said rear component being approximately related in the ratio +5.5 : −2.5 : +1, the relative positioning of said components being such as to provide an image diagonal which is shorter than the separation of said first and second lenses.

3,927,932

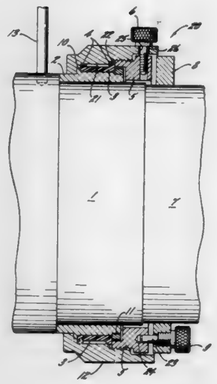
ZOOM LENS CONTROL DEVICE

Alfred S. Chrosziel, Orleanstrasse 5a, 8000 Munich 80, Germany

Filed Oct. 9, 1974, Ser. No. 513,402

Int. Cl.² G02B *15/14*

U.S. Cl. 350—187 **5 Claims**



1. For use with a zoom lens having a fixed element and a zoom cylinder rotatable relative to the fixed element for varying the effective focal length of the lens, a device comprising, in combination, a ring mounted for relative rotation on said zoom cylinder and defining an inner cylindrical surface, an annular element of deformable material having a low coefficient of friction fixed to said zoom cylinder and formed with a tongue in engagement with said cylinder surface, a pressure member threaded into said ring and having a surface bearing against said element, and means for floatingly locking said member to said fixed element to prevent relative rotation, whereby rotation of said ring, through said threaded pressure member, selectively deforms said element to vary the pressure of said tongue on said surface and thus establish a controllable resistance to relative rotation of the zoom cylinder and the fixed element.

3,927,933

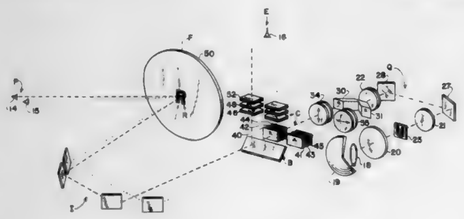
APPARATUS FOR OPTHALMOLOGICAL PRESCRIPTION READOUT

William E. Humphrey, Oakland, Calif., assignor to Humphrey Instruments, Inc., Berkeley, Calif.

Continuation of Ser. No. 385,784, Aug. 6, 1973, abandoned. This application June 26, 1974, Ser. No. 483,171

Int. Cl.² A61B *3/10*; G02B *13/08*

U.S. Cl. 351—17 **15 Claims**



1. An eye testing device providing for digital readout of astigmatic lens power and angle comprising: a patient viewing

station; an image to be viewed from a preselected location; first means for varying astigmatic lens power to said image, said first means varying said astigmatic power along first and second substantially perpendicular axes normal to a light path from said image; second means for varying the astigmatic lens power to said image, said second means for varying the astigmatic lens power occuring along third and fourth axes normal to the light path from said image, said third and fourth axes being positioned relative to said first and second axes so that first imaginary planes taken through said first and second axes including said light path do not coincide with second imaginary planes taken through said third and fourth axes including said light path; first signal generation means coupled to said first astigmatic lens means for generating a signal proportionate to the astigmatic lens power generated at said first astigmatic lens power means; second signal generation means coupled to said second astigmatic lens means for generating a signal proportionate to the astigmatic lens power generated at said second astigmatic lens means; means for emulating a Cartesian coordinate plot having first and second inputs connected to said first and second signal generation means emulating first and second axes of said Cartesian coordinate plot; output means for emulating a polar coordinate plot operatively connected to said means for emulating a Cartesian coordinate plot, said output means including a first output for resolving the power of the resultant polar coordinate of said polar coordinate plot and second output means for determining the resultant half angle of the resultant polar coordinate plot of said polar coordinate plot.

3,927,934

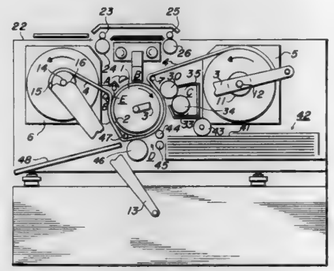
ELECTROSTATOGRAPHIC REPRODUCTION MACHINES

John Hayward Cook, Fawbridgeworth, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 11, 1974, Ser. No. 450,267

Int. Cl.² G03G *15/00*

U.S. Cl. 355—3 R **19 Claims**



1. An electrostatographic reproduction machine comprising:
a photoconductive member;
developer means arranged relative to said photoconductive member;
web means interposed between said photoconductive member and said developer means; and,
a sectional cassette having first and second portions movable relative to each other for supporting said web therein, said web being feedable from one of said cassette portions to the other of said cassette portions between said photoconductive member and said developer means, said photoconductive member being movable from an operative position to an inoperative position in which said web is insertable into said machine, said web being interposed between said photoconductive member and said developer means when said photoconductive member is returned to said operative position.

3,927,935

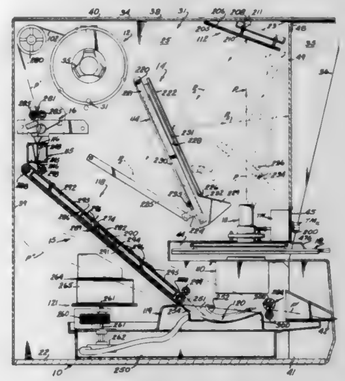
DRIVE SYSTEM WITH MECHANICAL TIME DELAY

Lawrence M. Freeman, 599 Ansley Court, NE., Atlanta, Ga. 30324, and Francis T. Arnold, 2379 Tristan Circle, NE., Atlanta, Ga. 30345

Division of Ser. No. 304,519, Nov. 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 146,114, May 24, 1971, Pat. No. 3,730,622. This application June 17, 1974, Ser. No. 479,887

Int. Cl.² G03G *15/00*

U.S. Cl. 355—14 **4 Claims**



1. In an apparatus for electrostatically copying images from an original document onto copy paper including a supply of copy paper, an image forming means for reproducing the image on the original document medium onto the copy paper, and conveying means for selectively transporting said copy paper from said supply of copy paper through the image forming means; the improvement comprising:
a flexible endless transfer member movable along a prescribed endless path;
drive means for moving said transfer member along said path;
driven member means positioned adjacent said prescribed path and operatively connected to said conveying means for driving same as said driven member is driven; and
a flexible engaging member carried by said endless transfer member, said engaging member having a predetermined length shorter than said endless transfer member, defining a gap between opposite ends thereof, and located at a predetermined position on said endless transfer member so that said engaging member drivingly engages said driven member to drive said conveying means as said endless transfer member moves said engaging member thereby and to not drive said conveying means as said gap moves thereby.

3,927,936

BLADE TYPE CLEANING DEVICE IN AN ELECTROPHOTOGRAPHIC COPYING MACHINE OF THE IMAGE TRANSFER TYPE

Shigehiro Komori; Hisashi Sakamaki, both of Yokohama; Hiroyuki Hattori, Mitaka; Toshihide Iida, Tokyo; Koichi Miyamoto, Tokyo, and Kazumi Umezawa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 2, 1973, Ser. No. 375,463

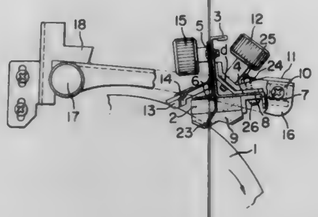
Claims priority, application Japan, July 18, 1972, 47-71860

Int. Cl.² G03G *21/00*

U.S. Cl. 355—15 **10 Claims**

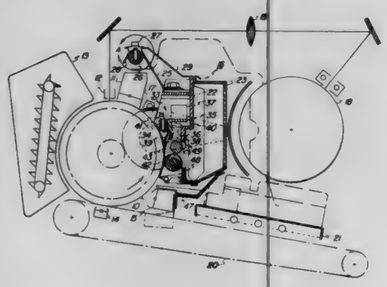
1. A blade type cleaning device in an electrophotographic copying machine of the image transfer type comprising:
a blade member having an end edge thereof making pressure-contact with the surface of a rotatable photosensitive medium to clean said surface;

blade mounting means;
support means for supporting said blade mounting means on the body of said copying machine;
said blade member being of high polymer material and having said pressure contact edge formed into substantially a right angle and contacting the photosensitive medium at a position thereof lower than the highest portion of the photosensitive member by an angle within the range of 0° to 40° in the direction of movement of said



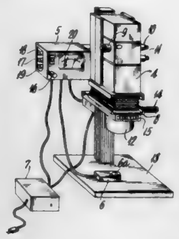
photosensitive medium, the angle of contact of said blade member being within a range of 25° to 40° with respect to that portion of the tangential plane containing a line of contact between the end edge and the surface of the photosensitive member, which extends downstream of the line of contact with respect to the direction of movement of the photosensitive medium, and the surface of the photosensitive medium and an end surface of said blade member forming a V-shaped groove.

3,927,937
CLEANING ASSEMBLY FOR AN ELECTROSTATOGRAPHIC DEVICE
Cornelis Jacobus de Keyzer, Venray, Netherlands, assignor to Rank Xerox Ltd., London, England
Filed Nov. 1, 1973, Ser. No. 411,951
Claims priority, application Netherlands, Nov. 10, 1972, 7215210
Int. Cl.² G03G *21/00*
U.S. Cl. 355—15 **12 Claims**



1. An apparatus for collecting particles removed from a movable image bearing surface of an electrostatographic apparatus comprising;
means for removing said particles from said movable image bearing surface;
a chamber for receiving said particles;
a first roller and a second roller mounted for rotation in rolling engagement with one another, with a nip being formed between said rollers, said rollers being positioned to collect said particles removed by said removing means and to transport said particles through said nip into said chamber.

3,927,938
COLOR BALANCE ADJUSTING DEVICE FOR COLOR PRINTING
Kiyoshi Seigenji, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Sept. 16, 1974, Ser. No. 506,068
Claims priority, application Japan, Sept. 24, 1973, 48-107113
Int. Cl.² G03B *27/78*; G01J *3/48*, *1/42*
U.S. Cl. 355—38 **22 Claims**

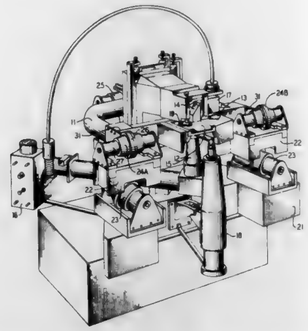


1. A color balance adjusting device for color printing, comprising:
optical means arranged to receive a color negative and including three density adjustable color compensating filters of yellow, magenta and cyan, and a light source;
photoelectric transducing means for measuring the light from said light source which has traversed a color negative inserted in said optical means, said photoelectric transducing means having three spectral sensitivites to red, green and blue;
selector means transferrable to three positions for selecting the spectral sensitivity of said photoelectric transducing means;
a first amplifying means having three amplification gain setting means alternatively selectable with the selection of respective spectral sensitivities of said photoelectric transducing means, at least two of said amplification gain setting means being adjustable, said first amplifying means having an amplification gain corresponding to the amplification gain setting means thus selected, and said first amplifying means being connected to said photoelectric transducing means; and
a first indicating means for indicating the output of said first amplifying means
whereby when said selector means are sequentially transferred, those of said amplification gain setting means, which are adjustable, are adjusted in a manner that the respective outputs of said first amplifying means in said first indicating means will be equal to each other for the respective amplification gain setting means, thereby storing the ratio of either two of the spectral energies of red, green and blue of the light from said light source, which light has been transmitted through the three color compensating filters of yellow, magenta and cyan, as well as through the color negative inserted in said optical means.

3,927,939
APPARATUS FOR REDUCING ROTATION COMPONENTS IN TABLE TRANSLATION
Kevin James Brady, Murray Hill; Victor Andrew Firtion, Secaucus; Leif Rongved, Summit, and Thomas Edward Saunders, Basking Ridge, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 27, 1973, Ser. No. 429,037
Int. Cl.² G03B *27/44*
U.S. Cl. 355—54 **10 Claims**

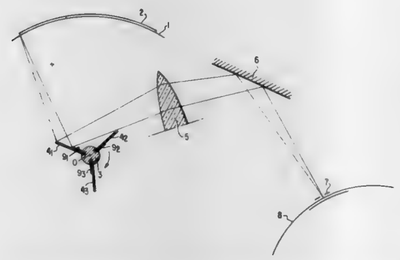
1. Apparatus for driving a table in a reciprocating manner with minimal rotational components comprising:

means for applying a motion to the table in an *x* direction;
means for constraining table motion comprising first and second air bearings arranged along parallel axes which extend in the *x* direction;



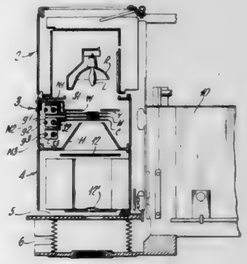
the distance separating the first and second bearings being longer than the distance through which the table moves;
means for supporting the table and for preventing its rotation comprising a third air bearing having an axis extending substantially in the *x* direction.

3,927,940
MANUSCRIPT SCANNING DEVICE FOR COPYING MACHINES AND THE LIKE
Hitoshi Kitahara, Yamato, and Jack C. Pei, Machida, both of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Jan. 17, 1974, Ser. No. 434,104
Claims priority, application Japan, Jan. 24, 1973, 48-9465
Int. Cl.² G03B *27/70*
U.S. Cl. 355—66 **1 Claim**



1. A scanning device for a copying machine and the like, said copying machine copying an original document and including a photosensitive material driven at a predetermined speed, said scanning device comprising
means for maintaining said original document stationary;
a light source for illuminating said stationary original document;
reflecting means for directing light from said stationary original document towards the photosensitive material;
a rotatable shaft having a predetermined axis;
said reflecting means including three reflectors radially mounted at equal angular intervals on said rotatable shaft for scanning the original document by progressively directing the light from the original document towards the photosensitive material, each said reflector being fixedly mounted on said rotatable shaft and extending therefrom along an outwardly directed radial, each said reflector being covered on its reflecting side by a non-reflecting portion extending from said rotatable shaft along said reflector, the length of each of said non-reflecting portions being such as to prevent reflections from its associated reflector onto the reflector in front of it;
driving means for driving said rotatable shaft in one direction so that said reflectors successively scan the original document; and
means for mounting said document and reflectors with respect to one another so that a light ray from any predetermined point on the stationary original document is incident to and reflected from said reflectors in a plane which is substantially perpendicular to said predetermined axis of the shaft.

3,927,941
PHOTOGRAPHIC ENLARGER MIXING BOX
Haruki Yamaguchi, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed June 28, 1974, Ser. No. 484,204
Claims priority, application Japan, July 3, 1973, 48-79411; Jan. 25, 1974, 49-11440; Jan. 28, 1974, 49-12152
Int. Cl.² G03B *27/76*
U.S. Cl. 355—71 **10 Claims**

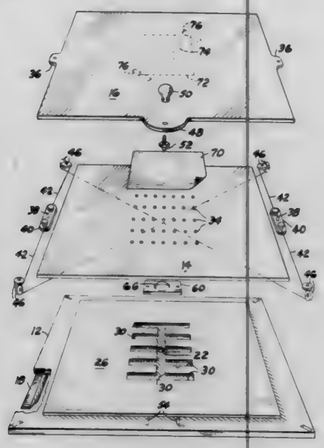


1. In a photographic enlarger having a light source and a filter box including filters and a mechanism for adjustment of said filters and a mixing box including an entrance for the light emerging from said filter box and a diffusing inside surface for mixing the light and an exit for mixed light, means for increasing the intensity of the light projected toward the peripheral area of said mixing box exit characterized in that said means for increasing the intensity of light comprises an inwardly facing reflecting surface disposed at the lower part of the inner periphery of said mixing box and said diffusing inside surface is disposed at the upper part of the inner periphery of said mixing box.

3,927,942
GRAPHICS MODIFIER
Thomas L. Byers, 3004 S.E. 21, Del City, Okla. 73115
Filed July 5, 1974, Ser. No. 486,146
Int. Cl.² G03B *27/10*
U.S. Cl. 355—84 **1 Claim**

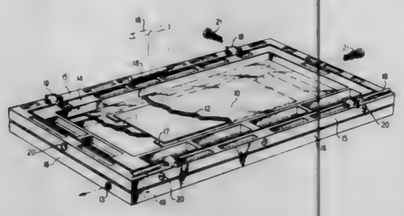
1. A graphics modifier, comprising:
a planar base having an upper surface and having an opening in its central portion for communication with a source of vacuum;
a light sensitive sheet contiguously overlying the opening and a portion of the upper surface of said base for preventing movement of said light sensitive sheet relative to said base;
at least one stationary panel interposed between said light sensitive sheet and said base,
said stationary panel having at least one aperture communicating with the opening in said base;
a transparent carriage panel overlying said base;
means supported by said base including a plurality of pulleys having strands entrained around the pulleys and connected with said carriage panel permitting movement of said carriage panel relative to said base and maintain-

ing the marginal edges of said carriage panel parallel with respect to adjacent marginal edges of said base;
a transparent film having at least one opaque symbol thereon interposed between said sensitive sheet and said carriage panel and secured to the latter; and,
guide means interconnecting with said base and said carriage panel for moving the latter in a predetermined pattern,



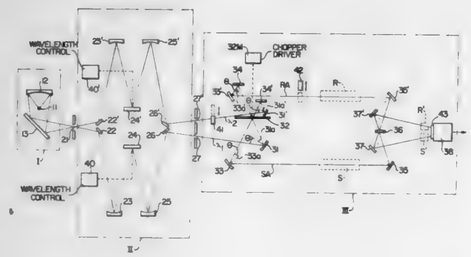
said guide means including upstanding template mounting pins on a marginal portion of the upper surface of said base,
a template having mounting pin receiving apertures,
said template having an opening in its central portion defined by inner wall surfaces describing a predetermined configuration,
a control knob secured to said carriage panel above said template, and,
a guide mandrel secured to said control knowb and projecting into the opening of said template.

3,927,943
MASK ALIGNMENT METHOD
Karl-Heinz Pohl, Boulder, and Jack Theodore Schierle, Broomfield, both of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 1, 1974, Ser. No. 484,762
Int. Cl.² G03B *27/02*
U.S. Cl. 355—132 **7 Claims**



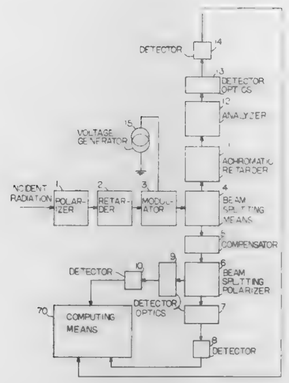
1. A method for aligning first and second masks on opposite sides of a substrate, such that the masks and substrate are mutually registered, comprising the steps of:
mounting the first and second masks respectively in first and second supports;
coupling the first and second supports with an alignment member;
adjusting and fixing the orientation of the first support with respect to the alignment member;
removing the alignment member and the second support;
coating opposite sides of a substrate with photosensitive material;
mounting the sensitized substrate in a third support;
coupling the first and third supports with said alignment member;
adjusting and fixing the orientation of the third support with respect to the alignment member;
fixing the substrate in contact with the first mask;
detaching the third support from the substrate and removing the third support and the alignment member; and
coupling the first and second supports with said alignment member such that the substrate is contained between the first and second masks, whereby the first and second masks are registered with each other and with the substrate.

3,927,944
SPECTROPHOTOMETER
Kenji Iwahashi, Osaka, and Hiroshi Yamamoto, Kyoto, both of Japan, assignors to Shimadzu Seisakusho Ltd., Kyoto, Japan
Filed Dec. 18, 1973, Ser. No. 425,732
Claims priority, application Japan, Dec. 28, 1972, 48-1649
Int. Cl.² G01J *3/42*
U.S. Cl. 356—97 **7 Claims**



1. A spectrophotometer comprising:
means for producing a monochromatic light beam;
optical means for causing said beam to alternately advance along a first and a second optical path which optically are symmetrical with, and substantially equivalent to, each other;
cell means disposed in each of said first and second optical paths; and
photoelectric means for receiving light transmitted through said cell means to produce a corresponding electrical signal, said monochromatic light producing means includes an exit slit and said optical means includes a reflecting chopper and a plurality of concave mirrors disposed along each of said first and second paths and arranged off-axis relative to the axis of each said optical paths so that the tangential image of the exit slit of said monochromatic light producing means is formed at the plane of said chopper with the sagittal image of said slit being axially displaced from said tangential image and the sagittal image of the pupil of said monochromatic light producing means coincides with said tangential image at said chopper plane, so that said beam has a well-defined cross-sectional area on said chopper plane.

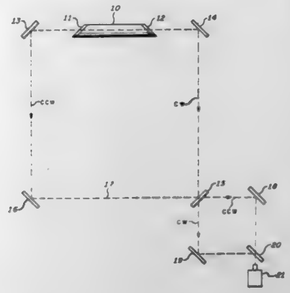
3,927,945
OPTICAL COHERENCE AND WAVELENGTH MEASUREMENT
Harry Eugene Bates, 240½ E. Ridgewood St., Orlando, Fla. 32801
Filed Oct. 29, 1974, Ser. No. 518,759
Int. Cl.² G01B *9/02*
U.S. Cl. 356—106 **11 Claims**



1. An apparatus for studying the coherence and mean wavelength of beams of optical radiation comprising:
a. optical means for polarizing the radiation;
b. means for dividing the resulting polarized beam into two independent orthogonally polarized components;
c. means for generating a phase retardation between the two independent orthogonally polarized components;
d. means for generating a time dependent modulation in the degree of phase retardation between the two independent orthogonally polarized components;
e. means for analyzing the elements of the coherency matrix of the resulting beam by measuring the intensity of the beam after passage through optical elements which project, in sequence or simultaneously, the beam into three independent states of polarization such that the three said intensities supply all information needed to calculate the three independent elements of the coherency matrix;
f. means for detecting the three independent intensities and thus converting them into electrical analogue signals; and
g. means for calculating the complex degree of coherence and mean wavelength from the three independent intensities and attendant modulation values.

3,927,946
RING LASER FREQUENCY BIASING MECHANISM
Robert E. McClure, Locust Valley, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Mar. 21, 1968, Ser. No. 714,891
Int. Cl.² H01S *3/10*
U.S. Cl. 356—106 LR **6 Claims**

1. A ring laser comprising
means forming a closed loop optical path comprising a mirror including a magnetically saturable member magnetized in a direction perpendicular to the plane of said optical path,
an active laser medium positioned in the closed loop path for propagating contra-directional light waves therein, said light waves being plane polarized parallel to the plane of said path,
means for extracting from the optical path a portion of the energy in each of the contra-directional waves, and



means for combining the extracted wave energies to produce an electrical signal having a frequency equal to the frequency difference between said extracted wave energies.

3,927,947
POLARIZATION ANALYSER DEVICE
Toshiyuki Kasai, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Nov. 7, 1974, Ser. No. 521,923
Claims priority, application Japan, Nov. 12, 1973, 48-126183
Int. Cl.² G01N *21/40*
U.S. Cl. 356—117 **7 Claims**

1. A reciprocally movable polarization analyser device comprising a light source (S), a condenser lens (L1) for forming the light from said source into a parallel light beam, a monochrome filter (F) for forming the light from said lens into a predetermined wavelength of light, a polarizer (P) for forming the light from said filter into linearly polarized light, a light modulator (X1) disposed with its principal axial azimuth maintained at 45° with respect to the axial azimuth of said polarizer (reference azimuth), an oscillator (KD1) for applying a predetermined frequency of alternating current to said light modulator to thereby impart, in cooperation with said modulator, a phase difference modulation to the light as it passed therethrough, a first ¼ wavelength plate (Q1) disposed subsequently to said light modulator with its axial azimuth maintained at said reference azimuth, a ½ wavelength plate (H) disposed subsequently to said first ¼ wavelength plate and for rotation about the optical axis, a second ¼ wavelength plate (Q2) disposed subsequently to said ½ wavelength plate with its axial azimuth maintained at 45° with respect to said reference azimuth, a sample object (0) to be measured disposed perpendicularly to the optical axis with its azimuth maintained at 45° with respect to said reference azimuth, a mirror (M2) for reflecting the light once passed through said sample (0) to cause said light to travel back along the same optical path, a half-mirror (M1) disposed between said monochrome filter

and said polarizer for reflecting the light reflected by said mirror (M2) and passed through said polarizer (P), photoelectric converter means (PM) for receiving the light from said half-mirror and converting the same into an electrical signal, a servo-motor (M) for rotating said ½ wavelength plate (H), tuning means (PS1, SA) for deriving, from said electrical signal from said photoelectric converter means, a signal of the same frequency as the frequency component of the phase difference modulation by said light modulator and applying said signal to said servo-motor, and phase difference display means (PT, DS1) for detecting the amount of revolution of said servo-motor and displaying the value of the phase difference (Δ) of said sample from said amount of revolution.

3,927,948

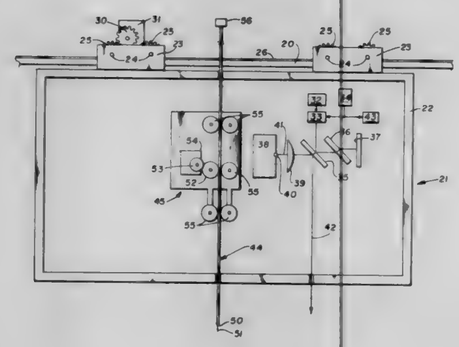
APPARATUS FOR PRODUCING DATA INDICATIVE OF THE GEOMETRIC SHAPE AND ARRANGEMENT OF THE VARIOUS COMPONENTS OF A MODEL

Leonard C. Cox, 8907 Bonhomme, Houston, Tex. 77036, and Joe B. Wyatt, 6111 Yarwell, Houston, Tex. 77035

Continuation of Ser. No. 263,129, June 15, 1972, abandoned. This application Dec. 3, 1973, Ser. No. 420,760

Int. Cl.² G01B *11/00, 9/02*

U.S. Cl. 356—167 **6 Claims**



1. An apparatus for producing data indicative of the geometric shape and arrangement of the various components of an irregular shaped model, comprising:

a receiving means for supporting the model;

a scanning means; and

means for moving the scanning means through substantially all of a selected area of a plane, which plane is positioned in a selected spaced relationship with the receiving means supporting the model;

the scanning means including:

light modulation means for determining within a selected range of accuracy the distance between the scanning means and selected points on the surface of the model exposed to the scanning means as the scanning means through the selected area of the plane and for generating an electrical signal representative thereof. and

interferometer means for determining, within a selected magnitude of distance, changes in the distance between the scanning means and selected points on the surface of the model as the scanning means moves through the selected area of the plane and for generating an electrical signal representative thereof;

the light modulation means and the interferometer means coacting with the moving means to produce output data indicative of the surface of the model exposed to the scanning means in a three-dimensional coordinate system.

3,927,949

PLASTIC HINGES

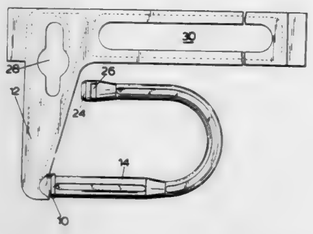
Colin W. F. Clinch, Woodley, England, assignor to ITW Limited, Slough, England

Filed Sept. 18, 1974, Ser. No. 507,027

Claims priority, application United Kingdom, Sept. 17, 1973, 43500/73

Int. Cl.² B42F *3/02*

U.S. Cl. 402—22 **2 Claims**



1. A loose-leaf binder formed from a one-piece plastic molding including a base portion, at least one bracket arm extending outwardly substantially perpendicular from and being coplanar with said base portion and including an aperture with a restricted throat positioned at the juncture of said base portion and said bracket arm, resilient integral arch means extending upwardly from said at least one bracket arm adjacent its free extremity removed from said base portion, said arch means being deformable and at least initially having a generally U-shaped configuration with one end of the arch means permanently affixed to said bracket arm at said free extremity by a web forming a resilient hinge means, said bracket arm adjacent an edge thereof having a recess facing toward the web, and a lip bounding the recess at one side and directed towards the web, and said one end of said arch means including a rigid portion having a rib directed away from the web, the relative distances of the lip and rib from the web being such that relative rotation of said arch means and said bracket arm in one direction pivoted about said web will cause the rib and lip to engage each other and continuation of the rotation in that direction will cause the rib and lip to ride past each other until the rib lies in the recess and below said lip in retained relationship, said arch means formed having cooperative means at its opposite extremity for telescopic introduction into said aperture and adapted to cooperate with said restricted throat for releasable fixment therewith, said aperture throat being in the form of a keyhole slot and said cooperative means at the free end of the arch means being slotted and adapted to have said slotted end moved into the restricted throat of the keyhole slot, said arch means being initially molded in a flat position generally parallel to said base portion and co-planar with the base portion and said bracket arm and is adapted to be rotatably moved into a position by said hinge means perpendicular to a plane passing through said base portion and bracket arm and locked in place by said rib and lip located on the bracket arm and the arch means at adjacent ends thereof.

3,927,950

HALF-LAPPED TUBE JOINT

John R. Herrmann, Tustin, and Robert L. Alexander, Newport Beach, both of Calif., assignors to G.S. Beckwith Gilbert, Greenwich, Conn.

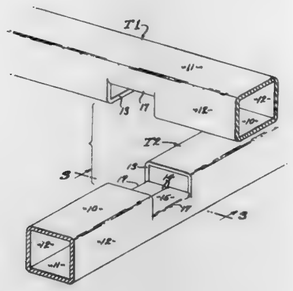
Filed Jan. 24, 1975, Ser. No. 543,825

Int. Cl.² F16B *7/04;* **F16D** *1/00;* **B25G** *3/00*

U.S. Cl. 403—346 **9 Claims**

1. A notch in an elongated hollow member having a planar top wall and spaced planar and parallel side walls depending from the top wall, portions of the top wall and spaced side walls being displaced along transverse and vertically disposed

shear lines respectively, the center of the top wall being folded downwardly, the displaced side wall portions being folded inwardly to a plane disposed beneath and parallel to the remaining top wall, and the displaced top wall portion being disposed in the form of a fold depending from the notch bottom established by the two displaced and juxtaposed side wall portions.



3,927,951

WATER TURBINE

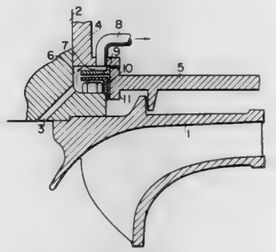
Yoshiyasu Mitsuhashi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 27, 1974, Ser. No. 500,878

Claims priority, application Japan, Aug. 28, 1973, 48-100793

Int. Cl.² F16J *15/50;* **F04D** *9/00*

U.S. Cl. 415—110 **4 Claims**



1. In a water turbine of the type wherein when the turbine is started to operate as a pump, pressurized air is introduced into the turbine chamber, and then the air therein is discharged through a conduit provided for the shaft of the turbine, through an annular chamber about said shaft and a discharge pipe opening into said annular chamber, the improvement which comprises an annular member for dividing said annular chamber into upper and lower sections, means for securing the outer periphery of said annular member to the outer side wall of said annular chamber, means for connecting said discharge pipe to the upper section, and means for defining a gap between the outer periphery of said shaft and the inner periphery of said annular member for permitting free flow of the air, whereby when said shaft is rotated the water entering into the lower section is forced radially outwardly.

3,927,952

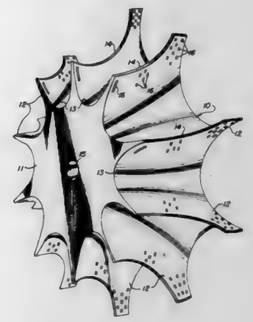
COOLED TURBINE COMPONENTS AND METHOD OF MAKING THE SAME

Robert F. Kirby, Scottsdale, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Nov. 20, 1972, Ser. No. 308,188

Int. Cl.² F01D *5/18*

U.S. Cl. 416—95 **3 Claims**



1. A turbine wheel of the type having a hub portion and thin blades projecting radially therefrom, said blades and said hub portion defining grooves between said blades through which hot gases flow after impinging on the sides of the blades, said turbine wheel comprising:

a. a plurality of thin flat sheets, each of said sheets having a central portion corresponding to the hub of the turbine wheel and a plurality of projections extending outwardly from said central portion, said projections being substantially equally spaced around the circumference of said central portion and corresponding to said blades;

b. said sheets each having a central opening;

c. said sheets being stacked together in fact-to-face relation with said central opening and said radial projections of each sheet being aligned with the projections and central opening of adjacent sheets;

d. bonding means between each one of said adjacent sheets for securing said sheets together over the entire surface of engagement between said sheets to form a unitary turbine wheel;

e. at least one pair of said sheets having slots therein, one of said pair of sheets having a slot extending from said central opening into one of said radial projections of said one sheet and the other of said pair of sheets having a slot inclined with respect to a radius of said wheel extending from the edge of said other sheet across said projection and intersecting said slot in said one sheet, whereby said pair of slots provides fluid communication between said central opening and the channel between adjacent blades of said turbine wheel.

3,927,953

GETTER DEVICE AND METHOD OF USE

Mario Zucchinelli, Milan, Italy, assignor to S.A.E.S. Getters S.p.A., Milan, Italy

Filed May 15, 1974, Ser. No. 470,183

Claims priority, application Italy, May 18, 1973, 24291/73

Int. Cl.² F04B *37/02*

U.S. Cl. 417—48 **2 Claims**

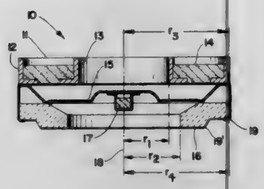
1. A getter assembly comprising:

A. an annular container,

B. a getter metal vapor releasing material within the container,

C. an annular support attached to the bottom of the container, said annular support having an inner radius and an outer radius

1. said annular support being of a material of low thermal conductivity,
2. said annular support being of a material of high resistance to heating by induction currents,



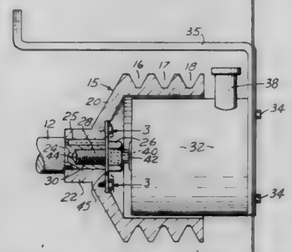
3. wherein the inner radius of the annular support is greater than the inner radius of the annular container,
4. wherein the outer radius of the annular support is substantially equal to the outer radius of the annular container.

3,927,954

POWER TAKE-OFF FOR POWER STEERING PUMP

Fred W. Walker, 262 W. Chaparral St., Rialto, Calif. 92370

Continuation-in-part of Ser. No. 377,715, Sept. 7, 1973, abandoned. This application Sept. 20, 1974, Ser. No. 507,940
Int. Cl.² F04B *17/00*
U.S. Cl. 417—360 **9 Claims**



1. In an automotive vehicle wherein a power shaft extending from the prime mover of the vehicle actuates a power steering pump together with a plurality of other components, the improvement for saving space, promoting safety, reducing the load on the prive mover, and reducing cost, comprising:
   said power steering pump extending axially from the end of the power shaft and being close coupled therewith for actuation thereby;
   means mounted on the vehicle in supporting engagement with the pump; and
   an assembly of pulley elements for driving said plurality of components by means of belts;
   said pulley elements being united with each other and being united with said power shaft axially thereof for actuation thereby;
   said pulley elements being hollow and enclosing at least a substantial part of said pump.

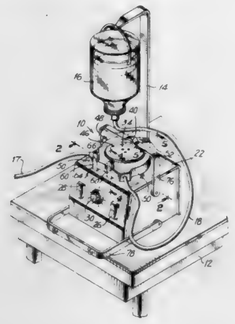
3,927,955

MEDICAL CASSETTE PUMP

Dominic Spinosa, Wantagh, and John Varga, Bayville, both of N.Y., assignors to East/West Medical Products, Inc., Hauppauge, N.Y.

Continuation-in-part of Ser. No. 174,019, Aug. 23, 1971, abandoned. This application July 9, 1973, Ser. No. 377,677
Int. Cl.² F04B *43/08, 43/12, 45/26*
U.S. Cl. 417—477 **33 Claims**

1. A medical cassette pump comprising in combination a driving means; a fluid-pumping assembly operatively coupled to the drive means for rotation thereby about a principal axis, said fluid-pumping assembly including a pumping means rotatable about the principal axis; cassette means movable between a first position towards and a second position away from the pumping means; means defining at least one wall of a channel for reception of a fluid-carrying tube; the wall restraining the tube from movement away from the pumping means and retaining the tube in a path corresponding to the rotational path of the pumping means in close proximity to the pumping means in a manner such that the tube is collapsed by the pumping means against the wall; the cassette means in the first position retaining the fluid-carrying tube in the channel and in



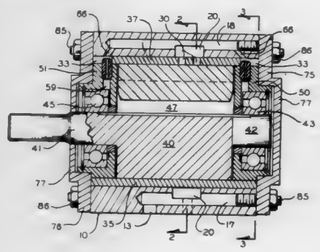
a position to be collapsed by the pumping means, and in the second position releasing the tube from such engagement to permit insertion of the tube in the channel or removal of the tube from the channel, and the pumping means in said first position of the cassette means being always in engagement with the tube at some portion along the tube for pumping of fluid through the tube upon rotation of the drive means; said cassette means comprising a pair of cassette half-members each describing an approximately 180° arc and pivotably mounted at one end in a manner such that, when brought together, they extend through an approximately 360° arc about the fluid-pumping drive assembly and having an inside wall defining one wall of the channel.

3,927,956

FLUID ACTUATED MOTOR

Harley E. Linthicum, Springfield, Ohio, assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 30, 1974, Ser. No. 474,624
Int. Cl.² F01C *21/04*
U.S. Cl. 418—100 **3 Claims**



1. In a fluid operated rotary motor of the type wherein a rotor having radially slidable vanes is eccentrically mounted in a cylindrical bore of a casing, end caps having eccentrically located recesses mounted in each end of the cylindrical bore, bearings mounted in the recesses of the end caps and supporting the rotor, end plates mounted on each end of the casing,

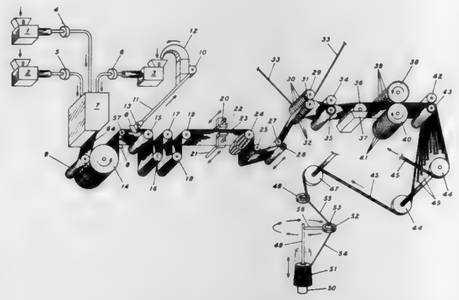
fluid supply ports through the casing in communication with the interior of the cylindrical bore and an exhaust port also communicating with the insides of the cylindrical bore, the improvement comprising:
   means in said end caps to allow passage of fluid containing lubricant from the cylindrical bore to the bearings; and
   means to allow passage of the fluid from the bearings to the exhaust port whereby lubricant in the fluid supply is deposited on the bearings and the pressure is equalized on both sides of the end caps.

3,927,957

APPARATUS FOR MAKING YARN FROM POLYMER FILM

Leonard Chill, Waynesboro, Va.; Gordon B. Johnson, Sausalito, and Carl S. Weisner, Pleasant Hill, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 317,502, Dec. 21, 1972, Pat. No. 3,807,918. This application Feb. 11, 1974, Ser. No. 441,700
Int. Cl.² B29D *7/02, 7/20*; B29F *3/12*
U.S. Cl. 425—131.1 **2 Claims**



1. Apparatus for forming yarn from thermoplastic polymers comprising die means for extruding a continuous sheet of multicolored film from thermoplastic polymer stock, orientation means for orienting said continuous sheet of multicolored film in the longitudinal direction, cutting means for cutting said continuous sheet of multicolored film along the longitudinal direction to form strips of film of fixed widths, oscillating means for oscillating said continuous sheet of multicolored film transverse to the longitudinal direction upstream of said cutting means, means for fibrillating said strips of film, means for twisting said fibrillated strips of film to form yarn and means for collecting said yarn.

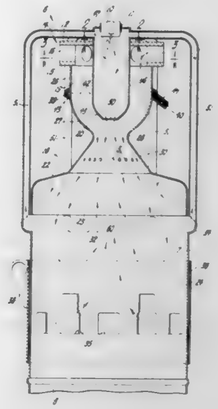
3,927,958

RECIRCULATING COMBUSTION APPARATUS

Ronald E. Quinn, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 29, 1974, Ser. No. 518,518
Int. Cl.² F23M *9/06*
U.S. Cl. 431—116 **3 Claims**

1. A combustion liner for a gas turbine engine combustion apparatus or the like having an upstream end and a downstream outlet end and including wall means defining, in flow sequence from the upstream end of the liner, a fuel vaporizing prechamber, a convergent-divergent passage having a throat, a reaction chamber, and a dilution section, means for admitting fuel and combustion air into the prechamber and thence through the convergent-divergent passage into the reaction chamber, and means for admitting dilution air into the dilution section, wherein the improvement comprises a manifold on the reaction chamber wall to receive combustion products, a centerbody extending axially of the prechamber and having an outlet into a region of relatively low static pressure upstream of the throat in the convergent-divergent passage, and recirculation conduit means connecting the manifold to the centerbody, so that combustion products are recirculated from the



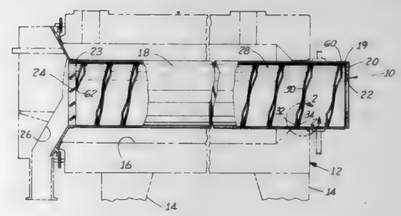
reaction zone through the manifold, conduit means, centerbody, and convergent-divergent passage into the reaction zone.

3,927,959

FREE FLOATING FLIGHT IN A RETORT AND METHOD

Harold E. Mescher, Pico Rivera, and Walter E. Heyer, Los Alamitos, both of Calif., assignors to Pacific Scientific Company, City of Commerce, Calif.

Filed Sept. 6, 1974, Ser. No. 503,731
Int. Cl.² F27D *1/16*; F27B *7/14*
U.S. Cl. 432—3 **13 Claims**



1. A heat treatment device for treating workpieces, and device comprising:
   a heating surface;
   guide means located on said heating surface for directing said workpieces along said heating surface; and
   means connected to and extending away from said heating surface adjacent said guide means for maintaining the location of said guide means on said heating surface, said maintaining means allowing said guide means to move relative and substantially normal to said heating surface so that any temperature differential between said heating surface and said guide means will not cause thermal stress cracks in said heating surface and said guide means adjacent their interface.

11. A method of placing a helical flight on the interior surface of a cylindrical heat treating retort, said method comprising the step of positioning said helical flight on said surface by a pair of spaced helical strips secured on the surface in a manner to confine the flight while allowing the flight to move relative to said retort.

3,927,960
ROTARY KILN

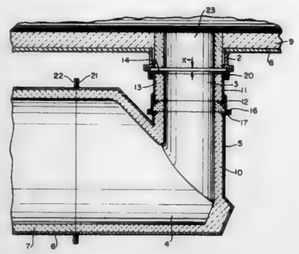
William Christian Endersen, Copenhagen-Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Mar. 27, 1972, Ser. No. 238,323
Claims priority, application United Kingdom, Apr. 19, 1971, 9808/71
Int. Cl.² F27D *15/02*; F27B *7/38*; F16L *21/00*
U.S. Cl. 432—80 9 Claims

1. A rotary kiln having at least one planetary cooler tube in communicating relation with an outlet portion thereof and a junction piece connecting the outlet portion of the kiln with the inlet end portion of each planetary cooler tube, comprising:

a. a first shell section having open end portions, a first end portion being connected to the inlet end portion of the cooler tube; and

b. a second shell section having a first inner member communicating with a second outer member, at least a portion of the second outer member being in overlapping relation with said first inner member, said first inner member being tack-welded thereto, said first inner member further being in sealed communicating spaced relation with the outlet portion of the rotary kiln and said first and second members being in communicating relation with the second end portion of said first shell section, said members being further secured to each other by at least one fully welded joinder portion extending over at least a portion of the tack welded portion and in superposed relation therewith to form a communicating section between the rotary kiln and the first shell section, while the spaced relation between the first inner member and the outlet portion of the rotary kiln permits freedom of movement of the inlet portion of the inner member with respect to the outlet portion of the rotary kiln.



3,927,961
DYEING AND MONOMER POLYMERIZATION IN PROTEIN FIBER WITH METAL CATALYST AND TRICHLOROACETIC ACID OR SALT THEREOF

William Stanley Simpson, Christchurch, New Zealand, assignor to Wool Research Organisation of New Zealand, Inc., Christchurch, New Zealand

Filed July 6, 1972, Ser. No. 269,398
Claims priority, application United Kingdom, July 13, 1971, 32834/71; July 13, 1971, 32835/71
Int. Cl.² D06P *5/00*
U.S. Cl. 8—17 9 Claims

1. A combined dyeing and polymer deposition process for protein fibers which comprises the steps of:

applying to the fibers a dyestuff, at least one polymerizable olefinic monomer of the formula:

$$CH_2 = CR_5R_4$$

wherein R_4 represents hydrogen, methyl or ethyl and R_5 represents halogen, cyano, phenyl, $-CONH_2$ or $-COOR_6$ wherein R_6 represents an alkyl or alkenyl group of 1 to 3 carbon atoms,

and a catalyst comprising a complex compound of at least one of the metals copper, iron, chromium, manganese, vanadium, cobalt, nickel or aluminum and trihaloacetic acid or a salt thereof,

and causing said monomer to polymerize within said fibers.

3,927,962
NON-DISCOLORING FLAME RESISTANT WOOL

Mendel Friedman, Moraga; John F. Ash, El Cerrito, both of Calif., and Willie Fong, deceased, late of Richmond, Calif. (by Yukiye Fong, executrix), assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed July 17, 1974, Ser. No. 489,312
Int. Cl.² D06M *3/02*, *13/00*; D06P *5/00*, *7/00*
U.S. Cl. 8—17 5 Claims

1. A process for modifying wool to make it flame resistant, which comprises:

a. contacting the wool with an aqueous dispersion containing about 2 to 12%, owf, of a compound selected from the group consisting of tetrabromophthalic anhydride, tetrabromophthalic acid, tetrachlorophthalic anhydride, and tetrachlorophthalic acid, at about 100° C., and

b. rinsing the wool and drying it.

5. A process for concomitantly dyeing wool and for modifying wool to make it flame resistant, which comprises:

a. providing an aqueous acidified dyebath containing a wool dye,

b. entering the wool into the dyebath and heating it to the boiling point,

c. adding tetrabromophthalic acid in the amount of about 2 to 12%, based on the weight of wool, to the dyebath, and continuing boiling until the wool adsorbs about 2 to 8%, based on the weight of wool, of tetrabromophthalic acid, and

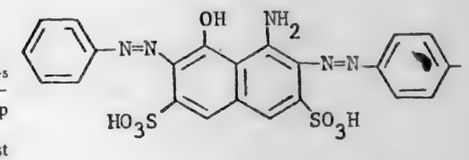
d. removing the treated wool from the dyebath, then rinsing and drying it.

3,927,963
HYDROSOLUBLE TRISAZOIC DYES, MIXTURES THEREOF, AND THE USE THEREOF

Sisto Papa, Milan; Ugo Moiso, Saronno (Varese), and Renzo Ferrario, Ceriano Laghetto, (Milan), all of Italy, assignors to Aziende Colori Nazionali Affini ACNA S.p.A., Milan, Italy

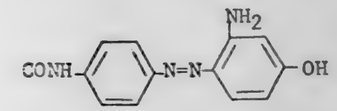
Filed Apr. 1, 1974, Ser. No. 456,948
Claims priority, application Italy, Mar. 27, 1973, 22204/73
Int. Cl.² C09B *27/00*, *45/48*, *31/16*, *33/18*
U.S. Cl. 8—26 4 Claims

1. A mixture of hydrosoluble trisazo-dyes consisting of from 35–60% of a compound of the formula:



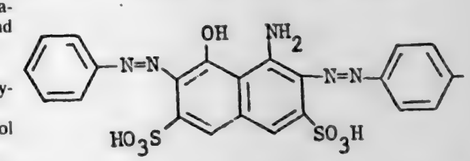
(I),

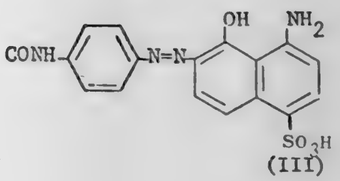
from 35–60% of a compound of the formula:



(II)

and from 5–15% of a compound of the formula:





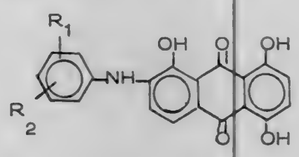
(III)

3,927,964
6-ANILINO-1,4,5-TRIHYDROXYANTHRAQUINONES

Raouf Botros, Beech Creek, Pa., assignor to American Aniline Products, Inc., Lock Haven, Pa.

Filed June 28, 1973, Ser. No. 374,772
Int. Cl.² C09B 1/00, 5/62; D06P 1/20, 5/00
U.S. Cl. 8—39 4 Claims

1. An aromatic polyester textile material dyed with a compound of the formula



each of R_1 and R_2 is independently hydrogen, chlorine, bromine, alkyl having from 1–8 carbon atoms, alkoxy having from 1–8 carbon atoms, hydroxy(lower alkyl), N-lower alkylamino, N,N-di-lower alkylamino, lower alkoxy lower alkyl, lower alkoxy lower alkoxy and acylamido having up to 7 carbon atoms.

3,927,965
DIRECT AND ACID DYES WITH THE SAME DYE CHLORINE DECOLORED AS LEVELLER

Longinas Lasas, Los Angeles, Calif., assignor to United States Gypsum Company, Chicago, Ill.

Division of Ser. No. 271,967, July 14, 1972, Pat. No. 3,807,947. This application Dec. 17, 1973, Ser. No. 425,368
Int. Cl.² D06P 1/620
U.S. Cl. 8—89 3 Claims

1. A novel dyestuff solution comprising an aqueous suspension including (1) dyestuff selected from the group consisting essentially of acid and direct dyes and (2) a leveling dyeing assistant obtained from halogen decolorization of said dyestuff.

3,927,966
PROCESS OF PRODUCING A FATLIQUORING CHROME TANNING AGENT, COMPOSITION CONTAINING SAME AND METHOD OF USING SAME

Rolf Leberfinger, Holzgerlingen, and Heinz Matschkal, Gaertringen, both of, assignors to Schill & Seilacher, Boeblingen, Germany

Filed Nov. 6, 1974, Ser. No. 521,509
Claims priority, application Germany, Nov. 7, 1973, 2355503
Int. Cl.² C14C 5/00, 3/04, 3/06
U.S. Cl. 8—94.2 18 Claims

1. In a process of producing a fatliquoring chrome-tanning agent, the steps which comprise
a. heating an aqueous chromium sulfate solution in mixture with an aqueous solution of an alkyl sulfonate, the alkyl residue of which contains at least 8 carbon atoms, and
b. atomizing and spray-drying said mixture of solutions to a powder.

12. A fatliquoring chrome-tanning agent in powder form, said agent containing
between about 93.0% and about 53.0% of chromium sulfate, corresponding to about 24% to about 14.0% of chromium trioxide and
between about 6.0% and about 23.0% of an alkyl sulfonate, the alkyl moiety of said alkyl sulfonate having at least 8 carbon atoms.

3,927,967
PHOTOACTIVATED BLEACHING PROCESS AND COMPOSITION

Peter Roscoe Hartley Speakman, Newcastle-Upon-Tyne, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 259,326, June 2, 1972, abandoned. This application July 6, 1973, Ser. No. 377,169
Claims priority, application United Kingdom, July 10, 1972, 32222/72
Int. Cl.² D06L 3/02, 3/04, 3/00, 3/06
U.S. Cl. 8—103 18 Claims

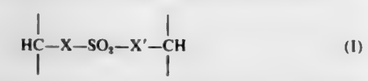
1. A process for removing stains from textiles which comprises
a. treating the textiles in the presence of oxygen with an aqueous liquor containing
i. a concentration of from 0.2 to 2.0 grams per liter of organic detergent;
ii. a concentration of from 0.2 to 2.0 grams per liter of alkaline detergency builder; and
iii. a concentration of from 1 to 50 mg. per liter of a photoactivator selected from the group consisting of eosin, rose bengal, fluoroscein, chlorophyll, metal-free porphyrin, sulfonated phthalocyanine, and sulfonated zinc phthalocyanine; and
b. simultaneously irradiating the textiles with visible light which includes light of wavelength 640 nm and higher.

3,927,968
PROCESS FOR PRODUCING AN ION-EXCHANGEABLE AND SOLVENT-RESISTANT FILAMENTARY STRUCTURE

Hideaki Suzuki, Machida; Haruo Togawa, Koganei; Akira Omori, Sagamihara, and Naoki Yamamoto, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

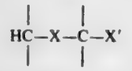
Filed May 8, 1973, Ser. No. 358,327
Claims priority, application Japan, May 10, 1972, 47-45346
Int. Cl.² D06M 11/02
U.S. Cl. 8—115.5 5 Claims

1. A method for producing a solvent-resistant filamentary structure, which comprises reacting a filamentary structure comprising at least 20 percent by weight of aromatic nuclear structural units derived from an aromatic monovinyl monomer with chlorosulfonic acid to form a cross-linked structure in which 2 to 40 out of 100 of the aromatic nuclear structural units are cross-linked by crosslinkages of the formula (I)

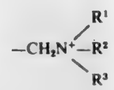


(I)

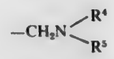
wherein X and X′ are the same or different and each represent aromatic nuclear structural units derived from an aromatic monovinyl monomer and which does not contain crosslinkages expressed by the following formula



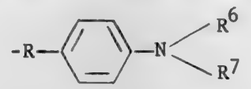
wherein X is the same as defined with respect to (I) and X′ is the same as defined above or a hydrogen atom,
reacting the cross-linked filamentary structure with a reagent capable of introducing an ion-exchangeable group selected from the group consisting of a sulfonic acid group, —COR.-COOH wherein R is an alkylene group containing 1 to 4 carbon atoms or a phenylene group, a carboxyl group, an alkali metal salt of any of the above-cited groups,



wherein R^1, R^2 and R^3 are the same or different and each represent an alkyl group having 1 to 4 carbon atoms, a phenyl group or β-hydroxyethyl group,



wherein R^4 and R^5 are the same or different, and each represent a hydrogen atom, an alkyl group containing 1 to 4 carbon atoms, a phenyl group or a β-hydroxyethyl group,



wherein R^6 and R^7 are the same or different and each represent a hydrogen atom or a methyl group, $—CH_2—NHCH_2CH_2)_n NH_2$ wherein n is an integer of 1 to 5, and $—CH_2NH—CH_2)_m NH_2$ wherein m is 1 or an integer of 3 to 6,
into a part or whole of the remainder of the aromatic nuclear structural units.

3,927,969
INSECTPROOFING WOOL WITH ZINC ACETATE

Nathan H. Koenig, Albany, and Mendel Friedman, Moraga, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sept. 24, 1973, Ser. No. 399,873
Int. Cl.² D06M 3/02, 13/00
U.S. Cl. 8—128 R 4 Claims

1. A process for preparing modified wool which has increased resistance to insects, which comprises reacting wool with zinc acetate in the presence of N,N-dimethylformamide at a temperature of about from 105° to 120° C. until there is attained a weight increase by the wool of about from 5 to 20%.

3,927,970
LIQUID LAUNDRY BUILDER CONTAINING ALKALI HYDROXIDE AND BORAX

John D. Ciko, Allen Park, and John J. Cramer, Wyandotte, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

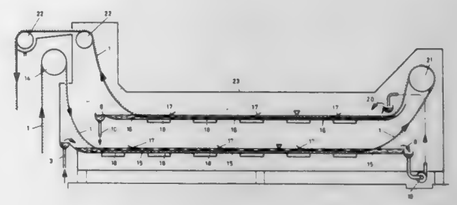
Filed Nov. 12, 1973, Ser. No. 415,238
Int. Cl.² C11D 9/16, 7/06, 7/10
U.S. Cl. 8—137 9 Claims

1. In a method of cleaning fabrics with an aqueous solution containing alkali metal hydroxide builder selected from the group consisting of sodium hydroxide and potassium hydroxide, the improvement wherein borax is included in said aqueous solution in an amount from about 5 to 15 weight percent of the amount of said hydroxide present, thereby forming in situ alkali metal mataborate in an amount from about 6.5 to 19.5 weight percent of the amount of said hydroxide initially present.

3,927,971
PROCESS FOR THE CONTINUOUS FINISHING TREATMENT OF TEXTILE WEB MATERIALS

Christian August Meier-Windhorst, 2101 Lindhorst uber Hamburg-Harburg, Germany

Continuation-in-part of Ser. No. 136,275, March 16, 1971, abandoned, which is a division of Ser. No. 845,677, July 23, 1969, abandoned. This application Mar. 4, 1974, Ser. No. 448,119
Int. Cl.² D06B 3/06
U.S. Cl. 8—151.2 15 Claims

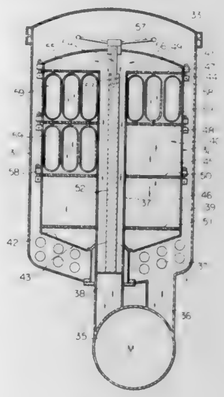


1. Process for the continuous liquid treatment of wide webs of textile material wherein the textile web is contacted with a treating liquid which remains in a stable chemical and physical state during the process, which comprises preheating said treating liquid to treatment temperature, applying to each unit length of a moving textile web said treating liquid which travels in the same direction as the web, the rate of movement of web and liquid being such that substantially complete absorption of the treating agent by said textile web takes place during the treating operation.

3,927,972
PROCESS FOR TREATING FIBROUS ARTICLES WITH AN AQUEOUS TREATING LIQUID

Sadao Kawamura; Akira Hayakawa, and Harutoshi Kurokawa, all of Kyoto, Japan, assignors to Toray Industries, Inc., Japan

Division of Ser. No. 234,152, March 13, 1972, abandoned. This application Mar. 11, 1974, Ser. No. 450,109
Claims priority, application Japan, Mar. 15, 1971, 46-13678
Int. Cl.² D06B 5/16, 21/00
U.S. Cl. 8—155.2 12 Claims



1. A process for treating fibrous articles consisting of bulky yarns with an aqueous treating liquid, comprising:
a. providing a stratiform treating chamber having a thickness L_1 defined by a pair of horizontally extending partitions having apertures therethrough to permit the flow of

treating liquids through the treating chamber along the thickness dimension;

b. providing fibrous articles, consisting of bulky yarns, to be treated;

c. charging the treating chamber with the fibrous articles to form a stratum of fibrous articles having an uncompressed thickness in the atmosphere less than L_1, an apparent density in the atmosphere of about 0.09 to 0.16 g/cm³, and an uncompressed thickness L_2 in the treating liquid, where

$$L_1 < 1.5L_2,$$

in order to effect a resistance to the flow of the treating liquid through the treating chamber of about 0.2 to 0.5 Kg/cm²; and

d. flowing the treating liquid through the treating chamber in alternate directions along the thickness dimension at a flow rate of about 10 to 30 litres/min per Kg of fibrous articles within the treating chamber for a period of time sufficient to change the apparent density of the stratum of fibrous articles according to the relationship

$$\rho_n\rho_o = 1.0 \text{ to } (\alpha+\beta/\rho_o)$$

where ρn is the apparent density of the stratum of fibrous articles in the atmosphere after treatment, ρo is the initial apparent density of the stratum of fibrous articles in the atmosphere before treatment, α is about 0.62 to 0.63 and β is about 80 to 90.

3,927,973

METHOD FOR COLORING FIBROUS MATERIAL COMPOSED OF PHENOLIC RESINS

Syunya Ida, Nara, and Norio Endo, Osaka, both of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Apr. 17, 1973, Ser. No. 351,884
Claims priority, application Japan, Apr. 20, 1972, 47-40115
Int. Cl.² D06P 5/04
U.S. Cl. 8—173 **7 Claims**

1. A method for coloring fibers or fibrous structures composed of phenolic resins, which comprises:

a. applying a dye liquor to said fibers or fibrous structures;

b. drying the resulting fiber or fibrous structures; and

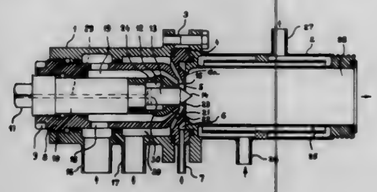
c. contacting the dried fiber or fibrous structures with a mixed vapor of water and at least 5% by weight, based on the total weight of the mixed vapor, of benzyl alcohol.

3,927,974

METHOD FOR STERILIZING LIQUIDS

Bjorn-Olow Johansson, Lomma, and Bengt Arne Palm, Genarp, both of Sweden, assignors to Alfa-Laval AB, Tumba, Sweden

Filed Oct. 9, 1973, Ser. No. 404,622
Claims priority, application Sweden, Oct. 13, 1972, 13203/72
Int. Cl.² A23C 3/02, 3/04; A23L 3/16
U.S. Cl. 21—56 **2 Claims**



1. In the sterilizing of a liquid containing heat degradable biological material by contacting with each other, in a jet nozzle locus, two annular and concentric jets of steam and said liquid, respectively, thereby forming an annular jet of steam-heated liquid in said locus, the improvement which comprises forming two additional annular jets of cold liquid concentric to said first-mentioned jets of steam and liquid, and directing said additional jets along both the inside and the outside of said annular jet of steam-heated liquid, whereby material from the liquid to be sterilized is prevented from burning onto surfaces of the jet nozzle locus.

3,927,975

SYSTEM FOR SUPPRESSING LIQUID SULFUR TRIOXIDE

Clark A. Sumner, Santa Ana, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 26, 1974, Ser. No. 500,216
Int. Cl.² B01J 1/18
U.S. Cl. 21—60.5 **4 Claims**

1. A method for substantially reducing the formation of sulfuric acid aerosol smoke from liquid sulfur trioxide after a spill of said liquid sulfur trioxide, comprising the steps of:

a. Confining the liquid sulfur trioxide;

b. Applying to the top surface of said liquid sulfur trioxide spill an inert non-reactive and immiscible oil which has been slurried with a predetermined amount of inert solid diluent to adjust the specific gravity thereof to less than that of liquid sulfur trioxide; said inert non-reactive and immiscible oil defined as a linear polymer having the formula



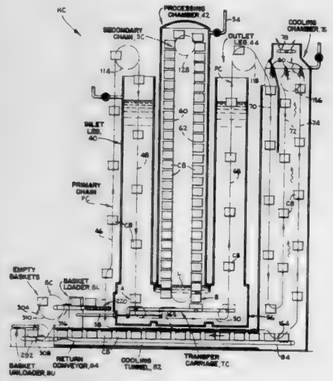
wherein X is selected from the group consisting of chlorine and fluorine.

3,927,976

CONTAINERIZED HYDROSTATIC STERILIZING SYSTEM

James L. Reimers, Saratoga, and Rodney D. Miller, San Jose, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Sept. 26, 1973, Ser. No. 400,997
Int. Cl.² A23L 3/00, 3/04; B65B 55/02
U.S. Cl. 21—80 **15 Claims**



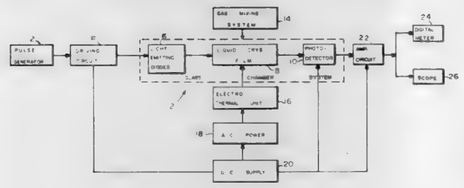
1. In a sterilizer of the hydrostatic type for products in containers, said sterilizer having inlet and outlet water legs, an intermediate steam processing leg, water leg means for interconnecting the lower ends of said legs, means for conveying containers through the sterilizer comprising chain means running through said legs, product carriers spaced along said chain means and means for driving said chain means; the improvement wherein said conveying means comprises endless primary chain means running through said inlet and outlet legs, secondary chain means running through said processing leg, supports for detachably mounting product carriers uniformly spaced along said primary chain means at one spacing and similar supports uniformly spaced along said secondary chain means at a much closer spacing, said chain driving means comprising means for driving said primary and secondary chain means in synchronism and for driving said primary chain means at a higher speed than that of said secondary chain means, transfer means disposed in said interconnecting water leg means for transferring product carriers from carrier supports on a reach of said primary chain means that is leaving said inlet water leg to carrier supports on a reach of said secondary chain means that is entering said processing leg and for transferring product carriers from carrier supports on a reach of said secondary chain means that is leaving said processing leg to carrier supports on a reach of said primary chain means that is entering said outlet water leg.

3,927,977

LIQUID CRYSTAL GAS ANALYZER

John E. Jacobs, Evanston, Ill., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed Sept. 20, 1974, Ser. No. 507,991
Int. Cl.² G01N 31/06, 33/16; G02F 1/01, 1/13
U.S. Cl. 23—230 LC **7 Claims**



1. A liquid crystal gas analyzer comprising:

liquid crystal film;

illuminating means for illuminating the liquid crystal film, said illuminating means including first and second light emitting diodes;

detector means for detecting the intensity of light reflected from the liquid crystal;

injection means for causing a gas to come in contact with said liquid crystal; and

output means, connected to said detector means, for recording the intensity of reflected light detected by said detecting means.

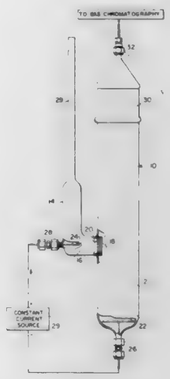
3,927,978

ELECTROLYTIC STRIPPING CELL AND METHOD

Stanley P. Wasik, Rockville, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Nov. 20, 1974, Ser. No. 525,430
Int. Cl.² B01D 15/08; G01N 27/28, 31/08, 33/18
U.S. Cl. 23—230 R **7 Claims**

1. A method for stripping hydrocarbons from an aqueous liquid phase, comprising passing hydrogen bubbles upwardly through the liquid phase, collecting the hydrogen and stripped hydrocarbons in a head space region above the liquid phase,



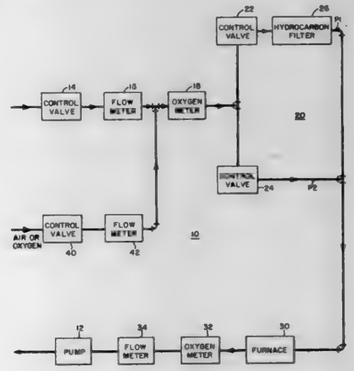
and analyzing a portion of the gas phase to determine the hydrocarbon concentration therein.

3,927,979

TECHNIQUE FOR MEASURING THE CARBON MONOXIDE AND REACTIVE HYDROCARBON CONTENT OF A GAS

Francis P. Byrne, Murrysville, and Thomas D. Kaczmarek, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 10, 1974, Ser. No. 478,139
Int. Cl.² G01N 31/12
U.S. Cl. 23—232 R **4 Claims**



1. A combustion technique for determining the carbon monoxide and the smog and air pollutant reactive hydrocarbon content of a gas comprising the steps of;

stoichiometrically reacting oxygen with the total combustibles content of a first sample of the gas,

removing the smog and air pollutant reactive hydrocarbon content of a second sample of the gas,

stoichiometrically reacting oxygen with the carbon monoxide content of said second sample of the gas following removal of the smog and air pollutant reactive hydrocarbon content, the oxygen required to produce said stoichiometric reaction representing the amount of oxygen required to change the carbon monoxide to carbon diox-

ide, said amount of oxygen being indicative of the carbon monoxide content of the gas ,and,

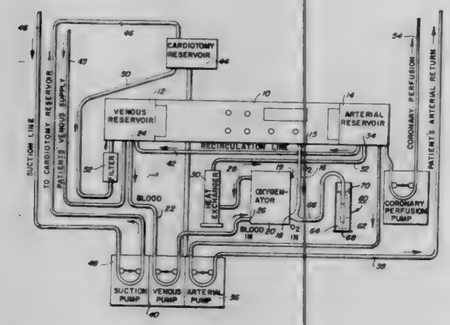
determining the difference between the amount of oxygen required to stoichiometrically react with the carbon monoxide and the amount of oxygen required to stoichiometrically react with the total combustibles content of the gas, said difference being indicative of the smog and air pollutant reactive hydrocarbon content of the gas.

3,927,980

OXYGEN OVERPRESSURE PROTECTION SYSTEM FOR MEMBRANE-TYPE BLOOD OXYGENATORS

Ronald James Leonard, Elk Grove Village, Ill., assignor to Baxter Laboratories, Inc., Deerfield, Ill.

Filed Aug. 22, 1973, Ser. No. 390,567
Int. Cl.² A61M 1/03
U.S. Cl. 23—258.5 **6 Claims**



1. In an extracorporeal oxygenator system wherein oxygen and carbon dioxide are transferred across a porous, hydrophobic membranous barrier separating the blood and the oxygen, said oxygenator having a blood inlet, a blood outlet, and ar oxygen inlet and outlet; the improvement comprising, in combination: a blood reservoir coupled to said blood outlet downstream therefrom, said blood reservoir being positioned at a higher level than said blood outlet to provide to blood adjacent the membranous barrier a pre-determined minimum pressure; and manometer means which comprises an open liquid container being at least partially filled with a liquid; an oxygen supply line coupled to said oxygen inlet, venting conduit means coupled with said oxygen line and communicating with said liquid within said container and having an outlet therein, said liquid having a level that is selected to provide a pressure at said venting conduit means outlet but to permit venting of the oxygen in order to prevent the pressure of the oxygen from exceeding said minimum pressure of said blood.

3,927,981

MEMBRANE-TYPE BLOOD OXYGENATOR WITH RECYCLE OF OXYGEN-CONTAINING GAS

Stéphane Viannay, Plaisir, and André Sausse, Sceaux, both of France, assignors to Rhone Poulenc, Paris, France

Filed Aug. 30, 1973, Ser. No. 393,228
Claims priority, application France, Aug. 30, 1972, 72.30810
Int. Cl.² A61M 1/03
U.S. Cl. 23—258.5 **7 Claims**

1. A blood oxygenator comprising, in combination:

a. a blood oxygenator chamber;

b. at least one gas-permeable membrane dividing said blood oxygenator chamber into a first compartment and a second compartment;

c. blood inlet and outlet means for connecting said first compartment into a blood stream;

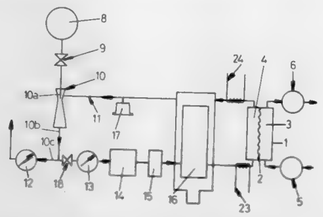
d. an inlet and outlet means connected to said second compartment;

e. a source of oxygen-containing gas under pressure;

f. a gas ejector;

g. a pressure nozzle of said gas ejector connected to said source of oxygen-containing gas;

h. means connecting a suction means connection of said gas ejector to said outlet means of said second compartment;



i. means connecting an exhaust means connection of said gas ejector to said inlet means of said second compartment, effective to recycle a portion of the gas which leaves said second compartment via said outlet means; and

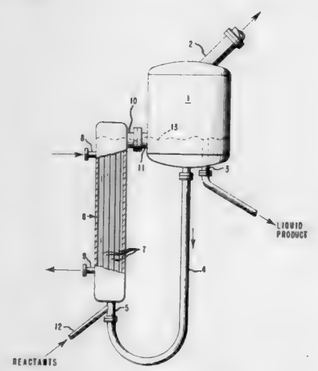
j. means connecting an exhaust outlet means to said exhaust means connection to release the remainder of the gas flowing out through said exhaust means connection.

3,927,982

RECIRCULATING APPARATUS FOR CONTINUOUS ESTERIFICATION REACTIONS

Rodney M. Chapman, Kinston, N.C., and Kenneth A. Temple, Richmond, Va., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Division of Ser. No. 20,704, March 18, 1970, abandoned. This application June 19, 1973, Ser. No. 371,502
Int. Cl.² C07C 69/76; B01J 8/12, 8/00
U.S. Cl. 23—260 **1 Claim**



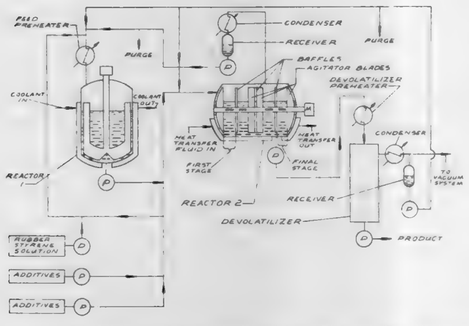
1. A chemical process apparatus, which is self-stirring and provides vigorous agitation of reacting materials without the use of mechanical stirring or pumping, comprising an esterification vessel for esterification liquid, a heat exchanger for heating the liquid to a temperature of 250° to 400°C. located externally of said esterification vessel, a conduit loop for conducting liquid without the use of a pump downward from the bottom of the vessel and then upward into the heat exchanger through a lower fluid inlet, means for injecting reactant feed mixture into the lower fluid inlet of the heat exchanger at a level at least 3 feet above the lowest point of the conduit loop, means for conducting heated fluid from the heat exchanger through an upper fluid outlet and into a vessel through an inlet in the side of the vessel, means in the upper part of the vessel for withdrawing vapors, and overflow means in the vessel for withdrawing esterification product at a rate which maintains a constant liquid level within the vessel, said overflow means being located within said vessel at substantially the same height as said inlet in the side of said vessel, thereby ensuring sufficient liquid head within said vessel to maintain flow in said conduit loop.

3,927,983

CONTINUOUS STAGED ISOBARIC STIRRED POLYMERIZATION APPARATUS

Robert E. Gordon, Monson; Robert W. Jones, Wilbraham; Rajendra Paul, Agawam, and Robert H. M. Simon, Longmeadow, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 19, 1973, Ser. No. 398,722
Int. Cl.² B01J 1/00; C08L 9/06
U.S. Cl. 23—260 **25 Claims**



1. A continuous staged, isobaric, stirred reactor apparatus for operation in a generally horizontal configuration at partial fillage levels with evaporative cooling and for the continuous exothermic polymerization of monomers in a fluid reaction media under substantially linear flow conditions, said apparatus comprising:

a. a generally cylindrical, enclosed vessel, for operation in a generally horizontal configuration with input and output ports at opposite end regions thereof,

b. at least one shaft extending generally longitudinally through said vessel for axial rotational movements relative thereto,

c. at least one baffle-like member, each such member (1) extending generally radially and transversely across the interior of said vessel, (2) partitioning said vessel internally into staged chambers, (3) being longitudinally fixed relative to said shaft means, (4) defining during operation of said apparatus, radial clearances with said vessel interior wall and between adjacent chambers defining a top aperture for passage of vapor and a bottom aperture for passage of polymerizing fluid,

d. agitator blade means mounted on said shaft means and positioned in each of said staged chambers to maintain polymerizing fluid partially filling said vessel in each of said chambers during operation of said apparatus in horizontal configuration in a generally uniform and homogeneous condition,

e. drive means, coupled with that shaft means to rotatably drive same during operation of said apparatus,

f. vapor removal means comprising a vapor outlet port, a condenser and a receiver interconnected with an upper portion of said vessel to remove vapors evolved from fluid in said vessel in each of said chambers during operation of said apparatus,

g. condition sensing means to measure temperature and pressure in at least one of said chambers during operation of said apparatus and to convert the so measured values into at least one condition signal representative thereof,

h. set points means to generate a signal representative of a predetermined temperature desired in a predetermined one of said chambers,

i. pressure control means interconnected with said vapor removal means, said condition sensing means, said set point means, a vent valve and a pressurized nitrogen valve regulating the pressure and the rate at which said condenser withdraws and condenses said vapors such that the temperature in at least one of said chambers is maintained with operating limits at a predetermined temperature and

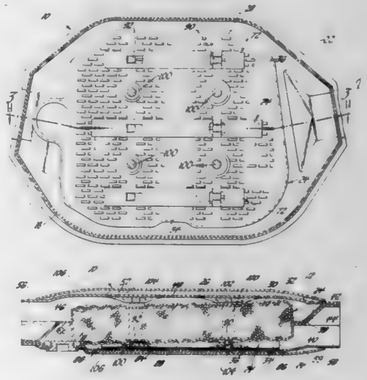
j. flow regulating means interconnected with said input and output ports to maintain the average level of fluid in said vessel in each of said stated chambers within predetermined limits.

3,927,984

CATALYTIC CONVERTER BED SUPPORT MEANS

Frederick J. Hartley, Waterford, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 7, 1973, Ser. No. 422,699
Int. Cl.² F01N 3/15
U.S. Cl. 23—288 F **4 Claims**



1. In a low profile catalytic converter assembly for the treatment of exhaust gas of the type having dished top and bottom housing plates with side wall portions and peripheral flange portions extending outwardly therefrom, a dished catalyst retaining element including top and bottom catalyst retaining plates with peripheral flange portions extending between the flange portions of said top and bottom housing plates for support of said retaining element, an exhaust gas inlet at one end of said assembly and an exhaust gas outlet at the other end of said assembly formed between said peripheral flange portions, a compact bed of catalytic material filling said dished catalyst retaining element in the space between said top and bottom catalyst retaining plates, said retaining plates sloping relative to said housing plates so that the flow area between the upper housing plate and the upper retaining plate decreases as the flow distance from said inlet to said outlet decreases, support studs extending between said top and bottom housing plates and through said top and bottom retaining plates and being anchored to the top and bottom housing plates, the improvement comprising a plurality of elongated channel supports secured to said bottom catalyst retaining plate and extending adjacent to said bottom housing plate, said supports having a flat surface portion extending in parallelism with said bottom housing plate with upstanding rib portions extending from said flat surface toward the bottom catalyst retaining plate between rows of perforations therein and with upstanding web portions forming tabs adapted to attach to said bottom housing plate thus defining open-ended channel means for the passage of exhaust gas therethrough without substantial impedance to the flow.

3,927,985
DEVICE FOR PREPARATION OF EARTH IMPROVING SUBSTANCES FROM ORGANIC WASTE

Roy Lennart Hyttinge, Huddinge; Lars Olov Widvall, Vallingby, and Anders Erik Ingvar Hook, Vallentuna, all of Sweden, assignors to Toa-Throne AB, Bromma, Sweden

Filed July 29, 1974, Ser. No. 492,470
Claims priority, application Sweden, Aug. 7, 1973, 7310836
Int. Cl.² C05F *3/04*; A47K *11/02*
U.S. Cl. 23—259.1 **4 Claims**



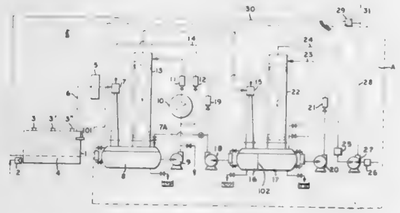
1. Receptacle for the production of earth improving substance from organic waste, comprising an inverted top section and a bottom section, said sections having congruent trapezoidal vertical cross sections and the top section being turned 180° in the horizontal plane relative to the bottom section and detachably mounted upon the bottom section to form a lid therefor, the dimensions of one of said sections being smaller than those of the other section in order to house the major part of said one section within said other tray for transportation when inverted and turned 180°, an inner bottom within said bottom section having an inclined portion and defining an air space therebelow, at least part of said inclined portion being of staircase shape with oblique steps formed by plates with slots and spacers between adjacent steps, whereby adjacent plates partly overlap each other to prevent waste from penetrating said slots, air inlet means communicating with said air space and through said slots with the waste receiving interior of said receptacle, and air outlet means for leading air out of said interior.

3,927,986
APPARATUS FOR INCINERATING A PLASTIC WASTE

Toshikatsu Ishikawa, Tokyo; Tei Endo, Yokohama; Toshio Masuyama, Yokohama; Fumio Uruma, Yokohama; Masutaka Morishita, Yokohama, and Takeshi Kuki, Tokyo, all of Japan, assignors to Nippon Carbon Co. Ltd., Tokyo, Japan

Filed Mar. 7, 1973, Ser. No. 339,018
Claims priority, application Japan, Mar. 9, 1972, 47-27947; Mar. 21, 1972, 47-28260; Oct. 19, 1972, 47-104633
Int. Cl.² B01J *1/00*; F23G *7/00*
U.S. Cl. 23—277 R **9 Claims**

1. An apparatus for incinerating solid plastic waste, comprising:
1. an incinerator having inlet means for an oxidizing gaseous mixture, an outlet for exhaust gas and temperature sensing means for sensing the temperature within the incinerator, said incinerator also having an inlet for permitting solid plastic waste to be deposited therein,
2. first detrimental components removing means connected to said outlet for exhaust gas and comprising
a. a jet scrubber for sucking, cooling and washing said exhaust gas by a circulating liquid,
b. an absorbing tower for absorbing hydrogen chloride contained in the exhaust gas cleaned by said jet scrubber,
c. a reservoir tank for storing therein the circulating liquid for said jet scrubber and said absorbing tower, said reservoir tank being connected between said jet scrubber and said tower for permitting said exhaust gas to pass from said jet scrubber through the reservoir tank into said absorbing tower,
d. means for introducing said circulating liquid into said jet scrubber and,
e. means for cooling said circulating liquid and introducing it into said absorbing tower,
3. second detrimental components removing means connected for receiving treated exhaust gas from said first detrimental components removing means and comprising a circulating liquid pump and an absorbing tower,

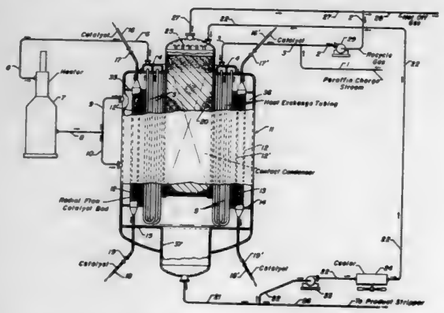


4. an exhaust gas duct for connecting said incinerator to said first detrimental components removing means, and a further exhaust gas duct for connecting said first detrimental components removing means to said second detrimental components removing means,
5. exhaust gas duct means connected to said second detrimental components removing means for discharging the exhaust gas, and
6. control means responsive to said temperature sensing means and connected to both said inlet means and said exhaust gas duct means for supplying controlled quantities of exhaust gas and air to said incinerator to maintain the temperature within said incinerator to a maximum of about 800°C, said exhaust gas and air comprising an oxidizing gaseous mixture for controlling burning within the incinerator.

3,927,987
DEHYDROGENATION REACTOR

George R. Winter, III, Des Plaines, and William G. Boney, Rolling Meadows, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 451,660, March 14, 1974, which is a continuation-in-part of Ser. No. 301,007, Oct. 26, 1972, abandoned. This application Sept. 9, 1974, Ser. No. 504,397
Int. Cl.² B01J *8/02*; C10G *35/04*
U.S. Cl. 23—288 K **4 Claims**



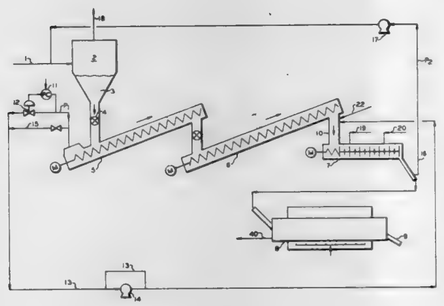
1. A reactor for the catalytic conversion of hydrocarbons which comprises:

a. a vertically oriented outer cylindrical vessel;
b. a first vertically orientated catalyst retaining screen, located within the outer vessel a distance redially inward from the inner surface of the outer vessel and defining an annular reactant distribution volume between the first catalyst retaining screen and the outer vessel;
c. a second vertically orientated catalyst retaining screen located within the first catalyst retaining screen a distance radially inward from the first catalyst retaining screen and defining an annular catalyst retention volume between the first and the second catalyst retaining screens;
d. an indirect heat exchange means arranged as a vertically orientated substantially hollow cylinder having a cylindrical central void volume and located adjacent to the second catalyst retaining screen, at a distance radially inward from the second catalyst retaining screen;
e. a contact condensing means located within the central void volume of the indirect heat exchange means, said condensing means comprising cylindrical packed bed of a vapor-liquid contacting media;
f. a reactant inlet means communicating with the reactant distribution volume;
g. a vapor outlet means communicating directly with the central void volume of the heat exchange means at a point located above the contact condensing means; and,
h. a liquid outlet means communicating with the internal volume of the outer vessel at a point located below the contact condensing means.

3,927,988
PELLETING CARBON BLACK

Arthur E. Frazier, Toledo, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 8, 1973, Ser. No. 386,577
Int. Cl.² C01B *31/14*; B01J *2/12*
U.S. Cl. 23—314 **7 Claims**

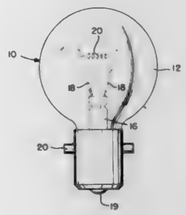


1. A method of pelleting carbon black which comprises:
a. introducing a first mixture comprising carbon black and occluded gases into a screw conveyor;
b. separating and withdrawing occluded gases having carbon black entrained therewith from said mixture at the inlet to said screw conveyor and leaving carbon black to be transferred by the screw conveyor;
c. transferring said carbon black remaining by said screw conveyor to a pelleter;
d. admixing the separated and withdrawn occluded gas and the entrained carbon black with the carbon black transferred by the screw conveyor downstream of said screw conveyor and thereafter introducing the resulting admixture into said pelleter; and
e. forming pellets out of said carbon black in said pelleter.

3,927,989
TUNGSTEN ALLOY FILAMENTS FOR LAMPS AND METHOD OF MAKING

Ronald C. Koo, Weehawken, N.J., assignor to Duro-Test Corporation, North Bergen, N.J.

Continuation-in-part of Ser. No. 862,340, Sept. 30, 1969, abandoned. This application Jan. 31, 1973, Ser. No. 328,246
Int. Cl.² B22F *1/00, 5/00*
U.S. Cl. 29—182.5 **20 Claims**



1. In a tungsten filament of the type containing a filament dopant compound including at least one alkali metal which produces a second phase consisting of bubbles at filament operating temperatures to improve the sag resistant properties of the filament, the improvement comprising a third phase material selected from the group consisting of titanium, zirconium, hafnium, tantalum, ruthenium, strontium and columbium added to the filament for combining with the bubbles to reduce their migration and coalescence.

3,927,990
TWO-PART SINTERED ELECTRICAL CONTACT

Bernhard Rothkegel, and Horst Schreiner, both of Nuremberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 5, 1971, Ser. No. 112,979
Claims priority, application Germany, Feb. 7, 1970, 2005681
Int. Cl.² B22D *19/00*
U.S. Cl. 29—191 **23 Claims**

1. A contact member for high electrical loads comprising at least two component parts, the second part being a carrier portion of sintered porous solderable material and good electrically conductive properties, and the first part being a contact layer of sintered porous non weldable material resistant to burn off, the sintered component parts being impregnated by the same impregnating metal which firmly connects the sintered parts together with a continuous concentration of the impregnating metal in the sintered parts.

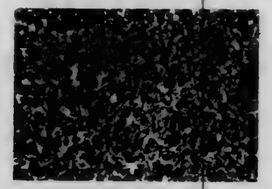
3,927,991
WEAR-RESISTANT SLIDING MEMBER

Jun Miyata; Toshihumi Morimoto, both of Hiroshima, and Hiroshi Yamazoe, Yokohama, all of Japan, assignors to Toyo Kogyo Co., Ltd. and Nippon Carbon Co. Ltd., both of, Japan

Continuation of Ser. No. 53,569, July 9, 1970, abandoned. This application Nov. 20, 1972, Ser. No. 308,276
Claims priority, application Japan, July 15, 1969, 44-56278
Int. Cl.² B32B *15/20*
U.S. Cl. 29—191.2 **3 Claims**

1. An apex seal member of a rotary piston engine having a continuous structure comprising a member selected from the group consisting of aluminum and an aluminum alloy and carbon particles, essentially uniformly distributed in said aluminum or aluminum alloy, said structure being prepared from a composition in which the amount of said carbon particles is by volume 40 to 80% of said member; and the size of the carbon particles is finer than 100 mesh Tyler standard and a

layer of aluminum carbide formed in the interface between said aluminum or aluminum alloy and the surface of each of



said carbon particles to securely bond said carbon particles thereto.

3,927,992

COAL COMBUSTION PROCESS AND COMPOSITION

Robert V. Kerley, Ortonville, Mich., assignor to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 878,258, Nov. 19, 1969, abandoned, which is a continuation of Ser. No. 723,945, April 24, 1968, abandoned, which is a continuation of Ser. No. 601,558, Dec. 14, 1966, abandoned. This application Nov. 23, 1971, Ser. No. 201,301

Int. Cl.² C10L *9/00, 10/00*

U.S. Cl. 44—4 **10 Claims**

1. A process for reducing the sulfur trioxide produced in the combustion of coal, said process consisting essentially of burning pulverized coal in a combustion chamber in the presence of a combustion improving quantity of (methyl cyclopentadienyl)manganese tricarbonyl, wherein said coal and said (methylcyclopentadienyl) manganese tricarbonyl are simultaneously but separately introduced into said combustion chamber.

3,927,993

FIRE STARTER AND METHOD

Ronald W. Griffin, 2047 E. Fifth, Albany, Oreg. 97321

Filed Nov. 21, 1973, Ser. No. 418,044

Int. Cl.² C10L *11/00*

U.S. Cl. 44—39 **25 Claims**

1. A fire starter comprising particles of metallic sponge material from the group consisting of zirconium, titanium and hafnium bonded together into a compact mass in combination with ignition means associated with said mass for igniting said sponge material.

25. The method of starting a fire comprising compacting particles of metallic sponge selected from the group zirconium, titanium and hafnium under sufficient pressure to bond mechanically said particles into a dense mass, igniting the particles of said mass to cause them to burn for an extended period of time by applying sufficient external detonating pressure to said compacted mass to raise the temperature thereof to its spontaneous combustion temperature, and applying said ignited particles of said metallic sponge to a material to be burned.

3,927,994

ADDITIVE COMPOSITION FOR SPARK-IGNITION ENGINE FUELS

Duane R. Romans, Kansas City, Mo., assignor to Farmland Industries, Inc., Kansas City, Mo.

Filed Dec. 26, 1973, Ser. No. 428,138

Int. Cl.² C10L *1/20*

U.S. Cl. 44—63 **3 Claims**

1. In combination:

a quantity of spark ignition fuel;

an additive admixed with said fuel and taken from the group consisting of:

A. from about 20 to 200 ppm, based upon the fuel, of dodecylphenol ethoxylate containing an average of about 5 radicals of the formula $-O-CH_2-CH_2-$, and from about 10 to 100 ppm, based upon the fuel, of 1-(2-hydroxyethyl)-2-uncosyl-2-imidazoline;

B. from about 20 to 200 ppm, based upon the fuel, of dodecylphenol ethoxylate containing an average of about 7 radicals of the formula $-O-CH_2-CH_2-$, and from about 10 to 100 ppm, based upon the fuel, of 1-(2-hydroxyethyl)-2-uncosyl-2-imidazoline; and

C. from about 20 to 200 ppm, based upon the fuel, of dodecylphenol ethyoxylate containing an average of about 7 radicals of the formula $-O-CH_2-CH_2-$, and from about 10 to 100 ppm, based upon the fuel, of 1-(2-aminoethyl)-2-tridecyl-2-imidazoline.

3,927,995

ADDITIVE COMPOSITION FOR COMPRESSION-IGNITION ENGINE FUELS

Duane R. Romans, Kansas City, Mo., assignor to Farmland Industries, Inc., Kansas City, Mo.

Filed Oct. 23, 1973, Ser. No. 408,425

Int. Cl.² C10L *1/20*

U.S. Cl. 44—63 **3 Claims**

1. In combination:

a quantity of compression ignition fuel;

an additive admixed with said fuel and taken from the group consisting of:

A. from about 20 to 300 ppm, based upon the fuel, of nonylphenol ethoxylate containing an average of about 4 radicals of the formula $-O-CH_2-CH_2-$, and from about 1 to 100 ppm, based upon the fuel of 1-(2-hydroxyethyl)-2-heptadecenyl-2-imidazoline;

B. from about 20 to 300 ppm, based upon the fuel, of dodecylphenol ethoxylate containing an average of about 5 radicals of the formula $-O-CH_2-CH_2-$, and from about 1 to 100 ppm, based upon the fuel, of 1-(2-hydroxyethyl)-2-heptadecenyl-2-imidazoline; and

C. from about 20 to 300 ppm, based upon the fuel, of dodecylphenol ethoxylate containing an average of about 5 radicals of the formula $-O-CH_2-CH_2-$, and from about 1 to 100 ppm, based upon the fuel, of 1-(2-hydroxyethyl)-2-uncosyl-2-imidazoline.

3,927,996

COAL INJECTION SYSTEM

Christian W. Knudsen, Seabrook, and Hermann E. von Rosenberg, Baytown, both of Tex., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Feb. 21, 1974, Ser. No. 444,614

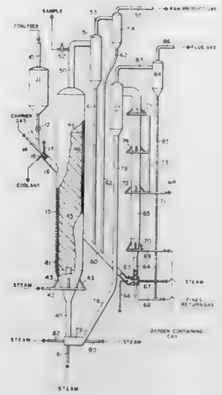
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C10J *3/06*

U.S. Cl. 48—197 R **10 Claims**

1. In a process wherein finely divided carbonaceous solids which contain volatilizable hydrocarbon constituents and have an initial softening point and a resolidification point higher than said initial softening point are introduced into a fluidized bed of char particles maintained at a temperature above said resolidification point for devolatilization and wherein gases containing entrained fines are withdrawn overhead from said fluidized bed, the improvement which comprises entraining said carbonaceous solids in a preheated stream of carrier gas having a temperature in excess of about 300° F. but below said initial softening point, injecting said stream of carrier gas containing the entrained solids into said fluidized bed through a fluid-cooled nozzle at a superficial gas velocity between about 15 and 1,000 feet per second, monitoring the entrained fines content of said gases withdrawn overhead from said fluidized bed, and regulating the velocity

at which said carrier gas and entrained carbonaceous solids are injected into the bed through said nozzle in response to



changes in said entrained fines content of said gases to produce controlled attrition of agglomerated particles in said bed.

3,927,997

METHANE-RICH GAS PROCESS

Edward T. Child, Tarrytown, N.Y., and Allen M. Robin, Anaheim, Calif., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,467

Int. Cl.² C10J *3/06*

U.S. Cl. 48—197 R **16 Claims**

1. A process for producing a methane-rich gas stream comprising the steps of (1) reacting a hydrocarbonaceous fuel with substantially pure oxygen comprising 95 mole % O_2 or more by partial oxidation in the presence of a temperature moderator selected from the group consisting of H_2O, CO_2, and mixtures thereof in the reaction zone of a free-flow unpacked noncatalytic synthesis gas generator, at an autogenous temperature in the range of about 1700 to 3100°F., and a pressure in the range of about 1 to 250 atmospheres gauge wherein the weight ratio of H_2O/hydrocarbonaceous fuel is in the range of 0.5 to 5.0, the atomic ratio of oxygen in the substantially pure oxygen to carbon in the hydrocarbonaceous fuel is in the range of about 0.8 to 1.0, and the stream of effluent gas leaving said synthesis gas generator comprises mixtures of H_2 and more than 10 mole % CO having a mole ratio H_2/CO in the range of greater than 1.0 to no greater than 3.0, H_2O, CH_4, CO_2, particulate carbon, and gaseous impurities selected from the group consisting of COS, H_2S, Ar, N_2, and mixtures thereof; (2) cooling the process gas stream from (1), and removing particulate carbon, H_2O, at least a portion of said CO_2, and said gaseous impurities therefrom; (3) adjusting the mole % CO_2 in the clean process gas stream from (2) to a value in the range of about 0.5 to 20 and a mole ratio H_2/CO_2 in the range of about 2 to 60, and a temperature in the range of about 390°F to 1000°F; (4) introducing the process gas stream from (3) without a separate water-gas shift step into a catalytic methanation zone where said H_2 and CO are reacted together while in contact with a methanation catalyst at a pressure in the range of about 1 to 250 atm. to produce an effluent gas stream comprising CH_4 and containing one or more members of the group consisting of CO, H_2, H_2O, and CO_2; and (5) cooling and separating one or more of said members from the effluent gas stream from (4), producing said methane-rich gas stream having a gross heating value of 940 BTU/SCF or more.

3,927,998

PRODUCTION OF METHANE-RICH GAS STREAM

Edward T. Child, Tarrytown, N.Y.; Allen M. Robin, Anaheim, Calif.; William L. Slater, La Habra, Calif., and George N. Richter, San Marino, Calif., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,468

Int. Cl.² C10J *3/06*

U.S. Cl. 48—197 R **11 Claims**

1. A process for producing a methanerich gas stream comprising the steps of

1. reacting a hydrocarbonaceous fuel feed by partial oxidation with substantially pure oxygen comprising 99 mole % O_2 or more and H_2O at an autogeneous temperature in the range of about 1700° to 3100°F and a pressure in the range of about 1 to 250 atmospheres in the reaction zone of a free-flow unpacked noncatalytic synthesis gas generator, wherein the weight ratio of H_2O/hydrocarbonaceous fuel is in the range of 2.2–2.9 and the atomic ratio of oxygen in the substantially pure oxygen to carbon in the fuel is in the range of 0.80–0.84, and the stream of effluent gas leaving said synthesis gas generator principally comprises mixtures of H_2 and CO having a mole ratio H_2/CO in the range of 1.0 to 2.5, CH_4 in the amount of 15 mole % or more, H_2O, CO_2, and one or more members of the groups COS, H_2S, Ar and N_2, and wherein said effluent gas stream contains 13 weight % or less of particulate carbon (basis weight of C in said hydrocarbonaceous fuel feed);
2. cooling the process gas stream from (1) and separating particulate carbon, H_2O, CO_2 and one or more members of the group COS, H_2S, Ar, and N_2; and
3. introducing the dry process gas stream from (2) without a separate water-gas shift step into a catalytic methanation zone where said H_2 and CO are reacted together at a temperature in the range of about 390° to 1400°F. and at a pressure in the range of about 1 to 250 atmospheres to produce a methane-rich gas stream principally comprising CH_4 and containing H_2O, CO_2, and one or more members of the group H_2, CO, Ar and N_2; and
4. Separating said H_2O and CO_2 from the methane-rich gas stream from (3) to produce a product gas stream comprising at least 93 mole % CH_4.

3,927,999

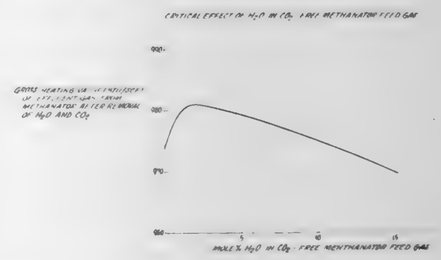
METHANE-RICH GAS PROCESS

Edward T. Child, Tarrytown, N.Y., and Allen M. Robin, Anaheim, Calif., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,469

Int. Cl.² C10J *3/06*

U.S. Cl. 48—197 R **14 Claims**



1. In a process for producing a methane-rich gas stream by the partial oxidation of a hydrocarbonaceous fuel with a free-oxygen containing gas in the presence of a temperature moderator to produce a process gas stream which is subsequently subjected to catalytic methanation the improvement comprising the steps of (1) reacting said hydrocarbonaceous fuel feed by partial oxidation with substantially pure oxygen comprising at least 95 mole % O_2 and a temperature moderator selected

from the group consisting of H_2O, CO_2, and mixtures thereof at an autogenous temperature in the range of about 1700° to 3100°F and a pressure in the range of about 1 to 250 atmospheres gauge in the reaction zone of a free-flow unpacked noncatalytic synthesis gas generator, wherein the weight ratio of H_2O/hydrocarbonaceous fuel is in the range of 0.2 to 3, the atomic ratio of oxygen in the substantially pure oxygen to carbon in the hydrocarbonaceous fuel is in the range of about 0.75 to 1.0 and the stream of effluent gas leaving said synthesis gas generator comprises mixtures of H_2 and CO having a mole ratio H_2/CO in the range of about 0.5 to 1.15, H_2O, CH_4, CO_2 and one or more members of the group of impurities COS, H_2S, Ar, and N_2, and particulate carbon; (2) cooling the process gas stream from (1); removing therefrom particulate carbon, CO_2, H_2S, COS and adjusting the mole % H_2O in the process gas stream to a value in the range of about 0.1 to 15; and adjusting the temperature to a value in the range of about 390° to 600°F.; (3) introducing the process gas stream from (2) into a catalytic methanation zone where said H_2 and CO are reacted together while in contact with a methanation catalyst at a pressure in the range of about 1 to 250 atm. to produce an effluent gas stream comprising CH_4 and containing one or more members of the group H_2O, H_2, CO_2, CO, N_2 and Ar; and (4) separating H_2O and CO_2 from the effluent gas stream from (3), producing said methane-rich gas stream comprising at least 70 mole % of methane (dry basis).

3,928,000

PRODUCTION OF A CLEAN METHANE-RICH FUEL GAS FROM HIGH-SULFUR CONTAINING HYDROCARBONACEOUS MATERIALS

Edward T. Child, Tarrytown, N.Y.; Allen M. Robin, Anaheim, Calif.; William L. Slater, La Habra, Calif., and George N. Richter, San Marino, Calif., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,470
Int. Cl.² C10J *3/06*
U.S. Cl. 48—197 R **23 Claims**

1. A process for producing a methane-rich gas from a sulfur-containing hydrocarbonaceous fuel comprising the steps of

1. reacting said sulfur-containing hydrocarbonaceous fuel feed by partial oxidation with substantially pure oxygen comprising 95 mole % O_2 or more and a temperature moderator from the group H_2O, CO_2, and mixtures thereof at an autogenous temperature in the range of about 1700° to 3100°F and a pressure in the range of about 1 to 250 atmospheres in the reaction zone of a free-flow unpacked noncatalytic synthesis gas generator, wherein the mole ratio of oxygen in the free-oxygen containing gas to carbon in the hydrocarbonaceous fuel is in the range of about 0.80 to 1.0, and the stream of effluent gas leaving the synthesis gas generator comprises mixtures of H_2, CO, H_2O, CO_2, and one or more members of the group CH_4, H_2S, COS, N_2, and Ar, and particulate carbon;
2. cooling the process gas stream from (1) to a temperature in the range of about 300° to 800°F by indirect heat exchange with water thereby producing steam;
3. separating particulate carbon and H_2O from the process gas stream from (2);
4. introducing the process gas stream from (3) without purification of said gas stream directly into a methanation zone containing a sulfur-resistant methanation catalyst comprising about 0.8 to 10 atoms of a first element selected from the group Mo, Cr, W or mixtures thereof per atom of a second element selected from the group CO, Ni or mixtures thereof, and reacting said H_2 and CO together at a temperature in the range of about 500 to 1500°F and at a pressure in the range of about 1 to 250 atmospheres to produce an effluent gas stream comprising mixtures of CH_4 and one or more members of the group H_2, CO, H_2O, CO_2, COS, H_2S, N_2 and Ar; and
5. cooling the effluent gas stream from (4) and removing therefrom one or more members of said group in a gas purification zone.

3,928,001

PRODUCTION OF METHANE

Edward T. Child, Tarrytown, N.Y.; Allen M. Robin, Anaheim, Calif.; William L. Slater, La Habra, Calif., and George N. Richter, San Marino, Calif., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,471
Int. Cl.² C10J *3/06*
U.S. Cl. 48—197 R **12 Claims**

1. A process for producing substantially pure methane comprising the steps of (1) reacting a hydrocarbonaceous fuel feed by partial oxidation with substantially pure oxygen comprising 95 mole % O_2 or more and H_2O at an autogenous temperature in the range of about 1700° to 3100°F. and a pressure in the range of about 1 to 250 atmospheres in the reaction zone of a free-flow unpacked noncatalytic synthesis gas generator, wherein the weight ratio of H_2O/ hydrocarbonaceous fuel is in the range of 0.25 to 1.7, the atomic ratio of oxygen in the substantially pure oxygen to carbon in the hydrocarbonaceous fuel is in the range of 0.85 to 1.0, and the stream of effluent gas leaving said synthesis gas generator principally comprises mixtures of H_2 and CO having a mole ratio H_2/CO in the range of 1.0 to below 1.5, H_2O, CO_2, and one or more members of the group CH_4,COS, H_2S, Ar, and N_2 and particulate carbon; (2) cooling the process gas stream from (1) and separating particulate carbon, H_2O, CO_2, H_2S, and COS therefrom, thereby producing a stream of dry feedgas; (3) introducing the stream of dry feedgas from (2) without a separate water-gas shift step into a catalytic methanation zone where H_2 and CO are reacted together at a temperature in the range of about 390° to 1000°F. and at a pressure in the range of about 1 to 250 atmospheres to produce a methane-rich gas stream principally comprising CH_4 and containing H_2O, CO_2 and one or more members of the group H_2, CO, Ar, and N_2; and (4) separating said H_2O and CO_2 from the methane-rich gas stream from (3), producing a product gas stream comprising about 90 or more mole % CH_4 and having a gross heating value of 920 BTU/SCF or more.

3,928,002

LOW-TEMPERATURE STEAM REFORMING PROCESS FOR HYDROCARBONS

Kiyoshi Morikawa, Fujisawa; Akio Furuta, Yokohama, and Hideyuki Matsumoto, Tokyo, all of Japan, assignors to Japan Gasoline Co., Ltd. and Nikki Chemical Co., Ltd., both of Tokyo, Japan

Filed Nov. 21, 1973, Ser. No. 417,768
Claims priority, application Japan, Nov. 28, 1972, 47-118573
Int. Cl.² C01B *2/14*
U.S. Cl. 48—214 **5 Claims**

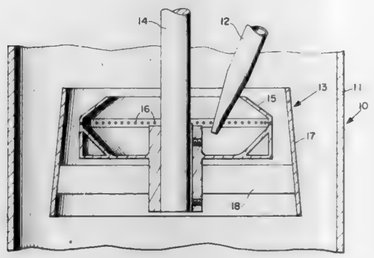
1. In a process for manufacturing a gas containing more than 40 percent of methane on a dry basis, by subjecting steam-reformable feed hydrocarbon to adiabatic low-temperature steam reforming in the presence of a nickel catalyst, the improvement which comprises preheating a mixture of said feed hydrocarbon with steam mixed in the ratio of moles of steam to the number of moles of carbon atoms in said feed hydrocarbon in the range of 0.9 to 5.0 to a temperature in the range of 250° to 600°C, feeding the preheated mixture into a steam reforming reaction zone containing a binary catalyst consisting of Ni-MgO or Ni-NiO-MgO in which the atomic ratio of nickel to magnesium is in the range of 0.5 to 5.0, and effecting steam reforming of said feed hydrocarbon under a pressure in the reaction zone in the range of 10 to 100 Kg/cm² G, while maintaining the temperature of said catalyst in the range of 300° to 600°C.

3,928,003

VACUUM DEAERATOR FOR VISCOUS LIQUIDS

Durward Fryar, Burlington, Ky., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 22, 1973, Ser. No. 372,734
Int. Cl. B01d *19/00, 45/00*
U.S. Cl. 55—41 **6 Claims**



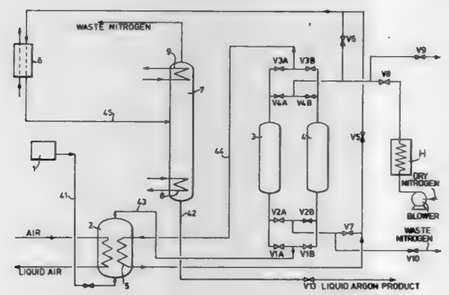
1. A centrifugal vacuum deaerator comprising an enclosed chamber connected to a source of vacuum for creating a vacuum within said chamber, and a rotor disposed within said chamber, said rotor comprising a flange positioned to receive the material to be deaerated after it is accelerated by centrifugal force, said flange being distinguished by being unperforated in the area where the material impinges, and said flange being further distinguished by the absence of any flow-impeding means which would substantially impede the spreading of said material into a thin film when it is deposited on said flange, and the presence of an edge on said flange over which said thin film of said material can be sheared by centrifugal force.

3,928,004

PURIFICATION OF INERT GASES

Bernard Ramsay Bligh, Hampton Hill, and John Allam, Guildford, both of England, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 7, 1974, Ser. No. 431,188
Claims priority, application United Kingdom, Jan. 8, 1973, 925/73
Int. Cl.² B01D *53/04*
U.S. Cl. 55—66 **5 Claims**



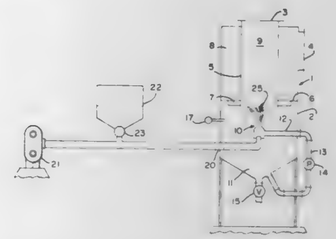
2. A process according to claim **1**, wherein the cooling bed of molecular sieve is a columnar bed and the cold stream of the pure inert gas is passed therethrough so that particles of the molecular sieve in the bed are progressively and successively cooled in the direction in which the pure inert gas is passed through the bed to an extent which substantially prevents the said argon adsorption.

3,928,005

METHOD AND APPARATUS FOR TREATING GASEOUS POLLUTANTS IN A GAS STREAM

Dennis J. Laslo, Whitehall, Pa., assignor to Fuller Company, Catasauqua, Pa.

Filed Feb. 19, 1974, Ser. No. 443,589
Int. Cl.² B01D *53/14*
U.S. Cl. 55—73 **6 Claims**



1. Apparatus for treating gaseous pollutants in a gas stream comprising:

a vessel having an inlet for a dirty gas stream containing gaseous pollutants and an outlet for cleaned gas;
means dividing said vessel into a dirty gas chamber and a cleaned gas chamber;
nozzle means mounted in said vessel;
means for supplying a scrubbing liquid to said nozzle means;
means for supplying a compressed gas to said nozzle means for atomizing said scrubbing liquid whereby said nozzle means directs the atomized liquid into the flow of dirty gas; and
means for supplying a material to said means for supplying a compressed gas to said nozzle means whereby the material is conveyed to said nozzle means and is discharged from the nozzle means into the flow of dirty gas for treating gaseous pollutants from said gas stream.

3,928,006

DEVICE FOR SIGNALLING DIRTY FILTERS

Richard P. Martineau, 429 Elm St., Keene, N.H. 03431

Filed Aug. 29, 1974, Ser. No. 501,610
Int. Cl.² B01D *35/14*; **G08B** *21/00*
U.S. Cl. 55—274 **1 Claim**



1. A signalling device for automatically designating the end of useful filter life in a circulating air system such as a furnace, comprising in combination,

a circulating air passageway,
a blower forcing a flow of air through said passageway,
a substantially planar filter arranged in said passageway to intercept the flow of said air,
rigid peripheral mounting structure for said filter confining it in place at the edges and permitting the unsupported central portion of said filter to flex in the direction of air flow therethrough,
and means including a switch for signalling end of life positioned for actuation by the crown of the bowing movement of said central portion after it is flexed a predetermined distance as a result of increased resistance to air flow when it has become partially clogged by retention of dust and the like,

said switch having a mounting structure supporting said switch adjacent said filter mounting structure and having adjusting means thereon for establishing said predetermined distance for relatively positioning said two mounting structures.

3,928,007

DRY-TYPE AIR FILTERS

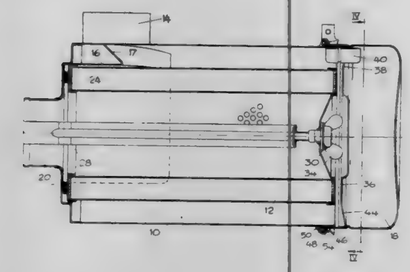
Neville Jackson, Hinckley, England, assignor to Burgess Products Company Limited, Hinckley, England

Continuation of Ser. No. 334,130, Feb. 20, 1973, abandoned. This application Nov. 27, 1974, Ser. No. 527,700

Claims priority, application United Kingdom, Feb. 22, 1972, 8223/72

Int. Cl.² B01D *50/00*

U.S. Cl. 55—337 **3 Claims**



1. A dry-type air filter comprising means defining a cylindrical casing having a side wall, a cylindrical filter element, means mounting said filter element within said casing and being of relatively less diameter than said casing defining therewith an annular spacing therebetween, means defining the rearward end of said casing, means defining the forward end of said casing, said casing having a tangential dirty air inlet in its side wall proximate its rearward end, said casing also having a clean air outlet, the improvement comprising a shield disposed interiorly of said casing within said spacing, between said filter element and said dirty air inlet protecting said filter element from direct impact by dirty air from said inlet, said shield being arcuate in cross section and of reduced peripheral extent with relation to said filter element extending about only a portion thereof, said shield having a forward end edge, a rearward end edge, and first and second side edges, said forward end edge terminating a limited distance forwardly of said opening, said rearward end edge terminating proximate said casing rearward end, said first side edge being relatively remote from said inlet, said shield second side edge being relatively proximate said inlet, an out-turned ramp integrally formed on the proximate second side edge of said shield and extending across said spacing, otherwise said shield throughout its extent is spaced from said casing side wall.

3,928,008

FILTERING APPARATUS

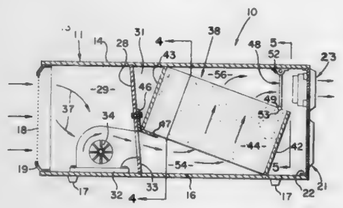
Petersen, Ross K., 2974 W. River Road, Minneapolis, Minn. 55406

Filed Aug. 5, 1974, Ser. No. 494,539

Int. Cl.² B01D *46/00*

U.S. Cl. 55—472 **20 Claims**

17. An apparatus for separating foreign materials from a pneumatic fluid comprising: side walls and top and bottom walls forming a housing having a generally rectangular filtering chamber with passage means having a generally longitudinal axis for carrying pneumatic fluid, a transverse member closing one end of the filtering chamber and having an inlet opening to said filtering chamber, means mounted on the housing located adjacent said inlet opening for moving fluid through the passage means, an outlet from said chamber at the other end of the filtering chamber spaced from the inlet opening, filtering means located in the filtering chamber for separating foreign materials from the fluid moving through the passage, said filtering means having a box-shaped frame and filtering media located within and across said frame, means in the filtering chamber connected to the transverse member for supporting one end wall of said frame in an elevated position relative to the longitudinal axis of the passage means with an upper end of said end wall in engagement with the top wall of



the housing, and the bottom wall of the housing supporting the other end wall of said frame to support said frame in an inclined position diagonally dividing the filtering chamber into an inlet plenum space open to the inlet opening and the entire inlet side of the filtering means, and an outlet plenum space open to the outlet from said chamber and the entire outlet side of the filtering means, and holding means cooperating with the housing in the filtering means to hold the filtering means in its inclined position in the housing.

3,928,009

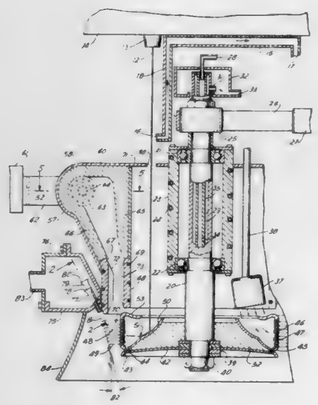
ROTARY FORMING UNIT FOR FINE MINERAL FIBERS

Walter Merton Perry, 76 Locust Hill Road, Darien, Conn. 06820

Continuation-in-part of Ser. No. 231,347, March 3, 1972, Pat. No. 3,785,791. This application Oct. 15, 1973, Ser. No. 406,360

Int. Cl.² C03D *37/04*

U.S. Cl. 65—14 **17 Claims**



1. In an apparatus for forming fine fibers from heat softened viscous thermoplastic mineral material, such as glass, said apparatus comprising,

a hollow rotor, having a main flange wall which has connected thereto outer annular support means near its periphery, and having an outer peripheral wall attached to said annular support means, said outer peripheral wall having a plurality of superposed filament forming orifices therein, shaft means for supporting said rotor and with

said shaft means attached to said main flange wall of said rotor, and means for turning said rotor at high speed to effect discharge by centrifugal force of the softened mineral material thru the orifices in the form of filaments,

means for supplying said heat softened mineral material to the interior region of said rotor,

means for controlling the temperature of parts of said rotor,

annular concentric orifice means positioned radially outward from the outer peripheral wall of said rotor, and having means for discharging gases from said orifice means into engagement with said filaments and to change the direction of their flow,

the improvement comprising

a hollow rotor structure, in which said main flange wall of said rotor and said outer annular support means connected thereto are made of base metal, and in which the main area of said outer peripheral wall of said rotor is made of corrosion resistant alloy material, and with said corrosion resistant alloy material consisting essentially of platinum group metals, and with a plurality of superposed filament forming orifices therein, and with said corrosion resistant alloy material welded to and reinforced by said outer annular support means of base metal.

3,928,010

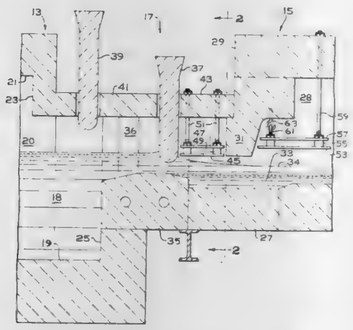
METHOD AND APPARATUS FOR FORMING GLASS ON MOLTEN METAL BY USING A RADIATION REFLECTOR

Deane G. Cramer, Festus, Mo., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 30, 1974, Ser. No. 474,847

Int. Cl.² C03B *18/02*

U.S. Cl. 65—65 A **19 Claims**



1. In an apparatus for making glass comprising a glassmaking furnace for supplying molten glass, a forming chamber including a pool of molten metal for supporting glass and means for forming the glass into flat glass while supporting it on and conveying it along the molten metal, and means for delivering a layer of molten glass from the glassmaking furnace to the glass forming chamber and connecting a discharge end of the furnace to an inlet end of the forming chamber, the improvement comprising

means, mounted inside the glass forming chamber, spaced from and facing the upper surface of the pool of molten metal for facing the upper surface of a delivered layer of molten glass, and spaced from an overlying roof portion of the forming chamber, for directing heat received from the molten glass substantially immediately following its delivery onto the molten metal back to the glass, said means being located inside the chamber in a zone of the chamber adjacent its inlet end where a delivered layer of glass is supported and conveyed prior to reaching a stable thickness.

13. In a method of making glass comprising the steps of melting and refining glass, delivering a layer of molten glass onto a pool of molten metal, supporting it on and conveying it along the molten metal while cooling it to form a dimensionally stable continuous sheet of glass and thereafter withdrawing the continuous sheet of glass from the pool of molten metal, the improvement comprising

retarding sufficiently the loss of heat from the upper surface of the layer of molten glass substantially immediately following its delivery onto the molten metal and before the layer of molten glass reaches a stable thickness to maintain its viscosity within the range of from 10^3 to 10^5 poises to cause the continuous sheet of glass to have observably diminished optical distortion along the direction of its conveyance during forming.

3,928,011

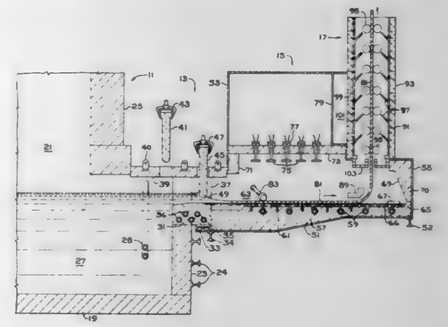
APPARATUS AND METHOD FOR CONTROLLING THE ORIENTATION OF A NEWLY-FORMED CONTINUOUS SHEET OF FLAT GLASS

James R. Schornhorst, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 15, 1974, Ser. No. 514,968

Int. Cl.² C03B *18/02*

U.S. Cl. 65—65 A **15 Claims**



1. In an apparatus for making flat glass comprising and enclosed forming chamber having an upstream inlet end, a downstream outlet end, a bottom portion containing a pool of molten metal, a pair of sidewalls extending from the upstream end to the downstream end of the chamber and a roof portion providing a headspace above the pool of molten metal; means for delivering molten glass to the forming chamber at its upstream end and onto the pool of molten metal; means for advancing the glass along the surface of the pool of molten metal and for applying forces to it to form a continuous sheet of glass; means for sufficiently cooling the glass during its advance to cause the formed continuous sheet of glass to be dimensionally stable; means for lifting the formed continuous sheet of glass upwardly from the pool of molten metal; and means for conveying the lifted sheet of glass upwardly from the forming chamber, the improvement comprising:

means for individually adjusting the temperatures of the marginal edge portions of the dimensionally stable sheet of glass during lifting for controlling the alignment of the sheet of glass while conveying it upward wherein said temperature adjusting means includes at least one cooler on each side of the chamber in the headspace above the glass and having a cooling face facing the advancing glass on the pool of molten metal and a cooling face facing the upwardly conveyed glass, each cooling face being effective for removing sufficient heat from the glass to control the location at which the glass facing the cooling lifts from the molten metal.

11. In a method of making glass comprising the steps of delivering molten glass onto a pool of molten metal in a bottom portion of a forming chamber having an upstream end, sidewalls, a downstream end, and a roof portion enclosing a headspace above the pool of molten metal; advancing the

glass along the surface of the pool of molten metal toward the downstream end of the forming chamber; cooling the glass during its advance and applying forces thereto to form a continuous sheet of glass; thereafter lifting the sheet of glass upwardly from the pool of molten metal and conveying it upwardly thereform, te improvement comprising:

individually adjusting the temperature of the marginal edge portions of the sheet of glass during lifting to control the alignment of the sheet of glass while conveying it upwardly, wherein the temperatures of the marginal edge portions of the sheet of glass are adjusted to decrease the radius of curvature of the marginal edge portion of the glass sheet during lifting on the side of the sheet that is closest to a forming chamber sidewall.

3,928,012

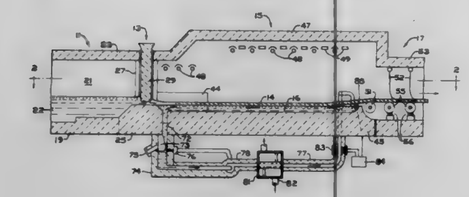
METHOD AND APPARATUS FOR REGULATING THE TEMPERATURE OF A GLASS SHEET FLOAT TANK

William C. Harrell, Sarver, and Homer R. Foster, Kittanning, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 338,496, March 6, 1973, Pat. No. 3,843,345. This application Oct. 21, 1974, Ser. No. 516,693. The portion of the term of this patent subsequent to Oct. 22, 1991, has been disclaimed.

Int. Cl.² C03B *18/02*

U.S. Cl. 65—65 A **20 Claims**



2. In a method of manufacturing flat glass wherein a layer of glass is advanced in a path from an upstream location to a downstream location along the surface of a pool of molten metal while the glass is cooled to form a continuous sheet of glass, the improvement comprising

removing a portion of the molten metal from the pool of molten metal at the upstream location,

regulating the temperature of the removed portion of molten metal, and

directing the temperature-regulated metal into the pool of molten metal at the downstream location.

11. In an apparatus for making flat glass comprising a forming chamber containing a pool of molten metal and having an upstream, inlet end and a downstream, outlet end; means for delivering molten glass onto the pool of molten metal in the forming chamber in its upstream end, means for advancing the glass in a path along the surface of the pool of molten metal toward the downstream end of the forming chamber; means for cooling the glass during its advance for forming a continuous sheet of glass therefrom; and means for removing the formed sheet of glass from the pool of molten metal and from the forming chamber; the improvement comprising

means for removing a portion of the molten metal from the upstream end of the pool of molten metal,

means for regulating the temperature of the removed molten metal, and

means for directing temperature-regulated metal into the downstream end of the pool of molten metal.

3,928,013

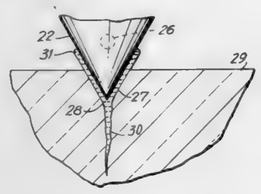
METHOD FOR THE DIRECT MANUFACTURE OF TEMPERED GLASS SHEETS FROM A RIBBON OF GLASS

Walter K. French, Montrose, N.Y., assignor to The Seagrave Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 426,526, Dec. 20, 1973, Pat. No. 3,875,766. This application May 17, 1974, Ser. No. 470,815

Int. Cl.² C03B *21/02*

U.S. Cl. 65—97 **6 Claims**



1. The process for the formation of discrete sheets of tempered glass directly from a flat, continuous band of glass withdrawn from a melt, said band being at a temperature below the softening point, above the strain relief point, and preferably in the range of the annealing point, comprising the steps of forming a score line by drawing a scoring implement pressed against a surface of said sheet transversely across said sheet while continuously supplying to the glass engaging tip of said implement limited quantities of liquid, said liquid being supplied at a rate to prevent lateral flow substantially beyond the path of said score line, thus to define a score line including depthwisely extending fissures into which increments of said liquid have been drawn, thereafter flexing said band about a bending axis extending through said score line, thus to break said band along said line and sever an increment from said band, and thereafter separating said severed increment from said band and subjecting the same to quenching influence to temper the increment.

3,928,014

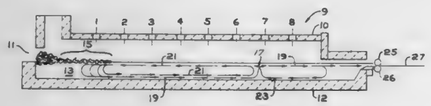
METHOD FOR PRODUCING FLAT GLASS

Leonard A. Knavish, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 29, 1974, Ser. No. 465,053

Int. Cl.² C03B *5/04*

U.S. Cl. 65—136 **11 Claims**



1. A method for producing flat glass, having a high temperature melting glass composition which includes a component which detrimentally volatilizes at the melting temperature, in a continuous tank-type flat glass-producing furnace, said furnace comprising an inlet end wall having a glass batch feeding inlet, a front end wall having an outlet delivering molten glass to a ribbon forming means, and top and botton walls and two generally parallel sidewalls defining a channel through which molten glass flows from the inlet end wall toward the front end wall, said method comprising:

a. feeding glassmaking ingredients to the furnace through the batch feeding inlet to a bath of molten glass already contained in the furnace,

b. flowing said molten glass through said furnace from the inlet end wall to the glass ribbon forming means,

c. applying heat to said molten glass as it is flowing through said furnace, so as to melt the glassmaking ingredients and to maintain said glass in the molten condition; said heating creating convection currents within said molten glass flow and a spring zone of upwardly rising thermal current, said spring zone separating the furnace into a melting zone and a thermal conditioning zone, said melting zone extending from the inlet end wall of the furnace to the spring zone, and the thermal conditioning zone extending from the spring zone to the glass ribbon forming means,

d. regulating the application of heat so as to locate said spring zone near the outlet end of the furnace such that the ratio of the melting zone length to the thermal conditioning zone length is at least **1.25** to **1**,

e. withdrawing a layer of the molten glass which passes substantially uninterruptedly from the spring zone to said ribbon forming means near the top surface of the molten glass from the furnace, through said outlet, and into said ribbon forming means to form a continuous ribbon of flat glass.

3,928,015

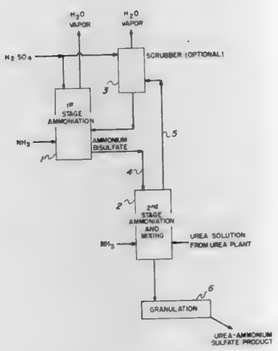
MANUFACTURE OF UREA-AMMONIUM SULATE FROM SULFURIC ACID, AMMONIA, AND UREA

Milton R. Siegel, and Oscar E. Moore, both of Florence, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 518,413, Oct. 29, 1974. This application June 9, 1975, Ser. No. 580,837

Int. Cl.² C05C *3/00, 9/00*

U.S. Cl. 71—28 **13 Claims**



1. A process for the production of solid urea-ammonium sulfate fertilizers from sulfuric acid, ammonia, and urea, which comprises the steps of:

a. simultaneously introducing into a first-stage reacting means a stream of sulfuric acid and a stream of ammonia, said sulfuric acid containing from about 25 to about 95 percent H_2SO_4 and the relative proportions of said ammonia and said sulfuric acid fed thereto sufficient to yield therein an NH_3:SO_4 mole ratio in the range from about 0.7 to about 1.3;

b. retaining the resulting ammonium bisulfate intermediate product in said first-stage reacting means at a temperature in the range from about 200°F to about 350°F for a period of time ranging from about 1 minute to about 15 minutes; said residence time and said temperatures being sufficient to effect predetermined water vapor disengagement mentioned in step (e) infra from said intermediate bisulfate product in said first-stage reacting means;

c. withdrawing from said first-stage reacting means at least a portion of said ammonium bisulfate intermediate product produced therein and simultaneously introducing same, together with a stream of ammonia and a stream of urea, into a second-stage reacting means, the proportion of ammonia fed thereto in relation to said ammonium bisulfate being sufficient to effect therein an NH_3:SO_4 mole ratio ranging from about 1.7 to about 2.0, said urea stream fed to said second-stage reacting means containing from about 95 percent to about 100 percent urea by weight and introducted thereinto at a temperature substantially about equal to the temperature of the material maintained therein ranging from about 270°F to about 320°F;

d. retaining the resulting homogeneous mixture of urea-ammonium sulfate co-melt and particulate ammonium sulfate in said second-stage reacting means for a period of time ranging from about one to about 300 seconds:

e. offgasing from said second-stage reacting means mainly ammonia and water vapor, the quantity of said water vapor so offgased together with that removed by disengagement from said first-stage reacting means in step (b) supra being sufficient in toto to ultimately yield said solid urea-ammonium sulfate product with a moisture content ranging from about 0.1 to about 5 percent by weight and being substantially effected by the autogenous heat of reaction; and

f. removing at least a portion of the resulting homogeneous mixture of urea-ammonium sulfate co-melt and particulate ammonium sulfate, said urea melt containing upwards of about 50 percent of the input ammonium sulfate as co-melt therewith, to granulation means wherefrom is removed as product said solid urea ammonium sulfate.

3,928,016

PROCESS OF MANUFACTURING PHOSPHATE FERTILIZER

Robert Michel, 1000 N. Ashley Drive, Suite 800, Tampa, Fla. 33602

Filed May 22, 1973, Ser. No. 362,869

Int. Cl.² C05B *11/16*

U.S. Cl. 71—42 **9 Claims**

1. A process of manufacturing phosphate fertilizer from phosphate rock, which comprises preparing a mixture of crushed phosphate rock, water, and a catalytically effective amount of a catalyst which is a water-soluble iron salt, adjusting the pH of the mixture to an alkaline value and permitting the mixture thus obtained to react at a temperature between about 20° to 80°C until soil-soluble phosphate has been formed.

3,928,017

VIOLURIC ACID AS AN ALGAECIDE

John D. Douros, Jr., and Al F. Kerst, both of Littleton, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 78,322, Aug. 31, 1970, Pat. No. 3,728,461. This application Dec. 15, 1972, Ser. No. 315,711

Int. Cl. A01n *23/00*

U.S. Cl. 71—67 **34 Claims**

1. A method of killing, preventing and inhibiting the growth of algae which comprises applying an effective algaecidal amount of violuric acid to the algae.

3,928,018
N-SUBSTITUTED-P-(2-CHLOROETHYL)-PHOSPHONAMIDATES AS YIELD IMPROVERS

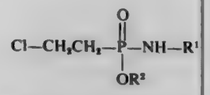
David I. Randall, and Robert W. Wynn, both of Easton, Pa., assignors to GAF Corporation, New York, N.Y.

Continuation of Ser. No. 230,456, Feb. 29, 1972, abandoned, which is a division of Ser. No. 881,579, Dec. 2, 1969, Pat. No. 3,679,780. This application Feb. 11, 1974, Ser. No. 441,317

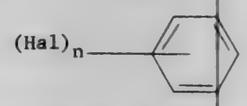
Int. Cl.² A01N *9/36*

U.S. Cl. 71—86 **9 Claims**

1. A method for increasing plant yield which comprises contacting the plant to be treated with an effective amount of a composition comprising an inert carrier and a plant yield increasing amount of a 2-chloroethyl phosphonamidic ester of the formula:



wherein R^1 is halophenyl, having the formula



wherein Hal is chlorine or bromine, *n* is an integer from 1 to 3 and R^2 is alkyl of one to seven carbon atoms or haloalkyl of one to seven carbon atoms wherein halo is chlorine.

3,928,019
FROTH FLOTATION METHOD

Gary B. Marsh, Woodbridge, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Filed Nov. 27, 1974, Ser. No. 527,684

Int. Cl.² C22B *1/00*

U.S. Cl. 75—2 **5 Claims**

1. In the flotation separation of a calcium-bearing mineral from an ore wherein an ore pulp is dispersed with a soluble alkali silicate, a polyvalent metal salt is used as a depressant for one or more gangue minerals, and a calcium-bearing mineral is floated with a fatty acid collector, the improvement which comprises adding the polyvalent metal salt and the alkali silicate to the pulp in the form of a dilute stable hydrosol obtained by adding to a solution of polyvalent metal salt an agent capable of complexing metallic cations in the salt to form stable complex cations and mixing the resulting solution with a solution of alkali metal silicate.

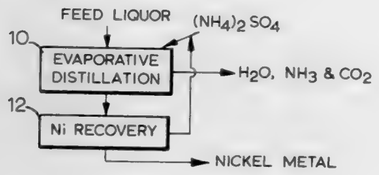
3,928,020
TREATMENT OF NICKEL-BEARING AMMONIUM CARBONATE LEACH LIQUORS

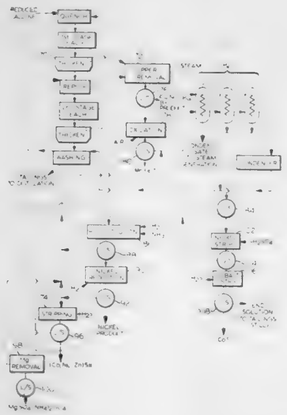
Donald Robert Weir, Fort Saskatchewan, Canada, assignor to Sherritt Gordon Mines Limited, Toronto, Canada

Filed July 10, 1973, Ser. No. 377,998

Int. Cl.² C22B *23/04*

U.S. Cl. 75—.5 A **15 Claims**





1. The process for recovering nickel in elemental form from a nickel-containing aqueous ammoniacal ammonium carbonate feed liquor which comprises the steps of: adjusting the composition of said liquor such that it contains at least about 1.5 moles of sulphur in the form of dissolved ammonium sulphate per mole of contained nickel; heating said so-adjusted ammoniacal ammonium carbonate liquor to drive off carbon dioxide and ammonia and to produce a nickel diammine sulphate solution having a nickel concentration at least equal to the nickel concentration of said feed liquor; recovering nickel in elemental form from said nickel diammine sulphate solution by reacting said solution (from said heating step) with hydrogen at elevated temperature and pressure to reduce contained nickel to elemental powder form and to produce a reduction end solution containing at least one mole of ammonium sulphate per mole of (recovered) elemental nickel produced; and recycling reduction end solution containing said ammonium sulphate to supply, at least in part, the sulphur requirements of said feed liquor composition adjustment step.

11. The process for recovering nickel in elemental form from a nickel-containing aqueous ammoniacal ammonium carbonate feed liquor which is contaminated with chloride ions which comprises the steps of: adjusting the composition of said liquor such that it contains at least about 1.5 moles of sulphur in the form of dissolved ammonium sulphate per mole of contained nickel; heating said so-adjusted ammoniacal ammonium carbonate feed liquor to drive off carbon dioxide and ammonia and to evaporate water therefrom; continuing said heating to form and precipitate a nickel sulphate-ammonium sulphate double salt while leaving said chloride ions in solution; separating said chloride ion containing solution from said precipitated double salt; dissolving said double salt in an ammoniacal solution to form nickel diammine sulphate solution, reacting said nickel diammine sulphate solution with hydrogen at elevated temperature and pressure to reduce contained nickel to elemental powder form and to produce a reduction end solution containing at least 1 mole of ammonium sulphate per mole of elemental nickel produced and recycling reduction end solution containing said ammonium sulphate to supply, at least in part, the sulphur requirements of said feed liquor composition adjustment step.

3,928,021
PROCESS OF REDUCING IRON ORES

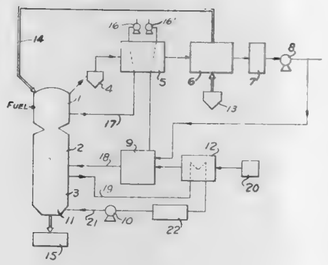
Kenji Matsubara, Yokohama, and Shigeo Kanbara, Chigasaki, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 210,434, Dec. 21, 1971, abandoned. This application Dec. 14, 1973, Ser. No. 424,915

Claims priority, application Japan, Dec. 28, 1970, 45-120075

Int. Cl.² C21B *13/02*

U.S. Cl. 75—35 **4 Claims**



1. A fluidized bed process for the direct reduction of iron ores comprising:

providing a vertical reactor vessel through which ore will fall during reduction and having arranged in vertically descending order a fluidized bed zone, an intermediate zone and a cooling zone;

pelletizing and drying a blend of iron ore and solid reducing agent to provide pellets having a diameter of between 1mm to 15mm;

charging the dried pellets into the fluidized bed zone of said vessel wherein said pellets are fluidized;

maintaining the temperature of said fluidized bed zone within the range of 800°C to 1100°C to thereby reduce the iron ore and to produce a first hot off-gas;

transferring said hot off-gas to a first heat exchanger;

feeding air to said first heat exchanger to obtain hot air;

feeding a portion of said hot air to said fluidized bed zone in order to fluidize the pellets and effect combustion of reductants;

feeding another portion of said hot air to a gasifying furnace to gasify preheated oil therein to produce a reducing gas;

blowing said reducing gas into said intermediate zone of the vessel below the fluidized bed zone, whereby the upward flow of said reducing gas will contribute to fluidization of the pellets in the fluidized bed zone and enhance the reduction of the iron ore of the pellets;

removing a second off-gas from the upper portion of the cooling zone immediately below the intermediate zone;

transferring said second off-gas to a second heat exchanger to heat additonal air being fed to said gasifying furnace and thereby cooling said second off-gas;

further cooling the cooled second off-gas from the second heat exchanger;

blowing the twice cooled second off-gas to the lower portion of the cooling zone to cool the reduced pellets; and

discharging the cooled reduced pellets into a receiver.

3,928,022
METHOD OF PRODUCING FERROUS METAL OF CONSTANT PROPERTIES FROM HETEROGENEOUS MIXTURES

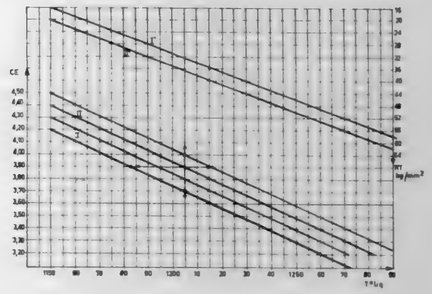
Henri Langagne, Tourcoing, France, assignor to La Bonvarite, Louvroil, France

Filed June 14, 1973, Ser. No. 369,841

Claims priority, application France, June 15, 1972, 72.22936

Int. Cl. C21c *7/00*

U.S. Cl. 75—51 **22 Claims**



1. A method of producing cast irons having predetermined properties from heterogeneous raw materials by melting said raw materials with corrective additives, comprising the steps of charging a furnace with alternate layers of fuel and raw materials, starting the operation of the furnace, continuously introducing ozone into the furnace as well as at least one compound liberating nitrogen and a halogen at the melting temperature of the raw materials, determining melting curves corresponding to different liquidus temperatures for a select range of raw materials as a function of the eutectic temperature by introducing different amounts of one constituent of the raw materials for a given temperature and plotting a diagram thereof, determining from this diagram the amount of said one of the raw materials to be added to any mixture of available raw materials for a given carbon equivalent in view of obtaining the optimum liquidus temperature corresponding to said mixture and the corresponding tensile strength, continuing the melting as a function of the desired relationship of carbon equivalent, eutectic temperature, amounts of said one of the raw materials to be added and tensile strength, thereby directly maintaining the optimum temperature for the desired production.

3,928,023
METHOD OF TREATING OFF GASES FROM IRON PROCESSES

Harry B. Claflin, Upland, Calif., assignor to Kaiser Steel Corporation, Oakland, Calif.

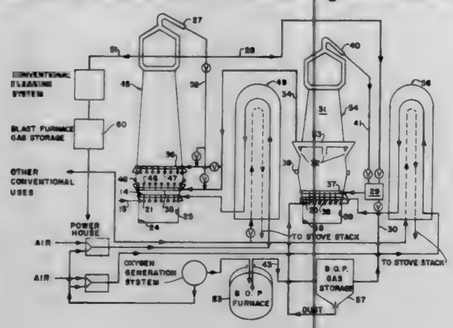
Division of Ser. No. 221,900, Jan. 31, 1972, Pat. No. 3,814,404. This application Sept. 20, 1973, Ser. No. 399,260

Int. Cl.² C21C *7/00;* **C21B** *3/04*

U.S. Cl. 75—60 **6 Claims**

1. The method of treating off gases from iron processes which comprises establishing a bed of hot solid carbonaceous reducing agent in a reformer, adding an oxidizing gas to said reformer to maintain said solid carbonaceous fuel as a hot bed, conducting said off gases containing CO_2 and fine iron oxide particles to said reformer without an intermediate step that removes said fine particles, and introducing said off gases into the lower portion of said hot bed of carbonaceous solid

reducing agent, whereby iron oxide is reduced to metallic iron and CO_2 is converted to CO, withdrawing molten iron from



the base of said reformer and withdrawing CO containing gas from said reformer.

3,928,024

ORE PRETREATMENT PROCESS

David E. Mueller, and Marnell A. Segura, both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 111,680, Feb. 1, 1971, abandoned. This application Nov. 19, 1974, Ser. No. 525,070

Int. Cl.² C22B *1/11*

U.S. Cl. 75—6 **10 Claims**

1. A method of pretreating a gangue-containing particulate oxidic iron ore to lower the sulfur and phosphorus in the ore which comprises washing a particulate oxidic iron ore consisting essentially of iron oxides and gangue with an aqueous solution of an inorganic base and thereafter washing the ore with water.

3,928,025

TOOL STEEL FOR HOT WORKING

Toshio Okuno, Yasugi, and Rinzo Sasaki, Nagoya, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Nov. 27, 1974, Ser. No. 527,740

Claims priority, application Japan, Nov. 28, 1973, 48-132737

Int. Cl.² C22C *38/44*, *38/4638/52*

U.S. Cl. 75—128 B **4 Claims**

1. A tool steel for hot working consisting essentially of, in weight percent, from 0.25 to 0.60% carbon, not more than 0.6% silicon, from 0.50 to 1.50% manganese, from 0.50 to 1.50% nickel, from 1.50 to 3.50% chromium, from 2.00 to 4.50% molybdenum, from 1.20 to 3.00% vanadium, from 0.50 to 5.00% cobalt, balance essentially iron and impurities.

3,928,026

HIGH TEMPERATURE NICOCRALY COATINGS

Ralph J. Hecht, West Palm Beach, Fla.; George W. Goward, North Haven, and Richard C. Elam, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 13, 1974, Ser. No. 469,186

Int. Cl.² C22C *30/00*

U.S. Cl. 75—134 F **10 Claims**

1. A coating composition for the nickel-base and cobalt-base alloys which consists essentially of, by weight, 11–48% cobalt, 10–40% chromium, 9–15% aluminum, 0.01–1.0% of a reactive metal selected from the group consisting of yttrium, scandium, thorium, lanthanum and other rare earth elements balance essentially nickel, the nickel content being at least about 15%.

3,928,027

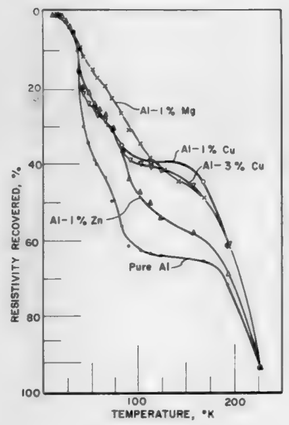
NONSWELLING ALLOY

Samuel D. Harkness, W. Simsbury, Conn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Continuation of Ser. No. 345,421, March 27, 1973, abandoned. This application Aug. 20, 1974, Ser. No. 499,104

Int. Cl.² C22C *21/12*

U.S. Cl. 75—139 **1 Claim**



1. In a water-cooled nuclear reactor designed for operation in the temperature range of from 0° to 200°C. and to neutron fluences greater than 10^{19} n/cm² (E > 0.1 MeV), the improvement wherein the fuel element cladding and structural material of the reactor consists of an alloy containing 99% aluminum and 1% copper whereby swelling of the cladding and structural material will not occur under irradiation since the alloy exhibits little swelling upon irradiation due to the combined effects of substitutional solute interstitial trapping and second-phase precipitation.

3,928,028

GRAIN REFINEMENT OF COPPER ALLOYS BY PHOSPHIDE INOCULATION

John C. Yarwood, Madison, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Apr. 5, 1974, Ser. No. 458,302

Int. Cl.² C22C *9/00*, *9/02*, *9/05*, *1/02*

U.S. Cl. 75—153 **10 Claims**

1. A method of casting molten copper base alloys comprising the steps of:

A. providing a melt of copper base alloy with a content of 0.002 to 0.5% phosphorus at a temperature of 20° to 200°C. above the liquids;

B. then stirring into said melt at said temperature 0.002 to 1.0% of a transition metal selected from the group consisting of Zr, Hf, Ti, V, Cr, Mn and mixtures thereof; and

C. then pouring the molten alloy said temperature into a cooled mold within a period of about 2 minutes after the said addition of transition metal, thereby forming a solidified uniform ingot of fine grain size without substantial loss of said transition metal.

3,928,029

BRAZE ALLOY SYSTEM

Harry R. Fisk, and Jeffrey J. Clark, both of Tempe, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Feb. 27, 1974, Ser. No. 446,434

Int. Cl.² C22C *9/05*

U.S. Cl. 75—159 **7 Claims**

1. A composition adapted for use as a brazing alloy consisting essentially of, in percent by weight, from about 49 to 58 percent copper, about 25 to 32 percent manganese, about 2 to 10 percent nickel, about 7 to 16 percent gold and up to 4 percent cobalt.

3,928,030

COBALT-TUNGSTEN HIGH TEMPERATURE EUTECTIC ALLOY

Edward R. Buchanan, Burnt Hills, and Lemuel A. Tarshis, Latham, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed July 16, 1971, Ser. No. 163,290

Int. Cl.² C22C *19/07*

U.S. Cl. 75—170 **4 Claims**

1. A directionally solidified cast alloy body consisting essentially in weight percent of 53–57% of cobalt and 43–47% of tungsten, said body having a reinforcing phase of an intermetallic compound having the approximate chemical composition Co_7W_6 dispersed in a matrix phase of a cobalt-tungsten solid solution.

3,928,031

METHOD OF ELECTROPHOTOGRAPHY

Koichi Kinoshita, Narashino, Japan, assignor to Katsuragawa Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 169,654, Aug. 6, 1971, abandoned. This application Aug. 15, 1973, Ser. No. 388,638

Int. Cl. G03g *13/22*

U.S. Cl. 96—1 R **16 Claims**

1. A method of electrophotography comprising the steps of preparing a photosensitive element including a highly insulative layer which includes a mixture of highly insulative material and a material highly reflective to visible light rays, said mixture containing at least 5% by weight of said highly reflective material and said highly reflective material comprising fine crystals of metal compound reflecting visible light rays, a photoconductive layer manifesting persistent internal polarization and an electrode layer transparent to visible light rays, said layers being laminated in the order mentioned and bonded together into an integral structure; applying a first electric field across said photosensitive element to deposit a charge of one polarity on the surface of said highly insulative layer; applying a second electric field across said photosensitive element to deposit a charge of the opposite polarity on the surface of said highly insulative layer; projecting a light image upon said photoconductive layer through said electrode layer concurrently with the application of said second electric field whereby to form a latent image corresponding to said light image on the surface of said highly insulative layer; developing said latent image with a colored toner under ambient light to form a powder image; and correcting said powder image during development by adjusting the density of toner while observing the powder image against the reflective background provided by said highly insulative layer.

3,928,032

METHODS OF AND APPARATUS FOR REPRODUCING IMAGES BY TRANSFERRING ELECTROSTATIC CHARGES

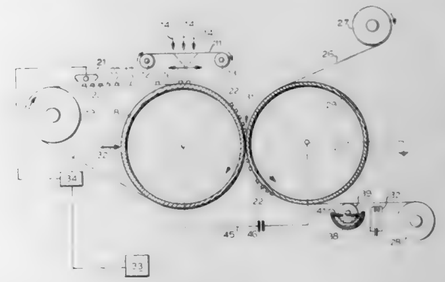
Pham Kim Quang, Dieppe, France, assignor to La Cellophane, Paris, France

Filed Dec. 3, 1973, Ser. No. 421,041

Claims priority, application France, Dec. 8, 1972, 72.43711

Int. Cl.³ G03G *13/18*

U.S. Cl. 96—1 R **3 Claims**



1. A method of reproducing an image on an uncharged surface, comprising the steps of:

forming the image of electrostatic charges on an intermediate photoconductive surface;

advancing the photoconductive surface while in contact with a first electrode;

advancing the uncharged surface while in contact with a second electrode juxtaposed with the first electrode to bring the uncharged surface and photoconductive surface into proximity with one another so that there is virtual contact therebetween;

creating a potential difference between the electrodes by charging the first electrode with a corono-charging device while grounding the second electrode, to thereby transfer the image of electrostatic charges to the uncharged surface, said potential difference due to the capacitance determined by the interaction of the electrodes, photoconductive surface and uncharged surface; and

connecting the electrodes with a circuit which includes an auxiliary capacitor having a capacitance substantially higher than the capacitance existing between the electrodes.

3,928,033

COLOUR ELECTROPHOTOGRAPHIC METHOD IN WHICH THE RECORDING SHEET IS CHARGED TO ITS SATURATION VOLTAGE

Masayasu Anzai, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Feb. 1, 1974, Ser. No. 438,610

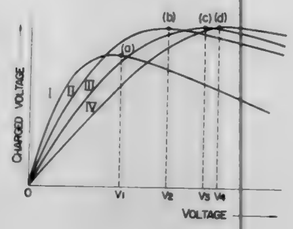
Claims priority, application Japan, Feb. 5, 1973, 48-13742

Int. Cl.² G03G *13/01*

U.S. Cl. 96—1.2 **25 Claims**

1. An electrophotographic method of reproducing a colour picture on a recording paper sheet from an original picture while successively changing a plurality of colour filters corresponding to the number of required colours and the same number of developers individually producing the complementary colours of the corresponding colour filters and repeating a number of times corresponding to the number of the filters the image-forming process comprising the steps of imparting an electric charge to the entire surface of the recording paper sheet, forming a first charge latent image on the recording paper sheet corresponding to the complementary colour of the first colour filter of the original picture through the first colour filter, developing a first colour image on the recording paper sheet on which the first latent image has been formed

by a first developer producing the complementary colour of the first colour filter, and fixing the first colour image on the recording paper sheet, characterized in that in the electric



charge imparting step in each image-forming process the charged voltage of the recording paper sheet is selected around its saturation value.

3,928,034

ELECTRON TRANSPORT LAYER OVER AN INORGANIC PHOTOCONDUCTIVE LAYER

Paul J. Regensburger, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 94,071, Dec. 1, 1970, abandoned, which is a continuation-in-part of Ser. No. 14,282, Feb. 26, 1970, abandoned. This application Mar. 16, 1973, Ser. No. 341,839

Int. Cl.² G03G *5/08, 13/22*

U.S. Cl. 96—1.5 **10 Claims**

5. An electrophotographic plate comprising in successive layers:

a. a conductive substrate,

b. a blocking layer,

c. an inorganic photoconductive layer, and

d. an organic charge transport layer consisting essentially of 2,4,7-trinitor-9-fluorenone; the photoconductive layer having a thickness between 0.02 and 25 microns and dispersed in from 0 to 95 volume percent binder but comprising at least 25 volume percent when an electronically inert binder is employed, the photoconductor binder thickness ranging from 0.05 to 20 microns when a binder is employed; the transport material, if dispersed in an electronically inert binder, is present in a volume ratio of at least 25 percent active transport material to electronically inert binder.

3,928,035

ELECTROPHOTOGRAPHIC ELEMENT WHICH INCLUDES A PHOTOCONDUCTIVE POLYVINYL CARBAZOLE LAYER CONTAINING AN AROMATIC ANHYDRIDE

Denis J. Curtin, Chicago, Ill., assignor to A. B. Dick Company, Niles, Ill.

Filed June 7, 1974, Ser. No. 477,301

Int. Cl.² G03G *5/04*

U.S. Cl. 96—1.5 **12 Claims**

1. An electrophotographic element for use in an electrophotographic copy process comprising a substrate having a photoconductive coating on one surface of the substrate comprising 2,4,7-trinitro-9-fluorenone, a polyvinylcarbazole, and an aromatic anhydride in which the materials are present in the composition of which the coating is formed in the ratio of about 0.49 to 1.23 moles of the 2,4,7-trinitro-9-fluorenone per monomeric unit of the polyvinylcarbazole, and 0.05 to 5.0 parts by weight of the aromatic anhydride per 100 parts by weight of the polyvinylcarbazole.

3,928,036

FLEXIBLE XEROGRAPHIC PHOTORECEPTOR ELEMENT

Robert N. Jones, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1974, Ser. No. 518,554

Int. Cl.² G03G *5/04, 5/08*

U.S. Cl. 96—1.5 **3 Claims**

1. A flexible photoreceptor member comprising:

a. a conductive substrate comprising an elastomeric material formed in the shape of a continuous belt, said elastomer containing a second phase which results in electrical conductivity; and

b. a photoconductive layer overlying and bonded to said substrate, said photoconductive layer comprising a polymeric matrix of an electrically insulating elastomeric resin containing therein an interlocking network of photoconductive material in the form of continuous chains which pass through the photoconductive layer thickness, said photoconductor being present in a volume concentration from about 1 to 15 percent by volume of said binder layer, with the outer surface of said layer comprising elastomeric resin material.

3,928,037

TITANIUM DIOXIDE WITH ALUMINUM OXIDE OR ALUMINIUM OXIDE PLUS SILICON DIOXIDE PRECIPITATED THEREON AS PIGMENT FOR DIFFUSION TRANSFER

Louis Maria De Haes, Edegem, Belgium, and Hans-Georg Völz, Krefeld-Bockum, Germany, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed May 15, 1974, Ser. No. 470,271

Claims priority, application Germany, May 16, 1973, 2324590

Int. Cl.² G03C *5/54, 7/00, 1/48, 1/40*

U.S. Cl. 96—29 R **25 Claims**

1. In a photographic diffusion transfer reversal process in which a photo-sensitive silver halide emulsion layer is exposed and developed to form a visible negative silver image in the emulsion layer and to transfer either a silver halide complex or a dye to an image receiving layer to make a silver image or dye image visible against a white pigment background layer covering said negative silver image wherein said silver halide emulsion layer forms part of a monosheet material comprising in order, either

A. a non-transparent support, a silver halide emulsion layer, a pigment layer or means for applying a pigment layer and an image receiving layer or

B. a transparent support, an image receiving layer, a pigment layer or means for applying a pigment layer, and a silver halide emulsion layer,

the improvement wherein the pigment particles of the pigment layer consist essentially of white titanium dioxide pigment particles that have been modified by precipitation thereon of hydrated aluminum oxide alone or in admixture with hydrated silicon dioxide.

3,928,038

PROCESS FOR MAKING MULTI-COLOR INTAGLIO PLATES AND CYLINDERS FOR USE IN GRAVURE PRINTING

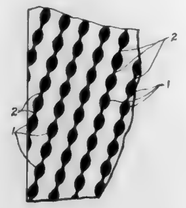
Michael J. Bergin, Bayside, N.Y., assignor to Intaglio Service Corporation, Long Island City, N.Y.

Filed Feb. 28, 1974, Ser. No. 447,005

Int. Cl.² G03F *5/00, 7/24*

U.S. Cl. 96—38 **8 Claims**

1. A process of making a set of color separated intaglio plates for use in multi-color gravure printing which comprises the steps of making a set of continuous tone color separated positive transparencies, each of which bears a color separated image corresponding to a specific color different from the specific color of each other image, and assembling each of said transparencies separately with a transparent halftone screen having closely spaced parallel lines of connected opaque dots extending in a single direction, said dots being of a length greater than their width and with successive dots connected by narrow necks of a width substantially less than



the maximum width of the dots with said lines of connected dots of each of said screens arranged at an angle to the horizontal which is different from the angle to the horizontal at which the corresponding lines of connected dots of each other screen are arranged.

3,928,039

METHOD FOR MODIFYING VESICULAR IMAGES

Ernst Schumacher, Fribourg, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 123,821, March 12, 1971, abandoned. This application Nov. 14, 1973, Ser. No. 415,585

Claims priority, application Switzerland, Mar. 13, 1970, 3822/70

Int. Cl.² G03C *5/24*

U.S. Cl. 96—48 R` **3 Claims**

1. A method for modifying a vesicular image present in a hydrophobic thermoplastic layer selected from the group consisting of polyvinylidene chloride, polymethacrylonitrile, polystyrene and polyepoxide polymers and co-polymers made from acrylonitrile with ethyl acrylate and co-polymers of acrylonitrile with vinylidene chloride into a non-light-scattering image which method comprises allowing a solid or liquid image substance selected from the group consisting of dyestuffs and optical brighteners, the image substance being dissolved in a lipophilic organic solvent, which is capable of causing the hydrophobic thermoplastic bubble walls of the vesicular image to swell, to act on the vesicular image by contacting said lipophilic organic solvent composition with the surface of said thermoplastic layer so that the solution of the image substance is deposited at the image areas rich in bubbles, removing the excess adhering solution and drying the image material.

3,928,040

THE USE OF A POLYVALENT CATION-ORGANIC PHOSPHONIC ACID COMPLEX AS A BLEACHING AGENT

Isao Shimamura, and Haruhiko Iwano, both of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

Filed July 8, 1974, Ser. No. 486,737

Claims priority, application Japan, July 7, 1973, 48-76842

Int. Cl.² G03C *5/32*

U.S. Cl. 96—60 **18 Claims**

1. In a method for developing, bleaching and fixing an image-wise exposed silver halide photographic material, bleaching and fixing comprising separate steps in said method, the improvement comprising bleaching the silver halide photographic material with a bleaching solution containing a polyvalent cation-organic phosphonic acid complex as the bleaching agent and a re-halogenating agent selected from the group consisting of an alkali metal halide and an ammonium halide.

3,928,041

DEVELOPMENT INHIBITOR YIELDING COMPOUND FOR SILVER HALIDE PHOTOGRAPHY

Mitsuto Fujiwhara; Takaya Endo; Ryosuke Satoh; Toyoaki Masukawa, and Takahiro Uozumi, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

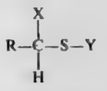
Filed Dec. 14, 1973, Ser. No. 424,831

Claims priority, application Japan, Dec. 18, 1972, 47-126217

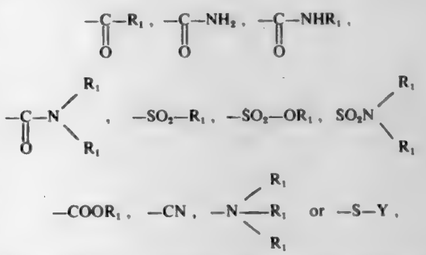
Int. Cl.² G03C *5/30*

U.S. Cl. 96—66.3 **9 Claims**

1. A method for development of an imagewise-exposed light-sensitive silver halide photographic material which comprises subjecting the imagewise-exposed light-sensitive silver halide photographic material to development in the presence of a development inhibitor-yielding compound having the formula



wherein X is halogen, $-COOR_2$ or $-OZ$, where Z is an alkyl group, aryl group, heterocyclic ring residue, acyl group, or $-SO_2-R_3$, R_3 is an alkyl group, aryl group or heterocyclic ring residue and R_2 is an alkyl group; and R is



where each R_1 is an aliphatic group or an aryl group or two of the R_1 groups may, together with the adjacent nitrogen atom, form a heterocyclic ring residue, and Y is a group which, when the thioether linkage has been split, forms, together with the sulfur atom, a compound having a development-inhibiting action.

3,928,042

PRESERVATIVES FOR PHOTOGRAPHIC DEVELOPERS

Arthur Karchmar, Guttenberg, and Leo Lawrence Nejelski, Jr., Tabor, both of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 22, 1974, Ser. No. 490,361

Int. Cl.² G03C *5/30*

U.S. Cl. 96—66.4 **14 Claims**

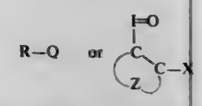
1. An aqueous solution for developing photographic material comprising a silver halide developing agent and as a preservative therefor a compound selected from the group consisting of salts, esters and amides of plicatic acid in an amount effective to extend the storage life of said solution, said amount being at least 0.01% on a weight/volume basis.

3,928,043
PHOTOGRAPHIC ELEMENTS CONTAINING IODOSO OR IODOXY OXIDANTS

Samuel John Ciurca, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 16, 1973, Ser. No. 416,551
Int. Cl.² G03C *1/40, 1/48, 1/10, 1/40*
U.S. Cl. 96—77 **23 Claims**

9. A photographic element comprising a support having thereon at least one layer containing a silver halide emulsion, at least one layer containing an image dye-providing material and at least one layer containing an oxidant according to the formulae:



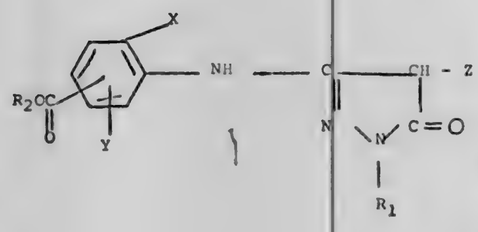
wherein Q is an iodoxy diacetate, R is a group containing a 5- to 7-membered carbocyclic or heterocyclic group covalently bonded to the iodine atom of Q through a carbon atom of said cyclic group, X is a carboxylic acid group or a sulfonic acid group, and Z represents a group containing the atoms necessary to form a 5- to 7-membered ring with the remainder of the atoms of said formula.

3,928,044
MAGENTA COUPLER-CONTAINING PHOTOGRAPHIC SILVER HALIDE MATERIALS

Atsuaki Arai; Yasushi Oishi; Minoru Yamada; Yukio Yokota; Mitsugu Tanaka, and Kozo Inouye, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

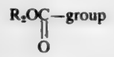
Filed Nov. 14, 1973, Ser. No. 415,853
Claims priority, application Japan, Nov. 15, 1972, 47-114446
Int. Cl.² G03C *1/40*
U.S. Cl. 96—100 **20 Claims**

1. A silver halide photographic emulsion containing at least one 3-anilino-2-pyrazol-5-one type nondiffusing magenta coupler of the following formula (I)



(I)

wherein R_1 represents a phenyl group substituted in at least one ortho-position thereof, with an alkyl group, an alkoxy group, an alkylthio group, a cyano group or a halogen atom R_2 represents an alkyl group or an alkyl group substituted with an alkoxy group, an aryloxy group, an acyloxy group, an alkoxycarbonyl group, an acylamino group or a carbamoyl group; or a heterocyclic group selected from the group consisting of a 2-thiazolyl, a 2-benzothiazolyl, a 2-benzoxazolyl, a 2-oxazolyl, a 2-imidazolyl or a 2-benzimidazolyl group; X and Y each represents an alkyl group, aryl group, an alkoxy group, an aryloxy group, an alkylthio group, an arylthio group, an amino group, an amido group, a hydroxyl group, a cyano group, a nitro group or a halogen atom and wherein Y additionally represents a hydrogen atom, wherein said

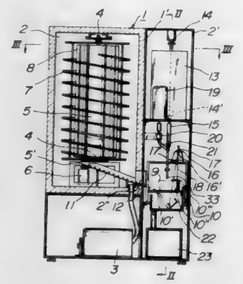


is at the meta or para-position of the phenyl group of said coupler; and Z represents a hydrogen atom or a coupling removable residue which can be removed by coupling with an oxidation product of a primary aromatic amino color developing agent.

3,928,045
AUTOMATIC COOKING AND VENDING MACHINE FOR BOILED NOODLES

Tatsui Tsunoda, Kobe; Santaro Oka, Nishinomiya; Kazuma Miyamoto, Kobe; Makoto Matsumoto, Kobe, and Heiji Baba, Kobe, all of Japan, assignors to Kawatetsu Metrological Equipment and Vending Machine Company, Ltd., Nishinomiya, Japan

Filed Feb. 7, 1975, Ser. No. 547,789
Int. Cl.² A47J *27/18*
U.S. Cl. 99—330 **1 Claim**



1. An automatic cooking and vending machine for boiled noodles comprising a casing composed of a refrigeration chamber and a cooking chamber arranged side by side and made integral with each other through a partition wall, said refrigeration chamber being communicated with said cooking chamber through an opening provided at the lower part of said partition wall and normally closed by a door, a vertical rotary drum rotatably journaled in said refrigeration chamber and provided around its periphery with a plurality of radial blades extending along said rotary drum and equidistantly apart from each other, a driving step motor for rotating said drum in a stepwise manner, a stationary spiral chute surrounding said radial blades and extending along said rotary drum, a plurality of containers each containing a bunch of boiled noodles and disposed in a space defined by said radial blades and said spiral chute, each of said containers being provided at its lid with an injection opening, an inclined guide member having one end located directly below the lower outlet end of said spiral chute, a cooking table arranged in said cooking chamber and adapted to be inclined, means for inclining said cooking table and returning it into its original position, a hot water tank and a broth tank arranged above said cooking table and provided with respective supply pipes communicated at their lower ends with an injection pipe adapted to be raised and lowered and extended through said injection opening of said lid into said container, means for raising and lowering said injection pipe, and electromagnetic valves provided for said supply pipes of said hot water tank and broth tank, respectively, and adapted to open and close said supply pipe of said hot water tank and then simultaneously open both said supply pipes of said hot water tank and broth tank.

3,928,046
BRIGHTENER ADDITIVE FOR INSPECTION PENETRANT DEVELOPERS

James R. Alburger, 5007 Hillard Ave., La Canada, Calif. 91011

Filed Jan. 17, 1974, Ser. No. 434,228
Int. Cl.² C09D *11/00*
U.S. Cl. 106—19 **8 Claims**

1. In an inspection penetrant process in which a dyed liquid penetrant is applied to test parts, surface penetrant is removed leaving entrapments of said dyed penetrant liquid in any surface flaws, a developer is applied to said test parts, and said parts are inspected for residual entrapments of penetrant liquid in said surface flaws, the improvement wherein said developer is comprised essentially of the following formulation, stated in weight percentages:

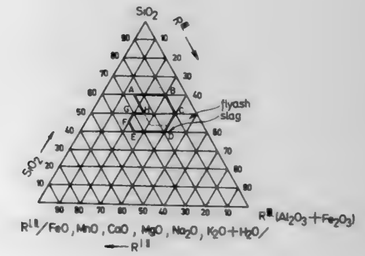
Pigment	10% to 90%
Pyrrolidone-type brightener	.5% to 20%
Wetting agent	Zero to 5%
Glycol	Zero to 5%
Carrier liquid	Zero to 89.5%

said pigment being at least one member selected from the group consisting of:
Talc,
Calcium carbonate,
Magnesium oxide,
Magnesium sulfate,
Silica,
Silica aerogel,
Clay,
Diatomaceous earth,
Barytes, and
Sodium benzoate;
said pyrrolidone-type brightener being at least one member of the group consisting of:
2-Pyrrolidone,
N-methyl-2-pyrrolidone,
N-Vinyl-2-pyrrolidone, and
3.3-Dimethyl-2-pyrrolidone; and
said carrier liquid being at least one member of the group consisting of:
methanol,
ethanol,
isopropanol,
Butanol,
Methylene chloride,
1.1.1-Trichloroethane,
Perchloroethylene, and
Water:
each of said pigment, brightener and carrier liquid ingredients being employed selectively, singly, and in combination.

3,928,047
ARTIFICIAL STONE AND METHOD FOR MAKING THE STONE FROM A COAL BYPRODUCT

László Kapolyi; Imre Kubovits, both of Budapest; Ferenc Kaszanitzky, Tatabanya, and Szabo, Dunaharaszti, all of Hungary, assignors to Tatabanyai Szenbanyak, Tatabanya, Hungary

Continuation of Ser. No. 279,253, Aug. 9, 1972, abandoned, which is a continuation-in-part of Ser. Nos. 27,450, April 10, 1970, abandoned, and Ser. No. 27,461, April 10, 1970, abandoned. This application July 10, 1974, Ser. No. 486,996
Claims priority, application Hungary, Apr. 17, 1969, TA 1016
Int. Cl.² C03C *3/22*; C03B *35/00, 5/18, 32/00*
U.S. Cl. 106—39.6 **8 Claims**



1. A process for making artificial stone, which comprises:
a. adjusting the composition of a coal byproduct having a melting point not higher than approximately 1500°C, with at least one chemical ingredient which contains, expressed as an oxide, at least one member selected from the group consisting of SiO_2, Al_2O_3, Fe_2O_3, FeO, MnO, CaO, MgO, Na_2O, and K_2O, to obtain a starting composition which is contained within the area demarcated with bold lines in the phase diagram of FIG. 1 and is defined by corner points marked with the letters from A to H;
b. melting the starting composition between about 1,350°C and about 1,500°C until the contained gases are substantially removed from the melt;
c. forming the resulting melt into objects at a temperature between about 1,200°C and about 1,400°C; then without the need for reheating
d. crystallizing the formed object at a temperature between about 900°C and about 1,300°C for a period of from about 0.5 hour to about 6 hours; and
e. cooling the resulting crystallized object.

3,928,048
ENAMEL GLAZE COMPOSITION

Minoru Kitayama; Kasuyuki Taniguchi; Kyoichi Kaneta, and Kikuzi Hirose, all of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 13, 1972, Ser. No. 314,665
Claims priority, application Japan, July 18, 1972, 47-71230; July 20, 1972, 47-71989
Int. Cl.² C03C *5/02*
U.S. Cl. 106—48 **3 Claims**

1. In an enamel glaze composition for coating onto steel sheets of the type composed of an enamel frit and conventional mill additives, the improvement consisting essentially of said composition further containing from 0.03 – 0.3 parts by weight as carbon of an inorganic carbonaceous material and 0.1 – 10 parts by weight of a high valency oxide of a polyvalent metal, per 100 parts by weight of said enamel frit to prevent the formation of fishscale.

3,928,049
ALKALI-RESISTANT MINERAL FIBERS USEFUL FOR THE REINFORCEMENT OF VARIOUS MOULDED ARTICLES

Takashi Otouma; Susumu Aoki, both of Yokohama; Toshihiro Minaki, Yamato-kooriyama; Kenichi Shibata, Nara, and Kentaro Mori, Tokyo, all of Japan, assignors to Japan Asbestos Co., Ltd., Japan

Filed July 2, 1974, Ser. No. 485,135
Claims priority, application Japan, July 19, 1973, 48-80491
Int. Cl.² C03C *13/00*
U.S. Cl. 106—50 **5 Claims**

1. An alkali-resistant glassy fiber usable as a reinforcing material in calcium silicate-containing molded articles and cement- or gypsum-containing molded articles, which consists essentially of 38 to 50.0% by weight of silica; 10 to 35% by weight of iron oxide and manganese oxide; and 15 to 19% by weight of zirconium oxide.

3,928,050
COLORED GLASS COMPOSITIONS

John Jasinski, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 239,725, March 30, 1972, Pat. No. 3,844,796, which is a continuation-in-part of Ser. No. 883,317, Dec. 8, 1969, abandoned. This application Mar. 1, 1973, Ser. No. 337,168
Int. Cl.² C03C *3/04, 3/24*
U.S. Cl. 106—52 **4 Claims**

1. A method of making a Champagne Green colored glass which comprises adding to a colorless flint glass in the forehearth a mixture of colorant oxides consisting of 0.03% to 0.15% Cr_2O_3, 0.01% to 0.04% MnO and 0.005% to 0.015% CoO based on the weight of the composite glass, whereby the composite glass has C.I.E. characteristics for a ten millimeter thickness falling within the following ranges:

DWL (mμ)	560–570
Purity (%)	40–58
Brightness (%)	3–15.

3,928,051
DIELECTRIC GLASSES

James M. Brownlow, Crompond; Relva C. Buchanan, Fishkill, and Rao R. Tummala, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1973, Ser. No. 422,378
Int. Cl.² C03C *3/10, 3/04, 5/02*
U.S. Cl. 106—53 **5 Claims**

1. A dielectric glass having a thermal coefficient of expansion (from room temperature to 300°C) in the range of approximately 83.9-86.0 × 10^{-7} per °C and a crazing temperature with respect to a magnesium oxide overcoat above about 480°C, consisting essentially of the following ingredients in the following proportions:

	Percent by weight
Lead oxide (PbO)	56.0–56.7
Boric oxide (B_2O_3)	21.0–21.5
Silicon oxide (SiO_2)	12.0–12.5
Alumina (Al_2O_3)	1.0–2.8
Calcium oxide (CaO)	3.5–5.5
Magnesium oxide (MgO)	2.0
Sodium oxide (Na_2O)	2.0.

3,928,052
METHODS AND COMPOSITIONS FOR SEALING SUBTERRANEAN EARTH FORMATIONS

Clarence C. Clement, Jr., Odessa, Tex., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 387,881, Aug. 13, 1973, Pat. No. 3,835,926. This application May 6, 1974, Ser. No. 467,189
Int. Cl.² C04B *7/02*
U.S. Cl. 106—76 **12 Claims**

1. A cementing composition for sealing a highly permeable formation comprising a pumpable slurry which will not set while being agitated and which rapidly sets when in a static condition, said slurry comprising sufficient water to form a pumpable slurry mixed with the components which form a thixotropic composition consisting essentially of hydraulic cement, a silicate compound present in an amount of up to about 18% by weight of dry cement, a hydroxide present in an amount of at least 0.5% by weight of dry cement and a salt present in an amount of about 0.5%–30% by weight of dry cement.

3,928,053
METHOD OF IMPROVING THE GRADE OF PHOSPHORIC ACID BY-PRODUCT GYPSUM TO BE USED AS AN INHIBITOR FOR CEMENT SETTING AND ITS APPARATUS

Yoshiharu Fukuda, Tokyo; Toshio Onishi, Koshigaya, and Akitoshi Takeuchi, Yokohama, all of Japan, assignors to Onoda Cement Company, Ltd., Onoda, Japan

Filed June 4, 1973, Ser. No. 366,402
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C04B *11/00*
U.S. Cl. 106—109 **1 Claim**

1. Method of improving the grade of phosphoric acid by-product gypsum to be used as an inhibitor for cement setting comprising:

A. Dispersing lime stone powder in hot gas stream to calcine it into quick lime,

B. Dispersing phosphoric acid by-product gypsum powder in hot gas containing said quick lime to calcine it into half hydrated or soluble anhydrous gypsum,

C. Separating calcined quick lime and gypsum from gas and then subjecting said calcined product to hydration.

3,928,054
PRODUCTS OF WOLLASTONITE CRYSTALS AND MANUFACTURING THE SAME

Kazuhiko Kubo, Gifu, Japan, assignor to Kabushiki Kaisha Osaka Packing Seizosho, Osaka, Japan

Filed Sept. 4, 1973, Ser. No. 394,251
Int. Cl.² C04B *1/00*
U.S. Cl. 106—120 **9 Claims**

1. A method for manufacturing a shaped product of wollastonite crystals comprising the steps of;

1. dispersing agglomerates of wollastonite crystals into water to produce a dispersion of agglomerates of wollastonite crystals, said agglomerates of wollastonite crystals having a substantially spherical shell construction which has a diameter of up to 150μ and comprises a shell and interior space thereby defined, said shell being made of wollastonite crystals containing at least 50% by weight of β-wollastonite crystals interlocked with one another three-dimensionally,

2. shaping the resulting dispersion of agglomerates of wollastonite crystals into desired shape, and then,

3. drying the resulting shape to produce a shaped product of wollastonite crystals.

3,928,055
METHOD OF PREPARING A COATING COMPOSITION

Sidney Frank Brailsford, Maidstone, and Donald Robson McDonald, Larkfield Green, both of England, assignors to Reed Paper Group Limited, London, England

Continuation of Ser. No. 801,245, Feb. 19, 1969, abandoned. This application Aug. 25, 1971, Ser. No. 175,008
Claims priority, application United Kingdom, Feb. 16, 1968, 7818/68
Int. Cl.² C08L *3/00*
U.S. Cl. 106—214 **2 Claims**

1. A method of preparing a coating composition which comprises:

a. forming a slurry in an aqueous medium of a pigment selected from the group consisting of china clay, whiting and titanium dioxide, and an uncooked or partially cooked starch, and

b. passing the slurry successively through a plurality of continuous agitation milling stages, using sand or glass, steel or plastic beads, whereby the heat generated by said continuous milling stages supplies some of the heat necessary to cook the starch and would raise the temperature of the slurry to about 65°C. without external heating before its discharge from the milling stages and wherein a first one or more of the continuous agitation milling stages is thermally insulated, and a second one or more of said stages is heated to a temperature of from about 85°C. to 100°C. to cook the starch passing therethrough.

3,928,056
PAN RELEASE PRODUCT AND PROCESS

Bernard F. Szuhaj, 303 S. Brewster Ave., Lombard, Ill. 60148

Filed July 29, 1974, Ser. No. 492,763
Int. Cl.² C08H *9/00*
U.S. Cl. 106—243 **5 Claims**

1. A pan release product comprising a mechanical atomizer containing an aqueous suspension of an acylated, hydroxylated lecithin, all of said lecithin being both acylated and hydroxylated, said acylation being carried out to reduce the free amino nitrogen value from about 10% to about 90% relative to crude lecithin, said hydroxylation being carried out with at least 1% hydrogen peroxide by weight of the unmodified lecithin to reduce the iodine value from about 5% to about 20% relative to crude lecithin.

3,928,057
TiO_2 PIGMENT COATED WITH POROUS ALUMINA/SILICA AND DENSE SILICA

Raymond Lew DeColibus, Camden, Tenn., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed May 30, 1974, Ser. No. 474,540
Int. Cl.² C09C *1/36*
U.S. Cl. 106—300 **18 Claims**

1. Coated TiO_2 pigment consisting essentially of a core of pigmentary TiO_2, a porous inner coating of silica and alumina, said silica, calculated as SiO_2, being present in an amount less than about 12% by weight, based on said pigmentary TiO_2, and said alumina, calculated as Al_2O_3, being present in an amount less than about 11% by weight, based on said pigmentary TiO_2, and a dense outer coating of silica in an amount, calculated as SiO_2, between about 2% by weight and about 17% by weight, based on said pigmentary TiO_2.

3,928,058
EXPANDED SYNTHETIC CALCIUM SILICATES

Carl Heinrich Schmitt-Henco, Mainz, and Eberhard Rauschenfels, Wiesbaden, both of Germany, assignors to Dyckerhoff Zementwerke A.G., Wiesbaden, Germany

Filed Dec. 20, 1972, Ser. No. 317,021
Claims priority, application Germany, Dec. 21, 1971, 2163384; Sept. 9, 1972, 2244299
Int. Cl.² C09C *1/02*
U.S. Cl. 106—306 **13 Claims**

1. Synthetic calcium silicate expanded beads having a bubble-like structure, having an external sealing skin and numerous small non-intercommunicating air bubbles in the interior of the bead separated by thin walls, the beads comprising as major constituents CaO and SiO_2 and having a raw grain density below 1.5 g/cc.

3,928,059
HYDROUS MAGNESIUM CONTAINING SILICATE MINERALS WITH REDUCED ABSORBENCIES

Thomas Howard Ferrigno, 29 Clover Hill Circle, Trenton, N.J. 08638

Continuation-in-part of Ser. No. 306,926, Nov. 15, 1972, Pat. No. 3,856,545. This application Oct. 4, 1974, Ser. No. 512,836
Int. Cl.² C09C *1/28*
U.S. Cl. 106—306 **17 Claims**

1. A material adapted for use as a filler or extender in paints, plastics or the like consisting essentially of a calcined agglomerate comprising from about 40 to 75 parts by weight of a hydrous magnesium containing silicate mineral, from about 15 to 40 parts by weight of a feldspar mineral; from about 0 to 10 parts by weight of a fluxing agent selected from the group consisting of boric acid, boric oxide, borax, colemanite, sodium polyphosphates, low melting glasses, frits, lead oxide, barium oxide, soda-lime glasses and eutectic combinations of inorganic oxides; from about 0 to 20 parts by weight of an inorganic colorant; and from about 1 to 6 parts by weight of a temporary binder selected from the group consisting of expanding lattice montmorillonites, soluble silicates, starch, polyglycols, lignin, lignin sulfonates and esters, casein and cellulose derivatives; said agglomerates embodying a plurality of mineral particles having an average size of from about 0.3 to 40 microns bonded together to form agglomerates having an average size of from about 10 microns to ¼ inch and having a porosity of less than about 25% by volume of that of the parent hydrous magnesium containing silicate mineral.

3,928,060
COMPOSITION AND METHOD FOR INHIBITING ASBESTOS FIBER DUST

Malcolm Kent Smith, Mountainside, and Robert Winslow White, Califon, both of N.J., assignors to N L Industries, Inc., Hightstown, N.J.

Filed Aug. 13, 1973, Ser. No. 387,919
Int. Cl.² C08J *7/04*
U.S. Cl. 106—308 Q **18 Claims**

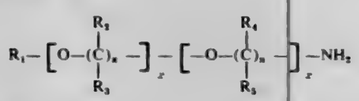
1. A method of processing asbestos fibers to inhibit dusting of said fibers which comprises charging asbestos fibers of from about 1 to about 25 micrometers in length into a treatment zone, coating said asbestos fibers with an effective amount to inhibit fiber dusting of an anti-dusting agent consisting essentially of the partially esterified reaction product of a polyhydroxy compound derived from a C_3 to C_8 alkyne and a compound selected from the group consisting of saturated and unsaturated C_1 through C_8 carboxylic acids and their anhydrides for a predetermined time period, agitating said fibers during said coating step and drying said fibers at room temperature after agitation.

3,928,061
ASPHALT COMPOSITIONS HAVING IMPROVED ADHESION TO AGGREGATE

Martin Edvin Hellsten, Odsmal; Anders William Klingberg, and Stig Erik Svennberg, both of Stenungsund, all of Sweden, assignors to Mo och Damsjo Aktiebolag, Ornskaldsvit, Sweden

Filed Apr. 23, 1973, Ser. No. 353,271
Claims priority, application Sweden, Apr. 26, 1972, 5527/72
Int. Cl.² C08L *95/00*; **C09D** *3/24*
U.S. Cl. 106—273 N **19 Claims**

1. An asphalt composition having improved adhesion to aggregate comprising asphalt and an amount to improve the adhesion of the asphalt to aggregate of an ether amine having the formula:



wherein:

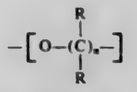
R_1 is a hydrocarbon group having from about six to about 16 carbon atoms and selected from the group consisting of alkyl and alkenyl;

R_2, R_3, R_4 and R_5 are selected from the group consisting of hydrogen and alkyl radicals having from one to about two carbon atoms;

n_1 and n_2 are numbers within the range from one to about four;

x_1 and x_2 are numbers within the range from zero to about five, the sum of x_1 and x_2 being from one to five;

the total number of carbon atoms in each

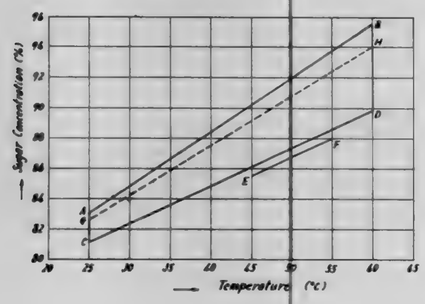


unit being from one to about four.

3,928,062
METHOD FOR OBTAINING ANHYDROUS FRUCTOSE CRYSTALS

Toshio Yamauchi, Kyoto, Japan, assignor to Dai-ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Jan. 22, 1974, Ser. No. 435,525
Claims priority, application Japan, Feb. 12, 1973, 48-17718
Int. Cl.² C13K *9/00*
U.S. Cl. 127—60 **10 Claims**



1. A process for obtaining anhydrous fructose crystals without the formation of fructose hemihydrate or fructose dihydrate crystals from an aqueous solution of fructose, which comprises:

a. seeding anhydrous fructose crystals into a metastable supersaturated solution of fructose in water having an initial sugar concentration of less than 92% (dry basis) of total sugar comprising 88–99% fructose and a temperature of 25°–60° C. located at a point within the range defined by points G, H, C and D in FIG. 1 of the accompanying Drawing;

b. simultaneously crystallizing anhydrous fructose from said solution and concentrating said solution by evaporation under reduced pressure at a rate sufficient to shift the equilibrium between the solid and liquid phases of the resultant system in a direction which increases the degree of supersaturation of the liquid phase within said range to continuously crystallize anhydrous fructose from said metastable supersaturated solution without the formation of hemihydrate or dihydrate crystals; and

c. recovering anhydrous fructose crystals from the resultant mother liquor having a fructose concentration within said range.

3,928,063
METHOD FOR CLEANING A CRYSTAL MICROBALANCE

William H. King, Jr., Florham Park, and Gideon M. Varga, Jr., Clark, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed June 5, 1974, Ser. No. 476,601
Int. Cl.² B08B *7/02*; **H04R** *17/10*
U.S. Cl. 134—1 **7 Claims**

1. A method for removing particles from the surface of a piezoelectric crystal used in its measuring mode as a microbalance, comprising the steps of:

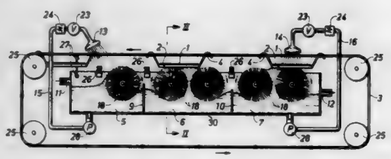
a. applying a variable electrical AC voltage to said crystal, thereby generating variable frequency signals in a frequency range extending from a lower frequency below the natural clean resonant frequency of said crystal to an upper frequency above said natural clean resonant frequency of said crystal, whereby said crystal vibrates in different vibrational modes corresponding to said frequency range spanning said natural clean resonant frequency; and

b. vibrating said crystal as in step (a) at a relatively high power compared to the power at which said crystal vibrates in its measuring mode, whereby said particles are dislodged from and vibrated off of said crystal and thereby said crystal is substantially cleaned of any particles present on the surface thereof.

3,928,064
METHOD FOR CLEANING PLATE-SHAPED OBJECTS

Kurt Anders Holm, Skoghall, Sweden, assignor to Uddeholms AB, Sweden

Filed July 11, 1974, Ser. No. 487,733
Claims priority, application Sweden, Aug. 8, 1973, 7310894
Int. Cl.² B08B *1/02*; **15** *77;21 D;102;3.15*
U.S. Cl. 134—6 **2 Claims**



1. A method of cleaning plate-shaped objects by moving the objects past a tub containing a cleaning liquid and having a plurality of brushes mounted therein, comprising conveying the plate-shaped objects across and above the tub, serially arranging the brushes in the tub along the path of movement of the objects with at least certain of the brushes disposed in pairs and partially immersed in the cleaning liquid, positioning the periphery of the brushes above the top of the tub so as to come into contact with the plate-shaped objects, and rotating one brush of a pair in the opposite direction as the rotation of the other brush of the pair, so as to form a meniscus therebetween contacting the surface of the object being cleaned.

3,928,065
COMPOSITION FOR CLEANING METAL COOKWARE

Richard Savino, Park Ridge, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed Dec. 19, 1973, Ser. No. 426,399
Int. Cl.² B08B *3/08*, *7/04*; **C11D** *7/20*, *7/50*
U.S. Cl. 134—7 **6 Claims**

1. A detergent composition in fine particulate form suitable for use in removing adhering carbonized food debris from metal surfaces comprising in admixture:

i. one part by weight of a solvent selected from the group consisting of N-methyl-2-pyrrolidone, N-ethyl-2-pyrrolidone, N-isopropyl-2-pyrrolidone, and 2-amino-2-methyl-1-propanol, and mixtures thereof, and

ii. about 3 parts to about 9 parts by weight of sedimentary kaolin.

6. A process for removing hardened adhering food debris from metal surfaces comprising the steps of:

i. covering said debris with a flowing, particulate mixture comprising about 3 parts to about 9 parts by weight of sedimentary kaolin and one part by weight of a solvent selected from the group consisting of N-methyl-2-pyrrolidone, N-ethyl-2-pyrrolidone, N-isopropyl-2-pyrrolidone, or 2-amino-2-methyl-1-propanol, and mixtures thereof,

ii. contacting said mixture with hot water at 120°F to about 200°F, to form an aqueous cleansing medium,

iii. allowing said aqueous cleansing medium to stand for at least 10 seconds and until at least a part of said debris has loosened, and

iv. rinsing said aqueous cleansing medium and said loosened debris from said metal surface.

3,928,066
ELECTROLYTIC CELL WITH MINIMAL WATER DISSIPATION

Hoshea L. Lewenstein, 118 Mason Terrace, Brookline, Mass. 02146

Filed May 7, 1974, Ser. No. 467,711
Int. Cl.² H01M *39/04*
U.S. Cl. 136—6 L **11 Claims**

1. A rechargeable battery comprising:

a lead anode;

a lead dioxide cathode;

a sulfuric acid electrolyte within a container thereof, said lead anode and said lead dioxide cathode being immersed in said electrolyte; and

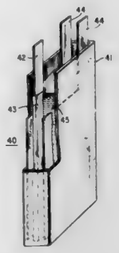
a quaternary ammonium compound located within said container in contact with said electrolyte, said compound being soluble in water to form an anion and a quaternary ammonium cation.

3,928,067
POLYALKYLENE GLYCOL ETHERS IN RECHARGEABLE LITHIUM NONAQUEOUS BATTERIES

John Broadhead, Morristown; Thomas Michael Putvinski, Scotch Plains, and Forrest Allen Trumbore, Summit, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 6, 1974, Ser. No. 503,853
Int. Cl.² H01M *10/00*
U.S. Cl. 136—6 LN **6 Claims**

1. A nonaqueous secondary battery comprising a lithium negative electrode, a positive electrode, electrolyte and microporous polymer separators in which the electrolyte consists essentially of a solvent, 0.01–2.0 molar lithium salt, where the lithium salt is selected from the group consisting of LiI and $LiClO_4$, and other dopants characterized in that the other

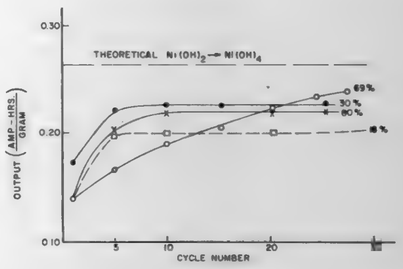


dopants are 1–5 weight percent of tetraglyme and 0.01–0.6 molar tetrabutylammonium iodide.

3,928,068
ACTIVE ELECTRODE COMPOSITION AND ELECTRODE

John F. Jackovitz, Monroeville; Earl A. Pantier, Verona, and Christopher K. Wu, Turtle Creek, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 20, 1974, Ser. No. 471,731
Int. Cl.² H01M *43/04*
U.S. Cl. 136—24 **16 Claims**



1. A composition comprising:

A. a hydrated mixture of nickelous carbonate and nickelous hydroxide in a molar ratio of about **0.5** to about **1.5**; and

B. a compound selected from the group consisting of $CoCO_3$, $Co(OH)_2$, hydrates thereof, and mixtures thereof, wherein the number of cobalt atoms in said composition is about 2 to about 10 percent of the number of nickel atoms.

9. A method making an active electrode material comprising:

A. preparing a composition which comprises:

1. a hydrated mixture of nickelous carbonate and nickelous hydroxide in a molar ratio of about 0.5 to about 1.5;

2. a compound selected from the group consisting of CoO_3, $Co(OH)_2$, hydrates thereof, and mixtures thereof, where the number of cobalt atoms in the composition is about 2 to about 10 percent of the number of nickel atoms;

3. sufficient water to form a slurry; and

4. a suitable oxidant in an amount sufficient to oxidize about 30 to about 75 percent of the nickel and cobalt atoms to a quadrivalent state;

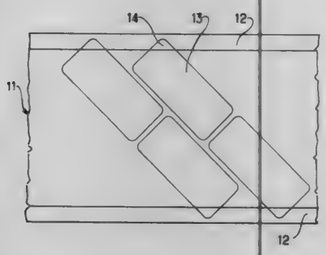
B. permitting said oxidant to oxidize about 30 to about 75 percent of the nickel and cobalt atoms to a quadrivalent state; and

C. separating the solids from said water.

3,928,069
METHOD FOR CUTTING OUT SUBSTANTIALLY RECTANGULAR ELECTRODES FROM A CONTINUOUS BAND OBTAINED BY SAID METHOD AND CELLS EMBODYING SAID ELECTRODES

Francis Sperandio, Le Bouscat, and Michel Leturque, Lormont, both of France, assignors to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed Sept. 5, 1974, Ser. No. 503,252
Claims priority, application France, July 12, 1974, 74.24356
Int. Cl. H01m *35/18*
U.S. Cl. 136—75 **8 Claims**



1. Method for cutting out substantially rectangular electrodes from a continuous strip comprising at least one zone uncoated with active material parallel to its longitudinal edges, characterized in that the edges of the electrodes are cut out obliquely in relation to the longitudinal axis of the strip so that angular corners of said electrodes are cut out in the uncoated zone of said strip.

5. An electrode comprising a rectangularly shaped body coated with active material in all its area except a corner portion of triangular configuration that is bare of said active material.

7. An electrochemical cell comprising a positive electrode, a negative electrode, and separator means between the electrodes forming a stack, electrolyte and a casing, said positive electrode comprising rectangularly shaped body with active material in all its area except a corner portion of triangular configuration bare of said active material.

3,928,070
ELECTROLYTE FOR ORGANIC ELECTROLYTE CELLS

Ronald G. Gunther, Mystic, Conn., assignor to Yardney Electric Corporation, Pawcatuck, Conn.

Filed Mar. 28, 1974, Ser. No. 455,580
Int. Cl.² H01M *6/04*
U.S. Cl. 136—83 R **15 Claims**

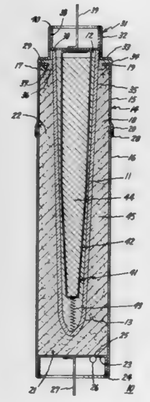
1. An improved current-producing, organic electrolyte cell which comprises an operable combination of an anode, a cathode, and an organic electrolyte substantially free of water and in which the improvement comprises a non-ionic surfactant which is soluble in said organic electrolyte and which is present in said cell in an amount of at least about 0.01 percent by weight of the weight of said organic electrolyte.

3,928,071
HERMETICALLY SEALED PRIMARY BATTERY

Roy F. Thornton, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 4, 1974, Ser. No. 512,150
Int. Cl.² H01M *23/00*
U.S. Cl. 136—83 R **3 Claims**

1. A hermetically sealed primary battery comprising an inner casing of a solid sodium beta-alumina ion-conductive material with one open end, an outer metallic casing comprising an upper portion and a lower portion, the upper portion with opposite open ends, an inwardly extending flange affixed to the upper portion at its first open end, the lower portion with an open and a closed end, the upper and lower portions sealed together at their associated open ends, the outer metallic casing surrounding the inner casing with the exterior surface of the flange on a lower plane than the surface of the open end of the inner casing and spaced from the inner casing, a metallic closure consisting of a cap portion with a flange and a cap insert, the flange of the cap portion positioned adjacent the flange of the upper portion of the outer metallic casing, a first glass seal sealing together the adjacent flanges of the upper portion of the outer metallic casing and of the cap portion of the metallic closure and sealing the adjacent flanges



to the outer wall of the inner casing adjacent its open end, a second glass seal sealing together the opposite surface of the flange of the upper portion of the outer metallic casing and a portion of the outer wall of the inner casing, the cap insert positioned within and sealed to the cap portion thereby closing the open end of the inner casing, an electronic conductor affixed to the interior surface of the cap insert and positioned within the interior surface of the inner casing, an anode selected from the class consisting of sodium, sodium as an amalgam, and sodium in a nonaqueous electrolyte in one of the casings, and a cathode in the other casing, the cathode functioning with a sodium type anode and a solid sodium beta-alumina ion-conductive electrolyte.

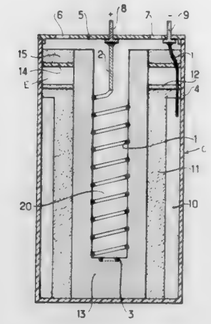
3,928,072
AIR DEPOLARIZED ELECTRIC CELL

Gerard Gerbier, and Pierre Depoix, both of Poitiers, France, assignors to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed July 18, 1974, Ser. No. 489,603
Claims priority, application France, Aug. 1, 1973, 73.28166; May 6, 1974, 74.15618
Int. Cl.² H01M *29/04*
U.S. Cl. 136—86 A **8 Claims**

1. Air depolarized electric cell comprising a negative electrode occupying a peripheral position, an electrolyte and a positive mass occupying a central position within said negative electrode, said positive electrode having a funnel located in the center of the positive mass, a metallic current collector

disposed in said funnel in contact with the walls of said funnel, the said current collector comprising at least one metallic wire

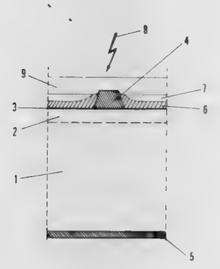


arranged along the wall of said funnel and at least partly embedded in the positive mass.

3,928,073
SOLAR CELLS

Jean Georges Besson, Meudon; Thuoc Nguyen Duy, Ivry, and Wolfgang Palz, Paris, all of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Continuation of Ser. No. 351,034, April 13, 1973, abandoned. This application Oct. 9, 1974, Ser. No. 513,461
Claims priority, application France, Apr. 19, 1972, 72.13738; May 3, 1972, 72.15599
Int. Cl.² H01L *31/02*
U.S. Cl. 136—89 **10 Claims**



1. A solar cell comprising a p-type doped semi-conductor body in whose upper part, exposed to the incident light, there is provided a thin n-type doped zone in the form of a continuous layer, the cell being covered in its lower part by a continuous metal electrode and in its upper part by a metal collector grid constituted of metal bars, wherein the n-type doped layer between the bars of the collector grid is covered by an insulating layer which is transparent to the incident radiation, said insulating layer being itself covered by a conductive layer which is also transparent to the incident radiation and insulated from the collector grid, said conductive layer being maintained at a fixed potential.

3,928,074
PRIMARY CELL WITH NEGATIVE ELECTRODE

Gerd Jung, and Jakob Bauer, both of Ellwangen, Germany, assignors to Varta Batterie Aktiengesellschaft, Germany

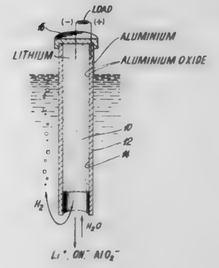
Filed Apr. 17, 1974, Ser. No. 461,512
Claims priority, application Germany, Apr. 21, 1973, 2320555
Int. Cl.² H01M *17/00*
U.S. Cl. 136—100 M **9 Claims**

1. Primary cell with a negative zinc or magnesium electrode and a positive depolarizer electrode and an electrolyte comprising a soluble polyethylene glycol monoalkyl ether, as corrosion inhibitor, the alkyl having from eight to 22, and preferably from eight to 18 carbon atoms.

3,928,075
CONSUMABLE FUEL ELEMENT FOR BATTERY APPLICATIONS

Dieter Bass, Baie D'Urfe, Canada, assignor to Canada Wire and Cable Limited, Toronto, Canada

Filed July 15, 1974, Ser. No. 488,410
Claims priority, application Canada, June 21, 1974, 203111
Int. Cl.² H01M *13/00*
U.S. Cl. 136—100 R **17 Claims**



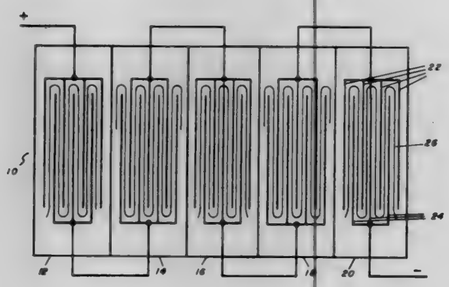
1. A water-activated fuel element comprising:
a. an alkali metal consumable anode;
b. a consumable cathode of aluminum or aluminum alloys in intimate contact with at least a portion of the surface of said anode, said cathode corroding in aqueous solutions of alkali metal hydroxide of a pH higher than 9 which are formed by the electrochemical reaction of said alkali metal with water;
c. an insulating layer separating said anode from said cathode along the contact area of anode and cathode and which is dissolved in aqueous solutions of said alkali metal hydroxide, said insulating layer being of a minimum thickness to insure intimate contact but no electrical short-circuit between said anode and cathode, and the thickness of said anode, cathode, and insulating layer being selected to assure constant mean rate of consumption of all parts of the fuel element as long as the element is in contact with water; and
d. electrical connections to said anode and cathode for withdrawing electric energy from the fuel element.

3,928,076

LiCl INHIBITOR FOR PERCHLORATE BATTERY

James R. Moser, deceased, late of Shrewsbury, Pa., and by Karen Moser, executrix, Bakersfield, Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 13, 1974, Ser. No. 505,825
Int. Cl.² H01M 17/02
U.S. Cl. 136—100 M 4 Claims



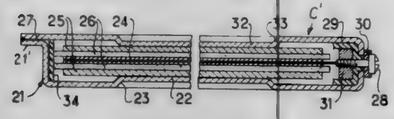
1. A cell comprising a magnesium anode, a cathode and an electrolyte consisting essentially of aqueous magnesium perchlorate, wherein the electrolyte contains lithium chloride in sufficient amount to inhibit the self-discharge reaction at said anode.

3,928,077

CASING FOR AN ELECTROCHEMICAL CELL HAVING SMALL BULK

Francis Sperandio, Le Bouscat, and Michel Guglieri, Bassens, both of France, assignors to Saft-Societe des Accumulateurs Fixes et de Traction, Fomainville, France

Filed Sept. 5, 1974, Ser. No. 503,253
Claims priority, application France, July 12, 1974, 74.24355
Int. Cl.² H01M 2/00
U.S. Cl. 136—111 2 Claims



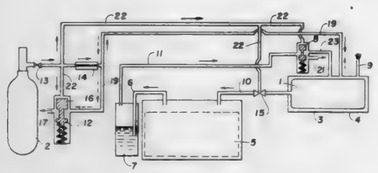
1. An electrochemical cell comprising a casing, electrolyte, a first electrode of one polarity, a second electrode and a third electrode both of like opposite polarity located respectively on each side of the first electrode, separator means between the electrodes and electrolyte within said casing, said casing comprising a metal sheet member having the shape of a shallow cup, a central part of the bottom of said casing being offset inwardly of said casing in relation to the remainder of said bottom and defining a peripheral rim in permanent contact with the said second electrode irrespective of outward deformation of said cell during use, and said cell also comprising a lid of insulating material over which the said member is crimped and terminal means connected to the first electrode sealingly mounted on said lid.

3,928,078

AUTOMATICALLY ACTIVATED BATTERY ASSEMBLY

Hans-Kurt Kothe, Kelkheim, Taunus, and Rudi Schneider, Falkenstein, Taunus, both of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Germany

Filed June 5, 1974, Ser. No. 476,719
Claims priority, application Germany, June 8, 1973, 2329362
Int. Cl.² H01M 1/06
U.S. Cl. 136—114 6 Claims



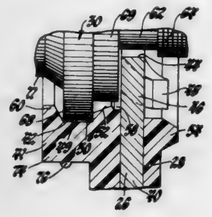
1. Automatically activated battery assembly comprising a battery having a plurality of cells, an electrolyte chamber separated from said cells, electrolyte activation line means connecting said cells with said electrolyte chamber, gas venting line means distinct from said electrolyte activation line means connecting said cells with said electrolyte chamber, valve means connected in said gas venting line means and having a vent opening, pressure gas chamber means connected by an activation gas line means to said electrolyte chamber, valve means connected in said activation gas line means and having a vent opening, an aperture member connected in said electrolyte activation line means, and adjustable venting means communicating with said activation gas line means for decreasing pressure in said activation gas line means.

3,928,079

BATTERY CABLE WITH DETACHABLY RETAINED CONNECTOR

Gene A. Jennings, Bristolville; John J. Streitferdt, Warren, and Lyle B. Suverison, Fowler, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 7, 1974, Ser. No. 512,869
Int. Cl.² H01M 5/00; H01R 3/02
U.S. Cl. 136—135 S 2 Claims



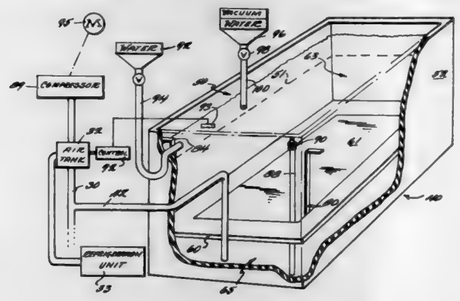
1. In a battery cable comprising an elastomeric cap having a transverse aperture therethrough, a cable terminal at least partially embedded in the elastomeric cap, said cable terminal having an aperture aligned with said cap aperture and portions adjacent said cable terminal aperture disposed in said cap aperture and a connector for mechanically and electrically connecting the cable terminal to a battery terminal, said connector having a portion disposed in said cap aperture between said cable terminal portions adjacent said cable terminal aperture and an entrance of said cap aperture, the improvement comprising, said cap having integral lip means extending inwardly toward the axis of said cap aperture and spaced axially from said cable terminal portions disposed in said cap aperture toward said cap aperture entrance, said lip means and said cable terminal portion cooperatively axially retaining said connector portion in said cap aperture, said lip means having an interference fit with said connector portion and being sufficiently flexible to permit said connector portion to be pushed past said lip means for detachable retainment between said lip means and said cable terminal portions.

3,928,080

PANCAKE BATTERY

Robert R. Aronson, Ferndale, Mich., assignor to Electric Fuel Propulsion Incorporated, Troy, Mich.

Continuation of Ser. No. 26,218, April 7, 1970, abandoned.
This application Aug. 3, 1973, Ser. No. 385,324
Int. Cl.² H01M 2/38
U.S. Cl. 136—160 6 Claims



1. A battery comprising,

a plurality of plates mounted substantially horizontally within said battery each comprised of a metallic grid with a paste applied thereto and wherein the thickness of said grid is 20 thousandths of an inch ± 2 thousandths and the thickness of said plate is 23 to 27 thousandths of an inch, a case for containing said plates and an electrolyte and having a region above said plates and a region below said plates so that electrolyte in said region above said plates flows through said plates to said region below said plates, means defining a passage between said upper and lower regions, said passage being separated from the region occupied by said plates including a tube and one way valve means in said tube preventing downward movement of said electrolyte,

means for transporting electrolyte in said region below said plates to said region above said plates via said tube including means for introducing air, at least intermittently, into said region below said plates so that said electrolyte moves up said passage into said region above said plates, and

means for cooling said air before introduction into said region below the plates.

3,928,081

METHOD FOR FABRICATING SEMICONDUCTOR DEVICES USING COMPOSITE MASK AND ION IMPLANTATION

James A. Marley, Jr., Saratoga, and Bohumil Polata, Los Altos, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Oct. 26, 1973, Ser. No. 409,903
Int. Cl.² H01L 7/44
U.S. Cl. 148—1.5 17 Claims

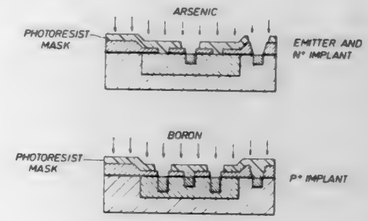
10. A method for fabricating semiconductor devices from a semiconductor body having a planar surface, forming a layer of material to be utilized as a mask on said surface, forming substantially simultaneously a plurality of openings in the layer of material to expose areas of said surface, selectively doping the exposed areas defined by said openings in sequence and selectively covering said openings so that the areas exposed thereby are not doped until the proper time in said sequence.

3,928,082

SELF-ALIGNED TRANSISTOR PROCESS

Frederic Nickels Schwettmann, Richardson, and John Luther Prince, III, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 28, 1973, Ser. No. 429,257
Int. Cl.² H01L 21/265
U.S. Cl. 148—1.5 6 Claims



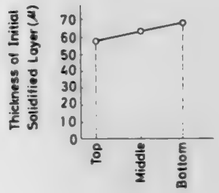
5. The process of claim 1, wherein said P+ conductivity producing impurity is selected from the group consisting of aluminum and boron.

3,928,083

PROCESS FOR PRODUCING AN ENAMELLING STEEL SHEET

Hisashi Gondo; Hiroshi Takechi; Kazuo Namba, all of Kisarazu; Matsuo Usuda, and Kouichi Kawasaki, both of Kimitsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 7, 1974, Ser. No. 448,958
Claims priority, application Japan, Mar. 9, 1973, 48-27169
Int. Cl.² C21D 7/02, 7/13, 9/46
U.S. Cl. 148—2 12 Claims



1. A process for producing an enamelling steel sheet which comprises tapping molten steel with a manganese content of not more than 0.40%, lowering the carbon content in the molten steel to not more than 0.01%, adding titanium to the molten steel in an amount enough to obtain a titanium content between 0.01 and 0.3%, and adding one or more elements selected from the group consisting of the rare earth elements in a total amount between 0.01 and 0.15%, casting the molten steel into ingot or slab, hot rolling and then cold rolling the ingot or slab and then annealing the steel sheet.

3,928,084

TIP FOR AN INDUSTRIAL GAS CUTTING TORCH AND METHOD OF USING SAME

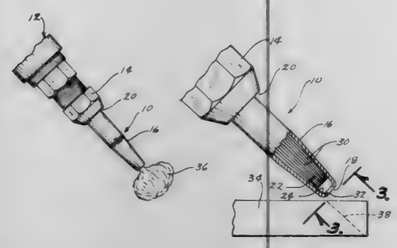
Berwyn E. Etter, P.O. Box 11965, St. Petersburg, Fla. 33733

Filed June 7, 1974, Ser. No. 477,631
Int. Cl.² B23K 7/02
U.S. Cl. 148—9 1 Claim

1. The method of cutting a beveled edge on a sheet of flat material with a cutting torch means including a cutting tip

having a longitudinal axis said cutting tip being configured so as to produce a mushroom-shaped preheating flame, comprising,

holding the cutting tip so that its longitudinal axis is positioned with respect to said plate in the direction of said bevel cut,



creating a mushroom-shaped preheating flame by supplying a combustible gas mixture to said cutting tip and igniting said mixture,

and maintaining the mushroom-shaped preheating flame in contact with the plate until the bevel cut has been made.

3,928,085

TIMEPIECE MAINSPRING OF COBALT-NICKEL BASE ALLOYS HAVING HIGH ELASTICITY AND HIGH PROPORTIONAL LIMIT

Katsumi Yamamura; Hiroshi Harigaya, both of Suwa, and Yasuo Sakai, Sendai, all of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 250,927, May 8, 1972, abandoned, which is a continuation-in-part of Ser. No. 876,551, Nov. 13, 1969, abandoned. This application June 10, 1974, Ser. No. 478,136

Int. Cl.² C22C *19/07*

U.S. Cl. 148—11.5 F **10 Claims**

6. The process of manufacturing a mainspring for a timepiece, comprising the steps of forming an alloy by melting in vacuum at a temperature between 1,400°C and 1,600°C a composition consisting essentially of 30–50% Co, 25–35% Ni, at least one member selected from the group consisting of Cr in the range of 6–9 percent, Mo in the range of 8–12 percent, and W in the range of 2–9 percent, the total weight of Cr, Mo and W being in the range 15–30 percent, at least one member selected from the group consisting of Ti in the range 0.05–5 percent, Nb in the range 0.1–6 percent and Be in the range 0.01–3 percent, less than 2% Mn, less than 1.5% Si and less than 5% Fe, quenching said alloy for 10–90 minutes from 1,100°–1,200°C hot-forging, hot-rolling and cold-processing said alloy to reduce the cross-sectional area by at least 80 percent.

3,928,086

HIGH STRENGTH DUCTILE STEEL

Donald J. Bailey, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 2, 1974, Ser. No. 529,010

Int. Cl.³ C21D *6/02*, *9/46*

U.S. Cl. 148—12.3 **4 Claims**

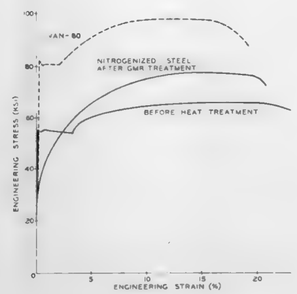
1. The method of producing a high yield strength steel comprising the steps of:

heating an aging low carbon steel to a temperature within the alpha plus gamma region of the iron carbon phase diagram for a time sufficient to dissolve a substantial proportion of the carbon into the ferrite of said steel and to form a predetermined proportion of said steel into austenite,

quenching said steel to substantially retain the solubilized carbon in solution and to transform at least the major proportion of said austenite into a form selected from the group consisting of martensite and bainite,

plastically deforming the steel an amount equivalent to at least 2 percent on the tensile stress-strain diagram,

aging said deformed steel for time sufficient to develop a desired superior yield strength,



said predetermined proportion of austenite being an amount necessary to provide the aged steel with said yield strength when said steel is deformed at least the equivalent of 2 percent on the tensile stress-strain diagram.

3,928,087

METHOD OF STRENGTHENING LOW CARBON STEEL AND PRODUCT THEREOF

Rollin E. Hook, Dayton, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Division of Ser. No. 306,390, Nov. 14, 1972, Pat. No. 3,847,682. This application May 30, 1974, Ser. No. 474,514

Int. Cl.² C21D *9/48*

U.S. Cl. 148—36 **2 Claims**

1. Cold reduced and annealed steel sheet stock having a thickness between about 0.02 inch and 0.09 inch, an average yield strength of at least 70 ksi, and sufficient formability to permit fabrication into articles other than deep drawn, consisting essentially of less than about 0.010% carbon, from about 0.05 to about 0.6% manganese, from about 0.02 to about 0.04% total aluminum, up to about 0.035% sulfur, up to about 0.01% oxygen, residual silicon and phosphorus, at least one nitride-forming element chosen from the group consisting of titanium, titanium and columbium, titanium and zirconium, and titanium and mixtures of columbium and zirconium, with total titanium ranging between about 0.08 and 0.10 percent, total columbium ranging between about 0.03 and 0.06 percent, total zirconium ranging between about 0.03 and 0.06 percent, sufficient nitrogen to combine substantially completely with said aluminum and said nitride-forming elements, and remainder essentially iron, all percentages being by weight.

3,928,088

FERRITIC STAINLESS STEEL

Donald K. Schlosser, Shillington; Lewis P. Myers, and Robert L. Caton, both of Reading, all of Pa., assignors to Carpenter Technology Corporation, Reading, Pa.

Filed Nov. 9, 1973, Ser. No. 414,257

Int. Cl.² C22C *38/22*, *38/60*

U.S. Cl. 148—37 **12 Claims**

1. A ferritic stainless steel consisting essentially in weight percent of about

Carbon	0.08 Max.
Manganese	2.5 Max.
Silicon	1 Max.
Phosphorus	0.04 Max.
Sulfur	0.50 Max.
Chromium	17.5–19.5
Molybdenum	1.5–2.5
Nickel	0.5 Max.
Copper	0.5 Max.
Nitrogen	0.06–0.20

the balance being essentially iron and incidental impurities, in which selenium can be substituted for all or part of the suflur on a 1 for 1 basis and tungsten can be substituted for all or part of the molybdenum in the ratio of about 1.5% tungsten to 1% molybdenum, and said stainless steel when annealed at about 1,200°–1,600°F and quenched after having been hot worked from about 1,800°–2,200°F contains about 5 to 50% highly tempered partially decomposed martensite free of acicular structure.

3,928,089

RARE EARTH INTERMETALLIC COMPOUNDS PRODUCED BY A REDUCTION-DIFFUSION PROCESS

Robert E. Cech, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 352,427, April 19, 1973, abandoned. This application July 24, 1974, Ser. No. 491,608The portion of the term of this patent subsequent to July 24, 1990, has been disclaimed.

Int. Cl.² H01F *1/02*

U.S. Cl. 148—105 **4 Claims**

1. A process for preparing a magnetic material comprised of a particulate rare earth intermetallic compound comprising providing a halide of a rare earth metal except samarium, europium and ytterbium, admixing in at least substantially stoichiometric amounts particles of said rare earth metal halide, calcium hydride and a solid metal selected from the group consisting of cobalt, cobalt-manganese alloys, cobalt-iron-manganese alloys or cobalt-iron alloys, heating the resulting particulate mixture in an atmosphere which is inert to it at a temperature ranging from about 850°C to about 1,000°C decomposing said calcium hydride and effecting reduction of said rare earth metal halide to produce the rare earth metal, continuing heating the resulting mixture in an atmosphere which is inert to it at a temperature which diffuses the resulting rare earth metal into said solid metal group member to form the rare earth intermetallic compound, and recovering from the rare earth intermetallic compound-containing mixture said rare earth intermetallic compound.

3,928,090

HEAT TREATMENT OF STEEL

Keith Randerson, Middlesbrough, England, assignor to British Steel Corporation, London, England

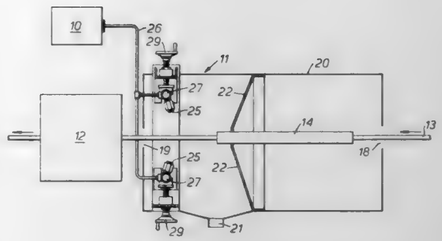
Filed Mar. 8, 1973, Ser. No. 339,309

Claims priority, application United Kingdom, Mar. 9, 1972, 11087/72

Int. Cl.² C21D *1/18*

U.S. Cl. 148—134 **13 Claims**

1. A method of heat treating a steel body having surface scale comprising applying a stream of water at an impact force of at least 2.5 kg/cm² over substantially the whole of the surface of the body while it is red heat or higher temperature to remove the scale and subsequently subjecting the body without substantial further scale formation to a conventional accelerated cooling process from a temperature above its change point to a lower temperature through transformation



to achieve a higher cooling rate during said conventional accelerated cooling process without descaling.

3,928,091

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE UTILIZING SELECTIVE OXIDATION

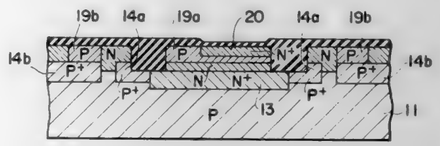
Seiichi Tachi, and Hideki Moriyama, both of Kodaira, Japan, assignors to Hitachi, Ltd., Japan

Division of Ser. No. 292,640, Sept. 27, 1972, abandoned. This application Aug. 12, 1974, Ser. No. 496,899

Claims priority, application Japan, Sept. 27, 1971, 46-74684; Oct. 20, 1971, 46-82457; Oct. 10, 1971, 46-88994

Int. Cl.² H01L *21/76*, *27/04*

U.S. Cl. 148—175 **7 Claims**



1. A method for manufacturing a semiconductor device comprising the steps of:

a. forming a first semiconductor region of a first conductivity type and a relatively low resistivity partially on a major surface of a semiconductor substrate of a second conductivity type and a relatively high resistivity;

b. forming a second semiconductor region of the second conductivity type and a relatively low resistivity on the major surface of the substrate except for the surface of said first semiconductor region;

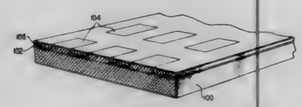
c. depositing a semiconductor layer of the first conductivity type and a relatively high resistivity, so as to embed said first and second semiconductor regions thereunder; and

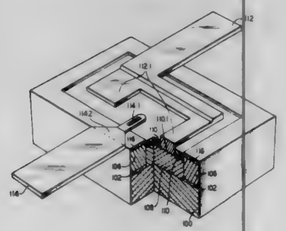
d. selectively oxidizing said semiconductor layer from the surface thereof, so as to form an insulating layer of the semiconductor material extending to said second semiconductor region in said semiconductor layer, said insulating layer being connected to said second semiconductor region at the bottom surface thereof and surrounding the portion of said semiconductor layer formed on said first semiconductor region at the side surface thereof.

3,928,092
SIMULTANEOUS MOLECULAR BEAM DEPOSITION OF MONOCRYSTALLINE AND POLYCRYSTALLINE III(A)-(A) COMPOUNDS TO PRODUCE SEMICONDUCTOR DEVICES

William Charles Ballamy, Reading, Pa., and Alfred Yi Cho, New Providence, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 28, 1974, Ser. No. 501,154
Int. Cl.² H01L *21/203, 29/04, 21/76, 29/48*
U.S. Cl. 148—175 **17 Claims**





1. A method of fabricating planar isolated semiconductor devices comprising the steps of:

a. forming an amorphous insulative layer on a major surface of a substrate comprising a compound of a Group III(a)-V(a) material; said substrate being at least semi-insulating;

b. removing selected portions of said amorphous layer to form a plurality of windows which expose the underlying substrate;

c. placing said substrate in an evacuable chamber;

d. reducing the pressure of said chamber to a subatmospheric pressure;

e. preheating said substrate to a temperature in the range of 450° to 675° C approximately; and

f. directing at least one molecular beam comprising at least one Group III(a) element and at least one Group V(a) element at said major surface so that monocrystalline material comprising a compound of said elements is deposited in said windows and on said substrate and simultaneously polycrystalline material comprising the same compound of said elements is deposited on said amorphous layer, said polycrystalline material being of sufficiently high resistivity to produce electrical isolation between said devices formed in separate ones of said windows and being substantially coplanar with said monocrystalline material.

3,928,093
METHOD FOR MAKING A BI-DIRECTIONAL SOLID STATE DEVICE

Eric Henry van Tongerloo, Minnetonka, Minn.; Abd-El-Fattah Ali Ibrahim, Ottawa, Canada; Douglas Roy Colton, Kanata, Canada, and John Lawrence, Freelton, Canada, assignors to Northern Electric Company Limited, Montreal, Canada

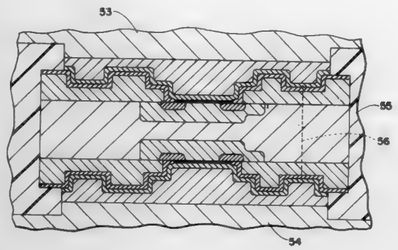
Filed June 3, 1974, Ser. No. 475,659
Int. Cl.² H01L *21/223*
U.S. Cl. 148—186 **3 Claims**

1. A process for making a bi-directional solid state device, comprising:

forming an oxide layer on each surface of a substrate wafer of one semiconductor type;

photoengraving simultaneously on both sides of said wafer to define aligned base regions;

simultaneously diffusing base regions to have a semiconductor type opposed to said substrate;



photoengraving simultaneously on both sides of said wafer to define aligned emitter regions in said base regions;

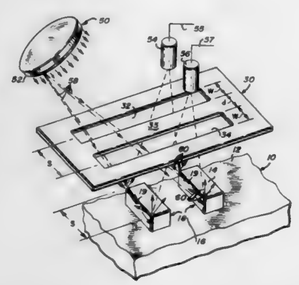
simultaneously diffusing emitter regions to have a semiconductor type the same as said substrate;

forming electrical contacts to said base and emitter regions.

3,928,094
METHOD OF ALIGNING A WAFER BENEATH A MASK AND SYSTEM THEREFOR AND WAFER HAVING A UNIQUE ALIGNMENT PATTERN

James B. Angell, Portola Valley, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Jan. 16, 1975, Ser. No. 541,463
Int. Cl.² H01L *21/308*
U.S. Cl. 148—187 **19 Claims**



1. A method of aligning a wafer beneath a mask comprising:

forming a first plurality of spaced-apart steps of predetermined length on a wafer such that the edges of said steps define a pattern of parallel lines;

positioning the wafer beneath a mask having a first set of symmetrical openings spaced-apart by a distance substantially equal to said predetermined length such that the ends of said steps appear under said openings;

illuminating the wafer with rays of light directed parallel to a plane perpendicular to said edges and incident upon said edges at an oblique angle relative to the top surface of the wafer;

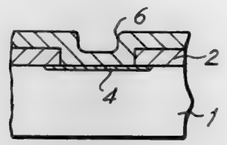
simultaneously detecting first diffraction scattered light emanating from one end of said steps and passing through one of said openings and second diffraction scattered light emanating from the other end of said steps and passing through the other of said openings; and

moving the wafer relative to the mask until said first light has a predetermined relationship to said second light.

3,928,095
SEMICONDUCTOR DEVICE AND PROCESS FOR MANUFACTURING SAME

Hiroshi Harigaya, Suwa; Masao Kanai, Shimosuwa, and Toshio Kano, Suwa, all of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 304,699, Nov. 8, 1972, abandoned. This application July 26, 1974, Ser. No. 492,109
Int. Cl.² H01L *7/34*
U.S. Cl. 148—188 **10 Claims**

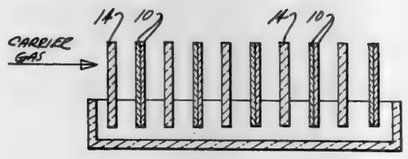


1. The improvement in a process for the formation on a silicon substrate of a surface region containing 10^{14} –10^{17} impurity atoms/cm³ introduced by diffusion and to which reliable ohmic metallic contact can be made, wherein said improvement comprises the steps of holding a silicon substrate having an apertured film of SiO_2 thereon at a temperature of 500° – 700°C for a period between 2 and 40 minutes in a first atmosphere consisting of an inert gas, silane and a gaseous impurity source to form a layer of polycrystalline silicon containing the impurity from said source on said substrate and apertured film, said polycrystalline Si layer containing 10^{14} –10^{17} impurity atoms/cm³, replacing said first atmosphere with a second atmosphere including oxygen and free of silane and said impurity source, and holding said substrate at a temperature between 900° and 1250°C for a period between 5 and 60 minutes to effect concurrent diffusion of said impurity from said polycrystalline silicon into said substrate at the aperture in said film and oxidation of said polycrystalline silicon layer to form SiO_2 containing said impurity.

3,928,096
BORON DOPING OF SEMICONDUCTORS

Peter J. Vergano, Toledo, Ohio, and William E. Smith, deceased, late of Toledo, Ohio (by Frederick L. Smith, administrator), assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 7, 1974, Ser. No. 431,211
Int. Cl.² H01L *7/44*
U.S. Cl. 148—189 **12 Claims**



1. In the process for doping a semiconductor, wherein a semiconductor and a solid dopant host for vapor phase transport of B_2O_3 are maintained in vapor phase communication at a temperature and for a time sufficient to form a zone of P type conductivity in said semiconductor, the improvement wherein said solid dopant host comprises a glass-ceramic body consisting essentially of:

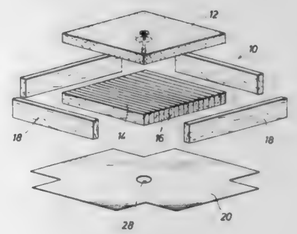
Component	Mole %
SiO_2	2–50
Al_2O_3	15–36
B_2O_3	10–50
MgO	15–36

said body being substantially free of alkali metal oxides, and said body being rigid and dimensionally stable during the doping period.

3,928,097
PROCESS AND MACHINE FOR MANUFACTURING INSULATION MODULES

Robert A. Sauder, and Gary R. Kendrick, both of Emporia, Kans., assignors to Sauder Industries, Inc., Emporia, Kans.

Filed Mar. 1, 1974, Ser. No. 447,359
Int. Cl.² B29C *17/04*
U.S. Cl. 156—213 **44 Claims**



1. A process for the manufacture of insulated enclosure liner modules, said process comprising:

severing from a stack of sheets of fibrous insulation material a plurality of generally rectangular battens of substantially similar size and disposed in side to side relationship, each of said battens being composed of a thickness of fibrous insulation material and having side and edge surfaces, said edge surfaces being of smaller dimension than the dimension of said side surfaces, said battens cooperating to define a pad of insulating material;

forming a fibrous pad of generally rectangular configuration, the edge surfaces of said battens being exposed at the side surfaces of said pad;

providing a substrate of a dimension corresponding to the dimension of said pad and supporting said substrate;

coating at least one of the side surfaces of said substrate with an adhesive material;

securing a connecting member to said substrate prior to assembly of said substrate and said fibrous pad, said connecting member extending from a coated surface of said substrate;

protecting said connecting member from said adhesive material during coating of said substrate;

bringing said pad unit into intimate engagement with said coated surface of said substrate; and

retaining said pad unit and substrate in a state of compression during curing of said adhesive material.

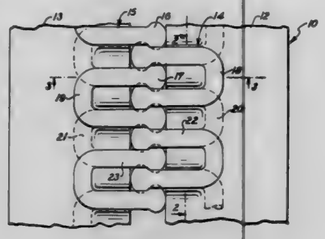
21. A machine as recited in claim 20, including:

means for at least partially enclosing said insulation module assembly in a protective wrapping, said wrapping maintaining said module under a degree of compression during full curing of said adhesive material.

3,928,098
METHOD OF MANUFACTURING THREADLESS SLIDE FASTENER CHAINS

George B. Moertel, Conneautville, Pa., assignor to Textron, Inc., Providence, R.I.

Division of Ser. No. 225,146, Feb. 10, 1972, Pat. No. 3,885,274, which is a continuation-in-part of Ser. No. 64,487, Aug. 17, 1970, abandoned. This application Aug. 21, 1974, Ser. No. 499,230
Int. Cl.² B32B 31/20
U.S. Cl. 156—73.4 8 Claims



1. A method of forming a threadless slide fastener chain from a carrier tape and a filamentary stringer having a plurality of head elements connected to a plurality of heel members by a plurality of legs, said method comprising the steps of

forming a plurality of raised interstitial portions on the carrier tape along one lateral edge thereof conforming to interstices defined by said heel members and legs of said filamentary stringer,

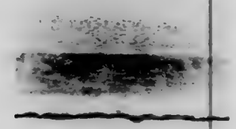
disposing said filamentary stringer, along the one lateral edge of said carrier tape with said plurality of legs and heel members overlying said carrier tape and with said interstitial portions being at least partially displaced into the interstices of said filamentary stringer, and

threadlessly bonding each of said heel members to said carrier tape and said interstitial portions thereby firmly attaching said filamentary stringer to said carrier tape.

3,928,099
PROCESS OF PRODUCING PRESSURE SENSITIVE RECORDING SHEETS

Hiro Ohotsubo; Suguru Fujikura, and Yoshimitsu Miyata, all of Ibaragi, Japan, assignors to Oji-Yuka Synthetic Paper Company, Ltd., Tokyo, Japan

Filed Apr. 30, 1973, Ser. No. 355,379
Int. Cl.² B32B 27/24
U.S. Cl. 156—83 103 Claims



70. In a process for manufacturing a autogeneous self-marking pressure sensitive recording sheet comprising a thermoplastic, colored resin substrate having adhered thereto a surface layer of a different color from the substrate, which layer exhibits a writing surface comprising a plurality of microvoids, comprising the steps of:

contacting the surface layer, the surface layer comprising a polymer of styrene and uniformly dispersed fine particles of rubbery polymer, the surface layer being at least uniaxially stretched to deform the fine particles of rubbery polymer, the fine particles of rubbery polymer being retained in the deformed state in the styrene polymer film, with a swelling agent for the polymer of styrene for a period of time and at a temperature sufficient to swell at least the surface of the surface layer, whereby the fine particles of rubbery polymer which were deformed by the stretching are no longer retained in the deformed state because the swelling softens the styrene polymer and releases the retaining force on the fine particles, which, due to their rubbery nature, return to their original non-deformed shape and create microvoids in the surface layer, rendering the surface layer opaque, the improvement wherein:

the surface layer further contains a resin, in an amount of less than 15% by weight based on the weight of the surface layer, different from the fine particles of rubbery polymer which is softer than the polymer of styrene and which has a lower softening point than the polymer of styrene and which satisfies the following formula:

$$To - T > 3 \text{ seconds:}$$

wherein T_o = time in seconds for a test surface layer treated in n-heptane at 45°C to reach a whiteness value (L value) of 83 ± 2%;

and T = time in seconds for the same test surface layer but containing 5% of the resin, based on surface layer weight, treated in n-heptane at 45°C to reach a whiteness value (L value) of 83 ± 2%;

the test surface layer used to determine compliance with the formula consisting of 94% by weight polymer of styrene component and 6% by weight of polybutadiene component, having fine particles of a size of 0.1 to 10μ uniformly dispersed therein, and having a melt index of 2.2g/10 min., 18 – 19 wt% of insolubles in toluene and the polymer of styrene component having an $[\eta]$ toluene ^{30} = 0.8,

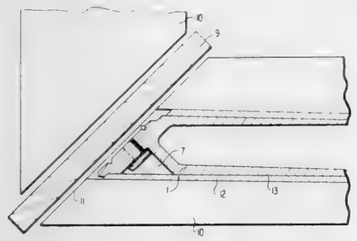
the test surface layer being laminated to a substrate of the same composition but containing 1% Phthalocyanine Blue;

the laminate being simultaneously biaxially stretched at 128°C 4× in the longitudinal and width directions, whereby the test surface layer and substrate thicknesses after stretching are 12μ and 23μ, respectively: whereby the crushability of the surface layer is increased.

3,928,100
CORNER JOINT FOR HOLLOW PROFILE MEMBERS OF PLASTIC WITH REINFORCING FRAME

Alexander Heuschen, Troisdorf; Hans Schaefer, Cologne; Wolfgang Budich; Robert Krah, both of Troisdorf-Sieglar, and Karl Obermeier, Rheidt, Troisdorf, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

Division of Ser. No. 236,639, March 21, 1972, Pat. No. 3,836,274. This application June 20, 1974, Ser. No. 481,336
Int. Cl.² B32B 7/08
U.S. Cl. 156—92 7 Claims



1. A process for the production of a corner joint formed of a pair of miter-cut profile members made of synthetic plastic material and each having a hollow internal metallic reinforcing frame disposed therein with a surface substantially coincident with the miter-cut surface of said profile member, the steps comprising

inserting into said metallic reinforcing frame of each profile member a connector having a miter surface with a plurality of asymmetrical grooves and projections thereon and an outwardly projecting edge until the outwardly projecting edge contacts the end of said reinforcing frame,

heating only the miter surface of each profile member with a one-piece, closed heating member,

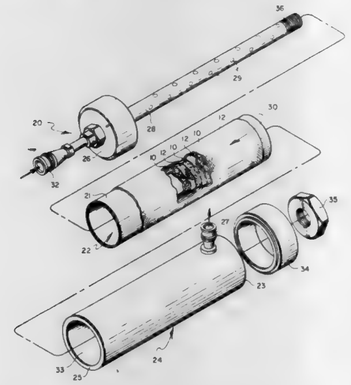
pressing together the miter surfaces of said profile members until the grooves and projections on said connectors come into registration, and

securing said connectors together with fastening means.

3,928,101
METHOD OF FABRICATING A ROLLING DIAPHRAGM SEAL

Jerry Tucker, Waco, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 7, 1974, Ser. No. 449,178
Int. Cl.² B65C 3/26
U.S. Cl. 156—156 8 Claims



1. A method of fabricating a composite seal material for a flexible rolling diaphragm seal capable of retaining pressures up to 3000 psi in a temperature range between −40°F to 170°F in an operating system such as a rocket engine, the composite seal fabrication process comprises the steps of:

rolling a sheet of rubber material in a tubular form on a rolling mill, and cutting said tubular form to two or more equal lengths previously selected,

cutting two or more lengths of seamless tubular woven cloth to substantially correspond to the previously cut lengths of said rubber material,

sliding one of said lengths of said tubular rubber material over a thin-walled flexible tube bladder,

alternately sliding a length of said tubular cloth followed by a length of said rubber material over the tube bladder, building up a composite material to a desired thickness, sliding said tube bladder with said alternate layers of said composite material thereon into a heavy-walled pressurizable cylinder,

pressurizing the interior of said flexible tube bladder to compress said alternate layers of material between the outside wall of said flexible bladder and the inside wall of said heavy-walled cylinder,

evacuating the space between said outside wall of said flexible bladder and the inside wall of said heavy-walled cylinder by vacuum pump means to further compress said alternate layers of material on said bladder to a uniform thickness,

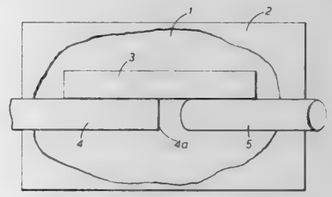
heating said pressurized cylinder containing said bladder and said alternate layers of composite material in a heated oven for approximately 240 minutes at temperatures ranging from 250°F to 370°F to fuse and cure said layers of material into said flexible composite seal material on the bladder, and

removing said cured composite seal material from said tube bladder, and bonding at least a pair of seal attachment rings to said composite seal material to facilitate mounting in place, the flexible composite seal material so prepared for retaining said pressure and said temperatures in said operating system.

3,928,102
JOINING OPTICAL WAVEGUIDES

Stephen Henry Rowe, Bristol; John Charles Bass, Northampton, and Robert Charles Goodfellow, Blisworth, all of England, assignors to Plessey Handel und Investments A.G., Essex, England

Filed Dec. 7, 1972, Ser. No. 313,012
Claims priority, application United Kingdom, Dec. 22, 1971, 59845/71
Int. Cl.² B29D 11/00; B65H 69/02
U.S. Cl. 156—158 15 Claims

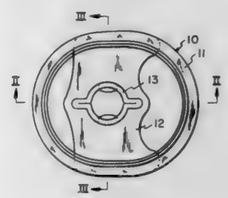


1. A method of joining a first optical fibre end-to-end with a second optical fibre which includes providing a reference line, placing the first and second fibres so as to touch and lie parallel to the reference line and holding said fibers so positioned by surface tension of a liquid, adjusting the alignment of the first and second fibres while so held, and joining the first and second fibres to each other while held in the adjusted positions by the surface tension of the liquid.

3,928,103
HIGH ELONGATION VOIDED ELASTOMERIC BUSHINGS AND METHOD AND MEANS FOR THEIR ASSEMBLING

Gary L. Hipsher, Logansport, Ind., and Robert D. Vosburgh, Birmingham, Mich., assignors to The General Tire & Rubber Company, Akron, Ohio

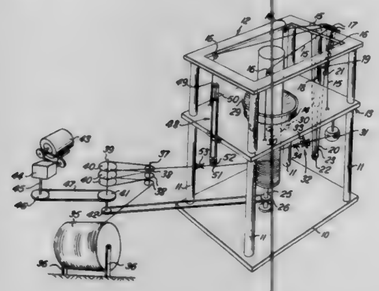
Division of Ser. No. 330,910, Feb. 9, 1973. This application June 7, 1974, Ser. No. 477,243
Int. Cl.² B32B 31/20
U.S. Cl. 156—160 5 Claims



1. A method of assembling an elastomeric bushing comprising an elastomeric insert disposed in substantial compressive elongation in excess of 10% between a rigid inner sleeve axially aligned with a rigid outer sleeve, said assembled bushing defining at least one void of selected size and shape axially aligned between said sleeves and extending completely through said bushing, the steps comprising:

a. placing a spacer member substantially the size and shape of said void in a recess defined through the length of said elastomeric insert;
b. compressively inserting said insert together with said spacer member between said sleeves to assemble said bushing; and
c. withdrawing said spacer member from said void leaving said void as defined by said spacer member after said bushing is assembled.

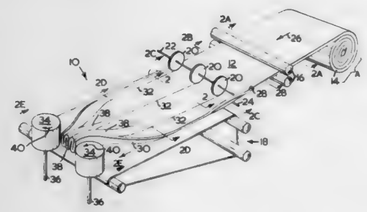
3,928,104
METHOD OF MAKING CONCRETE PIPES
Peter Robert Luckett; Jack Sidney Mobbs, both of Ashford, and Alan James Harris, London, all of England, assignors to Stelmo Limited, Ashford, England
Filed May 18, 1973, Ser. No. 361,686
Claims priority, application United Kingdom, May 19, 1972, 23600/72
Int. Cl.² B28B *21/48, 21/64*; B05H *81/00*
U.S. Cl. 156—171 **15 Claims**



1. In a method of manufacturing reinforced concrete pipes comprising the known steps of casting a layer of concrete onto the peripheral surface of a mandrel, and winding helically a wire reinforcing member around the concrete layer, the wire reinforcing member being tensioned to form a prestressed reinforcing layer for the concrete pipe; the improvement including the steps of consolidating and retaining the concrete on the mandrel by helically winding a flexible binding member around said layer of concrete before it has set and before the wire reinforcing member is applied, tensioning the wire reinforcing member and winding it under a substantial tension onto the consolidated and retained concrete before it has set, preserving tension in the wire reinforcing member after it is wound onto the concrete and is prevented by the presence of the binding member from cutting into the inner layer of green concrete to any substantial degree, and permitting the concrete to set with the wire under tension and without expansion of the mandrel.

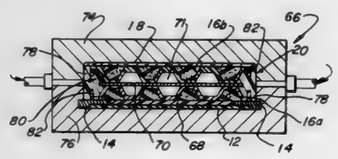
3,928,105
AUTOMATED APPARATUS AND PROCESS FOR MAKING MATCH MOLDED COVERING
Derek J. Holden, Sarnia, Canada, assignor to Fiberglas Canada Limited, Canada
Filed May 4, 1973, Ser. No. 357,385
Int. Cl.² B31F *1/00*; F16L *59/00*
U.S. Cl. 156—200 **19 Claims**

1. In an automated process adapted to produce a prefabricated, match molded covering for a conduit of a selected precisely dimensioned cross-sectional configuration the steps of,
conveying a pliable felted mass of an insulating material along a path, the felted mass being of indeterminate length and disposed generally in a plane, said felted mass containing at least 75% by weight of randomly oriented, discrete or discontinuous, glass or mineral fibers and a substantially liquid heat sensitive bonding material in uncured condition, and having a density of up to 2 pounds per cubic foot;
forming a line of weakening in one surface of the felted mass, by locally depressing said surface along a line parallel to said path;
deforming the felted mass to create a corrugation projecting out of said plane and extending longitudinally by applying a compressive force laterally and along the longitudinal side edges of the felted mass, the deforming occurring about the line of weakening to place said line interiorly of the corrugation;



compressing successive portions of the deformed felted mass while subjecting said mass to heat, to cause hardening of the bonding material and impart rigidity and dimensional stability to the corrugated felted mass to a density ranging from about 3.5 to 10 pounds per cubic foot and having said selected precisely dimensioned cross-sectional configuration;
releasing the dimensionally stabilized, corrugated felted mass from pressure; and
cutting the stabilized, corrugated felted mass longitudinally to provide mating portions of the match molded conduit covering.

3,928,106
METHOD OF MANUFACTURING A SKI
Arpad A. Molnar, Boulder, Colo., assignor to Molnar & Co., Inc., Boulder, Colo.
Filed May 14, 1974, Ser. No. 469,654
Int. Cl.² B31F *1/22*
U.S. Cl. 156—210 **15 Claims**



1. A method of manufacturing a ski comprising the steps of: forming a pair of elongated corrugated structural sheets with open channels therein in the general pheripheral configuration of the ski to be manufactured,
forming a bottom sheet to conform in general peripheral configuration to that of the structural sheets,
filling at least one of the open channels in at least one of the structural sheets with a filler material,
applying a layer of adhesive material to at least one of the structural sheets so that when the structural sheets are placed in face-to-face abutting relationship, the contacting surfaces of the structural sheets will be bonded leaving open tubular passages between the structural sheets, placing the structural sheets in face-to-face relationship with the adhesive material therebetween to bond the structural sheets into a unified structural body,

affixing the bottom sheet to one face of the unified structural body, and
applying a top layer to the opposite face of the unified structural body.

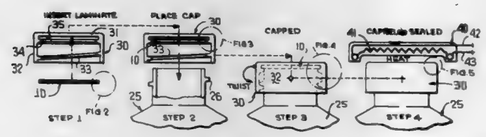
3,928,107
MANUFACTURE OF GASKETS
Henry W. Brooks, Epping, England, assignor to Engineering Components Limited, Slough, England
Filed July 9, 1974, Ser. No. 486,814
Claims priority, application United Kingdom, July 13, 1973, 33467/73
Int. Cl.² B29C *17/07*; B29D *23/10*
U.S. Cl. 156—217 **10 Claims**

1. A method of producing cork gaskets comprising the steps of forming at least two tubes of cured cork composition sheet material, the inside diameter of one tube being substantially the same as the outside diameter of the other tube, assembling the tubes one inside the other with a layer of adhesive at their interface, bag-moulding the assembly around a form whilst curing the adhesive, followed by slicing through the axis of the moulded assembly to produce thin sections.

3,928,108
METHOD OF MAKING A POLY(METHYL METHACRYLATE) PRE-HOLOGRAPHIC ELEMENT
Arnold Adicoff, and Warren J. Murbach, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 12, 1974, Ser. No. 496,419
Int. Cl.² B32B *31/12, 31/24, 23/08*; G03C *5/00*
U.S. Cl. 156—246 **5 Claims**

1. A method for manufacturing a pre-holographic element comprising the steps of:
a. providing a poly (methyl methacrylate) base;
b. coating the base with a coating composition made up of 2 weight percent nitrocellulose and 98 weight percent 2-methoxyethanol;
c. drying the coating
d. denitrating the coating by immersing it in a stirred bath of a denitrating composition made up of 50 volume percent ammonium sulfide and 50 volume percent ethanol for 1 hour to form regenerated cellulose;
e. covering the coated base with water;
f. placing a pre-hardened gelatin film under the water near the coated base; and
g. removing the water from between the coated base and the gelatin film allowing the gelatin film to contact the coating.

3,928,109
METHOD OF ASSEMBLING AND BONDING A LAMINATED LINER WITHIN A CLOSURE MEMBER
William J. Pollock, Glenview, and Peter Tagalakis, Chicago, both of Ill., assignors to Phoenix Closures, Inc., Chicago, Ill.
Division of Ser. No. 287,825, Sept. 11, 1972, Pat. No. 3,815,314. This application Nov. 30, 1973, Ser. No. 420,652
Int. Cl.² B29C *27/04*; B32B *3/02*; B65D *53/04*
U.S. Cl. 156—272 **4 Claims**



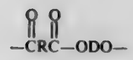
1. A prepackaging method comprising the steps of providing a closure having an end panel and a peripheral skirt, providing a liner formed of at least a metallic ply - nonmetallic ply - metallic ply laminate, assembling the liner within the closure with one of the metallic plies proximate the end panel, electrically inductively heating said one metallic ply sufficient to fuse said one metallic ply to the end panel whereby the liner and closure will become fusibly united, and said electrically inductively heating step creates a bond strength between the one metallic ply and the end panel and the nonmetallic ply which is greater than the bond strength between the remaining metallic ply and the nonmetallic ply whereby upon removal of the closure from an associated container the remaining metallic ply will be retained upon the container and separation of the liner will occur between an interface of the nonmetallic ply and the remaining metallic ply.

3,928,110
FILM BONDING USING A SOLVENT SATURATED CLOTH WICK
Richard J. Arconti, Akron, and Robert M. Pierson, Hudson, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 11, 1974, Ser. No. 450,035
Int. Cl.² C09J *5/02*; B32B *7/10, 5/02*
U.S. Cl. 156—308 **2 Claims**

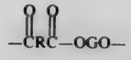
1. In a method for bonding films selected from polyvinylchloride and polyesters, using a solvent, the improvement which comprises:
a. saturating a cloth wick with a solvent capable of rapid interpenetration of the film surface,
b. placing the saturated wick between overlapping edges of the film, and
c. applying pressure until the bond forms,
where said cloth wick is polyvinylchloride when said film is polyvinylchloride, and where said cloth wick is polyester when said film is polyester.

3,928,111
PROCESS OF MAKING A COMPOSITE STRUCTURE OF ISOCYANATE COATED ELASTOMERIC HYDROCARBON AND METAL
Richard Leroy Baird, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 25, 1974, Ser. No. 436,542
Int. Cl.² C09J *5/02*; B32B *31/12, 25/08, 15/08*
U.S. Cl. 156—315 **15 Claims**

1. In a process for manufacturing a composite structure of a metal bonded to a cured elastomeric hydrocarbon copolymer containing ethylene units and propylene units, the improvement which consists essentially of coating the surface of the cured elastomeric hydrocarbon copolymer with an organic aromatic polyisocyanate having an —NCO functionality of at least three and wherein the —NCO groups are unhindered and on separate rings, applying an epoxy-based or chlorinated rubber phenolic-based adhesive primer to the surface of the metal to be bonded, and interposing between the polyisocyanate-coated elastomeric surface and the metal-primed surface an adhesive composition, said adhesive composition comprising about 40–100 weight percent of a thermoplastic segmented copolyester having a melt index of less than 150 grams/10 minutes at 200°C. under a 2,160 gram load, and a melting point of at least about 125°C., said copolyester containing 15–75 weight percent short-chain ester units represented by the formula:



and 25–85 weight percent long-chain ester units represented by the formula:



where R is a divalent aromatic radical having a molecular weight of about 76–220, D is a divalent organic radical having a molecular weight of about 28–220, and G is a divalent organic radical having a number-average molecular weight of about 566–3966, and up to about 60 weight percent of a low molecular weight thermoplastic resin which forms compatible mixtures with the segmented copolyester, is thermally stable at 150°C., and has a melt viscosity of less than about 10,000 centipoises at 200°C., applying pressure to the metal and elastomer sufficient to bond them together, thus forming said composite structure.

3,928,112

PROCESS FOR PRODUCING STABILIZED ANATASE TITANIUM DIOXIDE SURFACES FOR DURABLE ADHESIVE BONDING

Willard C. Hamilton, Webster, N.Y., and Raymond F. Wegman, Ledgewood, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 4, 1974, Ser. No. 430,825
Int. Cl.² C23F *7/06*; C09J *5/04*
U.S. Cl. 156—319 **9 Claims**

1. In the method of adhesive bonding of titanium parts to other parts wherein said titanium parts are subjected, prior to adhesive bonding, to a phosphate-fluoride process to produce anatase titanium dioxide surfaces for adhesive bonding, which process includes (1) an acid pickle bath step, (2) a phosphate-fluoride bath step, and (3) a hot water bath step, and said anatase titanium dioxide surfaces, after being produced, are adhesively bonded to other parts,

the improvement consisting of adding about 2% of a neutral alkali metal sulfate to the bath in any of said three steps for stabilizing the anatase surfaces and thereby preventing transformation thereof to the undesired rutile structure.

3,928,113

METHOD FOR COATING HUMAN NAILS

Ira Rosenberg, West Norwalk, Conn., assignor to Clairol Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 370,071, June 14, 1973. This application Oct. 24, 1973, Ser. No. 409,359
Int. Cl.² A61K *7/043*; B05D *3/06*
U.S. Cl. 156—344 **41 Claims**

1. A method for coating human nails with compositions that are adopted to be readily removable from the nails by soaking the nails in water which comprises:

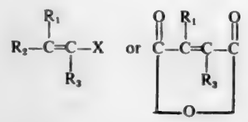
a. applying to said nails a liquid basecoat composition containing a water-soluble or water-swellable flexible film forming polymer;

b. allowing said composition to dry on said nails whereby a film of said water-soluble or water-swellable polymer is deposited on and adheres to said nails;

c. applying to said dried film of water-soluble or water-swellable polymer a second layer of liquid photocurable nail lacquer composition capable of being polymerized by an actinic light source; and

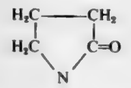
d. exposing said layer of photocurable nail lacquer composition to a source of actinic light for a sufficient period of time to cure said nail lacquer composition whereby a hard polymerized layer of nail lacquer is obtained which overlies and adheres to said basecoat layer,

said water-soluble or water-swellable polymer being a polymerization product of one or more vinylic compounds of the formula:



in which:

(i). R_1 is hydrogen, alkyl, phenyl, halide or pyrrolidonyl



(ii). R_2 is hydrogen, alkyl, phenyl, halide or -COOH;

(iii). R_3 is hydrogen, alkyl, carboxyalkyl, phenyl or halide;

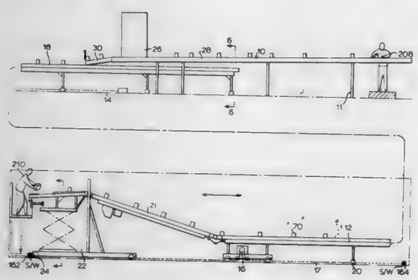
(iv). X is hydrogen, —COO alkyl, COOH, —O alkyl, —CN or halide.

3,928,114

APPARATUS FOR BUILDING OF STRUCTURAL COMPONENTS

Norman N. Aylon, Willowdale, Canada, assignor to General Concrete of Canada Limited, Hamilton, Canada

Filed Mar. 26, 1974, Ser. No. 454,792
Int. Cl.² E04G *21/00*; E04B *1/00*; B65G *37/00*; B32B *31/12*
U.S. Cl. 156—351 **11 Claims**



1. An apparatus for use in the building of structural components which comprises:

first longitudinally extending conveyor means having a building block conveying surface and a discharge end, said first conveyor means having a substantially fixed position;

second longitudinally extending conveyor means having a building-block conveying surface and a discharge end and being situated to receive building blocks from said discharge end of said first conveyor means,

fixed location track means extending in the same longitudinal direction as said first conveyor means,

first-mounting means mounting said second conveyor means on said track means for movement longitudinally thereof and longitudinally of said first conveyor means to provide a variable portion of said second conveyor means vertically below said first conveyor means,

adhesive applying means located in substantially fixed position adjacent to and upstream from said discharge end of said first conveyor means for applying adhesive to selected portions of selected surfaces of building blocks situated on said first conveyor means prior to discharge of the same to said second conveyor means;

platform assembly means located at said discharge end of said second conveyor means and articulated thereto for

receiving building blocks therefrom, second mounting means mounting said platform means on said track means for movement of said platform means with said second conveyor means on said track means, stop means located at said discharge end of said first conveyor means for selectively preventing and allowing discharge of a block from said first conveyor means to said second conveyor means,

first and second block sensing means longitudinally spaced apart from each other and located adjacent said second conveyor means for sensing the presence of blocks thereon, said first and second block sensing means being located in fixed positions spaced from and downstream of said discharge end of said first conveyor means with said first block sensing means being spaced a distance from said discharge end of said first conveyor means which is greater then said second block sensing means,

said first block sensing means actuating the opening of said first stop means to allow passage of a block from said first conveyor means to said second conveyor means when a block conveyed on said second conveyor means passes said first sensing means,

said second block sensing means actuating the closure of said first stop means when a block conveyed on said second conveyor means passes said second sensing means,

at least one panelization frame on which said structureal unit is to be built situated in substantially fixed position adjacent said platform assembly means and extending in the longitudinal direction of said first and second conveyor means; and

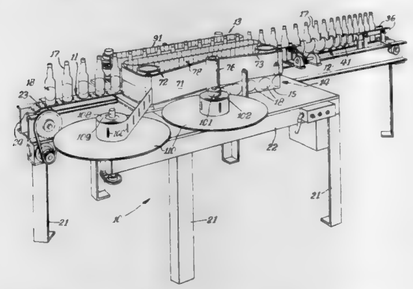
drive means for simultaneously longitudinally moving said second conveyor means and platform assembly means on said track means relative to said fixed location first conveyor means, first and second block sensing means and at least one panelization frame.

3,928,115

MACHINE FOR TRANSFERRING INDICIA TO CYLINDRICAL ARTICLES

Daniel Kerwin, Lombard, Ill., assignor to The Meyercord Co., Carol Stream, Ill.

Filed Oct. 9, 1973, Ser. No. 404,300
Int. Cl.² B65C *3/16*
U.S. Cl. 156—363 **14 Claims**



1. Apparatus for applying indicia to a succession of generally cylindrical articles while the articles are in movement, the indicia being removably attached to an elongated web and being sequentially spaced on said web at fixed intervals, comprising conveyor means for moving a series of articles sequentially along an article transport path, means for moving an indicia carrying web along a web transport path, a portion of said web transport path extending parallel to and adjacent said article transport path, means for turning articles while the articles are moving on said article transport path to cause said articles to roll along said web and against said indicia to peel said indicia from said web, means for spacing said articles on said article transport path, and sensor means responsive to the relative positions of said indicia and said articles for automatically actuating said spacing means during operation of said apparatus to adjust the spacing of said articles while maintaining substantially constant the speed of movement of said web.

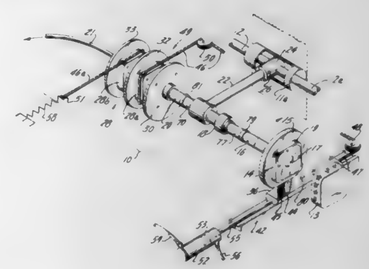
8. A machine comprising an indicia transferring mechanism, means for moving a web through the mechanism, the web having indicia thereon at fixed intervals, means for moving cylindrical articles through said mechanism at spaced intervals, said mechanism including means for rolling each article along said web and across an indicium to peel an indicium from said web and thereby attach the indicia to the articles, and automatic means for adjusting the spacing between adjacent articles during operation of said machine and while maintaining substantially constant the speed of movement of said web in order to properly time the entrance of said articles and said indicia into said mechanism.

3,928,116

AUTOMATIC DECAL APPARATUS

Albert J. Wahl, Fredonia, N.Y., assignor to Commercial Decal, Inc., Mount Vernon, N.Y.

Filed Mar. 12, 1974, Ser. No. 450,295
Int. Cl. B65c *3/10*
U.S. Cl. 156—447 **10 Claims**



1. Apparatus for transferring decalcomanias to objects to be decorated therewith; said apparatus comprising:

a frame;

first means rotatably mounted on said frame for holding an object to be decorated, said object having a predetermined shape;

second means movably mounted on said frame with respect to said first means for holding a decalcomania in releasable position;

third means for reciprocally moving said second means with respect to said first means whereby said decalcomania will be passed in transfer relation to said object; and

fourth means connected between said first means and said second means for rotating said first means in direct response to movement of said second means, said fourth means comprising a cam having said predetermined shape of said object, said cam being mounted for rotation with said first means, and connecting means having a first portion connected to said second means and a second portion wrapped about said cam, whereby the velocity of said periphery of said object will correspond to the velocity of said second means.

3,928,117

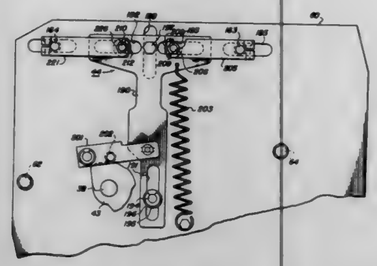
T-BAR ACTUATED BOOKBINDER

Ernest J. Sarring, Mundelein, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed May 30, 1974, Ser. No. 474,510
Int. Cl.² B42C *13/00*, *19/00*
U.S. Cl. 156—477 B **8 Claims**

1. Apparatus for applying an adhesive bearing substrate to a stack of sheets, comprising:

a. rotatable bipartite clamping means;
b. means for biasing the clamping means into abutment with the stack of sheets, whereby the stack of sheets are compressed and held;
c. means for supporting the substrate with its adhesive bearing side facing an edge of the stack of sheets;

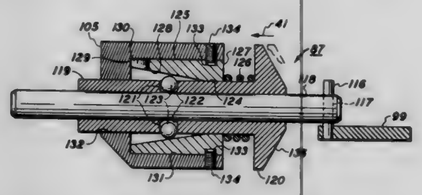


d. an arrangement of platens;
e. means for rotating the clamping means to linearly drive the stack of sheets against the adhesive bearing side of the substrate and to move the other side of the substrate against at least one of the platens; and
f. means for biasing the platens in the arrangement against said other side of the substrate, thereby fixing the adhesive bearing substrate to the stack of sheets to form a book.

3,928,118
BOOKBINDER HAVING ROTATABLE CLAMPING MEANS

Richard J. Kuhns, Barrington, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed May 30, 1974, Ser. No. 474,840
Int. Cl.² B42C *13/00, 19/00*
U.S. Cl. 156—477 B **10 Claims**

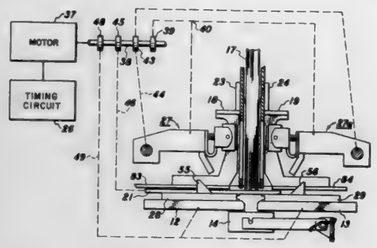


1. Apparatus for applying an adhesive bearing substrate to a stack of sheets, comprising:
a. rotatable bipartite clamping means, one of the parts including a first rod rotatably mounted on a frame, a first bracket rotatably mounted on the rod, a first plurality of drivers mounted on the bracket, and first means for elastically driving the bracket, the other one of the parts including a second rod rotatably mounted on the frame, a second bracket rotatably mounted on the second rod, a second plurality of drivers mounted on the second bracket, and second means for elastically driving the second bracket;
b. means for biasing said first and second plurality of drivers into abutment with the stack of sheets, whereby the stack of sheets are compressed and held;
c. means for supporting the substrate with its adhesive bearing side facing an edge of the stack of sheets;
d. an arrangement of platens;
e. means for rotating said first and second rod to linearly drive the stack of sheets against the adhesive bearing side of the substrate and to move the other side of the substrate against at least one of the platens; and
f. means for biasing the platens in the arrangement against said other side of the substrate, thereby fixing the adhesive bearing substrate to the stack of sheets to from a book.

3,928,119
BOOKBINDING MACHINE

Ernest J. Sarring, Mundelein, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed May 30, 1974, Ser. No. 474,841
Int. Cl.² B42C *13/00, 19/00*
U.S. Cl. 156—477 B **11 Claims**



1. Apparatus for applying a piece of adhesive strip to a stack of sheets having a thickness within one of several thickness ranges, the width of the adhesive strip to be applied being dependent on the thickness range to which the thickness of the stack of sheets corresponds, comprising:
a. a frame;
b. a pair of support plates movably mounted to the frame;
c. a pair of caliper members, each member being coupled to a different one of the support plates;
d. means for moving the support plates to bring the caliper members toward each other until they compress with a predetermined force a stack of sheets to be bound;
e. releasable clutch means for preventing movement of the support plates away from each other as soon as the stack of sheets has been compressed with said force;
f. a pair of strip guides, each strip guide being coupled to a different one of the support plates;
g. means, responsive to the distance between the clutched support plates, for moving the strip guides into position for supporting a piece of adhesive strip which is of suitable width for binding an edge of the stack of sheets;
h. a pair of platens facing each other, each of the platens being slidably mounted on a different one of the support plates, the maximum distance between the facing platens being determined by the distance between the support plates;
i. means for driving, with an edge of the stack of sheets, against the spaced facing parts of the platens the adhesive strip supported by the strip guides, thereby snugly wrapping the strip about said edge; and
j. means for fixing the adhesive strip to the stack of sheets to form a book.

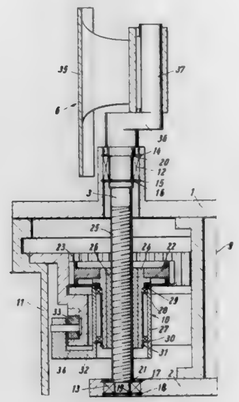
3,928,120
APPARATUS FOR SEPARATING AND CONVEYING SHEET-LIKE BLANKS

Rudolf Zodrow, Dusseldorf, Germany, assignor to Jagenberg Werke AG, Dusseldorf, Germany

Filed Apr. 30, 1974, Ser. No. 465,648
Claims priority, application Germany, May 18, 1973, 2325244
Int. Cl.² B65C *9/16;* **B65H** *3/20*
U.S. Cl. 156—568 **5 Claims**

1. An apparatus for treating a plurality of sheet-like blanks in a succession of stations, such as applying gum to a removal member mounted on a support, picking up a label from a pile

with said removal member and delivering the label to another station, comprising first means for rotating said support on a support axis and second means for rotating said removal member about an axis spaced from and parallel to said support axis, a stationary sun gear, an annular pinion, a shaft coaxial with said pinion and having an axis located so that the pinion meshes with the sun gear, threads connecting the inside of said annular pinion with said shaft to cause them to rotate together, the removal member being operatively connected to said shaft so as to be rotated together therewith about the axis



of said shaft due to engagement of said pinion with said sun gear as rotation of said support carries said removal member past the successive stations, a stationary cam extending past all the stations, a cam follower engaging said cam, said follower being operatively connected with said pinion so as to displace said pinion vertically in dependence on said cam configuration, vertical displacement of said pinion increasing or decreasing the rotational speed of said shaft and its removal member about the axis of said shaft due to the threaded connection between said pinion annulus and said shaft.

3,928,121
PROCESS FOR THE OBTENTION OF FERMENTABLE POWDERED SYRUP AND ALPHACELLULOSE FROM XEROPHYTE PLANTS

Enrique Zepeda-Castillo, Juan Bernardino 249, Guadalajara 5, Jal., Mexico

Filed Oct. 23, 1974, Ser. No. 517,575
Claims priority, application Mexico, Oct. 23, 1973, 146945
Int. Cl.² D21C *3/00, 5/00;* **A23L** *1/28, 2/08, 2/30*
U.S. Cl. 162—14 **10 Claims**

1. A process for the obtention of fermentable powdered syrup and alpha-cellulose from xerophyte plants which comprises: washing the mixed leaf and core material of said plants; chopping the washed plant material to form pieces of a relatively small size and a relatively small amount of plant juice; separating the chopped plant material from the plant juice; extracting the chopped material with an aqueous extractant at a temperature of between 85° and 92°C. to produce an enriched extractant; expressing the extracted residual solid plant material to expel the remaining enriched extractant; hydrolyzing said residual solid plant material by treatment with water at a temperature of about 100°C. to 120°C.; expressing the hydrolyzed plant material to expel a hydrolysis liquor to be incorporated into said aqueous extractant; admixing said plant juice and said enriched extractant in order to obtain a mixed juice and subjecting the residual solid plant material to digestion, bleaching, washing, drying and sifting to obtain alpha-cellulose; settling, clarifying and filtering said mixed juice to remove the impurifying solids; heating the juice to a temperature of about 100°C.; concentrating said juice by evaporation to produce a juice having a Brix degree of about 80, whereby a highly concentrated syrup is obtained; and drying said syrup to obtain a fermentable powdered syrup which is hygroscopic, but highly stable when packed in air-proof reservoirs.

3,928,122
PAPER CONTAINING A UREA-FORMALDEHYDE PIGMENT

Darrell J. L. Griffiths, State College, Pa., and Denis K. Huang, Laurel, Md., assignors to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 320,834, Jan. 3, 1973, Pat. No. 3,849,378.
This application Aug. 23, 1974, Ser. No. 499,928
Int. Cl.² D21H *3/52*
U.S. Cl. 162—166 **1 Claim**

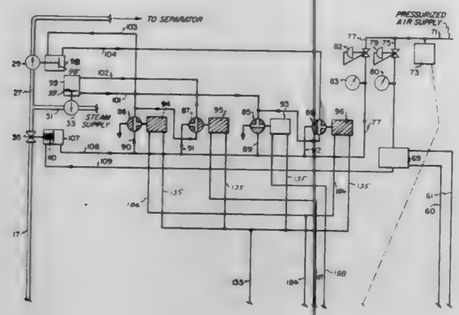
1. Paper comprising cellulose fibers and an amount of a bright, white and opaque precipitated urea formaldehyde pigment sufficient to increase the B&L Opacity of a control sheet having an opacity of about 70 without said pigment by about 12 points when the furnish for making said paper is provided with about 10 percent by weight of said pigment, said precipitated urea formaldehyde pigment being in the form of flakes having an average particle size of about 0.1 to 0.5 micron distributed in an agglomerated structure ranging from about 3 to 6 microns in size, and having a scattering coefficient ranging from about 0.42–0.52 and produced in slurry form by:
a. selecting a urea formaldehyde resin that has been reacted at least to its water insoluble stage, said resin having a water tolerance of from about 1.5 to 5.0 and a viscosity of at least about 450 cps. at 50 percent solids;
b. precipitating said resin in an aqueous precipitating bath containing from about 0.125 to 1.5 percent by volume of a strong mineral acid catalyst at a temperature of from about 20°–95° C., under agitation, at a resin to water ratio of from about 1/16 to ⅝, by adding said resin to the precipitating bath in controlled amounts over a period of time ranging from about 15 minutes to one hour to form the precipitated urea formaldehyde pigment in said slurry form; and,
c. reacting the mixture of resin and precipitating bath for an additional period of time to insure a total reaction time of from about ½ to 5 hours before collecting the precipitated pigment product in said slurry form and homogenizing the product to the stated particle size.

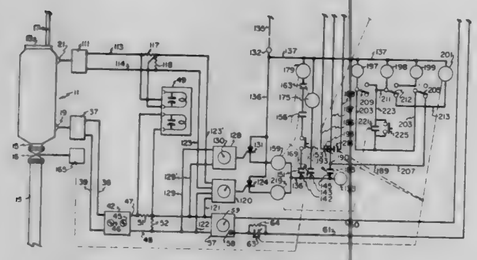
3,928,123
PULP DIGESTER VENT SYSTEM

Robert E. Marks, Belleair, Fla., assignor to Envirotech Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 294,421, Oct. 2, 1972, now Defensive Publication No. 3,817,824. This application June 17, 1974, Ser. No. 480,193
Int. Cl.² D21C *7/12*
U.S. Cl. 162—238 **18 Claims**

12. A system for controlling the venting of gases and vapors from a batch-type pulp digestion vessel comprising:
a. a selectively positionable relief valve connected in communication with the digestion vessel for venting vapors and gases therefrom;
b. means for continuously measuring the pressure in the digestion vessel;
c. means coupled to said pressure measuring means for generating first signals representative of the measured pressures in the digestion vessel;
d. positioning means associated with said relief valve and connected to receive said representative signals from said first signal generating means for adjusting the opening of said relief valve proportionately and in response to said first signals, said relief valve being disposed for opening to a maximum when the pressure within the digester is at a minimum, as reflected by said representative signals,



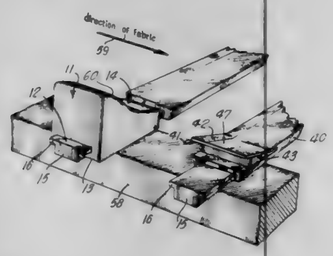


digester increases, as reflected by the amplitude of the representative signals, to a value corresponding to a pre-selected pressure in the digestion vessel.

3,928,124
FABRIC EDGE CURLER MEMBER FOR A PAPER MACHINE

Victor Emanual Hansen, 7704 Wildwood Way, Jacksonville, Fla. 32216

Filed Feb. 19, 1974, Ser. No. 443,735
Int. Cl.² D21F 1/24
U.S. Cl. 162—274 **9 Claims**

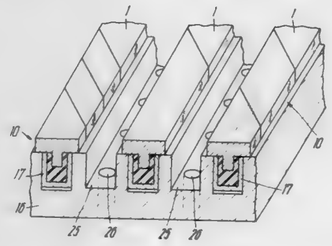


1. A curling member for curling the outside edge of a forming fabric of a paper making machine with said fabric supported on foil blades mounted on support rails, said curling member having an upper, substantially flat fabric support surface, said fabric support surface having rounded side edges extending transversely to the direction of travel of said forming fabric, said support surface having a lower end lying at the level of or slightly below the horizontal plane of said fabric and curving upwardly outward a distance sufficient to support and impart an upward curvature to a portion of the outside edge of said forming fabric, and a recess in an underface of said curling member for tight sliding fit of said curling member on an end portion of a respective one of said support rails, said sliding fit providing adjustment of said curling member transversely to the axis of travel of said fabric to obtain a desired up-curl in a side edge of said fabric.

3,928,125
WATER EXTRACTION APPARATUS FOR PAPERMAKING MACHINE

Rudolf Poeschl, Vienna, Austria, assignor to Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung, Dusseldorf-Oberkassel, Germany

Filed Dec. 13, 1973, Ser. No. 424,197
Claims priority, application Austria, Dec. 18, 1972, 10796/72; July 2, 1973, 5820/73
Int. Cl.² D21F 1/48
U.S. Cl. 162—352 **9 Claims**



1. A contact unit for a paper-making machine and the like comprising:
   a. an elongated channel member having a web part and two flange parts extending from said web part in a common direction,
      1. said parts jointly bounding a cavity open in said direction,
      2. respective free end portions of said flange parts defining therebetween the open side of said cavity;
   b. an elongated contact body constituted by a plurality of elongated contact sections of a material having a hardness greater than 6 on the Mohs scale,
      1. said sections being abuttingly juxtaposed in the direction of elongation of said body and having respective top faces located in a common longitudinal plane,
      2. each section having two longitudinal bottom face portions transversely spaced from each other,
      3. each bottom face portion engaging a respective one of said free end portions in direct contact and partly projecting from the engaged free end portion toward the other bottom face portion,
      4. the projecting part of each bottom face portion facing inward of said cavity;
   c. a body of bonding material filling said cavity in contact with said channel member and said projecting parts; and
   d. a longitudinally elongated, integral rib projecting from one of said bodies and separating said bottom face portions, the other body being formed with a longitudinal groove conformingly receiving said rib.

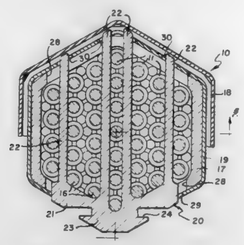
3,928,126
FUEL OR IRRADIATION SUBASSEMBLY

Orville S. Seim, Wheaton, and Ernest Hutter, Wilmette, both of Ill., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed July 9, 1974, Ser. No. 486,787
Int. Cl.² G21C 3/02
U.S. Cl. 176—15 **10 Claims**

1. A subassembly for use in a nuclear reactor comprising a bundle of parallel pins incorporating nuclear fuel or a material to be irradiated enclosed within a coolant tube having an annular undercut portion in the lower portion of the coolant

tube, an inner tube within said coolant tube and surrounding said bundle of pins, a coolant tube surrounding said inner tube, and a locking comb consisting of a head and a plurality

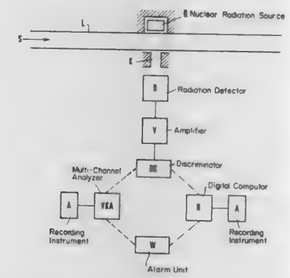


of elongated teeth extending through slots in said inner tube and engaging said undercut portions of said pins to restrain the pins from movement.

3,928,127
METHOD FOR DETERMINING RAPID DENSITY FLUCTUATIONS OF NUCLEAR REACTOR COOLANTS

Sigwart Hiller, Lauf, Pegnitz, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 6, 1973, Ser. No. 394,754
Claims priority, application Germany, Sept. 29, 1972, 2247745
Int. Cl. G21c 17/02
U.S. Cl. 176—19 R **3 Claims**



1. A method for determining rapid density fluctuations of a nuclear coolant flowing in a pipe by irradiating the coolant by a nuclear radiation source and detecting differences in the absorption of the radiation by the coolant; wherein the improvement comprises detecting unabsorbed radiation transmitted through the coolant flow to produce electric signals which are amplified and shaped into standardized pulses of equal amplitude, said pulses being stored at successive time intervals of short duration.

3,928,128
METHOD FOR ERECTING AND OPERATING AT LEAST TWO NUCLEAR REACTORS

Walter Kollmar; Hans Märkl, and Klaus Thieme, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

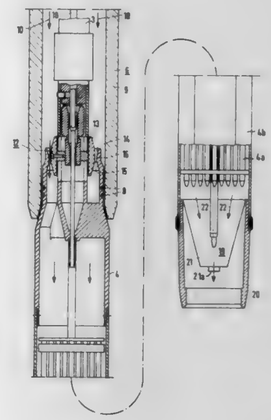
Filed June 28, 1973, Ser. No. 374,315
Claims priority, application Germany, July 26, 1972, 2236780
Int. Cl. G21c 19/20
U.S. Cl. 176—30 **7 Claims**

1. Method for erecting and operating at least two light-water nuclear reactors which are substantially identical to each other and with reactor cores which comprise several groups of fuel elements with identical outside dimensions but different concentrations, and which elements each comprise an assembly of fuel rods; characterized by the feature that the first nuclear reactor is erected and operated for the duration of at least one fuel element cycle, and that the second nuclear reactor is erected and completed after the end of the fuel element cycle of the first reactor, and is then equipped with a reactor core which consists 10 to 50%, and preferably 20 to 40%, of unchanged fuel elements of the first nuclear reactor, which have been burned down during one fuel element cycle.

3,928,129
NUCLEAR REACTOR ELEMENT

Claus Goetzmann, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 10, 1973, Ser. No. 387,249
Claims priority, application Germany, Aug. 31, 1972, 2242933
Int. Cl. G21c 9/00
U.S. Cl. 176—38 **3 Claims**



1. A gas-cooled nuclear reactor fuel element comprising a bundle of nuclear fuel rods having metal casings having maximum safe operating temperatures, an elongated tubular gas-coolant duct radially enclosing said bundle, said duct having an inlet end for gas coolant, an adjustable gas-coolant flow choke for said inlet end, said duct having an outlet end for gas coolant heated by said fuel rods when said element is operating, and a non-adjustable static gas-coolant flow choke for said outlet end and connected to said outlet end by metal having a melting temperature substantially lower than said maximum safe operating temperature of said metal casings of said fuel rods.

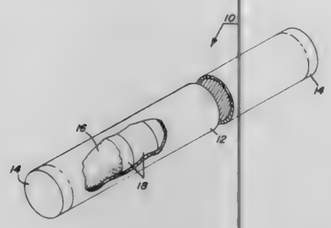
3,928,130
SHEATH FOR NUCLEAR FUEL ELEMENTS

John Pawliw, Peterborough, and Jarda Zabrodsky, Ottawa, both of Canada, assignors to General Electric Company, San Jose, Calif.

Filed June 19, 1973, Ser. No. 371,374
Claims priority, application Canada, Sept. 27, 1972, 152613
Int. Cl. G21c 3/04
U.S. Cl. 176—67 **8 Claims**

1. A nuclear fuel element which comprises an elongated cylindrical metallic container, a column of nuclear fuel material disposed in and partially filling said container thus leaving an internal cavity at one end of said container, an end plug secured and sealed at each end of said container, a fuel column retaining member positioned in said cavity, and a non-metallic sheath in wrapped relation with said column of said

fuel material to contain at least a portion of the mechanical loads acting on said element during nuclear fission, said sheath



being formed of fibrous material selected from the group of carbonaceous and boron filaments of high strength.

3,928,131

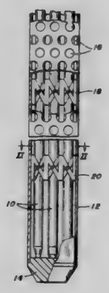
GRID STRUCTURE FOR NUCLEAR REACTOR FUEL ASSEMBLY

William J. Wachter, 3157 Bel Air Drive, Pittsburgh, Pa. 15227, and John G. Akey, 630 Garden City Drive, Monroeville, Pa. 15146

Continuation-in-part of Ser. No. 850,113, Aug. 14, 1969, abandoned. This application Oct. 24, 1972, Ser. No. 300,137

Int. Cl. G21c *3/30*

U.S. Cl. 176—78 **10 Claims**



1. In a grid structure for a nuclear reactor fuel assembly, a plurality of slotted members interconnected to each other to form an egg-crate assembly having openings through which elongated fuel elements extend, each of said openings being bounded by corners formed from vertical portions, and at least two cross straps at each side of each of said openings, said cross straps interconnecting said vertical portions and being disposed at an acute angle with respect to the vertical axes of said vertical portions whereby the flexibility of said cross straps is increased for a given fuel element diameter, each cross strap extending from the top of one vertical portion to the bottom of an adjacent vertical portion in a slotted member.

3,928,132

ANNULAR FUEL ELEMENT FOR HIGH-TEMPERATURE REACTORS

Roko Bujas, Gif-sur-Yvette, France, assignor to Commissariat a l'Energie Atomique, Paris, France

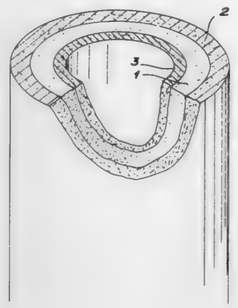
Continuation-in-part of Ser. No. 245,622, April 19, 1972, abandoned. This application Sept. 28, 1973, Ser. No. 401,960

Claims priority, application France, Apr. 29, 1971, 71.15372

Int. Cl. G21c *3/06*

U.S. Cl. 176—83 **2 Claims**

1. A compacted fuel element for a high-temperature reactor, said fuel element of annular shape being enclosed within an annular graphite casing constituted by an outer graphite tube and an inner graphite tube, wherein the inner tube is



formed of a graphite having a lower coefficient of shrinkage under irradiation of the fast neutrons produced in the reactor than the graphite of the outer tube.

3,928,133

BIOLOGICAL SHIELD FOR A NUCLEAR REACTOR

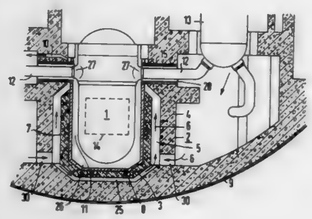
Hans-Peter Schabert, Erlangen; Johann Ropers, Grossdechsendorf, and Erich Strickroth, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 24, 1973, Ser. No. 354,000

Claims priority, application Germany, May 26, 1972, 2220486

Int. Cl. G21c *11/08*

U.S. Cl. 176—87 **25 Claims**



1. In a nuclear reactor equipped with a reactor pressure vessel made of steel and a concrete biological shield surrounding the reactor pressure vessel, said shield comprising an inner shield part surrounding the reactor pressure vessel and an outer shield part disposed around and concentric to said first shield part, said inner and outer shield parts conjointly defining a gap therebetween, cooling medium supply means communicating with said gap for circulating a cooling medium therethrough, said reactor pressure vessel and said inner part conjointly defining an intermediate space therebetween, means for closing off said intermediate space from said gap, said nuclear reactor including a containment shell enclosing said biological shield and said reactor pressure vessel, said cooling medium being air, and said cooling medium supply means comprising discharge means for conducting the air away from said gap and into the atmosphere of said containment shell, said inner shield part having a wall thickness of at least 20cm.

3,928,134

MICROBIOLOGICAL REDUCTION OF 7-(2(3-HYDROXY-1-OCTENYL)-5-OXO-3-CYCLOPENTEL-1-YL)-5-HEPTENOIC ACID AND RELATED COMPOUNDS

George Greenspan, Narberth, Pa., and Michael R. G. Leeming, Canterbury, England, assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 420,406, Nov. 30, 1973, abandoned. This application Oct. 23, 1974, Ser. No. 517,126

Int. Cl.² C12D *1/02*

U.S. Cl. 195—30 **2 Claims**

1. A process for the preparation of 7-(2-[(3R)-3-hydroxy-1-octenyl]-5-oxo-cyclopentyl)-5-heptenoic acid which comprises:

a. incubating 7-(2-[(3R)-3-hydroxy-1-octenyl]-5-oxo-3-cyclopenten-1-yl)-5-heptenoic acid; or its methyl ester, acetate with a fungus of the species *Corynespora cassiicola;* and

b. isolating the reduced acid product.

3,928,135

PROCESS FOR THE PRODUCTION OF GLUCOSE POLYMERS

Jeremiah Milner, 41, N. John St., Liverpool, L2 6SE, England

Filed May 2, 1973, Ser. No. 356,550

Claims priority, application United Kingdom, May 2, 1972, 20320/72

Int. Cl.² C12D *13/02*

U.S. Cl. 195—31 R **13 Claims**

1. Process for the production of glucose polymers which comprises

a. hydrolysing starch containing no more than 20% of amylopectin by means of an α -amylase enzyme is a buffer solution at a pH of about 6.5,

b. heating the resulting mixture in solution to a sufficiently elevated temperature to destroy the enzyme, stopping the hydrolysis reaction when the glucose level rises to about 3% by weight of the total dextrins,

c. removing electrolytes by passing the mixture through a ion-exchange resin or by making a solution of the mixture in water adding an alcohol to form a dextrin precipitate leaving the electrolyte in solution, dissolving the precipitate in aqueous alcohol and distilling off the alcohol,

d. boiling the solution to reduce pyrogens,

e. passing the solution through a candle or Seitz filter to remove bacterial and unwanted protein substances,

f. removing glucose by dialysis or by means of a dextran resin column, and

g. removing the long chain dextrins by fractionation with alcohol and thereafter recovering glucose polymers in which glucose units in the polymers linked in the 1,6-position constitute no more than 5% of the total linkages.

3,928,136

CONTAINER FOR COLLECTION OF CULTURES OF PARASITIC FUNGI AND A METHOD OF USING THE SAME

Pierre A. Launey, 9, rue des Canettes, 75006 Paris, France

Filed Oct. 16, 1973, Ser. No. 406,885

Claims priority, application France, Oct. 26, 1972, 72.37979

Int. Cl.² C12B *1/00*

U.S. Cl. 195—54 **9 Claims**

1. A container for the collection of cultures of parasites of a fungal nature, comprising a vessel and a cover, both constituted of transparent material, said vessel comprising a body having a flat face, said body having an elongated chamber of semicylindrical cross-section which is open at said flat face, said body including opposite side walls, between which the chamber is disposed, said side walls extending from said flat face in the same direction as said chamber and over a distance greater than the depth of the chamber, said cover being constructed to cover the flat face of the vessel and to be hermetically joined to the vessel.

8. A method of using containers according to claim 1, to form a collection of parasites of a fungal nature, comprising placing a necessary amount of agar in the chamber of the vessel of each container;

seeding a fungal parasite in the agar and allowing it to develop to the desired stage;

placing the open container in a heated environment at 30°C for 3 hours;

closing the container with said cover in an atmosphere of dry air at 30°C;

sealing the cover of the container; and

subjecting the container and the parasite to a flux of gamma rays from a radioactive source.

3,928,137

REAGENT FORMULATION FOR URIC ACID ASSAY

Alexander A. Monte, and Ching Chiang, both of Glendora, Calif., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Division of Ser. No. 200,552, Nov. 19, 1971, Pat. No. 3,816,262, which is a continuation-in-part of Ser. No. 190,883, Oct. 20, 1971, abandoned. This application May 6, 1974, Ser. No. 467,431

Int. Cl.² G01N *31/14, 33/16*

U.S. Cl. 195—63 **5 Claims**

1. An enzyme reagent formulation for use in assaying a biological specimen for uric acid comprising a granular, water-soluble, anhydrous, storage-stable mixture containing:

a. uricase;

b. potassium chloride;

c. mannitol;

d. gum acacia;

e. bovine serum albumin;

f. glycine;

g. sodium carbonate; and

h. a nitrogen-containing polyoxyalkylene nonionic surfactant obtained by the sequential reaction of ethylenediamine with propylene oxide and ethylene oxide in the presence of a catalyst, said surfactant containing polyoxypropylene chains having an average molecular weight of between about 750 and 6750 and polyoxyethylene chains constituting between about 10 and about 80 weight percent of said surfactant.

3,928,138

PREPARATION AND USE OF ENZYMES BOUND TO POLYURETHANE

Louis L. Wood, Rockville; Frank J. Hartdegen, and Peter A. Hahn, both of Columbia, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 404,823, Oct. 9, 1973, which is a continuation-in-part of Ser. No. 250,012, May 3, 1972, abandoned. This application May 21, 1973, Ser. No. 362,488

Int. Cl.² C07G *7/02*

U.S. Cl. 195—68 **5 Claims**

1. The method of preparing a bound enzyme that includes contacting, prior to a subsequent foaming step, an isocyanate-capped polyurethane with an aqueous dispersion of an enzyme, under foam-forming conditions, whereby the polyurethane foams and the enzyme becomes integrally bound to the thus formed polyurethane foam.

3,928,139

DETECTION OF MICROBIAL PATHOGENS

Gordon L. Dorn, Dallas, Tex., assignor to J. K. & Susie L. Wadley Research Institute & Blood Bank, Dallas, Tex.

Continuation-in-part of Ser. No. 331,693, Feb. 12, 1973, abandoned. This application Nov. 9, 1974, Ser. No. 428,135
Int. Cl.[2] C12K *1/04*
U.S. Cl. 195—103.5 R 47 Claims

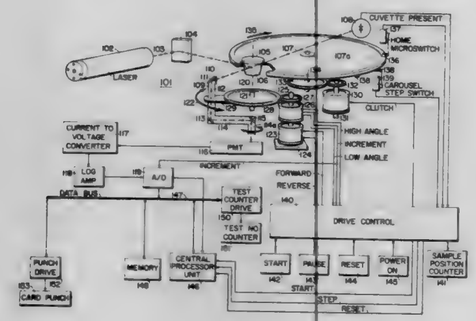
1. In a method of detecting the presence of microbial pathogens wherein a sample of body fluid is obtained and subjected to analysis for microbial pathogens the improvement comprising: concentrating said microbial pathogens contained within said body fluid and separating said microbial pathogens from the residual of said body fluid after said body fluid is obtained and before said analysis by the method comprising:
   a. depositing said sample of body fluid on a liquid filter medium in a confined sterile zone, said liquid filter medium being nontoxic to said microbial pathogens and having a density greater than said sample of body fluid and thereby able to support said body fluid and selectively receive said pathogens from said body fluid;
   b. subjecting said confined zone to centrifugation thereby forcing said sample of body fluid against said liquid filter medium and causing substantially all of said microbial pathogens to selectively pass therein and thereby separate from the residual mass of said sample of body fluid; and
   c. separating said liquid filter medium containing substantially all of said microbial pathogens from contact with said residual mass of said sample fluid.

3,928,140

APPARATUS AND PROCESS FOR TESTING MICROPARTICLE RESPONSE TO ITS ENVIRONMENT

Philip J. Wyatt, 1939 Laguna St., Santa Barbara, Calif. 93101; Vincent R. Stull, 1526 Monte Vista Road, Santa Barbara, Calif. 93103; William L. Proctor, 6641 Del Playa, Goleta, Calif. 93017, and Irving L. Miller, 129 York St., No. 5B, New Haven, Conn. 06511

Filed May 10, 1974, Ser. No. 468,992
Int. Cl.[2] C12K *1/04*
U.S. Cl. 195—103.5 R 43 Claims



1. Process for testing the response of a microparticle to its environment, comprising the steps of:
   A. preparing a microparticle control sample;
   B. inserting said sample into the path of an incident narrow, substantially monochromatic beam of radiant energy;
   C. measuring the intensity of radiant energy scattered by said sample at a plurality of angular locations about said sample relative to the direction of said incident beam sufficient to derive a control differential scattering pattern produced by said sample;
   D. preparing a microparticle test sample by introducing a selected environmental change relative to said control sample;
   E. inserting said test sample into said beam path;
   F. measuring the intensity of radiant energy scattered by said test sample at substantially the same said angular locations about said test sample to derive a test differential scattering pattern produced by said test sample;
   G. effectively shifting said test pattern along a selected axis relative to said control pattern until the algebraic sum of the areas between said patterns is a minimum; and
   H. comparing said control and said shifted test patterns to determine a selected relative difference therebetween, said difference providing an indication of the response of said microparticle to said selected environmental change.

3,928,141

METHOD AND APPARATUS FOR NITROBLUE TETRAZOLIUM (NBT) TESTS FOR CHRONIC GRANULOMATOUS DISEASE AND RELATED SYNDROMES

Zenon Sosnowski, Winnipeg, Canada, assignor to International Diagnostic Products Ltd., Winnipeg, Canada

Filed Mar. 6, 1975, Ser. No. 555,805
Claims priority, application Canada, Mar. 12, 1974, 194717
Int. Cl.[2] C12K *1/04*; G01N *31/00*
U.S. Cl. 195—103.5 R 11 Claims

1. A method for conducting nitroblue tetrazolium tests consisting of the steps of mixing a quantity of nitroblue tetrazolium dye with distilled water, then adding a quantity of dried human plasma and then adding a quantity of heparinzed blood to be tested, letting the results of the mixture incubate at a temperature sufficient to permit incubation, preparing a smear from the mixture, straining the smear in a conventional manner and then counting the P.M.N.-leukocytes having a dark blue deposit.

3,928,142

CULTURE CHAMBER FOR THE STUDY OF BIOLOGICAL SYSTEMS AND METHOD OF FABRICATION THEREOF

Dennis B. Smith, 12016 Rialto St., Sun Valley, Calif. 91352

Filed July 24, 1973, Ser. No. 382,164
Int. Cl.[2] C12B *1/00*
U.S. Cl. 195—104 11 Claims

1. A culture chamber suitable for use in the study of biological systems comprising:
   a first and second thin, fragile coverglass,
   a gasket of silicone-rubber compound having a peripheral wall with smooth, flat, molded, upper and lower surfaces, said gasket having been cleaned with an organic cleansing agent so that the molded upper and lower surfaces thereof have a natural bonding characteristic which strengthens with time,
   whereby said gasket is fully sandwiched between said first and second coverglasses such that the outer edges of the upper and lower surfaces of said gasket are fully supported by said coverglasses, the molded upper and lower surfaces of the peripheral wall of said gasket adhering to the contacting surfaces of said first and second coverglasses to thereby provide a water-tight chamber defined by the opposing surfaces of said coverglasses and the inner surface of the peripheral wall of said gasket, and
   wherein the peripheral wall of said gasket is provided with at least one aperture providing access to said chamber and communication with the ambient atmosphere.

7. A method for the fabrication of a culture chamber suitable for use in the study of biological culture systems which comprises:
   providing a gasket of silicone-rubber compound having a peripheral wall with smooth, flat, molded, upper and lower surfaces,
   forming at least one aperture in the peripheral wall of said gasket,
   cleaning the flat, molded, upper and lower surfaces of said gakset with an organic cleansing agent,

   providing a first and second thin, fragile coverglass,
   cleaning the surfaces of said first and second coverglasses with said organic cleansing agent,
   sandwiching said gasket between said first and second coverglasses, said gasket being of such a size that when so sandwiched between said first and second coverglasses the outer edges of the upper and lower surfaces of said gasket are fully supported by said coverglasses,
   pressing with moderate finger pressure the surface of said first and second coverglasses against the respective flat, molded, upper and lower surfaces of said gasket to form a continuous area of contact therebetween to thereby provide a liquid-tight chamber defined by the opposing surfaces of said first and second coverglasses and the inner surfaces of the peripheral wall of said gasket, and
   permitting the continuous areas of contact of said first and second coverglasses and said gasket to remain in contact for a period of approximately two days to thereby form a strong bond between said gasket and said first and second coverglasses.

3,928,143

METHOD OF CARRYING OUT ENZYME-CATALYZED REACTIONS

Robert W. Coughlin, 902 Seventh Ave., Bethlehem, Pa. 18018

Filed Feb. 23, 1972, Ser. No. 228,748
Int. Cl. C07g *7/02*
U.S. Cl. 195—115 2 Claims

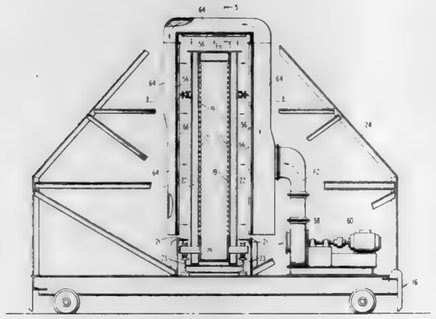
1. A method of carrying out enzymatic reactions using enzymes attached to insoluble, finely divided particles of carrier material which comprises continuously flowing a liquid containing the substrate or reactant upwardly through a reaction zone containing said enzyme-bearing particles and maintaining the vertical liquid velocity within said zone sufficiently high to cause suspension and agitation of said particles but sufficiently low to allow said particles to remain within said reaction zone.

3,928,144

POLLUTANTS COLLECTION SYSTEM FOR COKE OVEN DISCHARGE OPERATION

Christopher C. Jakimowicz, Detroit, Mich., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed July 17, 1974, Ser. No. 489,447
Int. Cl.[2] C10B *27/00*
U.S. Cl. 202—263 6 Claims



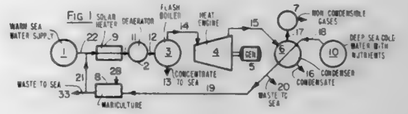
1. A coke oven battery air pollution prevention system, in which a transfer car receives the coke discharged from an oven, comprising
   a. coke guide means for guiding the coke discharged from an oven into the transfer car,
   b. a coke guide carriage carrying the coke guide means for positioning the coke guide means in coke guiding position relative to an oven to be discharged,
   c. an exhaust hood carried by the coke guide carriage, the exhaust hood being shaped to enclose the top and sides of the coke guide leaving an open end facing the battery through which end the coke guide projects, the exhaust hood extending outwardly away from the battery and the coke guide carriage to form an enclosure projecting over and enclosing the open top of the transfer car with the downwardly facing open end on the exhaust hood registerable with the open top of the transfer car,
   d. means forming an exhaust opening in the exhaust hood above the transfer car,
   e. means connectable to means (d) for inducing a draft through means (d) and through the exhaust hood from the open ends of the exhaust hood,
   f. a source of air under pressure,
   g. duct means associated with the walls of the exhaust hood adjacent the open end of the exhaust hood which faces the battery,
   h. conduit means connecting the duct means to the source of air under pressure, and
   i. nozzle means communicating with the interior of the duct means, the nozzle means having an outlet orifice shaped to form a curtain of air under pressure on the inside of the open end of the exhaust hood which faces the battery and on each side of the coke guide means, the curtain of air acting to cool and the coke guide means and to cooperate with the means for inducing draft through the exhaust hood to prevent escape of pollutants out of the open end of the exhaust hood.

3,928,145

PROCESS FOR PRODUCING POWER, FRESH WATER, AND FOOD FROM THE SEA AND SUN

Donald F. Othmer, 333 Jay St., Brooklyn, N.Y. 11201

Filed Sept. 16, 1974, Ser. No. 506,237
Int. Cl.[2] B01D *3/00*; F03G *7/02*; A01G *7/00*
U.S. Cl. 203—11 24 Claims

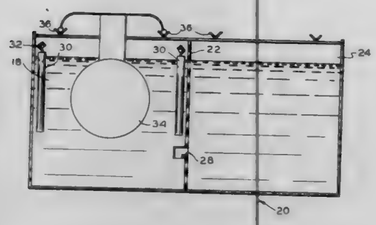


1. The process of preparing sea water for a mariculture operation comprising:
   a. supplying heat to a liquid so as to raise its temperature, said heat being derived from solar radiation;
   b. flash evaporating said heated liquid in a closed vessel to convert a portion thereof into vapor at a lower temperature and pressure, whereby some of the sensible heat of said liquid is transformed into the latent heat of said vapor;
   c. supplying an influent of cold deep sea water substantially free of pollution and of marine life inimical to product fish, but with substantial amounts of nutrients for biologic growth;
   d. preheating the deep sea water to raise its temperature to between 55° and 100°F by heat exchange with a major part of said vapor, which is thus condensed; and
   e. conveying the preheated deep sea water to said mariculture operation, which produces at least one species of food fish.

3,928,146
ELECTROPLATING RECOVERY PROCESS

James P. Russell, Oregon City, Oreg., assignor to Winter Products Co., Portland, Oreg.

Filed Sept. 6, 1974, Ser. No. 503,631
Int. Cl.² C07B 5/00; A44B 9/12
U.S. Cl. 204—14 R 8 Claims



1. In a plating process wherein articles are plated in a solution within a plating tank and thereafter rinsed in a series of at least three rinse tanks, the improvement comprising,
providing a dual chamber tank having an electrically non-conducting divider therein separating the dual chamber tank into two portions including a plating portion and a rinse portion,
said divider having an opening therein to permit flow of solution between said one portion of said dual chamber tank and the other portion thereof,
plating an article in said one portion of said dual chamber tank,
passing the article from said tank one portion to said plating tank and effecting a plating on said article,
passing the article from said plating tank to the said other portion of said dual chamber tank,
thereafter passing said article seriatum to said rinse tanks, continuously withdrawing solution from the first of said rinse tanks and subjecting it to a first reverse osmosis while continuously passing the concentrate from said first reverse osmosis to a holding tank and the permeate to the second of said rinse tanks,
continuously withdrawing solution from the third of said rinse tanks and subjecting it to a second reverse osmosis while continuously passing the concentrate from said second reverse osmosis to said second rinse tank and the permeate to the final one of said rinse tanks,
and returning solution from said holding tank to said plating tank.

3,928,147
METHOD FOR ELECTROPLATING

Xavier Kowalski, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 9, 1973, Ser. No. 404,562
Int. Cl.² C25D 5/34, 3/12, 3/38
U.S. Cl. 204—29 11 Claims

1. In the method of electroplating die castings composed of zinc or zinc alloyed with at least one of magnesium and aluminum with a less electronegative metal or alloy in a cyanide-free electrolyte comprising an aqueous solution of a complex of said less electronegative metal or alloy and an organophosphorus compound, the improvement which comprises contacting the cathode with an aqueous solution consisting essentially of from about 0.1 percent up to the limit of solubility of an organophosphorus chelating agent for said cathode prior to immersing the cathode in said electrolyte.

3,928,148
COPPER STRIKE BATH AND METHOD FOR COATING ELECTROLESSLY PLATED ARTICLES

Lewis Brian Lerner, Linglestown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 28, 1974, Ser. No. 484,023
Int. Cl.² C25D 3/40, 5/00
U.S. Cl. 204—38 B 6 Claims

2. An aqueous bath for depositing electrolytically a copper strike on an immersed body having a metal deposit thereon, the copper strike bath being at about a pH of 6.8 to 7.2 and consisting essentially of the following components: tetrapotassium pyrophosphate $K_4P_2O_7.3H_2O$ from 90 to 150 grams per liter; (a) potassium cyanide from 4 to 17 grams per liter; and (b) cuprous cyanide, wherein the ratio of a to b is 2:1 to 4:1, by weight.

4. The process as defined in claim 3 wherein the temperature of the bath is from 120° to 140°F and the pH of the bath at 25°C is from 6.8 to 7.2.

3,928,149
WEAK ACIDIC BRIGHT DUCTILE ZINC ELECTROLYTE

Joachim Steeg, Geislingen (Steige), Germany, assignor to Dr.-Ing. Max Schloetter, Geislingen-Steige, Germany

Filed Sept. 11, 1974, Ser. No. 505,065
Claims priority, application Germany, Sept. 18, 1973, 2346942
Int. Cl.² C25D 3/22
U.S. Cl. 204—55 R 15 Claims

1. An aqueous acid zinc plating bath substantially void of ammonium ions for depositing ductile glossy to bright zinc layers within a wide cathodic current density range containing a water-soluble zinc compound capable of plating zinc metal on a substrate, at least about 1 g/l of a polypropoxy ether having a molecular weight of from about 300 to about 1500 and/or a polypropoxy-ethoxy ether having a molecular weight of from about 1,000 to about 5,000 and containing up to about 25% by weight of the polymer of the oxyethylene moiety and an aromatic carbonyl compound.

9. An aqueous acid zinc plating bath for depositing ductile glossy to bright zinc layers within a wide cathodic current density range containing a water-soluble zinc compound capable of plating zinc metal on a substrate and a polypropoxy-ethoxy ether having an approximate molecular weight of between about 1,000 to about 5,000 and containing up to about 25% by weight of the polymer of the oxyethylene moiety, said polymer being present in an amount of at least about 1 g/l.

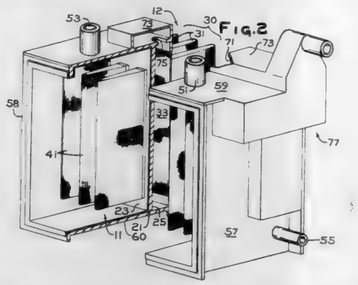
3,928,150
METHOD OF OPERATING AN ELECTROLYTIC CELL HAVING HYDROGEN GAS DISENGAGING MEANS

Henry W. Rahn, Pittsburgh, Pa.; Hugh Cunningham, Corpus Christi, Tex.; Colonel R. Dilmore, New Martinsville, W. Va.; Thomas C. Jeffery, Lake Charles, La., and Carl W. Raetzsch, Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 2, 1974, Ser. No. 457,299
Int. Cl.² C25B 1/46
U.S. Cl. 204—98 4 Claims

4. In a method of operating an electrolytic cell having a plurality of hollow, finger-like cathodes interleaved between a plurality of anodes and separated therefrom by a permeable barrier, where a sodium chloride brine is fed to the cell and an electrical current is imposed across the cell whereby to evolve hydrogen on the cathodes and chlorine on the anodes and the hydrogen is present within a catholyte chamber of the cell as hydrogen gas having catholyte liquor contained therein, the improvement which comprises:
removing the hydrogen gas having catholyte liquor contained therein from the catholyte chamber of the cell directly to a horizontal channel associated only with the said cell;

transporting the hydrogen gas having catholyte liquor contained therein through the horizontal channel at a velocity in excess of six feet per second;
transporting the hydrogen gas having catholyte liquor contained therein from the horizontal channel against a deflecting baffle, thereby deflecting the gas downwardly directly into a disengaging chamber of increased cross-sectional area associated only with said cell, thereby deflecting the direction of flow thereof and reducing the velocity thereof by a factor of from 0.25 to 0.50 relative to the gas velocity in the horizontal channel;

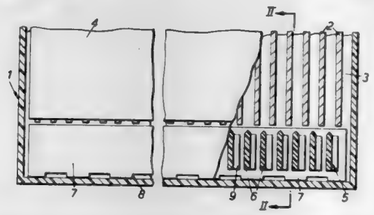


reversing the direction of flow of the gas and transporting the gas into a chamber of further increased cross-sectional area thereby further reducing the velocity by a further factor of 0.1 to 0.2 relative to the gas velocity in the horizontal channel, and disengaging the catholyte liquor from the hydrogen;
recovering hydrogen gas substantially free of catholyte liquor; and
returning the catholyte liquor directly to said cell.

3,928,151
ELECTROLYTIC REFINING OF COPPER

Colin Walter Nightingale, Formby, and Georg Paul Richard Bielstein, London, both of England, assignors to British Copper Refiners Limited, Prescot, England

Filed Sept. 12, 1973, Ser. No. 396,550
Int. Cl.² C25C 1/12
U.S. Cl. 204—106 5 Claims



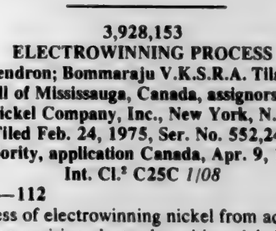
1. A method of electrolytically refining copper by the series process which comprises forming a copper strip of indefinite length by a continuous casting process, cutting this strip into lengths such that plates having the required superficial area are formed, immersing the cut lengths as unrefined electrodes in series in an electrolyte solution contained in a tank whose inner surface is of an electrically insulating synthetic polymeric material that is substantially inert to the electrolyte solution, maintaining the electrolyte solution at a temperature of at least 54°C (129°F), and passing direct current through the electrolyte solution to cause copper from one of the electrodes to be dissolved in the solution and deposited as pure copper on another of the electrodes, wherein baffles of an electrically insulating material that is substantially inert to the electrolyte solution are so positioned in the tank that flow of current between major facing surfaces of adjacent electrodes is not impeded and flow of current that would otherwise occur around at least some of the immersed edges of electrodes is substantially reduced.

3,928,152
METHOD FOR THE ELECTROLYTIC RECOVERY OF METAL EMPLOYING IMPROVED ELECTROLYTE CONVECTION

Walter W. Harvey, Bedford; Myron R. Randlett, Burlington, and Karlis L. Bangerskis, Walpole, all of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Division of Ser. No. 445,435, Feb. 25, 1974. This application Oct. 17, 1974, Ser. No. 515,513
Int. Cl.² C25C 1/12
U.S. Cl. 204—106 13 Claims

(PRIOR ART)



1. A method of performing electrodeposition at a high ratio of current density to metal ion concentration in a cell which includes anodes, cathodes and an electrolyte with an attendant production of high quality metal which can be easily stripped from the cathodes comprising the following steps:
a. positioning non-conductive convection edge baffles adjacent to opposite edges of the anode faces so as to extend toward the cathode faces;
b. positioning non-conductive anode bottom extensions beneath the anodes;
c. providing cathodes that are wider than the anodes so that the edges of the cathodes extend outwardly from the convection edge baffles;
d. submerging the cathodes so that the submerged length of the cathodes are equal to or greater than the submerged length of the anodes and the anode bottom extensions;
e. positioning bubble tubes having orifices between the non-conductive anode extensions and the cathode faces;
f. spacing opposed anode and cathode faces apart from each other at a distance of about 1 ¼ inches or less; and,
g. electrodepositing metal on the cathodes while generating a sheet of gas bubbles from the bubble tubes through the electrolyte between opposed anode-cathode faces to produce agitation of the electrolyte over the cathode faces as metal is being deposited thereon and maintaining said convection edge baffles during electrodeposition to form enclosures between cathode and anode faces to minimize lateral spreading and contraction of the sheet of bubbles and prevent deposition of metal at the edges of the cathodes extending beyond the baffles, and maintaining said anode bottom extension during electrodeposition to prevent deposition of metal at the bottom of the cathode faces.

3,928,153
ELECTROWINNING PROCESS

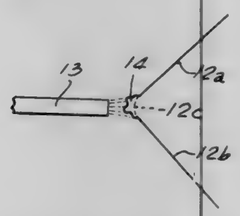
Aubrey S. Gendron; Bommaraju V.K.S.R.A. Tilak, and Victor A. Ettel, all of Mississauga, Canada, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Feb. 24, 1975, Ser. No. 552,247
Claims priority, application Canada, Apr. 9, 1974, 197211
Int. Cl.² C25C 1/08
U.S. Cl. 204—112 10 Claims

1. A process of electrowinning nickel from aqueous sulfate electrolytes comprising electrodepositing nickel at a cathode

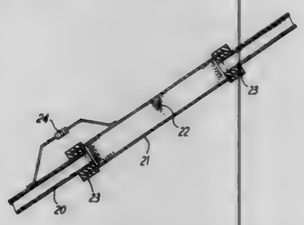
current density of about 2 to about 10 amperes per square decimeter from a nickel-containing sulfate electrolyte maintained at a temperature in excess of 60°C and at a pH of about 1.5 to about 2.0 (as measured at cell temperature) and contained in a cell having no diaphragm isolating the cathode from an essentially insoluble anode and in which vigorous agitation of the electrolyte is maintained, while feeding nickel-containing electrolyte at a relatively high pH to said cell and withdrawing nickel containing electrolyte from said cell at rates to maintain a substantially constant volume of electrolyte in said cell, to maintain the required pH in said cell and to maintain a nickel bite of at least about 5 grams per liter.

3,928,154
ELECTROCHEMICAL RADIUS GENERATION
James D. Andrews, Bloomfield Village, Mich., assignor to TRW Inc., Cleveland, Ohio
Filed Apr. 12, 1973, Ser. No. 350,388
Int. Cl.² C25F *3/00, 5/00*
U.S. Cl. 204—129.5 **8 Claims**



1. The method of generating a uniform radius on a workpiece having an extended edge which comprises positioning at least one generally tubular nozzle in spaced relationship to said edge of said workpiece, said nozzle being positioned to direct electrolyte substantially along a line of the series of lines that bisect the angles formed at said edge, passing a charged electrolyte through said nozzle and along said line to impinge upon said edge, and moving the nozzle along the contours of said edge while maintaining the position thereof and the passage of electrolyte therethrough substantially along one of said lines to thereby round off said edge.

3,928,155
METHOD AND MEANS FOR PROMOTING CO-AGULATION OF PARTICLES IN A LIQUID
Derek A. Woodhouse, Burne House, Tittensor, Stoke-on-Trent, Staffordshire, England
Continuation-in-part of Ser. No. 854,976, Sept. 3, 1969, abandoned. This application Jan. 3, 1973, Ser. No. 320,787
Claims priority, application United Kingdom, Sept. 20, 1968, 44775/68; June 10, 1969, 29204/69
Int. Cl.² C23F *13/00*
U.S. Cl. 204—150 **6 Claims**



1. A method of treating a liquid to promote coagulation of particles in the water containing scale forming hardness factors, comprising the steps of:

a. providing two tubes made of two different electrically-conductive materials having different positions on the Galvanic Scale,
b. providing a connector member made of insulator material,
c. interconnecting the tubes in series by means of the connector so that liquid flowing through the tubes flows first through one of the tubes and then through the other,
d. electrically connecting the two tubes together by means which is not engaged by liquid flowing through the tubes, and
e. causing such water to flow through the tubes.

3,928,156
PROCESS FOR THE ELECTRODEPOSITION OF ZWITTERION-CONTAINING COMPOSITIONS
Marco Wismer, Gibsonia, and Joseph F. Bosso, Lower Burrell, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 840,848, July 10, 1969, abandoned. This application July 29, 1971, Ser. No. 167,476
Int. Cl.² C25D *13/06*
U.S. Cl. 204—181 **4 Claims**

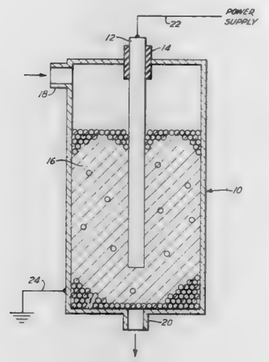
1. A method of electrodepositing a resin upon a conductive substrate serving as an electrode in an electric circuit, which method comprises passing an electric current between said electrode and a counter-electrode in electrical contact with an aqueous electrodepositable composition comprising an aqueous dispersion of an ungelled, inherently water-dispersible epoxy group free electrodepositable resin containing Zwitterions, said Zwitterions consisting of a quaternary ammonium base group and a carboxyl group, thereby electrodepositing an adherent coating upon said electrode.

3,928,157
CATHODIC TREATMENT OF CHROMIUM-PLATED SURFACES
Yasuo Suematsu, Itami; Ryuhei Miyazaki, Ibaraki; Mitsuyasu Kubo, Neyagawa; Tsuyoshi Uotani, and Hironori Uchida, both of Hirakata, all of Japan, assignors to Shinto Paint Co., Ltd., Amagasaki and Uyemura & Co., Ltd., Osaka, both of, Japan
Filed May 7, 1973, Ser. No. 357,534
Claims priority, application Japan, May 15, 1972, 47-047899; May 15, 1972, 47-047900; May 15, 1972, 47-047901
Int. Cl.² C25D *13/06, 13/20*
U.S. Cl. 204—181 **13 Claims**

1. A method for treating a chromium-plated surface characterized by the fact that a chromium-plated article having an uppermost chromium-plated layer of a thickness of at least 0.2 micron and adjacent thereto, an intermediate nickel or nickel-alloy layer, is dipped as the cathode in a water-soluble or water-dispersible resin solution or dispersion prepared by diluting with water a resin salt of at least one synthetic polyamino resin and a water-soluble organic acid, a water-soluble inorganic acid or a mixture of said acids and then passing a direct current in the range of 10–300 volts through the aqueous bath so that there is formed a resin film on the chromium plated surface.

8. A method as claimed in claim **1** wherein the chromium-plated surface is pretreated before the electrodeposition so that the surface electrode potential as defined herein before has a value higher than −0.42 volt by means of an electrochemical or physical treatment.

3,928,158
ELECTROFILTER
G. Ray Fritsche, Bradford Woods, and Leonard W. Haniak, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 362,036, May 22, 1973, abandoned, which is a continuation of Ser. No. 193,966, Oct. 29, 1971, abandoned. This application Aug. 26, 1974, Ser. No. 500,476
Int. Cl.² B03C *5/00*
U.S. Cl. 204—188 **22 Claims**

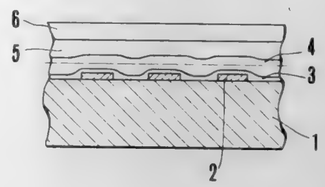


1. A method for removing finely divided suspended solid contaminants including electrically conductive solids from oils having a high resistivity and free of significant amounts of dispersed water which comprises flowing the oil substantially downwardly through interstitial spaces within a particulate bed of substantially spherical nonporous and nondeformable ceramic beads of high electrical resistivity having a smooth outer surface and diameters in the range of about 1/32 inch to about ¼ inch, and maintaining an electrostatic field having a voltage gradient of at least about 5 KV per inch substantially horizontally across said bed during the downward flow of the oil.

3,928,159
METHOD FOR FORMING PROTECTIVE FILM BY IONIC PLATING
Elichi Tadokoro, and Tatsuji Kitamoto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sept. 4, 1974, Ser. No. 503,125
Claims priority, application Japan, Sept. 4, 1973, 48-99642
Int. Cl.² C23C *15/00;* **C11B** *5/00*
U.S. Cl. 204—192 **7 Claims**

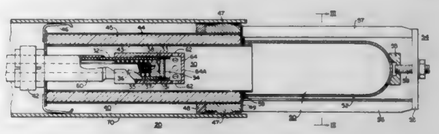
1. A method for formation of a protective layer on a magnetic recording substance by ionic plating comprising generating a glow discharge of nitrogen gas or an inert gas at a vacuum of about 1×10^{-1} to about 1×10^{-3} mmHg between a magnetic recording substance as a substrate and at least one metal selected from the group consisting of Group IB, Group IIB, Group VIB, Group VIIB and Group VIIIB metals as an evaporative source and applying a voltage so that the electric potential of said substrate is more negative than the electric potential of said evaporative source.

3,928,160
COLOUR PICKUP TUBES AND METHOD OF MANUFACTURING THE SAME
Saburo Nobutoki, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Sept. 5, 1974, Ser. No. 503,329
Claims priority, application Japan, Oct. 5, 1973, 48-111445
Int. Cl.² C23C *15/00;* **H01J** *31/00*
U.S. Cl. 204—192 **7 Claims**



1. In a method of manufacturing a colour pickup tube of the class wherein an optical colour analyzing filter is formed on a substrate, a layer of transparent inorganic substance is formed on said optical colour analyzing filter, and then a photoelectric converting element is formed by successively applying a transparent electroconductive film and a photoconductive film upon said layer of transparent inorganic substance, the improvement which comprises the steps of sputtering a first layer of said transparent inorganic substance upon said filter in a first mixed atmosphere of an inert gas and oxygen, and then sputtering a second layer of said transparent inorganic substance upon said first layer in a mixed atmosphere containing inert gas and a smaller quantity of oxygen than said first mixed atmosphere.

3,928,161
GAS MEASURING PROBE FOR INDUSTRIAL APPLICATIONS
William H. McIntyre, Orrville, Ohio; Richard W. Wallace, and Matthew J. Troha, both of Allison Park, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 247,368, April 25, 1972. This application Mar. 22, 1974, Ser. No. 454,031
Int. Cl.² G01N *27/46*
U.S. Cl. 204—195 S **3 Claims**



1. In a solid electrolyte electrochemical cell assembly adapted for monitoring gas constituents at elevated temperatures wherein the solid electrolyte electrochemical cell is a solid electrolyte member having a first electrode disposed in contact with a first surface of the solid electrolyte member and a second electrode disposed in contact with the opposite surface of the solid electrolyte member, said solid electrolyte electrochemical cell forming the closed end of a tubular member, the improvement for heating said solid electrolyte electrochemical cell, wherein said improvement comprises:

heating means inserted within said tubular member and disposed adjacent to the surface of the solid electrolyte member contacted by the first electrode and remote from the solid electrolyte surface contacted by said second electrode for directly heating said tubular member and the electrolyte surface contacted by said first electrode, and

heat conductive means in thermal contact with the external surface of said tubular member and having an end portion

extending adjacent and parallel to and spaced apart from the electrolyte surface contacted by said second electrode to define therebetween a gas cavity and to heat said electrolyte surface contacted by said second electrode, said heat conductive means including apertures therethrough to permit the flow of gas containing constituents to be monitored to enter said cavity and contact said electrolyte surface contacted by said second electrode.

3,928,162

GAS FLOW COULOMETRIC DETECTOR

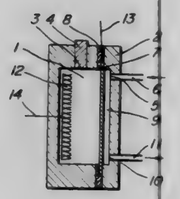
Yoshinori Takata, Tokaimura, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 16, 1972, Ser. No. 235,120

Claims priority, application Japan, Mar. 19, 1971, 46-15146

Int. Cl.² G01N 27/46

U.S. Cl. 204—195 R **21 Claims**



1. A gas flow coulometric detector driven with a predetermined constant voltage comprising a casing filled with an electrolyte, means for defining a sample gas passage within said casing, means for flowing a sample gas through said passage, said means for defining said sample gas passage including a porous operating electrode having a first surface in contact with said sample gas flowing through said passage, a second surface in contact with said electrolyte, and many pores providing communication means between said two surfaces, said porous operating electrode having the property that it inhibits undesirable permeation of said electrolyte from said second surface to said first surface through said pores, a counter electrode spaced from and disposed opposite to said operating electrode in said casing on the side of said second surface of said operating electrode so as to be in contact with said electrolyte, said counter electrode having a surface parallel to the second surface of said operating electrode, said counter electrode being made of a material selected from the group consisting of Ag-AgCl, Hg-Hg_2Cl_2, Ag-AgBr and Ag-AgI and being in the form of a meshed structure, means for applying said predetermined voltage, the value of which is suitable for the selective quantitative analysis of said sample gas, across said operating electrode and said counter electrode so that electrolysis can be carried out due to the contact between said electrolyte and said sample gas in said pores, and means for detecting the quantity of electricity appearing during said electrolysis.

3,928,163

SPARK DISCHARGE AND ELECTRO-CHEMICAL EROSION MACHINING APPARATUS

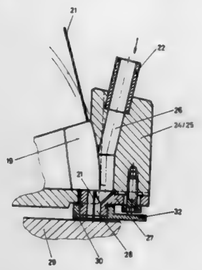
Werner Ullmann, Locarno; Bernd Schumacher, Losone; Silvano Mattei, Locarno-Solduno; Hans-Ueli Fenner, Ascona, and Arno Sieg, Locarno, all of Switzerland, assignors to A.G. fur industrielle Elektronik AGIE Losone b. Locarno, Losone, Switzerland

Filed Apr. 23, 1974, Ser. No. 463,317

Claims priority, application Switzerland, Sept. 11, 1973, 13062/73

Int. Cl.² B23P 1/04, 1/08

U.S. Cl. 204—206 **16 Claims**



1. An electro-erosion machine tool comprising a filamentary erosion electrode (**21**) and electrode guide and fluid delivery means, said electrode guide and fluid delivery means comprising a portion forming a guide for receiving said filamentary erosion electrode (**21**) and guiding movement of the electrode in the direction of the electrode axis, a portion defining an outlet for discharging a fluid medium alongside of said electrode in contact with the outer surface thereof and parallel to the axis thereof towards a working area of said electrode, and a portion providing duct means for leading said fluid medium from a supply conduit to said outlet in such a way as to cause said fluid medium to be discharged through said outlet as aforesaid when supplied from said supply conduit.

10. A spark-discharge erosion machine tool comprising supporting and guiding means (**1**) for supporting and guiding movement of a filamentary erosion electrode (**2**), fluid delivery means (**4**) which is positioned near the supporting and guiding means and which comprises portions defining an outlet for passing a dielectric flushing medium to a working area of said electrode to assist erosion thereby, collecting means (**5** and **6**) positioned and constructed for collecting used flushing medium passing from said working area, and a regeneration system which is constructed and arranged for receiving said used flushing medium from said collecting means, for regenerating it and for returning it to said fluid outlet means, the regeneration system including conductivity determining means (**12**) operably connected for determining the conductivity of said used flushing medium, and deionising means (**14**) which is connected for being brought into operation to deionise said used flushing medium under the control of said conductivity determining means when the conductivity of the used flushing medium rises above a predetermined level.

3,928,164

ALTERNATING CURRENT ELECTROLYTIC CELL

John C. Shepard, Jr., Lake Jackson; Robert C. Wight, Sugar Land, and Phillip W. Kosted, Rusk, all of Tex., assignors to Nalco Chemical Company, Chicago, Ill.

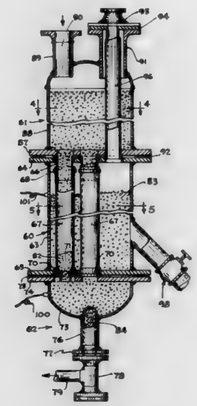
Filed Dec. 12, 1973, Ser. No. 423,913

Int. Cl.² C25B 9/00

U.S. Cl. 204—260 **11 Claims**

1. An electrolytic cell for producing organometallic compounds comprising, a substantially tubular upstanding metal

vessel including a central main shell, a top closure member mounted at the upper end of the main shell, and a bottom closure member mounted at the lower end of the main shell, means electrically insulating said top and bottom closure members from the main shell, at least one tubular perforate electrode insulating spacer extending through the main shell, means supporting said spacer at the opposite ends thereof and electrically insulating same from said main shell and from the closure members, a particulate consumable electrically conductive material in said tubular spacer defining one electrode and being supported by and in contact with the bottom closure member, a particulate consumable electrically conductive



material surrounding said tubular spacer and in contact with the main shell defining a second electrode, first opening means in said upper closure member for permitting the addition of particulate material to said first electrode, second opening means in said upper closure member for permitting the addition of particulate material to said second electrode, means supporting and electrically insulating the lower end of the second electrode from the bottom closure member, means connecting said first and second electrodes to a source of alternating current potential, and openings in said top and bottom closure members for permitting a Grignard reagent solution to flow through the vessel to be electrolyzed and thereby produce an organometallic compound.

3,928,165

ELECTROLYTIC CELL INCLUDING MEANS FOR SEPARATING CHLORINE FROM THE CHLORINE-ELECTROLYTE FROTH FORMED IN THE CELL

Loyd W. Piester, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 376,087, July 2, 1973, Pat. No. 3,855,091, which is a continuation-in-part of Ser. No. 219,096, Jan. 19, 1972, abandoned. This application July 5, 1974, Ser. No. 486,121

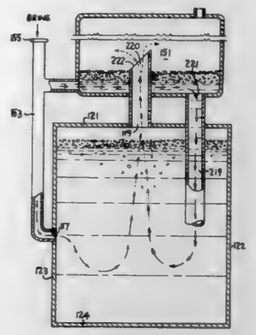
Int. Cl.² C25B 9/00

U.S. Cl. 204—278 **6 Claims**

5. In an electrolytic cell for the electrolysis of brines at currents above 2,500 amperes per square foot of horizontal area whereby a froth of chlorine and electrolyte is generated, the improvement comprising:

means having a cross-sectional area of less than 0.050 square feet per cubic foot of cell volume for removing froth from the cell to a disengaging tank having a cross-sectional area in excess of 0.06 square feet per cubic foot of cell volume;

means for changing the momentum vector and flow direction of the froth prior to discharging the froth into the disengaging tank;



means for thereafter discharging the froth into the disengaging tank above the level of liquid therein; and

means for returning liquid from the disengaging tank to the electrolytic cell.

3,928,166

DIMENSIONALLY ADJUSTABLE ANODE-DIMENSIONALLY STABLE DIAPHRAGM COMBINATION FOR ELECTROLYTIC CELLS

Kevin J. O'Leary, Cleveland Heights; Charles P. Tomba, and Robert W. Fenn, III, both of Painesville, all of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Mar. 1, 1974, Ser. No. 447,215

Int. Cl.² C25B 11/02, 13/02

U.S. Cl. 204—282 **3 Claims**

1. An improvement in a cell for the electrolysis of aqueous alkali metal chloride solutions comprising a container divided into anode-containing and cathode-containing compartments by a hydraulically permeable diaphragm, which improvement comprises, in combination:

a. as said anode, a dimensionally adjustable electrode comprising an anode-working face, an anode riser, and a moveable means for connecting the anode working face and anode riser with electrical integrity, and b. as said diaphragm, a dimensionally stable, heat-fused, polyfluorocarbon-asbestos diaphragm, said diaphragm having a discontinuous polyfluorocarbon coating binding the asbestos together.

3,928,167

IMPROVEMENTS IN METHODS OF PRODUCING ELECTROLYTIC ANODE ASSEMBLIES

Pierre Buoy, Enghien-les-Bains; Daniel Masure, La Madeleine; Paul Collon, Autreville; Jean-Marie Pigeaud, Martigues, and Bernard Sartre, Levallois-Perret, all of France, assignors to Rhone-Progil, Paris, France

Division of Ser. No. 316,515, Dec. 19, 1972. This application May 15, 1974, Ser. No. 470,167

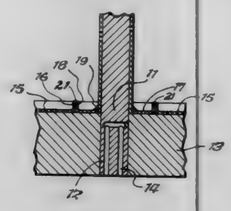
Claims priority, application France, Dec. 23, 1971, 71.46296

Int. Cl.² C25C 7/02

U.S. Cl. 204—286 **2 Claims**

1. A method of providing a replaceable anode assembly in an electrolytic diaphragm cell, said cell comprising a plurality of vertical substantially flat and hollow anodes formed, as regards at least one of their two substantially parallel faces, by a sheet of a film-forming metal, said anodes being secured to the base of the cell by means of extended portions which pass through the base, said extended portions comprising a core made of a metal which is a good electrical conductor, which core is covered by a sheath made of a film-forming metal, a

good electrical contact being ensured between the sheath and the core, said base of the cell being of an electroconductive metal, which base is protected by a sheet of film-forming metal, said core of said extended portions is exposed where it passes through the base of said cell, characterized in that sealing between said anode and said base is effected by weld-



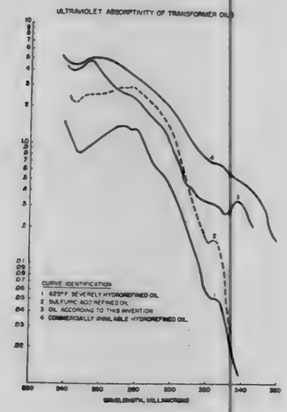
ing cup-shaped washers of film-forming metal affixed to said extended portions of said anodes and having a raised edge, to the film-forming metal sheet which protects the base of the cell, whereby said film-forming metal sheet which has a raised edge corresponding to the raised edge of said cup-shaped washers is welded at the raised edges of said cup-shaped washers to effect a seal.

3,928,168

OIL AND PROCESS OF MANUFACTURE OF BLENDED HYDROREFINED OIL

Ivor W. Mills, Media, and Glenn R. Dimeler, West Chester, both of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 873,008, Oct. 31, 1969, abandoned. This application Dec. 10, 1973, Ser. No. 423,362
Int. Cl. C10g *31/00*
U.S. Cl. 208—14 **10 Claims**



1. Process for preparing a hydrocarbon fluid of improved oxidation stability from a severely hydrorefined oil having a viscosity from 30 to 500 SUS at 100°F and an ultraviolet absorptivity of less than 0.04 in the 335 millimicron region, said process comprising adding to the severely hydrorefined oil an unrefined distillate of a recycle stock obtained from catalytic cracking of gas oil which is rich in polynuclear hydrocarbons having at least four condensed aromatic rings and recovering a blended oil having an absorptivity at 335 millimicrons at least 15% greater than that of said hydrorefined oil and less than 2.5.

3,928,169

PRODUCTION OF PITCH SUBSTANTIALLY SOLUBLE IN QUINOLINE

Edward Patrick Conroy, Montreal, Canada, assignor to Domtar Limited, Montreal, Canada

Filed May 6, 1974, Ser. No. 466,890
Int. Cl.² C10C *1/16*
U.S. Cl. 208—22 **6 Claims**

1. A process for producing pitch from a coal tar material comprising: distilling said coal tar material under atmospheric or reduced pressure to produce a pitch and distillate oil,

separating from said distillate oil a heavy creosote oil fraction having at least 90% of its constituents boiling above 300°C,

subjecting said creosote oil fraction to heat treatment at temperatures 400° – 470°C under pressure 15 – 500 psig to produce a pitch, and

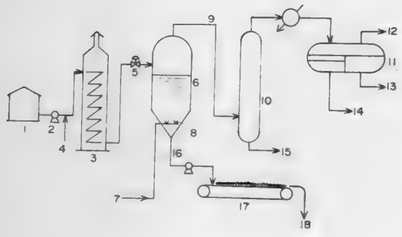
terminating said heat treatment when a pitch having a DMFI content between 10 and 30% and a QI content not greater than 2% is obtained.

3,928,170

METHOD FOR MANUFACTURING PETROLEUM PITCH HAVING HIGH AROMATICITY

Ryoichi Takahashi; Takuji Hosoi, both of Tokyo; Takaaki Aiba, Yokohama, and Tsutomu Konno, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 240,619, April 3, 1972, abandoned. This application Aug. 22, 1974, Ser. No. 499,858
Claims priority, application Japan, Apr. 1, 1971, 46-19230
Int. Cl.² C10G *9/36*
U.S. Cl. 208—40 **4 Claims**



1. A process for the liquid phase cracking and aromatization of a reduced crude oil residuum consisting mainly of aliphatic hydrocarbons to produce pitch having a H/C ratio of 0.4 – 1.1 and a non-pitch oil containing a major portion of aliphatic hydrocarbons, said process comprising:

providing, in a reaction zone, a vapor phase and a continuous liquid phase, which includes said residuum, at a total pressure less than 3.0 kg/cm²G with a liquid dwell time of 0.5 to 20 hours;

feeding a non-oxidative heat transfer medium at a temperature within the range of 400°C to 2000°C through and in direct contact with said liquid phase in said reaction zone to maintain said liquid phase at a temperature of 350°–450°C, to induce a polycondensation reaction in said liquid phase, and to strip volatile components from said liquid phase;

controlling the feed rate of said heat transfer medium to maintain the partial pressure in mmHg of organics in said vapor phase at less than about:

$$1.03 \times 10^{11} \times e^{-\frac{12200}{T+220}}$$

wherein T is the temperature (°C) of the liquid phase within the reaction zone; and

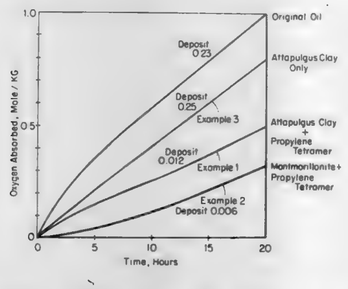
removing a non-pitch overhead from said reaction zone and recovering said pitch as the bottoms product of said reaction zone.

3,928,171

METHOD OF STABILIZING OILS AND PRODUCTS THEREOF

Tsoung-Yuan Yan, Trenton, and Robert F. Bridger, Hopewell, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 268,293, July 3, 1972, abandoned. This application Feb. 28, 1974, Ser. No. 440,617
Int. Cl.² C10G *41/00*
U.S. Cl. 208—46 **12 Claims**



1. A method of improving the light stability of a hydrocracked hydrocarbon mineral oil and lessening the formation of sludge material in said oil which comprises reacting said oil with an olefin, in the presence of a catalyst consisting of an acidic resin wherein the resin is a polymeric resin selected from the group consisting of phenolic resin, styrene resin and styrene copolymer resin having as the acidic radicals attached thereto a radical selected from the group consisting of sulfonic-containing radicals and phosphonic-containing radicals.

3,928,172

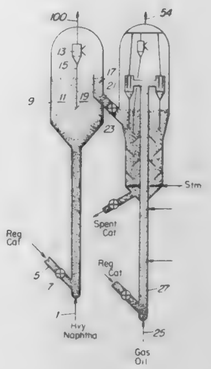
CATALYTIC CRACKING OF FCC GASOLINE AND VIRGIN NAPHTHA

Francis E. Davis, Jr., Woodbury; Richard G. Graven; Wooyoung Lee, both of Westmont, and Robert A. Sailor, Riverton, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed July 2, 1973, Ser. No. 376,091
Int. Cl.² B01J *29/28*; C10G *11/04*, *37/02*
U.S. Cl. 208—77 **10 Claims**

1. A method for upgrading hydrocarbons which comprises cracking a gas oil boiling range feed in a first cracking zone in the presence of a crystalline zeolite cracking catalyst at an elevated temperature of at least 850°F to obtain conversion of the gas oil feed to materials including a heavy cycle oil, a light cycle oil, a heavy naphtha fraction and materials lower boiling than said heavy naphtha fraction,

cracking the heavy naphtha fraction above obtained in a second cracking zone in the presence of freshly regenerated crystalline zeolite cracking catalyst at an elevated temperature within the range of 850°F to about 1000°F, separating the product of said heavy naphtha fraction cracking operation in a zone separate from the gas oil product separation under conditions to recover gasoline boiling range material rich in aromatics and lighter hydrocarbon material from a light cycle oil product material, combining said light cycle oil recovered products, combining materials lower boiling than said heavy naphtha product of gas oil cracking with said gasoline boiling and lighter materials separated from the product of said heavy naphtha cracking operation and



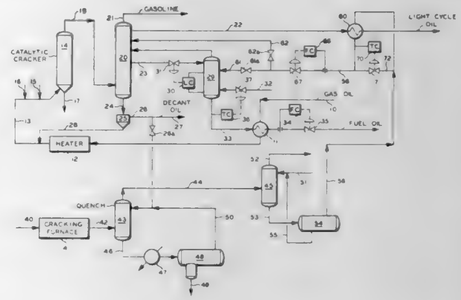
separating the combined materials lower boiling than light cycle oil into a gasoline boiling range product fraction and a lower boiling uncondensed vaporous product fraction.

3,928,173

INCREASED PRODUCTION OF DIESEL OIL AND FUEL OIL

John P. James, Old Ocean, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 21, 1974, Ser. No. 471,879
Int. Cl.² C10G *39/00*
U.S. Cl. 208—78 **6 Claims**

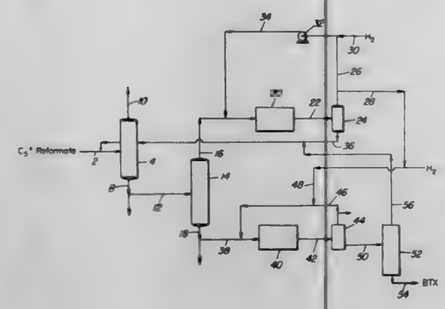


1. A process which comprises cracking a hydrocarbon oil in a cracking zone; passing the effluent from the cracking zone to a fractionation zone to separate the effluent into a plurality of streams including a gasoline stream, a light cycle oil stream, a heavy cycle oil stream and a kettle product stream; removing a residual oil from the kettle product stream; thermally cracking a hydrocarbon feed to produce an effluent stream containing unsaturated gaseous hydrocarbons; contacting said effluent stream in a quench zone with a stream of said residual oil to quench said effluent stream; removing a first stream containing a light oil and cracked gases and a second stream containing a rich oil from said quench zone; separating a stream of light oil from said first stream; and returning said light oil stream to said fractionation zone.

3,928,174
COMBINATION PROCESS FOR PRODUCING LPG AND AROMATIC RICH MATERIAL FROM NAPHTHA

John C. Bonacci, Cherry Hill; Henry P. Ireland, Woodbury, and Thomas R. Stein, Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 2, 1975, Ser. No. 538,221
Int. Cl.² C10G 37/06; B01J 29/28
U.S. Cl. 208—80 20 Claims



1. A method for redistributing the paraffin-aromatic components of a reformate product of catalytic reforming comprising C_5 and higher boiling hydrocarbons which comprises, separating C_5 and lower boiling components of catalytic reforming from C_6 and higher boiling materials in a first separation zone,

separating the C_6 and higher boiling material in a second separation zone into a first fraction comprising some C_7 components and lower boiling paraffin and aromatic components and a second fraction comprising C_7 and higher boiling paraffins and aromatic components,

passing said first fraction in contact with a first crystalline zeolite catalyst having properties for cracking paraffins to form LPG materials and redistribute the ratio between benzene and toluene components in the feed, separating product material of said first crystalline zeolite conversion operation into gaseous material comprising C_3 and lower boiling material from material comprising C_3 and higher boiling components, passing the C_3 and higher boiling material to said first separation zone,

passing a portion of said second fraction comprising C_7 and higher boiling paraffins and aromatics in contact with a separate second mass of crystalline zeolite catalyst having properties for cracking said paraffins and disproportionating aromatic to form a mixture of benzene, toluene and xylene; separating the product of said second zeolite catalyst conversion operation to recover a hydrogen rich stream, a stream rich in benzene, toluene and xylene aromatics and an intermediate product stream lower boiling than said aromatic rich stream, and recycling said intermediate product stream to said first separation zone.

3,928,175
UPGRADING CRUDE OIL BY COMBINATION PROCESSING

Hartley Owen, Belle Mead, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

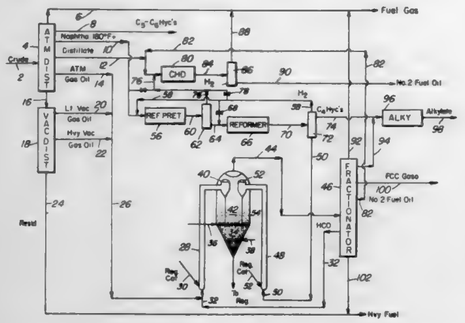
Continuation of Ser. No. 363,705, May 24, 1973, abandoned. This application Aug. 14, 1974, Ser. No. 497,428
Int. Cl.² C10G 37/10
U.S. Cl. 208—93 8 Claims

1. In a combination process for upgrading crude oils by catalytic cracking, reforming, desulfurization and alkylation, the improvement which comprises,

separating a curde oil to recover gas oils, light and heavy naphtha boiling hydrocarbons and a distillate fraction boiling in the range of about 400°F to about 650°F.

pretreating the heavy naphtha fraction to remove sulfur and nitrogen, reforming the pretreated heavy naphtha under conditions primarily restricted to dehydrogenation of naphthenes thereby forming a hydrogen rich gas stream, a C_4 hydrocarbon rich stream and a low octane liquid reformate stream,

catalytically cracking said low octane liquid reformate in a first riser conversion zone in the presence of a crystalline zeolite conversion catalyst at an elevated temperature of at least 1000°F. and a hydrocarbon residence time within the range of 1 to 8 seconds,



catalytically cracking said gas oils with a crystalline zeolite conversion catalyst in a second conversion zone at an elevated temperature of at least 1000°F.,

recovering from said cracking operations a low boiling olefin rich fraction, a gasoline product fraction and a No. 2 fuel oil fraction,

combining the No. 2 fuel oil fraction with said distillate fraction and subjecting the combined fractions to catalytic hydrodesulfurization in the presence of hydrogen rich gas recovered from said reforming operation,

alkylating said low boiling olefins with said C_4 hydrocarbons and collecting the gasoline boiling products of said combination operation for gasoline blending.

3,928,176
HEAVY CRUDE CONVERSION

Glen P. Hamner; Mamerto G. Luzarraga, and Alto Nelson Stuckey, Jr., all of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Apr. 1, 1974, Ser. No. 456,989
Int. Cl.² C10G 37/00
U.S. Cl. 208—97 20 Claims

1. In a process for upgrading the 1050°F.+ materials of a metals containing heavy crude or residua by conversion of the 1050°F.+ materials to produce 1050°F.− materials, the improved combination comprising

contacting said heavy crude or residua in an initial reaction zone, in the presence of added hydrogen, with a catalyst characterized as comprising a composite of from about 5 to about 30 percent of a Group VIB metal, or compound thereof, from about 1 to about 12 percent of a Group VIII metal, or compound thereof, or admixture of said Group VIB and Group VIII metals, or compounds thereof, and a porous inorganic oxide support, said catalyst including a combination of properties comprising at least about 50 percent of its total pore volume of absolute pore diameters ranging from about 200A to about 300A, and less than about 20 percent of its total pore volume are of absolute pore diameters ranging from 0 to about 100A, a surface area ranging at least about 200 m^2/g to about 600 m^2/g and a pore volume ranging from about 0.8 cc/g to about 3.0 cc/g, at severity sufficient to convert at least about 30 percent of the 1050°F.+ material to 1050°F.− material, while removing at least about 75 percent of the heavy metals from the feed, and

contacting product of said initial reaction zone in a subsequent reaction zone, in the presence of added hydrogen, with a catalyst which contains a metal hydrogenation component, and above about 30 percent aluminum phosphate, based on the weight of the catalyst (dry basis) exclusive of the hydrogenation component, said catalyst having at least about 90 percent of its total pore volume of absolute diameter within the range of about 15A to about 100A, a surface area ranging from about 200 m^2/g to about 600 m^2/g and a pore volume ranging from about 0.25 to about 0.75 cc/g, and the reaction is conducted at severities sufficient to hydrodenitrogenate the 1050°F.− fraction of the product of said initial reaction zone fed thereto to the extent of at least about 30 percent, based on the weight of total nitrogen contained in the reaction mixture, the nitrogen being eliminated as ammonia.

3,928,177
HYDROCARBON CONVERSION WITH A MULTIMETALLIC CATALYTIC COMPOSITE

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 216,739, Jan. 10, 1972, Pat. No. 3,806,446, which is a division of Ser. No. 17,886, March 9, 1970, abandoned. This application Feb. 14, 1974, Ser. No. 442,714The portion of the term of this patent subsequent to Apr. 23, 1991, has been disclaimed.
Int. Cl.² C10G 35/08, 13/10; C07C 3/34
U.S. Cl. 208—139 23 Claims

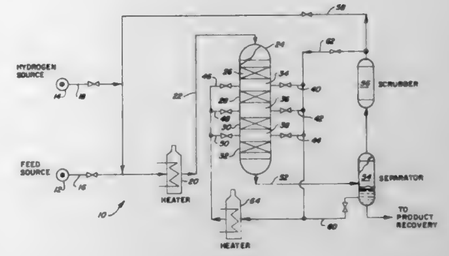
1. A process for converting a hydrocarbon which comprises contacting the hydrocarbon at hydrocarbon conversion conditions with an acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.01 to about 5 wt. % Group IVA metal selected from tin and germanium, about 0.01 to about 3 wt. % Group VIB transition metal and about 0.1 to about 3.5 wt. % halogen, wherein the platinum group metal, Group IVA metal and Group VIB transition metal are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum group metal is present in the elemental metallic state, wherein substantially all of the Group IVA metal and the Group VIB transition metal are present in oxidation states above that of the corresponding elemental metals, wherein the halogen component is present in the form of combined halide, and wherein the atomic ratio of Group VIB transition metal to platinum group metal is about 0.05:1 to about 4:1.

23. A process for converting a hydrocarbon which comprises contacting the hydrocarbon at conversion conditions with an acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal selected from palladium and iridium, about 0.01 to about 5 wt. % Group IVA metal, about 0.01 to about 3 wt. % Group VIB transition metal and about 0.1 to about 3.5 wt. % halogen, wherein the platinum group metal, Group IVA metal and Group VIB transition metal are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum group metal is present in the elemental metallic state, wherein substantially all of the Group IVA metal and the Group VIB transition metal are present in oxidation states above that of the corresponding elemental metals, wherein the halogen component is present in the form of combined halide, and wherein the atomic ratio of Group VIB transition metal to platinum group metal is about 0.05:1 to about 4:1.

3,928,178
METHOD OF CONTROLLING CATALYST DEPOSITS IN HYDRODESULFURIZATION

Clifton G. Frye, Valparaiso, and Warren L. McBride, Griffith, both of Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed June 12, 1974, Ser. No. 478,629
Int. Cl.² C10G 23/00
U.S. Cl. 208—210 6 Claims



1. In a hydrodesulfurization process combining the steps of preheating in the range of about 625° to about 800°F a process stream comprising liquid hydrocarbons boiling above 650°F and hydrogen gas, passing said process stream into a reactor containing a plurality of fixed catalyst beds spaced axially therein, said reactor having connected thereto a plurality of quench fluid inlet means between each two adjacent catalyst beds, reacting said process stream in the presence of desulfurization catalyst contained in a first catalyst bed and successive downstream catalyst beds including a last catalyst bed, extracting heat from said process stream by injecting through said quench fluid inlet means, a cool quench fluid into admix communication with said process stream subsequent to its exit from each catalyst bed but prior to its entry into the next successive downstream catalyst bed, wherein the process stream is progressively desulfurized as it passes through each successive catalyst bed, said desulfurization being accompanied by the deposition of metallic and carbonaceous materials on said catalyst, the accumulation of said deposits being greatest in said first catalyst bed and least in said last catalyst bed whereby progressive catalyst bed plugging and pressure-drop buildup occur, causing premature termination of the process run, the improvement comprising:

a. providing means for detecting incipient bed plugging and subsequent pressure-drop buildup in said first catalyst bed and each successive downstream catalyst bed preceding and upstream of said last catalyst bed;

b. providing a plurality of heating fluid inlet means, connecting with said reactor between each two adjacent catalyst beds;

c. sensing incipient plugging by said detecting means in said first catalyst bed caused by said accumulated deposits on the catalyst therein;

d. reducing the temperature of the process stream entering said first catalyst bed by an amount sufficient to reduce or eliminate the desulfurization activity thereby reducing or eliminating the further accumulation of metallic and carbonaceous deposits on the catalyst bed therein;

e. increasing the temperature of the hydrodesulfurization reaction stream subsequent to its exit from said first catalyst bed but prior to its entry into the next successive downstream catalyst bed, by an amount greater than the temperature reduction effected in step (d), by injecting through said heating fluid inlet means, a heated recycle oil to admix with said hydrodesulfurization reaction stream, thereby increasing the desulfurization rate in said next successive downstream catalyst bed, and each additional downstream catalyst bed thereafter to the last to

compensate for the reduced desulfurization rate in said first catalyst bed; and

f. repeating steps (c), (d) and (e) for each successive catalyst bed downstream of said first catalyst bed and upstream of said last catalyst bed, whereby the level of catalyst deposits in each catalyst bed upstream of the last catalyst bed are controlled permitting an extended process run.

3,928,179

PROCESS FOR HYDROREFINING A RESIDUAL HYDROCARBON

John G. Gatsis, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 386,137, Aug. 6, 1973, which is a continuation-in-part of Ser. No. 263,367, June 5, 1972, abandoned. This application Oct. 16, 1974, Ser. No. 515,374

Int. Cl.² C10G *23/02*

U.S. Cl. 208—213 **3 Claims**

1. A process for hydrorefining a residual hydrocarbon charge stock which comprises reacting said charge stock with hydrogen in contact with a catalyst prepared by combining an aqueous solution of a soluble Group V-B metal compound and phosphoric acid, contacting a slurry of a refractory inorganic oxide hydrogel with the resulting aqueous solution, drying the resulting impregnated hydrogel and calcining the dried composite in an oxidizing atmosphere at a temperature of from about 315° to about 650°C., the Group V-B metal compound and phosphoric acid being utilized in an amount sufficient to provide a final catalyst composite containing from about 2 to about 30 weight percent Group V-B metal oxide, and from about 1 to about 25 weight percent phosphorous oxide, said Group V-B metal oxide and phosphorous oxide being in a weight ratio of from about 1 to about 2.

3,928,180

HYDRODESULFURIZATION WITH A CATALYST CONTAINING ALUMINA DERIVED FROM ALUMINUM SULFATE AND ALUMINUM CHLORIDE HYDROSOL

Lee Hilfman, Mt. Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 341,441, March 15, 1973, abandoned. This application Dec. 16, 1974, Ser. No. 533,091

Int. Cl.² C10G *23/02*

U.S. Cl. 208—216 **9 Claims**

1. A process for desulfurizing a sulfur-containing petroleum hydrocarbon fraction which comprises passing said petroleum fraction and hydrogen in contact with a catalytic composite at hydrodesulfurization reaction conditions, said catalytic composite comprising from about 5 to about 20 wt. % Group VIB metal or metal oxide and from about 0.1 to about 10 wt. % Group VIII metal or metal oxide on an alumina carrier material, said carrier material having been prepared by:

a. commingling aluminum sulfate and ammonium hydroxide in aqueous solution at a pH of from about 5.5 to about 6.5 to precipitate a basic aluminum sulfate;

b. dissolving said basic aluminum sulfate in an aluminum chloride hydrosol, said hydrosol having an aluminum/-chloride weight ratio of from about 0.9:1 to about 1.4:1;

c. commingling urea and hexamethylenetetramine with the resulting hydrosol of step (b) and dispersing said misture as droplets in a hot oil bath to form hydrogel spheres;

d. aging the resulting hydrogel spheres at a temperature effecting decomposition of the residual urea and hexamethylenetetramine, and washing, drying and calcining the aged spheres to form said carrier material.

3,928,181

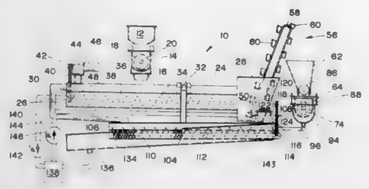
SEED SEPARATOR

John E. Iseman, Hartsville, S.C., assignor to Coker's Pedigreed Seed Company, Hartsville, S.C.

Filed Dec. 3, 1973, Ser. No. 412,304

Int. Cl. B03b *5/30*

U.S. Cl. 209—11 **2 Claims**



1. Cotton seed separator apparatus comprising a delivery trough having a helix screw for moving raw material having cotton seed and undesirable material therein; a separator trough having a helix screw therein for moving the separated seed; conduit means for removing the undesirable material from said separator trough; a receptacle for receiving the separated cotton seed; conveyor means having perforated cups for moving the cotton seed; hopper means for receiving the cotton seed from the perforated cups; trough means having a screw therein for conveying the separated cotton seed to a dryer; said second trough being perforated to permit the draining of liquid therefrom; a third trough associated with said second trough for receiving any liquid that may be drained therefrom; said third trough connected by a conduit to a fifth trough; a fourth trough having a screw mounted therein for conveying undesirable material separated from the cotton seed; said fourth trough being perforated to permit liquid to drain into said fifth trough; said fifth trough mounted below said fourth trough to receive liquids and permit the circulation thereof; liquid storage means connected with said first trough and said fifth trough to permit liquid to be recirculated from said first, second, third, fourth and fifth troughs.

3,928,182

METHOD AND APPARATUS FOR CLASSIFYING VISCOUS SLURRIES

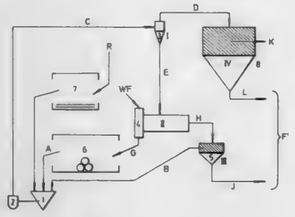
Theodor Eder, Vienna, Austria, assignor to Waagner-Biro Aktiengesellschaft and Chemie und Metall GmbH Rheax, both of Vienna, Austria

Filed Sept. 30, 1974, Ser. No. 510,556

Claims priority, application Austria, Oct. 2, 1973, 8397/73

Int. Cl.² B03B *7/00*

U.S. Cl. 209—12 **18 Claims**



1. In a method of operating a system for sharply classifying wet slurries for sharply separating fine particles from coarse particles in at least three stages, comprising the steps of delivery a slurry with particles which are to be classified suspended therein to a first stage, centrifugally separating fine particles from coarse particles in the slurry at the first stage, delivering the coarse particles separated at the first stage to a second stage, gravitationally separating coarse from fine particles at said second stage, delivering the fine particles in the slurry which are separated at the second stage to a third stage, separating fine from coarse particles at the third stage and returning the fine particles separated at the third stage back to the first stage, while providing for an output made up of the coarse particles derived in the slurry from the third stage and at least part of the fine particles centrifugally separated from the coarse particles at the first stage.

3,928,183

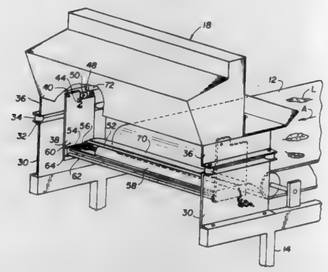
TOBACCO SORTING APPARATUS

Emil S. Asfour, 21 Wengirain, 8704 Herrliberg, Switzerland

Continuation of Ser. No. 453,079, March 20, 1974. This application Dec. 16, 1974, Ser. No. 533,029

Int. Cl.² B07C *5/342*

U.S. Cl. 209—73 **19 Claims**



1. In combination with tobacco sorting apparatus comprising a conveyor for tobacco leaves having a forward end, a sensing system mounted above the forward end of said conveyor, and an end plate spaced below said sensing system in operative position adjacent said forward end of said conveyor, apparatus for mounting said end plate comprising a pair of elongated arm members spaced apart at least an amount equal to the width of the conveyor, means at the lower end of each of said arm members for supporting the end plate in operative position with respect to the forward end of said conveyor, means at the upper end of said arms for pivotally mounting said arm members to permit said plate to swing away from said forward end of said conveyor, and means for resiliently biasing said arm members toward said forward end of said conveyor to maintain said end plate in operative position adjacent thereto.

3,928,184

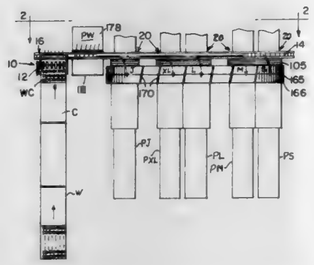
EGG HANDLING APPARATUS

Wayne H. Anschutz, 309 East 47th, Topeka, Kans.

Filed Sept. 19, 1973, Ser. No. 398,636

Int. Cl. B07c *5/28*

U.S. Cl. 209—74 R **31 Claims**



1. An apparatus for separating shell eggs into a predetermined number of groups, according to the weight of the individual eggs, in preparation for packing or further handling of the separated groups, which apparatus comprises an elongate support frame, a traveling conveyor having longitudinally spaced, individual egg accommodating pockets mounted on said support frame with the top run thereof traveling between a weighing area at the receiving end thereof and a series of transfer areas in the form of stations spaced along the length of said support frame, a plurality of individual egg weighing mechanisms arranged at said receiving end which are spaced along the conveyor according to the spacing of the egg accommodating pockets on said conveyor, means for intermittently driving the conveyor so as to position successive groups of pockets for receiving eggs from said weighing means, means for delivering successive eggs to the individual weighing mechanisms, means for transferring the eggs from the weighing mechanisms to pockets of the conveyor, means at each transfer station for discharging individual eggs from each of the pockets in a group which has been advanced to that station by said conveyor and a control means for operating each said individual egg discharging means which includes a memory device having triggering means for said egg discharge means settable according to the weight registered on the weighing mechanisms so as to discharge eggs having the same weight characteristics at the proper transfer station.

3,928,185

PHENOLALDIMINES AS FROTH FLOTATION REAGENTS

Vojislav Petrovich, 1925 W. Schiller St., Chicago, Ill. 60622

Filed Apr. 30, 1974, Ser. No. 465,411

Int. Cl.² B03D *1/02*

U.S. Cl. 209—166 **5 Claims**

1. A method of beneficiating ores selected from the group consisting of oxide of iron, oxide, silicate, sulfide, arsenide, and antimonide of copper, nickel, and cobalt, the vanadates of heavy metals by froth flotation process to produce a froth concentrate of desired metal value, which comprises; effecting froth flotation of aforesaid ores in the presence of cresylaldimine adduct of cresylic acid as collector in a pulp of mineral slurry having a pH of 8 to 12; and recovering the desired metal value in an enriched froth concentrate, leaving a tailings poor in the desired metal value.

3,928,186

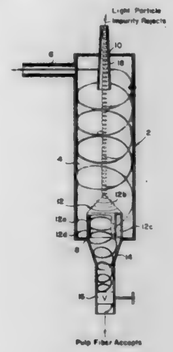
COMBINED PULP CLEANING SYSTEM INCLUDING HIGH AND LOW PRESSURE DROP HYDROCYCLONE CLEANERS

Rudolf Zemanek, Vancouver, Wash., assignor to Boise Cascade Corporation, Boise, Idaho

Filed July 24, 1973, Ser. No. 382,068

Int. Cl.² B04C *5/103*

U.S. Cl. 209—211 **9 Claims**



9. The method of separating from a suspension cellulose pulp fibers, and particles of impurities having a specific gravity lower than that of the pulp fibers, which comprises the steps of

a. introducing the suspension tangentially into an inlet opening arranged at the upper end of a totally cylindrical hydrocyclone chamber, said chamber having at its lower end a pulp fiber outlet opening and at its upper end a light impurity particle outlet opening, said suspension being introduced into said chamber at a pressure producing a pressure drop of about 5 psig. whereby the heavier pulp fiber particles are centrifugally displaced outwardly and flow downwardly in a helical path toward the bottom of the hydrocyclone chamber and wherein the lighter particles are displaced radially inwardly and downwardly in the chamber;

b. diverting the light impurity particles upwardly in a vortex toward the upper end of the hydrocyclone chamber by means of a conical diverter supported above the bottom wall of the chamber at an elevation above the pulp fiber outlet opening by means of a cylindrical support member having an outer diameter which corresponds with the maximum diameter of the conical diverter;

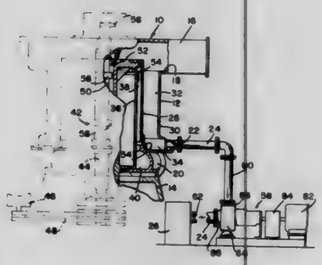
c. removing the pulp fibers adjacent the bottom of the chamber; and

d. removing the light impurity particles from the top of the chamber.

3,928,187
SUSPENSION FLOW CONTROL APPARATUS

Douglas L. G. Young, Lennoxville, Canada, assignor to Canadian Ingersoll-Rand Company Limited, Montreal, Canada

Filed Nov. 13, 1974, Ser. No. 523,345
Int. Cl.² B07B *1/18*
U.S. Cl. 209—255 **13 Claims**

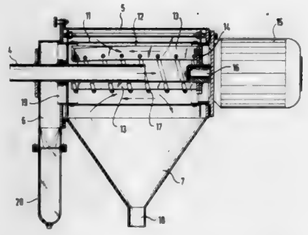


1. In combination, a pressurized source of fluid-solid suspension, a receiver for said suspension at lower pressure than said source, conduit means interconnecting said source with said receiver for supplying suspension from said source to said receiver, and pressure reducing means operatively associated with said conduit means for reducing the pressure of suspension flowing from said source to said receiver through said conduit means, said pressure reducing means comprising chamber means interposed in said conduit means intermediate upstream and downstream portions thereof, rotor means operatively associated with said chamber means to cause its driven rotation to provide recirculatory flow of suspension within said chamber means, and driving means operatively connected to said rotor means for rotatably driving said rotor means, said chamber means having peripheral inlet means communicating with said source through said upstream portion of said conduit means for introducing suspension from said source into said chamber means adjacent the periphery thereof, and said chamber means having outlet means centrally of said rotor means connected to said receiver through said downstream portion of said conduit means for discharging suspension from said chamber means to said receiver.

3,928,188
SCREENING ARRANGEMENT

Otmar Link, Osterburken, and Rudi Baumann, Rosenberg, both of Germany, assignors to AZO-Maschinenfabrik Adolf Zimmermann, Germany

Filed Aug. 1, 1974, Ser. No. 493,961
Claims priority, application Germany, Aug. 1, 1973, 2338909
Int. Cl.² B07B *1/20*
U.S. Cl. 209—250 **27 Claims**

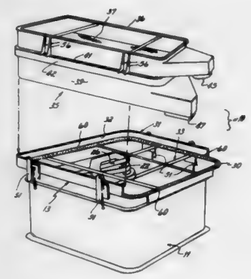


1. A material screening arrangement comprising: a cylindrical screen means, a rotor means disposed interiorly of said cylindrical screen means for directing material to be screened in a radially outward direction toward said cylindrical screen means, said rotor means including an axially extending internal free space for receiving the material to be screened, means for pneumatically conveying the material to be screened, a conveying conduit means for connecting the pneumatic conveying means with said internal free space, driving means disposed at one end of said rotor means for driving said rotor means, a discharge means for receiving the residue of the material to be screened, said discharge means being disposed at the end of said rotor means opposite said driving means, said conveying conduit means extending through said discharge means into said internal free space.

3,928,189
WEAR RESISTING HOLD-DOWN MEANS FOR SCREENING MACHINE

William E. Lower, and Edward K. Ivan, both of Cincinnati, Ohio, assignors to Rotex, Inc., Cincinnati, Ohio

Filed May 31, 1974, Ser. No. 474,979
Int. Cl.² B07B *1/46*
U.S. Cl. 209—405 **10 Claims**



9. In a screening machine having a screen assembly which is demountably seated on a peripheral planar mounting surface presented by a vibratory table having a vibratory drive to vibrate said table, and wherein clamps generally perpendicular to said surface are engaged between the table and the screen assembly and exert a clamping force holding the screen assembly on the said surface, there being an interface between the table and the screen assembly at said surface,

the improvement comprising,

a rim around said surface which is oversize with respect to the dimension of the screen assembly at the interface, and a layer of rigid, inelastic composite friction material extending for a substantial portion of said peripheral surface at the interface between the table and the screen assembly, the weight of the screen assembly being applied to the table through the composite material at the interface, the clamping force acting through the composite material in a direction generally perpendicular to it,

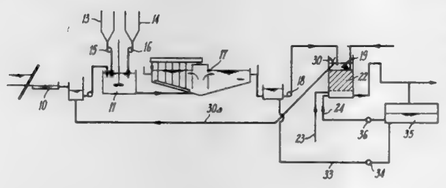
there being no mechanical abutment between the screen assembly and the vibratory table to restrain said screen assembly from movement in the plane of said surface, except through said composite material,

said material preventing relative motion between said screen assembly and said table at said interface which would occur in the absence of said material.

3,928,190
METHOD OF BIOLOGICAL PURIFICATION OF SEWAGE

Jean Louis Bebin, Reuil-Malmaison, France, assignor to Degremont, Societe Generale d'Epuration et d'Assainissement, Rueil-Malmaison, France

Continuation-in-part of Ser. No. 307,635, Nov. 17, 1972, abandoned. This application July 26, 1974, Ser. No. 492,326
Int. Cl.² C02C *1/04*
U.S. Cl. 210—8 **6 Claims**



1. A process for purifying waste water containing organic pollution, said process comprising:

introducing said waste water into a flocculation tank, introducing into said flocculation tank as flocculation reagents at least one material selected from the group consisting of aluminum salts and iron salts in amounts which are nontoxic to protozoa and bacteria, and subjecting said waste water to the action of said flocculation reagents to eliminate from said waste water materials in suspension and colloidal material, thus forming flocculated water having dissolved pollutants therein;

providing a biological filter comprising a filter bed formed of a porous mass of granular material having on the surfaces thereon smooth zones capable of supporting a bacterial film and limited hollow zones capable of supporting a bacterial film and retaining such bacterial film even when said filter is subjected to severe backwashing, said step of providing said porous mass of granular material comprising burning clay with dextrin therein at approximately 900°C to form fragments having said surfaces of smooth and hollow zones and having a grain size of from 0.5 to 10 mm;

providing a reservoir area on the top surface of said filter; supplying said flocculated water into said reservoir area to immerse said filter in said flocculated water;

introducing air into said flocculated water in said reservoir area and thus aerating said flocculated water;

passing said flocculated water downwardly from said reservoir area into said filter to form a bacterial film on said smooth zones and hollow zones of said surfaces of said granular material, and thereby biologically purifying said flocculated water to form purified water;

removing said purified water from said filter; and

periodically performing a backwashing operation on said filter including:

injecting a washing liquid into said filter in a direction opposite to the direction of passage therethrough of said flocculated water;

removing said bacterial film from said smooth zones of said surfaces of said granular material;

retaining said bacterial film in said hollow zones of said surfaces of said granular material;

collecting said washing liquid and thus removed bacterial film; and

recycling said thus collected washing liquid and removed bacterial film into said waste water at a position upstream of said flocculation tank.

3,928,191
BIODEGRADATION OF METHANOLIC WASTE WATER

Irvin Joseph Belasco, Wilmington, Del., assignor to E. I. Du-Pont de Nemours & Co., Wilmington, Del.

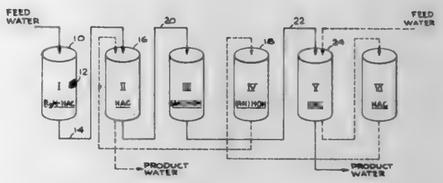
Continuation of Ser. No. 295,662, Oct. 6, 1972, abandoned. This application Aug. 2, 1974, Ser. No. 494,295
Int. Cl.² C02C *5/10*
U.S. Cl. 210—12 **1 Claim**

1. A process for purifying methanolic waste water having an organic content of about 0.7% by weight, at least 80% of which is methanol and including at least one of acetonitrile, acetaldoxime, acetonoxime, and acetohydroxamic acid, thiol-S-methyl ester, which comprises subjecting said water to the action of microbes in the presence of oxygen and dispersed, particulate attapulgite or montmorillonite clay, at a pH in the range of about 6 to 8 and temperature in the range of about 5° to 38°C., the average particle size of the clay being in the range of about 0.5 to 40 microns and the concentration of the clay being in the range of about 10 to 10,000 ppm.

3,928,192
BUFFERED, WEAK ION-EXCHANGE WATER DEMINERALIZATION PROCESS

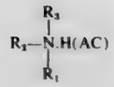
Arthur Katzakian, Jr., Sacramento, and David O. Depree, Loomis, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed June 6, 1974, Ser. No. 476,835
Int. Cl.² C02B *1/68, 1/76*
U.S. Cl. 210—30 **24 Claims**



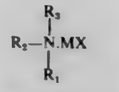
1. A process for demineralizing water comprising the steps of:

passing an amine buffer through a bed of weakly acidic cation exchange resin in hydrogen form to form a first bed containing an amine salt of the cation resin of the formula:



where H(AC) is the cation resin and R_1 is selected from the group consisting of alkyl, alkynyl, alkenyl, aryl, alkaryl, aralkyl, and alkoxy and may be substituted with hetero atoms or groups such as hydroxyl, ether, halogen or cyano; R_2 and R_3 are hydrogen or R_1; or R_2 and R_3 may be linked to form a cyclic structure;

passing feedwater containing mineral salts, of the formula MX, through said first amine salt bed and ionically exchanging the metal ion of the salt with the amine of the resin salt to form a first effluent containing an amine salt of the formula:



passing the first effluent through a second bed of weakly basic anion exchange resin and depositing the mineral anions thereon to form a second effluent containing said amine buffer, wherein the pK values of the cation exchange resin and anion exchange resin are between 3 and 7.5.

3,928,193

PROCESS FOR LARGE SCALE CHROMATOGRAPHY

Asko J. Melaja; Lauri Hämäläinen, and Lasse Rantanen, all of Kantvik, Finland, assignors to Suomen Sokeri Osakeyhtio (Finnish Sugar Company), Helsinki, Finland

Filed Feb. 14, 1975, Ser. No. 550,026
Int. Cl.² B01D *15/08*
U.S. Cl. 210—31 C **4 Claims**

1. A method for accomplishing chromatographic separation using ion-exchange resin in cylindrical, baffle-free chromatographic columns having a diameter in excess of about 1 meter and a height of from about 2.5 to about 5 meters which comprises the steps of

1. packing the column with a particulate ion-exchange resin to provide a bed having a permeability coefficient k of from about 1×10^{10} to about 4×10^{10} $1/m^2$,
2. saturating the column with water and back-washing to provide uniform packing of resin,
3. introducing the liquid to be chromatographically separated evenly across the column while initiating uniform flow of said liquid down through the column at a velocity of flow equal to 0.5 – 2 times the critical velocity of the system, and
4. eluting with water to recover successive fractions from the bottom of the column.

3,928,194

EMULSION BREAKING METHOD

Fan-Sheng Tao, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 301,020, Oct. 26, 1972, abandoned. This application Aug. 23, 1974, Ser. No. 499,887
Int. Cl.² B01D *17/04*
U.S. Cl. 210—43 **20 Claims**

1. A method for converting a water in oil emulsion into an oil in water dispersion at ambient temperature which may then be allowed to settle and separate into substantially separate oil and water phases comprising:

mixing a mixture comprising a water in oil emulsion, an amount of water sufficient to effect inversion of the emulsion and an effective amount of a demulsifier selected from the group consisting of oxyalkylated amines, salts of alkyl-aryl sulfonic acid, oxyalkylated phenolic resins, polymeric amines, glycol esters, polyoxyalkylated glycol esters, polyoxyethylated glycol esters, fatty acid esters, polyoxyethylated glycol esters, fatty acid esters, oxyalkylated polyols, oxyalkylated glycols sufficient to form an oil in water dispersion.

3,928,195

LIQUID PURIFYING PROCESS

James B. Hoeltgen, and Harold E. B. Humphrey, both of East Lansing, Mich., assignors to Kelmik, Inc., East Lansing, Mich.

Continuation-in-part of Ser. No. 317,798, Dec. 22, 1972, abandoned. This application Oct. 7, 1974, Ser. No. 512,614
Int. Cl.² C02B *1/20*
U.S. Cl. 210—49 **14 Claims**

1. A process for purifying a waste water system comprising the steps of: forming filterable solids by sequentially adding to the waste water system, with agitation in the waste water system, first from about 0.004 to 0.04 moles of an alkali aluminate per liter of said waste water system, secondly from about 0.006 to 0.2 moles of an alkali silicate per liter of said waste water system, and third from about 0.001 to 0.2 moles of at least one of (a) a soluble ammonium ion source and (b) a soluble di- or trivalent cation source, selected from the group consisting of the cations of calcium, magnesium, iron, aluminum, barium, cobalt, cadmium, strontium and copper, per liter of said waste water system, followed by filtering the solids from the waste water system; and insuring that the pH of the system is greater than about 5.5 upon said addition of said alkali aluminate.

3,928,196

INHIBITION OF SCALE DEPOSITION

Leonard John Persinski; Paul Hotchkiss Ralston, both of Pittsburgh, and Robert Cornelius Gordon, Jr., Rochester, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Dec. 5, 1973, Ser. No. 421,900
Int. Cl.² C02B *5/06*
U.S. Cl. 210—58 **2 Claims**

1. A method of inhibiting the precipitation of scale forming salts in an aqueous system comprising adding from 1 to 100 ppm of a copolymer having a molecular weight in the range of from about 1,000 to about 10,000 wherein said copolymer contains from about 5 to about 75 mole % of 2-acrylamido-2-methylpropyl sulfonic acid and from about 95 to about 25 mole % of acrylic acid.

3,928,197

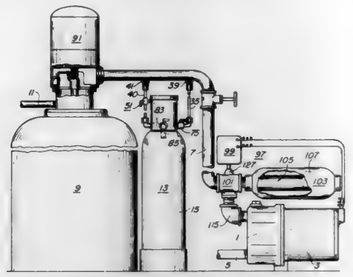
POLLUTION CONTROL SYSTEM FOR WATER SUPPLY

Raymond E. Horan, Jr., and Floyd M. Nash, both of Little Rock, Ark., assignors to Jacuzzi Bros. Incorporated, Little Rock, Ark.

Continuation of Ser. No. 93,770, Nov. 30, 1970, abandoned. This application Feb. 14, 1974, Ser. No. 442,360
Int. Cl.² C02B *3/08*
U.S. Cl. 210—62 **2 Claims**

1. The method of supplying safe and palatable water to service from a water system having a pump, coupled to a source of contaminated water and a service line, comprising predetermining the degree of contamination of said water, then determining a ratio of flow rate of an added disinfectant to flow rate of said water which will, after an exposure period of time, render said water safe without rendering said water unpalatable, supplying said disinfectant to said water in such system at substantially said aforementioned ratio of disinfectant flow rate to water flow rate, despite changes in flow rate of water, by-passing a part of said flow through a container parallel with said service line and having a collapsible bag

therein, said bag being compressed to deliver said disinfectant in said ratio, and retaining said disinfectant in contact with



said water, before discharge to service, for at least a period of time equal to said exposure time.

3,928,198

SYNERGISTIC COMPOSITIONS CONTAINING 2,2-DIBROMO-3-NITRILOPROPIONAMIDE AND 3,3,4,4-TETRACHLOROTETRAHYDROTHIOPENE-1,1-DIOXIDE AND THEIR USE

Robert H. Brink, Jr., Doylestown; Bernard F. Shema, Glenside, and Paul Swered, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Mar. 6, 1975, Ser. No. 555,776
Int. Cl.² A01N *9/12*; C02B *3/06*
U.S. Cl. 210—62 **10 Claims**

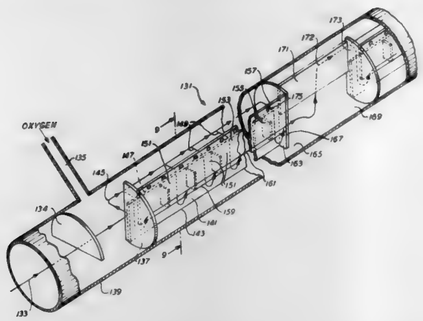
4. A method for controlling the growth of the microorganism Aerobacter aerogenes in an aqueous system which comprises adding to said system a growth inhibiting amount of a composition comprised of 2,2-Dibromo-3-nitrilopropionamide and 3,3,4,4-Tetrachlorotetrahydrothiophene-1,1-dioxide wherein the weight ratio of the amide to the dioxide ranges from about 95:5 to about 35:65 respectively.

3,928,199

GAS ABSORPTION SYSTEM AND METHOD

Bradley S. Kirk, Plainfield, and Raymond M. Chappel, Mendham, both of N.J., assignors to Airco, Inc., Montvale, N.J.

Division of Ser. No. 181,785, Sept. 20, 1971, Pat. No. 3,826,742. This application Apr. 10, 1974, Ser. No. 459,496
Int. Cl. C02b *3/08*
U.S. Cl. 210—63 **8 Claims**



1. Apparatus for dissolving a gas in a liquid comprising a conduit having an inlet and an outlet and a weir arranged longitudinally therein, first baffle means disposed at either end of said weir for directing a flow of said liquid from said inlet over said weir, second baffle means spaced away from said weir for defining a gravitational fall zone in said conduit substantially coextensive with said weir thereby enabling formation of a highly turbulent froth column of bubbles in said fall zone; and means for injecting said gas into said conduit at a controlled rate to establish a gas enriched space in said conduit in contact with said liquid falling over said weir and said froth column in said fall zone to thereby effect the dissolution of at least a portion of said gas in said liquid.

7. A method of increasing the oxygen content of a liquid stream flowing through

a plurality of enclosed gravitational fall zones each having an inlet and an outlet linking separate liquid levels therebetween with the outlet of one of said enclosed fall zones interconnected through conduit means to the inlet of a succeeding enclosed fall zone means, and comprising the steps of:

injecting oxygen at a controlled rate to provide and maintain an oxygen enriched gas space in each of said enclosed fall zones; and

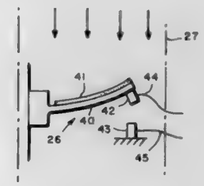
subjecting said stream to successive unconfined free falls through said plurality of enclosed fall zones at a superficial flow velocity within the range of about 0.5 ft./sec. to 2.0 ft./sec. and at a flow rate substantially independent of the rate at which oxygen is injected with each fall zone being of sufficient height to generate and maintain by free fall of said stream, a highly turbulent froth column of bubbles extending upwardly in each of said fall zones whereby a high rate of oxygen transfer into said liquid stream is enabled.

3,928,200

DETECTION DEVICES FOR USE IN SOLUTION PROCESSING SYSTEMS

Calvin Calmon, Birmingham, N.J., assignor to Water Purification Associates, Cambridge, Mass.

Filed Dec. 19, 1974, Ser. No. 534,466
Int. Cl.² B01D *15/06*
U.S. Cl. 210—96 **13 Claims**



1. A detection device for use in a solution processing system, said device comprising

a sensing element including

a first ion-exchange material the dimensions of which vary as a function of the salt concentration of said solution and as a function of the valence of ions present in said solution when said element is in contact with said solution, said first material having maximum dimensions when it is in contact with a solution having mono-valent ions whereby said sensing element is in its unflexed state and having reduced dimensions when it is in contact with a solution having multi-valent ions whereby said sensing element is in its flexed state and said first material further having its maximum dimensions when it is in contact with a salt solution having a relatively low salt concentration whereby said sensing element is in its unflexed state and having reduced dimensions when it is in contact with a salt solution having a relatively high salt concentration whereby said sensing element is in its flexed state;

a second, substantially flexible, solid material having substantially fixed dimensions which are retained in the presence of said solution independently of the salt concentration thereof and the valence of ions therein;

said first material being in contact with a surface of said flexible, solid material,

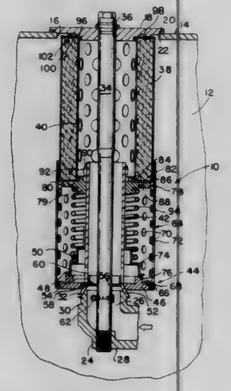
whereby dimensional changes of said first material which occur when said first material is in contact with said solution cause a flexing of said sensing element due to the flexing of said second material.

3,928,201

FILTER MOUNTING AND BYPASS VALVE ASSEMBLY

John A. Junck, Joliet, and Eugene E. Latimer, Wilmington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 8, 1974, Ser. No. 495,589
Int. Cl.² B01D *27/10*
U.S. Cl. 210—132 **6 Claims**



1. A filter assembly comprising:

a housing having an opening for receiving a filter element, cover enclosing said opening, and including fluid inlet and outlet means;

an annular filter element mounted within said housing adjacent and having one end in engagement with the end cover;

enlarged conduit means for directing fluid from the fluid inlet means through the filter element;

valve means mounted on one end of said conduit means and comprising a valving element movable to a first position away from the filter element so that the fluid-directing means direct fluid from the fluid inlet means through the filter element, and movable away from the first position toward the filter element to allow fluid to flow from the fluid inlet means to the fluid outlet means, bypassing the filter element;

annular support means including seal means mounted on said conduit means for engaging and supporting the other end of said filter element;

said annular support means consisting of an inner hub member slidably mounted on said enlarged conduit means,

a radially extending flange extending outwardly from said hub and integral therewith,

an annular groove separating one side of said flange into inner and outer annular supporting surfaces engaging said other end of said filter element, and, vent ports extending from the groove to the other side of said flange; and,

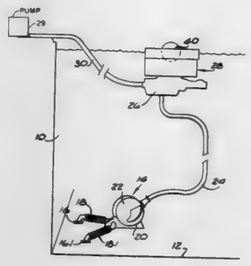
resilient means interposed between the valving element and the annular support and seal means, the valving element being biased thereby into said first position and movable toward the filter element against the resilience thereof, the valve means being subjected to the fluid pressure of the fluid introduced through the fluid inlet means to the filter element, so that the valving element moves toward the filter element upon increased fluid pressure built up in the filter element.

3,928,202

APPARATUS FOR CLEANING THE SURFACE OF A LIQUID

Johann Nicolaas Raubenheimer, Bedfordview, South Africa, assignor to Peacock Investments (Proprietary) Limited, Johannesburg, South Africa

Filed July 19, 1974, Ser. No. 490,030
Claims priority, application South Africa, July 26, 1973, 73/5112; Sept. 7, 1973, 73/7147
Int. Cl.² E04H *3/20*
U.S. Cl. 210—169 **4 Claims**



1. Apparatus operative in a tank having sidewalls and a bottom for cleaning the bottom of the tank and the surface of a body of liquid within the tank comprising

a pump located near the sidewall of the tank for withdrawing liquid therefrom,

first flexible conduit means in fluid communication with said pump and with liquid surface cleaning means for floating on the surface of the body of liquid,

second flexible conduit means with a first end connected to said liquid surface cleaning means and a second end in fluid communication with tank bottom cleaning means, said conduit first end being in fluid communication with said first flexible conduit means at its end connected to said liquid surface cleaning means,

said liquid surface cleaning means including a float supported chamber with filter means located therein for collecting debris from the surface of the body of liquid, inlet means in a sidewall of said chamber in fluid communication with an inlet side of said filter means, turbine blade means located in a lower region of said chamber for operating impeller means to induce liquid flow through said inlet means into said filter means and out of an outlet constructed and arranged in a sidewall of said chamber, second inlet means in said surface cleaning means separated from said outlet and constructed and arranged for said pump to cause liquid flow through said second inlet means and against said turbine blade means for operatively rotating said impeller means,

said tank bottom cleaning means including chamber means connected to said second end of said second conduit, said chamber means being constructed and arranged for being randomly pulled over the bottom of a tank by said second flexible conduit means connected to said floating liquid surface cleaning means by the movement of said surface cleaning means,

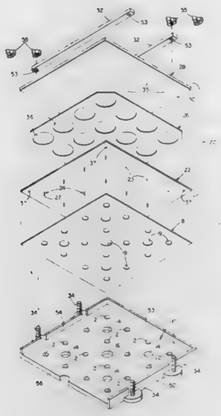
inlet means provided into the interior of said chamber means of said tank bottom cleaning means whereby liquid near the bottom of the tank induced to flow into said inlet means of said chamber means by the suction of said pump communicated to said bottom cleaning chamber means through said first and second flexible conduit means removes debris from the bottom of a tank for discharge through said pump.

3,928,203

CHROMATOGRAPHIC APPARATUS

Richard D. Kremer, Keene, N.H., assignor to Schleicher & Schuell, Incorporated, Keene, N.H.

Filed Mar. 27, 1975, Ser. No. 562,490
Int. Cl.² B01D *15/08*
U.S. Cl. 210—198 C **6 Claims**



1. Chromatographic apparatus for developing chromatograms on the stationary layer of a TLC plate spotted at predetermined sample positions with one or more samples, said apparatus comprising

a base providing solvent wells in a predetermined pattern, each open at the upper surface of the base so as to face the adsorbent surface of the TLC plate when the latter is positioned in the apparatus,

selection means adapted to be held between said base and said TLC plate to select solvent wells corresponding in number and position to the positions of said samples, said means comprising

a wick holding plate arranged to be held between said base and said TLC plate and having holes corresponding both in number and position to the aforesaid sample positions and corresponding wells,

said plate being adapted to hold wicks in said holes, each wick having a solvent take-up portion for dipping in a well and a sample contacting portion for contacting a sample, and

a spacing and sealing layer between said wick holding plate and said TLC plate, said layer including a spacing aperture having a periphery surrounding each said sample contacting portion and spaced therefrom to define a development chamber bounded by portions of said last named plates and said periphery, and

pressure means arranged to urge said plates together to seal each said chamber and to maintain said TLC plate in developing contact with each said wick sample contacting portion,

whereby each wick will transport solvent from its solvent well through its development chamber to a sample for development thereof.

3,928,204

INTERCONNECTORS FOR SPIRAL-WOUND FILTRATION MODULES

Frank A. Thomas, 309 Reese St., Greenwood, Wis. 54437

Filed June 27, 1974, Ser. No. 483,628
Int. Cl.² B01D *31/00*
U.S. Cl. 210—232 **13 Claims**

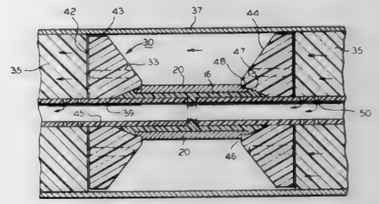
1. A filtration apparatus comprising:

at least one pressure vessel;

a plurality of spiral-wound ultrafiltration modules serially arranged within each vessel, each of said modules including a filtration membrane spirally wound about a permeate collection tube, said tubes extending beyond the ends of said wound membrane; and

means interconnecting and sealing adjacent ends of said permeate tubes comprising:

a. a cylindrical sleeve surrounding and overlapping said adjacent ends and having an inside diameter exceeding the outside diameter of said tubes, and



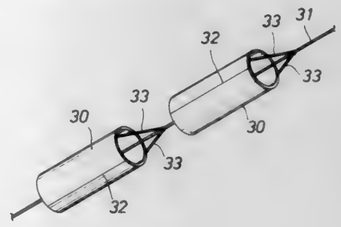
b. a resilient liner for said sleeve having a first portion bonded to the inner surface of said sleeve and a cylindrical interior surface having a diameter only slightly greater than the outside of said tubes whereby said tubes fit snugly within said lined sleeve, and wherein said liner is longer than said sleeve and includes end portions extending beyond the ends of said sleeve and engaging said tubes, whereby when pressure is increased in said vessel said end portions seal against said tubes.

3,928,205

REMOVAL OF FLOATING POLLUTANTS

Errol V. Seymour, and Ray R. Ayers, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 367,037, June 4, 1973, abandoned, which is a continuation of Ser. No. 147,934, May 28, 1971, abandoned. This application May 17, 1974, Ser. No. 470,888
Int. Cl.² E02B *15/04*
U.S. Cl. 210—242 **1 Claim**



1. An apparatus for removing a floating liquid pollutant from water, comprising:

a tension member;

a sorbent tube shaped as an open cylinder through which the tension member passes and having a lateral split so that it may be removed off the tension member in the event of failure of the sorbent;

lines connecting the tube to the tension member;

means to deploy the tension member to position the sorbent tubes in contact with the pollutant; and

means to remove the pollutant from the sorbent.

3,928,206

APPARATUS FOR THE COLLECTION OF BUOYANT FOREIGN MATTER

Frank Arthur Oakley Waren, 301 A Kingsway, Hove, Sussex, England

Continuation-in-part of Ser. No. 217,058, Jan. 11, 1972, abandoned. This application July 18, 1974, Ser. No. 489,811

Claims priority, application United Kingdom, Jan. 21, 1971, 2898/71The portion of the term of this patent subsequent to Aug. 8, 1989, has been disclaimed.

Int. Cl.² E02B *15/04*

U.S. Cl. 210—242 **23 Claims**

1. Apparatus for collecting buoyant foreign matter floating on or near the surface of a body of water comprising a collecting tank having side walls, a rear wall and a substantially open front and bottom,

means for supporting the tank to float in water with its upper edge above water level,

a vaned impeller extending between the side walls of the tank adjacent the front thereof, said impeller being mounted for rotation about an horizontal axis positoned such that the lower vanes extend below water level, and

a non-return valve positioned downstream of said impeller, said valve comprising a plate extending between the said side walls, said plate having a lower edge pivotally mounted on a horizontal axis positioned below water level and an upper edge supported to extend somewhat above water level by at least one float.

3,928,207

APPARATUS FOR SEPARATING PARTICULATE SOLIDS FROM LIQUIDS

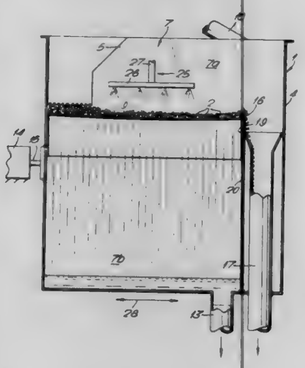
Peter Frederick Wace, Oxford; Claude Lewis Stockwell, Newbury, and Peter James Alder, Abingdon, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Apr. 4, 1974, Ser. No. 458,044

Claims priority, application United Kingdom, Apr. 9, 1973, 17002/73

Int. Cl. B01d *35/20*

U.S. Cl. 210—252 **4 Claims**



1. Apparatus for the separation of particulate solids from a liquid, the apparatus comprising a box, a longitudinally extending vertical partition within the box providing first and second chambers side by side within the box, first and second liquid draining screens dividing the first and second chambers respectively into upper and lower compartments, said screens having longitudinally spaced entry and exit ends adjacent the ends of said vertical partition, said screens being laterally disposed such that the entry end of the first screen is laterally adjacent the exit end of the second screen but separated therefrom by said vertical partition, means for feeding a mixture of particulate solids and liquid onto the entry end of the first screen for movement to the exit end, a first weir formed by a part of the vertical partition of reduced height disposed at the exit end of the first screen and projecting above the first screen for allowing the controlled passage of the solids transversely thereover from the exit end of the first screen onto the entry end of the second screen, a second weir disposed at the exit end of, and projecting above, the second screen for allowing controlled passage of the solids thereover, means for withdrawing liquid from the lower compartments of the chambers after passage through the screens, means for vibrating the box so as to cause generally longitudinal movement of solids along the first screen to the exit end thereof and then transversely over the first weir, along the second screen and over the second weir, and outlet means for the solids which pass over the second weir.

3,928,208

CORE BODY FOR USE IN COIL TYPE BLOOD DIALYZER

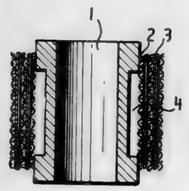
Shiro Morita; Konosuke Fujiki, both of Tokyo, and Kazuo Takeda, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Aug. 14, 1974, Ser. No. 497,390

Claims priority, application Japan, Aug. 14, 1973, 48-91055

Int. Cl.² B01D *31/00, 13/00*

U.S. Cl. 210—321 **4 Claims**



1. In a coil type blood dialyzer characterized by a core body having a membrane supporting member and a dialyzing tubular membrane coiled thereabout in sandwiched relation to each other, the improvement comprising:

said core body being of tubular configuration and having a circumferential channel of substantial axial length formed in the outer periphery thereof, thereby forming a spool-like structure having a radially outwardly extending flange at each end, and wherein the axial length of said channel is smaller than that of the supporting member, such that the supporting member is supported on said flanges in spaced relation from the base of said channel.

3,928,209

LAMINATED SETTLER

Holger Gustaf Engdahl, and Raimo Johannes Parviainen, both of Savonlinna, Finland, assignors to Enso-Gutzeit Osakeyhtio, Helsinki, Finland

Filed Sept. 3, 1974, Ser. No. 502,499

Int. Cl.² B01D *21/00*

U.S. Cl. 210—519 **4 Claims**

1. A laminated settler for settling solids present in a liquid in a tank, into which the liquid to be settled is fed, said settler comprising

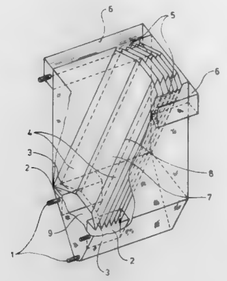
a tank having upper and lower end portions,

a plurality of laminae positioned in said tank in a slanted relation to the vertical and in spaced parallel relation to each other to define compartments therebetween in which the liquid to be settled flows,

said laminae each having a flat surface portion and an inclined surface portion which extends angularly to the flat surface portion generally laterally of the direction of flow of liquid through said compartments;

a feeding groove in the lower end portion of the tank open only to said compartments between the laminae at the laterally inclined surface portions thereof, said groove having an upper discharge edge located at the same level in the tank as the lower edge of the laminae and extending across only the surfaces laterally inclined surface portions of the laminae,

said upper end portion of the tank having an outlet opening at substantially the same level as the upper ends of the laminae and collecting troughs at the upper end portion of the tank adjacent said outlet opening and the upper ends of the laminae for receiving liquid, from which the sediment has been removed, as an overflow through said outlet opening from the compartments between the laminae, and



a sediment receiving chamber in the lower end portion of the bank for receiving sediment from the liquid, said sediment receiving chamber extending laterally further than said feeding groove,

said tank having an inlet opening through which liquid is supplied to said groove and an outlet opening for removal of sediment from said receiving chamber,

whereby particles settling out of liquid supplied from said groove to the compartments between the laminae are deflected by the inclined surface portions of the laminae towards the flat surface portions thereof to avoid conflict with first liquid supplied from the groove to said inclined surface portions of the laminae.

3,928,210

FIRE PROTECTIVE COMPOSITION FOR USE WITH ELECTRICAL CABLES

Roger L. Peterson, Los Angeles, Calif., assignor to The Dyna-Therm Corporation, Sun Valley, Calif.

Continuation of Ser. No. 218,237, Jan. 17, 1972, abandoned, which is a continuation-in-part of Ser. No. 880,813, Nov. 28, 1969, Pat. No. 3,642,531. This application Oct. 1, 1974, Ser. No. 510,887

Int. Cl.² C09K *3/28*

U.S. Cl. 252—8.1 **14 Claims**

1. A self-extinguishing fire protective composition for the coating of electrical cables containing from about 45 to about 80 weight percent total solids, based on the total weight of said composition, said composition consisting essentially of from about 4 to about 45 weight percent emulsion solids of a water based resinous emulsion selected from the group consisting of polyvinyl acetate emusions, GRS rubber, natural rubber latex, methacrylate and acrylate resins and copolymers thereof, elastomeric polyurethanes, polyvinyl chloride, polyvinylidene chloride, polyvinyl chloride and polyvinylidene chloride copolymers, vinyl acetate and vinyl chloride copolymers, polyvinyl acetate and ethylene copolymers, water emulsified epoxy resins, polystyrene and acrylonitrile-butadiene-styrene polymers, said resinous emulsion binding said composition upon application to electrical cables in a flexible cohesive structurally integral protective coating, about 1 to about 15 weight percent of a compound containing organically bound halogen selected from the group consisting of halogenated hydrocarbons, tetrabromophthalic anhydride, tris (2,3-dibromopropyl) phosphate, trisbetachloroethyl phosphate and chlorinated biphenyl to impart flame retarding properties to said composition, about 5 to about 50 weight percent of non combustible fibers, said fibers remaining in place about an electrical cable during a fire after said binder decomposes and reinforcing and maintaining the physical integrity of a protective coating formed from said composition upon application to electrical cables, about 1 to about 20 weight percent of a plasticizer for said water based resinous emulsion, and from about 0.5 to about 15 weight percent of an antimony oxide containing compound, said composition forming a coherent structurally integral fibrous reinforced self-extinguishing fire protective coating about the surface of electrical cables after application to the same to prevent the spread of a fire from its place of origin without affecting adversely the ampacity of such coated cables.

3,928,211

PROCESS FOR SCAVENGING HYDROGEN SULFIDE IN AQUEOUS DRILLING FLUIDS AND METHOD OF PREVENTING METALLIC CORROSION OF SUBTERRANEAN WELL DRILLING APPARATUSES

William C. Browning, and Homer F. Young, both of Harris County, Tex., assignors to Milchem Incorporated, Houston, Tex.

Continuation of Ser. No. 82,866, Oct. 21, 1970, abandoned. This application Dec. 30, 1974, Ser. No. 537,243

Int. Cl.² C09K *7/04*

U.S. Cl. 252—8.5 B **4 Claims**

1. In the process of preventing corrosion of metallic subterranean well drilling apparatuses exposed to an aqueous alkaline drilling fluid having a pH at least as high as about 9.0 and contaminated by hydrogen sulfide, the step of removing hydrogen sulfide from said fluid with a hydrogen sulfide scavenger consisting essentially of basic zinc carbonate, said scavenger being added to said drilling fluid in an amount of at least about 1 p.p.b.

3,928,212

HARMLESS SOFTENING AGENT FOR FABRICS HAVING EXCELLENT MOISTURE ABSORBABILITY

Sumio Goto, Uji, and Kazuhiko Ishihara, Kyoto, both of Japan, assignors to Dai-ichi Kogyo Seiyaku Co., Ltd., Japan

Filed July 6, 1973, Ser. No. 377,136

Claims priority, application Japan, July 12, 1972, 47-70282

Int. Cl.² D06M *13/16*

U.S. Cl. 252—8.6 **5 Claims**

1. A softening agent for giving excellent softness and moisture absorbability to fabrics consisting of 5 to 50% by weight of a natural fat and oil or the hardened product thereof selected from the group consisting of beef tallow, cotton seed oil, soybean oil and coconut oil and 95 to 50% by weight of at least one of polyvalent alcohol fatty acid esters selected from the group consisting of sugar fatty acid ester, sorbitan fatty acid ester, glycerin fatty acid ester and propylene glycol fatty acid ester wherein the fatty acid moiety has 12 to 18 carbon atoms; said polyvalent alcohol fatty acid ester including at least 10% by weight of monoester on the basis of the total weight of the fatty acid ester.

3,928,213

FABRIC SOFTENER AND SOIL-RELEASE COMPOSITION AND METHOD

Robert Dwight Temple; Vincent Paul Heuring, both of Cincinnati, Ohio, and James Bruce Prentice, Batesville, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 344,389, March 23, 1973, abandoned. This application June 29, 1973, Ser. No. 375,218

Int. Cl.² D06M *13/46*

U.S. Cl. 252—8.8 **10 Claims**

1. A liquid fabric softener composition having a viscosity of less than about 250 centipoises and effective to provide fabrics with softening and anti-soiling properties consisting essentially of:

A. from about 2% to about 15% by weight of a cation-active fabric softener compound having from one to two straight-chain organic groups of from 8 to 22 carbon atoms;

B. from about 0.1% to about 10% of a soil release agent selected from the group consisting of hydroxyalkyl alkyl cellulose and alkyl cellulose where each alkyl has from 1 to 3 carbon atoms, said soil release agent providing a viscosity of less than about 400 centipoises determined at a two percent by weight concentration in water at 20°C;

C. from 0 to about 2% of an emulsifier selected from the group consisting of

1. the condensation product of one mole of alkylphenol wherein the alkyl chain contains from about 8 to about 18 carbon atoms with from about one to about 100 moles of ethylene oxide,
2. the condensation product of one mole of an aliphatic alcohol wherein the alkyl chain contains from about 10 to about 24 carbon atoms with from about 1 to about 100 moles of ethylene oxide,
3. polyethylene glycol having a molecular weight of from about 1400 to about 30,000,
4. mixtures thereof; and

D. the balance water.

3,928,214

GREASE COMPOSITION

Reishi Naka; Shigeki Komatsuzaki; Tomotsuna Tomobe, all of Hitachi, Japan, and Yoshihiro Moniwa, deceased, late of Hitachi, Japan (by Yoshiko Moniwa, administratrix), assignors to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 247,384, April 25, 1972, abandoned. This application Feb. 26, 1974, Ser. No. 445,892

Int. Cl.² C10M *1/10, 1/32, 3/10, 3/24*

U.S. Cl. 252—11 **52 Claims**

1. A grease composition consisting essentially of a mineral oil having a dynamic viscosity of 50 to 600 centistokes at 37.8°C. (100°F.) and a pour point higher than −30°C. and a wax poor in solubility in the mineral oil and dispersed in the mineral oil having a molecular weight of 300 to 1,000 and a melting point higher than 100°C. in an amount larger than the solubility limit thereof in the mineral oil and sufficient to provide the consistency of 200 to 330 at room temperature with the grease composition.

3,928,215

HIGH FLUIDITY CUTTING OILS WHICH EXHIBIT RETRO-VISCOUS PROPERTIES

Karl D. Dreher, Littleton, Colo., and William B. Gogarty, Findlay, Ohio, assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 375,293, June 29, 1973, abandoned. This application Sept. 10, 1973, Ser. No. 395,673

Int. Cl.² C10M *1/40, 3/34*

U.S. Cl. 252—33.3 **14 Claims**

1. In a process of machining metal wherein a cutting oil comprised of about 30 to about 70% of a liquid hydrocarbon, about 15 to about 66% of water, about 4 to about 15% of an anionic surfactant having an average equivalent weight of 350 to about 525 or a carboxylate having an average equivalent weight of about 200 to about 500, and optionally containing about 0.001 to about 20% of a cosurfactant, the percents based on weight, is used, the improvement comprising using as the cutting oil a composition containing lamellar micelles having an axial ratio of at least about 3.5 and the cutting oil also exhibiting retro viscous properties.

3,928,216

PREPARATION OF OVERBASED MAGNESIUM LUBRICANT ADDITIVES

Peter Anthony Saunders; Michael Frank Fox; Anthony Francis Fagan, and Philip Edward Derbyshire, all of London, England, assignors to Edwin Cooper & Company, London, England

Division of Ser. No. 257,424, May 26, 1972, Pat. No. 3,857,790. This application Sept. 27, 1974, Ser. No. 510,038

Claims priority, application United Kingdom, May 27, 1971, 17604/71

Int. Cl.² C10M *1/40*

U.S. Cl. 252—33.4 **22 Claims**

1. In a process for preparing a magnesium overbased lubricant additive wherein a reaction mixture of an oil soluble detergent or dispersant susceptible to overbasing selected from the group consisting of phosphosulphurized hydrocarbons, metal salts of carboxylic acids, sulphonic acids and metal salts of sulphonic acid, a basic magnesium compound in an amount sufficient to overbase said oil soluble detergent or dispersant, and a reaction promoting amount of a hydroxy-containing compound selected from the group consisting of alcohols and monoethers of glycols is formed in an inert solvent, said reaction mixture is contacted with an acidic gas at a reaction temperature of from about 20°C up to the decomposition temperature of the reaction mixture and the resultant product is heated to remove volatile components; the improvement comprising: incorporating in said reaction mixture a reaction promoting amount, up to about 40% by weight based on the weight of the inert solvent, of a salt of boric acid and an aliphatic hydrocarbyl diamine or polyamine containing from 2 to 8 carbon atoms.

3,928,217

LUBRICATING COMPOSITIONS

Yves Labat, Pau; Yvon Mordelet, Chuzelles, and Jean Baptiste Signouret, Pau, all of France, assignors to Entreprise de Recherches et d'Activites Petrolieres (ELF), Paris, France

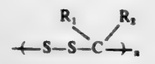
Filed Oct. 10, 1973, Ser. No. 404,887

Claims priority, application France, Oct. 19, 1972, 72.37129

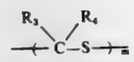
Int. Cl.² C10M *1/38, 3/32*

U.S. Cl. 252—45 **10 Claims**

1. A high pressure lubricating oil composition comprising oil and as an additive therefor, a heterocyclic compound consisting of



groups arranged consecutively or alternatively with



groups to form the heterocyclic ring such that there is no more than one carbon atom between sulfur atoms in the heterocyclic ring so formed, wherein n is 1–4 and m is 0–4, R_1, R_2, R_3 and R_4 are individually selected from the group consisting of hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 1–6 carbon atoms, sulfur-containing alkyl of 1–6 carbon atoms, sulfur-containing alkenyl of 1–6 carbon atoms, and wherein R_1 and R_2, and R_3 and R_4, respectively, can form with the carbon atom to which they are joined, a saturated, unsaturated or sulfur-containing ring of 4–8 carbon atoms, and wherein said additive is 0.5–15 weight percent of said composition.

3,928,218

LUBRICANT AND CLEANING COMPOSITION FOR PRECISION INSTRUMENTS

Charles S. Rowe, late of Lake Park, Fla. (by Doris D. Rowe, executrix), and Alvin C. Pyles, North Palm Beach, Fla., assignors to Doris D. Rowe, Lake Park, Fla., a part interest

Division of Ser. No. 277,257, Aug. 2, 1972, Pat. No. 3,791,488, which is a continuation-in-part of Ser. No. 34,597, May 4, 1970, abandoned. This application Nov. 12, 1973, Ser. No. 414,760

Int. Cl.² C10M *1/10, 1/50*

U.S. Cl. 252—49.6 **6 Claims**

1. A composition for lubricating complex mechanisms and protecting same from the elements consisting essentially of a highly refined mineral oil having the general formula C_nH_{2n+2}, a viscosity index of about 100 to 150, a viscosity at 10°F. of about 10–50 centistokes and a pour point in the range from about −10° to 20°F, a dimethyl siloxane polymer having a viscosity in the range from about 500 to 1500 centistokes at 77°F., said polymer being chemically inert to said mineral oil and to the materials constituting said complex mechanism, and a solvent for said mineral oil and said polymer, said polymer and said mineral oil being present in approximately equal proportions and having a proportion by volume of polymer and mineral oil to solvent in the range from 1:8 to 1:64.

3,928,219

LUBRICATING OIL COMPOSITIONS OF IMPROVED RUST INHIBITION

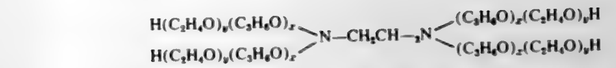
Andrew G. Papay, Manchester; Brian W. Matthews, Crestwood, both of Mo., and Arthur S. Thomas, Wokingham, England, assignors to Edwin Cooper, Inc., St. Louis, Mo.

Filed Aug. 24, 1973, Ser. No. 391,469

Int. Cl.² C10M *1/32;* **C09K** *50/00*

U.S. Cl. 252—51.5 R **5 Claims**

1. In a lubricating composition comprising a major amount of an oil of lubricating viscosity and conventional additives selected from the group consisting of internal combustion engine oil additives, gear oil additives and hydraulic oil additives in an amount sufficient to effect each additives attendant function, the improvement comprising as a further additive from 0.01 to 5.0 percent of a tetra poly (oxyethylene) - poly (oxypropylene) derivative of ethylenediamine having the formula,



wherein x and y are so selected that said derivative has a molecular weight in the range of from about 1650 to 15,000 and a poly(oxyethylene) content of about 10 to 50%.

3,928,220

PREPARATION OF HYDROCARBON-DISPERSIBLE MAGNETIC MICROSPHEROIDS IN POWDERED FORM

George M. J. Slusarczuk, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 27, 1973, Ser. No. 391,580

Int. Cl.² C04B *35/26*

U.S. Cl. 252—62.62 **5 Claims**

1. The method for preparing colloidal magnetic ferrite particles ranging in size from about 50A to about 800A as a dry powder, said powder when mixed with a hydrocarbon solvent producing a substantially stable colloidal dispersion comprising the steps of:

a. mixing a quantity of an aqueous colloidal dispersion of hydrothermally prepared magnetic ferrite particles ranging in size from 50A to about 800A with an excess amount of surfactant selected from the group consisting of non-drying fatty acids that are liquid and are not polymerized on exposure to air at ambient temperature, said surfactant when mixed with said aqueous colloidal dispersion being characterized by the property of forming an oily surfactant residue layer containing said colloidal magnetic ferrite particles and a supernatant clear aqueous layer,

b. agitating the resulting mixture whereby an oily surfactant residue layer containing said colloidal magnetic ferrite particles forms wherein said particles are coated with at least a monomolecular layer of surfactant and a supernatant clear aqueous layer forms, and recovering said oily surfactant residue layer,

c. mixing said recovered oily surfactant residue layer with hydrocarbon solvent whereby a colloidal dispersion forms, said hydrocarbon solvent having no significant deteriorating effect on the colloidal nature of said surfactant-coated ferrite particles,

d. mixing the resulting hydrocarbon solvent colloidal dispersion with a polar solvent in an amount which percipitates said colloidal ferrite particles, said polar solvent being a liquid organic compound containing oxygen in the molecule and being miscible with said hydrocarbon solvent,

e. recovering the resulting ferrite precipitate, and

f. drying said ferrite precipitate producing a dried precipitate, said dried precipitate being a powdery mass which when mixed with said hydrocarbon solvent forms a substantially stable colloidal dispersion.

3,928,221

SNOW AND ICE CONTROL COMPOSITIONS

Jack D. Slater; William G. H. Latham, and Robert H. Farrow, all of Savannah, Ga., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Aug. 15, 1973, Ser. No. 388,482

Int. Cl.² C09K *3/18*

U.S. Cl. 252—70 **10 Claims**

1. An aqueous snow and ice control composition containing as active ingredient a mixture of about 23 to about 25% by weight urea, about 11 to about 15% by weight ethylene glycol, about 35 to about 40% by weight methanol, balance water, with a sufficient quantity of alkali to adjust the pH of the composition from about 8.1 to about 8.4, characterized by a salting out temperature range of about −30°C to about −40°C.

3,928,222

SUPPRESSANT FOR COAL DUST

Walter A. Cheslick, Sr., 103½ Hickory Ave., Moundsville, W. Va. 26041

Filed Nov. 10, 1972, Ser. No. 305,231
Int. Cl.² C09K 3/22
U.S. Cl. 252—88 1 Claim

1. A suppressant for coal dust consisting of an aqueous solution of magnesium sulfate and completely flourinated carboxylic acid.

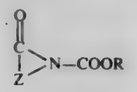
3,928,223

BLEACHING AND DETERGENT COMPOSITIONS HAVING IMIDE ACTIVATOR AND PEROXYGEN BLEACH

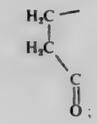
Leo Thomas Murray, East Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

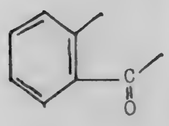
Continuation-in-part of Ser. No. 134,451, April 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 677,747, Oct. 24, 1967, abandoned. This application Dec. 11, 1972, Ser. No. 314,100
Int. Cl.² C11D 3/395
U.S. Cl. 252—95 10 Claims

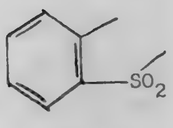
1. A bleaching composition consisting essentially of a water soluble peroxygen bleaching compound selected from the group consisting of perborates, percarbonates, persulfates, persilicates, perphosphates, hydrogen peroxide and sodium peroxide; and a water soluble imide selected from the group consisting of imides having the formula

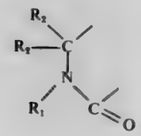


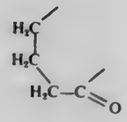
wherein R represents a C_1 to C_4 alkyl or phenyl, Z represents a substituent selected from the group consisting of

(a) 

(b) 

(c) 

(d) 

(e) 

wherein R_1 is hydrogen or —COOR and R_2 is hydrogen or methyl; the mol ratio of imide to peroxygen compound ranging from 0.01 to 2.0.

3,928,224

SHAMPOO COMPOSITION OBTAINED FROM THE POLYCONDENSATION OF GLYCIDOL ON ALPHA DIOLS WITH FATTY CHAIN WITH ALKALINE CATALYSTS

Guy Vanlerberghe, Montjay-la-Tour, and Henri Sebag, Paris, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation-in-part of Ser. No. 142,409, May 11, 1971, Pat. No. 3,821,372. This application Aug. 1, 1973, Ser. No. 384,635
Claims priority, application Luxemburg, May 12, 1970, 60900
Int. Cl.² C11D 7/50
U.S. Cl. 252—172 4 Claims

1. A shampoo composition for the hair, comprising at least one compound of the formula

$$R\text{-}CHOH\text{-}CH_2O[CH_2\text{-}CHOH\text{-}CH_2\text{-}O]_nH$$

wherein R is selected from the group consisting of aliphatic, cycloaliphatic or arylaliphatic radicals and mixtures thereof, having 7 to 21 carbon atoms, wherein the aliphatic moiety of said radicals is saturated or unsaturated, linear or branched, and optionally containing 1 to 6 ether, thioether and hydroxymethylene groups, n is greater than 1 and equal to or less than 10 and designates the average degree of polymerization, present in a proportion of 0.1 to 80 percent by weight of said composition.

3,928,225

GLASS FORMING MIXTURE WITH BORON AS THE DOPING MATERIAL FOR PRODUCING CONDUCTIVITY ZONES IN SEMICONDUCTOR BODIES BY MEANS OF DIFFUSION

Horst Schäfer, Wendelstein, Germany, assignor to SEMIKRON Gesellschaft fur Gleichrichterbau und Electronik m.b.H., Nurnburg, Germany

Filed Apr. 4, 1972, Ser. No. 241,070
Claims priority, application Germany, Apr. 8, 1971, 2117179
Int. Cl.² H01L 7/44
U.S. Cl. 252—182 16 Claims

1. A glass-forming composition for doping a silicon semiconductor body with boron to produce conductivity zones in the semiconductor body by diffusion, said composition consisting essentially of boron trioxide as a boron doping compound in an amount effective to provide a conductivity zone, a polymerizable organic compound of a silicon semiconductor which provides an oxide of said semiconductor upon heating, said polymerizable organic compound being a silicic acid ester, and a metal salt of an organic acid which modifies the thermal expansion properties of the glass without adversely affecting the properties of the semiconductor body, the proportion of said metal salt to said boron trioxide providing a glass having a coefficient of thermal expansion of said semiconductor body, the metal of said metal salt being selected from the group consisting of nickel, lead, calcium and tin, and said composition being dissolved in a solvent which has a low vapor pressure and is capable of wetting said semiconductor body.

9. In a method of doping a semiconductor body with boron to produce conductivity zones in the semiconductor body by diffusion by applying to the semiconductor body a glass-forming composition which consists essentially of boron trioxide as a boron doping compound in an amount effective to provide a conductivity zone, a polymerizable organic compound of a silicon semiconductor which provides an oxide of said silicon semiconductor upon heating, said polymerizable organic compound being a silicic acid ester, and a solvent for said boron trioxide and said polymerizable organic compound, said solvent having a low vapor pressure and being capable of wetting said semiconductor body, the improvement comprising: providing in said glass-forming composition a metal salt of an organic acid which modifies the thermal expansion properties of the glass without adversely affecting the properties of the semiconductor body, the proportion of said metal salt to said boron trioxide providing a glass having a coefficient of thermal expansion of said semiconductor body, and the metal of said metal salt being selected from the group consisting of nickel, lead, calcium and tin.

3,928,226

MULTI-DETECTABLE INK COMPOSITIONS AND METHOD OF USE

William F. McDonough, Trumbull; James A. Montlick, Darien, and Richard A. Bernard, Norwalk, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 16, 1974, Ser. No. 433,806
Int. Cl.² C09D 5/22
U.S. Cl. 252—301.2 R 4 Claims

1. A machine-readable marking ink composition having two or more mixed pigments for processing and distinguishing articles both visually and under radiation of a discrete predetermined wavelength, comprising

A. from 0.5 to 10 percent non-fluorescent pigment by weight;

B. from 2.0 to 25.0 percent fluorescent pigment by weight which fluoresces under radiation at a predetermined wavelength,

1. said fluorescent pigment being taken from the group consisting of

a. fluorescent pigment dispersions in a vehicle which comprises a resin dissolved in a narrow fraction petroleum distillate having a boiling range of from about 440°F. to 510°F.,

b. fluorescent pigment dispersions in a drying type alkyd resin, or

c. comminated solid solutions of fluorescent dyes in modified sulfonamide resins;

C. from 0.25 to 1.5 percent surfactant by weight;

D. from 0.25 to 5 percent gellant by weight; and

E. all of said pigments, said surfactant and said gellant being in a vehicle for the mixed pigment system,

1. said vehicle consisting essentially of a mixture of

a. dioctyl phthalate and

b. an aliphatic hydrocarbon having a distillation range of about 310°C. to 345°C.,

whereby the color of the ink under mixed light is different than the fluorescent color of the ink when irradiated at the fluorescent wavelength of said fluorescent pigment.

3,928,227

LIQUID SCINTILLATION, COUNTING AND COMPOSITIONS

Edwin A. Sena, Lafayette; Bert M. Tolbert, Boulder, both of Colo., and Chester L. Sutula, Granger, Ind., assignors to Sentol Associates, Granger, Ind.

Continuation-in-part of Ser. Nos. 613,109, Feb. 1, 1967, abandoned, and Ser. No. 29,267, April 16, 1970, abandoned. This application Feb. 20, 1973, Ser. No. 334,068
Int. Cl. F21k 2/02
U.S. Cl. 252—301.2 SC 10 Claims

1. In a process of counting in liquid scintillation counting devices using liquid scintillation counting medium containing surfactant; the step comprising forming the medium by admixing

an amount of at least one of scintillation solvent and scintillation solute sufficient to absorb emissions from isotopes and radiate the absorbed energy at device-detectable levels

with

an amount of a plurality of different surfactants sufficient to impart thermodynamic stability to the resulting medium on addition of sample and during which counting reacts to provide essentially no fluorescence, chemiluminescence or phosphorescence, the plurality of surfactants being selected from the group consisting of

a. a combination of preferentially oil-soluble surfactant and preferentially water-soluble surfactant;

b. a combination of anionic surfactant and nonionic surfactant;

c. a combination of cationic and nonionic surfactant; and

d. a combination of surfactant which acts as a dispersant and surfactant which acts as a surface-tension reducing agent.

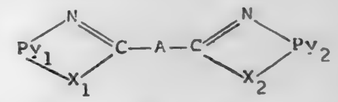
3,928,228

4,4′-STILBENEBIS-PYRIDOOXAZOLES AND RELATED OPTICAL BRIGHTENERS AND POLYMERIC COMPOSITIONS BRIGHTENED THEREBY

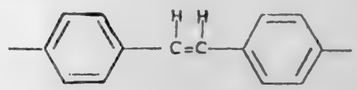
Nathan N. Crounse, Cincinnati, Ohio, assignor to Sterling Drug Inc., New York, N.Y.

Filed Apr. 28, 1969, Ser. No. 820,005
Int. Cl.² D06L 3/12
U.S. Cl. 252—301.2 W 3 Claims

1. A normally solid, fiber and film-forming polymeric material having incorporated therein about 0.005 to about 0.5 percent by weight of said polymeric material of a fluorescent compound of the formula



wherein Py_1 and Py_2 are each a bivalent heterocyclic nucleus of the pyridine class in which the open bonds are on vicinal ring carbon atoms of said nucleus wherein each of the pyrido rings is otherwise unsubstituted or further substituted by a member of the class consisting of halogen, lower alkoxy and lower alkyl; X_1 and X_2 are each a member of the class consisting of O, S and NR, wherein R is H, lower alkyl, hydroxy-lower alkyl, hydroxyoxaalkyl of 3 to 15 carbon atoms, phenyl-lower alkyl, cyano-lower alkyl, carboxy-lower alkyl, carbo-lower alkoxy-lower alkyl, phenyl-hydroxy-lower alkyl or lower alkenyl; and A is a bivalent 4,4′-stilbene radical of the formula



3,928,229

TRANSPARENT GLASS-CERAMIC LASERABLE ARTICLES CONTAINING NEODYMIUM

Norbert Neuroth, Mainz-Mombach, Germany, assignor to Jenaer Glaswerk Schott & Gen., Mainz, Germany

Continuation of Ser. No. 86,010, Nov. 2, 1970, abandoned. This application May 8, 1973, Ser. No. 358,224
Claims priority, application Germany, Nov. 3, 1969, 1955174
Int. Cl.² C09K 11/08; C03C 3/22, 3/04; C09K 11/10
U.S. Cl. 252—301.6 P 10 Claims

1. A laserable article consisting of transparent glass ceramic as host material containing activating ions rendering the article capable of induced emission, the activating ions being neodymium ions in amount of 0.1–10 wt.-% calculated on the oxide.

3,928,230

ENCAPSULATION OF FLUIDS AND SOLIDS

William Unsworth, Manchester, and Graham Harry Helsby, Egerton, both of England, assignors to Magnesium Elektron Limited, Manchester, England

Continuation-in-part of Ser. No. 170,658, Aug. 10, 1971, abandoned. This application May 22, 1973, Ser. No. 362,794
Claims priority, application United Kingdom, Aug. 13, 1970, 39075/70
Int. Cl.² B01J *13/02*
U.S. Cl. 252—316 **26 Claims**

1. A process for the encapsulation of fluids and solids comprising:

dissolving a water insoluble polymerisable epoxy monomer in a solvent having a higher affinity for water than for the monomer;

dispersing the monomer solution in water;

dispersing in the aqueous dispersion the substance to be encapsulated;

mixing into the resulting disperson a solution of a polymerising agent effective to polymerise said epoxy monomer in the presence of water, said polymerising agent being in a solvent having a higher affinity for water than the polymerising agent; and

continuing the mixing until polymerisation of the monomer is substantially complete.

11. A process for the encapsulation of fluids and solids comprising:

dispersing in water the substance to be encapsulated;

dissolving a water insoluble polymerisable epoxy monomer in a solvent having a higher affinity for water than the monomer;

dispersing the monomer solution in the aqueous dispersion of the substance;

mixing with the resulting dispersion of monomer and substance a solution of a polymerising agent effective to polymerise said epoxy monomer in the presence of water, said polymerising agent being in a solvent having a higher affinity for water than for the polymerising agent; and

continuing the mixing until polymerisation of the monomer is complete.

3,928,231

SELECTIVE HYDROCARBOXYLATION OF UNSATURATED FATTY COMPOUNDS

Edwin N. Frankel, Peoria, Ill., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 295,747, Oct. 6, 1972, abandoned. This application Nov. 15, 1973, Ser. No. 416,122
Int. Cl.² B01J *27/32, 31/40;* **C11C** *3/00;* **C07C** *55/00*
U.S. Cl. 252—413 **1 Claim**

1. A process for reactivating a spent hydrocarboxylation catalyst contained in the distillation pot residue from the distillation of carboxylated products from the reaction of unsaturated fatty compounds from the group consisting of mono- and polyunsaturated fatty acids, fatty acid alkyl esters, and triglyceride vegetable oils with carbon monoxide at pressures of from about 3000 to 4500 p.s.i.g. and a 10 to 100 mole percent excess of a stoichiometric amount of water in the presence of a catalytic amount of palladium chloride admixed with a trisubstituted phosphine from the group consisting of triphenylphosphine and trialkylphosphines in molar ratios of from 1:2 to 1:4 palladium chloride:trisubstituted phosphine, at temperatures of from about 100° to 160° C. for a period of time sufficient to produce carboxylated products in conversion yield of from 86 to 99 percent, said carboxylated products being distilled at temperatures of from about 135° to 220° C. and at pressures of from 0.02 to 0.01 mm. of mercury in such a manner that from 93 to 95 percent by weight of said reaction products are removed and the carboxylated products being characterized as having substantially all of the added carboxyl groups attached to one of the originally unsaturated carbon atoms in said unsaturated fatty compounds; comprising the steps of:

a. oxidizing the distillation pot residue with concentrated nitric acid;

b. mixing the oxidized distillation pot residue with water at 0° C.;

c. extracting the mixture resulting from step (b) with diethyl ether;

d. neutralizing the diethyl ether solution resulting from step (c);

e. drying the neutralized diethyl ether solution resulting from step (d);

f. removing the diethyl ether from the dried, neutralized diethyl ether solution resulting from step (e); and

g. admixing the oxidized distillation pot residue product of step (f) with said trisubstituted phosphine and hydrogen chloride in weight ratios of from 1:0.2:0.02 to 1:3:0.06 oxidized residue product:trisubstituted phosphine:hydrogen chloride.

3,928,232

ARYL SULFONATE STABILIZED COBALT CARBONYL COMPLEX COMPOUNDS

John B. Wilkes, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 300,053, Oct. 24, 1972, abandoned, which is a division of Ser. No. 32,386, April 27, 1970, abandoned. This application Mar. 1, 1974, Ser. No. 447,173
Int. Cl.² B01J *27/20*
U.S. Cl. 252—428 **5 Claims**

1. The method of inhibiting the formation of a cobalt metal plate on the surface of a system containing a cobalt carbonyl complex compound in a substantially water-free organic liquid medium and in the presence of carbon monoxide, said inhibition being in connection with the surface in contact with the organic liquid medium, which comprises adding an alkyl aryl sulfonate solute to the organic liquid medium, and wherein said alkyl aryl sulfonate is of the formula R_nYSO_3M, wherein Y is an aryl carbocyclic nucleus having a carbon atom content in the range from 6 to about 13, wherein R is an alkyl hydrocarbon group having a carbon atom content in the range from about 3 to 30, wherein M is selected from the group consisting of alkali metal, calcium and ammonium cations, said ammonium ions being of the formula $R_4'N^{(+)}$ wherein the groups R′ are the same or different and may be hydrogen or alkyl hydrocarbon radicals having a carbon atom content in the range from about 1 to 20, and wherein *n* is an integer in the range from 1 to 4, inclusive, and where *n* is greater than 1, said R may be the same or different groups, and wherein for each mol of cobalt carbonyl complex in the organic liquid medium there is present 0.001 to 2 mols of alkyl aryl sulfonate.

3,928,233

HYDROGENATIVE CONVERSION CATALYSTS

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 281,116, Aug. 16, 1972, which is a division of Ser. No. 869,389, Oct. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 669,288, Sept. 20, 1967, abandoned. This application Nov. 2, 1972, Ser. No. 302,998The portion of the term of this patent subsequent to July 13, 1988, has been disclaimed.
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B01J *11/40*
U.S. Cl. 252—455 Z **5 Claims**

1. The catalytic composition containing a crystalline aluminosilicate zeolite, a Group VI metal component selected from the group consisting of tungsten and molybdenum metals, oxides and sulfides, and a stabilizing amount of a stabilizing component comprising a Group IV metal selected from the group consisting of titanium and zirconium.

3,928,234

CATALYST FOR THE REDUCTION OF AUTOMOBILE EXHAUST GASES

James A. Ford, North Haven, Conn., and Sheldon H. Butt, Godfrey, Ill., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 385,077, Aug. 2, 1973, Pat. No. 3,876,456, which is a continuation-in-part of Ser. No. 342,271, March 16, 1973, Pat. No. 3,810,754. This application Aug. 28, 1974, Ser. No. 501,249. The portion of the term of this patent subsequent to Apr. 8, 1992, has been disclaimed.
Int. Cl.² B01J *29/14*
U.S. Cl. 252—455 R **6 Claims**

1. A catalyst for the reduction of automobile exhaust pollution comprising:

A. a nickel alloy substrate containing from 2 to 6% aluminum, from 0.5 to 4% silicon, from 0.001 to 6% chromium, balance essentially nickel; and

B. a surface layer of material on said substrate, having a composition at the surface of from 0.01 to 8% aluminum, from 0.01 to 6% silicon, from 0.001 to 6% chromium, from 10 to 50% copper, said surface layer having a thickness of from 1000 A to 0.1 inch, with the copper concentration varying from 10 to 50% at the surface to essentially 0% within the substrate, balance essentially nickel, the combined substrate and surface layer having been heat-treated at 750° to 1,050°C. for a time of 5 minutes to 4 hours in an atmosphere non-oxidizing to nickel.

3,928,235

CATALYST FOR PURIFICATION OF WASTE STREAMS

Paul Douglas Goodell, Ridgewood, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Nov. 12, 1973, Ser. No. 411,692
Int. Cl. B01j *11/06 11/22*
U.S. Cl. 252—458 **29 Claims**

1. As a catalyst material, an alloy in the form of a powder of uniform composition consisting essentially of (A) chromium and copper or (B) chromium, nickel and copper, said alloy powder being or capable of being on heat treatment substantially free of optically observable heterogeneities of a size greater than about 20 microns, said composition (A) consisting essentially of about 15 to about 45 percent chromium and the balance essentially copper, and said composition (B) consisting essentially of about 5 to about 50 percent chromium, about 5 to about 60 percent nickel, and the balance essentially copper, said chromium, nickel and copper components being correlated as defined by the area falling within the boundary A-B-C-D-E-A of FIG. 1.

3,928,236

ALUMINA CATALYST CARRIERS AND THE PROCESS FOR PRODUCING THEM

Ronald J. Rigge, Pleasanton, and Stephen C. Carniglia, Byron, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Nov. 25, 1974, Ser. No. 527,093
Int. Cl.² B01J *21/04*
U.S. Cl. 252—463 **11 Claims**

1. A process for producing shaped high purity, thermally stable active alumina catalyst carriers which comprises:

a. treating alumina shapes, having a crystalline phase structure selected from the group consisting essentially of chi-rho-eta, pseudoboehmite and mixtures thereof, in an aqueous medium with an ammonium salt having a pH in aqueous solution within the range of 4–9,

b. subjecting the treated shapes to a pressure treatment at a temperature within the range of about 100°C and about 250°C for a time period of about 4 to about 36 hours,

c. leaching the pressure-treated shapes with water at a temperature from about 20°C to about 100°C,

d. drying the leached shapes and then subjecting the dried shapes to a thermal activation step within the temperature range from about 500°C to about 980°C for a time period from about 30 minutes to about 100 minutes.

3,928,237

METHOD OF CATALYST PREPARATION FOR USE IN SUPPRESSING HYDROCARBON AND CARBON MONOXIDE EMISSION FROM INTERNAL COMBUSTION ENGINES

Robert E. Davis, 125 Hillcrest, Hinsdale, Ill. 60521

Continuation-in-part of Ser. No. 307,652, Nov. 17, 1972, abandoned. This application Aug. 20, 1973, Ser. No. 389,963
Int. Cl.² B01J *23/16*
U.S. Cl. 252—465 **15 Claims**

1. A method of preparing a catalyst on a substrate for use in suppressing hydrocarbon and carbon monoxide emission from internal combustion engines comprising taking a solution containing dissolved platinum, complexing the platinum by adding ammonia to the solution, contacting an amount of substrate with the solution so that the substrate absorbs the solution, and heating the substrate to remove ammonia and water to provide a catalyst, the amount of substrate added to the solution being such that the weight of platinum in the solution is about 0.1% of the weight of the catalyst.

13. A catalyst for reducing hydrocarbon and carbon monoxide emission from internal combustion engines comprising a plurality of pellets, some of the pellets containing platinum but not palladium and some of the pellets containing palladium but not platinum, the platinum-containing pellets and the palladium-containing pellets being mixed together.

3,928,238

EXHAUST GAS PURIFYING CATALYST AND PROCESS OF MAKING AND USING SAME

Edgar Koberstein, Alzanau, and Eduard Lakatos, Grossenhausen, both of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Oct. 12, 1973, Ser. No. 406,075
Claims priority, application Germany, Oct. 13, 1972, 2250200
Int. Cl.² B01J *23/16*
U.S. Cl. 252—465 **25 Claims**

1. A process for preparing an oxidic, carrier catalyst, said catalyst comprising at least one heavy metal compound as active component, said process comprising providing a temperature resistant carrier material with a catalytically active coating without substantial mutual permeation of said coating and carrier material by:

A. intensively mixing said carrier with a binding agent until the surface of said carrier is slightly glutinous;

B. applying to said carrier from step (A) at least one pulverulent, oxidic, heavy metal compound, a pulverulent mass containing at least one of said oxidic heavy metal compounds or at least one hydroxyl group-containing precursor of said heavy metal compounds, wherein said heavy metal is selected from the group consisting of copper, chromium, nickel, titanium, vanadium, manganese, iron, cobalt, zinc, tin, molybdenum, tungsten and bismuth; and

C. heating the resulting mass from step (B) to remove said binding agent.

3,928,239

METHOD FOR THE PRODUCTION OF EXHAUST AND WASTE GASES PURIFYING CATALYSTS

Kiyoshi Yonehara, Suita; Kunihiro Kubota, Takatsuki; Tetsuji Ono, Amagasaki, and Takashi Ohara, Nishinomiya, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan

Filed Nov. 29, 1973, Ser. No. 419,943

Claims priority, application Japan, Nov. 30, 1972, 47-11939; Nov. 30, 1972, 47-119397

Int. Cl.² B01J *23/08*

U.S. Cl. 252—466 PT 14 Claims

1. A method for the production of a catalyst for purification of exhaust gases of internal combustion engines and waste gases of industrial plants comprising the steps of: dissolving an alumina sol with an inorganic aicd to form an alumina sol solution, adding to the solution a finely powdered alumina containing at least 50% by weight of rho-alumina and capable of forming activated alumina on calcination to form an alumina slurry, immersing in the alumina slurry a monolithic multicellular chemically inert refractory support, while maintaining said slurry at a temperature of 0° to 30°C, to deposit a coating film of alumina on to the surface of said support, aging the immersed support at a temperature not exceeding 50°C for at least 30 minutes, drying said coating film of alumina to form a thin uniform film of alumina on the surface of said support, impregnating the so treated support in a solution or suspension containing a member selected from the group consisting of water soluble salts, metallic acids and metallic colloids of a noble metal to deposit a noble metal thereon and subjecting the noble metal-supporting support to activation at a temperature of 150° to 600°C.

3,928,240

PROCESS FOR THE PREPARATION OF MOLYBDENUM-CONTAINING OXIDATION CATALYSTS

Ernest C. Milberger, Solon, and Serge R. Dolhyj, Parma, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 177,105, Sept. 1, 1971. This application Aug. 27, 1973, Ser. No. 391,775

Int. Cl.² B01J *23/16, 23/18, 23/24*

U.S. Cl. 252—467 9 Claims

1. In the process for the preparation of oxidation catalysts containing antimony, molybdenum and oxygen or vanadium, molybdenum and oxygen or tungsten, molybdenum and oxygen, using an aqueous solution or slurry of a compound containing hexavalent molybdenum, the improvement comprising partially reducing in the aqueous solution or slurry the molybdenum in the compound containing hexavalent molybdenum to a valence state below +6 with a reducing agent capable of reducing hexavalent molybdenum.

3,928,241

CATALYSTS FOR PURIFYING EXHAUST GAS

Itaru Niimi, Nagoya; Yasuhisa Kaneko, Toyota; Akiyoshi Morita, Toyota; Yasuo Nemoto, Toyota, and Mitsuyoshi Sato, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Feb. 12, 1973, Ser. No. 331,888

Claims priority, application Japan, Feb. 12, 1972, 47-14983

Int. Cl.² B01J *23/86, 23/72*

U.S. Cl. 252—470 3 Claims

1. An exhaust gas purifying catalyst comprising an alloy consisting essentially of 0.1–40% Cu and the balance of at least one of the group consisting of Ni, Fe, and a combination of Ni and Fe by weight as fundamental components, and including a surface formed by first oxidizing the alloy by heating at 700°C. – 1100°C. in an oxidizing atmosphere for ½ to 24 hours to provide an oxidized layer at least 10μ in thickness, and thereafter reducing the oxidized layer in a reducing atmosphere at approximately 800°C. for about 2 hours.

3,928,242

METAL OXIDE VARISTOR WITH DISCRETE BODIES OF METALLIC MATERIAL THEREIN AND METHOD FOR THE MANUFACTURE THEREOF

John E. May, Skaneateles, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Nov. 19, 1973, Ser. No. 417,274

Int. Cl.² H01B *1/02*

U.S. Cl. 252—513 13 Claims

6. A metal oxide varistor having a sintered body comprising zinc oxide powder and a small percentage of at least one additive selected from the group consisting of metal oxides and metal fluorides, said zinc oxide and at least one additive forming a varistor phase and wherein said body portion further comprises discrete bodies of metallic matter distributed therethrough and wherein said discrete bodies of metallic matter are separated by said varistor phase.

3,928,243

THICK FILM RESISTOR PASTE CONTAINING TANTALA GLASS

Thomas M. Kudza, Swartz Creek; Raymond E. Schwyn, Flint, and Morris Berg, Grand Blanc, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 3, 1974, Ser. No. 485,337

Int. Cl.² H01B *1/02*

U.S. Cl. 252—514 9 Claims

1. A resistor composition suitable for electrical resistors comprising a mixture in relatively small amounts of ruthenia, antimony or bismuth trioxide and tantalum pentoxide, together with relatively large amounts of silver, non-conducting lead-borosilicate glass and conducting tantala glass.

3,928,244

ELECTRICALLY CONDUCTIVE REFRACTORY BODY

Edmund M. Passmore, Wilmington, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Nov. 1, 1973, Ser. No. 412,008

Int. Cl.² H01B *1/00*

U.S. Cl. 252—520 1 Claim

1. An electrically conductive refractory boat, for the vacuum deposition of metals, consisting essentially of TiB_2, BN and TiH_2, wherein said boat has the following composition: 5 to 65 volume percent of BN; 20 to 50 volume percent of TiB_2; 1 to 5 volume percent of TiH_2; 0 to 30 volume percent of AlN.

3,928,245

METAL OXIDE VOLTAGE-VARIABLE RESISTOR COMPOSITION

Herbert Fishman, and James S. Kresge, both of Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

Filed July 9, 1973, Ser. No. 377,218

Int. Cl.² H01B *1/08*

U.S. Cl. 252—521 5 Claims

1. A voltage-variable sintered body resistor composition of the type consisting mostly of zinc oxide and comprising a significant amount of silicon dioxide, wherein the improvement comprises that said composition also contains significant amounts of at least one of the impurities chosen from the group consisting of barium oxide and boron oxide.

4. The composition defined in claim 1 and comprising additionally at least one impurity chosen from the group consisting of bismuth trioxide, cobaltic trioxide, manganese dioxide, antimony oxide, and chromic oxide.

3,928,246

PERFUME COMPOSITION INCLUDING OXYGENATED DECALIN DERIVATIVES

Paul A. Stadler, Biel-Benken, Basel-Land; Albert Eschenmoser, Kusnacht, Zurich, and Erling Sundt, Pinchat-Geneva, all of Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

Continuation of Ser. No. 780,162, Nov. 29, 1968, abandoned. This application Feb. 2, 1973, Ser. No. 329,073

Claims priority, application Switzerland, Nov. 29, 1967, 16745/67; Nov. 22, 1968, 17405/68

Int. Cl. A61k *7/00*; C11b *9/00*

U.S. Cl. 252—522 1 Claim

1. A perfume composition comprising a mixture of perfuming ingredients including an odour-modifying amount of at least one odoriferous compound selected from the group consisting of cis-1,7,7 -trimethylbicyclo [4.4.0] decan-3-one, trans-1,7,7,-trimethylbicyclo [4.4.0] decan-3-one, and 1,7,7-trimethyl-3-acetoxybicyclo [4.4.0] decane.

3,928,247

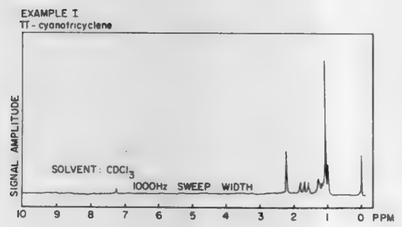
NOVEL PERFUMERY USES OF π-CYANOTRICYCLENE

Braja Dulal Mookherjee, Matawan; Venkatesh Kamath, Red Bank, both of N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

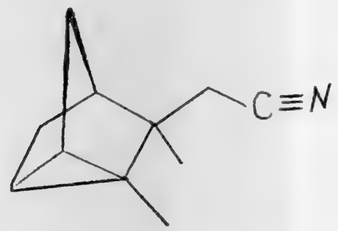
Filed Mar. 10, 1975, Ser. No. 556,874

Int. Cl.² A61K *7/46*; C11B *9/00*

U.S. Cl. 252—522 4 Claims



1. A perfume composition comprising π-cyanotricyclene having the structure:



and at least one adjuvant selected from the group consisting of natural perfume oils, synthetic perfume oils, alcohols, aldehydes, ketones, esters and lactones.

3,928,248

FRAGRANCE MATERIALS CONTAINING 4-(2,6,6-TRIMETHYL-1,3-CYCLOHEXADIEN-1-YL)-2-BUTANOL AND/OR 4-(6,6-DIMETHYL-2-METHYLENE-3-CYCLO-HEXEN-1-YL)-2-BUTANOL, AND/OR ACETALS THEREOF, AND METHODS FOR PRODUCING SAME

Braja Dulal Mookherjee, Matawan; Manfred Hugo Vock, Locust, both of N.J.; Carlos Benaim, Hartsdale, and Edward J. Shuster, Brooklyn, both of N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 461,704, April 17, 1974, Pat. No. 3,899,597. This application Mar. 24, 1975, Ser. No. 561,188

Int. Cl.² A61K *7/46*; C11B *9/00*

U.S. Cl. 252—522 12 Claims

2. A fragrance modifying composition containing an oxo compound selected from the group consisting of 4-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)-2-butanol, 4-(6,6-dimethyl-2-methylene-3-cyclohexen-1-yl)-2-butanol, 4-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)-2-butyl acetate and 4-(6,6-dimethyl-2-methylene-3-cyclohexen-1-yl)-2-butyl acetate and an auxiliary perfume ingredient.

3,928,249

LIQUID DETERGENT COMPOSITION

Gennaro Nunziata; Rainer Walter Max Schone, and Gianfranco Spadini, all of Brussels, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 29, 1973, Ser. No. 327,545

Claims priority, application Luxemburg, Feb. 7, 1972, 64,743

Int. Cl.² C11D *3/04, 1/75*

U.S. Cl. 252—526 21 Claims

1. A liquid, clear, homogeneous, easily dispensable, stable, concentrated, aqueous, detergent composition containing hydrosoluble surface-active detergents and usual minor additives, characterized in, that it contains, calculated on the total weight of the composition:

(A) from about 5 to about 15% by weight of a polyethylene glycol ether sulfate of the general formula

$$R_1O(C_2H_4O)_nSO_3M \quad (I)$$

wherein R_1 is a straight or branched, saturated or unsaturated hydrocarbon radical having 8 to 20 carbon atoms; n is from 1.5 to 12; M is an alkali-metal, ammonium, and dimethyl-, diethyl-, trimethyl-, triethyl-, dimethanol-, trimethanol-, diethanol- and triethanol ammonium salt;

(B) from about 8 to about 20% by weight of an aliphatic hydrocarbon sulfonate of the general formula

$$R_2SO_3M \quad (II)$$

wherein R_2 is a straight or branched, saturated or unsaturated hydrocarbon radical having 8 to 20 carbon atoms; M has the meaning given above;

C. from about 3 to about 12% by weight of nonionic surface-active detergent of which at least 20% and up to 100% by weight consists of a tertiary amine oxide of the formula

$$R_3R_4R_5N \rightarrow O \quad (III)$$

wherein R_3 is a branched or straight, saturated or unsaturated hydrocarbon radical having 8 to 20 carbon atoms; R_4 and R_5 represent each a methyl-, ethyl-, hydroxymethyl- and hydroxyethyl radical; while the other 0 to 80% by weight of nonionic surface-active detergent is selected from the group consisting of polyethylene glycol condensation product having a molecular weight from about 160 to 800; a condensation product of 3 to 15 moles of ethylene oxide per mole of aliphatic or alkyl aromatic compound having 8 to 20 carbon atoms and at least one reactive hydrogen atom; a saccharide fatty acid ester, and a polyoxyethylene saccharide fatty acid ester;

D. from about 2 to about 15% by weight of a solubilizing agent selected from the group consisting of C_{1-4} alcohol; potassium, sodium and ammonium salt of C_{1-3} alkyl and di-C_{1-3} alkyl-phenyl sulfonic acid; and urea;

E. from about 5 to about 9% by weight of an organic acid selected from the group consisting of acetic-, citric-, gluconic-, glycolic-, lactic-, malic, maleic-, o-phthalic-, and p-phthalic acid;

whereby the weight ratio of (A) to (B) varies between 1 to 3 and 1 to 1, and the weight ratio of (C) to (A) + (B) varies between 1 to 5 and 1 to 2.

7. A liquid detergent composition according to claim **1**, characterized in, that it contains 2 to 3% by weight of —Na or —K salt of meta-, ortho- or pyroboric acid.

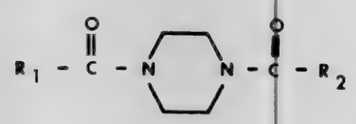
3,928,250

WASHING COMPOSITION CONTAINING SUDS SUPPRESSING AGENTS

Kurt Kosswig, and Herbert Meister, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Sept. 28, 1973, Ser. No. 401,691
Claims priority, application Germany, Oct. 5, 1972, 2248842
Int. Cl.² C11D *1/58, 3/28*
U.S. Cl. 252—542 **8 Claims**

1. A low-sudsing washing composition comprising detergent compounds and additives, and 1–40% by weight, based on the weight of the active detergent compounds of the washing composition, of a suds-suppressing agent, said agent being a piperazine derivative of the formula:



wherein R_1 and R_2 each are alkyl groups of 9–21 carbon atoms.

3,928,251

MILD SHAMPOO COMPOSITIONS

Raymond Edward Bolich, Jr., Montgomery, and Robert Benson Aylor, Blue Ash, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 11, 1972, Ser. No. 313,908
Int. Cl.² C11D *1/92*
U.S. Cl. 252—545 **16 Claims**

1. A mild shampoo composition comprising surfactants and water, said surfactants consisting of a mixture of:

A. a polyethoxylated anionic surfactant selected from the group consisting of (1) a surfactant having the formula $R(OC_2H_4)_nOSO_3M$, wherein R is a hydrophobic group selected from the group consisting of alkyl groups containing from about 8 to about 16 carbon aroms, alkylphenyl groups wherein the alkyl group contains from about 6 to about 15 carbon atoms, and fatty acid amido groups wherein the fatty acid contains from about 8 to about 16 carbon atoms, wherein n is a number from about 1 to about 10 and M is a non-toxic cation which makes the surfactant water-soluble, and (2) a water-soluble polyethoxylated fatty alcohol sulfosuccinate monoester wherein said fatty alcohhol contains from about 8 to about 16 carbon atoms and said polyethoxylated fatty alcohol contains from about 1 to about 10 ethoxy moieties per molecule; (B) a zwitterionic surfactant having the formula $(R^2)_4N^{(+)}$ $(R^3)_{2-4}CH_{3-B}(R^2)_B(R^4)_CY^{(-)}$, wherein A, B, and C are each selected from the group consisting of 0 and 1, wherein A is 0 when B is 1 and A is 1 when B is 0, wherein C can only be 1 when Y is a sulfonate group, wherein each R^2 is selected from the group consisting of alkyl groups containing from about 8 to about 16 carbon atoms, and a moiety having the formula R^5 —C(O)NH — R^6 - wherein R^5 is an alkyl group containing from about 8 to about 16 carbon atoms and R^6 is an alkylene group containing from 1 to about 5 carbon atoms, wherein each R^3 is selected from the group consisting of alkyl, hydroxyalkyl and alkoxyalkyl groups which can be connected to form a ring and each of which contains from 1 to about 3 carbon atoms, wherein Y is selected from the group consisting of sulfonate and carboxylate groups, and wherein R^4 is an alkylene group containing from 1 to about 5 carbon atoms when Y is a carboxylate group and R^4 is selected from the group consisting of alkylene and hydroxyalkylene groups containing from 2 to about 5 carbon atoms when Y is a sulfonate group, and wherein the hydroxy group in said hydroxyalkylene groups is on a secondary carbon atom; C. a polyethoxylated nonionic surfactant selected from the group consisting of: (1) polyethoxylated alkyl alcohols, said alkyl alcohols containing an alkyl group containing from about 8 to about 16 carbon atoms and said polyethoxylated alkyl alcohols containing from about 10 to about 45 ethoxy moieties per molecule, (2) polyethoxylated alkylphenols wherein the alkyl group contains from about 6 to about 15 carbon atoms and wherein the polyethoxylated alkylphenol contains from about 10 to about 45 ethoxy moieties per molecule, (3) polyethoxylated mono fatty acid esters of sorbitol wherein said fatty acids contain from about 8 to about 18 carbon atoms and said polyethoxylated mono fatty acid ester of sorbitol contains from about 10 to about 45 ethoxy moieties per molecule, (4) polyethoxylated polypropylene glycol, said polypropylene glycol having a molecular weight of from about 1000 to about 15,000 and said polyethoxylated polypropylene glycol containing from about 15 to about 300 ethoxy moieties per molecule, and (5) polyethoxylated fatty acids wherein said fatty acid contains from about 8 to about 16 carbon atoms and said polyethoxylated fatty acid contains from about 10 to about 45 ethoxy moieties per molecule, the molecular ratio of (A) to (B) being from about 1:1 to about 4:1; the weight ratio of (A) + (B) to (C) being from about 2:1 to about 1:2; and the pH of the composition being from about 6.0 to about 8.0.

9. The composition of claim **1** wherein the zwitterionic surfactant has the formula

$$R^{10}N^{(+)}(R^{11})_2CH_2CHX\ CH_2SO_3^{(-)}$$

wherein R^{10} contains from about 10 to about 16 carbon atoms, wherein each R^{11} is selected from the group consisting of methyl, ethyl, and 2-hydroxyethyl groups, and wherein X is selected from the group consisting of hydrogen and hydroxyl groups.

3,928,252

THICKENED FOOD

Lloyd E. Rigler, Los Angeles; Ghazi H. Taki, North Hollywood, and Nicholas G. Spirtos, Tarzana, all of Calif., assignors to Adolph's Ltd., Burbank, Calif.

Division of Ser. No. 206,912, Dec. 10, 1971, abandoned. This application July 9, 1973, Ser. No. 377,452
Int. Cl.² A23L *1/04*
U.S. Cl. 426—573 **17 Claims**

1. A thickened food preparation produced by the addition of an initially dry thickening agent to a liquid food preparation, said initially dry thickening agent comprising the following ingredients:

a. about 50 to 75% sodium carboxymethylcellulose;
b. about 15 to 25% of a halogen donating compound;
c. about 10 to 15% of a bicarbonate selected from the group consisting of sodium and potassium bicarbonate; and
d. about 3 to 10% of an organic acid.

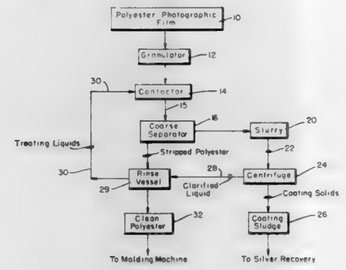
wherein said ingredients are added substantially at the same time to said liquid preparation.

3,928,253

PROCESS FOR RECOVERY OF CLEAN POLYESTER MATERIALS

J. Scott Thornton, Chagrin Falls, and Donald E. Glowe, Kent, both of Ohio, assignors to Horizons Incorporated, Cleveland, Ohio

Filed May 10, 1972, Ser. No. 252,327
Int. Cl.² G03C *11/24*; B08B *3/08*
U.S. Cl. 260—2.3 **1 Claim**



1. A process for the separate recovery of clean polyester and contaminants associated therewith from polyester photographic film scrap consisting of a polyester base, a subcoating on said base said subcoating consisting essentially of copolymers of vinyl chloride or vinylidene chloride with an acid selected from the group consisting of itaconic, acrylic and methacrylic and a silver containing gelatine coating on said subcoating which comprises:

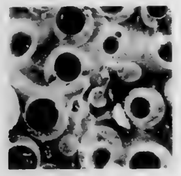
1. contacting said polyester photographic film scrap with an aqueous solution of an alkaline organic liquid reagent which will detach the contaminants from the polyester film base material; said aqueous solution consisting essentially of monoethanolamine and 2% to 15% by weight of water and having a temperature between 100°C and 170°c, for a time sufficient to remove both the coating and the subcoating from said base;
2. physically separating the polyester material from the solution and contaminants; and
3. recovering the resulting clean polyester material.

3,928,254

UNIFORMLY PIGMENTED UNSATURATED POLYESTER RESIN MOLDED ARTICLES

Yuzi Takayama, Kamakura; Yutaka Ichimura, Tokyo; Takanobu Aoyagi, and Takahiro Kishino, both of Yokohama, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1973, Ser. No. 385,346
Claims priority, application Japan, Aug. 4, 1972, 47-77712
Int. Cl.² C08J *9/00*; C08L *67/00*
U.S. Cl. 260—2.5 B **10 Claims**



X200

1. A filler- and fiber-reinforced, uniformly pigmented, unsaturated polyester resin molded article having low profile, which comprises a structure in which unconnected hollow balls having a diameter of 5 to 300μ with a wall of a styrene polymer containing 0.1 to 6% by weight of carboxyl group, the wall having a thickness of 1 to 50μ, are dispersed in a cured α,β-ethylenically unsaturated polyester-styrene matrix; the amount of said styrene polymer being 5 to 30% by weight based on the weight of the total resin components and the unsaturated polyester-styrene copolymer consisting of 20 to 80% by weight of unsaturated polyester and 80 to 20% by weight of styrene; said styrene polymer having a refractive index less than 0.05 different from that of the copolymer, the total volume of voids of the hollow balls being 10 to 25% by volume based on the volume of the copolymer.

3,928,255

CHEMICALLY JOINED, PHASE SEPARATED SELF-CURED HYDROPHILIC THERMOPLASTIC GRAFT COPOLYMERS AND THEIR PREPARATION

Ralph Milkovich, Naperville, and Mutong T. Chiang, Palos Heights, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Continuation-in-part of Ser. Nos. 117,733, Feb. 22, 1971, abandoned, and Ser. No. 244,205, April 14, 1972, Pat. No. 3,832,423, and Ser. No. 282,099, Aug. 21, 1972, Pat. No. 3,786,116. This application Jan. 11, 1974, Ser. No. 432,788
Int. Cl.² C08L *31/02*
U.S. Cl. 260—2.5 R **18 Claims**

1. A hydrogel comprising a chemically joined, phase separated self-cured hydrophilic thermoplastic graft copolymer in the form of a hydrogel containing from about 10 to about 95% by weight of an aqueous liquid based on the weight of said graft copolymer, wherein said graft copolymer is composed of:

1. at least one copolymerizable normally hydrophobic macromolecular monomer having a substantially uniform molecular weight distribution, and
2. at least one hydrophilic (water-soluble) copolymerizable comonomer or compound rendered hydrophilic forming the polymeric backbone of said copolymer, said copolymerizable normally hydrophobic macromolecular monomer forming linear polymeric sidechains of said graft copolymer, wherein:

a. the polymeric backbones of the graft copolymer are comprised of polymerized units of said copolymerizable comonomers, said copolymerizable comonomers being at least one ethylenically unsaturated monomer of a hydrophilic or water-soluble compound and mixtures thereof or a compound which can be rendered hydrophilic or water soluble;
b. the linear polymeric sidechains of the graft copolymer consist essentially of a polymerized hydrophobic macromolecular monomer, said hydrophobic macromolecular monomer comprising a linear polymer or copolymer having a molecular weight of at least about 2,000 and having a substantially uniform molecular weight distribution, such that its ratio of Mw/Mn is not substantially above about 1.1, said macromolecular monomer being further characterized as having no more than one copolymerizable moiety per linear polymer or copolymer chain, said copolymerization occurring between the copolymerizable end group of said hydrophobic macromolecular monomer and said copolymerizable hydrophilic comonomer; and
c. the linear polymeric sidechains of the graft copolymer which are copolymerized into the copolymeric backbone are separated by at least about 20 uninterrupted recurring monomeric units of said hydrophilic polymeric backbone, the distribution of the sidechains along the backbone and the copolymerization being controlled by the reactivity ratios of the copolymerizable end group on said hydrophobic macromolecular monomer and said copolymerizable hydrophilic comonomer.

3,928,256
PROCESS FOR THE PREPARATION OF CARBODIIMIDE-ISOCYANURATE FOAMS

Moses Cenker, Trenton, and Thirumurti L. Narayan, Riverview, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Feb. 25, 1974, Ser. No. 445,054
Int. Cl.² C08G *18/20, 18/14, 18/02, 18/06*
U.S. Cl. 260—2.5 BF **10 Claims**

1. A process for the preparation of a cellular foam characterized by carbodiimide and isocyanurate linkages which comprises condensing an organic polyisocyanate in the presence of a catalytically sufficient amount of a catalyst system consisting essentially of a tertiary amine trimerization catalyst selected from the group consisting of 1,3,5-tris(N,N-dialkylaminoalkyl)-s-hexahydrotriazines and alkylene oxide and water adducts thereof and a β-hydroxyalkyl N-substituted tertiary amine having a molecular weight of from 89 to 304 and containing from 1 to 3 tertiary amino groups wherein each nitrogen atom is substituted by at least one β-hydroxyalkyl group wherein the alkyl group contains from 1 to 4 carbon atoms.

3,928,257
REDUCTION OF FRIABILITY IN RIGID POLYURETHANE FOAM

Stephen Fuzesi, and Allan H. Syrop, both of Hamden, Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Sept. 23, 1974, Ser. No. 508,589
Int. Cl.² C08G *18/14, 18/32, 18/50*
U.S. Cl. 260—2.5 AS **15 Claims**

1. In a process of preparing a rigid polyurethane foam from a reaction mixture comprised of a polyether polyol reactant, an organic polyisocyanate reactant, a reaction catalyst and a foaming agent, said polyether polyol reactant having a hydroxyl number of about 150–800 and being the product of condensing 4,4,4-trichloro-1,2-epoxybutane with a mixture selected from the group consisting of a mixture of dextrose and water, a mixture of dextrose and an aliphatic diol or triol, and a mixture of dextrose, water and an aliphatic diol or triol, the improvement of including in said reaction mixture a second polyether polyol having a hydroxyl number of about 200–500 which is an adduct of ethylene oxide and an aliphatic diol, an aliphatic triol or a mixture thereof, said second polyether polyol being employed in a proportion which is effective in reducing the friability of said foam.

3,928,258
PREPARATION OF LOW FRIABILITY RIGID POLYURETHANE FOAM

Roy P. Alexander, Killingworth, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Sept. 23, 1974, Ser. No. 508,544
Int. Cl.² C08G *18/14, 18/48, 18/50*
U.S. Cl. 260—2.5 AS **17 Claims**

1. In a process of preparing a rigid polyurethane foam from a reaction mixture comprised of a polyether polyol reactant, an organic polyisocyanate reactant, a reaction catalyst and a foaming agent, said polyether polyol reactant having a hydroxyl number of about 150–800 and being the product of condensing 4,4,4-trichloro-1,2-epoxybutane with a mixture selected from the group consisting of a mixture of dextrose and water, a mixture of dextrose and an aliphatic diol or triol, and a mixture of dextrose, water an an aliphatic diol or triol, the improvement of including in said reaction mixture a second polyether polyol having 2–3 hydroxy groups and a molecular weight from about 1,000 to about 6,000, said second polyether polyol being employed in a proportion which is effective in reducing the friability of said foam.

3,928,259
HALOGENATED BUTYL RUBBER OF IMPROVED SCORCH CHARACTERISTICS

George Feniak, Wyoming, Canada, assignor to Polysar Limited, Sarnia, Canada

Division of Ser. No. 408,542, Oct. 23, 1973, Pat. No. 3,880,821. This application Nov. 22, 1974, Ser. No. 526,252
Claims priority, application Canada, Nov. 24, 1972, 157388
Int. Cl.² C08D *9/04;* **C08C** *11/34*
U.S. Cl. 260—5 **10 Claims**

1. A vulcanizable composition having improved scorch characteristics which comprise (a) a polymeric component being a halogenated butyl rubber and at least one of natural rubber and synthetic unsaturated rubbers selected from polyisoprene, polybutadiene, styrene-butadiene polymers and ethylene-propylene-diene polymers said halogenated butyl rubber forms at least 20 weight percent of said polymeric component and (b) a scorch retarding agent selected from at least one of the free acid and the aluminum, barium, calcium and magnesium salts of an oligomer of linoleic acid, said scorch retarding agent being present in an amount from about 0.5 parts to about 5 parts by weight per 100 parts by weight of said polymeric component.

3,928,260
OPAQUE WHITE COATING COMPOSITION COMPRISING ESSENTIALLY CELLULOSE ESTER/CROSS-LINKING AGENT/CATALYST/SOLVENT AND ORGANIC LIQUID

Ehrlich M. Eiland, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 410,684, Oct. 29, 1973, Pat. No. 3,869,305, which is a continuation-in-part of Ser. No. 170,647, Jan. 29, 1974, Pat. No. 3,788,886, which is a continuation of Ser. No. 781,977, Dec. 6, 1968, abandoned. This application Nov. 25, 1974, Ser. No. 526,640The portion of the term of this patent subsequent to Jan. 29, 1991, has been disclaimed.
Int. Cl.² C08L *1/10, 1/14*
U.S. Cl. 260—14 **7 Claims**

1. A coating composition capable of forming an opaque color when applied to a substrate and heat-cured thereon at a temperature as high as 750°F, said coating composition having as essential ingredients (a) a cross-linkable cellulose ester resin having an hydroxyl content of at least 4%; (b) a cross-linking agent compatible with said resin wherein said cross-linking agent is a condensation polymer of a compound selected from the group consisting of (1) a urea compound, (2) thiourea, (3) cyanamide, (4) guanidine, and (5) melamine reacted with a compound selected from the group consisting of (I) a lower aliphatic aldehyde and (II) a lower aliphatic aldehyde and alcohol; (c) a solvent for said resin and said cross-linking agent; (d) an acid catalyst adapted for cross-linking said resin with said cross-linking agent; and (e) an organic liquid adapted for mixing with the balance of said composition to form globules therein, said organic liquid comprising at least 85% by volume paraffinic hydrocarbons and having a boiling point of at least about 300°F.

3,928,261
PVA-PVC FIBERS AND PROCESS FOR THEIR PRODUCTION

Tadao Ashikaga, Akio Ohmori, Masasi Ando, Kurashiki, Japan, assignors to Kuraray Co. Ltd., Okayama Prefecture, Japan.

Continuation-in-part of Ser. No. 340,040, March 12, 1973, abandoned. This application July 8, 1974, Ser. No. 486,341.
Claims priority, application Japan, March 16, 1972, Ser. No. 47/26737.
Int. Cl.² C08L *27/06*
U.S. Cl. 260/45.75 **4 Claims**

1. Synthetic fibers having superior fire retardancy, light resistance and tenacity, said fibers consisting of a polyvinyl alcohol having an average degree of polymerization of 500 to 3000 and a degree of saponification of at least 99.5 mol percent, polyvinyl chloride and boric acid, the weight ratio of polyvinyl alcohol to polyvinyl chloride being 90:10 to 55:45, the content of boric acid being 0.02 to 0.5 percent by weight based on the weight of the polyvinyl alcohol, said fibers being molecularly oriented in the direction of the fiber axis and having a hot water resistance of at least 110° C. even when not acetalized.

3,928,262
PRESSURE-SENSITIVE ADHESIVE COMPOSITIONS CONTAINING HYDROXY-ETHYL CELLULOSE

Tomoyoshi Ono, Hino, and Yoshihiko Matsuguma, Hachioji, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Nov. 26, 1973, Ser. No. 419,068
Claims priority, application Japan, Dec. 21, 1972, 47-127626
Int. Cl.² B32B *23/08;* **C08L** *1/26*
U.S. Cl. 260—17 R **3 Claims**

1. An adhesive composition comprising, of the total composition of 100 parts by weight, 90 – 99 parts by weight of a tacky copolymer obtained by copolymerizing

a. 75 – 95 mol percent of at least one alkyl acrylate, the alkyl group of which contains 1 to 14 carbon atoms and the average number of which carbon atoms is 4 to 12, or a mixture of at least one class of said alkyl acrylate with methyl methacrylate and/or vinyl acetate in a molar ratio of 5 or more to 1; with

b. 5 – 25 mol percent of acrylic acid and/or methacrylic acid, and 10 – 1 parts by weight of a hydroxyethyl cellulose.

3,928,263
PROCESS FOR PRODUCING POLYOLEFIN POWDERS WITH GRINDING AIDS AND POWDER COMPOSITION OF GRINDING AIDS AND POLYOLEFINS

Peter M. Grant, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,514
Int. Cl.² B02C *19/18;* **C08L** *1/28*
U.S. Cl. 260—17 R **19 Claims**

1. A process for preparing polyolefin powders which comprises introducing a grinding aid into a crystalline polyolefin by melt compounding the grinding aid together with the crystalline polyolefin, extruding into pelleted form and grinding the pellets to form said polyolefin powders, the introduced grinding aid being a dissimilar and incompatible polymeric material having a softening point below 450°F. and a greater grindability than said polyolefin.

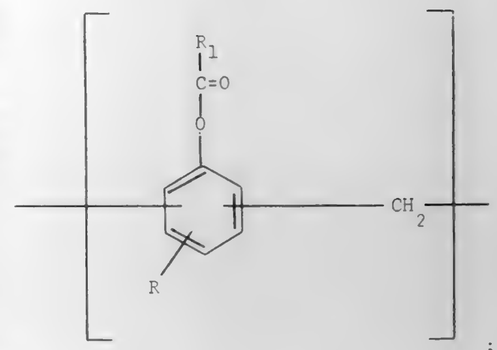
3,928,264
POLYMERIC ULTRAVIOLET LIGHT STABILIZERS PREPARED FROM PHENOL-FORMALDEHYDE CONDENSATES

Raymond H. Young, Jr., Macon, Ga.; Albert H. Markhart, Wilbraham, and Joseph G. Martins, Ludlow, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 225,653, Feb. 11, 1972, Pat. No. 3,817,924, which is a continuation-in-part of Ser. Nos. 849,210, Aug. 11, 1969, Pat. No. 3,650,799, and Ser. No. 606,595, Jan. 3, 1967, abandoned. This application May 17, 1974, Ser. No. 470,788
Int. Cl.² C08L *6/08;* **C08G** *8/28*
U.S. Cl. 260—17.2 **12 Claims**

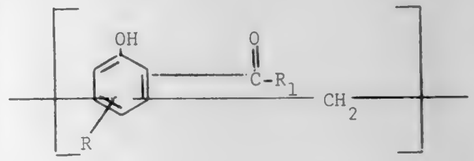
1. A synthetic resin polymer protected with an effective amount of a polymeric light stabilizer which is also a barrier to ultraviolet light, which stabilizer comprises a polymer comprising:

A. from 1 to 99 mol % of the following recurring unit:

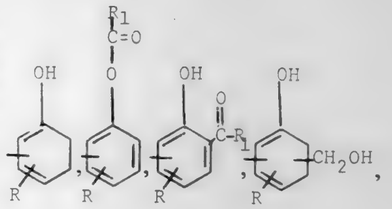


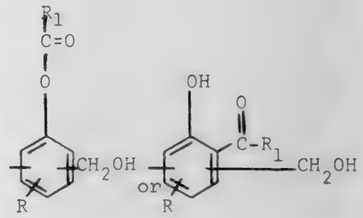
and

B. from 99 to 1 mol % of the following recurring unit:



wherein the total number of recurring units is from 1 to 25; wherein the end groups are:





wherein R is selected from the group consisting of hydrogen, halogen, a radical of from 1 to 18 carbon atoms selected from the group consisting of alkyl, alkenyl, haloalkyl, and alkoxy, a radical of from 5 to 18 carbon atoms selected from the group consisting of cycloalkyl, cycloalkenyl, alkylcycloalkyl, halocycloalkyl and cycloalkyloxy, and a radical of from 6 to 18 carbon atoms selected from the group consisting of aryl, alkaryl, alkenylaryl, aralkyl; haloaryl and aryloxy; wherein R_1 is a monovalent radical containing at least one ring of six carbon atoms, said ring characterized by benzenoid unsaturation and attached directly to the carbonyl group; and wherein at least 12.5 mole % of the positions ortho to the



groups are unsubstituted.

3,928,265

LACQUER SYSTEMS WHICH ARE HARMLESS TO THE ENVIRONMENT

Rolf Dhein; Bernd-Ulrich Kaiser; Hans Rudolph; Rolf Küchenmeister, and Clemens Niehaus, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Continuation of Ser. No. 410,687, Oct. 29, 1973. Filed Aug. 7, 1974, Ser. No. 495,407

Claims priority, application Germany, Oct. 31, 1972, 2253300

Int. Cl.² C08L *91/00*

U.S. Cl. 260—21 **4 Claims**

1. A composition comprising (A) a melamine formaldehyde condensation resin, (B) an alkyd resin having a molecular weight between 1500 and 5000, an acid number between 5 and 40 and a hydroxyl number between 40 and 140 and (C) a hydroxyl compound selected from the group consisting of ethylene glycol, propylene glycol, diethylene glycol, glycercl, bis-glycol adipate and castor oil, component (B) being present in an amount of 80 to 95% by weight, based on the combined weight of (B) and (C), component (C) being present in an amount of 5 to 20%, based on the combined weight of (B) and (C), and component (A) being present in an amount of 20 to 30 parts by weight for every 100 parts by weight of said composition.

3,928,266

COPOLYMER BINDER RESINS FOR TRAFFIC PAINTS

John M. Scohy, Vienna, W. Va.; George E. Cremeans, Groveport, and Manfred Luttinger, Columbus, both of Ohio, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed May 29, 1974, Ser. No. 474,298

Int. Cl.² C08F *218/04*, *220/06*; C09D *3/66*

U.S. Cl. 260—22 CB **3 Claims**

1. A traffic paint formulation comprising an alkyd resin, a chlorinated paraffin plasticizer, a second binder resin, pigments, fillers and a solvent mixture, wherein said second binder resin is an alkyd compatible and aliphatic hydrocarbon soluble copolymer comprising from about 51% to about 90% by weight of an alkylstyrene selected from the group vinyltoluene, ethylstyrene, propylstyrene and butylstyrene and correspondingly from about 49% to about 10% by weight of an acrylic acid ester of a C_2–C_{10} alcohol.

3,928,267

LIQUID STABILIZER SYSTEM FOR POLYVINYL CHLORIDE

Philip H. Rhodes, and Robert L. Ahr, both of Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

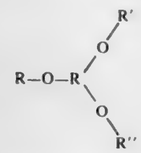
Division of Ser. No. 226,273, Feb. 14, 1972, Pat. No. 3,756,200. This application Mar. 5, 1973, Ser. No. 338,163

Int. Cl.² C08L *91/00*

U.S. Cl. 260—23 XA **5 Claims**

1. A method for stabilizing vinyl polymer resin to impart antifogging and antistatic properties and improve heat stability which comprises:

1. admixing at a temperature of 100°C to 200°C until solution has been effected (a) 5 to 50 parts by weight aliphatic or cycloaliphatic epoxy compound containing from 10 to 180 carbon atoms, (b) 1 to 35 parts polyvalent metal salt of a monocarboxylic acid containing from 6 to 26 carbon atoms and (c) 10 to 80 parts organophosphorous compound of the formula



wherein R is a hydrocarbon radical containing from 1 to 24 carbon atoms and selected from the group consisting of aryl, alkyl, alkaryl, aralkyl, and cycloaliphatic and R′ and R″ and hydrogen or R;

2. adding 35 to 85 parts of a partial ester of a polyglycerol having not more than 75% of the polyglycerol hydroxyl groups reacted and derived from a C_{8-24} monocarboxylic acid and a polyglycerol containing 2 to 30 condensed glycerol units; and

3. incorporating 0.5 to 25 parts by weight of the resulting liquid stabilizer into 100 parts polyvinyl chloride homopolymer or copolymer.

3,928,268

METHOD OF TREATING WASTE PLASTICS

Tsutomu Sato, Tokyo; Hiroshi Deura, Yachiyo, and Kenkichi Oba, Funabashi, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1974, Ser. No. 447,857

Claims priority, application Japan, Mar. 19, 1973, 48-032058

Int. Cl.² C08K *5/49*

U.S. Cl. 260—23 H **9 Claims**

1. A method of treating molded articles made of thermoplastic synthetic resin, wherein said resin is selected from the group consisting of polyolefin resins, polyvinyl chloride and polystyrene, to induce photodecomposition of said resin on exposure to ultraviolet radiation or sunlight, which comprises applying to the surface of said article an organic solvent solution of a composition consisting essentially of

A. a halogenide of a metal selected from the group consisting of manganese, iron, cobalt, nickel and copper, and

B. a triester of phosphorous acid of the formula

$$(RO)_3P$$

wherein each R is a member of the group consisting of alkyl, alkenyl, phenyl or alkylphenyl in the range of 1 to 20 carbon atoms;

the weight ratio of A:B being in the range of 1:1 to 1:10, said organic solvent solution containing from 1 to 30 parts by weight of said composition per 100 parts by weight of solvent.

3,928,269

ACID DYEABLE OLEFIN POLYMER CONTAINING QUATERNIZED AMINE GROUPS

Peter A. Taylor, and Tsung-Yuan Su, both of Greenville, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 9, 1974, Ser. No. 504,071

Int. Cl.² C08L *23/08*, *23/14*

U.S. Cl. 260—23 AR **21 Claims**

1. An acid dyeable composition produced by treating a polymer composition comprising a polymer of at least one aliphatic mono-1-olefin having 2 to 8 carbon atoms per molecule, and as a dye receptor, a copolymer of ethylene or propylene and an aminoalkyl acrylate with alkyl halide under conditions such that the alkyl halide reacts with dye sites in said dye receptor so as to obtain a composition susceptible to dyeing with acid dyes at a relatively high pH.

3,928,270

THERMOSETTING COMPOSITIONS

Aubrey South, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 8, 1973, Ser. No. 330,677

Int. Cl.² C08L *91/00*

U.S. Cl. 260—23.7 M **21 Claims**

1. A thermosetting molding composition comprising an at least substantially uniform mixture of at least one polymer of a conjugated diene having from 4 to 10 carbon atoms per molecule, said polymer having at least about 50 percent of the unsaturation thereof in the form of pendant vinyl groups; a particulate metal silicate filler; a silane coupling agent; an organic peroxide curing agent; and an organic acid or an anhydride thereof.

3,928,271

PROCESS FOR PREPARATION OF ANIONIC POLYURETHANE EMULSIONS

Kazuo Matsuda; Hidemasa Ohmura, and Hirakazu Aritaki, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Sept. 13, 1974, Ser. No. 505,680

Claims priority, application Japan, Sept. 18, 1973, 48-105302

Int. Cl.² C08G *18/32*; C08J *3/06*

U.S. Cl. 260—29.2 TN **9 Claims**

1. A process for preparing an anionic polyurethane emulsion, which comprises,

1. reacting, in the liquid phase and in a ketone solvent, at a temperature of from −20° to +70°C, (A) isocyanate-terminated urethane prepolymer prepared by reacting organic polyol having a molecular weight in the range of from 200 to 10000 with an excess of organic polyisocyanate, with (B) an excess of polyalkylene polyamine having at least two primary or secondary amino groups and also having a functional group of the formula $—CH_2—CH(OH)—CH_2X$, wherein X is chloro or bromo, the total mole number of primary and secondary amino groups in the polyalkylene polyamine being greater than the total mole number of isocyanate groups in the isocyanate-terminated urethane prepolymer, the reaction being carried out until the presence of —NCO groups cannot be detected, whereby to form polyurethane-urea-polyamine,

2. reacting, in the liquid phase, at a temperature of from 5° to 70°C, for from 0.5 to 2 hours, the reaction product of step 1 with cyclic dicarboxylic acid anhydride in an amount substantially equimolar to the amino groups of the polyurethane-urea-polyamine,

3. adding to the reaction product of step 2 an aqueous solution of a basic substance to adjust the pH of the product of step 2 to be in the range of about 6 to about 9, and

4. treating the product of step 3 to remove the organic solvent therefrom and thereby obtaining an aqueous anionic polyurethane emulsion as a final product.

3,928,272

PROCESS OF MAKING UREA-FORMALDEHYDE SOLID MICROSPHERES

Jack J. Brancato, Lincroft, and Daniel F. Herman, Princeton, both of N.J., assignors to N L Industries, Inc., New York, N.Y.

Filed Mar. 25, 1974, Ser. No. 454,594

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.4 R **4 Claims**

1. Preparation of spheroidal solid shaped microspheres of urea-formaldehyde, said microspheres having a surface area of from 10 to 90 m^2/gm. and having a diameter range from 0.2 μ to 4.0 μ, which comprises admixing with high shear at a temperature from 15°C. to 40°C. an aqueous solution of urea-formaldehyde prepolymer and a non-solvent containing an emulsifying agent to form water droplets in a water-in-oil emulsion, said emulsifying agent selected from the group consisting of the polymer of ethyl acrylate grafted onto polyethylene oxide and the sorbitol ester of long chain fatty acids having an HLB between 4.3 and 8.6, said urea-formaldehyde prepolymer dissolved in the water droplets, adding an acid catalyst to the emulsion to adjust the pH to fall within the range of from 2 to 5 during which time the prepolymer dissolved in the water droplets polymerizes and forms spherical shaped particles of urea-formaldehyde, aging the suspension for at least one hour, diluting the suspension with water, adding a dispersing agent, said dispersing agent selected from the group consisting of pigment dispersing agents, potassium tripolyphosphate, sodium hexametaphosphate and sodium lauryl sulfate, and then the neutralizing the diluted dispersed slurry to pH of 6.5 – 7.5, separating the spherical particles from the solvent and non-solvent and drying the particles.

3,928,273

METHOD OF MAKING ORGANIC SOLVENT FREE AQUEOUS COATING COMPOSITIONS OF ACRYLIC POLYMER LATEX, WATER SOLUBLE EMULSION-POLYMERIZED ACRYLIC POLYMER, AND AMINOPLAST

Yun-Feng Chang, Plymouth; Mo-Fung Cheung, Warren, and Ray A. Dickie, Birmingham, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 3, 1974, Ser. No. 476,116

Int. Cl.² C08L *29/02*, *33/02*, *61/24*, *61/28*

U.S. Cl. 260—29.4 UA **1 Claim**

1. In a method for producing an aqueous dispersion of paint in which a carboxy-functional polymer is at least partially neutralized with a water-soluble amine and dispersed with an amino resin crosslinking agent selected from melamine-formaldehyde resins and urea-formaldehyde resins in an aqueous solution of water and water-soluble amine, the improvement wherein the aqueous dispersion is produced essentially free of organic solvents by intimately dispersing with said water, said amino resin crosslinking agent and said water soluble amine:

I. an aqueous emulsion consisting essentially of water, water-soluble amine, and about 50 to about 95 parts by weight of an emulsion polymer having functionality selected from carboxy functionality and hydroxy functionality and is a copolymer of acrylic monomers that:

A. is essentially insoluble in said aqueous solution;

B. has average molecular weight (M_n) in the range of about 3,000 to about 20,000, and

C. has Tg in the range of −15°C. to 50°C., and

II. about 5 to about 50 parts by weight of a solution polymer which is a carboxy-functional copolymer of acrylic monomers that:

A. is at least partially neutralized with water-soluble amine,

B. is soluble in said aqueous solution.

C. has average molecular weight (M_n) in the range of about 3,000 to about 20,000,

D. has Tg in the range of −15°C. to 50°C., and

E. has been prepared by emulsion polymerization in water of about 5 to about 25 mole percent of an alpha-beta olefinically unsaturated monocarboxylic acid selected from acrylic and methacrylic acid and 75 to 95 mole percent of other monoethylenically unsaturated monomers consisting essentially of monomers selected from the group consisting of monoacrylates, monomethacrylates and monovinyl hydrocarbons at a temperature between about 45°C. and the reflux temperature of the reaction mixture and subsequently at least partially neutralized with water-soluble amine in the water in which it is formed,

said amino resin crosslinking agent being present in an amount in the range of about 15 to about 35 weight percent of the sum of the weights of said solution polymer and said emulsion polymer.

3,928,274

PROCESS FOR PREPARING NITRILES

Jiban Kumar Chakrabarti, Frimley, England, assignor to Lilly Industries, Ltd., London, England

Filed Aug. 29, 1973, Ser. No. 392,845
Int. Cl.² C07D *213/57*; **C07C** *120/00*
U.S. Cl. 260—294.9 **3 Claims**

1. Process for preparing nitriles which comprises the essential step of reacting the corresponding aldoxime with cyanuric chloride in a mutual solvent in the presence of pyridine at a temperature in the range 20°–30°C. wherein said aldoxime is a C_2–C_6 alkanal oxime, a pyridyl aldoxime, a pyrrolyl aldoxime, benzaldoxime or a substituted benzaldoxime wherein said substitutents can be C_1–C_4 alkyl, C_1–C_4 alkoxy or nitro.

3,928,275

VINYL CHLORIDE RESIN COMPOSITION CONTAINING A LUBRICANT

Osamu Hiyama, and Kazuo Ito, both of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed July 23, 1974, Ser. No. 491,039
Claims priority, application Japan, July 28, 1973, 48-83313
Int. Cl.² C08K *5/09, 5/11*; **B29F** *3/00*; **C08L** *27/06*
U.S. Cl. 260—31.8 B **6 Claims**

1. A vinyl chloride resin composition having incorporated therein, as lubricant, from 0.05 to 2.0 parts by weight, per 100 parts of a vinyl chloride resin, of a metal salt of a dialkyl citrate in which the alkyl groups contain a total of 26 to 44 carbon atoms and each of the alkyl groups contains from 12 to 22 carbon atoms, and the metal is selected from the group consisting of calcium, magnesium and zinc, said vinyl chloride resin being selected from the group consisting of polyvinyl chloride, copolymers containing at least 50 weight percent of vinyl chloride units and the balance is units of one or more monomers copolymerizable with vinyl chloride, and polymer blends containing at least 80 weight percent of polyvinyl chloride and the balance being another polymer compatible with polyvinyl chloride.

3,928,276

SALTS OF AMINE-ALKYLENE OXIDE ADDUCTS FOR PREVENTING SEDIMENTATION OF PIGMENT SUSPENSIONS

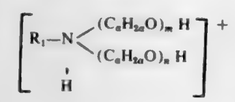
Heinz Linden, Dusseldorf-Holthausen; Jurgen Gartner, Hitdorf; Wilhelm Offermann, Dusseldorf, and Gunther Demmering, Solingen-Grafrath, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

Filed Jan. 29, 1973, Ser. No. 327,506
Claims priority, application Germany, Feb. 12, 1972, 2206691
Int. Cl.² C08K *9/04*
U.S. Cl. 260—34.2 **6 Claims**

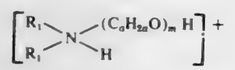
1. In the process for preventing the sedimentation of pigment suspensions in varnishes with an organic solvent, comprising adding a sedimentation preventing agent to a varnish with an organic solvent containing a pigment, the improvement which consists of utilizing a salt from tertiary and/or quaternary amine-alkylene oxide adducts and organic acids of the formula

$$K_x \cdot Y$$

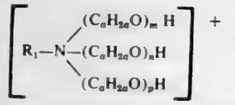
wherein Y is an anion of an acid selected from the group consisting of fatty acids having 1 to 37 carbon atoms and dimeric fatty acids having 12 to 36 carbon atoms; x is an integer from 1 to 2; and K is a cation of the formula selected from the group consisting of

(A) 

wherein R_1 is selected from the group consisting of alkyl having 2 to 24 carbon atoms and alkenyl having 3 to 24 carbon atoms, a is an integer from 2 to 4, m and n are integers whose sum is from 2 to 40,

(B) 

wherein R_1 and a each have the above-defined meaning, and m is an integer from 2 to 40, and

(C) 

wherein R_1 and a each have the above-defined meaning, and m, n and p are integers whose sum is from 3 to 100, as said sedimentation preventing agent.

3,928,277

MOULDING COMPOSITIONS

George L. Wicker, 1 Lowhouse Close, Milnrow, Lancashire, England

Continuation-in-part of Ser. No. 260,153, June 6, 1972, abandoned. This application Aug. 2, 1974, Ser. No. 494,252
Int. Cl.² C08K *3/22, 5/03, 7/12*
U.S. Cl. 260—37 N **3 Claims**

1. A fire resistant thermoplastic composition comprising

a. from 40 to 90 percent by weight of a thermoplastic polymer selected from the group consisting of polypropylene, copolymers of propylene, polyethylene, polystyrene, styrene/acrylonitrile copolymers, polyamides and mixtures thereof; and

b. a fire-retardant additive consisting essentially of

i. from 5 to 40 percent by weight of chrysotile asbestos fibres; and

ii. from 2.5 to 20 percent by weight of an additive mixture of antimony trioxide and at least one halogenated hydrocarbon selected from the group consisting of decabromodiphenyl and the double Diels-Alder condensation product of hexachlorocyclopentadiene and cyclooctadiene.

3,928,278

COUPLING AGENTS FOR CHRYSOTILE ASBESTOS AND THERMOPLASTIC POLYMERS

Raymond George Azrak, Whitehouse Station; Fred Harpoth Ancker, Warren Township, and Michael Dean Bertolucci, Martinsville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 29, 1973, Ser. No. 420,232
Int. Cl.² C03C *25/02*; **C08K** *3/34*
U.S. Cl. 260—40 R **17 Claims**

1. A composition comprising a thermoplastic polymer reinforced with chrysotile asbestos filler, which composition contains sufficient first phenolic composition at the interface of said filler and said thermoplastic polymer to increase the tensile strength of an article molded from said reinforced polymer, wherein said first phenolic composition is obtained by heating a second phenolic composition which is a member selected from the group consisting of:

a. a first phenol having at least one orthohydroxymethyl group;

b. a resole derived from a phenol having an oleophilic substituent in the para position;

c. a first novolak having the methylene bridges between phenolic nuclei at least predominantly bonded to the positions ortho to the phenolic hydroxyls;

d. a second novolak derived from a phenol having an oleophilic substituent in the para position, said second novolak being employed in combination with a reactive material capable of reacting with said second novolak at elevated temperature to effect linear advancement thereof;

e. a second phenol having at least one unsubstituted position ortho to the phenolic hydroxyl, or having at least one reactive substituent group ortho to the phenolic hydroxyl, and having an oleophilic substituent in the para position, said second phenol being employed in combination with a reactive material capable of reacting with said second phenol at elevated temperature to effect linear advancement thereof.

3,928,279

GLASS FIBER-CONTAINING AROMATIC POLYESTER COMPOSITION

Hiroo Inata; Shoji Kawase, and Takeo Shima, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 22, 1974, Ser. No. 454,006
Claims priority, application Japan, Mar. 26, 1973, 48-34879
Int. Cl.² C08K *3/40, 5/38*
U.S. Cl. 260—40 R **9 Claims**

1. An aromatic polyester composition containing glass fibers, comprising 100 parts by weight of an aromatic polyester resin selected from the group consisting of poly(alkylene terephthalate) resins containing at least 80% by weight of alkylene terephthalate units and poly(alkylene naphthalate) resins containing at least 80% by weight of alkylene naphthalate units, 3 to 70 parts by weight of glass fibers and a stabilizer to protect against heat deterioration consisting essentially of 0.01 to 5 parts by weight, per 100 parts by weight of said aromatic polyester resin, of a thiodipropionic acid diester.

3,928,280

PREPARATION OF DENTAL RESTORATIVE FILLING MATERIALS

Wallace A. Erickson, Chicago, and Byoung Suh, Oak Park, both of Ill., assignors to Wallace A. Erickson & Company, Chicago, Ill.

Continuation-in-part of Ser. No. 231,736, March 3, 1972, abandoned. This application July 5, 1974, Ser. No. 485,979
Int. Cl.² C08F *29/50*; **B08J** *11/54*
U.S. Cl. 260—42.28 **8 Claims**

1. A unitary dental restorative material pack comprising:

a paste-like phase containing a polymerizable component comprising the reaction product of a bisphenol and a glycidyl acrylate or methacrylate;

a sheet-like substrate carrying on its surface a controlled removable layer of a solid organic peroxide catalyst for the polymerization of said polymerizable component;

the pack having means to prevent premature contact between said catalyst and said polymerizable components; said catalyst being available for incorporation into said paste-like phase, in sufficient quantity to catalyze the polymerization of said polymerizable component, on spatulation of said paste-like phase on the surface of said substrate.

3,928,281

BACKING AGENT FOR CARPET

Taku Uchigaki, and Masataka Noro, both of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Sept. 3, 1974, Ser. No. 502,339
Claims priority, application Japan, Sept. 3, 1973, 48-98221
Int. Cl.² C08K *3/34, 3/26*
U.S. Cl. 260—42.39 **6 Claims**

1. A backing agent for adhering a carpet backing to a carpet comprising

1. a mixture of about 90 to 20 percent by weight of atactic polypropylene having a molecular weight of 2,000 to 100,000 and about 10 to 80 percent by weight of a urethane prepolymer having a molecular weight of 1,000 to 10,000, an amine equivalent of about 1,100 to 1,200 and having an isocyanate group at the terminals of the molecule, and

2. about 5 to 60 percent by weight of a non-porous inorganic filler based on the total weight of said mixture and said inorganic filler, said backing agent having a viscosity when applied of 3,000 to 10,000 cps and said urethane prepolymer being an addition polymerization product between at least one diisocyanate compound having an isocyanate group at the terminals of the molecule and at least one diol compound.

3,928,282

BLEND OF HIGH-VINYL POLYBUTADIENE AND HYDROFORMYLATED HIGH-VINYL POLYBUTADIENE

Delmar F. Lohr, Jr., Akron, and Jung W. Kang, Clinton, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sept. 9, 1974, Ser. No. 504,648
Int. Cl.² C08K *9/06* **C08L** *9/00*
U.S. Cl. 260—42.44 **2 Claims**

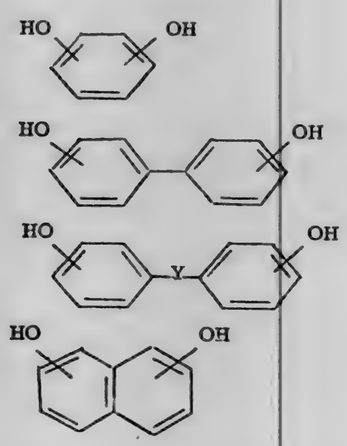
1. A blend of resin with a dilute solution viscosity of 0.05 to 0.7 and composed essentially of (a) 5 to 95 parts by weight of a resin of butadiene homopolymer in which at least 80 per cent of the repeating butadiene units are in the 1,2-configuration and (b) 95 to 5 parts by weight of hydroformylated butadiene homopolymer obtained from homopolymer in which at least 80 per cent of the repeating units are in the 1,2-configuration; the carbonyl content of the hydroformylated homopolymer varying from 0.1 to 10.0 weight per cent and its hydroxyl content varying from 0.1 to 10.1 meq per gram, and the molecular weight of each component of the blend being 1,000 to 200,000, together with (c) 100 to 500 parts by weight of silica and (d) 0.5 to 5 parts by weight of an unsaturatedgroup-containing silane silica-to-resin bonding agent, the parts by weight of the silica and bonding agent being based on 100 parts of the combined weights of the homopolymer and hydroformylated homopolymer.

3,928,283
FIREPROOF, THERMOPLASTIC POLYESTER COMPOSITION

Yukito Masai, Otsu; Yasuo Kato, Shiga; Ken Murayama, Iwakuni, and Nobuhiko Fukui, Otsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha (Toyo Spinning Co., Ltd.), Japan

Filed Mar. 9, 1971, Ser. No. 122,367
Claims priority, application Japan, Mar. 9, 1970, 45-19880
Int. Cl.² C08K *5/53*
U.S. Cl. 260—45.7 P **5 Claims**

1. A fireproof, thermoplastic polyester composition having a viscosity and degree of polymerization suitable for melt spinning into filaments, which comprises a polyester and a polyaryl phosphonate incorporated therein in an amount of 0.7 to 4.0 weight % as phosphorus to the polyester, the said polyaryl phosphonate being not less than 6 in the degree of polymerization and containing as its diol component at least one of the aromatic diol compounds of the formulae:



wherein Y is alkylidene or cycloalkylidene having 1 to 6 carbon atoms and the phenyl radicals may bear one or more alkyls.

3,928,284
ORGANOTIN COMPOUNDS STABILIZERS FOR VINYL HALIDE POLYMERS

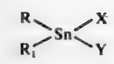
John D. Collins, Albrighton; Harold Coates, Wombourn, and Iftikhar Hussain Siddiqui, Birmingham, all of England, assignors to Albright & Wilson Limited, Oldburg near Birmingham, England

Division of Ser. No. 308,018, Nov. 20, 1972, abandoned. This application Apr. 24, 1974, Ser. No. 463,452
Int. Cl.² C08J *3/20*
U.S. Cl. 260—45.75 S **19 Claims**

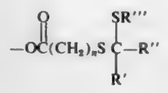
1. A resin composition stabilized against the deteriorative effects of heat, the composition comprising

1. a halogen-containing resin selected from the group consisting of homopolymers of vinyl chloride and vinylidene chloride, chlorinated polyethylene and copolymers of vinyl chloride or vinylidene chloride with ethylenically unsaturated monomers and

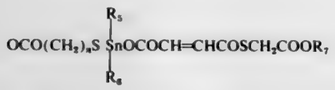
2. an organotin stabilizer of the general formula



where R and R_1 are the same or different and are C_1 to C_{12} alkyl groups, cycloalkyl groups or phenyl groups,
X is



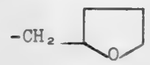
where
R′ is hydrogen, C_1 to C_{20} alkyl, cycloalkyl, phenyl, hydroxyphenyl or methoxyphenyl
R″ is C_1 to C_{20} alkyl, phenyl, hydroxyphenyl or methoxyphenyl wherein R_2 is a short chain alkyl group of 1 to 8 carbon atoms
R‴ is R_3 or $—(CH_2)_nCOOR_3$
where R_3 is an alkyl radical of from 1 to 20 carbon atoms, a cycloalkyl group or a phenyl group and n is an integer from 1 to 4 or
X is



where R_5 and R_6 are selected from the same groups and R and R_1, and R_7 is selected from the same groups as R′ and Y is either the same as X or is different from X and is selected from the same group of radicals as X or is $S(CH_2)_nCOOR_4$ or $OOCCH=CHCOOR_4$ or is $OOCCH=CHCOSCH_2COOR_4$ if X is



where R_4 is an alkyl group of from 1 to 20 carbon atoms, a cycloalkyl, phenyl or



group.

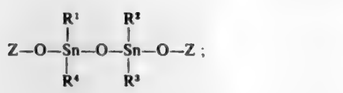
3,928,285
SYNERGISTIC ORGANOTIN BORATE STABILIZER COMPOSITION AND RESINS CONTAINING SAME

Robert George Gough, and Francis Joseph Buescher, both of Cincinnati, Ohio, assignors to Cincinnati Milacron, Inc., Cincinnati, Ohio

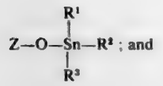
Filed Jan. 16, 1975, Ser. No. 541,495
Int. Cl.² C08G *6/00*
U.S. Cl. 260—45.75 K **21 Claims**

10. A plastic composition having improved resistance to early color formation during processing comprising (1) a vinyl halide homopolymer, vinyl halide copolymer or polymer blend containing a vinyl halide homopolymer or vinyl halide copolymer, (2) an organic thiol compound having a molecular weight per thiol group of from 40 to 400 and a boiling point of at least 180° C at one atmosphere pressure, and (3) an organotin borate which is a member selected from organotin borates having the following general formulae

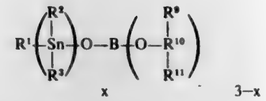
(a)



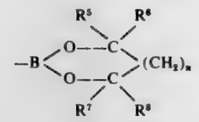
(b)



(c)



where R^1, R^2, R^3, R^4, R^9, R^{10} and R^{11} are the same or different and are an aryl group, aralkyl group, alkaryl group or C_1 to C_8 alkyl group, *x* is 0, 1 or 2 and Z is

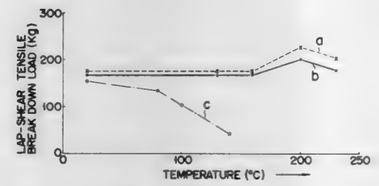


where R^5 and R^7 are hydrogen or C_1 to C_4 alkyl group, R^6 and R^8 are C_1 to C_4 alkyl group and *n* is 0, 1 or 2, said organotin borate and said organic thiol compound being present in a stabilizing effective amount.

3,928,286
HEAT-RESISTANT ADHESIVE COMPOSITION FROM A BIS-MALEIMIDE, AN ALPHA-CYANOACRYLATE AND OPTIONALLY A DIAMINE

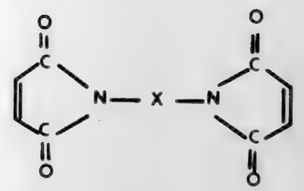
Keiiti Akiyama, Yokosuka; Shyuichi Suzuki, and Yukihiro Mikogami, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 1, 1974, Ser. No. 456,609
Claims priority, application Japan, Apr. 24, 1973, 48-45717; Aug. 6, 1973, 48-87620; Sept. 27, 1973, 48-107993
Int. Cl.² C08G *69/26*
U.S. Cl. 260—47 UA **7 Claims**

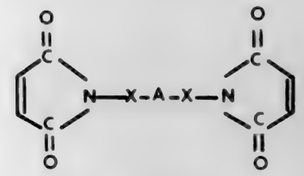


1. A heat-resistant solid adhesive composition consisting essentially of the polymeric reaction product of:

85 to 1 mol% of at least one N,N′-substituted bismaleimide selected from the group consisting of the bismaleimide represented by the formula

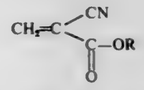


and those represented by the formula



where X is a member selected from the group consisting of alkylene, cycloalkylene and arylene groups, and A is a member selected from the group consisting of oxygen, methylene, carbonyl, sulfonyl, and —CONH—groups; and

15 to 99 mol% of at least one α-cyanoacrylate represented by the formula



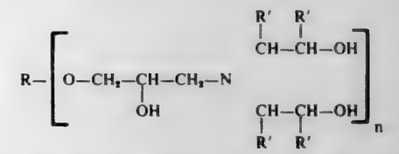
where R is a member selected from the group consisting of C_1 to C_6 alkyl groups and cyclohexyl group.

3,928,287
COMPOSITION CONTAINING UNSATURATED MONOMERS AND POLYMERIZABLE BY IONIZING RADIATION

Karl Jellinek, Letmathe, and Rudi Oellig, Duisburg-Meiderich, both of Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt, Germany

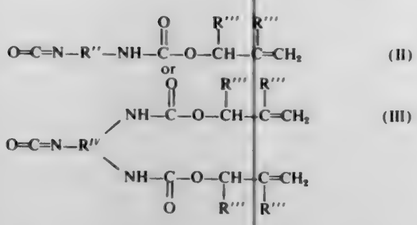
Filed Aug. 26, 1974, Ser. No. 500,813
Claims priority, application Germany, Sept. 6, 1973, 2344843
Int. Cl.² C08G *18/00*
U.S. Cl. 260—47 CB **12 Claims**

1. A composition polymerizable by ionizing radiation, said composition comprising a mixture of at least one vinyl monomer, at least one allyl monomer or a mixture of at least one vinyl monomer and allyl monomer, and a compound copolymerizable with said monomers, said compound comprising the reaction product of (A) at least half of the hydroxyl groups in a polyol of the formula:



(I)

said polyol being the reaction product of an epoxy compound and a dialkanolamine in a stoichiometric ratio between amine hydrogen and epoxy groups, with (B) a monoisocyanato-allyl carbamate or monoisocyanato-methallyl carbamate of the formulas:



(II)

(III)

wherein R is a C_1–C_{10} alkyl, cycloalkyl, aryl or aralkyl radical having a valency of from 1 to 10; each R′ is independently selected from hydrogen, methyl and ethyl; R″ is a C_1–C_{10} alkylene, cycloalkylene, arylene or aralkylene group; R^{IV} is a trivalent aryl, carbamate or carbamide group; each R‴ is independently selected from hydrogen and methyl and *n* is a number from 1 to 10.

3,928,288

EPOXY NOVOLAC RESINS HAVING A NARROW MOLECULAR WEIGHT DISTRIBUTION AND PROCESS THEREFOR

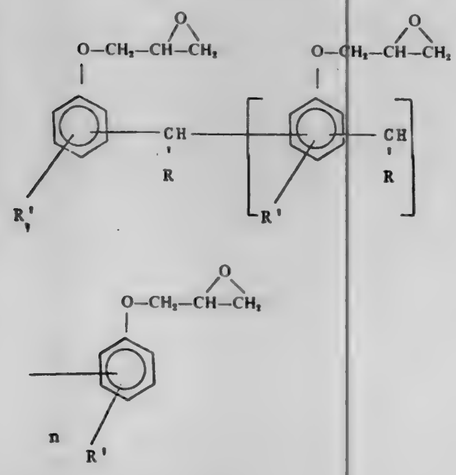
Eddie Bob Walker, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 350,277, April 11, 1973, abandoned. This application May 31, 1974, Ser. No. 475,015

Int. Cl.² C08G *59/08*

U.S. Cl. 260—59 EP **8 Claims**

1. An epoxy novolac resin having a relatively narrow molecular weight distribution represented by the general formula



wherein each R is independently hydrogen or an alkyl group having from 1 to about 5 carbon atoms, each R′ is independently hydrogen, chlorine, bromine, an alkyl group having from 1 to about 6 carbon atoms or a glycidyloxy group and *n* has an average value greater than 0.1 and such that the viscosity in centistokes at 70°C to average EEW, epoxide equivalent weight, ratio is less than 11:1 when the weight average molecular weight of the resin is below about 2000 and a plot of Mw vs Mw:Mn falling on or within the area bounded by A,B,C,D in FIG. 1 when the weight average molecular weight is above about 2000.

3. A process for preparing an epoxy novolac resin having a relatively narrow molecular weight distribution which comprises

A. dissolving an epoxy novolac resin having a relatively wide molecular weight distribution in a solvent or mixture of solvents selected from the group consisting of xylene, toluene, methyl isobutyl ketone, solvents selected from those with solubility parameters of 8.0–9.0 with low to medium hydrogen bonding and those with solubility parameters >11.5 and any hydrogen bonding value at a temperature between about 50°C and the boiling point of the solvent, wherein the quantity of solvent is from about 30% to about 90% by weight of the combined weight of solvent and resin,

B. cooling the resultant solution to a temperature between below about 50°C and the freezing point of the solvent for a period of time sufficient to cause a separation into two distinct phases,

C. separating the two phases one from the other,

D. removing the solvent from each of the phases;

thereby producing (1) an epoxy novolac resin of relatively low molecular weight and (2) an epoxy novolac resin of relatively high molecular weight and wherein the weight average molecular weight of resin (1) is below about 2000 and for resin (2) above about 2000, and wherein the viscosity in centistokes at 70°C to average EEW, epoxide equivalent weight, ratio of resin (1) is below about 11:1 and wherein a plot of Mw vs Mw:Mn for resin (2) falls on or within the boundary of A,B,C,D in FIG. 1.

3,928,289

HYDANTOIN PRODUCED POLYURETHANE

Charles B. Reilly, Uniontown, and Robert K. Rossi, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 26, 1973, Ser. No. 428,594

Int. Cl.² C08G *18/38*

U.S. Cl. 260—75 NQ **3 Claims**

1. A polyurethane prepared by reacting a mole of a reactive hydrogen material of 700 and higher molecular weight selected from the class consisting of polyester polyols and polyether polyols, with 1.2 to 3.5 moles of organic polyisocyanate and 0.2 to 2 moles of hydantoin containing dihydroxy alkyl and dialkyl substituents where the alkyl radical contains from 1 to 10 carbon atoms.

3,928,290

ENAMELING VARNISHES BASED ON AROMATIC CARBOXYLATES REACTED WITH POLYISOCYANATES AND POLYOLS

Choua Cohen, Grenoble; Bruno Durif-Varambon, Eybens; Robert Salle, Rue Pierre Loti, and Bernard Sillion, Grenoble, all of France, assignors to Institut Francais du Petrole, des Carburants & Lubrifiants, Paris, France

Filed Mar. 12, 1974, Ser. No. 450,426

Claims priority, application France, Mar. 14, 1973, 73.09220

Int. Cl.² C08G *18/34*

U.S. Cl. 260—75 TN **18 Claims**

1. A polymeric composition obtained by reacting simultaneously in solution:

a. at least one ester of an aromatic aminopolycarboxylic acid having at least 2 carboxylic groups, in relative position other than ortho or peri, and at least one amine function in ortho position with respect to one of the carboxylic groups;

b. at least one ester of an aromatic polycarboxylic acid, having at least two carboxylic groups in relative positions other than ortho or peri, with the provision that of the total of carboxylic acid groups of (a) and (b), said at least one ester of an aromatic amino polycarboxylic acid amounts to 20 to 60% of said total and said at least one ester of an aromatic polycarboxylic acid amounts to 40 to 80% of said total;

c. at least one polyisocyanate compound, in a proportion corresponding, in isocyanate equivalents, to 90–200% of the amine groups; and

d. at least one polyhydroxy compound, at least a part of which consists of at least one polyol containing at least three hydroxy groups, in such a proportion that the sum of the hydroxy groups and amine groups is higher than the sum of the ester groups and isocyanate groups.

3,928,291

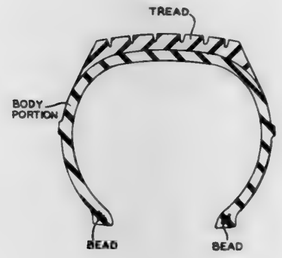
TIRE TREADS AND THEIR PRODUCTION

Joseph C. Sanda, Jr., Youngstown, N.Y., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 260,792, June 8, 1972, abandoned. This application Sept. 12, 1974, Ser. No. 505,426

Int. Cl.² C08G *8/76*

U.S. Cl. 260—75 R **10 Claims**



1. A tread of a pneumatic tire which comprises the chain-extending reaction product of a chain-extending di(carbonyl halide) of the formula Hal—O:C—C:O—Hal or Hal—O:C—X—C:O—Hal in which Hal is chlorine or bromine and X is an aliphatic or aromatic hydrocarbon moiety, and a polymer from the class consisting of (a) polyhydroxy homopolymers and copolymers of conjugated dienes which contain 4 to 6 carbon atoms, (b) polyhydroxy copolymers of such a diene and an aromatic vinyl monomer, (c) polyhydroxy copolymers of such a diene and an aliphatic vinyl nitrile monomer, (d) polyhydroxy polyisobutylene and ethylene-propylene copolymer, (e) polyhydroxy polyethers and (f) polyhydroxy polyesters, which polymers contain 2 or 3 hydroxy groups with sufficient reinforcing pigment for a tire tread.

3,928,292

PROCESS FOR PREPARING COLORED POLYURETHANE

Shigeo Maeda; Minoru Ozutsumi; Isao Niimura, and Hideo Okazaki, all of Tokyo, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

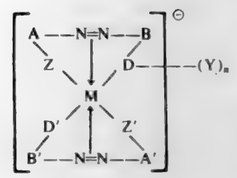
Continuation-in-part of Ser. No. 387,504, Aug. 10, 1973. This application Sept. 11, 1974, Ser. No. 505,144

Int. Cl.² C08G *18/32*

U.S. Cl. 260—77.5 AQ **8 Claims**

1. A process for preparing a colored polyurethane material, which comprises:

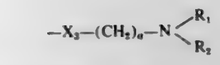
reacting a polyisocyanate compound and a polyhydroxyl compound with a 2:1 complex metal azo dye of the formula:



wherein A and A′ can be the same or different and each can represent a residual phenylene radical which can have a non-dissociated substituent; B and B′ can be the same or different and each represents a residual coupling component which can have a non-dissociated substituent and which have the metal coupling D and D′ groups disposed in an ortho relationship to the bridging azo groups; Z and Z′ can be the same different and each represents an —O— or —COO— group which is disposed in an ortho relationship to the bridging azo groups through groups A and A′; D and D′ can be the same or different and each represents —O—, —NH—, or —N—alkyl; M represents a chromium or cobalt atom; $[K]^+$ represents aliphatic and substituted aliphatic ammonium or acyclic ammonium; *n* represents an integer from 1 to 6 and Y represents



or



wherein R_1 and R_2 represent hydrogen, lower alkyl, amino or hydroxy substituted lower alkyl, N-alkylamino or N-hydroxyalkylamino-substituted lower alkyl groups wherein at least one of the R_1 and R_2 groups is an active hydrogen atom; and R_1 and R_2 can be cyclized together to form a hetero six membered ring with the nitrogen containing imino group; X_3 represents $-SO_2-$, $-NHSO_2-$, —CO— or —NHCO—; and *a* represents an integer from 1 to 4.

3,928,293

POLYMERIC REAGENT

Guy A. Crosby, Palo Alto, Calif., assignor to Dynapol, Palo Alto, Calif.

Filed Apr. 1, 1974, Ser. No. 456,731

Int. Cl.² C08F *28/02*

U.S. Cl. 260—79 **9 Claims**

1. A polymeric boron hydride reagent comprising a particulate, solid, cross-linked aliphatic, cycloaliphatic, or aromatic organic polymer containing a substantial plurality of sulfur atoms in a thioether configuration and, in complex combination with a major proportion of said sulfur atoms, boron hydride molecules.

3,928,294

BIOCOMPATIBLE ARTICLES INCLUDING POLYMERIC MEMBRANES HAVING HIGH PERMEABILITY TO GASES AND USES THEREOF

James E. Crawford, Adrian, Mich., and Don N. Gray, Sylvania, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

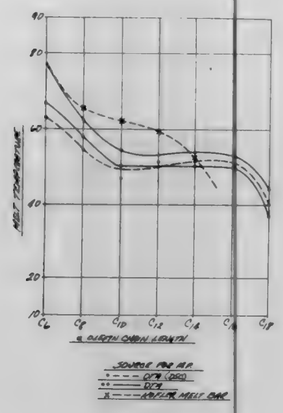
Continuation-in-part of Ser. No. 279,877, Aug. 11, 1972, abandoned, which is a continuation-in-part of Ser. No. 228,240, Feb. 22, 1972, abandoned. This application Feb. 2, 1973, Ser. No. 328,972

Int. Cl.² C08F *13/06* A61B *1/00, 13/00*; A61F *1/22*

U.S. Cl. 260—79.3 A **5 Claims**

1. As an article of manufacture, a permselective, biocompatible membrane article having high gaseous permeability, said membrane consisting of a poly(alpha-olefin-sulfone)

derived from the series C_8 to C_{18} alpha-olefins and sulfur dioxide, the membrane having an oxygen transmission rate of



about 1 to 4×10^{-4} cc mil./in² yr atm. and a CO_2 transmission rate of about 4 to 17×10^{-4} cc mil./in² yr atm.

3,928,295

AROMATIC POLYMERS CONTAINING KETONE LINKING GROUPS AND PROCESS FOR THEIR PREPARATION

John Brewster Rose, Letchworth, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 7, 1974, Ser. No. 467,798

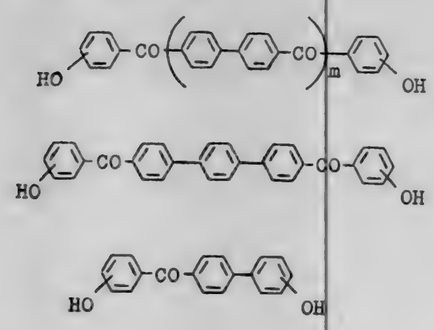
Claims priority, application United Kingdom, May 25, 1973, 25202/73; May 25, 1973, 25205/73; June 22, 1973, 29682/73; Oct. 12, 1973, 47684/73; Dec. 20, 1973, 59060/73; Mar. 14, 1974, 11443/74

Int. Cl.² C08G *2/00, 75/20*

U.S. Cl. 260—79.3 M **14 Claims**

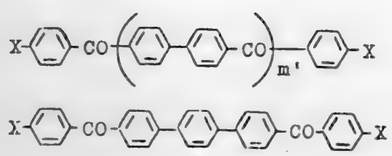
1. A process for the preparation of aromatic polymers having reduced viscosity of between 0.8 and 3.0, as measured at 25°C on a solution of polymer in concentrated sulphuric acid of density 1.84 g/cm³ containing 1 g of polymer in 100 cm³ of solution, which comprises heating at a temperature of 250°C to 400°C a monomer mixture comprising

1. 49 to 50% molar of a di(alkali metal) salt of at least one bisphenol selected from

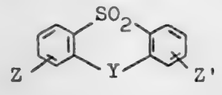


at least 95% of the phenolic OH groups being in the para position, and

2. 51 to 50% molar of at least one dihalo compound selected from



where X is F, Cl or Br, and each of *m* and *m'* is zero, 1, 2 or 3, and the molar percentages of said di(alkali metal) salt and said at least one dihalo compound sum to 100%, and in which monomeric mixture 0 to 25 mole % of the —CO— groups are replaced by sulphone groups, said di(alkali metal) salt being present as a suspension in a diaryl sulphone having the formula



in which Y is a direct link, an oxygen atom or two hydrogen atoms (one attached to each benzene ring) and Z and Z' are selected from hydrogen atoms and phenyl groups and may be the same or different.

3,928,296

STABILIZATION OF VINYLIDENE CHLORIDE/DIENE COPOLYMERS

Ronald W. Kavchok, Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 25, 1974, Ser. No. 445,362

Int. Cl.² C08G *6/00*

U.S. Cl. 260—80.73 **7 Claims**

1. A process of preparing a heat stable conjugated 1,3-diene/vinylidene chloride polymer comprising polymerizing in a free radical, emulsion polymerization system a monomer system comprising at least 40 parts by weight of conjugated 1,3-diene monomer selected from the group consisting of 1,3-butadiene, isoprene and 2,3-dimethyl-1,3-butadiene; at least 20 parts by weight of vinylidene chloride; 0.5 to 10 parts by weight of an amide stabilizer and 0 to 25 parts by weight of other non-diene monomer per 100 parts by weight of total monomer, wherein the amide stabilizer is selected from the group consisting of N-(4-anilinophenyl) acrylamide and N-(4-anilinophenyl) methacrylamide.

3,928,297

HIGH MOLECULAR WEIGHT, HIGH UNSATURATION ISOBUTYLENE-CONJUGATED DIENE COPOLYMERS

Warren A. Thaler, Matawan; Donald J. Buckley, Plainfield, both of N.J., and Joseph P. Kennedy, Akron, Ohio, assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 151,038, June 8, 1971, Pat. No. 3,808,177. This application Apr. 1, 1974, Ser. No. 457,109

Int. Cl.² C08F *210/12*

U.S. Cl. 260—85.3 R **10 Claims**

1. A substantially gel-free copolymer consisting essentially of a major portion of isobutylene and about 5 to about 40 mole percent of cyclopentadiene, said copolymers having a number average molecular weight of at least 120,000.

3,928,298

POLYETHERS CONTAINING HYDANTOIN RINGS AS ANTISTATIC AGENTS FOR SYNTHETIC FIBERS AND FOILS

Gerhard Dieter Wolf, Dormagen; Helmut Engelhard, Leverkusen, and Francis Bentz, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Sept. 14, 1973, Ser. No. 397,419

Claims priority, application Germany, Sept. 15, 1975, 2245335

Int. Cl.² C08F *122/30*

U.S. Cl. 260—88.7 B **8 Claims**

1. A fiber, thread or foil of a synthetic polyacrylonitrile polymer with permanent antistatic properties, which contains 0.5–15 percent, by weight of the total, of polyethers containing hydantoin rings as represented by the formula

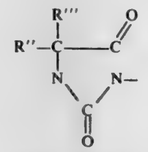
X - $(OC_nH_{2n})_p$ - $(OC_mH_{2m})_q$ - Hyd - R'

in which

X represents hydrogen or the group



Hyd represents a bivalent group of the formula



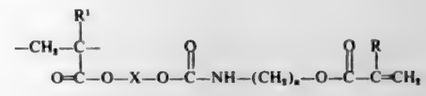
R represents a C_{1-18}-alkyl, cycloalkyl, aryl, aralkyl or alkaryl group or halogen alkyl, NO_2 or CN derivatives thereof;

R' has the meaning given for R or represents the group $-(C_mH_{2m}O)_q-(C_nH_{2n}O)_p-X$;

R'' and R''' represents a C_{1-4} alkyl or aryl group or together represent a C_{3-6} cycloalkyl group;

n and m represent an integer or from 2 to 6; and

p and q represent O or an integer of from 1 to 50, and at least p or q > O.



wherein

R and R^1 are hydrogen or alkyl having 1 to 4 carbon atoms,

n is an integer from 1 to 6,

y is an integer from 2 to 500 and

X is an alkylene group having 1 to 9 carbon atoms or an alkylene group having 2 to 9 carbon atoms interrupted by from one to two -O- groups.

3,928,300

FALLING STRAND DEVOLATILIZATION TECHNIQUE

Carl G. Hagberg, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 9, 1973, Ser. No. 322,261

Int. Cl.² B01D *1/08, 1/22, 1/28*

U.S. Cl. 260—93.5 A **6 Claims**

1. In a continuous process for the devolatilization of homopolystyrene, said process using as a starting process fluid a composition comprising from about 50 to 85 weight percent homopolystyrene and correspondingly about 50 to 15 weight per cent styrene monomer to falling strand devolatilization of the type wherein said composition is subjected first to heating and then to flash vaporization of said monomer, said composition being at an initial input temperature of from about 130° to 200°C. and at initial input pressure of from about 5 to 50 psi, the improvement in such a process which comprises the steps of:

A. passing said composition through a plurality of heating zones:

1. each of said heating zones having a generally columnar shape,

a. each one of such heating zones having:

a length of from about 2 to 8 feet,

an average inside diameter which is generally constant with respect to said length thereof and which ranges from about 0.5 to 1.5 inches,

a ratio of said length to said diameter ranging from about 30 to 80, and

b. the relationship between said composition and all of said heating zones being such that the amount of said composition flowing through said zones ranges from about 3 to 20 lbs./hr./heating zone,

2. each of said heating zones having its side wall portions defined by a heat exchange solid surface whose total heat flux relative to said composition passing therealong ranges from about **500** to **4000** BTU/hr./ft.²,

3. the residence time of each portion of said composition in a given one of said heating zones ranging from about 2 to 10 minutes,

4. the output temperature of said composition as it exits from each individual one of said heating zones ranging from about 40 to 160°C. greater than said input temperature,

5. the output pressure of said composition as it exits from each individual one of said heating zones being from about 5 to 50 psi less than said input pressure, and

6. said plurality of heating zones being tubes encased in a body section of a shell and tube heat exchanger assembly, said tubes being generally equally spaced throughout said assembly, said composition flowing as a plurality of strands from the bottom section of said assembly,

B. discharging said strands of said composition from each of said tubes of said assembly into a flash vaporization zone, downwardly through a central region of said flash zone, wherein said monomer vapor is separated from said homopolystyrene, said assembly being recessed in an upper region of said flash zone defining an annular area

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3,928,299

POLYMERS WHICH CONTAIN URETHANE GROUPS AND WHICH ARE CROSS-LINKABLE BY VINYL POLYMERISATION

Hans Jurgen Rosenkranz, Krefeld; Hans Rudolph, Krefeld-Bockum; Erich Wolff, Leichlingen, and Harald von Rintelen, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 247,758, April 26, 1972, abandoned. This application Sept. 13, 1973, Ser. No. 397,161

Claims priority, application Germany, Apr. 30, 1971, 2121252

Int. Cl.² C08G *22/04*

U.S. Cl. 260—89.5 N **1 Claim**

1. An organic homopolymer or random copolymer having a number average molecular weight, determined by the osmometric method, of greater than 1,000 which contains per molecule y recurring units of the formula

with the walls of said flash zone as a manifold-like device, collecting said vapor and directing said vapor out of a vapor take-off port in said device, controlling the temperature of said flash vaporization zone from about 180° to 280°C. and the pressure of said flash vaporization zone from about 2 to 800 mm Hg abs while continuously removing from said flash vaporization zone said monomer vapor at a rate at least approximately equal to the rate of generation thereof in said flash vaporization zone.

3,928,301
POLYMERS OF 2-ETHYL-1,3-BUTADIENE AND METHOD OF THEIR PREPARATION

James Neil Henderson, Hudson, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 100,545, Dec. 21, 1970, abandoned, which is a continuation of Ser. No. 741,342, July 1, 1968, abandoned. This application Jan. 12, 1972, Ser. No. 217,121

Int. Cl. C08d *3/04, 1/14*

U.S. Cl. 260—94.2 R **1 Claim**

1. A rubbery, amorphous polymer of 2-ethyl-1,3-butadiene characterized by having a structure comprising at least about 98 percent of a trans-1,4-addition structure, having a melting point of from about 18°C. to about 25°C., measured by dilatometric analysis with mercury as the containing fluid and a heating rate of 5°C. to 10°C. per day, having an inherent viscosity of from about 6 to about 10 dl/g, and having an ultimate tensile strength of from about 500 to about 2000 pounds per square inch at an elongation of from about 400 to about 800 percent at about 25°C.

3,928,302
ALKALINE EARTH METAL ORGANOMETALLIC COMPOUNDS, THEIR PREPARATION BY METALLATION AND CATALYSTS COMPRISING SAME

Ivan Glen Hargis, Tallmadge, and Russell Anthony Livigni, Akron, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 69,476, Sept. 3, 1970. This application Feb. 1, 1973, Ser. No. 328,583

Int. Cl. C08f *1/00, 1/28, 3/00*

U.S. Cl. 260—94.3 **10 Claims**

1. The method which comprises polymerizing at a temperature of from about −90° to 100°C. a polymerizable monomer selected from the group consisting of methyl acrylate, ethyl acrylate, butyl acrylate, ethyl hexyl acrylate, octyl acrylate, methyl methacrylate, ethyl methacrylate, butyl methacrylate, methyl ethacrylate, ethyl ethacrylate, butyl ethacrylate, octyl ethacrylate, acrylonitrile, methacrylonitrile, butadiene, isoprene, dimethyl butadiene, styrene, metavinyl toluene and paravinyl toluene and mixtures of the same with at least one diorgano-metallic catalyst where the metal of said catalyst is selected from the group consisting of barium, strontium and calcium and mixtures thereof and where the organic moiety of said catalyst is selected from the group consisting of xanthene, 9-phenyl xanthene, 9-(alpha naphthyl)xanthen and 9-(2-methoxy phenyl)xanthene and mixtures thereof, said metal being joined to said organic moiety by an ionic carbon to metal bond.

3,928,303
PROCESS FOR PRODUCING BUTADIENE POLYMER

Seimei Yasui; Yasuo Shinohara, both of Ibaraki, and Yoshiharu Yagi, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 1, 1973, Ser. No. 336,917

Claims priority, application Japan, Mar. 1, 1972, 47-21847; Mar. 31, 1972, 47-32969

Int. Cl.² C08F *136/06, 4/40;* **B01J** *31/14*

U.S. Cl. 260—94.3 **15 Claims**

1. A process for the polymerization of butadiene to give a rubber-like solid which comprises contacting butadiene with a catalyst system consisting essentially of (A) an organic aluminum fluoride compound of the formula: $AlR_{3-n}F_n$ wherein R is alkyl, aryl or aralkyl and n is a real number larger than 1 and smaller than 2 and (B) an organic nickel compound selected from the group consisting of nickel salts of organic carboxylic acids, nickel salts of organic complex compounds, tetracarbonyl nickel and π-bonded organic nickel compounds, the molar ratio of the organic aluminum fluoride compound to the organic nickel compound being in a range of from 1:1 to 1000:1, to produce said rubber-like solid butadiene polymer having a high content of cis-1,4 structure.

3,928,304
METHOD OF MAKING POLYOLEFINS USING ORGANOTIN CHROMATE POLYMERIZATION CATALYST

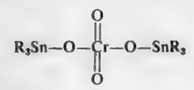
Thomas Pullukat, Hoffman Estates, Ill., assignor to Chemplex Company, Rolling Meadows, Ill.

Division of Ser. No. 414,177, Nov. 8, 1973, Pat. No. 3,876,554. This application Dec. 20, 1974, Ser. No. 534,874

Int. Cl.² C08F *4/44, 110/02, 210/02*

U.S. Cl. 260—94.9 D **8 Claims**

1. The method of making polymers from polymerizable 1-olefins which comprises polymerizing at least one of said olefins under polymerizing conditions with a catalyst system comprising an organotin chromate essentially of the formula:



and cocatalytic amounts of an alkyl aluminum compound of the formula R_aAlX_b, in each of which formula each R is a hydrocarbyl radical containing from 1 to about 14 carbon atoms and all R's are the same or different, X is a halogen or an alkoxy group, a is an integer from 1 to 3 inclusive, b is an integer from 0 to 2 inclusive, and the sum of a and b is 3.

3,928,305
UREA DERIVATIVES OF ACYL DERIVATIVES OF KTI

Eugen Werle; Hans Fritz, and Harald Schult, all of Munich, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 23, 1970, Ser. No. 92,314

Claims priority, application Germany, Dec. 19, 1969, 1963734

Int. Cl.² C07C *103/52;* **A61K** *37/26*

U.S. Cl. 260—112.5 **6 Claims**

1. Urea derivatives of acylated kallikrein-trypsin-inhibitor wherein the positions 26, 41, 46 and the amino group of the N-terminal arginine in position 1 are partially or completely acylated, and wherein the ϵ-amino group of the 15-lysine residue is replaced by a radical selected from the group consisting of urea and guanidine radicals.

3,928,306
PEPTIDES HAVING XENOPSIN-LIKE PHARMACOLOGICAL ACTIVITY

Mikio Uchiyama, Urawa; Shinro Tachibana, Narashino; Kengo Araki, Niiza, and Takafumi Nakamura, Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1974, Ser. No. 517,107

Claims priority, application Japan, Oct. 23, 1973, 48-118550; Oct. 23, 1973, 48-118551

Int. Cl.² C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 R **3 Claims**

1. Peptide compounds represented by the general formula:
R—Arg—Pro—Trp—Ileu—Leu—OH
wherein R stands for H or the grouping of pyrGlu—Lys—Gly.

3,928,307
P-GLU-D-PHE-TRP-SER-TYR-D-PHEE-LEU-ARG-PRO-GLY-NH2 AND INTERMEDIATES

Theodore J. Foell, and John P. Yardley, both of King of Prussia, Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Nov. 4, 1974, Ser. No. 520,382

Int. Cl.² C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 LH **8 Claims**

1. A compound selected from the group consisting of L-p-Glu-D-Phe-L-Trp-L-Ser-L-Tyr-D-Phe-L-Leu-L-Leu-L-Arg-L-Pro-Gly-NH_2 and R^4-L-p-Glu-D-Phe-L-Trp-L-Ser(R^3)-L-Tyr(R^2)-D-Phe-L-Leu-L-Arg-(N^G-R^1)-L-Pro-Gly-R and its non-toxic salts; wherein

R is selected from the class consisting of NH_2, OH, O-(lower)alkyl and O-benzyl; R^1 is selected from the class consisting of hydrogen and a protecting group for the N^δ, N^ω and $N^{\omega'}$ nitrogen atoms of arginine selected from nitro, tosyl, benzyloxycarbonyl, and adamantyloxycarbonyl;

R^2 is selected from the class consisting of hydrogen and a protecting group for the phenolic hydroxyl group of tyrosine selected from tert-butyl, tetrahydropyranyl, trityl, benzyl, 2,6-dichlorobenzyl, benzyloxycarbonyl and 4-bromobenzyloxycarbonyl;

R^3 is selected from the class consisting of hydrogen and a protecting group for the alcoholic hydroxyl group of serine and is selected from acetyl, benzoyl, tetrahydropyranyl, tert-butyl, trityl, 2,6-dichlorobenzyl, benzyl and benzyloxycarbonyl;

R^4 is selected from the class consisting of hydrogen and an α-amino protecting group, with the proviso that at least one of R^1, R^2 and R^3 is a protecting group.

3,928,308
P-GLU-D-P-F-PHE-TRP-SER-TYR-D-ALA-LEU-ARG-PRO-LY-NH_2

John P. Yardley, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 4, 1974, Ser. No. 520,383

Int. Cl.² C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 LH **8 Claims**

1. A compound selected from the group consisting of L-p-Glu-D-p-F-Phe-L-Trp-L-Ser-L-Tyr-D-Ala-L-Leu-L-Arg-L-Pro-Gly-NH_2 and R^4-L-p-Glu-D-p-F-Phe-L-Trp-L-Ser(R^3)-D-Ala-L-Leu-L-Arg-(N^G-R^1)-L-Pro-Gly-R and its non-toxic salts; wherein

R is selected from the class consisting of NH_2, OH, O-(lower)alkyl and O-benzyl; R^1 is selected from the class consisting of hydrogen and a protecting group for the N^δ, N^ω and $N^{\omega'}$ nitrogen atoms of arginine selected from nitro, tosyl, benzyloxycarbonyl and adamantyloxycarbonyl;

R^2 is selected from the class consisting of hydrogen and a protecting group for the phenolic hydroxyl group of tyrosine selected from tert-butyl, tetrahydropyranyl, trityl, benzyl, 2,6-dichlorobenzyl, benzyloxycarbonyl and 4-bromobenzyloxycarbonyl;

R^3 is selected from the class consisting of hydrogen and a protecting group for the alcoholic hydroxyl group of serine and is selected from acetyl, benzoyl, tetrahydropyranyl, tert-butyl, trityl, 2,6-dichlorobenzyl, benzyl and benzyloxycarbonyl;

R^4 is selected from the class consisting of hydrogen and an α-amino protecting group, with the provisa that at least one of R^1, R^2 and R^3 is a protecting group.

3,928,309
CATIONIC DYES FROM 5-AMINOIMIDAZO-(1,2-A)-PYRIDINES

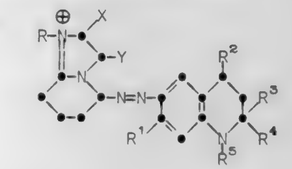
Gary T. Clark, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 15, 1974, Ser. No. 488,350

Int. Cl.² C09B *29/36;* **D06P** *3/24, 3/52*

U.S. Cl. 260—146 R **10 Claims**

1. Basic cationic dye having the formula



wherein

R is lower alkyl or benzyl;

R^1 is hydrogen, lower alkyl, lower alkoxy, formamido, acetamido, or benzamido;

R^2, R^3 and R^4 are the same or different and each represents hydrogen or methyl with the proviso that when R^2 is methyl then R^3 and R^4 are methyl and when R^2 is hydrogen only one of R^3 and R^4 may be methyl;

R^5 is lower alkyl or lower alkyl substituted with chloro, hydroxy, acetoxy, methoxy, acetamido, cyano, succinimido or phthalimido;

X is hydrogen or lower alkyl;

Y is hydrogen, lower alkoxycarbonyl, lower alkyl or formyl; and

Z is a basic dye anion.

3,928,310
TRISAZO COMPOUNDS CONTAINING A DIPHENYLHETEROCYCLIC COMPONENT

Kenzo Konishi, Nishinomiya; Akira Kotone, Nara; Yoshihiko Nakane, Yao; Takeshi Hori, and Masahiro Hoda, both of Sakai, all of Japan, assignors to Sakai-Chemical Industry Company, Ltd., Sakai, Japan

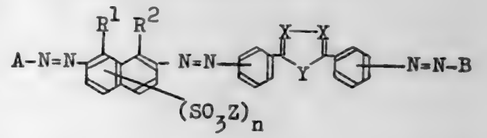
Filed Sept. 21, 1973, Ser. No. 399,555

Claims priority, application Japan, Sept. 22, 1972, 47-95707

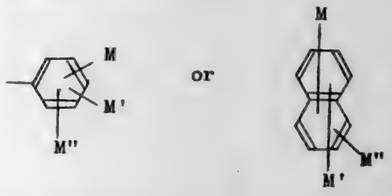
Int. Cl.² C09B *35/36, 35/46;* **D06P** *1/18, 1/39*

U.S. Cl. 260—152 **13 Claims**

1. A polyazo dye represented by the formula:



wherein A is phenyl, naphthyl or phenyl or naphthyl substituted with chlorine, lower alkyl, lower alkoxy, amino, carboxy, nitro, SO_3H or SO_3Na; B is



where M is NH_2 or OH; M' and M'' are the same or different and are H, NO_2, lower alkyl, SO_3H, SO_3Na or $N(R^6)_2$, the

members R^6 being independently H, NO_2, lower alkyl or phenyl substituted with lower alkyl; X is CH or N; Y is NH, N—NH_2, N—R^3, O or S, where R^3 is lower alkyl; Z is hydrogen, alkali metal, or NH_4; n is 1 or 2; and each of R^1 and R^3 is hydroxyl or amino, R^1 being amino when R^2 is hydroxyl or R^1 is hydroxyl when R^2 is amino.

3,928,311

NOVEL QUATERNIZED HETEROCYCLIC MONOAZO DYES

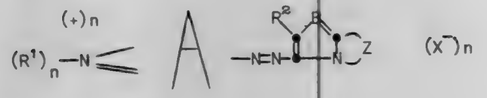
John G. Fisher, and James M. Straley, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 661,215, Aug. 17, 1967, abandoned, which is a continuation-in-part of Ser. Nos. 484,720, Sept. 2, 1965, abandoned, and Ser. No. 484,721, Sept. 2, 1965, abandoned. This application Mar. 15, 1973, Ser. No. 341,416

Int. Cl.² C09B *43/00*

U.S. Cl. 260—156 **13 Claims**

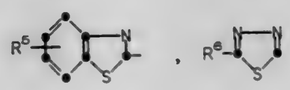
1. A compound having the formula

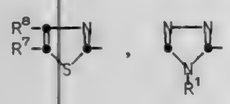


wherein



is 4-cyano-3-pyrazolyl, 3-pyrazolyl, 4-nitro-3-pyrazolyl, 4-bromo-3-pyrazolyl, 4-ethoxycarbonyl-3-pyrazolyl, 3-isothiazolyl, 5-methylsulfonyl-3-isothiazolyl, 5-nitro-3-isothiazolyl, 4,5-dimethyl-3-isothiazolyl, 5-cyano-3-isothiazolyl, 2-pyridyl, 4-pyridyl, 2-benzimidazolyl, 6-methoxy-2-benzimidazolyl, 6-methylsulfonyl-2-benzimidazolyl or a group having the formula





wherein

R^5 is hydrogen, nitro, cyano, lower alkylsulfonyl, lower alkoxycarbonyl, thiocyanato, lower alkyl, lower alkoxy, chlorine, or bromine;

R^6 is hydrogen, lower alkylthio, lower alkylthio substituted with lower alkoxycarbonyl, or lower alkylsulfonyl;

R^7 is hydrogen, thiocyanato, lower alkyl, lower alkylsulfonyl, nitro, cyano, or lower alkoxycarbonyl; and

R^8 is hydrogen, lower alkyl, phenyl, or phenyl substituted with lower alkyl, lower alkoxy, chlorine or bromine;

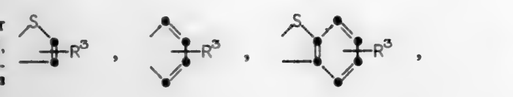
R^1 is lower alkyl or benzyl;

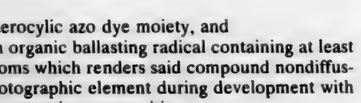
n is 0 or 1;

R^3 is phenyl or phenyl substituted with lower alkyl, lower alkoxy, chlorine, bromine, nitro, or cyano;

B is N;

Z is a group having the formula





wherein R^3 is hydrogen, lower alkyl, phenyl, or phenyl substituted with lower alkyl, lower alkoxy, chlorine or bromine; and X is an anion.

3,928,312

NOVEL P-SULFONAMIDOPHENOLS CAPABLE OF RELEASING A HETEROCYCLIC AZO DYE

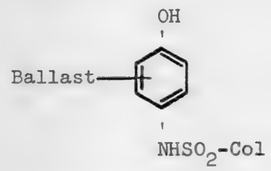
Lee J. Fleckenstein, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 282,795, Aug. 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 176,752, Aug. 31, 1971, abandoned. This application Apr. 16, 1973, Ser. No. 351,700

Int. Cl.² C09B *29/36, 29/38;* G03C *5/30, 7/00*

U.S. Cl. 260—156 **5 Claims**

1. A compound having the formula:



wherein:

a. Col is a heterocylic azo dye moiety, and

b. Ballast is an organic ballasting radical containing at least 8 carbon atoms which renders said compound nondiffusible in a photographic element during development with an alkaline processing composition.

3,928,313

TRISAZO DYESTUFF

Sisto Sergio Papa, Milan, and Renzo Ferrario, Cerlano Laghetto (Milan), both of Italy, assignors to Aziende Colori Nazionali Affini ACNA S.p.A, Milan, Italy

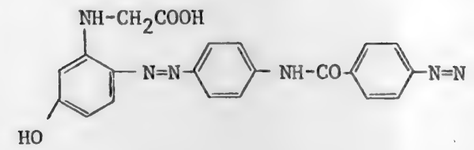
Filed Jan. 27, 1975, Ser. No. 544,175

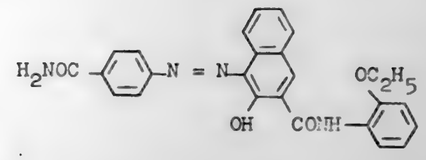
Claims priority, application Italy, Feb. 4, 1974, 20150/74

Int. Cl.² C09B *35/46*

U.S. Cl. 260—173 **1 Claim**

1. A trisazo dyestuff having the formula:





in its new γ-modification, characterized by an X-ray diagram by means of Cu- Kα-radiation, which shows at glance angles of 3.7° and 12.8° maxima of high intensity, at 5.7°, 7.7° and 9.1° maxima of middle intensity and at 4.5°, 6.5°, 7.3°, 8.3° and 11.0° maxima of low intensity.

3,928,314

ONE STEP PROCESS OF PREPARING AZO DYES BY SIMULTANEOUS DIAZOTIZATION AND COUPLING AT LOW PH

Alain Claude Rochat, Birsfelden, Switzerland, and Emil Stocker, deceased, late of Riehen, Switzerland (by Heidi Stocker-Boller, legal representative), assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 92,882, Nov. 25, 1970, abandoned. This application May 18, 1973, Ser. No. 361,841

Claims priority, application Switzerland, Nov. 27, 1969, 17614/69

Int. Cl.² C09B *29/00, 41/00*

U.S. Cl. 260—203 **13 Claims**

1. Process for the production of a metal-free azo compound containing no sulphonic acid groups by diazotisation and coupling in organic solvents, which consists essentially of adding a C_1 to C_{10} alkyl nitrite at a temperature between −50°C and +100°C, to an anhydrous reaction mixture consisting of a diazotisable primary amino-benzene, a coupling component, a C_2 to C_6 α-halogenated alkanoic acid having a pK_a-value smaller than 3.0 in an amount of 0.05 to 0.5 moles of said acid relative to 1 mole of said amine, and an organic, non-water-soluble solvent having a dielectric constant smaller than 15, or a mixture of such solvents.

3,928,315

γ-MODIFICATION OF PHENYL-AZO-NAPHTHOL PIGMENT

Joachim Ribka, Offenbach am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

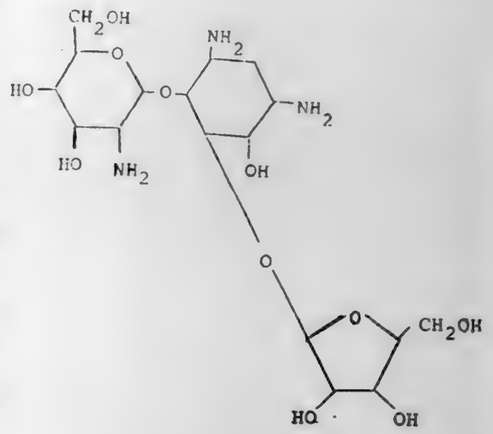
Continuation of Ser. No. 176,694, Aug. 31, 1971. This application Jan. 25, 1974, Ser. No. 436,793

Claims priority, application Germany, Sept. 2, 1970, 2043482The portion of the term of this patent subsequent to Feb. 15, 1989, has been disclaimed.

Int. Cl.² C09B *67/00, 29/20*

U.S. Cl. 260—204 **1 Claim**

1. A monoazo pigment of the formula



3,928,316

XANTHOMONAS GUM AMINE SALTS

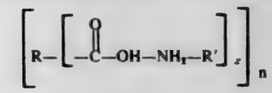
Wesley A. Jordan, Denver, Colo., and Walter H. Carter, Houston, Tex., assignors to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed Apr. 22, 1974, Ser. No. 462,897

Int. Cl.² C08B *9/00*

U.S. Cl. 260—209 R **2 Claims**

1. A salt of xanthomonas gum and a fatty amine containing from 10 to 20 carbon atoms, said salt having the formula:



wherein R is the hexosic groups constituting the repeating monomer group in the xanthomonas gum polymer chain, R′ is an alkyl group containing from 10 to 20 carbon atoms, x is the number of carboxylic-amine salt groups per repeating monomer group and is an integer of 3 to 4, n is a number between 300 and 1,000 and the degree of substitution of said carboxylicamine salt groups in the polymer is between 3 and 4.

3,928,317

ANTIBIOTIC BM408α

Jane Parsons Kirby, New City; Donald Bruce Borders, Suffern, and Jean Hayes Korshalla, Pearl River, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 25, 1974, Ser. No. 445,176

Int. Cl.² C07H *15/22*

U.S. Cl. 260—210 AB **5 Claims**

1. A compound selected from the group consisting of the compound of the formula:

and the pharmacologically acceptable acid-additon salts thereof.

3,928,318

PROCESS FOR MAKING METHYL GLUCOSIDE

Erwin Panusch, Livermore, and Igor Sobolev, Orinda, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Nov. 1, 1974, Ser. No. 520,180
Int. Cl.² C07H *15/04*
U.S. Cl. 260—210 R **6 Claims**

1. In the process of making methyl glucoside by the acid-catalyzed reaction of glucose and methanol the improvement which comprises incorporating in the reaction mixture of glucose, methanol and acid catalyst, anhydrous hydratable $CaSO_4$ in an amount sufficient to provide a $CaSO_4$:glucose weight ratio of at least 1:1, maintaining the reaction mixture within the temperature range of about 50°C and 200°C until formation of methyl glucoside ceases, cooling the reaction mixture, neutralizing the acid catalyst with a base capable of forming a salt of neutralization which is insoluble in the reaction mixture, and recovering methyl glucoside having a residual glucose content of less than about 1% by weight.

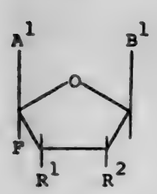
3,928,319

4'-FLUORO NUCLEOSIDES, NOVEL INTERMEDIATES AND METHODS OF PREPARING SAME

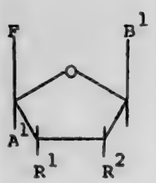
Ian Jenkins, Brighton, England; John G. Moffatt, and Julien P. H. Verheyden, both of Los Altos, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 153,817, June 16, 1971, Pat. No. 3,817,978. This application May 31, 1972, Ser. No. 258,327The portion of the term of this patent subsequent to June 18, 1991, has been disclaimed.
Int. Cl.² C07H *19/16, 19/20*
U.S. Cl. 260—211.5 R **37 Claims**

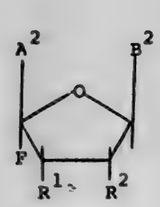
1. A compound selected from the group of compounds having the formulas:



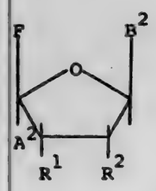
β-D-ribo (I)



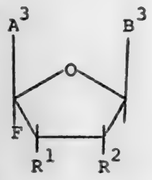
α-L-lyxo (I)



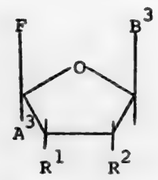
β-D-ribo (II)



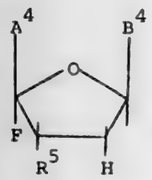
α-L-lyxo (II)



β-D-ribo (III)

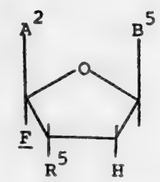


α-L-lyxo (III)



(XV)

and

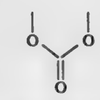


(XVI)

wherein R^1 and R^2 are independently hydroxy or acyloxy having from 2 through 12 carbon atoms, or R^1 and R^2 together form the group



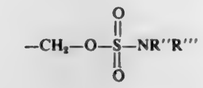
or



wherein R^3 and R^4 are independently hydrogen, lower alkyl, aryl having from 6 through 12 carbon atoms or together with the carbon atom to which they are joined form a cycloalkyl group having from 5 through 7 ring carbon atoms; A^1 is selected from the group having the formulas: $-CH_2OH$, $-CH_2N_3$, $-CH_2I$ or $-CH_2OPO(OH)_2$; and B^1 is a purine base selected from the group consisting of 6-mercaptopurine, 2-amino-6-lower alkylthiopurine, 6-lower alkylthiopurine, 2-amino-6-mercaptopurine, 6-dimethylaminopurine, 2-amino-6-methylaminopurine, 2-amino-6-dimethylaminopurine, 6-(1-adamantylamino)purine, 7-deazaadenine, hypoxanthine, xanthine, guanine, 8-azaguanine, 7-deazaguanine, adenine, 2-fluoroadenine, 2-chloroadenine, 2-azaadenine, 8-aza-9-deazaadenine, 7-deaza-7-cyanoadenine, and 8-azaadenine; or B^1 is a pyrimidine base selected from the group consisting of cytosine, 5-fluorocytosine, 5-chlorocytosine, 5-bromocytosine, 5-iodocytosine, 5-lower alkyl cytosine, 5-trifluoromethylcytosine, 5-hydroxymethylcytosine, 5-nitrocytosine, 5-azacytosine, 6-azacytosine, 5-methyl-6-azacytosine, 2-thiocytosine, uracil, 5-fluorouracil, 5-chlorouracil, 5-bromouracil, 5-iodouracil, 5-lower alkyluracil, 5-trifluoromethyluracil, 5-hydroxymethyluracil, 5-nitrouracil, 5-azauracil, 6-azauracil, 5-methyl-6-azauracil, 2-thiouracil, 4-thiouracil, 2,4-dithiouracil, 5-aminouracil, 5-methylaminouracil, 5-dimethylaminouracil, 5-methylaminocytosine, 5-dimethylaminocytosine, 5-aminocytosine, 4-hydroxylamino-5-fluoro-pyrimidin-2-one, 4-hydroxylamino-5-bromo-pyrimidin-2-one, 4-hydroxylamino-5-chloro-pyrimidin-2-one, 4-hydroxylamino-5-iodo-pyrimidin-2-one, 4-hydroxylamino-5-lower alkylpyrimidin-2-one, 4-hydroxylamino-5-trifluoromethylpyrimidin-2-one, 4-hydroxylamino-5-hydroxymethylpyrimidin-2-one, 4-hydroxylamino-5-nitro-pyrimidin-2-one, 4-hydroxylamino-5-aza-pyrimidin-2-one, 4-hydroxylamino-5-methyl-6-aza-pyrimidin-2-one, 4-hydroxylamino-pyrimidin-2-one, and 4-hydroxylamino-pyrimidin-2-thione; A^2 is selected from the group having the formulas: $-CH_3$ and $-CH_2NH_2$; and B^2 is a purine base selected from the group consisting of 6-dimethylaminopurine, 2-amino-6-methylaminopurine, 2-amino-6-dimethylaminopurine, 6-(1-adamantylamino)purine, 7-deazaadenine, hypoxanthine, xanthine, guanine, 8-azaguanine, 7-deazaguanine, adenine, 2-fluroadenine, 2-chloroadenine, 2-azaadenine, 8-aza-9-deazaadenine, 7-deaza-7-cyanoadenine, and 8-azaadenine; or B^2 is a pyrimidine base selected from the group consisting of cytosine, 5-fluorocytosine, 5-chlorocytosine, 5-lower alkyl cytosine, 5-trifluoromethylcytosine, 5-hydroxymethylcytosine, 5-azacytosine, 6-azacytosine, 5-methyl-6-azacytosine, uracil, 5-flurouracil, 5-chlorouracil, 5-lower alkyluracil, 5-trifluoromethyluracil, 5-hydroxymethyluracil, 5-azauracil, 6-azauracil, 5-methyl-6-azauracil, 5-aminouracil, 5-methylaminouracil, 5-dimethylaminouracil, 5-methylaminocytosine, 5-dimethylaminocytosine, 5-aminocytosine, 4-hydroxylamino-5-fluoro-pyrimidin-2-one, 4-hydroxylamino-5-chloro-pyrimidin-2-one, 4-hydroxylamino-5-lower alkyl pyrimidin-2-one, 4-hydroxylamino-5-hydroxymethylpyrimidin-2-one, 4-hydroxylamino-5-aza-pyrimidin-2-one, 4-hydroxylamino-6-aza-pyrimidin-2-one, 4-hydroxylamino-5-methyl-6-aza-pyrimidin-2-one, 4-hydroxylamino-5-trifluoromethylpyrimidin-2-one, and 4-hydroxylamino-pyrimidin-2-one; A^3 is selected from the group having the formula



wherein R'' and R''' are independently hydrogen or lower alkyl having from 1 through 6 carbon atoms; and B^3 is a purine base selected from the group consisting of 6-mercaptopurine, 2-amino-6-lower alkylthiopurine, 6-lower alkylthiopurine, 2-amino-6-mercaptopurine, 6-dimethylaminopurine, 2-amino-6-methylaminopurine, 2-amino-6-dimethylaminopurine, 6-(1-adamantylamino)purine, 7-deazaadenine, xanthine, guanine, 8-azaguanine, 7-deazaguanine, 2-fluoroadenine, 2-chloroadenine, 2-azaadenine, 8-aza-9-deazaadenine, 7-deaza-7-cyanoadenine, and 8-azaadenine; or B^3 is a pyrimidine base selected from the same group of pyrimidine bases as B^1; wherein A^4 is $-CH_2OH$, $-CH_2I$, $-CH_2N_3$, $-CH_2OPO(OH)_2$ or



wherein R'' and R''' are as defined above; B^4 is a pyrimidine base selected from the group consisting of cytosine, 5-fluorocytosine, 5-chlorocytosine, 5-bromocytosine, 5-iodocytosine, uracil, 5-fluorouracil, 5-chlorouracil, 5-bromouracil, 5-iodouracil, 5-lower alkyl uracil; and R^5 is hydroxy or an acyloxy group having from 2 through 12 carbon atoms; and B^5 is a pyrimidine base selected from the group consisting of cytosine, 5-fluorocytosine, 5-chlorocytosine, uracil, 5-fluorouracil, 5-chlorouracil, and 5-lower alkyl uracil; and pharmaceutically acceptable salts of the compounds of formulas, I, II and III.

3,928,320

PROCESS FOR THE PREPARATION OF METHYLCOBALAMINE

Jean Boige, 53, rue Vercingetorix, Aulnay-sous-Bois, Seine-Saint-Denis, France

Continuation-in-part of Ser. No. 303,147, Nov. 2, 1972, abandoned. This application July 26, 1974, Ser. No. 492,975
Claims priority, application France, Nov. 10, 1971, 71.40233; Aug. 8, 1973, 73.28998; Dec. 28, 1973, 73.46829
Int. Cl.² C07H *23/00*
U.S. Cl. 260—211.7 **12 Claims**

1. In a process for the preparation of methylcobalamine from hydroxocobalamine, the improvement consisting essentially of dissolving hydroxocobalamine in a solution of methanol containing 5 to 20 percent of water by volume, adding to said solution monomethyloxalate and a cobalt salt selected from the group consisting of cobalt chloride, cobalt nitrate and cobalt oxalate and adding to the obtained solution zinc powder in order that simultaneous reduction and methylation of hydroxocobalamine occur.

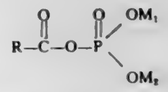
3,928,321

PREPARATION OF STARCH ESTERS

Martin M. Tessler, Edison, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed May 6, 1974, Ser. No. 467,109
Int. Cl.² C08B *31/02*
U.S. Cl. 260—233.5 **8 Claims**

1. A method for the preparation of starch esters comprising:
a. reacting a starch base in an aqueous medium at a temperature of from 10° to 90°C. and a pH of from about 5.0 to 12.5 with an acyl phosphate corresponding to the formula:



wherein R contains from 1 to 10 carbon atoms and is selected from the group consisting of alkyl, substituted alkyl, alkenyl, substituted alkenyl, cycloalkyl, bicycloalkyl, substituted bicycloalkyl, unsaturated bicycloalkyl, substituted unsaturated bicycloalkyl, aryl, substituted aryl, and aryl-alkyl; and M_1 and M_2 are cations, and

b. isolating the resultant starch derivative.

3,928,322

KONJAC MANNAN

Noboru Sugiyama, Tokyo, and Hideo Shimahara, Hiroshima, both of Japan, assignors to Kabushiki Kaisha Shimizu Manzo Shoten, Hiroshima, Japan

Division of Ser. No. 179,201, Sept. 9, 1971, Pat. No. 3,856,945. This application Oct. 9, 1974, Ser. No. 513,298
Claims priority, application Japan, Dec. 30, 1970, 45-128288
Int. Cl.² C08B *37/00*
U.S. Cl. 260—236.5 **2 Claims**

1. A process for preparing a purified, water-soluble konjac mannan, characterized by vigorously stirring with water the ground tuber of the konjac plant, removing insoluble material from the resultant liquid mixture, dialyzing the resultant solution with water to remove therefrom soluble impurities, and then lyophilizing the solution to remove water.

3,928,323
ANTI-MICROBIAL QUATERNARY AMMONIUM CO-POLYMERS

Harold A. Green, Havertown, Pa.; John J. Merianos, Jersey City, and Alfonso N. Petrocci, Glen Rock, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 425,931, Dec. 18, 1973, Pat. No. 3,874,870. This application Oct. 3, 1974, Ser. No. 511,759
Int. Cl.² C07D *295/12*
U.S. Cl. 260—239 B **4 Claims**

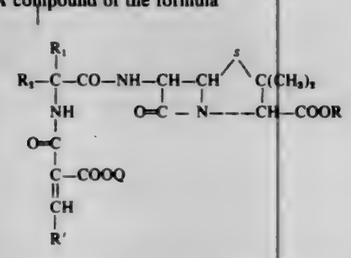
1. A product formed by the condensation of a mixture of difunctional tertiary amines and a molar quantity of 1,4-dichloro-2-butene that is substantially equal to the molar sum of the mixture of the difunctional tertiary amines, said mixture of difunctional tertiary amines being selected from the group consisting of (a) 1,4-bis-(dimethylamino)-2-butene and N,N'-di-lower alkyl piperazine, (b) 1,4-diazabicyclo (2.2.2) octane and 1,4-di-(N-homo-piperidino)-2-butene, (c) 1,4-bis-(dimethylamino)-2-butene and 1,4-bis-(N-homo piperidino)-2-butene, (d) 1,4-bis-(dimethylamino)-2-butene, 1,4-bis-(N-homopiperidino)-2-butene and N,N'-di-lower alkyl piperazine, (e) 1,4-bis-(dimethylamino)-2-butene, N,N'-di-lower alkyl piperazine and 1,4-diazabicyclo (2.2.2) octane, and (f) 1,4-bis-(dimethylamino)-2-butene and 1,4-diazabicyclo (2.2.2) octane.

3,928,324
MALONYL DERIVATIVES OF 6-(α-AMINOACYLAMIDO)PENICILLANIC ACIDS

Robert L. Rosati, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,751
Int. Cl.² C07D *499/44*
U.S. Cl. 260—239.1 **3 Claims**

1. A compound of the formula



wherein R is selected from the group consisting of hydroen and acyloxy lower alkyl wherein acyloxy is selected from the group consisting of lower alkanoyloxy, benzoyloxy and substituted benzoyloxy wherein the substituent is selected from the group consisting of chloro, bromo, fluoro, lower alkyl, lower alkoxy and trifluoromethyl, cations selected from the group consisting of sodium, potassium, calcium, magnesium and ammonium; and amines selected from the group consisting of procaine, N,N'-dibenzylethylenediamine, N-ethylpiperidine, dibenzylamine, N,N-bis(dehydroabietyl)ethylenediamine, 1-ephenamine, triethylamine and benzhydrylamine;

R_1 is selected from the group consisting of hydrogen, alkyl of from 1 to 14 carbon atoms, cycloalkyl of from 3 to 6 carbon atoms, 1,4-cyclohexadienyl, cyclohepatrienyl, naphthyl, benzyl, phenethyl, indolylmethyl, furyl, thienyl, ω-ethylthio(lower)alkyl and



wherein Y is selected from the group consisting of hydrogen, nitro, di(lower alkyl) amino, lower alkanoylamino, lower alkyl, lower alkoxy, hydroxy, sulfamyl, chloro, bromo, fluoro, iodo and trifluoromethyl;

R_2 is selected from the group consisting of hydrogen and lower alkyl;

R_1 and R_2 when taken together with the carbon atom to which they are attached are cycloalkylidene of 3 to 10 carbon atoms;

R' is a member selected from the group consisting of hydrogen, alkyl having from 1 to 4 carbon atoms and cycloalkyl having from 3 to 6 carbon atoms; and

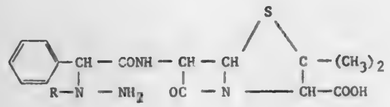
Q is a member selected from the group consisting of hydrogen, alkyl having from 1 to 4 carbon atoms, naphthyl, quinolyl, pphenyl, biphenyl, indanyl, 2-(1,4-naphthoquinonyl); cations selected from the grooup consisting of sodium, potassium, calcium, magnesium and ammonium; and amines selected from the group consisting of procaine, N,N'-dibenzylethylenediamine, N-ethylpiperidine, dibenzylamine, N,N-bis(dehydroabietyl)ethylenediamine, 1-ephenamine, triethylamine and benzhydrylamine.

3,928,325
ALPHA-HYDRAZINOBENZYLPENICILLINS

Giorgio Pifferi, Milan, Italy, assignor to I.S.F. S.p.A., Milan, Italy

Filed Nov. 5, 1973, Ser. No. 412,535
Claims priority, application Italy, Nov. 10, 1972, 31558/72; May 15, 1973, 24127/72
Int. Cl.² C07D *499/44*
U.S. Cl. 260—239.1 **11 Claims**

1. α-Hydrazinobenzylpenicillins of the formula:



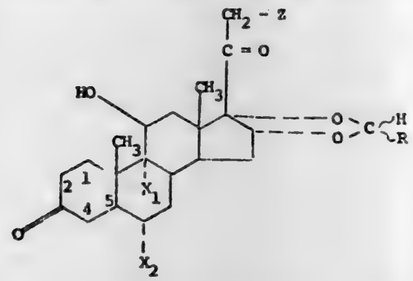
wherein R is hydrogen or an alkyl group having from 1 to 6 carbon atoms, in the form of either racemates or enantiomers; non-toxic salts thereof with an alkali or alkaline-earth metal cation, ammonium ion, or the cation of a non-toxic pharmaceutically acceptable amine; and non-toxic acid addition salts thereof with an inorganic acid selected from the group consisting of hydrochloric, hydrobromic, hydroiodic, sulfuric and phosphoric acids; or an organic acid selected from the group consisting of acetic, succinic, maleic, citric, benzoic, tartaric and ascorbic acids.

3,928,326
PROCESS FOR THE SEPARATION OF STEREOISOMERIC MIXTURES INTO THEIR COMPONENTS AND COMPONENTS OBTAINED HEREBY

Ralph Lennart Brattsand; Bo Thuresson af Ekenstam, both of Molndal; Karl Goran Claeson, Goteborg, and Bror Arne Thalen, Molndal, all of Sweden, assignors to AB Bofors, Bofors, Sweden

Filed May 14, 1973, Ser. No. 359,913
Int. Cl.² C07J *17/00*
U.S. Cl. 260—239.55 D **23 Claims**

8. Stereoisomeric component B of a stereoisomeric mixture (isomeric pair) of a steroid having the general formula:



(I)

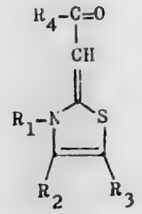
wherein the 1,2-position is saturated or a double bond is present in that position, a double bond always being present in at least the 4,5-position, X_1 and X_2 are independently selected from hydrogen and fluorine, X_1 being selected from hydrogen and fluorine when X_2 is hydrogen and X_1 being fluorine when X_2 is fluorine, Z is selected from hydroxyl and esterified hydroxyl wherein the hydroxyl group is esterified with a member of the group consisting of phosphoric and sulphuric acids, dicarboxylic acids having 2–12 carbon atoms, pyridine-3-carboxylic acid, pyridine-4-carboxylic acid, benzofurane-2-carboxylic acid, and menthoxy-methylcarboxylic acid, and lower alkanoic acids, and R is selected from alkyl groups with straight or branched hydrocarbon chains, having 1–10 carbon atoms, said component B being the isomer of the isomer pair showing the greatest relative rotary power or having the greatest retention volume in gel filtration using a cross-linked dextran gel.

3,928,327
AROYL ALKYLEDENE THIAZOLINES

Akira Takamizawa, Ibaraki, and Hiroshi Harada, Toyonaka, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Sept. 24, 1974, Ser. No. 509,354
Claims priority, application Japan, Dec. 14, 1973, 48-140766
Int. Cl.² C07D *239/04, 277/10, 417/04*
U.S. Cl. 260—240 J **27 Claims**

1. A compound represented by the general formula:



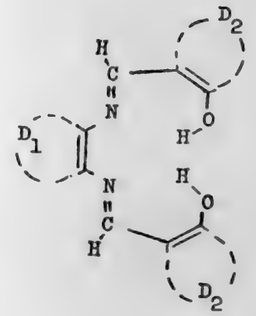
wherein R_1 represents a member selected from the group consisting of lower alkyl groups of up to 5 carbon atoms, lower alkenyl groups of up to 5 carbon atoms, lower alkynyl groups of up to 5 carbon atoms, aralkyl groups of 7 – 9 carbon atoms and (4-amino-2-methyl-5-pyrimidinyl)methyl group; R_2 represents a member selected from the group consisting of hydrogen atom and lower alkyl groups of up to 5 carbon atoms; R_3 represents a member selected from the group consisting of hydrogen atom and phenyl group; R_4 represents a member selected from the group consisting of unsubstituted aryl groups of 6 – 10 carbon atoms and substituted aryl groups of 6 – 10 carbon atoms.

3,928,328
SCHIFF BASE AND METAL BISAZOMETHINE METAL CHELATE

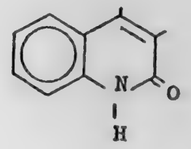
Pritam Singh Dhaliwal, Edison, N.J., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Division of Ser. No. 313,359, Dec. 8, 1972. This application Dec. 20, 1974, Ser. No. 535,140
Int. Cl.² C07D *215/20;* **C07C** *199/10*
U.S. Cl. 260—240 G **3 Claims**

1. A Schiff base of structural formula:



wherein D_1 represents the atoms necessary to complete a phenanthrene nucleus having the indicated nitrogen atoms attached to the 9,10-positions and D_2 represents the atoms necessary to complete a nucleus of the formula:

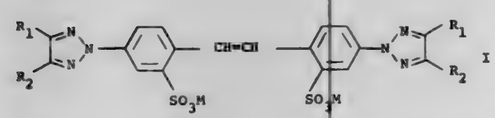


3,928,329
BIS-V-TRIAZOLYL-STILBENES

Fritz Fleck, Bottmingen; Horst Schmid, Munchenstein, both of Switzerland; Alec Victor Mercer, Leeds, and Roger Paver, Eldwick, both of England, assignors to Sandoz Ltd., Basel, Switzerland

Filed May 13, 1974, Ser. No. 469,105
Claims priority, application Switzerland, May 17, 1973, 7045/73
Int. Cl.² C07D *401/14*, *413/14*
U.S. Cl. 260—240.1 **38 Claims**

1. A compound of formula I,

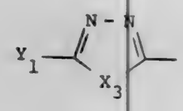


I

wherein

the R_1's are the same and each is hydrogen; chloro; C_{1-4} alkyl; phenyl; phenyl substituted by up to two substituents selected from the group consisting of C_{1-4} alkyl, C_{1-4} alkoxy, fluoro, or chloro; or biphenyl,

the R_2's are the same and each is a radical of formula (a), (b), or (c),

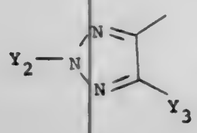


(a)

wherein

Y_1 is C_{1-4} alkyl; phenyl; or phenyl substituted by up to two substituents selected from the group consisting of C_{1-4} alkyl, C_{1-4} alkoxy, fluoro, chloro or $-SO_3M$, and

X_3 is -O- or $-NY_3$-, where Y_3 is hydrogen; C_{1-4} alkyl; C_{1-4} alkyl monosubstituted by chloro; or C_{2-4} alkyl monosubstituted by hydroxy or $-SO_3M$,

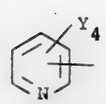


(b)

wherein

Y_2 is naphthyl, unsubstituted or monosubstituted by C_{1-4} alkyl, C_{1-4} alkoxy or $-SO_3M$; phenyl; or phenyl substituted by up to two substituents selected from the group consisting of fluoro, chloro, C_{1-4} alkyl, C_{1-4} alkoxy or $-SO_3M$, and

Y_3 is hydrogen; chloro; C_{1-4} alkyl; phenyl; or phenyl substituted by up to two substituents selected from the group consisting of C_{1-4} alkyl, C_{1-4} alkoxy, fluoro, chloro or $-SO_3M$, and



(c)

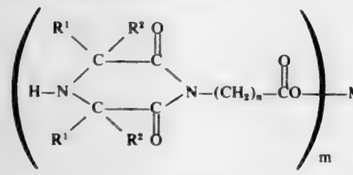
wherein Y_4 is hydrogen or C_{1-4} alkyl, and M is hydrogen or a non-chromophoric cation, with the proviso that any substituted phenyl is substituted by no more than one $-SO_3M$ substituent.

3,928,330
SUBSTITUTED PIPERAZINEDIONE CARBOXYLIC ACIDS AND METAL SALTS THEREOF

Chester E. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 19, 1973, Ser. No. 426,425
Int. Cl.² C07D *295/10*
U.S. Cl. 260—242 **12 Claims**

1. A compound of the formula



I

wherein

R^1 and R^2 are independently of each other methyl or ethyl or together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring, which is unsubstituted or substituted with a methyl group;

n is an integer of from 1 to 12;

M is hydrogen, or a metal selected from the group consisting of barium, nickel, manganese, calcium, zinc, iron, sodium, cobalt, and tin; and

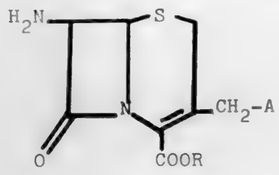
m has a value of from 1 to 4, the value of *m* being the same as the available valence of M.

3,928,331
PROCESS FOR THE MANUFACTURE OF 7-AMINO-3-CEPHEM-4-CARBOXYLIC ACID DERIVATIVES

Eberhard Bauerschmidt, Konigstein, Taunus; Dieter Bormann, Kelkheim, Taunus, and Manfred Worm, Mainz-Kastel, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 30, 1973, Ser. No. 392,877
Claims priority, application Germany, Sept. 2, 1972, 2243242
Int. Cl.² C07D *501/18*
U.S. Cl. 260—243 C **4 Claims**

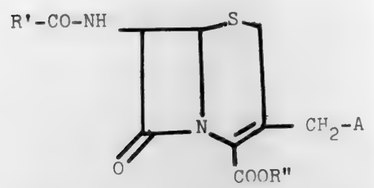
1. In a method for making a 7-amino-3-cephem-4-carboxylic acid or an ester thereof of the formula I



I

in which A stands for hydrogen, alkyl, acyloxy, alkyloxy or hydroxy and R stands of hydrogen, linear or branched alkyl, alkyl substituted by halogen, cycloalkyl, aryl, aralkyl, aralkyl

substituted by lower alkoxy or nitro, aryloxyalkyl, alkoxyalkyl, acyloxyalkyl, aroylalkyl or thienyl, and the salts thereof, from an acylamino compound of a formula II



II

in which R′ stands for alkyl, alkyl substituted by amino or carboxyl, aryl, aryl substituted by halogen or lower alkoxy or hydroxy, aralkyl, aralkyl substituted in the aromate by halogen or lower alkoxy or hydroxy, aralkyl substituted in the alkyl portion by lower alkyl or amino or halogen or lower alkoxy or lower acyloxy or the azido group, aryloxy alkyl, aryloxyalkyl substituted in the aromate by halogen or lower alkoxy or hydroxy, alkoxyalkyl and thienyloxymethyl, thienylmethyl, pyridylmethyl or isoxalyl and R″ has the meaning given for R but cannot stand for hydrogen and A is defined as above, by reacting compound II with an acid halide to form the corresponding iminohalide, converting the iminohalide into the corresponding iminoether by reaction with an alcohol, and hydrolyzing the resulting iminoether, the improvement wherein the compound of the formula II is reacted in an inert solvent with a silylating agent wherein the silylation agent used is trimethyl chlorosilane, dimethyl dichlorosilane, methyltrichlorosilane, triethyl chlorosilane, trimethyl bromosilane, N,O-bistrimethyl silyl acetamide or trimethylsilyl trifluoroacetamide in the presence of a base to activate the amido group before its reaction with the acid halide.

3,928,332
PROCESS FOR THE PRODUCTION OF 4-[3-[10-(2-TRIFLUOROMETHYL) PHENOTHIAZINYL]-PROPYL]-1-PIPERAZINEETHANOL, 1-ADMANTANE CARBOXYLIC ACID ESTER

Harry Louis Yale, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 22, 1974, Ser. No. 462,821
Int. Cl.² C07D *279/28*
U.S. Cl. 260—243 A **9 Claims**

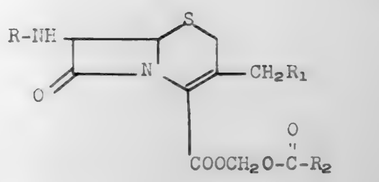
1. A process for the production of crystalline 4-[3-[10-(2-trifluoromethyl)phenothiazinyl]propyl]-1-piperazineethanol, 1-adamantane carboxylic acid ester, which comprises reacting 4-[3-[10-(2-trifluoromethyl)phenothiazinyl]propyl]-1-piperazineethanol with about 1:0.9 to 1.3 equivalents of a 1-adamantoyl halide at a temperature within the range of about 60° to 150°C. for about 2 to 10 hours in the presence of an organic tertiary amine acid acceptor in an anhydrous aromatic hydrocarbon solvent in which the two reactants and acid acceptor are soluble but in which the amine halide by product is insoluble and separating 4-[3-[10-(2-trifluoromethyl)-phenothiazinyl]propyl]-1-piperazineethanol, 1-adamantane carboxylic acid ester from the reaction medium.

3,928,333
PROCESS FOR THE PREPARATION OF 3 CEPHALOSPORIN ESTERS

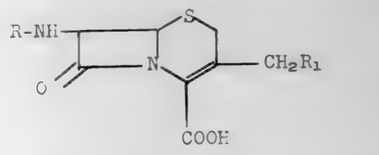
William J. Wheeler, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed May 20, 1974, Ser. No. 471,527
Int. Cl.² C07D *501/02*
U.S. Cl. 260—243 C **5 Claims**

1. In a process for preparing a cephalosporin ester of the formula



which comprises reacting a Δ^3 cephalosporin acid of the formula



with a halomethyl ester of a lower alkanoic acid of the formula

in the presence of base in an inert solvent at a temperature below 50°C. and recovering the product, the improvement which comprises adding one equivalent of base to an equimolar mixture of the acid and the halomethyl ester at a rate such that the rate of generation of acid anion is approximately equivalent to the rate of esterification;

wherein R

is acetyl, mandeloyl, 0-formylmandeloyl, 2-phenoxyacetyl, 2-phenylacetyl, N-t-BOC-phenylglycyl, 2-(2-thienyl)acetyl or 2-(1,2,3,4-tetrazol-1-yl)acetyl;

R_1 is hydrogen, acetoxy, methylthio, (2-methyl-1,3,4-thiadiazol-5-yl)thio or (1-methyl-1,2,3,4-tetrazol-5-yl)thio;

R_2 is methyl, ethyl, isopropyl or tert-butyl; and

X is chloro, bromo or iodo;

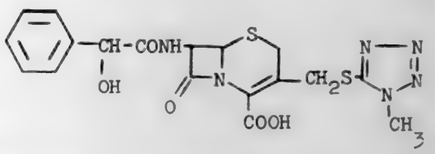
subject to the limitations that when R is N-t-BOC-phenylglycyl, R_1 is other than acetoxy, (2-methyl-1,3,4-thiadiazol-5-yl)thio or (1-methyl-1,2,3,4-tetrazol-5-yl)thio.

3,928,334
PROCESS FOR THE PRODUCTION OF CEFAMANDOLE

John Michael Essery, Fayetteville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

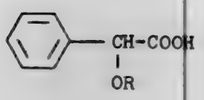
Filed June 6, 1974, Ser. No. 476,972
Int. Cl.² C07D *501/20*
U.S. Cl. 260—243 C **1 Claim**

1. The process for the preparation of the compound cefamandole having the D-configuration in the sidechain and the formula



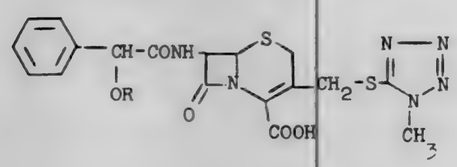
which comprises the consecutive steps of

a. mixing substantially equimolar weights of N-ethoxycarbonyl-2-ethoxy-1,2-dihydroquinoline and of a derivative of D-mandelic acid having the formula



wherein the hydroxyl blocking group R represents dichloroacetyl or formyl in anhydrous tetrahydrofuran at room temperature or below for a short period of time;

b. adding slowly thereto a solution at about the same temperature in aqueous tetrahydrofuran containing substantially the same number of moles of triethylamine as a tertiary amine and substantially the same number of moles of 7-amino-3-(1-methyltetrazol-5-yl)thiomethyl-3-cephem-4-carboxylic acid to produce the intermediate acid having the formula



thereof wherein R has the meaning set out above; and

c. removing said hydroxyl blocking group R by reaction with aqueous sodium bicarbonate to produce said cefamandole.

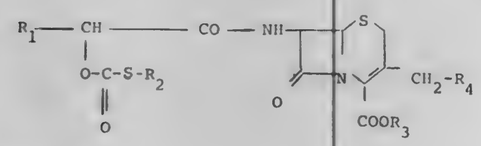
3,928,335

[[(ALKYLTHIOCARBONYL)OXY]ACETYL]CEPHALOSPORINS

Uwe Treuner, and Hermann Breuer, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed July 8, 1974, Ser. No. 486,543
Int. Cl.² C07D *501/24*
U.S. Cl. 260—243 C **10 Claims**

1. A compound of the formula

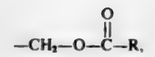


wherein

R_1 is hydrogen, lower alkyl, phenyl, thienyl, furyl or pyridyl;

R_2 is lower alkyl or phenyl-lower alkyl;

R_3 is hydrogen, lower alkyl, phenyl-lower alkyl, tri(lower alkyl)silyl, tri(lower alkyl)stannyl, alkali metal, alkaline earth metal, (lower alkyl)amine or



wherein R is lower alkyl, phenyl or phenyl-lower alkyl; and R_4 is $-SR_5$, wherein R_5 is thiadiazole, triazole, tetrazole and their lower alkyl derivatives.

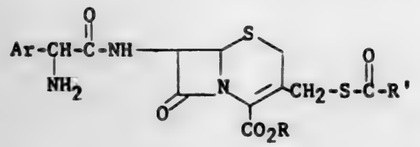
3,928,336

7-[D-(α-AMINOα-PHENYL-, 2-THIENYL- AND 3-THIENYL-ACETAMIDO)]-3-(3-METHYL-1,2,5-OXADIAZOL-4-YL)CARBONYLTHIOMETHYL-3-CEPHEM-4-CARBOXYLIC ACIDS

John Michael Essery, and Lee Cannon Cheney, both of Fayetteville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed July 29, 1974, Ser. No. 492,636
Int. Cl.² C07D *501/36*
U.S. Cl. 260—243 C **35 Claims**

1. A compound having the D-configuration in the 7-sidechain and the formula



wherein Ar is phenyl, 2-thienyl or 3-thienyl; R is hydrogen, pivaloyloxymethyl, acetoxymethyl, methoxymethyl, acetonyl or phenacyl; and R′ is 3-methyl-1,2,5-oxadiazol-4-yl; or a pharmaceutically acceptable salt thereof.

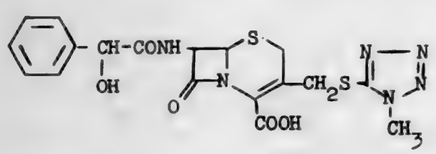
3,928,337

PROCESS FOR THE PRODUCTION OF CEFAMANDOLE

John Michael Essery, Fayetteville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

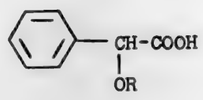
Filed Aug. 7, 1974, Ser. No. 495,343
Int. Cl.² C07D *501/22*
U.S. Cl. 260—243 C **1 Claim**

1. The process for the preparation of the compound cefamandole having the D-configuration in the sidechain and the formula



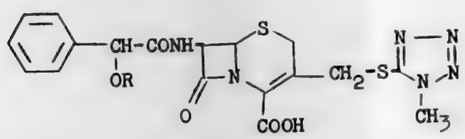
which comprises the consecutive steps of

a. mixing substantially equimolar weights of phosphonitrilic chloride trimer and of a derivative of D-mandelic acid having the formula



wherein the hydroxyl blocking group R represents dichloroacetyl or formyl in anhydrous tetrahydrofuran at room temperature or below for a short period of time;

b. adding slowly thereto a solution at about the same temperature in aqueous tetrahydrofuran containing substantially the same number of moles of triethylamine as a tertiary amine and substantially the same number of moles of 7-amino-3-(1-methyltetrazol-5-yl)thiomethyl-3-cephem-4-carboxylic acid to produce the intermediate acid having the formula



thereof wherein R has the meaning set out above; and

c. removing said hydroxyl blocking group R by reaction with aqueous sodium bicarbonate to produce said cefamandole.

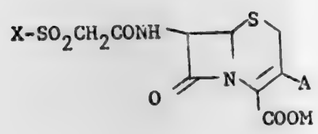
3,928,338

SUBSTITUTED SULFONYLACETAMIDO CEPHALOSPORINS

Robert M. De Marinis, King of Prussia, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 249,858, May 3, 1972, Pat. No. 3,865,819. This application Dec. 3, 1974, Ser. No. 529,163
Int. Cl.² C07D *501/22, 501/24, 501/28;* **A61K** *31/545*
U.S. Cl. 260—243 C **8 Claims**

1. A compound of the structure:



where:

X is NH_3; or mono or dialkylamino, each alkyl from C_1-C_4;

A is hydrogen, methyl, acetoxymethyl, or pyridiniummethyl; and

M is hydrogen, alkali metal cation, nontoxic ammonium cation, or when A is pyridiniummethyl an anionic charge.

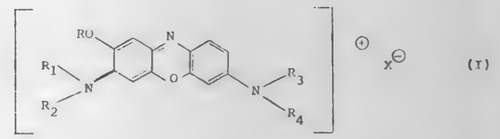
3,928,339

BASIC OXAZINE DYESTUFFS AND PROCESS FOR THEIR PREPARATION

Eberhard Mundlos, Heusenstamm; Luis Herz, Offenbach, Main; Rudolf Neeb, Obertshausen; Reinhard Mohr, Offenbach, Main, and Johann Ostermeier, Diedenbergen, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 212,618, Dec. 27, 1971, Pat. No. 3,806,504. This application Jan. 21, 1974, Ser. No. 435,277
Claims priority, application Germany, Dec. 31, 1970, 2064735The portion of the term of this patent subsequent to Apr. 23, 1991, has been disclaimed.
Int. Cl.² C09B *19/00*
U.S. Cl. 260—244 R **3 Claims**

1. A basic oxazine dyestuff of the formula



in which R is lower alkyl or lower alkyl substituted by halogen, hydroxy, lower alkoxy or cyano, R_1 and R_2 each are hydrogen, lower alkyl, or lower alkyl substituted by halogen, hydroxy, lower alkoxy or cyano, R_3 is hydrogen, lower alkyl or lower alkyl substituted by halogen, hydroxy, lower alkoxy, cyano, carbamoyl, di-lower alkylamino or carbo-lower alkoxy, R_4 is hydrogen, lower alkyl or lower alkyl substituted by halogen, hydroxy, lower alkoxy, cyano, carbamoyl, di-lower alkylamino or carbo-lower alkoxy, or R_3 and R_4 taken together with nitrogen are a heterocyclic ring selected from the group consisting of morpholino or piperidino, and $X^{(-)}$ is an anion.

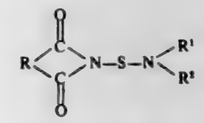
3,928,340

N-[(SUBSTITUTED AMINO) THIO]-IMIDES

John P. Lawrence, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 266,008, June 26, 1972, Pat. No. 3,838,114. This application Mar. 7, 1974, Ser. No. 448,856
Int. Cl.² C07D *209/48, 401/12, 403/12, 413/12*
U.S. Cl. 260—247.1 L **2 Claims**

1. An imide having the following structural formula



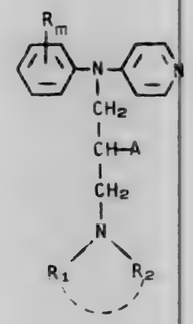
wherein R is selected from the group consisting of 4,5-cyclohexenylene, orthophenylene, ethylene and 1,3-propylene, and



is selected from the group consisting of morpholino, 2,6-dimethylmorpholino, piperidino, diethylamino, diisopropylamino, 3-methylpiperidino, t-butylamino, dicyclohexylamino, N-β-cyanoethylcyclohexylamino, N-β-cyanoethyl-t-butylamino, N-β-cyanoethyl-n-butylamino, N-phenylcyclohexylamino, N-methylanilino, N-ethylanilino, N-ethylbenzylamino, dibenzylamino, N-phenylbenzylamino, N-cyanomethylcyclohexylamino and N-cyanomethyl-n-butylamino.

3,928,341
N-AMINOALKYL-4-ANILINO PYRIDINES
Jean-Louis Delarue, and Albert Debarge, both of Paris, France, assignors to Merrell Toraude, Paris, France
Division of Ser. No. 720,474, April 11, 1968, abandoned. This application Jan. 27, 1972, Ser. No. 221,382
Int. Cl.² C07D *295/12*
U.S. Cl. 260—247.5 G **7 Claims**

1. An N-amino-substituted 4-anilinopyridine of the formula



wherein
R is selected from the group consisting of hydrogen, chlorine, trifluoromethyl, methyl and ethyl;
m is the integer 1 or 2;
A is hydrogen or methyl;
R_1 is alkyl having 1 to 4 carbon atoms;
R_2 is alkyl having 1 to 4 carbon atoms the same as or different from R_1, tetrahydrofurfuryl, or R_1 and R_2 together with the nitrogen atom to which they are attached form morpholino, 2,6-dimethylmorpholino, piperidino, pyrrolidino or piperazino;
or the non toxic acid addition salts thereof.

3,928,342
NITROFURYL-TRIAZOLO(4,3-B)PYRIDAZINE COMPOUNDS AND BACTERIOSTATIC COMPOSITIONS
Herbert Berger, Mannheim-Kafertal; Rudi Gall, Gross-Sachsen; Max Thiel; Wolfgang Vömel, both of Mannheim, and Winfriede Sauer, Mannheim-Wallstadt, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany
Filed Dec. 18, 1972, Ser. No. 316,197
Claims priority, application Germany, Jan. 21, 1972, 2202745
Int. Cl.² C07D *295/04, 237/00*
U.S. Cl. 260—247.5 EP **1 Claim**

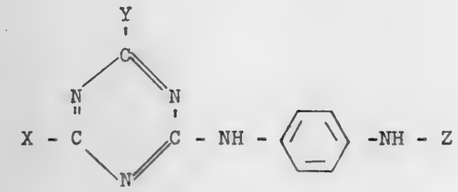
1. 3-(5-nitro-2-furyl)-s-triazolo[4,3-b]pyridazine-6-carboximic acid morpholide.

3,928,343
ISOCYANURATE COMPOUNDS AND PROCESSES FOR PREPARING SAME
William J. Kauffman, Lititz, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Dec. 31, 1974, Ser. No. 537,687
Int. Cl.² C07D *263/34*
U.S. Cl. 260—248 NS **4 Claims**

1. 1,3-bis(2-cyanoethyl)-5-phenylisocyanurate.

3,928,344
PHENYLENEDIAMINE-S-TRIAZINES
Hermann Westlinning, Kleinostheim; Werner Schwarze, Frankfurt, and Horst Fleischhauer, Grossauheim, all of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Germany
Division of Ser. No. 316,565, Dec. 19, 1972, Pat. No. 3,828,002. This application May 24, 1974, Ser. No. 473,168
Claims priority, application Germany, Dec. 27, 1971, 2164800
Int. Cl.² C07D *251/16, 251/38, 251/42*
U.S. Cl. 260—249.5 **22 Claims**

1. A 1, 3, 5-triazine of the formula:



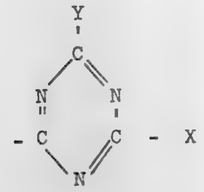
wherein:
Y is (1) SR_1, where R_1 is alkyl of 1 to 12 carbon atoms, phenyl, or cresyl, (2) CN, (3) OR_2, where R_2 is alkyl of 1 to 12 carbon atoms, phenyl, alkylphenyl having 1 to 5 carbon atoms in the alkyl group, allyl or methallyl, or (4)



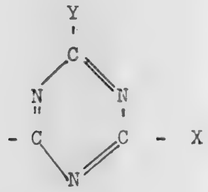
where R_3 and R_4 are hydrogen, allyl, methallyl, cycloalkyl of 5 to 8 carbon atoms, phenyl, methylphenyl, naphthyl or benzyl, alkyl of 1 to 18 carbon atoms, alkyl of 1 to 18 carbon atoms substituted with —OH, —CN or OR_5 where R_5 is alkyl of 1 to 18 carbon atoms, one of R_3 and R_4 is alpha or beta naphthyl with the proviso that the other is hydrogen, R_3 and R_4 together with the nitrogen atom are piperazino, piperidino, morpholino, thiomorpholino or pyrrolidino;
X is chlorine;
Z is alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 8 carbon atoms, phenyl, benzyl, acyl of the formula:



where R_7 is alkyl of 1 to 18 carbon atoms, benzyl or phenyl or the group:



with the proviso that when Z is:



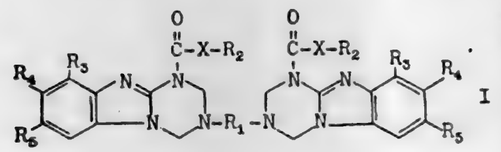
and X and Y are



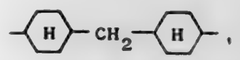
at least one of R_3 and R_4 is allyl or methallyl.

3,928,345
BIS-TRIAZINOBENZIMIDAZOLES AND THEIR PREPARATION
Hans Rochling, Altenhain, Taunus; Kurt Hartel, and Reinhard Kirsch, both of Hofheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed July 9, 1974, Ser. No. 486,780
Claims priority, application Germany, July 11, 1973, 2335193
Int. Cl.² C07D *251/72*
U.S. Cl. 260—249.5 **8 Claims**

1. A compound of the formula



wherein R_1 is a straight-chain or branched (C_2–C_{18})-alkylene group, a p,p'-dicyclohexyl-methylene group of the formula



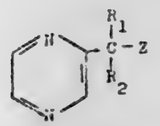
a 1,3- or 1,4-phenylene-dimethylene group or a 1,4-di-(C_2-C_4)-alkyl-piperazine group,
R_2 is a straight-chain or branched alkyl group having 1 to 4 carbon atoms,
R_3 is hydrogen or halogen,
R_4 is hydrogen or halogen, or the phenylthio, the phenoxy, ethoxy, methyl or cyano group,
R_5 is hydrogen or halogen, and
X is oxygen or sulfur.

3,928,346
SOLID HARDENER COMPOSITIONS
William A. Wentworth, Houston, Tex., assignor to Napko Corporation, Houston, Tex.
Continuation-in-part of Ser. No. 390,047, Aug. 22, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 518,627
Int. Cl.² C07D *251/54*
U.S. Cl. 260—249.6 **3 Claims**

1. A method of preparing a solid hardener which comprises heating a mixture consisting of:
a. from 25 to 75 mol percent of a carboxylic acid anhydride selected from the group consisting of phthalic anhydride and hexahydrophthalic anhydride,
b. from 0 to 50 mol percent of a monocarboxylic, aromatic, non-heterocyclic acid,
c. at least 25 mol percent of hexamethoxymethyl melamine.

3,928,347
PYRAZINYLMALONIC ACID ESTERS AND SALTS AND PYRAZINYLACETIC ACIDS, ESTERS AND SALTS
Norman Schwartz, Philadelphia, and Richard J. Mohrbacher, Fort Washington, both of Pa., assignors to McNeil Laboratories, Incorporated, Fort Washington, Pa.
Division of Ser. No. 774,486, Nov. 8, 1968, Pat. No. 3,761,477. This application Nov. 17, 1972, Ser. No. 307,682
Int. Cl.² C07D *241/02*
U.S. Cl. 260—250 B **4 Claims**

1. A member selected from the group consisting of a compound of the formula



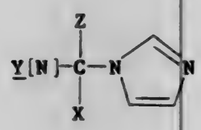
wherein R_1 is a member selected from the group consisting of hydrogen and loweralkyl; R_2 is a member selected from the group consisting of hydrogen, loweralkyl, loweralkyl carboxylate ester, and sodium, calcium, and ammonium carboxylate salts; and Z is a member selected from the group consisting of lower-alkyl carboxylate ester, carboxylic acid, and sodium, calcium, and ammonium carboxylate salts; wherein when R_2 is respectively loweralkyl carboxylate ester or carboxylate salt, Z is also respectively loweralkyl carboxylate ester or carboxylate salt.

3,928,348
N-METHYL-IMIDAZOLE DERIVATIVES AND THEIR PRODUCTION

Wilfried Draber; Karl Heinz Buchel; Erik Regel, and Manfred Plempel, all of Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Germany

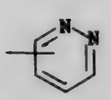
Division of Ser. No. 120,333, March 2, 1971, Pat. No. 3,787,415. This application Nov. 29, 1972, Ser. No. 310,400
Claims priority, application Germany, Mar. 23, 1970, 2013793
Int. Cl.² C07D *237/08*
U.S. Cl. 260—250 A 7 Claims

1. A compound of the formula:



or a pharmaceutically acceptable non-toxic salt thereof, wherein

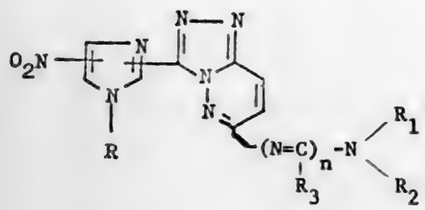
X is a heteroaromatic moiety of the formula:



unsubstituted or substituted by chlorine,

Y is phenyl unsubstituted or substituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or halogen, and

Z is phenyl.



wherein

R is hydrogen, lower alkyl, 2-hydroxyl-alkyl, 2-alkanoyloxalkyl, or 2-alkoxyalkyl, wherein the alkyl moieties contain up to 6 carbon atoms;

R_1 and R_2 are, individually, hydrogen, lower alkanoyl, aroyl, alkoxycarbonyl, alkyl, cycloalkyl, wherein the alkyl or cycloalkyl radicals may contain a hydroxyl, alkoxy or amino group or an alkyl-, alkanoyl- or aroyl- amino group; R_1 and R_2, taken together, represent with the N-atom piperidino, hydroxy-piperidino, alkyl-piperidino, piperazino, alkyl-piperazino or morpholino

R_1 and R_2, taken together, can also represent dialkylsulfimino or dialkylsulfoximino;

R_3 is hydrogen or alklyl; or

R_3, together with R_2, represents an alkylene bridge of from 3 to 4 carbon atoms;

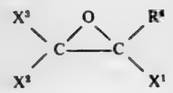
wherein the alkyl groups or moieties contained in the R_1, R_2 and R_3 radicals are of from 1 to 6 carbon atoms in each instance, the aryl groups or moieties are of 6 carbon atoms and the cycloalkyl groups or moieties are of 3 to 8 carbon atoms; and *n* is 0 to 1; and the pharmacologically acceptable salts thereof.

3,928,349
NITROIMIDAZOLYL-TRIAZOLO-PYRIDAZINE COMPOUNDS

Herbert Berger, Mannheim-Kafertal; Rudi Gall, Grossachsen; Kurt Stach, Mannheim-Waldhof; Wolfgang Vomel, and Rita Hoffmann, both of Mannheim, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany

Filed Feb. 26, 1973, Ser. No. 336,099
Claims priority, application Germany, Apr. 1, 1972, 2215999
Int. Cl.² C07D *237/00*
U.S. Cl. 260—250 AC 12 Claims

1. Nitroimidazolyl-triazolo-pyridazine compound of the formula:



where R^4 is hydrogen, fluorine, chlorine, lower perfluoroalkyl or phenyl: and the X's, alike or different, are fluorine or chlorine; and

an o-arylenediamine of the formula

3,928,350
PREPARATION OF 3-SUBSTITUTED 2-HYDROXYQUINOXALINES BY REACTION OF O-ARYLENEDIAMINES WITH TRIHALOVINYL EPOXIDES

James E. Nottke, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

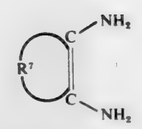
Division of Ser. No. 158,520, June 30, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 391,524
Int. Cl.² C07D *241/36*
U.S. Cl. 260—250 Q 7 Claims

1. A process for preparing a 3-substituted 2-hydroxyquinoxaline which consists essentially of mixing

a trihalovinyl epoxide of the formula

where R^4 is hydrogen, fluorine, chlorine, lower perfluoroalkyl or phenyl: and the X's, alike or different, are fluorine or chlorine; and

an o-arylenediamine of the formula



where R^7 is divalent and completes a carbocyclic aromatic nucleus of 6 or 10 carbons which may be substituted with 1 to 3 of halogen, cyano, lower n-alkyl, lower n-alkoxy, lower n-alkoxycarbonyl, carboxyl, phenyl or phenylalkyl in an inert solvent for the diamine having a non-nucleophilic base at a temperature in the range of −25° to 120°C.

3,928,351
MULTIFUNCTIONAL PYRAZINES

Dennis Scott Donald, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 232,207, March 6, 1972, Pat. No. 3,814,757, which is a continuation-in-part of Ser. No. 133,724, April 13, 1971, abandoned. This application Oct. 5, 1973, Ser. No. 403,867
Int. Cl.² C07D *241/02*
U.S. Cl. 260—250 BN 5 Claims

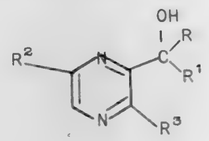
1. A compound selected from the group consisting of 2-(N-methyl-N-phenylamino)-3,5,6-tricyanopyrazine; 2-anilino-3,5,6-tricyanopyrazine; 2-allylamino-3,5,6-tricyanopyrazine; and 2-benzylamino-3,5,6-tricyanopyrazine.

3,928,352
CERTAIN SUBSTITUTED 2-PYRAZINEMETHANOLS

Harold M. Taylor, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed May 7, 1974, Ser. No. 467,708
Int. Cl.² C07D *241/12*, *241/18*, *241/16*
U.S. Cl. 260—250 B 6 Claims

1. A compound of the formula



wherein

R represents C_2–C_8 alkyl, C_3–C_8 cycloalkyl, phenyl, or phenyl mono- or disubstituted with fluoro, chloro, bromo, methyl, ethyl, trifluoromethyl, or methoxy;

R^1 represents C_2–C_8 alkyl, phenyl, or phenyl mono- or disubstituted with fluoro, chloro, bromo, methyl, ethyl, trifluoromethyl, or methoxy;

R^2 represents hydrogen, iodo, methyl, ethyl, methoxy, or methylthio;

R^3 represents hydrogen, iodo, methyl, ethyl, methoxy, methylthio, or dimethylamino;

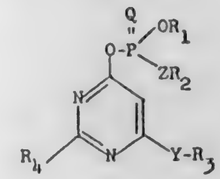
provided that either R^2 or R^3, but not both, represents hydrogen; and that both R and R^1 represent phenyl or substituted phenyl when R^3 represents a group other than hydrogen.

3,928,353
PYRIMIDYL PHOSPHORO-AND THIOPHOSPHOROAMIDATES

Karlheinz Milzner, Basel, and Fritz Reisser, Therwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 230,043, Feb. 28, 1972, Pat. No. 3,862,188. This application Nov. 28, 1973, Ser. No. 419,508
Claims priority, application Switzerland, Mar. 4, 1971, 3190/71; Jan. 12, 1972, 429/72; Aug. 20, 1971, 12298/71; Jan. 12, 1972, 430/72
Int. Cl.² C07F *9/65*; A01N *9/36*
U.S. Cl. 260—256.4 E 9 Claims

1. A compound of the formula:



wherein

R_1, R_2 and R_4 which may be the same or different, are each alkyl of 1 to 5 carbon atoms,

R_3 is alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 8 carbon atoms, phenyl or phenyl mono substituted by chlorine, bromine or alkyl of 1 to 3 carbon atoms,

Q and Y which may be the same or different, are each oxygen or sulphur and

Z is $>NR_5$

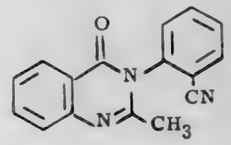
wherein R_5 is hydrogen or alkyl of 1 to 5 carbon atoms.

3,928,354
DERIVATIVES OF 4(3H)-QUINAZOLONE, PROCESS OF PREPARATION, AND PHARMACEUTICAL COMPOSITIONS THEREOF

John Bodenham Taylor, Down Ampley, and Derek Ralph Harrison, Swindon, both of England, assignors to Roussel Uclaf, Paris, France

Filed Oct. 21, 1974, Ser. No. 516,779
Claims priority, application United Kingdom, Oct. 23, 1973, 49338/73
Int. Cl.² C07D *239/90*
U.S. Cl. 260—256.4 Q 3 Claims

1. A compound selected from the group consisting of 2-methyl-3-(o-cyanophenyl)-4(3H)-quinazolone of the formula I:



I

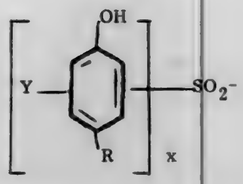
and its pharmaceutically acceptable acid addition salts.

3,928,355
POLYMERIC-ALKYLPHENOLSULFONAMIDES

Richard J. Lee, Downers Grove, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Oct. 26, 1972, Ser. No. 301,121
Int. Cl.² C07D *295/12*
U.S. Cl. 260—268 PL 5 Claims

1. A sulfonamide having the substituted sulfonyl radical



wherein *x* is an integer from 2 to 7, R is the alkyl-substituent having a molecular weight from 85 to 3,000, and Y is hydrogen or the sulfonyl radical and wherein each sulfonyl radical is attached to a nitrogen of the aminoalkyl radical of di-(aminoalkyl) piperazine wherein the aminoalkyl-substituent has 1–10 carbon atoms.

3,928,356

10-[4-(ω-HYDROXY ALKYL)-1-PIPERAZIMYL]-DIBENZO (H,F) OXOFINS AND THIEPINS AND ACETYL ESTERS THEREOF

Suminori Umio, Kawanishi; Ikuo Ueda, Yao; Yoshinari Sato, Ikeda, and Shizuo Maeno, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Japan

Continuation of Ser. No. 874,710, Nov. 6, 1969, abandoned, which is a continuation-in-part of Ser. No. 762,998, Sept. 26, 1968, abandoned. This application Nov. 14, 1972, Ser. No. 306,394

Claims priority, application Japan, Oct. 6, 1967, 42-64540; Dec. 20, 1967, 42-81731; Jan. 29, 1968, 43-5280; Feb. 28, 1968, 43-12773; Mar. 4, 1968, 43-13966; Mar. 19, 1968, 43-18122; Apr. 10, 1968, 43-23917; June 24, 1968, 43-44033

Int. Cl.² C07D *295/04*

U.S. Cl. 260—268 TR **11 Claims**

1. A compound selected from the group consisting of 10-(4-(2-hydroxyethyl)-1-piperazinyl)dibenz(b,f)oxepin, 8-chloro-10-(4-(2-hydroxyethyl)-1-piperazinyl)-dibenzo(b,f)oxepin, 8-chloro-10-(4-(2-acetoxyethyl)-1-piperazinyl)-dibenz(b,f)oxepin, 8-chloro-10-(4-(3-hydroxypropyl)-1-piperazinyl)-dibenz(b,f)oxepin, 8-chloro-10-(4-(3-acetoxypropyl-1-piperazinyl)-dibenz(b,f)oxepin, 8-methoxy-10-(4-(2-hydroxyethyl)-1-piperazinyl)-dibenz(b,f)oxepin, 8-nitro-10-(4-(2-hydroxyethyl)-1-piperazinyl)-dibenz(b,f)oxepin, 8-nitro-10-(4-(2-(2-acetoxyethyl)-1-piperazinyl)-dibenz(b,f)oxepin, 10-(4-(2-hydroxyethyl)-1-piperazinyl)dibenz(b,f)thiepin and 8-chloro-10-(4-(2-hydroxyethyl)-1-piperazinyl)dibenz(b,f)-thiepin.

3,928,357

SUBSTITUTED PIPERAZINE DIONES AND POLYMERIC COMPOSITIONS STABILIZED THEREBY

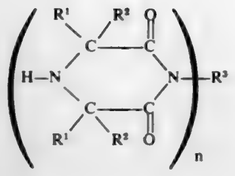
Chester E. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 237,982, March 24, 1972, abandoned. This application Aug. 24, 1973, Ser. No. 391,200

Int. Cl.² C07D *241/04*

U.S. Cl. 260—268 TR **16 Claims**

1. A compound of the formula

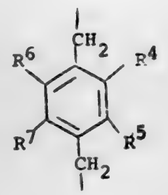


wherein

R^1 and R^2 are independently of each other methyl or ethyl or together with the carbon to which they are bound are cyclopentyl or cyclohexyl, which is unsubstituted or substituted with methyl;

n is an integer of from 1 to 3;

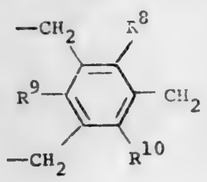
when *n* is 1, R^3 is alkyl of from one to 20 carbon atoms; when *n* is 2, R^3 is alkylene of from one to 20 carbon atoms, p-xylylene of alkyl substituted p-xylylene, of the formula



wherein

R^4, R^5, R^6 and R^7 are hydrogen or lower alkyl having from one to five carbon atoms;

when *n* is 3, R^3 is 1,4,5-mesitylene or 2,4,6-alkyl substituted mesitylene, of the formula



wherein

R^8, R^9, and R^{10} are hydrogen or lower alkyl, having from one to five carbon atoms.

3,928,358

PIPERAZINE DERIVATIVES

Ernst Otto Renth; Kurt Schromm; Anton Mentrup, all of Ingelheim am Rhein, and Peter Danneberg, Ockenheim, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

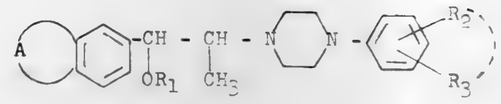
Filed May 15, 1974, Ser. No. 469,944

Claims priority, application Germany, May 21, 1973, 2325633

Int. Cl.² C07D *295/12*

U.S. Cl. 260—268 BC **4 Claims**

1. A compound of the formula



wherein

A is methylenedioxy or ethylenedioxy,

R_1 is (alkyl of one to four carbon atoms)-carbamoyl or phenyl-carbamoyl,

R_2 is hydrogen, alkyl of one to four carbon atoms, alkoxy of one to four carbon atoms, halogen or trifluoromethyl,

R_3 is hydrogen, alkyl of one to four carbon atoms, alkoxy of one to four carbon atoms or halogen, and

R_2 and R_3, together with each other and the carbon atoms of the phenyl ring to which they are attached, form the benzene ring,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,928,359

N-(FURYL-OR THIENYL-METHYL)-DESOXY-NORMORPHINES AND -NORCODEINES AND SALT THEREOF

Gerhard Walther; Herbert Merz; Adolf Langbein, and Klaus Stockhaus, all of Ingelheim, Rhine, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

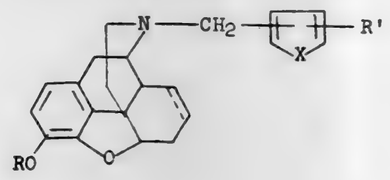
Filed Sept. 11, 1973, Ser. No. 396,171

Claims priority, application Germany, Sept. 14, 1972, 2245141

Int. Cl.² C07D *489/00*

U.S. Cl. 260—285 **6 Claims**

1. A compound of the formula



wherein

R is hydrogen, methyl or acetyl,

R′ is hydrogen or methyl, and

X is oxygen or sulfur,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,928,360

1,3,4,9B-TETRAHYDRO-2H-INDENO[1,2-C]PYRIDINES

Anton Ebnother, Arlesheim; Jean-Michel Bastian, Therwil, and Erwin Rissi, Basel, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

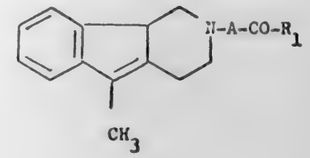
Continuation-in-part of Ser. No. 264,423, June 20, 1972, abandoned, Continuation-in-part of Ser. No. 72,800, Sept. 16, 1970, abandoned. This application Nov. 29, 1973, Ser. No. 419,991

Claims priority, application Switzerland, Sept. 23, 1969, 14317/69; Dec. 18, 1969, 18830/69; Apr. 23, 1970, 6078/70; June 3, 1970, 8267/70; Sept. 23, 1969, 14318/69; Dec. 16, 1969, 18671/69; Apr. 23, 1970, 6079/70; June 3, 1970, 8268/70; Sept. 23, 1969, 14319/69; Apr. 23, 1970, 6080/70; June 3, 1970, 8269/70

Int. Cl.² C07D *221/16*

U.S. Cl. 260—293.54 **33 Claims**

1. A pharmaceutically acceptable acid addition salt of the formula:



wherein

R_1 is lower alkyl of one to four carbon atoms, cycloalkyl of five or six carbon atoms, phenyl or phenyl monosubstituted by chlorine, bromine, fluorine, methoxy, methylthio or lower alkyl of one to four carbon atoms, and

A is a straight or branched alkylene chain of one to four carbon atoms.

3,928,361

1-(SULFAMOYLPHENYLALKYL)-3,5-DIPYRIDYL-1,2,4 TRIAZOLES

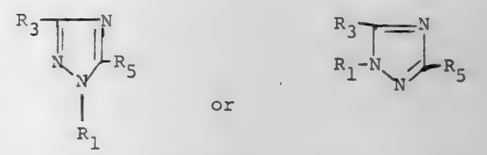
John J. Baldwin, Lansdale, and Frederick C. Novello, Berwyn, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 361,914, May 21, 1973, Pat. No. 3,882,134. This application Nov. 29, 1974, Ser. No. 527,992

Int. Cl.² C07D *213/44*

U.S. Cl. 260—294.8 F **3 Claims**

1. A compound of the formula



wherein

R_1 is loweralkyl substituted by N,N-di(C_1 to C_3) alkylsulfamoylphenyl,

R_2 is pyridyl; and

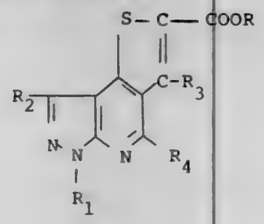
R_5 is pyridyl.

3,928,362
DERIVATIVES OF PYRAZOLO[3,4-b]THIENO[2,3-d]PYRIDINE-2-CARBOXYLIC ACIDS

Theodor Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 401,798, Sept. 28, 1973, Pat. No. 3,887,570. This application Feb. 21, 1975, Ser. No. 551,810
Int. Cl.² C07D *213/55*
U.S. Cl. 260—294.8 B **11 Claims**

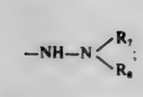
1. A compound of the formula



wherein
R and R_2 each is hydrogen or lower alkyl;
R_1 is hydrogen, lower alkyl, phenyl, benzyl or phenethyl;
R_3 is



or



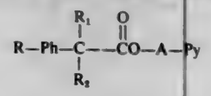
R_4 is hydrogen, lower alkyl or phenyl;
R_5 and R_6 each is hydrogen or lower alkyl; and
R_7 and R_8 each is hydrogen, lower alkyl or phenyl.

3,928,363
ALPHA-[P-(1-CYCLOLOWER ALKENYL)-PHENYL]LOWER FATTY ACID-PYRIDYL-LOWER ALKYL ESTERS AND DERIVATIVES

Georges Haas, Oberwil; Alfred Sallmann, Bottmingen, and Alberto Rossi, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 6, 1973, Ser. No. 386,133
Claims priority, application Switzerland, Aug. 16, 1972, 12129/72
Int. Cl.² C07D *213/55*
U.S. Cl. 260—295.5 R **9 Claims**

1. α-Phenyl fatty acid esters of the formula



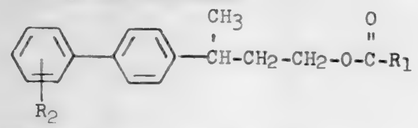
wherein R denotes unsubstituted 5, 6 or 7 ring membered 1-cycloalkenyl, or such radical mone-substituted by lower alkyl or lower alkoxy, Ph denotes unsubstituted o- or p-phenylene, or such radical mono-substituted by lower alkyl, lower alkoxy, halogen or trifluoromethyl, R_1 and R_2 each denote independently hydrogen, lower alkyl, allyl or methallyl, or together denote lower alkylidene, A denotes straight or branched lower 1,1- 1,2- or 1,3-alkylene or a direct bond and Py denotes unsubstituted pyridyl or such radical mono-substituted by lower alkyl or lower alkoxy, wherein "lower" denotes said radicals with at most 4 carbon atoms, or therapeutically acceptable acid addition salts thereof.

3,928,364
CARBOXYLIC ACID ESTERS OF 3-BIPHENYLYL-(BUTANOLS)

Ernst Seeger; Helmut Teufel; Wolfhard Engel, and Gunther Engelhard, all of Biberach an der Riss, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Filed June 11, 1974, Ser. No. 478,265
Claims priority, application Germany, June 16, 1973, 23308385
Int. Cl.² C07D *213/55*
U.S. Cl. 260—295 R **4 Claims**

1. A compound of the formula



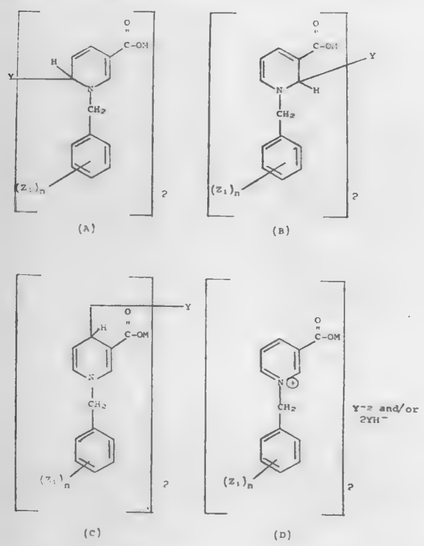
wherein
R_1 is 3-pyridyl, 4-pyridyl, [(alkyl of 1 to 3 carbon atoms)-3-pyridyl]or [(alkyl of 1 to 3 carbon atoms)-4-pyridyl], and
R_2 is hydrogen or halogen,
or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,928,365
PROCESS FOR THE PRODUCTION OF COMPLEX MIXTURES OF N-BENZYL-DIHYDRO-NICOTINIC ACID DIMERS AND METAL SALTS THEREOF AND DERIVATIVES THEREOF

Carl C. Greco, Garnerville, N.Y.; Stanley B. Mirviss, Stamford, Conn., and Arthur E. Martell, College Station, Tex., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 193,201, Oct. 27, 1971, Pat. No. 3,781,296. This application Aug. 20, 1973, Ser. No. 389,747
Int. Cl.² C07D *213/55*
U.S. Cl. 260—295.5 R **7 Claims**

1. A process for preparing a composition comprising a complex mixture of compounds which include those corresponding to the formulae:



wherein Y in (A), (B), and (C) is selected from the group consisting of oxygen and $(S)_x$ but wherein Y in (D) is $(S)_x$; M is selected from the group consisting of hydrogen and the cations of Group IA of the Periodic Table of the Elements and ammonium; Z_1 is a halogen, x is an integer having a value of

from 1 to 4 inclusive or a mixture of values of from 1 to 4 inclusive; and n is an integer having a value of from 0 to 2 inclusive; said process comprising reacting a reagent selected from the group consisting of alkali metal and ammonium hydroxides and alkali metal and ammonium sulfides and polysulfides with a 1-benzyl-3-carboxy pyridinium halide; and wherein the concentration of said alkali metal or ammonium hydroxide or alkali metal or ammonium sulfide or polysulfide is about 1.5 times, on a molar basis, the concentration of said pyridinium halide.

3,928,366
PREPARATION OF 2-SUBSTITUTED-6-PYRIDYL-NICOTINIC ACIDS

Ruth Pauline Brundage, and George Y. Lesher, both of Schodack, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 346,190, March 29, 1973, Pat. No. 3,838,156. This application Mar. 20, 1974, Ser. No. 452,806
Int. Cl.² C07D *213/22*
U.S. Cl. 260—295.5 R **1 Claim**

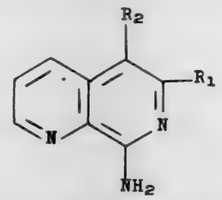
1. The process which comprises refluxing 1,2-dihydro-2-oxo-6-Q‴-nicotinonitrile in an aqueous acidic medium to produce 1,2-dihydro-2-oxo-6-Q‴-nicotinic acid, heating said 2-oxo-nicotinic acid with a halogenating agent at about 50°–110°C. to produce 2-halo-6-Q‴-nicotinic acid and heating said 2-halo compound with R_1NH_2 at about 75°–150°C. to produce 2-R_1NH-6-Q‴-nicotinic acid where R_1 is lower-alkyl and Q‴ is 4(or 3)-pyridyl or 4(or 3)-pyridyl having 1 or 2 lower-alkyl substituents.

3,928,367
1-AMINO NAPHTHYRIDINES

Joseph Mayer, New York, N.Y., and Margaret H. Sherlock, Bloomfield, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 816,075, April 14, 1969, abandoned, which is a continuation-in-part of Ser. No. 119,377, Feb. 26, 1971, abandoned. This application July 16, 1973, Ser. No. 379,525
Int. Cl.² C07D *213/74*
U.S. Cl. 260—296 B **7 Claims**

1. A 1,7-naphthyridine compound of the structural formula:



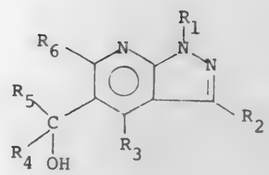
and the pharmaceutically acceptable salt thereof, wherein R_1 is pyridyl, and R_2 is selected from the group consisting of hydrogen, lower alkyl, phenyl, benzyl and phenethyl.

3,928,368
ALCOHOL DERIVATIVES OF PYRAZOLO[3,4-b]PYRIDINES

Hans Hoehn, Tegernheim, and Theodor Denzel, Nurenberg, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 12, 1973, Ser. No. 423,960
Int. Cl.² C07D *221/00*
U.S. Cl. 260—296 H **9 Claims**

1. A compound of the formula:



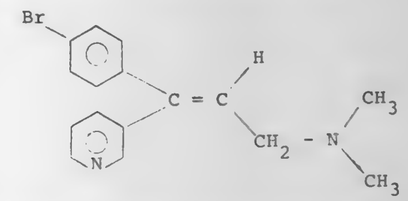
wherein R_1, R_2, and R_4 are each independently selected from the group consisting of hydrogen and lower alkyl of 1 to 4 carbons; and R_3 is selected from the group consisting of hydrogen, lower alkoxy of 1 to 4 carbons, and halogen; and R_4 and R_5 are independently selected from the group consisting of hydrogen, lower alkyl of 1 to 4 carbons, and phenyl.

3,928,369
COMPOUNDS USEFUL AS ANTIDEPRESSIVE AGENTS, AND A PROCESS FOR THEIR PREPARATION

Peder Bernhard Berntsson, Vastra Frolunda; Per Arvid Emil Carlsson, Goteborg, and Hans Rudolf Corrodi, Askim, all of Sweden, assignors to Aktiebolaget Hassle, Goteborg, Sweden

Continuation of Ser. No. 247,101, April 24, 1972, abandoned. This application Jan. 7, 1974, Ser. No. 431,051
Claims priority, application Sweden, Apr. 28, 1971, 5496/71
Int. Cl.² C07D *213/36*
U.S. Cl. 260—296 R **1 Claim**

1. A compound having the structural formula



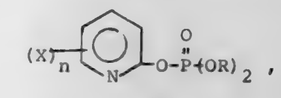
or a pharmaceutically acceptable acid addition salt thereof.

3,928,370
PROCESS FOR MAKING DIALKYL PYRIDYLPHOSPHATES

Chun Shan Wang, and Michael J. Mintz, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

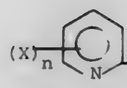
Filed Sept. 3, 1974, Ser. No. 502,481
Int. Cl.² C07D *213/00*
U.S. Cl. 260—297 P **9 Claims**

1. In the process of preparing a compound of the formula



(I)

wherein
X is fluoro, chloro or bromo,
n is an integer of from 0 to 3, inclusive, and
R is lower alkyl,
by reacting by contacting under substantially anhydrous conditions
a. an alkali metal or ammonium pyridinate of the formula



wherein M is an alkali metal and X and *n* have the aforesaid meaning,

b. a dialkyl hydrogen phosphite of the formula



wherein R has the aforesaid meaning, and

c. carbon tetrachloride,

the improvement consisting of conducting said process in the presence of a small but sufficient amount of a tertiary amine to catalyze the reaction between (a), (b) and (c),

said tertiary amine having a pKa of at least about 9.5.

3,928,371

PYRIDO-INDOLE DERIVATIVES

Giorgio Winters, and Nunzio Di Mola, both of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

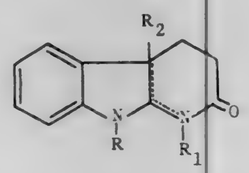
Filed Sept. 3, 1974, Ser. No. 503,026

Claims priority, application United Kingdom, Sept. 10, 1973, 42368/73

Int. Cl.² C07D *209/56*

U.S. Cl. 260—297 T **6 Claims**

1. A compound of the formula



wherein

the dotted lines represent an additional bond localized in one of the two possible positions;

R represents lower alkyl of 1 to 4 carbon atoms and benzyl;

R_1 represents hydrogen, lower alkyl of 1 to 4 carbon atoms, benzyl and lower aliphatic acyl of 1 to 4 carbon atoms and it is present only if the symbol R_2 is absent and the double bond is located between the carbon atoms in position 2 and 3 of the indole ring.

R_2 represents hydrogen, lower alkyl of 1 to 4 carbon atoms and benzyl and it is present only if the symbol R_1 is absent and the double bond is located between the positions 1 and 2 of the pyridine ring.

3,928,372

2-(3-OXYTHIAZOLYL)BENZIMIDAZOLES

Richard J. Bochis, East Brunswick, and Michael H. Fisher, Somerville, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 224,357, Feb. 7, 1972, abandoned, which is a continuation of Ser. No. 20,092, March 16, 1970, abandoned, which is a continuation of Ser. No. 775,117, Nov. 12, 1968, abandoned, which is a continuation of Ser. No. 688,373, Dec. 6, 1967, abandoned. This application Aug. 31, 1973, Ser. No. 393,515

Int. Cl.² C07D *277/30*

U.S. Cl. 260—302 H **2 Claims**

1. 2-(3-Oxythiazol-4-yl)benzimidazole.

2. 5-Isopropoxycarbonylamino-2-(3-oxythiazol-4-yl)benzimidazole.

3,928,373

1,2,3-TRIAZOLES

Gerhard Beck, Frankfurt am Main, and Dieter Günther, Kelkheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

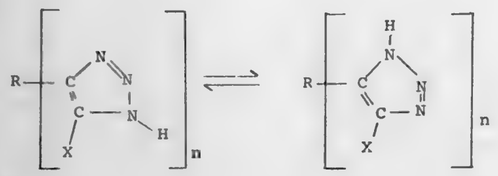
Continuation-in-part of Ser. No. 257,761, May 30, 1972, abandoned. This application Mar. 15, 1973, Ser. No. 341,799

Claims priority, application Germany, Aug. 2, 1971, 2138522

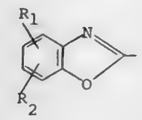
Int. Cl.² C07D *249/04*

U.S. Cl. 260—307 D **5 Claims**

1. A compound of the formula



in which *n* is 1 or 2, R is — if *n* is 1 — lower alkyl; lower alkenyl; cycloalkyl, cycloalkenyl or cycloalkdienyl of 4 to 6 carbon atoms each; phenyl; phenyl substituted by 1 to 3 radicals selected from the group consisting of lower alkyl, hydroxy, amino, lower-alkyl-amino, di-(lower alkyl)-amino, lower alkanoylamino, halogen, lower alkoxy, nitro, carboxy, lower carboalkoxy and cyano; naphthyl; anthracenyl, pyrenyl, 1-amino-anthraquinolyl; benzyl; phenethyl; styryl; furanyl; tetrahydrofuranyl, thienyl, pyridyl or benzoxazolyl and — if *n* is 2 — R is a direct bond, lower alkylene, lower alkenylene, phenylene, $-C_6H_4-$(lower alkylene), 4,4′-stilbylene or 1,4′-styrylene and X is a group of the formula



in which R_1 is hydrogen, lower alkyl, halogen, amino, lower alkanoylamino, nitro or lower carboalkoxy, R_2 is hydrogen, halogen or lower alkyl or R_1 and R_2 together stand for an annellated benzene ring.

3,928,374

NITROIMIDAZOLE DERIVATIVES

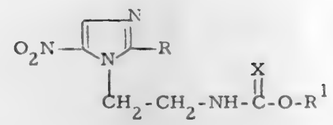
Jan Heeres, Turnhout; Joseph Hector Mostmans, Antwerpen, and Robert Maes, Vosselaar, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 372,567, June 22, 1973, abandoned. This application Apr. 18, 1974, Ser. No. 461,821

Int. Cl.² C07D *233/95*

U.S. Cl. 260—309 **25 Claims**

1. A chemical compound selected from the group consisting of a nitroimidazole derivative having the formula:



and the therapeutically active acid addition salts thereof, wherein:

X is a member selected from the group consisting of O and S;

R is a member selected from the group consisting of hydrogen, loweralkyl, phenyl, halophenyl, halomethyl and hydroxymethyl; and

R^1 is a member selected from the group consisting of loweralkyl, loweralkenyl, cyclopentyl, cyclohexyl and loweralkoxy-loweralkyl.

3,928,375

ANTHELMINTICALLY ACTIVE 2-CARBALKOXY-AMINO-BENZIMIDAZOLYL-5(6)-AMINO-PHENYL ETHERS

Dieter Duwel, Hofheim, Taunus; Reinhard Kirsch, Niederjosbach, Taunus; Heinz Loewe, Kelkheim, Taunus, and Josef Urbanietz, Schwalbach, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

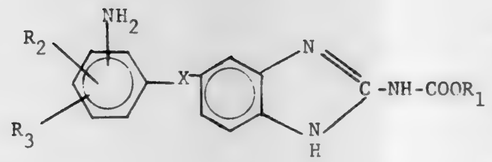
Filed Sept. 23, 1974, Ser. No. 508,337

Claims priority, application Germany, Sept. 25, 1973, 2348104

Int. Cl.² C07D *235/32*

U.S. Cl. 260—309.2 **7 Claims**

1. A 2-carbalkoxy-amino-benzimidazolyl-5(6)-aminophenyl ether of the formula



wherein R_1 is alkyl of 1 to 4 carbon atoms, R_2 and R_3, independently of one another, represent hydrogen, alkyl of 1 to 4 carbon atoms, hydroxyl, alkoxy of 1 to 4 carbon atoms, halogen or trifluoromethyl, and X is oxygen or sulfur, and the salt thereof with a physiologically tolerable acid.

3,928,376

N,N′-SUBSTITUTED 2,4,5-TRIKETOIMIDAZOLIDINES

Johannes Reese, Wiesbaden-Biebrich, and Kurt Kraft, Auringen, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

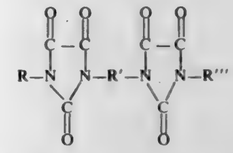
Continuation-in-part of Ser. No. 24,794, April 1, 1970, abandoned. This application Mar. 1, 1972, Ser. No. 230,989

Claims priority, application Germany, Apr. 2, 1969, 1916932; Apr. 24, 1969, 1920845

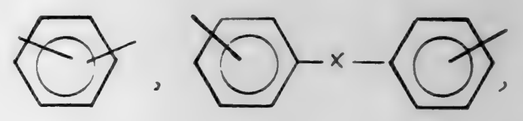
Int. Cl.² C07D *233/96*

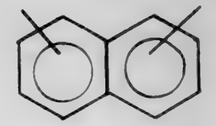
U.S. Cl. 260—309.5 **6 Claims**

1. A compound of formula



wherein R and R‴ are phenyl or naphthyl that are unsubstituted or monosubstituted with nitro, halo, lower alkyl, lower alkoxy or haloalkyl; R and R‴ being the same or different and R′ is





that is unsubstituted or mono-substituted with lower alkyl, lower alkoxy, halo, nitro or haloalkyl, and wherein x is a bond, CH_2, O, S or sulphonylene.

3,928,377

DI-(HYDROXYALKYL) IMIDAZOLIDINEDIONES

Jürgen Habermeier, Pfeffingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

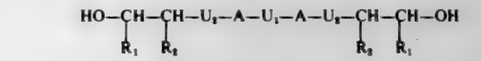
Filed July 10, 1974, Ser. No. 487,107

Claims priority, application Switzerland, July 30, 1973, 11053/73

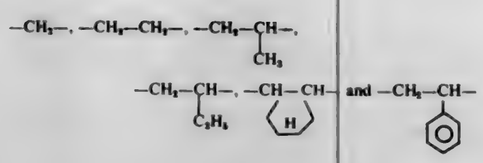
Int. Cl.² C07D *49/32*

U.S. Cl. 260—309.5 **6 Claims**

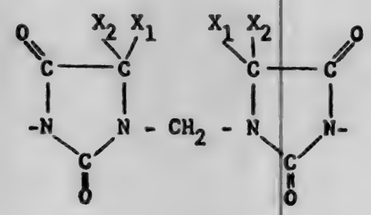
1. A di-(hydroxyalkyl) compound of the formula



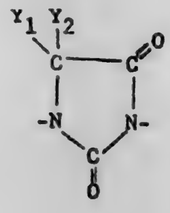
wherein each R_1 denotes a member selected from the group consisting of hydrogen, methyl, ethyl and phenyl, R_2 denotes hydrogen or together with R_1 denotes tetramethylene, A denotes a member selected from the group consisting of a divalent residue of the formulae



U_1 denotes a divalent residue of the formula



wherein X_1 and X_2 each denotes hydrogen or an alkyl with 1 to 4 carbon atoms, and U_2 has the same meaning as U_1 or denotes a residue of the formula



wherein Y_1 and Y_2 each denotes hydrogen, an alkyl with 1–4 carbon atoms or phenyl or together denote pentamethylene.

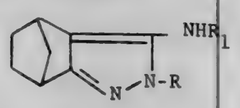
3,928,378

FUSED BICYCLIC AMINOPYRAZOLES

Victor J. Bauer, Somerville; Marc N. Agnew, Plainsboro, and Richard C. Effland, Somerville, all of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed Jan. 30, 1974, Ser. No. 437,992
Int. Cl.² C07D *231/54*
U.S. Cl. 260—310 R **4 Claims**

1. A compound of the formula



in which R is hydrogen, alkyl of 1–4 carbon atoms, phenyl or halophenyl and R_1 is alkyl of 1–4 carbon atoms, cycloalkyl of 3–7 carbon atoms, phenyl or halophenyl.

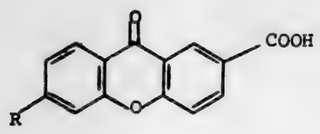
3,928,379

NOVEL SUBSTITUTED XANTHONE CARBOXYLIC ACID COMPOUNDS

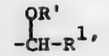
Jurg R. Pfister, Los Altos; Ian T. Harrison and John H. Fried, both of Palo Alto; all of California, assignors to Syntex, (U.S.A.) Inc., Palo Alto, California.

Division of Ser. No. 259,671, June 5, 1972, Pat. No. 3,821,252, which is a continuation-in-part of Ser. No. 231,756, Mar. 3, 1972, now abandoned. This application Feb. 7, 1974, Ser. No. 440,327.
Int. Cl. C07D *311/86*
U.S. Cl. 260/335 **4 Claims**

1. A compound selected from those represented by the following formula:



and the pharmaceutically acceptable, non-toxic alkyl or glycerol esters, unsubstituted, monoalkyl, dialkyl, dialkylaminoalkyl, alko::yalkyl or phenethyl substituted amides and salts thereof; wherein R is a group selected from those of the formula



wherein R′ is hydrogen, lower alkyl, cycloalkyl, tetrahydrofuran-2-yl, tetrahydropyran-2-yl, tetrahydropyran-4-yl, 4-alkoxytetrahydropyran-4-yl, or carboxylic acyl containing up to 12 carbon atoms, and R′ is hydrogen; lower alkyl; cycloalkyl; phenyl; substituted phenyl, in which the substituent is halo, lower alkyl, lower alkoxy, lower alkylthio trifluoromethyl, or cyano.

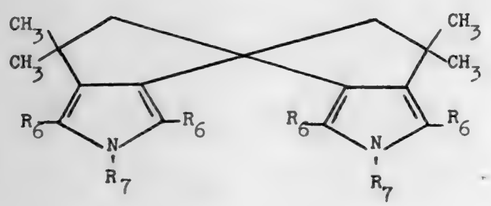
3,928,380

1,1′-SPIROBIS(CYCLOPENTA-[4,5-C]PYRROLES)

Malcolm R. Bell, and Rudolf Oesterlin, both of Rensselaer, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Mar. 29, 1973, Ser. No. 346,005
Int. Cl.² C07D *209/02*
U.S. Cl. 260—326.9 **3 Claims**

1. A compound having the formula



where each R_6 group is the same lower-alkyl; and R_7 is hydrogen, lower-alkyl, cycloalkyl or cycloalkyl-lower-alkyl containing from three to six ring carbon atoms and having a total of five to ten carbon atoms, phenyl, or phenyl substituted in the phenyl nucleus by a single member of the group consisting of lower-alkyl, lower-alkoxy, halogen, hydroxy, methylenedioxy, trifluoromethyl, lower-alkanoylamino, amino, di-lower-alkylamino, or sulfamoyl.

3,928,381

SULFURIZED AND CHLORINATED ALKYLENE POLYAMINE REACTION PRODUCT LUBRICANT ADDITIVE AND LUBRICATING COMPOSITION CONTAINING SAME

William P. Cullen, Fishkill; Harry Chafetz, Poughkeepsie, and Walter W. Hellmuth, Beacon, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 314,315, Dec. 12, 1972, Pat. No. 3,843,533. This application Apr. 22, 1974, Ser. No. 462,679
Int. Cl.² C07D *339/04*
U.S. Cl. 260—327 C **8 Claims**

1. An oil-soluble ashless sulfurized and chlorinated alkylene polyamine reaction product prepared by chlorinating a reaction product of sulfur and a polyolefin containing a trithione using at least a mole of chlorine per mole of trithione at a temperature ranging from about 20° to 95°C. to form a chlorinated intermediate product, said trithione being represented by the formula:



in which R and R′ represent hydrogen or a hydrocarbyl radical having from about 50 to 125 carbon atoms, at least one of R and R′ representing an aliphatic hydrocarbon radical, and, reacting said intermediate product with a polyamine in the proportion of 1 to 5 moles of said polyamine per mole of said intermediate product at a temperature in the range of 100° to 275°C., said polyamine being represented by the formula:

$$H_2N—(R''—NH)_xH$$

in which R″ is a divalent alkylene radical having from 2 to 6 carbon atoms and x is a integer ranging from 1 to 6 to produce a reaction product characterized by consisting of from 0.10 to 5.0 weight percent sulfur, 0.10 to 5.0 weight percent chlorine and 0.10 to 5.0 weight percent nitrogen.

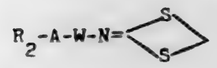
3,928,382

2-IMINO-1,3-DITHIETANE

Roger Williams Addor; James Byron Lovell, both of Pennington, and Sidney Kantor, Trenton, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 235,397, March 16, 1972, abandoned. This application Aug. 14, 1974, Ser. No. 493,944
Int. Cl.² C07D *339/00*
U.S. Cl. 260—327 M **6 Claims**

1. A 2-imino-1,3-dithietane having the formula



wherein W is selected from the group consisting of methylene, ethylene, lower alkyl (C_1 – C_5) substituted methylene and lower alkyl (C_1 – C_5) substituted ethylene; A is oxygen or sulfur; and R_2 is selected from the group consisting of C_1–C_{12} alkyl, monocyclic alkyl of up to 12 carbon atoms and bicyclic alkyl of up to 12 carbon atoms, phenyl, mono and diloweralkyl (C_1–C_4) phenyl, mono and dihalophenyl, furfuryl, tetrahydrofurfuryl, alkenyl (C_2–C_8), and lower alkoxy (C_1–C_4) lower alkyl (C_2-C_3).

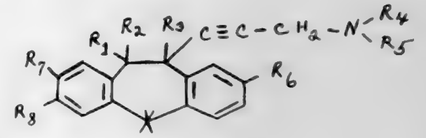
3,928,383

PROPYNYLAMINE-SUBSTITUTED DIBENZO[B,F]THIEPINS AND DIBENZ[B,F]OXEPINS

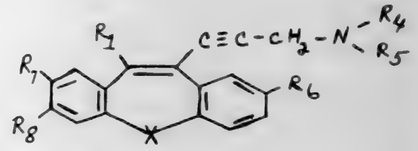
Jean-Pierre Kaplan, Le-Plessis-Robinson, France, and Emilio Kyburz, Reinach, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 380,653, July 12, 1973, abandoned. This application Aug. 26, 1974, Ser. No. 500,770
Claims priority, application Switzerland, June 8, 1973, 8354/73; May 10, 1974, 6421/74
Int. Cl.² C07D *337/14*
U.S. Cl. 260—327 B **20 Claims**

1. A compound of the formula



or



wherein X is oxygen or sulfur; R_1 and R_2, independently, are hydrogen or lower alkyl; R_3 is hydrogen; R_4 and R_5, independently, are hydrogen, lower alkyl, hydroxy-lower alkyl, alkanoyloxy-lower alkyl, wherein the alkanoyloxy group contains 2 to 18 carbon atoms, or, when taken together, are a saturated 5-or 6-membered heterocyclic ring, selected from the group consisting of pyrrolidino, piperazino, piperidino, morpholino, thiomorpholino, methyl-piperidino, N′-lower alkyl-piperazino, N′-hydroxy-lower alkyl-piperazino, and N′-alkanoyloxy-lower alkyl-piperazino, wherein the alkanoyloxy group contains 2 to 18 carbon atoms; R_6 is lower alkyl, lower alkyl-sulfonyl, hydroxy, lower alkoxy, lower alkylthio, di-(lower alkyl) sulfamoyl, halogen, trifluoromethyl, nitro, amino or di-(lower alkyl) amino; and R_7 and R_8, independently, are hydrogen, lower alkyl, lower alkoxy, lower alkylsulfonyl, hydroxy, lower alkylthio, di-(lower alkyl)-sulfamoyl, halogen, trifluoromethyl, nitro, amino or di-(lower alkyl)-amino, or its corresponding N-oxide or a pharmaceutically acceptable acid addition salt thereof.

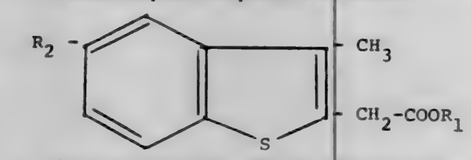
3,928,384

BENZO[B]THIENYL ACETIC ACID ESTERS

Marcel Descamps, Crainhem, and Etienne Van Durme, Wemmel, both of Belgium, assignors to Labaz, Paris, France

Filed May 7, 1973, Ser. No. 357,871
Claims priority, application United Kingdom, June 1, 1972, 25698/72
Int. Cl.² C07D *333/60*
U.S. Cl. 260—330.5 3 Claims

1. A benzo thiophene compound of the formula:



or a pharmaceutically acceptable acid addition salt thereof, wherein R_1 represents dialkylaminoalkyl in which each alkyl radical is straight- or branched-chain and has one to four carbon atoms, and R_2 represents fluorine, chlorine or bromine.

3,928,385

CONVERSION OF SULFOLENE TO SULFOLANE IN THE PRESENCE OF A TERTIARY AMINE

Edward E. Huxley, Fritch, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 15, 1973, Ser. No. 406,481
Int. Cl.² C07D *333/48*
U.S. Cl. 260—332.1 8 Claims

1. In a process wherein a sulfolene compound is contacted with a hydrogenation catalyst under suitable hydrogenation conditions to convert said sulfolene compound to the corresponding sulfolane compound, the improvement comprising contacting said sulfolene compound with said catalyst in the presence of a hexamethylenetetramine.

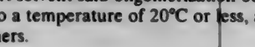
3,928,386

PROCESS FOR PREPARING CYCLIC POLYETHERS

Johannes Dale, Stasjonsveien 63, 1310 Bloomenholm; Gerd Borgen, Grinda 4, Oslo 8, and Kari Daasvatn, Waerpen Gard, 3475 Saetre, all of Norway

Filed Jan. 3, 1974, Ser. No. 430,510
Claims priority, application Norway, Jan. 12, 1973, 165/73
Int. Cl.² C07D *323/00*
U.S. Cl. 260—338 8 Claims

1. A process for preparing cyclic ethers of the formula:



in which n is an integer of from 3 to 11, by oligomerization of ethylene oxide, which process consists of conducting the oligomerization in the presence of a catlyst selected from the group consisting of boron trifluoride phosphorus pentafluoride and antimony pentafluoride and in the presence of benzene as an inert solvent said oligomerization being performed with cooling to a temperature of 20°C or less, and recovering said cyclic ethers.

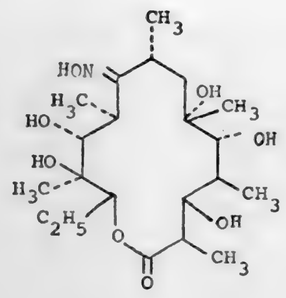
3,928,387

ANTIBIOTIC 1745A/X AND METHODS FOR THE PRODUCTION THEREOF

Richard Wightman Kierstead; Ronald Andrew LeMahieu, both of North Caldwell, and David Prusss, Passaic, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 4, 1974, Ser. No. 438,987
Int. Cl.² C07D *313/00*
U.S. Cl. 260—343 2 Claims

1. The compound of the formula



3,928,388

PREPARATION OF UNSATURATED-HYDROCARBYL COUMARYL ETHERS

Paul H. Reichenbacher, Elk Grove Village, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 20, 1973, Ser. No. 426,982
Int. Cl.² C07D *311/16*
U.S. Cl. 260—343.2 16 Claims

1. A process for the preparation of an ethylenically unsaturated-hydrocarbyl coumaryl-ether which comprises reacting an ethylenically unsaturated-hydrocarbyl hydroxyaryl ether with an ethylenic compound in the presence of an atmosphere comprising an oxygen-containing gas and a catalyst system consisting essentially of a metal or metal salt independently selected from Group VIII of the Periodic Table optionally in the presence of a metal or metal salt selected from the Transition Series of the Periodic Table at reaction conditions, and recovering the resultant ethylenically unsaturated-hydrocarbyl coumaryl ether.

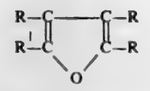
3,928,389

OXIDATIVE DEHYDROGENATION OF ALKENES OR ALKADIENES TO FURAN COMPOUNDS

Floyd E. Farha, Jr.; Marvin M. Johnson, and Donald C. Tabler, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 16, 1973, Ser. No. 389,738
Int. Cl.² C07D *307/36*
U.S. Cl. 260—346.1 R 13 Claims

1. A process which comprises reacting at least one unsaturated acyclic feed hydrocarbon selected from the group consisting of alkenes and alkadienes having from 4 to 10 carbon atoms, with oxygen in contact with a catalyst consisting essentially of iron, phosphorus and oxygen, with the iron-to-phosphorus atom ratio being in the range of 2:1 to about 20:1, under suitable vaporphase reaction conditions for the conversion of said at least one unsaturated acyclic feed hydrocarbon to at least one furan compound having the formula



wherein each R is individually selected from the group consisting of hydrogen and alkyl radicals having from 1 to 6 carbon atoms, the total carbon atoms in the R radicals being in the range of 0 to 6; and recovering at least a portion of the furan compounds thus produced.

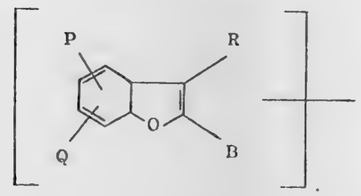
3,928,390

CERTAIN 2-SUBSTITUTED PHENYL AND SUBSTITUTED NAPHTHYL BENZOFURANS

Wilfried Sahm, Kelkheim, Taunus, and Gunter Rosch, Altenhain, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Aug. 10, 1972, Ser. No. 279,735
Claims priority, application Switzerland, Aug. 13, 1971, 11925/71
Int. Cl.² C07D *307/85, 307/92*
U.S. Cl. 260—346.2 R 5 Claims

1. A compound fo the formula



in which

P and Q, which are equal or different, are hydrogen, halogen, lower alkyl, lower alkoxy, phenyl, sulfo or its alkali metal salt or P and Q together are lower alkylene or an annellated benzene nucleus;

R is hydrogen or lower alkyl;

B is cyanophenyl, cyanonaphthyl, carboxyphenyl, carboxynaphthyl, lower carboalkoxy-phenyl, lower carboalkoxynaphthyl or lower carboalkoxyphenyl or -naphthyl being substituted in the alkyl moiety by di-(lower alkyl) amino;

M is hydrogen or alkali metal and

m is a number from zero to 4.

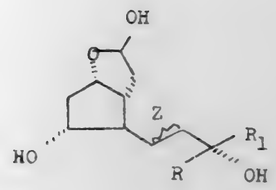
3,928,391

CERTAIN CYCLOPENTAFURAN DIOLS SUBSTITUTED BY CERTAIN-3-HYDROXYALKYL (OR ALKENYL) GROUPS USEFUL IN THE PREPARATION OF PROSTAGLANDIN ANALOGS

Hans-Jurgen E. Hess, Old Lyme; Leonard J. Czuba, New London, and Thomas K. Schaaf, Old Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 335,586, Feb. 26, 1973, Pat. No. 3,883,513, which is a continuation-in-part of Ser. No. 177,102, Sept. 1, 1971, abandoned. This application Aug. 27, 1974, Ser. No. 501,189
Int. Cl.² C07D *307/77*
U.S. Cl. 260—346.2 R 1 Claim

1. A compound



the structure:

wherein

R is hydrogen or alkyl having 1 to 3 carbon atoms;

and R_1 is alkyl having from 5 to 11 carbon atoms; and

Z is a single bond or a trans double bond, provided that when R is hydrogen, Z is a single bond.

3,928,392

OXIDATION OF BUTANE TO MAKE ANHYDRIDE AND CATALYST THEREFOR

Wesley E. Cherry, Prospect Park; Alan F. Dickason, Chester, both of Pa., and John A. Hedge, Wilmington, Del., assignors to Sun Ventures, Inc., St. Davids, Pa.

Filed Oct. 17, 1973, Ser. No. 407,340
Int. Cl.² C07D *307/56*
U.S. Cl. 260—346.8 A 9 Claims

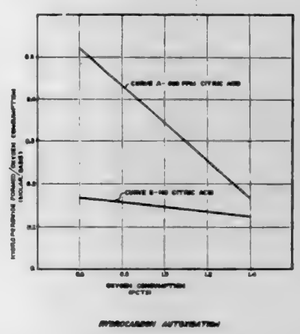
1. A process for the vapor phase oxidation of butane to form maleic anhydride which comprises reacting butane with oxygen or air at temperatures of from abut 350° to 650°C in the presence of a catalyst composition containing antimony, molybdenum and a third metal selected from the group consisting of nickel, cobalt, copper, and zinc, wherein said catalyst contains at least about 40 atomic percent antimony, less than about 20 atomic percent molybdenum, and less than about 40 atomic percent of said third metal, based on the total metals of the composition, wherein the contact time of the butane with the catalyst is from about 0.001 to 10 seconds, and wherein the mole ratio of butane to oxygen in the feed stream is no greater than 1:4.

3,928,393

PROCESS FOR THE PREPARATION OF OXIRANE COMPOUNDS

Stanley Herzog, Tenafly, N.J., assignor to Halcon International, Inc., New York, N.Y.

Filed Apr. 9, 1969, Ser. No. 814,693
Int. Cl. C07d *1/12, 1/08*
U.S. Cl. 260—348.5 L 10 Claims



1. The process for the preparation of an oxirane compound by a process comprising the steps of:

a. molecular oxygen oxidation of a hydrocarbon in the presence of a liquid phase reaction medium to produce an

organic hydroperoxide corresponding in carbon structure to the hydrocarbon starting material;

b. incorporating citric acid with the said organic hydroperoxide in amount sufficient to suppress iron-catalyzed hydroperoxide decomposition without adversely affecting the subsequent reaction between the hydroperoxide and the olefinic compound; and

c. reacting the said organic hydroperoxide containing said citric acid with an olefinically unsaturated compound in the liquid phase in the presence of an epoxidation catalyst.

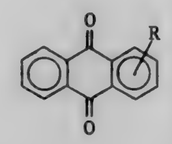
3,928,394

BENZYL AND (BENZYL)BENZYLANTHRAQUINONES

David A. Orser, Liverpool, N.Y., assignor to General Electric Company, Portsmouth, Va.

Filed Jan. 11, 1973, Ser. No. 322,636
Int. Cl.² C07C *49/68*
U.S. Cl. 260—369 **4 Claims**

1. A chemical compound having the formula



where R is $C_6H_5—CH_2—$.

4. The compound named 2(p-benzyl)-benzylanthraquinone.

3,928,395

PROCESS FOR THE NITRATION OF AROMATIC COMPOUNDS

Zdenek Seha, Basel, and Tibor Somlo, Birsfelden, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Sept. 26, 1973, Ser. No. 400,758
Claims priority, application Switzerland, Oct. 5, 1972, 14563/72; Dec. 6, 1972, 17767/72
Int. Cl.² C07C *79/37*
U.S. Cl. 260—369 **7 Claims**

1. A process for the nitration of unsubstituted or substituted benzene, napthalene, anthracene, anthraquinone, phenanthrene, phenanthrenequinone, wherein the substituents are selected from the group consisting of lower alkyl, halo, nitro, lower alkylsulphonyl, lower N,N-dialkylsulphonamide or lower alkoxycarbonyl; or perylene, dibenzpyrene, benzanthrone, anthranthrone, pyanthrone, dibenzopyrenequinone or dibenzanthrone wherein the nitration is carried out at a temperature of −40°C to +80°C with 90 to 100% nitric acid, nitrogen oxides, acetylnitrate, or a mixture of said nitric acid and acetic acid, sulfuric acid or acetic anhydride, in a dipolar aprotic solvent that is inert towards the nitrating agent and has a boiling point over 80°C and has a dielectric constant of over 30, the amount of aprotic solvent present being at most 50% by weight of the reaction mixture, wherein the reaction is halted by addition to the mixture of additional sufficient amount of said dipolar aprotic solvent, after the desired degree of nitration has been attained.

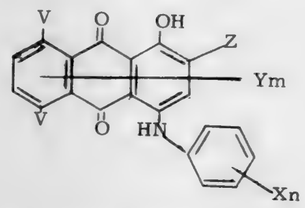
3,928,396

ANTHRAQUINONE DYESTUFFS

Noboru Kishi; Yoshitaka Ota, and Nobuyoshi Okuno, all of Kita-Kyushu, Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Apr. 16, 1973, Ser. No. 351,454
Claims priority, application Japan, Apr. 15, 1972, 47-38035; Apr. 15, 1972, 47-38035; Apr. 15, 1972, 47-38036
Int. Cl.² C09B *1/50*
U.S. Cl. 260—380 **4 Claims**

1. An anthraquinone dye having the formula



wherein X and Y represent chlorine or bromine; Z represents chlorine, bromine or methyl; one V substituent represents a hydroxyl group and the second V substituent represents an amino group; and *m* and *n* represent 0 – 3.

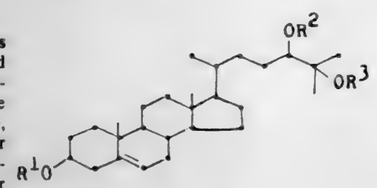
3,928,397

NEW 5-CHOLESTENE DERIVATIVES AND PREPARATION THEREOF

Nobuo Ikekawa; Masuo Morisaki; Julieta Rubio Lightbourn, all of Tokyo, and Masao Seki, Komae, all of Japan, assignors to Eisai Co., Ltd., Japan

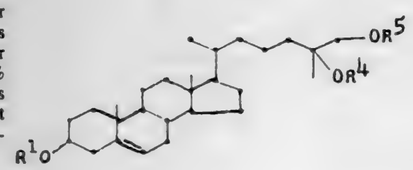
Continuation-in-part of Ser. No. 446,108, Feb. 26, 1974. This application Jan. 6, 1975, Ser. No. 538,772
Claims priority, application Japan, Mar. 2, 1973, 48-24262; Mar. 2, 1973, 48-24261;
Int. Cl.² C07J *9/00*
U.S. Cl. 260—397.2 **9 Claims**

1. 5-Cholestene derivatives represented by the formula:



Ia

or



Ib

wherein R^1 is hydrogen, alkanoyl, aroyl or hydroxy-protecting group, and each of R^2, R^3, R^4 and R^5 is hydrogen, alkanoyl, aroyl or trialkylsilyl.

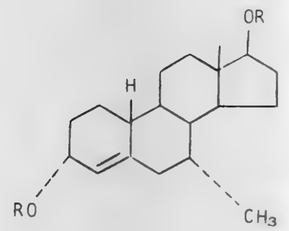
3,928,398

DERIVATIVES OF 7α-METHYLESTR-4-EN-3α,17β-DIOL

Joyce F. Grunwell, Hamilton, and Harvey D. Benson, Cincinnati, both of Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Nov. 1, 1973, Ser. No. 411,791
Int. Cl.² C07J *17/00*
U.S. Cl. 260—397.5 **4 Claims**

1. An essentially pure 7α-methylestr-4-ene-3α,17β-diol having the formula



wherein each R is selected from the group consisting of hydrogen, acyl having from 1 to 12 carbon atoms, 1-cycloalkenyl having from 5 to 8 carbon atoms, 1-methoxycycloalkyl and 1-ethoxycycloalkyl in which the cycloalkyl group has from 5 to 8 carbon atoms, 2-tetrahydropyranyl, and trialkylsilyl in which the alkyl group contains from 1 to 4 carbon atoms.

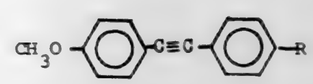
3,928,399

NEMATIC LIQUID CRYSTAL 4-METHOXY-4'-HYDROXYTOLAN ESTERS

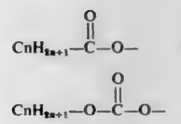
André Couttet; Jean Claude Dubois, and Annie Zann, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 8, 1974, Ser. No. 431,719
Claims priority, application France, Jan. 12, 1973, 73.1083
Int. Cl.² C07C *69/96, 69/28*; G01N *33/00*; G02F *1/13*
U.S. Cl. 260—410.5 **12 Claims**

1. A nematic liquid crystal compound of the formula:



wherein R is



or

and *n* is an integer from 1 to 10.

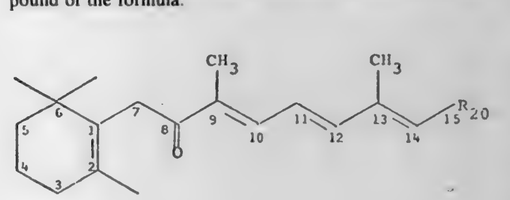
3,928,400

PROCESS FOR PRODUCING VITAMIN A

Gary Lee Olson, Westfield, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 303,162, Nov. 2, 1972, abandoned. This application Apr. 26, 1974, Ser. No. 464,398
Int. Cl.² C11C *3/02*
U.S. Cl. 260—410.9 V **15 Claims**

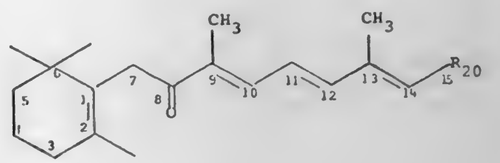
1. A process for producing an all trans isomer of a compound of the formula:



wherein R_{20} is $—CH_2OR_1$ or $—\overset{O}{\overset{\|}{C}}—OR_1'$;

R_1 is alkanoyl containing from 2 to 18 carbon atoms, or aroyl and R_1' is alkyl, aryl or aralkyl;

comprising providing a compound of the formula:

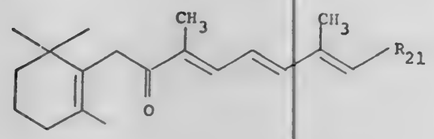


wherein R_{20} is as above; and

wherein said compound is a mixture of isomers or in an isomeric form other than the all trans form; and treating said

compound with an organic amine base or an organic acid at a temperature of from 20° to 160°C.

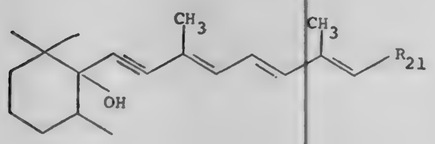
4. A process for producing a compound of the formula:



wherein R_{21} is $-CH_2OR_1$ or $-\overset{O}{\overset{\|}{C}}-OR_1'$;

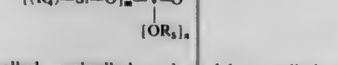
R_1 is alkanoyl containing from 2 to 18 carbon atoms, or aroyl and R_1' is alkyl containing from 2 to 18 carbon atoms, aryl or aralkyl

comprising treating in an inert organic solvent, at a temperature of from 35° to 200°C, a compound of the formula:



wherein R_{21} is as above

in the presence of a catalyst of the formula:



wherein R_4 is alkyl, cycloalkyl, aryl, aryl lower alkyl, or cycloalkyl substitued lower alkyl; R_5 is R_4 or $(R_4)_3$-Si; m is an interger from 1 to 3; and n is an interger from 0 to 2, with the proviso that the sum of m and n is 3.

3,928,401

WATER SOLUBLE TRIGLYCERIDE COMPOSITIONS AND METHOD FOR THEIR PREPARATION

Robert J. Sturwold, and Fred O. Barrett, both of Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Jan. 31, 1974, Ser. No. 438,283

Int. Cl.² C11C *3/02*

U.S. Cl. 260—410.7 **6 Claims**

1. A water soluble mixed ester product obtained by the single-step transesterification of:

a. a triglyceride selected from the group consisting of animal oils, animal fats, drying vegetable oil, semi-drying vegetable oils and non-drying vegetable oils;

b. a polyoxyethylene glycol having an average molecular weight from about 400 to 800; and

c. a carboxylic acid containing one or two carboxyl groups and from 2 to 12 carbon atoms; said reactants (a), (b) and (c) respectively comprising 5 to 35%, 60 to 85% and 1 to 20%, by weight, of the total charge.

3,928,402

ETHYL 2-TRANS,4-CIS-UNDECADIENOATE

Ferdinand Naf, Geneva, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

Filed Dec. 21, 1971, Ser. No. 210,620

Claims priority, application Switzerland, Dec. 22, 1970, 19018/70; Apr. 29, 1971, 6354/71

Int. Cl.² C07C *69/52*; A61K *7/46*

U.S. Cl. 260—410.9 R **1 Claim**

1. Ethyl 2-trans, 4-cis-undecadienoate.

3,928,403

PROCESS FOR PREPARING FARNESYL ACETIC ACID ESTERS AND 2-SUBSTITUTED-PRODUCTS THEREOF

Yoshiji Fujita, Kurashiki; Yoshiaki Omura, Okayama; Takashi Nishida, and Kazuo Itoi, both of Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

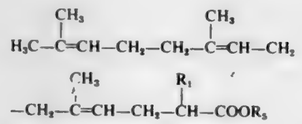
Filed July 10, 1974, Ser. No. 487,043

Claims priority, application Japan, July 13, 1973, 48-79448

Int. Cl.² C11C *3/02*

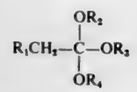
U.S. Cl. 260—410.9 N **12 Claims**

1. A process for preparing farnesyl acetic acid esters of the formula (I):



(I)

wherein R_1 represents a hydrogen atom or a hydrocarbon radical of 1 to 20 carbon atoms, and R_3 is the same as R_2, R_3 or R_4 below in formula (II), said process comprising reacting nerolidol with a 2-substituted orthoacetic acid ester derivative of the formula (II):



wherein R_1 is as defined in formula (I) above and R_2, R_3 and R_4, which may be the same or different, each represents an alkyl group of 1 to 8 carbon atoms or a cycloalkyl group of 3 to 8 carbon atoms; in the presence of an acidic catalyst.

3,928,404

PROCESS FOR THE PREPARATION OF HIGH MOLECULAR WEIGHT ALIPHATIC MONOCARBOXYLIC ACIDS BY SILICATE CONTACT AND CHROMOSULFURIC ACID OXIDATION OF α-OLEFINS

Werner Strabberger, Gersthofen, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 15, 1974, Ser. No. 497,745

Claims priority, application Germany, Aug. 21, 1973, 2342089

Int. Cl.² C11C *1/00*

U.S. Cl. 260—413 **4 Claims**

1. A process for the preparation of high molecular weight saturated aliphatic carboxylic acids being color-stable to ammonia and amines, by oxidation of α-olefins or α-olefin mixtures having from 16 to 70 carbon atoms in the molecule with chromosulfuric acid, which comprises in a first step intensely contacting in the melt said α-olefins or α-olefin mixtures having vinyl double bonds and olefins having vinylidene double bonds and olefins having transvinylene double bonds with from 0.01 to 5.0 weight %, relative to the olefins, of a silicate having a lamellar structure at a temperature of 120° to 350°C and in a second step carrying out the oxidation with aqueous chromosulfuric acid at a temperature of 80° to 150°C.

3,928,405

METHODS OF MANUFACTURING HEAVY METAL TRINITRO RESORCINATE

John Francis Hobbs, Sutton Coldfield, and William Melville, Birmingham, both of England, assignors to Imperial Metal Industries (Kynoch) Limited, Birmingham, England

Filed Oct. 26, 1973, Ser. No. 410,092

Claims priority, application United Kingdom, Nov. 9, 1972, 51680/72

Int. Cl.² C07F *7/24*

U.S. Cl. 260—435 A **20 Claims**

1. A method of manufacturing lead styphnate comprising continuously flowing solutions of a trinitro resorcinate and a lead salt into a reaction vessel, continuously agitating the contents of the reaction vessel, flowing the contents of the reaction vessel through a plurality of chambers wherein the reaction vessel and at least one of said plurality of chambers are maintained at a temperature of 45° to 70°C, and wherein said reaction vessel is connected in series with said chambers, to an outlet from which lead trinitro resorcinate and remaining solution is continuously drawn off, and within each chamber continuously agitating the contents of that chamber.

3,928,406

PLANT GROWTH REGULANT COMPOSITIONS AND METHODS

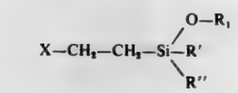
Robert W. Leeper, Chalfont, and Paul Strohm, Philadelphia, both of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Filed Apr. 4, 1973, Ser. No. 347,736

Int. Cl.² C07F *7/04*, *7/18*

U.S. Cl. 260—448.8 R **5 Claims**

1. Compounds of the formula



wherein X is chlorine or bromine; R_1 is selected from the group consisting of

polyether of the formula $-(C_nH_{2n}O)_y-R_4$ wherein $n=2$ or 3, y may be any integer from 2 to 100, and R_4 is a terminal group selected from the group consisting of hydrogen, alkyl, phenyl, chlorophenyl; benzyl and chlorobenzyl;

and ketal; and wherein R′ and R″ are each independently selected from the group consisting of alkyl, phenyl, chlorophenyl, benzyl and chlorobenzyl.

3,928,407

HERBICIDAL N-OXYTHIO-SUBSTITUTED UREAS

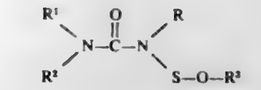
Melancthon S. Brown, deceased, late of Berkeley, Calif. (by Gustave K. Kohn, administrator), and Gustave K. Kohn, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 250,907, May 8, 1972, Pat. No. 3,853,966, which is a continuation-in-part of Ser. No. 189,732, Oct. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 88,212, Nov. 9, 1970, Pat. No. 3,755,437, which is a continuation-in-part of Ser. No. 88,105, Nov. 9, 1970, Pat. No. 3,679,733. This application July 11, 1974, Ser. No. 483,583

Int. Cl.² C07C *179/22*

U.S. Cl. 260—453 R **15 Claims**

1. A urea compound of the formula



wherein R, R^1 and R^2 individually are hydrogen, alkyl of 1 to 6 carbon atoms, cycloalkyl or bicycloalkyl of up to 10 carbon atoms, alkoxy of 1 to 4 carbon atoms, carbocyclic mononuclear or binuclear aryl of 6 to 12 carbon atoms substituted with up to 2 fluorine, chlorine, bromine, nitro, trifluoromethyl or alkoxy of 1 to 4 carbon atoms; and R^3 is alkyl of 1 to 10 carbon atoms, cycloalkyl or bicycloalkyl of up to 10 carbon atoms, or carbocyclic mononuclear or binuclear aryl of 6 to 12 carbon atoms substituted with up to 2 fluorine, chlorine, bromine, nitro, trifluoromethyl, or alkoxy of 1 to 4 carbon atoms.

3,928,408

ISOCYANO-DIPHENYL ETHERS

Ingeborg Hammann, Cologne; Peter Hoffmann, Leverkusen; Dieter Marquarding, Odenthal-Globusch; Ivar Ugi, Grunwald, and Gunter Unterstenhöfer, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

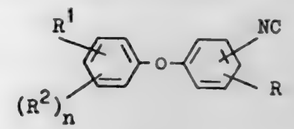
Filed May 10, 1973, Ser. No. 359,165

Claims priority, application Germany, May 27, 1972, 2225873

Int. Cl.² C07C *119/02*

U.S. Cl. 260—465 F **7 Claims**

1. An isocyanodiphenyl ether of the formula



(I)

in which

R is hydrogen or halogen,

R^1 is cycloalkyl, alkyl substituted cycloalkyl, halogen or alkylmercapto,

R^2 is hydrogen, halogen or methyl, and

n is 1, 2 or 3.

3,928,409

CATALYTIC PROCESS FOR PREPARING UNSATURATED NITRILES FROM OLEFINS, AMMONIA AND OXYGEN

Francesco Pignataro, Gallarate (Varese); Franco Faletti, Milan; Arsenio Castellan, Bollate (Milan); Alessandro Bossi, Novara; Paolo Marinozzi, and Nicola Giordano, both of Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Oct. 22, 1974, Ser. No. 516,999

Claims priority, application Italy, Jan. 21, 1974, 19613/74

Int. Cl.² C07C *120/14*

U.S. Cl. 260—465.3 **4 Claims**

1. The process for the preparation of acrylonitrile or methacrylonitrile from propene or respectively isobutene, by reaction in the gas phase, with ammonia and oxygen in the presence of a solid catalyst, at a temperature between 350°C and 550°C, said process being characterized in that the catalyst system consists of the elements tellurium, cerium, molybdenum, of one or both the elements selected from the group consisting of nickel and cobalt, chemically combined with oxygen, and the various elements are present in the atomic ratios defined by the following empirical formula:

$$A_x \quad Ce_y \quad Te_z \quad Mo_{12} \quad O_z$$

wherein:

A is Ni and/or Co

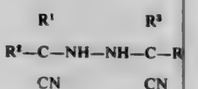
$x = 0.3–5$
$y = 1–10$
$v = 1–10$ and
z is a number indicating the amount of oxygen bound to the other elements and corresponding to the oxidation state in which they exist in the catalyst, said catalyst being obtained by mixing compounds of Mo, Ce, Te and of at least one element selected from the group consisting of Ni and Co in an aqueous medium, and then drying the mixture and heating it in the presence of air at a temperature ranging from 450°C to 700°C.

3,928,410
PROCESS FOR THE PRODUCTION OF HYDROZONITRILES

John Michael Jablonski, Over, and John Miller, Mapperley, both of England, assignors to Fisons Ltd., England

Filed Sept. 23, 1974, Ser. No. 508,271
Claims priority, application United Kingdom, Oct. 2, 1973, 45904/73
Int. Cl.² C07C *120/02*
U.S. Cl. 260—465.5 R **8 Claims**

1. A process for the production of a hydrazonitrile having the formula:



wherein R^1, R^2, R^3 and R^4, which may be different, are selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms, cycloalkyl of 5 to 8 carbon atoms, phenyl which may be substituted by up to two alkyl groups of 1 to 4 carbon atoms, phenylalkyl in which the alkyl group is of 1 to 4 carbon atoms, alkoxyalkyl of 2 to 8 carbon atoms, alkoxyphenyl in which the alkoxy group is of 1 to 4 carbon atoms, carboxyalkyl in which the alkyl group is of 1 to 4 carbon atoms, and R^1 and R^2 together or R^3 and R^4 together completing a cycloalkyl group of 5 to 12 carbon atoms; provided that R^1, R^2, or R^3 and R^4, are not both hydrogen;

which process comprises reacting 1 molar proportion of an azine reactant selected from the group consisting of

a. the corresponding azine, and

b. hydrazine and the corresponding alkehyde or ketone, with at least 2 molar proportions of sodium or potassium cyanide, in the presence of a stoichiometric excess of concentrated acid selected from the group consisting of formic, acetic and propionic acids and mixtures thereof.

3,928,411
NEW QUATERNARY COMPOUNDS HAVING ANTI-MICROBIAL ACTIVITY

Robert Andrew Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 39,536, May 21, 1970, abandoned. This application Sept. 24, 1973, Ser. No. 400,097
Int. Cl.² C07C *93/04, 93/197, 103/737, 87/30*
U.S. Cl. 260—468 G **4 Claims**

1. A chemical compound having the structural formula

$$\{RCOO(CH_2)_nN(CH_3)_2R^1\}X$$

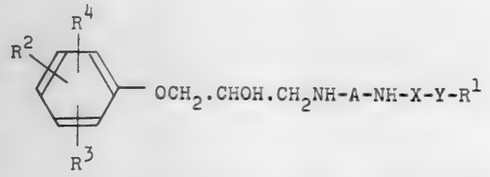
wherein R is 1— adamantyl, R^1 is a long chain alkyl group of 10 to 18 carbon atoms, n is an integer from 1 to 3 and X is a compatible halide.

3,928,412
1-ARYLOXY-3-UREIDOALKYLAMINO-2-PROPANOLS

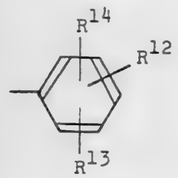
Leslie Harold Smith, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 4, 1973, Ser. No. 421,669
Claims priority, application United Kingdom, Dec. 15, 1972, 57970/72; Sept. 17, 1973, 43478/73
Int. Cl.² C07C *121/80, 127/19*
U.S. Cl. 260—465 D **12 Claims**

1. An alkanolamine selected from compounds of the formula:



wherein A is alkylene of from 2 to 12 carbon atoms, wherein R^1 is hydrogen, or alkyl, halogenoalkyl, alkenyl or cycloalkyl each of up to 10 carbon atoms, or aryl of the formula:



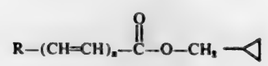
wherein R_2, R^3, R^{12} and R^{13}, which may be the same of different, each is hydrogen, halogen, hydroxy, amino, nitro or cyano, alkyl, cycloalkyl, alkenyl, alkynyl, alkoxy, alkylthio, cycloalkoxy, alkenyloxy, alkynyloxy or alkanoyl each of up to 6 carbon atoms, or aryl, aryloxy or aralkoxy each of up to 12 carbon atoms; wherein R^4 is hydrogen, hydroxy or hydroxymethyl or aralkoxy of up to 12 carbon atoms; wherein R^{14} is hydrogen, amino or dialkylamino of up to 12 carbon atoms; wherein X is carbonyl (—CO—) and wherein Y is imino (-NH-), or alkylimino of up to 6 carbon atoms and the acid-addition salts thereof.

3,928,413
CYCLOPROPANEMETHYL ESTERS

Clive A. Henrick, and Gerardus B. Staal, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 350,708, April 13, 1973, which is a continuation-in-part of Ser. No. 263,902, June 19, 1972, abandoned, which is a continuation-in-part of Ser. No. 255,368, May 22, 1972, abandoned. This application Nov. 5, 1973, Ser. No. 412,806
Int. Cl.² C07C *69/76*
U.S. Cl. 260—469 **9 Claims**

1. A compound of formula (A)



wherein n is one or two and R is phenyl or naphthyl, each optionally substituted by one or more of the groups, alkyl of one to ten carbon atoms, phenyl, phenylalkyl of seven to 10 carbon atoms, chlorine or bromine, one of said groups being in the para-position relative to the acid group.

7. The compound, cyclopropanemethyl 1-naphthoate.

8. The compound, cyclopropanemethyl 4-phenylbenzoate.

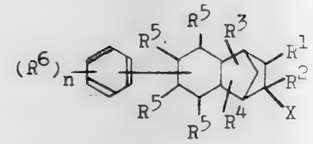
9. The compound, cyclopropanemethyl 4-octylbenzoate.

3,928,414
ALICYCLIC ACID AND DERIVATIVES THEREOF

Katsuhisa Shimizu, Kyoto; Shuhei Ishibe, Nara; Toshiharu Okumichi, Amagasaki, and Keizo Matsumoto, Osaka, all of Japan, assignors to Arakawa Rinsan Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 13, 1973, Ser. No. 426,935
Claims priority, application Japan, Dec. 16, 1972, 47-126346
Int. Cl.² C07C *63/00, 69/76*
U.S. Cl. 260—469 **6 Claims**

1. A resin having a formula of



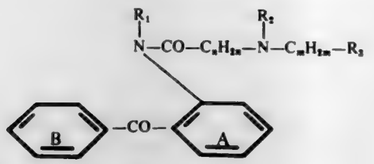
wherein each of R^1, R^2, R^3 and R^4 is a hydrogen atom or methyl group, R^5 represents a hydrogen atom or alkyl group having 1 to 4 carbon atoms and four R^5's may be the same of different, R^6 is an alkyl group having 1 to 6 carbon atoms, n is 0 or an integer of 1 to 5 and X is —COOM or —$COOR^a$, M being a hydrogen atom, alkali metal, $—NH_4$ or organic amine residue, R^a being an alkyl group having 1 to 4 carbon atoms.

3,928,415
BENZOPHENONE DERIVATIVES AND PROCESS FOR THEIR PRODUCTION II

Heinz Günter Greve, and Klaus Resag, both of Frankfurt am Main-Fechenheim, Germany, assignors to Cassella Farbwerke Mainkur AKT, Frankfurt am Main-Fechenheim, Germany

Division of Ser. No. 358,455, May 8, 1975, Pat. No. 3,888,899. This application Aug. 26, 1974, Ser. No. 500,286
Int. Cl.² C07C *149/40, 79/46*
U.S. Cl. 260—470 **3 Claims**

1. Benzophenone derivative having the structural formula:



and the acid addition salts thereof,

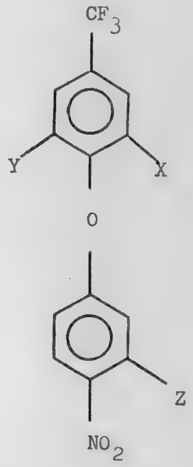
wherein R_1 and R_2 are substituents selected from the group consisting of hydrogen, saturated and unsaturated alkyl groups having 1 – 4 carbon atoms; R_3 is a substituent selected from the group consisting of —$COOCH_3$ and —$COOC_2H_5$; n is an integer selected from 1 and 2; and m is an integer selected from 1, 2 and 3; and wherein the ring A may be substituted with a substituent selected from the group consisting of halogen, nitro, trifluoromethyl, methyl, methoxy and methylmercapto, and the ring B may be substituted with a substituent selected from the group consisting of fluorine and chlorine.

3,928,416
HERBICIDAL 4-TRIFLUOROMETHYL-4'NITRODIPHENYL ETHERS

Horst O. Bayer, Levittown; Colin Swithenbank, Perkasie, and Roy Y. Yih, Doylestown, all of Pa., assignors to Rohm & Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 234,651, March 14, 1972, Pat. No. 3,789,276. This application Feb. 12, 1973, Ser. No. 331,719
Int. Cl.² C07C *101/54*
U.S. Cl. 260—471 R **6 Claims**

1. A compound of the formula



wherein

X is a hydrogen atom, a halogen atom, a trifluoromethyl group, or a (C_1–C_4)alkyl group,

Y is a hydrogen atom, a halogen atom, or a trifluoromethyl group, and

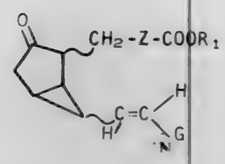
Z is a carboxy group, a carbalkoxy group having up to 4 carbon atoms in the alkoxy moiety, a carboxyalkyl group having up to 4 carbon atoms, a carbalkoxyalkyl group having up to 6 carbon atoms.

3,928,417
INTERMEDIATES FOR OXA-PHENYLENE PROSTAGLANDINS

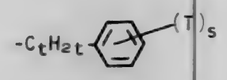
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 302,567, Oct. 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 121,572, March 5, 1971, abandoned. This application July 18, 1974, Ser. No. 489,845
Int. Cl.² C07C *65/72, 67/76*
U.S. Cl. 260—473 A **7 Claims**

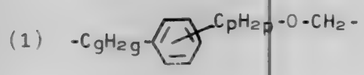
1. An optically active compound of the formula



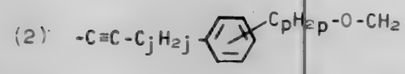
or a racemic compound of that formula and the mirror image thereof, wherein G is (1) alkyl of 2 to 10 carbon atoms, inclusive, substituted with zero, one, 2, or 3 fluoro or (2) a monovalent moiety of the formula



wherein C_tH_{2t} represents a valence bond or alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between —CH=CH— and the ring, wherein T is alkyl of one 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $—OR_6$, wherein R_6 is hydrogen or alkyl of one to 4 carbon atoms, inclusive, and wherein s is zero, one, 2 or 3, with the proviso that not more than two T's are other than alkyl; wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; wherein Z is



wherein C_gH_{2g} represents a valence bond or alkylene of one to 4 carbon atoms, inclusive, with one or 2 chain carbon atoms between $—CH_2—$ and the ring, wherein C_pH_{2p} represents a valence bond or alkylene of one to 4 carbon atoms, inclusive, with one or 2 chain carbon atoms between the ring and —O—, and wherein C_gH_{2g} and C_pH_{2p} together represent zero to 8 carbon atoms, inclusive, with total chain lengths zero to 3 carbon atoms, inclusive; or



wherein C_jH_{2j} represents a valence bond or alkylene of one or 2 carbon atoms with one chain carbon atom between —C C— and the ring, wherein C_pH_{2p} is defined as above, and wherein C_jH_{2j} and C_pH_{2p} together represent zero to 6 carbon atoms, inclusive, with total chain lengths zero to 3 carbon atoms, inclusive, and wherein ~ indicates attachment of a group to the cyclopentane ring in alpha or beta configuration and to the cyclopropane ring in exo or endo configuration.

3,928,418

PGF$_2\alpha$ -OXA PHENYLENE COMPOUNDS

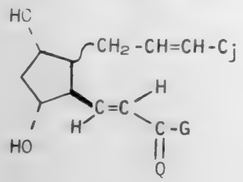
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

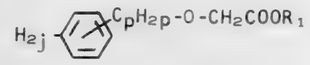
Continuation-in-part of Ser. No. 302,567, Oct. 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 121,572, March 5, 1971, abandoned. This application July 18, 1974, Ser. No. 489,848

Int. Cl.[2] C07C *65/22, 69/76*

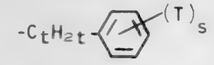
U.S. Cl. 260—473 A **31 Claims**

1. An optically active compound of the formula:





or a racemic mixture of that compound and the enantiomer thereof, wherein C_jH_{2j} represents a valence bond or alkylene of one or 2 carbon atoms with one chain carbon atoms between —CH=CH— and the phenylene ring; wherein C_pH_{2p} represents a valence bond or alkylene of one to 4 carbon atoms, inclusive, with one or 2 chain carbon atoms between the ring and the —O—; wherein C_jH_{2j} and C_pH_{2p} together represent zero to 6 carbon atoms, inclusive, with total chain lengths zero to 3 carbon atoms, inclusive; wherein G is (1) alkyl of 2 to 10 carbon atoms, inclusive, substituted with zero, one, 2, or 3 fluoro or (2) a monovalent moiety of the formula



wherein C_tH_{2t} represents a valence bond or alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between



and the ring, wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifuluromethyl, or $—OR_6$, wherein R_6 is hydrogen or alkyl of one to 4 carbon atoms, inclusive, and wherein s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl; wherein Q is



wherein R_2 is hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, wherein ~ indicates attachment of the side chain to the cyclopentane ring in alpha or beta configuration; including the lower alkanoates thereof and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,928,419

PROCESS FOR THE PRODUCTION OF RESORCYLIC ACID ESTERS

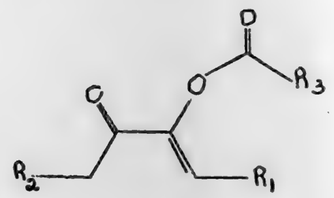
Kenneth K. Light, Asbury Park, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 379,488, July 16, 1973, abandoned. This application Apr. 22, 1974, Ser. No. 462,780

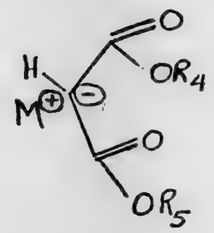
Int. Cl. C07c *69/78*

U.S. Cl. 260—473 S **4 Claims**

1. A process for preparing a C_1–C_4 alkyl-3-lower alkyl, 6-methyl resorcylate comprising the step of intimately admixing at a temperature of from 0°C up to 150°C an α-acyloxy, α,β-unsaturated alkenone having the structure:



and a malonic ester salt having the structure:



wherein R_1 represents methyl, R_2 represents C_1–C_4 alkyl, R_4 and R_5 are the same or different and represent C_1–C_4 lower alkyl, R_3 is selected from the group consisting of hydrogen, methyl and ethyl and M is alkali metal in the presence of an inert solvent.

3,928,420

MIXED ESTERS OF POLYBASIC SATURATED ACIDS, GLYCOLS AND GLYCIDYL ESTERS

James C. Fang, Media, Pa., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed June 12, 1973, Ser. No. 369,174

Int. Cl.[2] C07C *69/30, 69/80*

U.S. Cl. 260—475 P **8 Claims**

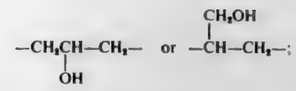
1. A compound represented by the structure



where

X is the residue of
- ethylene glycol
- 1,2-propanediol
- 1,3-propanediol
- 1,4-butanediol
- 1,5-pentanediol
- glycerol
- 1,2,3-butanetriol
- 1,2,3,4-butanetetrol
- 1,6-hexanediol
- neopentyl glycol
- diethylene glycol
- trimethylolpropane or
- trimethylpentanediol;

D is



R is an alkyl radical of 4–18 carbon atoms, or a singly, doubly or triply unsaturated hydrocarbon radical of 17 carbon atoms;

and

Z is



where A and B can be the same or different and are hydrogen or —COOH.

3,928,421

ANTI-GASTRIC ULCER CHALCONE ETHERS

Kazuaki Kyogoku, Tokyo; Katsuo Hatayama, Saitama; Sadakazu Yokomori, and Teruya Seki, both of Tokyo, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

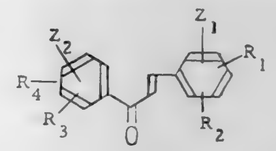
Filed June 25, 1974, Ser. No. 483,004

Claims priority, application Japan, Oct. 30, 1973, 48-12199; Jan. 19, 1974, 49-8736; Jan. 19, 1974, 49-8737; Feb. 9, 1974, 49-16524

Int. Cl.[2] C07C *69/02, 49/84*

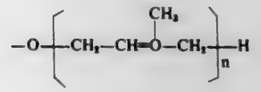
U.S. Cl. 260—479 R **21 Claims**

1. A chalcone ether represented by the formula (I)



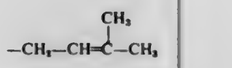
(I)

wherein R_1, R_2, R_3 and R_4 are independently a member selected from the group consisting of hydrogen, hydroxy, alkyl of 1–5 carbons, alkoxy of 1–5 carbons and alkanoyloxy of 1–5 carbons and one of Z_1 and Z_2 is a member selected from the group consisting of the groups represented by the formula (II)



(II)

wherein *n* is 1 or 2 and the other of Z_1 and Z_2 is a member selected from the group consisting of the groups represented by the formula (II) and (III)



3,928,422
SULFOSUCCINATES OF POLYHYDROXY TERTIARY AMINES

Bjorn Sundby, Piscataway, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 6, 1971, Ser. No. 205,395
Int. Cl.² C07C *143/12*
U.S. Cl. 260—481 R **3 Claims**

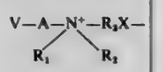
1. Disodium sulfosuccinate of N-(2-hydroxy-hexadecyl) diethanolamine.

3,928,423
MONOMERIC EMULSION STABILIZERS

Carlos M. Samour, Wellesley Hills, and Mildred C. Richards, Wakefield, both of Mass., assignors to The Kendall Company, Walpole, Mass.

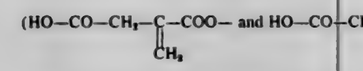
Division of Ser. No. 272,282, July 17, 1972, abandoned, which is a division of Ser. No. 867,899, Oct. 20, 1969, Pat. No. 3,780,092. This application Aug. 9, 1974, Ser. No. 496,321
Int. Cl.² C07C *101/20*
U.S. Cl. 260—482 P **3 Claims**

1. Compounds corresponding to the formula



wherein

V is selected from the class consisting of acid ester groups and acid amido groups derived from maleic, (HO—CO—CH=CH—COO— and HO—CO—CH=CH—CONH—), citraconic, (HO—CO—CH=C(CH₃)—COO — and HO—CO—CH=C(CH₃)CONH—), and itaconic acids



A is selected from the class consisting of ethylene, propylene, isopropylene, and hydroxypropylene groups;

R_1 and R_2 are selected from the class consisting of benzyl groups and alkyl groups of from one to seven carbon atoms;

R_3 is selected from the class consisting of —CH_2—CO—OR groups wherein R is a saturated aliphatic hydrocarbon group of from seven to 28 carbon atoms;

and X is a radical selected from the class consisting of F^-, Cl^-, Br^-, I^-, $CH_3SO_4^-$, $C_2H_5SO_4^-$, and

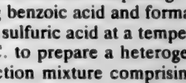


3,928,424
MIXED ESTERS OF DIBASIC UNSATURATED ACIDS, GLYCOLS AND GLYCIDYL ESTERS

James C. Fang, Media, Pa., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Mar. 5, 1973, Ser. No. 338,053
Int. Cl.² C07C *69/52, 69/60*
U.S. Cl. 260—485 G **8 Claims**

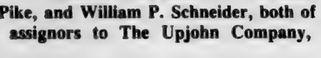
1. A compound represented by the structure

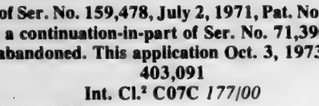


(III)

where

X is the residue of
ethylene glycol,
1,2-propanediol,
1,3-propanediol,
1,4-butanediol,
1,5-pentanediol,
glycerol,
1,2,3-butanetriol,
1,2,3,4-butanetetrol,
1,6-hexanediol,
neopentyl glycol,
diethylene glycol,
trimethylol propane or
trimethylpentanediol;





and

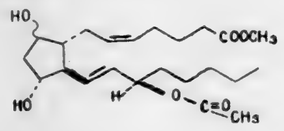
R is an alkyl radical of 4–18 carbon atoms, or singly, doubly or triply unsaturated hydrocarbon radical of 17 carbon atoms.

3,928,425
11β,15β-PGE₂,15β-PGF₂α, AND 15β-PGF₂β, 15-ACETATES METHYL ESTERS

John E. Pike, and William P. Schneider, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 159,478, July 2, 1971, Pat. No. 3,772,350, which is a continuation-in-part of Ser. No. 71,390, Sept. 11, 1970, abandoned. This application Oct. 3, 1973, Ser. No. 403,091
Int. Cl.² C07C *177/00*
U.S. Cl. 260—488 R **4 Claims**

1. A compound of the formula:



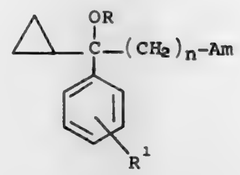
wherein R_9 is hydrogen or acetyl.

3,928,426
1-CYCLOPROPYL-1-PHENYL-OMEGA-AMINO-1-LOWER ALKANOYLOXYALKANES

William John Welstead, Jr., Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Division of Ser. No. 221,804, Jan. 28, 1972, abandoned. This application Apr. 1, 1974, Ser. No. 456,940
Int. Cl.² C07C *69/14, 69/24*
U.S. Cl. 260—490 **4 Claims**

1. A compound selected from those having the formula



wherein;

Am is lower-alkylamino, di-lower-alkylamino,

R is a lower alkanoyl,

R^1 is selected from hydrogen, halogen, lower-alkoxy, lower-alkyl and trifluoromethyl,

n is selected from two and three, and

the pharmaceutically acceptable acid addition salts thereof.

3,928,427
N,N'-BRIDGED-BIS[2-ALKYL-2-HYDROXYETHYLAMINE]SALTS

Guy D. Diana, Stephentown, and Royal A. Cutler, Sand Lake, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 123,097, March 10, 1971, abandoned. This application Feb. 14, 1973, Ser. No. 332,267
Int. Cl.² C07C *91/02*
U.S. Cl. 260—501.17 **14 Claims**

1. N,N'-(1,6-hexylene)-bis[2-hydroxyundecylamine]diglycolate.

2. N,N'-(1,6-hexylene)-bis[N-methyl-2-hydroxyundecylamine] dihydrobromide.

3,928,428
PROCESS FOR THE PRODUCTION HYDROGENATED OLEFIN SULFONATES

Gar Lok Woo, Tiburon, and William A. Sweeney, Larkspur, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 317,565, Dec. 22, 1972, abandoned, which is a continuation of Ser. No. 764,682, Oct. 3, 1968, abandoned. This application Apr. 18, 1973, Ser. No. 352,151
Int. Cl.² C07C *143/02*
U.S. Cl. 260—513 T **20 Claims**

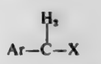
1. In a process for preparing mixtures of hydrogenated olefin sulfonates by hydrogenating a sulfonated product produced by sulfonating straight chain olefins with SO_3, the hydrogenation being carried out at temperatures of from about 20°C to about 200°C in the presence of 0.05 to 30% by weight based on the sulfonated product of a hydrogenation catalyst until from 50 to 100 percent of the carbon-carbon double bonds in the product are saturated, the improvement which comprises treating said sulfonated product immediately prior to hydrogenation with an oxidizing agent having an oxidation potential greater than that of the hydrogen on platinum electrode in an acidic solution, wherein said oxidizing agent is employed in sufficient quantity to provide at least 0.05 parts of oxygen or the oxidizing equivalent of another oxidizing agent per hundred parts of the sulfonated product.

3,928,429
METHOD OF PREPARING ARYL ACETIC ACIDS

Moustafa El-Chahawi, Troisdorf, and Hermann Richtzenhain, Much-Schwellenbach, both of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed Nov. 16, 1973, Ser. No. 416,566
Claims priority, application Germany, Dec. 2, 1972, 2259072
Int. Cl.² C07C *51/12*
U.S. Cl. 260—515 R **12 Claims**

1. A process for preparing an aryl acetic acid which comprises initially heating to 30°–70°C and thereafter contacting a compound of the formula



wherein Ar is an aromatic residue and X is a halogen with at least a stoichiometric amount relative to the halogen of carbon monoxide and a stoichiometric excess up to 1.8 times the stoichiometric amount of an alkali or an alkaline earth metal oxide, hydroxide or carbonate in the presence of a cobalt or iron carbonyl catalyst and in the additional presence of a mixture of water and an alcohol and thereafter subjecting the reaction mixture to a treatment with a strong acid.

3,928,430
METHOD FOR THE PREPARATION OF 3,3-METHYLENEBIS (BENZOIC ACID)

Norbert J. Mruk, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed July 19, 1974, Ser. No. 490,207
Int. Cl.² C07C *63/33*
U.S. Cl. 260—515 P **9 Claims**

1. A method for the preparation of 3,3'-methylenebis (benzoic acid), said method comprising:

A. reacting benzoic acid and formaldehyde in the presence of dilute sulfuric acid at a temperature of from about 60° to 120°C. to prepare a heterogeneous reaction mixture, said reaction mixture comprising first and second solid components of methylenebis (benzoic acid) and benzoic acid, respectively, and an acid phase;

B. filtering said heterogeneous reaction mixture to obtain said first and second solid component products;

C. adding water at a temperature of between 70° and 100°C. to said solid products to form an aqueous solution of said second component; and

D. filtering said aqueous solution and recovering said first component solid.

3,928,431
METHOD OF ISOLATING L-DOPA FROM A AQUEOUS SOLUTION THEREOF

Thord Broderman; Pentti Hietala, and Jacobus Sundman, all of Helsinki, Finland, assignors to Oy Medica Ab, Helsinki, Finland

Continuation-in-part of Ser. No. 377,585, July 9, 1973, abandoned. This application Oct. 15, 1973, Ser. No. 406,145
Claims priority, application Finland, July 14, 1972, 2027/72
Int. Cl.² C07C *101/77*
U.S. Cl. 260—519 **10 Claims**

1. A process for the isolation of 3-(3,4-dihydroxyphenyl)-L-alanine from an aqueous solution thereof, said process comprising extracting an aqueous solution of 3-(3,4-dihydroxyphenyl)-L-alanine with a liquid ion exchanger comprising a sulfonic acid selected from the group consisting of alkyl-, aryl- and ester-sulfonic acids dissolved in an organic solvent selected from the group consisting of alcohols, esters and ketones which are insoluble or sparingly soluble in water to bind the 3-(3,4-dihydroxyphenyl)-L-alanine to said sulfonic acid in the form of a sulfonic acid salt, liberating said 3-(3,4-dihydroxyphenyl)-L-alanine from said salt by neutralization with

a base that precipitates the 3-(3,4-dihydroxyphenyl)-L-alanine, separating the precipitate from the solution and regenerating the sulfonic acid by treating the solution with a mineral acid, said sulfonic acid being thereafter used in a subsequent extraction.

3,928,432
PROCESS FOR PREPARATION OF 2-METHOXY-3,6-DICHLORO-BENZOIC ACID

Heinz Manfred Becher, Bingen (Rhine), and Richard Sehring, Ingleheim am Rhein, both of Germany, assignors to Celamerck GmbH & Co. KG, Ingelheim am Rhein, Germany

Filed June 19, 1974, Ser. No. 480,685
Claims priority, application Germany, June 22, 1973, 2331712
Int. Cl.² C07C *65/02*
U.S. Cl. 260—521 H **5 Claims**

1. A process for the preparation of 2-methoxy-3,6-dichlorobenzoic acid comprising the steps of

electrolytically debrominating 2-methoxy-5-bromo-3,6-dichlorobenzyl alcohol to produce 2-methoxy-3,6-dichlorobenzyl alcohol,

oxidizing said 2-methoxy-3,6-dichlorobenzyl alcohol to produce 2-methoxy-3,6-dichlorobenzoic acid, and

recovering said 2-methoxy-3,6-dichlorobenzoic acid.

3,928,433
PROCESS FOR PREPARING MESITYLENIC ACID

Anatoli Onopchenko, Monroeville, and Johann G. D. Schulz, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 18, 1972, Ser. No. 315,809
Int. Cl.² C07C *63/32*, *51/33*
U.S. Cl. 260—524 R **14 Claims**

1. A process for converting mesitylene to mesitylenic acid of high purity and of good color which comprises continuously passing a mixture consisting essentially of mesitylene, oxygen, a lower carboxylic acid and a cobalt compound soluble in said lower carboxylic acid through a reaction zone at a temperature of about 80° to about 160° C. for about 5 minutes to about 10 hours to obtain a reaction mixture consisting essentially of mesitylene, mesitylenic acid, cobalt, said lower carboxylic acid and water of reaction, subjecting said reaction mixture to a temperature of about 50° to about 150° C. to remove therefrom an azeotrope containing mesitylene and water, cooling the remainder of the distillation mixture to a temperature of about +50° to about −10° C. to recrystallize mesitylenic acid therein, separating mesitylenic acid from the remainder of said distillation mixture and then recycling the remaining lower carboxylic acid and cobalt to the reaction zone.

3,928,434
OXIDATIVE REMOVAL OF IMPURITIES FROM ACETIC ACID

John Brian Saunby, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,125
Int. Cl.² C07C *51/42*
U.S. Cl. 260—541 **17 Claims**

1. Process for the reduction in the content of oxidizable impurities in acetic acid produced by hydrocarbon oxidation, which process comprises contacting:

a. acetic acid, in the liquid phase, wherein said acetic acid contains (i) oxidizable impurity comprising alpha, beta-olefinically unsaturated ketone, and (ii) a catalytically effective quantity of a soluble transition metal acetate, said transition metal being a metal of Group VB, VI B, VII B, or VIII of the Periodic Table, excluding the noble metals of Group VIII; with

b. a gas containing molecular oxygen,

at an elevated temperature within the range of from about 75° to about 150°C. and for a period of time sufficient to reduce the content of oxidizable impurities to a level wherein the acetic acid product of said process has a rating of at least 2 hours in the potassium permanganate time test.

3,928,435
PROCESS FOR THE CONTINUOUS PRODUCTION OF HIGHLY PURE SODIUM FORMATE

Yasushi Awane, Niigata; Sadao Otsuka, Nagareyama; Masao Nagata, and Fumio Tanaka, both of Niigata, all of Japan, assignors to Mitsubishi Gas Chemical Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1974, Ser. No. 496,561
Claims priority, application Japan, Aug. 13, 1973, 48-90052
Int. Cl.² C07C *51/00*
U.S. Cl. 260—542 **6 Claims**

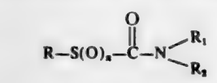
1. In a process for continuous production of sodium formate solution by reaction between an aqueous sodium hydroxide solution and excessive carbon monoxide under pressure in a tower type reactor, the improvement comprising introducing both reactants into said tower and subjecting the same to co-current contact as they progress therethrough.

3,928,436
CARBAMOYL SULFOXIDE DERIVATIVES

Harry Tilles, El Cerrito, and John E. Casida, Berkeley, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 280,373, Aug. 14, 1972, abandoned. This application June 18, 1973, Ser. No. 371,328
Int. Cl.² C07C *147/11*
U.S. Cl. 260—551 R **56 Claims**

1. A compound represented by the following formula:



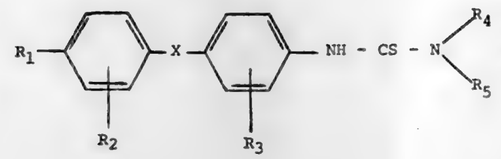
wherein *n* is 1 or 2; R is selected from the group consisting of lower alkyl, haloalkyl, ethoxyalkenyl and alkenyl; R_1 and R_2 can be the same or different and are selected from the group consisting of lower alkyl, cycloalkyl having 3–8 carbon atoms cyclohexylmethyl, alkenyl and alkynyl, said alkyl, alkenyl and alkynyl having straight or branched chain configuration having 1–6 carbon atoms, inclusive.

3,928,437
PHENOXY-PHENYL, PHENYLTHIOPHENYL, PHENYLSULFONYLPHENYL AND PHENYLAMINOPHENYL DIAMINOTHIOUREAS

Rudiger Spaun, Bottmingen; Alain Claude Rochat, Birsfelden; Jean-Jacques Gallay, Magden, and Paul Brenneisen, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 175,723, Aug. 27, 1971, Pat. No. 3,781,290. This application Oct. 11, 1973, Ser. No. 405,619
Claims priority, application Switzerland, Sept. 2, 1970, 13111/70; Dec. 23, 1970, 19065/70
Int. Cl.² C07C *157/09*
U.S. Cl. 260—552 R **4 Claims**

1. A compound of the formula



in which R_1 is hydrogen, halogen, nitro, low alkyl, low alkoxy or low alkylthio, each of the latter having alkyl groups with 1 to 4 carbon atoms; R_2 is hydrogen, halogen, nitro, low alkyl or low alkoxy; R_3 is hydrogen; each of R_4 and R_5 is alkyl of from 1 to 4 carbon atoms; and X is imino.

3,928,438
PROCESS FOR PREPARATION OF UREA AUTOCONDENSATION PRODUCT

Alvin F. Beale, Jr., and John M. Lee, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 865,208, Oct. 9, 1969, abandoned. This application Apr. 7, 1972, Ser. No. 242,221
Int. Cl.² C07C *127/24*
U.S. Cl. 260—553 B **5 Claims**

1. A process for preparing a biuret product which comprises:

providing a reaction mixture of urea in a glycol diether carrier liquid, the relative proportions of urea to diether on a weight basis ranging from about 90:10 to about 10:90, said glycol diether corresponding to the formula R′—O—R—O—$_n$R″ wherein R is ethyl or propyl, R′ and R″ are alkyl radicals containing from one to four carbon atoms, and *n* is an integer ranging from one to six, said ethers being further characterized as having a boiling point of no less than 110°C and a density less than that of urea,

heating said reaction mixture, thereby dissolving the urea, initially at a temperature of from above 150°C to about 210°C for a period of from about 10 minutes to about 2 hours and cooling to a temperature within the range of from about 115°C to below 150°C for a period of time which provides for substantial conversion of said urea to a product high in biuret while simultaneously minimizing formation of other urea autocondensation byproducts, and

contacting the resulting product mixture with water to precipitate the biuret product and recovering the solid biuret product from the residual liquid.

3,928,439
MANUFACTURE OF CARBOXAMIDES

Toni Dockner, Meckenheim, and Rolf Platz, Mannheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Apr. 10, 1974, Ser. No. 459,458
Claims priority, application Germany, Apr. 19, 1973, 2320060
Int. Cl.² C07C *103/00*
U.S. Cl. 260—557 R **11 Claims**

1. A process for the manufacture of carboxamides by the addition of water to nitrile in the presence of a copper-containing catalyst, wherein the reaction is carried out using a catalyst which contains copper and a magnesium silicate which has been manufactured by precipitation of a magnesium compound with an alkali metal silicate in an aqueous mother liquor in a ratio of 1 to 5 moles of alkali metal silicate per mole of magnesium compound at a temperature of from 15° to 50°C and in the presence of a copper compound, which catalyst has been treated with a reducing gas at elevated temperature to reduce the copper compound to mainly non-ionized copper and 0.1 to 30%, based on the total copper content of the catalyst, of a compound of monovalent or divalent copper.

3,928,440
ACRYLONITRILE HYDROLYSIS AND CATALYST USEFUL THEREFOR

Ronald J. Allain, Brookhaven, Miss., and Virgil L. Seale, Houston, Tex., assignors to Nalco Chemical Company, Chicago, Ill.

Filed July 29, 1974, Ser. No. 492,865
Int. Cl.² C07C *103/08*
U.S. Cl. 260—561 N **7 Claims**

1. In a process wherein acrylonitrile is hydrolyzed with water in the presence of a copper catalyst, the improvement which comprises using as said catalyst a particulate copper catalyst which has been prepared by contacting alloy particles comprised of copper and aluminum wherein the weight ratio of aluminum to copper ranges from about 70:30 to 30:70 with water having a pH in the range of from about 5.5 to 7.5 for a time sufficient to produce evolution of hydrogen gas from such particles.

3. In an improved process for preparing a copper catalyst, the improvement which comprises contacting alloy particles comprised of copper and aluminum wherein the weight ratio of aluminum to copper ranges from about 70:30 to 30:70 with water having a pH in the range of from about 5.5 to 7.5 for a time sufficient to produce evolution of hydrogen gas from such alloy particles.

3,928,441
RANEY COPPER CATALYST PRODUCTION AND USE

Wood Eugene Hunter, Lombard, and Karl H. Hoffmann, Brookfield, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed Aug. 8, 1974, Ser. No. 495,566
Int. Cl.² C07C *103/08*
U.S. Cl. 260—561 N **21 Claims**

1. In an improved process for preparing a Raney copper type catalyst, the steps comprising contacting at a temperature below about 80°C particles of an alloy comprised of aluminum and copper in a weight ratio of from about 70:30 to 30:70, said particles ranging in size from about 0.001 to 0.5 inch, with an aqueous solution having dissolved therein from greater than 0 up to 25 weight percent of at least one material selected from the group consisting of amine bases, ammonia, and alkali metal hydroxide for a time sufficient to remove from said particles at least about 25 weight percent of the aluminum present therein on a total initial particle weight pasis, and further contacting such particles simultaneously and/or sequentially during said contacting an aqueous solution having dissolved therein from greater than 0 to up to about 25 weight percent of at least one amino carboxylic acid compound for a time of at least about ½ hour, each said amine base being selected from the group consisting of alkyl amines, alkanol amines, and quaternary ammonium hydroxides, each said amino carboxylic acid compound being characterized by containing at least three carbon atoms per molecule, at least one nitrogen atom per molecule, and at least one carboxyl group per molecule, each such carboxyl group being either in the acid form or in a salt form, by having a solubility in water at a pH greater than 10 to an extent such that about a 5 weight percent solution thereof can be formed at room temperature conditions, and by having a molecular weight not more than about 1000.

19. A process for hydrolyzing an olefinic nitrile comprising the steps of:

A. Contacting at a temperature below about 80°C particles of an alloy comprised of aluminum and copper in a weight ratio of from about 70:30 to 30:70, said particles ranging in size from about 0.001 to 0.5 inch, with an aqueous

solution having dissolved therein from greater than 0 up to about 25 weight percent of at least one material selected from the group consisting of amine bases, ammonia, and alkali metal hydroxide for a time sufficient to remove from said particles at least about 25 weight percent of the aluminum present therein on a total initial particle weight basis, each said amine base being selected from the group consisting of alkyl amines, alkanol amines, and quaternary ammonium hydroxides.

B. Further contacting such particles simultaneously and/or sequentially during said contacting with an aqueous solution having dissolved therein from greater than 0 up to about 25 weight percent of at least one amino carboxylic acid compound for a time of at least about ½ hour, each said amino carboxylic acid compound being characterized by containing at least three carbon atoms per molecule, at least one nitrogen atom per molecule, and at least one carboxyl group per molecule, each such carboxyl group being either in the acid form or in a salt form, by having a solubility in water at a pH greater than 10 to an extent such that about a 5 weight percent solution thereof can be formed at room temperature conditions, and by having a molecular weight not more than about 1000.

C. Still further contacting the so-washed particles with a composition comprising from about 10 to 75 weight percent acrylonitrile with the remainder up to one hundred weight percent thereof being water at a temperature ranging from about 150° to 300°F. for a time sufficient to convert at least some of said olefinic nitrile to the corresponding amide.

3,928,442
METHOD OF PRODUCING ACRYLAMIDE WITH A NITROGEN BASE ACTIVATED COPPER CATALYST

Virgil L. Seale, Houston, Tex., and Ronald J. Allain, Brookhaven, Miss., assignors to Nalco Chemical Company, Chicago, Ill.

Filed Aug. 26, 1974, Ser. No. 500,600
Int. Cl.² C07C *103/08*
U.S. Cl. 260—561 N **11 Claims**

1. In the process wherein acrylonitrile is hydrolyzed with water in the presence of a copper catalyst, the improvement which comprises using as said catalyst a particulate copper catalyst which comprises from about 2 to 45 weight percent aluminum with the balance up to 100 weight percent thereof (total catalyst dry weight basis) being copper, said catalyst having been prepared by contacting a prechosen starting group of copper/aluminum alloy particles having an aluminum to copper ratio of from about 70:30 to 30:70 with a liquid aqueous medium containing dissolved therein from greater than 0 to about 50 weight percent of organic nitrogen base selected from the group consisting of ammonia, alkyl amines, alkanol amines, quaternary ammonium compounds, and mixtures thereof for a time sufficient to remove at least about 1 weight percent of the total starting aluminum content of said group of alloy particles (total starting alloy particle weight basis).

10. In an improved process for making a catalyst adapted for use in hydrolyzing acrylonitrile to acrylamide, the improvement which comprises contacting a metal alloy comprised of copper and aluminum in particular form with an aqueous liquid medium containing dissolved therein from greater than 0 to about 50 weight percent organic amine base and from greater than 0 to about 30 weight percent of at least one hydroxylated hydrocarbon compound characterized by having at least two carbon atoms per molecule and by having at least two groups per molecule, at least one of said groups being hydroxyl, the other of said groups being selected from the class consisting of hydroxyl, carboxyl, aldehyde, alkali metal carboxylate, and esterfied carboxylate.

3,928,443
COPPER CATALYST AND PROCESSES FOR MAKING AND USING

Ronald J. Allain, Brookhaven, Miss., and Virgil L. Seale, Houston, Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Sept. 20, 1974, Ser. No. 507,818
Int. Cl.² C07C *103/08*
U.S. Cl. 260—561 N **9 Claims**

1. A process for making a copper catalyst comprising the steps of

a. firstly contacting particles of a metal alloy comprised of copper and aluminum in a weight ratio from about 70:30 to 30:70 copper to aluminum, said particles ranging in size from about 0.001 to 0.5 inch, with an aqueous solution which has dissolved therin on a one hundred weight percent total by-product free solution basis from greater than 0 to about 50 weight percent of at least one mineral acid selected from the group consisting of sulphuric acid and hydrochloric acid for a time sufficient to remove from said particles at least about 5 weight percent of the aluminum initially present therein,

b. secondly contacting the so acid-treated particles with an aqueous solution which has dissolved therein on a 100 weight percent total by-product free solution basis from greater than 0 to about 50 weight percent of at least one base selected from the group consisting of alkali metal hydroxide, ammonium hydroxide, aliphatic amine, quaternary ammonium hydroxide, alkali metal carbonate and water having a pH ranging from about 5.5 to 7.5 for a time sufficient to remove from said so acid-treated particles at least about one weight percent aluminum, based on total weight of aluminum initially present in said particles.

4. A process for hydrolyzing an olefinic nitrile containg from 3 through 6 carbon atoms per molecule to the corresponding amide comprising the steps of

a. firstly contacting particles of a metal alloy comprised of copper and aluminum in a weight ratio from about 70:30 to 30:70 copper to aluminum, said particles ranging in size from about 0.001 to 0.5 inch, with an aqueous solution which has dissolved therein on a one hundred weight percent total byproduct free solution basis from greater than 0 to about 50 weight percent of at least one mineral acid selected from the group consisting of sulphuric acid and hydrochloric acid for a time sufficient to remove from said particles at least about 5 weight percent of the aluminum initially present therein,

b. secondly contacting the so acid-treated particles with an aqueous solution which has dissolved therein on a one hundred weight percent total byproduct free solution basis from greater than 0 to about 50 weight percent of at least one base selected from the group consisting of alkali metal hydroxide, ammonium hydroxide, aliphatic amine, quaternary ammonium hydroxide, alkali metal carbonate and water having a pH ranging from about 5.5 to to 7.5 for a time sufficient to remove from said so acid-treated particles at least about one weight percent aluminum, based on total weight of aluminum initially present in said particles,

c. washing the resulting product particles with water having a pH ranging from about 5.5 to 7.5 for a time at least sufficient to cause said wash water to have a pH ranging from about 5.5 to 7.5 and sufficient to remove from such product particles any non-metallic visible solids,

d. thirdly contacting the so-washed particles with a composition comprising from about 10 to 75 weight percent acrylonitrile with the remainder up to one hundred weight percent thereof being water at a temperature ranging from about 60° to 150°C for a time sufficient to convert at least some of said olefinic nitrile to the corresponding amide.

3,928,444
PROCESS FOR HYDROLYZING DICYAN

Sueo Kamada; Takeshi Yamashita; Tohru Ide; Ryogo Ajiki, and Takao Kitamura, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 25, 1974, Ser. No. 526,739
Claims priority, application Japan, Nov. 28, 1973, 48-132576; Dec. 11, 1973, 48-137314
Int. Cl.² C07C *103/08*
U.S. Cl. 260—561 K **12 Claims**

1. A process for preparing oxamide which comprises hydrolyzing dicyan in an aqueous solution containing as catalyst

a. one or more molybdates and/or tungstates, and

b. at least one metal ion selected from the group consisting of zinc, copper, nickel, cobalt, iron and manganese ions

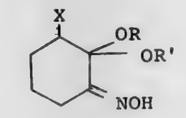
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3,928,445
SYNTHESIS OF 2-HALO-5-CYANO ALKYL VALERATE

Milorad M. Rogic, and Frantisek Mares, both of Whippany, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,607
Int. Cl.² C07C *131/04*
U.S. Cl. 260—566 A **4 Claims**

1. A compound of the formula:



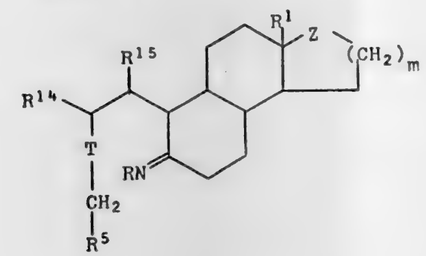
wherein X is a member of the group consisting of chlorine, bromine and iodine and R and R′ are independent alkyl groups having 1 to 12 carbon atoms.

3,928,446
PREPARATION OF 3-OXO-19-NOR-Δ⁴-STEROIDS FROM 10-[3-SUBSTITUTED-ALKYL]-DESASTEROIDS

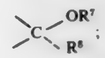
Michael Rosenberger, Caldwell, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 11, 1974, Ser. No. 459,979
Int. Cl.² C07C *131/02*
U.S. Cl. 260—566 AE **8 Claims**

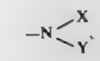
1. Compounds of the formula



wherein Z is carbonyl, >C=NR or a group of the formula



R^7 is hydrogen or lower alkanoyl or monocyclic aroyl; R^8 is hydrogen or lower aliphatic hydrocarbyl; *m* is an integer having a value of 1 or 2; R is lower alkoxy, hydroxy or a radical of the formula



wherein X and Y are each independently lower alkyl; R^1 is primary lower alkyl having from 1 to 5 carbons; R^5 is hydrogen or lower alkyl; R^{14} and R^{15} are each independently hyrogen or lower alkyl and T is carbonyl or a group of the formula



3,928,447
SEPARATION AND PURIFICATION OF DIALKYLDIMETHYL AMMONIUM HALIDES

Ting P. Chen, Wappingers Falls, and Ronald E. Jones, Glenham, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 22, 1974, Ser. No. 453,918
Int. Cl.² C07C *85/26*
U.S. Cl. 260—567.6 M **7 Claims**

1. A process for separating the purifying dialkyl dimethylammonium halides, each of said alkyl groups having about 10 to 24 carbon atoms, from amine hydrohalide-type contaminants, said products and said contaminants being present in the form of substantially anhydrous mixtures, comprising the steps of:

a. contacting said mixture with at least a solubilizing amount of lower alkanols containing less than 5% of water until both ammonium halide and amine hydrohalide-type contaminants are solubilized to produce a one-phase solution,

b. treating said solution with gaseous ammonia until substantially all of said contaminant is precipitated, and

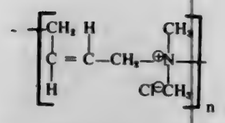
c. separating the solubilized product contained therein.

3,928,448
DICHLOROBUTENE/DIMETHYLAMINE IONENE POLYMER

Edward G. Ballweber, Glenwood; Wun Ten Tai, Palos Hills, and Radhakrishnan Selvarajan, Chicago, all of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed July 15, 1974, Ser. No. 488,644
Int. Cl.² C07C *85/00, 87/30;* C08F *214/00;* C02B *1/20*
U.S. Cl. 260—567.6 P **5 Claims**

1. A trans-1,4-dichloro-2-butene-dimethylamine ionene chloride polymer with repeating units represented by the formula:



where *n* is sufficiently large to give a polymer with an intrinsic viscosity in the range of 0.04 to 0.85.

3,928,449

AMINOALKOXY-TERPHENYLS AND THE SALTS THEREOF

Rudolf G. Griot, Basel-Stadt, Switzerland, assignor to Sandoz, Inc., E. Hanover, N.J.

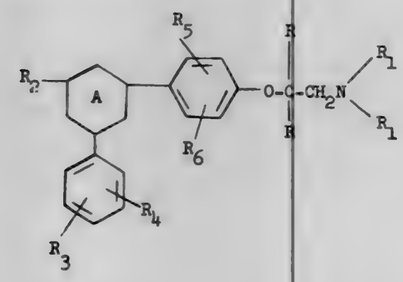
Division of Ser. No. 813,301, April 3, 1969, Pat. No. 3,622,588, which is a continuation-in-part of Ser. No. 725,172, April 29, 1968, abandoned. This application Mar. 3, 1971, Ser. No. 120,688

Int. Cl.² C07C *93/06*

U.S. Cl. 260—570.7 **10 Claims**

1. A compound from the group of

A. a compound of the formula:



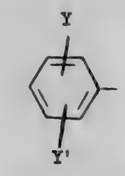
wherein

Ring A is a six-membered hydrocarbon ring having one double bond and a single hydroxy group pendent from said ring at a biphenyl position,

each of R is, independently, hydrogen or lower alkyl;

each of R_1 is, independently, lower alkyl;

R_2 is hydrogen, phenyl or substituted phenyl of the formula:



each of Y, Y', R_3 and R_4 is, independently, hydrogen, halo of atomic weight not exceeding 80, lower alkyl, lower alkoxy, or phenyl, provided R_3 and R_4 are hydrogen when R_2 is hydrogen and provided R_3, R_4, Y and Y' together represent no more than one phenyl and providing that R_3, R_4, Y and Y' together represent no more than a total of two alkyl and alkoxy substituents, and

each of R_5 and R_6 is, independently, hydrogen or lower alkyl; and

B. acid addition salts of (A), above.

3,928,450

ACETYLENE SUBSTITUTED AROMATIC PRIMARY AMINES AND THE PROCESS OF MAKING THEM

Norman Bilow; Robert H. Boschan, both of Los Angeles, and Abraham L. Landis, Northridge, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 16, 1973, Ser. No. 416,709

Int. Cl.² C07C *93/14*

U.S. Cl. 260—571 **3 Claims**

1. A class of compounds comprised of the formula NH_2—R—C≡CH wherein R is phenoxy phenylene or phenylene thiophenylene.

3,928,451

METHOD OF PREPARING P-CHLOROPHENYLENEDIAMINE

Ram Murthy Krishnan, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 375,589, July 2, 1973, abandoned. This application Nov. 25, 1974, Ser. No. 526,763

Int. Cl.² C07C *85/11*

U.S. Cl. 260—580 **1 Claim**

1. A method of preparing p-chloro-m-phenylene diamine which consists essentially of hydrogenating 4-chloro-1,3-dinitrobenzene in a solution containing about 20 to about 30 percent 4-chloro-1,3-dinitrobenzene of an acetate solvent selected from at least one ethyl acetate, propyl acetate and butyl acetate at a pressure in the range of about 400 to about 1000 psig and at a temperature in the range of about 60° to about 120°C in the presence of about 1 to about 3 weight percent of a reduced platinum on granular carbon catalyst, based on the total solution, having a particle size in the range of about 200 to about 400 U.S. Standard mesh size containing essentially about 0.5 to about 1.5 weight percent platinum, said catalyst having a nitrobenzene number in the range of about 2600 to about 3200, said platinum on the granular carbon being reduced by at least about 99 percent to a zero valence state, and where said nitrobenzene number is the volume of hydrogen at standard temperature and pressure (STP) taken up over the first five minutes of reaction per gram of dry catalyst from the result of mixing 0.125 gram catalyst, 4.0 milliliters of nitrobenzene and 100.0 milliliters anhydrous methyl alcohol, where said mixture is shaken in a Parr apparatus under 300 millimeters mercury pressure.

3,928,452

PREPARATION OF MIXTURES OF KETONES AND OF THEIR CORRESPONDING ALCOHOLS

Jean Claude Brunie, Francheville-Le-Haut; Michel Costantini; Noel Crenne, both of Lyon, and Michel Jouffret, Francheville-le-Bas, all of France, assignors to Rhone-Poulenc S.A., Paris, France

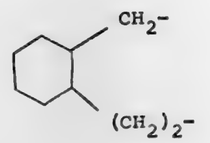
Filed Dec. 11, 1970, Ser. No. 97,375

Claims priority, application France, Dec. 12, 1969, 69.43179

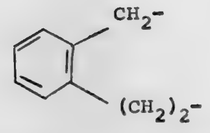
Int. Cl.² C07C *27/04, 29/00, 45/00*

U.S. Cl. 260—586 R **15 Claims**

1. Process for preparing a hydroperoxide decomposition product which consists essentially of a mixture of a major proportion of a ketone of the general formula R_1R_2CO and a minor proportion of the corresponding alcohol of the general formula R_1R_2CHOH in which R_1 and R_2, which may be identical or different, each represent a monovalent linear or branched aliphatic hydrocarbon radical having from 1 to 18 carbon atoms, an alicyclic hydrocarbon radical having from 3 to 16 carbon atoms in the ring, or a monocyclic or polycyclic aromatic hydrocarbon radical, or wherein R_1 and R_2 together form a divalent alkylene or alkenylene radical having from 4 to 15 carbon atoms or a radical of formula:



or



or wherein R_1 and R_2 are as defined above but is substituted by at least one fluoro, chloro, nitro or nitrile group by treating a secondary hydroperoxide of the general formula R_1R_2COOH where R_1 and R_2 are as defined above, at a reaction inducing temperature in the liquid phase with an aqueous solution of $CrCl_3.6H_2O$, CrO_3 or $VOCl_2$.

3,928,453

PROCESS FOR THE PREPARATION OF SUBSTITUTED CYCLOHEXADIENONES

John Halstead Atkinson, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

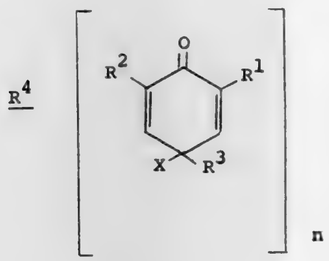
Filed Feb. 20, 1973, Ser. No. 334,107

Claims priority, application United Kingdom, Mar. 29, 1972, 14766/72

Int. Cl.² C07C *41/10, 45/00, 148/00*

U.S. Cl. 260—586 R **9 Claims**

1. A process for the production of a compound of the formula



in which:

X is sulphur or oxygen;

R^1 and R^2 are individually alkyl groups having 4 to 12 carbon atoms;

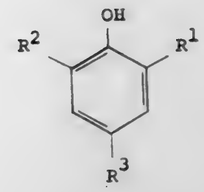
R^3 is a tertiary alkyl group having 4 to 8 carbon atoms;

R^4 is an acyclic hydrocarbon residue derived from a thiol or alcohol having from 1 to 10 carbon atoms; and

n is 1, 2, 3 or 4;

which comprises:

reacting a phenol of the formula



with an alcohol or thiol of the formula $R^4(XH)_n$, where R^1, R^2, R^3, R^4, X, and *n* are as defined above, with chlorine in the presence of a base selected from the group consisting of primary, secondary and tertiary alkylamines having 1 to 6 carbon atoms, alkali metal hydroxides, alkali metal lower alkoxides, alkali metal carbonates, alkaline earth metal carbonates, alkali metal bicarbonates, alkaline earth metal bicarbonates, and alkaline earth metal hydroxides.

3,928,454

BIS[2,6,6-TRIMETHYL-4-OXO-CYCLOHEXEN-1-YLIDENE]-3,7,12,16-TETRAMETHYL-2,6,8,10,12,16-OCTADECAHEXEN-4,14-DIYNE

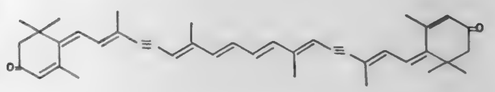
Joseph Donald Surmatis, and Armin Walser, both of West Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 153,090, June 14, 1971, Pat. No. 3,830,844, which is a division of Ser. No. 826,022, May 19, 1969, Pat. No. 3,624,105, which is a division of Ser. No. 617,827, Feb. 23, 1967, Pat. No. 3,466,331. This application May 20, 1974, Ser. No. 471,268

Int. Cl.² C07C *49/48*

U.S. Cl. 260—586 R **1 Claim**

1. A compound of the formula:



3,928,455

(2,6,6-TRIMETHYL-4-OXO-CYCLOHEX-2-EN-1-YLIDENE)-6-HYDROXY-3-METHYL-7-METHYLENE-OCT-2-ENE-4-YNE

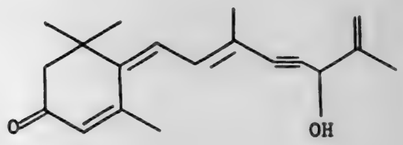
Joseph Donald Surmatis, and Armin Walser, both of West Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 153,090, June 14, 1971, Pat. No. 3,830,844, which is a division of Ser. No. 826,022, May 19, 1969, Pat. No. 3,577,407, which is a division of Ser. No. 617,827, Feb. 23, 1967, Pat. No. 3,466,331. This application May 20, 1974, Ser. No. 471,532

Int. Cl.² C07C *49/48*

U.S. Cl. 260—586 R **1 Claim**

1. A compound of the formula



3,928,456
CYCLOALIPHATIC UNSATURATED KETONES AS ODOUR- AND TASTE-MODIFYING AGENTS

Ervin Kováts, Lausanne; Edouard Demole, Geneva; Gunther Ohloff, Bernex,Geneva, Switzerland, and Max Stoll, deceased, late of Lully, Geneva, Switzerland (by Suzanne Stoll, executrix), assignors to Firmenich S.A., Geneva, Switzerland

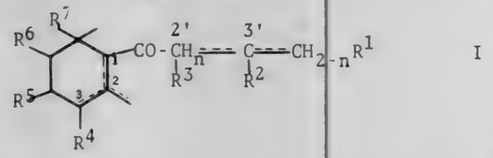
Division of Ser. No. 35,594, May 7, 1970, abandoned, which is a continuation-in-part of Ser. No. 774,179, Nov. 7, 1968, abandoned. This application Sept. 6, 1974, Ser. No. 503,794

Claims priority, application Switzerland, Nov. 9, 1967, 15667/67; Nov. 1, 1968, 16309/68; May 7, 1969, 6976/69; Aug. 8, 1969, 12065/69; Apr. 14, 1970, 5559/70; Apr. 17, 1970, 5725/70

Int. Cl.² C07C *49/61*

U.S. Cl. 260—586 R **13 Claims**

1. Compounds having the formula



I

containing one double bond in position 2′- or 3′- of the acyl side-chain, and a double bond in position 1 or 2 of the cycle, the double bonds being represented by dotted lines, and wherein n is zero or 1, R^1, R^2 and R^3 represent hydrogen or one of them a lower alkyl radical and the others hydrogen, and R^4, R^5, R^6 and R^7 represent hydrogen or one of them a lower alkyl radical and the others hydrogen.

3,928,457
ACID CATALYZED, LIQUID PHASE PREPARATION OF METHYL VINYL KETONE

George Ember, Hackensack, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 296,407, Oct. 10, 1972, abandoned. This application Aug. 31, 1973, Ser. No. 393,519

Int. Cl.² C07C *49/20*

U.S. Cl. 260—593 R **5 Claims**

1. A process for obtaining methyl vinyl ketone comprising reacting at a temperature of from 100°C. to 300°C., a reaction mixture containing from about 5 to 20 parts by weight of acetone to 1 part by weight of formaldehyde and from about 0.01 to 0.5% by weight of the reaction mixture of a strong acid having a dissociation constant of 10^{-4} selected from the group consisting of sulfuric acid, an aliphatic, alicyclic or aromatic sulfonic acid, said reaction being carried out under a combination of temperatures and pressures sufficient to maintain the reaction mixture in a liquid phase.

3,928,458
SYNTHESIS OF ALPHA, BETA-UNSATURATED ESTERS, ALDEHYDES, KETONES AND NITRILES

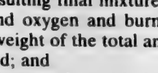
Hugh J. Hagemeyer, Jr.; Alden E. Blood, and Thomas C. Snapp, Jr., all of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 877,561, Nov. 21, 1969, Pat. No. 3,845,106, which is a division of Ser. No. 677,393, Oct. 23, 1967, Pat. No. 3,574,703. This application Aug. 5, 1974, Ser. No. 494,594

Int. Cl.² C07C *45/00*

U.S. Cl. 260—593 R **5 Claims**

1. A process for the preparation of alpha,beta-unsaturated ketones by the catalytic vapor phase condensation of a mixture of formaldehyde and a ketone, said ketone possessing at least two hydrogen atoms attached to the alpha carbon atom and having the general formula



wherein R is hydrogen or alkyl of 1 to 6 carbon atoms and R′ is an alkyl group of 1 to 6 carbon atoms, in the presence of a catalyst consisting essentially of silica gel having a pore volume greater than 0.30 cc/g. and a surface area less than 600 m^2/g.

3,928,459
PROCESS FOR SPLITTING ACETALS AND HEMIACETALS

Jules Mercier, Melle, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Feb. 28, 1968, Ser. No. 708,775

Claims priority, application France, Mar. 29, 1967, 67.100671

Int. Cl.² C07C *45/00*

U.S. Cl. 260—601 R **10 Claims**

1. A process for splitting acetals and hemiacetals which comprises passing a homogeneous liquid reaction mixture comprising a compound selected from the group consisting of an acetal having the formula:

$$R-CH(OR')_2$$

and a hemiacetal having the formula:

$$R-CH(OH)(OR')$$

wherein R is selected from the group consisting of hydrogen and a hydrocarbon group containing 1–12 carbon atoms and R′ is a hydrocarbon group containing 1–12 carbon atoms and a material selected from the group consisting of water and a mixture of alkanol and water, wherein the water constitutes between 5–30% by weight of the reaction mixture, upwardly through a fluidized catalyst, said catalyst being a sulfonic ion exchange resin in acid form, at a temperature of 60° to 140°C. and a pressure sufficient to maintain the reaction mixture in the liquid phase.

3,928,460
PRODUCTION OF COMBUSTION GAS TO HEAT SILVER CATALYST

Albrecht Aicher, Frankenthal; Hans Diem; Hans Haas, both of Ludwigshafen; Klaus Hess, Bad Duerkheim; Oskar Hussy, Ludwigshafen; Guenther Matthias, Ludwigshafen; Heinrich Sperber, Ludwigshafen, and Richard Stickel, Bad Duerkheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed May 14, 1973, Ser. No. 360,076

Claims priority, application Germany, May 18, 1972, 2224223

Int. Cl.² C07C *45/16*; B01J *23/48*

U.S. Cl. 260—603 C **5 Claims**

1. In a process for heating up a silver catalyst in the catalytic syntheses of formaldehyde from methanol and oxygen, the improvement of producing a combustion gas of 400° to 1300°C. used to initially heat said catalyst which comprises:

mixing (a) a starting gas mixture consisting essentially of methanol and from 1 to 10 percent by weight of oxygen based on methanol having a flow velocity of from 50 to 500 meters per second with (b) oxygen having a flow velocity of from 1 to 20 meters per second in a ratio of from 10 to 80 percent by weight of additional oxygen based on the starting mixture;

igniting the resulting final mixture consisting essentially of methanol and oxygen and burning only from 85 to 99 percent by weight of the total amount of methanol in the flame formed; and

heating said silver catalyst with the combustion gas formed by the burned mixture.

3,928,461
PRODUCTION OF FORMALDEHYDE

Hans Diem; Guenther Matthias, both of Ludwigshafen; Albrecht Aicher, Frankenthal-Studernheim; Hans Haas, Ludwigshafen; Hans Schreiber, Ludwigshafen, and Heinrich Sperber, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed June 21, 1973, Ser. No. 372,257

Claims priority, application Germany, June 26, 1972, 2231248

Int. Cl.² C07C *45/15*

U.S. Cl. 260—603 HF **13 Claims**

1. A process for producing formaldehyde by oxidizing dehydrogenation of methanol in the presence of a silver catalyst at elevated temperatures, wherein the reaction is carried out at a temperature of 550° to 750°C and during the reaction an additional vapor mixture heated to at least 70°C and consisting of 0.05 to 0.8 mole of water and 0.005 to 0.6 mole of oxygen based on 1 mole of feed methanol is introduced, into the vaporous methanolic starting mixture which has been heated to at least 60°C and contains water in a molar ratio of 0.09 to 1.8 and oxygen in a molar ratio of 0.35 to 0.5, based on 1 mole of methanol, before said starting mixture enters the catalyst bed, the space velocity being 0.9 to 3 metric tons of methanol, calculated 100%, per square meter of catalyst bed cross-section per hour, said reaction being carried out in a plurality of reactors arranged in parallel, each reactor having a bed of said silver catalyst of a diameter of at least 0.5 meters, said starting mixture being fed to the respective reactors via a branch line connecting each respective reactor with a main supply pipe for said starting mixture, and said additional vapor mixture being fed into at least one of said reactors at a point ahead of the entry of said starting mixture into said catalyst bed.

3,928,462
CATALYTIC PROCESS FOR THE PREPARATION OF METHACROLEIN

Tatsuo Shiraishi; Susumu Kishiwada; Shinkichi Shimizu; Shigeru Honmaru; Hiroshi Ichihashi, and Yoshihiko Nagaoka, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed July 2, 1971, Ser. No. 159,307

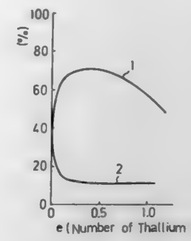
Int. Cl.² C07C *45/04*

U.S. Cl. 260—604 R **19 Claims**

1. A process for the preparation of methacrolein by the vapor phase oxidation of isobutylene which comprises contacting isobutylene and oxygen at a temperature from 250° to 500°C. with a catalyst composition consisting essentially of a catalyst system of the formula:

$$Mo_aBi_bFe_cNi_dTl_eX_fP_gO_h$$

wherein X is Mn, Mg or Co or a combination thereof and a, b, c, d, e, f, g and h represent respectively the number of atoms wherein a is 12, b is 0.1 to 5, c is 0.1 to 5, d is 0.1 to 12, e is



1 or less but not 0, f is 0 to 12, g is 0 to 5 and h is from 36 to 89.

3,928,463
PROCESS FOR THE PREPARATION OF TERTIARY METHYL-PHOSPHINE OXIDES

Martin Reuter, Kronberg, Taunus, and Walter Rupp, Konigstein, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

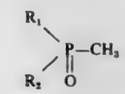
Filed Apr. 11, 1974, Ser. No. 460,133

Claims priority, application Germany, May 24, 1974, 2357279

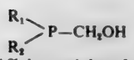
Int. Cl.² C07D *105/02*

U.S. Cl. 260—606.5 P **13 Claims**

1. A process for the preparation of tertiary methyl phosphine oxide of the formula



wherein R_1 is alkyl having up to 20 carbon atoms or alkyl having up to 20 carbon atoms and substituted by a group inert under conditions of the process, and R_2 is alkyl having up to 20 carbon atoms or alkyl having up to 20 carbon atoms and substituted by a group inert under conditions of the process or $-CH_2OH$, which comprises contacting a hydroxymethyl-alkyl phosphine of the formula



with at least about 1% by weight of carbon tetrachloride or carbon tetrabromide at a temperature between about −10° and about 120°C. substantially in the absence of oxygen, water and alcohol, and after reaction distilling off the carbon tetrahalide to isolate said tertiary methyl-phosphine oxide, the percent being based on the weight of said hydroxymethyl-alkyl-phosphine.

3,928,464
ORGANIC PEROXIDES, THEIR PREPARATION, AND THEIR APPLICATIONS

Egeo Sacrini, and Claudio Cavallotti, both of Milan, Italy, assignors to The B.F. Goodrich Company, Akron, Ohio

Division of Ser. No. 373,934, June 27, 1973, which is a division of Ser. No. 62,128, Aug. 7, 1970, Pat. No. 3,775,465. This application Apr. 23, 1975, Ser. No. 570,601

Claims priority, application Italy, Aug. 12, 1969, 20839/69

Int. Cl.² C07C *179/06*

U.S. Cl. 260—610 R **1 Claim**

1. A tetraperoxide selected from the group consisting of

1. α-α′ (2-tert.-butyl-peroxy-2-phenyl ethyl-2-idene-2-peroxy) 1,3 diisopropylbenzene;

2. α-α′ (2-tert.-butyl-peroxy-2-phenyl ethyl-2-idene-2-peroxy) 1,4 diisopropylbenzene;
3. α-α′ (2-cumyl peroxy-2-phenyl ethyl-2-idene-2-peroxy) 1,3 diisopropylbenzene;
4. α-α′ (2-cumyl peroxy-2-phenyl ethyl-2-idene-2-peroxy) 1,4 diisopropylbenzene;
5. α-α′ [2-tert.-butyl peroxy-(3 phenyl) propylidene-2-peroxy] 1,3 diisopropylbenzene.

3,928,465

ORGANIC PEROXIDES, THEIR PREPARATION, AND THEIR APPLICATIONS

Egeo Sacrini, and Claudio Cavallotti, both of Milan, Italy, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 62,128, Aug. 7, 1970, Pat. No. 3,775,465. This application June 27, 1973, Ser. No. 373,934
Int. Cl.² C07C *179/00*
U.S. Cl. 260—610 R **5 Claims**

1. A tetraperoxide selected from the group consisting of
1. α-α′ (2-cumyl peroxy-isopropylidene-2-peroxy) 1,3 diisopropylbenzene;
2. α-α′ (2-cumyl peroxy-isopropylidene-2-peroxy) 1,4 diisopropylbenzene;
3. α-α′ (2-tert.-butyl peroxy-n-butylidene-2-peroxy) 1,3 diisopropylbenzene;
4. α-α′ (4-tert.-butyl peroxy-2,6,8 trimethyl nonylidene-4-peroxy) 1,3 diisopropylbenzene.

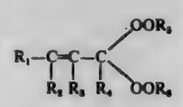
3,928,466

ORGANIC PEROXIDES DERIVED FROM UNSATURATED COMPOUNDS

Egeo Sacrini, and Claudio Cavallotti, both of Milan, Italy, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 53,267, July 8, 1970. This application Mar. 3, 1975, Ser. No. 554,474
Claims priority, application Italy, July 29, 1969, 20222/69
Int. Cl.² C07C *179/00*, *179/06*
U.S. Cl. 260—610 R **7 Claims**

1. An organic peroxide having the formula:



wherein R_1 is selected from the group consisting of alkyl and cycloalkyl radicals having 5–30 carbon atoms; and alkyl and hydroxy substituted phenyl radicals having 6–26 carbon atoms; R_2 is selected from the group consisting of hydrogen, alkyl and cycloalkyl radicals having 5–20 carbon atoms; alkyl radicals having 1–12 carbon atoms, and alkyl substituted phenyl radicals; and R_1 and R_2 together with the carbon atom to which they are bonded may form a cycloaliphatic ring selected from the group consisting of alkyl, phenyl, phenylalkyl, alkylidene and phenylalkylidene substituted cycloaliphatic rings having 5–30 carbon atoms; R_3 and R_4 are each selected from the group consisting of hydrogen, alkyl and cycloalkyl radicals having 5–20 carbon atoms; alkyl substituted phenyl radicals having 6–20 carbon atoms; alkyl radicals having 1–12 carbon atoms, and phenylalkyl radicals having 7–20 carbon atoms and R_3 and R_4 taken together with the two adjacent carbon atoms to which they are respectively bonded may form a cycloaliphatic ring selected from the group consisting of alkyl, phenyl, phenylalkyl, alkylidene, phenylalkylidene and hydroxyphenylalkylidene substituted cycloaliphatic rings having 5–25 carbon atoms; R_5 and R_6 are each selected from the group consisting of alkyl cycloalkyl radicals having 5–21 carbon atoms; alkyl substituted phenylcycloalkyl radicals having 9–25 carbon atoms; alkyl radicals having 4–12 carbon atoms, and phenylalkyl radicals having 9–18 carbon atoms.

3,928,467

ORGANIC PEROXIDES, THEIR PREPARATION AND THEIR APPLICATIONS

Egeo Sacrini, and Claudio Cavallotti, both of Milan, Italy, assignors to The B.F. Goodrich Company, Akron, Ohio

Division of Ser. No. 373,934, June 27, 1973, which is a division of Ser. No. 62,128, Aug. 7, 1970, Pat. No. 3,775,465. This application Apr. 23, 1975, Ser. No. 570,600
Claims priority, application Italy, Aug. 12, 1969, 20839/69
Int. Cl.² C07C *179/06*
U.S. Cl. 260—610 R **1 Claim**

1. A tetraperoxide selected from the group consisting of
1. α-α′ (1-tert.-butyl peroxy-cyclopentylidene-1-peroxy) 1,3 diisopropylbenzene;
2. α-α′ (1-tert.-butyl peroxy-cyclopentylidene-1-peroxy) 1,4 diisopropylbenzene;
3. α-α′ (1-cumyl peroxy-cyclopentylidene-1-peroxy) 1,3 diisopropylbenzene;
4. α-α′ (1-cumyl peroxy-cyclopentylidene-1-peroxy) 1,4 diisopropylbenzene;
5. α-α′ (1-tert.-butyl peroxy-cyclohexylidene-1-peroxy) 1,3 diisopropylbenzene;
6. α-α′ (1-tert.-butyl peroxy-cyclohexylidene-1-peroxy) 1,4 diisopropylbenzene;
7. α-α′ (1-cumyl peroxy-cyclohexylidene-1-peroxy) 1,3 diisopropylbenzene;
8. α-α′ (1-cumyl peroxy-cyclohexylidene-1-peroxy) 1,4 diisopropylbenzene;
9. α-α′ (1-tert.-butyl peroxy-4 tert.-butyl-cyclohexylidene-1-peroxy) 1,3 diisopropylbenzene;
10. α-α′ (1-tert.-butyl peroxy-4 tert.-butyl-cyclohexylidene-1-peroxy) 1,4 diisopropylbenzene;
11. α-α′ (1-tert.-butyl peroxy-cyclododecylidene-1-peroxy) 1,3 diisopropylbenzene;
12. α-α′ (1-tert.-butyl peroxy-cyclododecylidene-1-peroxy) 1,4 diisopropylbenzene;
13. α-α′ [1-cumyl-peroxy-(4-tert.-butyl) cyclohexylidene-1-peroxy] 1,3 diisopropylbenzene.

3,928,468

HALOGENATED METHYLCYCLOPROPYL ETHERS

Charles Alden Billings, Concord; Gerald Joseph O'Neill, Arlington, and Charles William Simons, Bedford, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Division of Ser. No. 451,677, March 15, 1974. This application Dec. 5, 1974, Ser. No. 529,631
Int. Cl.² C07C *43/18*
U.S. Cl. 260—611 R **1 Claim**

1. The methyl cyclopropyl ethers of the class consisting of 1-methoxy-1,2,2,3-tetrafluoro-3-chlorocyclopropane, 1-methoxy-1,2,3-trifluoro-2,3-dichlorocyclopropane, 1-methoxy-1,2,2-trifluoro-3,3-dichlorocyclopropane and 1-methoxy-1,2,2,3-tetrafluoro-3-bromocyclopropane.

3,928,469

PROCESS FOR THE CLEAVAGE OF HYDROPEROXIDES

Hideaki Suda, Takaishi; Iwao Dohgane, Nishinomiya; Takashi Chinuki, Toyonaka; Hidekazu Fujino, Moriguchi; Kenji Tanimoto; Hirokazu Hosaka, both of Minoo; Kazunari Ehara, Takarazuka; Yukimichi Nakao, Kobe; Yuji Ueda, Izumiotsu; Seiya Imada, Sakai, and Minoru Yasuda, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 21, 1973, Ser. No. 362,212
Claims priority, application Japan, May 23, 1972, 47-51398
Int. Cl.² C07C *39/08*
U.S. Cl. 260—621 C **5 Claims**

1. In a process for the cleavage of diisopropylbenzene dihydroperoxide which comprises heating an oxidation product of diisopropylbenzene containing m-diisopropylbenzene dihydroperoxide in an organic solvent selected from the group consisting of alcohols, ketones and alkyl benzenes in the presence of an acidic catalyst, the improvement comprising incorporating p-diisopropylbenzene dihydroperoxide in the material to be cleaved in an amount of from 5% to 80% by weight based on m-diisopropylbenzene dihydroperoxide to thereby improve the yield of resorcin from m-diisopropylbenzene.

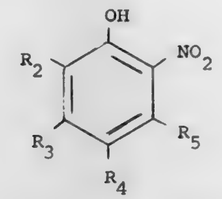
3,928,470

PREPARATION OF 2-NITROHALOPHENOLS

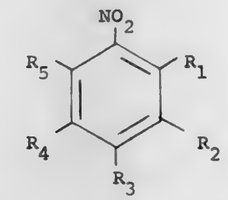
Gerard Soula, Meyzieu; Jacques Metzger, and Louis Lena, both of Marseille, all of France, assignors to Rhone-Progil, Courbevoie, France

Filed Apr. 1, 1974, Ser. No. 456,881
Claims priority, application France, Apr. 6, 1973, 73.13606
Int. Cl.² C07C *79/26*
U.S. Cl. 260—622 R **14 Claims**

1. In a process for the preparation of the 2-nitrohalophenols having the structural formula:



comprising reacting a polyhalonitrobenzene having the structural formula:



with a dehalohydroxylation agent, wherein the above formulae R_1 is halogen; R_2, R_3 and R_4 are independently selected from the group consisting of hydrogen, halogen and lower alkyl having from one to four carbon atoms; and R_5 is selected from the group consisting of hydrogen and lower alkyl having from one to four carbon atoms; with the proviso that at least one of R_2, R_3 and R_4 must be halogen; and wherein the halogen is selected from the group consisting of chlorine, fluorine and bromine, the improvement comprising conducting said reaction in an ortho orienting liquid organic reaction medium comprising a tertiary alcohol having a dielectric constant not in excess of 25 determined at approximately 25°C.

3,928,471

METHOD FOR THE SEPARATION OF 5-ISOPROPYL-M-RESOL

Hideaki Suda, Takaishi; Norio Kotera, Amagasaki, and Shinichi Hasegawa, Settsu, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed Aug. 9, 1973, Ser. No. 387,167
Claims priority, application Japan, Aug. 9, 1972, 47-80171; Aug. 9, 1972, 47-80174
Int. Cl.² C07C *37/44*, *39/06*
U.S. Cl. 260—627 G **5 Claims**

1. A method for the separation of 5-isopropyl-m-cresol from a mixture of isopropylated cresols containing 5-isopropyl-m-cresol, 4-isopropyl-m-cresol, 3-isopropyl-p-cresol, and 2,6-diisopropyl-m- and p-cresols, which comprises reacting the mixture with an alkylating agent selected from the group consisting of monoolefins having from 4 to 12 carbon atoms, at a temperature of 0° to 300°C. under a pressure of atmospheric to 10 kg/cm² in the presence of at least one catalyzer selected from the group consisting of hydrogen fluoride, sulfuric acid, phosphoric acid, perchloric acid, p-toluenesulfonic acid, aluminum chloride, boron trifluoride, ferric chloride, zinc chloride, titanium chloride, alumino-silicate, terra alba and sulfonic acid type ion exchange resins, and recovering unalkylated 5-isopropyl-m-cresol from the resulting mixture by an alkali extraction using 1 to 30% by weight aqueous sodium hydroxide or potassium hydroxide solution at a temperature of 0° to 100°C.

3,928,472

PROCESS FOR THE PRODUCTION OF INDANOL-(4) AND INDANOL-(5)

Heinrich Miele, Weinheim, Bergstr; Winfried Orth, Hassloch, Pfalz, and Emmerich Pastorek, Mannheim, all of Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Germany

Filed Feb. 14, 1973, Ser. No. 332,476
Claims priority, application Germany, Feb. 22, 1972, 22082537
Int. Cl.² C07C *37/04*
U.S. Cl. 260—628 **9 Claims**

1. A process for the production of indanol-(4) or indanol-(5), said process comprising adding an alkali metal salt, alkaline earth metal salt or ammoniuim salt of indan-4- or indan-5-sulfonic acid to potassium hydroxide and at least one alkali metal salt of a second acid selected from the group consisting of C_1–C_6 aliphatic monocarboxylic acids, C_1–C_6 aliphatic polycarboxylic acids, hydroxy-substituted C_1–C_6 aliphatic monocarboxylic or polycarboxylic acids and alkoxy substituted C_1–C_6 aliphatic monocarboxylic or polycarboxylic acids, said alkoxy group having 1–4 carbon atoms, while heating and agitating the resulting mixture at a temperature of about 250°–300°C to form a melt, stirring said melt for another four hours after all of said sulfonate has been added, and recovering said indanol-(4) or indanol-(5) from said melt, wherein said sulfonic acid salt, said potassium hydroxide and said salt of said second acid are in a molar ratio of about 1:3–25:0.1–2.

3,928,473

OSMIUM CATALYZED OXIDATION OF OLEFINIC COMPOUNDS

Harold Shalit, Drexel Hill, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 11, 1974, Ser. No. 449,889
Int. Cl.² C07C *27/10*, *29/02*
U.S. Cl. 260—635 H **9 Claims**

1. In the method for the oxidation of monoolefinic compounds having from 2 to 4 carbon atoms in the molecule and selected from the group consisting of ethylene, propylene, allyl alcohol and butylenes at a temperature in the range from 60°C. to 220°C. and a pressure of from 1 atmosphere to 10,000 psig with molecular oxygen in the presence of an octavalent osmium catalyst in aqueous solution to produce the corresponding glycol, the improvement comprising adding from 1 weight percent to 50 weight percent of an alkali metal borate based on the aqueous solution.

3,928,474

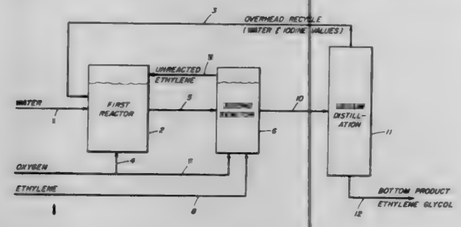
MANUFACTURE OF GLYCOLS

John Maurice Witheford, Wyckoff, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 273,586, July 20, 1972, abandoned. This application June 21, 1974, Ser. No. 483,842
Int. Cl.² C07C *29/02*
U.S. Cl. 260—635 H **2 Claims**

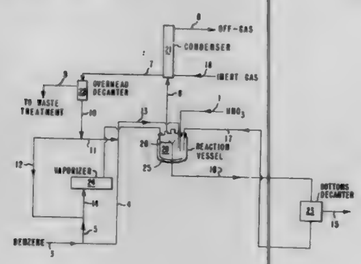
1. In a process for preparing ethylene glycol which comprises bringing into reactive combination ethylene, water and oxygen in substantially stoichiometric amounts in at least two

reaction zones maintained at an elevated temperature and under superatmospheric pressure in the presence of an aqueous iodine-containing catalyst for said reaction, distilling the latter reaction mixture and recovering ethylene glycol from said reaction mixture, the improvement which comprises the steps of: adding from about 0.350 to 0.490 mole of oxygen and an aqueous solution of a catalytic iodine-containing compound selected from the group consisting of iodine, hydrogen iodide, ethylene diiodide, iodoethanol and mixtures thereof dissolved in at least 1 mole of water to a first reaction zone, introducing about 1 mole of ethylene and about 0.010 to 0.150 mole of oxygen to a second reaction zone, the amount



of oxygen in both zones being equal to about 0.5 mole, withdrawing unreacted ethylene from the second reaction from overheads and introducing the same into the said first reaction zone, withdrawing from the first reaction zone a mixture of relatively high boiling organic iodides, iodine and ethylene glycol, introducing the latter mixture into said second reaction zone while maintaining said reaction zones at temperatures ranging from between 75°C. and 175°C. and pressure ranging from between 50 psi. and 1,000 psi. in each of said reaction zones, withdrawing a mixture of low boiling iodides and ethylene glycol as bottoms from the second reaction zone, subjecting the latter to distillation under a subatmospheric pressure at a bottoms temperature of from 50°C. to 190°C.

3,928,475
AZEOTROPIC NITRATION OF BENZENE
Mark W. Dassel, Alloway, N.J., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.
Filed Aug. 9, 1974, Ser. No. 497,047
Int. Cl.² C07C *79/10*
U.S. Cl. 260—645 **13 Claims**



1. A continuous process for the mononitration of benzene comprising the steps of

feeding fresh benzene and nitric acid in about stoichiometric proportions to produce nitrobenzene into a reaction vessel containing nitrobenzene, benzene and sulfuric acid;

mixing the ingredients in the reaction vessel and reacting benzene and nitric acid at a temperature in the range of about 120° to 160°C.;

vaporizing an azeotrope of a water phase containing nitric acid and a hydrocarbon phase containing benzene and nitrobenzene, and removing the azeotrope from the reaction vessel;

condensing the azeotrope, separating the aqueous phase from the hydrocarbon phase,

feeding excess benzene into the reaction vessel to maintain the total input of benzene to the reaction vessel above stoichiometric relative to the nitric acid fed thereto and to enhance the vaporization of the azeotrope, said excess benzene being either recycle stream of the hydrocarbon phase from the condensed azeotrope, or fresh benzene, or a combination of both; and

withdrawing from the reaction vessel a mixture of acids and nitrobenzene, separating the nitrobenzene as product, and recycling the acids to the reaction vessel;

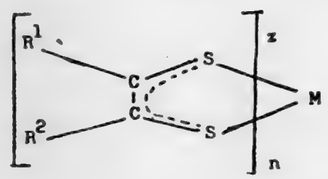
with the sulfuric acid concentration in the reaction vessel being controlled within the range of 55 to 70 percent by weight relative to the sulfuric acid plus water present by adjusting one or more of the reaction temperatures and the rates of feeding nitric acid and benzene to the reaction vessel.

3,928,476
PROCESS FOR NITRATION OF HALOGENATED BENZENE DERIVATIVES
Keizo Shimada; Takeo Nishikawa, both of Hino; Toshiaki Harada, Hachioji, and Shizuo Nagahama, Hino, all of Japan, assignors to Teitin Ltd., Osaka, Japan
Filed Feb. 20, 1974, Ser. No. 444,158
Claims priority, application Japan, Feb. 26, 1973, 48-22255
Int. Cl.² C07C *79/12*
U.S. Cl. 260—646 **6 Claims**

1. A process for nitrating halogenated benzene derivatives, which comprises reacting a halogenated benzene derivative with nitric acid in the liquid phase in the presence of a catalyst composed of an oxyacid of sulfur or phosphorus supported on silica-alumina and/or alumina.

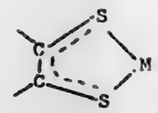
3,928,477
PRODUCTION OF PHENOLS FROM DECOMPOSITION OF AROMATIC HYDROPEROXIDES
Peter Graham Spencer Field, Bebington, and David Anthony Lock, Heswall, both of England, assignors to Burmah Oil Trading Limited, Swindon, England
Filed Nov. 8, 1973, Ser. No. 413,967
Claims priority, application United Kingdom, Nov. 8, 1972, 51630/72
Int. Cl.² C07C *37/08*
U.S. Cl. 260—621 C **21 Claims**

1. A process for producing a phenol or a substituted phenol by decomposing an aromatic hydroperoxide, which process comprises effecting the decomposition at a temperature in the range from ambient temperature to 180°C. in the presence of from 0.00001 to 0.5 mole percent, based on the amount of the hydroperoxide of a catalyst comprising a metal complex represented by the formula:



wherein *n* is 1, 2 or 3; M is a metal of the transition series capable of forming a complex in which it has a coordination number of at least 2; *z* represents the formal chanrge on the complex and is 0, −1 or −2; and R^1 and R^2, which may be the same or different, represent hydrocarbyl groups containing up

to 12 carbon atoms which may be unsubstituted, substituted by one or more halogen atoms, alkoxy groups containing up to 6 carbon atoms or atoms providing a grouping:



or, together with the carbon atoms to which they are attached, form an alicyclic ring, and recovering the required phenol or substituted phenol from the decomposition products.

3,928,478
CHLORINATION OF XYLENE
Thomas Albert Johnson, Newark, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.
Filed Jan. 17, 1974, Ser. No. 434,021
Int. Cl.² C07C *25/14*, *25/125*
U.S. Cl. 260—651 R **4 Claims**

1. In a process for preparing α, α′, 2, 3, 5, 6-hexachloro-p-xylene by admixing p-xylene or its ring-chlorinated derivatives and a solvent; incrementally adding thereto about from 7 to 10 moles of chlorine gas at a temperature of about from 60° to 120°C. in the presence of at least about 1%, by weight of the p-exylene, of Lewis acid catalyst, over a period of about from 10 to 20 hours; separating the catalyst from the reaction mass and isolating the product, the improvement wherein the solvent consists essentially of perchloroethylene.

3,928,479
PROCESS FOR THE MANUFACTURE OF CARBON TETRACHLORIDE
Wilhelm Riemenschneider, Frankfurt am Main, Germany; Lothar Heinz Hornig, deceased, late of Frankfurt am Main-Schwanheim, Germany; by Anneliese Hornig nee Munich, co-heiress, Frankfurt am Main, Germany; Helmut Meidert, Frankfurt am Main, Germany, and Hans Krekeler, Wiesbaden, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed Jan. 21, 1970, Ser. No. 4,747
Claims priority, application Germany, Jan. 30, 1969, 1904425
Int. Cl. C07c *17/00*
U.S. Cl. 260—658 R **3 Claims**

1. In a process for a continuous manufacture of carbon tetrachloride by the reaction of benzene, a mixture of benzene and chloro-substituted aromatic hydrocarbons or a mixture of benzene and chloro-substituted aliphatic hydrocarbons with chlorine in absence of catalysts at a pressure above 20 atmospheres gauge in a prereaction zone at a temperature in the range of from 100° up to 350°C whereby chlorinated products are formed in said prereaction zone and in a main reaction zone at the same pressure and at a temperature in the range of from 350° to 800°C in the gaseous phase, the improvement of which consists essentially of introducing into the prereaction zone liquid hexachlorobenzene at a temperature of at least 227°C prior to the beginning of the reaction, maintaining said temperature of at least 227°C until the admixture of chlorine and partially chlorinated hydrocarbons reduces the melting temperature of hexachlrobenzene and continuously passing into said main reaction zone products from said prereaction zone and entrained hexachlorobenzene.

3,928,480
PROCESS OF PRODUCING ALKYL ADAMANTANES
Iwao Tabushi, Fukuoka, and Koji Fukunishi, Kyoto, both of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan
Filed Nov. 25, 1974, Ser. No. 527,049
Int. Cl.² C07C *13/28*
U.S. Cl. 260—666 M **16 Claims**

1. A process of producing an alkyl adamantane which comprises reacting an adamantane compound with an olefin in the presence of a free radical initiator.

3,928,481
PREPARATION OF POLYPHENYLS
Robert M. Suggitt, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.
Filed July 5, 1974, Ser. No. 485,860
Int. Cl.² C07C *15/14*
U.S. Cl. 260—668 D **18 Claims**



11. The method which comprises

dehydrogenating a naphthenyl benzene in a non-oxidative atmosphere at dehydrogenation conditions in the presence of non-acidic dehydrogenation catalyst thereby forming a dehydrogenated stream containing (i) desired aromatic components and (ii) undesired components having a naphthenyl-aromatic bond;

cracking said dehydrogenated stream at cracking conditions thereby rupturing at least a portion of said naphthenyl-aromatic bonds and forming lower boiling products;

separating said lower boiling products; and

recovering said desired aromatic components.

3,928,482
PROCESS FOR CONVERSION OF ALKYLDECALINS AND/OR ALKYLTETRALINS
John A. Hedge, Wilmington, Del.; George Suld, Springfield, and Ralph L. Urban, Newtown Square, both of Pa., assignors to Sun Ventures, Inc., St. Davids, Pa.
Filed Apr. 8, 1974, Ser. No. 458,962
Int. Cl.² C07C *5/24*, *15/20*
U.S. Cl. 260—668 F **12 Claims**

1. A process for conversion of a feed consisting essentially of an alkyldecalin or an alkyltetralin or a non-equilibrium mixture thereof, said process comprising contacting said feed under conversion conditions with an aluminosilicate zeolite containing polyvalent metal cations in exchange positions, said contacting being at a temperature in the range of 100°C to 350°C, at a liquid hourly space velocity in the range of 0.25 to 10, and at a pressure in the range of 15 to 1500 psig.

3,928,483
PRODUCTION OF GASOLINE HYDROCARBONS
Clarence Dayton Chang, Princeton, N.J.; Anthony John Silvestri, Morrisville, Pa., and Robert Lloyd Smith, Hopewell, N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Sept. 23, 1974, Ser. No. 508,112
Int. Cl.² C10G *37/06*; B01J *29/28*
U.S. Cl. 260—668 R **13 Claims**

1. A method for controlling the exothermic reactions of feed mixtures comprising C_1 to C_3 alcohols and ethers to form gasoline boiling range products which comprises,

contacting a feed comprising methanol with a condensation catalyst under controlled exothermic reaction temperature conditions promoting the formation of water and an

aliphatic organic intermediate product comprising ethers and olefins,

separating water from said aliphatic organic intermediate product,

contacting at least the aliphatic organic intermediate product with a crystalline zeolite aromatizing catalyst under aromatizing conditions, said crystalline zeolite chracterized by a pore dimension greater than 5 Angstroms, a silica/alumina ratio greater than 12, and a constraint index within the range of 1 to 12, and

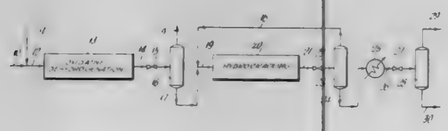
restricting aromatization of organic components in the intermediate product under exothermic generating temperature conditions promoting the formation of gasoline boiling range aromatics to the substantial exclusion of a durene product.

3,928,484

PRODUCTION OF AROMATIC COMPOUNDS BY OXIDATIVE DEHYDROGENATION

Robert M. Suggitt, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed July 5, 1974, Ser. No. 485,861
Int. Cl.² C07C *15/14*
U.S. Cl. 260—668 D **18 Claims**



18. The method which comprises

oxidatively dehydrogenating a charge stream containing dicyclohexyl benzene in an oxidative atmosphere at oxidative dehydrogenation conditions including pressure of 4–300 psia and temperature of 700°F–1100°F in the presence of a oxidative dehydrogenation catalyst including copper chromite containing barium thereby forming an oxidatively dehydrogenated stream containing (i) desired terphenyl and (ii) undesired components having a cyclohexyl-aromatic bond;

hydrocracking said oxidatively dehydrogenated stream at cracking conditions including temperature of 500°F–900°F and 0–2000 psig in the presence of an acidic catalyst thereby rupturing at least a portion of said cyclohexyl-aromatic bonds and forming lower boiling products;

separating said lower boiling products; and

recovering said desired terphenyl.

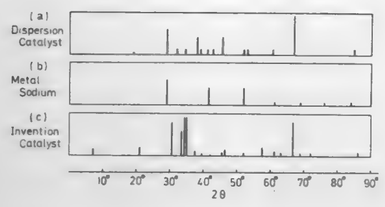
3,928,485

ISOMERIZATION OF OLEFINS

Tsuneyuki Nagase; Gohu Suzukamo, and Masami Fukao, all of Takatsuki, Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Continuation of Ser. No. 164,151, July 21, 1971, abandoned. This application Jan. 2, 1974, Ser. No. 429,948
Claims priority, application Japan, July 23, 1970, 45-64625; Sept. 5, 1970, 45-78006; Feb. 2, 1971, 46-4146
Int. Cl.² C07C *5/30*
U.S. Cl. 260—680 R **15 Claims**

1. A method for isomerization of olefins which comprises contacting a linear, isomerizable olefinic hydrocarbon with a catalyst to give the corresponding linear, isomerizable olefinic hydrocarbon, the said catalyst being prepared by heating alumina, from 0.01 to 100 percent by weight of the alumina of an alkali metal hydroxide, and from 0.01 molar to an equimolar amount with respect to the alkali metal hydroxide of an alkali metal at a temperature higher than the melting point of the alkali metal to give a catalyst composition which does not contain metallic alkali metal and consequently does not ignite



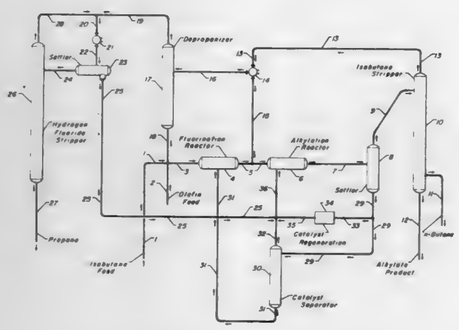
on exposure to air and does not generate hydrogen on admixture with water.

3,928,486

ALKYLATION PROCESS WITH FLUORINATION STEP UTILIZING HF CATALYST AND HYDROCARBON POLYMER

Jay E. Sobel, Highland Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 366,832, June 4, 1973, which is a continuation-in-part of Ser. No. 190,020, Oct. 18, 1971, abandoned. This application Apr. 8, 1974, Ser. No. 458,639The portion of the term of this patent subsequent to Oct. 29, 1991, has been disclaimed.
Int. Cl.² C07C *3/54*
U.S. Cl. 260—683.49 **9 Claims**



1. A process for producing an alkylation reaction product from a lower molecular weight mono-olefin and a lower molecular weight isoparaffin, which comprises the steps of:

a. contacting said mono-olefin, in a fluorination zone at fluorination conditions, with a first liquid solution comprising from about 40 weight percent to about 65 weight percent of hydrogen fluoride and from about 60 weight percent to about 35 weight percent of a hydrogen fluoride-soluble hydrocarbon polymer having a molecular weight of from about 200 to about 500, to produce an alkyl fluoride from said mono-olefin; and,

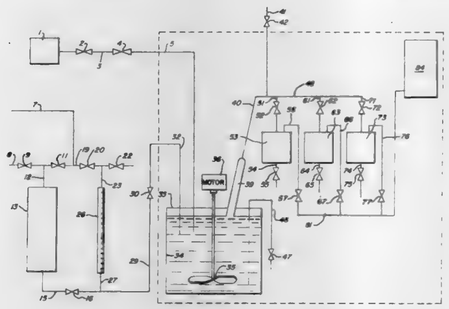
b. contacting said alkyl fluoride produced in Step (a), in an alkylation zone at alkylation conditions, with said lower molecular weight isoparaffin and with a second liquid solution comprising from about 70 weight percent to about 95 weight percent of hydrogen fluoride and from about 30 weight percent to about 5 weight percent of said hydrogen fluoride-soluble hydrocarbon polymer, and recovering said alkylation reaction product from the alkylation reaction mixture.

3,928,487

ALKYLATION PROCESS UTILIZING HYDROFLUORIC ACID WITH A MINOR AMOUNT OF FLUOROSULFURIC ACID

David A. McCaulay, Homewood, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Nov. 27, 1974, Ser. No. 527,715
Int. Cl.² C07C *3/54*
U.S. Cl. 260—683.51 **18 Claims**



1. In a process for conducting a liquid-phase alkylation of at least one alkylatable isoparaffin with at least one alkylating agent selected from the class consisting of an olefin and an alkyl sulfate ester in the presence of a mixture of hydrofluoric acid and fluorosulfuric acid as the alkylation catalyst, under alkylation conditions, and in an alkylation reactor, to thereby produce hydrocarbons boiling in the gasoline range, the improvement comprising reacting at least one said alkylatable isoparaffin and at least one said alkylating agent in the presence of a catalyst comprising a major amount of hydrofluoric and a minor amount of fluorosulfuric acid, to thereby produce a high-octane product and to extend the effective life of the catalyst.

3,928,488

PROCESS FOR ISOMERIZING SATURATED HYDROCARBONS

Bernard Torck, Boulogne-sur-Seine; Jean-Pierre Franck, Bougival, and Michel Derrien, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Paris, France

Continuation-in-part of Ser. No. 300,587, Oct. 25, 1972, Pat. No. 3,870,653. This application Nov. 25, 1974, Ser. No. 527,020
Claims priority, application France, Oct. 29, 1971, 71.39151
Int. Cl.² C07C *5/30*
U.S. Cl. 260—683.68 **9 Claims**

1. In a process for converting a normal paraffin to an isoparaffin, wherein a mixture of hydrogen and a normal paraffin is contacted with a catalyst at an isomerization temperature, the improvement consisting of using, as the catalyst, the composition obtained by compositing alumina with (1) a platinum group metal, (2) a halogen compound selected from the group consisting of chlorinated hydrocarbons, chlorine, $SOCl_2$, SO_2Cl_2 and S_2Cl_2, and (3) an aromatic compound of the formula $(R)_m$ Ar $(Z)_x$ where x is an integer of at least 2, m is zero or an integer, $(x+m)$ being at most the maximum valence of Ar, Ar is an aromatic hydrocarbon radical containing at least one carbocyclic ring, the m groups R are independently halogen atoms or monovalent hydrocarbon radicals and the x groups Z are independently hydroxy, oxo or hydrocarbyloxy, the weight of said platinum group metal, the chlorine compound and said aromatic compound content beint respectively 0.01 – 5 %, 1 – 20 % and 0.001 – 20 % by weight of said catalyst.

3,928,489

METHOD FOR INCREASING THE THERMOSTABILITY OF ORGANOPOLYSILOXANES

Alfred Anisimovich Berlin, Leninsky prospekt, 57, kv. 9; Roza Mikhailovna Aseeva, 1 ulitsa Stroitelei, 7, korpus 1, kv. 133; Semen Markovich Mezhikovsky, Raketny bulvar, 13, korpus 2, kv. 62; Alla Ilinichna Sherle, ulitsa Petrovka, 23/10, kv. 46-a; Nadezhda Alexeevna Tsepalova, ulitsa Garibaldi, 19, korpus 4, kv. 8; Evgeny Alexandrovich Goldovsky, ulitsa Udaltsova, 10, kv. 107; Tatiana Vladimirovna Zelenetskaya, ulitsa Fersmana, 7, kv. 49; Rozalia Komalovna Fatkulina, ulitsa Osipenko, 44, kv. 6, and Alexandr Samoilovich Kuzminsky, Frunzenskaya naberezhnaya, 38, kv. 91, all of Moscow, U.S.S.R.

Continuation of Ser. No. 116,612, Feb. 18, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 349,082
Int. Cl.² C08L *39/04, 83/06*
U.S. Cl. 260—827 **9 Claims**

1. A method for increasing the thermostability of organopolysiloxane elastomers containing aliphatic, aromatic, arylaliphatic or unsaturated radicals at the silicon atom comprising mixing together said organopolysiloxane and about 0.01 to 10 parts by weight of a polyethynylpyridine per 100 parts by weight of organopolysiloxane.

3,928,490

BLOCK POLYMERS OF POLYSILOXANES AND POLYBUTADIENE

William L. Hergenrother, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 232,610, March 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 52,136, July 2, 1970, abandoned. This application Aug. 16, 1973, Ser. No. 388,876
Int. Cl.² C08L *53/00, 83/10*
U.S. Cl. 260—827 **5 Claims**

1. The method of producing a linear alternating block copolymer composed of (a) 1 to 80 per cent by weight of a polybutadiene with a vinyl content of at least 60 per cent by weight and (b) 20 to 99 per cent by weight of a linear polysiloxane having the formula $(R_2SiO)_x$ in which each R is a group from the class consisting of alkyl groups containing 1 to 4 carbon atoms, phenyl, tolyl and alpha and beta naphthyl, and x is 1400 to 10,000, which method comprises joining the linear high molecular weight polysiloxane and a butadienyl dilithium in an alkane solvent and thereby producing said linear alternating block copolymer.

3,928,491

MODIFIED VINYL ESTER RESIN AND PIPE MADE THEREFROM

William D. Waters, Tulsa, Okla., assignor to Youngstown Sheet and Tube Company, Youngstown, Ohio

Filed Dec. 26, 1973, Ser. No. 428,116
Int. Cl.² C08L *63/10*
U.S. Cl. 260—837 **11 Claims**

1. A thermosetting resin composition comprising the reaction product of an epoxy resin, a carboxyl terminated elastomer selected from the group consisting of carboxyl terminated homopolymers and copolymers of conjugated dienes and an unsaturated monocarboxylic acid,

wherein approximately one chemical equivalent of epoxy is provided for each chemical equivalent of carboxyl provided by said elastomer and said acid combined.

3,928,492
COATING COMPOSITIONS CONTAINING MIXED ESTERS OF DIBASIC UNSATURATED ACIDS, GLYCOLS AND GLYCIDYL TERTIARY ESTERS, POLYESTERS AND AMINE-ALDEHYDE RESINS

James C. Fang, Media, Pa., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Mar. 12, 1973, Ser. No. 340,382
Int. Cl.² C08L 61/28, 67/06
U.S. Cl. 260—850 2 Claims

1. In a composition comprising

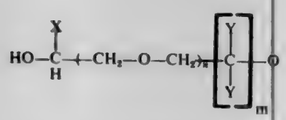
A. a product obtained by condensing

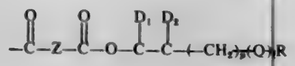
1. an unsaturated dibasic acid;
2. a polyol; and
3. an alkanol of 3–18 carbon carbon atoms, or an alkylene oxide of 4–18 carbon atoms; and

B. an aminoplast resin,

the improvement comprising the presence in the composition of

C. a compound represented by the structure



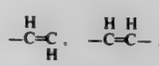


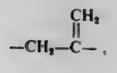
where

X is hydrogen, alkyl of 1–4 carbon atoms or phenyl;

Y is hydrogen, —OH, —CH_2OH or alkyl of 1–4 carbon atoms (only one Y can be —OH);

Z is





or



D_1 is hydrogen;

D_2 is —OH;

Q is



or —O —;

R is alkyl of 4–18 carbon atoms, or a singly, doubly or triply unsaturated hydrocarbon radical of 17 carbon atoms;

n is 0 or 1;

m is 1–5;

p is 0 or 1; and

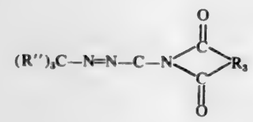
t is 0 or 1.

3,928,493
CURING AND POLYMERIZATION PROCESSES INITIATED BY TERTIARY-ALIPHATIC-ALPHA-(IMIDO)-AZO COMPOUNDS

Ronald Edward Mac Leay, Williamsville; Harold Carl Lange, Grand Island, and Chester Stephen Sheppard, Tonawanda, all of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 88,120, Nov. 9, 1970, Pat. No. 3,812,094, which is a continuation-in-part of Ser. No. 725,180, April 29, 1968, abandoned, which is a continuation-in-part of Ser. No. 616,158, Feb. 15, 1967, abandoned, which is a continuation-in-part of Ser. No. 409,306, Nov. 5, 1964, abandoned. This application Mar. 5, 1974, Ser. No. 448,420
Int. Cl.² C08F 4/04, 110/02; C08L 67/06
U.S. Cl. 260—864 7 Claims

1. In a process for the homo- or copolymerization of ethylenically unsaturated monomers which are responsive at suitable temperatures to free radical generators as polymerization initiators, the improvement which comprises employing as the free radical generator a t-aliphatic α-(imido)azo compound of the formula:



[(I)]

wherein:

$(R'')_3C$ is a tertiary C_4-C_{20} alkyl, cycloalkyl, alkylcycloalkyl, arylcycloalkyl or aralky group wherein each R'' is separately selected from C_1–C_8 alkyl, C_7–C_{12} aralkyl and C_6–C_{14} aryl, not more than one R'' being aromatic, and 2 or 3 of said R''s can join with the tertiary carbon atom to form a cyclo-, bicyclo-, or tricyclo-alkyl radical of 3–12 carbons;

R_1 and R_2 are separately selected from C_1–C_8 alkyl, C_3–C_{12} cyclo-, bicyclo- or tricycloalkyl, C_7–C_{12} aralkyl and 5–6 membered heterocyclic wherein the hetero atom is selected from oxygen or nitrogen, R_1 can also be C_6–C_{14} aryl, R_1 and R_2 taken together can form a C_3–C_{11} alkylene diradical, and one or more of each R_1 and R_2 can be substituted with lower alkoxy, hydroxy, carboxy, lower alkoxycarbonyl, lower acyloxy, halo, cyano, amido or lower alkylsulfonato; and

R_3 is C_2–C_{10} alkylene or alkenylene; C_3–C_{10} cycloalkenylene, cyclo- or bicycloalkylene or substituted cyclo- or bicycloalkylene; or C_6–C_{14} arylene or substituted arylene; the R_3 substituents being selected from lower alkyl, amino, halo, cyano and sulfo.

3,928,494
POLYBLEND OF TWO TYPES OF ABS GRAFT POLYMERS AND A COPOLYMER MATRIX

Vincent A. Aliberti, Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 322,244, Jan. 9, 1973, abandoned. This application Apr. 22, 1974, Ser. No. 462,710
Int. Cl.² C08L 9/02, 9/06, 51/06, 55/02
U.S. Cl. 260—876 R 3 Claims

1. An improved polyblend adapted to display a combination of low temperature impact strength and room temperature tensile strength comprising (on a 100 weight percent total polyblend basis) from about 40 to 89 weight percent of a matrix phase comprising copolymer of styrene and acrylonitrile having a weight average molecular weight of from about 75,000 to 300,000 and a weight ratio of styrene to acrylonitrile of from about 95:5 to 30:70, with the balance up to 100 weight percent thereof being a mixture of a first graft copolymer with a second graft copolymer, said graft copolymers being dispersed throughout said styrene/acrylonitrile copolymer when said polyblend is in a heat-fused form, the weight ratio of said first graft copolymer to said second graft copolymer in said polyblend ranging from about 85:15 to 5:95, said polyblend having a total elastomer content (ungrafted basis) ranging from about 10 to 30 weight percent (based on total polyblend),

A. said first graft copolymer particles being characterized by having

1. a number average particle size of from about 0.03 to 0.6 micron,
2. a substrate elastomer comprising a copolymer of from about 70 to 98 weight percent of a conjugated alkadiene with, correspondingly, from about 30 to 2 weight percent based on total substrate elastomer weight of at least one compound selected from the group consisting of styrene and acrylonitrile,
3. a superstrate grafted to said substrate elastomer and comprising polymerized styrene and acrylonitrile in the weight ratio of from about 95:5 to 30:70,
4. there being from about 30 to 100 parts by weight of grafted superstrate for each 100 parts by weight of said substrate elastomer, wherein

B. said second grafted copolymer particles being characterized by having a superstrate grafted to said substrate elastomer and comprising polymerized styrene and acrylonitrile in the weight ratio of from about 95:5 to 30:70 and from about 3 to 30 parts by weight of grafted superstrate for each 100 parts by weight of said substrate elastomer, wherein the improvement comprises said second grafted copolymer particles having:

1. a number average particle size of from about 0.6 to 3.0 microns, and at least half of such particles have a particle size above about 0.8 micron,
2. a substrate elastomer comprising homopolyalkadiene as the sole substrate, and
3. said second graft copolymer particles being comprised of agglomerated grafted subparticles at least 90 weight percent of which have particle sizes in the range of from about 0.05 to 0.15 micron before agglomeration.

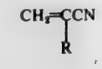
3,928,495
CONTINUOUS PROCESS FOR THE PREPARATION OF ABS TYPE POLYBLENDS

William O. Dalton, Hampden, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 26, 1974, Ser. No. 464,426
Int. Cl.² C08L 9/02, 9/06, 51/06, 55/02
U.S. Cl. 260—876 R 38 Claims

1. A continuous mass polymerization process for the preparation of an ABS type polyblend, the steps comprising:

A. continuously charging a monomer composition comprising at least one alkenyl nitrile monomer of the formula:



wherein R is selected from the group consisting of hydrogen and alkyl radicals containing from 1 through 4 carbon atoms each and at least one monoalkenyl aromatic monomer of the formula:



wherein:

Ar is selected from the group consisting of a phenyl radical, an alkaryl radical of 6 through 9 carbon atoms, a monochlorophenyl radical, a dichlorophenyl radical, a monobromophenyl radical, and a dibromophenyl radical, and X is selected from the group consisting of hydrogen and an alkyl radical containing less than three carbon atoms to a reaction zone,

B. continuously maintaining in said reaction zone a reaction system comprising a liquid phase of said monomers with a vapor phase of said monomers generally thereabove,

1. said liquid phase filling said reaction zone to an extent of from about 10 to 95 percent by volume and comprising said monomer composition,
2. said vapor phase filling the balance up to 100 percent by volume of said reaction zone, the exact composition of said vapor phase being in substantial equilibrium with the exact composition of said liquid phase,

C. continuously subjecting said reaction system in said reaction zone to mixing action sufficient to maintain a substantially uniform composition distribution throughout said liquid phase in said reaction zone,

D. continuously mass polymerizing said monomers at a temperature from about 100° to 180°C. and a pressure of from about 5 to 150 psia forming a matrix copolymer dissolved in said liquid phase, while simultaneously and,

E. continuously dispersing uniformly a first and second grafted diene rubber into said liquid phase under the mixing action of step (C), and during the polymerization of step (D), said first grafted diene rubber being dispersed as rubber particles having a weight average particle size of about 0.7 to 10 microns, a swelling index of at least about 5 and having present occluded and grafted copolymer in an amount of from about 1 to 5 parts per part of rubber, said second grafted diene rubber being dispersed as rubber particles having a weight average particle size of about 0.1 to 0.5 microns, a swelling index of at least about 2 and being grafted with about 0.1 to 2.5 parts of copolymer per part of rubber, said second grafted rubber comprising from about 70 to 97% of the total weight of said first and second grafted diene rubbers dispersed providing a bimodal particle size distribution of said first and second grafted rubber particles in said liquid phase,

F. continuously removing said vapor phase from said reaction zone at a rate sufficient to maintain, in combination with any heat of reaction being absorbed in said reaction zone by said charging of monomers and with any heat of reaction being removed from said reaction zone through the peripheral boundaries thereof, in said reaction zone a substantially constant temperature and a corresponding substantially constant pressure within the respective temperature and pressure ranges above specified,

G. continuously removing said liquid phase from said reaction zone at a rate sufficient to maintain the above specified volume of said liquid phase,

H. continuously separating said matrix copolymer and said first and second grafted rubbers from said liquid phase removed in step (G) as an ABS polyblend,

I. said charging additionally being conducted:

1. at a rate substantially equal to the total rate at which monomers are polymerized in said reaction zone, and removed from said reaction zone, and
2. in a ratio of total alkenyl nitrile monomers to total

monoalkenyl aromatic monomers such that both a substantially constant said monomer composition is effectively maintained in said liquid phase in said reaction zone and in said matrix copolymer formed from said monomer composition

J. the interrelationship between said charging, said liquid phase removal, and said substantially constant temperature and corresponding substantially constant pressure in said reaction zone being such that:

a. the weight percentage of said matrix copolymer in said liquid phase in said reaction zone is maintained at a substantially predetermined constant value,

b. the rate at which said matrix copolymer is formed from said monomer composition in said reaction zone ranges from about 0.05 to 2.0 pounds of said matrix copolymer produced per pound of said liquid phase per hour.

K. the interrelationship in said reaction zone between said mixing action and said vapor phase removal being such that said reaction system is maintained under substantially isothermal conditions,

L. the interrelationship between said charging, said vapor phase removal, and said reaction zone being such that:

1. at least about 10 percent of the heat of reaction is removed from said reaction zone by said vapor phase removal,

2. up to about 90 percent of the heat of reaction is absorbed by said charging, and

3. up to about 50 percent of the heat of reaction is removed through the peripheral boundaries of said reaction zone through heat transfer.

3,928,496
SYNTHETIC FIBER FOR PAPER AND METHOD FOR PRODUCING THE SAME

Hiromu Takeda; Takuichi Kobayashi; Koichiro Oka, all of Otsu, and Kazumi Tanaka, Kusatsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed July 15, 1974, Ser. No. 488,486

Claims priority, application Japan, July 19, 1973, 48-80469; July 26, 1973, 48-83609; Aug. 2, 1973, 48-86384

Int. Cl.² C08L *51/00, 33/20;* **B32B** *17/10;* **D01F** *6/18*

U.S. Cl. 260—876 R **7 Claims**

1. A synthetic fiber capable of being fibrillated for forming paper, consisting essentially of:

A. about 5 – 40% by weight of a graft copolymer consisting of

a. about 20 – 80% by weight of polyvinyl alcohol, and

b. about 80 – 20% by weight of acrylonitrile chemically bonded to said polyvinyl alcohol, and

B. about 60 – 95% by weight of a copolymer consisting of

c. about 55 – 95% by weight of styrene, and

d. about 5 – 45% by weight of acrylonitrile.

3,928,497
PROCESS FOR PREPARING GRAFT-MODIFIED ETHYLENE PLYOMER OR COPOLYMER

Masahiko Ohmori, Iwakuni; Toshiharu Tomatsu, Ohtake, and Tadao Iwata, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Apr. 26, 1974, Ser. No. 464,296

Claims priority, application Japan, May 1, 1973, 48-47588

Int. Cl.² C08L *23/26, 23/04*

U.S. Cl. 260—878 R **11 Claims**

1. A process for preparing a graft-modified ethylene homopolymer or copolymer by the reaction of an ethylene homopolymer or copolymer with a dicarboxylic acid graft-copolymerizable therewith or its graft-copolymerizable derivative in the presence of a radical initiator comprising

dissolving the ethylene homopolymer or copolymer in an alkyl-substituted aromatic solvent;

adding the dicarboxylic acid or its derivative to the solvent in which the ethylene homopolymer or copolymer is present at a rate of not more than 10^{-2} mol/hour per gram of starting ethylene polymer or copolymer; and,

continuing the addition until the graft-modified ethylene homopolymer or copolymer contains from 10^{-7} to 10^{-3} mol of units derived from the dicarboxylic acid or its derivative, per gram of the homopolymer or copolymer.

3,928,498
PREFORMED POLYMER LATEX IN EMULSION POLYMERIZATION SYSTEMS

Carl A. Uraneck, and John E. Burleigh, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 5, 1973, Ser. No. 376,582

Int. Cl.² C08F *2/22, 2/26, 2/30, 2/42*

U.S. Cl. 260—880 R **23 Claims**

1. In a process of aqueous emulsion polymerization wherein at least one polymerizable monomer polymerizable with a redox system or free-radical initiator is polymerized under aqueous emulsion polymerization conditions in the presence of a redox or free-radical initiator, aqueous emulsifier solution, and organosulfur compound as molecular weight modifier, and aqueous medium, the steps comprising:

admixing said aqueous emulsifier solution and said organosulfur compound,

coagitating said admixture of said aqueous emulsifier solution and said organosulfur compound to produce a coagitated mixture wherein the degree of said coagitation of said aqueous emulsifier solution and of said organosulfur compound is sufficient to effectuate a significant increase in the regulating index of said organosulfur compound as said modifier,

admixing said coagitated admixture of aqueous emulsifier solution and organosulfur compound molecular weight modifier with said polymerizable monomer and initiator and polymerizing the resulting polymerization admixture under aqueous emulsion polymerization conditions,

employing a preformed latex prepared by emulsion polymerization to the extent of about 0.1 to 10 parts by weight of polymer content of said latex per 100 parts by weight of said polymerizable monomer, wherein said preformed latex is added to said emulsifier/modifier admixture prior to coagitation thereof, subsequent to coagitation thereof, or to said emulsion polymerization system prior to, subsesquent to, or with addition of said coagitated emulsifier/modifier admixture, and prior to addition of initiator to said emulsion polymerization system, said preformed latex effective to substantially avoid early depletion of said modifier in said emulsion polymerization system.

3,928,499
UNSATURATED POLY(AMIDE-ESTERS) AND CROSS-LINKED DERIVATIVES THEREOF

Donald A. Tomalia, and Bruce P. Thill, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

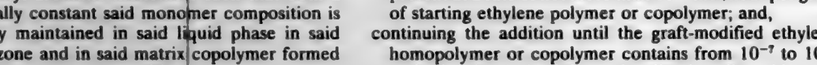
Filed Feb. 19, 1974, Ser. No. 443,265

Int. Cl.² C08L *31/02, 25/00;* **C08F** *210/00, 218/00*

U.S. Cl. 260—885 **15 Claims**

1. A substantially linear, film-forming, vinyl-addition polymer whose backbone comprises

a. at least about 1 mole percent of an interpolymerized unit corresponding to the formula

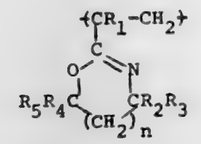


I

wherein:

R_1 is hydrogen or methyl; R_2, R_3, R_4 and R_5 are each independently hydrogen or lower alkyl of 1 to 4 carbon atoms; R_6 is hydrogen or methyl; and n is 0 or 1, and

b. from 0 to about 99 mole percent of an interpolymerized unit corresponding to the formula



II

wherein:

R_1–R_5 and n have the aforesaid meaning, with the proviso that units of formulas I and II constitute at least about 5 mole percent of said polymer.

3,928,500
PROCESSING AID FOR POLYVINYL CHLORIDE

Paul Kraft, Spring Valley; Adam F. Kopacki, Westwood, and Robert Brunner, Yonkers, all of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 178,795, Sept. 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 43,568, June 4, 1970, which is a continuation-in-part of Ser. No. 760,067, Sept. 16, 1968, abandoned. This application Aug. 14, 1973, Ser. No. 388,288

Int. Cl.² C08L *27/22, 51/06, 31/02, 63/00*

U.S. Cl. 260—884 **22 Claims**

1. A process for the preparation of a polyacrylate-modified polyvinyl chloride processing aid which consists essentially of: (1) first preparing particles of polyvinyl chloride by suspension polymerizing vinyl chloride monomer in the presence of from about 0.01 to 5%, by weight, of the vinyl chloride monomer, of a suspending agent with agitation being applied to the system, said particles having a particle size in the range of from 5–150 microns; (2) removing unreacted vinyl chloride monomer from the system after polymerization of the vinyl chloride is at least about 60% complete; (3) adding to the suspension of polyvinyl chloride particles resulting from step (1) an effective concentration of a chain transfer agent and a solution of (a) an acrylate ester monomer selected from the group consisting of methyl methacrylate and mixtures of methyl methacrylate together with from about 20 to 0%, by weight, of one or more ethylenically unsaturated comonomers and (b) an effective concentration of at least one free radical initiating catalyst which is soluble in said acrylate ester monomer; said solution of acrylate ester monomer and catalyst having been pre-mixed prior to its addition to said suspension of polyvinyl chloride; said acrylate ester monomer being added to the system in a total amount to provide between about 20–100% of monomer, by weight of the polyvinyl chloride resulting from step (1); (4) suspension polymerizing the acrylate ester monomer in the presence of the mixture resulting from step (3) while applying agitation; and (5) recovering the particles of polyacrylate-modified polyvinyl chloride resulting from step (4); said particles of polyacrylate-modified polyvinyl chloride resulting from step (4) having a particle size in the range of from about 10 microns up to a maximum limit such that no more than about 15%, by weight are larger than about 150 microns; said particles of polyacrylate-modified polyvinyl chloride comprising particles of polyvinyl chloride having polyacrylate ester moieties in and/or on said polyvinyl chloride particles, said particles having a Relative Viscosity of from about 1.50–2.80 when determined, at 25° C., with a 1% solution of the polymer in cyclohexanone.

3,928,501
GRAFT POLYMERS OF HALO OXIRANE OR OXETANE ONTO HALO POLYMERIC BACKBONE

Edwin J. Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed June 27, 1974, Ser. No. 483,856

Int. Cl.² C08L *11/00, 23/00*

U.S. Cl. 260—890 **15 Claims**

1. A process for producing a graft polymer comprising contacting a halogen-containing polymer wherein at least 0.01 mole % of the units of the polymer contain at least one reactive halogen on a tertiary carbon atom or on a primary or secondary carbon atom alpha to an aromatic ring, to a carbon-to-carbon double bond or to a carbon-to-oxygen double bond with at least one halogen substituted oxirane or oxetane selected from the group consisting of haloalkylene oxides, haloalkyl glycidyl ethers, haloaryl glycidyl ethers, haloalkyl oxetanes and haloalkoxy oxetanes in the presence of a catalytic amount of an organoaluminum compound which has been modified by reaction with at least one of the group consisting of water, boron trifluoride and phosphorus pentafluoride under polymerization conditions at a temperature below about 0°C. until a graft of a polyether derived from said oxirane of oxetane has replaced at least one of said reactive halogens of the halogen-containing polymer.

3,928,502
PROCESSABLE NON-BURNING ABS-PVC BLENDS

Hubert J. Fabris, Akron, and Wendell O. Phillips, Stow, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Aug. 4, 1971, Ser. No. 169,081

Int. Cl.² C08K *3/22;* **C08L** *9/02, 27/06*

U.S. Cl. 260—891 **8 Claims**

1. A homogeneous blend consisting essentially of

A. ABS terpolymers prepared from monomers of which 20 to 40 weight percent is selected from the group consisting of butadiene-1,3 and isoprene, 15 to 35 weight percent is selected from the group consisting of acrylonitrile and methacrylonitrile and 35 to 55 weight percent is selected from the group consisting of styrene and alphamethylstyrene, said ABS terpolymers having a heat distortion temperature in the range of about 195° to 245°F.,

B. chlorinated saturated aliphatic hydrocarbon polymers containing an average of from about 0.4 to about 1 chlorine atom per carbon atom and having an intrinsic viscosity of from about 0.25 to 2.5,

components (A) and (B) being in a weight ratio from about 60:40 to 40:60, and

C. from 2 to 12 parts by weight per 100 parts by weight of total components (A) and (B) of stannic oxide.

3,928,503
METHOD FOR WORKING UP CHLOROPOLYOLEFIN SOLUTIONS

Erich Hambsch, Inningen; Helmut Klug, Aystetten; Herbert Ortner; Walter Semmlinger, both of Gersthofen, and Rudolf Wirtz, Goggingen, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 850,229, Aug. 14, 1969, abandoned. This application July 15, 1971, Ser. No. 163,069

Claims priority, application Germany, Aug. 31, 1968, 1794061

Int. Cl.² C08L *23/28*

U.S. Cl. 260—897 C **5 Claims**

1. A method for isolating chloropolyolefins in a solid, particulate form from solutions of chloropolyolefins obtained by chlorinating polyolefins in organic solvent which comprises

adding said solution to a pulverulent to a finely granular component selected from the group consisting of polyvinyl acetate, chlorinated polyolefins, polyvinyl chloride, polyvinylidene chloride, flourine-containing polymers, chlorinated polyvinyl chloride and mixtures thereof while said component is being agitated and as the solution is added simultaneously removing the solvent from the resulting mixture so that said mixture remains in essentially a dry state, said component being present in an amount such that the isolated chloropolyolefin contains at least 5% by weight thereof.

3,928,504

DYEABLE POLYPROPYLENE COMPOSITIONS CONTAINING A POLYAMINE ADDUCT

Pieternella Koclewijn, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

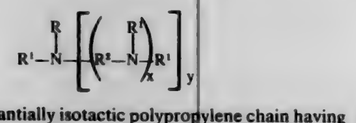
Filed Dec. 6, 1974, Ser. No. 530,104

Claims priority, application United Kingdom, Dec. 12, 1973, 57564/73

Int. Cl.² C08L *23/12*

U.S. Cl. 260—897 B **9 Claims**

1. An improved dyeable polypropylene composition comprising a isotactic polypropylene and a polyamine adduct containing at least two nitrogen atoms having the following formula:



where R is a substantially isotactic polypropylene chain having at least 25 carbon atoms, R^1 is R, a hydrogen, alkyl, cycloalkyl, aryl or nitrogen heterocyclic group, R^2 is an alkyl, cycloalkyl or aryl group having at least 2 carbons, no one carbon of R^2 being attached to more than one nitrogen atom, x is an integer from 0 to 6 inclusive, y is an integer from 1 to 6 inclusive, and the total molecular weight of the nitrogen atoms, R^2 and R^1 when R^1 is not R is less than about 300.

3,928,505

DIPENTAERYTHRITOL AND PENTAERYTHRITOL PHOSPHITE

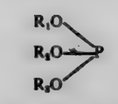
James D. Klicker, Morgantown, W. Va., and Murray S. Cohen, Convent Station, N.J., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 16, 1974, Ser. No. 515,254

Int. Cl.² C07F *9/15*

U.S. Cl. 260—921 **8 Claims**

1. Mixed mono-pentaerythritol-dipentaerythritol phosphite prepared by reacting 70 to 94 molar percent of mono pentaerythritol and 30 to 6 molar percent of dipentaerythritol with a phosphite of the formula:



where each of R_1, R_2 and R_3 is an alkyl of 1 to 12 carbon atoms, benzyl, cyclohexyl, phenyl, tolyl, haloalkyl of 2 to 3 carbon atoms or halophenyl wherein the total phosphite employed is sufficient to provide mono pentaerythritol to dipentaerythritol to phosphite in the relative proportion of from 3 moles of mono pentaerythritol to 3 moles plus 10% in excess thereof for 4 moles of phosphite and from 1 mole of dipentaerythritol to 1 mole plus 10% in excess thereof for 2 moles of phosphite, and removing the R_1OH, R_2OH and R_3OH formed, said mono pentaerythritol-dipentaerythritol phosphite being pourable at 160°C.

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LYSINO-CALCIUM CHLORIDE AND PHARMACEUTICALLY ACCEPTABLE ACID SALTS THEREOF

Jean, Georges Gobert, Brussels, and Jean, Adolphe Close, Linkebeek, both of Belgium, assignors to UCB Societe Anonyme, Brussels, Belgium

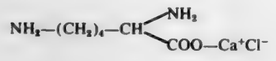
Filed Dec. 28, 1973, Ser. No. 429,297

Claims priority, application United Kingdom, Jan. 2, 1973, 192/73

Int. Cl.² C07C *101/26*; C07F *9/08*

U.S. Cl. 260—924 **24 Claims**

1. A compound selected from the group consisting of lysino-calcium chloride of the formula



its laevorotatory form, its dextrorotatory form mixtures of these forms and pharmaceutically acceptable acid addition salts thereof.

3,928,507

SUBSTITUTED NORBORNENE COMPOUNDS AND THEIR APPLICATIONS IN THERMOPLASTIC POLYMER COMPOSITIONS

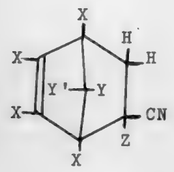
Nicodemus E. Boyer, Parkersburg, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 248,773, April 28, 1972, Pat. No. 3,784,581, which is a continuation of Ser. No. 824,668, May 14, 1969, abandoned. This application June 15, 1973, Ser. No. 370,266

Int. Cl.² C07F *9/02*; C07C *121/48*

U.S. Cl. 260—940 **3 Claims**

1. A 2-substituted-2-cyano-norbornene compound of the formula



wherein X is a halogen selected from the group chlorine, fluorine and bromine, Y and Y′ are independently selected from the group hydrogen chlorine, fluorine, bromine, 1 to 4 carbon alkyl and 1 to 4 carbon atom alkoxy and Z is a phosphono group of the formula



wherein R and R′ are each selected from the group 1 to 4 carbon atom alkyl, and 1 to 4 carbon atom alkoxy.

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S-(N-ACYL-N-ALKYL OR PHENYL-AMIDOCARBONYL)-ETHYL-THIO-PHOSPHORIC AND- -PHOSPHONIC ACID ESTERS

Claus Stölzer, c/o Bayer Aktiengesellschaft, Wuppertal-Elberfeld, and Ingeborg Hammann, c/o Bayer Aktiengesellschaft, Leverkusen, both of Germany

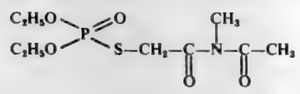
Filed Aug. 1, 1973, Ser. No. 384,676

Claims priority, application Germany, Aug. 16, 1973, 2240031

Int. Cl.² A01N *9/36*; C07F *9/165*, *9/40*

U.S. Cl. 260—943 **4 Claims**

3. The compound S-(N-acetyl-N-methyl-amidocarbonyl)-methylthiolphosphoric acid O,O-diethyl ester of the formula



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HYBRID IONIC PHOSPHORUS COMPOUNDS

Helmut Diery, Kelkheim, Taunus, and Ulrich Cuntze, Hofheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

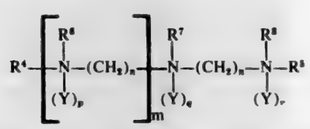
Filed Apr. 10, 1974, Ser. No. 459,545

Claims priority, application Germany, Apr. 14, 1973, 2319047

Int. Cl.² C07F *9/141*; A01N *9/36*

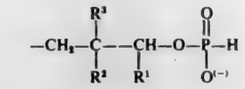
U.S. Cl. 260—945 **3 Claims**

1. A compound of the general formula I



(I)

in which R^4 stands for an alkyl or alkenyl group of 8 to 20 carbon atoms, R^5 for hydrogen, an alkyl or alkenyl group of 1 to 20 carbon atoms, R^6, R^7 and R^8 each stands for hydrogen, the methyl or ethyl group, m for zero or 1, n for 2 or 3 and p, q and r each stands for zero or 1, the sum of all values of p, q and r having to be 1 or 2; Y stands for a group of the formula II



(II)

in which R^1 stands for hydrogen, R^2 and R^3 each for hydrogen or an alkyl group of 1 to 4 carbon atoms, which may be identical or different.

3,928,510

BENZENE PHOSPHONIC ACID ESTERS

Kurt Hoger, Muenchenstein, and Guenther Tscheulin, Rienhen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

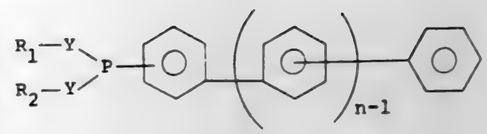
Continuation-in-part of Ser. No. 191,079, Oct. 20, 1971, Pat. No. 3,825,629. This application Apr. 25, 1974, Ser. No. 463,864

Claims priority, application Switzerland, Oct. 22, 1970, 15605/70; June 30, 1971, 9597/71

Int. Cl.² C07F *9/46*

U.S. Cl. 260—962 **14 Claims**

1. A compound of the formula



wherein

R_1 and R_2 are each, independently, a hydrocarbon radical of up to 16 carbon atoms selected from the group consisting of alkyl, cycloalkyl, aryl, alkylaryl and arylalkyl,

Y is oxygen or sulphur, and

n is 1 or 2.

3,928,511

CHOKE VALVE ASSEMBLY

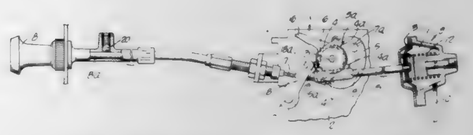
Minoru Atsumi, Kawagoe, and Toshimasa Shishido, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1974, Ser. No. 447,238

Claims priority, application Japan, Mar. 6, 1973, 48-25730

Int. Cl.² F02M *1/02*

U.S. Cl. 261—64 C **8 Claims**



1. In a choke valve assembly for an air intake passage of an internal combustion engine, the combination of: a turnable choke shaft having a choke valve fixed thereto to control flow through said air intake passage, an actuator connected to turn the shaft in a direction to close the choke valve, the actuator being provided with a cam track, means responsive to engine vacuum pressure for turning the shaft in a direction to open the choke valve, and means including a limiter member connected to limit the extent of opening movement of the choke valve in accordance with the position of said actuator, said limiter member having a follower engaging said cam track.

3,928,512

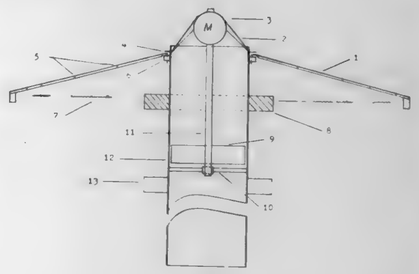
BIO POND AERATOR

Kenneth Floyd Cherry, 4406 Suder Ave., Toledo, Ohio 43611

Filed Mar. 4, 1974, Ser. No. 447,895

Int. Cl.² B01F *3/04*

U.S. Cl. 261—91 **3 Claims**



1. An aeration device adapted for positioning on a liquid pond for the purpose of transferring oxygen from the atmosphere to the liquid comprising a central tubular section and mounted externally thereon a buoyant means consisting of a

float ring with buoyancy sufficient to support the entire structure while in operation,

motor, shaft, and impeller combination with said impeller positioned inside said tubular section below said float ring and attached by said shaft to said motor, said motor mounted on and supported by said tubular section so as to impart the torque generated by turning said impeller inside said tubular section to said tubular section, said motor shaft and impeller combination sized and positioned to raise said liquid within said tubular section,

at least two liquid overflow weirs positioned in said tubular section above said float ring to allow said raised liquid to flow over said weirs and out of said tubular section,

bracket assemblies mounted below each said liquid overflow weirs externally on said tubular section between said float ring and said liquid overflow weirs,

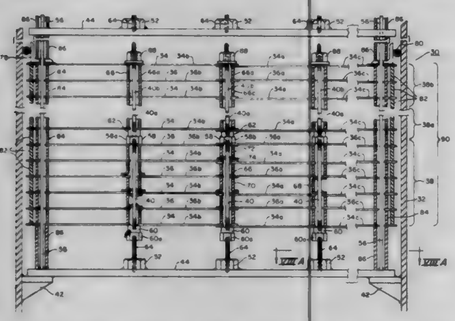
aerator arms of a channel shape with a float on one end and a hinge structure on the other end, said hinge structure compatible with said bracket assemblies for attachment of one aerator arm below each said overflow weir, said aerator arms positioned during operation so that the end with a float is below the hinged end and said liquid flowing over said overflow weirs onto said aerator arms will flow toward the float end,

holes in the lower surface of said aerator arms to allow portions of said liquid to flow through said holes and impact on the surface of said liquid pond, causing aeration to said liquid pond and the general flow of said liquid through said aeration device resulting in general movement and circulation of said liquid pond.

3,928,513
GAS-LIQUID CONTACT APPARATUS

Max Leva, One Hodgson Ave., Pittsburgh, Pa. 15205

Continuation-in-part of Ser. No. 180,381, Sept. 14, 1971, abandoned. This application June 5, 1973, Ser. No. 367,133
Int. Cl.² B01F *3/04*
U.S. Cl. 261—113 **21 Claims**

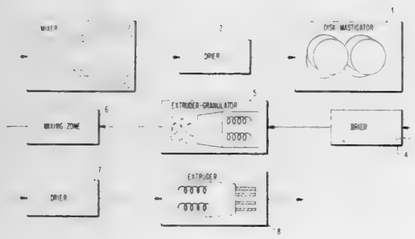


1. A gas-liquid contact tower comprising an outer tower shell, a plurality of superimposed flat generally horizontal plates spaced vertically so that each carries a thin film of liquid discharged within said tower shell, said horizontal plates being provided with a plurality of flow apertures distributed substantially uniformly over the surface of said plates, said apertures permitting the thin liquid film on said plates to flow downwardly therethrough from plate to plate and permitting gas to flow upwardly therethrough from plate to plate, each of said plates comprising a plurality of segments stacked with their edge portions in overlapping relationship but without being welded together or otherwise directly and rigidly secured to one another, a plurality of tie rods extending vertically through registering apertures in said plates for clamping the plates together, at least one of said tie rods extending through registering apertures formed respectively in said overlapping segment edge portions, and at least those registering apertures for said one tie rod being larger respectively than the adjacent cross sections of said one tie rod and being shaped so that said plate segments can expand and contract in the planes thereof and in different directions transverse to one another.

3,928,514
PROCESS FOR THE PRODUCTION OF GUDOL POWDER UTILIZING REDUCTION OF MOISTURE CONTENT

Heinrich Brachert, Troisdorf-Oberlar; Dieter Girke, and Joachim Kleiss, both of Liebenau, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Apr. 3, 1974, Ser. No. 457,610
Claims priority, application Germany, Apr. 3, 1973, 2316538
Int. Cl.² C06B *21/00*
U.S. Cl. 264—3 B **6 Claims**



1. In a process for the preparation of "Gudol powder" from a final mixture of nitrocellulose, diglycol dinitrate, nitroguanidine, and additives, wherein an aqueous raw mixture of nitrocellulose and diglycol dinitrate is premixed with the other components, the said final mixture then dehydrated in part, plasticized, and finally pressed into the final shape of the powder product, the improvement which comprises reducing the water content of the premixed components in a first drying stage, then homogenizing and preplasticizing the premixed components in a continuously operating masticator, thereafter further reducing the water content of the composition in a second drying stage, thereupon plasticizing and converting the composition into granular form in a continuously operating extruder, adjusting the moisture content of the granulated material to a required pressing or extruding moisture, and finally extruding the granulated material to the final shape of the powder product in a continuously operating extruder.

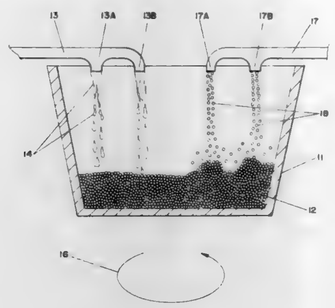
3,928,515
SEMICONTINUOUS PROCESS FOR PRODUCING OXIDE REFRACTORY MATERIAL HAVING FINE CRYSTAL STRUCTURE

Wesley Q. Richmond, Stevensville, Canada, and Paul Cichy, Buffalo, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed June 15, 1971, Ser. No. 153,318
Int. Cl.² B22D *23/08*
U.S. Cl. 264—5 **7 Claims**

1. A semicontinuous process for rapidly cooling and solidifying a melt of oxide refractory material, comprising the steps of

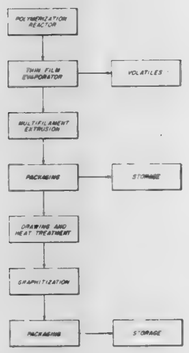
1. first filling a solidification chamber to a depth of at least about 15 cm with an initial supply of solid steel sphere cooling media of a size between about 5 and about 60 mm and which is non-reactive and non-melting with respect to the melt of oxide refractorymaterial; then simultaneously
2. adding additional steel sphere cooling media, of a size between about 5 and about 60 mm and which is non-reactive and non-melting with respect to the melt of oxide refractory material, over the initial supply of steel sphere cooling media, while
3. casting a melt of the oxide refractory material into the solidification chamber, over the initial supply of steel sphere cooling media and the additional steel sphere cooling media, whereby the melt is rapidly cooled and solidified.



3,928,516
CONTINUOUS METHOD FOR MAKING SPINNABLE POLYACETYLENE SOLUTIONS CONVERTIBLE TO HIGH STRENGTH CARBON FIBER

Daniel E. Sliva, Pittsfield, Mass., and William G. Selley, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 30, 1972, Ser. No. 310,989
Int. Cl.² D01D *5/04*; B05B *3/00*
U.S. Cl. 264—29 **8 Claims**



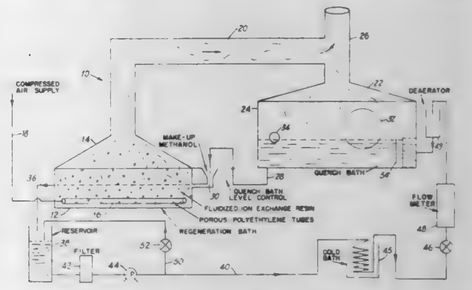
1. A continuous process for making polyacetylene fiber which comprises:

1. producing a polyacetylene solution having at least 3% polymer solids by weight by the oxidative coupling of diethynyl organo compounds, selected from the class consisting of metadiethynylbenzene, para-diethynylbenzene and bis-phenol-A dipropargyl ether and a mixture of metadiethynylbenzene and para-diethynylbenzene,
2. passing said polyacetylene solution through a thin film evaporator to produce a solution spinnable polyacetylene concentrate having a solids concentration of up to about 33% by weight,
3. spinning said polyacetylene concentrate,
4. and collecting the resulting polyacetylene fiber.

3,928,517
QUENCH BATH REGENERATION SYSTEM FOR MICROPOROUS FILM PRODUCTION

Rodney A. Knight, New Milford; Joseph A. Zang, Cos Cob, and John Slanski, Trumbull, all of Conn., assignors to AMF Incorporated, White Plains, N.Y.

Filed Dec. 26, 1973, Ser. No. 427,743
Int. Cl.² B29D *27/04*; D01F *13/04*
U.S. Cl. 264—38 **14 Claims**

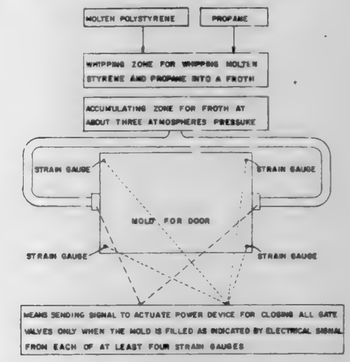


1. In a method of preparing a film by casting a film of a dope solution comprised of a film-forming polymer in a solvent system comprising formic acid and quenching said film in a quench bath comprising a non-solvent system for said polymer, the improvement which comprises continuously contacting at least a portion of said non-solvent system with a heterogeneous esterification catalyst in the presence of methanol to form methyl formate by esterification of formic acid with said methanol and removing the methyl formate therefrom.

3,928,518
LOW PRESSURE INJECTION MOLDING INVOLVING MOLD FILL DETECTION

Walter H. Greenberg, Syossett, N.Y., assignor to Beschoff Chemical Corporation, Hicksville, N.Y.

Continuation of Ser. No. 28,088, April 13, 1970, abandoned. This application Sept. 15, 1972, Ser. No. 289,415
Int. Cl.² B29D *27/00*; B29F *1/00*
U.S. Cl. 264—40 **1 Claim**



1. In the method of converting a mixture of an organic thermoplastic and gas to a cellular plastic article in which said organic thermoplastic is heated to provide molten plastic, in which gas cells are distributed throughout the molten plastic to provide a mixture of molten plastic and gas, in which a mixture of molten plastic and gas is injected at superatmospheric pressure into a mold, in which the mold is cooled to cool the mixture of molten plastic and gas to thereby form a cellular plastic article, in which a cellular plastic article is removed from the cooled mold, the improvement which includes the steps of:

directing a mixture of gas and molten thermoplastic selected from the group consisting of polyethylene, nylon, and polystyrene, into a heated accumulating zone for temporary storage at a superatmospheric pressure less than about 5 atmospheres, said gas being selected from the group consisting of trifluorochloromethane, carbon dioxide, and propane;

providing at least two heated conduits from said accumulating zone to a mold for a giant article, each conduit having a cross sectional area of at least 100 square centimeters, each said conduit being controllable at the entrance to a mold for flow or no flow;

initiating the flow of mixture of molten organic plastic and gas from said accumulating zone through the conduits into the mold, thereby displacing the gas at about atmospheric pressure from the mold through vents and expanding the mixture of molten organic plastic and gas;

sensing the arrival of expanded mixture of hot molten plastic and gas at each of at least four positions in the mold remote from the inlets from the said conduits;

providing a signal only when the mold is filled as indicated by the arrival of the mixture of hot molten plastic and gas at each of the plurality of sensing positions in the mold; and

utilizing said signal instantly to terminate the flow of mixture of molten plastic and gas into the mold, whereby the low pressure injection molding is responsive to the filling of the mold with cellular plastic from said accumulating zone maintained at a pressure less than five atmospheres.

3,928,519

METHOD FOR FORMING ON AN ELONGATED CORE MEMBER A COVERING OF THERMOPLASTIC MATERIAL BY EXTRUSION

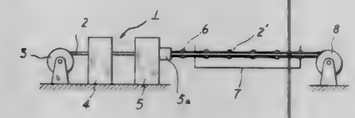
Hiroshi Kashiyama, and Susumu Tobita, both of Ichihara, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed July 25, 1973, Ser. No. 382,347

Claims priority, application Japan, July 29, 1972, 47-75552; Feb. 7, 1973, 48-14622; Apr. 4, 1973, 48-37850; Feb. 14, 1973, 48-18708

Int. Cl.² B29F 3/10; D01D 13/06

U.S. Cl. 264—40 **7 Claims**



1. A method for forming on an elongated core member a covering of thermoplastic material with the outer diameter thereof varied along the longitudinal axis of said core member, comprising the step of extruding said thermoplastic material on said core member through an extruder die while said core member is fed at a pulsatingly varied velocity of said core member, characterized by that said core member has a substantially constant average feeding velocity while said thermoplastic material has a substantially constant average volumetric flow rate at which said thermoplastic material is extruded from said extruder die; and that said pulsatingly varied velocity of said core member is established at a point before entry of said core member into said extruder to have a maximum value which is greater than the average flow rate of said thermoplastic material through said extruder die at the outlet thereof and to have a minimum value which is negative, with said maximum and minimum values alternately repeated in a periodical manner whereby said covering varies in the outer diameter thereof along the longitudinal axis of said core member.

3,928,520

BLACK LEAD AND PRODUCTION THEREOF

Masanori Shinomoto, Yokosuka; Kenji Oyaide, Kawasaki, and Etsuo Shinkawa, Hiratsuka, all of Japan, assignors to Pilot Kiko Kabushiki Kaisha, Hiratsuka, Japan

Filed Aug. 18, 1972, Ser. No. 281,940

Claims priority, application Japan, Aug. 19, 1971, 46-63220; Aug. 25, 1971, 46-65000; June 3, 1972, 47-55523

Int. Cl.² C09B 13/00

U.S. Cl. 264—42 **11 Claims**

1. In the production of a black lead by kneading a coloring material together with a binder or with a binder and a liquid, extruding the resulting mixture into a thin raw lead and burning said raw lead at a high temperature in a non-oxidizing atmosphere, the improvement wherein at least one pore-forming material selected from the group consisting of inorganic substances, sublimable organic compounds and depolymerizable high polymers is added to said mixture under kneading; the resulting mixture is extruded into a thin raw lead through the nozzle of an extruder at an extrusion speed of at least 4 meters per second; said thin raw lead is burned by heating it to raise the temperature thereof gradually from 150° to 300°C at a rate of less than 5°C/hr; and wherein the pore-forming material or materials are removed from the raw lead thereby to form minute continuous pores within the black lead.

3,928,521

METHOD OF MAKING MICROPOROUS ELASTOMERIC MATERIAL

Doyle V. Haren, Clyde, and Arthur D. Logan, Waynesville, both of N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Dec. 27, 1973, Ser. No. 428,965

Int. Cl.² B29H 7/20

U.S. Cl. 264—49 **15 Claims**

1. A method of making an ink-dispensing article comprising the steps of; forming a microporous rubber ink-dispensing material which has interconnected cavities, said forming step comprising the steps of, admixing sized particles of hydrated magnesium sulfate in a rubber matrix material, curing the rubber matrix material and simultaneously causing liberation of water of crystallization from said hydrated magnesium sulfate which provides a blowing effect resulting in the formation of interconnecting passages between said particles, and leaching said particles from said matrix material, said leaching being achieved in an accelerated manner due to said interconnecting passages; and fixing the microporous material to an associated support means to define said article.

3,928,522

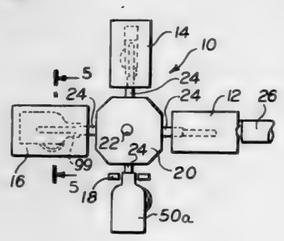
METHOD OF MAKING A BLOW MOLDED CONTAINER WITH HOLLOW HANDLE

John J. Farrell, Green Brook, N.J., assignor to Farrell Patent Company, Greenbrook, N.J.

Filed June 14, 1974, Ser. No. 479,547

Int. Cl.² B29C 17/07, 17/12

U.S. Cl. 264—89 **16 Claims**



1. The method of making a container with a hollow handle by injection blow molding, which method comprises injection molding a parison on a core rod, transferring the core rod and parison from an injection mold to a first blow mold having a cavity which is longer than the parison, which has a diameter greater than that of the parison, and which has portion of the first blow mold cavity confining the plastic of the parison to a limited circumferential stretching during the partial blowing of the parison in the first blow mold, and stretching the material of the parison lengthwise of the core rod by the partial blowing with such longitudinal stretching being greater than the increase in diameter during the partial blowing step applying fluid under pressure to the mold cavity of the first blow mold on the outside of the parison during the partial blowing so as to maintain a fluid cushion around the outside of the parison for limiting movement of the parison into contact with cavity walls of the first blow mold and to allow for the longitudinal stretching brought together over an area bounded on three sides by a hollow part of the handle portion and on the fourth side by part of the parison that was not displaced into said clearance on one side of the cavity, shearing the compressed part from the rest of the handle portion and from the part of the parison that was not displaced into the handle portion of the cavity, removing the sheared material, and then transferring the core rod and partially blown container to a second blow mold having a cavity shaped to the desired contour of the finished container, blow molding the container in the second blow mold and thereafter stripping the container from the core rod.

3,928,523

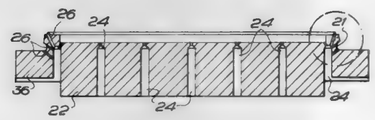
MOULDING OF SYNTHETIC PLASTICS SHEET MATERIAL

Peter Ward, 4 The Croft, Oulton, near Leeds, Yorkshire, and Jack Brocklehurst, 13 Beech Wood, Woodlesford, near Leeds, both of England

Filed Dec. 26, 1973, Ser. No. 428,399

Int. Cl.² B29C 17/04

U.S. Cl. 264—93 **1 Claim**



1. The method of molding lids from thermoplastic heat softened sheet material to form a lid having a raised location ring thereon and a downturned peripheral annular flange having an inwardly protruding bead therearound, the method comprising the steps of

1. clamping a portion of the heat softened thermoplastic sheet material in a flat plane between opposed annular clamping surfaces of a pair of dies to distort the thermoplastic material out of said plane into a groove in one of said surfaces to form a raised location ring encircling a center portion of the lid, and
2. forming on the lid a beaded peripheral flange that extends from said clamping plane in a direction opposite to that in which the raised location ring extends from said plane by causing the peripheral portion of the sheet material extending outside the clamped portion to be forced by air pressure against an undercut contoured surface in one of the dies to form an inwardly protruding bead around the downturned peripheral flange of the lid.

3,928,524

PROCESS FOR REDUCING ELECTROSTATIC CHARGE ON POLYTETRAFLUOROETHYLENE AGGLOMERATES

Glenn Frederick Leverett, Vienna, W. Va., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Jan. 17, 1973, Ser. No. 324,503

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B01J 2/06

U.S. Cl. 264—117 **5 Claims**

1. Process for producing agglomerates of particles of finely ground polytetrafluoroethylene which comprises agitating particles of finely ground polytetrafluoroethylene having a particle diameter of between 1 and 100 microns in a mixture of (a) demineralized water having a conductivity of at least 50 micromhos/cm in which the at least 50 micromhos conductivity is obtained by dissolving in the water an electrolyte which is volatile at a temperature of between about 100°C. and 300°C. and (b) an immiscible organic liquid which can be soluble in water in amounts up to 15 percent by weight at the operating temperature of the process and which has a surface tension of no greater than 40 dynes/cm at 25°C., said organic liquid being present in an amount of between 5 and 50 percent by weight of the water and the polytetrafluoroethylene, followed by separating the resulting agglomerates from the water mixture and drying them.

3,928,525

METHOD FOR FORMING AND VULCANIZING VULCANIZABLE MATERIALS

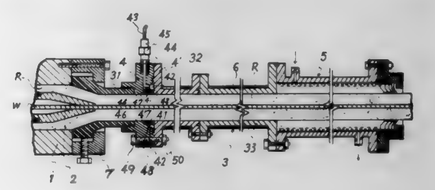
Masaru Fuwa; Kiyoshi Takahashi, both of Ami; Masaaki Otsuji, Nishinomiya, and Masatake Matsui, Takatsuki, all of Japan, assignors to Mitsubishi Petrochemical Co., Ltd. and Dainichi-Nippon Cables, Ltd., Japan

Continuation of Ser. No. 212,049, Dec. 27, 1971, abandoned. This application Nov. 19, 1973, Ser. No. 416,847

Claims priority, application Japan, Dec. 29, 1970, 45-127273; June 26, 1971, 46-46660

Int. Cl.² B29F 3/10

U.S. Cl. 264—174 **13 Claims**



1. A method for forming and vulcanizing a vulcanizable material comprising passing a mixture of an organic peroxide vulcanizable polymer and an organic peroxide through a long-land die having a forming zone and a succeeding vulcanizing zone maintained at a temperature of at least 140°C., while simultaneously supplying a forming coagent onto the inner surface of said long-land die, said forming coagent being characterized by

a. a viscosity of at least 1.1 centi-strokes and at most 3,000 centi-strokes at 235°C.,

b. an absorption ratio to the said polymer at 150°C. for 45 hours less than 30 mg./cm.²,

c. not being subject to gelation even in contact with said organic peroxide in the course of vulcanization, non-gelation being determined by a viscosity ratio of η_1/η_0 of less than 30, wherein η_0 is the viscosity of the forming coagent at 235°C. and η_1 is the viscosity of a mixture of 10 parts by weight of forming coagent and 1 part organic peroxide at a temperature of 235°C., and

d. not being boiled in the course of vulcanization; the forming coagent being supplied in such a manner as to main-

tain a continuous film between the inner surface of said die and the polymer product.

3,928,526
PROCESS FOR PRODUCING CURED PHENOLIC CONTINUOUS FILAMENTS

Hiroaki Koyama, Osaka, Japan, assignor to Nippon Kynol Inc., Osaka, Japan

Filed June 1, 1973, Ser. No. 366,096
Claims priority, application Japan, June 3, 1972, 47-55314
Int. Cl.² B29C *25/00*
U.S. Cl. 264—236 **17 Claims**

1. A process for producing a drawn or undrawn cured phenolic continuous filament which comprises melt-spinning an uncured novolak resin which may contain a fiber-forming thermoplastic synthetic resin selected from the group consisting of nylon resin and polyurethane resin in an amount of less than 30 % by weight based on the total weight of the novolak resin and the thermoplastic synthetic resin and then curing the melt-spun filament with an aldehyde as a curing agent in the presence of a catalyst; said novolak resin produced by the reaction of a phenol selected from the group consisting of phenol, o-cresol, m-cresol, p-cresol, 2,3-xylenol, 2,5-xylenol, 2,4-xylenol, 2,6-xylenol, 3,4-xylenol, 3,5-xylenol, o-ethylphenol, m-ethylphenol, p-ethylphenol, p-phenylphenol, p-tertiary butyl phenol, p-tertiary amylphenol, bisphenol A, resorcinol and mixtures thereof and an aldehyde selected from the group consisting of formaldehyde, paraformaldehyde, benzaldehyde, hexamethylenetetramine, furfural and mixtures thereof; characterized by precuring the melt-spun novolak filament with the aldehyde in the presence of an acid catalyst in two or three precuring baths maintained at progressively higher temperatures and then curing the precured filament with the aldehyde in the presence of a catalyst selected from the group consisting of acid catalysts and basic catalysts.

3,928,527
PREPARATION OF MOLDING PLATE FOR PRODUCTION OF HIGH-PRESSURE DECORATIVE TEXTURED LAMINATES

George J. Wohnhaas, Baltimore; Israel S. Ungar, and Herbert I. Scher, both of Randallstown, all of Md., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 355,436, April 30, 1973, abandoned, which is a division of Ser. No. 784,933, Dec. 18, 1968, abandoned. This application Dec. 16, 1974, Ser. No. 533,855
Int. Cl.² B29D *9/06*
U.S. Cl. 264—258 **6 Claims**

1. The new use of a hard, heat-resistant metallic plate as a molding die to produce high-pressure, textured, decorative laminates, said hard, heat-resistant metallic plate having a polished surface and a finely-roughened texture of 200–1000 microinches R.M.S. provided by bombarding or blasting the surface of said plate at high velocity with small, smooth, non-abrasive hard balls, and then electropolishing, said new use comprising:

placing a series of resin impregnated fiber sheets directly adjacent said hard, heat-resistant metallic plate having a finely-roughened texture,

pressing said resin impregnated fiber sheets against said hard, heat-resistant, finely-roughened metallic plate under high pressure and elevated temperature to produce a textured high-pressure laminate,

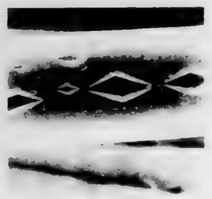
stripping said high-pressure laminate from said hard, heat-resistant, finely-roughened metallic plate, and

re-using said hard, heat-resistant, finely-roughened metallic plate to produce additional textured high-pressure laminates.

3,928,528
PROCESS FOR PRODUCING ACRYLIC FIBERS HAVING EXCELLENT PILLING RESISTANCE

Zen-ichi Orito; Minoru Uchida; Masatoshi Takesue; Hajime Sahara, and Kihiro Fujii, all of Nagoya, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Division of Ser. No. 146,148, May 24, 1971, Pat. No. 3,802,954. This application Aug. 3, 1973, Ser. No. 385,290
Claims priority, application Japan, May 27, 1970, 45-45502; June 5, 1970, 45-48614; June 8, 1970, 45-49308; June 12, 1970, 45-50834
Int. Cl.² B29C *25/00;* **D06M** *3/26*
U.S. Cl. 264—344 **9 Claims**



1. A process for producing acrylic fibers having a plurality of elongated wedge shaped concave depressions extending into the surface thereof, the number of said depressions being more than 3 per inch along the length of an individual fiber and the elongated axis of said depressions being axially aligned in the lengthwise direction of the fiber, which comprises pretreating acrylic fibers with a modifier selected from the group consisting of alkali metal hydroxides, sulfuric acid and hydroxylamine salts to modify the outer portion of individual fiber to make the outer portion of individual fiber insoluble in dimethyl formamide at 100°C. and then after-treating the fibers with an organic treating agent which is non-solvent for the modified outer portion, but is solvent for the unmodified inner portion of the acrylic fibers and which is selected from the group consisting of dimethyl formamide, dimethyl acetamide, dimethyl sulfon, dimethyl sulfoxide, ethylene carbonate, acetonitrile, malonitrile and adiponitrile.

3,928,529
PROCESS FOR RECOVERING HCl AND Fe_2O_3 FROM PICKLE LIQUOR

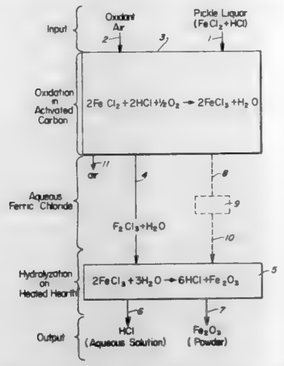
Carl A. Grulke, deceased, late of Berea, Ohio (by Elizabeth N. Grulke, executrix), assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 171,441, Aug. 13, 1971, abandoned. This application Mar. 9, 1973, Ser. No. 339,890
Int. Cl.² C01G *49/06;* **C01B** *7/08*
U.S. Cl. 423—138 **11 Claims**

1. A process for the regeneration of an aqueous solution of ferrous chloride and hydrochloric acid for the recovery of hydrochloric acid values along with iron oxide comprising the stages:

a. oxidizing at a temperature between about ambient temperature and about 110°C an aqueous solution of ferrous chloride and hydrochloric acid with an oxidant in contact with activated carbon to form a reaction-product of aqueous ferric chloride;

b. increasing the temperature of said reaction-product of aqueous ferric chloride to between about 115° and about 275°C to substantially hydrolyze it to hydrochloric acid vapor and hydrated iron oxide, said hydrated iron oxide accumulating on a substrate in layer form;



c. recovering the hydrochloric acid formed in stage (b); and

d. recovering the iron oxide.

3,928,530
SELECTIVE PRECIPITATION OF COBALT AND NICKEL AMINE COMPLEXES

Herman F. Bakker, Clarkson, Canada, and Malcolm C. Bell, Sudbury, Canada, assignors to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 380,562, July 19, 1973, abandoned. This application Dec. 5, 1974, Ser. No. 529,817
Int. Cl.² C01G *51/12;* **C22B** *23/04*
U.S. Cl. 423—140 **7 Claims**

1. A process for precipitating cobalt values from an aqueous ammine solution comprising providing an aqueous solution containing about 0.5 to about 50 gpl of divalent cobalt, about 0.5 to about 50 gpl of nickel, a complementary amount of chloride ion stoichiometrically equivalent to the nickel and cobalt in the divalent state, ammonia in a molar amount of about 3 to about 8 times the molar amount of total nickel plus cobalt and about 10 to about 350 gpl of ammonium chloride, the amounts of the ammonia and ammonium chloride being controlled such that all the nickel and divalent cobalt are soluble in the aqueous solution, oxidizing cobalt in said solution to the trivalent state using a gaseous oxidant containing molecular oxygen and precipitating trivalent cobalt chloropentammine chloride by maintaining the temperature of said aqueous ammine solution at about 60° to about 120°C. during the precipitation operation.

3,928,531
BLACK LIQUOR OXIDATION PROCESS

William H. Boatwright, and Thomas C. Hsu, both of Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Filed Mar. 18, 1974, Ser. No. 451,764
Int. Cl.² C01D *5/00;* **D21C** *11/14*
U.S. Cl. 423—206 **6 Claims**

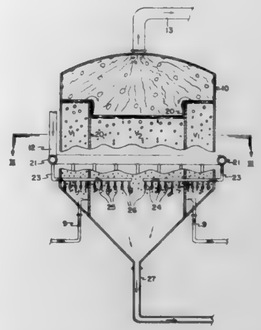
1. A method of intimately contacting a flowing quantity of cellulose pulping liquor with a quantity of oxidizing gas, said method comprising the steps of:

A. Providing a substantially unpressurized fluid retention vessel having a horizontal sectional area divided into at least two retention volumes;

B. Supplying concentrated spent cellulose pulping liquor to a first of said retention volumes;

C. Discharging said liquor from a second of said retention volumes;

D. Distributing substantially all of an oxidizing gas over substantially all of said horizontal sectional area at one end of said retention volumes for flow traverse along the length of said volumes toward the other end thereof in direct contact with said liquor; and,

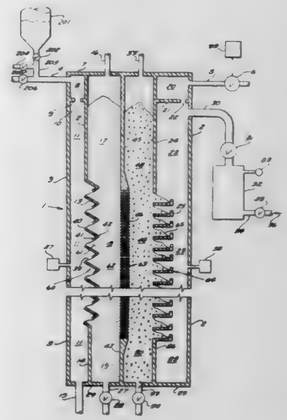


E. Conducting said liquor flow along the substantial length of each of said retention volumes between said supply and discharge.

3,928,532
TREATING GAS WITH CHEMICALLY REACTIVE DUST IN PANEL BED

Arthur M. Squires, 245 W. 104 St., New York, N.Y. 10025

Filed Sept. 19, 1974, Ser. No. 507,386
Int. Cl.² B01D *53/34*
U.S. Cl. 423—210 **13 Claims**



1. The method of treating a gas including its contacting with a fine chemically reactive granular medium, comprising:

a. arranging granular material smaller than about 40 mesh in a panel bed having a plurality of transversely disposed upwardly spaced gas entry portions separated by interposed supporting members having outer and inner edges with respect to the bed wherein said gas entry portions have gas entry faces substantially contiguous with said outer edges and wherein said bed has gas exit portions spaced from said inner edges;

b. forwardly flowing gas through the gas entry portions of

the granular material bed and outwardly from the gas exit portions while adding to said gas a chemically reactive granular medium substantially smaller than about 120 mesh to separate and accumulate said medium in surface layer deposits at said gas entry faces wherein said gas enters said gas entry faces at a velocity greater than about 16 feet per minute during at least a part of this step (b);

c. stopping the forward flow of said gas of step (b);

d. causing a transient flow of gas to move in the direction in reverse to the flow of said gas in (b);

e. said transient reverse flow producing first a rise at a given rate of rise and subsequently a fall in the pressure difference between said gas exit portions and said gas entry portions, said difference remaining greater than a first critical minimum difference for a time interval of less than about 50 milliseconds, said first critical difference being that difference at which a steady flow of gas in said reverse direction just produces a localized spill of said first granular material from said gas entry faces, and said difference produced by said transient reverse flow peaking to a top value beyond a second critical minimum difference, which is the pressure difference at which a transient flow of gas in said reverse direction producing said pressure difference at said rate of rise just initiates a body movement of said first granular material toward said gas entry faces to spill a portion of the granular material and substantially all of said accumulated chemically reactive granular medium from the bed;

f. supplying fresh granular material to replace material spilled from said gas entry portions;

g. repeating the cycle of said steps (b), (c), (d), (e), and (f) at least two times;

h. forwardly flowing gas through the gas entry portions of the granular material bed and outwardly from the gas exit portions while adding to said gas a first increment of said chemically reactive granular medium at a rate of addition less than about 5 grams per cubic meter of said gas to separate and accumulate said medium in surface layer deposits at said gas entry faces wherein said gas enters said gas entry faces at a first velocity greater than about 16 feet per minute until the pressure drop across said surface layer deposits reaches about 0.05 centimeters of water per foot per minute of said first velocity and then adding to said gas a second increment of said medium at a rate of addition less than about 5 grams per cubic meter of said gas while the gas enters said gas entry faces at a second velocity greater than about 16 feet per minute until said pressure drop increases by at least about 0.1 centimeters of water per foot per minute of said second velocity and wherein subsequently the rate of flow of said gas is reduced so that the gas enters said gas entry faces at a third velocity less than about one-half of said first velocity and of said second velocity and also less than about 16 feet per minute while adding to said gas at a rate of addition less than about 5 grams per cubic meter of said gas a third increment of said medium wherein said third increment is at least about 1.5 times as large as said second increment when said pressure drop increased with the addition of said second increment by about 0.1 centimeters of water per foot per minute and wherein, when said pressure drop increased by a substantially greater amount, said third increment is at least about 1.5 times as large as the pro rata portion of said second increment that was responsible for an increase of exactly 0.1 centimeters of water per foot per minute;

i. stopping the forward flow of said gas of step (h) and forwardly flowing gas to be treated at a rate to enter said gas entry faces at a velocity not substantially greater than said third velocity and thereby treating said gas by contact with said surface layer deposits of said chemically reactive medium;

j. stopping the forward flow of said gas of step (i); and

k. repeating steps (d), (e), (f), (h), (i), and (j) in a cyclic manner.

3,928,533

BASE METAL TITANATE CATALYSTS

George H. Beall, Big Flats; David M. Miller, Elmira, and Hermann L. Rittler, Horseheads, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 294,074, Oct. 2, 1972, abandoned. This application Mar. 7, 1974, Ser. No. 448,834

Int. Cl.² B01D *53/34*

U.S. Cl. 423—213.2 6 Claims

1. A process for catalytically oxidizing hydrocarbons and carbon monoxide present in a moving gas stream which comprises the step of contacting the moving gas stream at a catalyst temperature in the range of about 700°–2000°F. with a crystalline catalytic material consisting essentially, in weight percent on the oxide basis, of about 15–85% TiO_2, 15–70% M''O, wherein M'' is selected from the group consisting of Mn^{+2}, Co^{+2}, Cu^{+2} and Fe^{+2}, and 0–60% $M_2'''O_3$, wherein M''' is selected from the group consisting of Al^{+3}, Fe^{+3}, Mn^{+3}, Cr^{+3} and Co^{+3}, said material having a major crystal phase consisting of at least one crystalline species selected from the group consisting of titaniferous solid solutions of spinel ($M_2''TiO_4$—$M''M_2'''O_4$), ilmenite ($M''TiO_3$—$M_2'''O_3$) and pseudobrookite ($M''Ti_2O_5$— $M_2'''TiO_5$) structure.

3,928,534

CATALYST USEFUL AT HIGHER TEMPERATURES, ESPECIALLY FOR PURIFICATION OF EXHAUST GASES FROM MOTOR VEHICLES AND INDUSTRIAL PLANTS

Edgar Koberstein, Alzenau, and Eduard Lakatos, Hurth-Hermulheim, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Division of Ser. No. 64,957, Aug. 19, 1970, Pat. No. 3,669,906, which is a continuation-in-part of Ser. No. 581,163, Sept. 22, 1966, abandoned. This application Feb. 18, 1972, Ser. No. 227,629

Int. Cl.² B01D *53/00*

U.S. Cl. 423—213.2 11 Claims

1. A method for purifying exhaust gases from motor vehicles containing residual impurities from the group consisting of hydrocarbon and a mixture of nitrogen oxide and carbon monoxide which comprises contacting said exhaust gas at elevated temperatures in the presence of air with an oxidation catalyst consisting essentially of the calcined mixture of (1) eta and gamma aluminum oxide, (2) heavy metal oxide compounds containing the element chromium and at least one other heavy metal selected from the group consisting of (a) nickel and (b) copper with nickel, and (3) at least one compound of an element of Group IIA of the periodic system, the quantity of such heavy metal oxide compounds being 55 to 90 weight percent, the molar proportions of the chromium to the other heavy metal being between about 1:0.5 and 1:2.5 calculated as oxides and the majority of the particles of the heavy metal oxide compounds being of a size of from 0.5 to 5 microns, the quantity of Group IIA element being 0.5 to 10 weight percent of the heavy metal compound plus Group IIA element calculated as oxides, the heavy metal oxide compounds and compound of Group II A element having been formed by precipitating from a solution of ammonium bichromate with a soluble salt of said other heavy metal or metals and a soluble salt of said element of Group IIA and whereby said calcining of said mixture having been done at 400°–800°C, in an oxygen-containing atmosphere.

3,928,535

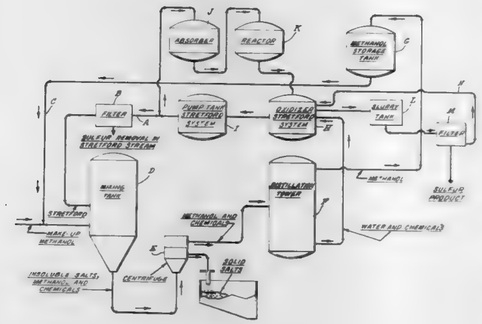
SULFUR RECOVERY SYSTEM

Paul G. Schulz, Maumee, Ohio, assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 352,758, April 19, 1973, abandoned, and a continuation-in-part of Ser. No. 438,054, Jan. 30, 1974, abandoned. This application Mar. 18, 1974, Ser. No. 452,493

Int. Cl.² B01D *53/34*

U.S. Cl. 423—224 15 Claims



1. A process for reducing the concentration of dissolved by-product alkali metal or ammonium thiosulfate or sulfate salts in aqueous H_2S removal systems containing a dissolved quinone type oxidation-reduction component which is recycled in said system and which is sensitive to precipitants for said by-product salts, which comprises mixing methanol with a solution containing said by-product salts and said sensitive oxidation-reduction component in a volume ratio of methanol to said aqueous solution of from about 25:75 to about 65:35, thereby precipitating said by-product salts but not said oxidation-reduction component, and separating said precipitated salts from said solution.

3,928,536

PROCESSES FOR REMOVAL OF SULFUR DIOXIDE FROM GASES

George W. Lewis, Jr., 8138 Lockwood Lane, Indianapolis, Ind. 46217

Filed Mar. 14, 1973, Ser. No. 340,963

Int. Cl.² C01B *17/00*

U.S. Cl. 423—242 13 Claims

1. A dry process for reducing SO_2 content of gases containing SO_2, ammonia and water vapor which comprises:

a. passing gases containing SO_2, ammonia and water vapor past a solid heat sink having a surface area maintained below the temperature of the gases,

1. the velocity of the gases passed past the heat sink being sufficiently slow and

2. the temperature of the heat sink being maintained such that solid compounds of SO_2, ammonia and water precipitate onto the surface of the heat sink.

mechanically removing solids accumulating on the heat sink.

3,928,537

METHOD OF REMOVING SULFUR DIOXIDE FROM COMBUSTION EXHAUST GAS

Shigeru Saitoh; Tetsuya Watanabe; Koji Konno; Kunihide Yaguchi; Kenji Kodama, and Tamotsu Miyamori, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1974, Ser. No. 440,381

Claims priority, application Japan, Feb. 10, 1973, 48-16919

Int. Cl.² C01B *17/00*

U.S. Cl. 423—243 4 Claims

1. A method of removing sulfur dioxide from combustion exhaust gas containing said sulfur dioxide, comprising contacting said combustion exhaust gas with an aqueous solution containing at least one organic acid salt selected from the group consisting of alkali metal salts or ammonium salts of acetic acid, propionic acid and butyric acid to dissolve the sulfur dioxide contained in the combustion exhaust gas in the form of alkali sulfite and alkali sulfate in said aqueous solution and to generate organic acid in said aqueous solution, adding into the resultant solution which contains alkali sulfite, alkali sulfate and organic acid dissolved therein a calcium compound selected from the group consisting of calcium carbonate, calcium oxide, calcium hydroxide and calcium salt of an organic acid for reaction of said alkali sulfite and said alkali sulfate contained in said solution with said calcium compound to produce calcium sulfite and calcium sulfate which precipitate in said solution resulting in formation of said organic acid salt in said solution, and recycling the organic acid salt-containing solution obtained after separation of said calcium sulfite and said calcium sulfate for contact with said combustion exhaust gas.

3,928,538

PROCESSING OF URANIUM HEXAFLUORIDE INCLUDING ABSORPTION OF URANIUM HEXAFLUORIDE IN AQUEOUS ALUMINUM NITRATE

Ernest Lillyman; Frank Charles Mascall, both of Thurso, and Cecil George Mathers, Halkirk, all of Scotland, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Oct. 29, 1973, Ser. No. 410,354

Claims priority, application United Kingdom, Nov. 8, 1972, 51500/72

Int. Cl.² C01G *43/02*

U.S. Cl. 423—260 2 Claims

1. A process in which uranium hexafluoride vapour enriched in U235 is absorbed in aqueous aluminium nitrate solution to complex the fluoride, the aqueous solution is brought into contact with an organic solvent for preferentially extracting uranium from the aqueous solution and the organic solvent is washed with dilute nitric acid to produce an aqueous uranyl nitrate solution.

3,928,539

METHOD FOR CONTINUOUSLY PRODUCING HYDRATED CALCIUM SILICATES

Hirokazu Satoh; Hidesato Takeuchi, and Shigeki Oikawa, all of Tokyo, Japan, assignors to Onoda Chemical Industry Company, Limited, Tokyo, Japan

Filed Jan. 7, 1974, Ser. No. 431,222

Int. Cl.² C01B *33/20*, *33/24*

U.S. Cl. 423—326 9 Claims

1. A method for producing hydrous calcium silicates continuously, which comprises:

1. heating a siliceous raw material and a calcareous raw material which is prepared with a SiO_2 : CaO molar ratio of about 1.00 : 0.6–1.3, with water so as to form an aqueous slurry until at least 50% of the total CaO and SiO_2 in the starting materials has been gelled by reaction at 50–100°C;

2. heating the gelled product of step (1) to above 160°C in less than 30 minutes by means of pressurized water of

high temperature, maintaining this temperature for about 0.5 to 4 hours; and

3. continuously discharging the reaction product.

3,928,540

PROCESS FOR PREPARING SILICA PIGMENT

James E. Morgan, Barberton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 164,843, July 26, 1971, abandoned. This application Feb. 8, 1974, Ser. No. 440,942

Int. Cl.² C01B *33/18*; C09C *1/28*

U.S. Cl. 423—339 **20 Claims**

1. A method for producing finely-divided precipitated silica, which comprises acidifying an aqueous solution of alkali metal silicate with acidifying agent in an amount sufficient to precipitate finely-divided silica and thereby form a first aqueous slurry of silica, said slurry having reached a viscosity in excess of 550 centipoises, adding from 10 to 200 weight percent of further aqueous alkali metal silicate, based on the initial alkali metal silicate solution, to the slurry, adding further acidifying agent to the slurry in an amount sufficient to precipitate further finely-divided silica, and recovering the precipitated silica.

3,928,541

AMORPHOUS PRECIPITATED SILICEOUS PIGMENTS FOR COSMETIC OR DENTRIFRICE USE AND METHODS FOR THEIR PRODUCTION

Satish K. Wason, Havre de Grace, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Sept. 5, 1972, Ser. No. 285,966The portion of the term of this patent subsequent to July 8, 1992, has been disclaimed.

Int. Cl.² C01B *33/18*, *33/00*; C04B *31/02*

U.S. Cl. 423—339 **1 Claim**

1. A new composition of matter comprising an amorphous, finely divided precipitated silica having a wet cake moisture content in the range of between 64 to 70; an oil absorption in the range of from about 91 to 136 cc/100gm; a pack density in the range of from about 17.6 to 25.0 pounds/cu.ft; a valley abrasion in the range of from about 11.6 to 26 mg wire loss; and a surface area in the range of from 52 to 72 m^2/gm.

3,928,542

PROCESS FOR THE PREPARATION OF ANION EXCHANGE RESIN FOR USE IN THE REDISTRIBUTION OF CHLOROSILANES

Carl James Bakay, Marietta, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Apr. 5, 1974, Ser. No. 458,321

Int. Cl.² C01B *33/08*

U.S. Cl. 423—342 **1 Claim**

1. In the process of disproportionation or redistribution of trichlorosilane, dichlorosilane or monochlorosilane in an amino anion exchange resin bed at a temperature of between about 100°C. to as high as about 350°C., by feeding said silanes to said anion exchange resin bed, the improvement which comprises pretreating said bed in an inert water immiscible liquid with anhydrous hydrogen chloride until at least one equivalent thereof is taken up by said bed.

3,928,543

MANUFACTURE OF NITRITES

Donald Dale Gregory, Wilmington, Del., and Martin Maurice Wendel, Glen Mills, Pa., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 213,930, Dec. 30, 1971, abandoned. This application Dec. 20, 1973, Ser. No. 426,654

Int. Cl.² C01B *21/50*

U.S. Cl. 423—385 **16 Claims**

1. A process for producing in a batch or continuous manner an aqueous solution of a nitrite of an inorganic cation selected from the group consisting of ammonium, alkali metal cations, and alkaline earth metal cations by using a base selected from hydroxides and carbonates of the selected cation, said process comprising the steps of

1. passing a gaseous mixture containing oxides of nitrogen having a state of oxidation of less than 70 percent into contact with said base to cause a reaction of the base with said oxides of nitrogen and
2. adding continuously or in stages, as said reaction proceeds, an inert diluent gas to the gaseous mixture being passed in step (1) to reduce progressively the concentration of oxides of nitrogen in said gaseous mixture as the concentration of said base in said solution is reduced, said state of oxidation being defined as

$$\frac{\text{moles e } NO_2}{\text{moles NO + moles e } NO_2} \times 100$$

wherein e NO_2 is determined by adding two times the number of moles of N_2O_4 to the number of moles of NO_2.

3,928,544

PROCESS FOR PRODUCING CARBON PRODUCTS

Hisao Yokota, Kobe; Akira Kobayashi, Nishinomiya; Jiro Horikawa, Suita, and Akira Miyashita, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 5, 1973, Ser. No. 337,856

Claims priority, application Japan, Mar. 6, 1972, 47-23020

Int. Cl.² C01B *31/02*, *31/07*

U.S. Cl. 423—447 **10 Claims**

1. A process for producing carbon products which comprises (1) forming a polymer selected from the group consisting of polystyrene, polychlorostyrene, polydimethylstyrene, polychloromethylstyrene, polyvinylnaphthalene, polyvinylanthracene, polyvinylpyridine and poly-N-vinylcarbazole into a fiber having a diameter of 1 to 500 μ or a film having a thickness of 5 to 1000 μ, (2) subjecting the fiber or film to sulfonation, chlorosulfonation, nitration or bromination sufficient to make the polymer infusible, and (3) carbonizing the resultant infusible product by heating to give carbon fibers or filmy carbon.

3,928,545

ZIRCONIUM COMPLEXES OF BASIC ALUMINUM CHLORIDES AND METHODS OF MAKING SAME

John L. Jones, North Plainfield; Andrew M. Rubino, New Providence, both of N.J., and Charles B. Lindahl, Sand Springs, Okla., assignors to Armour Pharmaceutical Company, Chicago, Ill.

Filed July 20, 1971, Ser. No. 164,434

Int. Cl.² C01G *25/04*; C01F *7/00*, *7/48*

U.S. Cl. 423—463 **7 Claims**

1. A method of preparing alcohol soluble solid complexes of 5/6 basic aluminum chlorides comprising the steps of providing an aqueous solution of 5/6 basic aluminum chloride having the general empirical formula:

$$Al_2(OH)_{6-x}Cl_x$$

in which x equals about 0.9 to 1.2; adding to said aqueous solution a substance selected from the group consisting of zirconyl hydroxybromide and a combination thereof with zirconyl bromide; said substance being added in an amount sufficient to yield an Al/Zr mole ratio of about 3:1 to 20:1; and drying the resulting mixture to a substantially friable solid.

3,928,546

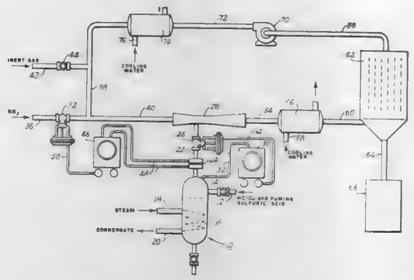
METHOD AND APPARATUS FOR MAKING AMMONIUM PERCHLORATE

Anthony T. Guzzo, Huntsville, Ala., assignor to Thiokol Corporation, Bristol, Pa.

Filed Dec. 11, 1970, Ser. No. 97,100

Int. Cl. C01b *11/16*

U.S. Cl. 423—476 **7 Claims**



1. The method of making ammonium perchlorate which comprises causing a stream of inert gas to flow in a closed cycle, adding gaseous ammonia to said inert gas stream at a first point in said cycle, adding substantially anhydrous perchloric acid vapor to said stream at a second point in said cycle to cause said perchloric acid vapor to react with said ammonia to form finely particulate ammonium perchlorate particles, and separating said ammonium perchlorate particles from said stream at a third point in said cycle.

3,928,547

PROCESS FOR THE REDUCTION OF SULFUR DIOXIDE

William D. Daley, Morristown; John E. Wilkalis, Morris Plains, and Wim J. M. Pieters, Morristownship, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 267,863, June 30, 1972, abandoned. This application June 10, 1974, Ser. No. 477,893

Int. Cl.² C01B *17/04*

U.S. Cl. 423—564 **17 Claims**

1. In a process for the catalytic reduction of sulfur dioxide to elemental sulfur by reacting a gaseous mixture of a sulfur dioxide-containing gas and a hydrocarbon reducing agent at elevated temperatures, the improvement comprising effecting initiation of said reduction reaction in the presence of 0.05 to 3 mol percent elemental sulfur vapor, expressed as S_8, wherein the volume of the mixture of the sulfur dioxide-containing gas and hydrocarbon reducing agent in the presence of said elemental sulfur is not appreciably increased and the reduction is carried out at temperatures within the range of 850° to 2,400°F.

3,928,548

PROCESS FOR PURIFYING A SULFUROUS ANHYDRIDE CONTAINING GAS AND PRODUCING ELEMENTAL SULFUR

André Deschamps, Chatou; Philippe Renault, Noisy-le-Roi, and Claude Dezael, Maisons-Laffitte, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Paris, France

Filed Sept. 17, 1973, Ser. No. 397,971

Claims priority, application France, Sept. 22, 1972, 72.33814; Jan. 11, 1973, 73.00975

Int. Cl.² C01B *17/04*

U.S. Cl. 423—575 **7 Claims**

1. A process for purifying a gas containing sulfurous anhydride and 0.5–10% by volume of oxygen, while producing elemental sulfur, said process comprising: in a first stage contacting the gas at 20°–130°C with an absorbing solution of urea, thiourea or an alkali metal or ammonium salt of benzoic acid or of an alkyl-, cycloalkyl- or aryl-phosphoric acid in a mixture of water and polyethylene glycol having a molecular weight of about 200–600, so as to absorb the sulfurous anhydride in said absorbing solution, separating resultant sulfurous ahnydride containing absorbing solution from the gas containing 0.5–10% by volume of oxygen, and, in a second stage contacting resultant separated solution at 20°–130°C with a gas containing hydrogen sulfide, substantially in the absence of oxygen, so as to produce sulfur and to regenerate the absorbing solution used in the first stage.

3,928,549

THERMOCHEMICAL PRODUCTION OF HYDROGEN

Oscar H. Krikorian, Danville, Calif., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed June 20, 1974, Ser. No. 481,263

Int. Cl.² C01B *1/02*

U.S. Cl. 423—648 **11 Claims**

1. A closed cycle process for the thermochemical production of hydrogen from water which comprises:

a. hydrolyzing a hydrolyzable compound of a metal and a metalloidal element selected from the group consisting of arsenic, antimony, bismuth, selenium, and tellurium, thereby producing the corresponding metal oxide or hydroxide and a compound of hydrogen and the metalloidal element;

b. thermally decomposing the compound of hydrogen and the metalloidal element, thereby producing hydrogen and the metalloidal element;

c. reacting the metalloidal element with the metal oxide or hydroxide, thereby regenerating the compound of the metal and the metalloidal element and producing an oxide of the metalloidal element;

d. reducing the oxide of the metalloidal element with a thermally regenerable reducing agent, thereby regenerating the metalloidal element and oxidizing the reducing agent; and

e. thermally decomposing the oxidized reducing agent, thereby regenerating the reducing agent and producing oxygen.

11. A closed cycle process for the thermochemical production of hydrogen which comprises:

a. reacting copper selenide with sulfuric acid, thereby producing copper sulfate, hydrogen, and selenium;

b. thermally decomposing the copper sulfate, thereby producing copper oxide, sulfur dioxide, and oxygen;

c. reacting the copper oxide with selenium, thereby regenerating the copper selenide and producing selenium dioxide; and

d. reducing the selenium dioxide with sulfur dioxide in aqueous solution, thereby producing selenium and regenerating sulfuric acid.

3,928,550

PROCESS FOR MAKING HYDROGEN

Walter H. Seitzer, West Chester, Pa., assignor to Sun Ventures, Inc., St. Davids, Pa.

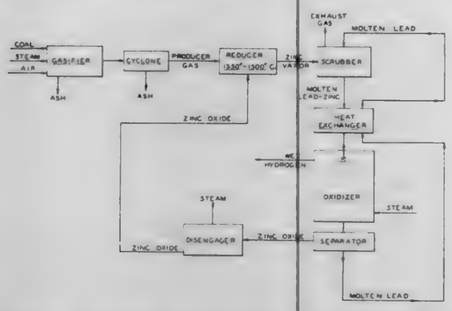
Filed Sept. 12, 1974, Ser. No. 505,436

Int. Cl.² C01B *1/02*, *1/08*; C01G *9/02*

U.S. Cl. 423—657 **5 Claims**

1. A process for making hydrogen which comprises contacting zinc oxide at 1,350° to 1,500°C. with a reducing gas to reduce said zinc oxide to zinc metal, contacting the metallic zinc with molten lead which is inert under process conditions to obtain a solution of zinc in lead containing from about 10% to about 50% by weight and spraying the solution under pressure to an oxidizer where metallic zinc is reacted at a temperature of from about 600° to about 900°C. and at about 1,000

to 3,000 psig with steam to yield hydrogen and zinc oxide, separating the hydrogen product under pressure, separating



the zinc oxide from the molten lead, recycling zinc oxide for reduction to zinc and recycling the lead for further use.

3,928,551

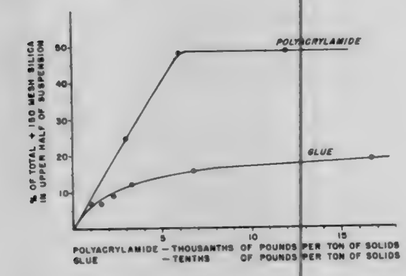
LEACHING POLYELECTROLYTE FLUIDIZED SOLIDS

Robert Ben Booth, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 58,388, July 27, 1970, Pat. No. 3,746,641, which is a continuation-in-part of Ser. No. 179,287, March 7, 1962, Pat. No. 3,524,682, which is a continuation-in-part of Ser. No. 698,429, Nov. 25, 1957, abandoned. This application Nov. 17, 1972, Ser. No. 307,667

Int. Cl. C01B *100*; C01C *100*; C01D *100*; C01F *100*; C01G *100*; C22B *100*

U.S. Cl. 423—659 **5 Claims**



1. In the leaching of a suspension of solids in water in which the solids range from comparatively coarse, including particles larger than 65 mesh, to very fine materials, including particles smaller than 325 mesh, and which suspension, at least when allowed to settle, has a high solids content of at least about 30% solids, and which suspension in the absence of a suspending agent, when in a quiescent state separates with the formation of a solid cake, which stalls agitators and resists resuspension, the step which comprises: adding to said water suspension of solids a small but effective amount of a water soluble polyelectrolyte suspending agent, from 0.005 to 5 pounds per ton of suspended solids, which is an ampholytic linear carbon chain vinyl polymer consisting essentially of recurring carbamylethylene and carboxyethylene linkages and not more than a minor amount of nitriloethylene linkages, and salts thereof, having a weight average molecular weight in excess of 100,000, thereby producing a suspension which is of uniform characteristics and from which the solids drop out as an unclassified readily resuspendable material, said polymer increasing the viscosity of the aqueous phase, insuring laminar flow at higher velocities, thereby reducing pumping power requirements, and simultaneously stabilizing the suspension, so that during interruptions in agitation, the suspension remains fluidized, and in pumpable condition.

3,928,552

HEPATO-BILIARY RADIOPHARMACEUTICAL COMPRISING 2-MERCAPTOISOBUTYRIC ACID CHELATING REDUCED TECHNETIUM-99M

Harry S. Winchell, Lafayette; Archie S. Khentigan, San Francisco, and Hong Lin, Berkeley, all of Calif., assignors to Medi-Physics, Inc., Emeryville, Calif.

Filed Oct. 18, 1973, Ser. No. 407,409

Int. Cl. A61k *27/04*; C07f *7/22*; G01t *1/00*

U.S. Cl. 424—1 **7 Claims**

1. A radiopharmaceutical for scintigraphic organ imaging comprising 2-mercaptoisobutyric acid labeled with reduced technetium-99m.

3,928,553

RADIOIMMUNOASSAY METHOD FOR TRIIODOTHYRONINE AND THYROXINE

Charles S. Hollander, New York, N.Y., assignor to New York University, New York, N.Y.

Continuation of Ser. No. 237,342, March 23, 1972, abandoned. This application Feb. 25, 1974, Ser. No. 445,115

Int. Cl.² A61K *43/00*; G01T *33/00*, *1/16*; G21H *5/02*

U.S. Cl. 424—1 **21 Claims**

1. A radioimmunoassay method for triiodothyronine or thyroxine or triiodothyronine and thyroxine present in unextracted serum containing thyroxine binding pre-albumin and thyroxine binding globulin which comprises:

a. adding to unextracted serum, a sufficient amount of a binding inhibitory agent to substantially inhibit binding of triiodothyronine or thyroxine or triiodothyronine and thyroxine to the thyroxine binding prealbumin;

b. adding to the serum an amount of an isotopically labelled triiodothyronine or thyroxine or triiodothyronine and thyroxine sufficient for detection;

c. adding to the serum, a sufficient amount of a binding inhibitory agent to substantially inhibit binding of triiodothyronine or thyroxine or triiodothyronine and thyroxine to the thyroxine binding globulin;

d. adding to the serum an amount of antiserum containing antibody for triiodothyronine or thyroxine or triiodothyronine and thyroxine which is approximately proportionate to the titer;

e. incubating the serum at a temperature and for a period of time which is sufficient to provide substantial equilibration of the antibody bound and unbound triiodothyronine or thyroxine or triiodothyronine and thyroxine;

f. separating the unbound triiodothyronine or thyroxine or triiodothyronine and thyroxine from the bound triiodothyronine or thyroxine or triiodothyronine and thyroxine while substantially preventing re-equilibration of antibody bound triiodothyronine or thyroxine or triiodothyronine and thyroxine; and

g. measuring the adsorbed unbound triiodothyronine or thyroxine or triiodothyronine and thyroxine and the bound triiodothyronine or thyroxine or triiodothyronine and thyroxine.

3,928,554

EMULSION DYEING

Tomas Hirschfeld, Framingham, Mass., assignor to Block Engineering, Incorporated, Cambridge, Mass.

Filed Dec. 19, 1973, Ser. No. 426,356

Int. Cl.³ G01N *1/00*, *1/30*

U.S. Cl. 424—3 **14 Claims**

1. A dyebath for histological staining comprising;
an emulsion having a dispersed phase in a suspending aqueous medium, the dispersed phase including at least one dye dissolved in a solvent which is substantially immiscible with said medium.

3,928,555

SPECKLE PARTICLE FOR DENTIFRICE

Ian Ray Gault, Lymm, England, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 3, 1973, Ser. No. 385,296

Int. Cl.² A61K *9/24*

U.S. Cl. 424—22 **7 Claims**

1. Finely divided visible functional particles, which alleviate periodontal sensitivitity and bleeding upon application to teeth and gums having a macroscopic size of 100 to 1000 microns, comprising a matrix of meltable binding material selected from the group consisting of C_{12} to C_{22} saturated fatty acid di- or tri-ester of glycerol or ethylene glycol and about 5–10% by weight of aluminum dihydroxy allantoinate said meltable binding material having a melting or softening point lower than the decomposition point of said allantoinate.

3,928,556

NON-STINGING WOUND DRESSING CONTAINING TERTIARY BUTYL ALCOHOL

Ulf Allan Sweger, Marbella, Spain, assignor to Novitas Nuprot SA, Freibourg, Switzerland

Filed Feb. 28, 1974, Ser. No. 447,032

Claims priority, application Sweden, Mar. 2, 1973, 73029498

Int. Cl.² A61K *31/02*, *31/12*, *31/22*, *31/74*

U.S. Cl. 424—45 **22 Claims**

1. A non-stinging wound dressing comprising film forming plastic material dissolved in a solvent system, said solvent system containing 70% or more non-stinging solvent, said non-stinging solvent consisting of tertiary butyl alcohol and solvent selected from the group comprising straight and branched chain saturated hydrocarbons having 5–8 carbon atoms, saturated cyclic hydrocarbons having 5–8 carbon atoms and chlorofluoro substituted saturated hydrocarbons containing 1–2 carbon atoms and mixtures thereof wherein the non-stinging solvent contains 50% or more tertiary butyl alcohol, said film forming plastic material selected from the group comprising, N-butyl methacrylate, isobutyl methacrylate, 2-ethoxyethyl methacrylate, methyl methacrylate, polyvinyl butyral, ethyl cellulose, polyvinyl ethyl ether, polyisobutylene polymers and 80/20 isobutyl methacrylate/N-butyl methacrylate and 95/5 2-ethoxyethyl methacrylate/methyl methacrylate copolymers, said film forming plastic material being skin adherent and washable upon drying.

3,928,557

DEODORANT FORMULATIONS AND ANTIPERSPIRANT FORMULATIONS CONTAINING PARTICULAR ALIPHATIC DIOLS AND THEIR ESTERS

Donald L. Wright, New York, N.Y., and John W. Frankenfeld, Atlantic Highlands, N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Oct. 28, 1970, Ser. No. 84,931

Int. Cl.² A61K *7/32*, *7/38*, *31/23*

U.S. Cl. 424—47 **4 Claims**

1. In an antiperspirant and deodorant composition containing from about 5 to 30% by weight of an astringent wherein the improvement comprises from about 2% by weight to about 20% by weight of a antibacterial compound selected from the group consisting of esters of saturated normal aliphatic 1,3-diols with monocarboxylic acids of saturated normal aliphatic hydrocarbons said esters having 4 to 15 carbon atoms in the diol portion of the molecule and 2 to 20 carbon atoms in the acyl portion of the molecule.

3,928,558

HAIRSPRAY COMPOSITIONS CONTAINING A SILICONE GLYCOL BLOCK COPOLYMER

Jean Ann Cheesman, Whitton, and Cherry Pamela Coles, West Ewell, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed May 29, 1973, Ser. No. 364,210

Claims priority, application United Kingdom, May 26, 1972, 25111/72

Int. Cl.² A61K *7/10*

U.S. Cl. 424—47 **5 Claims**

2. An aerosol hairspray composition suitable for imparting a set to hair comprising in solution in a mixture of from about 10% to 70% by weight of an organic solvent selected from the group consisting of ethanol, isopropanol, methylene chloride, methoxyethanol and 2-ethoxyethanol and from about 30% to about 90% by weight of a liquefied normally gaseous propellant,

a. from about 0.1% to about 7.5% by weight of the composition of a film-forming resin for imparting a set to hair; and
b. from about 0.5% to about 15% by weight of said film-forming resin of a polydimethylsiloxane-polyoxyalkylene block copolymer.

wherein each oxyalkylene group is selected from the group consisting of oxyethylene and oxypropylene, said block copolymer comprising dimethylsiloxane ($-Si(CH_3)_2O-$) units and units of the formula $-Si(CH_3)[(CH_2)_n(OCH_2CHR')_pOR-]O-$ where n is selected from the values of 0 and 3, each R' is selected from the group consisting of hydrogen and methyl, p represents the average number of oxyalkylene groups and R is selected from the group consisting of hydrogen and alkyl containing 1 to 5 carbon atoms, and said block copolymer having a silicon content of from 15% to 25% by weight, a molecular weight of from 1200 to 5000 and a viscosity at 25°C of from 3 to 10 poises.

3,928,559

DENTAL CREAM

Armando Patino, Mexico City, Mexico, and Bernardo Maldonado, Satelite Edo, both of N. Mex., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 256,309, May 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 146,802, May 25, 1971. This application Nov. 2, 1973, Ser. No. 412,444The portion of the term of this patent subsequent to Jan. 16, 1990, has been disclaimed.

Int. Cl.² A61K *7/16*

U.S. Cl. 424—49 **2 Claims**

1. Method for providing a speckled appearance to a toothpaste formulation containing at least about 1% by weight of chloroform comprising the sequential steps of:

a. preparing a base toothpaste formulation,
b. adding to said base formulation from about 0.2 to about 1% by weight of macroscopically visible pigmented thermoplastic particles of a desired color,
c. said particles comprising pigmented subparticles in amount adequate to provide said desired color held together by a binding agent, said binding agent being resistant to chloroform & chosen from the synthetic thermoplastic resins having a molecular weight from about 1,000 to about 5,000 & a hardness (ASTM D 1321) of at least about 1,
d. dispersing said particles throughout said formulation,
e. adding said chloroform to the mixture of said formulation and said particles, and
f. blending said chloroform into the mixture of said formulation and said particles.

3,928,560

COMPOSITIONS OF MATTER CONTAINING PARAMETHOXYCINNAMALDEHYDE AS A FLAVORING AGENT AND SWEETENER

James S. Neely, Liberty Township, Butler County, and James A. Thompson, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 352,813, April 19, 1973, Pat. No. 3,867,557. This application Dec. 11, 1974, Ser. No. 531,642

Int. Cl.² A61K 7/18

U.S. Cl. 424—52 **11 Claims**

1. A dentifrice composition comprising:

A. from about 0.0001% to about 2.0% of paramethoxycinnamaldehyde;

B. from about 0.5% to about 5.0% of a sudsing agent;

C. from about 0% to about 1.9999% of a flavoring agent other than paramethoxycinnamaldehyde;

D. from about 0% to about 0.4999% of an additional sweetening agent other than paramethoxycinnamaldehyde;

E. from about 0.5% to about 95% of an abrasive material;

F. from about 0.1% to about 5.0% of a thickening material;

G. up to about 40% of a humectant and viscosity modifying material;

H. up to about 50% water; and

I. from about 0% to about 1.0% of a fluorine containing compound.

3,928,561

COMPOSITION AND METHOD FOR TREATING FINGERNAILS AND TOENAILS

Mildred Baldwin, 1545 Archer Road, Bronx, N.Y. 10462

Continuation-in-part of Ser. No. 392,970, Aug. 30, 1973, Pat. No. 3,887,702. This application June 21, 1974, Ser. No. 481,899

Int. Cl.² A61K 7/04, 7/043

U.S. Cl. 424—61 **6 Claims**

1. A composition for improving the quality of fingernails and toenails comprising an effective amount of an oil chosen from the group consisting of soybean oil, sunflower oil and combinations thereof comprising from 1 to 19 parts of soybean oil and from 19 to 1 parts sunflower oil, from 200 to 2800 international units of vitamin E per fluid ounce of oil and from 0.1 to 1 cubic centimeters of Liquor Carbonis Detergens per ounce of oil.

3,928,562

POLYMER DERIVATIVE OF β-DIETHYLAMINOETHYL ESTER OF P-AMINOBENZOIC ACID WITH CELLULOSEGLYCOLIC ACID, METHOD OF PRODUCING AND APPLICATION THEREOF

Milda Janovna Pormale, ulitsa Suvorova, 104, kv. 10; Nadezhda Alexandrovna Kashkina, ulitsa Talsu, 9/11, kv. 22; Arvid Janovich Kalninsh, ulitsa Sverdlova, 8, kv. 3; Varvara Nikolaevna Sergeeva, bulvar Rainisa, 11, kv. 2; Janis Alexandrovich Serna, ulitsa M. Kaiju, 3, kv. 3; Janis Shusters, ulitsa Kveles, 15, korpus 4, kv. 30; Modris Janowich Meizobs, ulitsa Veidenbauma, 1/3, kv. 3a; Waldis Danielowich Mikazhan, ulitsa Marupes, 17, kv. 32; Indulis Waldowich Purwinsh, ulitsa Marupes, 17, kv. 35; Antons Petrowich Skutelis, ulitsa Marupes, 17, kv. 32, and Martinsh Aleksandrowich Liepinsh, ulitsa Dzirtsiema, 91, kv. 40, all of Riga, U.S.S.R.

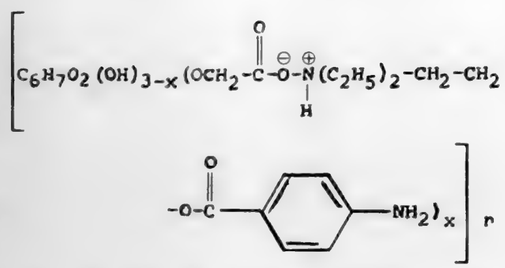
Division of Ser. No. 203,470, Nov. 30, 1971. This application Mar. 21, 1973, Ser. No. 343,377

Claims priority, application U.S.S.R., Jan. 2, 1969, 1207927; Nov. 30, 1970, 1601492

Int. Cl.² A61K 31/74

U.S. Cl. 424—78 **9 Claims**

1. An anesthetic composition comprising an anesthetically-effective amount of a salt of β-diethylaminoethyl p-aminobenzoate with celluloseglycolic acid having the general formula:



where x is the degree of substitution ranging from 75 to 100; and n is the degree of polymerization ranging from 30 to 120, and a pharmaceutical excipient or vehicle.

3,928,563

SELF-SANITIZING FILM FORMER

Robert H. McIntosh, and Ezekiel H. Hull, both of Greensboro, N.C., assignors to Anthony B. Askew, Atlanta, Ga.

Continuation-in-part of Ser. No. 292,792, Sept. 27, 1972, abandoned, which is a division of Ser. No. 139,265, April 30, 1971, Pat. No. 3,705,235. This application Apr. 22, 1974, Ser. No. 462,717

Int. Cl.² A61K 31/74, 33/24, 31/13

U.S. Cl. 424—78 **7 Claims**

1. A self-sanitizing film former comprising a mixture of a polyvinylacetate film forming plastic material, emulsified in water, and an effective amount of a sanitizing agent consisting essentially of a nonionic trialkyl amine and a Group II-A or Group II-B metal salt of a monocarboxylic acid having a carbon chain length of 1 to 4.

3,928,564

BIOCIDAL ELASTOMERIC COMPOSITION COMBINATIONS AND METHOD FOR DISPERSING BIOCIDES THEREWITH

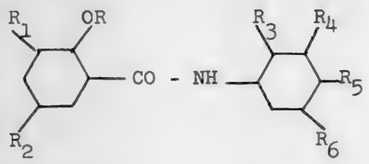
Nathan F. Cardarelli, Copley, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 194,528, Nov. 1, 1971, Pat. No. 3,851,053. This application May 1, 1974, Ser. No. 465,917The portion of the term of this patent subsequent to Nov. 26, 1991, has been disclaimed.

Int. Cl.² A61K 31/745

U.S. Cl. 424—83 **6 Claims**

1. In a method of preparing a biocidal composition comprising dissolving from 0.02 to 20 parts by weight of an organic toxicant selected from the class consisting of organotin compounds of the formula $(R_3Sn)_n X$ wherein n is number from one to three, R is selected from the class consisting of alkyl groups containing 1–20 carbon atoms and aryl groups containing 6–18 carbon atoms, X is a substituent radical attached to the metal atom and is selected from the class consisting of sulfide, oxide, chloride, bromide, fluoride, chromate, sulfate, nitrate, hydroxide, acetate, octanoate, laurate, dimethyl dithiocarbamate, naphthenate, paravinyl, benzoate, acrylate, methacrylate, hydroxide and methoxide; nitrosalicylanilide compounds of the formula



wherein R is selected from the class consisting of hydrogen and lower alkanoyl radicals having 1 to 4 carbon atoms, R_1 is selected from the class consisting of hydrogen and methyl, R_2 is selected from the class consisting of (chlorine, bromine and fluorine, R_3 and R_4 are selected from the class consisting of hydrogen, methyl, halogen and nitro, R_5 and R_6 are selected from the class consisting of hydrogen, halogen, and nitro and wherein the said nitrosalicylanilide compound always contains only one nitro group and at the most, three halogen substituents, and their salts; chlorinated hydrocarbon compounds selected from the class consisting of octachloro-4, 7, methanotetrahydroindane, heptachloro-4, 7, methano-tetrahydroindane and hexachlorocyclohexane; and organo-phosphorous compounds selected from the class consisting of 0,0-dimethyl phosphorothioate of diethyl mercaptosuccinate, and 0,0-diethyl-3,5,6-trichloro-2-pyridyl phosphorothioate, having low solubility in natural waters in a vulcanized matrix of 100 parts by weight of vulcanizable organic elastomer selected from the class consisting of natural rubber, neoprene, nitrile rubber, butyl rubber, styrene/butadiene rubber, and polybutadiene, plus 5 to 100 parts by weight of carbon black per 100 parts of said elastomer the proportion of said carbon black in the range given being selected to yield a desired rate of release of said toxicant by said composition to the environment wherein the maximum number of parts of said toxicant employed is the number equal to the limit of the parts of said toxicant soluble in the said 100 parts of elastomer, the improvement whereby from about 1 to about 90 parts by weight of said toxicant material in addition to the said number of parts of said toxicant is combined in said composition, said improvement comprising the addition to said elastomer plus carbon black of a mixture of said 1 to 90 parts of said toxicant material in physical combination with microballoons said microballoons being characterized as minute spheres 10–60 microns in diameter, with wall thicknesses ranging from 0.5 to about 3 microns and bulk density of about 0.100 to 0.150 g/cc.

3,928,565

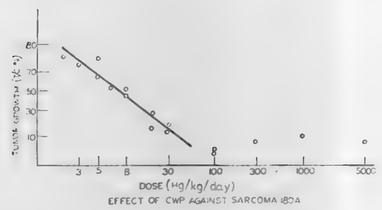
PHARMACEUTICAL PREPARATION OF PSEUDOMONAS AERUGINOSA BACTERIAL COMPONENT POSSESSING ANTI-TUMOR AND ANTI-INFECTION PROPERTIES

Yuzuru Homma; Chiyoji Abe, both of Tokyo, and Hiroshi Shionoya, Niiza, all of Japan, assignors to Yuzuru Homma; Chiyoji Abe and Hiroshi Shionoya, all of, Japan

Division of Ser. No. 190,536, Oct. 19, 1971. This application Dec. 4, 1972, Ser. No. 312,212

Int. Cl. A61k 23/00

U.S. Cl. 424—92 **2 Claims**



EFFECT OF CWP AGAINST SARCOMA 180A

1. A method for the treatment of infections caused by *Pseudomonas aeruginosa* which comprises parenterally administering to a human 1 – 100 μg/day of a cell wall protein component produced by aerobic cultivation in an aqueous medium of *Pseudomonas aeruginosa* and having the following properties:

ultraviolet absorption peaks at 275–280 nm, 410–415 nm, and 550 nm (weak);

analysis — **10–16%** nitrogen, less than 5% sugars in terms of glucose, 0.03 to 1.7% amino sugars and 0.3 to 2.0% phosphorus;

isoelectric point at about pH 4.5,

sparingly soluble in water and aqueous mineral acids, readily soluble in aqueous alkali.

3,928,566

LYOPHILIZED BIOLOGICAL PRODUCTS

Anglis R. Briggs, Newark, Del., and Thomas J. Maxwell, Philadelphia, Pa., assignors to E. I. du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. Nos. 177,834, Sept. 3, 1971, abandoned, and Ser. No. 63,942, Aug. 14, 1970, Pat. No. 3,721,725. This application Mar. 12, 1973, Ser. No. 340,196

Int. Cl.² A61K 37/48, 35/14, 35/40

U.S. Cl. 424—94 **8 Claims**

1. A lyophilized product containing at least one biologically active component said product comprising a plurality of uniform sized porous spheres, said product being formed according to a process comprising the steps of:

a. forming a solution or colloidal suspension of a substance containing at least one biologically active material in a liquid which will freeze and which will also vaporize at a temperature which will not destroy the biological activity of said material;

b. spraying said solution or colloidal suspension onto the surface of a moving bath of boiling fluorocarbon refrigerant having a boiling temperature of below about −20°C. from a sufficient height above the surface of the moving bath to allow droplet formation before the solution strikes the surface of the moving bath, whereby said droplets are frozen; and

c. lyophilizing said droplets to form a plurality of uniformed sized porous spheres in which the volume of the sphere that is not occupied by pores contains a uniform distribution of said substance containing at least one biologically active material.

3,928,567

DIETARY SUPPLEMENT

Ariel A. Andersen, 1074 Ash Ave., Provo, Utah 84601, and Wayne B. Binns, 555 N. 300 East, Logan, Utah 84321

Filed Aug. 26, 1974, Ser. No. 500,304

Int. Cl.² A61K 33/14, 37/48

U.S. Cl. 424—94 **6 Claims**

1. A food dietary supplement composition consisting of Brewer's yeast and Potassium Chloride with said yeast being in the range of between 3 and 5 grams per day by weight and said Potassium Chloride being in the ranges of 0.3 to 1.0 gram by weight.

3,928,568

AMPLIFYING FACTOR OF CORTISONE INDUCTION AND PROCESS OF THE PRODUCTION THEREOF

Nobuhiko Katunuma, Tokushima, Japan, assignor to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 180,756, Sept. 15, 1971, abandoned. This application Sept. 24, 1973, Ser. No. 399,795

Claims priority, application Japan, Sept. 19, 1970, 45-81821

Int. Cl. A61k 21/00

U.S. Cl. 424—115 **8 Claims**

1. A process for the production of an amplifying factor of cortisone induction comprising the steps of:

cultivating a microorganism selected from the group consisting of *Escherichia coli* IAM 1016, *Escherichia coli* IAM 1253, *Erwinia aroideae* IAM 1068, *Edwinia carotovora* IAM 1024, *Serrati marcesens* ATC 21717, *Proteus mirabilis* ATCC 21718, *Proteus vulgaris* ATCC 21719, *Proteus morganii* ATCC 21720, and *Aerobacter aerogenes* IAM 1183 under normal growth conditions in an aqueous nutrient medium containing assimilatable sources of carbon, nitrogen and inorganic salts until a sufficient amount of an amplifying factor of cortison induction is obtained; extracting the cells from said broth with water or physiological saline solution to obtain an aqueous bacterial extract;

deproteinizing said extract;
absorbing said deproteinized extract on activated carbon at a pH of 3–7;
eluting the adsorbate with 50:50 alkali-acetone mixture to obtain an eluate;
neutralizing and concentrating the eluate;
subjecting the concentrate to column chromatography on dextran gel having a fractionation range of less than 700; and
collecting the fractions containing an amplifying factor of cortison induction.

3,928,569

TWO SUBSTANCES INHIBITING BETA-LACTAMASE AND THEIR PRODUCTION

Hamao Umezawa, Tokyo; Susumu Mitsuhashi, Musashino; Ryozo Utahara, Tokyo, and Tetsuo Ishikawa, Yokohama, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaki Kenkyu Kai, Tokyo, Japan

Filed Aug. 2, 1973, Ser. No. 385,057
Claims priority, application Japan, Aug. 9, 1972, 47-79086; May 21, 1973, 48-55721
Int. Cl.² A61K *35/00*
U.S. Cl. 424—117 **6 Claims**

1. Bacteriostatis MC696-SY2-A substance obtainable by the aerobic cultivation of *Streptomyces fulvoviridis* ATCC 21,954, said substance being heat labile and of an acidic nature; inhibiting β-lactamase activity; being soluble in water but substantially insoluble in butanol, ethyl acetate, ethyl ether, chloroform and benzene; being hydrolyzable by heating with concentrated HCl in a sealed tube for 16 hours at about 100°C. to NH_3, aspartic acid, glutamic acid, glycine and tyrosine; and being resistant to penicillinase at 37° C. for 3 hours under conditions which completely hydrolyze benzylpencillin; said MC696-SY2-A substance being further characterized by
a. having an infrared absorption spectrum pelleted in potassium bromide corresponding to that shown in FIG. 1 of the attached drawings;
b. the elemental analysis of an impure sample having a potency of 60,400 units/mg. being C 41.46%; H 4.83%; N 6.58%; O 29.16%; S 2.07%; and sodium-containing ash 27%;
c. having an ultraviolet absorption spectrum characterized by λ_{max} at about 270–272 nm ($E_{1\ cm}^{1\%}$ 115); and
d. giving a R_f value in thin layer chromatography on silica gel GF_{254} on 5 × 20 cm. glass plates of about 0.32–0.37 with n-propanol-0.1 M (pH 7) phosphate buffer (7:3) as the developing solvent.

3,928,570

AMPHOTERICIN COMPLEXES

Julio Metzger, East Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 203,037, Nov. 29, 1971, abandoned. This application Dec. 28, 1973, Ser. No. 429,226
Int. Cl.² A61K *35/00*
U.S. Cl. 424—118 **1 Claim**

1. A complex comprising amphotericin B and calcium ion in a ratio of about 1 mole of amphotericin B to about 0.25 mole of calcium ion, the complex being crystalline and substantially free of chlorine, and having a solubility in water of over 2 grams per liter at about pH 2, having an infra-red spectrum showing peaks at about 3.0, 3.45, 5.87, 6.4, 7.2, 8.5, 8.88, 9.07, 9.38, 9.65, 9.93, 11.35 and 11.80 microns, and having the following elemental analysis: C, 52.55%; H, 7.25%; N, 1.64%; O, 37.64%; and Ca, 0.92%.

3,928,571

RUMINANT FEED UTILIZATION IMPROVEMENT

Arthur P. Raun, New Palestine, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 315,721, Dec. 15, 1972, Pat. No. 3,816,618. This application Feb. 14, 1974, Ser. No. 442,541
Int. Cl.² A61K *35/70*
U.S. Cl. 424—118 **7 Claims**

1. A method of increasing the efficiency of feed utilization by ruminant animals having a developed rumen function which comprises the oral administration to such animals of a propionate-increasing amount of an antibiotic chosen from the group consisting of A477, A-4696, and their physiologically-acceptable esters and salts.

3,928,572

MYRIOCIN AND PROCESS OF PREPARATION

Dieter Kluepfel, Montreal; Alicia Kudelski, Westmount, and Jehan Bagli, Kirkland, all of Canada, assignors to Ayerst Mckenna and Harrison Ltd., Montreal, Canada

Filed Feb. 11, 1971, Ser. No. 114,445
Int. Cl.² A61K *35/00*
U.S. Cl. 424—122 **4 Claims**

1. Myriocin, a compound which
a. is effective in inhibiting the growth of pathogenic fungi;
b. is soluble in methanol, somewhat less soluble in ethanol, slightly soluble in t-amyl alcohol, and substantially insoluble in water, ether, chloroform, and ethyl acetate;
c. has the following elemental analysis: C, 62.99: H, 9.72; N, 3.37 percent;
d. has an empirical formula $C_{21}H_{39}O_6N$;
e. has an optical rotation $[\alpha]_D^{25} + 10.3°$ (c = 0.386 percent, methanol);
f. does not show any characteristic absorption in the ultraviolet region from 220–400 mμ;
g. has a characteristic infrared absorption spectrum as shown in FIG. 1 of the accompanying drawing;
h. has a melting point of 183° to 184°C; and
i. shows a minimum inhibitory concentration against Candida albicans of 4 mcg/ml.

3,928,573

COMPOSITIONS OF MATTER

Theodoor Van Eek, Amerongen, and Robert Beukers, Nootdorp, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Filed Feb. 8, 1974, Ser. No. 440,724
Claims priority, application United Kingdom, Feb. 9, 1973, 6484/73
Int. Cl.² A61K *27/00*
U.S. Cl. 424—122 **11 Claims**

1. A mixture of compounds capable of promoting the growth of fowl comprising (a) mocimycin or a growth-promoting acceptable salt and (b) bacitracin or its zinc complex thereof, the ratio of the compounds (a) and (b) is about 1:4 to about 1:10.

3,928,574

METHOD AND COMPOSITION FOR TREATING DIARRHEA IN MAMMALS

Robert W. Phillips, Fort Collins, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.

Filed Mar. 27, 1973, Ser. No. 345,274
Int. Cl.² A61K *33/14. 33/10, 31/70*
U.S. Cl. 424—153 **17 Claims**

1. A parenteral composition for use as supportive therapy in a treatment for diarrhea in bovine animals that includes the replacement of lost sodium and chloride ions comprising: a buffered basic aqueous solution that is either isotonic or hypertonic with respect to normal blood, between approximately three and twelve times the potassium ion concentration present in normal blood, said blood normally having a potassium ion concentration of about 5 meq./L., and an amount of glucose effective as a source of energy and effective to enhance the movement of potassium into the cells thereby replacing lost potassium.

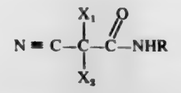
3,928,575

METHOD AND COMPOSITION FOR RAPID DISINFECTION

Clarence L. Moyle, Clare, and Paul A. Wolf, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 118,520, Feb. 24, 1971, abandoned. This application Jan. 30, 1974, Ser. No. 438,074
Int. Cl.² A61K *33/14*; A01N *9/02*
U.S. Cl. 424—153 **12 Claims**

1. A method of enhancing the antibacterial efficacy of a halocyanoacetamide in an aqueous environment, said halocyanoacetamide corresponding to the formula



wherein X_1 represents chlorine or bromine; X_2 represents chlorine, bromine or hydrogen and R represents hydrogen or methyl which comprises adding thereto a source of halide ion selected from the group consisting of water-soluble alkali metal bromides, alkali metal iodides, alkaline earth metal bromides, alkaline earth metal iodides, ammonium bromide and ammonium iodide in an amount of from about 0.05 mole of said halide ion per mole of halocyanoacetamide up to about 99.999 percent by weight of halide ion.

3,928,576

METHOD OF PREVENTION AND TREATMENT FOR THE KETOSIS AND OSTEOMALACIA OF CATTLE

Shigeru Yoshida, 464 Kami Iwanari, Miyuki-cho, Fukuyama, Hiroshima, Japan

Filed June 5, 1973, Ser. No. 367,162
Claims priority, application Japan, June 6, 1972, 47-55579
Int. Cl.² A61K *33/06, 33/14*
U.S. Cl. 424—154 **3 Claims**

1. A method for the prevention and treatment of ketosis and osteomalacia of cattle which consists in the administration to cattle by venous injection or oral administration of magnesium salt selected from the group consisting of magnesium sulfate, magnesium chloride and basic magnesium carbonate wherein said salt is administered in an amount corresponding to between about 1 to 4 g. of Mg per head of cattle when the administration is by venous injection and in an amount between about 10 to 20 g. of Mg per head of cattle when the administration is orally.

3,928,577

PREPARATION FOR PRESERVING VEGETABLE FOOD PRODUCTS PARTICULARLY FRUITS

Alexandra Ivanovna Kochurova, Universitetsky prospekt, 23, korp. 2, kv. 72, Moscow; Zoya Vasilievna Korobkina, Gospitalnaya ul., 16, Hodpiyslnsys ul., 16, and Tatiana Nikolaevna Mikhailova, Velozavodskaya ul., 3/2, kv. 30, Moscow, all of U.S.S.R.

Continuation of Ser. No. 26,422, April 7, 1970, abandoned, which is a continuation of Ser. No. 619,208, Feb. 28, 1967, abandoned. This application June 22, 1971, Ser. No. 155,633
Int. Cl.² A01N *13/00*
U.S. Cl. 424—164 **12 Claims**

1. A preparation in the form of tablets for preserving vegetable products comprising 90 to 97 weight percent of potassium metabisulfite, 1 to 4 weight percent of a component selected from the group consisting of starch and gelatin, 1 to 3 weight percent of a component selected from the group consisting of magnesium stearate and calcium stearate, and 1 to 3 weight percent of stearic acid.

3,928,578

COMPOSITION FOR CONTROL OF WHITE MUSCLE DISEASE

Henry C. Burns, and George C. McConnell, both of Piedmont, Calif., assignors to Chromalloy Pharmaceutical, Inc., Wilmington, Del.

Continuation of Ser. No. 639,923, April 28, 1967, Pat. No. 3,829,566, which is a continuation-in-part of Ser. No. 352,681, March 17, 1964, abandoned, which is a continuation-in-part of Ser. Nos. 300,684, Aug. 7, 1963, abandoned, and Ser. No. 96,733, March 20, 1961, abandoned. This application Dec. 5, 1973, Ser. No. 421,841
Int. Cl.² A61K *31/335, 33/04*
U.S. Cl. 424—164 **9 Claims**

1. A product useful in controlling white muscle disease syndrome in mammals, said product consisting essentially of a synergistic mixture of vitamin E and sodium selenite, the weight ratio of vitamin E to selenium being in the range 50:1 to 200:1, said mixture being in a pharmaceutically acceptable carrier in a medically effective amount and said product having a maximum selenium content of about 1.2% by weight.

3,928,579

PROCESS FOR THE PURIFICATION OF COAL TAR

James Edward McShane, San Antonio, Tex., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 25, 1974, Ser. No. 526,649
Int. Cl.² A61K *31/00*; A61L *13/00*
U.S. Cl. 424—167 **1 Claim**

1. A process for the purification of coal tar which comprises mixing coal tar with a non-polar volatile solvent system having a kauri-butanol value of less than 75 and a boiling point no higher than 80°C. comprising a fluorocarbon of the group consisting of trichlorofluoromethane, dichlorodifluoromethane, 1,2-dichloro-1,1,2,2-tetrafluoroethane, 1,1,2-trichloro-1,2,2-trifluoroethane and difluorochloromethane, and mixtures thereof with n-butane, isobutane, propane, pentane and n-hexane, separating the supernatant liquid and evaporating the solvent to recover the desired coal tar fraction.

3,928,580

INJECTABLE GLYCOPROTEINS CONTAINING TERMINAL "C" ENDS OF HUMAN IMMUNOGLOBULINS

Michel J. Fontaine, 448, rue Paradis, 13008 Marseilles, France

Filed Mar. 19, 1974, Ser. No. 453,019
Claims priority, application France, Mar. 22, 1973, 73.11455
Int. Cl.² A61K *37/00*
U.S. Cl. 424—177 **12 Claims**

1. A pharmaceutical composition having anti-allergic, anti-inflammatory, and immunodepressant activity comprising a sterile injectable solution of from 1 mg/ml to 20 mg/ml of glycoproteins consisting essentially of the terminal C ends of the heavy chains of human immunoglobulins D.

3,928,581
CERTAIN POLYMER-IRON COMPLEXES FOR TREATMENT OF IRON DEFICIENCY

Alf-Goran Dahlberg, Nykvarn; Karl Gustav Hogberg, Sodertalje; Sven Lindvall, Sodertalje, and Thore Oskar Verner Rydh, Sodertalje, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

Filed Mar. 22, 1973, Ser. No. 343,690

Claims priority, application South Africa, Sept. 13, 1972, 72/6255

Int. Cl.² A61K *31/70*

U.S. Cl. 424—180 **19 Claims**

1. A composition for treatment of iron deficiency by parenteral administration comprising an aqueous solution of a complex of ferric iron, said complex containing ferric iron which is bound to a polymer wherein said complex is prepared by

A. reacting in an aqueous solution at a temperature between about 20°C and the boiling point of the reaction mixture

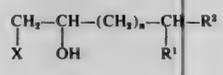
1. about 0.1 to 1.0 moles of a saccharide (per mole of component (3) below) which is selected from the group consisting of

a. sucrose,

b. trehalose, and

c. raffinose;

2. about 0.05 to 5 moles of a polymerization agent (per mole of component (3) below) of the formula



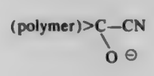
wherein *n* is an integer selected from the group consisting of 0, 1, 2, 3 and 4; X is selected from the group consisting of Cl, Br, and I; R^1 is selected from the group consisting of OH, Cl, Br, and I; and R^2 is selected from the group consisting of H and CH_2X with the proviso that R^2 is CH_2X only when R^1 is OH, wherein X has the meaning specified above; the epoxides or the diepoxides derivable therefrom; and

3. a hexitol selected from the group consisting of sorbitol, hydroxypropyl sorbitol, mannitol, talitol, iditol, galactitol, and allitol to form a first intermediate of the formula



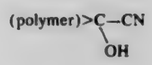
I;

B. reacting said first intermediate product with a cyanide selected from the group consisting of KCN, NaCN, $Ca(CN)_2$, HCN, and NH_4CN in an amount at least equimolar with the amount of carbonyl groups on the first intermediate product to form a second intermediate product of the formula



II;

C. acidifying said second intermediate product to form a third intermediate product of the formula



III;

D. hydrolyzing said third intermediate product to form a water swellable polymer of the formula

IV;

and

E. reacting said water swellable polymer with a ferric compound in solution under alkaline conditions to form said complex of ferric iron.

3,928,582
N^1-OXIDES OF ADENOSINE-5'-CARBOXYLATES FOR TREATING ANGINA

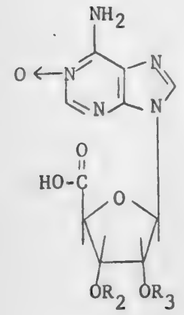
Raj Nandan Prasad, Pierrefonds, Canada, assignor to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 294,741, Oct. 3, 1972, Pat. No. 3,830,783. This application May 21, 1974, Ser. No. 472,030

Int. Cl.² A61K *31/70*

U.S. Cl. 424—180 **3 Claims**

1. A method of increasing coronary sinus partial pressure of oxygen in an angina pectoris patient in need of such treatment comprising administering to said patient a dosage of from 0.025 to 30 mg./kg. of body weight daily of a compound of the formula



wherein R_1 is loweralkyl, lowerhydroxyalkyl or lowerhaloalkyl, and R_2 and R_3 each are hydrogen, acetyl, propionyl, or butyryl, or when taken together form an isopropylidene or benzylidene moiety; or a pharmaceutically acceptable acid addition salt thereof.

3,928,583
METHOD FOR REDUCING SIDE EFFECTS OF AMINOGLYCOSIDE ANTIBIOTICS

Kouji Furuno; Hideki Nakano; Syuzo Matsubara, and Akitoshi Shioya, all of Tokyo, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1974, Ser. No. 495,498

Claims priority, application Japan, Aug. 31, 1973, 48-97344

Int. Cl.² A01N *9/00, 9/28*

U.S. Cl. 424—180 **9 Claims**

1. A method of reducing the renal toxicity and 8th nerve toxicity to mammals or poultry of aminoglycoside antibiotic comprising administering said aminoglycoside antibiotic in combination with the oral administration of 2,5-di-O-acetyl-D-glucosaccharo-1,4: 6,3-dilactone to said mammals or poultry for treating bacterial infection in an amount of 50–1000% by weight based on the free form of said antibiotic.

3,928,584
EXTRACTS FROM ACTIVE TREE SAPS FOR TREATING P388 MOUSE LEUKEMIA

Monie S. Hudson, San Jose, Costa Rica, assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Continuation-in-part of Ser. No. 837,861, June 30, 1969, abandoned. This application Apr. 5, 1972, Ser. No. 241,409

Int. Cl.² A61K *35/78*

U.S. Cl. 424—195 **8 Claims**

1. A method of treating P388 leukemia in mice which consists in injecting in said mouse an effective amount for treating P388 mouse leukemia of a tree sap which has been extracted with water and subsequently dried and which tree is selected from the group consisting of:

Quercus stellata,

Halesia carolina var. monticola and

Salix longipes.

3,928,585
TREATMENT OF HYPOAZOTEMIC AND ATHEROMATOUS CONDITIONS USING LESPECAPITOSIDE AND PROCESS FOR OBTAINING SAME

Claude Marie Henri Cervelle, 165 Boulevard Haussmann, Paris, France

Filed Apr. 28, 1967, Ser. No. 634,488

Claims priority, application France, May 5, 1966, 66.60476; July 28, 1966, 66.71310The portion of the term of this patent subsequent to Dec. 27, 1983, has been disclaimed.

Int. Cl.² A61K *35/78*

U.S. Cl. 424—195 **9 Claims**

1. A process for the production of lespecapitoside which comprises:

i. drying leaves of *Lespedeza capitata* harvested in the months of June, July, or August;

ii. powdering said leaves;

iii. extracting the powder obtained in (ii) twice with methanol;

iv. evaporating the solution obtained in (iii) to dryness in vacuo;

v. taking up the residue in (iv) in boiling water;

vi. extracting the aqueous solution obtained in (v) with ethyl acetate;

vii. evaporating in vacuo the solution in ethyl acetate obtained in (vi);

viii. taking up the residue obtained in (vii) in boiling 30° alcohol;

ix. and cooling the alcoholic solution obtained in (viii) to obtain crystals.

3,928,586
O,O-DIETHYL-0-1-(2,4-DICHLOROPHENYL)-2,2-DIBROMOVINYL PHOSPHATE USED TO CONTROL THE COLORADO POTATO BEETLE

Bohdan Śledzinski; Józef Kroczyński, both of Warsaw; Andrzej Zwierzak, Lodz; Ludwika Cieślak, and Aleksander Majda, both of Warsaw, all of Poland, assignors to Instytat Przemyslu Organicznego, Warsaw, Poland

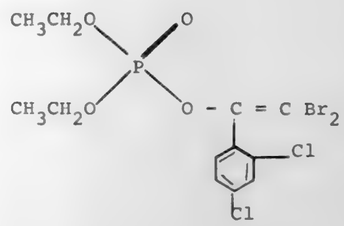
Filed July 27, 1973, Ser. No. 383,459

Claims priority, application Poland, Aug. 1, 1972, 157044; Nov. 21, 1972, 158980

Int. Cl.² A01N *9/36*

U.S. Cl. 424—219 **1 Claim**

1. A method of killing Colorado potato beetles, comprising contacting them with an insecticidal amount of a compound having the formula



3,928,587
METHOD OF CONDITIONING VASCULAR SYSTEMS BY ADMINISTERING 3,5 DICHLOROASPIRIN AND METHOD OF EVALUATING PHARMACEUTICAL COMPOUNDS

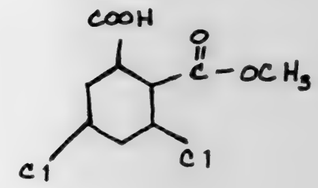
Philip Nicholas Sawyer, 606 Third St., Brooklyn, N.Y. 11215

Filed Aug. 16, 1974, Ser. No. 497,851

Int. Cl.² A61K *31/60*

U.S. Cl. 424—230 **4 Claims**

1. A method for rendering more negative the internal surface of a vascular system in order to decrease thrombotic tendency, said method comprising administering 3,5 dichloroaspirin in the order of magnitude of about 5–15 mg./kg. of body weight daily to a host requiring such treatment, the 3,5 dichloroaspirin having the structure



3,928,588
METHOD OF REDUCING THE UNDESIRABLE GASTROINTESTINAL EFFECTS OF PROSTAGLANDIN SYNTHETASE INHIBITORS

André Robert, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 22, 1974, Ser. No. 446,197

Int. Cl.² A61K *31/61*

U.S. Cl. 424—234 **8 Claims**

1. A method of reducing undesirable gastrointestinal effects caused by an anti-inflammatory prostaglandin synthetase inhibitor in a human suffering therefrom, which comprises the concomitant systemic administration with the anti-inflammatory prostaglandin synthetase inhibitor of a prostaglandin of the PGFβ -type, or an alkyl ester containing from one to 4 carbon atoms, inclusive, or a pharmaceutically acceptable salt thereof in an amount effective to reduce the undesirable gastrointestinal effects of the anti-inflammatory prostaglandin synthetase inhibitor.

3,928,589
NOVEL METHOD AND COMPOSITIONS

Walter Friis, Jr., Bangor, and Allan D. Rudzik, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 386,564, Aug. 8, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 518,451
Int. Cl.² A61K *31/33, 31/195*
U.S. Cl. 424—244 2 Claims

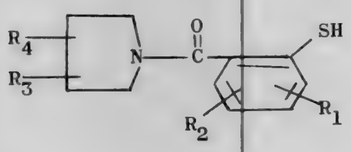
1. A method of treatment of paralysis agitans comprising administering from about 250 mg. to about 500 mg. of a compound selected from the group consisting of 3,4-dihydroxyphenyl-l-alanine, a hydrate thereof, or a pharmaceutically acceptable acid addition salt thereof and the co-administering of a potentiating dose of 7-chloro-1,3-dihydro-1-methyl-5-phenyl-2H-1,4-benzodiazepine-2-one in an amount of from about 1 mg. to about 5 mg. to a human afflicted with paralysis agitans.

3,928,590
ORTHO-MERCAPTOAROYLAMIDES AND SALTS THEREOF AS HYPOGLYCEMIC AGENTS

Milton Wolf, West Chester; John H. Sellstedt, Pottstown, and Richard L. Fenichel, Wyncote, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 232,250, March 6, 1972, Pat. No. 3,853,876. This application June 6, 1974, Ser. No. 477,121
Int. Cl.² A61K *27/00*
U.S. Cl. 424—245 10 Claims

1. A method for reducing the blood sugar level in a hyperglycemic, warm-blooded animal which comprises administering, orally or intramuscularly, in an amount sufficient to reduce said blood sugar level, a compound of the formula



in which:

R_1 and R_2 are members independently selected from the group consisting of —H, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, —F, —Cl, —Br, —I, dialkylamino in which each alkyl group has from 1 to 6 carbon atoms, —OH, —SH, —NO_2, and alkylthio having from 1 to 6 carbon atoms;

R_3 and R_4 are members independently selected from the group consisting of —H, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, —F, —Cl, —Br, —I and dialkylamino in which each alkyl group has from 1 to 6 carbon atoms;

or a pharmaceutically acceptable salt thereof.

3,928,591
7-(D-α-AMINO-1,4-CYCLOHEXADIEN-1-YLACETAMIDO)DESACETOXYCEPHALOSPORANIC ACID DIHYDRATE COMPOSITIONS

Friedrich Dürsch, Hopewell, and Theodore Michael Siewarga, Parlin, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 258,767, June 1, 1972, Pat. No. 3,819,620. This application Jan. 23, 1974, Ser. No. 435,913
Int. Cl.² A61K *31/51*
U.S. Cl. 424—246 4 Claims

3. A method for treating microbial infections in mammals which comprises administering orally or by injection an antimicrobially effective amount of said composition of claim 1.

3,928,592
ANTIBIOTIC PHARMACEUTICAL COMPOSITIONS

James M. Greene, Indianapolis, and Joseph M. Indelicato, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 21, 1974, Ser. No. 444,622
Int. Cl.² A61K *31/54*
U.S. Cl. 424—246 2 Claims

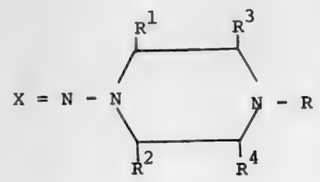
1. An antibiotic pharmaceutical composition in dosage unit form comprising a therapeutically effective amount of between about 50 mg. and 1000 mg. per dosage unit of sodium 7-(D-2-formyloxy-2-phenylacetamido)-3-(1-methyl-1H-tetrazole-5-ylthiomethyl)-3-cephem-4-carboxylate in admixture with between about 5 and 6 percent by weight of sodium carbonate or potassium carbonate.

3,928,593
ANTIVIRAL COMPOSITIONS CONTAINING PIPERAZINE DERIVATIVES AND METHOD OF USE

Giancarlo Lancini, Pavia, Italy, and Lise Thiry, Brussels, Belgium, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Filed Apr. 22, 1971, Ser. No. 136,558
Claims priority, application Italy, June 1, 1970, 25380/70
Int. Cl.² A61K *31/495*
U.S. Cl. 424—250 7 Claims

1. A method for inhibiting the replication of an animal virus selected from the group consisting of vaccinia and herpes simplex viruses which comprises administering to an animal host having cells susceptible to invasion by said virus an antiviral effective amount of a compound corresponding to the formula



wherein R represents hydrogen, lower alkyl, 2 to 4 carbon alkanoyl or phenyl-lower-alkyl; R^1, R^2, R^3 and R^4 each represents hydrogen or lower alkyl; X is selected from the group consisting of H_2, benzylidene, and (H, 2 to 4 carbon alkanoyl); and a pharmaceutically acceptable acid addition salt thereof.

3,928,594
METHOD OF ALLEVIATING SYMPTOMS OF MULTIPLE SCLEROISIS

Albert W. Cook, Centre Island Road, Centre Island, Oyster Bay, N.Y. 11771

Filed June 24, 1974, Ser. No. 482,061
Int. Cl.² A61K *31/44*
U.S. Cl. 424—263 2 Claims

1. Method of alleviating one or more of the symptoms of multiple sclerosis comprising administering to a person suffering therefrom a dose of 2-formyl-1-methylpyridium oxime or a physiologically acceptable salt thereof effective to alleviate said symptoms of multiple sclerosis.

3,928,595
DIPENICILLIN AND DICEPHALOSPORIN ESTER ANTIBIOTICS

Sven Erik Dahlén; Bertil Ake Ekström, and Berndt Olof Harald Sjöberg, all of Sodertalje, Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

Filed Feb. 27, 1973, Ser. No. 336,194
Claims priority, application United Kingdom, Mar. 13, 1972, 11688/72
Int. Cl.² A61K *31/43*
U.S. Cl. 424—271 2 Claims

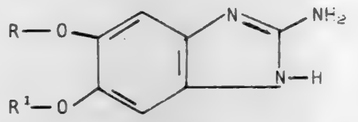
1. A method for the treatment of infection caused by bacterial organisms comprising administering to a man or an animal suffering from said bacterial infection an anti-bacterially effective amount of di[6-(D-α-aminophenylacetamido)-penicillanyl-methyl]-carbonate or a pharmaceutically acceptable salt thereof.

3,928,596
PHARMACEUTICAL COMPOSITIONS OF 5,6-DIALKOXY-2-AMINOBENZIMIDAZOLES AND METHOD FOR TREATING HYPERTENSION

Louis L. Skaletzky, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

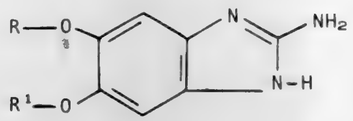
Continuation of Ser. No. 361,277, May 17, 1973, abandoned. This application May 28, 1974, Ser. No. 473,683
Int. Cl.² A61K *31/415*
U.S. Cl. 424—273 5 Claims

1. A pharmaceutical dosage unit form adapted to systemic administration to obtain antihypertensive effects consisting essentially of an effective amount for said effects of a compound of the formula:



or a pharmaceutically acceptable acid addition salt thereof, wherein R and R^1 are each lower alkyl; in combination with pharmaceutical means selected from the group consisting of carriers, vehicles, diluents, excipients, preservatives, and isotonic agents which adapt the compound for systemic administration.

3. A method of obtaining antihypertensive effects in a mammal which consists essentially of administering systemically to said mammal a pharmaceutical dosage unit form supplying an effective amount for antihypertensive effect of a compound of formula:



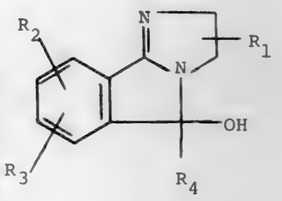
or a pharmaceutically acceptable acid addition salt thereof wherein R and R^1 are each lower alkyl.

3,928,597
HYPERGLYCEMIA THERAPY

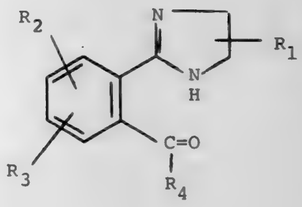
Harry Rosen, Drexel Hill, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Aug. 15, 1974, Ser. No. 497,806
Int. Cl.² A61K *31/415*
U.S. Cl. 424—273 1 Claim

1. The method of treating hyperglycemia in a warm-blooded animal suffering from hyperglycemia which comprises orally or parenterally administering to said animal an effective amount for treating hyperglycemia of a compound of the following formulae



and



HA

wherein:

R_1 is lower alkyl;

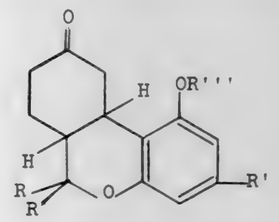
R_2 is hydrogen; R_3 is hydrogen; R_4 is selected from the group consisting of phenyl, monohalophenyl, and trifluoromethylphenyl; and HA is a pharmaceutically acceptable acid.

3,928,598
HEXAHYDRO-DIBENZO[b,d]PYRAN-9-ONES AS AN ANTI-ANXIETY DRUG

Robert A. Archer, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 5, 1973, Ser. No. 413,009
Int. Cl.² A61K *31/35*
U.S. Cl. 424—283 11 Claims

1. A process for treating mammals suffering for anxiety which comprises administering to a mammal in need of such treatment a dose of a compound represented by the formula



wherein R′ is either C_7–C_{10} normal alkyl or is the group



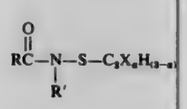
wherein R'' is C_3–C_7 alkyl and R''' is H or methyl, wherein both R groups are identical and are H or methyl and wherein R'''' is H or C_1–C_4 alkanoyl, in an amount effective to treat anxiety.

3,928,599
METHOD FOR TREATING RHEUMATOID ARTHRITIS
Thomas James Sullivan, 25 Old Gate Road, Thrussington, Leicestershire, England
Filed Oct. 18, 1974, Ser. No. 515,919
Claims priority, application United Kingdom, Oct. 23, 1973, 49197/73
Int. Cl.² A61K *31/35*
U.S. Cl. 424—283 **7 Claims**

1. A method for alleviating the symptoms of rheumatoid arthritis in an animal which comprises administering an effective quantity of 6,8-di-t-butyl-4-oxo-4H-1-benzopyran-2-carboxylic acid, or a pharmaceutically acceptable salt thereof, to an animal suffering from rheumatoid arthritis.

3,928,600
N-POLYHALOVINYLTHIOCARBOXAMIDES AS NEMATOCIDES
Melancthon S. Brown, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Division of Ser. No. 253,642, May 15, 1972, Pat. No. 3,771,990, which is a division of Ser. No. 33,879, April 30, 1970, Pat. No. 3,679,673, which is a continuation-in-part of Ser. Nos. 810,368, March 25, 1969, abandoned, and Ser. No. 748,642, June 30, 1968, abandoned, each is a continuation-in-part of Ser. No. 704,555, Feb. 12, 1968, abandoned, said Ser. No. 810,386, is a continuation-in-part of Ser. No. 748,642,. This application Aug. 6, 1973, Ser. No. 386,269
Int. Cl.² A01N *7/04*
U.S. Cl. 424—298 **14 Claims**

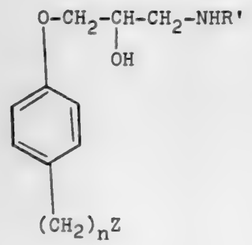
1. A method for controlling nematodes which comprises contacting said nematodes with a nematocidally effective amount of an N-polyhalovinylthiocarboxamide of the formula



wherein R is alkyl of one to 10 carbon atoms, haloalkyl of one to 10 carbon atoms and one to three halogen atoms of atomic number 17 to 35 or cycloalkyl of three to 10 carbon atoms, R' is hydrogen or alkyl of one to four carbon atoms, X is halogen of atomic number 17 to 35 and *a* is 2 or 3.

3,928,601
PHENOXY-HYDROXYPROPYLAMINES, METHOD AND PHARMACEUTICAL PREPARATIONS FOR TREATING CARDIOVASCULAR DISEASES
Arne Elof Brandstrom; Per Arvid Emil Carlsson, both of Goteborg; Stig Ake Ingemar Carlsson, Molnlycke; Hans Rudolf Corrodi, Sodertalje; Lars Ek, Onsala, and Bengt Arne-Hjalmar Åblad, Goteborg, all of Sweden, assignors to Aktiebolaget Hassle, Goteborg, Sweden
Division of Ser. No. 342,749, March 19, 1973, Pat. No. 3,873,600, Continuation-in-part of Ser. No. 115,851, Feb. 16, 1971, abandoned. This application Jan. 15, 1974, Ser. No. 433,450
Int. Cl.² A61K *31/27*
U.S. Cl. 424—300 **18 Claims**

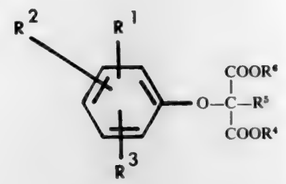
16. A method for treating cardiovascular diseases in animals including humans which comprises administering a therapeutically effective dose of a para-substituted phenoxyhydroxypropylamine compound selected from the group consisting essentially of a compound having the formula



and a pharmaceutically acceptable, non-toxic acid addition salt thereof, wherein R' is an isopropyl or tertiary-butyl radical; Z is —NHCOOR'', R'' being a straight or branched alkyl radical having 1 to 3 carbon atoms: and *n* is 1, 2 or 3, in association with a pharmaceutically acceptable carrier.

3,928,602
SUBSTITUTED PHENOXYMALONIC ACIDS, ESTERS THEREOF AND HYPOLIPAEMIC AGENTS CONTAINING THE SAME FOR LOWERING LIPID LEVELS
Dag Vilhelm Barthold, Solna; Johan Richard Dahlbom, Sodertalje; Harry Olof Magnusson, Bandhagen, and Berndt Olof Harald Sjöberg, Sodertalje, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden
Filed Oct. 16, 1973, Ser. No. 406,920
Claims priority, application Sweden, Nov. 1, 1972, 14117/72
Int. Cl.² A61K *31/19*, *31/235*, *31/255*
U.S. Cl. 424—308 **26 Claims**

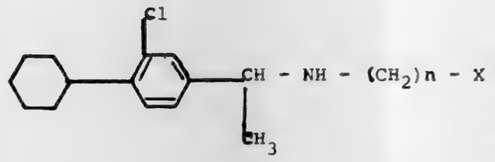
1. A method for lowering serum lipid concentration in animals, including man, which comprises administering to an animal in need of such treatment, as the active ingredient, a therapeutically effective amount of a compound of the formula



or a therapeutically acceptable salt thereof, wherein R^1 is selected from the group consisting of halogen, alkyl groups containing from 1 to 4 carbon atoms, alkoxy groups containing 1 to 4 carbon atoms, and trifluoromethyl; R^2 and R^3 are the same or different and are selected from the group consisting of hydrogen, halogen, alkyl groups containing from 1 to 4 carbon atoms, alkoxy groups containing from 1 to 4 carbon atoms, and trifluoromethyl; R^4 and R^6 are the same or different and are selected from the group consisting of hydrogen and alkyl containing from 1 to 4 carbon atoms; and R^5 is an alkyl group containing from 1 to 4 carbon atoms, in association with a pharmaceutically acceptable carrier.

3,928,603
NEW DERIVATIVES OF ALPHA-METHYL BENZYLAMINE IN TREATING INFLAMMATION
Michele Moreau; Isaac Karadavidoff, both of Paris, and Claude Risse, Saint-Michel-sur-Orge, all of France, assignors to Fuveau S.A., Saint-Jean-de-livet, France
Division of Ser. No. 193,175, Oct. 27, 1971. This application May 13, 1974, Ser. No. 469,608
Claims priority, application France, Oct. 28, 1970, 70.38818; July 15, 1971, 71.25902
Int. Cl.² A61K *31/135*
U.S. Cl. 424—330 **1 Claim**

1. A method of treating inflamed conditions, and in particular rheumatic disorders, in a patient comprising administering to the patient a dose of 100 to 1000 mg every 24 hours of a compound according to the formula:



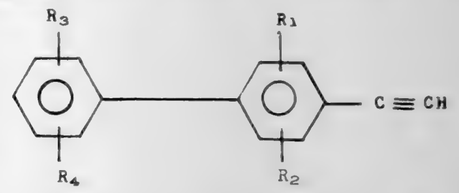
in which X is hydrogen, halogen or an amine group of the formula



in which R_1 and R_2 are each hydrogen or a lower alkyl group, n is equal to 1, 2 or 3 and may equal 0 when X is hydrogen, or an addition salt thereof with a pharmaceutically acceptable acid.

3,928,604
ARYLACETYLENE COMPOUNDS AS ANTITHROMBOTIC AGENTS
William B. Lacefield, and Winston S. Marshall, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed July 5, 1974, Ser. No. 485,877
Int. Cl.² A61K *31/03*, *31/38*
U.S. Cl. 424—353 **9 Claims**

1. A method of treating vascular thrombosis in warm-blooded animals which comprises administering to a warm-blooded animal in need of such treatment an amount effective for treating vascular thrombosis of an arylacetylene of the formula,



wherein R_1, R_2, R_3, or R_4 is halo and the remainder of R_1, R_2, R_3 and R_4 independently are hydrogen or halo.

3,928,605
PHENYLANTIMONY BIS(2-PYRIDINETHIOL-1-OXIDE IN ANTIBACTERIAL AND ANTIFUNGAL COMPOSITIONS
John Downing Curry, Oxford, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Division of Ser. No. 293,633, Sept. 29, 1972, Pat. No. 3,833,565. This application June 27, 1974, Ser. No. 483,596
Int. Cl.² A61K *31/44*
U.S. Cl. 424—245 **8 Claims**

7. The process of controlling bacteria, yeast, and fungal species, comprising the step of contacting said bacteria, yeast and fungal species with an effective amount of phenylantimony bis(2-pyridinethiol 1-oxide).

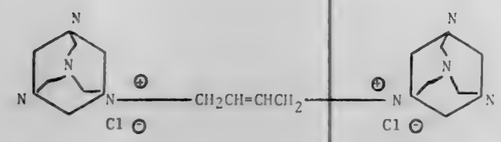
3,928,606
FUNGICIDAL COMPOSITION CONTAINING DIISOPROPYL 3-NITROPHTHALATE AND N-TRIDECYL-2,6-DIMETHYLMORPHOLINE
Ernst-Heinrich Pommer, Limburgerhof; Rudolf Polster, Frankenthal; Friedrich Loecher, and Manfred Hampel, both of Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Filed Nov. 14, 1974, Ser. No. 523,666
Claims Priority, application Germany, Jan. 1, 1953, 2365177
Int. Cl.² A01N *9/20*, *9/22*
U.S. Cl. 424—248 **1 Claim**

1. A fungicidal composition comprising a mixture of diisopropyl 3-nitroisophthalate and N-tridecyl-2,6-dimethylmorpholine in a ratio of from about 1:1 to about 4:1.

3,928,607
ANTIBACTERIAL COMPOSITION AND METHOD EMPLOYING A CERTAIN HEXAMETHYLENETETRAMINE ADDUCT
Jerome S. Luloff, Bloomington, Minn., and Albert L. Eilender, Flanders, N.J., assignors to Cosan Chemical Corporation, Clifton, N.J.
Filed Oct. 5, 1973, Ser. No. 403,819
Int. Cl.² A01N *9/22*
U.S. Cl. 424—249 **2 Claims**

1. An aqueous composition normally susceptible to deterioration by bacteria containing the two-to-one quaternary ammonium adduct of hexamethylenetetramine and 3,4-

dichlorobutene-1 in an amount effective to exert antibacterial activity, said adduct having the structural formula:



3,928,608
CERTAIN QUINOXALINE N-OXIDES USED TO COMBAT FUNGI

John Michael Cox, Wokingham, and Raymond Alexander Burrell, Yateley, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 26, 1973, Ser. No. 336,045

Claims priority, application United Kingdom, Mar. 14, 1972, 11766/72; Oct. 23, 1972, 48631/72

Int. Cl.² A01N 9/22

U.S. Cl. 424—250 **2 Claims**

1. A method of combating fungi which comprises contacting said fungi or the loci thereof with a fungicidally effective amount of a quinoxaline derivative having the formula:

or a salt thereof wherein R is selected from the group consisting of SO_2X, SOX and SX where X contains from 1 to 7 carbon atoms and is selected from the group consisting of unsubstituted alkyl, alkenyl, alkynyl, aryl, alkaryl, and aralkyl; or alkyl containing 1–7 carbon atoms substituted with halogen, carboxy, ethoxy carbonyl or thiocyano.

3,928,609
NON-ALCOHOLIC THEOPHYLLINE PRODUCT

George D. Behrakis, Lowell, Mass., assignor to Dooner Laboratories, Inc., Haverhill, Mass.

Filed Apr. 5, 1973, Ser. No. 348,076

Int. Cl.² A61K 31/52

U.S. Cl. 424—253 **1 Claim**

1. A non-alcoholic composition for the treatment of bronchiospasm, cardiac asthma and as a diuretic consisting essentially of an effective amount of anhydrous theophyllin and a pharmaceutically acceptable vehicle consisting essentially of 20% propylene glycol and 10% glycerine and water.

3,928,610
BENZENE SULFONYL-UREA PREPARATION FOR TREATMENT OF DIABETES MELLITUS AND A METHOD FOR TREATMENT

Rudy Weyer, Frankfurt am Main; Walter Aumuller, Kelkheim, Taunus; Helmut Weber, Frankfurt am Main; Roland Schweitzer, Falkenstein, Taunus, and Ruth Heerdt, Mannheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

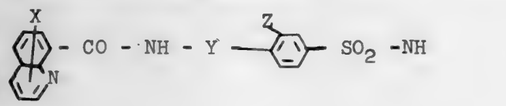
Division of Ser. No. 149,745, June 3, 1971, Pat. No. 3,751,418. This application Jan. 18, 1973, Ser. No. 324,834

Claims priority, application Germany, June 6, 1970, 2627950

Int. Cl. A61k 27/00

U.S. Cl. 424—258 **3 Claims**

1. A pharmaceutical preparation for oral administeration and lowering the blood sugar level in the treatment of diabetes mellitus, which comprise about 0.5 to 100 mg per unit dose of a benzenesulfonylurea of the formula



- CO -NH - R

in which:

X represents a hydrogen, chlorine or bromine atom, a methoxy or methyl group,

Y represents $-CH(CH_3)-CH_2-$, $-CH_2-CH(CH_3)-$ or $-CH_2-CH_2-$,

R is

a. alkyl having 3 to 6 carbon atoms

b. cycloalkyl having 5 to 8 ring carbon atoms, which is optionally substituted by 1 or 2 alkyl groups of up to 3 carbon atoms in total or by a chlorine atom,

c. cycloalkenyl having 5 to 8 ring carbon atoms, which is optionally substituted by 1 or 2 alkyl groups of up to 3 carbon atoms in total,

d. bicycloalkyl or bicycloalkenyl having 7 or 8 carbon atoms selected from the group consisting of endoalkylenecyclohexyl, endoalkylene-cyclohexenyl, bicyclo (2.2.1) hept-2ene-7-yl, 2,6-endomethylene cycloheptyl, 7-norcananyl or spiro (2,4)-heptyl,

e. nortricyclyl,

f. spiro[2,4]-heptyl,

Z is hydrogen or an alkylene radical having 1 or 2 carbon atoms, which forms with Y a 5- membered ring, and salts thereof of a pharmaceutically acceptable base and a pharmaceutically suitable carrier.

3,928,611
TRIS- AND TETRAKIS-(1,2,3,4-TETRAHYDROISOQUINOLINE) AND -[3,4-DIHYDROISOQUINOLINE] COMPOUNDS IN INHIBITING AND DISSOLVING BLOOD CLOTS

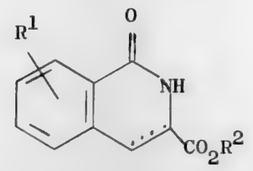
Parthasarathi Rajagapalan, Westbury, and Irwin J. Pachter, Fayetteville, both of N.Y., assignors to Endo Laboratories, Garden City, N.Y.

Continuation of Ser. No. 165,346, July 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 1,029, Jan. 6, 1970, abandoned. This application Mar. 1, 1973, Ser. No. 336,973

Int. Cl.² A61K 31/47

U.S. Cl. 424—258 **13 Claims**

1. A method for inhibiting the formulation of, and for dissolving, blood clots in mammals, which comprises administering to said mammals an effective amount for inhibiting the formation of and for dissolving blood clots in mammals of a compound of the formula



wherein

A and B is each hydrogen;

R_1 and R_2 individually represent hydrogen or lower alkyl,

R_3, R_4 and R_5 represent hydrogen, lower alkyl, halogen, hydroxy, lower alkoxy, lower alkenoxy, lower alkynoxy, acetaxy or butyloxy phenoxyl, phenyl-lower alkoxy, or R_3 and R_4 or R_4 and R_5 may be linked to form methylenedioxy;

n represents 3; and

Z represents a straight or branched alkanetriyl chain, or a straight or branched alkanetriyl chain substituted by a nitro or amino group containing from 5 to 18 carbon atoms or a pharmaceutically acceptable acid addition salt thereof; and a pharmaceutically acceptable carrier therefor.

3,928,612
1,2-DIHYDRO- AND 1,2,3,4-TETRAHYDRO-1-OXO-3-ISOQUINOLINECARBOXYLIC ACID DERIVATIVES AS ANTI-ALLERGIC AGENTS

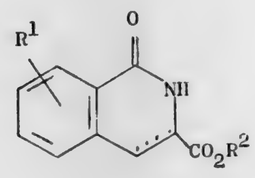
John H. Sellstedt, Pottstown; Charles J. Guinosso, King of Prussia, and Stanley C. Bell, Penn Valley, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Oct. 2, 1974, Ser. No. 511,341

Int. Cl.² A61K 31/47

U.S. Cl. 424—258 **7 Claims**

1. A method for preventing the physical manifestations of an atopic allergic reaction which comprises parenterally administering to a warm-blooded animal in need thereof, an effective amount of a compound of the formula:



in which

R^1 is —H, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxyalkoxy of 2 to 6 carbon atoms, halo, $-NO_2$, $-NH_2$, dialkylamino having from 1 to 6 carbon atoms in each alkyl group, $-COHN_2$, $-SO_2NH_2$, carbalkoxy having from 2 to 6 carbon atoms or alkylthio of 1 to 6 carbon atoms; and

R^2 is —H, alkyl of 1 to 6 carbon atoms, an alkali metal cation or the ammonium cation,

wherein the dotted line appearing in the structural formula represents optional unsaturation.

3,928,613
COMPOUNDS USEFUL AS ANTIDEPRESSIVE AGENTS

Peder Bernhard Berntsson, Frolunda; Per Arvid Emil Carlson, Goteborg, and Hans Rudolf Corrodi, Askim, all of Sweden, assignors to Aktiebolaget Hassle, Goteborg, Sweden

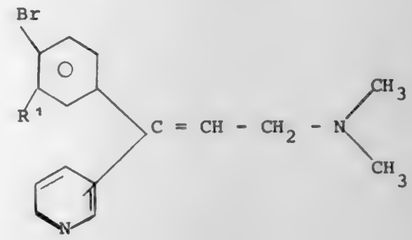
Division of Ser. No. 247,101, April 24, 1972, abandoned. This application Jan. 7, 1974, Ser. No. 431,123

Claims priority, application Sweden, Apr. 28, 1971, 5496/71

Int. Cl. A61k 31/44

U.S. Cl. 424—263 **4 Claims**

1. A method for treating depression in man, characterized by the administration to a subject suffering from symptoms of central nervous system depression of a compound having the structural formula



where the pyridine nucleus is bound in the ortho-, meta- or para- position to the adjacent carbon atom and where R^1 is selected from the group consisting of H and Br, in an amount effective to mitigate said symptoms or a therapeutically acceptable acid addition salt thereof, together with a pharmaceutically acceptable carrier.

3,928,614
3-AROYL-ALKENYLENEIMINES IN TREATING INFLAMMATION

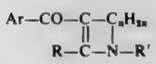
Harris Burt Renfroe, New City, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 269,901, July 4, 1972, Pat. No. 3,835,149, which is a continuation-in-part of Ser. No. 203,479, Nov. 30, 1971, abandoned. This application Jan. 23, 1974, Ser. No. 435,810

Int. Cl.² A61K 31/33, 31/38, 31/40, 31/44

U.S. Cl. 424—263 **9 Claims**

1. An antiinflammatory pharmaceutical composition comprising an antiinflammatory effective amount of a compound corresponding to the formula



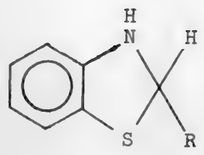
wherein Ar is unsubstituted phenyl, or phenyl substituted by up to two members selected from lower alkyl, hydroxy, lower alkoxy, lower alkanoyloxy, halogeno, trifluoromethyl, amino or di-lower alkylamino, the alkylene group C_nH_{2n} separates the carbon from the nitrogen atom by 2-4 carbon atoms, n is an integer from 2 to 7, R is hydrogen or lower alkyl and R' is hydrogen, lower alkanoyl, lower alkoxycarbonyl, Ar-lower alkanoyl, Ar-carbonyl, carbamoyl, N-Ar-carbamoyl or -thiocarbamoyl, or therapeutically acceptable acid addition salts of the amino compounds, in conjunction or admixture with a pharmaceutical excipient.

3,928,615
METHOD OF PROTECTING SEEDS AND PLANTS AGAINST FUNGI

Ludwig Nusslein; Kurt Roder, and Ernst Albrecht Pieroh, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Continuation-in-part of Ser. No. 244,260, April 14, 1972, abandoned. This application Feb. 21, 1974, Ser. No. 444,410
Claims priority, application Germany, May 6, 1971, 2123023
Int. Cl.² A01N *9/00, 9/22*
U.S. Cl. 424—263 **1 Claim**

1. The method for protecting crop plants against infestation by seed-borne and soil-borne phytopathogenic fungi which comprises contacting the seeds of said crop plants, prior to germination, with a fungicidal amount of a compound selected from the group consisting of 2-(4-pyridyl)-5-alkylsulfonyl-1,3,4-thiadiazole and 2-(4-pyridyl)-5-alkylsulfinyl-1,3,4-thiadiazole in which the alkyl group has from 1 to 5 carbons and the acid adducts of said thiadizoles.



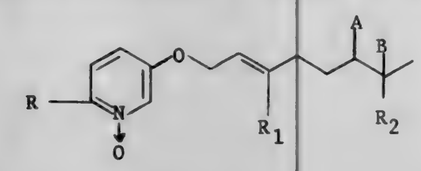
where R is phenyl, monosubstituted phenyl substituted with alkyl having one to 10 carbon atoms, cycloalkyl having five to 10 carbon atoms, halogen, hydroxyl, alkoxy having one to 14 carbon atoms, carbalkoxyalkoxy having three to 14 carbon atoms, cycloalkylalkoxy having six to 10 carbon atoms, cycloalkoxy having five to seven carbon atoms, or acyloxy selected from the group consisting of acetoxy, propionyloxy and butyryloxy, or disubstituted phenyl substituted with two alkyls having one to 10 carbon atoms, two halogens, two alkoxys having one to 14 carbon atoms, an hydroxyl and an alkyl having one to 10 carbon atoms, or an hydroxyl and a halogen.

3,928,616
DERIVATIVES OF CERTAIN N-OXYPYRIDYL GERANYL ETHERS USED IN CONTROLLING INSECTS

Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 412,091, Nov. 2, 1973, Pat. No. 3,864,334. This application Oct. 24, 1974, Ser. No. 517,696
Int. Cl.² A01N *9/22*
U.S. Cl. 424—263 **1 Claim**

1. A method of impeding the metamorphosis of tenebrio molitor comprising applying thereto in its larval stage a metamorphosis inhibiting amount of a compound of the formula:



in which R is hydrogen or alkyl having 1 to 4 carbon atoms; R^1 is methyl; R^2 is methyl; A and B together form a bond, or A is hydrogen and B is hydrogen.

3,928,617
CONTROL OF ACARIDS USING CERTAIN BENZOTHIAZOLES OR BENZOTHIAZOLINES

Winchester L. Hubbard, Woodbridge; Robert E. Grahame, Jr., Cheshire; Rupert A. Covey, Bethany, and Elmar H. Jancis, Naugatuck, all of Conn., assignors to Uniroyal Inc., New York, N.Y.

Division of Ser. No. 420,749, Nov. 30, 1973, Pat. No. 3,876,791. This application Jan. 24, 1975, Ser. No. 543,717
Int. Cl.² A01N *9/22*
U.S. Cl. 424—270 **9 Claims**

1. A method of controlling acarids comprising applying, to a locus subject to attack by acarids, an acaricidal amount of a benzothiazoline of the formula

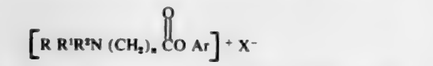
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3,928,618
ORAL COMPOSITIONS

Robert Andrew Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 242,750, April 10, 1972. This application Mar. 21, 1974, Ser. No. 453,359
Int. Cl.² A61K *31/22*
U.S. Cl. 424—311 **6 Claims**

1. An anti-microbial, anti-caries and anti-calculus oral composition consisting essentially of about 0.2–3% by weight of a nonionic organic surfactant and 0.01 to about 5% by weight of a quaternary ammonium aryl ester having the formula:



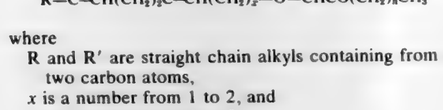
wherein R is a long chain alkyl of 12–18 carbon atoms, R^1 and R^2 are selected from the group consisting of methyl and ethyl, *n* is an integer from 1 to 6, Ar is an aryl selected from the group consisting of phenyl, naphthyl and phenyl and naphthyl substituted by a moiety selected from the group consisting of tri-halo and mono-nitro; and X is an anion selected from the group consisting of halide, sulfate and methosulfate, said nonionic organic surfactant being compatible with said quaternary ammonium aryl ester.

3,928,619
CERTAIN TERPENOID COMPOUNDS FOR INSECT CONTROL

William S. Bowers, Geneva, N.Y., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 499,690, Aug. 22, 1974, which is a division of Ser. No. 365,295, May 23, 1973, Pat. No. 3,852,472, which is a division of Ser. No. 78,577, Oct. 6, 1970, abandoned. This application Nov. 26, 1974, Ser. No. 527,321
Int. Cl.² A01N *9/24*
U.S. Cl. 424—314 **6 Claims**

1. A method of controlling the maturation of insects selected from the group consisting of *Tenebrio molitor* (L.) and *Epilachna varivestis* comprising contacting said insects at an immature stage of growth with an effective maturation inhibiting amount of a compound of the formula:



where
R and R′ are straight chain alkyls containing from one to two carbon atoms,
x is a number from 1 to 2, and
n is a number from 0 to 3.

3,928,620
PRESERVATION OF AGRICULTURAL PRODUCTS

Michel Armand Christian Courtade, Le Vesinet, and Bernard Raymond Pierre Ferveur, Ermont, both of France, assignors to The British Petroleum Company Limited, London, England

Filed July 3, 1974, Ser. No. 485,619
Claims priority, application France, July 3, 1973, 73.24373
Int. Cl.² A23K *3/03*; A23L *3/34*; A01N *9/04*
U.S. Cl. 424—317 **4 Claims**

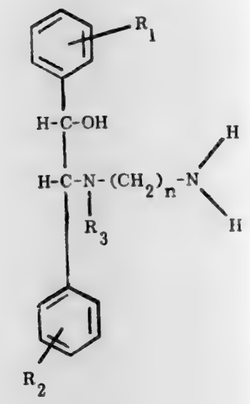
1. A composition for protecting stored plant feed-stuffs against attack by micro-organisms which composition comprises about 5 to 80 percent by weight of a hydrocarbon mineral oil which has a density of 15°C. of 0.830 to 1.025, a Kinematic Viscosity at 50°C. of 8 to 600 centistokes, a Pensky Flash Point of 180° to 300°C. and an aniline point of −5° to +120°C., and about 95 to 20 percent by weight of propionic acid.

3,928,621
ANTIINFLAMMATORY 2-(2-AMINOALKYLAMINO)-1,2-IPHENYLETHANOLS

Alfred Boris, Parsippany, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 10, 1974, Ser. No. 513,798
Int. Cl. A61k *31/135*
U.S. Cl. 424—330 **9 Claims**

1. A method for treating a topical inflammation, which method comprises topically applying to the situs of said inflammation an effective amount of a compound of the formula



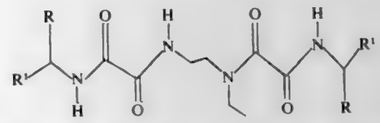
wherein R_1 and R_2 independently are hydrogen, halogen or C_{1-4} lower alkyl provided, however, that one of R_1 or R_2 is hydrogen; R_3 is hydrogen or C_{1-4} lower alkyl and n is an integer from 1 to 4 an isomer, an optical antipode or an acid addition salt thereof.

3,928,622
CERTAIN NON-TERPENOID JUVENILE HORMONE MIMICKING COMPOUNDS AND THEIR USE IN CONTROLLING INSECTS

Ferenc Marcus Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 437,128, Jan. 28, 1974, Pat. No. 3,847,970. This application July 31, 1974, Ser. No. 493,289
Int. Cl.² A01N *9/20*
U.S. Cl. 424—320 **3 Claims**

1. A method of impeding the metamorphosis of Tenebrio molitor comprising applying thereto at any stage of its development an effective amount of a compound of the formula



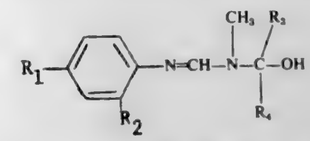
in which R is alkyl having 1 to 2 carbon atoms and R^1 is methyl.

3,928,623
METHOD OF CONTROLLING INSECTS USING CERTAIN FORMAMIDINE COMPOUNDS CONTAINING TRIHALOMETHYL GROUPS

Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 449,793, March 11, 1974, Pat. No. 3,862,229. This application Oct. 11, 1974, Ser. No. 514,169
Int. Cl.² A01N *9/20*
U.S. Cl. 424—326 **13 Claims**

1. A method of controlling insects consisting of applying to the habitat thereof an insecticidally effective amount of a compound of the formula:



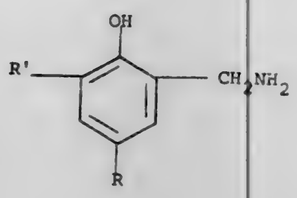
wherein R_1 and R_2 and independently methyl or halogen; R_3 is selected from the group of $-CF_3$, $-CH_2Cl$, $-CFCl_2$ and $-CCl_3$ and R_4 is selected from the group of $-H$, $-CF_3$, $-CF_2Cl$, $-CFCl_2$ and $-CCl_3$.

3,928,624
PHENOL COMPOUNDS IN TREATING PAIN, FEVER AND INFLAMMATION

Edward J. Cragoe, Jr., Lansdale, and Everett M. Schultz, Ambler, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 25, 1974, Ser. No. 464,003
Int. Cl.² A61K *31/135*
U.S. Cl. 424—330 **9 Claims**

1. A method of treating a condition exhibiting at least one of the symptoms of pain, fever and inflammation which comprises the administration to a patient in need of such treatment a therapeutically effective amount of a compound of the formula:



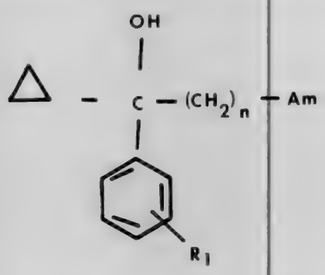
wherein R is C_{3-7} loweralkyl and R′ is halogen, or the nontoxic pharmaceutically acceptable salt thereof.

3,928,625
1-CYCLOPROPYL-1-PHENYL-ω-AMINO-1-ALKANOLS AND 1-LOWER-ALKYLACYL DERIVATIVES FOR TREATING DEPRESSION

William John Welstead, Jr., Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Division of Ser. No. 221,804, Jan. 28, 1974. This application Nov. 4, 1974, Ser. No. 526,033
Int. Cl.² A61K *31/445, 31/135*
U.S. Cl. 424—330 **5 Claims**

1. A process for treating depression which comprises administering to a living animal body requiring such treatment an effective amount of a compound having the formula:



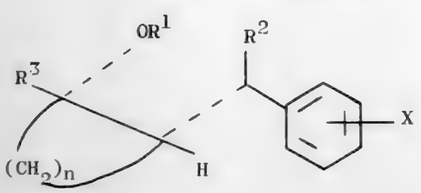
Wherein:
Am is lower-alkylamino and di-lower-alkylamino,
R^1 is hydrogen, halogen, lower-alkoxy, lower alkyl or trifluoromethyl,
n is two or three, or a pharmaceutically acceptable salt thereof.

3,928,626
BENZYLAMINE ANALGESICS

John P. Yardley, King of Prussia, and Peter B. Russell, Villanova, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 241,613, April 6, 1972, abandoned. This application Mar. 26, 1973, Ser. No. 345,037
Int. Cl.² A61K *31/40, 31/135, 31/535*
U.S. Cl. 424—330 **5 Claims**

1. The process for producing analgesia in warm-blooded animals which comprises administering to a warm-blooded animal in need thereof an amount sufficient to produce analgesia in said warm-blooded animal of a compound of the formula:

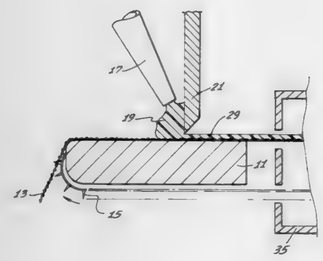


wherein R^1 is hydrogen or lower alkyl; R^2 is lower alkylamino, N-lower alkyl-N-methylamino, N-phenloweralkyl-N-methylamino, N-lower alkenylN-methylamino, N-cycloalkylmethyl-N-methylamino, or N-oxo-N-lower alkyl-N-methylamino; R^3 is hydrogen or methyl; X is hydrogen, hydroxy, lower alkoxy, lower alkoxymethoxy or halo; and n is an integer of from 3–6; and a pharmacologically acceptable acid addition salt thereof.

3,928,627
DECORATIVE WALL COVERING

Emery M. Mand, and Henry C. Shapiro, both of Los Angeles, Calif., assignors to Walter E. Heller Factors, Inc., Chicago, Ill.

Division of Ser. No. 165,269, July 22, 1971, Pat. No. 3,778,337. This application Aug. 9, 1973, Ser. No. 386,975
Int. Cl.² B32B *3/26, 5/18*
U.S. Cl. 427—358 **3 Claims**



1. The method of producing a decorative wall covering comprising the steps of
passing a woven material having variable strand thickness and separation across a first surface,
applying a relatively viscous backing material to one side of said woven material,
forcing said backing material to pass through said woven material at a constant thickness to cover strands of small thickness on the other side of said woven material, thus allowing said backing material and those strands having larger thicknesses to be clearly visible from the other side thereof while only said backing material is visible from said one side thereof,
spreading the backing material uniformly over the surface of said woven material to provide the wall covering with a substantially constant thickness across its area, and
curing the backing material to form a relatively resilient and pliable substance.

3,928,628
PROCESS FOR THE PREPARATION OF A SEROLOGICAL CARRIER

Szymon Kosmiderski, and Slaw Polak, both of Katowice, Poland, assignors to Wojewodzka Stacja Krwiodawstwa, Katowice, Poland

Filed June 27, 1973, Ser. No. 373,993
Claims priority, application Poland, July 6, 1972, 156528
Int. Cl.² C01B *31/14;* **C09C** *1/44;* **G01N** *31/00, 33/16*
U.S. Cl. 424—366 **5 Claims**

1. A process for the preparation of a carrier particularly used in serological reactions comprising burning active carbon in absolute alcohol, grinding the product obtained, and preparing a suspension in a buffer solution having a pH-value of 8.2.

3,928,629
COATING PROCESS

Grish Chandra, Penarth, Wales, and Colin Mostyn Rowland, Brussels, Belgium, assignors to Dow Corning Limited, Wales

Filed June 14, 1974, Ser. No. 479,245
Int. Cl.² B05D *3/02*
U.S. Cl. 427—387 **8 Claims**

1. A process for coating a surface which comprises applying thereto a composition having a viscosity not exceeding 4000 cS at 25°C and comprising (1) a polydiorganosiloxane having a viscosity in the range from 50 to 4000 cS at 25°C wherein from 0.1 to 15 per cent of the total silicon-bonded radicals are vinyl radicals, there being at least two vinyl radicals per molecule and at least 80 per cent of the remaining silicon-bonded radicals being methyl radicals, (2) an organohydrogenpolysiloxane having therein silicon-bonded hydrogen atoms and silicon-bonded organic radicals selected from methyl, ethyl and phenyl radicals, there being in the molecule on average at least three silicon-bonded hydrogen atoms and no more than 20 molar per cent of copolymeric diorganosiloxane units, and (3) a catalyst for the addition of SiH groups to silicon-bonded vinyl groups, said catalyst comprising one or more complexes of rhodium having the general formula

$$RhX_3(SR_2)_3 \quad \text{(i)}$$

or

$$Rh_2(CO)_4X_2 \quad \text{(ii)}$$

wherein each X represents a halogen atom and each R represents an alkyl, aryl, aralkyl or alkaryl radical having from 1 to 8 inclusive carbon atoms or the R'_3SiQ— group in which Q represents a divalent aliphatic hydrocarbon radical having from 1 to 6 inclusive carbon atoms and R′ represents an alkyl, aryl, aralkyl or alkaryl radical having from 1 to 8 inclusive carbon atoms or a $(CH_3)_3Si$— group, not more than one R′ per molecule being $(CH_3)_3Si$—, the ratio of silicon-bonded hydrogen atoms provided by (2) to silicon-bonded vinyl radicals provided by (1) being at least 0.5 : 1; and thereafter curing the applied composition.

3,928,630
ENZYMATIC PROCESSES FOR HYDROLYZING PROTEINS

Fulvio Perini, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 24, 1974, Ser. No. 473,255
Int. Cl.² C12B *1/00*
U.S. Cl. 426—7 **12 Claims**

1. A process of enzymatically hydrolyzing insoluble nonfunctioning protein, derived from a fish or animal source, comprising the steps of:
a. forming a liquid suspension of said protein:
b. adjusting the pH of said suspension to about from 7.5 to 9.5, by the addition of calcium hydroxide;
c. contacting said protein with an alkaline active protein proteolytic enzyme and maintaining temperature of said suspension in the range of about from 35° to 60°C and maintaining the pH in the range of about from 7.2 – 8, for 12 to 24 hours, by the addition of calcium hydroxide, thereby hydrolyzing said protein;
d. adjusting the pH of the suspension to about 7.0 by addition of phosphoric acid to form a particulate precipitate of calcium phosphate; and
e. filtering the product mixture of step (d), using the calcium phosphate precipitate formed in step (d) as a filter aid thereby yielding a clear, virtually colorless and tasteless hydrolysate rich filtrate and a filter cake comprising insoluble proteins, carbohydrates and calcium phosphate.

3,928,631
PROCESS FOR WET MILLING CORN

Jere E. Freeman, Hinsdale; Mukhtar Abdullah, Downers Grove, and Byron J. Bocan, Countryside, all of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed June 17, 1974, Ser. No. 479,923
Int. Cl.² C12C *9/00*
U.S. Cl. 426—18 **11 Claims**

1. In a process for the wet milling of corn kernels including the steps of steeping the kernels in an aqueous medium for a period of time sufficient to soften the kernels; degerminating the softened kernels by milling and removing the germ; separating the degerminated kernel from the steep water; comminuting the degerminated kernel to a fine mash; separating the fiber and gluten fractions from the comminuted mash and dewatering the fiber and gluten fractions; the improvement comprising: adding to the process mixture at the temperature of the wet milling process immediately before, concurrently with or subsequent to the milling of the softened kernel and prior to the dewatering step a glucoamylase enzyme preparation in an amount sufficient to provide at least about 0.005 glucoamylase unit of activity per gram of solids in the particular process mixture to which the preparation is added and allowing the glucoamylase to react with the mixture for a period of time sufficient to increase the rate and extent of dewatering of the fiber and gluten fractions.

3,928,632
EGG SUBSTITUTE PRODUCT

Ernest Glaser, Moraga, and Philip F. Ingerson, Merced, both of Calif., assignors to Avoset Food Corporation, Oakland, Calif.

Filed July 31, 1974, Ser. No. 493,450
Int. Cl.² A23L *1/30*
U.S. Cl. 426—72 **5 Claims**

1. A liquid egg substitute product comprising from about 65 to about 90 percent egg white, from about 0.5 to about 5.0 percent of a nontoxic vegetable oil composed of glyceryl esters of unsaturated higher fatty acids, and from about 0.05 to about 1.0 percent of a fatty acid lactylate alkali metal salt, said product being free of egg yolk.

3,928,633
SWEETENING COMPOSITION AND PROCESS THEREFOR

Myron D. Shoaf, and Lamonte D. Pischke, both of Danbury, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 3, 1973, Ser. No. 421,295
Int. Cl.² A23L *1/236*
U.S. Cl. 426—96 **9 Claims**

1. Process for stabilizing L-aspartyl-L-phenylalanine methyl ester crystals into a particulate form adapted to be intermixed with other powderous materials and be free-flowing therewith which comprises admixing said ester crystals and a fusing and matrix-forming material having a moisture content less than 10%, said material being molten at a temperature at or below 370°F, solidifying into a solid mass when cooled to below its melting point and retaining a thermosetting solid condition at ambient conditions; heating the admixture of said ester crystals and said fusing and matrix-forming material to a temperature sufficient to convert said fusing and matrix-forming mate-

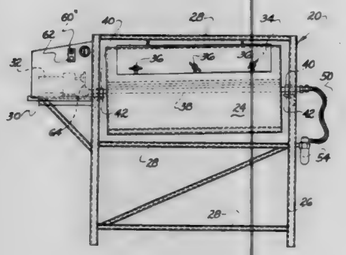
rial into a continuous molten condition but below the melting point of the ester crystals, wherein the ester crystals are discretely distributed; cooling the molten mass to fuse the same and permanently fix the ester crystals in a dispersed phase; and sub-dividing the cooled mass to a particular size thereby producing particles which encapsulate the crystals distributed therein.

3,928,634

METHOD FOR MARINATING POULTRY PRODUCTS

Geno N. Gasbarro, 1305 Noe-Bixby Road, Columbus, Ohio 43227

Filed Nov. 16, 1973, Ser. No. 416,692
Int. Cl.² A23L *1/31*
U.S. Cl. 426—281 5 Claims



1. A method of marinating poultry food products comprising the steps of placing poultry food products in a closed chamber containing a predetermined quantity of a liquid marinating solution and having significant air space above the level of said marinating solution; tumbling said food products while alternately immersed in said marinating solution and exposed to said air space in said chamber by rotating said chamber at speeds between approximately 3 to 70 r.p.m. while withdrawing air from said chamber to expose said products to a negative pressure of at least 20 inches of mercury for a time interval greater than 2 but less than 30 minutes whereby said products are caused to absorb at least two and one half percent by weight of the marinating solution during said tumbling.

3,928,635

METHOD FOR PREPARATION OF PEANUT FLAKES FROM PEANUT KERNELS

Ioe Ohta, Tokyo; Akira Matsunobu; Masafumi Nishizawa, both of Kobe; Hayato Kubota, Izumiohtsu, and Kenshi Sakamoto, Osaka, all of Japan, assignors to Ton Co., Ltd. and Fuji Oil Company, Ltd., both of, Japan

Filed July 15, 1974, Ser. No. 488,847
Claims priority, application Japan, July 19, 1973, 48-82265
Int. Cl.² A23L *1/36*
U.S. Cl. 426—312 8 Claims

1. A method for preparation of peanut slices from peanut kernels, which comprises steps of dividing each of skinned raw peanuts into a pair of peanut fractions each having a moisture content of 6 to 14 percent, slicing said peanut fractions in a direction substantially parallel to the confronting surface between said peanut fractions of each pair thereby providing sliced peanuts, steaming the sliced peanuts and drying the same.

2. A method as claimed in claim 1, wherein the peanut fractions are contacted with ethanol.

3,928,636

COFFEE EXTRACTION PROCESS

Saul N. Katz, Monsey, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Filed Apr. 30, 1973, Ser. No. 356,032
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² A23F *1/08*
U.S. Cl. 426—434 7 Claims

1. In a method for producing coffee extract wherein progressively fresher roasted and ground coffee is countercurrently contacted with an aqueous extraction liquid in the extraction columns of a percolator set and wherein said extraction liquid is fed to the spent stage extraction column containing the most extracted coffee and drawn off from the fresh stage extraction column containing the least extracted coffee, the improvement comprising feeding the entire portion of the aqueous extraction liquid fed to said spent stage extraction column at temperatures below about 120°F, and heating the exiting extraction liquid from said spent stage extraction column to above 300°F before contacting the next progressively fresher coffee.

3,928,637

METHOD OF TREATMENT OF ANIMAL FLESH

Ali Khayat, Huntington Beach; George W. Courtney, San Pedro, and Howard J. Dunn, Lomita, all of Calif., assignors to Ralston Purina Company, St. Louis, Mo.

Division of Ser. No. 328,797, Feb. 1, 1973, Pat. No. 3,851,078. This application July 19, 1974, Ser. No. 479,323The portion of the term of this patent subsequent to Nov. 26, 1991, has been disclaimed.
Int. Cl.² A23L *1/325*
U.S. Cl. 426—437 7 Claims

1. A method of treating tuna-type fish to reduce the mercury content thereof comprising forming a slurry of the tuna fish, supplying a predetermined quantity of material to the slurry sufficient to reduce the mercury content, the material having a free sulfhydryl group or yielding a sulfhydryl bond, heating the slurry at a temperature and for a time sufficient to coagulate the protein of the tuna fish and separating the tuna flesh from the slurry to obtain tuna flesh having a reduced mercury content.

3,928,638

METHOD OF MAKING TACO SHELLS

Daniel T. Stickle, 310 E. 40th St., Lubbock, Tex. 79404

Division of Ser. No. 222,493, Feb. 1, 1972, Pat. No. 3,785,273. This application Aug. 20, 1973, Ser. No. 390,164
Int. Cl.² A21D *10/00*
U.S. Cl. 426—439 1 Claim

1. The method of cooking a plurality of food products which each have a major portion of their respective surface areas disposed substantially parallel to a respective flat plane, the method comprising the steps of:

loading the products on a series of carriers longitudinally spaced from each other at a loading station,

moving the loaded carriers together to decrease the space between them and the products on them,

disposing the products on the carriers with their respective flat planes in line with and transverse to a substantially horizontal line,

advancing the loaded carriers along a substantially horizontal line at the decreased spacing through grease,

removing the loaded carriers from the grease,

increasing the space between the loaded carriers, and

removing the products from the spaced-apart carriers.

3,928,639

PROCESS FOR DEHYDRATING FROZEN FOOD PARTICLES

Nils Tangsrud, and Ole Gabriel Devik, both of Trondheim, Norway, assignors to Sintef, Trondheim, Norway

Continuation of Ser. No. 782,760, Dec. 10, 1968, abandoned. This application May 24, 1973, Ser. No. 363,337
Claims priority, application Norway, Dec. 18, 1967, 171037/67
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² A23B *1/04, 3/04*
U.S. Cl. 426—444 3 Claims

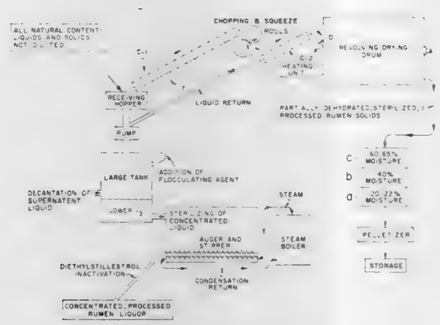
1. In a process for preparing a dehydrated powder of a meat or fish product by carrying out in sequence the steps of freezing the product to be dehydrated, subdividing it into a powder of fibrous particles, distributing this powder on a carrier means and drying it by contacting it at atmospheric pressure with a gaseous drying agent having a temperature above the thawing point of the frozen powder and moving relative to the fibrous particles of the powder, the improvement wherein said powder is distributed as a layer on a porous carrier means through which said drying agent is passed with an even distribution and with a velocity of about 0.5 m/sec. which is sufficiently high to lift and maintain the powder layer in porous condition but sufficiently low so that said powder is not carried away by the flow of drying agent, said drying agent causing a thawing and drying of the fibrous particles which result in adhesion between the individual particles where they touch each other to form a firm porous mat having a thickness of about 15 mm, and after the formation of said porous mat the velocity of said drying agent is gradually increased up to about 5 m/sec. and the drying is continued at said increased velocity to bring the dry content thereof up to about 95 percent, after which said mat is torn up to a dehydrated powder.

3,928,640

PRODUCTION OF SUBSTANTIALLY FULL-DIET BEEF CATTLE FEED THROUGH PROCESSING OF THE RUMEN CONTENT OF SLAUGHTERED CATTLE

Paul A. Stahler, Jordan, Minn. 55352

Continuation-in-part of Ser. No. 12,080, Feb. 17, 1970, abandoned, Continuation-in-part of Ser. No. 667,324, Sept. 7, 1967, Pat. No. 3,545,977. This application June 15, 1973, Ser. No. 370,459
Int. Cl.² A23B *4/04*
U.S. Cl. 426—465 4 Claims



1. The process of treating the rumen content per se without dilution or additives of slaughtered cattle to produce at least 75 percent of full diet beef cattle feed requirements which consist in:

obtaining the whole rumen contents from slaughtered cattle without addition of dilutants or other substances, the whole rumen content including liquid and solid ingredients,

mechanically removing at least 80% of the liquid ingredients from the solid and fibrous ingredients of said whole rumen content, said separated solid ingredients including matted fibers, adhering globules, coagulants, and emulsions, subdividing the separated fibrous materials, and

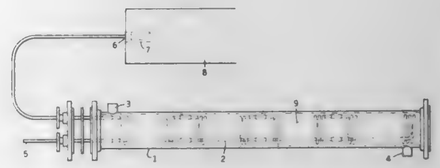
drying the said fibrous and adhering materials by conveying said materials through a dryer heated at the entrance end by a forced air heater at a temperature of from 2000°F. to 3000°F, said material being conveyed through said dryer for a period of from seven to ten minutes.

3,928,641

METHOD OF COLLECTING PROTEIN FILAMENTS

Ralph A. Hoer, Ballwin, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Filed Oct. 29, 1974, Ser. No. 518,765
Int. Cl.² A23P *1/00*
U.S. Cl. 426—506 8 Claims



1. In a method of continuously forming discrete elongated protein filaments from proteinaceous material wherein an aqueous slurry of the proteinaceous material is formed having a proteinaceous solids content of between about 0.5 and 35 percent by weight, the discrete elongated filaments being formed by continuously conducting the slurry under pressure through a heat exchange zone and in said zone heating the slurry to a temperature which is above 240°F. but which is less than that which will degrade the protein, whereby the protein is subjected to such temperature for a sufficient period of time so that elongated tender filaments are thereafter separated from the remaining constituents of the slurry and the heated slurry is continuously removed from said zone through a back pressure creating orifice whereby the elongated filaments and remaining constituents of the slurry are discharged into a collecting zone and in the collecting zone the discrete filaments are separated from the remaining constituents of the slurry, the improvement comprising; controlling the discharge of said filaments into the collecting zone by confining the stream of said filaments being discharged from said orifice into the collecting zone to within a total angle of between about 4 and 90° said angle being measured from an axis through the center of said orifice, in order to maintain discreteness of the filaments in said collecting zone.

3,928,642

PROCESS FOR LYSING MYCELIAL WASTE

Alfred W. Hubert, West Lafayette, and Ralph T. Russell, Lafayette, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 22, 1975, Ser. No. 542,990
Int. Cl.² A23K *1/00*
U.S. Cl. 426—521 8 Claims

1. A process for lysing mycelial waste obtained from the production of antibiotics, which comprises heating the mycelial waste at a temperature of from about 140° to about 200°C., at a pressure of from the equilibrium pressure to about 2,000 p.s.i.g., and at a pH of from about 2 to about 10, until substantially no antibiotic activity remains.

3,928,643

METHOD OF PRODUCING A BEEF FLAVOR

Kyosuke Ishiguro, Kawasaki, and Takehiko Ichikawa, Fujisawa, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Aug. 14, 1974, Ser. No. 497,273
Claims priority, application Japan, Aug. 20, 1973, 48-93194
Int. Cl.² A23L *1/226, 1/227*
U.S. Cl. 426—533 5 Claims

1. A method of preparing a seasoning composition which comprises heating a mixture of 0.01 part to ten parts ribose or ribose-5-phosphate with one part plasma solids of beef cattle or pigs' blood at 60° to 250°C for 15 seconds to 3 hours until the mixture assumes the flavor of cooked beef, said parts being by weight.

3,928,644

NOVEL VEGETABLE FLAVORED FOODSTUFF AND VEGETABLE FLAVOR COMPOSITIONS CONTAINING 2-PHENYL-4-PENTENAL AND/OR DIMETHYL ACETAL THEREOF

William Lewis Schreiber, Jackson; Manfred Vock, Locust, both of N.J.; Edward Joseph Shuster, New York, N.Y., and Alan O. Pittet, Atlantic Highlands, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 283,651, Aug. 25, 1972, Pat. No. 3,852,482. This application Oct. 2, 1974, Ser. No. 511,429The portion of the term of this patent subsequent to Dec. 3, 1991, has been disclaimed.
Int. Cl.² A23L *1/226*
U.S. Cl. 426—535 7 Claims

1. A process for altering the organoleptic properties of a foodstuff which comprises adding thereto a small but effective amount to enhance a vegetable flavor or to impart thereto a vegetable flavor of 2-phenyl-4-pentene derivatives selected from the group consisting of 2-phenyl-4-pentenal and 2-phenyl-4-pentenal dimethyl acetal.

3,928,645

ENHANCING RED-BERRY FLAVOR WITH 4-(2,6,6-TRIMETHYL-1,3-CYCLOHEXADIEN-1-YL)-2-BUTANONE AND 4-(6,6-DIMETHYL-2-METHYLENE-3-CYCLOHEXEN-1-YL)-2-BUTANONE

Braja Dulal Mookherjee, Matawan; Robert Walter Trenkle, Bricktown; Manfred Hugo Vock, Locust, all of N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 386,320, Aug. 7, 1973, Pat. No. 3,872,031. This application Apr. 22, 1974, Ser. No. 462,748
Int. Cl.² A23L *1/235*
U.S. Cl. 426—538 1 Claim

1. A process for enhancing the red-berry flavor of a foodstuff comprising adding thereto from 0.02 ppm up to 50 ppm by weight based on the total weight of foodstuff of a mixture of 4-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)-2-butanone and 4-(6,6-dimethyl-2-methylene-3-cyclohexen-1-yl)-2-butanone, the weight ratio of 4-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)-2-butanone:4-(6,6-dimethyl-2-methylene-3-cyclohexen-1-yl)-2-butanone being 90:10.

3,928,646

METHOD FOR BLENDING TEMPERATURE SENSITIVE INGREDIENTS IN THE PRODUCTION OF DOUGH

Howard A. Hartley, Columbus, Ohio, assignor to Cannell Auto-Process Corporation, Columbus, Ohio

Filed Oct. 11, 1972, Ser. No. 296,679
Int. Cl.² A21D *8/02*
U.S. Cl. 426—549 3 Claims

1. A continuous process of producing high shortening content dough which comprises blending and mixing the dough-forming ingredients which include shortening in a paste or semi-liquid form and dry ingredients and simultaneously blending and mixing therewith particles of a cooling substance that does not form an ingredient of the dough, said cooling substance combined with the dry ingredients and mixed therewith prior to mixing and blending with the shortening to cool and solidify the shortening so as to provide nucleating surfaces for the dry ingredients.

3,928,647

DRY PREPARED MUFFIN MIXES COMPRISING IMPACT-MILLED HARD WHEAT FLOUR

Monoj Kumar Gupta, Somerset, N.J., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 23, 1973, Ser. No. 354,029
Int. Cl.² A21D *10/00*
U.S. Cl. 426—554 4 Claims

1. A pulverulent and free-flowing dry muffin mix suitable for the preparation of muffins, said mix comprising flour; chemical leavening agent; sugar; and shortening; said flour comprising at least about 80% by weight of impact-milled hard wheat flour.

3,928,648

METHOD AND COMPOSITION FOR LOW PH WHIPPED TOPPINGS

Howard D. Stahl, Hartsdale, and Rex J. Sims, Pleasantville, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed June 12, 1974, Ser. No. 478,656
Int. Cl.² A23L *1/00*
U.S. Cl. 426—564 31 Claims

1. An improved method for preparing a dry whipped topping mix from a stable emulsion which comprises:

forming an emulsion comprising fat, water, carbohydrate and an amount of an emulsifier system which is effective to provide a stable emulsion, the emulsifier system comprising a minor amount of a strongly-hydrophilic, anionic emulsifier and a major amount of a nonionic emulsifier, the strongly-hydrophilic anionic emulsifier and the nonionic emulsifier being present at a weight ratio of within the range of from about 1:15 to about 1:1;

drying the emulsion; and thereafter

adding an amount of a destabilizing agent to the emulsion effective to partially destabilize the emulsion upon rehydration.

3,928,649

DIETARY DAIRY DESSERT MIX AND FROZEN PRODUCT THEREFROM

Edwin W. Cobb, 21 Holland Drive, Wakefield, R.I. 02879

Filed Sept. 18, 1974, Ser. No. 506,993
Int. Cl.² A23G *9/02*
U.S. Cl. 426—565 9 Claims

1. A mix suitable for homogenization and pasteurization with anhydrous milk fat and water and thereafter for freezing to form a frozen dietary dairy dessert characterized by low fat, sodium and calorie content, said mix comprising:

a. a polyhydric alcohol component selected from: (i) sorbitol in an amount effective to provide in said frozen dessert the equivalent of about 14–18 percent by weight of a 70 percent by weight aqueous sorbitol solution, or (ii) a mixture of sorbitol and mannitol in an amount effective to provide in said frozen dessert the equivalent of about 5–15 percent by weight of a 70 percent by weight aqueous sorbitol solution and about 3–15 percent by weight mannitol, of which the amount of one of said polyhydric alcohols is at least 14 percent by weight;

b. non-fat milk solids in an amount effective to provide about 10–15 percent by weight thereof in said frozen dessert; and

c. an effective amount of a low salt content, food quality stabilizer.

3,928,650

PASTY DRY PRODUCT AND PROCESS FOR MAKING SAME

Hans Bohrmann, Talheim, and Gerhard Schneider, Flein, both of Germany, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed July 24, 1974, Ser. No. 491,448
Int. Cl.² A23L *1/187*
U.S. Cl. 426—579 10 Claims

1. A pasty dry product for the preparation of desserts, which when stirred into boiling aqueous liquids and cooled sets and forms a dessert comprising a mixture of (a) triglycerides of the unbranched fatty acids naturally present in edible oils and edible fats, in an amount of between about 20 and about 35 percent by weight, said triglycerides having melting points not higher than 40°C, (b) ungelatinized starch, in an amount of between about 15 and 35 percent by weight, (c) at least one sugar, in an amount of between about 30 and 50 percent by weight, and (d) at least one emulsifier, in an amount of up to about 5 percent by weight.

3,928,651

METHOD FOR FORMING PROCESSED MEATS

Leonhard H. Froehlich, and Arthur M. Dowell, Jr., both of Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed Aug. 12, 1974, Ser. No. 496,483
Int. Cl.² A23L *1/31*
U.S. Cl. 426—641 2 Claims

1. A method of treating meat products which consists of forming said meat products into desired shapes, tying said formed meat products with an edible binding string consisting of a twisted tubular casing of tanned reconstituted edible collagen, said casing having a film thickness of about 1–3 mils, a width of from about 0.2.5–1.5 inches, and twisted about 0.25–4 revolutions per inch of string, and cooking said tied meat products until said meat products and string are tender and edible.

3,928,652

METHOD OF PREPARING A FISH PRODUCT

Kent J. Lanter, Belleville, Ill., assignor to Ralston Purina Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 367,284, June 5, 1973, abandoned. This application May 6, 1974, Ser. No. 466,925
Int. Cl.² A23L *1/325*
U.S. Cl. 426—643 8 Claims

1. A method of forming a grated tuna-type product from tuna flesh and protein filaments comprising the steps of: preparing heat settable synthetic protein filaments, chopping the heat settable filaments into discrete particles, substantially all of which have a length of less than about ⅝ inches, adjusting the liquid content of the discrete particles to about 75 – 85 percent by weight and forming a mixture of said adjusted particles with tuna flesh, the discrete particles being present in a range from 1-60 percent by weight of the mixture; grating the mixture, placing the grated mixture into cans and retorting the mixture to provide a tuna-type product.

3,928,653

COLLAGEN SLURRY CONTAINING PARTIAL FATTY ACID ESTERS OF GLYCERIN

Arthur M. Dowell, Jr., and Arthur L. Reitemeier, both of Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed Feb. 5, 1975, Ser. No. 547,300
Int. Cl.² A23L *1/31*
U.S. Cl. 426—657 11 Claims

1. In a process for preparing a slurry comprising edible collagen and water for extrusion into an artificial sausage casing by

comminuting a collagen source for forming a collagen pulp;

swelling said collagen pulp with an edible acid for releasing the collagen fibrils; and

mixing said collagen pulp in water for forming a slurry;

the improvement for reducing fiber clumps in said slurry and improving the productivity of the casing made from such slurry which comprises adding to said collagen pulp prior to swelling and blending therewith a partial fatty acid ester of glycerin, said partial fatty acid ester of glycerin being added in an amount effective for selectively reducing said fiber clumps.

3,928,654

METHOD AND FORMULATION FOR PREVENTING SNOW AND ICE ACCUMULATION

Anthony J. Bonnanzio, Westport Road, Fairfield, Conn. 06430

Continuation-in-part of Ser. No. 314,530, Dec. 13, 1972, abandoned, which is a continuation-in-part of Ser. No. 219,829, Jan. 21, 1972, abandoned, which is a continuation-in-part of Ser. No. 102,542, Dec. 29, 1970, abandoned. This application Apr. 19, 1974, Ser. No. 462,339
Int. Cl.² C09K *3/18*
U.S. Cl. 427—8 5 Claims

1. A method for treating walkways, roadways and driveways to prevent the accumulation of ice and snow thereupon, said method comprising applying to said surface a liquid composition consisting essentially of 30 to 45 percent by volume of at least one alkylene glycol having from 2 to 6 carbon atoms in water, and an organic dye compatible therewith selected from the group consisting of aromatic sulfonic acids, nitro-sulfonic acids, mono-azo sulfonic acids, diazosulfonic acids, and anthraquinone sulfonic acids, in an amount sufficient to impart to said formulation a visible coloration when said formulation is in contact with the surface and such that said coloration disappears in a uniform manner and proportionately with the loss of resistance to prevent such accumulation.

3,928,655

ELECTROSTATIC POWDER COATING METHOD

Masakazu Iwasa; Hajime Miyatuka; Kazuo Horikawa, all of Asaka, and Tomisaku Wakabayashi, Odawara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 28, 1974, Ser. No. 446,756
Claims priority, application Japan, Mar. 5, 1973, 48-25846
Int. Cl.² G03G *13/08*
U.S. Cl. 427—21 18 Claims

1. An electrostatic powder coating method comprising: forming a charged unfixable powder image on an electrically conducting substrate; electrostatically spraying a second charged powder having the same charge polarity as the polarity of said unfixable powder image over the unfixable powder image bearing surface of said substrate to form a layer of said second powder; fixing said second powder layer; and removing, subsequent to the fixing of said second powder layer, said unfixable powder image.

3,928,656
METHOD OF DEVELOPING ELECTROSTATIC LATENT IMAGES WITH PRESSURE SENSITIVE TONER

Stephen Strella, Pittsford, and Meurig W. Williams, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 214,441, Dec. 30, 1971, Pat. No. 3,804,764. This application Dec. 6, 1973, Ser. No. 422,399

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² G03G *7/00, 13/00;* **B44D** *1/94*

U.S. Cl. 427—22 **10 Claims**

1. A process for producing a final toner image comprising: fixing a toner in image configuration to a support by the application of pressure, said toner comprising a finely divided colored resin, said resin comprising an amorphous weakly crosslinked polymer having a bond strength from about 2 to about 30 kcal/mole and a Tg of greater than about −20° C.

2. A process for rendering an electrostatic latent image visible, comprising:

developing the electrostatic latent image with a finely divided colored resin, said resin comprising an amorphous weakly crosslinked polymer having a crosslink bond strength from about 2 to about 30 kcal/mole and a Tg of greater than about −20° C.

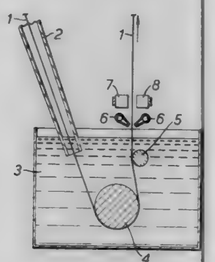
3,928,657
STRIP SHAPE CORRECTION ON GALVANISING LINE

David Alun Armstrong, Swansea, and Kenneth Gill Lewis, Port Talbot, both of Wales, assignors to British Steel Corporation, London, England

Division of Ser. No. 134,266, April 15, 1971, Pat. No. 3,784,072. This application Aug. 31, 1973, Ser. No. 393,319

Int. Cl.² H01F *1/00*

U.S. Cl. 427—47 **3 Claims**



1. In a method of coating a moving ferromagnetic metal sheet with a layer of material of uniform thickness wherein there is applied to at least one side of the moving metal sheet at a coating station a layer of liquid coating material of greater thickness than the thickness to remain on the sheet as the finish coating, and the coated sheet is moved past a rectilinear station where a portion of the coating material is removed, the improvement comprising the steps of controlling the moving ferromagnetic metal sheet to conform momentarily to a predetermined plane parallel with and disposed closely adjacent said rectilinear coating removal station by detector disconformity of the sheet from the predetermined plane, and applying directly to the sheet at the region of the disconformity a force which has a component normal to the sheet surface and which is dependent on the degree of disconformity, the force being a magnetic field of such size and magnitude as to urge the sheet to conform to the plane, and removing a portion of said coating material while said moving sheet is momentarily conformed to said predetermined plane whereby a finish coating layer of uniform thickness remains on the moving sheet.

3,928,658
METHOD OF PROVIDING TRANSPARENT CONDUCTIVE ELECTRODES ON A TRANSPARENT INSULATING SUPPORT

Antonius Marinus van Boxtel, and Cornelis Jan Gerritsma, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

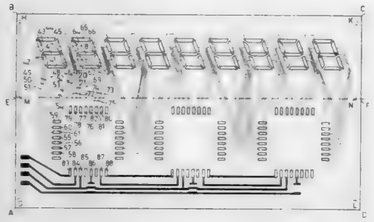
Filed Apr. 25, 1973, Ser. No. 354,510

Claims priority, application Netherlands, Apr. 28, 1972, 7205767

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² H05K *3/02*

U.S. Cl. 427—108 **13 Claims**



1. A method of producing a device comprising a transparent insulating support which is provided with a pattern of conductors of a transparent conductive material comprising the steps of:

a. forming on said support auxiliary layer comprising a metal layer containing at least one recess corresponding to said pattern of conductors;

b. forming a transparent conductive layer on said auxiliary layer and in each said recess;

c. forming a solderable metal layer on a part of the exposed surface of said transparent conductive layer; and

d. selectively dissolving said auxiliary layer so as to remove said auxiliary layer and the portion of said transparent conductive layer overlying said auxiliary layer, said conductor pattern comprising a first part having only a transparent layer and a second part having multiple layers comprising both at least one lowermost, support-adjoining transparent layer and one solderable layer therabove.

3,928,659
METHODS OF AND MEANS FOR VACUUM DEPOSITION

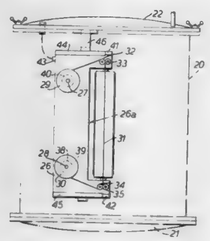
Alexander Samuel Baxter, Broomhill House, Great Brickhill, Bletchley, Buckinghamshire, England

Continuation-in-part of Ser. No. 113,313, Feb. 8, 1971, abandoned. This application Jan. 15, 1973, Ser. No. 323,424

Claims priority, application United Kingdom, Feb. 12, 1970, 6789/70

Int. Cl.² C23C *13/02, 13/04*

U.S. Cl. 427—132 **4 Claims**



1. A method of coating a surface of an article by the evaporation of a vaporizable coating material in a vacuum chamber, which method comprises the steps of carbonizing or graphitiz-

ing organic material to provide a flexible elongated electrically conductive heater element in the form of a tape which is inextensible under the conditions to which it is subjected in carrying out said method, forming a solid coating on the surface of said element with a quantity of said vaporizable material sufficient to substantially wholly cover the surface of said heater but insufficient to permit the formation of globules of said coating material more than a few microns in size, said vaporizable material having the property of not wetting the heater when at the vaporizing temperature of said material, said coated heater element retaining its flexibility when coated, disposing said article and said element with said material thereon in said chamber, providing electrical connections to regions of said element spaced along its length, heating that part of the element between said connections by passing electrical current through said connections and said part to bring said part of the element to a temperature which causes uniform vaporization of the material from substantially the full length of said part and deposition of said vaporized material on said surface of the article and, while maintaining a vacuum in said chamber, moving said element lengthwise to bring a different part of the element between said connections, and heating said different part.

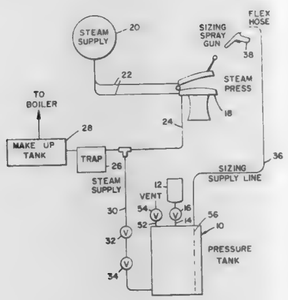
3,928,660
DRY CLEANING FINISHING METHOD AND APPARATUS

John M. Alderson, 21332 Bulkhead Circle, Huntington Beach, Calif. 92646, and Raymond H. Heiskell, 30 Laurel Court, San Mateo, Calif. 94401

Continuation-in-part of Ser. No. 268,885, July 3, 1972, abandoned. This application Feb. 26, 1974, Ser. No. 446,007

Int. Cl.² B32B *27/00, 17/06*

U.S. Cl. 427—248 **11 Claims**



1. A method for producing and applying a homogenized mixture of an additive material and chemically pure water to a garment being processed by an apparatus supplied with steam under pressure, said method comprising the steps of:

providing a closed tank having at least two inlets and one outlet; moving chemically pure water formed from condensed steam at said apparatus to one of said inlets to said tank;

supplying a preselected additive material to said tank through its other said inlet;

utilizing the pressure of the steam supplied to said apparatus for forcing said chemically pure water into said tank to mix with said additive material therein;

further utilizing the pressure of the steam supplied to said apparatus for forcing the mixture of additive material and water from said tank and directing it to a dispensing means on a conduit connected to said outlet of said tank; and

applying the mixture of additive material and water with said dispensing means to a garment.

3,928,661
SELECTIVE COATING OF A SUBSTRATE WITH POLY(ARYLENE SULFIDE)

David E. Higbee, and William D. Powell, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 1, 1973, Ser. No. 366,245

Int. Cl.² B05D *1/32*

U.S. Cl. 427—259 **19 Claims**

1. A process for selectively coating a first portion of a surface of a substrate with a poly(arylene sulfide) composition, said process comprising:

coating a second portion of said surface of said substrate with a masking composition comprising at least one member of the group consisting of diatomaceous earth, alkaline earth carbonates, and alkaline earth silicates,

applying a coating of said poly(arylene sulfide) composition to said first portion and at least part of the thus masked second portion of said substrate,

heating the thus-coated substrate to a temperature sufficient to cure said poly(arylene sulfide) composition,

stripping said poly(arylene sulfide) composition from the masked second portion of said surface of said substrate, and

treating said substrate to remove said masking composition.

14. The process of claim **13** wherein said poly(arylene sulfide) is poly(phenylene sulfide).

3,928,662
PROCESS FOR THE PRODUCTION OF METAL CONTAINING CERAMICS

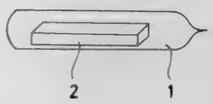
Yasuhisa Kaneko, Toyota; Yoshiro Komiyama, Okazaki; Katsumi Kondo; Fumiyoshi Noda, both of Toyota, and Kunihiko Uchida, Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 21, 1974, Ser. No. 435,159

Claims priority, application Japan, Jan. 24, 1973, 48-010108

Int. Cl.² C23C *1/00;* **C03C** *17/06*

U.S. Cl. 427—294 **6 Claims**



1. Method of impregnating a porous sintered ceramic material with metal, which method comprises the steps of sealing said material in an evacuated glass capsule, submerging said capsule in a molten metal, and breaking said capsule while applying pressure to said metal and capsule to impregnate said sintered ceramic material with said metal.

3,928,663
MODIFIED HECTORITE FOR ELECTROLESS PLATING

John Peter Redmond, Mechanicsburg; Daniel Marshall Andrews, Harrisburg, both of Pa.; Charles Parsons Brooks, Rural Hall, N.C.; Dominic A. Cinalli, Burlington, N.J., and Joseph Francis Merlina, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 1, 1974, Ser. No. 457,012

Int. Cl.² C23C *3/02;* **B05D** *3/04*

U.S. Cl. 427—304 **2 Claims**

1. In a method for rendering a substance selfcatalytic to deposition of electroless metal in which hectorite is employed and the replaceable cations in said hectorite are exchanged with a cation of a metal selected from the group consisting of nickel, copper, palladium, platinum, gold, silver, rhodium and iridium, the improvement which comprises: modifying the lattice structure of said hectorite to stabilize it against swelling

when immersed in aqueous electroless solutions by reducing the exchange metal cations at elevated temperatures in a reducing atmosphere consisting essentially of a compound selected from the group consisting of hydrogen, carbon monoxide, hydrogen sulfide and cracked ammonia.

3,928,664

OZONE TREATMENT OF ELASTOMERS

Robert Edward Tarney, Hockessin, and John Joseph Verbanc, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 17, 1973, Ser. No. 324,495

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B05D *3/00*

U.S. Cl. 427—322 **10 Claims**

1. A process for modifying the surface of a vulcanized elastomer to insure adequate paint adhesion thereto which comprises contacting a sulfur-cured ethylene, propylene, nonconjugated diene elastomer containing reinforcing carbon black in amounts of at least 50 parts per hundred parts of elastomer with a gaseous atmosphere containing at least about 100 parts per million ozone for a time sufficient to oxidize said surface thus conditioning the surface for painting.

2. A process of claim **1** wherein the elastomer contains about from 75 to 200 parts of carbon black per hundred parts of elastomer.

3. A process of claim **2** wherein the elastomer contains about from 10 to 100 parts of oil per hundred parts of elastomer.

10. A process of claim **3** wherein the additional subsequent steps of applying a film of flexible resin-based paint selected from the group consisting of acrylic resin, alkyd resin, polyester resin, polyurethane or plasticized nitrocellulose lacquer to the modified surface of the elastomer, and baking the surface to cure said resin paint film thereon, thereby producing an article in which paint cannot be removed therefrom without tearing the surface of the elastomer.

3,928,665

METHOD OF PREPARING DIFFUSION TRANSFER RECEIVING SHEETS

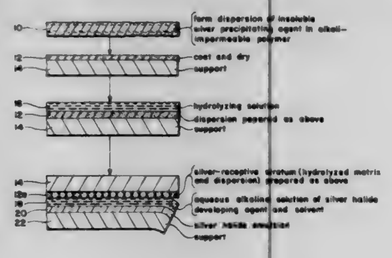
Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 675,472, Oct. 16, 1972, Pat. No. 3,671,241, which is a continuation-in-part of Ser. No. 437,799, March 8, 1965, abandoned. This application June 19, 1972, Ser. No. 264,257

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² G03C *5/54*, *1/48*

U.S. Cl. 427—339 **22 Claims**



1. A method of forming an image-receiving element for use in forming images in silver by a diffusion transfer process, said method comprising the steps of:

a. forming a dispersion comprising a solution of an alkali-impermeable polymer with an insoluble silver precipitant dispersed therein, said alkali-impermeable polymer being hydrolyzable to an alkali-permeable polymer,

b. coating a layer of said dispersion on a support,

c. drying said coated layer, and

d. subjecting said coated layer to a hydrolysis treatment to convert at least a depthwise portion of said layer to said alkali-permeable polymer.

3,928,666

GLASS FIBERS COATED WITH A SIZE CONTAINING STARCH ESTERS OF ISOALKANOIC ACIDS

Albert R. Morrison, Newark; Harold L. Haynes, Granville, and Reuben Hays Bell, Heath, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 29, 1972, Ser. No. 319,414

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B32B *17/02*; **C03C** *25/02*

U.S. Cl. 428—378 **5 Claims**

1. Glass fibers having an aqueous coating thereon consisting essentially of solubilized starch; unctuous material from the group consisting of vegetable waxes, animal waxes, mineral waxes, synthetic waxes, fats and gelled oils; and an effective amount of swollen but unburst starch granules modified by esters of an isoalkanoic acid of from 4 to 6 carbon atoms inclusive, to retain said unctuous material as a lubricant.

5. Glass fibers having a coating thereon consisting essentially of the following solids in percent by weight:

Esterified starch having ester groups of the formula O ‖ R—C—O—starch wherein R is an isoalkyl group of from 3 to 5 carbon atoms	5–90%
Underivatized starch	0–75%
Solid unctuous material	5–40%
Secondary film formers	0–5%
Nonionic oils	0–5%
Cationic lubricants	1–7%
Emulsifying agents	0.5–7%

an effective amount of said esterified starch being present as swollen and unburst starch granules to restrict migration of the unctuous material through the fibers.

3,928,667

AQUEOUS THERMOSET COATINGS UTILIZING TITANIUM CHELATE CURING AGENTS

Donald D. Carlos, Middletown, and Darrell D. Hicks, Jeffersontown, both of Ky., assignors to Celanese Coatings & Specialties Company, Jeffersontown, Ky.

Continuation-in-part of Ser. No. 426,786, Dec. 20, 1973, abandoned. This application Nov. 22, 1974, Ser. No. 525,891

Int. Cl.² B05D *7/24*; **C08L** *29/00*

U.S. Cl. 427—385 **7 Claims**

1. A thermosetting coating composition comprising

A. a water soluble or water dispersible polymer of a hydroxyalkyl acrylate or methacrylate wherein the hydroxyalkyl group contains 2 to 4 carbon atoms and wherein the polymer is

1. an inherently water soluble polymer which has a weight average molecular weight of less than 10,000 and which contains 10 to 100% by weight of the hydroxyalkyl acrylate or methacrylate and 90 to 0% by weight of a monomer copolymerizable therewith, said weight percentages being based on the total weight of polymer, or

2. a polymer which has sufficient acid content to be water soluble or water dispersible when salted with an inorganic or organic base, said polymer having an acid value of at least 20 and which contains 10 to 95% by weight of the hydroxyalkyl acrylate or methacrylate, 5 to 25% by weight of a polymerizable ethylenically unsaturated acid or a carboxylic acid containing mercaptan or mixture thereof and 0 to 85% by weight of a monomer copolymerizable therewith, said weight percentages being based on the total weight of polymer;

B. 0.5 to 10% by weight, based on the weight of polymer, of a titanium chelate catalyst; and

C. an aqueous solvent or aqueous dispersant wherein said coatings composition has a total solids content of 25 to 80% by weight.

7. A process for forming a thermoset coating on a substrate which comprises

A. applying to a substrate the coating composition of claim **1**; and

B. heating the coating at a temperature of at least 250°F. for a time sufficient to dry the coating and to crosslink it by ester interchange between the ester groups in the polymer.

3,928,668

ELECTROSTATIC DEPOSITION OF DRY CERAMIC POWDERS

Jerry D. Snow, Parma, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

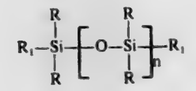
Filed May 6, 1974, Ser. No. 467,086

Int. Cl.² B05B *5/02*; **B44D** *1/094*

U.S. Cl. 427—14 **8 Claims**

1. An improved process for forming a ceramic coat on a substrate by electrostatically depositing thereon a ceramic powder having an extended retention time of an electric charge, comprising:

a. coating said ceramic powder with a liquid, curable organopolysiloxane having the formula:



in which R represents monovalent substituents which may be the same or different and are selected from the group consisting of hydrogen, alkyl or cycloalkyl up to 6 carbon atoms, alkenyl or cycloalkenyl up to 6 carbon atoms alkoxy up to 4 carbon atoms, and aryl or arakyl up to 10 carbon atoms, R_1 represents R and and hydroxyl, at least about one-fourth of said R substituents is hydrogen, and n is a whole number within the range from about 5 to about 30,

b. polymerizing the polysiloxane on said powder to a solid state to form a powder having a resistivity of at least about 10^{-12} ohm-cm in an environment having a relative humidity of about 88%,

c. electrostatically depositing the polysiloxane coated ceramic powder substantially uniformly over a portion of said substrate substantially at ambient room temperature,

d. subjecting said substrate to physical movement which but for the polysiloxane coating on the ceramic powder would dislodge some of said powder from the substrate, and

e. heating the substrate to fuse the ceramic powder and form thereover a substantially uniform ceramic coat.

3,928,669

IMAGE-FORMING METHOD

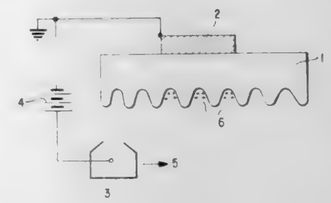
Isoji Takahashi, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 11, 1973, Ser. No. 423,800

Claims priority, application Japan, Dec. 12, 1972, 47-124563

Int. Cl.² G03G *13/08*, *13/22*

U.S. Cl. 427—19 **12 Claims**



1. An image-forming method, which comprises

positioning a grounded conductive pattern in contact with the back side of an insulating sheet having on the front side a uniform, fine uneven surface of depressions and projections, the depth of said depressions being about 5 to 200 microns,

forming, on said front surface of said insulating sheet, an electrostatic latent image in conformity with said conductive pattern by subjecting said surface to corona discharging,

supplying toner particles thereto to deposit said toner particles only in the depressions in said front surface corresponding to the latent image, and

then transferring said deposited toner particles to a receiving material by facing said front surface to said receiving material, said receiving material tending to damage the developed latent image but being prevented from doing so since the toner particles are deposited only in the said depressions.

3,928,670

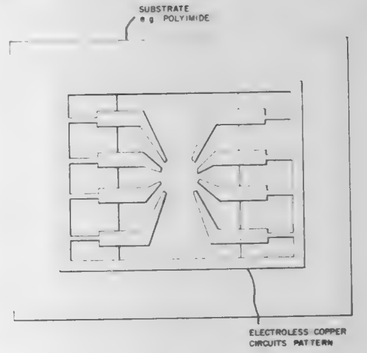
SELECTIVE PLATING ON NON-METALLIC SURFACES

Charles Roscoe Brummett, Harrisburg, and Ray Ned Shaak, Lebanon, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 23, 1974, Ser. No. 508,601

Int. Cl.² C23C *3/02*; **H05K** *3/10*

U.S. Cl. 427—53 **7 Claims**



1. A method for the selective electroless deposition of metals upon a substrate comprising the steps of:

a. applying to the said substrate a thin film of a combination of (1) a dye, (2) stannous dichloride and (3) a chelating

agent, said combination having a light absorbance with 3,750 A to 8,000 A wavelength, said dye being selected from the group consisting of methylrosaniline chloride, azure - A, rose bengal, malachite green, eosin, proflavin, proflavin hydrogen chloride, fluoroscein, fluoroscein sodium; erythrosin and mixtures thereof, said chelating agent being selected from the group consisting of orthophenanthroline and ethylenediamine tetraacetic acid;

b. exposing a selected area of the said substrate to which said combination of (1), (2) and (3) has been applied, to light in said wavelength to effect deactivation of said stannous chloride and create an image catalytic to electroless metal in non-exposed areas;

c. depositing palladium chloride on said substrate treated according to (a) and (b) steps; and

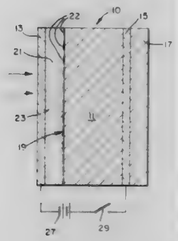
d. immersing in an electroless metal bath said substrate with said salt in the areas rendered catalytically active by the active residue of stannous chloride, said bath providing electrolessly a deposit of said metal on said catalytically active sites.

3,928,671

PROCESS FOR FABRICATING A SOLID STATE, THIN FILM FIELD SUSTAINED CONDUCTIVITY DEVICE

Paul F. Robusto, Huntington Beach, and Craig P. Stephens, Oceanside, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 12, 1973, Ser. No. 415,049
Int. Cl.² B05D *5/12*
U.S. Cl. 427—88 **7 Claims**



1. In the process of fabricating an electrical field sustained conductivity device of the type having a layer of heat-treated cadmium sulfide formed between a bottom electrode consisting of an optically transparent, electrically conductive coating disposed on an optically transparent substrate and a top electrode which is deposited on a composite film which is applied to said cadmium sulfide layer, the steps of:

a. applying to said layer of heat-treated cadmium sulfide between said layer and one of said electrodes a discontinuous layer of metal platelets, said metal being selected from a group consisting of silver, gold, and platinum; and

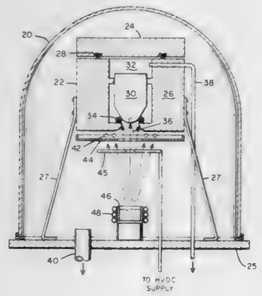
b. co-evaporating onto said metallic layer a second metal and a dielectric so as to form said composite film, said second metal being selected from a group consisting of gold, aluminum, silver, and palladium and said dielectric being silicon monoxide.

3,928,672

PROCESS FOR PROVIDING A HARD COATING TO MAGNETIC TRANSDUCING HEADS

Thomas R. Appleton, Afton; Richard H. Dean, Bloomington; Edward J. Hillman, Minneapolis; Charles J. Nelson, Rosemount, and Gunter E. Sinn, Inver Grove Heights, all of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Division of Ser. No. 38,423, May 18, 1970, abandoned. This application Apr. 14, 1972, Ser. No. 244,301
Int. Cl.² G11B *21/00*
U.S. Cl. 427—127 **5 Claims**



1. A method of treating a magnetic transducing head to extend the useful life of said head comprising the steps of:

a. cleaning the surface of the transducing head that is to be treated;

b. loading said head in a first evacuable chamber and positioning said first evacuable chamber within a second evacuable chamber for exposing only said surface of said head that is to be treated to said second evacuable chamber;

c. applying first and second vacuums from separate vacuum sources to said first and second evacuable chambers for preventing contaminants from passing from said first evacuable chamber into said second evacuable chamber;

d. generating a silicon monoxide evaporant within said second evacuable chamber but not within said first evacuable chamber; and,

e. directing said evaporant onto said surface of said head that is to be treated to form a deposit of silicon monoxide thereon of a predetermined thickness.

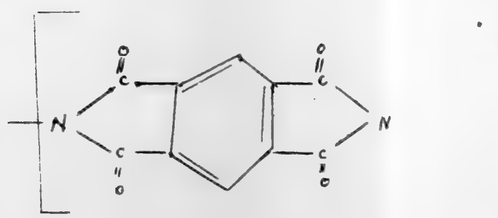
3,928,673

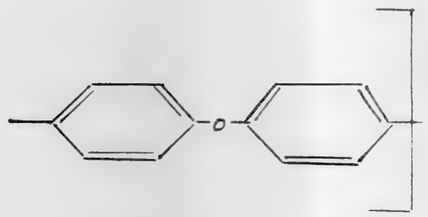
RELEASE AND LUBRICATING COMPOSITION FOR GLASS MOLDS AND METHOD AND APPARATUS UTILIZING SUCH COMPOSITION

Robert P. Pardee; Thomas J. Loran; Archie L. Bickling, Jr., and Richard E. Brown, all of Boulder, Colo., assignors to Ball Brothers Research Corporation, Boulder, Colo.

Filed Aug. 16, 1973, Ser. No. 388,847
Int. Cl.² B28B *7/36, 7/38*
U.S. Cl. 427—135 **8 Claims**

1. A method of forming a lubricating and release coating on metal surfaces which come into contact with molten glass for forming glass articles, comprising: applying a dispersion of about 10% and 90% by weight based upon the solids a high temperature, polyimide-forming system having a repeating structural unit represented by the formula:





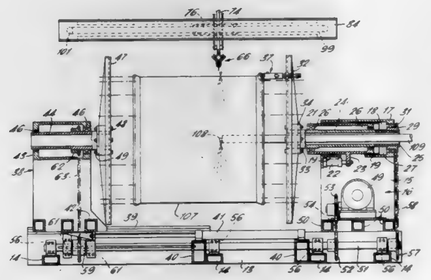
and between about 10% and 90% by weight based upon the solids of graphite having a particle size of about 10 to 200 microns in a liquid carrier to the glass-forming surface and heating for about 0.5 to about 2 hours at between about 105° to 300° F. the surface to remove the carrier and thereafter heating the resulting surface at a temperature about 450° to 700° F., for a period of about several minutes to about 3 hours to form a high temperature, stable polymerized polyimide and admixed graphite coating thereon which is adhered to the glass-forming surface.

3,928,674

METHOD AND APPARATUS FOR PRODUCING ARTICLES OF REINFORCED PLASTICS OR LIKE CONSTRUCTION

Ernst Theodoor Voermans, 9 White St., Clayton, Victoria, Australia

Filed June 12, 1973, Ser. No. 369,136
Int. Cl.² B05B *13/02, 13/06;* **B05C** *7/00*
U.S. Cl. 427—171 **18 Claims**



1. A method of producing reinforced tubular and non-tubular articles, of a wide variety of different shapes in a discontinuous manner, comprising the steps of providing a base of flexible material; holding the opposite ends of the base at two longitudinally spaced respective locations and tensioning the base between the locations, with the holding locations constituting the sole support for the base, whereby the base is self-supporting between the locations, coating the base by spraying an initially fluid, hardenable material onto the base, whereby the hardenable material adheres to and coats the base, and rotating the base about an axis during the spray coating thereof.

3,928,675

CRACKLE FINISH COATING OF ARYLENE SULFIDE POLYMER CONTAINING A FLUOROCARBON POLYMER

Dale O. Tieszen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 299,066, Oct. 19, 1972, Pat. No. 3,857,852. This application Sept. 13, 1974, Ser. No. 505,919
Int. Cl.² B05D *5/00*
U.S. Cl. 427—257 **10 Claims**

1. A process for forming a coated article comprising:

applying to a substrate a dispersion formed by subjecting a poly(arylene sulfide) in particulate form to intensive milling by ball milling or rod milling with a light colored pigment in particulate form capable of withstanding a curing temperature of at least about 300° F; thereafter under less intensive conditions blending the resulting mixture by blade mixing, tumbling, or shaking with a fluorocarbon polymer in particulate form, in the presence of a liquid selected from the group consisting of water, ethylene glycol, propylene glycol, and mixtures thereof; and

heating said thus applied dispersion at a temperature of at least 500°F for at least 5 minutes to obtain a cured coating having a crackle finish.

3,928,676

SYNTHETIC RESIN COMPOSITIONS AND METHODS APPLYING THE SAME TO POROUS MATERIALS TO CONTROL MIGRATION THEREON

Arthur H. Drelich, Plainfield, and George J. Lukacs, Perth Amboy, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Mar. 8, 1974, Ser. No. 449,310
Int. Cl.² B05D *7/00;* **C08L** *1/28*
U.S. Cl. 427—341 **14 Claims**

1. Stable, aqueous, colloidal, synthetic resin compositions having an alkaline pH comprising: (1) from about 0.1% by weight to about 60% by weight of a colloidal synthetic resin; and (2) from about 0.01% by weight to about 2% by weight based on the dry solids weight of the colloidal synthetic resin, of an aluminum hydroxy salt, said aluminum hydroxy salt being a reaction product of (a) an aluminum salt; (b) a hydroxide selected from the group consisting of ammonium hydroxide and alkali metal hydroxides; and (c) a high molecular weight, water-soluble, polymeric, poly-carboxy-containing thickening resin.

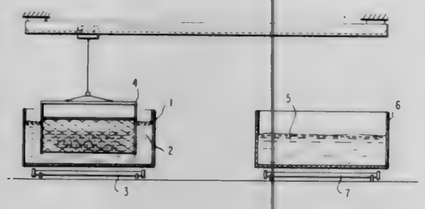
8. A method of applyiing a stable, aqueous colloidal synthetic resin composition to porous materials and controlling its migration thereon which comprises applying to porous materials a stable, aqueous colloidal synthetic resin composition having an alkaline pH comprising: (1) from about 0.1% by weight to about 60% by weight of a colloidal synthetic resin; and (2) from about 0.01% by weight to about 2% by weight, based on the dry solids weight of the colloidal synthetic resin of an aluminum hydroxy salt of a high molecular weight, water-soluble, polymeric, polycarboxy-containing thickening resin; and substantially immediately diluting the synthetic resin composition to substantially immediately coagulate and precipitate the synthetic resin composition.

3,928,677

PROCESS OF TREATING WOOD

Wilson B. Anthony, Auburn, Ala., assignor to Firewood, Inc., Covington, Ga.

Filed Dec. 8, 1972, Ser. No. 313,527
Int. Cl.² C10L *11/00*; B05D *1/00, 3/00, 1/18*
U.S. Cl. 427—374 **10 Claims**



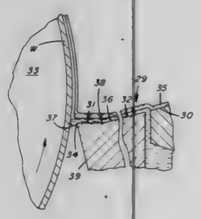
1. A process of treating wood to provide improved burning characteristics comprising immersing a natural wood product in a hydrocarbon bath, heating the bath to a temperature between about 140°C. and 180°C and sufficient to vaporize moisture from the wood and to form pores and passages therein, immediately thereafter cooling the wood product in the presence of hot hydrocarbon, which hydrocarbon provides improved combustion and burning characteristics to the wood, thereby absorbing the hydrocarbon in the pores and passages of the wood product and achieving substantially complete saturation thereof at ambient pressure, and wrapping the cooled wood product in a combustible covering material.

3,928,678

METHOD AND APPARATUS FOR COATING A SUBSTRATE

Brian W. Jackson, Pinner, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 26, 1973, Ser. No. 326,621
Int. Cl.² B05D *1/26, 1/34*; G03C *1/74*
U.S. Cl. 427—402 **8 Claims**



8. A method of simultaneously coating a plurality of distinct superposed layers of liquid coating compositions onto a web substrate from a coating hopper of the type having a downwardly inclined slide surface, which method comprises the steps of:

simultaneously feeding each liquid coating composition in the form of a layer and in superposed relation to the other composition layers onto the upper portion of the slide surface inclined downwardly at a first predetermined angle with respect to horizontal such that the liquid coating composition layers flow down the surface by gravity;

altering the direction of flow of the layers at a lower portion of the slide surface to a second predetermined angle of inclination less than said first angle of inclination so that the liquid composition layers flow more horizontally;

flowing the liquid layers from the lower portion of the slide surface across a generally horizontal gap to a substrate to be coated; and

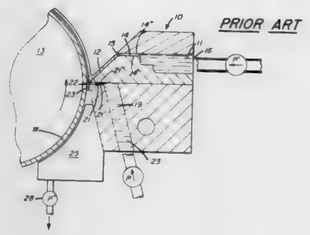
moving the substrate in a generally upward direction across and in contact with the liquid composition layers so that the surface of the substrate engages the lowermost layer and simultaneously picks up all of said compositions in distinct superposed layers.

3,928,679

METHOD AND APPARATUS FOR COATING A MULTIPLE NUMBER OF LAYERS ONTO A SUBSTRATE

Brian W. Jackson, Pinner, England; Dean E. Winkler, and Charles B. Woodworth, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 26, 1973, Ser. No. 327,048
Int. Cl.² B05D *1/26, 1/34*; G03C *1/74*
U.S. Cl. 427—402 **6 Claims**



1. A method of simultaneously coating a plurality of distinct superposed layers of liquid coating compositions onto a substrate from an extrusion-slide coating hopper having both an extruder slot and a downwardly inclined slide surface, which method comprises the steps of:

extruding a first liquid coating composition from an extruder slot across a generally horizontal gap to the substrate;

simultaneously feeding a second liquid coating composition in the form of a layer onto the upper portion of the inclined slide surface so that the second liquid layer flows as a layer by gravity downwardly on the inclined slide surface toward the substrate;

altering the direction of flow of the second layer at a lower lip portion of the slide surface to a direction closer to horizontal than the direction of the upper portion of the slide surface so that the second liquid layer flows in a more horizontal direction as it approaches the substrate;

flowing the second liquid layer from the lower portion of the slide surface on to the extruded first layer bridging the gap; and

moving the substrate in a generally upward direction across and in contact with the bridge of coating compositions so that the surface of the substrate picks up and is coated by the plurality of liquid composition layers.

3,928,680

PROCESS FOR MAKING PITCH-IMPREGNATED FIBER PIPE

Charles R. Gannon, Ashland, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 224,216, Feb. 7, 1972, abandoned. This application Aug. 2, 1972, Ser. No. 277,290
Int. Cl.² B05D *1/18*; F16L *9/14*
U.S. Cl. 427—398 **5 Claims**

1. A process for manufacturing a pitch-impregnated fiber pipe having a metallic-colored surface comprising;

a. forming a tubular body of interfelted fibrous material;

b. immersing said tubular body of (a) in a liquid impregnant consisting essentially of molten unoxidized petroleum pitch and suspended leafing aluminum pigment of ASTM designation 962–66;

c. forcing said liquid impregnant of (b) into the pore spaces and interstices of said tubular body; and

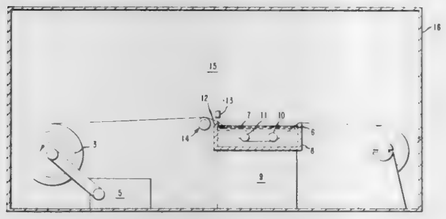
d. removing said tubular body from said liquid impregnant and quenching said tubular body; thereby forming a pitch impregnated fiber pipe having a metallic-colored surface.

3,928,681

MELT COATING WITH ALKALI METALS

Raymond Daniel Alaburda, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed June 5, 1974, Ser. No. 476,535
Int. Cl.² C23C *1/00*
U.S. Cl. 427—431 **7 Claims**



1. A process for coating the surface of a metal sheet with an alkali metal in an inert atmosphere which comprises

A. passing the metal sheet presenting a surface to be coated into a bath of molten alkali metal,

B. rubbing the immersed metal sheet with at least one bar of a metal inert to the alkali metal and at least about as hard as the metal sheet, to wet at least the surface to be coated with the molten alkali metal,

C. withdrawing the metal sheet from the bath bearing a film of molten alkali metal, and

D. cooling the metal sheet to solidify molten alkali metal film thereon within about three seconds after removal from the bath.

3,928,682

METHOD FOR THE SURFACE TREATMENT OF POLYESTER MATERIALS

Julius Hermes, Martinsville, Va., assignor to Martin Processing, Inc., Martinsville, Va.

Continuation-in-part of Ser. No. 192,935, Oct. 27, 1971, abandoned. This application Jan. 2, 1974, Ser. No. 430,084
Int. Cl.² B05D *3/00*; B32B *9/04, 27/06*
U.S. Cl. 427—444 **5 Claims**

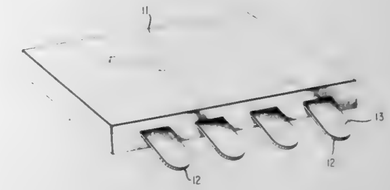
1. A method for surface-treating a polyester film in order to improve the adherability thereof to other materials comprising subjecting said polyester film to treatment under substantially anhydrous conditions with a solution comprising an alkali metal hydroxide in a relatively high boiling glycol selected from the class consisting of ethylene glycol, propylene glycol, diethylene glycol, dipropylene glycol and tetraethylene glycol.

3,928,683

CORROSION INHIBITOR

Edwin Arthur Chandross, Berkeley Heights, and Valerie Jeanne Kuck, Upper Montclair, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 6, 1974, Ser. No. 467,108
Int. Cl.² B32B *9/04, 9/06*
U.S. Cl. 428—447 **9 Claims**



1. An electrical device having a metal surface to at least a portion of which electrical connections are to be made by soldering, and having a coating on said portion which protects it against surface alteration which would tend to render such soldering more difficult but through which coating soldering can be effected, said coating comprising a polysiloxane having side chain substituents made up of terminal alkyl groups, containing at least 3 carbon atoms, joined by means of amide linkages to alkylene groups, containing not more than 6 carbon atoms, which are in turn bonded to silicon atoms of the siloxane.

3,928,684
STRENGTH CHARACTERISTICS OF GLASS FIBER REINFORCED VINYL CHLORIDE THERMOPLASTICS AND CHLORINATION PRODUCTS THEREOF

Robert Buning, Troisdorf-Sieglar; Peter Loebler, Troisdorf, and Werner Trautvetter, Troisdorf-Spich, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed May 24, 1973, Ser. No. 363,769

Claims priority, application Germany, June 7, 1972, 2227650

Int. Cl.² B32B *5/22, 17/06*

U.S. Cl. 428—297 **19 Claims**

1. Polyvinylchloride or chlorinated polyvinylchloride polymer article reinforced with glass fibers coated with vinyl chloride-vinyl trialkoxysilane copolymers containing a major amount of vinyl chloride in an amount effective to increase the strength characteristics of the article.

16. Glass fibers coated with vinyl chloride - vinyl trialkoxysilane copolymers containing a major amount of vinyl chloride, suitable for use in a polyvinyl chloride or chlorinated polyvinyl chloride polymer article for reinforcing said article.

3,928,685
1-HYDROXY-1-(4-AMINOPHENYL POLYMETHINE) NAPHTHALAN COMPOUNDS AND PRESSURE-SENSITIVE RECORDING SYSTEM THEREWITH

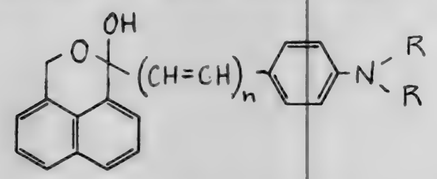
Derek J. Alsop, North Tonawanda, N.Y., assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.

Filed Nov. 21, 1974, Ser. No. 525,990

Int. Cl.² C07D *311/92;* **C08K** *5/15*

U.S. Cl. 428—411 **10 Claims**

1. A 1-hydroxy-1-(4-aminophenyl polymethine) naphthalan compound having the following structural formula:



wherein each R represents either a hydrogen atom or a lower alkyl group having from 1 to 5 carbon atoms and wherein *n* is an integer from 1 to 3.

7. In a pressure-sensitive recording system comprising a layer of microcapsules containing a substantially colorless color precursor compound and a layer of an electron-acceptor material, the improvement which comprises utilizing, as said color precursor compound, a naphthalan compound as set forth in claim **1**.

3,928,686
HEAT-SENSITIVE RECORDING MATERIALS

Albert Lucien Poot; Frans Clement Heugebaert, both of Kontich; Wilhelmus Janssens, Aarschot, and Antoon Leon Vandenberghe, Hove, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Feb. 26, 1973, Ser. No. 335,670

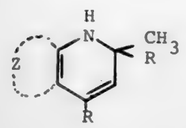
Claims priority, application United Kingdom, Feb. 28, 1972, 9141/72

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B41M *5/18*

U.S. Cl. 428—457 **15 Claims**

1. A recording process comprising the step of applying a heat pattern corresponding to an image to a recording material containing a silver compound that is generally non-light sensitive at a temperature below about 200°C and is adapted to undergo chemical reduction to release silver metal, while said silver compound is in reactive contact with an organic reducing compound corresponding to the following general formula:



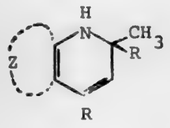
in which:

R represents a C_1–C_4 alkyl group, and

Z represents the necessary atoms to close a benzene, naphthalene, anthracene, carbazole, indole, benzo furan, dibenzofuran, phenothiazine, fluorene, indene, xanthene, or quinolin-2-one nucleus,

whereby said silver compound is reduced in the heated regions of said material to silver metal and forms a visible image of said pattern.

9. A sheet material comprising at least one recording layer containing an organic reducing compound corresponding to the following general formula:



in which:

R represents a C_1–C_4 alkyl group, and

Z represents the necessary atoms to close a benzene, naphthalene, anthracene, carbazole, indole, benzo furan, dibenzofuran, phenothiazine, fluorene, indene, xanthene, or quinolin-2-one nucleus,

and having in said layer or in a contacting layer a silver compound reducible by said organic reducing compound to silver metal under the influence of heat, said silver compound being generally non-light sensitive at a temperature below about 200°C.

3,928,687
PROCESS FOR THE PRODUCTION OF MODIFIED POLYPROPYLENES

Shozo Wada, Zushi; Makoto Yoda, and Takashi Uchiyama, both of Oi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1972, Ser. No. 234,640

Claims priority, application Japan, Mar. 16, 1971, 46-14066

Int. Cl.² C08K *7/14;* **C08L** *23/26*

U.S. Cl. 428—461 **9 Claims**

1. A process for the production of a modified polypropylene, which comprises heating a crystalline polypropylene with at least one member selected from the group consisting of cis-4-cyclohexene-1,2-dicarboxylic acid, endo-bicyclo[2,2,1]-5-heptene-2,3-dicarboxylic acid, methyl-endo-bicyclo[2,2,1]-5-heptene 2,3-dicarboxylic acids and their anhydrides in the presence of a free radical producing agent.

3,928,688
PRINTING FIBROUS MATERIAL

Karl Dachs, Frankenthal; Gerhard Faulhaber, Mannheim; Rolf Fikentscher, Ludwigshafen; Knut Oppenlaender, Ludwigshafen, and Joachim Schulze, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed June 2, 1972, Ser. No. 259,274

Claims priority, application Germany, June 11, 1971, 2128904

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² D06P *1/00*

U.S. Cl. 428—515 **5 Claims**

1. In a process for printing fibrous material wherein a print paste consisting essentially of an oil-in-water emulsion of a pigment, a thickening agent, a pigment binder and emulsifier of the oxyalkylated phenol derivative type is applied to said fibrous material, the improvement which comprises the use as said emulsifier from 0.1 to 1.5% by weight based on the finished print paste of di-(α-phenylethyl)-phenol which has been oxyethylated from 12 to 16 times.

3,928,689
ARTIFICIAL TREE WITH HINGED BRANCHES

Alan Mottel, Yonkers, N.Y., assignor to Consolidated Novelty Co., Inc., Paterson, N.J.

Filed Nov. 7, 1974, Ser. No. 521,935

Int. Cl.² A47G *33/08*

U.S. Cl. 428—9 **1 Claim**

1. An artificial tree including a central cylindrical trunk and a number of branches circumferentially disposed about the trunk, hinge means for joining the branches to the trunk for movement about generally horizontal axes between vertically erect positions and outstretched, up-swept positions, the hinge means including a retaining sleeve fixed to the trunk, elongated tubular, hollow branch receivers for receiving the interior end of a branch, the hinge means further including pairs of parallel tabs circumferentially spaced about the retaining sleeve, the interior portion of each branch receiver being situated between a pair of tabs, pivot means for rotatably mounting the branch receivers on the retaining member, the pivot means including a pin passing through each pair of tabs and through the interior portion of the branch receiver, and providing axes of rotation passing through the branch receivers, the axes being offset interiorly from the centerlines of the branch receivers so the branch receivers with their branches will tend to rotate by the force of gravity from the erect positions to the up-swept positions, and stop means for limiting the outward movement of the branches as they reach their up-swept positions, said stop means comprising the interior faces of the tubular, hollow branch receivers being in alignment with and coming into contact substantially along a line described by a closed figure, with the exterior of the cylindrical central trunk.

3,928,690
RELEASE COATED ADHESIVE TAPE

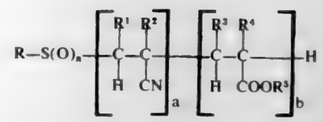
Robert A. Settineri, Telford, Pa., and John T. O'Brien, Cheshire, Conn., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Dec. 30, 1974, Ser. No. 537,625

Int. Cl.² C07C *121/00;* **B32B** *7/10*

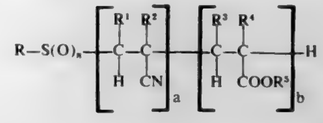
U.S. Cl. 428—40 **29 Claims**

1. A pressure sensitive adhesive tape comprising a flexible backing which has a pressure sensitive adhesive on one side and a release coating on the other side, said release coating consisting essentially of an oligomer represented by the formula



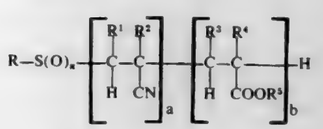
wherein R is a linear or branched alkyl radical having 12 to 22 carbon atoms; R^1 and R^2 may be the same or different and are hydrogen, a $-CH_3$ or $-C_2H_5$ group; R^3 is hydrogen, a $-CH_3$, $-C_2H_5$ or $-COOR^5$ group; R^4 is hydrogen, a $-CH_3$, $-C_2H_5$, $-COOR^5$ or $-CH_2COOR^5$ group provided R^3 is other than $-COOR^5$ if R^4 is $-COOR^5$ or $-CH_2COOR^5$; R^5 is hydrogen or a cation based on an alkali metal, ammonia or an amine; $(a+b)$ is from 4 to 100; $a/(a+b)$ is from 0.0 to 0.6; and n has a value of 0,1 or 2.

10. A flexible backing for pressure sensitive adhesive tape having on at least one side a release coating consisting essentially of an oligomer having a structural formula



wherein R is a linear or branched alkyl radical having 12 to 22 carbon atoms; R^1 and R^2 may be the same or different and are hydrogen, a $-CH_3$ or $-C_2H_5$ group; R^3 is hydrogen, a $-CH_3$, $-C_2H_5$ or $-COOR^5$ groups; R^4 is hydrogen, a $-CH_3$, $-C_2H_5$, $-COOR^5$ or $-CH_2COOR^5$ group, provided R^3 is other than $-COOR^5$ if R^4 is $-COOR^5$ or $-CH_2COOR^5$; R^5 is hydrogen or a cation based on an alkali metal, ammonia or an amine; $(a+b)$ is from 4 to 100; $a/(a+b)$ is from 0.0 to 0.6; and n has a value of 0, 1 or 2.

26. A strucutre comprising an adhesive engaged with a release coating, said release coating consisting essentially of an oligomer represented by the formula



wherein R is a linear or branched alkyl radical having 12 to 22 carbon atoms; R^1 and R^2 may be the same of different and are hydrogen, a $-CH_3$ or $-C_2H_5$ group; R^3 is hydrogen, a $-CH_3$, $-C_2H_5$ or $-COOR^5$ group; R^4 is hydrogen, a $-CH_3$, $-C_2H_5$, $-COOR^5$ or $-CH_2COOR^5$ group, provided R^3 is other than $-COOR^5$ if R^4 is $-COOR^5$ or $-CH_2COOR^5$; R^5 is hydrogen or a cation based on an alkali metal, ammonia or an amine; $(a+b)$ is from 4 to 100; $a/(a+b)$ is from 0.0 to 0.6; and n has a value of 0,1 or 2.

3,928,691
REINFORCED PANELS AND METHOD OF CONSTRUCTING SAME

Richard A. Knudson, P.O. Box 1393, Torrance, Calif. 90505

Filed June 17, 1974, Ser. No. 480,282

Int. Cl.² B32B *3/10, 3/02, 31/04;* **B63B** *3/06*

U.S. Cl. 428—53 **8 Claims**

1. A reinforced panel, comprising:

a reinforcing rod;

a plurality of core members each having edge portions provided with semi-cylindrical grooves generally conforming to the shape of semi-cylindrical portions of said reinforcing rod, pairs of said core members encompassing and in essentially contiguous contact with said reinforcing rod and having their edge portions sealed and bonded

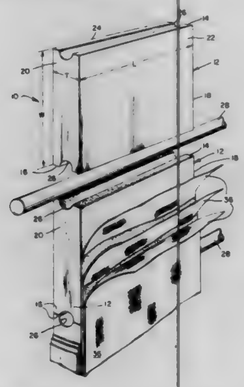
together by a sealant material in abutting relationship with each other and with said reinforcing rod; and

a sheet of material adhered to said core members by an adherent material.

8. A method of constructing a reinforced panel having a curved surface comprising the steps of:

providing a mold defining said curved surface, said mold having a lower edge and an upper edge;

placing a first core member along said lower edge of said mold, said first core member having an upper edge provided with a semi-cylindrical groove generally conforming to the shape of a reinforcing rod extending the full length of said first core member;



placing a first reinforcing rod in said groove on said first core member;

covering said rod and said upper edge of said first core member with an adhesive;

procuring a second core member having upper and lower edges both provided with semi-cylindrical grooves matching the groove in said first core member in size and shape;

sealing the lower edge of said second core member to the upper edge of said first core member and bonding said reinforcing rod to said core members; and

adding additional reinforcing rods and core members in like manner until said mold is covered.

3,928,692

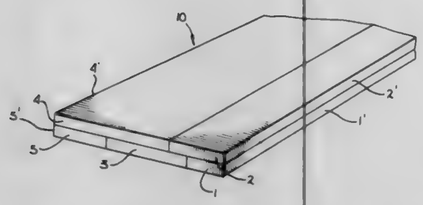
COMPOSITE PLATING TAPE

Peter P. Pellegrino, 2762 Shields Court, Thousand Oaks, Calif. 91360

Filed May 2, 1973, Ser. No. 356,481

Int. Cl.² B32B *3/16*

U.S. Cl. 428—54 **10 Claims**



1. A composite plating tape comprised of a tape configured in at least two layers, each of said layers being comprised of a plurality of sections of adhesive tape, said sections of tape being held in stable spatial relation with respect to one another by the adhesiveness of the adjoining surfaces of said sections of tape, the line of engagement between each pair of said adjacent sections of tape being located within the surface area of at least one other of said sections of tape which is disposed in an immediately adjacent layer thereof, whereby the adhesion between the surfaces of said pair of adjacent sections and said other section of tape keeps said adjacent sections of tape from disengaging, said sections of tape comprising each layer thereof being disposed adjacent to and in adhesion with one another in a direction transverse to their longitudinal direction, whereby the sequential removal of some of said sections of tape provides, sequentially, appropriately spaced tape sections required as barriers in a process for stripping a first metal from a surface and for replating said surface with said second metal.

3,928,693

COMPOSITE ARTICLE OF FIBERS AND RESINS

Bernard Rudloff, Marckolsheim (Bas-Rhin), France

Division of Ser. No. 87,605, Nov. 6, 1970. This application Sept. 19, 1973, Ser. No. 398,766

Int. Cl.² B32B *1/04, 3/02*

U.S. Cl. 428—74 **1 Claim**

1. A composite article comprising at least one layer of fibers permeated by a mixture of a rosin with a curing temperature in a range of about 60° to 100°C and a phenol-formaldehyde polymer whose melting point under a pressure of about 400 to 600 kg/cm² is in a range of about 110° to 200°C, said layer being encased in said polymer.

3,928,694

PILE CARPET AND A PROCESS FOR ITS MANUFACTURE

Ruedi Reinhard, Guger, 4917 Melchnau (Berne), Switzerland

Filed Mar. 16, 1973, Ser. No. 342,084

Claims priority, application Switzerland, Mar. 23, 1972, 4350/72

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² D03D *27/00;* **D04H** *11/00*

U.S. Cl. 428—92 **6 Claims**

1. A pile carpet having a pile perpendicular to a base and including textile yarn wherein the base comprises woven fabric strips abutting each other by their lateral areas and being connected to one another, said strips standing upright on edge on one of their edges, and wherein the pile comprises free, unbound ends of said yarn running perpendicularly to said base in said fabric strips, said free ends projecting beyond the other edges of said fabric strips.

4. A process for manufacturing a pile carpet having a pile layer perpendicular to a base and including textile yarn and in which the base comprises woven fabric strips abutting each other by their lateral areas and being connected to one another, said strips standing upright on edge on one of their edges, and wherein the pile layer comprises free, unbound ends of said yarn running perpendicularly to said base in said fabric strips, said free ends projecting beyond the other edges of said fabric strips, comprising the steps of cutting a fabric web, having warp threads in groups so spaced that the weft threads float between said warp thread groups, in the warp direction into strips including a part of woven fabric and a part of unbound free ends of weft threads extending over each strip's entire length, placing said strips upright on edge, and bonding the lateral areas of the woven parts of said strips so

that the woven parts will result in the base and the free ends of weft threads in the pile of the carpet.

3,928,695

ODORLESS ELECTROCONDUCTIVE LATEX COMPOSITION

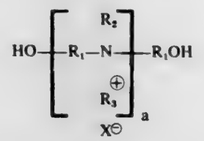
Dennis H. Philp, and Norman L. Madison, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 28, 1974, Ser. No. 484,042

Int. Cl.² B21B *3/02;* **B32B** *33/00, 7/00*

U.S. Cl. 428—95 **15 Claims**

1. An electroconductive latex composition comprising an anionically-stabilized latex and a hydroxyalkyl quaternary ammonium salt represented by the formula:



wherein R_1 is alkylene having from 1 to 6 carbon atoms, R_2 is alkyl having 1 to 6 carbon atoms or $(C_nH_{2n}O)_yH$ where y is 1 to 4 and n is an integer from 1 to 4, R_3 is alkyl having 1 to 6 carbon atoms or $(C_nH_{2n}O)_yH$ where y is 1 to 4 and n is an integer from 1 to 4, a is an integer from 1 to 15, and X is an anion, said ammonium salt being present in an amount sufficient to measurably reduce the volume resistivity of said composition.

11. The composition of claim **1** wherein the composition is applied as a backing to a textile fabric.

12. The composition of claim **1** wherein the composition is applied as a backing to carpet.

3,928,696

STITCHED WEBS OF FLEECES OF SYNTHETIC FIBERS AND METHOD OF MAKING SAME

Martin Wandel; Manfred Salamon, both of Dormagen; Götz Gotmar Dornheim, Leichlingen, and Bernard Kuhlmann, Rheydt, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Sept. 7, 1972, Ser. No. 286,913

Claims priority, application Germany, Sept. 7, 1971, 7133997

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² B32B *7/08, 27/02, 3/28;* **E02B** *3/12*

U.S. Cl. 428—102 **10 Claims**



1. An erosion preventing structural element in the form of a stitched web of fleece of coarse, crimped fibres, consisting of a web of fleece produced from

a. crimped polyamide fibres of dtex 5 to 250 and staple length 20 to 150 mm stitched with 60 to 180 stitches per cm^2,

b. a mesh fabric of synthetic endless yarns stitched into the fleece, the fabric having at least 2 warp yarns and 2 weft yarns per cm^2 and being arranged in the lower third of the web of fleece, and

c. a waterproof binder based on polyacrylic acid ester of at least 15% by weight, this web of fleece having a thickness of 4 to 10 mm and a weight per m^2 of between 500 and 2000 g.

3. A process for the production of erosion preventing structural elements in the form of webs of stitched fleeces of synthetic fibres, which comprises laying crimped polyamide staple fibres of dtex 5 to 250 to form a fleece, stitching together the formed fleece and a mesh fabric, impregnating the resultant combination with a waterproof binder based on polyacrylate and subjecting the impregnated fleece to a heat treatment at temperatures of between 100° and 150°C.

3,928,697

COATED FILMS

William John Mallinson, Colchester; Roy Frederick Huffey, Ipswich, and Geoffrey Pickles Irvin, Brantham, all of England, assignors to Imperial Chemical Industries Limited, London, England

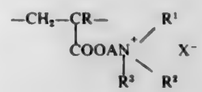
Filed Nov. 25, 1974, Ser. No. 526,925

Claims priority, application United Kingdom, Dec. 6, 1973, 56626/73

Int. Cl.² B32B *1/00, 3/00*

U.S. Cl. 428—142 **14 Claims**

1. An anti-static matt coated plastics film which comprises a self-supporting synthetic plastics film base having superimposed on at least one surface of the film base an adherent matt layer comprising a finely divided particulate material and a resinous binder, wherein the coated film has at least one coating layer comprising an anti-static material, said anti-static material comprising a polymer or copolymer containing repeating units of the formula:



wherein R represents hydrogen or methyl, R^1 represents methyl or ethyl, R^2 and R^3 each independently represent methyl or ethyl or R^2 and R^3 taken together represent $-CH_2CH_2OCH_2CH_2-$ or $-(CH_2)_n-$ where n represents 4, 5 or 6, A represents an alkylene or substituted alkylene group and X^- represents an anion, said polymer or copolymer having an average molecular weight in the range 5,000 to 2,000,000.

4. An anti-static film according to claim **1**, in which an intermediate adhesion-promoting layer is disposed between the plastics film base and the matt layer, the anti-static material being included in the intermediate adhesion-promoting layer in an amount in the range from 0.2 to 2.0 mg/dm^2.

3,928,698

STRINGER TAPE FOR SLIDING CLASP FASTENERS

Yoshiharu Yamaguchi, No. 1482 Hongo, Uozu, Toyama, and Shinya Kawanabe, No. 4001, Mikka-ichi, Kurobe, Toyama, both of Japan

Filed Mar. 25, 1971, Ser. No. 127,929

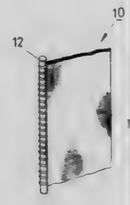
Claims priority, application Japan, Mar. 31, 1970, 45-27725; Mar. 31, 1970, 45-27726

Int. Cl.² B32B *3/10;* **A44B** *19/00;* **D03D** *3/00*

U.S. Cl. 428—172 **3 Claims**

1. A stringer tape for sliding clasp fasteners, comprising a tape web portion and a cord formed separately from the tape web and secured to a longitudinal edge thereof to form therealong a flange for mounting fastener elements, said cord hav-

ing a central, longitudinally extending reinforcing core and a multiplicity of longitudinally extending fibers bonded together



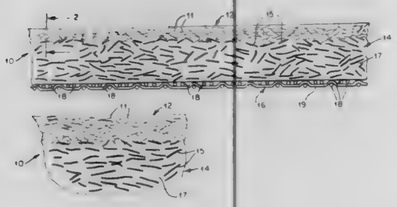
and to said core by an adhesive that is separate from said fibers and core and occupies interstitial spaces thereamong.

3,928,699

PAPERMAKERS FELTS

Eugene Zoltan Fekete, East Greenbush, N.Y., assignor to Huyck Corporation, Wake Forest, N.C.

Filed Aug. 8, 1973, Ser. No. 386,636
Int. Cl.² D03D *3/00*; B22C *9/08*
U.S. Cl. 428—212 **19 Claims**



1. A papermakers felt comprising
a fibrous surface layer and a fibrous underlayer characterized by the fact that
the surface layer comprises randomly arrayed fibers, the preponderance of which are 27 microns or less in diameter, and
the underlayer comprises randomly arrayed fibers a preponderance of which are substantially rigid and substantially nondeformable cross-sectionally, and the diameter of which are at least 1.75 times greater than the diameter of the fibers which comprise said surface layer; said fibrous surface layer being less than one-third the thickness of the entire felt in the uncompressed state.

13. A method of making a papermakers felt comprising the steps of forming a fibrous surface layer which comprises fibers the preponderance of which are 27 microns or less in diameter, said fibrous layer being less than one-third the thickness of the entire felt in the compressed state,
forming an underlayer from a material which comprises randomly arrayed fibers, the preponderance of which are substantially rigid, substantially nondeformable, cross-sectionally and at least 1.75 times greater in diameter than the fibers of said surface layer, and
affixing said surface layer and said underlayer to each other.

3,928,700

METHOD OF PRODUCING THIN CELLULOSE NITRATE FILM

Sebastian B. Lupica, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed May 30, 1974, Ser. No. 474,554
Int. Cl.² B32B *7/02*; C08L *1/18*; G01T *1/02*
U.S. Cl. 428—220 **1 Claim**

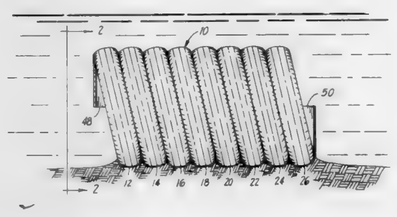
1. A cellulose nitrate film 10 to 20 microns in thickness, uniformly thick within ±0.5 micron, said film formed by a method which comprises forming a solution of cellulose nitrate containing 10–13 percent by weight nitrogen in tetrahydrofuran, said solution containing 7–15 percent by weight dioctyl phthalate based on the weight of cellulose nitrate, evaporating said solution on a flat surface, drying the resultant film, removing said film from said surface, and then annealing said film to remove residual solvent.

3,928,701

HELIX OF A SERIES OF DISCARDED VEHICLE TIRES

Soll Roehner, P. O. Box 428, Pompano Beach, Fla. 33061

Filed July 16, 1974, Ser. No. 488,959
Int. Cl.² B63B *59/02*; B60R *19/00*; B61F *19/04*
U.S. Cl. 428—222 **22 Claims**



1. An article of manufacture, comprising: a structure including a series of connected vehicle tire loops, said loops being generally tubular in form, and means connecting the end of one loop with the end of another loop in end-to-end relation.

3,928,702

PROCESS FOR MANUFACTURING AN ACTIVATED CLAY-COATED PAPER FOR USE AS A PRESSURE-SENSITIVE COPYING PAPER

Hiroharu Matsukawa, and Takao Hayashi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Continuation of Ser. No. 209,462, Dec. 17, 1971, abandoned, which is a continuation of Ser. No. 858,525, Sept. 16, 1969, abandoned. This application Mar. 25, 1974, Ser. No. 454,497
Claims priority, application Japan, Sept. 16, 1968, 43-66818
Int. Cl.² B41C *1/06*; B41M *5/16*
U.S. Cl. 428—323 **12 Claims**

1. In a process for producing color on a support having coated thereon a layer of an electron accepting clay material capable of forming a distinct color when contacted with a colorless, electron donating color former wherein a layer of electron accepting clay material is applied to said support and thereafter said electron accepting clay is contacted with a colorless, electron donating color former, the improvement which comprises adding a hydrophobic oily material as an oil in water emulsion to a water dispersion of said clay and then coating the obtained water dispersible emulsion and said clay onto the support and drying the clay coated support, the amount of said hydrophobic oily material to the clay ranging from 1:50 to 1:2 parts by weight.

10. A pressure-sensitive copying paper comprising a layer of microcapsules containing a color former and a layer of an electron-accepting clay material capable of forming a distinct color when contacted with the color former, said layers coated on the same or different support, and said layer of electron-accepting clay material containing a binder and a hydrophobic oily material, the amount of said hydrophobic oily material to the clay ranging from 1:50 to 1:2 parts by weight.

3,928,703

PROCESS FOR COATING A SUBSTRATE WITH A FLUORINATED ORGANIC POLYMER AND PRODUCT THEREOF

John Ransom Cook, Riegelsville, Pa., assignor to Chemical Fabrics Corporation, Bennington, Vt.

Continuation-in-part of Ser. No. 255,995, May 23, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,064
Int. Cl.² B05D *5/00*; D06M *15/32*
U.S. Cl. 428—255 **14 Claims**

1. A method for coating a substrate selected from the group consisting essentially of woven and non-woven fiberglass, asbestos, and wire cloth with a fluorinated organic polymer, wherein the substrate contains openings as large as about 12 mils, which comprises the steps of:
a. preparing a liquid suspensoid containing the fluorinated organic polymer and spherical beads, the major portion of which have a maximum diameter of 25 microns or less and which are capable of being suspended in the suspensoid and will withstand the fusion temperature of the polymer;
b. applying the suspensoid to the substrate to form a coated substrate material;
c. evaporating the suspensoid liquid medium; and
d. heating the coated substrate to at least the fusion temperature of the polymer to form a dried non-porous coated product.

10. A smooth, non-porous product comprising a substrate selected from the group consisting essentially of woven and non-woven fiberglass, asbestos, and wire cloth having a coating which comprises a fluorinated organic polymer and spherical beads, the major portion of which have a maximum diameter of 25 microns or less and which can withstand the fusion temperature of the polymer, said substrate having openings in its structure as large as about 12 mils.

3,928,704

METHOD FOR PRODUCING THIN-WALLED ARTICLES FROM PLASTICS

Viktor Heidingsfeld; Slavko Hudeček; Jaroslav Hnídek; Jan Kolařík, and Jiri Zelinger, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Division of Ser. No. 302,898, Nov. 1, 1972, Pat. No. 3,875,261. This application June 24, 1974, Ser. No. 482,641
Claims priority, application Czechoslovakia, Nov. 5, 1971, PV7797-71
Int. Cl.² B32B *7/00*; D04H *3/12*, *13/00*
U.S. Cl. 428—260 **12 Claims**

1. A thin-walled plastic article comprising a uniform blend of an admixture of at least one hydrophilic filler based on a synthetic cross-linked water-insoluble macro-molecular compound containing polar groups capable of binding water reversibly, at least one liquid boiling in the range of 60° to 140°C and effective to swell said hydrophilic filler selected from the group of water and lower aliphatic alcohols, and a vinyl chloride plastisol type resin material selected from the group of polyvinylchloride, copolymers of vinyl chlorid and mixtures thereof, said liquid being in an amount of at least 10% by weight referred to the hydrophilic filler, said blend being formed into an expanded jell and set into a predetermined shape.

3,928,705

DIELECTRIC INSULATION EMPLOYING OPEN-CELLED MICROPOROUS FILM

John T. Loft, Springfield, N.J., and John A. McTaggart, Erie, Pa., and Steven G. Plovan, Livingston, N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 134,423, April 15, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 331,843
Int. Cl.² B44D *1/18*, *1/44*
U.S. Cl. 428—311 **4 Claims**

1. An electrical conductor having a dielectric insulation layer for retarding the discharge of electrical charges comprising a partially heat-shrunk open-celled microporous film comprised of a polymer selected from polyolefins, polyacetals, polyamides, polyesters, polyalkylene sulfides and polyarylene oxides having a reduced bulk density as compared to the bulk density of the corresponding polymer films having no open-celled structure, a crystallinity of above about 20 pecent, a pore size of about 100 to 12,000 Angstroms, a pre-impregnation nitrogen flux of about 5–400, and an elastic recovery at 50 percent extension of greater than 40% and said polymer film impregnated with a dielectric liquid selected from a halogenated organic compound having from 1 to 5 halogen substituents and from 1 to 3 aryl groups; perfluorobutylamines and ethers; perfluorohydrocarbons; silicone oils; mineral oils; castor oil; and cottonseed oil, said dielectric liquid being in contact with said electrical conductor.

3. A method for retarding the discharge of electrical charges which comprises placing a partially heat-shrunk open-celled microporous polymer film in contact with an electrical conductor to insulate said electrical conductor, said polymer film comprising a polymer selected from polyolefins, polyacetals, polyamides, polyesters, polyalkylene sulfides and polyarylene oxides having a reduced bulk density as compared to the bulk density of the corresponding polymer films having no open-celled structure, a crystallinity of above about 20 percent, a pore size of about 100 to 12,000 Angstroms, a pre-impregnation nitrogen flux of about 5–400, and an elastic recovery at 50 percent extension of greater than 40% and said polymer film impregnated with a dielectric liquid selected from a halogenated organic compound having from 1 to 5 halogen substituents and from 1 to 3 aryl groups; perfluorobutylamines and ethers; perfluorohydrocarbons; silicone oils; mineral oils; castor oil and cottonseed oil, said dielectric liquid being in contact with said electrical conductor.

3,928,706
WEAR-RESISTANT DECORATIVE LAMINATES AND METHODS FOR PRODUCING SAME

Harold Gibbons, Wokingham, England, assignor to Formica International Limited, London, England

Filed June 25, 1973, Ser. No. 373,308
Int. Cl.² B32B *5/16*; **B44F** *1/00*
U.S. Cl. 428—323 **13 Claims**

1. A wear-resistant decorative plastics laminate, being the consolidated cured unitary structure obtained by the application of heat and pressure to a superimposed assembly consisting essentially of, in this order, (1) a core of thermosetting resin-impregnated fibrous sheets, (2) a coloured or printed decorative fibrous sheet impregnated with a thermosetting resin, (3) a wear-resistant layer consisting essentially of a thermosetting resin composition, a finely divided water-insoluble mineral matter having a hardness of at least 7 on the Moh's scale of hardness and a finely divided fibrous cellulosic material and (4), as an outermost lamina, an overlay sheet consisting essentially of an alpha-cellulose paper impregnated with a thermosettable resin.

3,928,707
PAPER COATING LUBRICANTS AND COATED PAPER INCORPORATING SUCH

George E. Lauterbach, Naperville, and Marla S. Crill, Lisle, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Nov. 6, 1974, Ser. No. 521,391
Int. Cl.² B32B *9/06*, *27/10*
U.S. Cl. 428—342 **12 Claims**

1. A coated paper comprising
a. a cellulosic, non-woven paper sheet member, and
b. a coating integral with at least one of the two opposed faces of said paper sheet member,
c. said coating comprising from about 1.4 to 17 grams per square meter relative to said paper sheet member,
d. said coating being further comprised of coating binder, particulate pigment, and at least one monohydric aliphatic alcohol containing from 16 through 30 carbon atoms per molecule, the weight ratio of said coating binder to said particulate pigment ranging from about 8:100 to 50:100, and the weight ratio of said alcohol to said particulate pigment ranging from about 0.2:100 to 3:100.

5. A coated paper comprising
a. a cellulosic, non-woven paper sheet member, and
b. a coating integral with at least one of the two opposed faces of said paper sheet member,
c. said coating comprising from about 1.4 to 17 grams per square meter relative to said paper sheet member,
d. said coating being further comprised of coating binder, particulate pigment and a lubricant composition, the weight ratio of said coating binder to said particulate pigment ranging from about 8:100 to 50:100, and the weight ratio of said lubricant composition to said particulate pigment ranging from about 0.2:100 to 3:100,
e. said lubricant composition comprising from about 1 to 85 weight percent of at leasat one paraffinic hydrocarbon containing from 16 through 30 carbon atoms per molecule with the balance up to 100 weight percent thereof being at least one monohydric aliphatic alcohol containing from 16 through 30 carbon atoms per molecule.

3,928,708
TRANSPARENT FIRE RESISTANT POLYMERIC STRUCTURES

George M. Fohlen, Millbrae; John A. Parker, Los Altos, and Paul M. Sawko, San Jose, all of Calif., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Jan. 29, 1974, Ser. No. 437,556
Int. Cl.² B32B *27/36*, *27/38*
U.S. Cl. 428—412 **10 Claims**

1. A transparent heat-, fire- and impact-resistant laminate structure comprising:
1. a heat resistant layer of an epoxy resin cured to a hard solid with an alkoxy boroxine catalyst,
2. a layer of high impact strength aromatic polycarbonate resin selected from a polybisphenol A carbonate resin or a polyphenolphthalein carbonate resin, and
3. intermediate said layers, a transparent adhesive elastomeric interlayer.

8. The structure of claim **1**, wherein the laminate structure is coated with a thin transparent polymeric abrasion resistant material.

3,928,709
FERROUS FERRIC OXIDES, PROCESS FOR PREPARING SAME AND THEIR USE IN MAGNETIC RECORDING

Roger G. L. Audran, Vitry-Sur-Seine, and Bernard J. Pinguad, Vincennes, both of France, assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 230,915, March 1, 1972, abandoned, which is a continuation-in-part of Ser. No. 74,533, Sept. 22, 1970, abandoned. This application Sept. 7, 1973, Ser. No. 395,220
Claims priority, application France, Sept. 13, 1972, 72.32367
Int. Cl.² C09G *49/08*
U.S. Cl. 428—539 **22 Claims**

1. Acicular ferrous ferric oxide consisting essentially of acicular crystals that have an acicularity ratio of at least 15, a coeffecient of polydispersion above 2, and which comprise alkali metal ions which impart a basicity of at least 0.04 meq. per gram to said oxide.

4. Acicular ferrous ferric oxide according to claim **3** in which said alkali metal ions are sodium or potassium ions, said basicity is in the range of 0.04 to about 0.2 meq. per gram of oxide and said alkaline earth metal ions are calcium ions.

16. A process for preparing acicular ferrous ferric oxide crystals for magnetic recording which comprises
adding under non-oxidizing conditions, at a temperature below about 60°C, an aqueous solution of ferrous salt to an aqueous solution of a stoichiometric excess of an alkaline hydroxide while substantially avoiding local excesses of said ferrous salt, to form an aqueous dispersion of ferrous hydroxide particles, said alkaline hydroxide being present in said aqueous dispersion in a concentration of at least a 500% stoichiometric excess;
introducing oxygen into said dispersion at a temperature of about 20° to about 60°C for a period of time sufficient to convert said ferrous hydroxide particles to crystals of alpha ferric oxide hydrate, the concentration of ferrous salt in said aqueous solution being such that the concentration of said alpha ferric oxide hydrate formed in said dispersion is less than about 15 grams per liter;
discontinuing introduction of said oxygen into said dispersion;
boiling said dispersion to obtain further crystallization of said alpha ferric oxide hydrate crystals;
dehydrating said alpha ferric oxide hydrate crystals to form alpha ferric oxide;
reducing said alpha ferric oxide to form ferrous ferric oxide and recovering said ferrous ferric oxide.

3,928,710
HEAT ACTIVATED TRANSFERS

Raymond Mills Arnold, Biddenden; Eric Henry Francis Neaves, Lympe, and Leslie John Phillips, Ashford, all of England, assignors to Letraset International Limited, London, England

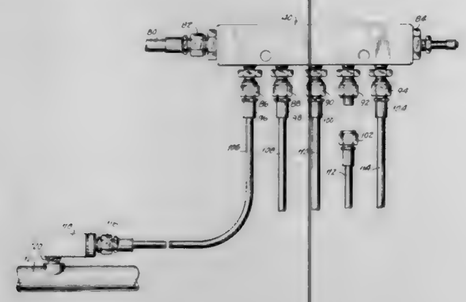
Continuation-in-part of Ser. No. 134,445, April 15, 1971, abandoned. This application July 10, 1973, Ser. No. 378,237
Claims priority, application United Kingdom, Apr. 29, 1970, 20699/70
Int. Cl.² B32B *7/06*
U.S. Cl. 428—483 **11 Claims**

1. A heat transfer material consisting essentially of a film carrier of polyethylene terephthalate, a thermoplastic layer consisting essentially of an acrylic resin adherent to said film carrier, said layer being essentially unpigmented, and a thermoplastic image in printing ink upon said acrylic resin layer, the acrylic resin having a hardness sufficient to reduce the bond between the polyethylene terephthalate carrier and acrylic layer upon application of heat, such bond at elevated temperatures being weaker than the bond between the thermoplastic image and a receiver surface at such elevated temperatures, whereby the carrier film may be stripped from said acrylic layer at substantially the same temperatures used to effect image transfer to leave the image firmly adhered to the receiver surface and at least a portion of said acrylic layer adhered to the receiver surface and covering said image.

3,928,711
MANIFOLD SYSTEM FOR RENEWING CABLE PRESSURE AND VALVE ARRANGEMENT THEREFOR

William J. Jakobsen, Farmingdale, N.Y., assignor to Lourdes Industries, Inc., Hauppauge, N.Y.

Division of Ser. No. 364,076, May 25, 1973, abandoned, which is a continuation-in-part of Ser. No. 355,759, May 30, 1973.
This application June 27, 1974, Ser. No. 483,897
Int. Cl.² H02G *15/28*
U.S. Cl. 174—11 R 28 Claims



1. Apparatus comprising a source of pressure medium, a plurality of pressurized communication system cables, manifold means coupled to said source for the distribution of said pressure medium from said source, and valve means coupled between said manifold means and said cables to deliver said pressure medium from the manifold to said cable, said valve means being responsive to a predetermined excess of pressure in respective of said cables relative to that in said manifold means due to a pressure loss related to one of said cables to seal off the respective cables with respect to said manifold means.

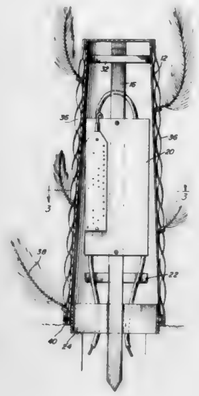
2. Apparatus as claimed in claim 1 comprising a plurality of connecting hoses respectively connected between said manifold means and said cables, said valve means including a plurality of valves each in a respective one of said connecting hoses for coupling the same to a respective one of said communication system cables and operative in response to a predetermined excess of pressure in the associated communication system cable relative to said manifold means to seal the associated cable from the associated connecting hose.

3,928,712
TERMINAL ENCLOSURE WITH ARTIFICIAL FOLIAGE

James C. Sears, Tonawanda, N.Y., assignor to Hinman Specialties, Inc., Buffalo, N.Y.

Filed Apr. 5, 1974, Ser. No. 458,446
Int. Cl.² A41G *1/00*; A47G *33/06*; H01R *13/52*
U.S. Cl. 174—38 2 Claims

1. In combination, an above ground utility terminal oriented in relation to a building, lawn, or other area such that the utility terminal is normally observable and represents a permanently installed unsightly above ground projection, and concealing means for the above ground terminal for concealing the utility terminal from a point adjacent ground surface to a point above the terminal, said utility terminal being in the form of a hollow enclosure enclosing the terminal components with the enclosure extending above ground and including a waterproof peripheral wall and top for protecting the terminal components, said concealing means including a pair of vertically spaced collars conforming generally in peripheral shape to the enclosure and mounted thereon in vertically spaced relation with the lower collar adjacent the ground surface and the upper collar adjacent the upper end of the enclosure, setscrew means extending through the lower collar for securing said collars removably to the enclosure, each of said collars including a peripheral outwardly extending flange, a plurality of spirally twisted rods extending between the flanges and rigidly secured thereto with the twisted rods being oriented in circumferentially spaced relation outwardly of the enclosure, a plurality of artificial foliage branches mounted on each of said rods for completely covering and concealing the rods, collars and enclosure to simulate foliage, each of the

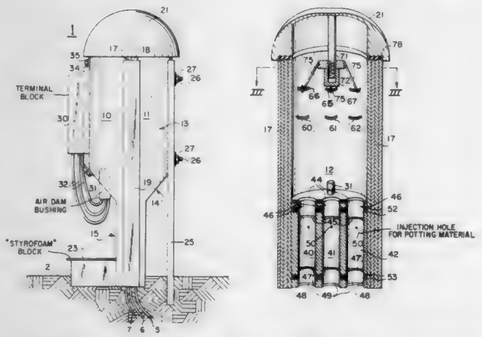


branches including a wire member attached to the twisted rod by wrapping the wire member around the twisted rod with the spiral twist in the rod serving to retain the branches in predetermined orientation on the rod thereby maintaining the continuity of the concealment of the terminal enclosure with the collars, rods and branches being removable from the enclosure as a unit to enable access to the enclosure and access to terminal components therein.

3,928,713
PRESSURIZED UNDERGROUND CABLE PEDESTAL

Glenn T. Davis, Rte. 2, Box 148-C, Monmouth, Oreg. 97361

Filed June 11, 1974, Ser. No. 478,323
Int. Cl.² H02G *9/02*
U.S. Cl. 174—38 6 Claims



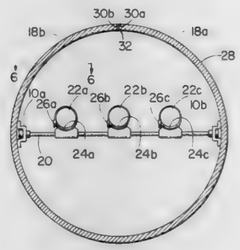
1. A pedestal closure for enclosing above-ground extensions of underground cables comprising, a first riser portion, a second riser portion, said first and second riser portions mating and forming an upper pedestal portion comprising a splice chamber, an intermediate tapered pedestal portion and a lower relatively narrow pedestal portion, each of said riser

portions having a curved internal element in said relatively narrow pedestal portion and the elements of the two riser portions being opposed and defining plural spaced cable chambers, means forming a seal between said first and second riser portions, a cap engaging with said riser portions and closing said splice chamber defined thereby, the cap including sealing means between an edge of the cap and edges of the first and second riser portions which the cap abuts, means maintaining the riser portions in contact, means in said splice chamber for supporting cables, and cable terminal blocks supported on the exterior of one of said riser portions.

3,928,714
SIMULTANEOUS OIL AND ELECTRIC TRANSMISSION SYSTEM AND METHOD FOR FABRICATING SAME

Walter E. Matchett, R.R. No. 6, Portland, Ind. 47371

Continuation-in-part of Ser. No. 399,848, Sept. 24, 1973, abandoned. This application June 5, 1974, Ser. No. 476,592
Int. Cl.² H02G *9/00*, *1/00*
U.S. Cl. 174—47 10 Claims



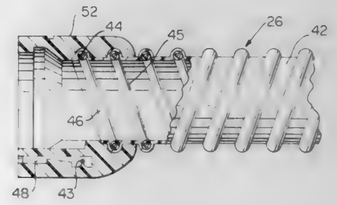
1. A method of fabricating a pipeline and conductor assembly comprising the steps of:
a. forming an elongated rectangular sheet of material into a U-shaped structure comprising a trough portion and a pair of upstanding flanges with the axis of said trough portion parallel to the length of said sheet;
b. placing a conductor in said trough portion in parallel relationship to said axis;
c. securing said conductor to said trough portion in spaced parallel relationship to the bottom and to said sides of said trough portion;
d. forming said U-shaped structure into a closed conduit with the elongated edges of said sheet proximal to each other;
e. attaching longitudinally spaced and transversely oriented conductor-supporting rods between opposite sides of said U-shaped structure prior to said placing operation;
f. attaching said conductor to said rods subsequent to said placing operation;
g. attaching pairs of rod-supporting brackets to one surface of said rectangular sheet of material with each pair spaced longitudinally from another pair and with each bracket of a pair spaced transversely from the other bracket of the same pair, prior to said first forming operation; and
h. attaching one of said conductor-supporting rods between each pair of said brackets, subsequent to said first forming operation.

7. A pipeline and conductor assembly which comprises:
a. a conduit of formed sheet construction having a closed and fluid-tight cross section;
b. a conductor being longitudinally disposed in said conduit and maintained in spaced parallel relationship to the inner walls of said conduit;
c. said assembly includes a plurality of rod-supporting brackets being attached to the inside of said conduit on oppositely opposing inner walls thereof, and forming longitudinally spaced pairs of brackets with each bracket located on a plane parallel to the longitudinal axis of said conduit and with each pair of brackets located on a transverse plane of said axis; each assembly includes a plurality of conductor-supporting rods, each having one end thereof attached to one bracket of one of said pairs and each having the other end thereof attached to the other bracket of said pair; and said brackets, said rods, and attaching of said conductor to said rods provides said maintenance of said spaced parallel relationship of said conductor to said inner walls; and
d. each of said conductor-supporting rods comprises a rod portion and flanged end connectors connected to opposite ends of said rod portion; each of said brackets includes slotted plate means, being spaced from the inside surface of said conduit, for receiving one end of one of said flanged end connectors and for securing said rods by said flanged end connectors; and said attachment of said conductor-supporting rods comprises said flanged end connectors and said slotted plate means.

3,928,715
VACUUM CLEANER HOSE ASSEMBLY AND APPARATUS AND METHOD USED IN MAKING SAME

Homer N. Holden, Sylva, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Oct. 31, 1974, Ser. No. 519,909
Int. Cl.² F16L *11/12*; H01B *7/00*
U.S. Cl. 174—47 16 Claims



1. A vacuum cleaner hose assembly comprising, an elongated vacuum hose having opposite ends and a central longitudinal axis, a plurality of electrical conductors extending in a helical pattern along said vacuum hose with each conductor having opposite end portions each disposed in a helical path about said longitudinal axis and each said opposite end portion being arranged immediately adjacent the associated opposite end of said vacuum hose, a plurality of electrical connectors each fixed to an associated end portion of each conductor while being disposed substantially parallel to said longitudinal axis, each of said electrical connectors comprising a knife-like portion provided with opposed edges defining sides of a slot, each knife-like portion being arranged generally transverse the helical path of the associated end portion of its conductor with the conductor end portion being wedged between said opposed edges to provide a firm mechanical and electrical connection, and a pair of hose connectors fixed to said opposite ends of said vacuum hose and formed substantially as an integral part thereof, each of said hose connectors having associated ones of said electrical connectors embedded therein and providing the sole support therefor.

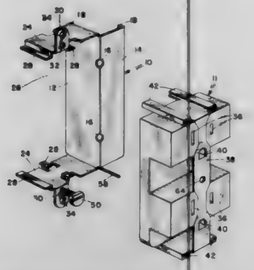
3,928,716
ELECTRICAL OUTLET BOX ASSEMBLY

Louis Marrero, 13004 Via Del Valedor, San Diego, Calif. 92129

Filed Dec. 13, 1973, Ser. No. 424,437
Int. Cl.² H02G *3/12*
U.S. Cl. 174—57 10 Claims

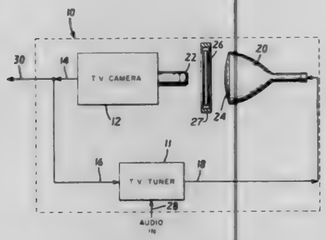
1. An electrical outlet box assembly comprising:

a. a mounting bracket element having a pair of substantially planar spaced parallel wall members joined at one edge by an orthogonal wall member, said members defining a channel;
b. a wiring box element having a front face with outlet openings therein and terminal means connectable to a source of power;



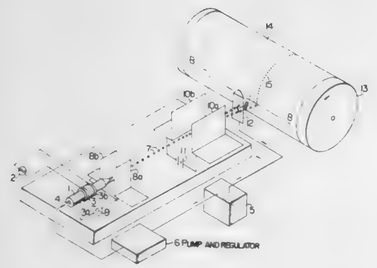
c. one of said elements having track means and the other of said elements having rail means slideably engaged with said track means such that said wiring box is slideably received in said channel; and
d. said bracket element having a substantially L-shaped support fastenable to a substantially orthogonal edge of building stud.

3,928,717
APPARATUS FOR PROVIDING PATTERNS ON TELEVISION RECEIVER SCREENS
Lee A. Dorland, 812 S. Dodge, Iowa City, Iowa 52240
Filed July 17, 1974, Ser. No. 489,360
Int. Cl.² H04N *5/72*
U.S. Cl. 178—6 **1 Claim**



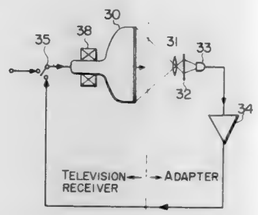
1. An apparatus for producing pleasing images on a TV receiver comprising:
a. a TV camera having a lens, said TV camera capable of producing an electronic signal representative of an optical scene;
b. a pattern generator which varies the frequency of said electronic signal in response to an audio signal present at an audio input of said pattern generator, said pattern generator comprising an audio controlled TV tuner having an input for an audio signal and including means for varying said electronic signal in frequency, with the amount of said variation being determined by the intensity of the audio signal;
c. means for connecting said pattern generator to a kinescope, the screen of which said lens is aimed at to form a feedback loop;
d. a slide holder interposed between said lens and said screen, said slide holder being spaced adjacent to said screen, whereby the planes of said screen and of said slide holder are both substantially in focus of said lens at the same time;
e. a slide in said slide holder, the image on said slide altering said feedback loop;
f. output means for connecting an external TV receiver to an output of said TV camera; and
g. an external TV receiver connected to said output means for viewing said pleasing images.

3,928,718
IMAGE REPRODUCING SYSTEM
Syoji Sagae, Hitachiota, and Tetsuo Doi, Hitachi, both of Japan, assignors to Hitachi, Ltd., Japan
Filed May 7, 1974, Ser. No. 467,795
Claims priority, application Japan, May 9, 1973, 48-50757; July 25, 1973, 48-83089; July 25, 1973, 48-83090
Int. Cl.² H04N *1/22*; **G01D** *15/18*
U.S. Cl. 178—6.6 R **10 Claims**



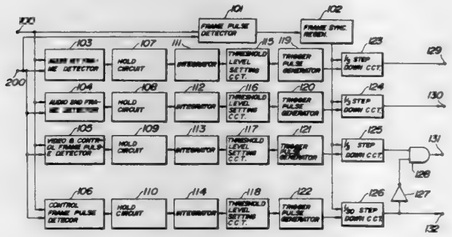
1. An image reproducing system comprising means for producing an image signal including components representing the relative density of successive portions of an original carrying an image to be recorded on a recording medium in a plurality of scanning lines, means for emitting ink droplets of predetermined size from a nozzle in accordance with the operating period of a vibration imparting element mounted on said nozzle, means for producing a signal in synchronizm with the emission of said ink droplets from said nozzle, means for dividing the frequency of the signal produced in synchronism with the emission of said ink droplets thereby determining the maximum number of ink droplets to be emitted within the period of frequency division, means for converting the pulses appearing within said period of frequency division into pulses corresponding to the relative density of the successive portions of the image in response to the application of said image signal components and the output signal of said frequency dividing means, means for charging said ink droplets emitted from said nozzle on the basis of the output of said converting means, means for deflecting said charged ink droplets from the flying path depending on the charge carried by said ink droplets and means for varying the printing density of dots in the dot pitch on the same scanning line depending on the relative density of the successive portions of the original.

3,928,719
IMAGE DISPLAY SYSTEM
Kaoru Sasabe, Ikeda; Hiroaki Kotera, Takatsuki; Toshihide Hane, Sakai, and Nobuyoshi Kihara, Amagasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 23, 1973, Ser. No. 344,203
Claims priority, application Japan, Mar. 25, 1972, 47-30197; Mar. 25, 1972, 47-30198; Mar. 31, 1972, 47-32925; Mar. 31, 1972, 47-32926; Mar. 31, 1972, 47-32927; Apr. 13, 1972, 47-37478
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² H04N *5/36, 5/68*
U.S. Cl. 178—6.8 **7 Claims**



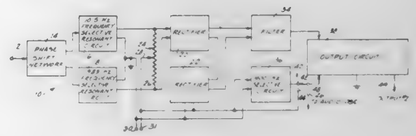
1. An image display system comprising a scan/display device capable of scanning with a flying spot, a picture information carrier scanned by the flying spot of said scan/display device, a photoelectric transducer for converting light modified by said picture information carrier into a corresponding electric signal, means, responsive to the electric signal produced from said photoelectric transducer, for amplifying said electric signal and feeding back positively an output signal corresponding to the amplified electric signal, said means for amplifying including a stabilizing device for limiting the output signal at a predetermined level, and means for leading the output signal produced from said amplifying means and video signals from video signal generators either simultaneously or selectively to said scan/display device.

3,928,720
SYNCHRONIZING SIGNAL REGENERATOR
Yoshizumi Watatani, Machida; Katsuo Mohri, Yokohama; Masaaki Fukuda, Kodaira; Tatsuo Kayano, Hachioji, and Takehiko Yoshino, Yokohama, all of Japan, assignors to Hitachi, Ltd.; Hitachi Electronics Co., Ltd. and Hoso Kyokai, all of Tokyo, Japan
Filed May 20, 1974, Ser. No. 471,822
Claims priority, application Japan, May 23, 1973, 48-56823
Int. Cl.² H04L *7/00*
U.S. Cl. 178—69.5 G **10 Claims**



1. A synchronizing signal regenerator for regenerating a first synchronizing signal including a pulse series having a predetermined certain repetition frequency being intermittently transmitted at a predetermined period for a predetermined certain duration, and a second synchronizing signal synchronized with boundaries of the pulse series of the first synchronizing signal and inserted in a repetition period for a period equal to a width of the pulse series intermittently inserted, from a composite signal including said first and second synchronizing signals, the regenerator comprising:
a means for detecting said second synchronizing signal and for regenerating said detected second synchronizing signal;
a means for detecting and deriving the pulse series of said first synchronizing signal;
a hold circuit for producing a wide width output pulse signal when a pulse of the detected pulse series is obtained at an interval less than a predetermined time interval;
an integrator for integrating the output pulse signal of the hold circuit and providing an output signal;
a means for producing a trigger pulse when an amplitude of the output signal of the integrator exceeds a certain determined level; and
a means for generating a signal synchronized with said intermittently transmitted frequency of the pulse series of said first synchronizing signal, said generating means including a frequency dividing means for dividing the frequency of said regenerated second synchronizing signal obtained from the second synchronizing signal regenerating means, including means for using said regenerated second synchronizing signal as a clock pulse and means for using the trigger pulse obtained from said trigger pulse producing means as a clear pulse.

3,928,721
ELECTRICAL WAVE FILTER
Thomas W. Holden, 301 W. 16th Place, Chicago Heights, Ill. 60411
Filed Nov. 23, 1973, Ser. No. 418,377
Int. Cl.² H04L *15/24*
U.S. Cl. 178—88 **18 Claims**



1. In an electric wave filter including input and output terminals, and a plurality of frequency selective networks interposed between said input and output terminals and resonant at respective frequencies lying on either side of a predetermined input frequency such that a substantial output signal will appear at the output terminals at the predetermined input frequency while frequencies relatively remote from said predetermined input frequency will be substantially attenuated, the improvement comprising:
a. a coupling circuit for providing outputs from the networks when the input terminals are excited at the predetermined input frequency and the frequency selective networks are in a steady state condition, and
b. said coupling circuit including energy absorbing means coupled between said networks so as to absorb energy from the networks during the rise times and decay times of successive input pulses of alternating current energy of said predetermined input frequency applied to said input terminals, and said outputs from the networks having a phase relationship so as to be substantially in opposing relation with respect to the production of current flow in said energy absorbing means and so as to produce in said energy absorbing means essentially zero current flow

after the input terminals have been excited by the predetermined input frequency and the frequency selective networks are in a steady state condition; and

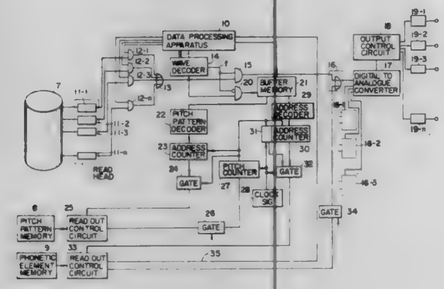
c. said energy absorbing means being of sufficient value to damp oscillation in the respective networks to substantially zero amplitude, when the input frequency is removed, within a time interval not substantially greater than a minimum repetition interval between input pulses.

3,928,722

AUDIO MESSAGE GENERATING APPARATUS USED FOR QUERY-REPLY SYSTEM

Kazuo Nakata, and Akira Ichikawa, both of Kokubunji, Japan, assignors to Hitachi, Ltd., Japan

Filed July 16, 1973, Ser. No. 379,230
Int. Cl.² H04Q *3/00*
U.S. Cl. 179—1 SM **7 Claims**



1. An apparatus for generating a replying voice signal composed of at least one variable word and a plurality of fixed words forming a reply sentence comprising:

a. first memory means for recording a plurality of reply sentences each in the form of word signals corresponding to the voice waveform of each of the fixed words of the reply sentence and control signals having first and second values to designate the position of a fixed or variable word in an output reply sentence;

b. data processing means responsive to a control input for initiating reading out of a selected reply sentence from said first memory means, including means for converting said reply sentence signals into audio signals;

c. pitch pattern information memory means for recording pitch patterns of each variable word;

d. voice segment memory means for recording a series of voice segment waveforms associated with each variable word; and

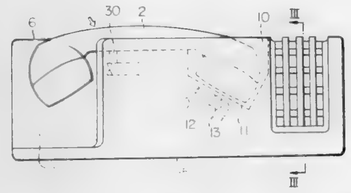
e. control circuit means responsive to said control signals from said first memory means designating each variable word for reading out pitch patterns from said pitch pattern information memory means and voice segment waveforms from said voice segment memory means, including means for introducing the voice signal formed of the pitch pattern information and voice segment waveforms of the variable word amongst the word signals of the reply sentence composed of the fixed words applied to said converting means of said data processing means.

3,928,723

TELEPHONE SET WITH BUILT-IN LOUDSPEAKER

Kazuo Kai, 12 Kuwazucho 6-chome, Higashi Sumiyoshi, Osaka, Osaka, Japan

Filed June 26, 1974, Ser. No. 483,103
Claims priority, application Japan, July 2, 1973, 48-78601[U]; July 2, 1973, 48-78602[U]; July 2, 1973, 48-78603[U]; Sept. 4, 1973, 48-103792[U]
Int. Cl.² H04M *1/20, 1/60*
U.S. Cl. 179—1 FS **4 Claims**



1. A telephone set having a built-in speaker for use with a telephone receiver, comprising:

a. a stand having a cradle formed therein for holding a telephone receiver, said stand having a sound reflector or focusing horn with a focusing point at the position of the transmitter of the receiver when placed in the cradle;

b. a pickup coil positioned in said stand to face the receiver when it is placed in the cradle;

c. an amplifier having an input connected to said pickup coil and having an output;

d. a switch positioned on said stand for actuation by the receiver when placed in said cradle, said switch for connecting said amplifier to a source of power when actuated by the receiver;

e. a speaker case mounted within said stand;

f. a speaker mounted within said speaker case and connected to said output of said amplifier;

g. a feedback coil coupled to said pickup coil; and

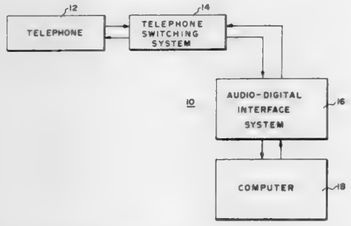
h. a feedback resistor connected from the output of said amplifier to said feedback coil.

3,928,724

VOICE-ACTUATED TELEPHONE DIRECTORY-ASSISTANCE SYSTEM

Harold E. Byram; Ronald J. Lockard; Roland D. Andersen, and Vincent L. Carney, all of Lincoln, Nebr., assignors to Andersen, Byram, Kouma, Murphy, Lockard & Carney, Lincoln, Nebr.

Filed Oct. 10, 1974, Ser. No. 513,562
Int. Cl.² G01L *1/08;* H04M *1/26*
U.S. Cl. 179—1 SD **23 Claims**



1. A voice-actuated automatic directory-assistance system adapted to be connected to a telephone switching system for communication with any of a plurality of telephones comprising:

signal carrier means for receiving audio signals from said telephone switching system representing the names of subscribers;

return signal means for supplying audio signals to the telephone representing at least the telephone numbers of said subscribers in response to the audio signals from said signal carrier means;

said signal carrier means including means for receiving audio signals from said telephone switching system representing at least letters of the alphabet;

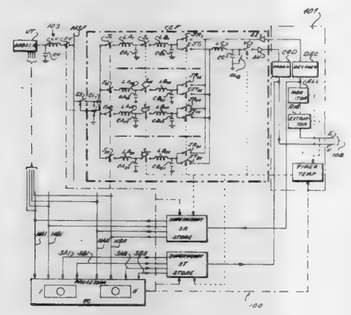
said return-signal means including conversion means for converting each of the audio signals representing letters of the alphabet to a signal compatible with a computer memory system and for applying said signals to said computer memory system.

3,928,725

PAM/PCM INTERFACE NETWORK FOR TDM TELECOMMUNICATION SYSTEM

Giuseppe Valbonesi, and Roberto Camiciottoli, both of Milan, Italy, assignors to Societa Italiana Telecomunicazion Siemens S.p.A., Milan, Italy

Filed Nov. 12, 1974, Ser. No. 523,145
Claims priority, application Italy, Nov. 12, 1973, 31186/73
Int. Cl.² H04J *3/04*
U.S. Cl. 179—15 AA **10 Claims**



1. In a telecommunication system, in combination:

a central office;

a multiplicity of local lines terminating at said central office;

sampling means at said central office including a set of individual capacitors respectively connected to said local lines for receiving analog message samples originating at and destined for at least some of said lines during respective time slots of a recurrent scanning cycle;

a pulse-code-modulation link with an outgoing path and an incoming path extending from said central office to a remote exchange for carrying messages to and from said local lines in a PCM frame recurring at substantially the same frequency as said scanning cycle, said frame being divided into a number of channels equal to the number of said time slots;

a coupler between said sampling means and said link with a plurality of parallel branches each including a pair of cascaded sections for the temporary storage of a message sample, one section of each branch being periodically connectable by said sampling means to the individual capacitor of an assigned local line;

a set of circuit breakers normally isolating said one section of each branch from the other section thereof;

a set of normally open transmit switches between said other section of each branch and said outgoing path;

a set of normally open receive switches between said other section of each branch and said incoming branch;

locally controlled first timing means for momentarily closing each of said circuit breakers and each of said transmit switches in staggered relationship once per scanning cycle for transferring departing message samples from said one section of any of said branches via said other section thereof to said outgoing branch;

second timing means controlled from said remote exchange via said link for momentarily closing each of said receive switches in staggered relationship once per scanning cycle for transferring arriving message samples from said incoming path to said other section of any of said branches preparatorily to delivery to a local line by way of said one section thereof, said first and second timing means having substantially the same operating frequency; and

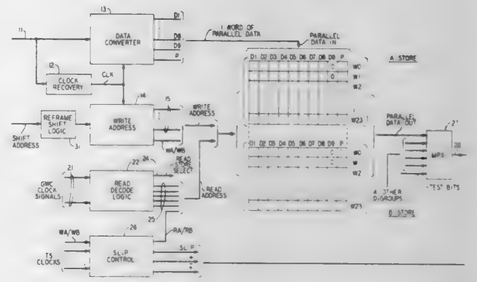
monitoring means connected to said first and second timing means for relatively phase-shifting same upon deviation of the relative closure times of said transmit and receive switches from a predetermined range, thereby maintaining an invariable closure sequence in each branch.

3,928,726

COMMON CONTROL VARIABLE SHIFT REFRAME CIRCUIT

John Robert Colton, Freehold; Robert Bruce Heick, Eatontown, and Henry Mann, Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 22, 1974, Ser. No. 526,107
Int. Cl.² H04J *3/06*
U.S. Cl. 179—15 BS **16 Claims**

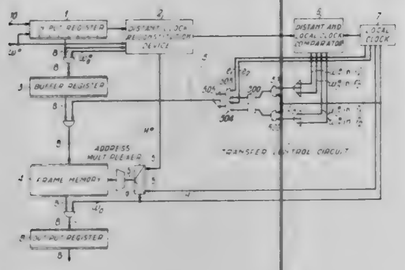


1. In a time division switching system wherein a plurality of digital groups of time division multiplexed channels are time multiplexed together on to a common bus, each digital group including a similar predetermined framing bit pattern; a reframer circuit comprising means for storing a given number of selected data bits including the assumed framing bit of each digital group and for cyclically reading the data bits of each digital group out of store in time coincidence with the appearance of each digital group on said common bus, comparator means serving to compare the output of said means with data bits of the same digital group that occur one or more frames later in time, suitability stoage means for recording for each digital group which of selected compared data bits have had framing pattern violations and which appear as suitable candidates for the framing bit, shift decoder means coupled to the output of said comparator means and said suitability storage means for determining how many digit shifts should be made based on the present set of comparisons and the past suitability record in said suitability storage means, means for shifting the data stored in the first recited means and for shifting the data recorded in said suitability storage means by a determined amount based on a digit shift indication from said shift decoder means, and means for shifting the multiplexed data bits of an out-of-frame digital group by a determined amount based on the digit shift indication from said shift decoder means.

3,928,727
SYNCHRONIZATION DEVICE FOR TIME-MULTIPLEXED SIGNAL TRANSMISSION AND SWITCHING SYSTEMS

Alain Y. Roche, 41 rue du Sergent L'Heveder, 22700 Perros-Guirec, France

Filed Dec. 23, 1974, Ser. No. 535,584
Int. Cl.² H04J *3/06*
U.S. Cl. 179—15 BS **3 Claims**



1. A device for synchronization of a digital time-multiplexed signal comprising time slots containing pulse code modulation signals respectively assigned to transmission channels, and multiplexed in frames, the frames and time slots of the incoming signal to said synchronization device being defined by a distant clock and the frames and time slots of the outgoing signal from said synchronization device being defined by a local clock, said synchronization device comprising an input register, a buffer register connected to said input register, a frame memory connected to said buffer register and an output register connected to said frame memory, means for defining a distant clock timing pulse having a fixed position relative to the incoming signal frame, means for defining a first and a second local clock timing pulses having a fixed position relative to the outgoing signal frame and a first and a second time windows overlapping said two local clock timing pulses, means for receiving the pulse code modulation signals in said input register and for storing these signals in said buffer register, means for writing the code modulation signals stored in the buffer register, at a writing instant, in the frame memory, means for recurrently reading the code modulation signals written in the frame memory, means for detecting, in each outgoing signal time slot, the coincidence of the distant clock timing pulse with the first and the second time windows and thereby respectively selecting as writing instant, the second and the first local clock timing pulse, means for switching the writing instant from the first to the second local clock timing pulse at switching instants and means for selecting as said switching instants, instants located in the time slot following the time slot during which the coincidence has been detected when the two writing instants to be switched to one another are in different time slots and instants located in the very time slot during which the coincidence has been detected and in said time slot between the first and second local clock timing pulses when the two writing instants to be switched to one another are in the same time slot.

3,928,728
NUMBER IDENTIFICATION CIRCUIT

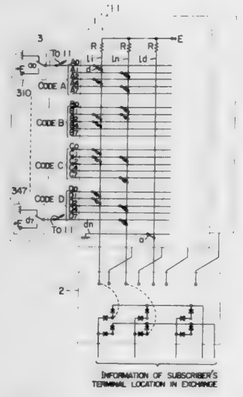
Hiromi Moriyama, Fujisawa; Motosuke Kuwabara, Yokohama, and Katsuyuki Jin, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 13, 1974, Ser. No. 450,775
Claims priority, application Japan, Mar. 26, 1973, 48-33606
Int. Cl.² H04Q *3/72*
U.S. Cl. 179—18 FH **4 Claims**

1. A number identification circuit with a two-out-of-five diode matrix, comprising:

a plurality of number information line sets corresponding to respective digits of a subscriber's number, each number information line set including five number information lines representative of respective elements of number information used on a two-out-of-five basis;

a pluraliity of output lines to be identified corresponding to respective numbers, said number information lines and said output lines being arranged in a matrix configuration; number setting means including a plurality of diode pairs each of which connects a selected one of said output lines to two selected number information lines of one of said number information line sets in accordance with number information elements for one digit of the number corresponding to the selected output line;



controlling means including first DC power source means for applying during nonidentification time periods a first potential to all of said number information lines which causes the diodes of said number setting means to be conductive and for applying only during an identification operation time period only to said two selected number information lines a second potential which causes the diodes of said number setting means associated therewith to be nonconductive while applying the first potential to nonselected number information lines; and

second DC power source means, whereby outputs are applied from said second DC power source means only to the output lines to which the diodes connected to said two selected number information lines are connected as an identification of the respective digits.

3,928,729
CIRCUITRY FOR PROVIDING EXECUTIVE RINGBACK IN A PBX SYSTEM IN ACCORDANCE WITH A SUPPLIED CLASS OF SERVICE

Carl Calvin Nielson, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 3, 1974, Ser. No. 511,802
Int. Cl.² H04M *3/48*
U.S. Cl. 179—18 BG **14 Claims**

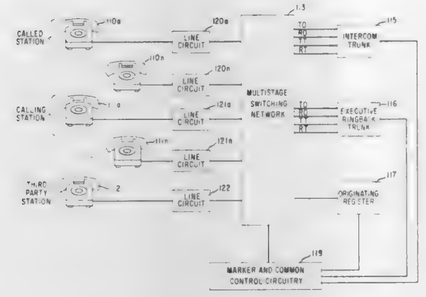
1. In a telephone switching system having a plurality of line circuits terminated in station sets, said line circuits being interconnectable to a plurality of trunk circuits through a multistage switching network, the invention comprising executive ringback circuitry for completing a connection between a calling station and a called station at the conclusion of a connection between said called station and a third party station, said executive ringback circuitry including

means for determining the class of service provided to said calling station,

means for detecting a busy condition of said called station,

means for determining a class of service provided to said called station,

means, responsive to said calling station class of service determining means, said called station busy condition detecting means, and said called station class of service determining means, for seizing said executive ringback circuitry provided said calling station is equipped with a class of service permitting executive ringback and said called station is equipped with a class of service allowing executive ringback, and

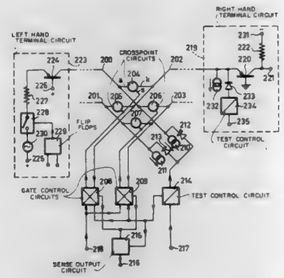


means, subsequently activated by said seizing means and responsive to a switchhook flash from said calling station, for effecting the establishment of executive ringback connections between said calling station and said called station at the conclusion of said connection between said called station and said third station.

3,928,730
MATRIX MODULE AND SWITCHING NETWORK

Einar Andreas Aagaard; Johannes Wilhelmus Coenders, and Eise Carel Dijkmans, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 10, 1974, Ser. No. 513,547
Claims priority, application Netherlands, July 1, 1974, 7408823
Int. Cl.² H04G *9/00;* **H04M** *3/00*
U.S. Cl. 179—18 GF **11 Claims**

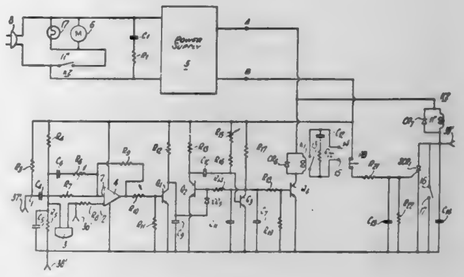


1. A matrix module, comprising electronic crosspoint elements which are arranged at crosspoints of two groups of conductors, separately denoted as horizontal and vertical conductors, and which are each provided with a first main electrode connected to the horizontal conductor and a second main electrode connected to the vertical conductor and also with a control gate, the control gates of the crosspoint elements connected to the same vertical conductor being connected to a gate control circuit which is connected to the vertical conductor, wherein the matrix module comprises a selection signal input, accessible to a central control unit, and first means for deriving control signals from the selection signal input so as to control the gate circuits therewith.

3,928,731
REPERTORY DIALER

Herbert I. Cohen, Point Pleasant Beach, N.J., assignor to Acron Corporation, Lakewood, N.J.

Continuation of Ser. No. 133,620, April 13, 1971. This application May 14, 1973, Ser. No. 360,107
Int. Cl. H04m *1/46*
U.S. Cl. 179—90 BB **5 Claims**



1. An electronic circuit for recording electrical signals representing telephone number information and subsequently for controlling the energization of relay means as a function of said electrical signals, said circuit comprising:

dial means for generating electrical signals representing telephone number information;

magnetic head means for recording said electrical signals,

means connected to said magnetic head an to said dial means for differentiating said electrical signals and for recording said differentiated electrical signals;

amplifier means connected to said magnetic head means for amplifying said recorded electrical signals;

transistor means including resistor-capacitor control means therefor, connected to the output of said amplifier means for blocking the output of said amplifier means unless such output exceeds a predetermined amplitude determined by said transistor means, and time duration determined by said resistor-capacitor means;

monostable multivibrator means connected to said transistor means for producing a pulse type output signal as a function of the output of said transistor means; and

relay driver means including relay means connected to said multivibrator means for controlling the connecting and disconnecting of said relay means as a function of said pulse type signal.

3,928,732
EXTENSION AND LINE INDICATING DISPLAY SYSTEM FOR KEY TELEPHONE SYSTEM

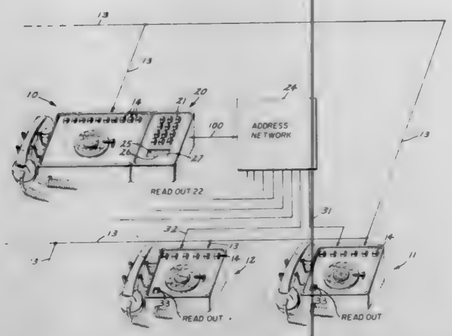
William F. Simon, Duluth, Minn., and William C. Torrey, Superior, Wis., assignors to Telephone Associates, Inc., Superior, Wis.

Filed Nov. 19, 1973, Ser. No. 416,849
Int. Cl.³ H04M *1/21*
U.S. Cl. 179—99 **12 Claims**

1. Apparatus for use in conjunction with a key telephone system for handling incoming calls, comprising:

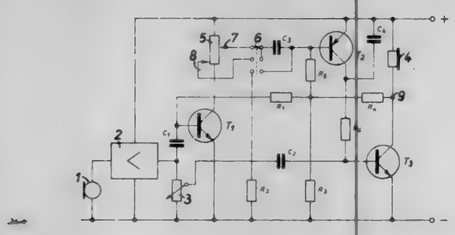
a plurality of digital readouts each associated with an extension of said key system, said digital readouts for visual display of data indicating the line on which an incoming call is received; and

b means for receiving extension and line data corresponding to an incoming call and for transmitting the line data for



display by the digital readout associated with the extension corresponding to the received extension data.

3,928,733
HEARING AID CONTROL CIRCUIT FOR SUPPRESSING BACKGROUND NOISE
Fritz Hueber, Vienna, Austria, assignor to Viennatone Gesellschaft m.b.H., Vienna, Austria
Filed Nov. 20, 1974, Ser. No. 525,552
Claims priority, application Austria, Nov. 21, 1973, 9757/73
Int. Cl.² H04R *25/00*
U.S. Cl. 179—107 R **10 Claims**



1. In a control circuit connected between a microphone and an emitter of a hearing aid, the microphone receiving an input signal and the circuit being arranged to transmit the input signal to the emitter, and the circuit including a low-frequency channel comprising a signal amplifier connected to the microphone and an output stage amplifying transistor connected to the emitter, the improvement of a threshold switching means connected to the low-frequency channel and arranged to block transmission of the input signal from the microphone to the emitter below a predetermined threshold level of the signal, the low-frequency signal in the low-frequency channel controlling the switching means.

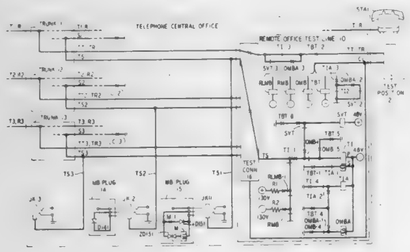
3,928,734
ORNAMENTED SUPPORT COLLAR FOR MICROPHONE AND THE LIKE
Jerry Lewis Noury, Jr., 522 W. 29th St., New York, N.Y. 10001
Filed Oct. 21, 1974, Ser. No. 516,634
Int. Cl.² H04M *1/05*
U.S. Cl. 179—157 **9 Claims**

1. A support for a microphone or the like comprising a collar formed of a substantially rigid outer portion and a protective lining covering the inner surface thereof, means to removably secure the collar around a wearer's neck, a single straight post extending from the front of the collar, means to removably secure the post to the collar, a support member for a microphone or the like, and means to frictionally secure the



support member to the free end of the post for selective rotation of the support member to any fixed position with respect to the wearer.

3,928,735
TRUNK MAKE-BUSY CIRCUIT
James Blakely Kennedy, Bexley, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Division of Ser. No. 432,083, Jan. 9, 1974, Pat. No. 3,875,351.
This application Dec. 23, 1974, Ser. No. 535,564
Int. Cl.² H04B *3/46;* **H04M** *3/12*
U.S. Cl. 179—175.3 R **4 Claims**



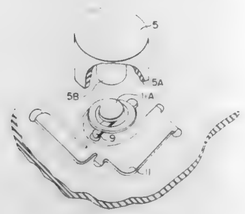
1. A make-busy plug for use in removing a telephone central office trunk from subscriber service and for use in restoring the trunk to subscriber service by a trunk test circuit arranged to selectively apply voltages between a busy lead of the trunk and a ground terminal comprising

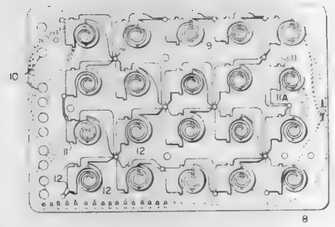
directional current conducting means for making the trunk appear busy, and

means responsive to one of the applied voltages for establishing a make-busy path from the ground terminal through said directional current conducting means to the busy lead and to another one of the applied voltages for interrupting said established make-busy path.

3,928,736
KEYBOARD SWITCH ASSEMBLY HAVING DISCRETE HELICAL CONDUCTORS PROVIDING WIPING ACTION
James John Drage, Uxbridge, England, assignor to Sumlock Anita Electronics Limited, Uxbridge, England
Filed May 7, 1974, Ser. No. 467,667
Claims priority, application United Kingdom, May 11, 1973, 22538/73
Int. Cl.² H01H *13/52, 1/06*
U.S. Cl. 200—5 A **2 Claims**

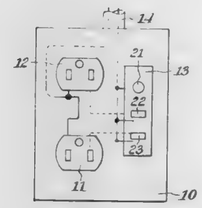
1. A keyboard comprising a cover plate; a plurality of push buttons movably mounted within the cover plate; an insulating base plate spaced from the buttons bearing a first set of longitudinally directed fixed contacts on that side of the base plate facing said push buttons, each contact of this set located opposite one of the push buttons; and a plurality of contact plates, each contact plate affixed to said base plate in a position co-operating with a corresponding button and a corresponding one of the first set of contacts; wherein the contact plates each comprises a strip of electrically conducting material having at least one tag securing the strip to the base plate and a resilient part with a free end spaced away from said base plate to engage one said push button at a position normally extending towards the corresponding contact of the first set of





contacts to make electrical wiping contact therewith when the push button is moved toward said base plate; and wherein the resilient part of the contact plate comprises an integral part of the contact plate cut out of the contact plate with a helical slot thereby forming a helically shaped conductor which engages said longitudinally directed fixed contact in a wiping action in at least two spaced positions on said helically shaped conductor when said push button is moved toward said base plate.

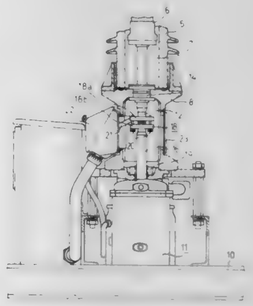
3,928,737
REMOTE CONTROL SWITCHING DEVICE
Lopsadhayoodh Prasert, Bangkok, Thailand, assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Nov. 4, 1974, Ser. No. 520,329
Int. Cl.² H01R *13/70*
U.S. Cl. 200—51 LM **4 Claims**



1. A female electrical socket and a mating attachable plug for individually joining some of the electrical conductors in the socket to the conductors of the electrical plug, in which contact making device of the female socket is an assembly of two contact members that are each attachable to individual conduct wires and spring-biased to contact each other except when a male contact of the plug is engaged in the contact assembly, said male contact then acting to separate the two contact members from contacting each other,

said male contact being in the form of a metal strip, a section of which is coated with an insulating material and shaped so that, when engaged, the male contact of the plug electrically contacts one of the two contact members of the contact making device of the socket and is insulated electrically from the other contact member of the assembly.

3,928,738
COUPLING ARRANGEMENT FOR A COMPRESSED-GAS CIRCUIT BREAKER EQUIPPED WITH A HYDRAULIC DRIVE
Helmut Beier, and Dieter Noack, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Apr. 2, 1974, Ser. No. 457,233
Claims priority, application Germany, Apr. 4, 1973, 2317499
Int. Cl.² H01H *35/38*
U.S. Cl. 200—82 B **6 Claims**



1. In a compressed-gas circuit breaker such as a high-voltage power breaker or the like, the breaker including: a closed gas circuit for gas utilized as an arc-quenching and insulating medium; an enclosure containing the gas; a contact system mounted in the enclosure; an actuator rod connected to the contact system for actuating the same, the actuator rod having a plunger portion extending from the enclosure; and, a hydraulic drive containing a hydraulic fluid and having a piston rod connected to the plunger portion of the actuator rod for actuating the contact system, the improvement of a coupling arrangement comprising: an air-filled housing containing the plunger portion and the piston rod therein; a coupling connecting the plunger portion directly to the piston rod in said housing; and, a gas-tight bushing on said housing surrounding the plunger portion for facilitating the penetration of the plunger portion into said housing from the enclosure in a gas-tight manner; said housing being disposed directly between the enclosure and the hydraulic drive whereby hydraulic fluid from the hydraulic drive is prevented from penetrating the gas containing enclosure in the event of a failure of said bushing.

3,928,739
NORMALLY OPEN TYPE PUSH BUTTON SWITCH OPERATING MECHANISM
Toshiaki Miyamae, 2-16, 2-chome,, Nishi-Iwata, Higashi-Osaka, Osaka-Pref., Japan
Filed Sept. 9, 1974, Ser. No. 504,050
Int. Cl.² H01H *3/02, 3/32*
U.S. Cl. 200—155 R **4 Claims**

1. A normally open type push button switch operating mechanism comprising a switch housing, a base plate fixedly mounted on the upper portion of said housing, an actuating plate having one end pivotally supported on said base plate, a contact element protruding from said base plate in a position contactable with the underneath portion of said actuating

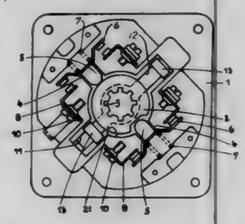
plate, a cam movably supported on one end of said base plate, the other end of said actuating plate formed to frictionally contact said cam, a knob fixedly connected to said cam outwardly of said base plate, a resilient means held between said base plate and said actuating plate to normally hold said actuating plate in contact with said contact element.

3,928,740

ROTARY SWITCH

Gottfried Alsch, Vienna, Austria, assignor to Hubert Laurenz Naimer, Vienna, Austria

Filed Feb. 21, 1974, Ser. No. 444,365
Claims priority, application Austria, Feb. 23, 1973, 1627/73
Int. Cl. H01I *19/62*
U.S. Cl. 200—153 LB **3 Claims**



1. A rotary switch having an axis of rotation and comprising:
a. a housing defining a plurality of first radial guide grooves and a second radial guide groove axially adjacent said first guide grooves and angularly spaced from each of said first grooves;
b. a plunger radially movable in each of said first grooves;
c. a cam disc mounted in said housing for rotation about said axis and having a cam face opposite said first grooves;
d. first yieldably resilient means biasing each plunger toward engagement with cam face;
e. a star wheel secured to said cam disc for joint rotation about said axis;
f. a detent element radially movable in said second groove;
g. second yieldably resilient means biasing said detent element toward engagement with said star wheel; and
h. a plurality of contact bridges mounted in said housing and operatively connected to respective ones of said plungers for operation when the connected plungers are moved during rotation of said cam disc against the biasing of said first yieldably resilient means.

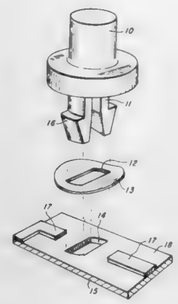
3,928,741

MOMENTARY CONTACT SINGLE POLE SWITCH

Jerry L. Comer, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 16, 1974, Ser. No. 506,485
Int. Cl.² H01H *3/12, 13/52*
U.S. Cl. 200—159 R **11 Claims**

1. A momentary-contact single-pole electrical switch comprising:
a. a substrate having two major surfaces with an opening therethrough extending from one of said major surfaces to the other major surface, said substrate including a plurality of electrically conductive terminal members on said one major surface approximately equidistant from said opening;
b. a non-conductive pushbutton actuator having a button and two legs with each of said legs having a retention means on the end thereof, said legs extending through said opening with said button facing said one major surface and with said retention means extending beyond the edge of said opening on said other major surface; and
c. conductive biasing means between said button and said one major surface being retained by said legs with said conductive biasing means normally biasing itself and said button away from said terminal members; wherein



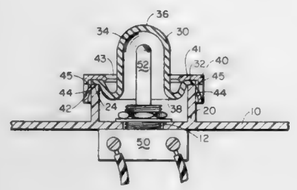
d. depression of said actuator button applies a force against said conductive biasing means causing said conductive biasing means to make electrical contact with said terminal members to complete a conductive path between said terminal members.

3,928,742

FLUID-TIGHT FLEXIBLE COVER

Clinton Rule, Beverly Farms, Mass., assignor to Rule Industries, Inc., Gloucester, Mass.

Filed July 12, 1974, Ser. No. 487,873
Int. Cl.² F16J *15/50;* **H01H** *9/04*
U.S. Cl. 200—302 **9 Claims**



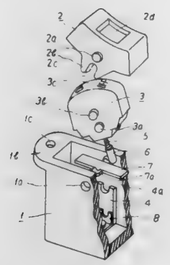
1. A flexible fluid-tight through-wall cover arrangement for manipulable wares comprising:
A. a walled fluid-tight enclosure having an aperture adapted to receive or expose the manipulable element of a ware therethrough;
B. a continuous wall defining a dam surrounding said aperture, said dam having a rim;
C. a flexible thimble composed of a resilient fluid-impervious material, the open end of which thimble comprises an external flange corresponding to and overlying the rim of said dam;
D. retainer ring means comprising (i) an internal flange member adapted to overlie said external flange of said flexible thimble, and (ii) locking means adapted to lockingly engage said dam and to maintain said external flange member of said flexible thimble in a fluid-sealing compressed state between said internal flange member and the rim of said dam.

3,928,743

ROCKER SWITCH WITH POSITION INDICATOR

Shigeo Ohashi, Tokyo, Japan, assignor to Nihon Kaiheiki Industrial Company, Ltd., Tokyo, Japan

Filed May 20, 1974, Ser. No. 471,691
Claims priority, application Japan, Nov. 12, 1973, 48-129831[U]
Int. Cl.² H01H *9/16*
U.S. Cl. 200—308 **7 Claims**



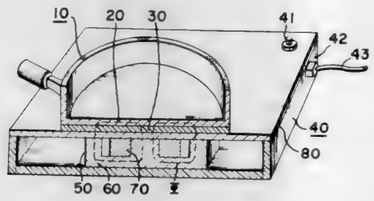
1. A rocker switch comprising a switch body, a rockable push-button mounted rotatably about an upper axis in said switch body, a contacts-actuating converter mounted rotatably about a lower axis in said switch body, said button and said converter being mutually connected by lug-and-recess engagement provided on said two members at a position intermediate between said upper and lower axis so that said two members are made to rotate mutually in reverse directions, an indicating window being provided centrally on the upper surface of said rockable push button, and a corresponding indicating surface being provided on the upper surface of said converter.

3,928,744

INDUCTION HEATING APPARATUS

Masahiro Hibino, Toyonaka, and Masatami Iwamoto, Itami, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 356,386, May 2, 1973, abandoned. This application Nov. 12, 1974, Ser. No. 523,113
Claims priority, application Japan, May 2, 1972, 47-44117; July 19, 1972, 47-72279; Nov. 8, 1972, 47-11873
Int. Cl.² H05B *5/04*
U.S. Cl. 219—10.49 **12 Claims**



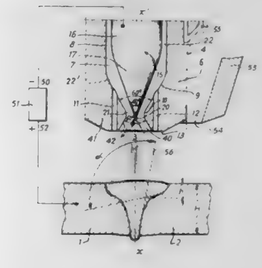
1. Induction heating apparatus comprising:
an iron core exciter having a cover plate and having an iron core excitation winding having a winding pitch for generating a low frequency alternating magnetic field,
a ferromagnetic element disposed adjacent to the exciter,
a non-magnetic high conductive element joined to the ferromagnetic element and interposed between the exciter and the ferromagnetic element and supported by the cover plate for the exciter to form a gap between the exciter and the high conductive element,
the iron core exciter generating alternating magnetic flux passing from the exciter through the high conductive element to the ferromagnetic element to inductively heat the high conductive element,
the excitation frequency being 60 Hz,
the gap being 5 mm,
the winding pitch being 80 mm, and
the high conductive element being copper with a thickness of 0.3 mm to achieve the maximum effective resistance.

3,928,745

METHOD OF ELECTRIC WELDING BY TRANSFERRED PLASMA AND A WELDING TORCH FOR CARRYING SAID METHOD INTO EFFECT

Paul Demars, Hazebrouck; Francis Cuny, Mantes-la-Jolie; Joseph Garrigoux, Laxou, and Christian Tassart, Brunoy, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed June 26, 1973, Ser. No. 373,899
Claims priority, application France, July 3, 1972, 72.23929
Int. Cl.² B23K *5/00*
U.S. Cl. 219—121 P **4 Claims**



1. A plasma welding torch with transferred arc, comprising a discharge nozzle for a plasma producing gas and a nonconsumable electrode disposed axially inside the discharge nozzle, said nozzle having in the direction of gas flow therethrough successively an axially convergent frusto-conical portion and an axially divergent frusto-conical portion the largest end of which constitutes the opening of said nozzle, said convergent and divergent portions of said nozzle meeting in a neck whose diameter is 2.5 mm. – 4 mm., said electrode having an extremity of conical form extending axially along said convergent portion and into said axially divergent portion of said nozzle a distance between 0.9 and 2 mm. from said neck.

3,928,746

DIRECT CURRENT POWER SUPPLY FOR MANUAL ARC WELDING

Rolf Ericsson, Laxa, Sweden, assignor to Elektriska Svetsningsaktiebolaget, Goteborg, Sweden

Filed Apr. 18, 1973, Ser. No. 352,445
Claims priority, application Sweden, Apr. 18, 1972, 4963/72
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B23K *9/10*
U.S. Cl. 219—135 **10 Claims**

1. A direct current power supply for manual arc welding having a steeply drooping, adjustable volt-ampere characteristic comprising
a polyphase transformer having a plurality of secondary output leads carrying mutually phase displaced voltages,
a polyphase rectifier system connecting said secondary output leads to a pair of D.C. welding current conductors for supplying a direct current to a welding arc struck

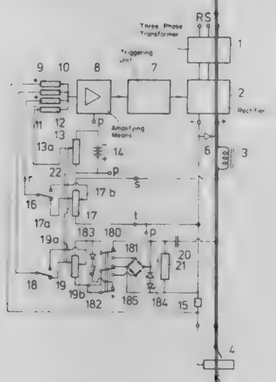
between a welding electrode and a workpiece, said polyphase rectifier system comprising a set of triggered rectifier valves connected one in series with each of said secondary output leads, said triggered rectifier valves having each a trigger terminal for initiating current flow through the valve,

means for periodically supplying igniting pulses to each of said trigger terminals, including means for causing the angular position of said pulses to vary in response to a direct current control signal,

means for generating said direct current control signal comprising the following means,

a. means for producing an adjustable direct current reference, signal, including manually operable means for adjusting said reference signal,

b. means including a welding current sensing means for producing a welding current feed-back D.C. signal equal to the welding current flowing in the pair of welding current conductors multiplied by a first factor of proportionality,



c. means including a welding voltage sensing means for producing a welding voltage feed-back D.C. signal equal to the voltage between the welding current conductors multiplied by a second factor of proportionality,

d. summing means for combining said reference signal, said welding current feed-back signal and said welding voltage feed-back signal into a compound signal constituting said control signal, both of said feed-back signals being supplied to said summing means in opposing relationship to said reference signal,

e. slope adjustment means comprising means for adjusting the proportion between said first and second factors of proportionality, and,

f. means linking said manually operable means for adjusting the reference signal and said proportion adjusting means to provide automatically a desired correlation between the slope of volt-ampere characteristic of the power supply and the reference signal setting.

3,928,747

THERMAL PRINTING APPARATUS

Ichiro Hanai, Ichikawa; Kazuo Takahashi, and Toshiharu Kobayashi, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 21, 1974, Ser. No. 444,571

Claims priority, application Japan, Feb. 23, 1973, 48-21955; Feb. 27, 1973, 48-23421; Nov. 27, 1973, 48-133274

Int. Cl.² H05B *1/00*

U.S. Cl. 219—216 **6 Claims**

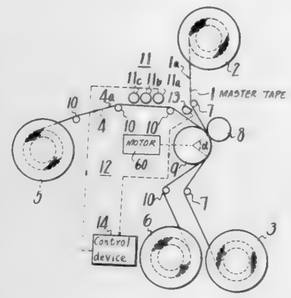
1. A thermal printing apparatus comprising:

a. means for transporting a master tape on which information is magnetically recorded;

b. means for transporting a slave tape;

c. means for bringing said master and slave tapes into contact with each other so as to print said information on said master tape onto said slave tape;

d. means for heating said slave tape to a temperature in the vicinity of the Curie point before said contact is made;



e. detecting means mounted between said heating means and said contacting means for detecting the temperature of said heated slave tape;

f. means for controlling the temperature of said heated slave tape as a function of the output of said temperature detecting means; and

g. in which said heating means is controlled by said control means by the output of said temperature detecting means.

3,928,748

COMBINED WINDOW HEATER AND ANTENNA

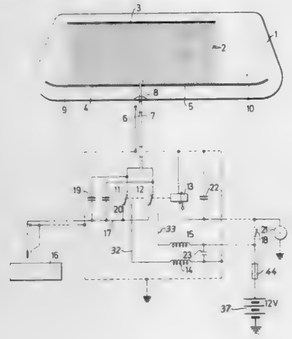
Gerd Sauer, Aachen-Laurensberg, Germany, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed May 20, 1974, Ser. No. 471,468

Claims priority, application France, Oct. 31, 1973, 73.38767

Int. Cl.² H05B *3/06*

U.S. Cl. 219—522 **2 Claims**



1. A windshield for automotive vehicles having a combined heater grid for heating said windshield at least within an area over which it is disposed and antenna for reception of frequency modulated radio signals of a frequency of the order of **100** megacycles, said windshield comprising a transparent substantially rectangular sheet, a plurality of electrically conductive resistive heating conductors supported on a surface of the sheet substantially parallel to one dimension thereof and spanning said area thereon smaller than but constituting a major fraction of the surface of said sheet, and three bus bands likewise supported on said sheet and extending at least in part

substantially parallel to the other dimension of said sheet, two of said bus bands being in spaced apart collinear relation and together with the other bus band connecting said conductors into a two-terminal circuit comprising said bus bands and conductors, each of said collinear bus bands including a portion extending beyond said area partly substantially collinearly with said bus band from which it extends and parallel to said other dimension and partly substantially parallel to said one dimension, said portions having a length substantially of the same order of magnitude as either of said dimensions, whereby said circuit may be tuned for the reception of frequency modulated signals of frequencies of the order of **100** megacycles, all parts of said combined heater grid and antenna being spaced from the edge of said sheet sufficiently to be outside the zone of influence of a vehicle body surrounding said sheet.

3,928,749

MACHINE FOR AUTOMATIC PRODUCTION OF SEMI-CONDUCTOR COMPONENTS

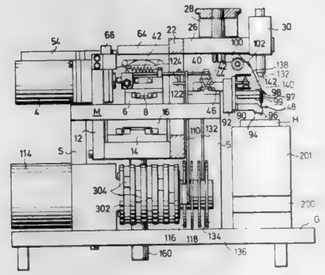
Eggert Herrmann, Waldpromenade 86, 8035 Gauting, Germany

Filed Oct. 9, 1974, Ser. No. 513,263

Claims priority, application Germany, Oct. 17, 1973, 2352113

Int. Cl.² B23K *1/00*

U.S. Cl. 228—4.5 **28 Claims**



1. A machine for automatically attaching connecting wires at selected connection positions of a semi-conductor crystal and leadframe comprising a vertically adjustable working head, and horizontally movable means on said working head for applying connecting wires to the crystal and the leadframe, a first program-controlled drive device for moving the working head to preselected working points on the crystal, a second program-controlled drive device for moving the working head to preselected working points on the leadframe; and a crystal adjusting device for adjusting the relative lateral position of said crystal between the first drive device and the crystal, a lead-frame adjusting device for setting relative angular position of said leadframe between the first drive device and the crystal and between the second drive device and the leadframe, and program control means controlling the said drive devices, said program control means having numerical control means with fixed value reprogrammable memories.

3,928,750

CODE CARD AND DECODING NETWORK FOR ELECTRONIC IDENTIFICATION SYSTEM

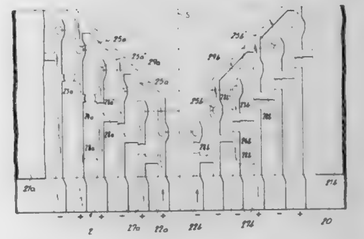
Herbert Wölflingseder, Gartenstrasse 3, 7967 Bad Waldsee, Germany

Filed July 16, 1973, Ser. No. 379,712

Claims priority, application Germany, July 19, 1972, 2235274

Int. Cl.² G06K *7/0619/06*

U.S. Cl. 235—61.11 A **10 Claims**



1. A key card for the selective energization of a multiplicity of terminals of an electronic identification system with two different electric signal voltages, comprising:

a flat dielectric body provided on opposite sides with respective conductor arrays each including an input lead and a multiplicity of output leads, a bus bar tied to said input lead, a first group of tabs directly connected to said bus bar, and a second group of tabs separated from said bus bar, the tabs of said first group on one of said sides registering with the tabs of said second group on the other of said sides and vice versa, the registering tabs being conductively interconnected through apertures in said body; and

selectively severable branch conductors in each of said arrays connecting each of said output leads to a respective tab of said first and said second group, thereby enabling exclusive energization of any output lead from either one of the input leads upon selective severance of one of its branch conductors.

3,928,751

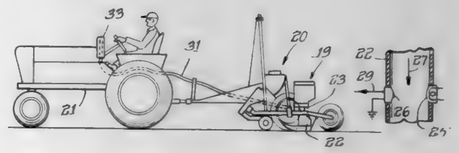
SEED POPULATION MONITOR

George H. Fathauer, Decatur, Ill., assignor to Dickey-john Corporation, Auburn, Ill.

Filed Aug. 19, 1971, Ser. No. 173,137

Int. Cl.² H03K *21/36*

U.S. Cl. 235—92 PK **16 Claims**



1. A seed population monitor for a planter that simultaneously plants a multiplicity of rows of seeds, said monitor comprising sensing means for simultaneously sensing the number of seeds of each row being planted, a first counter responsive to said sensing means for determining a seed count in a row, a readout device for said first counter, a second counter, means for applying input pulses to said second counter as a function of distance traveled by said planter, circuit means associated with said second counter for automatically producing an output signal indicative of area when the planter travels an ascertained distance, and means responsive to said output signal for resetting the first counter and including means for

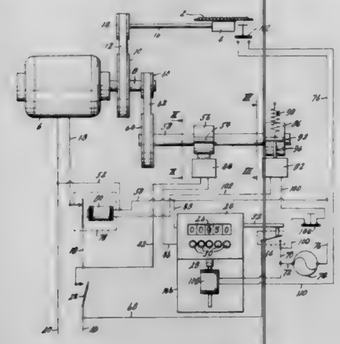
causing said readout device to provide a number that is a measure of the seed population per unit of area being planted over said ascertained distance.

3,928,752

BOBBIN MONITOR FOR SEWING MACHINES

Frank S. Darwin, 8838 Bluejacket Apt. 407, Overland Park, Kans. 66214

Filed Sept. 24, 1973, Ser. No. 399,818
Int. Cl. G06m *3/02*
U.S. Cl. 235—92 PD **6 Claims**



1. A monitor for indicating depletion of the bobbin thread of a sewing machine driven by an electric motor having an operating circuit including a treadle switch controlled by the machine operator and a source of electric power, said monitor comprising:

a. an electrically actuated signal device having an operating circuit including said signal device, said power source, and a normally open signal switch, but not said treadle switch,

b. a counter operable at and after a pre-determined reading thereof to actuate said signal device by closing said signal switch,

c. manually actuated reset means operable to reset said counter to a reading representing a full bobbin, whereby once actuated, said signal device remains actuated even when said treadle switch is opened, and until said counter is reset, and

d. driving means interconnecting said counter to a powered element of said sewing machine and operable to advance said counter at a rate proportional to the length of the stitch line being sewed, the reset and signal readings of said counter being so related that said signal device will be actuated when a pre-determined proportion of the bobbin thread has been exhausted.

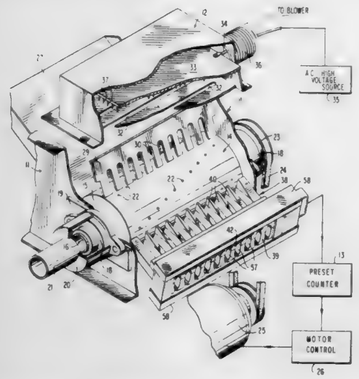
3,928,753

SMALL OBJECT COUNTING APPARATUS

William D. Kivett, Taylors; Robert J. Champion, and Jesse P. T. Harris, both of Greenville, all of S.C., assignors to Engineering Development Associates, Incorporated, Mauldin, S.C.

Filed Jan. 22, 1974, Ser. No. 435,499
Int. Cl.² G06M *3/00*
U.S. Cl. 235—92 PK **4 Claims**

1. An apparatus for counting large quantities of small objects with accuracy comprising an object infeed hopper, a horizontal axis object transport drum having plural spiral rows of suction ports mounted for rotation at the object discharge end of the hopper, means to turn the drum on its horizontal axis in one direction, means to create a partial vacuum in the drum during its rotation so that said suction ports may pick up objects from the hopper, an excess object rejection device fixedly mounted relative to the periphery of the drum and spaced from the hopper and allowing only one object to be transported by each suction port of the drum beyond said device, an object pick-off member fixedly mounted at the side of the drum remote from the hopper and spaced from said device and having inclined object guidance channels corresponding in number to the number of suction ports in each spiral row on said drum, said pick-off member removing objects from said suction ports with a scraping action during rotation of the drum and causing such objects to slide through said channels, electro-optical object sensors on the pick-off member adjacent to each channel thereof responding to the sequential passage of objects through the channels and producing sequential electrical pulses representative of the number of objects passing through the channels, counter means electrically coupled to said electro-optical sensors for totalizing the number of objects sequentially passing through all of said channels until a present count is obtained, means arranged above said hopper, drum and pick-off member for directing ionized air downwardly to agitate and clean objects resting in the hopper and for aiding the passage of objects through said object guidance channels, and said last-named means comprising an ionization chamber having a slotted bottom wall, a metal plate having a multiplicity of dependent needles positioned within said chamber above said slotted bottom wall, means for applying high voltage alternating current to said plate, and means for directing air forcibly into said chamber.

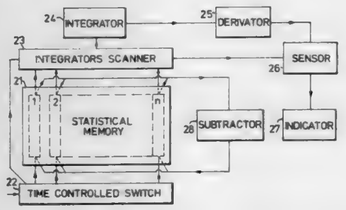


3,928,754

DEVICE FOR CALCULATING THE RESONANT ROLLING PERIOD OF A SHIP

Herman Allan Friedrich Edlund, Kolstorp, S-610 24 Vikbolandet, Sweden

Filed May 3, 1974, Ser. No. 466,855
Claims priority, application Sweden, May 7, 1973, 7306342
Int. Cl.² B63B *43/06*; **G06F** *15/50*
U.S. Cl. 235—150.2 **5 Claims**



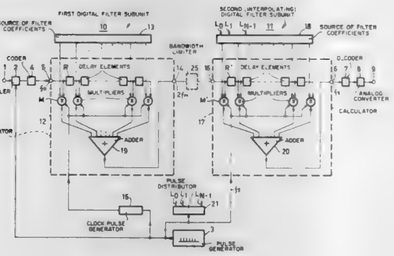
1. A device for ascertaining the most prevalent rolling period of a ship, including a pulse generator responsive to rolling to generate a train of pulses, each of which has a predetermined time relationship with the rolling motion in which it occurs, the interval between successive pulses representing the rolling period, a statistical memory having different storage locations corresponding respectively to different values of rolling period, a timer responsive to each new pulse from the pulse generator to start a new timing cycle and to enter a signal into the storage location corresponding to the duration of the period terminated by that pulse, an output scanner for scanning the storage locations to derive signals representing the number of entries in the different storage locations, and a maximum signal sensor responsive to the signals from the output scanner for ascertaining the storage location in which the most signals have been entered.

3,928,755

LOW PASS NONRECUSINE DIGITAL FILTER

Maurice Georges Bellanger, Antony; Guy Pierre Lepagnol, Sceaux, and Jacques Lucien Daguet, Saint-Maur-des-Fosses, all of France, assignors to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Jan. 24, 1974, Ser. No. 436,392
Claims priority, application France, Jan. 25, 1973, 73.02584
Int. Cl.² G06F *15/34*
U.S. Cl. 235—152 **2 Claims**



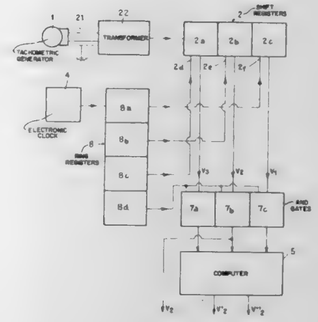
1. A digital filter for filtering a series of first binary code words occuring at a first sampling frequency f_e, and for producing a filtered version of the first words occuring at another sampling frequency f'_e, comprising: at least one first digital filter subunit having an input terminal, an output terminal and a first cut-off frequency which is smaller than f_e; means to apply said series of first words to the input terminal of the first filter subunit, at least one interpolation digital filter subunit having an input terminal, an output terminal and a second cut-off frequency which is smaller than f'_e; each subunit including a source of filter coefficients, means for providing a weighted sum of a predetermined series of words with a corresponding series of the filter coefficients, and a clock pulse generator; the pulse generator in the first subunit operating at a frequency which exceeds the first cut-off frequency to provide at the output terminal of the first subunit a series of second code words occuring at a sampling frequency exceeding said first cut-off frequency and constituting a version of said first words; means to apply said second code words to the input terminal of said interpolation filter subunit; and the pulse generator in the interpolation filter subunit operating at the desired sampling frequency f'_e.

3,928,756

DEVICE FOR CALCULATING THE SUCCESSIVE DERIVATIVES OF A FUNCTION OF A VARIABLE

Didier Auray, 4 Rue des Tartres, 92500 Rueil-Malmaison, France

Filed Jan. 16, 1974, Ser. No. 433,897
Claims priority, application France, Jan. 17, 1973, 73.01520; Oct. 8, 1973, 73.35895; Nov. 21, 1973, 73.41916
Int. Cl.² G06G *7/18*
U.S. Cl. 235—183 **5 Claims**



1. A device for calculating the successive derivatives of a function of a variable, especially for regulating or controlling said function, comprising: for calculating the n first derivatives, means for sensing in succession the function values for $(n+p)$ successive values of the variable, n and p designating two integers, storage means for memorizing the sensed $(n+p)$ values of said function, and computing circuits fed from said storage means and adapted to determine the values of the n first derivatives according to known mathematical formulas; said computing circuits being adapted to determine the value of the nth derivative of the function y of variable x according to the following formula:

$$\frac{d^n y}{dx^n} = \frac{1}{k\,\overline{\Delta x}^{\,n}} \sum_{i=0}^{i=n} a_i\, y\,(x_1 + i\,\Delta x),$$

k being a constant factor, Δx a predetermined algebric increment of the variable x, and a_i mathematically calculable coefficients, depending each on the respective value of integer index i; for calculating the acceleration dV/dt of a moving body at a time t, and its variation d^2V/dt^2, said computing circuits being adapted to determine the values of:

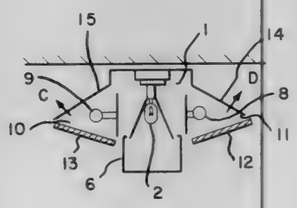
$$\frac{dV}{dt} = \frac{V\,(t+\Delta t) - V\,(t-\Delta t)}{2\,\Delta t}, \text{ and}$$

$$\frac{d^2V}{dt^2} = \frac{V\,(t+\Delta t) - 2\,V\,(t) + V\,(t-\Delta t)}{\overline{\Delta t}^{\,2}},$$

Δt being a predetermined time interval; for calculating the derivatives of a function of time at regularly spaced time intervals, said storage means essentially comprising a shift or displacement memory, having at least one input connected to the output of said sensing means, and a plurality of outputs stepped in the direction of shift or displacement of said memory, said memory outputs being connected to the corresponding inputs of said computing circuits; said memory being a shift register having at least one shift control input, connected to an electronic clock; first AND gates having each a first and

a second input, said first AND gates being respectively inserted through their respective first inputs between the outputs of said shift register and the corresponding inputs of said computing circuits, and means for transmitting a transfer pulse to the second inputs of said first AND gates at a time not earlier than the moment when said shift register is filled; for calculating the n first derivatives of a function of time, said device comprising a shift register having $(n+1)$ stages connected in series, and a ring register having $(n+2)$ stages, the input of the first stage of said ring register being connected to said electronic clock, whereas the outputs of the $(n+1)$ first stages of said ring register are connected to the respective shift control inputs of the corresponding stages of said shift register, and the output of the $(n+2)$th stage of said ring register is connected to the second inputs of said first AND gates.

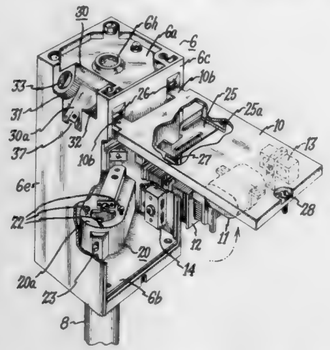
3,928,757
SPOT LIGHT FIXTURE
Paul Nelson, 34 Allee Emmanuel Chabrier, Parc du Roy d'Espagne, Marseille, France
Filed Apr. 17, 1973, Ser. No. 351,844
Claims priority, application France, May 26, 1972, 72.19622
Int. Cl. H05b *33/02*
U.S. Cl. 240—51.11 R **2 Claims**



1. An overhead lighting fixture comprising, in combination, a housing provided with a first pair of laterally spaced elongated casings and a second central elongated casing,
a pair of parallel coextensive fluorescent lamp tubes respectively supported within said first pair of casings,
means including a separate reflector below each tube to provide for directing the light therefrom at an angle to the ceiling, the directed light having vertical and oppositely directed lateral components away from the first pair of respective casings,
a pair of incandescent spotlight lamps within the elongated central casing and spaced therealong,
means supporting one of said spotlight lamps in said elongated central casing to project the light therefrom without obstruction in a downwardly vertical direction, and
means supporting the other of said spotlight lamps in said elongated central casing for projecting the light therefrom without obstruction in an oblique direction both downwardly and toward the one spotlight.

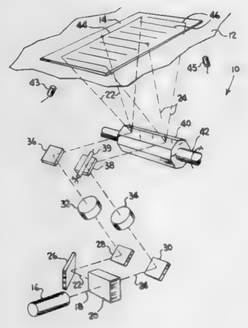
3,928,758
FLOODLIGHT
Mitchell M. Osteen, Zirconia, and Myron D. Martin, East Flat Rock, both of N.C., assignors to General Electric Company, N.Y.
Filed Apr. 27, 1972, Ser. No. 247,958
Int. Cl.³ F21S *1/00*
U.S. Cl. 240—73 R **2 Claims**

1. A lighting fixture comprising, in combination, an optical housing adapted to contain lamp means, combined ballast housing and fixture support means separate from and attached to said optical housing, said combined housing and support means comprising top, bottom and a plurality of side walls, said bottom wall formed with an aperture adapted to receive a supporting post, one of said side walls having an opening therein, an access door hingedly connected to said one side wall for swinging movement between a closed position covering said opening therein and an open position away from said opening to provide access to the interior of said combined housing and support means, electrical ballast means for operating the lamp means mounted on the inner side of said access door, and combined door support and locking means secured to said access door and co-acting with an adjacent one of said



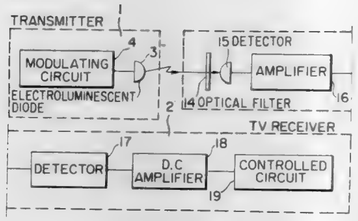
side walls for holding said access door in open position, said combined door support and locking means comprising an arm member secured at one end to said access door projecting inwardly therefrom and being normally urged in yieldable engagement with said adjacent side wall, said arm member having a catch portion near its other end adapted to snap over and engage the outer edge of said adjacent side wall when said access door is swung to open position, so as to hold said access door in said open position.

3,928,759
OMNIDIRECTIONAL SCANNER FOR READING DIGITALLY ENCODED TICKETS
Ronald P. Sansone, Floral Park, N.Y., assignor to Pitney-Bowes, Inc., Stamford, Conn.
Filed Aug. 22, 1974, Ser. No. 499,463
Int. Cl.² G06K *7/14*
U.S. Cl. 250—568 **8 Claims**



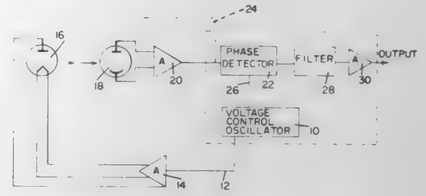
1. In a method for producing a scan pattern on the window of a check-out stand for the reading of bar codes, the steps comprising:
A. directing a beam of light toward the window to produce a longitudinally extending scan across the window; and
B. simultaneously directing a second beam of light toward the window to produce a plurality of scans on the window which are substantially at a right angle to the longitudinally extending scan.

3,928,760
REMOTE CONTROL SYSTEM
Mikio Isoda, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Continuation of Ser. No. 316.459, Dec. 19, 1972, abandoned. This application May 7, 1974, Ser. No. 467,664
Claims priority, application Japan, Dec. 27, 1971, 46-3559
Int. Cl.² H04B *9/00*
U.S. Cl. 250—199 **6 Claims**



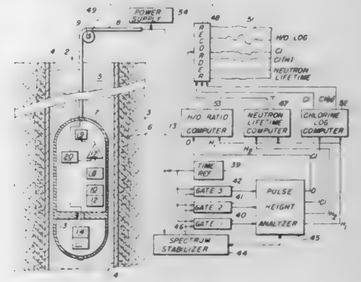
1. A remote control system for performing a control function by way of a transmission path exposed to ambient light, comprising
A. a transmitter assembled within a compact casing, said transmitter including
a. an electroluminescent diode for emitting, when energized, a remote control light signal having a relatively narrow spectral width by way of said transmission path;
b. circuit means connected to said diode for energizing said diode at a predetermined ultrasonic frequency said circuit means consisting of an oscillator means comprising an oscillator circuit for oscillating at said predetermined frequency rate, and means for energizing said diode with the output of said oscillator means whereby said remote control light signal is alternately energized and de-energized at said predetermined frequency rate;
c. an electric power source connected to said diode and said circuit means for supplying a low DC voltage thereto to actuate said diode and said circuit means circuit, and
d. a light reflector means mounted around said diode for effectively directing said remote control light emitter from said diode to a desired target; and
B. a receiver spaced apart from said transmitter for receiving said light signal by way of said transmission path, said receiver including
e. a light receiving means for receiving said remote control light signal transmitted from said transmitter,
f. a transducing means for detecting said received light signal and for converting a detected light signal into an electric signal by means of a photoelectric detector,
g. an amplifier means consisting of a narrow-band tuning amplifier connected to said transducing means for amplifying said converted electric signal, and for selecting only a signal component of frequency in the ultrasonic region from the light signal transmitted from said diode in the transmitter,
h. a detector means connected to said amplifier means for detecting said ultrasonic frequency component and for providing a detector output signal, and
i. a means connected to the output of said detector means for performing a control function in response to said detector output signal;
whereby spurious ambient light noises received by said receiver from said transmission path are reduced to eliminate any spurious control which may arise from ambient light.

3,928,761
PHOTOELECTRIC APPARATUS EMPLOYING PHASE LOCKED LOOP CIRCUITS
Francis P. Dunigan, 143 Lovell Road, Holden, Mass. 01520
Filed Apr. 15, 1974, Ser. No. 460,748
Int. Cl.² G01J *1/32*
U.S. Cl. 250—205 **9 Claims**



1. Phase locked loop in signal emitting circuit comprising an oscillator, said oscillator being connected to an optical signal emitting device, a signal receiving device, means for translating the signal into an electric signal, a connection from said signal translating means to a phase detector,
and a connection from the oscillator to the phase detector, said phase detector providing an output signal only upon receiving an electric wave form emanating from the signal receiving device and from the oscillator which wave forms are substantially the same.

3,928,762
PULSED NEUTRON COMBINATION WELL LOGGING SYSTEM
Harold E. Peelman, Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Filed May 6, 1974, Ser. No. 467,029
Int. Cl. G01v *5/00*
U.S. Cl. 250—270 **20 Claims**

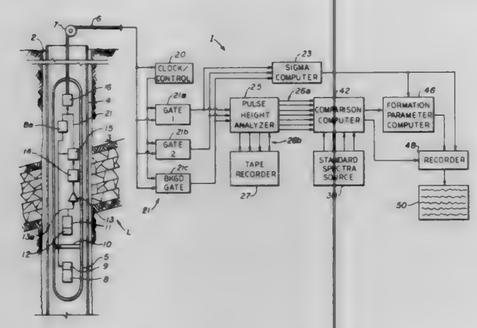


1. A method for logging a well borehole to obtain direct indications of the hydrocarbon bearing earth strata penetrated thereby, comprising the steps of:
passing a well tool having a pulsed source of fast neutrons and a radiation detector longitudinally spaced therefrom through a well borehole;
repetitively irradiating the earth formations in the vicinity of the borehole with bursts of fast neutrons;
detecting, subsequent to said neutron bursts, gamma radiations attributable to the capture of neutrons by elemental hydrogen and oxygen in the vicinity of the borehole and generating signals representative thereof;
forming a ratio signal representative of the ratio of said signals representative of elemental hydrogen and oxygen in the vicinity of the well borehole; and
recording said representative ratio signal as a function of the borehole depth of said well tool.

3,928,763
MEASUREMENT OF SUBSURFACE FORMATION LITHOLOGY, INCLUDING SHALINESS, USING CAPTURE GAMMA SPECTROSCOPY

Hubert D. Scott, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 12, 1974, Ser. No. 531,941
Int. Cl.² G01V 5/00
U.S. Cl. 250—270 **10 Claims**



1. A method for analysis of earth formations surrounding a well borehole wherein the macroscopic thermal neutron capture cross-section of the formations is known, comprising the steps of:

a. obtaining standard gamma ray energy spectra of materials postulated to be in formations surrounding a well borehole;

b. bombarding the earth formations in the vicinity of the borehole with fast neutrons which are slowed down and thereafter engage in neutron capture reactions with materials in the vicinity of the borehole;

c. obtaining gamma ray energy spectra of unknown materials surrounding the well borehole;

d. comparing an unknown gamma ray spectrum with a composite weighted mixture of the standard gamma ray spectra to obtain therefrom a quantitative measure of the percentage composition of elements in the vicinity of the borehole;

e. based on the quantitative measurement obtained in said step of comparing, obtaining a partial macroscopic thermal neutron capture cross section of the elements contributing to the gamma rays of the unknown gamma ray spectrum; and

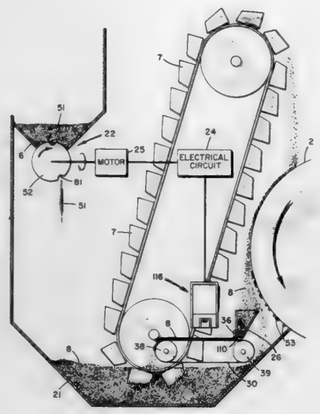
f. comparing the partial macroscopic thermal neutron capture cross section obtained to the known macroscopic thermal neutron capture cross section of the formation to obtain an indication of the shaliness of the formation.

3,928,764
METHOD AND APPARATUS FOR MEASURING AND CONTROLLING THE TONER CONCENTRATION IN ELECTROPHOTOGRAPHIC REPRODUCTION MACHINES

Hartmut Bock, Fischbach, Taunus, and Hans Götte, Kelkheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed June 4, 1973, Ser. No. 366,510
Claims priority, application Germany, June 2, 1972, 2226924
Int. Cl. G01n 23/12, 23/20
U.S. Cl. 250—272 **11 Claims**

1. A method of measuring the toner concentration of a developer containing toner circulating in an electrophotographic reproduction machine, comprising forming a horizontal layer of developer of constant thickness from the circulating developer for measurement, passing said layer past a source of β-rays that are effected by the toner, irradiating the layer by β-rays and measuring the β-rays being scattered back

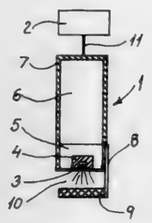


from said irradiation to determine the amount of toner present.

3,928,765
DETERMINING COMPOSITION OF A SUBSTANCE BY THE USE OF BOTH REFLECTED AND TRANSMITTED RADIATION

Steen Teller, Allerod, Denmark, assignor to Isotopcentralen, Copenhagen, Denmark

Filed Nov. 19, 1973, Ser. No. 417,407
Claims priority, application Denmark, Nov. 22, 1972, 5819/72
Int. Cl. G01n 23/00
U.S. Cl. 250—272 **6 Claims**



1. Apparatus for the determination of the content of at least one chemical element in a medium by an electromagnetic radiation method by the detection of backscattered and transmitted radiation, the apparatus comprising:

at least one first radiation source arranged on one side of a test zone;

at least one detecting means including a recording means, said detecting means being arranged on the same side of the test zone as said first radiation source; and

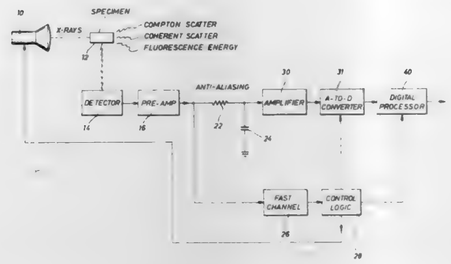
at least one second electromagnetic radiation source located at a side of said test zone opposite said detecting means;

said detecting means being adapted to detect both radiation emitted from said first radiation source and backscattered in the test zone and radiation emitted from said second radiation source and transmitted through the test zone.

3,928,766
HIGH SPEED PULSE PROCESSING

Kermit D. Clausen, and John R. Rhodes, both of Austin, Tex., assignors to Columbia Scientific Industries, Inc., Austin, Tex.

Filed Aug. 6, 1973, Ser. No. 386,100
Int. Cl.² G21K 1/00
U.S. Cl. 250—273 **11 Claims**



1. Method of processing energy charges from an energy-dispersive detector to determine the amplitude values of said charges, the detector operating in an emission spectroscopy system wherein a specimen under analysis is illuminated by a pulsable source capable of exciting characteristic X-rays, which comprises:

detecting a first energy charge with a long time constant circuit, the output therefrom being a first substantially linear decay;

sampling the amplitude value of said first linear decay and converting said sample value to digital form;

creating a second energy charge for detection by the detector by pulsing on said source, the output from the detector being a second substantially linear decay;

at a measurable time thereafter, sampling the amplitude value of said second linear decay and converting said sampled value to digital form;

digitally projecting along the slope of said first linear decay the amplitude value at the time of the sampling of said second linear decay; and

subtracting the value of said projected first linear decay from said sampled second linear decay to determine the relative amplitude value of said first and second decays.

3,928,767
APPARATUS FOR USE IN THE DETERMINATION OF FOCAL SPOT SIZE IN X-RAY TUBES

Werner Wilhelm Roeck, 41 Conlins Road, West Hill, Ontario, Canada

Filed Nov. 18, 1974, Ser. No. 524,922
Claims priority, application United Kingdom, Nov. 20, 1973, 53751/73
Int. Cl.² G03B 5/17
U.S. Cl. 250—320 **6 Claims**

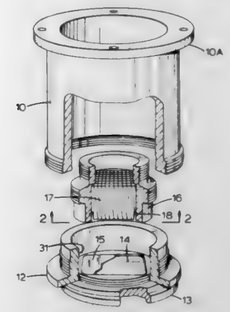
1. In an apparatus for use in the determination of focal spot size in X-ray tubes, means for determining the position of the central beam comprising:

a lens structure, said lens structure defining a pair of parallel upper and lower planes each providing a regular pattern of markings of distinctive opacity to X-rays, each pattern defining an array of discrete position coordinates in the respective plane, each array being the projection of the other in a direction perpendicular to said planes,

means for assembling a photographic film in close proximity to the lower plane at a predetermined orientation relative thereto, and

means for locating the assembly with respect to an X-ray tube so that the central beam impinges perpendicularly on said upper plane,

whereby to derive a composite photographic image of said patterns of markings in which the image components

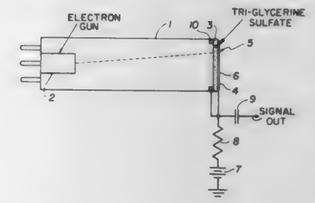


corresponding to the respective patterns coincide at the position of the central beam.

3,928,768
THERMAL IMAGING TUBE HAVING A PYROELECTRIC TARGET AND ANNULAR POTENTIAL STABILIZING ELECTRODE

Merton H. Crowell, Mahopac, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Sept. 9, 1974, Ser. No. 504,373
Int. Cl.² H01J 31/49
U.S. Cl. 250—333 **2 Claims**



1. A thermal imaging tube comprising an evacuated envelope, an electron gun within said envelope for producing an electron beam, a thermally responsive target of pyroelectric material positioned at one end of said tube to receive said electron beam on one surface thereof and a thermal image on the opposite face thereof for producing a potential image corresponding to said thermal image which can be scanned by said electron beam, an annular conductive member encircling the periphery of said target on the side facing the electron beam, means to apply a potential to said target at which said beam lands on said target, and means to apply a potential to said annular member which is not greater than the potential applied to the target and at which positive electrical charge build-up at the periphery of said target is prevented and said target is capable of being polled from an external source.

3,928,769
LAMINOGRAPHIC INSTRUMENT

Webster D. Smith, Lomita, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Mar. 19, 1973, Ser. No. 342,489
Int. Cl. G03b 41/16
U.S. Cl. 250—445 T **9 Claims**

1. A laminographic instrument comprising:

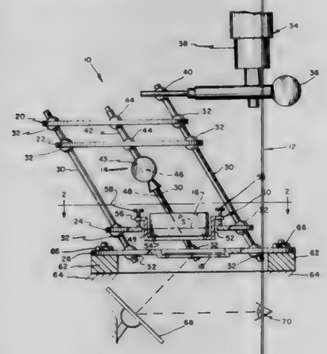
an articulated support including four frames disposed one over the other, connecting bars extending between and spaced about said frames, and swivel connections joining said frames and bars;

the swivel connections for each frame having their swivel centers located in a common swivel center plane, the swivel connections of each bar having swivel centers located on a common swivel center axis, the swivel center planes of said frames being parallel to one another, and the swivel center axes of the bars being parallel to one another;

said frames including a pair of radiator support frames adjacent one end of said bars, an image frame adjacent the other end of said bars, and a specimen frame between said support frames and said image frame;

a radiation source having a radiation axis parallel to swivel center axes;

a pair of swivel connections joining said source to said radiator support frames and having swivel centers located on said radiation axis;



said radiation source including means for emitting a beam of radiation along said radiation axis toward said specimen and image frames;

said specimen frame having means for supporting on said radiation axis a specimen to be examined;

said image frame including means for supporting on said radiation axis a radiation sensitive imaging medium;

means for mounting one of said frames in a fixed position, whereby said latter frame is a relatively fixed frame and said support may be driven in an oscillatory motion about the swivel connections of said fixed frame to produce on said imaging medium a shadow image which represents only the cross-section of said specimen located in the swivel center plane of said specimen frame; and

drive means connected to said support for oscillating said support about the swivel connections of said fixed frame.

3,928,770

FILM CASSETTE

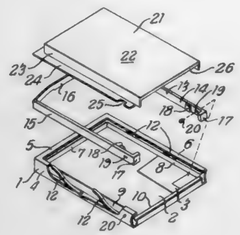
George Frederick Albert Marriott Turner, Ilford, England, assignor to Ilford Limited, England

Filed Aug. 19, 1974, Ser. No. 498,541

Int. Cl.² G03C *5/16*

U.S. Cl. 250—481 **11 Claims**

1. An X-ray film cassette which comprises (a) a rectangular base member consisting of a flat base plate which has on three sides upstanding walls having thereon inwardly directed horizontal flanges, (b) a cover member held in position on the base member which consists of a flat plate which has on three sides upstanding walls having thereon outwardly directed horizontal flanges, the dimension of both the base member and the cover member being so chosen that the flanges on the cover member can slide under the flanges on the base member to hold the cover member in the base member, (c) resilient means located between the base plate of the base member and the horizontal flanges of the cover member for holding the cover member in the raised position so that the horizontal flanges on the cover member abut the horizontal flanges on the base member, (d) means located in the base member enabling the cover member to be held with its flanges adjacent to the base plate of the base member when the cover member is pushed down against the resilient means to enable the cassette to be closed, (e) means for releasing the cover member



so that it can return to the raised position, (f) means for rendering light-tight the side of the cassette which is not covered by an upstanding wall on the base member and (g) means for retaining an X-ray film firmly in position in the cassette when the cassette is in the closed position.

3,928,771

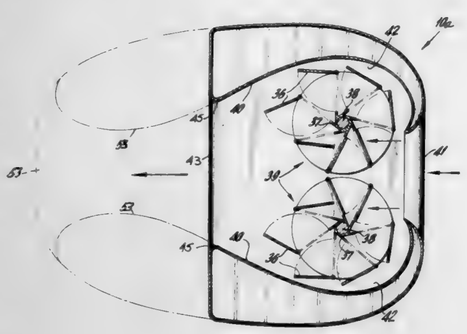
WATER CURRENT POWER GENERATOR SYSTEM

O. Robert Straumsnes, One Bryant Crescent, White Plains, N.Y. 10602

Filed Apr. 5, 1974, Ser. No. 458,228

Int. Cl.² F03B *13/10*

U.S. Cl. 290—43 **2 Claims**



1. In a water current power generator system including power generating means, the combination comprising:

a ship having an inlet and an outlet for the passage of water therethrough, a pair of water wheels mounted vertically within said inlet and in a juxtaposed position, each of said water wheels having a plurality of blades pivotally mounted and spaced about the periphery of said wheel, and a plurality of fixed radially extending members integrally formed about the axis of said water wheel wherein the blades pivot against said fixed radially extending members to form a rigid member as they encounter the water flow adjacent to the inlet and then pivot outwardly therefrom to minimize water resistance as the blades return to the inlet position, and, means coupling the water wheel to the power generator means.

3,928,772

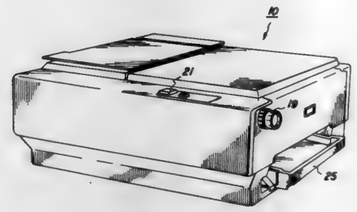
TIME DEPENDENT FAULT DETECTOR

Thomas J. Mooney, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 14, 1974, Ser. No. 450,959

Int. Cl.² G03G *15/00*

U.S. Cl. 307—116 **4 Claims**



1. In combination with a xerographic copier having a plurality of mutually exclusive routines each alloted a different amount of time, a time dependent fault detector for interrupting the operation of said copier whenever any one of said routines fails to be completed within the time alloted thereto; said detector comprising a timing capacitor, a resistive path for supplying charging current for said capacitor, a shunt path coupled in parallel with said capacitor for bypassing said charging current around said capacitor until one of said routines is initiated, means responsive to the initiation of any one of said routines for disabling said shunt path to thereby trigger said timer into operation, and means for selectively bypassing a portion of the resistance in said path to thereby adjust the time out period of said timer to match the time alloted to said one routine.

3,928,773

LOGICAL CIRCUIT WITH FIELD EFFECT TRANSISTORS

Henri J. Oguey, Peseux, and Eric André Vittoz, Cernier, both of Switzerland, assignors to Centre Electronique Horloger S.A., Neuchatel, Switzerland

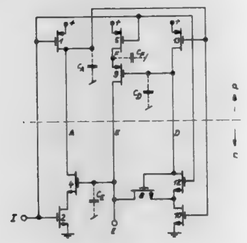
Continuation of Ser. No. 308,586, Nov. 21, 1972, abandoned. This application Apr. 9, 1974, Ser. No. 459,425

Claims priority, application Switzerland, Nov. 22, 1971, 16966/71

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.³ H03K *19/08, 19/20, 23/00*

U.S. Cl. 307—225 C **2 Claims**



1. A binary frequency divider stage circuit with insulated gate field effect transistors (MOST) powered by a constant voltage source, comprising an input I for introducing an input signal and at least three logical nodes, each logical node being an interconnection between the drains of at least one n-channel MOST and at least one p-channel MOST, each logical node being connected to control means of at least one other node and being able to be used as an output, the source of one of the MOST (1) of at least one of the nodes (A) being connected to one terminal of the voltage source and the source of the other MOST (A) of the same node being connected to the drain of a third MOST (2), the source of which is connected to the other terminal of the voltage source, the node (A) establishing the interconnection between the drains of the p- and n-channel MOST being controlled by two variables, one being the input signal and the other being the signal from an other logical node (E), in such a way that one variable (I) drives the gates of the third MOST (2) and one p-channel MOST, and the other variable drives the gate of the n-channel MOST (4), allowing the corresponding node to float when this transistor (4) as well as the complementary transistor (1) driven by the other variable are both blocked.

3,928,774

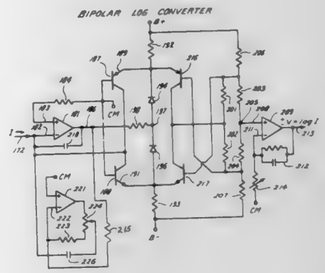
BIPOLAR LOG CONVERTER

Homer M. Wilson, Houston, Tex., assignor to Petrolite Corporation

Division of Ser. No. 436,250, Jan. 24, 1974, Pat. No. 3,855,101. This application Aug. 5, 1974, Ser. No. 494,443

Int. Cl.² G06G *7/12, 7/24*

U.S. Cl. 307—229 **16 Claims**



1. A bipolar log converter comprising

a. a differential input amplifier having one input receiving a bidirectional current signal and another input connected to circuit common of a DC power supply means, and an output providing a voltage representative of said current signal;

b. a pair of transistors comprising PNP and NPN types with their bases at circuit common and their collectors connected to said input of said differential input amplifier receiving the current signal;

c. a voltage biasing network for providing a current flow from said DC power supply means through the collector-emitter junctions of said transistors thereby placing said transistors into a conducting condition for nonlinear potential-current conversion;

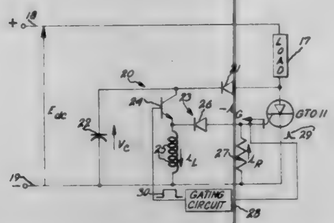
d. a pair of diodes series connected between the emitters of said transistors and at the common junction of said diodes connected to the output of said differential input amplifier thereby forming a feedback loop wherein said current signal is passed through one of said collector-emitter junctions and a diode to the output of said differential input amplifier for creating a potential; and

e. means for providing from said potential a continuous potential signal representing the current signal whereby said potential signal has a polarity representative of the flow direction of the current signal and a magnitude representative of the logarithm of the current signal, and said potential signal changing polarity upon a change in flow direction of the current signal.

3,928,775
TURN-OFF CIRCUIT FOR GATE TURN-OFF THYRISTORS AND TRANSISTORS USING SNUBBER ENERGY

Robert L. Steigerwald, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed June 20, 1974, Ser. No. 481,147
Int. Cl.² H03K *17/60*
U.S. Cl. 307—252 C **6 Claims**



1. A semiconductor device turn-off circuit comprising

a power semiconductor device having a pair of load terminals and a control terminal for controlling switching of said device between a conducting state and a non-conducting state blocking voltage,

a polarized snubber circuit comprising a series-connected snubber diode and snubber capacitor connected between said load terminals and operative to store energy in said snubber capacitor as the rate of rise of voltage across said device is limited, and

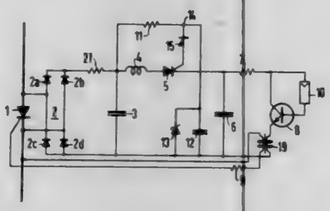
a turn-off circuit for selectively utilizing said stored snubber capacitor energy to generate a turn-off control current pulse to achieve switching of said device to the nonconducting state,

said turn-off circuit comprising a controlled solid state switch and inductive energy storage means connected across said snubber capacitor to form a series resonant circuit, means for rendering conductive said controlled solid state switch for a predetermined interval to transfer said stored energy to said inductive energy storage means, said inductive energy storage means and a series-connected blocking diode being coupled between said control terminal and one load terminal such that discharge of said inductive energy storage means forward biases said blocking diode and generates said turn-off pulse, and an impedance connected between said control terminal and one load terminal for circulating excess energy.

3,928,776
ARRANGEMENT FOR CONTROLLING A THYRISTOR

Gerd Thiele, Erlangen-Frauenaurach, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 29, 1974, Ser. No. 528,492
Claims priority, application Germany, Dec. 4, 1973, 2360392; Dec. 20, 1973, 2363617
Int. Cl.² H03K *17/60*
U.S. Cl. 307—252 N **9 Claims**



1. An arrangement for controlling a thyristor in which a series circuit consisting of a charging diode and a storage capacitor is coupled in parallel to the thyristor with the storage capacitor shunted by a series circuit comprising a switching device and a firing capacitor and with means provided for coupling the firing capacitor to the control electrode of the thyristor, the improvement comprising:

a. a switching device in the form of an auxiliary thyristor;

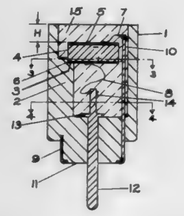
b. a choke in the series circuit shunted across the storage capacitor; and

c. means for firing said auxiliary thyristor as a function of the voltage across the firing capacitor.

3,928,777
DIRECTIONAL ULTRASONIC TRANSDUCER WITH REDUCED SECONDARY LOBES

Frank Massa, Cohasset, Mass., assignor to Fred M. Dellorfano, Jr. and Donald P. Massa, both of Cohasset, Mass.

Filed Aug. 26, 1974, Ser. No. 500,391
Int. Cl.² H01L *41/04*
U.S. Cl. 310—8.2 **5 Claims**



1. In combination in a directional electroacoustic transducer, a housing structure having an opening, a polarized ceramic disc characterized in that its periphery is smaller than the periphery of said opening, and further characterized in that it operates at a frequency near its planar resonant vibrational mode, said ceramic disc includes a vibratile surface, means for locating said ceramic disc within said opening in said housing structure with said vibratile surface placed opposite said opening, means for reducing the amplitude of the secondary lobes in the directional pattern of said transducer, said means including a sound conducting material located within said opening and making intimate contact with said vibratile surface.

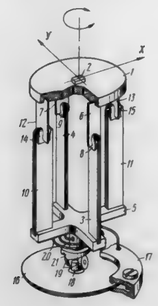
3,928,778
DEVICE FOR THE PRECISION DISPLACEMENT OF AN ARTICLE WITHIN A PLANE

Evgeny Alexandrovich Ivanov, Berezovaya alleya, 3, kv. 65; Vladislava Venediktovna Silchenkova, korpus 214, kv. 24; Alexandr Afanasievich Sazonov, ploschad Junosti 4, kv. 48, and Nikolai Stefanovich Budkin, korpus 117, kv. 4, all of Moscow, U.S.S.R.

Filed June 21, 1974, Ser. No. 481,846
Claims priority, application U.S.S.R., June 26, 1973, 1936988
Int. Cl.² H01L *41/08*
U.S. Cl. 310—8.3 **1 Claim**

1. A device for the precision orientation of articles in a plane, comprising: a ring base; a platform; a coordinate table for accommodating an article being oriented; and a piezoelectric electromechanical transducer assembly operatively connecting said platform to said coordinate table, said piezoelectric electromechanical transducer assembly comprising a plurality of piezoelectric plates, each plate having first and second ends, first of said piezoelectric plates being arranged in one plane and displacable along one coordinate for moving an article along the one coordinate,

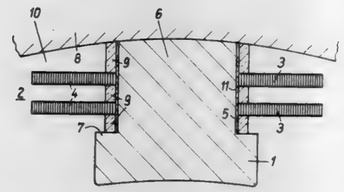
second of said piezoelectric plates being arranged in a plane perpendicular to said one plane of the first of the plates and displacable along a second coordinate for moving said article along the second coordinate, flat springs, each corresponding to each of said piezoelectric plates and connecting the first end of the corresponding piezoelectric plate with said coordinate table, the plane of said flat springs each being perpendicular to said corresponding piezoelectric plates; and a third piezoelectric plate, said third piezoelectric plate being connected to said ring base, a screw pair coupling said third plate with said platform, said second ends of said piezoelectric plates being rigidly secured to said platform.



3,928,779
EXCITATION WINDING ARRANGEMENT FOR A SALIENT POLE ELECTRIC MACHINE

Gunter Zwarg, and Paul Kirchner, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 14, 1974, Ser. No. 442,685
Claims priority, application Germany, Feb. 19, 1973, 2308541
Int. Cl.² H02K *3/00*
U.S. Cl. 319—194 **1 Claim**

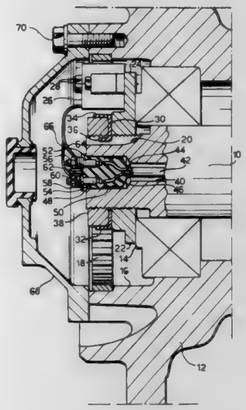


1. In an electrical machine having a plurality of salient poles, each of the poles including an insulated pole shank, an excitation winding arrangement comprising; a plurality of individual disc-like coils, each of said coils being wound of a flat conductor, the conductor being wound on its flat side in a single layer in the form of a disc-like member having a plurality of mutually insulated turns one next to the other; insulating compound means impregnating said coil and hardened to impart to said member an inner strength sufficient to make the same a self-supporting component; said coils being apportioned into a plurality of groups of coils corresponding to respective ones of the poles, the coils of each of said groups being mounted on the insulated pole shank corresponding thereto so as to be tightly fitted thereon in spaced relation from each other, each of said coils being disposed with respect to the pole shank so as to extend outwardly in free space substantially in a plane perpendicular to the shank wall so as to cause the flat sides of the conductor to extend parallel to the shank wall, each of said coils having top and bottom surfaces likewise extending perpendicular to the shank wall; and, spacer means lying directly next to corresponding ones of the pole shanks for spacing said coils in free space and from each other, said spacer means being in contact with said coils only close in at the wall of the pole shank whereby said spacer means covers only a small fraction of said coil surfaces, said coils of each group being arranged into a plurality of coil pairs, each of said pairs being spaced from each other as well as from the yoke and the pole shoe, the coils of each pair having respective end-face surfaces juxtaposed, said insulating compound being confined to the spaces between each two mutually adjacent turns of the coils of each pair and between said juxtaposed surfaces whereby each of the coils of each coil pair has an uncovered outwardly facing end-face perpendicular to said pole shank.

3,928,780
ANGULAR VELOCITY DETECROT ARRANGEMENT FOR A VEHICLE WHEEL, PARTICULARLY FOR AN ANTI-SKID BRAKE SYSTEM

Paolo Vannini, turin; Luigi Anselmino, and Giuseppe Frazzini, both of Turin, all of Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed June 25, 1974, Ser. No. 482,944
Claims priority, application Italy, June 25, 1973, 68883/73
Int. Cl.² H02K *21/38*
U.S. Cl. 310—168 **3 Claims**

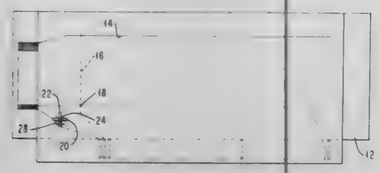


1. In an angular velocity detector assembly for a vehicle wheel having a hub mounted on an axle by inner and outer bearings, the outer bearing of which is secured in position by a nut threaded on the end of said axle, said detector assembly comprising a toothed wheel fixed to the vehicle wheel and a fixed electromagnetic pick-up device cooperating magnetically with said toothed wheel, the improvement comprising said pick-up device being supported by said nut which secures said outer bearing for said vehicle wheel on said axle, a threaded bush having a locking washer securing said nut in position on said axle, said toothed wheel being carried directly on said hub of said vehicle wheel concentric with said axle and disposed radially outwardly of said pick-up device for cooperation with said pick-up, an axial bore in said axle, a plug of elastomer material incorporating two terminal connectors, said plug being housed in said bore in said axle, a cable having two leads extending through said bore in said axle and output leads from said pick-up, said leads being connected to said two terminals in said plugs of elastomeric material.

3,928,781
GASEOUS DISCHARGE DISPLAY PANEL INCLUDING PILOT ELECTRODES AND RADIOACTIVE WIRE

Roger Joseph Edwards, Woodstock; Barouyr Zareh Hairabedian, Lake Katrine, and Neil Myron Poley, Kingston, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 3, 1974, Ser. No. 502,268
Int. Cl.² H01J *17/32, 61/54*
U.S. Cl. 313—54 **4 Claims**

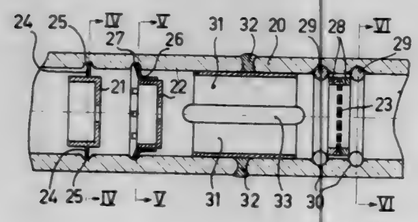


1. In a plasma display device comprising a panel with an illuminable gas sealed in a chamber between two substantially transparent flat plates, said chamber containing a multiplicity of light emitting cells wherein each cell is formed at a cross-over point of spaced orthogonal conductors, such that the gas in the region of each coordinate intersection of said conductors may be fired in response to a firing potential difference applied to said orthogonal conductors, the improvement comprising
   a pair of pilot electrodes one of which is disposed on the interior surface of one of said flat plates, the other of which is placed on the interior surface of the other of said flat plates, and
   a radioactive wire located within the chamber between the pilot electrodes,
   whereby the radiation from said wire aids the ionization of gas in the region of said pilot electrodes which in turn aids in the ignition of the illuminable gas cells of the display panel.

3,928,782
METHOD OF MANUFACTURING AN ELECTRIC DISCHARGE TUBE AND DISCHARGE TUBE OBTAINED IN THIS MANNER

Johannes van Esdonk; Johannes Petrus Hornman, and Franciscus Cupertinus Maria de Hass, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 14, 1973, Ser. No. 388,255
Claims priority, application Netherlands, Sept. 27, 1972, 7213022
Int. Cl.² H01J *1/88, 19/42*
U.S. Cl. 313—249 **3 Claims**

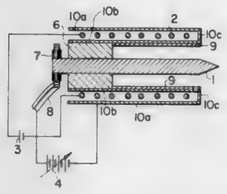


1. A method of manufacturing an electric discharge tube having a plurality of recesses in its inner wall for holding supporting parts of the electrode system of the tube, comprising the steps of: fixing into the tube relative to a reference point a mask having openings corresponding to the shape and mutual displacement of the recesses to be created, and exposing the uncovered wall portions of the tube to the action of a jet of particles of grinding material incorporated in a fluid until the recesses are created.

3,928,783
THERMIONIC CATHODE HEATED BY ELECTRON BOMBARDMENT

Shigeru Hosoki; Michio Ohtsuka, both of Hachioji, and Satoru Fukuhara, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 10, 1973, Ser. No. 423,107
Claims priority, application Japan, Dec. 8, 1972, 47-122502
Int. Cl.² H01J *1/94, 1/20*
U.S. Cl. 313—270 **13 Claims**



1. A thermionic cathode structure comprising:
   a cathode made of a material having a high electron emissivity;
   a supporter made of an electrically-insulating and high temperature-resistant material for supporting a part of said cathode;
   a first cylinder held in contact with said supporter and arranged so as to surround a part of said cathode;
   a second cylinder arranged concentrically with said first cylinder;
   a cathode heating coil arranged in an interstitial space between said first and second cylinders;
   an electron-emissive metal oxide layer formed on an inside surface of said first cylinder;
   flange means, extending from said first cylinder toward said cathode past said oxide layer, for preventing electrons emitted from said oxide layer from being mixed with electrons emitted from a part of said cathode;
   a power source connected to said coil for supplying heating power to said coil; and
   a power source connected between said cathode and said first cylinder in order to cause electrons, emitted from said oxide layer, to strike against said cathode.

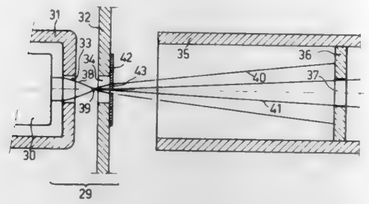
3,928,784
TELEVISION CAMERA TUBE WITH CONTROL DIAPHRAGM

Willem Paul Weijland, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 267,001, June 28, 1972, abandoned.
This application Apr. 15, 1974, Ser. No. 461,008
Claims priority, application Netherlands, July 2, 1971, 7109170
Int. Cl.² H01J *29/56, 31/38*
U.S. Cl. 313—389 **2 Claims**

1. A television camera tube comprising an electrically conductive transparent layer, a layer of photoconductive material on said electrically conductive layer on which a potential distribution is formed corresponding to an optical image projected thereon through said electrically conductive transparent layer, an electron gun spaced from said photoconductive layer for producing an electron beam for scanning the surface and periodically reducing said potential distribution to cathode potential of said photoconductive layer remote from said electrically conductive layer, said electron gun having a cathode, a grid and an anode, said grid and anode each having an aperture 0.6 mm therein and being spaced apart 0.25 mm for

forming an electron beam having a cross-over therebetween, said anode having a second aperture diameter at the area of the smallest cross-section is a maximum of 0.150 mm and a minimum equal to the electron beam diameter at said area for intercepting returning electrons from the photoconductive layer whereby the beam cross-over formed between the cathode and anode can serve as the object to be reproduced, a

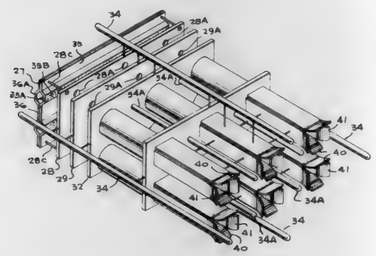


hollow cylindrical electrode between said anode and said photoconductive layer, and a diaphragm in said hollow cylindrical electrode having an aperture the diameter of which at the area of the smallest cross-section is a maximum of 10% of the distance between the aperture in the anode and the aperture in the diaphragm said aperture diaphragm distance being 12 mm, and the cathode-grid distance being 0.1. mm.

3,928,785
SINGLE GUN, MULTI-SCREEN, MULTI-BEAM, MULTI-OLOR CATHODE RAY TUBE

Adrian W. Standaart, 5 Bonbrook Circle, Winston-Salem, N.C. 27106

Filed Nov. 23, 1971, Ser. No. 201,460
Int. Cl.² H01J *29/50, 31/20*
U.S. Cl. 313—411 **14 Claims**

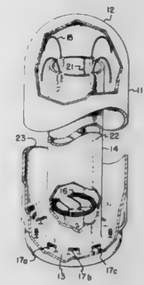


1. A single gun, multi-screen, multi-beam, multi-color cathode ray tube construction for producing visible images comprising a glass envelope including a neck portion and a faceplate portion, said faceplate portion having a plurality of individual phosphor screens arranged serially along a reference axis in at least one rectilinear row over the area of said faceplate portion, each said screen being adapted to produce an image for direct viewing, upon electron-activation of the phosphors, a single electron gun within said neck portion for producing a plurality of electron beams at least equalling in number the number of screens, said electron gun including a single cathode having a narrow elongated flat strip surface for each said row with its longitudinal center axis paralleling said reference axis and lying in a transverse plane transversely spanning the cathode and facing the screens, a coating of electron emission material on said flat strip surface which is thermally activated to emit electrons for forming the electron beams, control grid and first anode elements in spaced planes paralleling the plane of said flat strip surface and each comprising a single planiform non-conductive panel member each having a hole for each of the respective electron beams lined with conductive material for controlling and shaping the electrons emitted by the cathode into the beams, the holes in said grid and first anode elements for each respective electron beam being axially alined along a beam axis substantially perpendicular to said strip surface, said cathode comprising a pair of metallic sheet members joined along a common plane transverse and perpendicular to said beam axis, each having outwardly projectin truncated V-shaped channel formations collectively defining a six-sided channel of substantially honeycomb configuration in cross-section with one side paralleling said common plane forming said strip surface and alined respectively with said holes in said control grid and anode elements, the channel housing filament wire along the length thereof in a coil concentric with the axis of the channel and closed adjacent the walls thereof, and accelerating anode means for accelerating the electrons in said beams toward said phosphor screens, said cathode, grid and anode elements being rigidly supported in a unitary assembly.

3,928,786
FLUORESCENT LAMP HAVING PARTITIONED VAPOR DISCHARGE

John H. Campbell, Mentor, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 375,656, July 2, 1973, abandoned.
This application Oct. 21, 1974, Ser. No. 516,459
Int. Cl.² H01J *61/35, 61/42*
U.S. Cl. 313—493 **5 Claims**



1. A fluorescent lamp comprising a partition member, means providing ultraviolet-producing vapor discharge paths at opposite sides of said partition member, and phosphor at only one side of said partition member, said partition member being of ultraviolet-transmitting material so that said phosphor can be excited by ultraviolet radiation from both of said vapor discharge paths.

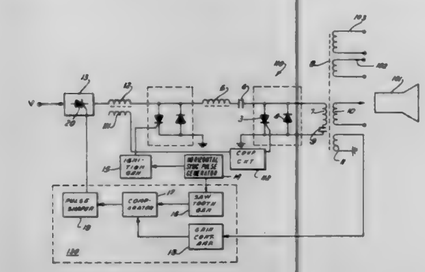
3,928,787
ENERGY STABILIZATION IN A HORIZONTAL DEFLECTION CIRCUIT FOR A TELEVISION RECEIVER

Erich Geiger, Friesen, Germany, assignor to Loewe-Opta GmbH, Kronach, Germany

Filed Nov. 9, 1973, Ser. No. 414,389
Claims priority, application Germany, Nov. 11, 1972, 2255389
Int. Cl.² H01J *29/70*
U.S. Cl. 315—403 **6 Claims**

1. In a deflection circuit having a repetitive sweep cycle including a first relatively short flyback interval and a second relatively long forward sweep interval wherein the circuit comprises, in combination, a first storage capacitor coupled between a supply inductor and the primary winding of a deflection transformer, first means for coupling the input of the inductor to a source of operating voltage whereby an oscillatory energy interchange occurs between the operating voltage source and the output of the deflection circuit via the inductance and the first storage capacitor, and a first thyratron-like

gating means associated with the inductor, the switching time of the first gating means being varied in dependence on changes in the quantity of energy in such oscillatory energy interchange, the improvement wherein the first gating means is serially connected between the source of operating voltage and the input of the inductor, and wherein the circuit further comprises, in combination, first means for generating, during each first interval, an output control pulse of substantially



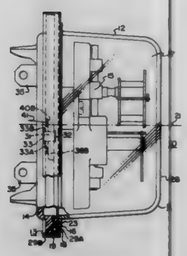
fixed duration whose time of occurrence relative to the start of the associated first interval is proportional to the voltage stored on the first capacitor at the start of such first interval, and second means for coupling the output of the first generating means to the control electrode of the first gating means, whereby the time of occurrence of the output control pulse is automatically adjusted to maintain a constant dynamic current-voltage ratio at the output of the deflection transformer.

3,928,788

TAMPER PROOF WATTHOUR METER ENCLOSURE

Gerald W. Finnen, Raleigh, and Herman Q. Wilson, Clayton, both of N.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 3, 1974, Ser. No. 485,675
Int. Cl.² H02B 9/00
U.S. Cl. 317—111 **3 Claims**



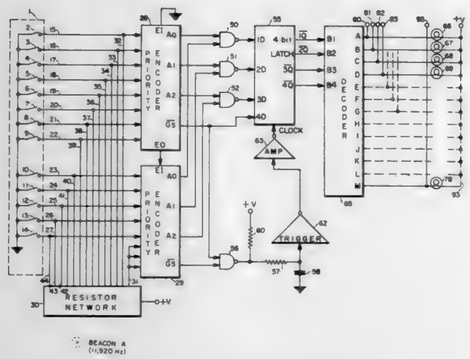
1. A tamper proof watthour meter enclosure comprising:
a base assembly supporting a watthour meter movement, said assembly including circularly arcuate attachment lugs extending radially at the outer periphery thereof in spaced apart relationship, said attachment lugs having forward and rear side radial surfaces thereon;
a cup-shaped cover including a closed forward end and an open rear end, said cover further including a circular mounting flange extending radially outward at said rear open end, with a rear radial side surface mating with said front radial side surfaces of said attachment lugs, said cover further including a locking rim carrying tab members rotationally attaching and locking said cover to said attachment lugs to enclose said watthour meter movement within a protective enclosure chamber; and
a permanent locking arrangement including a clip member, a first groove formed in the front side surface of one of said attachment lugs, a second groove formed in said rear side surface of said mounting flange of said cover, a slot extends from the side of said first groove, said second groove being in a facing relationship with said first groove, said first and second grooves and said slot defining an enclosed space wholly containing said clip member, said clip member being made of an integral piece of resilient sheet material and including a substantially flat elongated bottom portion supported on the bottom of said first groove, a tab extending from said bottom portion and into said slot and an arm projection extending at a predetermined angle from said bottom portion and terminating at a free edge, said bottom portion being supported on the bottom of the base assembly groove such that said free edge of said arm projection is positioned in alignment with an abutment end of the cover groove and engageable therewith to oppose movement of said cover in an opposite direction to said one direction, and said arm projection being resiliently depressible by said rear side surface of said cover into the space of said first groove during rotational attachment of said cover to said base assembly so as to thereafter resiliently return to the locking position within the space of said second groove upon said grooves being mutually aligned in the facing relationship.

3,928,789

SWITCH INTERLOCK CIRCUIT

Jack Elias, Lansdale, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 13, 1973, Ser. No. 397,153
Int. Cl.² G06F 3/02
U.S. Cl. 317—136 **8 Claims**



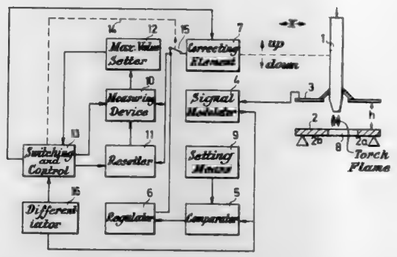
1. A keyboard interlock circuit comprising:
a keyboard having a plurality of manually actuable switches, supply means connected to said switches to provide a separate switch output signal from each of said switches with each switch output signal being representative of an actuation of a respective one of said switches,
encoding means connected to said switches for coding each of said output signals from said switches to a respective coded representation thereof, said encoding means including priority determining means for restricting said coded representation from said encoding means to represent a switch output signal having the highest priority among concurrently applied switch output signals from said switches to said encoding means,
means for decoding said coded representation from said encoding means into an energization of a mutually exclusive one of a plurality of output lines from said means for decoding, and
output means connected to said output lines to respond to a selective energization of said output lines by said means for decoding.

3,928,790

REGULATING PROCESS AND DEVICE

Karl Heinz Schmall, Baden-Baden, Germany, assignor to Precitec GmbH, Baden-Baden, Germany

Filed June 11, 1974, Ser. No. 478,278
Claims priority, application Germany, June 16, 1973, 2330782
Int. Cl.² B23Q 17/18; G05D 3/04
U.S. Cl. 318—286 **11 Claims**



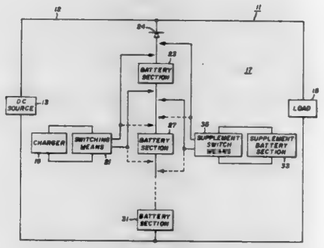
1. A regulating process for the carrying out the process for maintaining substantially constant the distance of a tool from a work piece to be processed having an uneven surface over which the tool is moved parallel to the surface, particularly for the distance regulation of the torch of a torch-cutting device from the work piece, the tool distance being determined by a sensing element, compared with the desired factor and the thus-determined deviation fed to a regulator, which, depending on this, emits regulating signals to a correcting element, which shifts the tool toward the work piece or away from the work piece, depending on the direction of the deviation, characterized in that in the initiation of a movement of the correcting element directed toward the work piece, the course of the tool to the correcting element is accumulatively determined, that the accumulated value is compared with the predetermined maximum factor, on exceeding the predetermined maximum factor, the tool is stopped and then is moved by in accordance with the predetermined maximum factor again away from the work piece and is maintained in this position until the sensing element determines a decrease of the distance between tool and work piece.

3,928,791

STAND-BY POWER SYSTEM

Ferdinand H. Mullersman, Gainsville, Fla., assignor to General Electric Company, Columbus, Ohio

Filed May 20, 1974, Ser. No. 471,594
Int. Cl.² H02J 7/00
U.S. Cl. 320—7 **11 Claims**



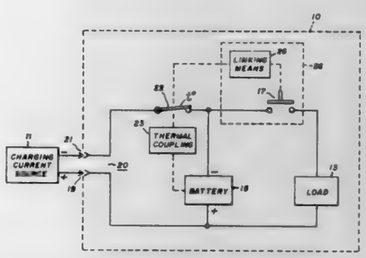
1. A battery charging apparatus for a high voltage stand-by power system, said system comprising a power source connected in circuit with a load and a battery of rechargeable cells coupled across said load to provide stand-by power upon the non-functioning of said source, said battery being divisible into a plurality of sections of at least one cell each for charging, and a supplemental battery section, said apparatus comprising:
a. charging means for supplying a source of charging current;
b. switching means, coupled between said charging means and each of said plurality of sections, for sequentially switching said plurality of sections, one section at a time, to said charging means for charging, said switching means comprising:
1. a plurality of circuit paths for electrically connecting said charging means in circuit with each of said sections;
2. current control means in said circuit paths for controlling the transmission of current from said charger to each of said sections; and
3. first control section means for activating said current control means to sequentially transmit said current to said sections, one at a time; and
c. a supplemental switching means, coupled between said supplemental battery section and said battery, for automatically, electrically connecting said supplemental battery section in circuit with said battery when one of said sections is being charged, said supplemental switching means comprising:
1. a plurality of supplemental circuit paths for connecting said supplemental section to each of said battery sections;
2. supplemental current control means in said supplemental circuit paths for controlling the conductivity of said circuit paths;
3. second control section means for activating said supplemental current control means to sequentially connect said supplemental section in parallel with each of said battery sections, one section at a time; and
4. third control section means for activating said supplemental current control means to disconnect each of said sections from said battery and from said supplemental section.

3,928,792

METHOD OF RESETTING THERMOSTAT USED WITH TEMPERATURE CONTROLLED CHARGING

Ferdinand Henry Mullersman, and James Edward Sarisky, both of Gainesville, Fla., assignors to General Electric Company, Columbus, Ohio

Filed Feb. 24, 1975, Ser. No. 552,289
Int. Cl.² H02J 7/04
U.S. Cl. 320—35 **8 Claims**



1. A battery-operated apparatus comprising:
a. an electrically operable load;
b. a rechargeable battery for energizing said load,
c. temperature-actuated switch means, thermally coupled to battery, said switch having first and second positions, said switch automatically shifting from said first to said second position responsive tc an increase of the temperature of said battery above a predetermined level;

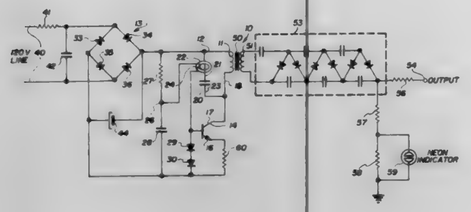
d. a switch mechanism for simultaneously energizing said load and for resetting said temperature-actuated switch to said first position.

3,928,793

POWER SUPPLY CIRCUIT WITH ELECTRO-MAGNETIC FEEDBACK

Douglas G. Waltz, Garland, Tex., assignor to Varo Semiconductor, Inc., Garland, Tex.

Filed July 31, 1974, Ser. No. 493,247
Int. Cl.² H02M *3/315*
U.S. Cl. 321—2 **10 Claims**



1. In a power supply for providing an operating voltage to an electric utilization means, the combination comprising: inductance means having a first and a second lead, said first lead extending therefrom for receiving DC current of a first value; a switchable circuit including solid state switching means having load electrodes connected to said second lead of said inductance means to be in series therewith, said solid state switching means further including a control electrode; capacitor means having a pair of electrical leads extending therefrom and connected in circuit with the leads of said inductance means to form a resonant circuit therewith, said switchable circuit providing a current path to initiate oscillation of said resonant circuit; feedback means electro-magnetically coupled to at least one of the leads of said inductance means and to said capacitor means to sense circulating current flow therethrough, said feedback means being coupled to said control electrode of said solid state switching means to cause said inductance means, capacitor means and said solid state switching means to function as an oscillator, said feedback means being responsive to the amplitude of oscillation from said oscillator to disable said oscillator when reduced circulating current is sensed between said inductance and capacitor means by said feedback means; and rectifier means coupled to said inductance means to provide a DC voltage of a second value to an output terminal thereof to be delivered to the electric utilization means.

3,928,794

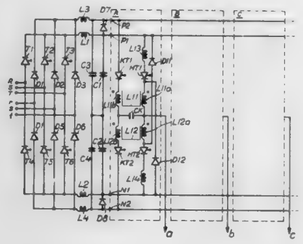
INVERTER

Anders Broms, and Kjell Frank, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Oct. 25, 1974, Ser. No. 518,148
Claims priority, application Sweden, Nov. 26, 1973, 7315941
Int. Cl.² H02M *7/00*
U.S. Cl. 321—5 **6 Claims**

1. Inverter comprising at least one connection group (A), each connection group comprising

a. a first positive (P1) and a first negative (N1) point of connection for connection to a feeding direct voltage source (T1–T6),
b. an alternating current terminal (*a*),
c. a first controllable main rectifier (HT1) connected between said positive point of connection (P1) and the alternating current terminal (*a*) and a second controllable main rectifier (HT2) connected between said alternating current terminal (*a*) and the negative point of connection (N1),
d. a commutating capacitor (CK), one terminal of which is connected to the alternating current terminal (*a*),
e. a second positive (P2) and a second negative (N2) point of connection for connection to a commutating direct voltage source (D1–D6),
f. a first controllable commutating rectifier (KT1) connected between said second positive point of connection (P2) and the second terminal of the commutating capacitor (CK), and a second controllable commutating rectifier (KT2) connected between said second terminal of the commutating capacitor and said second negative point of connection (N2),
g. a first and a second pair of windings (L11*a*, L11*b* and L12*a*, L12*b*, respectively), each pair of windings comprising a first and a second winding, said windings being magnetically coupled to each other,



h. a first and a second feedback valve (D11,D12),

in which the first pair of windings has its first winding (L11*a*) connected between the first main rectifier (HT1) and the alternating current terminal (*a*) and its second winding (L11*b*) in series with the first commutating rectifier (KT1),

the second pair of windings has its first winding (L12*a*) connected between the alternating current terminal (*a*) and the second main rectifier (HT2) and its second winding (L12*b*) in series with the second commutating rectifier (KT2),

the first feedback valve (D11) has its anode connected to a point between the second main rectifier (HT2) and the first winding (L12*a*) of the second pair of windings, and its cathode connected to the first positive point of connection (P1), and that

the second feedback valve (D12) has its anode connected to the first negative point of connection (N1) and its cathode to a point between the first main rectifier (HT1) and the first winding (L11*a*) of the first pair of windings.

3,928,795

CONTACT TESTER

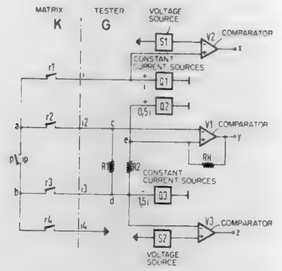
Robert Lechner, Feldgasse, Austria, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 6, 1974, Ser. No. 467,154
Claims priority, application Germany, May 7, 1973, 2322961
Int. Cl.² G01R *31/02*
U.S. Cl. 324—28 CR **3 Claims**

1. A tester for determining the operating condition of switch contacts by measuring the transfer resistance thereof with a low voltage, comprising:

a bridge circuit, the arms of which comprise, respectively, the contacts being tested, a first reference resistor, the latter being connected through first coupling contacts and second coupling contacts,
a first constant-current source having a positive terminal connected to a first terminal of said contacts being tested over third coupling contacts,

fourth coupling contacts connecting a second terminal of said contacts being tested to ground,
second reference resistor for supplying a reference voltage to said first reference resistor,
second constant-current source having a positive output terminal connected to a first terminal of said second reference resistor and a terminal of said bridge circuit formed by a first junction point connecting said first reference resistor and said second coupling contacts,
third constant-current source having a negative terminal connected to said first junction point, said third constant-current source being constructed to supply as much current as said first and second constant-current sources combined,



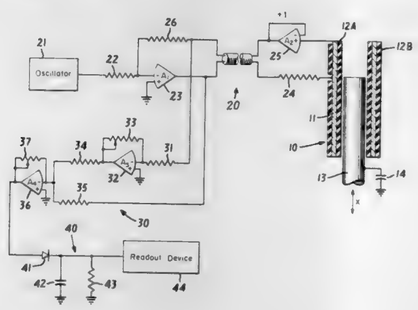
first threshold voltage source,
first comparator means having one input connected to said first junction point and another input connected to an output of said first threshold voltage source,
second comparator means having an input connected to said first terminal of said second reference resistor and another input connected to a second junction point of said bridge circuit connecting said first coupling contacts and said first reference resistor,
second threshold voltage source, and
third comparator means having an input connected to said second threshold voltage source and another input connected to said positive output of said first constant-current source.

3,928,796

CAPACITIVE DISPLACEMENT TRANSDUCER

Willard D. Kaiser, Grove City, Ohio, assignor to International Lead Zinc Research Organization, Inc., New York, N.Y.

Filed Nov. 30, 1973, Ser. No. 420,556
Int. Cl.² G01R *27/26*
U.S. Cl. 324—61 R **1 Claim**



1. Apparatus for measuring the displacement of a moveable rod of a machine, comprising:

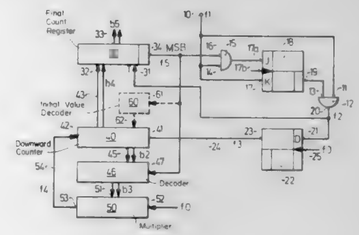
a conductive sleeve located over at least a part of the rod;
a resistance having one end connected to said conductive sleeve;
an operational amplifier with its output connected to the other end of said resistance and its noninverting input connected to a reference ground;
an input resistor with one end connected to the inverting input of said amplifier;
a source of a.c. voltage connected to the other end of said input resistor;
a feedback resistor with one end connected to the inverting input of said amplifier;
means for connecting said conductive sleeve to the other end of said feedback resistor;
means for coupling said rod to the reference ground;
means for obtaining an a.c. signal equal to the a.c. voltage drop across said resistance;
means for demodulating the a.c. signal; and
means for measuring the demodulated signal.

3,928,797

CIRCUIT FOR CONVERTING A FREQUENCY INTO A BINARY NUMBER

Uwe Kiencke, Moglingen, and Günter Hönig, Braunschweig, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed June 25, 1974, Ser. No. 482,831
Claims priority, application Germany, July 14, 1973, 2336015
Int. Cl.² G01R *23/02*
U.S. Cl. 324—78 D **8 Claims**



1. Circuit for converting a frequency into a binary number in response to a sequence of pulses of said frequency and to a sequence of clock pulses of a much higher frequency comprising:

downward binary number counting means (**40**) arranged to be initially set and reset at a maximum count number by a reset signal and to count downwards from said number in response to counting pulses;
count timing means responsive to said clock pulses for providing said counting means a count-versus-time characteristic that is substantially hyperbolic for a predetermined period of its downcounting operation, said count timing means being dependent on the momentary count output of said counting means and including
decoding means (**46**) for detecting the values of count at which the counting rate should be reduced by a predetermined amount for provision of said hyperbolic characteristic and for generating a modifying signal determining a factor by which the frequency of said clock pulses is reducible;
multiplying means (**50**) for reducing the frequency of said clock pulses by said factor in response to said clock pulses and said modifying signal and for producing counting pulses for said counting means;
registering means (**30**) for receiving the momentary count value in said counting means after counting down from said maximum count number for a predetermined integral number of periods of said frequency

to be measured and for holding said count value for readout thereafter for at least one period of said frequency to be measured, and

resetting means (22) for providing a reset signal to said counting means after a count value is received as aforesaid by said registering means.

3,928,798

MEANS FOR FREQUENCY/DIGITAL CONVERSION

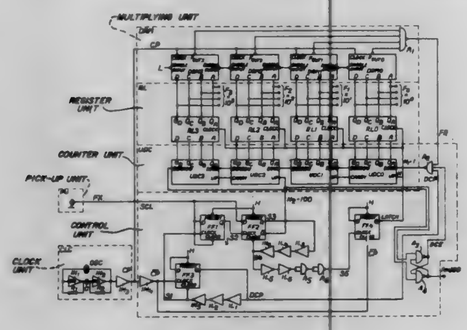
Jaroslav Valis, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Oct. 7, 1974, Ser. No. 512,624

Claims priority, application Sweden, Nov. 22, 1973, 7315792

Int. Cl.² G01R *23/02*

U.S. Cl. 324—78 D **5 Claims**



1. Apparatus from frequency/digital conversion, especially for digital revolution and speed measuring, which comprises a clock unit (CLC), a control unit (SCL), and a counter unit (UDC), the clock unit (CLC) including means to deliver a first pulse train (CP) with a constant frequency (f_C), in which the apparatus comprises a multiplying unit (DRM) including means to deliver to the control unit a second pulse train (FR), the frequency of which (f_R) is dependent on the product of said constant frequency (f_C) and the latest maximum value (F) of the contents (G) of the counter unit (UDC),

the counter unit (UDC) including means to reduce its contents (G) by a first quantity (N_1) in response to each pulse in the second pulse train (FR), another unit (PU) including means to supply the control unit (SCL) with a third pulse train (FX) with an unknown frequency (f_X),

the control unit (SCL) including means to emit a control signal to the counter unit (UDC) for each pulse in the third pulse train, the counter unit (UDC) increasing its contents (G) by a second quantity (N_2) at the occurrence of said control signal, said second quantity (N_2) being greater than or equal to said first quantity (N_1), and after each such addition the contents (G) of the counter unit (UDC) having reached a new maximum value (F) which constitutes a digital representation of the frequency (f_X) of the second pulse train (FX).

3,928,799

AUTOMATIC BALANCING DC COMPARATOR VOLTMETER

Norbert L. Kusters, and Malcolm P. MacMartin, both of Ottawa, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

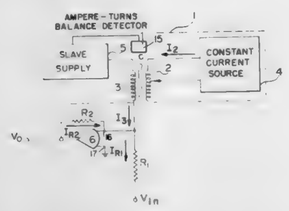
Filed May 20, 1974, Ser. No. 471,482

Int. Cl.² G01R *17/06*

U.S. Cl. 324—99 D **13 Claims**

1. Apparatus for measuring a dc potential comprising:

a. a self-balancing direct current comparator having a primary circuit, a secondary circuit, and means for detecting ampere-turns balance between the primary and secondary circuits; said primary circuit including a primary winding having an adjustable number of turns N_2 wound on a magnetic core and current means to provide a constant current I_2 through said primary winding, said secondary circuit including a secondary winding having N_3 turns wound on said magnetic core and current means controlled by said ampere-turns balance detector means to provide a direct current I_3 through said secondary winding to maintain ampereturns balance between said windings, such that $I_2 N_2 = I_3 N_3$;



b. first resistor means having first and second terminal means, said second terminal means coupled to said secondary winding, said first terminal means adapted to be coupled to said dc potential to be measured to generate a current I_{R1} in the resistor means; and

c. further detector means coupled to said second terminal means to generate a voltage V_o when I_3 I_{R1}, such that said dc potential to be measured is directly related to the turns N_2 of said primary winding when the voltage $V_o = 0$.

3,928,800

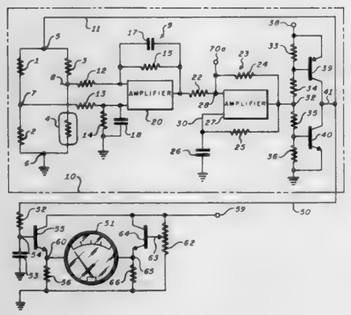
CALORIMETRIC RESISTANCE BRIDGES

Harry F. Strenglein, Clearwater, Fla., assignor to Sperry Rand Corporation, New York, N.Y.

Filed June 25, 1973, Ser. No. 373,574

Int. Cl.² G01R *5/22, 21/04*

U.S. Cl. 324—106 **6 Claims**



1. Measurement apparatus comprising:

multiple arm bridge circuit means having in one arm first and second impedance means,

said first impedance means being sensitive to an effect to be measured,

said second impedance means being cyclically variable between first and second values,

low pass amplifier means responsive to the state of balance of said bridge circuit means,

feed back means responsive to said low pass amplifier means for resetting the balance of said bridge circuit means,

display means,

synchronizer means for cyclically switching said second impedance means between said first and second values,

said synchronizer means being further adapted synchronously to couple and decouple capacitive means responsive to said low pass amplifier means to said display means.

3,928,801

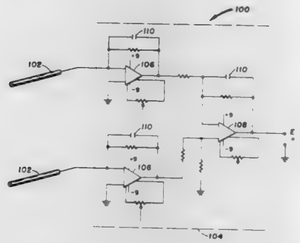
METHOD AND APPARATUS FOR SENSING RATE OF ANGULAR DISPLACEMENT

Maynard L. Hill, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Division of Ser. No. 301,363, Oct. 27, 1972, Pat. No. 3,868,074. This application Nov. 15, 1974, Ser. No. 524,335

Int. Cl.² G01P *3/42;* **G01R** *5/28*

U.S. Cl. 324—160 **3 Claims**



1. A method for sensing the rate of angular displacement of an object about an axis taken through the object, the object being disposed within the static electric field existing in the earth's atmosphere, the method comprising the steps of:

disposing at least two electrically conductive members on the object about the aforesaid axis, the members being electrically connected; and,

sensing the current flowing between the conductive members on displacement of the object,

converting said sensed current from said conductive members into a voltage signal proportional to the rate of angular displacement of the object about the aforesaid axis.

3,928,802

AXLE GENERATOR DEVICE HAVING DEFLECTABLE STATOR

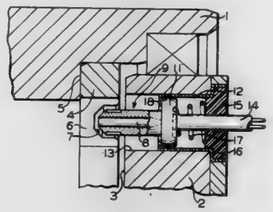
Erich Reinecke, Beinhorn, Germany, assignor to WABCO Westinghouse GmbH, Hannover, Germany

Filed May 24, 1974, Ser. No. 473,140

Claims priority, application Germany, Aug. 10, 1973, 2340585

Int. Cl.² G01P *3/48;* **H02K** *19/24*

U.S. Cl. 324—174 **3 Claims**



1. A speed signal generator device for providing output pulses corresponding in frequency to the angular velocity of a rotating member comprising:

a. a stator mounted on the axle of the rotating member and having a magnetic flux field;

b. a rotor mounted on the rotating member for movement in a plane passing through the magnetic flux field and having a plurality of uniformly spaced teeth to intermittently alter the path of the magnetic field flux;

c. a bore in the axle of the rotating member having an axis substantially aligned opposite the line of rotation of the teeth of said rotor;

d. a bushing in said bore having an inturned flange at one end;

e. said stator including:

i. a permanent magnet core for providing said magnetic flux, said core having one end adjacent said rotor and the other end terminating in a guide member that is operatively confined within said bushing for axial movement in said bore; and

ii. an electric coil on said magnetic core for generating output pulses with successive alterations in said magnetic flux field; and

f. elastic means for yieldably urging the other end of said core into engagement with the inturned flange of said bushing to establish the position of the one end of said core a predetermined distance from the teeth of said rotor during rotation thereof when said rotating member is properly assembled on its axle

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3,928,803

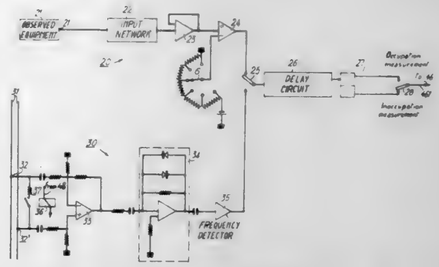
DISTRIBUTION FUNCTION ANALYZER FOR MEASURING TELEPHONE EQUIPMENT HOLDING TIMES

Jean H. Hugon, 63, Avenue du General de Gaulle, 94240 L'Hay-les-Roses; Jean Brosseron, 2, rue des Peupliers, 91630 Marolles-en-Urepoix, and Pierre J. Ligneres, 80 bis, rue des Mures, 92160 Antony, all of France

Filed Nov. 4, 1974, Ser. No. 520,645

Int. Cl.² G04F *8/00*

U.S. Cl. 324—181 **3 Claims**



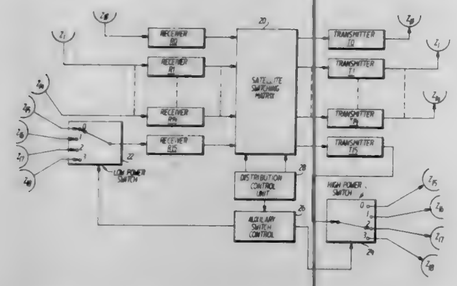
1. An analyzer unit to measure signal duration values and to classify them in function of their deviations in relation to a nominal duration value, said analyzer unit including means for sampling signals all having the same nominal duration value τ with a preset recurrence period, means for measuring and storing the successive duration values of the signals, means for counting the signal duration measurements carried out by said unit up to a predetermined number, means for defining a duration increment $\Delta\tau$, means for adding to and substracting from said nominal duration value said duration increment and the multiples thereof, a plurality of comparators each having a lower and an upper digital limits and defining adjacent time slots, the upper and lower limits of a given time slot being respectively equal to $(\tau - n\Delta\tau)$ and $(\tau - (n-1)\Delta\tau)$ where n is an integer, means for applying the stored duration values to said comparators and a plurality of counters respectively associated with said comparators and receiving therefrom counting pulses when the durations of the applied duration values respectively fall within the time slots of said comparators.

3,928,804

ZONE SHARING TRANSPONDER CONCEPT

William George Schmidt, Rockville, and Richard Sidney Cooperman, Silver Spring, both of Md., assignors to Communications Satellite Corporation (COMSAT), Washington, D.C.

Filed Mar. 30, 1973, Ser. No. 346,388
Int. Cl. H04b *7/20*
U.S. Cl. 325—4 **7 Claims**



7. An improved Space Division Multiple Access Communications satellite system of the type which includes a switching matrix on-board the satellite for selectively interconnecting a plurality of communications receivers each receiving incoming signals from a separate spotbeam antenna in view of its associated discrete geographical zone to a plurality of transmitters each transmitting outgoing signals through a separate spotbeam antenna in view of its associated discrete geographical zone according to a predefined sequence wherein the improvement comprises:

a. a plurality of input switching means on-board the satellite, each of said input switching means alternately connecting an associated group of receive spotbeam antennas to a receiver associated with said input switching means thereby enabling each group of receive spotbeam antennas associated with an input switching means to share the receiver associated with that same input switching means;

b. a plurality of output switching means on-board the satellite, each of said output switching means alternately connecting an associated group of transmit spot-beam antennas to a transmitter associated with said output switching means thereby enabling each group of transmit antennas associated with an output switching means to share the transmitter associated with that same output switching means;

c. local switch control and transmission synchronizing signal means connected to each of said input switching means and to each of said output switching means for synchronizing said input switching means and said output switching means with said switching matrix and further including

counting and logic means for causing terrestrial synchronizing signals to be tranmitted by each of said plurality of transmit spotbeam antennas.

3,928,805

DETECTABILITY OF EMERGENCY BEACON

Donald MacTaggart, Montreal, Canada, assignor to Canadian Marconi Company, Montreal, Canada

Filed Sept. 20, 1973, Ser. No. 399,069
Int. Cl.³ H04B *1/10*
U.S. Cl. 325—65 **1 Claim**

1. A method for increasing the range of an emergency locator radio transmitter beacon and for conserving transmitter power of the transmitter;

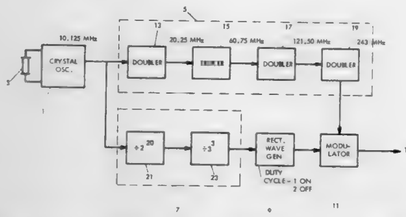
said method comprising;

amplitude modulating a carrier waveform, having a frequency which is accurately controlled by a crystal oscillator, of the transmitter with a modulating rectangular waveform at a modulating frequency which is a precise submultiple of the accurately controlled carrier waveform frequency;

transmitting the modulated waveform by radio waves;

receiving said transmitted signal in a receiver means;

demodulating said received signal;



and cross-correlating said demodulated signal with the output of a reference signal source in said receiver means to thereby determine whether said demodulated signal is identical with said output, of said reference signal source;

providing an indication signal when said demodulated signal is identical with said output of said reference signal source;

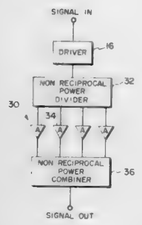
characterized in that the transmitter is cyclically turned on and off to preserve power.

3,928,806

POWER DIVIDING AND COMBINING TECHNIQUES FOR MICROWAVE AMPLIFIERS

John L. Carter, Ocean, and Joseph McGowan, Spring Lake Heights, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 8, 1974, Ser. No. 522,177
Int. Cl.² H04B *1/04*
U.S. Cl. 325—128 **3 Claims**



1. In a microwave transmitter, in combination

an antenna,

a microwave signal power amplifier feeding the antenna and having an overall gain exceeding the capacity of a single solid-state amplifier unit, the power amplifier comprising, an N-port circulator having an input port for the signal power to be amplified,

N-1 solid-state amplifier units,

an isomismatch coupled to each of the other N-1 ports of the circulator for coupling signal power from the circulator to the N-1 solid-state amplifier units, respectively and for isolating the N-1 ports against any return of signal power incident to the isomismatch from the direction opposite from the circulator, the isomismatches having reflect-transmit ratios respectively whereby they transmit predetermined fractions of the signal power incident from the respective circulator port to the respective solid-state power amplifier, the isomismatch coupled to the last of the N-1 ports transmitting all of the power incident from the last port,

a second N-port circulator having one output port for the transmitting amplified power output to the antenna,

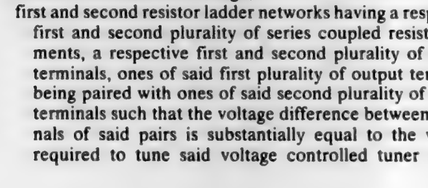
N-1 isolator-reflector devices coupling the outputs of the N-1 solid-state amplifier units and the other N-1 ports of the second circulator for transmitting all incident signal power from the respective amplifier units to the N-1 ports of the second circulator and for reflecting back to the second circulator ports any signal power incident to the isoreflectors from the respective second circulator ports.

3,928,807

HOMODYNE FM RECEIVER WITH FOLDED SIGNAL AND GATED UNFOLDING SIGNAL DETECTION

Stephen F. Weiss, 2157 N. 64th, Seattle, Wash. 98103

Filed Nov. 17, 1969, Ser. No. 877,271
Int. Cl.² H04B *1/30*
U.S. Cl. 325—344 **3 Claims**



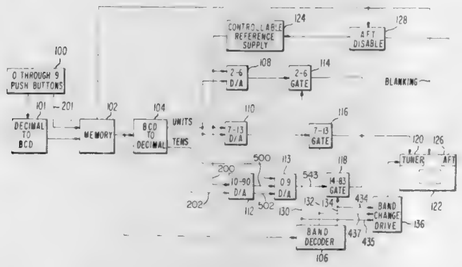
1. An FM receiver comprising means to convert a receiver FM carrier into a folded audio signal wherein alternate half cycles are of reversed polarity, and a wave shaper circuit means operable in response to said folded audio signal to reconstitute said audio signal including first means reversing the polarity of alternate half cycles thereof and including second means mixing the unreversed half cycles with the reversed half cycles of such folded audio signal.

3,928,808

ANALOG VOLTAGE GENERATORS FOR TELEVISION TUNERS

Wayne Wheeler Evans, Carmel, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 18, 1974, Ser. No. 434,402
Int. Cl.² H04N *5/50*
U.S. Cl. 325—464 **18 Claims**



1. In a television receiver having at least one voltage controlled tuner, a channel selection system for tuning said voltage controlled tuner comprising:

a source of reference voltage;

first and second resistor ladder networks having a respective first and second plurality of series coupled resistor elements, a respective first and second plurality of output terminals, ones of said first plurality of output terminals being paired with ones of said second plurality of output terminals such that the voltage difference between terminals of said pairs is substantially equal to the voltage required to tune said voltage controlled tuner over a plurality of channels, said ladder networks further having respective input terminals, said input terminals coupled in parallel to said source of reference voltage

a channel selection means for providing control signals responsive to selection of particular television channels;

first and second gating means receptive to signals from said channel selection means and respectively coupled to said plurality of output terminals of said first and second ladder networks for providing respective first and second output signals responsive to a selected channel

a third resistor ladder network having first and second input terminals respectively coupled to said first and second output terminals of said first and second gating means and a plurality of output terminals; and

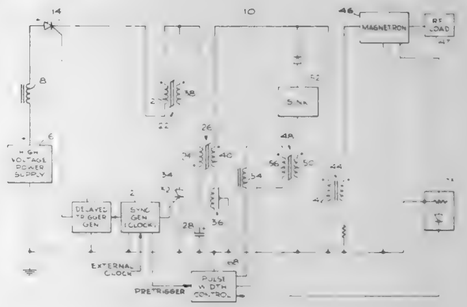
coupling means responsive to said control signals for coupling a selected one of said output terminals of said third network to said tuner and providing a tuning voltage thereto.

3,928,809

PULSE WIDTH CONTROL SYSTEM

Dennis E. Tschudi, Granada Hills, and Richard H. Geordan, Covina, both of Calif., assignors to Whittaker Corporation, Los Angeles, Calif.

Filed May 6, 1974, Ser. No. 467,199
Int. Cl.² H03K *5/04*
U.S. Cl. 328—58 **22 Claims**



1. A pulse width control system including:

means for generating a pulse of a first width, said generating means having output means adapted for coupling to a load;

means for deriving pulses corresponding to the pulses supplied to said load;

converting means for converting the widths of pulses from said deriving means to voltages representative of such widths;

pulse with reference means; and

automatic means coupled to said output means and responsive to a combination of the voltages from said reference and converting means, respectively, to determine what portion of the width of said pulse of a first width is coupled from said output means to said load.

18. A system for controlling the width of pulses from a pulse generator comprising, in combination:

a pulse generator having the capability of generating pulses of controllable width;

drive means coupled to trigger the pulse generator;

predeterminable pulse width control means coupled to provide a signal to the drive means to control the triggering of the pulse generator; and

a pulse width detector coupled between an output of the pulse generator and an input of the control means; the control means including

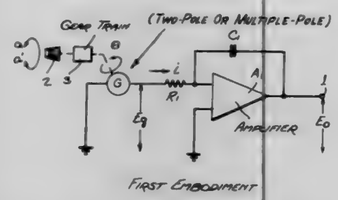
means for comparing the output of the pulse width detector with a predetermined condition of the control means and controlling the signal to the drive means in accordance with the result of said comparison.

3,928,810

ELECTRONIC ANALOG HOLD CIRCUIT

Mikio Narita, Yokohama; Kiyoto Ohashi, Tokyo, and Jun Yamamoto, Yokohama, all of Japan, assignors to Fischer & Porter Co., Warminster, Pa.

Filed Jan. 17, 1974, Ser. No. 434,001
Claims priority, application Japan, Jan. 25, 1973, 48-9941
Int. Cl. G06g 7/18; H03b 3/02; H03k 1/14
U.S. Cl. 328—127 6 Claims



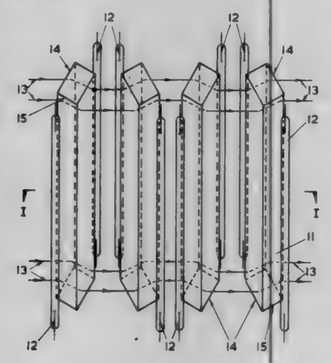
1. An electronic analog hold circuit comprising:
a. an operational amplifier having a hold capacitor connected thereto and
b. a manually operated device to alter the output of the hold circuit, said device including a D-C generator connected between a point of reference potential and an input to said amplifier, said generator being rotated in either direction by means of a manually operated knob or thumb wheel which is mechanically coupled to the generator shaft to cause it to make several turns for each turn of the knob or wheel, whereby the voltage produced by said generator has a polarity that depends on the direction of rotation and gives rise to a current which charges said capacitor to change the output of said analog hold circuit.

3,928,811

LASER AMPLIFIER

John Leonard Hughes, Aranda, Australia, assignor to Quentron Optics Pty Ltd, Adelaide, Australia

Filed Feb. 6, 1974, Ser. No. 439,920
Claims priority, application Australia, Feb. 9, 1973, 2210/73
Int. Cl.² H01S 3/02, 3/05
U.S. Cl. 330—4.3 8 Claims



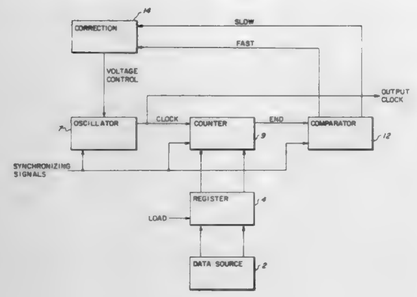
1. An elongated rectangular slab-shaped laser amplifier device having one pair of opposite side surfaces which are optically polished, said optically polished side surfaces being parallel to the longitudinal axis of the slab, with all other surfaces being optically unpolished, and means for introducing excitation radiation through said unpolished side surfaces with said device adapted to eliminate laser radiation and excitation through said unpolished end surfaces.

3,928,812

PROGRAMMABLE BIT CLOCK OSCILLATOR FOR CONTROLLING THE PROCESSING OF BINARY DIGITS

Roger D. Bates, Sunnydale, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 23, 1973, Ser. No. 418,507
Int. Cl. H03b 3/04
U.S. Cl. 331—1 A 8 Claims



1. A programmable oscillator for controlling the processing of binary digits, comprising:
oscillator means for providing an output clock signal indicative of the operating speed of said oscillator means,
counter means for receiving binary data indicative of the desired operating speed of said oscillator means,
said counter means being responsive both to the output clock signal from said oscillator means and to synchronizing signals which control the countdown of said counter means from the binary data value for providing an output signal,
comparator means for comparing the output of said counter means with synchronizing signals,
correction means responsive to the output of said comparator means for generating incremental correction signals which control the operating speed of said oscillator means, and
timing means responsive to one of said synchronizing signals for generating a disabling signal which further controls said oscillator means such that said oscillator means commences predetermined bit streams with the same phase.

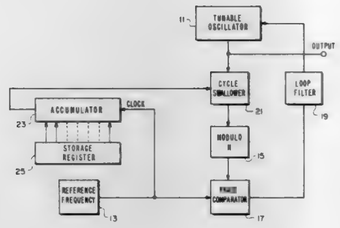
3,928,813

DEVICE FOR SYNTHESIZING FREQUENCIES WHICH ARE RATIONAL MULTIPLES OF A FUNDAMENTAL FREQUENCY

Charles A. Kingsford-Smith, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sept. 26, 1974, Ser. No. 509,577
Int. Cl.² H03B 3/04
U.S. Cl. 331—1 A 4 Claims

1. An electronic frequency synthesizer of the phase-locked loop type for generating frequencies which are desired rational multiples of the frequency of a reference signal, said synthesizer comprising:
frequency generating means for producing an output signal of a frequency responsive to the level of an input signal;
counting means responsive to the output signal of the frequency generating means for producing a wave-train output whose pulse spacing is equal to the total spacing of N pulses of a signal appearing at the input of the counting means, where *N* is a predetermined integer;
phase comparison means for comparing the phases of the wave train output from the counting means and the reference signal and generating an error signal indicative of a phase difference therebetween, said error signal serving as the input signal to the frequency generating means to thereby vary the frequency of the output signal from the frequency generating means;
digital storage means for storing a representation of a rational fractional interval indicative of the fractional part of said desired rational multiple of said reference frequency;
digital accumulating means for periodically receiving the contents of the digital storage means and accumulating said contents and generating a carryover signal output whenever the accumulated contents exceed the storage capacity of the accumulating means; and
cycle swallowing means interconnected between the frequency generating means and the counter means and being responsive to said carryover signal to alter by one cycle the output of the frequency generating means, for altering the phase of the signal directed to the counting means and phase comparison means by 360°.

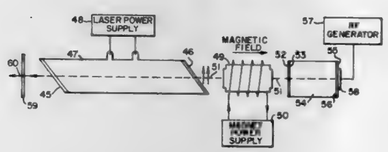


3,928,814

COLLINEAR ACOUSTO-OPTICAL TUNABLE FILTER AND ACOUSTO-OPTICALLY TUNABLE LASER

John D. Feichtner, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 25, 1974, Ser. No. 445,526
Int. Cl.² H01S 3/10
U.S. Cl. 331—94.5 M 6 Claims



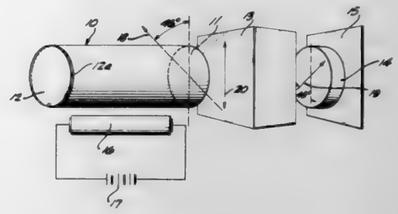
1. An acousto-optically tunable laser comprising:
A. a lasing tube having a broad band radiation output lying on the optical path between a totally reflecting mirror and a partially reflecting mirror;
B. analyzer means which passes only radiation having a predetermined plane of polarization, said analyzer means lying on the optical path between one of said mirrors and said lasing tube;
C. an acousto-optical filter which rotates the plane of polarization of a frequency band of said radiation, said acousto-optical filter lying on the optical path between said analyzer means and said lasing tube; and
D. means for polarizing the radiation of said lasing tube, and said means lying on the optical path between said acousto-optical filter and said lasing tube.

3,928,815

METHOD AND APPARATUS FOR OPERATING LASER

Robert W. Hellwarth, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 128,458, Aug. 1, 1961, abandoned.
This application June 3, 1974, Ser. No. 475,714
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 Q 12 Claims



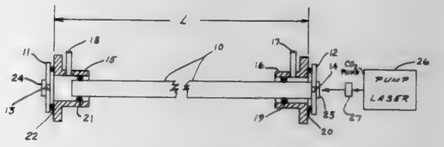
1. A laser device comprising: a medium capable of being excited to a condition in which population inversion occurs between a pair of energy levels having an energy separation corresponding to a light frequency, means for pumping said medium to said condition of population inversion whereby stimulated emission of light energy at said frequency occurs, means for regeneratively feeding a portion of said light energy back to said medium, and means for varying the regenerative energy fed back to said medium between a first regenerative condition which precludes laser oscillation and a second regenerative condition which permits laser oscillation.

3,928,816

FAR INFRARED WAVEGUIDE LASER

Thomas S. Hartwick, Torrance, and Dean T. Hodges, Jr., Redondo Beach, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 12, 1974, Ser. No. 478,501
Int. Cl.² H01S 3/08
U.S. Cl. 331—94.5 C 6 Claims

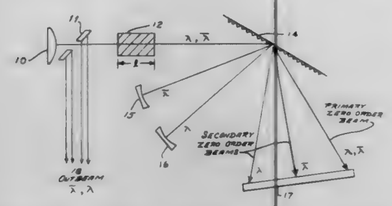


1. A far infrared laser being comprised of a hollow waveguide resonator of preselected length and inner diameter in accordance with the infrared wavelength in the region from 50 μm to ~ 1000 μm and having first and second ends, a first and second mirror for said first and second ends, each of said mirrors having a hole of preselected dimension therein, first and second windows sealing said holes in said first and second mirrors, respectively, said first window and said first mirror, in first combination sealing said first end, said second window and said second mirror, in second combination, sealing said second end, a preselected active laser medium in said hollow waveguide resonator, means to establish a preselected pressure in said hollow waveguide resonator, and laser pump means to optically excite said preselected active laser medium by way of said first combination to provide output radiation by way of said second combination.

3,928,817
MULTIPLE-SELECTED-LINE UNSTABLE RESONATOR

Richard A. Chodzko, Palos VErdes Peninsula, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 29, 1974, Ser. No. 501,728
Int. Cl.² H01S 3/082
U.S. Cl. 331—94.5 C **3 Claims**

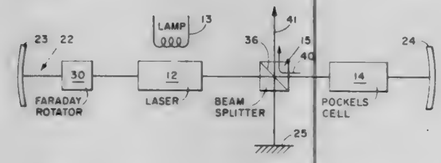


1. A multiple-selected-line unstable resonator comprising a first total reflector having a first predetermined radius, R_1, a blazed diffraction grating displaced from said first total reflector and positioned at an off-Littrow angle therefrom, an active region having a predetermined length and being positioned between said first total reflector and said blazed diffraction grating, a 45° mirror having a hole with a longitudinal axis at a 45° angle with respect to the mirror surface, said 45° mirror disposed between said first total reflector and said active region to provide an output beam, in the recited sequence, said first total reflector, said 45° mirror, said active region, and said blazed diffraction grating being in optical alignment, second and third total reflectors displaced from said blazed diffraction grating at first and second predetermined angles of r_1 and r_1, respectively, said third total reflector being adjacent to said second total reflector, each of said second and third total reflectors having a second predetermined radius of R_2, a cavity with a total length, L, being the sum of the distances between said first total reflector and said blazed diffraction grating and between said blazed diffraction grating and said second and third total reflectors, the radii of curvature of said total reflectors being related to said cavity length, L, by $R_1 + R_2 = 2L$, an absorbing plate displaced from said blazed diffraction grating at a third predetermined angle, r_0, said absorbing plate being adjacent to said third total reflector and operating to absorb secondary zero order beams received from said diffraction grating.

3,928,818
METHOD OF REDUCING LIGHT LEAKAGE IN LASERS

Matthew B. White, Cohasset, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 17, 1974, Ser. No. 516,241
Int. Cl.² H01S 3/11
U.S. Cl. 331—94.5 T **6 Claims**



1. A system for use in a laser cavity for compensating for the polarization changes in Q switched and cavity dumped lasers caused by anisotropies resulting from optical pumping or other causes comprising:

polarization sensitive means in the laser cavity and reflective means associated with said polarization sensitive means for forming an auxiliary laser cavity;

a laser rod in said auxiliary cavity and means adjacent said rod for optically pumping the laser rod;

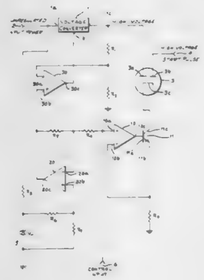
magneto-optical rotation means intermediate said laser rod and the adjacent end of said laser cavity for incrementally rotating the plane of polarization of depolarized radiation until it returns to the original state of polarization; and

means positioned intermediate said polarization sensitive means and the other end of said laser cavity for controllably altering the state of polarization of the intracavity radiation so that the radiation may be deflected out of the laser cavity by said polarization sensitive means.

3,928,819
LASER POWER SUPPLY

Daniel Bernstein, Miraleste, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 20, 1974, Ser. No. 525,592
Int. Cl.² H01S 3/097
U.S. Cl. 331—94.5 PE **2 Claims**



1. A power supply for a gas discharge laser having first and second anodes and a cathode being comprised of a DC high voltage converter to be operated in a pulse width modulated mode and having first and second input terminals and an output terminal, said first input terminal receiving unregulated power and providing in response thereto an output of DC high voltage for application to said first anode of said gas discharge laser, first and second preselected resistors connected in a series arrangement from said output terminal to ground to form a voltage divider network, a first amplifier having an input and output and receiving at said input a control signal, an emitter follower having a base, emitter, and collector, said base being connected to said output of said first amplifier, said collector connected to said cathode of said gas discharge laser, a third preselected resistor connected between said emitter and ground, said first amplifier and emitter follower forcing current through said preselected third resistor so as to be equal to the laser current control voltage divided by the value of said third resistor, a fixed reference voltage source, a second amplifier providing a control voltage equal to the fixed reference voltage applied thereto minus said laser current control voltage, and a third amplifier receiving said control voltage and also a preselected voltage from said voltage divider network, said third amplifier providing an error voltage to said second input of said DC high voltage converter varying the duty cycle of the pulse width modulated voltage converter such that the high voltage is regulated to a value equal to the fixed reference voltage minus the laser current control voltage multiplied by the sum of said preselected first and second resistors divided by said preselected second resistor.

3,928,820
HIGH GAIN PULSED ION LASER

Romano G. Pappalardo, Sudbury, and Robert Smith, Wilmington, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 25, 1974, Ser. No. 526,646
Int. Cl.² H01S 3/03
U.S. Cl. 331—94.5 G **11 Claims**



1. A high gain pulsed ion laser comprising

a cylindrical discharge tube having a centrally located axis therethrough and being closed at the ends,

a pair of electrodes within the cylindrical discharge tube, one electrode located effectively near each end of the cylindrical discharge tube, the electrodes being open at least at the axis of the cylindrical discharge tube,

an amount of oxygen within the cylindrical discharge tube sufficient to establish an oxygen pressure in the discharge tube in the range from about 10 to about 100 millitorr,

a pair of reflective elements disposed essentially normal to the axis of the cylindrical discharge tube adjacent to the respective ends thereof, the pair of reflective elements being spaced from each other so as to establish a resonant cavity therebetween at a wavelength at which doubly ionized oxygen can be caused to emit laser radiation, and one of the reflective elements being partially transparent at the laser wavelength, and

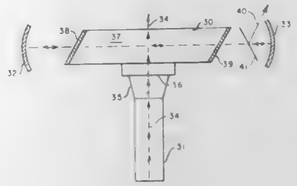
a voltage source connected across the electrodes to produce a discharge pulse having a duration less than about 2.0 microseconds whereby a high gain pulse of light at the doubly ionized oxygen emission wavelength is emitted through the partially transparent reflective element after the end of the discharge pulse.

3,928,821
HIGH ENERGY CHEMICAL LASER SYSTEM

David W. Gregg, Lafayette, and Richard K. Pearson, Pleasanton, both of Calif., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Continuation of Ser. No. 146,948, May 26, 1971, abandoned.
This application Jan. 23, 1975, Ser. No. 543,611
Int. Cl.² H01S 3/22
U.S. Cl. 331—94.5 G **6 Claims**

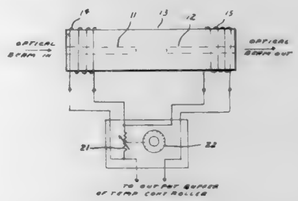
1. A high energy chemical laser system capable of generating a lasing pulse having light frequencies in the 3-micron range comprising: means defining an optical cavity; and explosive gaseous mixture including a reducing agent providing reactive hydrogen isotope species and interhalogen compounds within said cavity, said explosive gaseous mixture consisting essentially of a reducing agent selected from the group consisting of H_2, D_2, CH_4, and B_2H_6, and an interhalogen compound selected from the group consisting of BrF_3, BrF_5, ClF, ClF_3, ClF_5, IF_5, and IF_7, said mixture being in a ratio in the range of about 2–9 parts interhalogen compound to 1 part reducing agent and at a pressure ranging from about 10 to 300 torr; and means for uniformly igniting said gaseous mixture, said igniting means producing a 50 nanosecond pulse of electrons through said gaseous mixture producing an exothermic chemical reaction yielding a lasing reaction species which releases energy for pumping that lasing species at a sufficient rate to generate an extremely large population inversion generating a lasing pulse having light frequencies in the range from about 2.7 to 3.1 microns.



3,928,822
THERMAL DIFFERENTIAL COMPENSATOR

Amos J. Chenoweth, Florissant, Mo., and William E. Heafner, Godfrey, Ill., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 9, 1974, Ser. No. 486,803
Int. Cl.² H01S 3/10
U.S. Cl. 332—7.51 **2 Claims**



1. In a laser modulator having two modulation crystals contained in an oven core having two heater elements, one element substantially controlling the temperature of one crystal element of the modulator and the other heater element substantially controlling the temperature of the other crystal element of the modulator, the improvement for providing a determined thermal differential between the two crystal elements, comprising:

a. controlled source of electrical energy for energizing the said heater elements to provide a determined amount of heat energy to the said oven core; and

b. means cooperating with the said source of electrical energy and the said heater elements for providing a variable controlled thermal difference in temperature between the said two crystal modulating elements.

3,928,823
CODE TRANSLATION ARRANGEMENT

Michael J. Gingell, Sawbridgeworth, England, assignor to International Standard Electric Corporation, New York,, N.Y.

Filed Aug. 22, 1974, Ser. No. 499,742
Claims priority, application United Kingdom, Aug. 23, 1973, 39935/73
Int. Cl.² H03K 13/24
U.S. Cl. 332—11 R **5 Claims**

1. A pulse density modulation to pulse code modulation translation arrangement comprising:

a source of pulse density modulated signal;

a digital filter coupled to said source; and

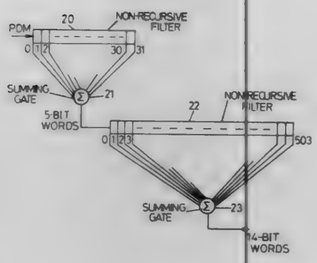
logic circuitry coupled to said digital filter, said logic circuitry selecting every *m*th group of *n* pulses in the output

of said digital filter, where m and n are each integers greater than one;

said digital filter including

a first non-recursive multi-section filter stage having a plurality of unity gain taps, said first filter stage being coupled to said source,

a first summing gate coupled in common to all of said taps of said first filter stage,



a second non-recursive multi-section filter stage having a plurality of unity gain taps, said second filter stage being coupled to the output of said first gate, and

a second summing gate coupled in common to all of said taps of said second filter stage, the output of said second gate being coupled to said logic circuitry.

3,928,824

WAVEGUIDE CIRCULATOR

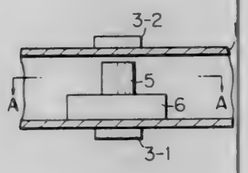
Kazunori Takahashi, and Atsushi Fukasawa, both of Tokyo, Japan, assignors to Oki Electric Industry Company Ltd., Tokyo, Japan

Filed Aug. 14, 1974, Ser. No. 497,263

Claims priority, application Japan, Aug. 30, 1973, 48-96717

Int. Cl.² H01P *1/38*

U.S. Cl. 333—1.1 **3 Claims**



1. A waveguide circulator including at least three waveguide H plane ports, said ports so arranged that a ferrimagnetic post is provided at their junction, at least one matching conductor which is provided in relation to said ferrimagnetic post, and a magnetic device for statically magnetizing said ferrimagnetic post, characterized in that the cross section of said ferrimagnetic post is circumscribed within a circle having a diameter equal to the value calculated from the equation

$$\frac{2\sqrt{\epsilon\mu_r}}{\lambda_0} \approx \sqrt{\left(\frac{P}{l}\right)^2 + \left(\frac{2}{\pi}\,\frac{\chi mn}{D}\right)^2}$$

wherein the resonance mode is TM_{mn} ($m \geqq 2$, $n=1$), D is the diameter, l is the length of the resonator, X_{mn} is an eigen value corresponding to mode TM_{mn} ($m \quad 2$, $n=1$), ϵ is the relative dielectric constant of the ferrimagnetic post, μ_r is the relative permeability of the ferrimagnetic post, λ_0 is the wavelength of the center frequency in free space, and p is the number of the standing waves appearing along the ferrimagnetic post in its longitudinal direction.

3,928,825

WAVEGUIDE TRANSITION PIECE WITH LOW REFLECTION

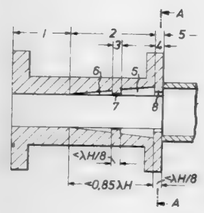
Ernst Kaffenberger, and Erich Schuttloffel, both of Backnang, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed May 3, 1974, Ser. No. 466,861

Claims priority, application Germany, May 4, 1973, 2322429; May 4, 1973, 7316744

Int. Cl.² H01P *1/16, 5/08*

U.S. Cl. 333—34 **4 Claims**



1. In a waveguide transition piece for the broad-banded, low reflection connection of a standard waveguide having a rectangular inner cross section with a smooth or corrugated waveguide having an oval inner cross section, said transition piece being a waveguide with a substantially rectangular inner cross section with the central portion of the longer sides of said inner cross section of a section of said transition piece having a widened portion which extends, in the form of linearly widened conical sections over a length of no more than 0.85 waveguide wavelengths (λ_H), in the direction toward the end of the transition piece to which the oval waveguide is to be connected, said widened portion serving substantially to effect a broadbanded matching of the characteristic impedance of the two waveguides having different inner cross sections which are to be connected by means of concentrated adapter elements which act, at the point where they are disposed, predominantly as parallel capacitances or parallel inductances; the improvement wherein said transition piece includes a further waveguide section disposed between the connecting plane with the oval waveguide and the end of the waveguide section having the conically widened portion, said further waveguide section being no longer than $\lambda_{H/8}$ and having a rectangular inner cross section whose longer sides are uniformly circularly widened in the central portion thereof with the diameter of these widened portions being less than the greatest diameter of said conically widened portion.

3,928,826

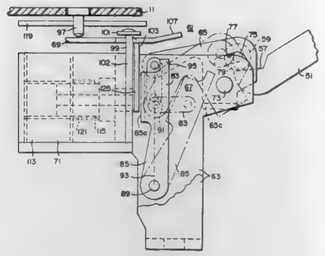
CIRCUIT BREAKER WITH IMPROVED TRIPPED LATCH MEANS

Alfred E. Maier, and Robert H. Hill, both of Beaver Falls, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 30, 1974, Ser. No. 474,855

Int. Cl.² H01H *77/00*

U.S. Cl. 335—22 **9 Claims**



1. A circuit breaker for controlling an electric circuit comprising relatively movable contacts, a releasable arm to effect automatic opening of the contacts, a trip device for latching the releasable arm and comprising a roller, a latch lever, and a linkage mechanism; the roller being mounted on the latch lever for retaining the releasable arm in the latched position, the latch lever being pivotally mounted for movement between latched and unlatched positions, the linkage mechanism comprising an overcenter toggle for holding the latch lever in the latched position, and release means operable to release the overcenter toggle so that the latch lever is movable to the unlatched position.

3,928,827

DEVICE FOR THE PHOTOELECTRIC MARKING AND READING OF TOOLS FOR NC MACHINE TOOLS

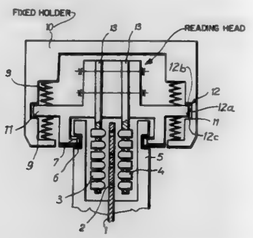
Jiri Kepka, Prague; Karel Kovarik, Celakovice; Bohuslav Loun, and Jaromir Zeleny, both of Prague, all of Czechoslovakia, assignors to Vyzkumny ustav obrabecich stroju a obrabeni, Prague, Czechoslovakia

Filed May 22, 1974, Ser. No. 472,286

Claims priority, application Czechoslovakia, May 29, 1973, 3866-73

Int. Cl.² G06K *7/10*

U.S. Cl. 235—61.11 E **5 Claims**



1. In a machine tool equipped with a tool magazine device for an automatic tool exchange, the improvement which comprises a holder for a tool to be exchanged, a coding plate affixed to the tool holder, a clamping holder, and a reading head, means mounting the reading head on the clamping holder, the tool holder and the coding plate mounted thereon being slidably movable past the reading head to permit the reading of the coding plate by the reading head, and at least one guide comprising inter-fitting and relatively slidable parts on the tool holder and the reading head to position such parts relative to each other.

3,928,828

CROSSPOINT ELEMENTS AND ELECTROMAGNETIC COORDINATE SELECTION DEVICES UTILIZING THE SAME

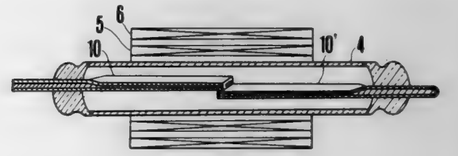
Katsuhiro Kato, Yokohama; Hideo Suzuki, and Norio Yano, both of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Feb. 12, 1975, Ser. No. 549,193

Claims priority, application Japan, Apr. 30, 1974, 49-48555

Int. Cl.² H01H *67/30*

U.S. Cl. 335—112 **9 Claims**



1. In a crosspoint element of the class comprising a glass envelope, a pair of reed pieces sealed in said envelope and having cooperating contacts, and an exciting winding surrounding said envelope for operating said contacts, the improvement wherein each one of said reed pieces comprises a core conductor of a first magnetic metal and a sheath made of a second magnetic metal and coaxially surrounding said core conductor, said first and second magnetic metals having different coercive force.

3,928,829

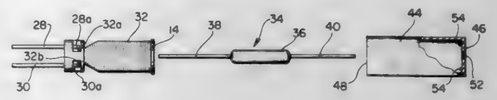
REED RELAY CONSTRUCTION

Ralph Abrams, Warwick, R.I., assignor to Coto-Coil Co., Inc., Providence, R.I.

Filed Jan. 27, 1975, Ser. No. 544,803

Int. Cl.² H01H *51/28*

U.S. Cl. 335—151 **6 Claims**

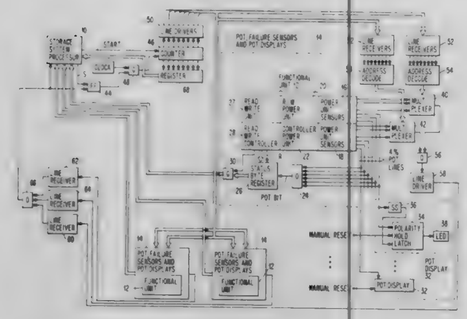


1. A reed relay bobbin constructed of electrically insulating material and comprising a hollow elongate central core, an outwardly extending marginal flange at one end of said core, an enlarged cylindrical body at the other end thereof, a pair of spaced circumferentially extending recesses in said body located intermediate the ends thereof, each of said recesses having a further recessed portion at one end thereof extending through said body and communicating with the exterior of said core, and a pair of spaced leads extending axially from outside said bobbin through said body into said recesses, one lead extending into one of said recesses and the other lead into the other of said recesses, the inner ends of said leads being bent so as to be positioned in said circumferentially extending recesses, one end of said bobbin having an opening of substantially the same size as the interior of said core, and the other end of said bobbin being substantially closed but having an opening therethrough of substantially smaller size than the interior of said core.

3,928,830
DIAGNOSTIC SYSTEM FOR FIELD REPLACEABLE UNITS

Lester Ralph Bellamy, Arvada, and Kenneth LeGrand Hotaling, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 19, 1974, Ser. No. 507,650
Int. Cl.² G06F 11/00
U.S. Cl. 235—153 AK 7 Claims



1. Module status reporting apparatus for assisting diagnosis of the operative condition of modules in functional units in a data processing system, said apparatus comprising:

early warning sensing means connected to the modules in the functional units for sensing degradation in the operation of a module;

failure sensing means connected to the modules in the functional units for sensing failure in the operation of a module;

scanning means initiated by the data processing means and connected to said failure sensing means for scanning said failure sensing means;

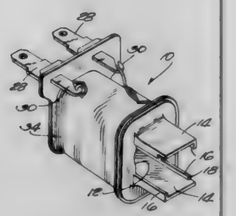
early warning reporting means connected to said early warning sensing means for reporting early warning status of functional unit back to the data processing system;

failure address reporting means connected to said scanning means and said failure sensing means for reporting to the data processing system addresses of failed modules in the functional units.

3,928,831
COIL AND SOLENOID INCORPORATING SAME

Kenji Yatsushiro, Chicago; George F. Kuchuris, Bloomingdale, and John Williman, Elk Grove Village, all of Ill., assignors to Controls Company of America, Schiller Park, Ill.

Filed Nov. 22, 1974, Ser. No. 526,073
Int. Cl.² H01F 7/08
U.S. Cl. 335—262 6 Claims

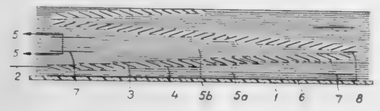


4. A solenoid according to claim 3 in which each guide is channel-like and a bracket fits over each projecting guide to reinforce the guide.

3,928,832
TRANSFORMER WINDING WITH HELICALLY WOUND LAYERS OF A TAPE-LIKE CONDUCTOR

Svante Forsberg; Stig Larbo, and Bjorn Stephensen, all of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Sept. 30, 1974, Ser. No. 511,304
Claims priority, application Sweden, Sept. 28, 1973, 7313223
Int. Cl.² H01F 27/28
U.S. Cl. 336—70 2 Claims

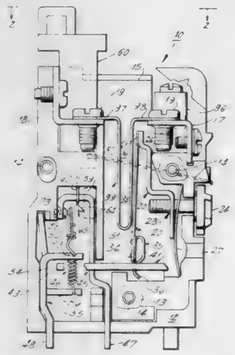


1. A transformer winding comprising a tape-like conductor wound in a succession of over-lapping helical turns forming a plurality of layers with turn insulation between the turns and layer insulation between the layers, the overlap in successive layers increasing outwardly and the axial length of the layers decreases progressively.

3,928,833
OVERLOAD RELAY WITH MEANS TO PREVENT AUTOMATIC RESET

David P. McClellan, Bellefontaine, Ohio, assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed July 1, 1974, Ser. No. 484,683
Int. Cl.² H01H 71/16
U.S. Cl. 337—56 10 Claims

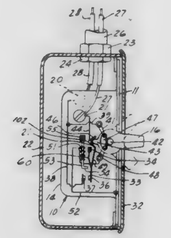


1. An overload relay including a stationary contact, a movable contact mounted for movement between a first position engaged with said stationary contact and a second position separated from said stationary contact, a repositionable over-center spring means connected to said movable contact to bias the latter to said first position when said movable contact is on one side of a neutral position and to bias said movable contact to said second position when said movable contact is on the other side of said neutral position, over-current responsive means operative upon the occurrence of predetermined overload conditions to automatically operate said movable contact to said second position, a manual operating member operable in a reset stroke to reset said movable contact to said first position, a reclose member, biasing means normally maintaining said reclose member in a rest position on said other side of said neutral position, deflector means operatively positioned to engage said reclose member as said operating member is operated to move in said reset stroke, with engagement of said deflector means and said reclose member moving the latter and thereby loading said biasing means, said deflector means and said operating means being constructed so that operative engagement thereof is broken abruptly when said operating member reaches a predetermined point in said reset stroke whereby energy stored in said biasing means is released moving said reclose member into engagement with said movable contact to drive the latter to said one side of said neutral position from which point said spring means closes said contacts.

3,928,834
TIME DELAY SWITCH

William E. Soong, 18W282 71st St., Westmont, Ill. 60559

Filed Mar. 4, 1974, Ser. No. 447,877
Int. Cl.² H01H 61/00, 71/16
U.S. Cl. 337—81 7 Claims



1. A three position electrical switch having "on", "off", and "time delay off" positions comprising, a switch housing, a pair of power supply leads, a snap action member with two stable positions mounted in said housing, a first contact carried on said snap action member, a second contact mounted in said housing and engageable with said first contact in one of said stable positions of said snap action member and electrically connected to one of said pair of power leads, a pivotally mounted V-shaped actuating member electrically connected to the other one of said pair of power leads and mechanically coupled to said snap action member and electrically connected to said first contact, a bimetallic member mounted so that in a first position it engages said switch actuator to move it to one of said stable positions to separate said first and second contacts, heating means mounted adjacent said bimetallic member, and a control member engageable with said actuating member to move it and said snap action member, and circuit means connected to said control member for connecting said heating means to said one of said pair of power leads when said control member does not engage said actuating member, said second side of said heating means connected to ground and said control member has a portion engageable with both legs of said V-shaped actuating member to move it either direction.

3,928,835
ELECTRIC SWITCH BOX

Jorge Castro-Genera, Escobedo Sur 733 Suite 201, Monterrey, Nueva Leon, Mexico

Filed Apr. 26, 1974, Ser. No. 464,517
Int. Cl.² H01H 85/04
U.S. Cl. 337—295 3 Claims

1. For use in an electric switch box defining a continuous electric circuit, a fusible element, comprising in combination, a male member formed of a flat longitudinal insulating member having a frontal wedge, a posterior wedge, a thinner brace section spaced therebetween, an insulating handle about one end constituting one of said wedges, and a thin conducting

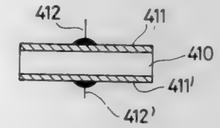


layer affixed on at least one side of said insulating member to constitute substantially the same shape as said flat member.

3,928,836
MAGNETORESISTIVE ELEMENT

Yoshimi Makino, Fujisawa; Tsutomu Okamoto, Yokohama, and Iwao Kamiya, Chigasaki, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed July 10, 1974, Ser. No. 487,282
Claims priority, application Japan, July 13, 1973, 48-97655
Int. Cl.² H01C 7/16
U.S. Cl. 338—32 R 6 Claims



1. A magnetoresistive element comprising an insulating substrate, a first current conducting ferromagnetic metal film strip on said substrate and having a current carrying ability predominantly in one direction, a second current carrying ferromagnetic metal film strip on said substrate having a current carrying ability predominantly in a direction substantially perpendicular to said one direction, first ends of said strips being connected together, a current input terminal connected to the opposite ends of said strips and an output terminal connected to the junction between the two strips.

3,928,837
CERAMIC OXIDE RESISTOR ELEMENT

Friedrich J. Esper; Karl-Hermann Friese, both of Leonberg, and Rudolf Pollner, Kornwestheim, all of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Filed Sept. 6, 1974, Ser. No. 503,846
Claims priority, application Germany, Sept. 27, 1973, 2348589
Int. Cl.² H01C 7/04
U.S. Cl. 338—22 R 10 Claims

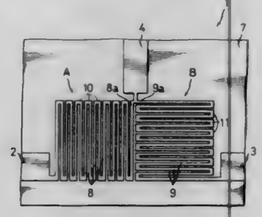
1. A ceramic oxide resistance element having a negative temperature coefficient at temperatures above about 200°C comprising

a shaped body comprising Fe_2O_3 about 50% by weight of Al_2O_3 and MnO in weight percent based on the total Fe_2O_3 and Al_2O_3 within the range of

$$X(C_{Fe_2O_3})\ 1.6$$

wherein X is from 0.3 to 12, and wherein $C_{Fe_2O_3}$ is the concentration of Fe_2O_3 in parts by weight based on the total Fe_2O_3 and Al_2O_3; and

at least two electrical conductors in electrical contact with said shaped body, said two conductors being spaced apart so that when an electrical current is passed serially through said two conductors and through said shaped



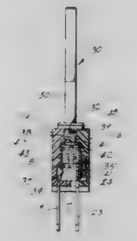
body, the resistance of said shaped body may be measured.

3,928,838

SLIDE POTENTIOMETER

William Wayne Leppek, Milwaukee, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Aug. 23, 1974, Ser. No. 500,012
Int. Cl.² H01C 5/02
U.S. Cl. 338—183 **2 Claims**



1. In a slide potentiometer comprising an electrically non-conductive hollow housing containing a resistive strip and a collector strip and a moveable electrically non-conductive slider having a contact for electrically coupling said collector and said resistor strips, said slider being selectively positionable along a slot formed in said housing through which a portion of said slider extends, and including terminal means coupled to said resistive and collective strips, the improvement comprising:

ridged partition means formed in said housing adjacent to said slot and spaced therefrom for forming a circuitous path from the outside of said housing through said slot to the interior of said housing, said path comprising spaced parallel passageways interconnected by a generally transverse passageway, and

said slider having a portion thereof conforming to said circuitous path for being guided during movement along said slot.

3,928,839

SONAR SYSTEM

Henry L. Warner, and Ted I. Haney, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 5, 1968, Ser. No. 757,628
Int. Cl.² G01S 9/68
U.S. Cl. 340—3 R **4 Claims**

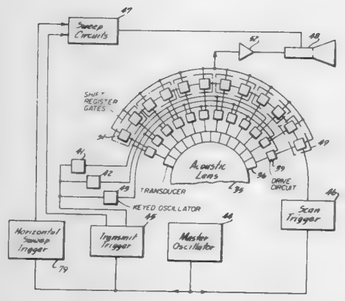
1. An echo-search-ranging system comprising:

a plurality of reversible, piezoelectric transducer elements mounted in a contiguous orientation with respect to one another, each of said transducer elements constructed to radiate and receive compressional wave energy at a one of three predetermined frequencies and different from the frequencies of the transducer elements adjacent thereto;

a refractive fluid filled acoustic lens located in contiguous relationship with said plurality of transducer elements in such a manner as to direct compressional wave energy from and returned reflections to said reversible transducer elements, thereby creating a composite volume of predetermined shape comprised of individual volumes associated with each of said transducer elements;

a plurality of three winding electrical inductors corresponding in number to said plurality of reversible transducing elements and having a first winding of each thereof connected to one of said transducer elements for conducting electrical signals thereto and therefrom;

first electrical oscillator means having a first of said three predetermined frequencies electrically joined to the second windings of the aforesaid three winding electrical inductors connected to transducer elements of said first frequency for timely supplying a burst of electrical energy of said first frequency thereto for transmission thereby to the aforesaid transducer element connected to said first winding thereof;



second electrical oscillator means having a second frequency of said three predetermined frequencies electrically joined to the second windings of the aforesaid three winding electrical inductors connected to transducer elements of said second frequency for timely supplying a burst of electrical energy of said second frequqency thereto for transmission thereby to the aforesaid transducer element connected to said first winding thereof;

third electrical oscillator means having a third frequency electrically joined to the second winding of the remaining ones of the aforesaid three winding electrical inductors which are connected to transducer elements of said third frequency for timely supplying a burst of electrical energy of said third frequency thereto for transmission thereby to the aforesaid transducer element connected to said first winding thereof;

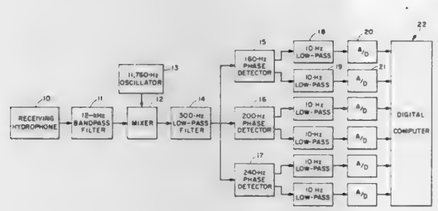
a display circuit having a plurality of input channels corresponding in number to said three winding inductors and electrically joined to said third windings thereof for displaying echo signals from said transducer elements; and an electrical timing circuit electrically joined to said display circuit and said first, second, and third oscillator means for establishing a time relationship therebetween.

3,928,840

TRACKING SYSTEM FOR UNDERWATER OBJECTS

Robert C. Spindel, North Falmouth, and Robert P. Porter, Falmouth, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 19, 1974, Ser. No. 462,557
Int. Cl.² G01S 5/18
U.S. Cl. 340—6 R **8 Claims**



1. In a system for tracking the movement of an underwater object, the combination of

first, second and third sound sources moored to the bottom of the ocean in a generally triangular pattern,

said first, second and third sound sources continuously radiating acoustic signals of frequencies f_1, f_2 and f_3, respectively,

means for detecting the composite signal arriving at said object;

means for processing said composite signal so as to produce first, second and third pairs of quadraturely phased signals which are proportional to the sine and cosine of the input phase angles of said signals f_1, f_2 and f_3;

means for converting said pairs of signals to digital signals at a pre-selected data rate; and

computer means for processing said digital signals so as to determine the inverse tangent of the input phase angles and therefrom the instantaneous phases of signals f_1, f_2 and f_3 at said object,

said phases corresponding to changes in the slant range from said object to said sound sources as determined by the wavelengths of f_1, f_2 and f_3.

3,928,841

WELL LOGGING SYSTEM USING SINGLE CONDUCTOR CABLE

Charles B. Vogel, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 3, 1974, Ser. No. 511,868
Int. Cl.² G01V 1/40
U.S. Cl. 340—18 NC **4 Claims**

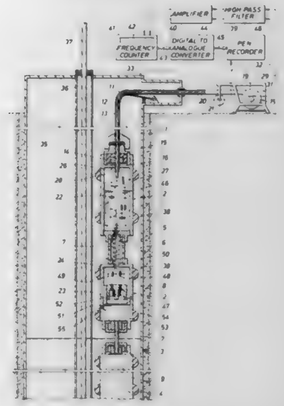
1. An electrical transmission system for a well logging tool comprising:

a well logging tool disposed to be lowered into a well and measure a physical parameter within the well, the value of said measurement being converted to an oscillating voltage whose frequency is related to said measurement; at least one housing, said logging tool being disposed in said housing, said housing in addition having at least a portion of its outer surface formed of a metal;

a cable, said cable being formed of a central metallic stress member and a smooth outer insulating covering, said stress member in addition being coupled to said housing by an insulated coupling member;

two terminal means, one of said terminals being connected to said stress member and the other terminal being connected to the metal portion of said housing, said oscillating voltage being supplied to said two terminals; and

amplifing means disposed at the surface of said well and coupled to the stress member and ground to detect said



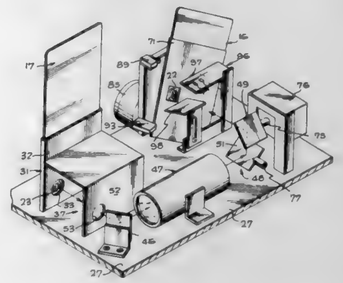
oscillating voltage, resulting from the capacitive coupling between said metal portion of said housing and ground.

3,928,842

FINGERPRINT COMPARATOR

Harold Green, Los Angeles, and Stephen J. Halasz, Claremont, both of Calif., assignors to Veriprint Systems Corporation, Chatsworth, Calif.

Filed May 9, 1974, Ser. No. 468,425
Int. Cl.² G06K 9/08
U.S. Cl. 340—146.3 Q **15 Claims**



1. An apparatus for rapid automatic comparison of two patterns, each located and oriented randomly within a bounded plane area, comprising:

a source of intense incoherent light illuminating a first one of said patterns;

optical projection means interposed between said patterns optically superimposing the image of said first pattern on the second of said patterns, said optical projection means including spaced first and second coaxial lenses so arranged that the periphery of the image of said first pattern projected by said first lens into said second lens is vignetted by said second lens;

scanning means positioned between said optical projection means and said second pattern causing said image to traverse said second pattern in a repeating scan raster;

rotation means effectively rotating said scan raster with respect to said second pattern about an axis passing through said second pattern and normal to the plane thereof;

sensing means responsive to the radiance produced by the interaction of said image with said second pattern posi-

tioned adjacent said second pattern, said sensing means emitting an electrical signal whose amplitude and frequency are representative of said radiance;

electrical signal processing means connected with said sensing means electrically comparing the amplitude of said signal with a preestablished correlation amplitude threshold; and

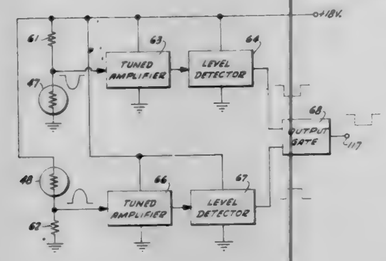
indicator means responsive to said signal processing means and actuated thereby when said signal exceeds said threshold to indicate the matching of said patterns.

3,928,843

DUAL CHANNEL INFRARED INTRUSION ALARM SYSTEM

James Cole Sprout, Los Altos, and Herbert L. Berman, Los Altos Hills, both of Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed June 24, 1974, Ser. No. 482,783
Int. Cl.² G08B 13/18
U.S. Cl. 340—258 D **18 Claims**



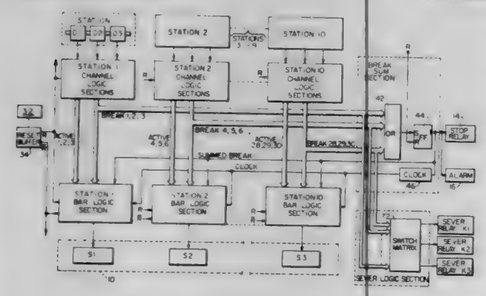
18. In an intrusion alarm system: first and second sensing elements arrangend to provide signals of opposite polarities in response to infrared energy from the body of an intruder, means for directing energy from a field of view simultaneously to both of the sensing elements, first and second amplifier means for providing output signals in response to the signals of opposite polarities, and means for providing an alarm signal upon conjoint receipt of the output signals from both of the amplifier means.

3,928,844

WEB BREAK DETECTOR SYSTEM

Edward F. Meihofer, Norfolk, Mass., assignor to Butler Automatic, Inc., Canton, Mass.

Filed June 17, 1974, Ser. No. 479,784
Int. Cl.² G08B 21/00
U.S. Cl. 340—259 **13 Claims**



1. A web break detector system comprising

A. two or more sensors for sensing web, each said sensor emitting an output signal when it detects the absence of web,

B. means for positioning said sensors along a web path,

C. indicating means corresponding to each sensor for indicating the detection by that sensor of the absence of web, and

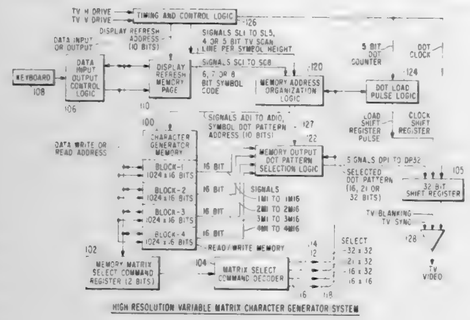
D. means for comparing the times of occurrence of said output signals, said comparing means applying a first signal to the indicating means corresponding to the sensor which first detects the absence of web and simultaneously applying a second signal to the indicating means corresponding to the sensors which subsequently detect the absence of web so that the indicating means automatically and simultaneously provide a display which distinguishes between the location in the web path where the absence of web was first detected and the locations in the web path where the absence of web was subsequently detected.

3,928,845

CHARACTER GENERATOR SYSTEM SELECTIVELY PROVIDING DIFFERENT DOT-MATRIX SIZE SYMBOLS

Robert John Clark, Dorion, Canada, assignor to RCA Corporation, New York, N.Y.

Filed Dec. 11, 1974, Ser. No. 531,613
Int. Cl.² G06F 3/14
U.S. Cl. 340—324 AD **7 Claims**



HIGH RESOLUTION VARIABLE-MATRIX CHARACTER GENERATOR SYSTEM

1. In a character generator system for digitally generating symbols for display on a display device exhibiting a television raster scan, said system comprising: a character generator memory having a predetermined fixed overall bit storage capacity for storing each respective one of a plurality of different symbols in two-dimensional dot-matrix form at a separate address location thereof, the dot matrix at all address locations having the same size first-dimension and the same size second-dimension; multibit shift register means having a number of stages at least equal to the size of said first dimension; timing and control logic synchronized with said television raster scan; first means, controlled by said timing and control logic and including a refresh memory page of stored multibit symbol codes defining the message to be displayed, for addressing said character generator memory during any scan line at the beginning of every successive symbol display interval with a multibit symbol dot pattern address word, said symbol dot pattern address word including a symbol code portion defining the character-generatormemory location of the symbol to be displayed in that symbol display interval and a scan-line code portion defining the ordinal position corresponding to the scan line then in progress in the dot matrix second dimension, whereby said character generator memory produces a parallel multibit dot pattern word output at least equal in size to the first dimension size of said dot matrix, at least a portion of said dot pattern word defining the portion of said symbol to be displayed in that symbol display interval which occurs during the scan-line then in progress; and second means controlled by said timing and control logic for loading stages of said shift register means with at least said portion of said parallel multibit dot pattern word output and then shifting said loaded word output from said shift register means with dot clock pulses during that symbol display interval; the improvement wherein:

a. said character generator memory is a read/write memory which may be programmed to store symbols in any selected single one of a given number of different predetermined dot-matrix sizes, with the number of different symbols and corresponding address locations therefor which can be accommodated being relatively larger for relatively small dot-matrix sizes than for relatively large dot-matrix sizes, and said system includes a dot-matrix register for registering therein the dot-matrix size that has been selected;

b. wherein said first means includes memory address organization logic coupled to said register and responsive to the registration therein for selecting the number of bits of the multibit symbol code from said refresh memory page assigned to the symbol code portion of said symbol dot pattern address word and for selecting the number of bits in said scan-line code portion of said dot pattern address word in accordance with the size of said second dimension of said dot matrix; and

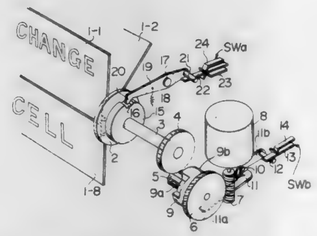
c. said second means includes dot pattern selection, load and clock logic coupled to said display refresh memory page and said register and responsive to the registration therein and the binary value of at least one predetermined bit of said multibit symbol code for selectively loading the stages of said shift register means with said bits of said parallel multibit dot pattern word output and shifting said shift register means to provide a serial sequence of the total number of dots in the first dimension of said selected size of dot matrix during each successive symbol display interval.

3,928,846

OPERATION CONDITION DETECTING AND DISPLAYING DEVICE

Kiyoyuki Arai, Tokyo, and Tomio Kikuchi, Tokorozawa, both of Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed Dec. 9, 1974, Ser. No. 530,990
Claims priority, application Japan, Dec. 14, 1973, 48-141719
Int. Cl.² G08B 5/14
U.S. Cl. 340—325 **1 Claim**



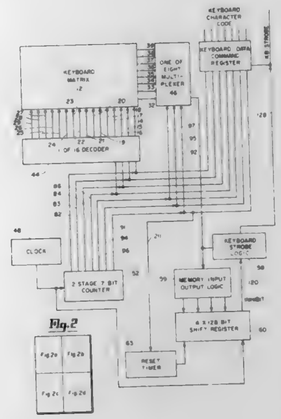
1. In a rotary indication device including a control circuit for energizing drive means adapted to successively switch and display a plurality of indication members in series each time said drive means is fed with a predetermined actuation signal, the improvement which comprises an operation condition detecting and displaying device including at least one abnormal operation condition indication member added to said plurality of indication members in series, a switch cam mounted on the rotary member of said rotary indication device, a first switch provided in said control circuit and interlocked with said switch cam to be actuated thereby so as to energize said drive means to cause the drive means to successively switch and display said indication members in series and abnormal operation condition indication member, an operation condition detection circuit for generating a check signal when said detection circuit detects an abnormal operation condition of said indication device and a second switch provided in said control circuit and interlocked with said cam disc to be a actuated thereby, said second switch being so arranged that when said abnormal operation condition indication member is positioned in the displaying position, the second switch energizes said drive means to cause the drive means to pass the abnormal operation condition indication member over said displaying position and bring the succeeding indication member in series to the displaying position and when the second switch is fed with said check input signal regardless of the operation of said first switch, the second switch energizes said drive means to cause the drive means to successively switch said indication means in series until said abnormal operation condition indication member is brought to the displaying position whereby the abnormal operation condition indication member is displayed.

3,928,847

FAST SCAN ELECTRONIC CIRCUIT WITH CONTACT BOUNCE ELIMINATION FOR AN AUTOMATIC TYPING SYSTEM KEYBOARD

Gary W. Spence, Loretto, Minn., assignor to CPT Corporation, Hopkins, Minn.

Filed Feb. 4, 1974, Ser. No. 439,310
Int. Cl.² G08C 1/00
U.S. Cl. 340—365 E **8 Claims**



1. A keyboard circuit comprising:

a plurality of conducting means;

a plurality of continuity switches having contacts for selectively interconnecting two of the conducting means;

counting means for establishing a keyboard code;

sensing means connected to the conducting means and connected to and controlled by the counting means for sequentially interrogating in accordance with the keyboard code the conducting means to determine whether two of the conducting means have been interconnected or disconnected by an operator of the continuity switches and for providing an output signal when two of the conducting means have been interconnected by one of the continuity switches;

means responsive to the output signal for generating a keyboard strobe signal;

storage means operatively connected to the counting means and connected to the sensing means, the storage means comprising at least two memory locations for each keyboard code, for recording the interconnection of two of the conducting means by the selected continuity switch wherein the output signal is electronically recorded in

parallel in each memory location corresponding to the selected continuity switch

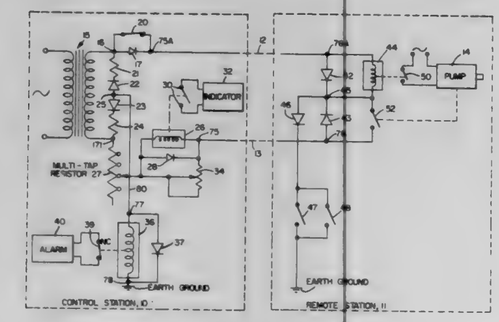
said storage means also being connected to the means for generating a keyboard strobe signal for inhibiting the means for generating a keyboard strobe signal until all memory locations for the selected keyboard code have been cleared; and

time delay means connected to the storage means for sequentially clearing each memory location for the selected keyboard code, each memory location being serially cleared after time intervals determined by the time delay means after the selected continuity switch has been disconnected by the operator of the continuity switches.

3,928,848
SUPERVISORY CONTROL SYSTEM

Jules Eugene Banville, 161 Hope St., Cumberland, R.I. 02908

Filed May 28, 1974, Ser. No. 473,358
Int. Cl.² G08B *23/00*
U.S. Cl. 340—409 **12 Claims**



1. A supervisory control system for use between a control station **10** and a remote station **11** connected by a pair of transmission lines **12, 13** carrying an a.c. signal, comprising:

first rectifying means **42, 43** having an output terminal **45,** said first rectifying means being connected across said transmission lines **12, 13** at said remote station **11** for generating a rectified signal at said output terminal **45;**

an electromechanical device **44** at said remote station connected between one of said transmission lines **12** and said output terminal **45;**

second rectifying means **17** in said one transmission line **12** at said control station **10** for blocking positive-going signals from said remote station coming in on said one line **12;**

means **20** for rendering said second rectifying means unblocking;

condition responsive switch means **47, 48** at said remote station **11** for selectively connecting said output terminal **45** to earth ground; and

means at said control station **10,** including an earth ground connection **78** responsive to the selective connection and disconnection of said output terminal **45** to earth ground at the said remote station **11** for indicating the state of said condition responsive switch means **47, 48.**

3,928,849
INTRUSION DETECTOR SELF-TEST SYSTEM

Frank Schwarz, Stamford, Conn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

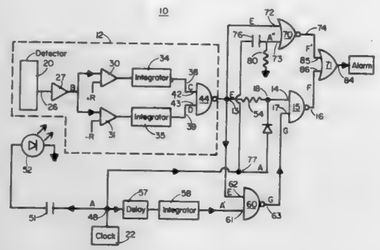
Filed Dec. 17, 1974, Ser. No. 533,741
Int. Cl.² G08B *29/00*
U.S. Cl. 340—410 **10 Claims**

1. In an intrusion alarm system the combination comprising:

A. Detector operated means for providing an output signal of the first of two switching states under normal circuit operation nonintrusion conditions and an output signal of the second of said states in response to activation of the detector,

B. Clock operated means for periodically providing (1) a first signal for simulating an intrusion, (2) a second signal for overriding said signal of said second state from said detector operated means, and (3) a third signal,

C. First gate means operatively connected for receiving the output signal of said detector operated means and said third signal from said clock means for providing an output of a first of two states in response to either a normal



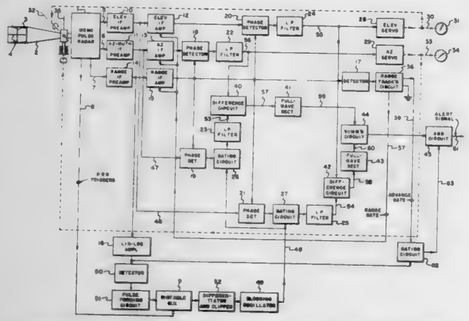
condition, an intrusion, or a simulated intrusion and an output of the second of two states in response to a malfunction, and

D. A second gate means operatively connected for receiving the outputs of said first gate, said detector operated means and said override signal for providing an output of a first of two states in response to either a normal condition or a simulated intrusion condition with normal circuit response thereto and of the second state in response to an actual intrusion or a simulated intrusion coupled with a malfunction.

3,928,850
INTERFERING SIGNAL SENSOR FOR ANGLE TRACKING RADARS

Philip Pollack, Wantagh, and Paul L. Di Matteo, Levittown, both of N.Y., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 29, 1958, Ser. No. 783,603
Int. Cl.² G01S *9/14, 7/36*
U.S. Cl. 343—7.3 **5 Claims**



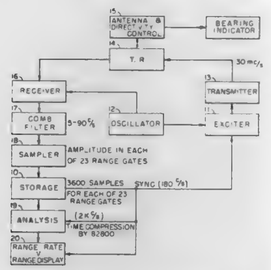
1. In an angle tracking radar receiver, first means for generating a first signal representing the angular deviation relative to the radar tracking axis of a predetermined target, second means for generating a second signal representing the angular deviation relative to said axis of the target nearest the radar, means for comparing said first and second signals and for generating a first control signal upon the inequality of said first and second signals, means for sensing the closure within a predetermined range interval of said predetermined target and another target situated at lesser range, said means for sensing producing a second control signal upon said range closure,

utilization signal generating means, and means for applying said first and second control signals to said last-named means to produce said utilization signal upon the concurrence of said first and second control signals.

3,928,851
OBJECT LOCATOR SYSTEM

Garold K. Jensen, Pinecrest, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 31, 1960, Ser. No. 53,312
Int. Cl.² G01S *9/44*
U.S. Cl. 343—9 **5 Claims**

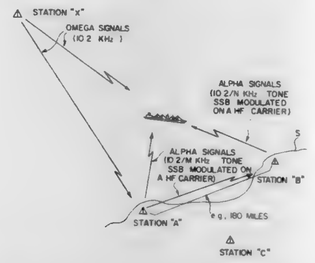


3. An object locator system comprising, means emitting signals, means for receiving signals returned by distant objects, means for storing received signals, a narrow bandwidth analysis channel, means for controlling the playback of stored signals whereby signals stored intermittently for a selected range are played back continuously without substantial intervening time interruptions, and means for varying the frequency of playback signals whereby they are held within the bandwidth of the analysis channel.

3,928,852
RADIO NAVIGATION SYSTEM AND APPARATUS

A. Clifford Barker, Virginia Beach, Va., assignor to Navidyne Corporation, Hampton, Va.

Filed Oct. 25, 1973, Ser. No. 409,363
Int. Cl.² G01S *1/30*
U.S. Cl. 343—105 R **25 Claims**

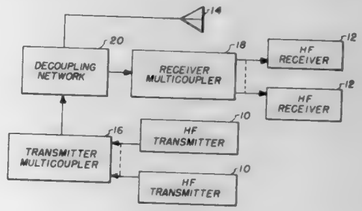


1. A high-resolution local radio navigation system employing a remote VLF transmitting station, said system comprising first and second local stations which are spaced from each other by a distance which is substantially less than the distance between said remote station and either one of said local stations so as to provide a short base line between said local stations and a substantially longer base line between said first local station and said remote station, said first and second local stations including means for transmitting, at higher frequency than VLF frequencies, first and second local signals, respectively, which are each phase-locked to a VLF signal transmitted by said remote station, said first local signal being cooperable with said VLF signal to produce a first family of equi-phase lines corresponding to said first local station and said remote station and further being cooperable with said second local signal to produce a second family of equiphase lines corresponding to said first and second local stations, and a mobile receiver having means for comparing the phase of said first local signal with the phases of said second local signal and said VLF signal to provide an indication of the position of the receiver in relation to said families of equi-phase lines.

3,928,853
DECOUPLING APPARATUS FOR A COMMON-ANTENNA RECEIVE-TRANSMIT SYSTEM

Irving C. Olson, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 218,985, Jan. 19, 1972, abandoned. This application Nov. 29, 1974, Ser. No. 528,110
Int. Cl.² H04L *5/00;* H04B *1/44*
U.S. Cl. 343—180 **1 Claim**



1. Communication system apparatus comprising:

reciprocal antenna means;

a first multicoupler means having input means and output means;

a plurality of transmitter means connected to the input means of said first multicoupler means;

a second multicoupler means having input means and output means;

a plurality of receiver means connected to the output means of said second multicoupler means;

non-resonant means having a first port connected to the output means of said first multicoupler, a second port connected to the input means of said second multicoupler, and a third port connected to said antenna means, said non-resonant means comprising capacitive means connected between said second and third ports, first inductive means connected between said first and third ports and a second inductive means connected between said second port and ground and being magnetically coupled to said first inductive means whereby said capacitive means and said second inductive means decouple received energy from said antenna means to said second multicoupler means over a predetermined frequency range substantially independent of the impedance of said first multicoupler means and said first inductive means simultaneously couples energy from said first multicoupler means to said antenna means.

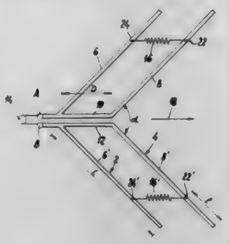
3,928,854
V-TYPE DIRECTIONAL ANTENNA

Maurice Tacussel, 105 bis rue du Point du Jour, 92100 Boulogne Billancourt, France

Filed May 17, 1974, Ser. No. 470,753
Claims priority, application France, May 21, 1973, 73.18305
Int. Cl.² H01Q *9/44, 11/06*
U.S. Cl. 343—735 **14 Claims**

1. A directional antenna comprising at least two longitudinally spaced dipole antennas each formed by a pair of radiators in V formation, the end of each radiator distant from the

open end of the radiator being connected to the corresponding end of the radiator of the adjacent antenna and to one of the outputs of the antenna, wherein at least two adjacent



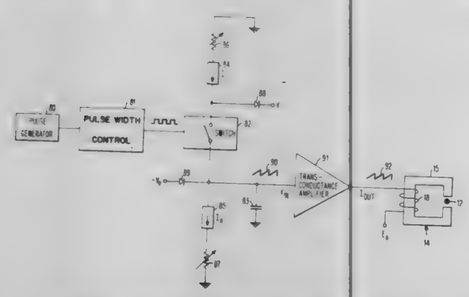
antennas have a resistive load directly connected between their corresponding radiators in the region spaced from the open ends of the radiators.

3,928,855

METHOD AND APPARATUS FOR CONTROLLING SATELLITES IN AN INK JET PRINTING SYSTEM

Edward F. Helinski, Johnson City; Ho C. Lee, Endicott, and Jack L. Zable, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1974, Ser. No. 533,913
Int. Cl.² G01D *15/18*
U.S. Cl. 346—1 **20 Claims**



1. In an ink drop forming system of the type having means for supplying ink under pressure to a nozzle or the like to cause a continuous jet stream of ink to flow from said nozzle, and a transducer for causing periodic perturbations in said stream at a predetermined frequency whereby drops are formed in said jet stream, the improvement comprising,

a method of controlling the formation of satellites by energizing said transducer with a signal having an asymmetrical waveform.

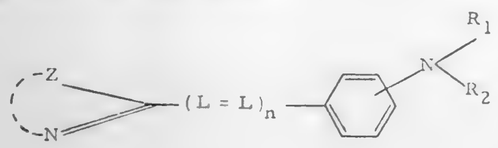
3,928,856

SILVER HALIDE PHOTOGRAPHIC EMULSION FOR RECORDING ELECTRON BEAM

Yoshiyuki Nakazawa; Yashuharu Nakamura; Yosuke Nakajima; Junichi Matsuyama, and Akira Sato, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Division of Ser. No. 181,136, Sept. 16, 1971, abandoned. This application Nov. 5, 1973, Ser. No. 413,146
Claims priority, application Japan, Sept. 16, 1970, 45-81112
Int. Cl.² G01D *9/00*
U.S. Cl. 346—1 **6 Claims**

1. An electron beam recording process comprising irradiating, with an electron beam, an electron beam recording material comprising a silver halide emulsion whose silver halide grains have a mean grain size no more than 0.2 micron and have adsorbed thereon at least one aminostyryl base represented by the following formula:



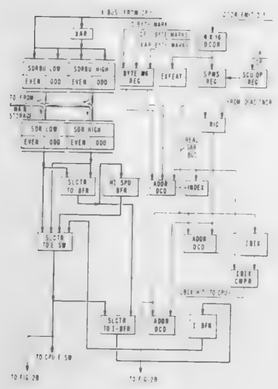
wherein Z is an atomic group required for forming a pyridine, oxazole, benzoxazole, naphthoxazole, benzimidazole, naphthiomidazole, thiazole, benzthiazole, naphthothiazole, selenazole, benzselenazole, or naphthoselenazole ring, R_1 and R_2 are lower alkyl groups, L is a methine group, and n is 1 or 2, and developing the irradiated material to form an image.

3,928,857

INSTRUCTION FETCH APPARATUS WITH COMBINED LOOK-AHEAD AND LOOK-BEHIND CAPABILITY

Richard S. Carter; Spurgeon G. Hogan, Jr., both of Poughkeepsie; Wan L. Leung, Hyde Park; Bruce L. McGilvray, Pleasant Valley, and Robert H. Werner, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 30, 1973, Ser. No. 392,900
Int. Cl.² G06F *9/06*
U.S. Cl. 340—172.5 **4 Claims**



1. In a data processing system which includes a system storage, a processing unit, addressing means for addressing a location in said system storage which contains a desired instruction; improved means for transferring said desired instruction to said processing unit comprising:

instruction buffering means (I-buffer) comprising an auxiliary multi-word memory for storing only a plurality of instructions;

means interconnecting said system storage to said I-buffer for transmission of instructions from said system storage to said I-buffer;

means interconnecting said I-buffer to said processing unit for transmission of instructions from said I-buffer to said processing unit;

means interconnecting said addressing means to said I-buffer for addressing a specific location within said I-buffer that is at least partially defined by an address in said adressing means;

I-buffer indexing means (IBIX) comprising a multi-word memory for storing at least portions of each of a plurality of the system storage addresses of instructions contained in said I-buffer;

means interconnecting said addressing means to said IBIX for addressing a location within said IBIX that corresponds to said specific location within said I-buffer;

comparison means;

means interconnecting said IBIX to an input of said comparison means and means interconnecting said addressing means to another input of said comparison means for comparing address information read from said IBIX to address information contained in said addressing means; said comparison means, upon detection of equality at said two inputs, causing generation of a data available signal which indicates that a desired instruction is contained within said I-buffer;

means within said system responsive to said data available signal to fetch said desired instruction to said processing unit from said I-buffer instead of from said system storage;

means responsive, after a comparison by said comparison means, to the absence of said data available signal to cause said desired instruction to be fetched from said system storage;

means responsive to said absence of said data available signal after said comparison for also causing said desired instruction to be stored into said I-buffer; and

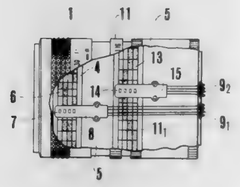
means responsive to said absence of said data available signal after said comparison for causing at least a portion of the system storage address of said desired instruction to be stored into said IBIX.

3,928,858

SYSTEM FOR SETTING PHOTOGRAPHING CONDITIONS

Nobuaki Sakurada, Yokohama; Soichi Nakamoto, Machida; Tadashi Ito, Tokyohama; Fumio Ito, Yokohama, and Nobuhiko Shinoda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1974, Ser. No. 514,911
Claims priority, application Japan, Oct. 17, 1973, 48-116578
Int. Cl.² G03B *7/00*, *7/20*
U.S. Cl. 354—23 D **5 Claims**



1. A system for setting photographing informations of a camera comprising:

a camera body having a digital exposure control means;

an interchangeable lens attached to the camera body, having:

an operation means for setting photographing information, and

photographing information setting means having means for coding set values in correspondence to the values set by the operating means; and

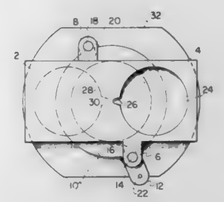
a connecting means for connecting the photographing information setting means to the digital exposure control means, and for supplying the digital output of the setting means to the digital exposure control means.

3,928,859

SHUTTER-IRIS FOR AUTOMATIC CAMERA

Dean M. Peterson, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 22, 1974, Ser. No. 453,888
Int. Cl.² G03B *7/14*, *9/00*
U.S. Cl. 354—27 **18 Claims**



1. In an automatic photographic camera, the combination comprising;

a shutter-iris combination including a first shutter blade and a second shutter blade, each blade having a configured opening,

complementary coupling means coupled to said first and second blades for imparting oppositely directed translational motion to said blades,

first driving means coupled to said coupling means for moving said shutter blades in said oppositely directed translational motion in a shutter-opening direction,

second driving means coupled to said first driving means for returning said first driving means to its original position and thereby to move said shutter blades in said oppositely directed motion in a shutter-closing direction,

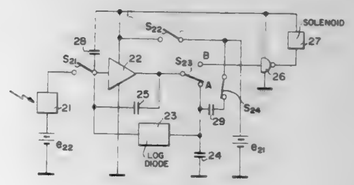
programmatic control means for controlling the actuation of said second driving means, said programmatic control means including a light sensing means operative in response to light transmitted through the opening of said shutter to produce a first signal indicative of the exposure of a film in said camera to a predetermined amount of light, exposure control means operative in response to said first signal to produce an exposure control signal, and means operative in response to said exposure control signal to actuate said second driving means.

3,928,860

EXPOSURE CONTROL CIRCUIT FOR PHOTOGRAPHIC CAMERA

Saburo Numata, and Shinichiro Fujino, both of Urawa, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Continuation of Ser. No. 398,937, Sept. 20, 1973, abandoned. This application Feb. 21, 1975, Ser. No. 551,904
Claims priority, application Japan, Sept. 26, 1972, 47-96472
Int. Cl.² G03B *7/08*
U.S. Cl. 354—51 **10 Claims**



1. An exposure control circuit for a photographic camera including a photo senser, an operational amplifier operatively connected between a power supply and ground and with the photo senser to amplify the input voltage thereof determined

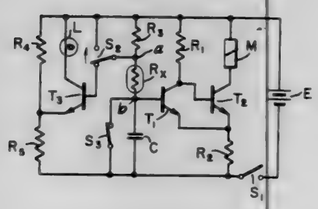
by the resistance of the photo senser which represents the light value from the subject to be photographed, a memorizing capacitor connected with the output of the operational amplifier and switching means for disconnecting the photo senser from the operational amplifier in response to the opening of the shutter of the camera and connecting the memorizing capacitor to a shutter closing means which operates to close the shutter when the input voltage of the switching means reaches a predetermined level whereby the time until the shutter closing means is energized is controlled in accordance with the value of illumination incident upon the photo senser, characterized in that at least one of the input terminal and the output terminal of the operational amplifier has a balancing capacitor having one side connected therewith, the other side of said balancing capacitor being connected to said power supply so as to effect a balance in capacitance between the input from the photo senser to the operational amplifier and the output of the operational amplifier, whereby the input voltage of the operational amplifier is instantly raised up to the operating voltage upon energization of the circuit.

3,928,861

ELECTRONIC CIRCUIT INDICATING LIGHT LEVEL AND CONTROLLING EXPOSURE OF CAMERA

Kiyoshi Kitai, Tokyo, Japan, assignor to Kabushiki Kaisha Hattori Tokeiten, Japan

Filed Dec. 2, 1971, Ser. No. 204,260
Claims priority, application Japan, Dec. 3, 1970, 45-106451
Int. Cl.² G03B *7/08, 17/18*
U.S. Cl. 354—60 L **10 Claims**



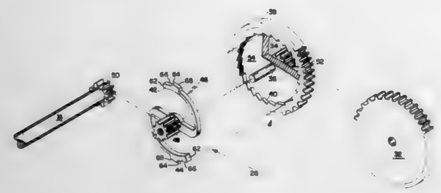
1. In a photographic camera, an indicating and shutter control circuit comprising a power source, three circuit elements namely a single photoelectric element, a comparison resistor and a capacitor connected in series with one another across said power source with first and second connecting points between said circuit elements, said circuit comprising an indicating circuit and a timing circuit, said indicating circuit including solely electrical components comprising said power source, said photoelectric element, said comparison resistor, level indicating means and a first amplifying means for feeding said level indicating means and having a control terminal, said timing circuit including said power source, said single photoelectric element, said capacitor, a timing switch for short circuiting said capacitor, an electromagnet controlling the closing of the shutter and second amplifying means for feeding said electromagnet and having a control terminal connected to said first connecting point, said indicating circuit further comprising a change-over switch means having a first condition in which it connects said second connecting point with said control terminal of said first amplifying means to provide an indication of level of brightness of a subject to be photographed and a second condition in which it short circuits said comparison resistor to provide for control of timing circuit by said single photoelectric element.

3,928,862

PHOTOGRAPHIC FILM ADVANCING AND PROCESSING APPARATUS HAVING A PROTECTIVE DEVICE

Andrew S. Ivester, Charlestown, and Bruce K. Johnson, Andover, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 2, 1974, Ser. No. 466,399
Int. Cl.² G03B *17/50*
U.S. Cl. 354—86 **11 Claims**



1. Photographic apparatus for spreading a processing composition across a photosensitive element of an exposed film unit comprising:

a pair of juxtaposed pressure-applying members including at least one roller adapted to be rotated in a predetermined direction for spreading a processing composition across an exposed area of a photosensitive element;

drive means including at least one gear coupled to said one roller;

means for supplying energy for rotary motion of said drive means; and

means for transferring energy including a plurality of gears and ratchet means, said ratchet means including a plurality of rotatable members at least one of which is a gear, said rotatable members including a driving member fixedly secured to a shaft and a driven member including substantially resilient contact means rotatably mounted upon said shaft, said driving member having engagement means included on one side thereof for engaging said substantially resilient contact means of said driven member and cooperating therewith to provide unidirectional rotation of said driven member in transferring energy in a first direction from said means for supplying energy to said drive means and substantially prevents the transfer of energy in a second direction, opposite to said first direction, from said drive means to said means for transferring energy when said roller is manually rotated in said predetermined direction.

3,928,863

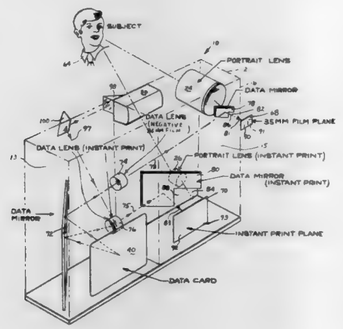
IDENTIFICATION CARD CAMERA

Charles J. Stewart, 1800 Gramercy Ave., Apt. 38, Anaheim, Calif. 92801, and Ernest B. Marjoram, 17874 E. Baintree Ave., Rowland Heights, Calif. 91745

Filed Dec. 17, 1973, Ser. No. 424,942
Int. Cl.³ G03B *17/24*
U.S. Cl. 354—109 **2 Claims**

1. An identification system camera comprising first and second portrait lens means for simultaneously forming first and second images of a predetermined object in first and second generally coplanar image planes, respectively, a data card and means for removably receiving and holding said data card, first and second data lens means for simultaneously forming first and second images of said data card, first and second image transmitting means for transmitting said first object and said first data card images and said second object and said second data card images onto mutually exclusive and contiguous portions of said first and second image planes, respectively, to thereby form composite images thereof on said first and said second image planes, said portrait lens means each including a shutter mechanism, a photo flash device including means for illuminating said data card, said

shutter mechanisms and said photo flash device being coupled together for synchronous operation, a first film cartridge means for positioning a frame of photographic negative film in said first image plane and second film cartridge means for positioning a frame of direct positive self-processing film in said second image plane, a light-tight enclosure having first and second light-tight compartments enclosing said first and second film frames, said first and second object and said first and second data card images being transmitted into said enclosure through said first and second portrait lens means and said first and second data lens means, respectively, and means for simultaneously exposing said negative film and said positive print film with identical ones of said composite images, said receiving and holding means holding said data card in said



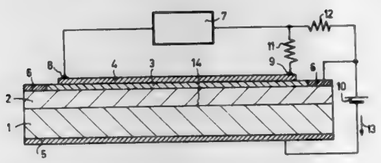
second compartment, said image transmitting means including a first-surface mirror positioned within said second compartment and optically in front of said data card and at an angle of about 45° with respect thereto and a pair of second first-surface mirrors positioned within said first enclosure at an angle of about 45° with respect to said image planes, said first and second data lens means being disposed optically between said first-surface mirror and individual ones of said second first-surface mirrors, respectively, and in a position to intercept the image transmitted through said first and second data lens means by said first-surface mirror, said pair of first-surface mirrors each having a portion thereof removed to define first and second apertures, said first and second images being transmitted through said apertures onto said first and second image planes, respectively.

3,928,864

LINEAR DISPLAY DEVICE

Jacques Fertin, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 18, 1973, Ser. No. 425,725
Claims priority, application France, Dec. 19, 1972, 72.45209
Int. Cl. H01l *14/11*
U.S. Cl. 357—17 **13 Claims**



1. A device comprising an electroluminescent diode having an elongated first region of a first conductivity type, an elongated second region of the opposite conductivity type extending on the first region and forming therewith a P-N junction and showing electroluminescent properties when charge carri-

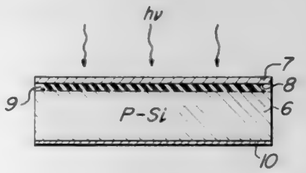
ers are injected into it, electrode connections to the first and second regions, a thin elongated insulated layer extending on the said second region and over and parallel to said P-N junction, an elongated resistance layer extending on the said insulating layer and over said P-N junction, said resistance layer and said insulating layer being transparent to the radiation emitted from said second region, means connected to the first and second region electrode connections to forward bias the junction causing the injection of charge carriers into the second region along its length whereby said carriers recombine in the second region bulk and radiation is emitted, said means being capable of establishing a column of radiation along the length of the device, and means to establish a potential difference between one end of said resistance layer and said second region and to cause a potential gradient along the length of and in the direction of the other end of said resistance layer, said potential difference being such as to drive the injected carriers in accordance with its magnitude toward the surface of the second region where they tend to recombine in a non-radiative manner thereby reducing the radiation thereat, whereby the length of the radiation column is related to the value of the potential difference.

3,928,865

PHOTO-ELECTRICAL TRANSDUCER

Akio Yamashita, Ikeda, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 21, 1971, Ser. No. 136,159
Claims priority, application Japan, Apr. 24, 1970, 45-35757
Int. Cl.² H01L *29/48, 29/56, 29/167*
U.S. Cl. 357—30 **1 Claim**



1. A photoelectric transducer comprising a semiconductor wafer, a metal layer on the semiconductor wafer, the semiconductor wafer and the metal layer forming a Schottky barrier therebetween, and a region in the neighborhood of the Schottky barrier heavily doped with a deep-level impurity selected from the group consisting of copper, gold, iron, nickel and manganese.

3,928,866

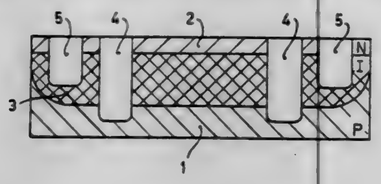
SEMICONDUCTOR RADIATION DETECTOR AND METHOD OF MANUFACTURING SAME

Jean Louis Digoy, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 9, 1973, Ser. No. 377,797
Claims priority, application France, July 10, 1972, 72.24928
Int. Cl. H01l *15/00*
U.S. Cl. 357—30 **8 Claims**

1. A radiation detector comprising a semi-conductor body having two oppositely located major surfaces which are opposed to each other, a surface layer of a first conductivity type adjoining a first of said major surfaces, said surface layer in the semiconductor body adjoining a substantially intrinsic intermediate region which extends through the semiconductor body to substantially the second major surface, an annular surface region of the second conductivity type being present at the second major surface, the first major surface comprising two substantially concentric grooves extending into the semiconductor body from the first major surface to a depth which is larger than the thickness of the surface layer of the first conductivity type, the grooves having unequal depths, a first

one of said grooves terminating in the substantially intrinsic intermediate region, the second one of said grooves being deeper and extending through the substantially intrinsic inter-



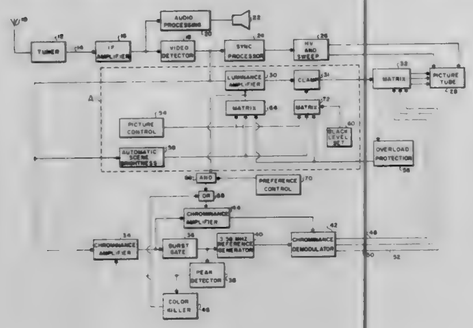
mediate region to the annular surface region of the second conductivity type, said annular region extending between the lower side of the second deeper groove and the second major surface.

3,928,867

TELEVISION RECEIVER WITH PICTURE LEVEL CONTROL

Edward I. Lynch, Portsmouth, Va., assignor to General Electric Company, Portsmouth, Va.

Filed May 10, 1974, Ser. No. 468,953
Int. Cl.² H04N *5/14, 5/44*
U.S. Cl. 358—39 **15 Claims**



11. In a television receiver including a picture tube, a source of video signal and coupling means for coupling said video signal to said picture tube, an improved picture control comprising:

level setting means coupled to said coupling means for setting the electrical black level of said video signal to correspond to optical black level;

amplitude control means coupled to said coupling means for controlling the maximum video signal amplitude to be supplied to said picture tube and maintaining said electrical black level in correspondence with said optical black level in response to ambient light change.

3,928,868

TAPE DUPLICATING DEVICE

Robert M. Grindley, Glendale, and Michael J. Strong, Simi, both of Calif., assignors to International Audio-Visual Hong Kong Ltd., Hong Kong

Division of Ser. No. 245,572, April 19, 1972, Pat. No. 3,864,732. This application Aug. 5, 1974, Ser. No. 494,851
Int. Cl.² G11B *5/86*
U.S. Cl. 360—15 **3 Claims**

1. A method for transmitting information from a master magnetic tape to a receiving magnetic tape, including the steps of

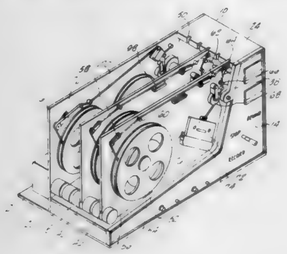
moving such master magnetic tape into operative relationship with a magnetic tape head and a capstan,

mounting a reel of receiving magnetic tape on a panel,

mounting a cassette on said panel,

splicing the receiving magnetic tape to the take-up reel of the cassette,

moving the panel such that the receiving magnetic tape is placed in operative relationship with a recording head and said capstan wherein the receiving magnetic tape



extends across the recording head and is driven by said capstan, the movement of the panel also engaging a drive means for the cartridge take-up reel with said capstan,

electronically transmitting information from the master magnetic tape to the receiving magnetic tape, and

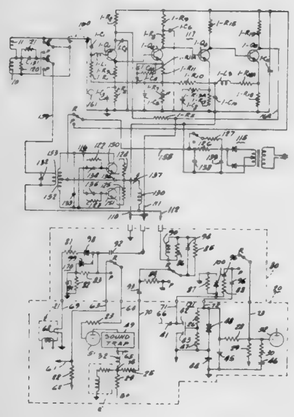
winding the receiving magnetic tape onto the cassett take-up reel as it is receiving information from the master magnetic tape.

3,928,869

VIDEO TRANSDUCING APPARATUS

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Division of Ser. No. 34,504, May 4, 1970, Pat. No. 3,705,954, which is a division of Ser. No. 649,256, June 27, 1967, Pat. No. 3,596,008, which is a continuation-in-part of Ser. No. 528,934, Feb. 21, 1966, abandoned. This application Sept. 20, 1971, Ser. No. 182,229
Int. Cl. H04n *5/76*
U.S. Cl. 360—55 **1 Claim**



1. In combination with a television display device for display of televison signals, a transducer head for reproducing recorded television signals for displays by means of said television display device, and

a coupling circuit connected with said transducer head and with said television display device for supplying reproduced television signals to said television display device for display thereby,

the improvement characterized in that

said coupling circuit comprises a video playback amplifier having an input with a shunt capacitance shunting said input, and an inductor connected in series between said transducer head and said input of said amplifier,

said inductor being disposed closely adjacent to the amplifier input and having a distributed capacitance of a relatively low capacitance value in comparison to said shunt capacitance to prevent pick-up and rectification of radio frequency fields by said video playback amplifier, and

means comprising said inductor for counteracting the effect of hum frequency magnetic fields in the vicinity of said inductor so as to substantially reduce transmission of hum frequency induced voltages from said inductor to said video playback amplifier.

3,928,870

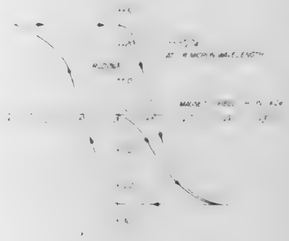
MAGNETO-OPTICAL PROCESSES AND ELEMENTS USING TETRAHEDRALLY COORDINATED DIVALENT COBALT-CONTAINING MAGNETIC MATERIAL

Richard K. Ahrenkiel, and Theodore J. Coburn, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 14, 1973, Ser. No. 425,045
Int. Cl.² G11B *5/02, 5/32, 5/62;* **H01F** *1/00*
U.S. Cl. 360—59 **24 Claims**

1. A magneto-optical readout process wherein electromagnetic radiation is used to determine the direction of magnetization within discrete areas of a magnetic element, said process comprising:

a. providing a magnetic element having discrete areas which are magnetized, each of said areas comprising an inorganic crystalline material having a magnetically ordered crystal sublattice containing tetrahedrally coordinated divalent cobalt in an amount sufficient to provide a Kerr ellipticity greater than 0.25°,



b. exposing at least one of said discrete areas to radiation having a wavelength corresponding to a crystal field transition of said cobalt, and

c. detecting the change in polarization of said radiation caused by said cobalt to determine the direction of magnetization within said discrete area which has been exposed.

DESIGNS

DECEMBER 23, 1975

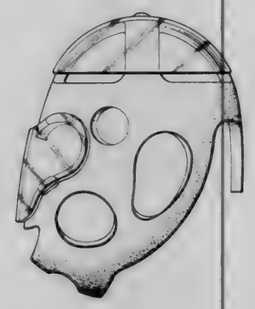
238,116
TWO PIECE BATHING SUIT
Barbara L. Firkser, 1066 McLean Ave., Wantaugh, N.Y. 11793
Filed May 3, 1974, Ser. No. 466,799
Term of patent 3½ years
Int. Cl. D2—*02*
U.S. Cl. D2—41



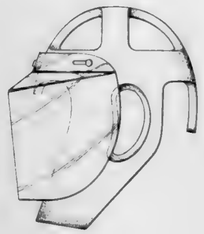
238,117
BIB WITH CATCH-POCKET
Karl Gösta Berill Andersson, Halmstad, Sweden, assignor to Duni Bila AB, Halmstad, Sweden
Filed Apr. 16, 1973, Ser. No. 351,189
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—229



238,118
PROTECTIVE HELMET OR THE LIKE
Jhoon Goo Rhee, 2525 N. Ridgeview Road, Arlington, Va. 22207
Filed Nov. 27, 1974, Ser. No. 527,900
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



238,119
PROTECTIVE HELMET OR THE LIKE
Jhoon Goo Rhee, 2525 N. Ridgeview Road, Arlington, Va. 22207
Filed Nov. 27, 1974, Ser. No. 527,901
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



238,120
PROTECTIVE HELMET OR THE LIKE
Jhoon Goo Rhee, 2525 N. Ridgeview Road, Arlington, Va. 22207
Filed Nov. 27, 1974, Ser. No. 527,902
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



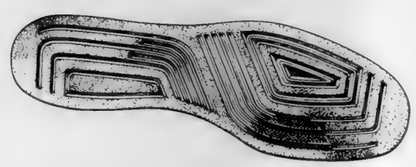
238,121
PROTECTIVE HELMET OR THE LIKE
Jhoon Goo Rhee, 2525 N. Ridgeview Road, Arlington, Va. 22207
Filed Nov. 27, 1974, Ser. No. 527,904
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



238,122
SPORT SHOE
William J. Cohen, Boston, Mass., assignor to CITC Industries, New York, N.Y.
Filed Aug. 21, 1972, Ser. No. 282,050
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310



238,123
SHOE SOLE
Sumner F. Davis, Salem, N.H., assignor to Converse Rubber Company, a division of Eltra Corporation, Wilmington, Mass.
Filed May 28, 1974, Ser. No. 473,780
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



238,124
FOXING TAPE
William J. Cohen, Randolph, Mass., assignor to CITC Industries, New York, N.Y.
Filed June 19, 1974, Ser. No. 480,881
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—328



238,125
NECKTIE FOR AN OPEN-COLLAR SHIRT
H. Heath Webb, 216 Applewood Lane, Virginia Beach, Va. 23452
Filed Nov. 6, 1973, Ser. No. 413,240
Term of patent 14 years
Inc. Cl. D2–*05*
U.S. Cl. D2—351

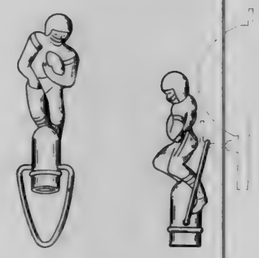


238,126
BRUSH
Robert A. O'Neil, Wheaton, Ill., assignor to Kellogg Brush Manufacturing Co., Easthampton, Mass.
Filed Mar. 1, 1974, Ser. No. 447,078
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—1

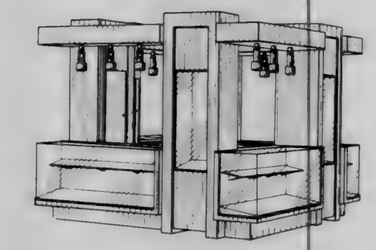




238,127
HANDLE CAP FOR BRUSHES AND THE LIKE
Jeffrey Snyder, 5225 Collins Ave., Miami Beach, Fla. 33140
Original design application July 3, 1973, Ser. No. 376,150. Divided and this application Sept. 9, 1974, Ser. No. 504,046
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—4



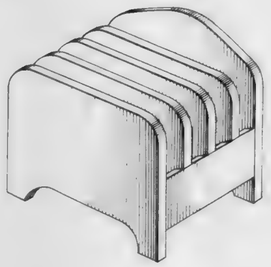
238,128
KIOSK
Richard D. Marquette, Prairie Village, Kans., assignor to Trio, Incorporated, Overland Park, Kans.
Filed Oct. 12, 1973, Ser. No. 406,086
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—169



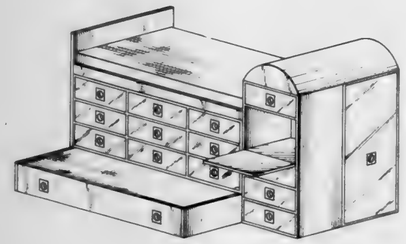
238,129
TABLE OR OTHER SIMILAR ARTICLE
Walter M. Jay, 16 Tweed Road, Fox Lake, Ill. 69920
Filed Jan. 18, 1974, Ser. No. 434,636
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—175



238,130
TENNIS RACKET SUPPORT OR SIMILAR ARTICLE
Daniel Liner, 319 Beverly, Wilmette, Ill. 60091
Filed Sept. 27, 1973, Ser. No. 401,355
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—185



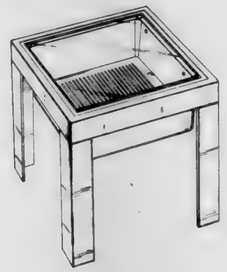
238,131
COMBINED BED AND STORAGE UNIT
Michael A. Mendlin, Springfield, N.J., assignor to Bunk Trunk Distributors, Paramus, N.J.
Original design application July 6, 1971, Ser. No. 160,237, now Patent No. 227,724. Divided and this application Apr. 16, 1973, Ser. No. 351,633
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—80



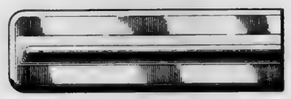
238,132
HANGING SUPPORT FOR PLANTS
Lee H. Stevens, P.O. Box 710, Escondido, Calif. 92025
Filed Aug. 12, 1974, Ser. No. 496,632
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D6—113



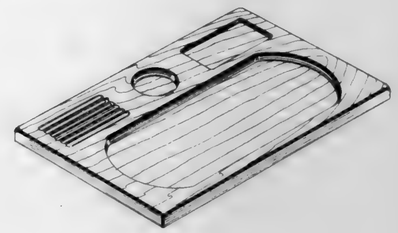
238,133
DISPLAY TABLE
Robert L. Uebele, West Bend, Wis., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Sept. 20, 1974, Ser. No. 508,023
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—175



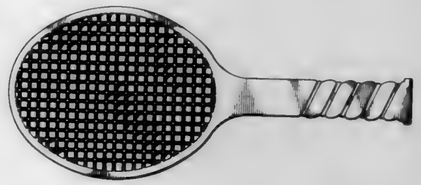
238,134
ARM REST
Merton J. Alexander, 610 Court St., Monrovia, Calif. 91016
Filed Jun. 17, 1974, Ser. No. 479,635
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194



238,135
ROLLING TRAY
Joseph J. Longobardi, Jr., 4905 Sunderland Drive, Boise, Idaho 83704
Filed Dec. 3, 1973, Ser. No. 420,835
Term of patent 14 years
Int. Cl. D7—*04*; D7—*99*
U.S. Cl. D7—43



238,136
COASTER
Jerome Goldstein, 17 Rural Drive, and Abraham Goldstein, 205 Secor Road, both of Scarsdale, N.Y. 10583
Filed Feb. 15, 1974, Ser. No. 442,988
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—45



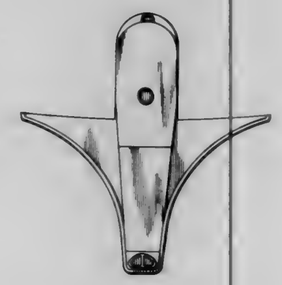
238,137
CANISTER OR THE LIKE
James B. Swett, Barrington, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed July 25, 1974, Ser. No. 491,887
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—79



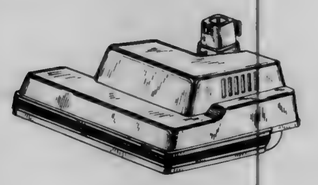


238,138
SPOUT FOR A WATER RESERVOIR TYPE COFFEEMAKER OR SIMILAR ARTICLE
Max C. Hauenstein, Monroe, Conn., assignor to General Electric Company
Filed Feb. 27, 1974, Ser. No. 446,519
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—129

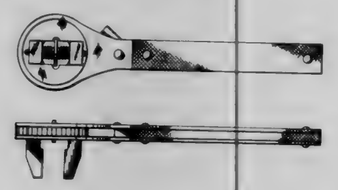




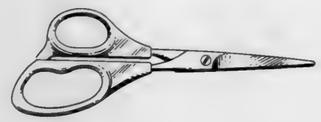
238,139
VACUUM CLEANER HOUSING
Gordon W. Goodrich, Grand Rapids, Mich., assignor to Bissell, Inc., Grand Rapids, Mich.
Filed Aug. 5, 1974, Ser. No. 494,766
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—165



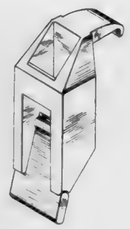
238,140
RATCHET WRENCH
Henry L. Guimarin, Colleyville, Tex. (Rte. 3, Box 337, Grapevine, Tex. 76051)
Filed Sept. 25, 1974, Ser. No. 509,252
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—25



238,141
HAIR CUTTING SCISSORS
Evan R. Kahn, 808 NE. 160th Terrace, North Miami Beach, Fla. 33162
Filed June 28, 1974, Ser. No. 484,458
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—57



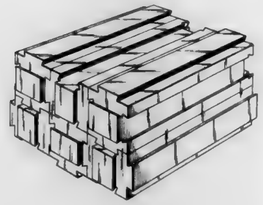
238,142
CLIP FOR PICTURE FRAMES
Samuel Wiener, Jr., Westport, Conn. (451 W. Broadway, New York, N.Y. 10012)
Filed Feb. 8, 1974, Ser. No. 440,668
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—257



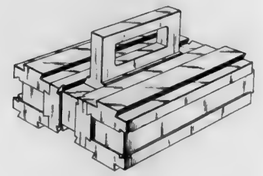
238,143
BOTTLE
J. Myron Bay, 990 Lake Shore Drive, Chicago, Ill. 60611
Filed Oct. 15, 1973, Ser. No. 406,604
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—48



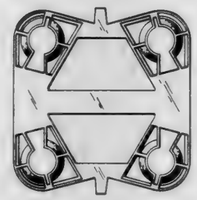
238,144
BUILDING BLOCK UNIT
Henry King Ketcham, Geneva, Switzerland, assignor to Rolande Ketcham, Geneva, Switzerland
Filed Apr. 26, 1973, Ser. No. 354,668
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—171



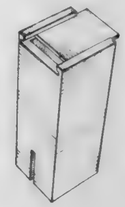
238,145
COMBINED BUILDING BLOCK UNIT AND CARRYING HANDLE OR SIMILAR ARTICLE
Henry King Ketcham, Geneva, Switzerland, assignor to Rolande Ketcham, Geneva, Switzerland
Filed Apr. 26, 1973, Ser. No. 354,472
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—171



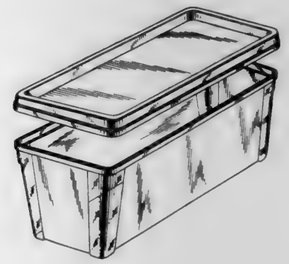
238,146
BOTTLE CARRIER
Rodney K. Calvert, Dunwoody, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed May 28, 1974, Ser. No. 474,086
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—178



238,147
CONTAINER FOR GLASSES AND BOTTLES OR THE LIKE
Markku Vartiainen, Helsinki, Robert Paulig, Ostersundom, and Matti Lahtinen, Helsinki, Finland, assignors to MRM-trading Ltd., Helsinki, Finland
Filed Nov. 7, 1973, Ser. No. 413,515
Claims priority, application Finland May 8, 1973
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—223



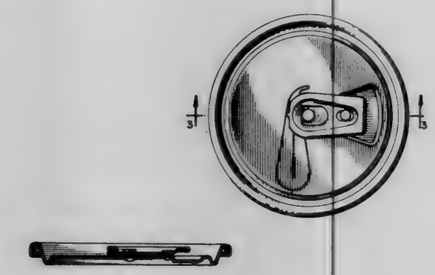
238,148
COMBINED CONTAINER AND COVER FOR FOODSTUFFS OR THE LIKE
Rolf Magnus Dilot, 106 Larkvagen, 22248 Uppakra, Sweden
Filed Dec. 4, 1972, Ser. No. 312,057
Claims priority, application Sweden June 2, 1972
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



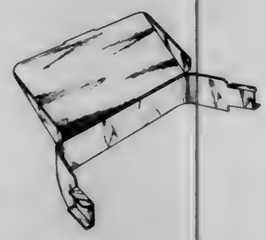
238,149
SECURITY SEAL FOR A MAILBAG OR THE LIKE
Sigurd M. Moberg, Orange, and George A. Lundberg, Pompton Lakes, N.J., assignors to E. J. Brooks Company, Newark, N.J.
Filed June 26, 1974, Ser. No. 483,125
Term of patent 14 years
Int. Cl. D9—*06*
U.S. Cl. D9—252



238,150
NON-DETACHABLE EASY-OPEN END CLOSURE
Daniel F. Cudzik, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed May 17, 1973, Ser. No. 361,168
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—255

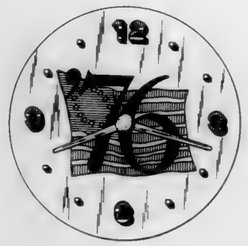


238,151
ACCESSORY TRAY FOR A PAINT CAN OR THE LIKE
Philip E. Shaffer, Grand Junction, Colo. (51413 Highway 6 and 24, No. 19, Glenwood Springs, Colo. 81601)
Filed July 5, 1973, Ser. No. 376,306
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—289

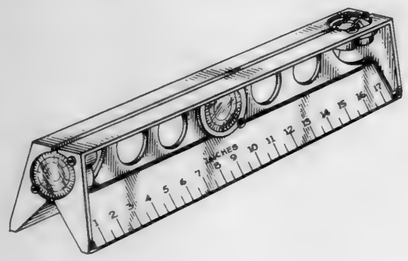




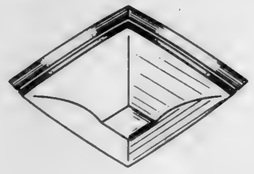
238,152
COMBINED WATCH DIAL AND HANDS THEREFOR
Lester E. Rubenstein, 100 E. Hartsdale Ave., Hartsdale, N.Y. 10530
Filed Aug. 8, 1974, Ser. No. 495,806
Term of patent 3½ years
Int. Cl. D10—*02*
U.S. Cl. D10—33



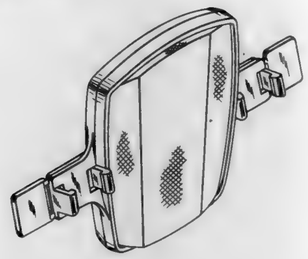
238,153
LEVEL TOOL
Vern H. Johnson and Robert G. Harms, Cheyenne, Wyo., assignors to Loyd Walters, Pine Bluffs, and Donald Kunau, Cheyenne, Wyo., fractional part interest to each
Filed Aug. 29, 1974, Ser. No. 501,700
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—69



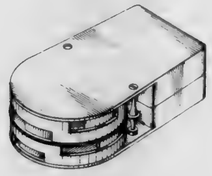
238,154
SMOKE DETECTOR
William C. Tipton, Newark, N.J., and Paul Olney Rawson, Easton, Conn., assignors to General Signal Corporation
Filed May 3, 1974, Ser. No. 466,646
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



238,155
BICYCLE REFLECTOR
Nicholas A. Amoroso, Hillsdale, N.J., assignor to Bright Star Industries, Clifton, N.J.
Original design application Mar. 27, 1974, Ser. No. 455,133. Divided and this application Feb. 5, 1975, Ser. No. 547,364
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—111



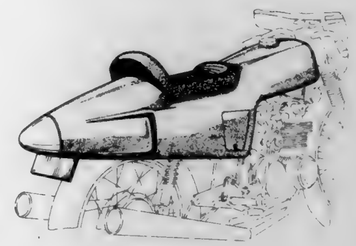
238,156
SONIC SIGNAL GENERATOR WITH SOUND LIMITER
David L. Livermore, Seattle, Wash., assignor to Proctor & Associates Company, Redmond, Wash.
Filed Dec. 12, 1973, Ser. No. 424,164
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—116



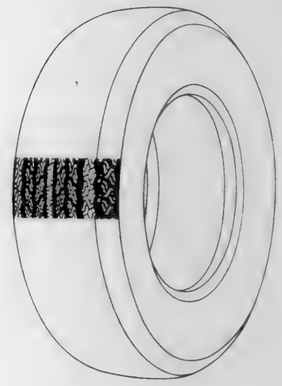
238,157
COMBINED DIAL AND HANDS FOR A WATCH
Lester E. Rubenstein, 100 E. Hartsdale Ave., Hartsdale, N.Y. 10530
Filed Feb. 13, 1974, Ser. No. 434,828
Term of patent 3½ years
Int. Cl. D10—*07*
U.S. Cl. D10—126



238,158
CYCLE FAIRING
William L. Mitchell, 760 Kennebec Court, Bloomfield Hills, Mich. 48013, and David R. North, 26240 Warner Ave., Warren, Mich. 48091
Filed Sept. 10, 1974, Ser. No. 504,837
Term of patent 7 years
Int. Cl. D12—*11*
U.S. Cl. D12—110

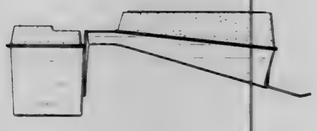


238,159
TIRE
John F. Duderstadt, Cuyahoga Falls, and James W. Stiffler, Tallmadge, Ohio, and Harold D. Fetty, Birmingham, Mich., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 7, 1974, Ser. No. 448,849
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147

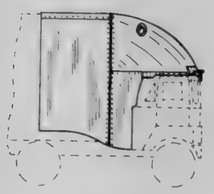


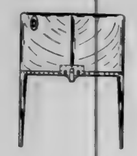
238,160
AUTOMOBILE CONSOLE
David E. Rogers, 147 Highland Ave., Hamden, Conn. 06247
Continuation-in-part of abandoned design application Ser. No. 315,512, Dec. 15, 1972. This application June 10, 1974, Ser. No. 477,853
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155



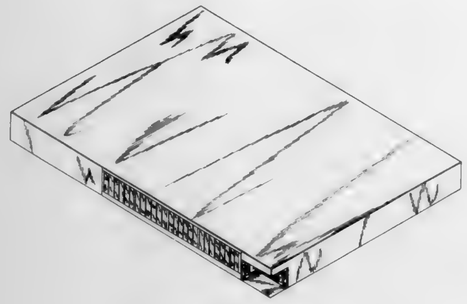


238,161
WINDBREAKER FOR VEHICLES
Marshall S. De Vaughn, P.O. Box 184, Spruce Pine, Ala. 35585
Filed July 6, 1973, Ser. No. 377,074
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181

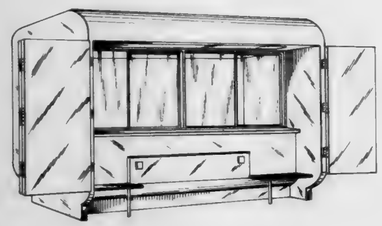




238,162
STORE
Joseph Binder, Oceanside, Michael J. Viesti, Bronx, and Carl Palestini, Lido Beach, N.Y., assignors to The Bohack Corporation, Brooklyn, N.Y.
Filed Aug. 16, 1972, Ser. No. 281,142
(Filed under Rule 47(a) and 35 U.S.C. 116)
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R



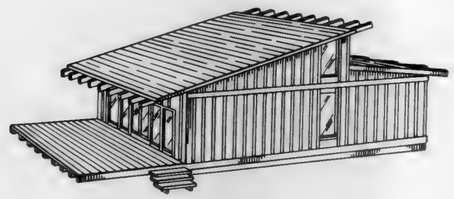
238,163
KIOSK
Wayne W. Enderling, 1301 Trelane Ave., St. Louis, Mo. 63126
Filed Mar. 7, 1974, Ser. No. 448,946
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1 D



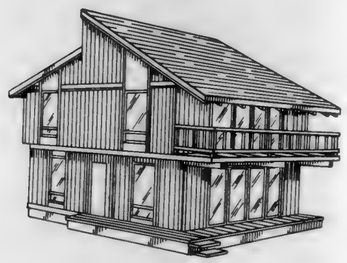
238,164
LEISURE HOUSE
Bertram Zusman, 570 Madera Ave., Youngstown, Ohio 44504
Filed June 20, 1974, Ser. No. 481,057
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A



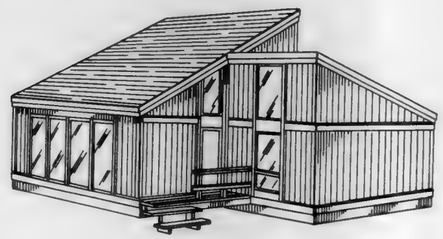
238,165
DWELLING HOUSE
Bertram Zusman, 570 Madera Ave., Youngstown, Ohio 44504
Filed June 20, 1974, Ser. No. 481,058
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A



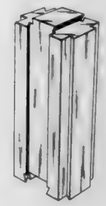
238,166
HOUSE
Bertram Zusman, 570 Madera Ave., Youngstown, Ohio 44504
Filed June 20, 1974, Ser. No. 481,059
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A



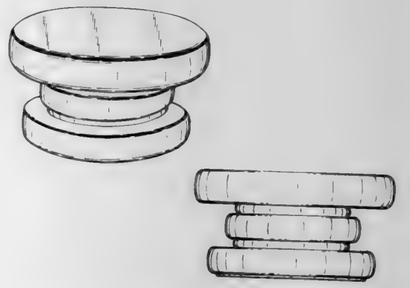
238,167
VACATION HOUSE
Bertram Zusman, 570 Madera Ave., Youngstown, Ohio 44504
Filed June 20, 1974, Ser. No. 481,060
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A



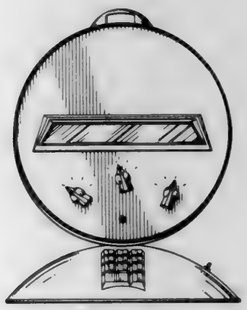
238,168
BUILDING BLOCK OR SIMILAR ARTICLE
Henry King Ketcham, Geneva, Switzerland, assignor to Rolande Ketcham, Geneva, Switzerland
Filed Apr. 26, 1973, Ser. No. 354,669
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 R



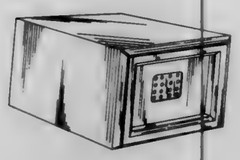
238,169
PAPER WEIGHT
Cecelia A. Bieringer, 100 Wilshire Drive, Minnetonka, Minn. 55343
Filed Mar. 18, 1974, Ser. No. 451,842
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—96



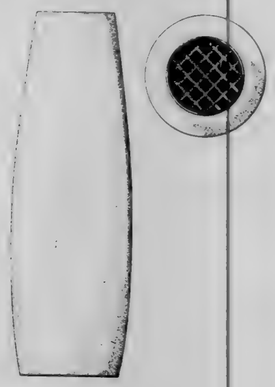
238,170
CASE FOR TEACHING MACHINE
Charles H. Schmidt, 7100 Ottawa NE., Albuquerque, N. Mex. 87110
Filed July 18, 1974, Ser. No. 489,712
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—60



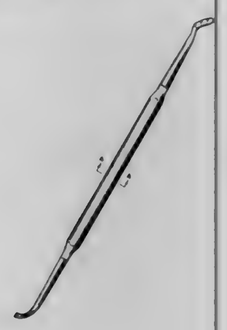
238,171
ULTRASONIC RODENT ELIMINATOR
John T. Banich, Sedalia, Mo., assignor to Design Devices, Inc.
Filed Apr. 22, 1974, Ser. No. 463,052
Term of patent 7 years
Int. Cl. D22—*06*
U.S. Cl. D22—18



238,172
WATER PURIFYING AND FILTERING UNIT
George H. Blackstone, 2284 Albion St., Toledo, Ohio 43606
Filed Feb. 22, 1974, Ser. No. 444,728
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



238,173
DENTAL TOOL
Roger B. Felt, Layton, Utah, assignor to Perma-Technological Industries, Inc., Ogden, Utah
Filed Nov. 19, 1973, Ser. No. 417,440
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 D



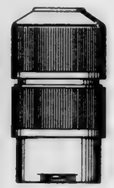
238,174
DENTAL TOOL
Roger B. Felt, Layton, Utah, assignor to Perma-Technological Industries, Inc., Ogden, Utah
Filed Nov. 19, 1973, Ser. No. 417,451
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 D



238,175
DENTAL FLOSS APPLICATOR
Franklin Eugene Wharton, 1308 Sartori Ave., Torrance, Calif. 90501
Filed Oct. 29, 1974, Ser. No. 518,375
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—1 D



238,176
ELECTRICAL CONNECTOR
Melvin Korman, North Attleboro, Mass., and Luther M. Sheldon, Cranston, R.I., assignors to General Electric Co., New York, N.Y.
Filed Apr. 18, 1974, Ser. No. 462,067
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 B



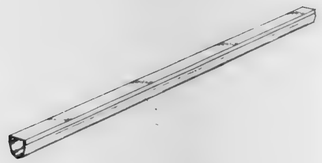
238,177
COMBINED ELECTRIC MOTOR AND FRAME
Yasuhiro Ohishi, 26–34, 5-chome, Nakano, Nakano-ku, Tokyo, Japan
Filed July 17, 1972, Ser. No. 272,621
Term of patent 14 years
Int. Cl. D13—*01*
U.S. Cl. D26—5 A



238,178
CABLE CONDUIT WITH ARCHED DETACHABLE CLOSURE PLATE
Frank R. Kinnan, Camas Valley, Oreg., assignor to Midland-Ross Corporation
Filed Jan. 17, 1973, Ser. No. 324,498
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—5 B



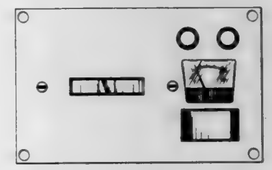
238,179
CABLE CONDUIT WITH DETACHABLE CLOSURE PLATE
Frank R. Kinnan, Camas Valley, Oreg., asssignor to Midland-Ross Corporation
Filed Jan. 17, 1973, Ser. No. 324,499
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—5 B



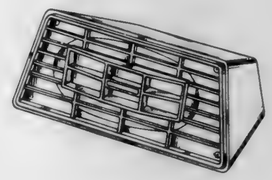
238,180
ELECTRIC BULB
Bertil Valentin Ricksater, Farsta, Sweden, assignor to Bengt Erling Beckman, Bromma, Sweden
Filed Nov. 28, 1972, Ser. No. 296,223
Claims priority, application Sweden Apr. 7, 1972
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—8



238,181
PANEL MOUNTED MONITORING SWITCH
William G. Roller, Purdy, Mo., assignor to G & R Industries, Inc., Purdy, Mo.
Filed June 17, 1974, Ser. No. 479,863
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 C

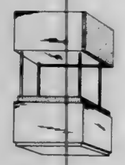


238,182
SPEAKER ENCLOSURE OR THE LIKE
Hisashi Kizawa, Fudomae Mansion, Suite 306, 8–11–5 chome, Nishigotanda, Shinagawa-ku, Tokyo, Japan
Filed Dec. 4, 1972, Ser. No. 311,756
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



238,183
SPEAKER ENCLOSURE
Nils Lou, 1400 Englewood, St. Paul, Minn. 55104
Filed Mar. 22, 1974, Ser. No. 453,571
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G





238,184
HEAD PHONE
Kazuhito Ohtomo, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan
Filed Apr. 9, 1974, Ser. No. 459,445
Claims priority, application Japan Feb. 26, 1974
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 H





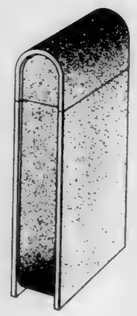
238,185
CEILING SPEAKER
Ronald C. Wellward, 53 S. Clinton Ave., Bayshore, N.Y. 11706, and Sherry Neuman, 72 Yale St., Roslyn Heights, N.Y. 11577
Filed Jan. 10, 1974, Ser. No. 432,228
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



238,186
AUXILIARY PUSH BUTTON UNIT FOR TELEPHONE SETS OR SIMILAR ARTICLE
Herbert Kramer, Furstenfeldbruck, and Tonis Kao, Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Oct. 25, 1973, Ser. No. 409,612
Claims priority, application Germany Apr. 25, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



238,187
CIGARETTE LIGHTER
Alain Carré, Paris, France, assignor to Waterman S.A., Paris, France
Filed July 17, 1974, Ser. No. 489,268
Claims priority, application France Apr. 10, 1974
Term of patent 14 years
Int. Cl. D9—*03;* D27—*05*
U.S. Cl. D27—36



238,188
CIGARETTE LIGHTER
Alain Carré, Paris, France, assignor to Waterman S.A., Paris, France
Filed July 17, 1974, Ser. No. 489,269
Claims priority, application France Apr. 10, 1974
Term of patent 14 years
Int. Cl. D9—*03;* D27—*05*
U.S. Cl. D27—36

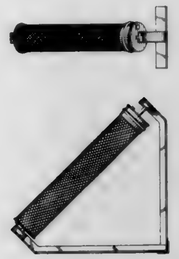


238,189
MEDICATED COLLAR FOR PETS
Barbara Jean Doria, Greece, N.Y., assignor to Aceline Products Corporation, Rochester, N.Y.
Filed Aug. 2, 1974, Ser. No. 494,175
Term of patent 14 years
Int. Cl. D30—*04*
U.S. Cl. D30—38





238,190
COMBINED ANIMAL OILER AND SCRATCHER
George W. Keene, P.O. Box 395, Rochelle, Ill. 61068
Filed Oct. 16, 1974, Ser. No. 515,083
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99



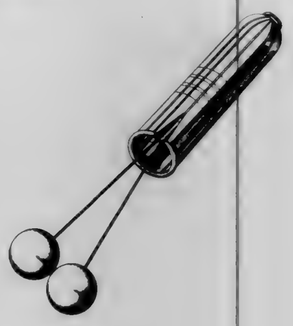
238,191
CHEERLEADER DOLL
Joyce McClanahan and Dawson G. McClanahan, both of 4 Sayers Drive, Williamstown, Ky. 41097
Filed July 1, 1974, Ser. No. 484,718
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R



238,192
DOUBLE-HEADED BOWLING PIN
Carl C. Jennings, 3107 Graciosa Lane, Anaheim, Calif. 92804
Filed June 14, 1974, Ser. No. 479,623
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 GP



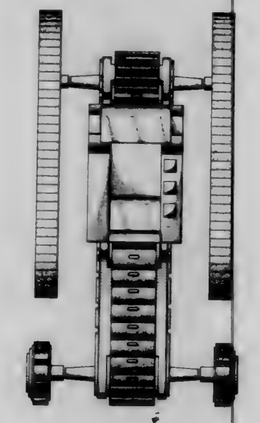
238,193
GRIP COVER FOR TENNIS RACKET
Manabu Toyosawa, % Daiya Sangyo Kabushiki Kaisha, 2–2–4 Nakano, Nakano-ku, Tokyo, Japan
Filed Nov. 7, 1974, Ser. No. 521,569
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 ST



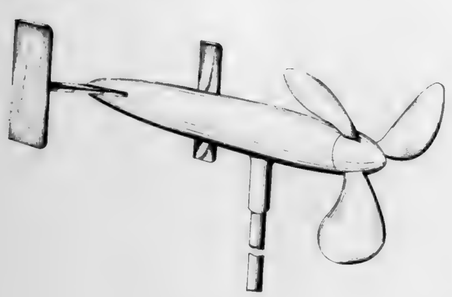
238,194
TOY HAMMER
Matthew Moustakas, Mercerville, N.J., assignor to CBS Inc., New York, N.Y.
Filed Feb. 19, 1974, Ser. No. 443,230
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 E



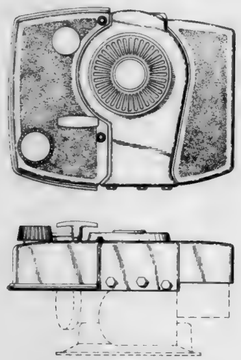
238,195
TOY VEHICLE
Howard J. Morrison, Deerfield, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 23, 1974, Ser. No. 435,639
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



238,196
WIND VANE
Alden H. Simpson, 54 Pine Grove St. Springfield, Mass. 01119
Filed Sept. 18, 1974, Ser. No. 507,012
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—1



238,197
SHROUDING FOR LAWN MOWER ENGINE
Mario F. Fernandez, Minneapolis, Minn., assignor to The Toro Company, Minneapolis, Minn.
Filed Aug. 9, 1974, Ser. No. 496,133
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 B



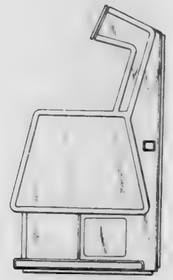
238,198
PENDANT
Marcia Bell Fear, Youngstown, Ohio, assignor to Marcia Bell Fear, Youngstown, Ohio
Filed June 10, 1974, Ser. No. 478,154
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—16 B



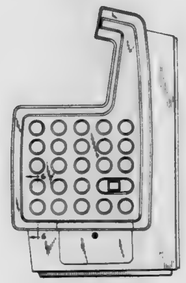
238,199
POST
Amnon Michaeli, 135—03 73rd Terrace, Kew Gardens Hills, Queens, N.Y. 11415
Filed Sept. 16, 1974, Ser. No. 506,410
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 R



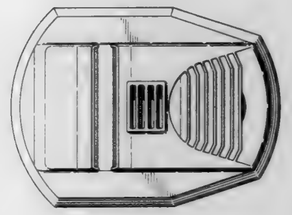
238,200
PHONOGRAPH
Melvin H. Boldt, Glenview, Ill., assignor to Rowe International, Inc., Whippany, N.J.
Filed June 21, 1973, Ser. No. 372,081
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R

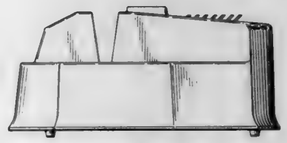


238,201
PHONOGRAPH
Melvin H. Boldt, Glenview, Ill., assignor to Rowe International, Inc., Whippany, N.J.
Filed June 21, 1973, Ser. No. 372,082
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R

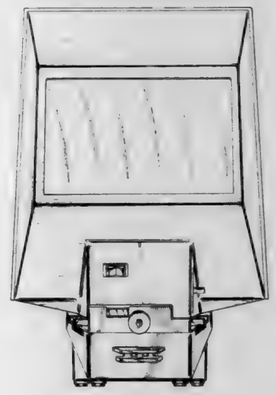


238,202
OPHTHALMIC FRAME WARMER
Edward A. Ebert, 203 Huxley Drive, Snyder, N.Y. 14226
Filed June 3, 1974, Ser. No. 475,501
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 R

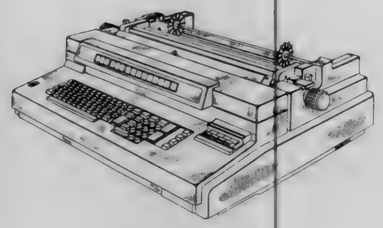




238,203
MICROFILM READER
Ralph M. Vigna, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 1, 1974, Ser. No. 438,823
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



238,204
DESK TOP ACCOUNTING MACHINE
Ettore Sottsass, Jr., Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed June 11, 1974, Ser. No. 478,267
Claims priority, application Italy Dec. 17, 1973
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 B



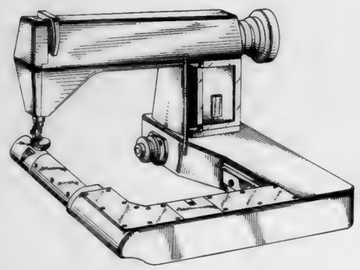
238,205
PRINTING BAND
Robert M. Pabodie, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio
Filed July 25, 1974, Ser. No. 491,911
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—10



238,206
ICE CREAM FREEZER CONTAINER
Bruce A. Claxton, Philadelphia, Pa., assignor to SCM Corporation, New York, N.Y.
Filed Sept. 24, 1973, Ser. No. 400,308
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D67—2 R



238,207
FRAME OF A SEWING MACHINE OR SIMILAR ARTICLE
Douglas J. Fox, Leeds, England, assignor to The Singer Company, New York, N.Y.
Filed July 15, 1974, Ser. No. 488,356
Claims priority, application Great Britain Feb. 5, 1974
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1

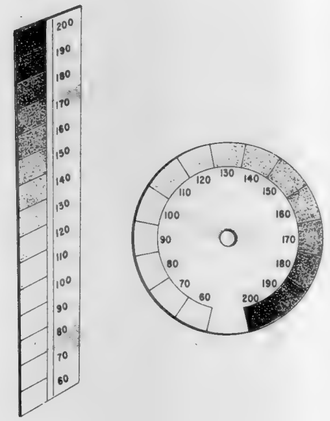


238,208
ELECTROCARDIOGRAPHIC RECORDING HOLSTER
Joseph A. Hesen, Torrance, Calif., assignor to Cardiac Scan Service, Inc., Los Angeles, Calif.
Filed May 28, 1974, Ser. No. 473,815
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 F

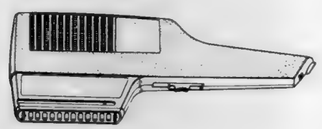




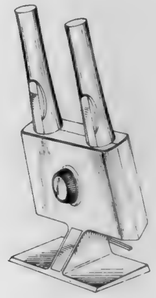
238,209
SPHYGMOMANOMETER DIAL FACE
Merton J. Alexander, 173 Highland Place, Monrovia, Calif. 91016
Filed Dec. 6, 1974, Ser. No. 530,204
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 F



238,210
HAIR STYLER
Douglas G. Long, Lombard, and Augusto Argandona, Lisle, Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed Jan. 16, 1974, Ser. No. 433,929
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



238,211
COMBINED HAIR CURLING IRONS AND HEATING UNIT THEREFOR
Robert S. Waters and Meyric K. Rogers, Lancaster, Pa., assignors to Schick, Incorporated, Los Angeles, Calif.
Filed June 24, 1974, Ser. No. 482,021
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 E



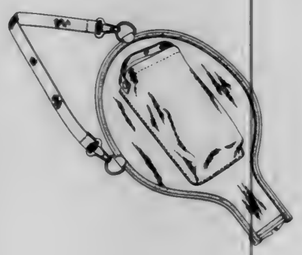
238,212
COSMETIC APPLICATOR
Ted I. Kingsford, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.
Filed Mar. 15, 1974, Ser. No. 451,650
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 A



238,213
HAIR DRYER
Evan R. Kahn, 808 NE. 160th Terrace, North Miami Beach, Fla. 33162
Filed June 28, 1974, Ser. No. 484,457
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



238,214
TENNIS RACKET JACKET
Robert J. Rivera, 424 Atlantic Ave., Brooklyn, N.Y. 11217
Filed Aug. 15, 1973, Ser. No. 388,424
Term of patent 14 years
The term of this patent subsequent to June 17, 1989, has been disclaimed
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



238,215
CAROUSEL ADVERTISING SIGN DISPLAY FOR STORES
John J. Casparro, Canoga Park, Calif., assignor to Don Fedderson Productions Inc., Studio City, Calif.
Filed May 10, 1974, Ser. No. 468,908
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 R



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF DECEMBER, 1975

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Welstead, William John, Jr., 3,928,625.
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Aboud, Fred George. Containers for waste for use with trash bags. 3,927,786, Cl. 220-4.00R.
Abrams, Ralph, to Coto-Coil Co., Inc. Reed relay construction. 3,928,829, Cl. 335-151.000.
Acron Corporation: *See—*
Cohen, Herbert I., 3,928,731.
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Adams, Maurice L., Jr., to Westinghouse Electric Corporation. Rotating element fluid seal for centrifugal compressor. 3,927,890, Cl. 277-29.000.
Addor, Roger Williams; Lovell, James Byron; and Kantor, Sidney, to American Cyanamid Company. 2-Imino-1,3-dithietane. 3,928,382, Cl. 260-327.00M.
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Adicoff, Arnold; and Murbach, Warren J., to United States of America, Navy. Method of making a poly(methyl methacrylate) preholographic element. 3,928,108, Cl. 156-246.000.
Adler, Karl-Heinz: *See—*
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Agren, Nils Axel, to Atlas Copco Aktiebolag. Pressure fluid valve having fully opened, fully closed and restricted flow positions. 3,927,690, Cl. 137-599.200.
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Aiba, Takaaki: *See—*
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Akiyama, Keiiti; Suzuki, Shyuichi; and Mikogami, Yukihiro, to Tokyo Shibaura Electric Co., Ltd. Heat-resistant adhesive composition from a bis-maleimide, an alpha-cyanoacrylate and optionally a diamine. 3,928,286, Cl. 260-47.0UA.
Aktiebolaget Hassle: *See—*
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Berntsson, Peder Bernhard; Carlson, Per Arvid Emil; and Corrodi, Hans Rudolf, 3,928,613.
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Albright & Wilson Limited: *See—*
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Alburger, James R. Fractured glass testing panel for dyed liquid penetrants. 3,927,551, Cl. 73-1.00R.
Alburger, James R. Brightener additive for inspection penetrant developers. 3,928,046, Cl. 106-19.000.
Alder, Peter James: *See—*
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Aldinger, Ulrich: *See—*
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Alexander, Robert L.: *See—*
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Alexander, Roy P., to Olin Corporation. Preparation of low friability rigid polyurethane foam. 3,928,258, Cl. 260-2.5AS.
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Alfa-Laval AB: *See—*
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Allain, Ronald J.; and Seale, Virgil L., to Nalco Chemical Company. Acrylonitrile hydrolysis and catalyst useful therefor. 3,928,440, Cl. 260-561.00N.
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Allain, Ronald J.: *See—*
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Allied Chemical Corporation: *See—*
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Arai, Atsuaki; Oishi, Yasushi; Yamada, Minoru; Yokota, Yukio; Tanaka, Mitsugu; and Inouye, Kozo, to Fuji Photo Film Co., Ltd. Magenta coupler-containing photographic silver halide materials. 3,928,044, Cl. 96-100.000.
Arai, Kiyoyuki; and Kikuchi, Tomio, to Copal Company Limited. Operation condition detecting and displaying device. 3,928,846, Cl. 340-325.000.
Arakawa Rinsan Kagaku Kogyo Kabushiki Kaisha: *See—*
Shimizu, Katsuhisa; Ishibe, Shuhei; Okumichi, Toshiharu; and Matsumoto, Keizo, 3,928,414.
Araki, Kengo: *See—*
Uchiyama, Mikio; Tachibana, Shinro; Araki, Kengo; and Nakamura, Takafumi, 3,928,306.
Archer, Robert A., to Eli Lilly and Company. Hexahydro-dibenzo[b,d]pyran-9-ones as an anti-anxiety drug. 3,928,598, Cl. 424-283.000.
Arconti, Richard J.; and Pierson, Robert M., to Goodyear Tire & Rubber Company, The. Film bonding using a solvent saturated cloth wick. 3,928,110, Cl. 156-308.000.
Aritaki, Hirakazu: *See—*
Matsuda, Kazuo; Ohmura, Hidemasa; and Aritaki, Hirakazu, 3,928,271.
Armco Steel Corporation: *See—*
Hook, Rollin E., 3,928,087.
Armour Pharmaceutical Company: *See—*
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Armstrong Cork Company: *See—*
Davey, John R., 3,927,706.
Kauffman, William J., 3,928,343.
Armstrong, David Alun; and Lewis, Kenneth Gill, to British Steel Corporation. Strip shape correction on galvanising line. 3,928,657, Cl. 427-47.000.
Arnblock, Lennart Oswald, to Flymo Societe Anonyme. Grass-cutting devices. 3,927,510, Cl. 56-12.800.
Arnold, Francis T.: *See—*
Freeman, Lawrence M.; and Arnold, Francis T., 3,927,935.
Arnold, Raymond Mills; Neaves, Eric Henry Francis; and Phillips, Leslie John, to Letraset International Limited. Heat activated transfers. 3,928,710, Cl. 428-483.000.
Aronson, Robert R., to Electric Fuel Propulsion Incorporated. Pancake battery. 3,928,080, Cl. 136-160.000.
Artos Engineering Company: *See—*
Gudmestad, Ragnar; and Sandblom, Sven O., 3,927,590.
Arvin, John R.; Sullivan, Robert E.; and Troth, Dennis L., to General Motors Corporation. Combustion apparatus with combustion and dilution air modulating means. 3,927,520, Cl. 60-39.230.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Kamada, Sueo; Yamashita, Takeshi; Ide, Tohru; Ajiki, Ryogo; and Kitamura, Takao, 3,928,444.
Tanaka, Kazue; Yamamoto, Katsuo; Nakamura, Hisao; and Wakita, Eiichi, 3,927,540.

Ascani, Leonard A., Jr.: *See—*
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Aseeva, Roza Mikhailovna: *See—*
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Asfour, Emil S. Tobacco sorting apparatus. 3,928,183, Cl. 209-73.000.
Ash, John F.: *See—*
Friedman, Mendel; Ash, John F.; and Fong, Willie, deceased, 3,927,962.
Ashikaga, Tadao; Ohmori, Akio; and Ando, Masasi, to Kuraray Co. Ltd. PVA–PVC fibers and process for their production. 3,928,261,Cl. 260/45.75K.
Ashland Oil, Inc.: *See—*
Gannon, Charles R., 3,927,696.
Gannon, Charles R., 3,928,680.
Ashworth, John W., III: *See—*
Turney, Stephen Z.; Blumenfeld, Walter; Cowley, R. Adams; Wolf, Samuel; McCluggage, Charles; and Ashworth, John W., III, 3,927,670.
Askew, Anthony B.: *See—*
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Dahlberg, Alf-Goran; Hogberg, Karl Gustav; Lindvall, Sven; and Rydh, Thore Oskar Verner, 3,928,581.
Dahlen, Sven Erik; Ekstrom, Bertil Ake; and Sjoberg, Berndt Olof Harald, 3,928,595.
Ateliers de Constructions Electriques de Charleroi (ACEC): *See—*
Fagel, Roger, 3,927,910.
Athey, Stuart E., to Hobart Corporation. Temperature indicating device. 3,927,571, Cl. 73-362.000.
Atkinson, John Halstead, to Imperial Chemical Industries Limited. Process for the preparation of substituted cyclohexadienones. 3,928,453, Cl. 260-586.00R.
Atlantic Richfield Company: *See—*
Shalit, Harold, 3,928,473.
Atlas Copco Aktiebolag: *See—*
Agren, Nils Axel, 3,927,690.
Atsumi, Minoru; and Shishido, Toshimasa, to Honda Giken Kogyo Kabushiki Kaisha. Choke valve assembly. 3,928,511, Cl. 261-64.00C.
Audran, Roger G. L.; and Pinguad, Bernard J., to Eastman Kodak Company. Ferrous ferric oxides, process for preparing same and their use in magnetic recording. 3,928,709, Cl. 428-539.000.
August Bilstein, Firma: *See—*
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Aumuller, Walter: *See—*
Weyer, Rudy; Aumuller, Walter; Weber, Helmut; Schweitzer, Roland; and Heerdt, Ruth, 3,928,610.
Auray, Didier. Device for calculating the successive derivatives of a function of a variable. 3,928,756, Cl. 235-183.000.
Ausherman, William S. Threshing cylinder and rasp bar thereof. 3,927,679, Cl. 130-27.0HA.
Austin, Michael L. Dispenser for flowable particulate material. 3,927,807, Cl. 222-430.000.
Austin, Richard Arnold. Adjustable liner. 3,927,585, Cl. 82-38.00A.
Avoset Food Corporation: *See—*
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Awane, Yasushi; Otsuka, Sadao; Nagata, Masao; and Tanaka, Fumio, to Mitsubishi Gas Chemical Co., Ltd. Process for the continuous production of highly pure sodium formate. 3,928,435, Cl. 260-542.000.
Awano, Tsuneo: *See—*
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Axelrod, Sydney; and Brenner, Walter, to United States of America, Army. Combustible cartridge case. 3,927,616, Cl. 102-43.00R.
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Aylon, Norman N., to General Concrete of Canada Limited. Apparatus for building of structural components. 3,928,114, Cl. 156-351.000.
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Aziende Colori Nazionali Affini ACNA S.p.A: *See—*
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Aziende Colori Nazionali Affini ACNA S.p.A.: *See—*
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Azrak, Raymond George; Ancker, Fred Harpoth; and Bertolucci, Michael Dean, to Union Carbide Corporation. Coupling agents for chrysotile asbestos and thermoplastic polymers. 3,928,278, Cl. 260-40.00R.
B.F. Goodrich Company, The: *See—*
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Sacrini, Egeo; and Cavallotti, Claudio, 3,928,465.
Sacrini, Egeo; and Cavallotti, Claudio, 3,928,466.
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Baba, Tomokiyo. Lea making apparatus. 3,927,446. Cl. 28-21.000.
Babcock & Wilcox Company: *See—*
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Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
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Bailey, David Y.: *See—*
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Bailey, Edwin M.; and Bailey, David Y. Heating system. 3,927,831, Cl. 237-9.00R.
Bailey, Raymond E.: *See—*
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Baird, Richard Leroy, to Du Pont de Nemours, E. I., and Company. Process of making a composite structure of isocyanate coated elastomeric hydrocarbon and metal. 3,928,111, Cl. 156-315.000.
Bakay, Carl James, to Union Carbide Corporation. Process for the preparation of anion exchange resin for use in the redistribution of chlorosilanes. 3,928,542, Cl. 423-342.000.
Baker, Charles J., to Royal Industries, Inc. Load cell retaining apparatus for on-board vehicle weighing systems. 3,927,724, Cl. 177-136.000.
Bakker, Herman F.; and Bell, Malcolm C., to International Nickel Company, Inc., The. Selective precipitation of cobalt and nickel amine complexes. 3,928,530, Cl. 423-140.000.
Baldwin, John J.; and Novello, Frederick C., to Merck & Co., Inc. 1-(Sulfamoylphenylalkyl)-3,5-dipyridyl-1,2,4 triazoles. 3,928,361, Cl. 260-294.80F.
Baldwin, Mildred. Composition and method for treating fingernails and toenails. 3,928,561, Cl. 424-61.000.
Ball Brothers Research Corporation: *See—*
Pardee, Robert P.; Loran, Thomas J.; Bickling, Archie L., Jr.; and Brown, Richard E., 3,928,673.
Ballamy, William Charles; and Cho, Alfred Yi, to Bell Telephone Laboratories, Incorporated. Simultaneous molecular beam deposition of monocrystalline and polycrystalline III(a)-V(a) compounds to produce semiconductor devices. 3,928,092, Cl. 148-175.000.
Ballweber, Edward G.; Tai, Wun Ten; and Selvarajan, Radhakrishnan, to Nalco Chemical Company. Dichlorobutene/dimethylamine ionene polymer. 3,928,448, Cl. 260-567.60P.
Bangerskis, Karlis L.: *See—*
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Banville, Jules Eugene. Supervisory control system. 3,928,848, Cl. 340-409.000.
Barker, A. Clifford, to Navidyne Corporation. Radio navigation system and apparatus. 3,928,852, Cl. 343-105.00R.
Baronnet, Pierre: *See—*
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Barrett, Fred O.: *See—*
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Barthold, Dag Vilhelm; Dahlbom, Johan Richard; Magnusson, Harry Olof; and Sjoberg, Berndt Olof Harald, to Astra Lakemedel Aktiebolag. Substituted phenoxymalonic acids, esters thereof and hypolipaemic agents containing the same for lowering lipid levels. 3,928,602, Cl. 424-308.000.
BASF Aktiengesellschaft: *See—*
Dockner, Toni; and Platz, Rolf, 3,928,439.
Pommer, Ernst-Heinrich; Polster, Rudolf; Loecher, Friedrich; and Hampel, Manfred, 3,928,606.
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Ciko, John D.; and Cramer, John J., 3,927,970.
Bass, Dieter, to Canada Wire and Cable Limited. Consumable fuel element for battery applications. 3,928,075, Cl. 136-100.00R.
Bass, John Charles: *See—*
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Bastian, Jean-Michel: *See—*
Ebnother, Anton; Bastian, Jean-Michel; and Rissi, Erwin, 3,928,360.
Bates, Harry Eugene. Optical coherence and wavelength measurement. 3,927,945, Cl. 356-106.000.
Bates, Roger D., to Xerox Corporation. Programmable bit clock oscillator for controlling the processing of binary digits. 3,928,812, Cl. 331-1.00A.
Bauer, Jakob: *See—*
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Bauer, Victor J.; Agnew, Marc N.; and Effland, Richard C., to American Hoechst Corporation. Fused bicyclic aminopyrazoles. 3,928,378, Cl. 260-310.00R.

Bauerschmidt, Eberhard; Bormann, Dieter; and Worm, Manfred, to Hoechst Aktiengesellschaft. Process for the manufacture of 7-amino-3-cephem-4-carboxylic acid derivatives. 3,928,331, Cl. 260-243.00C.

Baugesellschaft Klammt KG: *See—*
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Bauman, Robert Andrew, to Colgate-Palmolive Company. New quaternary compounds having anti-microbial activity. 3,928,411, Cl. 260-468.00G.

Bauman, Robert Andrew, to Colgate-Palmolive Company. Oral compositions. 3,928,618, Cl. 424-311.000.

Baumann, Rudi: *See—*
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Baumler, Peter; Hofer, Gerhard; Korner, Tassilo; Mohn, Heinrich; Seiler, Karl; Simmat, Fritz; and Rau, Karlheinz, to Heraeus-Schott Quarzschmelze GmbH. Quartz glass elements. 3,927,697, Cl. 138-145.000.

Baxter, Alexander Samuel. Methods of and means for vacuum deposition. 3,928,659, Cl. 427-132.000.

Baxter Laboratories, Inc.: *See—*
Leonard, Ronald James, 3,927,980.

Baxter, William E.: *See—*
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Bayer Aktiengesellschaft: *See—*
Dhein, Rolf; Kaiser, Bernd-Ulrich; Rudolph, Hans; Kuchenmeister, Rolf; and Nichaus, Clemens, 3,928,265.
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Hammann, Ingeborg; Hoffmann, Peter; Marquarding, Dieter; Ugi, Ivar; and Unterstenhofer, Gunter, 3,928,408.
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Wandel, Martin; Salamon, Manfred; Dornheim, Gotz Gotmar; and Kuhlmann, Bernard, 3,928,696.
Wolf, Gerhard Dieter; Engelhard, Helmut; and Bentz, Francis, 3,928,298.

Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y., to Rohm & Haas Company. Herbicidal 4-trifluoromethyl-4'-nitrodiphenyl ethers. 3,928,416, Cl. 260-471.00R.

Beal, Glenn L., to R. M. Smith, Inc. Article and card package and fastening means therefor. 3,927,765, Cl. 206-481.000.

Beale, Alvin F., Jr.; and Lee, John M., to Dow Chemical Company, The. Process for preparation of urea autocondensation product. 3,928,438, Cl. 260-553.00B.

Beall, George H.; Miller, David M.; and Rittler, Hermann L., to Corning Glass Works. Base metal titanate catalysts. 3,928,533, Cl. 423-213.200.

Beaubien, Everett E., to Twin Tool, Inc. Movable extension for a funnel. 3,927,703, Cl. 141-333.000.

Bebin, Jean Louis, to Degremont, Societe Generale d'Epuration et d'Assainissement. Method of biological purification of sewage. 3,928,190, Cl. 210-8.000.

Becher, Heinz Manfred; and Sehring, Richard, to Celamerck GmbH & Co. KG. Process for preparation of 2-methoxy-3,6-dichloro-benzoic acid. 3,928,432, Cl. 260-521.00H.

Beck, Gerhard; and Gunther, Dieter, to Hoechst Aktiengesellschaft. 1,2,3-Triazoles. 3,928,373, Cl. 260-307.00D.

Behrakis, George D., to Dooner Laboratories, Inc. Non-alcoholic theophylline product. 3,928,609, Cl. 424-253.000.

Beier, Helmut; and Noack, Dieter, to Siemens Aktiengesellschaft. Coupling arrangement for a compressed-gas circuit breaker equipped with a hydraulic drive. 3,928,738, Cl. 200-82.00B.

Belasco, Irvin Joseph, to Du Pont de Nemours, E. I., and Company. Biodegradation of methanolic waste water. 3,928,191, Cl. 210-12.000.

Bell, Malcolm C.: *See—*
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Bell, Malcolm R.; and Oesterlin, Rudolf, to Sterling Drug Inc. 1,1'-Spirobis(cyclopenta-[4,5-c]pyrroles). 3,928,380, Cl. 260-326.900.

Bell, Reuben Hays: *See—*
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Bell, Stanley C.: *See—*
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Bell Telephone Laboratories, Incorporated: *See—*
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Brady, Kevin James; Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, 3,927,939.
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Pohl, Karl-Heinz; and Schierle, Jack Theodore, 3,927,943.

Bellamy, Lester Ralph; and Hotaling, Kenneth LeGrand, to International Business Machines Corporation. Diagnostic system for field replaceable units. 3,928,830, Cl. 235-153.00AK.

Bellanger, Maurice Georges; Lepagnol, Guy Pierre; and Daguet, Jacques Lucien, to Telecommunications Radioelectriques et Telephoniques T.R.T. Low pass nonrecusine digital filter. 3,928,755, Cl. 235-152.000.

Bemiss, Robert P. Method of forming, filling and closing cartons, and specific cartons therefor. 3,927,505, Cl. 53-37.000.

Benaim, Carlos: *See—*
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Benedetti, Pierre, to Sylvette Kirnisky. Device for building construction. 3,927,498, Cl. 52-236.000.

Bennett, Darel: *See—*
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Bennett, David F. Fluid conductor. 3,927,691, Cl. 137-615.000.

Benson, Harvey D.: *See—*
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Berg, Morris: *See—*
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Bergdahl, Sven-Gunnar; and Wangdahl, Erik Torsten, to Allmanna Svenska Elektriska Aktiebolaget. Method of supervising the filling level in hoppers, shafts, silos and the like for miscellaneous materials and means for performing the method. 3,927,569, Cl. 73-290.00V.

Berger, Herbert; Gall, Rudi; Thiel, Max; Vomel, Wolfgang; and Sauer, Winfriede, to Boehringer Mannheim G.m.b.H. Nitrofuryltriazolo(4,3-b)pyridazine compounds and bacteriostatic compositions. 3,928,342, Cl. 260-247.5EP.

Berger, Herbert; Gall, Rudi; Stach, Kurt; Vomel, Wolfgang; and Hoffmann, Rita, to Boehringer Mannheim G.m.b.H. Nitroimidazolyltriazolo-pyridazine compounds. 3,928,349, Cl. 260-250.0AC.

Bergin, Michael J., to Intaglio Service Corporation. Process for making multi-color intaglio plates and cylinders for use in gravure printing. 3,928,038, Cl. 96-38.000.

Bergles, Eduard, to Fichtel & Sachs A.G. Disc brake for a bicycle and like vehicle. 3,927,736, Cl. 188-26.000.

Bergles, Eduard, to Fichtel & Sachs A.G. Rear derailleur for a bicycle. 3,927,904, Cl. 280-236.000.

Berlin, Alfred Anisimovich; Aseeva, Roza Mikhailovna; Mezhikovsky, Semen Markovich; Sherle, Alla Ilinichna; Tsepalova, Nadezhda Alexeevna; Goldovsky, Evgeny Alexandrovich; Zelenetskaya, Tatiana Vladimirovna; Fatkulina, Rozalia Komalovna; and Kuzminsky, Alexandr Samoilovich. Method for increasing the thermostability of organopolysiloxanes. 3,928,489, Cl. 260-827.000.

Berman, Herbert L.: *See—*
Sprout, James Cole; and Berman, Herbert L., 3,928,843.

Bernard, Bernard. Sheath for a staysail of a boat. 3,927,633, Cl. 114-105.000.

Bernard, Richard A.: *See—*
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Bernhoft, Gerald W., to Koehring Company. Control means for a pair of fluid motors. 3,927,603, Cl. 91-412.000.

Bernstein, Daniel, to United States of America, Air Force. Laser power supply. 3,928,819, Cl. 331-94.5PE.

Bernstein, Lawrence A. Ring elements, channel elements, and connectors for joining same. 3,927,489, Cl. 46-29.000.

Berntsson, Peder Bernhard; Carlsson, Per Arvid Emil; and Corrodi, Hans Rudolf, to Aktiebolaget Hassle. Compounds useful as antidepressive agents, and a process for their preparation. 3,928,369, Cl. 260-296.00R.

Berntsson, Peder Bernhard; Carlson, Per Arvid Emil; and Corrodi, Hans Rudolf, to Aktiebolaget Hassle. Compounds useful as antidepressive agents. 3,928,613, Cl. 424-263.000.

Berthoud, Francois, to Societe Suisse pour l'Industrie Horlogere Management Services SA. Timepiece movement with a timer mechanism. 3,927,519, Cl. 58-76.000.

Bertin & Cie: *See—*
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Bertolucci, Michael Dean: *See—*
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Beschoff Chemical Corporation: *See—*
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Besson, Jean Georges; Nguyen Duy, Thuoc; and Palz, Wolfgang, to Societe Anonyme de Telecommunications. Solar cells. 3,928,073, Cl. 136-89.000.

Betz Laboratories, Inc.: *See—*
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Bialek, Francis J. Automobile bumper. 3,927,907, Cl. 293-71.00R.

Bickle, Alton H. Pipe-seating apparatus. 3,927,457, Cl. 29-237.000.

Bickling, Archie L., Jr.: *See—*
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Bieker, Ronald D.: *See—*
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Bielstein, Georg Paul Richard: *See—*
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Big Drum, Inc.: *See—*
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Billings, Charles Alden; O'Neill, Gerald Joseph; and Simons, Charles William, to W. R. Grace & Co. Halogenated methylcyclopropyl ethers. 3,928,468, Cl. 260-611.00R.

Bilow, Norman; Boschan, Robert H.; and Landis, Abraham L., to Hughes Aircraft Company. Acetylene substituted aromatic primary amines and the process of making them. 3,928,450, Cl. 260-571.000.

Binns, Wayne B.: *See—*
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Bird & Son, Inc.: *See—*
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Blachowski, John A.: *See—*
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Blackwood, William A. Rotary internal combustion engine. 3,927,647, Cl. 123-43.00C.

Blake, Floyd A.; and Howerton, Murlin T., to Martin Marietta Corporation. Peak efficiency solar energy powered boiler and superheater. 3,927,659, Cl. 126-271.000.

Blake, Melvyn, to Norton Company. Flexible tape fastener or hinge. 3,927,438, Cl. 16-150.000.

Blankenburg, Carl-Heinrich Teodor, to Wikstrom International AB. Apparatus for lifting of heavy loads. 3,927,865, Cl. 254-105.000.

Bligh, Bernard Ramsay; and Allam, John, to Air Products and Chemicals, Inc. Purification of inert gases. 3,928,004, Cl. 55-66.000.

Block Engineering, Incorporated: *See—*
Hirschfeld, Tomas, 3,928,554.

Blood, Alden E.: *See—*
Hagemeyer, Hugh J., Jr.; Blood, Alden E.; and Snapp, Thomas C., Jr., 3,928,458.

Blum Folding Paper Box Co., Inc.: *See—*
Razziano, Margot, 3,927,824.

Blumenfeld, Walter: *See—*
Turney, Stephen Z.; Blumenfeld, Walter; Cowley, R. Adams; Wolf, Samuel; McCluggage, Charles; and Ashworth, John W., III, 3,927,670.

Boatwright, William H.; and Hsu, Thomas C., to Westvaco Corporation. Black liquor oxidation process. 3,928,531, Cl. 423-206.000.

Bocan, Byron J.: *See—*
Freeman, Jere E.; Abdullah, Mukhtar; and Bocan, Byron J., 3,928,631.

Bochis, Richard J.; and Fisher, Michael H., to Merck & Co., Inc. 2-(3-Oxythiazolyl)benzimidazoles. 3,928,372, Cl. 260-302.00H.

Bock, Hartmut; and Gotte, Hans, to Hoechst Aktiengesellschaft. Method and apparatus for measuring and controlling the toner concentration in electrophotographic reproduction machines. 3,928,764, Cl. 250-272.000.

Boehringer Ingelheim GmbH: *See—*
Renth, Ernst Otto; Schromm, Kurt; Mentrup, Anton; and Danneberg, Peter, 3,928,358.
Seeger, Ernst; Teufel, Helmut; Engel, Wolfhard; and Engelhard, Gunther, 3,928,364.
Walther, Gerhard; Merz, Herbert; Langbein, Adolf; and Stockhaus, Klaus, 3,928,359.

Boehringer Mannheim G.m.b.H.: *See—*
Berger, Herbert; Gall, Rudi; Thiel, Max; Vomel, Wolfgang; and Sauer, Winfriede, 3,928,342.
Berger, Herbert; Gall, Rudi; Stach, Kurt; Vomel, Wolfgang; and Hoffmann, Rita, 3,928,349.

Bogert, Clayton. Safety closure for containers. 3,927,783, Cl. 215-222.000.

Bohrmann, Hans; and Schneider, Gerhard, to CPC International Inc. Pasty dry product and process for making same. 3,928,650, Cl. 426-579.000.

Boige, Jean. Process for the preparation of methylcobalamine. 3,928,320, Cl. 260-211.700.

Boise Cascade Corporation: *See—*
Zemanek, Rudolf, 3,928,186.

Bolich, Raymond Edward, Jr.; and Aylor, Robert Benson, to Procter & Gamble Company, The. Mild shampoo compositions. 3,928,251, Cl. 252-545.000.

Bolsenga, Stanley J.; Kotow, Stephen S.; Reuter, Henry G.; and Volante, Donald J., to Apeco Corporation. Collator. 3,927,878, Cl. 271-173.000.

Bonacci, John C.; Ireland, Henry P.; and Stein, Thomas R., to Mobil Oil Corporation. Combination process for producing LPG and aromatic rich material from naphtha. 3,928,174, Cl. 208-80.000.

Bond, Robert W.; and Alexander, William J., III, to Bond Transmission & Controls, Inc. Cloth inspection device. 3,927,844, Cl. 242-55.000.

Bond Transmission & Controls, Inc.: *See—*
Bond, Robert W.; and Alexander, William J., III, 3,927,844.

Boney, William G.: *See—*
Winter, George R., III; and Boney, William G., 3,927,987.

Bonnanzio, Anthony J. Method and formulation for preventing snow and ice accumulation. 3,928,654, Cl. 427-8.000.

Bontempi, Jules. Hair curler. 3,927,685, Cl. 132-40.000.

Booth, Robert Ben, to American Cyanamid Company. Leaching polyelectrolyte fluidized solids. 3,928,551, Cl. 423-659.000.

Borders, Donald Bruce: *See—*
Kirby, Jane Parsons; Borders, Donald Bruce; and Korshalla, Jean Hayes, 3,928,317.

Borg-Warner Corporation: *See—*
Boyer, Nicodemus E., 3,928,507.
Briski, Michael, 3,927,830.
Klicker, James D.; and Cohen, Murray S., 3,928,505.
Scohy, John M.; Cremeans, George E.; and Luttinger, Manfred, 3,928,266.

Borg-Warner, GmbH: *See—*
Hallerberg, Karl Josef, 3,927,744.

Borgen, Gerd: *See—*
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Boris, Alfred, to Hoffmann-La Roche Inc. Antiinflammatory 2-(2-aminoalkylamino)-1,2-diphenylethanols. 3,928,621, Cl. 424-330.000.

Bormann, Dieter: *See—*
Bauerschmidt, Eberhard; Bormann, Dieter; and Worm, Manfred, 3,928,331.

Borner, Hans. Vehicle parking and rotary elevator assembly. 3,927,772, Cl. 214-16.1BA.

Borsuk, Leslie M. Connector assembly. 3,927,925, Cl. 339-14.00P.

Boschan, Robert H.: *See—*
Bilow, Norman; Boschan, Robert H.; and Landis, Abraham L., 3,928,450.

Bosley, Denis Vernon; and Pitkanen, Alan Ralph, to Mattel, Inc. Boxing apparatus for figure toys. 3,927,883, Cl. 273-85.00B.

Bossi, Alessandro: *See—*
Pignataro, Francesco; Faletti, Franco; Castellan, Arsenio; Bossi, Alessandro; Marinozzi, Paolo; and Giordano, Nicola, 3,928,409.

Bosso, Joseph F.: *See—*
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Boston Machine Works Company: *See—*
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Botros, Raouf, to American Aniline Products, Inc. 6-Anilino-1,4,5-trihydroxyanthraquinones. 3,927,964, Cl. 8-39.000.

Bough, Dale E., to TRW Inc. Vehicle steering apparatus. 3,927,899, Cl. 280-87.00A.

Bowers, William S., to United States of America, Agriculture. Certain terpenoid compounds for insect control. 3,928,619, Cl. 424-314.000.

Boyer, Nicodemus E., to Borg-Warner Corporation. Substituted norbornene compounds and their applications in thermoplastic polymer compositions. 3,928,507, Cl. 260-940.000.

Boyle, Daniel J., to Hoerner Waldorf Corporation. Display carton. 3,927,761, Cl. 206-45.140.

Brachert, Heinrich; Girke, Dieter; and Kleiss, Joachim, to Dynamit Nobel Aktiengesellschaft. Process for the production of gudol powder utilizing reduction of moisture content. 3,928,514, Cl. 264-3.00B.

Bradley, Robert Auldom. Double tiered conveyor track and safety switch. 3,927,619, Cl. 104-130.000.

Brady, Kevin James; Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, to Bell Telephone Laboratories, Incorporated. Apparatus for reducing rotation components in table translation. 3,927,939, Cl. 355-54.000.

Braginetz, Paul A., to Philip Morris Incorporated. Replaceable blade knife. 3,927,473, Cl. 30-125.000.

Brailsford, Sidney Frank; and McDonald, Donald Robson, to Reed Paper Group Limited. Method of preparing a coating composition. 3,928,055, Cl. 106-214.000.

Bramhill, Percy W., to H. H. Investments Limited. Apparatus for making cigarettes. 3,927,681, Cl. 131-70.000.

Brancato, Jack J.; and Herman, Daniel F., to N L Industries, Inc. Process of making urea-formaldehyde solid microspheres. 3,928,272, Cl. 260-29.40R.

Brandstrom, Arne Elof; Carlsson, Per Arvid Emil; Carlsson, Stig Ake Ingemar; Corrodi, Hans Rudolf; Ek, Lars; and Ablad, Bengt Arne-Hjalmar, to Aktiebolaget Hassle. Phenoxy-hydroxypropylamines, method and pharmaceutical preparations for treating cardiovascular diseases. 3,928,601, Cl. 424-300.000.

Brattsand, Ralph Lennart; Ekenstam, Bo Thuresson af; Claeson, Karl Goran; and Thalen, Bror Arne, to AB Bofors. Process for the separation of stereoisomeric mixtures into their components and components obtained hereby. 3,928,326, Cl. 260-239.55D.

Braun, Anton. Supercharged internal combustion engine. 3,927,530, Cl. 60-607.000.

Brenneisen, Paul: *See—*
Spaun, Rudiger; Rochat, Alain Claude; Gallay, Jean-Jacques; and Brenneisen, Paul, 3,928,437.

Brenner, Walter: *See—*
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Breuer, Hermann: *See—*
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Bridger, Robert F.: *See—*
Yan, Tsoung-Yuan; and Bridger, Robert F., 3,928,171.

Briggs, Anglis R.; and Maxwell, Thomas J., to Du Pont de Nemours, E. I., and Company. Lyophilized biological products. 3,928,566, Cl. 424-94.000.

Bright, Thomas John Robert. Load storage system and apparatus therefor. 3,927,773, Cl. 214-16.40C.

Brink, Robert H., Jr.; Shema, Bernard F.; and Swered, Paul, to Betz Laboratories, Inc. Synergistic compositions containing 2,2-dibromo-3-nitrilopropionamide and 3,3,4,4-tetrachlorotetrahydrothiopene-1,1-dioxide and their use. 3,928,198, Cl. 210-62.000.

Briski, Michael, to Borg-Warner Corporation. Control valve. 3,927,830, Cl. 236-100.000.

Bristol-Myers Company: *See—*
Essery, John Michael, 3,928,334.
Essery, John Michael; and Cheney, Lee Cannon, 3,928,336.
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British Copper Refiners Limited: *See—*
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British Gas Corporation: *See—*
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British Petroleum Company Limited, The: *See—*
Courtade, Michel Armand Christian; and Ferveur, Bernard Raymond Pierre, 3,928,620.

British Steel Corporation: *See—*
Armstrong, David Alun; and Lewis, Kenneth Gill, 3,928,657.
Randerson, Keith, 3,928,090.

Broadhead, John; Putvinski, Thomas Michael; and Trumbore, Forrest Allen, to Bell Telephone Laboratories, Incorporated. Polyalkylene glycol ethers in rechargeable lithium nonaqueous batteries. 3,928,067, Cl. 136-6.0LN.

Brocklehurst, Jack: *See—*
Ward, Peter; and Brocklehurst, Jack, 3,928,523.

Brockmuller, Friedrich Franz; Schwarzkopf, August; and Feldkamper, Richard, to Windmoller & Holscher. Method for making a cross-bottom bag having a plastics liner incorporated in the folding of the end closure. 3,927,606, Cl. 93-35.0SB.

Brockmuller, Friedrich-Franz: *See—*
Winnemoller, Aloys; and Brockmuller, Friedrich-Franz, 3,927,875.

Broderman, Thord; Hietala, Pentti; and Sundman, Jacobus, to Oy Medica Ab. Method of isolating L-dopa from a aqueous solution thereof. 3,928,431, Cl. 260-519.000.

Broms, Anders; and Frank, Kjell, to Allmanna Svenska Elektriska Aktiebolaget. Inverter. 3,928,794, Cl. 321-5.000.

Brooks, Charles Parsons: *See—*
Redmond, John Peter; Andrews, Daniel Marshall; Brooks, Charles Parsons; Cinalli, Dominic A.; and Merlina, Joseph Francis, 3,928,663.

Brooks, Henry W., to Engineering Components Limited. Manufacture of gaskets. 3,928,107, Cl. 156-217.000.

Brosseron, Jean: *See—*
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Brown Boveri - Sulzer Turbomachinery Ltd.: *See—*
Strub, Rene; and Naegeli, John Peter, 3,927,763.

Brown, Melancthon S., to Chevron Research Company. N-polyhalovinylthiocarboxamides as nematocides. 3,928,600, Cl. 424-298.000.

Brown, Melancthon S., deceased (by Kohn, Gustave K., administrator); and Kohn, Gustave K., to Chevron Research Company. Herbicidal N-oxythio-substituted ureas. 3,928,407, Cl. 260-453.00R.

Brown, Richard E.: *See—*
Pardee, Robert P.; Loran, Thomas J.; Bickling, Archie L., Jr.; and Brown, Richard E., 3,928,673.

Browning, William C.; and Young, Homer F., to Milchem Incorporated. Process for scavenging hydrogen sulfide in aqueous drilling fluids and method of preventing metallic corrosion of subterranean well drilling apparatuses. 3,928,211, Cl. 252-8.50B.

Brownlow, James M.; Buchanan, Relva C.; and Tummala, Rao R., to International Business Machines Corporation. Dielectric glasses. 3,928,051, Cl. 106-53.000.

Brumlik, George C., to Ingrip Fasteners, Inc. Multi-element self-gripping devices with linguiform gripping tabs. 3,927,443, Cl. 24-204.000.

Brummett, Charles Roscoe; and Shaak, Ray Ned, to AMP Incorporated. Selective plating on non-metallic surfaces. 3,928,670, Cl. 427-53.000.

Brundage, Ruth Pauline; and Lesher, George Y., to Sterling Drug Inc. Preparation of 2-substituted-6-pyridyl-nicotinic acids. 3,928,366, Cl. 260-295.5OR.

Brunette, Eugene J.; and Trosclair, Nathaniel D. Skyscraper escaper. 3,927,734, Cl. 182-193.000.

Brunie, Jean Claude; Costantini, Michel; Crenne, Noel; and Jouffret, Michel, to Rhone-Poulenc S.A. Preparation of mixtures of ketones and of their corresponding alcohols. 3,928,452, Cl. 260-586.00R.

Brunn, Frederick Milton, to Foster Wheeler Energy Corporation. Steam generating system and method utilizing exhaust gas recirculation. 3,927,627, Cl. 110-49.00R.

Brunner, Robert: *See—*
Kraft, Paul; Kopacki, Adam F.; and Brunner, Robert, 3,928,500.

Brunswick Corporation: *See—*
Crossman, Phillip E.; Kenrick, Robert C.; and Le Mieux, Robert W., 3,927,885.

Bryce, William Dean; Pinker, Richard Alfred; and Turner, Brian Arthur, to Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain & Northern Ireland, The. Aircraft gas turbine noise suppression. 3,927,522, Cl. 60-264.000.

Buchanan, Edward R.; and Tarshis, Lemuel A., to General Electric Company. Cobalt-tungsten high temperature eutectic alloy. 3,928,030, Cl. 75-170.000.

Buchanan, Relva C.: *See—*
Brownlow, James M.; Buchanan, Relva C.; and Tummala, Rao R., 3,928,051.

Buchel, Karl Heinz: *See—*
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Buckeye Molding Co.: *See—*
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Buckley, Donald J.: *See—*
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Budich, Wolfgang: *See—*
Heuschen, Alexander; Schaefer, Hans; Budich, Wolfgang; Krah, Robert; and Obermeier, Karl, 3,928,100.

Budkin, Nikolai Stefanovich: *See—*
Ivanov, Evgeny Alexandrovich; Silchenkova, Vladislava Venediktovna; Sazonov, Alexandr Afanasievich; and Budkin, Nikolai Stefanovich, 3,928,778.

Buescher, Francis Joseph: *See—*
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Buhler Brothers, Ltd.: *See—*
Remund, Werner, 3,927,756.

Buisman, Anthonius Theodorus Maria, to U.S. Philips Corporation. Paper stacker. 3,927,874, Cl. 270-61.00F.

Bujas, Roko, to Commissariat a l'Energie Atomique. Annular fuel element for high-temperature reactors. 3,928,132, Cl. 176-83.000.

Buning, Robert; Loebler, Peter; and Trautvetter, Werner, to Dynamit Nobel Aktiengesellschaft. Strength characteristics of glass fiber reinforced vinyl chloride thermoplastics and chlorination products thereof. 3,928,684, Cl. 428-297.000.

Bunzli, Paul, to Hydrel A.G. Support and guide cage. 3,927,919, Cl. 308-6.00R.

Buoy, Pierre; Masure, Daniel; Collon, Paul; Pigeaud, Jean-Marie; and Sartre, Bernard, to Rhone-Progil. Improvements in methods of producing electrolytic anode assemblies. 3,928,167, Cl. 204-286.000.

Burdyn, Ralph F.; Chang, Harry L.; and Foster, William R., to Mobil Oil Corporation. Alkaline waterflooding process. 3,927,716, Cl. 166-270.000.

Burgess, Fred M. Water powdered rotary brush. 3,927,434, Cl. 15-24.000.

Burgess Products Company Limited: *See—*
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Burke, Phillip J.: *See—*
Zinniger, Theodore C.; and Burke, Phillip J., 3,927,788.

Burkin, Jury Alexandrovich: *See—*
Seleznev, Jury Emelyanovich; Burkin, Jury Alexandrovich; and Kuzmin, Sergei Vladimirovich, 3,927,455.

Burleigh, John E.: *See—*
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Burmah Oil Trading Limited: *See—*
Field, Peter Graham Spencer; and Lock, David Anthony, 3,928,477.

Burns, Henry C.; and McConnell, George C., to Chromalloy Pharmaceutical, Inc. Composition for control of white muscle disease. 3,928,578, Cl. 424-164.000.

Burrell, Raymond Alexander: *See—*
Cox, John Michael; and Burrell, Raymond Alexander, 3,928,608.

Burris, Bobby V.: *See—*
Burris, James D.; and Burris, Bobby V., 3,927,511.

Burris, James D.; and Burris, Bobby V. Method and apparatus for harvesting cotton. 3,927,511, Cl. 56-33.000.

Burroughs Corporation: *See—*
Wojtowicz, Edward A.; Lazzarotti, S. James; and Tartar, Paul E., 3,927,876.

Butler Automatic, Inc.: *See—*
Meihofer, Edward F., 3,928,844.

Butler, Lee D.; and Wynn, Edward J., to Sperry Rand Corporation. Load position sensing and tier pattern selection for a bale wagon. 3,927,771, Cl. 214-6.00B.

Butt, Sheldon H.: *See—*
Ford, James A.; and Butt, Sheldon H., 3,928,234.

Byers, Thomas L. Graphics modifier. 3,927,942, Cl. 355-84.000.

Byram, Harold E.; Lockard, Ronald J.; Andersen, Roland D.; and Carney, Vincent L., to Andersen, Byram, Kouma, Murphy, Lockard & Carney. Voice-actuated telephone directory-assistance system. 3,928,724, Cl. 179-1.0SD.

Byrne, Francis P.; and Kaczmarek, Thomas D., to Westinghouse Electric Corporation. Technique for measuring the carbon monoxide and reactive hydrocarbon content of a gas. 3,927,979, Cl. 23-232.00R.

Calgon Corporation: *See—*
Persinski, Leonard John; Ralston, Paul Hotchkiss; and Gordon, Robert Cornelius, Jr., 3,928,196.

Calmon, Calvin, to Water Purification Associates. Detection devices for use in solution processing systems. 3,928,200, Cl. 210-96.000.

Camiciottoli, Roberto: *See—*
Valbonesi, Giuseppe; and Camiciottoli, Roberto, 3,928,725.

Campbell, John H., to General Electric Company. Fluorescent lamp having partitioned vapor discharge. 3,928,786, Cl. 313-493.000.

Campbell, William A., III, to Quality Food Machinery Inc. Article loading machine. 3,927,508, Cl. 53-251.000.

Camras, Marvin, to IIT Research Institute. Video transducing apparatus. 3,928,869, Cl. 360-55.000.

Canada Wire and Cable Limited: *See—*
Bass, Dieter, 3,928,075.

Canadian Ingersoll-Rand Company Limited: *See—*
Young, Douglas L. G., 3,928,187.

Canadian Marconi Company: *See—*
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Canadian Patents and Development Limited: *See—*
Criddle, Ernest E.; and Neals, Pierrette L., 3,927,667.
Kusters, Norbert L.; and MacMartin, Malcolm P., 3,928,799.

Candor, James T. Frame construction for a plural page document. 3,927,483, Cl. 40-102.000.

Cannell Auto-Process Corporation: *See—*
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Canon Kabushiki Kaisha: *See—*
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 3,927,936.
Sakurada, Nobuaki; Nakamoto, Soichi; Ito, Tadashi; Ito, Fumio; and Shinoda, Nobuhiko, 3,928,858.

Carborundum Company, The: *See—*
Richmond, Wesley Q.; and Cichy, Paul, 3,928,515.

Cardarelli, Nathan F., to B.F. Goodrich Company, The. Biocidal elastomeric composition combinations and method for dispersing biocides therewith. 3,928,564, Cl. 424-83.000.

Carey, Milburn K. Automotive seat suspension system. 3,927,854, Cl. 248-372.000.

Carl Schenck AG, Firma: *See—*
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Carlos, Donald D.; and Hicks, Darrell D., to Celanese Coatings & Specialties Company. Aqueous thermoset coatings utilizing titanium chelate curing agents. 3,928,667, Cl. 427-385.000.

Carlson, Per Arvid Emil: *See—*
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Carlsson, Per Arvid Emil: *See—*
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Carlsson, Stig Ake Ingemar: *See—*
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Carney, Vincent L.: *See—*
Byram, Harold E.; Lockard, Ronald J.; Andersen, Roland D.; and Carney, Vincent L., 3,928,724.

Carniglia, Stephen C.: *See—*
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Caron, Norman O., to General Dynamics Corporation. Lashing socket cover. 3,927,623, Cl. 105-475.000.

Carpenter Technology Corporation: *See—*
Schlosser, Donald K.; Myers, Lewis P.; and Caton, Robert L., 3,928,088.

Carrier Corporation: *See—*
Linthicum, Harley E., 3,927,956.

Carson, Lawrence E., to Le Van Specialty Company, Inc. Quick release hinged vehicle window. 3,927,492, Cl. 49-141.000.

Carter, John L.; and McGowan, Joseph, to United States of America, Army. Power dividing and combining techniques for microwave amplifiers. 3,928,806, Cl. 325-128.000.

Carter, Richard S.; Hogan, Spurgeon G., Jr.; Leung, Wan L.; McGilvray, Bruce L.; and Werner, Robert H., to International Business Machines Corporation. Instruction fetch apparatus with combined look-ahead and look-behind capability. 3,928,857, Cl. 340-172.500.

Carter, Walter H.: *See—*
Jordan, Wesley A.; and Carter, Walter H., 3,928,316.

Case, Derek Frank. Method of making multi track magnetic transducing heads. 3,927,470, Cl. 29-603.000.

Casida, John E.: *See—*
Tilles, Harry; and Casida, John E., 3,928,436.

Cassella Farbwerke Mainkur AKT: *See—*
Greve, Heinz Gunter; and Resag, Klaus, 3,928,415.

Castanoli, Alder F. Multiple deck drying apparatus. 3,927,715, Cl. 165-120.000.

Castellan, Arsenio: *See—*
Pignataro, Francesco; Faletti, Franco; Castellan, Arsenio; Bossi, Alessandro; Marinozzi, Paolo; and Giordano, Nicola, 3,928,409.

Castro-Genera, Jorge. Electric switch box. 3,928,835, Cl. 337-295.000.

Caterpillar Tractor Co.: *See—*
Dearlove, William E., 3,927,780.
Engel, William Karl, 3,927,527.
Freeman, William H.; and Williamson, Herschel M., 3,927,462.
Gianessi, Albert, 3,927,729.
Gibble, Lawrence W.; and Keesey, Dennis Lee, 3,927,449.
Golan, Kenneth Frank, 3,927,579.
Junck, John A.; and Latimer, Eugene E., 3,928,201.
Prillinger, Peter F. M.; and Rosenberger, Paul C., 3,927,737.
Wirt, Leon A., 3,927,704.

Caton, John E., Jr.: *See—*
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Caton, Robert L.: *See—*
Schlosser, Donald K.; Myers, Lewis P.; and Caton, Robert L., 3,928,088.

Cavalieri, Michel, to Sedit. Manual or powered single-lever haul-in and haul-off apparatus. 3,927,862, Cl. 254-76.000.

Cavallotti, Claudio: *See—*
Sacrini, Egeo; and Cavallotti, Claudio, 3,928,464.
Sacrini, Egeo; and Cavallotti, Claudio, 3,928,465.
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Sacrini, Egeo; and Cavallotti, Claudio, 3,928,467.

Cech, Robert E., to General Electric Company. Rare earth intermetallic compounds produced by a reduction-diffusion process. 3,928,089, Cl. 148-105.000.

Celamerck GmbH & Co. KG: *See—*
Becher, Heinz Manfred; and Sehring, Richard, 3,928,432.

Celanese Coatings & Specialties Company: *See—*
Carlos, Donald D.; and Hicks, Darrell D., 3,928,667.

Celanese Corporation: *See—*
Loft, John T.; McTaggart, John A.; and Plovan, Steven G., 3,928,705.

Cenker, Moses; and Narayan, Thirumurti L., to BASF Wyandotte Corporation. Process for the preparation of carbodiimide-isocyanurate foams. 3,928,256, Cl. 260-2.5BF.

Centre de Recherches Metallurgiques - Centrum voor Research in de Metallurgie: *See—*
Philippe, Leon Jean; Defraye, Rene Charles; and Renard, Lucien Paul, 3,927,558.

Centre Electronique Horloger S.A.: *See—*
Oguey, Henri J.; and Vittoz, Eric Andre, 3,928,773.

Cervelle, Claude Marie Henri. Treatment of hypoazotemic and atheromatous conditions using lespecapitoside and process for obtaining same. 3,928,585, Cl. 424-195.000.

Ceskoslovenska akademie ved: *See—*
Heidingsfeld, Viktor; Hudecek, Slavko; Hnidek, Jaroslav; Kolarik, Jan; and Zelinger, Jiri, 3,928,704.

Chafetz, Harry: *See—*
Cullen, William P.; Chafetz, Harry; and Hellmuth, Walter W., 3,928,381.

Chakrabarti, Jiban Kumar, to Lilly Industries, Ltd. Process for preparing nitriles. 3,928,274, Cl. 260-294.900.

Chambers, Arnold, to Glass Tubes and Components Limited. Self-centering chuck. 3,927,873, Cl. 269-154.000.

Champion, Robert J.: *See—*
Kivett, William D.; Champion, Robert J.; and Harris, Jesse P. T., 3,928,753.

Chandra, Grish; and Rowland, Colin Mostyn, to Dow Corning Limited. Coating process. 3,928,629, Cl. 427-387.000.

Chandross, Edwin Arthur; and Kuck, Valerie Jeanne, to Bell Telephone Laboratories, Incorporated. Corrosion inhibitor. 3,928,683, Cl. 428-447.000.

Chang, Clarence Dayton; Silvestri, Anthony John; and Smith, Robert Lloyd, to Mobil Oil Corporation. Production of gasoline hydrocarbons. 3,928,483, Cl. 260-668.00R.

Chang, Harry L.: *See—*
Burdyn, Ralph F.; Chang, Harry L.; and Foster, William R., 3,927,716.

Chang, Kenneth. Saw guide. 3,927,475, Cl. 33-42.000.

Chang, Yun-Feng; Cheung, Mo-Fung; and Dickie, Ray A., to Ford Motor Company. Method of making organic solvent free aqueous coating compositions of acrylic polymer latex, water soluble emulsion-polymerized acrylic polymer, and aminoplast. 3,928,273, Cl. 260-29.4UA.

Chapman, Rodney M.; and Temple, Kenneth A., to Du Pont de Nemours, E. I., and Company. Recirculating apparatus for continuous esterification reactions. 3,927,982, Cl. 23-260.000.

Chappel, Raymond M.: *See—*
Kirk, Bradley S.; and Chappel, Raymond M., 3,928,199.

Chase, Edward J.; and Topper, William R., to Container Corporation of America. Molded container. 3,927,790, Cl. 220-72.000.

Chase-Shawmut Company, The: *See—*
Salzer, Erwin; and Kozacka, Frederick J., 3,927,927.

Cheesman, Jean Ann; and Coles, Cherry Pamela, to Lever Brothers Company. Hairspray compositions containing a silicone glycol block copolymer. 3,928,558, Cl. 424-47.000.

Chemetron Corporation: *See—*
Harrington, Edward F., Jr., 3,927,818.

Chemical Fabrics Corporation: *See—*
Cook, John Ransom, 3,928,703.

Chemie und Metall GmbH Rheax: *See—*
Eder, Theodor, 3,928,182.

Chemische Werke Huls Aktiengesellschaft: *See—*
Kosswig, Kurt; and Meister, Herbert, 3,928,250.

Chemplex Company: *See—*
Pullukat, Thomas, 3,928,304.

Chen, Ting P.; and Jones, Ronald E., to Texaco Inc. Separation and purification of dialkyldimethyl ammonium halides. 3,928,447, Cl. 260-567.60M.

Cheney, Lee Cannon: *See—*
Essery, John Michael; and Cheney, Lee Cannon, 3,928,336.

Chenoweth, Amos J.; and Heafner, William E., to United States of America, Air Force. Thermal differential compensator. 3,928,822, Cl. 332-7.510.

Cherry, Kenneth Floyd. Bio pond aerator. 3,928,512, Cl. 261-91.000.

Cherry, Wesley E.; Dickason, Alan F.; and Hedge, John A., to Sun Ventures, Inc. Oxidation of butane to make anhydride and catalyst therefor. 3,928,392, Cl. 260-346.80A.

Cheslick, Walter A., Sr. Suppressant for coal dust. 3,928,222, Cl. 252-88.000.

Cheung, Mo-Fung: *See—*
Chang, Yun-Feng; Cheung, Mo-Fung; and Dickie, Ray A., 3,928,273.

Chevron Research Company: *See—*
Brown, Melancthon S., 3,928,600.
Brown, Melancthon S., deceased; and Kohn, Gustave K., 3,928,407.
Chill, Leonard; Johnson, Gordon B.; and Weisner, Carl S., 3,927,957.
Wilkes, John B., 3,928,232.
Woo, Gar Lok; and Sweeney, William A., 3,928,428.

Chiang, Ching: *See—*
Monte, Alexander A.; and Chiang, Ching, 3,928,137.

Chiang, Mutong T.: *See—*
Milkovich, Ralph; and Chiang, Mutong T., 3,928,255.

Chicago Rawhide Manufacturing Company: *See—*
Peisker, Glenn W., 3,927,600.

Child, Edward T.; and Robin, Allen M., to Texaco Inc. Methane-rich gas process. 3,927,997, Cl. 48-197.00R.

Child, Edward T.; Robin, Allen M.; Slater, William L.; and Richter, George N., to Texaco Inc. Production of methane-rich gas stream. 3,927,998, Cl. 48-197.00R.

Child, Edward T.; and Robin, Allen M., to Texaco Inc. Methane-rich gas process. 3,927,999, Cl. 48-197.00R.

Child, Edward T.; Robin, Allen M.; Slater, William L.; and Richter, George N., to Texaco Inc. Production of a clean methane-rich fuel gas from high-sulfur containing hydrocarbonaceous materials. 3,928,000, Cl. 48-197.00R.

Child, Edward T.; Robin, Allen M.; Slater, William L.; and Richter, George N., to Texaco Inc. Production of methane. 3,928,001, Cl. 48-197.00R.

Childers, Mark A.; and Dawkins, Enoch L., to Ocean Drilling & Exploration Company. Method of retrieving anchors. 3,927,636, Cl. 114-206.00R.

Chill, Leonard; Johnson, Gordon B.; and Weisner, Carl S., to Chevron Research Company. Apparatus for making yarn from polymer film. 3,927,957, Cl. 425-131.100.

Chinuki, Takashi: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Fujino, Hidekazu; Tanimoto, Kenji; Hosaka, Hirokazu; Ehara, Kazunari; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; and Yasuda, Minoru, 3,928,469.

Chittenden, Richard Marion; and Wilson, Earl David, to Abbott Laboratories. Irrigation solution administration system and reservoir therefor. 3,927,671, Cl. 128-227.000.

Cho, Alfred Yi: *See—*
Ballamy, William Charles; and Cho, Alfred Yi, 3,928,092.

Chodzko, Richard A., to United States of America, Air Force. Multiple-selected-line unstable resonator. 3,928,817, Cl. 331-94.50C.

Cholvin, Robert L., to Garrett Corporation, The. Engine exhaust reactor air flow ratio control method and apparatus. 3,927,524, Cl. 60-289.000.

Chromalloy American Corporation: *See—*
Graupmann, Lloyd Earl, 3,927,775.

Chromalloy Pharmaceutical, Inc.: *See—*
Burns, Henry C.; and McConnell, George C., 3,928,578.

Chrosziel, Alfred S. Zoom lens control device. 3,927,932, Cl. 350-187.000.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Furuno, Kouji; Nakano, Hideki; Matsubara, Syuzo; and Shioya, Akitoshi, 3,928,583.
Katunuma, Nobuhiko, 3,928,568.

Ciba-Geigy AG: *See—*
Rochat, Alain Claude; and Stocker, Emil, deceased, 3,928,314.
Schumacher, Ernst, 3,928,039.
Seha, Zdenek; and Somlo, Tibor, 3,928,395.

Ciba-Geigy Corporation: *See—*
Haas, Georges; Sallmann, Alfred; and Rossi, Alberto, 3,928,363.
Habermeier, Jurgen, 3,928,377.
Ramey, Chester E.; and Luzzi, John J., 3,928,330.
Ramey, Chester E.; and Luzzi, John J., 3,928,357.
Renfroe, Harris Burt, 3,928,614.
Spaun, Rudiger; Rochat, Alain Claude; Gallay, Jean-Jacques; and Brenneisen, Paul, 3,928,437.

Cichos, Manfred: *See—*
Pohlman, Reimar; and Cichos, Manfred, 3,927,675.

Cichy, Paul: *See—*
Richmond, Wesley Q.; and Cichy, Paul, 3,928,515.

Cieslak, Ludwika: *See—*
Sledzinski, Bohdan; Kroczynski, Jozef; Zwierzak, Andrzej; Cieslak, Ludwika; and Majda, Aleksander, 3,928,586.

Ciko, John D.; and Cramer, John J., to BASF Wyandotte Corporation. Liquid laundry builder containing alkali hydroxide and borax. 3,927,970, Cl. 8-137.000.

Cinalli, Dominic A.: *See—*
Redmond, John Peter; Andrews, Daniel Marshall; Brooks, Charles Parsons; Cinalli, Dominic A.; and Merlina, Joseph Francis, 3,928,663.

Cincinnati Milacron, Inc.: *See—*
Gough, Robert George; and Buescher, Francis Joseph, 3,928,285.

Ciurca, Samuel John, Jr., to Eastman Kodak Company. Photographic elements containing iodoso or iodoxy oxidants. 3,928,043, Cl. 96-77.000.

Claeson, Karl Goran: *See—*
Brattsand, Ralph Lennart; Ekenstam, Bo Thuresson af; Claeson, Karl Goran; and Thalen, Bror Arne, 3,928,326.

Claflin, Harry B., to Kaiser Steel Corporation. Method of treating off gases from iron processes. 3,928,023, Cl. 75-60.000.

Clairol Incorporated: *See—*
Rosenberg, Ira, 3,928,113.

Clapham, Thomas J. Magnetic propulsion system. 3,927,620, Cl. 104-148.0LM.

Clark, Gary T., to Eastman Kodak Company. Cationic dyes from 5-aminoimidazo-(1,2-A)-pyridines. 3,928,309, Cl. 260-146.00R.

Clark, Jeffrey J.: *See—*
Fisk, Harry R.; and Clark, Jeffrey J., 3,928,029.

Clark, Leroy P., to SCM Corporation. Pressurized mill and process. 3,927,837, Cl. 241-46.110.

Clark, Robert John, to RCA Corporation. Character generator system selectively providing different dot-matrix size symbols. 3,928,845, Cl. 340-324.0AD.

Clausen, Kermit D., and Rhodes, John R., to Columbia Scientific Industries, Inc. High speed pulse processing. 3,928,766, Cl. 250-273.000.

Clay, Robert B.: *See—*
Thurgood, J. Rand; and Clay, Robert B., 3,927,836.

Clement, Clarence C., Jr., to Halliburton Company. Methods and compositions for sealing subterranean earth formations. 3,928,052, Cl. 106-76.000.

Clinch, Colin W. F., to ITW Limited. Plastic hinges. 3,927,949, Cl. 402-22.000.

Clipp, Louis L.: *See—*
Hall, James M.; and Clipp, Louis L., 3,927,723.

Close, Jean, Adolphe: *See—*
Gobert, Jean, Georges; and Close, Jean, Adolphe, 3,928,506.

Clyce, Thomas E.: *See—*
Cromeens, Jeff Y.; and Clyce, Thomas E., 3,927,705.

Coates, Harold: *See—*
Collins, John D.; Coates, Harold; and Siddiqui, Iftikhar Hussain, 3,928,284.

Cobb, Edwin W. Dietary dairy dessert mix and frozen product therefrom. 3,928,649, Cl. 426-565.000.

Coburn, Theodore J.: *See—*
Ahrenkiel, Richard K.; and Coburn, Theodore J., 3,928,870.

Cochrane, Ben A. Tamper-proof bottle cap and container. 3,927,784, Cl. 215-256.000.

Coenders, Johannes Wilhelmus: *See—*
Aagaard, Einar Andreas; Coenders, Johannes Wilhelmus; and Dijkmans, Eise Carel, 3,928,730.

Cohen, Choua; Durif-Varambon, Bruno; Salle, Robert; and Sillion, Bernard, to Institut Francais du Petrole, des Carburants & Lubrifiants. Enameling varnishes based on aromatic carboxylates reacted with polyisocyanates and polyols. 3,928,290, Cl. 260-75.0TN.

Cohen, Herbert I., to Acron Corporation. Repertory dialer. 3,928,731, Cl. 179-90.0BB.

Cohen, Melvin. Magazine rack. 3,927,768, Cl. 211-49.00D.

Cohen, Murray S.: *See—*
Klicker, James D.; and Cohen, Murray S., 3,928,505.

Cohn, Alfred; and Reynolds, James S., to Cohn, Alfred. Electronic coin counter. 3,927,688, Cl. 133-8.00R.

Coker's Pedigreed Seed Company: *See—*
Iseman, John E., 3,928,181.

Coles, Cherry Pamela: *See—*
Cheesman, Jean Ann; and Coles, Cherry Pamela, 3,928,558.

Colgate-Palmolive Company: *See—*
Bauman, Robert Andrew, 3 928,411.
Bauman, Robert Andrew, 3,928,618.
Gault, Ian Ray, 3,928,555.
Murray, Leo Thomas, 3,928,223.
Patino, Armando; and Maldonado, Bernardo, 3,928,559.
Schaar, Charles H., 3,927,674.
Sundby, Bjorn, 3,928,422.
Taylor, Glenn N., 3,927,673.

Colletti, John Benjamin, to TRW Inc. Boot seal filter vent. 3,927,576, Cl. 74-498.000.

Collins, John D.; Coates, Harold; and Siddiqui, Iftikhar Hussain, to Albright & Wilson Limited. Organotin compounds stabilizers for vinyl halide polymers. 3,928,284, Cl. 260-45.75S.

Collon, Paul: *See—*
Buoy, Pierre; Masure, Daniel; Collon, Paul; Pigeaud, Jean-Marie; and Sartre, Bernard, 3,928,167.

Colorado State University Research Foundation: *See—*
Phillips, Robert W., 3,928,574.

Colton, Douglas Roy: *See—*
van Tongerloo, Eric Henry; Ibrahim, Abd-El-Fattah Ali; Colton, Douglas Roy; and Lawrence, John, 3,928,093.

Colton, John Robert; Heick, Robert Bruce; and Mann, Henry, to Bell Telephone Laboratories, Incorporated. Common control variable shift reframe circuit. 3,928,726, Cl. 179-15.0BS.

Columbia Scientific Industries, Inc.: *See—*
Clausen, Kermit D.; and Rhodes, John R., 3,928,766.

Comer, Jerry L., to Texas Instruments Incorporated. Momentary contact single pole switch. 3,928,741, Cl. 200-159.00R.

Commercial Decal, Inc.: *See—*
Wahl, Albert J., 3,928,116.

Commissariat a l'Energie Atomique: *See—*
Bujas, Roko, 3,928,132.

Communications Satellite Corporation (COMSAT): *See—*
Schmidt, William George; and Cooperman, Richard Sidney, 3,928,804.

Compagnie Francaise des Petroles: *See—*
Pavlin, Cyrille Francois; Mantoux, Gerard; Giraud, Adrien; and Grossin, Michele, 3,927,565.

Conroy, Edward Patrick, to Domtar Limited. Production of pitch substantially soluble in quinoline. 3,928,169, Cl. 208-22.000.

Consolidated Novelty Co., Inc.: *See—*
Mottel, Alan, 3,928,689.

Container Corporation of America: *See—*
Chase, Edward J.; and Topper, William R., 3,927,790.

Controls Company of America: *See—*
Yatsushiro, Kenji; Kuchuris, George F.; and Willigman, John, 3,928,831.

Cook, Albert W. Method of alleviating symptoms of multiple scleroisis. 3,928,594, Cl. 424-263.000.

Cook, John Hayward, to Xerox Corporation. Electrostatographic reproduction machines. 3,927,934, Cl. 355-3.00R.

Cook, John Ransom, to Chemical Fabrics Corporation. Process for coating a substrate with a fluorinated organic polymer and product thereof. 3,928,703, Cl. 428-255.000.

Cooperman, Richard Sidney: *See—*
Schmidt, William George; and Cooperman, Richard Sidney, 3,928,804.

Copal Company Limited: *See—*
Arai, Kiyoyuki; and Kikuchi, Tomio, 3,928,846.

Coppock, Alden D. Adjustable weeding hoe. 3,927,721, Cl. 172-371.000.

Corbin Gentry Inc.: *See—*
Hanagan, Michael W., 3,927,727.

Corning Glass Works: *See—*
Beall, George H.; Miller, David M.; and Rittler, Hermann L., 3,928,533.

Cornish, Alan H.: *See—*
Delaney, R. Edward; and Cornish, Alan H., 3,927,425.

Corrodi, Hans Rudolf: *See—*
Berntsson, Peder Bernhard; Carlsson, Per Arvid Emil; and Corrodi, Hans Rudolf, 3,928,369.
Berntsson, Peder Bernhard; Carlson, Per Arvid Emil; and Corrodi, Hans Rudolf, 3,928,613.
Brandstrom, Arne Elof; Carlsson, Per Arvid Emil; Carlsson, Stig Ake Ingemar; Corrodi, Hans Rudolf; Ek, Lars; and Ablad, Bengt Arne-Hjalmar, 3,928,601.

Cosan Chemical Corporation: *See—*
Luloff, Jerome S.; and Eilender, Albert L., 3,928,607.

Costantini, Michel: *See—*
Brunie, Jean Claude; Costantini, Michel; Crenne, Noel; and Joufret, Michel, 3,928,452.

Coto-Coil Co., Inc.: *See—*
Abrams, Ralph, 3,928,829.

Coughlin, Robert W. Method of carrying out enzyme-catalyzed reactions. 3,928,143, Cl. 195-115.000.

Courtade, Michel Armand Christian; and Ferveur, Bernard Raymond Pierre, to British Petroleum Company Limited, The. Preservation of agricultural products. 3,928,620, Cl. 424-317.000.

Courtney, George W.: *See—*
Khayat, Ali; Courtney, George W.; and Dunn, Howard J., 3,928,637.

Couttet, Andre; Dubois, Jean Claude; and Zann, Annie, to Thomson-CSF. Nematic liquid crystal 4-methoxy-4'-hydroxytolan esters. 3,928,399, Cl. 260-410.500.

Covey, Rupert A.: *See—*
Hubbard, Winchester L.; Grahame, Robert E., Jr.; Covey, Rupert A.; and Jancis, Elmar H., 3,928,617.

Cowley, R. Adams: *See—*
Turney, Stephen Z.; Blumenfeld, Walter; Cowley, R. Adams; Wolf, Samuel; McCluggage, Charles; and Ashworth, John W., III, 3,927,670.

Cox, John Michael; and Burrell, Raymond Alexander, to Imperial Chemical Industries Limited. Certain quinoxaline N-oxides used to combat fungi. 3,928,608, Cl. 424-250.000.

Cox, Leonard C.; and Wyatt, Joe B. Apparatus for producing data indicative of the geometric shape and arrangement of the various components of a model. 3,927,948, Cl. 356-167.000.

CPC International Inc.: *See—*
Bohrmann, Hans; and Schneider, Gerhard, 3,928,650.
Freeman, Jere E.; Abdullah, Mukhtar; and Bocan, Byron J., 3,928,631.
Milkovich, Ralph; and Chiang, Mutong T., 3,928,255.

CPT Corporation: *See—*
Spence, Gary W., 3,928,847.

Cragoe, Edward J., Jr.; and Schultz, Everett M., to Merck & Co., Inc. Phenol compounds in treating pain, fever and inflammation. 3,928,624, Cl. 424-330.000.

Cramer, Deane G., to PPG Industries, Inc. Method and apparatus for forming glass on molten metal by using a radiation reflector. 3,928,010, Cl. 65-65.00A.

Cramer, John J.: *See—*
Ciko, John D.; and Cramer, John J., 3,927,970.

Crawford, James E.; and Gray, Don N., to Owens-Illinois, Inc. Biocompatible articles including polymeric membranes having high permeability to gases and uses thereof. 3,928,294, Cl. 260-79.30A.

Cremeans, George E.: *See—*
Scohy, John M.; Cremeans, George E.; and Luttinger, Manfred, 3,928,266.

Crenne, Noel: *See—*
Brunie, Jean Claude; Costantini, Michel; Crenne, Noel; and Joufret, Michel, 3,928,452.

Criddle, Ernest E.; and Neals, Pierrette L., to Canadian Patents and Development Limited. Diffuser drape. 3,927,667, Cl. 128-132.00D.

Crill, Marla S.: *See—*
Lauterbach, George E.; and Crill, Marla S., 3,928,707.

Crockwell, George Warren, to Union Carbide Corporation. Silicone rubber hose. 3,927,695, Cl. 138-137.000.

Cromeens, Jeff Y.; and Clyce, Thomas E., to Industrial Woodworking Machine Co., Inc. Methods and means for continuous vertical finger jointing lumber. 3,927,705, Cl. 144-317.000.

Crosby, Guy A., to Dynapol. Polymeric reagent. 3,928,293, Cl. 260-79.000.

Crossman, Phillip E.; Kenrick, Robert C.; and Le Mieux, Robert W., to Brunswick Corporation. Puck and bat for an air cushion table game. 3,927,885, Cl. 273-126.00R.

Crounse, Nathan N., to Sterling Drug Inc. 4,4'-Stilbenebis-pyridooxazoles and related optical brighteners and polymeric compositions brightened thereby. 3,928,228, Cl. 252-301.20W.

Crowell, Merton H., to North American Philips Corporation. Thermal imaging tube having a pyroelectric target and annular potential stabilizing electrode. 3,928,768, Cl. 250-333.000.

Cullen, William P.; Chafetz, Harry; and Hellmuth, Walter W., to Texaco Inc. Sulfurized and chlorinated alkylene polyamine reaction product lubricant additive and lubricating composition containing same. 3,928,381, Cl. 260-327.00C.

Cummins Engine Company, Inc.: *See—*
Perr, Julius P., 3,927,654.

Cunningham, Hugh: *See—*
Rahn, Henry W.; Cunningham, Hugh; Dilmore, Colonel R.; Jeffery, Thomas C.; and Raetzsch, Carl W., 3,928,150.

Cuntze, Ulrich: *See—*
Diery, Helmut; and Cuntze, Ulrich, 3,928,509.

Cuny, Francis: *See—*
Demars, Paul; Cuny, Francis; Garrigoux, Joseph; and Tassart, Christian, 3,928,745.

Curry, John Downing, to Procter & Gamble Company, The. Phenylantimony bis(2-pyridinethiol-1-oxide in antibacterial and antifungal compositions. 3,928,605, Cl. 424-245.000.

Curtin, Denis J., to A. B. Dick Company. Electrophotographic element which includes a photoconductive polyvinyl carbazole layer containing an aromatic anhydride. 3,928,035, Cl. 96-1.500.

Cutler, Royal A.: *See—*
Diana, Guy D.; and Cutler, Royal A., 3,928,427.

Czuba, Leonard J.: *See—*
Hess, Hans-Jurgen E.; Czuba, Leonard J.; and Schaaf, Thomas K., 3,928,391.

Daasvatn, Kari: *See—*
Dale, Johannes; Borgen, Gerd; and Daasvatn, Kari, 3,928,386.

Dachs, Karl; Faulhaber, Gerhard; Fikentscher, Rolf; Oppenlaender, Knut; and Schulze, Joachim, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Printing fibrous material. 3,928,688, Cl. 428-515.000.

Da Costa, Harry; and Foster, Victor W., to Motorola, Inc. Torque measuring means for miniature watch motors or the like. 3,927,559, Cl. 73-134.000.

Daguet, Jacques Lucien: *See—*
Bellanger, Maurice Georges; Lepagnol, Guy Pierre; and Daguet, Jacques Lucien, 3,928,755.

Dahl, Leif B. Hammer, knife and glue gun combination. 3,927,432, Cl. 7-8.10R.

Dahlberg, Alf-Goran; Hogberg, Karl Gustav; Lindvall, Sven; and Rydh, Thore Oskar Verner, to Astra Lakemedel Aktiebolag. Certain polymer-iron complexes for treatment of iron deficiency. 3,928,581, Cl. 424-180.000.

Dahlbom, Johan Richard: *See—*
Barthold, Dag Vilhelm; Dahlbom, Johan Richard; Magnusson, Harry Olof; and Sjoberg, Berndt Olof Harald, 3,928,602.

Dahlen, Sven Erik; Ekstrom, Bertil Ake; and Sjoberg, Berndt Olof Haraid, to Astra Lakemedel Aktiebolag. Dipenicillin and dicephalosporin ester antibiotics. 3,928,595, Cl. 424-271.000.

Dai-ichi Kogyo Seiyaku Co., Ltd.: *See—*
Goto, Sumio; and Ishihara, Kazuhiko, 3,928,212.
Yamauchi, Toshio, 3,928,062.

Dainichi-Nippon Cables, Ltd.: *See—*
Fuwa, Masaru; Takahashi, Kiyoshi; Otsuji, Masaaki; and Matsui, Masatake, 3,928,525.

Daiwa Steel Tube Industries Co., Ltd.: *See—*
Nakamura, Matsuichi, 3,927,816.

Dale, Johannes; Borgen, Gerd; and Daasvatn, Kari. Process for preparing cyclic polyethers. 3,928,386, Cl. 260-338.000.

Daley, William D.; Wilkalis, John E.; and Pieters, Wim J. M., to Allied Chemical Corporation. Process for the reduction of sulfur dioxide. 3,928,547, Cl. 423-564.000.

Dalton, William O., to Monsanto Company. Continuous process for the preparation of ABS type polyblends. 3,928,495, Cl. 260-876.00R.

Dammar, Raymon H., to Possis Corporation. Coil winding machine with improved wire gripping and cutting means. 3,927,456, Cl. 29-205.00C.

Dammar, Raymon H., to Possis Corporation. Method of winding armatures. 3,927,469, Cl. 29-597.000.

Dammar, Raymon H., to Possis Corporation. Armature winding machine with improved lead retaining means. 3,927,843, Cl. 242-7.05B.

Danneberg, Peter: *See—*
Renth, Ernst Otto; Schromm, Kurt; Mentrup, Anton; and Danneberg, Peter, 3,928,358.

Danon, Michael, to Leisure Moments Incorporated. Bicycle support rack. 3,927,810, Cl. 224-29.00R.

Dart Industries Inc.: *See—*
Minsky, Norman C.; and Hiatt, Russell D., 3,927,610.

Darwin, Frank S. Bobbin monitor for sewing machines. 3,928,752, Cl. 235-92.0PD.

Dassel, Mark W., to Du Pont de Nemours, E. I., and Company. Azeotropic nitration of benzene. 3,928,475, Cl. 260-645.000.

Daum, Hermann: *See—*
Stefan, Johann; and Daum, Hermann, 3,927,680.

Davey, John R., to Armstrong Cork Company. Manufacturing ceiling tile. 3,927,706, Cl. 144-326.00R.

Davis, Francis E., Jr.; Graven, Richard G.; Lee, Wooyoung; and Sailor, Robert A., to Mobil Oil Corporation. Catalytic cracking of FCC gasoline and virgin naphtha. 3,928,172, Cl. 208-77.000.

Davis, Glenn T. Pressurized underground cable pedestal. 3,928,713, Cl. 174-38.000.

Davis, Robert E. Method of catalyst preparation for use in suppressing hydrocarbon and carbon monoxide emission from internal combustion engines. 3,928,237, Cl. 252-465.000.

Dawkins, Enoch L.: *See—*
Childers, Mark A.; and Dawkins, Enoch L., 3,927,636.

Day, Omar. Board game. 3,927,886, Cl. 273-135.00R.

Day, Robert H., to Illinois Tool Works Inc. Cups for holding ingredients for drinks. 3,927,766, Cl. 206-519.000.

Dayco Corporation: *See—*
Haren, Doyle V.; and Logan, Arthur D., 3,928,521.
Holden, Homer N., 3,928,715.

Dean, Richard H.: *See—*
Appleton, Thomas R.; Dean, Richard H.; Hillman, Edward J.; Nelson, Charles J.; and Sinn, Gunter E., 3,928,672.

Dearlove, William E., to Caterpillar Tractor Co. Loading apparatus for a collection vehicle. 3,927,780, Cl. 214-519.000.

de Baan, Johannes J., to August Bilstein, Firma. Cover plate for cylinders having sealed piston rod guides. 3,927,871, Cl. 267-65.00R.

Debarge, Albert: *See—*
Delarue, Jean-Louis; and Debarge, Albert, 3,928,341.

DeColibus, Raymond Lew, to Du Pont de Nemours, E. I., and Company. TiO_2 Pigment coated with porous alumina/silica and dense silica. 3,928,057, Cl. 106-300.000.

DeCoulos, John, to Boston Machine Works Company. Welt application process for unit soles and wedge platforms. 3,927,433, Cl. 12-142.00D.

de Figueiredo, Antonio M. C., to Raymond Lee Organization, Inc., The, a part interest. Thermomolecular rectifier. 3,927,532, Cl. 60-721.000.

Defraye, Rene Charles: *See—*
Philippe, Leon Jean; Defraye, Rene Charles; and Renard, Lucien Paul, 3,927,558.

Degremont, Societe Generale d'Epuration et d'Assainissement: *See—*
Bebin, Jean Louis, 3,928,190.

De Haes, Louis Maria; and Volz, Hans-Georg, to Agfa-Gevaert N.V. Titanium dioxide with aluminum oxide or aluminum oxide plus silicon dioxide precipitated thereon as pigment for diffusion transfer. 3,928,037, Cl. 96-29.00R.

de Hass, Franciscus Cupertinus Maria: *See—*
van Esdonk, Johannes; Hornman, Johannes Petrus; and de Hass, Franciscus Cupertinus Maria, 3,928,782.

de Hedouville, Philippe, to U.S. Philips Corporation. Laundry washing and drying machine. 3,927,542, Cl. 68-17.00R.

de Keyzer, Cornelis Jacobus, to Rank Xerox Ltd. Cleaning assembly for an electrostatographic device. 3,927,937, Cl. 355-15.000.

Delaney, R. Edward; and Cornish, Alan H., to Koehler-Dayton, Inc. Sewerage treatment system. 3,927,425, Cl. 4-10.000.

Delarue, Jean-Louis; and Debarge, Albert, to Merrell Toraude. N-Aminoalkyl-4-anilino pyridines. 3,928,341, Cl. 260-247.50G.

Dellorfano, Fred M., Jr.: *See—*
Massa, Frank, 3,928,777.

DeMan, Heiko T. Liquid dispenser with multi-container reserves. 3,927,804, Cl. 222-136.000.

De Marinis, Robert M.; and Hoover, John R. E., to SmithKline Corporation. Substituted sulfonylacetamido cephalosporins. 3,928,338, Cl. 260-243.00C.

Demars, Paul; Cuny, Francis; Garrigoux, Joseph; and Tassart, Christian, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Method of electric welding by transferred plasma and a welding torch for carrying said method into effect. 3,928,745, Cl. 219-121.00P.

Demmering, Gunther: *See—*
Linden, Heinz; Gartner, Jurgen; Offermann, Wilhelm; and Demmering, Gunther, 3,928,276.

Demole, Edouard: *See—*
Kovats, Ervin; Demole, Edouard; Ohloff, Gunther; and Stoll, Max, deceased, 3,928,456.

Denzel, Theodor; and Hoehn, Hans, to E. R. Squibb & Sons, Inc. Derivatives of pyrazolo[3,4-b]thieno[2,3-d]pyridine-2-carboxylic acids. 3,928,362, Cl. 260-294.80B.

Denzel, Theodor: *See—*
Hoehn, Hans; and Denzel, Theodor, 3,928,368.

Depoix, Pierre: *See—*
Gerbier, Gerard; and Depoix, Pierre, 3,928,072.

Depree, David O.: *See—*
Katzakian, Arthur, Jr.; and Depree, David O., 3,928,192.

Derbyshire, Philip Edward: *See—*
Saunders, Peter Anthony; Fox, Michael Frank; Fagan, Anthony Francis; and Derbyshire, Philip Edward, 3,928,216.

Derrien, Michel: *See—*
Torck, Bernard; Franck, Jean-Pierre; and Derrien, Michel, 3,928,488.

Descamps, Marcel; and Van Durme, Etienne, to Labaz. Benzo[b]thienyl acetic acid esters. 3,928,384, Cl. 260-330.500.

Deschamps, Andre; Renault, Philippe; and Dezael, Claude, to Institut Francais du Petrole, des Carburants et Lubrifiants. Process for purifying a sulfurous anhydride containing gas and producing elemental sulfur. 3,928,548, Cl. 423-575.000.

Detoia, Vincent D., to Raymond Lee Organization, Inc., The, a part interest. Ski and snow shoe device. 3,927,896, Cl. 280-11.13C.

Deura, Hiroshi: *See—*
Sato, Tsutomu; Deura, Hiroshi; and Oba, Kenkichi, 3,928,268.

Deutsche Gold-und Silber-Scheideanstalt vormals Roessler: *See—*
Koberstein, Edgar; and Lakatos, Eduard, 3,928,238.
Koberstein, Edgar; and Lakatos, Eduard, 3,928,534.

Westlinning, Hermann; Schwarze, Werner; and Fleischhauer, Horst, 3,928,344.

Devik, Ole Gabriel: *See—*
Tangsrud, Nils; and Devik, Ole Gabriel, 3,928,639.

Dezael, Claude: *See—*
Deschamps, Andre; Renault, Philippe; and Dezael, Claude, 3,928,548.

Dhaliwal, Pritam Singh, to Du Pont de Nemours, E. I., and Company. Schiff base and metal bisazomethine metal chelate. 3,928,328, Cl. 260-240.00G.

Dhein, Rolf; Kaiser, Bernd-Ulrich; Rudolph, Hans; Kuchenmeister, Rolf; and Niehaus, Clemens, to Bayer Aktiengesellschaft. Lacquer systems which are harmless to the environment. 3,928,265, Cl. 260-21.000.

Diamond Shamrock Corporation: *See—*
O'Leary, Kevin J.; Tomba, Charles P.; and Fenn, Robert W., III, 3,928,166.

Diana, Guy D.; and Cutler, Royal A., to Sterling Drug Inc. N,N'-bridged-bis[2-alkyl-2-hydroxyethylamine]salts. 3,928,427, Cl. 260-501.170.

Dickason, Alan F.: *See—*
Cherry, Wesley E.; Dickason, Alan F.; and Hedge, John A., 3,928,392.

Dickey-john Corporation: *See—*
Fathauer, George H., 3,928,751.

Dickie, Ray A.: *See—*
Chang, Yun-Feng; Cheung, Mo-Fung; and Dickie, Ray A., 3,928,273.

Diem, Hans; Matthias, Guenther; Aicher, Albrecht; Haas, Hans; Schreiber, Hans; and Sperber, Heinrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of formaldehyde. 3,928,461, Cl. 260-603.0HF.

Diem, Hans: *See—*
Aicher, Albrecht; Diem, Hans; Haas, Hans; Hess, Klaus; Hussy, Oskar; Matthias, Guenther; Sperber, Heinrich; and Stickel, Richard, 3,928,460.

Diery, Helmut; and Cuntze, Ulrich, to Hoechst Aktiengesellschaft. Hybrid ionic phosphorus compounds. 3,928,509, Cl. 260-945.000.

Digoy, Jean Louis, to U.S. Philips Corporation. Semiconductor radiation detector and method of manufacturing same. 3,928,866, Cl. 357-30.000.

Dijkmans, Eise Carel: *See—*
Aagaard, Einar Andreas; Coenders, Johannes Wilhelmus; and Dijkmans, Eise Carel, 3,928,730.

Dillon, William; and Blachowski, John A., to Skil Corporation. Collet assembly for a reciprocating tool. 3,927,893, Cl. 279-75.000.

Dilmore, Colonel R.: *See—*
Rahn, Henry W.; Cunningham, Hugh; Dilmore, Colonel R.; Jeffery, Thomas C.; and Raetzsch, Carl W., 3,928,150.

Di Matteo, Paul L.: *See—*
Pollack, Philip; and Di Matteo, Paul L., 3,928,850.

Dimeler, Glenn R.: *See—*
Mills, Ivor W.; and Dimeler, Glenn R., 3,928,168.

Di Mola, Nunzio: *See—*
Winters, Giorgio; and Di Mola, Nunzio, 3,928,371.

Display-Design GmbH fur moderne Verkaufsforderungsmittel und Raumausstattung: *See—*
Lang, Franz Josef, 3,927,625.

Dobbratz, Edward J., to Dobbratz, Janet E., a part interest. Slide assembly. 3,927,918, Cl. 308-3.600.

Dobbratz, Janet E.: *See—*
Dobbratz, Edward J., 3,927,918.

Dockner, Toni; and Platz, Rolf, to BASF Aktiengesellschaft. Manufacture of carboxamides. 3,928,439, Cl. 260-557.00R.

Dr.-Ing. Max Schloetter: *See—*
Steeg, Joachim, 3,928,149.

Dohgane, Iwao: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Fujino, Hidekazu; Tanimoto, Kenji; Hosaka, Hirokazu; Ehara, Kazunari; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; and Yasuda, Minoru, 3,928,469.

Doi, Tetsuo: *See—*
Sagae, Syoji; and Doi, Tetsuo, 3,928,718.

Dolhyj, Serge R.: *See—*
Milberger, Ernest C.; and Dolhyj, Serge R., 3,928,240.

Dolly Toy Company, The: *See—*
Marcus, Kenneth N., 3,927,482.

Domtar Limited: *See—*
Conroy, Edward Patrick, 3,928,169.

Donald, Dennis Scott, to Du Pont de Nemours, E. I., and Company. Multifunctional pyrazines. 3,928,351, Cl. 260-250.0BN.

Donovan, Timothy F.; and Ryan, William P., to Mite Corporation. Solenoid system for moving a type member. 3,927,753, Cl. 197-49.000.

Dooner Laboratories, Inc.: *See—*
Behrakis, George D., 3,928,609.

Dorland, Lee A. Apparatus for providing patterns on television receiver screens. 3,928,717, Cl. 178-6.000.

Dorn, Gordon L., to J. K. & Susie L. Wadley Research Institute & Blood Bank. Detection of microbial pathogens. 3,928,139, Cl. 195-103.50R.

Dorn, Michael Thomas: *See—*
Jones, Herbert; and Dorn, Michael Thomas, 3,927,448.

Dornheim, Gotz Gotmar: *See—*
Wandel, Martin; Salamon, Manfred; Dornheim, Gotz Gotmar; and Kuhlmann, Bernard, 3,928,696.

Dorst, Richard: *See—*
Reime, Roy O., 3,927,728.

Douros, John D., Jr.; and Kerst, Al F., to Gates Rubber Company, The. Violuric acid as an algaecide. 3,928,017, Cl. 71-67.000.

Dow Chemical Company, The: *See—*
Beale, Alvin F., Jr.; and Lee, John M., 3,928,438.
Moyle, Clarence L.; and Wolf, Paul A., 3,928,575.
Philp, Dennis H.; and Madison, Norman L., 3,928,695.
Tomalia, Donald A.; and Thill, Bruce P., 3,928,499.
Walker, Eddie Bob, 3,928,288.
Wang, Chun Shan; and Mintz, Michael J., 3,928,370.

Dow Corning Limited: *See—*
Chandra, Grish; and Rowland, Colin Mostyn, 3,928,629.

Dowell, Arthur M., Jr.; and Reitemeier, Arthur L., to Tee-Pak, Inc. Collagen slurry containing partial fatty acid esters of glycerin. 3,928,653, Cl. 426-657.000.

Dowell, Arthur M., Jr.: *See—*
Froehlich, Leonhard H.; and Dowell, Arthur M., Jr., 3,928,651.

Downs, Dallas I.: *See—*
Larson, Lory E.; and Downs, Dallas I., 3,927,534.

Doyel, John S. Beverage making device. 3,927,608, Cl. 99-297.000.

Draber, Wilfried; Buchel, Karl Heinz; Regel, Erik; and Plempel, Manfred, to Bayer Aktiengesellschaft. N-methyl-imidazole derivatives and their production. 3,928,348, Cl. 260-250.00A.

Drage, James John, to Sumlock Anita Electronics Limited. Keyboard switch assembly having discrete helical conductors providing wiping action. 3,928,736, Cl. 200-5.00A.

Dreher, Karl D.; and Gogarty, William B., to Marathon Oil Company. High fluidity cutting oils which exhibit retro-viscous properties. 3,928,215, Cl. 252-33.300.

Drelich, Arthur H.; and Lukacs, George J., to Johnson & Johnson. Synthetic resin compositions and methods applying the same to porous materials to control migration thereon. 3,928,676, Cl. 427-341.000.

Dresser Industries, Inc.: *See—*
Zinsmeyer, Herbert G.; Johnson, Rodney L.; Genz, Ralph H.; and Setliff, James E., 3,927,800.

Droll, Hans. Wire supply control arrangement. 3,927,842, Cl. 242-1.10R.

Dubois, Jean Claude: *See—*
Couttet, Andre; Dubois, Jean Claude; and Zann, Annie, 3,928,399.

Dumont, Fritz, to Baugesellschaft Klammt KG. Apparatus for driving sheet piles into the ground. 3,927,861, Cl. 254-29.00R.

Dungey, Harold J.; and Frendberg, Arthur M., to Babcock & Wilcox Company. Vapor generator. 3,927,646, Cl. 122-6.00A.

Dunigan, Francis P. Photoelectric apparatus employing phase locked loop circuits. 3,928,761, Cl. 250-205.000.

Dunn, Howard J.: *See—*
Khayat, Ali; Courtney, George W.; and Dunn, Howard J., 3,928,637.

Dunning, Robert M., to Hoerner Waldorf Corporation. Lined carton. 3,927,821, Cl. 229-14.0BL.

Du Pont de Nemours, E. I., and Company: *See—*
Alaburda, Raymond Daniel, 3,928,681.
Baird, Richard Leroy, 3,928,111.
Belasco, Irvin Joseph, 3,928,191.
Briggs, Anglis R.; and Maxwell, Thomas J., 3,928,566.
Chapman, Rodney M.; and Temple, Kenneth A., 3,927,982.
Dassel, Mark W., 3,928,475.
DeColibus, Raymond Lew, 3,928,057.
Dhaliwal, Pritam Singh, 3,928,328.
Donald, Dennis Scott, 3,928,351.
Fang, James C., 3,928,420.
Fang, James C., 3,928,424.
Fang, James C., 3,928,492.
Gregory, Donald Dale; and Wendel, Martin Maurice, 3,928,543.
Johnson, Thomas Albert, 3,928,478.
Leverett, Glenn Frederick, 3,928,524.
Nottke, James E., 3,928,350.
Tarney, Robert Edward; and Verbanc, John Joseph, 3,928,664.

Dupree, Donald G.; Bailey, Raymond E.; and Ling, Chester H. K., to Xerox Corporation. Method of making a cylindrically shaped, hollow electroforming mandrel. 3,927,463, Cl. 29-447.000.

Durand, Francois. Gear reduction device with floating pinion. 3,927,575, Cl. 74-410.000.

Durif-Varambon, Bruno: *See—*
Cohen, Choua; Durif-Varambon, Bruno; Salle, Robert; and Sillion, Bernard, 3,928,290.

Duro-Test Corporation: *See—*
Koo, Ronald C., 3,927,989.

Dursch, Friedrich; and Siewarga, Theodore Michael, to E. R. Squibb & Sons, Inc. 7-(D-α-amino-1,4-cyclohexadien-1-ylacetamido)desacetoxycephalosporanic acid dihydrate compositions. 3,928,591, Cl. 424-246.000.

Duwel, Dieter; Kirsch, Reinhard; Loewe, Heinz; and Urbanietz, Josef, to Hoechst Aktiengesellschaft. Anthelmintically active 2-carbalkoxy-amino-benzimidazolyl-5(6)-amino-phenyl ethers. 3,928,375, Cl. 260-309.200.

Dycke, Norbert; and Sakai, Hiroshi, to Kabushiki Kaisha Komatsu Seisakusho. Ejecting device for use in metal forging machine. 3,927,549, Cl. 72-345.000.

Dyckerhoff Zementwerke A.G.: *See—*
Schmitt-Henco, Carl Heinrich; and Rauschenfels, Eberhard, 3,928,058.

Dyna-Therm Corporation, The: *See—*
Peterson, Roger L., 3,928,210.

Dynamit Nobel AG: *See—*
El-Chahawi, Moustafa; and Richtzenhain, Hermann, 3,928,429.

Dynamit Nobel Aktiengesellschaft: *See—*
Brachert, Heinrich; Girke, Dieter; and Kleiss, Joachim, 3,928,514.
Buning, Robert; Loebler, Peter; and Trautvetter, Werner, 3,928,684.
Heuschen, Alexander; Schaefer, Hans; Budich, Wolfgang; Krah, Robert; and Obermeier, Karl, 3,928,100.

Dynapol: *See—*
Crosby, Guy A., 3,928,293.

Dzus Fastener Co., Inc.: *See—*
Schenk, Peter, 3,927,444.

E. D. Bullard Company: *See—*
Raschke, Herbert A., 3,927,668.

E. R. Squibb & Sons, Inc.: *See—*
Denzel, Theodor; and Hoehn, Hans, 3,928,362.
Dursch, Friedrich; and Siewarga, Theodore Michael, 3,928,591.
Hoehn, Hans; and Denzel, Theodor, 3,928,368.
Metzger, Julio, 3,928,570.
Treuner, Uwe; and Breuer, Hermann, 3,928,335.
Yale, Harry Louis, 3,928,332.

East/West Medical Products, Inc.: *See—*
Spinosa, Dominic; and Varga, John, 3,927,955.

Eastman Kodak Company: *See—*
Ahrenkiel, Richard K.; and Coburn, Theodore J., 3,928,870.
Audran, Roger G. L.; and Pinguad, Bernard J., 3,928,709.
Ciurca, Samuel John, Jr., 3,928,043.
Clark, Gary T., 3,928,309.
Fisher, John G.; and Straley, James M., 3,928,311.
Fleckenstein, Lee J., 3,928,312.
Grant, Peter M., 3,928,263.
Hagemeyer, Hugh J., Jr.; Blood, Alden E.; and Snapp, Thomas C., Jr., 3,928,458.
Jackson, Brian W., 3,928,678.
Jackson, Brian W.; Winkler, Dean E.; and Woodworth, Charles B., 3,928,679.
Roman, Robert J., 3,927,847.

Ebnother, Anton; Bastian, Jean-Michel; and Rissi, Erwin, to Sandoz Ltd. 1,3,4,9b-Tetrahydro-2H-indeno[1,2-c]pyridines. 3,928,360, Cl. 260-293.540.

Eder, Theodor, to Waagner-Biro Aktiengesellschaft; and Chemie und Metall GmbH Rheax. Method and apparatus for classifying viscous slurries. 3,928,182, Cl. 209-12.000.

Edlund, Herman Allan Friedrich. Device for calculating the resonant rolling period of a ship. 3,928,754, Cl. 235-150.200.

Edwards, Bryant, to Illinois Tool Works Inc. Plastic container and base construction. 3,927,782, Cl. 215-100.00R.

Edwards, Roger Joseph; Hairabedian, Barouyr Zareh; and Poley, Neil Myron, to International Business Machines Corporation. Gaseous discharge display panel including pilot electrodes and radioactive wire. 3,928,781, Cl. 313-54.000.

Edwin Cooper & Company: *See—*
Saunders, Peter Anthony; Fox, Michael Frank; Fagan, Anthony Francis; and Derbyshire, Philip Edward, 3,928,216.

Edwin Cooper, Inc.: *See—*
Papay, Andrew G.; Matthews, Brian W.; and Thomas, Arthur S., 3,928,219.

Effland, Richard C.: *See—*
Bauer, Victor J.; Agnew, Marc N.; and Effland, Richard C., 3,928,378.

Ehara, Kazunari: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Fujino, Hidekazu; Tanimoto, Kenji; Hosaka, Hirokazu; Ehara, Kazunari; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; and Yasuda, Minoru, 3,928,469.

Eiland, Ehrlich M., to Aluminum Company of America. Opaque white coating composition comprising essentially cellulose ester/cross-linking agent/catalyst/solvent and organic liquid. 3,928,260, Cl. 260-14.000.

Eilender, Albert L.: *See—*
Luloff, Jerome S.; and Eilender, Albert L., 3,928,607.

Eisai Co., Ltd.: *See—*
Ikekawa, Nobuo; Morisaki, Masuo; Lightbourn, Julieta Rubio; and Seki, Masao, 3,928,397.
Uchiyama, Mikio; Tachibana, Shinro; Araki, Kengo; and Nakamura, Takafumi, 3,928,306.

Ek, Lars: *See—*
Brandstrom, Arne Elof; Carlsson, Per Arvid Emil; Carlsson, Stig Ake Ingemar; Corrodi, Hans Rudolf; Ek, Lars; and Ablad, Bengt Arne-Hjalmar, 3,928,601.

Ekenstam, Bo Thuresson af: *See—*
Brattsand, Ralph Lennart; Ekenstam, Bo Thuresson af; Claeson, Karl Goran; and Thalen, Bror Arne, 3,928,326.

Ekstrom, Bertil Ake: *See—*
Dahlen, Sven Erik; Ekstrom, Bertil Ake; and Sjoberg, Berndt Olof Harald, 3,928,595.

Elam, Richard C.: *See—*
Hecht, Ralph J.; Goward, George W.; and Elam, Richard C., 3,928,026.

El-Chahawi, Moustafa; and Richtzenhain, Hermann, to Dynamit Nobel AG. Method of preparing aryl acetic acids. 3,928,429, Cl. 260-515.00R.

Electric Fuel Propulsion Incorporated: *See—*
Aronson, Robert R., 3,928,080.

Elektriska Svetsningsaktiebolaget: *See—*
Ericsson, Rolf, 3,928,746.

Elektro-Mekanik: *See—*
Steen, Aron Albin, 3,927,808.

Elfman, Allan M.: *See—*
Lemelson, Jerome H.; and Elfman, Allan M., 3,927,881.

Eli Lilly and Company: *See—*
Archer, Robert A., 3,928,598.
Greene, James M.; and Indelicato, Joseph M., 3,928,592.
Hubert, Alfred W.; and Russell, Ralph T., 3,928,642.
Lacefield, William B.; and Marshall, Winston S., 3,928,604.
Raun, Arthur P., 3,928,571.
Taylor, Harold M., 3,928,352.
Wheeler, William J., 3,928,333.

Elias, Jack, to Honeywell Inc. Switch interlock circuit. 3,928,789, Cl. 317-136.000.

Elliott, Richard I.: *See—*
Papalexis, Gregory C.; and Elliott, Richard I., 3,927,611.

Ember, George, to Hoffmann-La Roche Inc. Acid catalyzed, liquid phase preparation of methyl vinyl ketone. 3,928,457, Cl. 260-593.00R.

Emerson Electric Co.: *See—*
Willner, Richard; Pauli, Jude A.; and Latuda, Frank A., 3,927,829.

Emerson, Ralph W.: *See—*
Ingle, James E.; Emerson, Ralph W.; and Megahan, John S., 3,927,702.

Emery Industries, Inc.: *See—*
Rhodes, Philip H.; and Ahr, Robert L., 3,928,267.
Sturwold, Robert J.; and Barrett, Fred O., 3,928,401.

Emkjer, Erwin J.; and Tucker, L. Kenneth, to Kenematic Company Inc. Method and apparatus for opening letter envelopes. 3,927,589, Cl. 83-23.000.

Endersen, William Christian, to F. L. Smidth & Co. Rotary kiln. 3,927,960, Cl. 432-80.000.

Endo Laboratories: *See—*
Rajagapalan, Parthasarathi; and Pachter, Irwin J., 3,928,611.

Endo, Norio: *See—*
Ida, Syunya; and Endo, Norio, 3,927,973.

Endo, Takaya: *See—*
Fujiwhara, Mitsuto; Endo, Takaya; Satoh, Ryosuke; Masukawa, Toyoaki; and Uozumi, Takahiro, 3,928,041.

Endo, Tei: *See—*
Ishikawa, Toshikatsu; Endo, Tei; Masuyama, Toshio; Uruma, Fumio; Morishita, Masutaka; and Kuki, Takeshi, 3,927,986.

Engdahl, Holger Gustaf; and Parviainen, Raimo Johannes, to Enso-Gutzeit Osakeyhtio. Laminated settler. 3,928,209, Cl. 210-519.000.

Engel, Walter, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Sabot projectile. 3,927,618, Cl. 102-93.000.

Engel, William Karl, to Caterpillar Tractor Co. Mechanical multiplier-design II. 3,927,527, Cl. 60-427.000.

Engel, Wolfhard: *See—*
Seeger, Ernst; Teufel, Helmut; Engel, Wolfhard; and Engelhard, Gunther, 3,928,364.

Engelhard, Gunther: *See—*
Seeger, Ernst; Teufel, Helmut; Engel, Wolfhard; and Engelhard, Gunther, 3,928,364.

Engelhard, Helmut: *See—*
Wolf, Gerhard Dieter; Engelhard, Helmut; and Bentz, Francis, 3,928,298.

Engelhard Minerals & Chemicals Corporation: *See—*
Marsh, Gary B., 3,928,019.

Engineering Components Limited: *See—*
Brooks, Henry W., 3,928,107.

Engineering Development Associates, Incorporated: *See—*
Kivett, William D.; Champion, Robert J.; and Harris, Jesse P. T., 3,928,753.

Enso-Gutzeit Osakeyhtio: *See—*
Engdahl, Holger Gustaf; and Parviainen, Raimo Johannes, 3,928,209.

Entreprise de Recherches et d'Activites Petrolieres (ELF): *See—*
Labat, Yves; Mordelet, Yvon; and Signouret, Jean Baptiste, 3,928,217.

Envirotech Corporation: *See—*
Marks, Robert E., 3,928,123.

Erdman, Frank H., to Tropicana Products, Inc. Container and cap with depressible section for drinking access. 3,927,794, Cl. 220-268.000.

Erickson, Lars, to Walter Kidde & Co., Inc. Retractor mechanism for latch bolt. 3,927,905, Cl. 292-169.220.

Erickson, Wallace A.; and Suh, Byoung, to Wallace A. Erickson & Company. Preparation of dental restorative filling materials. 3,928,280, Cl. 260-42.280.

Ericsson, Rolf, to Elektriska Svetsningsaktiebolaget. Direct current power supply for manual arc welding. 3,928,746, Cl. 219-135.000.

Eriksson, Carl-Erik, to AB Bofors. Device for loading an artillery piece. 3,927,598, Cl. 89-45.000.

Ernst, Werner, to Inventio Aktiengesellschaft. Load dependent acting brake for conveyor devices. 3,927,738, Cl. 188-187.000.

Eschenmoser, Albert: *See—*
Stadler, Paul A.; Eschenmoser, Albert; and Sundt, Erling, 3,928,246.

Esper, Friedrich J.; Friese, Karl-Hermann; and Pollner, Rudolf, to Robert Bosch G.m.b.H. Ceramic oxide resistor element. 3,928,837, Cl. 338-22.00R.

Essery, John Michael, to Bristol-Myers Company. Process for the production of cefamandole. 3,928,334, Cl. 260-243.00C.

Essery, John Michael; and Cheney, Lee Cannon, to Bristol-Myers Company. 7-[D-(α-aminoα-phenyl-, 2-thienyl- and 3-thienyl-acetamido)]-3-(3-methyl-1,2,5-oxadiazol-4-yl)carbonylthiomethyl-3-cephem-4-carboxylic acids. 3,928,336, Cl. 260-243.00C.

Essery, John Michael, to Bristol-Myers Company. Process for the production of cefamandole. 3,928,337, Cl. 260-243.00C.

Ethyl Corporation: *See—*
Jackson, James C.; and Harberson, Loyd D., 3,927,587.
Kerley, Robert V., 3,927,992.

Ettel, Victor A.: *See—*
Gendron, Aubrey S.; Tilak, Bommaraju V.K.S.R.A.; and Ettel, Victor A., 3,928,153.

Etter, Berwyn E. Tip for an industrial gas cutting torch and method of using same. 3,928,084, Cl. 148-9.000.

Evans, Wayne Wheeler, to RCA Corporation. Analog voltage generators for television tuners. 3,928,808, Cl. 325-464.000.

Eversberg, Hans: *See—*
Schonfeld, Wolfram; Philipps, Armin; Eversberg, Hans; Hausler, Karl-Heinz; and Samans, Robert, 3,927,547.

Exotech, Incorporated: *See—*
Hall, James M.; and Clipp, Louis L., 3,927,723.

Exxon Research and Engineering Company: *See—*
Hamner, Glen P.; Luzarraga, Mamerto G.; and Stuckey, Alto Nelson, Jr., 3,928,176.
King, William H., Jr.; and Varga, Gideon M., Jr., 3,928,063.
Knudsen, Christian W.; and von Rosenberg, Hermann E., 3,927,996.
Mueller, David E.; and Segura, Marnell A., 3,928,024.
Thaler, Warren A.; Buckley, Donald J.; and Kennedy, Joseph P., 3,928,297.
Wohnhaas, George J.; Ungar, Israel S.; and Scher, Herbert I., 3,928,527.
Wright, Donald L.; and Frankenfeld, John W., 3,928,557.

F. L. Smidth & Co.: *See—*
Endersen, William Christian, 3,927,960.

Fabris, Hubert J.; and Phillips, Wendell O., to General Tire & Rubber Company, The. Processable non-burning ABS-PVC blends. 3,928,502, Cl. 260-891.000.

Fagan, Anthony Francis: *See—*
Saunders, Peter Anthony; Fox, Michael Frank; Fagan, Anthony Francis; and Derbyshire, Philip Edward, 3,928,216.

Fagel, Roger, to Ateliers de Constructions Electriques de Charleroi (ACEC). Resiliently laterally shiftable axle mounting bogie. 3,927,910, Cl. 295-36.00R.

Faiks, Frederick S., to Steelcase, Inc. Movement device. 3,927,920, Cl. 308-36.000.

Fairchild Camera and Instrument Corporation: *See—*
Angell, James B., 3,928,094.
Anthony, Michael P.; Gunsagar, Kamleshwar; Kim, Choong-Ki; and Walsh, Lloyd R., 3,927,468.

Faletti, Franco: *See—*
Pignataro, Francesco; Faletti, Franco; Castellan, Arsenio; Bossi, Alessandro; Marinozzi, Paolo; and Giordano, Nicola, 3,928,409.

Falke, Erich, to Knorr-Bremse GmbH. Operator's brake valve for a railway vehicle air braking system. 3,927,917, Cl. 303-68.000.

Fang, James C., to Du Pont de Nemours, E. I., and Company. Mixed esters of polybasic saturated acids, glycols and glycidyl esters. 3,928,420, Cl. 260-475.00P.

Fang, James C., to Du Pont de Nemours, E. I., and Company. Mixed esters of dibasic unsaturated acids, glycols and glycidyl esters. 3,928,424, Cl. 260-485.00G.

Fang, James C., to Du Pont de Nemours, E. I., and Company. Coating compositions containing mixed esters of dibasic unsaturated acids, glycols and glycidyl tertiary esters, polyesters and amine-aldehyde resins. 3,928,492, Cl. 260-850.000.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Werle, Eugen; Fritz, Hans; and Schult, Harald, 3,928,305.

Farha, Floyd E., Jr.; Johnson, Marvin M.; and Tabler, Donald C., to Phillips Petroleum Company. Oxidative dehydrogenation of alkenes or alkadienes to furan compounds. 3,928,389, Cl. 260-346.10R.

Farmland Industries, Inc.: *See—*
Romans, Duane R., 3,927,994.
Romans, Duane R., 3,927,995.

Farnsworth, Robert S. Process and apparatus for growing plants. 3,927,491, Cl. 47-1.200.

Farr, Emory W., to Transducers, Inc. Moment desensitization of load cells. 3,927,560, Cl. 73-141.00A.

Farrell, John J., to Farrell Patent Company. Method of making a blow molded container with hollow handle. 3,928,522, Cl. 264-89.000.

Farrell Patent Company: *See—*
Farrell, John J., 3,928,522.

Farrow, Robert H.: *See—*
Slater, Jack D.; Latham, William G. H.; and Farrow, Robert H., 3,928,221.

Fathauer, George H., to Dickey-john Corporation. Seed population monitor. 3,928,751, Cl. 235-92.0PK.

Fatkulina, Rozalia Komalovna: *See—*
Berlin, Alfred Anisimovich; Aseeva, Roza Mikhailovna; Mezhikovsky, Semen Markovich; Sherle, Alla Ilinichna; Tsepalova, Nadezhda Alexeevna; Goldovsky, Evgeny Alexandrovich; Zelenetskaya, Tatiana Vladimirovna; Fatkulina, Rozalia Komalovna; and Kuzminsky, Alexandr Samoilovich, 3,928,489.

Faulhaber, Gerhard: *See—*
Dachs, Karl; Faulhaber, Gerhard; Fikentscher, Rolf; Oppenlaender, Knut; and Schulze, Joachim, 3,928,688.

Fauth, Frederick E., to American Bottlers Equipment Company. Automatic control system for a motor-driven conveyor section. 3,927,757, Cl. 198-37.000.

Fawcett, Derek James, to Lewmar Marine Limited. Disengaging clutch systems for a three-speed winch. 3,927,580, Cl. 74-812.000.

Feichtner, John D., to Westinghouse Electric Corporation. Collinear acousto-optical tunable filter and acousto-optically tunable laser. 3,928,814, Cl. 331-94.50M.

Fekete, Eugene Zoltan, to Huyck Corporation. Papermakers felts. 3,928,699, Cl. 428-212.000.

Feldkamper, Richard: *See—*
Brockmuller, Friedrich Franz; Schwarzkopf, August; and Feldkamper, Richard, 3,927,606.

Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung: *See—*
Poeschl, Rudolf, 3,928,125.

Fella-Werke G.m.b.H.: *See—*
Stefan, Johann; and Daum, Hermann, 3,927,680.

Feniak, George, to Polysar Limited. Halogenated butyl rubber of improved scorch characteristics. 3,928,259, Cl. 260-5.000.

Fenichel, Richard L.: *See—*
Wolf, Milton; Sellstedt, John H.; and Fenichel, Richard L., 3,928,590.

Fenn, Robert W., III: *See—*
O'Leary, Kevin J.; Tomba, Charles P.; and Fenn, Robert W., III, 3,928,166.

Fenner, Hans-Ueli: *See—*
Ullmann, Werner; Schumacher, Bernd; Mattei, Silvano; Fenner, Hans-Ueli; and Sieg, Arno, 3,928,163.

Ferguson, Laureen M., to Raymond Lee Organization, Inc., The, a part interest. Guitar finger shield. 3,927,595, Cl. 84-322.000.

Ferrario, Renzo: *See—*
Papa, Sisto; Moiso, Ugo; and Ferrario, Renzo, 3,927,963.
Papa, Sisto Sergio; and Ferrario, Renzo, 3,928,313.

Ferrigno, Thomas Howard. Hydrous magnesium containing silicate minerals with reduced absorbencies. 3,928,059, Cl. 106-306.000.

Ferro Corporation: *See—*
Snow, Jerry D., 3,928,668.

Fertin, Jacques, to U.S. Philips Corporation. Linear display device. 3,928,864, Cl. 357-17.000.

Ferveur, Bernard Raymond Pierre: *See—*
Courtade, Michel Armand Christian; and Ferveur, Bernard Raymond Pierre, 3,928,620.

Fiat Societa per Azioni: *See—*
Vannini, Paolo; Anselmino, Luigi; and Frazzini, Giuseppe, 3,928,780.

Fiberglas Canada Limited: *See—*
Holden, Derek J., 3,928,105.

Fichtel & Sachs A.G.: *See—*
Bergles, Eduard, 3,927,736.
Bergles, Eduard, 3,927,904.

Field, Peter Graham Spencer; and Lock, David Anthony, to Burmah Oil Trading Limited. Production of phenols from decomposition of aromatic hydroperoxides. 3,928,477, Cl. 260-621.00C.

Fikentscher, Rolf: *See—*
Dachs, Karl; Faulhaber, Gerhard; Fikentscher, Rolf; Oppenlaender, Knut; and Schulze, Joachim, 3,928,688.

Fineman, J. C.: *See—*
Jones, Roger W.; Fineman, J. C.; and Roesser, James R., 3,927,752.

Fink, Werner; and Kircher, Dieter, to ITT Industries, Inc. Hydraulic anti-skid control arrangement including a plurality of throttles for synchronous and asynchronous control of the wheels of one axle of a vehicle. 3,927,914, Cl. 303-21.00F.

Finmekano Erik Samuelsson AB: *See—*
Samuelsson, Mokjas Erik Samuel, 3,927,550.

Finnen, Gerald W.; and Wilson, Herman Q., to Westinghouse Electric Corporation. Tamper proof watthour meter enclosure. 3,928,788, Cl. 317-111.000.

Firestone Tire & Rubber Company, The: *See—*
Hergenrother, William L., 3,928,490.
Lohr, Delmar F., Jr.; and Kang, Jung W., 3,928,282.
Sanda, Joseph C., Jr., 3,928,291.

Firewood, Inc.: *See—*
Anthony, Wilson B., 3,928,677.

Firmenich S.A.: *See—*
Kovats, Ervin; Demole, Edouard; Ohloff, Gunther; and Stoll, Max, deceased, 3,928,456.
Naf, Ferdinand, 3,928,402.
Stadler, Paul A.; Eschenmoser, Albert; and Sundt, Erling, 3,928,246.

Firtion, Victor Andrew: *See—*
Brady, Kevin James; Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, 3,927,939.

Fischer & Porter Co.: *See—*
Ketelsen, Broder, 3,927,564.
Narita, Mikio; Ohashi, Kiyoto; and Yamamoto, Jun, 3,928,810.

Fisher Gauge Limited: *See—*
Fisher, William Frederick; and Hodgson, Timothy Brian, 3,927,711.

Fisher, John G.; and Straley, James M., to Eastman Kodak Company. Novel quaternized heterocyclic monoazo dyes. 3,928,311, Cl. 260-156.000.

Fisher, Michael H.: *See—*
Bochis, Richard J.; and Fisher, Michael H., 3,928,372.

Fisher, William Frederick; and Hodgson, Timothy Brian, to Fisher Gauge Limited. High pressure die casting apparatus. 3,927,711, Cl. 164-303.000.

Fishman, Herbert; and Kresge, James S., to General Electric Company. Metal oxide voltage-variable resistor composition. 3,928,245, Cl. 252-521.000.

Fisk, Harry R.; and Clark, Jeffrey J., to Garrett Corporation, The. Braze alloy system. 3,928,029, Cl. 75-159.000.

Fisons Ltd.: *See—*
Jablonski, John Michael; and Miller, John, 3,928,410.

Flachglas Aktiengesellschaft Delog-Detag: *See—*
Lang, Joseph; Meckenstock, Helmut; and Nopper, Hans-Joachim, 3,927,819.

Fleck, Fritz; Schmid, Horst; Mercer, Alec Victor; and Paver, Roger, to Sandoz Ltd. Bis-v-triazolyl-stilbenes. 3,928,329, Cl. 260-240.100.

Fleckenstein, Lee J., to Eastman Kodak Company. Novel p-sulfonamidophenols capable of releasing a heterocyclic azo dye. 3,928,312, Cl. 260-156.000.

Fleischhauer, Horst: *See—*
Westlinning, Hermann; Schwarze, Werner; and Fleischhauer, Horst, 3,928,344.

Flider, Frank S., to Justrite Manufacturing Company. Plastic jerry can. 3,927,797, Cl. 220-318.000.

Flight Connector Corporation: *See—*
Iacobucci, Cesidio R., 3,927,841.

Flosser, Walter, to Oehler-Wyhlen-Lagertechnik A.G. Warehouse with high shelves. 3,927,495, Cl. 52-36.000.

Fluid Energy Processing & Equipment Co.: *See—*
Stephanoff, Nicholas N., 3,927,479.

Flymo Societe Anonyme: *See—*
Arnblock, Lennart Oswald, 3,927,510.

FMC Corporation: *See—*
Ramaker, Dudley D.; and Keller, Roger W., 3,927,513.
Reimers, James L.; and Miller, Rodney D., 3,927,976.

Foell, Theodore J.; and Yardley, John P., to American Home Products Corporation. P-Glu-D-Phe-Trp-Ser-Tyr-D-Phee-Leu-Arg-Pro-Gly-NH2 and intermediates. 3,928,307, Cl. 260-112.5LH.

Fohlen, George M.; Parker, John A.; and Sawko, Paul M., to United States of America, General Counsel-Code GP. Transparent fire resistant polymeric structures. 3,928,708, Cl. 428-412.000.

Fokakis, Nicholas J.; and Woods, Paul S. Incinerator system for dry waste material. 3,927,626, Cl. 110-18.00R.

Fong, Willie, deceased: *See—*
Friedman, Mendel; Ash, John F.; and Fong, Willie, deceased, 3,927,962.

Fong, Yukiye, executrix: *See—*
Friedman, Mendel; Ash, John F.; and Fong, Willie, deceased, 3,927,962.

Fontaine, Michel J. Injectable glycoproteins containing terminal "C" ends of human immunoglobulins. 3,928,580, Cl. 424-177.000.

Ford, James A., to Kirsch Company. Positively supported cam for engaging a traverse rod. 3,927,437, Cl. 16-94.00R.

Ford, James A.; and Butt, Sheldon H., to Olin Corporation. Catalyst for the reduction of automobile exhaust gases. 3,928,234, Cl. 252-455.00R.

Ford Motor Company: *See—*
Chang, Yun-Feng; Cheung, Mo-Fung; and Dickie, Ray A., 3,928,273.

Formall, Inc.: *See—*
McCall, John W., 3,927,760.

Formica International Limited: *See—*
Gibbons, Harold, 3,928,706.

Forrister, John J. Apparatus and method for producing a compressed, rolled package of resilient material. 3,927,504, Cl. 53-21.0FW.

Forsberg, Svante; Larbo, Stig; and Stephensen, Bjorn, to Allmanna Svenska Elektriska Aktiebolaget. Transformer winding with helically wound layers of a tape-like conductor. 3,928,832, Cl. 336-70.000.

Foster, Homer R.: *See—*
Harrell, William C.; and Foster, Homer R., 3,928,012.

Foster, James W. Clothing belt buckles. 3,927,442, Cl. 24-163.00K.

Foster, Victor W.: *See—*
Da Costa, Harry; and Foster, Victor W., 3,927,559.

Foster Wheeler Energy Corporation: *See—*
Brunn, Frederick Milton, 3,927,627.

Foster, William R.: *See—*
Burdyn, Ralph F.; Chang, Harry L.; and Foster, William R., 3,927,716.

Fowler, John T.: *See—*
Lapeyre, James M.; and Fowler, John T., 3,927,474.

Fox, Michael Frank: *See—*
Saunders, Peter Anthony; Fox, Michael Frank; Fagan, Anthony Francis; and Derbyshire, Philip Edward, 3,928,216.

Fox, Murray J. Stacking collar for warehousing and transporting sheet material. 3,927,764, Cl. 206-451.000.

Franck, Jean-Pierre: *See—*
Torck, Bernard; Franck, Jean-Pierre; and Derrien, Michel, 3,928,488.

Frank, Kjell: *See—*
Broms, Anders; and Frank, Kjell, 3,928,794.

Frankel, Edwin N., to United States of America, Agriculture. Selective hydrocarboxylation of unsaturated fatty compounds. 3,928,231, Cl. 252-413.000.

Frankenfeld, John W.: *See—*
Wright, Donald L.; and Frankenfeld, John W., 3,928,557.

Frantz, Lanier. Testing fitting for pressure-responsive devices. 3,927,553, Cl. 73-4.00R.

Frazier, Arthur E., to Phillips Petroleum Company. Pelleting carbon black. 3,927,988, Cl. 23-314.000.

Frazzini, Giuseppe: *See—*
Vannini, Paolo; Anselmino, Luigi; and Frazzini, Giuseppe, 3,928,780.

Frederick, Leonard L. Pile driving moving cylinder hammer with valved, fixed piston. 3,927,722, Cl. 173-125.000.

Freeman, Jere E.; Abdullah, Mukhtar; and Bocan, Byron J., to CPC International Inc. Process for wet milling corn. 3,928,631, Cl. 426-18.000.

Freeman, Lawrence M.; and Arnold, Francis T. Drive system with mechanical time delay. 3,927,935, Cl. 355-14.000.

Freeman, William H.; and Williamson, Herschel M., to Caterpillar Tractor Co. Method and apparatus for removing plungers from piston assemblies. 3,927,462, Cl. 29-427.000.

French, Walter K., to Seagrave Corporation, The. Method for the direct manufacture of tempered glass sheets from a ribbon of glass. 3,928,013, Cl. 65-97.000.

Frendberg, Arthur M.: *See—*
Dungey, Harold J.; and Frendberg, Arthur M., 3,927,646.

Fried, John H.: *See—*
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,928,379.

Friedman, Mendel; Ash, John F.; and Fong, Willie, deceased (by Fong, Yukiye, executrix), to United States of America, Agriculture. Non-discoloring flame resistant wool. 3,927,962, Cl. 8-17.000.

Friedman, Mendel: *See—*
Koenig, Nathan H.; and Friedman, Mendel, 3,927,969.

Friedrich Kocks GmbH: *See—*
Herchenroder, Johannes, 3,927,867.

Friese, Karl-Hermann: *See—*
Esper, Friedrich J.; Friese, Karl-Hermann; and Pollner, Rudolf, 3,928,837.

Friis, Walter, Jr.; and Rudzik, Allan D., to Upjohn Company, The. Novel method and compositions. 3,928,589, Cl. 424-244.000.

Fritsche, G. Ray; and Haniak, Leonard W., to Gulf Research & Development Company. Electrofilter. 3,928,158, Cl. 204-188.000.

Fritz, Hans: *See—*
Werle, Eugen; Fritz, Hans; and Schult, Harald, 3,928,305.

Friz, Helmut A.; and Grube, Dieter, to Adolf Friz Gesellschaft mit beschrankter Haftung. Apparatus for charging panels into a press. 3,927,612, Cl. 100-215.000.

Froehlich, Leonhard H.; and Dowell, Arthur M., Jr., to Tee-Pak, Inc. Method for forming processed meats. 3,928,651, Cl. 426-641.000.

Fryar, Durward, to Procter & Gamble Company, The. Vacuum deaerator for viscous liquids. 3,928,003, Cl. 55-41.000.

Frye, Clifton G.; and McBride, Warren L., to Standard Oil Company. Method of controlling catalyst deposits in hydrodesulfurization. 3,928,178, Cl. 208-210.000.

Fugi Xerox Co., Ltd.: *See—*
Sakaue, Fukumatsu, 3,927,638.

Fuji Oil Company, Ltd.: *See—*
Ohta, Ioe; Matsunobu, Akira; Nishizawa, Masafumi; Kubota, Hayato; and Sakamoto, Kenshi, 3,928,635.

Fuji Photo Film Co., Ltd.: *See—*
Arai, Atsuaki; Oishi, Yasushi; Yamada, Minoru; Yokota, Yukio; Tanaka, Mitsugu; and Inouye, Kozo, 3,928,044.
Iwasa, Masakazu; Miyatuka, Hajime; Horikawa, Kazuo; and Wakabayashi, Tomisaku, 3,928,655.
Matsukawa, Hiroharu; and Hayashi, Takao, 3,928,702.
Nakazawa, Yoshiyuki; Nakamura, Yashuharu; Nakajima, Yosuke; Matsuyama, Junichi; and Sato, Akira, 3,928,856.
Shimamura, Isao; and Iwano, Haruhiko, 3,928,040.
Tadokoro, Eiichi; and Kitamoto, Tatsuji, 3,928,159.
Takahashi, Isoji, 3,928,669.

Fuji Photo Optical Co., Ltd.: *See—*
Numata, Saburo; and Fujino, Shinichiro, 3,928,860.

Fuji Xerox Co., Ltd.: *See—*
Handa, Kenichi, 3,927,641.
Kitahara, Hitoshi; and Pei, Jack C., 3,927,940.
Terajima, Yasuhiko, 3,927,877.

Fujii, Kihiro: *See—*
Orito, Zen-ichi; Uchida, Minoru; Takesue, Masatoshi; Sahara, Hajime; and Fujii, Kihiro, 3,928,528.

Fujiki, Konosuke: *See—*
Morita, Shiro; Fujiki, Konosuke; and Takeda, Kazuo, 3,928,208.

Fujikura, Suguru: *See—*
Ohotsubo, Hiro; Fujikura, Suguru; and Miyata, Yoshimitsu, 3,928,099.

Fujino, Hidekazu: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Fujino, Hidekazu; Tanimoto, Kenji; Hosaka, Hirokazu; Ehara, Kazunari; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; and Yasuda, Minoru, 3,928,469.

Fujino, Shinichiro: *See—*
Numata, Saburo; and Fujino, Shinichiro, 3,928,860.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Umio, Suminori; Ueda, Ikuo; Sato, Yoshinari; and Maeno, Shizuo, 3,928,356.

Fujita, Yoshiji; Omura, Yoshiaki; Nishida, Takashi; and Itoi, Kazuo, to Kuraray Co., Ltd. Process for preparing farnesyl acetic acid esters and 2-substituted-products thereof. 3,928,403, Cl. 260-410.90N.

Fujiwhara, Mitsuto; Endo, Takaya; Satoh, Ryosuke; Masukawa, Toyoaki; and Uozumi, Takahiro, to Konishiroku Photo Industry Co., Ltd. Development inhibitor yielding compound for silver halide photography. 3,928,041, Cl. 96-66.300.

Fukao, Masami: *See—*
Nagase, Tsuneyuki; Suzukamo, Gohu; and Fukao, Masami, 3,928,485.

Fukasawa, Atsushi: *See—*
Takahashi, Kazunori; and Fukasawa, Atsushi, 3,928,824.

Fukuda, Masaaki: *See—*
Watatani, Yoshizumi; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; and Yoshino, Takehiko, 3,928,720.

Fukuda, Yoshiharu; Onishi, Toshio; and Takeuchi, Akitoshi, to Onoda Cement Company, Ltd. Method of improving the grade of phosphoric acid by-product gypsum to be used as an inhibitor for cement setting and its apparatus. 3,928,053, Cl. 106-109.000.

Fukuhara, Satoru: *See—*
Hosoki, Shigeru; Ohtsuka, Michio; and Fukuhara, Satoru, 3,928,783.

Fukui, Nobuhiko: *See—*
Masai, Yukito; Kato, Yasuo; Murayama, Ken; and Fukui, Nobuhiko, 3,928,283.

Fukunishi, Koji: *See—*
Tabushi, Iwao; and Fukunishi, Koji, 3,928,480.

Fuller Company: *See—*
Laslo, Dennis J., 3,928,005.

Furukawa Electric Co., Ltd., The: *See—*
Kashiyama, Hiroshi; and Tobita, Susumu, 3,928,519.

Furuno, Kouji; Nakano, Hideki; Matsubara, Syuzo; and Shioya, Akitoshi, to Chugai Seiyaku Kabushiki Kaisha. Method for reducing side effects of aminoglycoside antibiotics. 3,928,583, Cl. 424-180.000.

Furuta, Akio: *See—*
Morikawa, Kiyoshi; Furuta, Akio; and Matsumoto, Hideyuki, 3,928,002.

Fuveau S.A.: *See—*
Moreau, Michele; Karadavidoff, Isaac; and Risse, Claude, 3,928,603.

Fuwa, Masaru; Takahashi, Kiyoshi; Otsuji, Masaaki; and Matsui, Masatake, to Mitsubishi Petrochemical Co., Ltd.; and Dainichi-Nippon Cables, Ltd. Method for forming and vulcanizing vulcanizable materials. 3,928,525, Cl. 264-174.000.

Fuzesi, Stephen; and Syrop, Allan H., to Olin Corporation. Reduction of friability in rigid polyurethane foam. 3,928,257, Cl. 260-2.5AS.

G.S. Beckwith Gilbert: *See—*
Herrmann, John R.; and Alexander, Robert L., 3,927,950.

GAF Corporation: *See—*
Randall, David I.; and Wynn, Robert W., 3,928,018.

Galarza, Ernesto Felix. Indoor soccer ball. 3,927,882, Cl. 273-65.00E.

Gall, Rudi: *See—*
Berger, Herbert; Gall, Rudi; Thiel, Max; Vomel, Wolfgang; and Sauer, Winfriede, 3,928,342.
Berger, Herbert; Gall, Rudi; Stach, Kurt; Vomel, Wolfgang; and Hoffmann, Rita, 3,928,349.

Gallay, Jean-Jacques: *See—*
Spaun, Rudiger; Rochat, Alain Claude; Gallay, Jean-Jacques; and Brenneisen, Paul, 3,928,437.

Gannon, Charles R., to Ashland Oil, Inc. Pitch-impregnated fiber pipe. 3,927,696, Cl. 138-243.000.

Gannon, Charles R., to Ashland Oil, Inc. Process for making pitch-impregnated fiber pipe. 3,928,680, Cl. 427-398.000.

Garcia, Fe, to Rosenblum, Saul A., a part interest. Device for sealing body cavity during introduction of fluid to or extraction of fluid from said cavity. 3,927,672, Cl. 128-245.000.

Gardner, John: *See—*
Lavochkin, Ronald B.; and Gardner, John, 3,927,802.

Garrett Corporation, The: *See—*
Cholvin, Robert L., 3,927,524.
Fisk, Harry R.; and Clark, Jeffrey J., 3,928,029.
Kirby, Robert F., 3,927,952.
Novak, Edward A.; and Paclik, George F., 3,927,567.
Struttmann, Donald R.; and Ryan, William F., 3,927,694.

Garrigoux, Joseph: *See—*
Demars, Paul; Cuny, Francis; Garrigoux, Joseph; and Tassart, Christian, 3,928,745.

Gartner, Jurgen: *See—*
Linden, Heinz; Gartner, Jurgen; Offermann, Wilhelm; and Demmering, Gunther, 3,928,276.

Gasbarro, Geno N. Method for marinating poultry products. 3,928,634, Cl. 426-281.000.

Gates Rubber Company, The: *See—*
Douros, John D., Jr.; and Kerst, Al F., 3,928,017.

Gatewood, Askew Warren, Jr. Inventory device for packaged items. 3,927,922, Cl. 312-234.000.

Gatsis, John G., to Universal Oil Products Company. Process for hydrorefining a residual hydrocarbon. 3,928,179, Cl. 208-213.000.

Gault, Ian Ray, to Colgate-Palmolive Company. Speckle particle for dentifrice. 3,928,555, Cl. 424-22.000.

Gebr. Bohler & Co. AG: *See—*
Kleinhagauer, Otmar, 3,927,855.

Gebr. Happich GmbH: *See—*
Meissner, Wolfgang, 3,927,846.

Gebr. Hofmann KG: *See—*
Schleimann, Peter, 3,927,561.

Geddes, Paul E., to GNP Plastics Corporation. Male and female urinal. 3,927,426, Cl. 4-110.000.

Geiger, Erich, to Loewe-Opta GmbH. Energy stabilization in a horizontal deflection circuit for a television receiver. 3,928,787, Cl. 315-403.000.

Gendron, Aubrey S.; Tilak, Bommaraju V.K.S.R.A.; and Ettel, Victor A., to International Nickel Company, Inc., The. Electrowinning process. 3,928,153, Cl. 204-112.000.

General Concrete of Canada Limited: *See—*
Aylon, Norman N., 3,928,114.

General Dynamics Corporation: *See—*
Caron, Norman O., 3,927,623.

General Electric Company: *See—*
Buchanan, Edward R.; and Tarshis, Lemuel A., 3,928,030.
Campbell, John H., 3,928,786.
Cech, Robert E., 3,928,089.
Fishman, Herbert; and Kresge, James S., 3,928,245.
Godwin, Stanley J.; and Klint, Robert V., 3,927,555.
Guth, Lauren W., 3,927,853.
Lynch, Edward I., 3,928,867.
May, John E., 3,928,242.
Mullersman, Ferdinand H., 3,928,791.
Mullersman, Ferdinand Henry; and Sarisky, James Edward, 3,928,792.
Olthuis, Eugene G., 3,927,658.
Orser, David A., 3,928,394.
Osteen, Mitchell M.; and Martin, Myron D., 3,928,758.
Pawliw, John; and Zabrodsky, Jarda, 3,928,130.
Pustell, Robert Algerd; and Haselton, Thomas Parker, 3,927,928.
Sliva, Daniel E.; and Selley, William G., 3,928,516.
Slusarczuk, George M. J., 3,928,220.
Steigerwald, Robert L., 3,928,775.
Thornton, Roy F., 3,928,071.
Vierti, John R. M., 3,927,557.

General Foods Corporation: *See—*
Katz, Saul N., 3,928,636.
Shoat, Myron D.; and Pischke, Lamonte D., 3,928,633.
Stahl, Howard D.; and Sims, Rex J., 3,928,648.

General Instrument Corporation: *See—*
Miner, Carroll R., 3,927,572.

General Mills Chemicals, Inc.: *See—*
Jordan, Wesley A.; and Carter, Walter H., 3,928,316.

General Motors Corporation: *See—*
Arvin, John R.; Sullivan, Robert E.; and Troth, Dennis L., 3,927,520.
Bailey, Donald J., 3,928,086.
Hartley, Frederick J., 3,927,984.
Jacobs, James W., 3,927,525.
Jennings, Gene A.; Streitferdt, John J.; and Suverison, Lyle B., 3,928,079.
Jobst, Wolfgang, 3,927,607.
Kudza, Thomas M.; Schwyn, Raymond E.; and Berg, Morris, 3,928,243.
Langhorst, Fred E., 3,927,554.
Quinn, Ronald E., 3,927,958.
Rice, Daniel L., 3,927,574.
Smith, Claude A.; Taylor, David E.; and Williams, Donald L., 3,927,650.

General Signal Corporation: *See—*
Sibley, Henry C., 3,927,852.
Wilcox, Clinton S., 3,927,851.

General Staple Company: *See—*
Zahn, Irwin; and Husain, Feroz, 3,927,453.

General Tire & Rubber Company, The: *See—*
Fabris, Hubert J.; and Phillips, Wendell O., 3,928,502.
Hargis, Ivan Glen; and Livigni, Russell Anthony, 3,928,302.
Hipsher, Gary L.; and Vosburgh, Robert D., 3,928,103.

Genz, Ralph H.: *See—*
Zinsmeyer, Herbert G.; Johnson, Rodney L.; Genz, Ralph H.; and Setliff, James E., 3,927,800.

Geordan, Richard H.: *See—*
Tschudi, Dennis E.; and Geordan, Richard H., 3,928,809.

George G. Sharp, Inc.: *See—*
Giblon, Robert P., 3,927,535.

George Kent, Limited: *See—*
Rogers, Ivor Thomas, 3,927,451.

Georgiade, Nicholas G.; and Latham, Ralph A., to University of North Carolina, by said Ralph A. Latham. Apparatus for use in the correction of maxillary and premaxillary conditions in infants. 3,927,664, Cl. 128-76.00R.

Gerber Garment Technology, Inc.: *See—*
Gerber, Heinz Joseph, 3,927,591.

Gerber, Heinz Joseph, to Gerber Garment Technology, Inc. Support bed for sheet material cut by a fluid jet. 3,927,591, Cl. 83-177.000.

Gerbier, Gerard; and Depoix, Pierre, to Saft-Societe des Accumulateurs Fixes et de Traction. Air depolarized electric cell. 3,928,072, Cl. 136-86.00A.

Gerrard, Alan Joseph, to Lucas Aerospace Limited. Liquid atomising devices. 3,927,835, Cl. 239-400.000.

Gerritsma, Cornelis Jan: *See—*
van Boxtel, Antonius Marinus; and Gerritsma, Cornelis Jan, 3,928,658.

Gianessi, Albert, to Caterpillar Tractor Co. Apparatus for detachably mounting an engine belly guard to a vehicle main frame. 3,927,729, Cl. 180-69.100.

Gibble, Lawrence W.; and Keesey, Dennis Lee, to Caterpillar Tractor Co. Formed one-piece hollow roller shaft. 3,927,449, Cl. 29-148.40D.

Gibbons, Harold, to Formica International Limited. Wear-resistant decorative laminates and methods for producing same. 3,928,706, Cl. 428-323.000.

Giblon, Robert P., to George G. Sharp, Inc. Jack-up type offshore oil production platform apparatus and method. 3,927,535, Cl. 61-46.500.

Giebel, Buddy E., to Union Camp Corporation. Carton with improved ends. 3,927,822, Cl. 229-23.00R.

Gilbreth Company: *See—*
Spiegel, William; Spiegel, Jacob; and Miller, Albert, 3,927,484.

Gildone, Anthony M.: *See—*
Martin, Richard E.; and Gildone, Anthony M., 3,927,801.

Gilford, Ira B.: *See—*
Glass, Marvin I.; Morrison, Howard J.; and Gilford, Ira B., 3,927,884.

Gilles, Theodore C., to Lennox Industries Inc. Energy reclaiming multi-zone air processing system. 3,927,713, Cl. 165-16.000.

Gilron Holdings Limited: *See—*
Tindley, Ronald John, 3,927,799.

Gingell, Michael J., to International Standard Electric Corporation. Code translation arrangement. 3,928,823, Cl. 332-11.00R.

Giordano, Nicola: *See—*
Pignataro, Francesco; Faletti, Franco; Castellan, Arsenio; Bossi, Alessandro; Marinozzi, Paolo; and Giordano, Nicola, 3,928,409.

Giraud, Adrien: *See—*
Pavlin, Cyrille Francois; Mantoux, Gerard; Giraud, Adrien; and Grossin, Michele, 3,927,565.

Girke, Dieter: *See—*
Brachert, Heinrich; Girke, Dieter; and Kleiss, Joachim, 3,928,514.

Gist-Brocades N.V.: *See—*
Van Eek, Theodoor; and Beukers, Robert, 3,928,573.

GKN Transmissions Limited: *See—*
Pagdin, Brian Colin, 3,927,653.

Glaser, Ernest; and Ingerson, Philip F., to Avoset Food Corporation. Egg substitute product. 3,928,632, Cl. 426-72.000.

Glass, Marvin I.; Morrison, Howard J.; and Gilford, Ira B., to Marvin Glass & Associates. Surface projectile amusement device. 3,927,884, Cl. 273-119.00R.

Glass Tubes and Components Limited: *See—*
Chambers, Arnold, 3,927,873.

Glatt, Linda R. Bandage construction. 3,927,669, Cl. 128-156.000.

Glavna Directzia Kbumkp Pri Sgns: *See—*
Anastasov, Ivan Krestev, 3,927,543.

Globe-Union Inc.: *See—*
Leppek, William Wayne, 3,928,838.

Glowe, Donald E.: *See—*
Thornton, J. Scott; and Glowe, Donald E., 3,928,253.

GMF Inc.: *See—*
Martin, Richard E.; and Gildone, Anthony M., 3,927,801.

GNP Plastics Corporation: *See—*
Geddes, Paul E., 3,927,426.

Gobeli, David H.; and Adams, John M., to Medtronic, Inc. Demand cardiac pacer. 3,927,677, Cl. 128-419.0PG.

Gobert, Jean, Georges; and Close, Jean, Adolphe, to UCB Societe Anonyme. Lysino-calcium chloride and pharmaceutically acceptable acid salts thereof. 3,928,506, Cl. 260-924.000.

Godwin, Stanley J.; and Klint, Robert V., to General Electric Company. Hydrogen detector system. 3,927,555, Cl. 73-23.000.

Goetzmann, Claus, to Siemens Aktiengesellschaft. Nuclear reactor element. 3,928,129, Cl. 176-38.000.

Gogarty, William B.: *See—*
Dreher, Karl D.; and Gogarty, William B., 3,928,215.

Golan, Kenneth Frank, to Caterpillar Tractor Co. Down shift inhibitor system for automatic transmission control. 3,927,579, Cl. 74-752.00C.

Goldberg, Paul; and van Heerden, Pieter J., to Polaroid Corporation. Light polarization employing magnetically oriented ferrite suspensions. 3,927,930, Cl. 350-151.000.

Goldovsky, Evgeny Alexandrovich: *See—*
Berlin, Alfred Anisimovich; Aseeva, Roza Mikhailovna; Mezhikovsky, Semen Markovich; Sherle, Alla Ilinichna; Tsepalova, Nadezhda Alexeevna; Goldovsky, Evgeny Alexandrovich; Zelenetskaya, Tatiana Vladimirovna; Fatkulina, Rozalia Komalovna; and Kuzminsky, Alexandr Samoilovich, 3,928,489.

Gondo, Hisashi; Takechi, Hiroshi; Namba, Kazuo; Usuda, Matsuo; and Kawasaki, Kouichi, to Nippon Steel Corporation. Process for producing an enamelling steel sheet. 3,928,083, Cl. 148-2.000.

Goodell, Paul Douglas. Catalyst for purification of waste streams. 3,928,235, Cl. 252-458.000.

Goodfellow, Robert Charles: *See—*
Rowe, Stephen Henry; Bass, John Charles; and Goodfellow, Robert Charles, 3,928,102.

Goodyear Aerospace Corporation: *See—*
Zarembka, Robert L., 3,927,740.

Goodyear Tire & Rubber Company, The: *See—*
Arconti, Richard J.; and Pierson, Robert M., 3,928,110.
Henderson, James Neil, 3,928,301.
Kavchok, Ronald W., 3,928,296.
Krishnan, Ram Murthy, 3,928,451.
Lawrence, John P., 3,928,340.
Reilly, Charles B.; and Rossi, Robert K., 3,928,289.

Gordon, Robert Cornelius, Jr.: *See—*
Persinski, Leonard John; Ralston, Paul Hotchkiss; and Gordon, Robert Cornelius, Jr., 3,928,196.

Gordon, Robert E.; Jones, Robert W.; Paul, Rajendra; and Simon, Robert H. M., to Monsanto Company. Continuous staged isobaric stirred polymerization apparatus. 3,927,983, Cl. 23-260.000.

Goto, Kenji; and Niwa, Takao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Structure of the combination chamber of internal combustion engines. 3,927,655, Cl. 123-191.00R.

Goto, Sumio; and Ishihara, Kazuhiko, to Dai-ichi Kogyo Seiyaku Co., Ltd. Harmless softening agent for fabrics having excellent moisture absorbability. 3,928,212, Cl. 252-8.600.

Gotte, Hans: *See—*
Bock, Hartmut; and Gotte, Hans, 3,928,764.

Gough, Robert George; and Buescher, Francis Joseph, to Cincinnati Milacron, Inc. Synergistic organotin borate stabilizer composition and resins containing same. 3,928,285, Cl. 260-45.75K.

Goward, George W.: *See—*
Hecht, Ralph J.; Goward, George W.; and Elam, Richard C., 3,928,026.

Graco Inc.: *See—*
Siczek, Bernard W., 3,927,605.

Grahame, Robert E., Jr.: *See—*
Hubbard, Winchester L.; Grahame, Robert E., Jr.; Covey, Rupert A.; and Jancis, Elmar H., 3,928,617.

Grant, Peter M., to Eastman Kodak Company. Process for producing polyolefin powders with grinding aids and powder composition of grinding aids and polyolefins. 3,928,263, Cl. 260-17.00R.

Graupmann, Lloyd Earl, to Chromalloy American Corporation. Ramp for transporting wheel mounted machinery. 3,927,775, Cl. 214-85.000.

Graven, Richard G.: *See—*
Davis, Francis E., Jr.; Graven, Richard G.; Lee, Wooyoung; and Sailor, Robert A., 3,928,172.

Gray, Don N.: *See—*
Crawford, James E.; and Gray, Don N., 3,928,294.

Grayson, John T. Turkey call. 3,927,490, Cl. 46-189.000.

Great Plains Bag Corporation: *See—*
Stearley, Robert J., 3,927,825.

Greco, Carl C.; Mirviss, Stanley B.; and Martell, Arthur E., to Stauffer Chemical Company. Process for the production of complex mixtures of N-benzyl-dihydro-nicotinic acid dimers and metal salts thereof and derivatives thereof. 3,928,365, Cl. 260-295.50R.

Green, Harold; and Halasz, Stephen J., to Veriprint Systems Corporation. Fingerprint comparator. 3,928,842, Cl. 340-146.30Q.

Green, Harold A.; Merianos, John J.; and Petrozzi, Alfonso N., to Millmaster Onyx Corporation. Anti-microbial quaternary ammonium co-polymers. 3,928,323, Cl. 260-239.00B.

Greenberg, Walter H., to Beschoff Chemical Corporation. Low pressure injection molding involving mold fill detection. 3,928,518, Cl. 264-40.000.

Greene, James M.; and Indelicato, Joseph M., to Eli Lilly and Company. Antibiotic pharmaceutical compositions. 3,928,592, Cl. 424-246.000.

Greenlee Bros. and Co.: *See—*
Linquist, Wayne A., 3,927,866.

Greenspan, George; and Leeming, Michael R. G., to American Home Products Corporation. Microbiological reduction of 7-(2(3-hydroxy-1-octenyl)-5-oxo-3-cyclopentel-1-yl)-5-heptenoic acid and related compounds. 3,928,134, Cl. 195-30.000.

Greenwald, Harry; and Iglio, Salvatore, to Walter Kidde & Co., Inc. Lockable coin slide assembly. 3,927,750, Cl. 194-97.00R.

Gregan, Dorsey J. G.: *See—*
Sinsky, Joel A.; and Gregan, Dorsey J. G., 3,927,552.

Gregg, David W.; and Pearson, Richard K., to United States of America, Energy Research and Development Administration. High energy chemical laser system. 3,928,821, Cl. 331-94.50G.

Gregor, Vaughn. Automatic material-handling apparatus. 3,927,758, Cl. 198-89.000.

Gregory, Donald Dale; and Wendel, Martin Maurice, to Du Pont de Nemours, E. I., and Company. Manufacture of nitrites. 3,928,543, Cl. 423-385.000.

Greve, Heinz Gunter; and Resag, Klaus, to Cassella Farbwerke Mainkur AKT. Benzophenone derivatives and process for their production II. 3,928,415, Cl. 260-470.000.

Griffin, Ronald W. Fire starter and method. 3,927,993, Cl. 44-39.000.

Griffiths, Darrell J. L.; and Huang, Denis K., to Westvaco Corporation. Paper containing a urea-formaldehyde pigment. 3,928,122, Cl. 162-166.000.

Grindley, Robert M.; and Strong, Michael J., to International Audio-Visual Hong Kong Ltd. Tape duplicating device. 3,928,868, Cl. 360-15.000.

Griot, Rudolf G., to Sandoz, Inc. Aminoalkoxy terphenyls and the salts thereof. 3,928,449, Cl. 260-570.700.

Griswold, Augustus W.; and Haritonoff, Boris W. Microfiche deleter apparatus. 3,927,586, Cl. 83-8.000.

Gronbach, Wilhelm. Hinge. 3,927,439, Cl. 16-190.000.

Grossin, Michele: *See—*
Pavlin, Cyrille Francois; Mantoux, Gerard; Giraud, Adrien; and Grossin, Michele, 3,927,565.

Grube, Dieter: *See—*
Friz, Helmut A.; and Grube, Dieter, 3,927,612.

Grulke, Carl A., deceased (by Grulke, Elizabeth N., executrix), to Union Carbide Corporation. Process for recovering HCl and Fe_2O_3 from pickle liquor. 3,928,529, Cl. 423-138.000.

Grulke, Elizabeth N., executrix: *See—*
Grulke, Carl A., deceased, 3,928,529.

Grunwell, Joyce F.; and Benson, Harvey D., to Richardson-Merrell Inc. Derivatives of 7α-methylestr-4-en-3α,17β-diol. 3,928,398, Cl. 260-397.500.

Gruppo Lepetit S.p.A.: *See—*
Lancini, Giancarlo; and Thiry, Lise, 3,928,593.
Winters, Giorgio; and Di Mola, Nunzio, 3,928,371.

GTE Laboratories Incorporated: *See—*
Pappalardo, Romano G.; and Smith, Robert, 3,928,820.

GTE Sylvania Incorporated: *See—*
Passmore, Edmund M., 3,928,244.

Gudmestad, Ragnar; and Sandblom, Sven O., to Artos Engineering Company. Apparatus for producing electrical conductors of measured length. 3,927,590, Cl. 83-151.000.

Guglieri, Michel: *See—*
Sperandio, Francis; and Guglieri, Michel, 3,928,077.

Guinosso, Charles J.: *See—*
Sellstedt, John H.; Guinosso, Charles J.; and Bell, Stanley C., 3,928,612.

Guldin, Maxwell: *See—*
Jette, Emile; and Guldin, Maxwell, 3,927,428.

Gulf Research & Development Company: *See—*
Fritsche, G. Ray; and Haniak, Leonard W., 3,928,158.
Onopchenko, Anatoli; and Schulz, Johann G. D., 3,928,433.

Gulf & Western Manufacturing Company: *See—*
Weyrauch, George L., 3,927,898.

Gulick, Ronald A.: *See—*
Sheesley, John M.; and Gulick, Ronald A., 3,927,573.

Gunsagar, Kamleshwar: *See—*
Anthony, Michael P.; Gunsagar, Kamleshwar; Kim, Choong-Ki; and Walsh, Lloyd R., 3,927,468.

Gunther, Dieter: *See—*
Beck, Gerhard; and Gunther, Dieter, 3,928,373.

Gunther, Ronald G., to Yardney Electric Corporation. Electrolyte for organic electrolyte cells. 3,928,070, Cl. 136-83.00R.

Gupta, Monoj Kumar, to Procter & Gamble Company, The. Dry prepared muffin mixes comprising impact-milled hard wheat flour. 3,928,647, Cl. 426-554.000.

Guth, Lauren W., to General Electric Company. Household appliance leveling system. 3,927,853, Cl. 248-188.200.

Guzzo, Anthony T., to Thiokol Corporation. Method and apparatus for making ammonium perchlorate. 3,928,546, Cl. 423-476.000.

H. H. Investments Limited: *See—*
Bramhill, Percy W., 3,927,681.

Haas, Georges; Sallmann, Alfred; and Rossi, Alberto, to Ciba-Geigy Corporation. Alpha-[p-(1-cyclolower alkenyl)-phenyl]lower fatty acid-pyridyl-lower alkyl esters and derivatives. 3,928,363, Cl. 260-295.50R.

Haas, Hans: *See—*
Aicher, Albrecht; Diem, Hans; Haas, Hans; Hess, Klaus; Hussy, Oskar; Matthias, Guenther; Sperber, Heinrich; and Stickel, Richard, 3,928,460.
Diem, Hans; Matthias, Guenther; Aicher, Albrecht; Haas, Hans; Schreiber, Hans; and Sperber, Heinrich, 3,928,461.

Habermeier, Jurgen, to Ciba-Geigy Corporation. Di-(hydroxyalkyl) imidazolidinediones. 3,928,377, Cl. 260-309.500.

Habrovec, Frantisek: *See—*
Sommer, Karel; Zdrazil, Jiri; Kubinek, Milan; Bahna, Jarolim; Kyselica, Stanislav; Habrovec, Frantisek; and Skarek, Jiri, 3,927,450.

Hack, Heinrich, to Carl Schenck AG, Firma. Apparatus for transporting and adjusting rotative workpieces. 3,927,909, Cl. 294-81.00R.

Hagberg, Carl G., to Monsanto Company. Falling strand devolatilization technique. 3,928,300, Cl. 260-93.50A.

Hagemeyer, Hugh J., Jr.; Blood, Alden E.; and Snapp, Thomas C., Jr., to Eastman Kodak Company. Synthesis of alpha, beta-unsaturated esters, aldehydes, ketones and nitriles. 3,928,458, Cl. 260-593.00R.

Hahn, Peter A.: *See—*
Wood, Louis L.; Hartdegen, Frank J.; and Hahn, Peter A., 3,928,138.

Hairabedian, Barouyr Zareh: *See—*
Edwards, Roger Joseph; Hairabedian, Barouyr Zareh; and Poley, Neil Myron, 3,928,781.

Hakansson, Sven Anders Samuel, to Kommanditbolaget United Stirling (Sweden) AB & Co. Multi-cylinder double-acting stirling cycle engines. 3,927,529, Cl. 60-521.000.

Halasz, Stephen J.: *See—*
Green, Harold; and Halasz, Stephen J., 3,928,842.

Halcon International, Inc.: *See—*
Herzog, Stanley, 3,928,393.

Hall, James M.; and Clipp, Louis L., to Exotech, Incorporated. Apparatus for drilling holes utilizing pulsed jets of liquid charge material. 3,927,723, Cl. 175-422.000.

Hallerberg, Karl Josef, to Borg-Warner, GmbH. Cage for overrunning roller clutch. 3,927,744, Cl. 192-45.000.

Halliburton Company: *See—*
Clement, Clarence C., Jr., 3,928,052.
Hyde, Walter E., 3,927,556.

Hamalainen, Lauri: *See—*
Melaja, Asko J.; Hamalainen, Lauri; and Rantanen, Lasse, 3,928,193.

Hambsch, Erich; Klug, Helmut; Ortner, Herbert; Semmlinger, Walter; and Wirtz, Rudolf, to Hoechst Aktiengesellschaft. Method for working up chloropolyolefin solutions. 3,928,503, Cl. 260-897.00C.

Hamilton, C. Howard; and Ascani, Leonard A., Jr., to Rockwell International Corporation. Method for making metallic sandwich structures. 3,927,817, Cl. 228-157.000.

Hamilton, Charles R.: *See—*
Hoelzen, Warren R.; Hamilton, Charles R.; and Warnock, James E., 3,927,617.

Hamilton, Willard C.; and Wegman, Raymond F., to United States of America, Army. Process for producing stabilized anatase titanium dioxide surfaces for durable adhesive bonding. 3,928,112, Cl. 156-319.000.

Hammann, Ingeborg; Hoffmann, Peter; Marquarding, Dieter; Ugi, Ivar; and Unterstenhofer, Gunter, to Bayer Aktiengesellschaft. Isocyanodiphenyl ethers. 3,928,408, Cl. 260-465.00F.

Hammann, Ingeborg: *See—*
Stolzer, Claus; and Hammann, Ingeborg, 3,928,508.

Hamner, Glen P.; Luzarraga, Mamerto G.; and Stuckey, Alto Nelson, Jr., to Exxon Research and Engineering Company. Heavy crude conversion. 3,928,176, Cl. 208-97.000.

Hampel, Manfred: *See—*
Pommer, Ernst-Heinrich; Polster, Rudolf; Loecher, Friedrich; and Hampel, Manfred, 3,928,606.

Hanado, Masanao; Takamoku, Kensi; Miyoshi, Tsutomu; and Jeng, Shien Tsai, to Tanita Corporation. Digital display type weighing apparatus. 3,927,726, Cl. 177-213.000.

Hanagan, Michael W., to Corbin Gentry Inc. Vehicular seat and fairing assembly. 3,927,727, Cl. 180-30.000.

Hanai, Ichiro; Takahashi, Kazuo; and Kobayashi, Toshiharu, to Sony Corporation. Thermal printing apparatus. 3,928,747, Cl. 219-216.000.

Handa, Kenichi, to Fuji Xerox Co., Ltd. Developing mechanism using magnetic brush. 3,927,641, Cl. 118-637.000.

Hane, Toshihide: *See—*
Sasabe, Kaoru; Kotera, Hiroaki; Hane, Toshihide; and Kihara, Nobuyoshi, 3,928,719.

Haney, Ted I.: *See—*
Warner, Henry L.; and Haney, Ted I., 3,928,839.

Haniak, Leonard W.: *See—*
Fritsche, G. Ray; and Haniak, Leonard W., 3,928,158.

Hans Ehgartner, Firma: *See—*
Willinger, Karl, 3,927,447.

Hansen, Victor Emanual. Fabric edge curler member for a paper machine. 3,928,124, Cl. 162-274.000.

Hanslik, Wilhelm, to Krauss-Maffei Aktiengesellschaft. Multiscrew extruder. 3,927,869, Cl. 259-192.000.

Harada, Hiroshi: *See—*
Takamizawa, Akira; and Harada, Hiroshi, 3,928,327.

Harada, Shunichi; and Abe, Hideo, to Kawasaki Steel Corporation. Pretreating process for vitreous enamelling. 3,927,460, Cl. 29-424.000.

Harada, Toshiaki: *See—*
Shimada, Keizo; Nishikawa, Takeo; Harada, Toshiaki; and Nagahama, Shizuo, 3,928,476.

Harberson, Loyd D.: *See—*
Jackson, James C.; and Harberson, Loyd D., 3,927,587.

Hardinge Brothers, Inc.: *See—*
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Haren, Doyle V.; and Logan, Arthur D., to Dayco Corporation. Method of making microporous elastomeric material. 3,928,521, Cl. 264-49.000.

Hargis, Ivan Glen; and Livigni, Russell Anthony, to General Tire & Rubber Company, The. Alkaline earth metal organometallic compounds, their preparation by metallation and catalysts comprising same. 3,928,302, Cl. 260-94.300.

Harigaya, Hiroshi; Kanai, Masao; and Kano, Toshio, to Kabushiki Kaisha Suwa Seikosha. Semiconductor device and process for manufacturing same. 3,928,095, Cl. 148-188.000.

Harigaya, Hiroshi: *See—*
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Harkness, Samuel D., to United States of America, Energy Research and Development Administration. Nonswelling alloy. 3,928,027, Cl. 75-139.000.

Harrell, William C.; and Foster, Homer R., to PPG Industries, Inc. Method and apparatus for regulating the temperature of a glass sheet float tank. 3,928,012, Cl. 65-65.00A.

Harrington, Edward F., Jr., to Chemetron Corporation. Method of installing cylindrical bellows. 3,927,818, Cl. 228-189.000.

Harris, Alan James: *See—*
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Harris, Timothy L. Curve-drawing apparatus. 3,927,477, Cl. 33-177.000.

Harrison, David; and Sainz, Raul T., to Ransburg Corporation. Apparatus for forming multiple-component composite structures. 3,927,833, Cl. 239-306.000.

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Hartley, Howard A., to Cannell Auto-Process Corporation. Method for blending temperature sensitive ingredients in the production of dough. 3,928,646, Cl. 426-549.000.

Hartwick, Thomas S.; and Hodges, Dean T., Jr., to United States of America, Air Force. Far infrared waveguide laser. 3,928,816, Cl. 331-94.50C.

Harvey, Walter W.; Randlett, Myron R.; and Bangerskis, Karlis L., to Kennecott Copper Corporation. Method for the electrolytic recovery of metal employing improved electrolyte convection. 3,928,152, Cl. 204-106.000.

Hasegawa, Shinichi: *See—*
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Hayes, Douglas R.; and Phipps, Charles M., to United Technologies Corporation. Joining of multi-section ceramic molds. 3,927,710, Cl. 164-25.000.

Hayes, John C., to Universal Oil Products Company. Hydrocarbon conversion with a multimetallic catalytic composite. 3,928,177, Cl. 208-139.000.

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Hedge, John A.; Suld, George; and Urban, Ralph L., to Sun Ventures, Inc. Process for conversion of alkyldecalins and/or alkyltetralins. 3,928,482, Cl. 260-668.00F.

Hedge, John A.: *See—*
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Heraeus-Schott Quarzschmelze GmbH: *See—*
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Hergenrother, William L., to Firestone Tire & Rubber Company, The. Block polymers of polysiloxanes and polybutadiene. 3,928,490, Cl. 260-827.000.

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Hsu, Thomas C.: *See—*
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Huang, Denis K.: *See—*
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Hubbard, Winchester L.; Grahame, Robert E., Jr.; Covey, Rupert A.; and Jancis, Elmar H., to Uniroyal Inc. Control of acarids using certain benzothiazoles or benzothiazolines. 3,928,617, Cl. 424-270.000.

Hubert, Alfred W.; and Russell, Ralph T., to Eli Lilly and Company. Process for lysing mycelial waste. 3,928,642, Cl. 426-521.000.

Hubert Laurenz Naimer: *See—*
Alsch, Gottfried, 3,928,740.

Hudecek, Slavko: *See—*
Heidingsfeld, Viktor; Hudecek, Slavko; Hnidek, Jaroslav; Kolarik, Jan; and Zelinger, Jiri, 3,928,704.

Hudson, Monie S., to United States of America, Health, Education and Welfare. Extracts from active tree saps for treating P388 mouse leukemia. 3,928,584, Cl. 424-195.000.

Hueber, Fritz, to Viennatone Gesellschaft m.b.H. Hearing aid control circuit for suppressing background noise. 3,928,733, Cl. 179-107.00R.

Huffey, Roy Frederick: *See—*
Mallinson, William John; Huffey, Roy Frederick; and Irvin, Geoffrey Pickles, 3,928,697.

Hughes Aircraft Company: *See—*
Bilow, Norman; Boschan, Robert H.; and Landis, Abraham L., 3,928,450.
Hellwarth, Robert W., 3,928,815.
Robusto, Paul F.; and Stephens, Craig P., 3,928,671.

Hughes, John Leonard, to Quentron Optics Pty Ltd. Laser amplifier. 3,928,811, Cl. 330-4.300.

Hugon, Jean H.; Brosseron, Jean; and Ligneres, Pierre J. Distribution function analyzer for measuring telephone equipment holding times. 3,928,803, Cl. 324-181.000.

Hugoson, Birger O.; and Rohr, Carl A., to Westinghouse Electric Corporation. Multicone exhaust diffuser system for a gas turbine. 3,927,521, Cl. 60-39.310.

Hull, Ezekiel H.: *See—*
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Hulme, Clement E. Automatic tire pressure control. 3,927,708, Cl. 152-418.000.

Humphrey, Harold E. B.: *See—*
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Humphrey Instruments, Inc.: *See—*
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Humphrey, William E., to Humphrey Instruments, Inc. Apparatus for opthalmological prescription readout. 3,927,933, Cl. 351-17.000.

Hunter, Wood Eugene; and Hoffmann, Karl H., to Nalco Chemical Company. Raney copper catalyst production and use. 3,928,441, Cl. 260-561.00N.

Husain, Feroz: *See—*
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Hussy, Oskar: *See—*
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Hutter, Ernest: *See—*
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Huxley, Edward E., to Phillips Petroleum Company. Conversion of sulfolene to sulfolane in the presence of a tertiary amine. 3,928,385, Cl. 260-332.100.

Huyck Corporation: *See—*
Fekete, Eugene Zoltan, 3,928,699.

Hyde, Walter E., to Halliburton Company. Expandable pipeline plug leak location method. 3,927,556, Cl. 73-40.50R.

Hydrel A.G.: *See—*
Bunzli, Paul, 3,927,919.

Hyler, John H.; and Johnson, Clifford E., to Westinghouse Air Brake Company. Flight assembly for achieving balanced reaction forces in elevating-type scraper. 3,927,759, Cl. 198-171.000.

Hyttinge, Roy Lennart; Widvall, Lars Olov; and Hook, Anders Erik Ingvar, to Toa-Throne AB. Device for preparation of earth improving substances from organic waste. 3,927,985, Cl. 23-259.100.

I.S.F. S.p.A.: *See—*
Pifferi, Giorgio, 3,928,325.

I-T-E Imperial Corporation: *See—*
McClellan, David P., 3,928,833.

Iacobucci, Cesidio R., to Flight Connector Corporation. Contact. 3,927,841, Cl. 339-278.00C.

Ibrahim, Abd-El-Fattah Ali: *See—*
van Tongerloo, Eric Henry; Ibrahim, Abd-El-Fattah Ali; Colton, Douglas Roy; and Lawrence, John, 3,928,093.

Ichihashi, Hiroshi: *See—*
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Ichikawa, Takehiko: *See—*
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Ichimura, Yutaka: *See—*
Takayama, Yuzi; Ichimura, Yutaka; Aoyagi, Takanobu; and Kishino, Takahiro, 3,928,254.

Ida, Syunya; and Endo, Norio, to Kanebo, Ltd. Method for coloring fibrous material composed of phenolic resins. 3,927,973, Cl. 8-173.000

Ide, Tohru: *See—*
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Idemitsu Kosan Co., Ltd.: *See—*
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Iida, Bunkichi: *See—*
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Iida, Toshihide: *See—*
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IIT Research Institute: *See—*
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Ikekawa, Nobuo; Morisaki, Masuo; Lightbourn, Julieta Rubio; and Seki, Masao, to Eisai Co., Ltd. New 5-cholestene derivatives and preparation thereof. 3,928,397, Cl. 260-397.200.

Ilford Limited: *See—*
Marriott Turner, George Frederick Albert, 3,928,770.

Illinois Tool Works Inc.: *See—*
Day, Robert H., 3,927,766.
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Imada, Seiya: *See—*
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Imperial Metal Industries (Kynoch) Limited: *See—*
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Inagaki, Yasuhiro, to NCR Corporation. Record feed control mechanism. 3,927,813, Cl. 226-135.000.

Inata, Hiroo; Kawase, Shoji; and Shima, Takeo, to Teijin Limited. Glass fiber-containing aromatic polyester composition. 3,928,279, Cl. 260-40.00R.

Indelicato, Joseph M.: *See—*
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Industrial Woodworking Machine Co., Inc.: *See—*
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Ingerson, Philip F.: *See—*
Glaser, Ernest; and Ingerson, Philip F., 3,928,632.

Ingle, James E.; Emerson, Ralph W.; and Megahan, John S., to Maxon Marine Industries, Inc. Emergency over-fill assembly for marine vessels. 3,927,702, Cl. 141-285.000.

Ingrip Fasteners, Inc.: *See—*
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Inoue, Naohiko; and Moori, Youichi, to Nissan Motor Co., Ltd.; and Jidosha Denki Kogyo Kabushika Kaisha. Multiple-shaft double-motion drive mechanism. 3,927,436, Cl. 15-250.170.

Inouye, Kozo: *See—*
Arai, Atsuaki; Oishi, Yasushi; Yamada, Minoru; Yokota, Yukio; Tanaka, Mitsugu; and Inouye, Kozo, 3,928,044.

Institut Francais du Petrole: *See—*
Torck, Bernard; Franck, Jean-Pierre; and Derrien, Michel, 3,928,488.

Institut Francais du Petrole, des Carburants et Lubrifiants: *See—*
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Institut Francais du Petrole, des Carburants & Lubrifiants: *See—*
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Instytat Przemyslu Organicznego: *See—*
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Intaglio Service Corporation: *See—*
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Intermercury Finance and Trading Co., Ltd.: *See—*
Johannsen, Rolf, 3,927,698.

International Audio-Visual Hong Kong Ltd.: *See—*
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International Business Machines Corporation: *See—*
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Brownlow, James M.; Buchanan, Relva C.; and Tummala, Rao R., 3,928,051.
Carter, Richard S.; Hogan, Spurgeon G., Jr.; Leung, Wan L.; McGilvray, Bruce L.; and Werner, Robert H., 3,928,857.
Edwards, Roger Joseph; Hairabedian, Barouyr Zareh; and Poley, Neil Myron, 3,928,781.
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International Diagnostic Products Ltd.: *See—*
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International Flavors & Fragrances Inc.: *See—*
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Mookherjee, Braja Dulal; Vock, Manfred Hugo; Benaim, Carlos; and Shuster, Edward J., 3,928,248.
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International Lead Zinc Research Organization, Inc.: *See—*
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International Nickel Company, Inc., The: *See—*
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Gendron, Aubrey S.; Tilak, Bommaraju V.K.S.R.A.; and Ettel, Victor A., 3,928,153.

International Standard Electric Corporation: *See—*
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International Telephone and Telegraph Corporation: *See—*
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Inventio Aktiengesellschaft: *See—*
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Iowa Mold Tooling Co., Inc.: *See—*
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Ireco Chemicals: *See—*
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Ireland, Henry P.: *See—*
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Irvin, Geoffrey Pickles: *See—*
Mallinson, William John; Huffey, Roy Frederick; and Irvin, Geoffrey Pickles, 3,928,697.

Iseman, John E., to Coker's Pedigreed Seed Company. Seed separator. 3,928,181, Cl. 209-11.000.

Ishibe, Shuhei: *See—*
Shimizu, Katsuhisa; Ishibe, Shuhei; Okumichi, Toshiharu; and Matsumoto, Keizo, 3,928,414.

Ishiguro, Kyosuke; and Ichikawa, Takehiko, to Ajinomoto Co., Inc. Method of producing a beef flavor. 3,928,643, Cl. 426-533.000.

Ishihara, Kazuhiko: *See—*
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Ishikawa, Tetsuo: *See—*
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Ishikawa, Toshikatsu; Endo, Tei; Masuyama, Toshio; Uruma, Fumio; Morishita, Masutaka; and Kuki, Takeshi, to Nippon Carbon Co. Ltd. Apparatus for incinerating a plastic waste. 3,927,986, Cl. 23-277.00R.

Isoda, Mikio, to Matsushita Electric Industrial Co., Ltd. Remote control system. 3,928,760, Cl. 250-199.000.

Isotopcentralen: *See—*
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Ito, Fumio: *See—*
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Ito, Kazuo: *See—*
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Ito, Tadashi: *See—*
Sakurada, Nobuaki; Nakamoto, Soichi; Ito, Tadashi; Ito, Fumio; and Shinoda, Nobuhiko, 3,928,858.

Itoh, Hideyo, to Agency of Industrial Science & Technology. Mechanical hand. 3,927,424, Cl. 3-12.600.

Itoi, Kazuo: *See—*
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ITT Industries, Inc.: *See—*
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ITW Limited: *See—*
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Ivan, Edward K.: *See—*
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Ivanov, Evgeny Alexandrovich; Silchenkova, Vladislava Venediktovna; Sazonov, Alexandr Afanasievich; and Budkin, Nikolai Stefanovich. Device for the precision displacement of an article within a plane. 3,928,778, Cl. 310-8.300.

Ivester, Andrew S.; and Johnson, Bruce K., to Polaroid Corporation. Photographic film advancing and processing apparatus having a protective device. 3,928,862, Cl. 354-86.000.

Iwahashi, Kenji; and Yamamoto, Hiroshi, to Shimadzu Seisakusho Ltd. Spectrophotometer. 3,927,944, Cl. 356-97.000.

Iwamoto, Masatami: *See—*
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Iwano, Haruhiko: *See—*
Shimamura, Isao; and Iwano, Haruhiko, 3,928,040.

Iwasa, Masakazu; Miyatuka, Hajime; Horikawa, Kazuo; and Wakabayashi, Tomisaku, to Fuji Photo Film Co., Ltd. Electrostatic powder coating method. 3,928,655, Cl. 427-21.000.

Iwase, Kazuo: *See—*
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Iwata, Tadao: *See—*
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Iwatani & Co., Ltd.: *See—*
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J. K. & Susie L. Wadley Research Institute & Blood Bank: *See—*
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J. M. Huber Corporation: *See—*
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Jablonski, John Michael; and Miller, John, to Fisons Ltd. Process for the production of hydrozonitriles. 3,928,410, Cl. 260-465.50R.

Jablonsky, Erich, to Zahnradfabrik Friedrichshafen AG. Power steering system with reaction force limiting means. 3,927,604, Cl. 91-434.000.

Jackovitz, John F.; Pantier, Earl A.; and Wu, Christopher K., to Westinghouse Electric Corporation. Active electrode composition and electrode. 3,928,068, Cl. 136-24.000.

Jackson, Brian W., to Eastman Kodak Company. Method and apparatus for coating a substrate. 3,928,678, Cl. 427-402.000.

Jackson, Brian W.; Winkler, Dean E.; and Woodworth, Charles B., to Eastman Kodak Company. Method and apparatus for coating a multiple number of layers onto a substrate. 3,928,679, Cl. 427-402.000.

Jackson, James C.; and Harberson, Loyd D., to Ethyl Corporation. Gasket cutting apparatus. 3,927,587, Cl. 83-8.000.

Jackson, Neville, to Burgess Products Company Limited. Dry-type air filters. 3,928,007, Cl. 55-337.000.

Jacobs, James W., to General Motors Corporation. Engine with exhaust manifold converter-reactor. 3,927,525, Cl. 60-301.000.

Jacobs, John E., to United States of America, Health, Education and Welfare. Liquid crystal gas analyzer. 3,927,977, Cl. 23-230.0LC.

Jacuzzi Bros. Incorporated: *See—*
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Jagenberg Werke AG: *See—*
Zodrow, Rudolf, 3,928,120.

Jakimowicz, Christopher C., to National Steel Corporation. Pollutants collection system for coke oven discharge operation. 3,928,144, Cl. 202-263.000.

Jakobsen, William J., to Lourdes Industries, Inc. Manifold system for renewing cable pressure and valve arrangement therefor. 3,928,711, Cl. 174-11.00R.

James B. Carter Limited: *See—*
Lancaster, Arthur, 3,927,731.

James, John P., to Phillips Petroleum Company. Increased production of diesel oil and fuel oil. 3,928,173, Cl. 208-78.000.

Janaer Glaswerk Schott & Gen.: *See—*
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Jancis, Elmar H.: *See—*
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Janssen Pharmaceutica N.V.: *See—*
Heeres, Jan; Mostmans, Joseph Hector; and Maes, Robert, 3,928,374.

Janssens, Wilhelmus: *See—*
Poot, Albert Lucien; Heugebaert, Frans Clement; Janssens, Wilhelmus; and Vandenberghe, Antoon Leon, 3,928,686.

Japan Asbestos Co., Ltd.: *See—*
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Japan Gasoline Co., Ltd.: *See—*
Morikawa, Kiyoshi; Furuta, Akio; and Matsumoto, Hideyuki, 3,928,002.

Japan Tobacco and Salt Public Corporation, The: *See—*
Matsuyama, Susumu; Hirabayashi, Seishiro; Iida, Bunkichi; and Miki, Hajime, 3,927,682.

Jasinski, John, to Owens-Illinois, Inc. Colored glass compositions. 3,928,050, Cl. 106-52.000.

Jeffery, Thomas C.: *See—*
Rahn, Henry W.; Cunningham, Hugh; Dilmore, Colonel R.; Jeffery, Thomas C.; and Raetzsch, Carl W., 3,928,150.

Jellinek, Karl; and Oellig, Rudi, to Rutgerswerke Aktiengesellschaft. Composition containing unsaturated monomers and polymerizable by ionizing radiation. 3,928,287, Cl. 260-47.0CB.

Jeng, Shien Tsai: *See—*
Hanado, Masanao; Takamoku, Kensi; Miyoshi, Tsutomu; and Jeng, Shien Tsai, 3,927,726.

Jenkins, Ian; Moffatt, John G.; and Verheyden, Julien P. H., to Syntex (U.S.A.) Inc. 4 -Fluoro nucleosides, novel intermediates and methods of preparing same. 3,928,319, Cl. 260-211.50R.

Jennings, Gene A.; Streitferdt, John J.; and Suverison, Lyle B., to General Motors Corporation. Battery cable with detachably retained connector. 3,928,079, Cl. 136-135.00S.

Jensen, Garold K., to United States of America, Navy. Object locator system. 3,928,851, Cl. 343-9.000.

Jet Spray Cooler, Inc.: *See—*
Lavochkin, Ronald B.; and Gardner, John, 3,927,802.

Jette, Emile; and Guldin, Maxwell. Adjustable bathtub overflow liquid control. 3,927,428, Cl. 4-206.000.

Jidosha Denki Kogyo Kabushika Kaisha: *See—*
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Jidosha Kiki Co., Ltd: *See—*
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Jin, Katsuyuki: *See—*
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Joan of Arc Company: *See—*
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Jobst, Wolfgang, to General Motors Corporation. Defroster outlet. 3,927,607, Cl. 98-2.090.

Johannsen, Rolf, to Intermercury Finance and Trading Co., Ltd. Installation channel. 3,927,698, Cl. 138-162.000.

Johansson, Bjorn-Olow; and Palm, Bengt Arne, to Alfa-Laval AB. Method for sterilizing liquids. 3,927,974, Cl. 21-56.000.

Johns Hopkins University, The: *See—*
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Johnson, Aaron C., to Weekley, Alfred E.; Hatfield, John; and Jones, Floyd, part interest to each. Traction system. 3,927,745, Cl. 192-49.000.

Johnson, Bruce K.: *See—*
Ivester, Andrew S.; and Johnson, Bruce K., 3,928,862.

Johnson, Clifford E.: *See—*
Hyler, John H.; and Johnson, Clifford E., 3,927,759.

Johnson, Ferris L. Car top carrier for boats and the like. 3,927,779, Cl. 214-450.000.

Johnson, Gordon B.: *See—*
Chill, Leonard; Johnson, Gordon B.; and Weisner, Carl S., 3,927,957.

Johnson & Johnson: *See—*
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Johnson, Marvin M.: *See—*
Farha, Floyd E., Jr.; Johnson, Marvin M.; and Tabler, Donald C., 3,928,389.

Johnson, Rodney L.: *See—*
Zinsmeyer, Herbert G.; Johnson, Rodney L.; Genz, Ralph H.; and Setliff, James E., 3,927,800.

Johnson, Thomas Albert, to Du Pont de Nemours, E. I., and Company. Chlorination of xylene. 3,928,478, Cl. 260-651.00R.

Johnston, Clyde P., to Minnesota Mining and Manufacturing Company. High-pressure valve. 3,927,693, Cl. 137-625.470.

Jones, Floyd: *See—*
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Jones, George D. Foldable step. 3,927,903, Cl. 280-166.000.

Jones, Herbert; and Dorn, Michael Thomas, to Simon-Barron Limited. Pelletizing machines. 3,927,448, Cl. 29-116.00R.

Jones, Herman W. Ventilation systems. 3,927,828, Cl. 236-49.000.

Jones, John L.; Rubino, Andrew M.; and Lindahl, Charles B., to Armour Pharmaceutical Company. Zirconium complexes of basic aluminum chlorides and methods of making same. 3,928,545, Cl. 423-463.000.

Jones, Robert N., to Xerox Corporation. Flexible xerographic photoreceptor element. 3,928,036, Cl. 96-1.500.

Jones, Robert W.: *See—*
Gordon, Robert E.; Jones, Robert W.; Paul, Rajendra; and Simon, Robert H. M., 3,927,983.

Jones, Roger W.; Fineman, J. C.; and Roesser, James R., to American Institute of Physics. Keyboard and encoding system for photocomposition of scientific text including multiline mathematical equations. 3,927,752, Cl. 197-19.000.

Jones, Ronald E.: *See—*
Chen, Ting P.; and Jones, Ronald E., 3,928,447.

Jordan, Wesley A.; and Carter, Walter H., to General Mills Chemicals, Inc. Xanthomonas gum amine salts. 3,928,316, Cl. 260-209.00R.

Jouffret, Michel: *See—*
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Junck, John A.; and Latimer, Eugene E., to Caterpillar Tractor Co. Filter mounting and bypass valve assembly. 3,928,201, Cl. 210-132.000.

Jung, Gerd; and Bauer, Jakob, to Varta Batterie Aktiengesellschaft. Primary cell with negative electrode. 3,928,074, Cl. 136-100.00M.

Justrite Manufacturing Company: *See—*
Flider, Frank S., 3,927,797.

Juvet, Claude-Michel, to Seitz S.A. Pin guide for printing head. 3,927,751, Cl. 197-1.00R.

Kabushiki Kaisha Aichidenkikosakusho: *See—*
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Kabushiki Kaisha Hattori Tokeiten: *See—*
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Kabushiki Kaisha Komatsu Seisakusho: *See—*
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Kabushiki Kaisha Osaka Packing Seizosho: *See—*
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Kabushiki Kaisha Shimizu Manzo Shoten: *See—*
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Kabushiki Kaisha Suwa Seikosha: *See—*
Harigaya, Hiroshi; Kanai, Masao; and Kano, Toshio, 3,928,095.
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Kabushiki Kaisha Tokyo Keiki: *See—*
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Kai, Kazuo. Telephone set with built-in loudspeaker. 3,928,723, Cl. 179-1.0FS.

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Kalninsh, Arvid Janovich: *See—*
Pormale, Milda Janovna; Kashkina, Nadezhda Alexandrovna; Kalninsh, Arvid Janovich; Sergeeva, Varvara Nikolaevna; Surna, Janis Alexandrovich; Shusters, Janis; Melzobs, Modris Janowich; Mikazhan, Waldis Danielowich; Purwinsh, Indulis Waldowich; Skutelis, Antons Petrowich; and Liepinsh, Martinsh Aleksandrowich, 3,928,562.

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Kaneko, Yasuhisa; Komiyama, Yoshiro; Kondo, Katsumi; Noda, Fumiyoshi; and Uchida, Kunihiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Process for the production of metal containing ceramics. 3,928,662, Cl. 427-294.000.

Kaneko, Yasuhisa: *See—*
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Kapolyi, Laszlo; Kubovits, Imre; Kaszanitzky, Ferenc; and Szabo, to Tatabanyai Szenbanyak. Artificial stone and method for making the stone from a coal byproduct. 3,928,047, Cl. 106-39.600.

Karadavidoff, Isaac: *See—*
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Karchmar, Arthur; and Nejelski, Leo Lawrence, Jr., to International Telephone and Telegraph Corporation. Preservatives for photographic developers. 3,928,042, Cl. 96-66.400.

Karrer, Friedrich Wilhelm Johann; and Mellgren, Per Gustaf, to Karrer System AG. Method and apparatus for drying fibrous material. 3,927,478, Cl. 34-20.000.

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Kasai, Toshiyuki, to Nippon Kogaku K.K. Polarization analyser device. 3,927,947, Cl. 356-117.000.

Kashiyama, Hiroshi; and Tobita, Susumu, to Furukawa Electric Co., Ltd., The. Method for forming on an elongated core member a covering of thermoplastic material by extrusion. 3,928,519, Cl. 264-40.000.

Kashkina, Nadezhda Alexandrovna: *See—*
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Kato, Katsuhiro; Suzuki, Hideo; and Yano, Norio, to Nippon Telegraph and Telephone Public Corporation. Crosspoint elements and electromagnetic coordinate selection devices utilizing the same. 3,928,828, Cl. 335-112.000.

Kato, Yasuo: *See—*
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Katunuma, Nobuhiko, to Chugai Seiyaku Kabushiki Kaisha. Amplifying factor of cortisone induction and process of the production thereof. 3,928,568, Cl. 424-115.000.

Katz, Saul N., to General Foods Corporation. Coffee extraction process. 3,928,636, Cl. 426-434.000.

Katzakian, Arthur, Jr.; and Depree, David O., to Aerojet-General Corporation. Buffered, weak ion-exchange water demineralization process. 3,928,192, Cl. 210-30.000.

Katzer, Ernst; and Baronnet, Pierre, to Knorr-Bremse GmbH. Device for mounting rail-brake magnets. 3,927,739, Cl. 188-206.00R.

Kauffman, William J., to Armstrong Cork Company. Isocyanurate compounds and processes for preparing same. 3,928,343, Cl. 260-248.0NS.

Kavchok, Ronald W., to Goodyear Tire & Rubber Company, The. Stabilization of vinylidene chloride/diene copolymers. 3,928,296, Cl. 260-80.730.

Kawai, Hisasi; and Iwase, Kazuo, to Nippon Soken, Inc. Electronic ignition timing control circuit for internal combustion engine. 3,927,648, Cl. 123-117.00R.

Kawamura, Kiyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. After-control signal detecting sensor for keyboard of electronic musical instrument. 3,927,593, Cl. 84-1.010.

Kawamura, Sadao; Hayakawa, Akira; and Kurokawa, Harutoshi, to Toray Industries, Inc. Process for treating fibrous articles with an aqueous treating liquid. 3,927,972, Cl. 8-155.200.

Kawanabe, Shinya: *See—*
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Keithley, Joseph F., to United States of America, Navy. Pressure-time responsive electronic device. 3,927,615, Cl. 102-18.000.

Keller, Roger W.: *See—*
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Kelmik, Inc.: *See—*
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Kendall Company, The: *See—*
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Kepka, Jiri; Kovarik, Karel; Loun, Bohuslav; and Zeleny, Jaromir, to Vyzkumny ustav obrabecich stroju a obrabeni. Device for the photoelectric marking and reading of tools for NC machine tools. 3,928,827, Cl. 235-61.11E.

Kerley, Robert V., to Ethyl Corporation. Coal combustion process and composition. 3,927,992, Cl. 44-4.000.

Kersavage, Joseph A. Method for constructing a tensile-stress structure and resultant structures. 3,927,496, Cl. 52-80.000.

Kerst, Al F.: *See—*
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Kerwin, Daniel, to Meyercord Co., The. Machine for transferring indicia to cylindrical articles. 3,928,115, Cl. 156-363.000.

Ketelsen, Broder, to Fischer & Porter Co. Vortex type flowmeter. 3,927,564, Cl. 73-194.00B.

Khayat, Ali; Courtney, George W.; and Dunn, Howard J., to Ralston Purina Company. Method of treatment of animal flesh. 3,928,637, Cl. 426-437.000.

Khentigan, Archie S.: *See—*
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Kiencke, Uwe; and Honig, Gunter, to Robert Bosch G.m.b.H. Circuit for converting a frequency into a binary number. 3,928,797, Cl. 324-78.00D.

Kierstead, Richard Wightman; LeMahieu, Ronald Andrew; and Pruess, David, to Hoffmann-La Roche Inc. Antibiotic 1745A/X and methods for the production thereof. 3,928,387, Cl. 260-343.000.

Kiess, Tilman: *See—*
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Kimoto, Hisashi, to Murata Kikai Kabushiki Kaisha. Twister device for producing crimped filamentary yarns. 3,927,517, Cl. 57-77.450.

King, William H., Jr.; and Varga, Gideon M., Jr., to Exxon Research and Engineering Company. Method for cleaning a crystal microbalance. 3,928,063, Cl. 134-1.000.

Kingsford-Smith, Charles A., to Hewlett-Packard Company. Device for synthesizing frequencies which are rational multiples of a fundamental frequency. 3,928,813, Cl. 331-1.00A.

Kinney, David W.; and Baxter, William E., to Union Insulating Company. Electrical wiring box structure. 3,927,785, Cl. 220-3.800.

Kinoshita, Koichi, to Katsuragawa Denki Kabushiki Kaisha. Method of electrophotography. 3,928,031, Cl. 96-1.00R.

Kirby, Jane Parsons; Borders, Donald Bruce; and Korshalla, Jean Hayes, to American Cyanamid Company. Antibiotic BM408α. 3,928,317, Cl. 260-210.0AB.

Kirby, Robert F., to Garrett Corporation, The. Cooled turbine components and method of making the same. 3,927,952, Cl. 416-95.000.

Kircher, Dieter: *See—*
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Kirchner, Paul: *See—*
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Kirk, Bradley S.; and Chappel, Raymond M., to Airco, Inc. Gas absorption system and method. 3,928,199, Cl. 210-63.000.

Kirsch Company: *See—*
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Kirsch, Reinhard: *See—*
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Kishi, Noboru; Ota, Yoshitaka; and Okuno, Nobuyoshi, to Mitsubishi Chemical Industries Ltd. Anthraquinone dyestuffs. 3,928,396, Cl. 260-380.000.

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Kitahara, Hitoshi; and Pei, Jack C., to Fuji Xerox Co., Ltd. Manuscript scanning device for copying machines and the like. 3,927,940, Cl. 355-66.000.

Kitai, Kiyoshi, to Kabushiki Kaisha Hattori Tokeiten. Electronic circuit indicating light level and controlling exposure of camera. 3,928,861, Cl. 354-60.00L.

Kitamoto, Tatsuji: *See—*
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Kitayama, Minoru; Taniguchi, Kasuyuki; Kaneta, Kyoichi; and Hirose, Kikuzi, to Nippon Steel Corporation. Enamel glaze composition. 3,928,048, Cl. 106-48.000.

Kivett, William D.; Champion, Robert J.; and Harris, Jesse P. T., to Engineering Development Associates, Incorporated. Small object counting apparatus. 3,928,753, Cl. 235-92.0PK.

Klein, Jack, to S.S.B. Industries, Inc. Lock securing assembly. 3,927,544, Cl. 70-416.000.

Klein, Richard W., Sr. Film cartridge carrier. 3,927,809, Cl. 224-5.00R.

Kleinhagauer, Otmar, to Gebr. Bohler & Co. AG. Fluid-cooled mold. 3,927,855, Cl. 249-79.000.

Kleiss, Joachim: *See—*
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Knavish, Leonard A., to PPG Industries, Inc. Method for producing flat glass. 3,928,014, Cl. 65-136.000.

Knelson, Harry. Pulp sheet gripping tool. 3,927,908, Cl. 294-19.00R.

Knight, Rodney A.; Zang, Joseph A.; and Slanski, John, to AMF Incorporated. Quench bath regeneration system for microporous film production. 3,928,517, Cl. 264-38.000.

Knorr-Bremse GmbH: *See—*
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Knudsen, Christian W.; and von Rosenberg, Hermann E., to Exxon Research and Engineering Company. Coal injection system. 3,927,996, Cl. 48-197.00R.

Knudson, Richard A. Reinforced panels and method of constructing same. 3,928,691, Cl. 428-53.000.

Kobayashi, Akira: *See—*
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Kobayashi, Kazuhiro; Saito, Hiroshi; Ogawa, Yukio; Yoshida, Koki; and Kondo, Isamu, to Hitachi, Ltd. Apparatus for producing laminated magnetic cores for inductive electric apparatus. 3,927,454, Cl. 29-203.00L.

Kobayashi, Takuichi: *See—*
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Kobayashi, Toshiharu: *See—*
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Koberstein, Edgar; and Lakatos, Eduard, to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler. Exhaust gas purifying catalyst and process of making and using same. 3,928,238, Cl. 252-465.000.

Koberstein, Edgar; and Lakatos, Eduard, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Catalyst useful at higher temperatures, especially for purification of exhaust gases from motor vehicles and industrial plants. 3,928,534, Cl. 423-213.200.

Kochurova, Alexandra Ivanovna; Korobkina, Zoya Vasilievna; and Mikhailova, Tatiana Nikolaevna. Preparation for preserving vegetable food products particularly fruits. 3,928,577, Cl. 424-164.000.

Kodama, Kenji: *See—*
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Koehring Company: *See—*
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Koelewijn, Pieternella, to Shell Oil Company. Dyeable polypropylene compositions containing a polyamine adduct. 3,928,504, Cl. 260-897.00B.

Koenig, Nathan H.; and Friedman, Mendel, to United States of America, Agriculture. Insectproofing wool with zinc acetate. 3,927,969, Cl. 8-128.00R.

Kohn, Gustave K.: *See—*
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Kohn, Gustave K., administrator: *See—*
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Kollmar, Walter; Markl, Hans; and Thieme, Klaus, to Siemens Aktiengesellschaft. Method for erecting and operating at least two nuclear reactors. 3,928,128, Cl. 176-30.000.

Kolodziej, Alojzy Antoni, to Ronson Products Limited. Method for manufacturing dry shaver-cutter unit. 3,927,581, Cl. 76-104.00R.

Komatsuzaki, Shigeki: *See—*
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Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, to Canon Kabushiki Kaisha. Blade type cleaning device in an electrophotographic copying machine of the image transfer type. 3,927,936, Cl. 355-15.000.

Kondo, Isamu. *See—*
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Kondo, Katsumi. *See—*
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Konishi, Kenzo, Kotone, Akira; Nakane, Yoshihiko; Hori, Takeshi; and Hoda, Masahiro, to Sakai Chemical Industry Company, Ltd. Trisazo compounds containing a diphenylheterocyclic component. 3,928,310, Cl. 260-152.000

Konishiroku Photo Industry Co., Ltd.: *See—*
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Konno, Tsutomu: *See—*
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Konomi, Toshiaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Flow rate measuring system with calibration means. 3,927,563, Cl. 73.205.00D

Koo, Ronald C., to Duro-Test Corporation. Tungsten alloy filaments for lamps and method of making. 3,927,989, Cl. 29-182.500

Kopacki, Adam F.: *See—*
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Koppers Company, Inc.: *See—*
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Kosmiderski, Szymon; and Polak, Slaw, to Wojewodzka Stacja Krwiodawstwa. Process for the preparation of a serological carrier. 3,928,628, Cl. 424-366.000.

Kosswig, Kurt; and Meister, Herbert, to Chemische Werke Huls Aktiengesellschaft. Washing composition containing suds suppressing agents. 3,928,250, Cl. 252-542.000.

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Kothe, Hans-Kurt; and Schneider, Rudi, to Varta Batterie Aktiengesellschaft. Automatically activated battery assembly. 3,928,078, Cl. 136-114.000

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Kotow, Stephen S.: *See—*
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Kovalenko, Gerald E.; and Woods, Charles E., to United States of America, Navy. Fluidic analog ring position device. 3,927,849, Cl. 244-3.220

Kovarik, Karel: *See—*
Kepka, Jiri; Kovarik, Karel; Loun, Bohuslav; and Zeleny, Jaromir, 3,928,827

Kovats, Ervin; Demole, Edouard; Ohloff, Gunther; and Stoll, Max, deceased (by Stoll, Suzanne, executrix), to Firmenich S.A. Cycloaliphatic unsaturated ketones as odour- and taste-modifying agents. 3,928,456, Cl. 260-586.00R

Kowalski, Xavier, to Monsanto Company. Method for electroplating. 3,928,147, Cl. 204-29.000

Koyama, Hiroaki, to Nippon Kynol Inc. Process for producing cured phenolic continuous filaments. 3,928,526, Cl. 264-236.000.

Kozacka, Frederick J.: *See—*
Salzer, Erwin; and Kozacka, Frederick J., 3,927,927.

Kraft, Kurt: *See—*
Reese, Johannes; and Kraft, Kurt, 3,928,376.

Kraft, Paul; Kopacki, Adam F.; and Brunner, Robert, to Stauffer Chemical Company. Processing aid for polyvinyl chloride 3,928,500, Cl. 260-884.000.

Krah, Robert: *See—*
Heuschen, Alexander; Schaefer, Hans; Budich, Wolfgang; Krah, Robert; and Obermeier, Karl, 3,928,100.

Krauss-Maffei Aktiengesellschaft: *See—*
Hanslik, Wilhelm, 3,927,869.

Krekeler, Hans. *See—*
Riemenschneider, Wilhelm; Hornig, Lothar Heinz, deceased; Hornig nee Munich, Anneliese, co-heiress; Meidert, Helmut; and Krekeler, Hans, 3,928,479.

Kremer, Richard D., to Schleicher & Schuell, Incorporated. Chromatographic apparatus. 3,928,203, Cl. 210-198.00C

Kresge, James S.: *See—*
Fishman, Herbert, and Kresge, James S., 3,928,245

Krikorian, Oscar H., to United States of America, Energy Research and Development Administration. Thermochemical production of hydrogen. 3,928,549, Cl. 423-648.000.

Krishnan, Ram Murthy, to Goodyear Tire & Rubber Company, The. Method of preparing p-chlorophenylenediamine. 3,928,451, Cl. 260-580.000.

Kroczynski, Jozef: *See—*
Sledzinski, Bohdan; Kroczynski, Jozef; Zwierzak, Andrzej; Cieslak, Ludwika; and Majda, Aleksander, 3,928,586.

Kubinek, Milan: *See—*
Sommer, Karel; Zdrazil, Jiri; Kubinek, Milan; Bahna, Jarolim; Kyselica, Stanislav; Habrovec, Frantisek; and Skarek, Jiri, 3,927,450.

Kubo, Kazuhiko, to Kabushiki Kaisha Osaka Packing Seizosho. Products of wollastonite crystals and manufacturing the same. 3,928,054, Cl. 106-120.000.

Kubo, Mitsuyasu: *See—*
Sucmatsu, Yasuo; Miyazaki, Ryuhei; Kubo, Mitsuyasu; Uotani, Tsuyoshi; and Uchida, Hironori, 3,928,157.

Kubota, Hayato: *See—*
Ohta, Ioe; Matsunobu, Akira; Nishizawa, Masafumi; Kubota, Hayato; and Sakamoto, Kenshi, 3,928,635.

Kubota, Kunihiro: *See—*
Yonehara, Kiyoshi; Kubota, Kunihiro; Ono, Tetsuji; and Ohara, Takashi, 3,928,239.

Kubovits, Imre: *See—*
Kapolyi, Laszlo; Kubovits, Imre; Kaszanitzky, Ferenc; and Szabo, 3,928,047.

Kuchenmeister, Rolf: *See—*
Dhein, Rolf; Kaiser, Bernd-Ulrich; Rudolph, Hans; Kuchenmeister, Rolf; and Niehaus, Clemens, 3,928,265.

Kuchuris, George F.: *See—*
Yatsushiro, Kenji; Kuchuris, George F.; and Williman, John, 3,928,831.

Kuck, Valeric Jeanne: *See—*
Chandross, Edwin Arthur; and Kuck, Valeric Jeanne, 3,928,683.

Kudelski, Alicia: *See—*
Kluepfel, Dieter; Kudelski, Alicia; and Bagli, Jehan, 3,928,572.

Kudza, Thomas M.; Schwyn, Raymond E.; and Berg, Morris, to General Motors Corporation. Thick film resistor paste containing tantala glass. 3,928,243, Cl. 252-514.000.

Kuhar, Ludwig John, to Singer Company, The. Thread tensioner with improved yawn mechanism. 3,927,631, Cl. 112-254.000.

Kuhlmann, Bernard: *See—*
Wandel, Martin; Salamon, Manfred; Dornheim, Gotz Gotmar; and Kuhlmann, Bernard, 3,928,696.

Kuhns, Richard J., to Xerox Corporation. Bookbinder having rotatable clamping means. 3,928,118, Cl. 156-477.00B.

Kuki, Takeshi: *See—*
Ishikawa, Toshikatsu; Endo, Tei; Masuyama, Toshio; Uruma, Fumio; Morishita, Masutaka; and Kuki, Takeshi, 3,927,986.

Kuraray Co. Ltd.: *See—*
Ashikaga, Tadao; Ohmori, Akio; and Ando, Masasi, 3,728,261.
Fujita, Yoshiji; Omura, Yoshiaki; Nishida, Takashi; and Itoi, Kazuo, 3,928,403.

Kurcha Kagaku Kogyo Kabushiki Kaisha: *See—*
Saitoh, Shigeru; Watanabe, Tetsuya; Konno, Koji; Yaguchi, Kunihide; Kodama, Kenji; and Miyamori, Tamotsu, 3,928,537
Takahashi, Ryoichi; Hosoi, Takuji; Aiba, Takaaki; and Konno, Tsutomu, 3,928,170.

Kurokawa, Harutoshi: *See—*
Kawamura, Sadao; Hayakawa, Akira; and Kurokawa, Harutoshi, 3,927,972.

Kusters, Norbert L.; and MacMartin, Malcolm P., to Canadian Patents and Development Limited. Automatic balancing DC comparator voltmeter. 3,928,799, Cl. 324-99.00D.

Kuwabara, Motosuke: *See—*
Moriyama, Hiromi; Kuwabara, Motosuke; and Jin, Katsuyuki, 3,928,728.

Kuzmin, Sergei Vladimirovich: *See—*
Seleznev, Jury Emelyanovich; Burkin, Jury Alexandrovich; and Kuzmin, Sergei Vladimirovich, 3,927,455.

Kuzminsky, Alexandr Samoilovich: *See—*
Berlin, Alfred Anisimovich; Aseeva, Roza Mikhailovna; Mezhikovsky, Semen Markovich; Sherle, Alla Ilinichna; Tsepalova, Nadezhda Alexeevna; Goldovsky, Evgeny Alexandrovich; Zelenetskaya, Tatiana Vladimirovna; Fatkulina, Rozalia Komalovna; and Kuzminsky, Alexandr Samoilovich, 3,928,489.

Kyburz, Emilio: *See—*
Kaplan, Jean-Pierre; and Kyburz, Emilio, 3,928,383.

Kyogoku, Kazuaki; Hatayama, Katsuo; Yokomori, Sadakazu; and Seki, Teruya, to Taisho Pharmaceutical Co., Ltd. Anti-gastric ulcer chalcone ethers. 3,928,421, Cl. 260-479.00R.

Kyselica, Stanislav: *See—*
Sommer, Karel; Zdrazil, Jiri; Kubinek, Milan; Bahna, Jarolim; Kyselica, Stanislav; Habrovec, Frantisek; and Skarek, Jiri, 3,927,450.

La Bonvarite: *See—*
Langagne, Henri, 3,928,022.

La Cellophane: *See—*
Quang, Pham Kim, 3,928,032.

Labat, Yves; Mordelet, Yvon; and Signouret, Jean Baptiste, to Entreprise de Recherches et d'Activites Petrolieres (ELF). Lubricating compositions. 3,928,217, Cl. 252-45.000.

Labaz: *See—*
Descamps, Marcel; and Van Durme, Etienne, 3,928,384.

Lacefield, William B.; and Marshall, Winston S., to Eli Lilly and Company. Arylacetylene compounds as antithrombotic agents. 3,928,604, Cl. 424-353.000.

Laderach, Hans Rudolf, to Micarna AG Fleischwarenfabrik. Aseptic slicing machine for food products, and method. 3,927,588, Cl. 83-15.000.

Ladouceur, Harold A.; and Steward, John H., to Multifastener Corporation. Method of forming a nut and panel assembly. 3,927,465, Cl. 29-509.000.

Ladouceur, Harold A.: *See—*
Pouch, Thomas M.; and Ladouceur, Harold A., 3,927,452.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Demars, Paul; Cuny, Francis; Garrigoux, Joseph; and Tassart, Christian, 3,928,745.

Laitram Corporation, The: *See—*
Lapeyre, James M.; and Fowler, John T., 3,927,474.

Lakatos, Eduard: *See—*
Koberstein, Edgar; and Lakatos, Eduard, 3,928,238.
Koberstein, Edgar; and Lakatos, Eduard, 3,928,534.

Lam, Peter W. H., to Hodgson, R. W. Hair-grooming implement. 3,927,684, Cl. 132-11.00R.

Lampe, Wolfgang: *See—*
Hedvall, Per; Lampe, Wolfgang; and Spicar, Erich, 3,927,570.

Lancaster, Arthur, to James B. Carter Limited. Muffler with spiral duct and double inlets. 3,927,731, Cl. 181-58.000.

Lancini, Giancarlo; and Thiry, Lise, to Gruppo Lepetit S.p.A. Antiviral compositions containing piperazine derivatives and method of use. 3,928,593, Cl. 424-250.000.

Land, Edwin H., to Polaroid Corporation. Method of preparing diffusion transfer receiving sheets. 3,928,665, Cl. 427-339.000.

Landis, Abraham L.: *See—*
Bilow, Norman; Boschan, Robert H.; and Landis, Abraham L., 3,928,450.

Lang, Franz Josef, to Display-Design GmbH fur moderne Verkaufsforderungsmittel und Raumausstattung. Set of parts for a display rack. 3,927,625, Cl. 108-91.000.

Lang, Joseph; Meckenstock, Helmut; and Nopper, Hans-Joachim, to Flachglas Aktiengesellschaft Delog-Detag. Method of treating the corners of planar polygonal workpieces. 3,927,819, Cl. 228-212.000.

Langagne, Henri, to La Bonvarite. Method of producing ferrous metal of constant properties from heterogeneous mixtures. 3,928,022, Cl. 75-51.000.

Langbein, Adolf: *See—*
Walther, Gerhard; Merz, Herbert; Langbein, Adolf; and Stockhaus, Klaus, 3,928,359.

Lange, Harold Carl: *See—*
Mac Leay, Ronald Edward; Lange, Harold Carl; and Sheppard, Chester Stephen, 3,928,493.

Langen & Co.: *See—*
Strauff, Gunther, 3,927,602.

Langen, Hanno, to Swiss Aluminum Ltd. Tamper proof seal for a container. 3,927,793, Cl. 220-266.000.

Langhorst, Fred E., to General Motors Corporation. Bumper test device. 3,927,554, Cl. 73-11.000.

Lannin, William W., to Stanray Corporation. Apparatus for forming arched roof sheets for automotive carrier vehicle. 3,927,548, Cl. 72-321.000.

Lanter, Kent J., to Ralston Purina Company. Method of preparing a fish product. 3,928,652, Cl. 426-643.000.

Lapeyre, James M.; and Fowler, John T., to Laitram Corporation, The. Internally gimballed compass. 3,927,474, Cl. 33-356.000.

Larbo, Stig: *See—*
Forsberg, Svante; Larbo, Stig; and Stephensen, Bjorn, 3,928,832.

Larker, Hans; and Nilsson, Jan, to Allmanna Svenska Elektriska Aktiebolaget. High pressure seal. 3,927,891, Cl. 277-190.000.

Larson, Lory E.; and Downs, Dallas I., to Southern California Edison Company. Water intake structure. 3,927,534, Cl. 61-17.000.

Lasas, Longinas, to United States Gypsum Company. Direct and acid dyes with the same dye chlorine decolored as leveller. 3,927,965, Cl. 8-89.000.

Laslo, Dennis J., to Fuller Company. Method and apparatus for treating gaseous pollutants in a gas stream. 3,928,005, Cl. 55-73.000.

Latham, Ralph A.: *See—*
Georgiade, Nicholas G.; and Latham, Ralph A., 3,927,664.

Latham, William G. H.: *See—*
Slater, Jack D.; Latham, William G. H.; and Farrow, Robert H., 3,928,221.

Latimer, Eugene E.: *See—*
Junck, John A.; and Latimer, Eugene E., 3,928,201.

Latuda, Frank A.: *See—*
Willner, Richard; Pauli, Jude A.; and Latuda, Frank A., 3,927,829.

Launey, Pierre A. Container for collection of cultures of parasitic fungi and a method of using the same. 3,928,136, Cl. 195-54.000.

Lauterbach, George E.; and Crill, Marla S., to Nalco Chemical Company. Paper coating lubricants and coated paper incorporating such. 3,928,707, Cl. 428-342.000.

Lavochkin, Ronald B.; and Gardner, John, to Jet Spray Cooler, Inc. Manual fill hot beverage dispenser. 3,927,802, Cl. 222-67.000.

Lawrence, John: *See—*
van Tongerloo, Eric Henry; Ibrahim, Abd-El-Fattah Ali; Colton, Douglas Roy; and Lawrence, John, 3,928,093.

Lawrence, John P., to Goodyear Tire & Rubber Company, The. N-[(Substituted amino) thio]-imides. 3,928,340, Cl. 260-247.10L.

Lazzarotti, S. James: *See—*
Wojtowicz, Edward A.; Lazzarotti, S. James; and Tartar, Paul E., 3,927,876.

Le Van Specialty Company, Inc.: *See—*
Carson, Lawrence E., 3,927,492.

Leberfinger, Rolf; and Matschkal, Heinz, to Schill & Seilacher. Process of producing a fatliquoring chrome tanning agent, composition containing same and method of using same. 3,927,966, Cl. 8-94.200.

Lechner, Robert, to Siemens Aktiengesellschaft. Contact tester. 3,928,795, Cl. 324-28.0CR.

Lederer, Louis Franklin, to Instrumentation Specialties Company. Sample collector. 3,927,701, Cl. 141-98.000.

Lee, Ho C.: *See—*
Helinski, Edward F.; Lee, Ho C.; and Zable, Jack L., 3,928,855.

Lee, John M.: *See—*
Beale, Alvin F., Jr.; and Lee, John M., 3,928,438.

Lee, Richard J., to Standard Oil Company. Polymeric-alkylphenolsulfonamides. 3,928,355, Cl. 260-268.0PL.

Lee, Wooyoung: *See—*
Davis, Francis E., Jr.; Graven, Richard G.; Lee, Wooyoung; and Sailor, Robert A., 3,928,172.

Leeming, Michael R. G.: *See—*
Greenspan, George; and Leeming, Michael R. G., 3,928,134.

Leeper, Robert W.; and Strohm, Paul, to Amchem Products, Inc. Plant growth regulant compositions and methods. 3,928,406, Cl. 260-448.80R.

Leisure Moments Incorporated: *See—*
Danon, Michael, 3,927,810.

LeMahieu, Ronald Andrew: *See—*
Kierstead, Richard Wightman; LeMahieu, Ronald Andrew; and Pruess, David, 3,928,387.

Lemelson, Jerome H.; and Elfman, Allan M. Integrally formed projectile and hook-like fasteners. 3,927,881, Cl. 273-58.00K.

Le Mieux, Robert W.: *See—*
Crossman, Phillip E.; Kenrick, Robert C.; and Le Mieux, Robert W., 3,927,885.

Lena, Louis: *See—*
Soula, Gerard; Metzger, Jacques; and Lena, Louis, 3,928,470.

Lennox Industries Inc.: *See—*
Gilles, Theodore C., 3,927,713.

Leonard, Ronald James, to Baxter Laboratories, Inc. Oxygen overpressure protection system for membrane-type blood oxygenators. 3,927,980, Cl. 23-258.500.

Lepagnol, Guy Pierre: *See—*
Bellanger, Maurice Georges; Lepagnol, Guy Pierre; and Daguet, Jacques Lucien, 3,928,755.

Leppek, William Wayne, to Globe-Union Inc. Slide potentiometer. 3,928,838, Cl. 338-183.000.

Lerner, Lewis Brian, to AMP Incorporated. Copper strike bath and method for coating electrolessly plated articles. 3,928,148, Cl. 204-38.00B.

Les Produits Associes, SA: *See—*
Moret, Michel A.; and Musy, Jean-Pierre, 3,927,435.

Lesher, George Y.: *See—*
Brundage, Ruth Pauline; and Lesher, George Y., 3,928,366.

Letraset International Limited: *See—*
Arnold, Raymond Mills; Neaves, Eric Henry Francis; and Phillips, Leslie John, 3,928,710.

Leturque, Michel: *See—*
Sperandio, Francis; and Leturque, Michel, 3,928,069.

Leung, Wan L.: *See—*
Carter, Richard S.; Hogan, Spurgeon G., Jr.; Leung, Wan L.; McGilvray, Bruce L.; and Werner, Robert H., 3,928,857.

Leva, Max. Gas-liquid contact apparatus. 3,928,513, Cl. 261-113.000.

Lever Brothers Company: *See—*
Cheesman, Jean Ann; and Coles, Cherry Pamela, 3,928,558.
Savino, Richard, 3,928,065.

Leverett, Glenn Frederick, to Du Pont de Nemours, E. I., and Company. Process for reducing electrostatic charge on polytetrafluoroethylene agglomerates. 3,928,524, Cl. 264-117.000.

Levin, Gerd. Process and apparatus for gassing brooding eggs 3,927,642, Cl. 119-1.000.

Lewenstein, Hoshea L. Electrolytic cell with minimal water dissipation. 3,928,066, Cl. 136-6.00L.

Lewis, George W., Jr. Processes for removal of sulfur dioxide from gases. 3,928,536, Cl. 423-242.000.

Lewis, Kenneth Gill: *See—*
Armstrong, David Alun; and Lewis, Kenneth Gill, 3,928,657.

Lewmar Marine Limited: *See—*
Fawcett, Derek James, 3,927,580.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Kaffenberger, Ernst; and Schuttloffel, Erich, 3,928,825.

Liepinsh, Martinsh Aleksandrowich: *See—*
Pormale, Milda Janovna; Kashkina, Nadezhda Alexandrovna; Kalninsh, Arvid Janovich; Sergeeva, Varvara Nikolaevna; Surna, Janis Alexandrovich; Shusters, Janis; Melzobs, Modris Janowich; Mikazhan, Waldis Danielowich; Purwinsh, Indulis Waldowich; Skutelis, Antons Petrowich; and Liepinsh, Martinsh Aleksandrowich, 3,928,562.

Light, Kenneth K., to International Flavors & Fragrances Inc. Process for the production of resorcylic acid esters. 3,928,419, Cl. 260-473.00S.

Lightbourn, Julieta Rubio: *See—*
Ikekawa, Nobuo; Morisaki, Masuo; Lightbourn, Julieta Rubio; and Seki, Masao, 3,928,397.

Ligneres, Pierre J.: *See—*
Hugon, Jean H.; Brosseron, Jean; and Ligneres, Pierre J., 3,928,803.

Lilly Industries, Ltd.: *See—*
Chakrabarti, Jiban Kumar, 3,928,274.

Lillyman, Ernest; Mascall, Frank Charles; and Mathers, Cecil George, to United Kingdom Atomic Energy Authority. Processing of uranium hexafluoride including absorption of uranium hexafluoride in aqueous aluminum nitrate. 3,928,538, Cl. 423-260.000.

Lin, Hong: *See—*
Winchell, Harry S.; Khentigan, Archie S.; and Lin, Hong, 3,928,552.

Lindahl, Charles B.: *See—*
Jones, John L.; Rubino, Andrew M.; and Lindahl, Charles B., 3,928,545.

Lindblad, Oskar Lennart. Safety belt arrangement for individuals. 3,927,902, Cl. 280-150.0SB.

Linden, Heinz; Gartner, Jurgen; Offermann, Wilhelm; and Demmering, Gunther, to Henkel & Cie G.m.b.H. Salts of amine-alkylene oxide adducts for preventing sedimentation of pigment suspensions. 3,928,276, Cl. 260-34.200.

Lindvall, Sven: *See—*
Dahlberg, Alf-Goran; Hogberg, Karl Gustav; Lindvall, Sven; and Rydh, Thore Oskar Verner, 3,928,581.

Ling, Chester H. K.: *See—*
Dupree, Donald G.; Bailey, Raymond E.; and Ling, Chester H. K., 3,927,463.

Link, Otmar; and Baumann, Rudi, to AZO-Maschinenfabrik Adolf Zimmermann. Screening arrangement. 3,928,188, Cl. 209-250.000.

Linquist, Wayne A., to Greenlee Bros. and Co. Pneumatic blow gun for installing fishing line, measuring tape and polyethylene pull line in electrical conduit. 3,927,866, Cl. 254-134.400.

Linthicum, Harley E., to Carrier Corporation. Fluid actuated motor. 3,927,956, Cl. 418-100.000.

Lion Fat & Oil Co., Ltd.: *See—*
Sato, Tsutomu; Deura, Hiroshi; and Oba, Kenkichi, 3,928,268.

Livigni, Russell Anthony: *See—*
Hargis, Ivan Glen; and Livigni, Russell Anthony, 3,928,302.

Lock, David Anthony: *See—*
Field, Peter Graham Spencer; and Lock, David Anthony, 3,928,477.

Lockard, Ronald J.: *See—*
Byram, Harold E.; Lockard, Ronald J.; Andersen, Roland D.; and Carney, Vincent L., 3,928,724.

Loebler, Peter: *See—*
Buning, Robert; Loebler, Peter; and Trautvetter, Werner, 3,928,684.

Loecher, Friedrich: *See—*
Pommer, Ernst-Heinrich; Polster, Rudolf; Loecher, Friedrich; and Hampel, Manfred, 3,928,606.

Loewe, Heinz: *See—*
Duwel, Dieter; Kirsch, Reinhard; Loewe, Heinz; and Urbanietz, Josef, 3,928,375.

Loewe-Opta GmbH: *See—*
Geiger, Erich, 3,928,787.

Loft, John T.; McTaggart, John A.; and Plovan, Steven G., to Celanese Corporation. Dielectric insulation employing open-celled microporous film. 3,928,705, Cl. 428-311.000.

Logan, Arthur D.: *See—*
Haren, Doyle V.; and Logan, Arthur D., 3,928,521.

Lohr, Delmar F., Jr.; and Kang, Jung W., to Firestone Tire & Rubber Company, The. Blend of high-vinyl polybutadiene and hydroformylated high-vinyl polybutadiene. 3,928,282, Cl. 260-42.440.

Long, Leo E.; and Phillips, Edward H., to American Fitness, Inc. Punching bag simulator. 3,927,879, Cl. 272-76.000.

Longhorn Construction Co., Inc.: *See—*
Nash, James C., 3,927,840.

Loomis, Lyon K. Vented cap. 3,927,798, Cl. 220-374.000.

Lopsadhayoodh Prasert, to Raymond Lee Organization, Inc., The. Remote control switching device. 3,928,737, Cl. 200-51.0LM.

Loran, Thomas J.: *See—*
Pardee, Robert P.; Loran, Thomas J.; Bickling, Archie L., Jr.; and Brown, Richard E., 3,928,673.

Loun, Bohuslav: *See—*
Kepka, Jiri; Kovarik, Karel; Loun, Bohuslav; and Zeleny, Jaromir, 3,928,827.

Lourdes Industries, Inc.: *See—*
Jakobsen, William J., 3,928,711.

Lovell, James Byron: *See—*
Addor, Roger Williams; Lovell, James Byron; and Kantor, Sidney, 3,928,382.

Lovisa, Peter R.; and Tausanovitch, Dusan, to Lovisa, Peter R.; Tausanovitch, Dusan; and Lovisa, Tullio, part interest to each. Internal spreader means for use with a reusable tie rod. 3,927,856, Cl. 249-177.000.

Lovisa, Peter R.; Tausanovitch, Dusan; and Lovisa, Tullio E. Reusable tie assembly for concrete forms. 3,927,857, Cl. 249-217.000.

Lovisa, Tullio: *See—*
Lovisa, Peter R.; and Tausanovitch, Dusan, 3,927,856.

Lovisa, Tullio E.: *See—*
Lovisa, Peter R.; Tausanovitch, Dusan; and Lovisa, Tullio E., 3,927,857.

Lower, William E.; and Ivan, Edward K., to Rotex, Inc. Wear resisting hold-down means for screening machine. 3,928,189, Cl. 209-405.000.

Lucas Aerospace Limited: *See—*
Gerrard, Alan Joseph, 3,927,835.

Luckett, Peter Robert; Mobbs, Jack Sidney; and Harris, Alan James, to Stelmo Limited. Method of making concrete pipes. 3,928,104, Cl. 156-171.000.

Lukacs, George J.: *See—*
Drelich, Arthur H.; and Lukacs, George J., 3,928,676.

Luloff, Jerome S.; and Eilender, Albert L., to Cosan Chemical Corporation. Antibacterial composition and method employing a certain hexamethylenetetramine adduct. 3,928,607, Cl. 424-249.000.

Lumber Systems, Inc.: *See—*
Ritola, Edward W., 3,927,755.

Lupica, Sebastian B., to United States of America, Energy Research and Development Administration. Method of producing thin cellulose nitrate film. 3,928,700, Cl. 428-220.000.

Luttinger, Manfred: *See—*
Scohy, John M.; Cremeans, George E.; and Luttinger, Manfred, 3,928,266.

Luzarraga, Mamerto G.: *See—*
Hamner, Glen P.; Luzarraga, Mamerto G.; and Stuckey, Alto Nelson, Jr., 3,928,176.

Luzzi, John J.: *See—*
Ramey, Chester E.; and Luzzi, John J., 3,928,330.
Ramey, Chester E.; and Luzzi, John J., 3,928,357.

Lynch, Edward I., to General Electric Company. Television receiver with picture level control. 3,928,867, Cl. 358-39.000.

Mac Leay, Ronald Edward; Lange, Harold Carl; and Sheppard, Chester Stephen, to Pennwalt Corporation. Curing and polymerization processes initiated by tertiary-aliphatic-alpha-(imido)-azo compounds. 3,928,493, Cl. 260-864.000.

MacMartin, Malcolm P.: *See—*
Kusters, Norbert L.; and MacMartin, Malcolm P., 3,928,799.

MacTaggart, Donald, to Canadian Marconi Company. Detectability of emergency beacon. 3,928,805, Cl. 325-65.000.

Maddox, Jim, Jr.: *See—*
Tate, Jack F.; and Maddox, Jim, Jr., 3,927,718.

Madison, Norman L.: *See—*
Philp, Dennis H.; and Madison, Norman L., 3,928,695.

Maeda, Shigeo; Ozutsumi, Minoru; Niimura, Isao; and Okazaki, Hideo, to Hodogaya Chemical Co., Ltd. Process for preparing colored polyurethane. 3,928,292, Cl. 260-77.5AQ.

Maeno, Shizuo: *See—*
Umio, Suminori; Ueda, Ikuo; Sato, Yoshinari; and Maeno, Shizuo, 3,928,356.

Maes, Robert: *See—*
Heeres, Jan; Mostmans, Joseph Hector; and Maes, Robert, 3,928,374.

Magnesium Elektron Limited: *See—*
Unsworth, William; and Helsby, Graham Harry, 3,928,230.

Magnusson, Harry Olof: *See—*
Barthold, Dag Vilhelm; Dahlbom, Johan Richard; Magnusson, Harry Olof; and Sjoberg, Berndt Olof Harald, 3,928,602.

Maier, Alfred E.; and Hill, Robert H., to Westinghouse Electric Corporation. Circuit breaker with improved tripped latch means. 3,928,826, Cl. 335-22.000.

Majda, Aleksander: *See—*
Sledzinski, Bohdan; Kroczynski, Jozef; Zwierzak, Andrzej; Cieslak, Ludwika; and Majda, Aleksander, 3,928,586.

Makino, Yoshimi; Okamoto, Tsutomu; and Kamiya, Iwao, to Sony Corporation. Magnetoresistive element. 3,928,836, Cl. 338-32.00R.

Maldonado, Bernardo: *See—*
Patino, Armando; and Maldonado, Bernardo, 3,928,559.

Malek, Theodore C. Water control device for offset lithographic printing presses. 3,927,614, Cl. 101-148.000.

Mallinckrodt, Inc.: *See—*
Monte, Alexander A.; and Chiang, Ching, 3,928,137.

Mallinson, William John; Huffey, Roy Frederick; and Irvin, Geoffrey Pickles, to Imperial Chemical Industries Limited. Coated films. 3,928,697, Cl. 428-142.000.

Mancusco, Jon R.: *See—*
Anderson, Norman J.; and Mancusco, Jon R., 3,927,537.

Mand, Emery M.; and Shapiro, Henry C., to Walter E. Heller Factors, Inc. Decorative wall covering. 3,928,627, Cl. 427-358.000.

Mann, Henry: *See—*
Colton, John Robert; Heick, Robert Bruce; and Mann, Henry, 3,928,726.

Mannesmannrohren-Werke Aktiengesellschaft: *See—*
Schonfeld, Wolfram; Philipps, Armin; Eversberg, Hans; Hausler, Karl-Heinz; and Samans, Robert, 3,927,547.

Mantoux, Gerard: *See—*
Pavlin, Cyrille Francois; Mantoux, Gerard; Giraud, Adrien; and Grossin, Michele, 3,927,565.

Marathon Oil Company: *See—*
Dreher, Karl D.; and Gogarty, William B., 3,928,215.

Marcus, Kenneth N., to Dolly Toy Company, The. Decorative nursery accessory. 3,927,482, Cl. 40-28.100.

Mares, Frantisek: *See—*
Rogic, Milorad M.; and Mares, Frantisek, 3,928,445.

Marinozzi, Paolo: *See—*
Pignataro, Francesco; Faletti, Franco; Castellan, Arsenio; Bossi, Alessandro; Marinozzi, Paolo; and Giordano, Nicola, 3,928,409.

Marjoram, Ernest B.: *See—*
Stewart, Charles J.; and Marjoram, Ernest B., 3,928,863.

Markhart, Albert H.: *See—*
Young, Raymond H., Jr.; Markhart, Albert H.; and Martins, Joseph G., 3,928,264.

Markl, Hans: *See—*
Kollmar, Walter; Markl, Hans; and Thieme, Klaus, 3,928,128.

Marks, Robert E., to Envirotech Corporation. Pulp digester vent system. 3,928,123, Cl. 162-238.000.

Marley, James A., Jr.; and Polata, Bohumil, to Signetics Corporation. Method for fabricating semiconductor devices using composite mask and ion implantation. 3,928,081, Cl. 148-1.500.

Marquarding, Dieter: *See—*
Hammann, Ingeborg; Hoffmann, Peter; Marquarding, Dieter; Ugi, Ivar; and Unterstenhofer, Gunter, 3,928,408.

Marrero, Louis. Electrical outlet box assembly. 3,928,716, Cl. 174-57.000.

Marriott Turner, George Frederick Albert, to Ilford Limited. Film cassette. 3,928,770, Cl. 250-481.000.

Marsh, Gary B., to Engelhard Minerals & Chemicals Corporation. Froth flotation method. 3,928,019, Cl. 75-2.000.

Marshall, Winston S.: *See—*
Lacefield, William B.; and Marshall, Winston S., 3,928,604.

Martell, Arthur E.: *See—*
Greco, Carl C.; Mirviss, Stanley B.; and Martell, Arthur E., 3,928,365.

Martella, Amelia. Knitting and crochet needle and sewing needle combination. 3,927,538, Cl. 66-117.000.

Martin Farms Partnership: *See—*
Sammet, Aaron F., 3,927,514.

Martin, Frederick W., to West Company, The. Apparatus for checking a dimension of an object. 3,927,476, Cl. 33-143.00L.

Martin, Harold B.; and Rogg, Herman O. Volume control for reed organ. 3,927,596, Cl. 84-355.000.

Martin Marietta Corporation: *See—*
Blake, Floyd A.; and Howerton, Murlin T., 3,927,659.

Martin, Myron D.: *See—*
Osteen, Mitchell M.; and Martin, Myron D., 3,928,758.

Martin Processing, Inc.: *See—*
Hermes, Julius, 3,928,682.

Martin, Richard E.; and Gildone, Anthony M., to GMF Inc. Dispenser for carbonated beverage or the like. 3,927,801, Cl. 222-61.000.

Martineau, Richard P. Device for signalling dirty filters. 3,928,006, Cl. 55-274.000.

Martins, Joseph G.: *See—*
Young, Raymond H., Jr.; Markhart, Albert H.; and Martins, Joseph G., 3,928,264.

Marvin Glass & Associates: *See—*
Glass, Marvin I.; Morrison, Howard J.; and Gilford, Ira B., 3,927,884.

Masai, Yukito; Kato, Yasuo; Murayama, Ken; and Fukui, Nobuhiko, to Toyo Boseki Kabushiki Kaisha (Toyo Spinning Co., Ltd.). Fireproof, thermoplastic polyester composition. 3,928,283, Cl. 260-45.70P.

Masaki, Kenji: *See—*
Shioyama, Giichi; Masaki, Kenji; and Nambu, Shuya, 3,927,523.

Mascall, Frank Charles: *See—*
Lillyman, Ernest; Mascall, Frank Charles; and Mathers, Cecil George, 3,928,538.

Mase, Shunzo; and Watanabe, Tetsuo, to NGK Insulators Ltd. Method for producing multilayer metallized beryllia ceramics. 3,927,815, Cl. 228-121.000.

Maser, Kenneth R., to United States of America, Interior. Remote sealing of mine passages. 3,927,719, Cl. 169-46.000.

Maslow, Frances, executor: *See—*
Maslow, Louis, deceased; Maslow, Frances, executor; and Maslow, Richard, executor, 3,927,769.

Maslow, Louis, deceased; by Maslow, Frances, executor; and by Maslow, Richard, executor, to Metropolitan Wire Goods Corporation. Shelf structure. 3,927,769, Cl. 211-153.000.

Maslow, Richard, executor: *See—*
Maslow, Louis, deceased; Maslow, Frances, executor; and Maslow, Richard, executor, 3,927,769.

Massa, Donald P.: *See—*
Massa, Frank, 3,928,777.

Massa, Frank, to Dellorfano, Fred M., Jr.; and Massa, Donald P. Directional ultrasonic transducer with reduced secondary lobes. 3,928,777, Cl. 310-8.200.

Master Packaging Equipment, Inc.: *See—*
Reid, Laurie M., 3,927,507.

Masuda, Naosuke, to Jidosha Kiki Co., Ltd. Combined load-sensing proportion and relay valve. 3,927,916, Cl. 303-22.00R.

Masukawa, Toyoaki: *See—*
Fujiwhara, Mitsuto; Endo, Takaya; Satoh, Ryosuke; Masukawa, Toyoaki; and Uozumi, Takahiro, 3,928,041.

Masure, Daniel: *See—*
Buoy, Pierre; Masure, Daniel; Collon, Paul; Pigeaud, Jean-Marie; and Sartre, Bernard, 3,928,167.

Masuyama, Toshio: *See—*
Ishikawa, Toshikatsu; Endo, Tei; Masuyama, Toshio; Uruma, Fumio; Morishita, Masutaka; and Kuki, Takeshi, 3,927,986.

Masuzawa, Isao; Awano, Tsuneo; and Onishi, Kazutoshi, to Kabushiki Kaisha Tokyo Keiki. Marine autopilot system. 3,927,635, Cl. 114-144.00E.

Matchett, Walter E. Simultaneous oil and electric transmission system and method for fabricating same. 3,928,714, Cl. 174-47.000.

Mathers, Cecil George: *See—*
Lillyman, Ernest; Mascall, Frank Charles; and Mathers, Cecil George, 3,928,538.

Matschkal, Heinz: *See—*
Leberfinger, Rolf; and Matschkal, Heinz, 3,927,966.

Matsubara, Kenji; and Kanbara, Shigeo, to Nippon Kokan Kabushiki Kaisha. Process of reducing iron ores. 3,928,021, Cl. 75-35.000.

Matsubara, Syuzo: *See—*
Furuno, Kouji; Nakano, Hideki; Matsubara, Syuzo; and Shioya, Akitoshi, 3,928,583.

Matsuda, Kazuo; Ohmura, Hidemasa; and Aritaki, Hirakazu, to Kao Soap Co., Ltd. Process for preparation of anionic polyurethane emulsions. 3,928,271, Cl. 260-29.2TN.

Matsuguma, Yoshihiko: *See—*
Ono, Tomoyoshi; and Matsuguma, Yoshihiko, 3,928,262.

Matsui, Masatake: *See—*
Fuwa, Masaru; Takahashi, Kiyoshi; Otsuji, Masaaki; and Matsui, Masatake, 3,928,525.

Matsukawa, Hiroharu; and Hayashi, Takao, to Fuji Photo Film Co., Ltd. Process for manufacturing an activated clay-coated paper for use as a pressure-sensitive copying paper. 3,928,702, Cl. 428-323.000.

Matsumoto, Hideyuki: *See—*
Morikawa, Kiyoshi; Furuta, Akio; and Matsumoto, Hideyuki, 3,928,002.

Matsumoto, Keizo: *See—*
Shimizu, Katsuhisa; Ishibe, Shuhei; Okumichi, Toshiharu; and Matsumoto, Keizo, 3,928,414.

Matsumoto, Makoto: *See—*
Tsunoda, Tatsui; Oka, Santaro; Miyamoto, Kazuma; Matsumoto, Makoto; and Baba, Heiji, 3,928,045.

Matsumoto, Tsutomu: *See—*
Katsuta, Kihei; Matsumoto, Tsutomu; and Matsuyama, Chiaki, 3,927,787.

Matsunobu, Akira: *See—*
Ohta, Ioe; Matsunobu, Akira; Nishizawa, Masafumi; Kubota, Hayato; and Sakamoto, Kenshi, 3,928,635.

Matsuo, Kenji: *See—*
Yoshinaga, Toshiaki; Wada, Takanao; and Matsuo, Kenji, 3,927,497.

Matsushita Electric Industrial Co., Ltd.: *See—*
Isoda, Mikio, 3,928,760.
Oda, Fujio; and Otani, Hiroshi, 3,927,887.
Sasabe, Kaoru; Kotera, Hiroaki; Hane, Toshihide; and Kihara, Nobuyoshi, 3,928,719.
Yamashita, Akio, 3,928,865.

Matsuyama, Chiaki: *See—*
Katsuta, Kihei; Matsumoto, Tsutomu; and Matsuyama, Chiaki, 3,927,787.

Matsuyama, Junichi: *See—*
Nakazawa, Yoshiyuki; Nakamura, Yashuharu; Nakajima, Yosuke; Matsuyama, Junichi; and Sato, Akira, 3,928,856.

Matsuyama, Susumu; Hirabayashi, Seishiro; Iida, Bunkichi; and Miki, Hajime, to Japan Tobacco and Salt Public Corporation, The. Air-curing process of tobacco leaf. 3,927,682, Cl. 131-140.00R.

Mattei, Silvano: *See—*
Ullmann, Werner; Schumacher, Bernd; Mattei, Silvano; Fenner, Hans-Ueli; and Sieg, Arno, 3,928,163.

Mattel, Inc.: *See—*
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Matthews, Brian W.: *See—*
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Matthias, Guenther: *See—*
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Diem, Hans; Matthias, Guenther; Aicher, Albrecht; Haas, Hans; Schreiber, Hans; and Sperber, Heinrich, 3,928,461.

Mattila, I. W. E-Z Removable belt guard hinge. 3,927,578, Cl. 74-608.000.

Maxon Marine Industries, Inc.: *See—*
Ingle, James E.; Emerson, Ralph W.; and Megahan, John S., 3,927,702.

Maxwell, Thomas J.: *See—*
Briggs, Anglis R.; and Maxwell, Thomas J., 3,928,566.

May, John E., to General Electric Company. Metal oxide varistor with discrete bodies of metallic material therein and method for the manufacture thereof. 3,928,242, Cl. 252-513.000.

May, William Stanley: *See—*
Reed, Alan Brydon; and May, William Stanley, 3,927,656.

Mayer, Joseph; and Sherlock, Margaret H., to Schering Corporation. 1-Amino naphthyridines. 3,928,367, Cl. 260-296.00B.

Mayfield, Johnny W. Pipe end facing and grooving machine. 3,927,584, Cl. 82-4.00C.

McBride, Warren L.: *See—*
Frye, Clifton G.; and McBride, Warren L., 3,928,178.

McCall, John W., to Formall, Inc. Conveyor hanger modular construction. 3,927,760, Cl. 198-177.00T.

McCaulay, David A., to Standard Oil Company. Alkylation process utilizing hydrofluoric acid with a minor amount of fluorosulfuric acid. 3,928,487, Cl. 260-683.510.

McClellan, David P., to I-T-E Imperial Corporation. Overload relay with means to prevent automatic reset. 3,928,833, Cl. 337-56.000.

McCluggage, Charles: *See—*
Turney, Stephen Z.; Blumenfeld, Walter; Cowley, R. Adams; Wolf, Samuel; McCluggage, Charles; and Ashworth, John W., III, 3,927,670.

McClure, Robert E., to Sperry Rand Corporation. Ring laser frequency biasing mechanism. 3,927,946, Cl. 356-106.0LR.

McConnell, George C.: *See—*
Burns, Henry C.; and McConnell, George C., 3,928,578.

McDonald, Donald Robson: *See—*
Brailsford, Sidney Frank; and McDonald, Donald Robson, 3,928,055.

McDonnell Douglas Corporation: *See—*
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McDonough, William F.; Montlick, James A.; and Bernard, Richard A., to Pitney-Bowes, Inc. Multi-detectable ink compositions and method of use. 3,928,226, Cl. 252-301.20R.

McGilvray, Bruce L.: *See—*
Carter, Richard S.; Hogan, Spurgeon G., Jr.; Leung, Wan L.; McGilvray, Bruce L.; and Werner, Robert H., 3,928,857.

McGowan, Joseph: *See—*
Carter, John L.; and McGowan, Joseph, 3,928,806.

McIntosh, Robert H.; and Hull, Ezekiel H., to Askew, Anthony B. Self-sanitizing film former. 3,928,563, Cl. 424-78.000.

McIntyre, William H.; Wallace, Richard W.; and Troha, Matthew J., to Westinghouse Electric Corporation. Gas measuring probe for industrial applications. 3,928,161, Cl. 204-195.00S.

McNeil Laboratories, Incorporated: *See—*
Schwartz, Norman; and Mohrbacher, Richard J., 3,928,347.

McNeilly, Michael A.: *See—*
Olson, Donald M.; and McNeilly, Michael A., 3,927,897.

McShane, James Edward, to Warner-Lambert Company. Process for the purification of coal tar. 3,928,579, Cl. 424-167.000.

McTaggart, John A.: *See—*
Loft, John T.; McTaggart, John A.; and Plovan, Steven G., 3,928,705.

Meckenstock, Helmut: *See—*
Lang, Joseph; Meckenstock, Helmut; and Nopper, Hans-Joachim, 3,927,819.

Medi-Physics, Inc.: *See—*
Winchell, Harry S.; Khentigan, Archie S.; and Lin, Hong, 3,928,552.

Medtronic, Inc.: *See—*
Gobeli, David H.; and Adams, John M., 3,927,677.

Megahan, John S.: *See—*
Ingle, James E.; Emerson, Ralph W.; and Megahan, John S., 3,927,702.

Meidert, Helmut: *See—*
Riemenschneider, Wilhelm; Hornig, Lothar Heinz, deceased; Hornig nee Munich, Anneliese, co-heiress; Meidert, Helmut; and Krekeler, Hans, 3,928,479.

Meier-Windhorst, Christian August. Process for the continuous finishing treatment of textile web materials. 3,927,971, Cl. 8-151.200.

Meierkort, Jurgen; and Schafer, Peter, to ITT Industries, Inc. Lifting jack. 3,927,864, Cl. 254-103.000.

Meihofer, Edward F., to Butler Automatic, Inc. Web break detector system. 3,928,844, Cl. 340-259.000.

Meissner, Wolfgang, to Gebr. Happich GmbH. Safety belt unwinding device with energy dissipator. 3,927,846, Cl. 242-107.400.

Meister, Herbert: *See—*
Kosswig, Kurt; and Meister, Herbert, 3,928,250.

Melaja, Asko J.; Hamalainen, Lauri; and Rantanen, Lasse, to Suomen Sokeri Osakeyhtio (Finnish Sugar Company). Process for large scale chromatography. 3,928,193, Cl. 210-31.00C.

Mellgren, Per Gustaf: *See—*
Karrer, Friedrich Wilhelm Johann; and Mellgren, Per Gustaf, 3,927,478.

Melville, William: *See—*
Hobbs, John Francis; and Melville, William, 3,928,405.

Melzobs, Modris Janowich: *See—*
Formale, Milda Janovna; Kashkina, Nadezhda Alexandrovna; Kalninsh, Arvid Janovich; Sergeeva, Varvara Nikolaevna; Surna, Janis Alexandrovich; Shusters, Janis; Melzobs, Modris Janowich; Mikazhan, Waldis Danielowich; Purwinsh, Indulis Waldowich; Skutelis, Antons Petrowich; and Liepinsh, Martinsh Aleksandrowich, 3,928,562.

Mennesson, Francois, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Throttle return systems for carburettors. 3,927,657, Cl. 123-198.00D.

Mentrup, Anton: *See—*
Renth, Ernst Otto; Schromm, Kurt; Mentrup, Anton; and Danneberg, Peter, 3,928,358.

Menzi, Ulrich, to Hermes Precisa International S.A. Margin stop arrangement for typewriters. 3,927,754, Cl. 197-63.000.

Mercer, Alec Victor: *See—*
Fleck, Fritz; Schmid, Horst; Mercer, Alec Victor; and Paver, Roger, 3,928,329.

Mercier, Jules, to Rhone-Poulenc Industries. Process for splitting acetals and hemiacetals. 3,928,459, Cl. 260-601.00R.

Merck & Co., Inc.: *See—*
Baldwin, John J.; and Novello, Frederick C., 3,928,361.
Bochis, Richard J.; and Fisher, Michael H., 3,928,372.
Cragoe, Edward J., Jr.; and Schultz, Everett M., 3,928,624.

Merianos, John J.: *See—*
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 3,928,323.

Merlina, Joseph Francis: *See—*
Redmond, John Peter; Andrews, Daniel Marshall; Brooks, Charles Parsons; Cinalli, Dominic A.; and Merlina, Joseph Francis, 3,928,663.

Merrell Toraude: *See—*
Delarue, Jean-Louis; and Debarge, Albert, 3,928,341.

Merz, Herbert: *See—*
Walther, Gerhard; Merz, Herbert; Langbein, Adolf; and Stockhaus, Klaus, 3,928,359.

Mescher, Harold E.; and Heyer, Walter E., to Pacific Scientific Company. Free floating flight in a retort and method. 3,927,959, Cl. 432-3.000.

Meshberg, Philip. Applicator for attachment to a spray mist dispenser. 3,927,806, Cl. 222-402.120.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
Voigt, Werner, 3,927,622.

Metal Service Company, Inc.: *See—*
Simmons, Smith H.; William, Otho A.; and Miller, Arthur E., 3,927,518.

Metropolitan Wire Goods Corporation: *See—*
Maslow, Louis, deceased; Maslow, Frances, executor; and Maslow, Richard, executor, 3,927,769.

Metzger, Jacques: *See—*
Soula, Gerard; Metzger, Jacques; and Lena, Louis, 3,928,470.

Metzger, Julio, to E. R. Squibb & Sons, Inc. Amphotericin complexes. 3,928,570, Cl. 424-118.000.

Meyercord Co., The: *See—*
Kerwin, Daniel, 3,928,115.

Mezhikovsky, Semen Markovich: *See—*
Berlin, Alfred Anisimovich; Aseeva, Roza Mikhailovna; Mezhikovsky, Semen Markovich; Sherle, Alla Ilinichna; Tsepalova, Nadezhda Alexeevna; Goldovsky, Evgeny Alexandrovich; Zelenetskaya, Tatiana Vladimirovna; Fatkulina, Rozalia Komalovna; and Kuzminsky, Alexandr Samoilovich, 3,928,489.

Micarna AG Fleischwarenfabrik: *See—*
Laderach, Hans Rudolf, 3,927,588.

Michel, Robert. Process of manufacturing phosphate fertilizer. 3,928,016, Cl. 71-42.000.

Miele, Heinrich; Orth, Winfried; and Pastorek, Emmerich, to Rutgerswerke Aktiengesellschaft. Process for the production of indanol-(4) and indanol-(5). 3,928,472, Cl. 260-628.000.

Mieras, Raymond J. Flip down door lock. 3,927,906, Cl. 292-262.000.

Miericke, Jurgen; and Urankar, Laxmikant, to Siemens Aktiengesellschaft. Magnet system for use in the contactless guidance of a moving vehicle. 3,927,735, Cl. 104-148.0MS.

Mikazhan, Waldis Danielowich: *See—*
Formale, Milda Janovna; Kashkina, Nadezhda Alexandrovna; Kalninsh, Arvid Janovich; Sergeeva, Varvara Nikolaevna; Surna, Janis Alexandrovich; Shusters, Janis; Melzobs, Modris Janowich; Mikazhan, Waldis Danielowich; Purwinsh, Indulis Waldowich; Skutelis, Antons Petrowich; and Liepinsh, Martinsh Aleksandrowich, 3,928,562.

Mikhailova, Tatiana Nikolaevna: *See—*
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Miki, Hajime: *See—*
Matsuyama, Susumu; Hirabayashi, Seishiro; Iida, Bunkichi; and Miki, Hajime, 3,927,682.

Mikogami, Yukihiro: *See—*
Akiyama, Keiiti; Suzuki, Shyuichi; and Mikogami, Yukihiro, 3,928,286.

Mikolics, Sandor; Ziegler, Karoly; and Homola, Viktor, to Novex Talalmanyfejleszto es Ertekesito Kulkereskedelmi Rt. Cooling water supply system with self adjusting hydraulics. 3,927,531, Cl. 60-690.000.

Milberger, Ernest C.; and Dolhyj, Serge R., to Standard Oil Company, The. Process for the preparation of molybdenum-containing oxidation catalysts. 3,928,240, Cl. 252-467.000.

Milchem Incorporated: *See—*
Browning, William C.; and Young, Homer F., 3,928,211.

Milkovich, Ralph; and Chiang, Mutong T., to CPC International Inc. Chemically joined, phase separated self-cured hydrophilic thermoplastic graft copolymers and their preparation. 3,928,255, Cl. 260-2.50R.

Miller, Albert: *See—*
Spiegel, William; Spiegel, Jacob; and Miller, Albert, 3,927,484.

Miller, Arthur E.: *See—*
Simmons, Smith H.; William, Otho A.; and Miller, Arthur E., 3,927,518.

Miller, David M.: *See—*
Beall, George H.; Miller, David M.; and Rittler, Hermann L., 3,928,533.

Miller, Irving L.: *See—*
Wyatt, Philip J.; Stull, Vincent R.; Proctor, William L.; and Miller, Irving L., 3,928,140.

Miller, John: *See—*
Jablonski, John Michael; and Miller, John, 3,928,410.

Miller, Rodney D.: *See—*
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Millmaster Onyx Corporation: *See—*
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 3,928,323.

Mills, Ivor W.; and Dimeler, Glenn R., to Sun Oil Company of Pennsylvania. Oil and process of manufacture of blended hydrorefined oil. 3,928,168, Cl. 208-14.000.

Mills, Walter D.: *See—*
Harrow, Geoffrey A.; and Mills, Walter D., 3,927,651.

Milner, Jeremiah. Process for the production of glucose polymers. 3,928,135, Cl. 195-31.00R.

Milzner, Karlheinz; and Reisser, Fritz, to Sandoz Ltd. Pyrimidyl phosphoro-and thiophosphoroamidates. 3,928,353, Cl. 260-256.40E.

Minaki, Toshihiro: *See—*
Otouma, Takashi; Aoki, Susumu; Minaki, Toshihiro; Shibata, Kenichi; and Mori, Kentaro, 3,928,049.

Mindner, Reinhard: *See—*
van der Kolk, Hans-Jurgen; Mindner, Reinhard; Kiess, Tilman; Muhlich, Peter; Aldinger, Ulrich; and Adler, Karl-Heinz, 3,927,528.

Miner, Carroll R., to General Instrument Corporation. UHF Tuner drive assembly with memory fine tuning. 3,927,572, Cl. 74-10.800.

Minnesota Mining and Manufacturing Company: *See—*
Johnston, Clyde P., 3,927,693.

Minolta Camera Kabushiki Kaisha: *See—*
Seigenji, Kiyoshi, 3,927,938.
Yamaguchi, Haruki, 3,927,941.

Minsky, Norman C.; and Hiatt, Russell D., to Dart Industries Inc. Auxiliary cooking utensil leg. 3,927,610, Cl. 99-425.000.

Mintz, Michael J.: *See—*
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Mirviss, Stanley B.: *See—*
Greco, Carl C.; Mirviss, Stanley B.; and Martell, Arthur E., 3,928,365.

Mite Corporation: *See—*
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Mitsubishi Chemical Industries Ltd.: *See—*
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Morita, Shiro; Fujiki, Konosuke; and Takeda, Kazuo, 3,928,208.

Mitsubishi Denki Kabushiki Kaisha: *See—*
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Mitsubishi Gas Chemical Co., Ltd.: *See—*
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Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Katsuta, Kihei; Matsumoto, Tsutomu; and Matsuyama, Chiaki, 3,927,787.

Mitsubishi Petrochemical Co., Ltd.: *See—*
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Mitsuhashi, Yoshiyasu, to Tokyo Shibaura Denki Kabushiki Kaisha. Water turbine. 3,927,951, Cl. 415-110.000.

Mitsui Petrochemical Industries, Ltd.: *See—*
Ohmori, Masahiko; Tomatsu, Toshiharu; and Iwata, Tadao, 3,928,497.

Mitsui Shipbuilding and Engineering Co., Ltd.: *See—*
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Miyamae, Toshiaki. Fishing rod holding leverage device. 3,927,487, Cl. 43-21.200.

Miyamae, Toshiaki. Normally open type push button switch operating mechanism. 3,928,739, Cl. 200-155.00R.

Miyamori, Tamotsu: *See—*
Saitoh, Shigeru; Watanabe, Tetsuya; Konno, Koji; Yaguchi, Kunihide; Kodama, Kenji; and Miyamori, Tamotsu, 3,928,537.

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Moffatt, John G.: *See—*
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Molnar & Co., Inc.: *See—*
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Moniwa, Yoshihiro, deceased: *See—*
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Pignataro, Francesco; Faletti, Franco; Castellan, Arsenio; Bossi, Alessandro; Marinozzi, Paolo; and Giordano, Nicola, 3,928,409.

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Mookherjee, Braja Dulal; Kamath, Venkatesh; and Shuster, Edward J., to International Flavors & Fragrances Inc. Novel perfumery uses of π-cyanotricyclene. 3,928,247, Cl. 252-522.000.

Mookherjee, Braja Dulal; Vock, Manfred Hugo; Benaim, Carlos; and Shuster, Edward J., to International Flavors & Fragrances Inc. Fragrance materials containing 4-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)-2-butanol and/or 4-(6,6-dimethyl-2-methylene-3-cyclo-hexen-1-yl)-2-butanol, and/or acetals thereof, and methods for producing same. 3,928,248, Cl. 252-522.000.

Mookherjee, Braja Dulal; Trenkle, Robert Walter; Vock, Manfred Hugo; and Shuster, Edward J., to International Flavors & Fragrances Inc. Enhancing red-berry flavor with 4-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)-2-butanone and 4-(6,6-dimethyl-2-methylene-3-cyclohexen-1-yl)-2-butanone. 3,928,645, Cl. 426-538.000.

Mooney, Thomas J., to Xerox Corporation. Time dependent fault detector. 3,928,772, Cl. 307-116.000.

Moore Business Forms, Inc.: *See—*
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Moore, Oscar E.: *See—*
Siegel, Milton R.; and Moore, Oscar E., 3,928,015.

Moore, Thomas B. Static-type mixer, and receptacle and method of packaging utilizing same. 3,927,868, Cl. 259-4.000.

Moori, Youichi: *See—*
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Mordelet, Yvon: *See—*
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Moreau, Michele; Karadavidoff, Isaac; and Risse, Claude, to Fuveau S.A. New derivatives of alpha-methyl benzylamine in treating inflammation. 3,928,603, Cl. 424-330.000.

Moret, Michel A.; and Musy, Jean-Pierre, to Les Produits Associes, SA. Toothbrush stem attachment. 3,927,435, Cl. 15-176.000.

Morgan, James E., to PPG Industries, Inc. Process for preparing silica pigment. 3,928,540, Cl. 423-339.000.

Mori, Kentaro: *See—*
Otouma, Takashi; Aoki, Susumu; Minaki, Toshihiro; Shibata, Kenichi; and Mori, Kentaro, 3,928,049.

Morikawa, Kiyoshi; Furuta, Akio; and Matsumoto, Hideyuki, to Japan Gasoline Co., Ltd.; and Nikki Chemical Co., Ltd. Low-temperature steam reforming process for hydrocarbons. 3,928,002, Cl. 48-214.000.

Morimoto, Toshihumi: *See—*
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Morisaki, Masuo: *See—*
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Morita, Masanori, to Roland Corporation. Piano action. 3,927,594, Cl. 84-237.000.

Morita, Shiro; Fujiki, Konosuke; and Takeda, Kazuo, to Mitsubishi Chemical Industries Ltd. Core body for use in coil type blood dialyzer. 3,928,208, Cl. 210-321.000.

Moriyama, Hideki: *See—*
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Moriyama, Hiromi; Kuwabara, Motosuke; and Jin, Katsuyuki, to Hitachi, Ltd. Number identification circuit. 3,928,728, Cl. 179-18.0FH.

Morooka, Yasuo, to Hitachi, Ltd. Rolling method for rolling mills. 3,927,545, Cl. 72-6.000.

Morrison, Albert R.; Haynes, Harold L.; and Bell, Reuben Hays, to Owens-Corning Fiberglas Corporation. Glass fibers coated with a size containing starch esters of isoalkanoic acids. 3,928,666, Cl. 428-378.000.

Morrison, Howard J.: *See—*
Glass, Marvin I.; Morrison, Howard J.; and Gilford, Ira B., 3,927,884.

Moser, James R., deceased; and by Moser, Karen, executrix, to United States of America, Army. LiCl inhibitor for perchlorate battery. 3,928,076, Cl. 136-100.00M.

Moser, Karen, executrix: *See—*
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Mostmans, Joseph Hector: *See—*
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Motorola, Inc.: *See—*
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Mottel, Alan, to Consolidated Novelty Co., Inc. Artificial tree with hinged branches. 3,928,689, Cl. 428-9.000.

Moyle, Clarence L.; and Wolf, Paul A., to Dow Chemical Company, The. Method and composition for rapid disinfection. 3,928,575, Cl. 424-153.000.

Mruk, Norbert J., to Koppers Company, Inc. Method for the preparation of 3,3-methylenebis (benzoic acid). 3,928,430, Cl. 260-515.00P.

Mueller, David E.; and Segura, Marnell A., to Exxon Research and Engineering Company. Ore pretreatment process. 3,928,024, Cl. 75-6.000.

Muhlich, Peter: *See—*
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Mullersman, Ferdinand H., to General Electric Company. Stand-by power system. 3,928,791, Cl. 320-7.000.

Mullersman, Ferdinand Henry; and Sarisky, James Edward, to General Electric Company. Method of resetting thermostat used with temperature controlled charging. 3,928,792, Cl. 320-35.000.

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Murata Kikai Kabushiki Kaisha: *See—*
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Myers, Lewis P.: *See—*
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Naegeli, John Peter: *See—*
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Naf, Ferdinand, to Firmenich S.A. Ethyl 2-trans,4-cis-undecadienoate. 3,928,402, Cl. 260-410.90R.

Nafziger, Joel L. Animal waste treatment system. 3,927,644, Cl. 119-16.000.

Nagahama, Shizuo: *See—*
Shimada, Keizo; Nishikawa, Takeo; Harada, Toshiaki; and Nagahama, Shizuo, 3,928,476.

Nagaoka, Yoshihiko: *See—*
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Nagase, Tsuneyuki; Suzukamo, Gohu; and Fukao, Masami, to Sumitomo Chemical Company, Limited. Isomerization of olefins. 3,928,485, Cl. 260-680.00R.

Nagata, Masao: *See—*
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Naka, Reishi; Komatsuzaki, Shigeki; Tomobe, Tomotsuna; and Moniwa, Yoshihiro, deceased (by Moniwa, Yoshiko, administratrix), to Hitachi, Ltd. Grease composition. 3,928,214, Cl. 252-11.000.

Nakajima, Yosuke: *See—*
Nakazawa, Yoshiyuki; Nakamura, Yashuharu; Nakajima, Yosuke; Matsuyama, Junichi; and Sato, Akira, 3,928,856.

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Nakamura, Hisao: *See—*
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Nakamura, Matsuichi, to Daiwa Steel Tube Industries Co., Ltd. Hot dipped steel tube and a method for producing the same. 3,927,816, Cl. 228-147.000.

Nakamura, Takafumi: *See—*
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Nakano, Hideki: *See—*
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Nakata, Kazuo; and Ichikawa, Akira, to Hitachi, Ltd. Audio message generating apparatus used for query-reply system. 3,928,722, Cl. 179-1.0SM.

Nakayama, Hiroshi, to Iwatani & Co., Ltd. Electronic control system of an air conditioning apparatus. 3,927,712, Cl. 165-12.000.

Nakazawa, Yoshiyuki; Nakamura, Yashuharu; Nakajima, Yosuke; Matsuyama, Junichi; and Sato, Akira, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsion for recording electron beam. 3,928,856, Cl. 346-1.000.

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Allain, Ronald J.; and Seale, Virgil L., 3,928,443.
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Namba, Kazuo: *See—*
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Nambu, Shuya: *See—*
Shioyama, Giichi; Masaki, Kenji; and Nambu, Shuya, 3,927,523.

Nantz, Jack George, to Addressograph Multigraph Corporation. Imprint wheel assembly. 3,927,613, Cl. 101-110.000.

Napko Corporation: *See—*
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Narayan, Thirumurti L.: *See—*
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Narita, Mikio; Ohashi, Kiyoto; and Yamamoto, Jun, to Fischer & Porter Co. Electronic analog hold circuit. 3,928,810, Cl. 328-127.000.

Nash, Floyd M.: *See—*
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Neeb, Rudolf: *See—*
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Neely, James S.; and Thompson, James A., to Procter & Gamble Company, The. Compositions of matter containing paramethoxycinnamaldehyde as a flavoring agent and sweetener. 3,928,560, Cl. 424-52.000.

Nejelski, Leo Lawrence, Jr.: *See—*
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Nelson, Charles J.: *See—*
Appleton, Thomas R.; Dean, Richard H.; Hillman, Edward J.; Nelson, Charles J.; and Sinn, Gunter E., 3,928,672.

Nelson, Norman A., to Upjohn Company, The. Intermediates for oxaphenylene prostaglandins. 3,928,417, Cl. 260-473.00A.

Nelson, Norman A., to Upjohn Company, The. PGF_2 -oxa phenylene compounds. 3,928,418, Cl. 260-473.00A.

Nelson, Paul. Spot light fixture. 3,928,757, Cl. 240-51.11R.

Nemoto, Yasuo: *See—*
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Neuroth, Norbert, to Janaer Glaswerk Schott & Gen. Transparent glass-ceramic laserable articles containing neodymium. 3,928,229, Cl. 252-301.60P.

New York University: *See—*
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Newell, Arthur F., to Pneumatic Scale Corporation. Method of loading magazine with cartons. 3,927,777, Cl. 214-152.000.

NGK Insulators Ltd.: *See—*
Mase, Shunzo; and Watanabe, Tetsuo, 3,927,815.

Nguyen Duy, Thuoc: *See—*
Besson, Jean Georges; Nguyen Duy, Thuoc; and Palz, Wolfgang, 3,928,073.

Niehaus, Clemens: *See—*
Dhein, Rolf; Kaiser, Bernd-Ulrich; Rudolph, Hans; Kuchenmeister, Rolf; and Niehaus, Clemens, 3,928,265.

Nielson, Carl Calvin, to Bell Telephone Laboratories, Incorporated. Circuitry for providing executive ringback in a PBX system in accordance with a supplied class of service. 3,928,729, Cl. 179-18.0BG.

Nienstedt, Heinz. Apparatus for sawing up flat, rectangular blocks, in particular deep-frozen blocks of fish. 3,927,592, Cl. 83-404.200.

Nightingale, Colin Walter; and Bielstein, Georg Paul Richard, to British Copper Refiners Limited. Electrolytic refining of copper. 3,928,151, Cl. 204-106.000.

Nihon Kaiheiki Industrial Company, Ltd.: *See—*
Ohashi, Shigeo, 3,928,743.

Niimi, Itaru; Kaneko, Yasuhisa; Morita, Akiyoshi; Nemoto, Yasuo; and Sato, Mitsuyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Catalysts for purifying exhaust gas. 3,928,241, Cl. 252-470.000.

Niimura, Isao: *See—*
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Nikki Chemical Co., Ltd.: *See—*
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Nilsson, Jan: *See—*
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Nippon Carbon Co. Ltd.: *See—*
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Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Kogaku K.K.: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Kynol Inc.: *See—*
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Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See—*
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Nippon Soken, Inc.: *See—*
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Nippon Steel Corporation: *See—*
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Nippon Telegraph and Telephone Public Corporation: *See—*
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Nishida, Takashi: *See—*
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Nishikawa, Takeo: *See—*
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Nishizawa, Masafumi: *See—*
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Nissan Motor Co., Ltd.: *See—*
Inoue, Naohiko; and Moori, Youichi, 3,927,436.
Shioyama, Giichi; Masaki, Kenji; and Nambu, Shuya, 3,927,523.
Tsuneishi, Norihiro; and Miyabayashi, Yoshiyuki, 3,927,493.

Niwa, Takao: *See—*
Goto, Kenji; and Niwa, Takao, 3,927,655.

Noack, Dieter: *See—*
Beier, Helmut; and Noack, Dieter, 3,928,738.

Nobutoki, Saburo, to Hitachi, Ltd. Colour pickup tubes and method of manufacturing the same. 3,928,160, Cl. 204-192.000.

Noda, Fumiyoshi: *See—*
Kaneko, Yasuhisa; Komiyama, Yoshiro; Kondo, Katsumi; Noda, Fumiyoshi; and Uchida, Kunihiko, 3,928,662.

Nopper, Hans-Joachim: *See—*
Lang, Joseph; Meckenstock, Helmut; and Nopper, Hans-Joachim, 3,927,819.

Noro, Masataka: *See—*
Uchigaki, Taku; and Noro, Masataka, 3,928,281.

North American Instrument Corporation: *See—*
Tegtmeyer, Charles John, 3,927,660.

North American Philips Corporation: *See—*
Crowell, Merton H., 3,928,768.

Northern Electric Company Limited: *See—*
van Tongerloo, Eric Henry; Ibrahim, Abd-El-Fattah Ali; Colton, Douglas Roy; and Lawrence, John, 3,928,093.

Northup, Francis B.; and Hart, Donald R., to Spanco Industries, Inc. Apparatus for producing wrapped yarns. 3,927,515, Cl. 57-18.000.

Northwest Marine Products, Inc.: *See—*
Smith, Franklin G.; and Wilson, Gerald M., 3,927,860.

Norton Company: *See—*
Blake, Melvyn, 3,927,438.

Nottke, James E., to Du Pont de Nemours, E. I., and Company. Preparation of 3-substituted 2-hydroxyquinoxalines by reaction of 0-arylenediamines with trihalovinyl epoxides. 3,928,350, Cl. 260-250.00Q.

Noury, Jerry Lewis, Jr. Ornamented support collar for microphone and the like. 3,928,734, Cl. 179-157.000.

Novak, Edward A.; and Paclik, George F., to Garrett Corporation, The. Fluid flow sensing method and apparatus. 3,927,567, Cl. 73-204.000.

Novello, Frederick C.: *See—*
Baldwin, John J.; and Novello, Frederick C., 3,928,361.

Novex Talalmanyfejleszto es Ertekesito Kulkereskedelmi Rt.: *See—*
Mikolics, Sandor; Ziegler, Karoly; and Homola, Viktor, 3,927,531.

Novitas Nuprot SA: *See—*
Sweger, Ulf Allan, 3,928,556.

Numata, Saburo; and Fujino, Shinichiro, to Fuji Photo Optical Co., Ltd. Exposure control circuit for photographic camera. 3,928,860, Cl. 354-51.000.

Nunziata, Gennaro; Schone, Rainer Walter Max; and Spadini, Gianfranco, to Procter & Gamble Company, The. Liquid detergent composition. 3,928,249, Cl. 252-526.000.

Nussbaum, Henry, to Nussbaum, Henry. Collapsible carrier for bicycles. 3,927,811, Cl. 224-42.03B.

Nusslein, Ludwig; Roder, Kurt; and Pieroh, Ernst Albrecht, to Schering Aktiengesellschaft. Method of protecting seeds and plants against fungi. 3,928,615, Cl. 424-263.000.

Oba, Kenkichi: *See—*
Sato, Tsutomu; Deura, Hiroshi; and Oba, Kenkichi, 3,928,268.

Obermeier, Karl: *See—*
Heuschen, Alexander; Schaefer, Hans; Budich, Wolfgang; Krah, Robert; and Obermeier, Karl, 3,928,100.

O'Brian, Edward D.: *See—*
Stults, Allan C.; Powell, Raymond H.; and O'Brian, Edward D., 3,927,597.

O'Brien, John T.: *See—*
Settineri, Robert A.; and O'Brien, John T., 3,928,690.

Ocean Drilling & Exploration Company: *See—*
Childers, Mark A.; and Dawkins, Enoch L., 3,927,636.

Oda, Fujio; and Otani, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Record stylus. 3,927,887, Cl. 274-38.000.

Oehler-Wyhlen-Lagertechnik A.G.: *See—*
Flosser, Walter, 3,927,495.

Oellig, Rudi: *See—*
Jellinek, Karl; and Oellig, Rudi, 3,928,287.

Oesterlin, Rudolf: *See—*
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Offermann, Wilhelm: *See—*
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Ogawa, Yukio: *See—*
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Oguey, Henri J.; and Vittoz, Eric Andre, to Centre Electronique Horloger S.A. Logical circuit with field effect transistors. 3,928,773, Cl. 307-225.00C.

Ohara, Takashi: *See—*
Yonehara, Kiyoshi; Kubota, Kunihiro; Ono, Tetsuji; and Ohara, Takashi, 3,928,239.

Ohashi, Kiyoto: *See—*
Narita, Mikio; Ohashi, Kiyoto; and Yamamoto, Jun, 3,928,810.

Ohashi, Shigeo, to Nihon Kaiheiki Industrial Company, Ltd. Rocker switch with position indicator. 3,928,743, Cl. 200-308.000.

Ohloff, Gunther: *See—*
Kovats, Ervin; Demole, Edouard; Ohloff, Gunther; and Stoll, Max, deceased, 3,928,456.

Ohmori, Akio: *See—*
Ashikaga, Tadao; Ohmori, Akio; and Ando, Masasi, 3,928,261.

Ohmori, Masahiko; Tomatsu, Toshiharu; and Iwata, Tadao, to Mitsui Petrochemical Industries, Ltd. Process for preparing graft-modified ethylene plyomer or copolymer. 3,928,497, Cl. 260-878.00R.

Ohmura, Hidemasa: *See—*
Matsuda, Kazuo; Ohmura, Hidemasa; and Aritaki, Hirakazu, 3,928,271.

Ohotsubo, Hiro; Fujikura, Suguru; and Miyata, Yoshimitsu, to Oji-Yuka Synthetic Paper Company, Ltd. Process of producing pressure sensitive recording sheets. 3,928,099, Cl. 156-83.000.

Ohta, Ioe; Matsunobu, Akira; Nishizawa, Masafumi; Kubota, Hayato; and Sakamoto, Kenshi, to Ton Co., Ltd.; and Fuji Oil Company, Ltd. Method for preparation of peanut flakes from peanut kernels. 3,928,635, Cl. 426-312.000.

Ohtsuka, Michio: *See—*
Hosoki, Shigeru; Ohtsuka, Michio; and Fukuhara, Satoru, 3,928,783.

Oikawa, Shigeki: *See—*
Satoh, Hirokazu; Takeuchi, Hidesato; and Oikawa, Shigeki, 3,928,539.

Oishi, Yasushi: *See—*
Arai, Atsuaki; Oishi, Yasushi; Yamada, Minoru; Yokota, Yukio; Tanaka, Mitsugu; and Inouye, Kozo, 3,928,044.

Oji-Yuka Synthetic Paper Company, Ltd.: *See—*
Ohotsubo, Hiro; Fujikura, Suguru; and Miyata, Yoshimitsu, 3,928,099.

Oka, Koichiro: *See—*
Takeda, Hiromu; Kobayashi, Takuichi; Oka, Koichiro; and Tanaka, Kazumi, 3,928,496.

Oka, Santaro: *See—*
Tsunoda, Tatsui; Oka, Santaro; Miyamoto, Kazuma; Matsumoto, Makoto; and Baba, Heiji, 3,928,045.

Okabe, Nobuya, to Hitachi Construction Machinery Co., Ltd. Excavator. 3,927,781, Cl. 214-763.000.

Okamoto, Tsutomu: *See—*
Makino, Yoshimi; Okamoto, Tsutomu; and Kamiya, Iwao, 3,928,836.

Okazaki, Hideo: *See—*
Maeda, Shigeo; Ozutsumi, Minoru; Niimura, Isao; and Okazaki, Hideo, 3,928,292.

Oki Electric Industry Company Ltd.: *See—*
Takahashi, Kazunori; and Fukasawa, Atsushi, 3,928,824.

Okumichi, Toshiharu: *See—*
Shimizu, Katsuhisa; Ishibe, Shuhei; Okumichi, Toshiharu; and Matsumoto, Keizo, 3,928,414.

Okuno, Nobuyoshi: *See—*
Kishi, Noboru; Ota, Yoshitaka; and Okuno, Nobuyoshi, 3,928,396.

Okuno, Toshio; and Sasaki, Rinzo, to Hitachi Metals, Ltd. Tool steel for hot working. 3,928,025, Cl. 75-128.00B.

O'Leary, Kevin J.; Tomba, Charles P.; and Fenn, Robert W., III, to Diamond Shamrock Corporation. Dimensionally adjustable anode-dimensionally stable diaphragm combination for electrolytic cells. 3,928,166, Cl. 204-282.000.

Olin Corporation: *See—*
Alexander, Roy P., 3,928,258.
Ford, James A.; and Butt, Sheldon H., 3,928,234.
Fuzesi, Stephen; and Syrop, Allan H., 3,928,257.
Yarwood, John C., 3,928,028.

Olson, Donald M.; and McNeilly, Michael A. Magnetic release system for snow skis. 3,927,897, Cl. 280-11.35M.

Olson, Gary Lee; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Process for producing vitamin A. 3,928,400, Cl. 260-410.90V.

Olson, Irving C., to United States of America, Navy. Decoupling apparatus for a common-antenna receive-transmit system. 3,928,853, Cl. 343-180.000.

Olthuis, Eugene G., to General Electric Company. Self-locking trim frame for built-in cooktop. 3,927,658, Cl. 126-214.00A.

Omori, Akira: *See—*
Suzuki, Hideaki; Togawa, Haruo; Omori, Akira; and Yamamoto, Naoki, 3,927,968.

Omura, Yoshiaki: *See—*
Fujita, Yoshiji; Omura, Yoshiaki; Nishida, Takashi; and Itoi, Kazuo, 3,928,403.

O'Neill, Cormac G., to Physics International Company. Fuel injection system for internal combustion engines. 3,927,652, Cl. 123-139.0AT.

O'Neill, Gerald Joseph: *See—*
Billings, Charles Alden; O'Neill, Gerald Joseph; and Simons, Charles William, 3,928,468.

Onishi, Kazutoshi: *See—*
Masuzawa, Isao; Awano, Tsuneo; and Onishi, Kazutoshi, 3,927,635.

Onishi, Toshio: *See—*
Fukuda, Yoshiharu; Onishi, Toshio; and Takeuchi, Akitoshi, 3,928,053.

Ono, Tetsuji: *See—*
Yonehara, Kiyoshi; Kubota, Kunihiro; Ono, Tetsuji; and Ohara, Takashi, 3,928,239.

Ono, Tomoyoshi; and Matsuguma, Yoshihiko, to Teijin Limited. Pressure-sensitive adhesive compositions containing hydroxy-ethyl cellulose. 3,928,262, Cl. 260-17.00R.

Onoda Cement Company, Ltd.: *See—*
Fukuda, Yoshiharu; Onishi, Toshio; and Takeuchi, Akitoshi, 3,928,053.

Onoda Chemical Industry Company, Limited: *See—*
Satoh, Hirokazu; Takeuchi, Hidesato; and Oikawa, Shigeki, 3,928,539.

Onopchenko, Anatoli; and Schulz, Johann G. D., to Gulf Research & Development Company. Process for preparing mesitylenic acid. 3,928,433, Cl. 260-524.00R.

Ooka, Takayuki; and Aihara, Shinji, to Mitsui Shipbuilding and Engineering Co., Ltd.; and Osaka Jack Mfg. Co., Ltd. Scaffold. 3,927,732, Cl. 182-36.000.

Oppenlaender, Knut: *See—*
Dachs, Karl; Faulhaber, Gerhard; Fikentscher, Rolf; Oppenlaender, Knut; and Schulze, Joachim, 3,928,688.

Optical Coating Laboratory, Inc.: *See—*
Sprout, James Cole; and Berman, Herbert L., 3,928,843.

Orito, Zen-ichi; Uchida, Minoru; Takesue, Masatoshi; Sahara, Hajime; and Fujii, Kihiro, to Mitsubishi Rayon Co., Ltd. Process for producing acrylic fibers having excellent pilling resistance. 3,928,528, Cl. 264-344.000.

Orser, David A., to General Electric Company. Benzyl and (benzyl)-benzylanthraquinones. 3,928,394, Cl. 260-369.000.

Orth, Winfried: *See—*
Miele, Heinrich; Orth, Winfried; and Pastorek, Emmerich, 3,928,472.

Ortner, Herbert: *See—*
Hambsch, Erich; Klug, Helmut; Ortner, Herbert; Semmlinger, Walter; and Wirtz, Rudolf, 3,928,503.

Osaka Jack Mfg. Co., Ltd.: *See—*
Ooka, Takayuki; and Aihara, Shinji, 3,927,732.

Osteen, Mitchell M.; and Martin, Myron D., to General Electric Company. Floodlight. 3,928,758, Cl. 240-73.00R.

Ostermeier, Johann: *See—*
Mundlos, Eberhard; Herz, Luis; Neeb, Rudolf; Mohr, Reinhard; and Ostermeier, Johann, 3,928,339.

Ota, Yoshitaka: *See—*
Kishi, Noboru; Ota, Yoshitaka; and Okuno, Nobuyoshi, 3,928,396.

Otani, Hiroshi: *See—*
Oda, Fujio; and Otani, Hiroshi, 3,927,887.

Othmer, Donald F. Process for producing power, fresh water, and food from the sea and sun. 3,928,145, Cl. 203-11.000.

Otouma, Takashi; Aoki, Susumu; Minaki, Toshihiro; Shibata, Kenichi; and Mori, Kentaro, to Japan Asbestos Co., Ltd. Alkali-resistant mineral fibers useful for the reinforcement of various moulded articles. 3,928,049, Cl. 106-50.000.

Otsuji, Masaaki: *See—*
Fuwa, Masaru; Takahashi, Kiyoshi; Otsuji, Masaaki; and Matsui, Masatake, 3,928,525.

Otsuka, Sadao: *See—*
Awane, Yasushi; Otsuka, Sadao; Nagata, Masao; and Tanaka, Fumio, 3,928,435.

Owen, Hartley, to Mobil Oil Corporation. Upgrading crude oil by combination processing. 3,928,175, Cl. 208-93.000.

Owens-Corning Fiberglas Corporation: *See—*
Morrison, Albert R.; Haynes, Harold L.; and Bell, Reuben Hays, 3,928,666.

Owens-Illinois, Inc.: *See—*
Crawford, James E.; and Gray, Don N., 3,928,294.
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Vergano, Peter J.; and Smith, William E., deceased, 3,928,096.

Oy Medica Ab: *See—*
Broderman, Thord; Hietala, Pentti; and Sundman, Jacobus, 3,928,431.

Oyaide, Kenji: *See—*
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Ozutsumi, Minoru: *See—*
Maeda, Shigeo; Ozutsumi, Minoru; Niimura, Isao; and Okazaki, Hideo, 3,928,292.

Pachter, Irwin J.: *See—*
Rajagapalan, Parthasarathi; and Pachter, Irwin J., 3,928,611.

Pacific Scientific Company: *See—*
Mescher, Harold E.; and Heyer, Walter E., 3,927,959.

Paclik, George F.: *See—*
Novak, Edward A.; and Paclik, George F., 3,927,567.

Pagdin, Brian Colin, to GKN Transmissions Limited. Fuel injection apparatus for internal combustion engines. 3,927,653, Cl. 123-140.0MC.

Pallos, Ferenc M., to Stauffer Chemical Company. Derivatives of certain N-oxypyridyl geranyl ethers used in controlling insects. 3,928,616, Cl. 424-263.000.

Pallos, Ferenc M., to Stauffer Chemical Company. Method of controlling insects using certain formamidine compounds containing trihalomethyl groups. 3,928,623, Cl. 424-326.000.

Pallos, Ferenc Marcus, to Stauffer Chemical Company. Certain non-terpenoid juvenile hormone mimicking compounds and their use in controlling insects. 3,928,622, Cl. 424-320.000.

Palm, Bengt Arne: *See—*
Johansson, Bjorn-Olow; and Palm, Bengt Arne, 3,927,974.

Palmer, George William, to Stateside Machinery Co. Profile stitching machines. 3,927,628, Cl. 112-121.120.

Palz, Wolfgang: *See—*
Besson, Jean Georges; Nguyen Duy, Thuoc; and Palz, Wolfgang, 3,928,073.

Pantier, Earl A.: *See—*
Jackovitz, John F.; Pantier, Earl A.; and Wu, Christopher K., 3,928,068.

Panusch, Erwin; and Sobolev, Igor, to Kaiser Aluminum & Chemical Corporation. Process for making methyl glucoside. 3,928,318, Cl. 260-210.00R.

Papa, Sisto; Moiso, Ugo; and Ferrario, Renzo, to Aziende Colori Nazionali Affini ACNA S.p.A. Hydrosoluble trisazoic dyes, mixtures thereof and the use thereof. 3,927,963, Cl. 8-26.000.

Papa, Sisto Sergio; and Ferrario, Renzo, to Aziende Colori Nazionali Affini ACNA S.p.A. Trisazo dyestuff. 3,928,313, Cl. 260-173.000.

Papalexis, Gregory C.; and Elliott, Richard I. Dough degasser and developer. 3,927,611, Cl. 99-472.000.

Papay, Andrew G.; Matthews, Brian W.; and Thomas, Arthur S., to Edwin Cooper, Inc. Lubricating oil compositions of improved rust inhibition. 3,928,219, Cl. 252-51.50R.

Papayoti, Hristo V., to Unistrut Corporation. Space frame floor column system. 3,927,499, Cl. 52-263.000.

Pappalardo, Romano G.; and Smith, Robert, to GTE Laboratories Incorporated. High gain pulsed ion laser. 3,928,820, Cl. 331-94.50G.

Pardee, Robert P.; Loran, Thomas J.; Bickling, Archie L., Jr.; and Brown, Richard E., to Ball Brothers Research Corporation. Release and lubricating composition for glass molds and method and apparatus utilizing such composition. 3,928,673, Cl. 427-135.000.

Parker, John A.: *See—*
Fohlen, George M.; Parker, John A.; and Sawko, Paul M., 3,928,708.

Parsons, Hubert J.; and Peterson, Anders Adolf, to Hardinge Brothers, Inc. Apparatus for loading a workpiece into a rotating collet or chuck. 3,927,583, Cl. 82-2.500.

Parviainen, Raimo Johannes: *See—*
Engdahl, Holger Gustaf; and Parviainen, Raimo Johannes, 3,928,209.

Passmore, Edmund M., to GTE Sylvania Incorporated. Electrically conductive refractory body. 3,928,244, Cl. 252-520.000.

Pastorek, Emmerich: *See—*
Miele, Heinrich; Orth, Winfried; and Pastorek, Emmerich, 3,928,472.

Patenaude, Clifford J.: *See—*
Allen, Herman C.; and Patenaude, Clifford J., 3,927,501.

Patino, Armando; and Maldonado, Bernardo, to Colgate-Palmolive Company. Dental cream. 3,928,559, Cl. 424-49.000.

Paul, Rajendra: *See—*
Gordon, Robert E.; Jones, Robert W.; Paul, Rajendra; and Simon, Robert H. M., 3,927,983.

Pauli, Jude A.: *See—*
Willner, Richard; Pauli, Jude A.; and Latuda, Frank A., 3,927,829.

Paver, Roger: *See—*
Fleck, Fritz; Schmid, Horst; Mercer, Alec Victor; and Paver, Roger, 3,928,329.

Pavlin, Cyrille Francois; Mantoux, Gerard; Giraud, Adrien; and Grossin, Michele, to Bertin & Cie; and Compagnie Francaise des Petroles. Apparatus and method for measuring the mass flow of a fluid stream. 3,927,565, Cl. 73-194.00M.

Pavlish, Allen T. Refuse bag retainer. 3,927,445, Cl. 24-243.00K.

Pawliw, John; and Zabrodsky, Jarda, to General Electric Company. Sheath for nuclear fuel elements. 3,928,130, Cl. 176-67.000.

Peacock Investments (Proprietary) Limited: *See—*
Raubenheimer, Johann Nicolaas, 3,928,202.

Pearson, Raymond H. Toilet deodorizing accessory including leak proof connection. 3,927,429, Cl. 4-213.000.

Pearson, Richard K.: *See—*
Gregg, David W.; and Pearson, Richard K., 3,928,821.

Peddy, Aubrey R. Device for preventing twists in fishing lines. 3,927,488, Cl. 43-25.000.

Peelman, Harold E., to Texaco Inc. Pulsed neutron combination well logging system. 3,928,762, Cl. 250-270.000.

Pei, Jack C.: *See—*
Kitahara, Hitoshi; and Pei, Jack C., 3,927,940.

Peiperl, Adam. Method of making randomly different display devices. 3,927,461, Cl. 29-424.000.

Peisker, Glenn W., to Chicago Rawhide Manufacturing Company. Method of forming a molding core for use in forming a seal unit. 3,927,600, Cl. 90-11.00C.

Pellegrino, Peter P. Composite plating tape. 3,928,692, Cl. 428-54.000.

Pennwalt Corporation: *See—*
Mac Leay, Ronald Edward; Lange, Harold Carl; and Sheppard, Chester Stephen, 3,928,493.

Perini, Fulvio, to Syntex (U.S.A.) Inc. Enzymatic processes for hydrolyzing proteins. 3,928,630, Cl. 426-7.000.

Perr, Julius P., to Cummins Engine Company, Inc. Fuel supply system. 3,927,654, Cl. 123-140.0FG.

Perry, Walter Merton. Rotary forming unit for fine mineral fibers. 3,928,009, Cl. 65-14.000.

Persinski, Leonard John; Ralston, Paul Hotchkiss; and Gordon, Robert Cornelius, Jr., to Calgon Corporation. Inhibition of scale deposition. 3,928,196, Cl. 210-58.000.

Persson, Karl Rune, to Sprinter Pack AB. Blank of a foldable material such as cardboard and a tray erected therefrom. 3,927,823, Cl. 229-31.00R.

Petersen, Ross K. Filtering apparatus. 3,928,008, Cl. 55-472.000.

Peterson, Anders Adolf: *See—*
Parsons, Hubert J.; and Peterson, Anders Adolf, 3,927,583.

Peterson, Dean M., to Honeywell Inc. Shutter-iris for automatic camera. 3,928,859, Cl. 354-27.000.

Peterson, Roger L., to Dyna-Therm Corporation, The. Fire protective composition for use with electrical cables. 3,928,210, Cl. 252-8.100.

Petrocci, Alfonso N.: *See—*
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 3,928,323.

Petrolite Corporation: *See—*
Wilson, Homer M., 3,928,774.

Petrovich, Vojislav. Phenolaldimines as froth flotation reagents. 3,928,185, Cl. 209-166.000.

Petrusek, Victor. Step on bug game. 3,927,880, Cl. 273-1.00E.

Pfaff Industriemaschinen GmbH: *See—*
Vollmar, Kurt, 3,927,629.

Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., to Syntex (U.S.A.) Inc. Novel substituted xanthone carboxylic acid compounds. 3,928,379, Cl. 260-335.

Pfizer Inc.: *See—*
Hess, Hans-Jurgen E.; Czuba, Leonard J.; and Schaaf, Thomas K., 3,928,391.
Rosati, Robert L., 3,928,324.

Philip Morris Incorporated: *See—*
Braginetz, Paul A., 3,927,473.

Philippe, Leon Jean; Defraye, Rene Charles; and Renard, Lucien Paul, to Centre de Recherches Metallurgiques - Centrum voor Research in de Metallurgie. Determination of properties of metals. 3,927,558, Cl. 73-95.000.

Philipps, Armin: *See—*
Schonfeld, Wolfram; Philipps, Armin; Eversberg, Hans; Hausler, Karl-Heinz; and Samans, Robert, 3,927,547.

Phillips, Edward H.: *See—*
Long, Leo E.; and Phillips, Edward H., 3,927,879.

Phillips, Leslie John: *See—*
Arnold, Raymond Mills; Neaves, Eric Henry Francis; and Phillips, Leslie John, 3,928,710.

Phillips Petroleum Company: *See—*
Farha, Floyd E., Jr.; Johnson, Marvin M.; and Tabler, Donald C., 3,928,389.
Frazier, Arthur E., 3,927,988.
Higbee, David E.; and Powell, William D., Jr., 3,928,661.
Huxley, Edward E., 3,928,385.
James, John P., 3,928,173.
South, Aubrey, Jr., 3,928,270.
Taylor, Peter A.; and Su, Tsung-Yuan, 3,928,269.
Tieszen, Dale O., 3,928,675.
Uraneck, Carl A.; and Burleigh, John E., 3,928,498.

Phillips, Robert W., to Colorado State University Research Foundation. Method and composition for treating diarrhea in mammals. 3,928,574, Cl. 424-153.000.

Phillips, Wendell O.: *See—*
Fabris, Hubert J.; and Phillips, Wendell O., 3,928,502.

Philp, Dennis H.; and Madison, Norman L., to Dow Chemical Company, The. Odorless electroconductive latex composition. 3,928,695, Cl. 428-95.000.

Phipps, Charles M.: *See—*
Hayes, Douglas R.; and Phipps, Charles M., 3,927,710.

Phoenix Closures, Inc.: *See—*
Pollock, William J.; and Tagalakis, Peter, 3,928,109.

Phsiological Electronics Corporation: *See—*
Russell, Robert H.; and Wolff, Allan L., 3,927,663.

Physics International Company: *See—*
O'Neill, Cormac G., 3,927,652.

Pieroh, Ernst Albrecht: *See—*
Nusslein, Ludwig; Roder, Kurt; and Pieroh, Ernst Albrecht, 3,928,615.

Pierson, Robert M.: *See—*
Arconti, Richard J.; and Pierson, Robert M., 3,928,110.

Piester, Loyd W., to PPG Industries, Inc. Electrolytic cell including means for separating chlorine from the chlorine-electrolyte froth formed in the cell. 3,928,165, Cl. 204-278.000.

Pieters, Wim J. M.: *See—*
Daley, William D.; Wilkalis, John E.; and Pieters, Wim J. M., 3,928,547.

Pifferi, Giorgio, to I.S.F. S.p.A. Alpha-hydrazi nobenzylpenicillins. 3,928,325, Cl. 260-239.100.

Pigeaud, Jean-Marie: *See—*
Buoy, Pierre; Masure, Daniel; Collon, Paul; Pigeaud, Jean-Marie; and Sartre, Bernard, 3,928,167.

Pignataro, Francesco; Faletti, Franco; Castellan, Arsenio; Bossi, Alessandro; Marinozzi, Paolo; and Giordano, Nicola, to Montedison S.p.A. Catalytic process for preparing unsaturated nitriles from olefins, ammonia and oxygen. 3,928,409, Cl. 260-465.300.

Pike, John E.; and Schneider, William P., to Upjohn Company, The. 11β,15β-PGE$_2$,15β-PGF$_2$, and 15β-PGF$_2$, 15-acetates methyl esters. 3,928,425, Cl. 260-488.00R.

Pilot Kiko Kabushiki Kaisha: *See—*
Shinomoto, Masanori; Oyaide, Kenji; and Shinkawa, Etsuo, 3,928,520.

Pinguad, Bernard J.: *See—*
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Pinker, Richard Alfred: *See—*
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Pischke, Lamonte D.: *See—*
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Pitkanen, Alan Ralph: *See—*
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Pitney-Bowes, Inc.: *See—*
McDonough, William F.; Montlick, James A.; and Bernard, Richard A., 3,928,226.
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Pittet, Alan O.: *See—*
Schreiber, William Lewis; Vock, Manfred; Shuster, Edward Joseph; and Pittet, Alan O., 3,928,644.

Platz, Rolf: *See—*
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Plempel, Manfred: *See—*
Draber, Wilfried; Buchel, Karl Heinz; Regel, Erik; and Plempel, Manfred, 3,928,348.

Plessey Handel und Investments A.G.: *See—*
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Plovan, Steven G.: *See—*
Loft, John T.; McTaggart, John A.; and Plovan, Steven G., 3,928,705.

Plumadore, John D., to Scott Paper Company. Apparatus for developing an electrostatic latent image on an electrophotographic film. 3,927,639, Cl. 118-637.000.

Plumlee, Oscar M. Fire resistant paneling system. 3,927,500, Cl. 52-460.000.

Pneumatic Scale Corporation: *See—*
Newell, Arthur F., 3,927,777.

Poeschl, Rudolf, to Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung. Water extraction apparatus for paper-making machine. 3,928,125, Cl. 162-352.000.

Pohl, Karl-Heinz; and Schierle, Jack Theodore, to Bell Telephone Laboratories, Incorporated. Mask alignment method. 3,927,943, Cl. 355-132.000.

Pohlman, Reimar; and Cichos, Manfred. Device for fragmenting urinary calculus. 3,927,675, Cl. 128-328.000.

Polak, Slaw: *See—*
Kosmiderski, Szymon; and Polak, Slaw, 3,928,628.

Polaroid Corporation: *See—*
Goldberg, Paul; and van Heerden, Pieter J., 3,927,930.
Ivester, Andrew S.; and Johnson, Bruce K., 3,928,862.
Land, Edwin H., 3,928,665.

Polata, Bohumil: *See—*
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Poley, Neil Myron: *See—*
Edwards, Roger Joseph; Hairabedian, Barouyr Zareh; and Poley, Neil Myron, 3,928,781.

Pollack, Philip; and Di Matteo, Paul L., to Sperry Rand Corporation. Interfering signal sensor for angle tracking radars. 3,928,850, Cl. 343-7.300.

Pollner, Rudolf: *See—*
Esper, Friedrich J.; Friese, Karl-Hermann; and Pollner, Rudolf, 3,928,837.

Pollock, William J.; and Tagalakis, Peter, to Phoenix Closures, Inc. Method of assembling and bonding a laminated liner within a closure member. 3,928,109, Cl. 156-272.000.

Polsky, George. Transportable jack. 3,927,863, Cl. 254-103.000.

Polster, Rudolf: *See—*
Pommer, Ernst-Heinrich; Polster, Rudolf; Loecher, Friedrich; and Hampel, Manfred, 3,928,606.

Polysar Limited: *See—*
Feniak, George, 3,928,259.

Pommer, Ernst-Heinrich; Polster, Rudolf; Loecher, Friedrich; and Hampel, Manfred, to BASF Aktiengesellschaft. Fungicidal composition containing diisopropyl 3-nitrophthalate and N-tridecyl-2,6-dimethylmorpholine. 3,928,606, Cl. 424-248.000.

Poot, Albert Lucien; Heugebaert, Frans Clement; Janssens, Wilhelmus; and Vandenberghe, Antoon Leon, to Agfa-Gevaert N.V. Heat-sensitive recording materials. 3,928,686, Cl. 428-457.000.

Pormale, Milda Janovna; Kashkina, Nadezhda Alexandrovna; Kalninsh, Arvid Janovich; Sergeeva, Varvara Nikolaevna; Surna, Janis Alexandrovich; Shusters, Janis; Melzobs, Modris Janowich; Mikazhan, Waldis Danielowich; Purwinsh, Indulis Waldowich; Skutelis, Antons Petrowich; and Liepinsh, Martinsh Aleksandrowich. Polymer derivative of β-diethylaminoethyl ester of p-aminobenzoic acid with celluloseglycolic acid, method of producing and application thereof. 3,928,562, Cl. 424-78.000.

Portec, Inc.: *See—*
Skeltis, Anthony John; Rostafinski, Jaroslaw Joseph; and Ravani, Chandrakant Dhanjibhai, 3,927,621.

Porter, Robert P.: *See—*
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Possis Corporation: *See—*
Dammar, Raymon H., 3,927,456.
Dammar, Raymon H., 3,927,469.
Dammar, Raymon H., 3,927,843.

Pouch, Thomas M.; and Ladouceur, Harold A., to Multifastener Corporation. Apparatus for assembling self-fastening nut to a panel. 3,927,452, Cl. 29-200.00B.

Powell, Jack B., to International Business Machines Corporation. Spiral braid connector. 3,927,926, Cl. 339-74.00R.

Powell Manufacturing Company, Inc.: *See—*
Wilson, Robert W.; and Akins, Eugene T., 3,927,683.

Powell, Raymond H.: *See—*
Stults, Allan C.; Powell, Raymond H.; and O'Brian, Edward D., 3,927,597.

Powell, William D., Jr.: *See—*
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PPG Industries, Inc.: *See—*
Cramer, Deane G., 3,928,010.
Harrell, William C.; and Foster, Homer R., 3,928,012.
Knavish, Leonard A., 3,928,014.
Morgan, James E., 3,928,540.
Piester, Loyd W., 3,928,165.
Rahn, Henry W.; Cunningham, Hugh; Dilmore, Colonel R.; Jeffery, Thomas C.; and Raetzsch, Carl W., 3,928,150.
Schornhorst, James R., 3,928,011.
Wismer, Marco; and Bosso, Joseph F., 3,928,156.

Pradota, Thaddeus T. Machine chuck jaws and the method of making the same. 3,927,892, Cl. 279-62.000.

Prasad, Raj Nandan, to Abbott Laboratories. N^1-oxides of adenosine-5'-carboxylates for treating angina. 3,928,582, Cl. 424-180.000.

Precitec GmbH: *See—*
Schmall, Karl Heinz, 3,928,790.

Prentice, James Bruce: *See—*
Temple, Robert Dwight; Heuring, Vincent Paul; and Prentice, James Bruce, 3,928,213.

Prillinger, Peter F. M.; and Rosenberger, Paul C., to Caterpillar Tractor Co. Annular dual piston brake arrangement. 3,927,737, Cl. 188-106.00F.

Prince, John Luther, III: *See—*
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Procter & Gamble Company, The: *See—*
Bolich, Raymond Edward, Jr.; and Aylor, Robert Benson, 3,928,251.
Curry, John Downing, 3,928,605.
Fryar, Durward, 3,928,003.
Gupta, Monoj Kumar, 3,928,647.
Neely, James S.; and Thompson, James A., 3,928,560.
Nunziata, Gennaro; Schone, Rainer Walter Max; and Spadini, Gianfranco, 3,928,249.
Speakman, Peter Roscoe Hartley, 3,927,967.
Temple, Robert Dwight; Heuring, Vincent Paul; and Prentice, James Bruce, 3,928,213.

Proctor, William L.: *See—*
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Prodel, Ulrich Heinrich. Bottle packing. 3,927,789, Cl. 220-21.000.

Pruess, David: *See—*
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Puetz, Jordan F., to Square D Company. Rejection-type cartridge fuse clip. 3,927,929, Cl. 339-258.00F.

Pullukat, Thomas, to Chemplex Company. Method of making polyolefins using organotin chromate polymerization catalyst. 3,928,304, Cl. 260-94.90D.

Purwinsh, Indulis Waldowich: *See—*
Pormale, Milda Janovna; Kashkina, Nadezhda Alexandrovna; Kalninsh, Arvid Janovich; Sergeeva, Varvara Nikolaevna; Surna, Janis Alexandrovich; Shusters, Janis; Melzobs, Modris Janowich; Mikazhan, Waldis Danielowich; Purwinsh, Indulis Waldowich; Skutelis, Antons Petrowich; and Liepinsh, Martinsh Aleksandrowich, 3,928,562.

Pustell, Robert Algerd; and Haselton, Thomas Parker, to General Electric Company. Multiple spring socket for pin connector. 3,927,928, Cl. 339-256.00R.

Putvinski, Thomas Michael: *See—*
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Pyles, Alvin C.: *See—*
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Quake-Proof, Inc.: *See—*
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Quality Food Machinery Inc.: *See—*
Campbell, William A., III, 3,927,508.

Quang, Pham Kim, to La Cellophane. Methods of and apparatus for reproducing images by transferring electrostatic charges. 3,928,032, Cl. 96-1.00R.

Quentron Optics Pty Ltd: *See—*
Hughes, John Leonard, 3,928,811.

Quigley, Richard J.: *See—*
Reynolds, Clarke; and Quigley, Richard J., 3,927,742.

Quinn, John N. Crushing apparatus. 3,927,839, Cl. 241-76.000.

Quinn, Ronald E., to General Motors Corporation. Recirculating combustion apparatus. 3,927,958, Cl. 431-116.000.

R. M. Smith, Inc.: *See—*
Beal, Glenn I., 3,927,765.

Raaphorst, Cornelius, to Hoogovens Ijmuiden, B.V. Blow off valve for a blast furnace. 3,927,859, Cl. 251-147.000.

Raetzsch, Carl W.: *See—*
Rahn, Henry W.; Cunningham, Hugh; Dilmore, Colonel R.; Jeffery, Thomas C.; and Raetzsch, Carl W., 3,928,150.

Rahn, Henry W.; Cunningham, Hugh; Dilmore, Colonel R.; Jeffery, Thomas C.; and Raetzsch, Carl W., to PPG Industries, Inc. Method of operating an electrolytic cell having hydrogen gas disengaging means. 3,928,150, Cl. 204-98.000.

Raimondi, Albert A.: *See—*
Adams, Maurice L., Jr.; and Raimondi, Albert A., 3,927,889.

Rajagapalan, Parthasarathi; and Pachter, Irwin J., to Endo Laboratories. Tris- and tetrakis- (1,2,3,4-tetrahydroisoquinoline) and -[3,4-dihydroisoquinoline] compounds in inhibiting and dissolving blood clots. 3,928,611, Cl. 424-258.000.

Ralston, Paul Hotchkiss: *See—*
Persinski, Leonard John; Ralston, Paul Hotchkiss; and Gordon, Robert Cornelius, Jr., 3,928,196.

Ralston Purina Company: *See—*
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Khayat, Ali; Courtney, George W.; and Dunn, Howard J., 3,928,637.
Lanter, Kent J., 3,928,652.

Ramaker, Dudley D.; and Keller, Roger W., to FMC Corporation. Safety shield for rotary mower. 3,927,513, Cl. 56-320.100.

Ramey, Chester E.; and Luzzi, John J., to Ciba-Geigy Corporation. Substituted piperazinedione carboxylic acids and metal salts thereof. 3,928,330, Cl. 260-242.000.

Ramey, Chester E.; and Luzzi, John J., to Ciba-Geigy Corporation. Substituted piperazine diones and polymeric compositions stabilized thereby. 3,928,357, Cl. 260-268.0TR.

Randall, David I.; and Wynn, Robert W., to GAF Corporation. N-substituted-p-(2-chloroethyl)-phosphonamidates as yield improvers. 3,928,018, Cl. 71-86.000.

Randerson, Keith, to British Steel Corporation. Heat treatment of steel. 3,928,090, Cl. 148-134.000.

Randlett, Myron R.: *See—*
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Rank Xerox Ltd.: *See—*
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Ransburg Corporation: *See—*
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Raschke, Herbert A., to E. D. Bullard Company. Dual purpose air inlet method for head enclosure. 3,927,668, Cl. 128-142.700.

Rau, Karlheinz: *See—*
Baumler, Peter; Hofer, Gerhard; Korner, Tassilo; Mohn, Heinrich; Seiler, Karl; Simmat, Fritz; and Rau, Karlheinz, 3,927,697.

Raubenheimer, Johann Nicolaas, to Peacock Investments (Proprietary) Limited. Apparatus for cleaning the surface of a liquid. 3,928,202, Cl. 210-169.000.

Rauch, Erwin I. Lawn plugger. 3,927,720, Cl. 172-22.000.

Raun, Arthur P., to Eli Lilly and Company. Ruminant feed utilization improvement. 3,928,571, Cl. 424-118.000.

Rauschenfels, Eberhard: *See—*
Schmitt-Henco, Carl Heinrich; and Rauschenfels, Eberhard, 3,928,058.

Ravani, Chandrakant Dhanjibhai: *See—*
Skeltis, Anthony John; Rostafinski, Jaroslaw Joseph; and Ravani, Chandrakant Dhanjibhai, 3,927,621.

Raymond, Jean-Louis. Universal engraving machine. 3,927,599, Cl. 90-13.200.

Raymond Lee Organization, Inc., The: *See—*
de Figueiredo, Antonio M. C., 3,927,532.
Detoia, Vincent D., 3,927,896.
Ferguson, Laureen M., 3,927,595.
Lopsadhayoodh Prasert, 3,928,737.
Zawislak, Phyllis D., 3,927,894.

Razziano, Margot, to Blum Folding Paper Box Co., Inc. Self-erecting box. 3,927,824, Cl. 229-37.00R.

RCA Corporation: *See—*
Clark, Robert John, 3,928,845.
Evans, Wayne Wheeler, 3,928,808.

Redmond, John Peter; Andrews, Daniel Marshall; Brooks, Charles Parsons; Cinalli, Dominic A.; and Merlina, Joseph Francis, to AMP Incorporated. Modified hectorite for electroless plating. 3,928,663, Cl. 427-304.000.

Reed, Alan Brydon; and May, William Stanley, to Imperial Chemical Industries Limited. Stopping internal combustion engines. 3,927,656, Cl. 123-198.00D.

Reed Paper Group Limited: *See—*
Brailsford, Sidney Frank; and McDonald, Donald Robson, 3,928,055.

Reese, Johannes; and Kraft, Kurt, to Hoechst Aktiengesellschaft. N,N'-Substituted 2,4,5-triketoimidazolidines. 3,928,376, Cl. 260-309.500.

Regel, Erik: *See—*
Draber, Wilfried; Buchel, Karl Heinz; Regel, Erik; and Plempel, Manfred, 3,928,348.

Regensburger, Paul J., to Xerox Corporation. Electron transport layer over an inorganic photoconductive layer. 3,928,034, Cl. 96-1.500.

Reichenbacher, Paul H., to Universal Oil Products Company. Preparation of unsaturated-hydrocarbyl coumaryl ethers. 3,928,388, Cl. 260-343.200.

Reid, Laurie M., to Master Packaging Equipment, Inc. Packaging apparatus. 3,927,507, Cl. 53-182.000.

Reilly, Charles B.; and Rossi, Robert K., to Goodyear Tire & Rubber Company, The. Hydantoin produced polyurethane. 3,928,289, Cl. 260-75.0NQ.

Reime, Roy O., to Dorst, Richard. Suspension system for electrically powered vehicle. 3,927,728, Cl. 180-60.000.

Reimers, James L.; and Miller, Rodney D., to FMC Corporation. Containerized hydrostatic sterilizing system. 3,927,976, Cl. 21-80.000.

Reinecke, Erich, to WABCO Westinghouse GmbH. Axle generator device having deflectable stator. 3,928,802, Cl. 324-174.000.

Reinhard, Ruedi. Pile carpet and a process for its manufacture. 3,928,694, Cl. 428-92.000.

Reinke, Friedhelm: *See—*
Seulen, Gerhard; Reinke, Friedhelm; and Stengel, Edgar, 3,927,870.

Reisser, Fritz: *See—*
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Reitemeier, Arthur L.: *See—*
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Rekawek, Janusz J., to Bennett, Darel. Apparatus to facilitate joining pipe sections together to form a vertical pipe column. 3,927,770, Cl. 214-1.00P.

Remund, Werner, to Buhler Brothers, Ltd. Transfer mechanism for long dried farinaceous products. 3,927,756, Cl. 198-27.000.

Renard, Lucien Paul: *See—*
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Renault, Philippe: *See—*
Deschamps, Andre; Renault, Philippe; and Dezael, Claude, 3,928,548.

Renfroe, Harris Burt, to Ciba-Geigy Corporation. 3-Aroyl-alkenyleneimines in treating inflammation. 3,928,614, Cl. 424-263.000.

Renth, Ernst Otto; Schromm, Kurt; Mentrup, Anton; and Danneberg, Peter, to Boehringer Ingelheim GmbH. Piperazine derivatives. 3,928,358, Cl. 260-268.0BC.

Resag, Klaus: *See—*
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Research Engineering Co.: *See—*
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Reuter, Henry G.: *See—*
Bolsenga, Stanley J.; Kotow, Stephen S.; Reuter, Henry G.; and Volante, Donald J., 3,927,878.

Reuter, Martin; and Rupp, Walter, to Hoechst Aktiengesellschaft. Process for the preparation of tertiary methyl-phosphine oxides. 3,928,463, Cl. 260-606.50P.

Reynolds, Clarke; and Quigley, Richard J. Third rail cover board. 3,927,742, Cl. 191-30.000.

Reynolds, James S.: *See—*
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Rhodes, John R.: *See—*
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Rhodes, Philip H.; and Ahr, Robert L., to Emery Industries, Inc. Liquid stabilizer system for polyvinyl chloride. 3,928,267, Cl. 260-23.0XA.

Rhone Poulenc: *See—*
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Rhone-Poulenc Industries: *See—*
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Rhone-Progil: *See—*
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Ribka, Joachim, to Hoechst Aktiengesellschaft. γ-Modification of phenyl-azo-naphthol pigment. 3,928,315, Cl. 260-204.000.

Rice, Daniel L., to General Motors Corporation. Indexing mechanism. 3,927,574, Cl. 74-57.000.

Richards, Mildred C.: *See—*
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Richardson-Merrell Inc.: *See—*
Grunwell, Joyce F.; and Benson, Harvey D., 3,928,398.

Richmond, Wesley Q.; and Cichy, Paul, to Carborundum Company, The. Semicontinuous process for producing oxide refractory material having fine crystal structure. 3,928,515, Cl. 264-5.000.

Richter, George N.: *See—*
Child, Edward T.; Robin, Allen M.; Slater, William L.; and Richter, George N., 3,927,998.
Child, Edward T.; Robin, Allen M.; Slater, William L.; and Richter, George N., 3,928,000.
Child, Edward T.; Robin, Allen M.; Slater, William L.; and Richter, George N., 3,928,001.

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Riebold, Fred A. Automatic in-place stirrup. 3,927,509, Cl. 54-48.000.

Riemenschneider, Wilhelm; Hornig, Lothar Heinz, deceased; by Hornig nee Munich, Anneliese, co-heiress; Meidert, Helmut; and Krekeler, Hans, to Hoechst Aktiengesellschaft. Process for the manufacture of carbon tetrachloride. 3,928,479, Cl. 260-658.00R.

Rigge, Ronald J.; and Carniglia, Stephen C., to Kaiser Aluminum & Chemical Corporation. Alumina catalyst carriers and the process for producing them. 3,928,236, Cl. 252-463.000.

Riggs & Lombard, Inc.: *See—*
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Rigler, Lloyd E.; Taki, Ghazi H.; and Spirtos, Nicholas G., to Adolph's Ltd. Thickened food. 3,928,252, Cl. 426-573.000.

Risse, Claude: *See—*
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Rissi, Erwin: *See—*
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Ritola, Edward W., to Lumber Systems, Inc. Sorting apparatus with rotating article diverter. 3,927,755, Cl. 198-25.000.

Rittler, Hermann L.: *See—*
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Ritzow, Gerald R.; and Ritzow, Roger C. Aquarium. 3,927,643, Cl. 119-5.000.

Ritzow, Roger C.: *See—*
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Robert, Andre, to Upjohn Company, The. Method of reducing the undesirable gastrointestinal effects of prostaglandin synthetase inhibitors. 3,928,588, Cl. 424-234.000.

Robert Bosch G.m.b.H.: *See—*
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van der Kolk, Hans-Jurgen; Mindner, Reinhard; Kiess, Tilman; Muhlich, Peter; Aldinger, Ulrich; and Adler, Karl-Heinz, 3,927,528.

Robertsson, Hans R., to Saab-Scania Aktiebolag. Gunnery training scoring system with laser pulses. 3,927,480, Cl. 35-25.000.

Robin, Allen M.: *See—*
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Child, Edward T.; Robin, Allen M.; Slater, William L.; and Richter, George N., 3,927,998.
Child, Edward T.; and Robin, Allen M., 3,927,999.
Child, Edward T.; Robin, Allen M.; Slater, William L.; and Richter, George N., 3,928,000.
Child, Edward T.; Robin, Allen M.; Slater, William L.; and Richter, George N., 3,928,001.

Robinson, William H., to Buckeye Molding Co. Molded article. 3,927,795, Cl. 220-269.000.

Robison, William G.; and Bieker, Ronald D., to Ag-Chem Equipment Co., Inc. Horizontal boom lift arms. 3,927,832, Cl. 239-168.000.

Robusto, Paul F.; and Stephens, Craig P., to Hughes Aircraft Company. Process for fabricating a solid state, thin film field sustained conductivity device. 3,928,671, Cl. 427-88.000.

Rochat, Alain Claude; and Stocker, Emil, deceased (by Stocker-Boller, Heidi, legal representative), to Ciba-Geigy AG. One step process of preparing azo dyes by simultaneous diazotization and coupling at low pH. 3,928,314, Cl. 260-203.000.

Rochat, Alain Claude: *See—*
Spaun, Rudiger; Rochat, Alain Claude; Gallay, Jean-Jacques; and Brenneisen, Paul, 3,928,437.

Roche, Alain Y. Synchronization device for time-multiplexed signal transmission and switching systems. 3,928,727, Cl. 179-15.0BS.

Rochling, Hans; Hartel, Kurt; and Kirsch, Reinhard, to Hoechst Aktiengesellschaft. Bis-triazinobenzimidazoles and their preparation. 3,928,345, Cl. 260-249.500.

Rockwell, Edward A. Skid control system components. 3,927,913, Cl. 303-6.00C.

Rockwell International Corporation: *See—*
Hamilton, C. Howard; and Ascani, Leonard A., Jr., 3,927,817.
Tucker, Jerry, 3,928,101.
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Roder, Kurt: *See—*
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Roeck, Werner Wilhelm. Apparatus for use in the determination of focal spot size in X-ray tubes. 3,928,767, Cl. 250-320.000.

Roehner, Soll. Helix of a series of discarded vehicle tires. 3,928,701, Cl. 428-222.000.

Roesser, James R.: *See—*
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Rogers, Ivor Thomas, to George Kent, Limited. Methods of fitting fluid pressure operated devices into pipelines. 3,927,451, Cl. 29-157.00R.

Rogg, Herman O.: *See—*
Martin, Harold B.; and Rogg, Herman O., 3,927,596.

Rogic, Milorad M.; and Mares, Frantisek, to Allied Chemical Corporation. Synthesis of 2-halo-5-cyano alkyl valerate. 3,928,445, Cl. 260-566.00A.

Rohm & Haas Company: *See—*
Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y., 3,928,416.

Rohr, Carl A.: *See—*
Hugoson, Birger O.; and Rohr, Carl A., 3,927,521.

Roland Corporation: *See—*
Morita, Masanori, 3,927,594.

Roman, Robert J., to Eastman Kodak Company. Film threading device. 3,927,847, Cl. 242-192.000.

Romans, Duane R., to Farmland Industries, Inc. Additive composition for spark-ignition engine fuels. 3,927,994, Cl. 44-63.000.

Romans, Duane R., to Farmland Industries, Inc. Additive composition for compression-ignition engine fuels. 3,927,995, Cl. 44-63.000.

Rongved, Leif: *See—*
Brady, Kevin James; Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, 3,927,939.

Ronson Products Limited: *See—*
Kolodziej, Alojzy Antoni, 3,927,581.

Ropers, Johann: *See—*
Schabert, Hans-Peter; Ropers, Johann; and Strickroth, Erich, 3,928,133.

Rosalsky, Ivan, to Airlite Aluminum Corporation. Method of making metal ball-bat. 3,927,466, Cl. 29-511.000.

Rosati, Robert L., to Pfizer Inc. Malonyl derivatives of 6-(α-aminoacylamido)penicillanic acids. 3,928,324, Cl. 260-239.100.

Rosch, Gunter: *See—*
Sahm, Wilfried; and Rosch, Gunter, 3,928,390.

Rose, John Brewster, to Imperial Chemical Industries Limited. Aromatic polymers containing ketone linking groups and process for their preparation. 3,928,295, Cl. 260-79.30M.

Rosen, Harry, to American Home Products Corporation. Hyperglycemia therapy. 3,928,597, Cl. 424-273.000.

Rosenberg, Ira, to Clairol Incorporated. Method for coating human nails. 3,928,113, Cl. 156-344.000.

Rosenberger, Michael; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Preparation of 3-oxo-19-nor-Δ⁴-steroids from 10-[3-substituted-alkyl]-desasteroids. 3,928,446, Cl. 260-566.0AE.

Rosenberger, Paul C.: *See—*
Prillinger, Peter F. M.; and Rosenberger, Paul C., 3,927,737.

Rosenblum, Saul A.: *See—*
Garcia, Fe, 3,927,672.

Rosenkranz, Hans Jurgen; Rudolph, Hans; Wolff, Erich; and von Rintelen, Harald, to Bayer Aktiengesellschaft. Polymers which contain urethane groups and which are cross-linkable by vinyl polymerisation. 3,928,299, Cl. 260-89.50N.

Rosquist, Gerald L. Vertical adjustable collapsible seat. 3,927,911, Cl. 297-15.000.

Rossi, Alberto: *See—*
Haas, Georges; Sallmann, Alfred; and Rossi, Alberto, 3,928,363.

Rossi, Robert K.: *See—*
Reilly, Charles B.; and Rossi, Robert K., 3,928,289.

Rostafinski, Jaroslaw Joseph: *See—*
Skeltis, Anthony John; Rostafinski, Jaroslaw Joseph; and Ravani, Chandrakant Dhanjibhai, 3,927,621.

Rotex, Inc.: *See—*
Lower, William E.; and Ivan, Edward K., 3,928,189.

Rothkegel, Bernhard; and Schreiner, Horst, to Siemens Aktiengesellschaft. Two-part sintered electrical contact. 3,927,990, Cl. 29-191.000.

Roussel Uclaf: *See—*
Taylor, John Bodenham; and Harrison, Derek Ralph, 3,928,354.

Rowe, Charles S., deceased (by Rowe, Doris D., executrix); and Pyles, Alvin C., to Rowe, Doris D., a part interest. Lubricant and cleaning composition for precision instruments. 3,928,218, Cl. 252-49.600.

Rowe, Doris D.: *See—*
Rowe, Charles S., deceased; and Pyles, Alvin C., 3,928,218.

Rowe, Doris D., executrix: *See—*
Rowe, Charles S., deceased; and Pyles, Alvin C., 3,928,218.

Rowe, Stephen Henry; Bass, John Charles; and Goodfellow, Robert Charles, to Plessey Handel und Investments A.G. Joining optical waveguides. 3,928,102, Cl. 156-158.000.

Rowland, Colin Mostyn: *See—*
Chandra, Grish; and Rowland, Colin Mostyn, 3,928,629.

Rowland-Hill, Edward W., to Sperry Rand Corporation. Concave for an axial flow threshing and separating machine. 3,927,678, Cl. 130-27.00T.

Royal Industries, Inc.: *See—*
Baker, Charles J., 3,927,724.

Rubino, Andrew M.: *See—*
Jones, John L.; Rubino, Andrew M.; and Lindahl, Charles B., 3,928,545.

Rubinstein, Morton K. Latching mechanism for portable security container. 3,927,741, Cl. 190-61.000.

Rudloff, Bernard. Composite article of fibers and resins. 3,928,693, Cl. 428-74.000.

Rudolph, Hans: *See—*
Dhein, Rolf; Kaiser, Bernd-Ulrich; Rudolph, Hans; Kuchenmeister, Rolf; and Niehaus, Clemens, 3,928,265.
Rosenkranz, Hans Jurgen; Rudolph, Hans; Wolff, Erich; and von Rintelen, Harald, 3,928,299.

Rudzik, Allan D.: *See—*
Friis, Walter, Jr.; and Rudzik, Allan D., 3,928,589.

Rule, Clinton, to Rule Industries, Inc. Fluid-tight flexible cover. 3,928,742, Cl. 200-302.000.

Rule Industries, Inc.: *See—*
Rule, Clinton, 3,928,742.

Rupp, Walter: *See—*
Reuter, Martin; and Rupp, Walter, 3,928,463.

Russell, James P., to Winter Products Co. Electroplating recovery process. 3,928,146, Cl. 204-14.00R.

Russell, Peter B.: *See—*
Yardley, John P.; and Russell, Peter B., 3,928,626.

Russell, Ralph T.: *See—*
Hubert, Alfred W.; and Russell, Ralph T., 3,928,642.

Russell, Robert H.; and Wolff, Allan L., to Physiological Electronics Corporation. Method and apparatus for detecting cardiac arrhythmias. 3,927,663, Cl. 128-2.06A.

Rutgerswerke Aktiengesellschaft: *See—*
Jellinek, Karl; and Oellig, Rudi, 3,928,287.
Miele, Heinrich; Orth, Winfried; and Pastorek, Emmerich, 3,928,472.

Ryan, William F.: *See—*
Struttmann, Donald R.; and Ryan, William F., 3,927,694.

Ryan, William P.: *See—*
Donovan, Timothy F.; and Ryan, William P., 3,927,753.

Rychnovsky, Raymond E., to United States of America, Energy Research and Development Administration. Lifting parachute. 3,927,850, Cl. 244-145.000.

Rydh, Thore Oskar Verner: *See—*
Dahlberg, Alf-Goran; Hogberg, Karl Gustav; Lindvall, Sven; and Rydh, Thore Oskar Verner, 3,928,581.

S.A.E.S. Getters S.p.A.: *See—*
Zucchinelli, Mario, 3,927,953.

S.S.B. Industries, Inc.: *See—*
Klein, Jack, 3,927,544.

Saab-Scania Aktiebolag: *See—*
Robertsson, Hans R., 3,927,480.

Sacrini, Egeo; and Cavallotti, Claudio, to B.F. Goodrich Company, The. Organic peroxides, their preparation, and their applications. 3,928,464, Cl. 260-610.00R.

Sacrini, Egeo; and Cavallotti, Claudio, to B. F. Goodrich Company, The. Organic peroxides, their preparation, and their applications. 3,928,465, Cl. 260-610.00R.

Sacrini, Egeo; and Cavallotti, Claudio, to B. F. Goodrich Company, The. Organic peroxides derived from unsaturated compounds. 3,928,466, Cl. 260-610.00R.

Sacrini, Egeo; and Cavallotti, Claudio, to B.F. Goodrich Company, The. Organic peroxides, their preparation and their applications. 3,928,467, Cl. 260-610.00R.

Safranek, Nathan N. Portable collapsible partition for a table. 3,927,481, Cl. 35-60.000.

Saft-Societe des Accumulateurs Fixes et de Traction: *See—*
Gerbier, Gerard; and Depoix, Pierre, 3,928,072.
Sperandio, Francis; and Leturque, Michel, 3,928,069.
Sperandio, Francis; and Guglieri, Michel, 3,928,077.

Sagae, Syoji; and Doi, Tetsuo, to Hitachi, Ltd. Image reproducing system. 3,928,718, Cl. 178-6.60R.

Sahara, Hajime: *See—*
Orito, Zen-ichi; Uchida, Minoru; Takesue, Masatoshi; Sahara, Hajime; and Fujii, Kihiro, 3,928,528.

Sahm, Wilfried; and Rosch, Gunter, to Hoechst Aktiengesellschaft. Certain 2-substituted phenyl and substituted naphthyl benzofurans. 3,928,390, Cl. 260-346.20R.

Sailor, Robert A.: *See—*
Davis, Francis E., Jr.; Graven, Richard G.; Lee, Wooyoung; and Sailor, Robert A., 3,928,172.

Saint-Gobain Industries: *See—*
Sauer, Gerd, 3,928,748.

Saintier, Francois Rene Andre, to Singer Company, The. Sewing machine attachment to carrying case base. 3,927,630, Cl. 112-217.100.

Sainz, Raul T.: *See—*
Harrison, David; and Sainz, Raul T., 3,927,833.

Saito, Hiroshi: *See—*
Kobayashi, Kazuhiro; Saito, Hiroshi; Ogawa, Yukio; Yoshida, Koki; and Kondo, Isamu, 3,927,454.

Saitoh, Shigeru; Watanabe, Tetsuya; Konno, Koji; Yaguchi, Kunihide; Kodama, Kenji; and Miyamori, Tamotsu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method of removing sulfur dioxide from combustion exhaust gas. 3,928,537, Cl. 423-243.000.

Sakai-Chemical Industry Company, Ltd.: *See—*
Konishi, Kenzo; Kotone, Akira; Nakane, Yoshihiko; Hori, Takeshi; and Hoda, Masahiro, 3,928,310.

Sakai, Hiroshi: *See—*
Dycke, Norbert; and Sakai, Hiroshi, 3,927,549.

Sakai, Yasuo: *See—*
Yamamura, Katsumi; Harigaya, Hiroshi; and Sakai, Yasuo, 3,928,085.

Sakamaki, Hisashi: *See—*
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 3,927,936.

Sakamoto, Kenshi: *See—*
Ohta, Ioe; Matsunobu, Akira; Nishizawa, Masafumi; Kubota, Hayato; and Sakamoto, Kenshi, 3,928,635.

Sakaue, Fukumatsu, to Fugi Xerox Co., Ltd. Vacuum evaporation plating apparatus. 3,927,638, Cl. 118-49.100.

Sakurada, Nobuaki; Nakamoto, Soichi; Ito, Tadashi; Ito, Fumio; and Shinoda, Nobuhiko, to Canon Kabushiki Kaisha. System for setting photographing conditions. 3,928,858, Cl. 354-23.00D.

Salamon, Manfred: *See—*
Wandel, Martin; Salamon, Manfred; Dornheim, Gotz Gotmar; and Kuhlmann, Bernard, 3,928,696.

Salle, Robert: *See—*
Cohen, Choua; Durif-Varambon, Bruno; Salle, Robert; and Sillion, Bernard, 3,928,290.

Sallmann, Alfred: *See—*
Haas, Georges; Sallmann, Alfred; and Rossi, Alberto, 3,928,363.

Salzer, Erwin; and Kozacka, Frederick J., to Chase-Shawmut Company, The. Composite fuse holders. 3,927,927, Cl. 339-125.00R.

Samans, Robert: *See—*
Schonfeld, Wolfram; Philipps, Armin; Eversberg, Hans; Hausler, Karl-Heinz; and Samans, Robert, 3,927,547.

Sammaritano, Michael. Positive sub-surface utility line and the like indicator. 3,927,637, Cl. 116-114.00R.

Sammet, Aaron F., to Martin Farms Partnership; and Joan of Arc Company, part interest to each. Selective asparagus harvesting unit. 3,927,514, Cl. 56-327.00A.

Samour, Carlos M.; and Richards, Mildred C., to Kendall Company, The. Monomeric emulsion stabilizers. 3,928,423, Cl. 260-482.00P.

Samuelsson, Mokjas Erik Samuel, to Finmekano Erik Samuelsson AB. Device for straightening deformed vehicles or vehicle parts. 3,927,550, Cl. 72-447.000.

Sanda, Joseph C., Jr., to Firestone Tire & Rubber Company, The. Tire treads and their production. 3,928,291, Cl. 260-75.00R.

Sandblom, Sven O.: *See—*
Gudmestad, Ragnar; and Sandblom, Sven O., 3,927,590.

Sandoz, Inc.: *See—*
Griot, Rudolf G., 3,928,449.

Sandoz Ltd.: *See—*
Ebnother, Anton; Bastian, Jean-Michel; and Rissi, Erwin, 3,928,360.
Fleck, Fritz; Schmid, Horst; Mercer, Alec Victor; and Paver, Roger, 3,928,329.
Hoger, Kurt; and Tscheulin, Guenther, 3,928,510.
Milzner, Karlheinz; and Reisser, Fritz, 3,928,353.

Sansone, Ronald P., to Pitney-Bowes, Inc. Omnidirectional scanner for reading digitally encoded tickets. 3,928,759, Cl. 250-568.000.

Sarisky, James Edward: *See—*
Mullersman, Ferdinand Henry; and Sarisky, James Edward, 3,928,792.

Sarring, Ernest J., to Xerox Corporation. T-bar actuated bookbinder. 3,928,117, Cl. 156-477.00B.

Sarring, Ernest J., to Xerox Corporation. Bookbinding machine. 3,928,119, Cl. 156-477.00B.

Sartre, Bernard: *See—*
Buoy, Pierre; Masure, Daniel; Collon, Paul; Pigeaud, Jean-Marie; and Sartre, Bernard, 3,928,167.

Sasabe, Kaoru; Kotera, Hiroaki; Hane, Toshihide; and Kihara, Nobuyoshi, to Matsushita Electric Industrial Co., Ltd. Image display system. 3,928,719, Cl. 178-6.800.

Sasaki, Rinzo: *See—*
Okuno, Toshio; and Sasaki, Rinzo, 3,928,025.

Sato, Akira: *See—*
Nakazawa, Yoshiyuki; Nakamura, Yashuharu; Nakajima, Yosuke; Matsuyama, Junichi; and Sato, Akira, 3,928,856.

Sato, Masatoshi; Umemura, Katuo; and Kamata, Yoshinori, to Tokyo Shibaura Electric Co., Ltd. Packaging unit. 3,927,767, Cl. 206-521.000.

Sato, Mitsuyoshi: *See—*
Niimi, Itaru; Kaneko, Yasuhisa; Morita, Akiyoshi; Nemoto, Yasuo; and Sato, Mitsuyoshi, 3,928,241.

Sato, Tsutomu; Deura, Hiroshi; and Oba, Kenkichi, to Lion Fat & Oil Co., Ltd. Method of treating waste plastics. 3,928,268, Cl. 260-23.00H.

Sato, Yoshinari: *See—*
Umio, Suminori; Ueda, Ikuo; Sato, Yoshinari; and Maeno, Shizuo, 3,928,356.

Satoh, Hirokazu; Takeuchi, Hidesato; and Oikawa, Shigeki, to Onoda Chemical Industry Company, Limited. Method for continuously producing hydrated calcium silicates. 3,928,539, Cl. 423-326.000.

Satoh, Ryosuke: *See—*
Fujiwhara, Mitsuto; Endo, Takaya; Satoh, Ryosuke; Masukawa, Toyoaki; and Uozumi, Takahiro, 3,928,041.

Saucy, Gabriel: *See—*
Olson, Gary Lee; and Saucy, Gabriel, 3,928,400.
Rosenberger, Michael; and Saucy, Gabriel, 3,928,446.

Sauder Industries, Inc.: *See—*
Sauder, Robert A.; and Kendrick, Gary R., 3,928,097.

Sauder, Robert A.; and Kendrick, Gary R., to Sauder Industries, Inc. Process and machine for manufacturing insulation modules. 3,928,097, Cl. 156-213.000.

Sauer, Gerd, to Saint-Gobain Industries. Combined window heater and antenna. 3,928,748, Cl. 219-522.000.

Sauer, Winfriede: *See—*
Berger, Herbert; Gall, Rudi; Thiel, Max; Vomel, Wolfgang; and Sauer, Winfriede, 3,928,342.

Saunby, John Brian, to Union Carbide Corporation. Oxidative removal of impurities from acetic acid. 3,928,434, Cl. 260-541.000.

Saunders, Peter Anthony; Fox, Michael Frank; Fagan, Anthony Francis; and Derbyshire, Philip Edward, to Edwin Cooper & Company. Preparation of overbased magnesium lubricant additives. 3,928,216, Cl. 252-33.400.

Saunders, Thomas Edward: *See—*
Brady, Kevin James; Firtion, Victor Andrew; Rongved, Leif; and Saunders, Thomas Edward, 3,927,939.

Sausse, Andre: *See—*
Viannay, Stephane; and Sausse, Andre, 3,927,981.

Savino, Richard, to Lever Brothers Company. Composition for cleaning metal cookware. 3,928,065, Cl. 134-7.000.

Sawko, Paul M.: *See—*
Fohlen, George M.; Parker, John A.; and Sawko, Paul M., 3,928,708.

Sawyer, Philip Nicholas. Prosthesis and method for making same. 3,927,422, Cl. 3-1.000.

Sawyer, Philip Nicholas. Method of conditioning vascular systems by administering 3,5 dichloroaspirin and method of evaluating pharmaceutical compounds. 3,928,587, Cl. 424-230.000.

Sazonov, Alexandr Afanasievich: *See—*
Ivanov, Evgeny Alexandrovich; Silchenkova, Vladislava Venediktovna; Sazonov, Alexandr Afanasievich; and Budkin, Nikolai Stefanovich, 3,928,778.

Schaaf, Thomas K.: *See—*
Hess, Hans-Jurgen E.; Czuba, Leonard J.; and Schaaf, Thomas K., 3,928,391.

Schaar, Charles H., to Colgate-Palmolive Company. Absorbent article with disposal means. 3,927,674, Cl. 128-287.000.

Schabert, Hans-Peter; Ropers, Johann; and Strickroth, Erich, to Siemens Aktiengesellschaft. Biological shield for a nuclear reactor. 3,928,133, Cl. 176-87.000.

Schaefer, Hans: *See—*
Heuschen, Alexander; Schaefer, Hans; Budich, Wolfgang; Krah, Robert; and Obermeier, Karl, 3,928,100.

Schafer, Horst, to SEMIKRON Gesellschaft fur Gleichrichterbau und Electronik m.b.H. Glass forming mixture with boron as the doping material for producing conductivity zones in semiconductor bodies by means of diffusion. 3,928,225, Cl. 252-182.000.

Schafer, Peter: *See—*
Meierkort, Jurgen; and Schafer, Peter, 3,927,864.

Schenk, Peter, to Dzus Fastener Co., Inc. Spring wing stud. 3,927,444, Cl. 24-221.00K.

Scher, Herbert I.: *See—*
Wohnhaas, George J.; Ungar, Israel S.; and Scher, Herbert I., 3,928,527.

Schering Aktiengesellschaft: *See—*
Nusslein, Ludwig; Roder, Kurt; and Pieroh, Ernst Albrecht, 3,928,615.

Schering Corporation: *See—*
Mayer, Joseph; and Sherlock, Margaret H., 3,928,367.

Scherr, Eugen: *See—*
Wagner, Ulrich; and Scherr, Eugen, 3,927,820.

Schierle, Jack Theodore: *See—*
Pohl, Karl-Heinz; and Schierle, Jack Theodore, 3,927,943.

Schill & Seilacher: *See—*
Leberfinger, Rolf; and Matschkal, Heinz, 3,927,966.

Schleicher & Schuell, Incorporated: *See—*
Kremer, Richard D., 3,928,203.

Schleimann, Peter, to Gebr. Hofmann KG. Method and apparatus for determining tire quality. 3,927,561, Cl. 73-146.000.

Schlosser, Donald K.; Myers, Lewis P.; and Caton, Robert L., to Carpenter Technology Corporation. Ferritic stainless steel. 3,928,088, Cl. 148-37.000.

Schmall, Karl Heinz, to Precitec GmbH. Regulating process and device. 3,928,790, Cl. 318-286.000.

Schmid, Horst: *See—*
Fleck, Fritz; Schmid, Horst; Mercer, Alec Victor; and Paver, Roger, 3,928,329.

Schmidt, William George; and Cooperman, Richard Sidney, to Communications Satellite Corporation (COMSAT). Zone sharing transponder concept. 3,928,804, Cl. 325-4.000.

Schmitt-Henco, Carl Heinrich; and Rauschenfels, Eberhard, to Dyckerhoff Zementwerke A.G. Expanded synthetic calcium silicates. 3,928,058, Cl. 106-306.000.

Schneider, Gerhard: *See—*
Bohrmann, Hans; and Schneider, Gerhard, 3,928,650.

Schneider, Rudi: *See—*
Kothe, Hans-Kurt; and Schneider, Rudi, 3,928,078.

Schneider, William P.: *See—*
Pike, John E.; and Schneider, William P., 3,928,425.

Schoeman, Musgrave. Locating and securing of wood joints. 3,927,467, Cl. 29-526.000.

Schone, Rainer Walter Max: *See—*
Nunziata, Gennaro; Schone, Rainer Walter Max; and Spadini, Gianfranco, 3,928,249.

Schonfeld, Wolfram; Philipps, Armin; Eversberg, Hans; Hausler, Karl-Heinz; and Samans, Robert, to Mannesmannrohren-Werke Aktiengesellschaft. Mandrel exchange for diagonal rolling mill. 3,927,547, Cl. 72-97.000.

Schornhorst, James R., to PPG Industries, Inc. Apparatus and method for controlling the orientation of a newly-formed continuous sheet of flat glass. 3,928,011, Cl. 65-65.00A.

Schreiber, Hans: *See—*
Diem, Hans; Matthias, Guenther; Aicher, Albrecht; Haas, Hans; Schreiber, Hans; and Sperber, Heinrich, 3,928,461.

Schreiber, William Lewis; Vock, Manfred; Shuster, Edward Joseph; and Pittet, Alan O., to International Flavors & Fragrances Inc. Novel vegetable flavored foodstuff and vegetable flavor compositions containing 2-phenyl-4-pentenal and/or dimethyl acetal thereof. 3,928,644, Cl. 426-535.000.

Schreiner, Horst: *See—*
Rothkegel, Bernhard; and Schreiner, Horst, 3,927,990.

Schromm, Kurt: *See—*
Renth, Ernst Otto; Schromm, Kurt; Mentrup, Anton; and Danneberg, Peter, 3,928,358.

Schult, Harald: *See—*
Werle, Eugen; Fritz, Hans; and Schult, Harald, 3,928,305.

Schultz, Everett M.: *See—*
Cragoe, Edward J., Jr.; and Schultz, Everett M., 3,928,624.

Schultz, Kenneth E. Endotracheal tube securing device and method. 3,927,676, Cl. 128-351.000.

Schulz, Johann G. D.: *See—*
Onopchenko, Anatoli; and Schulz, Johann G. D., 3,928,433.

Schulz, Paul G., to Sun Oil Company of Pennsylvania. Sulfur recovery system. 3,928,535, Cl. 423-224.000.

Schulze, Joachim: *See—*
Dachs, Karl; Faulhaber, Gerhard; Fikentscher, Rolf; Oppenlaender, Knut; and Schulze, Joachim, 3,928,688.

Schumacher, Bernd: *See—*
Ullmann, Werner; Schumacher, Bernd; Mattei, Silvano; Fenner, Hans-Ueli; and Sieg, Arno, 3,928,163.

Schumacher, Ernst, to Ciba-Geigy AG. Method for modifying vesicular images. 3,928,039, Cl. 96-48.00R.

Schus, Alexandr Grigorievich: *See—*
Soloviev, Vladimir Pavlovich; Kafarov, Viktor Vyacheslavovich; Schus, Alexandr Grigorievich; and Stulnikov, Gennady Pavlovich, 3,927,838.

Schuttloffel, Erich: *See—*
Kaffenberger, Ernst; and Schuttloffel, Erich, 3,928,825.

Schwartz, Norman; and Mohrbacher, Richard J., to McNeil Laboratories, Incorporated. Pyrazinylmalonic acid esters and salts and pyrazinylacetic acids, esters and salts. 3,928,347, Cl. 260-250.00B.

Schwarz, Frank, to United States of America, Energy Research and Development Administration. Intrusion detector self-test system. 3,928,849, Cl. 340-410.000.

Schwarze, Werner: *See—*
Westlinning, Hermann; Schwarze, Werner; and Fleischhauer, Horst, 3,928,344.

Schwarzkopf, August: *See—*
Brockmuller, Friedrich Franz; Schwarzkopf, August; and Feldkamper, Richard, 3,927,606.

Schweitzer, Roland: *See—*
Weyer, Rudy; Aumuller, Walter; Weber, Helmut; Schweitzer, Roland; and Heerdt, Ruth, 3,928,610.

Schwettmann, Frederic Nickels; and Prince, John Luther, III, to Texas Instruments Incorporated. Self-aligned transistor process. 3,928,082, Cl. 148-1.500.

Schwyn, Raymond E.: *See—*
Kudza, Thomas M.; Schwyn, Raymond E.; and Berg, Morris, 3,928,243.

SCM Corporation: *See—*
Clark, Leroy P., 3,927,837.

Scohy, John M.; Cremeans, George E.; and Luttinger, Manfred, to Borg-Warner Corporation. Copolymer binder resins for traffic paints. 3,928,266, Cl. 260-22.0CB.

Scott, Hubert D., to Texaco Inc. Measurement of subsurface formation lithology, including shaliness, using capture gamma spectroscopy. 3,928,763, Cl. 250-270.000.

Scott Paper Company: *See—*
Plumadore, John D., 3,927,639.

Scott, Ronald J. Wienie wiggler roasting implement. 3,927,609, Cl. 99-419.000.

Seagrave Corporation, The: *See—*
French, Walter K., 3,928,013.

Seale, Virgil L.; and Allain, Ronald J., to Nalco Chemical Company. Method of producing acrylamide with a nitrogen base activated copper catalyst. 3,928,442, Cl. 260-561.00N.

Seale, Virgil L.: *See—*
Allain, Ronald J.; and Seale, Virgil L., 3,928,440.
Allain, Ronald J.; and Seale, Virgil L., 3,928,443.

Sears, James C., to Hinman Specialties, Inc. Terminal enclosure with artificial foliage. 3,928,712, Cl. 174-38.000.

Sebag, Henri: *See—*
Vanlerberghe, Guy; and Sebag, Henri, 3,928,224.

Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain & Northern Ireland, The: *See—*
Bryce, William Dean; Pinker, Richard Alfred; and Turner, Brian Arthur, 3,927,522.

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Spiegel, William; Spiegel, Jacob; and Miller, Albert, to Gilbreth Company. Die-cut coupon shrink label. 3,927,484, Cl. 40-307.000.
Spier, I. Martin; and Vener, Frank B. Anti-friction release plate. 3,927,895, Cl. 280-11.35C.
Spindel, Robert C.; and Porter, Robert P., to United States of America, Navy. Tracking system for underwater objects. 3,928,840, Cl. 340-6.00R.
Spinosa, Dominic; and Varga, John, to East/West Medical Products, Inc. Medical cassette pump. 3,927,955, Cl. 417-477.000.
Spirtos, Nicholas G.: *See—*
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Sprenkel, Roger L., to American Tractor Equipment Corporation. Device for burying rigid wall pipe. 3,927,536, Cl. 61-72.400.
Sprinter Pack AB: *See—*
Persson, Karl Rune, 3,927,823.
Sprout, James Cole; and Berman, Herbert L., to Optical Coating Laboratory, Inc. Dual channel infrared intrusion alarm system. 3,928,843, Cl. 340-258.00D.
Square D Company: *See—*
Puetz, Jordan F., 3,927,929.
Squires, Arthur M. Treating gas with chemically reactive dust in panel bed. 3,928,532, Cl. 423-210.000.
Staal, Gerardus B.: *See—*
Henrick, Clive A.; and Staal, Gerardus B., 3,928,413.
Stach, Kurt: *See—*
Berger, Herbert; Gall, Rudi; Stach, Kurt; Vomel, Wolfgang; and Hoffmann, Rita, 3,928,349.
Stadler, Paul A.; Eschenmoser, Albert; and Sundt, Erling, to Firmenich S.A. Perfume composition including oxygenated decalin derivatives. 3,928,246, Cl. 252-522.000.
Stahl, Howard D.; and Sims, Rex J., to General Foods Corporation. Method and composition for low ph whipped toppings. 3,928,648, Cl. 426-564.000.
Stahlecker, Fritz, to Stahlecker, Fritz; and Stahlecker, Hans. Machine for continuous spinning by means of spinning rotors. 3,927,516, Cl. 57-58.890.
Stahlecker, Hans: *See—*
Stahlecker, Fritz, 3,927,516.
Stahler, Paul A. Production of substantially full-diet beef cattle feed through processing of the rumen content of slaughtered cattle. 3,928,640, Cl. 426-465.000.
Standaart, Adrian W. Single gun, multi-screen, multi-beam, multi-color cathode ray tube. 3,928,785, Cl. 313-411.000.
Standard Oil Company: *See—*
Frye, Clifton G.; and McBride, Warren L., 3,928,178.
Lee, Richard J., 3,928,355.
McCaulay, David A., 3,928,487.
Milberger, Ernest C.; and Dolhyj, Serge R., 3,928,240.
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Stanray Corporation: *See—*
Lannin, William W., 3,927,548.
Stateside Machinery Co.: *See—*
Palmer, George William, 3,927,628.
Stauffer Chemical Company: *See—*
Greco, Carl C.; Mirviss, Stanley B.; and Martell, Arthur E., 3,928,365.
Kraft, Paul; Kopacki, Adam F.; and Brunner, Robert, 3,928,500.
Pallos, Ferenc M., 3,928,616.
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Pallos, Ferenc Marcus, 3,928,622.
Sumner, Clark A., 3,927,975.
Tilles, Harry; and Casida, John E., 3,928,436.
Stearley, Robert J., to Great Plains Bag Corporation. Bag. 3,927,825, Cl. 229-55.000.
Steeg, Joachim, to Dr.-Ing. Max Schloetter. Weak acidic bright ductile zinc electrolyte. 3,928,149, Cl. 204-55.00R.
Steelcase, Inc.: *See—*
Faiks, Frederick S., 3,927,920.
Steen, Aron Albin, to Elektro-Mekanik. Device for firearm. 3,927,808, Cl. 224-1.00A.
Stefan, Johann; and Daum, Hermann, to Fella-Werke G.m.b.H. Machine for picking hops. 3,927,680, Cl. 130-30.00D.
Steiger, Douglas W. Safety lock device for the control levers of a front end loader. 3,927,776, Cl. 214-140.000.
Steigerwald, Robert L., to General Electric Company. Turn-off circuit for gate turn-off thyristors and transistors using snubber energy. 3,928,775, Cl. 307-252.00C.
Stein, Thomas R.: *See—*
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Stengel, Edgar: *See—*
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Stephanoff, Nicholas N., to Fluid Energy Processing & Equipment Co. Drying mill for wet granular particles. 3,927,479, Cl. 34-57.00E.
Stephens, Craig P.: *See—*
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Stephensen, Bjorn: *See—*
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Brundage, Ruth Pauline; and Lesher, George Y., 3,928,366.
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Stocker-Boller, Heidi, legal representative: *See—*
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Stockwell, Claude Lewis: *See—*
Wace, Peter Frederick; Stockwell, Claude Lewis; and Alder, Peter James, 3,928,207.
Stoerring, Werner. Pivotally operating sail and line holding and tightening means. 3,927,634, Cl. 114-108.000.
Stogmuller, Heinz, to Vorkauf, Heinrich. Heat exchanger arrangement. 3,927,714, Cl. 165-82.000.
Stoll, Max, deceased: *See—*
Kovats, Ervin; Demole, Edouard; Ohloff, Gunther; and Stoll, Max, deceased, 3,928,456.
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Stolzer, Claus; and Hammann, Ingeborg. S-(n-acyl-n-alkyl or phenylamidocarbonyl)-methyl-thio-phosphoric and- -phosphonic acid esters. 3,928,508, Cl. 260-943.000.
Strabberger, Werner, to Hoechst Aktiengesellschaft. Process for the preparation of high molecular weight aliphatic monocarboxylic acids by silicate contact and chromosulfuric acid oxidation of α-olefins. 3,928,404, Cl. 260-413.000.
Straley, James M.: *See—*
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Strauff, Gunther, to Langen & Co. Pressure follow-up control system for servo steering gears or similar devices. 3,927,602, Cl. 91-372.000.
Straumsnes, O. Robert. Water current power generator system. 3,928,771, Cl. 290-43.000.
Streitferdt, John J.: *See—*
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Strella, Stephen; and Williams, Meurig W., to Xerox Corporation. Method of developing electrostatic latent images with pressure sensitive toner. 3,928,656, Cl. 427-22.000.
Strenglein, Harry F., to Sperry Rand Corporation. Calorimetric resistance bridges. 3,928,800, Cl. 324-106.000.
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Strohm, Paul: *See—*
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Strub, Rene; and Naegeli, John Peter, to Brown Boveri - Sulzer Turbomachinery Ltd. Installation unit for a multistage radial compressor. 3,927,763, Cl. 206-319.000.
Struben, Francis L., to Silver Top Manufacturing Co. Inc. Tensionable hold-down anchorage apparatus. 3,927,494, Cl. 52-23.000.
Struttmann, Donald R.; and Ryan, William F., to Garrett Corporation, The. Fluidic computational device. 3,927,694, Cl. 137-829.000.
Stuckey, Alto Nelson, Jr.: *See—*
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Stults, Allan C.; Powell, Raymond H.; and O'Brian, Edward D. Blind fastener. 3,927,597, Cl. 85-3.00R.

Stumpp, Gerhard, to Robert Bosch G.m.b.H. Fuel-metering unit for internal combustion engines. 3,927,649, Cl. 123-119.00R.

Sturwold, Robert J.; and Barrett, Fred O., to Emery Industries, Inc. Water soluble triglyceride compositions and method for their preparation. 3,928,401, Cl. 260-410.700.

Su, Tsung-Yuan: *See—*
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Suda, Hideaki; Kotera, Norio; and Hasegawa, Shinichi, to Sumitomo Chemical Company, Limited. Method for the separation of 5-isopropyl-m-cresol. 3,928,471, Cl. 260-627.00G.

Suematsu, Yasuo; Miyazaki, Ryuhei; Kubo, Mitsuyasu; Uotani, Tsuyoshi; and Uchida, Hironori, to Shinto Paint Co., Ltd.; and Uyemura & Co., Ltd. Cathodic treatment of chromium-plated surfaces. 3,928,157, Cl. 204-181.000.

Suggitt, Robert M., to Texaco Inc. Preparation of polyphenyls. 3,928,481, Cl. 260-668.00D.

Suggitt, Robert M., to Texaco Inc. Production of aromatic compounds by oxidative dehydrogenation. 3,928,484, Cl. 260-668.00D.

Sugiyama, Noboru; and Shimahara, Hideo, to Kabushiki Kaisha Shimizu Manzo Shoten. Konjac mannan. 3,928,322, Cl. 260-236.500.

Suh, Byoung: *See—*
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Sullivan, Robert E.: *See—*
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Sullivan, Thomas James. Method for treating rheumatoid arthritis. 3,928,599, Cl. 424-283.000.

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Sun Oil Company of Pennsylvania: *See—*
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Seitzer, Walter H., 3,928,550.

Sundby, Bjorn, to Colgate-Palmolive Company. Sulfosuccinates of polyhydroxy tertiary amines. 3,928,422, Cl. 260-481.00R.

Sundman, Jacobus: *See—*
Broderman, Thord; Hietala, Pentti; and Sundman, Jacobus, 3,928,431.

Sundt, Erling: *See—*
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Surmatis, Joseph Donald; and Walser, Armin, to Hoffmann-La Roche Inc. (2,6,6-Trimethyl-4-oxo-cyclohex-2-en-1-ylidene)-6-hydroxy-3-methyl-7-methylene-oct-2-ene-4-yne. 3,928,455, Cl. 260-586.00R.

Surna, Janis Alexandrovich: *See—*
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Suzuki, Hideaki; Togawa, Haruo; Omori, Akira; and Yamamoto, Naoki, to Teijin Limited. Process for producing an ion-exchangeable and solvent-resistant filamentary structure. 3,927,968, Cl. 8-115.500.

Suzuki, Hideo: *See—*
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Swanson, Alfred B. Patellar implant and method. 3,927,423, Cl. 3-1.910.

Sweeney, William A.: *See—*
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Szuhaj, Bernard F. Pan release product and process. 3,928,056, Cl. 106-243.000.

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Tachi, Seiichi; and Moriyama, Hideki, to Hitachi, Ltd. Method for manufacturing a semiconductor device utilizing selective oxidation. 3,928,091, Cl. 148-175.000.

Tachibana, Shinro: *See—*
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Tacussel, Maurice. V-type directional antenna. 3,928,854, Cl. 343-735.000.

Tada, Tetsuya. Sprayer. 3,927,834, Cl. 239-359.000.

Tadokoro, Eiichi; and Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Method for forming protective film by ionic plating. 3,928,159, Cl. 204-192.000.

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Takada, Takezo, deceased (by Takada, Juichiro, legal authorized heir), to Takata Kojyo Co., Ltd. Automatic braking safety belt reel. 3,927,912, Cl. 297-388.000.

Takahashi, Isoji, to Fuji Photo Film Co., Ltd. Image-forming method. 3,928,669, Cl. 427-19.000.

Takahashi, Kazunori; and Fukasawa, Atsushi, to Oki Electric Industry Company Ltd. Waveguide circulator. 3,928,824, Cl. 333-1.100.

Takahashi, Kazuo: *See—*
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Takahashi, Ryoichi; Hosoi, Takuji; Aiba, Takaaki; and Konno, Tsutomu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for manufacturing petroleum pitch having high aromaticity. 3,928,170, Cl. 208-40.000.

Takamizawa, Akira; and Harada, Hiroshi, to Shionogi & Co., Ltd. Aroyl alkyledene thiazolines. 3,928,327, Cl. 260-240.00J.

Takamoku, Kensi: *See—*
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Takata, Yoshinori, to Hitachi, Ltd. Gas flow coulometric detector. 3,928,162, Cl. 204-195.00R.

Takayama, Yuzi; Ichimura, Yutaka; Aoyagi, Takanobu; and Kishino, Takahiro, to Mitsubishi Rayon Co., Ltd. Uniformly pigmented unsaturated polyester resin molded articles. 3,928,254, Cl. 260-2.50B.

Takechi, Hiroshi: *See—*
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Takeda, Hiromu; Kobayashi, Takuichi; Oka, Koichiro; and Tanaka, Kazumi, to Toray Industries, Inc. Synthetic fiber for paper and method for producing the same. 3,928,496, Cl. 260-876.00R.

Takeda, Kazuo: *See—*
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Takemura, Yasuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic wave diagnosis apparatus with galvanometer-driven probe. 3,927,661, Cl. 128-2.00V.

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Tanaka, Fumio: *See—*
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Tanaka, Kazue; Yamamoto, Katsuo; Nakamura, Hisao; and Wakita, Eiichi, to Asahi Kasei Kogyo Kabushiki Kaisha. Apparatus for continuously heat-treating fibrous materials under pressure. 3,927,540, Cl. 68-5.00E.

Tanaka, Kazumi: *See—*
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Tangsrud, Nils; and Devik, Ole Gabriel, to Sintef. Process for dehydrating frozen food particles. 3,928,639, Cl. 426-444.000.

Taniguchi, Kasuyuki: *See—*
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Tanimoto, Kenji: *See—*
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Tanita Corporation: *See—*
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Tao, Fan-Sheng, to Texaco Inc. Emulsion breaking method. 3,928,194, Cl. 210-43.000.

Tarney, Robert Edward; and Verbanc, John Joseph, to Du Pont de Nemours, E. I., and Company. Ozone treatment of elastomers. 3,928,664, Cl. 427-322.000.

Tarshis, Lemuel A.: *See—*
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Tartar, Paul E.: *See—*
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Tate, Jack F., to Texaco Inc. Secondary recovery process utilizing polyvinylpyrrolidones. 3,927,717, Cl. 166-271.000.

Tate, Jack F.; and Maddox, Jim, Jr., to Texaco Inc. Secondary recovery method. 3,927,718, Cl. 166-271.000.

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Taylor, Glenn N., to Colgate-Palmolive Company. Quilted diaper. 3,927,673, Cl. 128-287.000.

Taylor, Harold M., to Eli Lilly and Company. Certain substituted 2-pyrazinemethanols. 3,928,352, Cl. 260-250.00B.

Taylor, John Bodenham; and Harrison, Derek Ralph, to Roussel Uclaf. Derivatives of 4(3H)-quinazolone, process of preparation, and pharmaceutical compositions thereof. 3,928,354, Cl. 260-256.40Q.

Taylor, Peter A.; and Su, Tsung-Yuan, to Phillips Petroleum Company. Acid dyeable olefin polymer containing quaternized amine groups. 3,928,269, Cl. 260-23.0AR.

Tedrow, Jack V. Exhaust moisture reduction by prototype heat exchanger. 3,927,526, Cl. 60-320.000.

Tee-Pak, Inc.: *See—*
Dowell, Arthur M., Jr.; and Reitemeier, Arthur L., 3,928,653.
Froehlich, Leonhard H.; and Dowell, Arthur M., Jr., 3,928,651.

Tegtmeyer, Charles John, to North American Instrument Corporation. Lymph duct cannulator and method. 3,927,660, Cl. 128-2.00A.

Teijin Limited: *See—*
Inata, Hiroo; Kawase, Shoji; and Shima, Takeo, 3,928,279.
Ono, Tomoyoshi; and Matsuguma, Yoshihiko, 3,928,262.
Suzuki, Hideaki; Togawa, Haruo; Omori, Akira; and Yamamoto, Naoki, 3,927,968.

Teitin Ltd.: *See—*
Shimada, Keizo; Nishikawa, Takeo; Harada, Toshiaki; and Nagahama, Shizuo, 3,928,476.

Telecommunications Radioelectriques et Telephoniques T.R.T.: *See—*
Bellanger, Maurice Georges; Lepagnol, Guy Pierre; and Daguet, Jacques Lucien, 3,928,755.

Telephone Associates, Inc.: *See—*
Simon, William F.; and Torrey, William C., 3,928,732.

Teller, Steen, to Isotopcentralen. Determining composition of a substance by the use of both reflected and transmitted radiation. 3,928,765, Cl. 250-272.000.

Temple, Kenneth A.: *See—*
Chapman, Rodney M.; and Temple, Kenneth A., 3,927,982.

Temple, Robert Dwight; Heuring, Vincent Paul; and Prentice, James Bruce, to Procter & Gamble Company, The. Fabric softener and soil-release composition and method. 3,928,213, Cl. 252-8.800.

Tennessee Valley Authority: *See—*
Siegel, Milton R.; and Moore, Oscar E., 3,928,015.

Terajima, Yasuhiko, to Fuji Xerox Co., Ltd. Paper feed tray for use with copying machine and the like. 3,927,877, Cl. 271-11.000.

Terry, Michael R., to United States of America, Navy. Method of determining watertight integrity in hovercraft. 3,927,632, Cl. 114-67.00A.

Teske, Fritz; and Teske, Lothar. Apparatus for discharging bulk material from storage tanks. 3,927,774, Cl. 214-17.00D.

Teske, Lothar: *See—*
Teske, Fritz; and Teske, Lothar, 3,927,774.

Tessler, Martin M., to National Starch and Chemical Corporation. Preparation of starch esters. 3,928,321, Cl. 260-233.500.

Teufel, Helmut: *See—*
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Texaco Inc.: *See—*
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Child, Edward T.; and Robin, Allen M., 3,927,997.
Child, Edward T.; Robin, Allen M.; Slater, William L.; and Richter, George N., 3,927,998.
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Cullen, William P.; Chafetz, Harry; and Hellmuth, Walter W., 3,928,381.
Peelman, Harold E., 3,928,762.
Scott, Hubert D., 3,928,763.
Suggitt, Robert M., 3,928,481.
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Tate, Jack F.; and Maddox, Jim, Jr., 3,927,718.

Texas Instruments Incorporated: *See—*
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Schwettmann, Frederic Nickels; and Prince, John Luther, III, 3,928,082.

Textron, Inc.: *See—*
Moertel, George B., 3,928,098.

Thalen, Bror Arne: *See—*
Brattsand, Ralph Lennart; Ekenstam, Bo Thuresson af; Claeson, Karl Goran; and Thalen, Bror Arne, 3,928,326.

Thaler, Warren A.; Buckley, Donald J.; and Kennedy, Joseph P., to Exxon Research and Engineering Company. High molecular weight, high unsaturation isobutylene-conjugated diene copolymers. 3,928,297, Cl. 260-85.30R.

Thibaut, Yves Albert Daniel, to U.S. Philips Corporation. Device for controlling the spin-drying speed in a washing machine. 3,927,541, Cl. 68-12.00R.

Thiel, Max: *See—*
Berger, Herbert; Gall, Rudi; Thiel, Max; Vomel, Wolfgang; and Sauer, Winfriede, 3,928,342.

Thiele, Gerd, to Siemens Aktiengesellschaft. Arrangement for controlling a thyristor. 3,928,776, Cl. 307-252.00N.

Thieme, Klaus: *See—*
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Thierman, I. Bruce. Combination shaft and spool structure. 3,927,687, Cl. 132-92.00A.

Thill, Bruce P.: *See—*
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Thiokol Corporation: *See—*
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Thiry, Lise: *See—*
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Thomas, Arthur S.: *See—*
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Thomas, Frank A. Interconnectors for spiral-wound filtration modules. 3,928,204, Cl. 210-232.000.

Thompson, James A.: *See—*
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Thomson-CSF: *See—*
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Thornton, J. Scott; and Glowe, Donald E., to Horizons Incorporated. Process for recovery of clean polyester materials. 3,928,253, Cl. 260-2.300.
Thornton, Roy F., to General Electric Company. Hermetically sealed primary battery. 3,928,071, Cl. 136-83.00R.
Thornes, John, Jr. Water fowl decoy. 3,927,485, Cl. 43-3.000.
Thurgood, J. Rand; and Clay, Robert B., to Ireco Chemicals. Fine flaked aluminum manufacture. 3,927,836, Cl. 241-19.000.
Tieszen, Dale O., to Phillips Petroleum Company. Crackle finish coating of arylene sulfide polymer containing a fluorocarbon polymer. 3,928,675, Cl. 427-257.000.
Tilak, Bommaraju V.K.S.R.A.: *See*—
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Tilles, Harry; and Casida, John E., to Stauffer Chemical Company. Carbamoyl sulfoxide derivatives. 3,928,436, Cl. 260-551.00R.
Tindley, Ronald John, to Gilron Holdings Limited. Cup dispensing device. 3,927,799, Cl. 221-223.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
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Toa-Throne AB: *See*—
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Tobita, Susumu: *See*—
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Togawa, Haruo: *See*—
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Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
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Tolbert, Bert M.: *See*—
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Tomalia, Donald A.; and Thill, Bruce P., to Dow Chemical Company, The. Unsaturated poly(amide-esters) and cross-linked derivatives thereof. 3,928,499, Cl. 260-885.000.
Tomatsu, Toshiharu: *See*—
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Tomba, Charles P.: *See*—
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Ohta, Ioe; Matsunobu, Akira; Nishizawa, Masafumi; Kubota, Hayato; and Sakamoto, Kenshi, 3,928,635.
Topper, William R.: *See*—
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Toray Industries, Inc.: *See*—
Kawamura, Sadao; Hayakawa, Akira; and Kurokawa, Harutoshi, 3,927,972.
Takeda, Hiromu; Kobayashi, Takuichi; Oka, Koichiro; and Tanaka, Kazumi, 3,928,496.
Torck, Bernard; Franck, Jean-Pierre; and Derrien, Michel, to Institut Francais du Petrole. Process for isomerizing saturated hydrocarbons. 3,928,488, Cl. 260-683.680.
Torrey, William C.: *See*—
Simon, William F.; and Torrey, William C., 3,928,732.
Toyo Boseki Kabushiki Kaisha (Toyo Spinning Co., Ltd.): *See*—
Masai, Yukito; Kato, Yasuo; Murayama, Ken; and Fukui, Nobuhiko, 3,928,283.
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Treuner, Uwe; and Breuer, Hermann, to E. R. Squibb & Sons, Inc. [[(Alkylthioc arbonyl)oxy]acetyl]cephalosporins. 3,928,335, Cl. 260-243.00C.
Tricker, Keith Arthur. Electronic circuits. 3,927,471, Cl. 29-625.000.
Trinne, John Thomas; and Wilksch, Leslie John. Bottle filling means and method. 3,927,700, Cl. 141-5.000.
Troha, Matthew J.: *See*—
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Tropicana Products, Inc.: *See*—
Erdman, Frank H., 3,927,794.
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Smith, Webster D., 3,928,769.
Wright, Thomas B., 3,927,707.
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Tschudi, Dennis E.; and Geordan, Richard H., to Whittaker Corporation. Pulse width control system. 3,928,809, Cl. 328-58.000.
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Berlin, Alfred Anisimovich; Aseeva, Roza Mikhailovna; Mezhikovsky, Semen Markovich; Sherle, Alla Ilinichna; Tsepalova, Nadezhda Alexeevna; Goldovsky, Evgeny Alexandrovich; Zelenetskaya, Tatiana Vladimirovna; Fatkulina, Rozalia Komalovna; and Kuzminsky, Alexandr Samoilovich, 3,928,489.
Tsuchiye, Kimihiro, to Shimano Industrial Company, Limited. Coaster brake for a bicycle. 3,927,743, Cl. 192-6.00R.
Tsuneishi, Norihiro; and Miyabayashi, Yoshiyuki, to Nissan Motor Co., Ltd. Automobile compartment door weatherstrip. 3,927,493, Cl. 49-476.000.
Tsunoda, Tatsui; Oka, Santaro; Miyamoto, Kazuma; Matsumoto, Makoto; and Baba, Heiji, to Kawatetsu Metrological Equipment and Vending Machine Company, Ltd. Automatic cooking and vending machine for boiled noodles. 3,928,045, Cl. 99-330.000.
Tucker, Jerry, to Rockwell International Corporation. Method of fabricating a rolling diaphragm seal. 3,928,101, Cl. 156-156.000.
Tucker, L. Kenneth: *See*—
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Turney, Stephen Z.; Blumenfeld, Walter; Cowley, R. Adams; Wolf, Samuel; McCluggage, Charles; and Ashworth, John W., III. Automatic respiratory gas monitoring system. 3,927,670, Cl. 128-2.070.
Twin Tool, Inc.: *See*—
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UCB Societe Anonyme: *See*—
Gobert, Jean, Georges; and Close, Jean, Adolphe, 3,928,506.
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Orito, Zen-ichi; Uchida, Minoru; Takesue, Masatoshi; Sahara, Hajime; and Fujii, Kihiro, 3,928,528.
Uchigaki, Taku; and Noro, Masataka, to Mitsubishi Petrochemical Co., Ltd. Backing agent for carpet. 3,928,281, Cl. 260-42.390.
Uchiyama, Mikio; Tachibana, Shinro; Araki, Kengo; and Nakamura, Takafumi, to Eisai Co., Ltd. Peptides-having xenopsin-like pharmacological activity. 3,928,306, Cl. 260-112.50R.
Uchiyama, Takashi: *See*—
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Ullmann, Werner; Schumacher, Bernd; Mattei, Silvano; Fenner, Hans-Ueli; and Sieg, Arno, to A.G. fur industrielle Elektronik AGIE Losone b. Locarno. Spark discharge and electro-chemical erosion machining apparatus. 3,928,163, Cl. 204-206.000.
Umemura, Katuo: *See*—
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Umezawa, Hamao; Mitsuhashi, Susumu; Utahara, Ryozo; and Ishikawa, Tetsuo, to Zaidan Hojin Biseibutsu Kagaki Kenkyu Kai. Two substances inhibiting beta-lactamase and their production. 3,928,569, Cl. 424-117.000.
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Umio, Suminori; Ueda, Ikuo; Sato, Yoshinari; and Maeno, Shizuo, to Fujisawa Pharmaceutical Co., Ltd. 10-[4-(ω-Hydroxy alkyl)-1-piperazimyl]-dibenzo (b,f) oxofins and thiepins and acetyl esters thereof. 3,928,356, Cl. 260-268.0TR.
Underhill, Norman R. Clamp for tie rod with stress-relieving means. 3,927,858, Cl. 249-219.00R.
Ungar, Israel S.: *See*—
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Union Camp Corporation: *See*—
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Georgiade, Nicholas G.; and Latham, Ralph A. (said Ralph A. Latham assors. to), 3,927,664.
Unsworth, William; and Helsby, Graham Harry, to Magnesium Elektron Limited. Encapsulation of fluids and solids. 3,928,230, Cl. 252-316.000.
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Uraneck, Carl A.; and Burleigh, John E., to Phillips Petroleum Company. Preformed polymer latex in emulsion polymerization systems. 3,928,498, Cl. 260-880.00R.
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Uyemura & Co., Ltd.: *See*—
Suematsu, Yasuo; Miyazaki, Ryuhei; Kubo, Mitsuyasu; Uotani, Tsuyoshi; and Uchida, Hironori, 3,928,157.
Valbonesi, Giuseppe; and Camiciottoli, Roberto, to Societa Italiana Telecomunicazion Siemens S.p.A. PAM/PCM interface network for TDM telecommunication system. 3,928,725, Cl. 179-15.0AA.
Valis, Jaroslav, to Allmanna Svenska Elektriska Aktiebolaget. Means for frequency/digital conversion. 3,928,798, Cl. 324-78.00D.
van Boxtel, Antonius Marinus; and Gerritsma, Cornelis Jan, to U.S. Philips Corporation. Method of providing transparent conductive electrodes on a transparent insulating support. 3,928,658, Cl. 427-108.000.
Van de Moortele, Guido Ivo, to Unitas S.A. Device for measuring liquids or gasses. 3,927,601, Cl. 91-329.000.
Vandenberg, Edwin J., to Hercules Incorporated. Graft polymers of halo oxirane or oxetane onto halo polymeric backbone. 3,928,501, Cl. 260-890.000.
Vandenberghe, Antoon Leon: *See*—
Poot, Albert Lucien; Heugebaert, Frans Clement; Janssens, Wilhelmus; and Vandenberghe, Antoon Leon, 3,928,686.
van der Kolk, Hans-Jurgen; Mindner, Reinhard; Kiess, Tilman; Muhlich, Peter; Aldinger, Ulrich; and Adler, Karl-Heinz, to Robert Bosch G.m.b.H. Control system for internal combustion engine and variable transmission power train. 3,927,528, Cl. 60-431.000.
van der Lely, Piet, to U.S. Philips Corporation. Record player. 3,927,888, Cl. 274-39.00A.
Van Durme, Etienne: *See*—
Descamps, Marcel; and Van Durme, Etienne, 3,928,384.
Van Eek, Theodoor; and Beukers, Robert, to Gist-Brocades N.V. Compositions of matter. 3,928,573, Cl. 424-122.000.
van Esdonk, Johannes; Hornman, Johannes Petrus; and de Hass, Franciscus Cupertinus Maria, to U.S. Philips Corporation. Method of manufacturing an electric discharge tube and discharge tube obtained in this manner. 3,928,782, Cl. 313-249.000.

van Heerden, Pieter J.: *See—*
Goldberg, Paul; and van Heerden, Pieter J., 3,927,930.

Vanlerberghe, Guy; and Sebag, Henri, to Societe Anonyme dite: L'Oreal. Shampoo composition obtained from the polycondensation of glycidol on alpha diols with fatty chain with alkaline catalysts. 3,928,224, Cl. 252-172.000.

Vannini, Paolo; Anselmino, Luigi; and Frazzini, Giuseppe, to Fiat Societa per Azioni. Angular velocity detecrot arrangement for a vehicle wheel, particularly for an anti-skid brake system. 3,928,780, Cl. 310-168.000.

van Tongerloo, Eric Henry; Ibrahim, Abd-El-Fattah Ali; Colton, Douglas Roy; and Lawrence, John, to Northern Electric Company Limited. Method for making a bi-directional solid state device. 3,928,093, Cl. 148-186.000.

Varga, Gideon M., Jr.: *See—*
King, William H., Jr.; and Varga, Gideon M., Jr., 3,928,063.

Varga, John: *See—*
Spinosa, Dominic; and Varga, John, 3,927,955.

Varner, David E. Selective bird feeder. 3,927,645, Cl. 119-51.00R.

Varo Semiconductor, Inc.: *See—*
Waltz, Douglas G., 3,928,793.

Varta Batterie Aktiengesellschaft: *See—*
Jung, Gerd; and Bauer, Jakob, 3,928,074.
Kothe, Hans-Kurt; and Schneider, Rudi, 3,928,078.

Vener, Frank B.: *See—*
Spier, I. Martin; and Vener, Frank B., 3,927,895.

Verbanc, John Joseph: *See—*
Tarney, Robert Edward; and Verbanc, John Joseph, 3,928,664.

Vergano, Peter J.; and Smith, William E., deceased (by Smith, Frederick L., administrator), to Owens-Illinois, Inc. Boron doping of semiconductors. 3,928,096, Cl. 148-189.000.

Verheyden, Julien P. H.: *See—*
Jenkins, Ian; Moffatt, John G.; and Verheyden, Julien P. H., 3,928,319.

Veriprint Systems Corporation: *See—*
Green, Harold; and Halasz, Stephen J., 3,928,842.

Viannay, Stephane; and Sausse, Andre, to Rhone Poulenc. Membrane-type blood oxygenator with recycle of oxygen-containing gas. 3,927,981, Cl. 23-258.500.

Viennatone Gesellschaft m.b.H.: *See—*
Hueber, Fritz, 3,928,733.

Viertl, John R. M., to General Electric Company. Acoustic imaging apparatus with liquid-filled acoustic corrector lens. 3,927,557, Cl. 73-67.50R.

Vittoz, Eric Andre: *See—*
Oguey, Henri J.; and Vittoz, Eric Andre, 3,928,773.

Vock, Manfred: *See—*
Schreiber, William Lewis; Vock, Manfred; Shuster, Edward Joseph; and Pittet, Alan O., 3,928,644.

Vock, Manfred Hugo: *See—*
Mookherjee, Braja Dulal; Vock, Manfred Hugo; Benaim, Carlos; and Shuster, Edward J., 3,928,248.
Mookherjee, Braja Dulal; Trenkle, Robert Walter; Vock, Manfred Hugo; and Shuster, Edward J., 3,928,645.

Vockenhuber, Karl: *See—*
Muszumanski, Trude, 3,927,931.

Voermans, Ernst Theodoor. Method and apparatus for producing articles of reinforced plastics or like construction. 3,928,674, Cl. 427-171.000.

Vogel, Charles B., to Shell Oil Company. Well logging system using single conductor cable. 3,928,841, Cl. 340-18.0NC.

Voigt, Werner, to Messerschmitt-Bolkow-Blohm GmbH. Freight lashing apparatus, especially for aircraft. 3,927,622, Cl. 105-463.000.

Volante, Donald J.: *See—*
Bolsenga, Stanley J.; Kotow, Stephen S.; Reuter, Henry G.; and Volante, Donald J., 3,927,878.

Vollmar, Kurt, to Pfaff Industriemaschinen GmbH. Sewing machine presser foot and feed dog lifting mechanism. 3,927,629, Cl. 112-212.000.

Volpe, Richard Louis, to Rockwell International Corporation. Weft carrier control apparatus. 3,927,699, Cl. 139-122.00N.

Volz, Hans-Georg: *See—*
De Haes, Louis Maria; and Volz, Hans-Georg, 3,928,037.

Vomel, Wolfgang: *See—*
Berger, Herbert; Gall, Rudi; Thiel, Max; Vomel, Wolfgang; and Sauer, Winfriede, 3,928,342.
Berger, Herbert; Gall, Rudi; Stach, Kurt; Vomel, Wolfgang; and Hoffmann, Rita, 3,928,349.

von Rintelen, Harald: *See—*
Rosenkranz, Hans Jurgen; Rudolph, Hans; Wolff, Erich; and von Rintelen, Harald, 3,928,299.

von Rosenberg, Hermann E.: *See—*
Knudsen, Christian W.; and von Rosenberg, Hermann E., 3,927,996.

Vorkauf, Heinrich: *See—*
Stogmuller, Heinz, 3,927,714.

Vosburgh, Robert D.: *See—*
Hipsher, Gary L.; and Vosburgh, Robert D., 3,928,103.

Vyzkumny ustav obrabecich stroju a obrabeni: *See—*
Kepka, Jiri; Kovarik, Karel; Loun, Bohuslav; and Zeleny, Jaromir, 3,928,827.

W. R. Grace & Co.: *See—*
Billings, Charles Alden; O'Neill, Gerald Joseph; and Simons, Charles William, 3,928,468.
Settineri, Robert A.; and O'Brien, John T., 3,928,690.
Wood, Louis L.; Hartdegen, Frank J.; and Hahn, Peter A., 3,928,138.

Waagner-Biro Aktiengesellschaft: *See—*
Eder, Theodor, 3,928,182.

WABCO Westinghouse GmbH: *See—*
Reinecke, Erich, 3,928,802.

Wace, Peter Frederick; Stockwell, Claude Lewis; and Alder, Peter James, to United Kingdom Atomic Energy Authority. Apparatus for separating particulate solids from liquids. 3,928,207, Cl. 210-252.000.

Wachter, William J.; and Akey, John G. Grid structure for nuclear reactor fuel assembly. 3,928,131, Cl. 176-78.000.

Wada, Shozo; Yoda, Makoto; and Uchiyama, Takashi, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for the production of modified polypropylenes. 3,928,687, Cl. 428-461.000.

Wada, Takanao: *See—*
Yoshinaga, Toshiaki; Wada, Takanao; and Matsuo, Kenji, 3,927,497.

Wagner, Ulrich; and Scherr, Eugen, to Wagner, Wilhelm. Container. 3,927,820, Cl. 229-3.5MF.

Wagner, Wilhelm: *See—*
Wagner, Ulrich; and Scherr, Eugen, 3,927,820.

Wahl, Albert J., to Commercial Decal, Inc. Automatic decal apparatus. 3,928,116, Cl. 156-447.000.

Wakabayashi, Tomisaku: *See—*
Iwasa, Masakazu; Miyatuka, Hajime; Horikawa, Kazuo; and Wakabayashi, Tomisaku, 3,928,655.

Wakita, Eiichi: *See—*
Tanaka, Kazue; Yamamoto, Katsuo; Nakamura, Hisao; and Wakita, Eiichi, 3,927,540.

Walker, Eddie Bob, to Dow Chemical Company, The. Epoxy novolac resins having a narrow molecular weight distribution and process therefor. 3,928,288, Cl. 260-59.0EP.

Walker, Fred W. Power take-off for power steering pump. 3,927,954, Cl. 417-360.000.

Wallace A. Erickson & Company: *See—*
Erickson, Wallace A.; and Suh, Byoung, 3,928,280.

Wallace, Henry L. Ventilating spacer for beehive. 3,927,431, Cl. 6-1.000.

Wallace, Richard W.: *See—*
McIntyre, William H.; Wallace, Richard W.; and Troha, Matthew J., 3,928,161.

Wallsten, Hans Ivar, to AB Inventing. Method of manufacturing means for storing and transporting liquids, gases or fluidized solid particles under pressure. 3,927,464, Cl. 29-454.000.

Walser, Armin: *See—*
Surmatis, Joseph Donald; and Walser, Armin, 3,928,454.
Surmatis, Joseph Donald; and Walser, Armin, 3,928,455.

Walsh, Lloyd R.: *See—*
Anthony, Michael P.; Gunsagar, Kamleshwar; Kim, Choong-Ki; and Walsh, Lloyd R., 3,927,468.

Walter E. Heller Factors, Inc.: *See—*
Mand, Emery M.; and Shapiro, Henry C., 3,928,627.

Walter Kidde & Co., Inc.: *See—*
Erickson, Lars, 3,927,905.
Greenwald, Harry; and Iglio, Salvatore, 3,927,750.

Walther, Gerhard; Merz, Herbert; Langbein, Adolf; and Stockhaus, Klaus, to Boehringer Ingelheim GmbH. N-(furyl-or thienyl-methyl)-Desoxy-normorphines and -norcodeines and salt thereof. 3,928,359, Cl. 260-285.000.

Waltz, Douglas G., to Varo Semiconductor, Inc. Power supply circuit with electro-magnetic feedback. 3,928,793, Cl. 321-2.000.

Wandel, Martin; Salamon, Manfred; Dornheim, Gotz Gotmar; and Kuhlmann, Bernard, to Bayer Aktiengesellschaft. Stitched webs of fleeces of synthetic fibers and method of making same. 3,928,696, Cl. 428-102.000.

Wang, Chun Shan; and Mintz, Michael J., to Dow Chemical Company, The. Process for making dialkyl pyridylphosphates. 3,928,370, Cl. 260-297.00P.

Wangdahl, Erik Torsten: *See—*
Bergdahl, Sven-Gunnar; and Wangdahl, Erik Torsten, 3,927,569.

Ward, Peter; and Brocklehurst, Jack. Moulding of synthetic plastics sheet material. 3,928,523, Cl. 264-93.000.

Waren, Frank Arthur Oakley. Apparatus for the collection of buoyant foreign matter. 3,928,206, Cl. 210-242.000.

Warner, Henry L.; and Haney, Ted I., to United States of America, Navy. Sonar system. 3,928,839, Cl. 340-3.00R.

Warner-Lambert Company: *See—*
McShane, James Edward, 3,928,579.

Warnock, James E.: *See—*
Hoelzen, Warren R.; Hamilton, Charles R.; and Warnock, James E., 3,927,617.

Wasik, Stanley P., to United States of America, Commerce. Electrolytic stripping cell and method. 3,927,978, Cl. 23-230.00R.

Wason, Satish K., to J. M. Huber Corporation. Amorphous precipitated siliceous pigments for cosmetic or dentrifrice use and methods for their production. 3,928,541, Cl. 423-339.000.

Watanabe, Tetsuo: *See—*
Mase, Shunzo; and Watanabe, Tetsuo, 3,927,815.

Watanabe, Tetsuya: *See—*
Saitoh, Shigeru; Watanabe, Tetsuya; Konno, Koji; Yaguchi, Kunihide; Kodama, Kenji; and Miyamori, Tamotsu, 3,928,537.

Watatani, Yoshizumi; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; and Yoshino, Takehiko, to Hitachi, Ltd.; Hitachi Electronics Co., Ltd.; and Hoso Kyokai. Synchronizing signal regenerator. 3,928,720, Cl. 178-69.50G.

Water Purification Associates: *See—*
Calmon, Calvin, 3,928,200.

Waters, William D., to Youngstown Sheet and Tube Company. Modified vinyl ester resin and pipe made therefrom. 3,928,491, Cl. 260-837.000.

Wax, Jerome R. Lumbo-sacral support. 3,927,665, Cl. 128-78.000.

Weber, Alwin. Piercing spout. 3,927,803, Cl. 222-91.000.

Weber, Helmut: *See—*
Weyer, Rudy; Aumuller, Walter; Weber, Helmut; Schweitzer, Roland; and Heerdt, Ruth, 3,928,610.

Weekley, Alfred E.: *See—*
Johnson, Aaron C., 3,927,745.

Wegman, Raymond F.: *See—*
Hamilton, Willard C.; and Wegman, Raymond F., 3,928,112.

Weijland, Willem Paul, to U.S. Philips Corporation. Television camera tube with control diaphragm. 3,928,784, Cl. 313-389.000.

Weir, Donald Robert, to Sherritt Gordon Mines Limited. Treatment of nickel-bearing ammonium carbonate leach liquors. 3,928,020, Cl. 75-.50A.

Weisner, Carl S.: *See—*
Chill, Leonard; Johnson, Gordon B.; and Weisner, Carl S., 3,927,957.

Weiss, Stephen F. Homodyne FM receiver with folded signal and gated unfolding signal detection. 3,928,807, Cl. 325-344.000.

Welstead, William John, Jr., to A. H. Robins Company, Incorporated. 1-Cyclopropyl-1-phenyl-omega-amino-1-lower alkanoyloxyalkanes. 3,928,426, Cl. 260-490.000.

Welstead, William John, Jr., to A. H. Robins Company, Incorporated. 1-Cyclopropyl-1-phenyl-ω-amino-1-alkanols and 1-lower-alkylacyl derivatives for treating depression. 3,928,625, Cl. 424-330.000.

Weman, Per Olaf, to Sigmatex. Motor vehicle equipped with inflatable air bags for passenger accident protection. 3,927,901, Cl. 280-150.0AB.

Wendel, Martin Maurice: *See—*
Gregory, Donald Dale; and Wendel, Martin Maurice, 3,928,543.

Wenrich, Tom C., to American Standard, Inc. Four-way poppet valve device. 3,927,692, Cl. 137-625.270.

Wentworth, William A., to Napko Corporation. Solid hardener compositions. 3,928,346, Cl. 260-249.600.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
Engel, Walter, 3,927,618.

Werle, Eugen; Fritz, Hans; and Schult, Harald, to Farbenfabriken Bayer Aktiengesellschaft. Urea derivatives of acyl derivatives of KTI. 3,928,305, Cl. 260-112.500.

Werner, Robert H.: *See—*
Carter, Richard S.; Hogan, Spurgeon G., Jr.; Leung, Wan L.; McGilvray, Bruce L.; and Werner, Robert H., 3,928,857.

West Company, The: *See—*
Martin, Frederick W., 3,927,476.

Westinghouse Air Brake Company: *See—*
Hyler, John H.; and Johnson, Clifford E., 3,927,759.

Westinghouse Electric Corporation: *See—*
Adams, Maurice L., Jr.; and Raimondi, Albert A., 3,927,889.
Adams, Maurice L., Jr., 3,927,890.
Byrne, Francis P.; and Kaczmarek, Thomas D., 3,927,979.
Feichtner, John D., 3,928,814.
Finnen, Gerald W.; and Wilson, Herman Q., 3,928,788.
Hugoson, Birger O.; and Rohr, Carl A., 3,927,521.
Jackovitz, John F.; Pantier, Earl A.; and Wu, Christopher K., 3,928,068.
Maier, Alfred E.; and Hill, Robert H., 3,928,826.
McIntyre, William H.; Wallace, Richard W.; and Troha, Matthew J., 3,928,161.

Westlinning, Hermann; Schwarze, Werner; and Fleischhauer, Horst, to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler. Phenylenediamine-s-triazines. 3,928,344, Cl. 260-249.500.

Westvaco Corporation: *See—*
Boatwright, William H.; and Hsu, Thomas C., 3,928,531.
Griffiths, Darrell J. L.; and Huang, Denis K., 3,928,122.

Weyer, Rudy; Aumuller, Walter; Weber, Helmut; Schweitzer, Roland; and Heerdt, Ruth, to Hoechst Aktiengesellschaft. Benzene sulfonylurea preparation for treatment of diabetes mellitus and a method for treatment. 3,928,610, Cl. 424-258.000.

Weyrauch, George L., to Gulf & Western Manufacturing Company. Hand truck. 3,927,898, Cl. 280-47.270.

Wheeler, William J., to Eli Lilly and Company. Process for the preparation of 3 cephalosporin esters. 3,928,333, Cl. 260-243.00C.

White, Matthew B., to United States of America, Navy. Method of reducing light leakage in lasers. 3,928,818, Cl. 331-94.50T.

White, Robert Winslow: *See—*
Smith, Malcolm Kent; and White, Robert Winslow, 3,928,060.

Whitehouse, Harvey B. Container and closure therefor. 3,927,796, Cl. 220-281.000.

Whittaker Corporation: *See—*
Tschudi, Dennis E.; and Geordan, Richard H., 3,928,809.

Wicker, George L. Moulding compositions. 3,928,277, Cl. 260-37.00N.

Widvall, Lars Olov: *See—*
Hyttinge, Roy Lennart; Widvall, Lars Olov; and Hook, Anders Erik Ingvar, 3,927,985.

Wight, Robert C.: *See—*
Shepard, John C., Jr.; Wight, Robert C.; and Kosted, Phillip W., 3,928,164.

Wikstrom International AB: *See—*
Blankenburg, Carl-Heinrich Teodor, 3,927,865.

Wilcox, Clinton S., to General Signal Corporation. Alternating current track circuit apparatus. 3,927,851, Cl. 246-37.000.

Wilkalis, John E.: *See—*
Daley, William D.; Wilkalis, John E.; and Pieters, Wim J. M., 3,928,547.

Wilkes, John B., to Chevron Research Company. Aryl sulfonate stabilized cobalt carbonyl complex compounds. 3,928,232, Cl. 252-428.000.

Wilksch, Leslie John: *See—*
Trinne, John Thomas; and Wilksch, Leslie John, 3,927,700.

William, Otho A.: *See—*
Simmons, Smith H.; William, Otho A.; and Miller, Arthur E., 3,927,518.

Williams, Donald L.: *See—*
Smith, Claude A.; Taylor, David E.; and Williams, Donald L., 3,927,650.

Williams, Meurig W.: *See—*
Strella, Stephen; and Williams, Meurig W., 3,928,656.

Williamson, Herschel M.: *See—*
Freeman, William H.; and Williamson, Herschel M., 3,927,462.

Willigman, John: *See—*
Yatsushiro, Kenji; Kuchuris, George F.; and Willigman, John, 3,928,831.

Willinger, Karl, to Hans Ehgartner, Firma. Tire rasp. 3,927,447, Cl. 29-79.000.

Willner, Richard; Pauli, Jude A.; and Latuda, Frank A., to Emerson Electric Co. Thermostatic expansion valve. 3,927,829, Cl. 236-92.00B.

Wilson, Charles A., to Standard Pressed Steel Co. Prevailing torque fastener. 3,927,503, Cl. 52-758.00F.

Wilson, Earl David: *See—*
Chittenden, Richard Marion; and Wilson, Earl David, 3,927,671.

Wilson, Gerald M.: *See—*
Smith, Franklin G.; and Wilson, Gerald M., 3,927,860.

Wilson, Herman Q.: *See—*
Finnen, Gerald W.; and Wilson, Herman Q., 3,928,788.

Wilson, Homer M., to Petrolite Corporation. Bipolar log converter. 3,928,774, Cl. 307-229.000.

Wilson, Robert W.; and Akins, Eugene T., to Powell Manufacturing Company, Inc. Bulk curing burley tobacco with a seven day curing cycle. 3,927,683, Cl. 131-140.00R.

Winchell, Harry S.; Khentigan, Archie S.; and Lin, Hong, to Medi-Physics, Inc. Hepato-biliary radiopharmaceutical comprising 2-mercaptoisobutyric acid chelating reduced technetium-99m. 3,928,552, Cl. 424-1.000.

Windmoller & Holscher: *See—*
Brockmuller, Friedrich Franz; Schwarzkopf, August; and Feldkamper, Richard, 3,927,606.
Winnemoller, Aloys; and Brockmuller, Friedrich-Franz, 3,927,875.

Winkler, Dean E.: *See—*
Jackson, Brian W.; Winkler, Dean E.; and Woodworth, Charles B., 3,928,679.

Winnemoller, Aloys; and Brockmuller, Friedrich-Franz, to Windmoller & Holscher. Apparatus for laying a film web in Z-shaped folds or for depositing portions of film web in overlapped configuration. 3,927,875, Cl. 270-83.000.

Winslow, Gerald R., to United States Steel Corporation. Vehicle body decelerator I. 3,927,730, Cl. 180-82.00R.

Winter, George R., III; and Boney, William G., to Universal Oil Products Company. Dehydrogenation reactor. 3,927,987, Cl. 23-288.00K.

Winter Products Co.: *See—*
Russell, James P., 3,928,146.

Winters, Giorgio; and Di Mola, Nunzio, to Gruppo Lepetit S.p.A. Pyrido-indole derivatives. 3,928,371, Cl. 260-297.00T.

Winters, Russell M.; and Sell, Frederick. Carrying handle. 3,927,812, Cl. 224-48.00R.

Wirt, Leon A., to Caterpillar Tractor Co. Dual shear blade assembly. 3,927,704, Cl. 144-34.00E.

Wirtz, Rudolf: *See—*
Hambsch, Erich; Klug, Helmut; Ortner, Herbert; Semmlinger, Walter; and Wirtz, Rudolf, 3,928,503.

Wischmeier, Thomas Harry. Independent steering axle suspension. 3,927,900, Cl. 280-124.00A.

Wismer, Marco; and Bosso, Joseph F., to PPG Industries, Inc. Process for the electrodeposition of zwitterion-containing compositions. 3,928,156, Cl. 204-181.000.

Witheford, John Maurice, to American Cyanamid Company. Manufacture of glycols. 3,928,474, Cl. 260-635.00H.

Wohnhaas, George J.; Ungar, Israel S.; and Scher, Herbert I., to Exxon Research and Engineering Company. Preparation of molding plate for production of high-pressure decorative textured laminates. 3,928,527, Cl. 264-258.000.

Wojewodzka Stacja Krwiodawstwa: *See—*
Kosmiderski, Szymon; and Polak, Slaw, 3,928,628.

Wojtowicz, Edward A.; Lazzarotti, S. James; and Tartar, Paul E., to Burroughs Corporation. Device for singulating documents. 3,927,876, Cl. 271-10.000.

Wolf, Gerhard Dieter; Engelhard, Helmut; and Bentz, Francis, to Bayer Aktiengesellschaft. Polyethers containing hydantoin rings as antistatic agents for synthetic fibers and foils. 3,928,298, Cl. 260-88.70B.

Wolf, Milton; Sellstedt, John H.; and Fenichel, Richard L., to American Home Products Corporation. Ortho-mercaptoaroylamides and salts thereof as hypoglycemic agents. 3,928,590, Cl. 424-245.000.

Wolf, Paul A.: *See*—
Moyle, Clarence L.; and Wolf, Paul A., 3,928,575.

Wolf, Samuel: *See*—
Turney, Stephen Z.; Blumenfeld, Walter; Cowley, R. Adams; Wolf, Samuel; McCluggage, Charles; and Ashworth, John W., III, 3,927,670.

Wolff, Allan L.: *See*—
Russell, Robert H.; and Wolff, Allan L., 3,927,663.

Wolff, Erich: *See*—
Rosenkranz, Hans Jurgen; Rudolph, Hans; Wolff, Erich; and von Rintelen, Harald, 3,928,299.

Wolflingseder, Herbert. Code card and decoding network for electronic identification system. 3,928,750, Cl. 235-61.11A.

Wolowitz, William H. Typing and correcting cartridge for single-element typewriters. 3,927,746, Cl. 197-151.000.

Wolowitz, William H. Printing machine in which the ribbons in two different cartridges may be selectively used. 3,927,747, Cl. 197-151.000.

Wolowitz, William H. Attachment for converting a standard typewriter to a self-correcting typewriter. 3,927,748, Cl. 197-181.000.

Wolowitz, William H. Apparatus for supplementing the operation of the ribbon selecting and backspacing means of a typewriter. 3,927,749, Cl. 197-181.000.

Woo, Gar Lok; and Sweeney, William A., to Chevron Research Company. Process for the production hydrogenated olefin sulfonates. 3,928,428, Cl. 260-513.00T.

Wood, Daniel R. Multiple weight system weighing machine. 3,927,725, Cl. 177-171.000.

Wood, Louis L.; Hartdegen, Frank J.; and Hahn, Peter A., to W. R. Grace & Co. Preparation and use of enzymes bound to polyurethane. 3,928,138, Cl. 195-68.000.

Woodhouse, Derek A. Method and means for promoting co-agulation of particles in a liquid. 3,928,155, Cl. 204-150.000.

Woods, Charles E.: *See*—
Kovalenko, Gerald E.; and Woods, Charles E., 3,927,849.

Woods, Paul S.: *See*—
Fokakis, Nicholas J.; and Woods, Paul S., 3,927,626.

Woodworth, Charles B.: *See*—
Jackson, Brian W.; Winkler, Dean E.; and Woodworth, Charles B., 3,928,679.

Wool Research Organisation of New Zealand, Inc.: *See*—
Simpson, William Stanley, 3,927,961.

Woolley, Ronald William, to British Gas Corporation. Lubricated axial thrust bearing. 3,927,921, Cl. 308-134.100.

Worm, Manfred: *See*—
Bauerschmidt, Eberhard; Bormann, Dieter; and Worm, Manfred, 3,928,331.

Wright, Donald L.; and Frankenfeld, John W., to Exxon Research & Engineering Co. Deodorant formulations and antiperspirant formulations containing particular aliphatic diols and their esters. 3,928,557, Cl. 424-47.000.

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B 329,816	3,923,947	Dec. 2, 1975
B 330,536	3,925,452	Dec. 9, 1975
B 330,828	3,913,589	Oct. 21, 1975
B 331,417	3,914,157	Oct. 21, 1975
B 331,557	3,916,577	Nov. 4, 1975
B 331,895	3,916,403	Oct. 28, 1975
B 332,527	3,924,017	Dec. 2, 1975
B 332,811	3,924,359	Dec. 9, 1975
B 333,876	3,921,208	Nov. 18, 1975
B 333,928	3,927,172	Dec. 16, 1975
B 334,251	3,924,719	Dec. 9, 1975
B 334,868	3,919,469	Nov. 11, 1975
B 334,985	3,923,912	Dec. 2, 1975
B 335,670	3,928,686	Dec. 23, 1975
B 335,741	3,925,615	Dec. 9, 1975
B 335,773	3,920,953	Nov. 18, 1975
B 336,129	3,923,606	Dec. 2, 1975
B 336,243	3,925,422	Dec. 9, 1975
B 336,345	3,925,179	Dec. 9, 1975
B 336,652	3,914,211	Oct. 21, 1975
B 336,902	3,918,897	Nov. 11, 1975
B 336,946	3,919,425	Nov. 11, 1975
B 336,978	3,923,968	Dec. 2, 1975
B 337,235	3,919,386	Nov. 11, 1975
B 337,409	3,925,258	Dec. 9, 1975
B 337,442	3,913,658	Oct. 21, 1975
B 337,703	3,914,690	Oct. 21, 1975
B 337,787	3,923,506	Dec. 2, 1975
B 339,057	3,924,822	Dec. 9, 1975
B 339,218	3,925,121	Dec. 9, 1975
B 340,212	3,922,645	Nov. 25, 1975
B 340,833	3,925,208	Dec. 9, 1975
B 341,579	3,913,363	Oct. 21, 1975
B 342,084	3,928,694	Dec. 23, 1975
B 342,423	3,925,334	Dec. 9, 1975
B 342,886	3,923,507	Dec. 2, 1975
B 343,136	3,919,453	Nov. 11, 1975
B 343,240	3,925,693	Dec. 9, 1975
B 343,506	3,916,021	Oct. 28, 1975
B 343,577	3,921,165	Nov. 18, 1975
B 344,203	3,928,719	Dec. 23, 1975
B 344,479	3,924,042	Dec. 2, 1975
B 345,060	3,916,018	Oct. 28, 1975
B 345,384	3,916,146	Oct. 28, 1975
B 345,422	3,914,392	Oct. 21, 1975
B 345,527	3,927,365	Dec. 16, 1975
B 345,567	3,913,985	Oct. 21, 1975
B 346,165	3,913,293	Oct. 21, 1975
B 346,210	3,916,142	Oct. 28, 1975
B 346,350	3,915,824	Oct. 28, 1975
B 346,487	3,927,406	Dec. 16, 1975
B 346,585	3,913,820	Oct. 21, 1975
B 346,613	3,923,545	Dec. 2, 1975
B 346,901	3,915,583	Oct. 28, 1975
B 348,083	3,923,774	Dec. 2, 1975
B 348,383	3,923,452	Dec. 2, 1975
B 348,495	3,914,654	Oct. 21, 1975
B 348,558	3,914,109	Oct. 21, 1975
B 349,141	3,915,363	Oct. 28, 1975
B 349,177	3,914,033	Oct. 21, 1975
B 349,231	3,915,831	Oct. 28, 1975
B 349,321	3,916,103	Oct. 28, 1975
B 349,948	3,914,557	Oct. 21, 1975
B 350,025	3,927,415	Dec. 16, 1975
B 350,143	3,924,419	Dec. 9, 1975
B 350,219	3,917,802	Nov. 4, 1975
B 350,245	3,914,331	Oct. 21, 1975
B 350,523	3,924,726	Dec. 9, 1975
B 350,589	3,927,419	Dec. 16, 1975
B 350,708	3,923,871	Dec. 2, 1975
B 350,843	3,915,461	Oct. 28, 1975
B 351,055	3,914,074	Oct. 21, 1975
B 351,218	3,914,186	Oct. 21, 1975
B 351,222	3,921,179	Nov. 18, 1975
B 351,348	3,923,563	Dec. 2, 1975
B 351,421	3,914,733	Oct. 21, 1975
B 351,493	3,914,758	Oct. 21, 1975
B 351,535	3,915,239	Oct. 28, 1975
B 351,665	3,919,701	Nov. 11, 1975
B 351,672	3,914,000	Oct. 21, 1975
B 351,735	3,913,385	Oct. 21, 1975
B 351,863	3,914,700	Oct. 21, 1975
B 351,883	3,924,657	Dec. 9, 1975
B 351,926	3,914,133	Oct. 21, 1975
B 351,939	3,913,480	Oct. 21, 1975
B 352,445	3,928,746	Dec. 23, 1975
B 352,934	3,913,692	Oct. 21, 1975
B 352,950	3,922,590	Nov. 25, 1975
B 352,965	3,921,926	Nov. 25, 1975
B 353,317	3,916,446	Nov. 4, 1975
B 353,387	3,924,404	Dec. 9, 1975
B 353,546	3,913,273	Oct. 21, 1975
B 354,008	3,925,081	Dec. 9, 1975
B 354,098	3,925,547	Dec. 9, 1975
B 354,145	3,927,279	Dec. 16, 1975
B 354,296	3,914,580	Oct. 21, 1975
B 354,510	3,928,658	Dec. 23, 1975
B 354,889	3,913,204	Oct. 21, 1975
B 354,979	3,914,251	Oct. 21, 1975
B 355,095	3,925,656	Dec. 9, 1975
B 355,269	3,914,561	Oct. 21, 1975
B 355,510	3,913,704	Oct. 21, 1975
B 355,595	3,925,649	Dec. 9, 1975
B 355,876	3,925,685	Dec. 9, 1975
B 356,032	3,928,636	Dec. 23, 1975
B 356,253	3,925,025	Dec. 9, 1975
B 356,602	3,927,393	Dec. 16, 1975
B 356,724	3,924,586	Dec. 9, 1975
B 357,039	3,924,406	Dec. 9, 1975
B 357,057	3,913,738	Oct. 21, 1975
B 357,131	3,924,453	Dec. 9, 1975
B 357,402	3,914,180	Oct. 21, 1975
B 357,682	3,924,973	Dec. 9, 1975
B 357,803	3,919,470	Nov. 11, 1975
B 358,174	3,924,958	Dec. 9, 1975
B 358,244	3,913,411	Oct. 21, 1975
B 358,311	3,923,561	Dec. 2, 1975
B 358,939	3,924,713	Dec. 9, 1975
B 359,174	3,914,117	Oct. 21, 1975
B 359,187	3,924,525	Dec. 9, 1975
B 359,540	3,915,235	Oct. 28, 1975
B 359,825	3,921,344	Nov. 25, 1975
B 359,946	3,914,132	Oct. 21, 1975
B 359,947	3,914,653	Oct. 21, 1975
B 360,208	3,923,750	Dec. 2, 1975
B 360,296	3,916,720	Nov. 4, 1975
B 360,719	3,915,715	Oct. 28, 1975
B 360,910	3,925,696	Dec. 9, 1975
B 361,265	3,923,569	Dec. 2, 1975
B 361,443	3,927,405	Dec. 16, 1975
B 361,569	3,914,554	Oct. 21, 1975
B 361,604	3,922,702	Nov. 25, 1975
B 361,734	3,915,764	Oct. 28, 1975
B 362,589	3,914,012	Oct. 21, 1975
B 363,205	3,923,744	Dec. 2, 1975
B 363,337	3,928,639	Dec. 23, 1975
B 363,457	3,922,595	Nov. 25, 1975
B 363,892	3,913,395	Oct. 21, 1975
B 363,962	3,921,826	Nov. 25, 1975
B 364,022	3,913,499	Oct. 21, 1975
B 364,163	3,916,092	Oct. 28, 1975
B 364,241	3,916,668	Nov. 4, 1975
B 364,334	3,924,670	Dec. 9, 1975
B 364,528	3,919,510	Nov. 11, 1975

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER TRIAL VOLUNTARY PROTEST PROGRAM

JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 364,786	3,921,673	Nov. 25, 1975	B 389,932	3,913,268	Oct. 21, 1975
B 364,910	3,925,335	Dec. 9, 1975	B 389,933	3,913,267	Oct. 21, 1975
B 365,490	3,918,527	Nov. 11, 1975	B 390,679	3,913,668	Oct. 21, 1975
B 365,834	3,914,702	Oct. 21, 1975	B 390,732	3,913,878	Oct. 21, 1975
B 365,841	3,925,628	Dec. 9, 1975	B 391,184	3,914,214	Oct. 21, 1975
B 365,855	3,917,258	Nov. 4, 1975	B 391,210	3,914,220	Oct. 21, 1975
B 366,287	3,924,946	Dec. 9, 1975	B 391,437	3,915,416	Oct. 28, 1975
B 366,402	3,928,053	Dec. 23, 1975	B 391,509	3,925,175	Dec. 9, 1975
B 366,589	3,914,719	Oct. 21, 1975	B 391,675	3,916,017	Oct. 28, 1975
B 367,021	3,914,752	Oct. 21, 1975	B 392,154	3,923,809	Dec. 2, 1975
B 367,040	3,924,775	Dec. 9, 1975	B 392,242	3,926,636	Dec. 16, 1975
B 367,661	3,914,158	Oct. 21, 1975	B 392,696	3,916,175	Oct. 28, 1975
B 367,739	3,923,648	Dec. 2, 1975	B 392,732	3,914,903	Oct. 21, 1975
B 367,812	3,924,789	Dec. 9, 1975	B 392,753	3,916,341	Oct. 28, 1975
B 368,081	3,924,691	Dec. 9, 1975	B 392,894	3,914,763	Oct. 21, 1975
B 368,387	3,924,923	Dec. 9, 1975	B 393,163	3,914,535	Oct. 21, 1975
B 368,392	3,913,812	Oct. 21, 1975	B 393,970	3,914,638	Oct. 21, 1975
B 368,397	3,914,677	Oct. 21, 1975	B 394,088	3,914,740	Oct. 21, 1975
B 368,862	3,925,549	Dec. 9, 1975	B 394,188	3,924,591	Dec. 9, 1975
B 369,563	3,924,449	Dec. 9, 1975	B 394,300	3,914,159	Oct. 21, 1975
B 369,607	3,923,786	Dec. 2, 1975	B 394,712	3,916,306	Oct. 28, 1975
B 369,997	3,913,533	Oct. 21, 1975	B 395,478	3,922,577	Nov. 25, 1975
B 370,706	3,925,242	Dec. 9, 1975	B 395,496	3,919,435	Nov. 11, 1975
B 371,085	3,923,783	Dec. 2, 1975	B 395,671	3,920,418	Nov. 18, 1975
B 371,787	3,921,217	Nov. 18, 1975	B 395,889	3,913,190	Oct. 21, 1975
B 371,805	3,914,433	Oct. 21, 1975	B 396,025	3,913,869	Oct. 21, 1975
B 371,836	3,923,541	Dec. 2, 1975	B 396,551	3,921,929	Nov. 25, 1975
B 372,823	3,924,660	Dec. 9, 1975	B 397,027	3,923,736	Dec. 2, 1975
B 373,297	3,924,436	Dec. 9, 1975	B 397,527	3,913,488	Oct. 21, 1975
B 373,326	3,920,433	Nov. 18, 1975	B 397,990	3,914,848	Oct. 28, 1975
B 373,428	3,915,511	Oct. 28, 1975	B 398,262	3,913,481	Oct. 21, 1975
B 375,220	3,920,417	Nov. 18, 1975	B 398,551	3,924,924	Dec. 9, 1975
B 375,652	3,921,303	Nov. 25, 1975	B 398,597	3,913,743	Oct. 21, 1975
B 376,504	3,914,570	Oct. 21, 1975	B 398,625	3,920,996	Nov. 18, 1975
B 376,654	3,922,513	Nov. 25, 1975	B 399,292	3,914,810	Oct. 28, 1975
B 376,742	3,924,392	Dec. 9, 1975	B 399,304	3,919,567	Nov. 11, 1975
B 376,799	3,913,955	Oct. 21, 1975	B 399,349	3,925,694	Dec. 9, 1975
B 377,172	3,918,255	Nov. 11, 1975	B 399,766	3,915,667	Oct. 28, 1975
B 377,683	3,924,433	Dec. 9, 1975	B 400,080	3,925,163	Dec. 9, 1975
B 377,833	3,913,884	Oct. 21, 1975	B 400,293	3,923,719	Dec. 2, 1975
B 377,869	3,917,002	Nov. 4, 1975	B 400,310	3,915,507	Oct. 28, 1975
B 378,621	3,923,840	Dec. 2, 1975	B 401,133	3,924,443	Dec. 9, 1975
B 379,038	3,923,994	Dec. 2, 1975	B 401,992	3,924,898	Dec. 9, 1975
B 379,172	3,914,379	Oct. 21, 1975	B 402,065	3,925,413	Dec. 9, 1975
B 379,282	3,913,462	Oct. 21, 1975	B 402,555	3,914,688	Oct. 21, 1975
B 379,955	3,913,157	Oct. 21, 1975	B 403,140	3,913,486	Oct. 21, 1975
B 380,014	3,921,915	Nov. 25, 1975	B 403,355	3,913,352	Oct. 21, 1975
B 380,141	3,925,161	Dec. 9, 1975	B 403,990	3,914,684	Oct. 21, 1975
B 380,310	3,921,048	Nov. 18, 1975	B 403,996	3,916,016	Oct. 28, 1975
B 380,312	3,913,953	Oct. 21, 1975	B 404,290	3,924,918	Dec. 9, 1975
B 380,338	3,924,873	Dec. 9, 1975	B 404,437	3,915,200	Oct. 28, 1975
B 380,446	3,923,836	Dec. 2, 1975	B 405,136	3,915,565	Oct. 28, 1975
B 380,900	3,913,307	Oct. 21, 1975	B 405,137	3,915,566	Oct. 28, 1975
B 380,926	3,925,095	Dec. 9, 1975	B 405,160	3,924,821	Dec. 9, 1975
B 381,074	3,919,583	Nov. 11, 1975	B 405,248	3,926,294	Dec. 16, 1975
B 381,632	3,914,732	Oct. 21, 1975	B 405,305	3,922,111	Nov. 25, 1975
B 381,847	3,921,152	Nov. 18, 1975	B 405,360	3,913,403	Oct. 21, 1975
B 382,021	3,913,212	Oct. 21, 1975	B 405,495	3,924,577	Dec. 9, 1975
B 382,261	3,914,991	Oct. 28, 1975	B 405,938	3,920,109	Nov. 18, 1975
B 382,290	3,924,717	Dec. 9, 1975	B 406,065	3,914,199	Oct. 21, 1975
B 382,783	3,919,527	Nov. 11, 1975	B 406,357	3,924,529	Dec. 9, 1975
B 382,798	3,924,435	Dec. 9, 1975	B 407,736	3,924,463	Dec. 9, 1975
B 382,840	3,922,007	Nov. 25, 1975	B 407,357	3,924,614	Dec. 9, 1975
B 383,465	3,927,412	Dec. 16, 1975	B 407,728	3,925,240	Dec. 9, 1975
B 383,532	3,914,246	Oct. 21, 1975	B 408,487	3,924,046	Dec. 2, 1975
B 383,581	3,925,318	Dec. 9, 1975	B 408,749	3,914,116	Oct. 21, 1975
B 384,499	3,925,135	Dec. 9, 1975	B 409,026	3,925,497	Dec. 9, 1975
B 384,658	3,913,452	Oct. 21, 1975	B 409,220	3,915,648	Oct. 28, 1975
B 384,773	3,915,416	Oct. 28, 1975	B 409,251	3,922,620	Nov. 25, 1975
B 385,210	3,913,406	Oct. 21, 1975	B 409,657	3,927,362	Dec. 16, 1975
B 386,403	3,924,895	Dec. 9, 1975	B 409,816	3,921,317	Nov. 25, 1975
B 386,592	3,925,305	Dec. 9, 1975	B 410,062	3,923,855	Dec. 2, 1975
B 387,039	3,924,510	Dec. 9, 1975	B 410,168	3,914,717	Oct. 21, 1975
B 387,331	3,913,701	Oct. 21, 1975	B 411,145	3,914,168	Oct. 21, 1975
B 387,363	3,927,378	Dec. 16, 1975	B 411,356	3,919,649	Nov. 11, 1975
B 387,687	3,918,151	Nov. 11, 1975	B 411,483	3,925,196	Dec. 9, 1975
B 387,761	3,914,245	Oct. 21, 1975	B 411,633	3,914,741	Oct. 21, 1975
B 387,790	3,925,380	Dec. 9, 1975	B 412,516	3,927,417	Dec. 16, 1975
B 387,818	3,918,935	Nov. 11, 1975	B 412,619	3,925,292	Dec. 9, 1975
B 388,580	3,923,712	Dec. 2, 1975	B 412,867	3,924,587	Dec. 9, 1975
B 389,070	3,914,171	Oct. 21, 1975	B 413,006	3,914,850	Oct. 28, 1975
B 389,285	3,914,631	Oct. 21, 1975	B 413,546	3,924,314	Dec. 9, 1975
B 389,327	3,924,504	Dec. 9, 1975	B 414,129	3,925,484	Dec. 9, 1975
B 389,639	3,914,626	Oct. 21, 1975	B 414,288	3,925,537	Dec. 9, 1975
B 389,726	3,921,010	Nov. 18, 1975	B 415,113	3,915,717	Oct. 28, 1975
B 389,807	3,922,623	Nov. 25, 1975	B 415,124	3,915,944	Oct. 28, 1975

JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 415,845	3,925,076	Dec. 9, 1975	B 429,442	3,923,485	Dec. 2, 1975
B 415,847	3,914,208	Oct. 21, 1975	B 430,106	3,918,941	Nov. 11, 1975
B 415,957	3,925,635	Dec. 9, 1975	B 430,140	3,922,084	Nov. 25, 1975
B 415,977	3,927,359	Dec. 16, 1975	B 430,798	3,918,204	Nov. 11, 1975
B 416,598	3,923,473	Dec. 2, 1975	B 430,944	3,922,096	Nov. 25, 1975
B 416,832	3,924,975	Dec. 9, 1975	B 432,373	3,919,670	Nov. 11, 1975
B 416,710	3,923,746	Dec. 2, 1975	B 433,587	3,914,567	Oct. 21, 1975
B 416,933	3,924,968	Dec. 9, 1975	B 435,343	3,919,244	Nov. 11, 1975
B 417,299	3,918,235	Nov. 11, 1975	B 435,844	3,925,170	Dec. 9, 1975
B 418,121	3,925,023	Dec. 9, 1975	B 437,173	3,924,627	Dec. 9, 1975
B 418,153	3,925,251	Dec. 9, 1975	B 437,172	3,913,251	Oct. 21, 1975
B 418,302	3,913,252	Oct. 21, 1975	B 437,195	3,914,618	Oct. 21, 1975
B 419,327	3,921,197	Nov. 18, 1975	B 437,450	3,922,479	Nov. 25, 1975
B 419,481	3,924,970	Dec. 9, 1975	B 438,053	3,916,013	Oct. 28, 1975
B 420,016	3,914,572	Oct. 21, 1975	B 438,706	3,925,050	Dec. 9, 1975
B 420,148	3,927,414	Dec. 16, 1975	B 439,168	3,919,676	Nov. 11, 1975
B 420,514	3,923,929	Dec. 2, 1975	B 439,669	3,921,499	Nov. 25, 1975
B 420,568	3,925,069	Dec. 9, 1975	B 440,898	3,921,789	Nov. 25, 1975
B 421,026	3,914,785	Oct. 21, 1975	B 441,024	3,913,629	Oct. 21, 1975
B 421,362	3,924,817	Dec. 9, 1975	B 441,416	3,913,851	Oct. 21, 1975
B 421,383	3,925,047	Dec. 9, 1975	B 442,280	3,914,054	Oct. 21, 1975
B 421,797	3,914,023	Oct. 21, 1975	B 442,859	3,918,570	Nov. 11, 1975
B 422,399	3,928,656	Dec. 23, 1975	B 442,919	3,925,483	Dec. 9, 1975
B 422,467	3,924,804	Dec. 9, 1975	B 444,614	3,927,996	Dec. 23, 1975
B 422,949	3,921,873	Nov. 25, 1975	B 445,471	3,914,711	Oct. 21, 1975
B 424,415	3,919,458	Nov. 11, 1975	B 445,740	3,923,612	Dec. 2, 1975
B 424,462	3,920,522	Nov. 18, 1975	B 448,571	3,924,760	Dec. 9, 1975
B 424,572	3,924,979	Dec. 9, 1975	B 449,647	3,916,797	Nov. 4, 1975
B 424,748	3,924,395	Dec. 9, 1975	B 450,499	3,920,526	Nov. 18, 1975
B 425,035	3,914,025	Oct. 21, 1975	B 450,546	3,924,417	Dec. 9, 1975
B 425,345	3,922,015	Nov. 25, 1975	B 450,927	3,913,844	Oct. 21, 1975
B 425,470	3,923,796	Dec. 2, 1975	B 455,520	3,922,543	Nov. 25, 1975
B 425,539	3,916,742	Nov. 4, 1975	B 455,775	3,914,356	Oct. 21, 1975
B 425,541	3,914,051	Oct. 21, 1975	B 456,346	3,914,531	Oct. 21, 1975
B 425,572	3,923,822	Dec. 2, 1975	B 459,425	3,928,773	Dec. 23, 1975
B 427,631	3,921,433	Nov. 25, 1975	B 461,872	3,919,586	Nov. 11, 1975
B 428,177	3,914,624	Oct. 21, 1975	B 467,684	3,915,119	Oct. 28, 1975
B 428,795	3,921,056	Nov. 18, 1975	B 468,198	3,925,340	Dec. 9, 1975

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF DECEMBER, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Baer, James I., to Baka International Marketing Corporation. Fluid motor and material handling apparatus and the like utilizing same. Re. 28,663, Cl. 294-99.00R.

Baka International Marketing Corporation: *See*—
Baer, James I., Re. 28,663.

Barger, J. P.; Crandell, William H.; and Gardner, Thomas W., to Dynatech Corporation. Cryosurgical apparatus. Re. 28,657, Cl. 128-303.100.

Bell Telephone Laboratories, Incorporated: *See*—
Miller, Stewart Edward, Re. 28,664.

Bilz, Otto; and Fauth, Otto, to Otto Bilt, Firma. Quick-change chuck with adjustable tool-holding socket. Re. 28,662, Cl. 279-75.000.

Crandell, William H.: *See*—
Barger, J. P.; Crandell, William H.; and Gardner, Thomas W., Re. 28,657.

De La Instruments Limited: *See*—
Pettet, Ronald Sidney, Re. 28,660.

Dynatech Corporation: *See*—
Barger, J. P.; Crandell, William H.; and Gardner, Thomas W., Re. 28,657.

Fauth, Otto: *See*—
Bilz, Otto; and Fauth, Otto, Re. 28,662.

Gardner, Thomas W.: *See*—
Barger, J. P.; Crandell, William H.; and Gardner, Thomas W., Re. 28,657.

MacDaniel, Gene D., to Sweetheart Plastics, Inc. Insulated plastic bucket. Re. 28,658, Cl. 229-1.50B.

Miller, Stewart Edward, to Bell Telephone Laboratories, Incorporated. Single material optical fiber structures including thin film supporting members. Re. 28,664, Cl. 350-96.0WG.

Otto Bilt, Firma: *See*—
Bilz, Otto; and Fauth, Otto, Re. 28,662.

Pettet, Ronald Sidney, to De La Instruments Limited. Discriminating apparatus for moving translucent sheets. Re. 28,660, Cl. 271-263.000.

Pettibone Corporation: *See*—
Wenninger, Clifford E., deceased, Re. 28,659.

Sweetheart Plastics, Inc.: *See*—
MacDaniel, Gene D., Re. 28,658.

Tredway, Wynn B., Sr. Golf swing training glove including light projecting device. Re. 28,661, Cl. 273-183.00B.

Wenninger, Clifford E., deceased, to Pettibone Corporation. Sandmulling apparatus. Re. 28,659, Cl. 241-110.000.

Zagoroff, Dimiter S. Heat gun. Re. 28,665, Cl. 431-347.000.

LIST OF PLANT PATENTEES

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Bailey, Dorothy J. S., to San Joaquin Rose Co. Rose plant. 3,820, 12–23–75, Cl. 20.

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2.5 3,927,583
4C 3,927,584
38A 3,927,585

CLASS 83
8 3,927,586
3,927,587
15 3,927,588
23 3,927,589
151 3,927,590
177 3,927,591
404.2 3,927,592

CLASS 84
1.01 3,927,593
237 3,927,594
322 3,927,595
355 3,927,596

CLASS 85
3R 3,927,597

CLASS 89
45 3,927,598

CLASS 90
11C 3,927,600
13.2 3,927,599

CLASS 91
329 3,927,601
372 3,927,602
412 3,927,603
434 3,927,604

CLASS 92
13.1 3,927,605

CLASS 93
35SB 3,927,606

CLASS 96
1R 3,928,031
3,928,032
1.2 3,928,033
1.5 3,928,034
3,928,035
3,928,036
29R 3,928,037
38 3,928,038
48R 3,928,039
60 3,928,040
66.3 3,928,041
66.4 3,928,042
77 3,928,043
100 3,928,044

CLASS 98
2.09 3,927,607

CLASS 99
297 3,927,608
330 3,928,045
419 3,927,609
425 3,927,610
472 3,927,611

CLASS 100
215 3,927,612

CLASS 101
110 3,927,613
148 3,927,614

CLASS 102
18 3,927,615
43R 3,927,616
82 3,927,617
93 3,927,618

CLASS 104
130 3,927,619
148LM 3,927,620
148MS 3,927,735

CLASS 105
368R 3,927,621
463 3,927,622
475 3,927,623

CLASS 106
19 3,928,046
39.6 3,928,047
48 3,928,048
50 3,928,049
52 3,928,050
53 3,928,051
76 3,928,052
109 3,928,053
120 3,928,054
214 3,928,055
243 3,928,056
273N 3,928,061
300 3,928,057
306 3,928,058
3,928,059
308Q 3,928,060

CLASS 108
56 3,927,624
91 3,927,625

CLASS 110
18R 3,927,626
49R 3,927,627

CLASS 112
121.12 3,927,628
212 3,927,629
217.1 3,927,630
254 3,927,631

CLASS 114
67A 3,927,632
105 3,927,633
108 3,927,634
144E 3,927,635
206R 3,927,636

CLASS 116
114R 3,927,637

CLASS 118
49.1 3,927,638
637 3,927,639
3,927,640
3,927,641

CLASS 119
1 3,927,642
5 3,927,643
16 3,927,644
51R 3,927,645

CLASS 122
6A 3,927,646

CLASS 123
43C 3,927,647
117R 3,927,648
119A 3,927,650
119R 3,927,649
122A 3,927,651
139AT 3,927,652
140FG 3,927,654
140MC 3,927,653
191R 3,927,655
198D 3,927,656
3,927,657

CLASS 126
214A 3,927,658
271 3,927,659

CLASS 127
60 3,928,062

CLASS 128
2A 3,927,660
2V 3,927,661
3,927,662
2.06A 3,927,663
2.07 3,927,670
76R 3,927,664
78 3,927,665
130 3,927,666
132D 3,927,667
136 Re.28,656
142.7 3,927,668
156 3,927,669
227 3,927,671
245 3,927,672
287 3,927,673
3,927,674
303.1 Re.28,657
328 3,927,675
351 3,927,676
419PG 3,927,677

CLASS 130
27HA 3,927,679
27T 3,927,678
30D 3,927,680

CLASS 131
70 3,927,681
140R 3,927,682
3,927,683

CLASS 132
11R 3,927,684
40 3,927,685
91 3,927,686
92A 3,927,687

CLASS 133
ER 3,927,688

CLASS 134
1 3,928,063
6 3,928,064
7 3,928,065

CLASS 136
6LN 3,928,067
6L 3,928,066
24 3,928,068
75 3,928,069
83R 3,928,070
3,928,071
86A 3,928,072
89 3,928,073
100M 3,928,074
3,928,076
100R 3,928,075
111 3,928,077
114 3,928,078
135S 3,928,079
160 3,928,080

CLASS 137
45 3,927,689
599.2 3,927,690
615 3,927,691
625.27 3,927,692
625.47 3,927,693
829 3,927,694

CLASS 138
137 3,927,695
145 3,927,696
3,927,697
162 3,927,698

CLASS 139
122N 3,927,699

CLASS 141
5 3,927,700
98 3,927,701
285 3,927,702
333 3,927,703

CLASS 144
34E 3,927,704
317 3,927,705
326R 3,927,706

CLASS 148
1.5 3,928,081
3,928,082
2 3,928,083
9 3,928,084
11.5F 3,928,085
12.3 3,928,086

36 3,928,087
37 3,928,088
105 3,928,089
134 3,928,090
175 3,928,091
3,928,092
186 3,928,093
187 3,928,094
188 3,928,095
189 3,928,096

CLASS 151
41.75 3,927,707

CLASS 152
418 3,927,708

CLASS 156
73.4 3,928,098
83 3,928,099
92 3,928,100
156 3,928,101
158 3,928,102
160 3,928,103
171 3,928,104
200 3,928,105
210 3,928,106
213 3,928,097
217 3,928,107
246 3,928,108
272 3,928,109
308 3,928,110
315 3,928,111
319 3,928,112
344 3,928,113
351 3,928,114
363 3,928,115
447 3,928,116
477B 3,928,117
3,928,118
3,928,119
568 3,928,120

CLASS 160
37 3,927,709

CLASS 162
14 3,928,121
166 3,928,122
238 3,928,123
274 3,928,124
352 3,928,125

CLASS 164
25 3,927,710
303 3,927,711

CLASS 165
12 3,927,712
16 3,927,713
82 3,927,714
120 3,927,715

CLASS 166
270 3,927,716
271 3,927,717
3,927,718

CLASS 169
46 3,927,719

CLASS 172
22 3,927,720
371 3,927,721

CLASS 173
125 3,927,722

CLASS 174
11R 3,928,711
38 3,928,712
3,928,713
47 3,928,714
3,928,715
57 3,928,716

CLASS 175
422 3,927,723

CLASS 176
15 3,928,126
19R 3,928,127
30 3,928,128
34 3,928,129
67 3,928,130
78 3,928,131
83 3,928,132
87 3,928,133

CLASS 177
136 3,927,724
171 3,927,725
213 3,927,726

CLASS 178
6 3,928,717
6.6R 3,928,718
6.8 3,928,719
69.5G 3,928,720
88 3,928,721

CLASS 179
1FS 3,928,723
1SD 3,928,724
1SM 3,928,722
15AA 3,928,725
15BS 3,928,726
3,928,727

18BG 3,928,729
18FH 3,928,728
18GF 3,928,730
18HH 3,928,731
99 3,928,732
107R 3,928,733
157 3,928,734
175.3R 3,928,735

CLASS 180
30 3,927,727
60 3,927,728
69.1 3,927,729
82R 3,927,730

CLASS 181
5R 3,927,731

CLASS 182
36 3,927,732
187 3,927,733
193 3,927,734

CLASS 188
26 3,927,736
106F 3,927,737
187 3,927,738
206R 3,927,739
218XL 3,927,740

CLASS 190
61 3,927,741

CLASS 191
30 3,927,742

CLASS 192
6R 3,927,743
45 3,927,744
49 3,927,745

CLASS 194
97R 3,927,750

CLASS 195
30 3,928,134
31R 3,928,135
54 3,928,136
63 3,928,137
88 3,928,138
103.5R 3,928,139
3,928,140
3,928,141
104 3,928,142
115 3,928,143

CLASS 197
1R 3,927,751
19 3,927,752
49 3,927,753
63 3,927,754
151 3,927,746
3,927,747
181 3,927,748
3,927,749

CLASS 198
25 3,927,755
27 3,927,756
37 3,927,757
89 3,927,758
171 3,927,759
177T 3,927,760

CLASS 200
5A 3,928,736
51LM 3,928,737
82H 3,928,738
153LB 3,928,740
155R 3,928,739
159R 3,928,741
302 3,928,742
308 3,928,743

CLASS 202
263 3,928,144

CLASS 203
11 3,928,145

CLASS 204
14R 3,928,146
29 3,928,147
38B 3,928,148
55R 3,928,149
98 3,928,150
106 3,928,151
3,928,152
112 3,928,153
129.5 3,928,154
150 3,928,155
181 3,928,156
3,928,157
188 3,928,158
192 3,928,159
3,928,160
195R 3,928,162
195S 3,928,161
206 3,928,163
260 3,928,164
278 3,928,165
282 3,928,166
286 3,928,167

CLASS 206
45.14 3,927,761
45.31 3,927,762

319 3,927,763
451 3,927,764
481 3,927,765
519 3,927,766
521 3,927,767

CLASS 208
14 3,928,168
22 3,928,169
40 3,928,170
46 3,928,171
77 3,928,172
78 3,928,173
80 3,928,174
93 3,928,175
97 3,928,176
139 3,928,177
210 3,928,178
213 3,928,179
216 3,928,180

CLASS 209
11 3,928,181
12 3,928,182
73 3,928,183
74R 3,928,184
166 3,928,185
211 3,928,186
250 3,928,188
255 3,928,187
405 3,928,189

CLASS 210
8 3,928,190
12 3,928,191
30 3,928,192
31C 3,928,193
43 3,928,194
49 3,928,195
58 3,928,196
62 3,928,197
3,928,198
63 3,928,199
96 3,928,200
132 3,928,201
169 3,928,202
198C 3,928,203
232 3,928,204
242 3,928,205
3,928,206
252 3,928,207
321 3,928,208
519 3,928,209

CLASS 211
49D 3,927,768
53 3,927,769

CLASS 214
1P 3,927,770
6B 3,927,771
16.1BA 3,927,772
16.4C 3,927,773
17D 3,927,774
85 3,927,775
140 3,927,776
152 3,927,777
333 3,927,778
450 3,927,779
519 3,927,780
763 3,927,781

CLASS 215
100R 3,927,782
222 3,927,783
256 3,927,784

CLASS 219
10.49 3,928,744
121P 3,928,745
135 3,928,746
216 3,928,747
322 3,928,748

CLASS 220
3.8 3,927,785
4R 3,927,786
9LG 3,927,787
3,927,788
21 3,927,789
72 3,927,790
114B 3,927,791
210 3,927,792
266 3,927,793
268 3,927,794
269 3,927,795
281 3,927,796
318 3,927,797
374 3,927,798

CLASS 221
223 3,927,799

CLASS 222
26 3,927,800
61 3,927,801
67 3,927,802
91 3,927,803
136 3,927,804
153 3,927,805
402.12 3,927,806
430 3,927,807

CLASS 224
1A 3,927,808
5R 3,927,809
29R 3,927,810
42.03B 3,927,811
48R 3,927,812

CLASS 226
135 3,927,813
199 3,927,814

CLASS 228
4.5 3,928,749
121 3,927,815
147 3,927,816
157 3,927,817
189 3,927,818
212 3,927,819

CLASS 229
1.5B Re.28,658
3.5MF 3,927,820
14BL 3,927,821
23R 3,927,822
31R 3,927,823
37R 3,927,824
55 3,927,825

CLASS 233
11 3,927,826

CLASS 235
61.11A 3,928,750
61.11E 3,928,827
92PD 3,928,752
92PK 3,928,751
3,928,753
150.2 3,928,754
152 3,928,755
153AK 3,928,830
183 3,928,756

CLASS 236
49 3,927,827
3,927,828
92B 3,927,829
100 3,927,830

CLASS 237
9R 3,927,831

CLASS 239
168 3,927,832
306 3,927,833
359 3,927,834
400 3,927,835

CLASS 240
51.11R 3,928,757
73R 3,928,758

CLASS 241
19 3,927,836
46.11 3,927,837
46.15 3,927,838
76 3,927,839
110 Re.28,659
187 3,927,840

CLASS 242
1.1R 3,927,842
7.05B 3,927,843
55 3,927,844
68.3 3,927,845
107.4 3,927,846
192 3,927,847
198 3,927,848

CLASS 244
3.22 3,927,849
145 3,927,850

CLASS 246
37 3,927,851
126 3,927,852

CLASS 248
188.2 3,927,853
372 3,927,854

CLASS 249
79 3,927,855
177 3,927,856
217 3,927,857
219R 3,927,858

CLASS 250
199 3,928,760
205 3,928,761
270 3,928,762
3,928,763
272 3,928,764
3,928,765
273 3,928,766
320 3,928,767
333 3,928,768
445T 3,928,769
481 3,928,770
568 3,928,759

CLASS 251
147 3,927,859
299 3,927,860

CLASS 252
8.1 3,928,210
8.5B 3,928,211
8.6 3,928,212

8.8 3,928,213
11 3,928,214
33.3 3,928,215
33.4 3,928,216
45 3,928,217
49.6 3,928,218
51.5R 3,928,219
62.62 3,928,220
70 3,928,221
88 3,928,222
95 3,928,223
172 3,928,224
182 3,928,225
301.2C 3,928,227
301.2R 3,928,226
301.2W 3,928,228
301.6P 3,928,229
316 3,928,230
413 3,928,231
428 3,928,232
455R 3,928,234
455Z 3,928,233
458 3,928,235
463 3,928,236
465 3,928,237
3,928,238
466PT 3,928,239
467 3,928,240
470 3,928,241
513 3,928,242
514 3,928,243
520 3,928,244
521 3,928,245
522 3,928,246
3,928,247
3,928,248
526 3,928,249
542 3,928,250
545 3,928,251

CLASS 254
29R 3,927,861
76 3,927,862
103 3,927,863
3,927,864
105 3,927,865
134.4 3,927,866
175.7 3,927,867

CLASS 259
4 3,927,868
192 3,927,869

CLASS 260
2.3 3,928,253
2.5AS 3,928,257
3,928,258
2.5BF 3,928,256
2.5B 3,928,254
2.5R 3,928,255
5 3,928,259
14 3,928,260
17R 3,928,261
3,928,262
3,928,263
17.2 3,928,264
21 3,928,265
22CB 3,928,266
23AR 3,928,269
23XA 3,928,267
23H 3,928,268
23.7M 3,928,270
29.2TN 3,928,271
29.4UA 3,928,273
29.4R 3,928,272
31.8B 3,928,275
34.2 3,928,276
37N 3,928,277
40R 3,928,278
3,928,279
42.28 3,928,280
42.39 3,928,281
42.44 3,928,282
45.7P 3,928,283
45.75K 3,928,285
45.75S 3,928,284
47CB 3,928,287
47UA 3,928,286
59EP 3,928,288
75NQ 3,928,289
75TN 3,928,290
75R 3,928,291
77.5AQ 3,928,292
79 3,928,293
79.3A 3,928,294
79.3M 3,928,295
85.3R 3,928,297
88.7B 3,928,298
89.5N 3,928,299
93.5A 3,928,300
94.2R 3,928,301
94.3 3,928,302
3,928,303
94.9D 3,928,304
112.5LH 3,928,307
3,928,308
112.5R 3,928,306
112.5 3,928,305

146R 3,928,309
152 3,928,310
156 3,928,311
3,928,312
173 3,928,313
203 3,928,314
204 3,928,315
209R 3,928,316
210AB 3,928,317
210R 3,928,318
211.5R 3,928,319
211.7 3,928,320
233.5 3,928,321
236.5 3,928,322
239B 3,928,323
239.1 3,928,324
3,928,325
239.55D 3,928,326
240G 3,928,328
240J 3,928,327
240.1 3,928,329
242 3,928,330
243A 3,928,332
243C 3,928,331
3,928,333
3,928,334
3,928,335
3,928,336
3,928,337
3,928,338
244R 3,928,339
247.1L 3,928,340
247.5EP 3,928,342
247.5G 3,928,341
248NS 3,928,343
249.5 3,928,344
3,928,345
249.6 3,928,346
250AC 3,928,349
250BN 3,928,351
250A 3,928,348
250B 3,928,347
3,928,352
250Q 3,928,350
256.4E 3,928,353
256.4Q 3,928,354
268BC 3,928,358
268PL 3,928,355
268TR 3,928,356
3,928,357
285 3,928,359
293.54 3,928,360
294.8B 3,928,362
294.8F 3,928,361
294.9 3,928,274
295R 3,928,364
295.5R 3,928,363
3,928,365
3,928,366
296B 3,928,367
296H 3,928,368
296R 3,928,369
297P 3,928,370
297T 3,928,371
302H 3,928,372
307D 3,928,373
309 3,928,374
309.2 3,928,375
309.5 3,928,376
3,928,377
310R 3,928,378
326.5L 3,928,379
326.9 3,928,380
327B 3,928,383
327C 3,928,381
327M 3,928,382
330.5 3,928,384
332.1 3,928,385
338 3,928,386
343 3,928,387
343.2 3,928,388
346.1R 3,928,389
346.2R 3,928,390
3,928,391
346.8A 3,928,392
348.5L 3,928,393
369 3,928,394
3,928,395
380 3,928,396
397.2 3,928,397
397.5 3,928,398
410.5 3,928,399
410.7 3,928,401
410.9N 3,928,403
410.9R 3,928,402
410.9V 3,928,400
413 3,928,404
435A 3,928,405
448.8R 3,928,406
453R 3,928,407
465D 3,928,412
465F 3,928,408
465.3 3,928,409
465.5R 3,928,410
468G 3,928,411
469 3,928,413

3,928,414
470 3,928,415
471R 3,928,416
473A 3,928,417
3,928,418
473S 3,928,419
475P 3,928,420
479R 3,928,421
481R 3,928,422
482P 3,928,423
485G 3,928,424
488R 3,928,425
490 3,928,426
501.17 3,928,427
513T 3,928,428
515P 3,928,430
515R 3,928,429
519 3,928,431
521H 3,928,432
524R 3,928,433
541 3,928,434
542 3,928,435
551R 3,928,436
552R 3,928,437
553B 3,928,438
557R 3,928,439
561K 3,928,444
561N 3,928,440
3,928,441
3,928,442
3,928,443
566AE 3,928,446
566A 3,928,445
567.6M 3,928,447
567.6P 3,928,448
570.7 3,928,449
571 3,928,450
580 3,928,451
586R 3,928,452
3,928,453
3,928,454
3,928,455
3,928,456
593R 3,928,457
3,928,458
601R 3,928,459
603HF 3,928,4[illegible]
603C 3,928,460
604R 3,928,462
606.5P 3,928,463
610R 3,928,464
3,928,465
3,928,466
3,928,467
611R 3,928,468
621C 3,928,469
3,928,477
622R 3,928,470
627G 3,928,471
628 3,928,472
635H 3,928,473
3,928,474
645 3,928,475
646 3,928,476
651R 3,928,478
658R 3,928,479
666M 3,928,480
668D 3,928,481
3,928,484
668F 3,928,482
668R 3,928,483
680R 3,928,485
683.49 3,928,486
683.51 3,928,487
683.68 3,928,488
827 3,928,489
3,928,490
837 3,928,491
850 3,928,492
864 3,928,493
876R 3,928,494
3,928,495
3,928,496
878R 3,928,497
880R 3,928,498
884 3,928,500
885 3,928,499
890 3,928,501
891 3,928,502
897B 3,928,504
897C 3,928,503
921 3,928,505
924 3,928,506
940 3,928,507
943 3,928,508
945 3,928,509
962 3,928,510

CLASS 261
64C 3,928,511
91 3,928,512
113 3,928,513

CLASS 264
3B 3,928,514
5 3,928,515
29 3,928,516
38 3,928,517
40 3,928,518
3,928,519
42 3,928,520
49 3,928,521
89 3,928,522
93 3,928,523
117 3,928,524
174 3,928,525
236 3,928,526
258 3,928,527
344 3,928,528

CLASS 266
4E 3,927,870

CLASS 267
65R 3,927,871

CLASS 269
32 3,927,872
154 3,927,873

CLASS 270
61F 3,927,874
83 3,927,875

CLASS 271
10 3,927,876
11 3,927,877
173 3,927,878
263 Re.28,660

CLASS 272
76 3,927,879

CLASS 273
1E 3,927,880
58K 3,927,881
65E 3,927,882
85B 3,927,883
119R 3,927,884
126R 3,927,885
135R 3,927,886
183B Re.28,661

CLASS 274
38 3,927,887
39A 3,927,888

CLASS 277
25 3,927,889
29 3,927,890
190 3,927,891

CLASS 279
62 3,927,892
75 Re.28,662
3,927,893

CLASS 280
8 3,927,894
11.13C 3,927,896
11.35C 3,927,895
11.35M 3,927,897
47.27 3,927,898
87A 3,927,899
124A 3,927,900
150AB 3,927,901
150SB 3,927,902
166 3,927,903
236 3,927,904

CLASS 290
43 3,928,771

CLASS 292
169.22 3,927,905
262 3,927,906

CLASS 293
71R 3,927,907

CLASS 294
19R 3,927,908
81R 3,927,909
99R Re.28,663

CLASS 295
36R 3,927,910

CLASS 297
15 3,927,911
388 3,927,912

CLASS 303
6C 3,927,913
21F 3,927,914
3,927,915
22R 3,927,916
68 3,927,917

CLASS 307
116 3,928,772
225C 3,928,773
229 3,928,774
252C 3,928,775
252N 3,928,776

CLASS 308
3.6 3,927,918
6R 3,927,919
36 3,927,920
134.1 3,927,921

CLASS 310
8.2 3,928,777
8.3 3,928,778
168 3,928,780
194 3,928,779

CLASS 312
234 3,927,922
252 3,927,923
263 3,927,924

CLASS 313
54 3,928,781
249 3,928,782
270 3,928,783
389 3,928,784
411 3,928,785
493 3,928,786

CLASS 315
403 3,928,787

CLASS 317
111 3,928,788
136 3,928,789

CLASS 318
286 3,928,790

CLASS 320
7 3,928,791
35 3,928,792

CLASS 321
2 3,928,793
5 3,928,794

CLASS 324
28CR 3,928,795
61R 3,928,796
78D 3,928,797
3,928,798
99D 3,928,799
106 3,928,800
160 3,928,801
174 3,928,802
181 3,928,803

CLASS 325
4 3,928,804
65 3,928,805
128 3,928,806
344 3,928,807
464 3,928,808

CLASS 328
58 3,928,809
127 3,928,810

CLASS 330
4.3 3,928,811

CLASS 331
1A 3,928,812
3,928,813
94.5PE 3,928,819
94.5C 3,928,816
3,928,817
94.5G 3,928,820
3,928,821
94.5M 3,928,814
94.5Q 3,928,815
94.5T 3,928,818

CLASS 332
7.51 3,928,822
11R 3,928,823

CLASS 333
1.1 3,928,824
34 3,928,825

CLASS 335
22 3,928,826
151 3,928,829
152 3,928,828
262 3,928,831

CLASS 336
70 3,928,832

CLASS 337
56 3,928,833
81 3,928,834
295 3,928,835

CLASS 338
22R 3,928,836
32R 3,928,837
183 3,928,838

CLASS 339
14P 3,927,925
74R 3,927,926
125R 3,927,927
256R 3,927,928
258F 3,927,929
278C 3,927,841

CLASS 340
3R 3,928,839
6R 3,928,840
18NC 3,928,841
146.3Q 3,928,842
172.5 3,928,857
258D 3,928,843
259 3,928,844
324AD 3,928,845
325 3,928,846
365E 3,928,847
409 3,928,848
410 3,928,849

CLASS 343
7.3 3,928,850
9 3,928,851
105R 3,928,852
180 3,928,853
735 3,928,854

CLASS 346
1 3,928,855
3,928,856

CLASS 350
96WG Re.28,664
151 3,927,930
184 3,927,931
187 3,927,932

CLASS 351
17 3,927,933

CLASS 354
23D 3,928,858
27 3,928,859
51 3,928,860
60L 3,928,861
86 3,928,862
109 3,928,863

CLASS 355
3R 3,927,934
14 3,927,935
15 3,927,936
3,927,937
38 3,927,938
54 3,927,939
66 3,927,940
71 3,927,941
84 3,927,942
132 3,927,943

CLASS 356
97 3,927,944
106LR 3,927,946
106 3,927,945
117 3,927,947
167 3,927,948

CLASS 357
17 3,928,864
30 3,928,865
3,928,866

CLASS 358
39 3,928,867

CLASS 360
15 3,928,868
55 3,928,869
59 3,928,870

CLASS 402
22 3,927,949

CLASS 403
346 3,927,950

CLASS 415
110 3,927,951

CLASS 416
95 3,927,952

CLASS 417
48 3,927,953
360 3,927,954
477 3,927,955

CLASS 418
100 3,927,956

CLASS 423
138 3,928,529
140 3,928,530

206 3,928,531
210 3,928,532
213.2 3,928,533
3,928,534
224 3,928,535
242 3,928,536
243 3,928,537
260 3,928,538
326 3,928,539
339 3,928,540
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342 3,928,542
385 3,928,543
447 3,928,544
463 3,928,545
476 3,928,546
564 3,928,547
575 3,928,548
648 3,928,549
657 3,928,550
659 3,928,551

CLASS 424
1 3,928,552
3,928,553
3 3,928,554
22 3,928,555
45 3,928,556
47 3,928,557
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61 3,928,561
78 3,928,562
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83 3,928,564
92 3,928,565
94 3,928,566
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115 3,928,568
117 3,928,569
118 3,928,570
3,928,571
122 3,928,572
3,928,573
153 3,928,574
3,928,575
154 3,928,576
164 3,928,577
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167 3,928,579
177 3,928,580
180 3,928,581
3,928,582
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195 3,928,584
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219 3,928,586
230 3,928,587
234 3,928,588
244 3,928,589
245 3,928,590
3,928,605
246 3,928,591
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248 3,928,606
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250 3,928,593
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253 3,928,609
258 3,928,610
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263 3,928,594
3,928,613
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270 3,928,617
271 3,928,595
273 3,928,596
3,928,597
283 3,928,598
3,928,599
298 3,928,600
300 3,928,601
308 3,928,602
311 3,928,618
314 3,928,619
317 3,928,620
320 3,928,622
326 3,928,623
330 3,928,603
3,928,621
3,928,624
3,928,625
3,928,626
353 3,928,604
366 3,928,628

CLASS 425
131.1 3,927,957

CLASS 426
7 3,928,630
18 3,928,631
72 3,928,632
96 3,928,633
281 3,928,634
312 3,928,635
434 3,928,636
437 3,928,637
439 3,928,638
444 3,928,639
465 3,928,640
506 3,928,641
521 3,928,642
533 3,928,643
535 3,928,644
538 3,928,645
549 3,928,646
554 3,928,647
564 3,928,648
565 3,928,649
573 3,928,252
579 3,928,650
641 3,928,651
643 3,928,652
657 3,928,653

CLASS 427
8 3,928,654
14 3,928,668
19 3,928,669
21 3,928,655
22 3,928,656
47 3,928,657
53 3,928,670
88 3,928,671
108 3,928,658
127 3,928,672
132 3,928,659
135 3,928,673
171 3,928,674
248 3,928,660
257 3,928,675
259 3,928,661
294 3,928,662
304 3,928,663
322 3,928,664
339 3,928,665
341 3,928,676
358 3,928,627
374 3,928,677
385 3,928,667
387 3,928,629
398 3,928,680
402 3,928,678
3,928,679
431 3,928,681
444 3,928,682

CLASS 428
9 3,928,689
40 3,928,690
53 3,928,691
54 3,928,692
74 3,928,693
92 3,928,694
95 3,928,695
102 3,928,696
142 3,928,697
172 3,928,698
212 3,928,699
220 3,928,700
222 3,928,701
255 3,928,703
260 3,928,704
297 3,928,684
311 3,928,705
323 3,928,702
3,928,706
342 3,928,707
378 3,928,666
411 3,928,685
412 3,928,708
447 3,928,683
457 3,928,686
461 3,928,687
483 3,928,710
515 3,928,688
539 3,928,709

CLASS 431
116 3,927,958
347 Re.28,665

CLASS 432
3 3,927,959
80 3,927,960

Classification of Designs

D2—	41	238,116		185	238,130		255	238,150		R	238,162			238,183	D56—	4	238,200
	229	238,117		194	238,134		289	238,151	D18—	2	238,168			238,185			238,201
	232	238,118	D7—	43	238,135	D10—	33	238,152	D19—	60	238,170		H	238,184	D57—	1	238,202
		238,119		45	238,136		69	238,153		96	238,169	D27—	36	238,187	D61—	H	238,203
		238,120		79	238,137		106	238,154	D22—	18	238,171			238,188	D64—	10	238,205
		238,121		129	238,138		111	238,155	D23—	3	238,172	D30—	38	238,189		11B	238,204
	310	238,122		165	238,139		116	238,156	D24—	1D	238,173		99	238,190	D67—	2R	238,206
	320	238,123	D8—	25	238,140		126	238,157			238,174	D34—	4R	238,191	D70—	1	238,207
	328	238,124		57	238,141	D12—	110	238,158			238,175		5GP	238,192	D83—	F	238,208
	351	238,125		257	238,142		147	238,159	D26—	B	238,176		ST	238,193			238,209
D4—	1	238,126	D9—	48	238,143		155	238,160		5A	238,177		15AJ	238,195	D86—	10A	238,212
	H	238,127		171	238,144		181	238,161		B	238,178		E	238,194		E	238,211
D6—	80	238,131			238,145	D13—	1A	238,164			238,179	D35—	I	238,196		F	238,210
	113	238,132		178	238,146			238,165		8	238,180	D40—	B	238,197			238,213
	169	238,128		219	238,148			238,166		13C	238,181	D45—	16	238,198	D87—	1R	238,214
	175	238,129		223	238,147			238,167		14A	238,186	D48—	20R	238,199	D96—	12	238,215
		238,133		252	238,149		D	238,163		G	238,182						

Classification of Plants

P. —	12	3,822	P. —	18	3,818	P. —	19	3,819	P. —	20	3,820	P. —	38	3,823	P. —	68	3,821

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

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Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
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Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

Patents

1 :	3,927,502	3,927,792	3,928,627	3,928,226		3,928,221	3,928,201
	3,927,507	3,927,804	3,928,630	3,928,234		3,928,264	3,928,231
	3,928,015	3,927,807	3,928,632	3,928,257	15 :	3,927,475	3,928,237
	3,928,546	3,927,811	3,928,637	3,928,258	17 :	Re.28,659	3,928,255
	3,928,677	3,927,817	3,928,660	3,928,324		3,927,462	3,928,280
2 :	3,927,526	3,927,841	3,928,671	3,928,391		3,927,514	3,928,304
4 :	3,927,430	3,927,845	3,928,691	3,928,517		3,927,527	3,928,355
	3,927,559	3,927,849	3,928,692	3,928,551		3,927,539	3,928,388
	3,927,694	3,927,850	3,928,708	3,928,617		3,927,579	3,928,441
	3,927,952	3,927,879	3,928,716	3,928,633		3,927,600	3,928,448
	3,928,029	3,927,883	3,928,769	3,928,654		3,927,605	3,928,486
5 :	3,928,197	3,927,897	3,928,809	3,928,849		3,927,614	3,928,487
6 :	3,927,421	3,927,913	3,928,812	10 :	3,927,790	3,927,644	3,928,631
	3,927,427	3,927,925	3,928,815		3,928,111	3,927,671	3,928,651
	3,927,434	3,927,933	3,928,816		3,928,191	3,927,673	3,928,652
	3,927,458	3,927,950	3,928,817		3,928,350	3,927,674	3,928,653
	3,927,463	3,927,954	3,928,819		3,928,351	3,927,704	3,928,707
	3,927,468	3,927,959	3,928,821		3,928,478	3,927,708	3,928,721
	3,927,491	3,927,962	3,928,842		3,928,482	3,927,720	3,928,751
	3,927,492	3,927,965	3,928,843		3,928,501	3,927,729	3,928,831
	3,927,504	3,927,969	3,928,853		3,928,543	3,927,737	3,928,834
	3,927,505	3,927,975	3,928,863		3,928,566	3,927,759	3,928,869
	3,927,524	3,927,976	3,928,868		3,928,664	3,927,762	18 :	3,927,520
	3,927,534	3,928,023	8 :	3,927,659		3,928,681	3,927,780		3,927,548
	3,927,536	3,928,046		3,927,943	11 :	3,927,645	3,927,782		3,927,654
	3,927,551	3,928,081		3,928,017	12 :	Re.28,663	3,927,797		3,927,702
	3,927,560	3,928,094		3,928,106		3,927,428	3,927,830		3,927,709
	3,927,578	3,928,108		3,928,215		3,927,442	3,927,866		3,927,791
	3,927,582	3,928,137		3,928,227		3,927,488	3,927,878		3,927,899
	3,927,584	3,928,140		3,928,316		3,927,518	3,927,880		3,927,958
	3,927,597	3,928,142		3,928,574		3,927,533	3,927,884		3,928,103
	3,927,617	3,928,192		3,928,673		3,927,589	3,927,892		3,928,333
	3,927,647	3,928,210		3,928,729		3,927,676	3,927,893		3,928,352
	3,927,652	3,928,232		3,928,813		3,927,686	3,927,907		3,928,379
	3,927,663	3,928,233		3,928,830		3,927,691	3,927,977		3,928,536
	3,927,666	3,928,236		3,928,859		3,927,794	3,927,980		3,928,571
	3,927,668	3,928,252	9 :	3,927,425		3,927,798	3,927,987		3,928,592
	3,927,669	3,928,293		3,927,532		3,927,833	3,928,026		3,928,598
	3,927,684	3,928,318		3,927,591		3,927,945	3,928,035		3,928,604
	3,927,688	3,928,407		3,927,609		3,928,084	3,928,056		3,928,642
	3,927,689	3,928,413		3,927,710		3,928,123	3,928,109		3,928,714
	3,927,707	3,928,428		3,927,727		3,928,124	3,928,115		3,928,808
	3,927,721	3,928,436		3,927,753		3,928,218	3,928,117	19 :	3,927,713
	3,927,728	3,928,450		3,927,764		3,928,701	3,928,118		3,927,778
	3,927,741	3,928,549		3,927,806		3,928,791	3,928,119		3,927,825
	3,927,742	3,928,552		3,927,905		3,928,792	3,928,126		3,928,717
	3,927,758	3,928,578		3,928,009		3,928,800	3,928,177	20 :	3,927,679
	3,927,771	3,928,600		3,928,027		3,928,839	3,928,178		3,928,097
	3,927,779	3,928,616		3,928,028	13 :	Re.28,658	3,928,179		3,928,184
	3,927,784	3,928,622		3,928,070		3,927,508	3,928,180		3,928,752
	3,927,788	3,928,623		3,928,113		3,927,935	3,928,185	21 :	3,927,658

3,927,692
3,927,696
3,927,786
3,927,818
3,927,828
3,927,853
3,928,003
3,928,667
3,928,680
22 : 3,927,474
3,927,587
3,927,636
3,927,734
3,928,024
3,928,176
24 : 3,927,440
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,913,976, D. F. Cole, ELECTRIC BROILER; **3,091,171,** same, BROILER, **filed** Aug. 19, 1975, United States Court of Appeals, Sixth Circuit, Ohio (Cincinnati), Doc. 74–2235–36, *David F. Cole* v. *Sears, Roebuck & Company.* The judgment of the District Court is reversed as to the last issue, and in all other respects said judgment is affirmed, Aug. 19, 1975.

3,063,024, L. Davis, Jr., MICROWAVE STRIP TRANSMISSION LINE CIRCULATORS, **filed** Sept. 3, 1975, D.C., M.D. Fla. (Tampa), Doc. 75–635–C–T–K, *Raytheon Company* v. *Trak Microwave Corp.*

3,091,171. (See 2,913,976.)

3,181,939, Marshall and Roschuk, FUSED ALUMINA-ZIRCONIA ABRASIVES, **filed** Aug. 22, 1975, United States Court of Appeals, First Circuit, Massachusetts (Boston), Doc. 75–1310, *Norton Company* v. *Carborundum Company.*

3,192,624, D. Gringer, KNIFE HANDLE WITH ADJUSTABLE BLADE, **filed** Aug. 22, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c2830, *Allway Tools, Inc.* v. *Industrias Egana, S.A. and Great Neck Saw Manufacturers, Inc.*

3,255,780, B. L. Squirrell, FLEXIBLE HOSE OF INTERLOCKING HELICAL CONVOLUTIONS, **filed** Aug. 29, 1975, D.C., C.D. Calif. (Los Angeles), Doc. 75–2940–DWW, *Plastiflex Co.* v. *Consolidated Foods, Inc.*

3,265,048, L. J. Herbon, COOLING SYSTEM; **3,499,481,** W. C. Avrea, PRESURIZED LIQUID COOLING SYSTEM; **3,601,181,** same, METHOD AND APPARATUS FOR PURGING AIR FROM INTERNAL COMBUSTION ENGINE COOLING SYSTEM, **filed** May 13, 1975, D.C., E.D. Mich. (Detroit), Doc. 75–70881, *General Motors Corp.* v. *Saf Gard Systems, Inc.*

3,268,636, R. G. Angell, Jr., METHOD AND APPARATUS FOR INJECTION MOLDING FOAMED PLASTIC ARTICLES, **filed** Nov. 22, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72–426, *Union Carbide Corporation* v. *Borg-Warner Corporation.* That judgment be entered in favor of defendants, that claim 1 of patent has not been infringed; that claim 1 of patent is invalid for obviousness and lack of novelty; and that said patent is invalid and void in its entirety for failure to disclose the best mode to carry out the invention, Aug. 22, 1975.

3,292,341, J. D. Frost, ORIENTING AND PACKING APPARATUS, **filed** Aug. 4, 1975, D.C., E.D. Calif. (Fresno), Doc. F–75–141, *James D. Frost* v. *Sunkist Growers, Inc.*

3,391,484, P. W. Darin, AILERON CONTROL FOR MODEL AIRPLANES, **filed** Sept. 3, 1975, D.C., E.D. Mich. (Detroit), Doc. 75–71679, *Pio W. Darin* v. *John Josiatis, doing business as Joe's Hobby Center.*

3,437,149, Cugini and Jeannerett, CABLE FEED-THROUGH MEANS AND METHOD FOR WELL HEAD CNSTRUCTIONS, **filed** Sept. 8, 1975, D.C., S.D. Tex. (Houston), Doc. 75–H–1530, *Seaboard Pipe & Equipment Company, Inc.* v. *FMC Corporation.*

3,499,481. (See 3,265,048.)

3,506,385, Weber and Cressman, PHOTOFLASH LAMP; **3,508,984,** S. L. Slomski, PHOTOFLASH LAMP ARRAY; **3,508,985,** Harnden and Kornrumpf, CONSTRUCTION OF DISPOSABLE PHOTOFLASH LAMP ARRAY; **3,609,332,** D. R. Schindler, PHOTOFLASH LAMP ARRAY WITH REFLECTOR-LAMP MODULE; **3,725,663,** Anderson, Hanson, Lecrone and Landgraf, LINEAR PHOTOFLASH LAMP ARRAY AND REFLECTOR UNIT THEREFOR, **filed** Apr. 4, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c1083, *General Electric Company* v. *GTE Sylvania Inc.* Enter order joint motion for entering of an order for dismissal granted, May 15, 1975.

3,525,147, V. E. Kieffer, METHOD OF MAKING A FIELD MEMBER FOR A DYNAMOELECTRIC DEVICE, **filed** Dec. 26, 1974, D.C., N.D. Ind. (Fort Wayne), Doc. F–74–146, *Wagner Electric Corporation and Industra Products, Inc.* v. *Essex International, Inc.* **Same, filed** Aug. 21, 1975, D.C., S.D. Ohio (Dayton), Doc. C–3–75–208, *Industra Products, Inc.* v. *Machine Products Corp.*

3,541,606, Heenan and Nagel, REFLECTORIZED VEHICLES AND REFLECTORS THEREFOR, **filed** Aug. 2, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2192, *Amerace Corporation* v. *Sate-Lite Mfg. Co. et al.* Dismissed by stipulation with prejudice, July 7, 1975.

3,591,282, W. Renold, FILM POSITIONING SYSTEM; **Re. 28,046,** same, **filed** Sept. 3, 1975, D.C., C.D. Calif. (Los Angeles), Doc. CV 75–2980–WPG, *Seaco Computer-Display Incorporated* v. *Terminal Data Corporation and Michael Rothbart.*

3,598,984. (See 3,506,385.)

3,599,038, D. D. Skidmore, APPARATUS AND SYSTEMS FOR HIGH-VOLTAGE ELECTROSTATIC CHARGING OF PARTICLES; **3,731,145,** R. S. Senay, ELECTROSTATIC SPRAY GUN WITH SELF-CONTAINED MINIATURIZED POWER PACK INTEGRAL THEREWITH, **filed** July 2, 1975, D.C., N.D. Ohio (Toledo), Doc. C75–270, *Nordson Corporation* v. *Owens-Illinois, Inc. and Gema AG Apparatebau.*

3,601,181. (See 3,265,048.)

3,609,332. (See 3,506,385.)

3,706,156, E. L. Thornell, MUSICAL WRISTWATCH TOY; **D. 224,661,** same, HOUSING FOR A TOY MUSIC BOX, **filed** Aug. 7, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2233, *Marlin Toy Products, Inc.* v. *Sears, Roebuck and Co. et al.* Enter order of stipulation and order of dismissal with prejudice, granted, June 24, 1975.

3,725,693. (See 3,506,385.)

3,731,145. (See 3,599,038.)

3,732,419, Kulberg and Muehlehner, SCINTILLATION CAMERA WITH IMPROVED RESOLUTION, **filed** Mar. 19, 1975, D.C., N.D. Ohio (Cleveland), Doc. C75–250, *Searle Analytic, Inc.* v. *Ohio Nuclear, Inc.* Order dismissing plaintiff's complaint without prejudice and defendant's counterclaim is dismissed with prejudice, Aug. 27, 1975.

3,803,332, Seiferth, Austin, and Paul, BACON PACKAGE, **filed** Aug. 26, 1975, D.C., C.D. Calif. (Los Angeles), Doc. 75–2882–DWW, *John E. Stoneman* v. *American Can Co.*

3,811,453, C. Bretton, METHOD AND MEANS FOR ATTACHING A HAIR SUPPLEMENT, **filed** Sept. 8, 1975, D.C. Minn. (Minneapolis), Doc. 4–75–C–458, *Allen Arthur Co., Inc.* v. *David Green, doing business as Greer's Hair Replacement Studio.*

3,831,553, R. R. Theitu, WICK FOR OIL DISPENSING APPARATUS; **D. 232,144,** J. A. Ford, SHELF SPINDLE, **filed** Sept. 11, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c3030, *Kirsch Company* v. *Edgecraft Corporation et al.*

Re. 28,046. (See 3,591,282.)

D. 198,760, L. T. Harris, RIVETLESS CHAIN LINK, **filed** Feb. 10, 1975, D.C., E.D. Wis. (Milwaukee), Doc. 75–66, *Janes Manufacturing, Inc.* v. *Portec, Inc.*

D. 224,661. (See 3,706,156.)

D. 232,144. (See 3,831,553.)

An "Open Letter" to Subscribers and Readers of the Official Gazette of the United States Patent and Trademark Office

Dear Subscriber or Reader:

Presented in this Notice Section of the OFFICIAL GAZETTE is a tabulation of the results of the Cost-Survey cards sent in by subscribers and users of the O.G. The cards appeared at 935 O.G. 1 (June 3, 1975). The approximately 25% of subscribers who took time to inform us of their views and concerns have my sincere thanks.

Pursuant to the responses indicated therein the Patent and Trademark Office will retain the present practice of printing claims rather than abstracts in the O.G., and will not make available a "notices" leaflet. Effective immediately a fourth-class mail option is being made available by the U.S. Government Printing Office for all subscribers. This may be elected upon initial subscription or at the time of renewal. The cost is $250.00 per annum (first-class mail is $342.20). We are initiating a test on a microfiche edition of the O.G. Patents Section with a target for final evaluation and possible implementation by the spring of 1976.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Category, percent of returns	No. surveys/ (No. readers)	Microfiche: Subscribe Yes	Subscribe No	Copies	Retain O.G. Would	Retain O.G. Would not	Favor abstracts: Mechanical Yes	Mechanical No	Electrical Yes	Electrical No	Chemical Yes	Chemical No	Entire Yes	Entire No	Fourth class mail Yes	Fourth class mail No	O.G. leaflet: Subscribe Yes	Subscribe No	Replace O.G. Yes	Replace O.G. No
Subscriber 14.9%	211 (731)	69 (194)	132 (534)	54	8	60	71 (367)	70 (181)	63 (328)	61 (188)	60 (354)	60 (195)	101 (413)	75 (217)	150 (550)	45 (110)	55 (149)	144 (575)	24 (43)	152 (417)
Partner, emp. law firm 16.0%	227 (1,316)	72 (406)	146 (856)	67	13	60	58 (365)	112 (696)	56 (360)	109 (671)	53 (327)	113 (697)	80 (406)	124 (691)	171 (968)	49 (300)	68 (339)	138 (902)	9 (49)	174 (1,094)
Employee Co. 63.8%	902 (4,762)	295 (1,698)	566 (2,917)	216	67	215	249 (1,288)	312 (1,845)	230 (1,202)	289 (1,693)	186 (1,104)	337 (2,015)	392 (1,899)	373 (2,195)	656 (3,206)	205 (1,414)	132 (982)	718 (3,705)	22 (83)	743 (3,999)
Librarian 2.2%	31 (516)	14 (154)	15 (350)	5	2	10	8 (115)	9 (75)	5 (13)	7 (75)	7 (47)	9 (90)	12 (275)	14 (131)	12 (106)	13 (385)	2 (21)	23 (488)	1 (1)	23 (152)
User public library 0.1%	1 (1)	0	1 (1)	0	0	0	0	1 (1)	0	1 (1)	0	1 (1)	0	0	1 (1)	0	0	0	0	0
Unknown 0.4%	5 (5)	2 (2)	2 (2)	2	0	1	0	3 (3)	0	3 (3)	0	3 (3)	1 (1)	3 (3)	4 (4)	1 (1)	1 (1)	2 (2)	0	3 (3)
Government 2.7%	38 (144)	17 (55)	19 (84)	15	1	15	8 (26)	18 (79)	9 (28)	16 (77)	5 (13)	21 (92)	11 (27)	19 (33)	30 (108)	6 (33)	11 (46)	24 (100)	5 (13)	31 (117)
Subtotal 100%	1,415 (7,475)	469 (2,499)	881 (4,748)	369	91	361	394 (2,161)	525 (2,870)	363 (1,931)	486 (2,688)	311 (1,845)	544 (3,033)	606 (3,111)	608 (3,330)	1,033 (4,952)	319 (2,243)	269 (1,418)	1,049 (5,772)	61 (178)	1,126 (5,787)
Responses (No. green cards)	17 (53)	7 (23)	10 (30)	4	0	6	3 (10)	7 (27)	3 (10)	7 (27)	3 (10)	7 (27)	9 (35)	7 (27)	9 (28)	7 (23)	8 (26)	8 (26)	1 (4)	12 (34)
Total	1,432 (7,528)	476 (2,522)	891 (4,778)	363	91	367	397 (2,171)	532 (2,897)	366 (1,941)	493 (2,685)	314 (1,855)	551 (3,120)	615 (3,136)	615 (3,357)	1,042 (4,980)	326 (2,266)	277 (1,444)	1,057 (5,798)	62 (182)	1,138 (5,821)

NOTES:
1. Surveys which were marked "subscriber" and another category were listed in the other category.
2. The percentage figure under each category is the ratio of the number of surveys in that category to the total number of surveys returned.
3. The number of readers was considered "one" if no number was specified, or if "100's" or "1,000's" was written. A range, e.g. "5 to 9," was recorded as its average value (7 in the example).
4. Twelve of the total yeses under "O.G. Leaflet-subscribe" and six of the yeses under "O.G. Leaflet-replace" were conditioned on having microfiche available.

National Inventor's Day

The 4th Annual National Inventor's Day Exhibit will be held on Saturday and Sunday, February 7 and 8, 1976 at the Patent and Trademark Office in Arlington, Virginia.

Limited space is available for appropriate display and demonstration of patented materials, devices or methods.

Inventors or firms interested in participating in this public exhibit are urged to contact the National Inventor's Day Committee of the Patent and Trademark Office (phone 703 557-3428). Communications should be directed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231. Attn: Oscar Mastin, Office of Information Services.

I. J. ROTKIN,
Chairman.

Dec. 1, 1975.

Examination

Pursuant to the provisions of Rule 341(c), an examination for persons seeking registration before the United States Patent & Trademark Office as patent attorneys or agents will be held on Tuesday, March 2, 1976.

With the exception of those former patent examiners for whom the examination is waived, all persons recognized for practice before the Patent & Trademark Office in patent cases must, pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent & Trademark Office in trademark cases. Recognition for practice in trademark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

The examination will be given under the supervision of the Civil Service Commission, and may be taken in any of the cities in which the Civil Service Commission regularly conducts examinations. Applications to take the examination must be filed in the Patent & Trademark Office together with a $35 fee not later than January 31, 1976.

Application blanks may be obtained from the Clerk of the Patent & Trademark Office Committee on Enrollment, Bldg. 3, 11th Floor, Room C16, Crystal Plaza, Arlington, Va., or by mail addressed to the Commissioner of Patents & Trademarks, Washington, D.C. 20231, and directed to the attention of the Clerk of the Committee on Enrollment.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

PATENT NOTICES

Certificates of Correction for the Week of Dec. 30, 1975

Re. 28,547	3,872,035	3,896,737	3,906,538
D. 227,409	3,873,740	3,896,804	3,907,014
D. 236,099	3,874,354	3,897,045	3,907,259
3,641,088	3,874,451	3,897,064	3,907,409
3,676,482	3,874,549	3,897,396	3,907,734
3,732,377	3,877,312	3,898,272	3,907,935
3,740,307	3,877,392	3,898,742	3,908,066
3,761,496	3,879,765	3,898,940	3,908,265
3,771,195	3,880,147	3,899,520	3,908,585
3,779,159	3,880,931	3,899,570	3,908,644
3,785,569	3,881,057	3,899,604	3,908,796
3,786,116	3,883,949	3,899,628	3,908,835
3,786,902	3,884,053	3,899,718	3,908,921
3,791,219	3,884,097	3,899,923	3,908,971
3,793,402	3,884,676	3,900,033	3,909,059
3,800,641	3,885,024	3,900,069	3,909,178
3,807,653	3,885,735	3,900,356	3,909,274
3,809,461	3,887,433	3,900,391	3,909,304
3,819,308	3,888,016	3,900,458	3,909,367
3,825,568	3,889,027	3,900,798	3,909,458
3,833,645	3,889,729	3,901,083	3,909,476
3,838,032	3,890,003	3,901,196	3,909,494
3,838,067	3,890,139	3,902,050	3,909,744
3,842,083	3,890,161	3,902,086	3,910,717
3,842,452	3,890,783	3,902,535	3,910,989
3,844,838	3,891,454	3,902,600	3,911,005
3,846,674	3,891,702	3,902,910	3,911,096
3,847,713	3,891,925	3,903,333	3,911,456
3,849,430	3,892,490	3,903,471	3,911,651
3,860,630	3,892,686	3,904,293	3,911,701
3,860,879	3,892,695	3,904,383	3,911,718
3,862,310	3,893,597	3,904,478	3,911,892
3,865,322	3,893,703	3,904,594	3,911,955
3,867,291	3,894,113	3,904,995	3,912,002
3,868,335	3,894,410	3,905,157	3,912,591
3,869,338	3,894,890	3,905,190	3,912,606
3,870,695	3,895,242	3,905,541	3,912,882
3,870,705	3,895,299	3,905,757	3,912,928
3,871,132	3,895,968	3,905,980	3,913,026
3,871,764	3,896,206	3,906,439	

Errata

All reference to Patent No. 3,921,357 to Earl L. Unruh of California for "Mobile Home Skirting Side Panel" appearing in the OFFICIAL GAZETTE of November 25, 1975 should be deleted since no patent was granted.

All reference to Patent No. 3,923,080 to Alan Allread of Michigan for "Frangible Valved Fitting" appearing in the OFFICIAL GAZETTE of December 2, 1975 should be deleted since no patent was granted.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 6, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds: Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-19-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur: Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-13-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-13-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-6-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-21-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-23-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-2-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-18-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-23-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-17-74
DESIGNS, GROUP 200—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	7-18-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-3-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools: Cutlery; Jacks.	2-26-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-21-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	2-4-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	5-12-75

Expiration of patents: The patents within the range of numbers indicated below expire during December 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,862,205 to 2,866,972 inclusive
Plant Patents..... Numbers 1,775 to 1,791 inclusive

REISSUES

DECEMBER 30, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,666

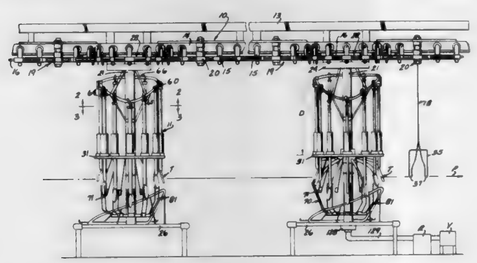
POULTRY PROCESSING METHOD AND APPARATUS

Grover S. Harben, Jr., Gainesville, Ga., assignor to Gainesville Machine Company, Inc., Gainesville, Ga.

Original No. 3,806,988, dated Apr. 30, 1974, Ser. No. 228,962, Feb. 24, 1972. Application for reissue July 12, 1974, Ser. No. 488,053

Int. Cl.² A22B *3/08*

U.S. Cl. 17—11 **21 Claims**



1. In a poultry processing system having a conveyor with a plurality of shackle means for suspending poultry therefrom in a head lowermost position and drive means for moving the shackle means and poultry successively along a predetermined path, apparatus for supporting and orienting the poultry with respect to a processing tool comprising:

a support frame;

a vertically extending main shaft rotatably journalled in said support frame,

a 180° idler unit connected to the conveyor including an idler sprocket attached to the upper end of said main shaft for rotating said shaft, said idler sprocket engaged by the conveyor drive means and rotated thereby to rotate said sprocket and main shaft at the same rate as the shackle means and the poultry are moving;

a circular tool support table attached to said main shaft intermediate its ends and rotatable therewith, said tool support table lying in a horizontal plane below said idler unit with a radius sufficient for the outside peripheral edge of said table to engage and position the shackle means as they pass around said idler unit, said tool support table including a plurality of holding means equally spaced about the periphery of said table adjacent its peripheral edge, one of said holding means radially aligned with each of the shackles as it passes around said idler unit;

a tool support carried by each of said holding means;

a tool mandrel reciprocably carried by each of said tool supports and mounting said processing tool on the lower end thereof, said mandrel including first cam follower means at the upper end thereof and guide means, said guide means maintaining a predetermined rotational relationship between said mandrel and said tool support table;

a first annular cam member carried by said support frame adjacent the upper ends of said mandrels and engagable by said first cam follower means to reciprocably position each of said mandrels and the processing tool carried thereby;

a plurality of first deflection subassemblies pivotally carried by said tool support table therebelow, one of said deflection subassemblies being associated with and radially aligned with each of said mandrels and its associated tool, each of said deflection subassemblies including an inverted U-shaped support member comprising a longer depending leg facing said mandrel and a shorter depending leg facing said main shaft, a V-shaped deflection plate mounted on the depending end of said longer leg for engaging poultry carried by the shackle means adjacent the processing tool associated with said support member, a second cam follower roller rotatably carried by the depending end of said shorter leg, a second radial cam rotatably mounted around said main shaft for engagement by said roller to selectively position said deflection plate and the poultry for the insertion of the processing tool into its body cavity, and carriage means connecting said second radial cam to said support frame to hold same stationary;

a plurality of second orienting subassemblies carried by said main shaft below said support table, one of said orienting subassemblies being associated with each of said mandrels and its processing tool and vertically aligned therewith, a carriage plate carried by said main shaft for rotation therewith and pivotally mounting each of said orienting subassemblies, each of said orienting subassemblies including a U-shaped rod member pivoted to said carriage plate, said rod member comprising a pair of legs having an upturned hook portion at the extending ends thereof, a third annular cam carried by said support frame and engaging said rod member to selectively pivot said hook portions into engagement with the poultry between its body and legs on either side of the processing to prevent upward movement of the poultry during removal of the processing tool from its body cavity.

Re. 28,667

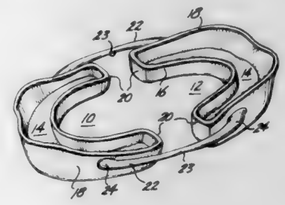
DOUBLE TRAY DENTAL APPARATUS

Kenneth W. Gores, Bellevue, Wash., assignor to Kirkman Laboratories, Inc., Portland, Oreg.

Original No. 3,536,069, dated Oct. 27, 1970, Ser. No. 856,395, Sept. 9, 1969. Application for reissue Feb. 3, 1972, Ser. No. 223,343

Int. Cl.² A61F *5/56*

U.S. Cl. 128—136 **6 Claims**



1. Dental apparatus, comprising:

a pair of upper and lower dentition [encasing troughs;] *trays;*

a hairpin-shaped resilient bridge member disposed adjacent the buccal exteriors of said paired [troughs] *trays* at each side;

said resilient members each having a U-end between a pair of outwardly biased legs; [and]

said trays and said resilient members being formed of the same pliant material; and

said legs being joined to said [trough] *tray* sides forward of the posterior portions thereof, *the ends of each said leg having a lap connection, non-pivotally anchoring said end to a tray side, the intermediate portions of said resilient members each having reduced cross-sectional area relative*

the cross-sections of said leg ends adjacent said lap connections thereby insuring bending of the resilient members into hairpin shape, said lap connections transferring the forces of said resilient members into the tray sides before and behind said connections whereby resilient members in use exert divergent forces on said trays tending to uniformly press and hold the trays into contact with the user's teeth during opening and closing of the jaws and during lateral and anterior/posterior movements thereof.

Re. 28,668

SILVER HALIDE EMULSIONS CONTAINING ALKYL SELENOLS AND THIOLS AS ANTIFOGGANTS

Arthur H. Herz, Rochester, N.Y., and Edwin R. Westcott, New Smyrna Beach, Fla., assignors to Eastman Kodak Company, Rochester, N.Y.

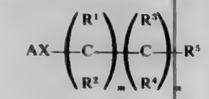
Original No. 3,732,103, dated May 8, 1973, Ser. No. 139,941, May 3, 1971. Application for reissue Apr. 3, 1975, Ser. No. 564,960

Int. Cl.² G03C *1/34, 1/48*

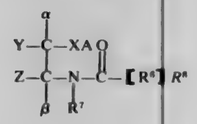
U.S. Cl. 96—76 R **12 Claims**

1. A photographic element comprising a support bearing a light sensitive silver halide-containing layer and, in a concentration of from about 0.005 gram to about 50 grams per mole of silver, an organic compound having the structural formula:

(I)

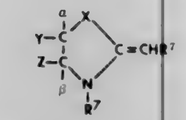


(II)



or

(III)



in which A is a cation selected from the group consisting of hydrogen, sodium, potassium, guanidinium, tetraalkylammonium, and trialkylsulfonium; X is sulfur or selenium; R^1 to R^5 are each hydrogen, an alkyl group having 1 to 6 carbon atoms or a substituted alkyl selected from the group consisting of haloalkyl, hydroxyalkyl and aryl alkyl, provided that at least one of said R^1 to R^5 is a sulfonic acid group or salt thereof; R^6 is hydrogen, an alkyl residue having 1 to 6 carbon atoms, an aryl residue or a halo-, hydroxy-, or aryl-substituted alkyl residue; R^7 is an alkyl residue having 1 to 6 carbon atoms, an aryl residue or a halo-, hydroxy-, or aryl-substituted alkyl residue; α and β are each hydrogen, an alkyl residue having 1 to 6 carbon atoms, an aryl residue, a halo-, hydroxy-, or aryl-substituted alkyl residue or the electrons required to form double bonds between the carbon atoms: R^8 *is an alkyl residue having 1 to 6 carbon atoms, an aryl residue or a halo-, hydroxy-, or aryl-substituted alkyl residue;* Y and Z are each hydrogen, an alkyl residue having 1 to 6 carbon atoms, an aryl residue, a halo-, hydroxy-, or aryl-substituted alkyl residue or together provide the linkage required for completion of a cyclic nucleus selected from the group consisting of phenyl, naphthyl and pyridyl; and m and n are each 0 to 4 and the sum of m and n equals a positive integer up to 8.

Re. 28,669

BI-2-OXAZOLINE AND OXAZINE COMPOUNDS DERIVED FROM CYANOETHYLATED POLY(ETHYLENE GLYCOLS) AND POLY(PROPYLENE GLYCOLS)

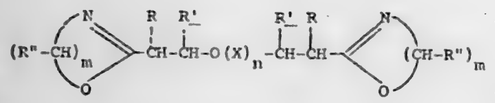
Donald A. Tomalia, and David P. Sheetz, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Original No. 3,730,915, dated May 1, 1973, Ser. No. 224,587, Feb. 8, 1972. Division of Ser. No. 129,262, March 29, 1971, Pat. No. 3,763,177, which is a continuation-in-part of Ser. No. 835,910, June 16, 1969, abandoned. Application for reissue Aug. 22, 1974, Ser. No. 499,673

Int. Cl.² C08G *59/26*

U.S. Cl. 260—2 N **1 Claim**

1. A latent curable polyepoxide composition comprising in combination, a curable poly-1,2-epoxyalkyl compound having an average of more than one 1,2-epoxyaliphatic group per molecule and a curing amount of [a bi-2-oxazoline derived from cyanoethylated poly(ethylene and propylene) glycols and] *a compound* having the formula



where R, R′ and R″ can be H or alkyl [containing] *of* from one to four carbon atoms, where X is (C_2H_4O) or (C_3H_6O), where n is 1 to 50 inclusive and where m is 2 or 3.

Re. 28,670

Patent Not Issued For This Number

PATENTS

GRANTED DECEMBER 30, 1975

ERRATA

For CLASS	See PATENT NO.
053–022	3,928,938
053–032	3,928,939
053–112	3,928,940
053–182	3,928,941
053–247	3,928,942
102–027	3,929,072
241–055	3,929,236
272–057 R	3,929,335
123–008.47	3,929,402
035–037	3,929,462
209–395	3,929,647
426–580	3,929,890
426–582	3,929,892
260–268	3,930,008
204–258	3,930,151

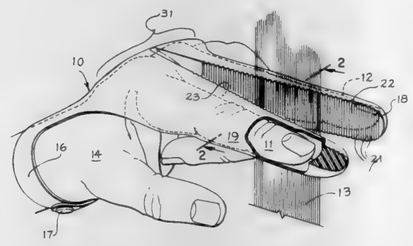
PATENTS

GRANTED DECEMBER 30, 1975

NOTE – A cross reference listing of applications published under Trial Voluntary Protest Program on January 28, 1975 is located in the back of this Issue. These entries will be in numerical order by document publication number.

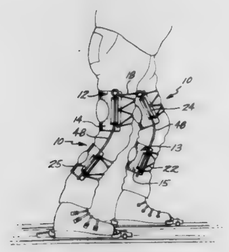
GENERAL AND MECHANICAL

3,928,871
BARBER'S GLOVE AND METHOD
Albert Wall, 515 S. Crescent Ave., Lodi, Calif. 95240
Filed Apr. 17, 1975, Ser. No. 569,104
Int. Cl.[2] A41D *19/00*
U.S. Cl. 2—161 R **14 Claims**



1. In a glove to be worn by a barber over two adjacent fingers of the hand which controls the hair, the improvement comprising a pair of finger-receiving coverings adapted to enclose said adjacent fingers, said finger coverings having side surfaces disposed in confronting relation to be moved by their supporting fingers into and out of engagement with each other so as to engage and hold strands of hair therebetween, means forming said coverings to cause said surfaces to meet substantially uniformly throughout the length thereof so as to substantially uniformly engage all the hair disposed between the confronting surfaces when said surfaces are moved into engagement.

3,928,872
LEG SUPPORT DEVICE FOR SKIING
Albert F. Johnson, 2509 Blueberry Road, Spenard, Alaska 99503
Filed Sept. 18, 1974, Ser. No. 507,001
Int. Cl.[2] A41D *13/00*
U.S. Cl. 2—22 **18 Claims**



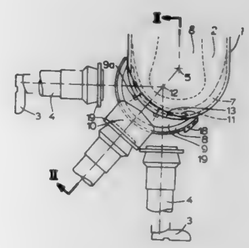
1. A leg support device securable to the leg of a skier, comprising:

upper support means positionable to engage the rearward portion and sides of the skier's leg above the knee, and including means for securing said upper support means to the skier's leg;

lower support means positionable about the skier's leg below the knee, and including means for securing said lower support means to the skier's leg; and

spring means interconnecting the sides of said upper and lower support means, said spring means being in an essentially unstressed condition when the device is thus secured to the skier's leg and the leg is only slightly bent, and being in a stressed condition when the leg and the spring means are relatively sharply bent, which stressed condition tends to relatively straighten said spring means.

3,928,873
ARTIFICIAL LEG
Willem Zevering, Weesp, Netherlands, assignor to Stichting Revalidatie Instituut Muiderpoort, Amsterdam, Netherlands
Filed Feb. 14, 1975, Ser. No. 550,132
Claims priority, application Netherlands, Feb. 20, 1974, 7402290
Int. Cl.[2] A61F *1/04, 1/08*
U.S. Cl. 3—27 **4 Claims**



1. An artificial leg adapted to be used in cases wherein the natural lower leg has been amputated in the knee joint, comprising a socket member adapted to receive the stump formed by the natural upper leg and provided with a spherical outer surface at its lower end, a crescent-shaped carrier segment directly attached to the lower end of said socket member, having a substantially cylindrical top surface with a radius adapted to the radius of said spherical outer surface and a substantially cylindrical bottom surface having a smaller radius than said top surface, a cylindrical, backwardly sloping guide means provided on said bottom surface and having a radius smaller than the radius of said spherical outer surface, a sliding block slidably mounted on said guide means and forming, together with the same, an artificial knee joint, and an artificial lower leg, connected to and exclusively supported by said sliding block, said carrier segment being dimensioned in such manner that the axis of said guide means is contained within the stump and lies below and behind the center point of said spherical outer surface.

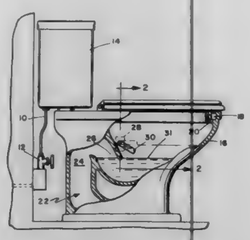
3,928,874
NO-OVERFLOW TOILET
James F. Albertson, 813 Pleasant Lane, National City, Calif. 92050
Filed Oct. 10, 1974, Ser. No. 513,554
Int. Cl.[2] A47K *17/00*
U.S. Cl. 4—1 **9 Claims**

1. An improvement in a commode having a waste evacuation passageway comprising a toilet bowl with a drain line communicating therewith and a fresh water flush system having an outlet into said bowl and valve means to control the flow of water therethrough, said improvement comprising:

a switch assembly mounted on said commode and activated by an abnormally high water condition therein; and

water flow blocking means mounted in said flush system

connected to and operated by said switch to prevent the flow of water therein when said switch assembly is acti-



vated by an abnormally high water condition in said commode.

3,928,875

THROW-AWAY RECEPTACLE FOR COLLECTION OF URINE OF THOSE CONFINED TO BED

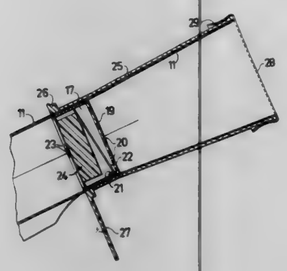
Sture Ivan Persson, 2, Bankogardsgatan, Helsingborg, Sweden (S-252 60)

Filed Feb. 15, 1974, Ser. No. 443,050

Claims priority, application Sweden, Feb. 20, 1973, 7302314

Int. Cl.² A47K *11/12*

U.S. Cl. 4—110 **4 Claims**



1. A throw-away receptacle for the collection of urine of those confined to bed, comprising an elongated flexible bag of tubular foil material one end of which is closed and the other end of which is open, a nonreturn valve for insertion into the open end of said bag, and a comparatively rigid funnel-shaped holder for said bag and valve, said valve including a valve body comprising a sleeve having the same conicity as said holder whereby said sleeve may be wedged into said holder to secure said bag in place between the exterior of said sleeve and the interior of said holder, a perforated cover member extending across one end of said sleeve, a thin membrane disposed within said sleeve adjacent the inner surface of said cover member, a limited portion of said membrane being hingedly attached to said sleeve to permit said membrane to move toward and away from the perforations in said cover member thereby to control the passage of urine through said perforations, a disc-shaped member located within said sleeve between said membrane and the other end of said sleeve for free movement relative to said membrane whereby said member is operative to move said membrane toward said cover member to selectively close said perforations, and an apertured bottom structure extending across the other end of said sleeve for retaining said member within said sleeve while permitting the passage of urine past said member and through said other end of said sleeve into said bag.

3,928,876

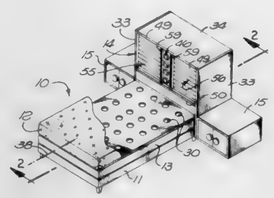
BED WITH CIRCULATED AIR

Louis J. Starr, 1460 S. Norton Ave., Los Angeles, Calif. 90019

Filed Aug. 19, 1974, Ser. No. 498,561

Int. Cl.² A47C *19/00*

U.S. Cl. 5—284 **12 Claims**



1. In a bed, the combination comprising:

a body supporting assembly having a mattress-top surface on which a person using the bed rests and which is cushioned to yieldingly support and be deformed by the user's weight, and is constructed to pass air upwardly through said mattress-top surface to the user's body, said assembly including means forming a chamber or plurality of chambers beneath said surface adapted to conduct a circulation of air and from which said air may flow upwardly through said mattress-top surface and to the user;

a hollow housing at an end of said body supporting assembly communicating with said chamber or chambers beneath the mattress-top surface in a relation delivering air thereto along a first path, said housing having an upper portion projecting upwardly to a level above that of said mattress-top surface and containing an air discharge outlet through which air discharges along a second path at a level above that of said mattress-top surface in a direction to flow over a person lying thereon; and

power driven fan means within said housing at said end of the body supporting assembly and operable to produce two different flows of air from said housing, one being along said first path from the housing through said chamber or chambers and then upwardly through said mattress-top surface to the user, and the second flow being from the housing along said second path and through said discharge outlet above the mattress-top level and over the user's body.

3,928,877

LUG NUT WRENCH TOOL

Robert L. Tregoning, 920 North Market St., Frederick, Md. 21701

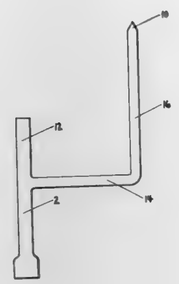
Division of Ser. No. 322,387, Jan. 10, 1973, Pat. No. 3,872,527. This application Jan. 23, 1975, Ser. No. 543,475

Int. Cl.² B25F *1/00*

U.S. Cl. 7—1 G **1 Claim**

1. An automotive tool comprising a straight bar having at one end a socket for a lug-nut and having at an intermediate point along its length an outwardly directed first member extending perpendicularly to the longitudinal axis of the bar and a second member extending from the end of said first member remote from the bar parallel to the longitudinal axis of the bar in a direction away from the socket and terminating at a distance from a plane through said socket perpendicular to the axis of the bar greater than the distance from said plane to the end of said bar remote from the socket, said second

member having a wedge-shaped end for removal of the hub cap, said bar extending on the opposite side of said point from



said socket by a distance at least substantially as great as the width of the normal human hand.

3,928,878

COMBINATION ELECTRICAL CABLE CUTTERS, STRIPPERS AND PLIERS

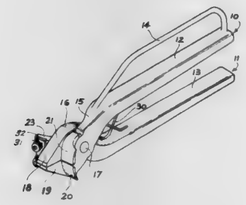
Frederick VanHeuman, 20 Thomas St., Sydney, Australia

Filed Mar. 13, 1974, Ser. No. 450,746

Claims priority, application Austria, Mar. 15, 1973, 2610/73

Int. Cl.² H02G *1/12*; **B25F** *1/00*

U.S. Cl. 7—5.5 **6 Claims**



1. A combination tool having crossed handles pivoted together with a protection loop extending along, spaced from, and integral with one of the handles, and each handle having an integral jaw formation on one end, having opposed faces, and forming cooperating engaging surfaces whereby movement of the pivoted handles toward each other causes the jaws to move together and vice versa, each jaw formation having on one side, an integral cutting jaw extending generally transversly outwards adjacent the pivot point, and having cutting surfaces which engage upon closing of the jaws, and having an arcuate shape to define a transverse opening in the jaw formation in the closed position, and integral abutment members on the opposite jaw faces having stripper jaws which engage together to form a restricted opening therebetween for stripping the insulation from around an insulated conductor inserted therebetween, said stripper jaws including blade members having cooperating shaped notches which form said restricted opening, headed pins adjustably mounting said blade members on the respective abutment members, and resilient means on one of said pins and engaging a blade member.

3,928,879

INFLATABLE TUBE BODIES

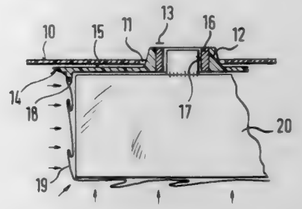
Horst Britschinn, Munich; Fritz Federer, Turkenfeld, and Henning Neumann, Germering, all of Germany, assignors to Metzeler Kautschuk AG, Munich, Germany

Filed Feb. 11, 1975, Ser. No. 549,072

Claims priority, application Germany, Feb. 15, 1974, 7405362[U]

Int. Cl.² B63B *35/00*

U.S. Cl. 9—400 **19 Claims**



1. In an inflatable arrangement, particularly for use in inflatable boats, life-saving buoys, bathing platforms and like buoyant elements, a combination comprising an inflatable tube having an opening and flexible wall portions defining an interior space when inflated; a rigid container positioned within said interior space and having an access port requiring to be secured in a predetermined position within said opening; elastic, impermeable retaining means provided within said space and partially surrounding said container for pressure-tightly securing said container in said predetermined position under the influence of the internal inflation pressure in said tube; and preventing means for preventing deformation of said flexible wall portions of said tube in the region adjacent said rigid container, said preventing means comprising a flange portion secured to the interior surface of said flexible wall portions and maintaining said rigid container out of contact with the latter.

3,928,880

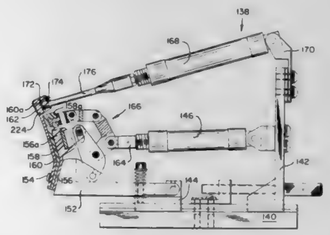
LASTING MACHINE HAVING FLEXIBLE LASTING STRAP

Sinville Runions, Booneville, Miss., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Mar. 27, 1975, Ser. No. 562,700

Int. Cl.² A43D *21/12*

U.S. Cl. 12—8.2 **2 Claims**



1. A lasting machine, operable on a selected portion of a shoe assembly formed of a last having an upper mounted thereon and an insole located on its bottom by wiping the corresponding portion of the margin of the upper against the corresponding portion of the insole, comprising: support means for supporting the shoe assembly bottom-up with said margin portion extending upwardly of said insole portion; a lasting strap, located outwardly of said upper portion, having a relatively rigid top segment and a relatively flexible remainder extending downwardly of said top segment, said top seg-

ment and said remainder being joined by a juncture; a nozzle located upwardly of the shoe assembly and mounted for movement in a cement applying stroke along the corner between said margin portion and the periphery of said insole portion; resilient means so bearing against at least a part of the support means as to yieldably urge said shoe assembly portion upwardly; means for causing the lasting strap to so engage said upper portion as to cause said lasting strap remainder to press said portion of the upper against the last with said top segment extending upwardly of said insole portion and with said juncture located below the upwardly facing bottom of said insole portion; means for so folding said top segment that it extends part way towards said insole portion; means for thereafter effecting said cement applying stroke and for causing the nozzle to apply cement into said corner during the cement applying stroke; and means for thereafter further folding said top segment towards the insole so as to cause said top segment to wipe said margin portion against said insole portion in a wiping operation, said resilient means enabling the part of the last that is part of said shoe assembly portion to be depressed during said wiping operation to bring the juncture to the level of the upwardly facing bottom of said insole portion.

3,928,881

METHOD AND MOULD FOR THE MANUFACTURE OF A PLASTIC SOLE FOR SHOES

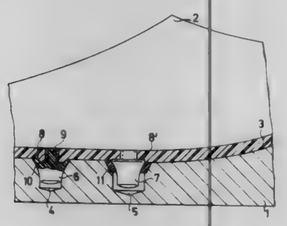
Alfred Bente, Herzogenaurach, Germany, assignor to Adolf Dassler, Herzogenaurach, Germany

Filed July 5, 1974, Ser. No. 485,815

Claims priority, application Germany, Aug. 1, 1973, 2338942; Feb. 21, 1974, 2408444

Int. Cl.² A43D *9/00*; A43C *15/00*

U.S. Cl. 12—142 R **6 Claims**



1. A method for the manufacture of a plastic material outsole for shoes, especially sports shoes, with exchangeable screw-in gripper elements, having screw-threaded extensions, said method comprising the steps of locating the screw-threaded gripper elements in a mold cavity and thereafter introducing plastic material directly round the screw-threaded extensions.

3,928,882

PORTABLE RAMP

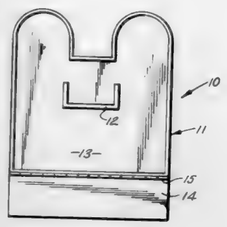
Marie Miland, Watertown, Minn. 55388

Filed Dec. 11, 1972, Ser. No. 268,000

Int. Cl.² E01D *15/12*

U.S. Cl. 14—72 **3 Claims**

1. A board device for enabling wheel chair patients to weigh themselves upon a scale, comprising, an aluminum main body providing platform means for the wheel chair, a balance weight carried by said main body providing balance means to said main body, rail means carried by said main body providing preventive means for the wheel chair from accidentally rolling off of the top side of said main body of said device, a ramp carried by said device providing easy ascending and descending of wheel chair.



3,928,883

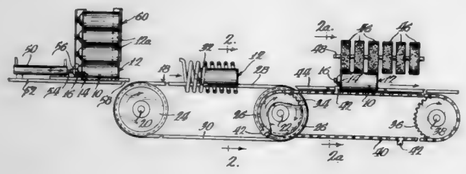
APPARATUS FOR REMOVAL OF LITHOGRAPHY FROM METAL SURFACES

Joseph J. Gregory, 1929 Stratford Ave., Westchester, Ill. 60153, and Jack R. Randolph, Phoenix, Ariz. 85000

Continuation-in-part of Ser. No. 302,495, Oct. 31, 1972, Pat. No. 3,801,369. This application Jan. 16, 1974, Ser. No. 433,681

Int. Cl.² A46B *13/02*

U.S. Cl. 15—4 **7 Claims**



1. Apparatus for removing lithography from the cylindrical outer surface of a container comprising conveyor means for moving said container axially along its outer surface, means for heating the container substantially uniformly while being thus moved to a temperature sufficient to soften the lithography without disturbing the structure of the container, brush means for brushing the cylindrical surface of the container while it is being moved, and means to allow rotation of said container while being brushed by said brush means.

3,928,884

APPARATUS FOR CLEANING A ROTATING BRUSH

Hanspeter Sutter, Uster, Switzerland, assignor to Luwa AG, Zurich, Switzerland

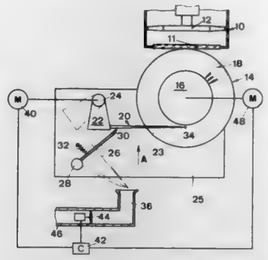
Filed Feb. 6, 1975, Ser. No. 547,712

Claims priority, application Switzerland, Feb. 15, 1974, 2128/74

Int. Cl.² A46B *13/02*

U.S. Cl. 15—21 D **7 Claims**

1. An apparatus for cleaning a rotating brush, especially at a textile machine, comprising a movable cleaning comb operatively engaging with said brush, a relatively movable stripper operatively associated with said cleaning comb, drive means for generating the movements between the cleaning comb and brush and between the stripper and the cleaning comb, and pneumatic means for conducting away stripped-off contaminants.



3,928,885

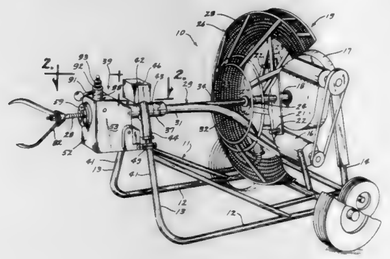
PIPE CLEANING MACHINE AND CABLE RETRIEVING MECHANISM THEREFOR

Henry G. Peterson, West Des Moines, and Tom Grimes, Altoona, both of Iowa, assignors to Roto Rooter Corporation, West Des Moines, Iowa

Filed Jan. 27, 1975, Ser. No. 544,063

Int. Cl.² B08B *9/02*

U.S. Cl. 15—104.3 SN **6 Claims**



1. In a pipe cleaning machine having a frame, a reel for a coiled spring cable rotatable on said frame, power means on said frame for rotating said reel in one direction, and a cable guide tube rotatable on said frame having one end portion coaxial with the axis of said reel and an opposite end portion extended within and terminating adjacent the outer peripheral surface of the reel; a cable retrieving mechanism comprising:

a. a housing fixed on said frame adjacent the one end portion of said guide tube having a pair of oppositely arranged end walls,

b. a tubular shaft rotatably supported on and extended through one of said end walls in a coaxial relation with said reel, said other end wall having a cable receiving opening in axial alignment with said shaft with the length of cable within said opposite end portion of the guide tube and coiled within said reel providing for the rotation of the guide tube with said reel,

c. means coupling said tubular shaft with the one end portion of the guide tube for rotation with said guide tube,

d. a cable feed means in said housing movable into and out of engagement with a cable to move the cable in only one direction through said end wall opening into said housing and axially through said tubular shaft into said guide tube for coiled reception within said reel, and

e. means connecting said tubular shaft in continuous driving engagement with said cable feed means.

3,928,886

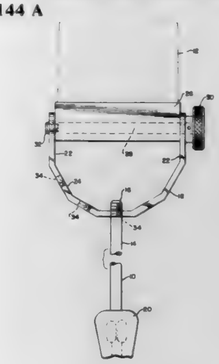
PAINT BRUSH

Frank Marino, 1593 Wales Ave., Baldwin, N.Y. 11510, and Thomas D. Hadnagy, 17 Briar Lane, Roslyn Heights, N.Y. 11577

Filed Mar. 1, 1974, Ser. No. 447,063

Int. Cl.² A46B *5/00*; B25G *1/06*, *3/30*

U.S. Cl. 15—144 A **2 Claims**



1. A paint brush comprising: a plurality of bristles; clamp means securing said plurality of bristles at one end thereof; a U-shaped yoke having opposed generally parallel spaced sides, an arcuate section of said yoke connecting said sides; screw means operatively associated with said sides and said clamp means for removably securing said clamp means to said yoke between said sides in variable angular relationship; a plurality of identical threaded openings formed in said arcuate section; a handle and a threaded end of said handle for selective threaded engagement of said handle with one of the threaded openings of said plurality said screw means being an elongated pin which passes between and through said sides, and said clamp means is provided with a pin receiving opening through which said pin is passed.

3,928,887

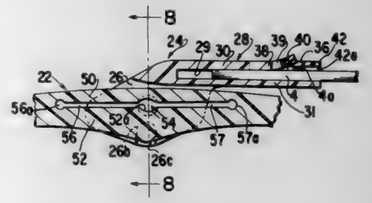
WINDSHIELD WIPER COUPLING STRUCTURES

Manuel Lopez, Trumbull, and Joseph R. Bourassa, Huntington, both of Conn., assignors to Parker-Hannifin Corporation, Shelton, Conn.

Filed Oct. 1, 1973, Ser. No. 402,402

Int. Cl. B60s *1/40*

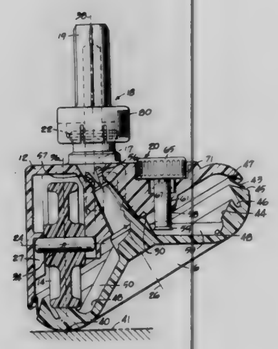
U.S. Cl. 15—250.32 **10 Claims**



1. In a windshield wiper blade holder including a resilient molded primary bow member carrying thereon means for holding a flexible windshield wiping blade in working relation thereto and means on a central portion of said bow member for coupling it with the end of a windshield wiper arm, the improvement wherein said coupling means comprise a connector which is a unitary molded body forming a saddle portion straddling said central portion and forming a tubular coupler portion protruding from said saddle portion along and over said central portion, said coupler portion defining an

elongate socket to receive snugly, and defining a latch to interlock detachably with a detent protruding laterally from, said arm end when said arm end is of the bayonet mounting type, coacting means integral respectively with side panels of said saddle portion and opposite sides of said central portion for holding said connector pivotally yet detachably on said central portion, and means including a transverse socket integrally formed by and inside a region of said central portion normally obstructed by said side panels for receiving and interlocking detachably with a side pin of said arm end when said arm end is of the side mounting type, whereby the blade holder is attachable to an serviceable on a wiper arm end of either of said types.

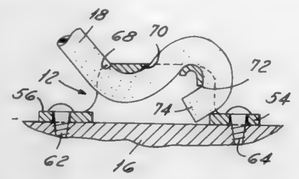
3,928,888
INTERCHANGEABLE CASTER WITH INCLINED AXLE AND LINT PROTECTION MEANS
Sidney D. Lapham, Walnut Creek, Calif., assignor to Lapham Engineering, Inc., Martinez, Calif.
Filed Aug. 30, 1974, Ser. No. 502,180
Int. Cl.² B60B *33/00*
U.S. Cl. 16—35 R **16 Claims**



15. In a carpet caster having a bearing block mounted for swiveling movement on a stem about a generally vertical axis, a roller journaled in said block on a generally horizontal axis, and a dished disc journaled in said block on an inclined axis and having formed therein an annular track surface on which said roller rides, the improvement comprising the axis of said stem being positioned at the apex of a substantially isosceles triangle whose base is the distance between the center of said roller and the bearing point of said dished disc, and whose sides are greater than said base but whose apex is inside the perimeter of said dished disc as seen in plan view.

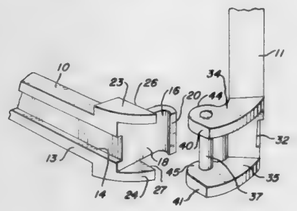
3,928,889
COMBINATION BRACKET AND ELASTOMERIC ELEMENT THEREFOR
George Wartian, East Detroit, Mich., assignor to Wartian Lock Company, St. Clair Shores, Mich.
Filed Jan. 6, 1975, Ser. No. 538,765
Int. Cl.² E05F *1/08*
U.S. Cl. 16—74 **3 Claims**

1. The combination of a bracket and elastomeric element therefor, said bracket comprising a body having at least three walls, a first entrance opening in one of the walls, an exit opening in a second wall adjacent said one wall, a second entrance opening in the third wall, said first entrance opening being in communication interiorally of said body with said exit opening, one end of said elastomeric element being inserted first into said first entrance opening, thence out of said exit opening and thence into said second entrance opening whereby said one end of the elastomeric element is configured in a hook shape which is resistant to extraction from the



bracket when the portion of the elastomeric element exteriorally of the bracket is pulled upon.

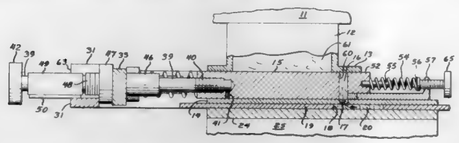
3,928,890
DRAPERY SUPPORTING LINKAGE
George H. Baker, Sr., Dunlap, Ill., assignor to Baker Drapery Corporation, Peoria, Ill.
Continuation-in-part of Ser. No. 332,711, Feb. 15, 1973. This application May 20, 1974, Ser. No. 471,339
Int. Cl.² E05D *13/02*
U.S. Cl. 16—87.2 **14 Claims**



1. An accordian linkage for a drapery support, comprising:
first link means having an end portion,
second link means having an end portion pivotally interconnected to said end portion of the first link means,
each of said link means having an elongated body portion, means pivotally interconnecting said link means including a male member carried by and supported adjacent the end of one of the link means and a female member receiving said male member and carried by and supported adjacent the end of the other link means,
one of said members being formed integrally with the associated body portion, a projection formed integrally with and extending axially from at least one of said body portions to limit pivotal movement of said first and second link means, said one of said members being supported completely independently of said projection.

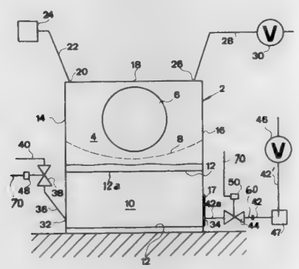
3,928,891
MOLDING APPARATUS
Harry H. Holly, Olympia Fields, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.
Filed Apr. 14, 1972, Ser. No. 244,027
Int. Cl. A22c *7/00*
U.S. Cl. 17—32 **3 Claims**

1. Molding apparatus, comprising: supply means for retaining a supply of pressure flowable moldable material; compression chamber means for said material from said supply; a mold adjacent to said compression chamber means having a shaping cavity therein; passage means communicating between said compression chamber and said cavity for pressure flow of material from said chamber and through said passage into said mold cavity; pressure means for applying pressure to said material in said chamber; a pressure movable piston in said compression chamber; means mounting the piston for movement under increasing pressure transmitted through said material in the compression chamber; and a closure valve mounted on said piston, the piston thereby comprising valve



operating means activated by the pressure of said material in the chamber for opening the valve.

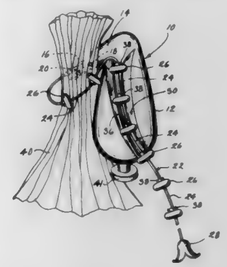
3,928,892
APPARATUS FOR REMOVING WASTE FROM A BLOWING ROOM MACHINE
Johann Walter Ferri, Uster, Switzerland, assignor to Luwa AG, Zurich, Switzerland
Filed June 21, 1974, Ser. No. 481,832
Claims priority, application Switzerland, June 28, 1973, 9413/73
Int. Cl.² D02J *7/00;*
U.S. Cl. 19—200 **8 Claims**



1. An apparatus for removing waste from a blowing room machine, said blowing room machine comprising a work zone, a collecting compartment for the waste arranged neighboring said work zone, and means for conjointly enclosing in an essentially airtight manner said work zone and said collecting compartment, a blower having a suction side, a pneumatic transport conduit for conveying cleaned fibers operatively connecting in flow communication the work zone with the suction side of said blower, means defining an infeed opening for the fibers to be cleaned communicating with said work zone, means defining an air inlet opening for the collecting compartment, means defining an air outlet opening for said collecting compartment, a first shutoff element for controlling the air inlet opening, means connecting said first shutoff element with said air inlet opening, a second shutoff element for controlling the air outlet opening, means connecting said second shutoff element with said air outlet opening, a further blower having a suction side, means for connecting said second shutoff element with the suction side of said further blower, and means for periodically opening and closing both of said shutoff elements.

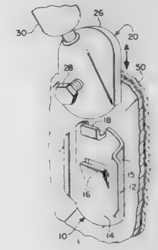
3,928,893
BAG FASTENER
Robert L. Schmoller, 1016 Glenn Drive, Waukesha, Wis. 53186
Filed Mar. 11, 1974, Ser. No. 449,890
Int. Cl.² B65D *77/10, 63/00*
U.S. Cl. 24—30.5 **10 Claims**

1. A bag fastener comprising a fastening element with a main body portion having a longitudinal axis and having upper and lower ends and having a horn portion projecting laterally outwardly and transversely of the longitudinal axis of the body portion, said horn portion having a projecting end, an elongated flexible member attached to the projecting end of said horn portion, engaging means on said body portion extending from said horn to the lower end of the body, and means on said flexible member cooperating with said engaging means for releasably securing a part of the flexible member to said



body portion while a portion of the length of the flexible member which is between the horn and body portion is looped around the neck of the bag, said horn forming an angle with the body portion adjacent said engaging means and being positioned to cause self-engagement of the flexible member with the engaging means when the fastening element is swung around the neck of a bag.

3,928,894
ADHESIVE MOUNTING DEVICE
George John Bury, Lake Villa, and Edwin Grant Swick, Bartlett, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.
Filed Nov. 26, 1974, Ser. No. 527,331
Int. Cl.² A44B *21/00;* **A47G** *1/16*
U.S. Cl. 24—73 VA **11 Claims**

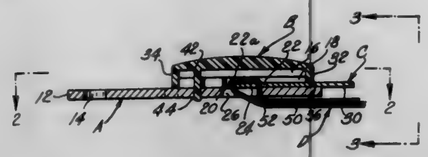


1. A system for mounting devices to a primary workpiece including a base plate member having one surface adapted to be adhesively secured to the primary workpiece through an adhesive bonding layer, opposing side edges of the base member including shoulder surface means in spaced relationship to the said one surface, a mounting member adapted to be slidably positioned over the base plate, the mounting member including lip portions extending inwardly from the opposite side edges thereof to underlie the shoulder surface means when associated therewith, the opposing lip portions and shoulder surface means forming a first set of opposing clamping surfaces, the means to clamp the mounting member being adapted to bear against a predetermined region of the base plate and thereby forming a second set of opposing clamping surfaces, spring means positioned between at least one set of opposing clamping surfaces and adapted to relieve the stress on the adhesive bonding layer when the system is mounted on the primary workpiece as a result of the clamping pressure between the two members as well as preloading the system.

3,928,895
ADJUSTABLE STRAP FASTENER

Wolf-Dieter Klink, Alfdorf, Germany, assignor to Repa Feinstanzwerk GmbH, Industriegebiet, Germany

Filed Aug. 19, 1974, Ser. No. 498,448
Int. Cl.² A44B 11/10
U.S. Cl. 24—196 9 Claims

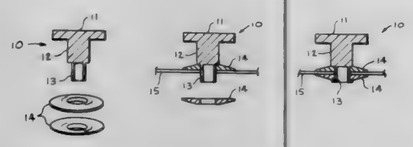


1. An adjustable strap fastener comprising; a housing defining a cavity having a belt access opening thereto, said housing including a base plate and a cover member, said base plate having opposite reversely bent edges providing channels having opposed facing grooves defining a guideway in said housing, said cover member being of plastic material and having front and rear depending flanges extending perpendicular to said grooves and spaced apart a distance slightly less than the length of said channels, said flanges being in resilient gripping engagement with the opposite ends of said channels, said cover member having an integral plastic spring support extending downwardly therefrom in spaced relationship to said rear flange through a hole in said base plate, a substantially flat slider plate slidably received in said guideway and having a single clamping bar, a strap extending through said access opening in said housing and around said clamping bar, biasing means for biasing said slider plate to a strap clamping position wherein the strap is clamped between opposed edges of said clamping bar and said access opening, said biasing means comprising an arcuate leaf spring stressed between said spring support and the rear end of said slider plate, said housing further defining a release tab opening, said front flange having a terminal end spaced from said base plate a distance slightly greater than the thickness of said slider plate to define said release tab opening, and an integral release tab on said slider plate projecting outwardly of said cavity through said release tab opening, said release tab being positioned for application of manual force thereto for sliding said slider plate away from said clamping position against the force of said biasing means.

3,928,896
FASTENER

Brian C. Puckett, 5490 Braes Valley No. 410, Houston, Tex. 77035

Filed Dec. 18, 1974, Ser. No. 533,934
Int. Cl.² A44B 17/00
U.S. Cl. 24—224 4 Claims



1. A positive lock device for fastening together adjacent sections of material, said device comprising:

a. a male portion adapted to be fixed to a first portion of said material, said male portion including means permitting it to be so affixed to said material first portion, and further including a narrow, slot-engaging stem connected to an enlarged portion;

b. a female portion adapted to be fixed to a second portion of said material, said female portion including an interior chamber, a plate having an aperture therethrough, said aperture having an enlarged portion and a narrow slot leading transverse therefrom, said aperture communicating with said chamber, spring means including a pair of legs forming a restricted orifice positioned within said chamber between the area underlying said enlarged aperture portion and the area underlying said narrow slot, and means for affixing said female portion to said material second portion, said aperture being so positioned that on said male enlarged portion being inserted through said aperture and said stem moved through said orifice, forces tending to separate said adjacent material sections will be opposed by said narrow slot.

3,928,897
DEVICE FOR FASTENING WALL COVERING FABRICS

Gerard J. Tombu, 8, Rue des Bouchers, F-02 Saint-Quentin, France

Filed Aug. 13, 1974, Ser. No. 497,075
Claims priority, application France, Aug. 2, 1974, 74.26918
Int. Cl.² A44B 21/00; A47H 23/00
U.S. Cl. 24—243 K 6 Claims

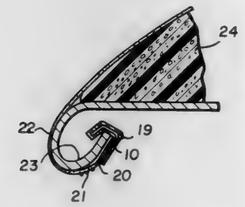


1. A device for fixing and stretching wall fabrics, comprising: a sole piece in the form of a flat strip adapted to be secured to a wall, the side edges of said flat strip being curved toward each other forming at each side of said flat strip a hooking groove, one of the hooking grooves having a larger curve radius than the other of the hooking grooves; and a shaped section comprising a hollow rib portion having a relatively narrow entry opening, a wing portion extending outwardly from each side of the entry opening of said hollow rib portion, the lengthwise edges of the wing portions being curved toward each other forming at each side of the shaped section a hooking element, the curve radius of one of the hook elements corresponding to that of said one hooking groove and the curve radius of the other hooking groove corresponding to that of the other said hooking groove, the shaped section being dimensioned to be inserted in the sole piece with the hooking elements of the shaped section disposed within the corresponding hooking grooves of the sole piece for securing fabric between said sole piece and said shaped section, whereby held fabric extending from between said one hooking groove and one hooking element and over the device is spaced above said other hooking groove and hooking element.

3,928,898
UPHOLSTERY ATTACHER

Edward H. Smoot, Holcomb, N.Y., assignor to The Schlegel Manufacturing Company, Rochester, N.Y.

Continuation of Ser. No. 336,918, March 1, 1973, abandoned, which is a continuation-in-part of Ser. No. 249,307, May 1, 1972, abandoned. This application Sept. 16, 1974, Ser. No. 506,740
Int. Cl.² A47C 27/00; A44B 21/00
U.S. Cl. 24—259 FS 14 Claims



1. An upholstery attacher comprising:

a. a substantial length of flexible, non-stretchable carrier material that is both bendable and twistable and is formed into a self-maintaining hook shape in cross section continuously throughout said substantial length;

b. a continuous flange of a separate and generally plane and flexible material secured to said carrier and extending away from the shank portion of said hook shape along said substantial length of said carrier material;

c. means for fastening a peripheral edge of said upholstery to said flange along the entire longitudinal length of said flange;

d. a support edge extending along a cushioned body to be upholstered and along said peripheral edge of said upholstery;

e. said upholstery being shaped for covering said cushioned body and said peripheral edge of said upholstery extending to within a predetermined distance from said support edge; and

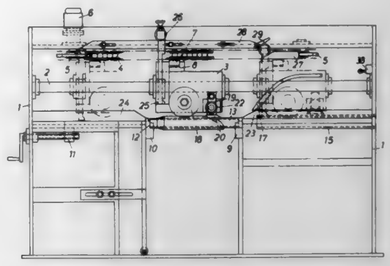
f. said hook shape being sized and formed of a material having sufficient strength to hook over and maintain a position following along said support edge along the substantial length of said carrier material, and said flange having sufficient strength to pull said upholstery evenly over said cushioned body and closer to said support edge and to hold said upholstery tightly in place.

3,928,899
YARN CUTTING-OFF MACHINE

Günter Maiworm, Schontaler Weg 22, 5982 Neuenrade, Germany

Filed Apr. 4, 1975, Ser. No. 565,108
Claims priority, application Germany, Apr. 17, 1974, 2418492
Int. Cl.² D03D 45/58
U.S. Cl. 28—19 22 Claims

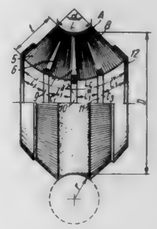
1. A machine suitable for cutting yarn residue off yarn tubes comprises bearing means to support a yarn tube, a cutter carriage having a cutting knife thereon and arranged to be moved relative to the yarn tube in a cutting pass, so as to cut residual yarn from the yarn tube by means of said cutting knife, and in a return pass, a driving dog and means to hold the driving dog clear of the yarn tube during the cutting pass of the cutter carriage and to engage the driving dog with the yarn tube on the return pass of the cutter carriage so as to eject the yarn tube from the bearing means.



3,928,900
ROTATING CUTTING TOOL

Viktor Samsonovich Salukvadze, and Larisa Viktorovna Salukvadze, both of 5 Parkovaya ulitsa, 42, kv. 53, Moscow, U.S.S.R.

Filed Dec. 16, 1974, Ser. No. 533,064
Int. Cl.² B26D 1/12
U.S. Cl. 29—105 R 2 Claims

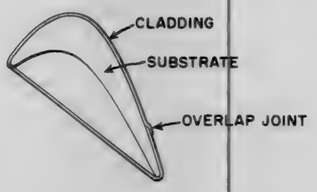


1. A rotating cutting tool for surface machining of articles and materials, comprising at least two sets of radially arranged cutter members constituted by pieces of wire of the same length; said cutter members fastened together at one of the ends thereof, and said cutter members being pressed against each other at the fastened ends along the side surfaces thereof; free cutting tips of said cutter members opposite to said fastened ends forming a common working surface of the tool in the shape of a surface of revolution; the ratio of the sum of face areas of the free cutting tips of the wire pieces on the working surface of the tool is 0.10 to 0.99; ring-type packings each of which is installed between each pair of said sets of cutter members near said fastened ends thereof; said ring-type packings have such a thickness and are so installed that the working surface of the tool formed by said cutting tips of said cutter members has a curvilinear shape in cross-section, the curvature of the working surface of the tool being substantially equal to the curvature of the surface being machined in cross-section; said cutter members are so disposed at the site of contact with the surface being machined that, being in a free state, they are in substantially normal relationship with the surface being machined.

3,928,901
FORMING A CLADDING SHEET TO A CONVEX/CONCAVE SUBSTRATE

William F. Schilling, Schenectady, and Adrian M. Beltran, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 10, 1974, Ser. No. 513,852
Int. Cl.² B23P 15/04; B21K 3/04
U.S. Cl. 29—156.8 B 6 Claims



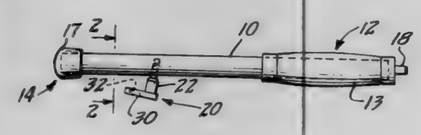
1. A method of preforming a sheet cladding to a substrate having a concave-convex surface, the method comprising the steps of:
a. rough forming the sheet cladding to the substrate so that the sheet cladding closely abuts the convex surface of the substrate while the sheet cladding opposite the concave surface of the substrate is spaced from the concave surface including:
i. fastening one edge of the sheet cladding to the convex surface of the substrate;
ii. joining the other edge of the sheet cladding to the one edge of the sheet cladding to define a seam on the convex surface of the substrate;

3. A method of preforming a sheet cladding to a substrate having a convex-concave surface, the method comprising the steps of:
a. rough forming the sheet cladding to the substrate so that the sheet cladding closely abuts the convex surface of the substrate while the sheet cladding opposite the concave surface of the substrate is spaced from the concave surface;
b. placing the sheet cladding and substrate assembly into a sealed rubbery mold including:
i. inserting the rubbery mold into a rubbery sleeve;
ii. sealing each end of the rubbery sleeve with an end plate and clamp; and,
c. applying isostatic pressure to the mold to deform the sheet cladding into contact with the substrate concave surface.

3,928,902
TOOL FOR TUBELESS TIRE VALVES

Warren J. Seims, Freeport, and Gabor Farkas, Stony Point, both of N.Y., assignors to Acme Air Appliance Co., Inc., Hackensack, N.J.

Filed Dec. 4, 1974, Ser. No. 529,455
Int. Cl.² B25P 19/04
U.S. Cl. 29—221.5 7 Claims

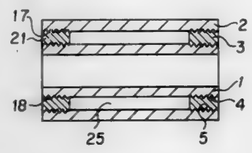


1. A tool for installing a valve for a tubeless tire in or removing it from the valve hole of a tire rim, said valve having a stem extending at least partly through said hole and formed with an externally threaded end, comprising a bar presenting a handle portion at one end thereof and having at a location away from said one end a fulcrum portion adapted to be seated against a portion of said rim, and a valve gripping foot depending from said bar at a location spaced away from both said handle portion and said fulcrum portion, said foot comprising an ankle post fixed to said bar and a foot plate projecting laterally from said post, said foot plate containing an aperture extending therethrough and of sufficient diameter to be passed over said stem end, said aperture being bordered at its opposite sides as viewed lengthwise of said bar by oppositely directed ridges which are spaced apart in the axial direction of the aperture and which are engageable between threads on said stem end so as to grip said stem end and lift it for displacement of said valve by a tilting movement of said bar and said gripping foot about a seated location of said fulcrum portion on said rim.

3,928,903
METHOD OF MAKING A DOUBLE-WALLED PIPE ASSEMBLY

Bart D. Richardson, and Michael L. Waggoner, both of Anchorage, Alaska, assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 29, 1975, Ser. No. 545,011
Int. Cl.² B23Q 17/00
U.S. Cl. 29—407 3 Claims

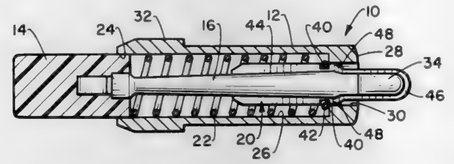


1. A method for making a double-walled pipe assembly for use in a permafrost zone in a wellbore in the earth comprising providing two sections of pipe, the first pipe being of smaller outside diameter than the inside diameter of the second pipe so that the first pipe can be inserted into the second pipe and the outer wall of the first pipe spaced from the inner wall of the second pipe to provide an annulus between said pipes, a first end of each of said first and second pipes being threaded, said threads being in the same rotational direction, said first ends being threadably joined by a first connector means, said first connector means being of sufficient size so that it forms an essentially rigid connection between said first and second pipes, the length of the threaded portions on the first ends of said pipes and said first connector means being sufficient to withstand the force requirements to which said assembly is expected to be subjected, threading the outer surface of the second end of said first pipe and the inner surface of the second end of said second pipe, said threads being in the same rotational direction, said threads starting at the same relative points on said second ends of said pipes, marking the thread start points on the second ends of both pipes, providing a second connector means which when threaded will fit into the annulus between said second ends, threading said second connector means on its inner and outer surfaces so the inner thread will mate with the thread on the outer surfaces of said first pipe and the other thread will mate with the thread on the inner surface of said second pipe, said second connector means being of a size and threaded portion length essentially equivalent to said first connector means, starting the threads on the inner and outer surfaces of said second connector means at the same point and marking that point of thread starting, aligning the thread start mark on said second connector means between the thread start marks on the second ends of said pipes and screwing said second connector means into the annulus.

3,928,904
FASTENING DEVICE

Sterling B. Jones, 858 Duff Ave., West Covina, Calif. 91790

Filed Feb. 28, 1975, Ser. No. 554,153
Int. Cl.² F16B 13/06
U.S. Cl. 29—436 6 Claims

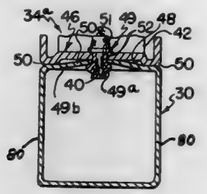


4. A method of making a fastening device comprising the steps of:
forming a tubular housing having an open end and a closed end;
forming an aperture in said closed end;
inserting the base of a pair of spreadable pins within a cap so said pins are under continuous bias toward each other;
locating a spreader bar between said pins aft of the head area of said pins;
locating a compressible spring about said spreadable pins between said cap and said closed end;
placing said spreadable pins within said tubular housing with the head area of said pins to extend through said aperture;
forcibly moving said cap within said open end causing said spreader bar to move between the head area of said pins causing securing of said spring to a connection means formed on said spreader bar; and
releasing said cap resulting in said cap being retained within said housing by the head area of said pins not being movable back through said aperture due to said spreader bar being located between the head area of said pins.

3,928,905
METHOD OF ASSEMBLY FOR KNOCK-DOWN STORAGE FRAME

Wayne G. Atwater, Willoughby, Ohio, assignor to The Triax Company, Cleveland, Ohio

Continuation of Ser. No. 484,427, July 1, 1974, abandoned, which is a division of Ser. No. 301,528, Oct. 27, 1972, Pat. No. 3,840,124. This application Mar. 6, 1975, Ser. No. 555,800
Int. Cl.² B23P 11/02
U.S. Cl. 29—446 12 Claims

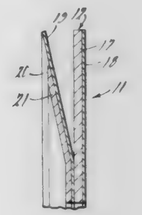


1. In a method of making a rigid connection in a structural unit such as a storage frame or the like, comprising, providing a generally vertically oriented load supporting column member, providing a connecting member in generally laterally extending abutting relation to said column member for connection to the latter by actuatable fastener means, at least one of said members at the connection comprising a deformable web, said web being adapted for coaction with said fastener means with at least a fastener receiving portion of said web spaced from the other of said members, coupling said connecting member to said column member by said actuatable fastener means and deforming said web outwardly adjacent said fastener means, and toward said other member by actuation of said fastener means, to accomplish prestressing of said web of said one member whereby the rigidity of said connection is enhanced.

3,928,906
METHOD OF MAKING A TURBINE REGENERATIVE SEAL

William E. Good, Cinnaminson, N.J.; Leonard Di Grasso, Philadelphia, Pa., and James D. Hoffman, Santa Monica, Calif., assignors to Kelsey-Hayes Company, Romulus, Mich.

Division of Ser. No. 231,975, March 6, 1972, Pat. No. 3,761,101. This application Mar. 8, 1973, Ser. No. 339,123
Int. Cl. C23c 7/00
U.S. Cl. 29—460 9 Claims

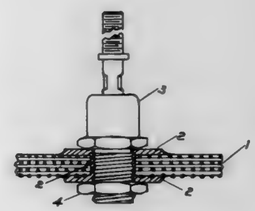


1. The method of applying a wear resistant coating to a metal substrate for forming a compliant seal comprising the steps of forming a metal oxide layer on the portion of the substrate to be coated, depositing a transition coating of nickel aluminide on the oxidized surface, the transition coating of nickel aluminide being capable of exothermically reacting with the metal oxide layer to form an effective surface bond, exothermically reacting the nickel aluminide transition coating with the metal oxide layer and depositing a wear resistant metal oxide coating on the transition coating.

3,928,907
METHOD OF MAKING THERMAL ATTACHMENT TO POROUS METAL SURFACES

John Chisholm, 3 River Terrace Lane, Jupiter, Fla. 33458

Continuation-in-part of Ser. No. 200,079, Nov. 18, 1971, abandoned. This application Oct. 17, 1973, Ser. No. 407,299
Int. Cl.² B05B 7/20; B32B 15/20; H01L 21/48
U.S. Cl. 29—527.4 7 Claims

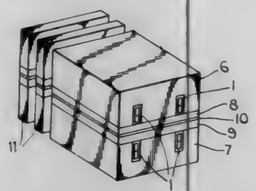


3. The process of providing a heat transfer connection at selected regions of a porous metal panel comprising the steps of masking surrounding surface areas of the panel which are to be left untreated; filling in the interstices of the porous metal panel surface within said regions by spraying on molten, high thermal conductivity metal; smoothing the filled-in surface areas; similarly treating the opposed surface of said metal panel at said regions; and providing at least one through hole between the opposed filled-in panel surfaces.

3,928,908
MANUFACTURE OF MAGNETIC HEADS

Derek Frank Case, 122 Cadbury Rd., Sunbury-on-Thames, England

Filed Dec. 7, 1973, Ser. No. 422,684
Claims priority, application United Kingdom, Dec. 29, 1972, 60152/72
Int. Cl. H01f 7/06
U.S. Cl. 29—603 3 Claims

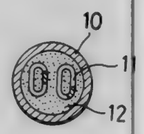


1. A method of manufacturing a transducing head for use in conjunction with a magnetic recording medium, the head having a working face arranged to be positioned in use adjacent the medium to co-operate therewith, the method including the steps of assembling a pair of electrically non-conductive ferrite elements and a non-magnetic spacer so as to provide at the working face magnetic pole pieces separated by the non-magnetic spacer the latter defining a transducing gap; depositing an electrically conductive layer over the assembled ferrite elements to provide a closed electrically conductive loop about an axis substantially perpendicular to the working face and such as to circumscribe only the pole pieces and the transducing gap at least in the vicinity of the working face, forming a non-magnetic block grooved to receive the assembled elements; inserting the assembled elements with the conductive layer thereon into the groove with the spacer between the ferrite elements layer parallel to the axis of the groove; applying a plate of non-magnetic material to bridge the groove; and bonding the elements in the block and the plate to form an assembly having a face in which the ferrite elements are separated by the transducing gap and surrounded by non-magnetic material.

3,928,909
METHOD FOR PRODUCING CARTRIDGE HEATERS

Isamu Saku, Aichi, Japan, assignor to Kabushikikaisha Kawaidenkiseisakusho, Nagoya, Japan

Filed July 12, 1974, Ser. No. 487,958
Claims priority, application Japan, July 12, 1973, 48-78603
Int. Cl.² H05B 3/00
U.S. Cl. 29—611 3 Claims

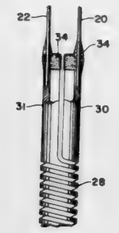


1. A method for producing cartridge heaters, which includes the steps of inserting a going and returning heating coil of a circular cross-section within a heat-resisting cover pipe with an elliptical cross-section, the cross-section of the going and returning portions of the heating coil being aligned along the longer axis of the elliptical cross-section of said cover pipe, charging powdered insulator in the region within the cover pipe not occupied by said heating coil and reducing said longer axis by compressing said cover pipe along said longer axis to deform the cross-section into a less eccentric ellipse and the cross-section of said heating coil into an elliptical one having its longer axis perpendicular to the direction of compression.

3,928,910
GAS IGNITER

Richard L. Perl, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Division of Ser. No. 290,256, Sept. 18, 1972, Pat. No. 3,842,819, and a continuation-in-part of Ser. No. 223,451, Feb. 4, 1972, abandoned. This application June 3, 1974, Ser. No. 475,389
Int. Cl.² H01R 43/00
U.S. Cl. 29—628 8 Claims

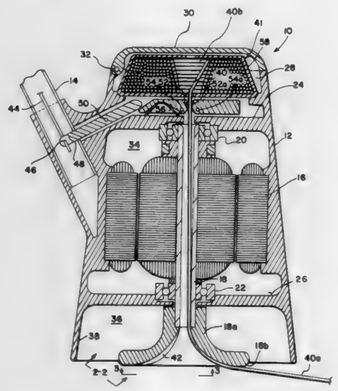


1. The improvement in the method of connecting an energizing lead to a high temperature gas igniter, that comprises the steps of providing said lead with an appreciable uninsulated terminal portion and said igniter with a conductive extension of the same, bringing said uninsulated terminal portion of said lead into appreciable generally longitudinal direct interengagement with a surface of such igniter extension, and holding said uninsulated terminal portion of said lead and igniter extension in such interengaged relation while applying thereto a metallizing spray fully covering the interengagement of the two, so that the metallizing spray bonds the lead to the igniter extension, the material thus applied as a metallizing spray having a high degree of mechanical adherence to the material of which the igniter extension is formed.

3,928,911
HOLLOW-SHAFT FEED FILAMENT TRIMMER

Charles B. Pittinger, Jr., 79 Maybin Circle, Owings Mills, Md. 21117

Filed Oct. 15, 1974, Ser. No. 514,561
Int. Cl.² B26B 27/00
U.S. Cl. 30—276 9 Claims

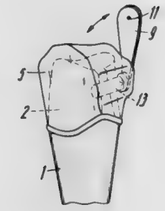


1. In a filament trimmer having aframe mounting a rotary drive means, a filament having first and second ends, and means connecting the filament with the rotary drive means, the improvement comprising: the rotary drive means having a hollow output shaft with first and second ends and with an open bellmouth at said first end, the filament disposed in the hollow output shaft and having the first end freely protrusive from the bellmouth, and means for securing the second end of the filament and swinging said first end thereof as a filament trimmer on rotation of the rotary drive means.

3,928,912
METHOD FOR MANUFACTURING OF A DETACHABLE JOINT FOR ARTIFICIAL TEETH, AND A STRUCTURAL MEMBER ASSEMBLY THEREFOR

Franz-Peter Just, Bremen, Germany, assignor to Hans Grafelmann, Bremen, Germany

Continuation of Ser. No. 324,183, Jan. 16, 1973, abandoned. This application Aug. 26, 1974, Ser. No. 500,561
Int. Cl.² A61C 13/22
U.S. Cl. 32—5 12 Claims



1. Prefabricated modeling aids for use in preparing an artificial tooth of the kind comprising two crowns releasably secured together and including a first crown cast from a first crown mold prepared from a first crown mold pattern; and a second crown cast from a second crown mold prepared from a second crown mold pattern; said patterns being modeled to conform with each other and the requirements of the jaw whereby the second crown fits over the first crown and is releasably secured thereto; the first crown including a locking strip having a portion removed to define a locking strip recess; the second crown including a rotatably mounted locking part for interengaging with the locking strip in the first crown,

said modeling aids comprising:

a prefabricated locking part for use in producing in said second crown mold pattern a guide means for said locking part, said locking part being operable for use in said artificial tooth and including a prefabricated locking axle and a prefabricated locking blade secured to said prefabricated locking axle, whereby said axle may be rotated to interengage said locking strip.

3,928,913
PALLADIUM ALLOY FOR CERAMIC BONDING

Stephen P. Schaffer, Bloomfield, Conn., assignor to The J. M. Ney Company, Bloomfield, Conn.

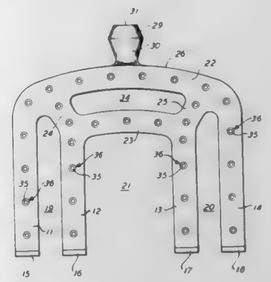
Filed Jan. 23, 1975, Ser. No. 543,524
Int. Cl.² A61C 13/00; C22C 5/04
U.S. Cl. 32—8 12 Claims

1. A dental casting alloy consisting essentially of about 40–60 percent precious metal component selected from the group consisting of palladium and mixtures of palladium and platinum wherein the platinum is in the amount of up to 12 percent of the alloy but not in excess of 25 percent of the palladium content; 20–59 percent non-precious metal component selected from the group consisting of 20–50 percent cobalt and mixtures of 20–50 percent cobalt and up to 25 percent nickel wherein the nickel content does not exceed the cobalt content; and a modifier selected from group consisting of 1–8 percent indium, 1–3 percent tin, and 1–8 percent of mixtures of tin and indium wherein the tin does not exceed 3percent; said alloy containing as optional additives, 0–5 percent zinc, 0–5 percent iron, 0–5 percent tungsten, 0–2 percent ruthenium, 0–2 percent rhodium and 0–10 percent molybdenum, said alloy having a thermal coefficient of expansion of 14.5–15.2 × 10^{-6} per degree Centigrade up to 600° Centigrade.

3,928,914
ENDOSSEOUS IMPLANT FOR PROSTHETIC TEETH

Isaac M. Kozlovsky, 1 Beach 105 St., Rockaway Park, New York, N.Y. 11694

Filed Aug. 25, 1971, Ser. No. 174,896
Int. Cl.² A61C 13/00
U.S. Cl. 32—10 A 10 Claims



1. An endosseous implant for prosthetic teeth, comprising,

a. at least two spaced apart pairs of spaced apart relatively thin, vertically straight legs, each leg having a constant thickness and width from the top to substantially the bottom, the distance between the said pairs of legs being greater than the distance between the respective legs of each pair,

b. an upwardly arcuate, relatively thin, flat upper bridge joining the tops of the outermost legs of each said pair,

c. an upwardly arcuate relatively thin, flat lower bridge vertically spaced apart from the upper bridge joining the tops of the innermost legs of each said pair,

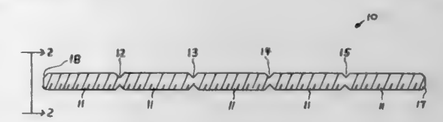
d. a relatively thin, flat arm joining the innermost and outermost leg of each said pair in proximity to their tops, and

e. a post formed on the uppermost bridge extending vertically upwardly therefrom.

3,928,915
TOOTH ANCHORING MEANS AND METHOD

Irving A. Ellman, 558 Willow Ave., Cedarhurst, N.Y. 11516

Filed Mar. 31, 1972, Ser. No. 240,003
Int. Cl.² A61K 5/02
U.S. Cl. 32—15 7 Claims

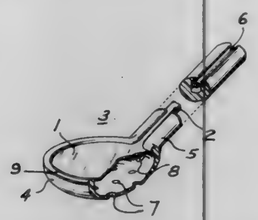


1. A method of anchoring a metal pin to a tooth, comprising forming in the tooth a hole having a width approximately equal to that of the pin, applying a thin coating of a liquid cyanoacrylate cement to an end of the pin, then before the cyanoacrylate cement hardens rapidly inserting the pin end into the hole in order to anchor it therein by means of a bond formed between the cyanoacrylate cement and each of the tooth and the pin, and wherein the pin is supplied in the form of an elongated strip of at least four pins of the same width separated by regions of reduced cross-section, and after the first pin is anchored, the remaining pins still in strip form are broken off, cement again applied to a free pin end, the latter inserted in another tooth hole, and so-on until all the pins on the strip have been anchored in place.

3,928,916
COMBINATION IMPLEMENT FOR DENTAL USE

Tomas Wilhelm Hansson, Ganla Ornasgatan 14, Amal, Sweden

Filed Nov. 14, 1973, Ser. No. 415,626
Claims priority, application Sweden, Nov. 21, 1972, 15092/72
Int. Cl.² A61B 1/24
U.S. Cl. 32—69 4 Claims

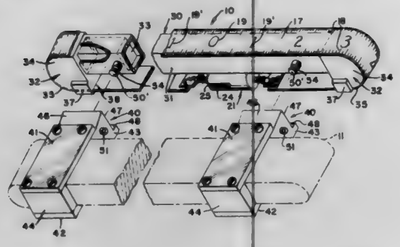


1. A dental instrument comprising in combination:
a dental mirror means having a stem extending from the periphery of the mirror;
a dental extractor means for sucking out saliva accumulating in the mouth of a patient;
said extractor means comprising a shallow bowl having in its wall at least one suction hole for ingress of saliva accumulating in the mouth of a patient and including a handle extending from the bowl, said handle having therethrough a lengthwise bore communicating with the space within the bowl and a lengthwise groove in the outside surface of the handle;
the peripheral outlines of the mirror and the rim of the bowl being so correlated that the mirror is fittable with a pressure fit into the bowl along the rim thereof for releasably attaching the mirror to the bowl thereby covering the open side of the bowl and the groove in the bowl handle being so correlated that the stem is fittable into said groove in the handle simultaneously with pressure fitting of the mirror into the bowl for locking the stem in the groove by sliding a suction hose upon said handle.

3,928,917
POSITION INDEX DEVICE AND DRAFTING APPARATUS COMBINED THEREWITH

James R. Dalsey, 103 Compass Drive, Claymont, Del. 19703

Filed Nov. 15, 1974, Ser. No. 524,237
Int. Cl.² B43L 13/00
U.S. Cl. 33—76 R 12 Claims



1. A position index device for attachment to drafting apparatus said apparatus having at least one elongated linear guide bar mounted adjacent and parallel to edge of a drafting board, a carriage mounted upon said linear guide bar and constrained to move linearly thereon, and means supported by said carriage for facilitating the drawing of lines, said position index device comprising a flexible position index tape having scale markings thereon, an elongated tape support bar on which said index tape is movably mounted, bracket means for mounting said elongated tape support bar along side of said elongated linear guide bar in spaced parallel relationship thereto, said bracket means and said tape support bar having separable pin and socket connecting means for quickly connecting and disconnecting said tape support bar to and from said bracket means, and a position indicator means positionable on said carriage for indicating the position of said carriage with respect to the scale markings on said tape, said bracket means including at least one mounting block to which said tape support bar is separably connected and clamping means for detachably clamping said mounting block to said elongated linear bar, said mounting block having a flat upstanding face and a flat shelf projecting at a right angle from the base of said face on which said tape support bar rests, said separable connecting means comprising a socket extending into said block from and normal to said face, a pin projecting from said tape support bar and engagable in said socket, and detent means extending into said socket for releasably retaining said pin in said socket.

3,928,918
DEVICE FOR MEASURING THE THICKNESSES OF PARTS HAVING AN ARCUATE PORTION SUCH AS BEARINGS AND THE LIKE

Nobukazu Morisaki, Aichi, Japan, assignor to Daido Metal Company, Ltd., Nagoya, Japan

Filed July 8, 1974, Ser. No. 486,430
Int. Cl.² G01B 5/02
U.S. Cl. 33—172 R 10 Claims

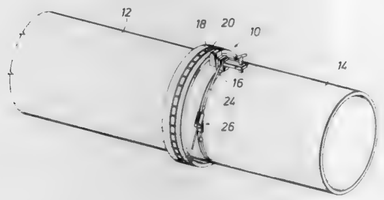


1. A device for measuring the thicknesses of parts having an arcuate portion such as bearings: comprising:
a surface plate provided on a base,
a stopping member disposed on said surface plate, said stopping member having a convexly curved surface substantially perpendicular to said surface plate, said convexly curved surface being adapted to be in contact with the inner surface of said arcuate portion of said parts,
a movable member adapted to be moved relative to said base in the direction parallel to said surface plate, said movable member having a pressing portion adapted to come into contact with the outer surface of said arcuate portion of said parts at two points,
a spring means adapted to impart a spring force to said movable member so that the pressing portion of said movable member presses said arcuate portion of parts to put said arcuate portion between said pressing portion and said stopping member, and
a measuring instrument mounted on said base in adjustably secured relation to said base, said measuring instrument having a detecting rod, the axis of said detecting rod being arranged to be of symmetry for said two points at which said pressing portion comes into contact with the outer surface of said arcuate portion, said detecting rod being adapted to be moved together with said pressing portion away from said stopping member, said arcuate portion being adapted to be placed, substantially perpendicular to said surface plate, between said stopping member, and said pressing portion and said detecting rod when said pressing portion and said detecting rod are spaced apart from said stopping member, said arcuate portion being put between said two points of said pressing portion and said stopping member when said movable member is moved toward the original position thereof by the action of said spring means, the point at which said stopping member is in contact with the inner surface of said arcuate portion of said parts being on the axis of said detecting rod, and said detecting rod coming into contact with said arcuate portion of said parts.

3,928,919
WELDING TRACK POSITIONING GAUGE

Russell S. Thatcher, 813 Sidnor, Alvin, Tex. 77511

Filed Apr. 25, 1975, Ser. No. 571,777
Int. Cl.² G01B 3/38
U.S. Cl. 33—180 R 5 Claims

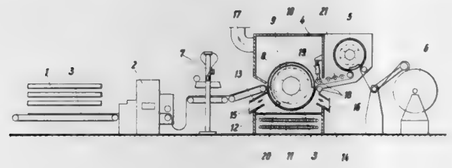


1. A positioning gauge for fitting into a seam about a workpiece to be welded and precisely locating a welding machine track adjacent thereto, comprising:
a flexible cable with first and second ends, said cable being externally fitted about the workpiece;
a plurality of positioning blocks attached to said cable and radially spaced apart about said cable, each of said blocks including:
a manually adjustable spacing member;
a gauge block opposite said spacing member, said gauge block being a predetermined thickness for spacing said welding machine track a fixed distance from the seam to be welded;
a clamp assembly for engaging said cable and urging said cable into firm contact with said workpiece, said positioning blocks adapted to fit within said seam for rigidly positioning said positioning block with respect to said track; and
a latch mechanism affixed to said first and second ends of said cable, said latch mechanism having an overcenter lock for securing said cable to the workpiece.

3,928,920
SIEVE DRUM DEVICE FOR THE BONDING AND STRENGTHENING OF FELT AND SIMILAR PRODUCTS

Heinz Fleissner, Egelsbach near Frankfurt am Main, Germany, assignor to Vepa Aktiengesellschaft, Switzerland

Filed Feb. 20, 1973, Ser. No. 333,734
Claims priority, application Germany, Feb. 19, 1972, 2207896
Int. Cl.² B29D 7/00; F26B 11/04
U.S. Cl. 34—115 9 Claims

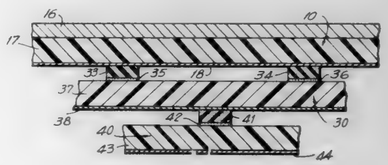


1. In a sieve drum device for the bonding of fleece, needled felt, felt, and similar textile material products by means of thermoplastic binder fibers contained in the textile material which are made to become tacky or to melt by a shock-like heat treatment, wherein the device includes a housing with a first sieve drum means subjected to a suction draft and rotatably mounted in the housing for heat-treatment purposes, followed by a pair of pressure rolls, which rolls are followed by a second sieve drum means subjected to a suction draft for the cooling of the textile material, the improvement which is characterized in that the pair of rolls is disposed directly at an outlet of the first sieve drum housing for said textile material; the rolls can be pressed against each other under a variable pressure, by hydraulically or pneumatically operated means; and the first sieve drum means is associated, across an operating width of said first sieve drum means at a portion covered by the textile material with a first and a second fresh air intake opening means, said first air intake opening means being located at an inlet in said housing for said textile material and said second fresh air intake opening means being located at a zone adjacent to the pair of rolls, said fresh air intake opening means each being adjustable in its opening cross section and each being closable independently of the other.

3,928,921
MULTI-MAGNETIC LAYER TEACHING AID

Norman R. Gurman, Englewood Cliffs, N.J., assignor to Noray Unlimited, Inc., Englewood, N.J.

Continuation of Ser. No. 313,803, Dec. 11, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 458,860
Int. Cl.² G09B 29/00
U.S. Cl. 35—7 A 5 Claims



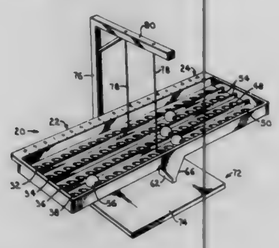
1. A multi-layer teaching aid for visual presentation of a predetermined scene comprising,
a backing substrate having a portion of said scene on the front surface thereof,
a plurality of substantially flat add-on layers having magnetic means on the rear surface thereof and a pictorial representation on the front surface thereof,
each of said layers being juxtaposable in a superimposed relationship upon said substrate and upon one another,
each of said layers and said pictorial representations thereon forming a different pictorial representation which incorporates the features of the scene of the substrate when said layers are superimposed upon said substrate,
said substrate in conjunction with all of said add-on layers in juxtaposed superimposed relationship with said substrate scene providing the composite pictorial representation comprising said predetermined scene,
said backing substrate comprising at least one contiguous metal stratum capable of acting as a medium for magnetic flux lines, and
a framework fitted about the periphery of said backing substrate for facilitating the handling thereof and for containing the strata thereof,
whereby a three dimensional view is achieved by applying successive of said layers of magnetic backed material upon the backing substrate which serves as a common medium for the magnetic flux lines of the various layers.

3,928,922
INSTRUCTIONAL AID DEVICE
Peter S. Rosenbaum, 425 Riverside Drive, New York, N.Y. 10025
Filed May 15, 1974, Ser. No. 469,958
Int. Cl.² G09B *3/02*
U.S. Cl. 35—9 R **8 Claims**



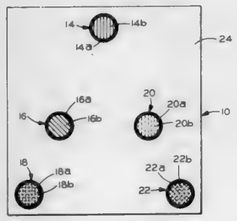
1. An instructional aid device comprising a jacket including a front panel and a rear panel, means for visually displaying a first set of problems with answers at the front panel and simultaneously displaying a second, identical set of problems without answers at said rear panel, the problems of said first set being in registry with identical problems of said second set, a row of holes formed in said front panel with each hole in alignment with an adjacent problem, a row of holes formed in said rear panel in alignment with the respective holes in said front panel, a sheet of frangible material, and means for removably mounting said sheet between said front and rear panels with said sheet underlying said rows of holes, said aligned holes being sized for insertion of a punching tool therethrough from the side of the device displaying the problems with answers, whereby to puncture said sheet adjacent each problem which has been correctly answered, the punctured sheet being removable from said jacket for grading the answers represented by the punctures therein.

3,928,923
MATHEMATICAL BALANCE
James Richard Harte, 10 W. Concord, Kansas City, Mo. 64112
Filed Nov. 12, 1973, Ser. No. 415,242
Int. Cl.² G09B *19/02*
U.S. Cl. 35—31 R **7 Claims**



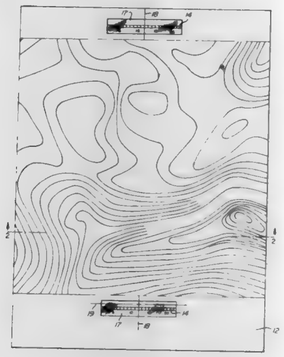
1. In a mathematical balance:
a beam having a pair of elongated balance arms extending in opposite directions away from a central origin, and further having a pair of spaced longitudinal edges,
each of said arms being provided with an upper surface having a longitudinally extending row of uniformly spaced engagement zones,
said zones subdividing each arm into a linear scale having numerical values associated with the zones that increase with increasing distance from said origin, the distance from said origin to each zone defining a lever arm having a length representing the associated numerical value;
a plurality of tokens of predetermined weight, each configured for engagement with a selected zone; and
means connected to said beam at said origin and suspending the beam for movement to and from a balanced condition in response to the selective positioning of said tokens at said zones, whereby the beam assumes said balanced condition when the tokens thereon are positioned to equalize the sum of the moments about said origin created by the weights thereof acting through the associated lever arms,
said suspending means including a pair of flexible suspension elements connected with said beam adjacent corresponding edges, and a stand supporting said elements above said beam.

3,928,924
LEARNING KIT FOR CHILDREN WITH LEARNING DISABILITIES
Eileen R. Taska, 14 Wildflower Trail, Greenwich, Conn. 06830
Filed May 3, 1974, Ser. No. 466,544
Int. Cl.² G09B *11/04*
U.S. Cl. 35—37 **8 Claims**



1. A learning kit for use by a learning disabilities teacher to teach children having learning disabilities to recognize and to correctly form by writing alphabetical and numerical characters comprising:
a. a multiplicity of individual cards constituting a set thereof, each one of said set of individual cards consisting of a planar member having at least one surface thereof suitable for writing thereon, said one surface of each one of said set of individual cards having the image of a set of individual, differently colored symbols comprising a circle consisting of a border defining the circumference of the circle and a colored center, each one of said set of individual, differently colored symbols being located on said one surface of the corresponding one of said set of individual cards in spaced relation relative to each other to form thereon the outline of a preselected character selected from the alphabetical and numerical characters, said set of individual, differently colored symbols on said one surface of the corresponding one of said set of individual cards consisting of the minimum number thereof to establish the outline of said preselected character; and
b. a multiplicity of different reading scripts comprising a set thereof corresponding in number to the number of cards in said set of individual cards, each one of said set of different reading scripts being employable solely with a particular one of said set of individual cards, each one of said set of different reading scripts comprising textual material consisting of a story, each of said stories including a multiplicity of instructions for interconnecting said set of individual, differently colored symbols to complete the formation of the character on the corresponding one of said set of individual cards by referring to each one of said set of individual, differently colored symbols by the color thereof in accord with a predetermined sequence corresponding to the same sequence of manipulative movements employed when said character on the corresponding one of said set of individual cards is manually written.

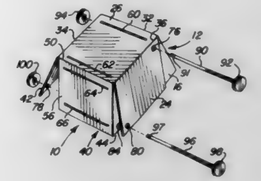
3,928,925
METHOD AND MEANS FOR PRODUCING STEREOSCOPIC CONTOUR MAPS
Sylvester Parker Gay, Jr., 1941 South 13th East, Salt Lake City, Utah 84108
Continuation of Ser. No. 841,790, July 15, 1969, abandoned. This application Sept. 13, 1971, Ser. No. 179,846
Int. Cl.² G09B *25/06*
U.S. Cl. 35—40 **5 Claims**



1. A method of producing a single stereoscopic pair of contour maps, comprising placing in face-to-face relationship a total of two copy sheets and an original contour map sheet with impression transfer means interposed between said sheets; tracing a selected contour line from said map sheet onto said copy sheets, so as to produce two identical and non-distorted tracings; shifting two of said sheets relative to the third and relative to each other by respective distances related to the contour value of the next contour line to be traced and tracing said next contour line on said map sheet, so as to produce a pair of identical and non-distored, stereoscopically offset tracings on the respective copy sheets; and repeating the said shifting and tracing for additional contour lines of said map sheet wherein the copy and map sheets are shifted by respective distances that make equal offsets for the paired tracings on the two copy sheets relative to the corresponding contour line traced on the contour map sheet, each copy sheet and the contour map sheet being provided with reference markings at mutually corresponding locations, establishing both vertical and horizontal axes; a scale of contour values being provided at a location visible to a person tracing the contour lines of the contour map and correlated with the axis from which the sheets are shifted; and the sheets being shifted with reference to said markings and said scale of contour values.

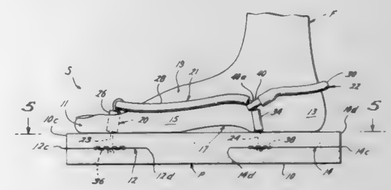
3,928,926
SHOW AND TELL APPARATUS
Ronald S. Carriveau, 514 W. Turney, Phoenix, Ariz. 85013
Filed Jan. 29, 1975, Ser. No. 545,176
Int. Cl.² G09B *1/24*
U.S. Cl. 35—76 **3 Claims**

1. Apparatus for writing and displaying on adjacent sides, comprising, in combination:
a first and second panel connected to each other and disposed substantially perpendicular to each other;
a pair of side panels generally parallel to each other and each disposed substantially perpendicular to the first and second panels and connected thereto;
a back panel connected to the first panel and the side panels and disposed generally parallel to the second panel, said first and second panels, back panel, and side panels defining a hollow container;
a first slot and a second slot generally parallel to each other in the first panel;
a first slot and a second slot generally parallel to each other in the second panel and disposed generally parallel to the slots in the first panel;
a pair of first holes, one in each of the side panels, aligned with each other and disposed adjacent the first slot in the first panel;



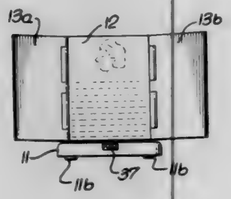
a pair of second holes, one in each of the side panels, aligned with each other and disposed adjacent the second slot in the second panel;
a first rod extending through the first holes in the side panels;
a second rod extending through the second holes in the side panels; and
a medium for writing and drawing wound about the first rod within the container and extending outwardly through the first slot on the first panel, inwardly through the second slot on the first panel, outwardly through the first slot on the second panel, inwardly through the second slot on the second panel, and wound about the second rod.

3,928,927
SANDALS AND METHOD FOR MAKING SAME
Dwight Collin Brown, and Kevin Bruce Brown, both of 4118 Mischire, Houston, Tex. 77025
Filed Nov. 25, 1974, Ser. No. 526,466
Int. Cl.² A43B *3/12*; **A43D** *9/00*
U.S. Cl. 36—11.5 **17 Claims**



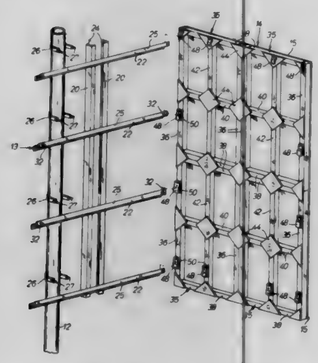
1. A sandal adapted to be worn on the foot comprising:
a platform conforming substantially to the shape of the sole of the foot and including a toe end and a heel end, said platform further having an upper surface and a lower surface, said platform having a first slit and a second slit, said first slit formed at said toe end of said platform and said second slit formed at said heel end of said platform; strap means mounted with said platform for securing said platform to the foot;
securing means mounted in said first slit and said second slit in attachment with said strap means for securing said strap means with said platform; and
means for closing said first and second slit together after the mounting of said securing means.

3,928,928
AUDIO VISUAL MEMORIAL
Pierre M. Kalust, 5902 Irvine St., North Hollywood, Calif. 91601
Filed Apr. 1, 1974, Ser. No. 456,860
Int. Cl.² G09F *27/00*
U.S. Cl. 40—28.1 **4 Claims**



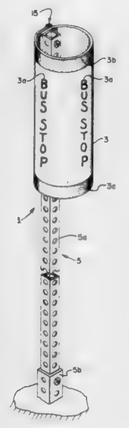
1. In an audio visual memorial, the combination comprising
a. a support for carrying a memorial object in the form of an memorial book and a cover carried on the support for movement between a first position in which the memorial object is covered and a second position in which the memorial object is exposed to view,
b. first means including a recording operable to produce an audio frequency memorial accompaniment to exposure of the memorial object, and a first drive to drive the recording, and
c. second means coupled with the cover for effecting operation of said recording in conjunction with said exposure of the object,
d. the support including a plate inclined upwardly and rearwardly at the rear side of the book which is supported flatly against the plate, the support also including an enclosure enclosing said first and second means at a predetermined level, the support defining a locus for said book to extend higher than said predetermined level,
e. said second means including a second drive coupled with the cover to effect swinging movement of the cover to said second position, and there being a motor directly coupled to said first and second drives respectively and means to actuate the motor.

3,928,929
OUTDOOR ADVERTISING SIGN
Robert D. Forte, 8288 Firwood Lane, Greendale, Wis. 53129
Filed Sept. 5, 1974, Ser. No. 503,347
Int. Cl.² G09F *7/18*
U.S. Cl. 40—125 K **4 Claims**



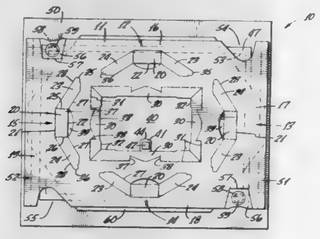
1. An outdoor advertising sign comprising:
a single tubular support pole,
a frame for displaying an advertising sign, said frame comprises a number of upright sections, a plurality of cross braces and a number of support plates secured to the upright sections and cross braces at their points of intersection,
and means on said pole for removably supporting said frame in an upright position on said pole, said support means including a pair of elongate angle iron members and a number of cross arms secured to said members, said members being spaced apart a distance equal to the diameter of said tubular pole whereby said frame is supported on said pole with said elongate members located in a parallel relation and adjacent to each side of said pole, said frame includes a panel on one surface on which a sign can be displayed and a number of clips on the other surface for engaging said support means.

3,928,930
SIGNPOST STRUCTURE
Warren R. Attwood, Wayne, Mich., assignor to Unistrut Corporation, Wayne, Mich.
Filed July 15, 1974, Ser. No. 488,714
Int. Cl.² G09F *7/18*
U.S. Cl. 40—145 R **12 Claims**



1. A signpost structure, comprising:
a hollow cylindrical sign formed an initially rectangular, flat, flexible sign blank, said sign blank having first and second side edges and first, second, fourth and forth openings provided therein in first, second, third and fourth corner regions thereof, respectively, the first and second openings being adjacent to the first side edge of the sign blank and the third and fourth openings being adjacent to the second side edge of the sign blank, said sign blank further having an outer surface having a plurality of identical items of information thereon;
edge-placement means placing the first and second side edges of the sign blank adjacent to each other thereby to from the intially flat, rectangular sign blank into the hollow cylindrical sign, said edge-placement means including an S-shaped member having first and second diagonally opposed edge-receiving portions arranged to receive the first and second side edges, respectively, of the sign blank and a flat portion between the first and second edge-receiving portions and having first and second spaced openings therein, the openings in the sign blank and in the flat portion of the S-shaped member being arranged so that the first second openings in the sign blank are coaxially aligned with the first opening in the flat portion of the S-shaped member and the third and fourth openings in the sign blank are coaxially aligned with the second opening in the flat portion of the S-shaped member when the first and second side edges of the sign blank are received by the respective first and second edge-receiving portions of the S-shaped member, the plurality of items of information at the outer surface of the sign blank being arranged so that at least one item of information is always presented to a viewer when the side edges of the sign blank have been placed adjacent to each other in forming the cylindrical sign:
an elongated support member having a cross-sectional area less than the cross-sectional area of the cylindrical sign; and
mounting means including means employing the first and second openings in the sign blank and the first opening in the flat portion of the S-shaped member and means employing the third and fourth openings in the sign blank and the second opening in the flat portion of the S-shaped member for mounting the cylindrical sign and the associated S-shaped member to the elongated support member.

3,928,931
STAND-OFF TYPE WALL-MOUNTED PICTURE FRAME
John W. Slemmons, 19142 Glen Albyn, Orange, Calif. 92669
Filed Feb. 11, 1974, Ser. No. 441,655
Int. Cl.² G09F *1/12*
U.S. Cl. 40—152.1 **9 Claims**



1. A picture mount comprising:
a generally rectangular, planar backing member including four integral, identical, fold-out legs and four integral, identical, fold-out locking tabs positioned parallel to and spaced from respective legs, each of said legs including a pair of integral, opposed, side tabs, foldable relative to said legs towards respective locking tabs, said legs and said locking tabs folding outwardly along lines parallel to and adjacent the four sides of said backing member, said side tabs being foldable towards the center of said backing member, said locking tabs engaging and holding the ends of respective side tabs in locked positions with substantial portions of the outer edges of said legs and said locking tabs coplanar.

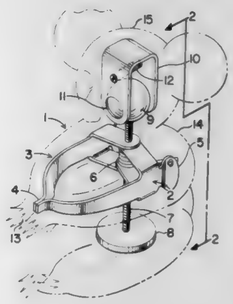
3,928,932
ANIMATED FIGURE TOY
Donald John Maurer, Torrance, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 11, 1974, Ser. No. 531,837
Int. Cl.² A63H *3/28*
U.S. Cl. 46—118 **16 Claims**

1. A toy figure comprising:
A. a lower torso having at least two legs and having a vertically-disposed open channel between said legs;
B. an upper torso rotatably coupled to said lower torso;
C. a base structure supporting said lower torso in a relatively stationary position, said base structure including a journal communicating with said vertically-disposed open channel; and
D. actuating means for rotating said upper torso, comprising:
1. a post rotatably mounted in said journal and said vertically-disposed open channel, said post including an upper end coupled to said upper torso for oscillating said upper torso when said post is oscillated; and



2. an actuating lever on said post, said actuating lever extending to the exterior of said base structure, whereby said actuating lever may be swung back-and-forth to oscillate said upper torso.

3,928,933
HOLDING TOY
Takeji Iwamoto, 1441 Kapiolani Blvd., Suite 1014, Honolulu, Hawaii 96814
Filed Nov. 11, 1974, Ser. No. 522,747
Claims priority, application Japan, Dec. 21, 1973, 48-4407
Int. Cl.² A63H *3/46*
U.S. Cl. 46—119 **7 Claims**

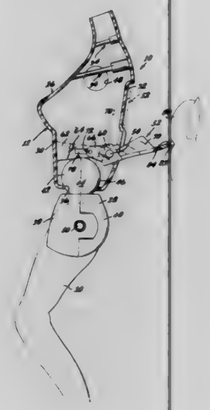


1. A toy comprising a covering and a framework; the framework includes a clamping device, a shaft, and an inner head; the clamping device is connected to the middle portion of the shaft; the clamping device has two clamping parts, two handle parts, and a spring; the spring is coiled around the shaft and its ends are pressed against the inside surfaces of the handle parts of the clamping device; the inner head is mounted on one end portion of the shaft; the covering is fitted over the framework with the clamping parts inserted in the hands, the handle parts inserted in the shoulders, and the inner head inserted in the head.

3,928,934
CONTROLLER FOR A FIGURE TOY

J. Stephen Lewis, Pacific Palisades, and Jurgis Sapkus, Manhattan Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 18, 1974, Ser. No. 524,726
Int. Cl.² A63H *11/00*
U.S. Cl. 46—119 **12 Claims**



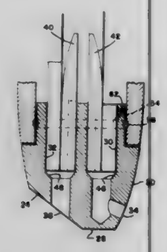
1. In a figure toy construction including a torso having an upper torso member and a lower torso member and means connecting said torso members together so that said torso members may rotate with respect to each other, the improvement which comprises:

a torso-control means movably mounted on said torso, said torso-control means including means for imparting a frictional drag to said connecting means when said torso-control means is moved to a first position and for releasing said frictional drag when said torso-control means is moved to a second position, whereby said torso-control means will hold said torso members in predetermined rotated positions when said torso-control means is in said first position and will release said torso members for unobstructed rotation with respect to each other when said torso-control means is in said second position.

3,928,935
CHANGEABLE GAME CALLER WITH TWO DISTINCT SOUND SYSTEMS

Glenn H. Beadles, Jr., P. O. Box 402, Lake Charles, La. 70601

Filed June 24, 1974, Ser. No. 482,629
Int. Cl.² A63H *5/00*
U.S. Cl. 46—180 **1 Claim**

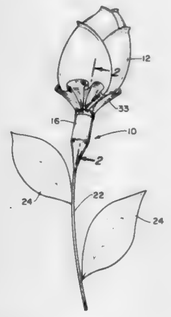


1. A game calling device comprising a hollow-barrel-configured member having an opening at one end thereof and a mouthpiece at the other end thereof, an air chamber disposed within the hollow-barrel-configured member extending from said mouthpiece to and contiguous with said opening, a keg-contoured member having at one end a mating surface interfitting with said opening of the hollow-barrel-configured member and having a truncated portion forming at least two surfaces at the other end, a pair of nonaxial essentially cylindrically shaped openings at said mating surface and communicating with respective passages which extend to and terminate each in a respective one of said surfaces of the truncated portion, a vibrating reed element mounted in each of the cylindrically shaped openings at the mating surface, sealing and securing means comprising an elastomeric O-ring fitted within an annular groove in the mating surface for forming an air-tight seal between the hollow-barrel-configured member and the key-contoured member and for securing them together, the vibrating reed elements comprising portions of two distinct sound systems for calling different species of game fowls, the two surfaces of the truncated portion of said keg-contoured member being selected to allow an operator's hand to conform to the contour of the device so that alternatively the operator's fingers may completely or partially close off one or the other of the passages, at least one of the vibrating reed elements being adjustably positioned longitudinally within its cylindrical shaped opening for modifying sound, and a set-screw being disposed in the wall of the passageway of the cylindrical shaped opening to secure the vibrating reed element in place.

3,928,936
FLOWER HOLDER

Dennis J. Wollen, 1116 E. Lexington Ave., Apt. C, Glendale, Calif. 91206

Filed Sept. 9, 1974, Ser. No. 504,329
Int. Cl.² A01G *5/00*
U.S. Cl. 47—41 SS **3 Claims**



1. A flower holder comprising:

a housing having an internal chamber therein, an opening in said housing providing access into said chamber, said chamber having a closed bottom and a side wall and an open top;

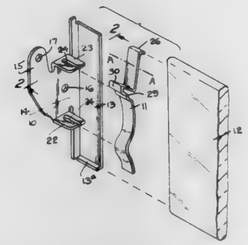
absorbent means contained within said chamber at said closed bottom, said absorbent means adapted to contain a liquid; and

retaining means attached to the wall of said chamber and located between said opening and said closed bottom, said retaining means comprising a plurality of protuberances extending inwardly toward the center of said chamber, each of said protuberances being sharp pointed, there being at least two longitudinally spaced apart rows of said protuberances with there being a plurality of protuberances for a single row being approximately one-half the cross-sectional area of said chamber, said protuberances being slightly deflectible, whereby as the stem of a flower is inserted into said chamber said protuberances deflect and bind into the flower stem thereby providing holding force for the flower stem with the stem contacting said absorbent means.

3,928,937
JALOUSIE LOUVER BRACKET

Nathan Dovman, 6713 Akron St., Philadelphia, Pa. 19148

Filed Oct. 21, 1974, Ser. No. 516,151
Int. Cl.² E06B *7/08*
U.S. Cl. 49—403 **10 Claims**



1. A bracket assembly for quick-detachably engaging and supporting one end of a louver in a jalousie frame comprising

a. a swingably mounted main bracket member having

1. a mounting flange disposed in a plane extending orthogonally with respect to the plane of the louver for limiting endwise movement thereof,
2. an elongated base flange integral with and right angularly related to said mounting flange adapted to overlie and engage the outside surface of the louver when the same is in substantial engagement with said mounting flange,
3. a louver abutting stop at the bottom end of said base flange, and
4. a pair of vertically spaced parallel lugs extending from said mounting flange crosswise of and at right angles to said base flange with corresponding edges thereof spaced from said base flange a distance greater than the thickness of the jalousie louver, said lugs being respectively provided with vertically registering openings each in the form of an open-ended slot for permitting edgewise insertion thereinto of a flat leaf spring member, and

b. an elongated spring metal member extending through said openings in said lugs in overlying relation to said base flange of said main bracket member, said spring member having spaced portions thereof resiliently biased to engage the inside surface of the jalousie louver when its aforesaid end is disposed in position between said base flange and said spring member, said spring member including means which coact with at least one of said slotted lugs to preclude shifting movement of said spring member longitudinally with respect to said bracket member when said spring member is interfitted in said lug openings.

3,928,938
METHOD FOR EVACUATING PACKAGES

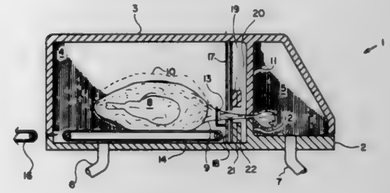
William E. Burrell, Duncan, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Continuation of Ser. No. 375,300, June 29, 1973. This application June 19, 1974, Ser. No. 480,907The portion of the term of this patent subsequent to Sept. 3, 1991, has been disclaimed.
Int. Cl.² B65B *31/02*
U.S. Cl. 53—22 B **3 Claims**

3. A process of evacuating and closing flexible, impervious receptacles such as pouches, bags and the like which have at least one opening and contain at least one product comprising the steps of:

a. confining the product containing portion of said receptacle within a first region;

b. confining a portion of the receptacle which contains said opening in a second region so that the interior of said receptacle is in communication with said second region through said opening;



c. reducing the pressure within said first region thereby causing at least a part of said receptacle to move outwadly away from contact with said product; and, subsequently,

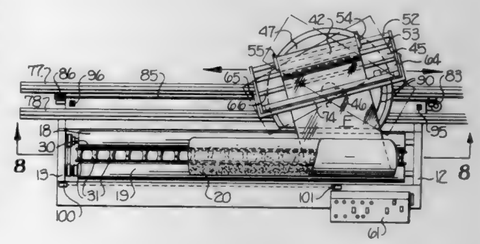
d. reducing the pressure within said second region to evacuate the interior of said receptacle so that the receptacle again contacts the product; and,

e. closing said opening thereby making an evacuated, sealed, package.

3,928,939
METHOD OF WRAPPING ELONGATE CYLINDRICAL OBJECTS

John M. Edwards, Charlotte, N.C., and James D. Wright, Berkley Heights, N.J., assignors to John Edwards & Associates, Inc., Charlotte, N.C.

Division of Ser. No. 360,156, May 14, 1973, Pat. No. 3,863,425. This application Oct. 29, 1974, Ser. No. 518,995
Int. Cl.² B65B *11/04*
U.S. Cl. 53—32 **7 Claims**



1. A method of covering a cylindrical object with elongate sheet material having a width less than the length of said object, said method comprising steps of

a. rotating said object,

b. withdrawing the elongate sheet material from a rotatable supply roll and wrapping it around one end portion of said object while maintaining the rotational axis of the sheet material supply roll parallel to the rotational axis of said

object to provide at least one convolute winding around said one end portion of said object,

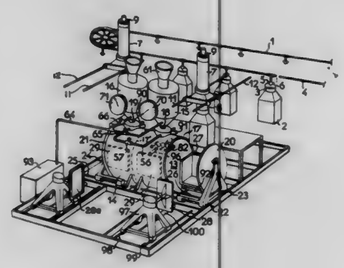
c. continuing to withdraw the elongate sheet material from the supply roll and wrapping it around the medial portion of said object while moving the sheet material supply roll parallel to said object and with the rotational axis of the supply roll in angular relationship to the rotational axis of said object to provide spiral windings around said medial portion of said object, and

d. continuing to withdraw the elongate sheet material from the supply roll and wrapping it around the other end portion of said object while maintaining the rotational axis of the sheet material supply roll parallel to the rotational axis of said object to provide at least one convolute winding around said other end portion of said object.

3,928,940
PACKAGING MACHINE

Gaston Fagniart, Valenciennes, France, assignor to Societe Anonyme dite: Boracier, Switzerland

Filed Feb. 27, 1974, Ser. No. 446,205
Claims priority, application France, Mar. 2, 1973, 73.07831
Int. Cl.² B65B *31/02*
U.S. Cl. 53—112 B **18 Claims**



1. A machine for packaging finely divided material, comprising;

support means for supporting and laterally confining a bag of flexible material, said support means comprising flat rigid walls defining an enclosure open at at least its upper part, to prevent deformation of the bag when the bag is filled with divided material;

means for defining a first chamber, for sealing it tightly and for receiving therein the material to be packaged in the bag; a discharge pipe for discharging the material received in the first chamber from that chamber; means for defining a second chamber and for sealing it tightly, and into which chamber the discharge pipe opens;

means for maintaining a controlled gaseous atmosphere selectively in said first chamber for treatment of the material received therein, and in both chambers for controlled filling of the bag;

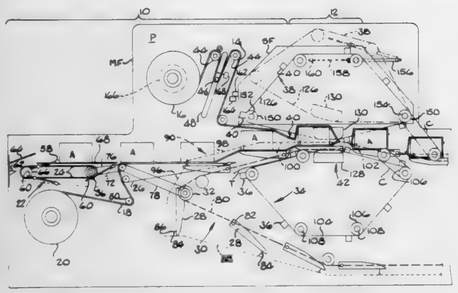
closure means for supporting the support means, for enabling introduction of the support means and of the bag thereon into the second chamber, and for positioning a neck of the bag under the discharge pipe to enable filling of the bag, in the controlled gaseous atmosphere, with finely divided material previously treated by exposure to such atmosphere in the first chamber; and

means in the second chamber for sealing the neck of the bag pursuant to the filling of the bag.

3,928,941
MACHINE FOR WRAPPING ARTICLES

Alec Singer, 14 Mountain Road, Claremont, Cape Town, Cape Province, South Africa

Filed Jan. 25, 1974, Ser. No. 436,585
Claims priority, application South Africa, Feb. 12, 1973, 73/0978; Aug. 13, 1973, 73/5521
Int. Cl.² B65B *11/18*
U.S. Cl. 53—182 **11 Claims**



1. A machine for wrapping articles comprising:

a. a plurality of supports for receiving articles and transporting the articles in spaced-apart relationship along an article feed path having a first linear portion intersecting with and obliquely disposed to a succeeding adjacent second linear portion, whereby a support transporting an article along the first linear portion of said article feed path will be in step-wise relationship with a a support transporting an article along said second linear portion;

b. a plurality of wrapping members for forming wrapping material into sleeves around said articles;

c. means for guiding said wrapping members along a path which lies substantially in or parallel to the plane defined by said first and second linear portions and which converges with said article feed path before said first linear portion intersects with said second linear portion; and

d. driving means for moving said plurality of supports and said plurality of wrapping members along their respective paths continuously and in synchronism, the oblique disposition of said first and second linear portions being such in relation to the wrapping member guiding means that said wrapping members enter the spaces between adjacent articles while the trailing one of said adjacent articles moves along said first linear portion and while the leading one of said adjacent articles moves along said second linear portion, whereby said wrapping members avoid obstruction from the leading edge of said trailing article.

3,928,942
MEANS TO GUIDE A LAYER OF OBJECTS INTO A BOX

Paul F. Paddock, Riverside, and Jerry W. Cramer, Upland, both of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed Apr. 19, 1974, Ser. No. 462,215
Int. Cl.² B65B *39/02, 39/12, 35/38*
U.S. Cl. 53—247 **23 Claims**

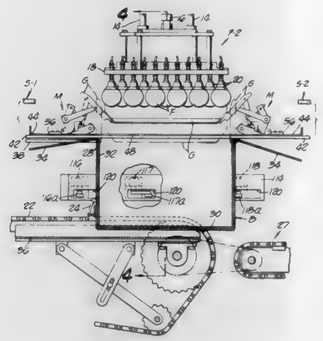
1. In an apparatus for automatically packing layers of objects into successive boxes at a packing station, wherein a pickup head picks up a layer of the objects and descends briefly into a box to deposit the layer therein,

the improvement comprising:

a guide chute extending upward from the box and defining a zone of approach to the box, said chute being shaped and dimensioned to surround a layer of objects on a pickup head as the layer descends to the box and to confine the layer of objects to the inside dimensions of the box,

said chute being made of separate parts movably mounted on said apparatus to permit the chute to be disassembled by moving the separate parts away from their assembled positions to positions spaced upwardly of said box and to be reassembled by restoring the parts to their assembled positions;

means to disassemble the chute by moving the upper edges of the separable parts in different directions outwardly



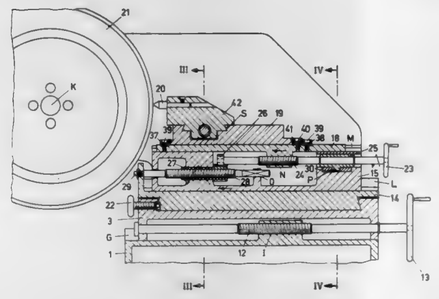
from the path of descent of each layer of objects before the layer descends to the level of the upper ends of the parts of the chute thereby to keep the descending layer from encountering the upper ends of the parts of the chute; and

means to reassemble the chute responsive to downward movement of a descending layer of objects on a pickup head after said objects pass the level of the upper end of the chute.

3,928,943
DEVICE FOR THE FEED OF GRINDING TOOLS TO GRINDING MACHINES

Walter Wirz, Dietlikon, Switzerland, assignor to Reishauer AG., Switzerland

Filed Sept. 11, 1974, Ser. No. 505,059
Claims priority, application Switzerland, Sept. 17, 1973, 13303/73
Int. Cl.² B24B *49/18*
U.S. Cl. 51—5 D **9 Claims**



1. A feed device for grinding machines having a support with which a grinding wheel is operatively associated and on which it is supported and in which the support and rotatable work-piece are slidable relative to each other comprising:

a slidable adjusting carriage;

a trimming device mounted on said carriage, said trimming device being adapted to have a trimming tool disposed therein;

means for shifting said adjusting carriage transversely to the grinding wheel axis, said shifting means including a threaded spindle slidably disposed in the support and in threaded engagement with said adjusting carriage;

control means interconnecting the support and said adjusting carriage to provide an additional shifting of the adjusting carriage;

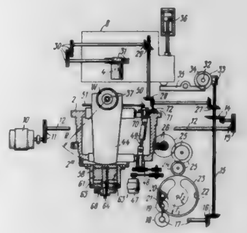
said control means including a slide member which is carried by the support and which is shifted during the adjustment operation transversely to the grinding carriage guide, said slide member having a groove or slot formed therein; and

a slide pin which is guided in said groove or slot to thereby impart additional shifting to the threaded spindle.

3,928,944
STRAIGHT BEVEL GEAR GRINDING MACHINE

Vasily Nikolaevich Kedrinsky, ulitsa Vavilova 93, kv. 23, and Ivan Dmitrievich Zakharov, Kavkazsky bulvar, 41, korpus 1, kv. 5, both of Moscow, U.S.S.R.

Filed Mar. 8, 1974, Ser. No. 449,467
Int. Cl.² B23F *5/10*
U.S. Cl. 51—33 W **6 Claims**

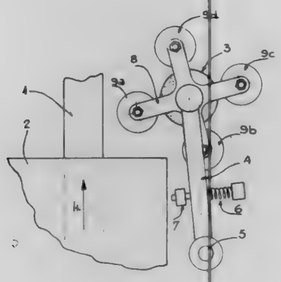


1. A straight bevel gear grinding machine comprising a rotatable cradle carrying a tool means mounted for oscillating motion inside said cradle between guide means secured in a rectangular hole provided in the cradle body; a base; a wheel rotation drive; a spindle carrying a disk tool and receiving rotation from said drive; another spindle carrying the gear being machined and mounted on said base and being kinematically associated with said cradle; said tool means comprising a carriage carrying said spindle with said disk tool inside said cradle and capable of oscillating motion; drive means mechanically connected to said carriage to impart to the latter oscillating motion lengthwise the tooth space of the gear being machined; said guide means comprising guide members mounted in said rectangular hole of said cradle for accommodating said carriage inside said cradle, said guide members being L-shaped in cross-section, one of the surfaces of said guide members being fitted to the cradle rear and front faces, while the other surfaces thereof are fitted to the corresponding surfaces of the cradle holes so that the top surfaces of the holes and the surfaces of the guide members fitted thereto have a slope towards the cradle interior to enable adjustment of the clearance between the carriage and the guide members.

3,928,945
APPARATUS FOR MACHINING THE ANGLES OF A PLATE

Julien Albert Devillers, Livry Gargan, France, assignor to Intercontinental Trading Company - Intraco, Puteaux, France

Filed Dec. 24, 1974, Ser. No. 536,191
Claims priority, application France, Dec. 26, 1973, 73.46203; June 6, 1974, 74.19629
Int. Cl.² B24B 9/00
U.S. Cl. 51—80 A 11 Claims

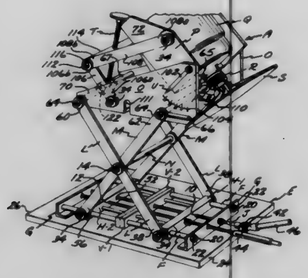


1. An apparatus for machining an angle of a moving plate comprising a rotary grinding wheel; a ring of rollers surrounding the grinding wheel and mounted for free rotation thereon; means for displacing the grinding wheel and the ring together between a first position in which one of the rollers is situated in the path followed by the plate, and a second position in which two successive rollers are simultaneously in contact with one lateral edge of the plate, via a third intermediate position in which the grinding wheel is in contact with the angle of the plate to be machined and in which two successive rollers are in contact with the front or rear edge and with said side edge, respectively of the plate; and means for biassing the grinding wheel and ring into the said first position.

3,928,946
THREE AXIS ADJUSTABLE DISC SANDER

Virgil J. Wynn, 821 N. Louise, Santa Ana, Calif. 92703

Filed May 14, 1975, Ser. No. 577,548
Int. Cl.² B24B 7/00, 9/00; B24D 17/00; B66F 3/00
U.S. Cl. 51—109 9 Claims



1. In combination with a horizontal support of a desired elevation on which a workpiece may rest to slide in a first direction thereon when in contact with an elongate guide that occupies a fixed position relative to said support, a device that permits a power-driven sander disc to be adjusted laterally, vertically and angularly relative to said guide to contact said workpiece as the latter is moved in said first direction, said device including:

a. a horizontal base disposed at a fixed position adjacent said support;
b. a pair of spaced parallel rails disposed above said base and normal relative to said guide;
c. first and second spaced crosspieces secured to said base and supporting said pair of rails therebetween;
d. first and second parallel cross members slidably supported on said rails;
e. first means that are manually operated for moving said first cross member on said rails, with said first means when not operated holding said first cross member at a desired fixed position on said rails;
f. second means that are manually operated for moving said second cross member on said rails;
g. two sets of first and second elongate members that extend upwardly from said base to define an "X", each of said first and second members having first and second end portions, with said first end portions of said first members being connected to opposite ends of said first cross member, and said second end portions of said second members being pivotally connected to opposite ends of said second cross member, with each of said sets of said first and second members having aligned centrally disposed bores formed therein;
h. third means that engage said aligned bores for pivotally connecting said first and second members in each of said sets;
i. a pair of spaced parallel side walls that have first and second end portions, with said first end portion having elongate horizontal slots formed therein;
j. fourth means slidable in said slots and pivotally connected to said first end portions of said second members;
k. fifth means that pivotally connect said second end portions of said side walls;
l. at least one horizontal plate that connects the longitudinal edges of said side walls most adjacent said base;
m. a cradle pivotally supported between said side walls and above said plate;
n. an electric motor supported in a fixed position in said cradle, said motor including a stub drive shaft;
o. sixth means for removably securing said sander disc to said drive shaft;
p. seventh means that are manually operated for pivoting said crable, motor and sander disc to a desired angular relationship relative to said horizontal plate;
q. eighth means for visually indicating the vertical angle of said sander disc; and
r. first and second stops that extend towards one another from said first and second cross members, with said first and second cross members, said two sets of first and second members, said side pieces, said plate, said cradle, and said motor and sander disc being moved as a unit laterally on said pair of rails when said first means is operated, and said first and second members pivoting relative to one another to raise or lower said sander disc when said second means is operated, and with said motor-supporting cradle being at a maximum elevation relative to said base when said first and second stops are in abutting contact.

3,928,947
PRESSURIZED WATER POWERED SANDING DEVICE

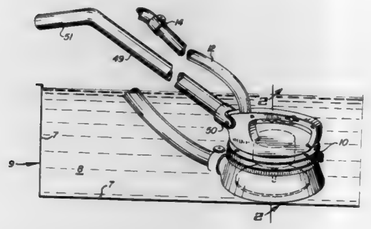
Dennis A. Millett, 4601 S. Rita Lane, Tempe, Ariz. 85282

Filed Feb. 8, 1974, Ser. No. 440,674
Int. Cl.² B24B 23/00
U.S. Cl. 51—170 T 15 Claims

1. In apparatus for cleaning swimming pool surfaces while said surfaces are under water,

a. a body presenting a peripheral surface and a bottom surface;
b. a water powered motor carried by said body and having a water inlet and a water outlet;

c. a pump having a low pressure side and a high pressure side provided by said pump;
d. a flexible conduit having one end connected to said pump at the high pressure side thereof, with the other end of said conduit being connected to the water inlet of said motor;
e. a skirt mounted on said body, depending below said bottom surface thereof and presenting an edge which is spaced from a swimming pool surface a slight distance to provide a narrow gap between said edge and said pool surface;
f. a drive shaft having one end operatively connected to said motor by which it is driven and extending beyond said bottom surface of the body substantially to the plane of said skirt edge;



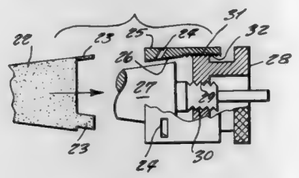
g. a cleaning element;
h. mechanism drivably connecting said cleaning element to said drive shaft at the end of the latter remote from said motor;
i. a water outlet in said skirt;
j. a source of low pressure;
k. a flexible conduit having one end connected to said source of low pressure, with its other end being connected to the water outlet of said skirt, and
l. a handle connected to said body,

whereby a low pressure is created in the water within said skirt as compared to the pressure of ambient water as water is supplied therefrom through said outlet, and ambient water is drawn through said gap and entrains particles removed from the pool surface being cleaned by said cleaning element.

3,928,948
SANDING CONE

Anthony Denunzio, and George Spector both of 3615 Woolworth Bldg. 233 Broadway, New York, N.Y.

Filed Nov. 27, 1973, Ser. No. 419,268
Int. Cl.² B24D 17/00
U.S. Cl. 51—379 2 Claims

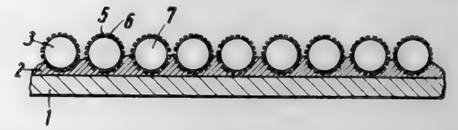


1. In a sanding cone, the combination of a conically tapered mandrel and a similarly shaped sandpaper sock snugly and replaceably fitted thereon said mandrel having an axial shank projecting from one end of the mandrel adapted to be mounted in the chuck of a portable power drill including a collar adjustably mounted axially on the mandrel whereby the shank projects axially through said collar, further including a sleeve mounted axially adjustable on the collar encompassing and fitting closely about said one end of the mandrel and sock for retaining the sock on the mandrel in an adjustable manner, wherein said collar includes means for securing and engaging said sock on said mandrel.

3,928,949
HOLLOW BODY GRINDING MATERIALS

Eckhard Wagner, Elmshorn, Germany, assignor to Norddeutsche Schleifmittel-Industrie Christiansen & Co., Hamburg, Germany

Filed May 1, 1974, Ser. No. 465,802
Claims priority, application Germany, Sept. 26, 1973, 2348338; Oct. 5, 1973, 2350139
Int. Cl.² B24D 3/34
U.S. Cl. 51—401 20 Claims

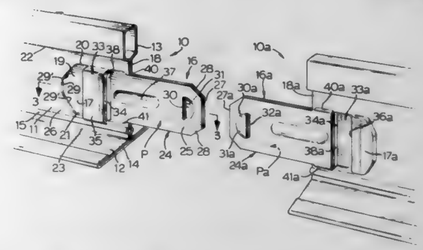


1. A grinding material comprising a multiplicity of hollow bodies whose walls contain abrasive grains in an amount of more than 50% of the wall surface and a bonding means selected from the group consisting of a synthetic resin, a ceramic binder and a metallic binder and are arranged to be stable in resistance to grinding forces, the mean diameter of said hollow bodies are measured parallel to a grinding surface lies between 0.1 and 8 mm and is not more than 50 times the mean grain diameter and the abrasive grains are contained substantially within the walls of the hollow bodies.

3,928,950
STRUCTURAL MEMBER WITH END CONNECTOR

John O. Beynon, Waterloo, Canada, assignor to Preston Metal and Roofing Products Limited, Cambridge, Canada

Filed May 17, 1974, Ser. No. 470,721
Int. Cl.² E04C 3/04
U.S. Cl. 52—726 10 Claims



1. A structural member having a planar web portion provided at least at one end with an integral connector means to enable the member to be connected in end to end relation with a corresponding member having a corresponding connector means, said connector means comprising a tongue receiving socket portion extending longitudinally inwardly from the end of the member and formed by displacing a portion of the web out of its plane to provide a socket bottom offset to one side of the plane of the web, a continuous resilient retainer strap connected at its ends to said web struck from said socket bottom transversely of said socket intermediate the ends thereof and offset to the other side of the plane of the web to transversely bridge said socket in spaced relation to the bottom thereof, the portion of the socket bottom from which said strap is struck defining a slot in the socket bottom extending transversely thereacross, and a resilient cantilever tongue portion of a configuration to be received in a socket portion corresponding to the aforesaid socket portion, said tongue extending longitudinally outwardly from the end of the member as an extension of and coplanar with said socket bottom,

said tongue being formed to present intermediate the ends thereof a locking barb projecting therefrom on the side thereof away from the plane of the web, said barb having a strap engaging locking shoulder facing away from the end of the tongue, said strap having its leading edge facing towards said tongue portion flared outwardly away from the socket bottom to present a flared entrance to facilitate insertion of the tongue of a corresponding member beneath said strap, and the bottom socket portion forming the edge of said slot nearest the inner end of the socket being flared out away from the plane of the socket bottom and the plane of the web of the member and opposite to the flare of said strap leading edge to provide a cam and guide surface to cam and guide the leading portion of the tongue of a corresponding member being forced under said strap into the inner end of the socket, the arrangement being such that when the barbs of opposing corresponding members being forced into interlocking relation have cleared the inner edges of the straps of the opposing members they snap outwardly while the straps recover inwardly to locate the locking shoulders in locking position behind the inner strap edges.

3,928,951

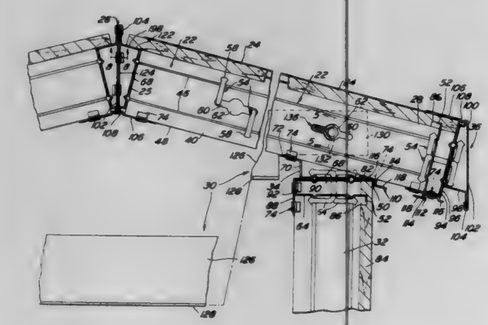
ROOF ASSEMBLIES FOR BUILDING STRUCTURES

Wesley T. Murphy, Auburn, N.Y., assignor to Vercon Products, Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 160,018, July 6, 1971, abandoned, which is a continuation-in-part of Ser. No. 85,533, Oct. 30, 1970, abandoned. This application June 6, 1973, Ser. No. 367,600

Int. Cl.² E04B *7/02*

U.S. Cl. 52—92 **14 Claims**



1. A roof assembly for a building including a planar roof panel, a rafter having a free end, said rafter supporting said roof panel directly thereon and an elongated tie bar connected to the rafter adjacent its free end, said rafter being supported adjacent its free end on the upper end of a vertical wall stud by a top wall plate and comprising a pair of elongated members, each of said members including a first longer wall and a second shorter wall, the first and second walls being spaced apart from each other but running generally parallel to each other and connected by a bridging section having an opening therein, each wall terminating in a free edge tab portion, said tabs defining a space therebetween in which an edge of said roof panel is disposed, said members being disposed adjacent each other with their long walls abutting and including aligned openings therein through which quick acting rotating clamp means extend to hold members together, said top wall plate comprising an angularly extending lip on which said rafter is mounted and having an opening aligned with the opening in said bridging section of said elongated member and resilient clip means disposed within said aligned openings and securing said rafter to said top wall plate.

3,928,952

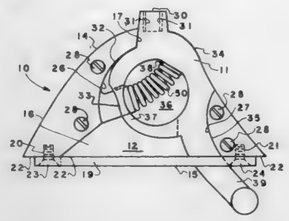
ANTENNA MOUNT

Thomas P. Whyte, 912 Warrington, Deerfield, Ill. 60015

Filed June 4, 1975, Ser. No. 583,545

Int. Cl.² H01Q *1/08*

U.S. Cl. 52—110 **9 Claims**



1. An antenna mount apparatus for mounting an antenna onto a vehicle comprising:

a base member including a bottom adapted to be secured to a vehicle surface, a cavity having a concave cam surface on a first wall thereof and a convex cam surface on a second wall thereof, said first and second walls being opposite and facing one another, and an elongated slot in the top of said base member and separating said cam surfaces;

a pivotable member within said cavity having a receptacle extending through said elongated slot and adapted for receiving an antenna to be mounted, said pivotable member being pivotable between a first position and a second position, said pivotable member also including a first convex peripheral surface portion and a shallow concave peripheral surface portion, said first convex peripheral surface portion extending from said receptacle and terminating integrally with said shallow concave portion, said first convex portion and said shallow concave portion facing said concave cam surface when said pivotable member is in said first position, and a second convex peripheral surface portion and a second concave peripheral surface portion, said second convex peripheral surface portion extending from said receptacle to and integrally terminating with said second concave peripheral surface portion, said second concave peripheral surface portion facing and engaged with said base convex cam surface when said pivotable member is in said first position; and

resilient means for resiliently holding said pivotable member in communication with said base member cavity walls; whereby,

when said pivotable member is in said first position, the antenna is disposed in a vertical semi-locked position with said second concave peripheral surface portion in engagement with said convex cam surface, and when said pivotable member is in said second position the antenna is disposed in locked acute position with said shallow concave peripheral surface portion engaged with said concave cam surface and said second convex peripheral surface portion engaged with said convex cam surface.

3,928,953

PACKAGED ADD-ON MULTIPLE GLAZING UNITS AND METHOD

Renato J. Mazzoni, Tarentum; George H. Bowser, New Kensington, and John L. Stewart, Murrysville, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 25, 1974, Ser. No. 454,210

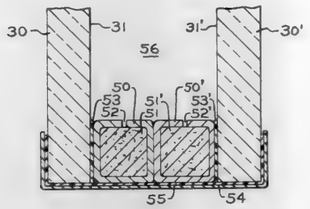
Int. Cl.³ B65D *85/48*; **E06B** *3/28*

U.S. Cl. 52—172 **21 Claims**

1. A packaged assembly of glazing units comprising:

two discrete glazing subassemblies, each including a transparent pane and a spacer element affixed to marginal portions of one major surface of each said pane; said

subassemblies adjoining each other in opposed, substantially non-adhering relation, said spacers lying between said panes in substantial alignment with each other so as to form a substantially enclosed space between said panes; and



closure means adhered to edge surface portions of said adjoined subassemblies for retaining said subassemblies in the adjoining relationship.

3,928,954

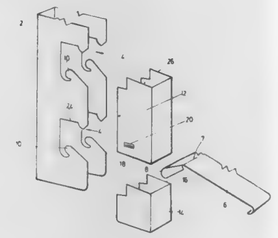
LOUVRE SYSTEM

Alwyn Petrus Naude, c/o Architectural Sun Control (Proprietary) Ltd., Corner End and Commissioner Sts.., Johannesburg 2001, South Africa

Filed Apr. 18, 1974, Ser. No. 461,978

Int. Cl.² E06B *7/08*

U.S. Cl. 52—473 **9 Claims**



1. A louvre system including a louvre, at least two stringers located parallel to each other and supporting a louvre between them, characterized by each stringer being formed with a registering slot receiving the louvre and said slot wall and louvre having engaging means, an abutment comprising or associated with one edge of the slot, a locking piece separate from the stringer and in engagement with the abutment to clamp the louvre against the abutment, and locking means engaging between said locking piece and said stringer to maintain engaged said engaging means.

3,928,955

DOUBLE WINDROWING METHOD AND APPARATUS

Cecil L. Case, Newton, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed May 6, 1974, Ser. No. 467,458

Int. Cl.² A01D *91/00*

U.S. Cl. 56—1 **9 Claims**

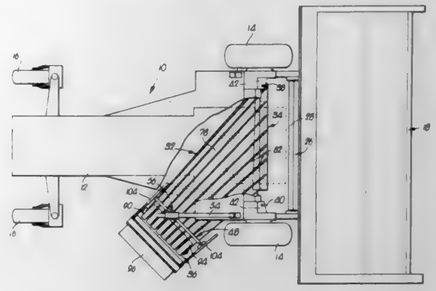
1. In a double windrowing method, the steps of: raising a swath of crop from a field while advancing thereacross in one direction;

reducing the width of the raised swath to form a narrower row of crop;

projecting the row of crop rearwardly generally parallel with the path of advancement;

transferring the projected crop obliquely of said path of advancement to one side of the latter without discontinuing the rearward momentum of the crop;

depositing the crop on the field within the lateral boundries of said swath of crop to produce a windrow alongside said path of advancement; and



repeating said raising, reducing, projecting, transferring and depositing steps while advancing across the field in the opposite direction to produce a second windrow associated with the first.

3,928,956

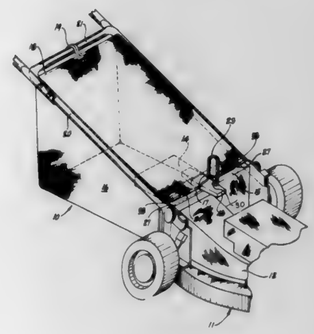
REAR MOUNTED GRASS CATCHER

Walter J. Boyer, St. Louis, Mo., assignor to The Perfection Manufacturing Company, St. Louis, Mo.

Filed Nov. 29, 1974, Ser. No. 528,333

Int. Cl.² A01D *35/22*

U.S. Cl. 56—202 **4 Claims**



1. In combination with a lawn mower housing of the type having a rearwardly extending handle and including a rear discharge opening, an upper wall and a hingedly mounted closure flap, said closure flap having a lever disposed above the upper wall for rotating the flap into an open condition in which the lever overlies the housing upper wall, a grass catcher and mounting assembly comprising:

a. bracket means attached to the housing and including transversely spaced forwardly extending portions overlying the housing upper wall,

b. a removable grass catcher including:

1. a fabric container having an opening at one end adapted to receive clippings through the discharge opening,

2. front mounting means including front framing means for said opening, said framing means including opposed side members and a transverse upper member spaced forwardly of said side members, said upper member having an intermediate portion disposed in operatively overlying relation with said flap lever and transversely spaced end portions disposed in operatively underlying relation with said bracket forwardly extending portions, said upper member intermediate portion provid-

ing an upwardly extending handle portion to facilitate installation of said catcher, and

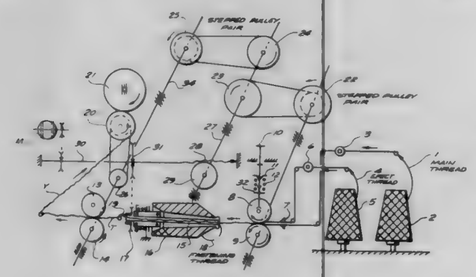
3. rear mounting means at said other end attachable to the lawn mower handle in spaced relation from said lawn mower housing.

3,928,957

METHOD OF AND DEVICE FOR SHAPED EFFECT YARNS WITH OR WITHOUT LADDERS

Georgi Mitov Petrov; Iliya Marinov Iliev, and Rangel Georgiev Ilov, all of Sofia, Bulgaria, assignors to DSO "Textil", Sofia, Bulgaria

Filed Aug. 26, 1974, Ser. No. 500,703
Claims priority, application Bulgaria, Aug. 27, 1973, 24402
Int. Cl.² D01H 7/88; D02G 3/34, 3/38
U.S. Cl. 57—18 **6 Claims**



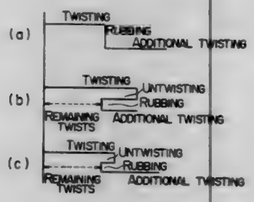
5. Apparatus for producing shaped effect yarns, comprising a rapidly rotating hollow spindle, a non-rotating bobbin carrying a fastening thread carried by the spindle, a pair of feeding rollers disposed upstream of the inner end of the hollow spindle for simultaneously feeding the main thread and the effects thread to the spindle, and means for continuously regulating the pressure between said feeding rollers.

3,928,958

METHOD FOR PRODUCING SPUN YARN-LIKE BULKED YARNS

Takeo Kurata; Tamotsu Hayazaki, and Kyoko Murakami, all of Takatsuki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 29, 1974, Ser. No. 518,969
Claims priority, application Japan, Oct. 29, 1973, 48-120715; Mar. 19, 1974, 49-30625
Int. Cl.² D02G 1/20, 1/18, 3/34
U.S. Cl. 57—157 TS **12 Claims**



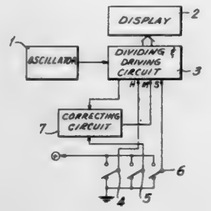
1. A method for producing spun yarn-like bulked yarns which comprises twisting plural yarns having difference in length of 3 to 40% in an optional direction at a twist coefficient of 10 to 140, rubbing thus twisted yarns to form loops and snarls in longer filament yarns and subsequently additionally twisting the yarns in the direction of the first twisting so that the twist coefficient becomes at least 5 to set the loops and snarls formed by the rubbing action.

3,928,959

ELECTRONIC TIMEPIECE

Okito Naito, Suwa, Japan, assignor to Kabushiki Kaisha Seikosha, Tokyo, Japan

Filed Jan. 11, 1974, Ser. No. 432,721
Claims priority, application Japan, Jan. 12, 1973, 48-5911
Int. Cl.² G04C 3/00
U.S. Cl. 58—23 R **5 Claims**



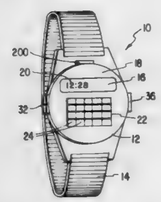
1. An electronic timepiece having a multi-digital display and comprising oscillator means for generating a relatively high frequency time standard signal; an electronic divider means having a plurality of stages coupled to said oscillator means and adapted to supply low frequency signals to said digital display that are representative of present time in response to said high frequency time standard signal, an intermediate stage of said divider means producing an intermediate frequency correction signal, correction circuit means for receiving said intermediate frequency correction signal from said intermediate stage of said electronic divider means, means for producing an index correction signal including one manually operated correction switch coupled to said correction circuit means, said correction means applying said index correction signal to a second divider stage associated with at least one displayed digit of time to be corrected to index the count of said stage by one when said switch is maintained in an operative position for less than a predetermined interval, and to apply said intermediate frequency correction signal to said second divider stage when said switch is maintained in said position in excess of said interval to repetitively index said digit.

3,928,960

COMBINATION WRISTWATCH AND CALCULATOR

Robert O. Reese, Lancaster, Pa., assignor to Time Computer, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 329,973, Feb. 6, 1973, Pat. No. 3,803,834. This application Mar. 28, 1974, Ser. No. 455,666
Int. Cl.² G04B 37/12, 19/30; G04C 21/32
U.S. Cl. 58—152 R **20 Claims**



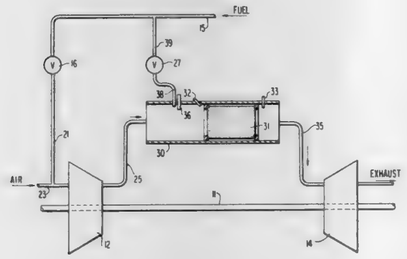
1. A combination wristwatch and wrist calculator comprising an electro-optical digital display, a time circuit having a plurality of time information outputs, a demand switch coupled to said time circuit for energizing said time information outputs only on demand, a calculator circuit having a plurality of calculator information outputs, a miniature keyboard coupled to said calculator circuit, common means coupling both said time and calculator information outputs to said display, and a second demand switch coupled to said calculator circuit for energizing said calculator information output, said common coupling means comprising a plurality of driver transistors.

3,928,961

CATALYTICALLY-SUPPORTED THERMAL COMBUSTION

William C. Pfefferle, Middletown, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

Continuation-in-part of Ser. No. 142,939, May 13, 1971, abandoned, and a continuation-in-part of Ser. No. 164,718, July 21, 1971, abandoned. This application May 8, 1973, Ser. No. 358,411
Int. Cl.² F02C 3/04; F02M 27/02
U.S. Cl. 60—39.02 **42 Claims**



1. A method for the catalytically-supported, thermal combustion of carbonaceous fuel comprising (a) forming an intimate admixture of fuel and air, (b) contacting in a combustion zone at least a portion of said fuel-air admixture with solid oxidation catalyst occupying a major portion of the flow cross section of said combustion zone, and (c) thereby effecting sustained combustion of at least a portion of said fuel under essentially adiabatic conditions at a rate surmounting the mass transfer limitation to form an effluent of high thermal energy; said combustion being characterized by said fuel-air admixture having an adiabatic flame temperature such that upon contact with said catalyst, the operating temperature of said catalyst is substantially above the instantaneous auto-ignition temperature of said fuel-air admixture but below a temperature that would result in any substantial formation of oxides of nitrogen.

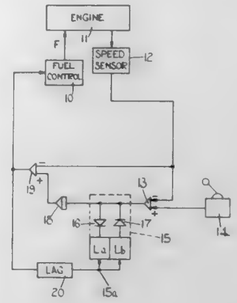
3,928,962

FUEL CONTROL SYSTEMS FOR GAS TURBINE ENGINES

Paul Mainwaring Maker, Birmingham, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed Apr. 26, 1974, Ser. No. 465,142
Claims priority, application United Kingdom, Apr. 27, 1973, 20027/73
Int. Cl.² F02C 9/08
U.S. Cl. 60—39.28 R **2 Claims**

1. A fuel control system for a gas turbine engine comprising means for producing an electrical signal corresponding to the actual engine speed, means for producing an electrical signal corresponding to the desired engine speed, a first difference amplifier connected to both of said means, and arranged to produce an error signal corresponding to the difference between the desired and actual speeds, a limit circuit which imposes a variable limit on the magnitude of said error signal, an integrator connected to produce an output corresponding to the time integral of the output of the limit circuit, a second difference amplifier connected to compare the output of the integrator with the signal corresponding to the actual speed and an electrically actuated fuel flow control for controlling the fuel flow to the engine, in accordance with the output of



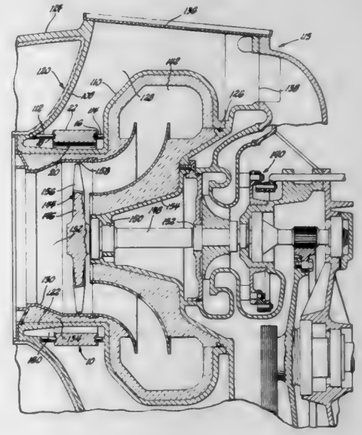
the second difference amplifier, said limit circuit being responsive only to the output of the second difference amplifier.

3,928,963

CAST IN PLACE GAS TURBINE CONTAINMENT RING AND METHOD OF MANUFACTURE

Melvin W. Devers, Bay City, and William L. Felske, Saginaw, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 4, 1974, Ser. No. 520,498
Int. Cl.² F02C 7/12; F01B 25/16; F01D 5/08
U.S. Cl. 60—39.66 **2 Claims**



1. In a gas turbine engine, a cast iron block having a central bore therethrough including an annular turbine shroud wall, means including a liner defining a burner exhaust gas passage, radially inwardly of said shroud wall, a turbine wheel having a plurality of blades directed radially outwardly of said wheel, each of said blades including a tip portion thereon located in closed spaced relationship to said liner, means for supporting said wheel for high speed rotation relative to said shroud, said block having spaced apart internal wall portions located radially outwardly of said shroud defining an air cooling passage formed in surrounding circumferential relationship to said shroud, a plurality of integral cast iron pins formed on said spaced apart internal wall portions, pins on one of said spaced apart wall portions defining a circular pattern thereon, pins on the opposite internal wall forming a second circular pattern thereon, a metal containment ring located in said cooling passage radially outwardly of said shroud having an inside diameter in spaced relationship to said casting shroud wall to

form a circumferential cooling space radially inwardly of each of said first and second circular pattern of pins, said metal containment ring including a pair of side walls thereon each having a continuous circumferential groove formed thereabout, each of said posts on said walls having the tip portions thereof formed in situ in one of said grooves to rigidly locate said metal containment ring in said cooling passage in radially spaced surrounding relationship to said turbine wheel.

3,928,964

PYROTECHNIC COOL GAS GENERATION METHOD FOR INFLATABLE STRUCTURE

Brian K. Hamilton, Utica, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 224,525, Feb. 8, 1972, abandoned. This application Nov. 19, 1973, Ser. No. 417,453

Int. Cl.² C06D *5/00*

U.S. Cl. 60—219 **3 Claims**

1. A method of filling an air cushion assembly with a generated gas without the production of carbon monoxide and at a temperature less than about 2000° F., comprising burning a propellant grain to generate gas, passing said generated gas through a porous bed of oxidizer and coolant, further cooling said gas by mechanical heat exchange with a heat exchange surface after passing the gas through the bed, further treating the oxidized gas emerged from the porous bed with a separate coolant, and directing the generated gas to an air cushion assembly.

3,928,965

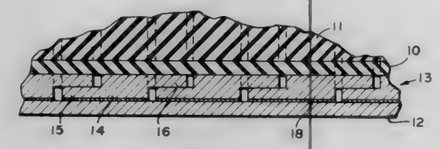
ROCKET MOTOR CONSTRUCTION

Albert W. Macbeth, Brigham City, Utah, assignor to Thiokol Corporation, Newtown, Pa.

Division of Ser. No. 413,477, Nov. 7, 1973. This application June 27, 1975, Ser. No. 591,227

Int. Cl.² F02K *9/04*

U.S. Cl. 60—255 **5 Claims**



1. In a rocket motor that includes a case and a solid propellant grain therein, the improvement comprising:

an elastomeric sheath surrounding and bonded to the propellant grain on surfaces thereof that are adjacent the case; and

a bearing sleeve of noncombustible material surrounding and bonded to the elastomeric sheath but unbonded to the case, the bearing sleeve formed by overlapping, helical windings of a continuous tape upon the elastomeric sheath, whereby expansion and contraction of the propellant grain relative to the case are permitted without harmful stress.

3,928,966

FLOW CONTROL VALVE FOR EXHAUST GAS RECIRCULATION SYSTEM

Kenji Goto, and Ryozo Mitsui, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

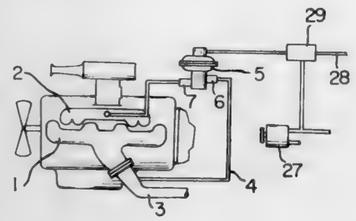
Filed Sept. 25, 1973, Ser. No. 400,674

Claims priority, application Japan, Nov. 30, 1972, 47-119436

Int. Cl.² F02M *25/06*

U.S. Cl. 60—278 **9 Claims**

1. A flow control system for circulating exhaust gases in an engine, including intake means for providing a combustible mixture to said engine and exhaust means for removing exhaust gases therefrom, said system comprising, in combination, means defining a first valve chamber and a second valve chamber, means defining a flow orifice between said first and second chambers, a valve body mounted for movement to open and close said flow orifice, means for delivering exhaust gases from said exhaust means to said first valve chamber, throttling means provided in said exhaust gas delivering means located to have said first valve chamber on the downstream side thereof, means communicating said second valve chamber with said intake means, a diaphragm connected with said valve body and mounted to have pressure in said first valve chamber applied to one side thereof to control opening and



closing of said flow orifice in accordance with said first valve chamber pressure, an air pump for delivering secondary air to said engine exhaust means, means for selectively applying the pressure of said secondary air to the side of said diaphragm opposite the side upon which said first valve chamber pressure is applied, and a pressure compensating piston affixed to said valve body and located to have pressure in said second valve chamber applied thereto, said piston being configured to generate a force upon said valve body resulting from application to said piston of said second valve chamber pressure which substantially equally counteracts the action of pressure from said intake means upon said valve body.

3,928,967

APPARATUS AND METHOD FOR EXTRACTING WAVE ENERGY

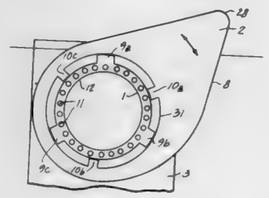
Stephen Hugh Salter, 143 E. Trinity Road, Edinburgh, EH53 PP, Scotland

Filed Nov. 6, 1974, Ser. No. 521,385

Claims priority, application United Kingdom, Nov. 15, 1973, 53119/73; May 6, 1974, 19763/74

Int. Cl.² F01D *25/00*; **F03G** *7/00*; **F04B** *35/00*

U.S. Cl. 60—398 **18 Claims**



1. Apparatus for extracting energy from a wave pattern on the surface of a body of water comprising, a first body, a horizontal shaft supported by said first body, a second member pivotally supported on said horizontal shaft and having a vertical cross-sectional contour of asymmetrical shape with a rear circular portion having a radius centered at the center of said horizontal shaft and a forward generally pointed portion extending from said rear circular portion and means for generating power from relative motion of said body and said second member.

3,928,968

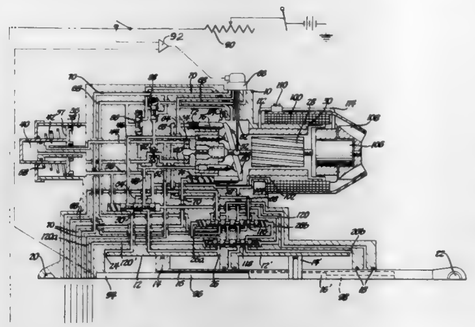
POWER TRANSMISSION

Kenneth F. Becker, Clarkston, and Nicholas F. Pedersen, Farmington, both of Mich., assignors to Sperry Rand Corporation, Troy, Mich.

Filed Oct. 4, 1974, Ser. No. 512,263

Int. Cl.² F15B *11/22*, *20/00*

U.S. Cl. 60—403 **2 Claims**



1. In a dual integrated actuator package comprising dual hydraulic actuators mechanically connected together and to a load to be selectively positioned by remote control, dual rotary electric prime movers, dual reversible variable displacement hydraulic pumps driven separately by the prime movers and each separately driving an actuator, and dual electro hydraulic servo controllers each controlling separately the displacement of a hydraulic pump, that improvement which comprises a pair of metering valve means, one being responsive oppositely to the pressures in the actuators to modulate the action of each servo controller for one direction of actuator motion, the other being responsive oppositely to pressures in the actuators to modulate the action of each servo controller for the other direction of actuator motion whereby the load is divided equally between the actuators.

3,928,969

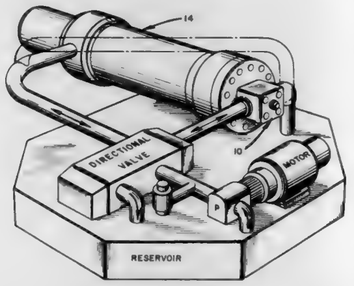
SELF-MONITORED FLUID PRESSURE BOOSTER SYSTEM

Franck Picker, Oak Ridge, Tenn., assignor to Oak Ridge Machines, Oak Ridge, Tenn.

Filed May 24, 1974, Ser. No. 473,217

Int. Cl.² F15B *15/18*

U.S. Cl. 60—428 **21 Claims**



1. A self-monitored fluid pressure booster device comprising:

a. a body having a bore connectable to a fluid pressure operated mechanism and inlet port means and outlet port means connected to the bore;

b. a shiftable sliding means in the bore having means to control fluid flow to and from said outlet and inlet port means in response to pressure in the fluid operated mechanism;

c. pressure converter means associated with said sliding means to convert a high volume low pressure fluid flow into a low volume high pressure flow;

d. said sliding means being mounted to shift from a first position in which the fluid control means directs the fluid flow from the inlet port into the mechanism to a second position in which the fluid control means directs the fluid flow from the inlet port through the pressure converter means to the mechanism and the outlet port means.

3,928,970

POWER ASSISTED MASTER CYLINDER ASSEMBLIES

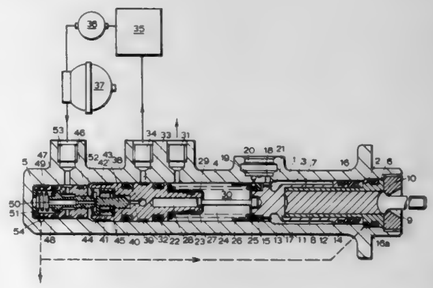
Glyn Phillip Reginald Farr, Kenilworth, England, assignor to Girling Limited, Birmingham, England

Filed Nov. 28, 1973, Ser. No. 419,627

Claims priority, application United Kingdom, Feb. 20, 1973, 8177/73; Nov. 30, 1972, 55397/72; Dec. 1, 1972, 55567/72

Int. Cl.² B60T *11/20*

U.S. Cl. 60—562 **18 Claims**



1. A power assisted master cylinder assembly comprising a master cylinder which includes a body provided with a bore having inner and outer ends, a first piston moveable in said bore and having inner and outer portions, said inner portion bounding a pressure space inward of said piston for connection to a brake circuit, the outer portion of said piston being formed with an inwardly extending axial bore, a fixed sleeve slideably received in said bore, a pedal operated member extending through said fixed sleeve to directly engage said first piston, an annular closure member for closing the outer end of an annular space defined between said sleeve and said bore, first seal means between said piston outer portion, said sleeve and said bore, second seal means for sealing said closure member to said bore and said sleeve, said first and second seal means, said sleeve and said bore defining a sealed annular power chamber, an inlet to said power chamber for connection to a source of fluid under pressure and a control valve assembly which includes valve means for controlling the supply of fluid from said source to said power chamber, a second piston to operate said valve means, and means for transmitting movement of said first piston to said second piston; said pedal-operated member and pressure fluid in said power chamber acting in parallel on said first piston to prevent kick-back on said pedal-operated member on a rapid increase in pressure in said power chamber.

3,928,971

INTERNAL COMBUSTION ENGINE

Tommy W. Spath, Box 13149, Kansas City, Kans. 66113

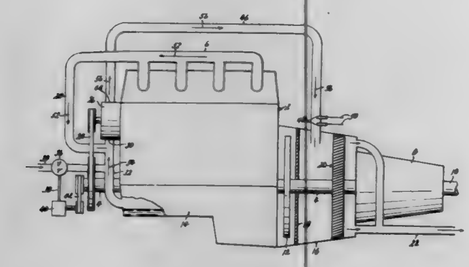
Filed Mar. 11, 1974, Ser. No. 450,051

Int. Cl.² F02G *3/00*

U.S. Cl. 60—614 **3 Claims**

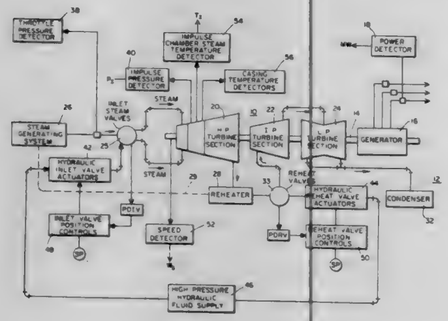
1. In combination with an internal combustion engine emitting exhaust gases including combustible constituents and operable to turn a power output shaft:

a. a turbine drivable by gas under pressure and also operable to turn said power output shaft,
b. means operable to collect said exhaust gases, deliver them to said turbine, and burn them to supply expanded quantities of gas for driving said turbine, said means comprising a gas compressor driven by said internal combustion engine, a conduit connecting the exhaust manifold of said internal combustion engine to the intake of said compressor, means for admitting fresh air to the



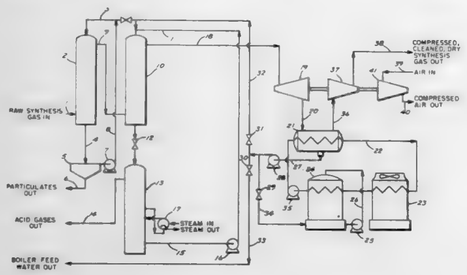
intake of said compressor, a conduit connecting the outlet of said compressor to the gas inlet of said turbine, and ignition means operable to ignite said air-exhaust gas mixture at the inlet of said turbine, and
c. a throttling valve operable to regulate the amount of fresh air delivered to said compressor intake, and means responsive to the speed of operation of said engine to adjust said throttling valve, to render the quantity of air admitted directly proportional to the speed of operation of said engine.

3,928,972
SYSTEM AND METHOD FOR IMPROVED STEAM TURBINE OPERATION
Robert L. Osborne, Wallingford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 13, 1973, Ser. No. 331,738
Int. Cl. F01k *13/02*
U.S. Cl. 60—646 **50 Claims**



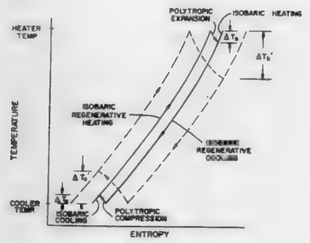
1. An improved steam turbine system comprising:
a. A steam turbine having a portion subject to thermal stress when said turbine is in operation;
b. means for generating a heat flow representation of present heat flow to said portion from a predetermined region in heat transfer relation to said portion; and
c. means for controlling operation of said steam turbine as a function of said heat flow representation, whereby said thermal stress is controlled.

3,928,973
PROCESS FOR EXTRACTING WATER AND ENERGY FROM SYNTHESIS GAS
John W. Hand, Aurora, Colo., assignor to Mintech Corporation, Denver, Colo.
Filed Aug. 12, 1974, Ser. No. 496,637
Int. Cl.² F01K *25/06*
U.S. Cl. 60—648 **4 Claims**



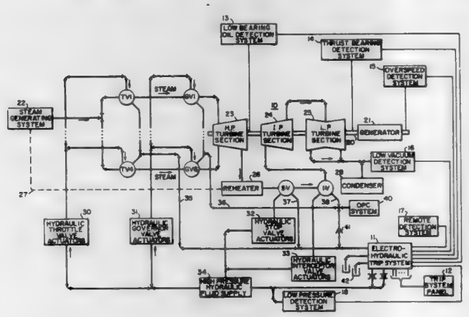
1. A process for extracting water and work from a conditioned, hot, moisture laden synthesis gas stream produced from solid carbonaceous matter and for pressurizing the dried synthesis gas for use in the catalytic synthesis of methanol, methane or ammonia, consisting of the sequential steps of:
a. cleaning the conditioned synthesis gas stream, under pressure, by scrubbing it with water and a solution of hot alkali salt;
b. passing said cleaned and water-saturated pressurized synthesis gas stream through an expansion turbine followed by a condenser;
c. extracting work from said expansion turbine by direct coupling of said turbine to one or more rotary compressors,
d. extracting water from the condenser for use as boiler feedwater and cooling water, and
e. compressing the dried synthesis gas by utilizing a portion of the work extracted in the expansion turbine.

3,928,974
THERMAL OSCILLATOR
Glendon M. Benson, Danville, Calif., assignor to New Process Industries, Inc., Minneapolis, Minn.
Filed Aug. 9, 1974, Ser. No. 496,229
Int. Cl.² F02G *1/04*
U.S. Cl. 60—650 **13 Claims**



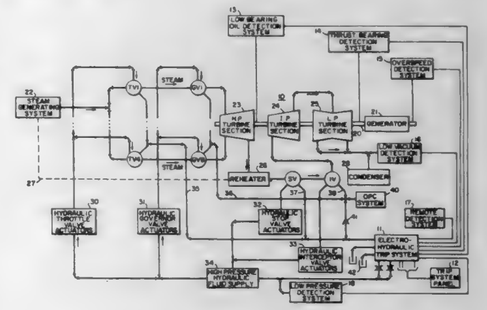
1. A thermodynamic cycle which subjects a working fluid to processing steps comprising:
regeneratively cooling the working fluid approximately isobarically;
compressing the working fluid to a prescribed pressure ratio, said compressing step including in combination polytropically compressing and approximately isobarically cooling the working fluid so as to approach an isothermal compressing step;
regeneratively heating the working fluid approximately isobarically;
expanding the working fluid to a prescribed pressure ratio, said expanding step including in combination polytropically expanding and approximately isobarically heating the working fluid so as to approach an isothermal expanding step; and said prescribed pressure ratios for said compressing and expanding steps being continuously varied to produce a net energy exchange per cycle that matches the instant cycle load, said net energy exchange determined by heat exchange rates in said compressing and expanding steps.

3,928,975
ELECTRICAL SYSTEM FOR ELECTROHYDRAULIC EMERGENCY TRIP SYSTEM
Andrew S. Braytenbah, Pennsauken, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 6, 1974, Ser. No. 477,115
Int. Cl. F01k *13/02*
U.S. Cl. 60—660 **10 Claims**



1. An electrohydraulic emergency trip system for a turbine power plant to close rapidly the steam inlet valves to the turbine in response to a predetermined contingency, comprising:
a plurality of steam inlet valves,
an operating mechanism for each steam inlet valve operative to close its associated valve in response to a predtermined decrease of fluid pressure in communication with such operating mechanism,
an hydraulic trip system in communication with the valve operating mechanism,
a first and a second electrically operable trip valve means operatively connected in the hydraulic trip system to decrease the fluid pressure in response to the operation of both the first and second trip valve means,
a first and second electrically operable contingency detection means,
first and second independent voltage sources,
first circuit means connected to both the first and second voltage sources to generate a third voltage output in response to the generated voltage from either one or both of the first and second voltage sources,
second circuit means including the first and second contingency detection means and the third voltage output to operate both the first and second contingency detection means in response to the opening and closing of the second circuit means,
third circuit means including the first contingency detection means and the first voltage source to operate the first trip valve means in response to the operation of the first contingency detection means,
fourth circuit means including the second contingency detection means and the second voltage source to operate the second trip valve means in response to the operation of the second contingency detection means,
said third and fourth circuit means each being effective to operate their respective first and second trip valve means to an open position in response to a loss of the respectively connected first and second independent voltage sources, and
means to operate the third circuit means in response to a predetermined contingency.

3,928,976
ELECTROHYDRAULIC EMERGENCY TRIP SYSTEM FOR A TURBINE POWER PLANT
Andrew S. Braytenbah, Pennsauken, N.J.; Karl O. Jaegtnes, Chester, and Millard F. Smith, West Chester, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 6, 1974, Ser. No. 477,116
Int. Cl. F01k *13/02*
U.S. Cl. 60—660 **14 Claims**



1. An electrohydraulic emergency trip system for a turbine power plant to close rapidly the steam inlet valves to the turbine in response to a predetermined contingency, comprising
a plurality of steam inlet valves,
an operating mechanism for each steam inlet valve operative to close its associated valve in response to a predetermined decrease of fluid pressure in communication with such operating mechanism,
contingency sensing means normally in one condition and operative to a second condition in response to a predetermined contingency,
a source of fluid under pressure,
first and second independent voltage sources,
a first and second trip valve means, each operable electrically to an open and closed position,
an hydraulic system connecting the source of fluid under pressure and the first and second trip valve means and the steam inlet valve operating mechanisms to decrease the fluid pressure said predetermined amount in communication with the operating mechanism in response to the operation of both the first and second trip valve means to an open position only,
first circuit means connecting the first trip valve means to the first voltage source to close the first trip valve means in response to the voltage from the first voltage source when the first circuit means is in one condition and to open the first trip valve means in the absence of the voltage from the first source or when the first circuit means is in another condition,
second circuit means connecting the second trip valve means to the second voltage source to close the second trip valve means in response to the voltage from the second source when the first circuit means is in one condition and to open the second trip valve means in the absence of voltage from the second source or when the second circuit means is in another condition, and
third circuit means including the contingency sensing means responsive to the operation of the contingency sensing means to its second condition to operate both the first and second circuit means to their other condition,

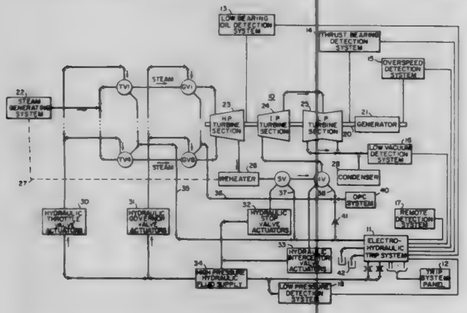
whereby the steam inlet valves are closed upon the occurrence of a predetermined contingency, but a loss of power from one of the sources does not operate to close the steam inlet valves.

3,928,977

ELECTROHYDRAULIC ON-LINE TESTABLE TRIP SYSTEM FOR TURBINE POWER PLANT

Andrew S. Braytenbah, Pennsauken, N.J., and Karl O. Jaegtnes, Chester, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 6, 1974, Ser. No. 477,117
Int. Cl. F01k *13/02*
U.S. Cl. 60—660 **11 Claims**



1. An electrohydraulic emergency trip system for a turbine power plant to close rapidly the steam inlet valves to the turbine in response to a predetermined contingency, comprising:

a turbine,

a plurality of steam inlet valves for controlling the admission of steam to the turbine,

a source of trip fluid under pressure,

an operating mechanism for each steam inlet valve operative to permit its associated valve to be controllably open in response to a predetermined trip fluid pressure and operative to close in response to a predetermined decrease of trip fluid pressure in communication with such operating mechanism,

a fluid draining means,

an hydraulic means connecting each operating mechanism in communication with the trip fluid under pressure and the fluid draining means to provide the predetermined trip fluid pressure when the draining means is closed and to decrease the trip fluid pressure when the draining means is open,

a first and second electrically operable trip valve means connected in series in the hydraulic means to close the draining means when one of the first and second trip valve means is closed and to open the draining means when both the first and second trip valve means are open,

a first and second contingency detecting means both operable to a trip condition in response to a predetermined operating contingency,

a first trip circuit means responsive to the operation of the first contingency detecting means to its trip condition to open the first trip valve means,

a second trip circuit means responsive to the operation of the second contingency detecting means to its trip condition to open the second trip valve means,

contingency simulation means operative when activated to simulate a trip contingency condition,

switching circuit means to activate the contingency simulation means to render selectively the first and second contingency detection means responsive to the simulated trip contingency condition,

means including the contingency simulation means and the switching circuit means to render one of the first and second cintingency detecting means operative to its trip condition in response to a predetermined contingency at times when the other of the first and second contingency detection means is activated by the contingency simulation means, and

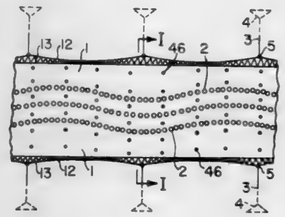
indicating means operatively associated with each of the trip valve means to indicate the operation of the respective first and second trip circuit means.

3,928,978

APPARATUS FOR PRODUCING AND PROTECTING DEPOSITS OF SEDIMENTARY MATERIAL ON FLOORS OF BODIES OF WATER

Ole Jeppe Fjord Larsen, Fasanvaenget 62, 6733 Hjerting, Denmark

Division of Ser. No. 212,056, Dec. 27, 1971, Pat. No. 3,844,123. This application Oct. 25, 1974, Ser. No. 518,050
Int. Cl.² L02B *3/04*
U.S. Cl. 61—3 **3 Claims**



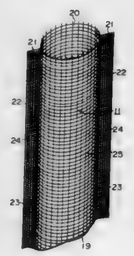
1. Apparatus for producing and protecting deposits of sedimentary material on a floor of a body of water, said apparatus comprising an elongated sheet located beneath the surface of the water in at least partially upwardly spaced relationship close to but above said floor, means for maintaining said elongated sheet so positioned, said maintaining means are a plurality of elements supporting said sheet along spaced points of the length thereof, and said sheet is of undulating configuration as viewed in transverse cross section along the length thereof.

3,928,979

FLEXIBLE SAND DRAIN FORMED IN A CASING

Osamu Terashima, Tokyo, and Ikuo Okabayashi, Yamato, both of Japan, assignors to Chiyoda Chemical Engineering and Construction Co., Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 381,587, July 23, 1973, Pat. No. 3,859,798. This application Dec. 3, 1974, Ser. No. 529,231
Claims priority, application Japan, May 22, 1973, 48-56378
Int. Cl.² E02B *11/00;* **E02D** *5/40*
U.S. Cl. 61—11 **5 Claims**



1. In a flexible sand drain formed in a casing, including a sand pillar and a tubular protector for holding the sand pillar, the improvement wherein

a. said protector comprises a plain woven fabric constituted by warps and wefts of a plurality of water-repellent, anti-weathering, chemically noncorrosive monofilaments so intermeshed as to make interfilament meshes large enough to allow sand to freely pass out of the protector;

b. said warps intersect with said wefts at right angles and extend lengthwise of the protector so as to restrict the elongation of the protector;

c. said protector is provided with a pair of lugs having a higher mechanical strength and rigidness than those of the main body of the protector, comprising warps and wefts of said monofilaments and extending in a diametrically opposed relation along the full length thereof to prevent the protector from being twisted when the protector with a weight member fixed to the lower end of the protector is lowered into the casing driven into a poor subsoil;

d. the number of said warps of said lugs per unit length of the wefts thereof is 2 to 3 times greater than the number of said warps of the main body of said protector per unit length of the wefts thereof;

e. said protector when packed with sand has a diameter of 5 to 15 centimeters;

f. said protector has an elongation of less than 5 percent, and a lengthwise tensile strength of 80 to 120 kilograms and crosswise tensile strength of 60 to 180 kilograms per 5 centimeter width of the protector as measured when the protector is flattened;

g. said monofilaments have a fineness of 300 to 500 denier; and

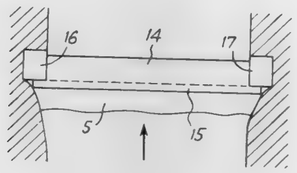
h. the sand drain when installed in the soft ground can be flexed so as to cope with the movement of the poor subsoil.

3,928,980

INFLATABLE WATER-RETAINING BARRIER

Jean Victor Ganzinotti, Brive, France, assignor to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes, Paris, France

Continuation-in-part of Ser. No. 77,297, Oct. 1, 1970, abandoned. This application Oct. 23, 1973, Ser. No. 408,443
Claims priority, application France, Oct. 6, 1969, 69.34082
Int. Cl.² E02B *7/20*
U.S. Cl. 61—29 **14 Claims**



1. A water retaining barrier means of unitary structure for a watercourse, said water retaining barrier means having upstream and downstream sides and comprising:

a. at least one flexible membrane forming at least one inflatable enclosure,

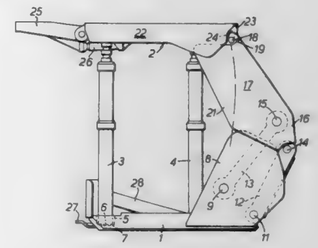
b. a rigid, mechanically strong, member of which at least a substantial portion is disposed within, and secured to, said at least one inflatable enclosure in a position to lie at least across the bed of the watercourse and the upstream side of the barrier means, said rigid member extending along the whole length of said barrier means, whereby when said barrier means is positioned in the watercourse, the ends of said rigid member bear freely against the banks of the watercourse and any stresses on the barrier means are distributed along the whole length of the barrier means and thereby the strain of holding the said barrier means in position is transferred laterally to the banks of the watercourse.

3,928,981

MINE PROOF SUPPORT

James Eric Parker, and Nigel Hill, both of Cheltenham, England, assignors to Dowty Mining Equipment Limited, Tewkesbury, England

Filed Oct. 11, 1974, Ser. No. 514,262
Claims priority, application United Kingdom, Oct. 18, 1973, 48621/73
Int. Cl.² E21D *23/04*
U.S. Cl. 61—45 D **4 Claims**



1. A roof support for use in a mine comprising, a roof-engaging canopy, a floor-engaging beam, a plurality of variable length struts extending between the floor beam and the canopy, and guide means comprising a first link pivotally connected at one position to the floor beam, a second link pivotally connected at another position to the floor beam spaced from the one position, a third link pivotally connected at spaced positions along its length to the first and second links and an extension fixedly secured to the third link and pivotally connected to the canopy, such that the center of the pivotal connection to the canopy is limited by the links and the extension to move solely in a fixed path approximately at right angles relative to the plane of the floor beam, the first link, the third link and its extension being arranged to extend substantially the full width of the support to form a shield and the pivotal connection to the canopy being arranged to permit angular tilting movement of the canopy relative to the floor beam about a longitudinal axis and a transverse axis both of which lie parallel to the plane of the canopy and to resist angular movement relative to the floor beam in the plane of the canopy.

3,928,982

METHOD AND DEVICE FOR A FOUNDATION BY DEPRESSION IN AN AQUATIC SITE

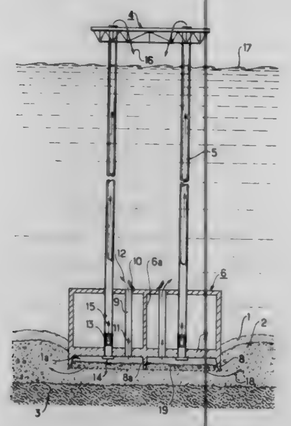
Roger Lacroix, Sceaux, France, assignor to Sea Tank Co., Paris, France

Filed Mar. 5, 1974, Ser. No. 448,436
Claims priority, application France, Mar. 5, 1973, 73.07739
Int. Cl.² E02D *27/52*
U.S. Cl. 61—50 **4 Claims**

1. In an underwater foundation structure for controlled submerged depression in an aquatic site, including: a tank having an apron forming the bottom of said structure with a ridge projecting downwardly therefrom and digging into the ground, which ground comprises at least two stratified layers in the form of a surface layer of permeable sand resting on an impermeable layer of clay, the improvement comprising:

said ridge having a height greater than the thickness of said sandy layer and extending continuously about the periphery of said apron to enclose the sandy layer within a confined space between said apron, the ridge and said clay layer after initial submergence of said tank, tubular funnels extending vertically through the tank from said apron to the top of said tank with said funnels being provided with closures at their upper ends to permit the removal of water trapped beneath said apron during initial submergence of said foundation structure, tubular

drains extending through the tank and having their lower ends entering the sand layer and their upper ends projecting above the surface of the water of the aquatic site, filters provided at the lower ends of said drains where the drains enter the sandy layer to insure the removal of



water, and pumps housed internally of the drains for pumping water through the drains to create said depression and for expelling water from the upper ends of the drains captured within the layer of permeable sand above the surface of said aquatic site.

3,928,983

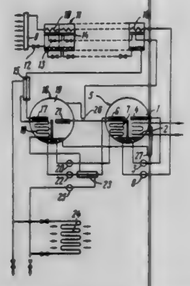
METHOD OF PRODUCING COLD IN AN ABSORPTION-YPE REFRIGERATING PLANT PERFORMING THIS METHOD

Emmanuil Gershkovich Ainbinder, bulvar Pushkina, 7, kv. 8; Georgy Vasilievich Kurilov, ulitsa Universitetskaya, 97, kv. 21, and Leonid Sergeevich Neustroev, ulitsa Artema, 127, kv. 42, all of Donetsk, U.S.S.R.

Continuation of Ser. No. 424,737, Dec. 14, 1973, abandoned, which is a continuation of Ser. No. 331,358, Feb. 12, 1973, abandoned, which is a continuation of Ser. No. 204,108, Dec. 2, 1971, abandoned. This application July 22, 1974, Ser. No. 490,864

Int. Cl.² F25B *15/06*

U.S. Cl. 62—101 **8 Claims**



1. A method of producing low temperatures and causing refrigeration, comprising the steps of:

absorbing the vapor of a coolant with a liquid absorbent;

directing said absorbent into a primary flow into a superheating zone thereof with the help of a high-temperature heat transfer medium under a high pressure;

maintaining the high pressure within said superheating zone to prevent boiling-up of the superheated absorbent;

reducing the pressure in a step-wise fashion in successive stages at successive portions of the flow of the absorbent, starting from the superheating zone, the pressure in each stage being reduced so as to provide for a momentary boiling-up of said superheated absorbent at a respective given temperature thereof;

returning said superheated absorbent from said superheating zone in counterflow heat exchange with the primary flow of said absorbent toward the superheating zone so that the vapor of said coolant produced at each stage of said return flow condenses and effects heat transfer inside the stage with respect to the cold primary flow of absorbent toward said superheating zone; and

returning the coolant condensate to an evaporator with a subsequent evaporation thereof at a low temperature due to the heat extracted from the object to be cooled and by absorbing the cold vapors with the liquid absorbent which is to be cooled by an outside source.

3,928,984

COMPRESSOR CYCLING UNIT

Claude H. Nickell, 17809 Oakwood Blvd., Dearborn, Mich. 48124

Filed May 22, 1974, Ser. No. 472,232

Int. Cl.² F25B *41/04*

U.S. Cl. 62—196 **5 Claims**



1. An air conditioning system for an automotive vehicle having a master control switch on the instrument panel and including a compressor cycling unit, said system comprising;

A. a compressor having,

1. a high pressure side, and
2. a low pressure suction side;

B. a condenser to receive a compressed gaseous refrigerant from said high pressure side and to convert same into a liquid state;

C. a receiver-dryer to receive the liquid refrigerant, said refrigerant in the upper portion thereof remaining in a gaseous state;

D. a combination expansion and system holding unit to receive the liquid refrigerant from said receiver-dryer;

E. an evaporator to receive said liquid refrigerant at a reduced pressure where it boils off, picks up heat, returning to a vapor state;

F. a compressor cycling control unit including,

1. a first inlet port from said high pressure side,
2. a first outlet port connecting with said condenser,
3. a second inlet port from said evaporator,
4. a second outlet port connecting with said low pressure side,
5. a valve means normally in a closed relation between an enlarged cylinder communicating with said first inlet port and first outlet port, and a chamber communicating with said second inlet port and second outlet port;

G. means to control said valve means comprising,

1. a longitudinal bore in said cycling control unit providing a first, enlarged portion and a second, reduced diameter portion;
2. a primary piston slidably engaged in said enlarged portion, normally seated against a stop means to define a bore chamber therebetween;
3. a secondary piston, spaced from said primary piston, slidably engaged in said reduced diameter portion;
4. a compression spring between said pistons to normally, forcibly maintain said spacing;
5. said electric circuit connecting between the control switch and an input terminal of said solenoid and from an output terminal thereof to ground contacts to said secondary piston to the housing of said cycling control;
6. a third inlet port from said receiver-dryer upper section to said bore chamber, the pressure exerted on the gaseous refrigerant moving said primary piston against a shoulder stop defined by the juncture of said enlarged and reduced diameter bore portions;
7. by-pass conduit means connecting between said third inlet port and said secondary piston in a manner whereby pressure beyond said predetermined value moves said secondary piston towards said primary piston in opposition to the forces of said compression spring, opening said ground contacts, deenergizing said solenoid, opening said valve assembly to by-pass the refrigerant from said first inlet port through said second outlet port back to said low pressure side.

3,928,985

CONSTANT VELOCITY TORQUE TRANSMITTING UNIVERSAL JOINT

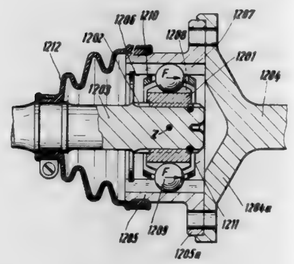
Sobhy Labib Girguis, Troisdorf, Germany, assignor to Uni-Cardan AG, Lohmar, Germany

Filed May 13, 1974, Ser. No. 469,601

Claims priority, application Germany, May 11, 1973, 2323822

Int. Cl.² F16D *3/30*

U.S. Cl. 64—21 **6 Claims**



1. A constant velocity torque transmitting universal joint comprising an outer joint member having a bore therethrough and a plurality of grooves in the surface of said bore, an inner joint member within said bore and having a plurality of grooves in the outer surface thereof opposing said outer joint grooves, a ball in each pair of opposed inner and outer joint member grooves, the balls being disposed in a plane passing through the axes of the outer and inner joint members, the balls being subjected to a force due to play in the joints to displace the balls from the homokinetic plane, and means on the universal joint for increasing the angle between the plane passing through the balls and the axis of the inner joint member to control the alignment direction of the balls with respect to the homokinetic plane.

3,928,986

ADJUSTABLE DOFFER SUPPORT FOR HIGH PILE FABRIC KNITTING MACHINES

Thomas J. Thore, Tarboro, N.C., assignor to Glenoit Mills, Inc., New York, N.Y.

Filed Mar. 1, 1974, Ser. No. 447,282

Int. Cl.² D04B *9/14*

U.S. Cl. 66—9 B **6 Claims**

1. In a sliver feeding device for a high pile fabric knitting machine having a circle of needles, said device having a main cylinder and a doffer, with the doffer being disposed between the main cylinder and the needles and mounted on a rotatable shaft, an adjustable support for mounting the doffer selectively relative to the needles and main cylinder, comprising:

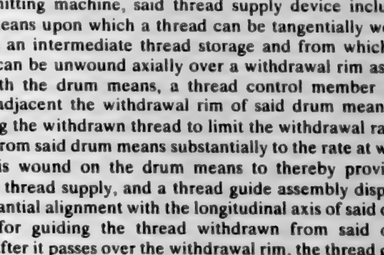
a. a pair of spaced stationary yokes for supporting the doffer shaft,

b. a cavity in each yoke,

c. a bearing block in each cavity having capacity for multi-directional transverse movement within the cavity,

d. said bearing blocks retaining the doffer shaft rotatably,

e. adjustment means within the cavities for displacing the bearing blocks transversely, to locate the bearing blocks at selected positions within the cavities, with consequent mounting of the doffer selectively relative to the needles and main cylinder,



f. said adjustment means comprising spaced, opposing groups of interchangeable spacers, the spacers of each group being transferrable selectively to their opposite group of spacers,

g. retention means to maintain the bearing blocks against both transverse and axial displacement at each of their selected positions within their cavities, and

h. said retention means including pins within each cavity engageable with channels in the bearing block in the cavity.

3,928,987

THREAD SUPPLY DEVICE FOR TEXTILE MACHINES

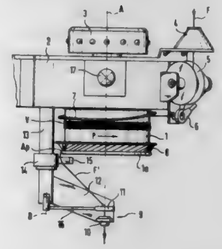
Kurt Arne Gunnar Jacobsson, Ulricehamn, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

Filed Aug. 8, 1974, Ser. No. 495,880

Claims priority, application Germany, Aug. 16, 1973, 2341498

Int. Cl.² B65H *51/20*

U.S. Cl. 66—132 R **3 Claims**



1. In a thread supply device for a textile machine, in particular a knitting machine, said thread supply device including drum means upon which a thread can be tangentially wound to form an intermediate thread storage and from which the thread can be unwound axially over a withdrawal rim associated with the drum means, a thread control member positioned adjacent the withdrawal rim of said drum means for engaging the withdrawn thread to limit the withdrawal rate of thread from said drum means substantially to the rate at which thread is wound on the drum means to thereby provide a positive thread supply, and a thread guide assembly disposed in substantial alignment with the longitudinal axis of said drum means for guiding the thread withdrawn from said drum means after it passes over the withdrawal rim, the thread guide assembly including a first thread guide element aligned with

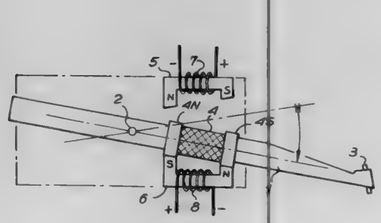
the axis of said drum means and disposed in engagement with the withdrawn thread, the thread guide assembly including a second thread guide element disposed adjacent the first thread guide element and means mounting the second thread guide element for pivotal movement substantially transversely relative to the thread passage therepast, the second thread guide element being substantially coaxially aligned with the axis of said drum means during positive thread supply, and spring means coacting with said second thread guide element for urging same transversely away from its position of alignment with the axis of said drum means, comprising the improvement wherein the withdrawn thread after passing over the withdrawal rim and the thread control member is supplied directly to the second thread guide element, said second thread guide element engaging the thread as withdrawn from the drum means prior to engagement thereof by any other part of the thread guide assembly, and said spring means normally swingably urging said second thread guide element outwardly toward an area which is substantially aligned with a part of the withdrawal rim over which the withdrawn thread passes as it moves relative to the thread control member due to a reduction in the thread withdrawal tension.

3,928,988

MAGNETIC CONTROL DEVICE FOR YARN GUIDES

Claus-Peter Lüth, Via delle Cave di Monteripaldi 55, Firenze, Italy

Filed Aug. 10, 1973, Ser. No. 387,517
Int. Cl.² H01F 7/00
U.S. Cl. 66—138 **4 Claims**



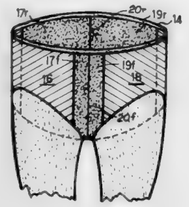
1. In a circular knitting machine having a needle cylinder and a plurality of yarn guides arranged about said cylinder and selectively movable into and out of operating position, the combination of a magnetic control device operatively connected with said yarn guides and responsive to electrical energization to selectively actuate said yarn guides, said magnetic control device comprising a movable component and two stationary components, characterized in that it includes: on each said stationary component, two opposite and symmetric magnetic circuit components designed to alternately cooperate with a magnetic circuit formed on the movable component in such a manner as to establish the closure of a magnetic circuit on one of the stationary components according to the position assumed by the movable component; means to establish a constant magnetic polarization in said magnetic circuit on the movable component in order to stablize the position of said movable component against one of the stationary components of the magnetic circuit by effect of magnetic attraction, and solenoid means arranged to reverse the polarity to create a magnetic repulson effect between one of said stationary components and the movable component which is located against said stationary component.

3,928,989

METHOD OF MANUFACTURE OF TUBULAR KNITTED ARTICLES, AND ARTICLES, PARTICULARLY TIGHTS, OBTAINED BY THE SAID METHOD

Bernard Giberstein, Paris, France, assignor to DIM S.A., Autun, France

Filed July 5, 1973, Ser. No. 376,284
Claims priority, application France, Apr. 4, 1972, 73.12140
Int. Cl.² D04B 1/24, 9/16
U.S. Cl. 66—177 **3 Claims**



1. Method of manufacturing tights comprising the steps of: circularly knitting two symmetrical long tubular stockings and providing in a minor circumferential portion of each of their upper parts on an interval having a center angle α a reduced elasticity by interlacing at least a part of the threads used for the circular knitting in this interval and normally knitting the threads in the other angular portions, cutting said two stockings symmetrically one with the other as mirror images along cut lines substantially parallel to the axis of the tubular stockings and provided in the upper part of said stockings in said normally knitted portions, said cut lines being offset from respective median lines of said normally knitted portions, dividing said normally knitted portions into respective main parts and into respective reduced parts, and assembling said two stockings and joining them at front and rear seams along said cut lines to constitute a panty portion of said tights with two normally knitted portions, one of reduced surface area formed by said reduced parts being assembled at the front seam and forming a minor area on each side of said front seam of said panty portion and one of greater surface formed by said main parts assembled at the rear seam forming substantially all of the rear of said panty portion and with reduced elasticity portions of said minor circumferential portions adjoining both said front and rear normally knitted portions and extending over a major portion of the front parts of the panty portion thereby forming the panty portion from the upper assembled parts of said two stockings.

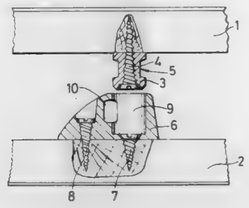
3,928,990

SKI LOCK

Rudolf Stenz, Neubiberg, Germany, assignor to Dipl.-ing. Rudolf Konwitschny, Taufkirchen, Germany

Filed Apr. 17, 1974, Ser. No. 461,624
Claims priority, application Germany, Apr. 18, 1973, 2319772
Int. Cl.² E05B 73/00; A63C 11/02
U.S. Cl. 70—58 **9 Claims**

1. A ski lock comprising a pin member having a locking groove adapted to be attached to a ski, a bush member adapted to be attached to another ski and having first means defining a first opening into which said pin member is inserted, said bush member having second means defining a second opening, said second opening extending through said bush member in a direction transverse to said first opening and communicating with at least a portion of said locking groove, locking means capable of being inserted into said second opening having a contour complementary to said second opening, said locking means further including a rotatable part which is lockable by a key, said rotatable part providing an offset relative to the contour of said locking means, and retention means on said bush member juxtaposed with said rotatable part to retain said locking means in said second opening



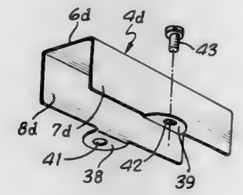
when said rotatable part is offset whereupon said key is removed.

3,928,991

LOCK

Ray A. Gaul, 1813 High St., Alameda, Calif. 94501, and Raymond J. Penoli, Jr., 20 Geary Court, Walnut Creek, Calif. 94596

Filed May 28, 1974, Ser. No. 473,392
Int. Cl.² E05B 15/00
U.S. Cl. 70—364 A **3 Claims**



1. An improved lock which is invulnerable to operation by a gaff or air gun wherein the lock consists of a housing formed with pin cylinder openings in a pin cylinder block, a rotatable barrel formed with openings in registration with said pin cylinder openings, pin members slidably contained in said cylinder openings and biased by individual springs, and a removable cap covering said cylinder openings for containing said pins and springs, the improvement comprising:
   a. means securing said cap to said lock body housing to prevent movement of said cap in a direction outwardly from said lock housing axial to said cylinder openings including:
      1. said cap being formed with an end leg depending from said cap top member and being formed with a foot protruding at approximately right angles thereto and having an opening therein;
      2. said lock body being formed with a threaded opening; and
      3. a threaded fastener for attaching said cap to said lock body and insertable through said foot opening and into said lock body opening.

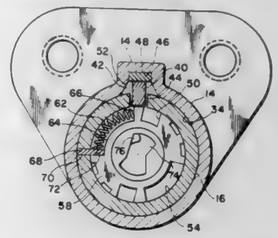
3,928,992

HIGH SECURITY LOCK

Donald Thomas Talbot, Wednesfield, England, assignor to Eaton Corporation, Ohio

Filed July 24, 1974, Ser. No. 491,429
Int. Cl.² E05B 29/08, 47/00
U.S. Cl. 70—366 **24 Claims**

1. A lock for use with a key for effecting actuation of a latching device, said lock comprising:
   a housing having a substantially cylindrical bore therethrough;
   a lock cylinder having a substantially cylindrical bore therein, said lock cylinder being received in said bore in said housing and being rotatable relative to said housing; latch actuating means operatively connected to said lock cylinder and rotatable therewith to effect actuation of the latching device;
   locking means received in said bore of said lock cylinder and being rotatable relative thereto in response to the linear movement of the key into the lock;



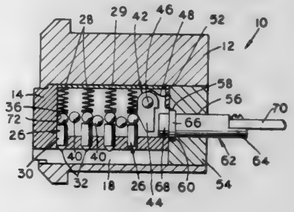
   coupling means for coupling said locking means to said lock cylinder, said coupling means coupling said locking means to said lock cylinder when said lock is in an unlocked condition permitting simultaneous rotation of said locking means and said latch actuating means to effect actuation of the latching device; and
   means for moving said coupling means to prevent engagement of said coupling means with said locking means when said lock is in a locked condition.

3,928,993

PICKPROOF CYLINDER LOCK

Norman Epstein, Carmel, N.Y., assignor to Norman Lock Co., Mahopac, N.Y.

Continuation of Ser. No. 388,428, Aug. 15, 1973, abandoned.
This application Aug. 29, 1974, Ser. No. 501,808
Int. Cl.² E05B 17/04, 25/00, 27/04, 63/00
U.S. Cl. 70—419 **13 Claims**



1. A locking mechanism characterized by:
   a body having a longitudinally extending key slot therein;
   a lock-operating member mounted in the body for movement from a normal position toward a second position which it must occupy before the lock can be released;
   a plurality of key-actuatable members movably mounted within the body;
   means urging said key-actuatable members toward positions at which portions thereof are engageable by a key inserted into the key slot, and from which positions said key-actuatable members are movable to predetermine unlocking positions by a proper key in said slot;
   and lock-release means connected to said key-actuatable members to move therewith, through which key produced motion of said key-actuatable members to their unlocking positions is translated into force on said lock-operating member to effect motion thereof to its said second position;

said lock-release means comprising a lock-release element carried by each of said key-actuatable members, said key-actuatable members having a normal lock-closed position in which said lock-release elements are maintained out of operative association with each other, said key-actuatable members in their unlocking positions retaining said lock-release elements in operative engagement with each other, with each element exerting a force upon the adjacent elements and said force being transmitted to said lock-operating member in a direction to move the latter to its said second position.

3,928,994

THICKNESS CONTROL SYSTEM FOR A ROLLING MILL

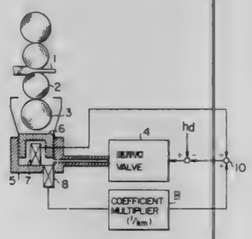
Ken Ichiryu, Mito; Masayuki Shigeta, Katsuta; Ichiro Nakamura, Katsuta, and Toshiyuki Kajiwara, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 15, 1974, Ser. No. 515,030

Claims priority, application Japan, Oct. 17, 1973, 48-115905

Int. Cl.² B21B *37/00*

U.S. Cl. 72—8 **12 Claims**



1. In a strip thickness control system of the gagemeter type comprising a plurality of rolls, a hydraulic jack for giving rolling power to said rolls, a flow rate control valve for adjusting the roll gap by controlling the amount of oil in said hydraulic jack, a valve control device, means for giving a command associated with a desired thickness to said control device and a position detector for detecting the roll gap, the output of said position detector being fed back to said valve control device; a method of controlling the strip thickness for the rolling mill comprising steps of continuously detecting a value of at least one parameter relating to the outgoing thickness of a strip rolled by said rolls, producing an autocorrelation function R of the detected value of said parameter, producing a power spectra for the whole region and a power spectra for a predetermined part of the region covered by said autocorrelation function, determining a roll eccentricity power from the ratio between said power spectra for the predetermined part of the region and said power spectra for the whole region, and applying said roll eccentricity power to the strip thickness control system so as to compensate for the variation of the outgoing thickness of the strip due to the roll eccentricity.

3,928,995

METHOD OF AND APPARATUS FOR PRODUCING ARTICLES HAVING HIGH MAGNETIC PERMEABILITY FROM BILLETS OF TEMPORARILY MAGNETIZABLE (I.E., SOFT MAGNETIC) MATERIAL

John Edward Oldis, Carmel, Ind., and Peruvemba Swaminatha Venkatesan, Princeton, N.J., assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 428,948, Dec. 27, 1973, abandoned. This application Jan. 27, 1975, Ser. No. 544,527

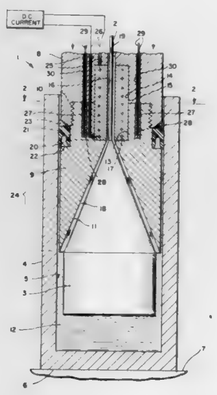
Int. Cl.² B21G *23/00*

U.S. Cl. 72—60 **6 Claims**

1. Apparatus for producing an article having high magnetic permeability from a billet of temporarily magnetizable material, said apparatus comprising:

a. a fluid control element having a flow control surface providing a zone of deformation having an entrance end adapted to receive the head end of a billet of temporarily magnetizable material and an exit end downstream from said entrance end adapted to discharge deformed material having the cross-section of the desired article,

b. first means to establish a controlled flow of pressurized extrusion fluid through the fluid control element between the flow control surface and the head end of the billet



from the entrance end to the exit end of the zone of deformation to deform said billet,

c. second means to advance said billet into the entrance end of said zone of deformation,

d. a magnetizing coil embedded in said fluid control element and extending from the exit end of the zone of deformation to a station downstream from said exit end and adapted to surround deformed material exiting the exit end of the zone of deformation,

e. a source of direct current connected to said magnetizing coil to energize said magnetizing coil.

3,928,996

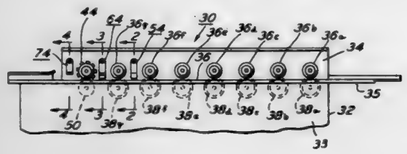
DUCT JOINING MEANS AND APPARATUS FOR FORMING THE SAME

Angelo R. Molino, 816 East Bldg. Haddonview Apartments, Haddonfield, N.J. 08033

Division of Ser. No. 318,005, Dec. 26, 1972, abandoned. This application Nov. 18, 1974, Ser. No. 524,541

Int. Cl.² B21D *53/36, 17/04*

U.S. Cl. 72—129 **12 Claims**



1. Apparatus for forming a duct joining member comprising die means for forming an upstanding U-shaped portion along a strip of sheet metal having a pair of legs each joined to a respective one of a pair of coplanar horizontal side flanges, and slitter means for forming spaced slits in the strip along and between the end of one leg of the U-shaped portion and one of said flanges.

3,928,997

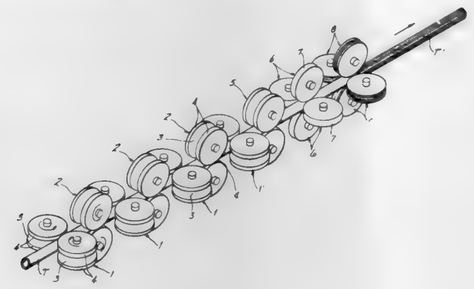
METHOD AND APPARATUS FOR PRODUCING CORRUGATED TUBING

Harold H. Laws, East Alton, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Mar. 28, 1975, Ser. No. 563,034

Int. Cl.² B21D *13/04*

U.S. Cl. 72—178 **10 Claims**



1. An apparatus for providing a longitudinally extended pattern on a metallic tube comprising:

A. a plurality of paired idling rolls, each roll of said pair possessing a continuous concave surface of semi-circular cross section located in the cylindrical surface thereof and both rolls located within the same plane;

B. a plurality of paired resilient drive rolls located in adjacent alternation with said idling rolls and in a plane perpendicular to the plane of said idling rolls, and possessing concave surfaces identical thereto, wherein said concave surfaces are lined with a resilient material;

C. at least one pair of non-resilient drive rolls of identical configuration to said resilient drive rolls and located beyond said resilient drive rolls, serving to size said tube;

D. a set of 4 smooth turk's head rolls situated beyond said non-resilient drive rolls, arranged in two orthogonal axial planes the intersection of said axial planes corresponding to the central axis of the tube, each of said rolls having a smooth concave surface of quarter-circular cross-section located in its cylindrical surface, and all of said rolls positioned so as to lie within a single plane perpendicular to the longitudinal axis of said tube; and

E. means for forming said pattern on said tube comprising at least one patterned roll located in contact with said tube after its passage through said smooth turk's head rolls.

3,928,998

METAL ROD FOR REINFORCED CONCRETE AND PROCESS FOR PRODUCING SAID ROD

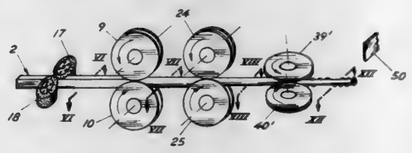
Hector Jose Torres, Buenos Aires, Argentina, assignor to Leonardo Francisco Aurelio, Buenos Aires, Argentina, a part interest

Filed Feb. 13, 1974, Ser. No. 442,008

Claims priority, application Argentina, Nov. 28, 1973, 251204

Int. Cl.² B21H *8/00*

U.S. Cl. 72—185 **7 Claims**



1. A process for producing a metal rod having a high yield point and good adhesive properties for use with reinforced concrete or the like, comprising the steps of:

producing an elliptical rod having intersecting major and minor axes by subjecting a metal strip to cold compacting in order to reduce the cross-sectional area thereof and to increase the yield point of the metal constituting said elliptical rod;

applying pressure to said elliptical rod at peripheral locations thereof located at opposite ends of said major axis; allowing a portion of the metal at said locations to shift toward other peripheral locations of said rod, said other peripheral locations being at the opposite ends of said minor axis thereby increasing the amount of metal located at said other peripheral location while simultaneously maintaining another portion of the metal of said rod unshifted and substantially free of metalographic transformation, said another portion forming a core and studs and being located adjacent said major axis, the shifting of said material causing studs to be formed out at said peripheral locations while said shifted material transforms said elliptical rod to a circular rod having studs thereon.

3,928,999

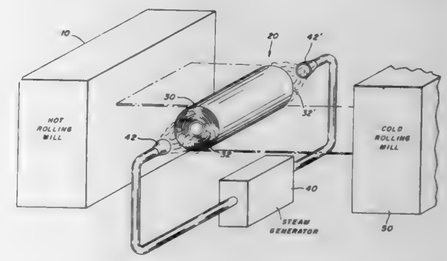
PROCESS FOR TREATMENT OF COILED ALUMINUM SHEET

Arvid N. Anderson, and Wayne W. Binger, both of New Kensington, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 27, 1975, Ser. No. 553,672

Int. Cl.² B21B *45/02*; B21D *31/00*

U.S. Cl. 72—202 **7 Claims**



1. A process for inhibiting damage to rolls in a mill for cold rolling aluminum sheet which comprises:

a. coiling the aluminum sheet as it exits from a hot rolling mill; and

b. thereafter applying a spray of steam to the lateral edges of said coiled sheet prior to its entry into the cold rolling mill.

3,929,000

HIGH-SPEED SHORT-STROKE FORGING PRESS

Bruno Kralowetz, St. Ulrich 142, Steyr, Austria

Filed Oct. 18, 1974, Ser. No. 516,010

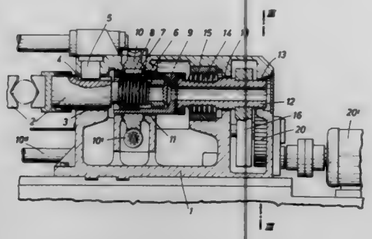
Claims priority, application Austria, Nov. 15, 1973, 9603/73

Int. Cl.² B21J *9/18*

U.S. Cl. 72—402 **5 Claims**

1. A high-speed short-stroke forging press, which comprises a machine frame at least one press ram mounted and guided in said machine frame for a straight-line movement relative thereto, and helical drive means carried by said machine frame and operatively connected to said press ram and operable to adjust the stroke position of said press ram and axially to reciprocate said press ram, and in which helical drive means comprise a cam ring fixed in said machine frame and formed on one side with helical cam faces, a cam follower mounted in said machine frame for angular and axial movement relative

to said cam ring and having helical faces which face said helical cam faces, biasing means for resiliently urging said helical faces of said cam follower against said helical cam



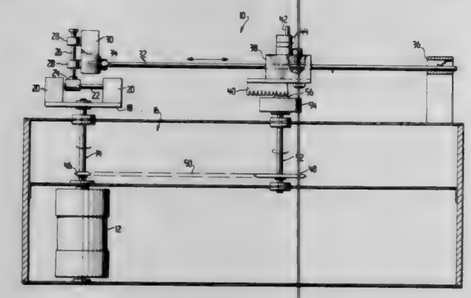
faces, and means for angularly oscillating said cam follower, said cam follower being axially fixed to said press ram and adapted to reciprocate the same.

3,929,001

DEVICE FOR TESTING WEAR RESISTANCE OF DENTAL RESTORATIVE MATERIALS

Henry L. Lee, 3534 E. California, Pasadena, Calif. 91107; Jan A. Orlowski, 1304 Rubio Drive, Altadena, Calif. 91001, and David V. Butler, 2825 E. Cortez, West Covina, Calif. 91791

Filed Apr. 29, 1974, Ser. No. 464,949
Int. Cl.² G01N *3/56*
U.S. Cl. 73—7 **1 Claim**



1. A device for use in testing the wear resistance of composite dental restoratives comprising:

a sample holder adapted to receive and hold a sample of composite dental restorative whose wear resistance is to be tested;

means connected to said sample holder for rotating the same;

means for abrading said composite dental restorative;

a mounting frame adapted to hold said means for abrading said composite dental restorative;

a reciprocating mechanism mechanically coupled to said mounting frame for stroking said abrading means held in said mounting frame cyclically across an exposed surface of said composite dental restorative held in said sample holder when said rotating means is operative;

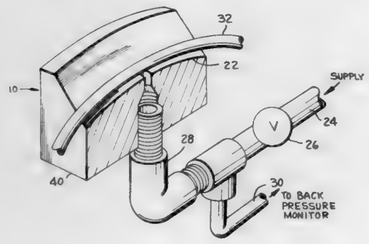
wherein said reciprocating mechanism comprises a motor having a shaft secured thereto; a rotatable coupling attached to said shaft; and an arm mechanically coupled between said rotatable coupling and said mounting frame; and wherein said rotatable coupling comprises a mounting plate secured to said motor shaft; a pair of mounting blocks secured to said mounting plate; a shaft secured within each of said mounting blocks and extending therebetween; said shaft being off-center from the axis of said motor shaft; an additional mounting block slideably engaging said shaft secured between said pair of mounting blocks and being adapted to be fixedly secured to said shaft; a shaft secured to said additional mounting block and projecting away therefrom; at least one collar rotatably secured to said shaft secured to said additional mounting block; a mounting block secured to said collar; and a ball joint attached to said mounting block secured to said collar and to said arm.

3,929,002

FLUIDIC GAUGING SENSOR HEAD

Hansjoerg Stern, Scotia, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Oct. 29, 1974, Ser. No. 518,268
Int. Cl.² G01B *13/08*
U.S. Cl. 73—37.7 **2 Claims**



1. A fluidic gauging sensor head for monitoring a characteristic of a continuously moving strand-like monofilament material comprising:

a. a support block having an open channel bounded by converging side walls extending from a surface and lengthwise of said support block;

b. means for admitting pressurized fluid to said channel to sense variations in the back pressure therefrom proportional to changes in the characteristic of the material being monitored as the strand-like material passes through said open channel; and

c. means for establishing a substantially leak-proof seal between the monofilament material and said converging side walls bounding said channel to define an enclosed gauging area, said means for establishing a substantially leak-proof seal comprising said channel extending lengthwise in a convex arc, whereby the continuously moving monofilament material presses against said side walls bounding said channel to insure that the flow of the fluid through said gauging area is large compared to any leakage passing through the interface formed between the monofilament material and said side walls.

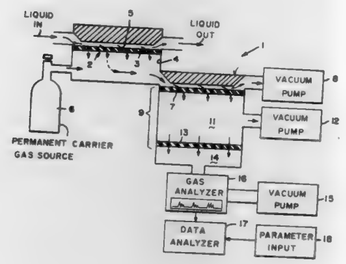
3,929,003

METHOD AND APPARATUS FOR DETECING MATERIALS IN A LIQUID

Peter M. LLewellyn, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.

Continuation of Ser. No. 833,517, June 16, 1969, abandoned. This application Nov. 15, 1971, Ser. No. 199,025
Int. Cl. G01N *13/04*; **B01D** *13/00*
U.S. Cl. 73—61 R **35 Claims**

4. In a method for locating the source of a certain contaminate in a body of water the steps of, sampling the water at a plurality of points, separating the contaminant from the sampled water beneath the surface of the body of water by passing the contaminant through a generally water impervious membrane within the body of water which is at least semipermeable to the contaminant, diffusing the separated contaminant in a vaporized state into a carrier gas atmosphere, separating the contaminant vapor from the carrier gas atmosphere by passing the contaminant through a generally carrier gas impervious membrane which is at least semipermeable to the contaminant, diffusing the separated contaminant in a vaporized state into a carrier gas atmosphere, separating the contaminant vapor from the carrier gas atmosphere by passing the contaminant through a generally carrier gas impervious membrane which is at least semipermeable to the contaminant to enrich the contaminant concentration in the atmosphere on



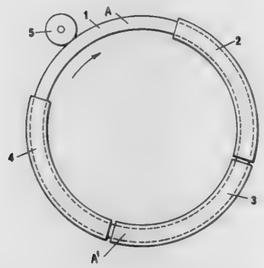
the downstream side of the membrane, analyzing the contaminant enriched atmosphere to detect the presence of the contaminant, and correlating the presence of the detected contaminant with the respective sampling points to derive an indication of the location of the source of the certain contaminant.

3,929,004

METHOD AND APPARATUS FOR MONITORING MATERIALS DISSOLVED OR SUSPENDED IN LIQUID

Dimiter Stefanoff Gunew, St. Albans, and Ronald John Herniman, North Balwyn, both of Australia, assignors to ICI Australia Limited, Melbourne, Australia

Filed Nov. 26, 1973, Ser. No. 419,102
Claims priority, application Australia, Dec. 15, 1972, 1644/72; June 21, 1973, 3792/73
Int. Cl.² G01N *31/08*
U.S. Cl. 73—61.1 C **19 Claims**



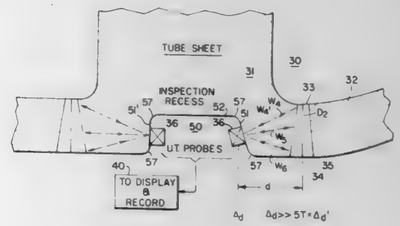
1. In a monitor for a liquid stream including a carrier liquid and at least one component dissolved or suspended therein comprising, in combination, a means for dispensing said liquid stream, a conveyor capable of receiving at least a part of said liquid stream, a carrier removal chamber or space traversed by said conveyor and maintained at a temperature selected to remove said carrier liquid and leave said component or components on said conveyor as a residue, means for heating said conveyor in a gasifying chamber to gasify said residue and means for monitoring said gasified residue to generate an output signal indicative of the presence of said component or components in said stream the improvements wherein firstly said conveyor comprises a non-supple annulus of which at least a part is porous and which is of uniform radius and mounted so as to be capable of axial rotation; and secondly said gasifying chamber surrounds a portion of said conveyor and includes bearing surfaces in engagement with the edge portions of said annulus in a manner such that said gasified residue is prevented from escaping from said gasifying chamber without first being exposed to said monitoring means.

3,929,005

ULTRASONIC INSPECTION RECESS IN HEAT EXCHANGER AND NUCLEAR STEAM GENERATOR TUBESHEETS

John K. Parkinson, 65 Dunvegan Road, St. Catharines, and Anthony Ruhe, 168 S. Pelham St., Fonthill, both of Ontario, Canada

Filed Aug. 1, 1974, Ser. No. 493,598
Int. Cl.² G01N *29/04*
U.S. Cl. 73—67.8 **5 Claims**



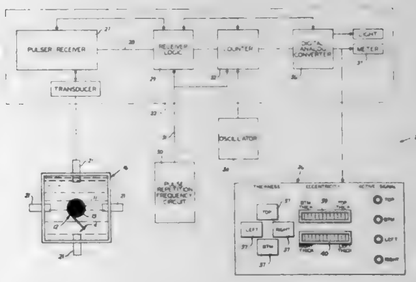
1. An improved system for non-destructive ultrasonic testing of a vessel weld seam utilizing an ultrasonic probe for testing for possible defects in said weld seam of said vessel, wherein the improvement comprises: a vessel having a circumferentially extending exterior U-shaped access slot, said slot having a wall substantially aligned with the weld seam, said wall forming a working surface of the slot is engaged by said transducer for generating frontal ultrasonic signals which substantially uniformly cross an axis of the weld seam with substantially no reflection from adjacent surfaces, the ultrasonic transducer responsive to reflected signals from said weld seam which indicate possible weld seam defects, the transducer movable in said slot so as to permit a scanning of the entire weld seam said slot disposed about said vessel at a distance substantially uniform along the entire length of the weld.

3,929,006

MEASURING ARTICLE THICKNESS ULTRASONICALLY

Luther Miles Boggs, Chamblee, and Howard John Flichman, Atlanta, both of Ga., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Nov. 26, 1973, Ser. No. 419,170
Int. Cl.² G01B *17/02*; **G01N** *29/00*
U.S. Cl. 73—67.8 S **19 Claims**



1. A method of measuring the thickness of an article having

first and second surfaces bounding a material of known acoustical properties, which comprises the steps of:

establishing a medium having known acoustical characteristics contiguous with the first surface of the article;

generating a longitudinal wave in the medium directed toward the first surface, one part of the wave being reflected therefrom back through the medium, as a first echo, the other part of the wave passing through the first surface and the article to the second survace, and a portion of the other part being reflected back through the article and the medium as a second echo;

generating control signals to establish first and second predetermined minimum intensity levels and a time varying intensity associated with and greater than the first predetermined minimum intensity;

comparing the intensity of a first echo having the first predetermined minimum intensity level with the time varying intensity after a preset time and the intensity of a second echo with the second predetermined minimum intensity;

generating a quantity proportional to the time interval between a first echo having the first predetermined minimum intensity and of which the intensity is less than the time varying intensity after the preset time and a second echo having the second predetermined minimum intensity and a duration during which the second predetermined minimum intensity is exceeded to establish the thickness of the article; and

inhibiting the generation of any quantity when at least one of the predetermined minima or time varying intensity characteristics do not exist.

3,929,007

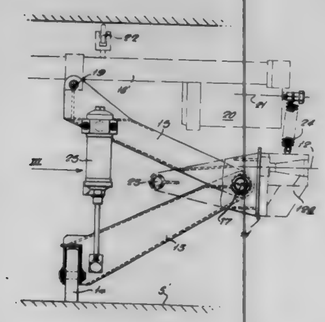
APPARATUS FOR CARRYING OUT ULTRASONIC INSPECTION OF PRESSURE VESSELS

Kenneth Henry Dent, Northwich, and Ronald Scott Challender, Warrington, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 13, 1973, Ser. No. 424,577

Int. Cl.[2] G01N 29/04

U.S. Cl. 73—67.8 S **3 Claims**



1. A manipulator for supporting an ultrasonic scanning transducer within a coolant nozzle of a nuclear reactor pressure vessel, the manipulator being arranged for carriage by a support member disposed within the vessel and comprising a caliper means including a pair of legs pivotable to span the bore of the nozzle, an ultrasonic transducer mounting attached to the free end of one leg of the pair of legs, and the pair of legs being pivotable about a manipulator axis extending between the legs and normal to the pivot axis of the legs, ram means connected to each leg for pivoting the legs together to enable free entry of the manipulator and ultrasonic transducer mounting into the nozzle and for pivoting the legs apart to span the bore of the nozzle, a plurality of roller members associated with the transducer mounting for making rolling contact with the interior surface of the nozzle and for spacing a transducer carried by the transducer mounting in an operable position relative to the surface of the nozzle, and a gimbal mount for mounting the transducer mounting on the free end of said one leg of the pair of legs.

3,929,008

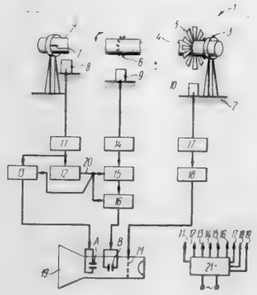
APPARATUS FOR MEASURING AMPLITUDE OF VIBRATION OF ROTATING MACHINE PARTS

Boris Nikolaevich Zlotin, ulitsa Degtyarnaya, 12, kv. 8; Valentin Vyacheslavovich Timofeev, ulitsa Ordzhonikidze, 33, kv. 75, and Sergei Vladimirovich Chernenko, prospekt Geroev, 43, kv. 35, all of Leningrad, U.S.S.R.

Filed Dec. 31, 1974, Ser. No. 537,707

Int. Cl.[2] G01H 11/00

U.S. Cl. 73—71.4 **1 Claim**



1. An apparatus for measuring the amplitude of vibration of rotating parts of machines having a stator and a shaft with marks, mounting rotating parts, comprising: a first pulse sensor sensing a first mark of said shaft of said machine, said sensor being mounted on the stator of said machine; a second pulse sensor for sensing second marks of said shaft of said machine, disposed in the same plane with said rotating parts of said machine when the latter do not vibrate, the number of said second marks corresponding to the number of said rotating parts; said second pulse sensor being mounted on said stator of said machine opposite to said second marks; a third pulse sensor for sensing said rotating parts of said machine, mounted on said stator of said machine opposite to said rotating parts; a first pulse former for appropriately shaping pulses from a sensor, having its input connected to the output of said first pulse sensor; a second pulse former for appropriately shaping pulses from a sensor, having its input connected to the output of said second pulse sensor; a third pulse sensor for appropriately shaping pulses from a sensor, having its input connected to the output of said third pulse sensor; a horizontal scanning unit comprising a sawtooth generator with controlled sawtooth rise-time and having a first input connected to the output of said first pulse former, and a second input for feeding signals controlling the rise-time of sawtooth signal generated therein; a pulse delay unit at the output of said second pulse former, comprising a sawtooth generator with controlled sawtooth rise-time, having a first input connected to the output of said second pulse former, and a second input for feeding signals controlling the rise-time of a sawtooth signal generated therein; a vertical scanning unit comprising a sawtooth generator with controlled sawtooth rise-time, having a first input connected to the output of said pulse delay unit, and a second input for feeding signals controlling the rise-time of a sawtooth signal generated therein; a cathode-ray tube; horizontal-deflection plates of said cathode-ray tube connected to the output of said horizontal scanning unit; vertical-deflection plates of said cathode-ray tube connected to the output of said vertical scanning unit; a control electrode of said cathode-ray tube electrically coupled to the output of said third pulse former; a converter for converting pulse frequency into a signal proportional thereto, having its input connected to the output of said first pulse former and an output connected to said second input of said horizontal scanning unit, to said second input of said pulse delay unit and to said second input of said vertical scanning unit; a screen of said cathode-ray tube on which a scan pattern is displayed during the operation of the apparatus, the scan pattern consisting of vertical lines whose number corresponds to the number of said rotating parts, each line displaying a spot which is defined by the instant of passage of a respective one of said rotating parts by said third pulse sensor, said spot displaying a displacement line, the length of the displacement line being proportional to the amplitude of vibration of said rotating part.

3,929,009

MEASUREMENT OF DRILLING TORQUE

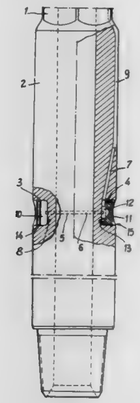
Jean Lutz, Pau; Andre Traille, Aussevielle, and Francois Besnard, Lescar, all of France, assignors to Societe Nationale des Petroles d'Aquitaine, Paris, France

Filed June 18, 1973, Ser. No. 370,677

Claims priority, application France, June 20, 1972, 72.22150

Int. Cl. G01l 3/10

U.S. Cl. 73—136 A **7 Claims**



1. A device to supply a signal representative of the drilling torque comprising a Kelly defining an axial passage for drilling mud, at least one cavity near its lower end, and passage means distinct from said axial passage connecting said cavity to the upper end of said Kelly, a torque-measuring electrical bridge including at least four strain gauges located in diametrically opposed pairs inside said at least one cavity, electrical connections within said passage means which are likewise parts of the measuring bridge and serve to transmit the signal provided by said strain gauges to the top of the Kelly, and means for hermetically closing said at least one cavity.

3,929,010

METHOD AND MEANS FOR MEASURING THE CLAMPING FORCE ON TRANSFORMER WINDINGS

Ove Tjernstrom, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

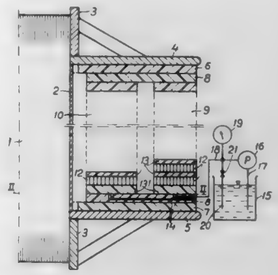
Filed Sept. 30, 1974, Ser. No. 511,302

Claims priority, application Sweden, Oct. 26, 1973, 73145427

Int. Cl.[2] G01L 5/00

U.S. Cl. 73—141 R **2 Claims**

2. In a transformer having windings in which the windings are mechanically clamped between two clack rings which support the windings at their two ends, first clacks arranged within the clack rings and second clacks forming columns of clacks in the windings over which the clamping force is to be measured, some of the second clacks being in contact with the first clacks, at least one of the contacting clacks having a channel therein opening into a contact surface area between



the clacks and to the outside, means to supply pressure medium to said channel, and means to determine the pressure medium pressure at which there is a balance between added pressure medium and pressure medium leaking from said area.

3,929,011

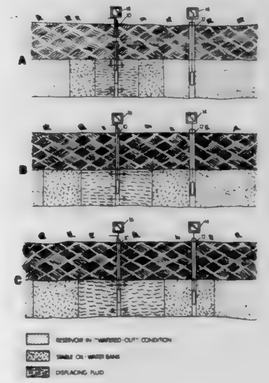
DETERMINATION OF OIL SATURATION IN AN ANISOTROPIC RESERVOIR

Stanley C. Jones, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Dec. 13, 1974, Ser. No. 532,351

Int. Cl.[2] E21B 49/00

U.S. Cl. 73—155 **8 Claims**



1. A process of determining in situ the average oil saturation of an oil-bearing reservoir having an injection well in fluid communication with at least one observation well, comprising injecting into the reservoir a displacing fluid which will form a stable oil-water bank of the formation fluids within the reservoir and wherein the mobility of the displacing fluid is less than the mobility of the oil-water bank, determining the amount of the displacing fluid, comprised of a front portion and a back portion, required to displace the oil-water bank and the front portion of the displacing fluid to the observation well and thereafter determining the average oil saturation by the following formula:

$$S_{oi} = S_{ob} - \frac{V_{obt}}{V_{dbt}}\left(S_{ob} - S_{or} - f_{oi}\frac{V_{dbt}}{V_p}\right)$$

wherein

S_{oi} = average oil saturation between the injection well and the observation well prior to start of displacing fluid injection,

S_{ob} = average oil saturation in the oil-water bank

V_{obt} = cumulative volume in barrels of displacing fluid injected when the front portion of the oil-water bank arrives at the observation well,

V_{dbt} = cumulative volume in barrels of displacing fluid injected when the front portion of the displacing fluid arrives at the observation well

S_{or} = average residual oil saturation left by the displacing fluid

f_{oi} = fractional flow of oil prior to injection of placing fluid,

V_p = elliptical pore volume of reservoir bounded by the observation well.

3,929,012

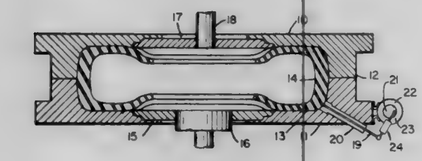
METHOD AND APPARATUS FOR OPTIMIZING CURE TIME OF ELASTOMERIC ARTICLES

Constantine E. Anagnostopoulos, St. Louis, Mo., and Raleigh W. Wise, Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 791,031, Jan. 14, 1969. This application July 7, 1972, Ser. No. 269,859

Int. Cl. G01n *3/32*

U.S. Cl. 73—156 **2 Claims**



1. In a method of curing a staple elastomeric article under pressure within a mold wherein said article comprises at least one thick section and at least one thinner section and undergoes changes in modulus as curing progresses, the improvement which comprises the steps of embedding a slender probe in a thick section of said article, the tip of said probe being in the interior of said section, oscillating said tip embedded probe transversely at a frequency of from about 1 to about 1000 cycles per minute about a pivot line substantially perpendicular to a longitudinal plane of the probe, measuring the force required to oscillate said probe as curing progresses, opening the mold at a determined force and removing a vendible article.

3,929,013

DEFECT-DETECTING METHOD AND APPARATUS

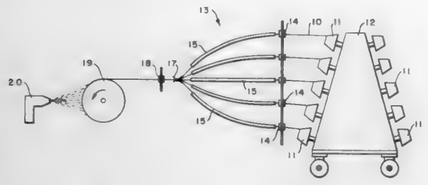
James E. Hendrix, Inman, and Hans H. Kuhn, Spartanburg, both of S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 11, 1974, Ser. No. 459,943

Int. Cl.² G01N *21/06*

U.S. Cl. 73—160 **3 Claims**

1. A method for detecting defects in textile yarns comprising the steps of withdrawing yarns from packages, winding each yarn under substantially equal tension a plurality of wraps around a support surface with the wraps of each yarn being displaced from the wraps of adjacent yarns, applying a composition comprising a colorant and a solvent mixture to the yarn wraps on said support surface, permitting said composition to undergo phase separation, and comparing the resulting depths of shade of the respective yarn wraps.



3,929,014

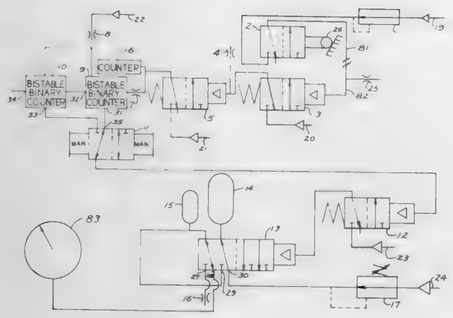
PERIODICALLY ACTUATED PNEUMATIC RATEMETER

Martin James Sharki, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 442,027, Feb. 13, 1974, abandoned. This application Dec. 30, 1974, Ser. No. 537,627

Int. Cl.² G01M *19/00*

U.S. Cl. 73—168 **28 Claims**



13. An apparatus for monitoring the rate of air impulses in an air line, comprising:

tank means for storing air;

pressure variation means for causing the pressure of air in said tank to vary at a predetermined rate;

display means for indicating air pressure;

gating means responsive to impulses from said line for alternately connecting said tank means to said pressure variation means and said tank means to said display means; and

means for removing periodic impulses from said line.

3,929,015

LINE MOTION AND WATER CURRENT DISC SENSOR

Michael L. Greene, Oxon Hill, and George J. Moss, Bethesda, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 30, 1975, Ser. No. 573,278

Int. Cl.² G01F *1/28*

U.S. Cl. 73—170 A **4 Claims**

1. A line motion and water current disc sensor; which comprises,

a cylindrical elongated housing;

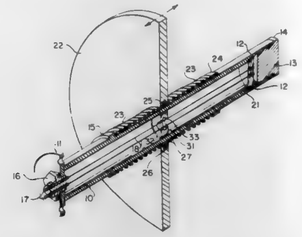
noninsulated wires secured within said housing along a portion of its length;

a disc surrounding said housing and adapted for movement along said housing;

spring means on opposite sides of said disc for normally positioning said disc in a neutral position;

a magnetic follower within said housing;

said magnetic follower including an electrical contact thereon for completing an electrical circuit between said noninsulated wires; and



means on said disc for causing said magnetic follower to move simultaneously with movement of said disc.

3,929,016

FLOWMETER FOR AN OPEN AQUEDUCT

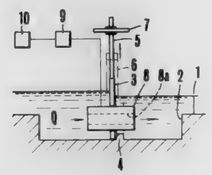
Kazuhiko Takeuchi, Fujisawa, and Ryoichiro Matsumoto, Yokohama, both of Japan, assignors to Yamatake-Honeywell Company, Ltd., Tokyo, Japan

Filed Mar. 12, 1975, Ser. No. 557,793

Claims priority, application Japan, Mar. 14, 1974, 49-28500

Int. Cl.² G01F *1/58*

U.S. Cl. 73—194 EM **1 Claim**



1. A flowmeter for an open aqueduct comprising

a sump in said aqueduct of a predetermined depth greater than the depth of said aqueduct;

a dam gate positioned across said aqueduct intermediate the ends of said sump; and

an electromagnetic fluid flow transducer having a central bore therethrough,

said electromagnetic fluid flow transducer being carried by said gate and positioned thereby to be completely submerged in the fluid in said sump, with the fluid flowing through the submerged bore of the transducer.

3,929,017

FLOW MONITOR AND SAMPLE CONTROL DEVICE

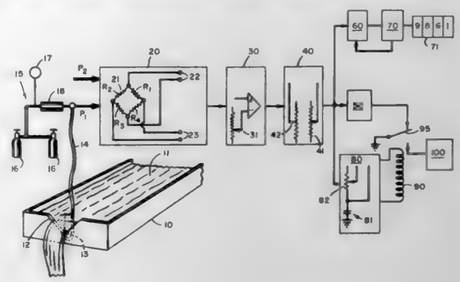
William S. Kowalski, Hinsdale, Ill., assignor to Elan Engineering Corporation, Hinsdale, Ill.

Filed Oct. 5, 1973, Ser. No. 403,841

Int. Cl.² G01F *1/20*

U.S. Cl. 73—198 **18 Claims**

1. Apparatus for indicating rate of flow of a fluid comprising a weir arranged to receive said liquid thereover, a dip tube having its outlet end extended below the level of said liquid behind said weir at least to the depth of the throat of the weir, means for feeding at the other end of said tube a gas under pressure so that said gas is caused to pass in a continuous stream from the outlet end of said tube into said liquid, an electronic transducer sensitive to gas pressure when impressed thereon and which yields an output voltage proportional to said pressure, means for impressing upon said transducer the pressure of said gas which is passed through said tube, a function amplifier having a logarithmic function element set at a value of at least 1.0 and which is a constant for the shape of said weir, means connected with the output of said transducer



for impressing upon said amplifier a voltage which is proportional to the output voltage of said transducer, and means connected to the output of said amplifier for indicating a value proportional to the output voltage of said amplifier.

3,929,018

PROBE SYSTEM

Robert Bruce Turner, Weymouth, Mass., assignor to American Medical Electronics Corporation, Weymouth, Mass.

Filed May 6, 1974, Ser. No. 467,222

Int. Cl.² G01K *1/16, 7/16*

U.S. Cl. 73—343 R **6 Claims**



1. A heat sensing probe system comprising a probe member, a heat sensitive element sealingly engaged with and mounted on said probe member, separate and independent of said probe cover, and a disposable probe cover for mounting on said probe member, said probe cover including a body section and a tip including a thermally conductive contact section sealingly interconnected with said body section, said tip being contiguous to and in sealed engagement with said probe member for forming a thermal chamber, between said probe member and said contact section, by said contact section and said heat sensing element being spaced from each other and a low thermal conductivity fluid medium for transferring heat from said contact section to said heat sensitive element.

3,929,019

PRESSURE TRANSDUCER

James R. Younkin, Fayetteville, Ark., assignor to Edo - Aire Mitchell Industries, Inc., Mineral Wells, Tex.

Filed Mar. 25, 1974, Ser. No. 454,365

Int. Cl.² G01L *9/12*

U.S. Cl. 73—398 C **28 Claims**

1. A pressure transducer which comprises:

a frame;

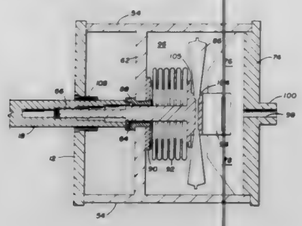
a bellows secured at one end to said frame and having a movable end;

an aneroid element having a free side and secured at the opposite side to the movable end of said bellows with the sensitive axis of said aneroid coaxial to an axis of said bellows and bodily movable with the movable end;

actuation means fixed to the movable end of said bellows and extending through said bellows;

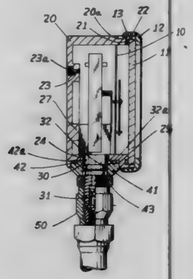
control means coupled to said actuation means and rotational relative to said frame to impart rectilinear move-

ment to the movable end of said bellows along the sensitive axis to said aneroid element; and



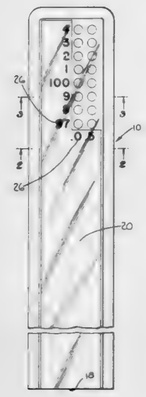
pickoff means coupled to the free side of said aneroid element along the sensitive axis and responsive to movement on the free side of said aneroid element relative to said frame.

3,929,020
LEAK-RESISTENT GUAGE
Reino Walter Honkanen, 17621 Irvine Blvd., Suite 101, Tustin, Calif. 92680
Filed May 20, 1974, Ser. No. 471,683
Int. Cl.² G01L 7/04
U.S. Cl. 73—420 **12 Claims**



1. A guage, adopted to contain an instrument for measuring pressurized gas or vacuum, which is subject to leaking in the ambient environment, comprising in combination,
a housing having an opening for reading the instrument,
one or more ports for connections to be the source to be measured,
a threaded portion on the upper outer wall of the housing surrounding the opening,
a horizontal surface between the inner and outer surfaces of the housing wall forming the opening,
an annular groove to contain an annular sealing means on the horizontal surface,
a lens of transparent material,
a bezel to contain the lens threaded on the inside circumference to engage the threads on the outer housing wall and hold the lens in sealing engagement with the horizontal surface,
an instrument to measure an external source containing a connector means, a portion of which is threaded at the end opposite the instrument, the length of which is dimensioned to permit assembly into the housing from the inside, and a portion adjacent to the instrument which is larger than the port opening to position the instrument inside the housing and prevent pull through,
a safety vent and a pressure relief plug in the housing wall, a flat raised portion of the inside wall of the housing opposite the instrument reading opening to position the instrument within the housing during assembly,
a counterbored area or recess outwardly surrounding the port opening,
an annular gland dimensioned to at least partially be contained in the counterbore or recess and having a smooth bore circumferentially dimensioned to fit the unthreaded portion of the connector means,
an annular groove to contain an annular sealing means, on the face of the annular gland,
an annular groove in the connector means to contain an annular sealing means, located between the threaded portion and the instrument so as to be in sealing engagement with the gland when the gland is doweled into the recessed area,
a nut, threaded to engage the threaded portion of the connector and axially hold the gland in sealing engagement with the counterbore or recessed face of the housing.

3,929,021
DISPOSABLE THERMOMETER
Saviour S. Pecorella, Howard Beach, N.Y., assignor to Becton, Dickinson and Company, East Rutherford, N.J.
Filed Mar. 13, 1974, Ser. No. 450,866
Int. Cl.² G01K 11/06
U.S. Cl. 73—356 **8 Claims**

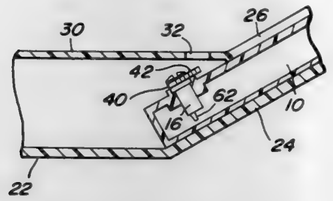


1. A disposable, irreversible thermometer comprising: a base member; a transparent cover member overlying said base member; a temperature sensitive material carried by portions of said base member, said material being meltable at a predetermined temperature; a mask of absorbent material underlying portions of said transparent cover blocking said temperature sensitive material from view through said cover; said base and cover portions together defining a pocket; and means extending from said pocket to the exterior of said thermometer defining a vent for said pocket.

3,929,022
RECESSED METER IN A HOUSING AND METHOD OF ADJUSTING THE SAME
Alfred G. Ocken, Jr., Franklin Park, and William G. Skoda, Oak Park, both of Ill., assignors to Motorola, Inc., Chicago, Ill.
Filed Dec. 31, 1974, Ser. No. 537,745
Int. Cl.² G01D 11/24
U.S. Cl. 73—431 **18 Claims**

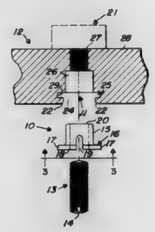
1. The method of adjusting an instrument having an adjustable set member, and mounted in a housing having a meter face surface and a base surface comprising the steps of:

a. affixing a toothed member to the adjustable set member of the instrument;
b. mounting the instrument in alignment with the meter face surface in a first plane of the housing having the base surface in a second plane oblique to the first plane;
c. positioning the toothed member below the base surface;
d. providing a window in the base surface for external access to the toothed member;
e. inserting an object suitable for engaging the toothed member through the window, and;



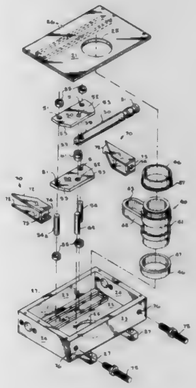
f. moving the toothed member with the object.
10. An instrument and housing including
an instrument having a readout viewable in a plane, the readout having a mechanical set adjustment accessible through the plane of readout view,
a housing having a first surface containing the instrument and a second surface, oblique thereto, provided with an access window, and
a toothed member mechanically coupled to the set adjustment and located under the window for external access to the teeth thereof.

3,929,023
TUNING SCREW LOCK AND TORQUE CONTROL
Pasquale Ambruoso, Sr., Coral Springs, Fla., assignor to Motorola, Inc., Chicago, Ill.
Filed Sept. 27, 1974, Ser. No. 509,988
Int. Cl.² F16H 35/18
U.S. Cl. 74—10.85 **6 Claims**



1. A tuning screw lock and torque control comprising:
a. a housing wall defining an aperture;
b. a tuning screw having predetermined characteristics; and
c. a molded resilient plastic insert, said insert being contained within and retained by the walls of said aperture; said aperture having cavity means for preventing axial motion of said insert, slotted means for preventing rotation of said insert, and shoulder means for retaining said insert; and
said insert having a body portion for threadedly mating with said tuning screw and for providing frictional resistance to said screw, flange means integral with said body portion for preventing axial motion of said insert and for providing locking action on said screw, and a slotted means extending through said flange means and through a substantial portion of said body portion for relieving excess stress on the material of said insert and for contributing to the locking action on said screw, and for contributing to the frictional resistance applied to said screw.

3,929,024
ACTUATOR
John M. Sheesley, and Ronald A. Gulick, both of Houston, Tex., assignors to Research Engineering Co., Houston, Tex.
Filed Oct. 10, 1974, Ser. No. 513,576
Int. Cl.² F01B 9/00
U.S. Cl. 74—104 **3 Claims**

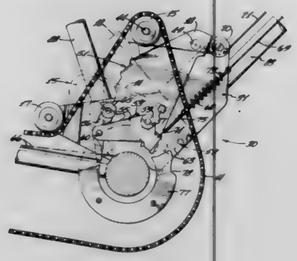


1. An valve actuator for translating a linearly directed force into an oscillatable, force, comprising:
a housing;
an oscillatable yoke adapted to receive a portion of a valve, said yoke positioned within said housing and including a hub portion and a slotted arm depending from said hub;
a movable member, movable along a first linear path, said member extending at least partially within said housing;
means linking said movable member with said yoke whereby linear movement of said movable member is translated into oscillatable movement of said yoke, said linking means including,
a. pressure exerting means, positioned at least partially within said slotted portion of said arm, and
b. said pressure exerting means comprising a pin member being movable along a second linear path, said second linear path being nonintersecting with said first linear path, and being intermediate the outer diameter of said hub and said first linear path.

3,929,025
AUTOMATIC SHIFT CONTROL FOR BICYCLES AND THE LIKE
Robert E. Perry, 852 W. Las Palmas Drive, Fullerton, Calif. 92635
Filed Dec. 13, 1974, Ser. No. 532,509
Int. Cl.² F16H 9/00, 11/06
U.S. Cl. 74—217 B **24 Claims**

1. An automatic shift control for a vehicle including a frame, at least one wheel, a crank, a chain interconnecting said wheel and said crank, and a means for changing the rotation ratio between said wheel and said crank comprising:
a control arm mounted for rotation around a fixed point on said frame, said arm being positionable in any one of multiple positions;
means interconnecting said control arm and said ratio changing means for selecting one of multiple ratios depending upon the position of said control arm;

a control arm idler wheel mounted on said control arm, said chain extending over said control arm idler wheel and forming an acute angle relative thereto, the resultant chain-tension force being in a direction to cause rotation of said control arm in a first direction; and



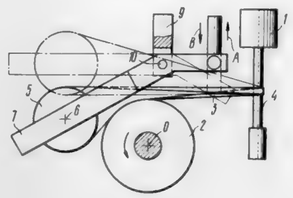
tension means connected to said control arm for applying a force in a direction to cause rotation of said control arm in a second direction opposite to said first direction, said control arm being approximately in equilibrium for a selected chain tension in all of said multiple positions of said control arm.

3,929,026
FOAMED CONVEYOR BELT
Dieter Albrecht Hofmann, 2419 Paliswood Road, S.W., Calgary, Alberta, Canada
Filed Apr. 12, 1974, Ser. No. 460,639
Claims priority, application Canada, Apr. 13, 1973, 168702
Int. Cl.² F16G *1/22, 1/00;* **B29H** *7/22*
U.S. Cl. 74—237 **6 Claims**

1. A belt comprising a longitudinally extending polyurethane shaped structure, said polyurethane structure comprising a central body of high density closed-cell polyurethane foam at least partly covered by an integral skin of higher density or substantially solid polyurethane, said foam having a density of at least about 15 lb/cu. ft.

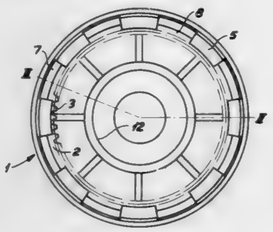
3,929,027
TWISTING MECHANISM DRIVE FOR SPINNING AND TWISTING FRAMES
Alexandr Alexeevich Sharychenkov, Ternovka, ulitsa Experimentalnaya, 1, kv. 67, Penza, U.S.S.R.
Filed June 4, 1974, Ser. No. 476,229
Int. Cl.² F16H *7/10;* **A01D** *45/02*
U.S. Cl. 74—242.15 R **2 Claims**

1. A drive for a twisting mechanism used in a spinning machine comprising a first drive shaft, a second shaft actuating the twisting mechanism, a rocking lever, a slide block mounted on the rocking lever, a tension roller carried by the slide block, an endless flexible coupling trained about the tension roller and the second shaft actuating the twisting mechanism, a tension member urging the slide block out of contact with the second shaft for placing the flexible coupling under tensions, and said rocking lever and tension roller being arranged relative to the first drive shaft so that the rocking motion of the lever urges the tension roller to engage the twisting mechanism by moving the flexible coupling to contact the first drive shaft and to disengage the twisting mechanism



by moving the flexible coupling out of contact with the drive shaft.

3,929,028
GEARWHEEL
John Kirk Kirkegaard, Holte, Denmark, assignor to John Kirkegaard Maskinfabrik A/S, Hvidovre, Denmark
Filed Apr. 16, 1974, Ser. No. 461,342
Claims priority, application Denmark, Apr. 17, 1973, 2102/73
Int. Cl.² F16H *55/12, 55/30*
U.S. Cl. 74—448 **3 Claims**

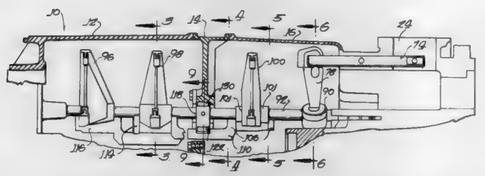


1. A composite gear wheel comprising two concentrically engaged cylinders coterminal at one end, the inner diameter of the outer cylinder being equal to the outer diameter of the inner cylinder, the inner cylinder being provided at said one end with a first set of axially extending peripherally spaced projections which also extend in the radial direction outwardly of the inner cylinder beyond its outer cylindrical surface immediately adjacent thereto to define an outwardly extending edge engaging the end surface of the outer cylinder, the outer cylinder being provided with a second set of axially extending, peripherally spaced projections at said one end, each projection of the second set interfitting between successive projections of the first set and having a peripheral extension equal to the peripheral spacing between successive projections of the first set, the projections of said second set also extending radially inward of the outer cylinder beyond its inner cylindrical surface immediately adjacent thereto to define an inwardly extending edge engaging the end surface of the inner cylinder, one of said cylinders being composed of metal, and the other of said cylinders being composed of plastic and defining gear teeth on its cylindrical surface remote from said one cylinder.

3,929,029
TRANSMISSION SHIFT CONTROL LINKAGE
Donald W. Kelbel, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Feb. 25, 1974, Ser. No. 445,373
Int. Cl.² B60K *23/00;* **G05G** *5/00;* **F16H** *3/08*
U.S. Cl. 74—473 R **16 Claims**

5. In a transmission including a housing, an input shaft journalled in said housing and defining an input gear, an output shaft journalled in said housing, a plurality of output gears

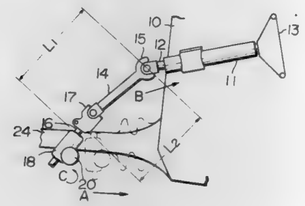
journalled on said output shaft, a cluster gear assembly journalled in said housing and defining a ratio input gear driven by said input gear and a plurality of ratio output gears respectively in driving relationship with said output gears, and a plurality of clutching elements supported by said output shaft and movable for selectively engaging said output gears with said output shaft to establish a plurality of drive ratios; the improvement comprising a plurality of shift forks respectively contacting said clutching elements for effecting movement thereof, each shift fork defining a bore portion, a plurality of bars formed from a harder material than said shift forks and respectively secured to said shift forks for movement there-



with, each bar defining a complementary bore portion whereby each associated shift fork and bar together define a bore, and shift means including a shift element movable in said bores and selectively engageable with said bars upon initial movement of said shift means, the engaged bar and its associated shift fork being movable to establish one of said drive ratios upon subsequent movement of said shift means.

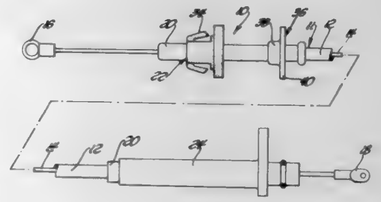
6. The invention according to claim 5, said shift means including a lock element engageable with the remainder of said bars upon said selective engagement of said shift element with one of said bars, said lock element preventing movement of the remainder of said bars upon subsequent movement of said shift means.

3,929,030
AUTOMOTIVE STEERING SYSTEM OF RACK AND PINION TYPE HAVING MEANS TO PREVENT DISPLACEMENT OF STEERING SHAFT IN COLLISION
Kazumi Sukeshita, Koganei, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan
Filed Dec. 3, 1974, Ser. No. 529,186
Claims priority, application Japan, Dec. 7, 1973, 48-139452[U]
Int. Cl.² B62D *1/18*
U.S. Cl. 74—492 **6 Claims**



1. In an automotive steering system having a rack-and-pinion type steering gear, the steering shaft being linked with the pinion shaft through a relay shaft, the relay shaft being coupled with the steering shaft by a flexible joint, the rack member being enclosed in a rack jacket tube integrated with the steering gear box and arranged generally laterally of the vehicle, the combination of (a) first means to clamp the rack jacket tube to a chassis member, said first means comprising two clamp regions of the outer surface of the rack jacket tube, said clamp regions being shaped circular-cylindrical and arranged at a distance therebetween, two clamp members fixed to the chassis member and shaped to rotatably receive said two clamp regions, respectively, and second means to fix the rack jacket tube to the clamp members in such a manner that the rack jacket tube is allowed to be turned on the axis thereof when an external force generally in the longitudinal direction of the vehicle and greater than a predetermined magnitude is exerted on the chassis member, and (b) third means to move the pinion shaft such that the distance between the gear box and the flexible joint is shortened without any substantial displacement of the steering shaft, when the rack jacket tube moves generally rearwardly of the vehicle and turns on the axis thereof.

3,929,031
CLUTCH LOCK
Grant A. Webb, Northville, Mich., assignor to Teleflex Incorporated, North Wales, Pa.
Filed Feb. 4, 1974, Ser. No. 439,120
Int. Cl.² F16C *1/10*
U.S. Cl. 74—501 R **10 Claims**

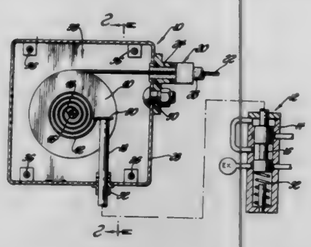


1. A motion transmitting remote control assembly of the type for transmitting forces along a curved path by a motion transmitting core element, said assembly comprising: a flexible guide means, a flexible motion transmitting core element movably supported by said guide means with the ends thereof extending from the ends of said guide means, a support member, said support member normally slidably supporting said guide means when said support member is in supporting relationship to said guide means to permit axial movement of said guide means with respect to said support member, and locking means supported by said support member and engageable with said guide means for controlling the axial sliding movement of said guide means relative to said support member; said locking means including a plurality of resilient fingers supported circumferentially about said guide means and extending toward said guide means to establish gripping engagement therewith, said fingers contacting the surface of said guide means at an acute angle whereby said fingers allow relative movement between said guide means and said support member in one direction when a force sufficient to overcome the gripping engagement is applied to said guide means while normally preventing such movement in the opposite direction when said guide means is supported by said support means and said fingers engage said guide means.

3,929,032
TRANSMISSION ASSEMBLY
Paul H. Kehm, Ambler, Pa., assignor to Teleflex Incorporated, North Wales, Pa.
Division of Ser. No. 394,358, Sept. 4, 1973, Pat. No. 3,884,449. This application Jan. 6, 1975, Ser. No. 538,870
Int. Cl.² F16C *1/10*
U.S. Cl. 74—501 R **2 Claims**

1. An actuating assembly comprising: a member to be actuated, a motion transmitting remote control including guide means and a flexible motion transmitting core element mov-

ably supported by said guide means, and a flat flexible spring interconnecting said core element and said member for moving said member in response to movement of said core element.

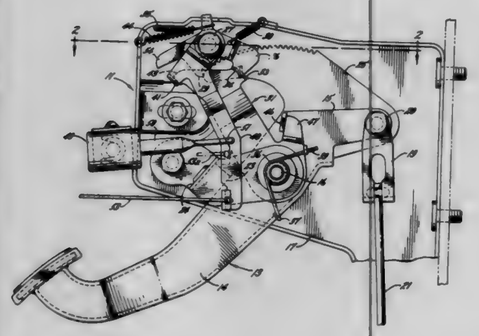


3,929,033

VEHICLE PARKING BRAKE CONTROL

Thomas O. Marx, Rockton, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Nov. 20, 1974, Ser. No. 525,365
Int. Cl.² G05G *1/04*
U.S. Cl. 74—512 **10 Claims**



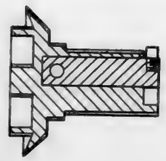
1. A vehicle parking brake control comprising a support, an actuator mounted on said support to move between release and apply positions, the movement of said actuator to said apply position being effective to set the vehicle parking brake, a member associated with said actuator and movable from a normal position to a hold position when said actuator is moved from said release position to said apply position, the vehicle parking brake being held in a set condition when said member is retained in said hold position and being released when said member is returned to said normal position, a latch movably mounted on said support and automatically engageable with said member to retain the member releasably in said hold position when the member is moved to such position, an impactor mounted on said support for movement between a cocked position in which the impactor is spaced from said latch and a striking position in which the impactor slams against said latch, means for releasably retaining said impactor in said cocked position when said member is in said hold position, and energy storing means associated with said impactor and positioned to be loaded as an incident to movement of said member from one of its positions to the other of its positions, said energy storing means being operable when loaded to bias said impactor away from said cocked position and toward said striking position whereby said impactor is propelled away from said cocked position upon being released by said retaining means and slams against said latch to release the latter from said member and permit the member to return to its normal position to release the vehicle parking brake.

3,929,034

ROTATING SYSTEM

Guido Marchione, 3 Via G. Leopardi, Trieste, Italy

Filed Apr. 29, 1974, Ser. No. 464,891
Int. Cl.² G05G *1/00*, *3/00*
U.S. Cl. 74—575 **1 Claim**



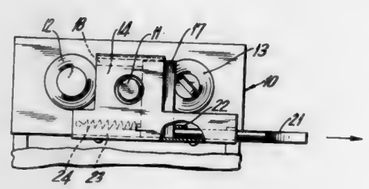
1. In an assembly of an axle, a first member rotatably journalled on said axle, and a second member rotatably journalled on said axle, the improvement which comprises, in combination, a first set of ratchet teeth projecting radially inwards on said first member, a second set of ratchet teeth projecting radially inward on said second member, said first and second sets of ratchet teeth being arranged for relatively opposite directions of drive and escapement about said axle, a pawl carrier housed in said axle, a first pawl on said carrier positioned in alignment with said first set of ratchet teeth, a second pawl on said carrier positioned in alignment with said second set of ratchet teeth, said second pawl being angularly offset from said first pawl, said pawl carrier being rotatable about an axis parallel to the axis of said axle into a first limiting position in which said first pawl projects from said axle and engages with a tooth of said first set of ratchet teeth whilst said second pawl is spaced from said second set of ratchet teeth, and a second limiting position in which said first pawl is spaced from said first set of ratchet teeth whilst said second pawl projects from said axle and engages with a tooth of said second set of ratchet teeth.

3,929,035

ELECTRIC CONTROL SAFETY MECHANISM

Robert Cohn, Millbrae, Calif., assignor to Champion International Corporation, New York, N.Y.

Filed July 26, 1974, Ser. No. 492,139
Int. Cl.² F16P *3/00*
U.S. Cl. 74—616 **11 Claims**



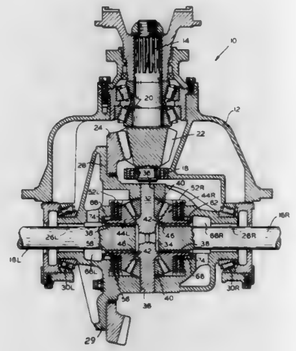
1. In combination with a switch means control station including a start switch for actuating a machine, a two-hand safety mechanism comprising: a support plate secured to said control station and extending over the start switch, said support plate formed with an opening therein disposed over said start switch to enable an operator to actuate the start switch; a safety plate slidably mounted under said support plate and movable between positions covering and uncovering the opening in the support plate; biasing means for biasing said safety plate to a position covering the opening in said support plate; and a handle means secured to said safety plate in order to enable the operator to overcome said biasing means and move said safety plate with one hand to a position which uncovers said start switch whereby said start switch may then be depressed with the other hand to activate the machine.

3,929,036

LIMITED SLIP DIFFERENTIAL WITH NEGLIGIBLE BIAS UNDER LIGHT LOAD CONDITIONS

Noah A. Shealy, Niles, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 26, 1973, Ser. No. 428,265
Int. Cl. F16h *1/44*; F16d *13/04*
U.S. Cl. 74—711 **7 Claims**

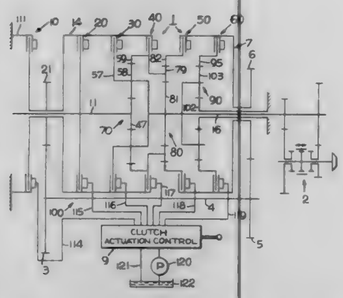


1. A limited slip differential mechanism comprising:
a. a differential carrier housing;
b. a cross disposed within said carrier housing and connected for rotation with the carrier housing;
c. an axle shaft rotatably carried by said carrier housing;
d. a planetary gear carried by said cross;
e. a side gear disposed within said carrier housing, and rotatable about the carrier housing axis of rotation, said side gear being disposed adjacent to said cross, with the teeth of said side gear engaging with the teeth of said planetary gear, with the inner end of said axle shaft being drivingly connected with said side gear;
f. friction clutch means for transmitting torque between the carrier housing and said side gear, said clutch means being disposed between an adjacent part of said carrier housing and an inner annular side surface of said side gear and including first friction means connected to the carrier housing and second friction means connected to said side gear whereby an axial force applied to said side gear, via said planetary gear, urges said clutch means first and second friction means into engagement and thus restrict the differential action of said mechanism; and
g. spring means capable of exerting a predetermined force, situated between a further adjacent part of said carrier housing and a first annular thrust side surface of said side gear adjacent to said spring means and axially spaced from said side gear inner annular end surface whereby said side gear is urged in a direction opposite to the direction of said axial force applied to said side gear via said planetary gear, thereby normally tending to urge said clutch means first and second friction means into disengagement as long as said predetermined force is greater than said axial force, thereby providing negligible bias to said axle shaft under light load conditions.

3. A limited slip differential mechanism comprising:
a. a differential carrier housing rotatable about an axis of rotation;
b. a cross disposed within the carrier housing and connected for rotation with the carrier housing, said cross having first and second opposite sides facing along the carrier housing axis;
c. first and second aligned axle shaft rotatably carried by said carrier housing;
d. a planetary gear carried by said cross;
e. a first side gear disposed within the carrier housing on said first side of said cross and rotatable about the carrier housing axis of rotation, the gear teeth of said first side gear engaging in the teeth of said planetary gear, with the inner end of said first axle shaft being drivingly connected with said first side gear;
f. a second side gear disposed within the carrier housing on said second side of said cross and rotatable about the carrier housing axis of rotation, the gear teeth of said second gear engaging in the teeth of said planetary gear, with the inner end of said second axle shaft being drivingly connected with said second side gear;
g. a first clutch for transmitting torque between the carrier housing and said first side gear, said first clutch being disposed between said carrier housing and an inner annular end surface of said first side gear and including a driving friction disc connected to the carrier housing and a driven friction disc connected to said first side gear;
h. a second clutch for transmitting torque between the carrier housing and said second side gear, said second clutch being disposed between said carrier housing and an inner annular end surface of said second side gear and including a driving friction disc connected to the carrier housing and a driven friction disc connected to said second side gear, whereby an axial force applied to one of said side gears urges its respective clutch friction discs into engagement to restrict the differential action of said mechanism; and
i. first spring means, exerting a first predetermined force, situated between said carrier housing and an adjacent thrust side surface of said first side gear axially spaced from said first side gear inner annular end surface, whereby said first side gear is urged in a direction opposite to the direction of said axial force applied to said first side gear, thereby urging said first clutch friction discs into disengagement when said predetermined force is greater than said axial force, thereby providing a negligible differential bias under light load conditions, said first clutch discs being urged into engagement when said axial force is greater than said predetermined force, thereby providing a high differential bias under heavy load conditions.

6. In a limited slip differential mechanism of the type having a cross disposed within a differential carrier housing and connected for rotation therewith about an axis of rotation, a planetary gear carried by the cross, an axle shaft rotatably carried by said carrier housing, a side gear disposed within the carrier housing and having its teeth engaged with the teeth of the planetary gear, with the inner end of said axle shaft being drivingly connected with said side gear, and friction clutch means for transmitting torque between the carrier housing and the side gear wherein the clutch means is disposed between an adjacent part of the carrier housing and an inner annular end surface of the side gear and includes a first friction means connected to the carrier housing and a second friction means connected to the side gear whereby an axial force applied to the side gear, via the planetary gear, urges the clutch means first and second friction means into engagement and thus restricts the differential action of the mechanism, wherein the improvement comprises biasing means, exerting a predetermined force, located between said carrier housing and an adjacent thrust side surface of said side gear axially spaced from said side gear inner annular side surface, whereby said side gear is urged in a direction opposite to the direction of said axial force applied to the side gear, via said planetary gear, thereby urging said clutch means first and second friction means into disengagement when said predetermined force is greater than said axial force, thereby providing a negligible differential bias under light load conditions.

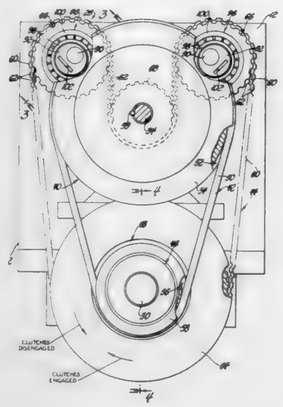
3,929,037
SIX SPEED POWER SHIFT TRANSMISSION
James E. Marsch, Brookfield, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed May 30, 1974, Ser. No. 474,673
Int. Cl.² F16H *57/10, 37/06*
U.S. Cl. 74—759 **10 Claims**



1. A vehicle transmission comprising, an input shaft and an output shaft rotatably mounted in a transmission casing and on a common axis of rotation, a front planetary gearset having a sun gear connected to said input shaft, an intermediate planetary gearset, a rear planetary gearset having a sun gear connected to said transmission casing, each of said planetary gearsets including a sun gear having an axis mounted on said common axis, each of said planetary gearsets including the elements of a sun gear, a ring gear, and a planetary carrier, means connecting the planetary carriers of said front planetary gearset and said rear planetary gearsets and the sun gear of said intermediate planetary gearset to said output shaft, means connecting the ring gear of the front planetary gearset and the planetary carrier of the intermediate planetary gearset, a front clutch housing and a rear clutch housing rotatably mounted on said common axis, a countershaft gearset rotatably mounted on a second axis parallel with said common axis including a drive gear on said front clutch housing, a driven gear on said rear clutch housing, and a countershaft having gears engaging said drive and driven gears of said clutch housings, a plurality of clutches connected to said front clutch housing, each clutch including a friction member singularly connected to at least one of said elements of said front planetary gearset, a plurality of clutches connected to said rear clutch housing, each of said clutches connected to said rear clutch housing including a friction member singularly connected to at least one of said ring gears of said intermediate planetary gearset and said rear planetary gearset, means selectively engaging said clutches to selectively provide power paths through said transmission.

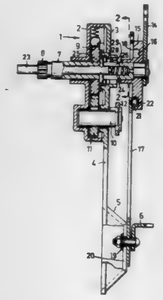
3,929,038
GRINDING MACHINE AND DRIVE ASSEMBLY THEREFOR
Richard M. Moser, Lincoln Park, Mich., assignor to Moni, Inc., Livonia, Mich.
Filed Jan. 2, 1975, Ser. No. 537,888
Int. Cl.² F16H *5/52, 9/00, 3/14*
U.S. Cl. 74—810 **24 Claims**

1. A grinding machine comprising: a rotatable grinding wheel; an output shaft drivingly connected with said grinding wheel; an input power shaft; and a drive mechanically including high and low speed drive trains extending between said input power shaft and said output shaft, said high speed drive train connecting the power shaft and the output shaft during rotation of the power shaft in one direction such that the grinding wheel is griven for high speed grinding, the high speed drive train uncoupling the power shaft and the output shaft during rotation of the power shaft in the other direction, said low speed drive train uncoupling the power and output shafts during rotation of the power shaft in the one direction, and the low speed drive train coupling said power and output



shafts during rotation of the power shaft in the other direction such that the grinding wheel is driven for low speed grinding.

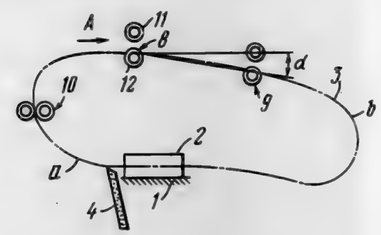
3,929,039
SINGLE LEVER CONTROL DEVICE
Tore Erik Karl Comstedt, Stockholm, Sweden, assignor to Teknoflex Control System AB, Vastra Frolunda, Sweden
Filed May 7, 1974, Ser. No. 467,812
Claims priority, application Sweden, May 17, 1973, 7306990
Int. Cl. B60k *41/18*
U.S. Cl. 74—878 **4 Claims**



1. Control device for performing two different operations by means of a single operating lever, preferably for control of the throttle and shifting gears in boat motors, comprising a main shaft rotatably journalled in a housing, on which the operating lever acts, a first control arm for the shifting operation which is effected by the rotation of the main shaft by means of a transmission means and a second control arm, connected to the main shaft, for the throttle opening, the transmission means being coupled to the main shaft via a coupling, which has a coupling shaft displaceably disposed in an axial bore in the main shaft, with at least one radially extending driver element, which extends through an axial slot in the main shaft and engages the transmission means in the position of engagement, spring means urging said driver element toward said position of engagement, the driver element in the neutral position of the main shaft lying opposite an opening in the housing or in a member connected to the

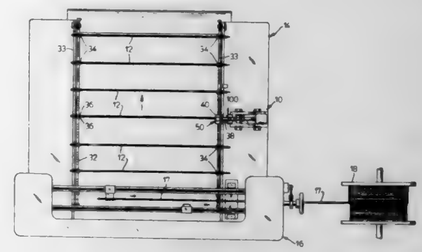
housing, through which opening the driver element at disengagement is pushed out through axial displacement of the coupling shaft against the effect of the spring means so that upon subsequent rotation of the main shaft the driver element slides against the side of the housing or the member connected to the housing, facing away from the transmission means, there being at least one stationary stop surface angularly displaced relative to and disposed immediately on at least one side of the opening and disposed on the side of the housing or the member connected to the housing and extending in the direction in which the driver element at disengagement is pushed, the coupling shaft being so disposed that when disengaged it is displaced by manual pressure so far that the driver element passes over the stop surface when the main shaft is rotated from the neutral position, and when the pressure on the coupling shaft is released and the main shaft rotated back toward the neutral position, the driver element engages the stop surface and prevents the rotation of the main shaft back to the neutral position until the driver element is again pushed and rotated to clear the stop surface.

3,929,040
BAND-SAW SHARPENING MACHINE
Vladimir Viktorovich Idel, ulitsa Gertseoa, 3, kv. 37, Zavolzhie Gorkovskoi oblasti, U.S.S.R.
Continuation of Ser. No. 425,836, Dec. 18, 1973, abandoned, which is a continuation of Ser. No. 300,362, Oct. 24, 1972, abandoned. This application Dec. 6, 1974, Ser. No. 530,521
Claims priority, application U.S.S.R., Oct. 25, 1971, 1706659; Oct. 25, 1971, 1706660
Int. Cl.² B23D *63/12*
U.S. Cl. 76—37 **5 Claims**



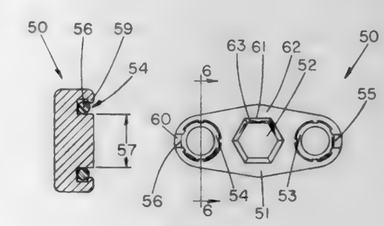
1. A machine for sharpening and setting the teeth of an endless band saw with its sides stretched in a horizontal plane, comprising: a bed; a cutting tool rigidly mounted on said bed; feeding means for feeding the saw with respect to said cutting tool, mounted on said bed; holding means for holding the saw on its lateral surfaces in the course of machining the teeth thereof, said holding means being mounted in said feeding means and having horizontal ways whereon rests one of the sides of the endless band saw; at least two supporting elements rigidly fixed on said bed for permitting the other side of the saw to rest thereon, said supporting elements being located at different heights from said bed, the first supporting element being nearest the horizontal plane of said bed and also being nearer to said feeding means than the distal portion of the band saw opposite the proximate portion of the band saw supported by said first supporting element whereby the length of the portion of the endless band saw between the feeding means and the supporting elements in the direction of the pitch feed of the sharpening and setting machine, is lesser in length than the length of the portion of the endless saw between said feeding means and said supporting elements in the direction opposite to the pitch feed of the sharpening and setting machine, so that the band saw is free to move under its own weight; and driving means for driving said cutting tool and said feeding means during an operation of the machine.

3,929,041
WIRE ALIGNING DEVICE FOR USE WITH A WIRE STRIPPING MACHINE
Gerald E. Blaha, Waukesha, Wis., assignor to Artos Engineering Company, New Berlin, Wis.
Filed Mar. 12, 1975, Ser. No. 557,619
Int. Cl.² H02G *1/12*
U.S. Cl. 81—9.51 **9 Claims**



1. A wire guide assembly for use with a wire stripping machine having a stripping mechanism, said machine also having a wire conveying means including gripping means for releasably gripping a generally horizontally disposed insulated wire whereby said wire has a free end, said machine having a vertically movable clamp operable to engage said gripping means to rigidly secure said wire which is held between said gripping means, said assembly including a wire guide pivotably mounted to said wire stripping machine for swinging about a generally horizontal axis, pivotable linkage means connecting said vertically movable clamp with said wire guide, said wire guide including a notched member for receiving said free end, said guide being pivotal in response to vertical movement of said clamp such that said notched member pivots to embrace said wire for aligning said free end for reception by said stripping mechanism.

3,929,042
TOOL FOR INSTALLATION OF SEALS FOR LP GAS CYLINDER VALVES
William C. Blocker, 1406 N. Butler Ave., Indianapolis, Ind. 46218
Filed June 10, 1974, Ser. No. 478,049
Int. Cl.² B25B *13/06, 13/48*
U.S. Cl. 81—121 R **9 Claims**

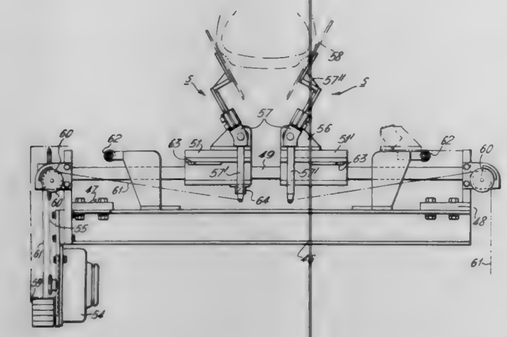


1. An O-ring storage wrench comprising:
a plate having a first hole extending therethrough for complementarily receiving a nut to be tightened;
at least one O-ring removably mounted on said plate;
said plate having means thereon operable to releasably hold said O-ring and to eccentrically locate said O-ring relative to said first hole.

3,929,043
METHOD AND APPARATUS FOR FINISHING PNEUMATIC TIRES

Seiichiro Nishimura, Tokyo, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Division of Ser. No. 257,531, May 30, 1972, Pat. No. 3,851,697. This application Sept. 24, 1974, Ser. No. 508,760
Claims priority, application Japan, June 7, 1971, 46-39277
Int. Cl.² B23B *3/00, 3/22*; B29H *21/08*
U.S. Cl. 82—1 C **4 Claims**



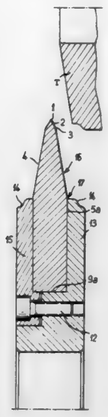
1. A method of finishing pneumatic tires to trim molding spew pips and other fins from pneumatic tires rotating about their rotating axes which have been molded and vulcanized, comprising the steps of bringing cutting edges of comblike blades into slight contact with profiles in sectional planes parallel to the rotating axis in tangential direction to the profiles, said blades being mounted on swingable holders pivotally movable about axes intersecting planes including the rotating axis of the tire to be treated, and translationally moving the respective pivotal connections of said swingable holders in planes parallel to said sectional planes whereby guiding said cutting edges of said comblike blades so as to envelope said profiles of the tire.

3,929,044
CUTTING WHEELS FOR THE ISOSTATIC CUTTING OF PIECES, NOTABLY FROM TUBES

Jean Beauchet, Annecy, France, assignor to Societe Nouvelle de Roulements, Annecy, France

Filed Oct. 5, 1973, Ser. No. 403,957
Claims priority, application France, Oct. 16, 1972, 72.36542
Int. Cl.² B23B *5/14*; B26D *1/00*; B23D *21/06*
U.S. Cl. 82—46 A **4 Claims**

1. A cutting wheel for an isostatic cutting device comprising:
   - a disc-wheel comprising:
     - a cutting edge having a rounded tip,
     - a first frustoconical portion extending inwardly from the tip,
     - a second frustoconical portion extending inwardly from said first frustoconical portion, said second frustoconical portion having a vertex angle less than that of said first frusto-conical portion,
     - a fillet interconnecting said first and second frustoconical portions, and
     - a portion having parallel side surfaces extending inwardly from said second frustoconical portion, and
   - two supporting flanges,
   - said parallel-sided portion being clamped between said two supporting flanges,
   - one of said two flanges abuts the entire surface of one of the side surfaces of the parallel sided portion and the other one of said two flanges abuts the entire surface of the other side surface of the parallel-sided portion

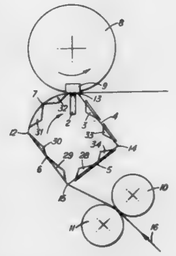


said supporting flanges form an operative portion of a tool operating by upsetting the metal around the cut formed by the cutting edge.

3,929,045
ARRANGEMENT FOR THE FEEDING AND CUTTING OFF OF A PACKING MATERIAL WEB

Jån Palsson, Lund, Sweden, assignor to AB Ziristor, Lund, Sweden

Filed Aug. 26, 1974, Ser. No. 500,758
Claims priority, application Sweden, Sept. 14, 1973, 73125346
Int. Cl.² B26D *1/56*
U.S. Cl. 83—323 **4 Claims**



1. A device for continuously feeding and cutting off predetermined lengths of a continuous web of packaging material having spaced, parallel, transverse creases therein comprising a rotatable mandrel provided with a plurality of outer faces each being parallel to the axis of rotation of said mandrel and having parallel transverse edges for engaging the transverse creases of that portion of the web which is in engagement with at least one face of said rotatable mandrel for feeding said web, at least one transverse cutting means disposed in at least one face of said mandrel and spaced from the transverse edges of said at least one face, and at least one counterpressure plate rotatable in synchronism with said mandrel about an axis parallel with the axis of rotation of said mandrel so that said at least one counterpressure plate will cooperate with said at least one transverse cutting means to cut said web at predetermined locations along the length of the web after the web has been fed by said mandrel to the location of cooperation between said cutting means and said counterpressure plate.

3,929,046
PLATE CONVEYING APPARATUS

William C. Guenst, Jr., and Gerold Litschi, both of Ambler, Pa., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 456,841, April 1, 1974. This application May 2, 1975, Ser. No. 574,116
Int. Cl.² B26D *7/06*
U.S. Cl. 83—409 **1 Claim**

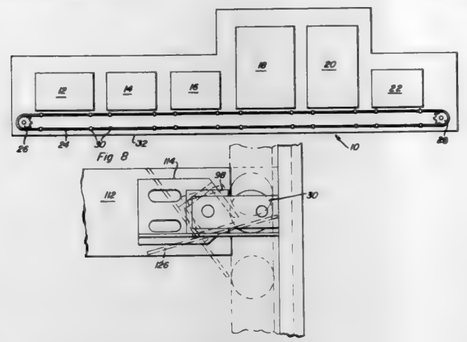


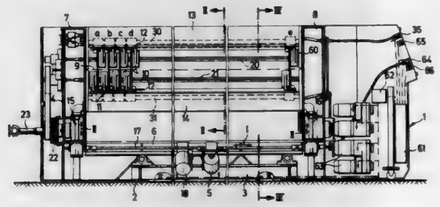
Fig 8

1. Plate conveying apparatus comprising:
1. a platform;
2. an endless chain adapted to be driven on the platform;
3. a plurality of anvils on the chain, each anvil having a vertical shaft with a constricted neck;
4. means to pull a plate over the top of at least two anvils;
5. staker means adapted to drive a staking pin down into the anvil shaft and to bring it up again;
6. plate unfastening means, including upward thrusting means arising from below the level of the anvil and adapted to unfasten the plate from the anvils;
7. a plate support of a size to support the entire plate, hinged at the rear, with means to raise the support at the front;
8. means for removing the plate from the grid; and
9. a cutting mechanism for cutting the plate into two pieces after it is removed from the grid.

3,929,047
LONGITUDINAL CUTTING AND/OR GROOVING MACHINE FOR MATERIAL WEBS IN MOTION, PARTICULARLY CARDBOARD MEANS

Hermann Josef Brandl, Mantel, Germany, assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 12, 1973, Ser. No. 405,911
Claims priority, application Germany, Oct. 13, 1972, 2250125
Int. Cl.² B26D *1/24, 5/02*
U.S. Cl. 83—499 **10 Claims**

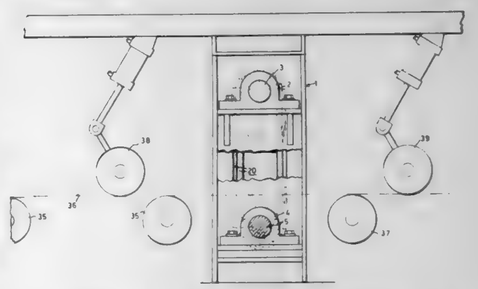


1. A longitudinal cutting and grooving machine for webs of material, particularly corrugated cardboard webs, comprising: a frame, a plurality of pairs of upper and lower rotating tools positioned on opposite sides of the web, guide means arranged transverse to the longitudinal direction of the web enabling to displace the tools along said guide means, a plurality of drives for the tools and adjustment drives for the displacement of the tools, an actual value counter, a set value indicator and comparing device therefor; means for positioning the pairs of tools, the actual value counters, the set value indicators, and the comparison means; each pair of tools including a pair of upper and lower adjustment spindles, an adjustment drive and means for connecting said adjustment spindles rigidly mechanically to said adjustment drive and the actual value counter; wherein in connections of the adjustment spindles with one another, with the adjustment drive and the actual value counter are disposed on the outside of the machine frame; and further including means for driving the upper and lower tools by said adjustment spindles,
   - means for permanently coupling each adjustment spindle and its respective tool to one another, and
   - means including one common motor for driving the upper and lower adjustment spindles of an associated tool pair, wherein the motor is lockingly coupled to the two spindles.

3,929,048
RECIPROCATING GANG SAW

John W. McGehee, 3450 N. State St., Ukiah, Calif. 95482

Filed Nov. 11, 1974, Ser. No. 522,546
Int. Cl.² B27B *3/00*
U.S. Cl. 83—751 **4 Claims**



1. In a gang saw that includes a row of elongated saw that includes a row of elongated saw blades in parallel, spaced relation having cutting teeth along one of their longitudinally extending edges, which teeth face the same direction for sawing engagement with the material to be cut thereby, the improvement comprising:
   - a. blade supporting means rotatable about parallel axes respectively extending along the opposite ends of said row rotatably connected with the ends of each of said blades at one of a plurality of points spaced from said respective axes and from each other for movement of said ends and said blades in annular paths in parallel planes with the ends of each blade offset from the others around said axes for successive sawing engagement of said blades with material fed thereto and therepast upon rotation of said blade supporting means in one direction,
   - b. means for supporting material to be cut to and past said cutting teeth during said rotation of said blade supporting means, and
   - c. power means connected with one of said blade supporting means for rotating it about its axis for successively moving the blades of said row into cutting engagement with material fed to and past said cutting teeth.

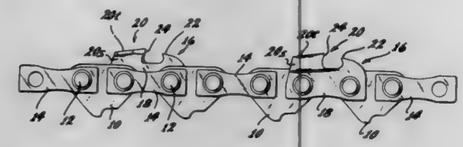
3,929,049
EXTENDED PITCH SAW CHAIN

Curtis L. Graversen, Milwaukie, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.

Continuation of Ser. No. 398,143, Sept. 17, 1973, abandoned. This application Apr. 4, 1975, Ser. No. 565,150
Int. Cl.² B27B *33/14*
U.S. Cl. 83—834 **4 Claims**

1. A saw chain comprised of pivotally connected center

drive links and guide bar engaging side links, certain of said guide bar engaging side links being cutting links, said cutting links having a base portion from which is extended a leading depth gauge portion and a cutting portion having a leading cutting edge, said base portion of said cutting links having front and rear rivet receiving openings with rivets therethrough pivotally connecting said cutting links to drive links that precede and follow said cutting links, said base portion further having front and rear bar engaging edge portions and said rear bar engaging edge portion providing at its rearward most point a pivot around which the cutting link pivots as the front end of the cutting link is raised in response to a force



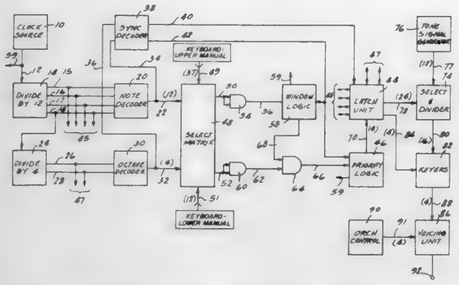
acting against the cutting edge, said pivot being located rearwardly of the rear rivet opening and the lengthwise distance between said pivot and the front rivet being substantially greater than the vertical distance of the cutting edge above the pivot, and said pivot located at the rearward most point of the base portion.

3,929,050
REVERSIBLE HACK SAW BLADE
Arden L. Salzwedel, Rte. No. 1, Montello, Wis. 53949
Filed Aug. 1, 1974, Ser. No. 493,967
Int. Cl.² B23D *61/12*
U.S. Cl. 83—848 **1 Claim**



1. In a thin, elongated, narrow, toothed blade configured with apertures in near adjacency to the end extremities to provide for mounting in a frame, tensioning, stretching, and driving with reciprocal oscillation as a power hack saw to provide cutting action in one direction of motion, an improvement comprising in combination a first plurality of next adjacent teeth disposed in a file in one facing direction along one blade edge portion and second plurality of next adjacent teeth disposed in a file in opposite facing direction along another portion of said blade edge, wherein said portions are substantially equal in length and comprise substantially the entire blade edge, and wherein said files of teeth are aligned axially with each such tooth configured in substantial uniformity with all other teeth in such file, thereby to provide operable cutting reversibility to said blade.

3,929,051
MULTIPLEX HARMONY GENERATOR
Douglas R. Moore, Niles, Ill., assignor to Chicago Musical Instrument Co., Lincolnwood, Ill.
Filed Oct. 23, 1973, Ser. No. 409,009
Int. Cl.² G10H *1/00, 3/06*
U.S. Cl. 84—1.17 **20 Claims**



1. In an electronic musical instrument having a source of tone signals, an output system, and a keyboard with an upper manual portion and a lower manual portion, a system comprising:

a. drive means for producing a plurality of signals for use in scanning the keys of the keyboard,

b. scanning means connected to said drive means for receiving said signals, and operative to scan the keys of the keyboard for producing first signals in response to operation of the keys of the upper manual and second signals responsive to operation of the keys of the lower manual,

c. means connected with said scanning means and responsive to said first signals and said second signals for producing third signals in accordance with the operated keys of the upper manual and of the lower manual only when keys of both the upper and lower manuals are simultaneously operated,

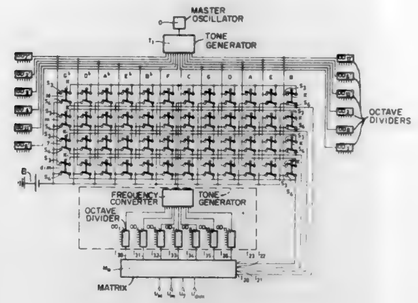
d. said third signals comprising a train of pulses encoded in time position in response to operated keys of both the upper manual and the lower manual, means synchronized with said scanning means and responsive to said third signals for producing a combination of output signals uniquely dependent on the time positions of pulses in said train of pulses, and

e. a plurality of keyers responsive to said output signals for keying selected ones of said tone signals to said output system.

3,929,052
ELECTRONIC MUSICAL INSTRUMENT WITH ONE TONE GENERATOR CONTROLLING A SECOND TONE GENERATOR
Davis Josephus van der Wal, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 30, 1974, Ser. No. 510,633
Claims priority, application Netherlands, Oct. 6, 1973, 7313758
Int. Cl.² G10H *1/02, 5/02*
U.S. Cl. 84—1.22 **6 Claims**

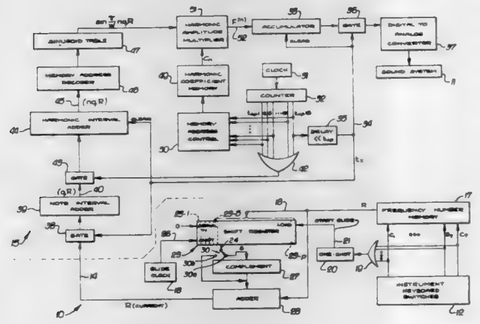
1. Musical tone generating circuit comprising a single master oscillator, a first plurality of digital dividers connected to said master oscillator, each of said digital dividers providing a single tone output of a musical scale, a switching device means having inputs connected to each of the outputs of the first plurality of dividers and having an output for selectively providing one of said single tones as an output signal, a second plurality of digital dividers connected to the output of said switching device means for providing lower frequency musical output tones, a plurality of signal controlled adders each connected to a different combination of outputs of said second plurality of dividers, and means for selectively applying

control signals to said adders, whereby chords are selectively provided, and whereby the key of said chords from each of



said adders is selectively transposed by operating said switching device means.

3,929,053
PRODUCTION OF GLIDE AND PORTAMENTO IN AN ELECTRONIC MUSICAL INSTRUMENT
Ralph Deutsch, Sherman Oaks, Calif., assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Filed Apr. 29, 1974, Ser. No. 464,936
Int. Cl.² G10H *1/02, 5/00*
U.S. Cl. 84—1.24 **10 Claims**

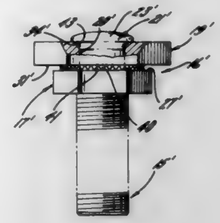


1. Apparatus for producing glide or portamento in an electronic musical instrument of the type having a tone generator for generating a musical tone, and wherein the fundamental frequency of the generated tone is proportional to a number utilized by said tone generator, the value of said number that is presently utilized by said tone generator being the "current frequency number", said instrument comprising;

increment means for establishing another number that increases or decreases in value incrementally during the production of glide or portamento, said other number being a "fractional frequency number," and

means for modifying said current frequency number in increments corresponding to said fractional frequency numbers, said modifying terminating when the modified current frequency number differs from the frequency number of the presently selected note by less than a certain amount.

3,929,054
FASTENING ELEMENT ADAPTED FOR TIGHTENING TO PREDETERMINED TORQUE
Charles E. Gutshall, Rockford, Ill., assignor to Elco Industries, Inc., Rockford, Ill.
Filed Dec. 1, 1972, Ser. No. 311,367
Int. Cl.² F16B *31/02*
U.S. Cl. 85—61 **13 Claims**



1. A fastening element adapted to be threaded into a workpiece to a predetermined torque by a tool, said element including an elongated threaded shank, and a head on one end of the shank comprising a base member integrally formed with the upper end of said shank, a projecting member extending upwardly from said base member, a plate member with a central opening telescoped on said projecting member and being shaped for engagement by said tool to tighten the screw in the workpiece, and permanently yieldable means adapted to hold said plate against turning relative to said projecting member until the tightening torque applied to said plate exceeds said predetermined torque and said means thereafter being permanently deformed so said plate member may slip freely around said projecting member, said means including a boss formed on the upper end of said projecting member and being spaced from said base member a distance substantially equal to the thickness of said plate, said boss engaging said plate member and holding the latter on said projecting member and against said base member, said means further including a first series of parts integrally formed of the material of said plate member, a second series of parts integrally formed of the material of another of said members, said first and second series of parts being oriented on their respective members to allow said plate member to be telescoped onto said projecting member with said parts in said first and second series interfitting with each other to hold said plate against turning relative to said projecting member until the tightening torque applied to said plate by the tool exceeds said predetermined torque, at least one of said boss and said interfitting parts being permanently deformed when said tightening torque exceeds said predetermined torque.

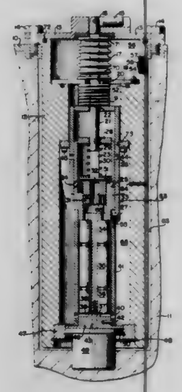
3,929,055
EXPLOSIVE CHARGE PISTOL
Charles A. Lewis, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 12, 1963, Ser. No. 272,809
Int. Cl.² F41C *3/00*
U.S. Cl. 89—1 M **10 Claims**

1. In an explosive charge pistol, an elongated casing having at least one opening and a booster inserted in one end thereof, a stab-initiated delay detonator means fixedly supported in said casing and located adjacent to said booster in aligned relationship therewith,

a rotatable shutter mounted in said casing between said delay detonator means and said booster,

explosive leads defining an explosive path through said shutter and carried by said shutter in such a manner that said leads are axially misaligned with the delay detonator means and booster when the shuttter is in the unarmed position thereby providing a safety means,

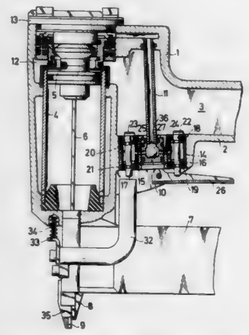
a first fluid filled normally expanded bellows supported in the other end of said casing,
a second normally collapsed bellows supported within said casing,
a plate attached to said casing between said first and second bellows and having a vent therein for establishing communication between said first and second bellows,
spring loaded firing pin means connected to said second bellows,
detent means to release said firing pin means when said second bellows is in an expanded position,
means connected to said second bellows and said shutter to rotate said shutter to align said explosive leads with said delay detonator means and said booster when said second



bellows has expanded to complete an explosive train between said detonator means and said booster,
releasable means locking said first bellows in said expanded position whereby when said pistol is submerged in water and said releasable means is released the hydrostatic pressure of the water acts on the first bellows forcing said fluid through the vent in said plate to expand said second bellows, the expansion of said second bellows cocking said spring loaded firing pin means and rotating said shutter to align said explosive leads with said delay detonator means and said booster, said firing pin means being released when said second bellows reaches the expanded position thereby striking said delay detonator means to initiate sequential firing of the delay detonator means, explosive leads and booster.

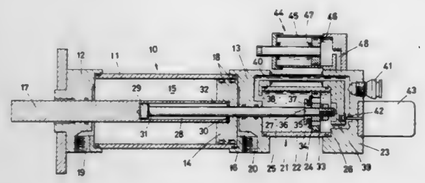
3,929,056
STAPLER RELEASE SAFETY MECHANISM
Wilfried Lange, Altenhagen, Germany, assignor to Dieter Haubold Industrielle Nagelgerate, Brockhold, Germany
Filed May 14, 1973, Ser. No. 360,160
Claims priority, application Germany, May 17, 1972, 2224016
Int. Cl. F15b *11/08, 13/04*
U.S. Cl. 91—461 **1 Claim**

1. A release safety mechanism for a pneumatic stapler and nail driver, said mechanism comprising a casing having a compressed air reservoir and a separate working cylinder, an inlet valve in said cylinder, a piston movable in said cylinder in response to air pressure controlled by said inlet valve, a driving ram connected with said piston, a tube extending through said reservoir and having one end communicating with said inlet valve, said tube supplying compressed air to said inlet valve to keep it in a closed position, valve means connected with the other end of said tube, said valve means comprising a body carried by said casing and having a central chamber with an opening communicating with said other end of the tube and two passages spaced from and extending on opposite sides of said opening, a ball located in said chamber, said ball being movable to close any one of said passages in response to pressure differential between said passage and constituting with said chamber a ball valve, two auxiliary valves, each of said auxiliary valves having a space connected with a separate passage and having a separate valve piston located in said space and extending symmetrically to said ball valve, each valve piston having an end portion extending into said reservoir, and an opposite end portion extending to atmo-



sphere, two separate gasket rings carried by each valve piston to seal off the respective space alternately from the atmosphere and said reservoir, a separate stop carried by each valve piston upon its one end portion extending into said reservoir and adapted to engage said body to prevent excessive displacement of each valve piston, and separate trip means adapted to engage said opposite end portions to actuate said valve pistons, whereby compressed air keeps either of said inlet valve in the closed position when said trip means are not actuated and in the open position only when both said trip means are actuated.

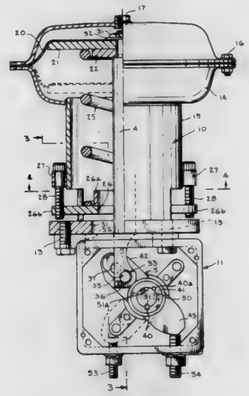
3,929,057
HYDRAULIC BRAKE MECHANISM FOR AN AIR CYLINDER
Shigeji Kondo, Gamagori, Japan, assignor to Kondo Manufacturing Co. Ltd., Japan
Filed Dec. 26, 1973, Ser. No. 427,847
Claims priority, application Japan, Sept. 18, 1973, 48-105140; Apr. 14, 1973, 48-42427
Int. Cl.² F15B *15/2*
U.S. Cl. 92—9 **4 Claims**



1. A feed mechanism for a machine tool comprising in combination:
a. a double-acting pneumatic cylinder assembly having a first piston and a piston rod having its inner end secured to and terminating within said piston, said rod having an axially hollow portion and an outer end for being connected to a load, said rod being subjected to compressional axial forces as it is extended during its working stroke and to tension during retraction thereof, there being means communicating the interior of said rod with

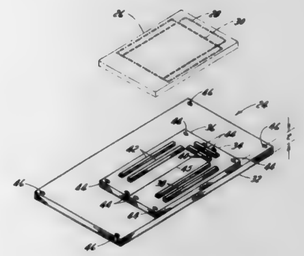
that side of said first piston which is the low pressure side during the working stroke and the high pressure side during retraction;
b. a double-acting hydraulic cylinder assembly connected concentrically with said pneumatic cylinder assembly, and having a second piston, of smaller diameter and lesser stroke than said first piston, and a second piston rod having one end rigidly secured to said second piston, said second piston rod having a portion at all times projecting through and slidably guided by said first piston into said hollow portion of said piston rod;
c. the other end of said second piston rod having a flange engaging the low-pressure side of said first piston during the working stroke to tension said second piston rod for thereby pressurizing the side of said second piston which is closer to said first piston, said flange being engaged by an abutment in said axially hollow piston rod during the return stroke;
d. impact absorbing means for acting between said flange of said second piston rod and said first piston;
e. a throttling passageway interconnecting the opposite sides of said second piston during a working stroke, there being a power-actuated shut-off valve in said throttling passageway for hydraulically arresting the second portion during the working stroke;
f. a separate second hydraulic cylinder assembly including a third piston of the single-acting spring-return type and fluidly connected to the end of the first-named hydraulic cylinder which is more remote from said first piston and disposed in radially spaced relation to said first hydraulic cylinder assembly; and
g. a check valve directed to freely interconnect the opposite sides of said second piston during a return stroke.

3,929,058
VALVE ACTUATOR
Joling P. Smith, Houston, Tex., assignor to Keystone International, Inc., Houston, Tex.
Filed Oct. 15, 1973, Ser. No. 406,164
Int. Cl.² F16K *31/165*; **F15B** *15/06*; **F16H** *21/44*
U.S. Cl. 92—13 **9 Claims**



1. An actuator for converting linear motion to rotary motion comprising:
a. housing means;
b. force transfer means disposed in said housing means for movement from one terminal position in said housing means toward another;
c. means associated with said housing means for effecting movement of said force transfer means between said terminal positions in said housing;
d. a substantially rigid rod member connected to said force transfer means for reciprocal movement between first and second terminal positions during said travel of said force transfer means between its terminal positions; and
e. crank means connected to said rod member and rotatable about a fixed axis through an angle of a preselected value in response to said reciprocal movement of said rod member;
f. said rod member being selectively and pivotally connectable directly to said crank means at either of first and second pivot points on said crank means at positions radially spaced from said crank axis to change the angle of rotation of said crank means without altering the amount of said rod member reciprocal movement,
said actuator including means for shifting said rod member transversely to the axis of the path of travel of said force transfer means such that the axis of said rod member when connected at said first pivot point is substantially parallel to the axis of said rod member when connected at said second pivot point, when said force transfer means is at one of its terminal positions.

3,929,059
DIE COUNTER PLATE OR MAKE-READY FOR FORMING BOX BLANKS
Walter P. Gendron, 150 Fairview, Dollard des Ormeaux, Quebec, Canada
Filed June 5, 1974, Ser. No. 476,611
Int. Cl.² B31B *1/16*
U.S. Cl. 93—58.3 **6 Claims**

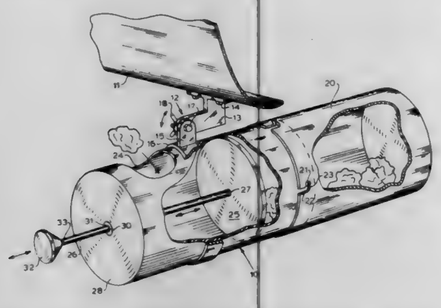


1. A counter plate for use in cutting and scoring board to form carton blanks or the like comprising a mounting plate, means for detachably securing said mounting plate on a press, a plurality of accurately ground hardened steel cutting plates less than 20 inches wide and 3/16 of an inch thick adapted to cooperate with knives on a male die to cut said board and means for securing said cutting plates in abutting relationship to said mounting plate thereby to form the cutting surface of said counter plate, said mounting plate being made of different material than said cutting plates.

3,929,060
VEHICLE LITTER COMPACTOR
Willie C. Burke, P. O. Box 799 Route 1, Groveland, Fla. 32736
Filed Nov. 4, 1974, Ser. No. 520,680
Int. Cl.² B30B *1/04*
U.S. Cl. 100—100 **7 Claims**

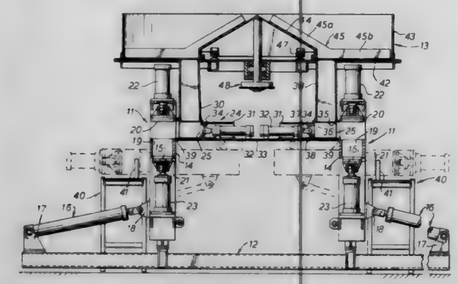
1. A vehicle litter compactor comprising in combination:
a. an elongated hollow casing;
b. said casing having an opening on one side thereof for the insertion of litter therein;
c. attaching means connected to said casing for attaching said casing to a vehicle, or the like, said attaching means having means for adjusting said casing to different positions, whereby said casing may be placed in one position when not in use and quickly shifted to a second position for use in compressing litter;

d. a slidable compression piston located in said hollow casing and slidable past said opening therein;
e. an elongated rod connected to said slidable piston and extending through said elongated casing for sliding said piston; and



f. a removable casing system removably attached to one end of said hollow casing whereby said piston will compress litter placed in said casing opening into said removable casing section which may be removed for disposal.

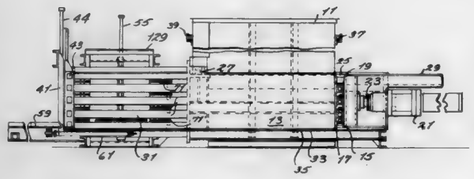
3,929,061
WATER EXTRACTION METHOD AND APPARATUS
David Dugmore Banks, and Francis McManus, both of Blackburn, England, assignors to Scapa Engineering Limited, England
Filed Feb. 4, 1975, Ser. No. 547,059
Claims priority, application United Kingdom, Feb. 8, 1974, 5970/74
Int. Cl.² B30B 9/06, 15/32
U.S. Cl. 100—116 **17 Claims**



1. A method of extracting water from pulp and of providing a pressed block of pulp including the steps of charging a generally vertically disposed press-chamber from above with moisture-containing pulp, constraining the pulp between opposed moisture-permeable elements arranged at the top and bottom of the said chamber, rotating the press-chamber from its generally vertical disposition into a generally horizontal disposition, pressing the pulp to extract moisture therefrom whilst the chamber is disposed horizontally, and ejecting the resultant pressed block from the chamber.

3. Apparatus for extracting water from pulp and of providing a pressed block of pulp, comprising a press-chamber, opposed moisture-permeable elements at respective opposite ends of the said chamber, at least one such element being movably mounted for adjustment relative to the other element to vary the separation of the elements for providing access to the chamber in the direction of movement of the element and for compressing material positioned between the said elements, and feed means adapted to introduce a predetermined quantity of moisture-containing material into the chamber for support by that moisture-permeable element arranged in opposed disposition relative to the aforementioned such element, the said press-chamber being movable between a first position wherein the opposed moisture-permeable elements are arranged in generally vertically spaced relationship, in which position the chamber is charged with moisture-containing material, and a second position wherein the said elements are in generally horizontally spaced relationship, in which position the pressed block is discharged from the chamber.

3,929,062
CLOSED CHAMBER BALER
Wallace M. Thompson, Cordele, Ga., assignor to Harris Press & Shear Corporation, Cordele, Ga.
Filed May 16, 1974, Ser. No. 470,572
Int. Cl.² B65B 13/20
U.S. Cl. 100—3 **10 Claims**

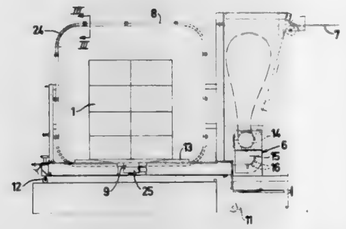


1. In a closed chamber baler for forming compressible material into generally rectangular bales and including a hopper and a bale chamber in which said material is compressed and formed into bales, the method comprising the steps of:
feeding said compressible material into said hopper,
forcing said material from said hopper into said bale chamber, said forcing step including the step of reciprocating a ram with respect to said hopper and said chamber to force said compressible material from said hopper into said bale chamber,
guiding strapping wires about the external periphery of said bale chamber after a predetermined quantity of material has been forced into said chamber, said wires being positioned about the outside of said chamber at a plurality of vertically spaced intervals,
tensioning said strapping wires about said compressed material,
releasing said strapping wires to engage said compressed material to thereby form a bale, and
ejecting said bale from said bale chamber, said ejecting step including the steps of gripping said bale, moving said bale outside of said chamber, and releasing said bale after said bale has moved a predetermined distance outside of said chamber.

3,929,063
BINDING MACHINE
Nils Erik Stromberg, and Ulf Engelbert Lindberg, both of Sundsvall, Sweden, assignors to Sunds Aktiebolag, Sundsvall, Sweden
Filed Apr. 26, 1974, Ser. No. 464,675
Claims priority, application Sweden, May 10, 1973, 7306601
Int. Cl.² B65B 13/04
U.S. Cl. 100—26 **8 Claims**

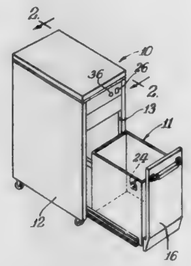
1. A binding machine for binding objects with wire, comprising
a device (6) for feeding and stretching the wire;
a track (8) for guiding the wire around an object to be bound;
a locking unit comprising a stop member (29) for the free wire end as well as a movable (30) and a stationary (31) tongs part for locking the free wire end;

a twisting unit comprising a rotary twisting roller (36) in the form of a toothed wheel provided with a radial slit (37) for twisting the wire parts;
a cutting unit comprising a movable (48) and a stationary (47) cutting member for cutting off the wire;
a openable guide bar (10) for guiding the wire between the units;
lever means (32) for operating the movable tongs part (30); a lever member (50) for operating the movable cutting member (48);
lever means (27*a*, 27*b*) for operating the openable guide bar (10); and



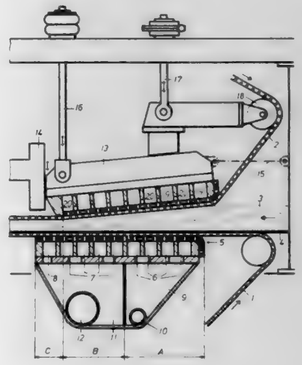
transmitting wheels (39) (40) for transmitting drive force to the twisting roller (36);
said locking unit, twisting unit, cutting unit, openable guide bar, lever means, lever member and transmitting wheels all being assembled in one binding unit (9), and
a drive unit (25) attached to the binding unit (9) for driving the parts assembled in said binding unit (9),
said binding machine being further characterized in that said lever means and said lever member and, respectively, the transmitting wheels are adapted to be driven only by frictional contact with drive means (33, 34, 51, 52), and, respectively, a drive wheel (38) in said drive unit (25).

3,929,064
REFUSE COMPACTOR WITH RECEPTACLE CONTROLLED ACTUATION
Thomas R. MacFarlane, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jan. 2, 1974, Ser. No. 430,175
Int. Cl.² B30B 15/14
U.S. Cl. 100—53 **13 Claims**



1. A refuse compactor comprising: a receptacle defining a compacting space; means for movably mounting said receptacle for selective disposition in a refuse compacting position and in a refuse receiving position; ram means for compacting refuse in the receptacle; control means for causing sequential movement of the ram means from a retracted position, into compacting engagement with refuse in the receptacle in the compacting position, and back to the retracted position; and means responsive to movement of the receptacle from said refuse receiving position to said refuse compacting position for temporarily operating said ram to move a preselected small amount away from said retracted position and cause said control means to complete a said sequential movement of the ram means.

3,929,065
WEDGE PRESS FOR CONTINUOUS DEHYDRATION OF A WEB OF FIBROUS MATERIAL, SUCH AS FIBERBOARD, ESPECIALLY
Elemer Csordas; Karl Gaugenmaier, both of Heidenheim, Brenz, and Gerhard Kotitschke, Steinheim, all of Germany, assignors to J. M. Voith GmbH, Heidenheim, Germany
Filed May 7, 1974, Ser. No. 467,672
Claims priority, application Germany, May 10, 1973, 2323519
Int. Cl.² B30B 9/00; D21F 1/44, 1/00
U.S. Cl. 100—90 **2 Claims**

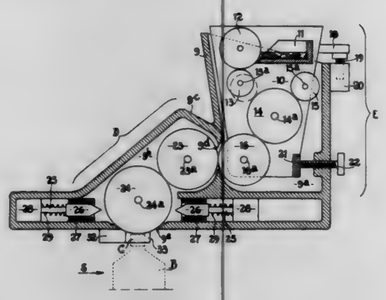


1. Device for continuous dehydration of a previously formed web of fibrous material, such as fiberboard, containing moisture, comprising two pressure plates pervious to water and mutually disposed so as to form a wedge-shaped gap therebetween, the wedge angle of said gap and the mutual spacing of said pressure plates being adjustable, and a water-permeable belt looped around said pressure plates, respectively, one of said pressure plates having a terminating portion projecting beyond the other pressure plate at the narrow end of said wedge-shaped gap, suction chamber means located at least at said terminating projecting portion so as to apply suction to the web as the pressure exerted by the pressure plates on the web terminates for preventing rewetting of the web and additional suction means at a region of said one pressure plate immediately preceding said projecting portion in direction of feed of a web of fibrous material through said wedge-shaped gap from the wide to the narrow end thereof, said other pressure plate being formed with perforations.

3,929,066
MACHINE FOR PRINTING STAMPS, IN PARTICULAR ON BOTTLE CAPS
Marcel Octave Pillon, Gergy, France, assignor to Pont-A-Mousson S.A., Pont-A-Mousson, France
Filed Dec. 18, 1973, Ser. No. 425,891
Claims priority, application France, Dec. 22, 1972, 72.46070
Int. Cl.² B41F 17/16, 31/30
U.S. Cl. 101—35 **15 Claims**

1. A machine for printing stamps on objects, comprising a device for printing the objects and a device for feeding the objects to the printing device, the printing device comprising a case defining a chamber which is closed except for a first opening and a second opening, a printing sub-assembly disposed in the chamber and comprising roller means defining a first surface for receiving ink and roller means defining a

second surface which is positioned for applying an ink stamp on each object through said first opening, a second sub-assembly which has roller means for inking up the first surface and is accessible and removable from the printing device, said first surface and said roller means of the second sub-assembly being in interengagement through said second opening, said first opening and second opening being just sufficient to allow application of the ink stamp on the object and inking of the first surface while rendering access to the inside of said chamber difficult, an electronic sub-assembly, means enclosing the electronic sub-assembly to render the electronic sub-assembly normally inaccessible, a device for detecting the passage of

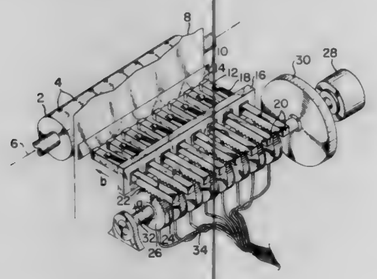


each object adjacent the printing sub-assembly to a position for the printing of the stamp on the object by the printing sub-assembly, the detecting device including a circuit producing an electrical signal upon detection of each object, the electronic sub-assembly comprising circuitry including the circuit of the detecting device and a counting circuit connected to the circuit of the detecting device to be responsive to the production of said signal, and a safety circuit associated with said circuitry to check correct operation of said circuitry upon passage of each object to said position for printing and operative to stop operation of the machine in the event of incorrect operation of said circuitry.

3,929,067
IMPACT PRINTER

Tatsuo Nishikawa, Tachikawa, and Osamu Asakura, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 10, 1974, Ser. No. 487,370
Claims priority, application Japan, July 20, 1973, 48-82032; July 13, 1973, 48-83478[U]
Int. Cl.² B41J 9/32
U.S. Cl. 101—93.3 **16 Claims**

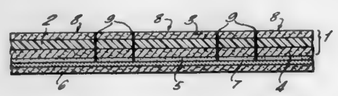


1. An impact printer comprising:
a type base carrying at least one group of typing characters, each of which being selectively faced toward printing paper;
a drive shaft having a driving force continuously applied thereto;
a friction disc mounted on said drive shaft corresponding to each said group of typing characters;
a wheel member disposed coaxially with and in facing relationship with respect to each said friction disc, said wheel member being rotatable relative to said friction disc;
an energizable magnet coil means for establishing, when energized, driving engagement between said wheel member and said friction disc by the magnetic force thereof, said magnetic coil being free from the rotation of said friction disc and said wheel member;
a printing hammer means for impacting a selected one of said typing characters through the recording paper;
means for urging said printing hammer means away from said type base; and
means for transmitting the driving force, applied to said wheel member through said friction disc, to said printing hammer means, thereby enabling said printing hammer means to overcome the urging force of said urging means and impact a selected typing character when said coil means is energized.

3,929,068
STENCILS

Brian Thomas Budden, Guildford, England, assignor to Samuel Jones & Company, Limited, England

Filed May 1, 1974, Ser. No. 466,013
Int. Cl.² B41N 1/24
U.S. Cl. 101—128.2 **1 Claim**

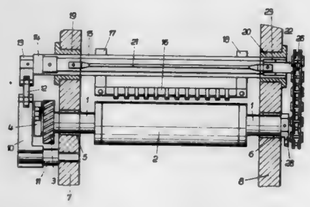


1. A stencil consisting of a first sheet in which a design is defined by cuts extending through the sheet, and a second sheet constituting a cover for the first sheet, the first and second sheets being bonded together by a coating of water-soluble pressure-sensitive adhesive on the first sheet, and the second sheet having a coating of silicone release material on its surface contacting the adhesive on the first sheet, permitting the first and second sheets to be peeled apart, the first sheet comprising a layer of polyethylene laminated between two layers of kraft paper.

3,929,069
GRIPPER CONTROL FOR SHEET-FED ROTARY PRINTING PRESSES

Hans-Georg Jahn, Wiesloch, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed May 23, 1973, Ser. No. 363,043
Claims priority, application Germany, May 23, 1972, 2224732
Int. Cl.² B65H 5/10
U.S. Cl. 101—232 **2 Claims**

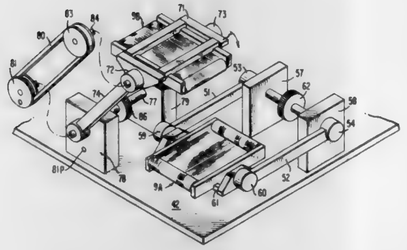


1. Gripper control means for sheet-fed printing presses, comprising a shaft on which an impression cylinder is mounted, oscillatably mounted gripper means for feeding sheets to the printing press, a cam mounted on said shaft, actuating means operatively connected between said cam and said gripper means to oscillate said gripper means by said cam and said actuating means upon rotation of said shaft, spring means connected to said actuating means to apply a spring force to the oscillating motion of said gripper means, and control means connected to said spring for controlling said spring force, said control means being connected to said shaft, wherein said gripper means includes a hollow shaft, said actuating means including a lever arrangement operable by said cam for oscillating said hollow shaft, and said spring means comprises a torsion spring extending in said hollow shaft, a bearing shaft member oscillatably mounted in said hollow shaft, said torsion spring having one end thereof attached to said bearing shaft member, said control means including a mechanical connection between said bearing shaft member and said impression cylinder shaft, said mechanical connection comprising a crank mounted on said shaft, a chain attached to said crank, an eccentric cam mounted on said bearing shaft member, said chain being attached to said cam at the curved segment of the latter closest to the axis of symmetry of said bearing shaft member, said chain being arranged on said cam in such a manner that the chain is wound on and off of said eccentric cam for each oscillation of said bearing shaft.

3,929,070
PRINTING METHOD AND APPARATUS WITH WIRE PRINTING ELEMENTS

John D. Grier, Temperance, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 796,797, Feb. 5, 1969, abandoned. This application Dec. 15, 1971, Ser. No. 208,277
Int. Cl.² B41F 1/00
U.S. Cl. 101—298 **6 Claims**

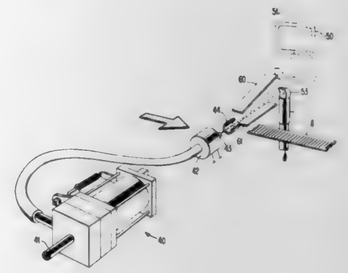


1. A method of forming a pattern of dots on a substrate comprising the steps of, supplying at least one elongated member with a printing media extending along its length, placing the said member into transverse and printing media transfer relationship with a plurality of coplanar members to transfer a portion of said printing media from said first member to said coplanar members, and then bringing said coplanar members into printing media transfer relationship with a substrate to transfer a pattern of dots thereto.

3,929,071
INK RECIRCULATING SYSTEM FOR INK JET PRINTING APPARATUS

David R. Cialone, Richmond; Gerald W. Hieronymus, Lexington; Henry R. Kruspe, Lexington; Richard W. McCornack, Lexington; Norwood K. Perkins, Lexington, and Donald L. West, Lexington, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,774
Int. Cl.² G01D 15/18
U.S. Cl. 101—335 **26 Claims**

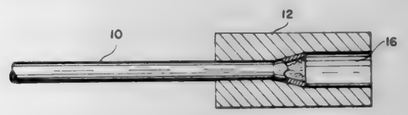


1. Ink recirculating apparatus, comprising:
ink supply means, said ink supply means providing a predetermined quantity of ink for said apparatus;
a utilization device, said utilization device having an input side and an output side and intervening portions thereof open to atmospheric pressure;
an ink supply line interconnected between said ink supply means and the input side of said utilization device;
an ink return line interconnected between the output side of said utilization device and said ink supply means;
pump means interposed in said ink supply line for establishing a predetermined supply pressure to said utilization device and to concurrently establish a predetermined range of vacuum in said ink supply means; and
fluid servo means interposed in said ink return line to enable return of ink to said ink supply means while maintaining said predetermined range of vacuum in said ink supply means.

3,929,072
MILD DETONATING FUSE END TERMINATION

Donald C. Zapf, Ben Lomond, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 26, 1974, Ser. No. 527,325
Int. Cl.² C06C 5/08, 7/02
U.S. Cl. 102—27 R **3 Claims**



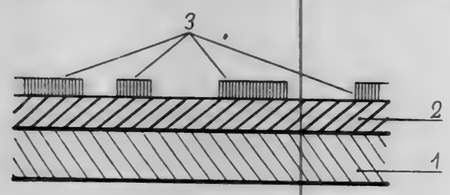
1. A method of seating a mild detonating fuse within a metal ferrule having a small bore portion corresponding to the diameter of said fuse and linearly adjacent thereto and a coaxial enlarged bore portion with a diameter larger than the diameter of said fuse, said method comprising:
positioning said fuse within the bore portions of said ferrule so that the end of said fuse is located within said enlarged bore portion;

gripping said fuse to prevent axial movement;
applying axial forces to said end of said fuse to compress said fuse causing it to conform to the shape of said enlarged bore portion of said ferrule; and
machining said compressed end of said fuse to produce a flat clean surface.

3,929,073
COMPOSITE PRINTING PLATE

Klaus Bretthauer, Volkertshausen, and Erich Simon, Singen, Hohentw, both of Germany, assignors to Swiss Aluminum Ltd., Neuhausen am Rheinfall, Switzerland

Filed Feb. 27, 1974, Ser. No. 446,121
Claims priority, application Germany, Mar. 7, 1973, 7308584[U]
Int. Cl.² B41N *1/06*
U.S. Cl. 101—395 **2 Claims**

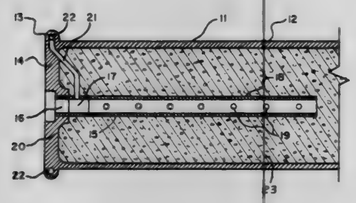


1. A printing plate formed of a composite material, comprising a support layer consisting of from 0.2 to 5 per cent manganese, from 0.1 to 0.5 per cent magnesium, zinc and tin at most as impurities, and the balance being aluminum and a clad layer consisting of from 0.2 to 10 per cent zinc and the balance being aluminum clad onto one side of said support layer.

3,929,074
MEANS FOR THE ELIMINATION OF A CARTRIDGE RIM

Anthony San Miguel, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 5, 1974, Ser. No. 458,253
Int. Cl.² F42B *5/30*
U.S. Cl. 102—43 P **3 Claims**

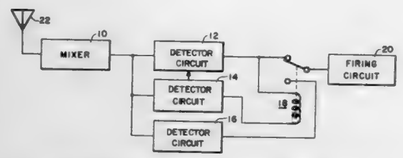


1. A consumable cartridge comprising:
a case member;
a base member closing one end of the case member and encircled by a rim;
an igniter inserted through the base member into the interior of the cartridge; and
a fuse train and a pyrotechnic train in combination connecting the igniter and the base to insure consumption of the base and rim when the igniter is initiated.

3,929,075
GUIDED MISSILE FUZE SYSTEM

Theodore E. Beane, Upper Gwynned Township, Montgomery County, and Alan L. Kirsch, Dresher, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 24, 1964, Ser. No. 347,098
Int. Cl.² F42C *13/04*
U.S. Cl. 102—70.2 P **1 Claim**

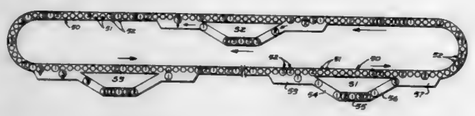


1. In a guided missile fuze system of the type wherein electromagnetic energy is radiated and a portion of said radiated energy is returned by a reflecting means for actuating a firing circuit the combination for providing countermeasures against a sweep jammer comprising:
a. first fuzing channel responsive to signals received in a first frequency band,
b. a first firing circuit,
c. a normally closed relay for connecting said first fuzing channel to said first firing circuit,
d. a second fuzing channel responsive to signals received in a second frequency band that is higher in frequency than said first frequency band,
e. a second firing circuit,
f. a normally open relay for connecting said second fuzing channel to said second firing circuit,
g. a signal processing channel responsive to signals received in a third frequency band that is higher in frequency than said second frequency band,
h. relay actuating means responsive to an output from said signal processing channel when signals are received from the sweep jammer for closing said normally open relay for a predetermined period that is less than the time for the sweep to travel from said signal processing channel to said second fuzing channel,
i. relay actuating means responsive to an output from said second fuzing channel when signals are received from the sweep jammer for opening said normally closed relay whereby said first firing circuit will not fire on the jamming signal.

3,929,076
MEANS OF HIGH MASS FLOW TRANSPORTATION

William V. McRae, Jr., Anaheim, and John J. Stuart, Jr., Newport Beach, both of Calif., assignors to Transyt Corporation, Newport Beach, Calif.

Division of Ser. No. 185,126, Sept. 30, 1971, Pat. No. 3,769,913, which is a continuation of Ser. No. 765,550, Oct. 7, 1968, abandoned. This application Sept. 7, 1973, Ser. No. 395,243
Int. Cl.² A63G *1/00*
U.S. Cl. 104—25 **19 Claims**

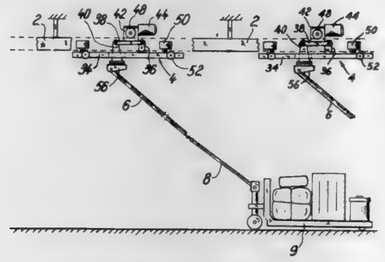


1. A transportation system, comprising:
a. a series of stations, each including means for receiving cars and means for delivering cars;
b. a continuously movable loop connecting the stations in sequential order, the loop including a plurality of car receiving locations divided into sets, the number of sets corresponding in number to the stations, and the locations constituting each set being reserved only for cars destined for a selected station;
c. a multiplicity of cars for removable reception at said locations and at said stations, the cars being divided into sets corresponding in number and sequence to the number and sequence of the stations, the cars of each set being destined for delivery only to a single selected station and received only at the corresponding set of locations;
d. said cars, when received in any station, being reassignable to other sets for delivery to corresponding sets of locations.

3,929,077
CONVEYOR SYSTEMS

Lars Olov Benndahl, Vidtskuegaard, Aaby Ringvej, 8230 Aabyhoj, Denmark

Filed May 30, 1974, Ser. No. 474,793
Claims priority, application United Kingdom, May 30, 1973, 25696/73
Int. Cl.² B61B *5/00*; B60M *1/34*
U.S. Cl. 104—93 **24 Claims**



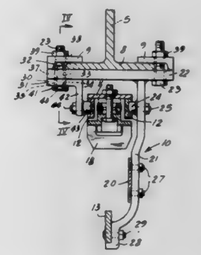
1. A conveyor system of the type comprising an overhead guiding rail supporting a number of driving units each provided with a driving motor so as to be movable along the rail and with means for holding one end of a depending pulling rod operable to be connected with a load carrier for driving the carrier along the path of the rail, each of said driving units being provided with at least one driving wheel connected with said motor and frictionally engaging a first surface portion of the rail, the rail having a second surface portion opposed to said first surface portion, each driving unit further being provided with at least one counter pressure wheel engaging said second surface portion of the rail, clamping means being provided for urging the driving wheel and the counter pressure wheel in opposite directions against the respective surface portions of the rail, characterized in that the pulling rod holding means are operatively connected with said clamping means so as to effect an increase of the clamping force of said wheels against the opposed rail portions in response to the pulling force in said pulling rod exerting an increased resistance against the movement of the driving unit.

3,929,078
DROP FINGER CONVEYOR, HANGER AND METHOD

Richard J. Sears, P.O. Box 83, Elk Grove Village, Ill. 60007

Filed June 3, 1974, Ser. No. 475,954
Int. Cl.² E01B *25/24*
U.S. Cl. 104—111 **15 Claims**

1. In a drop finger conveyor assembly including a supporting beam, a drop finger conveyor chain disposed to run longitudinally in limited spaced relation below the beam, horizontally spaced longitudinally extending track means supporting and guiding the conveyor chain, therebetween, a longitudinal track rail substantially spaced below the chain and the track means, and means for attaching a hanger to said beam, the improvement comprising:
a hanger having a track rail supporting leg depending from one end portion of a horizontal head plate thinner than the width of the space between the beam and the chain and track means and extending across and under the beam and secured thereto by said attaching means, an opposite end portion of the head plate being free from any obstruction which would interfere with moving said opposite end of the plate into position under the beam by passing it freely through the space between the beam and said chain and track means;



means securing the rail to a lower portion of said leg;
means on an upper portion of said leg mounting the chain guiding track means at one side of the conveyor chain;
a bracket provided separate from said plate and mounting the chain guiding track means at the opposite side of the chain;
and securing means fastening the bracket to said opposite end portion of the head plate; whereby the hanger is adapted to be installed by inserting said head plate into position between said beam and the conveyor chain and then attached to the beam without dismantling the chain or the guiding means, and the bracket is adapted to be thereafter secured in place on the installed head plate and in mounting relation to the chain guiding means.

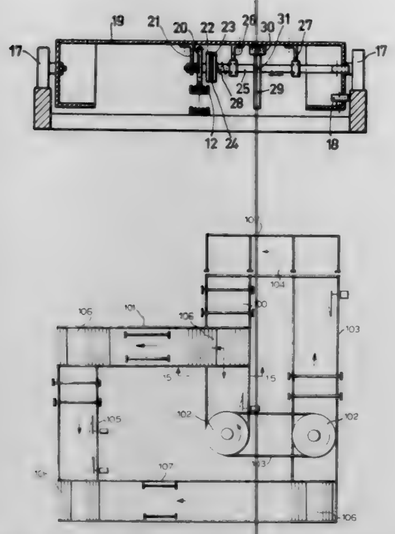
3,929,079
TRANSPORT SYSTEM

Gunnar Thure Eliassen, Skolgatan 1, S-661 00 Saffle, Sweden

Continuation of Ser. No. 248,494, April 28, 1972, abandoned. This application June 17, 1974, Ser. No. 480,101
Claims priority, application Sweden, Apr. 30, 1971, 5634/71
Int. Cl.² B65G *13/12*; B61B *13/00*; B60S *13/02*
U.S. Cl. 104—172 B **3 Claims**

1. A system for transporting, comprising:
a. a guideway including
at least one pair of horizontally spaced parallel tracks; and a rollway having rollers intersecting said tracks from a position lower than said tracks to a position higher than said tracks; and
b. a carriage including
wheels for engaging said track to allow said carriage to advance along said tracks;
a planar portion extending parallel to the rotational axes of said wheels in a plane beneath said wheels, said planar portion having a width less than the space between the parallel tracks and being engaged by the rollers to lift the carriage from said tracks so that the carriage may roll along the rollway at an angle to said tracks,
a chain positioned between said tracks for conveying said carriage therealong;
sprocket means on said carriage for engaging said chain;
uncoupling means for disengaging said sprocket from said

chain; and



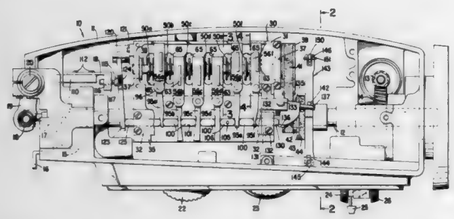
said sprocket means and said uncoupling means being positioned above said planar portion so as not to engage said rollway.

3,929,080
CULTIVATING AND PARTICLED MATERIAL APPLYING GARDENING TOOL
Swan M. Akeyson, 726 Walnut, Long Beach, Calif. 90813
Filed Aug. 26, 1974, Ser. No. 500,290
Int. Cl.² A01C *7/08*
U.S. Cl. 111—1 **3 Claims**



1. A soil cultivating and particled material applying device that includes:
   a. an elongate shaft having first and second ends;
   b. tine means projecting from said first end of said shaft;
   c. a hopper secured to said shaft adjacent said first end thereof, said hopper having first and second open ends, said hopper capable of having said particled material positioned therein through said first open end, and said particled material discharging by gravity through said open end;
   d. a cylindrical housing in communication with said second open end, said housing secured in a fixed position relative to said shaft, with said housing having a particled material discharge opening therein adjacent said tine means and said housing including two spaced end pieces;
   e. rotatable metering means in said housing, said metering means when in a first position receiving and holding a metered quantity of said particled material from said hopper through said second end thereof, and said metering means when pivoted to a second position discharging said metered quantity of said particled material by gravity through said discharge opening to fall to the ground surface said rotatable metering means including;
      1. a rod of circular transverse cross section journalled in said end pieces and extending therebetween, said rod having first and second arms extending outwardly from opposite ends thereof; and
      2. at least a portion of a cylindrical shell in said housing rigidly secured to said rod, said shell having a metering chamber therein that receives said granular material from said hopper when aligned with said second end thereof, with said chamber discharging said granular material through said discharge opening when aligned with the latter, and said manually operated means being pivotally connected to said first arm.
   f. spring loaded means that at all times tend to maintain said metering means in said first position; and
   g. first manually operated means for moving said metering means from said first to said second position to permit a metered quantity of said particled material to the ground as the latter is cultivated by said tine means.

3,929,081
ELECTRO MECHANICAL ADDER MECHANISM
Stanley Joseph Ketterer, Jamesburg, N.J., assignor to The Singer Company, New York, N.Y.
Filed Jan. 24, 1975, Ser. No. 543,727
Int. Cl.² D05B *3/02*
U.S. Cl. 112—158 D **4 Claims**



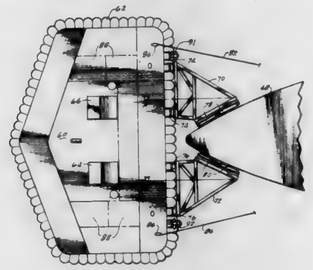
3. In a sewing machine having a frame, a needle bar gate supported in said frame for lateral oscillation, a needle bar supported in said gate for endwise reciprocation, drive means including means to drive said needle bar in endwise reciprocation, and means for driving said needle bar gate in lateral oscillation said means including:
   An adder mechanism having a housing supported in said sewing machine frame, a drive shaft journaled in said housing driven by said sewing machine drive means, a plurality of adder links carried by said housing spaced from said drive shaft, said adder links each having a thin section and a thick section, a plurality of link actuators individually connected to said adder links encircling said drive shaft and spanning said space between said drive shaft and said adder links, adder spacers interposed between said adder links and carried in said housing in a selected effective position for connecting selected sections, means associated with said drive shaft and said link actuators for urging said link actuators and said adder links to a selected position for said thin and thick sections of said adder links, and output means responsive to the total dimension of said adder spacers and said sections in said selected effective position for driving said needle bar gate in lateral oscillation.

3,929,082
NEEDLES FOR TUFTING OR THE LIKE
Josef Zocher, Haaren, Aachen, Germany, assignor to The Singer Company, New York, N.Y.
Filed Apr. 16, 1975, Ser. No. 569,323
Int. Cl.² D05B *85/00*
U.S. Cl. 112—222 **9 Claims**



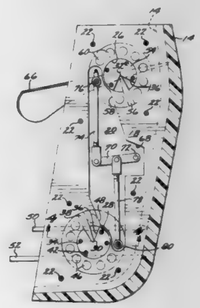
1. A needle for tufting or the like including a shank having a longitudinal axis, a blade extending from said shank, an eye and point portion including a transverse eye connected to said blade and terminating in a tip, said blade having a longitudinal groove on one side terminating at the eye, said eye and point portion having an axis skewed relative to said longitudinal axis away from said groove side, and means defining a shoulder at the junction of the eye and point portion with the blade on the side toward which the axis is skewed to define a clearance above the eye.

3,929,083
APPARATUS FOR CLEARING A PATH THROUGH ICE
Owen Davis Blankenship, and Edward Olen Anders, both of Houston, Tex., assignors to Global Marine Inc., Los Angeles, Calif.
Filed Oct. 10, 1972, Ser. No. 295,803
Int. Cl.² B63B *35/08*
U.S. Cl. 114—40 **14 Claims**



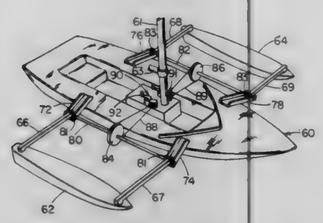
14. Ice breaking apparatus for use with a vessel having a buoyant hull, a deck and a prow extending therefrom comprising: a surface effect structure mounted on and attached to the prow and extending in front of the vessel and including a platform with a large areal extent having a flexible material attached to and extending downwardly from the platform to a point adjacent a surface being traversed by the vessel, such flexible material extending downwardly substantially around the underside of the platform to enclose the underside periphery of the platform, said surface effect structure having means mounted in the platform for forcing air below the platform.

3,929,084
HEIGHT CONTROL SYSTEM FOR A HYDROFOIL WATERCRAFT
David J. Cline, Brea, Calif., assignor to Dynafoil, Inc., Newport Beach, Calif.
Filed Feb. 14, 1974, Ser. No. 442,613
Int. Cl.² B63B *1/28*
U.S. Cl. 114—66.5 H **5 Claims**



1. A height control system for a hydrofoil watercraft, said system comprising:
   supporting strut means including a fin extending fore-and-aft and generally downwardly from the watercraft hull;
   control hydrofoil means adapted to ride at or above the water surface and pivotally mounted to said fin in symmetrical relation thereto for pivotal movement about a transverse control axis, and having a center of lift and a center of gravity located rearwardly of said control axis;
   lift hydrofoil means mounted to said strut means below said control hydrofoil means for pivotal movement about a transverse lift axis, said lift hydrofoil means having a center of lift located rearwardly of said transverse lift axis; and
   linkage means coupling said control hydrofoil means and said lift hydrofoil means and operative upon pivotal movement of said control hydrofoil means to oppositely pivot said lift hydrofoil means, said linkage means including a pivot arm located between said control axis and said lift axis and pivoted at one extremity to said strut means; an upper actuating arm pivotally connected at its lower extremity to the extremity of said pivot arm opposite said one extremity, and pivotally connected at its upper extremity to said control hydrofoil means rearwardly of said control axis; and a lower actuating arm pivotally connected at its upper extremity to said pivot arm between the extremities thereof, and at its lower extremity to said lift hydrofoil means forwardly of said lift axis.

3,929,085
TRIMARAN
Scott M. Mason, P.O. Box 369, Wakefield, R.I. 02880
Continuation-in-part of Ser. No. 397,969, Sept. 17, 1973, Pat. No. 3,881,440, which is a continuation-in-part of Ser. No. 183,357, Sept. 24, 1971, abandoned. This application Nov. 4, 1974, Ser. No. 520,365
Int. Cl.² B63B 43/14
U.S. Cl. 114—123 14 Claims

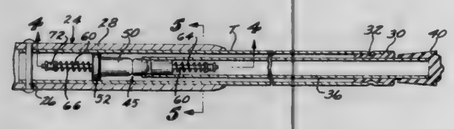


1. In a trimaran having one central and two outrigger hulls, each outrigger being connected to the central hull by a pair of mutually spaced arms which are resiliently pivoted to the central hull to permit the central hull to heel to the wind with respect to the outrigger hulls in the manner of a single hull sailing vessel, the improvement wherein

there are provided adjusting means operatively connected to each of said pairs of arms forcibly lower at least the leeward outrigger hull thereby to increase the bouyancy force exerted thereby and correspondingly to adjust its stabilizing effect on the central hull and means for pivotally raising said outrigger hulls out of the water, and

wherein each of said pairs of arms is mounted to pivot with a rod extending parallel to a side of the central hull and resilient means are provided acting between each rod and the central hull to permit gross movements of said outrigger hulls with respect to said central hull.

3,929,086
SAILBOAT TILLER APPARATUS
Hobart L. Alter, Capistrano Beach, Calif., assignor to Coast Catamaran Corporation, San Juan Capistrano, Calif.
Filed Feb. 1, 1974, Ser. No. 438,785
Int. Cl.² B63H 25/06
U.S. Cl. 114—144 R 1 Claim



1. Sailboat rudder apparatus, comprising:

a rudder;

a tiller tube attached to said rudder and normally extending forwardly therefrom;

a hiking stick telescopically arranged relative to said tiller tube;

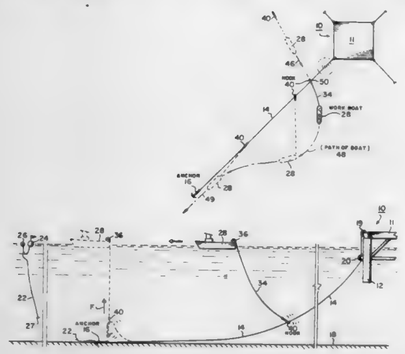
a slider longitudinally slidably disposed within said tiller tube;

a flexible element connecting said slider and the rear end of said hiking stick, said flexible element being coaxial with said slider and said hiking stick and extending rearwardly from said slider and forwardly from the rear end of said hiking stick;

first spring means interposed between the rear end of said flexible element and said slider; and

second spring means interposed between the front end of said flexible element and the rear end of said hiking stick whereby said hiking stick is movable longitudinally between a retracted and an extended position relative to said tiller tube, and with said hiking stick being allowed to swivel relative to the front end of said tiller tube when said hiking stick is in its extended position.

3,929,087
METHOD OF RETRIEVING ANCHORS
Thomas M. Montgomery, Aberdeen, S.C., assignor to Ocean Drilling & Exploration Company, New Orleans, La.
Filed Nov. 11, 1974, Ser. No. 522,395
Int. Cl.² B63B 21/26
U.S. Cl. 114—206 R 5 Claims



1. A method for locating and retrieving an anchor from the seabed and being attached to the lower end of an inclined mooring line which is considerably longer than the depth of the water body, the upper end of the mooring line being attached to a member of a floating marine structure, comprising the steps of:

attaching to one portion of a long service line a hook having an open gap;

submerging the hook in the water;

towing a remote portion of the service line in a direction intersecting the inclined mooring line, the length between said portions of the service line being such as to allow the submerged hook to catch the mooring line at a point considerably remote from said structure;

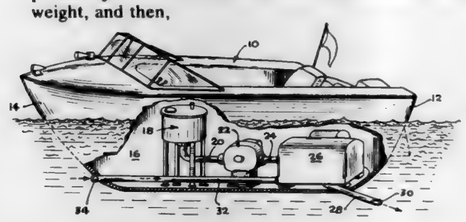
gradually swerving the service line in the direction of the mooring line toward the buried anchor while maintaining sufficient tension on the service line and maintaining the hook in engagement with the mooring line as the hook slides down on the mooring line; and

exerting an uplift force on the service line sufficient to retrieve the anchor.

3,929,088
USE OF WATER-IN-OIL EMULSIONS OF WATER SOLUBLE VINYL ADDITION POLYMERS TO IMPROVE THE EFFICIENCY OF JET POWERED SHIPS
Paul L. DuBrow, Chicago, and Alvin J. Frisque, La Grange, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.
Filed July 11, 1974, Ser. No. 487,524
Int. Cl.² B63H 11/02; F17D 1/16
U.S. Cl. 115—14 4 Claims

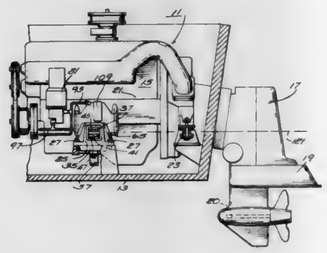
1. A method for improving the operating efficiency of an aqueous jet propelled ship of the type where a high pressure jet of water is forced outward through one or more orifices below the normal water level of the ship to be propelled which improvement comprises the steps of:

A. adding to the high pressure jet of water being forced outward before it leaves the ship, a quantity of water-in-oil emulsion of a finely divided water soluble vinyl addition polymer so that the polymer is present in the high pressure jet of water at levels of from 0.003% to 10% by weight, and then,



B. forcing said high pressure jet of water through said orifice to produce a high pressure jet of water with improved coherent character and turbulence reduction properties whereby said aqueous jet propelled ship is operated more efficiently.

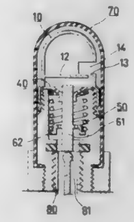
3,929,089
STERN DRIVE HYDRAULIC TRIM CONTROL SYSTEM INCLUDING A TILT POSITION INDICATOR
Ralph E. Lambrecht, Lake Bluff, and Harry Najimian, Jr., Lake Forest, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed Nov. 18, 1974, Ser. No. 524,400
Int. Cl.² B63H 5/12
U.S. Cl. 115—41 HT 7 Claims



1. A stern drive unit comprising an engine, a stern drive leg fixed to the rear of said engine and including a part which is tiltable vertically and swingable horizontally independently of said engine, elastomeric mounting means connected to said stern drive unit rearwardly of the front of said engine and adapted for connection to a boat hull for vibrationally isolating and supporting said stern drive unit from the boat hull and for providing a pivotal axis relative to which said stern drive unit is tiltable relative to the boat hull, and means located forwardly of said elastomeric mounting means for tilting said stern drive unit about said elastomeric mounting means and for vibrationally isolating and supporting said stern drive unit from the boat hull, said isolating, supporting and tilting means comprising a mount including an elastomeric part, a bracket fixed to said elastomeric part and adapted to be fixed to the boat hull, an arm fixed to said elastomeric part remotely from said bracket, and a jacking mechanism connected between said engine and said arm for tilting said stern drive unit relative to the boat hull.

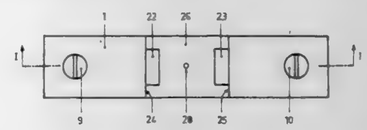
3,929,090
LEAKAGE WARNING DEVICE FOR VEHICLE TIRE
Chiang-Shui Su, No. 237 Ming Kuo Road, Chia-Yi, China /Taiwan
Filed Nov. 21, 1974, Ser. No. 525,879
Int. Cl.² B60C 23/02
U.S. Cl. 116—34 R 2 Claims

1. An air leakage warning device for a pneumatic tire comprising: a substantially cylindrical whistle-producing member having an enlarged shoulder on the lower portion thereof; a cylinder member containing piston means, a coil spring surrounding the same and responsive to a predetermined pressure within the tire, a perforated disk plate covering the upper end thereof, a perforated shoulder carried by said piston and retaining said coil spring between the same and said disk plate, the upper end of the cylinder member being inter-connected with the shoulder portion of the whistle-producing member and said perforated disk plate, and the lower end thereof having internal threads adapted to be screwed onto a conventional air filling valve stem of the tire; a rubber sack enveloping the whistle-producing member and the cylinder member



and forming a receiver for escaping air from the tire and adapted to be ruptured by air pressure so as to emit an audible signal, said rubber sack having an inwardly directed annular rim integrally formed on the circumference of the sack opening; a base member including a recess and an internal thread adapted to be screwed onto the lower exterior end of the cylinder member with said rim and the lower end of said rubber sack sandwiched therebetween, thereby tightly securing the rubber sack to the cylinder member; the whistle-producing member being provided with a radially extending plate on the inside of said whistle member and an air outlet port formed on the wall of said whistle member.

3,929,091
AUTOMATICALLY INFLATING AND LIBERATING A BALLOON
Philippe Holder, Avoriaz (Haute Savoie), France
Filed Apr. 8, 1974, Ser. No. 458,501
Claims priority, application France, Apr. 10, 1973, 73.12859
Int. Cl.² G09F 9/00
U.S. Cl. 116—124 B 3 Claims



1. A device for drawing attention to persons in danger comprising:

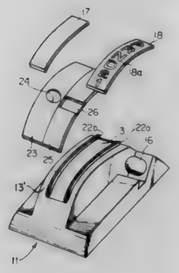
a. a source of gas under pressure;

b. a balloon means maintained in place in a housing and designed to be inflated by means selectively controlling the release of said source of gas; and

c. integral connecting means for removably interlocking said balloon means to said source of gas including two opposing members subjected to the action of resilient means, said action of said resilient means opposing the pressure of said gas upon release of said gas by said controlling means, such that said balloon means remains connected to said source of gas for as long as the pressure of said gas is greater than the pressure of said resilient means, said connecting means further including a protective cover for said balloon means on the housing and held

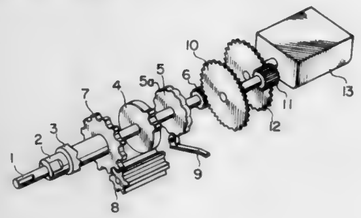
in position by resilient hooking means, said hooking means being caused to be unhooked from the housing by the pressure of said balloon means being inflated.

3,929,092
SELECTOR LEVER POSITION INDICATOR FOR MOTOR VEHICLE AUTOMATIC TRANSMISSION SYSTEM
Hisateru Ogura, Yokohama, Japan, assignor to Nissan Motor Company Limited, Japan
Filed Apr. 26, 1974, Ser. No. 464,671
Claims priority, application Japan, May 8, 1973, 48-53257
Int. Cl.² G09F *9/00*
U.S. Cl. 116—124 M **1 Claim**



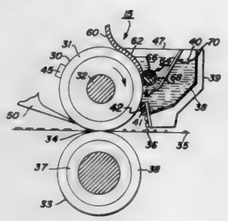
1. A shift lever position indicator for a motor vehicle transmission, comprising;
a casing disposed to be mounted on a floor wall of a motor vehicle thereof, the casing having an upper curved wall having a first central slot, and a pair of windows having identical dimensions and being symmetrical to one another with respect to and on opposite sides of said first central slot, a lower curved wall in the casing having a second central slot, coextensive with said first central slot, the slots enabling a shift lever to extend therethrough and to be moved along the slots for positioning a motor vehicle transmission system;
an opaque plate member normally snugly fitted into one of the windows;
a patterned plate member normally snugly fitted into the other window and having transparent indicating pattern portions, each contoured to represent a position of the lever and transmission system, the opaque and patterned plate members having identical dimensions to enable each to be interchangeably snugly fitted into either of the two windows;
a light source within the casing, beneath the patterned plate member;
guide means on the lower wall extending along the second central slot;
a curved slide member having an opening in a central portion thereof disposed to receive a shift lever and slidably mounted in the guide means to enable positioning of the slide member by a shift lever; and
a translucent indicating member rigidly secured to the slide member, overlying said source, underlying said patterned plate member, having a distinctively light-transmissive portion juxtaposed with said opening of the slide member, said portion having such extent, longitudinally of the indicating member, as to coincide with one of the transparent pattern portions in each position of the slide member and indicating member.

3,929,093
CHANNEL INDICATING DEVICE FOR TELEVISION RECEIVING SETS
Hisao Ikeda, Fujisawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 9, 1973, Ser. No. 322,180
Claims priority, application Japan, Jan. 14, 1972, 47-6332
Int. Cl.² H03J *1/02*
U.S. Cl. 116—124.2 R **6 Claims**



1. A channel indicating device for television receiving sets, comprising:
a. a tuner having a tuner shaft projecting therefrom and a first gear affixed to said tuner shaft;
b. a main shaft having a second gear affixed thereto;
c. a fine adjustment shaft rotatably coaxially mounted on said main shaft and having a cam affixed thereto;
d. third and fourth gears coaxially mounted on a connecting shaft, said third and fourth gears having being rotatably coupled to said second and first gears respectively;
e. an arm secured to said connecting shaft and pivotally mounted about the axis of said main shaft;
f. resilient means for biasing one end of said arm in a predetermined direction;
g. lever means contacting said cam and held in abutting engagement with the other end of said arm, rotation of said fine adjustment shaft producing a relatively small displacement of said tuner shaft thereby permitting fine adjustment of said tuner,
h. an indicator shaft rotatably mounted on said main shaft and having an indicator gear affixed thereto, said indicator shaft being coaxial with said main shaft and said fine adjustment shaft;
i. an intermittent gear affixed to said main shaft; and
j. an intermittent pinion coupling said indicator gear and intermittent gear, the gear ratio between said indicator gear and said intermittent pinion being selected to provide a desired angular rotation of said indicator shaft for a given angular rotation of said main shaft.

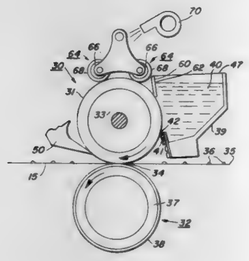
3,929,094
ROLL FUSER
Raghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 2, 1975, Ser. No. 537,881
Int. Cl.² G03G *15/20*
U.S. Cl. 118—60 **7 Claims**



1. Fuser apparatus for fixing toner images to support members, said apparatus comprising:

a heated metal fuser member;
a resilient member cooperating with said metal fuser member to form a nip through which said support members pass in order to soften said toner images;
a first sump containing release agent material to be coated on said metal fuser member;
a second sump smaller in size than said first sump and disposed within an area delineated by said first sump, said second sump also containing release agent material; and
means for cleaning toner particles from said fuser members, said cleaning member being disposed in said second sump whereby the toner particles removed from said fuser member are prevented from contaminating the release agent material contained in said first sump.

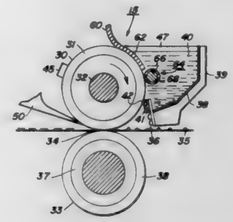
3,929,095
ROLL FUSER
Raghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 2, 1975, Ser. No. 537,883
Int. Cl.² G03G *15/20*
U.S. Cl. 118—60 **16 Claims**



1. Fuser apparatus for fixing toner images to substrates through the utilization of heat and pressure, said apparatus comprising:
a metal fuser roll member;
a resilient member cooperating with said metal fuser member to form a nip through which said substrates pass to thereby soften said toner images;
means for applying release agent material to the surface of said metal fuser member to facilitate removal of toner particles and other contaminates therefrom;
cleaning means disposed adjacent said metal fuser member intermediate said nip and said release agent applying means and contacting said fuser member; and
means for removing heat from said cleaning means to maintain the temperature thereof at a level which facilitates removal of toner particles from said fuser member.

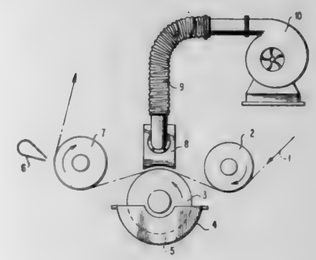
3,929,096
ROLL FUSER
Raghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 2, 1975, Ser. No. 537,884
Int. Cl.² G03G *15/20*
U.S. Cl. 118—60 **6 Claims**

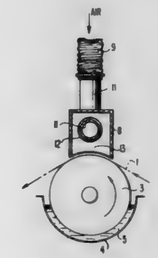
1. Roll fuser apparatus for fixing toner images to support members comprising:
a metal fuser member;
a resilient fuser member forming a nip with said metal fuser member through which said support members move;
a sump containing a quantity of release agent material; and
a cleaning member supported for contacting the surface



of said metal fuser member, said cleaning member being immersed in said release agent material.

3,929,097
APPARATUS FOR COATING A WEB
Masao Kanda, Fujinomiya, and Mineo Suefuji, Minami-ashigara, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed Aug. 8, 1973, Ser. No. 386,822
Claims priority, application Japan, Aug. 9, 1972, 47-79745
Int. Cl.² B05C *1/08*, *11/06*
U.S. Cl. 118—62 **5 Claims**





1. In a web coating apparatus employing a coating roll and means for feeding the web into contact with the coating roll periphery which carries a coating material thereon, the improvement comprising:
means defining an air chamber overlying the back of the web at the position where the web is in contact with the coating roll,
air blowing means for pressurizing said air chamber,
said air chamber being provided with a flexible membrane which directly overlies the back of the web, said flexible membrane being provided with at least one lateral opening parallel to the axis of the coating roll such that said flexible membrane flexes under static air pressure within said air chamber towards the back of said web but does not contact the back of said web,
and wherein, air escaping from said chamber between said flexible membrane and said web acts to form dyanmic air

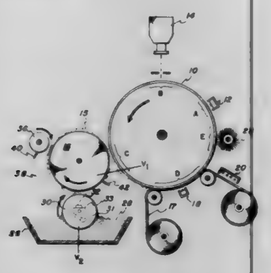
pressure means therebetween and wherein said opening within said flexible membrane directly applies static air pressure against said web.

3,929,098

TONER LOADING FOR TOUCHDOWN DONOR

Alan J. Liebman, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 28, 1973, Ser. No. 419,732
Int. Cl.² G03G *13/06*
U.S. Cl. 118—637 **6 Claims**



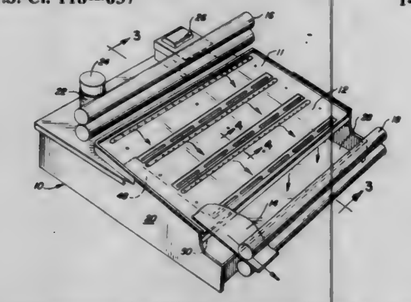
1. A development system for developing latent electrostatic images carried by a photoreceptor of an electrostatic processor; said development system comprising the combination of a sump for storing a supply of developer, said developer including ferromagnetic carrier particles having toner particles triboelectrically attracted thereto; a rotatable doner member positioned adjacent said photoreceptor for applying toner particles to said photoreceptor in conformity with said latent images; magnetic means disposed between said sump and said doner member for loading said doner member with toner particles; and means coupled to said doner member and said magnetic means for creating an electrostatic field between said magnetic means and said doner member for stripping the toner particles from the carrier particles during the loading of said doner member.

3,929,099

TONER APPARATUS FOR ELECTROPHOTOGRAPHIC DEVELOPMENT

Oleg Szymber, Elk Grove, and Anatoli Brushenko, Elmhurst, both of Ill., assignors to GAF Corporation, New York, N.Y.

Filed Sept. 5, 1974, Ser. No. 503,266
Int. Cl.² G03G *15/10*
U.S. Cl. 118—637 **14 Claims**



1. In apparatus for the development of latent electrostatic images on dielectric sheeting, said apparatus having a generally flat developing electrode surface for receiving said sheeting, the improvement comprising:

means for circulating toner fluid across said generally flat developing electrode surface in a generally unidirectional flowing stream of uniform thickness; and means for laying said sheeting on said flowing stream of toner fluid, whereby said sheeting is spaced from said developing electrode surface in automatic, uniform manner by said stream of toner fluid, for improved development of latent electrostatic images, and

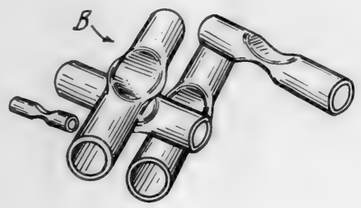
toner fluid staging means provided for supplying a flow of fresh toner fluid to a plurality of locations on said developing electrode surface, including at least one location on said developing electrode surface spaced from the edges thereof and at an intermediate point along said path of travel, and means for removing spent toner fluid from said developing electrode surface at a location upstream from said one location at said intermediate point.

3,929,100

ARTIFICIAL UNDERWATER HABITATS

Jean-Claude Thomas, Neuilly/Seine; Pierre Raoul, Epinay-/Orge, and Claude Ledoux, Massy, all of France, assignors to Rhone-Progil, Courbevoie, France

Filed June 17, 1974, Ser. No. 479,772
Claims priority, application France, June 22, 1973, 73.22836
Int. Cl.² A01K *61/00*
U.S. Cl. 119—2 **10 Claims**



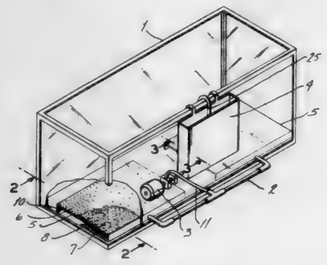
1. An artificial underwater habitat for crustacea comprising a plurality of unenclosed structures of thermoplastics material having a density of from 1.2 to 2 resting on the sea bed, the structures comprising relatively straight open ended tubular elements, which are partially flattened at a point along their length while allowing substantially free circulation of water inside the tubular elements.

3,929,101

FILTRATION AND CIRCULATION SYSTEM AND APPARATUS THEREFORE

Louis N. Katz, 13415 Land O'Woods Drive, St. Louis, Mo. 63141

Division of Ser. No. 380,228, July 18, 1973, Pat. No. 3,835,813. This application July 10, 1974, Ser. No. 487,178
Int. Cl.² A01K *63/00*
U.S. Cl. 119—5 **5 Claims**



1. An aquarium comprising

a tank for containing aquatic specimens, said tank being filled with suitable aquatic medium;

a biological filter positioned within said tank, said filter being perforated and covered by aggregate;

a combined unit comprising a particulate filtration chamber and an algae propagation chamber, said chambers being separated by a perforated partition; and

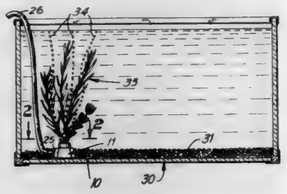
means for circulating said medium throughout said tank and through said biological filter and said combined unit.

3,929,102

AQUARIUM AERATOR AND ORNAMENT HOLDER

Bernard Suchowski, Marlboro; David D. Lovitz, Short Hills, and Claud W. Kissin, Fort Lee, all of N.J., assignors to The Hartz Mountain Corporation, Harrison, N.J.

Filed Jan. 30, 1975, Ser. No. 545,426
Int. Cl.² A01K *64/00*
U.S. Cl. 119—5 **5 Claims**



1. A combination aquarium ornament stem holder and aerator comprising a hollow body portion having a base at the bottom thereof adapted to rest on the floor of an aquarium and a roof at the upper portion thereof, said roof having a plurality of air holes therein and an apertured stem-receiving portion, said body portion having a pipe fitting communicating with the interior thereof and adapted for connection to a source of air supply, whereby when air is operatively pumped through said pipe fitting it will enter the interior of said body portion and emerge as bubbles through said air holes adjacent said stem-receiving portion, thereby to flow upwardly in adjacent relation to an ornament operatively supported by said stem-receiving portion, said body portion having an annular wall defining an interior chamber, said stem-receiving portion comprising a hollow stem support extending down from said roof into said chamber, said stem-receiving portion being centrally disposed with respect to said roof and having an apertured portion communicating with said stem support, said air holes comprising a plurality of clusters of holes flanking said apertured portion, said roof having a plurality of dome-like portions each containing a cluster of said air holes.

3,929,103

DETACHER MECHANISM FOR MILKING UNIT

Gary W. Schluckbier, Madison, Wis., assignor to Dec International Inc., Madison, Wis.

Filed Dec. 6, 1974, Ser. No. 530,213
Int. Cl.² A01J *7/00*, *9/08*
U.S. Cl. 119—14.08 **14 Claims**

1. A milking unit support and detacher mechanism comprising:

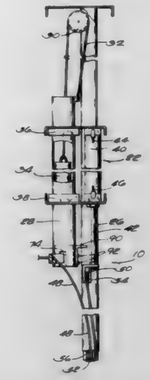
a main support column;

a vertically movable milker support column slidably mounted on said main support column;

a horizontally extending retractable milking unit support assembly mounted on said milker support column, said retractable milker unit support assembly adapted to support a milker unit on the outer end thereof when the milker unit is attached to a cow for milking, said milker unit support assembly further adapted to be retracted from its extended position underneath the cow to a retracted position adjacent the cow;

a flexible retract member fastened at one end to said retractable milking unit support assembly; and

retract means for pulling on said flexible retract member to cause said milker unit support assembly to be moved from its extended position to its retracted position, said retract means including a power cylinider having a movable



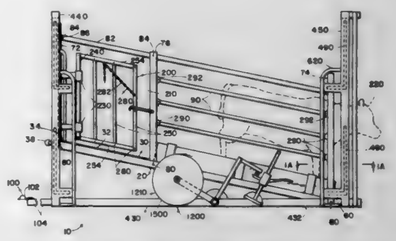
piston rod mounted on said main support column, said power cylinder being operatively connected to said flexible retract member and to said milker support column, said power cylinder adapted when energized in its retract direction to pull on said flexible retract member and to also move said milker support column upwardly in a vertical direction.

3,929,104

LIVESTOCK UNLOADING AND TREATING TRAILER ASSEMBLY

Dean L. Corbin, 1349 Prospect, Blair, Nebr. 68008

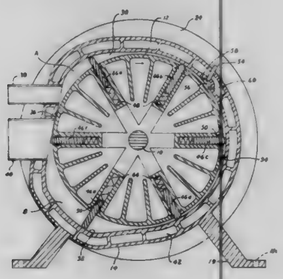
Filed Apr. 1, 1974, Ser. No. 456,751
Int. Cl.² A01K *29/00*
U.S. Cl. 119—82 **8 Claims**



1. A livestock trailer for loading, unloading and treating livestock comprising an elongated ramp, right and left wheel means disposed on right and left sides of said ramp as seen from the top, said wheel means having surfaces suitable for engaging public roads for road travel of said trailer, means connecting said wheel means to said ramp whereby said ramp can be transported on said wheel means, said ramp having a floor having an elongated upper surface, said ramp having its upper surface placeable in a certain position downwardly inclining from one of its ends to its other end, said inclination being at an acute angle with respect to the horizontal, said ramp upper surface having a length of at least 11 feet, right and left side wall means attached respectively to said ramp at right and left sides of said upper surface and extending upwardly from said upper surface, when said ramp is in said certain position at least one of said sidewall means having in its upper half an access opening therethrough alongside said inclined ramp surface, access

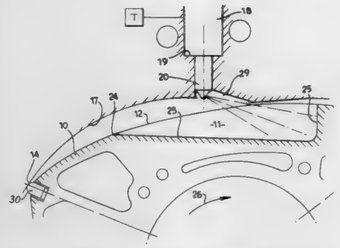
door means openably closing said access opening, said access opening being of a size permitting treatment personnel to pass therethrough for access to said floor so as to be able to stand on said floor to treat an animal standing on said ramp, an openable headgate assembly in upright position at the lower end of said ramp for receiving the neck of an animal standing on said floor, means attaching said headgate assembly to one of said sidewall means.

3,929,105
ROTARY ENGINE
Lloyd Duncan Chisholm, 100 Lawrence Ave., Thunder Bay, Ontario, Canada
Filed Sept. 25, 1973, Ser. No. 400,643
Claims priority, application Canada, Oct. 13, 1972, 153893
Int. Cl.² F02B *53/00*
U.S. Cl. 123—8.09 **34 Claims**



1. A rotary internal combustion engine comprising:
a stator having a working fluid surface, an air charge intake port and a gas exhaust port spaced from said intake port; a rotor having a working fluid surface and a plurality of vanes having outer ends, said vanes being equally spaced about said rotor surface and being mounted in said rotor for reciprocation perpendicular to said rotor surface and for maintaining said vane ends in contact with said stator working fluid surface, said rotor being mounted for rotation relative to said stator whereby said respective working fluid surfaces are in opposed cooperative association so as to form in association with any two adjacent rotor vanes a plurality of serially arranged and distinct chambers, said chambers being:
an air intake chamber in association with said intake port; a compression chamber reducing in volume to a final compression chamber;
a substantially constant volume combustion chamber;
a gas expansion chamber; and
an exhaust chamber in association with siad exhaust port, said intake chamber and said exhaust chamber being adjacent but substantially closed from each other;
a portion of said stator working fluid surface being spaced a substantially constant distance from an opposed portion of the rotor working fluid surface for an arcuate length substantially greater than the distance between adjacent vane ends to form said final compression chamber and said constant volume combustion chamber;
fuel injector means located in said stator working fluid surface at the end of said final compression chamber and at the beginning of said constant volume combustion chamber for delivering a predetermined amount of fuel at a predetermined rate into a constant volume chamber between adjacent vanes, said substantially constantly spaced portions of said working fluid surfaces in forming said constant volume combustion chamber having an arcuate length such that substantially complete constant volume combustion of a fired air charge occurs within said combustion chamber during a combustion phase.

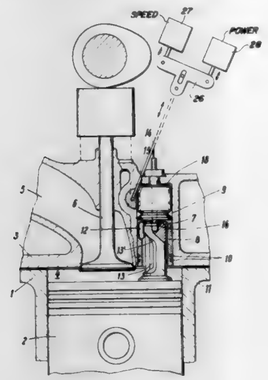
3,929,106
COMBUSTION CHAMBER ARRANGEMENT FOR ROTARY COMPRESSION-IGNITION I.C. ENGINES
William Murray Scott, Brighton, England, assignor to Rolls-Royce (1971) Limited, Crewe, England
Filed Oct. 1, 1974, Ser. No. 511,478
Claims priority, application United Kingdom, Oct. 5, 1973, 46660/73
Int. Cl.² F02B *53/04*
U.S. Cl. 123—8.11 **6 Claims**



1. A rotary piston compression-ignition internal combustion engine comprising: a housing defining a main chamber comprising *n* lobes; a shaft extending axially of the housing; a rotor defined by an $(n + 1)$ sided piston having flanks defining its sides, said piston being eccentrically mounted on the shaft and rotatable in the housing; a seal mounted at each apex formed between each pair of adjacent flanks of the piston; a combustion recess formed in each flank of the rotor having an end wall at its leading end extending substantially normal to the corresponding rotor flank at its intersection therewith, a substantially plane bottom wall which extends substantially at right angles to the leading end wall, and a depth which increases progressively in the direction of rotation of the rotor; and means for injecting fuel into each recess disposed in the housing and arranged to inject one or more sprays of fuel into the combustion recess, the direction of injection of the spray or sprays being essentially towards the leading end wall of the recess in the direction of rotation.

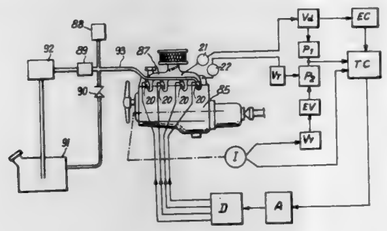
3,929,107
RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE
Udo Renger, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed Apr. 30, 1974, Ser. No. 465,582
Claims priority, application Germany, May 12, 1973, 2324190
Int. Cl.² F02B *3/00*
U.S. Cl. 123—32 B **9 Claims**

1. A reciprocating piston internal combustion engine comprising:
a. at least one primary cylinder;
b. at least one primary piston, the primary piston being mounted for reciprocating movement in the primary cylinder;
c. a cylinder head mounted to overlie the primary cylinder and with the primary cylinder and a face of the primary piston defining a primary combustion chamber;
d. at least one subsidiary cylinder formed in the cylinder head; and
e. at least one subsidiary piston, the subsidiary piston being mounted for reciprocating movement in the subsidiary cylinder,
a subsidiary combustion chamber being defined within the subsidiary cylinder and communicating with the primary combustion chamber, the subsidiary piston being mounted to move upwardly in the subsidiary cylinder during upward movement of the primary piston in the primary cylinder and having means for interrupting, at least intermittently, the communication between the primary and subsidiary combustion chambers, the subsidiary piston being dimensioned to compress an air-fuel mixture in the subsidiary combustion chamber to a higher pressure than the air-fuel mixture compressed in the primary combustion chamber by the primary piston,



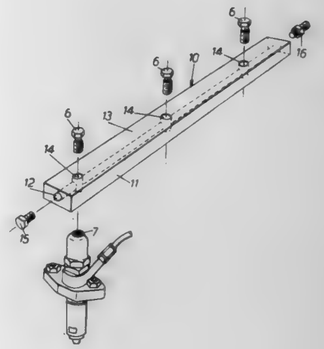
f. wherein a first recess is formed in an axial surface of said subsidiary piston that cooperates with a second recess formed in a rotatable cylindrical sleeve surface that defines said subsidiary combustion chamber and is separate from the subsidiary piston to provide communication between the primary and secondary combustion chambers when the subsidiary piston is at about top dead center.

3,929,108
ELECTRONIC CONTROL SYSTEMS FOR INTERNAL COMBUSTION ENGINES
Louis A. Monpetit, 16 Bis Chemin de la Butte, 78 L'Etang-la-Ville, France, and Daniel R. Fournier, 13 Frans Haisstraat, Lisse, Netherlands
Filed Mar. 25, 1974, Ser. No. 454,679
Claims priority, application France, Aug. 24, 1970, 70.30910
Int. Cl.² F02D *5/00*
U.S. Cl. 123—32 EA **20 Claims**



1. In an electronic system for controlling the duration of injections in a fuel injection internal combustion engine having electrically actuated means for cyclically injecting fuel during discrete time periods in response to successive fuel injection signals of predetermined duration and means for sensing one operating parameter of an engine, said electronic control system being of the type that includes means for generating a regulating voltage that is a function of such an engine operating parameter and timing means responsive to the regulating voltage and to the operating cycle of such an engine for generating successive fuel injection signals in successive engine cycles, each signal having a duration depending on the amplitude of the regulating voltage, the improvement wherein the means for generating the regulating voltage comprises:
means, adapted for connection to a means for sensing one operating parameter of such an engine, for generating a noncyclical input voltage having a magnitude that is at all times a function of the one engine operating parameter and
means responsive to the magnitude of the input voltage for generating an output voltage having a magnitude that at all times is a predetermined nonlinear function of the input voltage, the curve of the output voltage as a function of the input voltage consisting of a predetermined plurality of curve segments having different average slopes.

3,929,109
LEAK-OFF PIPE FOR FUEL INJECTION EQUIPMENT
Noel Christopher Chamberlain, 63 Peterborough, Eye Peterborough, England
Division of Ser. No. 324,944, Jan. 19, 1973. This application June 12, 1974, Ser. No. 478,558
Claims priority, application United Kingdom, Jan. 22, 1972, 3139/72; Jan. 5, 1973, 701/73
Int. Cl. F02b *3/00*
U.S. Cl. 123—32 R **1 Claim**



1. A fuel injection manifold having a plurality of injector nozzles comprising a malleable, flexible pipe with a plurality of holes therein normal to the longitudinal axis of said pipe, opposing walls on said pipe having substantially plane and parallel surfaces normal to the holes in said pipe, side walls on said pipe to enclose and form a passage for conveying fluid and intersecting the holes of said pipe, a cross section for said opposing walls of a thickness relative to the size of said passage to permit local deformation of the malleable material under a load applied normal thereto and intersecting the passage, a corresponding plurality of bolts having conduits therein to permit fluid communication with the passage of said pipe when said bolts are inserted in the holes therein, said bolts fastening to said injector nozzles with said pipe therebetween to provide a load normal to said plane surfaces to fluidly seal said bolt with said pipe and said pipe with said injector nozzles by deformation of the malleable material of said pipe.

3,929,110
LUBRICATION SYSTEM OF A TWO-STROKE INTERNAL COMBUSTION ENGINE

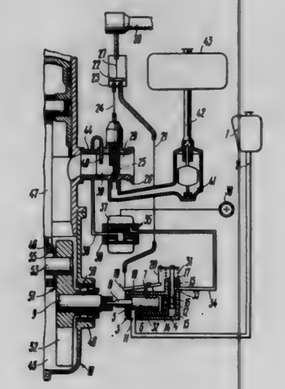
Ivan Yakovlevich Raikov, ulitsa B. Galushkina, 26, kv. 34; Pavel Andreevich Ivaschenko, ulitsa Glebovskaya, 4, kv. 51; Alexandr Nikolaevich Judin, Kutuzovsky prospekt, 435/30, kv. 69, all of Moscow; Georgy Lvovich Pisarev, ulitsa Pushkinskaya, 213, kv. 6, Izhevsk, and Vladimir Yakovlevich Roslyakov, ulitsa Streletskaya, 3, kv. 17, Vladimir, all of U.S.S.R.

Filed Jan. 24, 1974, Ser. No. 436,378

Claims priority, application U.S.S.R., Jan. 26, 1973, 1871348

Int. Cl.² F01M *1/00*

U.S. Cl. 123—73 AD **2 Claims**



1. A lubricating system incorporable in a two-stroke internal combustion engine including means for introducing fuel into said engine through a carburetor, said system including a worm-type oil pump to effect continuous positive supply of a liquid lubricant into said engine, said oil pump having a worm connected directly to the crankshaft of said engine and a metering device comprising a smooth sleeve and a helically threaded stud received in said sleeve, the thread of said stud and the walls of said sleeve defining a throttling passage; said pump and said metering device being arranged in a common housing and connected hydraulically with each other so that the outlet passage of said pump serves as the inlet passage of said throttling passage of said metering device whose outlet passage is connected hydraulically with said means for introducing fuel into said engine.

3,929,111
FUEL FEED SYSTEM FOR RECYCLING FUEL

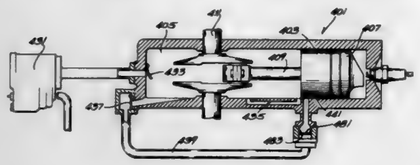
Robert K. Turner, Waukegan, and Edgar Rose, Glencoe, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 402,322, Oct. 1, 1973, abandoned, which is a division of Ser. No. 228,775, Feb. 23, 1972, abandoned, which is a division of Ser. No. 17,729, March 9, 1970, abandoned. This application Dec. 5, 1974, Ser. No. 529,860

Int. Cl.² F02B *33/04*

U.S. Cl. 123—73 R **1 Claim**

1. A two-cycle internal engine including a crankcase having a portion in which "drains" accumulate, a cylinder extending from said crankcase, a piston movable in said cylinder and relative to said crankcase, a transfer passage communicating, subject to piston operation, between said crankcase and said cylinder, a conduit communicating with said crankcase portion, valve means in said conduit preventing flow to said crankcase and permitting flow from said crankcase, said conduit communicating with said cylinder independently of said transfer passage.



3,929,112
FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES

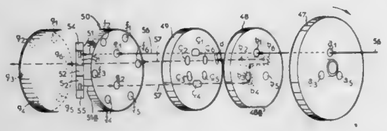
Brian Colin Pagdin, Sutton Coldfield, England, assignor to GKN Transmissions Limited, Birmingham, England

Filed Jan. 31, 1974, Ser. No. 438,355

Claims priority, application United Kingdom, Jan. 31, 1973, 4763/73

Int. Cl.² F02M *39/00*

U.S. Cl. 123—139 BC **1 Claim**



1. In fuel injection apparatus for an internal combustion engine, such apparatus incorporating metering means for determining the quantity of fuel delivered in each cycle of operation, which metering means includes a metering piston and a metering cylinder having faces in face-to-face sliding contact with each other, and commutating valve means having stationary and rotary components of which the latter is adapted to be driven in timed relation with the crankshaft or other rotary output member of the engine, and which are in combination operative to define connections between cylinder spaces in said metering cylinder on opposite sides of said metering piston respectively to a pump means for said fuel and an outlet means with reversal of such connections for successive injections of fuel, the improvement being the provision of means for preventing transference of fuel between opposite sides of said metering piston, comprising:

a. At least one groove formed in the circumferential face of same metering piston,

b. Means defining a drain duct extending through a body portion of said metering cylinder,

c. Said drain duct having an entrance positioned intermediate the limits of travel of said groove resulting from reciprocation of said metering piston, whereby in each stroke of the latter said groove moves past said entrance,

d. Means for collecting leakage fuel from said drain duct.

3,929,113
FUEL INJECTION PUMP

Koichi Kawase, Higashi-Matsuyama, and Yasuhide Suzuki, Saitama, both of Japan, assignors to Diesel Kiki Kabushiki Kaisha, Japan

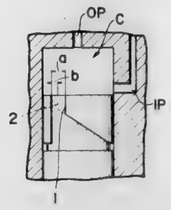
Filed Apr. 29, 1974, Ser. No. 465,349

Claims priority, application Japan, May 7, 1973, 48-52638[U]

Int. Cl.² F02M *39/00*

U.S. Cl. 123—139 R **1 Claim**

1. In a fuel injection pump comprising a plurality of pump devices each including a chamber and a plunger slidably disposed in oil tight relationship within the chamber, each said plunger including a helical control edge formed thereon which cooperates with a port in the chamber to control the amount of fuel supplied, said pump devices being controlled from a common fuel rod, and a plurality of said plungers including a vertical fuel supply groove which opens at the top of the



plunger and is connected to the helical control edge at a portion of the latter which corresponds to the engine idling position, the improvement wherein the width of the vertical groove is varied for each said plunger so as to provide a predetermined variation in the total amount of fuel to be supplied to the engine.

3,929,114
FUEL INJECTOR ARRANGEMENT FOR COMPRESSIVE MIXTURE INTERNAL COMBUSTION ENGINES

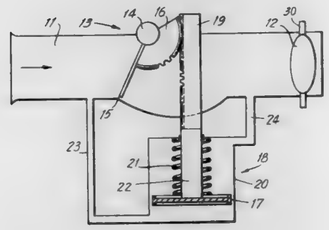
Asoke Chattopadhayay, Norf, and Karl Schmidt, Wehl, both of Germany, assignors to Deutsche Vergaser GmbH & Co. Kommanditgesellschaft, Neuss, Germany

Filed Aug. 12, 1974, Ser. No. 497,148

Claims priority, application Germany, Aug. 13, 1973, 2340834

Int. Cl.² F02M *9/06*

U.S. Cl. 123—139 R **11 Claims**



1. In a fuel injector arrangement for compressive mixture internal combustion engines including a fuel quantity control installation, and an air intake passageway having a variably actuatable throttle valve disposed therein, the improvement comprising a shaft eccentrically located in said air passageway upstream of said throttle valve, differential pressure producing means for actuating said fuel quantity control installation mounted on said shaft and including a baffle valve, said differential pressure producing means being adapted to measure the air flow rate through said passageway, pneumatic control power amplifier means, and means for mechanically connecting said baffle valve and said control power amplifier means.

3,929,115
MEANS FOR CLEANING EXHAUST GAS IN A RECIPROCATING PISTON TYPE AUTOMOBILE ENGINE

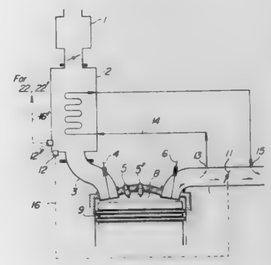
Teruo Yamauti; Yoshishige Oyama, both of Hitachi, and Yukio Hohsho, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 16, 1973, Ser. No. 341,847

Claims priority, application Japan, Mar. 17, 1972, 47-27288

Int. Cl.² F02P *1/00*

U.S. Cl. 123—148 R **9 Claims**



1. Means for reducing noxious constituents in exhaust gas of a reciprocating piston type engine comprising fuel supply means for supplying relatively lean fuel air mixture having an air fuel ratio of 18 to 23, fuel atomizing means including heating means for sufficiently atomizing the fuel in the mixture supplied from said fuel supply means to a combustion chamber of the engine continuously in response to temperature changes in the fuel atomizing means, a primary and an auxiliary ignition plug disposed in each engine combustion chamber, and an ignition timing control mechanism varied in response to temperature changes in the fuel atomizing means for determining the ignition timing of the auxiliary ignition plug independently from that of the primary ignition plug.

wherein said ignition timing control mechanism includes an advance mechanism which is operated in response to the engine speed, such that both of the ignition plugs are energized simultaneously under a relatively low engine speed while the ignition timing of the primary ignition plug is advanced under medium and high speed engine operation at a greater rate than that of the auxiliary ignition plug so that the difference between the timings of the ignition plugs is increased in response to the increase in the engine speed and wherein said ignition timing control mechanism is provided with an acceleration compensating mechanism for advancing the timing of the auxiliary ignition plug during engine deceleration.

3,929,116
MODULATING COMPRESSION RELEASE FOR AN ENGINE

Brent L. Peterson, 2916 River Road, Tacoma, Wash. 98404

Filed Nov. 5, 1973, Ser. No. 412,800

Int. Cl.² F01L *13/08*

U.S. Cl. 123—182 **24 Claims**

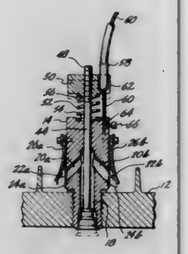
1. A device for connection to a head of an engine for compression release from the top of an engine cylinder comprising:

a. a housing one end of which has means for fastening to an engine head and having a passage extending longitudinally from inside a compression chamber to communicate through at least one lateral opening to atmosphere,

b. a first valve at an entrance to the longitudinal passage having a valve stem centered in the longitudinal passage.

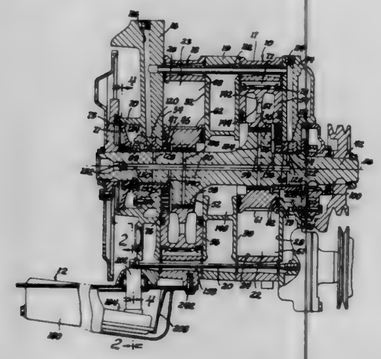
c. a reed fastened to the housing and located to cover the lateral opening,

d. means for acting on the valve stem to control the first valve.
e. means for restricting the clearance between the stem and the passage to control the flow of gases therethrough, wherein the means for restricting the clearance comprises:



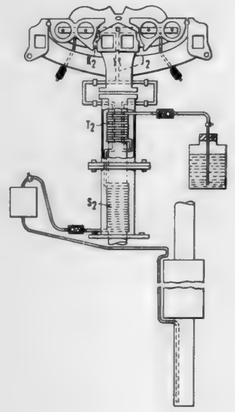
f. an enlarged cross section in the longitudinal passage immediately adjacent the entrance therein,
g. a first enlarged section on the stem contiguous to the valve, and
h. a second smaller enlarged section on the stem contiguous to the first enlarged section.

3,929,117
ROTARY ENGINE OIL TANK VENT
Raymond J. Green, Northville, and Paul D. Stevenson, Ann Arbor, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 29, 1974, Ser. No. 518,574
Int. Cl.² F01M *1/10*
U.S. Cl. 123—196 R **2 Claims**



1. A rotary engine including a pair of end housings and a crankshaft rotatably supported in said end housings and an annular end cover received about said crankshaft normally covering an oil supplied cavity on the outboard side of one of said end housings, said one end housing having located underneath a drain-vent hole to which oil drains and through which air can be vented into the engine and also having located underneath a suction-vent hole through which oil can be supplied to the engine's lubrication system and also through which air may be vented into the engine, an oil tank secured to said engine in an underneath location, said oil tank having a drain-vent hole sealingly connected to the drain-vent hole in said one end housing, said oil tank also having a suction-vent hole sealingly connected to the suction-vent hole in said one end housing, suction passage means extending from said oil tank through said suction-vent holes into said engine, vent passage means also extending from said oil tank through said suction-vent holes into said engine, said end cover having a wall cooperating with said end housing on the outboard side to provide a quiet zone shielded from said oil supplied cavity elevated above said oil tank, an upwardly extending elongated vent passage in said one end housing connecting said vent passage means to said quiet zone at a low location, and another vent passage in said one end housing connecting said quiet zone at a high location to the engine's internal breathing system at a place away from any oil drainage..

3,929,118
I.C. ENGINE IMPROVEMENTS
Chai Mun Leong, 108 Serangoon Garden Way, Singapore 19, Malaysia
Filed June 11, 1973, Ser. No. 368,726
Claims priority, application United Kingdom, June 13, 1972, 27617/72; Mar. 26, 1973, 18986/73
Int. Cl.² F02B *75/02*; F02M *23/00*
U.S. Cl. 123—198 A **13 Claims**

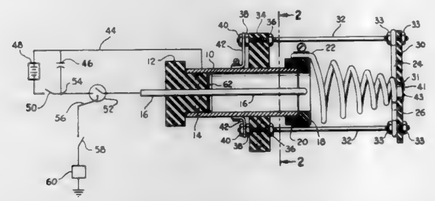


5. An internal combustion engine having a carburettor for feeding fuel/air mixture to a mixture inlet and an exhaust system for burnt gases, in which engine the mixture inlet has at least one air inlet passage for admitting and directing a corresponding number of streams of extra, heated air to impinge upon and mix turbulently with the fuel/air mixture from the carburettor and vaporize fuel droplets therein, and in which engine furthermore, means are provided for causing a solution of a copper-salt combustion catalyst to pass in preheated and vaporized form into the mixture inlet and thence into the combustion chamber or chambers of the engine and into the exhaust system.

3,929,119
SELF-ENERGIZED PLASMA COMPRESSOR
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Edward L. Shriver, Huntsville, Ala., and Eduard B. Igenbergs, Munich, Germany
Division of Ser. No. 367,606, June 6, 1973, Pat. No. 3,854,097. This application Aug. 27, 1974, Ser. No. 500,982
Int. Cl.² F41F *7/00*
U.S. Cl. 124—1 **3 Claims**

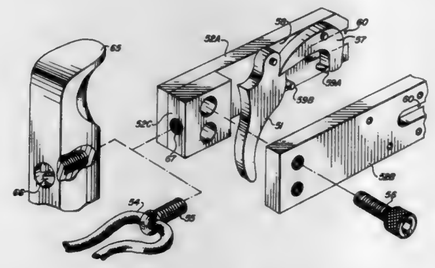
1. An apparatus for producing high temperature compressed plasma comprising:
a. an elongated cylindrical first electrode;
b. a central rod electrode disposed coaxially of said first electrode out of contact therewith;
c. an electrically conductive element extending between said central rod electrode and an inner end of said first electrode;

d. means for applying a high voltage to said first electrode and said central rod electrode for causing said electrically conductive element to ionize producing a plasma which is accelerated out of the outer end of said first electrode;
e. an insulating connecting means carried on an outer end of said first electrode;
f. an elongated electrically conductive helical coil having a large diameter end and a small diameter end;
g. said large diameter end of said helical coil being connected to said connecting means and said small diameter end being spaced longitudinally therefrom;
h. means for electrically connecting said small diameter end of said helical coil to said first electrode;
i. said helical coil being in axial alignment with said elongated cylindrical first electrode so that a current path is



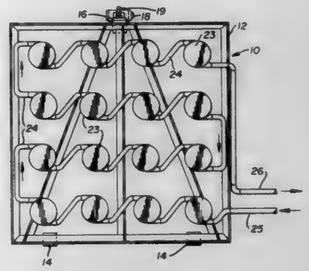
formed between an outer end of said central rod electrode and said helical coil as said plasma is accelerated out the outer end of said first electrode producing current flow through said helical coil which in turn produces a time varying magnetic field that compresses said plasma adjacent said small diameter end of said coil;
j. whereby a source of high temperature compressed plasma is produced adjacent said small diameter end of said helical coil;
k. a thin foil member carried adjacent said small diameter end of said helical coil; and
l. a supply of beads carried on an outer surface of said thin foil member so that said compressed plasma penetrates said thin foil member propelling said beads to high velocities.

3,929,120
COMBINED BOWSTRING DRAW AND TRIGGER RELEASE MECHANISM FOR USE IN ARCHERY
Roland K. Barner, P.O. Box 1035, Bozeman, Mont. 59715
Division of Ser. No. 444,526, Feb. 21, 1974, Pat. No. 3,845,752. This application Aug. 2, 1974, Ser. No. 494,164
Int. Cl.² F41C *19/00*
U.S. Cl. 124—35 A **1 Claim**



1. A bowstring holding and release device comprising in combination:
a handle member adapted to be gripped by the human hand, holding and release means attached to said handle member for releasably engaging a bowstring,
said holding and release means comprising a pivotally mounted holding member for movement between first and second positions for holding and releasing a bowstring respectively,
trigger means pivotally mounted on said holding and release means for engaging a first end portion of said holding member to retain said holding member in said first position when said trigger means is in a first pivoted position, said trigger means being pivotable to a second position out of engagement with said portion to permit said holding member to pivot to its second position for releasing a bowstring,
said holding member when manually moved to said first position being engaged by said trigger means,
said holding and release means being provided with a U-shaped opening into which a part of a bowstring is inserted, and means for detachably holding said part of a bowstring in said opening,
flexible cord means connected to said holding and release means and comprising a shield fixed to said cord means at its free end for forming a stop and support when a hand of an archer grips said cord means between said shield and said holding and release means,
said cord means between said shield and said holding and release means being covered by a pliable cylindrical member, and
said shield and said cylindrical member being formed of plastic.

3,929,121
SOLAR HEAT COLLECTOR
Bruce C. Rogers, 915 Georgetown Road, Salem, Ohio 44460
Filed Aug. 1, 1974, Ser. No. 493,566
Int. Cl.² F24J *3/02*
U.S. Cl. 126—271 **6 Claims**

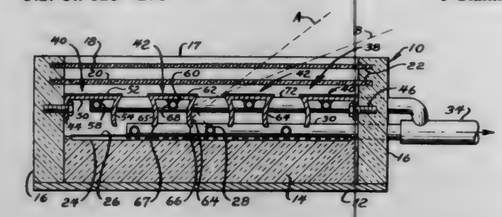


1. In a solar heat collector having a plurality of heat collecting elements, each of which comprises a round hollow transparent member having spaced flat top and bottom walls with a peripheral wall joining their annular edges, inlet and outlet openings in said peripheral wall, at least one of said inlet and outlet openings tangentially arranged with respect to said peripheral wall, means for circulating fluid to be heated successively through said heat collecting elements and a plurality of light magnifying lenses each of which is arranged in spaced parallel relation to one of said heat collecting elements and spaced with respect thereto a distance equal to the focus depth of light passing through said lens so that said magnified light is at its maximum magnification on said heat collecting element.

3,929,122
SOLAR ENERGY COLLECTOR

Kalil A. Alkasab, Wheaton, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 18, 1974, Ser. No. 525,037
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 6 Claims

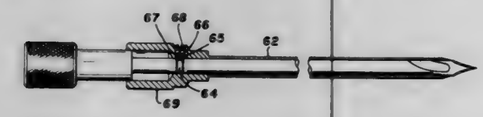


1. In a solar energy collector of the type having a flat energy absorbing plate mounted on an insulating base and covered by at least one transparent surface spaced above said flat plate, the energy absorbing plate having a plurality of liquid containing conduits integral with its surface for carrying heat away from said plate, the improvement comprising upper absorption means positioned beneath said at least one transparent surface and above said flat plate and in predetermined spaced relation thereto, said upper absorption means including a plurality of spaced apart, generally coplanar, upwardly facing absorption surfaces, each of said plurality of coplanar absorption surfaces having at least one outwardly concave focusing surface projecting from an edge thereof in a direction inwardly of said edge and generally downward from said coplanar absorption surface, at least one liquid carrying conduit integral with and extending downwardly from the bottom of each of said coplanar absorption surfaces, said last named conduits and at least a portion of the surfaces with which they are integral being in uninterrupted vertical communication with portions of said flat energy absorbing plate and adapted to receive radiation emanating upwardly therefrom.

3,929,123
MUSCLE BIOPSY NEEDLE

Khosrow Jamshidi, 610 Winston Court, Minneapolis, Minn. 55118

Continuation-in-part of Ser. No. 330,184, Feb. 7, 1973, abandoned. This application Jan. 9, 1974, Ser. No. 432,097. The portion of the term of this patent subsequent to Jan. 2, 1991, has been disclaimed.
Int. Cl.² A61B 10/00
U.S. Cl. 128—2 B 4 Claims

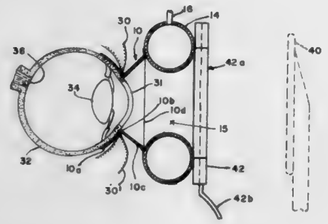


1. Biopsy means for obtaining muscle tissue specimens from a body and comprising:
a. blade means comprising a generally cylindrical shaft and having a shank portion with an inwardly tapered pointed distal puncturing and cutting tip;
b. hollow tubular sheath means slidably enveloping said blade means with free axial and arcuate rotational motion of said sheath means relative to said cylindrical shaft and providing a hollow blade receiving sleeve with the circumferential distal tip end of said sheath terminating along a plane normal to the tubular axis and being tapered inwardly at the distal tip end in continuation with the taper formed on said blade and forming an extension of said pointed puncturing and cutting tip;
c. a sample receiving slot formed in said blade means and forming a sample retaining cavity in said blade at a point spaced from the distal tip thereof and disposed adjacent the surface of said shaft along said shank portion and adjacent said tapered zone;
d. said sheath being slidable over said blade between retracted and extended dispositions, with the forward edges of said sheath enclosing said sample receiving slot when said blade is in said retracted disposition and with the said sample receiving cavity being exposed when said blade is in said extended disposition; and
e. detent means being formed along said cylindrical shaft, and a mating plunger member is provided along the axial length of said sheath means, the arrangement being such that when said distal tip end of said sheath reaches the proximate end of the taper formed on said blade, said plunger is received within said detent means.

3,929,124
OPTHALMODYNAMOMETER

Michael E. Yablonski, Golden Valley, Minn., and John Nichparenko, Willow Grove, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 1, 1974, Ser. No. 465,978
Int. Cl.² A61B 3/00, 5/02
U.S. Cl. 128—2 T 6 Claims



1. An ophthalmodynamometer comprising:
a speculum member provided with a viewing port;
a pressurized toroidal bladder attached to said speculum member with the eye of the toroidal bladder coaxial with said speculum viewing port; and
means operatively connected to said bladder for determining the internal pressure of said bladder.

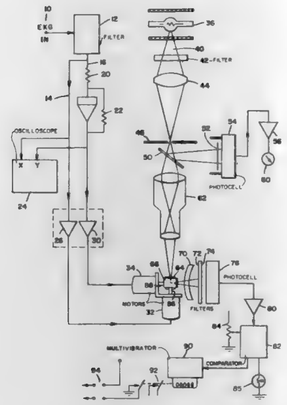
3,929,125
ECTOPIC BEAT DETECTOR

Clarence W. Barnes, San Francisco, Calif., and Jack H. Shore, San Rafael, Calif., assignors to The Institutes of Medical Sciences, San Francisco, Calif.

Filed Dec. 3, 1973, Ser. No. 420,805
Int. Cl.² A61B 5/04
U.S. Cl. 128—2.06 A 16 Claims

1. A method for monitoring a cyclic electrical signal which comprises:
continuously transforming said electrical signal into a repetitive light beam pattern specific for each cycle of said cyclic electrical signal;
continuously transmitting said light beam pattern to a photochromic glass plate to imprint a two-dimensional pattern specific for each cycle of said cyclic electrical signal; continuously transforming the light transmitted through said photochromic glass plate into a light intensity dependent electrical signal defining a base signal level corresponding to the repetitive cycle resulting from each cycle of said cyclic electric signal; and

actuating a signaling device when said light intensity dependent electrical signal differs from said base signal level by

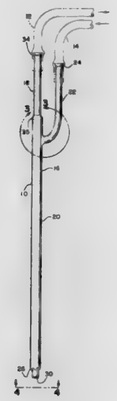


a predetermined amount corresponding to an aberrant cycle.

3,929,126
SURGICAL SUCTION IRRIGATOR

Jay C. Corsaut, Box 7703, South Lake Tahoe, Calif. 95731

Filed Sept. 26, 1974, Ser. No. 509,484
Int. Cl.² A61M 3/00
U.S. Cl. 128—240 5 Claims

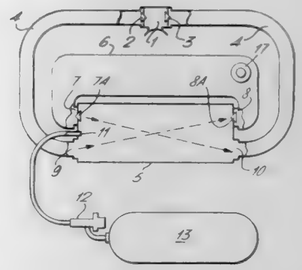


1. A medical irrigator for flushing wounds with a liquid comprising:
a. a first conduit having a first terminal open end and a second end having means for connecting said second end to a liquid supply means for delivering liquid to said first conduit;
b. a second conduit having a first terminal open end and a second end having means for connecting said second end to a liquid suction means for removing liquid from said conduit, said second conduit positioned within said first conduit and displaced from said first conduit, wherein said terminal end of said first conduit has a scalloped edge that is inwardly pinned against the outer surface of said second conduit forming a plurality of apertures therebetween.

3,929,127
DIVER'S BREATHING APPARATUS WITH GAS PURIFYING SYSTEM

Terence Barrington Paul, 72 Carmen Drive, Carlingford, New South Wales, Australia (2118)

Filed June 25, 1974, Ser. No. 482,966
Claims priority, application Australia, Feb. 6, 1974, 6482/74
Int. Cl.² A62B 7/02; B63C 11/22
U.S. Cl. 128—142 11 Claims



1. A breathing apparatus comprising a first and a second gas conduit loop, a gas purifier chamber which forms a common portion of the two gas conduit loops over part of their length, a gas purifying substance contained within said chamber, means for permitting only uni-directional flow of gas through each of said loops and the gas purifier chamber, a mouthpiece orifice located in the first of said loops, a gas tight inflatable bag forming part of the second of said loops and means for admitting make-up gas to the apparatus whereby the gases flowing into the mouthpiece orifice flow through the gas purifying substance twice in the same direction before being returned to the mouthpiece orifice.

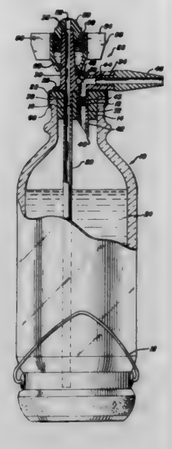
3,929,128
DISPOSABLE HUMIDIFIER

Michael O. Pekkarinen, Lincolnshire, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Continuation-in-part of Ser. No. 304,943, Nov. 9, 1972, Pat. No. 3,834,385. This application Apr. 10, 1974, Ser. No. 459,498. The portion of the term of this patent subsequent to Sept. 10, 1991, has been disclaimed.
Int. Cl.² A61M 15/00
U.S. Cl. 128—194 2 Claims

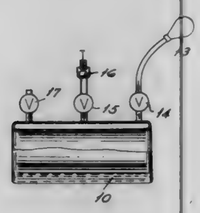
1. An oxygen humidifier set which comprises: an intravenous solution bottle having a stopper defining a first opening and a second opening, an airway tube connected to the wall of the stopper defining said first opening with said airway tube being coaxial with said first opening and extending to the lower portion of said bottle, said first and second openings being in communication with the inside of the bottle; a connector assembly for coupling said intravenous solution bottle to an oxygen supply, said connector assembly comprising an oxygen inlet member, means for coupling the upper portion of said oxygen inlet member to the oxygen supply, the lower portion of the oxygen inlet member comprising an oxygen inlet tube coupled to said first opening in communication therewith; an outlet tube for providing an outlet path for the humidified oxygen, said outlet tube being inserted into said second opening, a humidified oxygen outlet in communication with said outlet tube, said humidified oxygen outlet being adapted for coupling to an oxygen administration device; means located in the outlet path of the oxygen humidifier for preventing liquid droplets from passing, said liquid droplets preventing means comprising a filter plug formed of a material

having a substantially hydrophobic surface, said plug having a pore size of 20 to 500 microns; and means carried by the



connector assembly and engaging the intravenous solution bottle for retaining said connector assembly in engagement with said bottle and for supporting the bottle.

3,929,129
DEVICE FOR CHECKING BLOOD PRESSURE
Rene F. Archambault, 35550 Michigan Ave., Wayne, Mich. 48184
Filed Dec. 16, 1974, Ser. No. 533,297
Int. Cl.² A61B *5/02*
U.S. Cl. 128—2.05 C **11 Claims**



1. In a device for checking blood pressure, the combination comprising

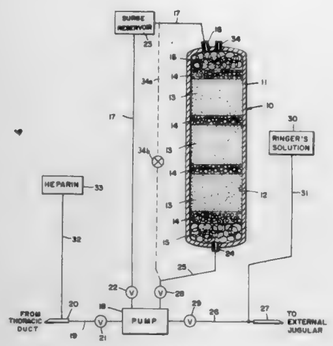
an inflatable hollow band adapted to encircle a limb,

pump means connected to said band for inflating said band, a first pressure relief valve on said band and set to relieve pressure at a first predetermined pressure,

on-off valve means associated with said first pressure relief valve for disabling said first pressure relief valve,

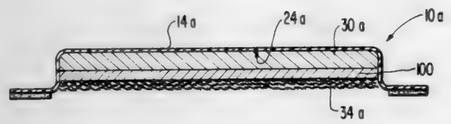
a second pressure relief valve associated with said hollow band and set for relieving the pressure of said band at a higher setting than said first pressure relief valve such that, the blood pressure may be checked by actuating said pump means until the pulse of the person being checked is interrupted in said limb or until the first pressure relief valve operates to relieve the pressure, thereafter actuating said on-off valve means if said first pressure relief valve has been actuated to disable said first pressure relief valve and continuing the application of pressure until the pulse of the individual is interrupted or the second pressure relief valve is actuated indicating a more serious condition of blood pressure.

3,929,130
METHOD FOR LYMPHOCYTE DEPLETION
Thomas S. Hargest, 1078 Winslow Drive, Charleston, S.C. 29412
Filed Oct. 30, 1972, Ser. No. 302,271
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² A61M *01/03, 05/00*
U.S. Cl. 128—214 R **10 Claims**



1. A method for removing lymphocytes from the lymph of a living vertebrate, comprising the steps of surgically redirecting the flow of lymph from a major lymph duct into a filter column containing a mass of irregularly-shaped glass microparticles having sizes within the range of about 37 to 105 microns, controlling the rate of flow of lymph through said column to maintain a velocity of approximately 12 to 20 centimeters per hour, and returning the filtrate to the vascular system without interrupting the flow thereof.

3,929,131
BANDAGE AND METHOD OF USING SAME
Thomas L. Hardwick, 2512 W. Vivion Road, North Kansas City, Mo. 64151
Filed Jan. 9, 1975, Ser. No. 539,732
Int. Cl.² A61F *7/00*
U.S. Cl. 128—254 **5 Claims**



1. A bandage comprising:

an elongated main body strip having a central panel and side panels;

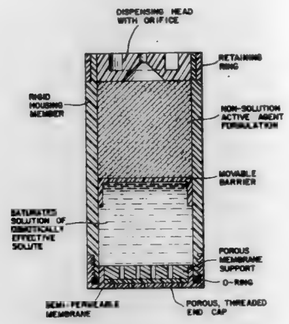
the side panels each having opposite inner and outer surfaces;

adhesive on said inner surfaces;

the central panel having inside and outside surfaces;

pad means engaged against the inside surface of the central panel, the pad means comprising a block of material having the characteristic of heat exchange at a slow rate; means retaining the pad means against said inside surface of the central panel, the means for retaining the pad means comprising a gauze panel overlying the pad means; at least the central panel being maintained at a temperature of less than 32°F prior to application to a wound; and a block of medication adapted to be frozen and to be released in liquid form upon thawing interposed between the pad means and the gauze panel.

3,929,132
OSMOTIC DISPENSER
Takeru Higuchi, Lawrence, Kans., assignor to Alza Corporation, Palo Alto, Calif.
Continuation of Ser. No. 349,774, April 10, 1973, abandoned.
This application July 23, 1974, Ser. No. 490,934
Int. Cl.² A61M *31/00*
U.S. Cl. 128—260 **9 Claims**



1. An osmotic active agent dispenser comprised of a first compartment of relatively impervious material containing an active agent and provided with means for releasing the active agent to the exterior of the dispenser, and a second compartment of controlled permeability to water containing a solution of an osmotically effective solute which exhibits an osmotic pressure gradient against water, the said first and second compartments having a barrier member such that the said first compartment diminishes in volume in response to an increase in volume of the solution in the said second compartment via absorption of water by osmosis therein and defining a means for establishing a substantially zero order rate of release as water flows into the dispenser in a tendency towards osmotic equilibrium with its environment, so that the active agent is continuously squeezed thereout at an osmotically controlled rate over a prolonged period of time; said active agent being formulated in a form other than wholly in liquid solution, and characterized by a consistency at least as firm as that of the semisolid state, whereby the uniformity of dosage of the said active agent over the said prolonged period of time is assured.

3,929,133
APPARATUS FOR REMOVING, WASHING AND DISPLAYING FRAGMENTARY PRODUCTS OF OPERATIVE PROCEDURES
Mohamed Ismail Ragab, Cairo, Egypt, assignor to International Pregnancy Advisory Services, Chapel Hill, N.C.
Filed Nov. 20, 1974, Ser. No. 525,512
Int. Cl.² A61M *1/00*
U.S. Cl. 128—277 **11 Claims**

1. In a system for removing from the uterus intermixed liquid and non-liquid products of a pregnancy preparatory to external examination of selected removed non-liquid products, comprising in combination:

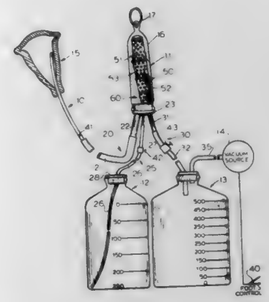
a. an aspiration cannula sized to permit insertion into the uterus;

b. an aspirate collection chamber adapted to be supported proximate the uterus and having:

1. an outer imperforate transparent wall structure providing an enclosed collection space with a first entrance port having a tubular connection to the cannula for receiving the products, a second entrance port for admitting water to the chamber in a predetermined pattern to wash the products received therein and a third exit port for discharging the products; and

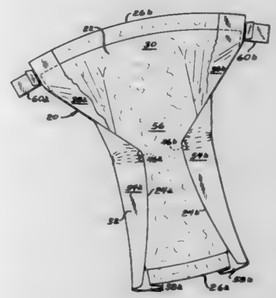
2. filter means comprising a perforate wall structure having plural holes of uniform size formed therein, said filter means being mounted within the collection chamber and being formed and arranged so as to isolate an inner space within the collection chamber which communicates only with said third exit port from the remainder of the space therein communicating with the said entrance ports such that any product flow between the entrance and exit ports is directed through said holes; and

c. vented container of water having a tubular connection to said second entrance port,



whereby with an appropriate level of vacuum applied to the exit port and the cannula in the uterus, the intermixed products along with water are drawn through the respective entrance ports into the collection chamber but externally of the isolated inner space followed by the liquid and non-liquid products of less size than said hole diameter being drawn through said perforate structure into such inner space and through the exit port towards the source of such vacuum leaving the filtered out products on display on said perforate wall structure for immediate visual examination.

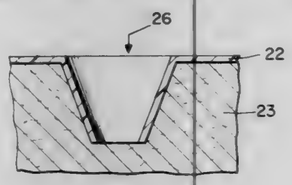
3,929,134
ABSORBENT ARTICLE AND METHOD
Hamzeh Karami, Crystal Lake, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Aug. 29, 1974, Ser. No. 495,356
Int. Cl.² A61F *13/16*
U.S. Cl. 128—284 **24 Claims**



1. A disposable diaper comprising, an absorbent pad assembly having a front surface, a back surface, a pair of side edges, a first fold of said pad assembly along a first pair of longitudinally extending fold lines defining a pair of side panels extending between said side edges and the first pair of fold lines, said side panels being folded against the front surface of the pad assembly, and a second fold of the pad assembly along a second pair of longitudinally extending fold lines intermediate

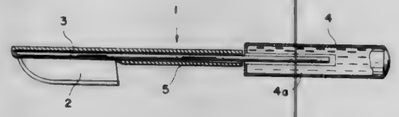
said side edges and first fold lines, the second fold lines defining doubled edge sections remote said side edges being folded against the back surface of the pad assembly.

3,929,135
ABSORPTIVE STRUCTURE HAVING TAPERED CAPILLARIES
Hugh Ansley Thompson, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Dec. 20, 1974, Ser. No. 535,003
Int. Cl.² A41B *13/02*
U.S. Cl. 128—287 **8 Claims**



1. A disposable diaper comprising a topsheet and an absorbent element wherein said topsheet is a liquid-impermeable material provided with tapered capillaries each having a base in the plane of said topsheet and an apex remote from said plane of said topsheet, having an angle of taper of from about 10° to about 60°, base opening dimension of from about 0.006 to about 0.250 inch, and apex opening dimension of from about 0.004 to about 0.100 inch; and wherein said absorbent element is in intimate contact with said apex of said tapered capillaries.

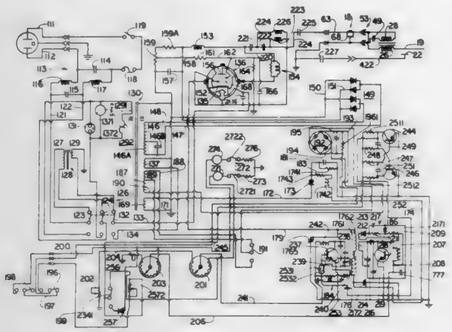
3,929,136
APPARATUS FOR LOW-TEMPERATURE SURGERY
Helmut Kreeb, Immenstaad; Gerhard Hauser, Friedrichshafen, and Klaus Kögler, Bermatingen, all of Germany, assignors to Dornier System GmbH., Germany
Filed Nov. 18, 1974, Ser. No. 525,027
Claims priority, application Germany, Dec. 8, 1973, 2361273
Int. Cl.² A61B *17/36*
U.S. Cl. 128—303.1 **7 Claims**



1. An apparatus for use in low temperature surgery comprising surgical instrument means, heat pipe means connected to said instrument means and functioning as a handle, and low temperature cell means connected to said heat pipe means.

3,929,137
SONIC WARNING FOR ELECTROSURGICAL DEVICE
Donald I. Gonser, Forest Park, Ohio, assignor to Dentsply Research & Development Corporation, Milford, Del.
Division of Ser. No. 414,646, Nov. 12, 1973, Pat. No. 3,870,047. This application Dec. 5, 1974, Ser. No. 529,607
Int. Cl.² A61B *17/36*; A61N *3/02*
U.S. Cl. 128—303.14 **2 Claims**

1. In an electrosurgical device, means for generating an electrosurgical cutting current, a sonic warning device connected to the means for generating the electrosurgical cutting current including means to produce a sound signal of a selected frequency when the electrosurgical cutting current is generated, means for generating an electrosurgical coagulating current, a second sonic warning device connected to the means for generating the coagulating current including means to produce a sound of a second and different selected frequency when the coagulating current is generated, means for generating an electrosurgical current, the last mentioned



means including both the means for generating the electrosurgical cutting current and the means for generating the electrosurgical coagulating current, both sonic warning devices being actuated when the blended current is generated, and means for supplying each of said currents to a patient.

3,929,138
SUB-INTIMAL DISSECTOR AND METHODS FOR PERFORMING ENDARTERECTOMIES THEREWITH
Eli Curi, 3 Rail Court, Roseland, N.J. 07068
Filed July 18, 1973, Ser. No. 380,508
Int. Cl.² A61B *17/22*
U.S. Cl. 128—304 **8 Claims**

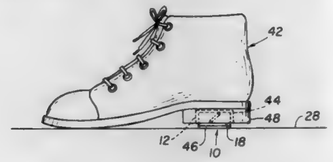


1. A sub-intimal dissector comprising:
a. an elongated shaft, the shaft being bendable and having shape memory,
b. a dissecting tip on one end of the shaft,
c. the tip being arcuate transverse to its longitudinal axis to define a concave top surface and a convex bottom surface extending between side edges,
d. a slightly forwardly convex leading edge on the tip smoothly merging with the said opposed side edges,
e. the opposed side edges tapering rearwardly and inwardly toward the shaft from a position slightly rearwardly of the leading edge,

f. the arcuately longest portion of the said convex bottom surface extending along an arc transverse to the longitudinal axis of the tip a distance equal to approximately one third to one fifth of the circumference of an artery upon which it is to be employed, and
g. the said leading edge in both said opposed side edges being smoothly rounded between the concave top and convex bottom surface of the tip.

6. A method for performing endarterectomies comprising:
a. incising an artery to expose the interface between the intima and the media,
intruding a dissecting tip intermediate the intima and the media at said exposed interface,
c. wedging the intima and media apart by passing the dissecting tip longitudinally along said interface for a distance from said incision while avoiding damaging the integrity of both the intima and media,
d. withdrawing the dissecting tip longitudinally to the incision,
e. reintruding the dissecting tip intermediate the intima and media and wedging the intima and media apart as aforesaid successively along paths contiguous to previous paths of movement of said tip for said distance until substantially the entire intima is wedged from the media along said distance, and
f. withdrawing the disengaged intima from the artery.

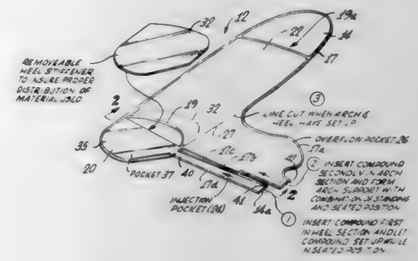
3,929,139
CORRECTIVE SHOE DEVICE
Nathan Salzman, 695 Willow Road, Franklin Square, N.Y. 11010
Filed Dec. 27, 1974, Ser. No. 536,727
Int. Cl.² A43B *7/24*
U.S. Cl. 128—583 **9 Claims**



1. A device for attachment to and rotation of a corrective shoe comprising first and second members,
one of said members being attached to a corrective shoe while the other of said members is free of the shoe,
means connecting said first and second members for relative reciprocable and rotative movements to rotate the shoe in response to the engagement of one of said members with the ground,
said connecting means including cam means on one of said members and follower means on the other of said members and guided by said cam means and means to urge said members to one relative position of reciprocation.

3,929,140
COMBINED HEEL POSITIONER AND ARCH SUPPORT FOR THE FOOT
Alex Wesberg, 615 N. Rexford Drive, Beverly Hills, Calif. 90210
Filed Sept. 16, 1974, Ser. No. 506,392
Int. Cl.² A61F *5/14*
U.S. Cl. 128—595 **13 Claims**

1. An insert support envelope for support of a foot in a shoe, which comprises:
a discrete heel positioning and support chamber formed by at least a pair of superposed plastic sheets;
a discrete arch support chamber formed by a pair of superposed plastic sheets;
a weld line, constituted by the lamination of superposed plastic sheets, spacedly separating said discrete heel positioning support chamber from said discrete arch support chamber whereby pressure applied to said heel chamber is not transmitted to said arch chamber, and pressure applied to said arch chamber is not transmitted to said heel chamber;



a first inlet means communicating only with said heel positioning and support chamber for the purpose of injecting molding compound and allowing escape of trapped air; and
a second inlet means communicating only with said arch support chamber for the purpose of injecting molding compound and allowing escape of trapped air.

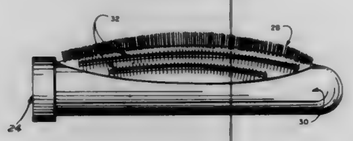
3,929,141
PROCESS FOR THE MANUFACTURE OF REGENERATED TOBACCO
Monique Beringer, St. Louis, France, and Paul Buchmann, Basel, Switzerland, assignors to Tamag Basel AG, Switzerland
Continuation of Ser. No. 337,475, March 2, 1973, abandoned. This application July 9, 1974, Ser. No. 486,837
Claims priority, application Luxemburg, Mar. 2, 1972, 64888
Int. Cl.² A24B *3/14*, *13/00*, *15/08*
U.S. Cl. 131—17 R **4 Claims**

1. A homogeneous regenerated tobacco of reduced nicotine content which consists of:
5,000 grams of filler consisting of: one or more of gramineous plants or shells of nuts, cocoa beans or coffee beans, 3,000 to 5,000 grams tobacco
600 grams magnesium formate
50 grams tartaric acid
300 grams potassium nitrate
1,000 grams paraffinurea
300 grams diammonium hydrogen phosphate
10 grams of vanillylideneurea
1,500 grams sodium carboxymethylcellulose
1,400 grams glycerine
150 grams diethylene glycol
1,050 grams fruit concentrate
600 grams raw molasses
105 grams malt extract.

3,929,142
HAIR VACUUM WITH STRIPPING CLASP
Edward M. Carfi, 210 Ramapo Valley Road, Oakland, N.J. 07436
Filed Oct. 3, 1974, Ser. No. 511,878
Int. Cl.² A45D *1/00*
U.S. Cl. 132—9 **2 Claims**

1. A hair vacuum with a stripping clasp comprising in combination:
a hollow base adapted to receive a vacuum source;
an elongated tubular vacuum head attached to said base and in communication with said vacuum source through said base and adapted to receive stripping attachment;

said vacuum head having at least one vacuum inlet aperature;
a handle attached to said base for manipulating said hair vacuum;
an elongated stripping clasp pivotally attached to said base such that said clasp may be moved into close proximity to said vacuum head and said vacuum inlet aperature;
a handle attached to said stripping clasp for manipulating said stripping clasp relative to said vacuum head in a scissors-like movement;
a lining of a soft material on the inside of said stripping clasp;

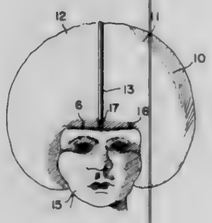


an elongated tubular stripping attachment for said vacuum head having a plurality vacuum inlet aperatures arranged to communicate with said vacuum head inlet aperature; said aperatures of said elongated tubular attachment fabricated of a soft, flexible material comprising triangular grooves transverse the longitudinal axis of said attachment wherein the cross-sectional profile of said grooves progressively increases from the inner longitudinal extremity of said attachment to the outer longitudinal extremity of said attachment.

3,929,143
COIFFURE HOOD

Arthur Coleman, San Francisco, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Aug. 14, 1974, Ser. No. 497,206
Int. Cl.² A45D *6/00*
U.S. Cl. 132—36.1 R **1 Claim**

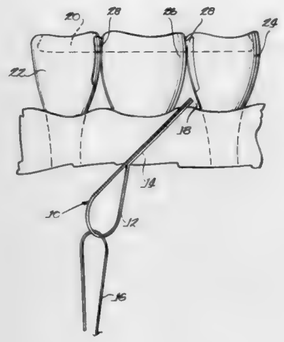


1. A coiffure hood for protecting the hair-do of a wearer which is formed of two half-sections of flexible material joinable by a slide fastener, said slide fastener protected from engaging the hair of the wearer by a flap of material, attached to one section which extends under the slide fastener, when worn, in which each half-section is fitted on its side with an external folding handle, with vent holes located in the top central portion of the hood for admission of heated air, said vent holes being covered by a removable flap of material held in place by snap fasteners, and with a side vent hole located in the side of each half-section adjacent the external handle, with
the half-sections and slide fastener formed so that the two half-sections form the two lateral sides of the assembled hood, with the slide fastener extending over the mid-section of the front, top and back of the assembled hood.

3,929,144
DEVICE FOR INSERTING DENTAL FLOSS THROUGH INTERPROXIMAL AREAS AND METHOD OF USING SAME

E. B. Tarrson, Chicago, Ill., and R. Young, Bowmanville, Canada, assignors to John O. Butler Company, Chicago, Ill.

Filed June 19, 1972, Ser. No. 264,171
Int. Cl.² A61C *15/00*
U.S. Cl. 132—93 **7 Claims**

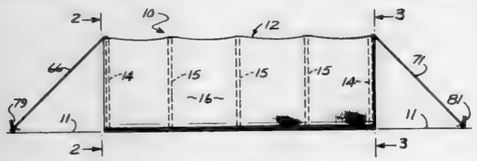


1. A preformed device for threading dental floss under or around bridges, said device comprising a closed looped portion formed from a single length of a relatively flexible filament material folded back on itself to form an elongated guide portion adjacent to and integral with said looped portion, the ends of said length of filament being integrally joined together in a juxtaposed side by side relationship to form said guide portion which is a single and integral length of said flexible material, said guide portion remaining substantially flexible but having a greater stiffness than said looped portion whereby said filament can slide through virtually any interproximal space which said dental floss can pass through.

3,929,145
COLLAPSIBLE SHELTER

Allen J. Schroeder, 1001 E. 12th St., Beaumont, Calif. 92223

Filed Feb. 14, 1975, Ser. No. 550,141
Int. Cl.² A45F *1/16*; E04B *1/347*
U.S. Cl. 135—1 R **10 Claims**



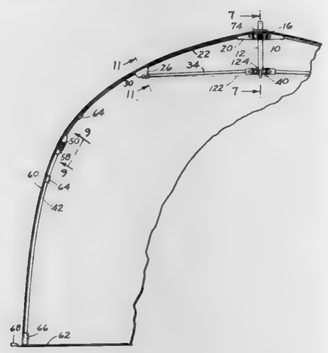
1. Collapsible shelter means comprising:
a flexible cover of relatively thin, weatherproof, lightweight sheet material adapted to assume a tubular shape when suitably stretched;
a plurality of normally hoop-shaped ribs formed from flat strip material in general conformity with the cross-sectional size and shape of said cover in its stretched, tubular form, said ribs being resiliently deformable under downwardly directed force when standing on edge;
fastening means for securing said ribs in positions adjacent said cover in generally coaxial relationship with, and in spaced apart relationship along the axis of, the cover in its stretched, tubular form, the spacing of the secured ribs being such as to permit them to serve as frame means for the stretched cover; and

removably installable anchoring means for exerting oppositely and downwardly directed pulling force on the upper center portions of the two end ones of said ribs to stretch the rib-reinforced cover into the form of a tubular shelter, and help cause flattening distortion of said shelter to increase its width, on a substantially horizontal support surface;
said shelter means being axially contractable, when free of the pulling influence of the anchoring means, into a compact, lightweight bundle, for easy portability.

3,929,146
UMBRELLA TENT

Francis H. Maiken, Keasey Rte., Box 134, Vernonia, Oreg. 97064

Filed Oct. 18, 1973, Ser. No. 407,553
Int. Cl.² A45F *1/04*
U.S. Cl. 135—2 **10 Claims**



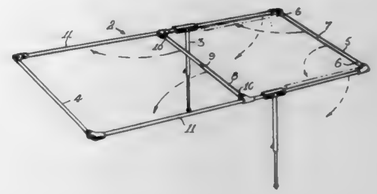
1. An umbrella tent comprising
a. a framework including
1. an imperforate top base member including a flange portion and a vertical post portion extending downward from the flange portion,
2. a plurality of elongated resilient ribs pivoted at their upper ends to the flange portion of the top base member at peripherally spaced positions for movement between extended and retracted positions,
3. a plurality of braces connected pivotally at their outer ends one to each of the ribs intermediate the ends of the latter,
4. a hub pivotally interconnecting the inner ends of the braces and positioned vertically below the top base member for vertical movement toward and away from the latter across the plane extending through the pivot connections of the braces to the ribs, to move the ribs between said extended and retracted positions, and
5. abutment means on the top base member and hub interengageable when the hub moves upward across said plane to limit said upward movement, and
b. flexible cover material supported by the framework and dimensioned to become stretched as the ribs move toward extended position, whereby to maintain the abutment means resiliently in interengagement and the tent in erected condition.

3,929,147
COLLAPSIBLE SHELTERS

Edward J. Roscoe, 3 Chesterfield House, High Level Road, Green Point Cape Province, South Africa

Filed Feb. 4, 1974, Ser. No. 439,086
Int. Cl.² E04F *10/10*
U.S. Cl. 135—7.1 A **11 Claims**

1. A collapsible shelter frame comprising, in an erected condition, at least four elongated frame members arranged to define the sides of a polygon having at least four sides, at least two of said members being generally parallel, said at least four members being hingedly interconnected together, one of said parallel members comprising a pair of member sections interconnected together by a releasable joint intermediate the ends of said one member, the other of said parallel members being rigid throughout its length, the remaining two frame members of said at least four members each including a pair of remaining member sections; a pair of leg members extending outwardly of the plane of the frame and being hingedly connected

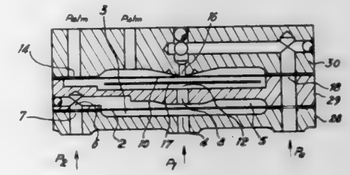


to said remaining frame members by means of hinge assemblies designed to permit said sections of said respective remaining members to be releasably aligned in coaxial relationship with one another, whereby the frame may be collapsed into a compact unit upon release of said one member sections, upon movement of said one member sections to respectively lie against said remaining members, upon movement of said remaining member sections into contact with their respective leg members, and upon movement of said remaining frame members together with said hinged sections to lie against said other parallel member.

3,929,148
DIFFERENTIAL AND PROPORTIONAL PNEUMATIC AMPLIFIERS

Michel Midy, Pavillon-sous-Bois, France, assignor to Materiel Electrique de Controle et Industriel, Paris, France

Continuation of Ser. No. 331,952, Feb. 12, 1973, abandoned.
This application Nov. 4, 1974, Ser. No. 520,781
Claims priority, application France, Feb. 14, 1972, 72.04825
Int. Cl.² G05D *16/06*
U.S. Cl. 137—84 **12 Claims**



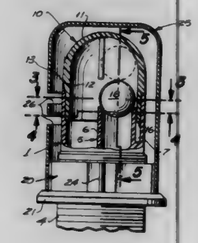
1. A differential and proportional amplifier comprising:
a first stage chamber divided by a first membrane into a first compartment and a second compartment,
the first compartment having a pressure input and the second compartment having a pressure input,
the pressure input of the first compartment being directly connected to a pressure source providing a pressure P_1, the pressure input of the second compartment being connected by a pneumatic resistance to a pressure source providing a pressure P_2, the second compartment having an outlet opening which is closable by the first membrane under the influence of the pressure P_1, the outlet opening of the second compartment providing a flow Q proportional to the pressure difference $P_2 - P_1$, and

a second stage chamber divided by a second membrane into a third compartment and a fourth compartment,
the third compartment having an input connected only to the outlet opening of the second compartment for receiving the flow Q, the third compartment also having a separate output channel connected only to the atmosphere through a penumatic resistance, such that in the third compartment there prevails a pressure P proportional to the flow Q and thus to the pressure difference $P_2 - P_1$,
the fourth compartment being at atmospheric pressure and including an exhaust opening,
the exhaust opening forming a nozzle which is closable by the second membrane to thereby act as a baffle under the influence of the pressure P and
provide an output pressure P_2 from the fourth compartment which is proportional to the pressure P and consequently to the pressure difference $P_2 - P_1$.

3,929,149
BACKFLOW PREVENTOR FOR AUTOMATIC DISHWASHERS

Wendell Phillips, Bloomington, Calif., assignor to Robert Manufacturing Company, Cucamonga, Calif.

Filed May 23, 1974, Ser. No. 472,624
Int. Cl.² F16K *24/00*
U.S. Cl. 137—216 **4 Claims**

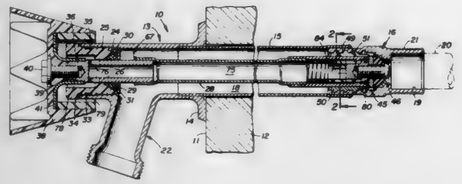


1. A back flow preventor comprising:
a. a tubular shell having a circular open upper end, a vent opening near its upper end, and an internal essentially disposed tube terminating approximately at the upper end of the shell to define with the shell an opening equal to the passage within the internal tube and forming an upwardly directed valve seat, the internal tube and shell forming respectively an inlet duct and an outlet duct;
b. a cap member having a closed upper end and a tubular lower portion dimensioned for reception into the upper end of the shell around the inner tube whereby the internal tube discharges upwardly into the cap member for downward discharge into the surrounding shell;
c. said cap member also having an internal valve guide channel aligned with the valve seat and an external channel forming with the shell an upwardly directed vent passage to the vent opening; whereby, in the event of suction pressure within the shell, air may be drawn through the vent opening;
d. and a ball valve engageable with the internal tube valve seat and movable upwardly therefrom in the guide channel for discharge from the internal tube into the cap member and deflection into the shell.

3,929,150
SILLCOCK INCORPORATING AN ANTISIPHON AND BACKFLOW PREVENTER

Vaughn D. Flinner, Big Prairie, and Richard W. Sprang, Lakeville, both of Ohio, assignors to Mansfield Sanitary Inc., Perrysville, Ohio

Filed Oct. 9, 1974, Ser. No. 513,339
Int. Cl.² F16K *24/02*
U.S. Cl. 137—218 **8 Claims**



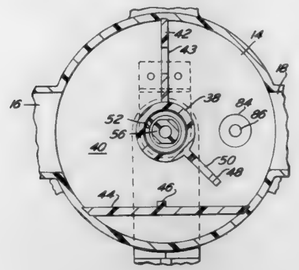
1. A sillcock comprising; a barrel having an axially inner and an axially outer end portion; a first passageway extending through said barrel; connector means at the axially inner end portion of said barrel adapted for securing said barrel to a pressurized fluid supply line; a spout communicating with said first passageway; a valve stem having axially inner and axially outer end portions and extending axially within said first passageway; a second passageway extending through said valve stem opening to the atmosphere; a handle secured to the axially outer end portion of said valve stem for selectively displacing said valve stem axially between an open and a closed position while permitting said second passageway to communicate to the atmosphere; a valve seat circumscribing said first passageway within said barrel and disposed between said connector means and said spout; a piston mounted within the axially inner end portion of said valve stem so as to be movable axially between a retracted and protracted position with respect to said valve stem; a valving element mounted on said piston in opposition to said valve seat; means on said valve stem to engage said piston in its retracted position and maintain said valve element in sealing engagement with said valve seat when said valve stem is in closed position; and, biasing means acting between said valve stem and said piston continuously to urge said piston toward its protracted position to maintain said valve element in sealing engagement with said valve seat throughout the range of axial movement available to said valve stem between said open and closed positions when the pressure within said fluid supply line falls below a predetermined value thereby preventing backflow and simultaneously permiting communication between said first passageway and said second passageway to release backpressure present to the atmosphere through said second passageway.

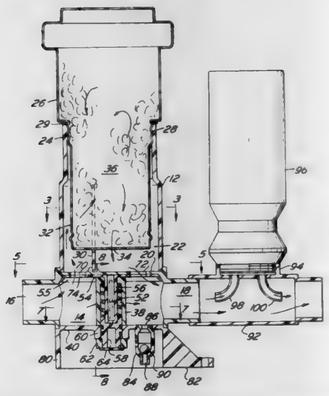
3,929,151
MIXING APPARATUS

Harry S. Rubin, 7847 Williams Ave., Philadelphia, Pa. 19150

Filed Mar. 6, 1974, Ser. No. 448,778
Int. Cl.² B01D *11/00*; **B01F** *1/00*
U.S. Cl. 137—268 **18 Claims**

1. Apparatus comprising a housing means having primary and secondary flow paths communicating with an inlet and an outlet, said housing means including selectively adjustable valve means for controlling flow between said flow paths, a movable flow restrictor in said primary flow path, and means on said housing for automatically correlating the range of movement of said flow restrictor with said valve means so that the range of movement of said flow restrictor is at a minimum when said valve means is fully opened and vice versa, a fixed limit stop on said housing means, spring means biasing said flow restrictor towards said limit stop so that there is minimum flow through the primary flow path, and another limit stop on



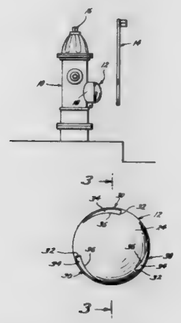


a movable portion of said valve means for defining the range of movement of said flow restrictor.

3,929,152
FIRE HYDRANT CAP AND ACTUATING TOOL THEREFOR

Gerald A. Graham, 9721 Kempwood Drive, Apt. 1405, Houston, Tex. 77055

Filed July 10, 1974, Ser. No. 486,975
Int. Cl.² E03B *9/02*
U.S. Cl. 137—296 **8 Claims**

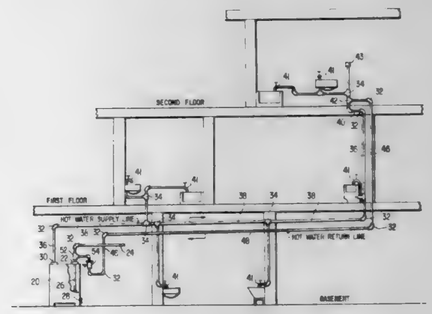


1. A fire hydrant cap comprising,
a body having first and second ends,
said first end having internal threads extending inwardly into the body for attachment to a fire hydrant,
said second end extending from the first end and having a curved convex shape,
a plurality of tool engaging surfaces spaced from each other and positioned on the second end, each engaging surface including a shoulder facing oppositely to the direction in which the cap is threaded onto a hydrant for providing shoulders for engaging a tool for connecting the cap to a hydrant,
each engaging surface including a recess extending from said shoulder in a direction opposite to the direction in which the cap is threaded onto the hydrant, said recess including a curved surface progressively increasing in distance from the axis of the body and includes a sidewall which extends parallel to the longitudinal axis of said cap for coacting with a tool for unthreading the cap from a hydrant.

3,929,153
GRAVITY HOT WATER CIRCULATING SYSTEM AND FLOW REGULATOR THEREFOR

William E. Hasty, 14038 Peyton Drive, Apt. 117, Dallas, Tex. 75240

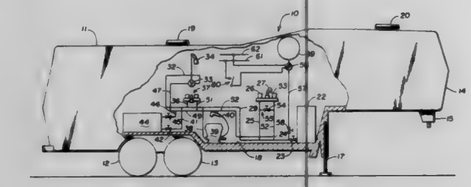
Continuation of Ser. No. 386,548, Aug. 8, 1973, abandoned. This application Mar. 11, 1975, Ser. No. 557,361
Int. Cl.² E03B *11/06*
U.S. Cl. 137—337 **6 Claims**



1. A system for maintaining heated water at one or more fixtures, said system comprising:
a. fixture means,
b. water heater means having an inlet for introducing cold water to be heated to said water heater means and an outlet, said outlet being connected by piping to said fixture means for supplying heated water to said fixture means, said fixture means being further connected by piping to said inlet for returning heated water to said inlet, at least a portion of said return piping being graded with respect to the horizontal to facilitate movement of said heated water in the vertical direction and to permit any air present in said return piping to easily rise to the highest point in the system to thereby insure the required circulation of said heated water in said return piping,
c. air vent means connected to said return piping at said highest point for permitting said air to be dispelled from said system; and
d. flow regulating means connected between said fixture means and said cold water inlet, said flow regulating means having a valve head which is closed by gravity during the absence of circulating heated water in said return piping and during the introduction of cold water at said inlet to thereby prevent said cold water from entering said return piping and disrupting said circulation, and said valve head being opened in response to pressure exerted adjacent said valve head by the circulating heated water in said return piping between said fixture means and said flow regulating means to thereby permit the return of

heated water to said cold water inlet and maintain heated water at said fixture means.

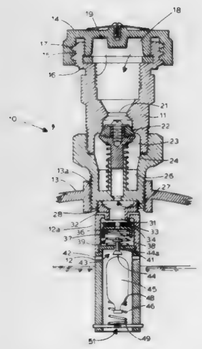
3,929,154
FREEZE PROTECTION APPARATUS
Frank E. Goodwin, 1015 N. 23rd St., Billings, Mont. 59101
Filed July 29, 1974, Ser. No. 492,492
Int. Cl.² E03B *9/14*
U.S. Cl. 137—344 **7 Claims**



1. In combination with a structure having a plurality of water conduits leading to various regions of utilization, at each of which regions there is a valved outlet from one of said water conduits, some of said conduits acting as hot water conduits and other of said conduits acting as cold water conduits;
- a water heater having a storage tank with a valved drain outlet, a valved inlet connection to one of said cold water conduits and a valved outlet connection between said tank and said hot water conduits, said storage tank and said valved inlet and outlet connections constituting the only interconnections between said hot and cold water conduits when said valved inlet and outlet connections are open,
- a source of water connected to said cold water conduits by a further valved connection,
- a source of antifreeze also connected to said cold water conduits by a further valved connection,
- and a normally closed further valved connection between said hot and cold water conduits so that upon opening the valve in said last named connection and the valve in the connection between the source of antifreeze and said cold water conduits, following closure of the valves in the connection to the source of water and in the inlet and outlet connections of said heater storage tank and draining of the latter, antifreeze can be admitted to both said cold and hot water conduits while leaving said heater storage tank substantially free of fluid of any kind.

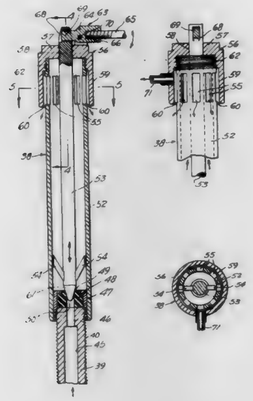
6. The method of winterizing a structure having a plurality of water conduits leading to various regions of utilization, at each of which regions there is a valved outlet from one of said water conduits, some of said conduits acting as hot water conduits and other of said conduits acting as cold water conduits, a water heater having a storage tank with a valved drain outlet, a valved inlet connection to one of said cold water conduits and a valved outlet connection between said tank and said hot water conduits, said storage tank and said valved inlet and outlet connections constituting the only interconnections between said hot and cold water conduits when said valved inlet and outlet connections are open, and a source of water connected to said cold water conduits by a valved connection, said method comprising:
- providing a normally closed connection between said hot and cold water conduits,
- closing off the connections between said source of water and said cold water conduits,
- opening the valved outlets at each of said points of utilization and opening said drain outlet of said heater storage tank to drain substantially all of the water from said storage tank and said conduits,
- closing the inlet and outlet connections of said heater storage tank and the valved outlets at the regions of utilization,
- supplying an antifreeze solution under pressure to said cold water conduits,
- opening said valved outlets in the cold water conduits at the regions of utilization, one by one, and maintaining each such valved outlet open until said antifreeze solution starts to flow out of said outlet,
- opening said normally closed connection between said hot and cold water conduits, and
- opening said valved outlets in the hot water conduits at the regions of utilization, one by one, and maintaining each such valved outlet open until said antifreeze solution starts to flow out of said outlet.

3,929,155
FLOAT SHUT OFF VALVE FOR LIQUEFIED PETROLEUM GAS TANK FILLERS
Owen L. Garretson, P.O. Box 108, Farmington, N. Mex. 87401
Continuation of Ser. No. 288,132, Sept. 11, 1975, abandoned.
This application Sept. 3, 1974, Ser. No. 502,612
Int. Cl.² F16K *31/18*
U.S. Cl. 137—430 **10 Claims**



1. A liquefied petroleum gas tank filler valve assembly, comprising a filler valve body having a flow passage extending therethrough from a filler mouth, a check valve in said flow passage, attachment means on the exterior of said body for sealingly securing said body vertically in an opening in the top of a liquefied petroleum gas tank which is normally vertical during filling, means defining a housing of relatively reduced diameter extending from said body adjacent said attachment means such that said housing will pass freely through an opening in which said attachment means secures said body and thus extend downwardly into the interior of a tank, said body and said housing being rigidly secured together so as to be mountable as an integral unit on and in a tank, discharge port means communicating with said flow passage and opening from the assembly below said attachment means so as to open into a tank in which the assembly is mounted, shut-off valve means movable between open and closed positions for controlling flow from said passage to said discharge port means, said shut-off valve comprising a valve closure member movable between open and closed positions and having opposed pressure surfaces, spring means having a closing force for normally maintaining said valve closure member in its closed position except when a net pressure force on said opposed pressure surfaces in an opening direction exceeds the closing force of said spring during filling of a tank in which the assembly is mounted, automatic means, including a float carried by said housing, responsive to the level of liquid in a tank in which the assembly is mounted for reducing said net pressure force to a value less than the closing force of said spring when such liquid level reaches a predetermined level, and override means responsive to the orientation of the assembly for causing said automatic means to reduce said net pressure force as aforesaid when the assembly is oriented beyond a predetermined amount from the vertical, regardless of the liquid level in a tank in which the device is mounted.

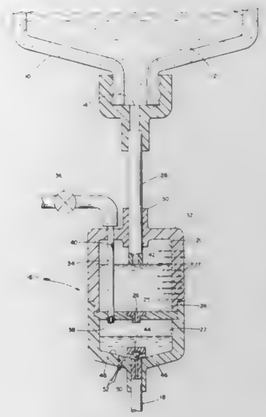
3,929,156
FLOAT VALVE
Pasquale P. Pariso, 222 Bloomer Ave., Elmira, N.Y. 14901
Filed Nov. 20, 1973, Ser. No. 417,517
Int. Cl.² F16K *31/24*
U.S. Cl. 137—444 **1 Claim**



1. In a float valve for a water closet tank of the type including a bottom wall having an opening therein, said float valve comprising a vertically disposed generally cylindrical hollow shank extending through the opening in said bottom wall and having a fluid passageway therethrough, a fitting detachably secured on the upper end of said shank, a bushing mounted in said fitting and having a fluid passageway therethrough communicating with the fluid passageway in said shank and having at its upper end a seat, a hollow valve body having said fitting in the lower end thereof, said valve body having a plurality of spaced parallel window slots in the upper portion thereof, a body member mounted on the upper end of said valve body, said body member having a cylindrical skirt spaced outwardly from the window slots providing a space for fluid to pass therethrough into said tank, said body member having an opening in the top thereof, a vertically disposed vertically moveable valve rod extending through the opening in said body member and through said valve body, a conically tapered valve element on the lower end of said valve rod adapted for movement into and out of open and closed relation with respect to the seat in said bushing, and a pair of guide prongs projecting integrally outwardly of opposite sides of said valve rod and sloping in a direction away from said valve element to guide the movement of said valve element into and out of engagement with said seat.

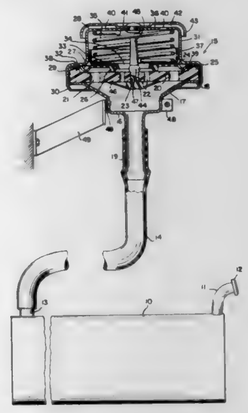
3,929,157
FLUID FLOW REGULATOR
Juan R. Serur, 34A Harvard Ave., Brookline, Mass. 02146
Filed June 17, 1974, Ser. No. 479,762
Int. Cl.² A61M *5/00*
U.S. Cl. 137—453 **10 Claims**

1. A rate of flow regulator for use in a gravity assisted fluid delivery system, the regulator comprising
- a first upper fluid chamber having a fluid inlet, fluid outlet means, and means for maintaining a predetermined level of fluid in said upper chamber;
- a second lower fluid chamber having an inlet lower than said outlet means and disposed to gravitationally receive all fluid from said upper fluid chamber outlet means and having a fluid outlet; and



- vent means for establishing uninterrupted communication between each said chamber and the atmosphere exterior of the regulator.

3,929,158
REMOTE PRESSURE-VACUUM RELIEF VALVE ASSEMBLY
Robert E. Rodgers, Connersville, Ind., assignor to Stant Manufacturing Company, Inc., Connersville, Ind.
Filed July 3, 1974, Ser. No. 485,350
Int. Cl.² G05D *27/00*; F16K *17/04*
U.S. Cl. 137—493.9 **7 Claims**



1. A safety pressure-vacuum relief assembly for vehicle fuel tanks and the like comprising a tubular fitting having an upwardly flared upper end and a reduced lower end, a substantially flat flange circumscribing said upper end and disposed in a plane substantially perpendicular to the axis of said fitting, a substantially flat plastic plate resting on and peripherally substantially congruent with said flange, a plurality of openings through said plate, each of said openings being disposed at at least a first radial distance from the center of said plate, at least one aperture through said plate at a radial distance from said plate center less than said first distance, an inverted cup having a peripheral skirt and a reduced, upwardly-extend-

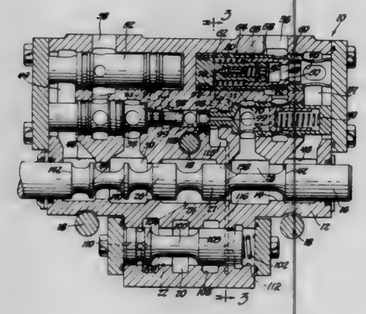
ing base defining an annular shoulder, said skirt encompassing said flange and being deformed to hold said fitting and said cup against axial separation, an annular, flexible gasket having an outer peripheral bead gripped between said plate and said shoulder and an inner peripheral bead engaging the upper flat surface of said plate in an annular area disposed between said first distance and said lesser distance, a seal plate having a central aperture and bearing on a radially inward region of the upper surface of said gasket, spring means confined between the floor of said cup base and said seal plate to urge said gasket inner peripheral bead into yieldable sealing contact with the upper surface of said plate to provide a pressure relief valve for the tank, a rubberoid umbrella valve having a stem centrally penetrating and axially fixed relative to said plate and having its flexible outer peripheral region normally in sealing engagement with the lower surface of said plate in an annular region disposed between said first distance and said lesser distance to provide a vacuum relief valve for the tank, means for mounting said assembly on a vehicle, and conduit means for connecting said lower end of said fitting with the interior of a fuel tank for such a vehicle at a point remote from the filler neck of such a tank, said cup base having ports therein to provide communication between the cup interior and the atmosphere.

3,929,159

POWER TRANSMISSION

Dennis J. McAvoy, Lake Orion, Mich., assignor to Sperry Rand Corporation, Troy, Mich.

Filed Feb. 10, 1975, Ser. No. 548,476
Int. Cl.² F15B *13/04*
U.S. Cl. 137—596.18 **2 Claims**



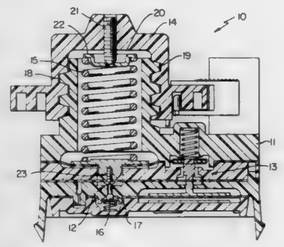
1. A directional valve assembly for hydraulic power systems comprising a body having a sliding spool of the closed center type arranged to selectively direct inlet fluid to either of two motor ports, load holding check valves between the spool and each motor port, combined counter balance and relief check valves one connected between each motor port and a return port and each having a control piston exposed through a restriction to its respective motor port pressure, pilot valves for relieving the pressures on the respective control pistons at a pre-determined pressure level, and secondary pilot valves each responsive to operating pressure upstream from the load holding check valve for the opposite motor port, whereby each pilot valve controls one check valve to open it, either for limiting maximum pressure in its own motor port or in response to operating pressure at an opposite motor port and means controlled by the spool for directing inlet pressure to both secondary pilot valves at the same time for opening both counterbalance and relief check valves to bypass both motor ports to tank around the load holding check valves.

3,929,160

DIFFERENTIAL PRESSURE OPERATED PILOT RELAY AND SYSTEM AND DIVERTING RELAY CONSTRUCTION UTILIZING THE SAME OR THE LIKE

Edward N. Caldwell, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation-in-part of Ser. No. 405,132, Oct. 10, 1973. This application Feb. 21, 1975, Ser. No. 551,624
Int. Cl.² G05D *23/00*
U.S. Cl. 137—625.5 **40 Claims**



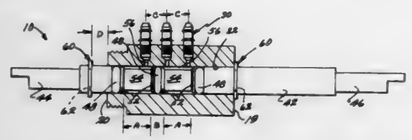
1. A pneumatically operated diverting relay construction comprising a differential pressure operated pilot relay means and a diverting valve means operatively associated together, said pilot relay means having means for sending a pneumatic pilot output to said diverting valve means to switch said diverting valve means from one condition thereof to another condition thereof when said pilot relay means receives a pneumatic signal of a certain magnitude, said pilot relay means having pneumatic means for selecting within limits the magnitude of said pneumatic signal that is required for said pilot relay means to produce said pneumatic pilot output for switching said diverting valve means from said one condition thereof to said other condition thereof, said pilot relay means having means for terminating said pneumatic pilot output to cause said diverting valve means to switch from said other condition thereof to said one condition thereof when said pneumatic signal falls to another certain magnitude, the last named means causing said other certain magnitude to be a fixed differential from said selected magnitude thereof.

3,929,161

SPOOL VALVE FOR MULTIPLE ADJUSTABLE SYSTEMS

Wallace G. Boelkins, Grand Rapids, Mich., assignor to Uni-Mist, Inc., Grand Rapids, Mich.

Filed Aug. 22, 1973, Ser. No. 390,569
Int. Cl.² F16K *11/07, 11/18*
U.S. Cl. 137—625.69 **8 Claims**



1. In a spool valve including a valve body having a passageway therethrough, an elongated spool shaft rotatably, axially movably, and coaxially received in said passageway, a plurality of ports communicating with said passageway, and means on said spool shaft providing a fluid seal for said shaft in said passageway and for selectively interconnecting certain of such ports for fluid communication in response to axial movement of said shaft; the improvement comprising said spool shaft having a length sufficient to protrude at both its ends beyond said body; said spool shaft further including rotatable drive connection means on at least one of its said protruding ends for rotatable drive connection of said shaft to a rotatably

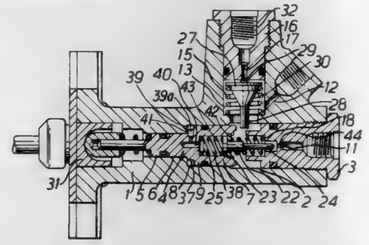
variable device such that shaft rotation is transmitted to such device, whereby axial movement of said spool may actuate said valve while rotational movement of the spool varies said device; and including removable abutment means on said spool shaft external of said valve body and adjacent to parts of said body for limiting the axial movement of said shaft and for selective disassembly of said shaft from said body.

3,929,162

MASTER CYLINDER ASSEMBLIES FOR HYDRAULIC SYSTEMS

Robin Adam Cochrane, Haseley Knob, England, assignor to Girling Limited, Birmingham, England

Continuation of Ser. No. 215,848, Jan. 6, 1972, abandoned. This application Aug. 10, 1973, Ser. No. 387,258
Int. Cl.² F16K *11/16*
U.S. Cl. 137—627.5 **3 Claims**



1. A master cylinder assembly comprising a housing having a cylindrical bore, a recuperation port, an inlet, and an outlet, a piston assembly working in said bore and movable therein in response to a positive applying force, a normally closed tilting valve for controlling communication between said inlet and said outlet and operated by said piston assembly, and a normally open recuperation valve for controlling communication between a pressure space in the bore in advance of said piston assembly and said recuperation port, said recuperation valve comprising a seating surrounding said port, an axially movable valve member for engagement with said seating a resilient connection between said axially movable valve member and said piston assembly so constructed and arranged that when said piston assembly is advanced in said bore initial axial movement thereof causes said axially movable valve member to engage with said seating to cut-off communication between said port and said outlet before further axial movement of said piston assembly opens said normally closed valve, wherein said bore is of stepped outline having a first bore portion of smaller diameter and a second bore portion of greater diameter, and said piston assembly is of stepped outline having a first portion of smaller diameter working in said first bore portion, and a second portion of greater diameter working in said second bore portion which also defines said pressure space, the piston assembly being provided with restricted passage means providing communication at all times between said pressure space and a chamber defined in said bore between steps at the changes in diameter between said first and second bore portions and said first and second portions of said piston assembly.

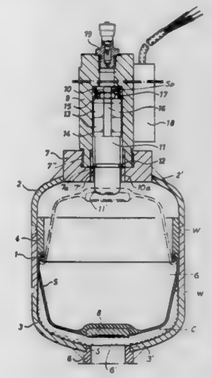
3,929,163

PRESSURE VESSEL WITH SENSING DEVICE

Otmar Schön, Scheidterberg, Germany, assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Filed July 10, 1974, Ser. No. 486,945
Claims priority, application Germany, July 20, 1973, 2336965
Int. Cl.² F16L *55/04*
U.S. Cl. 138—30 **5 Claims**

1. A pressure vessel comprising a rigid container having a gas port and an oil port and a flexible partition intervening between said ports and defining a gas chamber and a liquid chamber, a magnetic switch positioned exteriorly of said container, a permanent magnet slidably mounted on said container, means protruding into said gas chamber operatively connected to said permanent magnet to move the latter, said



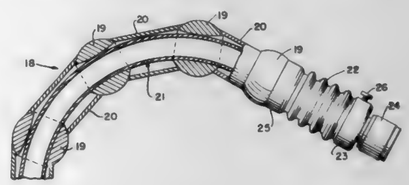
means being in the path of movement of said flexible partition, said magnetic switch being substantially aligned with said permanent magnet to be actuated upon movement of the latter when the volume of gas in said gas chamber has fallen below a predetermined amount.

3,929,164

FLUID TRANSFER UMBILICAL ASSEMBLY FOR USE IN ZERO GRAVITY ENVIRONMENT

Harold J. Richter, Rte. 3, Box 55, Evergreen, Colo. 80439

Division of Ser. No. 118,694, Feb. 25, 1971, abandoned. This application Sept. 8, 1972, Ser. No. 287,342
Int. Cl. F16l *11/12*
U.S. Cl. 138—120 **1 Claim**



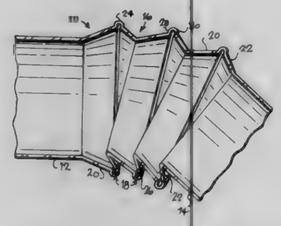
1. A fluid transfer umbilical assembly for use in a zero gravity environment comprising, hose means, means positioned within and operatively connected to said hose means for containing the end forces developed during pressurization of the umbilical, thereby preventing longitudinal growth of the umbilical, whereby the umbilical is maintained flexible to facilitate the maneuverability of an astronaut to whom the line is attached; a plurality of spherical members and tubular sockets alternately positioned on the hose means and slidably supported thereon, a bellows having one end fixedly mounted on the umbilical supply line, the opposite end of the bellows being slidably mounted on the umbilical supply line and adjacent one of the spherical members, and valve means connected to the bellows for controlling the flow of pressurized fluid from the umbilical supply line to the bellows, whereby when the valve means is opened pressurized fluid is allowed to flow into the bellows thereby expanding the bellows to slide said opposite end of the bellows axially toward said one spherical member which, in turn, transmits the rigidifying force to the remaining spherical members and tubular sockets, whereby the hose means may be selectively rigidified to

thereby maintain the umbilical assembly at a fixed attitude once a desired position at a work station has been attained.

3,929,165
TUBULAR HINGE ASSEMBLY

Edwin J. Diebolt, Muncie, and Roger A. Hendrickson, Indianapolis, both of India, assignors to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 207,069, Dec. 13, 1971, abandoned. This application Oct. 17, 1974, Ser. No. 515,459
Int. Cl.² F16L 11/06
U.S. Cl. 138—121 **6 Claims**



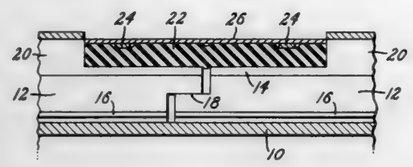
1. A tubular hinge assembly having relatively thick walls for inclusion between two ends of a relatively thick-walled conduit so as to permit the ends of the conduit to be moved with respect to one another between a plurality of stable positions, said hinge assembly comprising:
a first hollow frusto-conical wall section having a major diameter at one end, a minor diameter at its other end; a first wall length dimension, and a wall thickness in excess of about 0.008 inch;
a second hollow frusto-conical wall section having a major diameter at one end, a minor diameter at its other end, a second wall length dimension, and a wall thickness in excess of about 0.008 inch;
said major diameters being substantially equal;
said minor diameters being substantially equal;
said first wall length dimension being greater than said second wall length dimension;
an annular, hollow, beaded hinge element disposed between and circumferentially connecting said major diameters and defining a hollow, annular circumferential channel on the radially inner side of said hinge element;
said hinge element having a curved, partially closed cross-sectional shape with a center of curvature located inwardly thereof; and
at least one of said wall sections being movable about an imaginary annular axis substantially within the hollow annular structure of said hinge element between at least two alternate stable positions;
said annular, hollow, beaded hinge element thereby facilitating the positioning of the conduit ends with respect to each other between a plurality of stable positions by defining and providing said annular axis and, at the same time, providing space in the hollow portion thereof for receiving at least part of the thickness of the movable wall section when in at least one of its stable positions.

3,929,166
PIPELINE THERMAL INSULATION

Robert J. Westerheid, Seabrook, Tex., assignor to General Electric Company, Fairfield, Conn.

Filed Aug. 9, 1973, Ser. No. 387,206
Int. Cl.² F16L 9/14, 9/22
U.S. Cl. 138—149 **4 Claims**

1. Improved insulation for application to a pipe carrying hot fluids in an environment which is cool relative to the fluids comprising:
preformed foamed insulation in a longitudinal section forming a segment of an annulus;
said annulus having an inner diameter sufficiently larger than the outer diameter of the pipe to permit free relative axial movement between the pipe and the insulation;
a segmented sheet metal cover to which said insulation is bonded; and

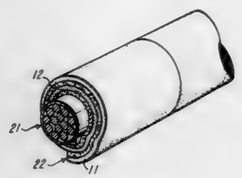


friction reducing means between the inner surface of said segment and the outer surface of said pipe to eliminate shear forces in the foamed insulation when the relative movement occurs, whereby friction between said pipe and said segment is reduced.

3,929,167
INSULATION DEVICE FOR PROTECTION AGAINST HEAT

Bruce T. Bickel, Rte. 3, Box 21, Brookville, Ohio 45309

Filed Oct. 29, 1974, Ser. No. 518,504
Int. Cl.² F16L 59/02, 9/14
U.S. Cl. 138—151 **18 Claims**



1. An insulating device comprising a plurality of layers of insulation material, said layers of insulation material comprising a minimum of one layer of multi air cell non combustible material consisting of high temperature electronic needled fiberglass or ceramic fiber and one layer of high temperature asbestos mill board with any additional layers comprising layers of said multi air cell non combustible material and asbestos mill board configured in an alternating sequence, said layers of said multi air cell non combustible material and said asbestos mill board further configured in a variable number of layers and thicknesses per layer to provide insulation protection in conformance with a varying range of high temperatures.

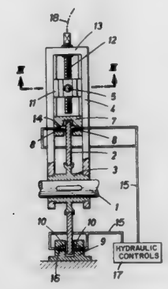
3,929,168
TAKE-OFF REGULATOR

Walther Filter, Langenhagen, and Claus Filter, Rethem, Aller, both of Germany, assignors to Vereinigte Osterreichische Eisen-und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria and Etablissement Wanderfield & Co., Schaan, Liechtenstein

Filed Jan. 25, 1974, Ser. No. 436,456
Claims priority, application Austria, Feb. 8, 1973, 1150/73
Int. Cl.² D03D 49/06, 49/20
U.S. Cl. 139—99 **4 Claims**

1. A weaving machine comprising:
a. a shaft having an axis and mounted for angular movement about said axis;

b. a cloth take-up mechanism and a warp let-off mechanism, one of said mechanisms being drivingly connected to said shaft for control of said one mechanism by said shaft;
c. a disc member secured to said shaft for joint angular movement about said axis and having two radial faces;
d. an operating member mounted for pivoting movement about said axis relative to said disc member;
e. actuating means for alternatively pivoting said operating member forward and backward about said axis;

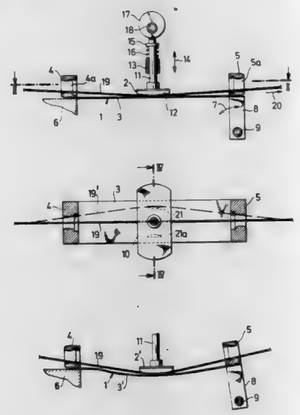


f. first clamping jaw means mounted on said operating member and engageable with said radial faces for coupling said disc member to said operating member for joint angular movement;
g. second clamping jaw means engageable with said radial faces for preventing angular movement of said disc member; and
h. control means for alternatively operating said first and second jaw means during standstill of said operating member between forward and backward pivoting movements of the operating member and for thereby rotating said shaft in steps.

3,929,169
THREAD BRAKE

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 2, 1974, Ser. No. 457,235
Claims priority, application Switzerland, Apr. 3, 1973, 4723/73
Int. Cl.² D03D 47/34
U.S. Cl. 139—122 H **10 Claims**

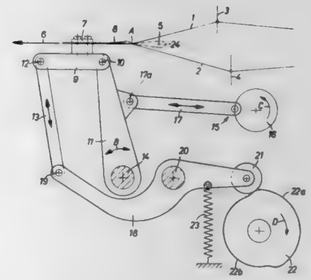


1. A thread brake comprising a pair of brake members for movement against each other for braking a thread passing longitudinally therebetween in a predetermined path, each brake member having a smooth braking surface opposite each other to define said path therebetween, and an indentation in at least one of said braking surfaces disposed in a laterally spaced parallel plane to said path, said indentation being sized to receive a braked thread therein to retain the thread within the limits of said brake members.

3,929,170
METHOD AND APPARATUS FOR MOVING A KNITTING NEEDLE OR THE LIKE OF A SHUTTLELESS LOOM

Jakob Müller, Frick, Switzerland, assignor to Ingenieurburo fur Maschinebau Jakob Müller, Frick, Switzerland

Filed Jan. 21, 1974, Ser. No. 434,991
Claims priority, application Switzerland, Jan. 24, 1973, 984/73
Int. Cl.² D03D 47/42
U.S. Cl. 139—124 A **10 Claims**



1. An apparatus for moving a knitting needle having a hook of a shuttleless loom, said apparatus comprising at least two drive mechanisms for imparting movement to the knitting needle, each of said drive mechanisms being adjutable independently of the remaining drive mechanisms for changing the movement imparted by it to the knitting needle, the hook of the knitting needle being movable by means of a first drive mechanism essentially in the direction of the selvage of the woven article and by means of a second drive mechanism in a direction which is essentially perpendicular to such selvage, said first and second drive mechanisms being constituted by said at least two drive mechanisms, said first drive mechanism including a lever, a stationary shaft, said lever being rotatably mounted about said stationary shaft, and first drive means connected to said lever for moving said lever to-and-fro between two positions, a coupler having means for carrying the knitting needle, said lever being hingedly connected with said coupler adjacent one end of said coupler, said second drive mechanism including a substantially rod-shaped connection element connected with said coupler adjacent an opposite end thereof, second drive means connected to said connection element for moving said connection element to-and-fro between two positions in its lengthwise direction to thereby pivot said coupler about its hinged connection with said lever.

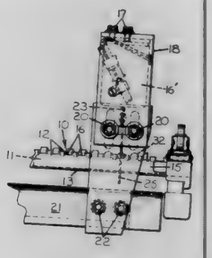
3,929,171
FAIL SAFE STOP MOTION FOR LOOMS

Umberto V. Tosti, Milford, and Richard L. Childs, Mendon, both of Mass., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Nov. 27, 1974, Ser. No. 527,597
Int. Cl.² D03D 51/00, 51/20
U.S. Cl. 139—336 **3 Claims**

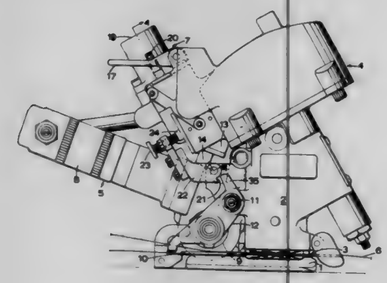
1. A fail safe operating system for looms having a mechanical warp stop motion of the sliding feeler bar type for effecting stoppage of loom operation upon breakage of a warp yarn and the release of a drop wire suspended thereby to the sliding feeler bar, said system comprising:

a. drive means for operating the loom;
b. circuit means operably connected to a source of electricity and to said drive means for effecting operation thereof;
c. solenoid means connected to said circuit means, said solenoid means having a reciprocable armature held in a



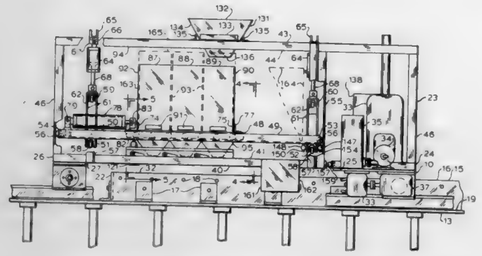
first position when said solenoid means is energized and movable to a second position upon the deenergizing of said solenoid means; and
d. means operated by said armature for actuating the warp stop motion upon movement of said reciprocable armature to said second position.

3,929,172
PACKAGE STRAPPING TOOL
Robert David Sansum, Harpenden, England, assignor to Gerrard Industries Limited, Rotherham, England
Filed June 5, 1974, Ser. No. 476,446
Claims priority, application United Kingdom, May 31, 1973, 26076/73
Int. Cl.² B21F 9/02
U.S. Cl. 140—93.2 **9 Claims**



1. A strapping tool of the kind comprising jointing means for securing together the overlapping ends of a loop of strapping which has been tightened around a package and tensioning means including a rotary dog and a support opposite the rotary dog, in use at least one end of a loop of strapping being disposed between the rotary dog and the support, the rotary dog being urged into frictional engagement with the face of said one end of the loop of strapping and rotated to tension the loop wherein the strapping tool further comprises sensing means responsive to bodily movement of the rotary dog having at least a component in a direction normal to the strapping and towards the support, for initiating or permitting the making of the joint by the jointing means when such movement exceeds a pre-determined amount.

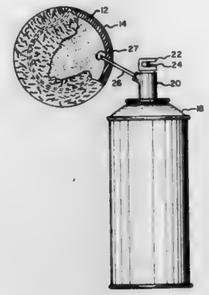
3,929,173
MATERIALS DISPENSING APPARATUS
Curtis Mauroner, 627 W. Concord, Orlando, Fla. 32801
Filed Mar. 22, 1974, Ser. No. 453,684
Int. Cl.² B65B 3/06
U.S. Cl. 141—74 **8 Claims**



1. The combination comprising an elongated trackway having spaced apart parallel rails, a plurality of open top horizontally arranged forms that are located in the space between said rails and spaced apart along the trackway for use in casting vertical wall sections from cementitious materials, and an apparatus for storing and dispensing said materials into said forms, said apparatus comprising a rigid body frame having a bottom portion and a top portion which is vertically spaced from said bottom portion, wheels rotatably mounted on said rails and supporting said body frame over the space therebetween, a rigid frame mounted on said body frame and vertically movable between the top and bottom portions thereof, a carriage supported on the vertically movable frame, said carriage being horizontally movable on said vertically movable frame and in parallel with said rails, a plurality of elongated bins arranged transversely of the trackway and mounted on and movable with said carriage, each of said bins having an open top portion for receiving cementitious material to be stored therein, an elongated transversely arranged narrow bottom opening for discharging the stored cementitious material into said forms, and a gate movable between open and closed positions with respect to the bottom opening of the bin, said apparatus further comprising manually controllable powered means secured to the body frame for vertically moving the vertically movable frame, manually controllable powered means secured to the vertically movable frame for horizontally moving said carriage on said vertically movable frame, and manually controllable powered means supported by and movable with the carriage for moving the gate between the open and closed positions therefor.

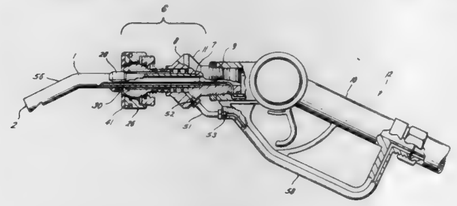
3,929,174
MEANS FOR REJUVENATING TENNIS BALLS AND THE LIKE
Luis L. Isnardi, Jr., 19400 Sorenson Ave., No. 141, Cupertino, Calif. 95014
Filed Nov. 9, 1973, Ser. No. 414,460
Int. Cl.² B65B 3/10
U.S. Cl. 141—329 **3 Claims**

1. Apparatus for pressurizing and maintaining the air pressure within the interior of a tennis ball comprising:
a. a sealed container;
b. a sealant contained within said container;
c. a liquid contained within said container which when exposed to reduced pressures is converted into a pressurized gaseous state;
d. means for creating an aerosol composed of said gas and said sealant, said means including a valve assembly forming a part of said container for lowering the pressure within said container to cause said liquid to convert into the pressurized gaseous state;
e. a conduit forming a part of said container for providing an outlet for said aerosol, said conduit having a sharpened tip to enable penetration thereof within the interior of a tennis ball to enable the aerosol to enter within the tennis



ball to increase the pressure therein, and whereby said sealant acts to seal both the hole caused by said tip when removed as well as other holes in the tennis ball walls.

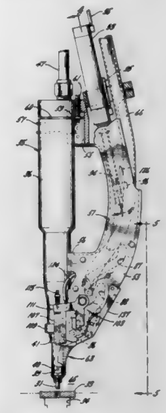
3,929,175
VAPOR RECOVERY FUEL NOZZLE APPARATUS
Malcolm G. Coone, Houston, Tex., assignor to Lynes, Inc., Houston, Tex.
Filed June 28, 1974, Ser. No. 484,133
Int. Cl.² B67D 5/37; F16L 27/06
U.S. Cl. 141—392 **18 Claims**



1. In a nozzle apparatus for use in transmitting fluid hydrocarbons from a holding tank to a receiving tank having a tubular receiving member, and for recovery of fumes resulting from said transmission, the improvement which comprises:
A. An elongated tubular member for discharge therethrough of fluid hydrocarbons;
B. Means on the elongated tubular member for positioning the apparatus within the tubular receiving member of the receiving tank;
C. Ball means on the elongated tubular member for rotational movement relative to the elongated tubular member;
D. Means affixed to the ball means for sealing engagement of the apparatus to the tubular receiving member; and
E. Means for transmission of fumes within the tubular receiving member through the nozzle apparatus.

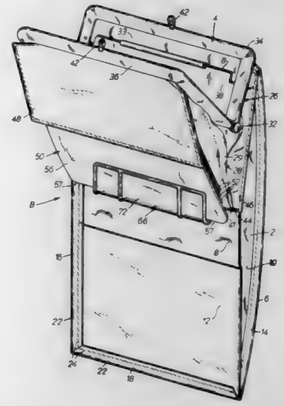
3,929,176
MACHINE FOR AUTOMATICALLY DRIVING THREADED FASTENERS
Paul H. Dixon, Belvidere, Ill., assignor to Babette Dixon, Trustee, Belvidere, Ill.
Filed Oct. 25, 1974, Ser. No. 517,920
Int. Cl.² B25B 23/10
U.S. Cl. 144—32 **22 Claims**

1. A machine for automatically driving a threaded fastener into a workpiece and comprising a power-rotated fastener driver, a finder telescoped over said driver and having an end portion sized to telescope over a fastener, means for supporting said finder for movement between extended and retracted positions along said driver, means for urging said finder to and for normally keeping said finder in said extended position, mechanism for delivering a fastener to a driving position in which the fastener is in line with said end portion of said finder, and means associated with said mechanism for causing



said finder to move from its extended position and toward its retracted position as said fastener is moved toward said driving position and then for causing said finder to move back to its extended position and into telescoping relation with said fastener after the fastener has been delivered to said driving position.

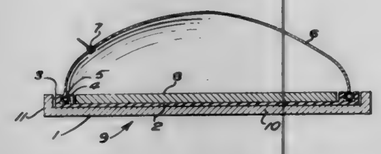
3,929,177
PASS CASE
John P. Reis, West Bend, Wis., assignor to Amity Leather Products Co., West Bend, Wis.
Filed Apr. 28, 1975, Ser. No. 572,530
Int. Cl.² A45C 1/08, 11/18
U.S. Cl. 150—35 **14 Claims**



1. In combination a flexible wall including two opposed ends, a coin purse attached to said flexible wall adjacent one of said ends, said coin purse having an openable end and a closed end, a pass case secured to said coin purse, said pass case including at least one folded flexible plastic wing releasably connected in hinged relation to the open end of said coin purse, a flexible flap secured to said coin purse adjacent said openable end and covering said flexible plastic wing, and a restraining means secured to said flexible wall adjacent to the closed end of said coin purse releasably restraining said flexi-

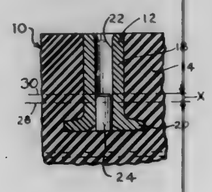
ble flap against said flexible wings and securing said pass case against said coin purse.

3,929,178
FLEXIBLE CONTAINERS
Christopher Daniel Dowling Hickey, 5 Heathside, Hinchley Wood, Esher, Surrey, England
Filed May 21, 1974, Ser. No. 472,037
Claims priority, application United Kingdom, May 24, 1973, 24802/73; Mar. 28, 1974, 13786/74
Int. Cl.² B65D *51/16*
U.S. Cl. 150—52 K **14 Claims**



1. A flexible container comprising a flexible, impermeable base member which includes an upstanding part having a continuous channel encircling an area of the base member, a load-bearing rigid member fitting within said upstanding part, a flexible impermeable cover with sealing means adapted to co-operate with the channel to provide a fluidtight seal therewith sealing the perimeter of the cover to the base member and valve means controlling an outlet for air from the interior of the container whereby suction can be applied to and maintained within the said interior.

3,929,179
INDICATOR DEVICE FOR INDICATING TREAD WEAR AND TIRE INCORPORATING THE INDICATOR
Edwin W. Hines, Slippery Rock, Pa., assignor to Kennametal Inc., Latrobe, Pa.
Filed Dec. 5, 1973, Ser. No. 421,941
Int. Cl.² B60C *19/10*
U.S. Cl. 152—330 A **12 Claims**



8. In combination a vehicle tire having a tread portion, and tread wear indicator means for indicating when the tread portion has worn down a predetermined amount, said tread wear indicator means comprising at least one rod-like body having a flange near one end forming a head, and a hard wear resistant element in said body near said on end, said body being formed of material which will wear off at a rate not less than the rate of wear of the tread and said wear resistant element having a wear rate substantially less than the wear rate of treads, said rod-like body imbedded in a blind hole of said tread portion at at least one circumferential region thereof with the head near the bottom of the hole and the other end of the body substantially flush with the tread surface and said wear resistant element having a radially outwardly facing axial region which is disposed near that level in the tread portion that it is desired to indicate a worn condition of the tread portion, said region of said rod-like body when exposed by the tread portion wearing down to the said level providing a discernable indication, the indication provided by said wear resistant element comprising an indication which is audible when the tire rolls on a roadway.

3,929,180
TYRES
Shoji Kawase, Iwakuni; Kenji Maeda, Kobe; Shiro Kumakawa, and Takatoshi Kuratsuji, both of Iwakuni, all of Japan, assignors to Teijin Limited, Osaka, Japan
Filed Sept. 16, 1974, Ser. No. 506,506
Claims priority, application Japan, Sept. 20, 1973, 48-105409
Int. Cl.² B60C *1/00*
U.S. Cl. 152—359 **5 Claims**

1. A reinforced tyre which is characterized in that its carcass material consists of a cord composed substantially of polyethylene 2,6-naphthalate, said cord, as set in a tyre, having a twisting coefficient, K-value, of 1600 to 3300, a modulus under 2% extension of 40 – 160 g/denier, and a dry heat shrinkage of no greater than 3% when exposed to the temperature of 150°C. for 30 minutes, with the definition of K as below $K = T\sqrt{D}$
in wnich
T denotes the number of folded twist per 10 cm of the cord, and
D denotes the total denier of the filaments constituting the cord.

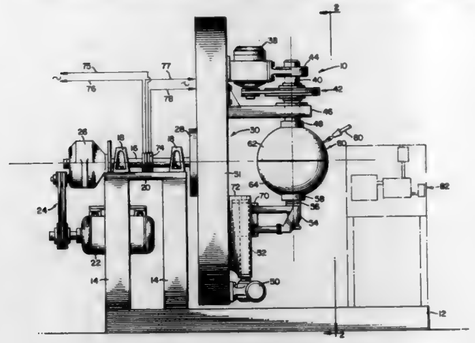
3,929,181
METHOD FOR PRODUCING ALLOYS HAVING WEAR-RESISTANT SURFACES
Horst Beyer, and Hans-Jürgen Veutgen, both of Burscheid, Germany, assignors to Goetzewerke, Burscheid, Germany
Filed July 5, 1973, Ser. No. 376,297
Claims priority, application Germany, July 6, 1972, 2233148
Int. Cl.² B22D *27/18*
U.S. Cl. 164—58 **14 Claims**

1. Process for producing materials with wear-resistant surfaces, comprising forming a melt of a matrix material and at least one substance which forms at least one hard solid phase having a density other than that of the matrix material and which separates from the basic matrix material during hardening, casting the resulting melt and subjecting the molten casting to mass acceleration during the hardening process.

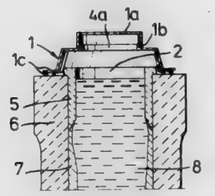
3,929,182
METHOD OF CENTRIFUGALLY CASTING HOLLOW SPHERES
Juan Jose Amado, Jr., Aptdo. 4241, Panama 5, R.P., Panama
Division of Ser. No. 412,614, Nov. 5, 1973, Pat. No. 3,856,452. This application Sept. 16, 1974, Ser. No. 506,443
Int. Cl.² B22D *13/00*
U.S. Cl. 164—114 **4 Claims**

1. A method of centrigually casting hollow spheres from molten metal comprising the steps of
a. disposing a rotatable platform means for rotation by a first drive shaft about a first axis,
b. mounting a second drive shaft parallel to the plane of said rotatable platform for rotation about a second axis which is perpendicular to said first axis and in a common plane therewith,
c. providing a pair of mold parts to form a separable mold for the reception of molten metal,
d. partially filling said separable mold with a molten metal,
e. clamping said mold with a pair of clamping members at least one of which may be advanced toward and away from said mold parts so as to clamp said mold with its center of rotation at the intersection of said first and second axes,

f. and rotating said mold about said two axes of rotation and gradually solidifying said molten metal under the influence of the centrifugal rotational forces established to form a hollow sphere.



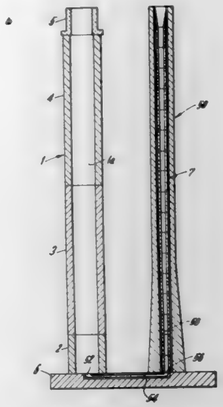
3,929,183
METHOD FOR SEALED SYSTEM OF HOT TOPS, INGOT MOULDS OR A COMBINATION OF INGOT MOULD AND HOT TOP AND AN ARRANGEMENT FOR SAID SEALED SYSTEM
Hannes Vallak, Geneva, Switzerland, assignor to Enn Vallak, Geneva, Switzerland
Filed June 25, 1974, Ser. No. 482,882
Claims priority, application Sweden, July 6, 1973, 7309558
Int. Cl.² B22D *7/10, 27/06*
U.S. Cl. 164—123 **15 Claims**



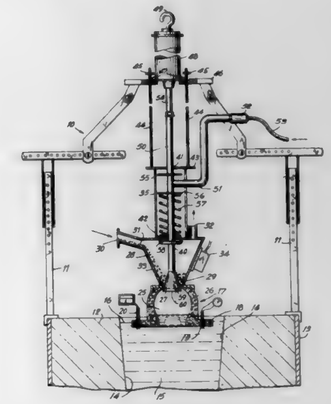
1. An improved method of casting metals in an ingot mould comprising the steps of enclosing a heat radiation retarding material in a sealed enclosure, teeming molten metal into said mould through an open end of said mould, positioning said sealed enclosure and material within said mould, closing said open end of said mould, releasing said material from said enclosure onto the molten metal while said mould is closed thereby ensuring that the heat radiation retarding material is not dispensed in the air surrounding the exterior of the mould.

3,929,184
APPARATUS FOR PRODUCING BLANK METAL INGOTS OF UNIFORM CROSS SECTION AND IN PARTICULAR STEEL INGOTS
Guido Reuter, Dusseldorf, and Hans Robertz, Monchengladbach, both of Germany, assignors to Rheinstahl Aktiengesellschaft, Germany
Division of Ser. No. 179,007, Sept. 9, 1971, abandoned. This application Oct. 15, 1973, Ser. No. 406,191
Int. Cl.² B22D *41/08*
U.S. Cl. 164—309 **10 Claims**

1. A casting apparatus comprising a flat mold casting plate having a pouring passage defined therethrough, and a vertically elongated mold located over said casting plate overlying said pouring passage and being made up of a plurality of tubular sections vertically interfitting and being of a length of at least 2 meters and a diameter over 250 mm, and filling passage means connected into said pouring passage on said casting plate for filling said mold through said pouring passage and upwardly into the interior of said mold.



3,929,185
APPARATUS FOR TREATING CAST MATERIALS IN THE MOLTEN STATE
Liviu B. Wiener, 105-40 62nd Road, Forest Hills, N.Y. 11375
Division of Ser. No. 381,510, July 23, 1973, Pat. No. 3,882,922. This application Jan. 8, 1975, Ser. No. 539,274
Int. Cl.² B22D *7/10, 27/00*
U.S. Cl. 164—338 **4 Claims**



1. An apparatus for treating a molten metal cast body comprising:
a. reservoir means for storing a prescribed amount of reactant to be introduced below the surface of said molten metal, said reservoir means being provided with a bottom opening and inlet and outlet ducts for introducing said reactant;
b. a refractory plunger adapted to be affixed beneath said reservoir means, said plunger including a reaction chamber having an upper opening adapted to cooperate with said reservoir means bottom opening and adapted to be immersed in molten metal;
c. an injection plunger slidably mounted for vertical movement within said reservoir means and said reaction cham-

ber, said injection plunger being hollow and having upper, middle and lower portions, said upper portion being provided with means adapted to introduce gas under pressure to said molten metal, said middle portion being provided with a circular shaped flange adapted to seal said upper opening when said injection plunger is lowered into said molten metal, said lower portion being provided with a frusto conical head adapted to seal said upper opening when said head is in its uppermost position and adapted to release said reactant when lowered therefrom, said head being provided with a porous opening therein adapted to be inserted beneath the surface of said molten metal and bubble said gas therethrough; and

d. means for mounting and lowering said refractory plunger to the surface of said molten metal and said injection plunger beneath the surface of said molten metal.

3,929,186

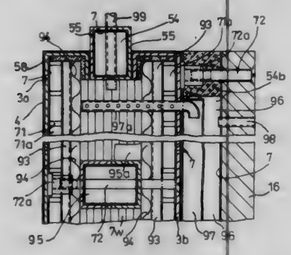
THERMALLY INSULATING WALL UNITS

Otto Alfred Becker, 59 Robert Koch Strasse, D-6600 Saarbrucken, Germany

Continuation of Ser. No. 37,068, May 13, 1970, abandoned. This application Feb. 20, 1974, Ser. No. 444,003

Int. Cl.² F24H *9/08*

U.S. Cl. 165—49 **12 Claims**



1. An assembly of wall units for providing thermal and acoustic insulation, each of said wall units comprising at least one outer panel and one inner panel connected to the outer panel, said panels forming a cavity therebetween, the cavity being air-tightly closed, shaped insulating and spacing means disposed in the cavity, said insulating and spacing means being formed of relatively stiff material so as to transversely rigidify the wall unit between said outer and inner panels, means for circulating a dry gas through said wall units, said means comprising a gas supply line communicating with each of said cavities, said supply lines being connected to a common supply line for supplying gas to all of said cavities, a gas take-off line in each cavity spaced from said supply line, said take-off lines being connected to a common take-off line for removing gas simultaneously from said cavities, a volume compensating device for controlling the volume of gas in said wall units, and pump means for recirculating the gas from said take-off lines to said supply lines.

3,929,187

VIBRATION RESISTANT HEAT EXCHANGER FOR INTERNAL COMBUSTION ENGINES

Edwin E. Hurner, 2605 S. Rivershore Drive, Moorhead, Minn. 56560

Filed Dec. 23, 1974, Ser. No. 536,034

Int. Cl.² F02M *31/02*

U.S. Cl. 165—52 **6 Claims**

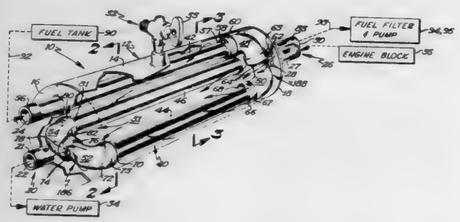
1. A vibration resistant heat exchanger for internal combustion engines to preheat fuel flowing between a fuel tank and the engine and usable with a supply of flowing, heated coolant comprising:

a fluid-tight coolant tank including an elongated cylindrical sidewall and first and second endwalls, an endwall being positioned at each end of said cylindrical sidewall and fixed to said sidewall in sealed relationship therewith;

each of said endwalls having a fuel port and a coolant port passing therethrough, said coolant ports connectable with the supply of flowing heated coolant, permitting the heated coolant to flow through said coolant tank;

a fuel heating conduit within said coolant tank, extending between said fuel ports and connectable in fluid flow relationship with the fuel tank and the engine, said heating conduit including first, second and third fuel tubes positioned within said coolant tank and spaced from said sidewall;

said first tube having an end communicating with one of said fuel ports in sealed relationship therewith and said third tube having an end communicating with the remaining said fuel port in sealed relationship with the remaining said fuel port;



said heating conduit further including a pair of generally U-shaped couplers, a coupler being positioned adjacent each endwall, one of said couplers connecting the remaining end of said first tube in fluid flow relationship with an end of said second tube, and the remaining coupler connecting the remaining end of said second tube in fluid flow relationship with the remaining end of said third tube to permit continuous flow of fuel through said first, second and third tubes; and

each said coupler bearing against said sidewall and against said adjacent endwall and cooperating with one another to wedge said heating conduit within said coolant tank to prevent movement of said heating conduit relative to said coolant tank, thereby stopping vibration and loosening of said fuel heating conduit within said coolant tank.

3,929,188

HEAT EXCHANGER INSTALLATION FOR A CLOSED GAS CIRCULATORY SYSTEM, SUCH AS A THERMAL POWER PLANT, FOR EXAMPLE

Dieter Brinkmann, Erlangen; Wolfgang Simon, Kersbach, and Heinrich Zimon, Hemhofen, all of Germany, assignors to Kraftwerke Union Aktiengesellschaft, Mulheim (Ruhr), Germany

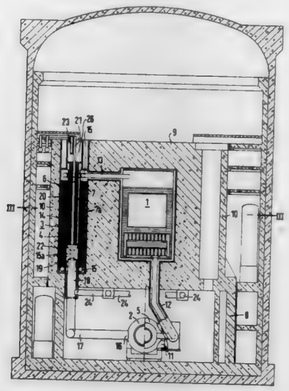
Filed June 3, 1974, Ser. No. 475,837

Claims priority, application Germany, June 5, 1973, 2328556

Int. Cl. A23c *3/02*

U.S. Cl. 165—66 **5 Claims**

1. Heat exchanger installation for assembly in a closed gas circulatory system which includes a heat consumer and a heat source located upstream of said heat consumer in flow direction of gas in said circulatory system, comprising a recuperative heat exchanger, a precooling heat exchanger, and means for conducting gas, that has been cooled in the heat consumer, through said recuperative heat exchanger for preheating the gas to said precooling heat exchanger for removing heat from the circulatory system, said precooling heat exchanger for removing heat from the circulatory system being connected to the heat source through a compressor and through said recuperative heat exchanger for preheating the gas, one of said heat exchangers having tubes disposed around a centrally located space, and the other of said heat exchangers having tubes projecting into said centrally located space, supply and discharge lines for heat exchanging working medium traversing the tubes of said heat exchangers being located at one end of each of said heat exchangers, a supply inlet for heated waste gas delivered from the heat source and a gas discharge outlet both being located at the other ends, respectively, of said



recuperative heat exchanger for preheating the gas and of said precooling heat exchanger for removing heat from the circulatory system, and flowthrough opening means for the gas located between said centrally located space and the space surrounding the same at said other ends of said heat exchangers at which said waste gas supply inlet and said gas discharge outlet are located.

3,929,189

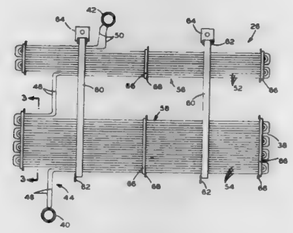
HEAT EXCHANGER STRUCTURE

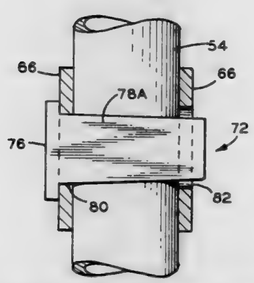
Andrew P. Lecon, Akron, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Mar. 20, 1974, Ser. No. 452,859

Int. Cl.² F28F *7/00*

U.S. Cl. 165—69 **6 Claims**





1. A tubular heat exchanger disposed within a passageway, means for conveying a heated fluid stream over the heat exchanger and means for passing a fluid to be heated through the heat exchanger, said heat exchanger having at least one bank of spaced tube rows arranged across the fluid stream in side-by-side parallel relation, each of the rows being formed of substantially coplanar return bend tube segments spaced in the direction of flow of the fluid stream, and means for suppressing vibration of the heat exchanger, said last named means including rigidly connected first and second intersecting plate members, wherein first plate members are paired to contiguously straddle each of at least some of said rows, and second plate members are spaced from and extend between return bend tube segments of said straddled rows, the first plate members being slotted to accommodate the substantially perpendicular extension therethrough of intersecting second plate members, and said second plate members being press fit into respective slots of at least one of the first plate members intersecting therewith.

3,929,190

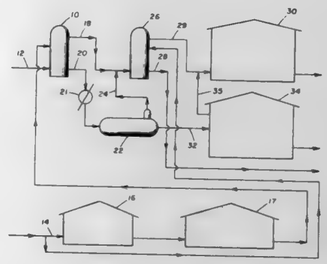
SECONDARY OIL RECOVERY BY WATERFLOODING WITH EXTRACTED PETROLEUM ACIDS

Harry L. Chang; Evin L. Cook, and Ralph F. Burdyn, all of Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 5, 1974, Ser. No. 521,009

Int. Cl.² E21B *43/22*

U.S. Cl. 166—274 **10 Claims**



1. In the recovery of oil from a subterranean oil reservoir penetrated by spaced injection and production systems, the method comprising:

a. contacting a petroleum oil with an aqueous alkaline solution to extract neutralized organic acids from said oil in said aqueous medium,

b. separating the resulting aqueous solution of neutralized organic acids from said oil,

c. injecting said aqueous solution of neutralized organic acids into said reservoir via said injection system,

d. thereafter introducing into said reservoir via said injection system an aqueous flooding medium to displace oil to said production system, and

e. recovering oil from said production system.

3,929,191

METHOD FOR TREATING SUBTERRANEAN FORMATIONS

John Wayne Graham; Thomas Wayne Muecke, and Claude Everett Cooke, Jr., all of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

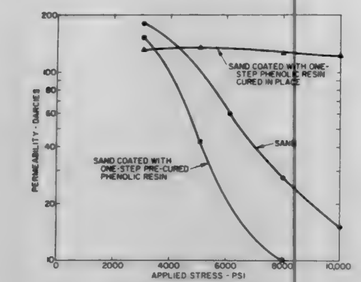
Continuation-in-part of Ser. No. 497,797, Aug. 15, 1974, abandoned. This application Sept. 25, 1974, Ser. No. 509,155

Int. Cl.² E21B *43/02*, *43/26*

U.S. Cl. 166—276 **36 Claims**

1. A method of treating a subterranean formation which comprises placing in or adjacent said formation particulate

material coated with a fusible, one-step, resole-type phenolic resin and thereafter causing said resin to fuse and cure to an



infusible state to thereby bond the particulate material together.

3,929,192
PROCESS FOR TREATMENT OF WELLS WITH NITROGEN TETROXIDE

Robert H. Friedman, Houston, Tex., assignor to Getty Oil Company, Los Angeles, Calif.

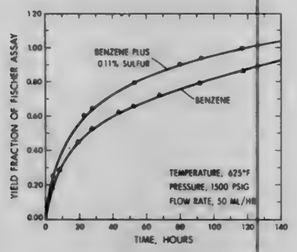
Filed Mar. 11, 1974, Ser. No. 449,770
Int. Cl.² E21B *43/27*
U.S. Cl. 166—300 **6 Claims**

1. A process for chemical treatment of wells comprising:
providing an acidizing composition of nitrogen tetroxide;
injecting said composition through the well bore into the subterranean formation surrounding the well;
said composition reacting with the water in situ in said formation to form at least a substantial amount of nitric acid, said acid being effective to react with formation materials to increase the permeability of said formation.

3,929,193
RECOVERY OF ORGANIC MATTER FROM ORGANIC MINERAL-CONTAINING DEPOSITS

Roy B. Duke, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 380,783, Aug. 9, 1973. This application Sept. 23, 1974, Ser. No. 508,585
Int. Cl.² E21B *43/24*
U.S. Cl. 166—303 **9 Claims**



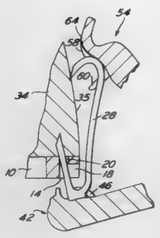
Extraction of oil shale with benzene and sulfur.

1. A process for the recovery of organic matter from organic mineral-containing deposits selected from the groups consisting of tar sands, oil shale, lignite, torbanite, coorongite and kukersite, by contacting the organic mineral-containing deposits at a temperature of from about 200 to about 1000°F with an extraction fluid and elemental sulfur, said elemental sulfur being present in the range of from about 0.001 to about 0.5 parts by weight of sulfur per part by weight of extraction fluid.

3,929,194
HORSESHOEING METHOD AND NAIL

Mark Warfel, R.D. 2, Halifax, Pa. 17032

Filed Aug. 8, 1973, Ser. No. 387,825
Int. Cl.² A01L *7/10*
U.S. Cl. 168—23 **4 Claims**

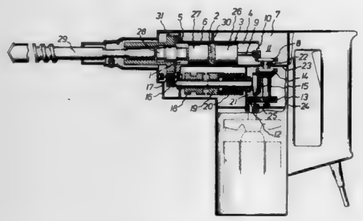


1. A method of applying shoes to hoofed animals without entering the life of the animal comprising the step of placing a shoe so that it overlies the bottom surface of a hoof, and coupling the shoe to the hoof by nails having first and second prongs without hammering the nails, said coupling step including introducing one prong of a nail through a hole in the shoe while the other prong on the nail is pointed toward a side face of the hoof, and then simultaneously applying pressure to both prongs to enter into the hoof and secure the shoe to the hoof.

3,929,195
HAMMER DRILL

Erwin Stiltz, Winnenden; Boris Langhoff, Backnang, and Manfred Spieth, Bietigheim, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Filed Aug. 26, 1974, Ser. No. 500,733
Claims priority, application Germany, Aug. 25, 1973, 2343014
Int. Cl.² B23B *45/00*; B25D *11/00*
U.S. Cl. 173—109 **8 Claims**



1. In a hammer drill having a drive motor; a gearing driven by the drive motor; housing means defining a first chamber for accommodating the gearing; a cylinder defining an inner cylinder chamber; a work piston disposed in the cylinder chamber and connected with the gearing for effecting a reciprocation thereof in the cylinder; a striker body freely slidable in the cylinder chamber and driven by the work piston; a spindle sleeve connected to the gearing to be rotated thereby; a tool bit inserted in the spindle sleeve and operatively connected with the striker body; housing means defining a second chamber adjoining the first chamber and at least partially surrounding the cylinder; and means defining ports in the cylinder for maintaining communication between the cylinder chamber and the second chamber; the improvement comprising means for maintaining a permanent, lubricant-tight isolation of said second chamber and said cylinder chamber from said first chamber.

3,929,196
ICE AUGER

Uuno Rantanen, Rauhankatu 2-4 A 5, Heinola, Finland

Filed Aug. 16, 1974, Ser. No. 498,042
Claims priority, application Finland, Apr. 26, 1974, 1293/74
Int. Cl.² E25C *5/04*
U.S. Cl. 175—18 **3 Claims**

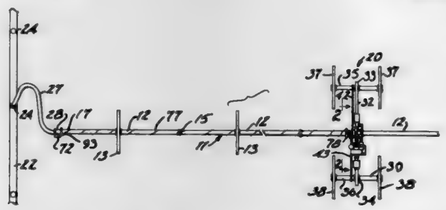


1. Improvement in an ice auger, comprising an axially extending body tube, an ice removal helix wound around said body tube, said body tube having a first end and a second end, a blade attached to the first end of said body tube and a hand crank attached to the second end of said body tube, said body tube comprising a lower section extending axially from said first end to a point intermediate said first and second ends and an upper section extending from the intermediate point toward said second end, a hinge located at the intermediate point and pivotally connecting said lower section and upper section together, said hinge comprising a first hinge half fixed to said lower section and a second hinge half fixed to said upper section, each of said first and second hinge halves comprising two plates spaced apart and extending in parallel relation with the axis of said body tube, each of said plates having an outer end spaced laterally outwardly from said body tube and an inner end located on the opposite side of the axis of said body tube from said outer end, a hinge pin connecting the outer ends of said plates of said first and second hinge halves together, and a locking pin releasably connecting the inner ends of said plates of said first and second hinge halves, wherein the improvement comprises that said ice helix comprises a first helix section secured to said lower section of said body tube and a second helix section secured to said upper section, said first helix section at the intermediate point attached to said first hinge half and said second helix section at the intermediate point attached to said second hinge half.

3,929,197
LATERAL ROLL IRRIGATION MACHINE HAVING REMOTE END CONTROL

Corwin Malott, and Robert William Erath, both of Spokane, Wash., assignors to Alumax Mill Products, Inc., Spokane, Wash.

Filed Jan. 6, 1975, Ser. No. 538,914
Int. Cl.² B60K *23/00*
U.S. Cl. 180—2 **16 Claims**



1. A lateral move irrigation pipeline system, comprising:
an elongated irrigation pipeline;
a plurality of longitudinally spaced wheels coaxially mounted on the pipeline to support the pipeline above the ground level and to enable the pipeline to be moved laterally across a field;
a wheeled power unit mounted to the pipeline intermediate the ends of the pipeline for moving the wheel-supported pipeline in either lateral direction;
said power unit having an internal combustion engine with an engine starting means, an engine stopping means and a drive means selectively operatively connected to the internal combustion engine and the pipeline;
remote operation control means operatively connected to the engine starting means, the engine stopping means and the drive means for selectively rendering effective the engine starting means, the engine stopping means and the drive means remotely from the power unit;
said remote operational control means having a remote control console having operator controlled switching means for selectively generating separate command digital signals (1) to energize the engine starting means to start the engine, (2) to stop the engine, and (3) to energize the drive means to drive the wheeled pipeline laterally;
said remote control console having a multiplexer for converting the command digital signals and formulating a multiplex signal according to a selected code;
a demultiplexer at the power unit for converting the multiplex signal and formulating separate instructional digital signals according to the selected code;
a signal transmission means operatively interconnecting the multiplexer and the demultiplexer to transmit the multiplex signal therebetween;
logic switching means at the power unit operatively interconnecting the demultiplexer with the engine starting means, the engine stopping means and the drive means to selectively activate same in response to the separate instructional digital signals.
a tachometer operatively connected to the engine for generating an analog signal responsive to the magnitude of the engine RPM: and
wherein said logic switching means further includes a logic interlock network means responsive to the analog signal generated by the tachometer for deactivating the engine starting means when the engine reaches a pre-selected RPM.

3,929,198
TRACTOR-TRAILER PULLING AND GUIDING DEVICE

Harrison Lee Dalton, Rte. No. 1, Franklin, Tenn. 37064

Filed Apr. 29, 1974, Ser. No. 465,321
Int. Cl.² B62D *59/02*
U.S. Cl. 180—14 A **4 Claims**

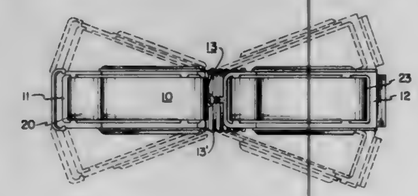
1. A four wheel front and rear axle trailer driving unit the front wheels of which are steerable by a towing draft connection to a pulling vehicle comprising a single jointed drive shaft linking together a ground take-off unit at the rear of said pulling vehicle with a rear differential positioned substantially half-way between the two wheels of the rear axle of said trailer which follows or runs behind said pulling vehicle, said single jointed drive shaft having a pillow block bearing providing support and a linkage of a first universal joint forward of said

front axle and a second universal joint forward of said rear axle enabling said trailer to be driven by, steered with and



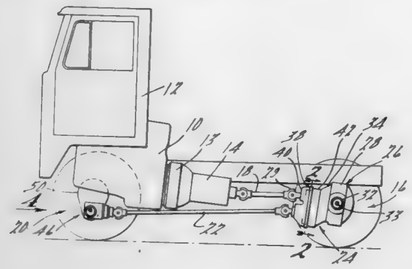
follow the contour of the pulling vehicle at substantially the same speed or gear at which the pulling vehicle is moving.

3,929,199
SNOW MACHINE
Ivan Van Warren, P.O. 117, Greenleaf, Idaho 83620
Filed Sept. 26, 1974, Ser. No. 499,351
Int. Cl.² B62D *11/04*
U.S. Cl. 180—14 R **6 Claims**



1. A steering joint for articulated vehicles having a control unit and a trailing unit comprising:
- a housing including a mounting flange having means for fastening said flange centrally in the rearwardmost terminal end of said control unit, and a horizontal support plate issuing rearwardly from said flange;
- a sprocket being fastened on a vertically disposed shaft which is journally mounted to said support plate, said sprocket being provided with a roller chain connected to a suitably controlled actuator in said control unit;
- a pivot plate being fastened perpendicularly to said shaft carrying said sprocket, said pivot plate being fastened to the forwardmost terminal end of said trailing unit; and
- said chain issues through a hole in said mounting flange and about said sprocket, said chain being held in parallel alignment through said hole by a pair of sprockets journally mounted to said support plate adjacent said hole.

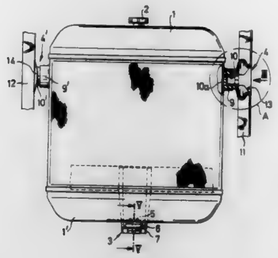
3,929,200
DRIVE TRANSFER GEAR ASSEMBLY FOR FOUR-WHEEL DRIVE VEHICLE
Marcel N. Behar, Southfield, Mich., assignor to Eaton Corporation, Ohio
Filed Oct. 5, 1972, Ser. No. 295,340
Int. Cl.² B60K *17/00*
U.S. Cl. 180—49 **8 Claims**



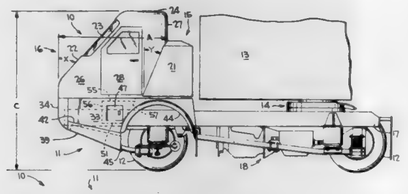
1. A torque proportioning drive transfer gear assembly for a motor vehicle of the type including a first drive axle, a second drive axle, and an engine; said assembly comprising:
- A. an input shaft adapted to be coupled to the output of said engine;
- B. torque proportioning gear means coaxial with the rotational axis of said input shaft and having an input gear driven by said input shaft and first and second relatively rotatable output gears driven by said input gear and adapted to be drivingly connected to said first and second axles, respectively;
- C. a first annular member fixed to rotate with one of said gears but slideable axially relative to said one gear;
- D. clutch means on said first annular member;
- E. a second annular member mounted on the exterior periphery of said first annular member for rotation therewith but axially slideable relative thereto;
- F. clutch means on said second annular member;
- G. first clutch means on another of said gears operative in response to axial movement of one of said annular members to coact with the clutch means on said one annular member to preclude relative rotation between said one gear and said other gear in one directional mode while allowing relative rotation in the other directional mode; and
- H. second clutch means on said other gear adapted in response to axial movement of the other annular member to coact with the clutch means on the other annular member to preclude relative rotation between said one gear and said other gear in either directional mode.

3,929,201
RADIATOR MOUNTINGS FOR INTERNAL COMBUSTION ENGINES
Willi Hoffman, Bauschheim, Germany, assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 10, 1975, Ser. No. 548,685
Claims priority, application Germany, Mar. 1, 1974, 2409822
Int. Cl.² B60K *11/04*
U.S. Cl. 180—68 R **5 Claims**

1. In a motor vehicle having a body with a horizontal frame part forming part of a lower mounting for the base of a radiator and two spaced vertical frame parts forming parts of two lateral mountings for said radiator, a radiator mounting assembly comprising a pin fixed on and depending from the base of said radiator centrally thereof; an elastomeric block fixed on said horizontal frame part, said block having therein an upwardly opening cavity in which said pin is engaged to locate said radiator base on said horizontal frame part; a pair of elastomeric elements respectively retained on opposite side portions of the radiator, each said element having therein a laterally opening cavity and said vertical frame parts each having an opening therein in substantial alignment with the cavity of the elastomeric element on the adjacent side of the radiator; and a pair of plugs respectively inserted in said vertical frame part openings from the outboard sides thereof, each said plug having a spigot portion which engages in the cavity of the elastomeric element adjacent thereto and a flange portion integral with said spigot portion, said vertical frame parts and said flange portions having interengaging formations by which said plugs are clamped to said vertical frame parts.

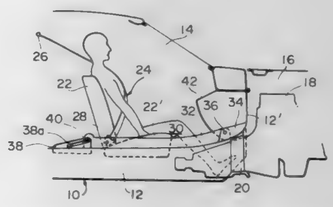


3,929,202
VEHICLE CAB CONFIGURATION EFFECTING REDUCTION OF AIR DRAG AND ENHANCING STORAGE SPACE CAPACITY AND CONVENIENCE
Dean W. Hobbensiefken, Rte. 1, Box 39, Lyons, Oreg. 97358
Filed Apr. 21, 1975, Ser. No. 569,754
Int. Cl.² B60K *11/04*; **B62D** *35/00*
U.S. Cl. 180—68 R **11 Claims**



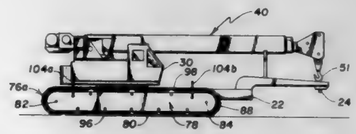
1. In a tractor-trailer combination vehicle having a gap between the tractor and the trailer, and an engine assembly mounted on said tractor between the front and rear axles thereof, a cab mounted on said tractor and having a flat horizontal roof at an elevation below the elevation of the trailer roof, and said cab having flat vertical side walls spaced apart a distance less than the distance between the side walls of the trailer, said cab further having a flat front wall interconnecting said cab roof and said cab side walls, said front wall sloping in a rearward direction of vehicle travel, said cab having panels extending transversely outwardly of the lower edges of said side walls, vertical side panels extending downwardly of said transversely extending panels, under panels interconnecting said side panels, and a vertical bumper panel interconnecting said side panels and said under panels, radiators on said cab being operatively connected to said engine assembly and extending laterally outwardly of said cab side walls, said radiators further extending rearwardly of said cab toward said trailer, whereby said radiators function in cooling the engine of the engine assembly as they are directly exposed to the oncoming air moving alongside said cab walls during movement of the vehicle in its forward direction of travel, and said radiators serve to partially close the gap between said cab and said trailer, thereby also functioning as an air shield at said gap, and whereby the configuration of said cab results in reduced horsepower needed to overcome aerodynamic drag during vehicle travel in the forward direction.

3,929,203
MOUNTING DEVICE FOR SHOULDER HARNESS TYPE SAFETY BELT
Yasuo Nagazumi, Tokyo, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan
Filed Jan. 17, 1974, Ser. No. 434,036
Claims priority, application Japan, Jan. 19, 1973, 48-8391
Int. Cl.² B60R *21/10*
U.S. Cl. 180—82 C **8 Claims**



1. A mounting device for use with a vehicle having a front engine and a vehicle body accommodating a seat and a shoulder harness, comprising
- an elongate link disposed longitudinally of the vehicle on one side of the seat,
- anchor means detachably connecting one end of the shoulder harness to said link,
- a front support for the front end of said link movable rearward with said link upon displacement of the engine due to the collision of the vehicle, and
- a rear support for the rear end of said link secured to a stationary part of the vehicle body and having means permitting longitudinal rearward movement of said link relative to the vehicle body resulting from said displacement of the engine.

3,929,204
TRAILER CRANE WITH OUTRIGGER TO CRAWLER CONVERSION
Lawrence Hugh Newell, 7316 143rd St. West, Apple Valley, Minn. 55124
Filed Jan. 22, 1975, Ser. No. 543,175
Int. Cl.² B62D *55/04*
U.S. Cl. 180—9.2 C **12 Claims**



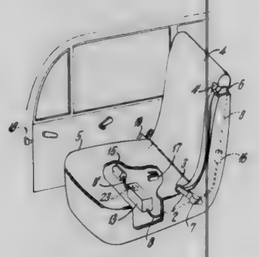
1. A trailer crane comprising an elongated chassis having forward and rear ends, coupling means at the forward end of the chassis for connecting said forward end to a tractor, wheel means near the rear end of the chassis for supporting said rear end so that said chassis can be pulled by a tractor, a crane carried on said chassis, first and second longitudinally spaced means at one side of said chassis for mounting a first pair of stabilizers, third and fourth longitudinally spaced means at the other side of said chassis for mounting a second pair of stabilizers, first and second crawlers each including a frame and an endless track, means for detachably mounting said first crawler to said first and second longitudinally spaced means, and means for detachably mounting said second crawler to said third and fourth longitudinally spaced means, whereby

said crawlers can be employed in lieu of stabilizers to independently maneuver said trailer when said forward end is uncoupled from said tractor.

3,929,205
THREE POINT SAFETY BELT SYSTEM WITH INERTIA ACTUATED INFLATABLE BELTS

Takezo Takada, deceased, late of Hikone, Japan, and by Juichiro Takada, heir, Tokyo, Japan, assignors to Takata Kojyo Co., Ltd., Tokyo, Japan

Filed Jan. 9, 1974, Ser. No. 432,124
Claims priority, application Japan, Jan. 12, 1973, 48-5928
Int. Cl.² B60R *21/08*
U.S. Cl. 180—82 C **5 Claims**



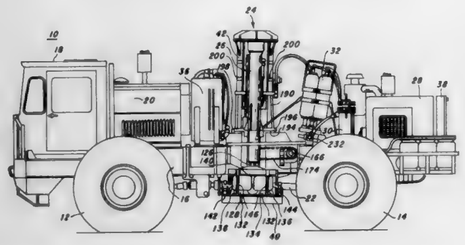
1. A safety belt system in a vehicle having a seat including a seat portion and a back rest comprising a first spring loaded retractor positioned proximate a first side of said seat portion, a second spring loaded retractor and a belt outlet positioned on said back rest at the same side as said first retractor with said belt outlet at the upper part of said back rest at least at the level of the shoulder of an occupant of said seat, an inflatable tubular lap belt extendable from and retractable by said first retractor, and of curved configuration in an inflated condition with its concave face confronting said back rest, a first coupling member conntected to the outer end section of said lap belt, a second coupling member positioned proximate the second side of said seat portion opposite said first side and releasably engageable with said first coupling member, a shoulder belt extendable from and retractable by said second retractor through said belt outlet and connected at its outer end section to said lap belt outer end section and applicator means for withdrawing and advancing said lap belt in a curved path from said retractor toward said seat portion second side to bring said first coupling member into registry with said second coupling member and for withdrawing and advancing said shoulder belt from said second retractor along a predetermined path extending forwardly from said outlet at above said shoulder level for a distance forward of said shoulder, said applicator means comprising a source of compressed air and means including a flexible tube providing communication between said compressed air source and the interior of said lap belt.

3,929,206
SERVO HYDRAULIC TRANSDUCER AND METHOD OF OPERATION

John W. Bedenbender, Plano, Tex., and Gilbert H. Kelly, Irving, Tex., assignors to Texas Instruments Co., Dallas, Texas

Filed Apr. 30, 1973, Ser. No. 355,838
Int. Cl.² G01V *1/04*
U.S. Cl. 181—114 **11 Claims**

1. A transportable hydraulic seismic transducer comprising:
a. a transport means for transporting hydraulic seismic transducer;
b. a vibrator means attached to the transport means, for producing mechanical vibrations;
c. a pad rigidly secured to the vibrator for generating acoustical energy in the earth responsively to the vibrations of the vibrator; and
d. a hydraulic system means operatively connected to the vibrator means for vibrating the vibrator to produce varying frequencies through a given frequency range for a sweep, including (i) a source of hydraulic fluid, (ii) pump means connected to the source of hydraulic fluid for pumping continuously throughout the sweep hydraulic fluid from the source at a volume rate less than the maximum average volume required for the vibrator to produce the varying frequencies of the sweep; (iii) a power source connected to the pump for driving the pump; (iv) a high pressure accumulator coupled to the pump means for storing hydraulic fluid under pressure

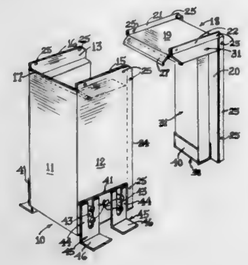


between sweeps and during the period of the sweep at which the pump volume exceeds the requirements of the vibrator means; (v) manifold means coupled to the pump means and high pressure accumulator for alternately introducing hydraulic fluid into and withdrawing hydraulic fluid from the vibrator means; and (vi) a control means connected to the manifold means for controlling the amount of hydraulic fluid introduced into the vibrator whereby the vibrator is activated to produce the varying frequencies of the sweep.

3,929,207
VENTILATED ACOUSTICAL COVER

Raymond W. Urban, Chicago, Ill., assignor to Transco Inc., Chicago, Ill.

Filed Mar. 17, 1975, Ser. No. 559,327
Int. Cl.² A47B *81/06*
U.S. Cl. 181—198 **8 Claims**

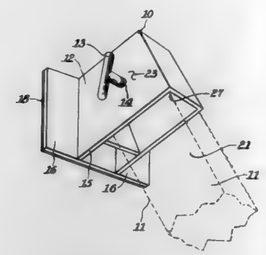


1. A ventilated acoustical cover for a noise-generating apparatus comprising
a. a metallic three-sided shell,
b. a removable section providing a top and end wall cooperating with said shell to form an open bottom cover,
c. means for removably connecting said section to said shell,
d. means within said cover for acoustically and thermally insulating the same,
e. means provided by said top wall of said section and one wall of said shell cooperating to provide an air chute having open communication with the interior of said cover,
f. and means for supporting said cover with its open bottom in a raised position whereby an air flow therethrough and out of said chute is maintained.

3,929,208
LADDER BEARING PLATE

Richard G. Hendrich, 1130 San Andres St. No. 23, Santa Barbara, Calif. 93101

Filed Dec. 19, 1973, Ser. No. 426,208
Int. Cl.² E06C *7/48*
U.S. Cl. 182—108 **1 Claim**

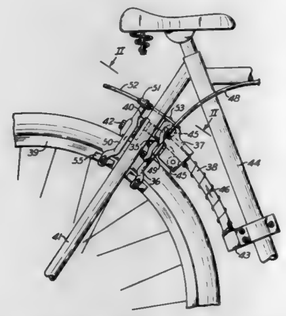


1. A bearing support device of a shape to fit over and completely about the top end section of a ladder rail, said device shaped in the form of a rectangular frame fitted with an external cushioned back surface on a back plate that serves as a bearing surface against a vertical surface upon which the rail of an equipped ladder rests in the erect condition, said cushioned back acting to protect the said vertical surface from disfigurement,
said frame formed with an internal recess of rectangular cross-section, open at both opposed ends, the cross-section of said recess of a size such that the frame fits completely about the top end section of a ladder rail, with the sides of said frame fastened to the back plate which is oriented at an angle to the axis of a ladder rail fitted in the recess of the frame, said back plate extending transversely from said frame, together with a male threaded member engaged in a threaded hole in a side of the frame, said threaded member serving as a clamping means to fix the frame to the side of a ladder rail in the installed position.

3,929,209
BICYCLE POWER BRAKE

Victor A. Peckham, Jr., 1151 Fifth St., Manhattan Beach, Calif. 90266

Division of Ser. No. 450,886, March 13, 1974, Pat. No. 3,882,971. This application Mar. 5, 1975, Ser. No. 555,414
Int. Cl.² B62L *1/12*
U.S. Cl. 188—24 **9 Claims**

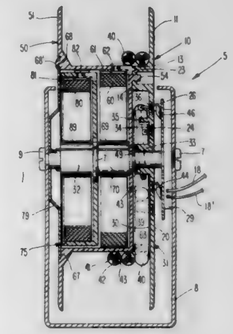


1. In a bicycle having a frame with a fork supported by a wheel rotatably mounted therein, a caliper brake mounted on said fork and straddling the peripheral portion of the wheel, a clamp straddling the peripheral portion of the wheel and normally disengaged from it, a bar extending part way around said wheel and rigidly attached to the frame, a carriage mounted on the bar for movement along it, means connecting said clamp to the carriage, manually operable means connected with the clamp for clamping it against the rotating wheel so that said carriage will be moved forward by the wheel, and a cam bar connected to said carriage and extending toward the brake, the brake having pivoted levers straddling the cam bar, and the cam bar being shaped to spread said levers farther apart to apply the brake to the wheel when the cam bar is moved forward by said carriage.

3,929,210
RETRACTABLE CORD REEL

Morris Cutler, Wyndmoor, and Bernard J. Tamarin, Philadelphia, both of Pa., assignors to The Vacuum Cleaner Corporation of America, Philadelphia, Pa.

Filed May 28, 1974, Ser. No. 473,885
Int. Cl.² H02G *11/00*
U.S. Cl. 191—12.2 R **12 Claims**



1. In a retractable electrical cord reel having an arbor comprising electrically conductive material, electrical conductor rings concentric therewith, and a nonconductive flange rotatable relative to the arbor and carrying the rings rotatively therearound, the improvement comprising a three-conductor electrical cord adapted to be wound onto and unwound from the reel, two of the conductors terminating in fixed contact with the respective conductor rings, and electrically conductive collar secured in fixed relation to the flange and encircling an electrically conductive portion of the arbor and in contact therewith, the third conductor of the cord terminating in fixed contact with the collar.

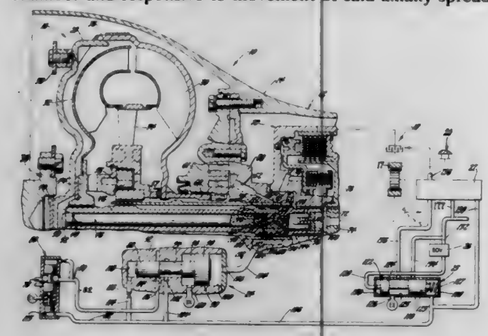
3,929,211
POWER TRAIN INCLUDING A TORQUE-PRESSURE TRANSDUCER

Don G. Maddock, Ypsilanti, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 3, 1974, Ser. No. 502,279
Int. Cl.² F16D *25/00, 43/20*
U.S. Cl. 192—54 **5 Claims**

1. A torque-pressure transducer for use with a power train including a torque converter, a clutch, a shift valve, a source of fluid under pressure, a mainshaft, and a hollow turbine shaft operatively connected between said torque converter and said clutch for driving said mainshaft when said clutch is engaged, said torque-pressure transducer comprising a transducer shaft mounted in said hollow turbine shaft and fixedly secured to one end thereof, a chamber formed in the free end of said transducer shaft, an inlet into said chamber for said fluid under pressure, a plurality of longitudinally stacked members extending transversely across said chamber and operatively connected between said turbine shaft and said transducer shaft so as to be axially spreadable in said chamber in propor-

tion to the relative torque-responsive twist between said shafts, springbiased regulating valve means mounted in said chamber and responsive to movement of said axially spread-



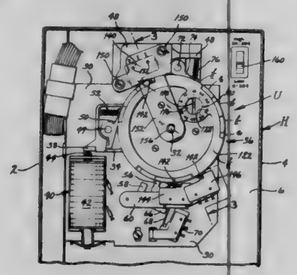
able stacked members for regulating said fluid under pressure, and conduitry means communicating said regulated fluid from said regulating valve means to said shift valve.

3,929,212

CONTROL MEANS FOR ADJUSTING THE VEND PRICE OF A COIN HANDLING MECHANISM

Norman J. Burzen, Pacific, Mo., assignor to Nordon Industries, Inc., Fenton, Mo.

Filed July 29, 1974, Ser. No. 492,778
Int. Cl.² G07F 9/00
U.S. Cl. 194—1 L **13 Claims**



10. In a coin handling unit, a cam rotatable about an axis for actuating switches as it rotates, said cam comprising first and second sections which are rotatable relative to each other and have lobes thereon which pass by and operate the switches as the cam revolves, the first section including front and back rings and the second section being an intermediate ring interposed between the front and back rings, a rotatable adjusting element rotatable about an axis fixed in position relative to the first section and engaged with the second section such that the second section rotates relative to the first section when the element rotates about its axis.

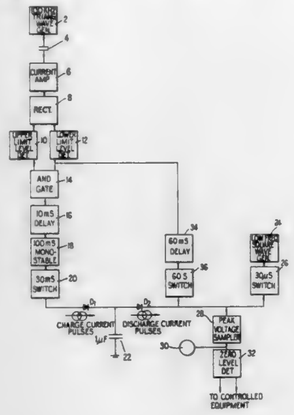
3,929,213

COIN-OPERATED TIMER UTILIZING MEASUREMENT OF ABSOLUTE CAPACITANCE FOR COIN TESTING

Richard Verrill, 23 Roper Close, Hillmorton, Rugby, Warwickshire, England

Filed Jan. 28, 1974, Ser. No. 437,519
Claims priority, application United Kingdom, Jan. 29, 1973, 4449/73
Int. Cl.² G07F 3/02
U.S. Cl. 194—100 A **5 Claims**

1. A coin operated timing device comprising:
a pair of parallel plates forming an electrical capacitance,
means for guiding a coin to pass between the said plates,
a first timer circuit, said first timer circuiting including a timing capacitor whose charge is increased each time a coin is inserted and which is periodically discharged a fixed amount,
capacitance monitoring means for measuring the absolute value of the capacitance of the parallel plates when the coin is passed between them, said capacitance monitoring means comprising:



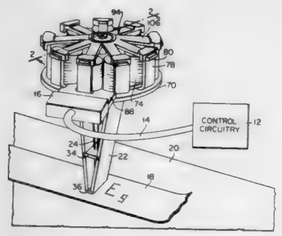
a signal generator connected to one of said plates,
a rectifier connected to the other said plate,
a first, upper-level detector connected to the output of the rectifier; and a second, lower-level detector also connected to the said rectifier, and
means for initiating the operation of the timer circuit if the change in the absolute value of the capacitance when the coin passes between the plates falls within a range determined by the level detectors.

3,929,214

WIRE MATRIX BALLISTIC IMPACT PRINT HEAD

Donald G. Hebert, San Ramon, Calif., assignor to D & D Associates, Mountain View, Calif.

Filed Sept. 18, 1974, Ser. No. 507,060
Int. Cl.² B41J 3/50
U.S. Cl. 197—1 R **9 Claims**



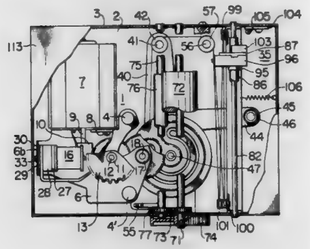
1. A wire matrix ballistic impact print head comprising:
a base;
stylus guide means affixed to said base;
N electromagnetic structures mounted to said base and disposed around said guide means, each of said electromagnetic structures having an outer pole, a center pole coupled to said outer pole, and a coil disposed around one of said poles;
N armatures disposed radially about said guide means, each of said armatures being associated with one of said electromagnetic structures to form an electromechanical actuator for transferring electromechanical energy to a stylus, and each of said armatures having a stylus engaging end and an outer end that extends in cantilevered fashion outside of said outer pole;
N styli carried by said guide means, each of said styli being of an elongated rod-like configuration having a head end for engagement by the stylus engaging end of one of said armatures and a printing end for impacting a recording medium when the stylus is propelled through said guide means by one of said actuators;
a unitary connector having a central portion connected to said guide means and N resilient arms extending radially outward therefrom, each of said arms engaging the outer end of one of said armatures for applying a moment of force thereto tending to cause the stylus engaging end to rotate about said outer pole toward said central portion.

3,929,215

PRINTING MECHANISM

Toshio Hayakawa, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Oct. 8, 1974, Ser. No. 513,068
Claims priority, application Japan, Oct. 12, 1973, 48-115241; Oct. 12, 1973, 48-115242; Oct. 12, 1973, 48-115243; Oct. 12, 1973, 48-119322[U]; Oct. 12, 1973, 48-119324[U]; Oct. 12, 1973, 48-119323[U]; Oct. 12, 1973, 48-119325[U]; Oct. 12, 1973, 48-119326[U]; Aug. 20, 1974, 49-99926[U]; Aug. 20, 1974, 49-99927[U]
Int. Cl.² B41J 3/04
U.S. Cl. 197—1 R **15 Claims**



1. A mechanism for moving a writing unit of a non-impact type along a straight path to scan across each of a plurality of line paths within a sheet of recording paper, comprising, a housing having a bottom wall and a pair of opposing side walls, a support rotatably mounted on said bottom wall, a mangle wheel rotatably mounted on said support and having first and second toothed portions arranged in an outer and an inner arcuate path to form a continuous loop, a gear engaged with said loop of teeth, drive means for driving said gear whereby said mangle wheel is rotated in one direction at a first speed and in the opposite direction at a second speed higher than said first speed, first guide means arranged to guide said writing unit along said straight path, means for connecting said writing unit with said mangle wheel to cause said writing unit to move in opposite directions, second guide means for guiding said recording paper, and means engageable with said support for stepwisely shifting said paper in a direction normal to the direction of movement of said writing unit, when said writing unit moves at said second speed.

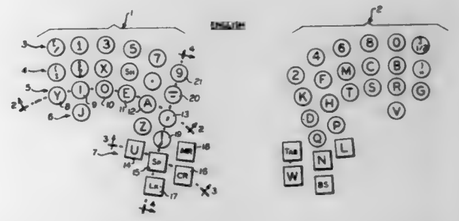
3,929,216

INPUT KEYBOARDS

Harvey Einbinder, 308 W. 97th St., New York, N.Y. 10025

Filed Sept. 4, 1973, Ser. No. 394,516
Int. Cl.² B41J 5/10
U.S. Cl. 197—100 **17 Claims**

1. An input keyboard for the transfer of information to a machine by a human operator, comprising:
a plurality of keys arranged in transversely oriented key rows as viewed by the operator: the number key row being situated at the greatest distance from the operator; the upper letter key row being situated closer to the operator than the number key row; the home key row being situated closer to the operator than the upper letter key row; the lower letter key row being situated closer to the operator than the home key row; and the thumb key row being situated closer to the operator than the lower letter key row;
wherein the upper letter key row comprises twelve keys: six keys on the left hand side of the keyboard as viewed by the operator, and six keys on the right hand side of the keyboard as viewed by the operator;



wherein the home key row comprises twelve keys: six keys on the left hand side of the keyboard as viewed by the operator, and six keys on the right hand side of the keyboard as viewed by the operator;
wherein the thumb key row comprises six keys: three keys on the left hand side of the keyboard as viewed by the operator, and three keys on the right hand side of the keyboard as viewed by the operator;
wherein the keys on the upper letter key row are designated in serial order along the upper letter key row as viewed by the operator from the outer edge of the keyboard from the center of the keyboard as follows: on the left hand side of the keyboard as viewed by the operator—the first upper letter key, the second upper letter key, the third upper letter key, the fourth upper letter key, the fifth upper letter key, and the sixth upper letter key, respectively; and on the right hand side of the keyboard as viewed by the operator—the seventh upper letter key, the eighth upper letter key, the ninth upper letter key, the tenth upper letter key, the eleventh upper letter key, and the twelfth upper letter key, respectively;
wherein the keys on the home key row are designated in serial order along the home key row as viewed by the operator from the outer edge of the keyboard to the center of the keyboard as follows: on the left hand side of the keyboard as viewed by the operator—the first home key, the second home key, the third home key, the fourth home key, the fifth home key, and the sixth home key, respectively; and on the right hand side of the keyboard as viewed by the operator—the seventh home key, the eighth home key, the ninth home key, the tenth home key, the eleventh home key, and the twelfth home key, respectively;
wherein the keys on the thumb key row are designated in serial order along the thumb key row as viewed by the operator from the outer edge of the keyboard to the center of the keyboard as follows: on the left hand side of the keyboard as viewed by the operator—the first thumb key, the second thumb key, and the third thumb key, respectively; and on the right hand side of the keyboard as viewed by the operator—the fourth thumb key, the fifth thumb key, and the sixth thumb key, respectively;
wherein the upper and lower case forms of a single letter are assigned to the same key;
wherein space and letter keys are arranged on the left hand side of the keyboard as viewed by the operator as follows: the space key, which generates the separation between

words, is assigned to the second thumb key; one high frequency vowel is assigned to the second home key; a second high frequency vowel is assigned to the third home key; a third high frequency vowel is assigned to the fourth home key; and a fourth high frequency vowel is assigned to the fifth home key; wherein each of these four high frequency vowels is a different letter; and

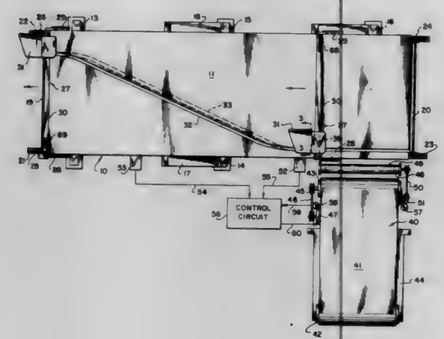
wherein letter keys are arranged on the right hand side of the keyboard as viewed by the operator as follows: one high frequency consonant is assigned to the fifth thumb key; a second high frequency consonant is assigned to the eighth home key; a third high frequency consonant is assigned to the ninth home key; and a fourth high frequency consonant is assigned to the tenth home key; and a fifth high frequency consonant is assigned to the eleventh home key; wherein each of these five high frequency consonants is a different letter.

3,929,217

ARTICLE TRANSFERRING APPARATUS

Franklin J. Thurston, Rockville; Franciscus J. Schendeler, Gaithersburg, and Joseph C. Jounen, Frederick, all of Md., assignors to Fairchild Industries, Inc., Germantown, Md.

Filed June 1, 1973, Ser. No. 366,184
Int. Cl.² B65G *47/00*
U.S. Cl. 198—23 **25 Claims**



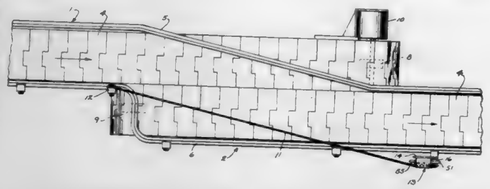
1. Article transferring apparatus comprising article supporting means having an upper surface for supporting an article, first article pushing means associated with said article supporting means for pushing an article in a first direction along the upper surface of said article supporting means, said first article pushing means being movable with respect to said article supporting means, second article pushing means in moving engagement with said first article pushing means for pushing the article in a second direction along the upper surface of said article supporting means, said second article pushing means having projecting means for positively moving said article in said second direction, said second article pushing means being movable with respect to said article supporting means, means operatively associated with said second article pushing means and said article supporting means for causing said second article pushing means to move in a second direction to push the article in a second direction along the upper surface of said article supporting means as said first article pushing means moves to push the article in the first direction along the upper surface of said article supporting means, and means operatively connected to at least one of said article pushing means for driving said first and second article pushing means.

3,929,218

MODULATED SPEED CONTROL FOR A CONVEYING SYSTEM

Robert F. Risley, Wauwatosa, Wis., assignor to Jos. Schlitz Brewing Company, Milwaukee, Wis.

Filed May 1, 1974, Ser. No. 465,915
Int. Cl.² B65G *43/08*
U.S. Cl. 198—37 **12 Claims**



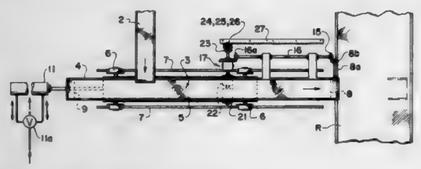
1. An apparatus for moving articles, a first transfer unit for moving articles, a second transfer unit for moving articles, guide means disposed above said transfer units for guiding the articles from the first transfer unit to the second transfer unit, said guide means including a movable guide member associated with a first of said transfer units, said guide member being mounted for movement with respect to the first transfer unit in response to pressure exerted by an accumulation of said articles on said first transfer unit, fluid power-operated drive means operably connected to the second of said transfer units for driving said second transfer unit, control means for controlling the flow of fluid to said drive means and including a rotary valve element, a rotatable member means connecting said rotatable member to said guide member in a manner such that movement of said guide member acts to rotate said rotatable member, and means operably connecting said rotatable member to said rotary valve element whereby rotation of said rotatable member will cause rotation of said valve element to vary the flow of fluid to said drive means.

3,929,219

RECIPROCATING VARIABLE SPEED MATERIAL TRANSFER CONVEYOR SYSTEM

Donald B. Malcolm, Pittsburgh, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1974, Ser. No. 455,415
Int. Cl.² B65G *21/12*
U.S. Cl. 198—111 **15 Claims**



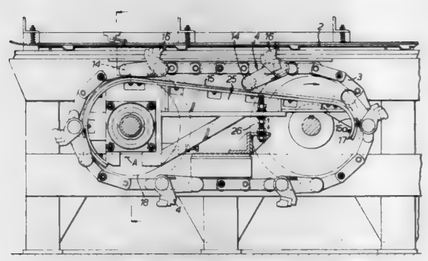
10. A system wherein material is carried from a source at a substantially constant rate to a point of discharge at which point it is delivered onto a shuttle conveyor which has a discharge end, which shuttle conveyor is reciprocated transversely to said point of discharge and from which shuttle conveyor material is in turn discharged onto a receiving area across which the discharge end of the conveyor moves, said shuttle conveyor comprising a carriage and means for effecting reciprocation thereof relative to the ground and a single belt conveyor having upper and lower runs both of normally fixed length entirely mounted on and fixed against movement relative to the carriage along with a driving means for operating the conveyor at a predetermined speed relative to the ground when the carriage is stationary, the upper run of the belt conveyor being arranged to receive material directly to said point of discharge, and means on the carriage responsive to its movement back and forth relative to the ground for varying the speed of travel of the belt conveyor to decrease its speed relative to the carriage when the carriage is moving in one direftion and increasing its speed when the carriage is moving in the reverse direction.

3,929,220

PALLET CONVEYOR HAVING RELATIVELY ADJUSTABLE PUSHER HEADS

William Roy Powel, Leatherhead, England, assignor to Powel International Limited, England

Filed July 15, 1974, Ser. No. 488,407
Claims priority, application United Kingdom, July 26, 1973, 35706/73
Int. Cl.² B65E *15/14*
U.S. Cl. 198—164 **6 Claims**



1. A conveyor for a tile making machine, the conveyor comprising:

frame means defining a pallet track for receiving and supporting a line of end-to-end pallets to be conveyed;

a drive chain mounted for movement adjacent said pallet track;

said drive chain including a linear driving run which extends in the direction of said track;

a plurality of pushers carried by said drive chain in spaced relation therealong, each pusher being pivotally coupled to the chain and including:

a head portion for engaging and pushing a contact surface of a pallet to advance the line of pallets, and

a follower portion;

a follower track disposed adjacent at least a substantial portion of the driving run of said chain and being arranged to support and guide the follower portions of pushers traveling along said driving run in driving engagement with the pallets;

said follower track being angularly inclined relative to said driving run in a manner for guiding said follower portions for rotational movement relative to said chain to rotate said head portions in a direction opposed to the direction of travel of said driving run, so that with the chain being driven at constant speed the head portions advance the line of pallets at a constant speed less than the speed of the driving run; and

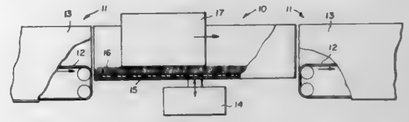
adjustment means operably connected to said follower track for adjusting the inclination angle of said follower track relative to said driving run so as to vary the distance between the head portion of a pusher located at the beginning of the track and the head portion of a pusher disposed on the track to accommodate different length pallets and changes in effective chain length.

3,929,221

PAPER SHEET CONVEYOR

Jack W. Armstrong, Baldwinsville, N.Y., assignor to Lipe Rollway Corporation, Syracuse, N.Y.

Filed Apr. 11, 1974, Ser. No. 460,128
Int. Cl.² B65G *27/00*
U.S. Cl. 198—220 BA **2 Claims**



1. A conveyor for moving paper sheets on edge along a predetermined path established by a feed element, said conveyor comprising:

a. the upper surface of said feed element having pile material with resilient bristles inclined from the vertical toward the direction of feed along said path;

b. means for vibrating said feed element to move said bristles repeatedly against the bottom edges of said paper sheets to move said paper sheets along said path in said direction of feed;

c. the tips of said bristles being at a uniform height and having surfaces angled relative to said bristle inclination angle to extend under and support said bottom edges of said paper sheets on said angled surfaces to prevent said paper sheets from slipping down between said bristles; and

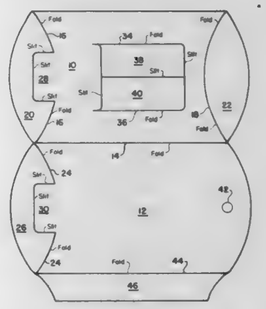
d. said tips of said bristles being bent transversely of said direction of feed to form said angled surfaces.

3,929,222

PILLOW BOX BLANK

William Paul Smith, Anaheim, and Glen Matsuyama, Los Angeles, both of Calif., assignors to Graphic Arts Packaging Corporation, Gardena, Calif.

Filed Oct. 29, 1974, Ser. No. 518,407
Int. Cl.² B65D *5/50*, *25/54*
U.S. Cl. 206—45.14 **5 Claims**



1. A one-piece blank for forming an ellipsoidal-shaped pillow-pack carton having a first panel and a second panel, each panel having arcuately-shaped ends, said panels being separated by a scoreline extending from one of their ends to the other, one of the panels having arcuately-shaped scorelines at the first and second ends thereof each forming an ellipse with the corresponding arcuately-shaped end, and the other of the panels having an arcuately-shaped scoreline at the first end thereof forming an ellipse with the corresponding arcuately-shaped end, and each of the panels having transversely spaced slits therein at the first end thereof interrupting and extending outwardly from the corresponding arcuately-shaped scoreline into the corresponding ellipse and intercon-

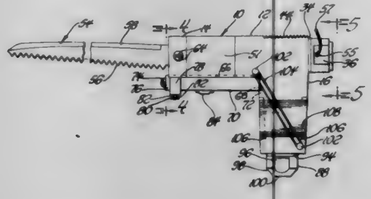
nected therein to define spaced and parallel support pedestals for the carton when the arcuately-shaped ends are folded about the corresponding scorelines.

3,929,223

SELF-CONTAINED SURVIVAL DEVICE

Russell S. Ludeman, 982 Miller Road, Lake Orion, Mich. 48035

Filed July 23, 1974, Ser. No. 381,904
Int. Cl.² B65D *69/00, 85/28*
U.S. Cl. 206—234 **6 Claims**



1. A survival device, comprising a substantially L-shaped single-piece body having discreet first and second legs disposed and joined substantially at right angles to one another so that each of said legs has one free end and one end jointed to said other leg, each of said first and second legs having removably associated with said free end thereof at least one survival tool that requires, for efficient use thereof, use of said second and first legs, respectively, as the handle therefor, each of said legs being formed lengthwise thereof to provide a storage chamber therein, each of said storage chambers having one permanently-closed bottom end and one open end with removable means for sealing the same, the chamber of said second leg opening at the free end of said second leg and the chamber of said first leg opening at the end thereof joined to said second leg, whereby said closed bottom end of said chamber of said second leg is disposed adjacent but spaced from said open end of said chamber in said first leg and said closed bottom end of said chamber of said first leg is spaced from said free end of said first leg, said chambers being internally threaded and said chamber sealing means comprising externally threaded plugs threadable into said chambers, said plugs having oppositely disposed flats formed on the outer circumference thereof to enable the same to be more easily removed and replaced without use of tools, and said plugs being hollow from the inner ends thereof so as to increase the length and volume of said chambers when said plugs are in chamber-sealing position.

3,929,224

CLOTHES-CARRYING ASSEMBLY

Charles A. Smith, Jr., P.O. Box 574, Norwich, N.Y. 13815

Filed Sept. 9, 1974, Ser. No. 504,300
Int. Cl.² B65D *85/18;* **A45C** *7/00*
U.S. Cl. 206—287 **13 Claims**

1. A clothes-carrying assembly for carrying a suitcoat and trousers in a wrinkle-free manner within a protective covering, comprising, in combination: a male clothes-hanger having an upper hook portion, sloping upper shoulder portions and a lower cross-bar portion; a generallyrectangular back-panel having attachment means adjacent an upper edge of said back-panel looped around said lower cross-bar portion of said hanger for removably suspending said back-panel from said cross-bar portion of said hanger and retaining said upper edge of said back-panel substantially parallel to said cross-bar portion if said hanger is tilted, said back-panel having a plurality of pockets attached thereto, said back panel having a width substantially equal to the width of said hanger and at least one seam extending laterally across said back-panel to stiffen said back-panel in a lateral sense and resist lateral crushing of said back-panel; said trousers being suspended over said cross-bar portion, said suitcoat being suspended over said shoulder portions of said hanger with an upper portion of said back-panel extending within said suitcoat to prevent lateral crushing of said suitcoat; and an outer substantially flexible garment bag surrounding said back-panel, trousers and suitcoat, with said hook portion of said hanger protruding from said garment bag.

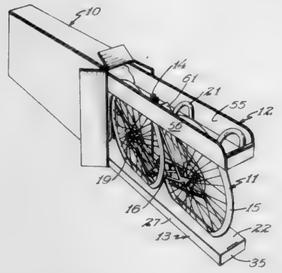


3,929,225

SHORT BICYCLE PACK

Frank W. Locke, and John F. Sorenson, both of Minneapolis, Minn., assignors to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed Dec. 9, 1974, Ser. No. 531,052
Int. Cl.² B65D *85/68*
U.S. Cl. 206—335 **3 Claims**



1. A package for shipping and storing a partially disassembled bicycle of the type having a frame with a rear wheel mounted thereto, a sprocket wheel and chain, a front wheel support member at the front of said frame in the form of a fork, with handle bars, pedals, and a front wheel being removed from said frame, said front wheel positioned to one side of said fork toward said rear wheel to form a shortened package, said container made of foldable sheet-like material and comprising:

a lower die cut tray having downwardly extending side walls;

an upper die cut tray having upwardly extending side walls; said upper and lower trays having first die cut elongate openings formed therein and positioned with the edges of said openings in engagement with a portion of the circumference of said rear wheel of said bicycle;

said elongated openings being parallel and in angular relationship to the sides of said trays;

said bicycle frame and said rear wheel being positioned angularly within said container to allow said front wheel to be located at one side of said frame;

said upper and lower trays having formed therein second parallel elongated openings engaging a portion of the circumference of said front wheel;

said upper tray having formed therein openings with said handle bars positioned with a portion of said handle bars extending downwardly through said openings in said upper tray;

said upper die cut tray having formed therein a third opening, the edges of said third opening engaging a portion of said frame;

said lower die cut tray having formed therein a fourth opening, the edges of said fourth opening engaging a portion of the circumference of said sprocket wheel and chain attached to said frame;

said lower die cut tray having a pair of fifth openings formed therein and at one end thereof, the edges of said fifth openings engaging the lower ends of said fork of said frame, a first of said downwardly extending end walls in said lower die cut tray having attached thereto a horizontally positioned support flap on which the lower end of said fork is positioned; and

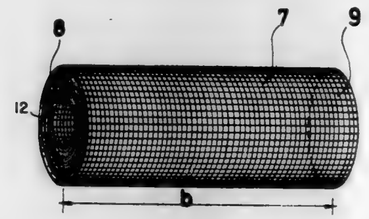
an enclosing box structure completely surrounding said bicycle and said trays.

3,929,226

PACKING COILS OF WIRE NETTING

Marc Nijs, Harelbeke, Belgium, assignor to N. V. Bekaert S.A., Zwevegem, Belgium

Filed June 25, 1974, Ser. No. 482,900
Claims priority, application United Kingdom, July 3, 1973, 31631/73
Int. Cl.² B65D *65/02, 85/67*
U.S. Cl. 206—410 **6 Claims**



1. A package comprising:

a wire netting coil,

a protective end cover on each end of said coil,

said cover having a tongue hingedly connected thereto and extending into said coil,

said tongue being in sufficient independent frictional engagement with said coil to keep said end covers in place, said frictional engagement being accomplished independently of any additional element, and

a sheet tightly enclosing said coil and said end covers,

said end covers acting to prevent puncturing or damaging of said enclosing sheet by the end wires of said coil.

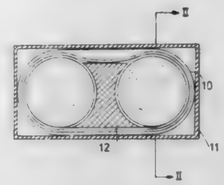
3,929,227

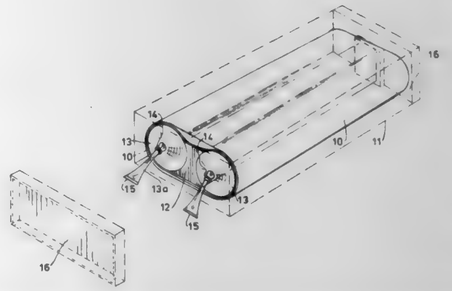
METHOD OF PACKAGING TUBULAR STENCILS

Roy Stonier Burdis, Tarporley, England, assignor to Screentex Limited, St. Helens, England

Filed Feb. 11, 1974, Ser. No. 441,440
Claims priority, application United Kingdom, Mar. 2, 1973, 10227/73
Int. Cl.² B65D *85/30, 81/12;* **B65B** *19/00*
U.S. Cl. 206—446 **8 Claims**

1. A transit package having packed within it at least one screen printing cylinder reinforced internally by two expansible bags, filled with material in particulate form, in spaced parallel relationship and a reinforcing block located between the expansible bags so as to occupy any space therebetween when the latter are filled, forming a substantially rigid body





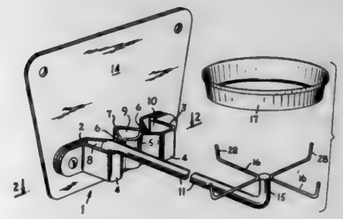
which bears firmly against the wall of the cylinder or against a part or parts thereof.

3,929,228

ADJUSTABLE BRACKET ASSEMBLY

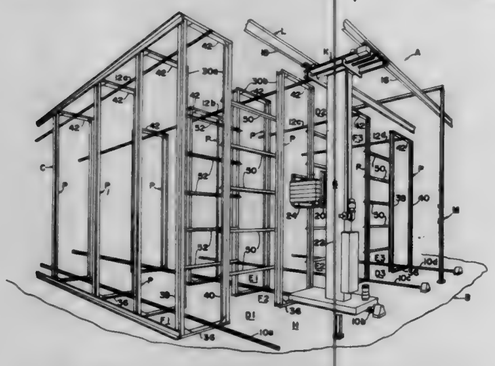
Efraim Margolin, and Michael Grunstein, both of New York, N.Y., assignors to Grun Mar Industries, Inc., New York, N.Y.

Division of Ser. No. 382,459, July 25, 1973, Pat. No. 3,888,354. This application Mar. 21, 1975, Ser. No. 560,325
Int. Cl.² A47F *5/08*
U.S. Cl. 211—102 **5 Claims**



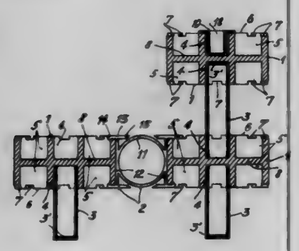
1. A bracket assembly comprising a front plate and a back plate, said plates being adjustably connected to each other adjacent their ends, at least a first forward section on said front plate, a recessed section on said front plate adjacent said first forward section, a projecting section on said back plate, a rear section on said back plate adjacent said first projecting section, a first opening defined by said first forward section and said first projecting section, a second opening defined by said recessed section and said rear section, a support member frictionally held in said second opening, a first rod in said first opening.

3,929,229
ARTICLE STORAGE FACILITY
Karl A. Pamer, Chagrin Falls, Ohio, assignor to McNeil Corporation, Akron, Ohio
Filed Sept. 10, 1973, Ser. No. 395,619
Int. Cl.² A47F 5/00; B65G 1/06
U.S. Cl. 211—134 **1 Claim**



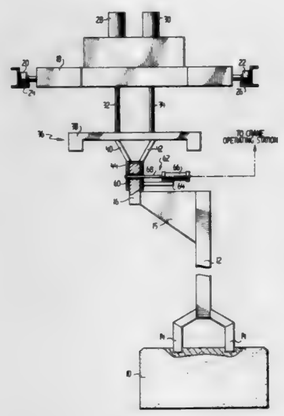
1. An article storage facility comprising: at least two horizontally spaced parallel rows of vertically positioned, parallel, duplicate, rectangular picture frame-like members spaced one behind the other; each said row of picture frame-like members forming an aisle for the movement of a power-operated article handling apparatus therein; a plurality of vertically spaced article supports spanning the space between said parallel rows of picture frame-like members comprising generally horizontal members connected at one end to vertical sides of said picture frame-like members of one row of picture frame-like members and at their other ends to adjacent vertical sides of picture frame-like members of a second row of picture frame-like members adjacent to said first row of picture frame-like members and which picture frame-like members are in the same vertical plane as the plane of the picture frame-like member of said one row of adjacent picture frame-like members to which the generally horizontal members are connected; and rail members in said aisle of each row rows of picture frame-like members connected to top and/or the bottom sides thereof for supporting a power-operated article handling apparatus therein.

3,929,230
SETS OF UNITS FOR CONSTRUCTING VARIOUS TYPES OF STAND
Hanspeter Luthi, Maurstrasse 58, CH-8117 Fallanden, Switzerland
Filed Nov. 12, 1973, Ser. No. 415,195
Claims priority, application Switzerland, Nov. 10, 1972, 16372/72
Int. Cl.² A47F 5/10
U.S. Cl. 211—177 **8 Claims**



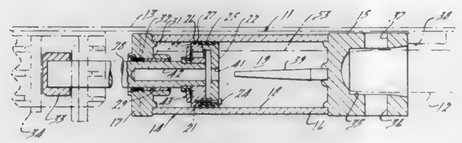
1. A set of units including holding units, plug-in units, and connecting units for the construction of various types of stands comprising:
each said holding unit defining on opposite sides thereof receptacles for selectively receiving an article such as a plant, candle or the like or for alternatively receiving a tubular plug-in unit,
each said tubular plug-in units having an end portion and means for retention of said plug-in unit in said receptacle of a respective holding unit to permit thereby the detachable connection of a plurality of said holding units in stacked relation one above the other,
each said holding unit further defining on its said opposite sides recesses adjacent its periphery for receiving a portion of one of said connecting units,
each said connecting unit including opposed web portions each of which is adapted to lie against an outer surface of a respective holding unit, each said web portion at its ends supporting transverse shanks having catches on one side of the web for fitting into said recesses on the opposite sides of a holding unit, and grips on the other side,
whereby said transverse shanks are resiliently pivoted on said grips to permit said catches to engage said recesses to engage a holding unit so that a plurality of said holding units can be interconnected in a generally coplanar relationship.

3,929,231
ANODE CARRIER LIFTING DEVICE
Henry S. Cook, Owensboro, Ky., assignor to Southwire Company, Carrollton, Ga. and National Steel Corporation, Pittsburgh, Pa.
Filed July 31, 1974, Ser. No. 493,483
Int. Cl.² B66C 17/06
U.S. Cl. 212—11 **7 Claims**



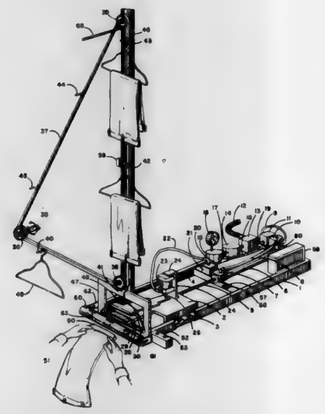
1. In combination with a carbon anode having an anode shaft extending therefrom, means for lifting and carrying said anode comprising first coupling means carried by a superstructure extending from an overhead crane, said first coupling means and said cooperating coupling means having openings formed therein which are adapted to be concentrically aligned when in coupled relation, means carried by said cooperating coupling means adapted to be extended through said concentrically aligned openings for joining said coupling means in coupled relation, means for actuating said means for joining said coupling means in coupled relation, and wherein said actuating means is operatively connected to the operating station of said crane whereby the crane operator may selectively advance and retract said joining means.

3,929,232
END OF CAR CUSHIONING UNIT
William K. MacCurdy, Plymouth, Mich., assignor to Evans Products Company, Plymouth, Mich.
Filed Aug. 13, 1973, Ser. No. 388,330
Int. Cl. B61g 11/12
U.S. Cl. 213—43 **14 Claims**



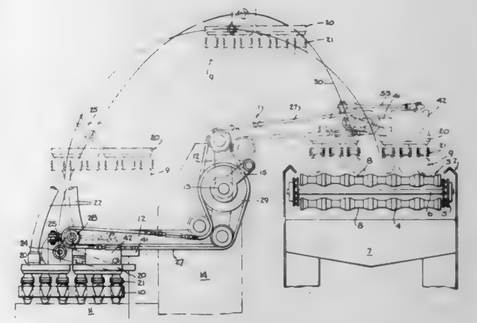
1. An end of car cushioning unit adapted to be interposed between a coupler and a car frame of a railway car for damping shock forces, said cushioning unit comprising a cylinder, a piston received within said cylinder, said piston and said cylinder defining a chamber adapted to receive a fluid, primary metering means in communication with said chamber for passing fluid therethrough at a restricted rate upon relative movement of said piston and said cylinder, and pressure responsive valve means in series flow arrangement with said primary metering means for precluding the flow of fluid through said primary metering means until a predetermined force is applied to said cushioning unit.

3,929,233
PANTS HANGING APPARATUS
Lawrence V. Drace, 6928 Acoma Court, Las Vegas, Nev. 89128
Filed June 25, 1974, Ser. No. 483,050
Int. Cl.² B65G 37/00
U.S. Cl. 214—1 R **7 Claims**



1. Apparatus for threading a pair of trousers on a clothes hanger comprising in combination with a clothes hanger:
a frame;
clamp means for receiving the cuffs of a pair of trousers carried by said frame, said clamp means being movable between a first position near the front of the frame and a second position;
activating means for securing the cuffs of a pair of trousers in said clamp means when the clamp means is in the first position and deactivating means for releasing said cuffs from the clamp means when the clamp means is in the second position;
drive means for moving said clamp means between said first and second positions;
support means for positioning said clothes hanger adjacent said first position such that the trousers are threaded through said clothes hanger when the cuffs are engaged in the clamp means in the first position and the clamp means is moved to the second position; and
transport means for removing said hanger away from said first position after the trousers have been threaded on the hanger.

3,929,234
ARTICLE TRANSFER AND SPACER MEANS
William H. Warren, Omaha, Nebr., assignor to Henningsen Foods, Inc., White Plains, N.Y.
Filed Dec. 23, 1974, Ser. No. 536,023
Int. Cl.² B65G 47/26
U.S. Cl. 214—1 BV **12 Claims**

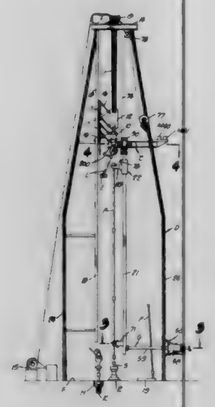


1. In an article transfer device for picking up and for carrying an array of articles from a pick-up position to an article placement position and including article supporting means and lifter members for moving the supporting means between said positions the improvement comprising:
said supporting means comprising a plurality of rows of individual lifter plates with a plurality of lifter plates in each row;
means for changing the spacing between individual lifter plates in each row during the movement of the supporting means between said positions; and
means for simultaneously changing the spacing between said rows of lifter plates.

3,929,235
SYSTEM FOR HANDLING AND RACKING PIPE IN THE HOLD OF A VESSEL
James A. Howard, Houston, Tex., and Robert R. Kelly, Hoffman Estates, Ill., assignors to Byron Jackson Inc., Long Beach, Calif.
Filed Nov. 22, 1974, Ser. No. 526,207
Int. Cl.² E21B 19/02
U.S. Cl. 214—2.5 **18 Claims**

1. Well pipe handling apparatus comprising: a derrick having a floor provided with an opening for receiving lengths of well pipe in generally vertically disposed racked positions, crane means aloft in said derrick having support means shiftable in opposite directions laterally of said derrick and towards and away from the center of said derrick, means for shifting said support means, a guide post depending from said support means, positioning means adjacent to the lower end of said guide post for moving the lower end of said guide post laterally and towards and away from the center of the derrick, pipe engaging guide means also adjacent to the lower end of said guide post, pipe supporting means releasably engageable

with a length of pipe and vertically shiftable on said guide post for raising and lowering the lengths of pipe in said pipe engaging guide means, and means for lifting and lowering said pipe supporting means on said guide post.



3,929,236

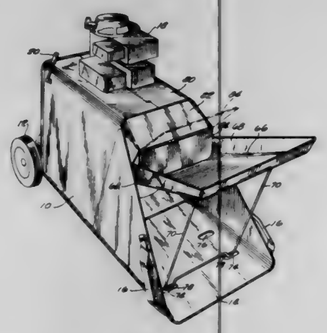
SHREDDING MACHINE

Daniel Koturov, Plymouth, Wis., assignor to Gilson Brothers Co., Plymouth, Wis.

Continuation of Ser. No. 386,690, Aug. 8, 1973, abandoned. This application Nov. 13, 1974, Ser. No. 523,297

Int. Cl.² B02C *13/14*

U.S. Cl. 241—55 **16 Claims**



1. A shredding machine comprising a hollow cylindrical shredder drum, a shaft coaxially journalled within said drum, at least one shredding blade attached to said shaft and projecting radially therefrom, means for rotating said shaft and said shredding blade, an inlet opening at the upper end of said drum and intersected by the axis of said shaft, a discharge opening at the lower end of the drum and intersected by the axis of said shaft, said shaft having no blade closer to the input opening than said one blade, said one shredding blade being spaced from the inlet opening to provide a material recirculation zone in the drum above the blade, the axis of said drum and said shaft being inclined at an acute angle to the horizontal whereby the drum is tilted to elevate portions of the discharge opening and promote discharge of shredded material from the drum.

3,929,237

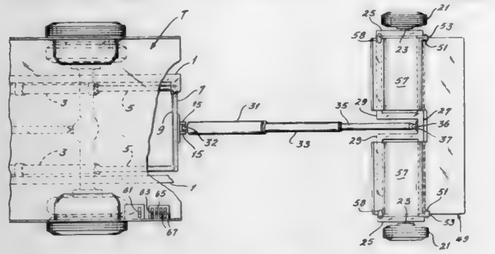
SELF-STORING DOLLY

Alvin C. Schaedler, 1005 N. 17th St., Belleville, Ill. 62223

Filed Feb. 13, 1974, Ser. No. 442,070

Int. Cl.² B60P *3/12*

U.S. Cl. 214—86 A **5 Claims**



1. In combination with a vehicle having a chassis, a two-wheel dolly, structure for coupling said dolly to said chassis, means extensibly and retractably mounting said structure on said chassis for movement between a stored ground elevated inoperative position substantially forward of the rear end of said chassis and an operative position near the rear end of said chassis, a telescoping draft tongue pivotally connected at its forward end to said coupling structure and at its rear end to said dolly and being extensible from its stored fully-telescoped condition wherein its rear end and said dolly are near the rear of said chassis when said coupling structure is in its stored position and its fully extended condition wherein said dolly is spaced a substantial distance rearwardly from said chassis.

3,929,238

EQUIPMENT FOR SUPPLYING CONTAINERS FILLED WITH CIGARETTES TO THE SUPPLY HOPPER CHARGING MECHANISM OF CIGARETTE PACKETING MACHINES

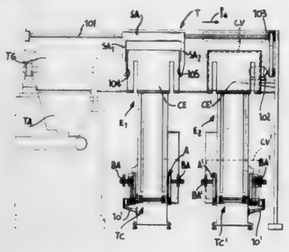
Ariosto Seragnoli, deceased, late of Bologna, Italy, by Elazar Romano, legal representative, Bologna, Italy, assignors to G.D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Seragnoli, Italy

Filed Dec. 10, 1973, Ser. No. 423,179

Claims priority, application Italy, Mar. 1, 1973, 3343/73

Int. Cl.² B60B *17/00*

U.S. Cl. 214—89 **7 Claims**



1. Apparatus for moving cigarette containers to and from a supply hopper charging mechanism of a cigarette packeting machine, comprising;

first and second conveyor means for, respectively, approximately horizontally moving uniform containers, filled with cigarettes, to a first lower rest position, and similarly removing such containers, which have been emptied of cigarettes, from a second lower rest position;

first and second trolley means for respectively and cyclically, first, receiving the filled containers in the first lower rest position and lifting them to a first upper rest position for transfer to a supply hopper charging mechanism of a cigarette packeting machine and, second, receiving the emptied containers in a second upper rest position and lowering them to the second lower rest position for return to the second conveyor means;

pusher-follower means for cyclically transferring the filled containers from the first upper rest position to the hopper charging mechanism and cyclically transferring the emptied containers from the hopper charging mechanism to the second upper rest position; and

container holding means operable in synchronism with the trolley and pusher-follower means for releasably gripping and holding successive containers on the first and second conveyor means in respective positions each horizontally spaced from the respective trolley means and contiguous to the respective lower rest position, to enable smooth upward transfer of one container from the respective lower rest position by the respective trolley means, and smooth downward transfer of another container by the respective trolley means to the respective lower rest position free of interference by the moving and removing of other containers on the respective conveyor means.

3,929,239

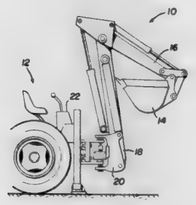
BACKHOE ACTUATOR

John Frederick Shumaker, Mount Pleasant, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Apr. 25, 1974, Ser. No. 464,288

Int. Cl.² F16H *27/02*; B66F *9/02*

U.S. Cl. 214—138 R **10 Claims**



1. In a backhoe having a generally vertical support attachment, a swing tower having a pair of interconnected, vertically spaced support members, one of said support members being pivotally connected to said support attachment about a generally vertical pivot axis, a backhoe boom operably mounted on said swing tower for earth working, the improvement of means for pivoting said swing tower relative to the support attachment including a hydraulic motor actuator having an output component driving a planetary gear reducer said planetary gear reducer having a rotary power output shaft coaxial with said vertical swing tower pivot axis and nonrotatably connected to the other of said support members, said hydraulic motor actuator and planetary gear reducer being nonrotatably connected to said support attachment and being nested between the vertically spaced swing tower support members so that the moment arm from the backhoe center of gravity to the support attachment may be reduced.

3,929,240

SHAFT FURNACE CHARGING PROCESS

Edouard Legille, Luxembourg, and René N. Mahr, Howald-Hesperange, both of Luxemburg, assignors to S.A. des Anciens Etablissements Paul Wurth, Luxembourg, Luxemburg

Continuation-in-part of Ser. No. 374,089, June 27, 1973, abandoned. This application Jan. 22, 1975, Ser. No. 543,177

Claims priority, application Luxemburg, July 7, 1972, 65660

Int. Cl.² F27B *1/20*

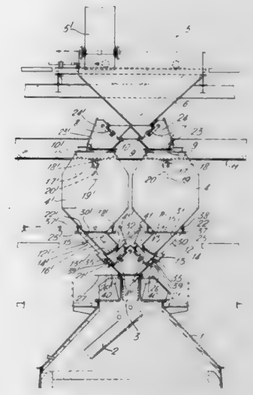
U.S. Cl. 214—152 **5 Claims**

1. A process for charging a shaft furnace, the furnace having a hearth and side wall, the furnace having a rotatable and angularly adjustable charge distribution chute centrally mounted therein, the chute being supplied with charge material from a storage hopper and the furnace installation including means for adjusting the quantity of material delivered from the storage hopper to the chute per unit of time, the process including the steps of:

rotating the charge distribution chute at constant speed;

supplying a constant quantity of charge material per unit of time to the rotating distribution chute to thereby deliver the charge material to the furnace hearth along an arcuate path; and

varying the pitch angle of the rotating distribution chute relative to the blast furnace central axis in uneven steps in order to convert the constant charge material applied per unit of time into a constant charge quantity per unit of furnace hearth cross-section, the magnitude of said pitch angle step variations increasing in the direction of vertical chute orientation.



3,929,241

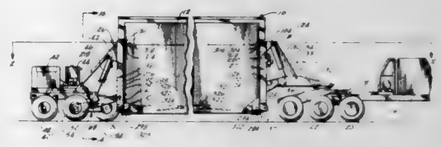
TRANSPORT RIG

Alvin A. Putnam, San Antonio, Tex., assignor to H. B. Zachry Co., San Antonio, Tex.

Continuation-in-part of Ser. No. 164,524, Aug. 21, 1971, abandoned. This application Aug. 8, 1973, Ser. No. 386,838

Int. Cl.² B60P *3/40*

U.S. Cl. 214—390 **17 Claims**



1. A transport rig for moving a load having a first and a second end, the transport rig comprising

a first load support frame having means on it for carrying the first end of the load,

a second load support frame having means on it for carrying the second end of the load,

a first wheel frame for supporting a first set of wheels resting on the ground forward of the first load support frame,

a first frame support attached to the first wheel frame and extending toward the load for pivotal attachment to the first load support frame so as to maintain the carrying means of the first load support frame above the ground and so that the first frame support is able to pivot about

a substantially horizontal axis through its point of attachment to the first load support frame,

a second wheel frame for supporting a second set of wheels resting on the ground behind the second load support frame,

a second frame support attached to the second wheel frame and extending toward the load for pivotal attachment to the second load support frame so as to maintain the carrying means of the second load support frame above the ground and so that the second frame support is able to pivot about a substantially horizontal axis through its point of attachment to the second load support frame,

an extendible and contractible first actuating arm extending from the first load support frame to a point on the first frame support spaced from the support's point of attachment to the first load support frame, the first actuating arm being operative to pivot the first frame support about its horizontal axis to raise or lower the first end of the load,

an extendible and contractible second actuating arm extending from the second load support frame to a point on the second frame support spaced from the support's point of attachment to the second load support frame, the second actuating arm being operative to pivot the second frame support about its horizontal axis to raise or lower the second end of the load, and

means for securing the first and second load support frames together comprising an elongated flexible cable engaged with tension adjusting means on the first load support frame for paying out or reeling in the cable, the cable extending from the tension adjusting means directly into engagement with guide means on the first load support frame independently of the first wheel support frame or the first frame support means and then to a point of attachment on the second load support frame independently of engagement with the second wheel support frame of the second frame support means so that the adjustment of the tension adjusting means can shorten the effective length of the cable to squeeze the first and second ends of the load between the first and second load support frames, respectively, and so that raising or lowering of the load can be done independently of the adjustment of the tension in the cable,

whereby the transport rig and the load may be transported as a unit under power supplied by a towing vehicle coupled to either of the wheel support frames.

3,929,242

VERTICAL LIFT CRANES

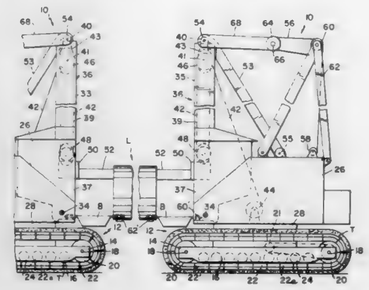
Edward C. Sawyer, 9200 River Valley Drive, Brighton, Mich. 48116

Continuation-in-part of Ser. No. 333,475, Feb. 20, 1973, abandoned, which is a continuation-in-part of Ser. No. 186,620, Oct. 5, 1971, abandoned. This application Aug. 2, 1974, Ser. No. 493,871

Int. Cl.² B60P *3/42*

U.S. Cl. 214—390 **7 Claims**

1. Lifting and transporting apparatus comprising a pair of cranes disposed in spaced relation to one another, said cranes being track-laying vehicles each having a ground engaging base and provided with endless tracks supporting the same for movement over the ground, each crane also having a boom and the cranes disposed with their booms facing one another, said boom of each crane being of the gallows or A-frame type comprising a pair of elongated laterally spaced boom members joined at their upper ends by a transverse member and pivotally supported at their lower ends within the area of ground engagement of said tracks, means holding the boom of each crane in a position extending substantially vertically upwardly within the area of ground engagement of said tracks, load-supporting means suspended from the connecting transverse member of each boom by flexible linear members to support one end of a load disposed between said cranes, means for taking in and paying out said flexible linear members to raise and lower said load-supporting means, each crane having a tow bar adapted to be releasably connected to the



load, said tow bars having pivotal connections to said cranes permitting swinging movement from an operative, forwardly extended position to an inoperative position, and pneumatic tires for said endless tracks.

3,929,243

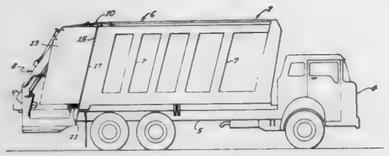
REFUSE COLLECTION APPARATUS

Fred T. Smith, Dearborn Heights, Mich., assignor to Sargent Industries, Inc., Los Angeles, Calif.

Division of Ser. No. 264,021, June 19, 1972. This application Feb. 8, 1974, Ser. No. 440,796

Int. Cl.² B60P *1/00*

U.S. Cl. 214—518 **39 Claims**



1. In a refuse collector including a storage body, a loading hopper positioned rearwardly of and adjacent to an opening in said body, an upper packing panel mounted above and longitudinally of said hopper for up and down movement with respect to said hopper, and a lower packing panel having an upper edge pivotally connected to the lower edge of said upper packing panel for forward and rearward rotation with respect to said hopper; apparatus comprising:

a first hydraulic means operably connected to said upper packing panel to provide up and down movement of said panel;

a second hydraulic means operably connected to said lower packing panel to provide forward and rearward rotation of said lower panel;

said second hydraulic means providing a relatively quick rotation of said lower panel in a rearward direction with a relatively low rotational force exerted on said panel and a relatively slow rotation of said lower panel in a forward direction with a relatively high rotational force exerted on said panel;

a first feed means to feed hydraulic fluid to said second hydraulic means to rotate said lower panel in a rearward direction and to hold said panel in a rearward position;

a second feed means to feed hydraulic fluid to said first hydraulic means while withdrawing hydraulic fluid from said first hydraulic means and combining the withdrawn fluid with the fluid feed to provide a regenerative loop to said first hydralic means to thereby cause a relatively quick downward movement of said upper panel and to hold said upper panel in a lowered position;

a third feed means to feed hydraulic fluid to said second hydraulic means to rotate said lower panel in a forward direction and to hold said lower panel in a forward position;

a fourth feed means to feed hydraulic fluid at a relatively high pressure to said first hydraulic means to move said upper packing panel in an upward direction to move refuse through said opening into said body;

an ejection panel positioned within said body;

said ejection panel being progressively moved away from said opening as refuse is packed against said ejection panel during upward movement of said upper packer panel;

a third hydraulic means to move said ejection panel;

sump means for receiving hydraulic fluid from said fourth feed means and said third hydraulic means;

control means regulating the flow of hydraulic fluid from said fourth feed means and said third hydraulic means to said sump means; and

said control means set to operate at a predetermined pressure of hydraulic fluid in said fourth feed means to momentarily dump hydraulic fluid to said sump from said fourth feed means and said third hydraulic means until the pressure of hydraulic fluid in said fourth feed means is reduced below said predetermined pressure,

whereby the movement of said upper packing panel and said ejection panel are interrelated to provide relatively high and constant compaction pressure during packing of refuse against said ejection panel.

3,929,244

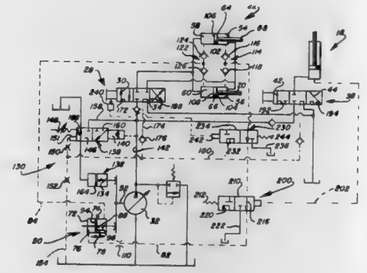
MATERIAL HANDLING VEHICLE

George A. Ekstrom, Churchville, Pa., assignor to Eaton Corporation, Ohio

Filed Apr. 22, 1974, Ser. No. 462,796

Int. Cl.² B66F *9/20*

U.S. Cl. 214—674 **18 Claims**



12. A vehicle comprising a base, an upstanding mast connected with said base, load engaging means connected with said mast and movable therealong for engaging and lifting a load, tilt motor means for moving said mast and load engaging means relative to said base in such a manner as to vary an overturning moment to which said vehicle is subjected by a load engaged by said load engaging means, said tilt motor means including first and second chambers, variable displacement pump means including load responsive displacement control means for supplying fluid under pressure to said first chamber of said motor means, said tilt motor means including means for subjecting fluid in said second chamber to forces which vary as a function of variations in the overturning moment to which the vehicle is subjected and as a function of variations in the fluid pressure in said first chamber, actuator means operable to vary the djsplacement of said pump means, further said displacement control means is operable to position said actuator means in response to the pressure differential between the variable displacement pump output and the input pressure to said first chamber and comparator means for comparing the fluid pressures in said first and second chambers independent of said load responsive displacement control means and effecting operation of said actuator means independent of said load responsive displacement control means to reduce the displacement of said pump means when the fluid pressure in said second chamber exceeds the fluid pressure in said first chamber by a predetermined amount.

3,929,245

DEVICE FOR SETTING THE INCLINATION OF THE BUCKET IN A BULLDOZER

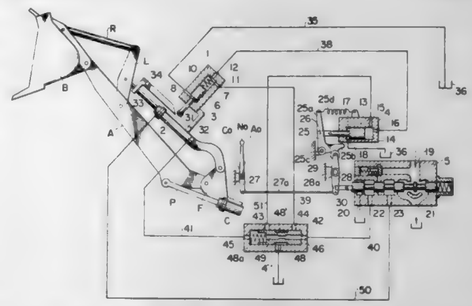
Kazuo Inoue, Tokyo, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed June 25, 1974, Ser. No. 482,854

Claims priority, application Japan, Nov. 7, 1973, 48-124369; Nov. 7, 1973, 48-124370

Int. Cl.² E02F *3/64*

U.S. Cl. 214—764 **3 Claims**



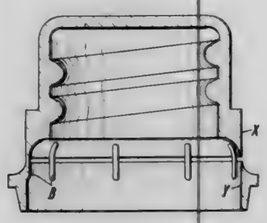
1. Device for setting the inclination of a bucket of a bulldozer comprising a tiltable bucket, a bucket tilting cylinder piston assembly having a bottom side chamber and a head side chamber and connected to said bucket for tilting the same upwards when said bottom side chamber is pressurized by working fluid while said bucket is tilted downwards when said head side chamber is pressurized, a piston pump operatively coupled with said bucket tilting cylinder-piston assembly such that the head side chamber of said piston pump is pressurized when said bucket tilting cylinder-piston assembly moves to a position to tilt said bucket upwards to a predetermined position, the bottom side chamber thereof communicating with a sump of working fluid, an actuator cylinder-piston assembly with its head side chamber communicating with the head side chamber of said piston pump, wherein the head side chamber of said actuator cylinder-piston is pressurized when the head side chamber of said piston pump is pressurized, a detent lever connected to said actuator cylinder-piston assembly said detent lever being moved by the movement of the piston of said actuator cylinder-piston assembly, an actuator valve having a movable spool therein and connected to a source of working fluid said actuator valve communicating with said head side chamber and said bottom side chamber of said bucket tilting cylinder-piston assembly for actuating said bucket tilting cylinder-piston assembly to tilt said bucket upwards and downwards by the actuation of said spool, a switching lever connected to said spool of said actuator valve said switching lever being engageable with said detent lever, an operating handle connected to said switching lever for actuating said switching lever such that, when said handle is operated to move said spool in a position for actuating said bucket tilting cylinder-piston assembly to tilt said bucket upwards, said detent lever is engaged with said switching lever for maintaining said spool in said position for tilting said bucket upwards, while, when said piston pump is actuated by said bucket tilting cylinderpiston assembly, said piston pump actuates said actuator cylinder-piston assembly such that said detent lever is disengaged from said switching lever thereby permitting said spool to move to the neutral position thereof for terminating the actuation of said bucket tilting cylinder-piston assembly to automat-

ically set the inclination of said bucket, and a bypass valve having a movable throttle member therein, said bypass valve being connected between said head side chamber of said bucket tilting cylinder-piston assembly and said actuator valve, said bypass valve communicating with said head side chamber of said piston pump and said head side chamber of said actuator cylinder-piston assembly, said movable throttle member being adapted to be moved to a first position to shut off the communication of said head side chambers of said piston pump and said actuator cylinder-piston assembly with said bypass valve when said bottom side chamber of said bucket tilting cylinder-piston assembly is pressurized to tilt said bucket upwards thereby maintaining said head side chambers of said piston pump and said actuator cylinder-piston assembly in pressurized condition and said movable throttle member being adapted to move to a second position to establish the communication of said head side chambers of said piston pump and said actuator cylinder-piston assembly with said bypass valve thereby communicating said head side chamber of said piston pump with said head side chamber of said bucket tilting cylinder-piston assembly and communicating said head side chamber of said actuator cylinder-piston assembly with said sump of working fluid through said bypass valve, when the head side chamber of said bucket tilting cylinder-piston assembly is pressurized, whereby said head side chambers of said piston pump and said actuator cylinder-piston assembly are at all times in a pressurized condition.

3,929,246
PLASTIC CONTAINER CAP UNIT WITH INTEGRAL SEALING RING

Wilfried Leitz, Bad Krozingen, Germany, assignor to Koninklijke Emballag Industrie Van Leer B.V., Amstelveen, Netherlands

Filed Feb. 24, 1975, Ser. No. 552,592
Claims priority, application Germany, Feb. 25, 1974, 2409015
Int. Cl.² B65D *41/32*
U.S. Cl. 215—252 **5 Claims**

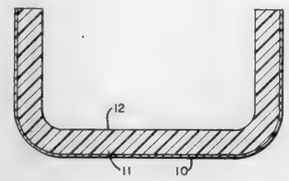


1. An integrally molded plastic closure cap unit for a bottle and like container and having a closure cap with an annular skirt and adapted to be removably inserted over a container neck opening with the annular skirt surrounding the neck of the container, and an annular sealing ring below the annular skirt of the closure cap contoured to be inserted around the container neck and retained thereon to prevent normal removal of the closure cap without severing the closure cap from the sealing ring, the inner diameter of the annular sealing ring being substantially equal to and coaxial with the outer diameter of the closure cap, and the closure cap unit having an annular shear zone intermediate the annular skirt and sealing ring with axially extending severable means interconnecting the annular skirt and annular sealing ring and adapted to be severed to permit the closure cap to be removed from the container.

3,929,247
CRYOGENIC TANK

Herbert H. Borup, Walnut Creek, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed July 11, 1973, Ser. No. 378,138
Int. Cl.² B65D *25/18*
U.S. Cl. 220—9 LG **11 Claims**

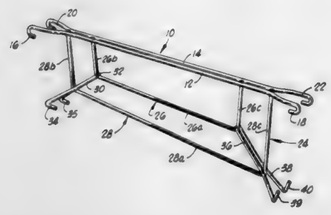


1. An internally insulated tank capable of storing or transporting a large volume of liquid at temperatures down to −260°F comprising an outer support shell, a layer of rigid closed cell polyurethane foam having a density of about 2.5 to 10 pounds/ft³ attached to the inner surfaces of said support shell and a thin impervious metallic layer less than 0.015 inch thick completely bonded to the inner surfaces of said foam layer with the bond therebetween being at least as strong as the foam to restrict the thermal contraction of said foam surface at cryogenic temperatures and thereby minimize crack formation therein, said metallic layer having a substantially lower coefficient of expansion and a substantially higher tensile strength than said foam and further characterized by high ductility at low temperatures.

3,929,248
DIVIDER AND PARTITION DEVICE FOR WIRE

Jimmie H. Morrison, 2921 Monitor, Norman, Okla. 73069

Filed Jan. 26, 1973, Ser. No. 326,983
Int. Cl.² B65D *7/20*
U.S. Cl. 220—19 **14 Claims**

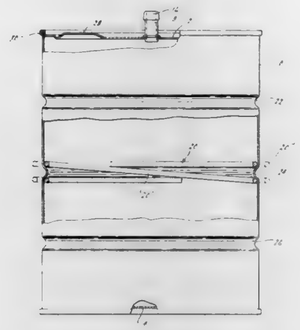


1. A partition device for providing a partition in a wire basket, said device comprising:
an elongated, longitudinal top member;
means on opposite ends of said longitudinal top member for detachably engaging opposite sides of a wire basket adjacent the top of said basket;
rod means attached along one side of longitudinal top member and projecting therefrom to lie substantially in a plane including the longitudinal top member, said rod means extending from a first point of attachment of the longitudinal top member thereto adjacent one end of the longitudinal top member, and including a wire having a non-linear end section thereon arranged for contacting at least one wire of said basket at a second point spaced downwardly from the other end of said longitudinal member which is opposite said one end thereof, said rod means further including a plurality of wires collectively forming a diagonal brace for transmitting a force between said second and first points, and said wire having said nonlinear end section extending diagonally on said partition device and with respect to said longitudinal top member, and projecting from said second point toward said first point for transmitting force diagonally with respect to said longitudinal top member.

3,929,249
VACUUM RESERVOIR

William L. Sheppard, Romulus, Mich., assignor to AVM Corporation, Jamestown, N.Y.

Filed Apr. 21, 1975, Ser. No. 570,166
Int. Cl.² B65D *7/42*
U.S. Cl. 220—71 **18 Claims**



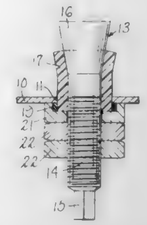
1. A vacuum reservoir comprising: a generally cylindrical longitudinally extending sheet metal body member having a plurality of circumferentially extending radially inwardly projecting ridges formed therein, one of said ridges being disposed in the vicinity of the longitudinal center of said body member; end members sealingly closing the ends of said body member to define a fully enclosed reservoir; inlet passage means in one of said end members for communicating fluid into and out of said reservoir; a helical coil spring having a plurality of coils and being disposed within said body member, the entirety of said spring being disposed in the vicinity of said one of said ridges with at least one coil on each side thereof, said spring being in a stressed state to thereby exert a radially outward bias on said body member for substantially the full circumferential extent of said spring, whereby said body member is placed in circumferential tension in the vicinity of said spring, said spring being maintained in position solely by frictional engagement with said body member and mechanical engagement with said one of said ridges.

3,929,250
GASOLINE TANK PLUG

John Abbate; Warren R. Jewett, both of Orange, and William H. Mason, Woodbridge, all of Conn., assignors to John Abbate, Orange, Conn.

Filed Feb. 3, 1975, Ser. No. 546,328
Int. Cl.² B65D *53/00*
U.S. Cl. 220—237 **6 Claims**

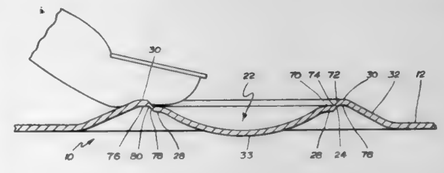
1. A device for plugging gasoline tanks and the like, comprising:
a bolt having a flared end, a grippable end and a threaded portion between said ends;
a non-metallic, radially expandable sleeve seal slidably fitted on said bolt below said flared end and having an outside diameter adapting said sleeve seal to be received in a hole of predetermined diameter in said gasoline tank; a gasket slidably fitted on said sleeve seal, the outside diameter of said gasket being greater than the diameter of said hole;
a washer on said bolt, said washer having a cavity for sealingly receiving said gasket; and
at least one nut on said threaded portion in abutment with said washer on the opposite face thereof from said cavity; said nut acting on said washer and bolt, when said washer and gasket abut the rim of said hole in said tank, whereby said flared end of said bolt causes said sleeve seal to expand outwardly of said hole and thereby to engage and to anchor on the edges of said hole interiorly of said tank, and said gasket sealingly engages the rim and edges of said hole exteriorly of said tank.



3,929,251
CONTAINER WALL WITH RUPTURABLE WEAKENING LINE

Hugh C. Urmston, Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 281,541, Aug. 17, 1972. This application May 7, 1973, Ser. No. 357,937
Int. Cl.² B65D *17/00*
U.S. Cl. 220—268 **24 Claims**



1. A peripherally chimed sheet metal container component having a wall with
at least one inwardly displaceable opening panel therein non-concentric with the peripheral chime around the container component and constituting a minor portion of the component, said opening panel having an integral rim therearound peripherally terminating in a fracturable web defining a locus of separation of said opening panel from the adjacent portion of said wall,
an integral deflectable portion adjacent said opening panel and projecting outwardly from the general plane of the wall of said container component, said deflectable portion terminating in a lip on the marginal edge thereof toward said web integrally interconnected with the rim of said opening panel and defining therewith said fracturable web,
the rim of said opening panel including an outwardly exposed surface terminally intersecting the outwardly exposed marginal edge of the lip of said deflectable portion in an outwardly exposed corner,
said deflectable portion having a portion of the undersurface thereof terminally meeting the undersurface of the outer marginal edge of said rim in predetermined spaced relation with said exposed corner to define therebetween the extent of said fracturable web,
said opening panel including means for imparting greater rigidity thereto than that of said deflectable portion disposed adjacent thereto to effect an initiation, in response to digitally applied localized inwardly directed pressure against said deflectable portion at a location spaced from the peripheral chime around the container component, of

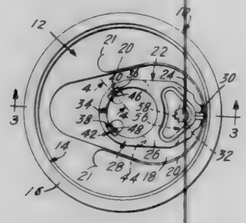
relative displacement of said lip relative to said rim to strain said web and induce fracture thereof to permit inward displacement of a separated opening panel.

3,929,252

CHILD-RESISTANT CLOSURE FOR METAL CONTAINER

Leonard Thomas La Croce, Paramus, N.J., assignor to American Can Company, Greenwich, Conn.

Filed Aug. 22, 1974, Ser. No. 499,620
Int. Cl.² B65D *41/32*
U.S. Cl. 220—269 **12 Claims**



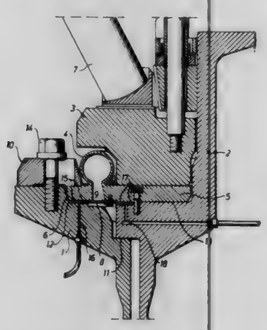
1. In an end closure for a container having a central panel portion, a displaceable portion defined by a score line included in said central panel portion, and an opening tab including a pull ring attached to the displaceable portion at a point proximate the periphery of the central panel portion with the pull ring of the opening tab radially inward from the point of attachment, the improvement which comprises an arcuate channel formed in the central panel portion underlying the pull ring of the opening tab, the channel being configured to coincide with the pull ring and substantially nesting the pull ring therein, and means for releasably engaging the pull ring to maintain and resist movement of the pull ring from said substantially nested position.

3,929,253

METHOD OF ARRANGING A SEAL BETWEEN A PRESSURE VESSEL, PREFERABLY A REACTOR VESSEL, AND ITS LID BY MEANS OF A TORRID RING PROVIDED WITH FLANGES

Erik Börje Johnsson, Trosa, Sweden, assignor to Aktiebolaget Atomenergi, Sweden

Filed Apr. 18, 1973, Ser. No. 352,225
Claims priority, application Sweden, May 26, 1972, 6989/72
Int. Cl. B65d *53/00, 45/00*
U.S. Cl. 220—320 **1 Claim**



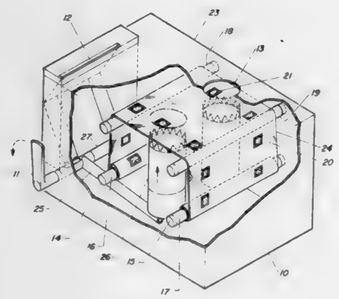
1. A sealing assembly for a pressure vessel including a vessel body having an open end and a lid engaging said vessel body completely about said end to form a preliminary seal for said vessel body, said sealing assembly comprising, in combination, a toroid ring member extending completely about said pressure vessel externally of said preliminary seal, said toroid ring member including integrally formed first and second flanges extending, respectively, radially inwardly and radially outwardly of said ring member, shoulder means formed about said lid and having said first annular flange in abutment therewith, collar means formed about said vessel body and having said second annular flange in abutment therewith, first connecting means releasably affixing said first annular flange against said shoulder means, and second connecting means releasably affixing said second annular flange against said collar means, said first connecting means comprising a support ring extending in abutting relationship about said first annular flange, with said first annular flange being positioned between said support ring and said shoulder means, and support legs extending to apply to said support ring a force clamping said first annular flange between said support ring and said shoulder means, said lid and said vessel body being so configured that the force applied by said support legs to clamp said first annular flange between said support ring and said shoulder means simultaneously operates to press said lid against said vessel body along the engaging portions thereof forming said preliminary seal, and said toroid ring member is formed with an arcuate portion thereof extending between and across a gap between said first and second annular flanges and wherein said assembly includes a spring plate attached to extend across said cap in abutment with both said first and second annular flanges.

3,929,254

STAMP VENDING MACHINE

Rene G. Artze, 61-45 98th St., Rego Park, Queens, N.Y. 11374

Continuation-in-part of Ser. No. 367,234, June 5, 1973, abandoned. This application May 13, 1974, Ser. No. 469,509
Int. Cl.² G07F *11/72*
U.S. Cl. 221—30 **4 Claims**



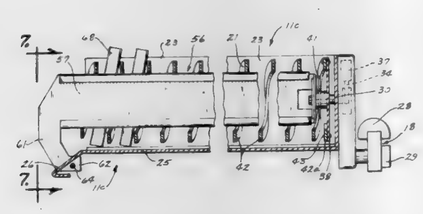
1. A stamp vending machine comprises a housing, a sheet for supporting stamps, a first roller means on which a portion of the sheet is stored, a second roller means cooperating with said first roller means to receive another portion of the sheet, drive means operable for moving the sheet between said roller means passed a viewing point, and removing means operable for removing a part of the sheet, said sheet comprising a plastic and said removing means comprising a heat source operable for producing a circular ring of heat whereby the removing means melts said sheet to cause the removal of a portion of said sheet.

3,929,255

VENDING MACHINE DIVIDED HELIX APPARATUS

Francis A. Wittern, Des Moines, and Arthur N. Wirstlin, Altoona, both of Iowa, assignors to Fawn Engineering Corporation, Des Moines, Iowa

Filed Jan. 31, 1974, Ser. No. 438,435
Int. Cl.² G07F *11/36*
U.S. Cl. 221—75 **4 Claims**



1. In a vending machine having a cabinet and within one portion of which is an item discharge chute for dispensing items to be withdrawn from the machine, a plurality of item discharge units mounted in a side-by-side, horizontally disposed arrangement, each item discharge unit comprising:

tray means having side walls, a rear wall, a bottom and a front end open to the discharge chute, said tray means including a front ledge portion extended forwardly and downwardly toward the chute and beyond the front end of said helical means;

drive means mounted in said machine and having a drive shaft inserted through said rear wall and toward said front end, said drive means customer controlled for predetermined incremental operation;

driven means connected to said drive means and rotatable therewith, said driven means including a disc and sleeve integral therewith, with said sleeve secured to said drive shaft;

divider means mounted within said tray means intermediate said side walls and extended longitudinally of said tray means, one end thereof mounted on said driven means in a non-rotatable manner, and the other end of said divider means secured to said bottom at the front end thereof, said divider means including a rear end extending normal to the axis of said drive shaft, said rear end also having an opening formed therein which is larger than said sleeve, whereby said rear end is fitted over and rests upon said sleeve and said sleeve is inserted through said opening;

helical means having a plurality of convolutions disposed within and extended the length of said tray means, said helical means secured at the rear end thereof to said driven means so as to be rotatable thereby and supported on said divider means, the arrangement such that articles to be dispensed are placeable completely to each side of said divider means between adjacent convolutions and are discharged alternately from said front end in response to operation of said drive means; and

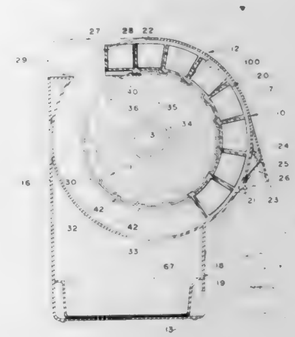
wherein said front ledge portion of the tray means has a slot formed therein, and said divider means includes an element, the front end of which has a tab inserted through said slot, the bottom of said tab resting upon the bottom of said slot, said tab having a passage formed therein, and an elongated pin extended parallel to and under the said front ledge portion of the tray portion transversely of said tray means and inserted through said passage for locking said element to the front of said tray means.

3,929,256

DISPENSER FOR ICE CUBES AND THE LIKE

Arieh Solomon, Tel Aviv, Israel, assignor to Avraham Deshe, Tel Aviv, Israel

Filed Mar. 13, 1974, Ser. No. 451,004
Claims priority, application Israel, Mar. 13, 1973, 41765
Int. Cl.² G07F *11/00*
U.S. Cl. 221—81 **11 Claims**



1. Dispensing apparatus for ice cubes or other discrete articles comprising:

a circular rotatable wheel;

a longitudinally extending flexible magazine insertable into engagement with the periphery of said rotatable wheel, said magazine being normally flat and having a bottom that fits and conforms to the curved periphery of said wheel when in engagement therewith and having a plurality of spaced compartments arranged longitudinally in parallel rows, such that the compartments in adjacent rows are in relatively staggered disposition to one another, said compartments being adapted to hold discrete articles, wherein adjacent compartments of said magazine are defined by spaced transverse walls interconnected by a longitudinal wall, whereby the discrete articles are ejected from the compartments in response to the flexure of said magazine in conformity with the periphery of said wheel;

a cover having an outlet opening operatively associated with said wheel for retaining the contents of said magazine therein until rotation of said wheel places a single compartment in alignment with said outlet opening in said cover at which time as article in the last mentioned compartment is gravity dispensed through said outpet opening; and

wherein the sides of said magazine and the sides of said cover have cooperating ridges and grooves for retaining the bottom of said magazine engaged with the wheel periphery during rotation of said wheel.

3,929,257

MECHANICAL INTERLOCK DEVICE FOR A VENDING MACHINE

Manohar Mohan, Cincinnati, Ohio, assignor to William F. Shepherd, Inc., Cincinnati, Ohio

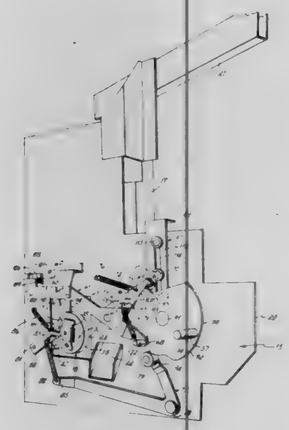
Filed Jan. 30, 1975, Ser. No. 545,401
Int. Cl.² G07F *11/16*
U.S. Cl. 221—152 **9 Claims**

1. A mechanical interlock device for a product dispenser mechanism of a vending machine, said mechanical interlock device being adapted to cooperate with a credit accumulator device of the type that includes a rotatable credit cam having a notch in the periphery thereof, said interlock device comprising

a drive cam adapted to be rotated by said product dispenser mechanism from a home position to a vend position, said

drive cam presenting a cam track on a first portion of its periphery and a lock notch on a second portion of its periphery,

a sensing arm having a sensing finger adapted to ride on the periphery of said credit cam and move into said credit cam's notch when same is presented thereto, said sensing arm being positioned to contact said drive cam's cam track, said sensing arm's finger being moved out of said credit cam's notch upon rotation of said drive cam from home position toward vend position,



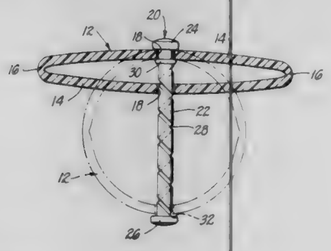
a locking arm having a bolt movable into and out of locking relation with said drive cam's locking notch, said sensing arm and locking arm being connected together in a manner that permits said bolt to be retracted from locking engagement with said drive cam upon rotation of said credit cam when said sensing finger moves into said credit cam's notch and permits said bolt to be moved into locking engagement with said drive cam when said drive cam has returned to home position from vend position.

3,929,258

FLUID DISPENSING STRUCTURES

James B. Stephens, La Crescenta, Calif., assignor to Westates Space-Era Products, Inc., So. El Monte, Calif.

Filed July 29, 1974, Ser. No. 492,488
Int. Cl.² B05B *15/00*
U.S. Cl. 222—1 **21 Claims**



1. A fluid dispensing structure which includes:

an elongated, flexible, fluid impervious tube of an organic polymer material which is capable of changing in cross-sectional configuration between a substantially flat configuration and a circular configuration in accordance with changes in internal pressure within said tube, one end of said tube being adapted to be connected to a source of fluid under pressure,

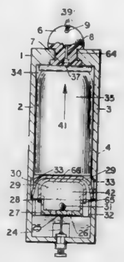
said tube having a plurality of holes located along its length, an elongated flow control member associated with each of said holes, each of said flow control members having a cross-sectional configuration which renders it capable of moving with respect to the hole with which it is associated at all times of said tube changes in cross-sectional configuration between said substantially flat configuration and said circular configuration, each of said flow control members having a cross-sectional configuration different than its associated hole so as to permit flow to the exterior of said tube when a fluid is supplied to the interior of said tube.

3,929,259

CHEMICAL DISPENSING ANTI-BURGLAR DEVICE

Charles R. Fegley, 1606 Frush Valley Road, Laureldale, Pa. 19605, and Werner F. Esseluhn, 12 Larchwood Road, Wyomissing, Pa. 19610

Filed June 4, 1974, Ser. No. 476,314
Int. Cl.² B67D *5/08*
U.S. Cl. 222—61 **6 Claims**



1. A chemical dispensing anti-burglar device for use with a pressurized container, the device comprising: a housing, means for supporting said pressurized container in said housing; a fluid passageway extending through said housing having an entry section, means for discharging fluid from said pressurized container into said entry section of said passageway, a reciprocal member slideably mounted within said housing and adapted upon movement to discharge fluid from said pressurized container, an enclosed expansion chamber within said housing, an expansive charge within said chamber, means for causing expansion of said charge within said chamber, said reciprocal member having a surface against which the gases resulting from said expansion react to move said reciprocal member within said housing to cause discharge, a spring activated retaining means for locking said reciprocal member in position to cause discharge after said expansion, a sealing means formed around said entry section and said discharging means and arranged to prevent fluid leakage as fluid is discharged from said pressurized container into said passageway.

3,929,260

GLUE DISPENSING ASSEMBLY

Richard J. Ernst, Palatine, Ill., assignor to Xerox Corporation, Stamford, Conn.

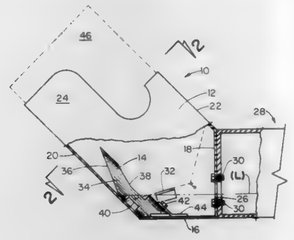
Continuation of Ser. No. 312,352, Dec. 5, 1972, abandoned.
This application Feb. 13, 1974, Ser. No. 442,287
Int. Cl.² B67B *7/24*
U.S. Cl. 222—88 **6 Claims**

1. Apparatus for dispensing a liquid in a container, comprising:

a housing into which the container is insertable downwardly along a linear path;

a tubular blade member having at least one opening in its wall;

means for connecting the blade member inside the housing with its axis parallel to the direction of the linear path, whereby said blade pierces a hole in the container upon its being inserted a predetermined amount; and



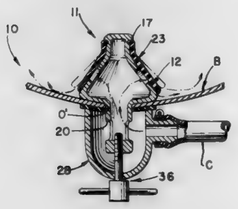
a pair of tabs connected to the inside of the housing at a level above the bottom of the housing for limiting the extent to which said container is insertable into the housing, said hole and at least one of said openings being in communication when further insertion of the container is limited, whereby the liquid in the container maintains a sump of the liquid in the bottom of the housing.

3,929,261

AERATION DEVICE AND METHOD FOR ASSISTING DISCHARGE OF MATERIAL FROM CONTAINERS

Keith F. Solimar, New Brighton, Minn., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Feb. 4, 1974, Ser. No. 439,530
Int. Cl.² B65G *3/12*
U.S. Cl. 222—195 **6 Claims**



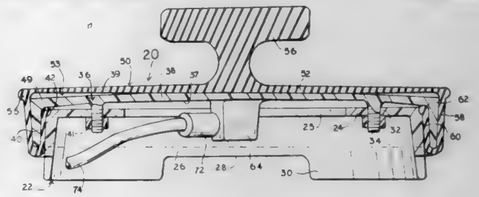
1. An aeration device for assisting discharge of material from containers, comprising a cone shaped support means having a small diameter end and a large diameter end and adapted to be affixed to a wall of a container with the large end thereof adjacent the interior of the container wall and the small diameter end extending into the interior of the container, said support means having an air inlet adjacent the large diameter end thereof adapted to be connected to a source of air exteriorly of the container, and an air outlet interiorly of the container, a flexible, cone shaped flap correspondingly shaped to the support and having a small diameter end fixed on the small diameter end of the support means and extending in close fitting relationship to the support means and closing said air outlet, the large diameter end of the flap disposed adjacent the container wall when the device is in operative position and said large diameter end of the flap being free of attachment to said support means for flexing movement thereof toward and away from the support means to close and open said air outlet, whereby when said device is used, flow of air through said support means and outwardly through said outlet induces flexation of said large diameter end of said flap away from said support means and flow of air outwardly relative to the axis of the support and toward the container wall and into material stored in the container to aerate the material, the flexibility of said flap being such that it is caused to flutter or vibrate by air flowing therepast to agitate material in the container and prevent bridging of the material in the container and to insure substantially complete removal of the material from the container.

3,929,262

SELF-PRESSURIZED PORTABLE CONTAINER FOR LIQUIDS

John S. Viehe, 692 Talamini Road, Somerville, N.J. 08876

Filed Feb. 26, 1975, Ser. No. 553,095
Int. Cl.² B65D *37/00*
U.S. Cl. 222—210 **10 Claims**



1. A self-pressurized portable container for liquid, comprising:

a bottom ring plate having

an upper annular flange defining a central hole, and

a depending circumferential side wall integrally joined to the periphery of said flange;

a pressure plate having

a circular upper wall, and

a depending circumferential other side wall integrally joined to the periphery of said upper wall and nesting on the bottom ring plate;

a circular elastic membrane having

a circular top wall overlaying said pressure plate and defining therewith an an expansible chamber for containing liquid under pressure,

an axially extending depending skirt integral with the periphery of said top wall, surrounding and abutting said other side wall, and

an inwardly turned circumferential wall concentric with and integral with said skirt engaged between the side wall of the bottom ring plate and the other side wall of the pressure plate; means in the pressure plate for filling and emptying said chamber and

attachment means detachably securing the ring plate and pressure plate together to hold the inwardly turned wall of the membrane in sealing pressure engagement while the top wall of the membrane is free to expand under pressure of liquid filling said chamber.

3,929,263

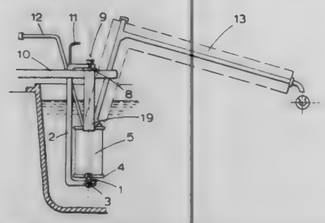
APPARATUS FOR PORTIONING LIQUID METAL

Ivar Dagfinn Heimdal, and Ivar Skreosen, both of Porsgrunn, Norway, assignors to Norsk Hydro A.S., Oslo, Norway

Filed Oct. 21, 1974, Ser. No. 516,871
Claims priority, application Norway, Oct. 19, 1973, 4065/73
Int. Cl.² B22D *17/30*
U.S. Cl. 222—373 **5 Claims**

1. In an apparatus for portioning liquid metal comprising a portioning container intended to be submerged into a reservoir of molten metal, means for supplying pressure gas to said container and a metal outlet therein to be connected with a mould, such as a die-casting machine, said container being provided with a demountable valve means positioned at a bottom portion thereof to permit liquid metal to flow into said container when gas pressure is relieved, the improvement wherein: said valve means comprises a valve housing having an upper portion which during operations extends through an opening in the bottom portion of said container with sufficient clearance to permit the valve housing to be tilted in relation

to a vertical when being inserted into said opening, said valve housing being provided with an outer, upward narrowing, generally conical flange having a contact area intended to



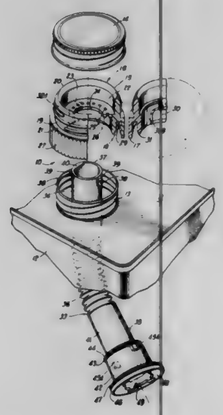
contact a generally conically shaped seating area at said opening in the bottom portion of said container, said valve housing being pivoted to a lever.

3,929,264

DOUBLE SEALING POURING ASSEMBLY

Walter P. Maynard, Jr., 6650-A Peachtree Industrial Blvd., Atlanta, Ga. 30340

Filed June 28, 1974, Ser. No. 483,987
Int. Cl.² B67D 5/12
U.S. Cl. 222—525 **6 Claims**



1. A double sealing pouring assembly for operable connection to a container having a dispensing neck and which is adapted to contain therein a supply of dispensing material, comprising:

a. a closure means for said dispensing neck;

b. a collar for removable sealing engagement with said neck, said collar including an upper portion for selected sealing engagement with said closure means and a bifurcated section depending therefrom which engages said neck therebetween; and,

c. a spout slidably positioned within said collar for selective positioning at retracted and extended positions, said spout having an outer end portion for dispensing said material therefrom, an inner end portion for engaging said collar at said extended position and a central passage extending therethrough;

said bifurcated section of said collar including an outer wall whose inner surface engages the exterior of said dispensing neck, and an inner wall having a radially extending shelf with an opening therethrough for slidably receiving said spout;

said inner end portion having a section of greater diameter than said central passage and being in communication therewith by means of an intermediate annular ledge, said section terminating in a flared ring portion; and

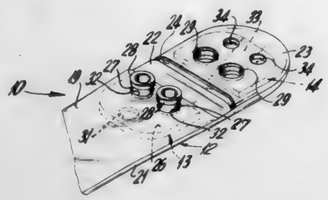
wherein said assembly is provided with a means for locking said spout within said collar when said spout is in its extended position, said locking means comprising a protrusion and a groove for mating engagement with said protrusion, whereby said annular ledge engages the underside of said shelf and said ring portion engages the bottom of said inner wall to provide a double seal for said spout in its extended position.

3,929,265

WATCH STRAP WITH PLASTIC CLIP

Bernard Pyne, Sunbury on Thames, and Robert Liddle, Woodley, both of England, assignors to Timex Corporation, Waterbury, Conn.

Filed Jan. 14, 1974, Ser. No. 433,025
Int. Cl.² A44C 5/16
U.S. Cl. 224—4 D **4 Claims**



1. A quick-fastening watch strap adapted to be secured about the spring bar of a watch case comprising a pair of strap elements, each including:

an outer plastic layer having at least one aperture and an inner plastic layer which extends along a substantial portion of the outer layer and is affixed thereto along the edges of said layers, said outer layer having an end terminating a predetermined distance from an end of the inner layer and said inner layer further including at least one aperture therethrough,

a stud plate having a base portion positioned between the outer plastic layer and the inner plastic layer, said plate having at least one stud projecting upwardly therefrom through the aperture in the inner layer,

the stud plate including at least one hollow cylindrical stud having an enlarged lip portion at the end thereof to facilitate locking engagement with a corresponding aperture in the keeper plate in a snap fit, said lip being of no greater length than the thickness of said outer layer so as not to project therefrom,

a keeper plate disposed on the terminating end of said outer layer having at least one aperture extending therethrough in alignment with the aperture in the outer layer to receive and retain the end of said projecting stud within said outer layer aperture without projecting therefrom when the strap end is folded back about a spring bar, said keeper plate including anchoring means, and,

connecting means mounted to the strap element at the other end and adapted to be secured to mating connection means to hold the watch in place about one's wrist.

3,929,266

KEY HOLDING DEVICE

Jung K. Kim, 617 Via Altamira, Montebello, Calif. 90640

Filed Mar. 13, 1974, Ser. No. 450,824
Int. Cl.² A45F 5/02
U.S. Cl. 224—26 R **2 Claims**

1. A security type holding device for keys comprising:

a holder formed of a sheet of metal having its upper and lower end portions bent back to form a substantially flat

back wall and having its central portion rounded to form an outwardly curved front wall spaced from said back wall so as to form a lateral opening through which a belt being worn by a person can be passed and held flat against the back wall, said outwardly curved front wall having a centrally disposed first opening and a second opening with a slot extending downwardly from said second opening and partly across the lower end portion of the holder, said second opening having a width larger than the width of said slot,

a leaf spring having a button attached to the surface thereof, said leaf spring fixed at its upper end to the underside of the outwardly curved front wall with the button thereof projecting through the first opening on said front wall and with the surface of the leaf spring resiliently urged to bear closely against the underside of the outwardly curved front wall so as to cover the second opening on the upper end of the slot,

a disconnect element having a cylindrical body and having a head formed on the upper end thereof by a recessed neck, said neck having a diameter smaller than the width

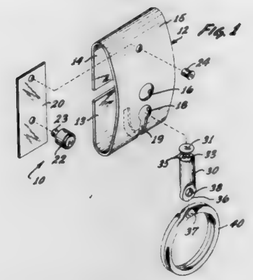


Fig. 1

of said slot and said head and cylindrical body both having a diameter larger than the width of said slot, said head being of such a size that it can be inserted through the second opening to depress said leaf spring and then moved down such that said element is engaged by its recessed neck in said slot to thereby retain it on said holder, said neck when engaged in said slot having such a fit therein as to prevent said element from moving into the lateral opening of said holder, and

means for securely coupling one or more keys to the lower end of said disconnect element,

whereby the disconnect element has its head securely engaged by its recessed neck on the slot of said holder and can be removed therefrom by manually depressing said button to push the lower portion of the leaf spring inwardly into the spacing provided between the underside of the outwardly curved front wall and said belt to uncover said second opening and thereby enable the head of the disconnect element to be guided by its recessed neck along the slot up into and out of said second opening.

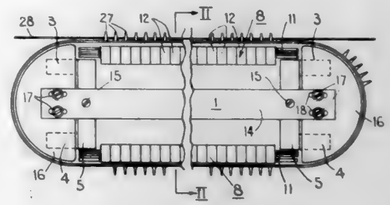
3,929,267

SHEET MATERIAL TRANSPORT

Alan Foster, 5, Lindsay Ave., Hitchin, Hertfordshire, England

Filed Sept. 21, 1973, Ser. No. 397,471
Claims priority, application United Kingdom, Sept. 16, 1972, 43027/72
Int. Cl. G03b 1/30
U.S. Cl. 226—74 **8 Claims**

1. Web feeding apparatus including guide means to guide an endless belt around a path having a linear portion; means on the belt arranged to engage the web at least during travel along the linear portion of the path; a plurality of spaced magnetic elements carried on the belt; and means operable to generate a pattern of magnetic fields which moves along at least a portion of the path in a sequence of steps, the magnetic fields being effective to co-operate with the magnetic elements on the belt to cause the magnetic elements and the belt



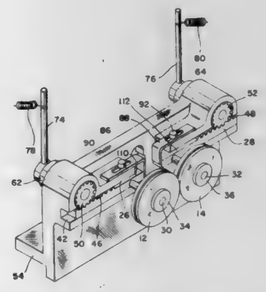
to move along the path in steps corresponding to the stepping movement of the pattern of magnetic fields.

3,929,268

PRESSURE ROLLERS FOR CHENILLE MACHINES

Alexander Gross, 2590 W. Maple Ave., Feasterville, Pa. 19047

Filed Jan. 8, 1974, Ser. No. 431,746
Int. Cl. B65h 17/22
U.S. Cl. 226—176 **10 Claims**



1. In a pressure roller system containing a left roller and a right roller, the combination of

A left and right block means to each respectively carry one said roller,

1 each roller having rotative motion relative to its associated block means;

B left track means to slidingly receive the left block means,

1 said left block means having longitudinal movement within the left track means,

2 said left track means including means to prevent transverse and vertical movement of the left block means,

3 said left track means including left stop means to limit the inward, longitudinal movement of the associated block means;

C right track means to slidingly receive the right block means,

1 said right block means having longitudinal movement within the right track means,

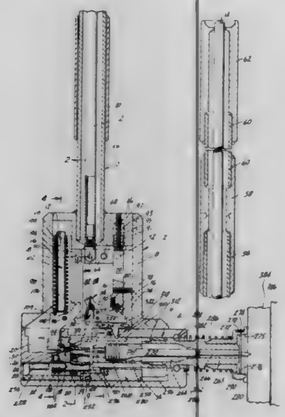
2 said right track means including means to prevent transverse and vertical movement of the right block means;

3 said right track means being provided with right stop means to limit the inward, longitudinal movement of the associated block means;

D left and right spring biased means to continuously respectively urge the left and right block means toward each other, whereby the pressure rollers are urged into tangential contact; and

E the left and right stop means having longitudinal adjustment means to vary the inward limit of travel of the left and right block means.

3,929,269
POWDER-ACTUATED TOOL
Elmer R. Hodil, Branford, Conn., assignor to Olin Corporation, New Haven, Conn.
Filed Aug. 5, 1974, Ser. No. 494,663
Int. Cl.² B25C 1/14
U.S. Cl. 227—10 **21 Claims**



1. A powder-actuated tool comprising a housing, means in said housing for providing a path for a cartridge belt having a plurality of cartridge holding sections, cartridge holding means moveable in said housing and including at least one cartridge holding portion for receiving a cartridge from the cartridge belt, a barrel assembly having an opening therein for receiving at least a portion of said cartridge holding portion, means for moving said cartridge holding means from a first position whereat the cartridge holding portion receives a cartridge from said cartridge receiving belt to a second position when said cartridge holding portion is in alignment with said opening in said barrel assembly and to a third position whereat the cartridge holding portion is in alignment with an empty cartridge holding section of the belt, and means for moving said belt from a position wherein a cartridge holding section having a cartridge therein is in alignment with the cartridge holding portion of said cartridge holding means when the cartridge holding means is in said first position to a position wherein an empty cartridge holding section is in alignment with the cartridge holding portion of the cartridge holding means when said cartridge holding means is in its third position.

3,929,270
FILM-SURFACE WELDING BACKUP TAPE
Roger H. Keith, Ramsey, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed July 17, 1974, Ser. No. 489,143
Int. Cl.² B23K 5/22
U.S. Cl. 228—50 **3 Claims**

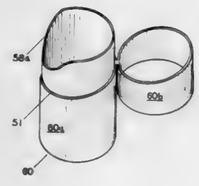


1. In a welding backup tape of the type in which an elongated heat-resistant flexible tape backing of glass cloth, metal foil or the like is coated with a pressure-sensitive adhesive and provided with, medially adhered along the length thereof, a strip of flexible refractory material comprising refractory particles held together by a flexible binder,

the improvement which comprises, disposed on the surface of said refractory strip opposite said backing, a thin tacky layer of film-forming adhesive which is curable when heated to about 150°C. or more for extended periods, and a monolayer of inorganic particles protectively covering the exposed surface of the tacky adhesive layer to permit easy rolling and unrolling of the tape,

whereby when said tape is applied over one side of a joint to be welded and preheated to temperatures above about 150°C. the heat hardenable film will retain said refractory particles in position, and said inorganic particles will form a smooth glaze during welding, insuring a smooth, sound weld.

3,929,271
CARTON AND BLANK THEREFOR
George L. Meyers, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.
Filed Sept. 30, 1974, Ser. No. 510,653
Int. Cl.² B65D 3/22, 3/04
U.S. Cl. 229—4.5 **6 Claims**



1. A unitary carton blank for forming a generally cylindrical carton having a reclosable cover portion adapted to telescope over a receptacle portion, said blank comprising:

a generally rectangular inner and outer wall panels each having an upper, lower and outer edge, said panels having a common inner edge along which they are hingedly connected, said outer wall panel having an integral glue panel portion at its outer edge, the length of said outer wall panel including said glue panel portion thereof being longer than said inner wall panel to permit said outer wall panel to be completely wrapped around said inner wall panel overlapping said inner edge and to permit at least a part of said glue panel portion thereof to be adhered to the outer wall panel beyond said common inner edge,

b a line of weakness formed in said outer wall panel dividing said outer wall panel into an upper section providing a skirt for said cover portion and a lower section providing an outer wall for said receptacle portion,

c at least two generally circular top panels hingedly connected along the upper edge of said outer wall panel,

d a top flap hingedly connected along the upper edge of said outer wall panel between said circular top panels,

e at least two generally circular bottom panels hingedly connected along the lower edge of said outer wall panel, and

f a bottom flap hingedly connected along the lower edge of said outer wall panel between said circular bottom panels.

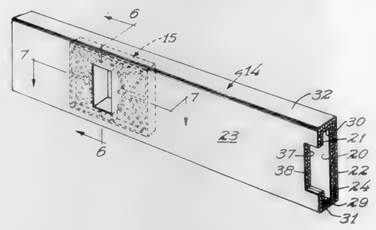
3,929,272
REINFORCED CORRUGATED MEMBER
Renile E. Bowles, Janesville, Wis., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.
Filed Mar. 14, 1975, Ser. No. 558,342
Int. Cl.² B65D 85/54, 19/40
U.S. Cl. 229—23 C **8 Claims**

1. An improved skid for use in a shipping container or the like, said skid comprising:

a pair of longitudinal members each formed from a single blank of corrugated paperboard or the like and folded into a tube having a hollow rectangular cross section;

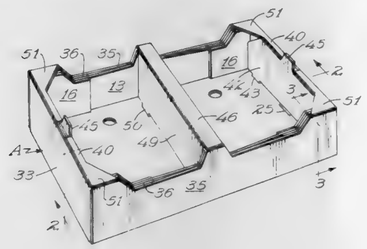
each of said longitudinal members being folded around into substantially rectangular tubular relation and having positioned therein a rigid reinforcing insert;

said reinforcing insert being adapted to fit snugly within the hollow interior of said folded longitudinal member;



said reinforcing insert having a rectangular aperture formed therein, said aperture defined by a flange extending outwardly through at least one side of said longitudinal member and adapted to receive one end of a wooden cross member interconnecting said pair of longitudinal members.

3,929,273
TRAY FOR STRAWBERRIES AND THE LIKE
Elmer G. Swanson, Salinas, Calif., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.
Filed Sept. 12, 1974, Ser. No. 505,228
Int. Cl.² B65D 5/22; 229/23 BT, 34 R, 34 HW, 32
U.S. Cl. 229—34 R **2 Claims**



1. A tray-like shipping container formed from a pair of separate blanks of corrugated paperboard, said container including:

a first tray including a rectangular bottom wall, side and end walls hingedly connected to the sides and ends of said bottom panel,

corner flaps connected to the sides of said end walls and adhesively secured in face contact with the inner surfaces of said side walls,

a second tray including a top flange at each end thereof, side and end panels hingedly connected to said top flanges and extending downwardly therefrom,

corner panels hingedly connected to opposite ends of said end panels and adhesively secured to the inner surfaces of said second tray side panels,

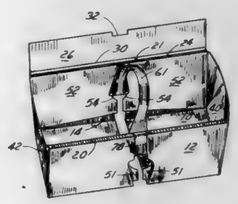
said first and second trays being telescoped together with the side walls of said first tray engaging the inner surfaces of said corner panels of said second tray,

end wall liner panels hingedly connected to said flanges and extending downwardly therefrom in spaced relation to said end panels and engaging said bottom wall,

tongues projecting downwardly from said liner panels and engaging in apertures in said bottom wall to form a hollow end wall, and

said structure resulting in side wall portions underlying said flanges which are of four thicknesses of paperboard, and three thickness hollow end walls.

3,929,274
FRUIT BASKET
Allardus A. Akkerman, Calgary, Canada, assignor to Domtar Limited, Montreal, Canada
Filed Sept. 20, 1974, Ser. No. 507,754
Int. Cl.² B65D 25/22
U.S. Cl. 229—52 B **8 Claims**



1. A basket comprising a bottom wall, a pair of side walls integrally connected one to each side of said bottom wall, a handle integrally foldably connected at each of its opposite ends to respective of said side walls, said handle being formed in said bottom and said side walls by a pair of lines of severence extending across said bottom wall and part way up each of said side walls, end walls foldably integrally connected to opposite ends of said bottom walls, and flaps integrally foldably connected one at each side edge of said end walls and foldable into face to face relationship with said side walls on respective sides of said basket, a pair of side flaps, means connecting one of said side flaps to each of said side walls along the edges thereof remote from their respective foldable connections to said bottom wall, each of said side flaps folded inwardly and overlying a pair of said end flaps positioned in face to face relationship with the side wall to which said side flap is connected thereby trapping a pair of said end flaps between each of said side flaps and its respective side wall, said side flaps having free edges at least a portion of which is positioned immediately above the said foldable connection between the end of said handle and the side wall to which said side flap is connected.

3,929,275
BAGS WITH FILM LINERS AND METHOD OF MAKING
Robert W. Bolling, Savannah, Ga., and Jerry H. Reeves, Bluffton, S.C., assignors to Union Camp Corporation, Wayne, N.J.
Division of Ser. No. 269,755, July 7, 1972, abandoned. This application June 28, 1974, Ser. No. 484,110. The portion of the term of this patent subsequent to Feb. 11, 1992, has been disclaimed.
Int. Cl.² B31B 39/00
U.S. Cl. 229—55 **5 Claims**

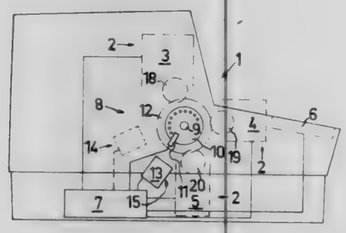


3. The film lined paper bag made by the method of claim **1.**

3,929,276
DEVICE FOR SETTING TYPE CARRYING MEANS IN A PRINTING DEVICE HAVING AT LEAST ONE PRINTING POSITION, ESPECIALLY FOR CASH REGISTERS

Göran Ingemar Lundström, Johanneshov; Friedrich Hartmann, Saltsjobaden, and Willem Huijsers, Farsta, all of Sweden, assignors to Hugin Kassaregister AB, Stockholm, Sweden

Filed Apr. 16, 1974, Ser. No. 461,354
Claims priority, application Sweden, Apr. 17, 1973, 7305458
Int. Cl.² G06C *29/00, 11/04*
U.S. Cl. 235—61 PK 6 Claims

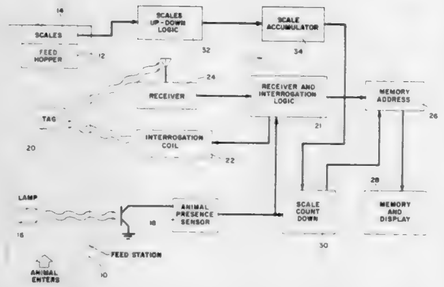


1. A device for setting type-carrying means in a printing device having a printing position, especially for cash registers, said device comprising a pulse generating means which emits pulses to an electronic counting unit and also comprising an electromagnet for each of the character locations, said electromagnet being arranged to change its magnetic state when the counting unit has received a predetermined number of pulses from the pulse generating means, said number of pulses corresponding to the symbol which is to be set, and in which device a driven setting unit is provided for each electromagnet, said setting unit being arranged to cooperate with a type-carrying means of each respective character location, the setting units being arranged side by side on a common driven axle and have lesser dimension in the axial direction of the axle than in the radial direction of the same, there being provided one single setting unit for each character location, said one setting unit being arranged to, when its accompanying electromagnet changes state as a result of the counting unit having received a predetermined number of pulses, disengage a central means in the setting unit from the driven axle, said central means cooperating with the type-carrying means of the printing location, the central means at each setting unit comprising a central wheel which is rotatable on the driven axle and which is provided with teeth along its periphery, said central wheel supporting a retaining mechanism which is arranged for locking and disengaging the central wheel in relation to the drive axle, said retaining mechanism cooperating with a driver which is mounted on the drive axle, said retaining mechanism including a retaining ring which is mounted on one side of the central means, said retaining ring being rotatable to a limited extent in relation to the central wheel and also being concentric to said central means, said retaining ring on its outer periphery being provided with a number of engagement means for cooperation with the electromagnet, the inner periphery of said retaining ring being provided with a locking boss for cooperation with an outer pawl which is pivotable on the central wheel, an inner pawl being arranged to be in or out of engagement with the driver depending on the position of the outer pawl in relation to the locking boss of the retaining ring, the inner pawl and the outer pawl each being comprised of an arm which is journalled at one end, said arms being arranged to be turned outwards away from the driven axle and disengage the central means as the rotation of the retaining ring is stopped by means of the electromagnet, the retaining ring being thereby turned to a disengagement position in relation to the central means.

3,929,277
ANIMAL FOOD MONITOR

John A. Byrne, and Charles K. Rhea, Jr., both of Cookeville, Tenn., assignors to Universal Identification Systems, Inc., Cookeville, Tenn.

Filed Dec. 12, 1974, Ser. No. 532,204
Int. Cl.² G06K *7/08*; A01K *5/02*
U.S. Cl. 235—61.6 R 6 Claims

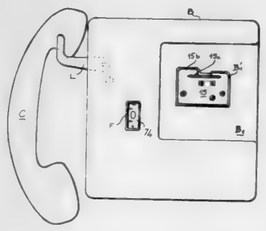


1. Apparatus for determining the amount of food consumed in a given time by each of a plurality of animals comprising a feed station, a scale located at the feed station, a feed hopper mounted on the scale, means for sensing the presence of an animal at the feed station, means responsive to the actuation of the presence-sensing means to determine the identity of the given animal, consumption measuring means connected to the scale for determining the amount of food consumed from the feed hopper by the given animal subsequent to the actuation of the presence-sensing means, memory means for storing the cumulative totals of food consumption of all of the animals individually, means responsive to the actuation of said identity determining means for connecting the consumption measuring means into that portion of the memory means corresponding to the given animal, and means responsive to the departure of the given animal from the feed station for returning the consumption measuring means to zero in preparation for the entry of the next animal into the feed station.

3,929,278
PREPAYMENT APPARATUS WITH A CODED TICKET

Loic Balavoine, Valence; Robert Cadot, Toulaud, and Jacques Sapy, Valence, all of France, assignors to Crouzet, Paris, France

Filed Feb. 19, 1974, Ser. No. 443,779
Claims priority, application France, Feb. 23, 1973, 73.06637
Int. Cl.² G06K *7/08*; G07F *1/06*
U.S. Cl. 235—61.8 R 3 Claims

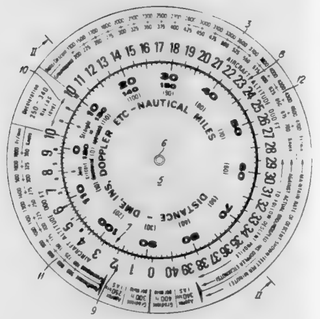


1. Prepayment apparatus with coded ticket including a movable reading and erasing head for the data written on the ticket, first mechanical means for introducing and setting in place the ticket, second mechanical means for effecting the successive steps of the working cycle, and means for exploiting the coded data on the ticket to control said second mechanical means, wherein the first mechanical means includes a ticket-carrying slider slidable on a slide fitted with a movable member including two coaxial pinions meshing respectively with a rack fixed to the frame of the apparatus and with a rack fixed to said ticket-carrying slider, relative movement between these two elements producing the setting of helical springs and the movement of a weight, the slide being also fitted with a retaining pawl, the second mechanical means includes a lever associated with a crank which transmits an alternative motion to the magnetic head, a locking pawl for said lever, a setting lever coupled with said lever through a crank and including at one end thereof a longitudinal aperture, said both levers being permanently urged towards each other by a spring whose attachment points determine unequal lever-arms, governor means for moving the magnetic head, a rack slider carrying an electrical feeler whose motion is controlled by a step-by-step escapement which is itself controlled by electrical impulses through an electromagnet and the means for exploiting the coded data includes a counter-subtracter with reset controlled by a contact, a diode matrix decoding a plurality of N discrete positions of the counter and a switch a branch of which scans a series of N contacts connected to the conductors representing the N discrete positions of the counter.

3,929,279
FLIGHT PATH CALCULATOR

Hugh P. K. Dibley, 18 Queens Gate Mews, London, SW7 5QJ, England

Filed May 14, 1974, Ser. No. 469,817
Claims priority, application United Kingdom, May 15, 1973, 23071/73
Int. Cl.² G06C *3/00*
U.S. Cl. 235—88 N 2 Claims



1. A flight path calculator calibrated to display the descent path for a selected type of aircraft, comprising:

a first member having a distance scale increasing linearly in a predetermined direction and calibrated in units of distance;

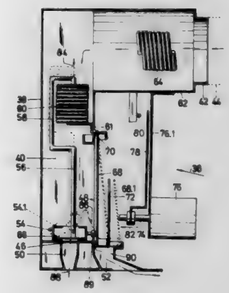
a second member having an altitude scale increasing in said predetermined direction and calibrated in units of altitude, said altitude scale consisting of three portions: (a) a first portion having a range from zero to a predetermined deceleration altitude and calibrated such that equal lengths of said first portion and said distance scale correspond to units of descent and the distance flown by said aircraft during said descent, respectively, at the indicated air speed for flight of said aircraft below said deceleration altitude; (b) a second portion in which the altitude indicia is maintained at said deceleration altitude and having a length relative to said distance scale corresponding to the distance said aircraft would travel while decelerating from the indicated air speed for flight of said aircraft above said deceleration altitude to said indicated air speed below said deceleration altitude, one end of said second portion being coincident with the said deceleration altitude indicium of said first portion; and (c) a third portion having a range from said deceleration altitude to a selected maximum altitude and calibrated such that equal lengths of said third portion and said distance scales correspond to units of descent and the distance flown during that descent, respectively, at said speed above said deceleration altitude, said deceleration altitude indicium of said third portion being coincident with the other end of said second portion; and

means for constraining said first and second members to move relative to each other while maintaining said distance and altitude scales juxtaposed so that the markings on one can be read off against the markings on the other.

3,929,280
TERMINAL AIR OUTLET DEVICE

Leslie John Kloot, Cape Town, South Africa, assignor to Cape Air Conditioning (Proprietary) Ltd., Milnerton, South Africa

Filed June 7, 1974, Ser. No. 477,331
Claims priority, application South Africa, July 11, 1973, 73/4666
Int. Cl.² F24F *11/02, 13/08*
U.S. Cl. 236—1 B 16 Claims



1. A terminal air outlet device for use at a discharge from a building air distribution system, including

a. a housing;

b. a chamber defined within the housing;

c. an inlet leading into the chamber and being adapted for connection to a building air distribution system;

d. a first air outlet from the chamber through which air is adapted to be discharged in a first direction,

e. a first fixed air guide means at the air outlet for guiding air in the first direction;

f. a second air outlet from the chamber through which air is adapted to be discharged in a second direction, which direction is substantially at right angles to the first direction;

g. a second fixed air guide means at the second air outlet for guiding air in the second direction; and

h. control means for regulating air discharge through the first and second outlets.

3,929,281

FLUID MIXING VALVES

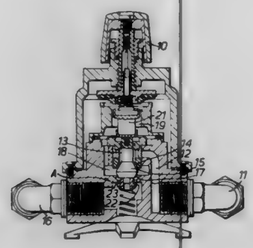
Alan Francis Woodward, Hockley, England, assignor to Barking Brassware Company Limited, Barking, England

Filed Nov. 5, 1973, Ser. No. 412,966

Claims priority, application United Kingdom, Nov. 10, 1972, 52051/72

Int. Cl. B05d *23/13*

U.S. Cl. 236—12 R **4 Claims**



1. A mixing valve for mixing first and second fluids, the valve comprising in combination

1. an inlet for the first fluid,
2. an inlet for the second fluid,
3. an outlet for the mixed fluids,
4. a main valve member located between said inlets and movable to vary fluid flow through each said inlet in inverse relation to fluid flow through the other inlet,
5. control means including a thermostatic device connected to said main valve for controlling the position thereof to vary said fluid flow,
6. an auxiliary valve member carried by said main valve member for movement therewith,
7. said second inlet being located between said main valve member and said auxiliary valve member whereby fluid flow through said second inlet is controlled by said auxiliary valve member only when fluid flow through the first inlet falls below a predetermined rate after which fluid flow through the second inlet is controlled by said auxiliary valve in accordance with fluid flow through said first inlet, and
8. further valve means operable by said control means for controlling the flow of fluid through said outlet.

3,929,282

THERMOSTAT FOR CONTROLLING A LIQUID MIXER

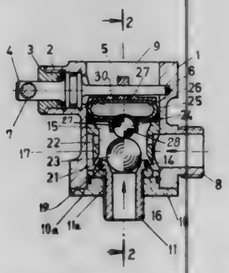
Franz Doll, Montreux, Switzerland, assignor to Bernd Grohe, Villa Les Cretes, Switzerland

Filed Jan. 28, 1974, Ser. No. 436,895

Claims priority, application Switzerland, Feb. 1, 1973, 1328/73; Apr. 18, 1973, 5563/73

Int. Cl.² G05D *23/00*

U.S. Cl. 236—12 R **13 Claims**



1. A combination of a thermostat and a mixer for liquids of different temperatures, comprising:

said mixer comprising:

a housing, a mixing chamber in said housing, a cold liquid inlet to said mixing chamber, a separate hot liquid inlet to said mixing chamber, a mixed liquid outlet from said mixing chamber;

a shiftable temperature regulating element in said mixing chamber, which said element is shiftable to various positions which block at least one said liquid inlet;

a seat at said hot liquid inlet; said temperature regulating element being shiftable toward and away from said seat, and said seat and said regulating element being cooperatively so shaped that when said regulating element is on said seat, flow through said one liquid inlet is blocked;

said temperature regulating element comprising a floatable ball, which floats in the presence of a liquid in said mixing chamber;

said cold liquid inlet communicates into said mixing chamber through inlet ports oriented to direct inflow at said ball and in a direction which raises said ball off said seat;

said thermostat comprising an enclosed thermostat chamber that is in communication with said mixing chamber and that is surrounded and defined by an elastic, flexible diaphragm-like jacket; said thermostat chamber being filled with a heat-sensitive, heat-expansive, hydropneumatically acting material; said jacket being in engagement with said temperature regulating element, thereby to shift the position of that said element as the temperature varies and as the volume of the material in said thermostat chamber varies.

3,929,283

THERMOSTATIC MIXING APPARATUS AND A RELATED METHOD FOR REGULATING TEMPERATURE

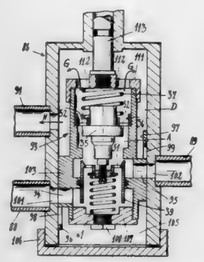
Claude Delpla, Reims, France, assignor to Societe Generale de Fonderie, Paris, France

Filed May 23, 1974, Ser. No. 472,849

Claims priority, application France, Nov. 13, 1973, 73.40290

Int. Cl.² G05D *11/16*

U.S. Cl. 236—12 R **9 Claims**



1. A thermostatic mixing apparatus primarily intended for use in sanitary installations, comprising a body having two inlets which open respectively into a cold-water admission chamber and a hot-water admission chamber and containing a mixing chamber which opens into an outlet for the discharge of blended water, means comprising a thermostatic cell for regulating the temperature of the mixture and means for controlling the outflow rate, wherein said apparatus comprises a delivery chamber in communication with the mixing chamber and adjustable means for introducing either of the feed water streams directly into said delivery chamber, said body being cylindrical, and a bush mounted in coaxial relation to the body so as to define the mixing chamber and provided with ports for the admission of feed water into the mixing chamber, wherein the bush is adapted to carry a cover pierced by a hole and forming a partition-wall between the mixing chamber and the chamber for the delivery of blended water, and wherein longitudinal gaps for the admission of hot water and cold water directly from the inlets into the delivery chamber are formed in the bush.

3,929,284

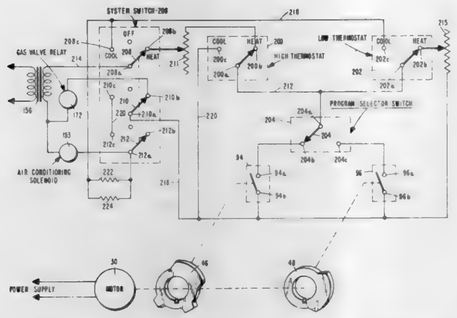
PROGRAMMABLE TIMER MECHANISM

Mike Prewarski, 3432 Lansdowne Drive, and Edward Mills, 3415 Thistletow Drive, both of, Lexington, Ky. 40502

Filed July 25, 1974, Ser. No. 491,635

Int. Cl.² G05F *23/19*

U.S. Cl. 236—46 **6 Claims**



1. A dual temperature control system for controlling the temperature of a zone comprising:

a. first and second zone thermostats;

b. a first programmable means for determining the time said first and second thermostats are effective to control temperature of said zone;

c. a second programmable means for determining the time said first and second thermostats are effective to control temperature;

d. means for automatically selecting which of said first and second programmable means determines when said thermostats are effective to control temperature; and

e. means for manually selecting one of said first and second programmable means to determine when said thermostats are effective to control temperature.

3,929,285

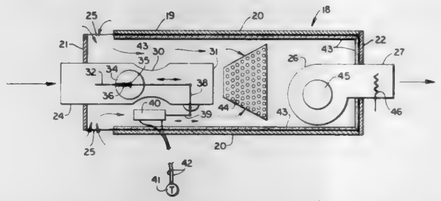
AIR CONDITIONING SYSTEM

Carl Francis Daugherty, Jr., P.O. Box 28617, Atlanta, Ga. 30328

Filed Mar. 25, 1974, Ser. No. 454,596

Int. Cl.² F24F *11/04*

U.S. Cl. 236—13 **7 Claims**



1. An air induction box comprising a housing with side walls and opposed end walls, a primary air conduit entering said housing through a first end wall and extending into said housing with its end opening extending toward the second end wall, at least one unrestricted secondary air inlet opening in said housing adjacent the entrance of said primary air conduit into said housing, a substantially constant speed centrifugal blower in said housing including an exhaust conduit extending through the second end wall arranged to continuously exhaust mixed air from said housing at a substantially constant rate, a sound baffle in said housing, valve means in the portion of said primary air conduit extending into said housing for selectively decreasing or increasing the flow of primary air through said primary air conduit, said valve means comprising a venturi in said primary air conduit, a valve support rod in said primary air conduit upstream from said venturi movable along its length toward and away from said venturi, a valve ball mounted on and movable with said valve support rod toward and away from said venturi and spring means connected between said valve ball and said valve support rod and arranged to permit relative movement between said valve ball and said valve support rod and to bias said valve ball away from said venturi, whereby the valve ball moves along the length of the valve support rod in response to differential air pressure across the valve ball and regulates the flow of primary air into the housing.

3,929,286

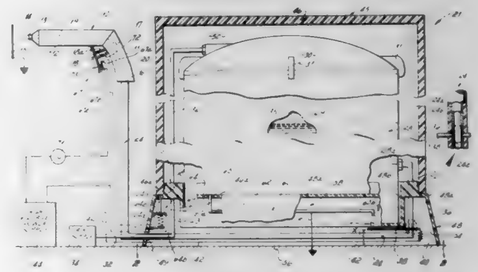
APPARATUS AND METHOD FOR ELECTROSTATICALLY SPRAYING HIGHLY ELECTRICALLY CONDUCTIVE WATER-BASED COATING MATERIAL

Donald R. Hastings, Elyria, and Jeffrey S. Noss, Bay Village, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Jan. 29, 1975, Ser. No. 545,152

Int. Cl.² B05B *5/08*

U.S. Cl. 239—3 **40 Claims**



1. A system for electrostatically spraying highly electrically conductive water-based paint with improved safety, comprising:

a spray device for directing electrostatically charged water-based coating material toward an object to be coated which is maintained at a potential different from that of the charged coating material,

a container for highly electrically conductive waterbased coating material,

a fluid conduit interconnecting said container and said spray device for transporting water-based coating material from said container to said spray device,

a source of electrostatic charging potential for charging water-based coating material in said container, conduit and spray device,

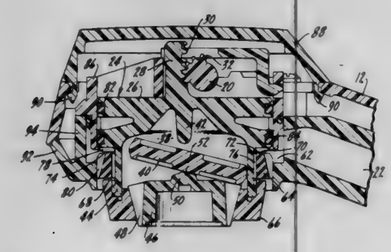
an electrically insulative enclosure surrounding said container, said enclosure having an opening therein provided with a removable cover to selectively expose and facilitate access to said coating container, and

means to electrically ground said charged coating material concomitantly with removal of said enclosure cover, thereby dissipating electrical energy stored in capacitive form in said system and in turn minimize electrical shock hazards upon removal of said cover to expose said coating container for access thereto.

15. A method of electrostatic spraying in which safety hazards are minimized when replenishing a container with highly electrically conductive water-based coating material following electrostatic spraying of charged coating material from a spray device supplied from said container via a hose, said method comprising the steps of:

enclosing the container with an insulative enclosure while spraying charged water-based coating material supplied to the spray device from said container via an electrically insulative hose,
removing a cover from an opening in the enclosure to facilitate access to said container subsequent to termination of spraying, and
electrically grounding the conductive coating material concomitantly with removal of the cover.

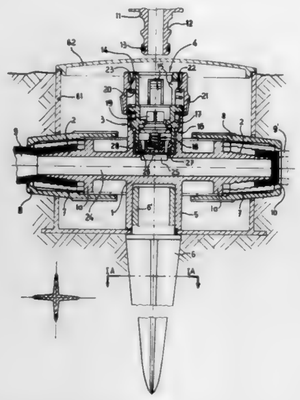
3,929,287
PORTABLE SHOWER HEAD
John D. Givler, Avon Lake; Walter F. Schlotman, Bay Village, and David L. Sipos, Elyria, all of Ohio, assignors to Stanadyne, Inc., Windsor, Conn.
Filed Mar. 14, 1975, Ser. No. 558,233
Int. Cl.² B05B *3/16, 1/30*
U.S. Cl. 239—102 **15 Claims**



1. A shower head including a housing, a water inlet in said housing, water discharge means mounted in said housing and including a diverter movable in said housing between first and second positions, a spray forming member attached to said diverter and passage means in said housing connecting said inlet and spray forming member when said diverter is in said first position,
a chamber in said diverter and passage means in said diverter connecting said inlet and chamber when said diverter is in said second position, a spray head attached to said diverter and defining an outlet for said chamber, and an oscillating member positioned in said chamber and pivotally mounted on said spray head for providing a pulsating discharge for said outlet.

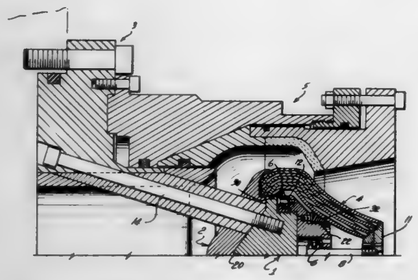
3,929,288
WATER LINE
Giacomo Brusadin, and Giordano Prosdocimo, both of Pordenone, Italy, assignors to Uniflex S.p.A., Roveredo in Piano (Pordenone), Italy
Filed July 22, 1974, Ser. No. 490,705
Int. Cl.² B05B *15/06*
U.S. Cl. 239—201 **5 Claims**

1. A device for connecting distribution lines and for providing branch points of a water distribution system, said device comprising:
a box body having an open top and at least two lateral diametrically opposed openings;
a cover for selectively closing said open top;
a duct body positioned within said box body, said duct body having:
at least two lateral projections, one each extending toward one of said lateral openings of said box body;
a centrally located, vertically upwardly extending projection extending toward said open top of said box body;
duct means internally of said duct body forming interconnected passages through each of said lateral projections and said vertically upwardly extending projection; and
a lower downwardly extending projection integral with said duct body;
nozzle means in said vertically upwardly extending projection for selective coupling thereto of a water utilization device, said nozzle means having therein an automatic valve; and



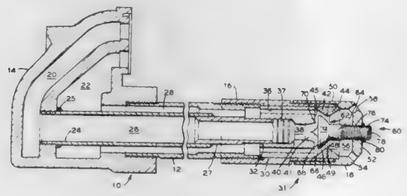
supporting means positioned in said downwardly extending projection of said duct body and extending through the bottom of said box body for fixing said box body to the ground.

3,929,289
PLUG FOR PLUG NOZZLES
Samuel Kardon, Raleigh, N.C., and Carlton J. Curry, Potomac Park, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 23, 1968, Ser. No. 788,989
Int. Cl.² B63H *11/00*
U.S. Cl. 239—265.11 **1 Claim**



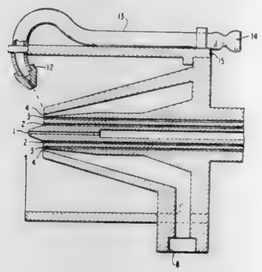
1. In a rocket motor having a variable area nozzle formed by a moveable cowl portion surrounding a plug member, the improvement comprising:
a plug member comprising inner and outer components, said inner components comprising a forward core, an aft core, and a retainer disk, first resilient means for fastening said forward core to said aft core and second resilient means for fastening said aft core to said retainer disk, said resilient means enabling expansion of said plug components in the presence of heat,
said outer component comprising a forward shell, an aft shell, and an insulator disk, said forward shell and said insulator disk being comprised of asbestos-phenolic material, said aft shell being comprised of plural laminations of bulk preoriented pyrolytic graphite, said laminations of pyrolytic graphite being oriented to conduct heat of combustion to said forward shell and to said insulator disk and to insulate said inner components from heat to minimize dimensional changes in said inner components resulting from the heat of combustion and to thereby protect said plug from structural failure, said inner components being adapted to support said outer components to thereby provide dimensional stability to said plug member.

3,929,290
FUEL ATOMIZER
James F. Tallarovic, Cincinnati, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed Oct. 10, 1974, Ser. No. 513,682
Int. Cl.² B05B *1/30*
U.S. Cl. 239—417.3 **7 Claims**



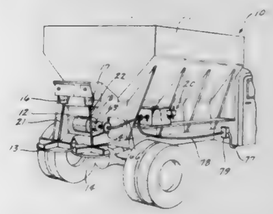
1. A liquid fuel burner having tube means defining a central passageway, barrel means concentrically disposed about said tube means to form therebetween an annular passageway, means supplying a fluid to be atomized to said central passageway and an atomizing fluid to said annular passageway, the improvement comprising an atomizer connected to the barrel means, said atomizer including a cylindrical member having a first and second passageway means communicating respectively with said central and annular passageways, a perforated end cap for discharging the atomized fluid from said burner, and a deflector having plate means cooperating with an end face of the cylindrical member to form therebetween an annular outlet passageway from said first passageway means the plate means including an arcuate projection facing said first passageway means, and, the deflector being mounted on said cap.

3,929,291
SPRAY MIXING NOZZLE
Gerhard Ladisch, Konstanz, Germany, assignor to Otto Pfrengle, Wiesbaden, Germany
Filed May 10, 1974, Ser. No. 468,910
Claims priority, application Germany, May 24, 1973, 2326440; May 20, 1974, 2419148
Int. Cl.² B05B *7/00*
U.S. Cl. 239—425 **7 Claims**



1. A spray mixing nozzle comprising:
a nozzle body having a nozzle outlet, said nozzle body including a central channel for directing pressurized gas to the nozzle outlet, at least two annular channels surrounding the central channel for separately directing liquid to the nozzle outlet, an outer channel surrounding the at least two annular channels for directing pressurized gas to the nozzle outlet, said pressurized gas from the central channel and the outer annular channel forcefully mixing liquids flowing through the at least two annular channels into a fine spray; and
a water spray nozzle mounted to the body of the spray mixing nozzle, said water spray nozzle being mounted to direct a stream of water against the nozzle body in the area of the nozzle outlet.

3,929,292
APPARATUS FOR SYNCHRONIZING THE ROTATIONAL SPEEDS OF A PAIR OF INDEPENDENTLY DRIVEN REVERSELY ROTATABLE SHAFTS
Lyle C. Phillips, Cedar Rapids, Iowa, assignor to Henderson Manufacturing Co., Cedar Rapids, Iowa
Filed Dec. 9, 1974, Ser. No. 530,493
Int. Cl.² A01C *15/00*
U.S. Cl. 239—685 **4 Claims**



1. In combination with a bulk material spreading vehicle having a material unloading conveyor, a vehicle engine driven oil pump unit in operative association with a hydraulic motor for driving said conveyor, and a speedometer having a flexible shaft, apparatus for synchronizing the rotational speed of the hydraulic motor to a predetermined ratio of the ground speed of the vehicle comprising:
a. a housing mountable on said vehicle,
b. a vehicle ground speed monitor shaft,
c. a conveyor speed monitor shaft,
d. an idler shaft reversely rotatable relative to said ground speed monitor shaft,
e. means rotatably supporting said ground speed monitor shaft and idler shaft within said housing and in axially spaced relation,
f. means rotatably supporting said conveyor speed monitor shaft within said housing in a parallel relation with said idler shaft,
g. first means coupling said flexible shaft in a driving connection with said ground speed monitor shaft,
h. second means coupling said hydraulic motor in a driving connection with said conveyor speed monitor shaft,
i. a sensing unit located between the adjacent ends of said idler shaft and ground speed monitor shaft including a first rotatable means for sensing the difference in the rotational speeds of said idler shaft and ground speed monitor shaft and a second rotatable means rotated in response to said rotational difference,
j. coacting means on said idler shaft and conveyor speed monitor shaft for selectively connecting said two shafts for rotation in a predetermined speed ratio, and
k. control means for said hydraulic motor mounted on said housing and connected to said second rotatable means for adjusting the rotational speed of said conveyor speed monitor shaft to rotate said idler shaft at the rotational speed of said ground speed monitor shaft, said second rotatable means being non-rotatable when said ground speed monitor shaft and said idler shaft are synchronized at the same rotational speeds.

3,929,293

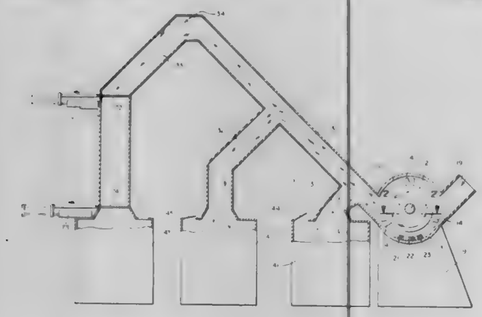
SHREDDER CRUSHER MATERIAL REDUCER

William F. Hahn, Devon, and Carl R. Graf, Whitehall, both of Pa., assignors to Pennsylvania Crusher Corporation, Broomall, Pa.

Continuation of Ser. No. 360,998, May 16, 1973, abandoned, which is a continuation-in-part of Ser. Nos. 185,760, Oct. 1, 1971, abandoned, and Ser. No. 267,915, June 30, 1972, abandoned. This application Sept. 17, 1974, Ser. No. 506,817

Int. Cl.² B02C *13/288, 18/40, 21/00*

U.S. Cl. 241—42 11 Claims



1. In a material reduction apparatus comprising a rotor housing, means for introduction of material into said housing, rotatable means mounted in said housing for subjecting said material to blows for reducing and propelling away from said rotatable means a stream of solid material including lighter and heavier pieces, and means for causing a flow of air to travel along with said stream of solids over at least a portion of the path covered thereby, the improvement which comprises means defining a first confined path away from said rotatable means for receiving said stream and for causing it to continue in motion in the direction in which it is impelled by the blows of the rotatable means, at least until it passes beyond at least one additional confined path, and means defining said at least one additional confined path diverging from and between the ends of said first path, said at least one additional confined path including means for diverting at least a portion of said flow and at least a portion of said light pieces together from said first path.

3,929,294

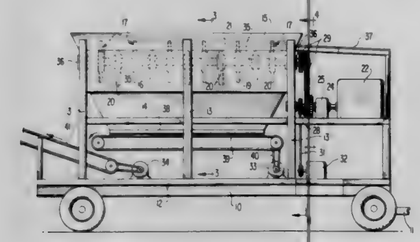
WASTE WOOD REDUCTION MACHINE

Ernest P. Cox, P.O. Box 154, Lolo, Mont. 59847

Filed Aug. 15, 1974, Ser. No. 497,667

Int. Cl.² B02B *5/02;* A01D *55/00*

U.S. Cl. 241—101.7 4 Claims



1. A waste wood reduction machine comprising a wheeled support, an open top hopper on the wheeled support, plural laterally spaced parallel wood reduction rotor shafts positioned in the upper portion of the hopper and extending longitudinally across the hopper from front to back thereof in relation to the path of movement of the wheeled support, plural axially spaced toothed wood reduction rotor heads on said shafts and turning therewith with the teeth of the rotor heads revolving in planes transverse to the axes of said rotor shafts, plural spaced parallel breaker bars in the upper portion of the hopper substantially at right angles to the axes of the rotor shafts and across said path of movement and disposed in planes parallel to said planes of revolution of said teeth, said plural breaker bars being continuous across said hopper and rotor shafts and having their ends supportively anchored to opposite sides of the hopper, said rotor shafts intersecting and extending through the breaker bars, bearing means for the rotor shafts on the breaker bars and fore and aft ends of the hopper, and power means on said machine drivingly connected with the rotor shafts to turn them in unison, said toothed wood reduction rotor heads intervened between pairs of said breaker bars.

3,929,295

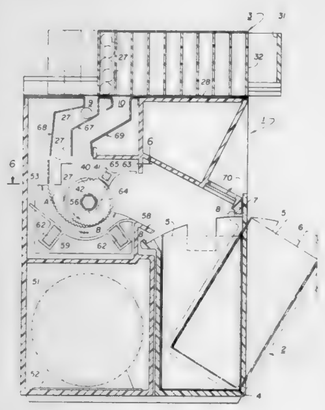
APPARATUS FOR DESTROYING SYRINGES AND LIKE ARTICLES

Anthony P. Montalbano, Glencove, N.Y., assignor to Madeline Ippolito, Great Neck, N.Y.

Filed Nov. 1, 1973, Ser. No. 411,829

Int. Cl.² B02C *13/06, 19/14*

U.S. Cl. 241—190 58 Claims



1. Apparatus for destroying medical syringes, or like objects, comprising:

a plurality of rotatable members, each having a circumferential row of aligned serrations along at least a portion of the periphery thereof;

a plurality of stationary members, each having a row of aligned serrations over at least a substantial portion of a given surface thereof which faces the periphery of said at least one rotatable member; and

means for rotatably mounting each of at least a plurality of said rotatable members between respective pairs of adjacent stationary members;

said given surfaces of said stationary members having a shape which defines an entrance path between said rotatable members and said stationary members, said entrance path tapering from an entrance dimension larger than the maximum lateral dimension of said syringe or like object to a dimension at least substantially smaller than said maximum lateral dimension of said syringe;

said given surfaces of said stationary members having said serrations over at least a substantial portion of the portion thereof which defines said tapered entrance path;

said serrations having adjacent teeth which are closely spaced, the spacing between said teeth and the depth of said teeth being substantially less than the maximum lateral dimension of said syringe or like object.

3,929,296

STRIKING TOOL

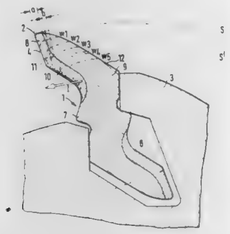
Hans Stöeber, Sonthofen, Germany, assignor to Hans Stöeber, Sonthofen, Germany

Filed Apr. 5, 1974, Ser. No. 458,311

Claims priority, application Germany, Apr. 7, 1973, 2317692

Int. Cl.² B02C *13/28*

U.S. Cl. 241—197 3 Claims



1. A striking tool for an impact and hammer crusher, the tool adapted to be mounted on a rotor supported in a bearing and operable to rotate the tool at high velocity into engagement with stones along a striking circle for crushing same, the tool comprising an impact head formed of a composite material comprising at least a pair of layers of material having an intimately bonded interface, one layer providing a working side of wear-resistant material having a striking edge, the other layer formed of a material resistant to bending and having a low wear resistance, and wherein the upper surface of said other layer substantially recedes relative to the striking edge of the working side at an acute angle relative to a plane tangential to the striking edge and generally normal to the striking circle.

3,929,297

AUTOMATIC WINDING MACHINE HAVING A CLAMPING DEVICE

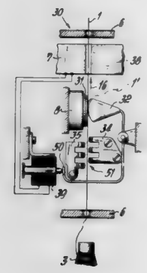
Heinz Zumfeld, München-Gladbach; Hermann Rutten, Viersen, and Nishit Bhattacharya, Mönchen-Gladbach, all of Germany, assignors to W. Schlafhorst & Co., Mönchen-Gladbach, Germany

Filed June 17, 1974, Ser. No. 480,093

Claims priority, application Germany, June 16, 1973, 2330707

Int. Cl.² B65H *63/00*

U.S. Cl. 242—36 4 Claims



1. In an automatic thread winding machine having thread tensioner means including a tensioning rocker acting upon a running thread being unwound from a supply coil, and sensing means specifically serving to monitor the presence of a broken thread, said tensioner means and said sensing means, respectively, being disposed in the path of travel of the thread being unwound from the supply coil, a clamping device controllable in accordance with the condition of the thread being unwound, and being adapted, in the event of a break in the thread, to grip the thread end coming from the supply coil, said clamping device formed by at least part of one of said means, and means also disposed in the path of travel of the thread for detecting a thread break and actuating said clamping device to grip the thread end coming from the supply coil.

3,929,298

ENDLESS TAPE TRANSPORTING DEVICE

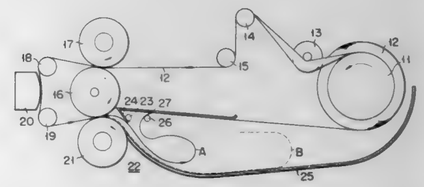
Satoshi Hara, Kanagawa; Morio Akino, Fujisawa, and Keizo Nakagawa, Chigasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Sept. 20, 1973, Ser. No. 399,250

Claims priority, application Japan, Sept. 22, 1972, 47-95591

Int. Cl.² B65H *17/48*

U.S. Cl. 242—55.19 R 10 Claims



1. An endless tape transporting device for transporting a tape at a high rate of speed comprising:

an endless tape reel adapted to coil an endless tape into a laminated coil so that the tape is delivered from the innermost of the laminated coil and wound on the outermost of the laminated coil;

a capstan and a pinch roller between which the tape is driven at said high rate of speed;

a loop buffer mechanism provided in a route in which the tape delivered from between the capstan and the pinch roller is wound on the reel, and having first, second and third guides;

said first guide being adapted to guide the tape so delivered in a direction in which the pinch roller is rotated and to deflect said tape toward said second guide so as to partially form a loop thereby;

said second guide being adapted to guide said tape from the first guide towards the reel in a curved manner; and

said third guide being adapted to cause the tape so guided to be reversed back in the direction of the first guide so that substantially one freely standing loop is created, and then to smoothly and freely guide it towards the reel,

whereby said smooth and free passage of said tape about said third guide means permits said loop to be adjustable in size so as to compensate for any variation in tension within said tape upon said reel and to maintain said tape properly tensioned.

3,929,299

APPARATUS FOR FORMING AND HANDLING REELS OF PAPER OR LIKE MATERIAL

Colin Walkington, Bristol, England, assignor to Masson Scott Thrissell Engineering Limited, Bristol, England

Filed Aug. 13, 1974, Ser. No. 497,003

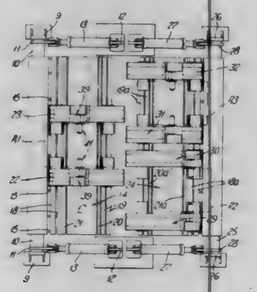
Claims priority, application United Kingdom, Aug. 15, 1973, 39556/73

Int. Cl.² B65H *17/08*

U.S. Cl. 242—65 14 Claims

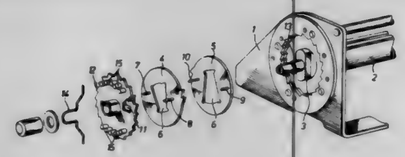
1. Apparatus for handling reels of paper or like material comprising a pair of rotatable chuck means adapted to be inserted into opposite ends of a hollow core on which a reel is to be formed, a carrier for each of said chuck means, sup-

port means for each of said carriers, a platform, means for movably connecting said support means having a surface along which one of said carriers is arranged to be moved, a fixed mounting, means pivotally connecting said platform to said fixed mounting, the axis of said pivotal connection being parallel to the axis of said core when the latter is engaged by said chuck means, operating means connected to said platform, separate drive means extending between each of said support means and its associated carrier for moving said carriers along the respective surfaces of said support means, said carriers being arranged to be moved in one direction along the



respective surfaces on said support means by both said drive means during formation of the reel to a rest position prior to said operating means becoming operable, said operating means being operable after complete formation of the reel to cause said platform to move relative to said fixed mounting about said pivotal connection so as to move the completed reel to an unloading position, and control means adjacent at least one of said surfaces at said rest position for actuating said operating means and arranged so that actuation of said operating means is inhibited until said carrier has reached said rest position to actuate said control means.

3,929,300
LOCKING DEVICE
Karl Lindqvist, Hagavagen 14, S-171 53 Solna, Sweden
Filed Nov. 6, 1974, Ser. No. 521,237
Claims priority, application Sweden, Nov. 12, 1973, 7315301
Int. Cl.² B65H *75/48*
U.S. Cl. 242—107.4 **4 Claims**



1. In a locking device for locking a rotatable shaft or the like against rotation in one direction and having locking means and detecting means for measuring the angular acceleration of said shaft and for moving said locking means into a locking position with respect to said shaft to prevent further rotation of said shaft in said one direction when said angular acceleration reaches a predetermined magnitude;

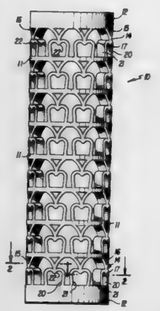
a rotatable shaft having a portion of substantially rectangular cross sectional shape;

detecting means mounted on said portion of said shaft, said detecting means comprising at least one plate;

a substantially centrally disposed hole in said plate for receiving said portion of said shaft, said hole being substantially in the form of a trapezoid, said trapezoid having two substantially parallel sides of unequal length, the shorter one of said parallel sides being slightly longer than the shorter side of said rectangular portion of said shaft, the height of said trapezoid being slightly greater than the longer sides of said rectangular portion of said shaft;

whereby said plate can be rotated around said shorter one of said parallel sides of said trapezoidally formed hole therein from a normal position in which one of the non-parallel sides of said hole abuts one of the longer sides of said rectangular portion of said shaft to an activated position in which the other non-parallel side of said hole abuts the other longer side of said rectangular position of said shaft, in which last mentioned position said locking means achieves a locking position.

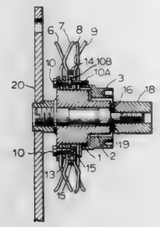
3,929,301
DYE TUBE FOR COMPRESSIVE PACKAGED DYEING
Fyans Frank, 252 S. Pleasantburg Drive, Greenville, S.C. 29606, and Steve I. Biroczky, Rte. 4, Box 463-A, Piedmont, S.C. 29673
Filed Feb. 18, 1975, Ser. No. 550,732
Int. Cl.² B65H *75/20*
U.S. Cl. 242—118.11 **17 Claims**



11. In a dye tube for compressive packaged dyeing, a pair of substantially rigid rings which are contained within the same cylindrical plane and are spaced apart axially along such plane, a web member joining said rings, said web member comprising a substantially rigid part which is directly connected with one of said rings and a yieldable part directly connected to and extending from the other said ring to join said first mentioned part, said yieldable part comprising a pair of leg portions which are curved outwardly relative to each other and meet where said parts join together.

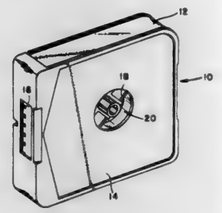
3,929,302
PULLEY WHEELS
Joseph John Hurley, Paisley, Scotland, assignor to J & P Coats Limited, Glastow, Scotland
Filed July 31, 1973, Ser. No. 384,307
Claims priority, application United Kingdom, Aug. 5, 1972, 36651/72
Int. Cl. B65h *59/16*
U.S. Cl. 242—155 R **2 Claims**

1. A differential pulley incorporating a hub having a flange at one end and a screw-threaded portion at the other end, two co-axial pulley elements mounted on the hub and connected to one another, each pulley element presenting a circumferential groove, the pulley element adjacent the screw-threaded end of the hub comprising two dished pulley cheeks each formed with spokes so curved that opposite faces of the cheek present an annular convexity and an annular concavity respectively, the cheeks of said pulley element being so placed together that the faces formed with the annular convexities are adjacent one another with the spokes interlacing, the pulley cheek adjacent the screw threaded end of the hub being movable axially on the hub, and the other pulley cheek being fixed on the hub, leaf springs located to act between the cheeks and urge the cheeks to move relatively apart, an axially movable abutment member arranged to act in opposition to the leaf springs formed as an internally screw-threaded stop ring engaged with the screw-threaded portion of the hub and presenting an end face engageable with the axially movable pulley



cheek and bolts disposed parallel to the axis of the hub penetrating the flange and also the fixed pulley cheek, one of the bolts at least being formed with an extension arranged to penetrate the axially movable pulley cheek so that the said movable pulley cheek cannot rotate relatively to the other cheeks.

3,929,303
FILM CARTRIDGE WITH RETAINING RING AROUND A SUPPLY COIL
Robert C. Sutliff, 1669 Lake Ave., Rochester, N.Y. 14615
Filed Oct. 18, 1974, Ser. No. 768,849
Int. Cl. G03b *23/02*
U.S. Cl. 242—194 **11 Claims**



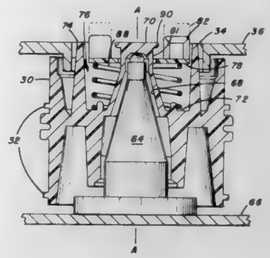
7. A cartridge for roll film, particularly for 8 millimeter motion picture film, comprising a housing defining a chamber for a supply of convoluted roll film which is rotatable in said housing; and a rigid confining ring loosely mounted in said housing and surrounding in its entirety the outermost convolution of the film in said chamber, said confining ring being rotatable in said housing in response to rotation of the supply of convoluted roll film in said chamber.

3,929,304
FILM CARTRIDGE
Francis A. Williams, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 10, 1975, Ser. No. 540,296
Int. Cl.² G03B *1/04*; **G11B** *15/32*
U.S. Cl. 242—194 **6 Claims**

1. In a cartridge for handling a photosensitive web strip and having means, including a generally cylindrical rotatable core for use in transporting said strip through said cartridge, said cartridge being receivable in a camera of the type having drive means for rotating said core and having actuatable clutch means for adjusting the driving force produced by said drive means; the improvement wherein said cartridge core carries means for applying an actuating force directed generally parallel to the axis of rotation of said core, said actuating means comprising:

means carried by said core for defining a support surface disposed between the opposite axial ends of said core and facing one of said ends;

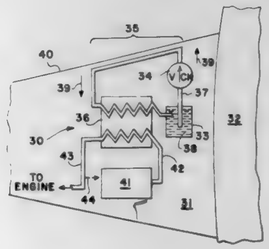
plate member means disposed adjacent said one core end for entry into operable relationship with said camera clutch means when said cartridge is received in said camera;



means for mounting said plate member means for limited movement along said core axis; and

spring means supported by said support surface for moving said plate member means along said core axis away from said support surface to actuate said clutch to responsively adjust the driving force applied to said core.

3,929,305
HEAT EXCHANGER SYSTEM AND METHOD
Alexander P. Sabol, Williamsburg, Va., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.
Division of Ser. No. 301,419, Oct. 27, 1972, abandoned. This application Nov. 27, 1973, Ser. No. 419,319
Int. Cl. B64d *37/34*; **B64c** *1/00*
U.S. Cl. 244—117 A **1 Claim**



1. The combination of an aircraft and a heat exchanger system for the aircraft comprising:

a first reservoir for liquid coolant;

conduit means for conveying liquid coolant from said reservoir through a heating zone;

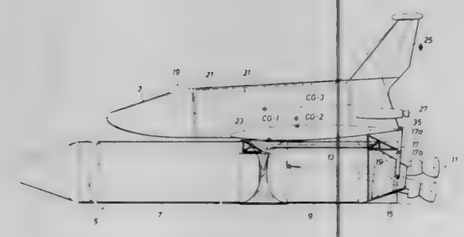
said heating zone comprising a leading edge of an airfoil surface on said aircraft,

means for preventing reverse flow of said liquid in said conduit means in a direction opposite to the flow therein from said first reservoir through said heating zone,

further conduit means for conveying said liquid coolant from said heating zone to said first reservoir and forming, with said first reservoir and the first mentioned conduit means a closed loop for circulation of said liquid coolant, cooling means located downstream of said heating zone for cooling heated liquid coolant prior to returning same to said heating zone,

said cooling means comprising a cooling unit through which the portion of the conduit means carrying the heated liquid passes before returning to said first reservoir,
a fuel tank disposed in said aircraft,
a fuel conduit leading from said fuel tank to the aircraft engine, and
said fuel conduit leading through said cooling unit and extending adjacent to the conduit means carrying the heated liquid, whereby heat from the heated fluid is transferred to the fuel in said fuel conduit within said cooling unit.

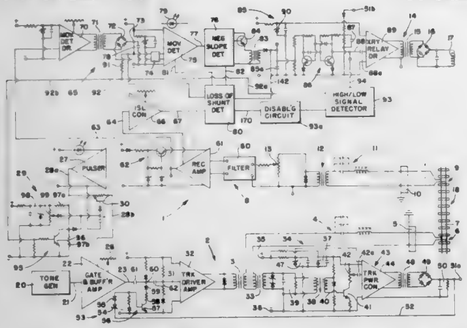
3,929,306
SPACE VEHICLE SYSTEM
Maxime A. Faget, Dickinson; William W. Petynia, Seabrook, and Willard M. Taub, Houston, all of Tex., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.
Filed Mar. 5, 1974, Ser. No. 448,323
Int. Cl.² B64G 1/00
U.S. Cl. 244—162 **18 Claims**



1. A space vehicle system consisting of an orbiter vehicle having an externally mounted propellant tank that is expendably affixed to a side thereof; the improvement comprising:
an engine module disposed proximate the aft end of the propellant tank and releasably communicating therewith so as to obviate the need for fuel lines into the orbiter vehicle fuselage, and
support and retraction means coupling the engine module to the orbiter vehicle so that the module may, subsequent to expenditure of the empty propellant tank, be retracted into the orbiter vehicle.

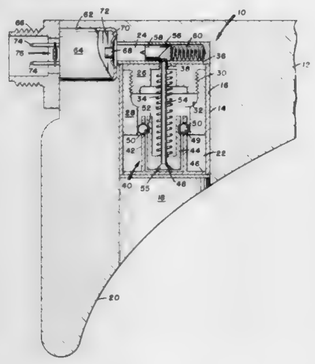
12. A method for increasing the payload area of a space vehicle system while simultaneously reducing the system weight and increasing the range and maneuverability for landing subsequent to re-entry, comprising the steps of;
providing a payload vehicle having its engine module disposed exteriorly of the fuselage, the fuselage being characterized by an aft opening therein,
releasably affixing to the exterior of the fuselage, in operative relation to the engine module, a propellant tank having fuel therein,
launching the vehicle system by actuating the engine module until the fuel in the tank is consumed,
retracting the propulsion engine module into the opening in the fuselage and,
expending the propellant tank from the vehicle.

3,929,307
RAILWAY SIGNAL SYSTEM WITH SPEED DETERMINED MOVEMENT DETECTOR
Willard L. Geiger, Chagrin Falls, Ohio, assignor to Erico Rail Products Company, Solon, Ohio
Continuation-in-part of Ser. No. 348,944, April 9, 1973, Pat. No. 3,850,390. This application Apr. 5, 1974, Ser. No. 458,172
Int. Cl.² B61L 23/04
U.S. Cl. 246—130 **30 Claims**



1. A railway signal system for producing an output signal indicative of a train on a track approaching the system tie points to the track, comprising:
means for generating an AC signal, said means for generating including means for coupling the same to said track, whereby said AC signal is transmitted in said track;
means for automatically regulating the current level of said AC signal; in accordance with variations in the track ballast; and
receiver means coupled to said track for receiving said AC signal from said track, said receiver means including means for detecting said AC signal to effect production of said system output signal in response to changes in said AC signal occurring due to such an approaching train.

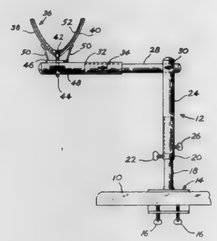
3,929,308
LOCAL DERAILMENT SENSOR AND BRAKE ACTUATOR SYSTEM
John H. Armstrong, Silver Spring, and William W. Wassmann, Rockville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 7, 1974, Ser. No. 495,480
Int. Cl.² B61K 9/04
U.S. Cl. 246—169 A **21 Claims**



1. A motion and temperature sensor system for detecting train wheel local derailment and actuating the brake system comprising:

a motion sensor activated by wheel impact with the roadbed;
a thermal sensor responsive to journal bearing temperature exceeding a predetermined value;
an output signal generator operatively coupled with and activated by said motion sensor and said thermal sensor; and
an electroexplosive means coupled to said signal generator for venting the brake system,
whereby the train brake system is applied to stop the train upon detection of wheel impact with the roadbed or journal bearing temperature exceeding a predetermined value.

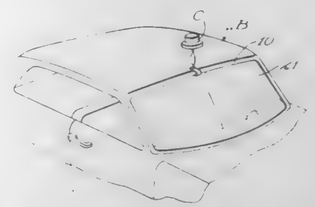
3,929,309
HEAD REST
Ellen G. De Vore, Medford, Oreg., assignor to Louis B. Pierce, Medford, Oreg.
Filed Aug. 26, 1974, Ser. No. 500,594
Int. Cl.² B68G 5/00
U.S. Cl. 248—118 **4 Claims**



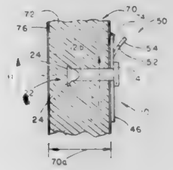
1. A head supporting device adapted for use in conjunction with an overhead hair dryer, for enabling any user of the dryer, regardless of her facial contour, comfortably, conveniently, effortlessly and safely to rest her head removably in a chosen, substantially fixed relation to the dryer, said head supporting device comprising, in combination,
a. a chin and cheek engaging and conforming head supporting rest consisting of opposed, continuously upwardly divergent padded members for engaging opposite sides of the face,
b. means pivotally connecting the lower ends of said padded members to one another together with means for relatively adjusting said members to increase or diminish the angle of upward divergence formed between them for adaptation to different facial contours, said padded members having surface portions generated by a straight line segment moving parallel to the axis of rotation of said pivotal connecting means, and
c. adjustable supporting means for the head rest constructed and arranged to determine and control the height, the horizontal location and disposition, and the fore-an-aft tilt of the head rest.

3,929,310
BRACKET FOR SUPPORTING AN ORNAMENT
Engelbert J. Peham, 1263 Donohue Ave., St. Paul, Minn. 55104
Filed Oct. 4, 1974, Ser. No. 512,069
Int. Cl.² B65A 77/10; A01D 57/02
U.S. Cl. 248—226 E **10 Claims**

1. An ornament support for use with an automobile having a windshield, a top, and a molding extending along the upper edge of the windshield, the molding having a lower edge adapted to substantially engage the windshield, an upper edge adapted to substantially engage the top of the automobile, the support including:
a resilient bracket including a lower end edge extending beneath the lower edge of said molding, an upper end including a stop shoulder extending over said molding and including a stop shoulder engaging the area between the upper edge of said molding and said top of said automobile, and a resilient rounded connection between the upper and lower ends of said bracket,
said bracket supporting a rod extending upwardly from the upper portion thereof, and
an ornament supported by the upper end of said rod.



3,929,311
SUPPORTING FASTENER
Alan J. Solo, Brooklyn, N.Y., assignor to Knock-N-Lok, Brooklyn, N.Y.
Continuation-in-part of Ser. No. 463,820, April 24, 1974, which is a continuation-in-part of Ser. No. 454,393, March 25, 1974. This application May 14, 1974, Ser. No. 469,666The portion of the term of this patent subsequent to Sept. 30, 1992, has been disclaimed.
Int. Cl.² A47G 1/16
U.S. Cl. 248—217 **15 Claims**



1. A fastener for supporting a member on a surface of a penetrable material, said fastener comprising an elongate generally round shank, said shank having converging surfaces at one end thereof to form a cutting edge suitable for being driven through the penetrable material; an engageable head at the other end of said shank suitable for being hammered to advance said cutting edge and said shank through the penetrable material and for being engaged to permit turning of said shank about axis thereof; an anchoring portion in region of said cutting edge which projects laterally of said shank along a direction substantially normal to axial length of said shank to form therewith anchoring shoulders on diametrically opposing sides of said shank, said shoulders tapering from a major portion of said shank to form concave surfaces facing in the general direction of said head and merging with said cutting edge to form a point at each end thereof, said anchoring portion having a maximum transverse dimension and a maximum axial dimension, the ratio of said axial dimension to said transverse dimension being less than approximately 0.2, and the ratio of the diameter of said shank to said transverse dimension being approximately 0.5, said converging surfaces on said anchoring portion providing cutting surfaces sufficiently small to facilitate turning of said fastener after being driven into the penetrable material by engagement of said head with a suitable tool; said shoulders being sufficiently large to assure good anchoring of said fastener in the driven position due to engagement of said shoulders with the penetra-

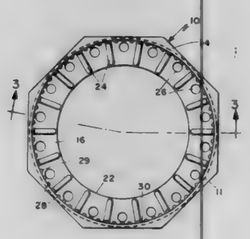
ble material after said fastener is turned angularly about its axis relative to initial driven position; support means apertured to permit passage of said anchoring portion and said shank therethrough prior to entry of the fastener into the penetrable material, said support means being fixed in position between said head and a surface of the penetrable material in fully driven and turned position of said shank and anchoring portion, said supporting means including engaging means for engaging a corresponding portion of a member to be supported, whereby driving said shank into the penetrable material and turning the same about the axis thereof by engaging said head fixes the fastener in place and secures the member to the surface of the penetrable material; said support means further including a planar sheet of material having an aperture dimensioned to permit passage of said anchoring portion and said shank therethrough and prevent passage of said head, said engaging means including a tab projecting from a plane of said sheet and spaced from said aperture, said tab being inclined relative to the plane of said sheet and configurated to engage and support the member.

3,929,312

DIVER'S AIR TANK PROTECTIVE CAP

Alan K. Uke, 530 Couper Drive, San Luis Obispo, Calif. 92708

Filed June 28, 1974, Ser. No. 483,967
Int. Cl.² A47G *29/02*
U.S. Cl. 248—346.1 **3 Claims**



1. A diver's air tank protective cap made of resilient plastic material for attachment to the lower end of a diver's compressed air tank, which cap can remain on the tank in storage or in use in the water comprising:

a cylindrical body having a wall with a length substantially less than the length of the tank and longitudinally extending internal ribs projecting inwardly from said wall for engagement with and gripping the sides of the tank,

the inner surface of the wall having water conducting channels between the ribs that are open at each end to allow water to flow directly therethrough,

said channels have a depth about equal to the thickness of said wall,

the bottom end of said body having a planar ground engaging circular rim,

said rim comprising a continuous band that extends radially inwardly forming a spaced centered opening,

said band having spaced ridges on the upper surface thereof for being contacted by the lower end of the tank,

said band having spaced holes therethrough communicating with said channels for letting water flow through said body and out the bottom end thereof,

said ridges extending from said wall radially inwardly toward the center of said opening,

said ridges being spaced around said band in equally spaced distances, and said spaced holes being positioned between each of said ridges,

said band having a thickness of said wall,

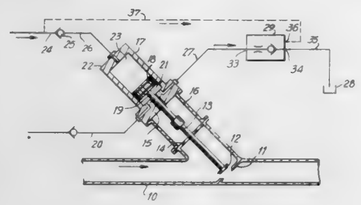
and the other end of said wall portion having an outwardly projecting flange that projects outwardly from the outer surface of said wall, which flange has outer edge surfaces having spaced flat portions for preventing rolling of said cap and diver's air tank.

3,929,313

ANTI-BOTTOMING FLUID CONTROL SYSTEM

Russell V. Noah, Covina, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Filed July 31, 1974, Ser. No. 493,258
Int. Cl.² F16K *31/12*
U.S. Cl. 251—28 **5 Claims**



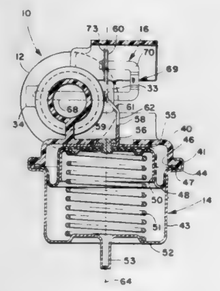
1. An anti-bottoming fluid control system comprising a fluid supply passage having a valve seat, a valve member movable toward and away from said seat between sealing and opening positions of said passage, actuator means for moving said valve member between said positions including a hydraulic cylinder, a piston mounted in said cylinder and dividing the same into two chambers, said piston being operatively connected to said valve, first conduit means leading to one said chamber for introducing fluid into said chamber to shift said piston toward the sealing position of said valve, bleed conduit means leading to the other said chamber for conducting fluid expelled from said other chamber to a reservoir responsive to said movement of said piston toward said sealing position, and pressure sensing variable orifice restrictor valve means interposed between said bleed conduit and said reservoir for sensing the pressure in said bleed conduit and varying the flow resistance in the path between said conduit and reservoir directly in accordance with the pressure sensed in said bleed conduit.

3,929,314

ACTUATING MEANS FOR A BUTTERFLY VALVE

Eugene Edward Stratynski, West Chicago, Ill., assignor to Eaton Corporation, Ohio

Filed June 8, 1973, Ser. No. 368,386
Int. Cl.² F16K *31/165*
U.S. Cl. 251—58 **6 Claims**



1. A butterfly valve comprising:

a. a valve actuator having a movable plunger extending therefrom;

b. a valve body secured to said valve actuator, said valve body defining an open-ended, longitudinally-extending first chamber therein;

c. a rotatable butterfly plate within said chamber for controlling flow of fluid therein; and

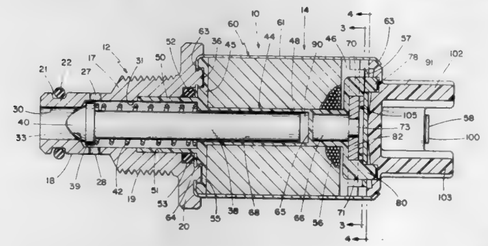
d. a preformed, generally U-shaped actuating link connecting said plunger with said plate, said link having a first segment affixed to said plate, a third segment fixed to said plunger and an intermediate resilient second segment between said first and third segments, said second segment generally perpendicular to said first and third segments, said actuating link being disposed to rotate about an axis substantially parallel to said first segment, and said resiliency of said second segment permitting said second segment to flex in a direction perpendicular to said axis of rotation of said actuating link.

3,929,315

SOLENOID VALVE ASSEMBLY

Lawrence E. Rieth, Springfield, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed July 25, 1974, Ser. No. 491,817
Int. Cl.² F16K *31/06*
U.S. Cl. 251—129 **12 Claims**



1. A solenoid valve assembly, comprising; housing means, inlet port means in said housing means, outlet port means in said housing means, a valve seat between said inlet port means and said outlet port means, a valve member movable between a closed position blocking flow from said inlet port means and an open position permitting flow from said inlet port means to said outlet port means, said valve member including a plunger stem, a coil assembly surrounding at least a portion of said plunger stem, said coil assembly including a shell, said shell having a plurality of apertures receiving portions of said housing means for holding the coil assembly to the housing means, seal means between said housing and said coil assembly, said coil assembly including a sleeve surrounding said plunger stem, and an integral partition in said sleeve defining a stop for said plunger stem.

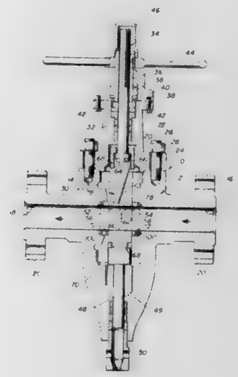
3,929,316

NON-FLOATING SEAT STRUCTURE FOR EXPANDING GATE VALVES

Larry E. Guthrie, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 7, 1974, Ser. No. 521,825
Int. Cl.² F16K *25/00*
U.S. Cl. 251—196 **9 Claims**

1. A gate valve structure comprising a valve body having a valve chamber therein and inlet and outlet flow passages communicating with the valve chamber, an expanding valve assembly including a gate element and segment slidably mounted within the valve chamber for movement between open and closed positions of the gate valve structure with said gate element and segment expanding away from each other at the fully open position, said valve body having an annular recessed portion about each flow passage and a circumferential groove in each of the recessed portions facing the valve chamber, generally cylindrical seats about said flow passages for engaging said gate element and segment in the open and closed positions of the gate element and segment, each seat having a circumferential groove in opposed relation to the groove in the adjacent flow passage and fitting within an associated recessed portion in face-to-face abutting contact with the associated recessed portion, and a deformable seal of an elongate cross section positioned within each pair of opposed grooves and filling between 80 and 100 percent of the total cross-sectional areas of the combined facing grooves when the seat is pressed within the associated recessed portion, said elongate seal having a width between around 105 and 130% of the total combined depth of the associated grooves and a thickness between around 70 and 90% of the total thickness of the associated grooves, said seal upon being inserted within the opposed pair of grooves being deformed when the seat is in abutting contact with the associated recessed portion to fill substantially the entire cross-sectional area of the combined grooves and permitting face-to-face abutting contact between the seat and valve body without any portion of the seal being gripped between the opposed faces of the seat and valve body.

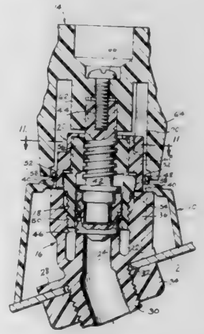


3,929,317

VALVE ASSEMBLY

Lawrence P. Cohn, Clarkston; Dennis W. Crawford, Pontiac, and Larry G. Turner, Waterford, all of Mich., assignors to Bristol Products, Inc., Bristol, Ind.

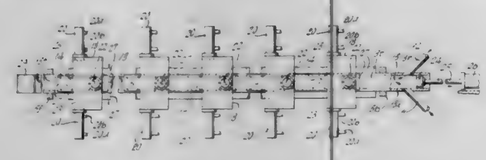
Filed Jan. 20, 1975, Ser. No. 542,279
Int. Cl.² F16K *31/44*
U.S. Cl. 251—223 **7 Claims**



1. In combination, a valve and attachment part; said valve including a body, a bonnet, a valve seat, a stem carrying a closure member engageable with said seat upon rotation of said stem, and a handle connected to said stem; said attachment part having an opening therein to accommodate said valve; the improvement wherein one of said attachment part

and body includes first slot means, said bonnet including a threaded part and second slot means, said body including a threaded part and being located at one side of said attachment part at said opening therein, said bonnet being located at the opposite side of said attachment part at its said opening with the stem projecting outwardly from said opposite attachment part side, the threaded part of said body interlocking with the threaded part of said bonnet to secure said body and bonnet to said attachment part, said first and second slot means being aligned, and retainer means extending into said aligned slot means for preventing rotation of said bonnet relative to said body.

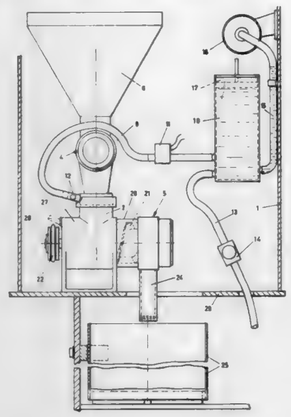
3,929,318
STATIC MIXERS FOR VISCOUS MATERIAL
Glen E. W. Saidla, Hampton Falls, N.H., assignor to Exxon Research & Engineering Co., Linden, N.J.
Filed Dec. 9, 1974, Ser. No. 531,062
Int. Cl.² B01F *5/06, 15/02*
U.S. Cl. 259—4 **10 Claims**



8. A static mixer for mixing a fluid stream comprising:
a. a hollow elongated body member providing a mixing passageway for said fluid stream and having an inlet end for receiving said stream and an outlet end for discharging said stream after mixing therein, said passageway having slot openings through the walls thereof;
b. at least two mixing blade means, each of said blade means being disposed in a plane substantially normal to the walls of said passageway and at an angle from the longitudinal axis thereof, said mixing blades being disposed to obstruct a straight line fluid flow through said body member and provide a serpentine passageway therethrough; and
c. operator means connected to said mixing blade means for retracting said blade means through said slot openings in said body member walls whereby said blades are scraped clean and entirely removed from obstructing the passageway through said body member.

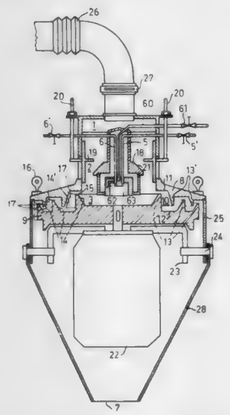
3,929,319
APPARATUS FOR PREPARING A DOUGH FROM A POWDERED MATERIAL AND A LIQUID
Willem Hendrik Willemsen, Westervalge 83, Warffum, Netherlands
Filed Oct. 5, 1973, Ser. No. 404,008
Claims priority, application Netherlands, Oct. 5, 1972, 7213494
Int. Cl.² B01F *7/08*
U.S. Cl. 259—6 **4 Claims**

1. An apparatus for preparing a dough-like material from a powdered material mainly consisting of a starch-containing powder, thickening agents and binders, to which a liquid, preferably water, is added, said dough-like material being destined for the manufacture of so-called potato fries, croquettes and similar fried products, said apparatus comprising a feeding device for feeding a stream of said powdered material into a mixing device and a feeding device for feeding a stream of liquid into said mixing device, said mixing device having an outlet portion dispensing the mixture of powdered material and liquid in liquid state to a container in which said mixture stiffens to a dough-like material, said feeding device for said powdered material and said mixing device each including a worm adapted to be driven at a substantially constant speed, said worm of said feeding device for the powdered material and said worm of said mixing device each arranged



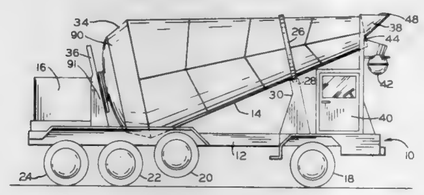
in a cylindrical housing, said housings being removably mounted in the apparatus.

3,929,320
FOUNDRY MIXING MACHINE
Walter Haller, Schlieren, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland
Filed May 6, 1974, Ser. No. 467,143
Claims priority, application Switzerland, May 7, 1973, 6411/73; Dec. 21, 1973, 18002/73; Dec. 21, 1973, 18003/73; Dec. 21, 1973, 18004/73; Apr. 9, 1974, 4984/74
Int. Cl.² B28C *5/16*
U.S. Cl. 259—165 **27 Claims**



1. A foundry mixing machine for preparing a mixture of sand and an additive having at least two liquid components, the machine comprising
a. wall means defining a sand inlet chamber, a preliminary mixing chamber located below the inlet chamber, and an annular slot positioned vertically between said chambers and serving to allow sand to descend by gravity, and in the form of an annular curtain, from the inlet chamber to the preliminary mixing chamber,
b. said slot being defined by cooperating walls which are movable relatively to each other to vary the width of the slot;
c. a feeding and spraying device in the preliminary mixing chamber and including a separate duct for each of said liquid components and an additional duct for compressed air,
d. the ducts leading into the preliminary mixing chamber and being so arranged relatively to each other and to said slot that compressed air admixes the liquid components and propels the admixture into said annular curtain of sand which descends through said slot;
e. an annular final mixing chamber having an inlet at its inner margin which communicates with the preliminary mixing chamber at a region radially outward of said descending annular curtain of sand, and an outlet at its outer margin,
f. the final mixing chamber being defined by a gap bounded by two axially spaced, relatively rotatable bodies of revolution, each of which carries projections which extend toward the gap;
g. a drive motor located below, and connected to cause relative rotation of, said bodies of revolution; and
h. additional wall means which surrounds the bodies of revolution and defines a duct which leads mixture existing from the outlet of the final mixing chamber downward to an outlet located below said bodies of revolution.

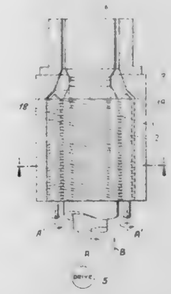
3,929,321
CONCRETE MIXER BOWL AND METHOD FOR CONSTRUCTING SAME
Royal W. Sims, 6500 Holladay Blvd., Salt Lake City, Utah 84117
Filed Jan. 16, 1974, Ser. No. 433,550
Int. Cl.² B21D *51/10*
U.S. Cl. 259—175 **6 Claims**



1. A process for making a concrete mixer bowl container comprising the steps of: cutting complementary pairs of rectilinearly sided sections from flat sheet metal stock, bending such sections into arcuate shapes and simultaneously develop edges which are in a plane non-normal to the axis of rotation of the bowl, joining said complementary pairs of such sections to form complete conical circumferential sectors having at least one convexly shaped edge, interfitting intermediate confronting edges which are complementary convexly shaped edges of said complete circumferential sectors to form a larger conical sector and permanently joining the confronting convexly shaped surfaces of respective conical sections to form a container.

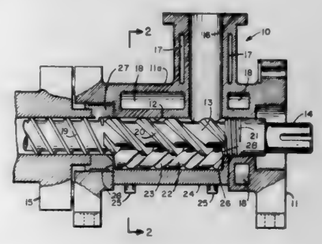
3,929,322
MULTISCREW EXTRUDER
Wilhelm Hanslik, Vienna, Austria, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany
Filed Mar. 29, 1974, Ser. No. 456,251
Claims priority, application Germany, Apr. 7, 1973, 2317617
Int. Cl.² B29B *1/10*
U.S. Cl. 259—192 **7 Claims**

1. In an extruder for thermoplastic synthetic resin having a plurality of parallel auxiliary screws each formed with a respective auxiliary screw thread, and a central screw parallel to said auxiliary screws and formed with a respective central screw thread meshing with said auxiliary threads at meshing zones, said central thread defining a plurality of main flow passages between said zones and said auxiliary threads defining a plurality of auxiliary flow passages outside the respective zones, the improvement comprising.
means for rotating all of said screws about their axes with the same peripheral speed, said central and auxiliary screws having respective crown cylinders, the sum of the



diameters of said crown cylinders of said auxiliary screws being substantially equal to the diameter of said crown cylinders of said central screw and the ratio of profile areas of the threads of the auxiliary screws to that of the threads of the central screw is in an inverse proportion to the ratio of their lengths.

3,929,323
EXTRUDER FEED SECTION
David J. Smith, Belle Meade, N.J., assignor to Egan Machinery Company, Somerville, N.J.
Filed Nov. 14, 1974, Ser. No. 523,815
Int. Cl.² B29B *1/10*
U.S. Cl. 259—192 **5 Claims**



1. A single screw extruder for processing hot melt plastic material which becomes tacky during processing, said extruder comprising:
a feed section housing having an extruder barrel connected thereto and a bore extending through said housing and said barrel;
means defining feed inlet and discharge outlet passages communicating respectively with the feed end and the discharge end of the bore;
an extruder screw rotatably mounted in said bore having a helical material processing screw thread portion in said extruder barrel, and a helical feed flight screw thread portion between said processing screw thread portion and said feed inlet passage having a running clearance with the wall of the bore to feed said material from said feed inlet passage to said material processing screw thread;
an auxiliary feed screw rotatably retained in the housing with its axis parallel to the axis of the extruder screw and having a helical groove whose helix is the reverse of and in mesh with said helical feed flight screw thread portion of the extruder screw;

means for drivingly connecting said extruder screw to means for rotating it;

there being a driving contact between the auxiliary feed screw and the flight screw thread portion of the extruder screw, and the auxiliary feed screw being rotatably driven solely by said feed flight screw thread portion of the extruder screw in opposite rotation to the extruder screw, and

said feed flight screw thread portion of the extruder screw and said auxiliary feed screw being coactive to feed said material from said feed inlet to the material processing portion of the extruder screw.

3,929,324

FLAME CUTTING MACHINE

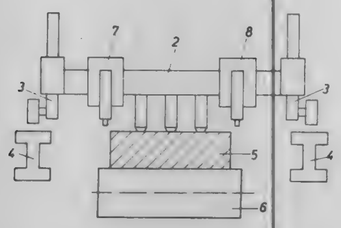
Horst K. Lotz, Wallau, BRD, and Bernhard Otto, Klein-Winternheim, both of Germany, assignors to GeGa Gesellschaft fur Gasetechnik Lotz KG, Germany

Filed Nov. 9, 1973, Ser. No. 414,208

Claims priority, application Germany, Nov. 9, 1972, 2254795

Int. Cl.² B23K 7/10

U.S. Cl. 266—23 K **7 Claims**



1. A flame cutting machine for cutting strands produced in continuous casting plants, said machine comprising a carriage, at least one cutting torch mounted to said carriage, means mounting said carriage for movement above said strand for a distance along the path of movement of said strand, means for selectively transferring substantially the entire weight of said carriage to said strand to connect said carriage to said strand to produce synchronous movement of said strand and said carriage, said last mentioned means being engageable only with the upper surface of said strand and comprising at least one bearing member and means selectively moving said bearing member into engagement with the upper surface of said strand to frictionally engage said strand to be driven by said strand and thereby produce synchronous movement of said carriage with said strand.

3,929,325

PIPE HOLDING APPARATUS

Chester A. Eastwood, 2202 River Road, and Clyde A. Eastwood, 2311 River Road, both of Yakima, Wash. 98902

Filed July 22, 1974, Ser. No. 478,186

Int. Cl.² B25B 1/20

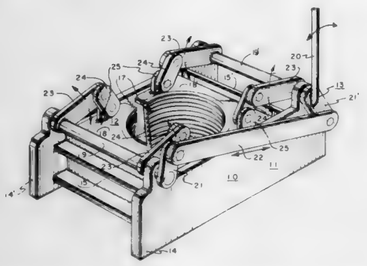
U.S. Cl. 269—218 **2 Claims**

1. A pipe holding apparatus comprising:

a base including a pair of parallelly, upstandingly, rectilinearly disposed walls, and a pair of parallelly, transversely, substantially upstandingly disposed walls;

a chuck including a pair of upstanding, semicircular jaws together forming a ring-like configuration about a pipe, and substantially rectangular blocking plates disposed about the exterior terminal sides of said jaws, said jaws having means for riding within said base; and

an actuator assembly including a pair of axles journally transversely carried distally from the terminal ends of said rectilinear walls, one of said axles having a first lever and a linkage arm fixedly fastened thereto, said lever providing means to rotate said one axle, the opposing axle having a second linkage arm fixedly fastened to one of the terminal ends of said opposing axle, a linkage rod pivotally mounted to said first and second linkage arms at the opposite ends of said rod, each of said axles having a pair



of fixedly mounted interiorly disposed upwardly inclined linkage arms, said interior linkage arms having pivotally mounted second linkage rods disposed at their ends opposite said axles, said second linkage rods being pivotally mounted to capstans disposed on the uppermost terminal side of said blocking plates of said chuck.

3,929,326

DEVICE FOR ACCUMULATING AND SUPPLYING LENGTHS OF MATERIAL IN SHEET FORM

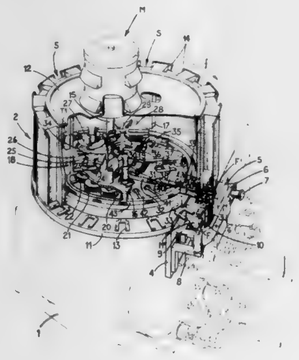
Enzo Seragnoli, Bologna, Italy, assignor to G. D. Societa per Azioni, Bologna, Italy

Filed May 29, 1974, Ser. No. 474,441

Claims priority, application Italy, July 11, 1973, 3449/73

Int. Cl.² B65H 7/14

U.S. Cl. 271—3.1 **5 Claims**



1. A device for accumulating and supplying material in sheet form or in cuttings which operates in conjunction with a fixed reception chamber so that the material is successively supplied to the fixed reception chamber and then supplied to a wrapping mechanism of a wrapping machine, comprising:

a body, having an outer periphery, a portion of the outer periphery being disposed above the fixed reception chamber, said body being movable such that different portions of the outer periphery thereof come into alignment with the fixed reception chamber as the body moves;

a plurality of body compartments provided along the outer periphery of said body, each of said compartments including means for receiving and containing a pile of material;

moving means for causing said body to move intermittently so as to cause said body compartments to halt, one at a time, in alignment with the fixed reception chamber;

a plurality of movable support means, each being contained in one of said plurality of body compartments, for supporting a pile of material within each respective body compartment, wherein said plurality of movable support means are movable radially with respect to said body and are provided with a member which cooperates with an operating device and works in conjunction with said moving means for intermittently operating said body, in order that said plurality of movable support means can be displaced radially from a support position within the compartments to one whereby the pile of material in the particular compartment located above the fixed reception chamber can be discharged therein, said plurality of movable support means engaging with a fixed rail so as to maintain stable their support position for the piles of material in all the other positions; and

sensing means sensitive to the level of the pile of material inside the fixed reception chamber for activating said moving means and, after one of said body compartments has halted in alignment with the fixed reception chamber, causing the movable support means thereof to release the material contained in said body compartment so as to allow transfer of material into the fixed reception chamber.

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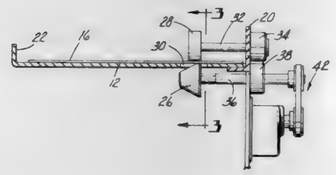
DOCUMENT TRANSPORT AND REGISTRATION APPARATUS

Lorin P. Olson, Tustin, Calif., assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Apr. 1, 1974, Ser. No. 457,072

Int. Cl.² B65H 9/16

U.S. Cl. 271—250 **10 Claims**



5. An apparatus for transporting documents in a predetermined direction of travel, said apparatus comprising:

a document support surface extending in the direction of travel,

an edge member mounted on one side of said support surface and defining a document registration edge generally parallel to the direction of travel,

a drive shaft mounted generally parallel to said support surface,

a single drive roller mounted to said drive shaft adjacent said support surface and being of generally hollow, tapered decreasing radius configuration open at the larger radius end,

drive means for rotating said shaft about the axis of said roller,

said drive roller being of flexible, resilient construction having a continuous peripheral drive surface adjacent said open end, a portion of said peripheral drive surface engaging a presented document in an area, said portion being deformed radially inward while in engagement with said document, said area being asymmetric with respect to said direction of travel whereby said roller creates a couple influencing the trailing end of the document toward said registration edge during transport, said drive roller being of generally frusto-conical configuration with said open end facing toward said registration edge.

3,929,328

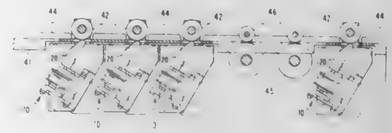
DOCUMENT TRANSPORT DEVICE

LaVerne Frank Knappe, Rochester; Lee Philip Sapetta, New Brighton; Gary John Stroebel, and Myron Arden Wilke, both of Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 5, 1974, Ser. No. 458,493

Int. Cl.² B65H 5/16

U.S. Cl. 271—267 **11 Claims**



5. A document transport device for moving a document along a device surface which defines a document path comprising

a base member;

a pair of parallel spaced flexure mounting means each supported by and extending from said base member;

an elongated elastomer member connected at one end to the first of said parallel flexure mounting means at a surface facing away from the second of said parallel flexure mounting means;

said elongated elastomer member presenting a surface at the distal end thereof in confronting relation to said device surface;

rigid interconnecting means secured to said elongated elastomer member and to the second of said pair of said parallel flexure mounting means; and

electromechanical transducer means for imparting to said elongated elastomer member an oscillatory vibratory motion as a periodic rotation and translation which causes said elastomer member surface to process through an elliptical path and propel a document disposed between said elastomer member surface and said device surface along said document path.

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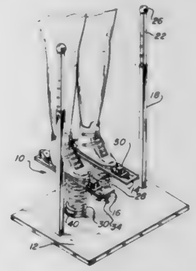
APPARATUS FOR TESTING SKI BOOT FIT

Richard L. Rivera, 480 S. Marion Parkway, Apt. 101, Denver, Colo. 80209

Filed Aug. 5, 1974, Ser. No. 494,534

Int. Cl.² A63B 69/18

U.S. Cl. 272—57 D **4 Claims**



1. Apparatus for the checking and verification of feel and fit of a pair of ski boots to the feet of a wearer under conditions simulating those of actual use on the ski slopes which comprises in combination;

a stationary base member;

a pair of coil springs mounted on said base member in side-by-side relation with the axes of the coils near parallel, said springs being mounted for limited rotational

movement about said axes in a horizontal plane, as well as bending movement forward and backward and from side-to-side to provide three degrees of freedom of movement; and,

a foot support platform attached to the upper extremity of each spring to lie generally near the same plane, each said foot platform having a ski binding attached to the upper surface thereof to secure thereto a pair of ski boots therein in side-by-side skiing relation.

3,929,330

PARALLEL WALKING BAR ASSEMBLY

Anthony Cerasoli, 46 Woodmont Road, West Hartford, Conn. 06117

Filed Mar. 11, 1974, Ser. No. 449,951
Int. Cl.² A63B 3/00
U.S. Cl. 272—63 **1 Claim**



1. A readily assembled and disassembled parallel walking bar assembly comprising:

a. a first base support having front and rear surfaces which define parallel planes and including a first leg and a second leg interconnected by a central portion, each of said first and second legs having a multiplicity of holes intersecting said surfaces and having axes substantially perpendicular thereto in suitably spaced relation relative to each other, each of said first and second legs further having slot means formed therein in spaced relation to said multiplicity of holes, said first base support also including planar portions extending outwardly therefrom at an angle to the said surfaces thereof operable for maintaining said first base support in an upstanding position on a planar surface, said portions comprising foot members extending outwardly on each side of said first leg and said second leg of said first base support substantially at right angles thereto;

b. a second base support spaced from said first base support and having the front and rear surfaces thereof defining planes parallel to the planes defined by said first base support, said second base support including a first leg and a second leg interconnected by a central portion, each of said first and second legs having a multiplicity of holes intersecting said surfaces and having axes substantially perpendicular thereto in suitably spaced relation relative to each other, each of said first and second legs further having slot means formed therein in spaced relation to said multiplicity of holes, said second base support also including planar portions extending outwardly therefrom at an angle to said surfaces thereof operable for maintaining said second base support in an upstanding position on a planar surface, said portions comprising foot members extending outwardly on each side of said first leg and said second leg of said second base support substantially at right angles thereto;

c. first bracket means detachably secured on said first base support in one of a plurality of adjustable positions relative to said first base support, said first bracket means including a first pair of brackets, one of said first pair of brackets being detachably mounted on said first leg of said first base support by means of said multiplicity of holes formed in said first leg of said first base support, and the other of said first pair of brackets being detachably mounted on said second leg of said first base support by means of said multiplicity of holes formed in said second leg of said first base support so that by selectively employing different pairs of said multiplicity of holes to mount said first pair of brackets on said first and second legs of said first base support the position of said first pair of brackets relative to said first base support may be adjusted;

d. second bracket means detachably secured on said second base support in one of a plurality of adjustable positions relative to said second base support, said second bracket means including a second pair of brackets, one of said second pair of brackets being detachably mounted on said first leg of said second base support by means of said multiplicity of holes formed in said first leg of said second base support, and the other of said second pair of brackets being detachably mounted on said second leg of said second base support by means of said multiplicity of holes formed in said second leg of said second base support so that by selectively employing different pairs of said multiplicity of holes to mount said second pair of brackets on said first and second legs of said second base support the position of said second pair of brackets relative to said second base support may be adjusted;

e. a first walking bar having one end thereof supported by said one of said first pair of brackets on said first base support and the other end thereof supported by said one of said second pair of brackets on said second base support so that said first walking bar is detachably supported by said first and second base supports substantially at right angles to the front and rear surfaces of each of said first and second base supports;

f. a second walking bar having one end thereof supported by said other of said first pair of brackets on said first base support and the other end thereof supported by said other of said second pair of brackets on said second base support so that said second walking bar lies in the same horizontal plane as said first walking bar and is detachably supported by said first and second base supports substantially at right angles to the front and rear surfaces of each of said first and second base supports;

g. a first rail member having one end thereof detachably received in said slot means of said first leg of said first base support and the other end thereof detachably received in said slot means of said first leg of said second base support so that said first rail member extends between said first and second base supports substantially at right angles to the major axis of each of said first and second base supports and in spaced relation to said first walking bar, said first rail member being provided at each end thereof with a pair of dowel pins, one of said pair of dowel pins being removable to permit the ends of said first rail member to be received in said slot means, said one of said pair of dowel pins thereafter being repositioned so that a portion of the corresponding one of said first and second base supports is captured between said pair of dowel pins, said first rail member being operable to increase the rigidity of the parallel walking bar assembly;

h. a second rail member having one end thereof detachably received in said slot means of said second leg of said first base support and the other end thereof detachably received in said slot means of said second leg of said second base support so that said second rail member is spaced from said second walking bar and lies in the same horizontal plane as said first rail member and extends between said first and second base supports substantially at right angles to the major axis of each of said first and second base supports, said second rail member being provided at each end thereof with a pair of dowel pins, one of said pair of dowel pins being removable to permit the ends of said second rail member to be received in said slot means, said one of said pair of dowel pins thereafter being repositioned so that a portion of the corresponding one of said first and second base supports is captured between said pair of dowel pins, said second rail member being operable to increase the rigidity of the parallel walking bar assembly; and

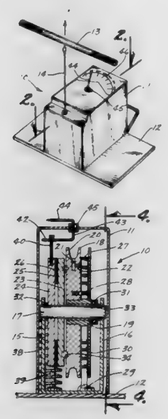
i. additional support means cooperatively associated with each of said first and second walking bars to impart additional support thereto intermediate the ends thereof and positionable intermediate said base supports, said additional support means comprising a pair of stanchions, one of said pair of stanchions being cooperatively associated with said first walking bar and the other of said pair of stanchions being cooperatively associated with said second walking bar, each of said pair of stanchions including a lower portion terminating at one end in an enlarged base supportable on a planar surface, and an upper portion terminating at one end in a ring-like element operable for receiving therethrough one of said first and second walking bars, said upper portion being supported on said lower portion for sliding movement relative thereto to enable said upper portion to be adjusted relative to said lower portion so that the height of said ring-like element corresponds to the height of said first and second walking bars.

3,929,331

EXERCISE DEVICE

Jack D. Beeding, Rockford, Ill., assignor to E. Dale Mask, Milwaukee, Wis. and Ernest M. Mattox, Independence, Mo., a part interest to each

Continuation of Ser. No. 355,554, April 30, 1973, abandoned. This application Oct. 15, 1974, Ser. No. 514,382
Int. Cl.² A63B 21/00
U.S. Cl. 272—79 D **5 Claims**



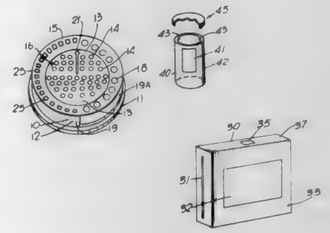
4. In an exercising device, the combination of, first and second members disposed in facing relation, said members being supported for relative turning about a predetermined axis and also being supported for relative bodily shifting, means operable to turn said first member in one direction relative to said second member when said means are moved manually during the performance of an exercising operation, a series of raceways formed in the opposing faces of said members and positioned such that the raceways of one member are substantially alined with the raceways of the other member, spreading devices captivated within the alined raceways and operable to force said members apart when said first member is turned relative to said second member in said one direction, and braking means operable to automatically retard movement of said manually movable means when said members are forced apart by said spreading devices.

3,929,332

CARDS, MAGNETIC MOUNTING MEMBERS AND ROTATABLE HOLDER

Donald A. Kidd, 2711 Octavia St. No. 302, San Francisco, Calif. 94123

Filed Mar. 10, 1975, Ser. No. 557,234
Int. Cl.² A63F 9/00
U.S. Cl. 273—1 M **1 Claim**



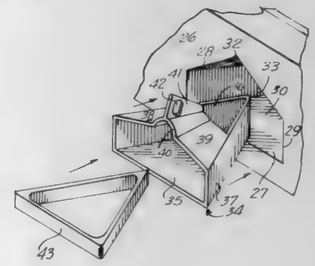
1. An educational game utilizing two sets of marked cards in which the purpose of the game is to match a card of one set with an appropriately marked card of the other set of cards, in which each of one set of cards are installable in each of a first set of objects, and each of the other set of cards are installable in each of a second set of objects, with each of the objects of both sets fitted with a window opening for displaying the marking of an installed card, together with a holder fitted with shaped recesses for individually retaining the objects so as to conceal the window opening of each retained object, each holder is rotatably mounted on a base, and each object is fitted with a magnetic attractable piece of material, together with a pick fitted with a tip of magnetic material so that the pick can remove an object from the recess of the holder by magnetic attraction.

3,929,333

POOL TABLE AND QUICK RACK SYSTEM

Jacob Kremski, 10440 South State Road, Goodrich, Mich. 48438

Continuation-in-part of Ser. No. 496,182, Aug. 9, 1974, abandoned. This application Feb. 28, 1975, Ser. No. 553,992
Int. Cl.² A63D 15/00
U.S. Cl. 273—22 **3 Claims**



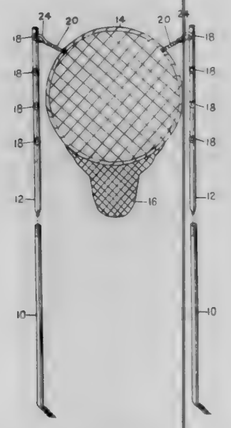
1. A pool table and quick rack system therefor, said table having pockets opening into a plurality of ball return channels positioned beneath the table, an aperture formed in said table adjacent one end thereof, a bottom wall in said aperture positioned to underlie the discharge end of said channels, said rack system comprising a triangular rack carrier removably positioned in said aperture on said bottom wall, said rack carrier including a triangular bottom wall, a pair of generally upright forwardly converging side walls joined at the forward portion of said carrier, a handle for moving said carrier, a triangular rack removably positioned in said carrier, and

means integral with said handle extending between said side walls and integral therewith for supporting said handle substantially above the triangular bottom wall sufficiently to permit movement of said rack into and out of said carrier with one or more balls supported on the balls lying on said triangular bottom wall.

3,929,334
MECHANICAL BASEBALL UMPIRE

Ronald A. Magazzu, R.D. 4 Dolly Bridge Road, Randolph, N.J. 07801

Filed Sept. 18, 1974, Ser. No. 507,143
Int. Cl.² A63B 69/40
U.S. Cl. 273—26 A **3 Claims**



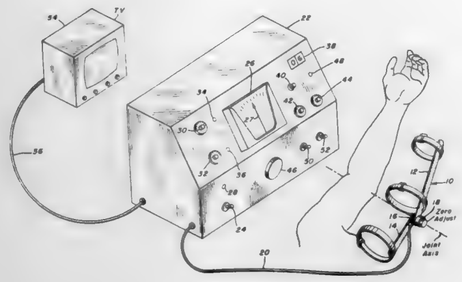
1. A mechanical baseball umpire comprising:
a pair of elongated vertical support posts spaced a preselected distance apart, each having a series of vertically spaced eye bolts attached thereto intermediate its ends; a net structure, said net structure having a net member formed as a pocket having a closed bottom portion and an open top portion, said top portion being secured around the periphery of a loop to form an open pocket, said loop having a pair of elongated suspension members attached thereto, each of said suspension members having means at its free end to fasten said suspension members to eye bolts for suspending said loop and net from said pair of posts such that said loop lies in a substantially vertical plane between said post, said fastening means being disengagable from said eye bolts for vertically adjusting said loop and net on said posts, said post net and loop arrangement serving as an umpire in the sense that when a ball is thrown through the loop and retained by said net a "strike" is designated and when a ball does not pass through said loop a "ball" is designated.

3,929,335
ELECTRONIC EXERCISE AID

Franklin S. Malick, 518 Greenleaf Drive, Monroeville, Pa. 15146

Filed Feb. 10, 1975, Ser. No. 548,514
Int. Cl.² A63B 23/00
U.S. Cl. 272—57 R **8 Claims**

1. Apparatus for motivating a patient in need of occupational therapy comprising a hinged device adapted to be operatively associated with a joint of a patient and having a transducer coupled thereto for producing an electrical signal which quantitatively increases on either side of a central, null position of the hinged device, first and second comparator devices for comparing said electrical signal with a pair of bias signals such that an output will be produced from each comparator device when said electrical signal equals or exceeds an associated bias signal upon movement of the hinged device in either direction from said central, null position, an electrically-

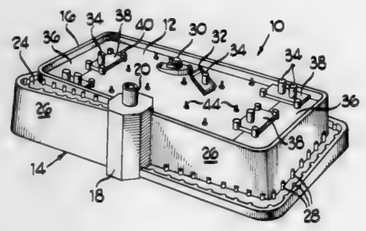


operated motivation device, and means for deactivating said motivation device in the absence of an output from either of said comparator devices for a predetermined period of time.

3,929,336
SURFACE PULLING APPARATUS WITH OBSTACLE SIGNALING

Jeffrey D. Breslow, Highland Park, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 9, 1973, Ser. No. 404,286
Int. Cl.² A63F 9/00
U.S. Cl. 273—108 **13 Claims**

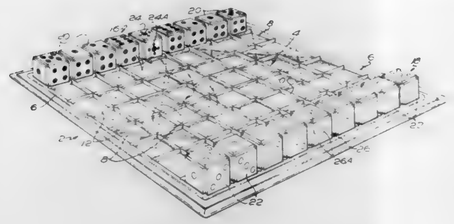


1. A game apparatus, comprising: means defining a playing surface; means defining a starting position on the playing surface; means defining an ending position on the playing surface; means defining an obstacle course between said positions including a plurality of obstacles protruding upwardly from said playing surface between said positions defining plural alternate paths of travel between the obstacles; a hand manipulatable first playing piece having bottom surface means engageable with said playing surface during play, and said playing surface between the obstacles being generally flat and devoid of any guiding influencing structure for said playing piece and allowing for manual pushing by a player of the playing piece freely in any direction on the playing surface over said obstacle course between said upwardly protruding obstacles; a freely movable second playing piece which is capable of being pushed over said playing surface by the first playing piece so as to move the second playing piece along said obstacle course between the upwardly protruding obstacles; and hazard warning means to signal when one of said playing pieces deviates from said obstacle course and engages one of said obstacles.

3,929,337
BOARD GAME APPARATUS

Geoffrey Hayes, Prestbury, England, assignor to Toy Development Limited, England

Filed Feb. 5, 1975, Ser. No. 547,200
Claims priority, application United Kingdom, Feb. 7, 1975, 5771/75
Int. Cl.² A63F 3/00
U.S. Cl. 273—134 C **3 Claims**



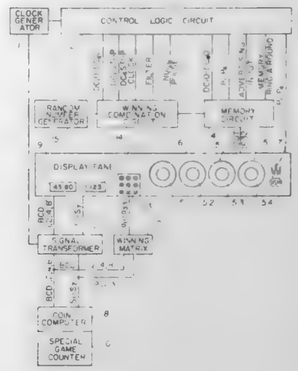
1. Apparatus for playing a game comprising the combination of
1. a first set of equal size dice, one die of the set having all its faces presenting the same symbol, all the other dice in the set being marked with symbols of different numerical value whereby each face of a die bears a symbol of different value from the symbols on the other faces of the die,
2. a second set of dice equal in size and number to the first set of dice, the second set of dice being marked in the same manner as the first set of dice, the second set of dice having at least one common characteristic that enables any die of the set to be readily distinguished from any die of the first set,
3. means providing a playing surface divided into contiguous and aligned squares of equal sizes, each square being of substantially the same size as a die face, the playing surface having sufficient squares to permit the first set of dice to be aligned in a row parallel to a row of the second set of dice with a plurality of squares being vacant to accommodate movement of the dice,
4. and means for indicating the symbol to be presented by the uppermost face of a die in a new position on the playing surface when the die is moved from its initial position to its new position along a permitted path having the number of squares equal to the numerical value that is on the uppermost face of the die in the initial position.

3,929,338
GAMING APPARATUS

Juergen Peter Busch, Bingen, Germany, assignor to NSM Apparatebau GmbH Kommanditgesellschaft, Bingen (Rhine), Germany

Filed Dec. 26, 1973, Ser. No. 428,344
Claims priority, application Germany, Dec. 27, 1972, 2263570
Int. Cl.² A63B 71/06
U.S. Cl. 273—138 **6 Claims**

1. A control and indicator apparatus, comprising a first group of a plurality of display devices, first and second counters, a clock generator connected to apply clock pulses to said first and second counters, shift register means, means for selectively applying the output of said counters to said shift register means, and decoder means coupled to determined stages of said shift register means for controlling said display devices, said means for selectively applying the outputs of said counters to said shift register means comprising first and second AND-gate means connected to the outputs of said first and second counters respectively, means for selectively operating said first and second AND-gate means, OR-gate means coupling the output of said second AND-gate means to said shift register means, a plurality of third AND-gate means coupling the output of said first AND-gate means to said

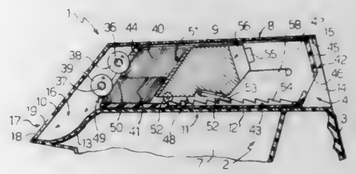


OR-gate means and means for selectively opening the AND-gate means of said plurality of AND-gate means.

3,929,339
DEVICE FOR DISTRIBUTION OF PLAYING-CARDS

Luciano Mattioli, Milan, Italy, assignor to S.I.T.A.V. S.p.A. - Societa Incremento Turistico Alberghiero Valdostano, Aosta, Italy

Filed Sept. 9, 1974, Ser. No. 505,191
Claims priority, application Italy, Sept. 28, 1973, 29494/73
Int. Cl.² A63F 1/14
U.S. Cl. 273—148 A **4 Claims**



1. A device for distribution of playing-cards, the device comprising:
a cavity;
magazine means for accommodating at least two separate packs of cards arranged in a superimposed and on-edge relationship, and with each card of one pack arranged with one of its edges in contact with a corresponding edge of a card of the other pack, said magazine means being mounted to be slidable along at least part of said cavity; first aperture means for communication of said cavity with the outside, said first aperture means facing an end wall of said magazine means;
compression means arranged within said magazine means for engaging the bottom card of each pack of cards, and pushing said packs of cards towards said end wall;
second aperture means provided through said end wall to enable the cards to come out from said magazine means; movable retainer means adapted to extend through said second aperture means into said magazine means and into contact with the top card of each pack of cards to support said packs of cards against the action of said compression means; and
means for operating said movable retainer means in a step-by-step manner, said movable retainer means being adapted, when operated, to exert a grazing action on each of said top cards, and said grazing action tending to cause, at each step, at least said top card of each pack to slide

relative to the remaining cards towards said first aperture means through said second aperture means, and into a position in which it can be drawn from the outside through said first aperture means.

3,929,340

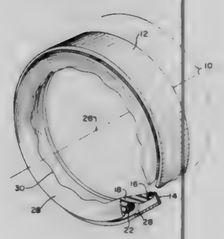
SEAL WITH PUMPING ACTION

Glenn W. Peisker, Barrington, Ill., assignor to Chicago Rawhide Manufacturing Company, Elgin, Ill.

Continuation of Ser. No. 246,865, April 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 213,693, Dec. 29, 1971, abandoned. This application Nov. 11, 1974, Ser. No. 522,883

Int. Cl.² F16J *15/32*

U.S. Cl. 277—134 **9 Claims**



1. An oil seal unit for creating a fluid seal between a pair of relatively movable elements, at least one of which is arranged for rotation about a given axis, and unit having a mounting portion thereof adapted to be fixedly associated in use with the first of said elements, and a generally annular, flexible primary lip portion disposed in a position of use, in a generally facing relation to said second element and defined at least partially by converging first and second, at least partially axially undulating frusto-conical lip surfaces meeting each other along an axially undulating seal band area formed at the convergence of said undulating lip surfaces, said seal band undulating so as to have portions thereof lying on either side of an imaginary plane lying parallel to the plane of said seal mounting portion and substantially perpendicular to said given axis of said movable member, said first lip surface at least partially facing the surface of said second element lying on the exterior of a region in which a fluid is to be sealed, and said second lip surface at least partially facing the surfaces of said second element lying on the interior of said region in which said fluid is to be sealed, the included angle between said first lip surface and the surface of said second element being from about 15° to about 30° and the included angle between said second lip surface and the surface of said second element being from about 40° to about 60°, said angles being measured as said seal is in a normally installed position of use over said second member, each of said angles being substantially constant throughout the circumferential extent of said lip surfaces, with the amplitude of said seal band undulations being from about 0.003 inches to about 0.015 inches to either side of said imaginary plane, and with said seal band area of said seal as said seal is formed being of substantially constant radius throughout its entire extent.

3,929,341

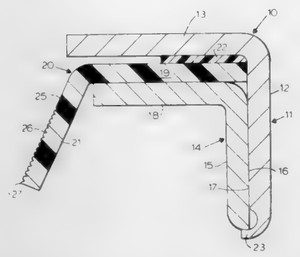
METHOD OF MAKING POLYTETRAFLUOROETHYLENE SEALING ELEMENTS WITH HYDRODYNAMIC ACTION

William E. Clark, Chelsea, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Continuation-in-part of Ser. No. 426,365, Dec. 19, 1973, abandoned. This application Nov. 13, 1974, Ser. No. 523,451

Int. Cl.² B61F *15/22*; **F16J** *15/54*

U.S. Cl. 277—134 **19 Claims**



1. A method for manufacturing an oil seal having an element made from a tubular billet of polytetrafluoroethylene or the like having an outer cylindrical surface, a concentric inner cylindrical surface, and an annular body between said cylindrical surfaces, comprising the steps of:

facing off one end wall perpendicular to said cylindrical surfaces,

slicing said billet at a desired thin distance from said faced end wall to provide a washer and to provide a newly faced end wall which is thereafter sliced, proceeding thusly through said billet to provide a plurality of said washers, and

coining one face of each said washer to provide hydrodynamic means for returning oil, leading from the intersection of said wall with its inner cylindrical surface and extending for a desired width.

17. A method for manufacturing an hydrodynamic oil seal element from a generally flat wafer of polytetrafluoroethylene or the like, comprising the steps of:

substantially simultaneously blanking and piercing said wafer to provide the desired inner and outer dimensions, and

coining one face of said wafer to provide hydrodynamic means for returning leaked fluid, leading from its inner periphery and extending for a desired width.

3,929,342

SPREADER SPRING FOR PISTON RINGS

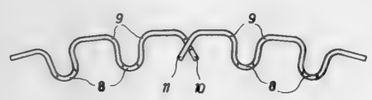
Martin Morsbach, Hilgen; Paul Jöhren, and Hermann Meuken, both of Burscheid, all of Germany, assignors to Goetzewerke, Burscheid, Germany

Filed June 13, 1975, Ser. No. 586,725

Claims priority, application Germany, June 22, 1974, 2430072

Int. Cl.² F16J *9/06*

U.S. Cl. 277—141 **1 Claim**



1. A spreader spring for disposition in a piston groove for urging piston rings outwardly of the piston groove into engagement with a cylinder wall; the spreader spring being formed of a resilient strip bent annularly and having radially oriented corrugations and two adjoining spring strip ends; each spring strip end has a cutout extending axially from a strip edge; the cutouts in the two strip ends being oriented, with their open side, in opposite axial directions; each cutout having an axial dimension that is at least one half the width of the spring strip; the improvement wherein said strip ends are oriented towards one another and are angularly bent at an angle of 0°–90° with respect to the tangent of the annular spring strip in the location of bend; said cutouts being disposed in the bent portions of said spring strip ends.

3,929,343

QUICK-RELEASE TOOL CHUCK

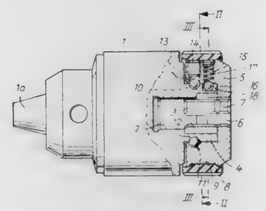
Karl Wanner, Echterdingen; Reinhard Hähner, Kemnat; Wolfgang Schmid, Plattenhardt; Gernot Hänsel, Stuttgart-Plieningen; Manfred Bleicher, Leinfelden, and Jorg Falchle, Bempflingen, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Sept. 21, 1973, Ser. No. 399,723

Claims priority, application Germany, Oct. 7, 1972, 2249234

Int. Cl.² B23B *31/04*

U.S. Cl. 279—1 B **9 Claims**



1. A quick-release tool chuck, comprising a chuck body including jaw means for engaging a tool and having a passage provided with a profiled cross-section having circumferentially spaced profiled portions extending inwardly of said passage, and with an open end; a drive shaft having an end portion which is receivable in said passage and provided adjacent to the profiled end portion with a circumferential recess the inner diameter of which is greater than the smallest diameter of said profiled cross-section; and arresting means, including a ring mounted on said chuck body for turning movement between two end positions, retaining means for retaining said ring in said respective end positions thereof, the claw portions displaceable circumferentially of said passage between a release position in which they are each located in axial alignment with one of said profiled portions, and an arresting position in which they are each located between two circumferentially adjacent ones of said profiled portions, so as to arrest said drive shaft against axial movement relative to said chuck body; and detent means for detaining said ring against movement relative to said body in axial direction of said passage, said detent means having an outer circumferential groove provided in a surface of said body which is surrounded by said ring, an inner circumferential groove provided in an inner surface of said ring and registering with said outer groove, and a plurality of ball members each received partly in said inner groove and partly in said outer groove.

3,929,344

MOUNT FOR PAIR OF SKI BOOTS ON SINGLE SNOW SKI

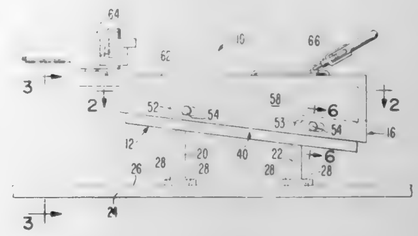
Joseph D. Ott, 3220 Homestead Road, Santa Clara, Calif. 95051

Filed Feb. 28, 1975, Ser. No. 554,348

Int. Cl.² A63C *5/00*

U.S. Cl. 280—11.35 C **12 Claims**

1. A mount for a pair of ski boots for a single ski comprising: a base having a pair of spaced, side-by-side sections; means on the base for mounting the same on a ski with the sections extending longitudinally of the ski; a boot mounting member for each section, respectively, each mounting member having an upper, boot-receiving surface provided with binding means thereon so that a ski boot can be releasably connected thereto; means mounting each member, respectively, on the corresponding section for movement longitudinally thereof through a limited distance; and a link pivotally connected to the members and pivotally coupled to the base intermediate its ends to permit one of the members to move in one direction as the other member moves in the opposite direction relative to the base.



3,929,345

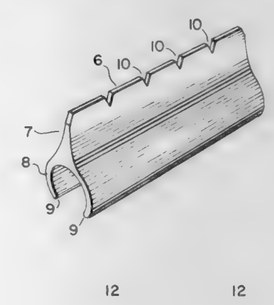
SKI BOOT CLEANER

Robert D. Nasby, 6912 Edwina, NE., Albuquerque, N. Mex. 87110, and James A. Corll, 1911 Spruce St., Los Alamos, N. Mex. 87544

Filed May 23, 1974, Ser. No. 472,604

Int. Cl.² A63C *11/22*

U.S. Cl. 280—11.37 E **10 Claims**

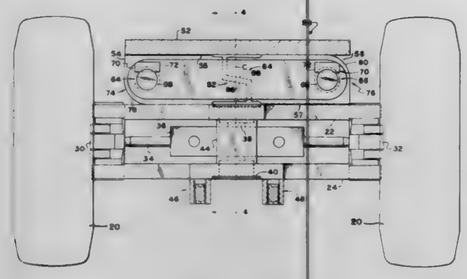


1. A ski boot cleaner comprising at least one elongated scraping member and a securing means to rigidly secure said scraping member to the shaft of a ski pole intermediate the handle and snow pad of said ski pole wherein said elongated scraping member is a flange extending radially outwardly from said securing means with said flange affixed to said securing means along the base of said flange and terminating at an outer edge and being substantially parallel to the axis of said shaft and wherein said securing means is an elongated channel formed by a housing having substantially cylindrical interior walls to cooperate with said shaft and substantially cylindrical outer walls, said housing having a slot therein extending in the same direction as the axis of said cylindrical interior walls thereby forming a pair of inwardly facing oppositely disposed resilient lips defined by said slot so that movement away from said shaft of said ski pole is resisted by the cooperation of said lips and said shaft.

3,929,346
STEERING AXLE ASSEMBLY PROVIDING IMPROVED LATERAL STABILITY

Derek K. Keene, Philadelphia, and James A. Wahl, Langhorne, both of Pa., assignors to Eaton Corporation, Ohio

Filed Apr. 17, 1974, Ser. No. 461,569
Int. Cl.² B60P *1/02*
U.S. Cl. 280—87 R **13 Claims**



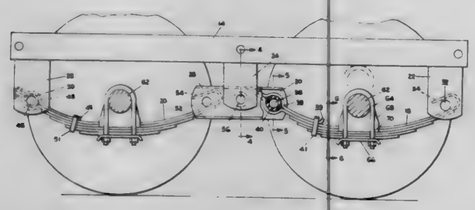
10. In a load lifting vehicle including an elevatable load carriage, a pair of ground-engaging wheels, a vertical central plane and a vehicle frame portion extending transversely of the vehicle, a steering axle assembly connecting the wheels, comprising:

a. a main frame, oppositely disposed from the vehicle frame portion;
b. a first support frame fixedly attached to the vehicle frame portion and carrying a first pivot means;
c. a second support frame fixedly attached to said main frame and carrying a second pivot means, said first and second pivot means being oppositely disposed about said central plane;
d. link means connecting said first and second pivot means and maintaining said first and second pivot means on a substantially constant center-to-center distance; and
e. said first support frame is normally in contact with said main frame and said second support frame is normally in contact with the vehicle frame portion to permit angular movement of said main frame, with respect to the vehicle frame portion, about either of said pivot means.

3,929,347
TANDEM WHEEL SUSPENSION SYSTEM FOR CLOSELY ADJACENT WHEELS

Lloyd D. Masser, Muskegon, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Aug. 26, 1974, Ser. No. 500,479
Int. Cl.² B62D *59/00;* **B60G** *11/04*
U.S. Cl. 280—104.5 R **10 Claims**



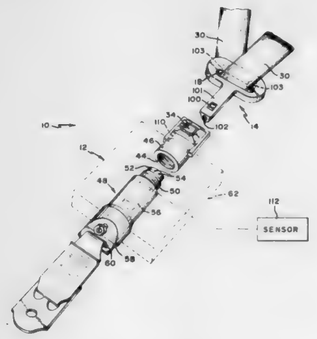
1. In a suspension system for a vehicle including tandem pairs of closely adjacent ground engaging wheel wherein at least first and second leaf springs are positioned between the wheels, means support said leaf springs in tandem beneath said vehicle and means support axles for said ground engaging wheels on said leaf springs, the improvement in said leaf spring support means comprising:

first, second, and third U-shaped hanger brackets mounted in spaced relationship in inverted manner to the underside of the frame of said vehicle;
a pair of rigid identical facing equalizer brackets pivotably mounted to said second U-shaped hanger bracket;
means pivotably mounting said first leaf spring to said first U-shaped hanger bracket on one end and said equalizer bracket at another end;
means for pivotably mounting said second leaf spring to said equalizer bracket at one end and to said third U-shaped bracket at the other end; and
said first, second, and third U-shaped brackets and said equalizer brackets being formed by bending identical blanks of sheet metal, such that said brackets have an identical configuration in unbent sheet form.

3,929,348
TONGUE FOR INFLATABAND

Ronald C. Lawwill, Birmingham, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Feb. 13, 1974, Ser. No. 442,022
Int. Cl.² B60R *21/08*
U.S. Cl. 280—150 AB **1 Claim**



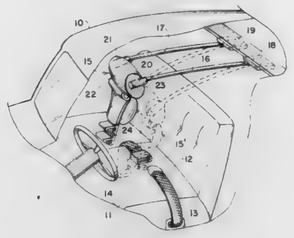
1. A seat band restraint assembly comprising a hollow tongue, a buckle portion, with a push button mounted on one side thereof, adapted to be latched with said tongue and unlatched therefrom on actuation of the push button, an inflatable seat band restraint mounted on said tongue, said buckle portion being provided with chamber means, said tongue having a single central passageway having a longitudinal axis through a portion thereof, said buckle portion containing a latching bar mounted therein moving perpendicular to the longitudinal axis of the passageway, said tongue containing a recess therein for receipt of the bar and consequent latching of said tongue to said buckle at one end of said tongue as a result of reception of the bar in said recess, said recess located on the same side of the tongue as said push button mounting on the buckle, said central passageway being located at the end of said hollow tongue adjacent said recess, exit ports in said hollow tongue in communication with said central passageway and said inflatable band for communicating gas from said passageway to said band, said exit ports located at the end of said hollow tongue opposite to the end latched to the buckle, said central passageway being adapted to communicate with said chamber means when said tongue and buckle portions are latched, inflating means communicating with said chamber means, said inflating means including a gas source whereby said inflating means and said inflatable band are interconnected through said chamber means, said central passageway and said ports when said hollow tongue and said buckle portion are latched so as to allow gas released from said gas source to inflate said inflatable seat band restraint, said inflatable band restraint being mounted on said tongue

between said exit ports and the end of the central passageway adjacent said recess.

3,929,349
PROTECTIVE DEVICE FOR VEHICLES

Emil Georg Schubert, 4210 Kenyon Ave., Los Angeles, Calif. 90066

Filed Sept. 30, 1974, Ser. No. 510,482
Int. Cl.² B60R *21/02*
U.S. Cl. 280—150 B **4 Claims**



1. A protective device for protecting an occupant of a vehicle equipped with a seat and seat belt, comprising, in combination:

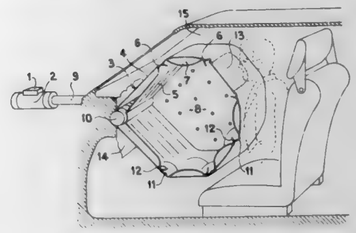
a. elongated resilient means secured to said vehicle and extending forwardly in a generally horizontal direction above the vehicle seat in a cantilevered fashion;
b. a head cushion secured to the forward portion of the resilient means;
c. a chest cushion secured to the underside of said head cushion; and
d. first and second channels at different distances below said chest cushion secured to the underside of said chest cushion, either one of which may receive said seat belt, said resilient means supporting said head cushion and chest cushion when not in use being in a position in front of an occupant in said vehicle seat blocking his line of vision out the front of the vehicle, whereby the occupant can pull down on said protective device against the bias of said resilient means towards his front when seated and pass the seat belt through one of said channels and then fasten the same to thereby anchor said protective device in a proper protective position in front of him below his line of sight out the front of the vehicle, releasing of said seat belt permitting said protective device to be raised by said resilient means to a position blocking the occupant's line of sight from the front of the vehicle so that in order to see effectively to operate the vehicle a driver occupant must lower the protective device and anchor the same with said seat belt in its protective position, one or the other of said channels being selected for securement by said seat belt to provide an adjustment of the vertical height of said protective device in accord with the size of the vehicle occupant.

3,929,350
SAFETY DEVICE WITH AN INFLATABLE CUSHION, ESPECIALLY FOR AUTOMOBILES

Bernard M. Pech, Paris, France, assignor to Societe Nationale des Poudres et Explosifs, France

Filed Jan. 15, 1973, Ser. No. 323,954
Claims priority, application France, Jan. 19, 1972, 72.01803
Int. Cl.² B60R *21/08*
U.S. Cl. 280—150 AB **14 Claims**

1. A safety device for moving vehicles, especially for automobiles, comprising a collision detector controlling the actuation of a source of gas under pressure, at least one inflatable safety cushion connected to said source of gas, said cushion comprising an inner chamber communicating with the atmosphere via orifices with valves which open only in the direction which admits air into the said chamber, and an outer chamber connected to the said source of gas under pressure and enclosing partially the inner chamber, the walls of these two chambers being arranged one inside the other and being firmly fixed to one another in a discontinuous manner, the inner wall being made of elastic material, the outer wall being made of flexible material, said chambers being adjacent and non-communicating, the outer chamber spreading out the cushion when it is pressurized, and the inner chamber being spread out by the pressurization of the outer chamber and being pressurized

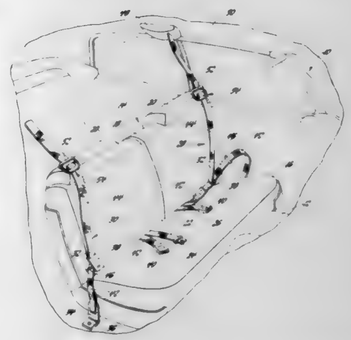


itself by sucking in air from the atmosphere via the inlet orifices, elastic means compressing the outer chamber, said elastic means comprising at least said inner wall, said valves having a calibration pressure less than atmospheric, whereby the pressure of the inner chamber is maintained substantially less than the pressure of the outer chamber and less than atmospheric pressure during the cushion compression phase and during the entire stage of deadening of the blow, for deadening the blow to the person to be protected, the region of the cushion coming in contact with the head of said person being a portion of one of said walls which bounds the inner chamber, whereby the head is subjected to the lower pressure of said inner chamber.

3,929,351
COMFORT CLIP FOR A SHOULDER BELT OF A VEHICLE OCCUPANT RESTRAINT BELT SYSTEM

John J. Fricko, Harper Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1974, Ser. No. 526,455
Int. Cl.² B62B *35/00;* **B60R** *21/10*
U.S. Cl. 280—150 SB **1 Claim**



1. In a vehicle occupant restraint belt system including lap and shoulder belts having a predetermined width between side edges thereof, a buckle assembly for securing the lap and shoulder belts across a seated vehicle occupant, a shoulder belt guide slidably receiving and thereby guiding the shoulder belt over the shoulder of the seated occupant, and a shoulder

belt retractor receiving the shoulder belt so as to normally pull the shoulder belt back through the guide for storage but permitting withdrawal thereof for use, a comfort clip for the shoulder belt comprising:

an integral plastic clip of a generally S-shaped configuration that defines elongated slots opening outwardly in opposite directions, the clip including a central belt web between the slots and a pair of legs extending from the belt web in opposite directions to cooperate therewith in defining the slots, the clip web and legs being located in the same plane so that the shoulder belt takes an abruptly curved configuration upon being passed through the slots and over the web, this abruptly curved configuration of the belt generating a frictional force that positions the clip along the shoulder belt during use so that the clip engages the guide to prevent the retractor from tensioning the shoulder belt across the occupant, the slots each having a bifurcated configuration adjacent the open end thereof so as to define two tine portions, one tine portion of each slot being in alignment with the rest of the slot and being closed at its outer end, the other tine portion of each slot being laterally displaced from the rest of the slot and opening outwardly to permit the shoulder belt to be received by the clip intermediate ends of this belt by inserting opposite edges thereof into the slots, the clip leg adjacent each slot including an integral projection that extends inwardly at the open end of the associated slot between the tine portions thereof so as to terminate at an inward end in a manner that defines the bifurcated configuration of the open end of the slot, and the opposite edges of the belt being passed over the inward ends of the respective projections after insertion into the laterally displaced open tine portions of the slots so as to be received within the closed tine portions and the rest of the slots in a manner that retains the clip on the belt, the clip web and the integral projections thereof being recessed from at least one outer side of the comfort clip to recess the abruptly curved configuration portion of the belt within the confines of the comfort clip.

3,929,352

SPLASH GUARD

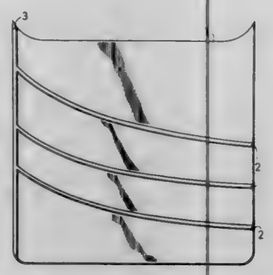
Knut Arenhold, Birkenweg 5, 764 Kehl, Germany

Filed Aug. 19, 1974, Ser. No. 498,274

Claims priority, application Germany, June 18, 1974, 2429467; Aug. 22, 1973, 7330563[U]

Int. Cl.² B62D *25/16*

U.S. Cl. 280—154.5 R **3 Claims**



1. A splash guard for a vehicle wheel comprising:

a sheet of material having a top edge, a bottom edge, and two laterally spaced side edges, the sheet being adapted for mounting adjacent its top edge on a vehicle behind a wheel of the vehicle so that one face of the sheet is presented to the wheel;

at least one continuous transverse rib projecting from said one face of the sheet and extending from one side edge of the sheet to the other side edge of the sheet, the transverse rib being curved along its length and inclined so that it is closer to the top edge of the sheet at the outermost side edge of the sheet, relative to the vehicle, than it is at the innermost side edge, the curvature of the transverse rib being larger adjacent the outermost side edge of the sheet than adjacent the innermost side edge so that the end of the transverse rib adjacent the innermost side edge of the sheet is more nearly horizontal, relative to the vehicle, than the end adjacent the outermost edge; and

a longitudinal rib connected to the transverse rib and projecting from said one face of the sheet and extending along the outermost side edge of the sheet.

3,929,353

TRAILER APPARATUS

Cuba L. Burleson, and Charles B. Dillon, both of Box 157, Highway 36, S., Bellville, Tex. 77418

Filed Mar. 22, 1973, Ser. No. 343,829

Int. Cl.² B62D *53/06*

U.S. Cl. 280—423 R **8 Claims**



1. A trailer apparatus adapted for connection with a towing vehicle to effect desired movement of a cargo or load positioned on the trailer apparatus, including:

a. an axle housing rotatably mounting a pair of spaced wheels for supporting said axle housing;

b. a support frame mounted with said axle housing for supporting the load on said axle housing;

c. a drawbar assembly connected with said support frame including:

1. a first substantially vertical member having a first lower end connected with said support frame; and

2. a second substantially vertical member laterally spaced from said first substantially vertical member with each of said vertical members having a first lower end connected with said support frame;

3. a first gooseneck forming member having a substantially horizontal first position connected with said substantially vertical member at a location spaced from the connection of said substantially vertical member with said frame and extending from said substantially vertical member to a second portion of said gooseneck forming member which angles downwardly from said substantially horizontal first portion at an angle greater than 30° and less than 40° to said hitch means;

4. a second gooseneck forming member laterally spaced from said first gooseneck forming member and having a substantially horizontal first portion connected with said second substantially vertical member at a location spaced from the connection with said support frame and extending from said second substantially vertical member to a second portion of said second gooseneck forming member which angles downwardly from said substantially horizontal first portion of said second gooseneck forming member at an angle greater than 30° and less than 40° to said hitch means whereby operator visibility, usable cargo space, and overall length is enhanced; and

d. hitch means mounted on said drawbar assembly at a location spaced from said support frame for releasably connecting said drawbar with the towing vehicle wherein towing force is imparted to said trailer apparatus for effecting movement thereof.

3,929,354

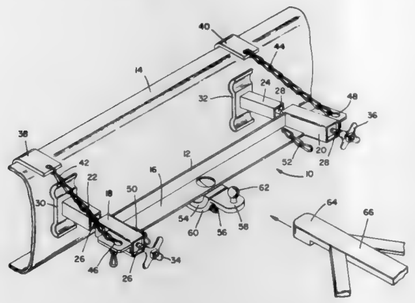
ADJUSTABLE DRAWBAR

Edward John Elkins, 3568 Halifax Way, Concord, Calif. 94520

Filed Dec. 19, 1974, Ser. No. 534,320

Int. Cl.² B60D *1/06*

U.S. Cl. 280—490 R **6 Claims**



1. A trailer hitch comprising:

a hitch frame attachable to a towing vehicle and including an exposed arcuate mounting surface having at least one aperture formed therethrough;

a drawbar having an arcuate portion and a linear trailer mounting portion contiguous to the arcuate portion, said arcuate portion having an inner arcuate surface conformed to the exposed arcuate mounting surface of the hitch frame and adapted to partially circumscribe said mounting surface, and at least one circumferential slot through said arcuate portion; and

means for mounting the arcuate portion of the drawbar to the mounting surface of the hitch frame, said mounting means including at least one fastener extending through the aperture in the mounting surface and the slot in the arcuate portion of the drawbar, said fastener being loosened for adjusting the circumferential position of the arcuate portion of the drawbar with respect to the mounting surface so that the trailer mounting portion of the drawbar can be made horizontal and tightened to fix the drawbar in position so that the likelihood of damage to the trailer hitch or the towing vehicle due to misalignment of the drawbar is minimized.

3,929,355

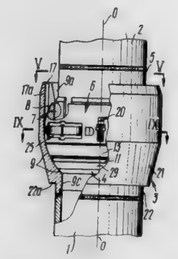
PIVOTAL PIPE JOINT

Anatoly Emelyanovich Sljusar, ulitsa B. Khmelnitskogo, 84, kv. 5, Belgorod, U.S.S.R.

Filed Apr. 4, 1974, Ser. No. 457,758

Int. Cl.² F16L *35/00*

U.S. Cl. 285—39 **19 Claims**



1. A pivotal pipe joint comprising: a female member secured to the end of one of a pair of pipes to be connected; a spherical socket in said female member, coaxial with said one pipe; a spherical ring receivable in said spherical socket of said female member and having an external spherical surface congruent with said surface of said socket and an internal cylindrical surface defining the bore of said ring; grooves made in said spherical ring; a bore made in said female member extending coaxially with said spherical socket and having two diametrically opposite longitudinal grooves on its surface through which said spherical ring is adapted to be inserted into said spherical socket and remove therefrom; a male member having one end secured to the end of the other pipe of said pair, said male member being receivable upon connection of said pipes in said bore of said spherical ring coaxially therewith, the external cylindrical surface of said male member being complementary to said cylindrical surface of said bore of said spherical ring, the opposite free end of said male member being receivable in said socket of said female member; retaining means securing said spherical ring in said socket of said female member coaxially therewith at an initial stage of connection of said pipes, said retaining means including at least two spring-urged retaining members each respectively positionable in ports formed in said spherical ring, said ports being located intermediate the grooves in said spherical ring, said retaining means being cooperable with recesses formed in the spherical surface of said socket so as to lock said spherical ring in said socket; said retaining means being cooperable with the male member so as to disjoin said spherical ring and said female member at a final stage of connection of said pipes; grooves made in said external surface of said male member and positioned at the final stage of connection of said pipes to face said grooves in said spherical ring so that their respective edges are aligned; spring-urged locking means effecting connection of said male member and said spherical ring upon said male member having been received in said bore of said spherical ring, with said locking means being accommodated simultaneously in said grooves of said spherical ring and said grooves of said male member; sealing means for sealing away the surfaces of said socket of said female member and said male member.

3,929,356

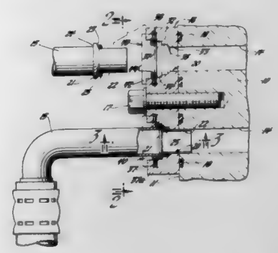
TUBE TO BLOCK MOUNTING ASSEMBLY

Patsy DeVincent, Dayton; John A. Falkowski, Tipp City, and John F. Wiechart, Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1974, Ser. No. 523,433

Int. Cl.² F16L *35/00*

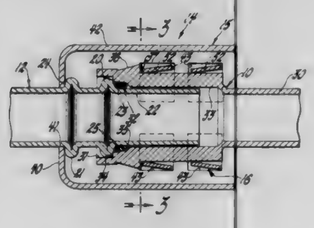
U.S. Cl. 285—305 **3 Claims**



1. A tube mounting assembly comprising a body member having a cylindrical stepped bore extending from one surface thereof and defining a socket, said body member having a slot opening extending transversely from one side thereof and intersecting said stepped bore at right angle thereto closely adjacent to said one surface, a tubular member having a plug portion at one end thereof which is slidably received in said socket and in sealing relation to said socket when fully inserted therein, said plug portion including an annular bead on the exterior of said tubular member providing a radial shoulder and, a retainer clip means having a body portion with a

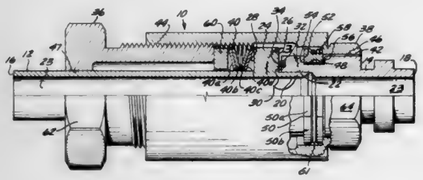
longitudinal extending through slot opening therein defined by a first semi-circular rim edge at one end of a diameter to slidably receive said annular bead, a second semi-circular rim edge at the opposite end and by interconnecting spaced apart rim edges, said rim edges providing a first shoulder means and a second shoulder means in parallel spaced apart relation to each other and longitudinally spaced apart on said body portion, said retainer clip means being slidably received in said slot, whereby said retainer clip means is movable from a position in which said first shoulder means engages said shoulder of said bead when said plug portion is fully inserted into said socket to retain said plug portion fully engaged and sealed, a second position at which said second shoulder means engages said shoulder to retain said plug portion within said socket in a position out of sealing engagement therewith and a third position at which said first semi-circular rim edge is concentric with said stepped bore to permit removal of said plug portion from said body.

3,929,357
QUICK CONNECT COUPLING WITH TANDEM SNAP RINGS
Patsy DeVincent, and John F. Wiechart, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 13, 1974, Ser. No. 523,432
Int. Cl.² F16L *39/00*
U.S. Cl. 285—319 **3 Claims**



1. A conduit coupling comprising a tubular socket member having a stepped bore therethrough and defining at one end thereof a socket and having an annular flange on the exterior thereof providing a ramped forward surface adjacent to said one end which terminates at a shoulder extending radially inward, a tubular plug member having a plug portion at one end thereof slidably received in said socket and in sealing relation to said socket when fully inserted therein, said plug member including a tube having annular bead means on the exterior thereof defining a first shoulder and an axially spaced apart, opposed second shoulder, said first shoulder having a cylindrical pilot portion extending therefrom to the free end of said tubular plug member, and a seal ring encircling said pilot portion, a portion of said annular bead means including said first shoulder, said pilot portion and said seal ring defining said plug portion, said stepped bore being defined by a first annular wall extending from said one end and of a diameter to slidably receive said annular bead means defining said first shoulder, a second annular wall of reduced diameter with an intervening radial shoulder therebetween and a third annular wall of a diameter to slidably receive said pilot portion of said plug member with an intervening second radial shoulder therebetween, the axial extent of said third annular wall being greater than the axial extent of said pilot portion, whereby when said plug member is fully inserted into said socket, said first shoulder is in abutment with said radial shoulder, said first shoulder and said pilot portion forming with said second annular wall and said second radial shoulder a substantially enclosed annular cavity of a predetermined axial width and radial width in which said seal ring is compressibly received when said plug member is fully inserted into said socket member, and an outer retainer means, said outer retainer means including an apertured cup member operatively connected to said tubular plug member and having an annular rim extending over and encircling said plug portion, said rim having diametrically opposed axially spaced apart openings therethrough and a unitary tandem snap ring having a mounting base fixed to the exterior of said cup and having axial spaced apart pairs of spring legs extending therefrom through said openings, one pair of said spring legs being engageable with said shoulder when said plug portion is fully inserted in said socket and the other pair of said spring legs being engageable with said shoulder to retain said plug portion within but in nonsealing engagement with said socket.

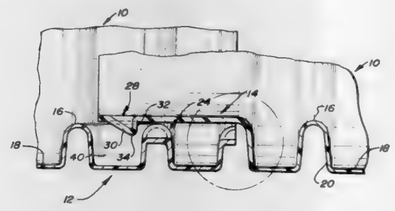
3,929,358
CRYOGENIC CONNECTOR
Fred A. Eckhardt, Anaheim, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.
Filed May 1, 1974, Ser. No. 466,011
Int. Cl.² F16L *19/00*
U.S. Cl. 285—353 **9 Claims**



1. A connector for fluid lines containing cryogenic materials, the connector including:
- a first tubing extension defining a passageway therethrough for containing the cryogenic material, said first tubing extension including an outwardly extending radial sealing surface and an abutment surface;
- a second tubing extension defining a passageway therethrough for containing the cryogenic material, said second tubing extension including an outwardly extending radial sealing surface positioned to face said outwardly extending radial sealing surface of said first tubing extension and an abutment surface;
- seal means positioned between said outwardly extending radial sealing surfaces of said first and second tubing extensions and about said defined cryogenic material containing passageway; and
- means to apply a predetermined force across said first and second tubing extension members to compress said seal means therebetween to establish and maintain a sealed condition thereof said force applying means including a gland extending over a portion of one of said tubing extensions, a thimble extending over a portion of the other of said tubing extensions, abutting said abutment surface thereof and threadably engaging said gland, and spring means positioned about said tubing extension over the portion of which said gland extends and engaging said abutment surface thereof, said spring means also engaging said gland and being compressed when said gland and thimble are threadably engaged.

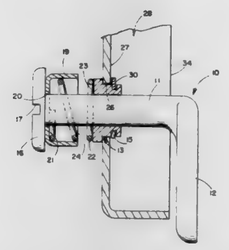
3,929,359
CONNECTING JOINT STRUCTURE FOR CORRUGATED PLASTIC TUBING
John D. Schmunk; James L. Child, Jr.; Robert E. Shroy, and John Wise, all of Findlay, Ohio, assignors to Hancock Brick and Tile Company, Findlay, Ohio
Filed Nov. 4, 1974, Ser. No. 520,458
Int. Cl.² F16L *21/00*
U.S. Cl. 285—401 **8 Claims**

1. A joint construction for plastic pipe comprising:
- a first main length of corrugated, hollow and generally cylindrical plastic pipe having an internal wall surface defined by adjacent circumferentially extending, longitudinally spaced peaks and valleys;
- the internal diameter of said first length measured diametrically between opposite peaks being equal to *d*, and the internal diameter measured diametrically between opposite valleys being equal to D, with D being substantially greater than *d*;
- said first length including a first portion which defines an end of said length and having an internal diameter *j* measured diametrically between opposed peaks which is greater than d but less than D, and a maximum internal diameter measured diametrically between opposed valleys which is substantially equal to D, and a plurality of sets of longitudinally aligned grooves formed in at least the two peaks adjacent the outer end of said first portion;



- a second main length of hollow plastic pipe having a generally cylindrical corrugated portion and a smooth-walled cylindrical second portion which defines an end of said second length and has an outer diameter which is slightly less than *j* but greater than d and an inner diameter J which is substantially equal to *d*; and,
- cleat members extending outwardly from the outer surface of said second portion of said second length, said cleats having a configuration and location to permit them to move longitudinally into the aligned grooves in the first portion of said first length, the portion of said second length being received in said first portion of said first length with the cleats of said second portion of said second length being located in valleys of the first portion of said first length and in a non-aligned position relative to said grooves.

3,929,360
CABINET LATCH
Bulent Gulistan, Malibu, Calif., assignor to Deutsch Fastener Corporation, Los Angeles, Calif.
Continuation of Ser. No. 409,152, Oct. 24, 1973, abandoned. This application Apr. 28, 1975, Ser. No. 572,070
Int. Cl.² E05C *5/00*
U.S. Cl. 292—67 **2 Claims**

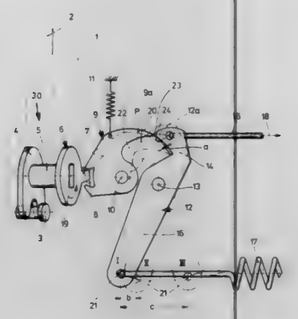


1. In combination with a door having a panel, said panel having an opening therethrough, a latch device for said door comprising
- a collar having
- an intermediate portion received in said opening,
- a flange exteriorly of said opening at one end thereof overlapping and engaging one side of said panel,
- an annular groove exteriorly of said opening at the opposite end thereof, and an aperture extending axially therethrough,
- a snap ring having an inner portion received in said groove and an outer portion projecting beyond said groove for engaging the opposite side of said panel and cooperating with said flange in holding said collar to said panel,
- a one-piece substantially L-shaped member having
- a first portion extending through said aperture and a second portion at an angle to said first portion and positioned outwardly from said opposite side of said panel,
- said first portion of said substantially L-shaped member being cylindrical and being substantially complementarily received in said aperture, so that said collar at said aperture guides said first portion for axial and rotational movement relative to said collar,
- a head projecting laterally outwardly from the end of said first portion opposite from said second portion for providing a means for imparting rotation to said L-shaped member,
- said head having an undersurface facing said panel,
- a cup-shaped member having an inner transverse wall having an opening receiving said first portion and in juxtaposition with said undersurface of said head, said head being entirely exteriorly of said cup-shaped member and beyond said inner transverse wall thereof, and a compression spring one end of which engages said inner wall of said cup-shaped member and the opposite end of which engages the outer surface of said flange of said collar,
- for thereby biasing said cup-shaped member, said head and said L-shaped member to a first position where said head is spaced outwardly from said one side of said panel and said cup-shaped member is spaced outwardly from said flange of said collar with a portion of said compression spring being exposed between said cup-shaped member and said flange of said collar,
- said substantially L-shaped member, head and cup-shaped member being movable in opposition to said spring to a second position in which said head is relatively closer to said one side of said panel,
- said cup-shaped member having a larger lateral dimension than that of said flange of said collar,
- whereby when said cup-shaped member is in said second position said flange of said collar is received in said cup-shaped member and said compression spring is concealed.

3,929,361
LOCK MECHANISM FOR A VEHICLE DOOR
Horst Klebba, Weyhausen, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed Aug. 1, 1974, Ser. No. 493,926
Claims priority, application Germany, Aug. 17, 1973, 2341641
Int. Cl.² E05C *3/26*
U.S. Cl. 292—216 **5 Claims**

1. An improved rotary-latch lock, preferably for the door of a vehicle, having a rotary locking assembly, a pivotally supported intermediate lever that meshes with said locking assembly, a pivotally supported main actuating lever, and a main spring connected to one end of said main lever for urging the other end of said main lever into contact with said intermediate lever, said intermediate lever being rotatable in a direction to open the lock and in a direction to close the lock, said main spring forcing said main lever against a first surface of sid intermediate lever during the opening of said lock, wherein the improvement comprises means tending to rotate the intermediate lever in the opening direction, said means including a curvature of said first surface of said intermediate lever such

that contact between said intermediate and main levers along said first surface occurs at points of said first surface whose radii of curvature extend along lines which pass the pivotal



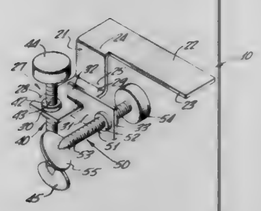
support of said intermediate lever on a side thereof such that the force applied to said intermediate lever by said main lever due to said main spring tends to rotate said intermediate lever in the opening direction.

3,929,362

LOCK FOR SLIDING DOORS AND WINDOWS

Guy Petroff, Fullerton, Calif., assignor to Philip M. Hinderstein, Orange, Calif.

Filed Sept. 26, 1974, Ser. No. 509,546
Int. Cl.² E05C *19/18*
U.S. Cl. 292—291 **8 Claims**



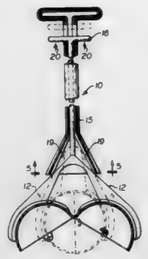
1. A lock for sliding doors and windows comprising:
a wall;
a first flange, one edge of said first flange being connected to one end of said wall and extending perpendicular thereto;
a second flange, one edge of said second flange being connected to the other end of said wall and extending perpendicular thereto, on the opposite side thereof as said first flange;
a third flange being connected to said second flange, said third flange being positioned parallel to said wall and being spaced therefrom on the same side thereof as said second flange;
a first adjustable bolt member extending through said second flange, perpendicular thereto; and
a second adjustable bolt member extending through said third flange, perpendicular thereto.

3,929,363

PORTABLE COLLECTOR APPARATUS WITH RESILIENT TONGS

Edward Kahan, 8 Alderwood Lane, Syosset, N.Y. 11791

Continuation-in-part of Ser. No. 154,471, June 18, 1971, Pat. No. 3,738,697. This application May 31, 1973, Ser. No. 365,483. The portion of the term of this patent subsequent to June 12, 1990, has been disclaimed.
Int. Cl.² A47F *13/06*
U.S. Cl. 294—19 R **1 Claim**



1. A portable collector apparatus which comprises an extended hollow handle, said handle having a camming end and a holding end, a pair of resilient tongs supported in said camming end, said tongs being disposed for angular movement relative to each other between a maximum spaced position and a minimum spaced position, said tongs being in a maximum spaced position when unconstrained, and means at said camming end to constrain said tongs to a minimum spaced position when said tongs are retracted into said camming end of said handle, rod means integrally associated with said tongs within said hollow handle and accessible at said holding end thereof for retracting said tongs at least partially into said handle for movement to a minimum spaced position and for projecting said tongs out of said handle for movement into a maximum spaced position, a container having sections connected by a resilient hinge, said hinge biasing said sections into an open maximum spaced-apart position, and said container being movable by and with said tongs from an opened configuration to a closed configuration for receiving and completely enclosing matter to be collected; said hollow handle having two similar longitudinal sections press-fitted together around said rod means, and having means defining cam surfaces disposed for engagement with said tongs to forcibly move same toward said minimum spaced position when the rod means is moved toward said holding end, said tongs and container sections having corresponding matching parts that engage to secure the container in a predetermined position relative to the tongs, said container sections having respective parts disposed for locking engagement, when the tongs are in said minimum spaced position, to secure the container in the completely enclosed configuration.

3,929,364

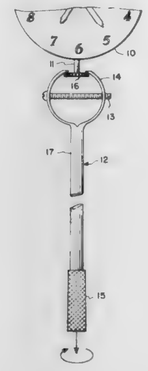
CLOCK SETTER

Claude T. Haley, Newport News, Va., assignor to The United States of America as represented by the National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Sept. 9, 1974, Ser. No. 504,225
Int. Cl.² B25J *1/00*
U.S. Cl. 294—19 R **1 Claim**

1. A clock setter for manually twisting the serated reset knob of a wall-mounted clock and thus enabling an operator to adjust the indicated time of the clock, comprising in combination:
a rod means having two ends; said rod means being capable of extending from an operator's reach to the serated reset knob of a wall-mounted clock;

a cap means having two adjustably opposed members extending axially outward from one end of said rod means and having lower, middle and upper portions; said members being joined together at said lower portions and said middle and upper portions being in spaced relation; said middle portions being spaced such that the serated reset knob will pass between said middle portions; said upper portions being disposed toward each other and spaced such that the serated reset knob will not pass between said upper portions; said upper portions having tips which



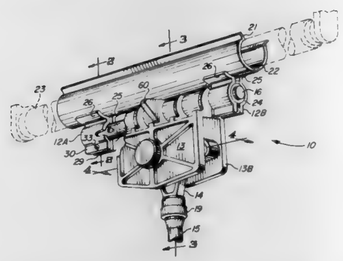
engage the serations of the reset knob when a downward force is exerted on said rod means thereby permitting a twisting motion to be imparted to the reset knob;
an adjusting means disposed between said opposed members for adjusting the spacing between said upper and middle portions to accomodate serated reset knobs of varying diameters; and
a handle means attached to the end of said rod means opposite said cap means for receiving and transmitting to said rod means a downward and twisting force.

3,929,365

FLUORESCENT TUBE CHANGING DEVICE

Joe B. Hunt, and Nina E. Hunt, both of 3601 E. Orange Drive, Phoenix, Ariz. 85018

Filed Aug. 16, 1974, Ser. No. 497,877
Int. Cl.² H01K *3/32*
U.S. Cl. 294—21 **2 Claims**



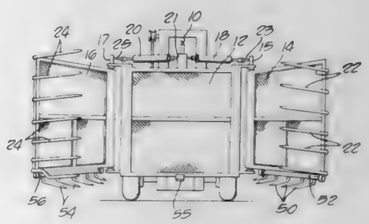
1. A device for changing fluorescent tubes and the like comprising:
a generally semi-cylindrical head having interior surface means of the same size as the exterior periphery of a fluorescent tube arranged to be engaged therewith in response to transverse movement of said head toward the tube,
said interior surface means having a tacky resinous material thereon capable of sticking to the exterior periphery of the tube when contacted therewith so as to prevent sliding movement of said interior surface means with respect to the exterior periphery of the tube but to permit ready disengagement of said interior surface means from the exterior periphery of the tube in response to transverse movement of said head away from the tube,
and elongated handle connected with said head for effecting transverse movement of said head into engagement with the exterior periphery of a tube to be changed and a subsequent movement of said head with the tube engaged therewith to release the latter from its fixture and for effecting movement of a replacement tube engaged with said head into securement with the fixture and subsequent transverse movement out of engagement with the secured tube in the fixture,
said elongated handle being connected with said head by means providing for a limited pivotal movement between said elongated handle and said head about a first axis parallel with the axis of said head and spaced closely to the periphery thereof to facilitate a partial rotational movement of said head about its axis when in engagement with a fluorescent tube of the type which is engaged and released from its fixture by a partial rotational movement of the tube with respect to its fixture,
said limited pivotal means comprising a pair of spaced cylindrical members fixedly secured to the center peripheral portion of said head,
a shaft means rotatably mounted within said cylindrical member and having an arm extending radially outwardly therefrom,
said shaft means being fixedly attached to said handle for rotation therewith,
said handle and said shaft means being movable arcuately a predetermined distance about said pair of cylindrical members until said arm engages the outer periphery of said head at which time partial rotational movement of said head about its axis occurs when in engagement with the fluorescent tube to release it from its fixture,
said limited pivotal means further comprising a pair of parallelly arranged juxtapositioned spaced surfaces connected along a common end to said shaft means,
stop means fixed to said handle and said handle being pivotally mounted between said spaced surfaces,
said stop means engaging said limited pivotal means upon rotation of said handle about the pivotal connection of said handle to said spaced surface, and
means for applying frictional force to said handle to control the ease of rotation of said handle between said spaced surfaces.

3,929,366

COTTON LOADER

John J. Keverline, 11242 G & S Ave., Hanford, Calif. 93277

Filed Aug. 21, 1974, Ser. No. 499,124
Int. Cl.² B66F *9/20*
U.S. Cl. 294—88 **6 Claims**



1. A loading attachment for an industrial lift truck, or the like, comprising: a rear wall; a pair of side walls hinged to the side edges of the rear wall to be turned about respective vertical pivotal axes between an open and a closed position; a first and second series of elongated fork members mounted in

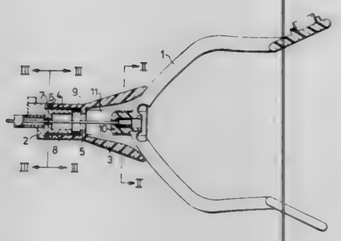
essentially spaced and parallel relationship along the respective forward end edges of the side walls in essentially perpendicular relationship to the planes of the respective side walls, said fork members serving to form a front wall for the attachment when the side walls are in their closed position essentially parallel to one another and perpendicular to the rear wall; and means coupled to the side walls to move the side walls to their open position in which the side walls are turned away from one another about said vertical axes, and to move the side walls to their closed position in which the side walls are turned towards one another to cause the elongated fork members of the first and second series to separate the load, and to cause the side walls to squeeze against the load.

3,929,367

MEANS FOR LOCKING A GRIPPING MEMBER OF A PAIR OF GRIPPING TONGS AGAINST ROTATION

Per Olof Bjurling, and Sven-Eric Juhlin, both of Gustavsberg, Sweden, assignors to AB Gustavsbergs Fabriker, Gustavsberg, Sweden

Continuation of Ser. No. 362,777, May 22, 1973, abandoned. This application Mar. 4, 1975, Ser. No. 555,285
Claims priority, application Sweden, June 1, 1972, 7193/72
Int. Cl.² B25J *1/00*; B25B *3/00*
U.S. Cl. 294—99 R **2 Claims**



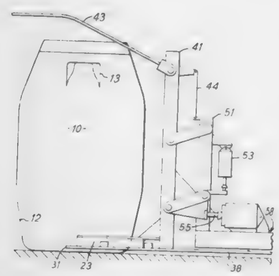
1. In means for locking a gripping member of a pair of gripping tongs against rotation, wherein the jaws of the tongs are moved towards each other for gripping an object by drawing the gripping member into a conical chuck by means of the operating mechanism of the tongs, a locking member (2) integrated with the gripping tongs being caused to engage a locking hub (4) that is axially displaceable by the gripping member (1), the improvement according to which the gripping member (1) and the chuck (3) are provided with cooperating guiding means (10, 11) adapted to keep the gripping member and the chuck secured against relative rotation during axial displacement into the chuck, said axially displaceable locking hub (4) being integrated with said chuck (3) and provided with coupling members (6) for axially engaging coupling members (7) of the locking member (2), said hub being axially displaceable on a forward projection (8) of said locking member (2) before engagement of the coupling members (6) and (7), said hub being brought into engagement with the locking member (2) during the initial portion of the axial displacement of the gripping member (1) into said chuck (3) whereby continued displacement of the gripping member into the chuck proceeds without any possibility of rotation in relation to the other portion of the gripping tongs.

3,929,368

DRUM LIFTERS

Vernon John Ryden, Ringwood, and Robert Lawford Oakley, Christchurch, both of England, assignors to St. Clare Engineering Limited, Hampshire, England

Filed May 13, 1974, Ser. No. 469,361
Claims priority, application United Kingdom, May 11, 1973, 22652/73
Int. Cl.² B66F *9/18*
U.S. Cl. 294—103 **14 Claims**



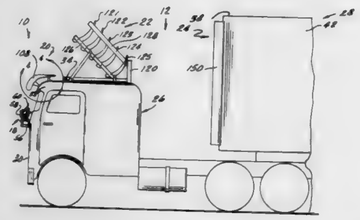
1. A drum-lifter suitable for lifting drums made of thermoplastics material having barrelled lower portions comprising a first part adapted to support a drum and having a support member for fitting against the lower portion of barrelled drum, a drum-embracing member movable relative to said support member from an inoperative position to an operative position, said drum-embracing member being adapted to engage the lower portion of the barrelled drum which is fitted against said support member and extending around the lower portion of said fitted drum, a second part adapted to be attached to a lifting means, said first and second parts being interconnected and movable relative to each other between a first unloaded position and a second loaded position, resilient means connected to bias said first and second parts towards said first, unloaded position, and actuation means arranged to move said drum-embracing member to its operative position in response to relative movement between said first and second parts from the unloaded position towards the loaded position against said resilieint bias caused by lifting said second part with a load on said first part.

3,929,369

AIR DEFLECTING VANE ASSEMBLY FOR A VEHICLE

Clarence I. Blair, Wichita, Kans., assignor to Blair-Lefler, Inc., Wichita, Kans.

Filed Mar. 19, 1973, Ser. No. 342,889
Int. Cl.² B62D *37/02*
U.S. Cl. 296—1 S **11 Claims**



1. An air current deflecting means for a tractor of a tractor trailer vehicle, comprising:

a. a roof top air current deflecting means mountable on a tractor of a tractor-trailer vehicle having a support means having means to mount same above the roof of said tractor, said deflecting means having a plurality of vane members mounted in a parallel relation on said support means,

b. said vane members each having a leading edge, a trailing edge, a forward surface and a rear surface, said forward and rear surfaces being rearwardly curved,

c. said support means having a frame securable to said vehicle roof and having a pair of vane support members pivotally mounted on said vane support means extending upward therefrom, said pair of vane support members pivotally mounting leading edge portions and trailing edge portions of said vane members with said leading edges and said trailing edges being parallel and being essentially parallel to said roof, means with said support means to move said plurality of vanes as a group in a pivoting motion above said roof,

d. a forward air current deflecting means having a forward vane mountable on a forward portion of said vehicle in a spaced relation to a forward corner portion of the roof of said vehicle and adjacent to the windshield of said vehicle, said forward vane having a leading edge, a trailing edge, a forward surface, a rear surface with said forward surface and said rear surface being generally upwardly and forwardly curved, said forward vane being constructed and adapted to turn an air current moving generally upward on said windshield so as to direct same onto said roof,

e. a nose air current deflecting means having a nose vane mount means mountable on a forward portion of the nose of said vehicle, having a nose vane support means pivotally mounted on said nose vane mount means, said nose vane mount means mounting a plurality of nose vanes in a parallel spaced relation, said nose vanes each having a leading edge, a trailing edge, a forward surface and a rear surface, said forward and rear surfaces being generally rearwardly and upwardly curved, said nose air current deflecting means being constructed and adapted to in use turn an air current moving toward said nose of said vehicle turning same to a direction upon and generally along said forward end portion of said vehicle.

3,929,370

VEHICLE-SUPPORTED STRUCTURE STABILIZER

Kenneth L. Farrell, 1719 Dundry Ave., Baldwin Park, Calif. 91706

Filed June 14, 1974, Ser. No. 479,297
Int. Cl.² B60P *3/32*
U.S. Cl. 296—23 MC **4 Claims**



1. In combination with a vehicle, a removable body structure supported on said vehicle, at least one stabilizing device extending between said structure and said vehicle for minimizing the vibration of said structure and movement of said structure relative to said vehicle when the same are in motion, said stabilizing device including:

brackets fixedly attached respectively to said structure and to said vehicle;

an inextensible elongated body member attached at a first of its ends to one of said brackets, said body member including an elongated cylindrical fluid chamber adjacent the second of said ends of said housing;

a damping fluid disposed within and completely filling said fluid chamber;

a piston supported in said fluid chamber dividing said fluid chamber into two portions of reciprocally variable capacity, said piston including at least one restricted orifice restricting the flow of said damping fluid between said two portions of said fluid chamber;

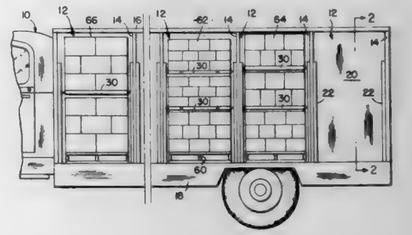
an inextensible elongated piston rod arrangement extending from opposite sides of said piston and always through said fluid-tight packing arrangements at opposite ends of said fluid chamber, a first end of said piston rod arrangement extending beyond said second end of said body member and attached to the other of said brackets and a second end of said piston rod arrangement always being disposed completely within said body member whereby relative movement of said structure and said vehicle causes a directly related reciprocal excursion of said piston in said fluid chamber, the length of said fluid chamber being substantially greater than the normal maximum reciprocal excursion of said piston, wherein each of said brackets include a body portion with attachment holes and also include a U-shaped bracket pivotally mounted on said body portion, said bracket including aligned transverse holes in the arms of said bracket, and wherein said first ends of said inextensible elongated body member and said inextensible elongated piston rod arrangement include a transverse hole and a removable pin normally disposed through associated ones of said transverse holes.

3,929,371

SUPPORT MEANS FOR STACKS OF ARTICLES

Louis J. Gibson, 1014 Anna Road, Huntingdon Valley, Pa. 19006

Filed July 1, 1974, Ser. No. 484,861
Int. Cl.² B60R *7/00*
U.S. Cl. 296—24 R **5 Claims**



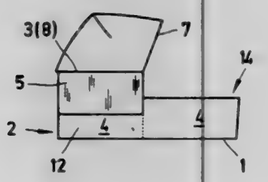
1. Support means for stacks of articles to be transported in vehicles comprising means providing a plurality of bins on the transporting vehicle for receiving a stack of articles, each bin including a pair of vertically extending spaced side walls, a back wall, and a front opening through which a stack of articles is received into the bin, shelf means adapted to be placed between layers of articles in a stack to divide the stack into at least an upper and a lower portion and means for supporting a shelf means in a plurality of vertical positions within a bin including bracket means fixedly positioned to extend vertically along the side walls of a bin and having vertically spaced portions adapted to be engaged by said shelf means at various vertical locations for positioning a stack of articles within a bin in a split condition with the upper portion of the stack supported on a shelf means spaced above the lower portion of the

stack, said shelf means being removably engageable with said shelf supporting members for placement between layers of articles of a stack during the formation of the stack, said shelf means includes bracket engaging members mounted for horizontal movement between a retracted position out of engagement with said bracket means and an extended position in engagement with said bracket means for engaging said bracket means at various of said vertically spaced portions, said bracket means includes a plurality of vertically spaced openings, said openings being generally equally spaced a short distance apart throughout a vertical extent providing numerous portions at different elevations for engagement by said bracket engaging members, said bracket engaging members on said shelf means being adapted for horizontal movement into said openings, means for biasing said bracket engaging members toward said extended position thereof, and means for retaining said bracket engaging members in said retracted position thereof and movable to a position releasing the same for movement to the extended position thereof by said biasing means.

3,929,372
BABY CARRIAGE

Georg Gesslein, Lichtenfels, 8621) Mannsgereuth, Kreis, Germany

Division of Ser. No. 188,846, Oct. 13, 1971, Pat. No. 3,799,606. This application Nov. 27, 1973, Ser. No. 419,394
Claims priority, application Germany, Oct. 14, 1970, 7037990[U]; July 14, 1971, 2135185
Int. Cl.² B62D *39/00*
U.S. Cl. 296—28 B **7 Claims**



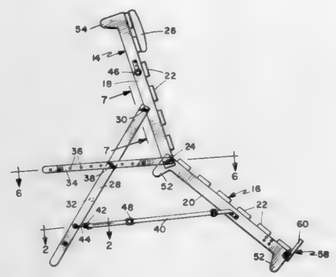
1. In a baby carriage having a body adapted to be supported on a wheeled carrier having a handle, wherein said body has a bottom and head, side and foot walls defining a cradle for accommodating a baby in belly-down position with his head adjacent said head wall, the improvement wherein the wall portions at one end of said body comprise vertically, adjustably mounted wall units having lower opaque sections integrally formed with transparent upper sections, whereby the view of a baby through said transparent sections may be selectively varied, and adjustable opaque covering means for selectively covering said transparent sections.

3,929,373
INCLINING SUN CHAIR

Louis S. Gawlinski, 740 Saphire St., San Diego, Calif. 92109

Filed Feb. 12, 1975, Ser. No. 549,158
Int. Cl.² A47C *4/00*
U.S. Cl. 297—19 **10 Claims**

1. An adjustable deck chair comprising:
a. an upper platform and a lower platform connected together by a hinge joint to define an elongated deck portion of a chair;
b. leg means pivoted to said upper platform to support same above a generally horizontal surface;
c. brace means pivoted to said hinge joint and releasibly securable to said leg means;
d. elongated means connected generally centrally to said lower platform and releasibly connectible to a lower portion of said leg means, whereby upon securing said leg means, brace means, and elongated means together, said

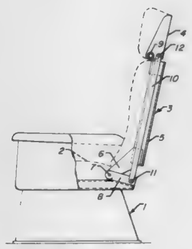


upper and lower platform are rigidly oriented at a set position.

3,929,374
VEHICLE SEAT WITH HEADREST MOVEMENT RESPONSIVE TO SEAT BACK TILTING

Gerard T. Hogan, Southington, and Kirby B. Weik, Litchfield, both of Conn., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 4, 1974, Ser. No. 520,311
Int. Cl.² A47C *1/036, 31/00*
U.S. Cl. 297—61 **5 Claims**



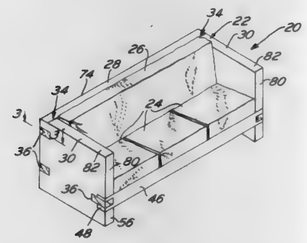
3. In a vehicle passenger seat having a seat section, seat support framing and a reclining seat back, the improved construction to provide a movable headrest section, which comprises in combination,
a. an elongated tilting seat back section having a hinged connection at its lower end to fixed seat support framing,
b. a relatively short tilting headrest section having a hinged connection from its lower portion to the forward part of the upper end portion of said seat back section and forming an extended portion for the latter,
c. fixed length, stiff linking members along each side portion of said seat back section connected to said headrest section and connected to respective lower pivot means on the fixed seat support framing at locations rearward of said hinged connection for said back section, said linking members extending upwardly to upper pivot means on said headrest section, said pivot means being spaced from and positioned rearward of the hinged connection between the upper part of said seat back section and said headrest section,
d. said linking members being positioned to be generally parallel to the tilting seat back section, such that as the latter is tilted from a generally upright position to a recline position there is a lowering of the top end portion of the seat back section relative to said upper pivot means between said linking members and said headrest section and a resulting forward tilting of the latter section with respect to the back section, and

e. a transverse lumbar support bar extending across the lower portion of said tilting seat back section in the zone of the lumbar region of a seat occupant, said support bar having fixedly connected arm members extending inwardly to pivotally connect with the side of said linking members to provide for arcuate movement of said support bar about the connecting points to said linking members, longitudinal slot means in the midportions of each of said arm members from said lumbar support bar to said linking members, and fixed pin means from each side portion of said seat back section positioned to extend through respective slot means for said arm members, whereby tilting movement of said seat back section provides a relative movement between the seat back framing and said linking members causing said fixed pin members in said slot means to move said arm members and said connecting lumbar support bar in an arcuate movement about the pivot connection means to said linking members.

3,929,375
KNOCK-DOWN SOFA

Charles C. Gans, 240 E. 35th St., New York, N.Y. 10016

Filed Nov. 4, 1974, Ser. No. 520,708
Int. Cl.² A47C *7/00*
U.S. Cl. 297—440 **10 Claims**



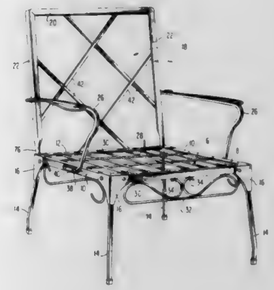
1. A knock-down seating device comprising a frame supporting at least one cushion thereon, said frame comprising a back wall, a side wall and base for said cushion and supported by said back and said side walls, said back and side walls being connected to each other by a freely detachable joint, said joint being secured together by a fastening tape comprising first and second components, one of said components having two separate portions and the other component having only a single portion, one of said components having a plurality of hook-like elements thereon and the other component having a plurality of loop-like elements thereon, one separate portion of one component being permanently secured to the back wall and the other separate portion of said one component being permanently secured to the side wall, said other component bridging both of the separate portions of the said one component and being releasably secured to each.

3,929,376
METAL CHAIR

Richard Kates, c/o Federal Steel Corp., 2 Pennsylvania Plaza, New York, N.Y. 10001

Filed Sept. 3, 1974, Ser. No. 502,496
Int. Cl.² A47C *1/12*
U.S. Cl. 297—445 **18 Claims**

1. A metal chair comprising:
a seat frame forming a seat portion of the chair, said seat frame including
a front portion,
a back portion, and
side portions interconnecting said front and back portions,
a plurality of support legs depending from said frame, and countering means connected directly to one of said frame portions for resisting flexture of said frame in response to the application of a load thereupon, said countering means including
a tensile rod whose ends terminate short of said support legs, and

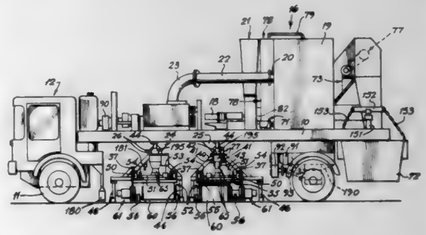


plural spacer portions for connecting said tensile rod directly to said one frame portion exclusive of connection to said support legs to space said tensile rod below said one frame portion in the region of maximum bending thereof, so that downward flexure of said front frame portion develops tensile forces in said tensile rod which resist such downward flexure.

3,929,377
VEHICLE-MOUNTED HARDENED CONCRETE GROOVING MACHINE

John Weaver, Beaconsfield; David Payne Maynard, Slough; Rayner Walter Taylor, Slough, and William Richards Gilbert Bayliss, Slough, all of England, assignors to The Cement and Concrete Association, London, England

Filed Jan. 18, 1974, Ser. No. 434,516
Int. Cl.² E01C *23/09*
U.S. Cl. 299—39 **12 Claims**



1. A vehicle constituting a self-contained roadway-grooving machine which comprises:
a. a vehicle chassis and roadway-engaging wheels for enabling said vehicle to be moved longitudinally of the roadway;
b. a supporting structure carried by said chassis comprising parallel tracks extending transversely both of said chassis and of said direction of movement of said vehicle along the roadway;
c. cutter means movable along said tracks in engagement with the roadway surface and operable to form at least two parallel grooves simultaneously in said roadway by a dry cutting action, said grooves extending transversely of said roadway;
d. roadway-surface cleaning means operable to pick up substantially all of the dry particulate material removed

by said cutter means during the formation of said at least two grooves;

e. said cleaning means comprising fan means and a deceleration chamber and an envelope all of which are interconnected by a pneumatic circuit said envelope enshrouding said cutter means and having a lower terminal edge closely adjacent to the roadway surface and said deceleration chamber being interposed in the pneumatic circuit between the fan means and the envelope;

f. said fan having intake and output apertures and being operable to produce negative air pressure at its intake aperture in order to create an airflow under said lower terminal edge towards said output aperture for the purpose of entraining substantially all of the dry particulate material removed by said cutting action from said roadway;

g. said pneumatic circuit including a manifold channel disposed above and parallel to said tracks on the supporting structure said channel being rigid and of inverted U-shape, the open bottom of said channel being closed by two elongated flexible flaps of elastomeric material, the upper portion of said envelope extending between said contacting portions of the flaps and said envelope moving along said channel as said cutter means moves along said tracks during groove formation, the resilience of the elastomeric material coupled with a negative air pressure within the channel ensuring an adequate degree of fluid-tightness between said flaps and around said upper portion of the envelope.

3,929,378

MINING MACHINE

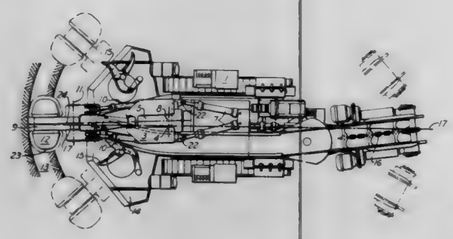
Pal Frenyo, Bochum; Wilhelm Bicker, Gelsenkirchen-Horst, and Werner Hellmuth, Dortmund, all of Germany, assignors to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Germany

Filed May 2, 1974, Ser. No. 466,130

Claims priority, application Germany, May 16, 1975, 2324661

Int. Cl.² E21C *35/02*

U.S. Cl. 299—64 **7 Claims**



1. A mining machine adapted to move along a mine floor relative to a facade of a mine, said mining machine comprising in combination:

a propulsion means including a chassis for movement along the mine floor relative to a facade of the mine, said chassis having two lateral sides lying symmetrically at opposite sides of a longitudinal plane extending along the center of the chassis;

a cutter head for working upon the facade of the mine;

a support beam for carrying said cutter head;

a universal support carried by said chassis at one lateral side thereof and spaced from said longitudinal plane of the chassis, said universal support including means to pivotally position said support beam about a horizontal axis spaced above the chassis, said universal support further including means to pivotally position said support beam about a vertical axis passing through the chassis at a horizontally spaced location from said longitudinal plane of the chassis;

a loading scoop supported by said chassis and including a projecting ore receiving surface sloped in a downward direction toward the mine floor outwardly of the chassis, said loading scoop having a central ore discharge surface intersected by said longitudinal plane of the chassis; and

a conveyor extending along said chassis for conveying ore in the general direction away from said cutting head, said conveyor essentially having an ore receiving end intersected by said longitudinal plane of the chassis, said ore receiving end being disposed in an ore transferring relation with the ore discharge surface of said loading scoop, said conveyor essentially including a laterally-curved conveyor section supported by said chassis at the second of said two lateral sides of said longitudinal plane in a manner such that the laterally-curved conveyor section extends below said horizontal axis and spaced laterally from both said horizontal axis and said longitudinal plane.

3,929,379

METHOD AND APPARATUS FOR THE PNEUMATIC CONVEYING OF BULK MATERIAL

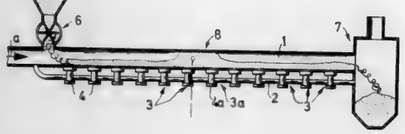
Wolfgang Krambrock, Ravensburg, Germany, assignor to Waeschle Maschinenfabrik GmbH, Ravensburg, Germany

Filed Jan. 30, 1974, Ser. No. 437,910

Claims priority, application Germany, Feb. 2, 1973, 2305030

Int. Cl.² B65G *53/16*

U.S. Cl. 302—24 **17 Claims**



1. An apparatus for the pneumatic conveying of bulk material, comprising a conveyor conduit; means for introducing conveyor gas into the conveyor conduit; means for introducing material to be conveyed into the conveyor conduit at a position downstream of the introduction of the conveyor gas; a by-pass conduit disposed adjacent said conveyor conduit; means to introduce gas into said by-pass conduit; means effective to substantially equate pressure distribution in the by-pass conduit to pressure distribution which occurs in the conveyor conduit in normal trouble-free pneumatic conveying; a plurality of connecting means connecting the by-pass conduit and the conveyor conduit at a plurality of positions spaced along the lengths thereof; and non-return valve means at each of said connecting means and individually openable for a flow of gas from the by-pass conduit into the conveyor conduit when the pressure in at least a part of the by-pass conduit is higher than the pressure in the conveyor conduit by a predetermined amount, each of said non-return valve means comprising a non-return valve and a shut-off valve operatively associated with said non-return valve, the shut-off valve being operable to close the by-pass conduit when the respective non-return valve is moved into its open position.

3,929,380

METHOD AND ARRANGEMENT FOR APPLYING OSCILLATING BRAKING PRESSURES TO VEHICLE WHEELS

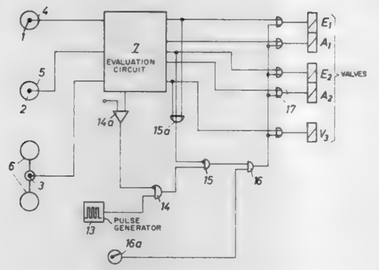
Heinz Leiber, Leimen, Germany, assignor to Teldix GmbH, Heidelberg, Germany

Filed Dec. 14, 1973, Ser. No. 424,803

Claims priority, application Germany, Dec. 21, 1972, 2262557

Int. Cl.² B60T *8/00*

U.S. Cl. 303—21 F **12 Claims**



2. An arrangement for modulation of the brake pressure of a wheel brake of a vehicle, comprising a modulator connected in a brake pressure line to said wheel brake for varying the brake pressure therein; switch means connected to said modulator for controlling said modulator to provide an oscillation of said brake pressure; and a logic circuit connected between said switch means and said modulator for allowing said switch means to operate said modulator only at low brake pressures.

8. A method of modulating the brake pressure of a vehicle wheel brake for eliminating brake squealing, including a brake line and a modulator connected in the brake line for varying the brake pressure therein, comprising the following steps:

a. applying, during braking, a series of pulses to said modulator by a switch means for effecting a pressure oscillation in the brake line in response to the pulses;

b. selecting the duration of each pulse and each pulse between pulses to be just sufficiently long for effecting a large-amplitude pressure fluctuation in the pressure line to eliminate brake squealing;

c. decreasing the pressure in the brake line by an anti-lock means when the associated vehicle wheel shows a tendency to lock; and

d. preventing, when said wheel shows a tendency to lock, said switch means from operating the modulator by means of a logic circuit connected to the anti-lock means, the switch means and the modulator.

3,929,381

PNEUMATIC BRAKE SYSTEM FOR A TRACTOR-TRAILER VEHICLE INCLUDING AN ANTI-LOCK CONTROL VALVE IN THE TRAILER BRAKE SYSTEM

Harold Durling, Elsie, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Mar. 11, 1974, Ser. No. 449,730

Int. Cl.² B60T *8/06, 15/16*

U.S. Cl. 303—21 F **3 Claims**

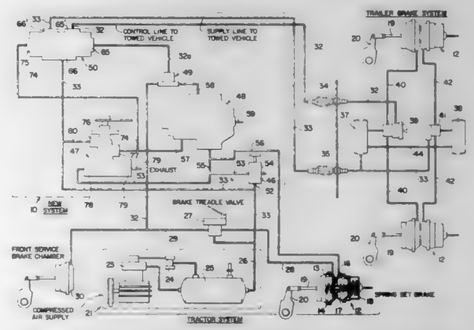
3. A vehicle brake system for braking a tractor coupled to a towed trailer by means of a source of fluid supplied to said system under supply and variable signal pressures, said trailer adapted to be equipped with associated, fluid-operated devices, said system comprising:

a plurality of spring-set brake actuators on said tractor, each actuator having a first chamber operable by said source under signal pressure to normally brake said tractor and trailer, spring means operable in a release position to brake said vehicle in an emergency condition and a second chamber operable by said source under supply pressure to maintain said spring means in a compressed inoperable manner under normal operating conditons;

a plurality of brake actuators on said trailer, each trailer actuator having a service brake chamber effective to actuate said trailer actuator when suppiled with said source of fluid;

trailer valve means on said trailer including first and second brake lines and a relay valve, said trailer valve means operable in a normal position by fluid under supply pressure in said first line to communicate fluid in said second line under signal pressure to said trailer brake actuators and automatically shifted to an emergency position upon sensing a drop in pressure of said fluid in said first line to actuate said trailer brake actuators;

a manually operable park valve on said tractor having an inlet connected to said source under supply pressure, an outlet and a vent, said park valve having a released position communicating its inlet with its outlet and an applied position communicating its outlet with its vent effective to actuate said spring means and shift said trailer valve means to its emergency position;



control valve means including a control valve on said tractor having a first inlet in communication with said source under supply pressure, a second inlet in communication with said outlet of said park valve, and at least a first outlet, said control valve means manually operable to a fill position when said park valve is in its applied position to communicate said first inlet with said first outlet of said control valve;

automatic valve means on said tractor in fluid communication with said outlet of said control valve and in fluid communication with said trailer valve means, said automatic valve means operable when said park valve is in its applied position and said control valve means is in its fill position to port fluid under supply pressure to both said first and second brake lines of said trailer valve means whereby said trailer brake actuators are actuated while said first line may be adapted to simultaneously operate said assocaited devices; and

said control valve means automatically disengages from said fill position when said park valve is manually operated to said release position, and said automatic valve means responds to said movements of said park valve and said control valve means to vent fluid at supply pressure from said second brake line.

3,929,382

SKID CONTROL SYSTEM

Joseph H. McNinch, Jr., Oak Park; John A. Urban, Livonia, and Gary L. Hopkins, Southfield, all of Mich., assignors to Eaton Corporation, Ohio

Filed May 10, 1974, Ser. No. 468,905

Int. Cl.² B60T *8/04*

U.S. Cl. 303—21 BE **18 Claims**

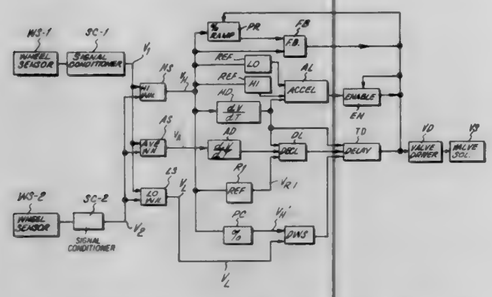
1. A skid control system for use with a vehicle having at least first and second spaced apart independently rotatable

wheels and having a braking system for applying braking forces to said wheels and comprising:

brake means responsive to an applied skid signal for controlling said braking system to relieve the braking forces on said wheels;

means for providing first and second wheel speed signals having values respectively representative of the wheel speed of the first and second wheels;

means for receiving said wheel speed signals and providing therefrom a high wheel speed signal representative of the speed of the faster wheel and a low wheel speed signal representative of the speed of the slower wheel; and



logic circuit means for providing a skid signal when a predetermined percentage of the magnitude of the high wheel speed signal differs from that of the low wheel speed signal, and wherein said logic circuit means includes first circuit means for deriving a percentage signal having a magnitude which is a fixed percentage of the magnitude of said high wheel speed signal, and signal comparing means for comparing the magnitude of said percentage signal with that of said low speed signal and providing a skid signal when the percentage signal exhibits a greater magnitude than said low speed signal, and further including means for delaying application of said skid signal to said brake control means for a time duration that varies as a function of the speed of the faster wheel.

3,929,383

SKID CONTROL SYSTEM INCLUDING A RELAY COMPENSATOR VALVE FOR RAPID BRAKE PRESSURE RE-APPLICATION FOLLOWED BY SLOWER RATE OF PRESSURE RE-APPLICATION

John A. Urban, Livonia, and Gary Lee Hopkins, Farmington, both of Mich., assignors to Eaton Corporation, Ohio

Continuation-in-part of Ser. No. 458,608, April 8, 1974, which is a continuation of Ser. No. 293,868, Oct. 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 271,824, July 14, 1972, abandoned, which is a continuation of Ser. No. 125,280, March 17, 1971, abandoned. This application Sept. 26, 1974, Ser. No. 509,527

Int. Cl.² B60T *8/02, 15/12*

U.S. Cl. 303—21 F **9 Claims**

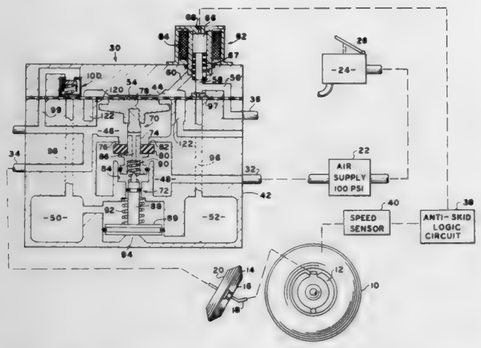
5. In a skid control system for use in controlling the braking pressure applied to a wheel, said system including a brake for applying braking forces to the wheel, a fluid pressure operated brake actuator for actuating said brake, skid control sensor means for detecting a skid condition at the wheel and generating an electrical signal in response thereto, a source of pressurized fluid for application to said brake actuator, means for supplying a variable control pressure and a compensating skid control valve in said system for cyclically applying fluid pressure to said brake actuator in response to the electrical signal generated by said skid control sensor means, said skid control valve comprising:

a. a valve housing defining an inlet pressure chamber, an outlet pressure chamber and a compensating pressure chamber;

b. a valve passage communicating between said inlet and outlet pressure chambers;

c. control valve means disposed in said valve passage, said control valve means including a piston portion having a surface thereof operatively exposed to the pressure in said compensating pressure chamber; the opening of said control valve means being at least partially a function of the pressure in said compensating pressure chamber;

d. means defining a flow passage communicating between said outlet pressure chamber and said compensating pressure chamber, said flow passage defining means including flow restricting means; and



e. pressure modulator valve means disposed in said flow passage, said pressure modulator valve means being operable to fluidly bypass said flow restricting means, in a direction from said outlet pressure chamber towards said compensating pressure chamber, in response to at least a predetermined pressure differential between said outlet pressure chamber and said compensating pressure chamber to maintain said compensating pressure no more than said predetermined pressure differential below said outlet pressure during a first brake application to provide, during a second brake application, a compensating pressure which is a predictable function of the peak outlet pressure during said first brake application.

3,929,384

EMPTY AND LOAD BRAKE APPARATUS

Glen D. Larsen, Upper Marlboro, Md., assignor to Southern Railway Company, Washington, D.C.

Filed Oct. 9, 1974, Ser. No. 513,463

Int. Cl.² B60T *8/20*

U.S. Cl. 303—22 R **2 Claims**

1. Empty and load brake apparatus for a railway car having a sprung part including a bolster vertically deflectable to varying degrees relative to an unsprung part of said car in accordance with the load on said car, comprising, in combination:

brake cylinder means operative for effecting a brake application when pressurized and a brake release when depressurized;

a variable capacity brake valve for said brake cylinder means, comprising:

a valve cylinder having a bore, said valve cylinder being mounted on said sprung part and communicating with said brake cylinder means;

a valve seat member mounted within said bore, said valve seat member having a passageway through which pressurized air from said brake cylinder means communicates;

a poppet valve slidably disposed in said bore for opening and closing said passageway as said poppet valve moves toward and away from said valve seat member;

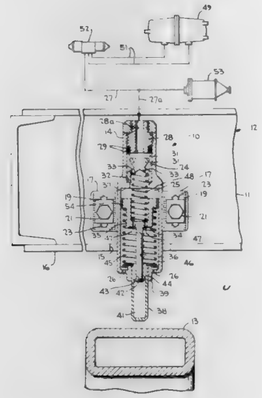
a first spring urging said poppet valve into a closing position against said valve seat member;

a slidable movable feeler element extending outwardly of said valve cylinder;

a plunger movable within said valve cylinder and bearing against said first spring;

a second spring disposed between said plunger and said feeler element; and

vent openings in said cylinder, said poppet valve and said plunger for venting fluid under pressure from said passageway during a braking operation and out through said valve cylinder upon predetermined movement of said poppet valve away from said valve seat into an open position responsive to fluid pressure established



in said brake cylinder means which exceeds a predetermined value depending on the load on said car;

said feeler element being movable in the same direction of deflection of said bolster into contact with a surface of said unsprung part during a loaded car condition and out of contact therewith during an empty car condition, whereby the fluid pressure established in said brake cylinder means is limited to a predetermined minimum during the empty car condition, and the fluid pressure is increased at a variable rate in accordance with an increased loaded car condition as the tension of said first spring is variably increased during inward movement of said feeler element.

3,929,385

VEHICLE TRACK SUPPORT

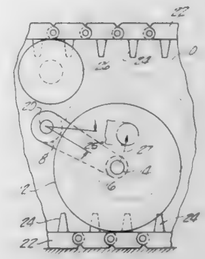
Richard R. Turkiewicz, Warren, and Anthony J. Volino, Detroit, both of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 3, 1974, Ser. No. 511,875

Int. Cl.² B62D *55/20*

U.S. Cl. 305—56 **10 Claims**

1. In a tracked vehicle: two independently rotatable rollers underlying the return run of the track to absorb vertical forces; said rollers being axially aligned with one another on opposite sides of the path taken by the teeth that project downwardly from the track; each roller having a radius that is less than the track tooth height, whereby the tooth path intersects the roller centerline; the central space between the



rollers being unobstructed for a sufficient vertical distance to permit passage of the track teeth therethrough.

3,929,386

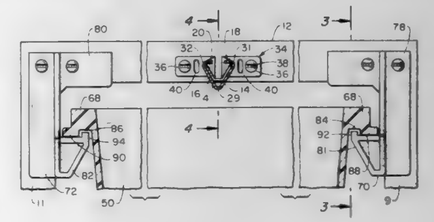
V-RAIL AND DRAWER MOUNTING SYSTEM THEREWITH

George D. Read, Glendora, Calif., assignor to Ajax Hardware Corporation, City of Industry, Calif.

Filed Nov. 5, 1973, Ser. No. 413,184

Int. Cl.² F16C *17/00*

U.S. Cl. 308—3.6 **15 Claims**



1. A drawer support system including a drawer structure and a rail support system, the combination including: an elongated rail of sufficient length to span the length of said drawer structure in which a drawer is to be supported, said rail being integrally formed and having a V-like shape in cross-section, comprising intersecting, non-curvilinear opposed legs and upper leg portions forming the base of said V-like shape, said upper leg portions of the V having inwardly directed, horizontal flange ends terminating in spaced relationship, said rail forming an elongate guide path, the depth of said V and the formed interior area being sufficient to receive end supporting members in telescopic relationship.

3,929,387

DRAWER GUIDE FOR HEAVY DRAWERS

Alfred Grass, Konsumstrasse 492, A-6973 Hochst, Vlbg.-Osterreich, Austria

Filed May 13, 1974, Ser. No. 469,618

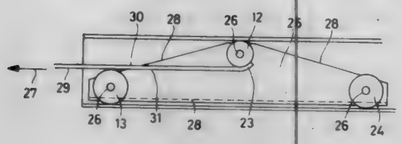
Claims priority, application Germany, May 15, 1973, 2324558

Int. Cl.² F16C *17/00*

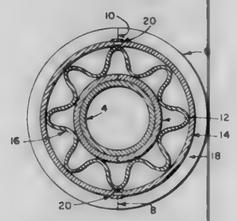
U.S. Cl. 308—3.8 **9 Claims**

1. A drawer support to be secured to a housing, comprising a guide member forming an elongated channel with upper and lower bearing surfaces, a movable load support member in the channel, three cylindrical bodies, means for journalling said cylindrical bodies at only three spaced positions on the load support member, said three journalling positions being located such that straight lines joining them form a triangle whose base generally parallels the lower bearing surface of the guide

member, said load support member being positioned in the channel with the cylindrical bodies journalled at the triangle base engaging the guide member lower bearing surface and the cylindrical body journalled at the triangle apex engaging the guide member upper bearing surface, the base-journalled cylindrical bodies being located in the proximity of the corners of the load support member, means for mounting on the drawer and forming an elongated member extending between the apex-journalled cylindrical body and the base-journalled cylindrical bodies and engaged by at least the apex cylindrical body and the base cylindrical body forward of the apex cylindrical body, and means for mounting of the guide member on the drawer housing.

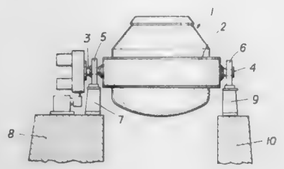


3,929,388
WELL PIPE PROTECTOR
Adolph A. Sutko, Ponca City, Okla., and George M. Myers, Houston, Tex., assignors to Continental Oil Company, Ponca City, Okla.
Filed Sept. 19, 1974, Ser. No. 507,318
Int. Cl.² F16C *1/26*
U.S. Cl. 308—4 A **3 Claims**



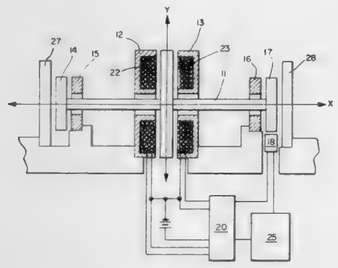
1. A well pipe protector comprising:
a. an inner steel cylinder having two diametrically opposite longitudinal splits, said inner steel cylinder sized to fit tightly about the well pipe;
b. an outer steel cylinder having two diametrically opposite longitudinal splits, said outer steel cylinder being concentric with and encompassing said inner steel cylinder to provide an annular space therebetween;
c. a corrugated steel cylindrical band having two diametrically opposite longitudinal splits therein, said corrugated steel cylindrical band being positioned in the annular space between said inner and outer steel cylinders, having corrugations running axially of the protector, presenting crests which alternately engage the outer surface of the inner steel cylinder and the inner surface of the outer steel cylinder, being bonded to the inner and the outer steel cylinders, and allowing for flow of fluid axially between said inner and outer steel cylinders;
d. an elastomeric sleeve having two diametrically opposite longitudinal splits therein, said sleeve surrounding and being bonded to the outer steel cylinder and concentric therewith;
e. said inner steel cylinder, outer steel cylinder, corrugated steel cylindrical band and elastomeric sleeve all with two diametrically opposite longitudinal splits providing two semi-cylindrical half sections, and
f. latching means for joining the two semi-cylindrical half sections of the protector about a well pipe.

3,929,389
EXPANSION BEARING ASSEMBLY FOR A CONVERTER CARRYING TRUNNION
Ernst Riegler, Enns, and Manfred Schmidt, Linz, both of Austria, assignors to Vereinigte Österreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria
Filed Nov. 27, 1974, Ser. No. 527,536
Claims priority, application Austria, Dec. 7, 1973, 10249/73
Int. Cl.² F16C *17/00, 21/00, 33/02*
U.S. Cl. 308—6 R **16 Claims**



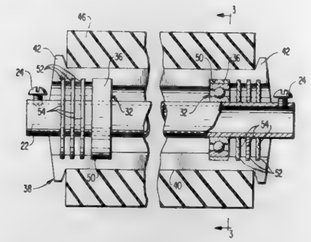
1. An expansion bearing assembly for a converter carrying trunnion, which comprises
a bearing housing,
an expansion bearing stand,
a sliding bushing provided with bores, said sliding bushing being axially displaceable within the bearing housing,
an inner race secured in place by means of distance rings fastened to the carrying trunnion,
cylindrical blocks acting as sliding elements peripherally distributed over the sliding bushing and inserted into the bores of the sliding bushing.

3,929,390
DAMPER SYSTEM FOR SUSPENSION SYSTEMS
Paul A. Simpson, Brookline, Mass., assignor to Cambridge Thermionic Corporation, Cambridge, Mass.
Filed Dec. 22, 1971, Ser. No. 211,030
Int. Cl.² F16C *39/06*
U.S. Cl. 308—10 **2 Claims**



1. Damping apparatus for magnetic bearing systems, which apparatus comprises:
a magnetically suspended movable object;
means for rotating said movable object;
means for obtaining radial and axial damping of said movable object, each damping means comprising a conductive plate which has a resistivity of less than about 3 microhm-centimeters at 20°C. and a magnet which has a peak energy product of at least about 7.25 megagauss-oersteds and a permeability of less than 5; and
magnet means for maintaining the movable object in an equilibrium position, which magnet means is different from the damping means.

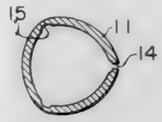
3,929,391
CONVEYOR BELT IDLER ROLLERS
Francisco A. Pico, 1212 N. El Paso St., El Paso, Tex. 79902
Filed Nov. 19, 1974, Ser. No. 525,224
Int. Cl.² F16C *35/06*
U.S. Cl. 308—20 **14 Claims**



1. Roller structure comprising
a. shaft means having an axis of symmetry,
b. means for holding the shaft means against rotation relative to a mounting member,
c. a roller body member concentrically disposed relative to the axis of symmetry of the shaft means and radially spaced outwardly from the shaft means,
d. the roller body member comprising a plurality of separable segments extending in the direction of the axis of symmetry,
e. inner bearing raceway means carried by the shaft means in nonrotatable relation to the shaft means,
f. outer bearing raceway means disposed in coacting relationship to the inner bearing raceway means,
g. roller bearing means between the inner bearing raceway means and the outer bearing raceway means,
h. elastic sleeve means having an outer cylindrical wear surface surrounding and resiliently holding the roller body member segments in contact with the outer bearing raceway means while permitting thermal expansion of the roller parts, and
i. means associated with the roller body member normally holding the outer bearing raceway means against rotation relative to the roller body member,
j. the last claimed means including a relatively low coefficient of friction surface means on the roller body member in contact with the outer bearing raceway means, the friction between the relative low coefficient of friction surface means and the outer bearing raceway means during normal use of the roller being greater than the friction between the inner bearing raceway means and the outer bearing raceway means but upon abnormally high friction arising between the outer bearing raceway means and the inner bearing raceway means, rotation of the roller can continue by virtue of relative movement of the lower coefficient of friction surface means and the outer bearing raceway means.

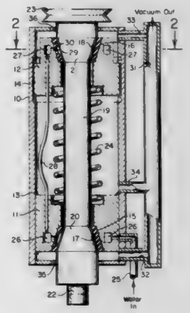
3,929,392
RESILIENT BEARING STRUCTURE
Michihiro Ogino, Tokyo, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan
Filed Feb. 11, 1974, Ser. No. 440,973
Claims priority, application Japan, Feb. 15, 1973, 48-17853
Int. Cl.² F16C *27/00*
U.S. Cl. 308—26 **2 Claims**

1. A resilient bearing bushing for use between a rotatingly or slidingly operating cylindrical shaft and a cylindrical housing for said shaft, said resilient bearing bushing comprising a generally tubular body having three arcuate side walls and three arcuate vertices, said side walls each having inner surfaces which are arcuate along their entire circumferential extent, each of said inner arcuate surfaces having a central, circumferential portion constituting a major portion of said arcuate inner surface, said central, circumferential portion resiliently pressed against a corresponding circumferential portion of said shaft, said side walls each having outer surfaces which are arcuate along their entire circumferential extent and which are radially spaced from the inner periphery of said cylindrical housing, said vertices having outer surfaces resiliently pressed against the inner periphery of said cylindrical



housing and inner surfaces spaced from the circumference of said shaft, said tubular body having three recesses formed on the inner surface of said tubular body in positions corresponding to said vertices, said recesses having a wall thickness smaller than the thickness of the remaining portions of the tubular body such that the thickness of said tubular body at said vertices is less than the thickness of said tubular body at the remaining portions thereof.

3,929,393
WATER-RUBBER BEARING HIGH SPEED DRILL SPINDLE
William F. Marantette, and Ruth B. Marantette, both of 20624 Earl St., Torrance, Calif. 90503
Filed Feb. 14, 1975, Ser. No. 549,860
Int. Cl.² F16C *1/24, 3/14, 3/16, 33/66*
U.S. Cl. 308—76 **9 Claims**



1. A water rubber bearing high speed drill spindle comprising, in combination:
a. an outer cylindrical barrel;
b. lower and upper bearing blocks disposed in the lower and upper ends of said barrel, respectively, defining annular tapered surfaces;
c. lower and upper rubber bearing bushings secured to said surfaces and of conical shape to match the tapered surfaces, the taper of the surfaces and rubber bushings of the lower and upper bearing blocks being in opposite directions;
d. a shaft passing through said rubber bushings and having lower and upper end portions tapered in opposite directions to match the taper of the bushings, one of said bearing blocks being axially movable within said barrel, and the other bearing block being locked to said barrel;
e. biasing means in said barrel urging the axially movable bearing block in the direction of increasing taper so that both of said rubber bushings are biased into engagement with the respective tapered surfaces of said shaft to leave substantially zero clearance; and,

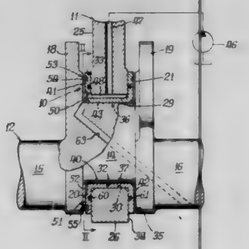
f. water passage means in said bearing blocks and rubber bushings for introducing water between the engaging conical surfaces of the rubber bushings and tapered end portions of the shaft whereby said shaft is "floated" on a water bearing supplied by the water in the pores of the rubber bushings, said biasing means permitting swelling of the rubber bushings when saturated with water and yet maintaining the desired substantially zero clearance of the bearing surfaces.

3,929,394

SHAFT JOURNAL BEARING LUBRICATION SYSTEM

David E. Hackett, Washington, and Frank E. Keske, Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 30, 1975, Ser. No. 591,664
Int. Cl.² B61F *17/00*; **F16C** *13/02, 1/24, 33/66*
U.S. Cl. 308—121 **14 Claims**



1. A lubrication system, for a journal box and a cylindrical journal of a shaft rotatably mounted within such journal box, comprising:

a radially extending shoulder provided on the shaft at one end of said journal in juxtaposed relation to said journal box;

annular bearing means carried by said journal box in circumferentially embracing relation about said journal and having a predetermined clearance therewith to permit relatively free rotation of the shaft therewithin; and

lubricating means including means between said shoulder of the shaft and the adjacent end of said bearing means forming a sealed annular chamber for lubricating fluid in communication with said clearance for directing a flow of such fluid axially through said clearance for lubrication of said bearing means and journal.

3,929,395

THRUST BEARING RETAINER

Dieter Stojek, Bergisch Gladbach, Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 13, 1975, Ser. No. 540,760
Int. Cl.² F16C *3/06, 9/02, 13/04, 35/00*
U.S. Cl. 308—167 **5 Claims**

1. Internal combustion engine structure including an engine block having crankshaft support means, a crankshaft mounted within said support means to rotate about a given axis,

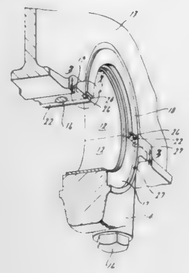
said crankshaft support means comprising a web member and a cap member, a pair of surfaces of said web member adjoining a pair of surfaces of said cap member at a plane which includes the axis of rotation of said crankshaft,

said crankshaft and said support means having axially adjacent surfaces,

thrust bearing means separating said axially adjacent surfaces, said surface on said bearing support means comprising an annular recess, each of said thrust bearing means comprising a partial annulus positioned between said adjacent surfaces,

an axially extending slot formed in each of the adjoining surfaces of one of said members comprising said crankshaft support means,

clip means including a portion received within said slot generally parallel to said plane, said clip means including



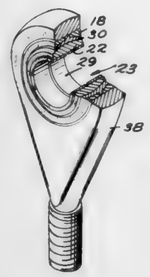
a pair of end legs positioned generally perpendicularly to the slot received portion of said clip means, said end legs being received within said annular recess and engaging the ends of said partial annulus to prevent rotation of said partial annulus within said annular recess.

3,929,396

MOLDED PLASTIC BEARING ASSEMBLY

Stanley S. Orkin, Rockville, and Edward John Nagy, Windsor, both of Conn., assignors to Kamatics Corporation, Bloomfield, Conn.

Continuation-in-part of Ser. No. 241,007, April 4, 1972, Pat. No. 3,806,216. This application Mar. 18, 1974, Ser. No. 452,359
Int. Cl.² F16C *1/24, 33/00*; **C10M** *5/00, 7/00*
U.S. Cl. 308—241 **11 Claims**



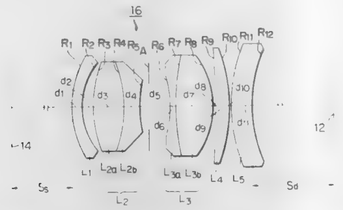
1. A bearing assembly comprising two coengaging members movable relative to one another, the first of said members having a ceramic bearing surface provided by a thin ceramic coating on a metal substrate the thickness of said ceramic coating ranging from 0.0001 to 0.02 inches and the bearing surface of said other member comprising a molded mixture of a curable acrylate composition and particulate solid lubricant, the bearing surface of said first member being coated with a thin film of a parting agent to prevent adhesion thereof to said molded bearing surface.

3,929,397

PROJECTION LENS

Motoaki Kawazu, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed July 1, 1974, Ser. No. 484,975
Claims priority, application Japan, Aug. 30, 1973, 48-96726
Int. Cl.² G02B *9/60*
U.S. Cl. 350—216 **2 Claims**



1. A projection lens for a projector illumination system in which an image of a projection light source is focussed into a projection lens aperture to substantially fill the aperture, comprising, in combination:

a diverging first meniscus lens spaced between the aperture and a viewing surface and having a convex surface facing the viewing surface and a concave surface facing a document being projected;

a first doublet lens spaced between the aperture and the first meniscus lens having a convex surface facing the viewing surface and a concave surface facing the document;

a second doublet lens spaced between the aperture and the document having a concave surface facing the viewing surface and a convex surface facing the document;

a converging second meniscus lens spaced between the second doublet lens and the document having a concave surface facing the viewing surface and a convex surface facing the document; and

a third meniscus lens spaced between the second meniscus lens and the document having a convex surface facing the viewing surface and a concave surface facing the document; whereby

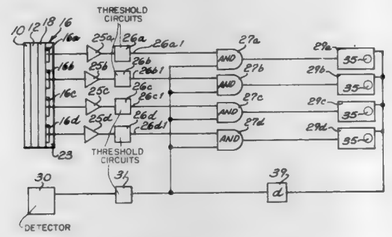
the radii of curvature of the surfaces of the third meniscus lens are selected to adjust the back focus distance of the projection lens to a value at which the image of the light source is focussed into the aperture and to correct, in conjunction with said other lenses, astigmatism, coma and distortion occurring in the projection lens.

3,929,398

HIGH SPEED OPTICAL WAVELENGTH DETECTION SYSTEM

Harry E. Bates, Orlando, Fla., assignor to Martin Marietta Corporation, Orlando, Fla.

Filed Aug. 18, 1971, Ser. No. 172,797
Int. Cl. G01j *3/48*
U.S. Cl. 356—186 **22 Claims**



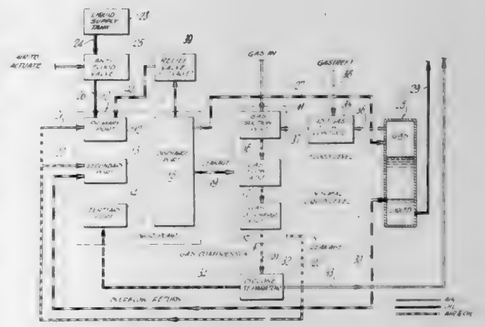
20. In an apparatus for determining the wavelength of light, first means for receiving and transmitting the light whose wavelength is to be measured, and a plurality of detectors, said first means comprising means for selectively transmitting or blocking light to each of said detectors as a function of the wavelength of the light, to transmit unique combinations of inputs to said detectors for different wavelengths.

3,929,399

METHOD AND APPARATUS FOR PUMPING A LIQUID AND COMPRESSING A GAS

David Aronson, Upper Montclair, N.J., assignor to Compump Systems, Inc., Newark, N.J.

Filed June 5, 1974, Ser. No. 476,673
Int. Cl.² F04B *23/10*; **H01V** *1/30*
U.S. Cl. 417—54 **21 Claims**



19. The method of pumping a liquid and compressing a gas to deliver liquid at a predetermined rate and gas at a predetermined pressure comprising the steps of feeding liquid under pressure from a supply to a reservoir containing both liquid and gas, feeding back a two phase fluid containing liquid and gas, from said reservoir to said pump, the relative percentages of liquid and gas in said fed back two phase fluid controlling the rate of liquid fed from said supply to control and maintain a selected liquid level in said reservoir whereby said pump processes a two-phase fluid and feeds the two-phase fluid to said reservoir, feeding gas to said compressor for delivery of a compressed gas, coupling said reservoir to a gas supply and to said compressor and controlling the flow of gas into and out of said reservoir to maintain a selected gas pressure therein and controlling the rate of compression of said gas and effecting delivery of said liquid and gas to the place of use.

3,929,400

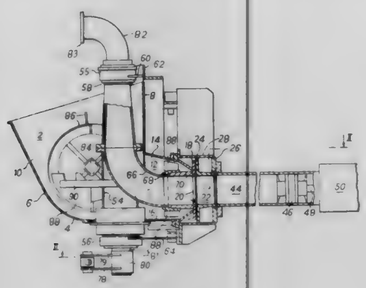
SLURRY PUMPS

Harry Merton, Maidstone, and Thomas Michael Howlitt, Gillingham, both of England, assignors to Winget Limited, Rochester, England

Filed Aug. 9, 1973, Ser. No. 387,165
Claims priority, application United Kingdom, Aug. 9, 1972, 37143/72
Int. Cl. F04b *15/02*
U.S. Cl. 417—516 **5 Claims**

1. A slurry pump having a framework, fixedly mounted on the framework first and second pump cylinders, hingedly

mounted on the framework a slurry hopper readily separable from the pump cylinders by rotation about an upright hinge mounting from a normal position in which the pump cylinders communicate with the interior of the slurry hopper, pistons in



the respective first and second pump cylinder, each piston provided with drive means adapted to move the piston between a position adjacent the slurry hopper to a position remote from the slurry hopper by way of an induction stroke and from a position remote from the slurry hopper to a position adjacent the slurry hopper by way of a discharge stroke, extending into the slurry hopper an upright, hollow, slurry discharge column, extending horizontally from the upright, hollow, slurry discharge column and in communication therewith a radial duct formed at an end portion remote from the upright, hollow, slurry discharge column with a cylindrical end wall face co-axial with the upright, hollow, slurry discharge column axis, means adapted to rotate the upright, hollow slurry discharge column and the radial duct through a restricted arc about the upright, hollow, slurry discharge column axis between a first position and a second position, a cylindrical wall portion of the slurry hopper co-axial with the upright, hollow, slurry discharge column penetrated by the first and second passages respectively in register with the radial duct in the first position connecting with the first pump cylinder and with the radial duct in the second position connecting with the second pump cylinder, the cylindrical wall portion being formed of abrasion resistant material and being readily removable upon rotating the slurry hopper about the upright hinge to separate the slurry hopper from the cylinders, and means interconnecting the drive means for each piston and the means adapted to rotate the hollow column such that the induction stroke is made with the respective pump cylinder in communication with the slurry hopper interior and the discharge stroke is made with the respective pump cylinder in communication with the radial duct.

3,929,401

ANTHRAQUINONE DYESTUFFS

Friedrich Wilhelm Krȍck, Opladen, and Rütger Neeff, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

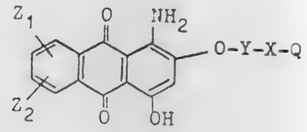
Filed Jan. 16, 1974, Ser. No. 433,693

Claims priority, application Germany, Jan. 16, 1973, 2301892

Int. Cl.² C09B *5/62*

U.S. Cl. 8—39 **3 Claims**

1. Process which comprises the dyeing or printing of synthetic fiber materials in an aqueous medium containing a dyestuff which is free of sulphonic acid groups and carboxylic acid groups and has the formula



wherein

Y is a straight-chain or branched-chain C_3–C_{10}-alkylene or such an alkylene interrupted by one or more ether oxygen atoms or by a cyclohexylene;

X is oxygen or sulphur;

Q is aralkyl; and

Z_1 and Z_2 are hydrogen or halogen.

3,929,402

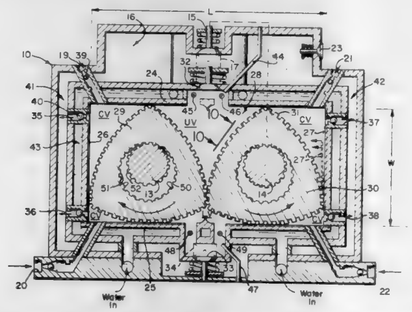
MULTIPLE ROTARY ENGINE

Emil Georg Schubert, 4210 Kenyon Ave., Los Angeles, Calif. 90066

Filed Dec. 2, 1974, Ser. No. 528,635

Int. Cl.² F02B *55/14*; **F01C** *1/02*

U.S. Cl. 123—8.47 **20 Claims**



1. A multiple rotary internal combustion engine comprising, in combination:

a. a casing having a rectangular interior incorporating left and right rotors in side-by-side relationship, the length of the interior being twice its width and each of the rotors having peripheries defined by three equal arcs of radius of curvature equal to said width so that they are always in physical contact with each other and the walls of the rectangular interior;

b. inter-engaging means coupling said rotors together for simultaneous rotation in opposite directions, rotation of said rotors defining with their peripheries and the central portion of one of the long walls of the rectangular interior, a variable volume;

c. inlet and exhaust valves connecting with said variable volume;

d. means for introducing an air-fuel mixture into said volume through said inlet valve when minimum in size; and,

e. means for igniting said air-fuel mixture, said inlet and exhaust valves operating in response to given rotor positions to provide a four-cycle engine operation for every two-thirds rotation of the rotors.

3,929,403

PROCESS FOR PRODUCING INDOANILINES AND KERATIN FIBER DYE COMPOSITION CONTAINING THE SAME

Gregoire Kalopissis, Paris; Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

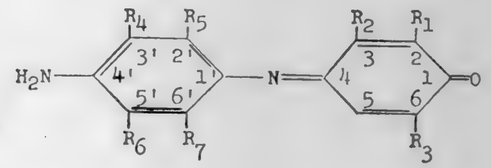
Continuation-in-part of Ser. No. 97,395, Dec. 11, 1970, abandoned, which is a continuation-in-part of Ser. No. 45,564, June 11, 1970, abandoned. This application Feb. 28, 1973, Ser. No. 336,802

Claims priority, application Luxemburg, June 11, 1969, 58848

Int. Cl.² A61K *7/12, 7/13, 7/135*; **D06P** *1/32*

U.S. Cl. 8—10.1 **9 Claims**

1. A hair dye composition consisting essentially of a solution of an indoaniline in a solvent selected from the group consisting of water and an aqueous solution of a lower alkanol, said indoaniline having the formula



which formula does not exclude the tautomeric forms thereof, and wherein R_1 and R_3 each independently represent a member selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, a ureido radical and -NHCOR wherein R is lower alkyl;

R_2 is selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, a ureido radical, -NHCOR wherein R is lower alkyl, and -NHR_8 wherein R_8 is selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl and carbamylmethyl, with the proviso that when R_2 is -NHR_8, R_3 is not hydrogen;

R_4, R_5, R_6 and R_7 each independently represent a member selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy and said indoaniline being present in said dye composition in amounts ranging between 0.02 to 0.3 weight percent of said composition.

3,929,404

INDOANILINES IN KERATINIC FIBER DYE COMPOSITIONS

Gregoire Kalopissis, Paris; Andrée Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

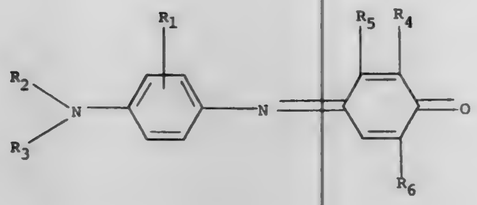
Filed June 24, 1974, Ser. No. 482,523

Claims priority, application Luxemburg, June 22, 1973, 67860

Int. Cl.² A61K *7/13*

U.S. Cl. 8—10.1 **13 Claims**

1. A dye composition for keratinic fibers comprising an aqueous or hydroalcoholic solution of an indoaniline of the formula



wherein

R_1 represents hydrogen, halogen, alkyl or alkoxy;

R_2 represents alkyl, hydroxyalkyl, carbamylalkyl, piperidinoalkyl, morpholinoalkyl, sulfoalkyl, acylaminoalkyl or mesylaminoalkyl;

R_3 represents hydroxyalkyl, carbamylalkyl, piperidinoalkyl, morpholinoalkyl, sulfoalkyl, acylaminoalkyl or mesylaminoalkyl; or R_2 and R_3 together with the nitrogen atom to which they are attached form piperidino or morpholino; R_4, R_5 and R_6 each independently represents hydrogen, halogen, alkyl, acylamino, ureido or carbalkoxyamino and R_5 can also represent amino, hydroxyalkylamino or carbamylalkylamino, the alkyl and alkoxy groups containing 1 to 6 carbon atoms, said indoaniline being present in an amount of 0.02 to 2 percent by weight of said composition.

3,929,405
COLOURATION PROCESS

Cyril Morris, and Arthur Topham, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 63,640, Aug. 13, 1970, abandoned. This application Aug. 8, 1973, Ser. No. 386,571

Claims priority, application United Kingdom, Aug. 18, 1969, 41059/69

Int. Cl.² C09B *1/00*

U.S. Cl. 8—39 **6 Claims**

1. A process for coloring polyester textile material comprising treating said textile material with a stable deflocculated dispersion of a finely divided disperse dyestuff in a halogenated aliphatic hydrocarbon which contains dissolved therein as a deflocculating agent polyureas which are essentially free from basic amino groups and which contain at least two urea groups and at least two alkyl, alkenyl or alkapolyenyl groups, each of which contains at least 8 carbon atoms, said polyureas being the reaction product of a polyisocyanate and an amine containing said alkyl, alkenyl or alkapolyenyl groups and then removing the halogenated aliphatic hydrocarbon, the said textile material being heated to a temperature between 50°–220°C simultaneously with or subsequent to the treatment with the dispersion.

3,929,406
METHOD OF DETECTING DEFECTS AND COMPOSITION THEREFOR

Larry B. Farmer; James E. Hendrix, and Hans H. Kuhn, all of Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed May 21, 1973, Ser. No. 361,994

Int. Cl.² D06P *3/00*

U.S. Cl. 8—164 **23 Claims**

1. A method of detecting defects in fabrics comprising the steps of:

a. applying to a fabric, a composition comprising a fugitive polyethyleneoxy modified dyestuff and a solvent mixture containing at least two miscible solvents of differing polarity which are substantially immiscible when exposed to the atmosphere in thin films, and

b. permitting said composition to undergo phase separation on said fabric whereby the tint migrates with one of the solvents to a portion of the fabric to facilitate visual inspection of the fabric.

3,929,407
PROCESS FOR DYEING OF NOVOLOID FIBERS

Roy B. Parker, Perkasie, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 24, 1974, Ser. No. 482,307

Int. Cl.² C08J *3/20*

U.S. Cl. 8—168 **14 Claims**

1. A process for dyeing an unmodified novoloid fiber comprising the steps of:

a. placing the fiber in an approximately 100°F mixture of:

1 water,

2 1 to 5 grams per liter of butyl benzoate dyestuff carrier,

3 0.1 to 10.0 per cent based on weight of fiber of the group consisting of cationic and dispersed dyestuffs,

4 a sufficient quantity of a suitable chemical for maintaining a pH of the mixture of essentially 4.5 to 6.5;

b. heating the mixture to a high temperature of between 240°F to 300°F;

c. holding the mixture at the high temperature of step (b) for at least 1 ½ hours; and

d. cooling the mixture and fabric to approximately 140°F to 180°F.

3,929,408
PROCESS FOR DYEING TEXTILE MATERIALS BASED ON POLYAMIDE

Georges Ravet, Champagne au Mont d'Or, and Jean-Bernard Chaux, Tassin la Demi-Lune, both of France, assignors to Soprosoie, Courbevoie, France

Filed Dec. 3, 1973, Ser. No. 420,975

Claims priority, application France, Dec. 6, 1972, 72.44078

Int. Cl.² D06P *5/04*

U.S. Cl. 8—169 **10 Claims**

1. A process for dyeing polyamide textile materials comprising:

forming an aqueous bath containing an admixture consisting essentially of 0.10 to 1.50 grams/liter of said bath of a first anionic leveling agent of the formula $R\ A_nR'$, in which R and R′ are sulfonated benzene or naphthylene rings, A is CH_2, SO_2 or NH and n is an integer from 0 to 4; 0.15 to 2.0 grams/liter of said bath of a second anionic leveling agent of a salt of an organic acid of the alkylaryl-sulfonic type or the polyalkyl-aryl-sulfonic type; 0.10 to 1.5 grams/liter of said bath of a cationic weak complexing agent capable of sequestering polyamide dyestuffs at low temperatures; 0.0045 to 0.06 grams/liter of said bath of an organic sulfur-containing compound having a reducing activity; and 0.25 to 1.0 grams/liter of said bath of a detergent and dispersing agent capable of maintaining the aqueous bath in an homogeneous condition;

contacting said polyamide textile material with said aqueous bath at a neutral or slightly basic pH and at approximately room temperature;

heating said aqueous bath at a rate between 0.5°C. and 4°C. per minute to an intermediate selected temperature to effect temporary fixation of the anionic leveling agents on the dye active sites of said polyamide textile material;

adding at least one acid or soluble or dispersed metalliferous dyestuff normally used for dyeing polyamides to said aqueous bath, said dyestuff becoming sequestered at said temperature by the weak cationic complexing agent;

gradually heating said aqueous bath from said intermediate temperature to a dyeing temperature no greater than 130°C. at a rate between 0.5°C. and 4°C. per minute, said increasing temperature serving to destroy the complex which retains the dyestuff and also serving to de-fix the anionic leveling agents from the dye active sites on the polyamide textile material;

lowering the pH of the aqueous bath to between 3 and 7 and maintaining said elevated dyeing temperature and said pH for about 15 to 60 minutes; and

removing the dyed textile material.

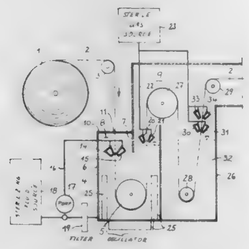
3,929,409
APPARATUS FOR THE STERILIZATION OF PACKAGING MATERIAL

Norbert Buchner, Tamm; Dieter Liede, Moglingen; Peter Schmeer, Bietigheim, and Günther Vögele, Schonaich, all of Germany, assignors to Robert Bosch Verpackungsmaschinen G.m.b.H., Waiblingen, Germany

Filed Sept. 12, 1973, Ser. No. 396,528

Int. Cl.² A61L *3/00;* **B08B** *3/12, 3/08, 1/02*

U.S. Cl. 21—91 **8 Claims**



1. In an apparatus for the sterilization of packaging material of the type including a container containing sterilizing liquid constituting a sterilizing bath through which the packaging material is drawn and guided, said container defining an entry portion and an exit portion, guide means for guiding the packaging material through the bath, said guide means including at least two elements which engage the packaging material while it is being drawn through the bath, one of the elements being disposed within the bath and the other of the elements being disposed outside of the bath, said other of the elements serving to guide the packaging material into the bath, a device for loosening any contaminants adhering to the packaging material and a drying installation disposed subsequent to the sterilizing bath, the improvement comprising:

a. liquid scouring means serving as said loosening device including at least one nozzle, adjacent to the packaging material adjacent to the entry portion of the container and located to spray a high velocity stream of sterilizing liquid at said packaging material during the passage thereof between said one of and the other of said elements so as to hit the packaging material over its entire width, for loosening the contaminants; and

b. gas scouring means serving as said drying installation including at least one nozzle disposed at a location adjacent the exit portion of the container through which a curtain of a sterile gas streams obliquely downward onto the packaging material at high velocity, for drying the packaging material.

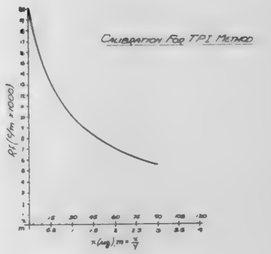
3,929,410
ANALYTICAL PROCESS

Benjamin Schloss, 179 Sundridge Drive, North Tonawanda, N.Y. 14120

Continuation-in-part of Ser. No. 87,865, Nov. 9, 1970, abandoned. This application Oct. 9, 1973, Ser. No. 404,695

Int. Cl.² G01N *33/16*

U.S. Cl. 23—230 R **13 Claims**



1. A method for determining the amount of a substance in a gaseous, liquid or solid sample, that is available in two forms, form A and B, in which A and B are chemically identical but A possesses an internal property which B does not possess, so that A can be analytically distinguished from B which comprises:

equilibrating a known amount, Y, of the substance in form A with an unknown amount, X, of the substance in form B,

in which Y is chosen to be precisely equal to the amount of substance required to saturate a phase I at a temperature, T_s,

and in which X + Y is divided between two immiscible phases, phase I and phase II,

and by measuring the property which distinguishes A from B to obtain an initial value R_i for the amount Y,

then by determining R_f, the value for the amount of A that is present in phase I at T_s after equilibration with B and partitioning of X + Y between phases I and II and where Y amount of substance is in phase I,

the amount X can be calculated from the equation

$$X = Y\left(\frac{R_i}{R_f} - 1\right)$$

or by referring to a calibration curve of R_f vs. X.

3,929,411
SAMPLE TRANSFER DEVICE AND METHOD FOR ANALYTICAL SYSTEM

Nobuyoshi Takano, Katsuta; Kaoru Sakai, Hitachi; Satoshi Aoki, and Kazuo Yasuda, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 28, 1973, Ser. No. 392,294

Claims priority, application Japan, Sept. 14, 1972, 47-91731

Int. Cl.² G01N *1/14*

U.S. Cl. 23—259 **14 Claims**

1. An apparatus for successively transferring a plurality of different liquid samples to a plurality of different treatment stations in an analytical system comprising:

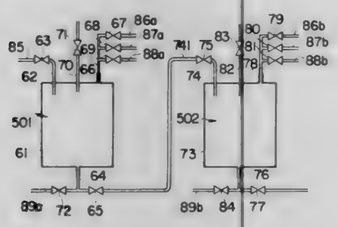
a first treatment unit including a first enclosed vessel, a sample inlet connected to an upper part of said first vessel and a first valve connected to said sample inlet;

a second treatment unit including a second enclosed vessel, a sample outlet connected to the lowermost portion of said second vessel and a second valve connected to said sample outlet;

first conduit means fluidly communicating the lowermost portion of said first vessel with an upper portion of said second vessel;

a third valve connected to said first conduit means;

sources of gasses at an increased pressure, reduced pressure and atmospheric pressure fluidly communicating with upper portions of said first and second vessesl through respective valves; and



control means for controlling the gas sources so that a pressure differential is maintained between the interiors of said first vessel and said second vessel for transferring a sample in said first vessel to said second vessel, said control means maintaining a pressure differential between the interiors of said first vessel and said second vessel after all of the sample is transferred from said first vessel to said second vessel so that sample deposited on the walls of said conduit means is blown away cleanly by a jet of gas, said control means thereafter causing another sample to be introduced into said first treatment station.

3,929,412

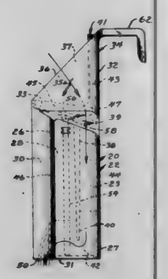
LIQUID RECEIVING DEVICE

Frank K. Villari, Oak Park, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Nov. 15, 1974, Ser. No. 524,023

Int. Cl.² G01F *1/20*; G01N *33/16*

U.S. Cl. 23—259 **14 Claims**



1. A self-administratable device to measure a discharge of urine, comprising:

a movable receptacle having a chamber, port means adjacent an upper end of the receptacle and being positionable adjacent the point of discharge to receive the discharge for passage of the discharge into the chamber, and means associated with said chamber for measuring a dynamic characteristic of the urine discharge; and

porous means intermediate the port means and chamber said porous means being sufficiently porous to permit an even flow of the discharge through the porous means without impairment of the measuring capabilities of the measuring means, and said porous means being sufficiently thick and closed to break up the discharge and prevent splashing of the discharge against the user.

3,929,413

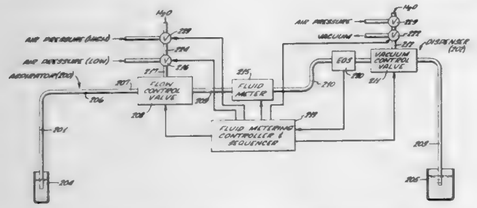
FLUID TRANSPORT AND METERING SYSTEM

Robert R. Young, Anaheim; Patrick L. Randleman, Brea, and Arthur B. Stolins, Newport Beach, all of Calif., assignors to Anatronics Corporation, Anaheim, Calif.

Filed Mar. 4, 1974, Ser. No. 447,959

Int. Cl.² G01N *1/14*

U.S. Cl. 23—259 **17 Claims**



1. In an automated apparatus for performing chemical analysis including a fluid transport system for transporting fluid from an aspirator to a dispenser through a fluid conduit, the improvements comprising:

said fluid conduit being continuous and of non-varying internal volume while the fluid is being transported therethrough;

means proximate said dispenser for supplying a substantially constant vacuum to said fluid downstream of said aspirator;

metering detector means for detecting passage of the fluid meniscus at a predetermined location along said conduit; flow control means downstream of said aspirator and responsive to said metering detector for interrupting the flow of fluid upstream of said metering detector so that a slug of fluid is entrapped in said conduit between said flow control means and said metering detector; and

means for automatically supplying gas under pressure to the trailing meniscus of said fluid slug for moving said fluid slug through said conduit.

3,929,414

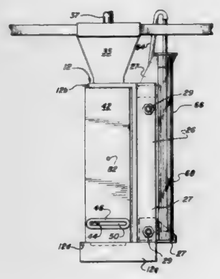
BLOOD OXYGENATOR UTILIZING A REMOVABLE MEMBRANE OXYGENATOR UNIT

Ronald J. Leonard, Elk Grove Village, Ill., assignor to Baxter Laboratories, Inc., Deerfield, Ill.

Filed Jan. 21, 1974, Ser. No. 435,143

Int. Cl.² A61M *1/03*

U.S. Cl. 23—258.5 **10 Claims**



1. In a blood oxygenator unit which defines a first plurality of blood flow channels and a second plurality of oxygen flow channels in interleaving relation to said first flow channels, said first and second flow channels being separated by a semipermeable membrane, and an outer casing enclosing said membrane and said flow channels, said outer casing having separate blood and oxygen inlets and outlets, the improvement wherein said oxygen inlet comprises a transversely elongated port defined in said casing, positioned to directly expose one end of all of said plurality of said second flow channels to the exterior of said casing, whereby simple connection of said second flow channels to an oxygen line is prevented.

2. The blood oxygenator unit of claim 1 in which said semipermeable membrane is a porous, hydrophobic material capable of preventing the passage of blood while permitting the passage of oxygen and carbon dioxide therethrough.

3,929,415

ϵ-ALUMINUM FLUORIDE BY EVAPORATING AQUEOUS MF SOLUTION OF ALF_3 UNDER VACUUM TO DRYNESS AND HEATING

Hiroyuki Wada, Mukomachi; Yasumasa Kawakami, Sakai, and Tutomu Kamihigoshi, Takatsuki, all of Japan, assignors to Daikin Kogyo Co., Ltd., Japan

Continuation of Ser. No. 156,536, June 24, 1971, abandoned, which is a continuation of Ser. No. 770,337, Oct. 24, 1968, abandoned. This application July 22, 1974, Ser. No. 490,916

Claims priority, application Japan, Oct. 26, 1967, 42-68911; Oct. 26, 1967, 42-68912

Int. Cl.² B01D *9/02*; C01F *7/50*

U.S. Cl. 23—305 **7 Claims**

1. A method for preparing ϵ-aluminum fluoride, characterized by an X-ray diffraction pattern with peaks at angles of diffraction of 8.1° (very strong), 18.8° (strong), 24.8° (very strong), 26.4° (strong), 28.1° (strong) and 50.8° (strong) with spacings in A of 10.915A, 4.719A, 3.590A, 3.370A, 3.175A and 1.797A, respectively, for each angle noted, and having the empirical formula $AlF_3.1.5\ H_2O$, which comprises evaporating under vacuum an aqueous hydrofluoric acid solution of aluminum fluoride to dryness at a temperature from 30° to 120°C and heating the resulting product of the evaporation to a temperature of from above 120° to 500°C.

3,929,416

PROCESS AND APPARATUS FOR PRODUCING GYPSUM LUMPS

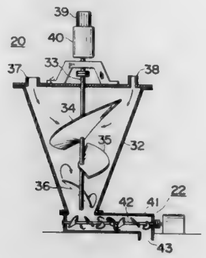
Hirobumi Tanaka, Sendai; Norio Arashi, Hitachi; Yukio Hishinuma, Hitachi, and Zensuke Tamura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed May 8, 1973, Ser. No. 358,335

Claims priority, application Japan, May 10, 1972, 47-45471

Int. Cl.² B01F *7/16, 15/00*; B28C *1/22*; C01F *11/46*

U.S. Cl. 23—260 **20 Claims**



1. An apparatus for producing solidified gypsum lumps comprising an inverted conical reactor having an inlet in an upper portion thereof for supplying sulfuric acid and limestone and an outlet at a lower portion thereof, discharging means arranged at the outlet of said reactor for conveying gypsum lumps produced in said reactor, a rotating shaft vertically disposed in said reactor, and a plurality of sector blades arranged in a staggered relationship around said rotating shaft, each blade being arranged at an inclined angle with respect to the axis of said rotating shaft, the outer peripheries of the sector blades extending to near the inner surface of said inverted conical reactor.

3,929,417

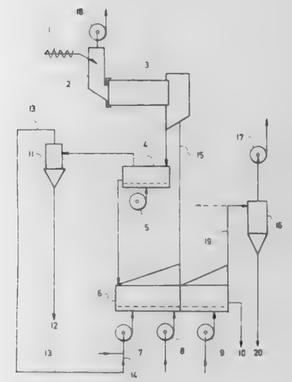
APPARATUS FOR THE MANUFACTURE OF POWDERED LIME

Josef Rosa, Drasov u Brno, and Vlastimil Petr, Brno, both of Czechoslovakia, assignors to Vyskumny ustav stavebnich hmot, Brno, Czechoslovakia

Division of Ser. No. 381,067, July 20, 1973, abandoned. This application July 1, 1974, Ser. No. 484,571

Int. Cl.² C01F *11/06*; B07B *9/02*; B01J *6/00*

U.S. Cl. 23—262 **2 Claims**



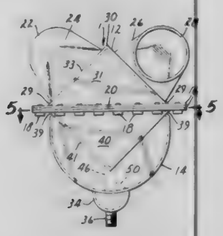
1. An apparatus for the manufacture of lime of substantially uniform activity comprising a rotary kiln with a downward inclination of about 0.5 to about 2.5 percent, a heat exchanger in front of said kiln, means for feeding ground limestone to the upper end of the rotary kiln through said heat exchanger, at least one fluid classifying cell connected to the outlet of the kiln, said fluid classifying cell having a particle support grate, at least two outlets, a first separator at one outlet of said fluid classifying cell, a fluid cooling device at another output thereof, said fluid cooling device having a particle support grate, comprising at least two sections in series provided with separators, fan means supplying cooling air to said fluid classifying cell and to each section of the fluid cooling device below the grates thereof respectively, a burner extending into the lower end of the kiln a distance from two to four times of the diameter of the kiln, said means for feeding comprising means for supplying ground limestone having a grain size of up to about 2 mm with a residue on a 2mm sieve below about 40 percent to the upper part of the kiln by way of the heat exchanger, means for feeding the burnt lime from said kiln to the fluid classifying cell, said fluid classifying cell separating at least one fraction of a grain size below about 600 microns for feeding to said one outlet thereof, means for feeding the remaining fractions to said fluid cooling device, said first separator separating said fraction from air from said fluid classifying cell as the first part of the product of said apparatus, a first conduit connecting the upper part of the first up to the last but one section of the fluid cooling device with the rotary kiln, a second separator, a second conduit connecting the upper part of the last section of said cooling device with said second separator, the air outlet from said first separator being connected by way of an air mixer with the fan means to the first section of said fluid cooling device below the grate thereof.

3,929,418

DUAL CROSS-FLOW CANISTER

Vernon E. Wood, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 31, 1973, Ser. No. 393,337
Int. Cl.² B01J *35/04*; **F01N** *3/15*
U.S. Cl. 23—288 FB **2 Claims**



1. A container or canister for connection into the exhaust stream of an engine and for positioning a catalyst support in said stream comprising, in combination,

I. a casing containing and holding a catalyst support, said casing having two parts, a cover and a base, said cover and said base mating and being joined at respective peripherally flanged rectangular openings,

A. said base having

1. a rounded bottom with extended sides extended toward a first pair of opposite sides of the rectangular opening of said base, said base having generally semicircularly shaped end members attached to said rounded bottom with extended side walls extended toward the second pair of opposite sides of the rectangular opening of said base, said rounded bottom, said end members and said extended sides forming a plenum space, the portion of the extended sides of the rounded bottom adjacent to said first pair of opposite sides of said peripherally flanged opening being shaped to provide lower cross rails;
2. said end members comprising right-triangular support frames, said support frames having equal sides meeting at a right angle, said right angle being located near the rounded bottom of said base, the hypotenuses of said support frames forming the top edges of said end members which hypotenuses are the second pair of opposite sides of the rectangular opening of said base and the equal sides of said support frames forming side rails;
3. an air inlet manifold and air inlets along the rounded bottom of said base at its deepest part for admitting air into the said plenum space and
4. an angle support member above said air inlets connecting the right angles of said support frames;

B. said cover having

1. right triangular end pieces having the right angle at the apex, the hypotenuses mating with the triangular support frames of the end members of the base and having equal sides;
2. a ridge connecting the right angles of said right-triangular end pieces and forming an internal angle therebetween;
3. cross rails connecting the acute angles of said triangular end pieces and
4. side rails along the sides of said triangular end pieces between said ridge and said cross rails,
5. first manifolding means parallel to and along one side of said ridge and lengthwise of said cover connecting to said ridge, side rails and cross rail with inlet port for inlet of said exhaust stream at one end and
6. second manifolding means parallel to and along the other side of said ridge connecting to said ridge, side rails and cross rail lengthwise of said cover with outlet port facing in the opposite direction to said inlet port for release of said exhaust stream, the centerlines of said inlet and outlet ports being offset from one another,

II. said container or canister further comprising a dual cross-flow refractory ceramic catalyst support of parallelepipedal form with longitudinal axis and square cross-section having passageways at right angles to the said longitudinal axis, said passageways being in approximately equal groups and said groups being mutually at right angles to each other, said catalyst support having catalyst thereon and being positioned within said casing with its square ends resting in the right-triangular support frames of the end members of said base with its longitudinal axis parallel to the first pair of opposite sides of the rectangular opening in said base, one longitudinal edge of said catalyst support being supported free from the outer wall of the base of said casing in the angle support member thereof, two opposite longitudinal edges being supported at the sides of said base in the lower cross rails along each side of said base and the fourth longitudinal edge and the ends being engaged and urged into position by said ridge, said side rails and said cross rails of said cover, with said first and second manifolding means securely positioned above adjacent faces of said catalyst support, and

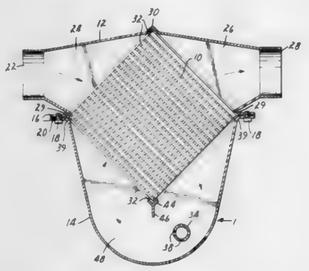
III. said container or canister further comprising resilient mounting material between said catalyst support and the said ridge, said cross rails and said side rails of said cover of said canister at all lines of contact therebetween thereby preventing blowby of gases in said exhaust stream.

3,929,419

DUAL CROSS-FLOW CANISTER AND PROCESS

Harvey A. Chapman, Richfield, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 31, 1973, Ser. No. 393,338
Int. Cl.² B01J *35/04*; **F01N** *3/15*
U.S. Cl. 23—288 FB **2 Claims**



1. A container or canister for connection into the exhaust stream of an engine and for positioning a catalyst support in said stream comprising, in combination,

I. a casing containing and holding a catalyst support, said casing having two parts, a cover and a base, said cover and said base mating and being joined at peripherally flanged rectangular openings,

A. said base having

1. a rounded bottom, approximately paraboloid end members and extended side walls, said side walls diverging toward a first pair of opposite sides of the rectangular opening of said base,
2. said approximately paraboloid end members comprising right-triangular support frames, said triangular support frames having equal sides meeting at a right angle, said right angle being located near the rounded bottom of the base, the hypotenuses of said triangular support frames forming the top edges of said end members which hypotenuses also form the second pair of opposite sides of the rectangular opening of said base and the equal sides of said support frames forming side rails, and said end members, said rounded bottom and said side walls forming a plenum space,
3. a vane between said end members below the right angles of the triangular support frames,
4. said base further having an air inlet inserted through one said end member below the triangular support frame into the said plenum space.

B. said cover having

1. right-triangular end pieces having the right angle at the apex, the hypotenuses of said triangular end pieces mating with the triangular support frames of the said paraboloid end members of said base,
2. a ridge connecting the right angles of said right-triangular end pieces and forming an internal angle therebetween;
3. cross-rails connecting the acute angles of said triangular end pieces and
4. side rails along the sides of said triangular end pieces between said ridge and said cross rails,
5. an inlet manifold connecting to said ridge, side rails and cross rail at one side of said ridge and inlet port for inlet of said exhaust stream in said inlet manifold,
6. outlet manifold connecting to said ridge, side rails and cross rail at the other side of said ridge and outlet port in said outlet manifold for release of said exhaust stream from said outlet manifold with outlet port facing in the opposite direction to said inlet port and the two said ports being on substantially the same centerline,

II. said container or canister further comprising a dual cross-flow refractory ceramic catalyst support of parallelepipedal form with longitudinal axis and square cross-section having all passageways at right angles to the said longitudinal axis, said passageways being in two directions mutually at right angles to each other, said catalyst support having catalyst thereon and being positioned within said casing with its square ends resting in the triangular support frames of said paraboloid end members of said base, its longitudinal axis parallel to the side walls of said base, a first longitudinal edge being positioned above said vane connecting said end members of said casing, two opposite longitudinal edges being supported at the sides of said base and the fourth longitudinal edge and the ends being engaged and urged into position by said ridge, said side rails and said cross rails of said cover with inlet and outlet manifolds securely positioned above adjacent faces of said catalyst support, and

III. said container or canister further comprising resilient mounting material between said catalyst support and the said ridge, said cross rails and said side rails of said cover of said canister at all lines of contact therebetween thereby preventing blowby of gases in said exhaust stream.

3,929,420

DUAL CROSS-FLOW CANISTER

William P. Wood, Marine, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 31, 1973, Ser. No. 393,339
Int. Cl.² B01J *35/04*; **F01N** *3/15*
U.S. Cl. 23—288 FB **2 Claims**

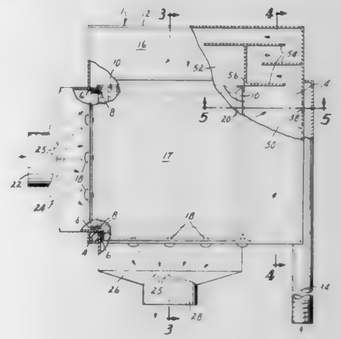
1. A container or canister for dual cross-flow catalyst-support comprising, in combination,

I. a casing of generally parallelepipedal shape with a square outline having square top and bottom and an outer wall of four rectangular sides and means securing said top and bottom to said outer wall,

A. two of said sides having a common corner therebetween and having equal rectangular openings therein adjacent said common corner and one other of said sides having openings for air inlets and having an air manifold over said openings externally of said casing,

B. said top and bottom of said casing being dished outward,

C. said casing containing and holding a refractory ceramic square dual cross-flow catalyst support with ends mating the dishing in said top and bottom and positioned within said casing with pads of intumescent sheet material between said catalyst support and said top and bottom and with two faces of said catalyst support having a first common corner therebetween at the rectangular openings in the said two sides of said casing and two other faces of said catalyst support having a second common corner therebetween, one of said two other faces facing into a first plenum into which said air inlets open and the other into a second plenum,



D. baffles in said casing adjacent said second common corner of said catalyst support providing a labyrinthine connection between said first plenum and said second plenum for mixing gases entering said first plenum with air from said air inlets,

E. an inlet manifold with inlet port in one of said rectangular openings opposite the said side having openings for air inlets and urged against said catalyst support and

F. an outlet manifold with outlet port in the other of said rectangular openings urged against said catalyst support,

G. means sealing between said two rectangular openings preventing blowby between said inlet and outlet manifolds, gaskets between said manifolds and said catalyst support and means attaching said manifolds in their respective rectangular openings.

3,929,421

TUBULAR CATALYTIC REACTOR WITH PREMIXING MEANS FOR MULTIPLE REACTANTS OF DIFFERENT DENSITIES

Darrell L. Werges, Park Forest, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Dec. 26, 1973, Ser. No. 428,064
Int. Cl.² B01J *3/04*, *8/02*, *8/06*; **C07C** *103/00*
U.S. Cl. 23—288 M **6 Claims**

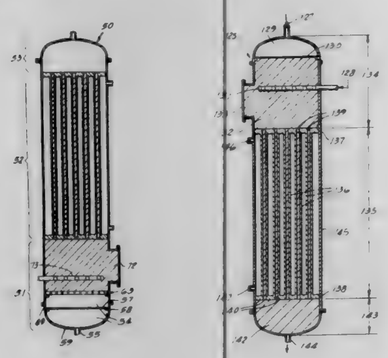
1. Apparatus adapted for reacting under strongly exothermic or endothermic conditions two at least partially immiscible fluids of differing density at least one of which is in a liquid phase comprising:

A. a plurality of substantially similar tubular members in laterally spaced relationship to each other, including tube connected mounting tube sheet means therefor at respective opposed ends of said tubular members, said tubular members each containing a particulate catalyst material comprising a catalyst bed,

B. a shell means generally enclosing wall portions of said tubular members in fluid tight relationship and including inlet and outlet means for circulation of a heat exchange fluid therethrough,

C. first housing means at one end of said tubular members and defining in combination with one of said tube sheet means a first fluid tight common chamber for end entrance openings of each of said tubular members,

D. second housing means at the opposite end of said tubular members and defining in combination with a second of said tube sheet means a second fluid tight common chamber for opposite end exit openings of each of said tubular members, and including an exit port means defined therein,



E. a bed of substantially inert particulate material positioned within said first common chamber, one end of said bed of inert particulate material being in adjacent relationship to said end entrance openings,

F. retention means maintaining said bed of inert particulate material in such relationship,

G. first injection means including first input port means defined in said first housing means and adapted to input a first fluid into said bed of inert particulate material, said first injection means including a conduit distribution network having a plurality of orifices therein, the location of said orifices being within said bed of inert particulate material and being positioned to permit said first fluid to escape therefrom in said bed of inert particulate material and be generally evenly distributed transversely across said first common chamber,

H. second injection means including second input port means defined in said first housing means and adapted to input a second fluid into said bed of inert particulate material said second injection means being located in said first common chamber further from said end entrance openings than said first injection means,

I. the interrelationship between said bed of inert particulate material, said first injection means, and said second injecton means being such that

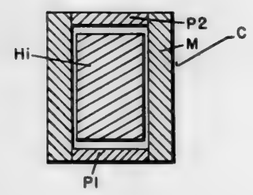
1. in the region of said bed of inert particulate material between said second injection means and said end entrance openings the said respective two fluids are generally uniformly intermixed transversely across said first common chamber adjacent said end entrance openings,
2. such resulting intermixture flows at a substantially uniform rate transversely across said first common chamber adjacent said end entrance openings,
3. such resulting intermixture flows at a substantially uniform rate into substantially all of each of said end entrance openings,
4. the ratio of said one fluid to said other fluid in substantially all of said end entrance openings being substantially the same.

3,929,422

MEANS FOR RECOMBINING HYDROGEN AND OXYGEN IN A SEALED BATTERY AND CONTROLLING RECOMBINATION AT CATALYST SURFACES

Ekkehard L. Kreidl, Wayland, and Douglas Shooter, Winchester, both of Mass., assignors to Koehler Manufacturing Company, Marlborough, Mass.

Continuation of Ser. No. 77,691, Oct. 2, 1971, abandoned, Division of Ser. No. 866,531, Oct. 15, 1969, Pat. No. 3,630,778. This application July 22, 1974, Ser. No. 490,715
Int. Cl.² B01J *35/10*
U.S. Cl. 23—288 R **1 Claim**



1. A self-limiting composite catalyst device for recombining hydrogen and oxygen with exothermic heating in a sealed battery chamber in which hydrogen and oxygen are evolved and exert increased pressure, said catalyst device including a nucleus of enclosed catalyst consisting in a catalyst-supporting body of alumina and a catalyst metal of palladium having a relatively high-level gas-recombining capability contained on the catalyst-supporting body, and a foraminous outer cylindrical enclosure member which defines an enclosed space in which gases may be received and held in contact with the nucleus, said enclosure member having exposed surfaces of relatively low-level gas-recombining capability through which hydrogen and oxygen gases may pass into contact with the nucleus and said exposed surfaces consisting in a catalyst supporting material having contained therein a quantity of catalyst metal capable of undergoing heating in a range of exothermic heating which is limited in response to increase in pressure in the sealed battery chamber and which lies within limits of from 400° C to 600° C, and said quantity of catalytic metal in the exposed surfaces occurring in amounts of from about 0.01% up to 0.1% by weight, and said outer catalyst supporting material having an internal surface area occurring between 0.3 square meters per gram up to a value of less than 1 square meter per gram, and said catalyst metal of relatively high-level gas-recombining capability in the nucleus occurring in a quantity of not less than 2% of catalyst metal, and said catalyst supporting body in the nucleus having a surface area of more than 50 square meters per gram.

3,929,423

HOT WORK FORGING DIE BLOCK AND METHOD OF MANUFACTURE THEREOF

Charles W. Finkl, Evanston, Ill., assignor to A. Finkl & Sons Company, Chicago, Ill.

Filed May 9, 1973, Ser. No. 358,827
Int. Cl.² B22F *9/00*; **C22C** *38/40*, *33/00*
U.S. Cl. 29—180 **12 Claims**

11. A forged, low alloy, hot work, steel die block, said forged steel die block being characterized by a low non-metallic inclusion content, including silicates and aluminates, high machinability in all conditions including final hardened condition, and substantially uniform through hardness in heavy sections, said steel die block consisting of the following composition by weight percent:

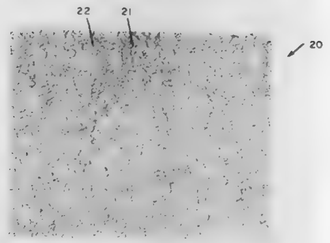
C	from about	.53	to a maximum of about .57
Mn	from about	.75	to a maximum of about .95
S	from about	.035	nim
P		.020	max.
Si	from about	.20	to a maximum of about .35
Ni	from about	.85	to a maximum of about 1.05
Cr	from about	.85	to a maximum of about 1.15
Mo	from about	.36	to a maximum of about .43
V		.05	aim
Al	less than	.005	
Fe	Balance, together with residual, non-deleterious elements		
O_2	30 ppm max.		
H_2	2.2 ppm max.		

3,929,424

INFILTRATION OF REFRACTORY METAL BASE MATERIALS

Richard H. Krock, Weston, and Jerome J. Pickett, Bedford, both of Mass., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Oct. 23, 1973, Ser. No. 408,606
Int. Cl.² B22F *1/00*
U.S. Cl. 29—182.1 **9 Claims**



1. A body including refractory metal containing particles and a metal containing matrix, the refractory metal containing particles having an average particle size substantially equal to the average particle size of the refractory metal containing particles prior to the formation of the body, the body comprising as major weight constituent, refractory metal containing particles, the refractory metal selected from the group consisting of tantalum, molybdenum and tungsten and as the minor weight constituent, a metal containing matrix including a refractory metal selected from the group consisting of tantalum, molybdenum and tungsten and a metal selected from the group consisting of Ni, Fe, Co, Cu, Cr and combinations thereof.

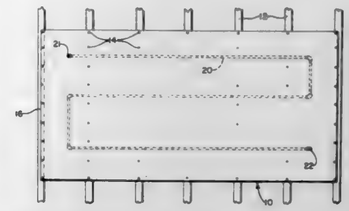
3,929,425

FOAMED METAL BODIES

Alex R. Valdo, Phoenix, Ariz., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 335,680, Feb. 26, 1973, Pat. No. 3,848,666, which is a continuation-in-part of Ser. Nos. 91,211, Nov. 19, 1970, abandoned, and Ser. No. 91,212, Nov. 19, 1970, abandoned. This application Mar. 29, 1974, Ser. No. 456,031. The portion of the term of this patent subsequent to Nov. 19, 1991, has been disclaimed.
Int. Cl.² B32B *15/20*
U.S. Cl. 29—191 **6 Claims**

1. A rectangular structural panel of foamed aluminum having discrete cells therein, having a density less than about 50 pounds per cubic foot and having embedded therein a tubular conduit for a heating liquid, said conduit being a material having a higher melting point than that of the foamed aluminum, said conduit having an inlet and an outlet end, and both of said ends projecting out through one face of the panel.

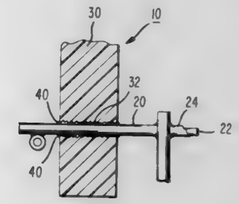


3,929,426

METHOD OF ANCHORING METALLIC COATED LEADS TO CERAMIC BODIES AND LEAD-CERAMIC BODIES FORMED THEREBY

Henry Leo Blust, Marion, Ind.; Norman Lee Lindburg, Berkeley Heights, and Dale Vernon Henry, Union, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 8, 1974, Ser. No. 468,098
Int. Cl.² B32B *15/04*
U.S. Cl. 29—195 **3 Claims**



1. An integral ceramic-lead body comprising:

a. a fired ceramic body;

b. an opening within said body having an interior surface with irregularities;

c. a lead anchored within said opening, said lead including a core material of a first metallic composition and a plated surface of a second metallic composition, the melting temperature of which is lower than that of said first metallic composition; said first metallic composition being wettable by said second metallic composition; said interior surface being substantially non-wettable by said second metallic composition; and

d. means for mechanical retention of said lead within said opening comprising primarily a casting of said second metallic composition within said irregularities of said interior surface.

3,929,427

WEAR-RESISTANT SURFACE COMPOSITE MATERIALS AND METHOD FOR PRODUCING SAME

Peshotan S. Kotval, Hartsdale; Henri Hatwell, White Plains, and Frank P. Gortsema, Croton, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 270,241, July 10, 1972, abandoned. This application May 4, 1973, Ser. No. 357,080
Int. Cl.² B32B *15/04*
U.S. Cl. 29—195 **11 Claims**

1. An improved wear-resistant surface composite material, the surface of which has a duplex composite structure comprised of (a) a matrix material of poor wear-resistance and (b) not less than about 50 percent area fraction and up to about 90 percent area fraction of a hard fibrous monocarbide phase,

said monocarbide phase being represented by the general formula MC wherein M is a metal selected from the group consisting of tantalum, titanium or tungsten and C is carbon, said monocarbide phase being in the form of filaments between 2 and about 15 microns in diameter and being present at the composite surface as sections of varying orientations, the remainder of the surface being comprised of the matrix of the said material.

3,929,428

WEARING MEMBER HAVING A PAD-WELDED SURFACE LAYER HIGH IN WEAR-RESISTANCE AND HEAT CRACK-RESISTANCE

Takeshi Nishi; Tsurugi Kimura; Isao Moriguchi; Kiyoshi Yokoi, all of Kitakyushu; Isojiro Nakakobo, Tokyo, and Ryohei Kumagai, Narashino, all of Japan, assignors to Yawata Iron & Steel Co., Ltd.; Yawata Welding Electrode Co., Ltd. and Nippon Hard Facing Co., Ltd., all of, Japan

Continuation of Ser. No. 727,034, May 6, 1968, abandoned. This application Feb. 8, 1971, Ser. No. 113,771

Claims priority application Japan, May 9, 1967, 42-29377

Int. Cl.² B32B *15/15*

U.S. Cl. 29—196.1 **13 Claims**

1. A roller for hot rolling operations comprising an alloy layer welded to a steel substrate, said alloy consisting essentially of 0.1 to 0.5% C, 0.1 to 1.3% Si, 0.3 to 2.0% Mn, 1.0 to 5.0% Cr, 0.5 to 5.0% Mo and 0.5 to 3.0% V, the remainder being Fe.

3,929,429

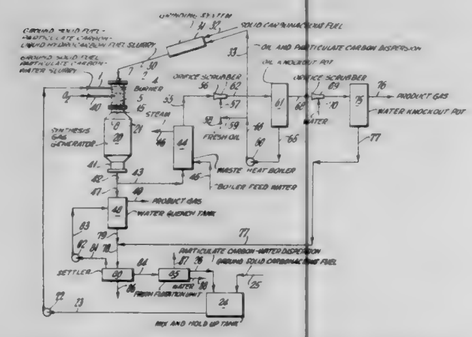
FUEL GAS FROM SOLID CARBONACEOUS FUELS

William B. Crouch, Whittier, Calif., assignor to Texaco Inc., New York, N.Y.

Filed Sept. 26, 1974, Ser. No. 509,375

Int. Cl.² C01B *2/14*; **C10J** *3/16*

U.S. Cl. 48—201 **6 Claims**



1. In the continuous manufacture of gaseous mixtures principally comprising H_2 and CO, and optionally containing at least one member of the group CO_2, H_2O, CH_4, N_2, A, COS, and H_2S by the partial oxidation of a hydrocarbonaceous fuel with a free-oxygen containing gas in the presence of a temperature moderator in a reaction zone free from packing and catalyst of a free-flow gas generator, the improvement which comprises introducing into said reaction zone a continuous first slurry feedstream comprising a ground solid carbonaceous fuel and a liquid hydrocarbon fuel at a velocity in the range of about 1 to 500 feet per second; simultaneously introducing into said reaction zone so as to contact said first slurry feedstream a continuous separate second slurry feedstream comprising a ground solid carbonaceous fuel and water at a velocity in the range of about 1 to 500 feet per second; simultaneously introducing into said reaction zone a continuous separate third stream comprising a free-oxygen containing gas interposed between said first and second slurry feedstreams; and contacting and mixing said three streams together to form an atomized dispersion in which the ratio of atoms of oxygen to atoms of carbon in the total fuel is in the range of about 0.6 to 1.6, the weight ratio of H_2O to fuel is in the range of about 0.10 to 1.3, and the weight ratio of total solid carbonaceous fuel to liquid hydrocarbon fuel is in the range of about 0.8 to 12, and reacting said atomized dispersion in said reaction zone at a temperature in the range of about 1,500° to 3,500°F., and a pressure in the range of about 1 to 250 atmospheres.

3,929,430

PROCESS FOR MAKING SYNTHETIC FUEL GAS FROM CRUDE OIL

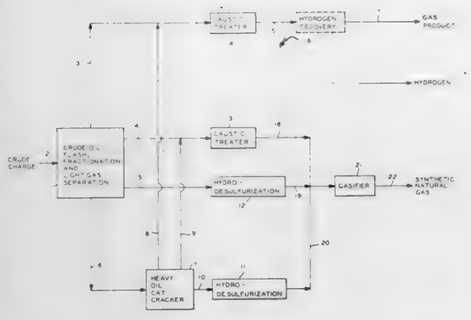
Rolland E. Dixon, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 14, 1973, Ser. No. 359,791

Disclosure was also published under Triol Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C10G *37/10, 11/28*

U.S. Cl. 48—211 **5 Claims**



1. A process for the conversion of a crude oil to a synthetic natural gas which comprises separating the crude oil into a first fraction containing ethane and lighter gases, a second fraction containing propane and butane, a third fraction which is normally liquid and will contain hydrocarbons boiling up to about 400°F and a fourth residual fraction comprising topped crude oil; treating said first and second fractions to remove sulfur therefrom as sulfur or sulfur compounds; hydrodesulfurizing said third fraction and catalytically cracking substantially to extinction said fourth fraction to obtain a lower boiling product which product is then hydrodesulfurized, thereafter combining at least two of the last three fractions to form a charge stock for a synthetic natural gas producing operation and catalytically converting said charge stock to form a synthetic natural gas.

3,929,431

CATALYTIC REFORMING PROCESS

Kwang K. Koh, Seabrook, Tex.; Robert E. Pennington, Lonnie W. Vernon, and Nicholas C. Nahas, all of Baytown, Tex., assignor to Exxon Research and Engineering Co., Linden, N.J.

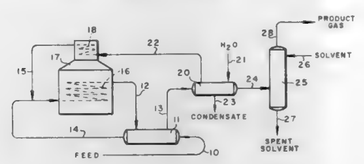
Continuation-in-part of Ser. No. 287,318, Sept. 8, 1972, abandoned. This application Oct. 15, 1974, Ser. No. 514,680

Int. Cl.² C01B *2/14*

U.S. Cl. 48—214 **25 Claims**

1. A process for the production of a hydrogen-containing gas which comprises reacting a hydrocarbon feed stream consisting essentially of constituents boiling below about 450° F. with steam in a steam reforming zone and in the presence of a carbon-alkali metal catalyst at a temperature between about 1200° and about 1700° F. and at a pressure between about atmospheric and about 5000 psig, said catalyst being

prepared by heating an intimate mixture of carbonaceous solids and an alkali metal constituent to a temperature in



excess of about 800° F., and recovering a hydrogen-containing gas from said steam reforming zone.

3,929,432

DIAMOND PARTICLE HAVING A COMPOSITE COATING OF TITANIUM AND A METAL LAYER

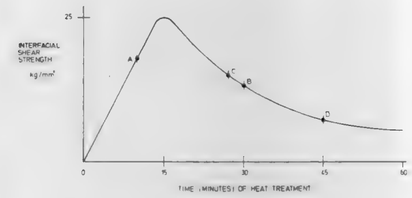
Robert John Caveney, Johannesburg, South Africa, assignor to De Beers Industrial Diamond Division Limited, Johannesburg, South Africa

Continuation-in-part of Ser. No. 146,831, May 25, 1971, abandoned. This application Sept. 18, 1973, Ser. No. 398,383

Claims priority, application South Africa, May 29, 1970, 70/3653

Int. Cl.² B24D *3/06*; **C09C** *1/68*

U.S. Cl. 51—295 **11 Claims**



1. A diamond particle of the MD or SD type having a composite coating comprising a thin continuous layer of titanium adjacent the diamond surface, the titanium being present in an effective amount less than 3% by weight of the uncoated particle, said amount being effective to provide a continuous layer around the diamond particle, and a metal layer on the titanium layer, the metal of the metal layer being selected from the group consisting of iron, nickel, cobalt, copper and alloys containing one or more of these metals and being capable of forming an alloy with titanium under the influence of heat and being present in an amount of from 10 to 100% by weight of the uncoated particle, and the interface between the diamond and the titanium being essentially free of chemical bond formation.

3,929,433

PROCESS AND APPARATUS FOR REMOVING IONS FROM FLUIDS

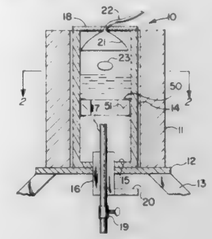
Ronald Ray Lucero, 1307 Monterey, Anaheim, Calif. 92801

Continuation-in-part of Ser. No. 150,599, June 7, 1971, Pat. No. 3,767,545. This application July 5, 1973, Ser. No. 376,295. The portion of this term of this patent subsequent to Oct. 23, 1990, has been disclaimed.

Int. Cl.² B03C *1/00*; **B01K** *1/00*

U.S. Cl. 55—3 **9 Claims**

1. In a process of removing like materials from gas, the steps of radiating into a gas electromagnetic energy of a wave length of increase the attraction of like materials in the magnetic field, inducing a vortex motion of the ionized particles to recycle the like materials, passing the radiated gas continuously through a substantially cylindrical magnetic field having a high magnetic field strength therethrough whereby like charged particles converge at a focal point within the magnetic field, and removing gas at the focal point of the charged



particles whereby gas of higher like material concentration is separated from gas of lower like material concentration.

3,929,434

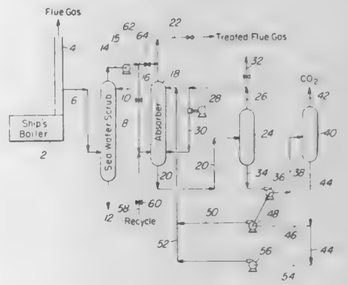
CORROSION REDUCTION OF TANKER VESSEL CARGO COMPARTMENTS

Earnest E. Nelson, Woodbury Heights, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 21, 1971, Ser. No. 191,274

Int. Cl.² B01D *53/14*

U.S. Cl. 55—68 **4 Claims**



1. In a cargo vessel relying upon gaseous products of combustion to effect inerting of vessel compartments against explosion hazards, the improvement for reducing the corrosion of metal exposed to said inerting gas which comprises, reducing the carbon dioxide level of the inerting gas to less than 2 vol. percent.

3,929,435

METHOD OF MULTI STAGE INJECTOR COOLING

John Engalitcheff, Jr., Gibson Island, Md., assignor to Baltimore Aircoil Company, Inc., Jessup, Md.

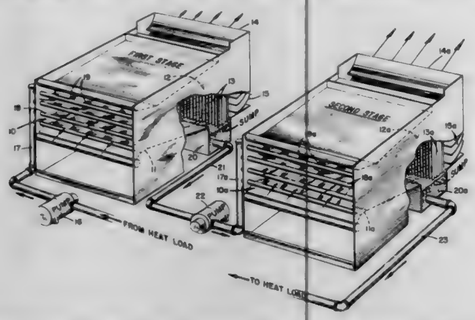
Continuation of Ser. No. 183,015, Sept. 23, 1971, abandoned. This application Mar. 11, 1974, Ser. No. 449,781

Int. Cl.² B01D *47/06*

U.S. Cl. 55—94 **6 Claims**

1. The method of extracting heat from a liquid that comprises spraying said liquid into a confined region having an end open to a source of first gas at a wet bulb temperature lower than that of the spray liquid, causing said spray to induce flow of said first gas from said source into said confined region for mixing and partial evaporation of said liquid, separating the so mixed first gas from said liquid and collecting the latter at a first temperature above the wet bulb temperature of the separated first gas, spraying said liquid into another confined region having an end open to a source of second gas at a wet bulb temperature no higher than that of the first gas at said first mentioned source, causing said spray to induce flow of said second gas from said source into said other confined region for mixing and partial evaporation of said liquid, sepa-

rating the second gas and liquid and collecting the liquid at a second temperature above the wet bulb temperature of the separated gas but below the wet bulb temperature of the



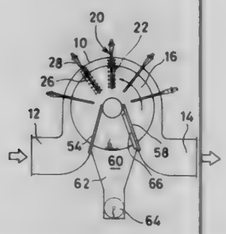
separated first gas, the combined total cross sectional area of both said confined regions being less than the cross sectional area of a single similar confined region capable of cooling said liquid to said second temperature.

3,929,436

ROTARY ELECTROSTATIC PRECIPITATOR

Kenneth Kim, Tokyo, and Shigemutsu Suzuki, Urawa, both of Japan, assignors to Lotte Co., Ltd., Tokyo, Japan

Filed Sept. 13, 1973, Ser. No. 396,821
Claims priority, application Japan, July 4, 1973, 48-75417
Int. Cl.² B03C *3/10*
U.S. Cl. 55—121 **10 Claims**



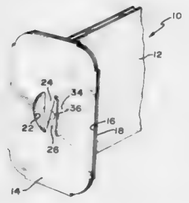
1. A rotary electrostatic precipitator comprising a housing provided with an inlet for receiving a dust laden gas stream under pressure and an outlet from which said gas stream issues substantially free of dust, an annular rotary dust collector means comprising a rotatable shaft having a plurality of disc electrodes mounted thereon within said housing and positioned in the path of the gas stream between said inlet and said outlet, said dust collector means rotating about a predetermined axis, a plurality of radially extending discharge means supported within said housing in spaced relation to said collector means and being adapted for connection together with the dust collector means to a source of electircal current for ionizing dust particles passing therebetween for collection by said dust collector means, first and second axially extending means at said inlet and said outlet ends of the precipitator, respectively, said first and second means being positioned with respect to said inlet and outlet ends and the discs of said annular dust collector means to direct said gaseous stream from said inlet through a first zone, through which said dust collector means rotates in proximate spaced relation to said discharge means, to said outlet, said first and second means also defining a dust removal zone which is liquid-free and isolated from said first dust collecting zone, said dust collecting means during rotation thereof rotating through said first dusting collecting zone and simultaneously through said dust removal zone, means on said second means in engagement with said dust collector means for removing dust from that part only of the dust collector means which passes through the dust removal zone, and conveyor means below the dust removal zone and in communication therewith for the conveying to waste dust from the dust removal zone, said dust from the dust removal zone freely falling onto the conveyor means.

3,929,437

SEAL FOR DISPOSABLE DUST BAGS FOR VACUUM CLEANERS

Paul Emile Gaudry, Laval des Rapides, Canada, assignor to Consolidated Foods Corporation, Old Greenwich, Conn.

Continuation-in-part of Ser. No. 434,057, Jan. 17, 1974, abandoned. This application Apr. 1, 1974, Ser. No. 457,084
Int. Cl.² B01D *46/02*
U.S. Cl. 55—367 **8 Claims**



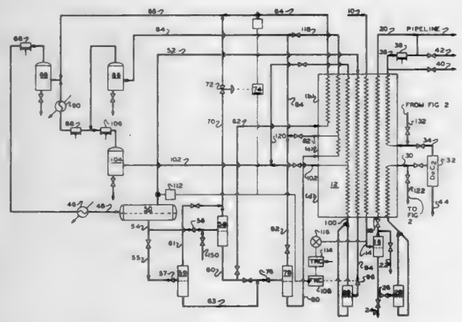
1. In a vacuum cleaner dust bag, a bag portion of air permeable and dust retaining material, a relatively stiff disc member secured to said bag portion and formed with an inlet opening into the bag portion, and a thin sheet of elastomeric material extending across said opening and formed with a normally small aperture located centrally of said opening, said disc including a pair of tongues extending side by side across said opening and covering said aperture, one end of the respective tongues being permanently integral with the remainder of the disc at opposite sides of said opening and being secured thereto at their other ends by frangible sections.

3,929,438

REFRIGERATION PROCESS

Ernest A. Harper, and Dunn M. Bailey, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 75,992, Sept. 28, 1970, Pat. No. 3,808,826. This application Mar. 4, 1974, Ser. No. 447,583
Int. Cl.² F25J *1/00*
U.S. Cl. 62—9 **1 Claim**



1. A process for recovering a mixture comprising ethane and propane from natural gas, which process comprises, in combination, the steps of:

a. cooling said natural gas partially to liquefy said natural gas;

b. distilling said partially liquefied natural gas from step (a) in a first distillation zone to recover an overhead stream comprising methane, ethane, and propane, and to recover from a first reboiler zone of said first distillation zone a bottoms stream comprising some propane and higher boiling hydrocarbons;

c. partially condensing said overhead stream from step (b);

d. in a second distillation zone, distilling a feed, as obtained below, to recover from said second distillation zone an overhead steam comprising methane which overhead stream is then combined with said overhead stream from step (b) and passed to a common accumulator to form a mixture;

e. removing a steam comprising methane from said common accumulator zone;

f. returning a first portion of said accumulator mixture to said first distillation zone as reflux to the first distillation zone;

g. passing a second portion of said accumulator mixture controlled in accordance with the liquid level in said reboiler region of the second distillation zone to the second distillation zone as feed to said second distillation zone;

h. recovering a bottoms steam comprising ethane and propane, as a product of the process, from a second reboiler zone in said second distillation zone, said second reboiler zone heated by indirect heat exchange with liquid from said first reboiler zone said liquid flow controlled in accordance with the temperature in said second reboiler zone; and

i. controlling the amount of heat supplied to said first reboiler zone in accordance with the level in the common accumulator zone so as to maintain a desired level in said common accumulator zone.

3,929,440

MANUFACTURE OF LASER GLASS

Lucy Florence Oldfield, Harrow Weald, England, assignor to The General Electric Company Limited, London, England

Filed Nov. 13, 1974, Ser. No. 523,513
Claims priority, application United Kingdom, Nov. 30, 1973, 55627/73
Int. Cl.² C03B *5/06*
U.S. Cl. 65—32 **8 Claims**

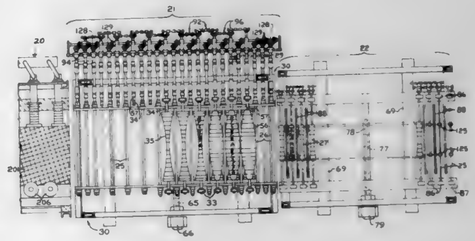
1. A method of manufacturing a laser glass, which includes the steps of melting a batch of glass-forming materials in a vessel at least the interior surface of which is formed of noble metal consisting at least mainly of platinum, bubbling helium gas through the melt for a sufficient length of time to remove any bubbles of gas formed during reaction of the batch, refining the melt by heating for at least 18 hours in the presence of a dry, oxygen-free gas stream consisting of at least one of the gases of the group consisting of neon, argon, krypton and xenon, said gas stream being caused to flow over the surface of the melt at sufficient velocity to effect flushing of the said surface, casting the refined melt in a mould preheated at least to the lower annealing temperature of the glass, and annealing the cast body of glass by cooling the said body from the upper annealing temperature of the glass to room temperature over a period of not less than 24 hours.

3,929,441

ROLL FORMING HEAT-SOFTENED GLASS SHEETS

Robert G. Frank, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 10, 1974, Ser. No. 487,332
Int. Cl.² C03B *23/02*
U.S. Cl. 65—106 **10 Claims**



1. An apparatus for forming shaped sheets of heat deformable materials comprising a conveyor means for conveying sheets along a normal path of movement defined by a longitudinally extending center line sequentially through a furnace for heating the sheets to a deformable state, a sheet forming station and a sheet cooling station, said furnace and said stations being in end to end relationship, said sheet forming station comprising opposed sets of forming rolls of complementary curvature for imparting a curvature to said deformable sheets aligned along a longitudinally extending common center line, said conveyor having shaped conveyor rolls in at least the initial portion of said sheet cooling station aligned along a longitudinally extending common center line, means for adjusting the transverse position of the center line common to said forming rolls relative to the center line of the normal path of movement of the conveyor, and means for adjusting the transverse position of the center line common to the shaped conveyor rolls in said initial portion of said cooling station where the sheet is at an elevated temperature such that it is subject to distortion upon contact with a solid surface whereby the rolls in the sheet forming and cooling stations may be offset laterally with respect to the normal path of movement of the sheets in an amount sufficient to modify the curvature of portions of the sheets disposed outwardly of the center line of the longitudinally extending path of movement of the sheets.

3,929,439

METHOD FOR PREPARING A HIGHLY SILICEOUS ALKALI METAL SILICATE GLASS AND HYDRATED POWDER

Richard H. Pierce, Broomall, Pa., assignor to Philadelphia Quartz Company, Valley Forge, Pa.

Filed July 8, 1974, Ser. No. 486,558
Int. Cl.² C03B *19/08, 5/16, 31/00*
U.S. Cl. 65—22 **12 Claims**

1. A method of preparing hydrated alkali metal silicate powders having a SiO_2/M_2O mol ratio between 4.5/1.0 and 20/1.0, wherein M stands for an alkali metal, comprising:

a. preparing a mixture consisting essentially of:

1. 10 to 90% by weight alkali metal silicate solution having a mol ratio of SiO_2/M_2O between 1.6/1.0 and 4.0/1.0,

2. 15 to 85% by weight colloidal silica sol having a mol ratio of SiO_2/M_2O between 70/1.0 and 400/1.0 and a concentration of 15 to 50% SiO_2, and

3. 0 to 305 by weight water;

b. heating said mixture for a sufficient period of time to form a uniform colloidal solution; and

c. drying said uniform colloidal solution to form the powder.

6. A method of preparing uniform alkali metal silicate glass having a SiO_2/M_2O mol ratio between 4.5/1.0 and 20/1.0, wherein M stands for an alkali metal, comprising:

a. preparing a mixture consisting essentially of:

1. 10 to 90% by weight alkali metal silicate solution having a mol ratio of SiO_2/M_2O between 1.6/1.0 and 4.0/1.0,

2. 15 to 85% by weight colloidal silica sol having a mol ratio of SiO_2/M_2O between 70/1.0 and 400/1.0 and a concentration of 15 to 50% SiO_2, and

3. 0 to 30% by weight water;

b. heating said mixture for a sufficient period of time to form a uniform colloidal solution;

c. drying said uniform colloidal solution to a powder; and

d. fusing said powder at 1100° to 1400°C to form a uniform molten glass.

2. In the method of shaping sheets of heat-softenable material by roll forming wherein a series of heat softened sheets is conveyed along a predetermined path in a forming station having a longitudinally extending center line and each sheet of said series in turn is moved continuously between a pair of sets of forming rolls rotating about axes transverse to said path, each set comprising a series of rotating forming rolls spaced longitudinally along said path and being aligned along a longitudinally extending center line common to said sets of forming rolls, and adapted to engage one or the other major surfaces of said sheet and each roll in one of said sets corresponding to a roll of complementary curvature in the other of said sets, and providing said sets with relative motion toward one another while said sheet is moving therebetween to engage said moving sheet in sandwiching position between said sets of rotating forming rolls for sufficient time to impart the shape of said rolls onto said sheets, and cooling each roll formed sheet until it is cooled to below a temperature at which it is subject to deformation on contact with a solid object while conveyed on rolls in a cooling station, said rolls having shapes similar to the shape of said forming rolls and positioned with their common center line normally in alighment with the common center line of said forming rolls,

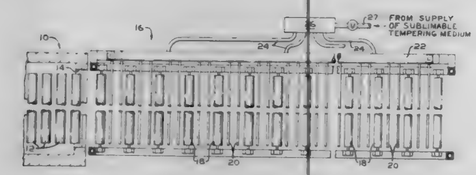
the improvement comprising offsetting the rolls in the forming station or the shaped conveyor rolls in the cooling station laterally with respect to the center line of the predetermined path of movement of the sheets in an amount sufficient to modify the curvature of portions of the sheets disposed outwardly of the center line of the longitudinally extending path of movement of the sheets.

3,929,442

TEMPERING GLASS SHEETS BY HEAT OF SUBLIMATION

James E. Neely, Jr., Butler, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 7, 1974, Ser. No. 467,766
Int. Cl.² C03B *27/00*
U.S. Cl. 65—114 **6 Claims**



1. In a method of tempering a glass sheet comprising:

heating said glass sheet to an elevated temperature range sufficiently high to impart a temper thereto on sudden chilling;

applying toward opposite surfaces of said glass sheet, throughout the areal extent of said surfaces, a cooling medium containing as a primary source of cooling soft particles of a solid sublimable material having a sublimation temperature below the strain point of the glass; and cooling said glass sheet with said cooling medium from said elevated temperature to a temperature below the strain point of the glass; the improvement comprising

applying said soft particles toward the opposite glass sheet surfaces from a system of apertures having a total aperture area facing each surface of said glass sheet less than 5% of the area of each said surface, said apertures being positioned sufficiently close to the adjacent surface of the glass sheet that solid particles of a sublimable material come into close proximity to said adjacent surface and being distributed through the areal extent of each said surface and spaced sufficiently close to one another that a spray of said sublimable material covers the entire area of each said surface of said glass sheet, and removing said cooling medium from the vicinity of said glass sheet along exhaust paths facing the glass sheet surfaces that occupy at least 50% of the areal extent of each said glass sheet surface.

3,929,443

METHOD FOR CURING FISSURES AND THE LIKE OF WORKPIECES FORMED OF METAL OXIDE MATERIALS AND PROCESSED UNDER HIGH MATERIAL STRESS

Hans-Ulrich Leuenberger, and Reiner Stemme, both of Thun, Switzerland, assignors to Lasag S.A., Thun, Switzerland

Continuation-in-part of Ser. No. 429,520, Jan. 2, 1974, abandoned. This application June 17, 1974, Ser. No. 479,884
Claims priority, application Switzerland, Jan. 11, 1973, 382/73
Int. Cl.² C03B *29/00*
U.S. Cl. 65—117 **6 Claims**

1. In a method of treating machined workpieces of rubies, sapphires and sintered metal oxides wherein fissures are present in the workpieces as a result of the machining operation, the improvement comprising the steps of:

providing a workpiece having fissures present therein as a result of the machining operation; and

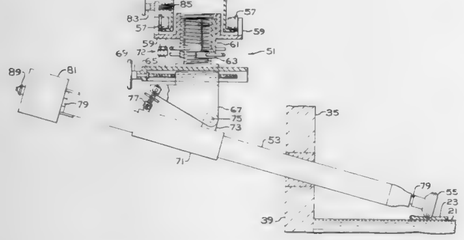
curing the fissures by heating the workpiece in a furnace to a temperature ranging from about 1200° to 1600°C for a time which is effective in reducing the magnitude of the fissures whereby the danger of rupture of the workpiece by said fissures is lessened.

3,929,444

APPARATUS FOR MAKING FLAT GLASS INCLUDING AN EDGE STRETCHING APPARATUS

Earl L. May, and Joseph J. Fisher, Oakmont, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 6, 1974, Ser. No. 448,786
Int. Cl.² C03B *17/00, 19/00*
U.S. Cl. 65—182 R **6 Claims**



1. In an apparatus for making flat glass wherein the position of a marginal portion of a body of glass supported on a pool of molten metal in a chamber in controlled to establish and maintain a desired width and thickness of the glass, the combination comprising:

a. structural support means mounted outside the chamber at an elevation above the pool of molten metal;

b. a carriage including a carriage frame, adjustable mounting means, and a mounting platform mounted on and depending downwardly from the structural support means;

c. an elongated member mounted on the mounting platform of the carriage and being extendable beneath the support means, through a side wall of the chamber and over the pool of molten metal; and

d. means for engaging glass supported on the pool of molten metal mounted on the elongated member and providing means for applying a force to the glass, wherein

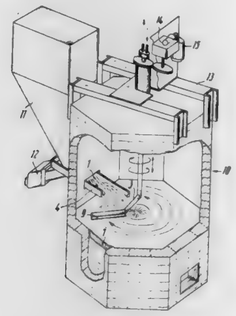
the adjustable mounting means of the carriage comprises means for elevating the mounting platform and the elongated member, means for rotating the mounting platform and the elongated member and means for locking the position of the mounting platform with respect to the carriage frame whereby the elevation and the plan orientation of the elongated member may be adjusted and maintained with respect to the structural support means.

3,929,445

MIXTURE FEEDER FOR CONTINUOUS ELECTRIC GLASS-MELTING FURNACE

Alfred Zippe, Am Freiergrahen 10, 698 Wertheim, Germany

Filed July 5, 1974, Ser. No. 486,272
Int. Cl.² C03B *3/00*
U.S. Cl. 65—335 **10 Claims**



1. Apparatus for delivering a fusible mixture to a blanket of said mixture floating on a molten glass mass in a vertical glass-melting furnace comprising:

i. delivery means extending through the furnace sidewall and into the furnace interior, said delivery means being positioned above said blanket;

ii. means for continuously feeding and fusible mixture to said delivery means; and

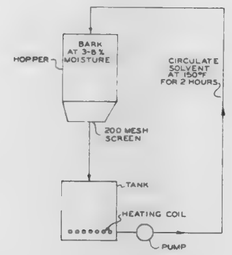
iii. horizontal arm means mounted in the furnace for spreading and leveling mixture delivered to said blanket, said arm means being vertically adjustable and adapted to rotate about a vertical axis in a circular path below the delivery means.

3,929,446

SLOW NITROGEN RELEASING FERTILIZERS AND METHODS OF MAKING THE SAME

Frank S. Trocino, Eugene, Oreg., assignor to Bohemia Inc., Eugene, Oreg.

Filed Apr. 19, 1974, Ser. No. 462,362
Int. Cl.² C05F *11/00;* **C05C** *9/00;* **C05B** *15/00;* **C05G** *1/02*
U.S. Cl. 71—23 **13 Claims**



1. A fertilizer product comprising a matrix material of Douglas fir bark having a substantial portion of its wax and cork removed, and a water-soluble nutrient fertilizer material blended into said matrix.

8. The method of making a fertilizer product comprising first extracting wax and then removing cork from Douglas fir bark to leave a matrix material, and then blending a water-soluble nutrient fertilizer material with said matrix material.

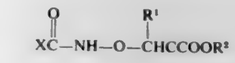
3,929,447

SELECTED AMIDOXY COMPOUNDS AS FLOWER PRESERVATIVES

Elmo M. Beyer, Jr., and Bruno Quebedeaux, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Jan. 19, 1973, Ser. No. 325,091
Int. Cl.² A01N *3/02*
U.S. Cl. 71—68 **4 Claims**

1. A method of extending the life of a cut flower which comprises putting the cut stem end of a flower in an aqueous solution containing a compound of the formula



wherein

X = NHR in which R is H, alkyl or chloroalkyl of up to 3 carbons;

R^1 = H or alkyl of up to 3 carbons;

R^2 = H, alkyl of up to 3 carbons, ammonium, alkali metal or alkaline earth metal ion;

the said compound being present to the extent of 100–1000 ppm.

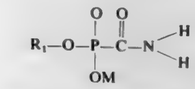
3,929,448

METHOD FOR ENHANCING THE LIFE OF CUT FLOWERS

Richard K. Brantley, 706 Cheltenham Road, Wilmington, Del. 19808

Filed July 5, 1974, Ser. No. 486,018
Int. Cl.² A01N *3/02*
U.S. Cl. 71—68 **21 Claims**

1. A method for preserving and enhancing the beauty of a cut flower comprising contacting the cut flower with an aqueous solution containing an effective amount of a compound of the formula:



wherein R_1 represents an alkyl group of 1 to 4 carbon atoms or an alkenyl group of 3 to 4 carbon atoms, and M represents an ammonium or alkali metal ion;

for a sufficent time to substantially preserve and prolong retention of the natural appearance and enhance the beauty of the flower.

3,929,449

METHOD OF ALLEVIATING DERMAL TOXICITY OF PESTICIDE COMPOSITIONS

Loren W. Hedrich, Overland Park, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Dec. 10, 1973, Ser. No. 423,383
Int. Cl.² A01N *13/00*
U.S. Cl. 71—82 **2 Claims**

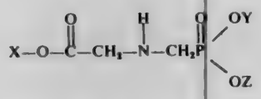
1. The method of alleviating the dermal toxicity of a composition containing 1-methyl-4-phenylpyridinium chloride which comprises incorporating into said composition an effective amount of an astringent substance selected from the group consisting of aluminum sulfate, aluminum potassium sulfate and tannic acid.

3,929,450
HERBICIDAL COMPOSITIONS AND METHODS

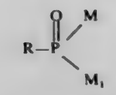
Philip C. Hamm, Glendale, and David E. Schafer, St. Louis County, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed June 28, 1974, Ser. No. 484,053
Int. Cl.² A01N 9/36
U.S. Cl. 71—86 **15 Claims**

1. A herbicidal composition consisting essentially of an inert diluent and an effective amount of: a glycine compound of the formula



wherein X is lower alkyl, H, lower alkoxyalkyl, lower alkoxyalkoxyalkyl or a salt-forming cation selected from the group consisting of alkali metals, alkaline earth metals, ammonia and amines having a molecular weight below about 300, Y and Z are H or a salt-forming cation as described for X; and a phosphonate compound of the formula



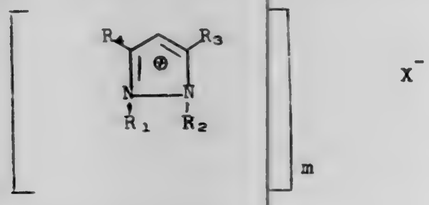
wherein R is an aliphatic hydrocarbon radical of from 1 to 20 carbon atoms or such a radical substituted with halogen, hydroxy or an alkylphenyl group and M and M_1 are each hydroxy, chlorine, the same or different lower alkoxy or an alkali metal oxy group.

3,929,451
PRE-EMERGENCE 1,2-DIALKYL-3,5-DISUBSTITUTED HERBICIDAL COMPOUNDS AND METHOD FOR USING SAME

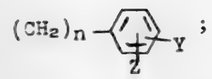
Barrington Cross, Rocky Hill, and Bryant Leonidas Walworth, Pennington, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sept. 21, 1973, Ser. No. 399,655
Int. Cl.² A01N 9/22
U.S. Cl. 71—92 **4 Claims**

1. A method for the pre-emergence control of undesirable broadleaf weeds and grasses comprising applying to soil containing seeds of said undesirable broadleaf weeds and grasses, a herbicidally effective amount of a compound having the structure:



where R_1 and R_2 are each alkyl, (C_1 – C_4), R_3 is cycloalkyl (C_3 – C_7), methyl-substituted cycloalkyl (C_3 – C_7), alkyl (C_5 – C_{11}), or



R_4 is cycloalkyl (C_3 – C_7), methyl substituted cycloalkyl (C_3 – C_7), or peutyl; *n* is 0 or 1; Y and Z each represents hydrogen, halogen, nitro, methylthio, methylsulfonyl, cyano, carboxyl, carboalkoxy (C_1 – C_4), alkyl C_1 – C_4, haloalkyl C_1 – C_4 containing 1 to 4 halogen groups, or alkoxy (C_1 – C_4); X is an anion having a charge of from 1 to 3; and *m* is 1, 2 or 3.

3,929,452
HERBICIDAL COMPOSITION

Ichiro Kimura, Shuzuoka; Hironari Sugiyama; Kiyoshi Takita, both of Shimizu, and Makoto Mizutani, Oyama, all of Japan, assignors to Kumiai Chemical Industry, Japan

Continuation-in-part of Ser. No. 128,134, March 25, 1971, abandoned, and a continuation-in-part of Ser. No. 117,711, Feb. 22, 1971, abandoned. This application July 26, 1974, Ser. No. 492,273
Int. Cl.² A01N 9/12
U.S. Cl. 71—100 **10 Claims**

1. A herbicidal composition consisting essentially of an effective amount of the mixture of 1 part by weight S-(monochloro, dichloro or methylbenzyl) N,N-diloweralkyl-thiocarbamate and 0.1 – 1.0 parts by weight of 2,4-dichlorophenoxy acetic acid or 2-methyl-4-chlorophenoxyacetic acid or the lower aliphatic hydrocarbyl esters or alkali metal salts thereof as active ingredients.

3,929,453
COMPOSITES OF LIGNIN AND BIOLOGICALLY ACTIVE MATERIALS

Mitchell S. Dimitri, Charleston, and Sten I. Falkehag, Mount Pleasant, both of S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,375
Int. Cl.² A01N 9/12
U.S. Cl. 71—101 **2 Claims**

1. A process for making a controlled release herbicide containing composite which consists essentially of;

a. emulsifying an aqueous slurry containing at least an effective amount of 2-chloroallyl diethyldithiocarbamate and an alkali lignin at a weight ratio of greater than 1:1 to 1:4 2-chloroallyl diethyldithiocarbamate to alkali lignin,

b. acidifying said emulsion with a mineral acid to a pH between about 2 and 6, to thereby precipitate said 2-chloroallyl diethyldithiocarbamate/alkali lignin, physically absorbing the 2-chloroallyl diethyldithiocarbamate throughout the alkali lignin matrix to form a micro dispersion, and

c. drying said precipitated materials.

3,929,454
SUBSTITUTED O-[AMINOSULFONYL]-GLYCOLIC ANILIDES HERBICIDES

Adolf Fischer, Mutterstadt; Gerhard Hamprecht, Mannheim; Dietrich Mangold, Neckargemuena, and Wolfgang Rohr, Mannheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Division of Ser. No. 321,548, Jan. 5, 1973, Pat. No. 3,870,740. This application Sept. 3, 1974, Ser. No. 502,740
Claims priority, application Germany, Jan. 13, 1972, 2201432
Int. Cl.² A01N 9/14
U.S. Cl. 71—103 **2 Claims**

1. A process for controlling the growth of unwanted plants wherein the soil in which unwanted growth is to be prevented is treated with a herbicidally effective amount of a substituted O-(aminosulfonyl)-glycolic anilide of the formula



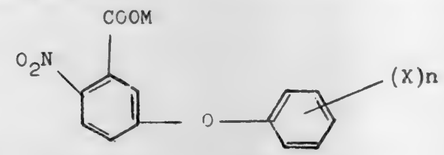
where R^1 denotes hydrogen, alkyl of 1 to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms, cyclopentyl, or cyclohexyl, R^2 denotes phenyl, and R^3 denotes a member selected from the group consisting of methyl, ethyl, propyl, isopropyl, n-butyl, isobutyl, sec-butyl, tertbutyl, pentyl, cyclopentyl, hexyl, cyclohexyl, allyl, butenyl, pentenyl, hexenyl, propargyl, butynyl, pentynyl, or benzyl.

3,929,455
HERBICIDAL HALOPHENOXY BENZOIC ACID SALTS

Robert J. Theissen, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 194,479, Nov. 1, 1971, Pat. No. 3,776,715, which is a division of Ser. No. 819,412, April 25, 1969, Pat. No. 3,652,645. This application Sept. 12, 1973, Ser. No. 396,630
Int. Cl.² A01N 9/24
U.S. Cl. 71—115 **20 Claims**

1. The method for controlling plant growth that comprises applying an herbicidal amount of an herbicidal compound having the formula:



wherein *X* is halogen, *n* is 1 to 5, and *M* is alkali metal (Li, Na, K), alkaline earth metal, a transition metal, ammonium, alkylammonium (C_1–C_{30}), alkanolammonium (C_1–C_3), alkyl (C_1–C_{30}) dialkanol (C_2–C_3) ammonium, dioxyalkylene (C_2–C_3) alkyl (C_1–C_{30}) ammonium, dialkylammonium (C_1–C_{30}), trialkylammonium (C_1–C_{30}), alkoxyalkylammonium (C_2–C_6) dialkoxyalkylammonium (C_3–C_6), aminoalkylammonium (C_1–C_{30}), dialkylaminoalkylammonium (C_3–C_8), alkenylammonium (C_2–C_{22}), alkyl (C_1–C_{30}aminoalkyl (C_2–C_6) ammonium, alkenyl (C_2–C_{30}) aminoalkyl (C_2–C_6) ammonium, alkynyl (C_3–C_{12}) ammonium dialkenylammonium (C_4–C_{12}), cycloalkylammonium (C_3–C_6), alkyl (C_1–C_{30}) ammonium alkyl (C_2–C_6) ammonium, benzylammonium, anilinium, substituted anilinium, guanidinium or heterocyclicammonium (C_4–C_6).

3,929,456
CARBOTHERMIC PRODUCTION OF ALUMINUM

Robert M. Kibby, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.

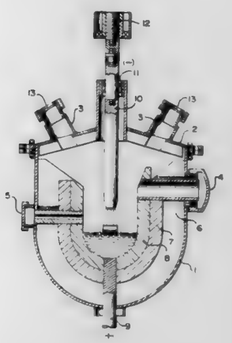
Continuation-in-part of Ser. No. 250,748, May 5, 1972, abandoned. This application Oct. 17, 1973, Ser. No. 407,271
Int. Cl.² C22B 21/02
U.S. Cl. 75—10 R **12 Claims**

1. A carbothermic process for the production of aluminum from an aluminum oxide which comprises:

a. striking an open electrical arc to a portion of the surface of a charge comprising an aluminum oxide and at least one material selected from the group consisting of carbon, aluminum compounds containing carbon, and mixtures thereof;

b. limiting the heating effect of the arc by controlling the time the arc is struck to any given portion of the surface of said charge so that the aluminum formed by the reaction of the charge is maintained substantially in the liquid state with the proviso that only a small portion of the charge in the reaction zone is heated to reaction temperature while the majority of the charge in the reaction zone is not at reaction temperature at any given time; and

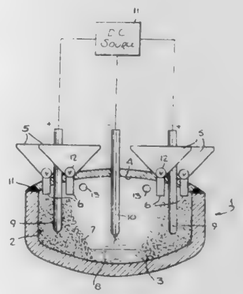
c. causing the liquid aluminum formed under the arc to flow away from the arc and over the non-reacted portion of the charge and be collected, said liquid aluminum containing no more than about five weight percent of aluminum carbide.



3,929,457
DIRECT CURRENT ELECTRIC ARC FURNACE AND METHOD FOR MELTING METAL SCRAP

Sven Einar Stenkvist, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 16, 1973, Ser. No. 416,400
Claims priority, application Sweden, Nov. 17, 1972, 14953/72
Int. Cl.² C22B 4/00; H05B 7/18
U.S. Cl. 75—10 R **6 Claims**



1. A direct current electric arc furnace for melting metal scrap, comprising means for containing a molten scrap melt and a charge of unmelted scrap in electrical contact with this melt, said scrap extending from this melt to a location free from said melt, at least one carbon electrode positioned to form an open arc between this electrode and said melt, a direct current power source and means for electrically conducting direct current from said source to said unmelted scrap at said location and through said unmelted scrap and melt and an arc, to said electrode so that the said electrode operates as a cathode.

3,929,458
PROCESS FOR THE ELABORATION OF CHROME STEELS

Pierre Leroy, Saint-Germain-en-Laye; Maurice Debras, Saint-Etienne; Michel Cadart, and Jean Saleil, both of Saint-Etienne, all of France, assignors to Creusot-Loire, Paris, France

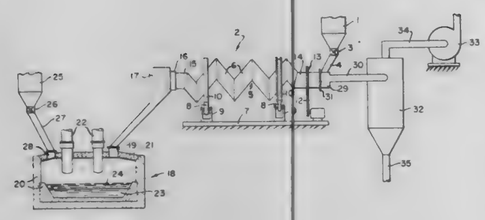
Filed Jan. 10, 1974, Ser. No. 432,309
Claims priority, application France, Feb. 7, 1973, 73.04266
Int. Cl.² C21C *5/52*; **H05B** *7/18*
U.S. Cl. 75—12 **12 Claims**

1. In a method of making a chrome steel which includes the step of blowing oxidizing gas into a molten steel-making charge containing chromium, the steps of introducing the charge in an electric arc furnace, to decarburise the charge, the charge initially having a carbon content of above 0.7 percent, blowing at least one submerged jet of oxidizing gas into the charge below the surface thereof and passing through the bath from the bottom of said furnace upwards, each said jet being surrounded at its periphery, at its point of entry into the charge, by a fluid protectant for the refractory lining of said furnace.

3,929,459
CHARGING AN ELECTRIC FURNACE

Jack E. Tress, and Willard L. Hunter, both of Albany, Oreg., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 13, 1974, Ser. No. 450,636
Int. Cl.² C21C *5/52*
U.S. Cl. 75—12 **8 Claims**



1. A process for charging solid objects comprising metals of varying size and shape into an electric furnace which comprises:

introducing said metallic objects into one end of an unobstructed tubular container of undulant shape, said container being disposed with its longitudinal axis in a substantially horizontal attitude and being adapted to rotate about its longitudinal axis;

rotating said container to cause said objects to be advanced through the container to the opposite end thereof and to cause a tumbling and mixing action in which said objects are repeatedly passed through a hot counter-flowing gas stream while advancing through said container to rapidly transfer the heat content of said gas stream to said objects, and

discharging said objects from the container into conduit means communicating with the interior of an electric furnace in counterflow relationship to hot gases emanating from said furnace and passing through said conduit means and through said container thereby cooling said hot furnace gases and heating said objects.

3,929,460
PROCESS FOR THE PREPARATION OF VANADIUM, VANADIUM ALLOYS OR VANADIUM COMPOUNDS

Franciscus J. W. M. Peters; Servaas Middelhoek, and Albert Rijkeboer, all of Arnhem, Netherlands, assignors to Billiton Research B. V., Netherlands

Filed June 11, 1974, Ser. No. 478,415
Claims priority, application Netherlands, June 25, 1973, 7308789
Int. Cl.² C22B *7/04*, *34/22*
U.S. Cl. 75—24 **5 Claims**

1. A process for the extraction of vanadium containing slags which comprises heating vanadium containing slags in a reaction furnace with sodium carbonate and oxygen at a temperature between 600°C and 800°C to provide a reaction product containing soluble vanadate and subsequently leaching the reaction product with water to provide a vanadate solution the amount of sodium carbonate utilized being such that the ratio

$$\frac{\text{quantity by weight of sodium carbonate}}{\text{quantity by weight vanadium calculated as vanadium pentoxide}}$$

is at least 1.1 and does not exceed 4.

3,929,461
FUSION-OXIDATION PROCESS FOR RECOVERING VANADIUM AND TITANIUM FROM IRON ORES

T. Kenneth Miyoshi, Lakewood; Cornelius E. Berthold, Littleton; Frank M. Stephens, Jr., Lakewood, all of Colo., and Alfred K. Schellinger, South Perth W.A., Australia, assignors to Ferrovanadium Corporation N.I., Perth, W.A., Australia

Filed Feb. 27, 1974, Ser. No. 446,156
Int. Cl.² C21B *3/04*
U.S. Cl. 75—30 **8 Claims**

1. A process for the recovery of vanadium from vanadium-bearing ores comprising:

reducing the ore to recover substantially all of the iron and to produce a slag containing the vanadium,

treating the slag with an alkali metal salt in sufficient quantity to produce a completely fused product upon sufficient heating of the slag and so heating the slag and alkali metal salt thereby forming an altered slag,

oxidizing the molten altered slag in order to oxidize the vanadium to its plus five valance state,

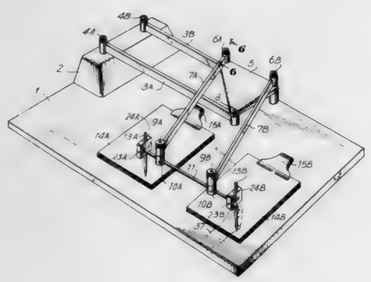
leaching the slag to extract the oxidized vanadium, and

recovering the vanadium from the leach solution.

3,929,462
PATTERN TRAINING APPARATUS

Irving Karmin, 3915 Orloff Ave., Bronx, N.Y. 10463

Filed Oct. 21, 1974, Ser. No. 516,786
Int. Cl.² G09B *11/00*; **B43L** *13/10*
U.S. Cl. 35—37 **4 Claims**



1. An educational apparatus for patterning manual movements, comprising:

a pair of styli adjustably fixed to a transverse support rod which has fixed to itself a set of dowel pins pivotally connected to the first end of;

a pair of secondary arms, the second end of each arm is pivotally connected to the first pair of dowel pins on;

a coupling plate and a second pair of dowel pins on the coupling plate is pivotally attached to;

a pair of primary arms having holes at each end of each arm, the holes furthest from the coupling plate being pivotally attached to a support having a pair of dowel pins and attached to;

a base having a plane surface, to which is attached;

a recording material for making the pattern formed visible.

3,929,463
METHOD OF CARRYING OUT ENDOTHERMIC METALLURGICAL REDUCTION PROCESSES WITH THE AID OF A CONTINUOUSLY OPERATING MECHANICAL KILN

Karl Jonas Valter Svensson, Strossa, Sweden, assignor to Granges Aktiebolag, Stockholm, Sweden

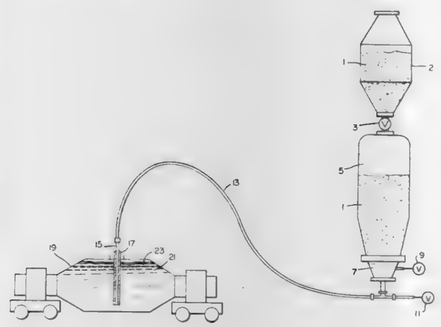
Filed Jan. 4, 1974, Ser. No. 430,620
Claims priority, application Sweden, Jan. 9, 1973, 73002404; Jan. 9, 1973, 73002412
Int. Cl.² C21B *13/00*; **C22B** *15/00*, *23/00*
U.S. Cl. 75—37 **6 Claims**

1. In a continuous method of effecting an endothermic metallurgical reduction reaction in the reactor space of a rotatable mechanical kiln as reaction vessel, in which the reaction materials at ambient temperature or in a preheated state are continuously charged into the reaction space and the resulting reaction mixture continuously discharged from the kiln, the improvement which comprises causing the charged kiln to rotate at lower than the speed at which the charge closest to the kiln wall ceases to move relative to the wall, whereby the charge is continuously isolated from air whilst being cascaded on itself and thereby autogeneously disintegrated and heated without any other heating to a temperature at which reaction is effected.

3,929,464
DESULFURIZATION OF MOLTEN FERROUS METALS

Lamar S. Todd, Tonawanda; Alan Fitzgibbon, Lewiston; Michael C. Carosella, Niagara Falls, and Donald C. Hilty, Sanborn, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 31, 1973, Ser. No. 393,505
Int. Cl.² C21C *7/00*, *7/02*
U.S. Cl. 75—58 **5 Claims**



1. A method for lowering the sulfur content of molten iron from the range of about 0.025% to 0.075% to not more than 0.015% by the injection of calcium carbide into said molten iron said method not requiring agitation by gas injection subsequent to the injection of calcium carbide and requiring not more than about 4 pounds of calcium carbide per ton of iron per 0.01% of sulfur removed in said range, said method comprising the steps of:

i. providing in a vessel molten iron containing sulfur impurity in an amount of at least 0.025%.

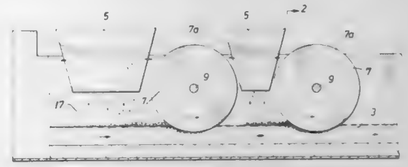
ii. providing finely divided particles of calcium carbide in a gas stream substantially all of said finely divided particles of calcium carbide being not larger than 200 microns, at least about 50 percent of said particles being not larger than 50 microns and at least 20 percent being not larger than 10 microns and the aggregate of said particles of calcium carbide having a Fischer sub-sieve number of less than about 12.

iii. injecting said calcium carbide containing gas stream at a velocity of not more than about 15 feet per second into the lower 75% of the total depth of molten iron to thereby reduce the sulfur content of said molten iron and provide in said molten iron a sulfur content of not more than 0.015% upon termination of calcium carbide injection.

3,929,465
METHOD EMPLOYING BARRIER MEANS TO SUBMERGE PARTICLES IN A MOLTEN METAL STREAM

Sam Proler, 5106 Contour Place, Houston, Tex. 77035

Continuation-in-part of Ser. Nos. 306,429, Nov. 4, 1972, Pat. No. 3,881,915, and Ser. No. 161,905, July 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 29,325, March 30, 1970, abandoned. This application Aug. 27, 1973, Ser. No. 391,878
Int. Cl.² C22B *1/00*
U.S. Cl. 75—65 R **19 Claims**



1. In a method for enhancing the processing of metal, including ores, compounds and concentrates thereof, on a substantially continuous basis in a molten metal stream by optimising heat transfer of the stream to the metal to be charged thereto comprising the steps of:

providing a coherent stream of molten metal that constitutes the medium in which processing takes place, said stream being characterized by a discreet width and length, the length including a longitudinal axis in the direction of stream flow,

introducing to the stream on a substantially continuous basis a material charge, said material charge occuring at an area of introduction above the linearly moving stream, constantly moving said stream past the area of introduction there beneath and thus moving the charged material also away from the area of introduction and thus presenting an entirely new mass of stream beneath the area of introduction so as to thus maintain a constant temperature of molten metal in the stream at the area of introduction, thereby maximizing the rate of heat transferred to the charged material,

disposing a physical barrier means downstream of the point of introduction to the stream of the material charge and such that said barrier means is in contacting relation to the charged material floating in the stream and which is exposed above the surface thereof, said physical barrier means applying physical force to the charged material on the stream surface so as to physically submerge the charged material below the streams surface, said physical barrier means being substantially coterminous with the stream width to thereby insure complete physical submersion of all of the material charge.

3,929,466

RECOVERY OF SILVER FROM SILVER SALTS

Edward B. Moynahan; August H. Brunner, Jr., both of Binghamton, and Gerald R. Skreckoski, Apalachin, all of N.Y., assignors to GAF Corporation, New York, N.Y.

Filed June 28, 1974, Ser. No. 484,349
Int. Cl.² C22B *11/00*
U.S. Cl. 75—83 30 Claims

1. A method of converting a silver salt to metallic silver, which comprises heating, to a temperature of at least about 300°C but below the melting point of silver, an admixture comprising a silver salt and an oxygen-containing alkali metal compound that will react with said silver salt at said temperature to form silver metal, for a period of time at least sufficient to convert said silver salt to metallic silver, said temperature being sufficient to initiate said conversion.

3,929,467

GRAIN REFINING OF METALS AND ALLOYS

Peter Wesley Davies, and John Philip Dennison, both of Swansea, England, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed May 21, 1973, Ser. No. 362,521
Int. Cl.² C22B *9/12*; C22C *1/06*, *19/05*
U.S. Cl. 75—93 G 11 Claims

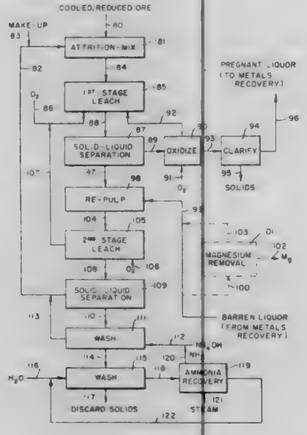
1. A process for grain refining a metal or alloy during solidification from the molten state which comprises introducing into a melt of the metal or alloy an innoculating additive comprised of a nickel carrier and tungsten oxide particles in at least a small but effective amount sufficient to induce grain refinement upon solidification, nickel dissolving in the melt and solid tungsten oxide nuclei being dispersed therein.

3,929,468

PROCESS FOR RECOVERY OF NON-FERROUS METALS FROM OXIDE ORES AND CONCENTRATES

Richard E. Siemens, and Philip C. Good, both of Albany, Oreg., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 2, 1975, Ser. No. 538,227
Int. Cl.² C22B *23/04*, *15/10*
U.S. Cl. 75—103 39 Claims



1. A process for the recovery of nickel from laterite ores which comprises:

comminuting said laterite ore to a finely divided state;

pelletizing said comminuted ore;

drying the pelletized ore at a temperature sufficiently high to drive off all free moisture and limonitic water but at a temperature sufficiently low so as not to drive off chemically combined silicate water;

contacting the dried ore with a reductant gas consisting essentially of carbon monoxide at a temperature in the range of 350° to 600°C for a time sufficient to reduce substantially all nickel oxide contained in the ore to elemental metal;

cooling the reduced ore to a temperature below about 200°C in an oxygen and water-free environment;

mixing said cooled ore with a leach solution comprising an aqueous ammonia-ammonium sulfate solution, said mixing being coupled with attrition sufficiently intense to disintegrate the ore pellets and to form a suspension of reduced ore in the leach solution;

contacting said suspension with gaseous oxygen for a time sufficient to oxidize substantially all of the elemental nickel contained in the reduced ore and to stabilize the oxidized nickel in the leach solution as its divalent ammine complex;

separating the nickel containing leach solution from the ore residue; and

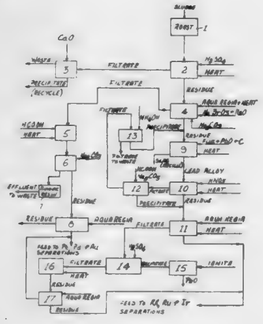
recovering nickel values from said leach solution.

3,929,469

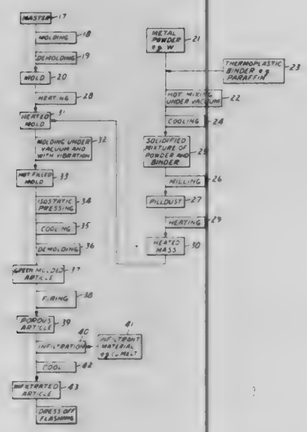
SEPARATION AND PURIFICATION OF GOLD

Willem Hubert Pittie, Roodepoort; Gerhardus Overbeek, Florida, and Kingsley Ferguson Doig, Johannesburg, all of South Africa, assignors to Swarsab Mining, Exploration & Development Company (Proprietary) Limited, Johannesburg, South Africa

Continuation-in-part of Ser. No. 384,825, Aug. 2, 1973, abandoned. This application July 23, 1974, Ser. No. 490,970
Claims priority, application South Africa, Aug. 10, 1972, 72/5488
Int. Cl.² C01G *7/00*
U.S. Cl. 75—108 6 Claims


CaO
FILTRATE
HEAT
RESIDUE
DOUBLE DECK
FILTRATE
RESIDUE
HEAT
FILTRATE
RESIDUE
HEAT
FILTRATE
RESIDUE
HEAT

warm mixing multi-modal refractory powder under reduced pressure with up to 45 volume percent of thermoplastic binder;
heating the powder-binder mixture above the softening temperature of said binder;
molding the resulting softened mixture in a heated flexible mold to form an essentially void-free green molded article having the shape and size of said mold;



packing the green molded article in a nonreactive refractory powder;
heating said green molded article in contact with an infiltrant to volatilize the thermoplastic binder, consolidate the refractory powder and infiltrate with a molten infiltrant metal, forming an infiltrated refractory article with a linear shrinkage of less than 2 percent;
and cooling the infiltrated part to solidify said infiltrant and form a refractory article.

3,929,477
IMAGE PRODUCING TECHNIQUES OF SUPERCONDUCTING MATERIAL IN A MAGNETIC FIELD

Eugene F. Young, Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 15, 1973, Ser. No. 332,664
Int. Cl.² G03G *16/00*
U.S. Cl. 96—1 R **16 Claims**

1. A method of producing viewable images, comprising the steps of:
providing a surface comprised of material admitting of superconductive characteristics;
decreasing the ambient temperature below a critical temperature value such that said surface exhibits a superconducting state;
applying a magnetic field below a critical field value to said superconducting surface;
selectively increasing the temperature of certain portions of said superconducting surface in accordance with a determined pattern such that the superconductivity of said certain portions is quenched and said applied magnetic field penetrates said certain portions;
returning said certain portions to their superconducting states such that said penetrated magnetic field is trapped in said certain portions to form a magnetostatic latent image of said determined pattern;
removing said applied magnetic field; and
developing said magnetostatic latent image.

3,929,478
ELECTROPHOTOGRAPHIC ELEMENT WHICH INCLUDES A PHOTOCONDUCTIVE POLYVINYL CARBAZOLE LAYER CONTAINING AN ALICYCLIC ANHYDRIDE

Denis J. Curtin, Chicago, Ill., assignor to A. B. Dick Company, Niles, Ill.

Filed Aug. 28, 1974, Ser. No. 501,132
Int. Cl.² G03G *5/04*
U.S. Cl. 96—1.5 **12 Claims**

1. In an electrophotographic element for use in an electrophotographic copy process formed of a substrate having an organic photoconductive coating formed of 2,4,7-trinitro-9-fluorenone and a polymerized vinyl carbazole present in the ratio of 0.49 to 1.23 moles of the trinitro fluorenone per monomeric unit of polymerized vinyl carbazole on one surface, the improvement wherein an alicyclic anhydride is incorporated into the organic photoconductive composition whereby the charge retention and sensitivity of the photoconductive coating is markedly improved to increase copy speed.

3,929,479
METHOD FOR IMPROVING THE PHOTOCONDUCTIVE PROPERTIES OF DYE SENSITIZED ZINC OXIDE

Fritz Rosenthal, Phoenixville, Pa., assignor to SCM Corporation, New York, N.Y.

Filed Feb. 12, 1974, Ser. No. 441,806
Int. Cl.² B31B *1/00*; **A01C** *1/00*; **C01G** *9/02*
U.S. Cl. 96—1.7 **15 Claims**

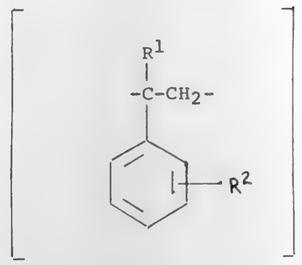
1. In a method for improving the photoconductive response of zinc oxide particles adaptable for dye sensitization and for admixture with a liquid binder for the preparation of photosensitized electrophotographic means, which process comprises the steps of:
grinding a slurry of zinc oxide particles in a nonpolar liquid, in the absence of a binder resin and prior to admixture with a sensitizing dye, said slurry having a mole ratio of nonpolar liquid to zinc oxide in excess of 2.0,
admixing a solution of sensitizing dye in a polar solvent with said slurry of ground zinc oxide particles in nonpolar liquid to contact the surface area of the unmodified zinc oxide particles with the sensitizing dye for adsorption of the dye onto the surface area of the zinc oxide particles for sensitizing same.

3,929,480
CONTINUOUS TONE ZNO - ACRYLIC POLYMER BINDER AND ADDITIVE

Barry R. Perlis, Lexington, and Michael E. Nelson, Worcester, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 63,933, Aug. 14, 1970, abandoned. This application Aug. 5, 1974, Ser. No. 494,492
Int. Cl.² G03G *5/08*
U.S. Cl. 96—1.8 **8 Claims**

1. An electrophotographic reproduction sheet having an electrophotographic coating consisting essentially of continuous tone zinc oxide pigment providing about 15 or more steps on a 21-step photographic gray scale of 0.15 (O.D.) increments, an insulating acrylic polymer binder therefor and a polymer resin additive having the repeating unit



where
R^1 is lower alkyl or hydrogen,
R^2 is lower alkyl or hydrogen, and
wherein said lower alkyl has 1 to 4 carbon atoms, positioned on a base paper, said pigment and binder having a ratio by weight in the range from about 9:1 to about 3:1, and said additive being present in an amount which is in the range from about 5 to 40 percent of said polymer binder.

3,929,481
ETCH BLEACHING PROCESSES FOR MAKING LITHOGRAPHIC PRINTING PLATES USING SILVER HALIDE AND/OR DIFFUSION TRANSFER LAYERS AND A HYDROPHILIC LAYER

Kikuo Kubotera; Eiichi Mizuki, both of Saitama; Tadahiro Fujiwara, and Nobuo Tsuji, both of Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 23, 1973, Ser. No. 335,219
Claims priority, application Japan, Feb. 25, 1972, 47-19922
Int. Cl.² G03C *5/54*
U.S. Cl. 96—29 L **14 Claims**

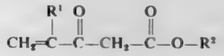
1. A method of making a lithographic printing plate from a plate comprising a support having an oleophilic surface bearing thereon a hydrophilic intermediate layer containing at least one compound selected from the following groups A, B and C:
Group A: gum arabic, alginic acid, hydroxyethyl cellulose, methyl cellulose, carboxymethyl cellulose, polyacrylamide, polyvinyl pyrrolidone, copolymers of the above components, polyvinyl alcohol, and a polyvinyl alcohol derivative;
Group B: a maleic anhydride-vinyl acetate copolymer, a maleic anhydride-ethylene copolymer, a maleic anhydride-methyl vinylether copolymer, a maleic anhydride-styrene copolymer, half ester derivatives of those copolymers, half amide derivatives of those copolymers, an acrylic acid copolymer, and a methacrylic acid copolymer; and
Group C: partially saponified cellulose acetate, partially saponified cellulose butyrate, and partially saponified cellulose acetate butyrate;
said intermediate layer bearing thereon a photosensitive silver halide emulsion layer *a*; or
a hydrophilic diffusion transfer image receiving layer (b) containing physical development nuclei, or
a layer *b* carrying thereon a silver halide emulsion layer *a'* on the side thereof away from the hydrophilic intermediate layer, which method comprises:
forming a silver image in layer *a* or *b*,
removing layer *a'* when it is present on layer *b*, and
etch bleaching the silver image, thereby etching away layer *a* or *b* at silver image portions thereof and at the same time the hydrophilic intermediate layer under the silver image portions thereof to thereby expose the oleophilic surface of the support at portions corresponding to the silver image portions in layer *a* or *b*.

3,929,482
HARDENABLE VEHICLES FOR SILVER HALIDE EMULSIONS

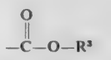
Ignazio Salvatore Ponticello, and Ernest John Perry, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 394,002, Sept. 4, 1973, abandoned. This application May 13, 1975, Ser. No. 577,141
Int. Cl.² G03C *1/72*
U.S. Cl. 96—114 **18 Claims**

1. A photographic element comprising a support having coated thereon at least one photographic silver halide emulsion and at least one binding agent comprising a film-forming, addition interpolymer comprising
A. from about 1 to about 50% by weight of a polymerized monomer containing active methylene groups and having the formula



wherein R^1 is hydrogen, methyl or

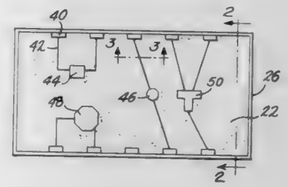


and R^2 and R^3 are alkyl radicals containing from 1 to 10 carbon atoms; and
B. from about 50 to about 99% by weight of at least one additional polymerized ethylenically un-saturated monomer free of active methylene groups.

3,929,483
METAL-PLATED IMAGES FORMED BY BLEACHING SILVER IMAGES WITH ALKALI METAL HYPOCHLORITE PRIOR TO METAL PLATING

Eugene Wainer, Shaker Heights, and Harold J. Quaintance, Fairview Park, both of Ohio, assignors to Horizons Incorporated, a division of Horizons Research Incorporated, Cleveland, Ohio

Division of Ser. No. 191,635, Oct. 22, 1971, Pat. No. 3,822,128. This application Jan. 18, 1974, Ser. No. 434,537. The portion of the term of this patent subsequent to July 2, 1991, has been disclaimed.
Int. Cl.² G03C *5/00*, *11/00*, *5/24*, *5/32*
U.S. Cl. 96—38.4 **7 Claims**



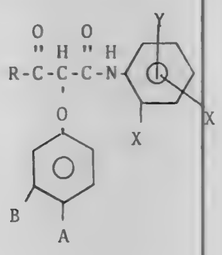
1. A product comprising a treated silver image on a base the surface of which comprises not less that 67.5 percent by volume of metallic silver and not more than 32.5 percent by volume of a carrying agent selected from the group consisting of gelatin, polyvinyl alcohol, polyacrylamide, and other water swellable hydrocolloids said product exhibiting increased photographic density and contrast as compared with the same image prior to such treatment, the said product being formed by bleaching said silver image with an alkali metal hypochlorite and having another metal plated thereon by electroless deposition, and the metal plated thereon being selected from the group consisting of nickel, cobalt, iron, copper, chromium, gold, silver, platinum, palladium and mixtures thereof.

3,929,484
COLOR DEVELOPER COMPOSITIONS CONTAINING IMPROVED YELLOW DYE-FORMING COUPLER

Robert E. Ross, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 449,800, March 8, 1974, abandoned. This application July 26, 1974, Ser. No. 492,116
Int. Cl.² G03C *7/00*
U.S. Cl. 96—55 **4 Claims**

1. In a color developer composition comprising at least one organic aromatic primary amino developing agent and a yellow-dye-forming coupler material; the improvement which comprises using as said yellow-dye-forming coupler material a compound having the structure:



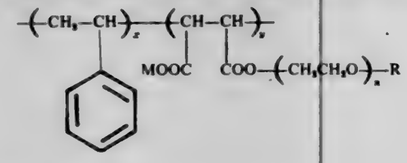
wherein R is a branched alkyl group containing 3 to 6 carbon atoms; X is Cl or Br; Y is X, hydrogen or alkyl (1 to 8 carbon atoms); and A and B differ and are either H or —COOM, wherein M is a photographically inactive cation or a methyl or ethyl group.

3,929,485
DISPERSION OF SILVER HALIDE DEVELOPING AGENT WITH SURFACE ACTIVE POLYMERS OF MALEIC ACID HALF ESTERS

Masami Miyakawa; Masakazu Yoneyama, and Nobuo Yamamoto, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

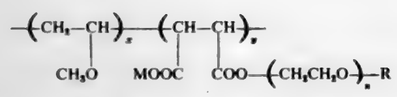
Filed July 26, 1974, Ser. No. 492,312
Claims priority, application Japan, July 26, 1973, 48-84438
Int. Cl.² G03C *5/30, 1/48, 1/40, 1/10*
U.S. Cl. 96—66 R **54 Claims**

1. A silver halide developing agent dispersion which comprises a hydrophilic organic colloid having dispersed therein fine droplets of a silver halide developing agent dissolved in a substantially water-insoluble solvent, and at least one surface active polymer selected from the group consisting of the compounds represented by the following formulae (II) and (III):



(II)

and



(III)

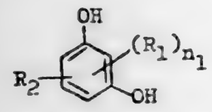
wherein R is a hydrocarbon chain or a fluorine substituted hydrocarbon chain containing 4 to 22 carbon atoms or an aryl group, *n* is O or an integer of 1 to 40, and M is a hydrogen atom or a cation; and wherein the molar ratio of *x* to *y* ranges from 3:1 to 9:1.

3,929,486
SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING A SENSITIZING AND STABILIZING COMBINATION OF A POLYALKYLENE OXIDE, A TETRAZAINDENE AND A RESORCINOL DERIVATIVE

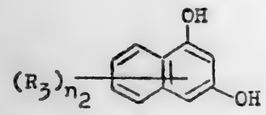
Teiji Habu; Tomio Nakajima; Eiichi Sakamoto; Kenzi Kadokura; Kyusaku Yoshida, and Katsutoshi Machida, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 8, 1974, Ser. No. 467,957
Claims priority, application Japan, May 12, 1973, 48-52094
Int. Cl.² G03C *1/28, 1/34*
U.S. Cl. 96—76 R **4 Claims**

1. A light-sensitive silver halide photographic material which comprises a light-sensitive silver halide emulsion layer and an adjacent layer thereof, at least one of which contains 0.01 to 5 g, per mole of silver halide, of at least one compound selected from polyalkylene oxide compounds; 0.1 to 50g, per mole of silver halide, of at least one compound selected from tetrazaindene compounds; and 0.1 to 50g, per mole of silver halide, of at least one compound represented by the general formula I or II,



I



II

wherein the R_1's are individually hydrogen, halogen, alkyl, aralkyl, alkoxy, acyl, carboxymethyl or a group-COOM or $-SO_3M$, M is hydrogen, an alkali metal or ammonium R_2 and R_3 are individually group —COOM or $-SO_3M$; and n_1 and n_2 are individually 1 to 3.

3,929,487
SPECTRAL BALANCING MEANS FOR COLOR PHOTOGRAPHY

Harbans Singh, Box 37, Rte. 1, Odessa, Fla. 33556

Division of Ser. No. 583,789, Oct. 3, 1966, Pat. No. 3,588,215. This application Dec. 7, 1970, Ser. No. 95,901
Int. Cl.² G03C *1/84*
U.S. Cl. 96—84 R **2 Claims**

1. A spectral balancing means for color photography under a fluorescent light source consisting essentially of in combination in a single transfer dye layer a magenta dye and a yellow dye in the ratio of 1:1 to 2:5 coated and applied as one of a single layer and a pellicle onto one of a photographic film base, a photographic emulsion and a photographic material.

3,929,488
LIGHT SENSITIVE DIAZO COMPOSITION WITH AZO DYE FORMED FROM A DIAZONIUM SALT AND A NOVOLAK RESIN

Peter John Smith, Seacroft, England, assignor to Howson-Algraphy Limited, Kent, England

Continuation-in-part of Ser. No. 262,652, June 14, 1972, abandoned. This application June 25, 1974, Ser. No. 483,027
Claims priority, application United Kingdom, June 17, 1971, 28574/71
Int. Cl.² G03F *7/08;* **G03C** *1/54, 1/60*
U.S. Cl. 96—91 R **6 Claims**

1. A light-sensitive positive-working composition which exhibits a colour change upon exposure to light and which is suitable for the production of a printing plate by a photomechanical technique, which composition comprises in admixture a diazonium salt, a novolak resin, and an azo-dye which undergoes a colour change in the presence of the light decomposition products of the diazonium salt, said azo-dye being the product obtained by coupling together a diazonium salt and a novolak resin in alkaline medium.

3,929,489
LITHOGRAPHIC PLATES HAVING RADIATION SENSITIVE ELEMENTS DEVELOPABLE WITH AQUEOUS ALCOHOL

Joseph A. Arcesi, and Frederick J. Rauner, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 14, 1973, Ser. No. 397,179
Int. Cl.² G03C *1/68;* **F01B** *3/00;* **C08G** *63/60*
U.S. Cl. 96—115 R **6 Claims**

1. In a lithographic printing plate comprised of a hydrophilic support means having as a radiation sensitive coated layer thereon a composition comprised of a condensation copolymer said copolymer having first dicarboxylic acid derived repeating units containing non-aromatic vinyl unsaturation capable of providing crosslinking sites for the purpose of insolubilizing said copolymer upon exposure of said composition to actinic radiation, the improvement comprising:

the inclusion within said copolymer of second, aromatic dicarboxylic acid derived repeating units each containing a disulfonamido unit containing a monovalent cation as an amido nitrogen atom substituent thus rendering said copolymer in its unexposed form soluble in an aqueous alkaline developer.

3,929,490
PHOTOPOLYMERIZIABLE COMPOSITIONS WITH POLYMERIC INITIATORS

Ralph H. Reiter, and George Rosen, both of Wayne, N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Mar. 28, 1974, Ser. No. 455,667
Int. Cl.² G03C *1/68*
U.S. Cl. 96—115 P **13 Claims**

1. A photopolymerizable composition consisting essentially of (a) an ethylenically unsaturated monomer and (b) a polymer of an aromatic compound having a polyhaloacyl moiety attached thereto as the photopolymerization initiator.

3,929,491
BONDED SILVER ARTICLE, COMPOSITION, AND METHOD OF BONDING SILVER TO A CERAMIC SUBSTRATE

Baynard R. Smith, and Arnold W. Treptow, both of North Palm Beach, Fla., assignors to Electro Oxide Corporation, Palm Beach Gardens, Fla.

Filed Jan. 24, 1974, Ser. No. 436,352
Int. Cl.² C09D *5/24*
U.S. Cl. 106—1 **16 Claims**

1. A metalizing composition comprising an intimate mixture on a weight basis, of: (a) about 0.5%–5.0% of an initial mixture of cadmium oxide powder and at least one copper oxide powder selected from the group consisting of cuprous oxide and cupric oxide, said copper oxide and cadmium oxide being combined in a weight ratio of between 0.15–6.0 parts of said copper oxide to 1.0 part of said cadmium oxide; (b) about 0.25%–2.0% of at least one particulate material selected from the group consisting of platinum, iridium, rhodium, and osmium powder; (c) about 0.50%–4.0% of rhuthenium oxide; (d) the balance of said intimate mixture being at least one silver particulate material selected from the group consisting of silver and silver oxide; and, said metalizing composition further including about 10.0%–95.0% by weight of said intimate mixture of an organic binder devoid of glass frits.

3,929,492
SURFACE TREATING COMPOSITIONS

Francis E. Chapman, and Robert F. Grant, both of Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation-in-part of Ser. No. 202,599, Nov. 26, 1971, abandoned. This application Nov. 6, 1972, Ser. No. 303,900
Int. Cl. C08h *9/08;* **C09g** *1/08, 1/14*
U.S. Cl. 106—3 **9 Claims**

1. A self-pressurized surface treating composition comprising a water-in-oil emulsion consisting essentially of about 0.1 to 5% wax, about 0.5 to 10% organic polysiloxane, about 7.5 to 80% of at least one liquified normally gaseous propellant, and water, the continuous phase of said emulsion being free of solvent other than said propellant, and wherein said propellant is selected from the group consisting of liquified normally gaseous hydrocarbon propellants, liquified normally gaseous halogenated hydrocarbon propellants and mixtures thereof.

3,929,493
DENTAL BASE MATERIAL

Henry L. Lee, Jr., Pasadena, and Jan A. Orlowski, Altadena, both of Calif., assignors to Lee Pharmaceuticals, South El Monte, Calif.

Filed Apr. 9, 1974, Ser. No. 459,319
Int. Cl.² C09K *3/00*
U.S. Cl. 106—35 **12 Claims**

1. A dental base material comprised of an organic acid salt of calcium suspended in a network of silica gel.

3,929,494
SEALANT FOR GLASS-CERAMIC SURFACES

Frank Veres, Sylvania Township, Lucas County, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 22, 1972, Ser. No. 317,558
Int. Cl.² C04B *33/00*
U.S. Cl. 106—40 R **15 Claims**

1. A foaming sealant for sealing together thermally crystallizable glass or glass-ceramic bodies upon firing of said sealant, said sealant consisting essentially of:

a. about 80–99 weight percent of a glass frit consisting essentially of, in weight percent, 54–80 SiO_2, 14–32 Al_2O_3, 3–8 Li_2O, 0–9 ZnO and 0–7 CeO_2, wherein the mole ratio of $(Li_2O + ZnO) : Al_2O_3$ is from 0.7 to 1.2 and the molar ratio of Li_2O : ZnO is at least 2,
b. zero to 15 weight percent of particulate ZnO,
c. zero to 6 weight percent of particulate CeO_2, and
d. a sufficient amount of particulate SiC which, upon firing of said sealant, will decompose to evolve a gas for foaming said sealant during said firing,

wherein the total ZnO in the sealant is not over 15 weight percent of the sealant and is at least 2 weight percent of the sealant when the CeO_2 component of glass component (a) is less than 2 mole percent thereof; and wherein said CeO_2 in said sealant is in an amount sufficient to effect the decomposition of the said SiC to evolve said gas for foaming said sealant, said amount of CeO_2 being from about 1 to about 7 weight percent.

3,929,495
OPTICAL BORATE GLASS OF HIGH CHEMICAL RESISTANCE AND PROCESS OF MAKING SAME

Heinz Broemer, Hermannstein, and Norbert Meinert, Wetzlar, both of Germany, assignors to Ernst Leitz G.m.b.H., Wetzlar, Germany

Filed May 15, 1973, Ser. No. 360,418
Claims priority, application Germany, May 15, 1972, 2223564
Int. Cl.² C03C *3/14, 3/00, 3/30*
U.S. Cl. 106—47 Q **23 Claims**

1. An optical borate glass of high chemical resistance, with negative anomalous partial dispersion and refractive indices n_e between 1.65 and 1.79 and Abbe numbers ν_e between 40 and 30, said glass consisting of

between 26 and 39 percent, by weight, of boron trioxide (B_2O_3);

between 32 and 57 percent, by weight, of lead oxide (PbO); between 5 and 19 percent, by weight, of aluminum oxide (Al_2O_3);

up to 3.0 percent, by weight, of at least one of the oxides of the alkali metals lithium (Li), sodium (Na), and potassium (K), but when present, not less than 2.0 percent, by weight, of said oxides;

up to 8.0 percent, by weight, of zinc oxide (ZnO), but, when present, not less than 0.8 percent, by weight, thereof; up to 600 percent; by weight, of zirconium dioxide (ZrO_2), but, when present, not less than 2.0 percent, by weight, thereof;

up to 15.0 percent, by weight, of tantalum pentoxide (Ta_2O_5), but, when present, not less than 2.0 percent, by weight, thereof; and

up to 16.0 percent, by weight, of a oxide selected from the group consisting of antimony trioxide (Sb_2O_3) and bismuthum trioxide (Bi_2O_3), but, when present, not less than 8.0 percent, by weight, thereof.

3,929,496
HIGH ALUMINA CERAMIC INSULATOR COMPOSITIONS

Toshiyasu Asano, and Kazuyoshi Sumi, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 324,153, Jan. 16, 1973, abandoned. This application Jan. 20, 1975, Ser. No. 542,400
Claims priority, application Japan, Jan. 21, 1972, 47-8657
Int. Cl.² C04B *33/26*
U.S. Cl. 106—46 **1 Claim**

1. An alumina ceramic insulator for use in a spark plug, formed by sintering at a temperature of 1410°C to 1700°C a mixture of 80 to 98 percent by weight of alumina of a main constituent and

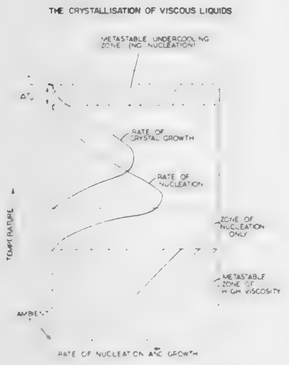
2 to 20 percent by weight of flux material of an accessory constituent consisting of SiO_2, B_2O_3 and at least one oxide (RO) selected from the group consisting of alkaline earth metal oxides of CaO, MgO, BaO, SrO and BeO and bivalent metal oxides of NiO, CdO, ZnO, MnO, CrO and SnO, said flux material having the following composition range encircled with the points A, B, C and D in the triangular coordinate:

	SiO_2	B_2O_3	RO
A	28.0	60.0	12.0
B	36.0	60.0	4.0
C	89.0	1.0	10.0
D	69.0	1.0	30.0

3,929,497
CRYSTALLIZABLE GLASS SUITABLE FOR FIBER PRODUCTION

Colin Clark-Monks, Sheffield, England, assignor to Fiberglas Canada Ltd., Toronto, Canada

Filed Jan. 31, 1973, Ser. No. 328,467
Int. Cl.² C03C *13/00, 3/22;* **C03B** *37/00, 32/00*
U.S. Cl. 106—50 **14 Claims**



1. A process for preparing glass fibers which in the vitreous state have a softening point in the range of 650° to 800°C, and in the ceramic state have a softening point in the range of 1040° to 1200°C, which process comprises:

a. compounding conventional glass making raw materials in proportions suitable for yielding glass compositions consisting essentially of:

SiO_2	46.0–48.4 wt. %
Al_2O_3	12.5–13.6 wt. %
CaO	12.0–13.8 wt. %
MgO	8.9–10.6 wt. %
Fe_2O_3	5.0–8.0 wt. %
Na_2O	6.2–7.0 wt. %
TiO_2	2.4–3.5 wt. %
MnO and/or MnO_2	0.3–0.6 wt. %

b. melting said mixture of raw materials in a neutral or oxidizing environment at a temperature in the range of 1200° to 1500°C to obtain an homogeneous glass mass;

c. forming glass from the glass mass into vitreous fibers, which fibers have a softening point in the range of 650° to 800°C, said vitreous fibers being capable, upon subsequent heating to a temperature in the range of 700° to 1035°C, of rapid nucleation and crystallization, without deformation, to a ceramic comprising spinel or diopside as the principal crystal phase.

3,929,498
SINTERED ZIRCONIA BODIES

John Douglas Hancock, Bolton, and Matthew A. Hepworth, Cheadle Hulme, both of England, assignors to Magnesium Elektron Limited, Manchester, England

Continuation of Ser. No. 350,064, April 11, 1973, abandoned. This application Apr. 30, 1975, Ser. No. 465,602
Claims priority, application United Kingdom, Apr. 11, 1972, 16651/72
Int. Cl.² C04B *35/48*
U.S. Cl. 106—57 **14 Claims**

1. A method of making a sintered zirconia body, which comprises sintering a compacted composition consisting essentially of from 10 to 100% by weight of baddeleyite sand, from 0 to 90% by weight of pure zirconia and zero to 2 mole % yttria stabilizer, at least 10% by weight of the composition having an average grain size not greater than 5 microns.

3,929,499
HIGH WATER-CONTENT WATER IN OIL EMULSION

Frederick L. Thomas, c/o Thomas Chemical Company, 1021 Walsh Road, Madison, Wis. 53714

Continuation-in-part of Ser. No. 287,365, Sept. 8, 1972, which is a continuation-in-part of Ser. No. 116,679, Feb. 18, 1971, abandoned. This application Mar. 8, 1974, Ser. No. 449,540
Int. Cl.² C08L *91/06*
U.S. Cl. 106—268 **1 Claim**

1. A water in oil emulsion consisting essentially of:

a. about 7.0–15.0% by weight of odorless mineral spirits having a boiling point between about 160° C. and 220° C.;

b. about 0.25–3.0% by weight of a surface active agent comprising principally alkanolamide formed as the condensation product of diethanolamine and oleic acid and having an HLB number between about 2.0 – 6.0;

c. about 0.3–3.0% by weight of a synthetic wax selected from the group consisting of the hydrogenation product of castor oil and N, N′ distearoylethylene diamine having a melting point of about 139°–141° C.; and

d. about 79.0–92.45% by weight of water.

3,929,500
CHROME YELLOW PIGMENT WITH IMPROVED THERMAL STABILITY

James Francis Higgins, Livingston, N.J., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Nov. 6, 1974, Ser. No. 521,524
Int. Cl.² C09C *1/20*
U.S. Cl. 106—298 **16 Claims**

1. In a process for preparing chrome yellow pigment in aqueous medium by contacting an aqueous solution containing soluble salts of chromate and sulfate with a salt of lead to form an aqueous slurry of said pigment and applying at least one hydrous metal oxide to the precipitated pigment,

wherein the improvement comprises adding from 0.2 to 18% by weight of a soluble boron compound to said aqueous medium.

3,929,501
NOVEL TITANIUM DIOXIDE COMPOSITION

Wendell E. Dunn, Jr., Sydney, Australia, assignor to Titanium Technology, N.V., Curacao, Netherlands Antilles

Continuation-in-part of Ser. Nos. 4,563, Jan. 21, 1970, abandoned, and Ser. No. 138,460, July 12, 1971, abandoned. This application June 4, 1973, Ser. No. 366,547
Int. Cl.² C09C *1/36*
U.S. Cl. 106—300 **18 Claims**

1. A novel titanium dioxide comprising 95.0 to 99.5 percent, by weight, of titanium dioxide, up to 1.0 percent, by weight of a combination iron oxide and readily chlorinated metal oxides and the remainder silicates and other difficultly chlorinated oxides, said composition of matter having a bulk density in the range of 1.73 to 2.4 grams per cubic centimeter, a hardness (VHN) of 337–650 and a porosity of 0.03 to 0.08 cc/g.

3,929,502
TITANIUM DIOXIDE PIGMENTS AND FILLERS

Jonathan Howard Hodgkin, Burwood; David Geoffrey Hawthorne, South Oakleigh; Jean Drummond Swift, Olinda, and David Henry Solomon, Glen Waverley, all of Australia, assignors to Commonwealth Scientific & Industrial Research Organization, Campbell, Australia

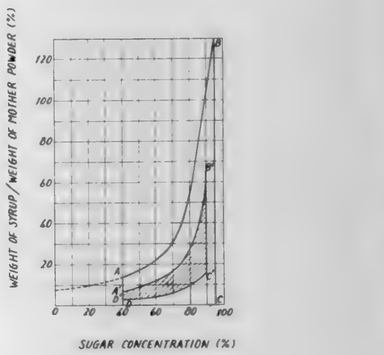
No Drawing. Division of Ser. No. 224,606, Feb. 8, 1972, Pat. No. 3,834,923. This application Feb. 19, 1974, Ser. No. 443,795
Claims priority, application Australia, Feb. 10, 1971, 3979/71; Feb. 10, 1971, 3981/71; Feb. 10, 1971, 3983/71; Feb. 10, 1971, 3985/71
Int. Cl. C09c *1/36*
U.S. Cl. 106—300 **11 Claims**

1. A process for the production of polymer-coated titanium dioxide particles comprising polymerizing a monomer capable of acid-catalysed polymerization in the presence of titanium dioxide particles coated with an aluminium compound and having on their surface a number of acidic sites with a pKa value below 2.8.

3,929,503
PRODUCTION OF FREE-FLOWING PARTICLES OF GLUCOSE, FRUCTOSE OR THE MIXTURE THEREOF

Toshio Yamauchi, Kyoto, Japan, assignor to Daiichi Seiyaku Co., Ltd., Kyoto, Japan

Filed May 31, 1974, Ser. No. 475,198
Claims priority, application Japan, June 4, 1973, 48-63250
Int. Cl.² C13K *1/00, 9/00*
U.S. Cl. 127—58 **13 Claims**



1. A method for preparing anhydrous, free-flowing solid particles of a sugar selected from the group consisting of glucose, fructose and admixtures thereof, which comprises:

a. kneading an anhydrous powder of said sugar with a 40–90% by weight solution of said sugar in an amount of 5–65% by weight of said powder within the area shown between points A, B, C and D of the attached Drawing without subjecting said solution to a crystallization step to form a kneaded mixture having a moisture content of less than 7% by weight;

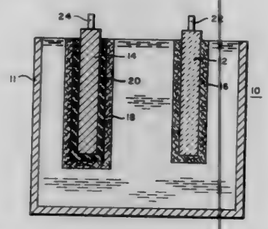
b. shaping said kneaded mixture into particles; and

c. drying the shaped particles at a temperature lower than 70° C. to form anhydrous particles.

3,929,504
RECHARGEABLE POWER SOURCE

Jon S. Gore, Lansdale, and Charles R. Walk, Collegeville, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 18, 1974, Ser. No. 534,042
Int. Cl.² H01M 10/00
U.S. Cl. 136—6 LN 5 Claims

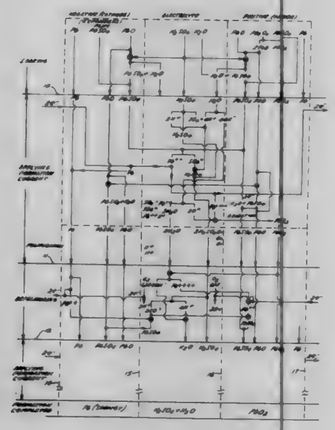


1. A secondary energy cell capable of operating in the discharge mode and in the charge mode, comprising:
a lithium anode;
a vanadium pentoxide cathode;
an electrolyte including lithium perchlorate dissolved in propylene carbonate; and
means for enclosing at least one electrode, said means having a permeability to permit passage of electrolyte ions and prevent migration of lithium metal from said anode.

3,929,505
FORMATION OF BATTERY PLATES

Wilford B. Burkett, Pacific Palisades, and Joseph A. Orsino, Calabasas Park, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Continuation of Ser. No. 136,833, April 23, 1971, abandoned. This application June 27, 1973, Ser. No. 374,265
Int. Cl.² H01M 35/30
U.S. Cl. 136—34 14 Claims

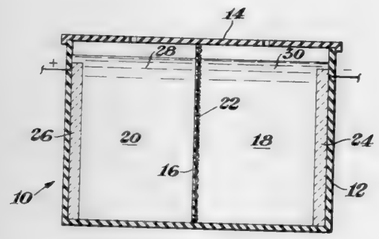


10. A method of electrochemically forming battery plates comprising:
immersing unformed battery plates in an electrolyte;
passing a formation current through the plates and electrolyte; and,
intermittently reversing the current through the plates and electrolyte for an interval of time sufficient to depolarize the plates and electrolyte without significantly discharging the battery.

3,929,506
ZINC-BROMIDE SECONDARY CELL

James J. Leddy, and Gerhard Gritzner, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 18, 1973, Ser. No. 361,745
Int. Cl.² H01M 4/86
U.S. Cl. 136—86 A 16 Claims

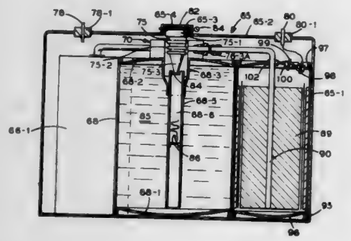


1. A method of operating a zinc-bromide secondary cell divided into anode and cathode compartments by a zinc cation ion exchange diaphragm comprising adding a catholyte consisting essentially of an aqueous solution of at least one salt selected from the group consisting of ammonium bromide and the bromides of lithium, sodium, potassium, beryllium, magnesium, calcium and strontium to the cathode compartment with a cathode disposed therein; adding an anolyte consisting essentially of an essentially bromide ion free, aqueous solution containing at least one salt selected from the group consisting of zinc chlorate, zinc chloride, zinc iodide, zinc tetrafluoroborate, zinc fluorosilicate and zinc nitrate to the anode compartment with an anode disposed therein; impressing an electromotive force between the anode and the cathode to deposit metallic zinc on the anode, release bromine at the cathode and pass substantially only cations through the diaphragm into the anode compartment.

3,929,507
MULTI CELL RESERVE BATTERY

Per Bro, Andover; Robert H. Kelsey, Acton, and Nikola Marincic, Winchester, all of Mass., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Aug. 22, 1973, Ser. No. 390,677
Int. Cl. H01m 21/00
U.S. Cl. 136—114 3 Claims

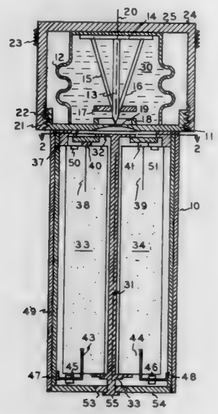


1. A reserve battery comprising
1. an anode,
2. a cathode,
3. a separator between said anode and said cathode, with space between and around said anode and cathode to accomodate an electrolyte; and
4. a closed case for said cell;
a container external to said cell case for holding a quantity of electrolyte for said cell;
a conduit system providing a passage between said electrolyte container and said cell case;
a conduit system includes a first conduit extending through a wall of said electrolyte container, said first conduit being open at its inner end to communicate with the electrolyte in said container, and said first conduit being closed at its outer end outside of said container by a frangible closure;
and said conduit system also includes a second conduit which extends into said cell through a wall of said cell case and has its outer end outside of said cell case;
and a closed box enclosing said outer closed end of said electrolyte container conduit;
said box having one wall constructed as a collapsible bellows;
and activating means including a puncturing element supported on said bellows and aimed at said frangible closure, and said puncturing element being movable inwardly through operation of said bellows, to puncture said frangible closure; and said box having a second wall supporting a hollow coupling for coupling onto the outer end of said second conduit leading to said cell case; whereby, upon a fracturing puncture of said frangible closure, the electrolyte, under its vapor pressure and the added pressure of an inert driving gas, in its container, will be pushed through said conduit system into said cell case.

3,929,508
RESERVE BATTERY

William Carl Merz, Delaware, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 15, 1974, Ser. No. 451,621
Int. Cl.² H01M 21/10
U.S. Cl. 136—114 7 Claims



1. An improved reserve battery comprising;
a. a battery housing;
b. an anode structure within said housing;
c. a cathode structure within said housing;
d. a dry material cell within said housing between said anode and said cathode and filled with a dry material;
e. a diaphragm permanently attached to said battery housing;
f. a collapsable solvent container structure mountably attached to said diaphragm, said solvent container structure being sealed from said housing by said diaphragm when said solvent container structure is mountably attached to said diaphragm;
g. means to collapse said solvent container; and
h. a solvent in said solvent container structure and means within said solvent container structure for providing access to said housing so that upon demand said liquid in said solvent container structure can be dispersed within the dry material cell between said anode structure and said cathode structure so that said liquid and said dry material react chemically to provide electrical current from said anode and said cathode structures.

3,929,509
HYDROPHILIC MICROPOROUS FILM

Henry T. Taskier, Englewood, N.J., assignor to Celanese Corporation, New York, N.Y.

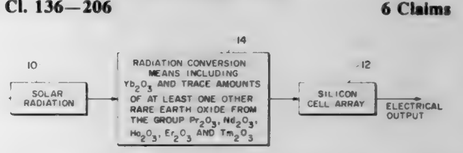
Division of Ser. No. 245,260, April 18, 1972, Pat. No. 3,853,601. This application Mar. 1, 1974, Ser. No. 447,184
Int. Cl.² H01M 2/14
U.S. Cl. 136—146 2 Claims

1. In a battery comprising at least one electrolytic cell, said cell including an anode and a cathode disposed in an electrolyte said anode and cathode separated in said electrolyte by a battery separator the improvement comprising the battery separator, said separator comprising a hydrophobic, microporous polymeric film characterized by a reduced bulk density compared to the bulk density of the corresponding non-porous precursor film, a crystallinity of above about 30 percent, an average pore size of about 100 to 12,000 Angstroms, a surface area of about 2 to about 200 square meters per gram, and a void volume of between about 20 to 45 percent; and a surfactant coating comprising about 2 to 20 percent by weight of the uncoated microporous film, of polyoxethylene polymethyl siloxane.

3,929,510
SOLAR RADIATION CONVERSION SYSTEM

Emil Kittl, Locust, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 22, 1974, Ser. No. 472,321
Int. Cl.² H01L 35/02
U.S. Cl. 136—206 6 Claims



1. A system for converting solar radiation into useful electrical energy, said system comprising a silicon cell and solar radiation conversion means, said solar radiation conversion means comprising ytterbium oxide and small amounts of at least one other rare earth oxide selected from the group consisting of praseodymium oxide, neodymium oxide, holmium oxide, erbium oxide, and thulium oxide.

3,929,511
THERMOCOUPLE ASSEMBLY

Ralph E. Solomon, Upland, Calif., assignor to Jade Controls, Inc., Upland, Calif.

Filed Feb. 25, 1974, Ser. No. 445,575
Int. Cl.² H01L 1/02
U.S. Cl. 136—228 12 Claims

8. A thermocouple device comprising
a member of electrically conductive material having a bore therethrough and a laterally directed surface in said bore, a length of tubing of electrically conductive material, said tubing having a laterally directed end portion engaging said laterally directed surface of said member,
and a thermocouple tip of electrically conductive material, said tip having an end portion received in said bore with

said member at said bore gripping the periphery of said end portion,

said end portion of said tip having a surface engaging said laterally directed end portion of said tubing and holding the same against said laterally directed surface of said member, whereby an electrical and mechanical connection is provided between said thermocouple tip and said tubing.



3,929,512

SEMICONDUCTOR DEVICES

Keith Harlow Nicholas, Reigate; Ronald Alfred Ford, Crawley, and Julian Robert Anthony Beale, Reigate, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 204,229, Dec. 2, 1971. Pat. No. 3,796,929.
This application Sept. 10, 1973, Ser. No. 395,912
Claims priority, application United Kingdom, Dec. 9, 1970, 58478/70
Int. Cl.² H01L *21/00*
U.S. Cl. 148—1.5 **12 Claims**

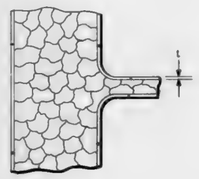
1. A method of manufacturing a semiconductor device having a region of one type conductivity in a semiconductor body portion of the opposite type conductivity and forming a junction with the semiconductor body portion, said one type region having a high sheet resistance and constituting the resistance region of a resistor of the semiconductor device, said device being processed by steps including effecting spaced contacts to the resistance region whereby when a voltage is applied to the contacts the resistor exhibits a voltage linearity determined by its measured resistance as a function of applied voltage, said processing also comprising the step of bombarding said semiconductor body portion with neutral ions to implant in the body at least where the junction is to be or is formed a high concentration of neutral ions and associated semiconductor crystal lattice damage, the concentration of implanted neutral ions and associated semiconductor crystal lattice damage in the resistance region of the finished device after the processing, at least in the vicinity of the said junction, being so high that the effective mobility of majority charge carriers in the resistance region in the vicinity of the said junction is at most one-third of the value in the absence of the implanted neutral ions and associated damage whereby the resistor exhibits improved voltage linearity.

3,929,513

LEAD ALLOY PRODUCTS

George W. Mao, St. Paul, Minn., assignor to Gould Inc., Mendota Heights, Minn.

Continuation-in-part of Ser. No. 749,257, July 25, 1968, abandoned. This application July 14, 1971, Ser. No. 162,605
Int. Cl. C22f *1/12*; H01m *35/08*
U.S. Cl. 148—3 **8 Claims**



1. A method of producing an essentially monograined layer along the outer surface of a pressure cast lead alloy product, comprising the steps of:

a. alloying lead with calcium ranging from 0.05 percent to 0.07 percent by weight;

b. pressure casting the lead alloy to form a product;

c. annealing said product at a temperature in a range of 450° F. to 550° F. for approximately six hours, followed by

d. quenching said product.

3,929,514

COMPOSITION AND METHOD FOR FORMING A PROTECTIVE COATING ON A ZINC METAL SURFACE

William F. Houlihan, deceased, late of Springfield, Mass. (by Rosemary Houlihan, executrix); Isaac Laird Newell, Wethersfield, Conn., and Gerald E. La Cosse, Chicopee, Mass., assignors to Heatbath Corporation, Springfield, Mass.

Filed Mar. 5, 1974, Ser. No. 448,371
Int. Cl.² C23F *7/00*
U.S. Cl. 148—6.14 **13 Claims**

1. A method for forming a protective coating on a zinc metal surface which comprises contacting said surface with an aqueous solution which consists essentially of an inorganic water soluble alkaline compound, at least one metal ion selected from the group consisting of cadmium, manganese, aluminum, tin, titanium, molybdenum, chromium, tungsten, cobalt, ferrous and ferric iron and, nickel and triethanolamine hydrochloride in an amount sufficient to hold said metal ions in solution.

3,929,515

METHOD FOR CUTTING OVERLAPPING METAL PLATES WITH GAS HEAT

Kozo Sato, No. 7-12, Minami 3-chome, Yamamoto-cho, Yao, Osaka, Japan

Filed Sept. 27, 1974, Ser. No. 510,009
Int. Cl.² B23K *7/08*
U.S. Cl. 148—9 R **3 Claims**

1. A method of heat-cutting stacks of overlapping metal plates with gas heat so that notwithstanding gaps in the plates or warping of the plates, the gas heat applied to an outer plate will rapidly penetrate the entire stack comprising applying to the contacting surfaces of the plates a filler material consisting of:

a. 75 percent alginate soda;

b. 20 percent of a vinyl acetate denaturant;

c. 1 percent of a surface-tension reducing surface-active agent;

d. 3 percent of a non-ion chelating agent;

e. 1 percent of a dispersity stabilizing surface-active agent;

f. 11 percent of the forgoing components being mixed with a 2 percent solution of amine naphthenate soap; and,

heat-cutting the stacked metal plates.

3,929,516

PROCESS FOR PRODUCING CU-BASE ALLOYS

Harvey P. Cheskis; Stanley Shapiro, both of New Haven, and Michael J. Pryor, Woodbridge, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Aug. 30, 1974, Ser. No. 501,990
Int. Cl.² C22D *1/08*
U.S. Cl. 148—11.5 R **22 Claims**

1. A method for producing blister free copper alloy material using as a starting material a copper alloy which has been hot worked at least 50 percent to a thickness of from 0.200 to 0.750 inch including the steps of:

A. annealing the copper alloy material at a temperature of from 40 to 70 percent of the absolute melting temperature of the alloy for a time of from 1 to 24 hours; and

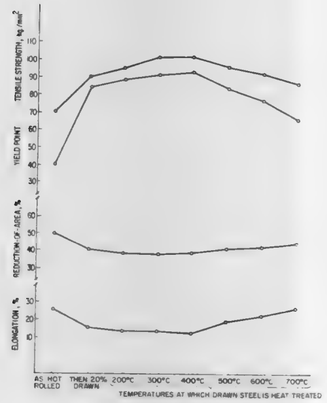
B. cold working the material at least 60 percent.

3,929,517

PROCESS FOR PRODUCING A STEEL HAVING A SUPERB COMBINATION OF HIGH STRENGTH AND SUBSTANTIAL TOUGHNESS

Yoshimi Nakamura; Toshihiro Minami, both of Kobe; Eizi Niina, Nishinomiya, and Katuzi Mizutani, Kobe, all of Japan, assignors to Kobe Steel Ltd., Kobe, Japan

Filed July 9, 1973, Ser. No. 377,634
Claims priority, application Japan, July 7, 1972, 47-67958; Aug. 24, 1972, 47-84891
Int. Cl.² C21D *7/02*
U.S. Cl. 148—12 F **9 Claims**



EFFECT OF THE TEMPERATURE OF THE TREATMENT PROCESS OF THE INVENTION

1. A process for producing a carbon steel or low alloy steel having a combined ferrite and pearlite structure, which is characterized by high strength and toughness, which comprises the steps of

subjecting said steel to cold working whereby the area of said steel is reduced to at least 10 %.

rapidly heating said steel to a temperature in the range of 450°C to the A_1 transformation point, and rapidly cooling said steel wherein the period at which said steel is held at the heating temperature is less than 3 minutes and wherein the heating rate is at least 50°C/min.

3,929,518

HIGH SPEED STEEL HAVING HIGH WEAR RESISTANCE

Kimihiko Akahori, Katsuta, and Masayuki Era, Hitachi, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 23, 1974, Ser. No. 435,952
Claims priority, application Japan, Jan. 24, 1973, 48-9543
Int. Cl.² C22C *38/12, 38/36*
U.S. Cl. 148—31 **11 Claims**

1. A high speed steel having high wear resistance consisting essentially of 3.1 to 6.3% by weight of carbon, 5 to 12% by weight of vanadium, 3 to 10% by weight of niobium, and the balance essentially iron, wherein all of vanadium and niobium is combined with carbon, 1.4 to 3.6% by weight of carbon forms cementite in the form of ternary-component eutectic crystals of carbides of vanadium and niobium, γFe and Fe_3C and 0.1 to 0.6% by weight of carbon is dissolved in a ferrous matrix as hardened and wherein the weight ratio of niobium to vanadium is from 0.5 to 1.

3,929,519

FLEXIBLE COBALT-RARE EARTH PERMANENT MAGNET PRODUCT AND METHOD FOR MAKING SAID PRODUCT

Mark G. Benz, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 410,621, Oct. 29, 1973, abandoned. This application Aug. 9, 1974, Ser. No. 496,064
Int. Cl.² H01F *1/04*
U.S. Cl. 148—31.57 **8 Claims**

7. A bendable cobalt-rare earth alloy permanent magnet product in the form of a tape or strip consisting essentially of a non-magnetic flexible substrate having bonded to a single side thereof a number of brittle sintered cobalt-rare earth alloy magnetic members in juxtaposition, wherein each member consists essentially of cobalt-rare earth alloy and contains the Co_5R soild intermetallic phase in an amount of at least 70 percent by weight of the sintered member, where R is a rare earth metal or metals, and wherein each said member has its easy axis of magnetization aligned perpendicular to the plane of the substrate, said substrate being in the form of a tape or strip at least as wide as the sintered member, each one foot length of said substrate being flexible longitudinally through an arc of at least 45° without rupturing, each said sintered member being a body of compacted particles having a density of at least 87 percent of theoretical, a thickness ranging from 0.01 inch to 0.5 inch, and having a size which allows each one foot length of said product to be bent longitudinally in at least a single direction through an arc of at least 45° without rupture.

3,929,520

CORROSION-RESISTANT AUSTENITIC-FERRITIC STAINLESS STEEL

Lars Ivar Hellner, Knektasvagen 31, S-691 00 Karlskoga, and Lars-Åke Norström, Villavagen 14, S-683 00 Hagfors, both of Sweden

Continuation-in-part of Ser. No. 317,494, Dec. 21, 1972, abandoned. This application Aug. 30, 1974, Ser. No. 502,132
Claims priority, application Sweden, Dec. 23, 1971, 16555/71
Int. Cl.² C22C *38/02, 38/44*
U.S. Cl. 148—37 **2 Claims**

1. Corrosion-resisting austeniticferritic stainless steel having an austenite content of between 10% and 25% by volume and a ferrite content of between 90% and 75% by volume, said steel having high tensile strength, high ductility and impact strength, high general corrosion resistance, high resistance to stress corrosion in chloride solutions, and high resistance to intergranular corrosion in warm chloride solutions, said steel consisting essentially of (percent by weight):

C max	0.15
Si	2.0 – 4.0
Mn	0.5 – 3.0
Cr	23 – 27
Ni	3.5 – 8.0
Mo	0.5 – 2.0
N max	0.1

and the balance substantially iron.

3,929,521

SOLUBILIZATION OF CHROMATE SALTS IN ORGANIC MEDIA

Jack Ohr, and Kenneth G. Clark, both of Warminster, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 2, 1974, Ser. No. 511,328
Int. Cl.² C23F 7/26
U.S. Cl. 148—6.2 **27 Claims**

1. A corrosion inhibitor for mixing with an organic medium, produced by the process comprising:

contacting an aqueous solution of hexavalent chromium-containing potassium salt with an organic solution of 18-crown macrocyclic polyether selected from the group consisting of dibenzo-18-crown-6, dicyclohexyl-18-crown-6 and 18-crown-6 macrocycles until equivalent molar amounts of said salt and said polyether are complexed in said organic solution, said aqueous solution having a molarity essentially from 0.1 mol to saturation and an acidic pH, and

said organic solution having a molarity essentially from 0.0004 mol to 0.7 mol; and

separating said organic solution containing said complexed salt and polyether and forming thereby said inhibitor.

3,929,522

PROCESS INVOLVING COOLING IN A STATIC ATMOSPHERE FOR HIGH PERMEABILITY SILICON STEEL COMPRISING COPPER

James A. Salsgiver, Sarver, and Frank A. Malsgari, Freeport, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Nov. 18, 1974, Ser. No. 524,846
Int. Cl.² H01F 1/04
U.S. Cl. 148—112 **16 Claims**

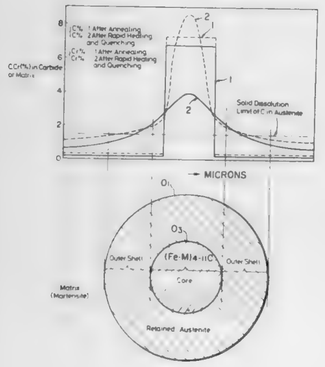
1. In a process for producing electromagnetic silicon steel having a cube-on-edge orientation and a peremeability of at least 1850 (G/O_e) at 10 oersteds, which process includes the steps of: preparing a melt of silicon steel; casting said steel; hot rolling said steel into a hot rolled band; subjecting said steel to at least one cold rolling; subjecting said steel to a final annealing prior to the final cold rolling; decarburizing said steel; and final texture annealing said steel; the improvement comprising the steps of carrying out said final anneal prior to the final cold rolling at a temperature of from 1400 to 2150°F for a period of from 15 seconds to 2 hours; cooling said steel from a temperature below 1700°F and above 750°F to a temperature at least as low as 500°F with a liquid quenching medium or gaseous stream and from its maximum annealing temperature to said temperature below 1700°F and above 750°F at a rate which is no faster than one wherein the steel is cooled in a static atmosphere or in a continuous processing line where there is some relative motion between the atmosphere and the steel, although the only deliberate motion is that imparted to the steel; and cold rolling the cooled steel at a reduction of at least 80%; said melt consisting essentially of, by weight, up to 0.07% carbon, from 2.60 to 4.0% silicon, from 0.03 to 0.24% manganese, from 0.01 to 0.09% of material from the group consisting of sulfur and selenium, from 0.015 to 0.04% aluminum, up to 0.02% nitrogen, from 0.1 to 0.5% copper, from 0.00045 to 0.0035% boron, balance iron.

3,929,523

STEEL SUITABLE FOR USE AS ROLLING ELEMENTS

Masao Kinoshi, Fujisawa, and Kyozarburo Furumura, Chigasaki, both of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 297,644, Oct. 16, 1972, abandoned. This application Aug. 27, 1973, Ser. No. 391,597
Int. Cl.² C21D 1/18
U.S. Cl. 148—143 **5 Claims**



2. A method for producing steel for rolling elements which comprises heating a steel material to a predetermined temperature between about 1000° and 1250°C at an average heating rate of more than 10°C/sec. above 850°C and quenching the thus heated steel material to obtain a steel wherein the surface layer has a martensite structure with 15 to 80 volume % of quasi-carbide particles distributed through the martensite structure, said particles being in the size range from about 0.2 to 10 microns and having a core portion and an outer shell portion, said core portion having a carbon content of about 2 to 5% and said outer portion being composed of retained austenite and having a carbon content which decreases continuously toward the outer shell portionn portion which further possesses lower carbon and chrome contents than cementite, the surface layer of said steel starting material consisting essentially of the following chemical composition;

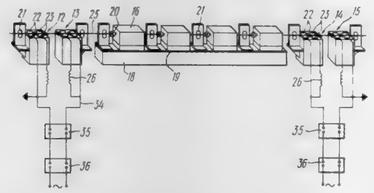
C, 0.65 – 1.4%; Mn, 0.04 – 1.5%; Si, 0.04 – 2.0%, one member selected from the group consisting of 0.06 – 0.6% Mo; 0.30 – 2.5% Cr, and a combination of 0.06 – 2.5% Cr and 0.06 – 0.6% Mo wherein Cr + Mo 0.2%, the balance being iron and unavoidable impurities, said surface layer containing 5 – 40 volume % of granular carbide composed mainly of cementite at a temperature below 850°C.

3,929,524

METHOD OF HEAT TREATING LINEAR LONG-LENGTH STEEL ARTICLES, APPARATUS FOR EFFECTING SAID METHOD AND ARTICLES PRODUCED THEREBY

Nikolai Grigorievich Filatov, ulitsa M. Gorkogo, 41, kv. 78, Orel; Jury Yakovlevich Meshkov, ulitsa Vernadskogo, 75A, kv. 21, Kiev; Nikolai Fedorovich Chernenko, Bulvar Lepse, 48/24, kv. 57, Kiev; Dmitry Iosifovich Nikonenko, ulitsa Dobrokhotova, 7, kv. 156, Kiev; Felix Isaakovich Mashlenko, M. Bronnaya ulitsa, 22/15, kv. 21, Moscow; Albert Mikhailovich Belyaev, ulitsa Bolotnikovskaya, 39, kv. 22, Moscow; Artur Khadyevich Valeev, proezd Rusanova, 11, korpus 1, kv. 68, Moscow; Valentina Alexandrovna Savina, Denisovsky perevlok, 14, kv. 14, Moscow; Vladimir Zakharovich Marchenko, prospekt Kanatchikov, 6, kv. 55; Valery Ionovich Fedorov, prospekt Kanatchikov, 3, kv. 8, both of Volgograd; Vitaly Nikiforovich Gridnev, ulitsa K. Libknekhta 36, kv. 15, Kiev, and Konstantin Vasilievich Mikhailov, Zelenodolskaya ulitsa, 16, kv. 57, Moscow, all of U.S.S.R.

Filed July 26, 1973, Ser. No. 382,850
Int. Cl.² C21D 9/62, 1/40
U.S. Cl. 148—150 **3 Claims**



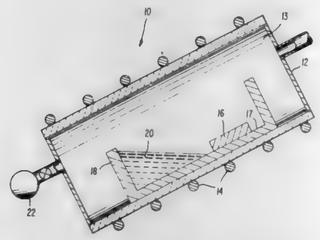
1. A method of heat-treating linear, long-length steel articles comprising: electrical resistance heating steel stock to an austenitizing temperature, cooling the said steel stock to effect martensitic hardening and subsequently electrical resistance temper-heating said stock to a temperature of 300° to 700°C at a rate of 50° to 3000°C/second, said heat treatment being conducted while continually transferring said stock from one heat treating operation to another at a speed of 10–300 m/minute; said method being further characterized in that said steel stock is electrically isolated between the austenitizing and temper-heating zones by passing said steel stock through at least one ferromagnetic core means located between the last current lead of the austenitizing zone and the first current lead of the temper-heating zone.

3,929,525

METHOD OF FORMING OHMIC CONTACTS

Frank Zygmunt Hawrylo, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 10, 1974, Ser. No. 477,850
Int. Cl.² H01L 7/38
U.S. Cl. 148—171 **10 Claims**



1. A method of providing an ohmic contact on a semiconductor body comprising:

preparing a solution in which gallium arsenide and a conductivity modifier are dissolved in indium such that the solution is saturated with said gallium arsenide;

contacting said solution to a body of single crystal gallium arsenide of high resistivity; and

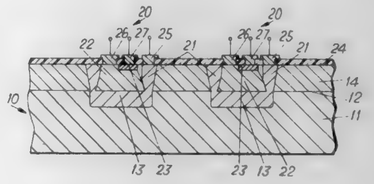
cooling said solution such that an indium gallium arsenide alloy is deposited on said body of single crystal gallium arsenide.

3,929,526

METHOD OF MAKING SEMI-CONDUCTOR DEVICES UTILIZING A COMPENSATING PREDIFFUSION

Roy Nuttall, Cheadle, and Clifford Rowbotham, Poynton, both of England, assignors to Ferranti, Limited, Hollinwood, England

Filed Feb. 7, 1973, Ser. No. 330,406
Int. Cl.² H01L 21/22, 27/04, 21/76
U.S. Cl. 148—175 **10 Claims**



1. A method of manufacturing a semiconductor device includes forming a semiconductor body by providing a semiconductor substrate of one conductivity type, forming in a first diffusion step a heavily doped region of opposite conductivity type adjacent to selected parts of one surface of the substrate, diffusing into said surface of the substrate in a second diffusion step a conductivity-type-determining impurity to provide an impurity characteristic of said one conductivity type, and subsequently depositing semiconductor material on said surface of the substrate to form an epitaxial layer of said one conductivity type from an atmosphere having as a constituent a conductivity-type-determining impurity of said one conductivity type, the epitaxial deposition being obtained solely by modifying the conditions under which the second diffusion step was performed such that the atmosphere above the substrate during the epitaxial deposition also contains a source of the semiconductor material of the epitaxial layer, there being inherently an interface region having a thickness in the range of 10 to 1000A between the bulk of the substrate and the bulk of the epitaxial layer deposited on the substrate, the properties of the interface region being determined by the diffusion of the conductivity-type-determining impurity providing an impurity characteristic of said one conductivity type.

3,929,527

MOLECULAR BEAM EPITAXY OF ALTERNATING METAL-SEMICONDUCTOR FILMS

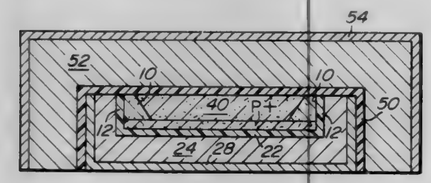
Leroy L. Chang, Lake Mohegan; Leo Esaki, Chappaqua, and Rudolf Ludeke, Millwood, all of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 11, 1974, Ser. No. 478,195
Int. Cl.² H01L 21/203, 21/84
U.S. Cl. 148—175 **4 Claims**

1. Method of growing alternately repeated layers of aluminum epitaxy on semiconductor substrates selected from the group consisting of GaAs, AlAs and pseudobinary alloys of GaAs and AlAs of the formula $Ga_{1-x}Al_xAs$ and semiconductor epitaxy selected from the group consisting of GaAs, AlAs and pseudobinary alloys of GaAs and AlAs of the formula $Ga_{1-x}Al_xAs$ on said aluminum epitaxy layer in an ultra-high vacuum evaporation system including the steps of

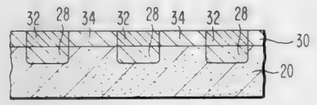
a. depositing the aluminum film on the clean surface of the semiconductor substrate over the temperature range between room temperature and 400°C; and
b. depositing the semiconductor film on the clean surface of the aluminum over the temperature range between 500°C and 600°C.

3,929,528
FABRICATION OF MONOCRIPTALLINE SILICON ON INSULATING SUBSTRATES UTILIZING SELECTIVE ETCHING AND DEPOSITION TECHNIQUES
Uryon S. Davidson, deceased, late of Scottsdale, Ariz.; by Amil J. Ajamie, administrator, and James B. Price, both of Phoenix, Ariz., assignors to Motorola, Inc., Chicago, Ill.
Filed Jan. 12, 1973, Ser. No. 323,011
Int. Cl.² H01L *21/20, 21/306, 21/76*
U.S. Cl. 148—175 **14 Claims**



1. A method of manufacture for providing a thin layer of high quality monocrystalline silicon on an insulating substrate to form a starting material in which monolithic integrated circuits having high frequency active devices can be fabricated, such method comprising:
providing a silicon wafer having a predetermined crystallographic orientation and first and second surfaces;
forming a layer of boron doped silicon having a first surface of a first concentration of dopant adjacent said first surface of said silicon wafer and an exposed second surface having a second concentration of dopant, said layer of doped silicon having an intermediate portion between said first and second surfaces having a concentration of dopant intermediate said first and second concentrations, said intermediate concentration being selected to retard the etch rate of a selective etchant;
forming a first layer of insulating material over said surfaces of said silicon wafer and said layer of doped silicon;
forming a first supporting layer over a portion of said first layer of insulating material;
exposing said second surface of said silicon wafer;
applying a selective etchant to said second surface of said silicon wafer, said etchant removing said silicon wafer at a first rate until a portion of said silicon near said intermediate portion of said layer of doped silicon is exposed, said concentration of dopant of said remaining boron doped silicon being selected to have an etch rate which is substantially less than said first etch rate;
epitaxially forming the thin layer of monocrystalline silicon on said exposed surface of said layer of doped silicon, said thin layer of monocrystalline silicon having a first surface and an exposed surface;
forming a second layer of insulating material over said exposed surface of said thin layer of monocrystalline silicon;
forming a second supporting layer over said second layer of insulating material; and
selectively removing portions of said first supporting layer, said first layer of insulating material and said layer of doped silicon to expose a surface of said thin layer of monocrystalline silicon through which field effect and bipolar devices can be fabricated.

3,929,529
METHOD FOR GETTERING CONTAMINANTS IN MONOCRYSTALLINE SILICON
Michael R. Poponiak, Newburgh, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 9, 1974, Ser. No. 530,910
Int. Cl.² H01L *7/52*
U.S. Cl. 148—191 **12 Claims**

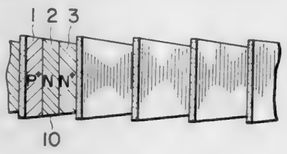


1. A method for removing fast diffusing metal contaminates from a monocrystalline silicon body comprising:
anodizing at least one side of said body in an aqueous liquid bath under conditions that result in the formation of a layer of porous silicon,
annealing the resultant structure in a nonoxidizing environment at a temperature and a length of time sufficient to diffuse the contaminates of interest a distance at least the thickness of the body, and
exposing the body to an oxidizing environment to oxidize said porous silicon layer to SiO_2.

3,929,530
PYROTECHNIC DISSEMINATING FORMULATION
Earl Thomas Niles, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Nov. 21, 1966, Ser. No. 596,008
Int. Cl.² C06D *3/00*
U.S. Cl. 149—84 **6 Claims**

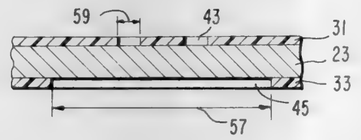
1. A pyrotechnic disseminating formulation comprising
a. from about 6 to about 23 weight per cent of an aminosubstituted thiourea as fuel,
b. from about 20 to about 36 weight per cent of a member selected from the group consisting of alkali metal and ammonium chlorates and perchlorates as oxidizer, and
c. balance an agent to be disseminated selected from the group consisting of smoke producing organic dyes, tear gas, herbicides, fungicides, pesticides, and psychotomimetic incapacitating agents.

3,929,531
METHOD OF MANUFACTURING HIGH BREAKDOWN VOLTAGE RECTIFIERS
Hirotsugu Hattori, and Yuichiro Takayama, both of Takatsuki, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan
Filed May 14, 1973, Ser. No. 360,080
Claims priority, application Japan, May 19, 1972, 47-51435
Int. Cl.² H01L *21/304, 21/306*
U.S. Cl. 156—3 **2 Claims**



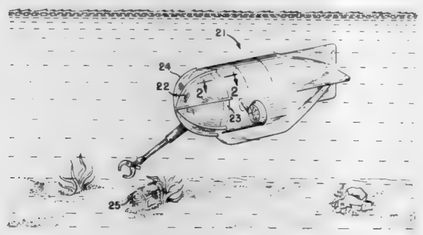
1. A method of manufacturing high breakdown voltage rectifiers comprising the steps of cutting a silicon wafer lamination consisting of a plurality of silicon wafers each having a P-N junction formed therein along planes perpendicular to the principal surface of the silicon wafers into slices of the laminated block, each of said slices of the laminated block consisting of a plurality of diodes connected in series, and subjecting said slices of the laminated block to an etching treatment with a blend etching liquid composed of hydrofluoric acid with a concentration of about 48 weight percent, nitric acid with a specific gravity of 1.420 and glacial acetic acid in a volume ratio of 2:4:1, thereby rendering each of said plurality of diodes into a bevel diode.

3,929,532
METHOD FOR ETCHING APERTURED WORK PIECE
Henry William Kuzminski, Ephrata, Pa., assignor to RCA Corporation, New York, N.Y.
Filed July 17, 1974, Ser. No. 489,393
Int. Cl.² B29C *17/08*
U.S. Cl. 156—11 **9 Claims**



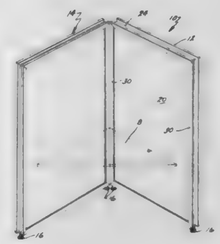
1. A method for producing an array of tapered apertures in a thin metal sheet comprising
a. coating opposite major surfaces of said sheet with etch-resistant patterns, the pattern on one major surface comprising an array of open areas surrounded by etch-resistant material, and the pattern on the opposite major surface comprising open areas of smaller shape but smaller than the open areas on said one major surface and registered with said larger open areas, each of said smaller open areas having therein a solid area of etch-resistant material that is still smaller than said smaller open area, each still-smaller solid area being continuous and unbroken by open areas,
b. simultaneously etching both sides of said coated sheet until said tapered apertures are produced in said sheet,
c. and then removing said etch-resistant patterns from both major surfaces of said sheet.

3,929,533
METHOD OF ASSEMBLING A GLASS SPHERICAL SEGMENT VIEWING PORT TO A SUBMARINE VESSEL
George M. Horn, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 1, 1974, Ser. No. 520,087
Int. Cl.² E04F *13/00*
U.S. Cl. 156—71 **5 Claims**



1. In a method of making a panoramic viewing aperture for a deep submersible vehicle which comprises the steps of,
placing a glass dome in contact with a mounting ring,
lapping said glass dome into mating surface contact with said mounting ring,
cleaning said glass dome and mounting ring,
treating a suitably dimensioned titanium gasket to improve epoxy cement bonding therewith,
coating an asbestos gasket, said titanium gasket and the lapped surfaces of said glass dome and mounting ring with epoxy cement,
the improvement comprising:
assembling the glass dome, mounting ring, titanium gasket, and asbestos gasket such that the titanium gasket is juxtaposed with said glass dome and said asbestos gasket with said mounting ring and the gaskets in mutual contact in a substantially horizontal position such that the joint therebetween extends vertically;
preloading said assembly with a predetermined compressing force to force the component parts into mating engagement;
curing said preloaded assembly while maintaining said compressive force for a predetermined time and at a controlled temperature to cause the epoxy cement to bind said components into a unitary assembly;
increasing the preload pressure means to a predetermined amount; and
joining said assembly to said deep submersible vehicle to cover an opening therein such that the spatial relationships of the components during curing is preserved, thereby providing a panoramic viewing port therein to withstand operational conditions imposed by deep-sea deployment.

3,929,534
METHOD OF MAKING A UNITARY PARTITION BY FUSING A CONNECTOR PLATE PANELS
Charles Kay, 6425 Thornapple River Drive, SE., Alto, Mich. 49302
Filed Apr. 17, 1974, Ser. No. 461,485
Int. Cl.² B32B *31/20*
U.S. Cl. 156—73.5 **8 Claims**



1. A method of locking the flanged edge of a connector plate to a selected portion of a panel comprising the steps of providing a heat-fusible bonding agent to at least one of (a) the flanged edge of the connector plate and (b) the interior of said panel selected portion; driving the flanged edge of the plate into the selected portion of the panel, with sufficient force and velocity to generate frictional heat adequate to momentarily fuse the bonding agent between the flanged edge and the selected portion; and retaining the panel and plate in fixed relationship until the bonding agent cools and locks the edge of the plate to the panel.

3,929,535
COLOR REVERSIBLE, MIRROR SURFACE GLASSY MATERIALS FROM PLUMBITE-TREATED CELLULOSICS

Truman L. Ward, and Ruth R. Benerito, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

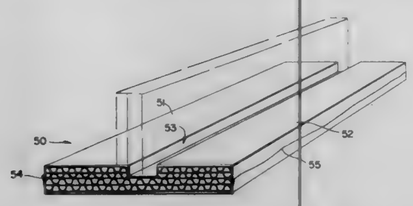
Filed Aug. 22, 1974, Ser. No. 499,693
Int. Cl.² B29C *25/00;* **B32B** *31/12;* **B44D** *5/00*
U.S. Cl. 156—82 **3 Claims**

1. A process for imparting to silica glass or ceramics reversible surface colorations which are visable from the one side in a mirror-like finish, when viewed from the same side as the light source, and are semi-transparent or clear when viewed from the opposite side, the said process comprising:
   a. contacting a plumbite-treated cellulosic sheet flatly against a silica glass or ceramic surface, the said cellulosic sheet containing about from 8% to 15% lead,
   b. heating the contacted material in a closed oven, or other limited oxygen environment, at a temperature of below 200°C. and elevating said temperature to about from 600° to 800°C. and maintaining the elevated temperature for a period of about 60 minutes to obtain a chemically bound unit of assembled components with hard surfaces,
   c. cooling the said unit slowly to avoid fractionation of the component parts, and
   d. reheating the plumbite-treated side of the said unit with a gas-air flame of about from 1,000° to 1,500°C. to obtain colorations in the gold, silver, and purple range upon heating for periods of about from 1 to 5 minutes, the lesser quantities of heat yielding the golden tones, the medium quantities the silver tones, and the higher quantities the purplish tones.

3,929,536
MOISTURE RESISTANT CORNER POST

William G. Maughan, Nutley, N.J., assignor to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 252,048, May 10, 1972. This application Apr. 18, 1974, Ser. No. 461,922
Int. Cl.² B24C *27/26;* **B29C** *27/18*
U.S. Cl. 156—85 **2 Claims**

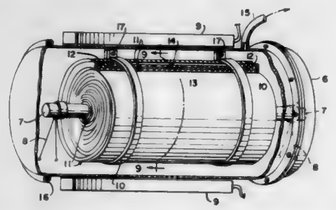


1. A method of manufacturing moisture resistant corner posts constructed from corrugated paperboard or the like which are protected from moisture penetration and contact with water vapor to thereby permit the corner posts to retain a high percentage of their dry strength when exposed to high humidity conditions comprising the steps of:
   1. applying a top sheet of heat shrinkable plastic film of a width that is greater than the width of said corner posts to the upper face of said corner posts;
   2. vacuum sealing said top sheet to the upper face of said corner posts;
   3. applying a layer of adhesive to the bottom of said corner posts;
   4. applying a bottom sheet of heat shrinkable plastic film of a width that is greater than the width of said corner posts to the lower face of said corner posts;
   5. simultaneously adhering the top and bottom sheets of plastic film longitudinally to one another at each side of said corner posts;
   6. adhering the top and bottom sheets of plastic film transversely to one another at each end of said corner posts; and,
   7. collecting the completely film enclosed corner posts sealed on all sides.

3,929,537
PREPARATION OF PLASTIC-METAL LAMINATES

Ransome W. Erwin, Houston, Tex., assignor to Austral-Erwin Engineering Co., Houston, Tex.

Division of Ser. No. 371,346, June 19, 1973, abandoned, which is a division of Ser. No. 246,220, April 21, 1972, Pat. No. 3,837,956, which is a division of Ser. No. 41,375, May 28, 1970, abandoned, which is a division of Ser. No. 311,137, Dec. 1, 1972. Pat. No. 3,841,937. This application Mar. 26, 1974, Ser. No. 454,928
Int. Cl.² B32B *15/08*
U.S. Cl. 156—86 **4 Claims**



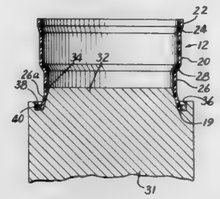
1. In a method of heat bonding a preformed, pliable continuous plastic film comprising a fluorocarbon polymer to a metal surface without employment of applied compressive pressure to said film or use of bonding additives; wherein the said film is first superimposed upon the metal surface of a thin flexible metal sheet in atmospheric environment over a substantial bonding area, and then the unbonded combination is subjected to partial or near total vacuum, and, next brought to the softening and bonding temperature of the plastic, the plastic film having no confining contact on its surface at any time during heating and bonding within the bonding area and entrapped air between the plastic film and the metal surface being liberated by the vacuum upon primary expansion of the plastic as its temperature is raised, thereby providing air free bonding when said film shrinks and bonds as the temperature is elevated, the improvement wherein, prior to subjecting to vacuum and heating, the superimposed layer of metal sheet and preformed pliable plastic film are wrapped in coils around a shaft or core, with superimposed spacer means at each end of the coil to provide an expansion space for a layer of film between each coil, bound with securing means to prevent uncoiling, and then subjected to vacuum and heating, to bond plastic film to the metal sheet within the bonding area, intermediate said space means and said securing means.

3,929,538
METHOD OF ASSEMBLING A THERMOPLASTIC SLEEVE ONTO A PIPE OR THE LIKE

Leverne G. Diebel, Cuyahoga Falls, Ohio, assignor to Clow Corporation, Oak Brook, Ill.

Filed June 14, 1974, Ser. No. 479,743
Int. Cl.² B29D *23/01*
U.S. Cl. 156—86 **6 Claims**

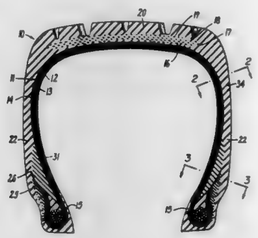
1. A method for assembling a thermoplastic tubular sleeve over the end of a pipe or the like, said pipe having an adhesive material disposed on the end thereof received within said sleeve, and said sleeve having an outermost end and an inner peripheral configuration which would normally cause the adhesive material to be wiped along the surface of said pipe forwardly of said outermost end of the sleeve as it is assembled coaxially over the end of the pipe, said method comprising the steps of heating at least the end portion of said sleeve to be received over the end of said pipe to a temperature rendering said heated portion of said sleeve thermoplastic, deforming the outermost end and a first predetermined axial length of said heated end of said sleeve to a configuration having an inner surface circumference greater than the outer surface circumference of said end of said pipe so that said deformed end of said sleeve may be received over said end of said pipe and said adhesive material disposed thereon without wiping said adhesive along said end of said pipe, reducing the temperature of said outermost end and a contiguous second predetermined axial length of said heated end of said sleeve to a temperature below said thermoplastic temperature to maintain said deformed configuration of said first predetermined length of said sleeve, assembling said deformed end of said sleeve coaxially onto said end of said pipe member so that at least said outermost end and a portion of said deformed length of said sleeve is received over said adhesive material disposed on said pipe, and causing said deformed end of said sleeve to return to a substantially non-deformed configuration to compress said adhesive material between the inner peripheral surface of said sleeve and the outer peripheral surface of said end of said pipe.



3,929,539
ELASTOMERS ASSOCIATED WITH CORDS OF RADIAL TIRES AT POINTS CLOSE TO AND REMOVED FROM BEADS

Jean Bernard Montagne, Cebazat, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand, France

Continuation of Ser. No. 285,083, Aug. 30, 1972, abandoned, which is a division of Ser. No. 99,371, Dec. 18, 1970, Pat. No. 3,709,277. This application June 21, 1974, Ser. No. 481,903
Claims priority, application France, Dec. 23, 1969, 69.44776
Int. Cl.² B29H *17/02*
U.S. Cl. 156—123 **2 Claims**

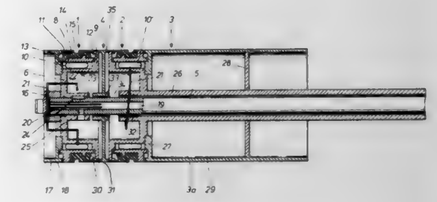


1. A method of manufacturing a radial pneumatic tire comprising the steps of forming a layer of green rubber stock convertible by vulcanization into a relatively low-modulus rubber, forming a ply of heat-shrinkable cords, calendering said cords with green rubber stock convertible by vulcanization into a relatively high-modulus rubber, providing a pair of bead rings, mounting said ply of calendered cords on said layer of rubber in tire-carcass form with said cords oriented radially and anchored on said bead rings to define two spaced-apart bead regions and, intermediate therebetween, a tread region, and heating said tire to effect vulcanization thereof and to cause said cords to shrink so that said cords and said rubber in which they are calendered penetrate into said layer of rubber adjacent to said tread region, whereby a tire is produced in which said relatively high-modulus rubber calenders said cords adjacent to said tread region, said relatively low-modulus rubber spaces said cords apart from one another adjacent to said tread region, and said relatively high-modulus rubber calenders said cords and spaces said cords apart from one another adjacent to said bead regions.

3,929,540
METHOD AND DRUM FOR BUILDING AND SHAPING BLANKS FOR RADIAL-PLY TIRES

Gerhard Held, Hochstadt, and Walter Ballé, Dornigheim-Waldsiedlung, both of Germany, assignors to Rheinstahl Aktiengesellschaft, Essen, Germany

Continuation-in-part of Ser. No. 271,125, July 12, 1972, Pat. No. 3,862,871. This application Dec. 19, 1974, Ser. No. 534,176
Claims priority, application Germany, July 13, 1971, 2134904
Int. Cl.² B29H *17/14, 17/16, 17/22, 17/26*
U.S. Cl. 156—123 **3 Claims**



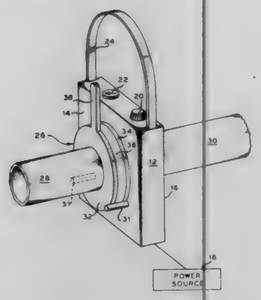
1. A method for building and shaping a tire carcass on a tire building drum having two radially expandable bead holders movable relative to one another, an extension drum on at least one bead holder, and means for feeding compressed gas into a chamber located between the bead holders, comprising the method steps:
   A. bringing closely together the bead holders and thereby forming a substantially continuous cylindrical surface;
   B. laying a tire band on said cylindrical surface with one axial end of the tire band spaced axially beyond said one bead holder by a distance *a* equal to the length of the axial end portion of the tire band to be folded around a bead ring;
   C. locating a bead ring around the tire band at said distance from said one axial end of said tire band and axially fixing the tire band to said one bead holder by expanding said one bead holder and thereby clamping said tire band against said bead ring;
   D. axially moving apart said bead holders and thereby correspondingly spacing the other bead holder from the remaining free axial end of the tire band;
   E. locating a further bead ring around the tire band in radial opposition to said other bead holder and expanding said other bead holder and thereby clamping said tire band against said further bead ring;
   F. introducing a compressed gas into the chamber formed by the two bead holders and the tire band while simultaneously reducing the axial separation between said bead holders and thereby forming the substantially cylindrical tire band into a substantially toroidal shape.

3,929,541

METHOD FOR HEATING THERMOPLASTIC ELEMENTS

Johnnie E. Spears, Titusville, Pa., and Donald L. Caldwell, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 29, 1974, Ser. No. 464,955
Int. Cl.² B29C 27/06
U.S. Cl. 156—157 6 Claims



1. A method for heating an end of a first thermoplastic element to a first fusion temperature and a second thermoplastic element to a second fusion temperature, wherein the fusion temperature of said first element is lower than the fusion temperature of the second element and wherein the fusion temperature of both elements is reached at approximately the same time, comprising the steps of:
positioning an insulating surface adjacent a first heating surface of a heating means which has two heating surfaces to establish an insulated heating surface and a noninsulated heating surface;
pressing the insulated heating surface against the end of the first element to be heated;
pressing the noninsulated heating surface against the end of the second element to be heated;
heating the end of the second element for a period of time X;
thereafter removing the insulating surface from the first surface of the heating means;
pressing the noninsulated first surface against the end of the first element and the noninsulated second surface against the end of the second element for a period of time Y;
removing the noninsulated surfaces of the heating means from the ends of the elements; and
pressing the heated ends of the elements together while said ends are at or above their respective fusion temperatures and while said ends are properly aligned.

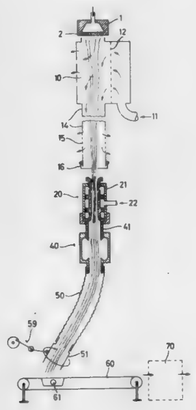
3,929,542

NON-WOVEN WEBS OF FILAMENTS OF SYNTHETIC HIGH MOLECULAR WEIGHT POLYMERS AND PROCESS FOR THE MANUFACTURE THEREOF

Heinz Gehrig, Buerstadt; Hermann Linge, Carlsberg, and Sepp Wagner, Weinheim, all of Germany, assignors to BASF Farben und Fasern A.G., Ludwigshafen (Rhine), Germany

Filed Nov. 3, 1971, Ser. No. 195,427
Claims priority, application Germany, Nov. 3, 1970, 2053918
Int. Cl.² D04H 3/16
U.S. Cl. 156—167 4 Claims

1. A process for the manufacture of a non-woven web of spun filaments, consisting of filaments or strands of filaments of synthetic high molecular weight polymeric material, by extrusion of filament-forming melts through spinnerets having a plurality of spinning holes arranged in circles, ellipses or lines, wherein:
a. cooling air is caused to impinge on the extruded filaments from one side at an angle of from 0° to 90° to the direction of travel of the filaments, all or at least part of which air is deflected to a direction of flow parallel to the filaments, by which means the filaments are asymmetrically cooled and a primary take-up of the filaments is effected;
b. at the end of the cooling zone substantially all of the cooling air is allowed to escape from or is sucked away from the filaments;
c. the filaments, substantially free from cooling air, are subjected to the main take-up forces in a take-up zone which is immediately downstream of the cooling zone and is in the form of a single-stage or, preferably, multi-stage pneumatic jet;
d. the filaments being thereby stretched by the action of said primary and main take-up forces upon them;



e. after stretching, the partially plastic filaments are helically crimped by periodic alteration of the position of one or more annular or cylindrical vortices of gaseous medium along the filaments at a high frequency with partial flow-off and replenishment of the vortex or vortices in conjunction with said asymmetrical cooling of the filaments whereby the diameter of the helices is from 1 to 10 mm and a change in direction of turn occurs after every 1 to 50 times;
f. the crimped filaments are discharged through flexibly mounted mouthpieces, which describe a transverse motion with superimposed rotating motion, onto a moving belt preferably provided with suction means at the point at which the said filaments initially contact the belt; and
g. the laid-down web is bonded.

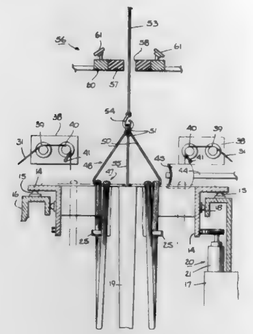
3,929,543

HANK FORMING MACHINE FOR A POLE CONSTRUCTION AND METHOD OF FORMING A POLE

Arthur Leslie Scott, Columbia; J. Hilton Parsons, Jr., and John S. Hammond, both of Newberry, all of S.C., assignors to Shakespeare Company, Columbia, S.C.

Division of Ser. No. 200,874, Nov. 22, 1971, Pat. No. 3,787,268. This application Sept. 6, 1973, Ser. No. 394,867
Int. Cl.² B65H 81/06
U.S. Cl. 156—169 13 Claims

1. In a method of forming an elongated pole the steps of
forming a roving of resin impregnated filamentary material into a plurality of depending drapes over and between radially extending spokes of a circular rotatable member, thereafter bringing the draped roving together and lifting the material through a deformable orifice for pressing the filamentary material together; and
subsequently wrapping the pressed material together for



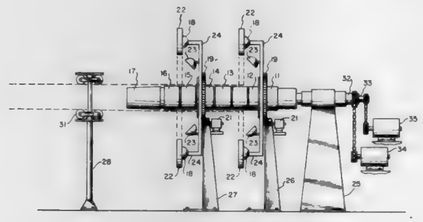
subsequent hardening into a self-supporting pole structure.

3,929,544

METHOD OF PRODUCING CONTINUOUS LENGTHS OF REINFORCED PLASTIC PIPE

Joseph Medrano, Jr., 14804 Daley Lane, Woodbridge, Va. 22191

Division of Ser. No. 290,601, Sept. 20, 1972, Pat. No. 3,837,970. This application June 14, 1974, Ser. No. 479,402
Int. Cl.² B31C 13/00
U.S. Cl. 156—189 1 Claim



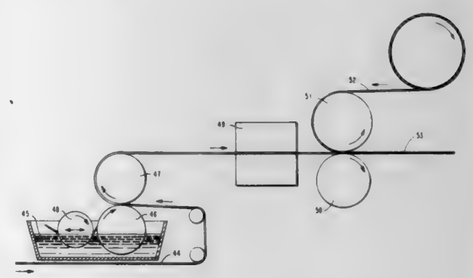
1. A method of production of built-up fiber reinforced plastic tubing on an elongated mandrel having a determined axis, where the tubing wall is built-up by layering and curing tape material of a variety having a cohesive characteristic, and the built-up tubing automatically moves off one selected end of the mandrel wherein:
the tape material is spirally wound, under selected tension, on a first variable circumference portion of said mandrel as said first portion of said mandrel continuously oscillates between an expanded first operational state and a relatively short term contracted second operational state, and said first portion periodically moves back and forth a selected axial distance as said first portion moves through each expansion-contraction cycle of operation;
the oscillation and axial movement of said first portion is synchronized such that said first portion is in said first operational state during the time period said first portion moves along its axis toward said selected end; and
the axial movement of said built-up tubing is restrained as said first portion of said mandrel moves in the reverse direction along the axis of said mandrel; said built-up tubing being restrained by a second variable circumference portion of said mandrel located adjacent said selected end, said second portion being expanded when said first portion is in said second operational state so as to produce a high friction resistant contact between said second portion and the internal surface of said built-up tubing.

3,929,545

PRESSURE LAMINATING METHOD

Emil J. Van Dyck; Jerry L. Malina, and Raymond E. Schiller, all of Temple, Tex., assignors to Dart Industries Inc., Los Angeles, Calif.

Continuation of Ser. No. 268,259, July 3, 1972, abandoned, which is a continuation-in-part of Ser. No. 170,076, Aug. 9, 1971, abandoned. This application May 23, 1974, Ser. No. 472,567
Int. Cl.² B32B 31/12, 31/20
U.S. Cl. 156—220 8 Claims



1. A method of making a laminated product comprising the steps of:
a. impregnating a decorative sheet with a liquid thermosetting resin;
b. drying said resin on said decorative sheet;
c. coating said impregnated sheet on one side with a fluid radiation-curable resinous material consisting of 100 percent reactive solids;
d. radiating said resinous material until it attains a dimensionally stable semisolid state;
e. impressing a removable sheet upon said semisolid material with at least one pressure roller at about 5 to 150 pounds per linear inch;
f. placing the side of said impregnated sheet opposite said semisolid material into contact with a substrate;
g. applying heat and pressure to said impregnated sheet, removable sheet, semisolid material and substrate to cure said resin and semisolid material and bond said decorative sheet to said substrate; and,
h. removing said removable sheet.

3,929,546

COLLAPSIBLE TIRE BUILDING DRUM

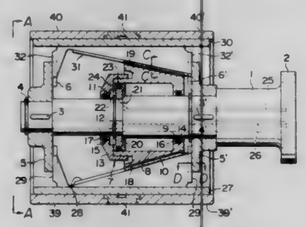
Yoshiaki Katagiri, Kodaira; Takao Urayama, Higashimurayama, and Masaji Mori, Kurume, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo and Mori Ironworks Company Limited, Kurume, both of, Japan

Filed Dec. 4, 1973, Ser. No. 421,632
Claims priority, application Japan, Dec. 7, 1972, 47-122829
Int. Cl.² B29H 17/16
U.S. Cl. 156—417 5 Claims

1. A collapsible tire building drum for manufacturing a carcass structure for a green tire, which comprises:
a rotary shaft for rotating said building drum;
a pair of flange members made of light metal and fixedly mounted on said rotary shaft in facing and spaced relationship with each other, each of said flange members having a plurality of radially extending guide grooves on its side surface facing the opposite flange member, each of said flange members having at least one pair of radially extending small grooves respectively formed on the inner side walls of each of said guide grooves;

a conical cam member made of said light metal and slidably mounted on said rotary shaft between said pair of flange members, said conical cam member having on its peripheral wall a plurality of axially extending and steeply tapered grooves and a plurality of axially extending and gently tapered grooves each of which is interposed between the adjacent two of said steeply tapered grooves, said conical cam member having a plurality of pairs of axially extending small grooves at least one pair of which are respectively formed on the side walls of each of said steeply tapered grooves and gently tapered grooves;

a first group of segments made of said light metal, each of said first group of segments having on its both side walls at least one pair of radially extending side projections to be respectively slidably engaged with said guide grooves



of said flange members, each of said projection having at least one pair of radially extending small grooves respectively formed on its side walls, said small grooves of said first group of segments respectively facing alternate ones of said small grooves of said flange members so as to define first guide rod bores, each of said first group of segments having on its radially inner wall an axially extending and steeply tapered inner projection slidably engaged with one of said steeply tapered grooves of said conical cam member, said inner projection having at least one pair of axially extending small grooves respectively formed on its side walls, each of said at least one pair of small grooves facing each of said at least one pair of small grooves of each steeply tapered groove so as to define a pair of second guide rod bores;

a second group of segment made of said light metal and interposed between the adjacent two of said first group of segments, each of said second group of segments having on its both side walls at least one pair of radially extending side projections to be respectively slidably engaged with said guide grooves of said flange members, each of said projections having at least one pair of radially extending small grooves respectively formed on its side walls, said small grooves of said second group of segments respectively facing the remaining small grooves of said flange members so as to define third guide rod bores, each of said second group of segments having on its radially inner wall an axially extending and gently tapered inner projection slidably engaged with one of said gently tapered grooves of said conical cam member, said inner projection of each of said second group of segments having at least one pair of axially extending small grooves respectively formed on its side walls, each of said at least one pair of small grooves facing each of said at least one pair of small grooves of each gently tapered groove so as to define a pair of fourth guide rod bores;

a plurality of guide rods respectively slidably accommodated in said first, second, third and fourth guide rod bores to provide respective small gaps between said projections and said grooves, each of said guide rods having a circular cross-section and being made of synthetic resin; and

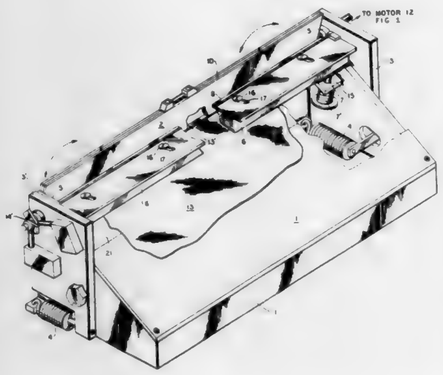
a conical cam member sliding means for sliding said conical cam member toward and away from alternate one of said flange members along said rotary shaft to collapse and expand said tire building drum.

3,929,547

APPARATUS FOR FOLDING AND PRESSING AN EDGE OF PLIANT MATERIAL

Danilo Paccagnella, Via Oltrebrenta, 6, Noventa Padova, Italy

Filed July 20, 1973, Ser. No. 381,227
Claims priority, application Italy, Dec. 7, 1972, 41711/72
Int. Cl.² B29C *17/00*
U.S. Cl. 156—443 **9 Claims**



1. Apparatus for folding and pressing an edge of a soft pliable material, comprising:

a supporting surface to receive and support a material to be folded;

movable material clamping means mounted in laterally spaced apart relation to an extremity of said supporting surface, said clamping means being mounted for selective movement between a raised position relative to said support surface and a lowered position for clamping the material against said support surface;

a material folding blade carried by said clamping means and having a folding edge parallel with said supporting surface;

means mounting said folding blade on said clamping means for a limited extent of movement transversely of said clamping means between an extended position and a retracted position, said folding blade when in said extended position placing said folding edge adjacent said supporting surface extremity in fold line defining relation with the material clamped by said clamping means;

a folding body mounted for selective rotation about an axis which is substantially parallel with said supporting surface extremity, said folding body having a folding surface which forms an extension of said support surface beyond said extremity when said folding body is rotated to an initial rotational position;

means operative to rotate said folding body about said axis from said initial rotational position to a terminal rotational position placing said folding surface in substantially parallel and confronting relation with said supporting surface between said extremity and said clamping means, so that an edge portion of the material which was clamped on said folding surface is folded back onto and pressed against said clamped material;

cam means mounted for rotation concurrently with said selective rotation of said folding body;

cam engaging means operatively associated with said clamping means to be engaged by said cam means for moving said clamping means to said raised position when said folding body is in said initial rotational position; and means operatively associated with said clamping means to lower said clamping means.

6. Apparatus for folding and pressing an edge of a soft pliable material, comprising:

a supporting surface to receive and support a material to be folded;

movable material clamping means mounted in laterally spaced apart relation to an extremity of said supporting surface, said clamping means being mounted for selective movement between a raised position relative to said support surface and a lowered position for clamping the material against said support surface;

a material folding blade carried by said clamping means and having a folding edge parallel with said supporting surface;

means mounting said folding blade on said clamping means for a limited extent of movement transversely of said clamping means between an extended position and a retracted position, said folding blade when in said extended position placing said folding edge adjacent said supporting surface extremity in fold line defining relation with the material clamped by said clamping means;

a folding body mounted for selective rotation about an axis which is substantially parallel with said supporting surface extremity, said folding body having a folding surface which forms an extension of said support surface beyond said extremity when said folding body is rotated to an initial rotational position;

means operative to rotate said folding body about said axis from said initial rotational position to a terminal rotational position placing said folding surface in substantially parallel and confronting relation with said supporting surface between said extremity and said clamping means, so that an edge portion of the material which was clamped on said folding surface is folded back onto and pressed against said clamped material; and

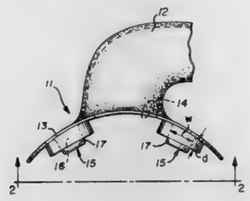
resilient means supporting said axis of said folding body to allow said axis and said folding body to undergo a limited extent of translational movement relative to said supporting surface as said folding body is rotated to assume said terminal position.

3,929,548

METHOD FOR CUSTOMIZING MOUTHPIECE RETAINER FOR UNDERWATER BREATHING APPARATUS

Ralph B. Shamlian, San Francisco, Calif., assignor to Farallon Industries, Inc., Belmont, Calif.

Division of Ser. No. 402,720, Oct. 2, 1973, Pat. No. 3,844,281.
This application Aug. 21, 1974, Ser. No. 499,183
Int. Cl.² A61D *15/00*; B29B *3/00*
U.S. Cl. 156—245 **6 Claims**



1. The method of customizing the retaining portion of a mouthpiece of an underwater breathing apparatus to the bite of the individual user comprising the steps of:

heating a blank of thermoplastic material as an individual portion of the retaining portion of the mouthpiece to a temperature sufficient to render the blank thermoplastic; placing the mouthpiece in the mouth of the user while at an elevated temperature compatible with use within the mouth of the user and while in a thermoplastic state;

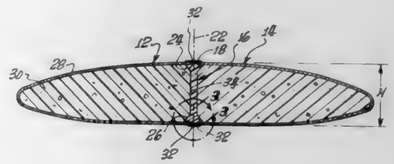
biting down on the blank thermoplastic material while in the thermoplastic state to squeeze and compress the blank so as to cause the blank to flow and to form an impression of the users bite in the thermoplastic blank and allowing the impressed blank to cool, whereby the retainer portion of the mouthpiece is customized to the bite of the user.

3,929,549

SURFBOARD CONSTRUCTION

Robert L. Smith, 435 Fair Drive, Apt. No. 103, Costa Mesa, Calif. 92626

Division of Ser. No. 316,058, Dec. 18, 1972, Pat. No. 3,802,010. This application Dec. 14, 1973, Ser. No. 424,727
Int. Cl.² A63C *15/02*; B29C *5/02*
U.S. Cl. 156—245 **3 Claims**



1. A method for constructing a surfboard comprising:

laying cover layers in each of two molds that each have substantially the shape of opposite halves of a surfboard that is divided by an imaginary vertical plane passing longitudinally through the middle of a horizontal surfboard, and that each have a cavity with a depth at least twice as great as the thickness at a middle portion thereof, including applying a thin layer of wax-like material to the mold, spraying a gel coat within the wax-like material, applying flexible fiberglass sheet material saturated with resin within the gel coat, and squeegeeing excess resin from within the fiberglass sheet material;

filling each mold with a moldable material to form two elongated surfboard portions, each with an inner surface that can lie substantially along said imaginary plane, including pouring foamable material into the shell formed by said cover layer and allowing it to harden;

forming an elongated cutout region in the molding material along the top and bottom of each elongated surfboard portion at the inner surface thereof to expose an area of the inner face of the cover layer;

filling the cutout regions with an epoxy resin adhesive and allowing it to harden at least partially; and

applying a layer of epoxy resin adhesive of a putty-like consistency and of a thickness of more than one-sixteenth inch to the inner surface of the body and to the epoxy adhesive in said cutout regions.

3,929,550

PROCESS FOR PROMOTING POLYOLEFIN ADHESION

Norman G. Gaylord, New Providence, N.J., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Aug. 27, 1973, Ser. No. 392,134
Int. Cl.² C09J *5/00*
U.S. Cl. 156—306 **6 Claims**

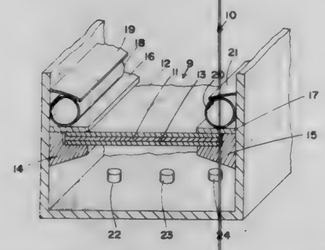
1. A process for forming a tightly adherent layer of solid olefinic polymer on the surface of a solid substrate which comprises admixing as the entire resinous ingredient previously unmodified, normally solid synthetic resin derived entirely from alpha mono-olefinically unsaturated hydrocarbons containing from two to four carbon atoms with between about 0.5 and about 5% based upon the weight of said resin of t-butyl betahydroxyethyl peroxide, applying the resulting mixture directly to the surface of said solid substrate and then pressing said mixture against said substrate by the application of pressure of at least about 20,000 psi and elevated temperatures in the range from about 122° to about 190°C until the major portion of said t-butylbetahydroxyethyl peroxide has been decomposed.

3,929,551

SEALING APPARATUS FOR CONTINUOUS MOVING WEB

John J. Frantzen, North St. Paul, Minn., assignor to Buckbee-Mears Company, St. Paul, Minn.

Filed July 11, 1974, Ser. No. 487,662
Int. Cl.² C23F *1/02*
U.S. Cl. 156—345 **5 Claims**



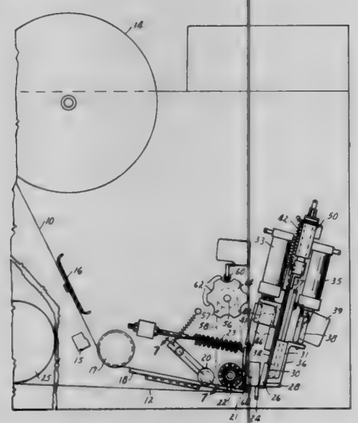
1. An apparatus for isolating one face of a continuous web from attack by etchant while allowing the opposite face of the web to be attacked by an etchant as the web passes through an etching chamber, comprising:
- an etching chamber for directing etchant at one face of a web;
- means located in said etching chamber for supporting the opposite edges of said web including a first pair of sealing members for contacting the edges on one face of said web; and
- flexible sealing means for coacting with said first pair of sealing members for sealing the edges of said web between said first pair of sealing members and said flexible sealing means to thereby provide a barrier to etchant leaking past the edges of the web.

3,929,552

TAPE APPLICATING APPARATUS

Larry A. Bettenhausen, West Lakeland Township, Washington County; James H. Casey, Roseville, both of Minn., and Robert A. Luhman, Cylon Township, St. Croix County, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 28, 1974, Ser. No. 436,874
Int. Cl.² B65H *35/06*
U.S. Cl. 156—391 **8 Claims**



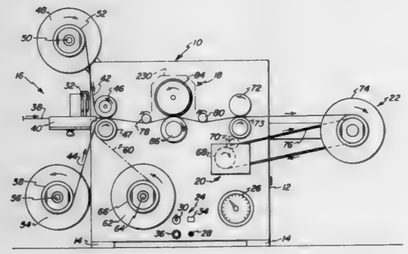
8. An apparatus for severing and applying short lengths of tape comprising a backing having a pressure-sensitive adhesive coating on one surface thereof, a liner wider than said backing, said liner surfacing said adhesive with the edges of said liner extending beyond said backing and said backing having a lofty fibrous surface opposite said adhesive coated surface, to a product including:
- a housing;
- a platen for supporting said tape and liner, said platen having a width equal to the width of said backing;
- a guide roller engageable with said fibrous surface to hold said tape and liner on said platen, said roller having radially extending flanges to engage and bend the outward extending edges of said liner along the edges of said platen to guide said tape and liner along said platen;
- means for dispensing tape from an end of said platen in predetermined measured lengths comprising a driven roller which engages the lofty surface of said tape to move said tape and liner along said platen, and means at said end of said platen for peeling said liner from said tape;
- cutting means for severing the dispensed lengths of tape; and
- an applicating means mounted on said housing to receive the severed lengths of tape comprising:
  - a reciprocating pad located on the side of the cutting means opposite said dispensing means having a surface suitable for pressing a severed length of tape against the product;
  - a bifurcated plate slidably supported on said pad and defining a pair of fingers positioned one on each side of said pad and movable in relation to said pad to hold a severed portion of said tape firmly against an applicating surface of said pad and adapted to move with said pad, said fingers extending toward each other over said surface;
  - means for retracting said fingers and said reciprocating pad from said product;
  - a push rod supported for reciprocating movement parallel to and independent of said pad and in position for movement between said fingers to a holding position whereby when said pad has applied said severed length of tape to said product, said rod can hold said severed material against said product while said pad and fingers are retracted insuring the severed material remains in contact with said substrate when the fingers are retracted.

3,929,553

FILM SLEEVING APPARATUS

Charles van Kempen, Haworth, N.J., assignor to Simplex Specialty Co., Inc., Hackensack, N.J.

Filed Sept. 13, 1974, Ser. No. 505,866
Int. Cl.² B29C *27/02*; B30B *15/34*
U.S. Cl. 156—391 **7 Claims**



1. Apparatus for sleeving a web of photographic film within a sleeve of foil, the web of film having a given width between opposite side edges thereof and being selected from a plurality of webs of film of different fixed given widths, said apparatus comprising:

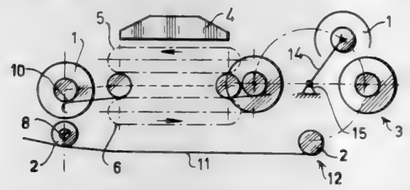
supplying means for supplying webs of foil along a predetermined path of travel;
- feed means for feeding the web of film to be sleeved into said predetermined path of travel and between the webs of foil, said feed means including guide means for accommodating film webs of any one of said different fixed given widths;
- drive means for transporting the webs of foil, with the web of film therebetween, along said predetermined path of travel; and
- heat-sealing means for fusing the webs of foil at the side edges of the web of film, as the foil and the film move along said predetermined path of travel, to form a sleeve surrounding the web of film, said heat-sealing means comprising:
  - a heater roller;
  - means mounting said heater roller for rotation;
  - first and second heat rings disposed on the heater roller for engaging the foil webs at the side edges of the film web;
  - means for heating the heat rings so as to seal the engaged foil;
  - at least two annular grooves located in the circumference of the heater roller, said grooves being spaced from the first heat ring at different fixed distances corresponding to the different fixed given widths of said plurality of webs of film;
  - said second heat ring being selectively positionable in one of said annular grooves to match the fixed distance between the first and second heat rings to the given width of the selected web of film.

3,929,554

DEVICE FOR MANUFACTURING FIBRE REINFORCED PLASTIC TUBES

Willem Kiezebrink, Hardenberg, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Filed June 14, 1973, Ser. No. 369,844
Claims priority, application Netherlands, June 14, 1972, 7208096
Int. Cl.² B31C *1/02*, *1/08*
U.S. Cl. 156—425 **4 Claims**



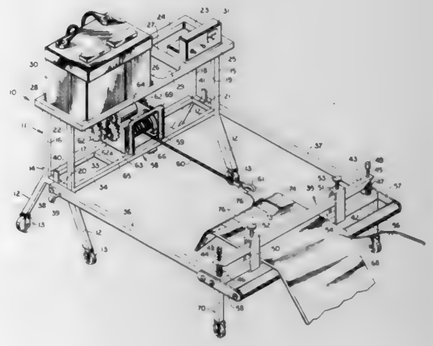
1. An apparatus for manufacturing fiber reinforced pipes, comprising:
- a core on which reinforcing fibers can be wound, said core having a pair of shafts, one shaft extending outwardly from each side of said core, and a pair of gear wheels having gear teeth, one gear wheel being fixedly mounted on each of said shafts;
- a heater for heating said core with the fibers and resins applied thereto;
- a conveyor extending through said heater and comprising a movable upper chain having links and a movable lower chain having links, said chains being spaced apart and being substantially parallel, means for driving said chains in opposite directions relative to one another and at different speeds, said gear wheel teeth engaging said links of said chains whereby said core rotates while simultaneously being conveyed through said heater;
- a core lifting device mounted for movement of said core from a supply station to a winding device provided for the apparatus, said lifting device also being mounted for subsequent movement of said core from said winding device toward said conveyor; and
- a return means for returning said core after it has been conveyed through said heater, said return means further including means to control the rate of return of said core.

3,929,555

CONVEYOR BELT STRIPPER

Lloyd E. Sanders, 2680 Braithwood Road, NE., Atlanta, Ga. 30345

Filed Jan. 7, 1974, Ser. No. 431,050
Int. Cl.² B66D *1/00*
U.S. Cl. 156—584 **4 Claims**



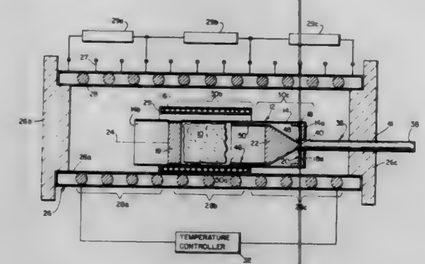
1. Apparatus for stripping a layer of material from a conveyor belt or the like comprising a framework including a winch track means for supporting a winch means and allowing a winch means to move along a rectilinear path, a pair of overlying rectilinear clamping bars positioned approximately parallel to the path of said winch track means and movable toward and away from each other and displaced from said winch track means for rigidly clamping the end portion of a flat belt of the like uniformly across its length with the length of the belt extending normal to the length of said winch track means, winch means including a reel and cable means mounted on said winch track means, said winch means being freely movable along the length of said winch track means for repositioning the free end of the cable with respect to said clamping bars and for movement into alignment with the length of the flat belt in the clamping bars, said cable means extending freely outwardly from said reel toward said clamping bars, and power means connected to said winch means for supplying power to said winch means, whereby a conveyor belt or the like which is to have a layer of material thereof stripped therefrom is clamped in the clamping bars with its end portion extending from the clamp member toward the winch track means and with its length extending normal to the winch track means, the winch means moved along the winch track means into alignment with the portion of the material of the conveyor belt which is to be stripped from the conveyor belt and the cable is connected to the portion of the material to be stripped from the conveyor belt, and the winch is operated to strip the portion of the material from the conveyor belt in a direction extending along the length of the conveyor belt.

3,929,556

NUCLEATING GROWTH OF LEAD-TIN-TELLURIDE SINGLE CRYSTAL WITH AN ORIENTED BARIUM FLUORIDE SUBSTRATE

Raghvendra K. Pandey, West Carrollton, Ohio, assignor to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Feb. 19, 1974, Ser. No. 443,385
Int. Cl.² H01L 7/62
U.S. Cl. 156—611 **25 Claims**



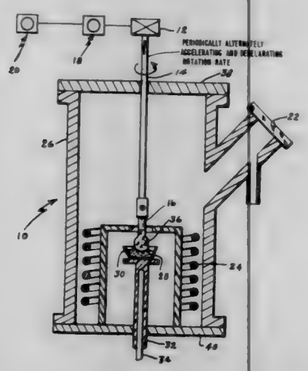
1. The method of producing a single crystal of lead-tin-telluride comprising depositing homogeneous lead-tin-telluride vapor on a crystallographically oriented barium fluoride substrate to form a growing bulk single crystal having the same orientation as the substrate and removing the single crystal from the substrate after sufficient growth of the single crystal has occurred for the crystal to be self-supporting.

3,929,557

PERIODICALLY AND ALTERNATELY ACCELERATING AND DECELERATING ROTATION RATE OF A FEED CRYSTAL

John W. Goodrum, Atlanta, Ga., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 11, 1973, Ser. No. 369,035
Int. Cl.² B01J 17/18
U.S. Cl. 156—617 **5 Claims**



1. In a system for growing single crystalline boules which comprises the steps of placing a seed crystal in contact with the surface of a molten solution of crystal growing material, lowering the temperature of the molten solution at a programmed rate to a temperature sufficient to effect the formation of a rod-like crystalline boule on said seed crystal while simultaneously rotating and withdrawing said seed crystal during said lowering of said temperature, and cooling said formed crystalline boules to room temperature, the improvement which comprises periodically altering the rotation rate of said rotating seed crystal by alternately accelerating and decelerating said rate of rotation at a constant rate for a predetermined period of time.

3,929,558

METHOD OF ADDING A SOLUBLE ALUMINUM SALT TO CHEMICALLY SOFTENED WOOD CHIPS FOLLOWED BY MECHANICAL REFINING

Alan C. Shaw, St. Catharines, Canada, assignor to The Ontario Paper Company Limited, Thorold, Canada

Filed Mar. 11, 1974, Ser. No. 449,748
Int. Cl.² D21C 3/26
U.S. Cl. 162—28 **8 Claims**

1. In a process for producing wood pulp by the successive steps of treating wood chips with an aqueous solution of a soluble bisulphite salt to soften the bonds between the fibres in the chips and obtain softened chips and subjecting the softened chips to mechanical refining to cause separation of the fibres of the softened chips one from another to provide a wood pulp, the improvement which comprises treating said softened chips after said softening step and prior to said mechanical refining step with a soluble salt of aluminum which yields positive aluminum ions in solution to obtain increased fibre-to-fibre friction during said refining step and to result in increased stretch, fibre-flexibility and conformability of the fibres of the pulp while substantially avoiding fibre shortening, generation of fines and drop in freeness, said soluble salt being used in a quantity of at least 5 lbs. per ton of pulp and at a pH of about 3 to about 6.

3,929,559

STABILIZATION OF CELLULOSIC MATERIAL BY TREATMENT WITH FERRICYANIDE ION

Alan R. Procter, North Vancouver, Canada, assignor to MacMillan Bloedel Limited, Vancouver, Canada

Filed Dec. 16, 1974, Ser. No. 533,027
Int. Cl.² D21C 1/00, 1/06
U.S. Cl. 162—70 **13 Claims**

1. A method for stabilizing a cellulosic material against degradation by an aqueous alkaline medium that comprises treating the cellulosic material with ferricyanide ion under alkaline conditions.

3,929,560

CONTINUOUS PROCESS FOR FORMING WEBS FROM FIBER SUSPENSIONS

Herbert Holik, Ravensburg, and Karl Mueller, Ringgenweiler, both of Germany, assignors to Escher Wyss G.m.b.H., Ravensburg, Germany

Continuation of Ser. No. 311,483, Dec. 4, 1972, abandoned. This application Jan. 17, 1974, Ser. No. 434,136
Claims priority, application Germany, Dec. 9, 1971, 2161101
Int. Cl.² D21F 11/00
U.S. Cl. 162—157 R **3 Claims**

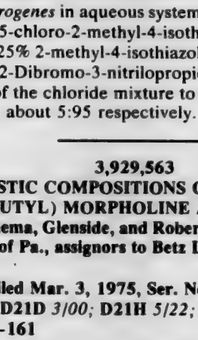
1. A continuous process for forming a web from long synthetic fibers comprising

a. establishing in a tank a body of water in which the fibers are suspended;

b. subjecting said body of suspension to an upward directed field of gas jets to agitate the suspension and thereby prevent entaglement of the fibers and encourage uniform distribution of same in the water;

c. continuously feeding a mixture water and fibers into the tank at one side of the jet field, below the surface of said body of suspension, and in the form of a stream which has a rectangular cross section and spans the entire width of the tank;

d. continuously withdrawing suspension from the tank over a weir located at the opposite side of the jet field and which spans the entire width of the tank; and



e. continuously conveying said withdrawn suspension directly to the breast box of a web-forming machine.

3,929,561

SYNERGISTIC COMPOSITIONS CONTAINING BIS (TRICHLOROMETHYL) SULFONE AND THEIR USE

Bernard F. Shema, Glenside, and Robert H. Brink, Jr., Doylestown, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Mar. 3, 1975, Ser. No. 554,367
Int. Cl.² D21D 3/00; D21H 5/22; A01N 9/12, 9/20
U.S. Cl. 162—161 **8 Claims**

1. A composition for the control of the microorganism *Aerobacter aerogenes* in aqueous systems comprising a mixture of 75% of 5-chloro-2-methyl-4-isothiazolin-3-one calcium chloride and 25% 2-methyl-4-isothiazolin-3-one calcium chloride with Bis (trichloromethyl) sulfone wherein the weight ratio of the chloride mixture to the sulfone ranges from about 95:5 to about 5:95 respectively.

3,929,562

SYNERGISTIC COMPOSITIONS CONTAINING 2,2-DIBROMO-3-NITRILOPROPRIONAMIDE AND THEIR USE

Bernard F. Shema, Glenside, and Robert H. Brink, Jr., Doylestown, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Mar. 3, 1975, Ser. No. 554,368
Int. Cl.² D21D 3/00; D21H 5/22; A01N 9/12, 9/20
U.S. Cl. 162—161 **8 Claims**

1. A composition for the control of the microorganism *Aerobacter aerogenes* in aqueous systems comprising a mixture of 75% of 5-chloro-2-methyl-4-isothiazolin-3-one calcium chloride and 25% 2-methyl-4-isothiazolin-3-one calcium chloride with 2,2-Dibromo-3-nitrilopropionamide wherein the weight ratio of the chloride mixture to the amide ranges from about 95:5 to about 5:95 respectively.

3,929,563

SYNERGISTIC COMPOSITIONS CONTAINING N (2 NITROBUTYL) MORPHOLINE AND THEIR USE

Bernard F. Shema, Glenside, and Robert H. Brink, Jr., Doylestown, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Mar. 3, 1975, Ser. No. 554,369
Int. Cl.² D21D 3/00; D21H 5/22; A01N 9/12, 9/20
U.S. Cl. 162—161 **8 Claims**

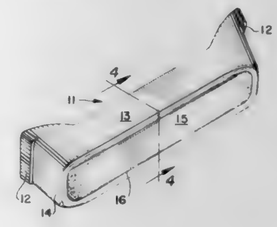
1. A composition for the control of the microorganism *Aerobacter aerogenes* in aqueous systems comprising a mixture of 75% of 5-chloro-2-methyl-4-isothiazolin-3-one calcium chloride and 25% 2-methyl-4-isothiazolin-3-one calcium chloride with N (2 nitrobutyl) morpholine wherein the weight ratio of the chloride mixture to the morpholine ranges from about 95:5 to about 5:95 respectively.

3,929,564

METHOD OF MOLDING FREE DRIED PULP DISPLAY TRAY

Richard F. Reifers, New Canaan, Conn., assignor to Diamond International Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 99,100, Dec. 17, 1970, abandoned. This application Apr. 20, 1973, Ser. No. 353,065
Int. Cl.² D21J 3/00
U.S. Cl. 162—224 **11 Claims**



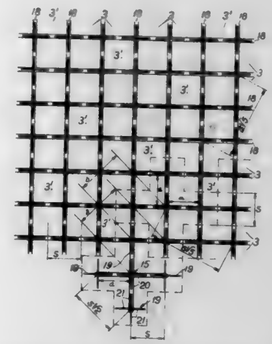
1. The method of making a free-dried, molded pulp tray with a plurality walls of which at least one of said walls is to have a generally central flat area surrounded by an offset or indented peripheral margin including the steps of preliminarily forming wet pulp in the shape of a tray having a plurality of walls, forming a generally central flat area in at least one of said walls and an offset or indented peripheral margin around the generally central flat area of said at least one of said walls and then finally drying said freshly formed wet and undried tray formation in a free-drying step without restraint such as would occur in form drying.

3,929,565

NUCLEAR REACTOR WITH GROUPS OF ELONGATED ABSORBER UNITS CARRIED BY CONTROL RODS

Bo Fredin, and Lars Leine, both of Vasteras, Sweden, assignors to AB Asea-Atom, Vasteras, Sweden

Continuation of Ser. No. 112,218, Feb. 3, 1971, abandoned. This application Feb. 22, 1974, Ser. No. 445,314
Int. Cl. G21c 7/10, 7/12
U.S. Cl. 176—35 **26 Claims**



1. A nuclear reactor having a core including a plurality of fuel assemblies each containing a substantially equal quantity of nuclear fuel, a plurality of control rods having longitudinal axes substantially parallel with longitudinal axes of the fuel assemblies, a group of elongated absorber units carried by each of said control rods for displacement into and out of the

core, said group of absorber units and the absorber units in said group each having a center of gravity and a longitudinal axis substantially parallel with the longitudinal axes of the fuel assemblies, said group including a central absorber unit having its center of gravity substantially coincident with the center of gravity of the group and a plurality of outer absorber units having their centers of gravity substantially equally spaced from the center of gravity of the group and symmetrically arranged therearound, there being absorber units of at least two of said groups located within or immediately adjacent each fuel assembly, and at least some of the absorber units of one of said groups carried by one control rod being located within or immediately adjacent different fuel assemblies, and, where a is the distance between the longitudinal axis through the center of gravity of the group of absorber units mounted on one control rod and the longitudinal axis through the center of gravity of an outer absorber unit of the same group and b is the distance between the longitudinal axis of one control rod and the longitudinal axis of the nearest absorber unit of an adjacent control rod, there being a ratio between *a* and *b* such that (*a*/*b*) is at least 1/ 2.

3,929,566

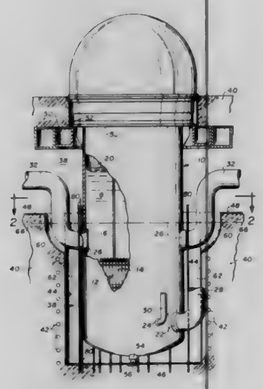
VOLUME DISPLACING MODULES FOR LIQUID METAL COOLED NUCLEAR REACTORS

Richard Croissant Noyes, Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed June 25, 1973, Ser. No. 373,049

Int. Cl. G21c *13/08*

U.S. Cl. 176—37 **9 Claims**



1. In combination;

a liquid metal cooled reactor vessel having a nuclear core therein, a plurality of nozzles mounted thereon and communicating with the interior thereof, a conduit means coupled with said nozzles for communicating liquid metal coolant into and out of said reactor vessel to cool said nuclear core, said vessel having a coolant containing plenum in the interior thereof, a portion of said plenum above a predetermined elevation above said nuclear core being of a first coolant containing volume;

a containment structure forming a vessel cavity in which said vessel is vertically disposed, said vessel being spaced from the walls of said containment structure to define a peripheral space the lateral dimension of which is sufficient to permit access by personnel into said space, and said peripheral space below said predetermined elevation defining a second volume; and

a plurality of volume displacing modules removably positioned in said peripheral space, the total volume of all of said modules positioned below said predetermined elevation being such that said second volume minus said total volume of all said modules is less than said first volume thereby insuring that level of coolant in said vessel will remain above said predetermined elevation in the event of coolant leakage into said cavity.

3,929,567

NUCLEAR REACTOR EQUIPPED WITH A FLOODING TANK AND A RESIDUAL HEAT REMOVAL AND EMERGENCY COOLING SYSTEM

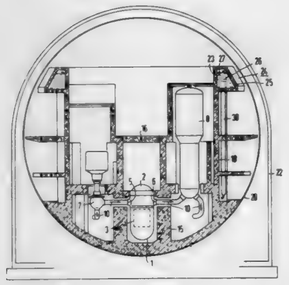
Hans-Peter Schabert, and Franz Winkler, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 9, 1973, Ser. No. 349,537

Claims priority, application Germany, Apr. 11, 1972, 2217398

Int. Cl. G21c *9/02*

U.S. Cl. 176—38 **28 Claims**



1. A nuclear reactor having a protective enclosure surrounding equipment comprising a reactor pressure vessel, a coolant circuit connected to said pressure vessel for conducting coolant through the same and exposed directly to the inside of said enclosure, a residual heat removal and emergency cooling system connected to said coolant circuit for providing cooling of the reactor core following a shut down of the reactor or a loss-of-coolant accident, and a flooding tank arranged in said protective enclosure at an elevation above the upper edge of said reactor core, said flooding tank being connected to said circuit and being configured to hold a quantity of liquid sufficient to flood said reactor core in the event of a loss of coolant.

3,929,568

NUCLEAR POWER PLANT CONTAINMENT CONSTRUCTION

Hans-Peter Schabert; Rüdiger Danisch, and Erich Strickroth, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

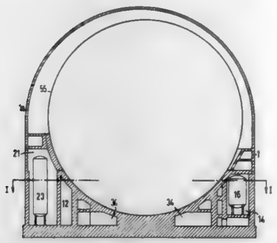
Filed Sept. 6, 1973, Ser. No. 394,755

Claims priority, application Germany, Sept. 11, 1972, 2244563

Int. Cl. G21c *13/10*

U.S. Cl. 176—38 **7 Claims**

1. A nuclear reactor installation comprising a spherical steel enclosure, pressure-carrying components at least comprising a pressurized-coolant reactor pressure vessel having a pressurized-coolant pump and a pressurized-coolant heat-exchanger, said components being contained inside of said enclosure and the enclosure being air-tight and functioning to intercept pressurized-coolant accidentally released by any of said components, a concrete construction entirely enclosing said spherical steel enclosure and forming an upstanding cylindrical wall extending upwardly to at least the equator of the spherical steel enclosure and a top over the spherical steel enclosure, said upstanding cylindrical wall forming an annular space extending completely around said spherical steel enclosure and which is accessible to personnel during operation of said components, the vertical axis of said cylindrical wall being horizontally offset from the vertical axis of said spherical steel enclosure to form an enlarged area in said space in the direction of said offset, and means for ventilating said space.



3,929,569

PLATE SPRING OR RETAINING GRID FOR A BUNCH CYLINDRICAL ELEMENTS ENGAGED IN A HEAT EXCHANGE PROCESS

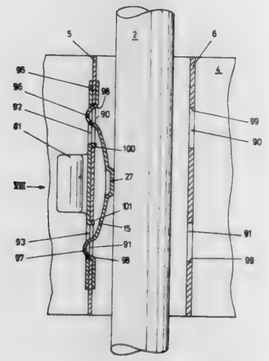
Gijsbrecht Gerhardus Piepers, Heiloo, and Leonard Hendrik Vons, Bergen, both of Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands

Filed June 27, 1973, Ser. No. 374,065

Claims priority, application Germany, July 10, 1972, 2233904

Int. Cl. G21c *3/18*, *3/34*

U.S. Cl. 176—78 **3 Claims**



1. A supporting grid for supporting a plurality of elements engaged in a heat exchange process against sideways shifting comprising: a plurality of grid strips connected together to form the sidewalls of a plurality of compartments having parallel axes; a plate spring extending longitudinally in each compartment, said plate spring having a continuous surface facing the sidewall of the respective compartment, said spring having a central arch-like bend projecting toward the center of the respective compartment for engaging an element therein and having at each end of the arch-like bend a smaller bend facing in the opposite direction, said spring further having straight end portions which engage the sidewall of the respective sidewall, each end portion extending longitudinally outwardly from the respective smaller bend so that the surface of the end portion engaging the sidewall is part of said continuous surface, each of said smaller bends projecting through an aperture in the adjacent sidewall and engaging only that edge of the respective aperture which is adjacent the straight end portions of the plate spring to thereby fasten said plate spring to said adjacent sidewall; and an element holder in each compartment engaging the sidewall opposite the respective plate spring and having a portion projecting toward the center of the compartment for engaging an element therein on the opposite side from the respective plate spring.

3,929,570

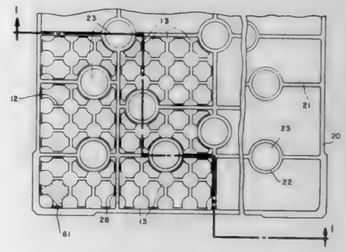
FAILED FUEL DETECTION FOR PWR

Cecil R. Jones, Orange, Conn.; Alfred H. Yoli, New City, N.Y., and William F. Kirk, Orange, Conn., assignors to Transfer Systems Incorporated, North Haven, Conn.

Filed Jan. 14, 1974, Ser. No. 432,902

Int. Cl. G21c *3/10*

U.S. Cl. 176—80 **8 Claims**



1. A fuel element for a nuclear reactor comprising a sealed pressurized containment, nuclear fuel within the containment, and means located within the containment and responsive to pressure changes therein for indicating a pressure change within the containment, said pressure-responsive means comprising a sealed flexible tube curved around a central axis of the fuel element and having a free end, means for anchoring the non-free end of the sealed tube, said sealed flexible tube being pressurized to a pressure different from that of the containment, said sealed tube being configured such that the free end rotates when the containment pressure changes, and a soft magnetic member connected to the free end of the sealed tube and rotatable therewith for indicating its radial position, said magnetic member having a shape and being connected to the free end such that it is non-symmetrical with respect to the central axis.

3,929,571

PROCESS FOR PREPARING L-LYSINE

Koji Kubota; Yasuhiko Yoshihara, both of Kawasaki, and Yoshio Hirose, Fujisawa, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed May 20, 1974, Ser. No. 471,190

Claims priority, application Japan, May 24, 1973, 48-58361; June 2, 1973, 48-62258

Int. Cl.² C12D *13/06*

U.S. Cl. 195—29 **7 Claims**

1. In a process of producing L-lysine by aerobically culturing an L-lysine producing microorganism at pH 5 to 9 on a medium containing assimilable sources of carbon and nitrogen, inorganic salts and minor organic nutrients required for the growth of said microorganism until L-lysine accumulates in said medium, and by recovering the accumulated L-lysine, said microorganism being a strain of Brevibacterium, Corynebacterium, Microbacterium, Micrococcus, or Arthrobacter, the improvement which comprises culturing said microorganism in said medium in the presence of an amount of an addition agent sufficient to improve the yield of said L-lysine as compared to the yield of said L-lysine produced in the absence of said agent, said agent being an antibiotic, a surface active agent, or an anti-oxidant.

3,929,572
METHOD FOR THE PRODUCTION OF N-ACYLPENTAPEPTIDES
Noriaki Kuwana, Inuyama; Kouichi Suzuki, Ichinomiya, and Tooru Sugitani, Aichi, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan
Filed Nov. 8, 1974, Ser. No. 522,268
Claims priority, application Japan, Nov. 15, 1973, 48-127716
Int. Cl.² C12D *13/06*
U.S. Cl. 195—29 4 Claims

1. In the method for providing N-acylpentapeptides by cultivation of the Streptomyces naniwaensis EF44-201 (ATCC 21689) strain, the improvement wherein the culture is carried out in a nutrient medium containing a precursor of said N-acylpentapeptides selected from the group consisting of S-acetylglutathion, and 4-amino-3-hydroxy-6-methyl-heptanoic acid or derivatives thereof.

3,929,573
METHOD OF PREPARING L-TRYPTOPHAN
Sano: Konosuke, Machida, and Koji Mitsugi, Yokohama, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Filed Dec. 20, 1974, Ser. No. 534,640
Claims priority, application Japan, Dec. 29, 1973, 49-455
Int. Cl.² C12D *13/06*
U.S. Cl. 195—29 5 Claims

1. A method for producing L-tryptophan or 5-hydroxy-L-tryptophan which comprises holding an aqueous mixture containing tryptophanase, indole or 5-hydroxyindole and β-halogenoalanine at 5° to 60°C until the indole or 5-hydroxyindole is converted to L-tryptophan or 5-hydroxy-L-tryptophan, and recovering the L-tryptophan or 5-hydroxy-L-tryptophan produced from the aqueous mixture.

3,929,574
USE OF ENZYMES BOUND TO POLYURETHANE
Louis L. Wood, Rockville; Frank J. Hartdegen, and Peter A. Hahn, both of Columbia, all of Md., assignors to W. R. Grace & Co., New York, N.Y.
Division of Ser. No. 362,488, May 21, 1973, which is a continuation-in-part of Ser. No. 404,823, Oct. 9, 1973, which is a continuation-in-part of Ser. No. 250,012, May 3, 1972, abandoned. This application Mar. 21, 1975, Ser. No. 560,741
Int. Cl.² C12B *1/00*
U.S. Cl. 195—29 6 Claims

1. The method of treating a material with an enzyme which includes the step of contacting an aqueous dispersion or solution of the material with a foamed polyurethane containing an enzyme integrally bound thereto prepared by the method which includes contacting, prior to a subsequent foaming step, an isocyanate-capped polyurethane with an aqueous dispersion of an enzyme, under foam-forming conditions, whereby the polyurethane foams and the enzyme becomes integrally bound to the thus formed polyurethane foam.

3,929,575
METHOD OF PRODUCING GLUTAMIC ACID BY FERMENTATION
Guido M. Miescher, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.
Filed Oct. 2, 1974, Ser. No. 504,943
Int. Cl.² C12D *13/06*
U.S. Cl. 195—30 2 Claims

1. In a process for the production of glutamic acid by cultivating the glutamic-acid producing organism Brevibacterium divaricatum on a nutrient fermentation medium consisting of a carbon source, a nitrogen source, essential minerals and a growth factor, while maintaining the carbon dioxide concentration in the exhaust gas below 6.5% during the fermentation, the improvement consisting of using ammonium acetate in the medium at a concentration of 3–7 g per liter.

3,929,576
PRODUCING 3-FLUORO-D-ALANINE
Donald F. Reinhold, North Plainfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.
Division of Ser. No. 223,355, Feb. 3, 1972, abandoned. This application Nov. 20, 1974, Ser. No. 525,591
Int. Cl.² C12D *13/06*
U.S. Cl. 195—30 2 Claims

1. The process which comprises enzymatically transferring an amino group of a D-amino acid for the keto group of fluoropyruvic acid thereby forming the corresponding 3-fluoro-D-alanine.

3,929,577
PRODUCTION OF CEPHALOSPORIN C
Toshihiko Kanzaki, Hyogo; Tadazumi Fukita, Osaka, and Yoichiro Kono, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Sept. 30, 1974, Ser. No. 510,861
Claims priority, application Japan, Sept. 28, 1973, 48-109680
Int. Cl.² C12D *9/04*
U.S. Cl. 195—36 R 3 Claims

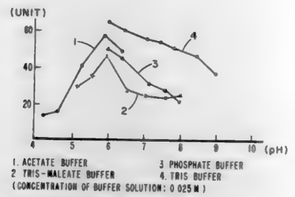
1. A process for producing cephalosporin C which comprises cultivating *Cephalosporium acremonium* ATCC 20425 or *Cephalosporium acremonium* ATCC 20426 in a culture medium containing an assimilable carbon source and a digestible nitrogen source, to accumulate cephalosporin C in the culture medium, and recovering the accumulated cephalosporin C from the culture medium.

3,929,578
PROCESS FOR CULTIVATING ETHANOL-ASSIMILATING YEASTS
Teiri Urakami, Niigata, Japan, assignor to Mitsubishi Gas Chemical Co., Ltd., Japan
Filed Oct. 29, 1974, Ser. No. 519,019
Claims priority, application Japan, Nov. 9, 1973, 48-125976
Int. Cl.² C12B *1/00*
U.S. Cl. 195—49 6 Claims

1. A process for cultivating ethanol-assimilating yeasts belong to species *Candida alcomigas*, *Torulopsis methanothermo*, *Torulosis enokii*, *Torulopsis methanophiles*, *Saccharomyces cerevisiae ellipsoideus* (IAM4140) *Hansenula alcolica*, *Saccharomyces steineri*, *Saccharomyces uvarum*, *Saccharomyces carlsbergensis* (OUT 7929), *Pichia farinosa miso mogi* (IAM 4526), *Candida utilis* (*OUT* 6020) or *Lipomyces sparkey*, using ethanol as a main carbon source, which comprises cultivating the yeasts in a culture liquor at an effective ethanol concentration of not more than 0.8 by weight based on the total weight of the culture liquor, a dissolved oxygen concentration of 0.1 to 30 ppm, a dissolved carbon dioxide concentration of 0.38 to 380 ppm, pH of 2.0 to 5.0 and temperature of 25° to 48°C.

3,929,579
DENTAL CARIES-INDUCING MICROORGANISM CELLS LYTIC ENZYME
Yoshio Yoshimura, Nishinomiya; Kanae Yokogawa, Nara, and Shigeo Kawata, Kobe, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 180,711, Sept. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 68,944, Sept. 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 26,010, April 6, 1970, abandoned. This application July 11, 1972, Ser. No. 270,821
Claims priority, application Japan, June 7, 1969, 44-45307; May 28, 1970, 44-46494
Int. Cl.² C12D *13/10*; A61K *19/00*
U.S. Cl. 195—62 14 Claims

1. An enzyme capable of lysing cells of cariogenic streptococci produced by cultivation of a Streptomyces microorganism selected from the group consisting of Streptomyces diastochromogenes (ATCC 21481), Streptomyces farinosus (ATCC 21482), Streptomyces globisporus (ATCC 21553)



and Streptomyces griseus Var. H-402 (ATCC 21483) and mutants thereof.

3,929,580
CREATINE PHOSPHOKINASE TEST INDICATOR
Peter Salvatore Forgione, Stamford, Conn., and Howard M. Robbins, Chicago, Ill., assignors to American Cyanamid Company, Stamford, Conn.
Filed Aug. 29, 1974, Ser. No. 501,587
Int. Cl.² G01N *31/14*
U.S. Cl. 195—99 20 Claims

1. A diagnostic test indicator for detection and concentration determination of creatine phosphokinase in sera comprising, in superimposed relationship,
A. an upper layer comprising a bibulous carrier material which has contained therein, at a pH of from about 7.2 to about 7.6, the dried residue resulting from the impregnation thereof with
1. creatine phosphate and
2. adenine diphosphate,
B. a middle layer comprising a cellulosic, bibulous material which has contained therein, at a pH of from about 7.1 to about 7.6, the dried residue resulting from the impregnation thereof with
3. glucose,
4. hexokinase
5. triphosphopyridine nucleotide,
6. glucose-6-phosphate dehydrogenase,
7. magnesium ion and
8. d-maltose and
C. a lower layer comprising a cast, water-soluble polymeric material which has contained therein, at a pH of from about 3.0 to about 6.0,
9. a tetrazolium salt and
10. phenazine methosulfate.

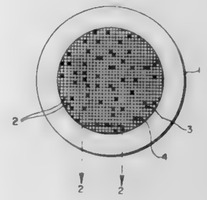
3,929,581
QUANTITATIVE DETERMINATION OF BLOOD AMMONIA
Friedrich da Fonseca-Wollheim, Berlin, Germany, assignor to Boehringer Mannheim G.m.b.H., Mannheim-Waldhof, Germany
Filed May 17, 1974, Ser. No. 471,064
Claims priority, application Germany, June 7, 1973, 2329174
Int. Cl.² C12K *1/04*
U.S. Cl. 195—103.5 R 12 Claims

1. Process for the quantitative determination of blood ammonia which comprises contacting a sample suspected of containing blood ammonia with glutamate dehydrogenase, α-ketoglutarate, and, as a coenzyme in the reduced state, nicotinamideadenine-dinucleotide phosphate in reduced form.

3,929,582
METHOD AND APPARATUS FOR CULTURING MICROORGANISMS
Maximilian Kellner, Untere Hauptstrasse 34, 805 Freising, Germany
Filed Feb. 13, 1974, Ser. No. 442,213
Claims priority, application Germany, Feb. 19, 1973, 2308087
Int. Cl. C12b *1/14*
U.S. Cl. 195—107 9 Claims

1. A method of culturing a microorganism in a closed stystem which comprises:
a. dispersing a feed gas in a liquid nutrient medium inoculated with the microorganism to be cultured at a rate sufficient to cause gas to be discharged from said medium,
1. the dispersed gas including a gaseous component,
2. a portion of said component being consumed by said microorganism during the culturing thereof, and
3. the non-consumed remainder of said component constituting a part of said discharged gas;
b. sensing the concentration of said component in said discharged gas;
c. generating a signal indicative of the sensed concentration;
d. replenishing said discharged gas with an additional amount of said component in response to said signal; and
e. recycling the replenished gas including said non-consumed remainder and said additional amount of said component to said medium for dispersal therein as feed gas.

3,929,583
APPARATUS FOR ENUMERATING MICROORGANISMS
Anthony N. Sharpe, Aylmer, and Gregory L. Michaud, Manotick, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada
Filed Aug. 14, 1975, Ser. No. 497,285
Int. Cl.² C12K *1/04*
U.S. Cl. 195—127 10 Claims

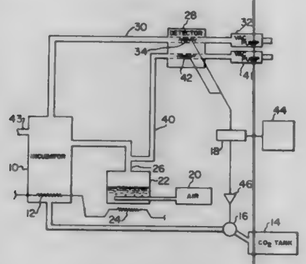


1. An apparatus to facilitate enumeration of microorganisms comprising a membrane filter element for retaining on a surface thereof the microorganisms present in a fluid sample filtered thereby, said filter element having imprinted on said surface, a barrier material, which restricts the spread of colonies through its physical properties, in a pattern defining a plurality of ordered, microbial colony isolating cells, wherein the cells are smaller in area than the normal colony area.

3,929,584
AUTOMATIC CARBON DIOXIDE INCUBATOR
Ernest Bryant Mansfield, Pittsburgh, Pa., assignor to Fisher Scientific Company, Pittsburgh, Pa.
Filed Jan. 23, 1975, Ser. No. 543,360
Int. Cl.² C12B *1/00*
U.S. Cl. 195—127 7 Claims

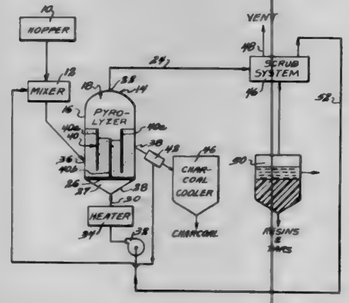
1. A control system for automatically and continuously maintaining a predetermined concentration of CO_2 in an incubator comprising:

A. means for supplying CO_2 to the incubator;
B. means for supplying water vapor and air to the incubator;
C. means for sampling the gaseous mixture in the incubator;
D. means for sampling the water vapor and air mixture supplied to the incubator;



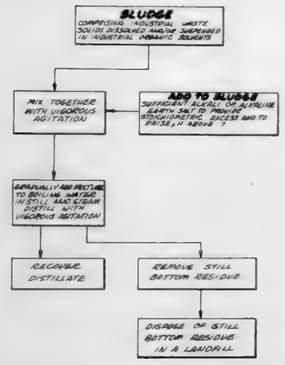
E. means for deriving electrical signals from the gas mixtures proportional to their respective thermal conductivities to obtain a difference signal;
F. means for comparing the difference signal with a preset signal proportional to the concentration of CO_2 desired in the incubator to obtain a control signal; and
G. means for regulating the supply of CO_2 to the incubator responsive to the control signal to maintain the concentration of CO_2 in the incubator substantially constant.

3,929,585
PRODUCTION OF CHARCOAL FROM SAWDUST IN A FLUIDIZED BED
Earl S. Grimmett, Idaho Falls, Idaho, assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.
Filed Aug. 16, 1972, Ser. No. 281,255
Int. Cl.² C10B *57/04*
U.S. Cl. 201—2.5 **4 Claims**



1. A method of disposing of wood refuse while simultaneously recovering charcoal and wood by-products without polluting the environment comprising: mixing the wood refuse selected from the group consisting of sawdust, wood chips and tree bark with about 40–60% by volume of an inert granular bed material which is from about −14 to 100 mesh in size selected from the group consisting of sand and alumina to form a feed mixture; passing the feed mixture into a fluidized bed containment vessel; fluidizing said mixture with an oxygen-free gas, thereby forming a fluidized bed; heating said fluidized bed to 280° to 1000°F to pyrolyze the wood refuse; maintaining the wood refuse in the bed until pyrolyzation of the refuse to charcoal and gaseous wood by-products is complete, the charcoal remaining with the bed material and the gaseous by-products being carried from the bed with the fluidizing off-gas; removing the charcoal and bed material from the vessel; separating the charcoal from the bed material; cooling the charcoal in an oxygen-free atmosphere while recirculating the inert bed material to be mixed with additional wood refuse; separating the gaseous by-products from the fluidized bed off-gas; recovering the by-products and venting the purified off-gas to the atmosphere.

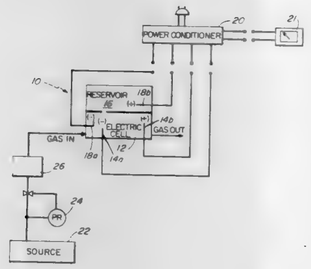
3,929,586
PROCESS FOR TREATMENT OF ORGANIC SOLVENT-CONTAINING WASTE SLUDGES
George Slikkers, Jr., Holland, Mich., assignor to Organic Chemicals Company, Inc., Grandville, Mich.
Filed May 7, 1973, Ser. No. 357,902
Int. Cl.² B01D *3/34*; **C05F** *7/00*; **B01D** *5/00*
U.S. Cl. 203—37 **12 Claims**



1. An industrial process for recovering land fill suitable solids from sludges composed of industrial waste solids and industrial organic solvents, said process comprising: mixing an alkali or alkaline earth metal salt into a sludge, said sludge being comprised of industrial waste solids selected from the group consisting of epoxy resins, polyester resins, phenolic resins, cellulosic fibers, polyolefins, vinyls, acrylics, and organic and inorganic ink and paint pigments, and being at least one of dissolved and suspended in industrial organic solvents selected from the group consisting of aliphatics, aromatics esters, ketones, aldehydes, alcohols, glycols, ethers and halogenated hydrocarbons, said mixing step including adding sufficient alkali or alkaline earth metal salt to provide a stoichiometric excess thereof based on the industrial waste solid constituents of said sludge and to create a mixture having a pH greater than 7; gradually adding the resultant mixture to boiling water in a still and effecting steam distillation of the resultant mixture; vigorously agitating said sludge and said alkali or alkaline earth metal salt during and in said mixing step and during said distillation step; recovering the industrial organic solvent through said steam distillation step; removing the still-bottom residue, comprising said industrial waste solids substantially organic solvent free, from the still and disposing of said solids in a land fill.

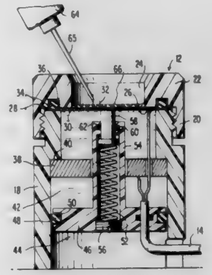
3,929,587
APPARATUS AND METHOD FOR MAINTAINING A STABLE ELECTROLYTE IN OXYGEN ANALYSIS
John P. Gallagher, Wilmington, Mass., assignor to Delta F Corporation, Woburn, Mass.
Filed Sept. 23, 1974, Ser. No. 508,351
Int. Cl.² G01N *27/28, 27/46*
U.S. Cl. 204—1 T **17 Claims**

1. In an electrolytic cell in which a component introduced into the cell is reduced at one cell electrode and oxidized at the other cell electrode and where a neutralization reaction occurs forming neutralization products because of the introduction of components other than the components to be measured, thereby reducing the ionic transfer capacity of the electrolyte, the improvement which comprises:
a. first means to generate an electrolytic current between the cell electrodes;
b. a reservoir of electrolyte in communication with the electrolyte of the cell;
c. a first electrode disposed in the electrolyte of the reservoir;
d. a second electrode disposed in the electrolyte of the cell;
e. second means to generate an electrolysis current between the first and second electrodes said second means independent of the first means which current results in a pH gradient between said first and second electrodes and which current effects the migration of ionic species that may cause neutralization products to be formed in the electrolyte of the cell to the first electrode, the zone about the first electrode having a concentration of hydrogen ions such that the ionic species which tend to form neutralization products remain segregated from the electrolyte of the electrolytic cell; and
f. means to inhibit the back diffusion of said ionic species from the zone about the first electrode to the electrolyte of the cell.



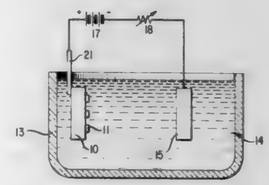
6. A method of stabilizing an electrolyte in an electrolytic cell in which unwanted ionic species are formed during an electrochemical operation which includes:
a. providing an electrolytic cell having a pair of sensing electrodes disposed therein, the electrodes specific for a component to be analyzed in a fluid stream, the electrodes completing a first electrolytic path;
b. providing a reservoir of electrolyte in communication with the electrolyte of the cell and including a second pair of electrodes, one of said electrodes disposed in the reservoir of electrolyte and the other of said electrodes disposed in the electrolyte of the cell, which pair of electrodes provides a second electrolytic path, the function of which path is independent of the function of the first electrolytic path;
c. imposing an electrical current between the second pair of electrodes resulting in a pH gradient between the electrolyte of the reservoir and the electrolyte of the cell to provide for the migration of other ionic species which are introduced into the electrolyte to the reservoir, which species do not directly affect reactions at the sensing electrode; and
d. restricting the back diffusion of the unwanted ionic species from the reservoir into the cell, whereby the unwanted ionic species remain segregated from the electrolyte of the electrolytic cell.

3,929,588
METHOD OF AND APPARATUS FOR DETERMINING THE OXYGEN CONTENT OF BLOOD
Frederick A. Parker, Broomall, and William R. Mac Bride, King of Prussa, both of Pa., assignors to Biomarine Industries, Inc., Devon, Pa.
Filed Aug. 3, 1973, Ser. No. 385,388
Int. Cl.² G01N *27/46*
U.S. Cl. 204—1 T **16 Claims**



1. A blood oxygen analyzer comprising, a galvanic pO_2 sensor having an oxygen permeable membrane for receiving on one side thereof a sample of blood to be analyzed and having on the other side thereof a pair of electrodes and an electrolyte solution adapted to produce a voltage proportional to oxygen permeating through said membrane, a modifying circuit for modifying the sensor signals in accordance with the transfer function of oxygen from said blood sample through said membrane, utilization means connected to said modifying circuit for utilizing the signal therefrom, and means for supplying an enable signal to said utilization means after a predetermined time interval after receipt of a blood sample on said one side of said membrane to enable said utilization means to utilize the modified signal, which at the end of said predetermined time interval is a function of the pO_2 of the blood sample at the time the sample was deposited on said membrane.

3,929,589
SELECTIVE AREA OXIDATION OF III-V COMPOUND SEMICONDUCTORS
Felix Ermanis, Summit, and Bertram Schwartz, Westfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 8, 1974, Ser. No. 440,657
Int. Cl.² C23B *11/02*; **C25D** *5/02*
U.S. Cl. 204—15 **19 Claims**



1. A method for forming an oxide on selected portions of the surface of a gallium containing compound semiconductor comprising the steps of:
forming a mask of a photoresist material over the surface of said semiconductor so as to leave exposed selected portions of the surface to be oxidized;
making the semiconductor the anode in an electrolytic cell wherein the electrolyte comprises H_2O and a material of the composition $(NH_4)_{3-x}\ H_x\ PO_4$ where $x = 0 - 2$, and passing a current through said cell so as to grow an oxide

into the exposed portions of the semiconductor surface; and

removing the photoresist mask from the surface of the semiconductor so as to leave the oxide on the selected portions of the surface.

3,929,590

METHOD OF APPLYING A FIRMLY ADHERENT COATING OF NON-METALLIC SUBSTANCES TO AN ELECTRICALLY CONDUCTIVE SUBSTRATE

Josef Heyes, Niederkasseler Strasse 114, 4 Dusseldorf, Germany

Filed Mar. 18, 1974, Ser. No. 452,160

Claims priority, application Germany, Mar. 16, 1973, 2313104

Int. Cl.² C25D 5/02

U.S. Cl. 204—16 13 Claims

1. A process for coating an electrically conductive substrate with a coating comprising a powdered nonmetallic hard substance bonded by a metal, the thickness of the coating being a multiple of the thickness of a particle of the powdered substance which comprises:

1. applying to said electrically conductive surface powder of a nonmetallic substance by electrophoresis whereby a porous coating is obtained;
2. thereafter compressing the so coated electrically conductive surface at a pressure of at least 1 kg per sq. cm.; and
3. subjecting the so compressionably coated electrically conductive surface to electroplating in an electrolytic bath containing a metal or metal alloy whereby the coating obtained in step 1 by electrophoresis is solidified galvanically by the deposition of said metal or alloy on said substrate and within the pores of said porous coating.

3,929,591

NOVEL LITHOGRAPHIC PLATE AND METHOD

Simon Long Chu, Dobbs Ferry, and Ken-Ichi Shimazu, Pleasantville, both of N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

Filed Aug. 26, 1974, Ser. No. 500,438

Int. Cl.² B41C 3/08; C25D 5/44

U.S. Cl. 204—17 9 Claims

1. A method for preparing an aluminum sheet base member for a lithographic printing plate, the surface of which is adapted to receive a light sensitive coating thereon, which comprises:

a. Graining the surface of said aluminum sheet by treatment thereof with a wet mass of fine, hard, abrasive particles, selected from the group consisting of silicates, oxides and sulfates; and

b. Etching said grained aluminum sheet by treatment thereof with alternating current in an aqueous electrolytic solution comprised of from 20 to about 50 percent by weight of phosphate electrolyte selected from the group consisting of alkali phosphates, alkaline earth phosphates, ammonium phosphate and phosphoric acid, and wherein the alternating current density is from about 10 to 200 amperes per square foot; said etching sufficient to increase the final surface reflectance of said aluminum sheet by at least about 5 percent; and

c. Anodizing said etched aluminum sheet by treatment with direct current in an aqueous electrolyte solution comprised of from 8 to 22 percent by weight of sulfuric acid, and wherein the direct current voltage is from 10 to 25 volts, and the current density is from 10 to 20 amperes per square foot, to provide a hard, abrasion resistant, porous surface on said aluminum sheet.

3,929,592

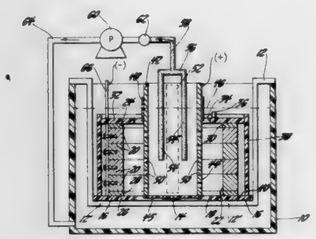
PLATING APPARATUS AND METHOD FOR ROTARY ENGINE HOUSINGS

Otto J. Klingenmaier, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 22, 1974, Ser. No. 490,688

Int. Cl.² C25D 7/04, 17/06

U.S. Cl. 204—26 4 Claims



1. An apparatus for uniformly electrodepositing a wear-resistant coating onto epitrochoidal radial working surfaces of a plurality of rotary engine housings simultaneously, said apparatus comprising:

a nonconductive substantially closed box-like enclosure for containing a vertical stack of abutting and registered rotary engine housings having aligned epitrochoidal inner working surfaces forming a passageway having an epitrochoidal cross section,

a flat metal plate on the top of said housing stack,

a flat metal plate on the bottom of said housing stack,

each of said flat metal plates having a major surface in contact with said stack and having an epitrochoidal opening therein congruent with said aligned inner surfaces,

top and bottom walls on said enclosure adjacent said metal plates with each wall having an epitrochoidal opening therein concentric with and smaller than the epitrochoidal cross section of said passageway,

an insoluble anode having a generally epitrochoidal transverse outer periphery and an interior space, said anode coaxially extending throughout said passageway parallel to and radially spaced inwardly from said aligned inner surfaces,

said anode being radially closer to said concentric epitrochoidal openings in said enclosure top and bottom walls than to said aligned inner surfaces,

said anode having a plurality of radially arrayed openings throughout said passageway that communicate said anode outer periphery with said anode interior space,

means for preventing said solution from entering said anode interior space except through said anode openings in said passageway,

means for supporting said enclosure in a tank of electroplating solution with said enclosure completely immersed in said solution, and

means for continuously withdrawing said solution from said anode interior space and recirculating it to said tank during electrodeposition of said wear-resistant coating onto said aligned inner surfaces.

3,929,593

METHOD OF FORMING COLORED OXIDE FILM ON ALUMINUM OR ALUMINUM ALLOY MATERIAL

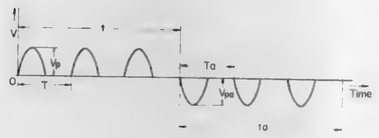
Noboru Sugiyama; Masahiro Takahashi; Hirosuke Kanamori; Ken Sato; Yoshio Hirayama, all of Shizuoka; Masahiro Mikamo, Tokyo; Toshiro Takahashi, Shizuoka; Toshihiro Nagano, Shizuoka; Kazuyoshi Kaneda, Shizuoka, and Isao Hara, Shizuoka, all of Japan, assignors to Riken Light Metal Industries Company, Ltd. and Nippon Light Metal Co., Ltd., both of, Japan

Filed Sept. 18, 1974, Ser. No. 507,216

Claims priority, application Japan, Sept. 21, 1973, 48-106656

Int. Cl.² C25D 5/48, 11/22, 5/18

U.S. Cl. 204—35 N 14 Claims



1. A method of forming a colored oxide film on an aluminum material by electrolyzing said aluminum material in an aqueous electrolytic bath containing a metallic salt by supplying said aluminum material serving as each electrode with a pulse voltage consisting of a plurality of unipotetial pulses whose polarity is inverted after every predetermined conduction time.

3. The method according to claim 1, wherein said aluminum material is electrolyzed by applying a pulse voltage whose positive and negative pulse waveforms are rectangular ones.

3,929,594

ELECTROPLATED ANODIZED ALUMINUM ARTICLES

Howard A. Fromson, Rogues Ridge Road, Weston, Conn. 06880

Continuation-in-part of Ser. No. 361,720, May 18, 1973, Pat. No. 3,865,700. This application Mar. 7, 1974, Ser. No. 449,162

Int. Cl.² C25D 5/00; B41C 3/08

U.S. Cl. 204—42 6 Claims



1. Lithographic printing plate having an aluminum substrate, a porous anodic oxide layer on the substrate, electrolytically deposited, randomly distributed discrete metal islands having a root portion anchored in one or more pores of the oxide layer, said islands extending from the root portion above the surface of the oxide layer thereby forming a composite anodized and discontinuously electroplated surface, and a layer of photosensitive material adhered to said anodized and electroplated surface.

3,929,595

ELECTROLYTIC BURNISHED GOLD BATH WITH HIGHER RATE OF DEPOSITION

Peter Biberbach, Grossauheim; Werner Dietschmann, Neuberg, and Hans-Joachim Lübke, Mutlangen, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Filed Nov. 4, 1974, Ser. No. 520,844

Claims priority, application Germany, Nov. 7, 1973, 2355581

Int. Cl.² C25D 3/48, 3/62

U.S. Cl. 204—44 21 Claims

1. In an aqueous, acidic alkali gold cyanide bath suitable for the electrolytic deposition of gold the improvement comprising including in the bath a heterocyclic sulfonic acid selected from the group consisting of pyridine sulfonic acid, picoline sulfonic acid and quinoline sulfonic acid or a water soluble salt of such heterocyclic sulfonic acid in an amount sufficient to provide improved bright gold deposition from the bath.

3,929,596

ELECTRODEPOSITION OF WEAR RESISTANT AND OIL RETENTIVE NICKEL COATINGS AND ARTICLE HAVING SUCH A COATING

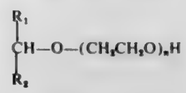
Takao Sasame, Hiroshima; Toshihiko Shigeta, Kure, and Toshio Yamada, Hiroshima, all of Japan, assignors to Toyo Kogyo Co., Ltd., Japan

Continuation-in-part of Ser. No. 294,298, Oct. 2, 1972, abandoned. This application Sept. 6, 1973, Ser. No. 394,855

Int. Cl.² C25D 15/00, 15/02

U.S. Cl. 204—49 13 Claims

1. In a method for providing wear resistance and oil retention in the surface of a workpiece by means of electroplating said workpiece in a nickel plating bath of an aqueous electrolyte to form a layer of nickel on said surface of said workpice, the improvement which comprises said nickel plating bath containing one or a mixture of powdered ceramic material of 0.5 to 9 microns particle size in an amount within the range of from 50 to 500 grams per liter of said plating bath and a surface active agent which is a non-ionic secondary alcoholic ethoxylate having the following formula;



wherein R_1 and R_2 are alkyl groups of 1 to 10 carbon atoms and n is an integer from 5 to 20, said ethoxylate having a molecular weight of from about 390 to 1,200, which is in an amount within the range of 0.5 to 5.0 percent by weight based on the total amount of said plating bath whereby the resultant nickel-plated layer on the surface of said workpiece contains therein particles of said powdered ceramic material and represents a porous structure such that liquid lubricating agent can be impregnated in said porous structure to provide sufficient lubrication for a coacting member with which the workpiece may cooperate in sliding engagement, the number of particles of said powdered ceramic material of 0.5 to 9.0 microns particle size in said porous structure are 250 to 2000 per 10,000 square microns and the number of porosities of 5 or more microns in diameter are more than 15 per 10,000 square microns.

10. A workpiece having formed on its surface an electroplated nickel layer, said nickel layer comprising ceramic particles contained therein, said nickel layer representing a porous structure with the number of said ceramic particles of 0.5 to 9.0 micron in particle size being within the range of from 250 to 2,000 per ten thousand square microns and the number of porosities of 5 or more microns in diameter being more than 15 per ten thousand square microns, whereby an improved wear resistance and an oil retention is imparted to the surface

of said workpiece.

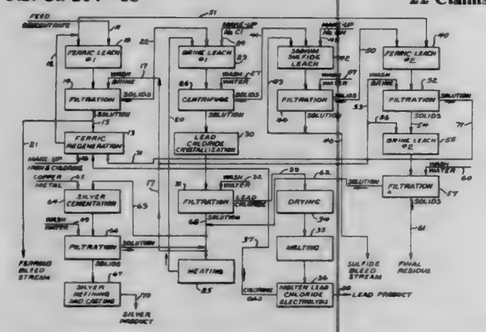
12. The workpiece produced by the method of claim 1.

3,929,597

PRODUCTION OF LEAD AND SILVER FROM THEIR SULFIDES

Stephen M. Cottam, Osburn; Howard E. Day, Silverton, and William A. Griffith, Osburn, all of Idaho, assignors to Hecla Mining Company, Wallace, Idaho

Filed May 17, 1974, Ser. No. 470,719
Int. Cl.² C25C 3/34
U.S. Cl. 204—66 22 Claims



1. The method of producing lead and silver from materials containing lead and silver sulfides along with the sulfides of zinc and iron, comprising: first leaching said materials with an aqueous water soluble ferric salt solution containing ferric ions to convert said sulfides to the corresponding salts of said lead and silver comprising a solid residue and generate the corresponding ferrous salt solution as a filtrate; separating said ferrous salt solution filtrate from said solid residue; second leaching the solid residue from the first leaching with aqueous sodium chloride brine to dissolve said lead and silver salts and provide a lead and silver salts solution and a further solid residue; cooling said lead and silver salts solution to crystallize and thereby separate said lead salts; removing the lead salt crystals from the resulting silver salt solution; and contacting said silver salt solution with metallic copper thereby to produce cement silver.

3,929,598

RECOVERY OF COPPER AND ZINC FROM LOW-GRADE NON-FERROUS MATERIALS

William R. Stern; Malcolm L. Jansen, and Bess L. Vance, all of Tucson, Ariz., assignors to The Anaconda Company, New York, N.Y.

Continuation-in-part of Ser. No. 280,718, Aug. 14, 1972, abandoned. This application Aug. 8, 1974, Ser. No. 495,784
Int. Cl.² C25C 1/12, 1/16
U.S. Cl. 204—108 16 Claims

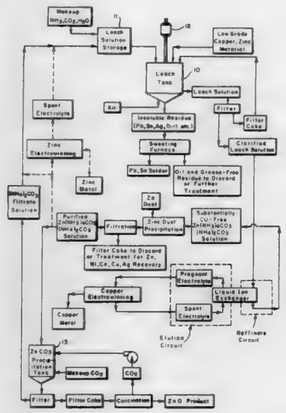
1. In a method for separating and separately recovering copper and zinc from low grade metallic scrap containing relatively large proportions of copper and zinc in association with relatively small proportions of other elements which comprises leaching the scrap with ammonium carbonate solution in the presence of oxygen to form a leach solution containing copper ammonium carbonate and zinc ammonium carbonate, and separating the resulting leach solution from the undissolved residue, the improvement which comprises

a. selectively removing the copper from the leach solution by treatment with a liquid ion exchanger, thereby producing as a raffinate an aqueous ammonium carbonate solution containing zinc in solution as zinc ammonium carbonate and substantially completely free of copper,

b. subsequently treating the liquid ion exchanger with an aqueous acid solution to form an aqueous acid eluant solution containing copper and substantially completely free of zinc,

c. treating the eluant solution to electrowin substantially pure copper therefrom,

d. introducing carbon dioxide into the raffinate solution while maintaining such solution under a substantial superatmospheric pressure, thereby precipitating a substantially pure zinc carbonate product,



e. separating the zinc carbonate precipitate from the residual ammonium carbonate solution and recovering zinc therefrom in the form of a substantially pure product, and

f. recycling said residual ammonium carbonate solution for re-use in leaching a further quantity of scrap.

3,929,599

PROCESS FOR REMOVING IRON FROM AN AQUEOUS ACID SOLUTION CONTAINING IRON AND COPPER

Morris A. Johnson, and Kang Yang, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Jan. 9, 1975, Ser. No. 539,757
Int. Cl.² C25C 1/12; C25B 15/12
U.S. Cl. 204—108 9 Claims

1. A process for removing iron ions from an aqueous acid solution without removing copper ions contained therein comprising the steps of:

combining activated carbon with said aqueous acid solution in an amount of at least about 0.01% by weight of said solution;

adjusting the pH of said acid solution to a value in the range of from about 2.0 to about 2.5 so that iron ions contained in said solution are hydrolyzed and precipitated but copper ions contained therein remain in said solution; and

then separating the precipitate from said acid solution.

3,929,600

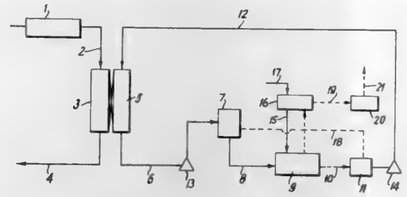
PROCESS OF REMOVING AMMONIACAL NITROGEN FROM WASTE WATER

Toshihisa Hiasa, Nishiariba, and Hirohisa Ishimard, Arita, both of Japan, assignors to Iwao Engineering Co., Inc., Tokyo, Japan

Filed Apr. 3, 1975, Ser. No. 564,648
Claims priority, application Japan, Apr. 9, 1974, 49-40160; Feb. 20, 1975, 50-21362
Int. Cl.² C02B 1/82
U.S. Cl. 204—149 10 Claims

1. A process for removing ammoniacal nitrogen from waste water by subjecting said water containing ammonium ions to adsorbtion on an ion-exchange substance and eluting the same comprising passing an alkaline eluant liquid containing alkali metal chlorides through the ion-exchange substance to elute the same, electrolyzing the liquid eluate containing the said ammonium ions to decompose the ammonium ion by the

oxidizing effect of chlorine thereby evolved, discharging the gas generated by said decomposition, adding to the electrolyzed liquid an adjusting liquid which contains a hydroxide of



the same alkali metal as that used in the eluant liquid to adjust the pH thereof and to supplement the alkali metal ion consumed in the foregoing steps, and recirculating the adjusted eluant to said ion-exchange substance.

3,929,601

SYNTHESIS OF PENTAFLUORIDES

Larned B. Asprey, and Robert T. Paine, Jr., both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Mar. 26, 1974, Ser. No. 454,983
Int. Cl.² B01J 1/10
U.S. Cl. 204—157.1 R 6 Claims

1. A method of preparing pure pentafluorides comprising reacting at least one of the hexafluorides selected from the class consisting of, molybdenum, rhenium, osmium, and iridium hexafluoride, with one equivalent of hydrogen gas in the presence of ultraviolet radiation, at room temperature and for a period of about one day.

3,929,602

LOW TEMPERATURE IRRADIATION OF VITRIFIABLE MIXTURES OF UNSATURATED MONOMERS

Isao Kaetsu; Akihiko Ito, both of Takasaki, and Koichiro Hayashi, Sapporo, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Dec. 8, 1972, Ser. No. 313,396
Claims priority, application Japan, Dec. 10, 1971, 46-99472
Int. Cl.² C08F 2/48, 2/54
U.S. Cl. 204—159.22 12 Claims

1. A process for preparing a resinous polymer at a low temperature which, in spite of the low temperature, can be carried out at a high polymerization rate, comprising:

1. uniformly mixing two or more organic compounds neither of which is vitrifiable independently and at least one of which is a polymerizable unsaturated monomer, said compounds being mixed in such a ratio as to give a vitrifiable mixture having a glass-transition point and a melting point, and having a temperature difference between said glass-transition point and said melting point of 70°C. or less; and

2. effecting polymerization by irradiating the mixture with an ionizing radiation or light at a temperature between said glass-transition point and 100°C. above said glass-transition point.

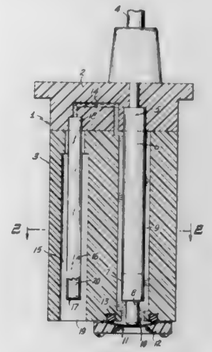
3,929,603

ELECTROLYTIC SENSOR WITH PRESSURE COMPENSATING MEANS

Joe A. Porter, Whittier, Calif., assignor to Uniloc, Inc., Irvine, Calif.

Filed Mar. 7, 1974, Ser. No. 449,139
Int. Cl.² G01N 27/46
U.S. Cl. 204—195 P 4 Claims

1. A cell for electrochemical analysis of a constituent in a sample comprising a body having an electrolyte reservoir therein, a pair of spaced electrodes positioned in said reservoir and adapted to be joined by an electrolyte in said reservoir, an opening communicating between said reservoir and the exterior of said body, a thin, flexible polymeric membrane permeable to said constituent and impermeable to electrolyte, means mounting said membrane under tension over one of



said electrodes and in a position to close said opening, and a passage in said body communicating between said reservoir and the exterior of said body wherein the improvement comprises an eliptically shaped, flexible, hollow tube connected to the exterior end of said passage, said tube having its end farthest from said passage closed so as to permit the tube to contian a quantity of an electrolyte.

3,929,604

METHOD FOR PRODUCING MAGNETIC RECORDING MEDIUM

Ryuji Shirahata; Tatsuji Kitamoto; Mahito Shimizu, all of Kanagawa; Akira Tasaki, Osaka, and Masaaki Suzuki, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed July 25, 1974, Ser. No. 491,901
Claims priority, application Japan, July 25, 1973, 48-83836
Int. Cl.² C23C 15/00; B05D 3/14
U.S. Cl. 204—192 10 Claims

1. A method for producing a magnetic recording medium by ionic-plating having generally uniform magnetic characteristics in every direction comprising generating in a vacuum chamber and in a magnetic field a plasma of the glow discharge of a gas between a negatively-charged magnetic recording medium substrate and a positively-charged evaporative source of a ferromagnetic material and positioning the substrate in a magnetically concentrated zone of the plasma which is concentrated by the magnetic field, whereby the ferromagnetic material is evaporated and deposited on the magnetic recording medium substrate.

3,929,605

APPARATUS FOR QUICKLY EVALUATING GASES DISSOLVED IN BLOOD

Dietrich W. Lübbers, Dortmund, and Albert Huch, Marbach-,Marburg, both of Germany, assignors to Eschweiler & Co., Kiel, Germany

Filed Sept. 23, 1974, Ser. No. 508,633
Claims priority, application Germany, Sept. 22, 1973, 2255879
Int. Cl.² G01N 27/46
U.S. Cl. 204—195 P 9 Claims

1. A sensing apparatus for measuring the concentration of gas in a blood sample comprising:

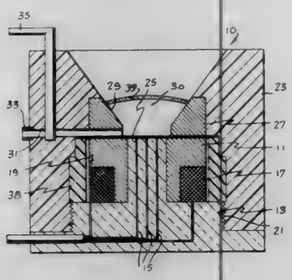
a temperature measuring element having a heater thermally connected thereto and responsive to control means for sensing the temperature of said temperature measuring

element and maintaining the same at a constant temperature,

an electrolytic sensing head, located within said temperature measuring element, having means for measuring the concentration of gas in the blood sample;

a membrane positioned adjacent said sensing head, said membrane being permeable to the gas of the blood sample and nonpermeable to the liquid of the blood sample;

a ring element made of a heat conductive material posi-



tioned adjacent said temperature measuring element and thermally coupled thereto, said ring element forming a reservoir for receiving a quantity of blood, said reservoir being formed by a conical bore extending through the ring element with the bottom of the reservoir being formed by the membrane extending across the opening of the bore, said reservoir having an inside diameter equal to its height, and capable of receiving a blood sample volume of 30 to 50 μl.

3,929,606

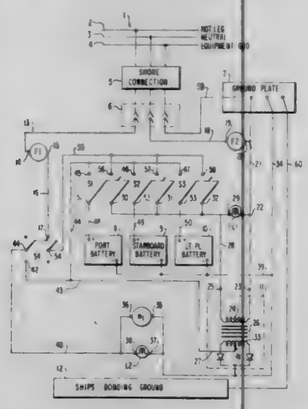
PROTECTION SYSTEM FOR THE METALLIC FITTINGS OF NON-METALLIC HULLS OF POWER BOATS

Ralph E. Wood, Lake Worth, Fla., assignor to Dunwood Development Corporation, Lake Worth, Fla.

Filed Jan. 18, 1973, Ser. No. 324,665

Int. Cl.² C23F *13/00*; B63B *17/00*

U.S. Cl. 204—196 **4 Claims**



1. In a system protecting the immersed metallic fittings of non-metallic hulls of docked power boats supplied by electrical power from a shorebased source of 3-wire customary voltage alternating current having a hot leg, a neutral leg, and an equipment ground;

at least one storage battery for supplying current for onboard use;

a marine battery charger and associated rectifier for maintaining the storage battery in operating condition;

a ground plate;

a ship's bonding ground, and

an electrical circuit in which the negative leads of the battery charger and associated rectifier, the storage battery, the equipment ground, and the neutral leg of the shorebased alternating current supply, are electrically connected with both the ground plate and the ship's bonding ground to avoid electrolysis.

3,929,607

ANODES FOR ELECTROCHEMICAL PROCESSES

Janusz Josef Henryk Krause, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 25, 1974, Ser. No. 445,783

Int. Cl.² C25B *11/02*, *11/04*

U.S. Cl. 204—286 **11 Claims**



1. An anode assembly for an electrolytic cell comprising a foraminate structure of a film-forming metal comprising a current lead-in means including a plate, a plurality of longitudinal members spaced with their longitudinal axes parallel to one another and carrying on at least part of their surface an electrocatalytically active coating, each longitudinal member comprising a channel blade member including a pair of spaced-apart parallel blades and one or more bridge portions, said bridge portions being connected to the plate of the current lead-in means, the gap between the blades in the vicinity of said bridge portions being greater than the gap between the blades along the length of the member away from said bridge portions.

3,929,608

CATALYTIC MATERIAL FOR ELECTRODES

Louis Degueldre; Yves Gobillon, both of Brussels; Lucien Clerbois, Vilvoorde, and Louis Bourgeois, Brussels, all of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Continuation-in-part of Ser. No. 167,189, July 29, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 391,736

Claims priority, application Luxemburg, July 29, 1970, 61436. The portion of the term of this patent subsequent to Oct. 1, 1991, has been disclaimed.

Int. Cl.² C25B *11/08*, *11/10*

U.S. Cl. 204—290 F **13 Claims**



1. Electrode for electrochemical processes comprising a conductive and inert substrate at least superficially comprising titanium or a titanium alloy and a protective and electrocatalytic coating covering at least a part of the surface of said substrate and adhered to said surface, said coating comprising:

a. at least one substance selected from among the group consisting of the platinum-group metals and their oxides, and

b. oxidized tellurium, the atomic ratio of b:a being 1:1–100.

3,929,609

METHOD AND APPARATUS USING SOLID SENSOR ELECTRODE

Don N. Gray, Sylvania, Ohio, and George G. Guilbault, New Orleans, La., assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 328,360, Jan. 31, 1973. This application Jan. 8, 1975, Ser. No. 539,268

Int. Cl.² G01N *27/46*

U.S. Cl. 204—1 T **16 Claims**

9. In the method for electrochemically determining the end point of a titration wherein a titrant is added to a titrate and the titration is electrochemically monitored using a reference electrode and a noble metal electrode having a sensing surface in direct contact with said titrate, the improvement wherein said noble metal electrode has a sensing surface comprising the composite, solidstate, fusion product of a mixture of noble metal powder and powdered glass, fused to an inert substrate.

3,929,610

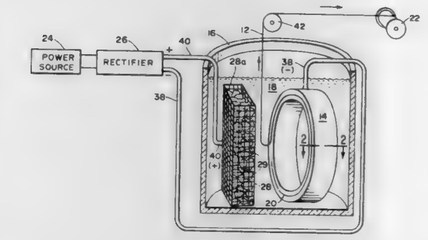
ELECTROFORMATION OF METALLIC STRANDS

Chih-Chung Wang, Lexington, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Filed May 31, 1974, Ser. No. 475,098

Int. Cl.² C25D *1/04*

U.S. Cl. 204—13 **22 Claims**



1. A method for continuously producing a metallic strand of indeterminate length, comprising the steps of

A. providing a cathode having a conductive portion with at least one exposed, narrow, closed-loop plating surface formed thereon, said plating surface being substantially strippable with respect to said metal, and an insulating portion in continuous contact with the edges of said plating surface and bonded to said conductive portions along a surface substantially perpendicular to said plating surface,

B. electrodepositing the metal on said plating surface with said plating surface totally immersed in a plating solution, and

C. removing the strand metal thus formed from said plating surface without interrupting said electrodepositing and without rotating said cathode.

3,929,611

ELECTRODEPOSITING OF ALUMINUM

Irving J. Hess, Philadelphia, Pa., assignor to Ametek, Inc., New York, N.Y.

Filed July 19, 1974, Ser. No. 489,997

Int. Cl.² C25D *1/00*

U.S. Cl. 204—14 N **13 Claims**

1. The process of electroplating comprising the steps of plating aluminum from a non-aqueous plating bath comprising the steps of electrodepositing aluminum from a bath consisting of a mixture of anhydrous aluminum chloride at from 4.25 molar to saturation; and ether selected from the group consisting of ethyl ether, ethyl n-butyl ether, a mixture of ethyl and butyl ethers, anisole, phenetole, and di-phenyl ether; and a metal hydride selected from the group consisting of lithium hydride, lithium aluminum hydride and aluminum hydride.

3,929,612

PROCESS FOR ELECTROLYTICALLY COLORING THE ANODICALLY OXIDIZED COATING ON ALUMINUM OR ALUMINUM BASE ALLOYS

Kiyomi Yanagida; Tadashi Hirokane; Tadashi Tsukiyasu, and Tomoari Sato, all of Nagoya, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 21, 1974, Ser. No. 516,523

Claims priority, application Japan, Oct. 20, 1973, 48-118047

Int. Cl.² C25D *5/48*

U.S. Cl. 204—35 N **8 Claims**

1. In a process for electrolytically coloring an anodically oxidized coating on an aluminum or aluminum alloy article comprising subjecting said article to anodic oxidation in an aqueous anodic oxidation bath consisting essentially of sulfuric acid or an aromatic sulfonic acid to form an oxidized film of a thickness of at least 6 microns and electrolyzing said anodic oxidized article as a cathode immersed in an aqueous electrolytic coloring bath containing a water-soluble nickel salt selected from the group consisting of nickel sulfate, nickel chloride and nickel acetate using a direct current, the improvement of obtaining uniformly colored coating on the aluminum article by maintaining the pH of said electrolytic coloring bath in a range of from 2.0 to 5.5 during said electrolytic coloring treatment.

3,929,613

PREPARATION OF GLYOXYLIC ACID

Daniel Michelet, Tassin La Demi-Lune, France, assignor to Rhone-Poulenc, S.A., Paris, France

Filed Nov. 30, 1973, Ser. No. 420,576

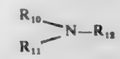
Claims priority, application France, Dec. 1, 1972, 72.42836. The portion of the term of this patent subsequent to Dec. 18, 1990, has been disclaimed.

Int. Cl.² C25B *3/04*

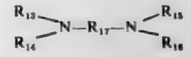
U.S. Cl. 204—77 **10 Claims**

1. Process for the preparation of glyoxylic acid by cathodic reduction of oxalic acid, by carrying out an electrolysis in an electrolyser comprising a cathode, a cathode compartment, a separating diaphragm, an anode and an anode compartment wherein the said cathode compartment contains a catholyte consisting essentially of an aqueous solution of oxalic acid and 0.00005 to 1% w/w of an adjuvant chosen from:

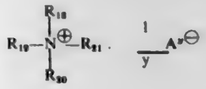
a. tertiary amines of the general formula


(I)

b. ditertiary diamines of the general formula

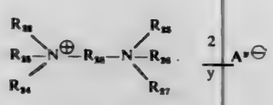

(II)

c. quaternary ammonium salts of the general formula


(III)

and

d. quaternary ammonium salts of the general formula



(IV)

in which

R_{10}, R_{11} and R_{12} each represent a linear or branched, saturated or unsaturated, aliphatic hydrocarbon radical, or two of R_{10}, R_{11} and R_{12} together represent a single saturated alkylene or oxydialkylene radical, or R_{10}, R_{11} and R_{12} can each represent an aliphatic radical containing at least one oxyalkylene link, at least one of the radicals R_{10}, R_{11} and R_{12} being an arylaliphatic radical, the radicals R_{10}, R_{11} and R_{12} together having less than 40 carbon atoms;

R_{13}, R_{14}, R_{15} and R_{16} each represent linear or branched saturated or unsaturated aliphatic hydrocarbon radicals, or an aliphatic radical containing at least one oxyalkylene links or at least one of R_{13} and R_{14} together or R_{15} and R_{16} together represent a single alkylene or oxydialkylene radical,

R_{17} represents an aliphatic or arylaliphatic, divalent hydrocarbon radical, the aliphatic chain or chains of which can be interrupted by oxygen atoms, the free valencies of the radical R_{17} being carried by aliphatic carbon atoms, and the total number of carbon atoms in the radicals R_{13}, R_{14}, R_{15}, R_{16} and R_{17} being greater than 6 and less than 40;

R_{18}, R_{19}, R_{20} and R_{21} each represent a linear or branched, saturated or unsaturated, aliphatic hydrocarbon radical, or an aliphatic radical containing at least one oxyalkylene links, or two of R_{18}, R_{19}, R_{20} and R_{21} together form a single saturated alkylene or oxydialkylene radical,

at least one of R_{18}, R_{19}, R_{20} and R_{21} being a monovalent aromatic hydrocarbon radical which is either purely aromatic, or arylaliphatic, or atomatic and having as substituents saturated or unsaturated, linear or branched, aliphatic radicals, the total number of carbon atoms in R_{18}, R_{19}, R_{20} and R_{21} being more than 15 and less than 40;

R_{22}, R_{23}, R_{24}, R_{25}, R_{26} and R_{27} are as defined for R_{13}, R_{14}, R_{15} and R_{16}; and R_{28} is as defined for R_{17}; the total number of carbon atoms in R_{22}, R_{23}, R_{24}, R_{25}, R_{26}, R_{27} and R_{28} being more than 8 and less than 40;

y is equal to 1, 2 or 3, and

$A^{y\ominus}$ is hydroxy or an anion such that AH_y represents an inorganic or organic acid.

3,929,614

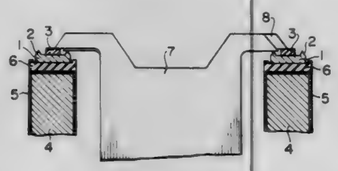
ELECTROLYTIC CELL HAVING MEANS FOR SUPPORTING THE ELECTRODES ON THE CELL WALL AND MEANS FOR SHORTING OUT THE ELECTRODES

Yoshihumi Hidohira, Takehara, Japan, assignor to Mitsui Mining & Smelting Co., Ltd., Japan

Filed Feb. 19, 1974, Ser. No. 443,635

Int. Cl.² C25C 7/00

U.S. Cl. 204—242 **3 Claims**



1. In a metal salt electrolytic cell, the improvement being in that peak-shaped or circular projecting portions on which shoulder portions of the electrodes are hung are provided on both side portions of the electric conductors on the upper face of their cell wall and an insulating material is provided between said projecting portions at a distance from both projecting portions in such a manner that height of said insulating material is higher than that of the projecting portions and that one or more conductors for shorting the said conductors on the cell wall when electrodes are taken out are fixed in a vertical plane at the ends of the said conductors on the cell wall.

3,929,615

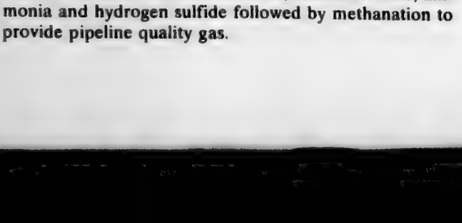
PRODUCTION OF HYDROCARBON GASES FROM OIL SHALE

Henry R. Linden, La Grange Park; Paul B. Tarman, Elmhurst, and Harlan L. Feldkirchner, Elk Grove Village, all of Ill., assignors to American Gas Association, Inc., Arlington, Va.

Continuation-in-part of Ser. No. 365,973, June 1, 1973. This application Oct. 26, 1973, Ser. No. 409,914. The portion of the term of this patent subsequent to Dec. 25, 1992, has been disclaimed.

Int. Cl.² C10B 53/06

U.S. Cl. 208—11 **12 Claims**



1. In the process for the production of pipeline quality gas by gasification of organic components of oil shale wherein above about 77 percent of the organic carbon in said oil shale is converted to liquids and gases the improvement comprising: introducing fresh oil shale into a preheat and prehydrogenation zone;

gradually preheating oil shale in a preheat and prehydrogenation zone to a temperature of about 700° to about 950°F. in the presence of hydrogen-rich gas with less than about 20 weight percent of the organic component of oil shale converted to liquid and gas in said preheat and prehydrogenation zone, said preheating at a rate of less than about 50°F. per minute above about 500° to 600°F. and said hydrogen-rich gas and shale passing countercurrently in said preheat and prehydrogenation zone;

hydrogasifying the preheated and prehydrogenated organic components of oil shale in a hydrogasification zone at a temperature of about 1200° to about 1500°F. in the presence of at least a stoichiometric amount of hydrogen-rich gas to form low molecular weight paraffinic gases and liquid hydrocarbons from the preheated and prehydrogenated organic portion of said oil shale;

said hydrogen-rich gas being supplied to said preheat and prehydrogenation zone in larger volumes than the hydrogen-rich gas supplied to said hydrogasification zone;

removing spent shale from the hydrogasification zone separate from said gases; and

purifying and upgrading said gases by removing liquids and undesired steam, carbon monoxide, carbon dioxide, ammonia and hydrogen sulfide followed by methanation to provide pipeline quality gas.

3,929,616

MANUFACTURE OF LUBRICATING OILS

Theodore C. Mead, Port Arthur; William B. Ashton, Nederland, and John P. Shillinglaw, Jr., Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed June 26, 1974, Ser. No. 483,255

Int. Cl.² C10G 13/00

U.S. Cl. 208—87 **10 Claims**

1. A process for the production of a lubricating oil which comprises contacting a residue-containing oil with a solvent having an affinity for aromatics to extract aromatic compounds from the oil, catalytically hydrocracking resulting raffinate, recovering from the hydrocracked product a fraction boiling in the lubricating oil range, subjecting said fraction to deasphalting treatment by contacting same with a low molecular weight paraffin and subjecting the deasphalted oil to a dewaxing treatment.

3,929,617

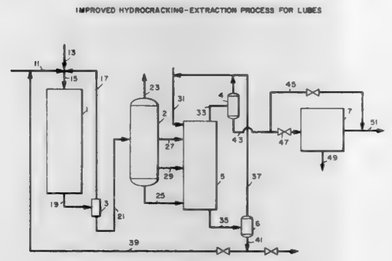
HYDROCRACKING EXTRACTION PROCESS FOR LUBES

H. Clarke Henry, and John B. Gilbert, both of Sarnia, Canada, assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation of Ser. No. 285,203, Aug. 31, 1972, abandoned. This application May 16, 1974, Ser. No. 470,608

Int. Cl.² C10G 37/00

U.S. Cl. 208—96 **13 Claims**



1. A process for producing high VI, UV stable lubricating oil products from substantially asphalt-free lube feed stocks that have not been subjected to solvent extraction for the removal of aromatics therefrom, as an extract which comprises the steps of (a) passing said lubricating oil stock and hydrogen into a hydrocracking zone maintained at a pressure below about 1500 psig with the presence of a hydrocracking catalyst, thereby forming a hydrocrackate product containing lube oil components, (b) solvent extracting at least a portion of said hydrocrackate product with a solvent having preferential solubility for aromatics, thereby forming extract and raffinate phases, and (c) recycling a substantial portion of the extract phase, substantially free of solvent, to step (a), wherein it is introduced into the hydrocracking zone either separately or in combination with said lubricating oil stock.

3,929,618

PROCESS FOR THE CONVERSION OF HYDROCARBON FRACTIONS CONTAINING CONDENSED-RING POLYCYCLIC AROMATIC HYDROCARBON

Shiro Abiko; Kazuo Yorihiro, both of Yokkaichi; Toshiyuki Sugihara, and Masakazu Hanawa, both of Ami, all of Japan, assignors to Mitsubishi Co., Petrochemical Ltd., Japan

Filed Mar. 12, 1974, Ser. No. 450,395

Claims priority, application Japan, Mar. 15, 1973, 48-30205

Int. Cl.² C10G 13/06, 37/02; B01J 29/12

U.S. Cl. 208—111 **9 Claims**

1. A process for conversion of a hydrocarbon fraction containing at least 10 % by weight of condensed-ring polycyclic aromatic hydrocarbons which comprises hydrogenative ring opening and hydrocracking of said polycyclic aromatic hydrocarbons by hydrogen into substantially monocyclic aromatics and saturated cyclic hydrocarbons in the presence of a catalyst comprising 1 to 25% of nickel, 1 to 20% of tungsten and 0.1 to 5% of vanadium, based on the total weight of a carrier plus the three metals supported on said carrier, which carrier consists of an NaY zeolite in which more than 60 molar % of sodium ions have been exchanged with nickel ions.

3,929,619

HYDROCRACKING PROCESS WITH TRI-METALLIC CATALYST

John H. Sinfelt, Berkeley Heights; Allan E. Barnett, and James L. Carter, both of Westfield, all of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 380,833, July 19, 1973, Pat. No. 3,871,996. This application Jan. 30, 1975, Ser. No. 545,371

Int. Cl.² C10G 13/06; C07C 3/58

U.S. Cl. 208—111 **12 Claims**

1. A process for hydrocracking a petroleum feed stream which comprises contacting said feed stream with a catalyst comprising platinum, iridium and rhodium supported on an inorganic refractory oxide in the presence of hydrogen at reaction conditions whereby a petroleum fraction characterized as having a lower average molecular weight than the starting feed stream is obtained.

3,929,620

HYDROCRACKING CATALYST AND PROCESS

R. Parthasarathy, Silver Spring, and Julius Scherzer, Columbia, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Dec. 4, 1974, Ser. No. 529,679

Int. Cl.² C10G 13/06; B01J 27/04, 29/12

U.S. Cl. 208—111 **5 Claims**

1. A method of hydrocracking a hydrocarbon feed stock to obtain lower boiling hydrocarbons which comprises subjecting said feedstock to hydrocracking conditions in the presence of a catalyst, said catalyst consisting of about 0.1 to 10 wt. percent nickel oxide, 10 to 25 wt. percent tungsten oxide and from 5 to 80% of a chromium containing ultrastable zeolite having an alkali metal content expressed as the oxide of less than 1 percent, a cubic unit cell of from 24.20 to 24.45 angstroms and an ultrastable structure as evidenced by retention of a surface area of greater than 150 m^2/g. after calcination of a temperature of 1725°F. for 2 hours.

3,929,621

COPPER CONTAINING HYDROCARBON CRACKING CATALYST

Roger J. Lussier, Ellicott City; John Storey Magee, Jr., Cooksville, and Edwin Wolf Albers, Annapolis, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 363,374, May 24, 1973, abandoned. This application Oct. 24, 1974, Ser. No. 517,559

Int. Cl.² C10G 11/04; B01J 29/12

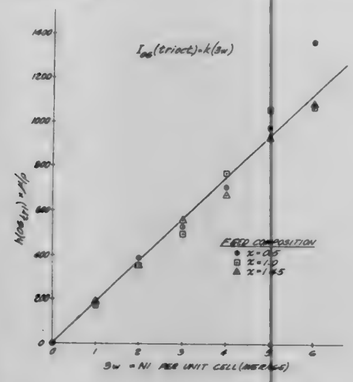
U.S. Cl. 208—120 **3 Claims**

1. A process for cracking hydrocarbons to obtain substantial yields of gasoline fractions of high aromatic and olefin content consisting essentially of contacting gas oil with a copper and hydrogen ion exchanged Type Y faujasite having a silica to alumina ratio in excess of 3.0, said faujasite having a copper content of 0.5 to 10% by weight as Cu O, at a temperature of 800° to 1000°F. for a period of 1 to 300 seconds.

3,929,622
HYDROCARBON CRACKING UTILIZING LAMINAR HEAVY METAL ALUMINOSILICATES

William T. Granquist, Houston, Tex., assignor to N.L. Industries, Inc., New York, N.Y.

Division of Ser. No. 291,252, Sept. 22, 1972, Pat. No. 3,852,405. This application Sept. 9, 1974, Ser. No. 504,679
Int. Cl.² C10G *11/04*; B01J *29/28*
U.S. Cl. 208—120 5 Claims



1. The process of cracking hydrocarbons which comprises contacting a hydrocarbon feedstock with a catalyst which is a laminar 2:1 layer-lattice aluminosilicate mineral possessing an inherent negative charge balanced by cations exterior to said lattice and corresponding to the following formula for a given embodiment:

$$\left[(Q^{3}_{4-ew}\,Y^{2}_{3w})^{VI}\ (Q^{4}_{8-x}R^{3}_{x})^{IV}\ O_{20}\ (OH)_{4-f}F_{f}\right]\cdot\left[d\ C^{y}\right]$$

$2 \leq e \leq 3$
$0.01 \leq w \leq 2$
$0.02 \leq ew \leq 4$
$0.05 \leq x \leq 2.0$
$f \leq 4$

wherein said first bracket represents said layer-lattice unit cell formulation and said second bracket represents said charge balancing cations; and wherein

G is at least 0.8 mol fraction aluminum ion, the remainder consisting of trivalent metal cations having an ionic radius not to exceed 0.75 A;

Y is selected from the class consisting of divalent metallic ions having an ionic radius not to exceed 0.75 A and mixtures thereof;

Q is at least 0.95 mol fraction silicon ions, the remainder consisting of tetravalent ions having an ionic radius not to exceed 0.64 A;

R is selected from the group consisting of trivalent ions having an ionic radius not to exceed 0.64 A and mixtures thereof; and

C is at least one charge-balancing cation, with y being its valence and d being the number of such cations C where: $dy = x + 3\,(e-2)w$, said contacting being at a temperature high enough to bring about cracking, and thereafter recovering the products resulting from said cracking.

3,929,623
LEAD/CHLORIDE/ALUMINA ISOMERIZATION CATALYST FOR GASOLINE

William T. Nelson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 25, 1974, Ser. No. 526,940
Int. Cl.² C10G *35/06*; B01J *27/06*
U.S. Cl. 208—135 8 Claims

1. A process for reforming a gasoline comprising passing said gasoline into contact with a catalyst consisting essentially of

1. an alumina base;
2. chlorine in an amount within the range of 0.1 to 5 weight per cent calculated as hydrogen chloride based on the weight of said catalyst; and
3. 0.01 to 5 weight per cent lead calculated as PbO based on the weight of said catalyst

at a temperature within the range of 600° to 1200°F; and recovering a product having a higher octane rating.

3,929,624
REFORMING PROCESS USING A URANIUM-CONTAINING CATALYST

Evan Ellis Davies, Weybridge, and Christopher Ronald Pout, Feltham, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Jan. 26, 1973, Ser. No. 326,815
Claims priority, application United Kingdom, Feb. 7, 1972, 5548/72
Int. Cl.² C10G *35/08*; B01J *27/06*
U.S. Cl. 208—139 4 Claims

1. A process for the reforming of hydrocarbons boiling in the range 15°–204°C comprising contacting the hydrocarbons under reforming conditions of 300° to 600°C, 1 to 70 bars gauge, 0.1 to 10 v/v/hr and 0.1 to 20:1 hydrogen : hydrocarbon mole ratio with a catalyst comprising from 0.01 to 5% wt. of a platinum group metal, 0.01 to 5% wt. of uranium, 0.1 to 2% wt. of rhenium, and a silica-free alumina having a surface area of at least 150 m²/g, said catalyst being free of alkali metals and alkaline earth metals and other metals of Group VIA of the Periodic Table.

3,929,625
SHALE OIL PURIFICATION

Roy N. Lucas, Tokyo, Japan, assignor to Petrolite Corporation, St. Louis, Mo.

Continuation of Ser. No. 270,343, July 10, 1972, abandoned, which is a continuation of Ser. No. 742,549, July 5, 1968, abandoned. This application Aug. 2, 1974, Ser. No. 494,679
Int. Cl.² C10G *33/04*
U.S. Cl. 208—188 9 Claims

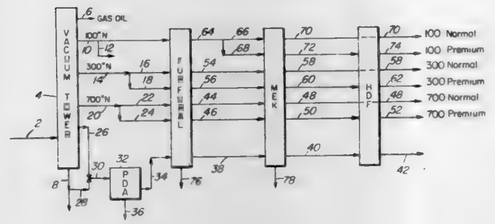
1. A process for separating a stable dispersion of suspended predominantly inorganic solids from shale oil produced by retorting oil shale, which process comprises

1. dispersing water in amounts sufficient only to form a shale oil-continuous dispersion into said shale oil containing a surface active chemical aid, said chemical aid having been added to said shale oil immediately after said shale oil had been retorted from oil shale and at a shale oil temperature not destructive to said chemical aid, said chemical aid comprising a polyoxyalkylene derived nonionic polymeric surfactant, said surfactant being derived from a nonionic polymeric precursor which is a polymeric hydrophobic compound with an active hydrogen reactable with alkylene oxides and having a molecular weight from about 150 to 1,500 and being selected from the group consisting of polyethylene amine and alkyl phenol formaldehyde resins wherein said alkyl group has four to eight carbon atoms, said precursor being reacted with said alkylene oxide to form said polymeric surfactant, said surfactant having a molecular weight from about 800 to about 27,000 and
2. then immediately resolving electrically said shale oil-continuous dispersion to coalesce said dispersion into (a) a shale oil phase with reduced inorganic solids content and (b) an aqueous phase containing said inorganic solids removed from said shale oil phase.

3,929,626
PRODUCTION OF LUBRICATING OILS BLENDING STOCKS

Harold O. Button, Yardley, Pa., and Robert A. Trimble, Pitman, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed July 31, 1974, Ser. No. 493,306
Int. Cl.² C10G *41/00*
U.S. Cl. 208—309 9 Claims



1. In an operation for the production of a plurality of different lube stocks from a reduced crude and the recovery of higher boiling by-product material, the improvement which comprises processing a reduced crude through a low pressure drop vacuum tower maintained at a pressure below 50 mmHg arranged to separate a plurality of different relatively narrow boiling range lube base fractions from an overflash fraction boiling in an initial portion above 1000°F and a vacuum resid fraction, processing each of said relatively narrow boiling range fractions through a plurality of solvent extraction steps to remove undesired aromatics and wax sufficient to produce normal and premium grade lube blending fractions, processing said overflash fraction admixed with a portion of said resid fractions through propane deasphalting to produce a raffinate phase and an asphalt phase and prcessing the raffinate phase through solvent extraction to produce an improved bright stock.

3,929,627
MAGNETIC BENEFICIATION FOR MAGNESITE ORES

Antonios Frangiskos, and Theodor Gambopoulos, both of Athens, Greece, assignors to Financial Mining - Industrial and Shipping Corporation, Athens, Greece

Filed Dec. 6, 1974, Ser. No. 530,395
Claims priority, application Greece, Jan. 29, 1974, 3627
Int. Cl.² B03B *1/04*
U.S. Cl. 209—9 5 Claims

1. A process for the recovery of pure magnesite from magnesite ores containing magnesite, serpentine and other gangue material, comprising:

crushing a quantity of magnesite ore;

conditioning the crushed ore in an aqueous suspension containing by volume 1 percent diesel oil and 0.15 percent of a mixture of cationic collectors comprising quaternary ammonium chlorides and primary amines for activating the surface of the serpentine and the other gangue material;

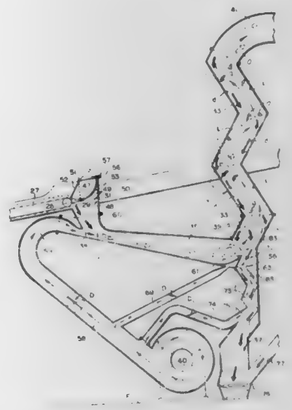
again conditioning the crushed ore in a suspension of a finely divided strongly ferromagnetic material so as to achieve selective absorption on the surface of the serpentine and the other gangue material as well as on the strongly siliceous and carbonaceous particles of the ore; and

removing the serpentine and the other gangue material as well as the strongly siliceous and carbonaceous particles of the ore from the remainder of the ore by means of a magnetic separator to obtain a concentrate of magnesite.

3,929,628
APPARATUS FOR REDUCING PRECONDITIONED GARBAGE TO A CLINKERLESS COMBUSTIBLE

Pietro G. Denevi; Mark B. DiDuca, both of Los Gatos; Billy J. Slane, and Thomas D. Vence, both of San Jose, all of Calif., assignors to Vista Chemical & Fiber Products Inc., New York, N.Y.

Filed Nov. 26, 1973, Ser. No. 418,830
Int. Cl.² B07B *9/02*
U.S. Cl. 209—36 7 Claims



1. Apparatus for disposing of refuse such as garbage and the like from which heavier ferrous material has been removed and the remaining refuse ground up, shredded and dried as a preconditioned material; a closed air system for separating heavier, non-combustible elements in such material from lighter fractions therein preliminary to consumption of the latter by fire or conversion into useful products comprising:

a. a feed conveyor for feeding such preconditioned material to the closed air system;
b. a hopper for receiving such preconditioned material from said feed conveyor;
c. an air sealed gate at the open upper end of said hopper openable by discharge of such preconditioned material from said feed conveyor into said hopper;
d. an elongated tapering infeed duct having a restricted open end communicating with the lower end of said hopper for receiving such preconditioned material therefrom and declinding at a slight angle relative to horizontal from said restricted open end and expanding in area progressively therefrom toward a terminal end;
e. a stack of vertically disposed zigzag ducts having its lower end communicating with the terminal end of said elongated tapering infeed duct and providing a tortuous path discharging at its upper end;
f. a closed chambered storage bin communicating with the discharge upper end of said stack of zigzag ducts;
g. a blower, having a housing communicated with the restricted open end of said tapering infeed duct for creating a venturi action at the lower end of said hopper for transmitting such preconditioned material therefrom and for causing the incoming shredded, dried material to spread out and flow more loosely and opening through the gradually expanding elongated tapering infeed duct and into said stack of zigzag ducts for discharging lighter fractions from the latter into said storage bin;
h. an air return duct between said closed chambered storage bin and said blower for recirculating air from the bin to the blower;
i. a baffle wall projecting upwardly from the declining bottom wall of said elongated tapering infeed duct at the

open lower end thereof for providing a trough-like terminal end therein;

j. a perforated plate mounted in the trough-like terminal end of said infeed duct and extending tangentially from the bottom wall thereof toward the upper edge of said baffle wall for providing an air lift chamber therebetween; and

k. a supplemental air supply duct communicating said blower with said air lift chamber for supplying air through the perforated plate to creat an air cushion for lifting preconditioned material therefrom and into the air stream passing from said infeed duct into the lowermost one of said zigzag ducts in the stack thereof.

3,929,629

MATERIALS AND PROCESSES FOR FLOTATION OF MINERAL SUBSTANCES

Robert M. Griffith, Bradford, and Christopher Parkinson, Halifax, both of England, assignors to Allied Colloids Limited, England

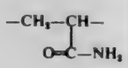
Filed Feb. 21, 1974, Ser. No. 444,505

Claims priority, application United Kingdom, Mar. 1, 1973, 10030/73

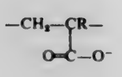
Int. Cl.² B03D *1/06*

U.S. Cl. 209—167 **7 Claims**

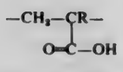
1. A method of concentrating cassiterite ore by subjecting an aqueous pulp of the ore to a froth flotation process in the presence of a collector and a gangue depressant, in which process the gangue depressant is a water soluble polymer containing from 40 to 100 mole percent recurring groups A and 0 to 60 mole percent recurring groups B, the mole percent being based on A+B, where A represents



and B represents



and/or



wherein R is hydrogen or methyl the polymer having a molecular weight distribution such that a solution of the polymer in water containing 10 percent by weight of the polymer has at pH 7 and a temperature of 25°C a Brookfield viscosity of between 8 and 50,000 centipoise.

3,929,630

PROCESS FOR BIOCHEMICAL REACTIONS

Pat E. Smith, San Antonio, Tex., assignor to Gary Aircraft Corporation, San Antonio, Tex.

Continuation-in-part of Ser. No. 285,241, Aug. 31, 1972, abandoned. This application Feb. 22, 1974, Ser. No. 444,928

Claims priority, application United Kingdom, Dec. 20, 1971, 59038/71

Int. Cl.² C02C *1/04*

U.S. Cl. 210—17 **4 Claims**

1. A process for reducing the BOD of a waste water stream comprising introducing the stream to a bed of shaped, porous and adsorbent silica substrate, the silica substrate having been formed by gelling and subsequent leaching of a soluble alkali metal silicate selected from the group consisting of sodium and potassium silicates to provide a porous, insoluble silica, the pores of which are of sizes from about 100 to about 800 microns.

3,929,631

COMPOSITIONS AND SYSTEMS TO RECOVER OILS FROM AQUEOUS AND SOLID SURFACES

Aniela Winkler, 120 Wilson Drive, Hazleton, Pa. 18201

Continuation of Ser. No. 725,529, April 30, 1968, abandoned. This application July 6, 1971, Ser. No. 160,204

Int. Cl.² C02B *9/02*

U.S. Cl. 210—36 **7 Claims**

1. The method of recovering hydrocarbon liquids dispersed in water which comprises:

forming porous predominantly hollow bodies of a polymeric substance selected from the group consisting of polystyrene, copolymers of polystyrene and mixed polymers thereof from an expandable form of said polymeric substance by heat popping at the site of said hydrocarbon liquids, said expandable form of said polymeric substances containing a meltable hydrocarbon;

subsequently immediately contacting said hydrocarbon liquids at said site with said porous predominently hollow bodies; and

removing said bodies containing absorbed hydrocarbon liquid from the water.

3,929,632

USE OF POLYMERIC QUATERNARY AMMONIUM BETAINES AS OIL-IN-WATER DEMULSIFIERS

Rudolf S. Buriks, and Allen R. Fauke, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 227,261, Feb. 17, 1972, Pat. No. 3,819,589. This application Mar. 19, 1974, Ser. No. 452,991

Int. Cl.² B01D *17/04*

U.S. Cl. 210—43 **11 Claims**

1. The process of demulsifying an oil-in-water emulsion which comprises treating said emulsion with an effective amount of a polymeric quaternary ammonium betaine which has no anions, the said polymeric betaine containing repeating units having a — COO^- group internally linked to a quaternary ammonium group and being derived from a dicarboxylic acid anhydride.

3,929,633

METHOD AND APPARATUS FOR CENTRIFUGALLY SEPARATING FINELY DIVIDED SOLIDS FROM AQUEOUS SUSPENSIONS THEREOF

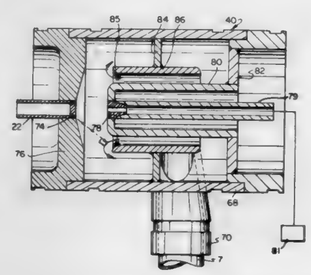
Jan Visman, Sydney, Canada, and Hassan A. Hamza, Cairo, Egypt, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Feb. 28, 1974, Ser. No. 446,903

Claims priority, application Canada, Mar. 29, 1973, 167482

Int. Cl.² B01D *21/26*

U.S. Cl. 210—49 **5 Claims**



1. A method of centrifugally separating finely divided solids from an aqueous suspension thereof, comprising:

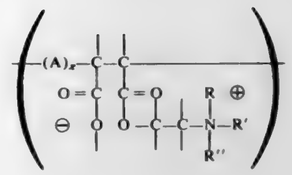
a. feeding the aqueous suspension substantially tangentially into a cylindrical casing of a blender and swirling the aqueous suspension in a cylindrical, open ended vortex finder in the cylindrical casing to form, as a thin flowing sheet of the aqueous suspension with the finely divided solids having wetted surfaces from the aqueous medium, a swirling hollow cone in the vortex finder flowing around a rim of the vortex finder,

b. spraying, as a conical spray, a solution of a water soluble, high molecular weight long chain flocculant substantially at right angles, with the kinetic energies of sprayed flocculant and that of flowing sheet flowing around the rim of the vortex finder matched, towards a side face of all of the portion of the flowing sheet flowing around the rim of the vortex finder so that the flocculant is sprayed into the flowing sheet flowing around the rim of the vortex finder and the flocculant and aqueous suspension are rapidly and intensively interspersed and the flocculant is adsorbed onto the wetted surfaces of the finely divided solids without totally wrapping individual finely divided solids by the flocculant molecules and without entrapping finely divided solids by premature bridging by the flocculant molecules,

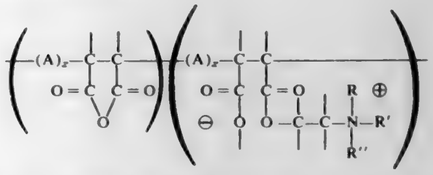
c. maintaining the shape of the swirling hollow cone by pressurizing air within the swirling hollow cone with air from a nozzle which is fed within the swirling hollow cone into the hollow center thereof in the outwardly tapering direction of the swirling hollow cone so that the kinetic energies of the flocculant and that of the aqueous suspension are not dissipated by eddy currents and fluid masses that would otherwise tend to be in the way of the intersection of the sprayed flocculant and the swirling hollow cone,

d. feeding the aqueous suspension, with the said flocculant adsorbed onto the said wetted surfaces of the finely divided solids, from the blender to a flocculator and flocculating the finely divided solids, by means of the water soluble flocculant adsorbed onto the wetted surfaces, to form dense, strong flocs, which are predominantly large enough to be substantially separated from the aqueous medium by a cyclone separator, and

e. feeding the dense, strong flocs and aqueous medium to a cyclone separator and centrifugally separating a major portion of the dense, strong flocs from at least some of the aqueous medium by means of that cyclone separator.



or the repeating unit



where A is derived from an unsaturated group capable of copolymerizing with the dicarboxylic anhydride to form a polymer, R, R′ and R″ are aliphatic, arylic, cycloaliphatic or heterocyclic groups and are the same or different, and x is 1 or more, said unsatisfied valences in said formulae being hydrogen, hydrocarbon or substituted group.

3,929,636

PROCESS FOR CONDITIONING EFFLUENT CONTAMINATED BY ALDEHYDE COMPOUNDS

Jean-Pierre Zumbrunn, Saint Gratien, France, assignors to L'Air Liguide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes, Paris, France

Filed Dec. 26, 1973, Ser. No. 428,196

Claims priority, application France, Jan. 5, 1973, 73.00286

Int. Cl.² C02C *5/04*

U.S. Cl. 210—63 **10 Claims**

1. A process for treating industrial effluent containing aldehyde impurities, comprising:

adjusting the pH of said effluent to a value of at least about 9;

reacting the aldehyde impurities in said effluent with an oxidizing reagent comprising the peroxymonosulfuric anion, SO_5^{--}, by mixing said effluent with a compound or compounds which form the peroxymonosulfuric anion, SO_5^{--}, in said effluent, said oxidizing reagent being present in the effluent in a molar ratio of oxidant/aldehyde at least equal to 1.

3,929,634

REMOVAL OF MERCURY FROM AQUEOUS SOLUTIONS EMPLOYING NAVAL STORES PRODUCTS

Walter H. Schuller, Bowie, Md., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D. C. 20250

Filed Aug. 16, 1974, Ser. No. 498,164

Int. Cl.² C02B *1/20*

U.S. Cl. 210—49 **9 Claims**

1. A Process for removing mercury salts from an aqueous solution of said salts, said process comprising:

a. contacting the aqueous solution of mercury salt with about 0.05 to 2.0 weight percent, based on the weight of the solution, of a naval stores product having at least one carboxyl group;

b. agitating the mixture from (a) for about one-half hour to about 16 hours; and

c. filtering the solution from (b).

3,929,635

USE OF POLYMERIC QUATERNARY AMMONIUM BETAINES AS WATER CLARIFIERS

Rudolf S. Buriks, and Allen R. Fauke, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 227,261, Feb. 17, 1972, Pat. No. 3,819,589. This application Mar. 19, 1974, Ser. No. 452,638

Int. Cl.² B01D *21/01*

U.S. Cl. 210—54 **9 Claims**

2. The process of claim **1** where the polymeric quaternary ammonium betaine which has no anions has the repeating unit

3,929,637

DEODORIZING PROCESS

Albert E. Appleby, and Tommy G. Simpson, both of Orangeburg, S.C., assignors to Ethyl Corporation, Richmond, Va.

Filed July 25, 1973, Ser. No. 382,495

Int. Cl.² C02B *1/34*

U.S. Cl. 210—63 **15 Claims**

1. A method for deodorizing the distillation residue from the preparation of organophosphorus compounds having the formula $RyP(L)_zX_{3-y}$, wherein R is substantially an alkyl or aryl group, L is S or O, X is halogen, y is 1 or 2 and z is 0 or 1, which comprises

1. hydrolyzing said residue with water containing an amount of surfactant effective to retard tarry sludge formation and

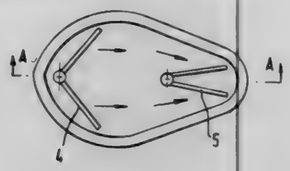
2. treating the hydrolysate from (1) with an amount of base selected from the group consisting of KOH, NaOH, NH_3 and NH_4OH, effective to at least neutralize the hydrolysate and an effective amount of inorganic oxidizing agent selected from the group consisting of sodium hypochlorite, ferric chloride, and water soluble permanganates

whereby the odor of the resultant treated residue is reduced.

3,929,638
REMOVAL OF SLAG FROM A METALLURGICAL VESSEL

Albert Hamilius, Destelbergen, Belgium, assignor to Centre de Recherches Metallurgiques— Centrum voor Research in de Metallurgie, Brussels, Belgium

Filed Aug. 20, 1974, Ser. No. 498,939
Claims priority, application Belgium, Aug. 22, 1973, 803921
Int. Cl.² B01D *21/04*
U.S. Cl. 210—65 **2 Claims**

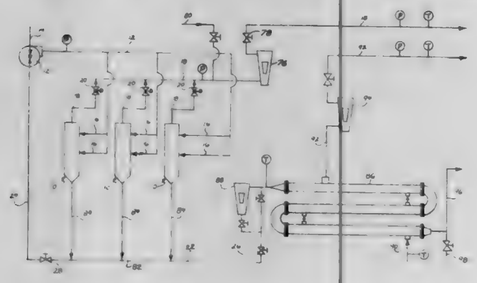


1. A method of removing slag from the surface of molten metal in a vessel having an outlet, by means of a scraper which comprises two scraping arms articulated together about a common axis, the method comprising the sequential steps of placing the scraper on the metal at a point diametrically opposite the outlet, with the common axis of articulation perpendicular to the surface, adjusting the angle between the arms so that the maximum area of the surface may be scraped, and moving the scraper across the surface towards the outlet and modifying the angle between the arms according to the remaining surface area to be scraped, so as to prevent slag from escaping laterally at the ends of the arms.

3,929,639
FILTERING APPARATUS AND PROCESS

James Keith Turner, Lincolnton, and Gary L. Parsons, Gastonia, both of N.C., assignors to Gaston County Dyeing Machine Company, Mount Holly, N.C.

Filed July 23, 1973, Ser. No. 381,798
Int. Cl.² B01D *35/22*
U.S. Cl. 210—71 **6 Claims**

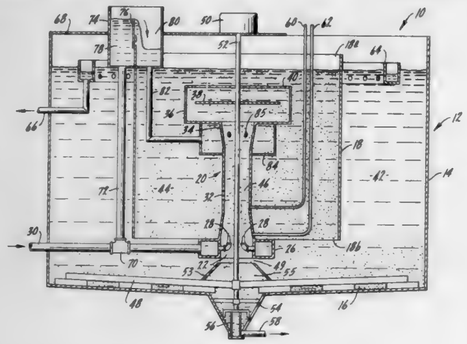


1. Apparatus for filtering contaminating solids and reclaiming heat from a heated aqueous effluent in the course of conditioning the effluent in substantial part for reuse, said apparatus comprising a plurality of filter units each of which comprises an elongate cylindrical housing having a tubular filter cartridge disposed in fixed relation coaxially and substantially coextensively therein and proportioned in cross section to leave an annular circulation space about said cartridge within said housing, means for supplying said effluent continuously to said filter units in parallel, said supply means being arranged for delivering effluent tangentially into said circulation space at a plurality of points spaced lengthwise of the housing of each filter unit, means for carrying off filtered effluent from the outlet side of each filter unit of said plurality, means for recirculating residual unfiltered effluent from the inlet side to said filter unit supply means which comprises a drain line from each filter unit connected to a common manifold having a recirculating line running therefrom to said filter unit supply means and having a common drain line fitted thereat, said common drain line being valved for throttling to force recirculation of a predominant portion of unfiltered effluent draining from said circulation space, means for selectively closing the means for carrying off filtered effluent from the filter units of said plurality so that any of said filter units may be regenerated by the cleansing action of effluent circulation therethrough only at said inlet side while the remainder of said filter unit plurality continues in operation, and a heat exchanger, together with means for supplying clear aqueous make-up through said heat exchanger, and means for bleeding a corresponding portion from said recirculating effluent through said heat exchanger in heat exchange relation with said make-up supply.

3,929,640
WATER TREATING APPARATUS

Edward H. Dohnert, East Brunswick, N.J., assignor to Ecodyne Corporation, Chicago, Ill.

Filed Apr. 27, 1972, Ser. No. 248,231
Int. Cl.² C02B *1/10*; B01D *19/04*
U.S. Cl. 210—195 **10 Claims**



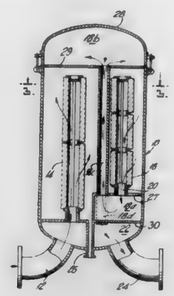
1. The water treating apparatus comprising:
a tank;
a partition within said tank defining a settling zone;
means for removing treated water from said settling zone;
an uptake member within said partition defining a mixing and recirculation zone, said uptake member including a lower opening;
a plurality of upwardly directed nozzles connected to an intake means, said nozzles being disposed within said uptake member and within the perimeter of said lower opening in said uptake member; and
precipitate collecting means underlying said lower opening whereby precipitates from said collecting means are mixed with liquid passing through said nozzles in said uptake member and are passed into said mixing and recirculation zone.

3,929,641
ELECTROSTATIC CHARGE REDUCTION IN FILTER-SEPARATORS

William G. Dukek, Summit, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Continuation of Ser. No. 427,513, Dec. 26, 1973, abandoned. This application Feb. 3, 1975, Ser. No. 546,424
Int. Cl.² B01D *29/42*
U.S. Cl. 210—73 **10 Claims**

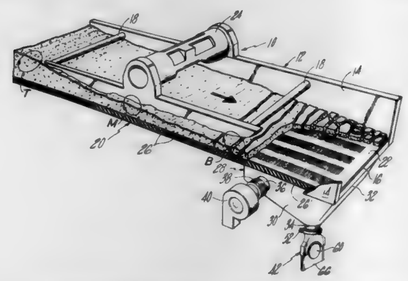
1. A method for reducing the static electrical charge developed in fuels during the filtering and separation of free water therefrom in a multi-stage filter-separator vessel having an outlet including the following steps: passing static charged fuel from the last stage of the filter-separator to at least a first holding chamber; holding said fuel in at least said first holding chamber for a sufficient holdup time to permit substantial relaxation of the static charged fuel whereby the static charge in said fuel is substantially reduced; and passing the relaxed fuel out of said vessel.



3,929,642
DEWATERING SYSTEM

Robert E. Ennis, West Simsbury, Conn., and Robert G. Derrick, Buffalo, N.Y., assignors to Linatex Corporation of America, Stafford Springs, Conn. and Derrick Manufacturing Corporation, Buffalo, N.Y.

Filed Mar. 7, 1974, Ser. No. 448,937
Int. Cl.² B01D *33/38*
U.S. Cl. 210—113 **7 Claims**

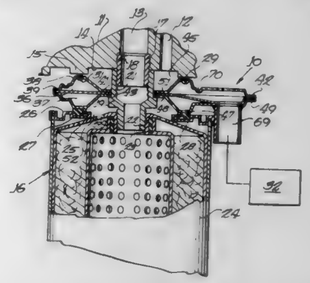


1. In a dewatering system for granular solid material comprised of an elongated vibratory screen deck having a top surface along which a bed of solid granular material travels relative to said top surface during dewatering and a discharge edge at one end thereof, the combination including a vacuum compartment positioned beneath a screen panel portion of said deck adjacent said one end, said compartment being in communication with the underside of said panel portion for assisting in removal of additional amounts of fluid from the bed of solid material moving relative to the vibratory overlying top surface, an air pump associated with said compartment for producing a pressure drop between said top surface and said underside of the panel portion overlying the chamber and a water discharge regulator for periodically discharging water from said compartment in response to the amount of water accumulated therein, said water discharge regulator being a self-operating, flexible member having a neck portion and a diaphragm portion movable between an open discharge position and a closed sealed position, said diaphragm portion depending integrally from said neck portion and having a reinforced top section and a central stabilizing pad extending downwardly therefrom, said central stabilizing pad being operative for constantly biasing said diaphragm portion into its closed flat position and being movable into its open position in response to the water pressure within the compartment acting on said reinforced section.

3,929,643
FLUID DIVERTER DEVICE WITH PRESSURE RELIEF VALVE

Desmond M. Donaldson, Halton, and Gregory S. T. Millard, Peel, both of Canada, assignors to Borg-Warner Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 351,755, April 16, 1973, Pat. No. 3,862,037. This application May 28, 1974, Ser. No. 473,615. The portion of the term of this patent subsequent to Jan. 21, 1992, has been disclaimed.
Int. Cl.² B01B *23/20*
U.S. Cl. 210—117 **10 Claims**

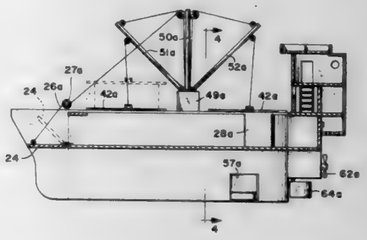


1. A fluid diverter device adapted to be disposed in a fluid flow path to divert fluid to a fluid treating apparatus and return the fluid to its original path, comprising first and second dished plates defining a hollow casing, said first plate having inlet means for flow of fluid into said casing and said second plate having outlet means for flow of fluid from said casing, a baffle plate disposed between and engaging said casing plates and dividing said casing to provide spaced independent first and second fluid chambers respectively communicating with said inlet and outlet means, said plates having coextensive engaged tab portions, the tab portions of said first and second plates extending from said fluid chambers and overlying and being in spaced relation to the tab portion of said baffle plate to provide spaced fluid passages therein, spaced conduit means respectively connected to said spaced fluid passages defined by said tab portions for flow of fluid from said first chamber to said fluid treating apparatus and for flow of fluid from said apparatus to said second chamber, and means to by-pass the fluid treating apparatus and cause liquid flow directly from said first chamber to said second chamber.

3,929,644
WATERCRAFT FOR SCAVENGING OIL SPILLAGE

George M. Fletcher, 456 Lee St., Oakland, Calif. 94610

Filed Dec. 28, 1970, Ser. No. 101,964
Int. Cl.² E02B *15/04*
U.S. Cl. 210—242 **5 Claims**



1. A watercraft for scavenging oil and other floating debris from the surface of a body of water, comprising: a buoyant

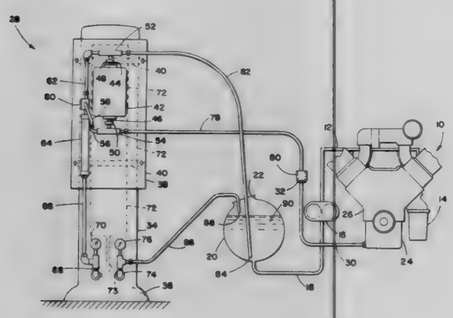
hull adapted to be propelled in such body of water and being equipped with a receiving tank having a substantial volume thereof extending downwardly below the surface of such body of water; an inlet system communicating with said tank and having a mouth located along the surface of such body of water to afford ingress of a surface layer thereof and delivery of such surface layer into said tank; a discharge system providing an exit opening for said tank at an elevation substantially below the surface of such body of water; and transversely spaced and longitudinally extending wall surfaces provided by said hull and defining an open ended flow passage below the surface of such body of water having a varying transverse cross section constituting a venturi through which water is forced to flow as said craft is propelled, said exit opening being disposed adjacent a lower-pressure area of said flow passage whereby the pressure adjacent said exit opening is reduced as said craft moves through such body of water so as to remove water accumulations from the lower portions of said tank and thereby enable the same to receive their greater quantities of scavenged debris.

3,929,645

FILTERING AND MIXING APPARATUS

William G. Bugelski, and Robert E. Teasley, Jr., both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed May 24, 1974, Ser. No. 472,936
Int. Cl.² B01D *29/00*
U.S. Cl. 210—251 **15 Claims**



1. A system for addition of used lubricating oil to fuel oil burned by a compression ignition engine, said system comprising:

means for extracting used lubricating oil from said compression ignition engine;

means for mixing fuel oil with said extracted lubricating oil and discharging the mixture of fuel oil and used lubricating oil from a common outlet;

a filter having an inlet connected to the outlet of said mixing means for filtering contaminates from said mixture; and,

means for adding said mixture to a tank of fuel oil for use by said compression ignition engine.

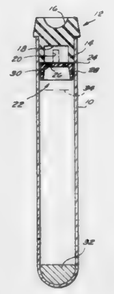
3,929,646

SERUM SEPARATOR AND FIBRIN FILTER

Stanford L. Adler, Monsey, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed July 22, 1974, Ser. No. 490,539
Int. Cl.² B01D *33/00*
U.S. Cl. 210—359 **3 Claims**

1. An article for use for the centrifugal separation of a blood sample into a plasma or a serum portion, constituting a lighter phase, and a cellular portion, constituting a heavier phase, for the formation of a barrier therebetween, comprising: a tubular container having an open outer end and a closed inner end; an inner cover element of relatively rigid material in said container adjacent said open end, said cover element comprising a platform-forming transverse relatively thin wall portion substantially filling the cross section of said container and at its circumferential extremity a depending relatively thin side wall portion having an inner surface tapering so as to narrow toward said transverse wall portion, said transverse wall portion defining straight-through plural normally open filter and vent openings dimensioned to pass said phases, said wall portions together defining a cavity, the height of said said inner



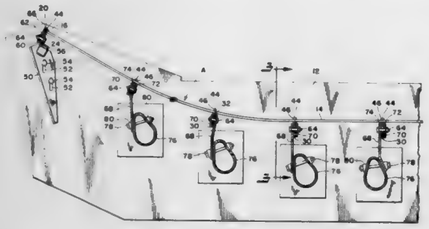
cover element being at least half the diameter thereof, and a sealant comprising a semifluid in said container closed end, said cover element and said sealant having respective specific gravities intermediate the respective specific gravities of said two phases, so that on separation of said two phases said sealant forms a barrier therebetween with said sealant sealing against said container and further sealing against at least the inner surface of said side wall structure and occluding said vent openings.

3,929,647

SCREENING APPARATUS

Joseph E. Kempa, Iron Mountain, Mich., assignor to The Hanna Mining Company, Cleveland, Ohio

Filed Oct. 10, 1973, Ser. No. 404,997
Int. Cl.² B07B *1/12, 1/46*
U.S. Cl. 209—395 **14 Claims**



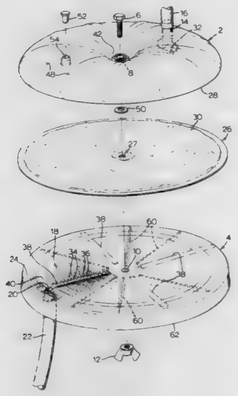
1. Screening apparatus comprising an upper screen deck, said upper screen deck including a plurality of elongated spaced-apart parallel rods having upstream and downstream end portions, support means for supporting said rods at said upstream and downstream end portions and at a plurality of longitudinally spaced locations intermediate said upstream and downstream end portions, said support means including a plurality of transversely extending elastomeric strips having holes therethrough snugly receiving said rods at said upstream and downstream end portions and at a plurality of longitudinally spaced locations intermediate said upstream and downstream end portions, and a lower screen deck extending outwardly from said downstream end portions of said upper screen deck rods, said lower screen deck including a plurality of elongated spaced-apart lower screen deck rods having upstream and downstream end portions, said strips including a common strip having vertically spaced upper and lower rows of said rod receiving holes, said downstream end portions of said upper screen deck rods being snugly received in said upper row of holes and said upstream end portions of said lower screen deck rods being snugly received in said lower row of holes, and said lower screen deck rods being additionally supported at longitudinally spaced locations by a plurality of said elastomeric strips, said common strip being secured to a support bracket extending substantially the full length of said common strip, said support bracket overlying said lower row of holes in said common strip on the opposite side into which said upstream end portions of said lower screen deck rods are received to preclude extension of said upstream end portions of said downstream screen deck rods completely therethrough, the upper edge of said support bracket terminating beneath said upper row of holes in said common strip, and a backing plate on the opposite side of said common strip into which the downstream end portions of said upper screen deck rods extend to preclude extension of said downstream end portions of said upper screen deck rods completely therethrough, said backing plate having a row of holes therethrough for passage of said upstream end portions of said lower screen deck rods into said lower row of holes in said common strip as aforesaid.

3,929,648

FILTER UNIT

Arthur Robert Cuthbert, 15 Fletcherdon Crescent, Downsview, Ontario, Canada

Filed May 7, 1974, Ser. No. 467,715
Claims priority, application Canada, Sept. 4, 1973, 180219
Int. Cl.² B01D *29/04*
U.S. Cl. 210—445 **10 Claims**



1. A filter unit comprising:

a first housing member having a fluid inlet;

a second housing member having a fluid outlet, an irregular central surface portion and a smooth generally planar peripheral surface portion;

a generally flat filter paper overlying said irregular and peripheral surface portions with said irregular surface portion providing drainage paths to said fluid outlet;

said first housing member being configured and positioned to define a filter chamber between itself and said filter paper and having a peripheral edge opposite said smooth peripheral surface of said second housing member with said filter paper therebetween; and

fastening means extending centrally through said housing members and serving to clamp them together and to clamp the periphery of said filter paper therebetween, said fastening means holding the central portion of said second housing member resiliently flexed toward the first housing member whereby to maintain sealing pressure between said members and the peripheral portion of said filter paper.

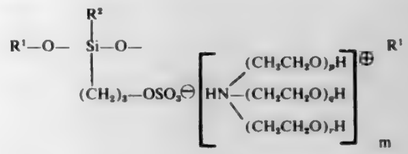
3,929,649

FIRE EXTINGUISHING FOAM CONCENTRATE

Gerd Rossmy, Essen-Werden, and Götz Koerner, Essen, both of Germany, assignors to Th. Goldschmidt AG, Germany

Continuation-in-part of Ser. No. 197,477, Nov. 10, 1971, abandoned, which is a continuation of Ser. No. 865,171, Oct. 9, 1969, abandoned. This application Mar. 19, 1973, Ser. No. 342,888
Claims priority, application Germany, Oct. 9, 1968, 1802052
Int. Cl.² A62D *1/00*
U.S. Cl. 252—3 **6 Claims**

1. In a fire extinguishing foam concentrate, the improvement which comprises that its active ingredient is a water-soluble, surface active organosilicon compound, said compound constituting at least 10 percent of said concentrate and having the formula



wherein

R^1 is $(CH_3)_3Si$;

R^2 is CH_3 or $(CH_3)_3SiO$;

$m = 1–3$;

$p, q, r = 0–7$ and

$p + q + r = 1–20$.

3,929,650

EXTREME PRESSURE AGENT AND ITS PREPARATION

John M. King, San Rafael, and Nicolaas Bakker, Pinole, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Mar. 22, 1974, Ser. No. 453,898
Int. Cl.² C10M *1/40, 3/34, 5/22, 7/38*
U.S. Cl. 252—33.4 **23 Claims**

1. A process for preparing a particulate alkali metal borate dispersion which comprises contacting an alkali metal carbonate overbased alkali or alkaline earth metal sulfonate with boric acid within a stable inert oleophilic liquid reaction medium, wherein said contacting is conducted at a temperature of 20° to 200°C for a period of 0.5 to 7 hours and wherein the molar ratio of boric acid to alkali metal carbonate is from 1 to 3.

3,929,651

MODIFIED LITHIUM SOAP GREASE

Donald W. Murray, Sarnia, and Warren C. Pattenden, Mooretown, both of Canada, assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation of Ser. No. 90,877, Nov. 18, 1970, abandoned. This application Sept. 25, 1974, Ser. No. 509,231
Int. Cl.² C10M *1/24, 3/18, 5/14, 7/20*
U.S. Cl. 252—41 **8 Claims**

1. A lubricating grease composition of high dropping point and long oxidation life which comprises a major proportion of a lubricating oil and from about 2 to 30 weight % of a thickener system whose essential components include a dilithium salt of a C_4–C_{12} dicarboxylic acid, a lithium soap of a C_{12} to C_{24} hydroxy acid, and a lithium salt of a hydroxy aromatic carboxylic acid having a maximum of 14 carbon atoms, wherein the hydroxy group is attached to a carbon atom not more than 6

carbon atoms removed from the carboxyl group, in a weight ratio of about 0.5 to 15 parts of hydroxy fatty acid per part of said dicarboxylic acid, and in a weight ratio of from about 0.025 to 2.5 parts of said hydroxy aromatic carboxylic acid per part of dicarboxylic acid, said lithium salt of hydroxy aromatic carboxylic acid having been prepared by reacting lithium base with hydroxy aromatic carboxylic acid or lower alcohol ester thereof in the presence of dilithium salt of dicarboxylic acid and lithium soap of hydroxy fatty acid.

3,929,652

DUAL PURPOSE CUTTING OIL

Leonard S. Seni, Port Arthur, Tex.; James E. Davis, Summerville, S.C., and Henry R. Harrison, River Rouge, Mich., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 13, 1974, Ser. No. 523,301
Int. Cl.² C10M *1/48, 3/42, 5/24, 7/46*
U.S. Cl. 252—46.7 **10 Claims**

1. A lubricant comprising
a. a major amount of a base oil,
b. a minor amount of a chlorophenyl polysulfide and
c. a minor amount of a mercapto-thiadiazole.

10. A lubricant comprising:
a. a major amount of a base oil,
b. a minor amount of Bis (β-chlorophenethyl) disulfide,
c. a minor amount of an alkyl derivative of 2,5-di-mercapto-1,3,4-thiadiazole,
d. a minor amount of a mixture of alkylmaleic acid phenol and lauric acid phosphate,
e. a minor amount of a copolymer of ethylene and propylene and
f. oil of citronella.

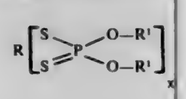
3,929,653

LUBRICANT ADDITIVES

John Scotchford Elliott; Gerald John Joseph Jayne, and Herbert Frank Askew, all of Bracknell, England, assignors to Edwin Cooper & Company Limited, Bracknell, England

Division of Ser. No. 342,088, March 16, 1973, abandoned. This application June 18, 1974, Ser. No. 480,363
Claims priority, application United Kingdom, Mar. 22, 1972, 13431/72
Int. Cl.² C10M *1/48, 3/42, 5/24, 7/46*
U.S. Cl. 252—46.7 **14 Claims**

1. A lubricating composition comprising a major amount by weight based on the total weight of the composition, of a lubricating oil and a minor amount, conferring antioxidant or anti-wear properties, by weight of an oil-soluble, ashless additive compound having the formula:



wherein:
i. R is selected from the group consisting of (a) a residue of a monocyclic, non-conjugated olefin containing from 8 to 12 carbon atoms and at least two ethylenically unsaturated double bonds in the ring and (b) the residue of the product formed by reacting at least one, but not all, of the ethylenically unsaturated double bonds in said monocyclic, non-conjugated olefin with a compound selected from the group consisting of sulphur, phosphorus pentasulphide, a mercaptan, phenol, thiopenol, and thiocyanate anion;
ii. each R^1 is the same or different and is phenyl, alkyl-substituted phenyl group containing from 7 to 18 carbon atoms and an alkyl group containing from 3 to 10 carbon atoms; and
iii. x is an integer selected from the group consisting of 1, 2, and 3.

3,929,654

ORTHO ALKYL PHENOL AND ORTHO ALKYL PHENOL SULPHIDE LUBRICATING OIL ADDITIVES

Phillip William Brewster, Wyoming, Canada; Peter Collen Hamblin, Cheadle, and James Pennycook Rutherford, Abingdon, both of England, assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 417,121, Nov. 11, 1973. This application Claims priority, application United Kingdom, Sept. 7, 1973, 1980/73, May 23, 1974, 23068/74 Sept. 5, 1974, Ser. No. 503,370
Int. Cl.² C10M *1/38, 3/32, 5/28, 7/36*
U.S. Cl. 252—48.2 **16 Claims**

1. An additive mixture comprising
a. 45–75 wt.% of a phenol substituted with one or two hydrocarbyl groups, one of which must be in the ortho position,
b. 5–20 wt.% of a hydrocarbyl substituted phenol disulphide, each benzene ring having one or two hydrocarbyl substituents, one of which in each ring being in the ortho position with respect to the hydroxyl group and
c. 15–40 wt.% of a hydrocarbyl substituted phenol trisulphide, each benzene ring having one or two hydrocarbyl substituents, one of which in each ring being in the ortho position with respect to the hydroxyl group.

15. A lubricating oil composition comprising a major proportion by weight of a lubricating oil and a minor proportion by weight of the alkyl phenol additive mixture according to claim **1.**

3,929,655

ADDITIVES FOR HYDROCARBONACEOUS MATERIALS

Marion J. Gattuso, Hoffman Estates, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 7, 1974, Ser. No. 521,981
Int. Cl.² C10M *1/32, 3/26, 5/20, 7/30*
U.S. Cl. 252—51.5 R **12 Claims**

1. A solid additive comprising a mixture of from about 1 to about 50 percent by weight of the reaction product of an epihalohydrin and a primary amine containing from 14 to 22 carbon atoms, and from about 50 to about 99 percent by weight of the reaction product of an epihalohydrin and an N-alkyl-1,3-diaminopropane containing from 14 to 22 carbon atoms in the alkyl chain.

2. The solid additive as set forth in claim **1** being added to a petroleum distillate.

3,929,656

DRAWING OIL

Klaus-Jurgen Flis, Bochum, Germany, assignor to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Filed July 26, 1974, Ser. No. 492,315
Claims priority, application Germany, Aug. 17, 1973, 2341577
Int. Cl.² C10M *1/00, 3/24, 5/18, 7/28*
U.S. Cl. 252—56 R **7 Claims**

1. A lubricating oil composition comprising from about 60 to 90 weight percent of a mineral oil having a viscosity of 50°C. in the range of about 250 to 600 centistokes, from about 5 to 30 weight percent of an additive from the class consisting of vegetable oils and from about 3 to 15 weight percent of a chlorinated paraffin containing greater than 40 up to 80 percent chlorine.

3,929,657

STOICHIOMETRIC FERRITE CARRIERS

Lewis O. Jones, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 5, 1973, Ser. No. 394,604
Int. Cl.² G03G *9/00*
U.S. Cl. 252—62.1 P **10 Claims**

1. An electrostatographic dry developer mixture for developing electrostatic latent images comprising finely-divided toner particles electrostatically clinging to the surface of humidity-insensitive, uncoated electrostatographic carrier materials, said carrier materials comprising substantially stoichiometric ferrite compositions which are within ± 3 mol percent deviation from stoichiometry in divalent metal content.

3,929,658

MAGNETIC RECORDING COMPOSITIONS AND ELEMENTS OF LOW ABRASIVENESS AND PROCESS FOR MAKING THEM

Grant A. Beske, Princeton Junction, N.J., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 303,052, Nov. 2, 1972, abandoned. This application Dec. 2, 1974, Ser. No. 529,005
Int. Cl.² H01F *1/30;* **G11B** *5/62*
U.S. Cl. 252—62.54 **4 Claims**

1. In a magnetic recording composition comprising ferromagnetic particles having a mean particle length not greater than about 10 microns dispersed in an organic polymeric binder, the improvement wherein said composition further comprises from about 2 to about 20 percent, based upon the weight of said ferromagnetic particles, of finely divided particles of at least one nonferromagnetic metal oxide having a hardness of 5.5 or less on the Moh scale selected from the group consisting of amatase titanium dioxide, molybdenum trioxide, brucite, calamine, chromite, cuprite, emmonsite, hausmannite, tenorite and zincite and a particle size in the range of about 0.2 to about 5.0 microns.

3,929,659

CROSSLINKED RUBBER/RESIN BINDERS FOR CHROMIUM DIOXIDE RECORDING MEMBERS

Boynton Graham, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed June 18, 1973, Ser. No. 370,713
Int. Cl.² H01F *1/113, 1/28*
U.S. Cl. 252—62.54 **23 Claims**

1. In a magnetic recording composition of the type comprising a plurality of ferromagnetic chromium dioxide particles dispersed in a polymeric resin binder, the improvement wherein said binder is formed by the reaction of a polyol and a polyfunctional hydroxyl-reactive compound in the presence of a preformed elastomer and a preformed hard resin; said polyol being selected from the group consisting of linear or branched aliphatic diols and triols, polymeric carboxylic esters having a molecular weight greater than 200 and hydroxyl numbers in the range of 1 to 500, and addition polymers having available pendant reactive hydroxyl groups; said preformed elastomers being selected from the group consisting of natural rubber, butadiene/acrylonitrile copolymers; block copolymers of butadiene/styrene; polychloroprene; chlorosulfonated polyethylene; and preformed non-reactive polyether-polyurethanes and polyesterpolyurethanes; and said preformed hard resin being selected from the group consisting of epoxy and phenoxy resins, polycarbonates; polyesters; polyacrylic and polymethacrylic acids and esters thereof, cellulose ethers and esters, styrene polymers and copolymers, polyamides, vinyl polymers and copolymers, vinylidene polymers and copolymers, copolymers of two or more vinyl, vinylidene or acrylic monomers and mixtures thereof; the total binder composition comprising 1 to 25% by weight of polyol, 2.5 to 30% by weight of polyfunctional hydroxyl-reactive compounds, 10 to 60% by weight of preformed elastomers and 25 to 70% by weight of preformed hard resin.

3,929,660

ARC-EXTINGUISHING MATERIALS

Joseph M. Khalid, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.

Filed May 29, 1973, Ser. No. 364,596
Int. Cl.² H01B *3/02*
U.S. Cl. 252—63.2 **9 Claims**

1. An arc-extinguishing material consisting of a compound comprising a primary ingredient having arc-extinguishing properties, and a binder, said primary ingredient including an element having a first ionization potential no less than 7.54 electron volts and selected from a class consisting of silver, tantalum, copper, rhenium, tungsten, boron, palladium, tellurium, zinc and selenium, the relative proportions of said primary ingredient and said binder being a silicone resin, the carbon atoms of said total compound being no greater than fifteen percent of the total concentration of atoms thereof.

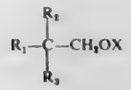
3,929,661

LIQUID DETERGENT BLEACHING COMPOSITION

Yunosuke Nakagawa, Koshigaya; Yoshiaki Inamoto, and Koji Aigami, both of Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1974, Ser. No. 531,226
Claims priority, application Japan, Dec. 11, 1973, 48-139338
Int. Cl.² C11D *7/56*
U.S. Cl. 252—103 **7 Claims**

1. A liquid detergent bleaching composition, consisting essentially of a stabilized, alkaline, aqueous solution of
a. from 0.5 to 10 percent by weight of sodium hypochlorite,
b. from 0.1 to 20 percent by weight of surfactant having the formula



wherein R_1, R_2 and R_3, which can be the same or different, each is alkyl having 1 to 18 carbon atoms, the sum of the carbon atoms of R_1, R_2 and R_3 being from 10 to 20, and X is $-SO_3M$, $-CH_2COOM$, $-CH_2CH_2COOM$, $-(CH_2CH_2O)_nSO_3M$ or $-(CH_2CH_2O)_nCH_2COOM$, wherein n is an integer from 1 to 40 and M is an alkali metal
c. from 0.1 to 5 percent by weight of a water-soluble inorganic alkali effective for stabilizing said sodium hypochlorite in aqueous alkaline solution, and
d. the balance water.

3,929,662

LIQUID OR GAS PHASE STERILIZING AND CLEANING COMPOSITION CONTAINING AN ALDEHYDE AND A FLUORO OR PERFLUORO COMPOUND

Raymond Marcel Gut Boucher, New York, N.Y., assignor to Wave Energy Systems Inc., New York, N.Y.

Filed Dec. 18, 1973, Ser. No. 425,881
Int. Cl.² C11D *3/48*
U.S. Cl. 252—106 **7 Claims**

1. A gas or liquid phase essentially non-aqueous composition for simultaneously cleaning and sterilizing of inanimate objects or animate surfaces consisting essentially of 0.005% to about 3% of at least one aldehyde selected from the group consisting of methanal, ethanedial, malonaldehyde, succinaldehyde, glutaraldehyde, adipaldehyde, heptanedial, octanedial, and iminodiacetaldehyde; and a fluoro or perfluoro chemical as active ingredients.

3,929,663

CONTROLLED FOAMING DETERGENT COMPOSITIONS

Haruhiko Arai, Narashino, and Yutaka Minegishi, Funabashi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 206,498, Dec. 9, 1971, abandoned. This application Apr. 1, 1974, Ser. No. 456,824
Int. Cl.² C11D *1/06, 9/14*
U.S. Cl. 252—110 **3 Claims**

1. A controlled foaming detergent composition consisting essentially of

A. from 5 to 40 percent by weight of anionic surface active agent selected from the group consisting of alkylbenzenesulfonate salts having a straight or branched chain alkyl group of 10 to 18 carbon atoms, alkyl sulfuric ester salts of 12 to 18 carbon atoms, α-olefin sulfonic acid salts of 14 to 20 carbon atoms, alkane sulfonic acid salts of 12 to 20 carbon atoms, sulfuric ester salt of polyoxyethylene (1–10 oxyethylene units) alkyl ($C_{12}-C_{18}$) ether, sulfuric ester salt of polyoxyethylene (1–10 oxyethylene units) alkyl (C_8-C_{12}) phenyl ether and mixtures thereof,

B. from 0.1 to 15 percent by weight of fatty acid salt or mixture of fatty acid salts of the formula:

$$R_1-O-(CH_2)_n-\underset{\displaystyle R_2}{\underset{|}{CH}}-COOM$$

wherein R_1 is an alkyl group of 10–24 carbon atoms, R_2 is an alkyl group of 1–8 carbon atoms and the total number of carbon atoms of R_1 and R_2 is 11-25, n is 0 or 1 and M is an alkali metal,

provided further that the amount of said fatty acid salt or mixture of fatty acid salts is from 1 to 40 percent by weight, based on the weight of said anionic surface active agent,

C. and the balance is builder selected from the group consisting of sodium tripolyphosphate, sodium sulfate, sodium carbonate, water-soluble sodium silicate, sodium borate, sodium nitrilotriacetate, sodium succinate, sodium salt of carboxymethylcellulose and polyethylene glycol and mixtures thereof.

3,929,664

WATER-WASHABLE INSPECTION PENETRANT EMPLOYING TRIGLYCERIDES AND POLYGLYCERIDES OF FATTY ACIDS

James R. Alburger, 5007 Hillard Ave., La Canada, Calif. 91011

Continuation-in-part of Ser. No. 482,465, June 24, 1974. This application Oct. 8, 1974, Ser. No. 513,084
Int. Cl.² C09K *11/06;* **G01N** *19/08, 21/16*
U.S. Cl. 252—301.2 P **1 Claim**

1. In a water-washable inspection penetrant process in which a water-dispersible dyed liquid penetrant is applied to test parts, surface penetrant is removed by washing said test parts with water, and said parts are inspected for residual entrapments of penetrant liquid in surface flaws, the improvement wherein said water-washable penetrant consists essentially of the following formulation, stated in weight percentages:

Low-solubility solvent liquid	30% to 99.8%
Indicator dye	.2% to 30%
Solvent coupler	zero to 40%

said low-solubility solvent liquid being at least one member selected from the group consisting of:
Cottonseed oil,
Palm kernel oil,
Peanut oil,
Coconut oil,
Linseed oil,
Olive oil,
Soybean oil,
Castor oil,
Sunflower seed oil,
Rape seed oil,
Safflower oil,
Lard,
Tallow,
Fish oil,
Sardine oil, and
Whale oil,
and said solvent coupler being at least one member selected from the group consisting of:
Methanol,
ethanol,
butanol,
isopropanol,
1-propanol,
2-butanol,
ethylene glycol monobutyl ether,
ethylene glycol monoethyl ether,
ethylene glycol monomethyl ether,
diethylene glycol monomethyl ether,
diethylene glycol monoethyl ether,
diethylene glycol monobutyl ether,
butoxytriglycol,
methoxytriglycol,
ethoxytriglycol, and
1-butoxyethoxy-2-propanol,
said low-solubility solvent liquids being selectively employed singly and in combination.

3,929,665

PROCESS FOR PREPARING LUMINESCENT MATERIALS BASED ON OXYSULPHIDES

Franco Gazzarrini; Paolo Aguzzi, both of Novara, Italy, and Adriana Corsini-Mena, Moscow, U.S.S.R., assignors to Montedison S.p.A., Milan, Italy

Filed May 29, 1974, Ser. No. 474,186
Claims priority, application Italy, May 30, 1973, 24827/73
Int. Cl.² C09K *11/46*
U.S. Cl. 252—301.4 S **4 Claims**

1. A process for preparing luminescent grade oxysulphides having the empirical formula $M'_{2-z}M''_zO_2S$, in which M′ is an element selected from the group consisting of yttrium, gadolinium and lanthanium; M″ is an element selected from the group consisting of europium, terbium, samarium, erbium, thulium, dysprosium, holmium, neodymium, and praseodymium, and x is a number from 0.0002 to 0.2; which process is characterized in that

a. an aqueous solution or suspension containing (1) element M′ in the form of an oxide, a nitrate, or a halide, (2) element M″ in the form of an oxide, a nitrate or a halide, (3) a sulphurizing agent in an amount of from 100% to 200% of the stoichiometric amount necessary to form oxysulphides having said formula and selected from the group consisting of thiourea, sodium thiosulphate, elementary sulphur, and mixtures thereof and a basic compound selected from the group consisting of alkaline or ammonium hydroxides and carbonates in amount such as to adjust the pH to a value of from 8 to 12; is subjected to a hydrothermal synthesis in an autoclave at 200°–350°C for from 3 to 5 hours and under a pressure of from 15 to 150 atm;

b. the solid product obtained at the conclusion of the hydrothermal synthesis is filtered and dried;

c. the dried solid product is mixed with a sulphurizing agent selected from the group consisting of alkaline thiosulphates, alkaline polysulphides and a mixture made up of 30 to 60% by weight of elementary sulphur and from 40 to 70% by weight of sodium carbonate to form a charge which is subjected to a heat-treatment at 900°C to 1100°C for from 30 minutes to 2 hours, said sulphurizing agent constituting from 10% to less than 40% by weight of said charge; and

d. the solid product obtained at the conclusion of the heat-treatment of (c) is reduced to pulp in water, filtered and dried.

3,929,666

PROCESS FOR PREPARING BASIC ALUMINUM SALT SOLUTION

Yoshikazu Aiba; Takaki Furumori; Shozo Shinpo, and Kaoru Funabiki, all of Kakogawa, Japan, assignors to Taki Fertilizer Manufacturing Co., Ltd., Japan

Filed Apr. 2, 1974, Ser. No. 457,344
Claims priority, application Japan, Apr. 19, 1973, 48-44475
Int. Cl.² C02B *1/20;* **C01F** *7/74, 7/76*
U.S. Cl. 252—317 **11 Claims**

1. A process for preparing a solution of the basic aluminum salt represented by the formula:

$$Al_m(OH)_nX_{3m-n-2k}(SO_4)_k$$

wherein X denotes Cl^- or NO_3^-, k, m and n are respective positive indices, $3m > n + 2k$, the basicity $((n/3m) \times 100)$ is 30 to 70% and $k/m = 0.01$ to 0.3, which solution is stable against precipitation, characterized by mixing a water-soluble sulfate or a solution containing SO_4^{--}, a solution containing Al^{+++} and X^- and a sodium or potassium aluminate solution at a temperature below 40°C to form a gel and then keeping the entire mixture at 50° to 80°C so that said gel is dissolved to give a basic aluminum salt solution.

3,929,667

IMMERSION OIL FORMULATIONS FOR USE IN MICROSCOPY AND SIMILAR FIELDS

Arthur N. Bautis, Lyndhurst, N.J., assignor to R. P. Cargille Laboratories, Inc., Cedar Grove, N.J.

Filed June 19, 1974, Ser. No. 480,630
Int. Cl.² G01N *21/60;* **G02B** *1/06*
U.S. Cl. 252—408 **10 Claims**

1. An immersion oil for use in the field of microscopy and related fields thereto, consisting essentially of a hydrogenated terphenyl in solution with at least one compound selected from the group consisting of polybutene derivatives and mineral oil to provide an index of refraction between the range of 1.5100 and 1.5240.

3,929,668

ZEOLITIC CATALYTIC CRACKING CATALYSTS

Gerald V. Nelson, Nederland; Douglas J. Youngblood, Groves, and James H. Colvert, Port Arthur, all of Tex., assignors to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 717,968, April 1, 1968, abandoned. This application Apr. 27, 1970, Ser. No. 29,758
Int. Cl.² B01J *29/06*
U.S. Cl. 252—455 Z **26 Claims**

1. A process of increasing the catalytic cracking activity, selectivity and attrition resistance of a catalytic cracking catalyst comprising a zeolitic crystalline aluminosilicate in a siliceous matrix, said catalyst having been rendered catalytically active previously by a process comprising drying and calcining, which comprises heat treating said catalyst at a temperature above about 1300°F. and below the thermal destructive temperature of said zeolitic crystalline aluminosilicate contained therein in the absence of steam.

21. A process of preparing a catalytic cracking catalyst which comprises:

a. calcining a material comprising zeolitic crystalline aluminosilicate in a siliceous matrix at a temperature below about 1300°F. rendering said material catalytically active,

b. heating said material in the presence of steam at a temperature of 1000° to 1400°F., and

c. heating said material in the absence of steam at a temperature above about 1300°F. and below the thermal destruction temperature of said zeolitic crystalline aluminosilicate.

3,929,669

METHOD FOR MANUFACTURING AN ADSORBENT USEFUL FOR OLEFIN SEPARATION

Donald H. Rosback, Elmhurst, and Richard W. Neuzil, Downers Grove, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 22, 1972, Ser. No. 317,861
Int. Cl.² B01J *29/06;* **C10G** *25/00*
U.S. Cl. 252—455 Z **6 Claims**

1. A method for the production of improved adsorbent particles comprising a sodium form X structured zeolite having increased adsorptive capacity for olefins and decreased catalytic activity from a precursor mass comprising an X structured zeolite and having a Na_2O/Al_2O_3 ratio less than about 0.7, which method comprises the steps of:

a. contacting said precursor mass with an aqueous sodium hydroxide solution at ion exchange conditions to increase the sodium cation content to a Na_2O/Al_2O_3 ratio of greater than about 0.7 and to remove from about 1 to about 15 wt. % of silica and alumina from the precursor mass;

b. washing said mass with water to remove therefrom excess sodium hydroxide; and,

c. at least partially dehydrating said mass at dehydrating conditions.

3,929,670

CATALYST

Tetsuichi Kudo, Tokyo; Tetsuo Gejyo, Tokyo; Kazuetsu Yoshida, Kokubunji, and Michiharu Seki, Fuchu, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 24, 1973, Ser. No. 391,244
Claims priority, application Japan, Aug. 25, 1972, 47-84543
Int. Cl.² B01J *29/06*
U.S. Cl. 252—455 R **19 Claims**

1. A catalyst consisting essentially of a metal oxide composition represented by the general formula:

$$La_{2-x}A_xCu_{1-y}M_yO_4$$

wherein A is at least one element selected from the group consisting of lanthanides of an atomic number of from 59 to 71, yttrium and alkaline earth metals, B is at least one element selected from the group consisting of lithium, aluminum, titanium, vanadium, chromium, manganese, iron, cobalt, nickel, zinc, gallium, zirconium, tin, molybdenum and tungsten, x is a number defined by $0 \leqq x \leqq 2$, and y is a number defined by $0<y<1$.

3,929,671

AUTO EXHAUST CONTROL CATALYST ON SILICA CLOTH SUPPORT

Harutoki Nakamura, Toyonaka, and Jun Yagi, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 165,094, July 23, 1971, abandoned. This application Dec. 5, 1973, Ser. No. 421,808
Claims priority, application Japan, July 30, 1970, 45-67149
Int. Cl.² B01J *29/06*
U.S. Cl. 252—455 R **3 Claims**

1. A process for preparing a catalyst for purification of exhaust gas from automobiles, which comprises dealkalizing glass fiber cloth with sulfuric acid to a silica content of at least 91 wt. percent and an alkali content of not more than 0.1 wt. percent, heating the dealkalized glass fiber cloth at 500° to 1100°C, thereby recrystallizing surfaces of the cloth once through semi-melting, dipping the cloth in an aqueous or an aqueous alcoholic solution containing at least one of inorganic powders of γ-alumina, magnesia, silica, titania, and zirconia and at least one of salts of platinum, palladium, rhodium, ruthenium, cobalt, iron, nickel, copper, manganese and chromium as a catalytic material, drying the silica cloth at 40° to 120°C and calcining the same at 300° to 400°C for 30 minutes to 2 hours.

3,929,672

AMMONIA-STABLE Y ZEOLITE COMPOSITIONS

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. Nos. 191,123, Oct. 20, 1971, abandoned, and Ser. No. 236,185, March 20, 1972, Pat. No. 3,781,199. This application Oct. 15, 1973, Ser. No. 406,684
Int. Cl.² B01J 29/06
U.S. Cl. 252—455 Z 32 Claims

1. A catalyst composition comprising a minor proportion of a hydrogenation component selected from the class consisting of the Group VIB and Group VIII metals and their oxides and sulfides intimately composited with a hydrothermally stable, ammonia-stable Y zeolite base, said Y zeolite base having been prepared by the steps of:

1 calcining an ammonium sodium Y zeolite containing about 0.6 – 5 weight-percent of sodium as Na_2O, said calcining being carried out at a temperature between about 600° and 1650°F in contact with at least about 0.2 psi of water vapor for a sufficient time to substantially reduce the unit cell size of said zeolite and bring it to a value between about 24.40 and 24.64 A;

2 subjecting the calcined zeolite to further ammonium ion exchange under conditions adjusted to replace at least about 25 percent of its residual zeolitic sodium ions with ammonium ions and produce a product containing less than about 1 weight-percent Na_2O;

3 consolidating the product from step (2) into granules having intimately admixed therein a finely divided hydrous oxide selected from the class consisting of alumina, silica, magnesia, titania, zirconia, thoria, beryllia, chromia, clays and mixtures thereof; and

4 calcining the granules at a temperature between about 600° and 1500°F for a time sufficient to effect substantial deammoniation, but insufficient to reduce the unit cell size of the zeolite to below about 24.40 A.

15. A hydrothermally stable, ammonia-stable Y zeolite composition prepared by the steps of:

1 calcining an ammonium-sodium Y zeolite containing about 0.6 – 5 weight-percent of sodium as Na_2O, said calcining being carried out at a temperature between about 600° and 1650°F in contact with at least about 0.2 psi of water vapor for a sufficient time to substantially reduce the unit cell size of said zeolite and bring it to a value between about 24.40 and 24.64 A; and

2 subjecting the calcined zeolite to further ammonium ion exchange under conditions adjusted to replace at least about 25 percent of its residual zeolitic sodium ions with ammonium ions and produce a final product containing less than about 1 weight-percent Na_2O.

3,929,673

METHOD OF PRODUCING A RANEY COPPER CATALYST AND THE CATALYST SO MADE

Karl H. Hoffmann, Brookfield; Donald R. Anderson, Oswego, both of Ill., and Ronald J. Allain, Brookhaven, Miss., assignors to Nalco Chemical Company, Chicago, Ill.

Filed June 28, 1974, Ser. No. 484,179
Int. Cl.² B01J 21/04, 23/72
U.S. Cl. 252—463 32 Claims

1. In an improved process for preparing a Raney copper catalyst comprising from about 2 to 45 weight percent aluminum with the balance up to 100 weight percent being copper, the improvement which comprises contacting particles of a metal alloy comprised of copper and aluminum with an aqueous solution which has dissolved therein on a 100 weight percent total by-product free solution basis from greater than 0 to about 25 weight percent alkali metal hydroxide and at least one soluble aliphatic polyhydric alcohol containing at least two carbon atoms, each said alcohol having a solubility in water of at least about 5 weight percent and having a molecular weight less than about 1000, said contacting being conducted at a temperature below about 80°C.

3,929,674

BORIDE-CONTAINING METALLIZATIONS

Frank Knowles Patterson, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed June 3, 1974, Ser. No. 476,032
Int. Cl.² H01B 1/02
U.S. Cl. 252—514 16 Claims

1. In metallizing compositions of a finely divided conductor powder selected from the class consisting of Pt, Pd, Au, Ag, and mixtures, alloys, and oxides thereof dispersed in an inert liquid vehicle, improved compositions additionally comprising finely divided aluminum boride; each of the aforesaid powders being sufficiently finely divided to pass through a 200-mesh screen; the aluminum boride being present in an amount equal to at least 0.05% of the weight of noble metal in the composition; the solids content of the composition being from 0.1–20 parts by weight of solids per part by weight of vehicle.

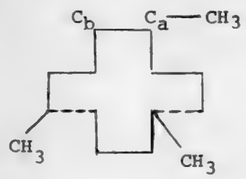
3,929,675

NOVEL PRODUCTS AND PROCESSES

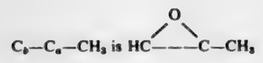
Seymour Lemberg, Elizabeth, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 638,429, May 15, 1967, Pat. No. 3,845,078, which is a continuation-in-part of Ser. No. 551,675, May 20, 1966, abandoned. This application Feb. 27, 1974, Ser. No. 446,141
Int. Cl.² A61K 7/46; C11B 9/00
U.S. Cl. 252—522 12 Claims

1. A perfume composition containing as an essential fragrance ingredient a 1,5,9-trimethylcyclododecatriene-1,5,9 derivative of the formula

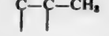


wherein



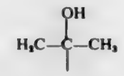
one or none of the dashed lines is a double bond, and the remaining dashed line or lines are single bonds;

or $C_b-C_a-CH_3$ is



and the dashed lines represent double bonds; or

$C_b-C_a-CH_3$ is



and the dashed lines represent single or double bonds, and at least one perfume additive selected from the group consisting of natural oils, synthetic oils, and fixatives.

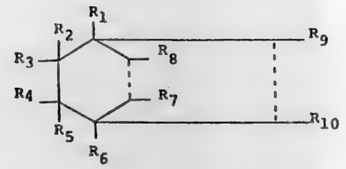
3,929,676

BICYCLIC FRAGRANCE MATERIALS AND PROCESSES THEREFOR

Robert L. Chappell, Morrestown, N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin F. Vinals, Red Bank, and Manfred H. Vock, Locust, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 494,034, Aug. 2, 1974, which is a continuation-in-part of Ser. No. 402,157, Oct. 1, 1973. This application Dec. 23, 1974, Ser. No. 535,561
Int. Cl.² A61K 7/46; C11B 9/00
U.S. Cl. 252—522 20 Claims

1. A process for treating a perfume material which comprises adding thereto a small but effective amount of at least one bicyclo-[2.2.2]-octane derivative having the formula



wherein the dashed lines represent single or double carbon-to-carbon bonds; one of R_8 and R_9 is hydrogen or lower alkyl and the other is hydrogen or hydroxy, or taken together, R_2 and R_3 are a carbonyl oxygen; R_4 and R_5 are lower alkyl; R_1, R_6, R_7, and R_8 are hydrogen or lower alkyl; and one of R_9 and R_{10} is hydrogen, lower alkyl, cyano, lower carboalkoxy, or lower aliphatic acyl and the other is hydrogen, at least five of R_1 through R_{10} being other than hydrogen, to alter the organoleptic properties of the material.

3,929,677

PERFUME COMPOSITIONS AND PERFUME ARTICLES CONTAINING ONE ISOMER OF AN OCTAHYDROTETRAMETHYL ACETONAPHTHONE

John B. Hall, Rumson, and James Milton Sanders, Eatontown, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 434,948, Jan. 21, 1974, which is a continuation-in-part of Ser. No. 336,172, Feb. 27, 1973, abandoned. This application Dec. 3, 1974, Ser. No. 529,086
Int. Cl.² A61K 2/46; C11B 9/00
U.S. Cl. 252—522 8 Claims

1. A process for altering the aroma properties of consumable material selected from the group consisting of perfume compositions and perfumed articles which comprises adding thereto a small but effective amount of an amber-like fragrance composition containing a major proportion of 1′,2′,3′,4′,5′,6′,7′,8′-octahydro-2′,3′,8′,8′-tetramethyl acetonaphthone isomers produced by a synthesis comprising the steps of:

i. Admixing at a temperature of from about 0°C up to about 50°C myrcene and 3-methyl-3-pentene-2-one in the presence of a Lewis acid catalyst thereby forming an acetyl substituted cyclohexane mixture, and

ii. Cyclizing the resulting acetyl substituted cyclohexane mixture with a cyclizing agent selected from the group consisting of concentrated phosphoric acid, sulfuric acid, boron trifluoride and complexes of boron trifluoride.

3,929,678

DETERGENT COMPOSITION HAVING ENHANCED PARTICULATE SOIL REMOVAL PERFORMANCE

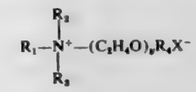
Robert Gene Laughlin, and Vincent Paul Heuring, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 1, 1974, Ser. No. 493,953
Int. Cl.² C11D 3/066, 1/18
U.S. Cl. 252—526 29 Claims

1. A detergent composition comprising

A. 1 to 99% by weight of the composition of a compound having a formula selected from the group consisting of

i)



wherein

R_1 is selected from the group consisting of straight and branched chain C_8–C_{30} alkyl and alkenyl moieties and alkaryl moieties in which the alkyl group has 10–24 carbon atoms;

R_2 is selected from the group consisting of straight and branched chain C_8–C_{21} alkyl and alkenyl moieties, alkaryl moieties in which the alkyl group has 6–16 carbon atoms, and C_{1-4} alkyl and hydroxyalkyl moieties;

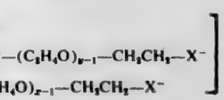
R_3 is selected from the group consisting of straight and branched chain C_8–C_{21} alkyl and alkenyl moieties, alkaryl moieties in which the alkyl group has 6–16 carbon atoms, C_{1-4} alkyl and hydroxyalkyl moieties and $-(C_2H_4O)_xH$ wherein x has a value of about 3 to about 50;

R_4 is selected from the group consisting of C_1–C_8 alkylene, C_3–C_8 alkenylene, 2-hydroxy propylene, 2- and 3-hydroxy butylene moieties and C_1–C_4 alkarylene moieties provided that where R_3 is $-(C_2H_4O)_xH$ then R_4 is $-CH_2-CH_2-$;

X^- is an anion selected from the group consisting of sulfate and sulfonate radicals; and

y has a value in the range of 2–100 provided that where R_3 is $-(C_2H_4O)_xH$ then $x + y \geq 10$; and

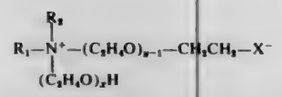
ii)



wherein R_1 is selected from the group consisting of linear and branched C_8–C_{30} alkyl and alkenyl radicals; R_2 is selected from the group consisting of linear and branched C_8–C_{30} alkyl and alkenyl radicals and C_1–C_4 alkyl and hydroxyalkyl radicals; X^- is selected from the group consisting of sulfate and sulfonate; y and x have values in the range of 2–100 provided that $y+x \geq 12$; M is a cation selected from the group consisting of alkali metal, ammonium and alkanolammonium ions; and

B. 99 to 1% by weight of the composition of an organic detergent.

3. A detergent composition according to claim 1 wherein the zwitterionic compound has the formula:



wherein R_1 is selected from the group consisting of straight and branched chain C_{16}–C_{22} alkyl and alkenyl moieties, R_2 is a C_1–C_3 alkyl group and $x + y$ has a value in the range of 14–50.

3,929,679

PARTICULATE SILICATE-HYDROXYALKYL IMINODIACETATE BUILT DETERGENT COMPOSITIONS OF IMPROVED PROPERTIES

Francis R. Cala, Somerville, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 26, 1973, Ser. No. 410,185

Int. Cl.² C11D *3/066*

U.S. Cl. 252—527 **14 Claims**

1. A particulate heavy duty synthetic organic detergent composition which comprises 5 to 30 parts of anionic detergent and/or 1 to 10 parts of nonionic detergent and, as a builder therefor, 15 to 50 parts of a water-soluble salt of a hydroxy C_2–C_4 alkyl iminodi C_2–C_4 carboxylic acid hydrated by 3 to 10 moles of water per mole of iminodicarboxylate.

3,929,680

LIQUID DETERGENT COMPOSITION

Haruhiko Arai, Narashino; Kyozaburo Tachibana, Sakura; Yoshinori Naganuma, Tokyo, and Moriyasu Murata, Narashino, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1973, Ser. No. 352,053

Claims priority, application Japan, Apr. 20, 1972, 47-039886

Int. Cl.² C11D *3/18, 3/43, 3/44, 17/08*

U.S. Cl. 252—542 **4 Claims**

1. A liquid detergent composition having improved low temperature stability, consisting essentially of an aqueous solution of at least one surfactant selected from the group consisting of anionic surfactants and non-ionic surfactants, the amount of said surfactant being an amount effective for making said detergent composition suitable for washing foodstuffs, tableware or clothes, or as a shampoo; a first solubilizing agent selected from the group consisting of alkanols having one to 3 carbon atoms; benzene sulfonates, p-toluene sulfonates, xylene sulfonates, acetyl benzene sulfonates, glycols, acetamides, pyridine dicarboxylic acid amides, benzoates, salicylates and urea; and a second solubilizing agent selected from the group consisting of hexyl benzene, octyl benzene, nonyl benzene, dodecyl benzene and tetradecyl benzene, said liquid detergent composition containing from about 3 to about 30 percent by weight, based on the weight of said surfactant, of said second solubilizing agent, the weight ratio of said second solubilizing agent to said first solubilizing agent being from 1/40 to 2/1, whereby to improve the low temperature stability of the liquid detergent composition.

3,929,681

CATALYTIC COMPOSITIONS USEFUL FOR THE OXIDATION OF CARBON MONOXIDE AND HYDROCARBONS AND THE PROCESS FOR PREPARING THEM

Franco Buonomo; Vittorio Fattore; Gianfranco Zanoni, and Bruno Notari, all of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese

Filed Sept. 1, 1972, Ser. No. 285,652

Claims priority, application Italy, Sept. 2, 1971, 28155/71; July 18, 1972, 27097/72

Int. Cl.² B01J *23/72, 23/84, 23/86*

U.S. Cl. 252—465 **13 Claims**

1. Supported catalytic composition adapted to catalyze the oxidation of carbon monoxide and hydrocarbons contained in the exhaust gases of an internal combustion engine, comprising:

a. a carrier constituted by gamma-alumina having a spheroidal shape, high porosity between 0.5 and 1.0 cc/g, a high specific area between 150 and 350 m^2/g, high mechanical resistance and low mass specific gravity; and

b. an active part constituted by a catalytic composition selected from the group consisting of members represented by the formulae:

Cu $Ni_{1.4}Cr_3O_{[6.9}$]w;

Cu Mn $Cr_3O_{[7.5}$]w; and

Cu $Mn_{1-2}Co_{1-0}$°[4.5–14]w.

wherein *w* is the index for the quantity of oxygen required to satisfy the valences of the metals.

3,929,682

CATALYST FOR DECOMPOSING HYDRAZINE AND ITS DERIVATIVES AND PROCESS OF MAKING SAME

Winfried Kuhrt, Hannover; Helmut Derleth, Nienburg, and Hermann Fischer, Evern, all of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

Filed Aug. 14, 1974, Ser. No. 497,251

Claims priority, application Germany, Aug. 16, 1973, 2341363

Int. Cl.² B01J *21/04, 23/56*

U.S. Cl. 252—466 PT **19 Claims**

1. A process for producing a catalyst for decomposing hydrazine and its derivatives, comprising the steps of impregnating particles of active aluminum oxide at least four times with an aqueous solution comprising a noble metal salt selected from the group consisting of an aqueous solution of an iridium salt, an aqueous solution of a mixture of an iridium salt and an osmium salt, and alternating aqueous solution of an iridium salt and an aqueous solution of an osmium salt, drying said impregnated product after each of said impregnation steps, and subjecting said dried product at least after each second drying step to reducing conditions in the presence of a stream of hydrogen gas at a temperature between about 180° and about 400°C, whereby said noble metal salt is reduced to the corresponding noble metal.

3,929,683

METHOD OF MANUFACTURING A PLATINUM-TIN REFORMING CATALYST

George J. Antos, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 7, 1974, Ser. No. 521,979

Int. Cl.² B01J *21/04, 23/62*

U.S. Cl. 252—466 PT **13 Claims**

1. A method of catalyst manufacture which comprises:

a. solubilizing a tin salt in an aluminum hydroxyhalide hydrosol;

b. effecting gelation of the tin-containing hydrosol;

c. drying and calcining the tin-containing gelation product;

d. impregnating the calcined product with an aqueous solution of a thermally decomposable platinum group metal compound;

e. drying and calcining the impregnated material in an oxygen-containing atmosphere, and heating the same at conditions to remove adsorbed oxygen;

f. commingling the resulting composite with a solution of a trialkyl aluminum compound; and

g. drying and treating the dried composite in a hydrogen atmosphere at a temperature of from about 425° to about 650° C.

3,929,684

NEW ADHESIVE TETRAZOLE POLYMERS AND PROCESS OF MAKING THEREFOR

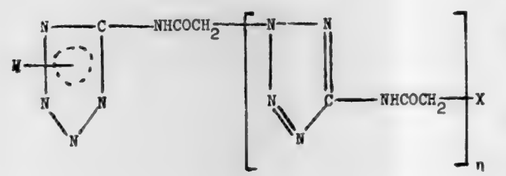
Fred J. Einberg, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 21, 1974, Ser. No. 435,345

Int. Cl.² C08G *73/06*

U.S. Cl. 260—2 R **8 Claims**

1. Tetrazole polymers of the formula



where X is a member selected from the group consisting of Br, Cl, and I, and η is an integer such that the inherent viscosity of said tetrazole polymers at 25°C is a number from about 0.05–0.11.

3,929,685

PROCESS FOR PRODUCING CASTING MOLDS SUITABLE FOR USE IN THE CERAMIC INDUSTRY

Bruno Jung, Bleiholle 76, CH 4242 Laufen, Switzerland

Continuation-in-part of Ser. No. 211,646, Dec. 23, 1971, abandoned. This application June 11, 1973, Ser. No. 368,919

Int. Cl.² C08J *9/24*

U.S. Cl. 260—2.5 HB **19 Claims**

1. A process for producing casting molds suitable for use in the ceramic industry, said process comprising the steps of:

a. forming a castable mixture of an emulsion and a major amount of at least one polymer component,

b. said polymer component being in the form of a powder composed of spherical particles and having a polymerization catalyst uniformly distributed over the entire surface of said particles,

c. said emulsion comprising at most 20% by weight of water based on said castable mixture, a surface active agent capable of maintaining said emulsion, and a polymerizable compound comprising at least one water insoluble liquid monomeric or only partially polymerized compound polymerizable to form a rigid polymer and capable of being slightly imbibed by said polymer powder as the oil phase,

d. casting said castable mixture to form a casting mold,

e. polymerizing said polymerizable compound, and

f. removing the water from the pores of the mold thus produced.

3,929,686

POLYISOBUTYLENE NUCLEATING AGENTS FOR EXPANDABLE STYRENE POLYMER COMPOSITIONS

John L. Stevenson, Big Spring, Tex., assignor to Cosden Oil & Chemical Company, Big Spring, Tex.

Filed Aug. 31, 1973, Ser. No. 393,454

Int. Cl.² C08J *9/00*

U.S. Cl. 260—2.5 B **14 Claims**

1. A composition suitable for the preparation of an expanded, cellular polymeric product, comprising a styrene polymer, a blowing agent for said styrene polymer and from about 0.02 to 0.15% by weight based upon said styrene polymer of a low molecular weight, liquid isobutylene polymer nucleating agent.

3,929,687

MULLTICELLULAR POLYMERS MADE FROM THE REACTION PRODUCT OF MALEIC ANHYDRIDE WITH A POLYIMINE

Max Gruffaz, La Mulatiere, and Bernard Rollet, Lyon, both of France, assignors to Rhone-Poulenc, S.A., Paris, France

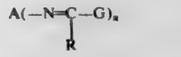
Filed Apr. 23, 1974, Ser. No. 463,248

Claims priority, application France, Apr. 26, 1973, 73.15176

Int. Cl.² C08J *9/00*

U.S. Cl. 260—2.5 EP **11 Claims**

1. Process for preparing a multicellular material which comprises curing a liquid polymer selected from a 1,2-epoxy resin, a phenol-aldehyde resin, an unsaturated polyester and a polymeric reaction product of an unsaturated polyamine with a polyimine in the presence of a reaction product of maleic anhydride with a polyamine of the general formula:



(I)

in which *n* represents a number at least equal to 2, G represents a monovalent organic radical containing less than 35 carbon atoms, R is as defined under G or represents a hydrogen atom, or G and R together form a divalent hydrocarbon radical, and A represents an organic radical of valency *n* containing 2 to 50 carbon atoms.

3,929,688

BIS(2,3-DIBROMOPROPYL)PHOSPHATE AS A FLAME RETARDANT FOR POLYMERS

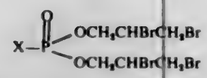
Milton L. Honig, New York, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 242,146, April 7, 1972, and a continuation-in-part of Ser. No. 145,553, May 20, 1971, abandoned. This application Apr. 25, 1974, Ser. No. 463,949

Int. Cl.² C08K *5/53*

U.S. Cl. 260—2.5 AJ **8 Claims**

1. A flame retardant composition comprising an intimate admixture of a polymeric substrate and an effective concentration of a bis(2,3-dibromopropyl) phosphonate corresponding to the formula:



where X is a radical selected from the group consisting of phenyl and Y—CH_2— radicals wherein Y is a halo radical selected from the group consisting of chloro and bromo radicals.

8. The composition of claim 1, wherein said bis(2,3-dibromopropyl) phosphonate is bis(2,3-dibromopropyl) phenylphosphonate.

3,929,689

FOAMED FLAME RETARDANT POLYOLEFIN COMPOSITIONS OF IMPROVED PHYSICAL STRENGTH

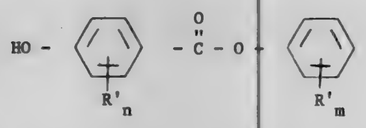
Roger J. Walton, and Kenneth R. Mills, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 246,202, April 21, 1972, abandoned. This application July 5, 1974, Ser. No. 486,174

Int. Cl.² C08J *9/04*; **C08K** *5/09*

U.S. Cl. 260—2.5 HA **21 Claims**

1. A foamed flame retardant polyolefin composition comprising a polyolefin selected from homopolymers derived from the polymerization of 1-monoolefins having from 3 to 8 carbon atoms, and copolymers derived from the polymerization of 1-monoolefins having from 3 to 8 carbon atoms with a minor amount of at least one 1-monoolefin having from 2 to 8 carbon atoms; an effective flame retardant amount of a halogenated organic compound; and an effective stabilizing amount of a phenylbenzoate stabilizer having the formula:



wherein each R′ is the same or different and independently represents halogen or an aliphatic, alicyclic, aromatic hydrocarbyl or hydrocarbyloxy radical, *n* is an integer of from 0 to 4, and *m* is an integer of from 0 to 5.

3,929,690

PHOTODEGRADABLE STYRENE POLYMER FOAMS CONTAINING CONJUGATED KETO STEROIDS

Harold A. Wright, Murrysville, Pa., assignor to ARCO Polymers, Inc., Philadelphia, Pa.

Filed Nov. 29, 1974, Ser. No. 528,063

Int. Cl.² C08J *9/20*

U.S. Cl. 260—2.5 HB **18 Claims**

1. A process for making expandable styrene polymer particles containing a photosensitizer comprising suspending styrene polymer particles with the aid of a suspending system in water containing a blowing agent and a photosensitizer, heating the suspension at a temperature from about 80° to 150°C. to impregnate the polymer particles, and separating the impregnated particles from the water; said photosensitizer being present in an amount of 0.5–5.0 parts by weight per 100 parts by weight of said polymer particles and being selected from the group consisting of those steroids having a 3-keto-group combined with an ethylenic unsaturation conjugated therewith.

3,929,691

SOLUTIONS OF COPOLYMERS CONTAINING AMIDE AND IMIDE GROUPS AND PROCESS FOR THEIR PREPARATION

Pierre Allard, Cailloux-sur-Fontaines, France, assignor to Societe Rhodiaceta, Paris, France

Filed Dec. 29, 1969, Ser. No. 888,913

Claims priority, application France, Dec. 30, 1968, 68.181,948

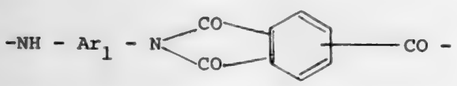
Int. Cl.² C08G *73/14*

U.S. Cl. 260—30.2 **10 Claims**

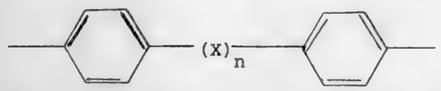
1. A spinnable solution consisting essentially of a high molecular weight polyamide-polyimide copolymer dissolved in a polar solvent, said copolymer consisting essentially of units of the formulae:

$$-NH-Ar_1-NH-CO-Ar_2-CO-$$

and



in which Ar_1 is a divalent aromatic radical of the formula:



in which *n* is 0 or 1 and X is —CH_2—, —O—, or —SO_2—, and Ar_2 is a divalent aromatic radical, said polar solvent being essentially anhydrous and essentially inert with respect to said copolymer, and said copolymer having an inherent viscosity between 0.5 and 1.6, as measured by using an 0.5% strength solution thereof in N-methylpyrrolidone at 25°C.

3,929,692

SPRAYABLE DECORATIVE COATING COMPOSITION FOR COVERING UNFINISHED SURFACES

Sidney Offerman, Great Neck, N.Y., assignor to Grow Chemical Corporation, New York, N.Y.

Filed Mar. 6, 1973, Ser. No. 338,601

Int. Cl. C08g *39/10*

U.S. Cl. 260—7.5 **6 Claims**

1. A sprayable decorative coating composition for imparting flame retardant and/or acoustical properties to building interior wall surfaces consisting essentially of, on a 100 gallon basis, a liquid medium, a synthetic fibrous material suspended in the liquid medium containing a film-forming substance, a mineral agent and hydroxy ethyl cellulose, wherein the fibrous material is present in an amount of at least 2 pounds and is selected from the group consisting of a polyamide and a polyester; the liquid medium is selected from the group consisting of water, phenols, alkyd resin, diethylene glycol, monoethyl ether acetate, ethylene glycol, aliphatic or aromatic liquid hydrocarbons, and oleoresin; the film-forming substance is selected from the group consisting of polyvinyl alcohol, acrylic resin, polyvinyl acetate, casein, butadiene styrene mixtures, and soya protein, and the mineral agent is selected from the group consisting of mica, calcium silicate, pearlite, calcium carbonate, and magnesium silicate.

3,929,693

FILM-FORMING COMPOSITIONS COMPRISING DISPERSIONS OF CELLULOSE ACETATE BUTYRATE OR POLYMETHYLMETHACRYLATE COMBINED WITH RUBBERY PARTICLES OF CROSSLINKED POLYACRYLATES IN LIQUID CARRER

Seymore Hochberg, Wynnewood, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 883,279, Aug. 12, 1969, abandoned, which is a continuation-in-part of Ser. No. 671,594, Sept. 29, 1967, abandoned. This application Feb. 12, 1973, Ser. No. 331,869

Int. Cl.² C08L *51/00*, *31/02*, *1/14*

U.S. Cl. 260—17 R **2 Claims**

1. A dispersion comprising

1. cellulose acetate butyrate or a poly(alkyl methacrylate) having 1–8 carbon atoms in the alkyl radical, wherein said polymer has a weight average molecular weight from 50,000 to 10 million and a Knoop hardness value of at least 5;
2. a polymeric composition prepared by
   - A. providing, as a first portion, substantially spherical monomolecular particles of a polymer each of which has sites of free radical attack, wherein said particles have an average diameter of about 60–20,000 millimicrons, a weight average molecular weight of at least 100 million, and which are rubbery at a temperature below 60°C, prepared by polymerizing, in a suitable reaction medium, a mixture of reactive components which contain in each 100 parts of a weight thereof
     - x. about 75–99 parts of a monoethylenically unsaturated monomer having an alkyl (C1–C8) acrylate content of about 75–100% by weight,
     - y. about 0.5–24 parts of allyl methacrylate,

and

     - z. about 1–15 parts of a cross-linking agent, other than allyl methacrylate, having at least two polymerizable double bonds per molecule,

and

   - B. grafting to each of the particles at said sites a second portion composed of a poly(alkylmethacrylate) of 1–8 carbon atoms in the alkyl group, wherein said second portion has a weight average molecular weight of 1,000–150,000, and
3. a liquid carrier.

3,929,694

CLEAR ADHESIVE APPLICATOR CRAYON COMPRISING AGAR AND POLYACRYLAMIDE

Peter Spiros Columbus, Whitestone, N.Y., assignor to Borden, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 447,153, March 1, 1974, which is a continuation-in-part of Ser. No. 348,357, April 5, 1973. This application Oct. 10, 1974, Ser. No. 513,684

Int. Cl. C08d *9/06*

U.S. Cl. 260—17.4 ST **12 Claims**



1. A solid adhesive applicator crayon comprising from about 0.5 to about 5.0 parts of agar, about 60 to 95 parts of water and about 0.5 to 36.0 parts of polyacrylamide having a molecular weight of from about 50,000 to 10,000,000.

3,929,695

PHENOLIC RESIN ADHESIVES CONTAINING RESORCINOL, FORMALDEHYDE AND AN ALKALI METAL CARBONATE

Takao Murata; Nobutaka Nakamura, and Yukio Saeki, all of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Filed Jan. 29, 1973, Ser. No. 327,512

Int. Cl.² C08G *8/22*

U.S. Cl. 260—17.5 **6 Claims**

1. An adhesive composition comprising in admixture:

1. a water-soluble thermosetting phenolic resin which consists essentially of a condensation product of a monohydroxy-phenol and an aldehyde in a mole ratio of phenol to aldehyde of about 1:1.5 to 1:3, and
2. a curing agent consisting essentially of resorcinol, a formaldehyde donor and an alkali metal carbonate, wherein said formaldehyde donor is in a proportion of about 1 to 10 parts by weight per 100 parts of said phenolic resin, said resorcinol is in proportion of about 1 to 5 parts by weight per 100 parts of said phenolic resin, and said alkali metal carbonate is in a proportion of about 1 to 5 parts by weight per 100 parts of said phenolic resin.

3,929,696

CONTINUOUS PROCESS FOR THE PRODUCTION OF AMINOPLAST MOULDING COMPOSITIONS

Ugo Nistri, Como; Antonio Parodi, and Silvio Vargiu, both of Milan, all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed June 17, 1974, Ser. No. 480,445

Claims priority, application Italy, June 15, 1973, 25411/73

Int. Cl.² C08L *1/02*

U.S. Cl. 260—17.3 **6 Claims**

1. A continuous process for the production of aminoplast moulding compositions, which comprises

continuously impregnating cellulose material with a syrup of an aminoplast resin, values of about 4:1 to about 50:1 being maintained for weight ratio between said syrup and the said cellulose material;

continuously eliminating the excess of resin to obtain a quantity of cellulose material of from about 15 to about 50 parts by weight per 100 parts by weight of resin in the impregnated material;

continuously homogenizing said impregnated material with the appropriate additives, and then subjecting the resulting mixture to drying and granulation.

3,929,697

DYE COMPOSITION AND METHOD OF DYEING

Elliott Morrill, and James E. Miller, both of Indianapolis, Ind., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Oct. 19, 1973, Ser. No. 408,012

Int. Cl.² C08L *3/02*

U.S. Cl. 260—17.4 ST **17 Claims**

1. An aqueous dye composition having a pH of from about 1.0 to about 9.0 comprising in combination (a) about 0.01–10% of a water insoluble pigment, (b) about 0.01–10% of a cationic starch and (c) about 0.01–5% of a nonionic, anionic or zwitterionic dispersant.

3,929,698

POLYMERIZABLE POLYMER COMPOSITIONS

Alan George Hudson, Maidstone, and John Leonard Orpwood, West Kingsdown, both of England, assignors to Coates Brothers & Company Limited, London, England

Continuation-in-part of Ser. No. 417,812, Nov. 21, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,542
Claims priority, application United Kingdom, Dec. 1, 1972, 55598/72
Int. Cl.² C09D *3/52, 3/66, 5/25*
U.S. Cl. 260—22 CB 5 Claims

1. A process for the preparation of a polymerizable composition which comprises reacting, in one or more stages and in the presence of a polymerzation inhibitor, (A) acrylamide or methacrylamide; (B) at least 1.5 moles of formaldehyde per mole of acrylamide or methacrylamide; (C) from 0.95 to 1 mole (x mole), per mole of acrylamide or methacrylamide, of an organic hydroxyl group-containing component comprising one or more organic hydroxyl group-containing compounds containing one primary or secondary aliphatic hydroxyl group per molecule as sole chemical functional group; and (D) k-x moles (wherein k is the number of moles of formaldehyde used ignoring any excess over two) of one or more polyesters having primary and/or secondary hydroxyl groups alone or a mixture of said polyester or polyesters with one or more hydroxyl group-containing compounds containing from 1 to 4 primary or secondary hydroxyl groups per molecule.

3,929,699

FOG RESISTANT POLYMER COMPOSITIONS

William F. Bernholz, Wayne, N.J., assignor to PVO International Inc., San Francisco, Calif.

Filed Jan. 29, 1970, Ser. No. 6,968
Int. Cl.² C08K *5/06, 5/10*
U.S. Cl. 260—23 XA 15 Claims

1. A film-forming composition comprising a homogeneous mixture of a polyvinyl polymer selected from the group consisting of polyvinyl chloride homopolymers and vinyl chloride-vinyl acetate copolymers, and an effective amount of an anti-fog composition to impart resistance to moisture fogging, said anti-fog composition comprising the two components:

A. a partial ester of a water soluble C_{3-6} polyol with a C_{8-18} aliphatic monocarboxylic acid, and

B. an alkoxylated alkylphenol.

3,929,700

POLYVINYL CHLORIDE COMPOSITION

Axel W. Tybus, New York, and Leonard A. Fabrizio, North Bellmore, both of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Apr. 29, 1974, Ser. No. 465,403
Int. Cl.² C08L *91/00*
U.S. Cl. 260—23 XA 20 Claims

1. A polyvinyl chloride composition which is formable at temperatures above about 129–130° F and is a shape-retaining solid at ambient temperatures comprising

100 parts by weight of polyvinyl chloride,

about 7.5 to 8.5 parts of a polyvinyl chloride plasticizer,

about 10 to 14 parts of an impact-modifier selected from the group consisting of methylmethacrylate-butadiene-styrene polymer and an acrylonitrile-butadiene-sytrene polymer,

about 1.5 to 2.1 parts of a polyvinyl chloride processing aid, about 1¼ to 2 parts of at least one polyvinyl chloride lubricant,

about 0.8 to 1.1 parts of at least one polyvinyl chloride stabilizer, and

about 5 to 8 parts of at least one polyvinyl chloride stabilizer booster containing polyvinyl alcohol.

3,929,701

BINDERS FOR PRINTING INKS

Claude E. Hall, Alma, and Louis L. Stalvey, Baxley, both of Ga., assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 16, 1974, Ser. No. 506,484
Int. Cl.² C08L *91/00*
U.S. Cl. 260—23 ST 9 Claims

1. A binder for water base flexographic or gravure inks comprising a major amount of an ester of a copolymer of an ethylenically unsaturated alcohol and a styrene monomer; said esterified copolymer being a copolymer of:

a. an ethylenically unsaturated alcohol selected from the group consisting of allyl alcohol, methallyl alcohol and mixtures thereof, and

b. styrene monomer selected from the group consisting of styrene, alpha- and beta-substituted styrene, mono- and di-alkyl, chloro and chloroalkyl styrene and mixtures thereof; wherein said copolymer before esterification has a hydroxyl group content of from about 4–7.5 percent by weight;

from 50 to 85 percent of said hydroxyl groups being esterified with

c. a rosin material, and

from 1 to 10 percent of said hydroxyl groups being esterified with

d. a modified drying oil;

said binder having an acid number of from 70 to 225 and a melting point of from about 115° to 160°C.

3,929,702

PLATABLE POLYPROPYLENE COMPOSITION

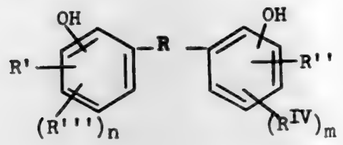
Robert W. Miller, Mentor, and Samuel Garry Howell, Painesville, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 13,042, Feb. 20, 1970. This application Jan. 22, 1971, Ser. No. 108,764
Int. Cl.² C08L *93/00*
U.S. Cl. 260—27 R 3 Claims



1. A novel composition of matter comprising a polymer selected from the group consisting of polypropylene homopolymers and copolymers of propylene and other alpha-olefins wherein at least 80 percent of the monomer units are propylene; said polymer having incorporated therein:

A. from about 0.1 to about 10.0 parts by weight per 100 parts by weight of polymer of a polyhydroxy aromatic compound selected from the group consisting of resorcinol, alkyl substituted gamma-resorcylic acids, aryl substituted gamma-resorcylic acids, aralkyl substituted gamma-resorcylic acids, and compounds within the scope of the formula:



wherein R is a member selected from the group consisting of sulfur atoms, sulfur containing radicals, and methylene radicals; wherein R′, R″, R‴, and R^{IV} may be the same or different, and each is a member selected from the group consisting of alkyl radicals having less than 15 carbon atoms; and wherein n and m are integers which may be the same or different, and each may be 0, 1, 2, or 3;

B. from about 0.25 to about 20.0 parts by weight per 100 parts by weight of polymer of a rosinous material, said rosinous material being a member selected from the group consisting of natural rosins, wood rosin esters, polymeric rosinous materials, hydrogenated wood rosins, polyterpene resins, and mixtures of at least two of said members;

C. from about 0.01 to about 5.0 parts by weight per 100 parts by weight of polymer of a nucleating agent.

3,929,703

ADHESIVE COMPOSITIONS CONTAINING ZINC RESINATES OF DISPROPORTIONATED ROSIN

Henry P. Weymann, Acadia Parish, La., and John Korose, Gulf Breeze, Fla., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.

Continuation of Ser. No. 280,340, Aug. 14, 1972, which is a division of Ser. No. 154,590, June 18, 1971, abandoned. This application May 16, 1974, Ser. No. 470,462
Int. Cl.² C08K *93/00*
U.S. Cl. 260—27 BB 10 Claims

1. An adhesive composition that comprises a polymeric material selected from the group consisting of natural rubber, polyethylene, ethylene-vinyl acetate copolymers, polychloroprene, butadiene-acrylonitrile polymers, block polymers of styrene with butadiene, block polymers of styrene with isoprene, and mixtures thereof and 25 percent to 400 percent, based on the weight of said polymeric material, of a zinc resinate of disproportionated rosin, said resinate being the product prepared by (a) forming a mixture that consists of 100 parts by weight of disproportionated rosin that has a Ball and Ring Softening Point in the range of about 40°C. to 75°C., 10 to 17 parts by weight of zinc oxide, and 0 to 4 parts by weight of hydrated lime and (b) heating said mixture at a temperature in the range of about 50°C. to 100°C. to form a resinate having a calculated acid number in the range of 0 to −70.

3,929,704

SILICONE PRESSURE SENSITIVE ADHESIVES AND TAPES

Albert Emerson Horning, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed June 7, 1973, Ser. No. 367,960
Int. Cl.² C08K *5/01, 5/12, 5/54;* C08L *83/04*
U.S. Cl. 260—29.1 SB 20 Claims

1. A pressure-sensitive adhesive composition comprising a silicone resin, a silicone gum and a catalytic amount of a curing agent therefor, said curing agent comprising from about 10 to about 90% by weight of 2,4-dichlorobenzoyl peroxide, from about 2 to about 30% by weight of a plasticizer therefor, said plasticizer being a high boiling ester of low volatility, and for the balance an extender therefor, said extender comprising an alkylaryl or an alkylaralkyl siloxane fluid containing at least about 3% of aryl-silicon or aralkyl-silicon bonds out of the total carbon-silicon linkages.

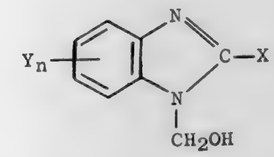
3,929,705

PRESERVATIVES FOR SURFACE-COATING COMPOSITIONS

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Mar. 6, 1974, Ser. No. 448,734
Int. Cl.² C09D *5/14*
U.S. Cl. 260—29.6 MN 12 Claims

1. A surface-coating composition having improved resistance to attack by fungi and bacteria that comprises (a) a water-insoluble, film-forming, resinous binder selected from the group consisting of oleoresinous binders, synthetic linear addition polymers obtained by the vinyl polymerization of ethylenically-unsaturated molecules, and mixtures thereof and (b) about 0.10 percent to 3 percent, based on the weight of said composition, of a biocidal compound having the structural formula



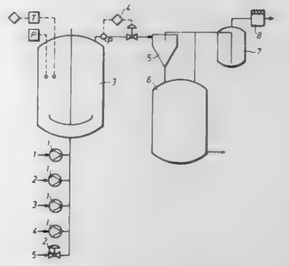
wherein X represents hydrogen, alkyl of 1 to 4 carbon atoms, hydroxymethyl, or hydroxymethylthio; Y represents nitro or halogen; and n represents a number in the range of 0 and 2.

3,929,706

CONTINUOUS PROCESS FOR THE PRODUCTION OF COPOLYMER DISPERSIONS

Adolf Schmidt, Cologne; Herbert Bartl, Odenthal-Hahnenberg, and Heinrich Meckbach, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Feb. 22, 1974, Ser. No. 444,753
Claims priority, application Germany, Feb. 24, 1973, 2309368
Int. Cl.² C08L *23/08*
U.S. Cl. 260—29.6 TA 9 Claims



1. A continuous process for producing an aqueous film-forming dispersion having a solids content of from 45 to 60% by weight wherein a mixture consisting of

10 to 30% by weight of ethylene,

20 to 89% by weight of vinyl chloride;

0 to 69% by weight of vinyl acetate and

1 to 6% by weight of at least one hydrophilic monomer containing at least one $-SO_3Me$, $-O-SO_3Me$, $-COOMe$ or $-CONH_2$ group attached thereto through a carbon atom wherein Me is H, Na, K or NH_4,

is copolymerized in an aqueous dispersion in at least one reactor at a pH of from 3.5 to 8.5, at a temperature of from 40° to 80°C and under a pressure of from 50 to 200 atmospheres, the copolymerization of the monomers being carried out with intimate mixing in the presence of

a. 0.5 to 2.5% by weight of at least one anionic emulsifier, based on the quantity of water introduced per unit of time;
b. 0.05 to 1.5% by weight of at least one protective colloid, based on the quantity of water introduced per unit of time and
c. 0.1 to 2.5% by weight of at least one radical-forming initiator selected from the group consisting of (i) a water soluble peroxide and (ii) a redox system containing a water soluble peroxide and a water soluble reducing agent, based on the quantity of water introduced per unit of time, said temperature being from 60° to 80°C. when (i) is the radical-forming initiator and from 40 up to 70°C. when (ii) is the initiator and the ratio by weight of said peroxide compound to said reducing agent in (ii) being adjusted so that there is from 0.025 to 0.05% by weight of said peroxide compound in finished dispersion and
d. the average residence time, defined as the ratio between the quantity by weight of reaction mixture in the reactor and the quantity by weight of reaction mixture removed per hour being from 2 to 30 hours;
e. the ratio by weight of the quantity of ethylene introduced per unit of time to the total quantity of monomers introduced per unit of time, including ethylene being from 0.1:1 to 0.65:1;
f. the ratio by weight of the total quantity of vinyl chloride and vinyl acetate introduced per unit of time to the total quantity of water introduced per unit of time being from 0.5:1 to 1.5:1 and
g. the ratio of volume of dispersion in the reactor to total reactor volume being from 0.5:1 to 0.99:1.

3,929,707
PROCESS FOR THE PRODUCTION OF POURABLE, PULVERULENT RUBBER-FILLER MIXTURES
Gerhard Berg, and Karl-Heinz Nordsiek, both of Marl, Germany, assignors to Chemische Werke Hules Aktiengesellschaft, Marl, Germany
Filed June 27, 1974, Ser. No. 483,709
Claims priority, application Germany, June 28, 1973, 2332796
Int. Cl.² C08J *3/20*; **C08K** *5/01*; **C08L** *9/04*
U.S. Cl. 260—29.7 T **22 Claims**

1. In a process for preparing discrete, finely divided, tack-free, pourable, powdery, filler-containing elastomer particles from an admixture of (a) an aqueous elastomer emulsion comprising (i) a solution of elastomer dissolved in a volatile, inert organic solvent having a boiling point below 100°C, (ii) an elastomer emulsifying amount of about 0.05–2.0% by weight, based on the elastomer solution, of an alkylamine oxyalkylate surfactant, and (iii) water, and (b) an aqueous suspension or dispersion of a solid, finely divided elastomer filler, which comprises gradually introducing said admixture into an aqueous alkali silicate solution containing 2–20 moles of SiO_2 per mole of said alkylamine oxyalkylate while maintaining said silicate solution at an acidic pH of 0.1–7 and simultaneously evaporating said volatile organic solvent to form said filler-containing elastomer particles, the improvement which comprises:

employing said admixture of (a) and (b) in the form of a stable aqueous emulsion containing an emulsion-stabilizing amount of about 0.001–0.5% by weight, based on the elastomer solution, of an ionic, water soluble protective colloid, said stable emulsion having an alkaline pH of 7–14.

3,929,708
ARYLENE SULFIDE POLYMERS COMPRISING SILICONE FLUIDS
Donnie G. Brady, and Fay W. Bailey, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Aug. 15, 1974, Ser. No. 497,620
Int. Cl.² C08J *5/00*; **C08K** *5/54*; **C08L** *81/04*
U.S. Cl. 260—29.1 SB **8 Claims**

1. A composition of matter comprising at least one (poly-(arylene sulfide) resin having a melt point in the approximate range of 400° to 800°F, and a melt flow in the approximate range of 0.1 to 3,000, and from about 0.05 to about 5 weight percent of a thermally stable silicone fluid, based on the combined weight of said resin and said fluid, wherein said silicone fluid is a polysiloxane having a molecular weight in the approximate range of 500 to 3,000 and having the repeating units



wherein each R is a monovalent hydrocarbon radical having up to 6 carbon atoms individually selected from the group consisting of alkyl, cycloalkyl and aryl.

3,929,709
NON-ELASTOMERIC POLYURETHANE COMPOSITIONS CONTAINING CYCLIC ETHERS
Franciszek Olstowski, Freeport, and Donald B. Parrish, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 425,398, Dec. 7, 1973, Pat. No. 3,879,329, which is a continuation-in-part of Ser. No. 366,835, June 4, 1973, Pat. No. 3,878,157, which is a continuation-in-part of Ser. No. 179,149, Sept. 9, 1971, abandoned. This application Dec. 13, 1974, Ser. No. 532,553
Int. Cl.² C08K *5/15*
U.S. Cl. 260—30.4 N **9 Claims**

1. A process for producing solid, rigid, polyurethane articles having a density of at least 1 g/cc, a percent elongation of less than 80, and which can be demolded within a period of about 5 minutes without the addition of an external source of heat which process comprises:

1. admixing the components of a composition comprising
   A. a polyether polyol having from 3 to about 8 hydroxyl groups and a hydroxyl equivalent weight between about 75 and about 230,
   B. an organic polyisocyanate
   C. a liquid modifier compound having a boiling point above about 150°C selected from the group consisting of cyclic polyethers and mixtures thereof, said polyethers being cyclic tetramers and above of ethylene oxide, propylene oxide, butylene oxide or epichlorohydrin, and
   D. a non-amine-containing catalyst for urethane formation, which is an organo metal compound;

wherein Components (A) and (B) are present in amounts so as to provide an NCO:OH ratio of from about 0.8:1 to about 2:1, Component (C) is present in quantities of from about 20 to about 50 percent with the proviso that when Component (B) is an NCO-containing prepolymer containing less than about 40% NCO by weight, Component (C) is present in quantities of from about 10% to about 50% by weight of the sum of Components (A), (B), and (C); and Component (D) is present in quantities of from about 0.2 to about 10 percent by weight of the sum of the weights of Components (A), (B) and (C); and wherein said polymer can be demolded within less than about 5 minutes, without the application of an external source of heat, after admixture of said composition;

2. placing the admixed composition into a suitable mold wherein said composition solidifies within less than about 5 minutes to a solid having the aforesaid density and elongation; and
3. subsequently demolding the resultant article from the mold.

3,929,710
POLYMER COMPOSITIONS
Eric Nield, Watton-at-Stone, England, assignor to Imperial Chemical Industries Limited, London, England
Continuation-in-part of Ser. No. 357,573, May 7, 1973, abandoned, which is a continuation-in-part of Ser. No. 207,975, Dec. 14, 1971, abandoned, which is a continuation-n-part of Ser. No. 118,191, Feb. 23, 1971, abandoned. This application Apr. 30, 1974, Ser. No. 465,556
Claims priority, application United Kingdom, Feb. 23, 1970, 8477/70; Nov. 10, 1970, 53346/70
Int. Cl.² C08K *5/42*
U.S. Cl. 260—30.8 R **14 Claims**

1. A composition having improved processability comprising from 92 to 9990 by weight of a thermoplastic polymer containing 66.7% to 95% molar of units of acrylonitrile which is a copolymer and/or a superstrate of a graft copolymer having a diene rubber substrate, the amount of acrylonitrile present being calculated independently of any diene rubber which may be present, and 8% to 1% by weight of at least one processing aid selected from the group consisting of diphenyl sulphone and bis-(4-chlorophenyl) sulphone, the processing aid being a liquid at the temperature employed during the processing.

3,929,711
DICYCLOHEXADIENE TETRAACYL COMPOUNDS
Steven A. Cerefice, Naperville, and Ellis K. Fields, River Forest, both of Ill., assignors to The Standard Oil Company, Chicago, Ill.
Filed Oct. 12, 1973, Ser. No. 405,837
Int. Cl.² C08K *5/12*; **C08L** *27/06*
U.S. Cl. 260—31.8 B **5 Claims**

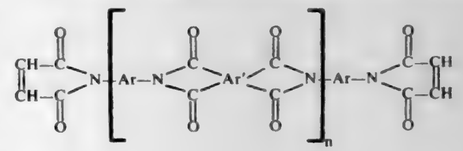
1. A composition comprising a resinous polymer of vinyl chloride containing at least 50 mol percent vinyl chloride units and from 5 to 300 parts by weight of a tetra ester of dicylohexadiene tetracarboxylic acid per 100 parts by weight resinous polymer of vinyl chloride, wherein the ester moieties of said tetra ester are selected from at least one member of the class consisting of alkyl groups containing from 1 to 24 carbon atoms, aryl groups containing from 6 to 24 carbon atoms, aralkyl groups containing from 7 to 24 carbon atoms and alkenyl esters containing from 3 to 24 carbon atoms.

3,929,712
VINYL CHLORIDE TYPE RESIN COMPOSITION CONTAINING A LUBRICANT
Osamu Hiyama, and Kazuo Ito, both of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan
Filed July 23, 1974, Ser. No. 491,038
Claims priority, application Japan, July 24, 1973, 48-83312
Int. Cl.² B29F *3/00*; **C08K** *5/11*; **C08L** *27/06*
U.S. Cl. 260—31.8 B **6 Claims**

1. A vinyl chloride resin composition having incorporated therein, as lubricant, from 0.05 to 2.0 parts by weight, per 100 parts of vinyl chloride resin, of a dialkyl citrate in which the two alkyl groups contain a total of 26 to 44 carbon atoms and each alkyl group contains from 12 to 22 carbon atoms, said vinyl chloride resin being selected from the group consisting of polyvinyl chloride, copolymers containing at least 50 weight percent of vinyl chloride units and the balance is units of one or more monomers copolymerizable with vinyl chloride, and polymer blends containing at least 80 weight percent of polyvinyl chloride and the balance being another polymer compatible with polyvinyl chloride.

3,929,713
POLYMERIZING BIS-MALEIMIDES AND POLYIMIDES THEREFROM
Gaetano F. D'Alelio, South Bend, Ind., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.
Continuation-in-part of Ser. No. 363,799, May 25, 1973. This application Aug. 14, 1974, Ser. No. 497,492
Int. Cl.² C08G *73/10*, *73/12*
U.S. Cl. 260—32.6 **23 Claims**

1. A process of B-staging a bis-maleimide of the formula:



wherein
Ar is a divalent aromatic organic radical,
Ar′ is a tetravalent aromatic organic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms in the Ar′ radical, and
n is 0 or a positive integer of 1 to 20, in a solvent which is inert to the bis-maleimide by passing oxygen or an oxygen-containing inert gas through the solution at a temperature from about 100°C. to about the boiling point of the solvent.

3,929,714
POLYESTER RESINS
Karl Schmidt, Hofweg 45; Ferdinand Hansch, Kalenbarg 23; Hans-Malte Rombrecht, Overbeckstrasse 3, and Hans-Joachim Beck, Am Langenzug 7, all of Hamburg, Germany
Division of Ser. No. 659,234, Aug. 8, 1967, Pat. No. 3,697,471, which is a continuation of Ser. No. 238,315, Nov. 2, 1962, abandoned. This application Oct. 2, 1972, Ser. No. 293,880
Claims priority, application Germany, Nov. 2, 1961, 64660; Dec. 12, 1961, 65130; July 6, 1962, 67934
Int. Cl.² C08G *73/16*; **C08K** *5/01*, *5/13*, **C08L** *79/08*
U.S. Cl. 260—33.4 P **6 Claims**

1. A lacquer comprising a polyester imide resin dissolved in an organic medium containing as an essential component thereof a cresol type solvent, said polyester imide resin having ester groups of acid and alcohol moieties which are condensation products of at least difunctional carboxylic acid and at least difunctional alcohol, and, between said moeities, moieties containing a 5-membered imide ring and which are condensation products of 1 mol of trimellitic acid anhydride and 1 mol of primary aromatic amino carboxylic acid or primary aromatic amino alcohol, said moieties containing a 5-membered imide ring being present in an amount effective to improve the thermal stability of the resin without rendering the resin insoluble to an extent which would make it unsuitable for use in a wire lacquer composed of the resin dissolved in cresol and solvent naphtha.

4. A lacquer comprising a polyester imide resin dissolved in an organic medium containing as an essential component thereof a cresol type solvent, said polyester imide resin having ester groups of acid and alcohol moieties which are condensation products of at least difunctional carboxylic acid and at least difunctional alcohol, and, between said moieties, moieties containing a 5-membered imide ring and which are condensation products of 1 mol of tetracarboxylic acid anhydride and 2 mols of primary aromatic amino carboxylic acid or primary aromatic amino alcohol, said moieties containing a 5 -membered imide ring being present in an amount effective to improve the thermal stability of the resin without rendering the resin insoluble to an extent which would make it unsuitable for use in a wire lacquer composed of the resin dissolved in cresol and solvent naphtha.

3,929,715

AN OIL-BASED EDPM POLYMER COMPOSITION IN THE FORM OF A CASTABLE JELLY AND METHOD OF USING SAME

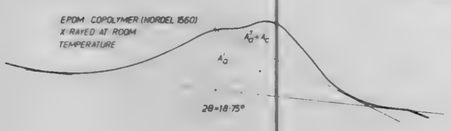
Roger Nowell, and Philip Edward Russell Tate, both of Swindon, England, assignors to Burmah Oil Trading Limited, Swindon, England

Continuation-in-part of Ser. No. 514,748, Oct. 15, 1974, abandoned, which is a continuation of Ser. No. 367,173, June 5, 1973, abandoned. This application Dec. 6, 1974, Ser. No. 530,609

Claims priority, application United Kingdom, June 8, 1972, 26852/72

Int. Cl.² C08K *5/01*

U.S. Cl. 260—33.6 AQ **11 Claims**



1. An oil-based composition in the form of a castable jelly comprising a substantially homogeneous blend of from 85 to 95 percent by weight of a mineral oil extender and from 5 to 15 percent by weight of a thermoelastic copolymer of ethylene, propylene and a diene monomer having an ethylene content between 60 and 90 percent by weight, a propylene content between 10 and 35 percent by weight and having a crystallinity of at least 12 percent.

3,929,716

EPOXY RESIN COMPOSITIONS

Hiroshi Komoto, Tsurugashima, and Kaoru Ohmura, Asaka, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 24, 1973, Ser. No. 363,674

Claims priority, application Japan, June 5, 1972, 47-55141

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C08L *63/02*

U.S. Cl. 260—37 EP **15 Claims**

1. An epoxy resin composition comprising:

I. 100 parts by weight of an epoxy resin having at least two epoxy groups in the molecule; and

II. 1–200 parts by weight of 1,3,6-triaminomethyl hexane or the reaction product thereof with an adduct forming compound selected from the group consisting of

a. a diepoxide or a glycidyl epoxy resin in up to about 0.5 times the molar amount of the triaminomethyl hexane, and

b. a monoepoxide or a vinyl compound in about 1 to 4 times the molar amount of the triaminomethyl hexane.

3,929,717

ALCOHOL SENSITIVE REPAIRABLE EPOXY EMBEDDING MATERIAL

S. Yen Lee, Upper Marlboro, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 28, 1974, Ser. No. 484,037

Int. Cl.² C08L *63/00*

U.S. Cl. 260—37 EP **5 Claims**

1. An epoxy embedding composition which is useful for potting of electrical and electronic components and which is easily removable therefrom for purposes of repair of the components, which comprises:

the combination of diglycidyl ether of a dihydroxyphenol, a diglycidyl ether of a polyoxyalkylene glycol, a polyoxyalkylenediamine, a primary or secondary alkyl, alkanol or aryl amine and, a filler, polyvinylpyrolidone wherein the polyvinylpyrrolidone filler is present in an amount of 10 to 100 parts by weight per 10 to 90 parts by weight diglycidyl either of dihydroxyphenol, 90 to 10 parts by weight of diglycidyl ether of polyoxyalkylene glycol and 1 to 5 parts by weight of said primary or secondary alkyl, alkanol or aryl amine.

3,929,718

ORGANOPOLYSILOXANE ELASTOMERS ADMIXED WITH FILLERS SUBJECTED TO MECHANICAL STRESS

Gunter Kratel; Jorg Patzke, and Karl-Heinrich Wegehaupt, all of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Aug. 16, 1974, Ser. No. 497,973

Claims priority, application Germany, Aug. 30, 1973, 2343846

Int. Cl.² C08L *83/04*

U.S. Cl. 260—37 SB **7 Claims**

1. An organopolysiloxane composition capable of being vulcanized to an elastomer containing a diorganopolysiloxane having a viscosity of at least 10^6 cSt at 25°C. in which the organic groups are selected from the class consisting of monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals and cyanoalkyl radicals, an agent capable of forming free radicals selected from the class consisting of peroxides, azo compounds and high energy radiation and a filler in which at least a portion of said filler is finely divided silicon dioxide particles having a surface area of at least 50 m^2/g. which have been subjected to mechanical stress and reacted with an organosilicon compound to increase the bulk weight of the silicon dioxide to a range of from about 120 to about 500 grams per liter, said organosilicon compound having the formula $(R_3Si)_aZ'$, wherein R is selected from the class consisting of monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals and cyanoalkyl radicals, Z' is selected from the class consisting of hydrogen, halogen, OH, OR', NR'X, ONR'$_2$, SR', OOCR', O, N(CX) and S, wherein R' is selected from the class consisting of alkyl radicals and aryl radicals, X is selected from the class consisting of hydrogen and R' and *a* is 1 or 2.

3,929,719

PROCESS FOR THE BULK-DYEING OF LINEAR POLYESTERS

Andre Pugin, Riehen; Kurt Burdeska, Basel, and Jost von der Crone, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

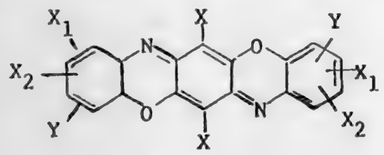
Filed Nov. 8, 1973, Ser. No. 414,018

Claims priority, application Switzerland, Nov. 10, 1972, 16399/72

Int. Cl.² C08K *5/29*

U.S. Cl. 260—40 P **11 Claims**

1. Process for bulk-dyeing linear polyesters, characterised in that mixtures containing at least 2 dyestuffs of the formula



wherein the X denote chlorine or bromine atoms or alkyl, alkoxy, aralkoxy, alkylmercapto, aralkylmercapto, arylmercapto, alkoxycarbonyl or aroyl groups, the Y denote hydrogen atoms or etherified hydroxyl groups, the X_1 denote hydrogen or halogen atoms, etherified hydroxyl groups or trifluoromethyl, aroyl, alkylsulphonyl, phenyl or phenylmercapto groups and the X_2 denote hydrogen or halogen atoms, or wherein the X_1 and X_2 form fused benzene rings, are used.

3,929,720

FLAME RESISTANT COMPOSITION OF MATTER OF HIGH MOLECULAR WEIGHT LINEAR POLYESTERS

Friedrich-Karl Rosendahl; Herbert Pelousek, both of Dormagen, and Hans Niederprüm, Monheim, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

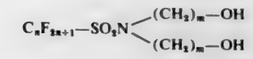
Filed Apr. 19, 1974, Ser. No. 462,497

Claims priority, application Germany, Apr. 19, 1973, 2320007

Int. Cl.² C08K *5/42;* **C08L** *67/02*

U.S. Cl. 260—40 P **7 Claims**

1. A flame-resistant composition of matter having an LOI Index of at least 32 comprising a high molecular weight linear polyester and at least one compound of the general formula



wherein

n represents an integer of from 1 to 10 and

m represents an integer of from 2 to 10.

3,929,721

PROCESS FOR REDUCING FILLER LOSS IN TETRAFLUOROETHYLENE POLYMER PARTICLES

Glenn Frederick Leverett, Vienna, W. Va., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 473,159, May 26, 1974, abandoned. This application Dec. 11, 1974, Ser. No. 531,482

Int. Cl.² C08K *3/08, 9/06;* **C08L** *83/04*

U.S. Cl. 260—42.15 **11 Claims**

1. In the process for preparing filled agglomerated granules of non-melt-fabricable granular tetrafluoroethylene polymer in which the filler is particulate glass, bronze, or a mixture thereof present in an amount of between about 5% and 40% by volume of the total volume, by agitating a finely-divided blend of said granular tetrafluoroethylene polymer and said filler in which the particle size of the finely-divided tetrafluoroethylene polymer averages numerically below about 200 microns and in which the filler is present in an amount between about 5% and 40% by volume, in a two-phase liquid medium consisting essentially of water and an organic liquid which is soluble in water up to at most 15% by weight at the operating temperature of the process and which has a surface tension no greater than about 40 dynes/cm. at 25°C., and in which the organic liquid is present in an amount of 0.1 to 0.5 cc per gram of said blend, said liquid medium containing said blend having between about 5 to 30% by weight solids content, the improvement wherein said liquid medium contains a silicon compound which is either an amino-functional organosilane present in an amount of between 0.01 and 5 parts per 1000 parts by weight of water or a silicone resin soluble in said organic liquid present in an amount of between 0.5 and 30 parts per 1000 parts by weight of said finely-divided blend.

3,929,722

SELF EXTINGUISHING HIGH IMPACT RESISTANT POLYMERIC POLYBLEND

Bruce S. Bak, Longmeadow; Gary L. Deets, Springfield, and Francis J. Pokigo, Longmeadow, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 8, 1972, Ser. No. 232,913

Int. Cl.² C08K *3/18;* **C08L** *9/02, 9/06*

U.S. Cl. 260—42.47 **16 Claims**

1. A self-extinguishing high impact strength polymeric polyblend composition comprising:

A. about 37 to 69.5% by weight of a polymer of at least one monovinylidene aromatic monomer and an ethylenically unsaturated nitrile monomer wherein said ethylenically unsaturated nitrile monomer moiety constitutes from 0% to about 90% by weight of the said polymer uniformly blended with,

B. a crosslinked chloroprene rubber, said rubber being present in the polyblend in from about 15–40% by weight,

C. a diene rubber, said diene rubber being present in the polyblend in from about 0.5–8.0% by weight, said diene rubber being grafted with:

1. at least one monovinylidene aromatic monomer, and

2. an ethylenically unsaturated nitrile monomer wherein said ethylenically unsaturated nitrile monomer moiety constitutes from 0% to about 90% by weight of the total monomers grafted, and

D. an inorganic compound selected from the group consisting of Sb_2O_3, Bi_2O_3, MoO_3, SnO_2, WO_3, and mixtures of the same, said compound being present in from about 1–15% by weight of the polyblend, the total weight percentage of the polyblend being 100%.

3,929,723

PHOTODEGRADABLE POLYOLEFINS CONTAINING SULFENYL HALIDES

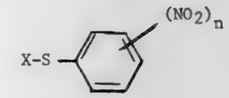
Bernard Freedman, Berkeley, and Martin J. Diamond, Oakland, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 23, 1975, Ser. No. 543,706

Int. Cl.² C08K *5/36*

U.S. Cl. 260—45.7 S **5 Claims**

1. A composition comprising a polyolefin and about from 0.1 to 10% of an additive of the structure -



wherein:

X is chlorine, bromine or iodine

n is 1 or 2.

3,929,724

METHOD OF MANUFACTURING A POLYETHYLENE COMPOSITION CONTAINING AN AGING INHIBITOR

Hirokazu Miyauchi, and Hironaga Matsubara, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 126,949, March 22, 1971, abandoned. This application July 13, 1973, Ser. No. 379,103

Int. Cl.² C08L *23/08*

U.S. Cl. 260—45.9 R **5 Claims**

1. A method of manufacturing a polyethylene compound comprising the steps of preparing a master batch by compounding 100 weight parts of ethylene-vinyl acetate copolymer containing 10 – 35 weight-% vinyl acetate and 1 – 20 weight parts of at least one aging inhibitor, at a temperature at least equal to the melting point of the selected aging inhibitor, and thereafter compounding the master batch with ordinary low density polyethylene and a crosslinking agent in a quantity such that the final mixture contains no more than one part of said aging inhibitor per each one hundred parts resin and an average quantity of vinyl acetate of no more than five weight per cent of the resin.

3,929,725

PROCESS FOR STABILIZING POLYAMIDES

John M. Davis, Signal Mountain, Tenn., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed July 31, 1974, Ser. No. 493,394

Int. Cl.² C08G *6/00*

U.S. Cl. 260—45.75 C **10 Claims**

1. A process for producing polyamides resistant to deterioration that is caused by heat and oxygen comprising incorporating into a polyamide-forming salt solution, cupric nitrate, an inorganic halide, and a hypophosphorous compound and then polymerizing the salt to form the polymer.

3,929,726

COLOR STABILIZED POLYURETHANES

Charles S. Schollenberger, Hudson; Kornelius Dinbergs, Broadview Heights, and Philip C. Kelley, Brecksville, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Sept. 6, 1974, Ser. No. 503,801
Int. Cl.² C08G 6/00
U.S. Cl. 260—45.85 B 4 Claims

1. A stabilized polyurethane containing about 0.1 to about 5 weight parts of benzoic acid hydrazide per 100 weight parts of polyurethane.

3,929,727

STABILIZED ETHYLENE-CARBON MONOXIDE COPOLYMERS

Donald Henry Russell, Cherry Hill, N.J., and Robert Warren Lenton, Glenolden, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed June 18, 1975, Ser. No. 588,071
Int. Cl.² C08J 3/20
U.S. Cl. 260—45.95 F 3 Claims

1. A stabilized ethylene carbon monoxide copolymer composition containing about 0.1 to 20 percent based on the weight of polymer in the composition of 2,2′-dihydroxy-4-methoxybenzophenone.

3,929,728

PROCESS FOR PREPARING LINEAR POLYESTERS

Kazuya Chimura; Kazuo Ito; Shunichi Takashima; Mizuo Shindo, and Yoshihiro Shimoshinbara, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Japan

Continuation-in-part of Ser. No. 139,959, May 3, 1971, Pat. No. 3,822,239. This application Oct. 19, 1973, Ser. No. 407,987
Claims priority, application Japan, June 2, 1970, 45-46918; June 3, 1970, 45-47871; June 3, 1970, 45-47872; June 9, 1970, 45-49710; June 11, 1970, 45-50613; June 11, 1970, 45-50614; June 30, 1970, 45-57029; Oct. 20, 1970, 45-92294; Oct. 21, 1970, 45-92642. The portion of the term of this patent subsequent to May 8, 1990, has been disclaimed.
Int. Cl.² C08G 63/14
U.S. Cl. 260—75 R 18 Claims

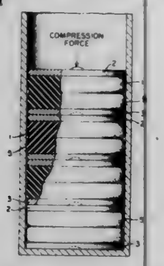
1. A process for preparing linear polyesters comprising condensing glycol terephthalate by incorporating into the polycondensation system an antimonycontaining polycondensation catalyst which is soluble in the polycondensation system and at least one member selected from the group consisting of (1) α-hydroxycarboxylic acid having 2 to 30 carbon atoms: (2) α,β-dicarboxylic acid having 4 to 30 carbon atoms; and (3ester, amide, acid anhydride, mixed acid anhydride or acid halide, of said α,β-dicarboxylic acid;

3,929,729

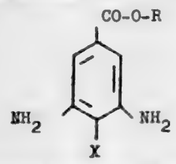
POLYUREAURETHANE SHOCK ABSORBING UNIT

Daniel A. Chung, North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

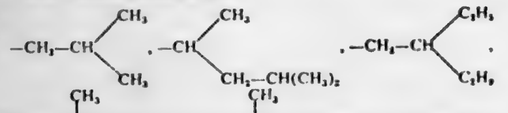
Filed Nov. 21, 1974, Ser. No. 525,790
Int. Cl.³ C08G 8/28; B61G 11/08; F16F 7/12, 1/36
U.S. Cl. 260—75 NH 12 Claims

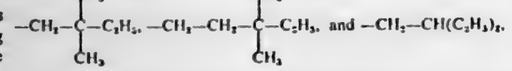


1. Shock absorbing unit which comprises a shaped resilient polyureaurethane composition characterized by (A) withstanding compressive cycling for at least about 500 cycles under constant compression alternating between a maximum of about 45 to about 55 percent and a minimum of about 8 to about 12 percent of its original uncompressed height, (B) requiring at least about 4200 pounds per square inch to compress said unit 55 percent of its original uncompressed height after 500 cycles of said compressive cycling, and (C) deflecting from about 0.3 to about 0.6 inch, preferably from about 0.4 to about 0.5 inch, at about 25°C upon the application of about 1800 pounds per square inch uniformly to the end surface areas of the said resilient compositions in its uncompressed state when the said composition is a generally disc-shaped cylindrical element with circular parallel end surfaces, said surfaces covered and adhered to circular steel plates, having a diameter of about 1.5 inches and a sidewall connecting the end surfaces substantially in the form of a V-shaped groove having substantially equal length sides, the said groove extending between the said end surfaces, the volume of said element being between 150 percent of the volume of the said groove, where said resilient shock absorbing polyureaurethane composition is prepared by the method which comprises reacting a diamine selected from 2,2′-diaminodiphenyldisulfide, 2,5-dichloro-1,3-phenylene diamine and a substituted diamine of the formula



where R is selected from alkyl radicals selected from methyl, ethyl, n-propyl, n-butyl, isopropyl, isobutyl, n-pentyl, isopentyl, hexyl, heptyl, octyl and decyl radicals, branched chain radicals selected from





aryl radicals selected from tolyl, phenyl and halophenyl radicals, aralkyl radicals selected from benzyl and α-alkyl benzyl radicals, where the alkyl group has 1 to 6 carbon atoms, and cycloalkyl radicals selected from cyclopentyl, cyclohexyl, 4-t-butylcyclohexyl and cycloheptyl radicals, and X is a chlorine radical, with the reaction product of (A) a diisocyanate selected from 1,5-naphthalene diisocyanate when the diamine is selected from 2,2′-diaminodiphenyldisulfide or a diisocyanate selected from 1,5-naphthalene diisocyanate, 3,3′-bitolylene-4,4′-diisocyanate and 3,3′-dimethyldiphenylenemethane-4,4′-diisocyanate when the diamine is selected from said substituted diamine and 2,5-dichloro-1,3-phenylene diamine, and (B) a mixture of at least one polymeric polyol with a total average molecular weight of about 1500 to about 2100 which comprises (1) polyols having a molecular weight of about 1800 to about 2200 selected from (a) about 65 to about 100 weight percent of a polyether polyol or (b) about 65 to about 100 weight percent of a polyol mixture comprising (i) about 35 to about 65 weight percent polyether polyol and (ii) about 65 to about 35 weight percent polyester polyol or (c) about 65 to about 95 weight percent of said polyether polyol-polyester polyol mixture and correspondingly (2) about 35 to about zero or 5 weight percent of at least one of a polyether polyol and polyester polyol having a molecular weight of about 800 to about 1250, wherein said polyether polyol is selected from polytetramethylene ether glycol and polypropylene ether glycol, and said polyester polyol is selected from (i) caprolactone polyesters prepared from caprolactones con-

taining 6 to 8 carbon atoms and glycols containing 4 to 7 carbon atoms and (ii) azelates of azelaic acid and glycols containing 4 to 7 carbon atoms, where the ratio of isocyanato groups to the sum of hydroxyl groups of the polyols is about 1.7 to about 2.5, where the ratio of primary amino groups of the diamine to excess isocyanato groups over the sum of said hydroxyl groups is about 0.6 to about 1.1 and where the acid number of the polyols is less than about 1.

3,929,730

PROCESS FOR PREPARING POLYURETHANES EMPLOYING A MIXTURE OF BUTANEDIOL AND PHENYLENE DIETHANOLAMINE AS A CHAIN EXTENDER

Peter U. Graefe, Brick Town; Vincent J. Gajewski, Jackson, and Ismael A. Jimenez, Farmingdale, all of N.J., assignors to Inter-Polymer Research Corporation, Farmingdale, N.J.

Filed Dec. 28, 1973, Ser. No. 429,284
Int. Cl.² C08G 18/32
U.S. Cl. 260—77.5 AN 3 Claims

1. A process for preparing polyurethane compositions which comprises reacting in the absence of any appreciable amount of dispersing agent:

a. at least one polyoxypropylene glycol of about 2,000 molecular weight, poly(epsilon-caprolactone)polyester glycol of about 2,000 molecular weight or mixture thereof;
b. a polyisocyanate, or a quasi-prepolymer prepared from the reaction of a poly(epsilon-caprolactone)polyester glycol of about 2,000 molecular weight with an excess amount of polyisocyanate sufficient to provide an average ratio of NCO groups to hydroxyl groups greater than about 2:1;
c. a mixture of polyfunctional chain extenders comprising butanediol and a sufficient amount of phenylenediethanolamine to render the mixture soluble in the polyol, the butanediol being present in the polyol at a level exceeding the maximum solubility of the butanediol at ambient temperature in the absence of phenylenediethanolamine and
d. a catalyst for the polyurethane reaction.

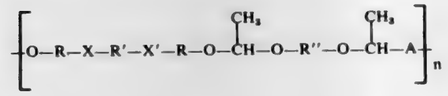
3,929,731

PROCESS FOR THE PRODUCTION OF POLYMERIC ACETALS CONTAINING URETHANE, CARBAMIDE AND AMIDE GROUPS

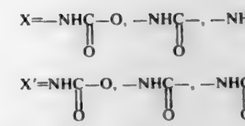
Leman Mustafa Kyzy Volkova, Noginsky raion, p/o Chernogolovka, ulitsa Pervaya, 15, kv. 7; Gennady Vladimirovich Korolev, Noginsky raion, p/o Chernogolovka, ulitsa Vtoraya, 3, kv. 1, both of Moskovskaya oblast; Fedor Ivanovich Dubovitsky, Vorobievskoe shosse, 2b, kv. 12, Moscow; Irina Ivanovna Trostyanskaya, Solnechny pereulok, 4, kv. 5, Gatchina Leningradskoi oblasti; Leonid Yakovlevich Rappoport, Grazhdansky prospekt, 105, korpus 4, kv. 57; Gennady Nikolaevich Petrov, Zheleznodorozhny pereulok, 7, kv. 35, both of Leningrad; Mikhail Fedorovich Shestakovsky, prospekt Mira, 49, kv. 108, Moscow; Renat Dovletovich Yakubov, ulitsa Dimitrova, 81, kv. 14, and Sergei Mikhailovich Maximov, ulitsa Gertsena, 9, kv. 6, both of Temirtau Karagandinskoi oblasti, all of U.S.S.R.

Filed June 27, 1974, Ser. No. 483,712
Claims priority, application U.S.S.R., June 28, 1973, 1929172
Int. Cl.² C08G 12/20, 12/22
U.S. Cl. 260—77.5 B 29 Claims

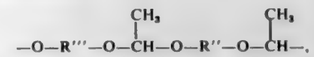
1. Polymeric acetals of the formula:



where
R is an alkylene with 1 to 6 carbon atoms;

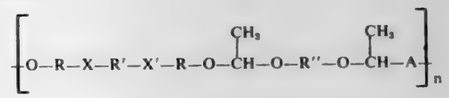


or is absent;
R′ is an alkylene with 1 to 10 carbon atoms, an arylene, a biarylene, or is absent;
R″ is an alkylene with 1 to 6 carbon atoms, an oxaalkylone with 1 to 8 carbon atoms, a cycloalkylene, an arylene, or a biarylene;
A has the formula:

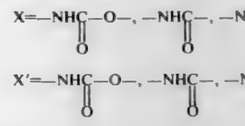


where R‴ is a chain of polymeric diol having OH end-groups with a molecular weight of from 500 to 5,000, or is absent;
n is equal to 10 to 300.

10. A process for the production of polymeric acetals of the formula:



where
R is an alkylene with 1 to 6 carbon atoms;



or is absent;
R′ is an alkylene with 1 to 10 carbon atoms, an arylene, a biarylene, or is absent;
R″ is an alkylene with 1 to 6 carbon atoms, an oxaalkylene with 1 to 8 carbon atoms, a cycloalkylene, an arylene, or a biarylene;
A is absent;
n is from 20 to 110, comprising effecting a reaction of polyaddition of a diol of the formula:

$$HO-R-X-R'-X'R-OH,$$

where R, R′, X and X′ are as, defined above, with a divinyl ether of the formula:

$$CH_2=CH-O-R''-O-CH=CH_2,$$

where R″ is as defined above, in the presence of an acid catalyst.

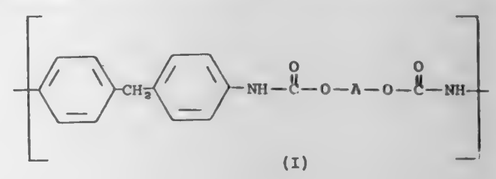
3,929,732

LOW TEMPERATURE RESISTANT POLYURETHANE ELASTOMERS

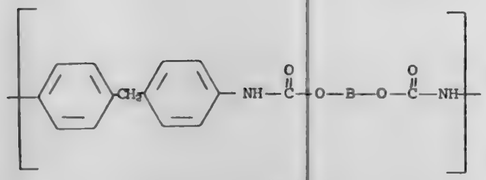
Tilak M. Shah, North Haven, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Sept. 16, 1974, Ser. No. 506,310
Int. Cl.² C08G 18/66
U.S. Cl. 260—77.5 AN 7 Claims

1. A thermoplastic polyurethane elastomer characterized by the presence therein of each of the recurring units having the formulae:



(I)



(II)

wherein A is the residue of a poly(1,4-butylene azelate) HO—A—OH having a molecular weight in the range of 2300 to 3500, B is the residue of an extender diol HO—B—OH selected from the class consisting of aliphatic diols having from 2 to 6 carbon atoms inclusive and the bis(2-hydroxyethylether) of hydroquinone, and wherein the overall proportion of recurring units (I) to recurring units (II) is in the range of about 1:2 to about 1:12.

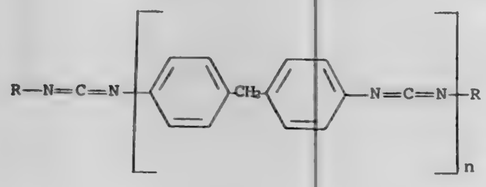
3,929,733

POLYCARBODIIMIDES FROM 4,4'-METHYLENEBIS(PHENYL ISOCYANATE) AND CERTAIN CARBOCYCLIC MONOISOCYANATES

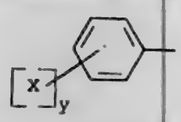
Louis M. Alberino, Cheshire, and William J. Farrissey, Jr., Northford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 2, 1974, Ser. No. 511,129
Int. Cl.² C08G *18/00*
U.S. Cl. 260—77.5 R **10 Claims**

1. A terminated polycarbodiimide having the formula:



wherein *n* is an integer having an average value from 6 to 20 and R is selected from the group consisting of cyclohexyl and



wherein X is a member selected from the group consisting of lower-alkyl, lower-alkoxy, and halo, and y is a whole number from 0 to 2.

3,929,734

FIRE-RESISTANT POLYAMIDE FROM BROMINATED AROMATIC DICARBOXYLIC ACID DIARYL ESTER

Cecile Bernier, Bagneux; Monique Jouhaneau, Issy-Les-Moulineaux, and Pierre Poisson, Antony, all of France, assignors to Aquitaine Total Organico, France

Filed Feb. 4, 1974, Ser. No. 439,122
Claims priority, application France, Feb. 8, 1973, 73.04442; Feb. 14, 1973, 73.05159
Int. Cl.³ C08G *69/42*
U.S. Cl. 260—78 R **13 Claims**

1. A fire-resistant brominated semi-aromatic polyamide thermoplastic resin condensation product of ingredients consisting essentially of at least one alpha,omega-diaminoalkane of 4–30 carbon atoms and at least one aryl diester of isophthalic acid or terephthalic acid, said isophthalic acid or terephthalic acid having at least one bromine on the aromatic nucleus thereof.

3,929,735

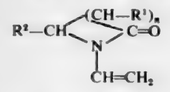
COPOLYMERS OF AN N-VINYL LACTAM AND AN UNSATURATED LACTONE

Eugene S. Barabas, Watchung, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Jan. 9, 1973, Ser. No. 322,109
Int. Cl.² C08F *15/02*
U.S. Cl. 260—78.3 UA **8 Claims**

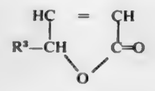
1. A copolymer comprising approximately by weight

a. 5 to 99% of an N-vinyl lactam of the formula



wherein R^1 is hydrogen, methyl or ethyl, R^2 is hydrogen or alkyl of 1 to 4 carbon atoms, and n is an integer of 2 to 4: and

b. 1 to 95% of an unsaturated lactone selected from the group consisting of compounds having the formula



wherein R^3 is hydrogen, an alkyl group or an alkoxy group.

3,929,736

PROCESS FOR PREPARING RESIN FOR PRINTING INK USE

Hisatake Sato, Yokohama, Japan, assignor to Nippon Oil Company Ltd., Tokyo, Japan

Filed Apr. 17, 1974, Ser. No. 461,757
Claims priority, application Japan, Apr. 17, 1973, 48-42682
Int. Cl.² C08G *63/18*; C08F *240/00*
U.S. Cl. 260—78.4 D **12 Claims**

1. A process for preparing a resin suitable for printing ink use which comprises using as the starting oil to be polymerized a mixture selected from the group consisting of a reaction mixture obtained by heating at a temperature of 100° – 300°C. that fraction containing diolefins of 5 carbon atoms and of a boiling point in the range of 20° – 80°C. of the thermally cracked product oil of petroleum fractions and a mixture of said reaction mixture with that fraction of a boiling point in the range of 140° – 280°C. of the thermally cracked product oil of petroleum fractions, polymerizing said selected mixture in the presence of a Friedel-Crafts type catalyst, and thereafter reacting the resulting thermoplastic resin with a compound selected from the group consisting of the unsaturated carboxylic acids and the anhydrides thereof, said compound being used in an amount of 0.01 – 0.2 mole per 100 grams of said thermoplastic resin, thereby forming a resin which is soluble in a nonaromatic hydrocarbon solvent and having a softening point of above 100°C.

3,929,737

MALEIC ANHYDRIDE-MODIFIED RESIN BACKBONE

James J. Tazuma, Stow, and Mario D. Zadra, Barberton, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 30, 1974, Ser. No. 510,332
Int. Cl.³ C08F *8/46, 236/04*
U.S. Cl. 260—78.4 D **10 Claims**

1. A resinous material characterized by having a softening point in the range of about 45°C to about 100°C having a basic resin backbone of piperylene and methyl branched monoolefins which comprises about 50 to about 60 mole percent units derived from piperylene and about 20 to about 30 mole percent units derived from monoolefins selected from at least one methyl branched chain α or β monoolefin containing 4 to 6 carbon atoms, where the mole ratio of piperylene to said

branched monoolefin is about 0.8/1 to about 2/1, in combination with about 10 to about 30 mole percent units derived from maleic anhydride, based on the total resin composition.

2. The resinous composition of claim 1 prepared by the method which comprises the steps of (A) reacting about 30 to about 60 parts by weight maleic anhydride, or about 10 to about 25 parts by weight maleic anhydride in the presence of an organoperoxide at a temperature in the range of about 150°C to about 250°C with 100 parts by weight of a hydrocarbon-derived resin having a softening point in the range of about 10°C to about 50°C prepared by polymerizing in the presence of a catalyst selected from boron trifluoride and boron trifluoride etherate, a monomer mixture which comprises about 40 to about 70 weight percent piperylene, and correspondingly, about 60 to about 30 weight percent of at least one monoolefin selected from methyl branched chain α or β monoolefin containing 4 to 6 carbon atoms, where the weight ratio of piperylene to said branched chain monoolefin is about 0.8/1 to about 2.0/1 and (B) removing unreacted maleic anhydride, if any, by distillltion.

3,929,738

PRODUCTION OF LOW MOLECULAR WEIGHT POLYANHYDRIDE COMPOUNDS

Omer E. Curtis, Jr., Morristown; Harold W. Tuller, Long Valley; Charles T. O'Neill, Dover, and Ralph W. Nussbaum, West Orange, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 81,616, Oct. 16, 1970, Pat. No. 3,732,332. This application Mar. 26, 1973, Ser. No. 345,172
Int. Cl.² C08F *2/02, 222/08*
U.S. Cl. 260—78.5 R **18 Claims**

1. A low molecular weight polyanhydride having a softening point within the range of about 111° to 156°C, said polyanhydride being the reaction product of the mass polymerization process, in the absence of a polymerization catalyst, of a maleic monomer selected from the group consisting of maleic acid, maleic anhydride, anhydrides which rearrange to maleic anhydrides and the halo-, aryl-, aralkyl-, alkyl-, or cycloalkyl-substituted derivatives thereof and at least one alkyl-substituted styrene in molar proportions of said maleic monomer relative to said alkyl-substituted styrene of greater than 1:1, said polymerization process being effected by heating at least a major portion of the maleic monomer to a temperature of about 160° to about 200°C, adding the alkyl-substituted styrene to said maleic monomer, with agitation, at a rate which permits control of the heat of reaction and continuing the polymerization until essentially all of said maleic monomer and alkyl-substituted styrene have polymerized.

3,929,739

NOVEL FLOCCULENT TERPOLYMERS

Eugene S. Barabas, Watchung, and Frederick Grosser, Midland Park, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Nov. 12, 1973, Ser. No. 414,810
Int. Cl.² C08F *220/18, 220/40, 220/54, 220/56*
U.S. Cl. 260—78.5 B **11 Claims**

1. A water soluble terpolymer of a) about 20–50 weight percent acrylamide, b) about 45–75 weight percent dimethylamino-methylacrylamide and c) about 5–25 weight percent of a third ethylenically unsaturated monomer selected from the group consisting of acrylonitrile, vinyl acetate, vinyl-isobutylether, chloroprene, dimethylmaleate, diethylmaleate, allyl acetate, methylacrylate, ethylacrylate, methyl methacrylate, and 2-vinyl pyridine said termonomer having lower solubility in water than either (a) or (b); the value of (a), (b) and (c) being such that the total monomers present amount to 100 percent and the number average molecular weight of the terpolymer being greater than 30,000.

3,929,740

HYDROLYZED COPOLYMER OF ACRYLONITRILE AND AN UNSATURATED SULFONIC ACID

Fritz Engelhardt; Willi Gunzert, both of Frankfurt am Main; Hellmut Georg Jalke, Wiesbaden; Joachim Ribka, Offenbach am Main-Burgel, and Gerhard Weckler, Sulzbach, Taunus, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 400,706, Sept. 26, 1973, abandoned. This application Sept. 12, 1974, Ser. No. 505,523
Claims priority, application Germany, Oct. 9, 1972, 2249443
Int. Cl.² C08F *28/00, 120/44*
U.S. Cl. 260—79.3 MU **6 Claims**

1. A water-soluble product obtained from a copolymer of acrylonitrile and an unsaturated sulfonic acid containing 0.1 to 30% by weight of sulfonic acid radicals and having a K-value of 30 to 140, by hydrolyzing said copolymer at a temperature of 70° to 150°C. in an aqueous alkali metal hydroxide solution containing from 8 to 35% by weight of alkali metal hydroxide to saponify the nitrile groups of said copolymer to $—CONH_2$ and —COOR groups where R is the cation of said alkali metal hydroxide and then adjusting the resulting solution to a pH of 6 to 9, said product containing

2 to 15% by weight $—CONH_2$ groups
20 to 68% by weight —COOR groups
0 to 0.5% by weight —CN groups
2 to 20% by weight $—SO_3R$ groups

calculated on the solid product and having a K-value of 80 to 150 and said product being useful as a textile aid for sizing and dye padding purposes.

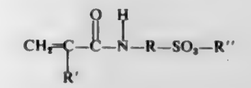
3,929,741

HYDROPHILIC ACRYLAMIDO POLYMERS

Richard A. Laskey, Washington, N.J., assignor to Datascope Corporation, Paramus, N.J.

Filed July 16, 1974, Ser. No. 488,933
Int. Cl.² C08F *28/02*; C08G *75/18*
U.S. Cl. 260—79.3 M **11 Claims**

1. A water insoluble cross-linked hydrophilic polymer capable of absorbing many times its own weight of water, said polymer consisting essentially of at least 95% by weight of a polymerized monomer of the formula:



wherein R is selected from the group consisting of straight and branched chain alkylene of up to 10 carbon atoms, R′ is selected from the group consisting of hydrogen and lower alkyl, and R″ is a monovalent cation cross-linked by up to 5% by weight of a cross-linking monomer.

3,929,742

POLY(P-BENZENESULFONAMIDE)

George E. Hulse, and R. James Kersting, both of Pittsburgh, Pa., assignors to ARCO Polymers, Inc., Philadelphia, Pa.

Filed July 23, 1973, Ser. No. 382,018
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² C08G *75/30*
U.S. Cl. 260—79.3 R **1 Claim**

1. A process for preparing poly(p-benzenesulfonamide) comprising:

a. heating for at least 1 hour at a temperature of 180° to 210°C. in the absence of air, a melt of a compound having the general formula, $R'R''N{\cdot}SO_2{\cdot}C_6H_4{\cdot}NH_2X$, where X is Br or Cl; and R′ and R″ may be the same or different and are H, alkyl having from 1–4 carbon atoms, or R′ and R″ together comprise a cyclic alkylene;

b. dissolving the heated melt in aqueous alkali; and
c. acidifying the solution by adding acid to a pH of 4–6, whereby the poly(p-benzenesulfonamide) precipitates.

3,929,743
POLYAMPHOLYTES

John A. Sramek, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation-in-part of Ser. No. 296,438, Oct. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 178,502, Sept. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 794,356, Jan. 27, 1969, abandoned. This application Feb. 11, 1974, Ser. No. 441,591
Int. Cl.² C08F *8/30*
U.S. Cl. 260—80.8 **10 Claims**

1. A polyampholyte having a molecular weight of from about 10,000 to about 200,000 and containing pendent carboxylic acid groups and pendent carboxylic amino ester groups of the formula

$$-COO\ CHR^2CHR^3NHR^1$$

each of R^1, R^2 and R^3 being hydrogen or a lower alkyl group containing 1–7 carbon atoms wherein said polyampholyte is prepared by imination of a copolymer which comprises 16–40% by weight of a monoethylenically unsaturated carboxylic acid monomer and the balance being from 10–84% by weight of a hard monomer selected from the group consisting of styrene, acrylonitrile, cycloalkyl acrylates and cycloalkyl methacrylates wherein said cycloalkyl group contains 5–7 carbon atoms, lower alkyl esters of methacrylic acid wherein said lower alkyl group contains 1–3 carbon atoms and mixtures thereof and 10–84% by weight of a soft monomer selected from the group consisting of alkyl esters of acrylic acid wherein said alkyl group contains 1–12 carbon atoms, higher alkyl esters of methacrylic acid wherein said higher alkyl group contains 4–12 carbon atoms vinyl acetate and mixtures thereof; wherein said polyampholyte is water soluble upon reaction with base and the ratio of carboxylic acid groups to carboxylic amino ester groups is from about 19:1 to about 0.25:1.

3,929,744
POLYMERIC ISOCYANATES AND PROCESS FOR MAKING SAME

Howard J. Wright, Kansas City, Mo., and Kenneth E. Harwell, Merriam, Kans., assignors to Cook Paint and Varnish Company, Kansas City, Mo.

Filed Oct. 31, 1974, Ser. No. 519,660
Int. Cl.² C08F *26/02*, *126/02*, *226/02*
U.S. Cl. 260—80.73 **15 Claims**

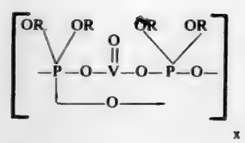
1. A process for preparing an isocyanate-functional polymer which comprises reacting a secondary alpha-carbon or tertiary alpha-carbon amide polymer -having at least one $—CONH_2$ group attached directly to a secondary or tertiary carbon atom, respectively, in the polymer chain, with a hypochlorite and recovering the isocyanate-functional polymer thus formed from the reaction mixture.

3,929,745
VANADIUM ORGANOPHOSPHATES

James R. Huerta; Amos R. Anderson, and Jeffrey G. Meyer, all of Adrian, Mich., assignors to Dart Industries Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 102,949, Dec. 30, 1970, abandoned, which is a division of Ser. No. 836,169, June 24, 1969, Pat. No. 3,595,890. This application Nov. 20, 1972, Ser. No. 308,066The portion of the term of this patent subsequent to July 27, 1988, has been disclaimed.
Int. Cl.² C08F *4/68*, *210/18*, *210/16*
U.S. Cl. 260—80.78 **18 Claims**

1. A catalyst composition comprising a vanadium organophosphate compound having the formula:



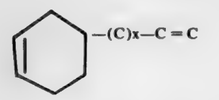
wherein R is methyl, ethyl, propyl, butyl or mixtures thereof and x is 2 to 6 and an organoaluminum halide wherein the molar ratio of Al/V in said catalyst composition is in the range of 1:1 to 20:1.

3,929,746
SULPHUR VULCANIZABLE ELASTOMERIC COPOLYMERS

Harold Tucker, Akron, and Robert J. Minchak, Parma Heights, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 12, 1962, Ser. No. 243,987
Int. Cl.² C08F *210/00*, *212/00*, *28/00*
U.S. Cl. 260—80.78 **2 Claims**

1. Vulcanizable, elastomeric terpolymers of ethylene, propylene and a mixture of terminally unsaturated cyclohexenyl compounds of the general formula



in which x is an integer from 2 to 10, inclusive, said ethylene and propylene monomeric units being present in approximately equi-mole proportions, and said terminally unsaturated cyclohexenyl compounds constituting at least about 0.3 mole percent of the terpolymer based on the total monomeric units present.

3,929,747
PROCESS FOR PREPARING PETROLEUM RESIN COPOLYMERS OF C_4 AND C_5 ALIPHATIC MONOOLEFIN FRACTIONS AND STYRENE OR ITS DERIVATIVES

Ken-ichi Kudo; Yoshihiko Kitagawa, and Hideyuki Kuribayashi, all of Nihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 2, 1974, Ser. No. 528,735
Claims priority, application Japan, Dec. 6, 1973, 48-139123
Int. Cl.² C08F *210/00*, *212/00*, *240/00*
U.S. Cl. 260—80.78 **13 Claims**

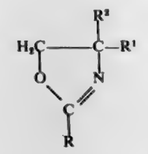
1. A process for manufacturing a petroleum resin, characterized by copolymerizing a monomer mixture of 20 to 80% by weight of aliphatic monoolefins mainly of four and five carbon atoms and 80 to 20% by weight of styrene and/or a styrene derivative with a catalyst system comprising an organoaluminum compound represented by the general formula AlR_nX_{3-n} (wherein R is an alkyl group having 1 to 4 carbon atoms, X is a halogen atom, and n is 2 or 1.5) as main catalyst and an alkyl halide or a hydrogen halide as co-catalyst, in a hydrocarbon solvent at a temperature of 0° to 60°C.

3,929,748
EMULSION POLYMERIZATION PROCESS EMPLOYING AN OXAZOLINE AS CHAIN TRANSFER AGENT

Louis A. Jurisch, Marengo, Ill., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Filed Oct. 15, 1973, Ser. No. 406,760
Int. Cl.² C08F *212/08*, *112/08*
U.S. Cl. 260—88.1 P **11 Claims**

1. In a process for the production of the homopolymers of styrene and of vinyl acetate, or the copolymer of styrene and methacrylic acid by emulsion polymerization or by solution polymerization, the improvement consisting of using as the chain transfer agent an oxazoline corresponding to the formula:



where R^1 and R^2 are hydroxymethyl, or the group $RCOOCH_2—$, and R is an alkyl group of 1 to 19 carbon atoms.

3,929,749
PROCESS FOR RECOVERING BORON TRIFLUORIDE

Terence Alfred Cooper, Newark, Del., and Anestis Leonidas Logothetis, Louisville, Ky., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Mar. 1, 1974, Ser. No. 447,256
Int. Cl.² C08F *210/00*, *212/00*, *218/00*; C01B *35/06*
U.S. Cl. 260—86.7 **5 Claims**

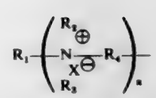
1. In a process for recovering boron trifluoride from a copolymer containing ethylene units and alkyl acrylate units complexed with boron trifluoride, the improvement which comprises heating a solution of said copolymer under anhydrous conditions in an inert liquid solvent for said copolymer to a temperature and at a pressure sufficient to decompose the alkyl acrylate-boron trifluoride complex while simultaneously passing superheated inert liquid or gaseous solvent for the copolymer into the copolymer solution so as to cause turbulence of the solution of copolymer, thereby removing gaseous uncomplexed boron trifluoride from the liquid mixture for recycle.

3,929,750
PROCESS FOR PREPARING POLYIONCOMPLEXES

Tsuchida Eishun, Tokyo, and Osada Yoshihito, Mito, both of Japan, assignors to The Fujikura Cable Works, Ltd., Tokyo, Japan

Filed May 9, 1973, Ser. No. 358,513
Claims priority, application Japan, May 13, 1972, 47-47536; May 13, 1972, 47-47537
Int. Cl.² C08L *23/00*, *25/00*, *29/00*; C08F *210/00*
U.S. Cl. 260—874 **5 Claims**

1. A process for preparing a water soluble polyioncomplex consisting essentially of reacting an aqueous solution of a polycation of the integral type having the general formula

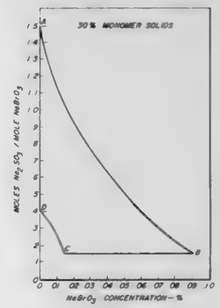


wherein R_1 and R_4 are selected from the group consisting of alkylene, aralkylene, arylene, piperazine ring, and alicyclic radicals, R_2 and R_3 are similar or dissimilar radicals, having carbon atoms not exceeding 3, selected from the group consisting of alkyl, alkoxyalcohol and benzylalkyl radicals, X^- is a counterion, and n is a positive integer, an aqueous solution of a polyanion selected from the group consisting of polyacrylic and polymethacrylic acids at a pH of 4–11 in the presence of alkali, the mole ratio of polycation to polyanion being in the range from 1:1 to 1:3.

3,929,751
HIGH MOLECULAR WEIGHT ACRYLAMIDE POLYMER PRODUCTION BY HIGH SOLIDS SOLUTION POLYMERIZATION

David Benedict Gershberg, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 14, 1971, Ser. No. 133,977
Int. Cl.² C08F *3/90*, *15/00*, *15/14*
U.S. Cl. 260—89.7 R **5 Claims**



1. A method of producing a substantially completely noncarboxylated, substantially completely water-soluble polymer of acrylamide having an intrinsic viscosity of at least 13 and therefore a molecular weight of at least about 8 million which comprises subjecting a reaction media consisting essentially of (A) acrylamide, (B) up to 50%, by weight, based on the weight of acrylamide, of a monomer copolymerizable therewith, (C) a sodium bromate-sodium sulfite catalyst and (D) water, to polymerizing conditions comprising a temperature of from about 10°C. to about 30°C. and a pH of from about 4.7 to about 5.9, said reaction media having a monomer solids content of from about 30% to about 60%, at least one dimension of said reaction media mass having a thickness of not more than about ¾ inch, the catalyst concentration being (1) within the area of curve ABCDA of the drawings for at least 30% monomer solids, (2) within the area of curve EFGHE of the drawings for at least 40% monomer solids and (3) within the area of curve JKLMJ of the drawings for at least 50% monomer solids.

3,929,752

PREPARATION OF SOL CHLOROPRENE POLYMERS

Terence Alfred Cooper, and Ausat Ali Khan, both of Newark, Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Apr. 5, 1974, Ser. No. 458,185
Int. Cl.² C08F 2/22, 36/18
U.S. Cl. 260—92.3 6 Claims

1. In the process of polymerizing in the presence of a C_8–C_{20} alkyl mercaptan and a carboxylated emulsifying agent in aqueous emulsion at a pH of about 10–13, chloroprene containing from 0 to about equal weight of a copolymerizable monomer at a temperature from the freezing point of the emulsion to about 52°C, the improvement of having present in the emulsion about 0.05–1 part by weight per 100 parts of the starting monomer, of an amine having the following formula (1)



(1),

wherein

R^1 is C_6–C_{20} alkyl, alkenyl, aryl, aralkyl, or alkaryl;

R^2 is represented by the following formula (2)



(2)

wherein n is a number having an average value of 1 to about 50, and

R^4 in each parenthetical unit is independently of any other such unit hydrogen or methyl; and

R^3 is phenyl, benzyl, a C_1–C_8 alkyl or a radical having the above formula (2);

with the proviso that when R^3 has the above formula (2), the sum of the average values of n in R^2 and R^3 is at most about 50.

3,929,753

METHOD FOR PRODUCING HIGH BULK DENSITY POLYVINYL CHLORIDE

Iko Itoh; Takeshi Sekihara, and Tomoyuki Emura, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 13, 1973, Ser. No. 415,358
Claims priority, application Japan, Nov. 21, 1972, 47-117449
Int. Cl. C08f 114/02, 114/16
U.S. Cl. 260—92.8 W 8 Claims

1. A method for producing polyvinyl chloride or a copolymer of vinyl chloride having a high bulk density by the suspension polymerization of vinyl chloride alone or a mixture consisting predominantly of vinyl chloride and at least one monomer copolymerizable therewith in the presence of an oil soluble catalyst which comprises initiating the polymerization reaction in the presence of (1) a partially saponified polyvinyl acetate having a degree of saponification of 70 to 80 mol % and an average degree of polymerization of 500 to 900 as a suspension stabilizer and in the presence of said oil soluble catalyst, and when the polymerization conversion reaches 3 to 40% by weight, adding (2) a partially saponified polyvinyl acetate having a degree of saponification of 75 to 95 mol % and an average degree of polymerization of 1000 or more to the polymerization system.

3,929,754

PROCESS FOR THE PREPARATION OF ETHYLENE POLYMERS BY BOTH FREE-RADICAL AND IONIC POLYMERISATION REACTIONS

Pierre Gloriod, Bully-les-Mines; Bernard Levresse, Lillebonne, and Jean-Pierre Machon, Bethune, all of France, assignors to Ethylene Plastique, Courbevoie, France

Filed Oct. 11, 1973, Ser. No. 405,653
Claims priority, application France, Oct. 13, 1972, 72.36443
Int. Cl.² C08F 4/66, 10/02
U.S. Cl. 260—94.9 E 1 Claim

1. A continuous process for the preparation of ethylene polymers by polymerisation or copolymerisation of ethylene in a polymerisation reactor at a pressure of at least 1000 bars and at a temperature of from 220° to 270° C. in the presence of a catalyst of the Ziegler type, the dwell time of the catalyst in the reactor being not more than 1.50 seconds, the catalyst comprising an organic compound of aluminum selected from the group consisting of trialkylaluminum and diethylaluminum chloride; and titanium trichloride and a titanium tetrapropoxide, the relative ratio of titanium tetrapropoxide to titanium trichloride being between 1:2 and 1:8 moles for controlling the relative degree of free radical polymerisation and ionic polymerisation.

3,929,755

PYROLYZED ROSIN PRODUCTS AS SYNTHETIC RUBBER TACKIFIERS

Ray F. Severson; Walter H. Schuller; N. Mason Joye, Jr., and Ray V. Lawrence, all of Lake City, Fla., assignors to The United States of America, as represented by the Secretary of Agriculture, Washington, D.C.

Filed June 1, 1973, Ser. No. 365,899
Int. Cl.² C09F 1/00
U.S. Cl. 260—106 7 Claims

1. A process for making ponderosa FF wood rosin effective as a rubber tackifier which process comprises pyrolyzing said rosin at a temperture of about 500°–800°C in the absence of catalyst for a period of about 0.01 to 10 seconds.

3,929,756

SYNTHETICALLY PRODUCED TRIDECAPEPTIDE HAVING THE SAME ACTIVITY AS THE HYPOTHALAMIC SUBSTANCE, NEUROTENSIN

Susan E. Leeman, Newton, and Robert E. Carraway, Brockton, both of Mass., assignors to Brandeis University, Waltham, Mass.

Filed Nov. 21, 1973, Ser. No. 417,816
Int. Cl.² C07C 103/52; A61K 37/00
U.S. Cl. 260—112.5 R 6 Claims

1. The chemically synthesized tridecapeptide, pyroglutamyl-leucyl-tyrosyl-glutamyl-asparaginyl-lysyl-prolyl-arginyl-arginylprolyl-tyrosyl-ileucinyl-leucyl-OH, said tridecapeptide having the same activity as the hypothalamic substance, neurotensin.

3,929,757

METHOD FOR THE PREPARATION OF HIGH PURITY KALLIKREIN

Miyazakai Hiroshi, Kawasaki; Kato Kazuo, Tokyo, and Koyama Michinori, Tokyo, all of Japan, assignors to Nippon Kayaku Co., Ltd., Tokyo, Japan

Filed May 15, 1974, Ser. No. 470,229
Claims priority, application Japan, May 17, 1973, 48-54136
Int. Cl.² C07C 103/52; C08H 1/00
U.S. Cl. 260—112.5 R 4 Claims

1. A method for the preparation of high purity kallikrein, which comprises contacting an autolysate obtained from organs of mammals, human urine or a low purity kallikrein-containing solution with a highly cross-linked macroporous type anion exchange resin having a tertiary amine as an exchange group for having kallikrein adsorbed in said anion exchange resin, and washing the kallikrein absorbed anion exchange resin with an electrolyte having a pH of 6.0 to 8.5 and a concentration of 0.25 M or less and eluting the kallikrein with an electrolyte having a pH of 6.0 to 8.5 and a concentration of 0.6M or more.

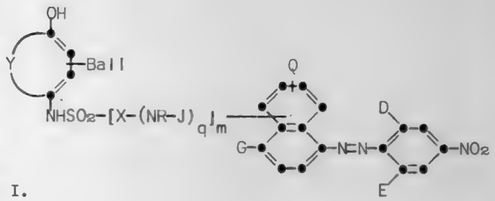
3,929,760

CYAN IMAGE-PROVIDING PHENYLAZONAPHTHYL DYES

Richard A. Landholm; Jan R. Haase, both of Rochester, N.Y., and James J. Krutak, Sr., Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

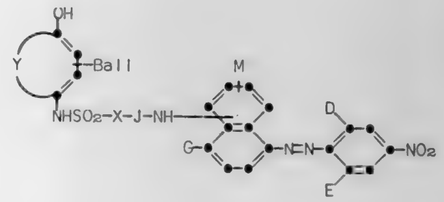
Continuation-in-part of Ser. No. 331,727, Feb. 12, 1973, abandoned. This application Feb. 5, 1974, Ser. No. 439,788
Int. Cl.² C09B 29/10, 29/20; G03C 5/30, 5/54
U.S. Cl. 260—197 14 Claims

1. A cyan image dye-providing compound having a formula as follows:



I.

or



II.

wherein

Ball represents an organic ballasting group containing at least 8 carbon atoms which renders said compound nondiffusible in a photographic element during development in an alkaline processing composition;

Y represents the carbon atoms necessary to complete a benzene or naphthalene nucleus;

X represents $—R^2—L_n—R^2_p—$ where each R^2 can be the same or different and each represents alkylene having 1 to 8 carbon atoms; phenylene; or phenylene substituted with chloro, bromo, cyano, nitro, methoxy, methyl, carboxy or sulfo; L represents oxy, carbonyl, carboxyamido, carbamoyl, sulfonamido, sulfamoyl, sulfinyl or sulfonyl; n is an integer having a value of 0 or 1; p is 1 when n equals 1 and p is 1 or 0 when n equals 0, provided that when p is 1 the carbon content of the sum of both R^2 radicals does not exceed 14 carbon atoms;

R represents hydrogen or alkyl having 1 to 6 carbon atoms; J represents sulfonyl or carbonyl;

m and q each represent an integer having a value of 0 or 1;

Q represents hydrogen, hydroxy or $—NHCOR^3$ or $—NHSO_2R^3$ wherein R^3 is alkyl having 1 to 6 carbon atoms, alkyl having 1 to 4 carbon atoms substituted with hydroxy, cyano, sulfamoyl, carboxy or sulfo; benzyl, phenyl, or phenyl substituted with carboxy, chloro, methyl, methoxy or sulfamoyl;

3,929,758

CYCLIZATION OF CYSTEINE-CONTAINING PEPTIDES

John Lawrence Hughes, Kankakee; Jay Kenneth Seyler, Bourbonnais, and Robert Chung-Huang Liu, Kankakee, all of Ill., assignors to Armour Pharmaceutical Company, Phoenix, Ariz.

Filed Sept. 12, 1974, Ser. No. 505,344
Int. Cl.² C07C 103/52; C08H 1/00
U.S. Cl. 260—112.5 R 38 Claims

1. In a process for preparing a peptide having a disulfide ring structure, the step of holding a peptide which contains at least two cysteine moieties in its amino acid chain one of which contains a free sulfhydryl function and the other having its sulfhydryl function protected by an n-alkylthio group which participates in a disulfide bond with the thiol function of said other moiety in a solution substantially free of oxygen until rearrangement has taken place to yield the cyclic disulfide peptide.

3,929,759

P-GLU-D-PHE-TRP-SER-TYR-D-ARG-LEU-ARG-PRO-GLY-NH_2 AND INTERMEDIATES

Theodore J. Foell, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 4, 1974, Ser. No. 520,591
Int. Cl.² C07C 103/52; A61K 37/00
U.S. Cl. 260—112.5 LH 8 Claims

1. A compound selected from the group consisting of

L-p-Glu-D-Phe-L-Trp-L-Ser-L-Tyr-D-Arg-L-Leu-L-Arg-L-Pro-Gly-NH_2

and

R^4-L-p-Glu-D-Phe-L-Trp-L-Ser(R^3)-L-Tyr(R^3)-D-Arg(N^G-R^5)-L-Leu-L-Arg(N^G-R^1)-L-Pro-Gly-R

and its non-toxic salts; wherein

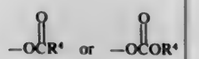
R is selected from the class consisting of NH_2, OH, O—(lower)alkyl and O-benzyl; R^1 and R^5 are selected form the class consisting of hydrogen and a protecting group for the N , N and N nitrogen atoms of arginine selected from nitro, tosyl, benzyloxycarbonyl and adamantyloxycarbonyl;

R^3 is selected form the class consisting of hydrogen and a protecting group for the phenolic hydroxyl group of tyrosine selected from tert-butyl, tetrahydropyranyl, trityl, benzyl, 2,6-dichlorobenzyl, benzyloxycarbonyl and 4-bromobenzyloxycarbonyl;

R^3 is selected from the class consisting of hydrogen and a protecting group for the alcoholic hydroxyl group of serine and is selected from acetyl, benzoyl, tetrahydropyranyl, tert-butyl, trityl, 2,6-dichlorobenzyl, benzyl and benzyloxycarbonyl;

R^4 is selected from the class consisting of hydrogen and an α-amino protecting group, with the proviso that at least one of R^1, R^2, R^3 and R^5 is a protecting group.

G represents hydroxy, an alkali metal salt thereof, a photographically inactive amine salt thereof or a hydrolyzable acyloxy group having the formula:

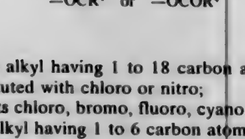


wherein R^4 is alkyl having 1 to 18 carbon atoms, phenyl or phenyl substituted with chloro or nitro;

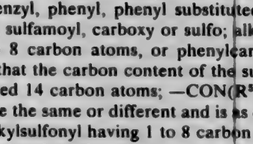
D represents chloro, bromo, fluoro, cyano, nitro, trifluoromethyl, alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms, carboxy, $-COOR^4$ wherein R^4 is as described previously, fluorosulfonyl, $-SO_3$-phenyl or $-SO_3$-phenyl substituted with hydroxy, chloro, carboxy, sulfamoyl, methyl or methoxy; sulfo, $-SO_3NR^5R^6$ wherein R^5 represents hydrogen or alkyl having 1 to 6 carbon atoms and R^6 represents hydrogen, alkyl having 1 to 6 carbon atoms, alkyl having 1 to 4 carbon atoms substituted with hydroxy, cyano, sulfamoyl, carboxy or sulfo; benzyl, phenyl, phenyl substituted with hydroxy, sulfonyl, sulfamoyl, carboxy or sulfo; alkylcarbonyl having 1 to 8 carbon atoms, or phenylcarbonyl, with the proviso that the carbon content of the sum of R^5 and R^6 not exceed 14 carbon atoms; $-CON(R^5)_2$ wherein each R^5 can be the same or different and is as described previously; alkylsulfonyl having 1 to 8 carbon atoms; alkylsulfonyl having 1 to 6 carbon atoms substituted with hydroxy, phenyl, cyano, sulfamoyl, carboxy or sulfo; phenylsulfonyl; phenylsulfonyl substituted with hydroxy, sulfonyl, sulfamoyl, carboxy or sulfo; or D represents



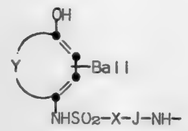
or



provided that the



on the naphthalene nucleus of Formula I is replaced by M or the



on the naphthalene nucleus of Formula II is replaced by Q wherein Car, X, J, R, *q* and *m* are as described previously;

E represents hydrogen, chloro, bromo, fluoro, nitro, cyano or trifluoromethyl;

M represents hydrogen, carboxy, $-COOR^4$ wherein R^4 is as described previously, sulfo, $-SO_3NR^5R^6$, $-CON(R^5)_2$ wherein R^5 and R^6 are as described previously, alkylsulfonyl having 1 to 8 carbon atoms; alkylsulfonyl having 1 to 6 carbon atoms substituted with cyano or hydroxy; phenylsulfonyl or phenylsulfonyl substituted with sulfamoyl, carboxy, fluorosulfonyl or methoxy;

with the proviso there be no more than one sulfo and no more than one carboxy present in said compound.

3,929,761

3-DEOXYKANAMYCIN

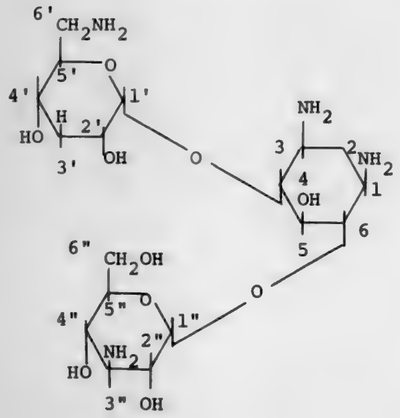
Sumio Umezawa; Hamao Umezawa, both of Tokyo, and Tsutomu Tsuchiya, Yokohama, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Continuation-in-part of Ser. No. 203,454, Nov. 30, 1971, abandoned. This application Mar. 11, 1974, Ser. No. 449,991

Int. Cl.² C07H *15/22*

U.S. Cl. 260—210 K **1 Claim**

1. 3′-Deoxykanamycin of the formula



3,929,762

3′-DEOXY DERIVATIVES OF NEAMINE AND ITS RELATED AMINOGLYCOSIDIC ANTIBIOTICS, AND THE PRODUCTION THEREOF

Hamao Umezawa; Sumio Umezawa, both of Tokyo, and Osamu Tsuchiya, Yokohama, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

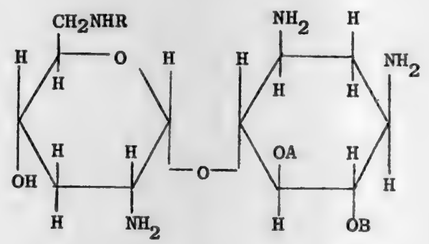
Continuation-in-part of Ser. No. 390,403, Aug. 22, 1973. This application Dec. 5, 1973, Ser. No. 421,821

Claims priority, application Japan, Aug. 23, 1972, 47-83671; Dec. 8, 1972, 47-122436

Int. Cl.² C07G *3/00*

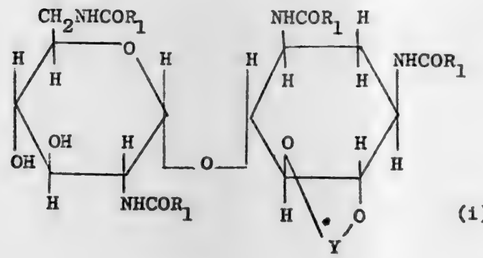
U.S. Cl. 260—210 AB **17 Claims**

1. A process for the production of a 3′-deoxy derivative of an aminoglycosidic antibiotic of the formula:

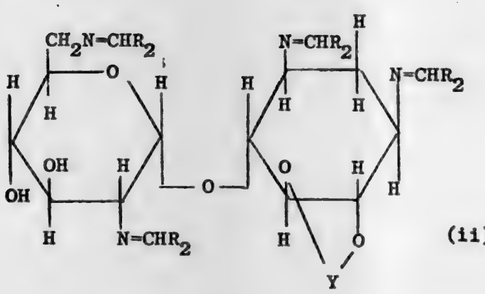


wherein R is hydrogen or alkyl of 1–4 carbon atoms; A is hydrogen or β-D-ribofuranosyl: B is hydrogen or 3-amino-3-deoxy-α-D-glucopyranosyl, provided that A is not β-D-ribofuranosyl when B is 3-amino-3-deoxy-α-D-glucopyranosyl, which comprises

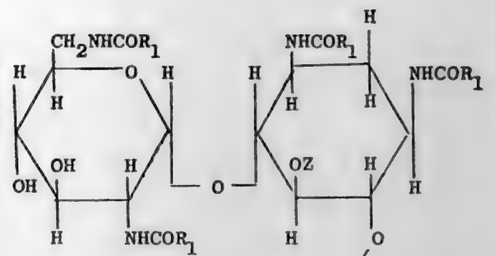
a. preferentially 3′ sulfonating an amino-protected and hydroxyl-protected aminoglycoside selected from the group consisting of compounds of the formulae (i) through (vi):



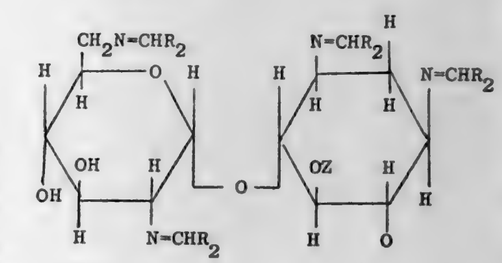
(i)



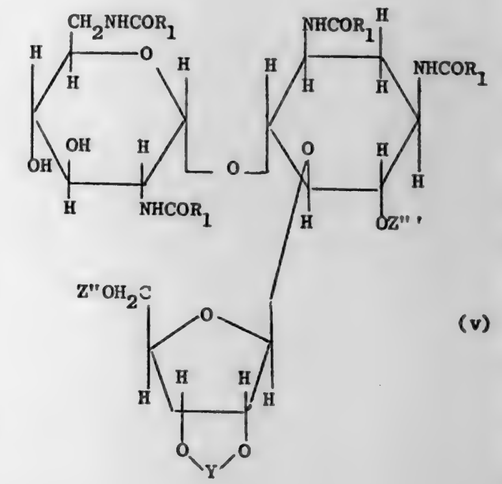
(ii)



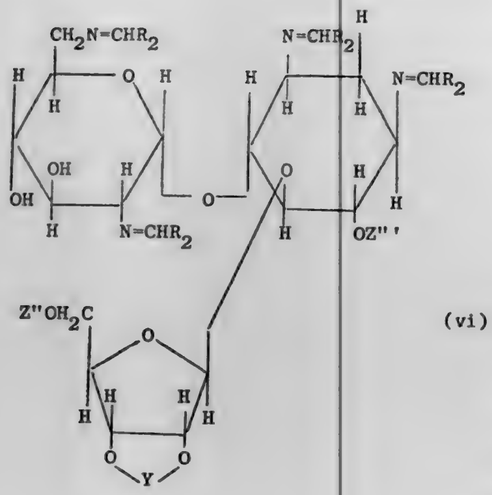
(iii)



(iv)



(v)

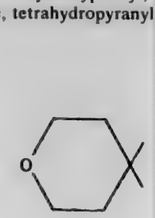


wherein:

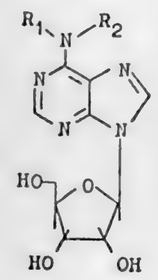
R_1 is hydrogen, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, phenyl, phenoxy, benzyloxy or p-nitrobenzyloxy;

R_2 is hydrogen, alkyl of 1–6 carbon atoms, phenyl, p-methoxylphenyl or o-hydroxyphenyl;

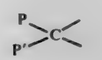
Y is cyclohexylidene, tetrahydropyranyl of the formula



or



a group of the formula



wherein:

P and P′ are each hydrogen, alkyl of 1–4 carbon atoms, phenyl, p-methoxylphenyl or o-hydroxyphenyl;

Z is hydrogen, alkanoyl of 2–5 carbons, hemiacetal or hemiketal;

Z′ is hydrogen, alkanoyl of 2–5 carbon atoms, benzyl, alkylsulfonyl of 1–4 carbon atoms, benzylsulfonyl, phenylsulfonyl or p-tolylsulfonyl; and

Z″ and Z‴ are each alkanoyl of 2–5 carbon atoms, benzoyl or benzyl, by reacting said protected aminoglycoside with up to 1.5 moles of a sulfonylating agent of the formula R_3SO_3X or $(R_3SO_3)O$ wherein R_3 is alkyl of 1–4 carbon atoms, benzyl, phenyl or p-tolyl and X is halogen, in a basic solvent at a temperature of up to 100° C. for a period of time sufficient to preferentially sulfonylate the 3′-hydroxyl group of said protected aminoglycoside;

b. removing the 3′-sulfonic ester from the resultant product by 3′-iodination or 3′-bromination; and

c. reducing the resultant 3′-iodinated or 3′-brominated product to form the corresponding 3′-deoxy derivative of said aminoglycoside.

3,929,763

N(6)-DISUBSTITUTED ADENOSINE COMPOUNDS

(vi) **Erich Faulandt, Mannheim-Gartenstadt; Wolfgang Kampe, Heddesheim; Max Thiel, Mannheim; Harald Stork, Mannheim-Feudenheim, and Felix Helmut Schmidt, Mannheim-Seckenheim, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany**

Filed May 30, 1974, Ser. No. 474,833

Claims priority, application Germany, July 31, 1973, 2338705

Int. Cl.² C07H *19/16*

U.S. Cl. 260—211.5 R **5 Claims**

1. An N(6)-disubstituted adenosine compound of the formula

wherein

R_1 is hydroxy- or C_{1-4}-alkoxy-substituted-alkyl of 1 to 8 carbon atoms, or hydroxy- or C_{1-4}-alkoxy-substituted cycloalkyl of 5-10 carbon atoms, and

R_2 is cycloalkyl or bicycloalkyl of 5 to 10 carbon atoms, or cycloalkyl or bicycloalkyl of 5 to 10 carbon atoms substituted by alkyl of 1 to 8 carbon atoms,

or a pharmacologically compatible salt thereof.

3,929,764

N(6)-DISUBSTITUTED ADENOSINE COMPOUNDS

Erich Fauland, Mannheim-Gartenstadt; Wolfgang Kampe, Heddesheim; Kurt Stach, Mannheim-Waldhof; Harald Stork, Mannheim-Feudenheim, and Karl Dietmann, Mannheim-Vogelstang, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim-Waldhof, Germany

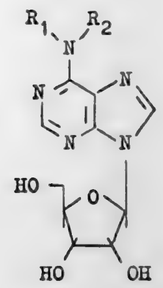
Filed June 25, 1974, Ser. No. 482,976

Claims priority, application Germany, Aug. 1, 1973, 2338963

Int. Cl.² C07H *19/16*

U.S. Cl. 260—211.5 R **14 Claims**

1. N(6)-disubstituted adenosine compounds of the formula:



(I),

wherein

R_1 is alkenyl of up to 6 carbon atoms, cycloalkenyl or cycloalkenyl-alkyl of 5 to 10 carbon atoms in the cyclic moiety and up to 6 carbon atoms in the alkyl moiety; and R_2 is alkenyl of up to 6 carbon atoms, cycloalkenyl of 5 to 10 carbon atoms, straight or branched-chain alkyl of up to 6 carbon atoms, cycloalkyl of 5 to 10 carbon atoms, bicycloalkyl of up to 10 carbon atoms, alkyl-cycloalkyl of from 5 to 10 carbon atoms in the cyclic moiety and up to 6 carbon atoms in the alkyl moiety, and alkyl-bicycloalkyl of up to 6 carbon atoms in the alkyl moiety and of up to 10 carbon atoms in the bicycloalkyl moiety;

and the pharmacologically acceptable salts thereof.

3,929,765

NOVEL 3-SUBSTITUTED-AMINOAZETIDINE DERIVATIVES AND PROCESS FOR PREPARATION THEREOF

Yasushi Suzuki, Yokohama; Yukio Hasegawa, Kawasaki; Kunio Tsukamoto, Tokyo; Yoshio Hiramatsu, and Katsuhiko Miyasaka, both of Kawasaki, all of Japan, assignors to Teikoku Hormone Mfg. Co. Ltd., Tokyo, Japan

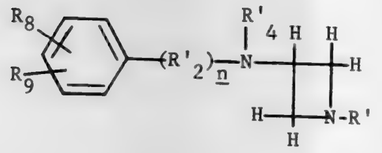
Filed Aug. 18, 1972, Ser. No. 281,804

Claims priority, application Japan, Aug. 21, 1971, 46-63722

Int. Cl.² C07D *205/04*

U.S. Cl. 260—239 A **9 Claims**

1. The compound of the formula



wherein

R′ is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, a mono- or diphenyl alkyl in which alkyl moiety has 1 to 4 carbon atoms, or a cycloalkyl of 3 to 6 atoms,

R′ is a straight or branched alkylene of 1 to 4 carbon atoms,

n is 0 or 1,

R_8 and R_9, which may be the same or different, and are selected from the group consisting of hydrogen, halogen alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkoxycarbonyl of 2 to 4 carbon atoms, haloalkyl of 1 to 4 carbon atoms or carboxyl, with the proviso that two adjacent t-butyl groups or the combination of an alkoxycarbonyl and a carboxyl group does not occur and R'_4 stands for hydrogen, alkyl of 1 to 4 carbon atoms, allyl, cycloalkyl of 3 to 7 carbon atoms, alkylcarbonyl of 2 to 4 carbon atoms or an alkoxycarbonyl of 2 to 4 carbon atoms; and an ammonium salt thereof in which ammonium salts are located at the 1-position, 3-substituted-N-position or 1-and 3-substituted-N-positions.

3,929,766

NOVEL 2[2-(1,3-DIAZACYCLOALK-2-ENYL)]BENZOPHENONE DERIVATIVES AND NOVEL 1,3-DIAZACYCLOALKENYL[2,1-a]ISOINDOLE DERIVATIVES

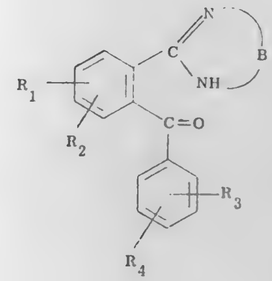
Werner Metlesics, Clifton, and Leo Henryk Sternbach, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 639,315, May 18, 1967, Pat. No. 3,888,846, which is a continuation-in-part of Ser. No. 626,965, March 30, 1967. This application July 30, 1974, Ser. No. 493,020

Int. Cl.² C07D *243/04*

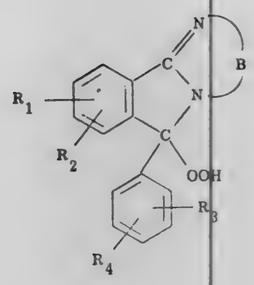
U.S. Cl. 260—239 BC **1 Claim**

1. A process for the preparation of a compound of the formula



wherein B represents an alkylene chain of 2 to 4 carbon atoms in which one or more of the hydrogens can be replaced by lower alkyl; and R_1, R_2, R_3, and R_4 are each independently selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy, and trifluoromethyl

and the tautomers thereof, which comprises treating a hydroperoxy derivative of the formula:



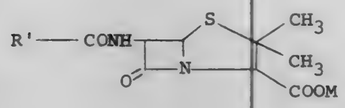
wherein B, R_1, R_2, R_3, and R_4 are as defined hereinabove with a reducing agent selected from the group consisting of sodium sulfite and trialkyl phosphite.

3,929,767
PROCESS OF PRODUCING SEMI-SYNTHETIC PENICILLIN

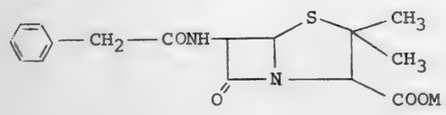
Masuo Murakami, Tokyo; Akio Koda, Hoya; Mutsuo Takashima, Kawagoe; Etuo Takagi; Ichiro Sakoh, both of Tokyo; Hideya Matsuda, Urawa, and Tsutomu Suzuki, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1972, Ser. No. 305,007
Claims priority, application Japan, Nov. 16, 1971, 46-91642; Feb. 23, 1972, 47-19075
Int. Cl.² C07D *499/04*
U.S. Cl. 260—239.1 **1 Claim**

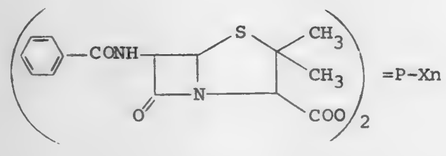
1. A process for the production of a semi-synthetic penicillin of the formula:



wherein R′ is a member selected from the group consisting of α-azidobenzyl, α-aminobenzyl, α-carboxybenzyl, isoxazolyl substituted by methyl, isoxazolyl substituted by phenyl, isoxazolyl substituted by chlorophenyl, phenoxypropyl, biphenylyl, quinoxalyl substituted by carboxy, and aminocyclohexyl and M is a member selected from the group consisting of hydrogen and an alkali metal, which comprises contact benzyl penicillin of the formula:



in which M is as defined in an inert solvent in the presence of a base and under cooling with 0.5 to 1 molar of a member selected from the group consisting of phosphorous trichloride, and phosphorous pentachloride to obtain an acid anhydride of penicillin of the formula:



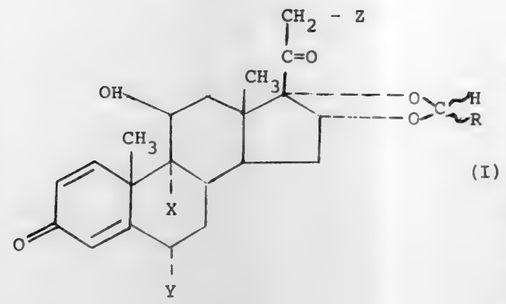
in which X is chloro and *n* is 1 or 3, reacting said acid anhydride of penicillin with a phosphorous halide in an inert solvent in the presence of 3 to 5 mols of tertiary amine per mole of phosphorous halide in an inert solvent to obtain an iminohalide compound, reacting said iminohalide compound with a lower alkanol to obtain an iminoether compound condensing the iminoether compound with a member selected from the group consisting of R′COOH in which R′ is as defined above, and the corresponding acid anhydride and acid chloride and adding the condensed product to a member selected from the group consisting of water and lower alkanol.

3,929,768
STEROIDS, PROCESSES FOR THEIR MANUFACTURE AND PREPARATIONS CONTAINING SAME

Ralph Lennart Brattsand; Bo Thuresson af Ekenstam, both of Molndal; Karl Göran Claeson, Goteborg, and Bror Arne Thalen, Molndal, all of Sweden, assignors to AB Bofors, Bofors, Sweden

Filed May 14, 1973, Ser. No. 360,051
Claims priority, application Sweden, May 19, 1972, 6644/72
Int. Cl.² C07J *17/00*
U.S. Cl. 260—239.55 D **29 Claims**

1. 2′-unsymmetrical-stereoisometric mixtures of 16,17 alkylenedioxy steroids having the general formula:



(I)

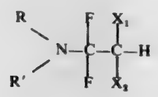
wherein X and Y are independently selected from hydrogen and fluorine, X being selected from hydrogen and fluorine when Y is hydrogen and X being fluorine when Y is fluorine, Z is selected from hydroxyl and esterified hydroxyl wherein the hydroxyl group is esterified with a member of the group consisting of phosphoric and sulphuric acids, dicarboxylic acids having 2 – 12 carbon atoms, pyridine-3-carboxylic acid, pyridine-4-carboxylic acid, benzofurane-2-carboxylic acid, and menthoxymethylcarboxylic acid, and lower-alkanoic acids having up to a maximum of 8 carbon atoms, and R is selected from straight and branched hydrocarbon chains having 2 – 10 carbon atoms.

3,929,769
PROCESS FOR THE MANUFACTURE OF STEROID EPOXIDES

Heinz Kaufmann, Fullinsdorf, and Albert Wettstein, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

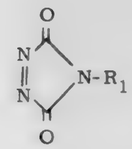
Continuation of Ser. No. 360,230, May 14, 1973, abandoned. This application Mar. 14, 1974, Ser. No. 451,261
Claims priority, application Switzerland, May 19, 1972, 7479/72
Int. Cl.² C07J *17/00*
U.S. Cl. 260—239.55 R **11 Claims**

1. A process for the manufacture of 5α,6α-steroid epoxides, wherein a 5α,6β-dihydroxy steroid is reacted in an inert organic solvent with an amine of the formula (I)

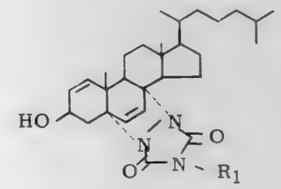


(I)

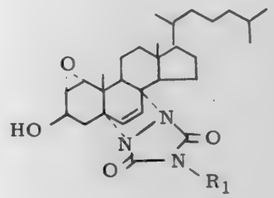
in which X_1 represents chlorine or fluorine, X_2 represents chlorine, fluorine or trifluoromethyl group, and R and R′ represent alkyl radicals or together with the nitrogen atom to which they are bonded jointly represent a heterocyclic radical with 5 to 7 ring atoms, and the 5,6 epoxides are isolated.



wherein R_1 represents an alkyl or aryl group, reacting the resulting 1,4-cyclized adduct represented by the following general formula:



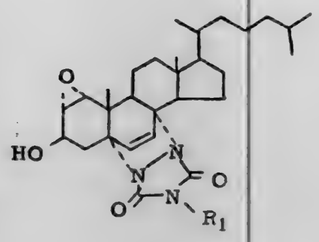
wherein R_1 is defined as above, with a peroxide, reducing the resulting 1α,2α-epoxide compound represented by the following general formula:



wherein R_1 is as defined above, with an alkali metal aluminum hydride, subjecting the resulting cholesta-5,7-diene-1α,3β-

diol to radiation of ultraviolet rays and allowing the resulting $1\alpha,3\beta$-dihydroxyprovitamin D_3 to stand in the dark.

5. The compound having the formula:



where R_1 is defined as above.

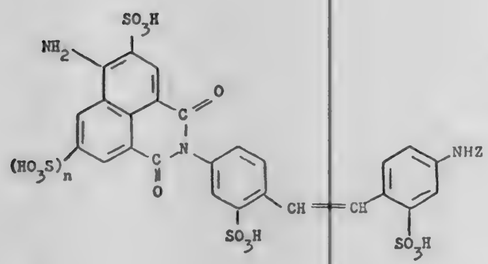
3,929,771

NEW REACTIVE DYESTUFFS

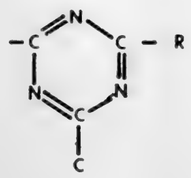
Peter William Austin, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 21, 1974, Ser. No. 453,634
Claims priority, application United Kingdom, May 9, 1973, 22148/73
Int. Cl.² C07D *213/46*, *211/86*
U.S. Cl. 260—240 R 4 Claims

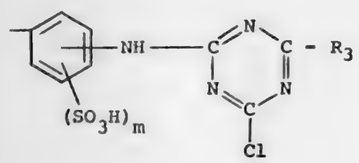
1. A dyestuff of the formula



wherein n is 0 or 1 and Z is a cellulose reactive group selected from the group consisting of sulphatoethylsulphonyl, tetrafluorocyclobutane carbonyl, trifluorocyclobutane carbonyl, tetrafluorocyclobutylacryloyl, trifluorocyclobutyl-acryloyl, dichloroquinoxaline-sulphonyl, dichloroquinoxaline-carbonyl, dichloroquinazoline-sulphonyl, trichloroquinazoline-sulphonyl, dichloroquinazoline-carbonyl, dichlorophthalazine-carbonyl, dichloropyridazonylpropionyl, methanesulphonyl-chloro-methylpyrimidyl, dichloropyridazonylbenzoyl, dichloropyridazonyl-benzene sulphonyl, dibromo-s-triazinyl, dichloropyrimidyl, trichloropyrimidyl, dibromopyrimidyl, methyl-dichloropyrimidyl, cyano-dichloropyrimidyl, nitro-dichloropyrimidyl, lower alkoxy carbonyl-dichloropyrimidyl,



wherein R is Cl, lower alkoxy, phenoxy, sulphophenoxy, sulphonaphthoxy, $-NR_1R_2$ wherein R_1 is H, lower alkyl or CH_2SO_3H and R_2 is H, hydroxy lower alkyl, phenyl, sulphophenyl, disulphophenyl, carboxyphenyl, sulphatoethylsulphonylphenyl, sulpho-carboxyphenyl, sulphotolyl, disulphotolyl, sulphonaphthyl, disulphonaphthyl, methyl-sulphobenzthiazolylphenyl, sulphoindazolyl, or



wherein m is 1 or 2 and R_3 is Cl, NH_2, phenoxy or NHR_4 wherein R_4 is sulphophenyl, tolyl, sulphotolyl, carboxyphenyl, disulphophenyl or sulphonaphthyl.

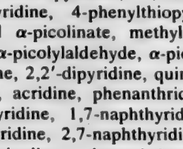
3,929,772

DYE INTERMEDIATES

Thomas Dean Weaver, Rochester, N.Y., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed June 4, 1974, Ser. No. 476,318
Int. Cl.² C07D *261/00*, *413/14*
U.S. Cl. 260—240.4 10 Claims

1. Dye intermediates having the formula



wherein R is selected from alkyl, alkaryl, and aryl and R_1 is selected from alkyl, alkaryl, aryl, and hydrogen.

5. A method of producing quaternated merocyanine dyes comprising reacting a compound of claim 1 with the quaternary salt of a cyanine dye-forming nucleus.

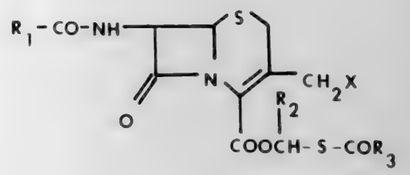
3,929,774

ACYLTHIOMETHYL ESTERS OF CEPHALOSPORINS

Hermann Breuer, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 277,700, Aug. 3, 1972, Pat. No. 3,860,591. This application Oct. 21, 1974, Ser. No. 516,566
Int. Cl.² C07D *501/24*
U.S. Cl. 260—243 C 9 Claims

1. A compound of the formula



wherein R_1 is tetrazolylmethyl or (lower alkyl)tetrazolylmethyl; R_2 is hydrogen or lower alkyl; R_3 is lower alkyl; and X is thiadiazolylthio or (lower alkyl)thiadiazolylthio.

3,929,773

PROCESS FOR PREPARATION OF A PALLADIUM COMPLEX COMPOUND

Takeshi Yamahara, Itami; Takashi Deguchi, Ibaraki, and Shinji Nakamura, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed Apr. 5, 1974, Ser. No. 458,416
Claims priority, application Japan, Apr. 5, 1973, 48-39357
Int. Cl.² C07F *15/00*
U.S. Cl. 260—242 6 Claims

1. A process for preparation of a palladium complex compound represented by the formula PdL_2X_2, wherein L is a nitrogen-containing heteroaromatic compound and X is a halogen atom, which comprises reacting (A) metallic palladium, (B) a nitrogen-containing heteroaromatic compound selected from the group consisting of pyridine, 2-chloropyridine, 2-bromopyridine, 2-fluoropyridine, 4-phenylpyridine, α-picoline, 5-ethyl-α-picoline, lutidine, 2-vinylpyridine, 2-styrylpyridine, 3-chloropyridine, 2,6-dichloropyridine, 2-chloro-4-methylpyridine, 4-phenylthiopyridine, 2-methoxypyridine, phenyl α-picolinate, methyl α-picolinate, 2,6-dicyanopyridine, α-picolylaldehyde, α-picolinamide, 5,6,7,8-tetrahydroquinoline, 2,2′-dipyridine, quinoline, isoquinoline, 2-chloroquinoline, acridine, phenanthridine, 1,5-naphthyridine, 1,6-naphthyridine, 1,7-naphthyridine, 1,8-naphthyridine, 2,6-naphthyridine, 2,7-naphthyridine, benzo[h]quinoline, benzo[f]quinoline, benzo[g]quinoline, benzo[h]isoquinoline, benzo[f]isoquinoline, benzo[g]isoquinoline, pyrazine, pyrimidine, pyridazine, quinazoline, phthalazine, quinoxaline, cinnoline, phenazine, polyvinylpyridine and styrene-vinylpyridine copolymer, (C) a halogen compound selected from the group consisting of hydrogen fluoride, hydrogen chloride, hydrogen bromide, hydrogen iodide, aluminum chloride, aluminum bromide, boron chloride, carbon tetrachloride, chloroform, bromoform, phosgene, carbonyl bromide, benzyl chloride, benzyl bromide, benzotrichloride, acetyl chloride, benzoyl chloride, phthaloyl dichloride, silicon tetrachloride, trimethylsilyl chloride, dimethyldichlorosilane, tin tetrachloride, titanium tetrachloride, phosphorus trichloride, phosphorus pentachloride, phosphorus tribromide, phosphorus pentabromide, phosphorus oxychloride, thionyl chloride, thionyl bromide, sulfuryl chloride, tetramethylammonium chloride and tetramethylammonium bromide and (D) an oxygen-containing oxidizing agent, the nitrogen-containing heteroaromatic compound being used in an amount of about 2 to 200 moles per one mole of the metallic palladium, the halogen compound being used in a stoichiometric amount or in excess with respect to the metallic palladium and the oxygen-containing oxidizing agent being used in an equimolar amount or more, in terms of the effective oxygen atom therein, with respect to the metallic palladium.

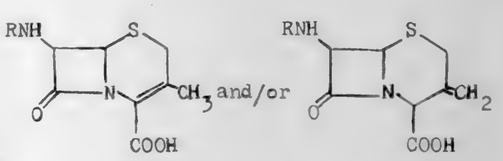
3,929,775

PROCESS FOR PRODUCING CEPHALOSPORIN DERIVATIVES

Michihiko Oshiai, Osaka; Osami Ari, Hyogo; Akira Morimoto, Osaka; Taiiti Okada, Kyoto, and Katsutada Masuda, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

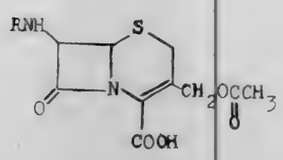
Filed Dec. 3, 1971, Ser. No. 204,771
Claims priority, application Japan, Dec. 8, 1970, 45-109159; Mar. 23, 1971, 46-16726; May 20, 1971, 46-34207
Int. Cl.² C07D *501/02*
U.S. Cl. 260—243 C 13 Claims

1. A process for producing a compound of the formula:



wherein R is hydrogen or an acyl group selected from the group consisting of 5-amino-5-carboxyvaleryl, thienylacetyl, phenylglycyl, α-sulfophenylacetyl, pyridylthioacetyl, phenoxyacetyl, 5-methyl-3-phenyl-4-isoxazolylcarbonyl, 1-cyclohex-

enylglycyl, cyanoacetyl, tetrazolylacetyl, β-ethylsulfonylethoxycarbonyl and β-phenylsulfonylethoxycarbonyl, which comprises reacting a compound of the formula:



wherein R is as defined above, with a compound selected from the group consisting of chromous acetate, chromous sulfate, chromous chloride and chromous ethylenediamine at a temperature of from 0°C to 100°C and at a pH of from 2 to 8.

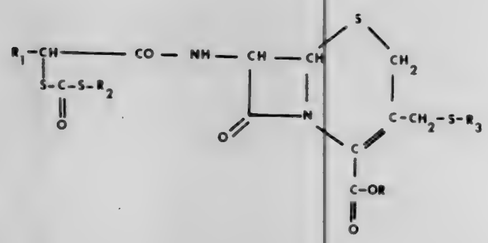
3,929,776

3-HETEROTHIO DERIVATIVES OF [(THIOALKOXYCARBONYL)THIOACETYL]CEPHALOSPORINS

Uwe D. Treuner, and Hermann Breuer, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

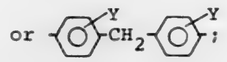
Filed May 10, 1974, Ser. No. 468,727
Int. Cl.² C07D *501/50;* **A61K** *31/545*
U.S. Cl. 260—243 C **10 Claims**

1. A compound of the formula



wherein R is

or



Y is hydrogen, methyl or halogen; X is



wherein R is hydrogen, lower alkyl, phenyl-lower alkyl, benzhydryl, tri(lower alkyl)stannyl, tri(lower alkyl)silyl, $-CH_2-OCO-R_4$, alkali metal, alkaline earth metal, mono(lower alkyl amine) salt or tri(lower alkylamine) salt; R_1 is hydrogen, lower alkyl, phenyl, pyridyl, thienyl or furyl; R_2 is lower alkyl; R_3 is a five membered heterocyclic of the group thiadiazole, triazole, tetrazole and the lower alkyl substituted members of said heterocyclics; and R_4 is lower alkyl, phenyl, phenyl-lower alkyl or benzhydryl; said lower alkyl groups having one to seven carbons.

Q is $-CH_3$ or $-CH_2OCOCH_3$; Z is hydrogen, an alkali metal salt, an alkaline earth metal salt, NH_4, alkyl of 1 to 4 carbons, trichloroethyl, pivaloyloxymethyl, benzyl, p-nitrophenyl, trimethylsilyl, trimethylstannyl, methoxymethyl, triethylamine, procaine, dibenzylamine, N-benzyl-β-phenethylamine, N,N-dibenzylethylenediamine, or N-ethylpiperidine; and *n* is 2, 3 or 4.

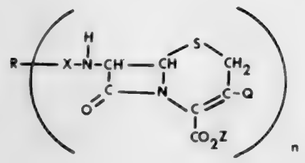
3,929,777

BIS-CEPHALOSPORINE

Donald J. Perrella, Princeton Junction, N.J., and Joseph E. Dolfini, Cincinnati, Ohio, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 291,442, Sept. 22, 1972, Pat. No. 3,825,536. This application May 30, 1974, Ser. No. 474,734
Int. Cl.² C07D *501/22*
U.S. Cl. 260—243 C **8 Claims**

1. A compound of the formula



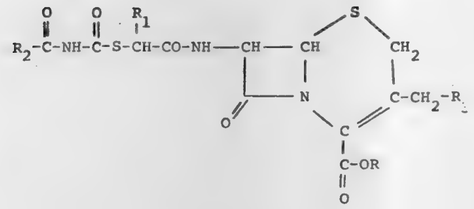
3,929,778

[(ACYLCARBAMOYL) THIOACETYL] CEPHALOSPORIN DERIVATIVES

Hermann Breuer, and Uwe D. Treuner, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 8, 1974, Ser. No. 495,597
Int. Cl.² C07D *501/28;* **A61K** *31/545*
U.S. Cl. 260—243 C **13 Claims**

1. A compound of the formula



wherein R is hydrogen, lower alkyl, phenyl-lower alkyl, diphenylmethyl, tri(lower alkyl)silyl,



alkali metal, alkaline earth metal, mono(lower alkyl)amine salt or tri(lower alkyl)amine salt; R_1 is hydrogen, lower alkyl, phenyl, thienyl or furyl; R_2 is lower alkyl, lower alkoxy, phenyl, phenyl-lower alkyl or diphenylmethyl; R_3 is hydrogen, hydroxy or lower alkanoyloxy; R_4 is lower alkyl, phenyl, phenyl-lower alkyl or diphenylmethyl; and R_5 is hydrogen or lower alkyl; said lower alkyl, lower alkoxy and lower alkanoyloxy groups having up to seven carbon atoms.

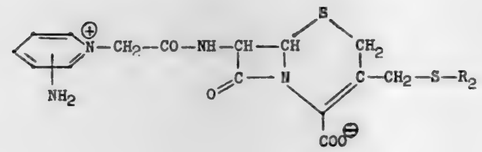
3,929,779

AMINOPYRIDINIUM ACETYL CEPHALOSPORANES

Hans Bickel, Binningen, and Johannes Mueller, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,802
Claims priority, application Switzerland, Apr. 21, 1971, 5768/71; June 16, 1971, 8823/71; Oct. 4, 1971, 14463/71
Int. Cl.² C07D *501/58*
U.S. Cl. 260—243 C **6 Claims**

1. Compounds of the general formula I



wherein R_2 represents a heterocyclic radical of aromatic character having 5 to 6 ring atoms, bonded via a carbon atom to the sulfur atom and which contains at least 3 nitrogen atoms, said heterocyclic radical being unsubstituted or substituted by lower alkyl, lower alkoxy, lower alkylthio, cyclopentyl, cyclohexyl, unsubstituted phenyl, substituted phenyl, unsubstituted thienyl, substituted thienyl, the substituents of phenyl and thienyl being nitro, halogen, lower alkyl or lower alkoxy and therapeutically acceptable salts of these compounds.

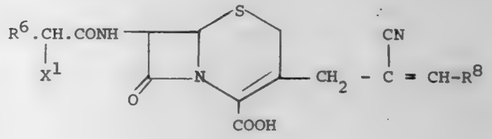
3,929,780

CEPHALOSPORIN COMPOUNDS

Niall Galbraith Weir, London, England, assignor to Glaxo Laboratories Limited, Greenford, England

Filed July 18, 1972, Ser. No. 272,945
Claims priority, application United Kingdom, July 1, 1971, 34268/71
Int. Cl.² C07D *501/20, 501/18*
U.S. Cl. 260—243 C **8 Claims**

1. A cephalosporin antibiotic compound of the formula



wherein R^6 is phenyl; phenyl mono-substituted by halogen, hydroxy, nitro or amino; thien -2- yl or thein -3- yl; X^1 is hydrogen, amino, hydroxy, (c_1–C_4) alkanoyloxy or carboxy and R^8 is a hydrogen atom or a C_1–C_8 alkyl, cyclopropyl, cyclopentyl or cyclohexyl group or a pharmaceutically acceptable salt thereof.

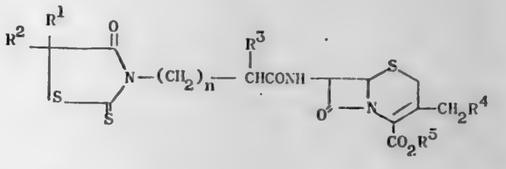
3,929,781

CERTAIN CEPHALOSPORANIC ACID DERIVATIVES

Daniel M. Teller, Devon, and John H. Sellstedt, Pottstown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed July 25, 1973, Ser. No. 382,436
Int. Cl.² C07D *501/22, 501/34*
U.S. Cl. 260—243 C **5 Claims**

1. A compound of the formula:

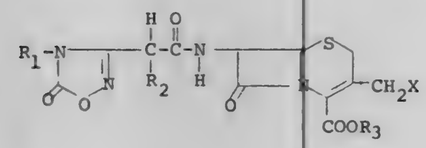


in which
R^1 is a member selected from the group consisting of —H,

alkyl of 1 to 6 carbon atoms, aryl of 6 to 10 carbon atoms and aralkyl of 7 to 12 carbon atoms;
R^2 is a member selected from the group consisting of —H and alkyl of 1 to 6 carbon atoms;
R^3 is a member selected from the group consisting of —H and benzyl;
R^4 is a member selected from the group consisting of —H and acetoxy;
R^5 is a member selected from the group consisting of —H, an alkali metal cation and the ammonium cation;
and
n is an integer from 0 to 5, inclusive.

3,929,782
1,2,4-OXADIAZOLONYLACETYL CEPHALOSPORINS
Hermann Breuer, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.
Continuation-in-part of Ser. No. 450,929, March 13, 1974, abandoned. This application July 8, 1974, Ser. No. 486,542
Int. Cl.² C07D *501/20, 499/44*
U.S. Cl. 260—243 C **5 Claims**

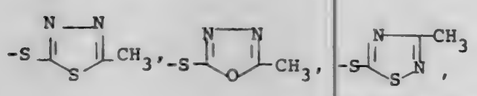
1. A compound of formula:



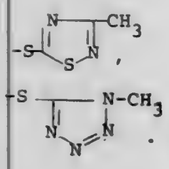
R_1 is selected from the group consisting of hydrogen, lower alkyl and phenyl-lower alkyl; R_2 is selected from the group consisting of hydrogen, lower alkyl, phenyl, hydroxyphenyl, thienyl, furyl, and pyridyl; and R_3 is selected from the group consisting of hydrogen, lower alkyl, phenyl-lower alkyl, benzhydryl, trimethylsilyl, a salt forming ion selected from the group consisting of aluminum, alkali metal, alkaline earth metal, lower alkylamine, phenyl-lower alkylamine, N-lower alkylpiperidine, and



wherein R_4 is selected from the group consisting of lower alkyl, phenyl, and phenyl-lower alkyl; and X is selected from the group consisting of



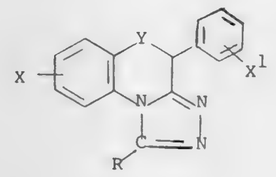
and



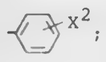
and the pharmaceutically accpetable mono-acid addition salts thereof, wherein R^1 and R^2, when taken separately, are each

3,929,783
1-SUBSTITUTED-4-PHENYL-4H-[1,2,4]TRIAZOLO[3,4-C][1,4] BENZOTHIAZINES OR BENZOXAZINES
John Krapcho, Somerset, and Chester Frank Turk, Kendall Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed Dec. 6, 1974, Ser. No. 530,123
Int. Cl.² C07D *279/16, 265/28*
U.S. Cl. 260—243 R **10 Claims**

1. A compound of the formula:



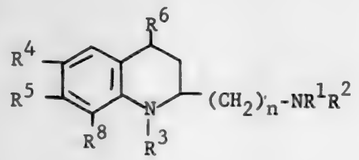
wherein R is selected from the group consisting of alkyl of 1 to 4 carbons and



X, X^1 and X^2 are independently selected from the group consisting of hydrogen, halogen, trifluoromethyl, alkyl of 1 to 4 carbons and alkoxy of 1 to 4 carbons; and Y is O or S; and the pharmaceutically acceptable acid-addition salts thereof.

3,929,784
2-AMINOALKYL TETRAHYDROQUINOLINES
Hugh Colin Richards, Canterbury, England, assignor to Pfizer Inc., New York, N.Y.
Division of Ser. No. 139,955, May 3, 1971, which is a continuation-in-part of Ser. No. 732,850, May 29, 1968, abandoned. This application Mar. 18, 1974, Ser. No. 451,980
Claims priority, application United Kingdom, June 10, 1967, 26893/67
Int. Cl.² C07D *215/38*
U.S. Cl. 260—247.5 GP **7 Claims**

1. A compound of the formula

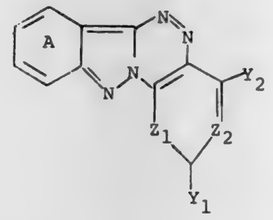


and the pharmaceutically acceptable acid-addition salts thereof, wherein R^1 and R^2, when taken separately, are each other than hydrogen.

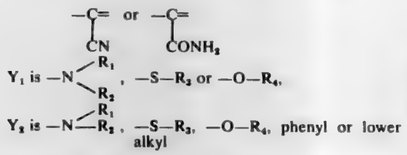
selected from the group consisting of hydrogen, alkyl having from 1 to 5 carbon atoms, β-hydroxyethyl and cycloalkyl having from 3 to 6 carbon atoms; R^1 and R^2, when taken together, complete a ring selected from the group consisting of pyrrolidino, piperidino and morpholino; R^3 is selected from the group consisting of hydrogen, methyl and ethyl; R^4 is alkoxymethyl having from 1 to 6 carbon atoms in the alkoxy moiety; R^5 is selected from the group consisting of nitro, cyano, fluorine, chlorine and bromine; R^6 is hydrogen or methyl; R^8 is hydrogen or methyl, and *n* is 1 or 2, and the N-oxides of said base compounds wherein R^1 and R^2, when taken separately, are each other than hydrogen.

3,929,785
POLYCYCLIC N-HETERO DYESTUFFS
Visvanathan Ramanathan, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland
Filed Apr. 8, 1974, Ser. No. 458,924
Claims priority, application Switzerland, Apr. 13, 1973, 5336/73
Int. Cl.² C07D *253/08*
U.S. Cl. 260—248 AS **12 Claims**

1. A polycyclic compound of the formula



in which the nucleus A is unsubstituted or substituted by nitro, halo, lower alkyl, lower alkoxy, sulpho, cyano, dimethylaminosulphonyl, diethylaminosulphonyl, methylsulphonyl or ethylsulphonyl; one of Z_1 and Z_2 is -N= and the other is



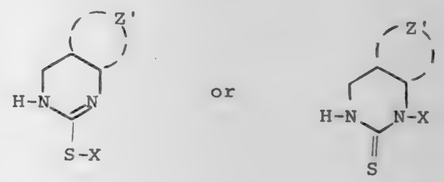
wherein R_1, R_2, R_3 and R_4 independently represent
hydrogen,
cyclohexyl,
allyl,
phenyl, unsubstituted or substituted by lower alkyl, lower alkoxy, halo or sulpho;
napthyl,
or
alkyl of up to 12 carbon atoms which is unsubstituted or substituted by lower alkoxy, napthyl, phenyl or phenyl substituted by lower alkoxy, lower alkyl, halo or sulpho; hydroxy, nitrile, lower alkoxy, 2-hydroxyethoxy, furanyl-(2)-, tetrahydropyranyl-(2)-, acyloxy wherein acyl represents alkanoyl of up to 5 carbon atoms, alkylcarbamyl of up to 5 carbon atoms, alkoxycarbamyl of up to 5 carbon atoms, phenylcarbamyl, phenoxycarbonyl, benzoyl, phenoxyacetyl, chloroacetyl or phenylacetyl; N-pyrollidonyl, diloweralkylamino and the quaternary salts thereof, the N-pyridinium quaternary salt, the N-(N-N-dimethyl) hydrazinium quaternary salt, the N-morpholino, N-ethoxycarbonylethyl quaternary ammonium salt, the N-(N,N-pentamethylene) hydrazinium quaternary salt, the N-ethyl pyridinium-(4)-quaternary salt, or the 1-(N-pyridinium) acetoxy quaternary ammonium salt; or



together with R_1 and R_2 represent represent pyrrolidono, piperdino, morpholino, piperazino, N'-methylpiperazino, N'-ethylpiperazino, N-thiomorpholino-S-dioxide, N'-acetylpiperazino or the N',N'-dimethylpiperazine quaternary salt.

3,929,786
S-SUBSTITUTED HYDROPYRIMIDINE COMPOUNDS
Donald O. Rickter, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of Ser. No. 214,665, Jan. 3, 1972, Pat. No. 3,785,813. This application Oct. 1, 1973, Ser. No. 402,130
Int. Cl.² C07D *239/70, 239/78;* **G03C** *1/40, 1/48*
U.S. Cl. 260—251 A **5 Claims**

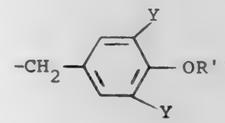
1. A compound having the formula:



wherein Z' is an ortho-fused cyclopenta or cyclohexa group; X is hydrogen or an alkaline hydrolyzable group represented by the formula:



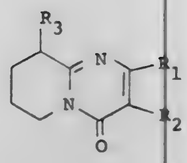
wherein R' is an alkyl group having from 1 to 20 carbon atoms; phenyl; p-hydroxyphenyl or o-hydroxyphenyl; or by the formula:



wherein Y is hydrogen, t-butyl or chloro, and R'' is hydrogen, acetyl or propionyl.

3,929,787
6,7,8,9-TETRAHYDRO-PYRIDO(1,2-A)PYRIMIDIN-4-ONES
Harry Louis Yale, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed Apr. 22, 1974, Ser. No. 462,899
Int. Cl.² C07D *471/04*
U.S. Cl. 260—251 A **5 Claims**

1. A compound having the structure



or a pharmaceutically acceptable salt thereof, wherein R_1 is phenyl or phenyl substituted with alkyl, alkoxy, halogen or trifluoromethyl in one or two positions; R_2 is hydrogen or alkyl; and R_3 is alkyl; wherein alkyl and alkoxy are groups having 1 to 3 carbon atoms.

3,929,788

SYNTHESIS OF 4,5-DIAMINOURACIL AND ITS SALTS

Richard C. Miller, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed July 2, 1973, Ser. No. 375,426

Int. Cl.² C07D *239/10*

U.S. Cl. 260—256.4 C **12 Claims**

1. A process for preparing 4,5-diaminouracil or its sulfate salts comprising the step of reacting an acetate derivative of 4,5-diaminouracil, whose acetate substituents are attached to at least one of the amino nitrogens, with sulfuric acid having a concentration of at least about 80 percent by weight at a temperature in the range from about 90° to about 120°C.

3,929,789

PYRIMIDINYL ACETIC ACID DERIVATIVES AND PROCESSES FOR THEIR PRODUCTION

David Rees Parry, Wokingham, England, assignor to Imperial Chemical Industries Limited, London, England

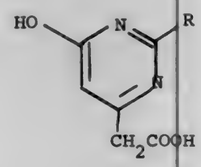
Filed Dec. 26, 1973, Ser. No. 428,315

Claims priority, application United Kingdom, Jan. 8, 1973, 964/73

Int. Cl.² C07D *239/36*

U.S. Cl. 260—256.4 C **4 Claims**

1. A pyrimidine derivative of the formula:



wherein R is alkylamino or dialkylamino wherein the alkyl moiety is methyl or ethyl.

3,929,790

ALKYLATION OF IODININ

Willy Leimgruber, Montclair, and Manfred Weigele, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 818,448, April 22, 1969, abandoned. This application Dec. 4, 1972, Ser. No. 312,095

Int. Cl.² C07D *241/46*

U.S. Cl. 260—267 **10 Claims**

1. A process for converting 1,-6-dihydroxyphenazine 5,10-dioxide to a 1-hydroxy-6-lower alkoxyphenazine 5,10-dioxide comprising the steps of

a. reacting at a temperature of from about 5°C. to about 35°C. 1,6-dihydroxyphenazine 5,10-dioxide with about an equimolar amount of an alkali metal lower alkoxide in hexamethylphosphoric triamide to form the mono-alkali metal salt,

b. reacting the salt thus formed in the hexamethylphosphoric triamide and at the same temperature with from about 1 to about 2 moles of an alkylating agent per mole of the salt, wherein the alkyl group of the alkylating agent contains from 1 to 7 carbon atoms and

c. recovering 1-hydroxy-6-lower alkoxyphenazine 5,10-dioxide.

3,929,791

2 SUBSTITUTED-10[4-(2-OXAZOLIDI NONE-LOWER ALKYL)]-PIPERAZINE-DIBENZO[B,F]THIEPINS

Max Gerecke, Reinach; Jean-Pierre Kaplan, Bubendorf, and Emilio Kyburz, Reinach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

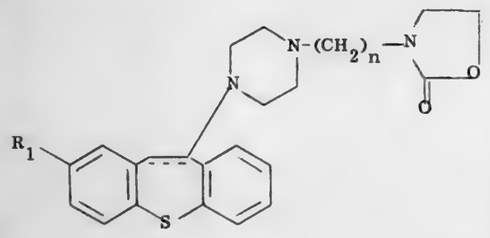
Filed July 12, 1973, Ser. No. 378,730

Claims priority, application Switzerland, July 21, 1972, 1101/72, May 17, 1973, 7059/73

Int. Cl.² C07D *295/12*

U.S. Cl. 260—268 TR **9 Claims**

1. A compound of the formula



wherein *n* stands for 2 or 3, R_1 is halogen, lower alkyl, di(lower alkyl)sulfamoyl, nitro, amino, di(lower alkyl-)amino or trifluoromethyl, and wherein the bond indicated by the broken line is hydrogenated or forms a double bond,

or a pharmaceutically acceptable acid addition salt thereof.

3,929,792

PHENYLPIPERAZINE DERIVATIVES, PROCESS FOR THEIR PREPARATION AND APPLICATIONS THEREOF

D. Emile Bouchara, 75 bis, Avenue Foch, 75016 Paris, France

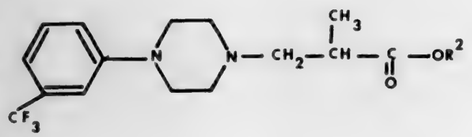
Filed Sept. 17, 1973, Ser. No. 397,769

Claims priority, application France, Sept. 29, 1972, 72.34476

Int. Cl.² C07D *295/10*

U.S. Cl. 260—268 PH **5 Claims**

1. A compound of the formula



in which R^2 is a radical selected from the group consisting of hydrogen, lower alkyl, allyl, propargyl, phenyl (lower) alkyl

and 3-[4-(m-trifluoromethylphenyl)-1-piperazinyl]-2-methyl-propyl, or its salts with therapeutically acceptable acids and bases.

3,929,793

CERTAIN PIPERAZINE-CONTAINING INDOLE COMPOUNDS

Alfred Popelak, Rimbach; Wolfgang Kampe, Heddesheim; Max Thiel, Mannheim; Karl Dietmann, Mannheim-Vogelstang, and Gisbert Sponer, Hemsbach, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany

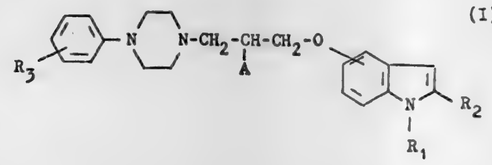
Filed June 28, 1974, Ser. No. 484,354

Claims priority, application Germany, July 24, 1973, 2337461

Int. Cl.² C07D *241/04*

U.S. Cl. 260—268 BC **19 Claims**

1. Indole compound of the formula:



(I)

wherein

R_1 is hydrogen or alkyl;

R_2 is hydrogen, alkoxycarbonyl or carboxyl;

R_3 is hydrogen, halogen, alkyl, alkoxy or alkylthio; and

A is hydrogen or hydroxyl;

wherein the alkyl moieties contain no more than six carbon atoms each;

and the pharmacologically acceptable salts thereof.

3,929,794

UNSYMMETRICAL BISAZOMETHINE METAL COMPLEX PIGMENTS

James McGeachie McCrae, Stewarton, Scotland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

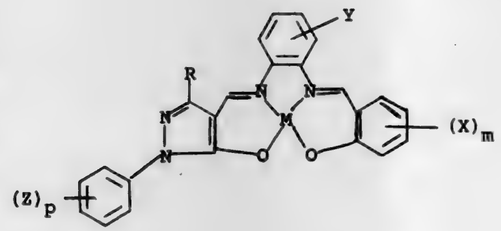
Filed Sept. 18, 1973, Ser. No. 398,528

Claims priority, application United Kingdom, Sept. 20, 1972, 43451/72

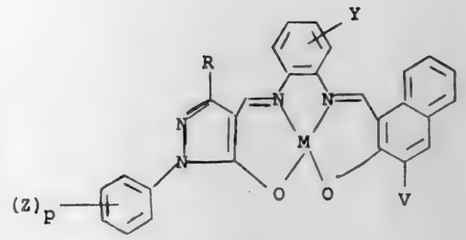
Int. Cl.² C07D *231/20, 215/22*

U.S. Cl. 260—270 **17 Claims**

1. A compound of the formula

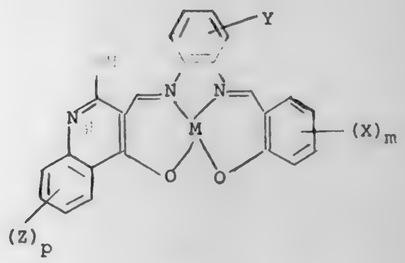


or

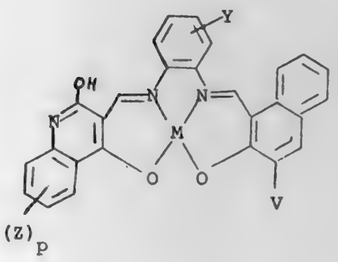


wherein Y is hydrogen, nitro, methyl or chloro; M is a transition metal atom; X is hydrogen, nitro, methyl, chloro or hydroxy; *m* is an integer of 1 to 4; Z is hydrogen, nitro, methyl, chloro or hydroxy; *p* is an integer of 1 to 4; R is hydrogen, nitro, methyl, chloro or hydroxy; and V is hydrogen or carboxy.

9. A compound of the formula

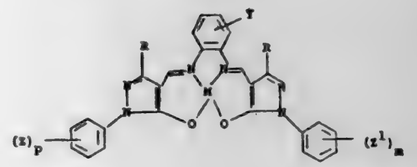


or



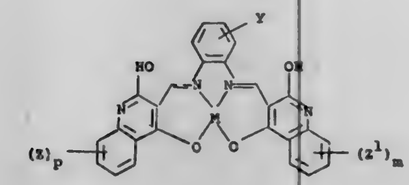
wherein Y is hydrogen, nitro, methyl or chloro; M is a transition metal atom; Z^1 is hydrogen, nitro, methyl, chloro or hydroxy; *m* is an integer of 1 to 4; X is hydrogen, nitro, methyl, chloro or hydroxy; *p* is an integer of 1 to 4; and V is hydrogen or carboxy.

12. A compound of the formula



wherein Y is hydrogen, nitro, methyl or chloro; M is a transition metal atom; Z is hydrogen, nitro, methyl, chloro or hydroxy; p is an integer of 1 to 4; Z^1 is hydrogen, nitro, methyl or chloro and is different from Z; m is an integer of 1 to 4; and R is hydrogen, nitro, methyl, chloro or hydroxy.

15. A compound of the formula



wherein Y is hydrogen, nitro, methyl or chloro; Z is hydrogen, nitro, methyl or chloro; p is an integer of 1 to 4; Z^1 is hydrogen, nitro, methyl or chloro; and Z^1 is hydrogen, nitro, methyl or chloro and is different from Z; and n is an integer of 1 to 4.

3,929,795

PROCESSES AND INTERMEDIATES FOR QUININE, QUINIDINE, ISOMERS AND DERIVATIVES THEREOF

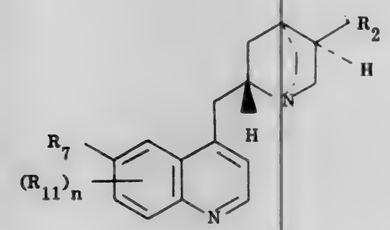
Juerg Albert Walter Gutzwiller, Bettingen, Switzerland, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 212,774, Dec. 27, 1971, Pat. No. 3,772,302, which is a continuation-in-part of Ser. No. 104,784, Jan. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 837,354, June 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 741,914, July 2, 1968, abandoned. This application Aug. 1, 1973, Ser. No. 384,525

Int. Cl.² C07D *453/04*

U.S. Cl. 260—284 **20 Claims**

1. A compound of the formula



wherein n is 0 to 2; R_8 is vinyl or ethyl; R_{11} is hydrogen, methyl, ethyl, propyl, butyl, methoxy, trifluoromethyl, chloro or, when n is 2, R_{11}, taken together with an adjacent R_{11}, is also methylenedioxy; when R_{11} is hydrogen, R_7 is methyl, ethyl, propyl, butyl, trifluoromethyl or chloro; when R_{11} is other than hydrogen and n is 1, R_7 is methyl, ethyl, propyl, butyl, methoxy, hydrogen, trifluoromethyl, chloro or, taken together with an adjacent R_{11}, is methylenedioxy; and when R_{11} is other than hydrogen and n is 2, R_7 is hydrogen, its antipode or racemate.

3,929,796

SYNTHESIS OF PENNICLAVINE AND ELYMOCLAVINE

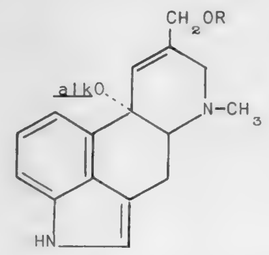
Edmund C. Kornfeld, and Nicholas J. Bach, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 2, 1974, Ser. No. 494,147

Int. Cl.² C07D *457/02*

U.S. Cl. 260—285.5 **2 Claims**

1. A compound of the formula



wherein alk is (C_1–C_3) alkyl and R is H or CO-alk, said alk groups being the same or different.

3,929,797

PHOTOGRAPHIC PROCESSES AND PRODUCTS EMPLOYING 8-QUINOLINOL PHTHALEINS AS OPTICAL FILTER AGENTS

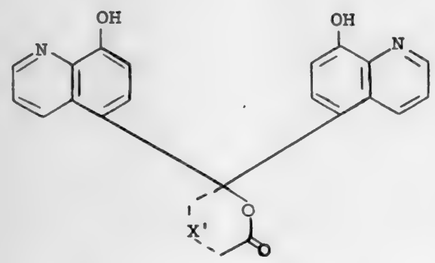
Alan L. Borror, Lexington, and Paulina P. Garcia, Arlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 202,483, Nov. 26, 1971, Pat. No. 3,816,123. This application Mar. 25, 1974, Ser. No. 454,692

Int. Cl.² C07D *215/32*

U.S. Cl. 260—287 CE **10 Claims**

1. An indicator dye of the formula:



wherein X′ represents the atoms necessary to complete a ring-closing moiety selected from phthalide; phthalide substituted in at least one of the 4- and 7-positions with carboxy; and naphthalide.

3,929,798

2-AMINO-1,4-DIHYDROPYRIDINE DERIVATIVES

Horst Meyer; Friedrich Bossert, both of Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

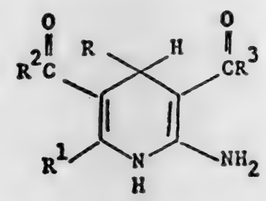
Division of Ser. No. 336,639, Feb. 28, 1973, Pat. No. 3,867,393. This application Feb. 1, 1974, Ser. No. 438,603

Claims priority, application Germany, Mar. 6, 1972, 221067

Int. Cl.² C07D *215/32*

U.S. Cl. 260—287 K **43 Claims**

1. A compound of the formula:



wherein

R is hydrogen; lower alkyl; lower alkenyl; lower alkynyl; phenyl unsubstituted or substituted by one to three members selected from the group consisting of 1 to 3, montertiary lower alkyl, tertiary lower alkyl, 1 to 3 lower alkoxy, 1 to 3 halogeno, 1 nitro, 1 cyano, 1 to 3 trifluoromethyl, 1 to 3 aziod, 1 to 3 carbo(lower alkoxy), 1 to 3 lower alkylsulfonyl, 1 to 3 lower alkylsulfinyl, 1 to 3 lower alkylthio and 1 to 3 phenyl moieties; or naphthyl;

R^1 and R^2 are linked together and are alkylene of 2 to 4 carbon atoms; and

R^3 is lower alkyl, lower alkoxy, lower alkoxy(lower alkoxy), lower alkenyloxy, lower alkynyloxy, amino, lower alkylamino or di(lower alkyl)amino.

3,929,799

PROCESS FOR PRODUCING VINYL PYRIDINE COMPOUNDS

Helmut Eugen Thyret, Munich, Germany, assignor to Consortium fur Elecktrochemische Industrie GmbH, Munich, Germany

Filed Jan. 20, 1971, Ser. No. 108,138

Claims priority, application Germany, Jan. 22, 1970, 2002661

Int. Cl.² C07D *313/06*, *215/06*, *217/02*, *219/02*

U.S. Cl. 260—290 V **4 Claims**

1. Process for the direct conversion in a single stage of an alkyl pyridine to the corresponding vinyl pyridine, consisting essentially of the steps of:

a. contacting an alkyl pyridine selected from the group consisting of 2-methylpyridine, 4-methylpyridine, 2,4-lutidine, 2,6-lutidine, 2,4,6-collidine, 2,3,6-collidine, 2-methyl-5-ethylpyridine, 2-methylquinoline, 4-methylquinoline, 1-methylisoquinoline, 3-methylisoquinoline, 9-methylacridine, and 9-methylphenanthridine with formaldehyde in the presence of a catalytic amount of an acid catalyst having a pH value less than 5 at a superatmospheric pressure of between about 30 and about 100 atmospheres and at a temperature between about 200° and about 300°C for a period of time between about 2 and about 10 minutes, the molar proportion of alkyl pyridine compound to formaldehyde being between about 2:1 and about 5:1, and

b. rapidly cooling the mixture and recovering the resulting vinyl pyridine.

3,929,800

POLYMER GRAFTING ONTO HYDROCARBON LIQUIDS

Carl Horowitz, Brooklyn, N.Y., assignor to Polymer Research Corporation of America, Brooklyn, N.Y.

Continuation of Ser. No. 888,905, Dec. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 834,489, June 18, 1969, Pat. No. 3,698,931. This application July 27, 1972, Ser. No. 275,672. The portion of the term of this patent subsequent to Oct. 17, 1989, has been disclaimed.

Int. Cl.² C07C *69/52*

U.S. Cl. 260—290 R **3 Claims**

1. Method of grafting a polymer onto a liquid hydrocarbon molecule selected from the group consisting of polypropylenes, polyisobutylenes, dipentene and postpyrolytic gasoline in a liquid hydrocarbon medium which comprises contacting said liquid hydrocarbon molecule in said liquid hydrocarbon medium with a solution of a soluble silver salt in an amount of about 0.0001 – 0.01 percent by weight, said solution thus containing silver ions, and also containing a polymerizable composition consisting essentially of a solution in a solvent selected from the group consisting of dimethylformamide, tetrahydrofurane, tetrahydrofurfuryl alcohol, dimethylsulfoxide, water, methyl alcohol, ethyl alcohol, isopropyl alcohol, acetone, methyl ethyl ketone, ethyl acetate and mixtures thereof of a per-catalyst selected from the group consisting of ammonium persulfate, hydrogen peroxide, tert-butylhydroperoxide, ditertbutyl peroxide, benzoyl peroxide, dicumyl peroxide, lauroyl peroxide, tert-butylperbenzoate and peracetic acid and a polymerizable monomer in an amount of 0.1 – 50 percent by weight which is activated to polymerization by activation of said percatalyst, said catalyst being activated by metallic silver, whereby the silver ions of said silver salt are reduced by said liquid hydrocarbon molecule to metallic silver which activates said catalyst, whereby polymerization occurs and the resulting polymer is bound directly to said liquid hydrocarbon molecule, thereby forming an intimate bonding of the polymer to said liquid hydrocarbon molecule in said liquid hydrocarbon medium, thus obtaining a liquid hydrocarbon composition with properties different from those of the original liquid hydrocarbon.

3,929,801

2-BENZIMIDAZOLINONES

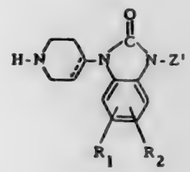
Paul Adriaan Jan Janssen, Vosselaar; Ineke van Wijngaarden, Beerse, and Willem Soudijn, Turnhout, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 417,702, Nov. 20, 1973, which is a continuation-in-part of Ser. No. 321,058, Jan. 4, 1973, abandoned. This application Sept. 25, 1974, Ser. No. 515,136

Int. Cl.² C07D *401/04*

U.S. Cl. 260—293.6 **7 Claims**

1. A compound selected from the group of benzimidazolinone derivatives having the formula



wherein:

Z′ is a member selected from the group consisting of lower alkenyl, phenoxy-loweralkyl, phenyl-loweralkyl, di-loweralkyl-aminoloweralkyl and cyclic loweralkyleneamino-loweralkyl;

R_1 and R_2 are each a member selected from the group consisting of hydrogen, halo and loweralkyl; and

the dotted line indicates an optional double bond.

3,929,802

BIS-BASIC ETHERS OF DIBENZOFURAN

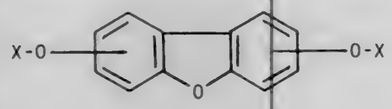
William L. Albrecht, and Robert W. Fleming, both of cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Continuation of Ser. No. 45,578, June 11, 1970, abandoned. This application Feb. 25, 1974, Ser. No. 446,194

Int. Cl.² C07D *307/91*

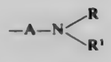
U.S. Cl. 260—293.58 **13 Claims**

1. A compound selected from a base of the formula



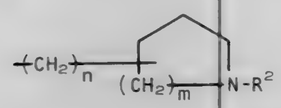
wherein each X is a member selected from the group consisting of

A. the group



wherein each A is an alkylene chain having from 2 to 6 carbon atoms and which separates the amino nitrogen and [Y] the ether oxygen by at least 2 carbon atoms; R and R¹ are individually selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, alkenyl of from 3 to 6 carbon atoms and having the vinyl unsaturation in other than the 1-position of the alkenyl group; or each set of R and R¹ taken together with the nitrogen atom to which they are attached is a saturated monocyclic heterocyclic group selected from pyrrolidino, piperidino, morpholino, or N-(lower)alkylpiperazino;or

B. the group



wherein *n* is a whole integer of from 0 to 2, *m* is 1 or 2, and R³ is a member selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, or alkenyl of 3 to 6 carbon atoms and having the vinyl unsaturation in other than the 1-position of the alkenyl group;

or a pharmaceutically acceptable acid addition salt of said base.

3,929,803

ARYL CARBOXYLIC ACIDS

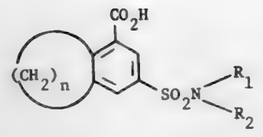
Gerald F. Holland, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed May 28, 1974, Ser. No. 473,742

Int. Cl.² C07D *295/22*

U.S. Cl. 260—293.62 **7 Claims**

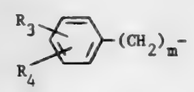
1. A compound selected from those of the formula



and the pharmaceutically acceptable basic salts thereof wherein

R_1 is selected from the group consisting of hydrogen and alkyl having 1 to 4 carbon atoms;

R_2 is selected from the group consisting of alkyl having 1 to 4 carbon atoms and



wherein *m* is an integer of 0 to 3 and R_3 and R_4 are each selected from the group consisting of hydrogen, methyl, chloro and bromo;

R_1 and R_2 when considered together with the nitrogen atom to which they are attached form a heterocyclic ring selected from the group consisting of morpholino, hexamethyleneimino, piperidino and mono- and dimethylpiperidino; and

n is an integer of 3 to 5.

3,929,804

4-PIPERIDINE ACETAMIDE COMPOUNDS

Barry Cook, Manchester, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

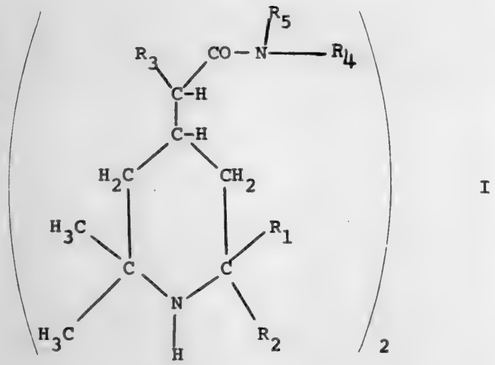
Filed July 17, 1973, Ser. No. 380,043

Claims priority, application United Kingdom, July 28, 1972, 35488/72

Int. Cl.² C07D *211/30*

U.S. Cl. 260—293.63 **6 Claims**

1. A compound of the formula



I

wherein

R_1 and R_2 are the same or different and each is a straight- or branched alkyl residue having from 1 to 12 carbon atoms or R_1 and R_2, together with the carbon atom to which they are attached, form a cycloalkyl group having from 5 to 12 carbon atoms,

R_3 and R_5 is independently hydrogen, a straight- or branched alkyl residue having from 1 to 4 carbon atoms, or aralkyl residue selected from benzyl, α- methylbenzyl or α-, p-dimethylbenzyl, or a cycloalkyl group having 5 or 6 carbon atoms,

R_4 is a divalent hydrocarbyl residue having from 2 to 20 carbon atoms and being either unsubstituted or substituted by halogen or interrupted by one or more oxygen or sulphur atoms, or a salt of the amine function thereof.

3,929,805

CERTAIN 4H-(2,3D)PYRIDO-1,3,2-DIOXAPHOSPHORINANES

Daniel Pillon; Jacques Ducret, both of Lyon, and Daniel Demozay, Villeurbanne, all of France, assignors to Pepro, Societe pour le Developement et la Vent de Specialities, Lyon, France

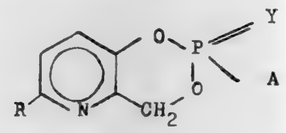
Filed Oct. 13, 1972, Ser. No. 297,316

Claims priority, application France, Oct. 20, 1971, 71.38520

Int. Cl.² C07D *213/62*

U.S. Cl. 260—294.8 C **4 Claims**

1. A chemical derivative of phosphorus corresponding to the following general formula:



in which

R represents hydrogen or a methyl radical,

A represents a halogen, alkyl, phenyl alkoxy, alkoxy-alkoxy or alkylthio radical, the alkyl portion of the aforementioned radicals containing from 1 to 4 carbon atoms, and

Y represents oxygen or sulphur.

3,929,806

ISOTHIOCYANOPYRIDINE DERIVATIVES

Wolfgang Schmid, Therwil; Ernst Gutzwiller, Rheinfelden, and Urs Meyer, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

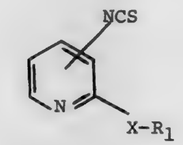
Filed Aug. 8, 1973, Ser. No. 386,796

Claims priority, application Switzerland, Aug. 10, 1972, 11886/72; Aug. 10, 1972, 11887/72

Int. Cl.² C07D *213/74*

U.S. Cl. 260—294.8 E **4 Claims**

1. A compound of the formula



wherein

the -NCS group is in the 3- or 5- position

R_1 is alkyl of from 1 to 10 carbon atoms, cycloalkyl of from 3 to 6 carbon atoms, or cyclopropylmethyl, and

X is oxygen or sulphur.

3,929,807

2-SUBSTITUTED-4(5)-(ARYL)-5(4)-(2,3 OR -4-PYRIDYL)-IMIDAZOLES

Konrad Fitzi, Neuallschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

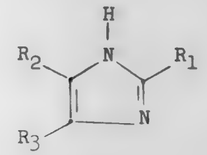
Continuation of Ser. No. 247,431, April 25, 1972, abandoned. This application June 3, 1974, Ser. No. 475,473

Claims priority, application Switzerland, Mar. 22, 1972, 4250/72

Int. Cl.² C07D *213/38*

U.S. Cl. 260—294.8 R **10 Claims**

1. A compound of the formula



wherein R_1 represents isopropyl, sec. butyl, tert. butyl or p-chlorophenyl, one of the groups R_2 and R_3 represents unsubstituted phenyl or phenyl substituted in the para position by methoxy, and the other represents an unsubstituted 2-, 3- or 4-pyridyl group, or a pharmaceutically acceptable acid addition salt thereof.

3,929,808

PYRIDYL PHENYL-CARBAMATE RODENTICIDE

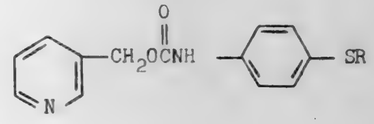
Edward E. Kilbourn, Chalfont, and Ernest D. Weiler, Ambler, both of Pa., assignors to Rohm & Haas Company, Philadelphia, Pa.

Filed Dec. 28, 1973, Ser. No. 429,464

Int. Cl.² C07D *213/75*

U.S. Cl. 260—294.8 G **5 Claims**

1. A compound of the structure



wherein R is

a. hydrogen

b. allyl

c. CN

d. CCl_3 or

e. 5-tetrazolyl

and its acid salts.

3,929,809

OXAZOLO-[4,5-B]-PYRIDINE-2-ONES AND -2-THIONES AS INTERMEDIATES

Haukur Kristinsson, Bottmingen, and Kürt Rüfenacht, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

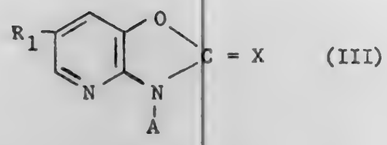
Continuation of Ser. No. 435,066, Jan. 21, 1974, abandoned, which is a division of Ser. No. 156,983, June 25, 1971, Pat. No. 3,808,218, which is a continuation-in-part of Ser. No. 155,604, June 22, 1971, abandoned. This application Oct. 7, 1974, Ser. No. 512,787

Claims priority, application Switzerland, June 26, 1970, 9702/70

Int. Cl.² C07D *213/44*

U.S. Cl. 260—294.8 C **17 Claims**

1. An oxazolo[4,5-b]pyridine compound of the formula III



(III)

wherein
A represents a halogenomethyl, the vinyl or a 1,2-dihalogenoethyl group,
R_1 is hydrogen, halogen or nitro, and
X represents oxygen or sulphur.

3,929,810
3-PYRIDYLMETHYL N-(4-CYANOMETHYLPHENYL)-CARBAMATE AND DERIVATIVES

Ernest D. Weiler, Ambler, Pa., assignor to Rohm & Haas Company, Philadelphia, Pa.

Filed June 3, 1974, Ser. No. 475,709
Int. Cl.² C07D *213/57*
U.S. Cl. 260—294.9 **5 Claims**

1. The compound 3-pyridylmethyl N-(4-cyanomethylphenyl)carbamate and an acid addition salt thereof.

3,929,811
PRODUCTION OF PYRIDINE NITRILES AND CARBOXYLIC ACIDS

Abraham P. Gelbein, Plainfield; Morgan C. Sze, Upper Montclair, and John E. Paustian, Whippany, all of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 415,991, Nov. 15, 1973, abandoned. This application Apr. 25, 1974, Ser. No. 463,882
Int. Cl.² C07D *213/79*
U.S. Cl. 260—295.5 R **23 Claims**

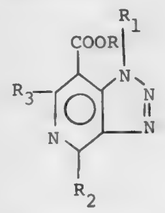
1. A process for producing nicotinic acid, comprising:
a. contacting in a nitrile production zone a member selected from the group consisting of 2,3-picoline, 2,3-and 2,5-dimethylpyridine, 2-methyl, 5-ehtylpyridine, 2,3-ethylpyridine and mixtures thereof with ammonina and vanadium pentoxide supported on a porous support selected from the group consisting of silica-alumina and gamma-alumina, said vanadium pentoxide being present in an amount to provide a vanadium pentoxide to support weight ratio ranging from about 0.3:1 to about 3:1 substantially entirely eithin the pores of the support, said vanadium pentoxide having been placed in molten form substantially within the pores of a support having a surface area greater than about 50 m^2/gm and a porosity greater than about 0.4 cc/gm, said contacting being effected in the absence of molecular oxygen;
b. withdrawing a gaseous effluent from the nitrile production zone;
c. separating organic components from the gaseous effluent, said organic components including nicotinonitrile, unreacted feed and organic intermediates;
d. introducing the separated organic components into a separation zone to separate nicotinonitrile from unreacted feed and organic intermediates;
e. recycling the unreacted feed and organic intermediates to the nitrile production zone;
f. combining separated nicotinonitrile with ammonia and an aqueous recycle containing nicotinoamide and ammonium nicotinate;
g. heating the combined streams to a temperature of from 200°F to about 450°F to effect hydrolysis of the nicotinonitrile and nicotinamide to ammonium nicotinate;
h. heating the ammonium nicotinate to effect decomposition thereof to nicotinic acid, said decomposition being effected with continuous removal of evolved ammonia;
i. recovering a product stream containing nicotinic acid and an aqueous solution of ammonium nicotinate and nicotinamide;
j. separating nicotinic acid from the aqueous solution; and
k. employing the aqueous solution of ammonium nicotinate and nicotinamide as said aqueous recycle.

3,929,812
DERIVATIVES OF 1H-TRIAZOLO [4,5-C]PYRIDINE-7-CARBOXYLIC ACIDS AND ESTERS

Theodor Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 20, 1974, Ser. No. 471,537
Int. Cl.² C07D *213/55*
U.S. Cl. 260—295.5 B **10 Claims**

1. A compound of the formula



wherein R is hydrogen or lower alkyl; R_1 is hydrogen, lower alkyl, phenyl or phenyl-lower alkyl; R_2 is lower alkoxy or



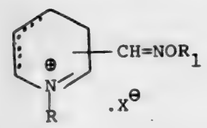
wherein R_4 is hydrogen, lower alkyl, di(lower alkyl)amino(-lower alkyl) or phenyl and R_5 is hydrogen or lower alkyl; and R_3 is hydrogen, lower alkyl or phenyl.

3,929,813
NOVEL PRO-DRUG DERIVATIVES OF PYRIDINIUM ALDOXIME TYPE CHOLINESTERASE REACTIVATORS AND PROCESS FOR PREPARING SAME

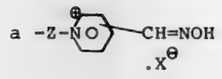
Takeru Higuchi; Nicolae S. Bodor, and Efraim Shek, all of Lawrence, Kans., assignors to Interx Research Corporation, Lawrence, Kans.

Filed Dec. 26, 1973, Ser. No. 428,215
Int. Cl.² C07D *211/26*
U.S. Cl. 260—296 M **22 Claims**

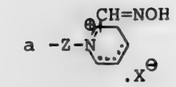
1. A pro-drug compound of the pyridine aldoxime (hydroxyiminomethyl pyridinium) type capable of reactivating blocked cholinesterase having the formula:



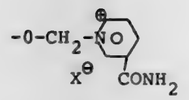
wherein R represents a member selected from the group consisting of an alkyl (C_1-C_4) group,



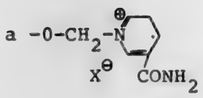
group,



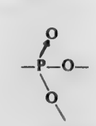
group,



group, and



wherein Z represents a member selected from the group consisting of a $—CH_2—CH_2—$ group, a $—CH_2—O—CH_2—$ group, a $—CH_2CH_2OCH_2CH_2—$ group, and a $—CH_2O—CH_2—CH_2—O—CH_2—$ group; wherein R_1 represents a member selected from the group consisting of a hydrogen atom, a methyl group, an acyl group and a



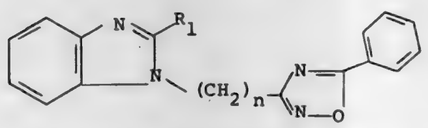
group; and wherein X^- represents an anion derived from a pharmaceutically acceptable acid addition salt.

3,929,814
(OXADIAZOLYL) ALKYL) BENZIMIDAZOLES

Venkatachala L. Narayanan, Hightstown, and Rudiger D. Haugwitz, Titusville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 1, 1974, Ser. No. 456,707
Int. Cl.² C07D *271/06*
U.S. Cl. 260—302 H **7 Claims**

1. A compound having the structure



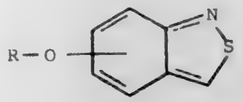
or a pharmaceutically acceptable acid-addition salt thereof wherein R_1 is hydrogen or thiazolyl and *n* is an integer of from 2 to 6.

3,929,815
HYDROXY-, ALKOXY-, AND ALKYLCARBAMOYLOXY-,1-BENZISOTHIAZOLES

Gary M. Singerman, Prairie Village, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 19, 1973, Ser. No. 426,118
Int. Cl.² C07D *275/04*
U.S. Cl. 260—304 A **8 Claims**

1. A compound having the general formula



where R is N-lower alkylcarbamoyl or N,N-di-lower alkylcarbamoyl.

3,929,816
HERBICIDAL THIADIAZOLYL-UREAS

Paul Rathgeb, Basel; Christian Vogel, Binningen, and Anton G. Weiss, Benken, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 842,023, July 15, 1969, abandoned. This application June 28, 1974, Ser. No. 484,047
Claims priority, application Switzerland, July 17, 1968, 10691/68
Int. Cl.² C07D *285/12*
U.S. Cl. 260—306.8 D **3 Claims**

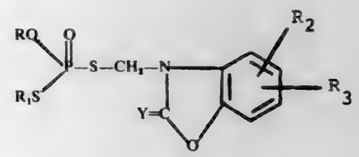
1. N-[5-(2′-chloroallylthio)-1,3,4-thiadiazolyl-(2)]-N′-methylurea.
2. N-[5-(2′-chloroallylthio)-1,3,4-thiadiazolyl-(2)]-N,N′-dimethylurea.
3. N-[5-(2′-chloroallylthio)-1,3,4-thiadiazolyl-(2)-N′,N′-dimethylurea.

3,929,817
DITHIOPHOSPHORIC ACID ESTERS

Jozef Drabek, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sept. 22, 1972, Ser. No. 291,494
Claims priority, application Switzerland, Sept. 28, 1971, 14157/71; July 25, 1972, 11112/72
Int. Cl.² C07D *263/58*, *277/68*, *277/70*
U.S. Cl. 260—307 C **13 Claims**

1. A compound of the formula



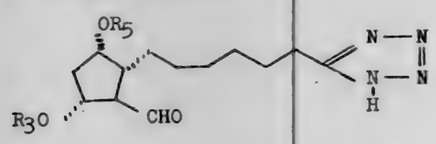
wherein
R is methyl or ethyl,
R_1 is n-pentyl or ethoxyethyl,
each of R_2 and R_3 is hydrogen or halogen, and
Y is oxygen or sulphur.

3,929,818
TETRAZOLYL DERIVATIVES OF NATURALLY OCCURRING PROSTAGLANDINS

Hans-Jurgen E. Hess, Old Lyme; Leonard J. Czuba, New London, and Thomas K. Schaaf, Old Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 335,586, Feb. 26, 1973, Pat. No. 3,883,513, which is a continuation-in-part of Ser. No. 177,102, Sept. 1, 1971, abandoned. This application Aug. 27, 1974, Ser. No. 500,944
Int. Cl.² C07D *257/04*
U.S. Cl. 260—308 D 1 Claim

1. A compound of the structure:



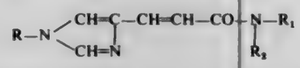
wherein R_3 is hydrogen or 2-tetrahydropyranyl; and R_5 is hydrogen, alkanoyl having from 1 to 5 carbon atoms, benzoyl, p-phenylbenzoyl, or α- or β-naphthoyl.

3,929,819
UROCANIC ACID AMIDE DERIVATIVES

Shinichi Inazuka, Tokyo, and Sadayoshi Ninagawa, Yokohama, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Oct. 26, 1973, Ser. No. 410,178
Claims priority, application Japan, Nov. 1, 1972, 47-109665
Int. Cl.² C07D *233/64*
U.S. Cl. 260—309 7 Claims

1. A compound which is an amide of the formula



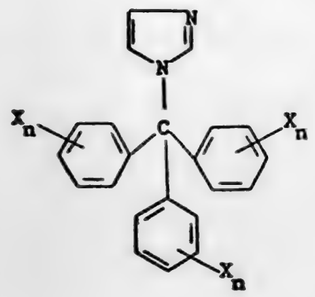
or a cosmetically acceptable acid addition salt thereof, in said formula R being hydrogen, alkyl of 1 to 22 carbon atoms or alkanoyl of 2 to 22 carbon atoms, R_1 and R_2 being hydrogen or alkyl or hydroxyalkyl each of up to 18 carbon atoms.

3,929,820
PROCESS FOR THE PRODUCTION OF N-TRITYLIMIDAZOLES

Karl-Heinz Büchel, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Germany

Continuation of Ser. No. 267,610, June 29, 1972, abandoned, which is a continuation-in-part of Ser. Nos. 37,841, May 15, 1970, Pat. No. 3,691,192, and Ser. No. 37,850, May 15, 1970, Pat. No. 3,711,497, each is a division of Ser. No. 789,601, Jan. 7, 1969, abandoned, and Ser. No. 762,161, Sept. 24, 1968, abandoned. This application Apr. 18, 1974, Ser. No. 461,886
Claims priority, application Germany, Sept. 26, 1967, 53587; Jan. 29, 1968, 1670976. The portion of the term of this patent subsequent to Jan. 6, 1990, has been disclaimed.
Int. Cl.² C07D *233/62*
U.S. Cl. 260—309 69 Claims

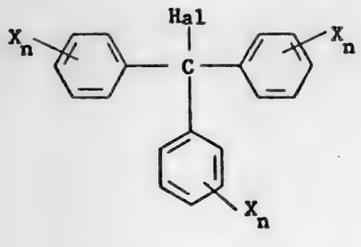
1. A process for the production of an N-tritylimidazole of the formula:



wherein
X is halogen, and 2 *n*'s are 0 and 1 *n* is 1,
which consists essentially of reacting imidazole of the formula:



with a tritylhalide of the formula



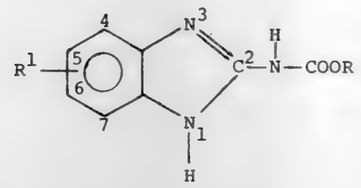
wherein X and *n* are as above defined, and Hal is halo, in a polar inert organic solvent having a dielectric constant greater than 15 at a temperature substantially between about 0°C to 100°C in the presence of an organic acid binding agent.

3,929,821
5 (6)-BENZENE RING SUBSTITUTED BENZIMIDAZOLE-2-CARBAMATE DERIVATIVES

Colin C. Beard, Palo Alto; John A. Edwards, Los Altos, and John H. Fried, Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 319,299, Dec. 29, 1972, abandoned. This application Nov. 21, 1973, Ser. No. 417,963
Int. Cl.² C07D *235/02*
U.S. Cl. 260—309.2 36 Claims

1. A compound selected from the group of compounds represented by the formula:



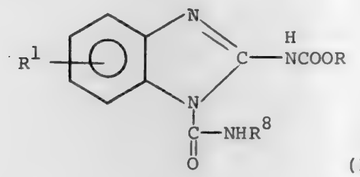
where R is a lower alkyl group having 1 to 4 carbon atoms; R^1 is $—SR^5$; and R^5 is lower alkenyl or lower alkynyl having 3 to 7 carbon atoms, benzyl or phenethyl, said lower alkenyl or lower alkynyl group being optionally substituted with one or more alkoxy having 1 to 6 carbon atoms, phenyl, naphthyl, thiocyanato, benzoyl, naphthoyl, hydroxy, cycloalkyl having 3 to 7 carbon atoms, halo, cyano, or nitro radicals, said benzyl or phenethyl group being optionally substituted with one or more lower alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms, halo, nitro, cyano, thiocyanato, isothiocyanato, trifluoromethyl, alkylthio having 1 to 6 carbon atoms, alkylsulfinyl having 1 to 6 carbon atoms, alkylsulfonyl having 1 to 6 carbon atoms, alkanoyl or alkanoylamino where the alkanoyl portion has 1 to 6 carbon atoms, $—SO_2NR^3R^4$ or $—N(R^3)SO_2R^4$ radicals; where R^3 and R^4 are independently hydrogen or lower alkyl having 1 to 6 carbon atoms; the R^1 substituent being at the 5(6)-position; or a pharmaceutically acceptable salt thereof.

3,929,822
1,5(6)-DISUBSTITUTED BENZIZIMIDAZOLE-2-CARBAMATE DERIVATIVES HAVING ANTHELMINTIC ACTIVITY

Colin C. Beard, Palo Alto; John A. Edwards, Los Altos, and John H. Fried, Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 417,963, Nov. 21, 1973, which is a continuation-in-part of Ser. No. 319,299, Dec. 29, 1972, abandoned. This application May 28, 1974, Ser. No. 473,865
Int. Cl.² C07D *235/32*
U.S. Cl. 260—309.2 32 Claims

1. A compound selected from the group of compounds represented by the formula:



(I)

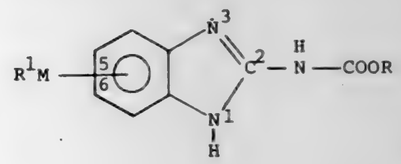
where R is lower alkyl having 1 to 4 carbon atoms; R^1 is $—SOR^2$, $—SR^5$, $—OR^5$ or $M'(CH_2)_nMR^7$; R^2 is lower alkyl having from 1 to 6 carbon atoms, cycloalkyl having 3 to 7 carbon atoms, lower alkenyl or lower alkynyl having 3 to 6 carbon atoms, phenyl, benzyl or phenethyl; R^5 is lower alkenyl or lower alkynyl having 3 to 6 carbon atoms, benzyl or phenethyl; R^7 is lower alkyl having 1 to 4 carbon atoms or phenyl; M and M′ are independently O, S, S or S;
n is 1–4; and R^8 is phenyl, benzyl, phenethyl, or lower alkyl having 1 to 12 carbon atoms and optionally substituted with a —COOR group where R is lower alkyl having 1 to 4 carbon atoms; the R^1 substitution being at the 5(6)-position; or a pharmaceutically acceptable salt thereof.

3,929,823
5(6)-BENZENE RING SUBSTITUTED BENZIMIDAZOLE-2-CARBAMATE DERIVATIVES HAVING ANTHELMINTIC ACTIVITY

Colin C. Beard, Palo Alto; John A. Edwards, Los Altos, and John H. Fried, Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 417,969, Nov. 21, 1973, abandoned. This application Oct. 25, 1974, Ser. No. 518,130
Int. Cl.² C07D *235/32*
U.S. Cl. 260—309.2 15 Claims

1. A compound represented by the formula:



(I)

where R is a lower alkyl group having 1 to 4 carbon atoms; M is O or S; and R^1 is an alkyl group having 1 to 6 carbon atoms and is substituted with one or more halo or cyano radicals; the R^1M-substitution being at the 5(6)-position; or a pharmaceutically acceptable salt thereof.

3,929,824
5(6)-BENZENE RING SUBSTITUTED BENZIMIDAZOLE-2-CARBAMATE DERIVATES HAVING ANTHELMINTIC ACTIVITY

Colin C. Beard, Palo Alto; John A. Edwards, Los Altos, and John H. Fried, Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 417,963, Nov. 21, 1973, which is a continuation-in-part of Ser. No. 319,299, Dec. 29, 1972, abandoned. This application Nov. 25, 1974, Ser. No. 526,861
Int. Cl.² C07D *235/32*
U.S. Cl. 260—309.2 9 Claims

2. The compound of claim 1 wherein said compound is 5(6)-[2-(benzyloxy)ethoxy]-2-carbomethoxyaminobenzimidazole.

3. The compound of claim 1 wherein said compound is 5(6)-(3-chloroprop-1-ylsulfinyl)-2-carbomethoxyaminobenzimidazole.

4. The compound of claim 1 wherein said compound is 5(6)-[2-(p-chlorophenoxy)ethoxy]-2-carbomethoxyaminobenzimidazole.

7. The compound of claim 1 wherein said compound is 5(6)-(but-3-en-1-ylthio)-2-carbomethoxyaminobenzimidazole.

3,929,825
PYRAZOLOXANTHENE COMPOUNDS AND PROCESS FOR PRODUCING SAME

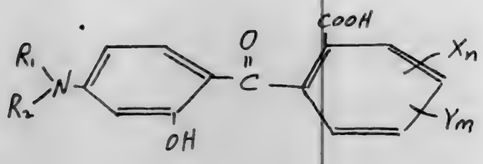
Sidney M. Spatz, Circleville, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Apr. 18, 1974, Ser. No. 461,860
Int. Cl.² C07D *231/54*, *231/56*
U.S. Cl. 260—310 C 16 Claims

1. A process for producing a color precursor having a pyrazoloxanthene structure by

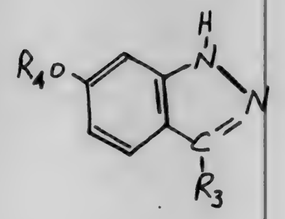
1. reacting about eqimolar quantities of at least one member of (A) with (B) wherein

A. is a 2-(4′-N,N-substituted amino-2′ hydroxybenzoyl)-benzoic acid having the formula



wherein R_1 and R_2 are hydrogen or lower alkyl groups of from 1 to 4 carbon atoms, X and Y are hydrogen, haolgen or lower alkyl of from 1 to 3 carbon atoms and n and m are integers whose sum is 4, and

B. is a 6-hydroxy or lower alkoxy indazole having the formula



wherein R_3 is hydrogen or methyl and R_4 is hydrogen, methyl or ethyl,

2. for a time period ranging from 1 to 24 hours,
3. at a temperature ranging from 110° to 35°C,
4. in sulfuric acid having a concentration above 70%, and thereafter recovering the reaction product.

3,929,826

INDAZOLE DERIVATIVES AS OPTICAL BRIGHTENERS

Mauro Stagi, Allschwil, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

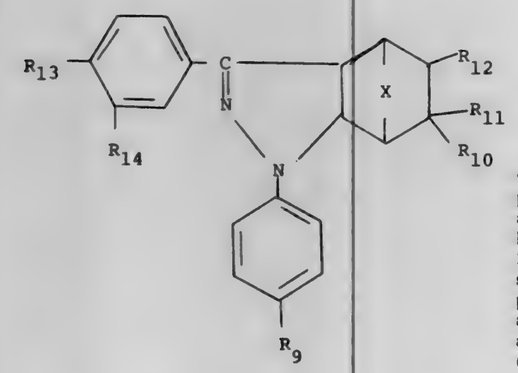
Division of Ser. No. 241,385, April 5, 1972, Pat. No. 3,828,069. This application May 20, 1974, Ser. No. 471,514

Claims priority, application Switzerland, Apr. 19, 1971, 5632/71

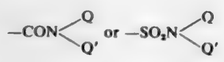
Int. Cl.² C07D *231/54*

U.S. Cl. 260—310 D **4 Claims**

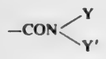
1. A 1,3-Diaryl-3a,4,5,6,7,7a-hexahydroindazole corresponding to the formula



or positional isomers of R_{10} and R_{11} with R_{12}, wherein R_9 denotes the



radicals, wherein Q and Q′ independently of one another represent hydrogen, alkyl with 1 to 4 carbon atoms or alkyl with 1 to 4 carbon atoms substituted by hydroxyl or alkoxy, or represents the $—SO_2Q''$ radical, wherein Q″ represents alkyl with 1 to 4 carbon atoms or alkyl with 1 to 4 carbon atoms substituted by hydroxyl, amino, sulphonic acid or carboxylic acid or represents alkenyl with 2 to 4 carbon atoms, R_{10} denotes hydrogen or nitrile, R_{11} and R_{12} independently one of another denote hydrogen, nitrile, alkyl possessing 1 to 4 carbon atoms, or a —COOY or



radical, wherein Y and Y′ independently of one another represent hydrogen, alkyl of 1 to 4 carbon atoms, hydroxy-substituted alkyl of 1 to 4 carbon atoms, or R_{11} and R_{12} together denote a fused benzene ring, R_{13} and R_{14} independently of one another denote hydrogen, chlorine or alkyl of 1 to 3 carbon atoms and X denotes $—CH_2—$.

3,929,827

1N,1N′-PHENYLENBIS(5-METHYL-4-PYRAZOLIN-3-ONES) AND PROCESS FOR PREPARING SAME

Carlo Venturello, Turin, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy

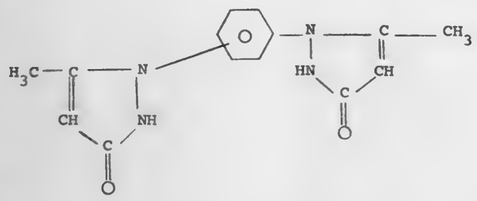
Filed Sept. 25, 1973, Ser. No. 400,516

Claims priority, application Italy, Sept. 26, 1972, 29674/72

Int. Cl.² C07D *231/08*

U.S. Cl. 260—310 A **3 Claims**

1. A process for preparing 1N, 1N′-para- or meta-phenylenbis (5-methyl-4-pyrazolin-3-ones) having the formula



which comprises reacting solid para- or, respectively, meta-phenylendiamine tetrazonium sulphate with diacetyl dimer in aldolic form, in a molar ratio of from 6:1 to 7:1, for about six hours, under atmospheric pressure and at a temperature of 30°C to 50°C, washing the reaction product comprising the salt of the 1N, 1N′-para- or meta-phenylenbis (5-methyl-4-pyrazolin-3-one) thus obtained with ether to remove unreacted diacetyl dimer, and dispersing the salt in water to liberate H_2SO_4 and recover the 1N, 1N′-para- or meta-phenylenbis (5-methyl-4-pyrazolin-3-one).

3,929,828

3′-AMINO-6′ OR 7′-(PYRAZOL-1-YL)FLUORAN COMPOUNDS

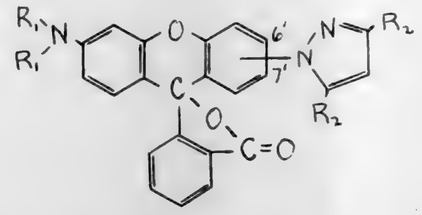
Derek J. Alsop, North Tonawanda, N.Y., assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.

Filed Nov. 21, 1974, Ser. No. 525,991

Int. Cl.² C07D *231/00*

U.S. Cl. 260—310 R **2 Claims**

1. A chromogenic 3′-amino-(pyrazol-1-yl) fluoran compound having the following structural formula:



wherein each R_1 represents either a hydrogen atom or a lower alkyl group of from one to five carbon atoms; wherein each R_2 represents either a hydrogen atom, a lower alkyl group of from one to five carbon atoms or a phenyl group; and wherein the pyrazol group is attached to the fluoran moiety at either the 6′ position or the 7′ position of the latter.

3,929,829

PH SENSITIVE DYES CONTAINING A PHENOLATE GROUP

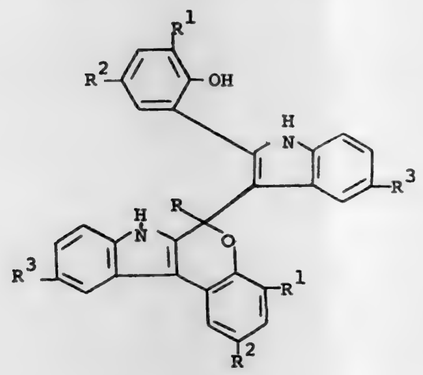
Alan L. Borror, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 204,326, Dec. 2, 1971, abandoned. This application Mar. 25, 1974, Ser. No. 454,693

Int. Cl.² C07D *209/14*

U.S. Cl. 260—326.15 **5 Claims**

1. A pH sensitive indicator dye of the formula:



wherein R is hydrogen or a hydrocarbon group containing up to 20 carbon atoms selected from alkyl, aryl selected from phenyl and naphthyl, phenyl-substituted alkyl and alkyl-substituted phenyl; R^1 and R^3 the same are hydrogen, chloro, or nitro; and R^3 is hydrogen; carboxy; $—NHSO_2R'$ wherein R′ contains up to 20 carbon atoms and is selected from alkyl, phenyl, naphthyl, phenyl-substituted alkyl and alkyl-substituted phenyl; $—SO_2NHR''$ wherein R″ contains up to 20 carbon atoms and is selected from alkyl, phenyl, naphthyl, phenyl-substituted alkyl and alkyl-substituted phenyl; or alkoxy, said alkoxy containing 1 to 18 carbon atoms.

3,929,830

N-(α-THIOCYANOACETYL)INDOLINES

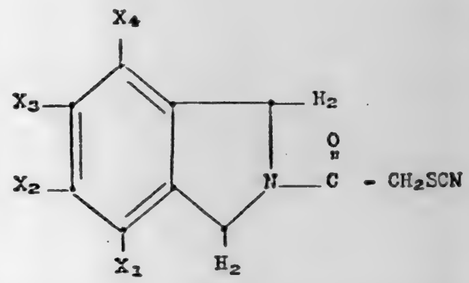
Sidney B. Richter, Chicago, and Alfred A. Levin, Skokie, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 284,295, Aug. 28, 1972, Pat. No. 3,869,471, which is a division of Ser. No. 165,348, July 22, 1971, Pat. No. 3,723,439, which is a continuation-in-part of Ser. No. 732,822, May 29, 1968, abandoned. This application Apr. 5, 1974, Ser. No. 461,076

Int. Cl.² C07D *209/44*

U.S. Cl. 260—326.1 **2 Claims**

1. A compound of the formula



wherein X_1, X_2, X_3 and X_4 are independently selected from the group consisting of hydrogen, lower alkyl, chlorine, bromine, trifluoromethyl, lower alkoxy and nitro provided that only one of X_1, X_2, X_3 and X_4 is nitro or tertiary lower alkyl and at least two of X_1, X_2, X_3 and X_4 are hydrogen.

3,929,831

HETEROCYCLIC SUBSTITUTED FLUORANS

Robert Garner, Ramsbottom Bury, England, and Jean Claude Petitpierre, Kaiseraugst, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

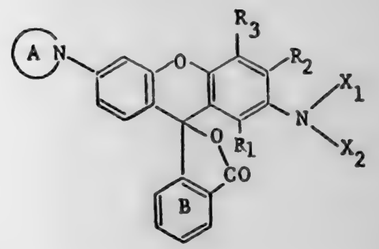
Filed Sept. 18, 1974, Ser. No. 507,158

Claims priority, application United Kingdom, Sept. 26, 1973, 45048/73; Oct. 23, 1973, 49331/73

Int. Cl.² C07D *207/14, 207/24, 207/26*

U.S. Cl. 260—326.34 **8 Claims**

1. A fluoran compound of the formula



wherein

R_1, R_2 and R_3 independently of the other, represent hydrogen, alkyl with one to four carbon atoms, nitro or halogen, or

R_2 and R_3 together complete a condensed carbocyclic ring,

X_1 and X_2 independently of the other, represent hydrogen, alkyl with one to 12 carbon atoms, alkenyl with at most 12 carbon atoms, alkoxyalkyl with two to eight carbon atoms, alkoxycarbonylalkyl with three to nine carbon atoms, cycloalkyl with five or six carbon atoms,

acyl having one to 12 carbon atoms, or an unsubstituted or substituted benzyl, phenyl or naphthyl radical, and the nitrogen ring A represents the pyrrolidinyl radical and the benzene ring B is unsubstituted or substituted by nitro or one to four halogen atoms.

3,929,832
2,3,7,8-TETRAAMINODIBENZOTHIOPHENE 5,5-DIOXIDE AND PROCESS THEREFOR

Albert J. Sicree, Dayton, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 371,089, June 18, 1973, Pat. No. 3,865,841. This application Nov. 22, 1974, Ser. No. 526,191
Int. Cl.² C07D *333/76*
U.S. Cl. 260—329.3 **2 Claims**

1. 2,3,7,8-Tetraaminodibenzothiophene-5,5-dioxide.

3,929,833
ORGANIC COMPOUNDS

Manfred Krieger, Pratteln, and Rudolf Sliess, Bettingen, both of Switzerland, assignors to Sandoz Ltd., (Sandoz AG), Basel, Switzerland

Continuation of Ser. No. 193,165, Oct. 27, 1971, abandoned. This application May 9, 1974, Ser. No. 468,378
Claims priority, application Switzerland, Oct. 30, 1970, 16064/70; July 6, 1971, 9888/71
Int. Cl.² C07D *333/24*
U.S. Cl. 260—332.2 C **4 Claims**

1. The compound, which is 3-hydroxy-2-(4-methoxyphenyl)-4-thiophenecarboxylic acid ethyl ester.

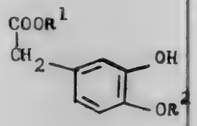
4. The compound, which is 2-(3-chlorophenyl)-3-hydroxy-4-thiophenecarboxylic acid ethyl ester.

3,929,834
3-ISOCHROMANONE DERIVATIVES

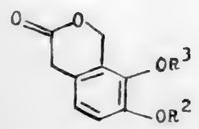
Wataru Nagata, Nishinomiya, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Filed June 13, 1974, Ser. No. 479,256
Claims priority, application Japan, June 26, 1973, 48-72057
Int. Cl.² C07D *311/20*
U.S. Cl. 260—343.2 R **8 Claims**

1. A process for producing 3-isochromanone derivatives which comprises reacting a compound of the formula:



wherein R' represents hydrogen or lower alkyl and R^2 is lower alkyl with formaldehyde or with a compound, which under the conditions of the reaction, yields formaldehyde, said reaction being carried out in the presence of a boron compound selected from the group consisting of boric acids, boric acid esters, tetraalkoxyboranes, boronic acids, boroxines, acyloxyboranes, alkoxyboranes and alkoxyhaloboranes and then alkylating or aralkylating the product to yield a compound of the formula:



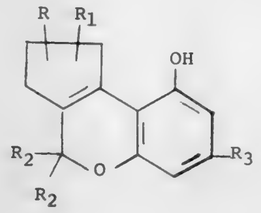
wherein R^2 has the same meaning as mentioned above, and R^3 represents lower alkyl or aralkyl.

3,929,835
ALKYL SUBSTITUTED CYCLOPENTA BENZOPYRANS

Martin Winn, Deerfield, Ill.; Raj Kumar Razdan, Belmont; Haldean Cloyce Dalzell, Weston, both of Mass., and Joyce Ruth Krei, Glenview, Ill., assignors to Sharps Associates, Cambridge, Mass.

Filed Aug. 29, 1973, Ser. No. 392,635
Int. Cl.² C07D *311/94*
U.S. Cl. 260—345.3 **8 Claims**

1. A compound of the formula



wherein R is a lower alkyl group having 1 to 5 carbons, R_1 is hydrogen or a lower alkyl group having 1 to 5 carbons, R_2 is a lower alkyl group and R_3 is an alkyl group having 1 to 20 carbon atoms, a phenyl-lower alkyl group or a cycloalkyl lower alkyl group.

3,929,836
2-(2-LOWER ALKYLAMINO-1-HYDROXY-ETHYL)-SUBSTITUTED BENZOFURANS

Graham Alwyn Fothergill, Knebworth; John Mervyn Osbond, Hatfield, and James Charles Wickens, Saint Albans, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 547,176, May 3, 1966, abandoned. This application Feb. 11, 1970, Ser. No. 10,645
Claims priority, application United Kingdom, May 11, 1965, 19823/65; Dec. 15, 1965, 53208/65; Mar. 18, 1966, 19823/66; Dec. 15, 1965, 53209/65; Dec. 15, 1965, 53210/65; Feb. 4, 1966, 4931/66
Int. Cl.² C07D *307/80*
U.S. Cl. 260—346.2 R **6 Claims**

1. 2-(2-isopropylamino-1-hydroxy-ethyl)-6,7-dimethyl-benzofuran.

3,929,837
2,3-DIHYDRO-2,2-DIMETHYL-7-ISOPROPYL BENZOFURAN AND 2-(2,3-DIHYDRO-2,2-DIMETHYL-7-BENZOFURANYL)ISOPROPYL HYDROPEROXIDE

Alexander Serban, Doncaster, and Phillip Knox Engel, Tullamarine, both of Australia, assignors to ICI Australia Limited, Melbourne, Australia

Division of Ser. No. 411,404, Oct. 31, 1973, Pat. No. 3,876,667, which is a division of Ser. No. 297,724, Oct. 16, 1972, Pat. No. 3,816,473. This application Jan. 16, 1975, Ser. No. 541,662
Claims priority, application Australia, Nov. 8, 1971, 6929/71
Int. Cl.² C07D *307/79*
U.S. Cl. 260—346.2 R **3 Claims**

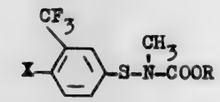
1. A benzofuran selected from the group consisting of 2,3-dihydro-2,2-dimethyl-7-isopropylbenzofuran and 2-(2,3-dihydro-2,2-dimethyl-7-benzofuranyl)isopropylhydroperoxide.

3,929,838
N-METHYL-N-(3-TRIFLUOROMETHYLPHENYLMERCAPTO)-CARBAMIC ACID DIHYDROBENZOFURANYL ESTERS

Peter Siegle, Cologne; Engelbert Kühle, Berg. Gladbach; Wolfgang Behrenz, and Ingeborg Hammann, both of Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 15, 1973, Ser. No. 360,485
Claims priority, application Germany, May 27, 1972, 2225872; Sept. 15, 1972, 2245344
Int. Cl.² C07D *307/79*
U.S. Cl. 260—346.2 R **3 Claims**

1. An N-sulfenylated N-methylcarbamic acid aryl ester of the formula



(I)

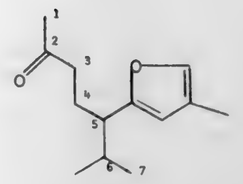
in which
X is hydrogen or halogen, and
R is dihydrobenzofuranyl optionally substituted by methyl.

3,929,839
FLAVOURING AND PERFUMING INGREDIENT

Edouard P. Demole, Coppet, Vaud, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

Division of Ser. No. 370,050, June 14, 1973, Pat. No. 3,857,403. This application July 31, 1974, Ser. No. 493,486
Int. Cl.² C07D *307/46*
U.S. Cl. 260—347.8 **2 Claims**

1. A pure compound of formula

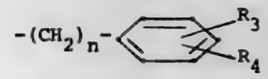


I

wherein R is hydrogen or R_1, and R_1 is a group of the formula $-CH_2OR_2$
wherein R_2 represents lower alkanoyl, benzoyl, a substituted benzoyl group of the formula



where R_3 represents loweralkyl, loweralkoxy, haloloweralkyl, halo or nitro and R_4 represents R_3 or hydrogen, or a group of the formula



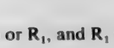
where *n* is 0 or 1 and R_3 and R_4 are the same as defined above, and the sodium salt thereof when R is hydrogen.

3,929,840
LABILE ESTERS OF (−)(CIS-1,2-EPOXYPROPYL)PHOSPHONIC

Burton G. Christensen, Scotch Plains; William J. Leanza, Berkeley Heights, and Georg Albers-Schonberg, Princeton, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 271,855, July 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 849,206, Aug. 11, 1969, abandoned, which is a continuation-n-part of Ser. No. 755,805, Aug. 28, 1968, abandoned, which is a continuation-in-part of Ser. No. 729,444, May 15, 1968, abandoned. This application Apr. 12, 1974, Ser. No. 460,330
Int. Cl.² C07F *9/40*
U.S. Cl. 260—348 A **7 Claims**

1. A labile ester of (−) (cis-1,2-epoxypropyl)phosphonic acid of the formula



3,929,841

ISOLATION OF 1,5-DINITROANTHRAQUINONE

Otto Ackermann, Otterstadt, and Heinz Eilingsfeld, Frankenthal, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed July 2, 1974, Ser. No. 485,213

Claims priority, application Germany, July 7, 1973, 2334713

Int. Cl.² C09B *1/00*

U.S. Cl. 260—369 **6 Claims**

1. A process for the isolation of 1,5-dinitroanthraquinone by extraction from a dinitroanthraquinone mixture which has been obtained by dinitration of anthraquinone wherein such an amount of N-methylpyrrolidone is allowed to act on the dinitroanthraquinone mixture that from 10 to 45% by weight of the mixture remains undissolved.

3,929,842

ANTHRAQUINONE DISPERSE DYES

Eiji Yamada, Ibaragi, and Masao Nishikuri, Hirakata, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

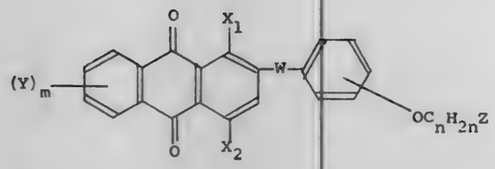
Filed Aug. 27, 1973, Ser. No. 391,872

Claims priority, application Japan, Sept. 6, 1972, 47-89818

Int. Cl.² C09B *1/54, 1/56*

U.S. Cl. 260—376 **4 Claims**

1. A compound of the formula,



wherein X_1 and X_2 each are an amino or hydroxyl group, Y is a halogen atom, W is an oxygen or sulfur atom, Z is —COOR in which R is a hydrogen atom, a C_1–C_8 alkyl group unsubstituted or substituted with a lower alkoxy or phenyl group or a halogen atom, or a phenyl group unsubstituted or substituted by a lower alkyl or alkoxy group or a halogen atom, *n* is an integer of from 1 to 7, and *m* is 0, 1 or 2.

3,929,843

DIHYDROXYTHIOPHENOXYANTHRAQUINONES

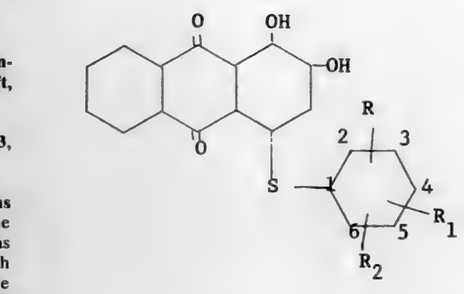
Raouf Botros, Beech Creek, Pa., assignor to American Color & Chemical Corporation, Charlotte, N.C.

Filed Nov. 26, 1974, Ser. No. 527,370

Int. Cl.² C07C *49/74*; C09B *1/02*

U.S. Cl. 260—383 **5 Claims**

1. A dye of the formula:



in which R, R_1 and R_2 are members independently selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl, chlorine and bromine.

3,929,844

3-CYCLOPENTYL ETHERS OF 7α-METHYL ESTRONE

Georg Anner, and Jaroslav Kalvoda, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

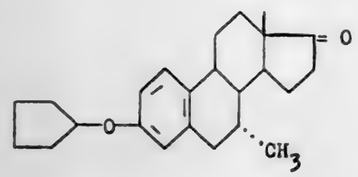
Continuation of Ser. No. 136,161, April 21, 1971, abandoned. This application Aug. 31, 1973, Ser. No. 393,518

Claims priority, application Switzerland, Apr. 24, 1970, 6217/70

Int. Cl.² C07J *1/00*

U.S. Cl. 260—397.4 **1 Claim**

1. The 3-cyclopentyl ether of 7α-methyloestrone of the formula



(I)

3,929,845

PREPARATION OF ALKYLAMIDES

Roger G. Duranleau, Ardonia, and John M. Larkin, Wappinger Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 12, 1974, Ser. No. 532,290

Int. Cl.² C07C *103/02*

U.S. Cl. 260—404 **14 Claims**

1. A method of preparing an alkylamide which comprises contacting a nitroketone with hydrochloric acid as catalyst in the presence of a carboxylic acid solvent.

3,929,846

ETHER TRIESTER DERIVATIVES OF P-DIOXANONE

Thomas C. Snapp, Jr., and Alden E. Blood, both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 25, 1974, Ser. No. 508,313

Int. Cl.² C09F *5/08*

U.S. Cl. 260—410.6 **19 Claims**

1. A compound having the formula

wherein R is alkyl of from 1 to 7 carbon atoms and X is an alkyl of 2 to 8 carbon atoms or $-(CH_2CH_2)_nO_{n-1}$ where *n* is an integer of from 2 to 4.

3,929,847

ETHER DIESTER DERIVATIVES OF P-DIOXANONE

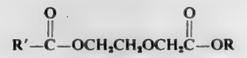
Thomas C. Snapp, Jr., and Alden E. Blood, both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 25, 1974, Ser. No. 508,314

Int. Cl.² C09F *5/08*

U.S. Cl. 260—410.6 **21 Claims**

1. A compound having the formula



wherein R is alkyl of from 1 to 8 carbon atoms and R′ is alkyl of from 1 to 7 carbon atoms.

3,929,848

CHROME-COMPLEXING AZOMETHINE DYES

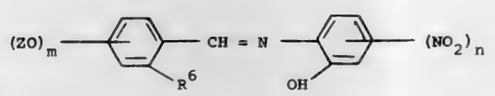
Henry Bader, Newton Center, Mass., and Edwin G. Jahngen, Jr., Burlington, Vt., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 47,174, June 17, 1970, abandoned. This application July 19, 1971, Ser. No. 164,103

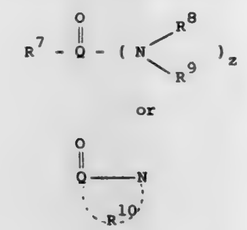
Int. Cl.² C07F *11/00*

U.S. Cl. 260—438.5 R **31 Claims**

1. A process for producing a chrome-complexed azomethine dye which comprises the step of chrome-complexing an azomethine dye of the formula:



wherein Z is hydrogen or an alkyl radical containing from 1–8 carbon atoms, *m* and *n′* are the integers 1 or 2 and R^6 is OH or alkoxy containing from 1–8 carbon atoms; with a chroming reagent prepared by dehydrating a chrome-containing compound in the presence of a dipolar solvent of the formulae:



wherein R^7 is hydrogen or alkyl having from 1–8 carbon atoms; Q is carbon, phosphorus or sulfur; R^8 and R^9 are hydrogen, alkyl or aryl and can be the same or different; z is the integer 1, 2 or 3; and R^{10} represents the carbon atoms necessary to complete a 5 or 6 membered ring.

9. A process of claim 1 including the step of reacting the produced chrome-complexed azomethine dye with a ligand containing a p-dihydroxyphenyl substituent or protected derivative thereof to produce a 1:1 chrome-complesed azomethine dye chrome-complexed

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3,929,849

TETRAALKYL PHOSPHONIUM ALUMINOSILICATES

Alexis A. Oswald, Mountainside, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Oct. 1, 1973, Ser. No. 402,465

Int. Cl.² C07F *5/06*

U.S. Cl. 260—448 C **16 Claims**

1. Tetra-alkyl phosphonium clays of layer and chain type structure.

3,929,850

PROCESS FOR THE PRODUCTION OF POLYMERIC HYDROCARBONS HAVING REACTIVE SILYL END GROUPS

Roland Streck, and Heinrich Weber, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Division of Ser. No. 306,989, Nov. 16, 1972, Pat. No. 3,857,825. This application Sept. 30, 1974, Ser. No. 510,761

Claims priority, application Germany, Nov. 19, 1971, 2157405

Int. Cl.² C07F *7/08, 7/18*

U.S. Cl. 260—448.2 E **19 Claims**

1. A process for preparing liquid polymeric hydrocarbons having reactive silyl end groups by catalyzed ring opening polymerization of a cyclic olefin, which comprises reacting:

a. a cyclomonoalkene or non-conjugated cyclopolyalkene monomer capable of catalytic ring opening polymerization having at least one metathetical unsubstituted, ethylenically unsaturated double bond in a hydrocarbon ring which contains 4, 5, 7 or more ring carbon atoms;

b. about 0.001-1.0 mole per mole of said monomer of a tetrasubstituted organic silicon compound consisting essentially of

i. at least one metathetical organic group having at least one unsubstituted, ethylenically unsaturated, non-conjugated, acyclic double bond, which group is bonded to silicon via a carbon-silicon bond;

ii. at least one hydrolyzable group bonded to a silicon atom via a carbon-silicon bond, selected from the group consisting of halogen, lower alkoxy, lower alkanoyloxy, carbocyclic aroyloxy of 6–12 carbon atoms and lower ketoxime; and

iii. any remaining silicon valences bearing a carbon-silicon bond; in the presence of

d. a catalytic amount of a cycloolefin metathesis catalyst comprising:

i. a halogenated compound of a metal in Subgroups 5–7 of the Mendeleyeev Periodic Table; and

ii. a metal, metal alkyl or metal hydride of a metal in Main Groups 1–3 of the Mendeleyeev Periodic Table;

in a reaction media substantially free of conjugated diolefins, alkines, water and H-acidic compounds, at a temperature of about −50° C. to +80° C. to form a liquid polymeric hydrocarbon chain having reactive silyl end groups.

3,929,851
PROCESS FOR PRODUCING HALOGENATED COMPOUNDS

John Heathcote Atherton; John Beckett Plumb, and Ronald Sangster Stuart, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 23, 1974, Ser. No. 435,957
Claims priority, application United Kingdom, Jan. 31, 1973, 4766/73
Int. Cl.² C07F 7/08, 7/18
U.S. Cl. 260—448.2 E 15 Claims

1. A process for the production of organosilicon compounds having at least one group XR—, where X is a halogen other than fluorine and R is a divalent hydrocarbon group, attached to silicon which comprises reacting an organosilicon compound having at least one group R′OR—, where R′ is a hydrocarbyl group, with a reagent consisting essentially of fluorine-free thionyl halides to replace the R′O group by halogen.

3,929,852
PROCESS FOR PREPARING α,β-UNSATURATED THIOLESTERS

Nicholas Kydonieus, Wayne, and Stanley Robert Sandler, Springfield, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed May 1, 1974, Ser. No. 465,788
Int. Cl.² C07C 153/11
U.S. Cl. 260—455 R 11 Claims

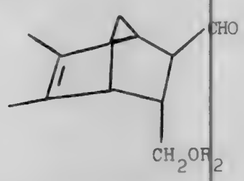
1. In the process of preparing an α,β-unsaturated thiolester via the reaction of an α,β-unsaturated carboxylic acid chloride, fluoride, bromide or anhydride with a mercaptan, the improvement which comprises conducting said reaction with the reactants in contact with a catalytically effective amount of compound selected from the group consisting of the chlorides and bromides of iron, tin, aluminum, boron, titanium, vanadium, zirconium, manganese, chromium, antimony, indium, tantalum, tellurium, bismuth, mercury, phosphorus, and silicon; the fluorides of boron and antimony; the sulfates of iron; and the oxides of iron and tin.

3,929,853
PREPARATION OF CYCLOPENTANE DERIVATIVES

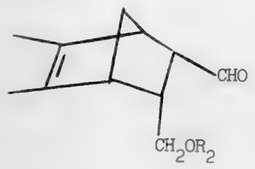
Albert Eduard Fischli, Basel, Switzerland; Michael Josef Klaus, Weil am Rhine, Germany; Hans Johann Mayer, Fullinsdorf, and Alexander Eduard Wick, Riehen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 20, 1973, Ser. No. 389,756
Claims priority, application Switzerland, Aug. 28, 1972, 12684/72; July 12, 1973, 10165/73
Int. Cl.² C07C 47/40
U.S. Cl. 260—456 R 2 Claims

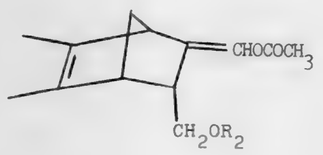
1. A process for preparing a compound of the formula:



wherein R_2 is a radical derived from an optically active or inactive monocyclic, bicyclic or tricyclic aromatic dicarboxylic acid containing 8 to 20 carbon atoms or an aliphatic dicarboxylic acid containing 3 to 12 carbon atoms, by removal of the hydrogen from one of the carboxyl groups, a radical derived from an optically active aliphatic mono-carboxylic acid containing 3 to 12 carbon atoms or an araliphatic mono-carboxylic acid wherein the aromatic moiety is a monocyclic, bicyclic or tricyclic radical containing 8 to 20 carbon atoms and the aliphatic moiety contains 3 to 12 carbon atoms, by removal of the hydrogen of the carboxyl group, a radical derived from an optically active sulfonic acid by removal of the hydrogen of the sulfanoyl group and the radical derived from an optically active carbamic acid by removal of the hydrogen from the carbamoyl group; comprising treating a compound of the formula:



wherein R_2 is as above; with a mixture of sodium acetate and acetic anhydride to form an enol acetate of the formula:



wherein R_2 is as above; and thereafter saponifying said enol acetate with pyridine in methanol.

3,929,854
BUNTE SALTS CONTAINING FLUORO-ALKYL GROUPS

Karl Waldmann, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Germany

Division of Ser. No. 238,524, March 27, 1972, Pat. No. 3,839,417. This application June 28, 1974, Ser. No. 484,161
Claims priority, application Germany, Mar. 29, 1971, 2115140The portion of the term of this patent subsequent to Oct. 1, 1991, has been disclaimed.
Int. Cl.² C07C 141/02
U.S. Cl. 260—458 6 Claims

1. A compound of the formula

$$X-C_aF_{2a}-V-S_2O_3-M$$

in which X is hydrogen or fluorine, a is a number from 4 to 14, V is a bivalent radical which contains at least one but not more than a methylene groups and which does not contain in the terminal position related to the thiosulfato group an ethylene group activated by a sulfonyl or carbonyl group, V having the formula

$$-(CHR')_b-(O)_c-(Z)_d-NR-(CH_2)_g-$$

3,929,855
N-1,3-DIMETHYLBUTYL-N′-1,4-DIMETHYLPENTYL-P-PHENYLENEDIAMINE ANTIOZONANTS

Charles Gene Summers, Medina, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 10, 1974, Ser. No. 513,712
Int. Cl.² C08G 6/00
U.S. Cl. 260—45.9 QB 3 Claims

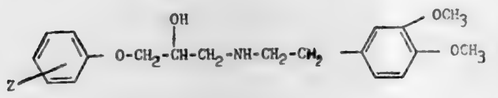
1. Vulcanizable diene rubber having incorporated therein a stabilizing amount of N-1,3-dimethylbutyl-N′-1,4-dimethylpentyl-p-phenylenediamine.

3,929,856
1-(3,4-DIMETHOXYPHENETHYLAMINO)-3-(PHENOXY)-2-PROPANOLS

Ann Holmes, and Robert F. Meyer, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Division of Ser. No. 207,954, Dec. 14, 1971, Pat. No. 3,857,891. This application Sept. 3, 1974, Ser. No. 502,591
Int. Cl.² C07C 93/06, 121/80
U.S. Cl. 260—465 E 4 Claims

1. A member of the class consisting of compounds of the formula



and acid-addition salts thereof; where Z is a member of the class consisting of lower alkoxy, chloro, cyano, hydroxymethyl, acetyl, and o-allyl.

3,929,857
1,1-DI(AMINOALKYLTHIO)-2,2-DICYANOETHYLENES

John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 224,968, Feb. 9, 1972, Pat. No. 3,776,891. This application Aug. 8, 1973, Ser. No. 386,756
Int. Cl.² C07C 121/30
U.S. Cl. 260—465.5 R 6 Claims

1. A compound of the formula

$$(CN)_2C=C(S-A-NRR_1)_2$$

in which A is dimethylene, 1-methyl-dimethylene, trimethylene, 1-methyl-trimethylene or tetramethylene, and R and R_1 independently are lower alkyl, aralkyl of 7–10 carbon atoms, or cycloalkyl of 5–8 ring carbon atoms or R and R_1 together with the nitrogen is a heterocyclic radical of 4–8 carbon atoms.

3,929,858
METHOD FOR PREPARING 2-BROMO-2-BROMOMETHYL-GLUTARONITRILE

Roger D. Swigert, Rahway, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 3, 1974, Ser. No. 529,014
Int. Cl.² C07C 120/00, 121/20
U.S. Cl. 260—465.7 4 Claims

1. A method for preparing 2-bromo-2-bromomethyl-glutaronitrile comprising reacting substantially equimolar quantities of bromine and 2-methyleneglutaronitrile in a solvent selected from the group consisting of water or carbon tetrachloride wherein there is 0.75 to 1.5 parts by weight of water or 0.5 to 1.5 parts by weight carbon tetrachloride employed for each part by weight of 2-methyleneglutaronitrile at a temperature of from about 70°C. to about 110°C. for from about ¼ hour to 4 hours.

3,929,859
MANUFACTURE OF DINITRILES FROM THIODINITRILES

James L. Callahan, Wooster, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Nov. 18, 1974, Ser. No. 524,729
Int. Cl.² C07C 120/00, 121/20, 121/26, 121/64
U.S. Cl. 260—465.8 R 15 Claims

1. A process for producing a dinitrile of the formula

$$NC-R-R'-CN$$

from a thiodinitrile of the formula

$$NC-R''-S-R'''-CN$$

wherein:
R, R′, R″ and R‴ are aliphatic or aromatic hydrocarbon radicals; and
R and R″ have the same number of carbon atoms and R′ and R‴ have the same number of carbon atoms
comprising heating the thiodinitrile at a temperature of 200° to 700°C.

3,929,860
SULFOLANE OR AQUEOUS SULFOLANE AS DILUENT FOR PREPARATION OF UNSATURATED NITRILES FROM LOWER UNSATURATED NITRILES AND OLEFINS

Charles A. Drake, Nowata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 29, 1974, Ser. No. 518,748
Int. Cl.² C07C 120/00, 121/30, 121/48, 121/70
U.S. Cl. 260—465.9 28 Claims

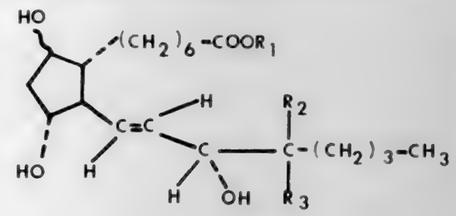
1. In a method wherein at least one olefinic hydrocarbon compound is reacted with at least one olefinically unsaturated nitrile reactant in the presence of a diluent under suitable reaction conditions to produce, as the principal product, at least one olefinically unsaturated nitrile product having a greater number of carbon atoms than said unsaturated nitrile reactant;
said at least one unsaturated nitrile reactant having the formula RCH=CR—CN, wherein each R is independently selected from the group consisting of hydrogen, alkyl, cycloalkyl, and aryl hydrocarbyl radicals and combinations thereof;
said at least one olefinic hydrocarbon compound having the formula $R'_2C=CR'-CHR'_2$, wherein each R′ is independently selected from the group consisting of hydrogen, alkyl, cycloalkyl, and aryl hydrocarbyl radicals and combinations thereof;
the improvement comprising conducting the reaction of said at least one olefinic hydrocarbon and said at least one olefinically unsaturated nitrile reactant in the presence of a diluent comprising at least one sulfolane compound and from zero to about 50 weight percent water, based on the total weight of said diluent; and wherein the amount of the total of said water, if present, and said at least one sulfolane compound is in the range of about 0.5 to about 40 parts by weight per part by weight of said at least one olefinically unsaturated nitrile reactant.

3,929,861
16- AND 16,16-METHYL AND ETHYL SUBSTITUTED PGF_1-TYPE COMPOUNDS

John E. Pike, Kalamazoo, and William P. Schneider, Kalamazoo Township, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 274,822, July 24, 1972, Pat. No. 3,813,433, which is a continuation-in-part of Ser. No. 123,388, March 11, 1971, abandoned, which is a continuation-in-part of Ser. No. 648,992, June 26, 1967, abandoned. This application Feb. 11, 1974, Ser. No. 441,519
Int. Cl.² C07C 61/38, 69/74
U.S. Cl. 260—468 D 10 Claims

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein ~ indicates alpha or beta attachment of hydroxyl to the cyclopentane ring, R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, or a pharmacologically acceptable cation, and wherein R_2 and R_3 are methyl.

3,929,862

SUBSTITUTED TOLYLESTERS OF $PGF_2\alpha$

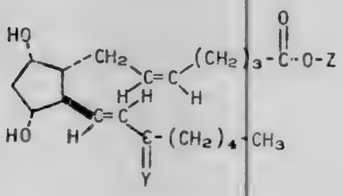
Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 431,758, Jan. 8, 1974. This application Sept. 30, 1974, Ser. No. 510,233

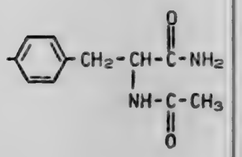
Int. Cl.² C07C *103/85*

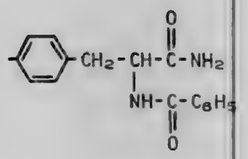
U.S. Cl. 260—468 D **8 Claims**

1. An optically active compound of the formula

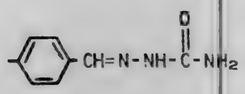


or a racemic compound of that formula and the mirror image thereof, wherein Z is

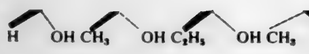




or



and wherein Y is



3,929,863

AROMATIC DIAMINO CARBONIC ACID ESTERS

Johannes Blahak, Colonge-Buchheim; Erwin Müller, and Helmut Kleimann, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

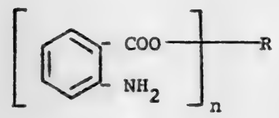
Filed Aug. 12, 1971, Ser. No. 171,381

Claims priority, application Germany, Aug. 17, 1970, 2040644

Int. Cl.² C07C *101/48*

U.S. Cl. 260—471 R **5 Claims**

1. Aromatic amines of the general formula



wherein *n* represents an integer of from 2 to 8, and R represents an n-valent saturated or unsaturated, straight chain or branched chain hydrocarbon radical which is interrupted by an O or S atom which is obtained by the removal of OH or SH groups from a polyol or polythiol having a molecular weight of from 76 to 599.

3,929,864

PROCESS FOR PREPARING 4-HYDROXY-3-NITROBENZOIC ACID ALKYL ESTERS

Theodor Papenfuss, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Aug. 27, 1973, Ser. No. 392,097

Int. Cl.² C07C *101/54*

U.S. Cl. 260—471 R **3 Claims**

1. A process for preparing a pure 4-hydroxy-3-nitrobenzoic acid alkyl ester by nitration of 4-hydroxybenzoic acid alkyl esters with nitric acid, wherein nitration is carried out at about 0° to 60°C with the aid of nitric acid having a strength of 30 to 62%.

3,929,865

N-1-NAPHTHYLCARBAMIC ACID-2,4,5-TRICHLOROPHENOL ESTER

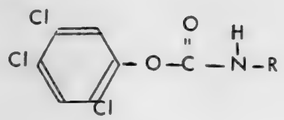
Mike Mehdi Fooladi, Apt. 4-B, Oakmont Manor Apts., Vicksburg, Miss. 39180

Filed Nov. 13, 1974, Ser. No. 523,496

Int. Cl.² C07C *125/06*

U.S. Cl. 260—471 C **1 Claim**

1. Compound having the formula



wherein R r is 1-naphthyl group.

3,929,866

DIESTERS OF TETRABROMOPHTHALIC ANHYDRIDE

James P. Baldino, Haddonfield, N.J., and Joseph Feltzin, Wilmington, Del., assignors to ICI United States Inc., Wilmington, Del.

Filed May 18, 1973, Ser. No. 361,476

Int. Cl.² C07C *69/80*

U.S. Cl. 260—475 P **2 Claims**

1. A simple diester comprising the single step reaction product of tetrabromophthalic anhydride and a polyhydric alcohol selected from the group consisting of trimethylol propane, pentaerythritol, glycerol, the reaction product of propylene oxide and sorbitol, the reaction product of ethylene oxide and sorbitol, arabitol, xylitol, adonitol, mannitol, dulcitol, sorbitol, 1,2,4-benzenetriol, phloroglucinol, 1,2,3,5-benzenetetrol, 1,2,4,5-benzenetetrol, and benzenehexol, wherein the molar ratio of polyhydric alcohol to tetrabromophthalic anhydride is equal to 2 to 1.

3,929,867

MIXED ESTER PLASTIC ADDITIVE

Anthony W. McCollum, and David C. Hull, both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 6, 1973, Ser. No. 385,759

Int. Cl.² C07C *69/82*

U.S. Cl. 260—475 P **3 Claims**

1. The mixed ester reaction product of 2,2,4-trimethylpentane-1,3-diol-monoisobutyrate, a monohydric alcohol of the form ROH where R is straight or branch-chained alkyl of 1 to 12 carbon atoms or benzyl, and dimethyl terephthalate wherein the molar ratio of the reactants is from about 0.1/1.9/1.0 to about 1.9/0.1/1.0 respectively and which mixture has an apparent molecular weight of from about 400 to about 1000.

3,929,868

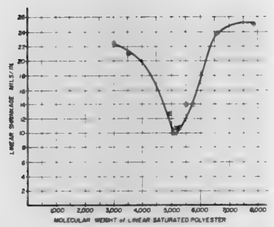
SATURATED POLYESTER USEFUL AS LOW SHRINK ADDITIVE FOR MOLDING COMPOSITIONS CONTAINING UNSATURATED POLYESTERS

John R. Dombroski, and John R. Caldwell, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

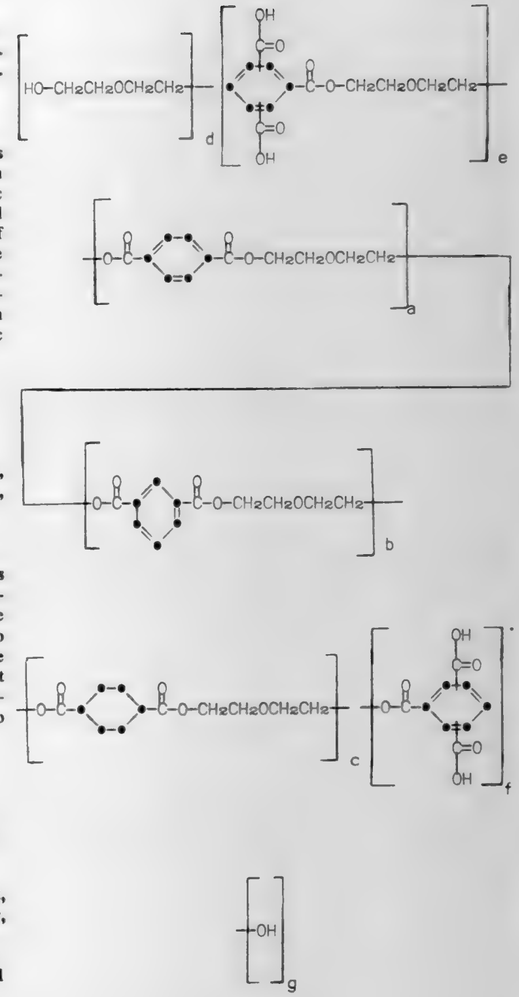
Continuation-in-part of Ser. No. 388,705, Aug. 15, 1973, abandoned. This application July 11, 1974, Ser. No. 487,691

Int. Cl.² C08G *63/20*

U.S. Cl. 260—475 P **2 Claims**



1. A polyester consisting essentially of the following structure



wherein

based on the sum of *a*, *b* and *c* being 100 moles, *a* is from 44 to 47 moles, *b* is from 44 to 47 moles and *c* is from 6 to 12 moles,

d is 0 or 1, *e* is 0 or 1 and the sum of *d* and *e* = 1,

f is 0 or 1, *g* is 0 or 1 and the sum of *f* and *g* = 1,

e or *f* are at least 1, the molecular weight of the polyester is 4000 to 6000, and

the acid number of the polyester is 10 to 30.

3,929,869

PENTANOL DERIVATIVES

Martine Pierrette Benoit-Guyod; Jean-Louis Alain Benoit-Guyod, both of Grenoble; Andre Louis Boucherle, Corenc-Montfleury, and Pierre Luc Eymard, Fontaine, all of France, assignors to Labaz, Paris, France

Continuation of Ser. No. 374,530, June 28, 1973, abandoned. This application Sept. 19, 1974, Ser. No. 507,380

Int. Cl.³ C07C *125/04*

U.S. Cl. 260—482 C **2 Claims**

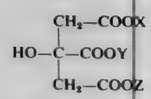
1. 4-n-propyl-3-heptanol carbamate.

3,929,870
EMULSIFIERS DERIVED FROM HYDROXYCARBOXYLIC ACIDS

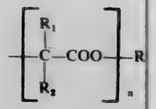
Reginald David, Lyon, and Jean Estienne, Ternay, both of France, assignors to Rhone-Poulenc, S.A., Paris, France

Filed May 28, 1974, Ser. No. 473,828
Claims priority, application France, May 30, 1973, 73.19733
Int. Cl.² C07C 69/68
U.S. Cl. 260—484 A **11 Claims**

1. A citric acid ester of the formula:



in which each of X, Y and Z represents:
a. hydrogen, alkali metal, or ammonium; or
b. a radical of formula:



in which n is 1 to 2, R_1 and R_2, which may be identical or different, are each hydrogen or methyl, and R is a saturated or unsaturated aliphatic radical of 12 to 22 carbon atoms, one to two of X, Y and Z conforming to definition (a), and the remainder conforming to definition (b).

3,929,871
1-(3-HYDROXY-4-ALKYL-PHENYL)-ALKYLAMINES(-2) AND THE SALTS THEREOF

Per Arvid Emil Carlsson, Goteborg; Hans Rudolf Corrodi, Askim; Sven Göran Hallhagen, Molndal, and Ulf Krister Junggren, Goteborg, all of Sweden, assignors to Aktiebolaget Hassle, Gothenburg, Sweden

Division of Ser. No. 811,662, March 28, 1969, Pat. No. 3,655,737, which is a continuation of Ser. No. 171,017, Aug. 11, 1971, abandoned. This application June 21, 1973, Ser. No. 372,088
Claims priority, application Sweden, Apr. 1, 1968, 4332/68
Int. Cl.² C07C 87/29
U.S. Cl. 260—501.17 **2 Claims**

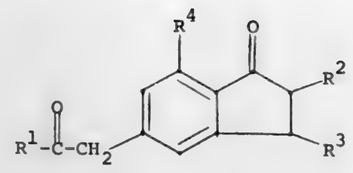
1. 1-(3-hydroxy-4-ethyl-phenyl)-propylamine(-2 or their optical antipodes) or therapeutically acceptable salts thereof.
2. 1-(3-hydroxy-4-methyl-phenyl)-butylamine(-2) or their optical antipodes or therapeutically acceptable salts thereof.

3,929,872
INDANACETIC ACID COMPOUNDS

Edward J. Cragoe, Jr., Lansdale; Everett M. Schultz, Ambler, and Otto W. Woltersdorf, Jr., Chalfont, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 12, 1973, Ser. No. 405,966
Int. Cl.² C07C 63/595
U.S. Cl. 260—515 R **8 Claims**

1. A compound having the formula:



wherein R^1 is hydroxy, alkali metal alkaline earth metal salts thereof and lower alkoxy; R^2 is hydrogen, lower alkyl and lower cycloalkyl; R^3 is hydrogen and lower alkyl and R^4 is hydrogen, lower alkyl or halogen.

3,929,873
OXIDATION OF POLYETHYLENE GLYCOLS TO DICARBOXYLIC ACIDS

William J. Gammans, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 23, 1973, Ser. No. 408,764
Int. Cl.² C07C 51/26
U.S. Cl. 260—531 R **16 Claims**

1. A process whereby a polyethylene glycol of the formula

$$HO-CH_2-CH_2-O+CH_2-CH_2-O+_nCH_2CH_2OH$$

where n is from 0 to 1, is oxidized directly to a dicarboxylic acid having the formula

$$HOOC-CH_2-O(CH_2-CH_2-O)_nCH_2-COOH$$

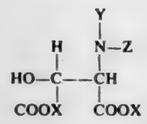
wherein n is as previously defined, in the presence of a platinum catalyst selected from the group consisting of finely divided platinum and platinum supported on carbon and an oxidizing gas.

3,929,874
AMINOHYDROXYPOLYCARBOXYLIC ACID COMPOUNDS

Claus Beermann, Wildsachsen, Taunus; Volker Knittel, Wiesbaden, and Walter Dürsch, Schneidhain, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

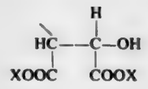
Filed Aug. 21, 1973, Ser. No. 390,321
Claims priority, application Germany, Aug. 22, 1972, 2241134
Int. Cl.² C07C 101/30
U.S. Cl. 260—534 M **4 Claims**

1. A compound of the formula

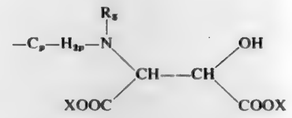


[(III)]

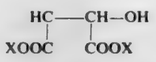
wherein Z is one of the groups $—CR_3R_4—COOX$,



or



wherein, if Z stands for the group



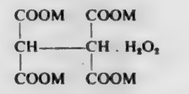
Y represents hydrogen or methyl, and for all the other variants of Z, Y is hydrogen, methyl or alkyl or hydroxyalkyl having 2 to 4 carbon atoms, and wherein X is hydrogen or an alkali metal, and R_3 and R_4 independently from each other representing hydrogen, alkyl or hydroxyalkyl having 1 to 4 carbon atoms, and R_4 furthermore representing the radical $—(CH_2)_m—COOX$, m being 1 to 4 and X having the above meaning, R_5 representing hydrogen or methyl, and p being 2 or 3.

3,929,875
ETHANETETRACARBOXYLATE PERHYDRATES

John N. Rapko, St. Louis, and Marvin M. Crutchfield, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed July 15, 1974, Ser. No. 488,382
Int. Cl.² C07C 55/24
U.S. Cl. 260—537 R **2 Claims**

1. A compound represented by the formula



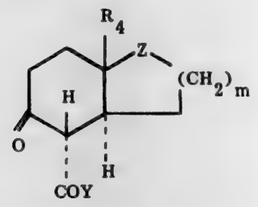
wherein M is alkali metal or ammonium.

3,929,876
STEREOSPECIFIC TOTAL STEROIDAL SYNTHESIS VIA SUBSTITUTED C/D-TRANS INDANONES

Zoltan George Hajos, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 765,023, Oct. 4, 1968. This application June 24, 1974, Ser. No. 482,713
Int. Cl.² C07C 61/36
U.S. Cl. 260—544 L **1 Claim**

1. A compound of the formula



wherein R_4 is hydrogen or lower alkyl, Z is lower alkylenedioxy methylene or $CH(OR_3)$ where R_3 is hydrogen, lower alkyl, lower alkoxy-lower alkyl, phenyl lower alkyl, tetrahydropyranyl, lower alkanoyl, benzoyl, nitrobenzoyl, carboxy-lower alkanoyl, carboxybenzoyl, trifluoroacetyl, or camphorsulfonyl, m is an integer having a value of 1 or 2 and Y is selected from the group consisting of chlorine, fluorine, bromine and iodine, its optical enantiomer and the racemate thereof.

3,929,877
PROCESS FOR THE PRODUCTION OF THIOCARBOHYDRAZIDE

Anton Toth, Obernburg; Hans-Dieter Rupp, Kassel-Bettenhausen, and Gerhard Meyer, Obernburg, all of Germany, assignors to Akzo N.V. of Arnhem, Holland, Arnhem, Netherlands

Filed Nov. 18, 1974, Ser. No. 524,931
Claims priority, application Germany, Nov. 26, 1973, 2358819
Int. Cl.² C07C 157/02
U.S. Cl. 260—552 SC **8 Claims**

1. In a process of the production of thiocarbohydrazide by the thermal treatment of hydrazinium-dithiocarbazinate in hydrazine hydrate as the reaction medium, the improvement which comprises carrying out said thermal treatment at a temperature of 20°C. to 85°C. in an aqueous or water-free hydrazine hydrate to which hydrogen sulfide has been added before said thermal treatment.

3,929,878
DECOMPOSITION OF AMMONIUM CARBAMATE

Ivo Mavrovic, 530 E. 72nd St., New York, N.Y. 10021

Filed May 10, 1971, Ser. No. 237,644
Int. Cl.² C07C 126/00
U.S. Cl. 260—555 A **6 Claims**

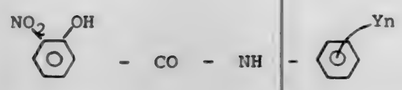
1. In the process for decomposing ammonium carbamate in an aqueous urea solution containing said carbamate, urea, water and ammonia, wherein said solution is charged to a lower section of a tube and shell decomposing vessel, wherein said solution is forced upwardly through and is heated in a tube of said vessel to a temperature at which the carbamate is decomposed with the formation of a liquid phase containing urea, wter, residual ammonium carbamate and residual ammonia, and a gaseous phase containing ammonia, carbon dioxide and water vapor, wherein said phases are discharged from said tube into an upper section of said decomposing vessel above the upper surface of the heat transfer chamber of said vessel, and wherein said gas phase is discharged through a discharge line positioned proximate the top of said upper section of said decomposing vessel, the improvement which comprises:
deflecting, in said upper section, said upwardly moving phases downwardly before said phases reach said discharge line, and
removing said liquid phase from an outlet located in said upper section at or below the upper extremity of said tube, thereby preventing substantially all of said liquid phase from reentering said tube.

3,929,879
3-NITROHALOSALICYLANILIDES

Robert G. Taborsky, Bedford Heights, Ohio, assignor to Ben Venue Laboratories, Inc., Bedford, Ohio

Continuation-in-part of Ser. No. 469,300, July 2, 1965, abandoned, which is a continuation-in-part of Ser. Nos. 325,473, Nov. 21, 1963, abandoned, and Ser. No. 435,686, Feb. 26, 1965, abandoned, each is a continuation-in-part of Ser. No. 56,679, Sept. 19, 1960, abandoned. This application May 20, 1968, Ser. No. 730,596
Int. Cl.² C07C 103/76
U.S. Cl. 260—559 S **9 Claims**

1. A 3-nitrohalosalicylanilide having the formula



where Y is a halogen and *n* is a positive integer no greater than 5.

3,929,880

PROCESS FOR THE PREPARATION OF OXOCARBOXYLIC ACID AMIDES AND OXOCARBOXYLIC ACIDS

Richard Kirchlechner; Werner Rogalski, and Jurgen Seubert, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

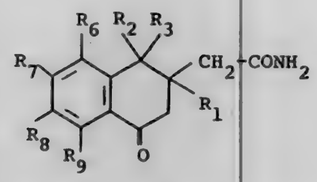
Division of Ser. No. 281,651, Aug. 18, 1972, Pat. No. 3,870,757. This application Jan. 3, 1974, Ser. No. 430,529

Claims priority, application Germany, Aug. 21, 1971, 2141947

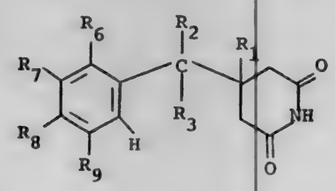
Int. Cl.² C07C *103/19*

U.S. Cl. 260—559 A **3 Claims**

1. A process for the preparation of a cyclic oxo-carboxylic acid amide of the formula



wherein R_1 is H, CH_3 or n-C_3H_7, one of R_4 and R_5 is H and the other is H or CH_3 R_6, R_7, R_8 and R_9 for each H, F, Cl, Br, I, CH_3, i-C_3H_7, n-C_4H_9, CF_3 OH, OCH_3, OC_6H_5, $OCOCH_3$, NO_2, NH_2, $N(CH_3)_2$ or $NHCOCH_3$ with the provisions that at least two of R_6–R_9 are H and that not more than one of R_6–R_9 represents a substituent from the group consisting of F, Cl, Br, I, CF_3 and NO_2, which process comprises the step of reacting (i) a cyclic dicarboxylic acid imide of the formula



wherein R_1, R_2, R_3, R_6, R_7, R_8 and R_9 have the above-indicated meannings, with (ii) a Friedel-Crafts catalyst reactant to form said cyclic oxo-carboxylic amide.

3,929,881

PROCESS FOR HYDRATING A NITRILE TO THE CORRESPONDING AMIDE

Tokuzo Kurata; Takeshi Okano, both of Kitakyushu; Akio Tamaru; Yozo Kato, both of Yokohama, and Saburo Nagashima, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Aug. 31, 1973, Ser. No. 393,291

Claims priority, application Japan, Sept. 2, 1972, 47-88217; Sept. 4, 1972, 47-88531; Feb. 14, 1973, 48-18195

Int. Cl.² C07C *103/08*

U.S. Cl. 260—561 N **31 Claims**

1. A process for preparing an amide which comprises hydrating acrylonitrile or methacrylonitrile to the corresponding amide in the presence of a copper metal catalyst which is obtained by decomposing copper hydride by heating in a non-oxidizing atmosphere at a temperature from room temperature to 300°C.

8. A process of preparing an amide, which comprises: hydrating acrylonitrile or methacrylonitrile to the corresponding amide in the presence of a copper metal catalyst which is obtained by decomposing copper hydride by heating at a temperature from room temperature to about 100°C in a solvent.

15. A process for preparing an amide, which comprises: hydrating acrylonitrile or methacrylonitrile to the corresponding amide in the presence of a copper metal catalyst obtained by decomposing copper hydride by heating in a non-oxidizing atmosphere at a temperature from room temperature to 300°C in the presence of a promoter compound of an element selected from the group consisting of Si, V, Fe, Ti, or Zr.

23. A process for preparing an amide, which comprises: hydrating acrylonitrile or methacrylonitrile to the corresponding amide in the presence of a copper metal catalyst obtained by decomposing copper hydride by heating at a temperature from room temperature to about 100°C in a solvent in the presence of a promoter compound of an element selected from the group consisting of Si, V, Fe, Ti, or Zr.

3,929,882

N,N',N'',N'''-TETRASUBSTITUTED MALONAMIDINES AND SALTS

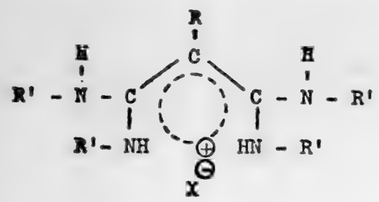
Frank Edward Herkes, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Jan. 13, 1972, Ser. No. 217,933

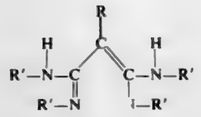
Int. Cl.² C07C *123/00*

U.S. Cl. 260—564 R **16 Claims**

1. A compound selected from the group consisting of



and



wherein R and R', alike or different, are selected from the group consisting of alkyl, aryl, alkaryl, aralkyl and cycloalkyl groups of 1 to 14 carbons and monosubstituted derivatives thereof in which the substituent is selected from the group consisting of alkoxy, perfluoroalkoxy, alkylthio, perfluoroalkylthio, dialkylamino, chlorine and fluorine, X is chlorine or fluorine, and the dotted line designates resonance.

3,929,883

PHENYLFORMAMIDINE DERIVATIVES

Dieter Dürr, Bottmingen, Switzerland, and Georg Pissiotas, Lorrach, Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 23, 1973, Ser. No. 344,461

Claims priority, application Switzerland, Mar. 29, 1972, 4730/72; Mar. 29, 1972, 4731/72

Int. Cl.² C07C *123/00*

U.S. Cl. 260—564 RF **2 Claims**

1. N,N-dimethyl-N'-(2-methyl-6-ethyl-phenyl)-formamidine.

3,929,884

INTERMEDIATES IN THE SYNTHESIS OF 5-ALKYLAMINO-7-PHENYL OR SUBSTITUTED PHENYL-2,3-DIHYDRO-1H-1,4-DIAZEPINES

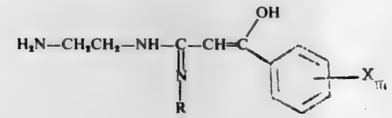
William R. J. Simpson, Mendham, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Mar. 29, 1974, Ser. No. 456,017

Int. Cl.² C07C *123/00*

U.S. Cl. 260—564 R **7 Claims**

1. A compound of the formula



or an acid addition salt thereof,
wherein
R is alkyl of 1 to 6 carbon atoms,
each X is independently alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halo, and
m is 0, 1 or 2.

3,929,885

PROCESS FOR THE MANUFACTURE OF KETONE DERIVATIVES

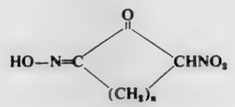
Robert Fuhrmann, Morris Plains; Stylianos Sifniades, Madison, and Allen Abraham Tunick, Denville, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 237,886, March 24, 1972, Pat. No. 3,758,851, which is a continuation-in-part of Ser. No. 852,881, Aug. 25, 1969, abandoned. This application June 20, 1973, Ser. No. 371,908

Int. Cl.² C07C *131/02*

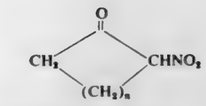
U.S. Cl. 260—566 A **9 Claims**

1. A process for the preparation of a compound of the structure:



wherein *n* is an integer ranging from 2 to 9 comprising the steps of:

a. forming an at least 10 wt.% solution of an α-nitroketone of the structure:

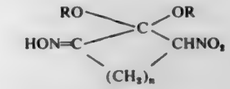


wherein *n* is as defined above in liquid SO_2;

b. admixing with said solution at a temperature ranging from about −30°C. to +25°C., at least about 1.0 mole per mole of said α-nitroketone of a nitrosating agent selected from the group consisting of C_1 to C_4 alkyl nitrites, N_2O_3, nitrosyl formate, nitrosyl chloride and nitrosyl bromide and when said nitrosating agent is N_2O_3, nitrosyl formate, nitrosyl chloride or nitrosyl bromide, at least 1.0 mole of an alkanol ROH per mole of α-nitroketone wherein R is a C_1 to C_4 alkyl group, and at least about 4.0 moles of a strong acid per mole of said α-nitroketone;

c. separating from the thereby formed hemi-ketal reaction product sulfur dioxide, acid, and any unreacted nitrosating agent and alkanol;

d. reacting said reaction product with at least about 1.0 mole of an alkanol ROH per mole of reaction product to thereby afford a ketal of the structure:



wherein R and *n* are as defined above;

e. reacting said ketal with at least one equivalent of base to afford an enol salt; and

f. neutralizing said enol salt.

3,929,886

QUATERNARY AMMONIA SALTS OF POLYHALOGENATED AROMATIC COMPOUNDS

Arsene Isard, Grenoble, and Ludovic Parvi, Pont-de-Claix, both of France, assignors to Products Chimiques Ugine Kuhlmann, Paris, France

Continuation of Ser. No. 17,935, March 9, 1970, abandoned. This application Mar. 15, 1973, Ser. No. 341,374

Claims priority, application France, Mar. 18, 1969, 69.07630

Int. Cl.² C07C *93/08*

U.S. Cl. 260—567.6 P **6 Claims**

1. Quaternary ammonium salts corresponding to the general formula:





in which the biphenyl radical is polyhalogenated; R is a lower alkylene group; R_1, R_2 and R_3 each represents an unsubstituted alkyl or cycloalkyl radical, or a halogen substituted alkyl or cycloalkyl radical, or a lower alkyl substituted cycloalkyl radical; and X^- is a halide, an alkylsulfate containing from 1 to 20 carbon atoms or an arylsulfonate anion.

3,929,887

ALKYLENEPOLY(ARALKYLAMINES) AND THE SALTS THEREOF

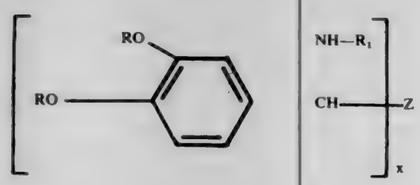
Leonard J. Fliedner, Jr., Flushing, and Irwin J. Pachter, Woodbury, both of N.Y., assignors to Endo Laboratories, Garden City, N.Y.

Continuation of Ser. No. 38,529, May 18, 1970, which is a continuation-in-part of Ser. No. 735,510, June 10, 1968, abandoned. This application July 24, 1972, Ser. No. 274,486

Int. Cl.² C07C *87/20*

U.S. Cl. 260—570.5 P **6 Claims**

1. A compound of the formula



wherein
R is lower alkyl, phenyl or benzyl;
R_1 is hydrogen or lower alkyl;
Z is alkylene of 7 to 15 carbon atoms and having a valence of *x*; and *x* is 3 or 4; and the acid addition salts thereof.

3,929,888

2-PHENYL-ADAMANTANEALKYLAMINE COMPOUNDS AND THEIR SALTS

Colin H. Cashin; Jiban K. Chakrabarti, both of Frimley, England, and Stephen S. Szinai, Gainesville, Fla., assignors to Lilly Industries, Ltd., London, England

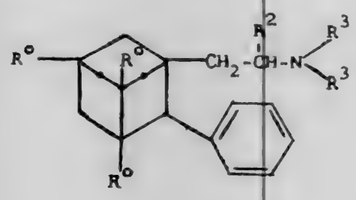
Continuation-in-part of Ser. No. 852,090, Aug. 21, 1969, abandoned. This application Nov. 19, 1973, Ser. No. 417,174

Claims priority, application United Kingdom, Aug. 27, 1968, 40968/68

Int. Cl.² C07C *87/29*

U.S. Cl. 260—570.5 CA **5 Claims**

1. The compound selected from those compounds of the following formula and their pharmaceutically acceptable acid addition salts:



wherein each R^0 independently represents hydrogen or methyl; R^2 represents hydrogen or alkyl of C_1–C_4; and each R^3 independently represents hydrogen, alkyl of C_1–C_4, or 2-hydroxyethyl, subject to the limitation that at least one of R^2 and R^3 is other than hydrogen.

3,929,889

SYNTHESIS OF AROMATIC AMINES BY REACTION OF AROMATIC COMPOUNDS WITH AMMONIA

Edward Noonan Squire, Glen Mills, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 115,774, Feb. 16, 1971, abandoned, and Ser. No. 99,636, Dec. 18, 1970, abandoned, which is a continuation-in-part of Ser. No. 22,716, March 25, 1970, abandoned. This application Dec. 19, 1973, Ser. No. 429,023

Int. Cl.² C07C *85/18*

U.S. Cl. 260—571 **13 Claims**

1. A process for aminating an aromatic compound selected from the group consisting of diphenyl ether, monamino derivatives thereof, benzene, aniline and toluene, said process comprising reacting ammonia with the aromatic compound at a temperature of from 150°C. to 500°C. and at a pressure of from 10 to 1000 atmospheres in the presence of a nickel/-nickel oxide cataloreactant which has been partially reduced to elemental nickel and thereafter oxidized to form a cataloreactant having a mole ratio of nickel to nickel oxide of 0.001:1 to 10:1, said ammonia and aromatic compound being in intimate contact with said cataloreactant.

3,929,890

PROCESS FOR THE PREPARATION OF A HYDROLYZATE OF PROTEINS FOR USE AS A FOODSTUFF

Bernard Pfister, Lucens, Switzerland, assignor to Union Laitiere Vaudoise, Switzerland

Filed Jan. 24, 1973, Ser. No. 326,162

Claims priority, application Switzerland, Jan. 27, 1972, 1219/72

Int. Cl.² A23J *3/00*

U.S. Cl. 426—580 **7 Claims**

1. A process for the preparation of a hydrolyzate of proteins for use as a foodstuff, comprising the steps of: providing a mixture of water, purified arsenic-free hydrochloric acid of density approximately 1.17 and proteins in a proportion by weight of approximately 9:13:10; boiling said mixture for several hours and then cooling to a temperature between 28° and 32°C; neutralizing the mixture by the progressive addition of a base to bring the pH to a value between 6.5 – 6.75 while maintaining said temperature range, then cooling the neutralized mixture to a temperature between 15° and 25°C; filtering the neutralized mixture to separate the clear filtrate and drying said clear filtrate to a solid product.

3,929,891

REDUCTION OF HALONITROAROMATES USING SULFITED PLATINUM ON CARBON CATALYSTS

Kurt Habig, and Konrad Baessler, both of Frankfurt am Main, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

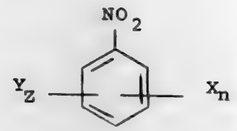
Division of Ser. No. 223,783, Feb. 4, 1972, Pat. No. 3,803,054. This application Dec. 10, 1973, Ser. No. 423,298

Claims priority, application Germany, Feb. 8, 1971, 2105682; Feb. 8, 1971, 2105780

Int. Cl.² C07C *85/11*

U.S. Cl. 260—580 **1 Claim**

1. In a process for the hydrogenation of a halonitroaromate of the formula



wherein
X is halogen,
Y is hydrogen, trifluoromethyl or alkyl or alkoxy of 1 to 4 carbon atoms each, and
Z and n are each 1 to 3 with the proviso that the sum of Z and *n* does not exceed 5;
the improvement comprising hydrogenating the halonitroaromate in the presence of a catalyst obtained by suspending a particulate platinum on carbon catalyst having an effective surface of at least 800 m^2/g in an aqueous medium of a pH in the range of 0 to 5, saturating with hydrogen at a pressure in the range of normal pressure to 1 atmg, admixing with 0.3 to 0.7 mol of a sulfitizing agent per each mol of hydrogen absorbed and isolating the catalyst from the aqueous medium.

3,929,892

PREPARATION OF A LOW FAT CREAM CHEESE PRODUCT

John T. Hynes, Glenview, Ill., and Demetrius G. Vakaleris, Lima, Ohio, assignors to Kraftco Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 311,315, Dec. 1, 1972, abandoned, which is a continuation-in-part of Ser. No. 74,937, July 23, 1970, abandoned. This application May 29, 1974, Ser. No. 474,175

Int. Cl.² A23C *19/00, 19/12*

U.S. Cl. 426—582 **9 Claims**

1. A method for making a cheese product having a body and texture similar to that of Cream cheese, but having less fat than Cream cheese, comprising providing a mixture of water and Cottage cheese curd, adding a fat source to said mixture to provide a substrate, adding non-fat milk solids to said substrate, at least about 4 percent to about 22 percent of the protein of said substrate being denatured serum proteins, heating said substrate to a temperature of about 140°F to about 180°F sufficient to provide a fluid mix and to effect pasteurization, adding an edible acid to said heated mixture, and homogenizing said acidified substrate at a pressure sufficient to establish a final product having a penetration firmness within the range of from about 30 to about 50, to provide a cheese product having a body and texture similar to that of Cream cheese, but having less fat than Cream cheese, said Cottage cheese curd being present at a level of from about 15 percent to about 65 percent by weight of said cheese product, said fat source being provided at a level sufficient to establish from about 10 percent to about 20 percent by weight fat in said cheese product, said non-fat milk solids being present at a level of from about 5 percent to about 15 percent by weight of said cheese product, the level of lactose in said cheese product being from about 4 percent to about 7 percent, said acid being added at a level sufficient to establish a pH of from about 4.3 to about 4.8 in said substrate.

3,929,893

PROCESS FOR PREPARING CYCLOHEXADECENONE-5

Ikuzi Kumasa; Takeshi Yamamoto; Fumitaka Norose, all of Yokohama; Susumu Acutagawa, Tokyo; Toshio Yoshida, Yokohama, and Akira Komatsu, Tokyo, all of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 213,718, Dec. 29, 1971, abandoned. This application Feb. 21, 1974, Ser. No. 444,596

Claims priority, application Japan, Dec. 29, 1970, 46-126904

Int. Cl.² C07C *45/00, 29/00*

U.S. Cl. 260—586 R **7 Claims**

1. A process for preparing cyclohexadecenone-5 consisting of:
1. reacting cyclododecanone with a chlorinating agent to produce α-chloro-cyclododecanone-1;
2. reacting 1 mole of the resulting α-chloro-cyclododecanone-1 with 1 mole of vinyl magnesium chloride at room-temperature for 1 hour in tetrahydrofuran as a solvent and thereafter adding a catalytic amount of aluminum isopropoxide followed by reacting the resulting reaction product with 1 more mole of vinyl magnesium chloride at about 60°C. for from 2 to 3 hours;
3. hydrolyzing the reaction product of step (2) to produce 1.2-divinyl cyclododecanol-1; and
4. thermally rearranging said 1,2-divinylcyclododecanol-1 by heating at a temperature of from 180°–250°C. under an inert gas atmosphere to produce said cyclohexadecenone-5.

3,929,894

PROCESS FOR THE PREPARATION OF ISOPROPENYL-BICYCLO[4,4,0]DEC-1-EN-3-ONES

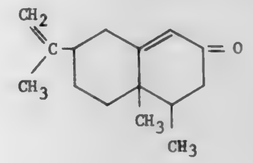
Theodore J. Leitereg, Albany; Dante G. Guadagni, Moraga, and Roy Teranishi, Berkeley, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 113,678, Feb. 8, 1971, abandoned. This application Apr. 8, 1974, Ser. No. 459,160

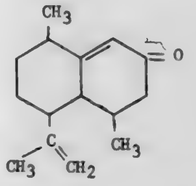
Int. Cl.² C07C *45/00, 49/54*

U.S. Cl. 260—586 P **1 Claim**

1. A method for preparing a mixture of the compounds



and

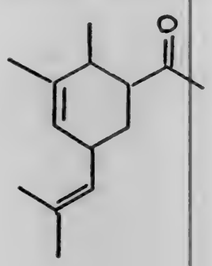


and including stereoisomers of each of these compounds, and wherein the stereoisomers of the second-designated compound comprises the major proportion of the mixture, which comprises:
a. condensing dihydrocarvone with 3-penten-2-one in the presence of pyrrolidine in a solvent selected from the

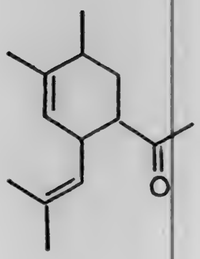
group consisting of benzene, toluene, tetrahydrofuran, and t-amyl alcohol, said condensation being carried out under reflux at a temperature of about 60° to 120° C., and b. treating the resulting condensation product with potassium tert-butoxide in dimethylsulfoxide at room temperature.

3,929,895
4-ACETYL-2,3-DIMETHYL-6-ISOPROPENYLMETHYL-CYCLOHEXENE
John B. Hall, Rumson, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.
Filed Apr. 22, 1974, Ser. No. 462,750
Int. Cl.² C07C *49/61*
U.S. Cl. 260—586 R **1 Claim**

1. A mixture of chemical compounds having the structures:



and



3,929,896
SINGLE STAGE CONVERSION OF SECONDARY HALOCARBONS TO KETONES
Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Nov. 9, 1970, Ser. No. 88,231
Int. Cl.² C07C *49/06, 49/26*
U.S. Cl. 260—593 R **14 Claims**

1. The process for the production of a ketone by the reaction of sulfur and water with a halocarbon feed which comprises contacting the feed in the liquid phase with water and sulfur at a temperature in the range from about 225°C. to 325°C. for a period of less than about two hours, wherein for each mol of the feed there is present from about 0.5 to 200 mols water and from about 0.15 to 2 mols sulfur, said feed comprising at least one compound of the formula R_2CHX, wherein R is an alkyl or cycloalkyl group, and wherein X is a halogen having an atomic number below 54; said compound having a carbon atom content of one to 25.

3,929,897
TETRAMETHYLALKANE DERIVATIVES
George W. Moersch, and Paul L. Creger, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.
Division of Ser. No. 327,977, Jan. 30, 1973, Pat. No. 3,857,884, which is a division of Ser. No. 29,704, April 17, 1970, Pat. No. 3,742,068. This application Sept. 20, 1974, Ser. No. 507,633
Int. Cl.² C07C *47/02*
U.S. Cl. 260—602 **1 Claim**

1. The compound 2,2,9,9-tetramethyldecanedial.

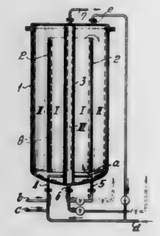
3,929,898
PRODUCTION OF MAINLY LINEAR ALDEHYDES
Hans-Juergen Nienburg, Ludwigshafen; Rudolf Kummer, Frankenthal; Heinz Hohenschutz, Mannheim; Max Strohmeyer, and Peter Tavs, both of Limburgerhof, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Filed Aug. 1, 1972, Ser. No. 276,936
Claims priority, application Germany, Aug. 7, 1971, 2139630; Feb. 10, 1972, 2206252
Int. Cl.² C07C *45/08*
U.S. Cl. 260—604 HF **10 Claims**

1. A process for the production of mainly linear aldehydes by hydroformylation of an olefinically unsaturated compound of from two to twenty carbon atoms with carbon monoxide and hydrogen at elevated temperature and superatmospheric pressure in the presence of a cobalt carbonyl complex prepared prior to the hydroformylation from an aqueous solution of a cobalt salt, wherein in a first stage an aqueous solution of a cobalt salt is treated with carbon monoxide and hydrogen at a temperature of from 50° to 200°C and at a pressure of from 100 to 400 atmospheres in the presence of activated carbon, a zeolite or a basic ion exchanger containing primary, secondary, tertiary or quaternary amino groups; the aqueous solution containing cobalt salt and cobalt carbonyl hydride thus obtained and the mixture of carbon monoxide and hydrogen, without releasing the pressure, are extracted at a temperature of 20° to 100°C and at a pressure of 100 to 400 atmospheres in a second stage with the olefinically unsaturated compound used for the hydroformylation, which compound is liquid under the conditions used and is insoluble in water, or with an organic solvent containing said olefinically unsaturated compound, which solvent is liquid under the conditions used and is insoluble in water; the aqueous phase is separated and the organic phase containing the carbonyl complex thus obtained and the mixture of carbon monoxide and hydrogen are transferred to a third stage; and, after supplying additional olefinically unsaturated compounds, if only a portion of the olefin to be used in the hydroformylation was used for the extraction in the second stage, hydroformylation is carried out in the third stage at a temperature of from 70° to 170°C and a pressure of from 100 to 400 atmospheres to obtain an oxo reaction product composed mainly of linear aldehydes.

3,929,899
PROCESS FOR THE OXIDATION OF OLEFINS TO UNSATURATED ALDEHYDES AND CATALYSTS THEREFORE
Robert K. Grasselli, Chagrin Falls, and Maria S. Friedrich, Cleveland, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio
Division of Ser. No. 205,706, Dec. 7, 1971, which is a continuation-in-part of Ser. No. 16,984, March 5, 1970, Pat. No. 3,666,823, which is a continuation of Ser. No. 691,992, Dec. 20, 1967, Pat. No. 3,544,616. This application Dec. 10, 1973, Ser. No. 423,494
Int. Cl. C07c *45/04*
U.S. Cl. 260—604 R **2 Claims**

1. The process for the oxidation of propylene and isobutylene to form acrolein and methacrolein, respectively, which comprises contacting in the vapor phase at a temperature within the range from about 500°F to about 1100°F a mixture of a molecular oxygen-containing gas and either propylene or isobutylene, or mixtures thereof, in a molar ratio of oxygen to olefin within the range from about 0.5:1 to about 5:1, in the presence of a supported catalyst composition of the empirical formula $U_x As_y O_z$ wherein x is a number within the range from 1 to 25; y is a number within the range from 1 to 10; and z is a number taken to satisfy the oxidation state of the elements in said catalyst composition.

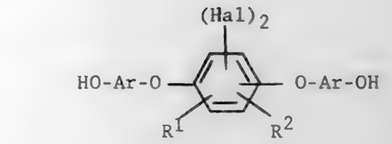
3,929,900
CONTINUOUS PROCESS FOR THE PRODUCTION OF OXYGEN CONTAINING COMPOUNDS
Friedrich Schnur; Josef Hibbel, both of Oberhausen, and Boy Cornils, Dinslaken, all of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Germany
Filed Dec. 14, 1973, Ser. No. 424,988
Claims priority, application Germany, Dec. 27, 1972, 2263498
Int. Cl.² C07C *45/08*
U.S. Cl. 260—604 HF **26 Claims**



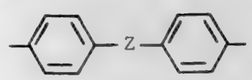
1. In a process for forming an aldehyde and/or alcohol by the Oxo-process wherein an olefinically unsaturated hydrocarbon is reacted with carbon monoxide and hydrogen in the presence of a Group VIII B catalyst, the improvement which comprises introducing said olefinically unsaturated hydrocarbon, said hydrogen, carbon monoxide and catalyst into the bottom of a first reaction zone and allowing the reactants to rise in said first reaction zone, passing liquid reactants from the top of said first reaction zone into the top of a second reaction zone, allowing a portion of the liquid reaction mixture from second reaction zone to enter the bottom of said first reaction zone, withdrawing liquid reaction mixture from the bottom of said second reaction zone withdrawing gaseous reactants from said first and/or second reaction zone.

3,929,901
DIHALOPHENYL-BIS-(HYDROXYARYLETHERS)
Gerhard Darsow, Krefeld-Uerdingen; Ludwig Bottenbruch, Krefeld-Bocku, and Hermann Schnell, Krefeld-Uerdingen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany
Continuation of Ser. No. 228,345, Feb. 22, 1972, abandoned, which is a continuation of Ser. No. 825,398, May 16, 1969, abandoned. This application July 19, 1973, Ser. No. 380,701
Claims priority, application Germany, June 1, 1968, 1768595
Int. Cl.² C07C *147/06, 43/22*
U.S. Cl. 260—607 A **6 Claims**

1. Aryl ethers of the formula



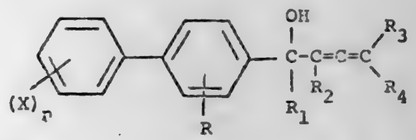
wherein R^1 and R^2 are hydrogen; Hal is chlorine or bromine; and Ar is selected from the group consisting of phenylene, diphenylene and



wherein Z is 2,2-isopropylene or $—SO_2—$.

3,929,902
1-PHENYL-2, 3-BUTADIEN-1-OLS
Eugene E. Galantay, Liestal, Switzerland, assignor to Sandoz, Inc., E. Hanover, N.J.
Continuation-in-part of Ser. No. 219,129, Jan. 19, 1972, abandoned. This application Oct. 11, 1973, Ser. No. 405,478
Int. Cl.² C07C *43/20, 35/02*
U.S. Cl. 260—612 R **20 Claims**

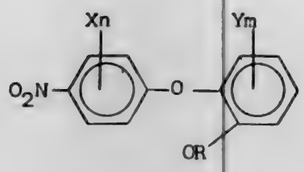
1. A compound of the formula



wherein
R is a hydrogen atom, or halo having an atomic weight from about 19 to 80;
R_1 is a hydrogen atom or alkyl of 1 to 3 carbon atoms;
R_2 is a hydrogen atom or methyl;
R_3 and R_4 are, independently, a hydrogen atom or alkyl of 1 to 3 carbon atoms, provided that at least one of R_3 and R_4 is a hydrogen atom when R_2 is methyl;
X is a hydrogen atom, halo having an atomic weight of from about 19 to 80, or alkoxy having from 1 to 4 carbon atoms; and
n is an integer from 1 to 5.

3,929,903
GERMICIDAL AND FUNGICIDAL DIPHENYL ETHERS
Teruhisa Noguchi; Yoshinobu Hashimoto, both of Fujisawa; Yoshio Uchiyama, Takaoka, and Michio Ueyama, Tokyo, all of Japan, assignors to Nippon Soda Company, Ltd., Tokyo, Japan
Division of Ser. No. 344,446, March 23, 1973, abandoned. This application July 26, 1974, Ser. No. 492,151
Int. Cl.² C07C *43/22*
U.S. Cl. 260—613 R **4 Claims**

1. A germicidal and fungicidal agent represented by the following general formula:



wherein each X represents a halogen atom, selected from the group consisting of chlorine and bromine, and whem *m* is a plural number Y may represent more than one kind of said halogen atom; R is selected from the group consisting of a hydrogen atom and a sodium atom, *n* expresses zero to 1, *m* expresses zero or an integer of not more than 3, and *m* and *n* cannot both be zero.

3,929,904

PROCESS FOR THE SELECTIVE ALLYLATION OF ORTHO ALKOXY PHENOLS

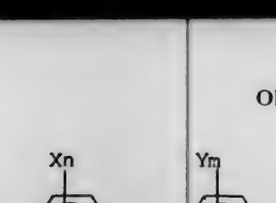
Robert S. De Simone, Willingboro, and Hugh E. Ramsden, Scotch Plains, both of N.J., assignors to Rhodia, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 244,958, April 17, 1974, abandoned. This application Aug. 16, 1974, Ser. No. 497,981

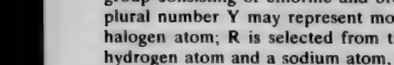
Int. Cl.² C07C *41/00*

U.S. Cl. 260—613 D **25 Claims**

1. A process for preparing an ortho-alkoxy-para allyl phenol which comprises allylating an ortho-alkoxy-phenol having the formula:

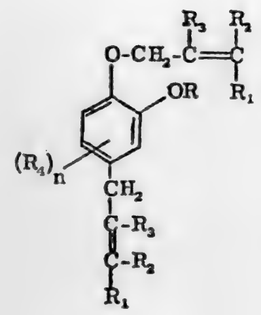


wherein R is an alkyl group having from one to about six carbon atoms, and R_4 is selected from the group consisting of hydrogen and methyl, *n* is an integer from one to three, and R_4 when methyl is not in the para position, with an allyl compound having the formula:

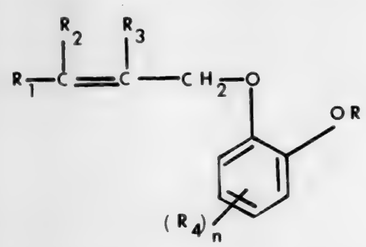


wherein R_1, R_2 and R_3 are selected from the group consisting of hydrogen and alkyl groups having from one to about six carbon atoms, and X is selected from the group consisting of halogen, sulfonate and sulfate, at a reaction temperature within the range from about 5° to about 150° C in the presence of an aqueous solution of an alkali or alkaline earth metal hydroxide; acidifying the reaction mixture; and recovering the allylated reaction product.

15. A process for the cleavage of the allyloxy group from 1-allyloxy-2-alkoxy-phenyl-ethers and 1-allyloxy-2-alkoxy-4-allyl-phenyl ethers substantially without cleavage of the 2-alkoxy ether group, which comprises reacting a 1-allyloxy-2-alkoxy-4-allyl-phenyl-ether having the formula:



and a 1-allyoxy-2-alkoxy-phenyl ether having the formula:



wherein R is an alkyl group having from one to about six carbon atoms; R_1, R_2 and R_3 are selected from the group consisting of hydrogen and alkyl groups having from one to about six carbon atoms, and R_4 is selected from the group consisting of hydrogen and methyl, n is an integer from 1 to 3, and R_4 when methyl is not in the para position, which comprises reacting the 1-allyloxy-2-alkoxy-phenyl-ether with alkali metal at a temperature within the range from about 50° to about 250°C to form the corresponding 2-alkoxy phenol.

3,929,905

CHLOROMETHYL 1,1-DIMETHYL-2-PROPYNYL ETHER AND PROCESS

Barrington Cross, Rocky Hill, and Charles Paul Grasso, Cranbury, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 7, 1974, Ser. No. 440,631

Int. Cl.² C07C *43/14*

U.S. Cl. 260—614 R **1 Claim**

1. Chloromethyl 1,1-dimethyl-2-propynyl ether.

3,929,906

CHLOROPHENYL-BUTADIENOLS

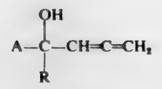
Paul L. Anderson, Dover, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Dec. 28, 1973, Ser. No. 429,664

Int. Cl.² C07C *35/21*

U.S. Cl. 260—618 D **5 Claims**

1. The compound of the formula



wherein

R is a hydrogen atom, methyl or ethyl; and

A is either ortho-chlorophenyl or meta-chlorophenyl.

3,929,907

HALOGENATION OF PHENOLIC COMPOUNDS

Karl Heinz Janzon, Grossauheim; Wolfgang Weigert, Offenbach; Hilmar Hein, Wiesbaden-Kohlheck; Helmut Mechler, Hofheim, and Eugen Meyer-Simon, Frankfurt, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Filed June 1, 1973, Ser. No. 365,975

Claims priority, application Germany, June 6, 1972, 2227439

Int. Cl.² C07C *17/02*, *37/00*

U.S. Cl. 260—619 R **22 Claims**

1. In a process of halogenating a phenol selected from the group consisting of (1) a phenol having 1 to 2 phenolic hydroxyl groups as the sole substituents, (2) benzene having one hydroxyl substituent and one aldehydo, carboxylic acid or sulfonic acid substituent as the sole substituents, (3) p-aminophenol, (4) p-nitrophenol, (5) o-nitrophenol, (6) p-fluorophenol, (7) p-chlorophenol and (8) o-bromophenol with chlorine or bromine in the liquid phase the improvement comprising carrying out said halogenation in the presence of aqueous hydrogen peroxide at a temperature of 0° to 100°C. and recovering the halogenated phenol formed.

3,929,908

BROMINATED BIPHENOLS

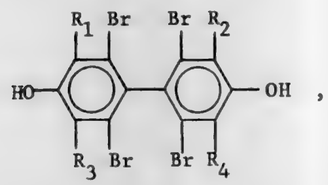
Charles M. Orlando, and Francois A. Lavallee, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 5, 1971, Ser. No. 169,517

Int. Cl.² C07C *39/24*

U.S. Cl. 260—620 **6 Claims**

1. A chemical compound of the formula



where independently each R_1, R_2, R_3 and R_4 is a normal methyl, ethyl, propyl, butyl, pentyl, hexyl, heptyl or octyl.

3,929,909

PROCESS FOR THE PREPARATION OF A PHENOL FROM A BENZENEMONOCARBOXYLIC ACID

Laurentius L. van Dierendonck, and Johan P. H. Von den Hoff, both of Geleen, Netherlands, assignors to Stamicarbon N.V., Geleen, Netherlands

Filed Jan. 18, 1971, Ser. No. 106,959

Claims priority, application Netherlands, Jan. 17, 1970, 7000684

Int. Cl.² C07C *37/00*

U.S. Cl. 260—621 R **10 Claims**

1. In a process for the preparation of a phenol by pyrolytic oxidation, decarboxylation and hydrolysis in the liquid phase of a benzenemonocarboxylic acid member selected from the group consisting of benzoic acid, substituted benzoic acid, salts, esters and anhydrides of said benzoic and substituted benzoic acids with oxygen in the presence of dissolved copper, the improvement comprising avoiding accummulation of tar or tar products in the reaction apparatus by limiting the oxidation reaction to the point that the reaction mixture still contains at least about 30 mole percent unreacted carboxylic acid, discharging at least part of the reaction mixture from the reaction apparatus, separating the tar and tar products therefrom by dissolving the withdrawn reaction mixture in a water-immiscible, organic solvent, adding water to the organic solution to separate copper salts from the organic solution, wherein the amount of water added is only that amount to form hydrates of the copper salts, which then precipitate as solids, fractionally distilling the remaining organic solution to separate the water-immiscible organic solvent, the unconverted reaction mixture containing benzenemonocarboxylic acid and the tar-containing remainder from each other.

3,929,910

PROCESS FOR SEPARATING RESORCINOL FROM HYDROQUINONE

Hideaki Suda, Takaishi; Iwao Dohgane, Nishinomiya; Takashi Chinuki, Toyonaka; Kenji Tanimoto; Hirokazu Hosaka, both of Minoo; Yukimichi Nakao, Kobe; Yuji Ueda, Izumi-otsu; Seiya Imada, Sakai; Hideki Yanagihara, Toyonaka, and Kunihiko Tanaka, Ibaragi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 19, 1973, Ser. No. 417,191

Claims priority, application Japan, Nov. 21, 1972, 47-117447

Int. Cl.² C07C *37/22*, *37/26*

U.S. Cl. 260—621 B **2 Claims**

1. A process of separating resorcinol and hydroquinone from their admixture to obtain a hydroquinone-rich fraction and a resorcinol-rich fraction which contains greater than approximately 85% resorcinol based on the weight of the resorcinol and hydroquinone present in the resorcinol-rich fraction which comprises heating a mixture of resorcinol and hydroquinone at any mixing ratio with 15 to 30% by weight of an aqueous methanol solution containing 5 to 50% by weight of water, based on the total of the admixture and the aqueous methanol solution, cooling to a temperature of −10° to 30°C to form a slurry, and separating the resulting slurry into a resorcinol-rich mother liquor which contains greater than approximately 85% by weight resorcinol and a hydroquinone-rich-crystal fraction.

3,929,911

PREPARATION OF A PHENOL FROM A BENZENEMONOCARBOXYLIC ACID

Laurentius L. van Dierendonck, and Johan P. H. Von den Hoff, both of Geleen, Netherlands, assignors to Stamicarbon N.V., Geleen, Netherlands

Filed Jan. 18, 1971, Ser. No. 106,958

Claims priority, application Netherlands, Jan. 17, 1970, 7000685

Int. Cl.² C07C *37/00*

U.S. Cl. 260—621 R **4 Claims**

1. In a process for the continuous preparation of a phenol by pyrolytic oxidation and decarboxylation of a benzenemonocarboxylic acid compound selected from the group consisting of benzoic acid, substituted benzoic acid, and esters, anhydrides and salts of benzoic acid and substituted benzoic acid comprising oxidizing said benzenemonocarboxylic acid compound in the liquid phase with molecular oxygen, in the presence of dissolved copper, forming an intermediate reaction mixture containing an ester product which is subsequently hydrolyzed to the phenol, the improvement comprising feeding the intermediate reaction mixture from the oxidation zone, together with steam at a temperature of approximately 200°C. to a hydrolysis zone and introducing into the hydrolysis zone sufficient molecular oxygen to maintain the

copper in a bivalent state of oxidation in the reaction mixture, whereby the copper is maintained in solution in the reaction mixture during the hydrolysis step.

3,929,912

ALKYLATION OF HYDROXY-SUBSTITUTED AROMATIC COMPOUNDS

George L. Hervert, Woodstock, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 40,454, May 25, 1970, abandoned, which is a continuation-in-part of Ser. No. 686,690, Nov. 29, 1967, abandoned. This application Dec. 22, 1972, Ser. No. 317,871

Int. Cl.² C07C *39/06*

U.S. Cl. 260—624 C 6 Claims

1. In a process for the liquid phase alkylation of a hydroxy-substituted aromatic compound by condensing said compound with an aliphatic mono-olefinic hydrocarbon of from 2 to 20 carbon atoms at a temperature in the range of from about −20° to about 150° C. and a pressure in the range of from about 10 to about 2,000 pounds per square inch, said aromatic compound being selected from the group consisting of phenol, poly-hydric phenols, monoalkyl mono-hydric phenols and polyalkyl mono-hydric phenols each of said alkyls containing from 1 to 3 carbon atoms, the improvement which comprises effecting the condensation of said aromatic compound and hydrocarbon in the presence of a hydrogen fluoride-carbon dioxide complex consisting essentially of carbon dioxide and from about 0.1 about 95 weight percent hydrogen fluoride.

3,929,913

PROCESS FOR PREPARING DIPHENOLS

Paolo Maggioni, Cernusco Montevecchia (Como), Italy, assignor to Brichima S.p.A., Milan, Italy

Filed Feb. 5, 1974, Ser. No. 439,713

Claims priority, application Italy, Feb. 16, 1973, 20497/73

Int. Cl.² C07C *37/00*

U.S. Cl. 260—621 G 8 Claims

1. Process for the preparation of pyrocatechin and hydroquinone as a mixture prevailing in pyrocatechin, comprising hydroxylating phenol with a 30 to 60% aqueous solution of hydrogen peroxide having a molar ratio of phenol: hydrogen peroxide of greater than 2 at atmospheric pressure and at a temperature of from 0-100°C. in the presence of a catalyst selected from the group consisting of dicyclopentadyeniliron, 1,1'-diacetyl-ferrocene, 1,1'-dibenzoyl ferrocene, di-n-butyl-ferrocene, ferrocendicarboxylic acid in an amount greater than 10 ppm by weight of catalyst per million parts by weight of phenol.

3,929,914

PROCESS FOR PREPARING A POLYCARBOXYDIENE POLYMER

Jihei Inomata, Komae; Seiichi Hino, and Tatsuo Tani, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 276,788, July 31, 1972. This application Apr. 1, 1974, Ser. No. 456,654

Int. Cl.² C08D *5/02*, *1/20*

U.S. Cl. 260—635 E 6 Claims

1. A process for preparing a liquid polycarboxydiene polymer, which comprises:

reacting a saturated polycarboxylic acid, anhydride, ester or acid halide with a polyhydroxydiene polymer having pendant and terminal hydroxy goups obtained from the reaction of 1 mole of a living polymer having a molecular weight of 500 to 10,000 which is prepared by reacting a conjugated diolefin or a mixture of the conjugated diolefin and a vinyl compound having the formula:

$$CH_2 = CR_1 R_2$$

wherein R_1 represents a hydrogen atom or an alkyl group and R_2 represents an aryl group or a pyridyl group in the presence of sodium or lithium metal or an organo sodium or lithium compound with 0.5 mole to 2 moles of epichlorohydrin, epibromohydrin, epifluorohydrin, chlorobutylene oxide or bromobutylene oxide.

3,929,915

PROCESS FOR THE PRODUCTION OF BUTANEDIOL

Charles C. Cumbo, Wilmington, and Kamlesh K. Bhatia, Newark, both of Del., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed July 31, 1974, Ser. No. 493,740

Int. Cl.² C07C *29/16*

U.S. Cl. 260—635 E 11 Claims

1. A three-step process for preparing a 1,4-butanediol which comprises reacting acrolein with 2-methyl-1,3-propanediol under conventional conditions to produce 2-vinyl-5-methyl-1,3-dioxane, hydroformylating the 2-vinyl-5-methyl-1,3-dioxane under conventional conditions to produce the corresponding aldehyde of 2-vinyl-5-methyl-1,3-dioxane and then hydrolyzing and hydrogenating the aldehyde of 2-vinyl-5-methyl-1,3-dioxane under conventional conditions to obtain a mixture of 1,4-butanediol and 2-methyl-1,3-propanediol.

3,929,916

PROCESS FOR THE MONONITRATION OF ORTHO-XYLENE

Stephen David Levy, Trenton, N.J., and Francis Clyde Rauch, Warrington, Pa., assignors to American Cyanamid Company, Stamford, Conn.

Filed June 11, 1974, Ser. No. 478,189

Int. Cl.² C07C *79/10*

U.S. Cl. 260—645 7 Claims

1. A process of mononitrating o-xylene which comprises the steps of: reacting at least equimolar amounts of o-xylene, concentrated nitric acid of at least 68% and a lower aliphatic monocarboxylic acid anhydride in the presence of both catalytic amounts of nitrogen dioxide or nitrogen tetroxide and a mercury salt at a temperature of from 25°C. to 80°C. for from about 1.5 hours to 8.0 hours, maintaining the nitric acid concentration to at least 68%, and recovering mononitro-o-xylene in good yield and having an isomer distribution ratio of at least 70:30 of 4-nitro-o-xylene to 3-nitro-o-xylene, respectively.

3,929,917

PROCESS FOR THE MONONITRATION OF ORTHO-XYLENE

Francis Clyde Rauch, Warrington, Pa.; Anthony Joseph Fanelli, Rockaway, N.J., and Gerlinde Metzler Blank, Wilton, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed June 11, 1974, Ser. No. 478,190

Int. Cl.² C07C *79/10*

U.S. Cl. 260—645 7 Claims

1. A process for mononitrating o-xylene which consists essentially in the steps of: reacting stoichiometrically o-xylene with a mixture of nitrogen dioxide or nitrogen tetroxide and an oxygen-containing gas in the presence of a mercury salt, at a temperature of from about 25°C. to about 80°C. for from about 1.5 hours to about 8.0 hours, and recovering mononitro-o-xylene in good yield and having an isomer distribution ratio of at least 70:30 of 4-nitro-o-xylene to 3-nitro-o-xylene, respectively.

3,929,918

SYNTHESIS OF FLUOROGRAPHITE

Dayal T. Meshri; Wayne E. White, and Charles L. Sowell, all of Sand Springs, Okla., assignors to Ozark-Mahoning Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 295,675, Oct. 6, 1972, abandoned. This application Apr. 19, 1974, Ser. No. 462,258

Int. Cl.² C07C *17/00*

U.S. Cl. 260—653.9 22 Claims

1. A process of preparing carbon fluorides comprising the steps of:

first treating relatively substantially pure carbon with substantially anhydrous hydrogen fluoride at a temperature in the range of 200°–350° C. for a period of 2 to 3 hours, then flushing the said hydrogen fluoride-treated carbon with an inert gas comprising one of the class of nitrogen, argon or helium in the temperature range of 300°–450° C. until the exiting gases are substantially free of HF,

and thereafter reacting the substantially hydrogen fluoride-free carbon with fluorine at a temperature in the range of 300°–600° C. for a time period of 12 to 16 hours.

3,929,919

PROCESS FOR PRODUCING ALKYLIDENE ALKENE HALIDES

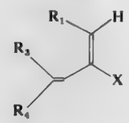
William J. Evers, Red Bank; Howard H. Heinsohn, Jr., Hazlet, and Bernard J. Mayers, Cliffwood Beach, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed July 30, 1973, Ser. No. 383,580

Int. Cl.² C02C *21/04*

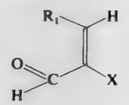
U.S. Cl. 260—654 R 2 Claims

1. A process for the preparation of an alkylidene trans alkene halide having the structure:

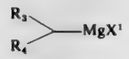


wherein R_1 is lower alkyl, R_3 is hydrogen and R_4 is lower alkyl; comprising the steps of:

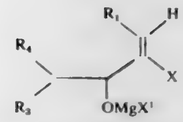
a. Reacting a halo-alkenal of the formula:



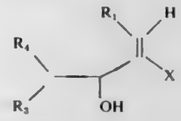
wherein R_1 is lower alkyl and X is chloro, bromo or iodo with a Grignard reagent of the formula:



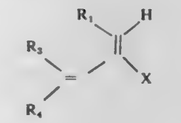
wherein R_3 is lower alkyl and R_4 is hydrogen and X^1 is bromo or chloro in order to provide an organometallic compound having the formula:



b. Hydrolyzing said organometallic compound with a hydrolyzing agent selected from the group consisting of dilute mineral acids and acid salts thereby forming a hydroxyalkene having the structure:



c. Reacting said hydroxyalkene with a dehydrating reagent which is an inorganic oxide, at a temperature of from 200°C up to 400°C, said inorganic oxide being selected from the group consisting of alimina and silica, thereby providing the corresponding alkylidene alkene halide having the structure:



3,929,920

PROCESS FOR CONTINUOUS FLUORINATION OF CARBON

Tetsuya Komo, Ikeda; Satoshi Mizobata, Takatsuki; Rokuo Ukaji, Ibaraki, and Tutomu Kamihigoshi, Takatsuki, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed May 30, 1974, Ser. No. 474,805

Claims priority, application Japan, June 11, 1973, 48-66037; May 31, 1973, 48-64560[U]

Int. Cl.² C07C *17/00*

U.S. Cl. 260—653.9 10 Claims

1. A process for the continuous fluorination of carbon materials in a vertical reactor, said reactor having a top and bottom cover, feed and exhaust ports in the top cover and feed and exhaust ports in the bottom portion of the reactor and a plurality of horizontal trays vertically spaced along the internal surface of the reactor, which comprises the steps of:

a. introducing continuously a carbon material being selected from the group consisting of carbon black, coke, pitch coke, charcoal, artificial graphite and natural graphite,

b. distributing the carbon material onto each of the trays and forming a thin layer thereon,

c. introducing a fluorine gas or a mixture of fluorine gas and diluent continuously into the bottom part of the reactor,

d. reacting the carbon material on each of the trays with the gas at elevated temperature in the range from 250° to 600°C,

e. transferring the carbon material simultaneously from each of the trays to the tray below while continuing the reaction, and

f. removing the fluorinated carbon material continuously through an exhaust port in the bottom portion of the reactor.

3,929,921
RING COMPOUNDS

Gunther Wilke, and Paul Heimbach, both of Mulheim (Ruhr), Germany, assignors to Studiengesellschaft Kohle m.b.H., Mulheim (Ruhr), Germany

Division of Ser. No. 109,949, Jan. 26, 1971, Pat. No. 3,849,506, which is a continuation of Ser. Nos. 843,220, July 18, 1969, Pat. No. 3,586,727, and Ser. No. 845,901, July 29, 1969, Pat. No. 3,629,347, and Ser. No. 845,904, July 29, 1969, abandoned, each is a continuation-in-part of Ser. No. 582,775, Sept. 27, 1966, abandoned. This application Apr. 22, 1974, Ser. No. 463,087

Claims priority, application Germany, Sept. 29, 1965, 2443912

Int. Cl.² C07C *13/00*

U.S. Cl. 260—666 A 4 Claims

1. A Large ring compound of the formula

A — *θ* — B

wherein

θ is cyclododecatriene - (1,5,9)

A is methyl or ethyl and

B is Hydrogen, methyl or ethyl.

3,929,922
NOVEL LARGE RING COMPOUNDS

Günther Wilke, and Paul Heimbach, both of Mulheim (Ruhr), Germany, assignors to Studiengesellschaft Kohle m.b.H., Mulheim (Ruhr), Germany

Division of Ser. No. 109,949, Jan. 26, 1971, Pat. No. 3,849,506, which is a continuation of Ser. No. 843,220, July 18, 1969, Pat. No. 3,586,727, and a continuation-in-part of Ser. Nos. 845,901, July 29, 1969, Pat. No. 3,629,347, and Ser. No. 845,904, July 29, 1969, abandoned, said Ser. No. 845,901, and Ser. No. 845,904, each is a continuation-in-part of Ser. No. 582,775, Sept. 27, 1966, abandoned. This application Apr. 22, 1974, Ser. No. 463,088

Claims priority, application Germany, Sept. 29, 1965, 2443912

Int. Cl.² C07C *13/00*

U.S. Cl. 260—666 PY 4 Claims

1. A large bicyclic ring compound of the formula

A-*θ*-B

wherein *θ* is cyclodecatriene-1,4,7 wherein A and B form A-$(CH_2)_{10}$- bridge at the 1,2 position of the cyclodecatriene.

3,929,923
PROCESS FOR PREPARATION OF ISOMERS OF 1-CYCLOHEXYL-1,3,3-TRIMETHYLHYDRINDANE

Peter Hosler, Wallingford, and David S. Gates, Swarthmore, both of Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

Filed Jan. 17, 1972, Ser. No. 218,338

Int. Cl.² C07C *5/10*

U.S. Cl. 260—667 12 Claims

1. A process for the hydrogenation of 1-phenyl-1,3,3-trimethylindane comprising contacting said indane or a feed consisting essentially of said indane with hydrogen and with a hydrogenation catalyst containing nickel, palladium or rhodium, at a hydrogen pressure in the range of 600 to 1500 psig and a temperature in the range of 200° to 225°C, and recovering a product of said contacting which consists essentially of perhydrogenated 1-phenyl-1,3,3-trimethylindane and including a major proportion of 4,9-cis-1-cyclohexyl-1,3,3-trimethyl hydrindane.

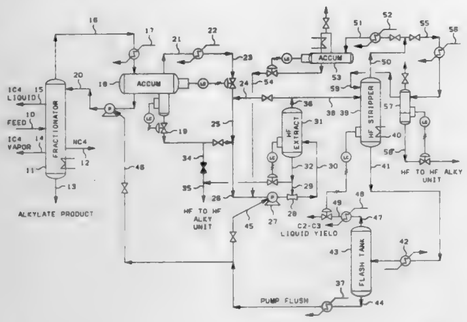
3,929,924
FRACTIONATION OF EFFLUENT FROM HF CATALYZED ALKYLATION

Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 11, 1974, Ser. No. 478,226

Int. Cl.² C07C *3/54*

U.S. Cl. 260—683.42 6 Claims



1. In an alkylation operation of which an isoparaffin is alkylated with an olefin and wherein in the alkylation effluent there are present ethane, propane, butane, isobutane, organic fluorides and heavier hydrocarbons including alkylate boiling range hydrocarbons, and HF catalyst, and wherein the effluent is fractionated in a fractionation zone to remove therefrom a stream rich in ethane, propane, and HF, and organic fluorides, the steps in combination which comprise

a. partially condensing said stream to form a first liquid hydrocarbon phase rich in propane and relatively lean in ethane, a first vapor stream relatively rich in ethane and containing propane, HF and organic fluorides, and a first acid phase and using at least a portion of said first liquid hydrocarbon phase by pumping the same with a pump as reflux for said fractionation zone, thereby operating said fractionation zone at a pressure significantly lower than when the overhead therefrom is not treated to remove the ethane content thereof as herein described,

b. condensing said first vapor stream to form a second liquid phase containing propane, HF and organic fluorides and relatively rich in ethane,

c. settling said second liquid phase to form and to separate therefrom a second acid phase from a second liquid hydrocarbon phase,

d. passing said second liquid hydrocarbon phase to an HF stripping zone, in said stripping zone removing a stripped bottoms consisting substantially of only ethane and propane,

e. flashing said stripped bottoms to remove therefrom a second vapor stream containing ethane and propane, thus yielding a flashed bottoms stream lean in ethane, and lean in HF, and

f. using said flashed bottoms stream lean in ethane, and lean in HF, a flush for said pump in step (a), whereby the intermingling of the flush from the pump with said reflux will not significantly add ethane to said reflux and therefore to said fractionation zone.

3,929,925
RECOVERY OF A PROPANE-ETHANE PRODUCT AND RECYCLE OF PROPANE IN HF ALKYLATION

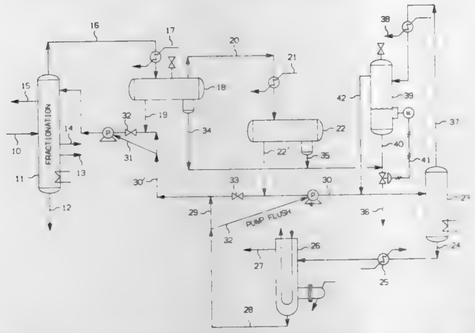
Charles Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 7, 1974, Ser. No. 477,179

Int. Cl.² C07C *3/54*

U.S. Cl. 260—683.48 3 Claims

1. A process for the alkylation of an isoparaffin with an olefin in the presence of HF catalyst which comprises fractionating in the fractionation zone an alkylation hydrocarbon phase to produce an overhead which contains ethane, propane, and HF, partially condensing said overhead producing (a) a first acid phase which is removed, from said process (b) a first liquid hydrocarbon phase containing propane lean in ethane and (c) a vapor stream containing HF, ethane and propane, passing said propane lean in ethane to the fractionation zone as reflux therefor, condensing said vapor stream to



form a second acid phase which is removed from said process and a second liquid hydrocarbon phase which is passed to an HF stripping zone to remove HF therefrom, separating from said stripping zone bottoms consisting essentially of ethane and propane, warming said bottoms, fractionating said bottoms into a propane-ethane product and a bottoms propane and passing said bottoms propane to one of said fractionation zone and said HF stripping zone.

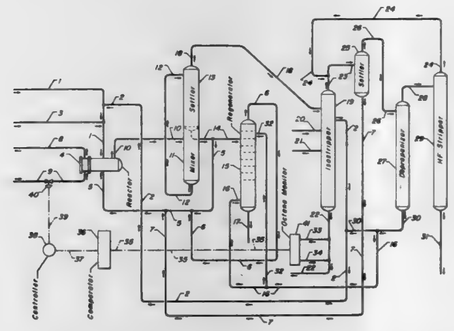
3,929,926
METHOD OF CONTROLLING HF ALKYLATION REACTION TEMPERATURE

Robert F. Zabransky, Oak Brook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 468,956, May 10, 1974. This application Nov. 29, 1974, Ser. No. 528,389

Int. Cl.² C07C *3/54*

U.S. Cl. 260—683.48 6 Claims



1. A process for alkylating an isoparaffin with an olefinic feed stream containing at least two olefins, which process comprises the steps of:

a. reacting said isoparaffin with said feed stream in admixture with a hydrogen fluoride catalyst, in an alkylation reaction zone, at alkylating conditions resulting in a reaction product effluent containing normally liquid alkylate;

b. regulating the temperature of the reaction mixture, within said reaction zone, through indirect contact of said reaction mixture with a cooling medium passing through conduit means through said reaction zone, the flow of said cooling medium being adjusted by flow-varying means connected to said conduit means;

c. recovering said normally liquid alkylate from said product effluent;

d. introducing a sample of said alkylate into a hydrocarbon analyzer and developing therein an output signal which is representative of a composition characteristic of said sample; and,

e. transmitting said output signal to signal-receiving means and from said signal-receiving means to said flow-varying means, whereby the flow of cooling medium through said conduit means and the temperature within said reaction zone is adjusted in response to said composition characteristic.

3,929,927
RADIATION POLYMERIZABLE EPOXY COMPOSITION

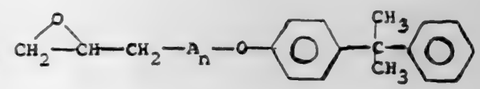
Nelson S. Marans, and Alfred Gluecksmann, both of Silver Spring, Md., assignors to W. R. Grace & Co., New York, N.Y.

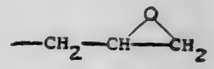
Filed Aug. 17, 1973, Ser. No. 389,316

Int. Cl.² C08F *2/46*, *2/50*; C08L *63/02*, *63/10*

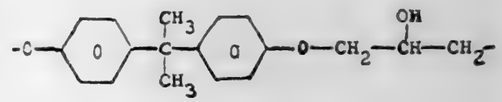
U.S. Cl. 260—837 R 2 Claims

1. A radiation curable composition consisting of 40–95 parts of an epoxy compound having the formula

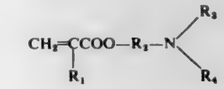




in which A is



and *n* has an average value of 0–13 and 5–60 parts of an ethylenically unsaturated compound having the formula



in which R_1 is hydrogen or a lower alkyl group, R_2 is an alkylene group having 2–8 carbon atoms, and R_3 and R_4 are lower alkyl groups.

3,929,928
BLEND OF THERMOPLASTIC POLYURETHANE ELASTOMER, CHLORINATED POLYETHYLENE, AND ADDITIONAL POLYETHYLENE

Harold G. Wolf, Jr., Waterbury, and Robert A. Hlavacek, Naugatuck, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Mar. 29, 1973, Ser. No. 345,923
Int. Cl.² C08L *75/00*
U.S. Cl. 260—859 R **2 Claims**

1. A method of making a shaped article comprising preparing a millable, calenderable thermoplastic composition comprising a blend of
   a. a high molecular weight thermoplastic polyurethane elastomer devoid of ethylenic unsaturation and free —NCO groups which is a reaction product of a polymeric polyol, an organic polyisocyanate and a low molecular weight bifunctional material having two reactive hydrogens,
   b. an elastomeric chlorinated polyethylene having a glass transition temperature of −30°C. to −20°C. and a chlorine content of 25–50% by weight, and
   c. additional polyethylene resin, the weight ratio of (a) to (b) in the said blend being within the range from 75:25 to 40:60, and the amount of (c) being from 4.5 to 7.5 parts, per 100 parts by weight of (a) plus (b), and forming the resulting blend into a shaped article without cure.

3,929,929
VINYL URETHANE RESINS

Erich Kuehn, Wilmington, Del., assignor to ICI United States Inc., Wilmington, Del.

Filed May 29, 1973, Ser. No. 364,911
Int. Cl.² C08L *75/00*
U.S. Cl. 260—859 R **15 Claims**

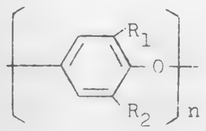
1. A composition comprising:
   a. a vinyl urethane resin comprising the reaction product of a diol, a polyisocyanate having a functionality equal to from 2.1 to about 3.0, and a hydroxyl terminated ester of acrylic or methacrylic acid; provided that, (i) when the amount of the diol is equal to up to 1 mole, the amount of the polyisocyanate is equal to about 2 moles per mole of the diol and the amount of hydroxyl terminated ester is equal to about 2 moles per mole of the diol, (ii) when the amount of the diol is equal to greater than 1 mole, the amount of the polyisocyanate is equal to about 1 mole plus 1 mole per mole of the diol and the amount of the hydroxyl terminated ester is equal to about 2 moles, and (iii) at least 50 percent of the excess functionality of the polyisocyanate is reduced by reaction with the diol and, when less than 100 percent of the excess functionality of the polyisocyanate is reacted with the diol, an additional hydroxylcontaining compound is employed in an amount sufficient to introduce adequate hydroxyl groups to react with any remaining isocyanate functionality; and
   b. a monomer selected from the group consisting of styrene, t-butyl styrene, alpha methyl styrene, chlorostyrene, divinyl benzene, acrylic acid, dimethyl maleate, dibutyl fumarate, butyl methacrylate, and nonyl methacrylate.

3,929,930
GRAFT COPOLYMERIZING A STYRENE TYPE COMPOUND AND A POLYPHENYLENE ETHER

Shinichi Izawa, Tokyo; Juro Ozeki; Tsutomu Tanaka, both of Yokohama, and Atsuo Nakanishi, Kanagawa, all of Japan, assignors to Asahi-Dow Limited, Japan

Filed Aug. 28, 1974, Ser. No. 501,450
Claims priority, application Japan, Sept. 6, 1973, 48-99712
Int. Cl.² C08L *23/00, 25/00*
U.S. Cl. 260—874 **18 Claims**

1. A process for producing graft copolymers containing substantially no polyphenylene ether homopolymers comprising graft polymerizing with stirring under anhydrous conditions 20 to 200 parts of a styrene type compound of the group consisting of styrene, lower alkyl styrene and halostyrenes at a temperature of 130°C to 200°C in the presence of 100 parts by weight of a polyphenylene ether represented by the formula



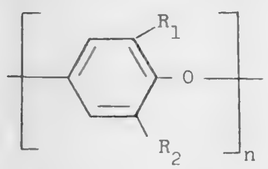
where R_1 and R_2 are alkyl of 1 to 4 carbon atoms or a halogen atom, n is the degree of polymerization and has a number average between 50 and 300, and 0.1 to 15 parts by weight of a radical initiator based on the polyphenylene ether.

3,929,931
GRAFT COPOLYMER OF STYRENE TYPE COMPOUND AND A POLYPHENYLENE ETHER

Shinichi Izawa, Tokyo; Katsuhiko Tsuzimura, Kanagawa; Ken Mizushiro, Tokyo; Juro Ozeki, Kanagawa; Yoshiaki Sugawara, Kanagawa; Tsutomu Tanaka, Kanagawa, and Astuo Nakanishi, Kanagawa, all of Japan, assignors to Asahi-Dow Limited, Japan

Filed Aug. 28, 1974, Ser. No. 501,451
Claims priority, application Japan, Sept. 6, 1973, 48-99713
Int. Cl.² C08L *23/00, 25/00*
U.S. Cl. 260—874 **15 Claims**

1. A graft copolymer composition which comprises 30 to 90 wt. % of a graft copolymer, 10 to 70 wt. % of a styrene type compound polymer having a number average molecular weight in the range from 50,000 to 200,000 and selected from the group consisting of styrene, lower alkyl styrenes and halostyrenes, said graft copolymer containing substantially no polyphenylene ether homopolymer and having been prepared by graft polymerizing with stirring under anhydrous conditions at a temperature of 130° to 200°C.20 to 200 parts by weight of a styrene type compound selected from the group consisting of styrene, lower-alkyl styrenes and halostyrenes on 100 parts of an oligophenylene ether having the formula



wherein R_1 and R_2 are alkyl of 1 to 4 carbon atoms or a halogen atom and n represents a polymerization degree ranging from 60 to 90, in the presence of 0.1 to 15 parts by weight of a radical initiator based on the polyphenylene ether, said composition having excellent resistance to creep.

3,929,932
HIGH IMPACT COMPOSITIONS OF POLYETHYLENE AND POLYPROPYLENE BLOCK COPOLYMERS

Eugene G. Castagna, Clark, N.J., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Mar. 26, 1973, Ser. No. 344,683
Int. Cl.² C08L *51/00, 53/00, 23/00*
U.S. Cl. 260—876 B **9 Claims**

1. A binary polypropylene composition having synergistic impact properties which comprises:
   I. from about 3 to about 15 percent by weight of the total composition of a linear polyethylene component having a melt index between about 0.5 and about 0.9 and a density of at least 0.93, and
   II. from about 85 to about 97 percent by weight of the total composition of a block copolymer component containing
      a. from about 60 to about 95 percent by weight of a polypropylene preblock, and
      b. from about 5 to about 40 percent by weight of a postblock of a random copolymer of ethylene and another α-olefin, wherein the content of ethylene derived units in said postblock ranges between about 25 and about 75 mole percent.

3,929,933
RIGID PLASTIC ADMIXED WITH CROSSLINKED ACRYLATE/VINYL CHLORIDE INTERPOLYMER

Ruth E. Gallagher, Dobbs Ferry, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 182,127, Sept. 20, 1971, abandoned, which is a continuation-in-part of Ser. No. 101,160, Dec. 23, 1970, abandoned. This application Dec. 12, 1973, Ser. No. 424,128
Int. Cl.² C08L *51/00, 53/00*
U.S. Cl. 260—876 R **14 Claims**

1. An impact resistant composition comprising an intimate admixture of a styrene-containing rigid plastic having a modulus of elasticity of greater than 7,000 kgf/cm² at 23°C. and 50% relative humidity and rubber-containing interpolymer particles consisting essentially of a crosslinked polymer of C_2–C_8 alkyl acrylate emulsion polymers having a glass transition temperature less than about 25°C. and a vinyl chloride suspension polymer surrounding and/or homogeneously dispersed within the mass of said crosslinked acrylate emulsion polymer.

3,929,934
NOVEL FLUOROELASTOMERS IN POWDER FORM

Albert Lloyd Moore, and Walter Kwei-Yuan Tang, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Nov. 19, 1973, Ser. No. 417,240
Int. Cl.² C08L *27/16, 27/18, 27/20*
U.S. Cl. 260—884 **13 Claims**

1. A process for the preparation of an elastomeric, fluorinated copolymer in powder form, said process comprising the following steps:
   1. copolymerizing in an aqueous emulsion in the first stage of a two-stage polymerization process and in the presence of a free radical catalyst to at least about 90% monomer conversion a mixture of monomers which will result in a copolymer of about
      a. 65–100 weight percent vinylidene fluoride and a second monomer selected from the group consisting of pentafluoropropene, hexafluoropropene, chlorotrifluoroethylene and a perfluorinated C_2–C_4 alkyl vinyl ether, the weight ratio of vinylidene fluoride to the second monomer being within the range of 0.67:1 to 3:1, and
      b. 0–35 weight percent tetrafluoroethylene, the resulting first-stage copolymer having a crystalline melting point of less than about 60°C.;
   2. polymerizing in the second stage in the same emulsion at least one of the same monomers as in the first stage but in such proportions that the second stage polymer, if made separately, would have a crystalline melting point above about 120°C.;
   3. flocculating the resulting dispersion; and
   4. spray-drying the dispersion at a temperature of about 121°–177°C.;

the relative proportions of the components in the resulting polymer being 65–90 weight percent of the first-stage copolymer and 10–35 weight percent of the second-stage copolymer.

3,929,935
ELECTRON BEAM CURABLE COATING COMPOSITION

James F. Kinstle, Powell, Tenn., assignor to Ford Motor Company, Dearborn, Mich.

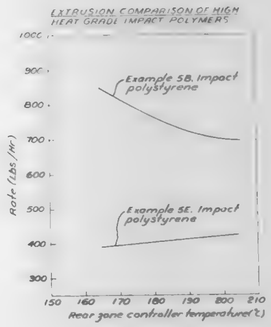
Filed Aug. 6, 1973, Ser. No. 384,522
Int. Cl.² C08L *33/08, 35/06;* **C09D** *3/81*
U.S. Cl. 260—885 **7 Claims**

1. A paint adapted to form a textured surface when polymerized in situ on a substrate by ionizing radiation which, exclusive of pigments and particulate mineral filler, consists essentially of a solution of a volatile, inert organic solvent and a mixture containing:
   1. between about 90 and about 10 parts by weight of an alpha-beta olefinically unsaturated resin having an average molecular weight above 1000, containing between about 0.5 and about 5 units of alpha-beta olefinic unsaturation per 1000 units of molecular weight and being a copolymer of
      a. about 50 to about 95 mole percent of styrene monomers selected from the group consisting of styrene, vinyl toluene, alpha-methyl styrene, t-butyl styrene and chlorostyrene and
      b. about 5 to about 50 mole percent of acrylic monomers; and
   2. between about 10 and about 90 parts by weight of vinyl monomers polymerizable with said unsaturated organic resin upon exposure to ionizing radiation, said unsaturated organic resin being soluble in said monomer only to the extent of between about 1 and about 15 weight percent based on the weight of said monomers.

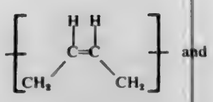
3,929,936
POLYSTYRENE

Thomas Ellis Davies, Barry, and Hubert Brian Hopkins, Swansea, both of Wales, assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 89,938, Feb. 17, 1961, abandoned, said Ser. No. 651,660. This application Apr. 16, 1973, Ser. No. 351,712
Claims priority, application United Kingdom, Feb. 27, 1960, 6955/60
Int. Cl.² C08L *9/06*
U.S. Cl. 260—892 **6 Claims**



1. A composition comprising a major proportion of a styrene polymer selected from the group consisting of homopolymers and copolymers of styrene and the nuclear methyl substituted styrenes having a softening point greater than 70°C and, as toughening agent, a minor proportion of a copolymer of butadiene and styrene, containing from 50 to 95 percent polymerized butadiene, from 30 to 95 percent of said polymerized butadiene units having the formula



and

in which the stereo configuration about the double bond is cis, said toughening agent having been obtained by polymerization with an alkyl lithium catalyst, said composition containing the toughening agent in discrete particulate form, dispersed in a matrix of the styrene polymer.

3,929,937

BIODEGRADABLE SHAPED ARTICLES FROM A MATERIAL COMPRISING A PARTICULATE ADDITION POLYMER IN A MATRIX OF A THERMOPLASTIC OXYALKANOYL POLYMER

Robert A. Clendinning, New Providence; James E. Potts, Millington, and William F. Gorham, Berkeley Heights, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 275,976. This application Sept. 6, 1974, Ser. No. 503,687

Int. Cl.² C08L *23/00, 25/04, 67/04*

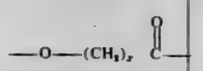
U.S. Cl. 260—896 **19 Claims**

1. Biodegradable shaped articles comprising a shaped composition of normally solid addition polymer dispersed in particulate form in a matrix of biodegradable thermoplastic oxyalkanoyl polymer, said addition polymer having been so dispersed in said oxyalkanoyl polymer at a temperature below the softening temperature of said addition polymer,

said composition comprising from about 20 to about 95 weight percent of said biodegradable thermoplastic oxyalkanoyl polymer and from about 80 to about 5 weight percent of said particulate, normally-solid addition polymer, based on the total weight of said composition,

said particulate, normally-solid addition polymer possessing a softening temperature at least about 15°C. higher than the melting point of said biodegradable thermoplastic oxyalkanoyl polymer, and

said biodegradable thermoplastic oxyalkanoyl polymer being characterized by a reduced viscosity value of at least about 0.1 and upwards to about 12 and being further characterized in that at least about 10 weight percent of said thermoplastic oxyalkanoyl polymer is attributable to recurring oxyalkanoyl units of the formula



wherein x is an integer having a value of 2 to 7, with the proviso that x does not equal 3.

3,929,938

LIMONENE/PHENOL CONDENSATION PRODUCTS AND HOT-MELT ADHESIVES CONTAINING THE SAME ALONG WITH ETHYLENE/UNSATURATED ESTER COPOLYMERS

Raymond Hadley White, and Fredric Martin Hill, both of Pensacola, Fla., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 174,190, Aug. 23, 1971, abandoned. This application Apr. 25, 1973, Ser. No. 354,454

Int. Cl.² C08L *23/08*

U.S. Cl. 260—897 B **5 Claims**

1. A hot-melt adhesive composition comprising:

a. a copolymer of ethylene and a 1,2-monoethylenically unsaturated ester selected from the group consisting of vinyl esters wherein the acid group contains from one to five carbon atoms and acrylic and methacrylic esters of saturated alcohols having from one to five carbon atoms, and mixtures of such copolymers, and

b. a limonene/phenol condensation product resulting from the acid catalyzed condensation between from 1.4 to 2.0 moles of limonene and 1 mole of phenol.

3,929,939

LARGE VOID-FREE POLYETHYLENE CASTINGS COMPRISING HIGH DENSITY POLYETHYLENE IN A LOW DENSITY POLYETHYLENE MATRIX

Ival O. Salyer, Dayton, and Charles J. North, West Carrollton, both of Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

Continuation of Ser. No. 219,498. This application Dec. 13, 1973, Ser. No. 425,894

Int. Cl.² C08L *23/06*

U.S. Cl. 260—897 A **2 Claims**

1. A composite material which comprises 50 to 75 weight percent high density polyethylene pellets having a size range of about one-sixteenth inch to one-fourth inch in a matrix of 25 to 50 weight percent low density polyethylene.

3,929,940

HALOGEN-CONTAINING PHOSPHORIC ACID ESTERS

Horst Mayerhoefer, Oberwil, Basel-Land; Wolfgang Mueller, Neuallschwil, Basel-Land; Urs Sollberger, Fullinsdorf, Basel-Land, and Rainer Wolf, Allschwil, Basel-Land, all of Switzerland, assignors to Sandoz Ltd., (Sandoz AG), Basel, Switzerland

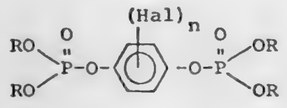
Filed Mar. 4, 1974, Ser. No. 447,921

Claims priority, application Switzerland, Mar. 9, 1973, 3513/73

Int. Cl.² C07F *9/09;* **C08K** *5/53*

U.S. Cl. 260—930 **10 Claims**

1. A compound of the formula:



wherein

each R, is independently, a radical of formula



each Hal is independently, chlorine or bromine,

n is 0 or an integer 1, 2, 3 or 4

m is an integer 1, 2, 3, 4 or 5

and the molecule contains at least eight bromine atoms.

3,929,941

HUMIDIFIER

Frederick H. Horne, Rye, N.H., assignor to Rice Barton Corporation, Worcester, Mass.

Filed July 15, 1974, Ser. No. 488,272

Int. Cl.² B01F *3/04*

U.S. Cl. 261—35 **11 Claims**

1. A humidifying apparatus comprising

a housing having:

a flue gas inlet,

a flue gas outlet,

a circulating air inlet, and

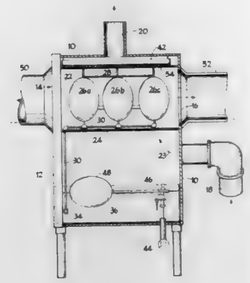
a circulating air outlet spaced apart from said circulating air inlet to create a circulating air flow zone within said housing,

a flue gas conduit extending between said flue gas inlet and outlet,

an expansion chamber mounted in said conduit,

a water dispersing medium mounted in and open to said flow zone,

a water pipe connected to communicate between said chamber and said medium, and



a water supply system connected to said expansion chamber,

whereby, when said flue gas inlet is connected to a source of hot flue gases, water is forced from said expansion chamber to said dispersing medium to humidify circulating air passing through said flow zone.

3,929,942

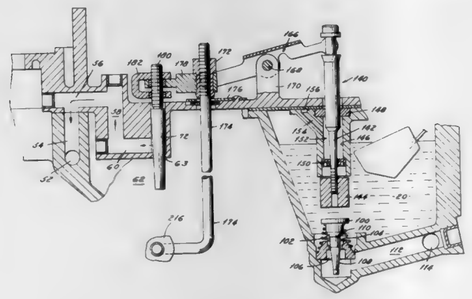
CARBURETOR COLD ENGINE AIR/FUEL MIXTURE ENRICHMENT APPARATUS

Robert S. Harrison, Grosse Ile; John D. Medrick, Plymouth, and Alvin P. Nowroski, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1974, Ser. No. 430,824

Int. Cl.² F02M *1/10*

U.S. Cl. 261—39 B **8 Claims**



1. An air fuel mixture enrichment apparatus for cold weather starting and running operation of an internal combustion engine having a carburetor having an induction passage open to fresh air at one end and adapted to be connected at the opposite end to the engine intake manifold, a throttle plate mounted for rotation across the passage between closed and open positions to control the flow of air and fuel therethrough and spring biased to a closed position, a fuel supply port connected to the passage and responsive to movement of the throttle valve to different positions to induce different quantities of fuel into the passage,

the apparatus characterized by control means to both open the throttle plate to a wider open than normal position to increase the airflow and to increase the fuel supply to the passage, the control means including, first means rotatable with the throttle plate, temperature responsive means movable with changes in temperature from a predetermined level and fixed to a fast idle cam engaged by the first means, the fast idle cam having a stepped edge construction for the individual engagement of each step with the first means as a function of the movement of the cam by the temperature responsive means, the steps varying in extent or projection so as to permit variable closing of the throttle valve as a function of the step engaged, a fuel conduit connected to the induction passage at a location spaced from the fuel supply port to supply additional fuel to the passage, a needle valve movable into and out of the conduit to control fuel flow, connecting means operatively interconnecting the needle valve and fast idle cam to move the needle valve to increase the fuel supply with decreases in temperature, and other means operably interengaging the cam and first means during engine start-up operations to increase the throttle plate opening position beyond the schedule provided by the stepped edge engagement with the first means, the other means comprising a second surface on the cam of greater extent of projection into the path of movement of the first means than the steps.

3,929,943

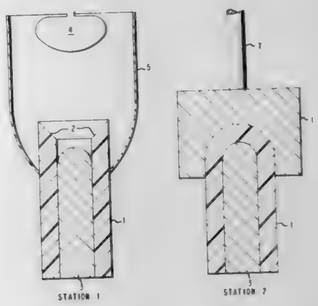
PROCESS FOR SEALING THERMOPLASTIC TUBE

Charles Stanley Klimaszewski, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 299,095, Oct. 19, 1972, abandoned. This application Aug. 28, 1974, Ser. No. 501,458

Int. Cl.² B29D *23/01*

U.S. Cl. 264—25 **3 Claims**



1. A process for sealing an open end of a hollow, cylindrical, polyethylene terephthalate tube comprising:

a. providing a circumferential beveled edge on the open end of the tube,

b. locally heating the beveled open end of the tube to a surface temperature of about 260° to 315°C. in less than about 15 seconds,

c. pressing the beveled open end of the tube into a mold to force the beveled edges together and seal the open end, and

d. rapidly cooling the sealed tube.

3,929,944

METHOD AND APPARATUS FOR FORMING SWIMMING POOL GUTTERS

Steve Oliver, 657 Chestnut, Deerfield, Ill. 60015

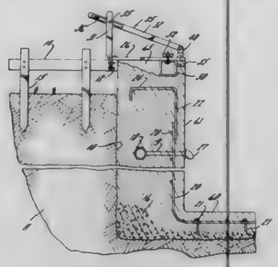
Filed Jan. 28, 1974, Ser. No. 437,066

Int. Cl.² E03C *1/00, 1/24*

U.S. Cl. 264—34 **9 Claims**

1. A method of constructing in an excavation in the ground a swimming pool wall with a gutter about its periphery comprising supporting an elongated flat form panel in a substantially horizontal position above the periphery of said excavation and parallel to the upper side of the intended pool wall securing an elongated gutter form to the underside of said panel in parallel relation to said panel, pressure spray directing concrete from within said excavation toward the side of

said excavation and the underside of said elongated form panel and gutter form thereby simultaneously forming a side wall of a pool with the upper side thereof at least partially



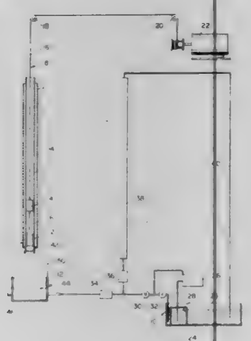
bounded by said form panel and at least patially forming a gutter in the upper portion of said side wall, and removing said panel and gutter form.

3,929,945

METHOD FOR MAKING TUBULAR POLYMERIC MEMBRANES FOR REVERSE OSMOSIS

William Thayer; Lucien Pageau, and Srinivasa Sourirajan, all of Ottawa, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed May 29, 1973, Ser. No. 365,031
Claims priority, application Canada, Aug. 23, 1972, 150045
Int. Cl.² B29D *27/04*
U.S. Cl. 264—41 **4 Claims**



1. A method of manufacturing a tubular polymeric membrane for reverse osmosis, comprising:

a. positioning a cylindrical casing on a casting bob,

b. pouring a casting solution into the cylindrical casing, the casting solution comprising a polymer, a solvent with the polymer dissolved therein, and a pore producing agent for the polymer,

c. attaching a leading bob to the casting bob to allow a clearance, when hauled, between the cylindrical casing and the casting bob,

d. removably securing the cylindrical casing to the leading bob, and

e. positioning at a lower end of a casting tube the casting bob with the cylindrical casing positioned thereon, containing the casting solution, and the leading bob attached thereto and removably secured to the cylindrical casing,

f. causing relative movement between the casting tube and the leading bob to initially cause the cylindrical casing to move away from the casting bob, whereby the casting solution is released from the cylindrical casing, and then a tubular polymeric membrane is cast, from the released casting solution, between the casting tube and the casting bob, while the positions of the leading bob and the casting bob are being changed to positions adjacent the upper end of the casting tube,

g. allowing solvent to evaporate from the cast tubular polymeric membrane,

h. circulating through the casting tube a gelation medium for the cast tubular polymeric membrane, and then

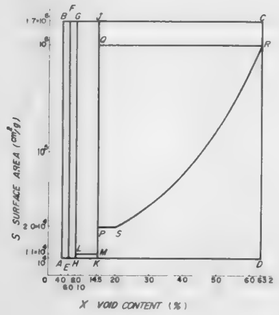
i. removing the cast tubular polymeric membrane from the casting tube.

3,929,946

PROCESS FOR PRODUCING HYGROSCOPIC ACRYLIC FIBERS

Zen-Ichi Orito; Minoru Uchida, and Noriaki Mori, all of Nagoya, Japan, assignors to Mitsubishi Rayon Co., Ltd., Japan

Division of Ser. No. 143,571, May 14, 1971, now abandoned.
This application Sept. 5, 1973, Ser. No. 394,502
Claims priority, application Japan, May 15, 1970, 45-40910
Int. Cl.² B29C *25/00*
U.S. Cl. 264—41 **6 Claims**



1. A process for producing hygroscopic acrylic fibers which includes the steps of

a. preparing a spinning solution by dissolving an acrylonitrile copolymer containing more than 50% by weight of acrylonitrile with at least one other polymerizable monomer having the >C=C< structure and copolymerizable therewith in a solvent thereof,

b. extruding said spinning solution into an aqueous coagulation liquid containing said solvent to form fibers, containing open capillary voids,

c. stretching the thus formed fibers,

d. annealing the stretched fibers in the wet state with saturated steam at a pressure of 0.3 to 2.8 kg/cm²,

e. drying the annealed fibers at a temperature of lower than 110°C, and

f. treating the fibers with an aqueous solution containing a compound as a modifier selected from the group consisting of alkali metal hydroxide, alkali metal carbonate sulfuric acid, hydrochloric acid and hydroxylamine salt to render the surface of the fibers hydrophilic and accelerate condensation of moisture in the voids.

3,929,947

PROCESS FOR MANUFACTURING WALLBOARD AND THE LIKE

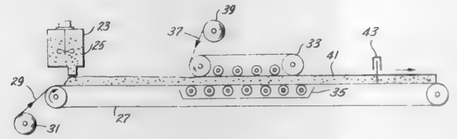
Murray Arthur Schwartz, Tuscaloosa, and Thomas Oscar Llewellyn, East Tuscaloosa, both of Ala., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Aug. 8, 1974, Ser. No. 495,486
Int. Cl.² B29H *7/20, 9/02;* **B22B** *31/06*
U.S. Cl. 264—42 **4 Claims**

1. A process for making porous wallboard panels and related porous building materials comprising the steps of:

a. providing a major quantity of molten sulfur at a temperature of about 130° to 155°C,

b. adding a minor amount of gypsum $CaSO_4.2H_2O$, to the molten sulfur in sufficient quantity such that the water in the gypsum vaporizes, thereby transforming the gypsum into



hemihydrate form, $CaSO_4.\frac{1}{2}H_2O$, thus causing foaming of substantially the entire quantity of molten sulfur,

c. forming the foamed sulfur under pressure into the desired panel shape, and

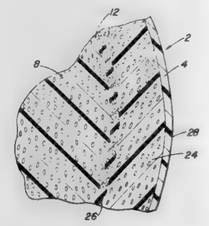
d. cooling the formed panel.

3,929,948

METHOD FOR FABRICATING IMPACT ABSORBING SAFETY STRUCTURE

John A. Welch, Cuyahoga Falls, Ohio, and Robert W. Mitchell, Brown Deer, Wis., assignors to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 195,260, is a continuation-in-part of Ser. No. 796,954, Feb. 6, 1969, abandoned. This application Oct. 19, 1973, Ser. No. 408,040
Int. Cl.² B29D *27/04*
U.S. Cl. 264—45.5 **6 Claims**



1. A method for fabricating an improved impact absorbing safety structure including a rigid deformable foam base member joined to a resilient foam outer layer member through a tough rigid composite crust member which is adapted to protect said base member from less than substantial impact forces received through said layer member, the steps comprising:

1. disposing a flexible resilient layer member of cured porous foam, having its integral skin as initially formed when foamed and cured removed from one exposed surface to expose a porous surface, into conforming relation with the molding surface of a mold as a preformed layer member with said porous surface disposed opposite said molding surface;

2. pouring a foaming mixture of thermosetting resin reactants selected to produce a rigid type foam onto said porous surface of said layer member while said mixture is in foaming condition;

3. Allowing a portion of said foaming mixture to permeate into said porous surface and partially into said layer member a distance sufficient to form a selected apparent thickness of a composite layer comprising said foaming mixture and said porous foam of said layer member; and

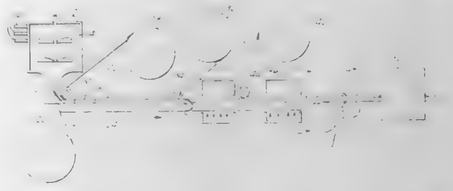
4. curing said foaming mixture to produce said rigid deformable base member and to convert said composite layer into said rigid composite crust member with said rigid composite crust member being tough yet frangible and adapted to break responsive to impact forces in excess of about 50 lbs., exemplified as a force exerted through said resilient layer member against said crust member by a solid hemispherical surface about 1 inch in diameter, and thereby allow such excess forces to be absorbed through deformation of said base member.

3,929,949

PROCESS FOR FORMING MICROPOROUS SHEET

John T. Day, Pasadena, Md., and John G. Hollick, Beverly, Mass., assignors to USM Corporation, Boston, Mass.

Filed June 21, 1974, Ser. No. 481,780
Int. Cl.² B29D *27/04*
U.S. Cl. 264—46.4 **5 Claims**



1. In the process of forming a microporous sheet of solid polyurethane comprising the steps of casting an emulsion of fine droplets of a volatile organic liquid as the internal phase in a continuous phase comprising reactive material convertible through reaction to solidified, resilient polyurethane, said organic liquid being substantially non-solvent for and non-reactive with said reactive material, being immiscible in said continuous phase and being present in amount from about 60% to about 300% by weight based on the weight of the reactive material, said organic liquid containing catalytic or other non-volatile materials which are undesirable in the final sheet, reacting said material at a temperature below the boiling point of said liquid so that the liquid never boils to cause the emulsion to gel and solidify with said droplets held in the solidified material and removing said liquid without expanding the solidified material leaving pores and discontinuities in the solidified material to constitute passageways for air and vapor, the improvement which comprises forming a layer of the liquid emulsion, reacting the materials of the continuous phase of the emulsion to a resilient state capable of return to substantially its initial thickness when pressed to 50% of its initial thickness under conditions preserving the uniformity of the emulsion, subjecting the resilient material to physical pressure of short duration promptly after reaching said resilient condition and before completion of said reaction to express from said sheet a substantial portion of said non-solvent liquid together with materials dissolved or carried in said non-solvent liquid and to clear pores and passageways, completing said reaction to form a stable solid body and removing further organic liquid from the solidified material.

3,929,950

PROCESS FOR PRODUCING POROUS SYNTHETIC RESIN FILM AND SHEET

Tadashi Nakamura, and Hisami Hagiwara, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 21, 1973, Ser. No. 372,353
Claims priority, application Japan, June 22, 1972, 47-61790
Int. Cl.² B01D *47/00;* **F02M** *11/00*
U.S. Cl. 264—49 **7 Claims**

1. In a process for producing a porous synthetic thermoplastic resin film or sheet which exhibits a continuous porous structure which comprises eluting a melt molded article of a synthetic thermoplastic resin composition which consists essentially of a synthetic thermoplastic resin selected from the group consisting of a polyolefin and polyvinylidene fluoride containing 50% to 85% by weight of calcium sulfite powder as rod-shaped crystals having a maximum width of 1 to 10 μ and a minimum length of 5 to 100 μ to remove the calcium sulfite

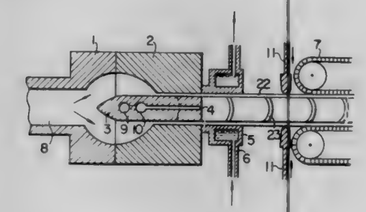
from the stretched article by elution with a solvent for the calcium sulfite, the improvement comprising stretching said melt molded article uniaxially at a stretch ratio of 3 to 10 and at a temperature of from room temperature to 150°C prior to the elution of the calcium sulfite, said stretching being to an extent exceeding the elastic limit of the resin but not exceeding the maximum limit over which the melt molded article breaks to thereby form fine cracks between the resin and the calcium sulfite to increase the ease of elution, whereby said continuous porous structure is obtained, the specific gravity of the stretched film decreasing to less than 1, the specific gravity of said film prior to stretching being 1.39 to 1.90.

3,929,951

METHOD OF EXTRUDING HOLLOW STRUCTURE HAVING PLURAL PARALLEL CELLS

Osamu Shibata, Suita; Susumu Kojimoto, Ibaragi; Takami Sato, Toyonaka, and Yoshio Tadokoro, Ibaragi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed July 16, 1974, Ser. No. 489,061
Claims priority, application Japan, July 18, 1973, 48-81520
Int. Cl.² B29D *23/04*; B29F *3/00*
U.S. Cl. 264—89 **1 Claim**



1. A method for manufacturing a hollow structure of thermoplastic resin comprising the steps of

forming a resin path by a die body and a core member for the extrusion of the hollow structure comprising an outer shell having a plurality of spaces at an opening thereof and diaphragms,

extruding the thermoplastic resin from the die equipped with a gas path into said core member having at least two circuits communicating with said spaces,

blowing gas alternately into the spaces within the extruded hollow structure through said circuits to expand and move the diaphragms and fuse alternate diaphragms with their adjoining diaphragms and outer sheets of said shell so that the hollow sections can be formed into isolated chambers for each of the alternate gas blows to prevent the outer shell of the hollow body from expanding substantially by contacting same with a cooling unit following said die body.

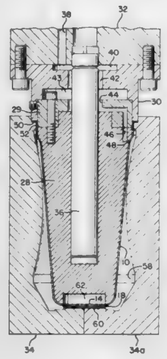
3,929,952

METHOD FOR MOLDING A PLASTIC CONTAINER

Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 338,774, March 7, 1973, Pat. No. 3,867,086. This application July 15, 1974, Ser. No. 488,371
Int. Cl.² B29C *17/07*
U.S. Cl. 264—94 **2 Claims**

1. A method for making a plastic shaker-type container from a preform shaped to nest with others for shipment and storage and with each preform having an open end portion of predetermined peripheral configuration and an opposite smaller end portion of predetermined configuration with a plurality of shaker openings therethrough, including the steps of adhering a cover over said smaller end portion to seal said shaker openings, positioning said preform on a heated mandrel, shielding the preform end portions against the heat of the mandrel while heating the wall of said preform between the shielded end portions thereof to a reform shaping temperature associating the heated mandrel and preform mounted thereon with a female mold internally shaped according to the finished plastic shaker-type container, supporting said end portions of said preform in said female mold against deformation during



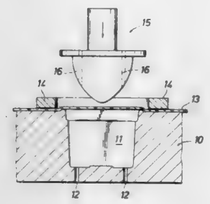
reform shaping of the preform, and shaping the wall of said preform between the shielded and supported end portions thereof under differential air pressure between the interior and the exterior of said preform against said female mold to the configuration of said plastic shaker-type container with maintained integrity of the predetermined configurations of said end portions.

3,929,953

METHOD FOR FORMING NONCIRCULAR THERMOPLASTIC CUPPED ARTICLES

Gerrit van der Gaag, and Thomas C. Tomey, both of Delft, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 337,329, March 2, 1973, Pat. No. 3,859,028. This application Sept. 12, 1974, Ser. No. 505,438
Claims priority, application United Kingdom, Mar. 21, 1972, 13130/72
Int. Cl.² B29C *17/04*
U.S. Cl. 264—94 **3 Claims**



1. A method for molding hollow articles of a configuration having an approximately polygonal cross-section with rounded corners, from thermoplastic sheet comprising clamping a sheet of thermoplastic material over the opening of a molding cavity having said configuration, drawing the thermoplastic sheet into the cavity while the sheet is maintained in the solid phase at a temperature below its melting point by lowering a plug having a modified polygonal shape, the modification in cross-section consisting of an upper portion with rounded corners and concave indentation of the side walls and a lower portion converging from said indented upper portion to an unindented configuration approximately elleptical in planes parallel to the plane made by the undrawn sheet and approximately parabolic in planes perpendicular to the undrawn sheet, on to the sheet and into the molding cavity,

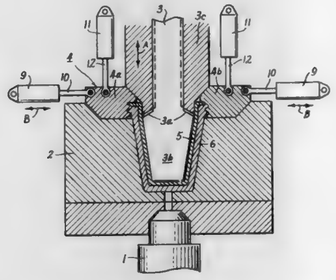
thereby causing the sheet to be forced into the cavity by first contacting the lower part of the plug in a sequence of progressively larger eliptical lines of contact, then the lower part of the plug and only the rounded corners of the upper part of the plug and thereafter providing a fluid pressure difference between said plug and fully plug stretched sheet forcing the sheet up against the walls of the mold cavity to form the hollow article.

3,929,954

METHOD FOR THE PRODUCTION OF COMPOSITE CONTAINERS

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Division of Ser. No. 211,898, Dec. 27, 1971, Pat. No. 3,816,580. This application July 27, 1973, Ser. No. 383,264. The portion of the term of this patent subsequent to Mar. 6, 1990, has been disclaimed.
Int. Cl.² B29C *17/07*; B29F *1/10*
U.S. Cl. 264—97 **9 Claims**



1. In the method of making a composite plastic article using a previously formed plastic liner which is subject to deformation upon heating, while preventing substantial deformation of said previously formed liner, wherein a parison is formed on a blow core in a parison mold, said core having heated portions, and is expanded in a blow mold, the improvement comprising providing said previously formed liner generally conforming to the shape of at least part of said core, positioning said liner in alignment with the core, holding said heated portions and liner at least partly in spaced relationship until positioning the core for molding, bringing said liner and said core into molding position with said parison mold and applying said liner to said core as the core and said parison mold are being positioned for molding, thereby preventing substantial deformation of said liner.

3,929,955

PROCESS FOR PRODUCING AGGLOMERATES FROM FINE-GRAINED LIGNITE OR FINE GRAINED CARBONIZED LIGNITE OR FROM MIXTURES OF THE TWO

Werner Wenzel, Aachen; Peter Speich, Cologne; Roman Kurtz, Frechen; Heinrich Gudenau, and Friedrich Franke, both of Aachen, all of Germany, assignors to Rheinische Braunkohlenwerke AG, Cologne and Werner Wenzel, Aachen, both of, Germany

Filed May 15, 1973, Ser. No. 360,514
Claims priority, application Germany, June 8, 1972, 2227812
Int. Cl.² B01J *2/28*
U.S. Cl. 264—117 **7 Claims**

1. A process for producing pellets from fine-grained carbonized lignite having a grain size less than 0.5 mm. comprising mixing said carbonized lignite with a pellet-forming agent consisting of lignite filter ash and water, subjecting the mixture to a pelletizing action including a further addition of water to pelletize it and produce pellets of a larger size than said fine-grained carbonized lignite and drying said pellets to harden them.

3,929,956

PROCESS FOR WET WINDING FILAMENTS

Karl Severin Jakobsen, Somers, and Victor Joseph Nadeau, Enfield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 302,977, Nov. 1, 1972, abandoned. This application Sept. 3, 1974, Ser. No. 503,002
Int. Cl.² B29B *1/04*
U.S. Cl. 264—137 **2 Claims**

1. A method of producing a substantially voidless filament reinforced resin matrix composite comprising:

mixing an amount of dry uncured powder of a high temperature, relatively low solvent solubility resin selected from the group consisting of polyimide, polybenzimadazole, polybenzothiozole and polyoxadiazole with a nearly saturated solvent solution of said resin to form a suspension of resin solids in said solution, said mixture being flowable and having a total resin content, relative to the solvent content, above 60 percent, by weight;

prior to said mixture becoming nonflowable, applying it to successive portions of high modulus, high strength filaments selected from the group consisting of boron, carbon, silicon carbide and silicon carbide coated boron to form a continuously matrixed laminate;

at least partially desolvating said applied mixture whereby voids are created; and

compression molding said desolvated laminate to eliminate said voids.

3,929,957

METHOD FOR PRODUCING A CONTINUOUS FLEXIBLE REINFORCED TUBULAR CONDUIT

Homer N. Holden, Sylva; James P. Hunt, Clyde; Vernon D. Browning, Waynesville; Edward L. Hoglen, Candler, all of N.C., and Donald L. Kleykamp, Springboro, Ohio, assignors to Dayco Corporation, Dayton, Ohio

Filed Mar. 5, 1975, Ser. No. 555,493
Int. Cl.² B29B *21/52*, *21/56*; B29C *17/14*
U.S. Cl. 264—150 **4 Claims**



1. A method of producing a continuous flexible reinforced tubular conduit comprising the steps of, operatively associating a plurality of rigid mandrels is aligned end-to-end relation, moving said operatively associated mandrels in a continuous manner through a fabrication area using associated moving means, forming at least one elongated member into a continuous non-rotating helical coil about each mandrel as it moves through said area, said moving step comprising moving each mandrel with its helical coil therearound through an extruder head of an extrusion apparatus at a speed correlated with the speed of forming said helical coil, extruding a tube of plastic material around said coil and mandrel as it moves through said extruder head to define said conduit, and separating said conduit from each of said mandrels.

3,929,958
PROCESS FOR PRODUCING RADIALLY-EXPANDED SOCKET ENDS ON THERMOPLASTIC PIPE LENGTHS

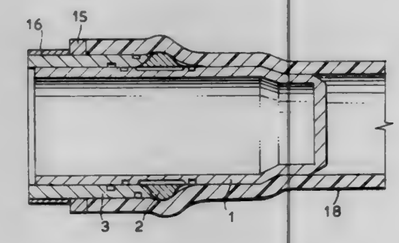
Gunnar Parmann, Mathopen, Norway, assignor to Rieber & Son Plastic-Industri A/S, Bergen, Norway

Continuation of Ser. No. 366,677, June 4, 1973, abandoned, which is a division of Ser. No. 246,217, April 21, 1972, Pat. No. 3,776,682. This application Jan. 23, 1975, Ser. No. 543,547

Claims priority, application Norway, Apr. 26, 1971, 1538/71; Sept. 27, 1971, 2386/71

Int. Cl.² B29D *3/02*

U.S. Cl. 264—249 **9 Claims**



1. A process for producing a radially expanded socket end with a radially expanded groove for an inner sealing element on a pipe length of thermoplastic material comprising the steps of

heating one end of a pipe length,

positioning a circumferentially split mould element of rigid elastic material having a wedge shaped side face portion on a substantially cylindrical face of a drift, said face having larger diameter than the outside diameter of the pipe length,

positioning a removable support member on said drift to axially support the mould element on said drift, said support member having an abutting surface cooperating with said wedge shaped side face portion to force said mould element into abutment with said drift surface during an influence of a pushing-on force exerted by the hot pipe end,

moving the heated end of the pipe length relatively over the mould element, the support member and the drift to radially expand the heated end and to locate the heated end in a final position axially on the drift,

subsequently removing the support member from adjacent the mould element and the heated end while said heated end remains axially undisplaceable in said final position, contracting the unsupported end of the heated pipe radially inwardly against said cylindrical drift face, and

subsequently cooling down such fashioned pipe end during support thereof in said final position by means of said mould element and said drift.

3,929,959
METHOD FOR PRODUCING ORIENTED PLASTIC SHOTSHELLS

Donald Urquhart Findlay; Francis Hamnet Garland McGaffrey, and Derek Edgar Alexander Scuffell, all of Brownsburg, Canada, assignors to Canadian Industries Limited, Montreal, Canada

Filed Oct. 1, 1973, Ser. No. 402,593

Claims priority, application United Kingdom, Oct. 30, 1972, 49843/72

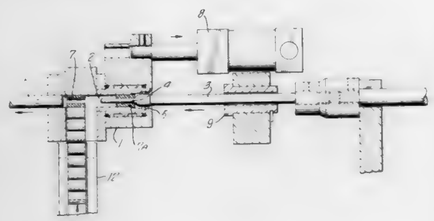
Int. Cl.² B29C *17/02*

U.S. Cl. 264—292 **3 Claims**

1. A method of producing an integral, oriented, crystalline polyolefinic shotgun cartridge comprising the steps of:

a. Heating an elongated, open-ended, thickwalled tubular blank of crystalline polyolefinic material to a temperature between about 80°F. and 240°F., but below the crystalline melting point of said polyolefinic material,

b. forcing said heated blank longitudinally for a distance equal to part of its length through an annular space defined by a fixed external die and a moveable internal mandrel in such a way that said blank is expanded circumferentially over said mandrel and reduced in wall thickness by extrusion through said annular space to form a biaxially oriented tubelike structure;



c. simultaneously compressing by the use of a ram acting through a further heated blank the portion of said tubular blank which has not been advanced through said annular space into the shape of a formed, shotshell head and base wad integral with the said oriented tubelike structure;

d. retracting the said internal mandrel and formed tubelike structure and integral shotshell head through the said die on the action of the movement of the die, and

e. removing said formed tubelike structure and integral shotshell head from the said mandrel.

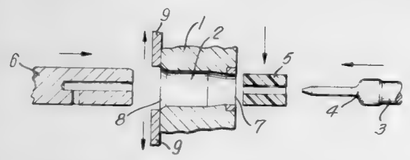
3,929,960
METHOD FOR PRODUCING ORIENTED PLASTIC SHOTSHELLS

Donald Urquhart Findlay; Francis Hamnet Garland McGaffrey, and Derek Edgar Alexander Scuffell, all of Brownsburg, Canada, assignors to Canadian Industries Limited, Montreal, Canada

Filed Oct. 1, 1973, Ser. No. 402,594

Int. Cl.² B29C *17/02*

U.S. Cl. 264—292 **3 Claims**



1. A method of producing an integral, oriented, crystalline polyolefinic shotgun cartridge having an enlarged head portion comprising the steps of:

a. heating an elongated, open-ended, thick-walled tubular blank of crystalline polyolefinic material to a temperature between about 80°F. and 240°F., but below the crystalline melting point of said polyolefinic material;

b. advancing said heated blank into a substantially cylindrical die cavity having an enlarged circumferential head end position by means of a reciprocating mandrel;

c. forcing said blank longitudinally for a distance equal to part of its length through an annular space defined by one outlet of said die cavity and said mandrel on the action of a reciprocating ram in such a way that said blank is expanded circumferentially over said mandrel and reduced in wall thickness by extrusion through said annular space to form a biaxially oriented tubelike structure and simultaneously compressing the portion of said tubular blank which has not been advanced through said annular space into the shape of a formed, shotshell head and base wad integral with the said oriented tubelike structure and having an enlarged head portion;

d. retracting the said ram and further advancing the said mandrel and formed tubelike structure and integral shotshell head through the said die cavity; and

e. reversing the direction of movement of said mandrel to remove therefrom said formed tubelike structure and integral shotshell head having said enlarged head portion.

3,929,961
TREATMENT OF IRRADIATED NUCLEAR FUEL ELEMENTS

Robert Edmund Strong, Bootle, England, assignor to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 111,096, Jan. 29, 1971, abandoned. This application Aug. 2, 1973, Ser. No. 384,837

Claims priority, application United Kingdom, Feb. 3, 1970, 5227/70

Int. Cl.² C01G *56/00*

U.S. Cl. 423—4 **3 Claims**

1. A method of treating an elongate irradiated nuclear fuel element comprising ceramic oxide nuclear fuel enclosed within a stainless steel metal sheath for removal of the fuel material from the sheath comprising disposing the elongate fuel element with a portion thereof within an induction coil, subjecting the induction coil to a radio frequency magnetic field to induce local induction heating of the metal sheath sufficient to raise the temperature of said metal sheath at the portion thereof within said coil to its melting temperature to effect local melting therein, and moving the fuel element axially relative to said induction coil while continuing heating to rupture said metal sheath.

3,929,962
TITANIUM PURIFICATION PROCESS

Chyn Duog Shiah, 189 Nassau Ave., Manhasset, L.I., N.Y. 11030

Filed Aug. 29, 1972, Ser. No. 284,541

Int. Cl.² C01G *23/02*, *23/04*, *23/06*

U.S. Cl. 423—82 **12 Claims**

1. The method of extracting purified TiO_2 from titanium-containing ores which comprises the steps of

a. reduction of said ores at elevated temperatures in the presence of a reducing gas, to convert at least 10 wt % of the tetravalent titanium contents of said ores to lower valent titanous compounds;

b. extracting said lower valent titanous compounds from the so-treated ores by solution as titanous chloride in an aqueous solution of hydrochloric acid;

c. separating the soluble titanous chloride extract from the residue;

d. returning the residue, containing undissolved titanium compounds, for retreatment according to step (a);

e. subjecting said separated aqueous extract, containing dissolved lower valent titanous chloride to an oxidation step to convert said titanous chloride, in solution, to titanium solutions;

f. hydrolyzing said titanium tetrachloride solution to hydrous titanium dioxide;

g. converting said hydrous titanium dioxide to titanium dioxide by calcination.

3,929,963
PROCESS FOR PREPARING CONCENTRATED TITANIUM MINERAL

Tokuzo Kurata; Satoshi Emi; Kunihiko Ofuchi; Tsutomu Takeuchi, and Isamu Sone, all of Kitakyushu, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed June 11, 1974, Ser. No. 478,274

Claims priority, application Japan, June 11, 1973, 48-65723

Int. Cl.² C01G *23/04*; **C22B** *1/00*

U.S. Cl. 423—86 **6 Claims**



1. In a process for preparing a concentrated titanium mineral by reducing a titanium mineral with a reducing agent such that the iron components of the minerals are substantially reduced to the Fe^{+2} state, and thereafter leaching the reduced titanium mineral with an acid leaching agent which minimizes the formation of fine particulate material of a particle size diameter less than 10μ, the improvement which comprises:

leaching a reduced titanium mineral at a temperature from 80°C to the boiling point of the leaching agent by feeding said reduced titanium mineral having an average weight particle size of 50 – 300μ, and by feeding the acid leaching agent at a superficial linear velocity (volumetric flow rate/sectional area of tower) of $U1 \leq 0.004\ Dp + 0.15$ cm/sec, wherein U1 represents the superficial linear velocity of the acid leaching agent and Dp represents the average weight particle size (μ) of the titanium mineral into a tower leaching apparatus under fluidized conditions.

3,929,964
PROCESS FOR THE CONVERSION OF SODIUM SULFITE

Matthias Thoma, Johann-Strauss-Strasse 8, 8264 Waldkraiburg, Germany

Filed Sept. 23, 1974, Ser. No. 508,401

Claims priority, application Germany, Oct. 5, 1973, 2350191

Int. Cl.² C01D *1/20*

U.S. Cl. 423—183 **6 Claims**

1. A process for the conversion of sodium sulfite, obtained in the production of hydroxy aromatics, into sodium hydroxide and sulphur trioxide for recirculation in said production of hydroxy aromatics, which comprises:

a. reacting said sodium sulfite with zinc chloride to form sodium chloride and zinc sulfite,

b. heating said zinc sulfite to form zinc oxide and sulphur dioxide and oxidizing said sulfur dioxide to sulphur trioxide,

c. reacting said sodium chloride with ammonium bic. rbonate to form ammonium chloride and sodium bicarbonate,

d. reacting said zinc oxide with said ammonium chloride to form zinc chloride and ammonia,

e. converting said ammonia to form ammonium bicarbonate, and
f. heating said sodium bicarbonate to form sodium carbonate and carbon dioxide, and reacting said sodium carbonate with calcium oxide to form sodium hydroxide.

3,929,965
DUAL PURPOSE AUTO EXHAUST CATALYSTS
Gwan Kim, Columbia, and Michael Vance Ernest, Baltimore, both of Md., assignors to W. R. Grace & Co., New York, N.Y.
Filed May 16, 1974, Ser. No. 470,596
Int. Cl.² B01D 53/00
U.S. Cl. 423—213.5 2 Claims

1. A method of converting the noxious components of exhaust gases to innocuous entities which comprises contacting said gases, having carbon monoxide to oxygen ratios of 2 to 10 with a catalyst consisting essentially of a mixture of two catalysts in which 70 to 90 percent of the mixture is a reducing catalyst consisting essentially of from 0.01 to 5 weight percent palladium and from 0.004 to 2 weight percent rhodium and from 5 to 80 percent by weight nickel oxide; and in which 10 to 30 weight percent of the mixture is an oxidation catalyst consisting essentially of 0.01 to 5 weight percent platinum and from 0.01 to 5 weight percent palladium, wherein said catalysts are distended on alumina supports containing 1 to 30 weight percent ceria.

3,929,966
METHOD FOR REMOVING OXIDES OF NITROGEN FROM GASEOUS MIXTURES
Taijiro Okabe; Akitsugu Okuwaki, both of Sendai, and Shigetoshi Nakabayashi, Shinminato, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Japan
Filed Feb. 16, 1973, Ser. No. 332,792
Claims priority, application Japan, Feb. 19, 1972, 47-17556
Int. Cl.² B01J 8/00; C01B 21/00
U.S. Cl. 423—239 3 Claims

1. A method for removing oxides of nitrogen (NO_x) existing in gaseous mixtures which consists essentially of subjecting said gaseous mixtures to contact-reaction with an alkali metal manganate at a temperature of from 200°C to 600°C, thereby absorbing the oxides of nitrogen into said alkali metal manganate.

3,929,967
HIGH TEMPERATURE FLUE GAS TREATMENT
Everett Douglas Cann, Madison, Wis., assignor to Everett Douglas Cann and William T. Neiman, both of Madison, Wis.
Filed Jan. 3, 1972, Ser. No. 214,960
Int. Cl.² C01B 17/00, 17/50
U.S. Cl. 423—242 1 Claim

1. In a method of treating an effluent gas containing a minor but polluting amount of both sulfur dioxide and sulfur trioxide by contacting said effluent gas with ammonia to form an ammonium salt of a sulfur oxide, the improvement comprising:
introducing said ammonia in gaseous form while said effluent gas is at a temperature above about 220° F and below about 1200° F, and in an amount at least sufficient to react with all the sulfur trioxide but not more than that equivalent to about 2.0 mols of ammonia per mol of total sulfur oxides in said effluent gas to thereby convert substantially all of the sulfur trioxide to ammonium monosulfate and to convert sulfur dioxide predominantly to the bi-sulfite, under temperature conditions minimizing oxidation of sulfur dioxide to trioxide, wherein said ammonium salts include salts of both sulfur dioxide and sulfur trioxide,
recovering the resulting non-caking solid ammonium salts of sulfur oxides from said effluent gas at a temperature above about 220° F,
treating said salts with at least the stoichiometric amount of an aqueous member of the group consisting of alkaline earth metal oxide and zinc oxide to liberate ammonia for recycle and to form alkaline earth metal or zinc sulfur oxide salts,
and drying, dehydrating, and thermally decomposing said salts under reducing conditions to convert the sulfur from hexavalent to tetravalent sulfur oxide and thereby liberate a stream of sulfur dioxide and to recover alkaline earth metal oxide or zinc oxide for recycle.

3,929,968
DRY COLLECTION OF WASTE MATERIALS
Steven I. Taub, Claymont, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.
Filed Oct. 10, 1973, Ser. No. 405,054
Int. Cl.² C01B 17/00
U.S. Cl. 423—242 7 Claims

1. A process for treating hot gas streams to remove acidic or basic gaseous components comprising the steps
a. passing the hot gas through an evaporative cooler in admixture with a salt-containing scrubbing solution as defined hereinbelow, by which the hot gas is cooled above the dew point by evaporation of liquid from the scrubbing solution and solid particles of salt are formed in dispersion with the gas;
b. feeding the cooled gas having salt particles dispersed therein into a dry collector means by which the salt particles and any other dispersed solids are removed from the gas stream;
c. feeding the gas from which the solids have been removed into a scrubber wherein the acidic or basic components of the gas are absorbed into a scrubbing solution;
d. discharging the scrubbed gas from the scrubber and adjusting the pH of the scrubbing solution containing absorbed acidic or basic components by admixing therewith a salt-forming chemical by which a salt of the acidic or basic components is formed in dispersion within the scrubbing solution; and
e. feeding the salt-containing scrubbing solution to the evaporative cooler of step (a).

3,929,969
TRIVALENT METAL SALTS OF DODECAMETAL TRIACONTA CARBONYLS
Earle S. Brown, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Filed Mar. 27, 1974, Ser. No. 455,377
Int. Cl.² C01F 17/00; C01G 1/04
U.S. Cl. 423—263 15 Claims

1. Plural metal triaconta carbonyl salts of the formula:
$M_2[T_yT'_{12-y}(CO)_{30}]_3$
wherein M is a trivalent metal cation selected from the group consisting of aluminum, gallium, iridium, scandium, yttrium, and rhenium, T and T′ are each different metals selected from the group consisting of cobalt, iridium and rhodium, and y is any whole number between 1 and 11.

3,929,970
TL_3PSE_4 COMPOUND, SINGLE CRYSTALS
Thelma J. Isaacs, Monroeville; Milton S. Gottlieb, Pittsburgh; John D. Feichtner, Murrysville, and Andrea A. Price, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 29, 1973, Ser. No. 392,693
Int. Cl.² C01B 25/00
U.S. Cl. 423—299 7 Claims

1. A compound having the general formula Tl_3XSe_4 where

X is about 50 to about 100% phosphorus and about 0 to about 50% arsenic.

3,929,971
POROUS BIOMATERIALS AND METHOD OF MAKING SAME
Della M. Roy, State College, Pa., assignor to Research Corporation, New York, N.Y.
Filed Mar. 30, 1973, Ser. No. 346,644
Int. Cl.² C01B 15/16, 25/26; A61F 5/04
U.S. Cl. 423—308 45 Claims

1. Synthetic material useful as a biomaterial characterized by a substantially uniform pore volume in the range from about 10% to about 90% and having a microstructure characterized by a pronounced threedimensional fenestrate structure corresponding to the microstructure of the porous carbonate echinoderm or schleractinian coral skeletal material of marine life and providing a periodic minimal surface, said periodic minimal surface dividing the volume of said material into two interpenetrating regions, each of which is a single, multiply connected domain, said material having a substantially uniform pore size diameter and substantially uniform pore connections or openings in the range from about 5 microns to about 500 microns, said synthetic material being made up of a material selected from the group consisting of hydroxyapatite and whitlockite.

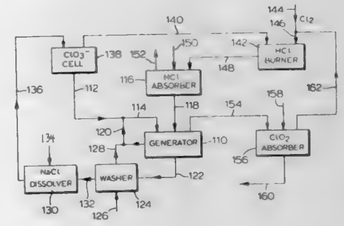
3,929,972
PRODUCTION OF SILICO-DIHYDROGEN SULFATE
David H. Blount, 5450 Lea St., San Diego, Calif. 92105
Continuation-in-part of Ser. No. 287,898, Aug. 13, 1973. This application Nov. 27, 1974, Ser. No. 527,906
Int. Cl.² C01B 33/00
U.S. Cl. 423—325 6 Claims

1. A method for producing silico-dihydrogen sulfate [$SiO(HSO_4)_2$] from sodium metasilicate pentahydrate, which comprises:
a. mixing slowly sodium metasilicate pentahydrate into concentrated sulfuric acid in the ratio of 1:4 mols with agitation over a period of 15–20 minutes, keeping the reaction temperature between 25°–100° C; the chemical reaction is completed in 2–6 hours,
b. producing a white granular mixture containing dihydroxy silicon dihydrogen sulfate [$(HO)_2Si(HSO_4)_2$], silico-dihydrogen sulfate [$SiO(HSO_4)_2$]; sodium hydrogen sulfate and water,
c. filtering off said sodium hydrogen sulfate and water,
d. adding an additional 2 mols of concentrated sulfuric acid per mol of sodium metasilicate to said white granular mixture for 20–30 minutes,
e. filtering off diluted sulfuric acid and sodium hydrogen sulfate, and thereby
f. producing additional silico-dihydrogen sulfate [$SiO(HSO_4)_2$] from said dihydroxy silicon dihydrogen sulfate.

3,929,973
PROCESS FOR THE PREPARATION OF CARBONYL DERIVATIVES
Daniela Belli Dell'Amico, Carrara, and Fausto Calderazzo, Ghezzano, both of Italy, assignors to Snamprogetti S.p.A., San Donato Milanese, Italy
Filed Mar. 4, 1974, Ser. No. 447,739
Claims priority, application Italy, Feb. 5, 1973, 20007/73
Int. Cl.² C01G 1/04
U.S. Cl. 423—417 2 Claims

1. Process for the preparation of gold-carbonyl chloride and phosgene by reacting gold trichloride with carbon monoxide which consists in bubbling carbon monoxide through a solution of gold trichloride in thionyl chloride at room temperature and atmospheric pressure.

3,929,974
PRODUCTION OF CHLORINE DIOXIDE
John D. Winfield, Etobicoke, Canada, assignor to ERCO Industries Limited, Islington
Continuation of Ser. No. 166,733, July 28, 1971, abandoned, which is a division of Ser. No. 451,850, June 12, 1970, abandoned. This application Nov. 19, 1973, Ser. No. 416,879
Int. Cl.² C01B 11/02
U.S. Cl. 423—478 4 Claims

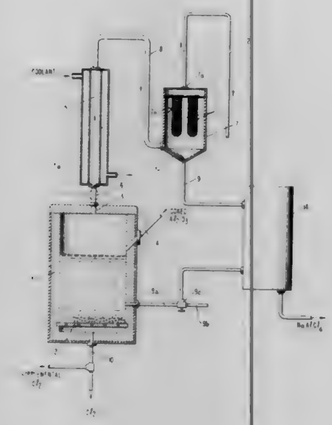


1. A process for the production of chlorine dioxide which comprises continuously feeding an aqueous solution of an alkali metal chlorate and hydrochloric acid to a reaction zone to maintain an aqueous reaction medium in said reaction zone containing an alkali metal chlorate and hydrochloric acid and having an acidity of about 0.05 to about 1N, continuously forming chlorine dioxide and chlorine by reaction between said alkali metal chlorate and said hydrochloric acid in said reaction medium, continuously maintaining said reaction zone under a reduced pressure, continuously maintaining said reaction medium at its boiling point to evaporate water from said reaction medium to form continuously a gaseous phase in said reaction zone consisting of a mixture of chlorine dioxide, chlorine and water vapor, and to deposit alkali metal chloride in said reaction zone, continuously conducting said gaseous phase mixture out of said reaction zone, continuously recovering chlorine dioxide from said mixture, removing deposited alkali metal chloride from said reaction zone, forming an aqueous solution from said removed alkali metal chloride, continuously electrolyzing said latter aqueous solution to convert the alkali metal chloride at least partially to alkali metal chlorate and to generate hydrogen gas, continuously feeding at least the alkali metal chlorate content of the alkali metal chlorate-containing solution to said reaction zone, continuously reacting at least part of said hydrogen gas with chlorine gas to generate hydrogen chloride, continuously forming hydrochloric acid from said hydrogen chloride and continuously feeding at least part of said hydrochloric acid to said reaction zone.

3,929,975
SELECTIVE RECYCLE PRODUCTION OF ALUMINUM CHLORIDE
Larry K. King, Maryville, Tenn., and Noel Jarrett, Lower Burrell, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Continuation of Ser. No. 180,278, Sept. 14, 1971, abandoned. This application Dec. 26, 1973, Ser. No. 427,534
Int. Cl.² C01F 7/58, 7/60
U.S. Cl. 423—496 7 Claims

1. In a process for the production of aluminum chloride by exothermically reacting substantially hydrogen-free sodium contaminated alumina having less than 0.5% of iron, silicon and titanium impurities therein and no more than 1.0% of sodium impurities therein calculated as Na_2O and an average alpha alumina content of less than about 5% and an average surface area of at least about 10 m^2/g, with chlorine gas in the presence of a substantially hydrogen-free solid carbonaceous reducing agent to form a hot gaseous effluent containing aluminum chloride values, entrained particles including aluminum oxychloride values, and condensible volatile constitu-

ents including sodium aluminum chloride values, the steps of cooling the hot gaseous effluent to a predetermined low value intermediate the chlorination reaction temperature and the condensation temperature of aluminum chloride under the ambient conditions there extant to condense at least a portion of the sodium aluminum chloride values therein, separating a mixture of such condensed sodium aluminum chloride values, and entrained particles including aluminum oxychloride from



said gaseous effluent and selectively returning predetermined portions of said mixture to the chlorination zone during the continuance of the chlorination reaction therein in a combined amount of about 10–30% by weight of the alumina introduced into said chlorination zone to maintain catalytic enhancement of the chlorination reaction to progressively effect the removal of contaminant oxygen values from said hot gaseous effluent.

3,929,976

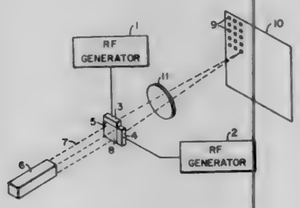
TL_3VS_4 AND TL_3NBS_4 CRYSTALS AND ACOUSTO-OPTICAL DEVICES

Thelma J. Isaacs, Monroeville; Milton S. Gottlieb, Pittsburgh; John D. Feichtner, Murrysville, and Andrea A. Price, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 29, 1973, Ser. No. 392,695

Int. Cl.² C01G *15/00, 31/00, 33/00*

U.S. Cl. 423—511 **4 Claims**



1. A single crystal selected from the group consisting of Tl_3VS_4, Tl_3NbS_4, and non-conducting single crystal mixtures thereof which is at least about ½ cm in diameter and 1 cm long.

3,929,977

METHOD FOR THE THERMAL CONVERSION OF AMMONIUM SULFATE TO AMMONIUM BISULFATE

Earl D. Brennan, Monroeville, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 294,230, Oct. 2, 1972, abandoned. This application Aug. 14, 1974, Ser. No. 497,299

Int. Cl.² C01C *1/24*

U.S. Cl. 423—520 **7 Claims**

1. A method for converting ammonium sulfate to ammonium bisulfate comprising:

A. fusing a mixture of ammonium sulfate and ammonium bisulfate to form a molten salt mixture;

B. continuously introducing said mixture into a thin-film reactor to form a continuous thin flowing film of molten salt;

C. sweeping said thin flowing film of molten salt in said reactor with a hot inert gas selected from the group consisting of superheated steam, nitrogen, combustion gases and synthetic gases to convert said ammonium sulfate to ammonium bisulfate, and to sweep ammonia formed during said conversion from said reactor, said hot inert gas having a temperature after said sweeping not in excess of about 330°C.

3,929,978

PROCESS FOR PREPARING FERROMAGNETIC CHROMIUM DIOXIDE

Domenico Morero, Merano; Ugo Montiglio, Alessandria; Pierfrancesco Aspes, Alessandria, and Giampiero Basile, Alessandria, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Mar. 1, 1972, Ser. No. 231,028

Claims priority, application Italy, Mar. 4, 1971, 21316/71

Int. Cl.² C01G *37/02*

U.S. Cl. 423—607 **4 Claims**

1. A process for preparing high quality ferromagnetic chromium dioxide consisting of

heating a chromium (III) chromate salt of the formula $Cr_2(CrO_4)_3 \cdot nH_2O$ wherein n is from 1 to 8

at a temperature between 250° and 500°C

under an oxygen pressure between 30 and 1000 atmospheres.

3,929,979

PROCESS FOR GENERATING HYDROGEN

Carlos E. Bamberger; Donald M. Richardson, and Warren R. Grimes, all of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Sept. 10, 1974, Ser. No. 504,790

Int. Cl.² C01B *1/03;* **C01G** *49/00;* **C01B** *5/00*

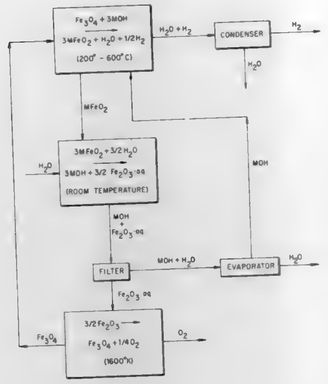
U.S. Cl. 423—648 **6 Claims**

1. A method for chemically generating hydrogen, comprising the steps of:

reacting magnetic iron oxide with a molten alkali metal hydroxide to produce hydrogen, alkali metal ferrite and water;

continuously exhausting the gaseous atmosphere from the reaction environment so as to continuously remove the

hydrogen and water produced during said step of reacting;



separating said hydrogen from said water; and

collecting said separated hydrogen.

3,929,980

METHOD OF PRODUCING HYDROGEN

Bernard M. Abraham, Oak Park, and Felix Schreiner, Mokena, both of Ill., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Dec. 26, 1974, Ser. No. 536,694

Int. Cl.² C01B *1/02*

U.S. Cl. 423—648 **2 Claims**

1. A method for decomposing water chemically comprising reacting molten KNO_3 and vaporous I_2 to form NO, O_2 and crystalline KI, reacting the NO and one half of the O_2 thus formed with water to form HNO_3, forming NH_4I by reacting this HNO_3 with NH_3 to form NH_4NO_3 and reacting this NH_4NO_3 with the KI produced in the first step above recited, decomposing the NH_4I to obtain hydrogen, and recycling all compound produced in this series of reactions except hydrogen and onehalf of the oxygen produced in the first-recited step, the net effect of the total process thus comprising the decomposition of water.

3,929,981

METHOD FOR DETERMINING THYROID FUNCTION

Hari S. Murty, North Brunswick; Siva K. Gara, Old Bridge, and Dasika R. Murty, North Brunswick, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 27, 1974, Ser. No. 446,179

Int. Cl.² G01N *33/00;* **G01T** *1/16*

U.S. Cl. 424—1 **18 Claims**

1. In a method of determining thyroxine in serum by the competitive protein-binding technique comprising extracting thyroxine from the serum with a lower alkanol or dioxane solvent; adding to the serum and solvent a solution of thyroxine-binding globulin saturated with radioisotope labelled thyroxine; separating thyroxine that is bound to the thyroxine-binding globulin from unbound thyroxine; and counting the bound thyroxine, the unbound thyroxine, or both bound and unbound thyroxine; the improvement wherein: the solvent extract is not separated from the serum prior to the addition of the solution of thyroxine-binding globulin saturated with radioisotope labelled thyroxine.

3,929,982

METHOD AND COMPOSITION FOR THE DIAGNOSIS OF EQUINE INFECTOUS ANEMIA VIRUS INFECTION BY USING AGAR-GEL-IMMUNODIFFUSION REACTION

Leroy Coggins, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Division of Ser. No. 196,060, Nov. 5, 1971, which is a continuation-in-part of Ser. No. 132,073, April 7, 1971, abandoned. This application Sept. 19, 1973, Ser. No. 398,744

Int. Cl.² A61K *39/12, 39/42;* **G01N** *31/02, 33/16*

U.S. Cl. 424—12 **18 Claims**

1. An immunological indicator system for use in the detection of equine infectious anemia in an equine comprising:

a liquid gel-forming material homogeneously mixed with a minor amount of a preparation consisting of an antigen which is specific in its reaction with equine infectious anemia virus precipitating antibody to form an insoluble complex which indicates the presence of equine infectious anemia virus, said antigen (A) obtained from an extract of the spleen removed from an equine acutely infected with equine infectious anemia virus, said equine having been inoculated with a virus of equine infectious anemia having sufficient virulence to render said equine severely febrile rapidly after inoculation with said virus, said spleen being removed from said equine after said equine becomes febrile but before the antigen in said spleen becomes substantially tied up or contaminated with antibodies to the antigen or (B) obtained as a concentrate from equine infectious anemia virus infected tissue culture; which antigen is not substantially tied up or contaminated with antibody to the antigen, the gel-forming mixture being in the form of a thin layer of said mixed materials having at least one well therein adapted to receive a test specimen of an animal suspected to be infected with said virus.

3,929,983

COMPOSITIONS AND METHODS OF KILLING RODENTS USING (DIPHENYL ACETYL)-2 INDANE DIONE-1,3

Eugene Boschetti, Venissieux, France, assignor to Lipha Lyonnaise Industrielle Pharmaceutique, Lyon, France

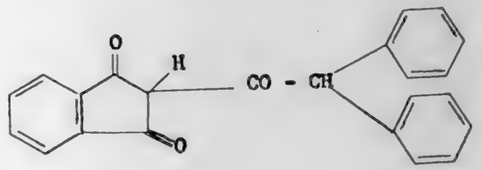
Continuation of Ser. No. 244,930, April 17, 1972, abandoned. This application June 11, 1974, Ser. No. 478,230

Claims priority, application France, Apr. 21, 1971, 71.14065

Int. Cl.² A01N *9/24, 17/14*

U.S. Cl. 424—17 **8 Claims**

1. A composition having rodenticidal activity comprising an oily solution of (diphenyl acetyl)-2 indane dione-1,3 having the formula:



at a concentration between 0.1 and 2.5 g/liter, wherein said oil is liquid petrolatum.

3,929,984
INTRAUTERINE DEVICE AND METHOD FOR RELEASING PHARMACEUTICALLY ACCEPTABLE CONTRACEPTIVE HETEROGENOUS COMPOUNDS

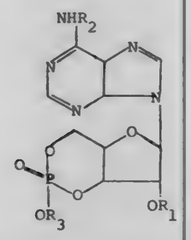
Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 201,054, Nov. 22, 1971, abandoned, and a continuation-in-part of Ser. No. 188,425, Oct. 12, 1971, abandoned, and a continuation of Ser. No. 886,358, Dec. 18, 1969, abandoned. This application Oct. 16, 1973, Ser. No. 406,831

Int. Cl.² A61K *9/22*

U.S. Cl. 424—22 **4 Claims**

1. An intrauterine delivery device adapted for insertion and retention in a uterine cavity for the administration of pharmaceutically acceptable antifertility agent to the uterine cavity comprising a uterine acceptable matrix or hollow body of non-toxic, biologically inert, polymeric release rate controlling material containing therein a locally contraceptively active antifertility agent of the structural formula:



wherein R_1 is a member selected from the group consisting of hydrogen, lower alkyl of 1 to 7 carbon atoms and aliphatic acyl of 1 to 18 carbon atoms; R_2 is a member selected from the group consisting of hydrogen, lower alkyl of 1 to 7 carbon atoms, and aliphatic acyl of 1 to 18 carbon atoms; R_3 is a member selected from the group consisting of hydrogen and lower alkyl of 1 to 7 carbon atoms, and the pharmaceutically acceptable addition salts thereof, and wherein the device, while in the uterus, continually meters the flow of a contraceptively effective amount of agent up to 2000 micrograms per day, for a local antifertility effect through the uterine acceptable polymeric material at a controlled and predetermined rate over a prolonged period of time.

3,929,985
ANHYDROUS CANDICIDIN FOAM COMPOSITIONS

Norval Ellsworth Webb, Jr., Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed Jan. 18, 1974, Ser. No. 434,391

Int. Cl.² A61K *9/14*

U.S. Cl. 424—45 **3 Claims**

1. An anhydrous, aerosol foam composition useful in the treatment of vaginitis consisting of:

a. from 0.2 to 0.5% by weight of Candicidin;

b. from 2 to 5% by weight of a nonionic, waxy, foaming agent prepared by reacting ethylene oxide with stearyl alcohol, having a melting range of 48°-52° C., a maximum iodine value of 3.5 and a maximum saponification value of 14;

c. from 0.5 to 2.0% by weight of polyoxyethylene (20) sorbitan monooleate;

d. from 0.05 to 1.0% by weight of propyl gallate;

e. from 5.0 to 20.0% by weight of an aerosol propellant selected from the group of chlorofluorohydrocarbons having a boiling point between −30° C. and 30° C; and

f. propylene glycol

3,929,986
ANTIPERSPIRANT COMPOSITION CONTAINING DIOXALUMININ AND DIOXALUMINANE

Claude Bouillon, Eaubonne; Pierre DuFaure, Paris, and Georges Rosenbaum, Asnieres, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

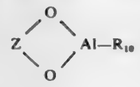
Division of Ser. No. 294,927, Oct. 4, 1972, Pat. No. 3,819,761. This application Mar. 25, 1974, Ser. No. 454,732

Claims priority, application Luxemburg, Dec. 16, 1971, 64463

Int. Cl.² A61K *7/38*

U.S. Cl. 424—46 **9 Claims**

1. An antiperspirant cosmetic composition comprising in a solvent selected from the group consisting of water, a lower alkanol and an aqueous solution of said lower alkanol, 0.2–30 percent by weight of an active compound having the formula

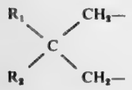


wherein

R_{10} is selected from the group consisting of chloro, —O-R″ wherein R″ is selected from the group consisting of methyl, ethyl, isopropyl and tertiary butyl and $—OSO_2R'$ wherein R′ is selected from the group consisting of alkyl having 1–4 carbon atoms, phenyl, p-chlorophenyl, hydroxyphenyl, tolyl and 2-oxo-10-bornanyl, and

Z represents a member selected from the group consisting of

(1)



wherein

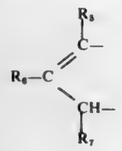
R_1 is selected from the group consisting of

a. $—COR_3$ wherein R_3 is selected from the group consisting of (i) methyl, (ii) ethyl, in which cases R_2 is methyl, and (iii) phenyl in which case R_2 is selected from the group consisting of methyl, acetyl and $—COOR_4$ wherein R_4 is alkyl containing 1–4 carbon atoms,

b. $—COOR_4$ wherein R_4 has the meaning given above in which case R_2 represents a member selected from the group consisting of methyl, —C≡N and $—COOR_4$ wherein R_4 has the meaning given above,

c. $—NO_2$ in which case R_2 represents a member selected from the group consisting of bromine and alkyl containing 1–3 carbon atoms; and

(2)



wherein

R_7 represents a member selected from the group consisting of

d. methyl, in which case R_6 is $COOR_8$ and R_5 represents $—O-R_8$, wherein R_8 represents alkyl having 1–4 carbon atoms, and

e. hydrogen, in which case R_6 is selected from the group consisting of

iv. $—COR_9$ wherein R_9 is selected from the group consisting of methyl, in which case R_5 is selected from the group consisting of methyl and phenyl, and phenyl, in which case R_5 is methyl;

v. $—COOR_8$ in which case R_5 is selected from the group consisting of methyl, phenyl and $—O-R_8$ wherein R_8 has the meaning given above; and

vi. —C≡N in which case R_5 represents $—O-R_8$ wherein R_8 has the meaning given above.

3,929,987
TOOTHPASTE

Daniel Colodney, Bridgwater, and Martin Cordon, Highland Park, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 268,908, July 3, 1972, abandoned. This application Feb. 21, 1974, Ser. No. 444,476The portion of the term of this patent subsequent to Jan. 16, 1990, has been disclaimed.

Int. Cl.² A61K *7/18*

U.S. Cl. 424—52 **6 Claims**

1. A macroscopically visible particle having a mean particle size from about 177 to about 840 microns comprising a functional ingredient for promoting hygiene in the oral cavity and an effective amount of a binding agent, said functional ingredient comprising from 1 to 99 percent by weight of said particles and being in the form of subparticles having a size from about 1 to about 20 microns, said functional ingredient being chosen from the group of anticaries agents consisting of water soluble anticaries fluoride salts and anticaries antimicrobial materials, said binding agent being chosen from the group of polyethylenes having a molecular weight from about 1,000 to about 5,000 and a hardness measured as tenths of a millimeter needle penetration (ASTM D 1321) of about 1 to about 15.

3,929,988
FLAVORED DENTIFRICE

Jordan B. Barth, East Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed June 21, 1974, Ser. No. 481,655

Int. Cl.² A61K *7/16, 9/50*

U.S. Cl. 424—54 **20 Claims**

1. A dentifrice having a liquid vehicle and which includes as a minor proportion thereof an encapsulated sweetener composition comprising about 0.1 to 10% of a dipeptide sweetener in admixture with a non-toxic acid-containing component and encapsulated or covered with a shell or coating through which said admixture does not penetrate substantially during storage of the dentifrice and which is substantially unpenetrable by the components of said dentifrice but which shell or coating is broken during use of the dentifrice, causing the same to be released, said acid-containing component included in amounts sufficient to maintain the pH in said capsule at substantially about 3–5 and thereby impart an acid pH to said sweetener upon fracture of said capsule.

3,929,989
STABLE SUSPENSION OF CALCIUM-MAGNESIUM OXYTETRACYCLINE FOR INTRAUTERINE ADMINISTRATION IN TREATMENT OF BOVINE METRITIS

Gregory P. Bergt, Belle Plaine, Minn., assignor to Wendt Laboratories, Inc., Belle Plaine, Minn.

Filed June 14, 1974, Ser. No. 479,430

Int. Cl.² A61K *31/65*

U.S. Cl. 424—227 **3 Claims**

1. A therapeutic composition for intrauterine infusion in bovine species for treating metritis, which comprises:

a stable suspension of calcium-magnesium oxytetracycline and having a molar ratio of combined calcium and magnesium to oxytetracycline of about 4–4.3 to 1,

in an aqueous solvent of 1,2 propanediol containing about 17 percent water, at a pH substantially between 5.0 and 11.

3,929,990
MICROBIOCIDAL POLYMERIC QUATERNARY AMMONIUM COMPOUNDS

Harold A. Green, Havertown, Pa.; John J. Merianos, Jersey City, and Alfonso N. Petrocci, Glen Rock, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 425,931, Dec. 18, 1973, Pat. No. 3,874,870. This application Aug. 7, 1974, Ser. No. 495,328The portion of the term of this patent subsequent to Jan. 1, 1992, has been disclaimed.

Int. Cl.² A01N *9/20, 9/24;* **A61K** *15/00, 17/00*

U.S. Cl. 424—78 **4 Claims**

1. A method of controlling the proliferation of bacteria and algae in a water-in-oil emulsion which comprises incorporating into said emulsion a condensation product as an antimicrobial agent and an amine oxide as an emulsifier, said condensation product being formed by mixing 1,4-dihalo-2-butene and 1,4-bis-dimethylamino-2-butene dissolved in a solvent at room temperature whereby an exothermic reaction is obtained causing the temperature of the mixture to rise, then maintaining the mixture at no higher than reflux temperature until the reaction is complete, the reactants being present in the reaction in relative molar proportions to each other of between about 1:3 and about 3:1, said condensation product being present in the emulsion in a bactericidally and algicidally effective amount, and said amine oxide being present in an amount effective to emulsify the composition.

3,929,991
POLYCATIONIC INTERFERON INDUCES

David L. Steward, Carmel, Ind., and Wen-Hong Tong, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 26, 1973, Ser. No. 382,975

Int. Cl.² A61K *39/00, 45/04, 31/785*

U.S. Cl. 424—78 **4 Claims**

1. A method which comprises parenterally administering to an animal about 18 to about 24 hours prior to viral infection an aqueous parenteral vehicle having a substantially neutral pH and containing an antiviral effective amount of polycation as a condensation polymer of pentachloropyridine with polyethylenimine having a molecular weight of from about 600 to about 60,000, wherein the gram atomic ratio of polyethylenimine nitrogen to pentachloropyridine nitrogen is from about 2:1 to about 8:1, wherein the condensation polymer is the product resulting from mixing together in the presence of an inert organic liquid reaction medium the said proportions of polyethylenimine and pentachloropyridine and wherein the polyethylenimine has a molecular weight of about 600 to about 60,000.

3,929,992
RAPAMYCIN AND PROCESS OF PREPARATION

Surendra N. Sehgal, Dollard des Ormeaux; Teodora M. Blazekovic, Mount Royal, and Claude Vezina, Deux-Montagnes, all of Canada, assignors to Ayerst McKenna and Harrison Ltd., Montreal, Canada

Continuation-in-part of Ser. No. 293,699, Sept. 29, 1972, abandoned. This application Apr. 12, 1974, Ser. No. 460,665

Int. Cl.² A61K *35/00*

U.S. Cl. 424—122 **4 Claims**

1. Rapamycin, an antibiotic which

a. is a colourless, crystalline compound with a melting point of 183° to 185°C, after recrystallization from ether;

b. is soluble in ether, chloroform, acetone, methanol and dimethylformamide, very sparingly soluble in hexane and petroleum ether and substantially insoluble in water;

c. shows a uniform spot on thin layer plates of silica gel;

d. has a characteristic elemental analysis of about C, 66.84%, H, 8.84%; N, 1.37%,

e. exhibits the following characteristic absorption maxima in its ultraviolet absorption spectrum (95% ethanol): 267

nm ($E_{1cm}^{1\%}$ 417), 277 nm ($E_{1cm}^{1\%}$ 541) and 288 nm ($E_{1cm}^{1\%}$ 416);

f. has a characteristic infrared absorption spectrum shown in accompanying FIG. 1;

g. has a characteristic nuclear magnetic resonance spectrum as shown in accompanying FIG. 2;

h. has a minimum inhibitory concentration of 0.02 to 0.1 μg/ml against *Candida albicans*; and

i. exhibits a LD_{50} (i.p., mice) of 597.3 ± 28.1 mg/kg and a LD_{50} (p.o., mice) of >2,500 mg/kg.

3,929,993

PROCESS FOR REMOVING COPPER FROM COPPER-CONTAINING BLEOMYCIN GROUP ANTIBIOTICS

Tomohisa Takita, Asaka; Akio Fujii, Tokyo; Yasuhiko Muraoka, Tokyo; Shigeru Mizuguchi, Tokyo, and Hamao Umezawa, Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1973, Ser. No. 330,686

Claims priority, application Japan, Feb. 17, 1972, 47-16021

Int. Cl.² A61K *37/00*

U.S. Cl. 424—177 **16 Claims**

1. A process for removing copper from copper-containing bleomycin antibiotics, comprising adsorbing a copper-containing bleomycin antibiotic onto a non-ion-exchangeable macroreticular resin by contacting said resin with an aqueous solution containing said antibiotic, then contacting the resin with an aqueous solution containing 3–10% of a chelating agent, said solution having a pH in the range 4–9, to release copper from the antibiotic, and thereafter contacting the resin with a solution selected from the group consisting of alcohol and acetone containing 20–50% by volume of water and 0.01–0.001 N of acid to elute the antibiotic.

3,929,994

ANTI-INFLAMMATORY GLYCOPROTEIN COMPOSITIONS AND METHOD OF USE

Jean Hirsch, Paris, and Jean Pierre Buret, Osny, both of France, assignors to Roussel-UCLAF, Paris, France

Division of Ser. No. 330,403, Feb. 7, 1973, Pat. No. 3,855,197, which is a continuation-in-part of Ser. No. 38,482, May 18, 1970, abandoned. This application Sept. 23, 1974, Ser. No. 508,335

Claims priority, application France, May 20, 1969, 69.16297; Feb. 15, 1972, 72.05016

Int. Cl.² A61K *37/00*

U.S. Cl. 424—177 **6 Claims**

1. An anti-inflammatory composition comprising an effective amount of glycoproteins extracted from at least one type of microbial bodies selected from the group consisting of Pneumococci, Streptococci, Neisseria, Micrococci, Staphylococci, Klebsellia Pneumoniae and hemophilus influenzae and from a mixture of at least 2 of the said strains or an association of different types of the same microbial species, said glycoproteins having a molecular weight of at least 1,000,000, being thermo stable and soluble in perchloric acid, phytic acid, ammonium sulfate and trichloroacetic acid, having a content of at least 50% of combined hexoses, a biuretogenic substance content of about 10%, a ratio of combined hexoses to protides of about 7, a molecular volume (Ve/VO) as determined through Sephadex G 200 gel of 1.0 to 1.2 in relation to a buffer with a pH of 8, an α-amine nitrogen content of 1 to 2% and a migration by electrophoretic density gradient comprised between α-proteins and β-proteins and acid hydrolysis under reduced pressure shows the presence of glucose, glactose and mannose but not ribose and a pharmaceutical carrier.

3,929,995

METHOD FOR TREATING DIABETIC KETOACIDOSIS

Yuzo Kawashima, No. 2-35, Aza Nishinokoshi, Yagura, Ohtsucho, Naruto, Tokushima, Japan

Filed Sept. 26, 1974, Ser. No. 509,604

Claims priority, application Japan, Sept. 26, 1973, 48-107613

Int. Cl.² A61K *27/00*

U.S. Cl. 424—178 **6 Claims**

1. A method for treating diabetic ketoacidosis which comprises orally or parenterally administering to a subject afflicted with diabetic ketoacidosis to reduce keto bodies in plasma a therapeutically effective amount of (+)-octanoylcarnitine.

3,929,996

PHARMACEUTICAL COMPOSITIONS CONTAINING A DIGOXIN COMPLEX

Takeru Higuchi, Lawrence, Kans., assignor to Interx Research Corporation, Lawrence, Kans.

Division of Ser. No. 375,052, June 29, 1973, Pat. No. 3,839,317. This application July 29, 1974, Ser. No. 492,827

Int. Cl.² A61K *31/705*

U.S. Cl. 424—182 **17 Claims**

1. A pharmaceutical composition for treating cardiac insufficiency consisting essentially of a pharmaceutical acceptable inert adjuvant and a digoxin complex of the formula:

D . An

wherein D represents digoxin, A represents a member selected from the group consisting of resorcinol, hydroquinone and pyrocatechol, and wherein n represents 1, 1-½ or 2,

said digoxin complex being present in a cardiotonic effective amount.

13. A method for treating cardiac insufficiency in warm-blooded animals which comprises:

orally administering thereto, a cardiotonic effective amount of the complex of claim **1**.

3,929,997

BATH COMPOSITION FOR HUMAN BODY

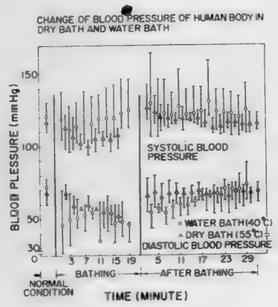
Hirofumi Matsui, No. 6-16, Higashi 2-chome, Shibuya-ku, Tokyo, Japan

Continuation of Ser. No. 213,428, Dec. 29, 1971, abandoned. This application Feb. 1, 1974, Ser. No. 438,670

Claims priority, application Japan, Dec. 31, 1970, 45-125709

Int. Cl.² A61K *27/00*

U.S. Cl. 424—195 **4 Claims**



1. A powdery bath composition for human body comprising a mixture of 90 to 10% by weight of powdery coffee grounds left after extraction of coffee essence and 10 to 90% by weight of at least one powder of a vegetable material selected from the group consisting of defatted soybeans, defatted cotton seeds, defatted rice bran, baggasse, corn core and pineapple stalk, wherein the water content is adjusted to 30–50% by weight of the total composition and the pH value is adjusted to about 5 and the temperature is 55° to about 60°C.

3,929,998

NOVEL METHOD OF PROTECTING COTTON PLANTS FROM INSECT ATTACK

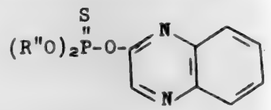
James Byron Lovell, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 24, 1967, Ser. No. 640,795

Int. Cl.² A01N *9/36*

U.S. Cl. 424—200 **8 Claims**

1. A method for protecting cotton plants from insect attack by applying to said cotton plants an insecticidally effective amount of a compound of the structure:



wherein R'' is methyl or ethyl.

3,929,999

ORAL HYPOGLYCEMIC METHOD

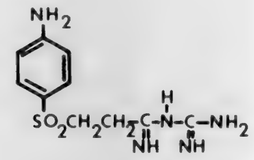
Clifford John Heaphy, 1635 Harvard N.E., Albuquerque, N. Mex. 87106

Division of Ser. No. 314,545, Dec. 12, 1972, Pat. No. 3,852,353. This application Sept. 26, 1974, Ser. No. 509,448

Int. Cl.² A61K *31/63*

U.S. Cl. 424—228 **1 Claim**

1. The method of treating diabetes mellitus which comprises orally administering to a diabetic human an anti-diabetic effective amount of a composition containing as an essential active ingredient:



3,930,000

SILVER-ZINC ALLANTOINATE COMPOSITIONS AND METHOD OF KILLING BACTERIA AND FUNGI THEREWITH

Harry W. Margraf, Clayton, Mo., assignor to Washington University, St. Louis, Mo.

Division of Ser. No. 153,820, June 16, 1971, Pat. No. 3,856,805. This application May 9, 1974, Ser. No. 468,228

Int. Cl.² A01N *9/00*; **A61K** *31/28, 31/555*

U.S. Cl. 424—245 **8 Claims**

1. A method of killing bacteria and fungi in an infected area comprising topically applying to the infected area an effected amount of silver-zinc-allantoinate of the formula $(C_4H_5O_3N_4Ag)_2:Zn(OH)_2$.

3,930,001

2-(SUBSTITUTED)-5,6-DIHYDRO-4H-1,4-THIAZINES USED FOR THE CONTROL OF RICE BLAST

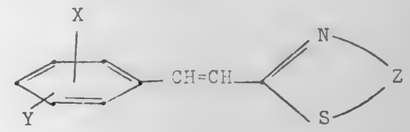
Richard C. Koch, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 203,455, Nov. 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 41,532, May 28, 1970, Pat. No. 3,624,217, which is a continuation-in-part of Ser. No. 788,642, Jan. 2, 1969, abandoned. This application Sept. 17, 1973, Ser. No. 397,758. The portion of the term of this patent subsequent to Nov. 30, 1988, has been disclaimed.

Int. Cl.² A01N *9/12*

U.S. Cl. 424—246 **5 Claims**

1. A process for the control of fungal disease on rice plants which comprises contacting the plants with a fungicidally effective amount, in admixture with a carrier therefor, of a compound having the formula



or a non-phytotoxic acid addition salt thereof wherein X and Y are each chloro or fluoro; and Z is trimethylene.

3,930,002

CARBAMATE PESTICIDAL COMPOSITIONS

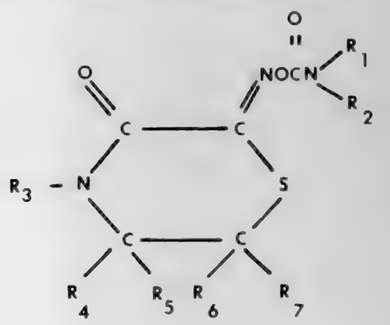
John Apling Durden, Jr., 1228 Ridge Drive, South Charleston, W. Va. 25309

Continuation-in-part of Ser. No. 319,532, Dec. 29, 1972. This application June 7, 1974, Ser. No. 477,417

Int. Cl.² A01N *9/00, 9/12*

U.S. Cl. 424—246 **22 Claims**

1. An insectidical and miticidal composition comprising an acceptable carrier and a miticidally or insecticidally effective amount of a compound of the structural formula:



wherein:

R_1 is lower trihaloalkanesulfenyl or lower alkanoyl;

R_2 is hydrogen or lower alkyl;

R_3 is hydrogen, lower alkyl, or lower alkenyl;

R_4, R_5, R_6 and R_7 are individually hydrogen or lower alkyl.

3,930,003
COUMARINE DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Karl Heinz Becker, Rossdorf near Darmstadt; Karl-Heinz Boltze, Bensberg-Kippekausen; Hans-Dieter Dell, Cologne, and Peter-Rudolf Seidel, Porz-Wahnheide, all of Germany, assignors to Troponwerke Dinklage & Co., Cologne, Germany

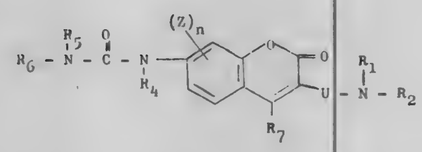
Division of Ser. No. 163,110, July 15, 1971. This application Mar. 13, 1974, Ser. No. 450,925

Claims priority, application Germany, July 17, 1970, 2035536; Feb. 20, 1971, 2108185

Int. Cl.² A61K *31/535*

U.S. Cl. 424—248 **21 Claims**

1. A coronary dilator composition comprising, as an active ingredient, an effective amount of a compound of the formula



(I)

wherein R_1, R_2, R_3, and R_6 are hydrogen, or straight-chain or branched-chain alkyl or hydroxyalkyl of up to 4 carbon atoms, cyclohexyl, phenyl or phenyl substituted with one of halogen, hydroxy, lower alkyl or alkoxy of 1 to 3 carbon atoms, or trifluoromethyl; at least one of the radical pairs R_1 and R_2, and R_3 and R_6, when taken together with the adjacent nitrogen atom represent morpholino or methylmorpholino; R_4 is hydrogen, lower alkyl of up to 3 carbon atoms, R_7 is hydrogen, lower alkyl of up to 3 carbon atoms, or phenyl; Z is halogen or lower alkyl of up to 3 carbon atoms; *n* represents a number from 0 to 2, and U is straight-chain or branched-chain lower alkylene, or monohydroxy-alkylene of from 2 to 5 carbon atoms; and the pharmacologically acceptable salts thereof in admixture with a pharmaceutically acceptable carrier.

3,930,004
METHOD OF USING PHENOXYPROPANOLPIPERAZINE COMPOUNDS TO LOWER BLOOD PRESSURE

John Christopher Danilewicz, Ash; John Edward Glyn Kemp, Canterbury; Michael Snarey, Sandwich, and James Robert Wright, Deal, all of England, assignors to Pfizer Inc., New York, N.Y.

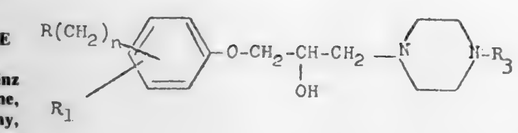
Division of Ser. No. 196,729, Nov. 8, 1971, Pat. No. 3,856,794. This application Aug. 2, 1974, Ser. No. 494,205

Claims priority, application United Kingdom, Nov. 10, 1970, 53303/70

Int. Cl.² A61K *31/495*

U.S. Cl. 424—250 **5 Claims**

1. A method for lowering blood pressure in the treatment of a hypertensive subject, which comprises administering to said subject an effective blood pressure lowering amount of a compound selected from the group consisting of a phenoxypropanolpiperazine base of the formula:



and a pharmaceutically acceptable acid addition salt thereof, wherein $R(CH_2)_n$ is at the 2- or 4- position on the phenyl ring; R of $R(CH_2)_n$ is carboxy, carbamoyl or alkanoylamino having from one to six carbon atoms and *n* is an integer of from one to two, inclusive; R_1 is hydrogen or a straight chain alkyl having from one to six carbon atoms, and R_3 is chlorophenyl or alkoxyphenyl having from one to six carbon atoms in the alkoxy moiety.

3,930,005
ANTIINFLAMMATORY AGENTS AND THEIR USE

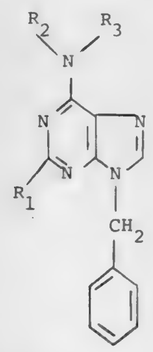
Robert John Wojnar, East Windsor; Russell James Brittain, Pennington; Jack Bernstein, and Kathryn Alice Losee, both of New Brunswick, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed June 15, 1973, Ser. No. 370,487

Int. Cl.² A61K *31/52*

U.S. Cl. 424—253 **12 Claims**

1. A method for treating inflammation which comprises administering to a mammal in need of said treatment a composition containing a pharmaceutical carrier and about 1 to 50 mg. per kg. of body weight of a compound of the formula



wherein R_1 is hydrogen, halogen, lower alkyl, lower alkoxy, amino, lower alkylamino or di-lower alkylamino, and R_2 and R_3 each is hydrogen or lower alkyl.

3,930,006
ANTIPARKINSONISM COMPOSITIONS AND METHOD

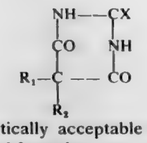
Leslie Frederick Wiggins, Wargrave; John William James, Langley, and Maurice Ward Gittos, Slough, all of England, assignors to Aspro-Nicholas Limited, Slough Bucks, England

Division of Ser. No. 276,977, April 30, 1963, abandoned, which is a continuation-in-part of Ser. No. 75,911, Dec. 15, 1960, abandoned. This application July 22, 1965, Ser. No. 510,108

Int. Cl.² A61K *31/40, 31/445, 31/495, 31/515, 31/535*

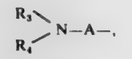
U.S. Cl. 424—254 **20 Claims**

1. A method of ameliorating symptoms of paralysis agitans comprising administering to a subject exhibiting the syndrome thereof an effective dose of a compound having anti-Parkinsonism activity selected from the group consisting of a compound of the formula



and a pharmaceutically acceptable salt thereof, in which formula X is selected from the group consisting of oxygen and sulphur, R_1 is selected from the group consisting of:

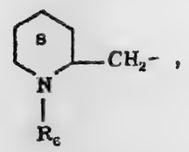
A.



wherein R_3 and R_4 are selected from the group consisting of methyl and ethyl, and A is selected from the group consisting of 2-ethylene and 3-propylene;

B. B N—A—, wherein B N— is selected from the group consisting of pyrrolidino, piperidino, morpholino, piperazino and homopiperazino, and A is selected from the group consisting of 2-ethylene and 3-propylene; and

C.



wherein R_6 is selected from the group consisting of hydrogen and methyl; and R_2 is phenyl.

3,930,007
PESTICIDAL BIS-PYRIDYL AMINE DERIVATIVES

Charles Brian Barlow, Camberley, and Clive Dudley Spencer Tomlin, Maidenhead, both of England, assignors to Imperial Chemical Industries Limited, London, England

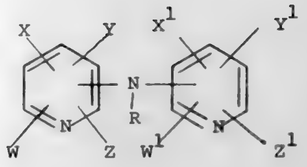
Division of Ser. No. 164,082, July 19, 1971, Pat. No. 3,830,822. This application May 13, 1974, Ser. No. 469,599

Claims priority, application United Kingdom, Aug. 4, 1970, 37585/70

Int. Cl.² A01N *9/22*

U.S. Cl. 424—263 **9 Claims**

1. An insecticidal, miticidal, fungicidal or bacteriacidal composition comprising, as active ingredient, an effective insecticidal, miticidal, fungicidal or bactericidal amount of a compound of the formula:



wherein R represents hydrogen or methyl; X, Y, Z and W are halogen and X^1, Y^1, Z^1 and W^1 represent hydrogen, fluorine, chlorine, bromine, cyano, nitro, trifluoromethyl, alkoxy containing up to 8 carbon atoms, benzyloxy, phenoxy, ethoxyethoxy, methylthio, phenylthio, methylamino, ethylamino, dimethylamino, methanesulphonyl, carboxyl, carboxylic acid methyl ester or carbamyl provided that all but one of Y^1 X^1, Z^1 and W^1 are halogen; potassium or triethyl ammonium salts of such compounds or the N-oxides of such compounds, and a major amount of a carrier therefor.

3,930,008
4-ARYL-5-AMINOALKYL-4-OXAZOLIN-2-ONES

Elso Manghisi, and Giuseppe Cascio, both of Monza, Italy, assignors to Istituto Luso Farmaco d'Italia S.r.l., Milan, Italy

Filed Oct. 3, 1973, Ser. No. 403,275

Claims priority, application Italy, Oct. 16, 1972, 30536/72; Aug. 22, 1973, 28115/73

Int. Cl.² C07D *295/12*

U.S. Cl. 260—268 PH **1 Claim**

1. A 4-aryl-5-aminoalkyl-4-oxazolin-2-one selected from the group consisting of 4-p-fluorophenyl-5-β-(4-phenyl-piperazino) ethyl-4-oxazolin-2-one, 4-p-fluorophenyl-5-β-(4-o-methoxy-phenyl-piperazino)ethyl-4-oxazolin-2-one, 4-phenyl-5-β-(4-phenyl-piperazino)-ethyl-4-oxazolin-2-one, 4-p-chlorophenyl-5-β-(4-phenyl-piperazino) ethyl-4-oxazolin-2-one, 4-p-methoxy-phenyl-5-β-(4-phenyl-piperazino) ethyl-4-oxazolin-2-one, 3-methyl-4-p-fluorophenyl-5-β-(4-phenyl-piperazino) ethyl-4-oxazolin-2-one, 3-ethyl-4-p-fluorophenyl-5-β-(4-phenyl-piperazino) ethyl-4-oxazolin-2-one, 3-butyl-4-p-fluorophenyl-5-β-(4-phenyl-piperazino) ethyl-4-oxazolin-2-one, 3-benzyl-4-p-fluorophenyl-5-β-(4-phenyl-piperazino) ethyl-4-oxazolin-2-one, 3-diethyl-aminoethyl-4-p-fluorophenyl-5-β-(4-phenyl-piperazino) ethyl-4-oxazolin-2-one, 3-acetyl-4-p-fluorophenyl-5-β-(4-phenyl-piperazino) ethyl-4-oxazolin-2-one, 3-benzoyl-4-p-fluorophenyl-5-β-(4-phenyl-piperazino) ethyl-4-oxazolin-2-one, 4-p-fluorophenyl-5-β-[4-(2 pyridyl)-piperazino] ethyl-4-oxazolin-2-one, 4-p-fluorophenyl-5-β-(4-methyl-piperazino) ethyl-4-oxazolin-2-one, 3-phenyl-4-p-fluorophenyl-5-β-(4-phenyl-piperazino) ethyl-4-oxazolin-2-one, 3-methylamino-carbonyl-4-p-fluorophenyl-5-β-(4-phenyl-piperazino)ethyl-4-oxazolin-2-one, 3-acetyl-4-p-fluorophenyl-5-β-(4-o-methoxyphenyl-piperazino)ethyl-4-oxazolin-2-one, 4-p-fluorophenyl-5-β-(4-phenyl-piperazino)ethyl-4-oxazolin-2-thione, 4-p-fluorophenyl-5-β-(4-o-methoxyphenyl-piperazino)ethyl-4-oxazolin-2-thione, 4-p-fluorophenyl-5-β-(4-phenylpiperazino) ethyl-2-imino-oxazoline, 4-p-fluorophenyl-5-β-(4-o-methoxyphenyl-piperazino)ethyl-2-imino-oxazoline, and a pharmaceutically acceptable salt thereof.

3,930,009
IMIDAZO(2,1-A)ISOINDOLES AS HYPOLIPIDEMICS

Alan R. Timms, Mendham, N.J., assignor to Sandoz-Wander, Inc. (Sandoz, Inc.), East Hanover, N.J.

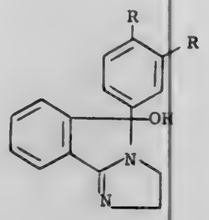
Filed June 25, 1973, Ser. No. 373,102

Int. Cl.² A61K *31/415*

U.S. Cl. 424—273 **6 Claims**

1. A method for lowering elevated triglyceride levels in blood which comprises orally or parenterally administering to a mammal in need of said treatment a triglyceride lowering

amount of a compound of the formula



where each R, independently, represents hydrogen or halo of atomic weight about 19–36, or an acid addition salt thereof.

3,930,010

FUNGICIDAL FORMULATIONS OF 2-BENZIMIDAZOLECARBAMIC ACID, ALKYL ESTERS

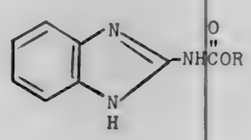
Hein Louis Klopping, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 260,196, June 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 861,791, Sept. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 727,036, May 6, 1968, abandoned, which is a continuation-in-part of Ser. No. 629,914, April 11, 1967, abandoned. This application Jan. 18, 1974, Ser. No. 434,556. The portion of the term of this patent subsequent to Apr. 18, 1989, has been disclaimed.

Int. Cl.² A01N *9/22*

U.S. Cl. 424—273 **9 Claims**

1. A method for the curative and preventive control of fungus diseases of living plants or plant parts with a wide margin of safety to the plants comprising applying to the plants or plant parts a fungicidal amount of a compound of the formula:



where R is methyl or ethyl in a spray slurry or suspension containing a surfactant at or above its critical micelle concentration in said slurry or suspension, the surfactant being selected from the group consisting of polyhydric alcohol ester (CMC 40 ppm), sodium lauryl sulfate, stearyloxypolyethoxyethanol-20 E.O., polyethylene glycol 600 monostearate, potassium oleate, lauryloxypolyethoxyethanol-23 E.O., sodium N-methyl-N-oleyltaurate, N-lauryl betaine, polyoxyethylene (20) sorbitan monostearate, polyoxyethylene (20) sorbitan monolaurate, polyoxyethylene (30) stearate, dodecylphenoxypolyethoxy ethanol (CMC 15 ppm), fatty alkylol amide condensate (CMC 70 ppm), modified alkanolamide (CMC 220 ppm), cetyloxypolyethoxy ethanol 10 E.O., sodium lauryl ether sulfate 4 E.O., stearyloxypolyethoxy ethanol 10 E.O., polyethylene glycol 200 monolaurate, polyethylene glycol 400 monolaurate, sodium N-coco-β-aminopropionate (CMC 44 ppm), and sodium dodecyl benzene sulfonate.

3,930,011

PYRAZOLIUM FUNGICIDES

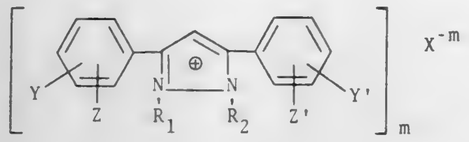
Bryant Leonidas Walworth, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 3, 1975, Ser. No. 546,654

Int. Cl.² A01N *9/22*

U.S. Cl. 424—273 **14 Claims**

1. A method for the control of fungi on plant crops comprising contacting said fungi with a fungicidally effective amount of a compound having the structure:



wherein R_1 is methyl; R_2 is C_1-C_3 alkyl, allyl, propynyl, ethylcarboxymethyl, phenyl or benzyl; Y, Y′, Z and Z′ each represent a member selected from the group consisting of hydrogen, halogen, C_1-C_4 alkyl and C_1-C_4 alkoxy; X represents an anion having a charge of 1 or 2; and m is 1 or 2.

3,930,012

COMPOSITION AND METHOD OF PRODUCING INFERTILITY IN MALE RODENTS

Gilbert A. Youngdale, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 93,383, Nov. 27, 1970, abandoned. This application Aug. 8, 1973, Ser. No. 386,536

Int. Cl.² A01N *9/28*

U.S. Cl. 424—278 **3 Claims**

1. A pharmaceutical preparation in the form of an oral ration for rodents consisting essentially of an effective amount for producing epididymal lesions and infertility in male rodents of 4-(chloromethyl)-2-oxo-1,3-dioxolane for preventing impregnation of receptive sexually mature female rodents by the male counterparts thereof, compounded with an ingestible bulking agent acceptable to said rodents, said ration providing at least about 5 mg./kg. of male rodent body weight.

3,930,013

FLUORO-DIOXOLANE ANESTHETIC COMPOUND AND METHOD

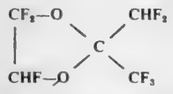
Ross C. Terrell, Plainfield, and George L. Moore, South Plainfield, both of N.J., assignors to Airco, Inc., Montvale, N.J.

Division of Ser. No. 168,401, Aug. 2, 1971. This application Apr. 5, 1973, Ser. No. 348,407

Int. Cl. A61k *27/00*

U.S. Cl. 424—278 **2 Claims**

2. A method of anesthetizing an anesthetic-susceptible mammal which comprises administering to the mammal an anesthetically-effective amount of a cyclic ether compound of the formula



as an inhalation anesthetic, while administering life-supporting amounts of oxygen.

3,930,014

PHARMACEUTICAL COMPOSITIONS

David Cecil Aldridge; Antony Borrow, and Ernest Edward Lawrence Gerring, all of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

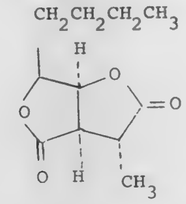
Filed Mar. 8, 1974, Ser. No. 449,555

Claims priority, application United Kingdom, Mar. 29, 1973, 15154/73

Int. Cl.² A61K *31/34*

U.S. Cl. 424—285 **3 Claims**

1. A pharmaceutical composition for internal use in the treatment of gastric or duodenal ulcers which comprises as active ingredient an effective amount of the compound dihydrocanadensolide having the formula:



together with a pharmaceutically acceptable diluent or carrier.

3,930,015

SLIMICIDAL COMPOSITIONS CONTAINING 2,2-DIBROMO-3-NITRILOPROPIONAMIDE AND THEIR USE

Paul Swered, and Mary Anne Girard, both of Philadelphia, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Jan. 30, 1975, Ser. No. 545,680

Int. Cl.² A01N *9/00, 9/20*

U.S. Cl. 424—298 **8 Claims**

1. A composition for the control of the microorganism Aerobacter aerogenes in aqueous systems comprising a mixture of 1,3-dichloroacetone oxime acetate, and 2,2-dibromo-3-nitrilopropionamide wherein the weight ratio of the acetate to the nitrilopropionamide ranges from about 95:5 to about 5:95 respectively.

3,930,016

PHARMACEUTICAL PREPARATIONS CONTAINING AMINES USEFUL FOR TREATMENT OF CARDIOVASCULAR DISEASES

Peder Bernhard Berntsson, Vastra Frolunda; Arne Elof Brändström, Goteborg; Enar Ingemar Carlsson, Kungsbacka; Stig Åke Ingemar Carlsson, Molnlycke; Lars Ek, Kungsbacka; Benny Roger Samuelsson, Pixbo; Sven Erik Sjöstrand, Kungsbacka; Gert Christer Strandlund, Molndal, and Bengt Arne Hjalmar Åblad, Goteborg, all of Sweden, assignors to Aktiebolaget Hassle, Goteborg, Sweden

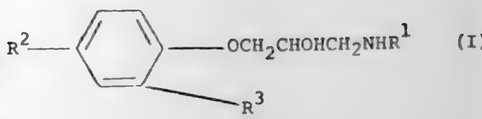
Filed July 6, 1973, Ser. No. 376,947

Claims priority, application Sweden, July 6, 1972, 8927/72

Int. Cl.² A61K *31/27, 31/17*

U.S. Cl. 424—300 **42 Claims**

1. A pharmaceutical preparation for the treatment of cardiovascular diseases by the use of a cardioselective antagonist for adrenergic β-receptor stimulation, containing as a therapeutic component an amine of formula I in an amount in the range of 0.1 to 95% by weight of said preparation, effective to provide said cardioselective antagonism for adrenergic β-receptor stimulation, together with a pharmaceutically acceptable carrier



wherein R^1 is lower alkyl or hydroxy lower alkyl, R^2 is carbamoylamino lower alkyl, mono lower alkyl carbamoylamino lower alkyl, di-lower alkyl carbamoylamino lower alkyl, carbamoylamino lower alkoxy, mono lower alkyl carbamoylamino lower alkoxy, di-lower alkyl carbomoylamino lower alkoxy, carbamoyloxy lower alkyl, mono lower alkyl carbamoyloxy lower alkyl, di-lower alkyl carbamoyloxy lower alkyl, carbamoyloxy lower alkoxy, mono lower alkyl carbamoyloxy lower alkoxy or di-lower alkyl carbamoyloxy lower alkoxy, and R^3 is hydrogen, halogen, lower alkyl, lower alkenyl, lower alkinyl, lower alkoxymethyl, lower alkoxy, lower alkenyloxy, lower alkinyloxy, lower alkylthio, lower alkenylthio, lower alkinylthio or lower acyl.

32. A method of treating cardiovascular diseases by the use of a cardioselective antagonist for adrenergic β-receptor stimulation comprising administering to a mammal an amount of a preparation according to claim **1** effective to provide said cardioselective antagonism for adrenergic β-receptor stimulation.

3,930,017

LOWERING BLOOD CHOLESTEROL AND LIPID LEVELS

Horst Kummer, Wilhelmbusch 47, 519 Stolberg, Rhineland, and Ruediger Beckmann, Elsa-Brandstrom-Strasse 10, 51 Aachen, both of Germany

Division of Ser. No. 584,089, Oct. 4, 1966, abandoned. This application May 22, 1970, Ser. No. 38,647

Claims priority, application Germany, Oct. 7, 1965, 1493567

Int. Cl.² A61K *31/24*

U.S. Cl. 424—309 **7 Claims**

1. The method of lowering blood cholesterol and lipid levels without increasing the basal metabolic rate and exhibiting no thyrotoxic activity in human patients which comprises administering orally a pharmaceutical composition which comprises 1 to 25 mg. dosage of dl-alpha-methylthyroxine ethyl ester and a pharmaceutically acceptable carrier to said patients.

3,930,018

FEED FOR PISCICULTURE

Masato Akasaki, Miyazaki; Hiroshi Takashima, and Kazuhiro Shibata, both of Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Oct. 31, 1973, Ser. No. 411,198

Claims priority, application Japan, Nov. 9, 1972, 47-112774

Int. Cl.² A61K *27/00*

U.S. Cl. 424—322 **8 Claims**

1. In a method for feeding catfish for the promotion of growth thereof in a pisciculture, the improvement which comprises: admixing 1–20% by weight of isobutylidene diurea into the feed, and feeding an effective growth promoting amount of the feed to said catfish.

3,930,019
2-(2-HALOPHEN OXY)ACETAMIDINES AS ANTIDEPRESSANTS

Abdulmuniem H. Abdallah, and Philip J. Shea, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 6, 1974, Ser. No. 521,436
Int. Cl.² A61K *31/155*
U.S. Cl. 424—326 **5 Claims**

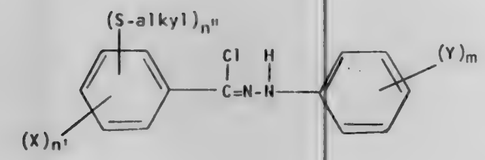
1. A method useful for alleviating symptoms of central nervous system depression in animals comprising administering to an animal suffering from central nervous system depression an amount of a compound selected from the group consisting of a 2-(2-halophenoxy) acetamidine and a pharmacologically-acceptable salt thereof effective to alleviate said symptoms.

3,930,020
COMPOSITIONS AND METHODS OF COMBATTING ARTHROPODAL PESTS USING PHENYLHYDRAZONE DERIVATIVES

Girts Kaugars, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed July 13, 1970, Ser. No. 54,622
Int. Cl.² A01N *9/20*
U.S. Cl. 424—327 **21 Claims**

1. A method of controlling arthropod pests which comprises contacting the pests or applying to a situs an effective anti-arthropodal amount of an ar or ar′ (alkylthio) benzoyl chloride phenylhydrazone having the structural formula:



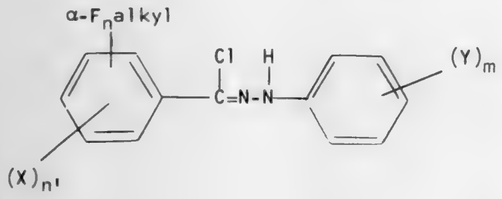
wherein "alkyl" is of from 1 to 6 carbon atoms, inclusive: X is halogen, alkyl of from 1 to 6 carbon atoms, inclusive, alkylthio of from 1 to 6 carbon atoms, inclusive, α-$F_n$alkyl of from 1 to 3 carbon atoms, inclusive, wherein n is the integer 2 or 3, or nitro; Y is alkyl of from 1 to 6 carbon atoms, inclusive, halogen, alkylthio of from 1 to 6 carbon atoms, inclusive, α-$F_n$alkyl of from 1 to 3 carbon atoms, inclusive, or nitro; n' is an integer 0 to 3, inclusive; n'' is 1 except when Y is alkylthio, when it can be zero; and m is an integer from 0 to 3, inclusive, the sum of $n'+n''+m$ being not more than 6, the sum of carbon atoms in the alkyl substituents being not more than 15, there being no more than one nitro group in the molecule, and no more than two α-$F_n$alkyl groups on any benzene ring or three total.

3,930,021
COMPOSITIONS AND METHODS OF COMBATTING ARTHROPODAL PESTS USING PHENYLHYDROZONE DERIVATIVES

Girts Kaugars, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed July 13, 1970, Ser. No. 54,620
Int. Cl.² A01N *9/20*
U.S. Cl. 424—327 **17 Claims**

1. A method of combatting arthropod pests which comprises contacting the pests with an effective anti-arthropodal amount of an (α-fluoroalkyl)benzoyl chloride phenylhydrazone having the structural formula:



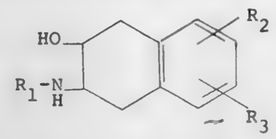
wherein α-$F_n$alkyl is an α-fluoroalkyl group of from 1 to 3 carbon atoms, inclusive; n is the integer 2 or 3; X is halogen, alkyl of from 1 to 6 carbon atoms, inclusive, α-$F_n$alkyl, or nitro; Y is halogen, alkyl of from 1 to 6 carbon atoms, inclusive, α-$F_n$alkyl, or nitro; n' is an integer from 0 to 3, inclusive; and m is an integer from 0 to 3, inclusive; the sum of $n'+m$ being not more than 5, the sum of carbon atoms in alkyl substituents being not more than 15, there being no more than one nitro group in the molecule, and no more than two α-$F_n$alkyl groups on any one benzene ring or three total.

3,930,022
CERTAIN TETRAHYDRONAPHTHALENES USED IN THE TREATMENT OF CARDIAC ARRHYTHMIA

Frederic Peter Hauck, Somerville; Christopher M. Cimarusti, Hamilton, both of N.J., and Joseph E. Sundeen, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 268,314, July 3, 1972, abandoned. This application June 20, 1974, Ser. No. 481,089
Int. Cl.² A61K *31/135*
U.S. Cl. 424—330 **18 Claims**

1. A method of treating cardiac arrhythmia which comprises administering to a mammalian host an effective amount of a compound having the formula



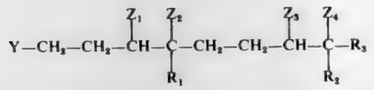
or a pharmaceutically acceptable acid addition salt thereof; wherein the hydroxyl and amino groups attached to the non-aromatic ring are in the trans configuration; wherein R_1 is alkyl or arylalkyl; and R_2 and R_3 are each hydrogen, hydroxyl, alkoxy or arylalkoxy; wherein aryl is phenyl or phenyl mono- or di-substituted with halogen, alkyl or alkoxy and wherein all alkyl and alkoxy groups contain one to eight carbon atoms.

3,930,023
INSECT CONTROL WITH CERTAIN SYNTHETIC HORMONES

Thomas L. Emmick, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 187,890, Oct. 8, 1971, Pat. No. 3,825,661, which is a continuation-in-part of Ser. No. 877,019, Nov. 14, 1969, abandoned, which is a continuation-in-part of Ser. No. 787,281, Dec. 26, 1968, abandoned. This application July 3, 1974, Ser. No. 485,485
Int. Cl.² A01N *9/24*
U.S. Cl. 424—341 **6 Claims**

1. A method for controlling the development of an insect species that is a member of an order selected from the group consisting of Coleoptera, Diptera, Orthoptera, Hemiptera, Homoptera and Lepidoptera which comprises treating, by contact or ingestion, an immature form of the insect species with a maturation-inhibiting amount of a compound having the formula



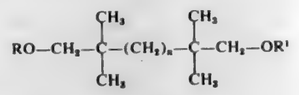
wherein each of R_1, R_2 and R_3 is a C_1-C_3 alkyl group;
each of Z_1, Z_2, Z_3 and Z_4 separately is hydrogen or halogen, or Z_1 and Z_2 together or Z_3 and Z_4 together are a carbon to carbon bond; and
Y is phenyl or substituted phenyl wherein the substituents are fluoro, chloro, bromo, carboethoxy, cyano, methoxy, ethoxy, C_1-C_4 alkyl, or dimethylamino.

3,930,024
PHARMACEUTICAL COMPOSITIONS AND METHODS

Paul L. Creger, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

Continuation-in-part of Ser. No. 193,215, Oct. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 854,757, Sept. 2, 1969, abandoned. This application Nov. 27, 1974, Ser. No. 527,934
Int. Cl.² A61K *31/045*
U.S. Cl. 424—343 **11 Claims**

1. A pharmaceutical composition in dosage unit form possessing serum triglyceride-lowering activity, serum cholesterol lowering activity and suitable for internal administration, comprising a pharmaceutical carrier and 20 to 5,000 mg. per dosage unit of a compound of the formula



where n is 6, 7, 8, 9, or 10; and R and R' are selected from the group consisting of hydrogen, acyl radicals of hydrocarbon monocarboxylic acids containing 1 to 12 carbon atoms, acyl radicals of hydrocarbon dicarboxylic acids containing 4 to 6 carbon atoms, phenylalanyl, and phosphono.

3,930,025
PENTACHLOROPHENOL-CREOSOTE WOOD-PRESERVATIVE

Denton M. Albright, Penn Hills Township, Allegheny County, and Charles Willard Leach, Penn Township, Westmoreland County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed July 1, 1971, Ser. No. 159,012
Int. Cl.² A01N *9/00, 9/26*
U.S. Cl. 424—346 **5 Claims**

1. A creosote-pentachlorophenol wood preservative solution consisting essentially of creosote having a maximum tar base content of 7.5 meq/100 g oil and pentachlorophenol, said phenol being about 1 to about 6 weight percent of said creosote.

3,930,026
CHEWING GUM HAVING ENHANCED FLAVOR

K. Warren Clark, Brewster, N.Y., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 28, 1974, Ser. No. 501,325
Int. Cl.² A23G *3/00, 3/30*
U.S. Cl. 426—3 **4 Claims**

1. A chewing gum comprising a gum base having incorporated therein particles of flavor and particles of an edible non-ionic surfactant, the flavor particles and the edible surfactant particles being jointly sorbed in an edible hydrophilic colloid.

3,930,027
PROCESS FOR PREPARING A PRECOOKED DEHYDRATED PRODUCT

Vincent J. Kelly; Larry L. Cloud, and Wayne J. Smalligan, all of Fremont, Mich., assignors to Gerber Products Company, Fremont, Mich.

Continuation of Ser. No. 177,903, Sept. 2, 1971, abandoned, which is a continuation-in-part of Ser. No. 54,851, July 14, 1970, abandoned. This application Nov. 16, 1973, Ser. No. 416,562
Int. Cl.² C12B *1/00*
U.S. Cl. 426—28 **8 Claims**

1. A process for preparing a precooked, dehydrated product comprising: adjusting the temperature of a slurry of gelatinized starch into the range of activity exhibited by amylase; contacting sufficient of said amylase with said slurry to completely hydrolyze said gelatinized starch; combining a quantity of a slurry of non-hydrolyzed starch with a quantity of a slurry of said completely hydrolyzed starch wherein the combined quantities of ingredients create a maltose concentration of about 14% based on total weight of slurry; and drying said combined slurry to provide said dehydrated product.

3,930,028
PROCESS FOR THE MICROBIOLOGICAL PURIFICATION OF DAIRY EFFLUENTS

Agnes Ullmann, and Maxime Schwartz, both of Paris, France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed June 4, 1973, Ser. No. 366,458
Claims priority, application France, June 8, 1972, 72.20697
Int. Cl.² A23C *5/00;* **C02C** *1/02;* **A23J** *1/20;* **A23K** *1/08*
U.S. Cl. 426—41 **7 Claims**

1. A process for purifying dairy effluents, comprising fermenting the effluents with at least one non-pathogenic, aerobic, proteolytic bacterial strain of the family Enterobacteriaceae having a least one B-galactosidase or one lactose-oxidase in a container at a temperature of from about 20°–37°C, and separating the bacterial matter from the fermentation liquors.

3,930,029
METHOD OF MANUFACTURING QUICK-SOLUBLE GELATINIZED POWDERED GRAIN

Junichi Minami, Tondabaya; Mitsumune Takatsu, Kusatsu; Masaki Terada, Osaka; Tsuneo Takeuchi, Osaka, and Yutaka Takagi, Osaka, all of Japan, assignors to Nissin Shokuhin Kaisha, Ltd., Japan

Filed Mar. 11, 1974, Ser. No. 450,243
Int. Cl.² A21D *8/04*
U.S. Cl. 426—44 **3 Claims**

1. A method for manufacturing a quick-soluble gelatinized powdered foodstuff selected from the group consisting of wheat flour, powdered rice and white potato starch comprising the steps of forming a paste by adding to wheat flour, powdered rice or white potato starch, an aqueous solution of a proteolytic enzyme composition containing amylase and protease and sodium chloride; mixing and kneading said paste for about 15 to 20 minutes, the amount of said enzyme composition and the temperature of said mixing and kneading being sufficient to effect zymolysis; forming said paste into strips, boiling or steaming said strips and then frying said boiled or steamed strips at a temperature of up to 155°C to effect dehydration thereof and then comminuting the resultant product.

3,930,030
PROCESS FOR MAKING A BARBECUE SAUCE WITH TENDERIZER

Ferdinand E. Metz, Glenshaw; Finis O. Boyce, Bridgeville, and James L. Segmiller, Pittsburgh, all of Pa., assignors to H. J. Heinz Company, Pittsburgh, Pa.

Filed Feb. 27, 1975, Ser. No. 553,669
Int. Cl.² A23L *1/31*
U.S. Cl. 426—63 **2 Claims**

1. A process for making a barbacue sauce for tenderizing and enhancing the flavor of protein-containing food consisting of

a. providing an aqueous mixture of spices and preservatives at about 160°F.,
b. adding tomato paste, sugar, gum-oil and salt to said mixture with agitation while maintaining the temperature thereof between 175° – 190°F. for about 15 minutes,
c. milling said mixture at about 180°F.,
d. deaerating and cooling said mixture to 120°F., and then
e. adding vinegar, oils, garnishes and papain substantially free of amylase to said mixture with agitation while maintaining the temperature thereof at about 120°F., and thereby bringing the mixture to a pH of about 3.5.

3,930,031
SYNERGISTIC FLAVOR ENHANCING COATINGS FOR CAT FOOD COMPOSITIONS COMPRISING CITRIC AND PHOSPHORIC ACIDS

Richard D. Kealy, Waterloo, Ill., assignor to Ralston Purina Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 487,526, July 11, 1974, abandoned. This application Apr. 7, 1975, Ser. No. 563,938
Int. Cl.² A23K *1/18*
U.S. Cl. 426—89 **32 Claims**

1. A cat food composition comprising a nutritionally balanced mixture of proteinaceous and farinaceous ingredients having a coating of a synergistically effective flavor enhancing mixture which comprises between about 87 to 13 parts by weight of phosphoric acid to 1 part by weight of citric acid, wherein said coating is applied to provide a level of phosphoric acid in said cat food composition of at least about 0.5% by weight.

3,930,032
BAKING POWDER OF IMPROVED STABILITY AND METHOD OF PRODUCING SAME

Norman E. Harris, Waltham; Anthony P. Umina, Hopkinton, and Donald E. Westcott, West Acton, all of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 4, 1975, Ser. No. 546,954
Int. Cl.² A23F *1/06*
U.S. Cl. 426—97 **10 Claims**

1. A baking powder of improved stability which comprises, a sodium bicarbonate leavening agent and an acidic leavening agent, both types of leavening agent being in the form of finely divided particles, said finely divided particles of both types of leavening agent being coated with a composition comprising a mixture of (1) a cellulose ether selected from the group consisting of hydroxypropylmethylcellulose containing from about 4 to about 12 percent of 2-hydroxypropyl groups and from about 19 to about 30 percent of methoxyl groups and methylcellulose containing from about 27.5 to about 31.5 percent methoxyl groups, (2) ethyl cellulose containing from about 45.0 to about 49.5 percent of ethoxyl groups, and (3) a solvent which is compatible with components (1) and (2), and thereafter freed of said solvent wherein the moisture content of the baking powder is below about 5%.

3,930,033
SIMULATED BACON PRODUCT AND PROCESS THEREFOR

Glenn Arthur Corliss, Clarendon Hills, and Henry Paul Furgal, Lombard, both of Ill., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Feb. 4, 1974, Ser. No. 439,356
Int. Cl.² A23J *3/00*; **A23L** *1/275*
U.S. Cl. 426—103 **11 Claims**

1. A simulated bacon product having alternate expanded cooked layer simulating the lean and fat portions of bacon, the expanded layer simulating the lean portions being produced by cooking a composition mixture consisting essentially of 10 to 40 percent vegetable protein fiber, 5 to 20 percent egg albumen, 5 to 20 percent tapioca starch, 30 to 60 percent water, 3 to 20 percent vegetable oil, 0.1 to **1.5** percent vegetable gum, 2 to 15 percent vegetable protein isolate, 0.05 to 0.50 percent dextrose, 0.005 to 0,05 percent food grade coloring and 5 to 20 percent flavors and seasoning, said composition mixture also containing a gas dispersed therein, and the expanded layers simulating the fat portions being produced by cooking a composition mixture consisting essentially of 0 to 5 percent vegetable protein fiber, 5 to 20 percent egg albumen, 3 to 20 percent tapioca starch, 30 to 60 percent water, 10 to 40 percent vegetable oil, 0.1 to 1.5 percent vegetable gum, 2 to 15 percent vegetable protein isolate, 4 to 15 percent sodium caseinate, 0.05 to 0.50 percent dextrose, and 5 to 20 percent flavors and seasonings, said composition mixture also containing a gas dispersed therein, said percents being weight percent based on the total weight of the layer composition.

3,930,034
SIMULATED STRAWBERRY SLICES AND METHOD OF PREPARING THE SAME

Sudhakar P. Shanbhag, Tarrytown, and Alina S. Szczesniak, Mount Vernon, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,582
Int. Cl.² A23G *1/00*
U.S. Cl. 426—104 **12 Claims**

1. A method of preparing a simulated strawberry colored food stuff which comprises peeling and slicing into pieces plant tissue composed mainly of large, thin-walled, loosely arranged parenchyma cells and infusing the plant tissue pieces with an aqueous water binding solution containing an effective amount of strawberry color and an amount of at least one edible polyhydric alcohol selected from the group consisting of glycerol, 1,3 - butylene glycol, propylene glycol, sucrose, dextrose, fructose and sorbitol sufficient to impart a water activity to the plant tissue of from about 0.3 to about 0.85 and a moisture content of about 10 to about 52%, said water binding solution having been infused into the plant tissue pieces for a period of time effective to allow infusion of the strawberry colored solution to become complete thereby imparting strawberry color to the outside of the piece with a progressively decreasing strawberry color intensity the further the solution infuses into said piece and thereafter further slicing said infused piece.

3,930,035
EDIBLE COLLAGEN SAUSAGE CASING AND PROCESS FOR PREPARING SAME

Noel I. Burke; Arthur M. Dowell, Jr.; Robert D. Talty, and Kenneth J. Kremer, all of Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed Oct. 15, 1974, Ser. No. 514,686
Int. Cl.² A23L *1/31*
U.S. Cl. 426—140 **8 Claims**

1. A process for preparing an edible collagen sausage casing wherein a collagen slurry is formed from a collagen source, extruded through an annular die, coagulated, first tanned in a bath with an aluminum tanning agent and subsequently tanned with glutaraldehyde which comprises,

conducting said first tanning of said collagen by contacting said casing in a tanning bath containing from 0.3 – 1.25% aluminum calculated as $Al_2(SO_4)_3 \cdot 14H_2O$ for about 2 – 15 minutes;

conducting said subsequent tanning of said first tanned casing by contacting said casing in a bath containing from 80 – 300 ppm glutaraldehyde and having a pH of from about 4.1 – 4.5 for a time sufficient to effect substantially complete dynamic equilibrium between said casing and said bath;

precipitating uncombined aluminum in said tanned casing by passing said tanned casing through a bath at a pH of 7.8 – 8.2, and then drying said tanned casing after precipitating said aluminum.

3,930,036
EDIBLE COLLAGEN SAUSAGE CASING AND METHOD OF PREPARING SAME

Noel I. Burke, Danville, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.

Filed July 12, 1974, Ser. No. 487,831
Int. Cl.² A23L *1/31*
U.S. Cl. 426—140 **9 Claims**

1. In a method of preparing edible tubular collagen sausage casings which comprises:

a. grinding animal hide collagen to form an aqueous slurry,
b. treating the slurry with acid at a pH of 2.5 – 3.7 to swell the collagen,
c. extuding the slurry at a collagen content of 2 – 8% through an annular die into a coagulation bath to form a tubular gel collagen casing,
d. tanning the gel casing in two steps first in a tanning bath of an aluminum salt solution and then in a dilute solution of glutaraldehyde, and
e. washing, plasticizing, and drying the casing to produce a translucent non-fibrous edible product, the improvement which comprises:

treating the gel collagen casing with a dilute solution of an acid orthophosphate salt at pH 6 – 8 after the final tanning step and prior to drying, whereby the free aluminum in the gel casing is converted to an insoluble aluminum phosphate.

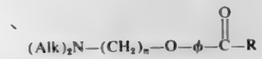
3,930,037
PROCESS FOR PREPARING MIXTURES OF CAROTENOID PIGMENTS

Henry Yokoyama; Wan-Jean Hsu, both of Pasadena, and Stephen M. Poling, Seal Beach, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 404,980, Oct. 10, 1973, Pat. No. 3,864,501. This application Oct. 9, 1974, Ser. No. 513,665
Int. Cl.² A23L *1/272*
U.S. Cl. 426—268 **6 Claims**

1. A process for preparing a mixture of carotenoid pigments, which comprises —

a. removing the peel from a citrus fruit,
b. coating the peel from an aqueous solution of a compound of the structure



wherein Alk is lower alkyl of 1 to 4 carbon atoms, *n* is an integer from 2 to 4, and R is a member of the group consisting of H, lower alkyl of 1 to 4 carbon atoms, phenyl, —CH=CH—Ph, and $-CH_2-CH_2-Ph$,

c. holding the peel until the carotenoid content thereof has been substantially increased, and
d. extracting the carotenoid pigments from the peel.

3,930,038
METHOD FOR COLORING FRUITS AND VEGETABLES

Henry Yokoyama; Wan-Jean Hsu, both of Pasadena, and Stephen M. Poling, Seal Beach, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 404,980, Oct. 10, 1973, Pat. No. 3,864,501. This application Oct. 9, 1974, Ser. No. 513,360
Int. Cl.² A23L *1/272*
U.S. Cl. 426—269 **3 Claims**

1. A process for enhancing the coloration of harvested fruits and vegetables which contain carotenogenic tissue, which comprises —

a. applying to the surface of the harvested fruit or vegetable a compound of the structure

$Et_2N-CH_2-CH_2-S-Et$

b. and holding the fruit or vegetable for a period long enough to develop an enhanced coloration.

3,930,039
METHOD OF PREPARING A PROTEIN CONCENTRATE FROM WHEY

Arie Kuipers, Reitmehring, Germany, assignor to Molkerei J. A. Meggle, Milchindustrie, Reitmehring, Germany

Continuation of Ser. No. 185,441, Sept. 30, 1971, abandoned. This application Apr. 25, 1974, Ser. No. 463,868
Claims priority, application Germany, July 30, 1971, 2138277
Int. Cl.² A23C *21/00*, *9/14*
U.S. Cl. 426—271 **8 Claims**

3. A method of preparing a protein concentrate from whey which comprises:

a. adjusting the pH of said whey to a value lower than the isoelectric point of the protein in said whey;
b. subjecting said whey at the adjusted pH value to ultrafiltration through a filtering medium, thereby passing a filtrate through said medium and separating said filtrate from a liquid concentrate retained by said medium,
1. said concentrate containing a higher percentage of solids than said filtrate, and
2. the weight ratio of protein to whey solids of a molecular weight lower than the molecular weight of said protein being higher in the solids of said concentrate than in the solids of said filtrate; and

c. heating said concentrate at said adjusted pH value to a temperature of at least 70°C until sterile.

6. A method as set forth in claim **3**, wherein said pH of said whey is adjusted to said lower value by substitution of hydrogen ions for cations other than hydrogen in said whey.

3,930,040

PROCESS OF STORING OR SHIPPING FRESH MEAT IN A MODIFIED GASEOUS ATMOSPHERE

Richard E. Woodruff, Salinas, Calif., assignor to TransFRESH Corporation, Salinas, Calif.

Filed Sept. 16, 1974, Ser. No. 506,454
Int. Cl.² A23L *1/31*
U.S. Cl. 426—312 **5 Claims**

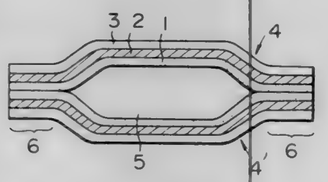
1. In the process of storage or shipment of fresh meat refrigerated to a temperature in the range of 29°–40° F., the improvement which consists essentially of maintaining said meat in a modified gaseous atmosphere of carbon dioxide, about 10–75% by volume, molecular oxygen, about 2½–30% by volume; carbon monoxide, about 1–10% by volume; and the remainder essentially molecular nitrogen during the period of storage or shipment.

3,930,041

HERMETIC SEALING PROCESS UTILIZING MULTIPLE HEAT-SEALING STEPS

Yoshihiro Komatsu, Kawasaki; Izumi Kakuta, Tokyo, and Kanemichi Yamaguchi, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan

Filed Apr. 24, 1973, Ser. No. 354,121
Claims priority, application Japan, Apr. 27, 1972, 47-42372; Apr. 27, 1972, 47-42373
Int. Cl.³ C09J *5/00*; B65B *7/06*; B32B *31/20*
U.S. Cl. 426—396 **18 Claims**



13. A hermetic sealing process for forming a heat-sterilizable packaged article by deaerating and heat-sealing a packaged article comprising a container having a heat-sealable resin coating on the inner surface of an area to be heat-sealed, and contents composed of cooked or semicooked foods containing a liquid filled in said container under such an atmosphere that an easily-condensable vapor or a condensate thereof resulting from the presence of the liquid is present on innerfaces to be heat-sealed, said process comprising applying to the area to be heat-sealed of the packaged article heat-sealing temperature T_1 (°C.) and pressure P_1 (Kg/cm²) necessary for melting and press-bonding the heat-sealable resin coating, then applying to the formed heat-sealed area a heat-seal bar temperature T_2 (°C.) which is lower than the temperature T_1 applied at the first heat-sealing step but higher than the temperature at which the heat-sealable resin coating begins melting or softening and a pressure P_2 (Kg/cm² gauge) which is higher than the pressure P_1 applied during the first heat-sealing step and also higher than the saturated vapor pressure of the easily-condensable vapor corresponding to said temperature T_2 to effect condensation of vapor disposed within the area sealed by the first heat-sealing step, and cooling the heat-sealed area under an elevated pressure.

3,930,042

PRODUCTION OF VODKA

William Dunnet, Menstrie, Scotland, assignor to The Distillers Company, Limited, Linden, N.J.

Filed Dec. 14, 1973, Ser. No. 425,030
Int. Cl.² C12G *3/00, 3/12*
U.S. Cl. 426—475 **13 Claims**

1. A process for the treatment of aqueous ethyl alcohol which comprises:

a. downwardly flowing aqueous ethyl alcohol being aqueous commercial grain neutral spirits having a pH of about 7, and being obtained by fermentation, distillation, and rectification processes and containing small quantities of impurities which adversely affect aroma and taste of the alcoholic beverage;

b. upwardly flowing a carbon dioxide-containing gas consisting essentially of carbon dioxide countercurrently to said aqueous ethyl alcohol;

c. wherein the relative flow rate of carbon dioxide to the aqueous ethyl alcohol is sufficient to provide an aqueous alcohol having a pH between about 4.0 and about 5.5,

d. wherein the relative flow rate of the aqueous ethyl alcohol is from about 2 to about 30 gallons per minute and the flow rate of the carbon dioxide is between about 10 and about 200 cubic feet per minute;

e. wherein the contact time between the countercurrently flowing carbon dioxide-containing gas and aqueous ethyl alcohol is between about 20 seconds and 180 seconds;

f. then passing the carbon dioxide-containing gas containing a substantial amount of vapors of ethyl alcohol, water and the impurities through an adsorption bed consisting of dry solid particles in order to remove the impurities from the gas stream;

whereby an aqueous ethyl alcohol product having a pH between about 4.0 and about 5.5 without distinctive aroma and taste, and which is suitable for use as vodka, is obtained; and

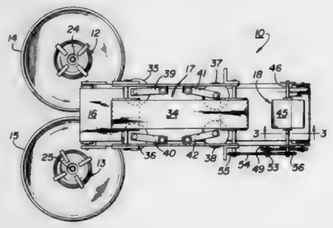
g. reusing the carbon dioxide-containing gas for countercurrent flow with fresh quantities of said aqueous ethyl alcohol.

3,930,043

METHOD FOR MAKING COTTON CANDY

Walter B. Warning, Chicago, and Walter B. Warning, Jr., Schaumburg, both of Ill., assignors to Tec-Pak Corporation, Schiller Park, Ill.

Filed July 19, 1973, Ser. No. 380,566
Int. Cl.² A23P *1/00*; B29C *23/00*; A23G *3/00, 3/10*
U.S. Cl. 426—515 **4 Claims**



1. A method of making cotton candy comprising the steps of

extruding melted sugar through a plurality of appertures in a rotating head to provide continuous strands of sugar,

collecting said strands in a rotating pan in the center of which said head is disposed,

pulling the collected strands upwardly from said pan onto a conveyor belt mounted at the side of said pan and traveling in a direction tangential to said pan at a linear speed slightly greater than the tangential speed at the periphery of said pan,

carrying the collected strands on said conveyor through a compactor to size the collected strands to a predetermined height and width, and

cutting the sized product into sections of predetermined length.

3,930,044

IN SITU PRODUCTION OF MEAT LIKE FLAVOR IN EXPANDED POROUS FOOD PRODUCT

Paul van de Rovaart, Chexbres, and Jean-Jacques Wuhrmann, Saint-Legier, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Nov. 20, 1973, Ser. No. 417,503
Claims priority, application Switzerland, Nov. 21, 1972, 16909/72
Int. Cl.² A23L *1/231*
U.S. Cl. 426—533 **17 Claims**

1. A process for preparing an expanded porous food product having a meat-like flavour, which comprises forming a mixture comprising

a. a finely divided carbohydrate or protein food material,

b. at least one pentose or hexose,

c. at least one sulfur-containing amino acid or an amino acid and a substance containing sulfide, and

d. water, the mixture containing from 18 to 45% by weight of water,

heating the mixture to a temperature of at least 150°C under a pressure which is at least equal to the saturated vapor pressure of water at the temperature to which the mixture is heated, whereby said constituents (b) and (c) react to impart a meat-like flavour, and thereafter rapidly reducing the pressure to which the mixture is subjected to vaporize the major proportion of the water contained in the mixture thereby forming an expanded porous structure in its interior.

3,930,045

IN SITU PRODUCTION OF MEAT LIKE FLAVOR IN EXTRUDED POROUS FOOD PRODUCT

Arthur Joseph Mosher, Paris Township, Union County, Ohio, and Donald Eugene Yingst, Lausanne, Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Nov. 20, 1973, Ser. No. 417,535
Int. Cl.² A23L *1/231*
U.S. Cl. 426—533 **17 Claims**

1. In a process for preparing an expanded porous food product which comprises:

A. forming a mixture of finely divided carbohydrate or protein food material with water and

B. extruding said mixture under conditions of elevated temperature and pressure,

the improvement which comprises blending reducing sugar and sulfur-containing substance with said mixture, the sulfur of said substance being in, or being readily transformable under said extrusion conditions into, a reactive sulfur radical and wherein said sugar and substance are in an amount sufficient to impart meat-like flavour to said food product and are in a ratio which stabilizes the extrusion flow rate.

3,930,046

PROCESS FOR PREPARING A MEAT FLAVORING

William Lewis Baugher, Logan Township, Dearborn County, Ind., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 3, 1974, Ser. No. 529,155
Int. Cl.² A23L *1/227, 1/231*
U.S. Cl. 426—533 **6 Claims**

3. A process for making a meat-like flavoring composition comprising:

a. reacting for from 3 minutes to 24 hours at a temperature of from 60° to 180°C a mixture of about 10 parts hydrolyzed whey protein, from about 0.8 to about 4 parts xylose and from about 0.8 to about 4 parts cysteine;

b. reacting for from 3 minutes to 24 hours at a temperature from 60° to 180°C a mixture of about 10 parts hydrolyzed whey protein and from about 0.8 to about 4 parts thiamine;

c. blending about 1 part of the product of step (a) with from about 0.1 to about 10 parts of the product of step (b).

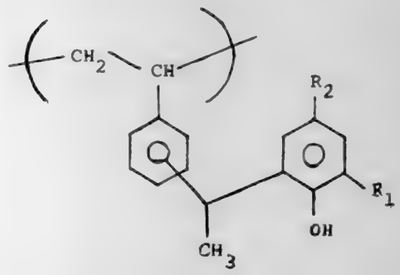
3,930,047

FAT OR OIL COMPOSITION STABILIZED WITH POLYSTYRLPHENOL ANTIOXIDANT

James A. Dale, Menlo Park, and William J. Leonard, San Francisco, both of Calif., assignors to Dynapol, Palo Alto, Calif.

Filed Mar. 11, 1974, Ser. No. 449,929
Int. Cl.² A23D *5/04*
U.S. Cl. 426—546 **3 Claims**

1. A stabilized food composition comprising an edible fat or oil normally subject to oxidative deterioration having intimately admixed therewith a polymer consisting essentially of n units of a monomer of the formula



wherein R_1 is a lower alkyl of from 1 to 5 carbons inclusive, R_2 is hydrogen or a lower alkyl of from 1 to 5 carbons, and n is an integer of from 3 to 2000, the amount of said polymer being in the range of about 0.001 to about 0.2 percent by weight of said fat or oil.

3,930,048

SWEETENING MATERIAL AND METHOD FOR MANUFACTURING THE SAME

Norman Wookey, Epsom; Arthur Frederick Jackson, Ashford; Michael Clive Collins, Hamstreet, and Brian Francis, Faversham, all of England, assignors to Ranks Hovis McDougall Limited, London, England

Filed Jan. 9, 1974, Ser. No. 431,699
Claims priority, application United Kingdom, Jan. 17, 1973, 2501/73
Int. Cl.² A23L *1/236*
U.S. Cl. 426—548 **12 Claims**

6. A method of producing a sweetening material in the form of porous agglomerates of spray-dried particles in which the essential components are dextrose and a synthetic sweetening agent, said material having substantially equivalent sweetening power to that of granulated sugar but a bulk density in the range of 0.2 to 0.75 gm/cc with a consequent low calorific value per unit of volume which comprises

feeding to a spray dryer (a) a liquid mixture comprising dextrose and said synthetic sweetening agent in the form of a water-base syrup and (b) a solid mixture in the form of powder of amorphous dextrose and said synthetic sweetening agent,

contacting said syrup and said powder as said mixture passes through said spray dryer whereby all or most of the

powder particles will pick up some of said syrup and will become sticky, and will agglomerate while drying;

screening said spray dried material so as to separate any unagglomerated powder together with agglomerates which are above and below a predetermined range of screen sizes, from the intermediate sized remainder and recovering the intermediate sized remainder.

3,930,049

PROCESS FOR PREPARING A SHELF-STABLE, FLEXIBLE TORTILLA

Peter H. Mattson, Hillsborough, Calif., assignor to S & W Fine Foods, Inc., San Mateo, Calif.

Continuation-in-part of Ser. No. 313,450, Dec. 8, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 458,876

Int. Cl.² A21D *15/00*

U.S. Cl. 426—549 **11 Claims**

1. A process for forming a packaged, fried, shelf-stable, flexible tortilla comprising the steps of

a. lightly frying a hot, pre-baked tortilla in oil at an elevated temperature for a time selected to sterilize said tortilla and retain at least 13.5% residual moisture in the tortilla for it to remain flexible, whereby the tortilla is capable of being formed into a spiral cross-section after frying while still at an elevated temperature before packaging,

b. maintaining the fried sterile tortilla at an elevated temperature, and

c. packaging and sealing the fried and sterile tortilla in a moisture-proof container at an elevated temperature, whereby the tortilla is capable of being heated in a hot liquid in the container to a temperature at which the tortilla can be readily removed from the container without breakage.

3,930,050

PROCESS FOR PREPARING LOW CALORIE GELATIN DESSERT WITH BROMELAIN

Berry V. Faber, 34 Yukon St., San Francisco, Calif. 94114

Filed Aug. 6, 1973, Ser. No. 386,125

Int. Cl.² A23L *1/04*

U.S. Cl. 426—564 **4 Claims**

1. In a process for preparing a low calorie gelatin dessert containing a hardening retardent in an amount sufficient to regard gel hardening selected from the group consisting of bromelain and papain, the steps of:

a. formulating a dry powder mix of ingredients including suitable amounts of gelatin, sweeteners, flavorings, and hardening retardent;

b. adding sufficient boiling water to the powder mix to dissolve all the ingredients;

c. allowing the solution to cool and form a gel; and thereafter

d. whipping the gel until creamy.

3,930,051

METHOD FOR PREPARING A PUDDING

Leonard R. Kahn, 70 N. Grove St., Freeport, L.I., N.Y. 11520

Continuation-in-part of Ser. No. 200,825, Nov. 22, 1971, abandoned. This application Aug. 13, 1973, Ser. No. 387,952

Int. Cl.² A23L *1/187*

U.S. Cl. 426—573 **14 Claims**

1. A method for producing a pudding similar in texture and density to bread pudding which comprises; mixing approximately one part weight of a dry mixture consisting essentially of oat flakes having a size between 0.1 and 0.7 cm and having a specific gravity of approximately 0.3 to approximately 0.7 with two parts weight of an edible liquid so as to wet said oat flakes and allowing the resulting mixture to set prior to serving.

3,930,052

GELATIN COMPOSITIONS

Michel De Brou, Grimbergen, and Claude Den Tandt, Wezembeek-Oppem, both of Belgium, assignors to PB Gelatines, Brussels, Belgium

Filed Jan. 10, 1973, Ser. No. 322,422

Claims priority, application France, Jan. 10, 1972, 72.00582

Int. Cl.² A23L *1/04*

U.S. Cl. 426—576 **14 Claims**

1. A cold-water-soluble gelatin composition consisting essentially of:

a. a particulate, spray dried, tunnel dried or drum dried amorphous gelatin component having particle size not exceeding 210 microns, said amorphous gelatin component having been prepared by evaporation of a gelatin solution without passing through the gelled state, then ground and screened, and

b. a powdered, water-dispersible comestible component different from (a) and having the following particle size:

i. not exceeding 500 microns, and

ii. at least one part by weight of said comestible component per part by weight of gelatin in said composition having a particle size not exceeding the particle size of the gelatin component;

the proportion of (b) to (a) in the composition being sufficient to maintain the gelatin in the non-clumping form when the composition is dispersed in water having a temperature of 15°–25°C.

3,930,053

RAPIDLY DISSOLVING DRY BEVERAGE MIX

Cornelis Hendrikus Japikse, Springfield Township, Hamilton County; Gyanendra Singh, Fairfield, and Timothy J. Kennedy, Springfield Township, Hamilton County, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed July 17, 1974, Ser. No. 489,278

Int. Cl.² A23L *2/00*

U.S. Cl. 426—590 **6 Claims**

1. A process for preparing a rapidly dissolvable and substantially dry beverage flavor mix comprising:

a. forming a slurry by admixing a flavor base with sugar crystals in an amount such that said admixture has a flavor base: sugar ratio of about 0.03 to about 0.15 and said slurry admixture has a total solids concentration of from about 75 to about 95 percent;

b. drying said slurry admixture to substantial dryness in a manner in which to form a stable foam; and

c. grinding said stable foam to form discrete dry beverage flavor particles.

3,930,054

METHOD OF MAKING IMPROVED DRIED EGG PRODUCT

Roger Liot, and Evelyne Liot, both of 134 Avenue Laferriere, Creteil, France

Continuation of Ser. No. 306,415, Nov. 14, 1972, abandoned, which is a continuation of Ser. No. 68,489, Aug. 31, 1970, abandoned. This application Apr. 12, 1974, Ser. No. 460,557

Claims priority, application France, Oct. 21, 1969, 69.36084

Int. Cl.² A23B *4/04*

U.S. Cl. 426—614 **13 Claims**

1. A method of preparing a dried egg product that rehydrates easily without forming lumps which comprises the steps of combining a liquid egg with the reaction products resulting from the transesterification of natural triglycerides of animal or vegetable origin with saccharose and drying said egg composition to form a powder.

3,930,055

VERY LOW CARBOHYDRATE BAKED PRODUCT

Elaine Green Engelman, 938 Berkeley Ave., and Dorothy Neri, 328 Hillcrest Ave., both of Trenton, N.J. 08618

Continuation-in-part of Ser. No. 258,268, May 31, 1972, abandoned. This application Nov. 16, 1973, Ser. No. 416,407

Int. Cl.² A21D *13/04, 13/06;* **A23J** *3/00*

U.S. Cl. 426—644 **8 Claims**

1. A very low carbohydrate baked product made from dough, said dough consisting principally of proteinaceous powder having less than 10% carbohydrate and leavening agent.

3,930,056

USE OF MODIFIED DRIED WHEY AS A FLAVOR ENHANCER IN FOODS

Joseph Vincent Feminella, Excelsior, Minn.; Nicholas Melachouris, Hartsdale, and Robert M. Lauck, New City, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 336,844, Feb. 28, 1973, abandoned. This application Dec. 11, 1974, Ser. No. 531,579

Int. Cl.² A23C *21/00*

U.S. Cl. 426—646 **6 Claims**

1. A method of enhancing the flavor of food which comprises adding to said food in an amount effective to enhance the flavor of said food a modified dried whey derived by drying the low protein-high ash fraction obtained by the molecular sieve fractionation of partially delactosed whey and having the following general composition: Lactose, about 35–45 percent, Ash, about 20–30 percent, Protein about 15–20 percent, Lactate, about 8 percent, Citrate, about 5 percent, moisture, about 2 percent, Fat, about 0.1 percent.

3,930,057

HIGH CALORIE PUDDING

Louis Jokay, Niles, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Mar. 20, 1975, Ser. No. 560,306

Int. Cl.² A23L *1/187, 1/04*

U.S. Cl. 426—577 **9 Claims**

1. A high calorie pudding substantially devoid of sodium, potassium and protein comprising:

a. 40–60 percent of a 3–10 percent fruit pectin in water solution,

b. 20–30 percent sucrose, dextrose, or mixtures thereof, and

c. about 20–30 percent of edible vegetable oils which are normally liquid above 75°F. and have a polyunsaturate/-saturate ratio of about 2/1.

3,930,058

MODIFIED VEGETABLE PROTEIN SIMULATING CASEIN

Surinder Kumar, 3 Villa Verde Drive, Apt. 103, Buffalo Grove, Ill. 60090, and Kolar S. Ramachandran, 1465 Joan Drive, Palatine, Ill. 60067

Filed June 12, 1974, Ser. No. 478,757

Int. Cl.² A23J *3/00, 3/02*

U.S. Cl. 426—656 **8 Claims**

1. A process for producing a modified vegetable protein having thermoplastic and forming properties similar to casein and caseinate salts, said process comprising:

A. making an aqueous slurry of a vegetable protein material containing at least about 50 percent by weight protein selected form the group consisting of oat protein and oil seed vegetable protein, said slurry having a solids content of from about 3 percent to about 16 percent by weight;

B. adjusting the pH of the aqueous slurry to a pH of from above 7.0 to about 10.5 by addition thereto of an alkali metal carbonate;

C. heating the aqueous slurry to a temperature of from 280°F. to 370°F. for from 2½ to 5 minutes to react the alkali metal carbonate with the protein;

D. neutralizing the slurry to a pH of from 6.6 to 7.0 by addition thereto of an edible acid; and

E. drying the neutralized slurry to remove a substantial portion of the water therein.

3,930,059

DENTAL FLOSS ROLL COMPRISING INTERCONNECTED PIECES EACH HAVING A PICK END

Richard L. Wells, 4503 N. 32nd St., Phoenix, Ariz. 85018

Continuation of Ser. No. 368,615, June 1, 1973, abandoned, which is a division of Ser. No. 301,963, Oct. 30, 1972, Pat. No. 3,744,499. This application Mar. 14, 1974, Ser. No. 451,011

Int. Cl.² B21F *43/00*

U.S. Cl. 427—2 **7 Claims**



1. A method of forming a continuous arrangement of dental floss articles comprising the steps of:

forming a continuous roll of dental floss, and periodically rigidying said floss to render predetermined portions of the floss more rigid than the remainder of the floss,

said roll being coated at predetermined areas with plastic to form pick ends when the rigidified portion and a contiguous portion of floss is detached from the roll.

3,930,060

METHOD FOR FORMING A CARBIDE LAYER OF A V-A GROUP ELEMENT OF THE PERIODIC TABLE ON THE SURFACE OF AN IRON, FERROUS ALLOY OR CEMENTED CARBIDE ARTICLE

Noboru Komatsu, Toyoake; Tohru Arai, Nagoya; Yoshihiko Sugimoto, Nagoya, and Masayoshi Mizutani, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan

Filed Apr. 27, 1973, Ser. No. 355,278

Claims priority, application Japan, May 4, 1972, 47-43730; Apr. 12, 1973, 48-40822

Int. Cl.² C23C *9/10;* **C23F** *7/00*

U.S. Cl. 427—12 **13 Claims**

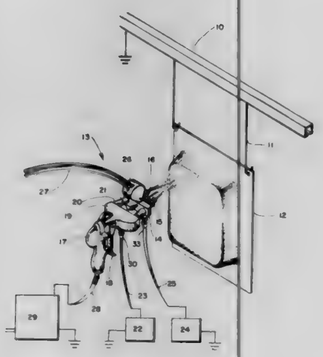
1. In a method for forming a carbide layer on an iron, ferrous alloy, or cemented carbide article, said articles containing at least 0.05% by weight of carbon, which comprises preparing a molten treating bath consisting essentially of boric acid or a borate and a metallic element dissolved therein, said metallic element being selected from the group consisting of vanadium, niobium and tantalum; immersing said article into said molten treating bath; maintaining said article in said molten treating bath to form a carbide layer of said metallic element on the surface of said article, and removing said article from the molten treating bath; the improvement wherein said molten treating bath is prepared by the method which comprises heating a boric acid or a borate to its molten state to form a molten bath; dipping a metal block containing at least one element selected from the group consisting of vanadium, niobium and tantalum, and applying an electric current to the molten bath through said metal block as the anode and an electric conductive material, which is in contact with the molten bath as the cathode, to anodically dissolve said metal block.

3,930,061

ELECTROSTATIC METHOD FOR FORMING STRUCTURES AND ARTICLES

James A. Scharfenberger, Indianapolis, Ind., assignor to Ransburg Corporation, Indianapolis, Ind.

Filed Apr. 8, 1974, Ser. No. 459,059
Int. Cl.² B05D *1/06*
U.S. Cl. 427—27 **13 Claims**



1. A method of forming a structure from plural component material with electrostatic deposition comprising

forming a promoted resinous material into a spray at one site;

establishing an electrostatic field from a charging electrode adjacent the site of formation of the spray of resinous material to charge the spray with one polarity;

simultaneously forming a catalyst material for said resinous material into a spray at another and grounded site adjacent the charging electrode, and charging said catalyst spray to the opposite polarity from said promoted resin, the site of formation of the spray of catalyst material acting as a terminous of the electrostatic field from said charging electrode; and

projecting the sprays from said sites of formation so that they converge and mix, the volume of said sprayed resin being greater than that of said catalyst material whereby said spray of mixed promoted resin and catalyst retains a net charge of said one polarity, and are directed for electrostatic deposition on a surface maintained at a spray-attracting potential on which the structure is to be formed.

3,930,062

COMPOSITION AND METHOD FOR ELECTROSTATIC DEPOSITION OF DRY PORCELAIN ENAMEL FRIT

Arsenije I. Nedeljkovic, Oak Park, Ill., assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed Dec. 4, 1974, Ser. No. 529,402
Int. Cl.² B05D *1/06;* **C03C** *5/02*
U.S. Cl. 427—27 **15 Claims**

1. The method of electrostatically spraying a porcelain enamel frit which comprises reacting said frit with an alkoxysilane having the formula:

$$R_n\text{-}Si\text{-}(OCH_3)_{4-n}$$

where R is a methyl or phenyl group or combinations of these and *n* is 1 or 2, and thereafter electrostatically spraying the reacted frit onto a substrate.

13. A composition for deposition by electrostatic spraying comprising a particulate porcelain enamel frit combined with a caking reducing amount of an alkoxysilane having the formula:

$$R_n\text{-}Si\text{-}(OCH_3)_{4-n}$$

where R is a methyl or phenyl group or combinations of these and *n* is 1 or 2.

3,930,063

CORRECTING FOR NON-UNIFORMITY OF A SILICA SOL COATING

Richard C. Miller, and Charles C. Payne, both of Chicago, Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Aug. 23, 1973, Ser. No. 390,897
Int. Cl.² B05D *3/06;* **B05B** *5/00;* **D06L** *3/12*
U.S. Cl. 427—54 **2 Claims**

1. A method of determining the uniformity of application of a coating on a substrate and correcting for lack of uniformity comprising:

preparing an aqueous coating mixture containing an aqueous silica sol;

incorporating in said coating mixture a fluorescent dye which becomes visible when irradiated with radiant energy of a predetermined wave length;

applying said coating mixture including said fluorescent dye to a substrate by means of an applicator;

radiating the applied coating on the substrate while it is still wet with radiant energy of said predetermined wave length to render the fluorescent dye visible to denote the uniformity or lack of uniformity of the application; and

adjusting the applicator to correct for non-uniformity of coating application.

3,930,064

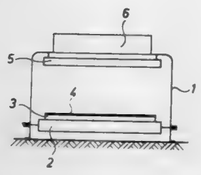
METHOD FOR CURING A COATING ON A BASE

Conrad Sander, Panoramastrasse 55, 7441 Zizishausen, Germany

Continuation-in-part of Ser. No. 407,652, Oct. 18, 1973, abandoned, which is a continuation of Ser. No. 135,009, April 19, 1971, abandoned. This application Nov. 5, 1974, Ser. No. 455,946

Claims priority, application Germany, Apr. 22, 1970, 2019270

Int. Cl.² B05D *3/06*
U.S. Cl. 427—54 **5 Claims**



1. A method of curing and hardening a coating on a base, said coating comprising an organic material which reacts exothermically with oxygen after being energized by being exposed to ultraviolet light, containing an ethylenically unsaturated double bond, which method comprises exposing said coating to a plurality of flashes of ultraviolet light to initiate a reaction in said coating, each said flash producing energy of at least 4.5 milliwatt/seconds per cm^2 of the surface of said coating to produce at least about 0.03% of radiation having an effective wave length of 197.4 nm, the means employed for producing said flashes being a flash lamp supplied with a current per flash having a density of more than 4000 A/cm^2 of the cross section of the light arc which is produced between the electrodes in said flash lamp and an output of less than 100 watt/seconds, said flash lasting for a period of less than 50 microseconds, each of said flashes being separated from the next flash for a period of time having a length equal to more than 100 times the length of time of one of said flashes.

3,930,065

METHODS OF FABRICATING SEMICONDUCTOR DEVICES

Ian Martin Baker; John David Emrys Beynon, and Peter Christopher Tudor Roberts, all of Southampton, England, assignors to National Research Development Corporation, London, England

Filed Nov. 7, 1973, Ser. No. 413,439
Claims priority, application United Kingdom, Nov. 10, 1972, 51950/72
Int. Cl.² B44D *1/18*
U.S. Cl. 427—89 **18 Claims**

1. A method of making a charge-coupled device having an ordered array of electrodes, including the steps of:

forming a surface layer for a body of semi-conductor material, the surface layer being of material other than conducting material and having an ordered array of projections thereon, each projection being associated with one of the desired electrodes particular thereto, and

depositing conducting material permanently on the said surface, at least in a region containing the said projections, to form the said electrodes, wherein the incident material casts shadows from the projections forming gaps between the electrodes where the shadows occur, the shadowed area being essentially devoid of deposited conducting material.

8. A method of making a charge-coupled device according to claim **1** wherein the projections define a plurality of parallel grooves and the deposition of conducting material is carried out by vacuum deposition over the whole area over which the grooves extend except for those parts of the area containing the ends of the grooves, to form electrodes each of which has two contiguous portions, one portion extending over the associated projections, except on that part of the projection forming part of one of the said gaps, and the other portion extending over the surface layer between the associated projection and an adjacent portion, except where part of another of the said gaps is formed.

3,930,066

TECHNIQUE FOR FABRICATION OF FOIL ELECTRET

Francis William Ryan, Millington; Harold Schonhorn, New Providence; Gerhard Martin Sessler, Summit, and James Edward West, Plainfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 12, 1973, Ser. No. 378,580
Claims priority, application Switzerland, July 24, 1972, 10990/72
Int. Cl.² H01F *27/42*
U.S. Cl. 427—79 **6 Claims**

1. A technique for the fabrication of a foil electret which comprises the steps of

a. bombarding the surface of a perfluorinated foil with an electron beam having an energy level within the range of 2.5 to 40 keV and an intercepted charge density within the range of 10^{-8} to 10^{-5}C/cm^2,

b. depositing a layer of gold on the resultant bombarded surface, and

c. charging the non-gold coated surface of said foil by bombarding the resultant assembly with a focused and scanned monoenergetic beam operating in the range of 10–40 keV for intervals ranging from 1–10 seconds in a vacuum while maintaining a current density for a time interval selected to yield a current time product within the range from $10^8 - 2 \times 10^{-7}$ A sec/cm^2.

6. A technique in accordance with claim **1** wherein the resultant charged structure is heated to a temperature of the order of 140°C for about 1 hour.

3,930,067

METHOD OF PROVIDING POLYCRYSTALLINE LAYERS OF ELEMENTTARY SUBSTANCES ON SUBSTRATES

Jan Gorrissen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 90,060, Sept. 29, 1970, abandoned, which is a continuation of Ser. No. 871,592, Nov. 10, 1969, abandoned, which is a continuation of Ser. No. 630,842, April 14, 1967, abandoned. This application Oct. 18, 1972, Ser. No. 298,624

Claims priority, application Netherlands, Apr. 16, 1966, 6605144

Int. Cl.² B05D *5/12*
U.S. Cl. 427—86 **2 Claims**

1. A method of providing an even fine-granular polycrystalline silicon layer on a silicon oxide substrate comprising the steps of passing over the substrate a gas current containing a thermally decomposable hydrogen compound selected from the group consisting of alkylsilanes and butane in an excess of hydrogen while heating the substrate at the decomposition temperature of said hydrogen compound to deposit on the surface layer a dense layer containing silicon or carbon in elementary form, thereafter passing over the substrate a gas current containing silicon chloride and hydrogen while heating the substrate at the decomposition temperature of silicon chloride temperature to continue to deposit on the silicon or carbon layer a polycrystalline layer of silicon.

3,930,068

METHOD FOR SEALING LEAKS IN RIGID HOLLOW ARTICLES

Samuel Sloan, 13011 Old Stage Coach Road, Laurel, Md. 20811

Filed May 23, 1973, Ser. No. 362,883
Int. Cl.² B32B *35/00*
U.S. Cl. 427—140 **1 Claim**

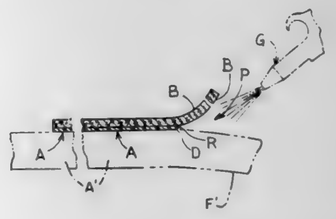
1. A method of repairing a rigid, hollow article useful for containing a fluid material therein, having one or more local fluid permeable discontinuities therein, comprising spreading over each of said discontinuities and the outer surface of said hollow article immediately adjacent to said discontinuities a composition consisting essentially of 12.5 parts by weight nitrocellulose, 76.5 parts by weight of an inert solvent, 10.0 parts by weight of a natural or synthetic resin, and 3.0 parts by weight of dibutyl phthalate.

3,930,069

REFINISH PAINTING METHOD

Charles Edward Stephens, 10037 Dixie Highway, Anchorville, Mich. 48004

Continuation of Ser. No. 271,294, July 31, 1972, abandoned. This application June 20, 1974, Ser. No. 481,383
Int. Cl.² C09J *7/04*
U.S. Cl. 427—142 **4 Claims**



1. A method of refinish painting a panel surface which is sub-divided generally along a longitudinal demarcation zone into two surface sections, which demarcation zone coincides with a highlight of said panel surface being refinish painted, comprising applying to said panel surface a protective tape

having an adhesive coating on a portion of one side surface thereof, the application being in such manner that said surface portion adheres to one panel surface section over a substantial area and along an edge of said demarcation zone, and that another portion of said tape side surface which lacks an adhesive coating, while facing the other panel surface section, diverges outwardly and non-adherently to the latter at an acute angle thereto, said divergent uncoated portion coacting with said other panel surface section in forming a tapered outwardly opening pocket to one side of the adhered tape area and demarcation zone, the adhesive coating of said one side surface portion being such that a ramp-like portion of the adhesive coating is formed along the junction line of the adhesive-coated and adhesive-lacking tape surface portions, and applying to said other panel surface section through the outward opening of said pocket a layer of refinish paint, which layer inwardly terminates as to said other panel surface section within said pocket and ramp-like portion at said edge of said demarcation zone.

3,930,070

COATING PROCESS USING A FLUIDISABLE POWDER COMPRISING A HEAT-STABLE BISIMIDE RESIN AND PARTICLES OF GLASS OR MICA

Michel Cronenberger, Lyon; Serge Laurent, Bron, and Maurice Mallet, Lyon, all of France, assignors to Rhone-Poulenc, S.A., Paris, France

Division of Ser. No. 91,610, Nov. 20, 1970, abandoned. This application Apr. 19, 1972, Ser. No. 245,670

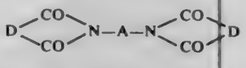
Claims priority, application France, Nov. 24, 1969, 69.40392; Oct. 1, 1970, 70.35524

Int. Cl.² B05D *1/24, 1/36, 3/00*

U.S. Cl. 427—185 **27 Claims**

1. A process for coating an article which comprises dipping the article, which is heated to a temperature above the softening point of the prepolymer into a fluidized bed containing a fluidizable powder in the form of particles of dimensions between 5 and 200 μ consisting of a mixture comprising:

a. 5 to 95 percent by weight of a prepolymer obtained by heating at between 50° and 250°C., an N,N′-bis-imide of an unsaturated dicarboxylic acid of general formula:



(I)

in which D represents a divalent radical containing a carbon-carbon double bond and A represents a divalent radical containing 2 to 30 carbon atoms, and a di-primary diamine of general formula:

$$H_2N - B - NH_2 \quad (II)$$

in which B represents a divalent radical containing 2 to 30 carbon atoms, and

b. 95 to 5 percent by weight of particles selected from glass micro-spheres, mica particles and mixtures thereof, and subsequently stoving the coating at a temperature between 150° and 300°C.

15. A process according to claim **14**, wherein the powder has a particle size not greater than 80 μ.

3,930,071

PROCESS FOR COATING THE RUBBING SURFACES OF THE SEAL OF THE GAS TURBINE REGENERATOR

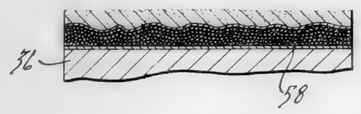
V. Durga Nageswar Rao, Woodhaven, and Yeshwant P. Telang, Grosse Ile, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 14, 1973, Ser. No. 415,897

Int. Cl.² B05D *1/36, 3/12*

U.S. Cl. 427—203 **3 Claims**

1. A method for forming a low friction seal coating on a rubbing seal surface for a ceramic regenerator core comprising the steps of mixing a polyarysulfone polymer with a graphite lubricant with a proportion of approximately 35% polymer by weight and 65% graphite by weight in a solvent, preparing a bond coating on the seal surface by applying a mixture of approximately 80% nickel by weight and 20% chromium by weight alloy powder to the surface of the seal, applying a thin coating of the polymergraphite mixture to the bond coating, drying the solvent from the polymer-graphite coating at approximately 250° to 300°F for at least 15 minutes, curing the coating at approximately 400°F to 500°F for approximately one-half hour to one hour and pressure laminating the coating at a temperature of approximately 500°F to 800°F for approximately one-half hour to one hour with a pressure of approximately 800 to 1500 psi, and slowly cooling the coating and grinding the coating to a smooth surface finish.



3,930,072

STABILIZATION OF METAL PLATING BATHS

Alan D. Wilks, Elk Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 28, 1974, Ser. No. 483,998

Int. Cl.² B05D *3/10*

U.S. Cl. 427—306 **6 Claims**

1. In the electroless deposition of copper on a substrate comprising a thermosetting resin, wherein the substrate is coated with copper in an electroless coating bath containing dissolved copper, the method of prolonging the usable life of said bath which comprises adding thereto from about 0.001 to about 1 percent by weight of a coumarin compound selected from the group consisting of coumarin, alkyl coumarins containing from 1 to about 5 carbon atoms in the alkyl group, and cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, phenyl, benzyl and tolyl orthocoumarates and from about 0.1 to about 5 percent by weight of a surfactant selected from the group consisting of alkyaryl polyether alcohols, sulfonates and sulfates and cyclic ether tetrahydric alcohols and anhydrides of sorbitol.

3,930,073

MIGRATION CONTROL RESIN COMPOSITIONS AND METHODS OF USING THE SAME ON POROUS MATERIALS

Arthur H. Drelich, Plainfield, and George J. Lukacs, Perth Amboy, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Mar. 8, 1974, Ser. No. 449,309

Int. Cl.² B44D *1/44*; **C08L** *1/28, 5/24*

U.S. Cl. 427—341 **8 Claims**

1. Stable, aqueous, colloidal synthetic resin compositions comprising: (1) from about 0.1 percent by weight to about 60 percent by weight of a colloidal synthetic resin; and (2) from about 0.01 percent by weight to about 2 percent by weight, based on the dry solids weight of the colloidal synthetic resin, of a metal ammine coordination complex of a high molecular weight, water-soluble, polymeric, polycarboxy-containing thickening resin selected from the group consisting of naturally occurring carboxylic acids, carboxy-containing cellulosics and the salts of said carboxylic acids and cellulosics, said metal being selected from the group consisting of zinc, copper, cobalt, nickel and chromium.

3,930,074

SYNTHETIC RESIN COMPOSITIONS AND METHODS OF APPLYING THE SAME TO POROUS MATERIALS TO CONTROL MIGRATION THEREON

Arthur H. Drelich, Plainfield, and George J. Lukacs, Perth Amboy, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Mar. 8, 1974, Ser. No. 449,311

Int. Cl.² B05D *7/00*; **C08L** *1/28*

U.S. Cl. 427—341 **14 Claims**

1. Stable, aqueous, colloidal synthetic resin compositions having an alkaline pH comprising: (1) from about 0.1 percent by weight to about 60 percent by weight of a colloidal synthetic resin; and (2) from about 0.01 percent by weight to about 2 percent by weight, based on the dry solids weight of the collodial synthetic resin, of a reaction product of a zirconyl complex salt and a high molecular weight, water-soluble, polymeric, polycarboxy-containing thickening resin, said zirconyl complex salt having the formula $R_3ZrOR'A_3$, wherein R and R′ are members of the group consisting of ammonium, hydrogen, and alkali metals and A is a divalent anion.

8. A method of applying a stable, aqueous, colloidal synthetic resin composition to porous materials and controlling its migration thereon which comprises applying to porous materials a stable, aqueous, colloidal synthetic resin composition having an alkaline pH comprising: (1) from about 0.1 percent by weight to about 60 percent by weight of a colloidal synthetic resin; and (2) from about 0.01 percent by weight to about 2 percent by weight, based on the dry solids weight of the colloidal synthetic resin of a reaction product of a zirconyl complex salt and a high molecular weight, water-soluble polymeric, polycarboxy-containing thickening resin, said zirconyl complex salt having the formula $R_3ZrOR'A_3$, wherein R and R′ are members of the group consisting of ammonium, hydrogen, and alkali metals and A is a divalent anion; and substantially immediately diluting the synthetic resin composition to substantially immediately coagulate and precipitate the synthetic resin composition.

3,930,075

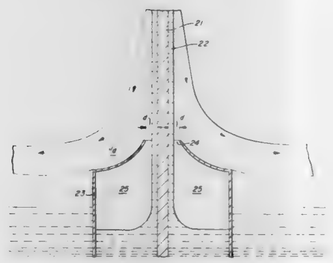
METHOD FOR CONTROLLING SPLASHING RESULTING FROM THE USE OF GAS KNIVES

Henry F. Myers, Monroeville, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 26, 1973, Ser. No. 428,468

Int. Cl.² B05D *1/18*

U.S. Cl. 427—349 **9 Claims**



1. In the method for the continuous hot-dip coating of a metal strip, wherein the strip emerges from a liquid bath in a generally upward direction and the thickness of the liquid layer adhering to said emerging strip is controlled by gas jets impinging against the planar surfaces of said strip at an angle of about 0° to 30° below the horizontal, said impingement causing each of said jets to divide into component streams, which components include wall streams flowing downward on both planar strip surfaces, said downward wall streams causing undesirable turbulence of the liquid bath within a region proximate the metal strip; the improvement for minimizing said liquid bath turbulence which comprises; employing a baffle chamber, the sides of which are substantially enclosed to form a restricted outlet for said downward wall streams, the bottom portions of said sides being approximal to the surface of the liquid bath, whereby the surface of the liquid bath serves as the bottom enclosure for said chamber to substantially restrict the egress of said wall streams; the topmost portion of said chamber lying an effective distance below the point at which said gas jet impinges upon the planar strip surfaces, said topmost portion having a generally rectangular slot opening, the long edges of which are substantially parallel to the planar faces of said strip, said slot opening being of a dimension at least sufficient to permit the unencumbered passage of said strip therethrough, but in which the normal distance between a planar surface of said strip and the oppositely facing long edge of said slot is no greater than about four times the thickness of the wall stream passing therebetween, whereby the resultant restricted wall streams within the chamber form a back pressure therein, sufficient to provide an air cushion to baffle the downcoming wall streams.

3,930,076

METHOD FOR PROVIDING DENTURES WITH A SOFT HYDROGEL LAYER

Karel Kliment, 321 Walnut Lane, Princeton, N.J. 08540

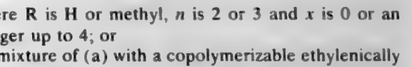
Filed July 13, 1973, Ser. No. 378,933

Int. Cl.² A61C *13/28*; **C08J** *7/08*

U.S. Cl. 427—353 **29 Claims**

1. A method of providing dentures having a hard polymeric acrylic base with a soft hydrogel layer comprising the steps of: preparing a paste consisting essentially of:

1a. a liquid hydrophilic monomer of the formula



where R is H or methyl, n is 2 or 3 and x is 0 or an integer up to 4; or

1b. a mixture of (a) with a copolymerizable ethylenically unsaturated monomer, said copolymerizable monomer being present in an amount insufficient to render the polymer formed either water soluble or hydrophobic;

2. an anhydrous water soluble solvent capable of dissolving said hard polymeric acrylic base but not the soft hydrogel; and

3. a finely divided inert filler;

applying said paste to the hard polymeric acrylic base; and polymerizing said paste to form a hydrophilic polymer coating on said base.

3,930,077

FILTERS

William E. Levers, and Charles H. Keith, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 237,925, March 24, 1972, Pat. No. 3,800,676. This application Dec. 19, 1973, Ser. No. 426,166

Int. Cl.² A24B *15/02, 15/033*; **A24C** *5/50*

U.S. Cl. 427—384 **4 Claims**

1. A process for preparing an intermediate product particularly adapted for use in tobacco smoke filters comprising providing a web of synthetic, thermoplastic filbers selected from the group consisting of polyolefin, polyamide and polyester fibers, coating at least one surface of said web with a solution of film-forming cellulose ether in a quantity sufficient to cause from about 10 to about 40 percent of said cellulosic derivative, based on the weight of said web, to remain on the web and removing solvent from the treated web to produce at least a partial film on the surface of said web.

3,930,078

COATING WITH ARYLENE SULFIDE POLYMER CONTAINING COMPOUNDS TO ENHANCE CURE

James N. Short, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 420,254, Nov. 29, 1973, Pat. No. 3,884,873. This application Dec. 4, 1974, Ser. No. 529,533

Int. Cl.² B05D *3/02*; **B32B** *15/08*

U.S. Cl. 427—388 **9 Claims**

1. A method of forming a coated substrate comprising: applying a coating composition comprising an arylene sulfide polymer and an amount sufficient to reduce melt flow of said polymer of a compound selected from the group consisting of tetrakis[3-(3,5-di-tert-butyl-4-hydroxypheny)propionyloxymethyl]methane, 1,3,5-trimethyl tris[3,5-di-tert-butyl-4-hydroxybenzyl]benzene, and octadecyl-3-(3′, 5′-di-tert-butyl-4′-hydroxyphenyl)propionate to a substrate; and heating said substrate for a time within the range of 10 to 40 minutes at a temperature within the range of 575°–725°F.

3,930,079

METHOD FOR FIRE-PROOFING TREATMENT OF FABRICS COMPOSED OF POLYESTER AND CELLULOSIC FILAMENTS OR FIBERS

Astuo Hashizume, Kyoto; Ryuichiro Tsuzuki, Ibaraki, and Haruo Mizushima, Takatsuki, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 12, 1974, Ser. No. 532,239

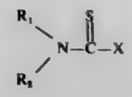
Claims priority, application Japan, Dec. 12, 1973, 48-137679

Int. Cl.² D06M *13/28*; **C09K** *3/28*

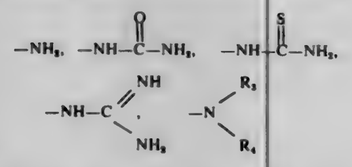
U.S. Cl. 427—396 **6 Claims**

1. A method for fire-proofing treatment of a fabric composed of polyester and cellulosic filaments of fabers, which comprises impregnating said fabric with the following treating agents (1) to (5)

1. a tetrakis-hydroxymethyl phosphonium compound,
2. methylolmelamine,
3. a thiocarbamic acid derivative expressed by the following formula

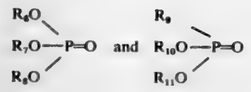


wherein X is a group selected from the class consisting of



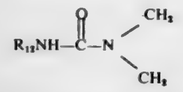
and $-OR_3$, each of R_1, R_2, R_3, R_4 and R_5 is a hydrogen atom or a hydrocarbon group containing 1 to 12 carbon atoms, and R_1 or R_2 may, together with X, form a cyclic structure,

4. an organic halogenated phosphorus compound selected from the group consisting of



wherein R_8, R_7 and R_8 are the same or different, and each represent a monovalent hydrocarbon group containing 1 to 12 carbon atoms, at least one of R_6, R_7 and R_8 contains at least one halogen atom selected from the group consisting of bromine and chlorine, R_9, R_{10} and R_{11} are the same or different and each represent a monovalent hydrocarbon group containing 1 to 12 carbon atoms, and at least one of R_9, R_{10} and R_{11} contains at least one halogen atom selected from the group consisting of bromine and chlorine, and

5. a long-chain alkylethyleneurea of the formula



wherein R_{12} is a monovalent saturated alkyl group containing 8 to 22 carbon atoms,

the amounts of the treating agents (1), (2), (3), (4) and (5), when designated *a*, *b*, *c*, *d* and *e* respectively, being as follows based on the total weight of *a* to *e*

a = 40 to 80 percent
b = 10 to 50 percent
c = 5 to 25 percent
d = 3 to 10 percent
e = 1 to 5 percent

and satisfying the following equation

$$4 \quad \frac{100\,(d\% + e\%)}{a\% + b\% + c\%} \quad 15$$

and heat-setting the impregnated fabric.

3,930,080

ELECTROSTATIC RECORDING MATERIALS

Tadashi Tanimoto, Amagasaki, and Kazuo Shibata, Nishinomiya, both of Japan, assignors to Kanzaki Paper Manufacturing Company, Ltd., Tokyo, Japan

Filed Mar. 19, 1974, Ser. No. 452,642

Claims priority, application Japan, Mar. 20, 1973, 48-32025

Int. Cl.² B32B *9/04*, *21/04*

U.S. Cl. 427—411 **10 Claims**

1. In an electrostatic recording material consisting essentially of an electroconductive base sheet having a dielectric layer on which a negatively charged electrostatic image of electrical signal is to be formed, an improvement which is characterized in that said dielectric layer contains at least one of guanidine compounds selected from the group consisting of guanidine, guanidine derivatives, and salts thereof in a proportion of 0.05 to 20 weight percent.

3,930,081

COMPOSITION AND PROCESS FOR DISPLACEMENT PLATING OF ZINC SURFACES

Hiroshi Shinomiya, Yokohama; Kajuro Muro, Komae; Sumio Sakata, Kobe; Shigeki Saida, Tokyo; Seichiro Umehara, Tokyo; Yutaka Tsuchiya, Tokyo; Kunijo Yashiro, and Yoshio Moriya, both of Yokohama, all of Japan, assignors to Oxy Metal Industries Corporation, Warren, Mich.

Filed Nov. 2, 1973, Ser. No. 412,120

Claims priority, application Japan, Nov. 6, 1972, 47-110257; Jan. 11, 1973, 48-5519

Int. Cl.² C23C *3/00*

U.S. Cl. 427—421 **2 Claims**

1. A process for providing a paint base coating on a zinc or zinc alloy surface, comprising contacting said surface with an aqueous acidic composition suitable for the displacement plating of a zinc or zinc alloy surface, consisting essentially of a. a soluble heavy metal compound selected from the group consisting of nickel, cobalt and iron in an amount of 0.1 – 50 g/l expressed as the heavy metal; and

b. a soluble compound of a desensitizing metal selected from the group consisting of antimony, tin, copper, lead, germanium, vanadium, arsenic and tungsten in an amount of at least 0.001 g/l expressed as the metal.

3,930,082

BOOKBINDING TAPE

Gunther J. Waldeck, Chicago, Ill., assignor to A. B. Dick Company, Niles, Ill.

Continuation of Ser. No. 151,863, June 10, 1971, abandoned. This application Mar. 18, 1974, Ser. No. 452,194

Int. Cl.² D03D *11/0*

U.S. Cl. 428—255 **1 Claim**

1. A prefabricated bookbinding tape having a substrate in the form of a film having a thickness within the range of 0.5 to 10 mils formed of a high melting point, high heat transfer value, tough, flexible and scuff resistant high polymeric material, a low temperature heat-reactivatable adhesive layer having a thickness within the range of 7 to 25 mils on one side of the substrate and a non-tacky layer as an overlayer laminated on the adhesive layer to prevent blocking of the adhesive layer, said non-tacky layer being a thin open net fabric through which the adhesive from the adhesive layer can flow when heated to activation temperature, said fabric being formed to contain synthetic resinous fibers selected from the group consisting of polyamide and polyester resins and which are reducible to a flowable state at elevated temperatures corresponding to the heat reactivatable temperature of the adhesive layer, and which when reduced to a flowable state can lend adhesiveness to enhance the binding characteristics of the tape.

3,930,083

KEYBOARD PANEL FOR AN ELECTRIC SWITCH CONTACT

Philip C. Pinkham, Arleta, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed July 26, 1974, Ser. No. 492,170

Int. Cl.² B32B *3/10*; **B29D** *3/00*; **H01H** *1/06*

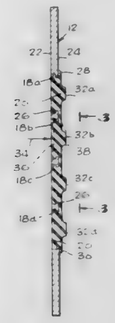
U.S. Cl. 428—67 **9 Claims**

1. A keyboard panel comprising:

a. rigid means having a plurality of apertures and further having first and second spaced-apart surfaces,

b. a lip flange extending from said rigid means radially inwardly into each of said apertures,

c. flexible means carried by said rigid means filling each of said apertures substantially flush with said first surface and covering a selected portion of said second surface, said aperture lip flange retaining said flexible means to said rigid means at each of said apertures, and



d. force transmitting and concentrating means extending from said flexible means at each of said apertures.

3,930,084

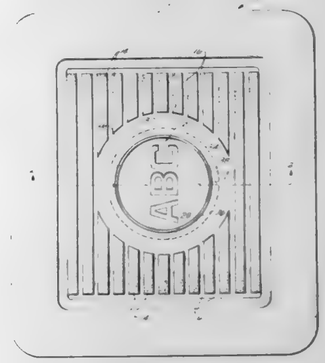
PLASTIC DECORATIVE INLAY IN A FLOOR MAT

Ronald F. Shields, Palos Verdes Estates, Calif., assignor to Royal Industries, Inc., Pasadena, Calif.

Filed Oct. 21, 1974, Ser. No. 516,387

Int. Cl.² B32B *1/04*, *3/10*; **B29D** *3/00*; **E04C** *5/04*

U.S. Cl. 428—67 **16 Claims**



1. An article of manufacture comprising a rubber base having a top surface, a flexible and foldable plastic inlay having a decorative surface, and means for securing the inlay to the rubber base in a releasable, interlocking fit in a fixed position relative to the base with the decorative surface of the inlay being displayed in the top surface of the base, the securing means including a raised section formed in the top surface of the rubber base, a recess formed in the raised section of the base, and a peripheral undercut below the top surface of the base for releasably holding an outer edge portion of the plastic inlay under a projecting portion of the base which overlaps the undercut.

3,930,085

PREPARATION OF THERMAL BARRIERS

Walter T. Pasiuk, Tulsa, Okla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 13, 1975, Ser. No. 549,574
Int. Cl.² B29C *17/00*; B32B *3/12*
U.S. Cl. 428—116 5 Claims

1. A method for preparation of thermal barriers that employ either a honeycomb core having a predetermined cell size with the honeycomb core being constructed of a reinforced plastic selected from glass-phenolic, glass-polyimide, and nylon-phenolic; or a fiber reinforced ceramic foam block core, said fiber reinforced ceramic foam block core formed by molding and curing a ceramic slurry formulation composed of 50 percent by weight of a laminate ceramic powder containing 77.3 percent by weight zircon and 22.7 percent by weight silica, 42 percent by weight of sodium silicate liquid, and 8 percent by weight of alumina-silica ceramic reinforcing fibers, said alumina-silica ceramic reinforcing fibers having a diameter of about 2.8 microns and having random lengths that are retained on 30 mesh size screen, said fibers being prepared for use by mixing for about 3 hours with a water/toluene solution containing 9 parts water and 1 part toluene, followed by decanting the solution, and drying the fibers in air circulating oven at 400°F until dry, said curing of ceramic slurry formulation being accomplished by air curing 16 hours at room temperature, 3 hours at 150°F, 2 hours at 250°F, 2 hours at 350°F, 2 hours at 400°F, said method for preparation of thermal barriers comprising:

i. providing said honeycomb core or said fiber reinforced ceramic foam block core and preparing the surface thereof by cleaning and etching which is accomplished by cleaning and etching in hot 5 percent sodium hydroxide solution of about 200°F and followed by washing with distilled or deionized water;

ii. dipping said honeycomb core or said fiber reinforced ceramic foam block core in a ceramic mix slurry composed of 80 parts by weight of casting mixed oxide ceramic containing 90 percent zircon and 10 silica, 15 parts by weight of sodium silicate liquid, and sufficient quantity of water in amount of 5 parts or more to adjust viscosity of ceramic mix to enable a thin uniform coating to be applied during said dipping, repeat said dipping while said honeycomb core or said film reinforced ceramic foam block core is turned over 180° to achieve complete coverage, and then while holding said honeycomb core or said reinforced ceramic foam block core in a horizontal position, tapping said core to remove any excess ceramic mix;

iii. placing said coated honeycomb core or said fiber reinforced ceramic foam block core in a horizontal position or a rigid drying rack and turn 180° every few minutes until said ceramic mix hardens and no more flow is evident and then air drying at room temperature for a minimum of 16 hours;

iv. clamping said air dried, coated honeycomb core or said air dried, coated fiber reinforced ceramic foam block core to drying forms after first applying high heat of 400°–500°F with hot air gun rapidly to any area to be shaped, and then placing said drying form with said clamped, air dried, coated honeycomb core or said clamped, air dried, coated fiber reinforced ceramic foam block core in a hot air circulating oven and curing for 2 hours at 150°F, 2 hours at 250°F, 2 hours at 350°F, and 4 hours at 400°F, and allowing to cool to room temperature;

v. completing a laminating procedure for the top surface to form a front facesheet for said cured, coated honeycomb core or said cured, coated fiber reinforced ceramic foam block core by first wetting the top surface with said ceramic mix slurry, and then applying said ceramic mix slurry to each surface of a quartz fabric and rubbing the slurry into said quartz fabric to impregnate said quartz fabric with said slurry and then wiping the excess slurry off, and subsequently, laying a first ply of the impregnated quartz fabric on the top surface of said cured. coated, honeycomb core or said cured, coated, fiber reinforced ceramic foam block core, and repeating said laminating procedure until at least four piles of impregnated quartz fabric are laid onto form an uncured front facesheet on the thermal barrier assembly;

vi. preparing said thermal barrier assembly for vacuum bag molding and curing said thermal barrier assembly under vacuum for 16 hours at room temperature, then in a hot air circulating oven for 3 hours at 150°F, 2 hours at 250°F, 2 hours at 350°F, 2 hours at 400°F, and then allowing said thermal barrier assembly to cool to room temperature and then removing the thermal barrier assembly; and thereafter,

vii. providing a back facesheet for the rear surface of said thermal barrier assembly which comprises attaching a glass-polyimide laminate to said rear surface with an adhesive selected from a polyimide-film adhesive and a ceramic adhesive.

3,930,086

APERTURED NONWOVEN FABRICS

Carlyle Harmon, Provo, Utah, assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 326,715, Jan. 26, 1973, abandoned, which is a division of Ser. No. 104,174, Jan. 5, 1971, Pat. No. 3,741,724. This application June 12, 1974, Ser. No. 478,668
Int. Cl.² B32B *3/10*; D02G *1/10*
U.S. Cl. 428—131 3 Claims

1. Apertured nonwoven textile fabrics having a predetermined pattern of fabric apertures and fiber bundles created by applied fluid forces comprising crimped, heat-insensitive, water-insoluble polyvinyl alcohol fibers having from about six to about 16 crimps per inch, a wet softening temperature of at least about 110°C., a dry heat softening temperature of at least about 210°C., and an average degree of acetalization of from about 20 mol % to about 35 mol %.

3. An infusion bag adapted to be used in the presence of boiling water and associated steam at a temperature of 100°C. and slightly higher prepared from the apertured nonwoven textile fabric defined in claim 1.

3,930,087

CREASE RESISTANT CELLULOSIC TEXTILE MATERIAL

Harro Petersen, Frankenthal; Klaus Erhardt, Ludwigshafen; Wilhelm Ruemens; Heinz Bille, both of Limburgerhof, and Güenter Reuss, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Dec. 13, 1972, Ser. No. 314,800
Claims priority, application Germany, Dec. 22, 1971, 2163853
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² D06M *13/00*
U.S. Cl. 428—278 1 Claim

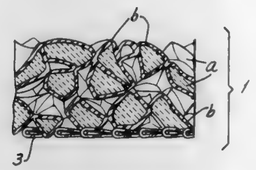
1. A cellulosic textile material which has been impregnated with an agent for imparting crease resist to said textile material, said agent comprising an amino resin prepared by reacting 1 mole of urea with from 3 to 10 moles of formaldehyde in aqueous solution at a pH of from 3 to 0, neutralizing said solution to a pH of from 6 to 7.5 and at a temperature of from 20° to 70°C adding urea and glyoxal in such amounts that the resulting total molar ratio of urea:formaldehyde:glyoxal is 1:1.5 to 2.5:0.1 to 0.5, said resin having been cured in the presence of an acid or potentially acid catalyst at a temperature of from 100° to 210°C.

3,930,088

DECORATIVE MATERIAL

Gurgui N. Constantin; Vasile Luca; Andras Eckardt, and Paraschiv I. Ciulacu, all of Bucharest, Romania, assignors to Intreprinderea "Bucuresti" Pentru Extragerea, Prelucrarea si Montarea Marmurei si Pietrei de Constructii, Bucharest, Romania

Division of Ser. No. 791,405, Jan. 15, 1969, Pat. No. 3,705,830. This application Jan. 27, 1972, Ser. No. 221,467
Claims priority, application Romania, Jan. 20, 1968, 55669.
Int. Cl.² B32B *5/16*, *19/04*
U.S. Cl. 428—143 5 Claims



1. A flexible-foil material for the finishing and decoration of the surface of a building and applicable to a component thereof as an intact veneer, said material comprising a net web of yarn; a plurality of layers of crystalline split stone granules overlying said web with the granules of the least undermost layer penetrating into openings of said web, said layers including an outer layer of irregular granules and being so disposed as to prevent observation of said web from the side of the foil opposite that at which said web is provided; and a binder composed of a colorless synthetic resin selected from the group which consists of acrylic, vinylic and polyester resins coating the granules of said layers exclusively in the form of a thin film and bonding the granules together and to the web without filling of the voids between said granules and between the granules and the web whereby said films are invisible from said side of said foil, said web being composed of natural or artificial textile yarn, glass yarn or coated-metal wire with said web having an open area of at least 70% of its total area, said web having a mesh size being at most 80% of the smallest particle size of the granules, said web being primed with a thermoplastic synthetic resin including finely ground filler of the material of said granules; said granules being hard stone in a particle size range of 0.5 to 5 mm, 1.5 to 3 layers of granules being provided on the web, and an adhesive mortar bonding said foil to said surface of said component and penetrating through the web contacting said corners of said granules.

3,930,089

PROCESSES FOR MAKING COMPOSITE RICE HULL-RESIN ARTICLES, PRODUCTS THEREOF, PROCESSES FOR MAKING RESIN-COATED RICE HULLS AND PRODUCTS THEREOF

Ramesh C. Vasishth, Delta, Canada, assignor to Cor Tech Research Limited, Richmond, Canada

Division of Ser. No. 314,973, Dec. 14, 1972, Pat. No. 3,850,677. This application Apr. 5, 1974, Ser. No. 458,220
Int. Cl.² B32B *5/16*
U.S. Cl. 428—212 43 Claims

1. A process for making a composite article which comprises the steps of

a. providing a composite mass comprising rice hulls to which has been applied a substantially water immiscible, caustic-free, thermosetting phenol formaldehyde resin, said resin being of a type that in its uncured state has a viscosity above 100 Krebb units at 120°F and

b. curing said resin of said mass, thereby forming a composite rice hull-resin article.

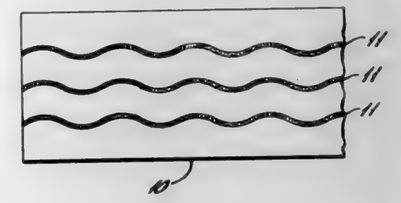
36. A composite article of manufacture comprising rice hulls in a binder of cured, caustic-free, thermosetting phenol formaldehyde resin, said resin being of a type that in its uncured state has a viscosity above 100 Krebb units at 120°F and which, when applied to said rice hulls, is substantially water immiscible.

3,930,090

NON-SLIP WAISTBAND PRODUCT

Roger G. Campbell, Sr.; Richard E. Goff, Jr., both of Barrington, and Thomas L. Staffier, Pawtucket, all of R.I., assignors to Johnson & Johnson, New Brunsiwck, N.J.

Division of Ser. No. 309,382, Nov. 24, 1972, Pat. No. 3,854,978. This application June 28, 1974, Ser. No. 484,192
Int. Cl.² B32B *3/10*
U.S. Cl. 428—196 3 Claims



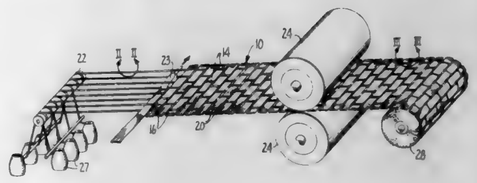
1. A new waistband product comprising; a permeable base fabric having a pattern of an elastomeric silicone compound adhered to one surface thereof, said silicone compound being flexible at temperatures of from −30°F. to +250°F., having a Shore-A hardness of from 20 to 45, a tensile strength of from 250 psi to 500 psi, a percent elongation of from 100 to 500 percent and a linear shrinkage of less than 2 percent whereby the product is dry cleanable, washable, color fast, and has good frictional characteristics.

3,930,091

UNIDIRECTIONAL WEBBING MATERIAL

Albert Lewis, Covina, and Ronald G. Krueger, Azusa, both of Calif., assignors to Kaiser Glass Fiber Corporation, Oakland, Calif.

Division of Ser. No. 288,793, Sept. 13, 1972. This application Jan. 28, 1974, Ser. No. 436,899
Int. Cl.² B32B *17/10*
U.S. Cl. 428—198 6 Claims

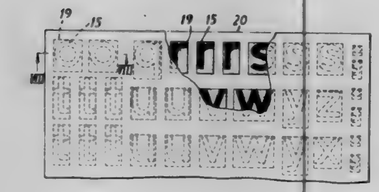


1. A unidirectional distortion resistant and relatively pliant glass fiber webbing material having a low warp to fill weight ratio, said material being comprised of a plurality of multi-filament synthetic fiber warp strands spaced from one another by about one-half inch and coated with a uniform blockable coating having a thickness of 0.002 to 0.004 inches, said coating being thermoplastic and selected from the group consisting of vinyl chloride, vinyl acetate and vinyl pyrrolidene polymers; and a plurality of glass fiber fill elements woven in intersecting crosswise relationship to said warp strands in a fill to warp weight ratio of 90% or more, said fill elements comprising weft bundles of glass fiber rovings composed of uncoated fine glass fiber fill elements and being bonded to said warp strands at their areas of intersection through the blockable coating on the warp strands.

3,930,092
PRINTING CHARACTERS FOR USE IN TRANSFER PRINTING PROCESSES

Alec Shapiro, London, England, assignor to Adhesive Materials Limited, London, England

Continuation-in-part of Ser. No. 74,301, Sept. 22, 1970, abandoned. This application Sept. 18, 1972, Ser. No. 289,878
Claims priority, application United Kingdom, Sept. 24, 1969, 47117/69
Int. Cl.² B32B *3/00*
U.S. Cl. 428—204 2 Claims



1. For use in a transfer printing process in which printing characters formed on one support surface are transferred individually from that surface to another support surface, comprising a translucent sheet, a first printed layer on the sheet of a first marking material, said layer consisting of printing characters, a second printed layer on the sheet of a second marking material consisting of rectangular printed areas sandwiching respective printing characters of the first layer between the sheet and said second layer and an additional layer of pressure sensitive adhesive which sandwiches between itself and the sheet the layers of the first and second marking materials, each character of the first layer being located in relation to the associated rectangular area of the second layer in the same known relationship with respect to said area as the same character of solid type mounted on the platform of a type body used in a type setting process bears with respect to the area of said platform, the bonding forces between the said first and second printed layers being greater than the bonding forces between said first layer and the sheet and the bonding forces between the additional layer and the second printed layer being greater than the bonding forces between the second printed layer and the sheet, whereby application of pressure to the side of the translucent sheet remote from said layers of marking material and said adhesive layer when the sheet is disposed with said layers of marking material and said adhesive layer facing a further support surface to which said additional layer of pressure sensitive adhesive can be bonded, effects transfer to the further support surface of the first and second layers forming respectively the printing character and the rectangular area within which the printing character is located so that after transfer of a first printing character and its associated rectangular area of said second layer from the sheet to the further support surface, a second printing character can be transferred to the second support surface together with its associated rectangular area of said second layer so that the rectangular areas associated with said first and said second printing characters are juxtaposed in edge to edge relationship to provide printed intelligence in which the printing characters are spaced from one another in a manner corresponding with the spacing of similar characters when printed by a type setting process.

3,930,093
BISMUTH-CONTAINING SILVER CONDUCTOR COMPOSITIONS

Oliver Alton Short, Luton, England, assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

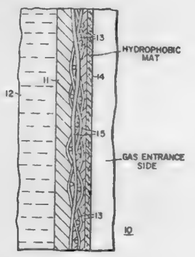
Division of Ser. No. 429,078, Dec. 28, 1973, Pat. No. 3,876,433. This application Feb. 7, 1975, Ser. No. 547,962
Int. Cl.² B32B *3/14, 15/04*
U.S. Cl. 428—208 4 Claims

1. A ceramic dielectric substrate having in adherent relationship therewith a conductive pattern of a composition comprising finely divided silver, inorganic binder, and bismuth, as either finely divided elemental bismuth powder or finely divided Ag/Bi coprecipitate powder, the amount of bismuth being an amount effective to increase the solder leach resistance of conductors thereof.

3,930,094
HYDROPHOBIC MATS FOR GAS DIFFUSION ELECTRODES

Ronald N. Sampson, Murrysville, and Jacob Chottiner, McKeesport, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 285,164, Aug. 31, 1972, Pat. No. 3,799,811. This application Nov. 9, 1973, Ser. No. 414,466
Int. Cl.² B32B *5/16*; H01M *4/06*
U.S. Cl. 428—240 5 Claims



1. A non-wettable, air permeable, resilient, bondable, low melt flow hydrophobic mat, said mat being capable of bonding without melt flow while retaining hydrophobic and air permeability properties, the mat having a heat and compression resistant structure comprising about 15 to about 85 percent of unmelted, pressed, interlocked, fibrillated strands, about 0.5–4000 microns long, and about 15 to about 85 percent of unmelted irregular shaped particles, about 0.05–400 microns in diameter, both the strands and particles consisting of very high molecular weight polyethylene having a weight average molecular weight between 1,750,000 and about 5,000,000 and a melt flow index of up to about 0.02; said resilient mat having an open strand matrix containing the irregular shaped particles.

3,930,095
COMPOSITE OF RUBBER BONDED TO GLASS FIBERS

Gerard E. van Gils, Tallmadge, and Edward F. Kalafus, Akron, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

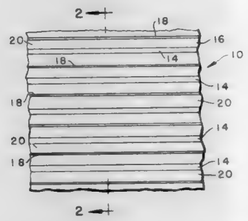
Filed July 19, 1973, Ser. No. 380,939
Int. Cl.² B29H *9/02*; B32B *17/04, 25/02*
U.S. Cl. 428—251 10 Claims

1. A bonded composite material comprising a glass fiber reinforcing element embedded in a vulcanized rubber, said element containing from about 10 to 40% by weight (dry) based on the weight of said element of a heat cured adhesive composition comprising essentially 100 parts by weight of a rubbery vinyl pyridine copolymer, from about 2 to 28 parts by weight of trimethylol phenol and from about 1.25 to 24 parts by weight of at least one water soluble thermoplastic and non-heat hardenable resorcinol compound selected from the group consisting of resorcinol and a resorcinol-formaldehyde novolak and said composition forming a bond between said element and said rubber, said composition coating and at least substantially totally impregnating said element.

3,930,096
COMPOSITE POROUS FABRIC-IMPERVIOUS FILM ARTICLE

Michael W. Gilpatrick, Chesnee, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 15, 1974, Ser. No. 460,983
Int. Cl.² F16K *15/00*; B32B *3/00*
U.S. Cl. 428—255 1 Claim



1. A novel fabric construction comprising: a first layer of porous fabric permeable material and a second layer of substantially impervious film material being heat sealed to said first layer at a plurality of elongated positions to said first layer, said layers of material being unconnected between said plurality of elongated spaced heat sealed positions, said second layer of material being severed between said heat sealed positions to provide a pair of contiguous elongated flap members.

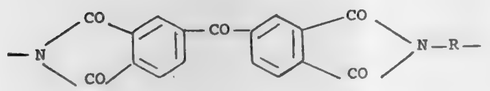
3,930,097
NOVEL COMPOSITIONS AND PROCESS

Louis M. Alberino, Cheshire; William J. Farrissey, Jr., Northford, and James S. Rose, Guilford, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

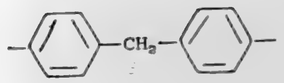
Continuation-in-part of Ser. No. 333,384, Feb. 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 317,957, Dec. 26, 1972, abandoned, which is a continuation-n-part of Ser. No. 124,958, March 16, 1971, Pat. No. 3,708,458, which is a continuation-in-part of Ser. No. 75,667, Sept. 25, 1970, abandoned. This application Aug. 21, 1974, Ser. No. 499,137The portion of the term of this patent subsequent to Dec. 25, 1990, has been disclaimed.
Int. Cl.² C08G *20/32*
U.S. Cl. 428—260 23 Claims

1. A heat resistant, reinforced composite comprising, in combination,

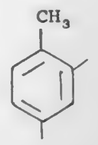
i. from about 21.5 percent by weight to about 85 percent by weight of a copolyimide consisting essentially of the recurring unit



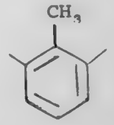
wherein from 10 to 90 percent of said recurring units are those in which R represents



and the remainder of said units are those in which R represents a member selected from the group consisting of



and



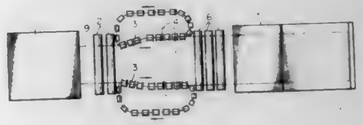
and mixtures thereof; and

ii. from about 15 percent by weight to about 78.5 percent by weight of a reinforcing material.

3,930,098
METHOD OF MOLDING FIBER REINFORCED PLASTIC FLAT PLATES

Kunio Araki; Takashi Sasaki; Yuko Kasahara; Yoshisada Yamashita; Keiichi Yotumoto, all of Takasaki; Hiromi Sunaga, Isezaki; Kiyoshi Tabei, Fujisawa; Kazuo Goto, Takasaki; Kunio Tajiri, Tokyo, and Hirokazu Kittaka, Sagamihara, all of Japan, assignors to Nitto Boseki Co., Ltd., Fukushima and Japan Atomic Energy Research Institute, Tokyo, both of, Japan

Filed May 21, 1973, Ser. No. 362,306
Claims priority, application Japan, May 24, 1972, 47-050791
Int. Cl.² B29H *5/01*
U.S. Cl. 428—280 17 Claims



1. A process for continuously preparing a fiber reinforced plastic (FRP) flat plate having no warps, comprising:

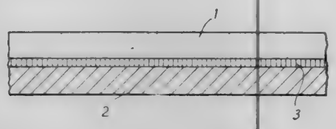
covering both the top and bottom surface of a continuous FRP flat plate molding material with film-like sheetings; continuously transporting the covered material in the lengthwise direction;

irradiating the covered material as it is being transported by means of an ionizing radiation until said molding material is cured, said ionizing radiation being β-rays, electron beam, or mixtures thereof, wherein the dose rate is about 0.01 – 20 Mrad/sec with a total dose of about 0.1 – 50 Mrad;

applying tensions to the film-like sheeting covering the FRP molding material in both the lengthwise and the widthwise directions before and in the course of the irradiation, said tensions being in a degree sufficient to press and hold the molding material so as to maintain the thickness thereof uniform and the surfaces thereof smooth before and in the course of radiation; and

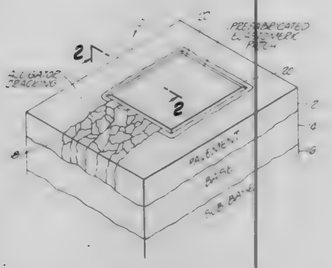
removing the film-like sheetings from the cured FRP molding material.

3,930,099
PRESSURE-SENSITIVE TRANSFER ELEMENTS
Leslie Gregson, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Apr. 22, 1974, Ser. No. 463,125
Int. Cl.² B32B *27/08, 27/30;* **B41M** *5/02*
U.S. Cl. 428—315 **13 Claims**



1. A pressure-sensitive transfer element comprising a polymeric film substrate having two surfaces; a transfer composition comprising a microporous thermoplastic polymeric sponge layer containing a pressure-releasable ink; and an intermediate anchor coating adhered to one of said surfaces and to said sponge layer to bond the transfer composition to said film substrate, wherein said anchor coating comprises a cross-linked acrylic or methacrylic acid or esters thereof resin.
8. A method of producing a pressure-sensitive transfer element comprising coating a surface of a polymeric film substrate with a solution or dispersion of a cross-linkable acrylic or methacrylic resin composition in a first volatile vehicle, heating the coated film to evaporate the first volatile vehicle from, and to effect cross-linking of, the resin composition, depositing on the cross-linked resin coating a solution or dispersion of a thermoplastic polymeric material in a second volatile vehicle, said solution or dispersion containing a pressure-releasable ink, and evaporating the second volatile vehicle to form, from the thermoplastic polymeric material, a microporous sponge layer bonded to the cross-linked coating and containing, within the pores of the sponge, the pressure-releasable ink.

3,930,100
ELASTOMERIC COLD PATCH FOR PAVEMENT REPAIR
Charles H. McDonald, 3130 W. Pierce St., Phoenix, Ariz. 85009
Continuation-in-part of Ser. No. 589,190, Oct. 21, 1966, abandoned. This application July 5, 1973, Ser. No. 376,920
Int. Cl.² B32B *25/02, 25/06, 25/08*
U.S. Cl. 428—323 **17 Claims**



1. An elastomeric cold patch comprising a thin flexible backing sheet; and a layer of elastomeric pavement repair material consisting essentially of 10 through 300 penetration grade asphalt and particulate non-oil resistant asphalt soluble hydrocarbon rubber that have been mixed together in a ratio of about 2 to about 3 parts asphalt to about 1 part rubber by weight at a temperature of from 300°F to about 500°F to form a hot jellied composition from which the layer is prepared; said flexible backing sheet secured to the under side of said layer wherein the layer is impregnated with aggregate.
11. An elastomeric cold patch comprising a thin flexible backing sheet; and a layer of elastomeric pavement repair material consisting essentially of 10 through 300 penetration grade asphalt and particulate non-oil resistant asphalt soluble hydrocarbon rubber that have been mixed together in a ratio of about 2 to about 3 parts asphalt to about 1 part rubber by weight at a temperature of from 300°F to about 500°F to form a hot jellied composition from which the layer is prepared; said flexible backing sheet secured to the under side of said layer wherein the upper side of the layer has an aggregate dressing.

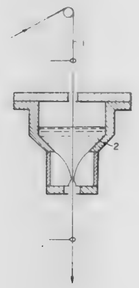
3,930,101
INORGANIC PIGMENT-LOADED POLYMERIC MICROCAPSULAR SYSTEM
David N. Vincent, Glenview, Ill., assignor to Champion International Corporation, New York, N.Y.
Division of Ser. No. 290,807, Sept. 21, 1972, Pat. No. 3,839,704. This application June 3, 1974, Ser. No. 475,809
Int. Cl.² B41M *5/00, 5/12*
U.S. Cl. 428—326 **21 Claims**

1. A coated paper sheet having improved opacity, said sheet comprising a cellulosic web coated with a coating composition, said coating composition comprising opacifying pigment particles consisting essentially of discrete, substantially spherical microcapsules, said microcapsules having a solid, polymeric shell and a solid, polymeric core, said polymeric core having discrete, inorganic pigment particles dispersed therein, said polymeric shell and said polymeric core being formed of different polymeric materials.
2. A record sheet which comprises a substrate having a coating on a surface thereof, which coating comprises pressure-rupturable, image-forming microcapsules and microcapsular load-bearing agents, said load-bearing agents consisting essentially of discrete, substantially spherical, non-pressure-rupturable microcapsules having a solid, polymeric shell and a solid, polymeric core. said polymeric core containing inorganic pigment particles dispersed therein, said load-bearing agents having an average diameter greater than that of said image-forming microcapsules and at least as great as the thickness of said coating.

3,930,102
ADHESIVE SHEETS AND WEBS AND PROCESS FOR THEIR MANUFACTURE
Heinz Muller, Hamburg, and Bodo Szonn, Pinneberg, both of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Germany
Filed Apr. 11, 1974, Ser. No. 460,246
Claims priority, application Germany, Apr. 19, 1973, 2320197
Int. Cl.² C09J *7/02;* **B32B** *27/40*
U.S. Cl. 428—354 **6 Claims**

1. A self-adhesive web or sheet material, which comprises a base sheet which is laminated with a polyurethane-based, self-adhesive coat, said coat having been produced by heating a mixture comprising
74 to 84 parts by weight of a branched polyether having terminal hydroxyl groups produced from propylene oxide and trimethylol propane, with a mean molecular weight of about 3000 and a hydroxyl number of about 56;
17.8 to 19 parts by weight of an aliphatic diisocyanate with an average of about 36 carbon atoms, an equivalent weight of about 300, and an isocyanate content of about 14%; and
0.3 to 0.7 parts by weight of an organometallic catalyst.

3,930,103
LIGHT TRANSMITTING FIBERS
Kazuya Chimura; Shunichi Takashima; Ryuichi Nakazono; Masao Kawashima; Hiroyuki Ota, all of Ohtake; Takashi Kaneko, Tokyo, and Kenichi Sakunaga, Ohtake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
Filed June 19, 1974, Ser. No. 480,860
Claims priority, application Japan, June 21, 1973, 48-70125
Int. Cl.² G02B *1/04, 5/16;* **B32B** *27/02, 27/28*
U.S. Cl. 428—361 **9 Claims**

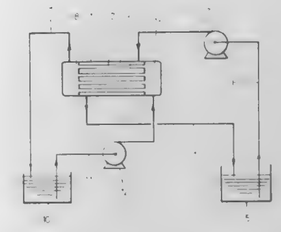


1. Light transmitting fibers having core-sheath structure, which comprises a polymer mainly composed of methyl methacrylate containing at least 60 mol % of methyl methacrylate as a core component and a vinylidene fluoride-tetrafluoroethylene copolymer containing 60 to 80 mol % of vinylidene fluoride as a sheath component.
8. A method for producing light transmitting fibers which comprises composite spinning a polymer mainly composed of methyl methacrylate containing at least 60 mol % of methyl methacrylate as a core component and a vinylidene fluoride-tetrafluoroethylene copolymer containing 60 to 80 mol % of vinylidene fluoride and stretching the resultant filaments to 1.2 to 2.0 times the original length.

3,930,104
FLAME-RESISTANT POLYOLEFIN USED AS INSULATOR FOR ELECTRICAL CONDUCTORS
Burton Thornley MacKenzie, Jr., Monroe, and Edward Vincent Wilkus, Trumbull, both of Conn., assignors to General Electric Company, New York, N.Y.
Filed Oct. 21, 1974, Ser. No. 516,468
Int. Cl.² C08L *23/26;* **H01B** *3/18, 17/62*
U.S. Cl. 428—379 **6 Claims**

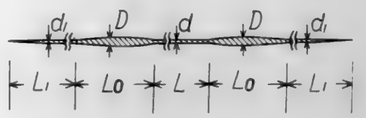
1. An insulated electrical conductor including a metallic element having thereabout an insulation of flame-resistant polyolefin compound comprising the combination of phosphorylated novolak phenol-formaldehyde and triallyl cyanurate.
2. The insulated electrical conductor of claim **1**, wherein the polyolefin compound of the insulation comprises about 5 to about 10 parts by weight of phosphorylated novolak phenol-formaldehyde and about 0.5 to about 5 parts by weight of triallyl cyanurate per 100 parts by weight of the polyolefin.

3,930,105
HOLLOW FIBRES
Gilbert Christen, Lyon; Bernard Favre, Ecully; Xavier Marze, Lyon; Michel Salmon, Mions, and Rene Thuillier, Morance, all of France, assignors to Rhone-Poulenc, S.A., Paris, France
Filed Sept. 7, 1973, Ser. No. 395,155
Claims priority, application France, Sept. 12, 1972, 72.32285
Int. Cl.² B05D *3/00;* **D02G** *3/22*
U.S. Cl. 428—398 **8 Claims**



1. A skinless hollow fibre possessing a continuous longitudinally extending channel free from macromolecular material, said fibre consisting essentially of a copolymer of acrylonitrile and olefinically unsaturated comonomer containing an optionally salified sulphonic acid group, the proportion of optionally salified sulphonic acid groups in said copolymer being 1 and 50% (by number) of the monomer units and possessing micropores of average diameter less than about 100 A, between 40 and 80% of walls of the fibre being empty space, said fibre possessing zero salt rejection, measured under a pressure of 2 bars for an aqueous solution containing 10 g/l of sodium chloride.

3,930,106
ANIMAL HAIR-LIKE SYNTHETIC FIBER
Hiromichi Mihara; Yuzuru Yajima, and Yadenji Ide, all of Takasago, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Oct. 15, 1973, Ser. No. 406,286
Claims priority, application Japan, Oct. 16, 1972, 47-103885
Int. Cl.² D03D *27/00;* **D02G** *3/00*
U.S. Cl. 428—399 **3 Claims**



1. An animal hair-like synthetic fiber which comprises a thermoplastic synthetic fiber having one or more narrow parts in middle part thereof and one or both sharpened end parts, and satisfying the following relationship:

$$L/D > 30,\ L_1/D > 30,\ d < 0.7D \text{ and } d_1 < 0.7D$$

wherein D is a diameter of the biggest part of the fiber, d is an average relative diameter of the narrow part, d_1 is an average relative diameter of the sharpened end part, L is a length of the narrow part and L_1 is a length of the tapered part of the sharpended end part, said thermoplastic synthetic fiber being at least one member selected from the group consisting of polyacrylonitriles, copolymers of acrylonitrile and vinyl chlo-

ride, polyamides, polyesters, polyolefins, polyvinyl chlorides and a blend of polyvinyl chloride and polyvinyl alcohol.

3,930,107

PELLETIZED UNVULCANIZED RUBBERY POLYMER

Yasuyuki Yaeda; Shigeki Hayashi, and Kazuo Kimura, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Company Limited, Tokyo, Japan

Filed Dec. 20, 1973, Ser. No. 426,499
Claims priority, application Japan, Dec. 30, 1972, 48-2352
Int. Cl.² B32B *25/16*
U.S. Cl. 428—407 **9 Claims**

1. Pelletized unvulcanized rubbery polymer comprising pellet cores of unvulcanized rubbery polymer and a coating layer formed thereon, said coating layer consisting of a 1,2-polybutadiene having a 1,2-addition unit content of not less than 70%, crystallinity of not less than 15%, and intrinsic viscosity [η], as measured in toluene at 30°C, of not less than 0.7 dl/g.

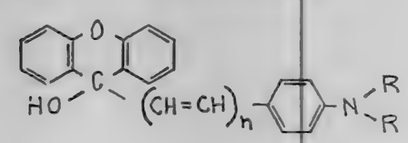
3,930,108

9-(4-AMINOPHENYL POLYMETHINE)-9-XANTHENOL COMPOUNDS AND PRESSURE SENSITIVE SYSTEM THEREWITH

Derek J. Alsop, North Tonawanda, N.Y., assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.

Filed Nov. 21, 1974, Ser. No. 525,988
Int. Cl.² C07D *311/90;* **C08K** *5/15*
U.S. Cl. 428—411 **10 Claims**

1. A 9-(4-aminophenyl polymethine)-9-xanthenol compound having the following structural formula:



wherein each R represents either a hydrogen atom or a lower alkyl group having from one to five carbon atoms and wherein *n* is an integer from 1 to 3.

7. In a pressure-sensitive recording system comprising a layer of microcapsules containing a substantially colorless color precursor compound and a layer of an electron-acceptor material, the improvement which comprises utilizing, as said color precursor compound, a xanthenol compound as set forth in claim 1.

3,930,109

PROCESS FOR THE MANUFACTURE OF METALLIZED SHAPED BODIES OF MACROMOLECULAR MATERIAL

Wilhelm Brandt, Wertach, and Irmgard Bindrum, Wiesbaden-Biebrich, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Division of Ser. No. 231,825, March 6, 1972. This application Aug. 2, 1973, Ser. No. 385,148
Claims priority, application Germany, Mar. 9, 1971, 2111136
Int. Cl.² C23C *3/02*
U.S. Cl. 428—422 **3 Claims**



1. A self-supporting film of polytetrafluoroethylene having a noble metal salt dispersed therein and a metal coating selected from the group consisting of copper and nickel on the surface of said film.

3,930,110

MANUFACTURE OF MULTILAYER PANELS USING POLYISOCYANATE: FORMALDEHYDE BINDER SYSTEM

Philip D. Shoemaker, Baker, and Hobert O. McQueary, Sweet Home, both of Oreg., assignors to Ellingson Timber Co., Baker, Oreg.

Filed Feb. 11, 1974, Ser. No. 441,278. The portion of the term of this patent subsequent to Nov. 11, 1992, has been disclaimed.
Int. Cl.² B32B *31/02;* **B29J** *5/00*
U.S. Cl. 428—424 **5 Claims**

1. A multilayer structure comprising a layer formed by providing a mass of comminuted cellulosic material,
coating said mass with an organic polyisocyanate having at least two active isocyanate groups per molecule and with an aqueous formaldehyde solution, and
consolidating the coated mass containing polyisocyanate, formaldehyde, and water by applying pressure and heat for a time sufficient to bond the material together, the ratio of polyisocyanate to formaldehyde by weight being within the range of 2:3 to 5:1.

ELECTRICAL

3,930,111

ELECTRICAL GROUNDING DEVICE

Albert P. Sheelor, La Verne, Calif., assignor to Christian J. Reimuller, Cherry Valley, Calif.

Filed Mar. 24, 1975, Ser. No. 561,210
Int. Cl.² H01R *3/06*
U.S. Cl. 174—6 **8 Claims**



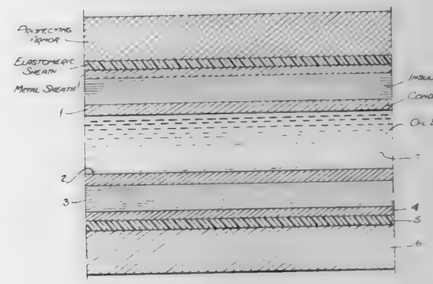
1. An electrical grounding device for connecting the neutral ground wire of an electrical service line to the soil, comprising:
a metal pipe having openings at both ends thereof and filled with moisture-absorbing salts that are soluble in water to form a highly conductive electrolyte;
said pipe being buried in the ground with one end thereof protruding above the surface of the ground so that the openings in that end are exposed to the atmosphere, thereby allowing air to flow freely into and out of the pipe;
said moisture-absorbing salts taking moisture out of the air, which dissolves some of said salts and runs out of said openings at the bottom end of the pipe, permeating the soil to make a good electrical contact between the pipe and the soil;
means at the bottom end of said pipe for retaining said salts in said pipe;
an end cap telescopically engaged with the top end of said pipe, said pipe and end cap each having pairs of horizontally aligned holes formed in opposite sides thereof, the holes in said cap registering with the corresponding holes in the pipe;
fastening means passing through said registered holes, said fastening means terminating in threaded members projecting from said end cap on one side thereof;
a bridge member having holes at opposite ends thereof through which said threaded members pass; and
nuts screwed onto said threaded members and bearing against the outer side of said bridge member;
the neutral ground wire of the electrical service line being clamped between said bridge member and said end cap, and said fastening means serving both to lock said cap to said pipe and to secure said grounding wire to the device in a solid mechanical and electrical connection.

3,930,112

MIXED FLUID IMPREGNANT FOR OIL FILLED ELECTRIC CABLES

Franco Pasini, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Mar. 17, 1975, Ser. No. 558,834
Claims priority, application Italy, Mar. 25, 1974, 49591/74
Int. Cl.² H01B *9/06*
U.S. Cl. 174—25 C **8 Claims**



1. A liquid-filled underwater, electric power cable comprising a conductor surrounded by insulation, said insulation being impregnated with a mixture of a first liquid having a predetermined viscosity, a predetermined boiling point, a specific gravity less than that of water, low dielectric losses and a low dielectric constant with a second liquid miscible with said first liquid, a viscosity at least as low as that of said first liquid, a boiling point at least as high as 150°C, a specific gravity higher than that of water and dielectric losses and a dielectric constant respectively substantially at least as low as said dielectric losses and said dielectric constant of said first liquid, said first liquid being at least 50 percent by weight of the mixture and the weight of the second liquid being at least equal to the amount thereof required to provide a specific gravity of the mixture substantially equal to the specific gravity of water.

3,930,113

HIGH VOLTAGE OVERHEAD TRANSMISSION LINE CONDUCTOR WITH REDUCED WET WEATHER CORONA NOISE AND CORONA LOSSES

Inge Johansen, Heimdal, Norway, and David W. Tong, Cambridge, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

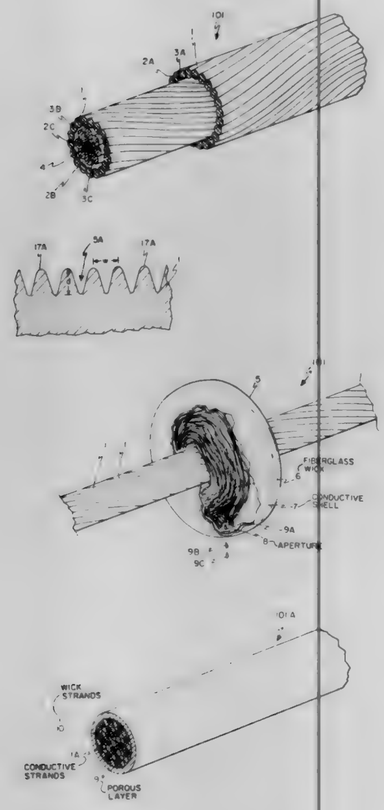
Filed June 10, 1974, Ser. No. 477,560
Int. Cl.² H02G *7/00;* **H01B** *5/00*
U.S. Cl. 174—40 R **23 Claims**

1. An electrical conductor for use in very high voltage or ultra-high voltage systems, that comprises: a plurality of conductive strands bound together in a plurality of layers, the outer surface of the conductor being moisture absorbent so that moisture is drawn by capillary action from said outer surface and toward the longitudinal axis of the conductor.

14. An electrical conductor for use as an overhead transmission line in a very-high voltage or an ultra-high voltage system, that comprises, an electrical conductor having disposed on its surface a layer of water-absorbent material that effects transport by capillary action of any water at said surface toward the longitudinal axis of the conductor, and means electrically shielding the water absorbent layer.

22. A method of reducing corona discharge from outdoor high voltage conductors of a transmission line during conditions of rain and fog, that comprises, drawing water drops that form on the outer surface of each conductor of the transmis-

sion line from said outer surface toward the interior of the conductor, transporting the water longitudinally within the



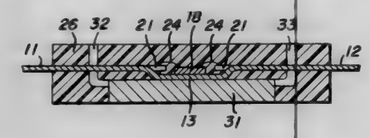
conductor to a drainage site, and draining the water from the conductor under conditions of reduced electric field.

3,930,114

INTEGRATED CIRCUIT PACKAGE UTILIZING NOVEL HEAT SINK STRUCTURE

Robin H. Hodge, Menlo Park, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 17, 1975, Ser. No. 558,643
Int. Cl.² H05R *9/02*
U.S. Cl. 174—52 FP **2 Claims**



1. A plastic encapsulated integrated circuit package comprising:

a lead frame including a flat die attachment pad having an IC die fixedly attached to one surface of said pad,

a pair of pad support bars, one extending from each end of said pad out to the opposite ends of said encapsulated package,

a metallic heat sink member fixedly attached to the other surface of said flat die attachment pad with its ends facing the ends of the package for conducting heat away from said IC die and die attachment pad in use,

a plurality of connector leads spaced from said die attachment pad and elevated relative to said one surface of said die attachment pad, connector wires attached between contact pads on said die and associated connector lead ends, said connector leads extending out from said circuit package,

a plastic molding encapsulating said die, said die attachment pad, said connector wires, said associated connector lead ends, and said heat sink member, and

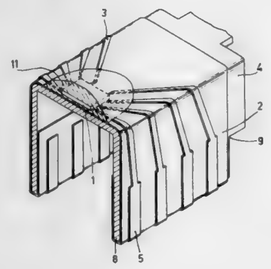
said heat sink member comprising a base portion having an external surface level with and exposed through one surface of said plastic molding, said base portion having two pairs of spring-like fingers extending upwardly from the upper surface thereof, one pair at either end of said heat sink member, each pair straddling the pad support bar passing from the associated end of the die attachment pad to the end of the package, the ends of said fingers extending through said plastic molding and having an external surface level with and exposed through the opposite surface of said plastic molding.

3,930,115

ELECTRIC COMPONENT ASSEMBLY COMPRISING INSULATING FOIL BEARING CONDUCTOR TRACKS

Edward Uden, Tangstedt, and Bengi Gotze, Hamburg, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 232,865, March 8, 1972, abandoned. This application Mar. 11, 1974, Ser. No. 449,850
Claims priority, application Germany, May 19, 1971, 2124887
Int. Cl.² H05K *1/18*
U.S. Cl. 174—52 FP **8 Claims**



7. A sub-assembly for incorporating an electric component with a connection fitting, comprising,

a. a supporting member having a substantially U-shaped profile comprising a base portion and limb portions, said limb portions comprising connection regions and inner and outer surface and being adapted to permit said sub-assembly to be incorporated with a connection fitting, said base portion comprising at least one of a recess and a perforated region adapted to receive said electric component thereat;

b. a flexible, electrically insulating foil secured on said supporting member and having at least a portion thereof disposed at at least one of said inner and outer surfaces of said limb portions; and

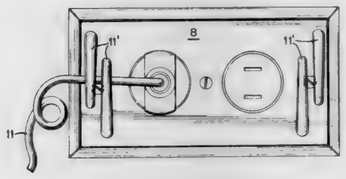
c. conductor tracks located on said foil and extending over said base portion, said tracks being adapted to be electrically connected to said electric component and comprising connection zones disposed at respective said connection regions of said limb portions, whereby said connection zones are inserted into and contact said connection fitting when said sub-assembly is incorporated with said connection fitting.

3,930,116

ELECTRIC OUTLET FACE PLATES OR COVERS

Theodore W. Richards, 1936 Sloat Blvd., San Francisco, Calif. 94116

Filed Sept. 18, 1973, Ser. No. 398,385
Int. Cl.² H02G *3/14*
U.S. Cl. 174—66 **1 Claim**



1. A one-piece face plate for an electric outlet of a conventional plug and socket type electrical connector, said face plate having at least one opening therein and being adapted to overlie the outlet when said face plate is secured in place thereon with said opening exposing said socket, said face plate having plug and wire retaining means and guiding means formed integrally therewith, said means being positioned between a side of said opening disposed toward an edge of said plate proximate said opening, said means including a pair of substantially L-shaped members arranged in a parallel spaced relation, with each having one end thereof formed integrally with said face plate, said L-shaped members having the free portions thereof extending in opposite directions from their ends and in side by side overlapping relationship to one another, and each being spaced substantially equally from and substantially parallel to the plane of said face plate, said wire underlying said free portions with said plug being retained thereby, a portion of a said wire leading to and adjacent said plug being maintained in substantially parallel relation to the plane of said face plate, and extending outwardly from said plug toward said proximate edge of said plate, the arrangement serving to prevent a direct outward pull on said plug with respect to said plate which would tend to unintentionally disconnect said plug from its cooperating socket, and said plug being prevented from passing between said face plate and said members when said plug is disconnected from its cooperating socket.

3,930,117

VIDEO CAPACITIVE DISC PLAYBACK APPARATUS AND STYLUS WITH DIELECTRIC COATING THEREFOR

Jon Kaufmann Clemens, Skillman, and Richard Claxton Palmer, Blawenburg, both of N.J., assignors to RCA Corporation, New York, N.Y.

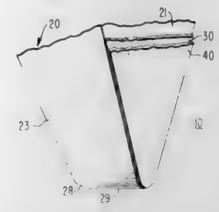
Filed Nov. 14, 1974, Ser. No. 523,311
Int. Cl.² H04N *5/76*
U.S. Cl. 178—6.6 R **10 Claims**

1. A stylus comprising, in combination:

a support element of dielectric material tapering to a tip at one end thereof and having a substantially flat face, said tip having a curved bottom surface of a given length terminating at said face;

a layer of conductive material of a given thickness adherent to said face; and

a coating of dielectric material overlying said conductive layer and having a thickness which is large relative to the thickness of said conductive layer, and which is small relative to said given length of said curved bottom surface of said support element.

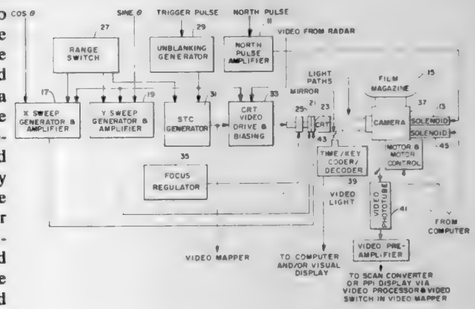


3,930,118

RADAR RECORDER SYSTEM

Richard W. Midland, Arlington Heights; George S. Bayer, Long Grove, and Keith H. Kreiger, Maywood, all of Ill., assignors to General Time Corporation, Thomaston, Conn.

Filed Apr. 24, 1973, Ser. No. 353,985
Int. Cl.² G01S *9/02*; **H04N** *5/88*
U.S. Cl. 178—6.7 R **2 Claims**

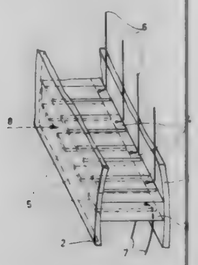


1. A radar recording and video playback system comprising in combination cathode ray tube means for displaying a radar sweep signal, means receiving said radar signal for driving said cathode ray tube, a motion picture camera aligned opposite the face of the cathode ray tube, a film magazine mounted on said camera, undeveloped motion picture film mounted in said magazine for relative movement with respect to said camera, a solenoid means for advancing said undeveloped film in said camera, a frame of which advances each time said radar sweep completes rotation through a 360° angle, the face of said cathode ray tube having a long period phosphor decay substance thereon, said camera having a shutter with a rapid shutter speed for minimizing information loss for each advancement of the film, a coded means including a mirror for directing identification data onto a portion of the undeveloped film frame being exposed, the cathode ray tube having an electron beam which scans the face of said tube for producing a source of light, the motion picture film magazine including therein a developed motion picture film substituted for the undeveloped film, and a video phototube means for directing the light from the electron beam of the cathode ray tube through frames on said developed film in said camera onto said video phototube, whereby said camera has its shutter in a position which so enables the light to pass through the frames, said phototube converting video information on said developed film into a corresponding electrical signal, and means for advancing said developed film in said camera.

3,930,119
FACSIMILE APPARATUS FOR WRITING AND READING MECHANICALLY MOVING DOCUMENTS

Rolf Schmidt, Rott; Klaus Carl, Aachen, both of Germany; Pol Ambroise Ghislain Joseph Gustin, and Raymond Georges Schayes, both of Brussels, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 20, 1974, Ser. No. 507,794
Int. Cl.² H04N *1/24*
U.S. Cl. 178—7.6 **10 Claims**

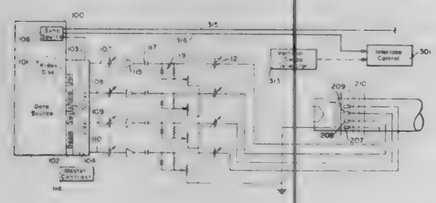


1. Facsimile apparatus using positionally controllable light beams for writing and reading information on mechanically moving documents, said apparatus comprising a pair of polarization filters, an electronically controllable switching mask plate having two major faces and consisting of mixed crystals of lead zirconate and lead titanate doped with lanthanum, said plate being disposed between said polarisation filters, a plurality of aligned electrodes disposed in rows on said plate and means for selectively applying voltage to said electrodes, whereby the light which is controlled by the mask plate scans the document to be read or written.

3,930,120
MULTI-BEAM CATHODE RAY TUBE HAVING EQUALIZED LINE BRIGHTNESS

Bruce W. Keller, Los Angeles; William C. Hoffman, Torrance, and Elvin E. Herman, Pacific Palisades, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 431,200, Jan. 7, 1974, abandoned. This application Mar. 6, 1975, Ser. No. 555,774
Int. Cl.² H04N *5/19*
U.S. Cl. 178—7.7 **9 Claims**



1. A display system having equalized line brightness comprising:

a source of sensor data having said data arranged in a predetermined number of N data lines:

display means for displaying a raster of data thereon having N display beams, positioned relative to said screen and relative to each other so that said N beams define N lines on said display means and form a raster of N lines by painting N lines at a time, said N beams being less than said N lines displayed on said display means:

data select means coupling said source of data to said display means for reading out selected lines of data N lines at a time beginning at a data second line to form a subsequent raster display on said display means;

scanning means coupled to said display means for simultaneously scanning said N beams across said display means in a first dimension;

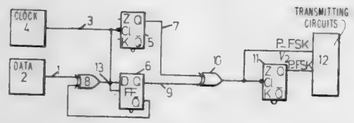
deflecting means coupled to said data select means and to said display means for simultaneously deflecting said N beams in a second dimension for forming a raster by tracing N lines at a time: and

said scanning means and said deflecting means paint a first raster commencing by tracing a first data line from said data select means at a first display line position on said display means by a display beam, and said scanning means paint a second raster commencing tracing a second data line from said select means at a second display line position by said first display beam.

3,930,121
METHOD FOR CONVERTING A BINARY CODED DATA SIGNAL INTO A P-FSK CODED SIGNAL

Odd Mathiesen, Oslo, Norway, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 24, 1974, Ser. No. 436,309
Int. Cl.² H04L *27/12*
U.S. Cl. 178—66 R **6 Claims**



1. An apparatus for converting a binary coded data signal into a pulse frequency modulated code (P-FSK), wherein the frequency of said code is that of a clock signal when the data signal is in a first binary state, and wherein the frequency of said code is half that of said clock signal when said data signal is in a second binary state comprising:

means for providing a binary data signal;

means for providing a clock signal;

means for generating a first binary output signal which changes state at half the frequency of said clock signal when said binary data signal is in said first binary state, said means for generating comprising:

an exclusive OR-gate having first and second inputs, said first input coupled to said data source; and

a delay flip-flop having a first input coupled to the output of said exclusive OR-gate and a second input coupled to said clock signal, the inverted output of said delay flip-flop coupled to the second input of said exclusive OR-gate such that when said binary data signal is in a second binary state, said first binary output signal is in the same state as the output of said delay flip-flop;

means for generating a second binary output signal having a frequency half that of said clock signal; and

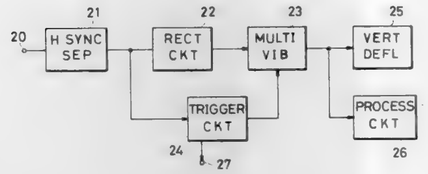
means for combining said first output signal and said second output signal to produce said pulse frequency modulated code.

3,930,122
OSCILLATOR SYNCHRONIZATION CIRCUIT IN A TELEVISION CAMERA

Akiyoshi Morita, Sagamihara, and Tomotada Enami, Tokyo, both of Japan, assignors to Victor Company of Japan, Limited, Japan

Filed Mar. 28, 1974, Ser. No. 455,959
Claims priority, application Japan, Mar. 31, 1973, 48-37175
Int. Cl.² H04L *7/00*; H03B *3/04*
U.S. Cl. 178—69.5 TV **4 Claims**

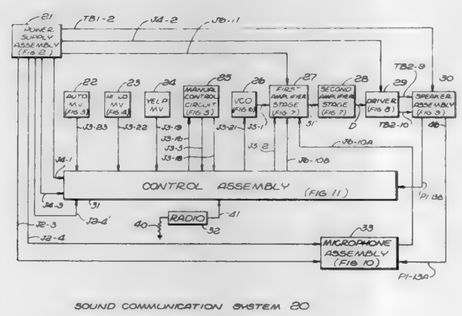
4. An oscillator synchronization circuit according to claim 2 wherein said detecting circuit comprises a circuit for separating a horizontal synchronizing signal from said externally originating synchronizing signal and a circuit for rectifying said horizontal synchronizing signal separated by said separator circuit and for supplying the resulting output DC voltage as a bias to said oscillator.



3,930,123
SOUND COMMUNICATION SYSTEM

Gordon S. Carroll, Costa Mesa, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 410,776, Oct. 29, 1973, Pat. No. 3,873,980. This application Sept. 25, 1974, Ser. No. 509,067
Int. Cl.² G08B *3/10*
U.S. Cl. 179—1 R **4 Claims**



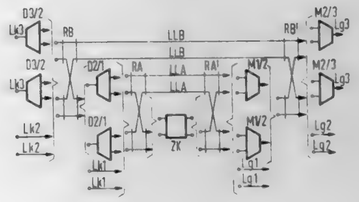
SOUND COMMUNICATION SYSTEM 20

1. A sound communication system comprising: amplifier means having at least first, second and third input leads, and an output lead, said amplifier means being adapted to produce an output signal on said output lead thereof which is directly proportional to the sum of the signals on said first, second and third input leads thereof; alternate means selectively operable to impress a variable audio frequency signal on said amplifier means first input lead; a source having an output lead, said source being adapted to produce audio frequency signals on said output lead thereof; a double-pole, double-throw switch having first and second ganged poles and first and second contacts respectively engageable by said first and second poles; means responsive to engagement of said first pole with said first contact for connecting said source output lead to said amplifier means second input lead; and output means having an input lead connected from said amplifier means output lead for broadcasting audible sound in accordance with the amplitudes and frequencies of the A.C. components in signal appearing on the said output lead of said amplifier means, said output means including a speaker having a negative feedback lead, said second pole and second contact forming a single-pole switch which is connected in series from said negative feedback lead to said amplifier means third input lead.

3,930,124
PCM TIME-DIVISION MULTIPLEX TELECOMMUNICATION NETWORK

Karl-Anton Lutz, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed June 25, 1974, Ser. No. 483,021
Claims priority, application Germany, June 29, 1973, 2333254
Int. Cl.² H04J *3/16*
U.S. Cl. 179—15 AT **1 Claim**



1. In a PCM time division multiplex telecommunication network having a plurality of PCM time division multiplex central offices interconnected by means of time division multiplex lines, wherein on at least one part of the time division multiplex lines PCM superordinate systems are constituted by interleaving, on a time division basis, time periods pertaining to PCM basic systems, and wherein data are transmitted for which all the time periods of a PCM basic system or PCM superordinate system are used for the formation of a single transmission channel, the improvement comprising:

a time division multiplex switching network and at least one pair of space division multiplex switching networks in each central office, said space division networks having corresponding parts on the receive side of said time division network connected to corresponding send side parts through the connection of outputs of the receive side with inputs of the send side,

demultiplexer means fo uninterleaving higher order PCM systems into PCM systems of the next lower order having outputs connected to inputs of receive side parts of the pair of space division multiplex networks, said receive side inputs being connected also to interexchange trunks, multiplexers for interleaving lower order PCM systems into PCM systems of the next higher order having inputs connected to outputs of send side parts of the space division multiplex networks, said send side outputs being connected also to time division multiplex lines for PCM systems of a higher order,

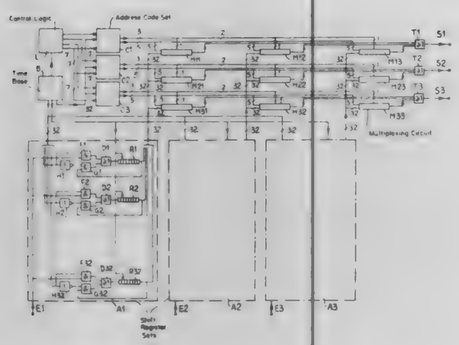
means connecting receive side parts of space division multiplex switching networks not used for the direct connection with the other part of the pair, with respect to the part of the pair of space division networks for through - connecting PCM basic systems, to inputs of the time division network, and with respect to parts of the pair of space division networks for through - connecting higher order PCM systems, to inputs of corresponding ones of said multiplexers,

means connecting inputs of send side parts of said pair of space division networks not used for direct connection with the other part of the pair, with respect to a part for through connecting PCM basic systems, to outputs of said time division network, and with respect to a part for through connecting higher order PCM systems to outputs of corresponding ones of said dimultiplexers.

3,930,125
CONNECTION NETWORK FOR A TIME SWITCHING AUTOMATIC ELECTRONIC EXCHANGE

Jean A. Picandet, Paris, France, assignor to Jeumont-Schneider, Puteaux, France

Filed July 5, 1974, Ser. No. 486,080
Claims priority, application France, July 6, 1973, 73.24841
Int. Cl.² H04Q *11/04*
U.S. Cl. 179—15 AQ **9 Claims**



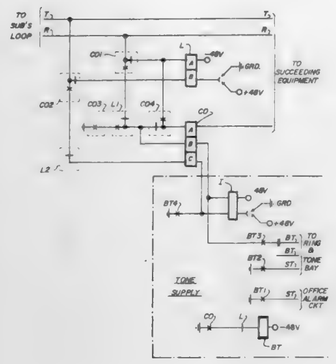
1. A connection network for connecting incoming channels to outgoing channels in an automatic electronic time switching PCM exchange comprising:
- a first set of circulating shift registers for each incoming PCM channel, the number of circulating shift registers in each set equal to the number of time slots in an incoming channel, said first set of circulating shift registers providing a serial bit output,
- a set of multiplexing circuits for each outgoing channel the number of circuits in each set equal in number to the number of incoming channels,
- means for directly connecting the serial bit output from said first set of circulating shift registers to said multiplexing circuits,
- means for connecting said multiplexing circuits to said outgoing channels,
- means for providing address codes to said multiplexing circuits for identifying a circulating shift register within said first set of circulating shift registers for each incoming PCM channel, and
- clock means for shifting said circulating shift registers and for actuating said address code providing means.

3,930,126
TWO RELAY LINE CIRCUIT

John Hugh Green, Milan, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 14, 1974, Ser. No. 497,301
Int. Cl.² H04M *3/16*
U.S. Cl. 179—19 **3 Claims**

1. A line circuit for an automatic telephone system comprising a first and second multiple winding relay, said relays being released during normal conditions, said line circuit including a path for operating said first relay over a first winding responsive to a closed loop condition on a line individual to the line circuit, means for operating said second relay responsive to closure of a path to said line circuit, means for maintaining said second relay operated over a path through contacts of said first relay, means responsive to a lockout condition for releasing said first relay and for maintaining said second relay in an operated condition over a path through said second relay following release of said first relay and restoration of said contacts of said first relay, said second relay operative to test said line for continued closed loop condition after release of said first relay, wherein the path for originally operating said second relay includes two windings of said second relay, and

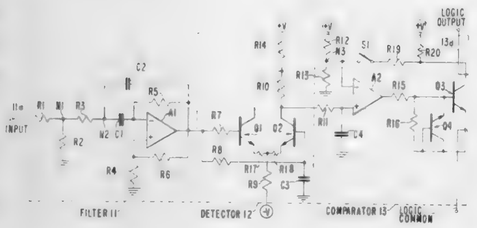


a path for maintaining said second relay operated includes two windings of said second relay in series with the line loop.

3,930,127
TONE DETECTOR

George H. Warren, and Gunnar Hurtig, III, both of San Jose, Calif., assignors to Baldwin Electronics, Inc., Little Rock, Ark.

Filed Jan. 18, 1974, Ser. No. 434,445
Int. Cl.² H04M *1/50*
U.S. Cl. 179—84 VF **13 Claims**

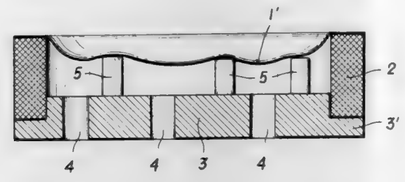


1. A tone detector circuit comprising:
- means for filtering an input signal to produce a first output signal at a first selected frequency, said means for filtering comprising amplifier means including an inverting and a non-inverting input lead and an output lead, first feedback means connecting said output lead to said inverting input lead, second feedback means connecting said output lead to said non-inverting input lead, means connecting said non-inverting input lead to a first reference potential, means for transmitting said input signal to said inverting input lead, and means electrically connecting said means for transmitting to said output lead;
- means for detecting said first output signal to produce a second output signal; and
- means for comparing said second output signal to a reference signal to produce a bilevel output signal, said bilevel output signal having a first level when said first output signal has an amplitude greater than a selected value and said bilevel output signal having a second level when said first output signal has an amplitude less than said selected value.

3,930,128
ELECTRET DIAPHRAGM MICROPHONE WITH MEANS TO CORRUGATE THE DIAPHRAGM WHEN IN AN OVERSTRESSED CONDITION

Werner Fidi, Baden, and Herbert Piribauer, Wiener Neustadt, both of Austria, assignors to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H., Austria

Filed June 12, 1974, Ser. No. 478,735
Claims priority, application Austria, June 26, 1973, 5624/73
Int. Cl.² H04R *19/04*
U.S. Cl. 179—111 R **6 Claims**



1. A condenser microphone, comprising an electrode having a surface, an electret diaphragm at a spaced location from said surface, and means for corrugating said diaphragm in the event said diaphragm becomes overstressed, comprising at least one pin-like projection extending outwardly from said surface in normally spaced relation to said electrode, the space between said pin-like projection and said diaphragm being unimpeded to permit oscillation of said diaphragm in response to normal sound waves.

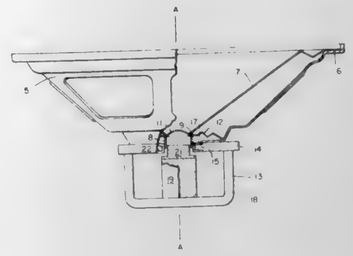
2. A condenser microphone comprising a mount, a first electrode connected to said mount and having an upper surface, and a second electrode in the form of an electretifiable foil diaphragm connected to said mount and having a lower surface facing said upper surface of said electrode and spaced therefrom by a small distance, and means for corrugating said diaphragm in the event said diaphragm becomes overstressed, comprising a plurality of pin-like raised projections projecting from and distributed over said upper surface of said first electrode and having end faces turned to said lower surface of said diaphragm and spaced therefrom by a free distance so that a free space adjacent said diaphragm is provided between said end faces and said diaphragm permitting unimpeded oscillations of the latter in response to normal sound waves.

3,930,129
ELECTRODYNAMIC LOUDSPEAKER WITH BASKET MOUNTING TO POLE PIECE

Hyman Cohen, 3898 Grosvenor Road, South Euclid, Ohio 44118; Paul Vago, 3396 Kildare Road, Cleveland Hts., Ohio 44118, and Davorin Skender, 790 Babbitt Road, Euclid, Ohio 44123

Filed May 14, 1974, Ser. No. 469,879
Int. Cl.² H04R *9/02*
U.S. Cl. 179—115.5 R **2 Claims**

1. An electrical loudspeaker comprising:
- a housing having a circular opening therein,
- diaphragm means secured within said housing for generating sound waves,
- magnetic means for creating a constant magnetic field, said magnetic means including an aperture therein,
- electromagnetic means secured to said diaphragm means, for vibrating said diaphragm means,
- flange means, formed integrally with said housing about said circular opening in said housing and extending through said aperture in said magnetic means, and
- flange receiving means within said magnetic means for retaining said flange means, said magnetic means including a plate in which said aperture is formed and an annular recess concentric about said aperture on one side of said plate,
- said housing including an annular shoulder concentric about said circular opening and adapted to be received in said annular recess to center said housing with respect to said plate



- said flange receiving means including an annular groove concentric about said aperture on the other side of said plate, said flange means being crimped into said annular groove and retained thereby.

3,930,130
CARBON FIBER STRENGTHENED SPEAKER CONE

Samuel M. Boszor, Parma, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

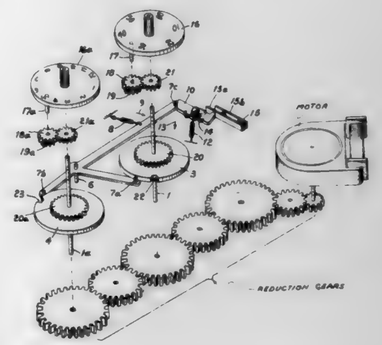
Filed Sept. 21, 1973, Ser. No. 399,319
Int. Cl.² H04R *7/26*
U.S. Cl. 179—181 R **11 Claims**

1. A loudspeaker diaphragm, said diaphragm consisting essentially of a carbonaceous fibrous web of carbon fibers and a resin, said carbon fibers representing between about 30% and about 70% by volume of said diaphragm, the balance being said resin, said diaphragm having a Young's modulus between about 3 million psi and about 30 million psi and a density between about 0.8 gm/cm³ and about 1.7 gm/cm³ so as to provide a sonic velocity for said diaphragm between about 2.5×10^5 cm/sec and about 11×10^5 cm/sec.

3,930,131
TIMER FOR CONTROLLING THE OPERATION OF ELECTRICAL DEVICES

Rintaro Nishina, Yonezawa, Japan, assignor to Tamura Electric Works, Ltd., Tokyo, Japan

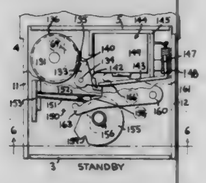
Filed Feb. 14, 1974, Ser. No. 442,619
Int. Cl.² H01H *43/00*; G04F *3/02*
U.S. Cl. 200—35 R **9 Claims**



1. A timer comprising
- a. first shaft means for intermittent rotation at a relatively high speed;

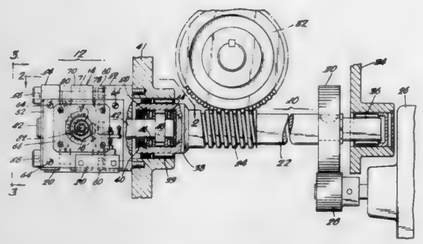
b. second shaft means for intermittent rotation at a relatively low speed;
c. first and second grooved disc means mounted on said first and second shaft means respectively for free rotation thereon, each of said disc means being provided with a groove on its periphery;
d. pivotally mounted lever means including a lever and a pair of pins thereon for respectively engaging with said pins the peripheries of said first and second disc means;
e. a switch arranged to be operated by said lever when said pair of pins engage said grooves;
f. first and second time setting disc means associated respectively with said first and second shaft means, for being rotatably displaced by an external force, said displacement being proportional to a time setting;
g. first and second planetary gear mechanism means, the first of which is connected between said first grooved disc means and said first time setting disc means, and the other is connected between said second grooved disc means and said second time setting disc means; and said first and second planetary gear mechanism means being drivably connected respectively to said first and second shaft means for rotatably displacing said grooved disc means proportional to the displacement of the corresponding time setting disc means, and for rotatably turning in the opposite sense said grooved disc means and said time setting disc means driven by rotation of its corresponding shaft means;
whereby for a timer in an initial position with the pins positioned at the grooves of the grooved disc means, has a desired time setting rotatably entered on the time setting disc means which displace said grooved disc means proportionally, after which said shaft means drive said discs through said planetary gear means until said grooves are brought to engagement with said pins thus activating said switch.

3,930,132
PROGRAM CENTRALLED, CAM OPERATED SWITCH ASSEMBLY
John L. Harris, Clearwater, Fla., assignor to Deltrol Corporation, Bellwood, Ill.
Division of Ser. No. 321,715, Jan. 8, 1973, Pat. No. 3,833,818, which is a division of Ser. No. 179,422, Sept. 10, 1971, Pat. No. 3,745,293. This application Mar. 18, 1974, Ser. No. 451,886
Int. Cl. H01h *43/00*
U.S. Cl. 200—38 R **3 Claims**



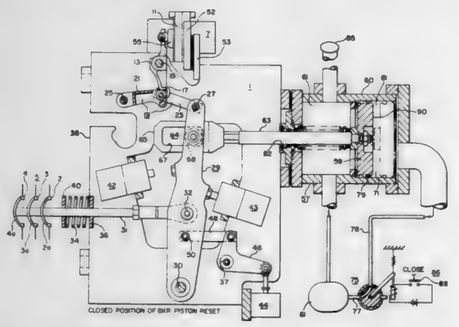
1. In a control mechanism, a switch, cam means arranged to operate said switch, an operator, means for supporting said operator and providing a limited range of movement therefor , said operator being arranged to operate said switch conjointly with the cam means, said cam means having two separate camming portions at different levels for operating the switch, the camming portion at one level being within the range of movement of the operator providing conjoint operation of the switch, and the camming portion at the other level being beyond the range of movement of the operator to exclude operation of the switch by the operator.

3,930,133
LIMIT SWITCH ASSEMBLY
Harry E. Sulzer, Warminster, Pa., assignor to Quaker City Gear Works, Inc., Huntingdon Valley, Pa.
Filed Oct. 24, 1974, Ser. No. 517,471
Int. Cl.² H01H *3/16*
U.S. Cl. 200—47 **16 Claims**



1. A limit switch assembly comprising slider means movable with axial movement of an input shaft, cam means carried by said slider means for movement therewith and actuator means located adjacent switch means and having a first position spaced from said switch means and a second position in engagement with said switch means, said cam means being engaged with said actuator means in said first and second positions thereof and being operatiave to move said actuator means from said first position to said second position when said slider means moves in one direction, whereby a limit signal is developed, said cam means further being adjustable whereby the spacing between said first and second positions of said actuator means is adjustable.

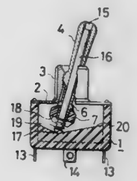
3,930,134
PNEUMATIC POWER-UNIT HAVING A DRIVING PISTON AND AN EXHAUST VALVE
Joseph R. Rostron, Monroeville; Lawrence A. Brunson, and Otto H. Soles, both of Irwin, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 27, 1973, Ser. No. 401,520
Int. Cl.² H01H *35/38*
U.S. Cl. 200—82 B **16 Claims**



1. An operating mechanism for a circuit-interrupter including in combination:
a. means defining separable contact means;
b. a movable member;
c. means rendering opening and closing motions of said separable contact means responsive to the movement of said movable member (**29**);
d. a pneumatic operator including a driving-piston operable within a pneumatic operating cylinder and having a piston-rod extending externally out of said pneumatic operating cylinder;

e. said piston rod being connected with said movable member (**29**) to cause the actuation thereof;
f. said piston-rod extending only out of one end of the operating cylinder on one working side of the driving piston;
g. the other end of the operating cylinder on the nonworking side of the piston being closed with respect to the piston-rod;
h. valve means normally maintaining high-pressure gas within said pneumatic operating cylinder on both the driving and non-driving sides of the driving-piston to thereby extend the piston-rod outwardly by differential piston action; and,
i. means for operating said valve means and exhausting gas from the non-driving side of the driving-piston at said other end of the cylinder to thereby move the driving-piston toward the closed end of the operating cylinder and the movable member (**29**) to close the breaker contacts.

3,930,135
SWITCH WITH AN INDICATING MECHANISM
Yasuo Kodaira, 5-14 Minamimagome, 1-chome, Ota-ku, Tokyo, Japan
Filed June 18, 1973, Ser. No. 371,073
Claims priority, application Japan, Dec. 29, 1972, 48-263[U]
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² H01H *9/16*
U.S. Cl. 200—308 **11 Claims**

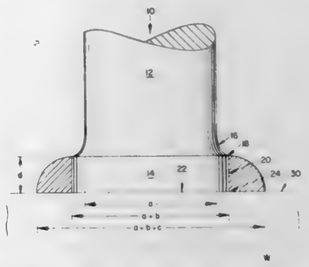


1. In a switch an indicating mechanism comprising:
an actuating member having a longitudinally extending bore;
a movable indicating member slidably received in said bore;
a switch case including at least one inclined surface formed in the switch case;
a spring located at the lower end of said movable indicating member, urging the lower end of said member to make contact with and move along said inclined surface;
whereby the upper end of the indicating member is made to be selectively visible or concealed by extending out of or being recessed within the upper surface of the actuator in accordance with the operating position of said actuating member.

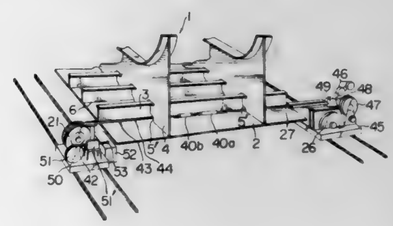
2. A switch with an indicating mechanism as set forth in claim 1 wherein said spring is inserted between a collar on said indicating member and a hemispherical portion provided at the lower end thereof.

3,930,136
ANCHOR STUDS AND SHEAR CONNECTORS USED IN WELDING
Albert P. Denis, 2050 Brookview Road, Castleton, N.Y. 12033
Filed Nov. 5, 1973, Ser. No. 412,708
Int. Cl.² B23K *9/20*
U.S. Cl. 219—99 **4 Claims**

3. The method of electric arc welding comprising: placing upon a work a stud having a shank of a first diameter and at its weld end a base of enlarged diameter and of a base height of a predetermined minimum dimension, introducing a conventional welding electrode within the welding area, initiating an arc through the electrode, and forming a fillet of effective throat having a radial throat dimension throughout not in excess of the enlarged base height of predetermined minimum demension, such that the area of metal contact in the weld fillet adjacent the periphery of said enlarged base and the work is equal to or greater than the cross-sectional area of said shank.



3,930,137
METHOD AND APPARATUS FOR FILLETT WELDING LONGITUDINAL MEMBERS OF FRAMED STRUCTURES
Shimpei Iizuka, and Katsumi Ishimoto, both of Yokosuka, Japan, assignors to Sumitomo Shipbuilding & Machinery Co., Ltd., Tokyo, Japan
Filed July 3, 1974, Ser. No. 485,492
Claims priority, application Japan, July 4, 1973, 48-74888; July 4, 1973, 48-74889; Oct. 16, 1973, 48-115279
Int. Cl.² B23K *9/12*
U.S. Cl. 219—125 R **12 Claims**



1. In an assembly of a framed structure comprising a horizontal plate, a plurality of parallel transverse members, and a plurality of parallel longitudinal members, said transverse and longitudinal members being arranged perpendicular to each other, wherein said transverse members have a small opening formed therethrough at every corner defined by said horizontal plate and said longitudinal members so that the spaces defined by the adjacent transverse members may be intercommunicated with each other,
a method for fillet welding said longitudinal members to said horizontal plate comprising the steps of
a. connecting one end of a length of chain to a welding apparatus, said chain extending from one end of one of said longitudinal members to be welded to the other end thereof including passing said chain through said small openings of said transverse members, said welding apparatus comprising wheels for carrying said welding apparatus upon said horizontal plate, and at least one welding torch holding therein an electrode wire; and
b. supplying the welding current to said electrode wire while said chain is pulled through said small openings so that said welding apparatus travels along one side surface of said one longitudinal member passing through said small openings of said transverse members as it moves from one end to the other end of said one longitudinal member,

whereby said one longitudinal member may be continuously fillet welded to said horizontal plate.

3,930,138

APPARATUS FOR WELDING VERTICAL JOINTS

Karl-Erik Knipstrom; Heinz Oskar Uhlig, and Knut Folke Ingemar Boden, all of Laxa, Finland, assignors to Elektriska Svetsningsaktiebolaget, Gotenburg, Sweden

Filed May 21, 1974, Ser. No. 471,902

Claims priority, application Sweden, May 22, 1973, 7307170

Int. Cl.² B23K *9/12, 9/28*

U.S. Cl. 219—126 **4 Claims**



1. Apparatus for welding a substantially vertical joint between two metal parts separated by a welding gap, comprising a consumable, tubular guide member provided with an external screw thread,

means for supplying a welding current to said consumable guide member,

an electrode advancing unit for feeding a fusible electrode downwards through said consumable guide member,

a guide member supporting unit for holding said consumable guide member along and within said welding gap, said supporting unit comprising an annular member mounted for rotation in said unit, means for clamping the consumable guide member in said annular member, and means for rotating said annular member,

means for supporting said guide member supporting unit in a stationary position with regard to said metal parts, welding pool confining means vertically movable along the welding gap, and,

means supporting said welding pool confining means comprising a nut member engaging the screw thread of the consumable guide member.

3,930,139

NONCONSUMABLE ELECTRODE FOR OXYGEN ARC WORKING

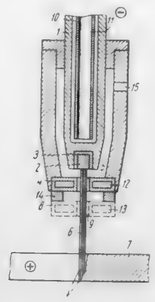
David Grigorievich Bykhovsky, Konjushenny pereulok, 1, kv. 18; Alexandr Yakovlevich Medvedev, ulitsa Kalyaeva 3, kv. 17; Yakov Vulfovich Rossomakho, prospekt Nauki 14/1, kv. 231, all of Leningrad, and Margarita Nikolaevna Butova, ulitsa Shabolovka 63/1, kv. 58, Moscow, all of U.S.S.R.

Filed May 28, 1974, Ser. No. 474,076

Int. Cl.² B23K *35/04, 9/26*

U.S. Cl. 219—145 **4 Claims**

1. A nonconsumable electrode for oxygen arc working, comprising: a holder made from a metal selected from the group consisting of copper and alloys thereof; an active insert fastened to the end face of said holder and produced from a metal selected from the group consisting of hafnium, and hafnium in combination with dopants selected from the group consisting of yttrium oxide, neodymium oxide, and a combination of yttrium and neodymium oxides; a metal spacer disposed between said holder and said active insert extending over the entire contact surface area thereof so that said active insert is in thermal and electric contact with said holder



through said metal spacer; and with said metal spacer being a metal selected from the group consisting of aluminium and alloys thereof.

3,930,140

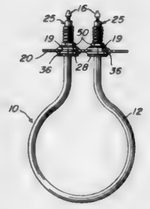
ELECTRICAL HEATING ELEMENT AND FITTING ASSEMBLY

James F. Pease, 5805 Folkestone Drive, Dayton, Ohio 45459

Continuation-in-part of Ser. No. 334,002, Feb. 20, 1973, Pat. No. 3,800,415, which is a division of Ser. No. 244,516, April 17, 1972, Pat. No. 3,732,398, and a continuation-in-part of Ser. No. 194,742, Nov. 1, 1971, abandoned. This application Mar. 25, 1974, Ser. No. 454,291The portion of the term of this patent subsequent to Apr. 18, 1989, has been disclaimed.

Int. Cl.² H05B *1/00*

U.S. Cl. 219—316 **10 Claims**



1. A heating element and fitting assembly for mounting within spaced openings in a wall of a liquid heating vessel, said assembly comprising an elongated tubular sheath having opposite end portions, an electrical resistance heating element extending longitudinally within said sheath and supported therein by a thermally conductive insulator material, an electrical connector connected to each end of said heating element and projecting through the corresponding said end portion of said sheath, a sheet metal tubular fitting mounted on each said end portion of said sheath and adapted to extend through the corresponding opening within the wall, each said fitting having a substantially uniform wall thickness and including an outwardly projecting peripheral flange portion integrally connected to a tubular wall portion, said flange portion of each said fitting includes a radially outwardly projecting annular wall integrally connected to a radially inwardly projecting annular wall providing said flange portion with a double wall thickness, said tubular wall portion of each said fitting having a deformed wall configuration forming an outwardly projecting threaded portion around said sheath, each said fitting including a portion in radial gripping engagement with the corresponding said end portion of said sheath to form an electrical conductor therewith and for securing said fitting to said end portion of said sheath, and means forming a liquid-tight seal between each said fitting and said sheath.

3,930,141

AUTOMATIC TIRE CLASSIFYING APPARATUS

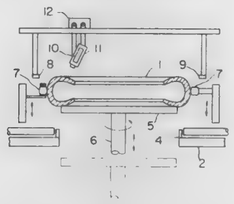
Masao Koyama, Hatano; Hiromitsu Akashi; Yoichi Nishikawa, both of Hiratsuka; Susumu Fujiwara, Fujisawa, and Takao Okada, Yokohama, all of Japan, assignors to The Yokohama Rubber Company, Ltd., Japan

Filed Oct. 4, 1974, Ser. No. 512,163

Claims priority, application Japan, Oct. 9, 1973, 48-112848

Int. Cl.² G06K *7/10;* **B60C** *13/00*

U.S. Cl. 235—61.11 E **4 Claims**



1. An automatic tire classifying apparatus which comprises:

a. an illumination light source for illuminating a classification mark which is provided on a part of the surface of each tire for representing the kind of the tire;

b. a camera tube for detecting the classification mark thus illuminated by the light source thereby to produce electrical signals accordingly;

c. a rotary mechanism operating to relatively rotate the tire and the axis of a light beam incident to the camera tube so that the camera tube can detect the classification mark within the angle of view;

d. a position adjusting mechanism for adjusting the relative positions of the camera tube and the light source and the tire;

e. a mark reading section for reading the classification mark by analyzing the electrical signals produced by the camera tube; and

f. an identification section for discriminating the kind of the tire by identifying the electrical signals read by the mark reading section.

3,930,142

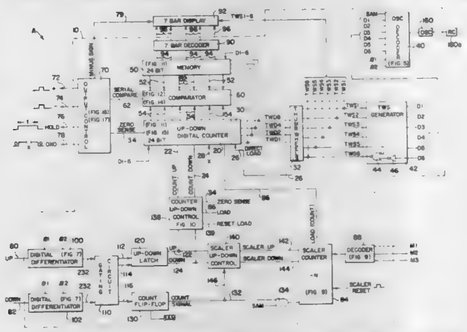
DIGITAL TIMER AND COUNTER DEVICE WITH DUAL CONTROL

Carl H. Meier, Davenport, Iowa, assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed June 13, 1974, Ser. No. 478,979

Int. Cl.² H03K *21/00*

U.S. Cl. 235—92 EV **81 Claims**



1. A digital counting device for counting input pulses and producing an output signal after a given number of said input pulses, said counting device comprising: a binary counter responsive to input counts and having a first mode select means for causing up binary counting of said counter upon receipt of input counts and a second mode select means for causing down binary counting of said counter upon receipt of input counts; a binary memory circuit; means interconnecting said binary counter and said binary memory circuit for creating a compare signal when the binary number of said binary counter corresponds to the binary number in said memory circuit; means for creating a sense signal when said binary counter reaches a given number; means responsive to either of said compare signal or said sense signal for creating said output signal; means for selecting a binary coded number; first control means including means for loading said selected coded number into said counter and means for activating said second mode select means; a second control means including means for loading said selected number into said memory circuit and means for activating said first mode select means; means for selecting only one of said control means; and, means for introducing input pulses to said counter.

3,930,143

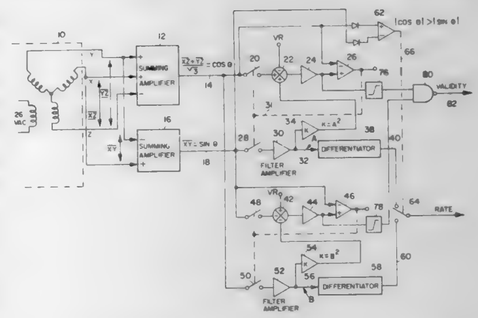
CIRCUIT FOR MEASURING THE RATE OF SYNCHRO ROTATION

Hans Rudolf Muller, Kirkland, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed May 27, 1975, Ser. No. 581,394

Int. Cl.² G06G *7/78, 7/22*

U.S. Cl. 235—150.2 **15 Claims**



1. A circuit for generating a signal representing the rate of rotation of a synchro comprising:

means for generating a cosine signal representing the cosine of the synchro shaft angle;

means for generating a sine signal representing the sine of the synchro angle;

means responsive to said sine signal and said cosine signal, for generating a tangent signal representing the tangent of the synchro shaft angle;

means, responsive to said cosine and said sine signals, for generating a cotangent signal representing the cotangent of the synchro shaft angle;

first differentiator means for differentiating said tangent signal into a first rate signal;

second differentiator means for differentiating said cotangent signal into a second rate signal; and

switch means, responsive to said sine and said cosine signal, for selecting one of said rate signals having substantially linear characteristics.

3,930,144

DIGITAL FUNCTION FITTER

Katsuaki Tanaka, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Sept. 20, 1974, Ser. No. 507,856

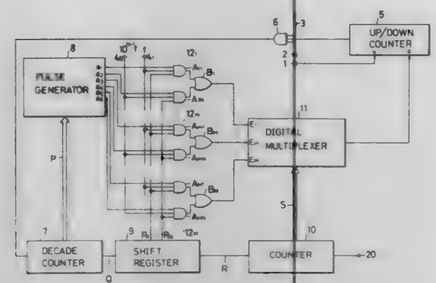
Claims priority, application Japan, Sept. 29, 1973, 48-110033

Int. Cl.² G06F *15/34*

U.S. Cl. 235—150.53 **7 Claims**

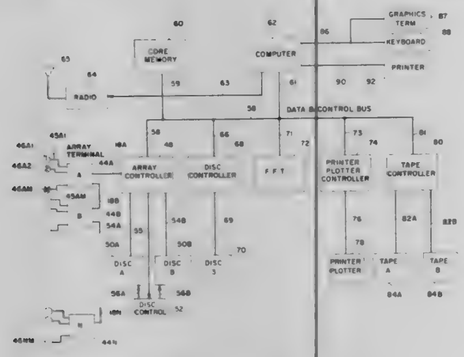
1. A digital function fitter comprising: means for storing a number of input pulses; a first clock pulse generator;

means for counting the number of clock pulses;
a plurality of second clock pulse generators generating pulses different from one another in frequency; and



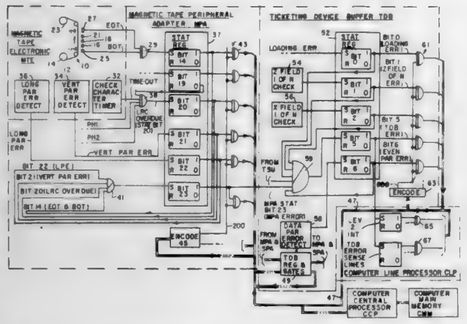
means for supplying clock pulses with different frequencies for predetermined intervals to said storing means, said clock pulses ceasing to be applied by said first clock pulse generator to said counting means when the pulses supplied to said storing means coincide with a stored number of input pulses.

3,930,145
DATA ACQUISITION AND PROCESSING SYSTEM
J. Robert Fort; James A. Westphal, both of Altadena; C. Hewitt Dix, Pasadena, and Donald R. Juiles, Chatsworth, all of Calif., assignors to Geophysical Systems Corporation, Pasadena, Calif.
Filed May 7, 1973, Ser. No. 358,076
Int. Cl. G01v *1/28*
U.S. Cl. 235—151.3 **7 Claims**



1. A seismic exploration system comprising:
a. means for generating seismic disturbances in the earth;
b. a plurality of spaced detectors for generating a plurality of analog signals in response to said seismic disturbances after traveling through the earth;
c. means for amplifying said analog signals, adding to each signal a shifting function to form a sum signal and zero-crossing-coding said sum signals and storing said coded signals;
d. means on command from a rotating magnetic disc storage means for sequentially reading out said stored coded signals in the form of a plurality of trains of digital bit signals and transmitting them through a single pair of conductors to said disc storage means;
e. means for storing said trains of digital bit signals on rotating magnetic disc means in first selected spaced relation, the time of read out of said signals being dependent upon the instantaneous position of said disc as it rotates.

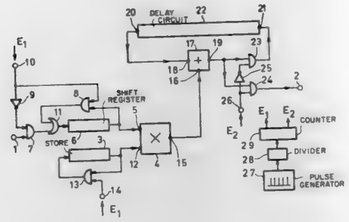
3,930,146
INPUT/OUTPUT CONTROLLER MAINTENANCE ARRANGEMENT FOR A COMMUNICATION SWITCHING SYSTEM
Frank J. Bogacz, Chicago, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Jan. 18, 1974, Ser. No. 434,760
Int. Cl.² G05B *23/02*; **G06F** *11/04*
U.S. Cl. 235—153 AK **8 Claims**



1. In a communication switching system having a central processor with a main memory therefor and having a peripheral adapter unit for transferring information to and from an input/output peripheral device, a device buffer for transferring information between the peripheral adapter and the main memory, a maintenance arrangement comprising:
a plurality of input/output device error detecting units for sensing malfunctions occurring in the input/output peripheral device;
a plurality of adapter bi-stable devices associated with peripheral adapter for generating input/output error signals in response to said peripheral device error detecting units sensing malfunctions;
a plurality of device buffer error detecting units for sensing malfunctions occurring in the device buffer;
a plurality of buffer bi-stable devices associated with the device buffer for generating device buffer error signals in response to said device buffer error detecting units sensing malfunctions occurring in the device buffer;
an error bi-stable device responsive to said adapter bi-stable device and to said buffer bi-stable devices generating their error signals for requesting the services of the central processor for maintenance purposes; and
control means responsive to said error bi-stable device for monitoring said buffer bi-stable devices to determine whether the malfunction occurred in the device buffer and for monitoring subsequently said adapter bi-stable devices if the malfunction did not occur in the device buffer to determine the source of the malfunction.

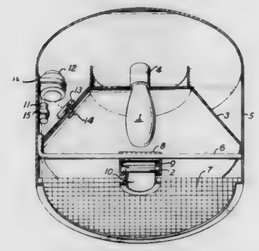
3,930,147
TIME MULTIPLEXED DIGITAL FILTER
Maurice Georges Bellanger, Antony, and Guy Pierre Lepagnol, Sceaux, both of France, assignors to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France
Filed May 13, 1974, Ser. No. 469,533
Claims priority, application France, May 11, 1973, 73.17164
Int. Cl.² G06F *7/38*
U.S. Cl. 235—156 **9 Claims**

1. A digital filter comprising:
input means for supplying a sequence of signals of predetermined frequency;
coefficient generator means for supplying a sequence of predetermined coefficients;
multiplier means having a first input connected to said input means, and a second input connected to said coefficient generator means, and an output having an output signal thereon representing the product of the signals on said first and said second inputs;
delay means for producing a predetermined time delay, and having an input and an output;



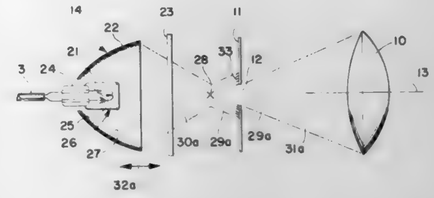
adding means having a first input connected to said output of said multiplier means and a second input connected to said output of said delay means, and having an output connected to said input of said delay means; and
control means for controlling the connection between said output of said adding means and said input of said delay means.

3,930,148
COMPOSITE LIGHT SOURCE
William Gruen, Encino, Calif., assignor to William Gruen, Encino, Calif.
Filed July 22, 1974, Ser. No. 490,470
Int. Cl.² F21S *7/00*
U.S. Cl. 240—1 R **2 Claims**



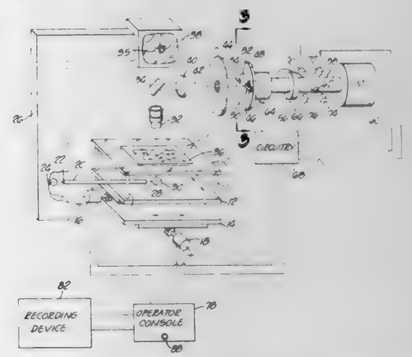
1. A color modulatable composite light source comprising a mercury lamp and an inherently lower efficacy tungsten halogen lamp having a rated voltage, a housing in which said lamps are enclosed and which includes at least a reflector for reflecting the light emitted by said lamps, said tungsten halogen lamp being mounted in said housing directly beneath said mercury lamp and being substantially smaller in physical size than said mercury lamp so that it obscures only a minimal amount of the lumen output of said mercury lamp, means for simultaneously supplying electrical energy to said lamps in respective amounts to cause said mercury lamp to have a substantially greater lumen output than said tungsten halogen lamp, and color modulator means comprising a manually operable means for varying the amount of electrical energy fed to said tungsten halogen lamp to vary the color output of the light source.

3,930,149
VARIABLE INTENSITY DENTAL LIGHT
Park French, Aurora, Ohio, assignor to Sterndent Corporation, Mount Vernon, N.Y.
Filed May 28, 1974, Ser. No. 473,719
Int. Cl.² A61B *1/06*
U.S. Cl. 240—41.15 **14 Claims**



1. A constant color temperature variable intensity lamp, comprising light source means for generating a generally tapered uniform beam of light; gate means for passing at least a portion of such light and capable of precluding passage of a different portion of such light; and focusing means for projecting light passed by said gate means; said gate means being positioned at least proximate one focal plane of said focusing means for substantially focusing an image of the latter at the other focal plane thereof; means for providing relative generally axial movement between said light source means and said gate means, whereby movement of one with respect to the other determines the quantity of light passed by said gate means and hence the intensity of the projected light without varying the uniformity and color temperature thereof.

3,930,150
APPARATUS FOR DETERMINING THE CENTROID OF A LIGHTED HOLE
William F. Marantette, Torrance, Calif., assignor to Digital Systems, Inc., Arcadia, Calif.
Filed Dec. 23, 1974, Ser. No. 536,038
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—203 R **8 Claims**



1. Apparatus for determining the centroid of a lighted hole comprising:
a. means for supporting a template containing an image of at least one hole, said means being moveable;
b. a photo-sensitive element in the form of a strip, illuminations of said photo-sensitive element resulting in an electrical signal dependent upon the amount of light striking said element;
c. a means for projecting light through a hole in the template so as to strike said photo-sensitive element;

d. means for rotating said photo-sensitive element about an axis; and

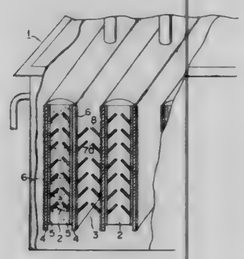
e. circuit means for sampling the resultant electrical signal at at least a first and second rotational position of said photo-sensitive material, and comparing said signals, said circuit means providing a signal for activating means for moving said supporting means if said first and second signals are not equal.

3,930,151

MULTIPLE VERTICAL DIAPHRAGM ELECTROLYTIC CELL HAVING GAS-BUBBLE GUIDING PARTITION PLATES

Hiroshi Shibata; Yoshikazu Kokubu, and Isao Okazaki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1974, Ser. No. 461,295
Claims priority, application Japan, Apr. 19, 1973, 48-44415
Int. Cl.² C25B 9/00
U.S. Cl. 204—258 **11 Claims**



1. In a multiple vertical diaphragm electrolytic cell, the improvement comprising a plurality of electrode chambers, each including two electrodes having mutually facing walls which are disposed on opposite inner sides of respective electrode chambers and a plurality of separate gas-bubble guiding partition plates made of a heat-resistant synthetic resin attached to said mutually facing walls of said electrodes in an upwardly inclined condition with the lower ends thereof in a slightly separated position from said walls and with adjacent heat-resistant synthetic resin partition plates spaced from each other in a vertical direction relative to said mutually facing walls, said heat-resistant synthetic resin partition plates being dimensioned and mounted in an opposing formation so that extremities thereof remote from said walls define a vertical gas-bubble passageway along the vertical central plane position of each respective electrode chamber, said heat-resistant synthetic resin partition plates being inclined upwardly relative to the central level of each respective electrode chamber.

3,930,152

SYSTEM FOR MEASURING EARTH FORMATION THERMAL NEUTRON LIFETIME UTILIZING A HARMONICALLY INTENSITY MODULATED FAST NEUTRON SOURCE

Robert W. Pitts, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

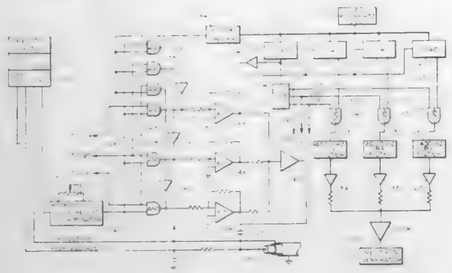
Filed July 17, 1974, Ser. No. 489,335
Int. Cl. G01t 1/16
U.S. Cl. 250—269 **15 Claims**

1. Apparatus for logging earth formations traversed by a fluid filled well borehole to develop a measurement of thermal neutron interaction characteristics of such formations, comprising:

a well logging sonde sized and adapted for passage through a well borehole and having therein;

means for continuously generating a population of fast neutrons for bombarding the media surrounding a well borehole to develop a thermal neutron population in the borehole and surrounding media;

means for harmonically modulating the intensity of fast neutrons at, at least three different modulation frequencies;



means for detecting the thermal neutron population in the vicinity of said sonde as a function of time and for developing signals representative thereof; and

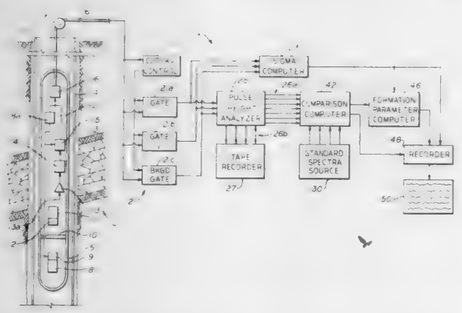
means for combining said representative signals according to predetermined relationships to derive an indication of the thermal neutron decay time of the earth formations in the vicinity of the borehole.

3,930,153

MEASUREMENT OF SUBSURFACE FORMATION LITHOLOGY, INCLUDING COMPOSITION AND FLUIDS, USING CAPTURE GAMMA SPECTROSCOPY

Hubert D. Scott, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 12, 1974, Ser. No. 531,939
Int. Cl.² G01V 5/00
U.S. Cl. 250—270 **52 Claims**



1. A method for analysis of earth formations surrounding a well borehole wherein the macroscopic thermal neutron capture cross-section of the formations is known, comprising the steps of:

a. obtaining standard gamma ray energy spectra of materials postulated to be in formations surrounding a well borehole;

b. bombarding the earth formations in the vicinity of the borehole with fast neutrons which are slowed down and thereafter engage in neutron capture reactions with materials in the vicinity of the borehole;

c. obtaining gamma ray energy spectra of unknown materials surrounding the well borehole;

d. comparing an unknown gamma ray spectrum with a composite weighted mixture of the standard gamma ray spectra to obtain therefrom a quantitative measure of the percentage composition of elements in the vicinity of the borehole; and

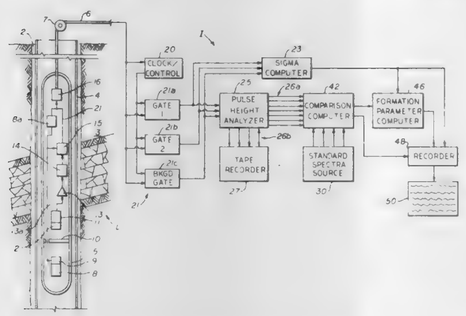
e. obtaining quantitatively the primary formation parameters of the formation from the quantitative measure of percentage composition of elements and the known macroscopic thermal neutron capture cross-section of the formation.

3,930,154

MEASUREMENT OF SUBSURFACE FORMATION LITHOLOGY, INCLUDING COMPOSITION AND FLUIDS, USING GAMMA SPECTROSCOPY AND THERMAL NEUTRON DECAY

Hubert D. Scott, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 12, 1974, Ser. No. 531,940
Int. Cl.² G01V 5/00
U.S. Cl. 250—270 **21 Claims**



1. A method for analysis of earth formations surrounding a well borehole comprising the steps of:

a. obtaining standard gamma ray energy spectra of materials postulated to be in formations surrounding a well borehole;

b. bombarding the earth formation with repetitive pulses of fast neutrons which are slowed down and thereafter engage in neutron capture reactions with materials in the viciniity of the borehole;

c. obtaining gamma ray energy spectra of the unknown materials surrounding a well borehole;

d. comparing an unknown gamma ray energy spectrum with a composite weighted mixture of the standard gamma ray spectra to obtain therefrom a quantitative measure of the percentage composition of elements in the vicinity of the borehole;

e. simultaneously obtaining a measure of the macroscopic thermal neutron capture cross section of the earth formation surrounding the borehole; and

f. compensating the unknown gamma ray energy spectra for variations in the thermal neutron capture cross section obtained for the materials present in the formations surrounding the well borehole.

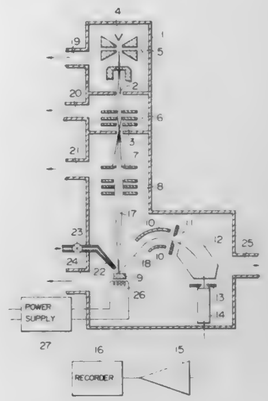
3,930,155

ION MICROPROBE ANALYSER

Ichiro Kanomata, Fuchu; Hiroshi Doi, Ome, and Hifumi Tamura, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 17, 1974, Ser. No. 434,061
Claims priority, application Japan, Jan. 19, 1973, 48-7911; Apr. 2, 1973, 48-36742
Int. Cl. H01J 37/00
U.S. Cl. 250—309 **9 Claims**

1. An ion microprobe analyser comprising an ion gun for emitting a primary ion beam of non-reactive gas, at least one ion lens for focusing said primary ion beam to irradiate a desired analysed spot on the surface of a specimen with said primary ion beam, mass spectrometric means for analysing the mass-to-charge ratio of a secondary ion beam emitted from the specimen due to irradiation with said primary ion beam, means for detecting the result of analysis by said mass spectrometric means, and means for supplying a chemically reactive gas toward the desired analysed spot on the surface of said specimen.

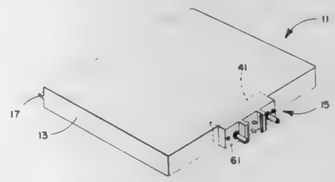


3,930,156

CASSETTE UNIT

Sidney E. Hindell, San Diego, Calif., assignor to Diagnostic Instruments, Inc., San Diego, Calif.

Continuation of Ser. No. 264,247, June 19, 1972, abandoned.
This application Apr. 8, 1974, Ser. No. 458,809
Int. Cl.² G03B 13/00
U.S. Cl. 250—315 A **7 Claims**



1. A cassette for ionographic reproduction of images comprising:

a first plate including a first flat electrode carrying a thin sheet of dielectric material smoothly adhered thereto but conveniently peelable therefrom, one surface of said sheet being exposed and adapted to have formed thereon a latent electrostatic image;

a second plate including a second flat electrode having a photoemissive surface, said plates being spaced apart with said surfaces opposing each other;

an electrically nonconductive spacer disposed between the plates to extend around the periphery of the plates at the margins thereof thereby to define a uniform gaseous filled gap between said opposing surfaces;

a connector having a first terminal in electrical contact with the first electrode and a second terminal in electrical contact with the second electrode and adapted to be quick-detachably connected to an electrical potential source; and

quick-releasable means for maintaining said plates and spacer in an assembled relationship but which when released permits them freely and completely to separate, said quick-release means comprising a surrounding pack-

aging envelope of a pliable synthetic resin film material which is conveniently severable.

3,930,157

PYROELECTRIC CAMERA TUBE SYSTEMS

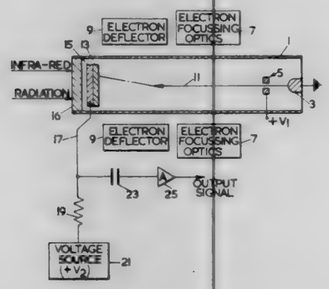
Rex Watton, Malvern, England, assignor to British Secretary of State for Defence, London, England

Filed July 22, 1974, Ser. No. 490,592

Claims priority, application United Kingdom, July 23, 1973, 35040/73

Int. Cl.² H01J *31/49*

U.S. Cl. 250—330 **10 Claims**



1. A pyroelectric camera tube system comprising a pyroelectric target for detecting by the pyroelectric effect thermal electromagnetic radiation incident thereon, means for repetitively scanning an ionic beam across a surface of said target, the product of the electrical resistance R_T and the electrical capacitance C_T of said target when scanned by said ionic beam being in the range from one-half of τ_F to 1,000 times τ_F, where τ_F is the average scanning period at which said means for scanning is capable of scanning said surface, the limits of said range being inclusive, a pick-up electrode in electrical contact with said target, said pickup electrode operating to produce an output signal corresponding to the quantity of pyroelectric charge developed at the part of said surface scanned by said electron beam, an electrical impedance having one end thereof electrically connected to said electrode, and a voltage source connected to the other end of said impedance, said voltage source providing a substantially steady electrical output voltage operative to leak, by conduction through said impedance and through said target to said scanned surface of said target, a quantity of charge of the opposite polarity to said ionic beam to form on said scanned surface a bias charge pedestal having a magnitude independent of said pyroelectric charge, said leaked charge acting as a quenching charge on said scanned surface capable of quenching in said average scanning period any excess charge left on said scanned surface from said ionic beam.

3,930,158

INFRARED PHOTOGRAPHY

Evan P. Chicklis, Nashua, N.H., and John D. Kuppenheimer, Jr., Tewksbury, Mass., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 4, 1974, Ser. No. 520,584

Int. Cl.² H01J *31/49*

U.S. Cl. 250—330 **5 Claims**



5. A stop action infrared photography system, comprising: an illuminator including a solid state laser optically pumped by an incoherent source of energy and operated at a wavelength of between 0.8 to 0.9 microns;

an image intensifier sensitive at the wavelength of the illuminator and disposed to receive reflected energy from a target on the photocathode thereof; and

a photographic film arranged to receive an image from the phosphor screen of said image intensifier.

3,930,159

DEVICE FOR MEASURING THE COOLING TIME OF WELDS

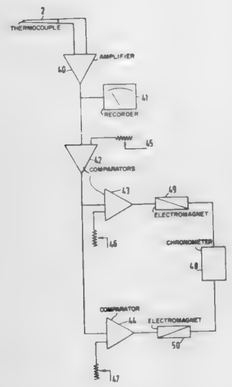
Freddy Antoine Marquet, Beaufays, Belgium, assignor to Centre de Recherches Metallurgiques - Centrum voor Research in de Metallurgie, Brussels, Belgium

Continuation-in-part of Ser. No. 494,919, Aug. 5, 1974, abandoned. This application Aug. 12, 1974, Ser. No. 496,738

Claims priority, application Belgium, Aug. 10, 1973, 803524

Int. Cl.² G01K *7/02*

U.S. Cl. 250—338 **11 Claims**



1. A device for measuring the cooling time of a weld, comprising: a holder in the form of a pistol having a barrel and a butt; a thermocouple housed in the barrel and being slidable along a longitudinal axis of the barrel so as to extend from the end of the barrel; a photo-electric cell sensitive to thermal radiation from the fused metal of a weld, the cell being mounted on the holder and having an axis of sight which intersects the said longitudinal axis in front of the barrel; means for projecting the thermocouple partially from the barrel along the said longitudinal axis; a first electronic control circuit adapted to actuate the said projecting means when the temperature corresponding to the thermal radiation sensed by the cell reaches a predetermined limit, the control circuit being housed in the butt; and a second electronic control circuit, which is connected to an output of the thermocouple and which is adapted to start and stop a time meter at respective upper and lower given temperature values as measured by the thermocouple.

3,930,160

GROOVED WINDOWS FOR SCINTILLATION CRYSTALS AND LIGHT PIPES OF HIGH REFRACTIVE INDEX

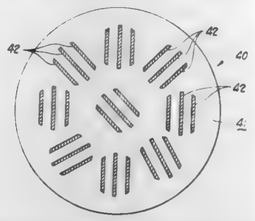
Carl F. Swinehart, University Heights, Ohio, assignor to Kewanee Oil Company, Bryn Mawr, Pa.

Filed Feb. 11, 1974, Ser. No. 441,584

Int. Cl. C01t *1/20*

U.S. Cl. 250—361 **9 Claims**

1. In a crystal for use with light collection means coupled thereto, the improvement comprising a transparent scintillation crystal having at least one shallow groove or depression in the crystal light transmitting surface through which light generated within the crystal is transmitted to the light collection means.



3,930,161

RADIATION DETECTOR HAVING A MOSAIC STRUCTURE

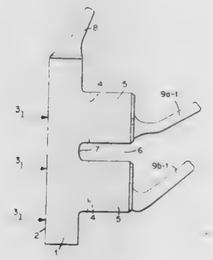
Jacques Francois Ameurlaine, Paris, and Michel Benoit Sirieix, Jouy-en-Josas, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed Mar. 18, 1974, Ser. No. 452,468

Claims priority, application France, Apr. 4, 1973, 73.12067

Int. Cl.² G01T *1/22*; G01J *1/00*

U.S. Cl. 250—370 **7 Claims**



1. An infra-red radiation detector comprising an n-type semi-conductor block on which are disposed in the form of projections small elementary p-type semi-conductor blocks, thereby creating a matricial network of elementary junctions, wherein the sensitive face of said detector is the free face of said n-type semi-conductor block which is parallel to the plane of the elementary junctions.

3,930,162

MATRIX-FORM RADIATION IMAGE CONVERTER

Karl-Hans Reiss, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

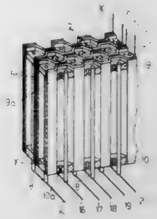
Filed June 5, 1973, Ser. No. 367,144

Claims priority, application Germany, June 21, 1972, 2230329

Int. Cl. G01t *1/18*

U.S. Cl. 250—385 **6 Claims**

1. A proportional radiation image converter for making visible images produced by gamma rays, comprising a container having a ray inlet surface and, inside the container, in combination, a matrix of detector cells, said matrix comprising two groups of conductors, the conductors of one group being anode members and spaced from the conductors of the other group which are cathode members, the space between the groups being filled with gas having substantially a pressure of 10 at., the conductors in the groups forming rows with rows of the one group extending at an angle to the rows of the other group, the conductive member of the group belonging to cathode members substantially encircling one of the conductors of the other of said groups, and thus forming one of said cells extending substantially perpendicularly to the ray inlet surface, and means for separately detecting an electrical signal from each of said conductors and for indicating the cell address of a gas-ionizing incident in the detector; said cathode members comprising electrically conductive strips which are insulated from one another; said anode members comprising electrically conductive rods disposed between and insulated from said cathode members.



3,930,163

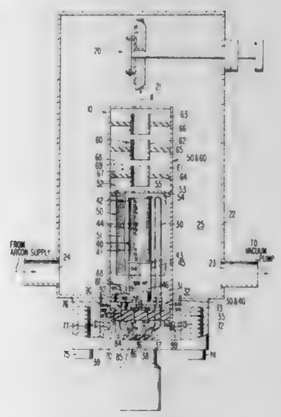
ION BEAM APPARATUS WITH SEPARATELY REPLACEABLE ELEMENTS

Robert L. Gerlach, Los Altos, and George Rossini, Mountain View, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Mar. 22, 1974, Ser. No. 453,750

Int. Cl.² G01K *1/08*

U.S. Cl. 250—398 **18 Claims**



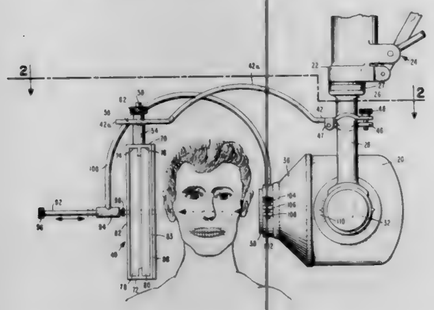
1. An ion beam source comprising an electron emitter, a grid structure maintainable at an electrical potential to attract electrons from said emitter toward the vicinity of said grid structure for collision with ionizable gas atoms in the vicinity of said grid structure thereby providing ions, said grid structure comprising a refractory metal mesh, means for extracting said ions from the vicinity of said grid structure, and means for forming said ions into an ion beam, said electron emitter and said grid structure being mounted on a first assembly member and forming therewith a first assembly unit, said ion extracting means and said ion beam forming means being mounted on a second assembly member and forming therewith a second assembly unit, said second assembly member being demountably secured relative to said first assembly member, and said electron emitter being demountably secured to said first assembly member, whereby said second assembly unit is insertable and removable separately from said first assembly unit and said electron emitter is insertable and removable as an individual unit.

3,930,164

DEVICE FOR USE WITH X-RAY MACHINES

Albert D. Alexander, 3304 Sleepy Hollow Road, Falls Church, Va. 22044

Filed June 28, 1974, Ser. No. 484,066
Int. Cl.² G03B *41/16*
U.S. Cl. 250—468 **10 Claims**



1. A device for use in combination with a projector suspending means and projector cone of an x-ray machine for locating and taking an x-ray picture of a specific portion of a patient's head comprising:

a. an open-ended cassette frame adapted to be adjustably spaced on and vertically disposed in relation to the centerline of said projection cone of said projector, said frame adapted to be demountably attachable by arm means to said suspending means for said projector,

b. said frame comprising guide means for carrying at least one cassette film plate, an open space central section, and shield means adjacent said open space on the inward side of said frame,

c. centering and locating means disposed on the outward side of said frame and adapted to be aligned with and for movement along said centerline of said cone and through the center of said open space of said frame, said centering means adapted to be demountably attachable to said projector cone and movable with said cone,

whereby said frame and said centering means are movable both vertically and pivotally horizontally together with said projector, and whereby said centering means is movable through the center of said open space of said frame for location and alignment contact with said specific portion of said patient's head when the head is disposed between said frame and said projector, thereby centering and aligning said specific head portion for taking an x-ray picture thereof, upon removal of said centering means, on the portion of said cassette film plate positioned in said open space of said frame.

3,930,165

CASSETTE

Alfred Robinson; Joseph S. Schatz, both of Brooklyn, N.Y., and Leonhard Katz, Winchester, Mass., assignors to U. S. Radium Corporation, Morristown, N.J.

Filed Oct. 21, 1974, Ser. No. 516,490
Int. Cl.² G01N *21/34*
U.S. Cl. 250—480 **13 Claims**

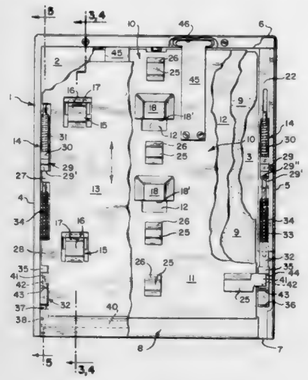
1. In a film cassette having a front and back wall and edge walls connecting three edges of the front and back walls together leaving an opening at one edge wall, first intensifying screen means disposed adjacent the inner surface of said back wall, second intensifying screen means disposed in opposed facing relation to said first screen means, and means for mounting said second screen means for movement toward and away from said first screen means, the improvement comprising:

a. plate means disposed between the second screen means and the front wall;

b. means for mounting said plate means in said housing at a fixed distance from said first screen means and for sliding movement toward and away from one edge wall of the housing between first and second positions;

c. a plurality of first fingers fixed to the surface of said plate means facing the second screen means with each finger having a lifting surface facing away from said second screen means;

d. a plurality of second fingers fixed to the surface of said second screen means facing said plate means for cooperating with the first fingers, said second fingers each having a second lifting surface facing away from said plate means for slidably engaging said first lifting surfaces;



e. at least one of the first and second lifting surfaces being inclined in a plane extending obliquely to said plate and second screen means and extending in the direction of sliding movement of said plate means;

f. said first lifting surfaces being disposed relative to said second lifting surfaces to permit movement of said second screen means toward said first screen means when said plate is in said first position;

g. said first lifting surfaces engaging said second lifting surfaces to move said second screen means away from the first screen means as said plate is slid from said first position to said second position; and

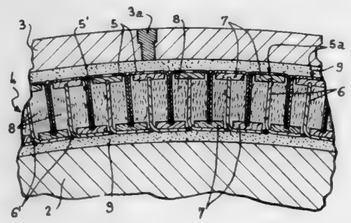
h. means for pressing said second screen means toward said first screen means when said plate is in said first position.

3,930,166

PACKAGE FOR TRANSPORTING OR ENCLOSING RADIOACTIVE MATERIALS

Camille Bochard, Lyon, France, assignor to Robatel S.L.P.I., Genas, France

Filed Dec. 14, 1973, Ser. No. 424,720
Int. Cl. G21f *3/00, 5/00*
U.S. Cl. 250—506 **16 Claims**



1. Packaging for enclosing and transporting radio-active material of the type including a material container surrounded

by an anti-radiation shield located within a protective metal jacket whose inner wall is spaced from the outer wall of the shield to leave an annular space between said walls for housing an improved protective device operative to insulate the container against heat generated externally of the packaging, the improvement comprising:

a. first and second metal rings concentrically disposed in said annular space and spaced from each other, the first ring being disposed in heat conductive relationship with said jacket and the second ring being disposed in heat conductive relationship with said shield:

b. radially inwardly extending vanes fixed to the first ring and extending toward the second ring without contacting the latter, and radially outwardly extending vanes fixed to the second ring and extending toward the first ring without contacting the latter, the radially inwardly extending vanes alternating with the radially outwardly extending vanes; and

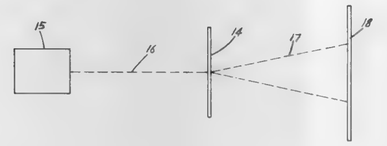
c. endothermic insulating material filling the spaces between the adjacent vanes.

3,930,167

IN-LINE PRODUCTION CONTROL OF POLYMERIC FILM

Chih C. Hsiao, St. Paul, Minn., assignor to The Reagents of the University of Minnesota, Minneapolis, Minn.

Filed May 4, 1973, Ser. No. 357,105
Int. Cl.² G01N *21/32*
U.S. Cl. 250—572 **27 Claims**



1. A method of controlling the production of a light pervious product comprising moving the material from which said product is to be made along a pre-determined path of travel, treating said material with at least one variable means the variation of which changes the character of the final end product,

transmitting a beam of light through the in-process material, causing diffraction of said light,

recording the characteristics of the diffracted beams after passage through said material,

comparing the recorded characteristics with the previously determined standard diffracted light characteristics of a control sample,

and changing said variable means in response to any differences in the character of the in-process diffracted beams and the control sample diffracted beams to cause the inprocess material to become more like said control sample.

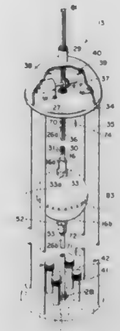
3,930,168

WAVE-ACTION POWER APPARATUS

Michael G. Tornabene, 462 - 7th Ave., New York, N.Y. 10018

Continuation-in-part of Ser. No. 428,349, Dec. 26, 1973, and a continuation-in-part of Ser. No. 432,211, Jan. 10, 1974. This application Apr. 1, 1974, Ser. No. 457,075
Int. Cl.² F03B *13/10*
U.S. Cl. 290—53 **22 Claims**

1. A wave-energy device comprising in combination: a lever means having a float-mounting portion thereof positioned uprightly; a float means mounted rotatably in a substantially horizontal plane on said float-mounting portion for free-roation there-around such that water current contact with the float means in a manner which would produce a torque thereon is rotatable of the float means thereby obviating twisting torque on the lever means; a mass means of predetermined dense mass sufficiently to impart a predetermined high degree of momentum to upward and downward actions of the lever means and the float means being adapted such that overall mass is substantially greater than for a float means devoid of



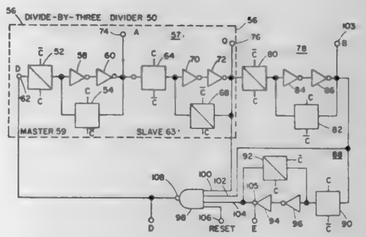
excess mass, the float means being of predetermined water displacement volume sufficiently to negate by water displacement disproportionate weight of the mass means whereby the float is positioned in a partially submerged floating state; and said float means and said mass means jointly including mass-attaching means for mounting said mass to said float means.

3,930,169

CMOS ODD MULTIPLE REPETITION RATE DIVIDER CIRCUIT

Harry A. Kuhn, Jr., Phoeniz, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Sept. 27, 1973, Ser. No. 402,491
Int. Cl.² H03K *23/08, 21/36, 19/08, 3/33*
U.S. Cl. 307—225 C **9 Claims**



1. An odd-multiple divider circuit employing flip-flops and having a minimum number of circuit components each flip-flop including a master and a slave section, each master and each slave section being comprised of a first and a second Complementary-Metal-Oxide-Semiconductor-Field-Effect-Transistor (CMOSFET) transmission gate and a pair of series connected CMOSFET inverters, the first CMOSFET transmission gate of each master and slave section having an output terminal connected to the input terminal of the pair of series connected CMOSFET inverters thereof, the second CMOSFET transmission gate of each master and slave section providing a feedback path from the output terminal of the pair of series connected CMOSFET inverters to the input terminal of the pair of series connected CMOSFET inverters, the output

terminal of the series connected CMOSFET inverters of each master section of each flip-flop being connected to the input terminal of the first CMOSFET transmission gate of each slave section of the flip-flop, each of the CMOSFET transmission gates of each master and slave section having control terminals adapted to receive a clock signal having a pair of periodic and complementary binary signals, the divider circuit including in combination:

a first one of the flip-flops having an input terminals and a single output terminal, said input terminal being connected to the input terminal of the first CMOSFET transmission gate of the master section of said first flip-flop, said single output terminal being connected to the output terminal of the pair of series connected CMOSFET inverters of the slave section of said first flip-flop;

a second one of the flip-flops having an input terminal and first and second output terminals, said input terminal being connected to the input of the first CMOSFET transmission gate of the master section of said second flip-flop, said input terminal also being connected to said single output terminal of said first flip-flop, said first output terminal being connected to the output terminal of the pair of series connected CMOSFET inverters of the master section of said second flip-flop, said second output terminal being connected to the output terminal of the pair of series connected CMOSFET inverters of the slave section of said second flip-flop;

the operation of said first and second flip-flops thereby being continuously dependent on each cycle of the clock signal to transfer the logic state at the input terminals thereof to the output terminals thereof regardless of the logic state at the input terminals thereof;

gate means having first, second and third input terminals and an output terminal, said first input terminal being connected to said output terminal of said first flip-flop, said second input terminal being connected to said second output terminal of said second flip-flop;

first circuit means coupling said output terminal of said gate means to said input terminal of said first flip-flop; and

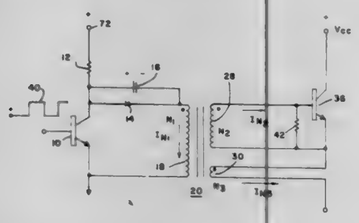
second circuit means coupling said first output terminal of said second flip-flop to said third input terminal of said gate means for rendering the divider circuit suitable to divide the frequency of the clock signal by an odd-multiple integer, the odd-multiple divider circuit having a minimum number of circuit components.

3,930,170

SWITCHING TRANSISTOR DRIVE APPARATUS

James H. Burens, Westlake Village, Calif., and Kenneth A. Wallace, Columbus, Ohio, assignors to North Electric Company, Galion, Ohio

Filed June 4, 1974, Ser. No. 476,254
Int. Cl.² H03K *17/60*
U.S. Cl. 307—254 **7 Claims**



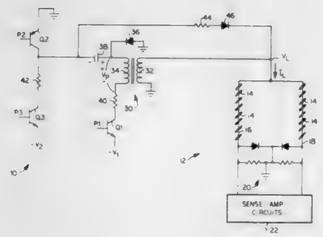
1. In a switching transistor drive apparatus, a first transistor having a base, a collector and an emitter, a second transistor having a base, a collector and an emitter, a transformer having a primary N1, and secondaries N2 and N3 forming windings of a larger and a smaller number of turns, respectively, for the transformer, first resistance means connecting a source to the collector of the first transistor, an impedance network connecting the collector of the first transistor to a terminal of the primary N1, the other terminal of the primary N1 connected to the emitter of the first transistor and to a return connection of said source, a common terminal for secondaries N1 and N2 connected to the emitter of the second transistor, the secondaries N2 and N3 wound and connected in series aiding relationship so that said secondary of larger number of turns has its other terminal connected to the base of the second transistor and so that the secondary of smaller number of turns has its terminal connected to a load.

3,930,171

LOW POWER, FAST RISE TIME CURRENT DRIVER FOR INDUCTIVE LOAD

Ricardo M. Takahashi, Canoga Park, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed July 15, 1974, Ser. No. 488,315
Int. Cl.² H03K *17/64, 17/16, 17/20;* **G11C** *11/02*
U.S. Cl. 307—270 **13 Claims**



1. A current driver for driving a sense-inhibit line of a magnetic core memory comprising:

a transformer having a primary winding with first and second terminals and a secondary winding which is connectable to drive a sense-inhibit line;

a first switch connected in series between the first terminal of the primary winding and a voltage source to impress a voltage across the primary winding on command;

a capacitor having a first terminal and a second terminal coupled to the second terminal of the primary winding;

a diode having a first terminal coupled to ground and a second terminal coupled to the second terminal of the primary winding and the second terminal of the capacitor;

a second switch coupled between the first terminal of the capacitor and a voltage supply; and

means for selectively charging the capacitor and closing the second switch whereby the charged capacitor increases the voltage impressed across the primary winding and discharges through the primary winding to a voltage which has substantially no effect upon the voltage impressed across the primary winding.

3,930,172

INPUT SUPPLY INDEPENDENT CIRCUIT

Robert C. Dobkin, Hillsborough, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

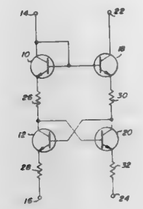
Filed Nov. 6, 1974, Ser. No. 521,363
Int. Cl.² G05F *1/56*
U.S. Cl. 307—297 **16 Claims**

1. A circuit disposed for connection to an input supply for providing an output which is independent of that supply, comprising

a plurality of transistors, and

means responsive to the input supply for generating a base-emitter voltage on all of said transistors,

the base-emitter junctions of said transistors being connected serially in a loop with one another, such that the summation of the base-emitter voltages of said transistors is developed as an output voltage between the base-emitter junctions of two adjacent ones of said transistors in said loop,



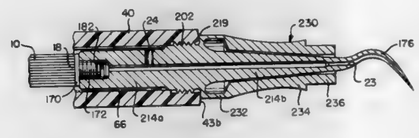
the collector currents of any of said transistors having their collector-emitter circuits connected in series being equal to one another and their base-emitter voltages opposing one another around said loop, such that said summation of the base-emitter voltages is independent of the collector currents of said transistors and only proportional to the difference of the emitter areas of said transistors.

3,930,173

ULTRASONIC TRANSDUCERS

Anton Banko, Brooklyn, N.Y., assignor to Surgical Design Corporation, Long Island City, N.Y.

Continuation of Ser. No. 153,380, June 15, 1971. This application Nov. 5, 1973, Ser. No. 412,767
Int. Cl.² H01L *41/00*
U.S. Cl. 310—26 **48 Claims**



1. An ultrasonic energy transducer for producing vibrational wave energy at a substantially predetermined frequency comprising:

a. magnetostrictive means for converting electrical energy into vibrational energy,

b. a vibrating structure for producing motion including;

an acoustic impedance transformer of metallic material which is substantially one half wavelength long at said predetermined frequency directly connected at one end thereof to one end of said magnetostrictive means, said transformer including a working tool at the other end for producing motion,

an outer shell of metallic material of a length substantially one quarter wavelength at said predetermined frequency which is spaced from and surrounds a portion of said transformer,

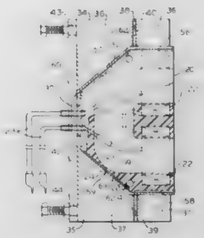
and means directly connecting said shell to said transformer in metal to metal contact so that energy can be transferred from the transformer to said shell, said shell thereby forming a part of the vibrating structure and affecting the characteristics of the vibrational energy of said structure.

3,930,174

STATOR AND ARMATURE FOR A VIBRATING MOTOR

Ming K. Shieh, Westerville, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 8, 1974, Ser. No. 458,653
Int. Cl.² H02K *33/02*
U.S. Cl. 310—29 **2 Claims**



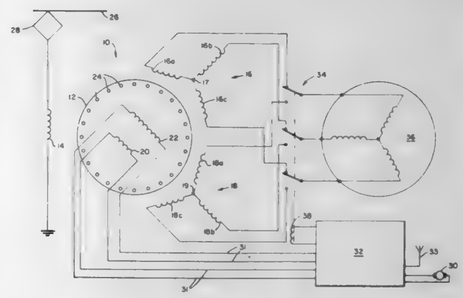
1. A vibrating motor comprising: a stator housing having an open end lying generally in a plane; a stator disposed in the stator housing and having an end flush with the open end of said stator housing; means for providing periodic electrical excitation of the stator; an armature housing movably connected to the stator housing and having an open end lying generally in a plane parallel to and spaced from the open end of said stator housing; and an armature disposed in the armature housing and having an end flush with the open end of said armature housing opposite the end of the stator such that periodic excitation of the stator produces a reciprocating movement of the armature and armature housing due to the periodic magnetic attraction and release of said armature, wherein both the stator and the armature are held in their respective housings by a hardened encapsulating material filling their respective housing flush to the open ends and surrounding all of the stator and armature except for their opposed polar ends and further including pieces of expanded metal secured to the walls of said housings to form an anchor for the encapsulating material.

3,930,175

DYNAMOELECTRIC MACHINE

Keith M. Chirgwin, Palos Verdes Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Sept. 10, 1973, Ser. No. 396,043
Int. Cl.² H02M *5/32*
U.S. Cl. 310—160 **18 Claims**



1. Dynamoelectric apparatus comprising:

a. rotor and stator members;

b. magnetic excitation means on each of said rotor and stator members for operating said rotor at a predetermined synchronous speed in response to the application

of single phase alternating current power to one of said magnetic excitation means; and

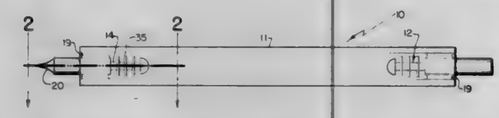
c. an alternating current output winding means comprising an electrically closed loop coil disposed on said stator member and arranged to provide multi-phase alternating current of at least two frequencies at two pairs of output terminals connected to said closed loop coil at four different locations thereon so as to define two electrically different pole arrangements of said output winding means.

3,930,176

INNER ELECTRODE-SUPPORT SEAL FOR A GASEOUS DISCHARGE FLASHTUBE

C. Richard Panico, Medford, Mass., assignor to Xenon Corporation, Medford, Mass.

Filed Feb. 14, 1974, Ser. No. 442,630
Int. Cl.² H01J *61/36, 61/52*
U.S. Cl. 313—220 **7 Claims**



1. A gaseous discharge flashtube in which the discharge electrode assemblies are soldered to the envelope of the flashtube comprising:

a. A transparent heat-resistant envelope having cylindrical terminal portions;

b. a discharge electrode assembly mounted in each said cylindrical terminal portion (with all metallic portions of each said assembly within the perimeter of the extended internal circumference), said discharge electrode assembly assembled from metal components having a total maximum outside diameter smaller than the internal diameter of the respective cylindrical terminal portions; and,

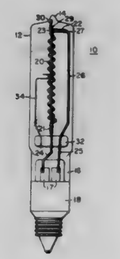
c. a layer of metallic solder surrounding a supporting portion of each electrode assembly between the electrode assembly and the inner surface of said envelope fused to both said electrode assembly and said envelope so as to sealingly support said electrode assembly in said envelope.

3,930,177

SINGLE-ENDED INCANDESCENT LAMP HAVING A SIMPLIFIED FILAMENT-MOUNT

Jack Martin, Paramus, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 6, 1972, Ser. No. 260,084
Int. Cl.² H01J *1/15, 1/88*
U.S. Cl. 313—271 **4 Claims**



1. In a single-ended electric incandescent lamp having a tubular envelope that is terminated at one end by a hollow tip and is closed at its other end by a press seal, said hollow tip being substantially aligned with the axis of the envelope, a mount structure comprising;

an elongated coiled-coil filament of continuously-wound refractory metal wire having a singly-coiled leg at each end that constitutes an integral part of the filament as wound and thus consists of a plurality of continuously-wound primary turns, one of said legs having a primary turn that is bent from its as-wound configuration and defines an opening in the leg that is located a predetermined distance from the free end of said leg, and

means suspending said coiled-coil filament in longitudinal position within the envelope comprising a pair of rigid lead wires of unequal length that are anchored in said press seal and are secured to the legs of said filament,

the longer of said pair of lead wires being disposed alongside of but spaced from said filament and being terminated by a generally L-shaped hook portion that extends through the filament leg with the bent primary turn, through the opening in said leg defined by said bent primary turn and into the hollow tip of the envelope,

the part of said longer lead wire that extends alongside the filament being substantially straight, offset toward the envelope wall, and joined to the generally L-shaped hook portion of said longer lead wire by a sharp angular bend, and

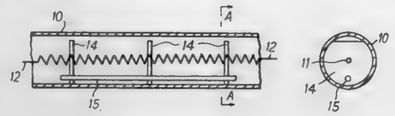
the end of the filament leg which is secured to said longer lead wire being seated against said sharp angular bend so that said bend thus serves as a stop for positioning the filament leg on said longer lead wire.

3,930,178

ELECTRICAL INCANDESCENT FILAMENT DEVICES

James Richard Coaton, London, England, assignor to Thorn Electrical Industries Limited, London, England

Filed July 5, 1974, Ser. No. 485,778
Claims priority, application United Kingdom, July 10, 1973, 32729/73
Int. Cl.² H01J *1/90, 19/44*
U.S. Cl. 313—275 **5 Claims**



1. In a linear incandescent filament electrical device having an elongated tubular envelope containing a filament extending along the tube parallel to the central axis thereof and supported at intervals by supports which engage the wall of the envelope, the improvement wherein the supports are plates of electrically-insulating, ceramic material heat-shrunk onto the filament to form a mechanical bond therewith, each plate having edges which fit closely against the inside surface of the envelope and are of sufficient width to prevent skewing of the plate relative to the axis of the envelope.

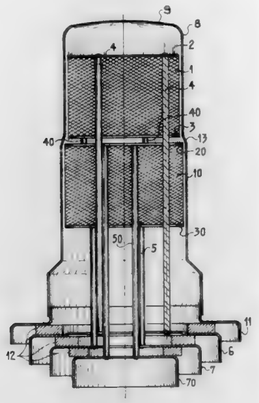
3,930,179

GRID-TYPE ELECTRONIC TUBE

Pierre Gerlach, and Roger Hoet, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 17, 1974, Ser. No. 533,715
Claims priority, application France, Dec. 21, 1973, 73.46038
Int. Cl.² H01J *1/46, 21/20*
U.S. Cl. 313—296 **1 Claim**

1. An electronic tube with cylindrical electrodes, comprising a cathode, one or more grids, and an anode, consisting of cylinders arranged around a common axis, characterised in that said cathode is constituted by at least two separate sections of different diameters; and in that at least the first of said grids, that is to say that which is closest to said cathode, is made up of cylindrical sections of different diameters connected together by a non-cylindrical surface at the level of the splits between said sections.

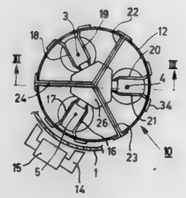


3,930,180

COLOR CATHODE RAY TUBE MAGNETIC POLE PIECE SUPPORT STRUCTURE

Johannes Aloysius van Leeuwen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 2, 1974, Ser. No. 466,388
Claims priority, application Netherlands, May 21, 1973, 7307040
Int. Cl.² H01J *29/51, 29/02*
U.S. Cl. 313—417 **3 Claims**



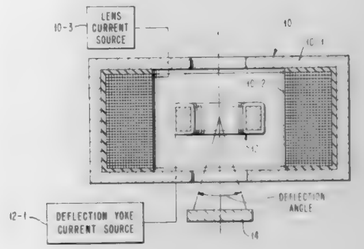
1. A cathode-ray tube for displaying color pictures comprising an evacuated envelope and, within said envelope, means to generate a plurality of electron beams, a display screen having a plurality of regions luminescing in different colors, a color selection electrode having a plurality of apertures to assign each electron beam to luminescent regions of one color, convergence means including a cylindrical sleeve, a plurality of pairs of ferromagnetic pole shoes secured to said sleeve and extending radially inwards to converge the electron beams toward the display screen, means to magnetically screen said pairs of pole shoes from each other, and spacing means abutting against the free ends of each pair of said pole shoes to fix the space therebetween.

3,930,181

LENS AND DEFLECTION UNIT ARRANGEMENT FOR ELECTRON BEAM COLUMNS

Hans Christian Pfeiffer, Ridgefield, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,410
Int. Cl.² H01J *29/76, 29/70*
U.S. Cl. 313—421 **4 Claims**



1. In an electron beam column deflection system of the type wherein an electron beam is generated, focussed, and deflected on a target, a focussing and deflection unit comprising: means for producing a magnetic lens in the path of said electron beam for focussing said electron beam onto a target, said magnetic lens producing means including a field generating coil and at least two pole pieces forming an air gap for producing static magnetic field lines which form a rotationally symmetrical field distribution having a field maximum in said air gap for focussing said electron beam,

and a magnetic deflection yoke including sinusoidally distributed windings for producing a dynamic magnetic field, said magnetic deflection yoke being located inside said longitudinal magnetic field lines of said air gap of said magnetic lens means at the maximum of said symmetrical field distribution wherein said dynamic magnetic field and said static magnetic field are superimposed, for deflecting said electron beam on said target wherein the working distance between said magnetic lens and said target is designated b, the working distance between said yoke and target is designated b', and wherein said yoke is located inside said magnetic lens at a position wherein $b = b'$ such that said yoke is located at the maximum of said symmetrical field distribution produced by said pole pieces of said magnetic lens.

3,930,182

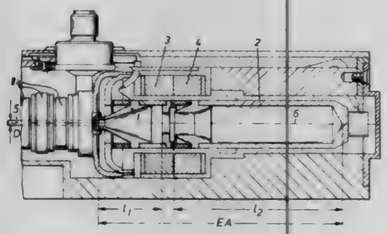
TRAVELING-WAVE TUBE HAVING IMPROVED ELECTRON COLLECTOR

Jork Bretting, Thalfingen, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed June 25, 1974, Ser. No. 483,074
Claims priority, application Germany, June 30, 1973, 2333441
Int. Cl.² H01J *25/34*
U.S. Cl. 315—3.5 **11 Claims**

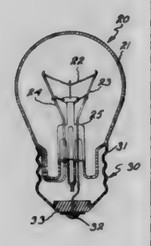
1. In a traveling-wave tube composed of a ppm electron beam focusing device and an electron collector disposed adjacent the focusing device and provided with two collector electrode arrangements disposed to enclose the electron beam over part of its path, said arrangements being spaced from one another by a transition region and being arranged in succession along the axis of the beam in the collector, the two arrangements being electrically insulated from one another, the improvement wherein said collector further comprises additional magnetic focusing lens field producing means disposed

in the transition region between said two collector electrode arrangements and producing a concentrating field which refo-



cuses the electrons in the beam in the region between said collector electrode arrangements.

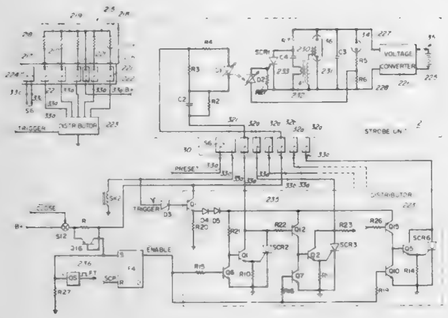
3,930,183
INCANDESCENT LAMPS HAVING PROTECTION AGAINST VOLTAGE SURGES
John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Apr. 30, 1973, Ser. No. 355,897
Int. Cl.² H01K *1/62*
U.S. Cl. 315—71 **11 Claims**



1. A voltage surge protected incandescent lamp comprising:
a filament;
an envelope for containing said filament in an oxidizing agent excluding atmosphere; and
polycrystalline varistor means connected electrically in parallel with said filament for shunting voltage surges to protect said filament therefrom.

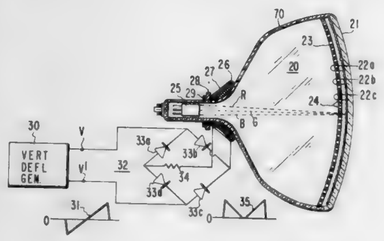
11. A surge protective device adapted to be inserted in a lamp socket comprising:
a body of polycrystalline varistor material having a pair of substantially parallel opposed faces and a void in said body extending from a first of said faces to a second of said faces;
first conductor means connected to said first face for providing electrical connection between said first face and a center contact of a lamp socket;
a second conductor means connected to said first conductor means and traversing said void for providing electrical connection between said first conductor means and a protected device; and
third conductor means connected to said second face for providing electrical connection between said second face and a shell contact of said lamp socket.

3,930,184
ELECTRONIC FLASH COUPLING SYSTEM FOR SEQUENTIAL FLASHBULB FIRING CIRCUIT
Conrad H. Biber, Needham, and Edwin K. Shenk, Littleton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 20, 1973, Ser. No. 426,967
Int. Cl.² H05B *39/00*
U.S. Cl. 315—241 P **14 Claims**



1. An electronic flash unit for use with a camera having an accessory connector adapted to receive at least one flashlamp and having terminals adapted to be supplied with current for firing a flashlamp, said electronic flash unit comprising a triggerable gas discharge tube, means for supplying electrical energy to said tube to cause said tube to produce a flash of light when triggered, trigger circuit means connected to said tube and responsive to an applied signal to trigger said tube, and a signal generating impedance network having input terminals adapted to be connected to the current supply terminals of the camera, said network comprising a resistance approximating the resistance of an unfired flashlamp connected in series with a capacitor between said input terminals, whereby current supplied to said input terminals flows in a pulse that falls in amplitude as said capacitor is charged, simulating the impedance characteristics of a flashlamp as it is fired, said impedance network further comprising means responsive to the flow of current through said capacitor to apply a signal to said trigger circuit means.

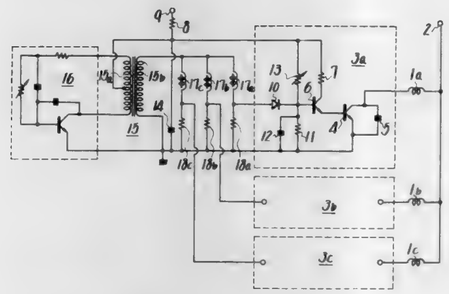
3,930,185
DISPLAY SYSTEM WITH SIMPLIFIED CONVERGENCE
William Henry Barkow, Pennsauken, and Josef Gross, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.
Filed May 20, 1974, Ser. No. 471,626
Int. Cl.² H01J *29/70*
U.S. Cl. 315—370 **7 Claims**



1. A display system utilizing simplified convergence, comprising:

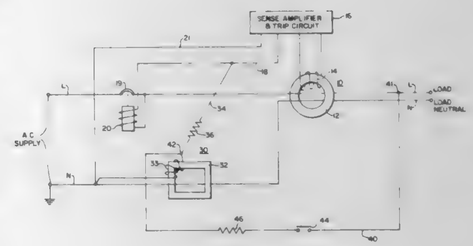
a color picture tube including an electron gun assembly for producing three coplanar beams;
static convergence means disposed relative to said picture tube for converging said three beams at the central region of the viewing screen of said picture tube;
a deflection yoke disposed in operating relation about the neck portion of said picture tube, said yoke including vertical and horizontal deflection coils for causing said beams to scan a raster, the winding distribution of said horizontal coils selected for producing negative horizontal isotropic astigmatism for substantially converging vertical lines along the horizontal deflection axis and the winding distribution of said vertical coils selected for causing horizontal lines to be substantially parallel;
means for positioning said yoke relative to said tube for aligning the magnetic deflection field of said yoke relative to said beams for substantially converging horizontal lines at all points on said screen and for substantially converging vertical lines along the horizontal deflection axis;
coil winding portions disposed about the neck portion of said picture tube for producing a quadrupole magnetic deflection field within said neck portion of said tube; and
means for energizing said coil winding portions with energy at the vertical scanning rate for converging vertical lines such that said beams are substantially converged at all points on said viewing screen.

3,930,186
PROTECTIVE DEVICE FOR BRUSHLESS DC MOTOR
Tetsuo Sekiya, Yokohama, and Atsushi Hienuki, Sendai, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed June 26, 1974, Ser. No. 483,153
Claims priority, application Japan, June 29, 1973, 48-78240[U]
Int. Cl.² H02H *7/08, 5/04*
U.S. Cl. 317—13 B **6 Claims**



1. A brushless electrical motor including,
a permanent magnet rotor,
a stator rotatably supporting said rotor and a plurality of angularly spaced field windings mounted in said stator, position sensing means mounted on said rotor, a plurality of detecting coils mounted to sense the angular position of said sensing means,
a plurality of electronic switches respectively connected in series with said plurality of field windings and having control electrodes respectively connected to said plurality of detecting coils, first voltage supply terminals connected across said plurality of field windings and electronic switches,
an oscillator,
a transformer having a temperature sensitive magnetic core with its primary winding connected to the output of said oscillator and its secondary connected across each of said detecting coils such that power is sequentially applied to said field windings as said rotor rotates at temperatures below a predetermined temperature but power is disconnected from said field windings by said electronic switches and transformer above said predetermined temperature.

3,930,187
GROUND FAULT INTERRUPTER WITH MEANS PROTECTING AGAINST A GROUNDED NEUTRAL CONDITION AND WITH A TEST CIRCUIT FOR TESTING PERFORMANCE
John J. Misencik, Shelton, Conn., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 20, 1973, Ser. No. 417,659
Int. Cl.² H02H *3/08, 3/28*
U.S. Cl. 317—18 D **4 Claims**



1. Ground fault interrupter apparatus comprising:
a differential current transformer including a magnetic core, a plurality of primary windings on said core, each being one of the line and neutral conductors of an AC electrical distribution system connected between a supply and at least one load, and a secondary sensing winding on said core for sensing current unbalance between currents in said primary windings, said neutral conductor being grounded at a supply terminal thereof;
means responsive to a predetermined sensed signal on said sensing winding to open at least one of said line conductors;
grounded neutral protection means responsive to a fault to ground from the neutral conductor on the load side of the differential transformer to produce a current imbalance in said differential current transformer, said grounded neutral protection means being associated with the neutral conductor on the supply side of said differential current transformer;
test means to test the ability of the apparatus to trip upon occurrence of either line to ground fault conditions or neutral to ground fault conditions, said test means comprising a circuit branch connected from a first point on a line conductor on the load side of said differential current transformer and a second point electrically proximate the neutral conductor on the supply side of said differential current transformer, said circuit branch including a normally open test switch that is closable to cause unbalanced currents in said primary windings;
said grounded neutral protection means comprising an additional transformer having a second magnetic core, a primary winding on said second magnetic core connected between the line and neutral conductors, the neutral conductor of the system being a secondary winding on said second core; and said second point to which said test circuit branch is connected is located adjacent said primary winding of said additional transformer on the side thereof opposite the neutral conductor.

3,930,188
COMPLETELY INSULATED HIGH-VOLTAGE SWITCHING SYSTEM

Willi Olsen, and Manfred Lieske, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

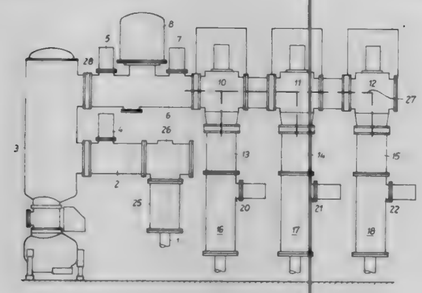
Filed Nov. 2, 1972, Ser. No. 303,011

Claims priority, application Germany, Nov. 12, 1971, 2157102

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² H02B 1/20

U.S. Cl. 317—103 **5 Claims**



1. In a completely insulated high-voltage switching system having a bus-bar fed through a power circuit breaker, a plurality of disconnect switches for connecting a corresponding plurality of branch lines to the bus-bar and for disconnecting the same during a currentless interval caused by a short opening of the power circuit breaker, each of the disconnect switches having first and second connecting conductors, the second connecting conductor being connected to a corresponding one of the branch lines; the improvement comprising the arrangement wherein the first connecting conductor of each of the disconnect switches is directed toward the breaker and is disposed to define a right angle with respect to the second conductor thereof, the first connecting conductors of the disconnect switches being arranged in a straight line to conjointly define the bus-bar, said second connecting conductors being in one plane and the power circuit breaker forming a common plane with the disconnect switches.

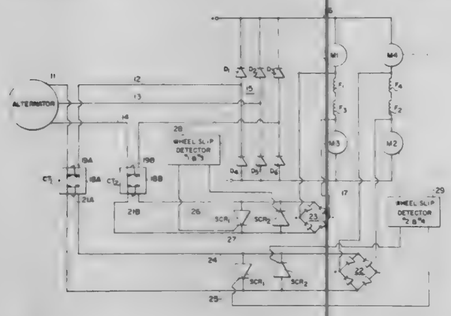
3,930,189
WHEEL SLIP CORRECTION SYSTEM

Russell M. Smith, North East, Pa., assignor to General Electric Company, Erie, Pa.

Filed Oct. 11, 1974, Ser. No. 514,087

Int. Cl.² H02P 5/46

U.S. Cl. 318—52 **11 Claims**



1. A wheel slip control system for electric traction motors employing series-type direct current traction motors having field and armature windings connected in series electrical circuit relationship, power rectifier means and means for supplying alternating current to the power rectifier means, the series-type traction motors being connected across the output from the power rectifier means for the supply of normal excitation direct current thereto, the improvement comprising current transformer means having primary and secondary windings wound on a common core, the primary winding being serially connected in the supply connection between the means for supplying alternating current and the power rectifier means, secondary rectifier means having the output thereof upon excitation coupled to supply auxiliary field current to the field winding of each series-type direct current traction motor in addition to the normal direct current excita tion from the power rectifier means, the polarity of the auxiliary field current being such that upon addition to the normal excitation direct current a reduction in the tractive effort of the motor results, and means responsive to the occurrence of a slippage condition for effectively supplying output current from the secondary winding of the current transformer means to the secondary rectifier means to excite the same.

3,930,190
BRUSHLESS DC MOTOR HAVING MULTIPLE STATOR WINDINGS

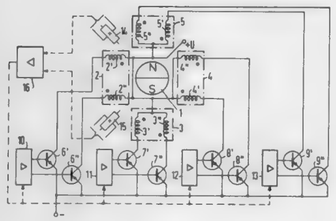
Manfred Liska, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed June 21, 1974, Ser. No. 481,753

Claims priority, application Germany, June 29, 1973, 2333252

Int. Cl.² H02K 23/00

U.S. Cl. 318—254 **2 Claims**



1. In a brushless d-c motor of the type having a permanent magnet rotor and a stator winding made up of several phase windings with the phase windings Y-connected on one side and provided to one side of a voltage source with the other side of the phase windings coupled through individual power transistors to the other side of the voltage source with each power transistor controlled by a separate control device which is responsive to a rotor position transducer, an improved arrangement for providing such a motor with a power rating in excess of that obtainable through the use of a single transistor in each phase winding the improvement comprising:

a. each phase winding sub-divided into an equal number of winding legs with the winding legs belonging to a phase winding arranged in the stator in two groups of equal size diametrically opposite each other with said two groups electrically connected in such a manner that the magnetic fluxes generated by them act in the same direction;

b. the power transistors coupling said phase winding including a separate power transistor coupling each of the winding legs to the other side of the voltage source; and

c. the separate control device for each phase winding coupled to simultaneously energize and deenergize all transistors associated with the legs making up an individual phase winding.

3,930,191
BRAKING CIRCUIT FOR THE MIXED REGENERATIVE AND RESISTANCE BRAKING OF A D-C SERIES MACHINE OPERATED AS A GENERATOR

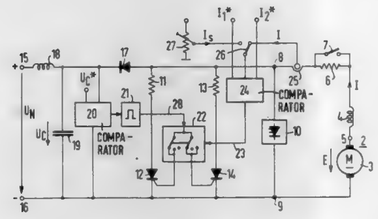
Peter Loderer, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed June 3, 1974, Ser. No. 475,992

Claims priority, application Germany, June 7, 1973, 2329146

Int. Cl.² H02P 3/14

U.S. Cl. 318—376 **11 Claims**



1. In a braking circuit for the mixed regenerative and resistance braking of a d.c. series machine operating as a generator in which the armature and field windings of said machine are combined with a stabilizing resistor in a series circuit across which is shunted a d.c. control element with a controlled main rectifier and across which is shunted a first braking branch comprising a first braking resistor in series with a first controlled braking rectifier, with the series circuit connected through a return rectifier to a d.c. source which can absorb current at least intermittently, the improvement comprising;

a. means to monitor voltage in the circuit and means responsive thereto to generate firing pulses;

b. at least a second braking branch comprising a second braking resistor having a resistance different from that of the first braking resistor in series with a controlled braking rectifier, said second braking branch coupled in parallel with said first braking branch;

c. a selection circuit having at least three switch positions, selectively closed in response to an input signal and selectively coupling said means generating firing pulses to said first and second controlled braking rectifiers, a first switching position coupling said firing pulses to said first braking rectifier, a second switching position coupling said firing pulses to said second braking rectifier and a third switching position coupling said firing pulses to both said first and second braking rectifiers;

d. means to develop a signal proportional to the actual current in said braking circuit; and

e. control means for providing a control signal to said selection circuit, said control having as inputs the output of said means providing a signal proportional to actual current and first and second predetermined limit values, said control means providing an output closing said first switch when said actual value exceeds said first predetermined value, an output closing said second switch when said actual value is between said two predetermined values and an output closing said third switch when said actual value is greater than said second predetermined value.

3,930,192
STAND-BY POWER SYSTEM

Leonard R. Dinkler, Gainesville, Fla., assignor to General Electric Company, Columbus, Ohio

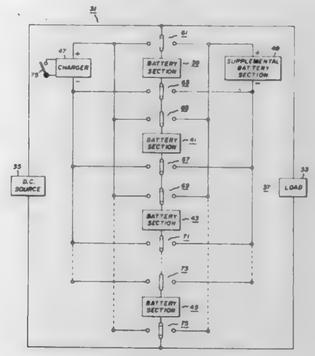
Filed May 20, 1974, Ser. No. 471,593

Int. Cl.² H02J 7/00

U.S. Cl. 320—15 **12 Claims**

1. A battery charging apparatus for a high voltage stand-by power system, said system comprising a power source connected in circuit with a load, a supplemental battery section, and a battery of rechargeable cells coupled across said load to provide stand-by power upon the non-functioning of said source, said battery being divisible into a plurality of sections of at least one cell each for charging, said apparatus comprising:

a. charging means for supplying a source of charging current;



b. switching means, coupled between said charging means and said battery, for sequentially disconnecting one section at a time, each of said plurality of sections from said battery and for connecting said disconnected section to said charger for charging; and

c. a supplemental switching means, coupled between said supplemental section and said battery, for connecting said supplemental section in parallel with each of said plurality of sections, one section at a time.

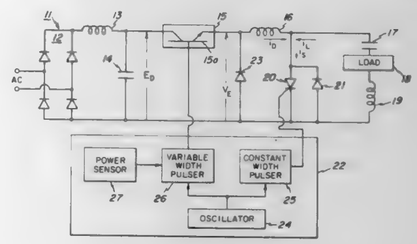
3,930,193
SCR INVERTER SYSTEMS

William P. Kornrumpf, and John D. Harnden, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 2, 1973, Ser. No. 384,988

Int. Cl.² H02M 5/45; G05F 1/44

U.S. Cl. 321—2 **13 Claims**



1. An improved direct current-to-alternating current inverter system comprising:

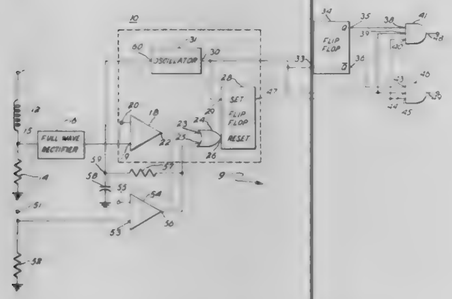
an SCR inverter adapted to be connected to a load, said inverter including a series resonant load circuit including an inductor, a capacitor and said load with an SCR connected in parallel relationship with said circuit;

a current controlling means having one terminal operatively connected to said SCR inverter and another terminal adapted to be connected to a D.C. voltage source, said means controlling the application of said D.C. voltage source to said SCR inverter;

frequency control means for maintaining the operation of said inverter at a substantially constant frequency, said frequency control means providing variable width gating

signals to said current controlling means for controlling the duration of time said D.C. voltage source is applied to said SCR inverter and constant width gating signals to said SCR for controlling the conduction of said SCR; and means responsive to inverter system variations for altering the width of said variable width gating signals to ensure reliable SCR commutation as said SCR inverter maintains a substantially constant frequency of operation independently of said system variations.

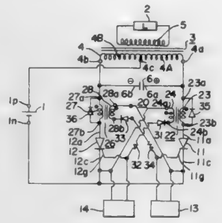
3,930,194
INVERTER CONTROL CIRCUIT
Loren H. Walker, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Oct. 21, 1974, Ser. No. 516,771
Int. Cl.² H02M 1/18
U.S. Cl. 321—11 **9 Claims**



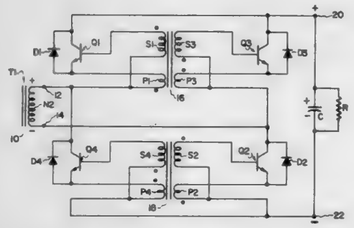
1. A control circuit for a quasi square wave high frequency inverter having solid state switching devices comprising
means sensing instantaneous transformer flux and providing an output proportional thereto,
a first comparator wherein the output of said flux sensing means and a first reference signal are compared and an output is produced when said output proportional to instantaneous transformer flux exceeds said reference signal,
an oscillator having a substantially square wave output at a selected frequency,
means responsive to the outputs of said first comparator and said oscillator for providing turn-on and turn-off signals to said solid state switching devices so that the conduction time is controlled to provide a constant level of peak flux from half cycle to half cycle which is below the saturation level.

3,930,195
ELECTRICAL CIRCUIT HAVING A PAIR OF THYRISTORS
Hideo Iwamoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed June 14, 1974, Ser. No. 479,442
Int. Cl.² H02M 7/515
U.S. Cl. 321—45 C **11 Claims**

1. An electrical circuit comprising:
at least one pair of thyristors each having an anode, cathode and gate;
the first thyristor being turned off when turning on the second thyristor and the second thyristor being turned off when turning on the first thyristor;
a pair of transformers;
the first transformer directly applying reverse bias voltage between the gate and cathode of the second thyristor when turning on the first thyristor;
the second transformer directly applying reverse bias voltage between the gate and cathode of the first thyristor when turning on the second thyristor.

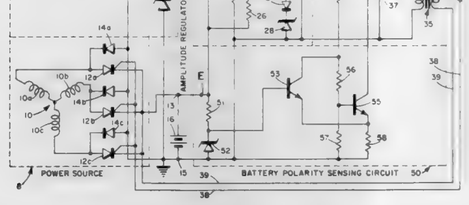


3,930,196
BRIDGE RECTIFIER CIRCUITS USING TRANSISTORS AS RECTIFYING ELEMENTS
John N. Park, Rexford; Robert L. Steigerwald, Scotia, and Loren H. Walker, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 412,342, Nov. 2, 1973, abandoned. This application Nov. 22, 1974, Ser. No. 526,143
Int. Cl.² H02M 7/217
U.S. Cl. 321—47 **2 Claims**



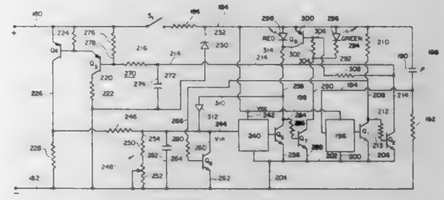
1. A full wave bridge active rectifying circuit comprising
a pair of input terminals for high frequency alternating-current input voltage with a frequency between 20 and 50 kilohertz, and a pair of output terminals for supplying unidirectional voltage to a load and between which is directly connected a capacitor,
first, second, third, and fourth silicon junction transistors each connected for inverted mode operation and each having an emitter, a base, a collector, and a collector-base junction, a diode connected between the emitter and collector of each transistor with a polarity to conduct in the same direction as the respective transistor, and a plurality of current transformers for controlling said respective transistors having only first, second, third, and fourth pairs of primary and secondary windings,
said first transistor having the collector thereof connected to one output terminal, one end of said first pair of primary and secondary windings being connected together and to one input terminal while the other ends of said first pair of primary and secondary windings are connected respectively to the emitter and base of said first transistor; said second transistor having the collector thereof connected to the other input terminal, one end of said second pair of primary and secondary windings being connected together and to the other output terminal while the other ends of said second pair of primary and secondary windings are connected respectively to the emitter and base of said second transistor; said third transistor having the collector thereof connected to the one input terminal, one end of said third pair of primary and secondary windings being connected together and to the other input terminal while the other ends of said third pair of primary and secondary windings are connected respectively to the emitter and base of said third transistor; said fourth transistor having the collector thereof connected to the one input terminal, one end of said fourth pair of primary and secondary windings being connected together and to the other output terminal while the other ends of said fourth pair of primary and secondary windings are connected respectively to the emitter and base of said fourth transistor; said transistors further being connecged such that voltage blockage is performable by the collector-base junction of each transistor,
one pair of said first and second pairs of primary and secondary windings and one pair of said third and fourth pairs of primary and secondary windings being magnetically coupled on a current transformer common magnetic core made of ferrite material while the other pair of said first and second pairs of primary and secondary windings and the other pair of said third and fourth pairs of primary and secondary windings are magnetically coupled on another current transformer common magnetic core made of ferrite material.

3,930,197
VOLTAGE REGULATOR SYSTEM
Frederick A. Saylor, Box 231, Leitchs Wharf, Prince Frederick, Md. 20678
Filed Apr. 25, 1974, Ser. No. 464,134
Int. Cl.² H02J 7/24
U.S. Cl. 322—28 **11 Claims**



1. Apparatus for supplying a regulated voltage to a load comprising,
a. permanent magnet alternator means for generating an output voltage,
b. rectifier means coupled between said permanent magnet alternator and said load for rectifying said output voltage, said rectifier means including at least one controllable uni-directional current device having two current carrying electrodes and a control electrode, said device being triggered into conduction upon the application of a control signal of given polarity between said control electrode and one of said two current carrying electrodes,
c. a reference amplifier having a signal input coupled to said load, a bias input coupled to said rectifier means and an output,
d. an oscillator having a signal input coupled to the output of said reference amplifier, a bias input coupled to said rectifier means and an output coupled between the control and one electrode of said uni-directional current device, said oscillator applying pulses to said uni-directional current device having a relative phase corresponding to the magnitude of the voltage across said load, and
e. a battery polarity sensing circuit including a first resistor and a zener diode connected in series across said load; first and second transistors, said first transistor having its base connected to the junction of said first resistor and zener diode, its collector coupled to said rectifier means and to the base of said second transistor and its emitter to the emitter of said second transistor, the collector-emitter circuit of said second transistor being connected to said oscillator, said battery polarity sensing circuit providing a low impedance path to prevent said oscillator from generating output pulses in the event said load is a battery and has been connected with reverse polarity.

3,930,198
BATTERY TESTER AND CIRCUIT
Richard P. Williamson, Jr., Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Oct. 21, 1974, Ser. No. 516,644
Int. Cl.² G01N 27/42
U.S. Cl. 324—29.5 **17 Claims**

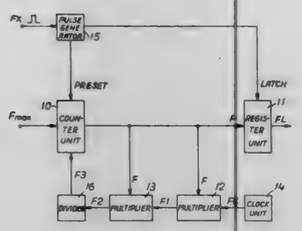


1. Apparatus for evaluating a battery having output terminals of opposed polarity comprising:
contact means for providing electrical communication with said terminals;
load means exhibiting an impedance of predetermined value connectable across said terminals to derive a closed circuit voltage value of said battery;
load switching means actuable to assume a first state applying said load across said terminals through said contact means and a second state electrically isolating said load from said terminals;
evaluating means responsive, when enabled, to said voltage value at said load means exhibiting at least a predetermined value and having a first output condition responsive thereto;
timing means for selectively enabling said evaluating means and responsive to said contact means electrical communication with said terminals for actuating said load switching means to sequentially assume said first and second states to define an interval of sampling for deriving said voltage value; and
indicator means responsive to said evaluating means first output condition for indicating the presence thereof.

3,930,199
MEANS FOR DETERMINING FREQUENCY
Jaroslav Valis, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Dec. 31, 1974, Ser. No. 537,782
Claims priority, application Sweden, Feb. 7, 1974, 7401611
Int. Cl.² G01R 23/02
U.S. Cl. 324—78 D **7 Claims**

1. Means for measuring frequency which comprises a counter unit (10), first and second multipliers (12,13) connected in series with each other, and connected to the counter unit, a sensing unit (15) including means for sensing each pulse in a first unknown pulse train (FX), the frequency (f_x) of which is to be determined, said multipliers (12,13) including means to generate a second pulse train (F2), the frequency of which is proportional to the square of the content (F) of the counter unit (10), the counter unit (10) including means responsive to each pulse in the second pulse train (F2) to reduce the content (F) of the counter unit by a predetermined quantity, the sensing unit (15) including means to deliver a third pulse train (PRESET) to the counter unit (10), the

counter unit (10) including means responsive to each pulse in the third pulse train (PRESET) to preset the content (F) of the counter unit to a predetermined greatest quantity (F_{max}),



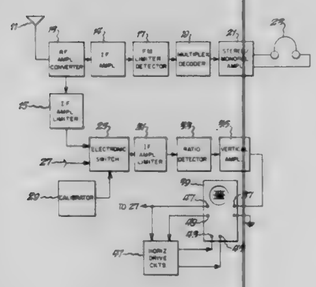
the content (F) of the counter unit (10) at the time of each pulse in the first pulse train (FX) constituting a measure of the frequency (f_x) of the first pulse train.

3,930,200

FM MONITORING SYSTEM

Stanley J. Feld, 209 East and West Road, West Seneca, N.Y. 14224

Filed Oct. 3, 1974, Ser. No. 511,777
Int. Cl.² H04B 17/00
U.S. Cl. 325—134 **12 Claims**



1. Modulation apparatus for monitoring frequency modulated signal transmissions comprising:

means for deriving the frequency modulation signal components from said frequency modulated signal transmission;

means for generating controlled sequential bursts of continuous wave signals at predetermined frequencies, said bursts bearing a fixed relation to modulation limits for said frequency modulated signal transmission;

display apparatus including a visual display screen; and

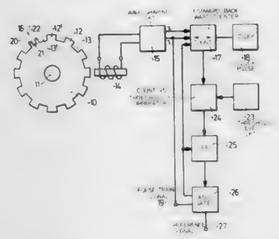
signal processing apparatus operative to alternately apply the frequency modulation signal components from said frequency modulated signal transmissions and the controlled sequential bursts of continuous wave signals to said display apparatus, whereby a visual display is presented to show the relation of the frequency modulation of the signal transmissions to the modulation limits as represented by said sequential bursts of continuous wave signals.

3,930,201

PULSE SOURCE TO PROVIDE A PULSE TRAIN REPRESENTATIVE OF MOVEMENT OF A SHAFT AND A REFERENCE PULSE REPRESENTATIVE OF A REFERENCE POSITION

Fritz Ackermann, Stuttgart; Günter Hönig, Markgroningen, and Alfred Schulz, Braunschweig, all of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Filed Sept. 27, 1974, Ser. No. 509,846
Claims priority, application Germany, Nov. 15, 1973, 2357061
Int. Cl.² G01P 3/44; H02K 24/00
U.S. Cl. 328—1 **10 Claims**



1. A pulse source to provide a pulse signal train representative of movement of a movable element (11) and a reference pulse signal when the movable element is in a predetermined reference position,

having a transducer system including a plurality of transducer elements (12, 13, 16) located on the movable element (11) and a transducer receiver (14) located in energy transfer coupling with respect to said plurality of elements, and providing said signals upon passage of the transducer elements past the receiver,

wherein

the transducer elements comprise projecting teeth (12) separated by gaps (13) to provide a sequence of pulses in the transducer receiver (14) having a 1:1 sensing relationship of elements and resulting pulses;

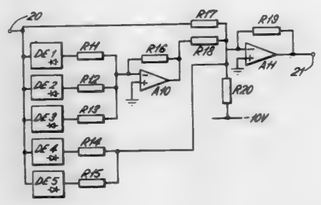
and wherein one of the transducer elements (16) is shaped differently from the others (12) and comprises a group of tooth portions (20, 22) separated by gaps (21), located within the space of any other tooth (12) and in advance of that transducer element (12') which provides the reference pulse.

3,930,202

FUNCTION GENERATOR CIRCUIT

John Alden Dever, London, England, assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 11, 1973, Ser. No. 368,657
Claims priority, application United Kingdom, June 9, 1972, 26941/72
Int. Cl.² G06G 17/12
U.S. Cl. 328—142 **3 Claims**



1. A function generator comprising an input terminal, a signal summing circuit, a plurality of signal rectifying circuits

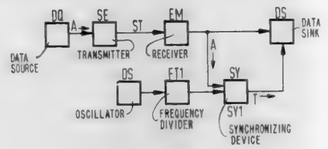
connected in parallel between said input terminal and said summing circuit; each of said signal rectifying circuits including biasing means for biasing a corresponding one of said signal rectifying circuits to conduct with a particular resistance at a particular input voltage so that the characteristics of said signal rectifying circuits thereby sum to form a combined characteristic of segmental form, and including a non-rectifying signal circuit connection from said input terminal to said summing circuit having a straight line characteristic which coincides with a representative or substantially central segment of the combined characteristic and which passes through the input equals zero line to one side of the origin of the input equals zero line, the characteristics of said rectifying circuits thus summing with the straight line characteristic of the non-rectifying circuit on a corresponding side of the central segment of the combined characteristic.

3,930,203

CIRCUIT ARRANGEMENT FOR ADJUSTING THE PHASE STATE OF A TIMING SIGNAL

Adolf Haass, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 29, 1974, Ser. No. 518,813
Claims priority, application Germany, Oct. 29, 1973, 2354072
Int. Cl.² H04B 1/02
U.S. Cl. 328—155 **6 Claims**



1. Apparatus for adjusting the phase state of a timing signal which has been obtained by means of a frequency divider from a divider signal, wherein a discriminator signal is produced in dependence on the phase state of a binary signal and wherein pulse edges of the divider signal are added to or suppressed from the divider signal, comprising:

polarity reversal means,

first channel means connecting said divider signal to said polarity reversal means and then to an input of said frequency divider,

second channel means connecting said divider signal to an input of said frequency divider,

switching means for selectively connecting said divider signal to said first or second channel in dependence on the value of said discriminator signal.

3,930,204

DEVICE AND CIRCUIT FOR DETECTING A PULSE SIGNAL IN NOISE IN REAL TIME

Mortimer H. Zinn, Elberon; George W. Taylor, Brielle, and Kenton Garoff, Little Silver, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 26, 1974, Ser. No. 500,963
Int. Cl.² H01J 31/58
U.S. Cl. 328—229 **11 Claims**

1. A device for distinguishing a signal in the presence of noise, said device (including) comprising

an evacuated housing;

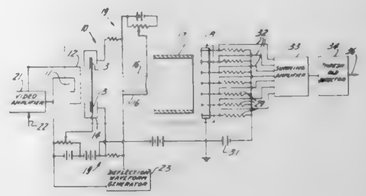
a planar array of diodes mounted at a first location in said housing.

a source of electrons mounted at a second location in said housing;

means mounted in said housing for accelerating electrons from said source towards said planar array;

means for sequentially directing said accelerated electrons to preselected portions of said planar array; (and)

means mounted on said housing for modulating the amplitude of said accelerated electrons;



a summing means connected to each of the diodes in said diode array for summing the output thereof; and

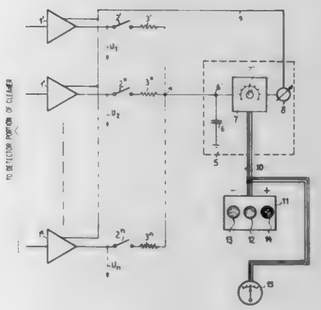
a threshold means for providing a signal when the output of said summing means exceeds a predetermined level.;

3,930,205

ARRANGEMENTS FOR AUTOMATICALLY ADJUSTING CORRECT REFERENCE VALUES FOR YARN FAULTS IN ELECTRONIC YARN CLEANERS

Kurt Aeppli, Uster, Switzerland, assignor to Zellweger, Ltd., Switzerland

Filed Feb. 18, 1972, Ser. No. 227,509
Claims priority, application Switzerland, Feb. 19, 1971, 2427/71
Int. Cl.² H03G 3/22
U.S. Cl. 330—2 **10 Claims**

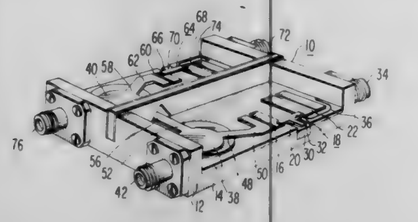


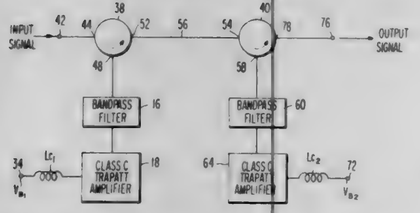
1. An arrangement for automatically adjusting and correcting the reference values for yarn faults in electronic yarn cleaners comprising, in combination with at least two yarn cleaners each having a variable gain amplifier providing an output control signal, a respective switch and resistance connected in series to the output of each amplifier and to a common point, comparator means for comparing the voltage at said common point with a reference voltage, and regulating means for regulating the gain of all of said amplifiers collectively in accordance with the difference between said reference voltage and the voltage at said common point as provided by said comparator means.

3,930,206
BROAD-BAND AMPLIFIER USING CASCADED CLASS C AMPLIFIERS

Arye Rosen, Cherry Hill, N.J., and James Francis Reynolds, Beverly, Mass., assignors to Robert L. Troike and RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 466,796, May 3, 1974. This application Mar. 31, 1975, Ser. No. 563,813
Int. Cl.² H03F *3/60*
U.S. Cl. 330—53 **9 Claims**





1. An amplifier for amplifying microwave signals above a given level over a given relatively broad band of frequencies comprising:

a first avalanche diode amplifier including a first avalanche diode and a first bandpass filter with one terminal of the diode coupled to said first filter and the other terminal to a reflecting means, said first diode being reverse biased an amount requiring a signal above said given level to achieve negative conductance and amplification, said first filter adapted to apply signals only substantially at frequencies f_1 through f_2 above said given level to said diode and to reflect signals substantially above frequency f_2 without any amplification, where frequency f_1 is at one end of the broad band of frequencies and f_2 is a frequency generally at the midfrequency of said broad band of frequencies;

a second avalanche diode amplifier including a second avalanche diode and a second bandpass filter with one terminal of said second diode coupled to said second filter and the other terminal to a reflecting means, said second diode being reverse biased an amount requiring a signal above said given level to achieve negative conductance and amplification, said second filter adapted to apply signals only substantially at frequencies f_2 through f_3 above said given level to said second diode and to reflect signals substantially below frequency f_2 and above frequency f_3 without amplification, where f_3 is at the other end of said broad band of frequencies;

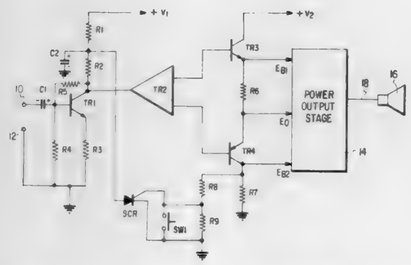
first means for coupling microwave signals over said relatively broad band of frequencies to said first filter, and for coupling the reflected signals at said first filter to said second filter, whereby microwave signals substantially at frequencies f_1 through f_2 are amplified by said first amplifier and are reflected back through said first filter and applied to said second filter and microwave signals generally above frequency f_2 are reflected at said first filter and applied to said second filter without amplification; and

second means for coupling the reflected signals at said second filter to an output terminal whereby microwave signals generally from frequency f_2 through f_3 are amplified by said second amplifier, are reflected back through said second filter and are applied to said output terminal, and microwave signals generally below frequency f_2 are reflected at said second filter and are applied to said output terminal without further amplification.

3,930,207
AMPLIFIER WITH OVERLOAD PROTECTION

Frank J. Kosinski, Hauppauge, N.Y., assignor to Unicord, Incorporated, New York, N.Y.

Filed June 10, 1974, Ser. No. 477,758
Int. Cl.² H03F *3/183*
U.S. Cl. 330—207 P **2 Claims**



1. In an amplifier circuit having a preamplifier stage, power supply means for said preamplifier stage, an output stage, an output driver stage responsive to the output signal of said preamplifier stage and driving said output stage, said output driver stage including a pair of driver transistors connected in quasicomplimentary push-pull configuration whereby the emitter of one of said transistors provides a first driving signal to said output stage and the collector of the other of said transistors provides a second driving signal to said output stage, power supply means for said output driver stage, one side thereof being connected to the collector of one of said transistors and the other side thereof being connected through a first resistor to the collector of the other of said transistors, an overload protection circuit, comprising:

a silicon controlled rectifier connected to said preamplifier power supply means through the anode and cathode terminals of the silicon controlled rectifier and in parallel circuit relation to the power connections of said preamplifier stage; and

a gating circuit for said silicon controlled rectifier comprising second and third resistors in series connection with one another and in parallel connection with said first resistor and conductor means directly connecting the gate of said silicon controlled rectifier to the junction of said second and third resistors, the arrangement being such that said silicon controlled rectifier is gating into its conductive state when the current drain through said first resistor exceeds a predetermined level.

3,930,208
A-C SIGNAL PROCESSING CIRCUITS FOR COMPANDORS

James Douglas Winter, Ottawa, and Mark Alexander Elder, Carp, both of Canada, assignors to Northern Electric Company Limited, Montreal, Canada

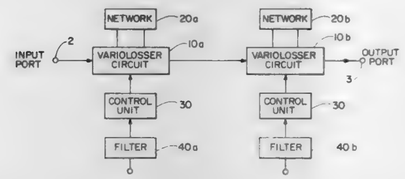
Filed Aug. 29, 1974, Ser. No. 501,492
Int. Cl.² H04B *1/64*
U.S. Cl. 333—14 **13 Claims**

1. An alternating current signal processing circuit, for use in a compandor and havaing input and output ports, comprising:

a plurality of variolossers, each having a variable gain characteristic;

buffer amplifier means residing between the variolossers in the plurality of variolossers, for providing impedance isolation between the variolossers, the variolossers connected in tandem between the input and output ports via the buffer amplifier means;

a filter network in combination with each variolosser, for limiting the variable gain characteristic of the variolosser to a mutually exclusive operational band of frequencies as determined by the stop band characteristic of the filter network, and providing a nearly constant gain characteristic for other frequencies as determined by the pass band impedance of the filter network;



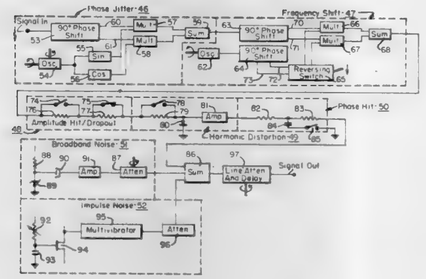
a separate control unit associated with each variolosser, for generating a control signal for controlling the associated variolosser, each control unit having an input, the inputs connected in common one with the other and to one of said ports, each control unit being responsive to alternating current signals having frequencies in the mutually exclusive band of frequencies of the variolosser associated therewith and appearing at the input of the control unit;

whereby the relative dynamic range of the alternating current signals, of frequencies falling within the operational frequency band of each variolosser, is altered according to the response of the control units to the alternating current signals and the response of the variolossers to the control signals.

3,930,209
TRANSMISSION LINE SIMULATOR

Mitchell A. Popick, Stony Brook; Robert M. Milne, III, and Suresh K. Aggarwal, both of Queens, all of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed June 5, 1973, Ser. No. 367,275
Int. Cl.² H03H *7/16, 7/22*
U.S. Cl. 333—23 **13 Claims**



1. A transmission line simulator for simulating one of a number of transmission lines having an input and an output and having serially connected therebetween,

an attenuation and delay simulator comprising active circuits for selectively simulating the attenuation and delay characteristics of a selected one of a number of transmission lines, and

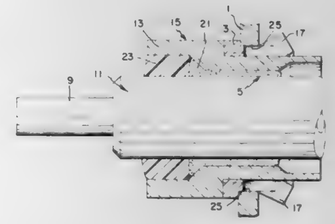
circuit means for selectively modifying the signal supplied thereto to simulate one or more of the random effects of phase jitter, frequency shift, amplitude hit and/or drop out, harmonic distortion, phase hit, broad band noise and impulse noise which result from transmission from a signal over a transmission line,

said circuit means including phase jitter circuit means which produces a signal which can be expressed as A sin (wt + B sin w_j t) where the input signal to said phase jitter circuit means has an amplitude A, a radian frequency w, B is the amplitude of phase jitter and w_j is the phase jitter radian frequency.

3,930,210
MOUNTED CERAMIC FILTER

Robert David Hollyday, Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 12, 1973, Ser. No. 423,942
Int. Cl.² G12B *9/04*; H02B *1/04*
U.S. Cl. 333—79 **4 Claims**



1. A filter assembly mounted in an opening in a grounding panel,

a tubular ceramic feed through filter,

an electrically conductive sleeve of a relatively rigid metal material secured about the filter,

a tubular electrically conductive locking ring having an enlarged flange portion abutting said panel and being of larger diameter than the opening and having an inner diameter receiving said sleeve and provided with axially extending angularly spaced fingers,

the outer surfaces of the fingers normally lying on a circle of a diameter receivable in the opening extending through and beyond said panel,

the fingers being progressively thicker normally inwardly in a direction away from the flange so that their interior surfaces lie against and frictionally engage over said sleeve,

portions of the fingers being forcefully driven by said sleeve outwardly beyond the periphery of the opening to frictionally lock the sleeve within said opening.

3,930,211
CIRCUIT BREAKER

Harold E. Belttary, Rio Piedras, P.R., assignor to Caribe Circuit Breaker Co., Inc., San Juan, P.R.

Filed Nov. 25, 1974, Ser. No. 526,804
Int. Cl.² H01H *73/04*
U.S. Cl. 335—6 **5 Claims**

1. A circuit breaker including

a stationary contact;

a movable contact;

a contact carrier having the movable contact mounted thereon;

an operating mechanism for manually moving said contact carrier to selectively open and close said contacts;

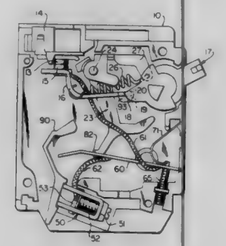
a load terminal;

a tripping mechanism including a current responsive member in a conductive path between said movable contact

and said load terminal for moving said contact carrier to open said contacts in response to a current overload condition through said current responsive member;

a flexible conductor connected in the current path between said movable contact and said current responsive member;

said flexible conductor being directly connected to said movable contact whereby said conductive path includes the movable contact and the flexible conductor, and said contact carrier is not an element directly in said conductive path;



a region of the contact carrier having an opening therethrough between opposite sides of the contact carrier;

said movable contact extending from one side of said contact carrier through said opening to the other side of said contact carrier;

said movable contact being fixed to said contact carrier and having a contact surface on the one side of said contact carrier for engaging the stationary contact; and

said movable contact having a surface in the direct fixed connection with said flexible conductor on the other side of said contact carrier.

3,930,212

METHOD OF ORIENTING ELECTRICALLY CONDUCTIVE BODIES, PREFERABLY NON-MAGNETIC ONES, IN A MAGNETIC FIELD AND APPARATUS FOR PERFORMING SAME

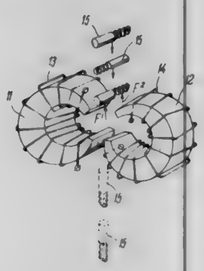
Benyamin Alexandrovich Ioffe; Robert Karlovich Kalnin; Vyacheslav Semenovich Dorofeev; Viktor Georgievich Sirotenko, all of Riga; Vladimir Borisovich Larin, Smolensk; Gunar Yanovich Sermons, and Alexandr Alexandrovich Shevchenko, both of Riga, all of U.S.S.R., assignors to Institut Fiziki Akademii Nauk Latviiskoi SSR, U.S.S.R.

Continuation of Ser. No. 885,190, Dec. 15, 1969. This application Jan. 16, 1974, Ser. No. 433,885

Claims priority, application U.S.S.R., Dec. 25, 1968, 1289054; Dec. 25, 1968, 1289056

Int. Cl.² H01F *7/20*

U.S. Cl. 335—284 **1 Claim**



1. A method of orienting and fixing nonmagnetic electrically conductive bodies under the action of a non-uniform magnetic field induced by an alternating electric current, said method comprising distributing, in a zone of simultaneous orientation and fixation, the inductance of the magnetic field in such a way that bodies are acted upon by a field with at least one non-uniform part, forming a central plane section in said part of the field, the inductance of which field tapers in said section towards a center of fixation corresponding to a minimum value of the inductance of the field, and forming the cross-section of said section relative to the field direction depending upon the form of the cross-section of the body in its position of fixation.

3,930,213

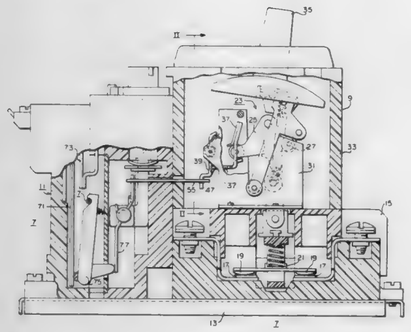
MANUALLY OPERABLE CIRCUIT INTERRUPTER WITH AUTOMATIC CURRENT OVERLOAD PROTECTION

Edward L. Richards, Aliquippa, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 9, 1974, Ser. No. 513,371

Int. Cl.² H01H *71/16*

U.S. Cl. 337—70 **5 Claims**



1. A circuit interrupting device comprising relatively movable contact means and means releasable to effect automatic opening of said contact means, operating means for moving the contacts between open and closed positions and comprising a releasable arm movable between latched and unlatched positions, a latch lever operable to effect unlatching of the releasable arm, a retainer plate effective to releasably retain the latch lever in the latched position, a trip device comprising a trip plate and bi-metal means for activating the trip plate in response to excessive currents, the trip plate being operatively connected to the retainer plate to move the retainer plate to the unlatched position, and the retainer plate being spring-biased in the latched position with the latch lever and including an extension engageable with the latch lever when in the unlatched position to maintain the latch lever in a relatching position.

3,930,214

PUSHBUTTON ELECTRIC SWITCH WITH RESET MECHANISM

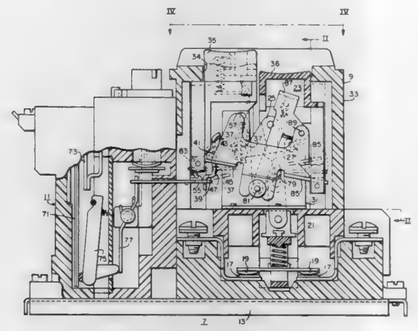
Edward L. Richards, Aliquippa; Charles R. Paton, New Brighton, and Daniel G. Rooney, Beaver, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 9, 1974, Ser. No. 513,372

Int. Cl.² H01H *77/04*

U.S. Cl. 337—72 **6 Claims**

1. A circuit interrupting device comprising a switch mechanism and an electrically insulating housing therefor, the switch mechanism comprising relatively movable contact means, operating means for moving the contact between open and closed positions and comprising an overcenter toggle and releasable arm operable to effect movement of the movable contact structure, the releasable arm also being movable between tripped and latched positions, a latch lever releasably connected to the releasable arm for retaining said arm in the latched position, means responsive to a current overload condition for actuating the latch lever to the tripped position, the housing having an opening, a reset pushbutton extending through the opening and effective to move the releasable arm



to the latched position with respect to the trip lever, a first pushbutton extending through the opening and effective to move the releasable arm to the open position, and a second pushbutton extending through the opening and effective to move the releasable arm to the closed position.

3,930,215

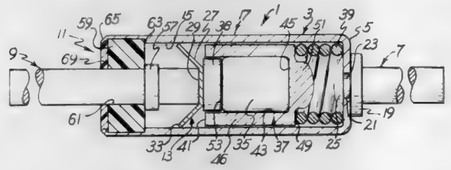
NONRESETTABLE THERMALLY ACTUATED SWITCH

Ronald E. Senor, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 29, 1974, Ser. No. 527,973

Int. Cl.² H01H *37/76*

U.S. Cl. 337—407 **8 Claims**



1. A nonresettable thermally actuated switch comprising a case of electrically conductive material, first power lead means electrically connected to said case, second power lead means, means securing said second lead means relative to said case in electrically insulated relation to said case, a deformable connector of electrically conductive material in electrical engagement with said second lead means and normally in electrical engagement with said case to complete the electrical circuit between said first and second lead means, a cup-shaped separator of rigid electrically insulating material having an open end and an edge around said open end, a normally solid body of material fusible at a selected temperature disposed in said cup-shaped separator, a force spreader member of a size slidable in said cup-shaped separator normally disposed in engagement with said solid body of fusible material at said open end of said cup-shaped separator, and spring means biasing said separator to normally press said force spreader member via said fusible body against said connector to permit said connector to maintain said circuit while said fusible body is solid and for moving said separator when said fusible material is heated to said selected temperature to allow said force spreader member to move into said separator and to move said separator edge into engagement with said connector to deform and to separate said connector from said case to break said circuit.

3,930,216

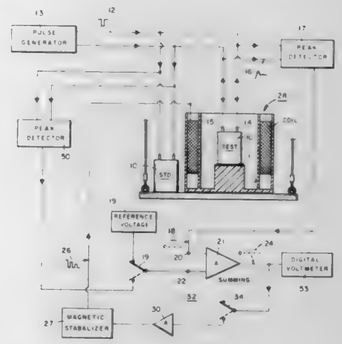
METHOD OF MAKING GEOPHONES HAVING MATCHED SENSITIVITIES

Ernest M. Hall, Jr., Houston, Tex., assignor to Walker-Hall-Sears, Inc., Houston, Tex.

Filed Apr. 1, 1974, Ser. No. 456,487

Int. Cl.² G01V *1/00*; H04B *13/00*; H04R *15/00*

U.S. Cl. 340—5 C **8 Claims**



1. A method of adjusting the impulse response sensitivity of a geophone having a coil mounted for movement relative to a permanent magnet, comprising:

a. applying an electric impulse to the coil of the geophone to thereby displace the coil from a quiescent position;

b. detecting the geophone's response signal to said impulse, said response signal being generated by said coil;

c. producing an error signal by comparing said response signal with a reference signal; and

d. applying a magnetic field to the magnet of the geophone, said magnetic field having an amplitude and polarity in dependence upon said error signal.

3,930,217

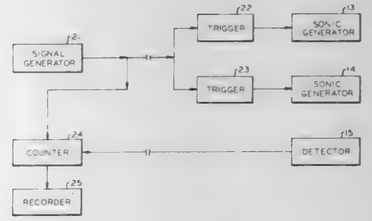
SONIC LOGGING RECORDING APPARATUS

Bruce F. Wiley, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 6, 1973, Ser. No. 422,268

Int. Cl.² G01V *1/40*; G04F *10/04*

U.S. Cl. 340—15.5 TN **4 Claims**



1. In an acoustical logging device which includes first and second acoustical signal generators spaced from one another and an acoustical receiver spaced a first distance from said first generator and a second lesser distance from said second generator; apparatus to measure the difference in times of propagation of acoustical signals from the two generators to the receiver, comprising:

an up-down digital counter having first and second inputs;

first means to actuate said first generator to generate an acoustical signal and to actuate said counter to count up at a first time;

second means responsive to an acoustical signal being received by said receiver at a second time following said first time to stop said counter from counting up;

third means to actuate said second generator to generate an acoustical signal and to actuate said counter to count down at a third time; and

fourth means responsive to an acoustical signal being received by said receiver at a fourth time following said third time to stop said counter from counting down;

said first, second, third and fourth means including first, second, third, fourth, fifth, sixth and seventh NAND circuits, each having first and second inputs and an output; means connecting said receiver to the first input of said first NAND circuit; a multivibrator having first and second inputs and an output; means to apply a pulse to the first input of said multivibrator and to the first input of said fourth NAND circuit when said first generator is actuated; means to apply a pulse to the second input of said multivibrator and to the first input of said seventh NAND circuit when said second generator is actuated; an oscillator connected to the second input of said second NAND circuit and to the first input of said third NAND circuit; means connecting the output of said multivibrator to the second input of said first NAND circuit; means connecting the output of said first NAND circuit to the second input of said fifth NAND circuit and to the second input of said sixth NAND circuit; means connecting the output of said fourth NAND circuit to the first input of said second NAND circuit and to the first input of said fifth NAND circuit; means connecting the output of said seventh NAND circuit to the second input of said third NAND circuit and to the first input of said sixth NAND circuit; means connecting the output of said sixth NAND circuit to the second input of said seventh NAND circuit; means connecting the output of said fifth NAND circuit to the second input of said fourth NAND circuit; means connecting the output of said second NAND circuit to the first input of said counter; and means connecting the output of said third NAND circuit to the second input of said counter.

3,930,218

GEOPHONE CASINGS

Ernest M. Hall, Jr., Houston, Tex., assignor to Walker-Hall-Sears, Inc., Houston, Tex.

Filed Jan. 16, 1974, Ser. No. 433,637
Int. Cl.² G01V *1/16*
U.S. Cl. 340—17 **1 Claim**

1. In a geophone casing comprising: a base made from a rigid, nonconductive material, said base defining a first substantially cylindrical chamber adapted to receive therein the bottom end of a seismic geophone, said base having a first wall; a cover for said base, said cover being made from a rigid, nonconductive material, said cover defining a second substantially cylindrical chamber adapted to receive therein the top end of said geophone, said cover having a second wall, said first and second walls having openings therein to allow the geophone's leads to exit outwardly of the casing, the improvement consisting of:

wholly self-locking means having a rigid male prong and a rigid female prong forming integral part with said first and second walls, respectively; said male and female prongs interlocking with each other when said base and said cover are forcibly assembled together,

said male prong having a frusto-conical, external surface tapering inwardly toward the free end thereof, and the male prong defining an external annular shoulder spaced from said free end,

said female prong having a mating cavity matching in shape the shape of said external surface and including an annular lip engageable beneath said external annular shoulder, said male prong being constructed to have sufficient resiliency to slightly bend inwardly when said lip is pushed downwardly over said frusto-conical surface until said lip comes to rest under said annular shoulder, and



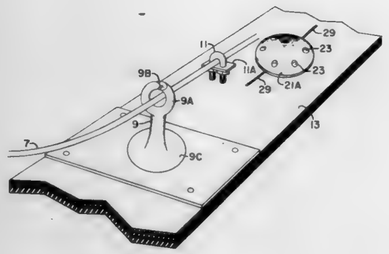
said cover comprising an internal ring having downwardly-extending cleats adapted to engage the geophone's leads inside said casing.

3,930,219

SYSTEM FOR TRANSPORTING SEISMIC ENERGY DETECTORS

Richard J. Kostelnicek, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Continuation of Ser. No. 224,205, Feb. 7, 1972, abandoned.
This application Feb. 15, 1974, Ser. No. 442,998
Int. Cl.² G01S *9/66*
U.S. Cl. 340—17 **12 Claims**



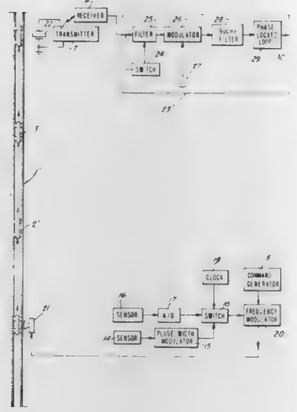
1. An apparatus for transporting seismic energy detectors across the earth's surface which comprises an elongated transport member adapted to carry said seismic detectors across the earth's surface, said transport member being deformable and capable of being placed in a state of tension by friction between said member and the earth's surface during movement across the earth's surface and retraction means connected to said transport member and operable subsequent to said movement across the earth's surface to place at least a substantial portion of said transport member in a slack condition.

3,930,220

BOREHOLE SIGNALLING BY ACOUSTIC ENERGY

Elbert N. Shawhan, West Chester, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Sept. 12, 1973, Ser. No. 396,635
Int. Cl.² G01V *1/40*
U.S. Cl. 340—18 FM **22 Claims**



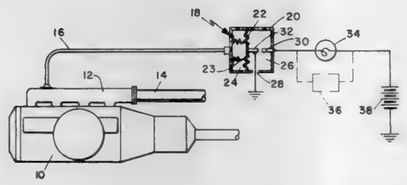
7. System set forth in claim **6**, wherein said means at location B also acts, upon the receipt by said pickup of carrier frequency f_2, to tune said output circuit to frequency f_1.

3,930,221

EXHAUST BACKPRESSURE WARNING SYSTEM

Frank Thing, P.O. Box 35, Guatay, Calif. 92031

Filed Mar. 9, 1973, Ser. No. 339,838
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.² B60Q *1/00*; F02B *77/10*
U.S. Cl. 340—52 R **2 Claims**

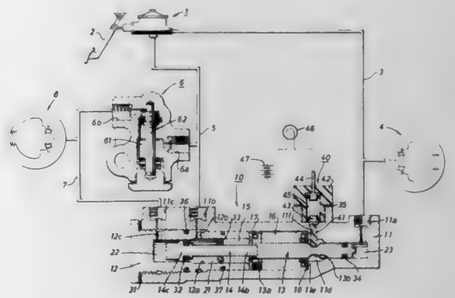


1. An exhaust backpressure warning system for an internal combustion engine comprising:

an exhaust system;

a pressure sensor operably connected with said exhaust system and responsive to abnormally high pressure within said exhaust system; and

a signal device activated by said sensor and positioned near the normal operating station of said engine to alert the operator thereof of an abnormally high pressure condition in said exhaust system.



1. A device for monitoring breakage in a hydraulic brake system of a vehicle having a first braking fluid pressure circuit connecting a tandem master cylinder with the front wheel brake cylinders and a second braking fluid pressure circuit connecting the master cylinder with the rear wheel brake cylinders and provided therein with a fluid control device to regulate the braking fluid pressure applied to the rear wheel brake cylinders, said monitoring device comprising:

a cylinder housing provided thereon with a first port to be connected with said first braking fluid pressure circuit, a second port to be connected directly with said master cylinder through said second braking fluid pressure circuit and a third port to be connected with said rear wheel brake cylinders through said second braking pressure circuit, said housing being provided therein with a first bore in communication with said first port and a second stepped bore communicated at its small diameter bore with said third port and at its large diameter bore with said second port;

a plunger engaged slidably at its one portion with said first bore to form a first pressure chamber in communication with said front wheel brake cylinders through said first port and engaged slidably at its other portion with the small diameter bore of said stepped bore to form a third pressure chamber in communication with said rear wheel brake cylinders through said third port;

a sleeve member engaged slidably with the large diameter bore of said stepped bore to form a second pressure chamber in communication with said second port at one end face thereof, said plunger passing through said sleeve member to be slidable and being engaged with the other end of said sleeve member;

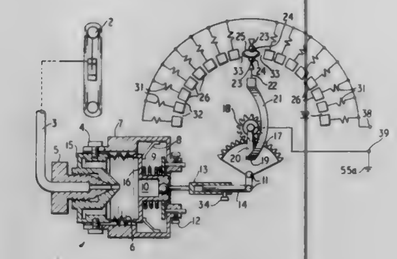
resilient means for biasing said sleeve toward said second pressure chamber; and

warning means provided on said cylinder housing to be activated in response to sliding movement of said plunger to alarm breakage in said hydraulic brake system.

3,930,223
APPARATUS FOR INDICATING PNEUMATIC TIRE PRESSURE

Nicolas Fotios Tsagas, Liverpool, England, assignor to Alexis Kalogeropoulos, England; a part interest

Filed Sept. 14, 1973, Ser. No. 397,427
Claims priority, application United Kingdom, Sept. 20, 1972, 43450/72; Dec. 8, 1972, 56708/72; Jan. 15, 1973, 02067/73; July 13, 1973, 33453/73
Int. Cl.² G08B *21/00*; B60C *23/04*
U.S. Cl. 340—58 10 Claims

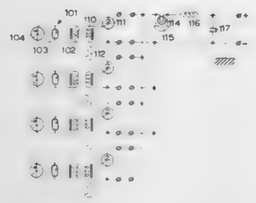


1. In an apparatus for indicating pneumatic pressure of a tire carried by a vehicle wheel, converting means adapted to be placed in communication with the interior of the tire for converting variations in pneumtic pressure in the tire into mechanical displacements the magnitude and direction of which correspond to pressure changes, transmission means operatively connected to said converting means to be moved thereby and carrying first electrical contact means for moving the latter along a predetermined path in response to pressure changes, a plurality of discrete electrical contact means distributed along said path and each having a different resistance magnitude associated therewith and respectively corresponding to tire pressures when said first contact means engages the plurality of second contact means, an electric circuit connected to and formed in part by said first and second contact means to at least partly close said circuit when one of said second contact means is engaged by said first contact means, and an indicating device in the circuit and responsive to current flow, said indicating device being calibrated to indicate variations in tire pressure proportional to the magnitude of the current permitted to flow in the circuit by the relative positioning of said first and second contact means, said first contact means including at least one metal rolling means rotatably carried by the remainder of said first contact means and rollable along said path to have rolling contact with said plurality of said second contact means, so that friction between said first and second contact means during tire pressure changes when the vehicle travels is reduced to a minimum, said path forming part of a circle and said transmission means including a spring bias means having at least one pivotally mounted leaf spring connected through said transmission means to said converting means to be turned thereby and carrying said first electrical contact means for rolling the latter along said path and biasing said metal rolling means against said plurality of said second contact means, said rolling means being at least one wheel displaceable between a plurality of pairs of spaced apart metallic surfaces forming the second electrical contact means with the metallic surfaces of each pair being electrically interconnected and with the pairs of surfaces being electrically insulated from one another, whereby contact of said wheel with the second contact means is ensured for optimum periods despite vibrational influences.

3,930,224
TRANSMISSION OF INFORMATION

Roland G. Whiteing, 45 Duncan Road, Glenferness, Johannesburg, Transvaal Province, and Johannes G. van Mill, 12 Lucas Road, Eastleigh, Edenvale, Transvaal Province, both of South Africa

Continuation-in-part of Ser. No. 252,227, May 11, 1972, Pat. No. 3,840,850. This application Apr. 23, 1973, Ser. No. 353,655
Claims priority, application South Africa, Nov. 7, 1972, 72/7885The portion of the term of this patent subsequent to Oct. 8, 1991, has been disclaimed.
Int. Cl.² B60C *23/02*
U.S. Cl. 340—58 6 Claims



1. A warning device associated with a movable body comprising:

transmitter means mounted on said body to move therewith, said transmitter means including a single transmitter coil and a condition-responsive switch electrically interconnected with said coil whereby a circuit is completed through the coil dependent upon the position of the switch;

receiver means mounted on a stationary body adjacent said movable body, said receiver means including a single receiver coil and a magnetic field source, said source being capable of inducing a current in said transmitter coil when proximate said transmitter coil;

a magnetically operated switch connected in parallel with said transmitter coil and operated by said source as current is induced in said transmitter coil so as to produce a back E.M.F. which is inductively coupled by the transmitter coil to said receiver coil when the condition-responsive switch is positioned to prevent completion of said circuit through the transmitter coil and the condition-responsive switch; and

means joined to said receiver coil and responsive to a predetermined level of voltage induced on the receiver coil as a result of said back E.M.F. for providing a warning upon occurrence of a condition which changes the position of said condition-responsive switch to one preventing completion of said circuit.

3,930,225
VEHICLE SAFETY INDICATING APPARATUS

Roxie Mollico, Rte. 4, Box 511, Duluth, Minn. 55802

Filed Jan. 16, 1975, Ser. No. 541,500
Int. Cl.² H01H *35/14*
U.S. Cl. 340—62 10 Claims

1. Safety indicating apparatus for use with motor vehicles having an accelerator pedal comprising in combination:

a. first switch member including a first contact, a second contact, and a third contact and having a first switch position electrically interconnecting the first contact and the second contact and having a second switch position electrically interconnecting the first switch contact and the third switch contact;

b. safety light member, including a first contact and a second contact;

c. a power supply having a first terminal and second terminal with the first and second terminals comprising one common terminal and one terminal of a voltage differing from the common terminal;

d. an electrical connection between the first terminal of the power supply and the first contact of the first switch;

e. an electrical connection between the first contact of the safety light and the second contact of the first switch;

f. an electrical connection between the second terminal of the power supply and the second contact of the safety light;

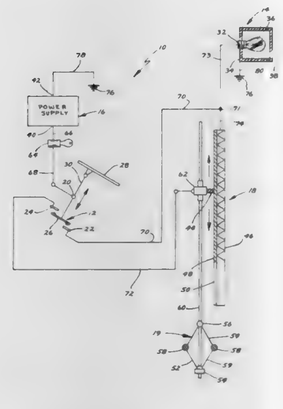
g. second switch including a fourth contact, a fifth contact, and an elongated member, with the elongated member including a first conductive portion covering a fixed length of the elongated member and a second non-conductive portion covering the remaining length of the elongated member and with one of the contacts moveable along the elongated member and with the other of the contacts being electrically interconnected to the first conductive portion;

h. an electrical connection between the third contact of the first switch and the fourth contact of the second switch;

i. an electrical connection between the fifth contact of the second switch and the first contact of the safety light;

j. means for operatively connecting the first switch to the accelerator pedal for causing the switch to be placed in its first position when the accelerator pedal is undepressed and causing the switch to be placed in its second position when the accelerator pedal is depressed; and

k. velocity means for providing an output indicative of the driving velocity of the vehicle including means responsive to the output of the velocity means for moving the fourth contact along the elongated member.



3,930,226
AUTOMATIC TAMPER ALARM FOR MOTOR VEHICLES

Leonard G. Plumberg, Olathe, Kans., assignor to Donald E. Funck, Overland Park, Kans.

Filed Apr. 22, 1974, Ser. No. 462,659
Int. Cl.² B60R *25/10*
U.S. Cl. 340—64 3 Claims

1. A tamper alarm for motor driven vehicles for activating an external transducer in response to preselected events, the alarm having an output and functioning in cooperation with the vehicle ignition switch, the alarm comprising:

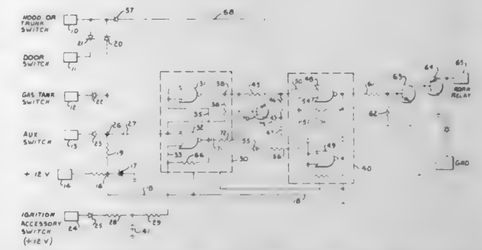
a plurality of alarm input means for initiating alarm circuitry operation in response to inputs delivered thereto;

means for generating a trigger signal for a predetermined time interval in response to at least one of said alarm inputs, the trigger signal generation means comprising a monostable multivibrator having at least one input and an output, one of said monostable multivibrator inputs interconnected with said alarm input means;

means for generating an intermittent output signal for said external transducer in response to said trigger signal, the last mentioned means comprising

an astable multivibrator having at least one input and an output, the astable multivibrator inputs interconnected to said monostable multivibrator output,

means for interconnecting said astable multivibrator output with said external transducer,



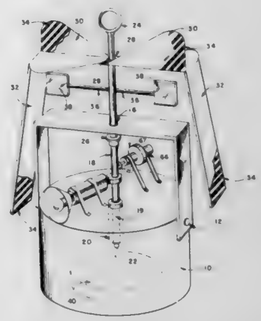
means cooperating with the vehicle ignition and/or accessory switch for automatically disabling said alarm whenever said vehicle ignition and/or accessory switch is activated,

said monostable multivibrator comprising at least one NOR-gate having at least one input and said alarm disabling means further comprises an interconnection between said vehicle ignition and/or accessory switch and said NOR-gate input, the interconnection operable to disable said monostable multivibrator by turning off said NOR-gate when said ignition switch is turned to the ignition on or accessory position.

3,930,227
PORTABLE MOTOR VEHICLE VISUAL WARNING INDICATOR

Sonia M. Gof, 89 Haledon Ave., Paterson, N.J. 07522

Filed Nov. 26, 1973, Ser. No. 418,811
Int. Cl.² B60Q *1/36*
U.S. Cl. 340—81 R 5 Claims



1. A portable motor vehicle visual warning indicator comprising in combination:

a base;

a support bracket attached to said base;

a vertically oriented rotatable shaft, one end of which is mounted in said base; said shaft extending upwardly through said support bracket and terminating above said support bracket;

a plurality of pairs of wind driven cups mounted on and extending horizontally outward from said rotatable shaft

and above said support bracket, such that when said cups are subjected to a relative wind, they will cause said rotatable shaft to rotate;

each pair of said wind driven cups mounted such that one of its members is mounted on the opposite side of said shaft from the other member;

mirror means mounted on and extending horizontally outward from said rotatable shaft such that said mirror means are caused to rotate when said wind driven cups are driven by a relative wind;

daylight reflective means connected with and driven by said wind cups;

a tab attached to each cup of at least one pair of said wind driven cups, the plane of said tabs being substantially tangential to the circumference of rotation of said cups; daylight reflective means connected with said tabs;

said base constructed in part of a magnetic material for securing said apparatus to a metallic portion of a motor vehicle.

3,930,228
METHOD AND DEVICE FOR READING CHARACTERS, PREFERABLY DIGITS

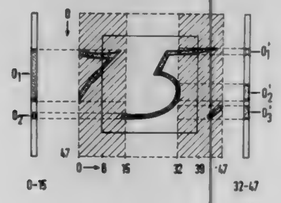
Arie Adriaan Spanjersberg, Leiderdorp, Netherlands, assignor to De Staat der Nederlanden, te dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, The Hague, Netherlands

Filed Feb. 11, 1974, Ser. No. 441,431

Claims priority, application Netherlands, Feb. 21, 1973, 7302410

Int. Cl.² G06K 9/10

U.S. Cl. 340—146.3 SG **8 Claims**



1. A method for reading hand written characters in predetermined squares marked on a document comprising electronically scanning said characters, said system comprising:

A. scanning predetermined marginal strips on each side of the border lines of said squares,

B. recording the character parts scanned in said strips in an auxiliary memory for processing before transfer to a character processor,

C. erasing for a given character those recorded parts which are not connected to said given character in said square inside strip,

D. adding those recorded parts of said given character in said strip to said given character which cross the border lines of said square, and

E. indicating the presence of more than three separate recorded parts in each said marginal side strip.

3,930,229
HANDWRITING SYSTEM

Hewitt David Crane, Portola Valley, and Robert Ellis Savoie, Mountain View, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Jan. 31, 1974, Ser. No. 438,413

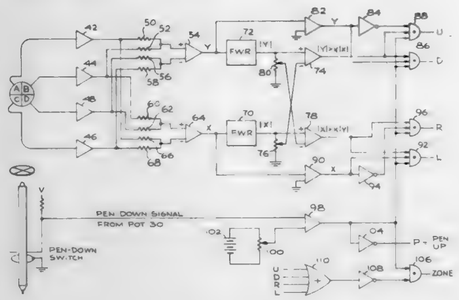
Int. Cl.² G06K 9/00

U.S. Cl. 340—146.3 SY **11 Claims**

1. A system for generating a set of digital signals representative of a handwritten character comprising

pen means for generating for each character which is written a sequence of direction signals representative of the sequence of directions taken in writing a character, and means responsive to predetermined direction signals including

means for storing, for each character, at successive locations, part of the data required for locating the next of said successive locations, with a final one of said locations



storing a set of digital signals representative of a handwritten character,

means for combining each direction signal with data signals derived from said means for storing, and

means for successively addressing said means for storing with both a sequence of direction signals and a sequence of data read from said means for storing until a final one of said locations is located following the last direction signal generated by said pen means in writing a character.

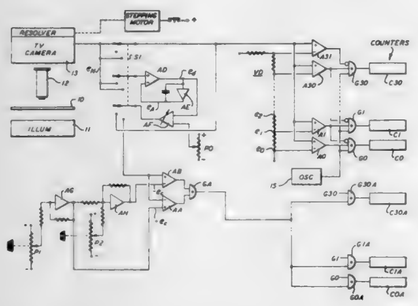
3,930,230
PATTERN ANALYSIS METHOD AND APPARATUS

Richard G. Stephens, 318 Security Mutual Life Bldg., Binghamton, N.Y. 13901

Filed Feb. 25, 1974, Ser. No. 445,340

Int. Cl.² G06K 9/12

U.S. Cl. 340—146.3 AG **20 Claims**



1. In apparatus for classifying a pattern comprised of elemental areas situated within a scanning field, said elemental areas having three or more different light-remissive levels, the combination of scanning means for optically scanning said field and said elemental areas of said pattern to derive a first electrical waveform having a parameter which varies in accordance with the light-remissive level of the elemental area being scanned at a given instant; means for differentiating said first electrical waveform to provide a second electrical waveform having a parameter which varies in accordance with the time rate of change of the light-remissivity of the elemental areas being scanned from instant to instant; signal-processor means responsive to said second electrical waveform for providing three or more groups of further signals, the signals of each group of said further signals being provided whenever the value of said second waveform lies between a respective pair of values defining a respective range of optical density gradients; and accumulator means for separately accumulating the signals of each of said groups to provide three or more stored data signals defining values of a function characteristic of said pattern.

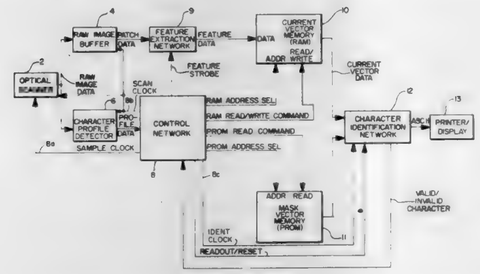
3,930,231
METHOD AND SYSTEM FOR OPTICAL CHARACTER RECOGNITION

Ernest G. Henrichon, Jr., Wellesley Hills, and Harvey J. Bloom, Bellingham, both of Mass., assignors to Xicon Data Entry Corporation, Newton Upper Falls, Mass.

Filed June 10, 1974, Ser. No. 477,808

Int. Cl.² G06K 9/12

U.S. Cl. 340—146.3 MA **16 Claims**



1. Method for optical character recognition comprising the steps of:

A. optically scanning a character-to-be-recognized to identify it as one of a plurality of predetermined vocabulary characters, detecting the optical density of n regions of each scan, said regions being arranged to form a multiple element set of grid cells arranged in a grid of m rows and n columns, and generating a binary signal representative of the optical density of each of said cells, said binary signal being **1** when the optical density of a region exceeds a predetermined threshold and **0** otherwise, so that each cell of said set has the binary value associated with the correspondingly positioned region of said character-to-be-recognized,

B. generating a series of multiple bit words, each word representing a rectangular arranged subset of said grid cells, the subset including p rows and q columns, where p is an integer less than m and q is an integer less than n, and wherein each word in the series represents a differing subset,

C. determining the presence or absence of r features in each word of said series, where r is an integer less than the quantity 2^{mn}, and each feature is defined as being present in a word when said word includes a predetermined distribution of binary values, said feature being defined as absent otherwise,

D. generating and storing a multiple bit current vector signal for said character-to-be-recognized, said current vector signal having a binary **1** for each feature detected as present and a binary **0** for each feature detected as absent in each of said words, wherein each bit position in said current vector signal is associated with one of said words,

E. generating and storing a plurality of multiple bit mask vector signals, each representing a different one of said predetermined plurality of vocabulary characters, wherein each bit position in each of said mask vector signals is associated with the same one of said words as the corresponding bit position in said current vector signal,

F. comparing said current vector signal with said plurality of stored mask vector signals on a bit-by-bit basis, and

G. identifying the mask vector signal which has highest correlation with current vector signal as the character-to-be-recognized.

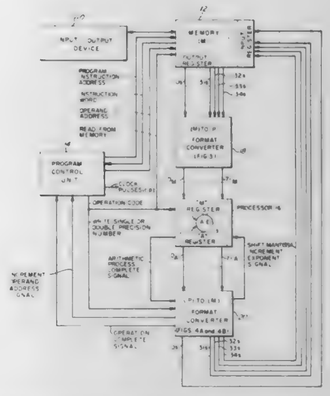
3,930,232
FORMAT INSENSITIVE DIGITAL COMPUTER

Steven J. Wallach, Chelmsford; Alan J. Deerfield, Newtonville, and Stanley M. Nissen, Reading, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Nov. 23, 1973, Ser. No. 418,641

Int. Cl.² H03K 13/00

U.S. Cl. 340—172.5 **1 Claim**



1. In a digital computer including a memory wherein single precision words may be stored at respective single memory locations and double precision words may be stored at two contiguous memory locations as two single precision words, each one of such words, other than instruction words, including an "m" bit operand code field, where "m" is the number of bits making up an operand code in any one of a plurality of formats including logical statements, fixed point numbers, floating point single precision numbers and floating point double precision numbers and an "n" bit data type code indicative of the format of the operand, and a processor wherein each operand retrieved from the memory during execution of a program may be processed, the improvement comprising

a. a plurality, corresponding in number to the number of different formats of operands, of first format conversion means for changing the format of each single precision word retrieved from the memory during execution of a program, each different one of such first format conversion means being actuated by a different one of the data type codes in each single precision word to convert each operand retrieved from the memory to a particular format of a floating point, double precision word of $2(m+n)$ bits and to combine the two single precision words making up each double precision word retrieved from the memory into said particular format, the states of selected bits in each said particular format floating point double precision word being indicative of the data type code corresponding to each operand retrieved from the memory;

b. means, responsive to each said particular format floating point, double precision word for processing each such word, the states of the selected bits remaining unchanged during processing; and

c. a plurality, corresponding in number to the number of different formats of operands, of second format conversion means, each different one of such second format conversion means being responsive to the states of the

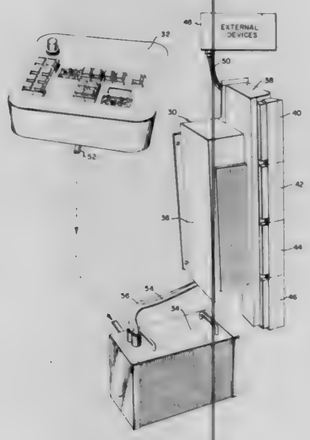
selected bits in each one of said particular format floating point, double precision words out of the processing means to convert each such one to a format corresponding to the original format of the single or double precision words stored in the memory in single or two contiguous memory locations, respectively.

3,930,233

DATA TRANSFER AND MANIPULATION APPARATUS FOR INDUSTRIAL COMPUTER CONTROLLERS

Richard E. Morley, Mason, and Charles C. Schelberg, Jr., Milford, both of N.H., assignor to Modicon Corporation, Andover, Mass.

Filed Apr. 11, 1974, Ser. No. 460,081
Int. Cl.² G06F *3/02*, *15/46*
U.S. Cl. 340—172.5 **40 Claims**



1. A programming panel for programming a computer controller to perform data manipulation operations, the computer controller having stored therein an executive program for communicating with the programming panel and for simulating an electrical ladder-type control circuit having a plurality of circuit lines, a plurality of spaces in each circuit line, a first of said spaces providing for the inclusion of one type of a plurality of types of electrical elements comprising elements the condition of which is a function of a referenced condition, a second of said spaces providing for the inclusion of a first character set indicating a first memory area within the controller where data may be retrieved, a third of said spaces providing for the inclusion of a second character set indicating the type of data manipulation to be performed on said retrieved data, a fourth of said spaces providing for the inclusion of a third character set indicating a second memory area within the controller where data may be deposited, at least one of said characters also indicating a third memory area within the controller where a number is stored related to the amount of data placed within said second area, each of said circuit lines further providing circuit line condition specifying means controlled in accordance with the electrical condition of the electrical element within said first space, the executive program simulating the specified electrical element within said first space, retrieving data in said first memory area, performing the data manipulation specified in said third space, depositing data in said second memory area, and updating the number in said third memory area, said programming panel comprising:

A. Manually operable means for specifying to the computer controller one of a plurality of circuit lines of the simulated ladder-type control circuit;

B. manually operable means for specifying to the computer controller one type of a plurality of types of electrical elements;

C. manually operable means for specifying to the computer controller a reference to the circuit line condition specifying means in the simulated ladder-type control circuit which is to control the condition of the said specified type of electrical element;

D. manually operable means for specifying to the computer controller said first space in the specified circuit line of the simulated ladder-type control circuit into which the specified type of electrical element is to be entered;

E. manually operable means for specifying to the computer controller said second space in the specified circuit line of the simulated ladder-type control circuit into which said first character set specifying said first memory area is to be entered;

F. manually operable means for specifying to the computer controller said third space in the specified circuit line of the simulated ladder-type control circuit into which said second character set specifying said desired data manipulation is to be entered; and

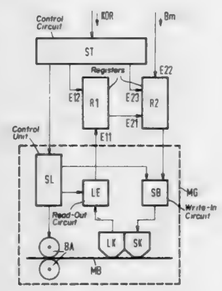
G. manually operable means for specifying to the computer controller said fourth space in the specified circuit line of the simulated ladder-type control circuit into which said third character set specifying said second memory area is to be entered.

3,930,234

METHOD AND APPARATUS FOR INSERTING ADDITIONAL DATA BETWEEN DATA PREVIOUSLY STORED IN A STORE

Rudolf Queisser, Geretsried, and Hubert Schlossbauer, Krailling, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed July 1', 1974, Ser. No. 487,554
Claims priority, application Germany, July 18, 1973, 2336618
Int. Cl.² G11B *27/00*; G06F *11/00*
U.S. Cl. 340—172.5 **7 Claims**



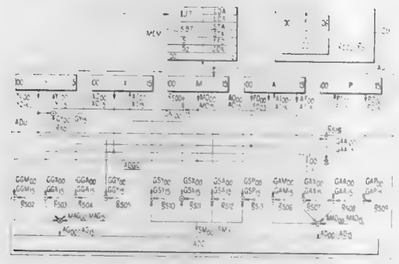
5. An arrangement for the insertion of additional data in data previously stored in a store, in the form of blocks of uniform block length, by insertion of the additional data in the form of an additional block of like block length, following a $(n-1)^{th}$ block, comprising a store having a read-out circuit and a write-in circuit, a write-in read-out control unit connected to said circuits for controlling the entry and withdrawal of data from said store, a first register connected to said read-out circuit for receiving and storing data from said store, a second register connected to said first register for receiving and storing data from the latter and having an input to which additional blocks may be supplied, said second register being connected to said write-in circuit for supplying its storage content thereto, and a control circuit connected to said registers and to said write-in read-out control unit, for controlling the entry of data into said first register, transfer of data from said first to said second register, and transfer of data from said second register to said store.

3,930,235

DATA PROCESSING SYSTEM

Stanislas Kobus, Palaiseau, France; Juliaan Leo Gerard Janssens, Olmen, and Willy Charles Jacques Zoile, St. Niklaas, both of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,509
Claims priority, application Belgium, Dec. 10, 1971, 776495
Int. Cl. G06f *13/08*, *7/38*
U.S. Cl. 340—172.5 **1 Claim**



1. A data processing system with a processor and a memory (MEM) for storing a plurality of n-bit data words, comprising:
an index register (X) having n stages for storing in the $n-m$ last stages a relative address of a data word in a table of said memory;
an accumulator (A) having an accumulator register (AR) for storing therein said data word;
coder means (FFOC, CC) for determining the m-bit position of the first bit of said data word having a predetermined one of two conditions, all said bits of said word being ordered in a predetermined way, said accumulator coupled to said coder means and said m-bit position being provided at the m-bit output (FO_{00}-FO_{03}) of said accumulator (A);
first means for coupling said memory (MEM) and said accumulator register (AR);
means for accessing a data word from said memory table by using said relative address and for storing said word in said accumulator register (AR) via said first coupling means; and
second means for coupling said $n-m$ last stages of said index register (X) and the m-bit output (FO_{00}-FO_{03}) of said accumulator (A) with the $n-m$ first stages and the m last stages of said index register respectively, whereby said $n-m$ bit relative address of said word and said m-bit position of said bit in said word are combined to obtain in said index register (X) the position of said bit in said memory table.

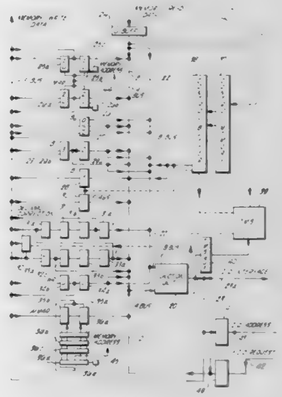
3,930,236

SMALL MICRO PROGRAM DATA PROCESSING SYSTEM EMPLOYING MULTI-SYLLABLE MICRO INSTRUCTIONS

Alisdair Cullen Ferguson, Bathgate; John McGregor, Currie, and Alastair George MacPherson, Linlithgow, all of Scotland, assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 2, 1973, Ser. No. 402,724
Claims priority, application United Kingdom, June 5, 1973, 26716/73
Int. Cl.² G06F *9/16*, *9/10*
U.S. Cl. 340—172.5 **4 Claims**

1. A data processing system including a processor having a fixed data path width and a memory having a first portion to store macro instructions and data and a second portion to store different types of micro instruction syllables, each syllable having a width equal to said fixed data path width, said processor comprising:
a function unit to perform logical operations on data;
a plurality of registers coupled to said function unit for data transfer therebetween;
macro instruction accessing means coupled to said memory to receive macro instruction operators from said first memory portion; and
micro instruction accessing means coupled to said function unit and said registers, said micro instruction accessing means also being coupled to said macro instruction accessing means and to said second memory portion and responsive to said macro instruction operator to access, in sequence, two or more micro instruction syllables from said second portion of said memory so as to form a micro instruction called for by said macro instruction operator wherein the first syllable of said micro instruction specifies a logical operation to be performed by said function unit and the particular ones of said plurality of registers for data transfer to said function unit and the remaining syllables specify literal values.



3,930,237

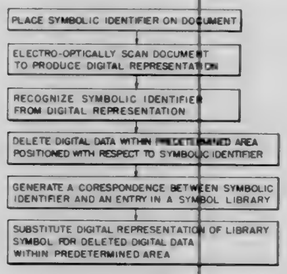
METHOD FOR AUTOMATING THE PRODUCTION OF ENGINEERING DOCUMENTATION UTILIZING AN INTEGRATED DIGITAL DATA BASE REPRESENTATION OF THE DOCUMENTATION

Philippe Villers, Cambridge, Mass., assignor to The Computervision Corporation, Bedford, Mass.

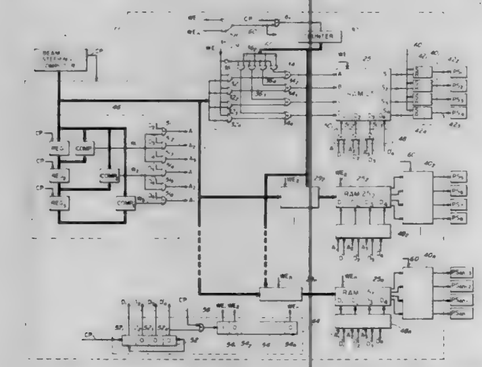
Filed Mar. 7, 1974, Ser. No. 448,892
Int. Cl.² G06F *15/20*
U.S. Cl. 340—172.5 **17 Claims**

1. A method for producing an integrated digital data base representing a document having at least one graphical entity thereon, said method comprising the steps of:
1. placing a symbolic identifier on the document with respect to each graphical entity thereon;
2. electro-optically scanning said document top produce a digital representation thereof,
3. recognizing the symbolic identifier from the digital representation thereof;
4. deleting at least a portion of the digital data within a predetermined area positioned with respect to each symbolic identifier;
5. generating a correspondence between each symbolic

identifier and a particular entry in a symbol library; and,
6. substituting for the deleted digital data a digital representation of a library symbol corresponding to the particular symbolic identifier within said predetermined area.

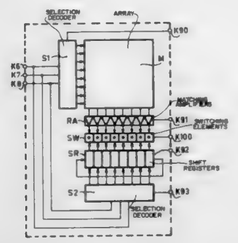


3,930,238
DIGITAL APPARATUS
Willard W. McLeod, Jr., Lexington, and John F. Heaton, Acton, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Apr. 25, 1974, Ser. No. 464,076
Int. Cl.² G11C *13/00*
U.S. Cl. 340—173 R **6 Claims**



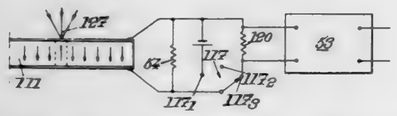
1. Digital apparatus for producing a set of pulses having time durations in accordance with corresponding digital words applied sequentially to such digital apparatus comprising:
a. addressable memory means having storage cells arranged in rows and columns;
b. means for applying a control bit to a different one of the columns of storage cells synchronously as each one of the digital words is applied to the digital apparatus;
c. means for enabling storage of such control bit in the row addressed by such applied one of the digital words;
d. a plurality of pulse generating means, each one thereof being coupled to a common actuating line and having a terminating line connected to a corresponding one of the columns of storage cells, each one thereof initiating one of the set of pulses in response to a signal being applied to the actuating line and for terminating such one of the pulses in response to a signal being applied to the terminating line;
e. means, actuated in response to the last one of a predetermined number of applied digital words, for sequentially reading each one of the rows of storage cells and for applying a signal to the actuating line to initiate simultaneously each one of the set of pulses; and,
f. means for applying signals to a different one of the terminating lines in response to the reading of a different one of the stored control bits thereby to terminate a different one of such pulses at times corresponding to the successively applied digital words.

3,930,239
INTEGRATED MEMORY
Roelof Herman Willem Salters; Lieuwe Boonstra, and Cornelis Willem Lambrechtse, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed July 5, 1974, Ser. No. 486,222
Claims priority, application Netherlands, July 11, 1973, 7309642
Int. Cl.² G11C *7/00, 8/00*
U.S. Cl. 340—173 R **5 Claims**



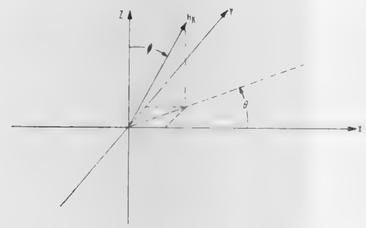
1. An integrated solid-state memory, comprising
a memory array for storing information in memory locations defined by rows and columns;
row selection members for selecting a row of said array under control of a first selection instruction signal;
a matching amplifier operatively associated with each of said columns;
switching means for outputting selected information to an information transfer line;
bit selection means, comprising bit selection members for selecting a bit location within an array row under control of a second selection instruction signal, and a shift register connected between said switching means and said bit selection members, said shift register being settable by said second selection instruction signal to a predetermined bit address; and
instruction signal input terminals for supplying to both said row selection members and said bit selection members said first and second selection instruction signals.

3,930,240
FERROELECTRIC MEMORIES AND METHOD OF ACTIVATING THE SAME
Armand Hadni, Nancy, and Robert Thomas, Saint Die, both of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France
Continuation-in-part of Ser. No. 273,531, July 20, 1972, Pat. No. 3,820,088. This application Mar. 25, 1974, Ser. No. 454,616
Claims priority, application France, July 23, 1971, 71.27044; Dec. 17, 1973, 73.44966
Int. Cl.² G11C *11/22, 11/42*
U.S. Cl. 340—173.2 **14 Claims**



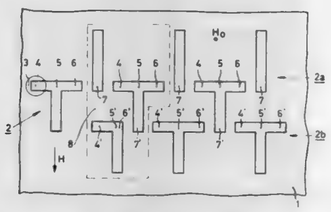
14. A ferroelectric memory comprising a thin plate formed of a ferroelectric material and metallized directly on its two large faces, means for applying, at will, an erasing voltage between these two faces in order to polarize all the domains in the same direction, means for concentrating the spot of a laser beam directly on one of the two metallized faces of the plate and to scan said face point by point with this spot, and means for reading information written on said memory, comprising means for applying between said two faces on writing, a voltage of the same sense as the erasing voltage, the energy introduced by the spot of the laser beam at each point of said face of the plate being at least equal to a given value, this energy being adapted to create a polarization gradient for generating an electric field adapted to produce an irreversible switching of the polarization of the domain situated under said point.

3,930,241
TAILORED ANISOTROPY MAGNETIC BUBBLE DOMAIN MATERIAL
C. Richard Guarnieri, San Jose; Kenneth Lee, and Aare Onton, both of Saratoga, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 29, 1974, Ser. No. 518,329
Int. Cl.² G11C *11/14*
U.S. Cl. 340—174 TF **10 Claims**



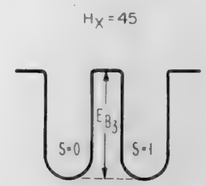
1. A film of magnetic amorphous material capable of supporting bubble domains comprising:
a region having a canted direction of magnetic uniaxial anisotropy, said canting direction defined by angles ϕ and θ, where $0 < \phi < 90°$ and defines the angle of canting measured from the perpendicular to the plane of the film, and where $0 \leq \theta \leq 360°$ and defines the angle of orientation of the projection of the canting in the plane of the film as measured from an arbitrary line.

3,930,242
MAGNETIC DEVICE HAVING DOMAINS
Willem Frederik Druyvesteyn, and Jan Willem Frederik Dorleijn, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 13, 1974, Ser. No. 450,741
Claims priority, application Netherlands, Mar. 13, 1973, 7303465
Int. Cl.² G11C *11/14*
U.S. Cl. 340—174 TF **2 Claims**



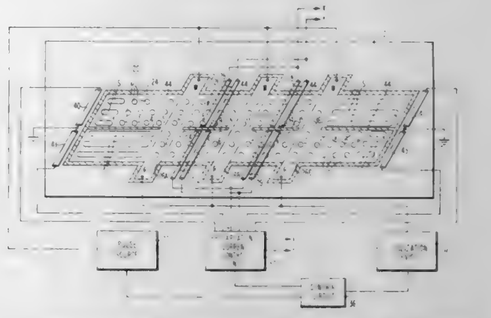
1. Magnetic device comprising at least one thin layer of a magnetisable material having a uniaxial anisotropy field and preferred direction of magnetisation which is substantially at right angles to the surface of the layer, means for maintaining magnetic domains in said layer, means for moving the domains, a domain positioning structure having first and second parts, and means for producing a uni-directional magnetic field of constant solarity substantially in the plane of the layer for moving a domain parallel to the axis of said magnetic field from the first part of the domain positioning structure to the second part of the domain positioning structure.

3,930,243
METHOD AND APPARATUS FOR STABILIZING A BUBBLE DOMAIN SYSTEM
Ta-Lin Hsu, and Hung Liang Hu, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 25, 1974, Ser. No. 518,026
Int. Cl.² G11C *11/14*
U.S. Cl. 340—174 TF **9 Claims**



1. A method of stabilizing a bubble domain system having a magnetic layer exchange coupled to a medium containing bubble domains having no Bloch lines and bubble domains having a pair of Bloch lines comprising the steps of
continuously applying an in-plane magnetic field to said magnetic layer, said magnetic field having a magnitude greater than 0 oersteds and less than that required to obtain a first bubble domain having a pair of Bloch lines when the wall of said first bubble domain is moved with a velocity sufficient to cause magnetic orientation instability therein.

3,930,244
BUBBLE DOMAIN LATTICE BUFFER ARRANGEMENT
Otto Voegeli, San Jose, Calif., assignor to International Business Machines Corporation, Armond, N.Y.
Filed Aug. 5, 1974, Ser. No. 494,940
Int. Cl.² G11C *11/14, 19/08*
U.S. Cl. 340—174 TF **23 Claims**



1. A combination for maintaining the integrity of a bubble domain lattice having an enclosed plurality of bubble domains in rows and columns on a medium supporting bubble domains, said combination comprising:
a column of stripe domains established on each end of the lattice, one pair for each row of bubble domains in the lattice; and

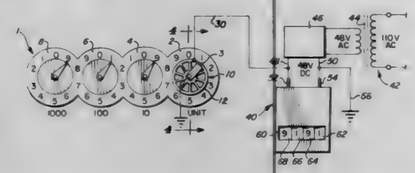
adjusting means for expanding and contracting, at opposite ends, the length of each pair of said stripe domains in accordance with the required propagation direction of its row of bubble domains.

3,930,245

REMOTE MONITOR APPARATUS FOR METERS

Eugene M. Taylor, 3913 W. Windsor Ave., Phoenix, Ariz. 85009

Filed Feb. 5, 1975, Ser. No. 547,226
Int. Cl.² G08C *19/16*
U.S. Cl. 340—188 R **4 Claims**



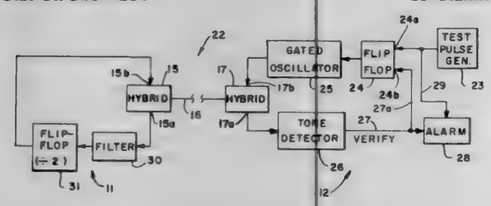
1. Apparatus for the remote monitoring of a meter having at least a single clock face with a plurality of numerals thereon and a rotatable pointer secured to a shaft, comprising, in combination:
an insulator disposed on the clock face;
conductive wheel means secured to the insulator, including a plurality of spaced apart spokes corresponding to the numerals on the clock face;
wiper means secured to the shaft and making electrical contact with the spokes of the conductive wheel means in response to rotation of the shaft; and
remote indicator means including dial means indicating electrical contact between the wiper means and the conductive wheel means.

3,930,246

ELECTRICAL ALARM SYSTEM

Scott V. Campbell, Melbourne, Fla., assignor to Francis A. Scott, Daytona Beach, Fla.

Filed Jan. 13, 1975, Ser. No. 540,537
Int. Cl.² G08B *25/00*
U.S. Cl. 340—214 **13 Claims**



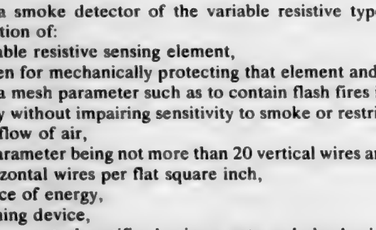
1. In a monitoring system for monitoring from a central station at least one condition occurring in at least one remote station, said system having communication means for transfer of electrical signals between said central and remote stations, coupling means at said central and remote stations for coupling electrical signals between said communication means and said central and remote stations respectively, said coupling means having transmit and receive ports, an improved system for testing the integrity of said monitoring system comprising means at the central station for generating periodic test pulses, test oscillator means for generating a first frequency test signal, oscillator control means for turning said oscillator means on and off so that the oscillator means will oscillate while on and cease to oscillate while off, said oscillator control means being responsive to pulses from said test pulse generating means to turn said oscillator means on, means for conducting said first frequency test signal to the transmit port of said coupling means at said central station whereby said test signal is coupled to said communication means and conveyed to the receive port of said remote station, means at said remote station responsive to said test signal to produce a second frequency signal different from said test signal, circuit means for conducting said second frequency signal to the transmit port of said coupling means at said remote station whereby said second frequency signal is coupled to said communication means and conveyed to the receive port of said central station, a first detector means responsive to said second frequency signal for producing a verify signal when said second frequency signal is detected, said control means being responsive to said verify signal for turning said oscillator means off, an alarm for alerting an operator whenever a verify signal fails to be produced within a predetermined time period after each test pulse, said alarm having means for actuating said alarm in response to a test pulse signal after a time delay equal to said predetermined time period and means responsive to said verify signal for blocking the actuation of said alarm when the verify signal is received within said predetermined time period, said predetermined time period being equal to at least the propagation delay time within the testing system which is measured from the time each test pulse is generated until a second frequency signal can normally be detected by said detector means.

3,930,247

OPEN SCREEN SMOKE DETECTOR AND CIRCUIT

Gordon Hurd, Toney, Ala., assignor to Avco Corporation

Filed Sept. 6, 1974, Ser. No. 503,607
Int. Cl.² G08B *17/10*
U.S. Cl. 340—237 S **1 Claim**



1. In a smoke detector of the variable resistive type the combination of:
a variable resistive sensing element,
a screen for mechanically protecting that element and having a mesh parameter such as to contain flash fires internally without impairing sensitivity to smoke or restricting the flow of air,
said parameter being not more than 20 vertical wires and 20 horizontal wires per flat square inch,
a source of energy,
a warning device,
a silicon control rectifier having a gate and also having an anode-cathode circuit in series with said warning device and said source of energy, and
a control circuit including said resistive element, said control circuit having an input coupled to said source and an output coupled to said gate element in such manner that the presence of smoke decreases the resistance of the resistive element and causes the silicon control rectifier to fire, thereby energizing the warning device.

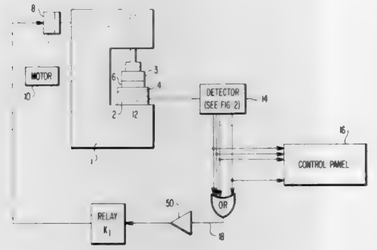
3,930,248

IMPACT SENSING DETECTOR

Michael I. Keller, 1935 Hawthorne Ave., Alexandria, Va. 22311

Filed July 22, 1974, Ser. No. 490,503
Int. Cl.² G08B *23/00*
U.S. Cl. 340—267 R **11 Claims**

1. An apparatus for monitoring the operation of a mechanical press having relatively movable members including tooling, said members operating to close upon each other to thereby form a workpiece into a desired part comprising:
a. means for detecting the shock wave produced as the said members close upon each other,
b. means for sampling the detected shock wave to produce a plurality of amplitude samples of said shock wave over time,
c. means for storing each of said samples of the detected shock wave,
d. means for producing standard samples representing samples of a shock wave produced when the press is operating normally,
e. means for storing said standard samples,



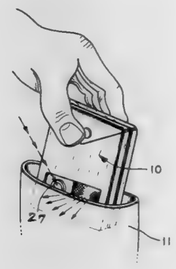
f. a first arithmetic means for electrically and successively comparing time-corresponding samples of the detected shock wave and standard samples to produce signals representing the difference in amplitude between each set of compared samples,
g. means for storing a plurality of electrical representations of standard difference signals representing the permissible difference between each set of compared samples,
h. means for electrically and successively comparing each difference signal with its corresponding standard difference signal, and
i. means for producing a warning indicator signal when the value of at least one of said difference signals is greater than or less than its corresponding standard difference signal by a predetermined amount.

3,930,249

SELF ACTUATING WALLET ALARM

Howard A. Steck, 458 S. Stuart, Palatine, Ill. 60067, and Ronald J. DiVito, 324 S. Dale St., Arlington Heights, Ill. 60004

Filed June 21, 1974, Ser. No. 481,531
Int. Cl.² G08B *21/00*
U.S. Cl. 340—280 **10 Claims**



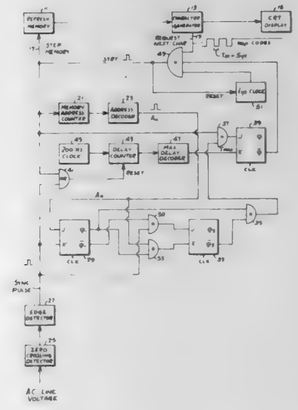
1. A wallet alarm device comprising:
an alarm system including alarm means operative to produce an alarm signal;
a case having a portion thereof for retaining said alarm means; and
said alarm system including receiving means responsive to sense pre-selected variations of electromagnetic radiation and effective to actuate said alarm means to product said alarm signal upon sensing said pre-selected variation of electromagnetic radiation; and
said alarm system comprising an electronic circuit having a pair of quasi-complementary coupled transistors coupled between said receiving means and said alarm means to provide a high out put to said alarm means notwithstanding substantial impedance mismatching between said circuit and said alarm means.

3,930,250

SYNCHRONIZING SYSTEM FOR REFRESH MEMORY

Walter T. Blejwas, Jr., Somerville, N.J., and Peter D. Dickinson, Monte Sereno, Calif., assignors to Vydec, Inc., Whippany, N.J.

Filed May 6, 1974, Ser. No. 467,270
Int. Cl.² G06F *3/14*
U.S. Cl. 340—324 A **10 Claims**



1. In a system for producing characters of a page of text on a display from a dynamic recirculating refresh memory, a method for synchronizing the system to the power line frequency to prevent movement of the display, the method comprising:
stepping said refresh memory from character to character at a predetermined slow clock rate until a power line synchronizing pulse occurs, wherein the time interval T_{max} between each clock pulse is longer than the time required to produce the most complex character to be displayed; and
stepping said refresh memory at variable clock rates after said synchronizing pulse occurs until all characters of a page are produced on the display, wherein a clock pulse occurs in response to the completion of each character displayed.
5. A synchronizing system comprising:
means for producing periodically recurring sync pulses;
a dynamic recirculating refresh memory for storing a plurality of characters in coded form, said memory having a control input for stepping said memory from one memory location to the next to output the characters in sequence;
a character generator coupled to the output of said refresh memory for producing characters in a manner for display, said character generator having an output indicating when the generation of each character is complete;
means for sensing the beginning of each recirculation of said refresh memory;

first means coupled to the control input of said memory for stepping said memory at predetermined long time intervals T_{max} which are longer than the time required to generate the most complex character to be displayed;

second means coupled to the control input of said memory and to said character generator output for stepping said memory at varying time intervals in response to the generation of each character; and

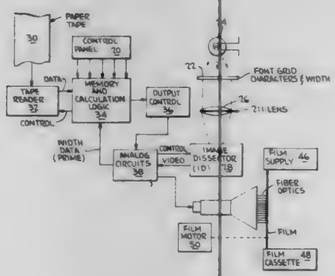
control means responsive to said sync pulse producing means and said sensing means for enabling said first stepping means at the beginning of a memory refresh cycle and for thereafter disabling said first stepping means and enabling said second stepping means when a sync pulse occurs.

3,930,251

CHARACTER IMAGE GENERATION APPARATUS AND CRT PHOTOTYPESETTING SYSTEMS

Roger F. Salava, Andover, Mass.; Brian G. Eastman, Hampstead, N.H., and George W. King, Concord, Mass., assignors to Compugraphic Corporation, Wilmington, Mass.

Filed May 9, 1974, Ser. No. 468,534
Int. Cl.² G08B 5/36
U.S. Cl. 340—324 AD **13 Claims**



1. Apparatus for printing text by converting encoded electrical signals into printed characters, comprising:

means for generating electron images of characters to be printed from said coded input signals and including an arrangement of characters with indexing bars forming a character field for each of said characters;

means for controlling said means for generating electron images to select characters from said arrangement of characters in accordance with a desired character format; said means for generating electron images further including means for deflecting said electron images in accordance with a predetermined scanning pattern in response to said means for controlling, said scanning pattern having first and second different scanning rasters wherein said first scanning raster scans at least one of said indexing bars and said second scanning raster scans said character associated with said at least one indexing bar, and means for producing output signals representative of said electron images;

first means responsive to said output signals for correcting the position of said first scanning raster to improve the initial position of said second scanning raster for scanning a selected character, said first means including means for selectively varying the rate of said position correction during said first scanning raster; and

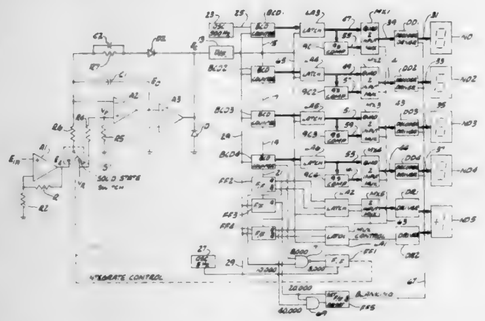
second means responsive to said output signals for generating a visual image of said characters in accordance with said second scanning raster and including means for recording said visual image.

3,930,252

BIPOLAR DUAL-SLOPE ANALOG-TO-DIGITAL CONVERTER

Robert C. Storar, Xenia, Ohio, assignor to United Systems Corporation, Dayton, Ohio

Filed Dec. 26, 1973, Ser. No. 427,953
Int. Cl.² H03K 13/20
U.S. Cl. 340—347 NT **27 Claims**



1. A bipolar dual-slope analog-to-digital converter system for converting an analog input signal of unknown polarity to a decimal number which is directly proportional to said analog input signal, said system comprising:

a. an integrator for providing an output signal which is proportional to the time integral of the magnitude with respect to a single analog reference of preselected magnitude and polarity of signal applied to the input thereof;

b. solid state switching means for alternately connecting to the input of said integrator either a first signal corresponding to an analog input signal of unknown magnitude and of either positive or negative polarity or a second signal constituting said single analog reference;

c. a pulse generator for supplying pulses at a substantially constant pulse repetition rate;

d. a digital counter for counting said pulses;

e. automatic means for effecting determination of the polarity of said analog input signal without polarity sensing of said analog input signal and for effecting display of a decimal number which is directly proportional to said analog input signal regardless of the polarity thereof, said automatic means comprising:

1. means for resetting said counter to a predetermined first count and for causing said switching means to apply one of said first and second signals to the input of said integrator whereby the output signal from said integrator increases linearly with respect to time from a reset value while said counter advances from said first count to a predetermined second count;

2. means responsive to said second count for causing said switching means to apply the other of said first and second signals to the input of said integrator whereby the output signal from said integrator decreases linearly with respect to time toward said reset value while said counter advances from said second count toward a predetermined third count, said reset value being reached prior to said third count if said first signal is of a first polarity and said reset value being reached after said third count if said first signal is of opposite polarity;

3. digital display means;

4. complement count means for causing said digital display means to display a decimal number corresponding to the complement of the count in said counter upon the output signal from said integrator reaching said reset value prior to said third count; and

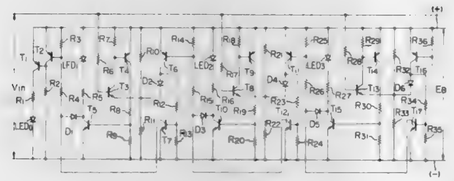
5. true count means responsive to said counter reaching said third count for causing said digital display means to display a decimal number corresponding to the true count in said counter upon the output signal from said integrator reaching said reset value, whereby the decimal number displayed by said display means digitally represents the true magnitude of said analog input signal regardless of the polarity thereof.

3,930,253

CIRCUIT FOR CONVERTING AN ANALOG INPUT SIGNAL VOLTAGE INTO A DIGITAL REPRESENTATION

Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jan. 24, 1974, Ser. No. 436,170
Claims priority, application Japan, Feb. 1, 1973, 48-12452
Int. Cl.² H03K 13/175
U.S. Cl. 340—347 AD **7 Claims**



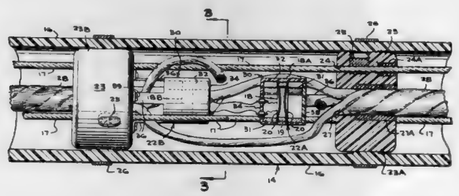
1. A circuit for converting an analog input signal from an analog signal source to a digital representation comprising a plurality of electrically sequential switching means (T_3, R_{10}, R_{11}, T_4, T_5; T_8, R_{21}, R_{22}, T_9, T_{10}; T_{13}, R_{32}, R_{33}, T_{14}, T_{15}) which have different detecting voltages, each of said switching means generating a detecting signal when an analog input signal voltage from said analog signal source equals a detecting voltage, a plurality of electrically sequential operating means (T_6, D_2; T_{11}, D_4; T_{16}, D_6; T_7, T_{12}, T_{17}) for preventing an analog input current from said analog source from flowing into said plurality of switching means, each of said plurality of operating means being actuated upon application of a detecting signal from the sequentially preceding switching means and the thus actuated operating means actuating the following sequentially operating means.

3,930,254

SEISMIC STREAMER CONSTRUCTION FOR MINIMIZING HYDROPHONE RESPONSE TO VIBRATION PRODUCED PRESSURE FIELDS

George M. Pavey, Jr., Dallas, Tex., assignor to Whitehall Corporation, Dallas, Tex.

Filed Apr. 9, 1974, Ser. No. 459,326
Int. Cl.² G01V 1/16
U.S. Cl. 340—7 R **3 Claims**



1. A marine seismic streamer section for an elongated seismic streamer made up of plural sections serially connected together, the streamer section comprising an elongated streamer jacket of generally cylindrical tubular configuration of predetermined inner and outer diameter concentric with a streamer axis including signal wires and strain cables extending through the interior thereof, an array of hydrophone units in the streamer section arranged in closely adjacent pairs of associated hydrophone units to respond to accoustic pressure variations originating externally of the streamer section and produce electrical output signals, means connecting the output signals from each associated pair of hydrophone units in additive relation to provide an added pair output; and means supporting the hydrophone units of each associated pair within said jacket in a manner to effect cancellation in the added pair output from the pair of associated units of unwanted output signals resulting from sound pressure fields produced by vibratory motion of the components forming the streamer section, comprising a pair of cylindrical bodies forming piston members concentric with said streamer axis having an outer diameter corresponding substantially to the inner diameter of said jacket tightly fitted therein and having apertures therethrough through which said strain cables and signal wires pass in tightly fitted relation, sealing means substantially sealing said piston members against the surfaces of said wires and cables and against said jacket to substantially prevent leakage of sound pressure fields travelling in the streamer section into the space between the associated pair of piston members, means firmly securing said piston members to said strain cables passing therethrough, and a pair of spaced hydrophone mounting members fixedly located in said space between the pair of piston members fixed on mounting faces of said respective piston members of said pair transverse to said streamer axis which face inwardly toward said space and confront each other, said mounting members supporting said hydrophone units in fixed spaced relation to their associated mounting faces of the piston members, whereby motion imparted to said mounting faces caused by vibratory motion of the streamer components is substantially identical in phase, amplitude and frequency at both faces producing identical sound fields of opposite sign which activate the pair of hydrophone units to produce opposite sign signals which cancel each other in said added output, each of said mounting members being a rigid body having a cylindrical cup-shaped portion spaced from the mounting face of the supporting piston and encircling the associate hydrophone unit in peripherally supported relation therein at the axial center thereof and having sound pressure communicating apertures in the end wall more remote from the associated mounting face, and said rigid body including plural legs extending integrally from the cup-shaped portion in concentric parallelism with the streamer axis to the associated mounting face and being fastened rigidly thereto.

3,930,255

ANALOG TO DIGITAL CONVERSION BY CHARGE TRANSFER DEVICE

Robert W. Means, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 6, 1974, Ser. No. 440,215
Int. Cl.² H03K 13/06
U.S. Cl. 340—347 AD **1 Claim**

1. An analog to digital converter employing a charge transfer matrix comprising:

a semiconductor substrata for storage of charge regions representing the analog signal and other comparison signals;

a plurality of electrodes cooperatively positioned in four linear channels of $2N - 1$ cells, where N is the number of digital bits required in the digital answer, individual cells being defined by the physical extend of the associated electrode and being numbered from one commencing with the input cell;

a first one of said electrode channels includes electrodes shaped to provide only full charge transfer cells to provide a channel for storage and transfer of the analog signal and for addition of signal thereto;

a second one of said electrode channels arranged adjacent said first electrode channel including odd-numbered full charge transfer cells and alternate even-numbered charge

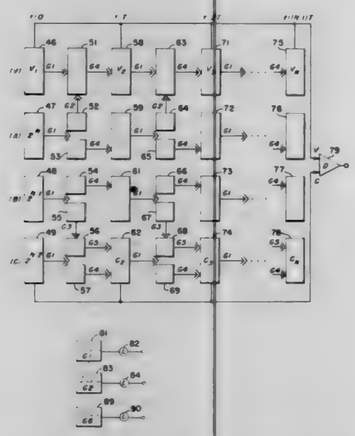
division cells whereby the initial charge placed therein is reduced to successively approximate the charge in said first channel upon sequented charge transfer;

a third one of said four electrode channels positioned on the opposite side of said second electrode channel from said first electrode channel and including alternate, oddnumbered full charge transfer cells and even-numbered charge division cells for establishing a comparison voltage channel;

a fourth one of said four electrode channels positioned on the opposite side of said third electrode channel from said second electrode channel and including alternate odd-numbered full charge transfer cells and even-numbered charge division cells for cooperation with said third one of said four electrode channels;

a first series of charge transfer gates extending between and for moving charges between odd and even numbered cells in each channel;

a second series of charge transfer gates arranged to extend between one of each pair of said charge division cells in said second one of said electrode channels and an adjacent, even-numbered full charge transfer cell in said first one of said electrode channels for charge transfer therebetween whereby a charge from said charge division cells may be added to the charge within said analog signal channel;



a third series of charge transfer gates arranged to extend between one of each pair of said even-numbered charge division cells in said third electrode channel and one of each pair of even-numbered charge division cells in said fourth electrode channel for charge transfer therebetween for charge transfer and addition therebetween;

a fourth series of charge transfer gates arranged to extend between each of said even-numbered and said odd-numbered cells in said first electrode channel and between each of the other even-numbered charge division cells in said second, third, and fourth electrode channels and the odd-numbered cells therein for charge transfer therebetween;

a fifth series of charge transfer gates arranged to extend between said one of each pair of said even-numbered charge division cells and said odd-numbered full charge transfer cells in said third electrode channel for charge transfer therebetween;

logic controlled clocking circuit means connected to each of the aforerecited charge transfer gates for effecting a timely migration of electrical charges between the associated cells in dependence on the charge potential therebetween; and

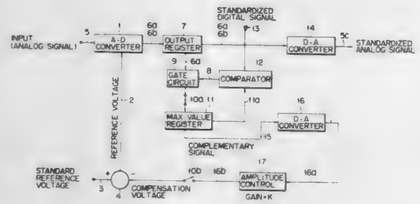
differential amplifier means connected between the odd-numbered full charge transfer cells in said first electrode channel and the odd-numbered full charge transfer cells in said fourth electrode channel for producing an output when a predetermined difference exists therebetween whereby a digital word output results in dependence upon the particular charge migrations established by the said first through fifth series of charge transfer gates and logic controlled clocking circuit means as the charge in the fourth electrode channel is processed to approximate the analog signal input of the first electrode channel.

3,930,256

DEVICE FOR STANDARDIZING A MAXIMUM VALUE OF AN OUT-PUT SIGNAL CORRESPONDING TO AN INPUT ANALOG SIGNAL

Hiroshi Amemiya, Fujisawa, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 8, 1974, Ser. No. 459,042
Claims priority, application Japan, Apr. 14, 1973, 48-42335
Int. Cl.² H03K *13/00*
U.S. Cl. 340—347 R **4 Claims**



1. A device for standardizing the maximum value of an output signal corresponding to an input analog signal, comprising an analog-digital converter for converting an input analog signal into digital signals in a manner to correspond to a standard reference voltage or a compensated reference voltage; an output register for storing the output digital signal of the analog-digital converter for each predetermined period corresponding to a sampling period of the analog-digital converter and for permitting the stored signal to be read out therefrom; a first means for storing through the output register the maximum-valued one of the digital signals from the analog-digital converter which corresponds to the standard reference voltage, and for producing a complementary signal of the maximum-valued digital signal; a second means for converting the complementary signal into an analog signal and producing a compensation voltage; and a third means for supplying, after lapse of an initiating period, to the analog-digital converter, a compensated reference voltage obtained through the subtraction of the level of the compensation voltage from the level of the standard reference voltage, to obtain from the analog-digital converter an output whose maximum value is standardized to a predetermined level.

3,930,257

METHODS OF AND APPARATUS FOR ELECTROSTATIC PRINTING

Pham Kim Quang, Dieppe, and René Gasdoué, Neuville les Dieppe, both of France, assignors to La Cellophane, Paris, France

Filed Mar. 18, 1974, Ser. No. 452,346
Claims priority, application France, Apr. 3, 1973, 73.11867
Int. Cl.² G03G *15/18*
U.S. Cl. 346—74 ES **12 Claims**

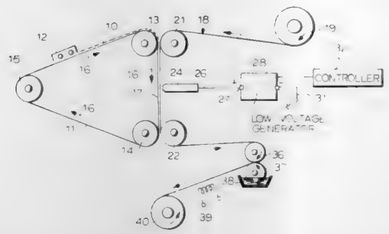
1. An apparatus for electrostatic printing on a strip of material, wherein said material includes an insulating support layer with a dielectric layer thereupon, the dielectric layer having an interior surface and an exterior surface, said apparatus comprising:

means for locating the material at a printing station;

means for depositing a uniform field of electrostatic charges

in the insulating support layer, wherein the charges have a level of potential which is below a threshold ionization level;

stylet means for creating the charge image, said stylet means being located in said printing station, wherein said stylet means is brought to a predetermined level of potential



substantially lower than that of the electrostatic charges and of opposite polarity, but high enough to cause ionization when added to the potential level of said charges to thereby transfer a charge image to the exterior surface of the dielectric layer; and

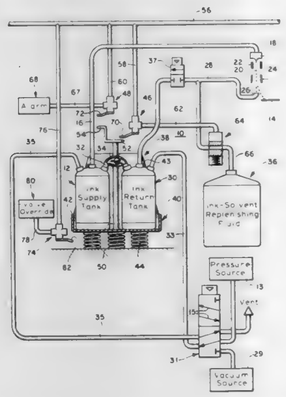
means for developing said charge image to make the image visible.

3,930,258

INK MONITORING AND AUTOMATIC FLUID REPLENISHING APPARATUS FOR INK JET PRINTER

George H. Dick, Highland Park, and Thomas J. Madden, Jr., Elk Grove Village, both of Ill., assignors to A. B. Dick Company, Chicago, Ill.

Filed Jan. 13, 1975, Ser. No. 540,394
Int. Cl.² G01D *18/00*
U.S. Cl. 346—75 **9 Claims**



1. An ink supply arrangement for an ink jet printing apparatus including in combination:

pressurized ink supply tank means connectable to an ink jet nozzle from which ink drops are projected toward a record medium, for supplying ink under pressure to said nozzle;

ink return tank means connectable to ink catcher means, for storing ink drops not used in the printing process, said ink return tank means being evacuated to provide a force for drawing ink drops from said catcher means to said ink return tank means;

container means having a supply of ink replenishing fluid therein, said container means being coupled to said return tank means for communication therewith, whereby replenishing fluid is drawn from said container means to said return tank means; and

ink monitoring and fluid replenishing apparatus for adding automatically replenishing fluid from said container means to said return tank means when necessary to increase the volume of liquid in said supply and return tank means to a predetermined volume, said apparatus including:

means for sensing the total volume of liquid in both said supply and return tank means,

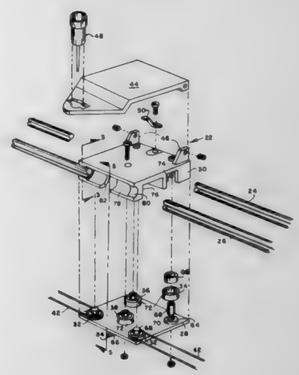
normally closed valve means interposed between said fluid replenishing container means and said return tank means, switch means coupled to said valve means and being actuable for operating said valve means to an open condition, said switch means being actuated by said volume sensing means upon said volume of liquid in said supply and return tank means decreasing to a predetermined volume, whereby replenishing fluid is drawn from said container means to said return tank means, said switch means being deactuated when said liquid volume is increased predeterminedly.

3,930,259

SLIDING STYLUS HOLDER FOR AN X-Y PLOTTER

David Orville Hoskins, Beaverton, Oreg., assignor to Tektronix Inc., Beaverton, Oreg.

Filed Apr. 22, 1974, Ser. No. 463,012
Int. Cl.² G01D *15/24*
U.S. Cl. 346—139 R **9 Claims**



1. A stylus holder for sliding movement along guide rods of a recorder apparatus for recording information on a recording medium thereon, said stylus holder comprising:

a mounting member;

roller members mounted on mounting means arranged in parallel provided by said mounting member with said roller members being arranged in a triangular configuration for rolling engagement with one of the guide rods, each of said roller members having an arcuate area that provide minimal contact areas with the one of the guide rods thereby minimizing frictional engagement therebetween;

groove means provided by said mounting member for engagement with another of the guide rods, said groove means having bearing means that engage the another of the guide rods thereby minimizing frictional engagement therebetween;

means provided by said mounting member for engagement by operating means to slidably move the stylus holder along the guide rods; and

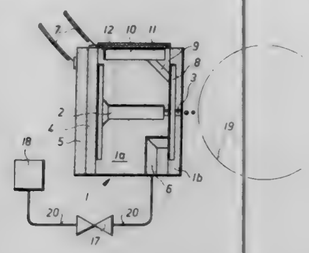
plate means pivotally mounted on said mounting member for carrying a stylus member for recording information on the recording medium.

3,930,260

APPARATUS FOR APPLYING A LIQUID IN DROPLETS TO A SURFACE

Heinrich Sicking, Grafschaft, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

Filed May 3, 1974, Ser. No. 466,862
Claims priority, application Germany, May 9, 1973, 2323220
Int. Cl.² G01D *15/16*
U.S. Cl. 346—140 **2 Claims**



1. In an apparatus for applying a liquid in droplets to a surface, including an ejection head having means forming a pressure chamber in the ejection head, means forming a discharge channel in the ejection head, the discharge channel communicating with the pressure chamber, means forming an inlet channel in the ejection head, the inlet channel communicating with the pressure chamber, the apparatus further including a reservoir for the liquid, conduit means coupling the reservoir with the inlet channel for supplying the pressure chamber with liquid and a device connected to the ejection head for effecting momentary pressurizations of the liquid in the pressure chamber, shutoff means in the conduit means, the shutoff means having an open position for maintaining communication between the reservoir and the ejection head in the operating state of the apparatus, the shutoff means having a closed position for blocking communication between the reservoir and the ejection head in the non-operating state of the apparatus, the improvement comprising a pressure equalizing device including wall means bounding and defining a pressure equalizing chamber entirely filled with the liquid, said pressure equalizing chamber being in communication with said pressure chamber, at least one portion of said wall means being constituted by a first plate deformable for varying the volume of said pressure equalizing chamber, said first plate being attached to said ejection head and being responsive to the temperature of the liquid in said pressure chamber and in said pressure equalizing chamber, a second plate affixed rigidly face-to-face to said first plate, the material of said first plate having a coefficient of thermal expansion that is smaller than that of said second plate for increasing and, respectively, decreasing said volume upon expansion and, respectively, contraction of the liquid in said ejection head in said closed position of said shutoff means.

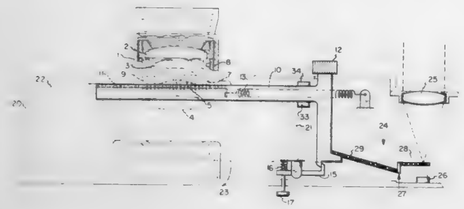
3,930,261

AUTOMATIC FOCUS APPARATUS

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 27, 1974, Ser. No. 500,868
Int. Cl.² G03B *7/08*
U.S. Cl. 354—25 **8 Claims**

1. Optical focusing structure for a camera including a taking lens, said taking lens being adjustable through a range of positions from substantially an extended position to substantially an infinity position, a spatial frequency filter, a fixed focus lens, said fixed focus lens providing imaging light ray components in the region of said filter from a subject to be photographed, means coupled to said taking lens and to said filter and operable on command to move said taking lens progressively between the last-mentioned two positions and simultaneously to move said filter in a first direction through said components to chop the latter, and in a second direction along said components to scan for the position of the subject image produced by said components, light sensitive detector means positioned to receive said components and to produce a detector signal of a frequency dependent upon the rate at which said filter chops said components, and of a value which reaches a maximum when said motion of said filter in said



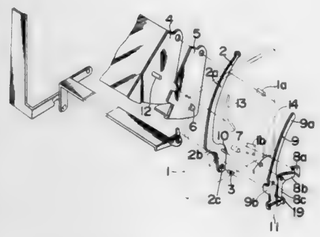
second direction causes said filter to intercept said image, peak detecting means connected to said detector means and responsive to the value of said detector signal to produce a stop signal when said value reaches said maximum, and means connected to said peak detecting means and responsive to said stop signal to stop the adjustment of said taking lens at its then position of adjustment upon the receipt of said stop signal, the last-mentioned position of said taking lens causing the latter to focus an image of said subject on a film plane of the camera.

3,930,262

SHUTTER SPEED CONTROL MEANS

Susumu Fujita, Hyogo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Apr. 18, 1974, Ser. No. 462,059
Claims priority, application Japan, Apr. 23, 1973, 48-46516
Int. Cl.² G03B *17/40*
U.S. Cl. 354—267 **3 Claims**



1. In a camera having first and second shutter curtains pivotally mounted within a housing, the improved shutter speed control means comprising:

a. a single-piece, shutter retaining member pivotally attached to said housing and engaging said second shutter curtain to retain said second shutter curtain in a first position,

b. a first lever pivotally attached to said housing at one end,

c. a second lever pivotally attached to said first lever, a first end of said second lever engaging said shutter retaining member,

d. a pin attached to said first shutter curtain passing through an arcuate slot in said housing, said pin being engageable with a second end of said second lever, and

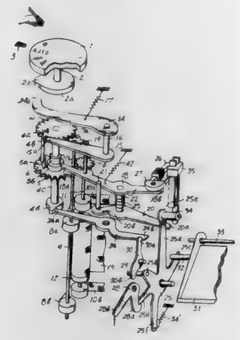
e. spring means connecting said shutter retaining member and said first end of said second lever.

3,930,263

CAMERA HAVING A SHUTTER MECHANISM CONTROLLED TO REMAIN CLOSED AS A FAILURE WARNING

Fumio Urano, Omiya, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1974, Ser. No. 500,669
Claims priority, application Japan, Aug. 27, 1973, 48-96012
Int. Cl.² G03B *17/38*
U.S. Cl. 354—268 **7 Claims**



1. In a single lens reflex camera having an actuating member, a mirror for reflecting light passing through the single lens to enable composition and focusing when the mirror is in a picture-composing position, the mirror being pivoted for rotation from its picture-composing position to a picture-taking position whereat it does not reflect the light, a shutter mechanism of the type which includes simultaneously chargeable and separately releasable leading and following shutter screens, and electromechanical means which when operable is operative upon movement of the actuating member to release the leading shutter screen and thereafter temporarily to hold and then release the following shutter screen so as to define an exposure slit as the released leading shutter screen moves ahead of the following shutter screen, said electromechanical means including an electromagnet and an armature magnetically attracted thereto when the electromagnet is operated in connection with the operation of holding the following shutter screen, the improvement for providing a warning that said electromechanical means is not operable, which comprises:

means for moving the mirror from its picture-composing position to its picture-taking position so that until said electromechanical means has completed its operation light passing through the single lens is not blocked from passing through the exposure slit;

a movable member for supporting the armature;

biasing means for urging the movable member in a direction away from a first position;

means, including said actuating member, for temporarily overcoming the urging of the biasing means so as to place the movable member in the first position during a first time interval in which the shutter screens are charged;

the movable member having a first mode of operation when the electromagnet is operating, in which first mode the movable member is held in the first position owing to magnetic attraction between the armature and the electromagnet, and having a second mode of operation if not so held during a second time interval immediately following the first time interval, in which second mode the movable member moves to reach a second position before the leading shutter screen is released; and

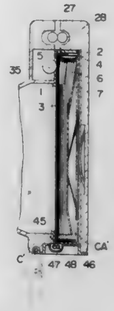
stop means responsive to the movable member operating in the second mode for preventing movement of the leading shutter screen while the mirror remains in its picture-composing position.

3,930,264

FILM CASSETTE

Yoshio Asano, Hyogo, Japan, assignor to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Apr. 3, 1974, Ser. No. 457,732
Claims priority, application Japan, Apr. 12, 1973, 48-44003; Apr. 3, 1973, 48-38054; Apr. 18, 1973, 48-43986
Int. Cl.² G03B *19/10*
U.S. Cl. 354—174 **8 Claims**



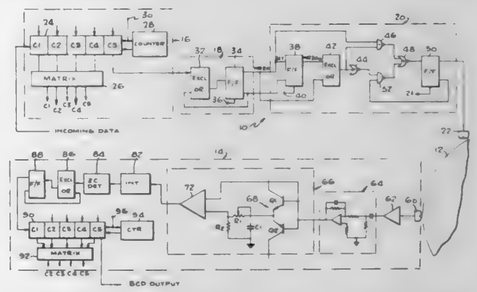
1. A film cassette containing a plurality of film monosheets comprising a lightproof outer case, said case forming a front opening through which monosheets may be exposed, and an exit opening through which exposed monosheets may be removed, a spring means urging said monosheets toward said front opening, a protective lightproof board located in said cassette adjacent said front opening, a strip made of flexible lightproof material with a length equal to that of said exit opening and a width greater than that of said exit opening, one edge of which is attached to the interior of said case adjacent said exit opening and the free end of which covers said monosheet exit opening and is bent by pushing of said board to open said monosheet exit, whereby monosheets in said cassette may be protected from exposure to light through said front opening said lightproof board being removable from and insertable into said cassette through said monosheet exit.

3,930,265

HIGH DENSITY MAGNETIC STORAGE SYSTEM

Noboru Kimura, Gardena, Calif., assignor to VRC California, Inc., El Segundo, Calif.

Filed June 7, 1974, Ser. No. 477,447
Int. Cl.² G11B *5/09*
U.S. Cl. 360—45 **33 Claims**



1. In a high track density magnetic recording system in which digital information is represented by magnetic flux changes on a magnetic medium, apparatus for maintaining a high integrity recorded signal with high linear bit density comprising:

means for converting an incoming bit stream to a converted bit stream comprising five bit cell fields, each of the five bit cell fields representing a corresponding ordered group

of four bits from the incoming bit stream, the converted bit stream comprising a first bilevel signal having a first level and a second level, and having not more than two cells at the first level adjacent one another;

means responsive to the converted bit stream for generating a second bilevel signal, the second bilevel signal changing from one level to the other level in response to the occurrence of the second level generated by the means for converting, thereby providing a self-clocking signal of known component frequency; and

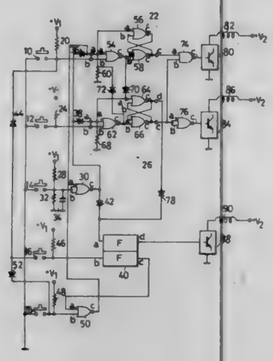
means coupled to the second bilevel signal generating means for providing a signal in response thereto having a modulated component for minimizing fringing field effects of nearby tracks.

3,930,266

CONTROL SYSTEM FOR A RECORDING/REPRODUCING APPARATUS

Hiroshi Okamoto, Simonkasaka 689-7, Kawagoe, Saitama, Japan

Filed Jan. 24, 1974, Ser. No. 436,199
Claims priority, application Japan, Jan. 31, 1973, 48-13150
Int. Cl.² G11B *15/12*
U.S. Cl. 360—62 **1 Claim**



1. In a recording/reproducing apparatus of the type including a record medium which can be caused to run in one and the opposite directions as required, a control system comprising, in combination:

a first control switch;

a first flip-flop circuit having a set terminal and a reset terminal and an output terminal, said set terminal of said first flip-flop circuit being connected to said first control switch whereby said first flip-flop circuit is triggered when said first control switch is actuated, said first flip-flop circuit comprising:

a first NOR circuit having first and second input terminals and an output terminal, said first and second input terminals of said first NOR circuit being connected to said set and reset terminals, respectively, of said first flip-flop circuit;

a second NOR circuit having first and second input terminals and an output terminal, said first input terminal of said second NOR circuit being connected to said output terminal of said first NOR circuit, said output terminal of said second NOR circuit being connected to said output terminal of said first flip-flop circuit; and

a third NOR circuit having first and second input terminals and an output terminal, said first input terminal of said third NOR circuit being connected to said reset terminal of said first flip-flop circuit, said second input terminal of said third NOR circuit being connected to said output terminal of said second NOR circuit, said output terminal of said third NOR circuit being connected to said second input terminal of said second NOR circuit;

means connected to said output terminal of said first flip-flop circuit and adapted to condition the recording/reproducing apparatus for the motion of the record medium in said one direction when said first flip-flop circuit is triggered;

a second control switch;

a second flip-flop circuit having a set terminal and a reset terminal and an output terminal, said set terminal of said second flip-flop circuit being connected to said second control switch whereby said second flip-flop circuit is triggered when said second control switch is actuated, said second flip-flop circuit comprising:

a fourth NOR circuit having first and second input terminals and an output terminal, said first and second input terminals of said fourth NOR circuit being connected to said set and reset terminals, respectively, of said second flip-flop circuit;

a fifth NOR circuit having first and second input terminals and an output terminal, said first input terminal of said fifth NOR circuit being connected to said output terminal of said fourth NOR circuit, said output terminal of said fifth NOR circuit being connected to said output terminal of said second flip-flop circuit; and

a sixth NOR circuit having first and second input terminals and an output terminal, said first input terminal of said sixth NOR circuit being connected to said reset terminal of said second flip-flop circuit, said second input terminal of said sixth NOR circuit being connected to said output terminal of said fifth NOR circuit, said output terminal of said sixth NOR circuit being connected to said second input terminal of said fifth NOR circuit;

means connected to said output terminal of said second flip-flop circuit and adapted to condition the recording/reproducing apparatus for the motion of the record medium in said opposite direction when said second flip-flop circuit is triggered;

a first diode connected between said output terminal of said first NOR circuit of said first flip-flop circuit and said reset terminal of said second flip-flop circuit, said first diode being adapted to reset said second flip-flop circuit when said first flip-flop circuit is triggered; and

a second diode connected between said output terminal of said fourth NOR circuit of said second flip-flop circuit and said reset terminal of said first flip-flop circuit, said second diode being adapted to reset said first flip-flop circuit when said second flip-flop circuit is triggered.

3,930,267

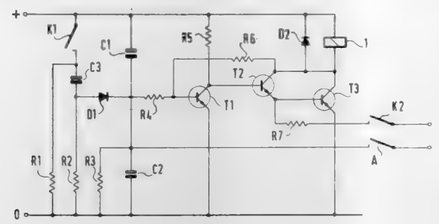
PUSH BUTTON RELEASE CONTROL SYSTEM FOR A TAPE RECORDER

Helmut Plener, Munich, Germany, assignor to Uher Werke Munich, Munich, Germany

Filed Feb. 27, 1974, Ser. No. 446,285
Claims priority, application Germany, Sept. 11, 1973, 2345790
Int. Cl.² G11B *15/10*
U.S. Cl. 360—69 **7 Claims**

1. A push button release control circuit for a tape recorder such as a cassette recorder in which tape is advanced by drive means between a supply reel and a take-up reel and having a plurality of push button switches selectively movable into operable positions for activating the functional operations of the recorder comprising, in combination, normally inoperative, electrically operated means for releasing all of said push button switches from said operative positions, a pair of transistors interconnected in a Darlington stage for connecting said releasing means to an associated source of power in the conducting condition to operatively condition said releasing means, a control transistor connected to said pair of transistors and to said associated source of power, circuit means

connected to said associated source of power for biasing said control transistor into a conducting condition during the advance of said tape to maintain said pair of transistors in a non-conducting condition, said circuit means being responsive



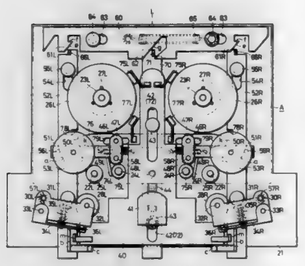
to the stopping of said tape to discontinue the biasing of said control transistor and to permit said pair of transistors to conduct for operatively conditioning said releasing means to release all of said push button switches from said operative positions.

3,930,268

CASSETTE TAPE DECK WITH BRAKE AND TAPE TENSIONING MEANS

Yasuhiro Uemura, Tokyo, Japan, assignor to Teac Corporation, Musashino, Japan

Division of Ser. No. 263,969, June 19, 1972, Pat. No. 3,864,744. This application May 6, 1974, Ser. No. 466,955
Claims priority, application Japan, June 20, 1971, 46-44082; June 20, 1971, 46-44083; June 20, 1971, 46-44084
Int. Cl.² G11B *15/18*; B65H *23/06*
U.S. Cl. 360—96 **1 Claim**



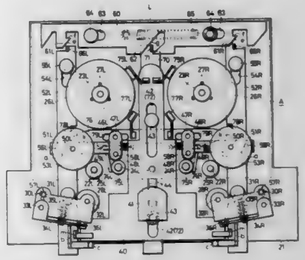
1. A cassette tape deck for use with a cassette having a magnetic tape wound on a pair of first and second reels having central apertures respectively in a casing, the casing having a first major face having formed therein at least a pair of first and second capstan receiving apertures and a pair of first and second reel drive shaft receiving apertures and a second major face having formed therein at least a magnetic head receiving window and a pair of first and second pinch roller receiving windows and substantially perpendicular to the first major face, comprising a pair of first and second capstans insertable into the first and second capstan receiving apertures; a pair of first and second pinch rollers that make rotary contact with the first and second capstans through the first and second pinch roller receiving windows; a magnetic head mounted on a sliding plate to make contact with the magnetic tape through the magnetic head receiving window; a pair of first and second reel drive shafts insertable into the first and second reel drive shaft receiving apertures; a pair of first and second actuating levers movable along first and second paths respectively, the pair of first and second actuating levers being moved in a first direction along the first and second paths respectively for bringing the first and second pinch rollers into rotary contact with the first and second capstans and for sliding the sliding plate to contact the magnetic head with the magnetic tape; a locking lever for selectively locking the first and second actuating levers at their moved positions in the first direction along the first and second paths; a third actuating lever for releasing the first and second actuating levers from their locked condition to move them along the first and second paths in a second direction reverse to the first direction; a pair of first and second wheels for coupling the first and second reel drive shafts with driving sources through a pair of first and second rotary frictional coupling means, a pair of first and second brake members mounted on the sliding plate, the pair of first and second brake members engaging the first and second wheels respectively to brake them when the sliding plate is not slid, and disengaging from the first and second wheels to release them from the braked condition when the sliding plate is slid; a movable lever adapted to be engageable with the first and second actuating levers and movable in third and fourth directions respectively along a third path; and a pair of third and fourth brake members disposed on the movable lever for engagement with the first and second wheels based upon the actuation of the second and first actuating levers respectively to apply back tension to the magnetic tape through the second and first reel drive shafts.

3,930,269

CASSETTE TAPE DECK WITH TAPE TENSIONING

Yasuhiro Uemura, Tokyo, Japan, assignor to Teac Corporation, Tokyo, Japan

Division of Ser. No. 263,969, June 19, 1972, Pat. No. 3,864,744. This application May 6, 1974, Ser. No. 467,463
Claims priority, application Japan, June 20, 1971, 46-44082; June 20, 1971, 46-44083; June 20, 1971, 46-44084
Int. Cl.² G11B *19/24*
U.S. Cl. 360—96 **1 Claim**



1. A cassette tape deck for use with a cassette having a magnetic tape wound on a first and second reel having central apertures respectively in a casing, the casing having a first major face having formed therein at least a first and second capstan receiving aperture and a first and second reel drive shaft receiving aperture and a second major face having formed therein at least a magnetic head receiving window and a first and second pinch roller receiving window and being substantially perpendicular to the first major face, comprising a first and second capstans inserted into the first and second capstan receiving apertures, a first and second pinch roller making rotary contact with the first and second capstan through the first and second pinch roller receiving windows, a magnetic head making contact with the magnetic tape through the magnetic head receiving window, a first and a second reel drive shaft inserted into the first and second reel drive shaft receiving apertures, a movable member having mounted thereon the magnetic head, and a first and a second actuating lever movable for actuating the movable member to

urge the magnetic head against the magnetic tape, the first and second pinch rollers being pivoted to first and second pins on the free end of first and second rotary arms journalled to first and second shafts, respectively, the first and second rotary arms are biased by first and second springs respectively and having pivoted thereto third and fourth rotary arms respectively, the third and fourth rotary arms being biased by third and fourth springs respectively towards the first and second rotary arms, the movable means having provided thereon first and second engaging pieces for abuttment with the third and fourth rotary arms respectively, the first and second actuating levers carrying thereon first and second actuating pieces for abuttment with the third and fourth rotary arms respectively, in which, based upon the actuation of the first actuating lever to actuate the movable means to urge the magnetic head against the magnetic tape, the third rotary arm is rotated by the first actuating piece against the third spring and then the first rotary arm is rotated through the third spring against the first spring to bring the first pinch roller into rotary contact with the first capstan, and the fourth rotary arm is rotated by the second engaging piece against the fourth spring through the movable means and then the second rotary arm is rotated by the fourth spring against the second spring to bring the second pinch roller into rotary contact with the second capstan with the contact pressure lower than that of the first pinch roller to the first capstan; and in which, based upon the actuation of the second actuating lever to actuate the movable means to urge the magnetic head against the magnetic tape, the fourth rotary arm is rotated by the second actuating piece against the fourth spring and then the second rotary arm is rotated through the fourth spring against the second spring to bring the second pinch roller into rotary contact with the second capstan, and the third rotary arm is rotated by the first engaging piece against the third spring through the movable means and then the first rotary arm is rotated by the third spring against the first spring to bring the first pinch roller into rotary contact with the first capstan with the contact pressure lower than that of the second pinch roller to the second capstan.

3,930,270

TAPE GUIDING DRUMS OF THE MAGNETIC RECORDING AND REPRODUCING APPARATUS

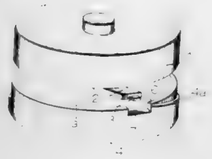
Shizuhiko Tanigawa, Moriguchi; Satoshi Kikuya, Kadoma; Yoshinori Yamazoe, Osaka, and Chihiro Nakamura, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 8, 1974, Ser. No. 486,453

Claims priority, application Japan, July 12, 1973, 48-83014[U]; July 12, 1973, 48-83015[U]

Int. Cl.² G11B *15/60, 5/52, 21/28*

U.S. Cl. 360—130 **5 Claims**



1. A tape guiding drum means for a magnetic recording and reproducing apparatus including;

a lower drum having a cylindrical tape guide surface formed on the upper peripheral portion thereof;

an upper drum having a cylindrical tape guide surface formed on the lower peripheral portion and disposed above the lower drum so as to leave a slit between the drums; and

a rotary magnetic head within the slit, whereby the tape can be run obliquely over the peripheral surface of the drums, straddling the slit;

at least one of the two drums having a notched portion along the edge of the drum which, during operation of the apparatus, is open toward the slit, said notched portion being provided at least at one of the points of the beginning and end of the tape contact with the drum means.

DESIGN PATENTS

GRANTED DECEMBER 30, 1975

ERRATA

For CLASS	See PATENT NO.
026-012	238,314

DESIGNS

DECEMBER 30, 1975

238,216
SPORT SHOE
William J. Cohen, Boston, Mass., assignor to CITC Industries, New York, N.Y.
Filed Aug 21, 1972, Ser. No. 282,049
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310



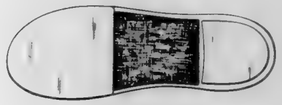
238,217
EXERCISE SHOE SOLE
Paul L. Cox, 104 Canton Hill Drive, Jackson, Miss. 39211
Filed Mar. 21, 1973, Ser. No. 343,301
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—319



238,218
BOOT SOLE
Lyle J. Cohn, Lyndhurst, Ohio, assignor to International Seaway Trading Corporation
Filed Dec. 21, 1973, Ser. No. 427,066
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—319



238,219
BOOT SOLE
Lyle J. Cohn, Lyndhurst, Ohio, assignor to International Seaway Trading Corporation
Filed Dec. 21, 1973, Ser. No. 427,067
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—319



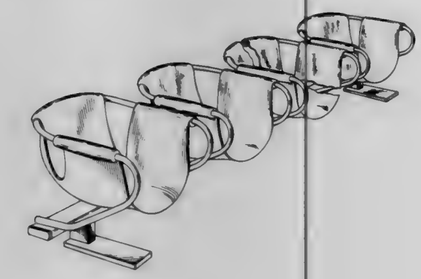
238,220
MOTORCYCLE SEAT
Michael W. Hanagan, Somers, Conn., assignor to Corbin Gentry, Inc., Somersville, Conn.
Filed Sept. 23, 1974, Ser. No. 508,431
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D6—48.1



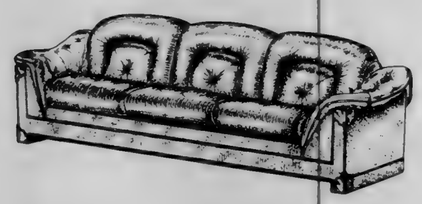
238,221
MOTORCYCLE SEAT
Michael W. Hanagan, Somers, Conn., assignor to Corbin Gentry, Inc., Somersville, Conn.
Filed Sept. 23, 1974, Ser. No. 508,551
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D6—48.1



238,222
MULTIPLE SEATING UNIT OR SIMILAR ARTICLE
Gunter F. Eberle, Dallas, Tex., assignor to The Vecta Group, Inc.
Filed June 21, 1973, Ser. No. 372,007
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—59



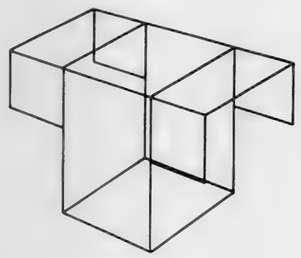
238,223
SOFA OR SIMILAR ARTICLE
Richard I. Brooks, North Hollywood, Calif., assignor to Kroehler Mfg. Co., Naperville, Ill.
Filed July 30, 1974, Ser. No. 493,035
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



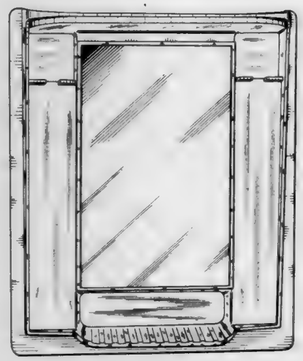
238,224
CHAIR
Frank Reenskaug, Drammen, Norway, assignor to West Norway Factories Ltd. A/S, Orsta, Norway
Filed May 4, 1973, Ser. No. 357,253
Claims priority, application Norway Nov. 17, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



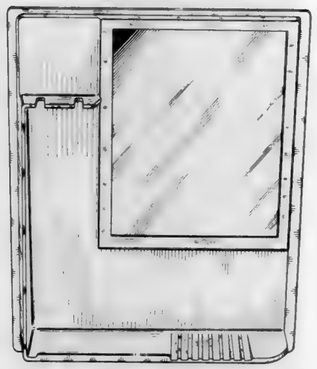
238,225
CLOTHING RACK
Christine R. Lyons, 7634 SE. Monroe, Milwaukie, Oreg. 97222
Filed May 24, 1974, Ser. No. 472,963
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—85



238,226
SHOWER RACK
William J. Spath, 2902 107th St., Toledo, Ohio 43611, and Harold S. Boutin, Northwood, Ohio; said Boutin assignor to said Spath
Filed Mar. 7, 1975, Ser. No. 556,457
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—91



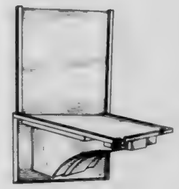
238,227
SHOWER RACK
William J. Spath, 2902 107th St., Toledo, Ohio 43611, and Harold S. Boutin, Northwood, Ohio; said Boutin assignor to said Spath
Filed Mar. 12, 1975, Ser. No. 557,815
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—91



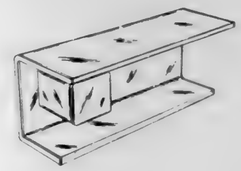
238,228
END STANDARD FOR A GUN RACK
Johnny C. Elkins, 1909½ Pulliam St., and Marvin C. Hanz, 2608 Parkview Drive, both of San Angelo, Tex. 76901
Filed Oct. 7, 1974, Ser. No. 512,376
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—114



238,229
PEGBOARD MOUNTED SUPPORT FOR DISPLAYING POWER TOOLS
Terrance Neil Touchett, Batavia, and William E. Kotzenberg, Geneva, Ill., assignors to McGraw-Edison Company, Elgin, Ill.
Filed Jan. 16, 1974, Ser. No. 433,704
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—136



238,230
DESK
William B. Sklaroff, Narberth, Pa., assignor to Tiffany Industries, Inc., St. Louis, Mo.
Filed Mar. 20, 1974, Ser. No. 452,792
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—158



238,231
LEG FOR ARTICLE OF FURNITURE
Myron M. McClain, Dayton, Ohio, assignor to Miami Valley Plastics, Lewisburg, Ohio
Filed Sept. 11, 1974, Ser. No. 505,003
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—195



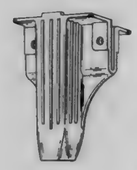
238,232
LEG FOR ARTICLE OF FURNITURE
Myron M. McClain, Dayton, Ohio, assignor to Century Mold, Inc., Tipp City, Ohio
Filed Sept. 11, 1974, Ser. No. 505,004
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—195



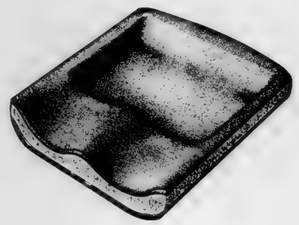
238,233
PILLOWED SLING CHAIR BODY
Gerry D. Welton, 910 E. Tripp, Peoria, Ill. 61603
Filed Oct. 12, 1973, Ser. No. 405,929
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—197



238,234
BED FRAME LEG
Richard A. Miller, Bedford Heights, Ohio, assignor to Rusco Industries, Inc., Los Angeles, Calif.
Filed July 11, 1973, Ser. No. 378,150
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—198



238,235
SEAT CUSHION FOR A WHEELCHAIR
Carl Henrik Elgebrandt, Farsta, Sweden, assignor to Camp Scandinavia AB, Helsingborg, Sweden
Filed Nov. 2, 1973, Ser. No. 412,432
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201

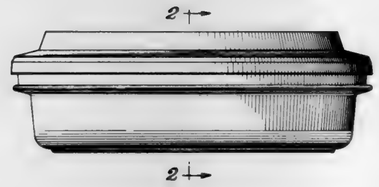


238,236
COMBINED SERVING BOWL AND CLOSURE
Edward N. Montesi, Barrington, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Jan. 16, 1973, Ser. No. 324,006
Term of patent 14 years
The term of this patent subsequent to Aug. 13, 1988, has been disclaimed
Int. Cl. D7—*01*
U.S. Cl. D7—17





238,237
COMBINED STORAGE BOWL AND SERVING PLATE
Erik Herlow, Tikob, Denmark, and Robert Daenen, Erembodegem, Belgium, assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Jan. 18, 1974, Ser. No. 434,738
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—17



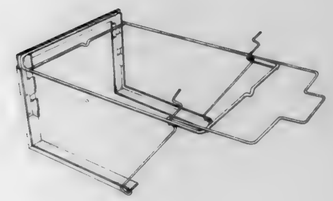
238,238
HANDLE FOR A HOSTESS TRAY OR THE LIKE
Manuel S. Ziskin, Mayfield Heights, and Harold O. Wagner Sheffield Lake, Ohio, assignors to American Trading & Production Corporation, Baltimore, Md.
Filed July 11, 1974, Ser. No. 487,600
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D7—39



238,239
COCKTAIL STIR STICK
Howard E. Barrows and Richard J. Berglund, Racine, Wis., assignors to Tenneco Inc., Racine, Wis.
Filed Dec. 17, 1973, Ser. No. 425,112
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—42



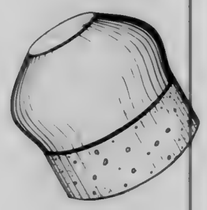
238,240
ROTISSERIE FRAME
Leslie George Dutchburn, 7 Devere Gardens, Toronto 2, Ontario, Canada
Filed Oct. 1, 1974, Ser. No. 511,110
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—129



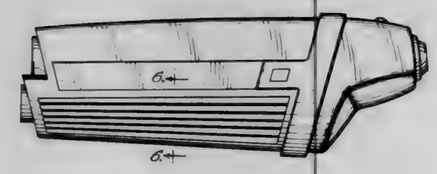
238,241
HANDLE FOR A CASSEROLE OR THE LIKE
Manuel S. Ziskin, Mayfield Heights, and Harold O. Wagner, Sheffield Lake, Ohio, assignors to American Trading & Production Corporation, Baltimore, Md.
Filed July 11, 1974, Ser. No. 487,599
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D7—132



238,242
CLEANING FLUID APPLICATOR
Gilbert Schwartzman, 20 Wilmot Circle, Scarsdale, N.Y. 10583
Filed Nov. 27, 1973, Ser. No. 419,253
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—178



238,243
FLUID POWERED DISPENSING GUN OR SIMILAR ARTICLE FOR VISCOUS MATERIAL
John N. Polivka, San Diego, Calif., assignor to Owatonna Tool Company, Owatonna, Minn.
Filed July 24, 1974, Ser. No. 491,310
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14.1



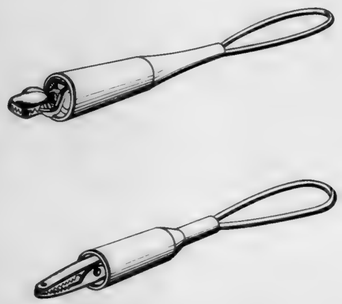
238,244
BOTTLE OPENER OR SIMILAR ARTICLE
Michael J. Pasquale, 115 Grove St., Middletown, Conn. 06451
Filed May 6, 1974, Ser. No. 467,494
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D8—18



238,245
SCISSORS
Olof Fredrik Backstrom, Tammisaari, Finland, assignor to Oy Fiskars AB, Helsinki, Finland
Filed Jan. 3, 1974, Ser. No. 430,442
Claims priority, application Finland Nov. 28, 1973
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—57



238,246
ARTICLE HOLDER
Robert E. Rickard, 408 Factory St. (or P.O. Box 32), Nevada City, Calif. 95959
Filed June 13, 1973, Ser. No. 369,488
Term of patent 14 years
The term of this patent subsequent to Oct. 10, 1986, has been disclaimed
Int. Cl. D8—*05*
U.S. Cl. D8—71



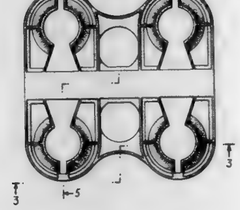
238,247
RETRACTABLE KNIFE
John F. Thomas III, Wyckoff, N.J., assignor to CBS Inc., New York, N.Y.
Filed Dec. 23, 1974, Ser. No. 535,314
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99



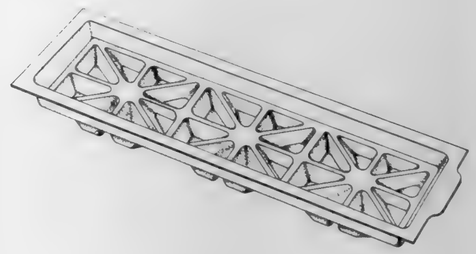
238,248
BOTTLE OR THE LIKE
James L. Westrich, 814 Parker Ave., Algoma, Wis. 54201
Filed May 24, 1973, Ser. No. 363,759
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—63



238,249
BOTTLE CARRIER
Gerald Erickson, P.O. Box 6175, Surfside, Fla. 33154
Filed May 22, 1974, Ser. No. 472,089
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—178



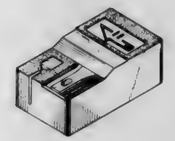
238,250
COMBINED CONFECTIONERY TRAY AND MOLD
William J. Sauer, Jr., Menomonee Falls, Wis., assignor to W. R. Grace & Co., New York, N.Y.
Filed Oct. 30, 1974, Ser. No. 519,327
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—187



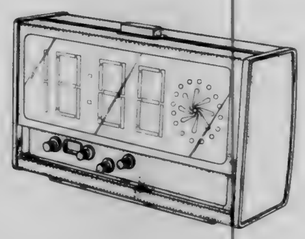
238,251
JEWELRY DISPLAY SUPPORT OR SIMILAR ARTICLE
Iraida Garey, New York, N.Y., assignor to D. Lisner & Co., Inc.
Filed Jan. 2, 1974, Ser. No. 430,225
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—191



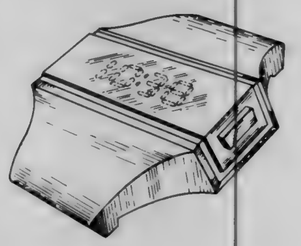
238,252
BLADE DISPENSING PACKAGE
Avram Meshulam, Edison, N.J., assignor to CBS Inc., New York, N.Y.
Filed July 18, 1974, Ser. No. 489,730
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—193



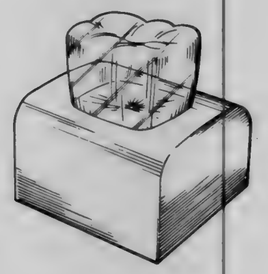
238,253
DIGITAL CLOCK
Tomokazu Suzuki, Tokyo, and Jiro Ochiai, Yokohama, Japan, assignors to Tamura Electric Works, Ltd.
Filed Feb. 25, 1974, Ser. No. 445,102
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



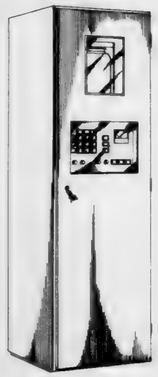
238,254
DIGITAL WRIST WATCH
Eugene Joseph Sulek, Richardson, Tex., assignor to Texas Instruments Incorporated
Filed Aug. 29, 1974, Ser. No. 501,948
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38



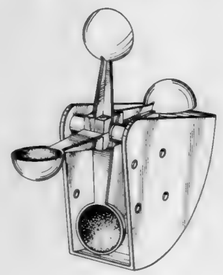
238,255
RUNNING SAND TOOTH TIMER
Edward K. Beckwith, 303 La Marina, Santa Barbara, Calif. 93109
Filed Aug. 2, 1974, Ser. No. 494,195
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D10—44



238,256
CONSOLE FOR FAULT DETECTOR FOR PAPER WEBS
Pentti Kalervo Mannonen, Kuohukuja 6 D 51, 01600 Myyrmaki, Finland
Filed July 2, 1973, Ser. No. 375,878
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—46



238,257
ROTARY REFLECTOR
Richard Rios, 1429 E. Mission, Escondido, Calif. 92025
Filed Nov. 15, 1974, Ser. No. 524,051
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—111



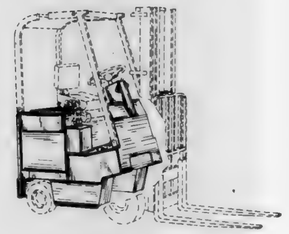
238,258
AUDIBLE VEHICLE BACK-UP ALARM
Rudolph M. Duris, Norwalk, Conn., assignor to General Signal Corporation
Filed Oct. 4, 1974, Ser. No. 511,962
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—116



238,259
REFUSE TRAILER
Phillip J. Sweet, Buck C. Hamlet, and David L. Sweet, Fresno, Calif., assignors to American Carrier Equipment
Filed July 29, 1974, Ser. No. 492,614
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—15



238,260
LIFT TRUCK BODY
Dennis M. Lanci, Battle Creek, Mich., assignor to Clark Equipment Company
Filed Oct. 25, 1973, Ser. No. 409,520
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—61



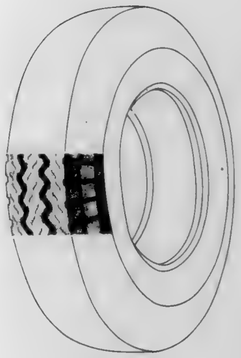
238,261
SUPPORT LEG FOR A DOCKBOARD
Richard G. Maki, Menomonee Falls, Ronald E. Riemer, Milwaukee, and Roderick B. Potter, Whitefish Bay, Wis., assignors to Kelley Company, Inc., Milwaukee, Wis.
Filed Nov. 5, 1973, Ser. No. 413,171
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—60



238,262
TIRE
Teruo Ogiso, Gifu, Japan, assignor to Inoue Rubber Co., Ltd., Nagoya-shi, Aichi-ken, Japan
Filed June 13, 1974, Ser. No. 478,902
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—136



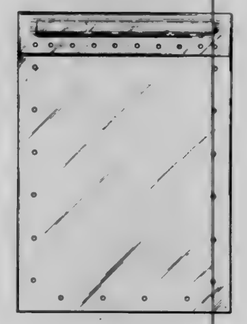
238,263
TIRE
Arthur L. Finley, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 28, 1974, Ser. No. 455,681
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



238,264
TIRE
Teruo Ogiso, Gifu, Japan, assignor to Inoue Rubber Co., Ltd., Nagoya-shi, Aichi-ken, Japan
Filed June 13, 1974, Ser. No. 478,903
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—145



238,265
BOAT HULL COVER
Edward Stewart, 1726 NE. 35th St., Fort Lauderdale, Fla. 33334
Filed Jan. 23, 1975, Ser. No. 543,274
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



238,266
MOTORCYCLE SADDLE BAG OR SIMILAR ARTICLE
Byrd E. Dalton, 1227 Crescent Drive, Glendale, Calif. 91205
Filed July 17, 1972, Ser. No. 272,166
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—158



238,267
MOTORCYCLE EXHAUST PIPE
Charles Strada, 2854 N. Cicero Ave., Chicago, Ill. 60641
Filed Aug. 26, 1974, Ser. No. 500,602
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—194



238,268
MOTORCYCLE EXHAUST PIPE
Charles Strada, 2854 N. Cicero Ave., Chicago, Ill. 60641
Filed Aug. 26, 1974, Ser. No. 500,603
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—194



238,269
FRONT DOOR
Yoshiaki Takimoto, B326, 3–7 Nishihara-cho, Tokyo, Japan
Filed Nov. 16, 1972, Ser. No. 307,226
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 M



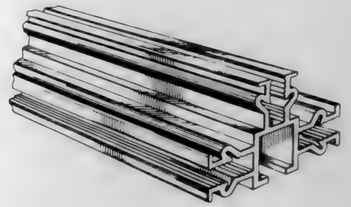
238,270
CAR WASH BUILDING
James W. Baker, 1143 6th St., Santa Monica, Calif. 90403
Filed Oct. 15, 1973, Ser. No. 406,627
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B



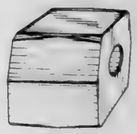
238,271
CAR WASH BUILDING
James W. Baker, 1143 6th St., Santa Monica, Calif. 90403
Filed Oct. 15, 1973, Ser. No. 406,640
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B



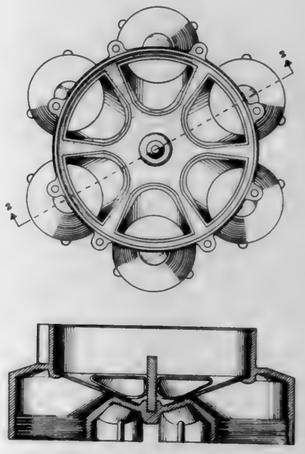
238,272
SUPPORT MEMBER FOR USE WITH SIGNS, SHELVES, PARTITIONS AND THE LIKE
Irving W. Shell, 442 W. Wellington, Chicago, Ill. 60657
Filed Jan. 28, 1974, Ser. No. 437,423
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6



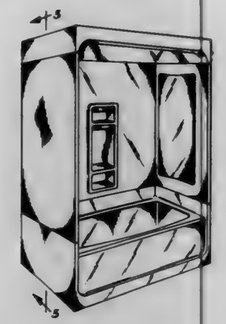
238,273
CASING FOR A FLUID CONDUIT COMPONENT
Jorgen Hogh and Adam Bonne, Copenhagen, Denmark, assignors to A/S Teknova, Niva, Denmark
Filed June 21, 1973, Ser. No. 372,344
Claims priority, application Denmark Dec. 28, 1972
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



238,274
VALVE BASE
Roger D. Slagel, 1301 SW. 20th Terrace, Fort Lauderdale, Fla. 33312
Filed July 16, 1973, Ser. No. 379,464
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



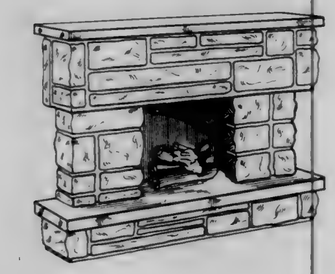
238,275
COMBINED BATHTUB AND SHOWER STALL
Clarence Lee Folden, Downers Grove, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Mar. 13, 1974, Ser. No. 450,664
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49



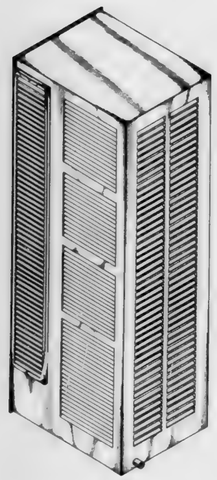
238,276
COMBINED BATHTUB AND SHOWER STALL
Fred C. Alexander, New Castle, Pa., assignor to Universal-Rundle Corp., New Castle, Pa.
Filed July 18, 1974, Ser. No. 489,486
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49



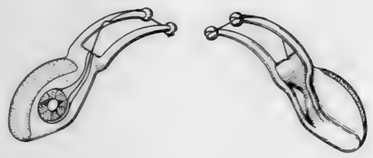
238,277
ARTIFICIAL FIREPLACE
Arthur Zaitlin, 6880 Kildare Cote St. Luc, Montreal, Quebec, Canada
Filed Sept. 24, 1974, Ser. No. 509,027
Claims priority, application Canada May 28, 1974
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—94



238,278
HOUSING FOR WINDOW AIR CONDITIONER
Walter Baker, Jr., Louisville, Ky., assignor to General Electric Company
Filed July 19, 1974, Ser. No. 490,417
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—144



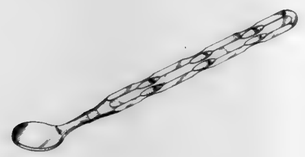
238,279
DENTAL FLOSS HOLDER
Jerome J. French, 1410 Hoffman Ave., Park Ridge, Ill. 60068
Filed Mar. 12, 1975, Ser. No. 557,737
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—1 D



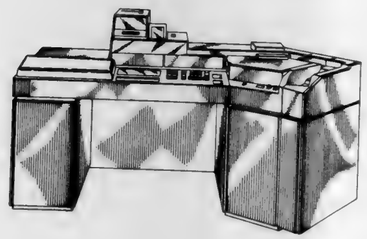
238,280
MOUTH AND DENTAL MIRROR
E. B. Tarrson, Chicago, Ill., assignor to John O. Butler Company, Chicago, Ill.
Filed Nov. 4, 1974, Ser. No. 520,615
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 D



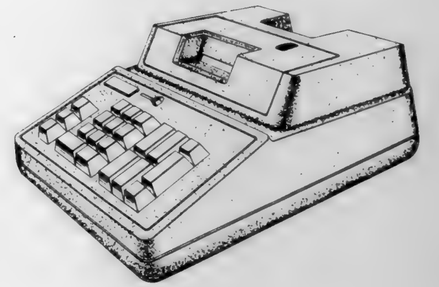
238,281
DENTAL EXAMINATION MIRROR
John S. Cali, 3452 E. Foothill Blvd., Pasadena, Calif. 91107
Filed Sept. 16, 1974, Ser. No. 506,010
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 D



238,282
FINANCIAL PROOF MACHINE OR SIMILAR ARTICLE
Harley J. Shawen and Ralph D. Haney, Waterloo, Ontario, Canada, and Jerry L. Kohli, Ithaca, N.Y., assignors to NCR Corporation
Filed Oct. 9, 1973, Ser. No. 404,519
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



238,283
CALCULATOR
Stephen G. Hauser, Tarzana, Calif., assignor to Addmaster Corporation
Filed Feb. 24, 1975, Ser. No. 552,648
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D26—5 C



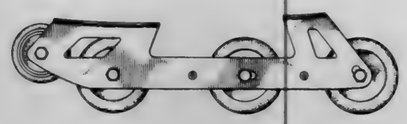
238,284
COMBINED BASKETBALL GOAL AND BRACKET
William C. Toedter, 1034 Nela Parkway, Toledo, Ohio 43615
Filed Sept. 27, 1973, Ser. No. 401,352
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 VV



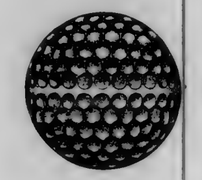
238,285
GOLF CLUB HEAD
Barney F. Ross, 3302 St. Albans Drive, Los Alamitos, Calif. 90720
Filed June 3, 1974, Ser. No. 475,407
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



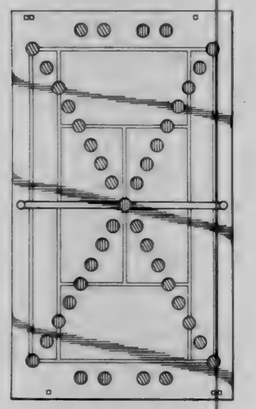
238,286
ROLLER SKATE
Masaomi Ochi, Kobe, Japan, assignor to Ochi Trading Co., Ltd.
Filed Dec. 26, 1973, Ser. No. 428,439
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—14 C



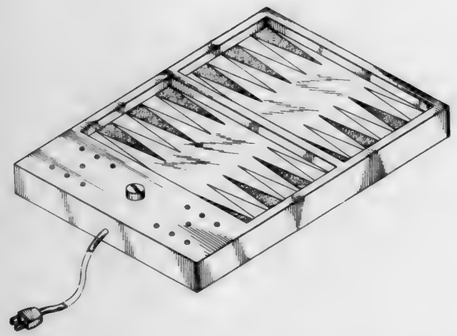
238,287
GOLF BALL
Francis deS. Lynch, Mattapoisett, John W. Jepson, Marion, and Robert A. Brown, Mattapoisett, Mass., assignors to Acushnet Company, New Bedford, Mass.
Filed June 1, 1973, Ser. No. 365,838
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 QQ



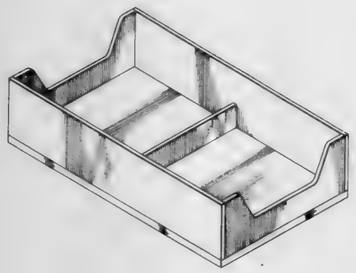
238,288
GAME BOARD
Wilhelmina Schohn, 231 N. Kenilworth Ave., Oak Park, Ill. 60302
Filed Jan. 28, 1974, Ser. No. 437,442
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



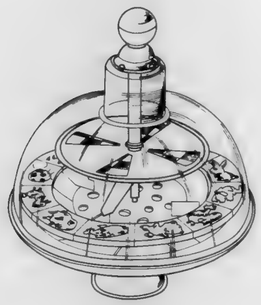
238,289
COMBINED ELECTRICALLY LIGHTED DICE AND BACKGAMMON BOARD
Charles P. Regensburg, 875 Park Ave., New York, N.Y. 10017
Filed Feb. 13, 1974, Ser. No. 442,182
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



238,290
GAME BOARD
Justin V. Dobbs, Rte. 5, Columbus, Ind. 46725
Filed Feb. 28, 1974, Ser. No. 446,617
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



238,291
TOY SPINNING TOP
Peter Balleis, 55 Hermann-Lons-Strasse D–8502, Zirndorf, near Nuremberg, Germany
Filed May 20, 1974, Ser. No. 471,654
Claims priority, application Germany Nov. 28, 1973
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 CC



238,292
NECKLACE
Alfred Joseph Durante, 111—46 76th Drive, Forest Hills, N.Y. 11375
Filed Apr. 24, 1974, Ser. No. 463,752
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—16 R



238,293
BRACELET
Alfred Joseph Durante, 111—46 76th Drive, Forest Hills, N.Y. 11375
Filed Apr. 24, 1974, Ser. No. 463,594
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4 C



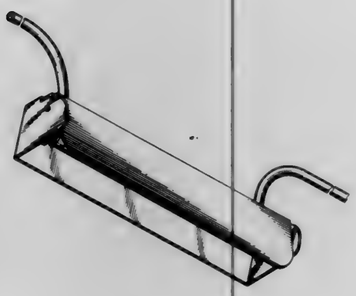
238,294
BRACELET
Alfred Joseph Durante, 111—46 76th Drive, Forest Hills, N.Y. 11375
Filed Apr. 24, 1974, Ser. No. 463,751
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4 C



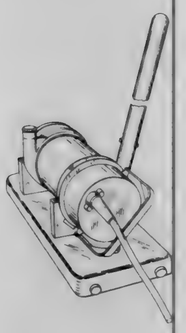
238,295
LAMP SHADE
Kenneth Yuhung Tongson, Kowloon, Hong Kong, assignor to Star Industrial Company, Limited, Kowloon, Hong Kong
Filed Apr. 26, 1974, Ser. No. 464,659
Claims priority, application Great Britain Oct. 29, 1973
Term of patent 7 years
Int. Cl. D26—*05*
U.S. Cl. D48—16 D



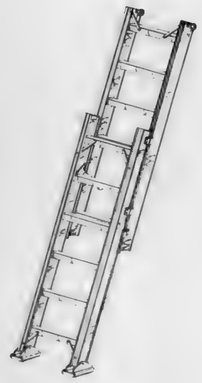
238,296
INDUSTRIAL LIGHT FIXTURE
Camili Trimarchi, 4454 Murdock Ave., Bronx, N.Y. 10466
Filed May 21, 1973, Ser. No. 362,219
Term of patent 3½ years
Int. Cl. D26—*05*
U.S. Cl. D48—20 E



238,297
POOL CLEANER
Ingemar Franzen, Pforzheim, Germany, and Sven Olov Wikholm, Skarholmen, Sweden, assignors to ITT Industries, Inc., New York, N.Y.
Filed Feb. 25, 1974, Ser. No. 445,423
Claims priority, application Sweden Oct. 10, 1973
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—11



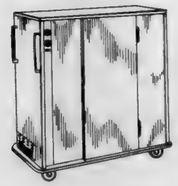
238,298
LADDER
Clayton E. Larson, Brooklyn, N.Y., assignor to White Metal Rolling and Stamping Corp., Brooklyn, N.Y.
Filed Aug. 13, 1974, Ser. No. 497,104
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D54—1 A



238,299
HEATED CABINET
Richard O. Klemm, Crystal Lake, Ill., assignor to Food Warming Equipment Company, Inc., Elk Grove Village, Ill.
Filed Apr. 8, 1974, Ser. No. 459,088
Term of patent 14 years
Int. Cl. D12—*02;* D15—*08*
U.S. Cl. D55—1 E



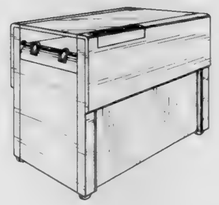
238,300
BANQUET CABINET
Richard O. Klemm, Crystal Lake, Ill., assignor to Food Warming Equipment Company, Inc., Elk Grove Village, Ill.
Filed Apr. 8, 1974, Ser. No. 459,089
Term of patent 14 years
Int. Cl. D12—*02;* D15—*08*
U.S. Cl. D55—1 E



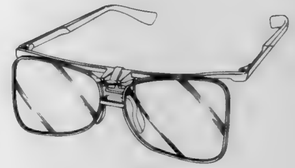
238,301
COMPACTOR
Anthony P. Montalbano, Glencove, N.Y., assignor to Constance Radice, Great Neck, N.Y.
Filed Jan. 21, 1974, Ser. No. 434,846
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 B



238,302
BURSTER OR SIMILAR ARTICLE
Andrew L. Alger, Wilmette, and Kim Yamasaki, Lombard, Ill., assignors to Varco Incorporated, Barrington, Ill.
Filed Sept. 16, 1974, Ser. No. 506,186
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D55—1 A



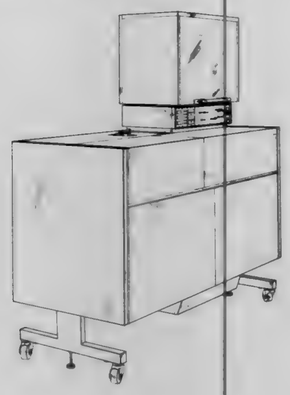
238,303
PAIR OF SPECTACLES
Conrad Leblanc, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.
Filed Feb. 22, 1974, Ser. No. 445,043
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F



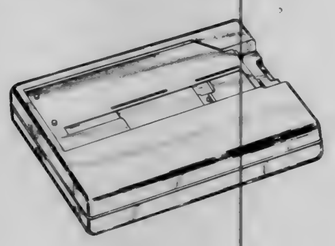
238,304
BINOCULAR
Alfred Hengst, Wetzlar-Dorlar, Heinrich Janke, Braunfels, and Ernst Ruehl, Naunheim, Germany, assignors to Ernst Leitz GmbH
Filed Dec. 9, 1974, Ser. No. 530,655
Claims priority, application Germany June 21, 1974
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E



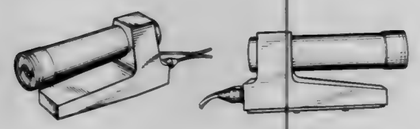
238,305
COMPUTER OUTPUT MICROFILMER
Gene D. Vedder, Granada Hills, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.
Filed May 23, 1974, Ser. No. 472,575
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



238,306
PORTABLE TRANSACTION LOG RECORDER
Elliot W. J. Spurway, Jr., Concord, Calif., assignor to Dymo Industries, Inc., San Francisco, Calif.
Filed Jan. 23, 1974, Ser. No. 435,997
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 B



238,307
X-RAY APPARATUS
Vitislav Yakovlevich Bobov, Bolsheokhtinsky prospekt 12, kv. 42; Dmitry Petrovich Rybakov, ulitsa Dzerzhinskogo 69, kv. 22; and Avrum Lvovich Farberg, ulitsa Bolshaya Ozernaya 86, kv. 1, all of Leningrad, U.S.S.R.
Filed July 20, 1973, Ser. No. 380,957
Term of patent 7 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 H

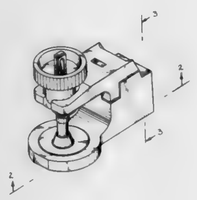


238,308
SPECIMEN COLLECTOR OR SIMILAR ARTICLE
Michael H. Sherin, P.O. Box 124, Fontana, Wis. 53125
Filed Apr. 12, 1974, Ser. No. 460,589
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 V





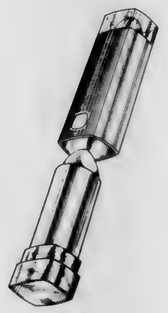
238,309
CIRCUMCISION CLAMP
Carl B. Baumgarten, Houston, Tex., assignor to Gomco Surgical Manufacturing Corp., Buffalo, N.Y.
Filed Feb. 19, 1974, Ser. No. 443,376
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D83—12 R



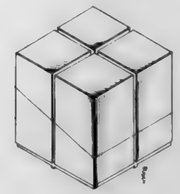
238,310
COMBINED COMPACT AND MAKEUP MIRROR
Ted I. Kingsford, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.
Filed Jan. 14, 1974, Ser. No. 433,434
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D86—10 N



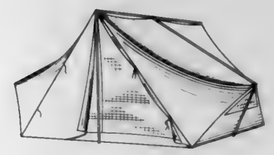
238,311
COMBINED LIPSTICK AND CASING THEREFOR
Ted I. Kingsford and Jayne H. Greene, Memphis, Tenn., assignors to Plough, Inc., Memphis, Tenn.
Filed Mar. 15, 1974, Ser. No. 451,648
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D86—10 G



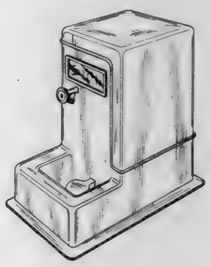
238,312
JEWELRY BOX OR SIMILAR ARTICLE
Robert S. Witkoff, Glen Cove, Long Island, N.Y., assignor to The Alsten Company
Filed Sept. 3, 1974, Ser. No. 502,504
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 B



238,313
TENT
Robert K. Wright, Belmont, Calif., assignor to Kalmar Trading Co., San Francisco, Calif.
Filed Oct. 9, 1973, Ser. No. 404,277
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D88—3 B



238,314
MULTI-SERVICE MODULE FOR A MOBILE CAMPER PARK
Robert L. Smith, Minnetonka, Minn., assignor to Roart Plastics, Inc., Hopkins, Minn.
Filed Dec. 11, 1974, Ser. No. 531,541
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—12



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF DECEMBER, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Dick Company: *See—*
Curtin, Denis J., 3,929,478.
Dick, George H.; and Madden, Thomas J., Jr., 3,930,258.
Waldeck, Gunther J., 3,930,082.

A. Finkl & Sons Company: *See—*
Finkl, Charles W., 3,929,423.

AB Asea-Atom: *See—*
Fredin, Bo; and Leine, Lars, 3,929,565.

AB Bofors: *See—*
Brattsand, Ralph Lennart; af Ekenstam, Bo Thuresson; Claeson, Karl Goran; and Thalen, Bror Arne, 3,929,768.

AB Gustavsbergs Fabriker: *See—*
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AB Ziristor: *See—*
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Abbate, John; Jewett, Warren R.; and Mason, William H., to Abbate, John. Gasoline tank plug. 3,929,250, Cl. 220-237.000.

Abdallah, Abdulmuniem H.; and Shea, Philip J., to Dow Chemical Company, The. 2-(2-Halophen oxy)acetamidines as antidepressants. 3,930,019, Cl. 424-326.000.

Abiko, Shiro; Yorihiro, Kazuo; Sugihara, Toshiyuki; and Hanawa, Masakazu, to Mitsubishi Petrochemical Co., Ltd. Process for the conversion of hydrocarbon fractions containing condensed-ring polycyclic aromatic hydrocarbon. 3,929,618, Cl. 208-111.000.

Ablad, Bengt Arne Hjalmar: *See—*
Berntsson, Peder Bernhard; Brandstrom, Arne Elof; Carlsson, Enar Ingemar; Carlsson, Stig Ake Ingemar; Ek, Lars; Samuelsson, Benny Roger; Sjostrand, Sven Erik; Strandlund, Gert Christer; and Ablad, Bengt Arne Hjalmar, 3,930,016.

Abraham, Bernard M.; and Schreiner, Felix, to United States of America, Energy Research and Development Administration. Method of producing hydrogen. 3,929,980, Cl. 423-648.000.

ACF Industries, Incorporated: *See—*
Guthrie, Larry E., 3,929,316.

Ackermann, Fritz; Honig, Gunter; and Schulz, Alfred, to Robert Bosch G.m.b.H. Pulse source to provide a pulse train representative of movement of a shaft and a reference pulse representative of a reference position. 3,930,201, Cl. 328-1.000.

Ackermann, Otto; and Eilingsfeld, Heinz, to BASF Aktiengesellschaft. Isolation of 1,5-dinitroanthraquinone. 3,929,841, Cl. 260-369.000.

Acme Air Appliance Co., Inc.: *See—*
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Acutagawa, Susumu: *See—*
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Adhesive Materials Limited: *See—*
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Adler, Stanford L., to Technicon Instruments Corporation. Serum separator and fibrin filter. 3,929,646, Cl. 210-359.000.

Adolf Dassler: *See—*
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Aeppli, Kurt, to Zellweger, Ltd. Arrangements for automatically adjusting correct reference values for yarn faults in electronic yarn cleaners. 3,930,205, Cl. 330-2.000.

af Ekenstam, Bo Thuresson: *See—*
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Aguzzi, Paolo: *See—*
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Aiba, Yoshikazu; Furumori, Takaki; Shinpo, Shozo; and Funabiki, Kaoru, to Taki Fertilizer Manufacturing Co., Ltd. Process for preparing basic aluminum salt solution. 3,929,666, Cl. 252-317.000.

Aigami, Koji: *See—*
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Ainbinder, Emmanuil Gershkovich; Kurilov, Georgy Vasilievich; and Neustroev, Leonid Sergeevich. Method of producing cold in an absorption-type refrigerating plant performing this method. 3,928,983, Cl. 62-101.000.

Airco, Inc.: *See—*
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Aisin Seiki Kabushiki Kaisha: *See—*
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Akahori, Kimihiko; and Era, Masayuki, to Hitachi, Ltd. High speed steel having high wear-resistance. 3,929,471, Cl. 75-123.00J.

Akahori, Kimihiko; and Era, Masayuki, to Hitachi, Ltd. High speed steel having high wear resistance. 3,929,518, Cl. 148-31.000.

Akasaki, Masato; Takashima, Hiroshi; and Shibata, Kazuhiro, to Mitsubishi Chemical Industries, Ltd. Feed for pisciculture. 3,930,018, Cl. 424-322.000.

Akashi, Hiromitsu: *See—*
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AKG Akustische u. Kino-Gerate Gesellschaft m.b.H.: *See—*
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Akino, Morio: *See—*
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Akzo N.V. of Arnhem, Holland: *See—*
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Alberino, Louis M.; and Farrissey, William J., Jr., to Upjohn Company, The. Polycarbodiimides from 4,4'-methylenebis(phenyl isocyanate) and certain carbocyclic monoisocyanates. 3,929,733, Cl. 260-77.50R.

Alberino, Louis M.; Farrissey, William J., Jr.; and Rose, James S., to Upjohn Company, The. Novel compositions and process. 3,930,097, Cl. 428-260.000.

Albers, Edwin Wolf: *See—*
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Albers-Schonberg, Georg: *See—*
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Albertson, James F. No-overflow toilet. 3,928,874, Cl. 4-1.000.

Albrecht, William L.; and Fleming, Robert W., to Richardson-Merrell Inc. Bis-basic ethers of dibenzofuran. 3,929,802, Cl. 260-293.580.

Albright, Denton M.; and Leach, Charles Willard, to United States Steel Corporation. Pentachlorophenol-creosote wood-preservative. 3,930,025, Cl. 424-346.000.

Alburger, James R. Water-washable inspection penetrant employing triglycerides and polyglycerides of fatty acids. 3,929,664, Cl. 252-301.20P.

Aldridge, David Cecil; Borrow, Antony; and Gerring, Ernest Edward Lawrence, to Imperial Chemical Industries Limited. Pharmaceutical compositions. 3,930,014, Cl. 424-285.000.

Alexander, Albert D. Device for use with X-ray machines. 3,930,164, Cl. 250-468.000.

Alkasab, Kalil A., to Universal Oil Products Company. Solar energy collector. 3,929,122, Cl. 126-271.000.

Allain, Ronald J.: *See—*
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Allard, Pierre, to Societe Rhodiaceta. Solutions of copolymers containing amide and imide groups and process for their preparation. 3,929,691, Cl. 260-30.200.

Allegheny Ludlum Industries, Inc.: *See—*
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Allied Chemical Corporation: *See—*
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Alsop, Derek J., to Moore Business Forms, Inc. 3'-Amino-6' or 7'-(pyrazol-1-yl)fluoran compounds. 3,929,828, Cl. 260-310.00R.
Alsop, Derek J., to Moore Business Forms, Inc. 9-(4-Aminophenyl polymethine)-9-xanthenol compounds and pressure sensitive system therewith. 3,930,108, Cl. 428-411.000.
Alter, Hobart L., to Coast Catamaran Corporation. Sailboat tiller apparatus. 3,929,086, Cl. 114-144.00R.
Alumax Mill Products, Inc.: *See—*
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Zaffaroni, Alejandro, 3,929,984.
Amado, Juan Jose, Jr. Method of centrifugally casting hollow spheres. 3,929,182, Cl. 164-114.000.
Ambruoso, Pasquale, Sr., to Motorola, Inc. Tuning screw lock and torque control. 3,929,023, Cl. 74-10.850.
Amemiya, Hiroshi, to Tokyo Shibaura Electric Co., Ltd. Device for standardizing a maximum value of an out-put signal corresponding to an input analog signal. 3,930,256, Cl. 340-347.00R.
American Can Company: *See—*
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American Color & Chemical Corporation: *See—*
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Cross, Barrington; and Grasso, Charles Paul, 3,929,905.
Forgione, Peter Salvatore; and Robbins, Howard M., 3,929,580.
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American Home Products Corporation: *See—*
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Ameurlaine, Jacques Francois; and Sirieix, Michel Benoit, to Societe Anonyme de Telecommunications. Radiation detector having a mosaic structure. 3,930,161, Cl. 250-370.000.
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AMP Incorporated: *See—*
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Anatronics Corporation: *See—*
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Anderson, Arvid N.; and Binger, Wayne W., to Aluminum Company of America. Process for treatment of coiled aluminum sheet. 3,928,999, Cl. 72-202.000.
Anderson, Donald R.: *See—*
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Anderson, Paul L., to Sandoz, Inc. Chlorophenyl-butadienols. 3,929,906, Cl. 260-618.00D.
Anner, Georg; and Kalvoda, Jaroslav, to Ciba-Geigy Corporation. 3-Cyclopentyl ethers of 7α-methyl estrone. 3,929,844, Cl. 260-397.400.
Antos, George J., to Universal Oil Products Company. Method of manufacturing a platinum-tin reforming catalyst. 3,929,683, Cl. 252-466.0PT.
Aoki, Satoshi: *See—*
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Appleby, Albert E.; and Simpson, Tommy G., to Ethyl Corporation. Deodorizing process. 3,929,637, Cl. 210-63.000.
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Arai, Haruhiko; and Minegishi, Yutaka, to Kao Soap Co., Ltd. Controlled foaming detergent compositions. 3,929,663, Cl. 252-110.000.
Arai, Haruhiko; Tachibana, Kyozaburo; Naganuma, Yoshinori; and Murata, Moriyasu, to Kao Soap Co., Ltd. Liquid detergent composition. 3,929,680, Cl. 252-542.000.
Arai, Tohru: *See—*
Komatsu, Noboru; Arai, Tohru; Sugimoto, Yoshihiko; and Mizutani, Masayoshi, 3,930,060.
Araki, Kunio; Sasaki, Takashi; Kasahara, Yuko; Yamashita, Yoshisada; Yotumoto, Keiichi; Sunaga, Hiromi; Tabei, Kiyoshi; Goto, Kazuo; Tajiri, Kunio; and Kittaka, Hirokazu, to Nitto Boseki Co., Ltd.; and Japan Atomic Energy Research Institute. Method of molding fiber reinforced plastic flat plates. 3,930,098, Cl. 428-280.000.
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Archambault, Rene F. Device for checking blood pressure. 3,929,129, Cl. 128-2.05C.
ARCO Polymers, Inc.: *See—*
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Armstrong, Jack W., to Lipe Rollway Corporation. Paper sheet conveyor. 3,929,221, Cl. 198-220.0BA.
Armstrong, John H.; and Wassmann, William W., to United States of America, Navy. Local derailment sensor and brake actuator system. 3,929,308, Cl. 246-169.00A.
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Aronson, David, to Compump Systems, Inc. Method and apparatus for pumping a liquid and compressing a gas. 3,929,399, Cl. 417-54.000.
Artos Engineering Company: *See—*
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Asahi-Dow Limited: *See—*
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Izawa, Shinichi; Tsuzimura, Katsuhiko; Mizushiro, Ken; Ozeki, Juro; Sugawara, Yoshiaki; Tanaka, Tsutomu; and Nakanishi, Astuo, 3,929,931.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
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Asano, Yoshio, to Fuji Photo Film Co., Ltd. Film cassette. 3,930,264, Cl. 354-174.000.
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Aspro-Nicholas Limited: *See—*
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Atherton, John Heathcote; Plumb, John Beckett; and Stuart, Ronald Sangster, to Imperial Chemical Industries Limited. Process for producing halogenated compounds. 3,929,851, Cl. 260-448.20E.
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Attwood, Warren R., to Unistrut Corporation. Signpost structure. 3,928,930, Cl. 40-145.00R.
Atwater, Wayne G., to Triax Company, The. Method of assembly for knock-down storage frame. 3,928,905, Cl. 29-446.000.
Atwood Vacuum Machine Company: *See—*
Marx, Thomas O., 3,929,033.
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Austin, Peter William, to Imperial Chemical Industries Limited. New reactive dyestuffs. 3,929,771, Cl. 260-240.00R.
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Bamberger, Carlos E.; Richardson, Donald M.; and Grimes, Warren R., to United States of America, Energy Research and Development Administration. Process for generating hydrogen. 3,929,979, Cl. 423-648.000.
Banko, Anton, to Surgical Design Corporation. Ultrasonic transducers. 3,930,173, Cl. 310-26.000.
Banks, David Dugmore; and McManus, Francis, to Scapa Engineering Limited. Water extraction method and apparatus. 3,929,061, Cl. 100-116.000.
Barabas, Eugene S., to GAF Corporation. Copolymers of an N-vinyl lactam and an unsaturated lactone. 3,929,735, Cl. 260-78.3UA.
Barabas, Eugene S.; and Grosser, Frederick, to GAF Corporation. Novel flocculent terpolymers. 3,929,739, Cl. 260-78.50B.
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Barlow, Charles Brian; and Tomlin, Clive Dudley Spencer, to Imperial Chemical Industries Limited. Pesticidal bis-pyridyl amine derivatives. 3,930,007, Cl. 424-263.000.
Barner, Roland K. Combined bowstring draw and trigger release mechanism for use in archery. 3,929,120, Cl. 124-35.00A.
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Baugher, William Lewis, to Procter & Gamble Company, The. Process for preparing a meat flavoring. 3,930,046, Cl. 426-533.000.
Bautis, Arthur N., to R. P. Cargille Laboratories, Inc. Immersion oil formulations for use in microscopy and similar fields. 3,929,667, Cl. 252-408.000.
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Bayer Aktiengesellschaft: *See—*
Blahak, Johannes; Muller, Erwin; and Kleimann, Helmut, 3,929,863.
Buchel, Karl-Heinz, 3,929,820.
Darsow, Gerhard; Bottenbruch, Ludwig; and Schnell, Hermann, 3,929,901.
Krock, Friedrich Wilhelm; and Neeff, Rutger, 3,929,401.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,929,798.
Rosendahl, Friedrich-Karl; Pelousek, Herbert; and Niederprum, Hans, 3,929,720.
Schmidt, Adolf; Bartl, Herbert; and Meckbach, Heinrich, 3,929,706.
Siegle, Peter; Kuhle, Engelbert; Behrenz, Wolfgang; and Hammann, Ingeborg, 3,929,838.
Bayer, George S.: *See—*
Midland, Richard W.; Bayer, George S.; and Kreiger, Keith H., 3,930,118.
Bayliss, William Richards Gilbert: *See—*
Weaver, John; Maynard, David Payne; Taylor, Rayner Walter; and Bayliss, William Richards Gilbert, 3,929,377.
Beadles, Glenn H., Jr. Changeable game caller with two distinct sound systems. 3,928,935, Cl. 46-180.000.
Beale, Julian Robert Anthony: *See—*
Nicholas, Keith Harlow; Ford, Ronald Alfred; and Beale, Julian Robert Anthony, 3,929,512.
Beane, Theodore E.; and Kirsch, Alan L., to United States of America, Navy. Guided missile fuze system. 3,929,075, Cl. 102-70.20P.
Beard, Colin C.; Edwards, John A.; and Fried, John H., to Syntex (U.S.A.) Inc. 5 (6)-Benzene ring substituted benzimidazole-2-carbamate derivatives. 3,929,821, Cl. 260-309.200.
Beard, Colin C.; Edwards, John A.; and Fried, John H., to Syntex (U.S.A.) Inc. 1,5(6)-Disubstituted benzizimidazole-2-carbamate derivatives having anthelmintic activity. 3,929,822, Cl. 260-309.200.
Beard, Colin C.; Edwards, John A.; and Fried, John H., to Syntex (U.S.A.) Inc. 5(6)-Benzene ring substituted benzimidazole-2-carbamate derivatives having anthelmintic activity. 3,929,823, Cl. 260-309.200.
Beard, Colin C.; Edwards, John A.; and Fried, John H., to Syntex (U.S.A.) Inc. 5(6)-Benzene ring substituted benzimidazole-2-carbamate derivatives having anthelmintic activity. 3,929,824, Cl. 260-309.200.
Beauchet, Jean, to Societe Nouvelle de Roulements. Cutting wheels for the isostatic cutting of pieces, notably from tubes. 3,929,044, Cl. 82-46.00A.
Beck, Hans-Joachim: *See—*
Schmidt, Karl; Hansch, Ferdinand; Rombrecht, Hans-Malte; and Beck, Hans-Joachim, 3,929,714.
Becker, Karl Heinz; Boltze, Karl-Heinz; Dell, Hans-Dieter; and Seidel, Peter-Rudolf, to Troponwerke Dinklage & Co. Coumarine derivatives and process for the preparation thereof. 3,930,003, Cl. 424-248.000.
Becker, Kenneth F.; and Pedersen, Nicholas F., to Sperry Rand Corporation. Power transmission. 3,928,968, Cl. 60-403.000.
Becker, Otto Alfred. Thermally insulating wall units. 3,929,186, Cl. 165-49.000.
Beckmann, Ruediger: *See—*
Kummer, Horst; and Beckmann, Ruediger, 3,930,017.
Becton, Dickinson and Company: *See—*
Pecorella, Saviour S., 3,929,021.
Bedenbender, John W.; and Kelly, Gilbert H., to Texas Instruments, Corporation. Servo hydraulic transducer and method of operation. 3,929,206, Cl. 181-114.000.
Beeding, Jack D., to Mask, E. Dale; and Mattox, Ernest M., a part interest to each. Exercise device. 3,929,331, Cl. 272-79.00D.
Beermann, Claus; Knittel, Volker; and Dursch, Walter, to Hoechst Aktiengesellschaft. Aminohydroxypolycarboxylic acid compounds. 3,929,874, Cl. 260-534.00M.
Behar, Marcel N., to Eaton Corporation. Drive transfer gear assembly for four-wheel drive vehicle. 3,929,200, Cl. 180-49.000.
Behrenz, Wolfgang: *See—*
Siegle, Peter; Kuhle, Engelbert; Behrenz, Wolfgang; and Hammann, Ingeborg, 3,929,838.
Beiersdorf Aktiengesellschaft: *See—*
Muller, Heinz; and Szonn, Bodo, 3,930,102.
Bell Telephone Laboratories, Incorporated: *See—*
Ermanis, Felix; and Schwartz, Bertram, 3,929,589.
Ryan, Francis William; Schonhorn, Harold; Sessler, Gerhard Martin; and West, James Edward, 3,930,066.

Bellanger, Maurice Georges; and Lepagnol, Guy Pierre, to Telecommunications Radioelectriques et Telephoniques T.R.T. Time multiplexed digital filter. 3,930,147, Cl. 235-156.000.

Beltran, Adrian M.: *See—*
Schilling, William F.; and Beltran, Adrian M., 3,928,901.

Belttary, Harold E., to Caribe Circuit Breaker Co., Inc. Circuit breaker. 3,930,211, Cl. 335-6.000.

Belyaev, Albert Mikhailovich: *See—*
Filatov, Nikolai Grigorievich; Meshkov, Jury Yakovlevich; Chernenko, Nikolai Fedorovich; Nikonenko, Dmitry Iosifovich; Mashlenko, Felix Isaakovich; Belyaev, Albert Mikhailovich; Valeev, Artur Khadyevich; Savina, Valentina Alexandrovna; Marchenko, Vladimir Zakharovich; Fedorov, Valery Ionovich; Gridnev, Vitaly Nikiforovich; and Mikhailov, Konstantin Vasilievich, 3,929,524.

Ben Venue Laboratories, Inc.: *See—*
Taborsky, Robert G., 3,929,879.

Benerito, Ruth R.: *See—*
Ward, Truman L.; and Benerito, Ruth R., 3,929,535.

Benndahl, Lars Olov. Conveyor systems. 3,929,077, Cl. 104-93.000.

Benoit-Guyod, Jean-Louis Alain: *See—*
Benoit-Guyod, Martine Pierrette; Benoit-Guyod, Jean-Louis Alain; Boucherle, Andre Louis; and Eymard, Pierre Luc, 3,929,869.

Benoit-Guyod, Martine Pierrette; Benoit-Guyod, Jean-Louis Alain; Boucherle, Andre Louis; and Eymard, Pierre Luc, to Labaz. Pentanol derivatives. 3,929,869, Cl. 260-482.00C.

Benson, Glendon M., to New Process Industries, Inc. Thermal oscillator. 3,928,974, Cl. 60-650.000.

Bente, Alfred, to Adolf Dassler. Method and mould for the manufacture of a plastic sole for shoes. 3,928,881, Cl. 12-142.00R.

Benz, Mark G., to General Electric Company. Flexible cobalt-rare earth permanent magnet product and method for making said product. 3,929,519, Cl. 148-31.570.

Berg, Gerhard; and Nordsiek, Karl-Heinz, to Chemische Werke Huels Aktiengesellschaft. Process for the production of pourable, pulverulent rubber-filler mixtures. 3,929,707, Cl. 260-29.70T.

Bergt, Gregory P., to Wendt Laboratories, Inc. Stable suspension of calcium-magnesium oxytetracycline for intrauterine administration in treatment of bovine metritis. 3,929,989, Cl. 424-227.000.

Beringer, Monique; and Buchmann, Paul, to Tamag Basel AG. Process for the manufacture of regenerated tobacco. 3,929,141, Cl. 131-17.00R.

Bernholz, William F., to PVO International Inc. Fog resistant polymer compositions. 3,929,699, Cl. 260-23.0XA.

Bernier, Cecile; Jouhaneau, Monique; and Poisson, Pierre, to Aquitaine Total Organico. Fire-resistant polyamide from brominated aromatic dicarboxylic acid diaryl ester. 3,929,734, Cl. 260-78.00R.

Bernstein, Jack: *See—*
Wojnar, Robert John; Brittain, Russell James; Bernstein, Jack; and Losee, Kathryn Alice, 3,930,005.

Berntsson, Peder Bernhard; Brandstrom, Arne Elof; Carlsson, Enar Ingemar; Carlsson, Stig Ake Ingemar; Ek, Lars; Samuelsson, Benny Roger; Sjostrand, Sven Erik; Strandlund, Gert Christer; and Ablad, Bengt Arne Hjalmar, to Aktiebolaget Hassle. Pharmaceutical preparations containing amines useful for treatment of cardiovascular diseases. 3,930,016, Cl. 424-300.000.

Berthold, Cornelius E.: *See—*
Miyoshi, T. Kenneth; Berthold, Cornelius E.; Stephens, Frank M., Jr.; and Schellinger, Alfred K., 3,929,461.

Beske, Grant A., to Du Pont de Nemours, E. I., and Company. Magnetic recording compositions and elements of low abrasiveness and process for making them. 3,929,658, Cl. 252-62.540.

Besnard, Francois: *See—*
Lutz, Jean; Traille, Andre; and Besnard, Francois, 3,929,009.

Bettenhausen, Larry A.; Casey, James H.; and Luhman, Robert A., to Minnesota Mining and Manufacturing Company. Tape applicating apparatus. 3,929,552, Cl. 156-391.000.

Betz Laboratories, Inc.: *See—*
Shema, Bernard F.; and Brink, Robert H., Jr., 3,929,561.
Shema, Bernard F.; and Brink, Robert H., Jr., 3,929,562.
Shema, Bernard F.; and Brink, Robert H., Jr., 3,929,563.
Swered, Paul; and Girard, Mary Anne, 3,930,015.

Beyer, Elmo M., Jr.; and Quebedeaux, Bruno, Jr., to Du Pont de Nemours, E. I., and Company. Selected amidoxy compounds as flower preservatives. 3,929,447, Cl. 71-68.000.

Beyer, Horst; and Veutgen, Hans-Jurgen, to Goetzewerke. Method for producing alloys having wear-resistant surfaces. 3,929,181, Cl. 164-58.000.

Beynon, John David Emrys: *See—*
Baker, Ian Martin; Beynon, John David Emrys; and Roberts, Peter Christopher Tudor, 3,930,065.

Beynon, John O., to Preston Metal and Roofing Products Limited. Structural member with end connector. 3,928,950, Cl. 52-726.000.

Bhatia, Kamlesh K.: *See—*
Cumbo, Charles C.; and Bhatia, Kamlesh K., 3,929,915.

Bhattacharya, Nishit: *See—*
Zumfeld, Heinz; Rutten, Hermann; and Bhattacharya, Nishit, 3,929,297.

Biber, Conrad H.; and Shenk, Edwin K., to Polaroid Corporation. Electronic flash coupling system for sequential flashbulb firing circuit. 3,930,184, Cl. 315-241.00P.

Biberbach, Peter; Dietschmann, Werner; and Lubke, Hans-Joachim, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Electrolytic burnished gold bath with higher rate of deposition. 3,929,595, Cl. 204-44.000.

Bickel, Bruce T. Insulation device for protection against heat. 3,929,167, Cl. 138-151.000.

Bickel, Hans; and Mueller, Johannes, to Ciba-Geigy Corporation. Aminopyridinium acetyl cephalosporanes. 3,929,779, Cl. 260-243.00C.

Bicker, Wilhelm: *See—*
Frenyo, Pal; Bicker, Wilhelm; and Hellmuth, Werner, 3,929,378.

Bille, Heinz: *See—*
Petersen, Harro; Erhardt, Klaus; Ruemens, Wilhelm; Bille, Heinz; and Reuss, Guenter, 3,930,087.

Billiton Research B. V.: *See—*
Peters, Franciscus J. W. M.; Middelhoek, Servaas; and Rijkeboer, Albert, 3,929,460.

Bindrum, Irmgard: *See—*
Brandt, Wilhelm; and Bindrum, Irmgard, 3,930,109.

Binger, Wayne W.: *See—*
Anderson, Arvid N.; and Binger, Wayne W., 3,928,999.

Biomarine Industries, Inc.: *See—*
Parker, Frederick A.; and Mac Bride, William R., 3,929,588.

Biroczky, Steve I.: *See—*
Fyans Frank; and Biroczky, Steve I., 3,929,301.

Bjurling, Per Olof; and Juhlin, Sven-Eric, to AB Gustavsbergs Fabriker. Means for locking a gripping member of a pair of gripping tongs against rotation. 3,929,367, Cl. 294-99.00R.

Blaha, Gerald E., to Artos Engineering Company. Wire aligning device for use with a wire stripping machine. 3,929,041, Cl. 81-9.510.

Blahak, Johannes; Muller, Erwin; and Kleimann, Helmut, to Bayer Aktiengesellschaft. Aromatic diamino carbonic acid esters. 3,929,863, Cl. 260-471.00R.

Blair, Clarence I., to Blair-Lefler, Inc. Air deflecting vane assembly for a vehicle. 3,929,369, Cl. 296-1.00S.

Blair-Lefler, Inc.: *See—*
Blair, Clarence I., 3,929,369.

Blank, Gerlinde Metzler: *See—*
Rauch, Francis Clyde; Fanelli, Anthony Joseph; and Blank, Gerlinde Metzler, 3,929,917.

Blankenship, Owen Davis; and Anders, Edward Olen, to Global Marine Inc. Apparatus for clearing a path through ice. 3,929,083, Cl. 114-40.000.

Blazekovic, Teodora M.: *See—*
Sehgal, Surendra N.; Blazekovic, Teodora M.; and Vezina, Claude, 3,929,992.

Bleicher, Manfred: *See—*
Wanner, Karl; Hahner, Reinhard; Schmid, Wolfgang; Hansel, Gernot; Bleicher, Manfred; and Falchle, Jorg, 3,929,343.

Blejwas, Walter T., Jr.; and Dickinson, Peter D., to Vydec, Inc. Synchronizing system for refresh memory. 3,930,250, Cl. 340-324.00A.

Blocker, William C. Tool for installation of seals for LP gas cylinder valves. 3,929,042, Cl. 81-121.00R.

Blood, Alden E.: *See—*
Snapp, Thomas C., Jr.; and Blood, Alden E., 3,929,846.
Snapp, Thomas C., Jr.; and Blood, Alden E., 3,929,847.

Bloom, Harvey J.: *See—*
Henrichon, Ernest G., Jr.; and Bloom, Harvey J., 3,930,231.

Blount, David H. Production of silico-dihydrogen sulfate. 3,929,972, Cl. 423-325.000.

Blust, Henry Leo; Lindburg, Norman Lee; and Henry, Dale Vernon, to RCA Corporation. Method of anchoring metallic coated leads to ceramic bodies and lead-ceramic bodies formed thereby. 3,929,426, Cl. 29-195.000.

Bochard, Camille, to Robatel S.L.P.I. Package for transporting or enclosing radioactive materials. 3,930,166, Cl. 250-506.000.

Boden, Knut Folke Ingemar: *See—*
Knipstrom, Karl-Erik; Uhlig, Heinz Oskar; and Boden, Knut Folke Ingemar, 3,930,138.

Bodor, Nicolae S.: *See—*
Higuchi, Takeru; Bodor, Nicolae S.; and Shek, Efraim, 3,929,813.

Boehringer Mannheim G.m.b.H.: *See—*
da Fonseca-Wollheim, Friedrich, 3,929,581.
Fauland, Erich; Kampe, Wolfgang; Thiel, Max; Stork, Harald; and Schmidt, Felix Helmut, 3,929,763.
Fauland, Erich; Kampe, Wolfgang; Stach, Kurt; Stork, Harald; and Dietmann, Karl, 3,929,764.
Popelak, Alfred; Kampe, Wolfgang; Thiel, Max; Dietmann, Karl; and Sponer, Gisbert, 3,929,793.

Boelkins, Wallace G., to Uni-Mist, Inc. Spool valve for multiple adjustable systems. 3,929,161, Cl. 137-625.690.

Bogacz, Frank J., to GTE Automatic Electric Laboratories Incorporated. Input/output controller maintenance arrangement for a communication switching system. 3,930,146, Cl. 235-153.0AK.

Boggs, Luther Miles; and Flichman, Howard John, to Western Electric Company, Inc. Measuring article thickness ultrasonically. 3,929,006, Cl. 73-67.80S.

Bohemia Inc.: *See—*
Trocino, Frank S., 3,929,446.

Bolling, Robert W.; and Reeves, Jerry H., to Union Camp Corporation. Bags with film liners and method of making. 3,929,275, Cl. 229-55.000.

Boltze, Karl-Heinz: *See—*
Becker, Karl Heinz; Boltze, Karl-Heinz; Dell, Hans-Dieter; and Seidel, Peter-Rudolf, 3,930,003.

Boonstra, Lieuwe: *See—*
Salters, Roelof Herman Willem; Boonstra, Lieuwe; and Lambrechtse, Cornelis Willem, 3,930,239.

Borden, Inc.: *See—*
Columbus, Peter Spiros, 3,929,694.

Borg-Warner Corporation: *See—*
Donaldson, Desmond M.; and Millard, Gregory S. T., 3,929,643.
Kelbel, Donald W., 3,929,029.

Borror, Alan L.; and Garcia, Paulina P., to Polaroid Corporation. Photographic processes and products employing 8-quinolinol phthaleins as optical filter agents. 3,929,797, Cl. 260-287.0CE.

Borror, Alan L., to Polaroid Corporation. pH sensitive dyes containing a phenolate group. 3,929,829, Cl. 260-326.150.

Borrow, Antony: *See—*
Aldridge, David Cecil; Borrow, Antony; and Gerring, Ernest Edward Lawrence, 3,930,014.

Borup, Herbert H., to Kaiser Aluminum & Chemical Corporation. Cryogenic tank. 3,929,247, Cl. 220-9.0LG.

Boschetti, Eugene, to Lipha Lyonnaise Industrielle Pharmaceutique. Compositions and methods of killing rodents using (diphenyl acetyl)-2 indane dione-1,3. 3,929,983, Cl. 424-17.000.

Bossert, Friedrich: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,929,798.

Boszor, Samuel M., to Union Carbide Corporation. Carbon fiber strengthened speaker cone. 3,930,130, Cl. 179-181.00R.

Botros, Raouf, to American Color & Chemical Corporation. Dihydroxythiophenoxyanthraquinones. 3,929,843, Cl. 260-383.000.

Bottenbruch, Ludwig: *See—*
Darsow, Gerhard; Bottenbruch, Ludwig; and Schnell, Hermann, 3,929,901.

Bouchara, D. Emile. Phenylpiperazine derivatives, process for their preparation and applications thereof. 3,929,792, Cl. 260-268.0PH.

Boucher, Raymond Marcel Gut, to Wave Energy Systems Inc. Liquid or gas phase sterilizing and cleaning composition containing an aldehyde and a fluoro or perfluoro compound. 3,929,662, Cl. 252-106.000.

Boucherle, Andre Louis: *See—*
Benoit-Guyod, Martine Pierrette; Benoit-Guyod, Jean-Louis Alain; Boucherle, Andre Louis; and Eymard, Pierre Luc, 3,929,869.

Bouillon, Claude; DuFaure, Pierre; and Rosenbaum, Georges, to Societe Anonyme dite: L'Oreal. Antiperspirant composition containing dioxaluminin and dioxaluminane. 3,929,986, Cl. 424-46.000.

Bourassa, Joseph R.: *See—*
Lopez, Manuel; and Bourassa, Joseph R., 3,928,887.

Bourgeois, Louis: *See—*
Degueldre, Louis; Gobillon, Yves; Clerbois, Lucien; and Bourgeois, Louis, 3,929,608.

Bowles, Renile E., to Hoerner Waldorf Corporation. Reinforced corrugated member. 3,929,272, Cl. 229-23.00C.

Bowser, George H.: *See—*
Mazzoni, Renato J.; Bowser, George H.; and Stewart, John L., 3,928,953.

Boyce, Finis O.: *See—*
Metz, Ferdinand E.; Boyce, Finis O.; and Segmiller, James L., 3,930,030.

Boyer, Walter J., to Perfection Manufacturing Company, The. Rear mounted grass catcher. 3,928,956, Cl. 56-202.000.

Brady, Donnie G.; and Bailey, Fay W., to Phillips Petroleum Company. Arylene sulfide polymers comprising silicone fluids. 3,929,708, Cl. 260-29.1SB.

Brandeis University: *See—*
Leeman, Susan E.; and Carraway, Robert E., 3,929,756.

Brandl, Hermann Josef, to Coulter Electronics, Inc. Longitudinal cutting and/or grooving machine for material webs in motion, particularly cardboard means. 3,929,047, Cl. 83-499.000.

Brandstrom, Arne Elof: *See—*
Berntsson, Peder Bernhard; Brandstrom, Arne Elof; Carlsson, Enar Ingemar; Carlsson, Stig Ake Ingemar; Ek, Lars; Samuelsson, Benny Roger; Sjostrand, Sven Erik; Strandlund, Gert Christer; and Ablad, Bengt Arne Hjalmar, 3,930,016.

Brandt, Wilhelm; and Bindrum, Irmgard, to Hoechst Aktiengesellschaft. Process for the manufacture of metallized shaped bodies of macromolecular material. 3,930,109, Cl. 428-422.000.

Brantley, Richard K. Method for enhancing the life of cut flowers. 3,929,448, Cl. 71-68.000.

Brattsand, Ralph Lennart; af Ekenstam, Bo Thuresson; Claeson, Karl Goran; and Thalen, Bror Arne, to AB Bofors. Steroids, processes for their manufacture and preparations containing same. 3,929,768, Cl. 260-239.55D.

Braytenbah, Andrew S., to Westinghouse Electric Corporation. Electrical system for electrohydraulic emergency trip system. 3,928,975, Cl. 60-660.000.

Braytenbah, Andrew S.; Jaegtnes, Karl O.; and Smith, Millard F., to Westinghouse Electric Corporation. Electrohydraulic emergency trip system for a turbine power plant. 3,928,976, Cl. 60-660.000.

Braytenbah, Andrew S.; and Jaegtnes, Karl O., to Westinghouse Electric Corporation. Electrohydraulic on-line testable trip system for turbine power plant. 3,928,977, Cl. 60-660.000.

Brennan, Earl D., to Koppers Company, Inc. Method for the thermal conversion of ammonium sulfate to ammonium bisulfate. 3,929,977, Cl. 423-520.000.

Breslow, Jeffrey D., to Marvin Glass & Associates. Surface pulling apparatus with obstacle signaling. 3,929,336, Cl. 273-108.000.

Bretthauer, Klaus; and Simon, Erich, to Swiss Aluminum Ltd. Composite printing plate. 3,929,073, Cl. 101-395.000.

Bretting, Jork, to Licentia Patent-Verwaltungs-G.m.b.H. Traveling-wave tube having improved electron collector. 3,930,182, Cl. 315-3.500.

Breuer, Hermann, to E. R. Squibb & Sons, Inc. Acylthiomethyl esters of cephalosporins. 3,929,774, Cl. 260-243.00C.

Breuer, Hermann; and Treuner, Uwe D., to E. R. Squibb & Sons, Inc. [(Acylcarbamoyl) thioacetyl] cephalosporin derivatives. 3,929,778, Cl. 260-243.00C.

Breuer, Hermann, to E. R. Squibb & Sons, Inc. 1,2,4-Oxadiazolonylacetyl cephalosporins. 3,929,782, Cl. 260-243.00C.

Breuer, Hermann: *See—*
Treuner, Uwe D.; and Breuer, Hermann, 3,929,776.

Brewster, Phillip William; Hamblin, Peter Collen; and Rutherford, James Pennycook, to Exxon Research & Engineering Co. Ortho alkyl phenol and ortho alkyl phenol sulphide lubricating oil additives. 3,929,654, Cl. 252-48.200.

Brichima S.p.A.: *See—*
Maggioni, Paolo, 3,929,913.

Bridgestone Tire Company Limited: *See—*
Katagiri, Yoshiaki; Urayama, Takao; and Mori, Masaji, 3,929,546.
Nishimura, Seiichiro, 3,929,043.

Brink, Robert H., Jr.: *See—*
Shema, Bernard F.; and Brink, Robert H., Jr., 3,929,561.
Shema, Bernard F.; and Brink, Robert H., Jr., 3,929,562.
Shema, Bernard F.; and Brink, Robert H., Jr., 3,929,563.

Brinkmann, Dieter; Simon, Wolfgang; and Zimon, Heinrich, to Kraftwerke Union Aktiengesellschaft. Heat exchanger installation for a closed gas circulatory system, such as a thermal power plant, for example. 3,929,188, Cl. 165-66.000.

Bristol Products, Inc.: *See—*
Cohn, Lawrence P.; Crawford, Dennis W.; and Turner, Larry G., 3,929,317.

British Petroleum Company Limited, The: *See—*
Davies, Evan Ellis; and Pout, Christopher Ronald, 3,929,624.

British Secretary of State for Defence: *See—*
Watton, Rex, 3,930,157.

Britschinn, Horst; Federer, Fritz; and Neumann, Henning, to Metzeler Kautschuk AG. Inflatable tube bodies. 3,928,879, Cl. 9-400.000.

Brittain, Russell James: *See—*
Wojnar, Robert John; Brittain, Russell James; Bernstein, Jack; and Losee, Kathryn Alice, 3,930,005.

Bro, Per; Kelsey, Robert H.; and Marincic, Nikola, to P. R. Mallory & Co., Inc. Multi cell reserve battery. 3,929,507, Cl. 136-114.000.

Broemer, Heinz; and Meinert, Norbert, to Ernst Leitz G.m.b.H. Optical borate glass of high chemical resistance and process of making same. 3,929,495, Cl. 106-47.00Q.

Brown, Dwight Collin; and Brown, Kevin Bruce. Sandals and method for making same. 3,928,927, Cl. 36-11.500.

Brown, Earle S., to Union Carbide Corporation. Trivalent metal salts of dodecametal triaconta carbonyls. 3,929,969, Cl. 423-263.000.

Brown, Kevin Bruce: *See—*
Brown, Dwight Collin; and Brown, Kevin Bruce, 3,928,927.

Browning, Vernon D.: *See—*
Holden, Homer N.; Hunt, James P.; Browning, Vernon D.; Hoglen, Edward L.; and Kleykamp, Donald L., 3,929,957.

Brunner, August H., Jr.: *See—*
Moynahan, Edward B.; Brunner, August H., Jr.; and Skreckoski, Gerald R., 3,929,466.

Brunson, Lawrence A.: *See—*
Rostron, Joseph R.; Brunson, Lawrence A.; and Soles, Otto H., 3,930,134.

Brusadin, Giacomo; and Prosdocimo, Giordano, to Uniflex S.p.A. Water line. 3,929,288, Cl. 239-201.000.

Brushenko, Anatoli: *See—*
Szymber, Oleg; and Brushenko, Anatoli, 3,929,099.

Buchel, Karl-Heinz, to Bayer Aktiengesellschaft. Process for the production of N-tritylimidazoles. 3,929,820, Cl. 260-309.000.

Buchmann, Paul: *See—*
Beringer, Monique; and Buchmann, Paul, 3,929,141.

Buchner, Norbert; Liede, Dieter; Schmeer, Peter; and Vogele, Gunther, to Robert Bosch Verpackungsmaschinen G.m.b.H. Apparatus for the sterilization of packaging material. 3,929,409, Cl. 21-91.000.

Buckbee-Mears Company: *See—*
Frantzen, John J., 3,929,551.

Budden, Brian Thomas, to Samuel Jones & Company, Limited. Stencils. 3,929,068, Cl. 101-128.200.

Bugaut, Andree: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,929,403.
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,929,404.

Bugelski, William G.; and Teasley, Robert E., Jr., to Cummins Engine Company, Inc. Filtering and mixing apparatus. 3,929,645, Cl. 210-251.000.

Buonomo, Franco; Fattore, Vittorio; Zanoni, Gianfranco; and Notari, Bruno, to Snam Progetti S.p.A. Catalytic compositions useful for the oxidation of carbon monoxide and hydrocarbons and the process for preparing them. 3,929,681, Cl. 252-465.000.

Burdeska, Kurt: *See—*
Pugin, Andre; Burdeska, Kurt; and von der Crone, Jost, 3,929,719.

Burdis, Roy Stonier, to Screentex Limited. Method of packaging tubular stencils. 3,929,227, Cl. 206-446.000.

Burdyn, Ralph F.: *See—*
Chang, Harry L.; Cook, Evin L.; and Burdyn, Ralph F., 3,929,190.

Burens, James H.; and Wallace, Kenneth A., to North Electric Company. Switching transistor drive apparatus. 3,930,170, Cl. 307-254.000.

Buret, Jean Pierre: *See—*
Hirsch, Jean; and Buret, Jean Pierre, 3,929,994.

Buriks, Rudolf S.; and Fauke, Allen R., to Petrolite Corporation. Use of polymeric quaternary ammonium betaines as oil-in-water demulsifiers. 3,929,632, Cl. 210-43.000.

Buriks, Rudolf S.; and Fauke, Allen R., to Petrolite Corporation. Use of polymeric quaternary ammonium betaines as water clarifiers. 3,929,635, Cl. 210-54.000.

Burke, Noel I.; Dowell, Arthur M., Jr.; Talty, Robert D.; and Kremer, Kenneth J., to Tee-Pak, Inc. Edible collagen sausage casing and process for preparing same. 3,930,035, Cl. 426-140.000.

Burke, Noel I., to Tee-Pak, Inc. Edible collagen sausage casing and method of preparing same. 3,930,036, Cl. 426-140.000.

Burke, Willie C. Vehicle litter compactor. 3,929,060, Cl. 100-100.000.

Burkett, Wilford B.; and Orsino, Joseph A., to McCulloch Corporation. Formation of battery plates. 3,929,505, Cl. 136-34.000.

Burleson, Cuba L.; and Dillon, Charles B. Trailer apparatus. 3,929,353, Cl. 280-423.00R.

Burmah Oil Trading Limited: *See—*
Nowell, Roger; and Tate, Philip Edward Russell, 3,929,715.

Burrell, William E., to W. R. Grace & Co. Method for evacuating packages. 3,928,938, Cl. 53-22.00B.

Burroughs Corporation: *See—*
Ferguson, Alisdair Cullen; McGregor, John; and MacPherson, Alastair George, 3,930,236.

Bury, George John; and Swick, Edwin Grant, to Illinois Tool Works Inc. Adhesive mounting device. 3,928,894, Cl. 24-73.0VA.

Burzen, Norman J., to Nordon Industries, Inc. Control means for adjusting the vend price of a coin handling mechanism. 3,929,212, Cl. 194-1.00L.

Busch, Juergen Peter, to NSM Apparatebau GmbH Kommanditgesellschaft. Gaming apparatus. 3,929,338, Cl. 273-138.000.

Butler, David V.: *See—*
Lee, Henry L.; Orlowski, Jan A.; and Butler, David V., 3,929,001.

Butler Manufacturing Company: *See—*
Solimar, Keith F., 3,929,261.

Butova, Margarita Nikolaevna: *See—*
Bykhovsky, David Grigorievich; Medvedev, Alexandr Yakovlevich; Rossomakho, Yakov Vulfovich; and Butova, Margarita Nikolaevna, 3,930,139.

Button, Harold O.; and Trimble, Robert A., to Mobil Oil Corporation. Production of lubricating oils blending stocks. 3,929,626, Cl. 208-309.000.

Bykhovsky, David Grigorievich; Medvedev, Alexandr Yakovlevich; Rossomakho, Yakov Vulfovich; and Butova, Margarita Nikolaevna. Nonconsumable electrode for oxygen arc working. 3,930,139, Cl. 219-145.000.

Byrne, John A.; and Rhea, Charles K., Jr., to Universal Identification Systems, Inc. Animal food monitor. 3,929,277, Cl. 235-61.60R.

Byron Jackson Inc.: *See—*
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Cadart, Michel: *See—*
Leroy, Pierre; Debras, Maurice; Cadart, Michel; and Saleil, Jean, 3,929,458.

Cadot, Robert: *See—*
Balavoine, Loic; Cadot, Robert; and Sapy, Jacques, 3,929,278.

Cala, Francis R., to Colgate-Palmolive Company. Particulate silicate-hydroxyalkyl iminodiacetate built detergent compositions of improved properties. 3,929,679, Cl. 252-527.000.

Calderazzo, Fausto: *See—*
Dell'Amico, Daniela Belli; and Calderazzo, Fausto, 3,929,973.

Caldwell, Donald L.: *See—*
Spears, Johnnie E.; and Caldwell, Donald L., 3,929,541.

Caldwell, Edward N., to Robertshaw Controls Company. Differential pressure operated pilot relay and system and diverting relay construction utilizing the same or the like. 3,929,160, Cl. 137-625.500.

Caldwell, John R.: *See—*
Dombroski, John R.; and Caldwell, John R., 3,929,868.

Callahan, James L., to Standard Oil Company, The. Manufacture of dinitriles from thiodinitriles. 3,929,859, Cl. 260-465.80R.

Cambridge Thermionic Corporation: *See—*
Simpson, Paul A., 3,929,390.

Campbell, Roger G., Sr.; Goff, Richard E., Jr.; and Staffier, Thomas L., to Johnson & Johnson. Non-slip waistband product. 3,930,090, Cl. 428-196.000.

Campbell, Scott V., to Scott, Francis A. Electrical alarm system. 3,930,246, Cl. 340-214.000.

Canadian Industries Limited: *See—*
Findlay, Donald Urquhart; McGaffrey, Francis Hamnet Garland; and Scuffell, Derek Edgar Alexander, 3,929,959.
Findlay, Donald Urquhart; McCaffrey, Francis Hamnet Garland; and Scuffell, Derek Edgar Alexander, 3,929,960.

Canadian Patents and Development Limited: *See—*
Sharpe, Anthony N.; and Michaud, Gregory L., 3,929,583.
Thayer, William; Pageau, Lucien; and Sourirajan, Srinivasa, 3,929,945.
Visman, Jan; and Hamza, Hassan A., 3,929,633.

Cann, Everett Douglas, to Cann, Everett Douglas; and Neiman, William T. High temperature flue gas treatment. 3,929,967, Cl. 423-242.000.

Canon Kabushiki Kaisha: *See—*
Nishikawa, Tatsuo; and Asakura, Osamu, 3,929,067.

Cape Air Conditioning (Proprietary) Ltd.: *See—*
Kloot, Leslie John, 3,929,280.

Carfi, Edward M. Hair vacuum with stripping clasp. 3,929,142, Cl. 132-9.000.

Caribe Circuit Breaker Co., Inc.: *See—*
Belttary, Harold E., 3,930,211.

Carl, Klaus: *See—*
Schmidt, Rolf; Carl, Klaus; Gustin, Pol Ambroise Ghislain Joseph; and Schayes, Raymond Georges, 3,930,119.

Carlsson, Enar Ingemar: *See—*
Berntsson, Peder Bernhard; Brandstrom, Arne Elof; Carlsson, Enar Ingemar; Carlsson, Stig Ake Ingemar; Ek, Lars; Samuelsson, Benny Roger; Sjostrand, Sven Erik; Strandlund, Gert Christer; and Ablad, Bengt Arne Hjalmar, 3,930,016.

Carlsson, Per Arvid Emil; Corrodi, Hans Rudolf; Hallhagen, Sven Goran; and Junggren, Ulf Krister, to Aktiebolaget Hassle. 1-(3-Hydroxy-4-alkyl-phenyl)-alkylamines(-2) and the salts thereof. 3,929,871, Cl. 260-501.170.

Carlsson, Stig Ake Ingemar: *See—*
Berntsson, Peder Bernhard; Brandstrom, Arne Elof; Carlsson, Enar Ingemar; Carlsson, Stig Ake Ingemar; Ek, Lars; Samuelsson, Benny Roger; Sjostrand, Sven Erik; Strandlund, Gert Christer; and Ablad, Bengt Arne Hjalmar, 3,930,016.

Carosella, Michael C.: *See—*
Todd, Lamar S.; Fitzgibbon, Alan; Carosella, Michael C.; and Hilty, Donald C., 3,929,464.

Carraway, Robert E.: *See—*
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Carriveau, Ronald S. Show and tell apparatus. 3,928,926, Cl. 35-76.000.

Carroll, Gordon S., to International Telephone and Telegraph Corporation. Sound communication system. 3,930,123, Cl. 179-1.00R.

Carter, James L.: *See—*
Sinfelt, John H.; Barnett, Allan E.; and Carter, James L., 3,929,619.

Cascio, Giuseppe: *See—*
Manghisi, Elso; and Cascio, Giuseppe, 3,930,008.

Case, Cecil L., to Hesston Corporation. Double windrowing method and apparatus. 3,928,955, Cl. 56-1.000.

Case, Derek Frank. Manufacture of magnetic heads. 3,928,908, Cl. 29-603.000.

Casey, James H.: *See—*
Bettenhausen, Larry A.; Casey, James H.; and Luhman, Robert A., 3,929,552.

Cashin, Colin H.; Chakrabarti, Jiban K.; and Szinai, Stephen S., to Lilly Industries, Ltd. 2-Phenyl-adamantanealkylamine compounds and their salts. 3,929,888, Cl. 260-570.5CA.

Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
Engelhardt, Fritz; Gunzert, Willi; Jalke, Hellmut Georg; Ribka, Joachim; and Weckler, Gerhard, 3,929,740.

Castagna, Eugene G., to Dart Industries Inc. High impact compositions of polyethylene and polypropylene block copolymers. 3,929,932, Cl. 260-876.00B.

Caterpillar Tractor Co.: *See—*
Hackett, David E.; and Keske, Frank E., 3,929,394.

Caveney, Robert John, to De Beers Industrial Diamond Division Limited. Diamond particle having a composite coating of titanium and a metal layer. 3,929,432, Cl. 51-295.000.

Celanese Corporation: *See—*
Levers, William E.; and Keith, Charles H., 3,930,077.
Taskier, Henry T., 3,929,509.

Cement and Concrete Association, The: *See—*
Weaver, John; Maynard, David Payne; Taylor, Rayner Walter; and Bayliss, William Richards Gilbert, 3,929,377.

Centre de Recherches Metallurgiques— Centrum voor Research in de Metallurgie: *See—*
Hamilius, Albert, 3,929,638.
Marquet, Freddy Antoine, 3,930,159.

Cerasoli, Anthony. Parallel walking bar assembly. 3,929,330, Cl. 272-63.000.

Cerefice, Steven A.; and Fields, Ellis K., to Standard Oil Company, The. Dicyclohexadiene tetraacyl compounds. 3,929,711, Cl. 260-31.80B.

Chakrabarti, Jiban K.: *See—*
Cashin, Colin H.; Chakrabarti, Jiban K.; and Szinai, Stephen S., 3,929,888.

Challender, Ronald Scott: *See—*
Dent, Kenneth Henry; and Challender, Ronald Scott, 3,929,007.

Chamberlain, Noel Christopher. Leak-off pipe for fuel injection equipment. 3,929,109, Cl. 123-32.00R.

Champion International Corporation: *See—*
Cohn, Robert, 3,929,035.
Vincent, David N., 3,930,101.

Chang, Harry L.; Cook, Evin L.; and Burdyn, Ralph F., to Mobil Oil Corporation. Secondary oil recovery by waterflooding with extracted petroleum acids. 3,929,190, Cl. 166-274.000.

Chang, Leroy L.; Esaki, Leo; and Ludeke, Rudolf, to United States of America, Army. Molecular beam epitaxy of alternating metal-semiconductor films. 3,929,527, Cl. 148-175.000.

Chapman, Charles C., to Phillips Petroleum Company. Fractionation of effluent from HF catalyzed alkylation. 3,929,924, Cl. 260-683.420.

Chapman, Charles; C., to Phillips Petroleum Company. Recovery of a propane-ethane product and recycle of propane in HF alkylation. 3,929,925, Cl. 260-683.480.

Chapman, Francis E.; and Grant, Robert F., to S. C. Johnson & Son, Inc. Surface treating compositions. 3,929,492, Cl. 106-3.000.

Chapman, Harvey A., to Minnesota Mining and Manufacturing Company. Dual cross-flow canister and process. 3,929,419, Cl. 23-288.0FB.

Chappell, Robert L.; Shuster, Edward J.; Vinals, Joaquin F.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Bicyclic fragrance materials and processes therefor. 3,929,676, Cl. 252-522.000.

Chattopadhayay, Asoke; and Schmidt, Karl, to Deutsche Vergaser GmbH & Co. Kommanditgesellschaft. Fuel injector arrangement for compressive mixture internal combustion engines. 3,929,114, Cl. 123-139.00R.

Chaux, Jean-Bernard: *See—*
Ravet, Georges; and Chaux, Jean-Bernard, 3,929,408.

Chemische Werke Huels Aktiengesellschaft: *See—*
Berg, Gerhard; and Nordsiek, Karl-Heinz, 3,929,707.

Chemische Werke Huls Aktiengesellschaft: *See—*
Streck, Roland; and Weber, Heinrich, 3,929,850.

Chernenko, Nikolai Fedorovich: *See—*
Filatov, Nikolai Grigorievich; Meshkov, Jury Yakovlevich; Chernenko, Nikolai Fedorovich; Nikonenko, Dmitry Iosifovich; Mashlenko, Felix Isaakovich; Belyaev, Albert Mikhailovich; Valeev, Artur Khadyevich; Savina, Valentina Alexandrovna; Marchenko, Vladimir Zakharovich; Fedorov, Valery Ionovich; Gridnev, Vitaly Nikiforovich; and Mikhailov, Konstantin Vasilievich, 3,929,524.

Chernenko, Sergei Vladimirovich: *See—*
Zlotin, Boris Nikolaevich; Timofeev, Valentin Vyacheslavovich; and Chernenko, Sergei Vladimirovich, 3,929,008.

Cheskis, Harvey P.; Shapiro, Stanley; and Pryor, Michael J., to Olin Corporation. Process for producing Cu-base alloys. 3,929,516, Cl. 148-11.50R.

Chevron Research Company: *See—*
King, John M.; and Bakker, Nicolaas, 3,929,650.
Suzuki, Shigeto, 3,929,896.

Chicago Musical Instrument Co.: *See—*
Moore, Douglas R., 3,929,051.

Chicago Rawhide Manufacturing Company: *See—*
Peisker, Glenn W., 3,929,340.

Chicklis, Evan P.; and Kuppenheimer, John D., Jr., to Sanders Associates, Inc. Infrared photography. 3,930,158, Cl. 250-330.000.

Child, James L., Jr.: *See—*
Schmunk, John D.; Child, James L., Jr.; Shroy, Robert E.; and Wise, John, 3,929,359.

Childs, Richard L.: *See—*
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Chimura, Kazuya; Ito, Kazuo; Takashima, Shunichi; Shindo, Mizuo; and Shimoshinbara, Yoshihiro, to Mitsubishi Rayon Co., Ltd. Process for preparing linear polyesters. 3,929,728, Cl. 260-75.00R.

Chimura, Kazuya; Takashima, Shunichi; Nakazono, Ryuichi; Kawashima, Masao; Ota, Hiroyuki; Kaneko, Takashi; and Sakunaga, Kenichi, to Mitsubishi Rayon Co., Ltd. Light transmitting fibers. 3,930,103, Cl. 428-361.000.

Chinuki, Takashi: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,929,910.

Chirgwin, Keith M., to Garrett Corporation, The. Dynamoelectric machine. 3,930,175, Cl. 310-160.000.

Chisholm, John. Method of making thermal attachment to porous metal surfaces. 3,928,907, Cl. 29-527.400.

Chisholm, Lloyd Duncan. Rotary engine. 3,929,105, Cl. 123-8.090.

Chiyoda Chemical Engineering and Construction Co., Ltd.: *See—*
Terashima, Osamu; and Okabayashi, Ikuo, 3,928,979.

Chottiner, Jacob: *See—*
Sampson, Ronald N.; and Chottiner, Jacob, 3,930,094.

Christen, Gilbert; Favre, Bernard; Marze, Xavier; Salmon, Michel; and Thuillier, Rene, to Rhone-Poulenc, S.A. Hollow fibres. 3,930,105, Cl. 428-398.000.

Christensen, Burton G.; Leanza, William J.; and Albers-Schonberg, Georg, to Merck & Co., Inc. Labile esters of (−)(cis-1,2-epoxypropyl)phosphonic. 3,929,840, Cl. 260-348.00A.

Chu, Simon Long; and Shimazu, Ken-Ichi, to Polychrome Corporation. Novel lithographic plate and method. 3,929,591, Cl. 204-17.000.

Chung, Daniel A., to Goodyear Tire & Rubber Company, The. Polyureaurethane shock absorbing unit. 3,929,729, Cl. 260-75.0NH.

Cialone, David R.; Hieronymus, Gerald W.; Kruspe, Henry R.; McCornack, Richard W.; Perkins, Norwood K.; and West, Donald L., to International Business Machines Corporation. Ink recirculating system for ink jet printing apparatus. 3,929,071, Cl. 101-335.000.

Ciba-Geigy AG: *See—*
Garner, Robert; and Petitpierre, Jean Claude, 3,929,831.
Ramanathan, Visvanathan, 3,929,785.
Stagi, Mauro, 3,929,826.

Ciba-Geigy Corporation: *See—*
Anner, Georg; and Kalvoda, Jaroslav, 3,929,844.
Bickel, Hans; and Mueller, Johannes, 3,929,779.
Cook, Barry, 3,929,804.
Drabek, Jozef, 3,929,817.
Durr, Dieter; and Pissiotas, Georg, 3,929,883.
Fitzi, Konrad, 3,929,807.
Kaufmann, Heinz; and Wettstein, Albert, 3,929,769.
Kristinsson, Haukur; and Rufenacht, Kurt, 3,929,809.
McCrae, James McGeachie, 3,929,794.
Pugin, Andre; Burdeska, Kurt; and von der Crone, Jost, 3,929,719.
Rathgeb, Paul; Vogel, Christian; and Weiss, Anton G., 3,929,816.
Schmid, Wolfgang; Gutzwiller, Ernst; and Meyer, Urs, 3,929,806.

Cimarusti, Christopher M.: *See—*
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Cincinnati Electronics Corporation: *See—*
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Ciulacu, Paraschiv I.: *See—*
Constantin, Gurgui N.; Luca, Vasile; Eckardt, Andras; and Ciulacu, Paraschiv I., 3,930,088.

Claeson, Karl Goran: *See—*
Brattsand, Ralph Lennart; af Ekenstam, Bo Thuresson; Claeson, Karl Goran; and Thalen, Bror Arne, 3,929,768.

Clark Equipment Company: *See—*
Shealy, Noah A., 3,929,036.

Clark, K. Warren, to E. R. Squibb & Sons, Inc. Chewing gum having enhanced flavor. 3,930,026, Cl. 426-3.000.

Clark, Kenneth G.: *See—*
Ohr, Jack; and Clark, Kenneth G., 3,929,521.

Clark-Monks, Colin, to Fiberglas Canada Ltd. Crystallizable glass suitable for fiber production. 3,929,497, Cl. 106-50.000.

Clark, William E., to Federal-Mogul Corporation. Method of making polytetrafluoroethylene sealing elements with hydrodynamic action. 3,929,341, Cl. 277-134.000.

Clemens, Jon Kaufmann; and Palmer, Richard Claxton, to RCA Corporation. Video capacitive disc playback apparatus and stylus with dielectric coating therefor. 3,930,117, Cl. 178-6.60R.

Clendinning, Robert A.; Potts, James E.; and Gorham, William F., to Union Carbide Corporation. Biodegradable shaped articles from a material comprising a particulate addition polymer in a matrix of a thermoplastic oxyalkanoyl polymer. 3,929,937, Cl. 260-896.000.

Clerbois, Lucien: *See—*
Degueldre, Louis; Gobillon, Yves; Clerbois, Lucien; and Bourgeois, Louis, 3,929,608.

Cline, David J., to Dynafoil, Inc. Height control system for a hydrofoil watercraft. 3,929,084, Cl. 114-66.50H.

Cloud, Larry L.: *See—*
Kelly, Vincent J.; Cloud, Larry L.; and Smalligan, Wayne J., 3,930,027.

Clow Corporation: *See—*
Diebel, Leverne G., 3,929,538.

Coast Catamaran Corporation: *See—*
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Coates Brothers & Company Limited: *See—*
Hudson, Alan George; and Orpwood, John Leonard, 3,929,698.

Coaton, James Richard, to Thorn Electrical Industries Limited. Electrical incandescent filament devices. 3,930,178, Cl. 313-275.000.

Cochrane, Robin Adam, to Girling Limited. Master cylinder assemblies for hydraulic systems. 3,929,162, Cl. 137-627.500.

Coggins, Leroy, to Cornell Research Foundation, Inc. Method and composition for the diagnosis of equine infectous anemia virus infection by using agar-gel-immunodiffusion reaction. 3,929,982, Cl. 424-12.000.

Cohen, Hyman; Vago, Paul; and Skender, Davorin. Electrodynamic loudspeaker with basket mounting to pole piece. 3,930,129, Cl. 179-115.50R.

Cohn, Lawrence P.; Crawford, Dennis W.; and Turner, Larry G., to Bristol Products, Inc. Valve assembly. 3,929,317, Cl. 251-223.000.

Cohn, Robert, to Champion International Corporation. Electric control safety mechanism. 3,929,035, Cl. 74-616.000.

Coleman, Arthur, to Raymond Lee Organization, Inc., The, a part interest. Coiffure hood. 3,929,143, Cl. 132-36.10R.

Colgate-Palmolive Company: *See—*
Barth, Jordan B., 3,929,988.
Cala, Francis R., 3,929,679.
Colodney, Daniel; and Cordon, Martin, 3,929,987.
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Collins, Michael Clive: *See—*
Wookey, Norman; Jackson, Arthur Frederick; Collins, Michael Clive; and Francis, Brian, 3,930,048.

Colodney, Daniel; and Cordon, Martin, to Colgate-Palmolive Company. Toothpaste. 3,929,987, Cl. 424-52.000.

Columbus, Peter Spiros, to Borden, Inc. Clear adhesive applicator crayon comprising agar and polyacrylamide. 3,929,694, Cl. 260-17.4ST.

Colvert, James H.: *See—*
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Combustion Engineering, Inc.: *See—*
Noyes, Richard Croissant, 3,929,566.

Commercial Solvents Corporation: *See—*
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Commonwealth Scientific & Industrial Research Organization: *See—*
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Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie: *See—*
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Compugraphic Corporation: *See—*
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Compump Systems, Inc.: *See—*
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Computervision Corporation, The: *See—*
Villers, Philippe, 3,930,237.

Comstedt, Tore Erik Karl, to Teknoflex Control System AB. Single lever control device. 3,929,039, Cl. 74-878.000.

Consolidated Foods Corporation: *See—*
Gaudry, Paul Emile, 3,929,437.

Consortium fur Elecktrochemische Industrie GmbH: *See—*
Thyret, Helmut Eugen, 3,929,799.

Constantin, Gurgui N.; Luca, Vasile; Eckardt, Andras; and Ciulacu, Paraschiv I., to Intreprinderea "Bucuresti" Pentru Extragerea, Prelucrarea si Montarea Marmurei si Pietrei de Constructii. Decorative material. 3,930,088, Cl. 428-143.000.

Continental Oil Company: *See—*
Johnson, Morris A.; and Yang, Kang, 3,929,599.
Sutko, Adolph A.; and Myers, George M., 3,929,388.

Cook, Barry, to Ciba-Geigy Corporation. 4-Piperidine acetamide compounds. 3,929,804, Cl. 260-293.630.

Cook, Evin L.: *See—*
Chang, Harry L.; Cook, Evin L.; and Burdyn, Ralph F., 3,929,190.

Cook, Henry S., to Southwire Company; and National Steel Corporation. Anode carrier lifting device. 3,929,231, Cl. 212-11.000.

Cook Paint and Varnish Company: *See—*
Wright, Howard J.; and Harwell, Kenneth E., 3,929,744.

Cooke, Claude Everett, Jr.: *See—*
Graham, John Wayne; Muecke, Thomas Wayne; and Cooke, Claude Everett, Jr., 3,929,191.

Coone, Malcolm G., to Lynes, Inc. Vapor recovery fuel nozzle apparatus. 3,929,175, Cl. 141-392.000.

Cooper, Terence Alfred; and Logothetis, Anestis Leonidas, to Du Pont de Nemours, E. I., and Company. Process for recovering boron trifluoride. 3,929,749, Cl. 260-86.700.

Cooper, Terence Alfred; and Khan, Ausat Ali, to Du Pont de Nemours, E. I., and Company. Preparation of sol chloroprene polymers. 3,929,752, Cl. 260-92.300.

Cor Tech Research Limited: *See—*
Vasishth, Ramesh C., 3,930,089.

Corbin, Dean L. Livestock unloading and treating trailer assembly. 3,929,104, Cl. 119-82.000.

Cordon, Martin: *See—*
Colodney, Daniel; and Cordon, Martin, 3,929,987.

Corliss, Glenn Arthur; and Furgal, Henry Paul, to Miles Laboratories, Inc. Simulated bacon product and process therefor. 3,930,033, Cl. 426-103.000.

Corll, James A.: *See—*
Nasby, Robert D.; and Corll, James A., 3,929,345.

Cornell Research Foundation, Inc.: *See—*
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Cornils, Boy: *See—*
Schnur, Friedrich; Hibbel, Josef; and Cornils, Boy, 3,929,900.

Corrodi, Hans Rudolf: *See—*
Carlsson, Per Arvid Emil; Corrodi, Hans Rudolf; Hallhagen, Sven Goran; and Junggren, Ulf Krister, 3,929,871.

Corsaut, Jay C. Surgical suction irrigator. 3,929,126, Cl. 128-240.000.

Corsini-Mena, Adriana: *See—*
Gazzarrini, Franco; Aguzzi, Paolo; and Corsini-Mena, Adriana, 3,929,665.

Cosden Oil & Chemical Company: *See—*
Stevenson, John L., 3,929,686.

Cottam, Stephen M.; Day, Howard E.; and Griffith, William A., to Hecla Mining Company. Production of lead and silver from their sulfides. 3,929,597, Cl. 204-66.000.

Coulter Electronics, Inc.: *See—*
Brandl, Hermann Josef, 3,929,047.

Cox, Ernest P. Waste wood reduction machine. 3,929,294, Cl. 241-101.700.

CPC International Inc.: *See—*
Morrill, Elliott; and Miller, James E., 3,929,697.

Cragoe, Edward J., Jr.; Schultz, Everett M.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. Indanacetic acid compounds. 3,929,872, Cl. 260-515.00R.

Cramer, Jerry W.: *See—*
Paddock, Paul F.; and Cramer, Jerry W., 3,928,942.

Crane, Hewitt David; and Savoie, Robert Ellis, to Stanford Research Institute. Handwriting system. 3,930,229, Cl. 340-146.3SY.

Crawford, Dennis W.: *See—*
Cohn, Lawrence P.; Crawford, Dennis W.; and Turner, Larry G., 3,929,317.

Creger, Paul L., to Parke, Davis & Company. Pharmaceutical compositions and methods. 3,930,024, Cl. 424-343.000.

Creger, Paul L.: *See—*
Moersch, George W.; and Creger, Paul L., 3,929,897.

Creusot-Loire: *See—*
Leroy, Pierre; Debras, Maurice; Cadart, Michel; and Saleil, Jean, 3,929,458.

Cronenberger, Michel; Laurent, Serge; and Mallet, Maurice, to Rhone-Poulenc, S.A. Coating process using a fluidisable powder comprising a heat-stable bisimide resin and particles of glass or mica. 3,930,070, Cl. 427-185.000.

Cross, Barrington; and Walworth, Bryant Leonidas, to American Cyanamid Company. Pre-emergence 1,2-dialkyl-3,5-disubstituted herbicidal compounds and method for using same. 3,929,451, Cl. 71-92.000.

Cross, Barrington; and Grasso, Charles Paul, to American Cyanamid Company. Chloromethyl 1,1-dimethyl-2-propynyl ether and process. 3,929,905, Cl. 260-614.00R.

Crouch, William B., to Texaco Inc. Fuel gas from solid carbonaceous fuels. 3,929,429, Cl. 48-201.000.

Crouzet: *See—*
Balavoine, Loic; Cadot, Robert; and Sapy, Jacques, 3,929,278.

Crutchfield, Marvin M.: *See—*
Rapko, John N.; and Crutchfield, Marvin M., 3,929,875.

Csordas, Elemer; Gaugenmaier, Karl; and Kotitschke, Gerhard, to J. M. Voith GmbH. Wedge press for continuous dehydration of a web of fibrous material, such as fiberboard, especially. 3,929,065, Cl. 100-90.000.

Cumbo, Charles C.; and Bhatia, Kamlesh K., to Du Pont de Nemours, E. I., and Company. Process for the production of butanediol. 3,929,915, Cl. 260-635.00E.

Cummins Engine Company, Inc.: *See—*
Bugelski, William G.; and Teasley, Robert E., Jr., 3,929,645.

Curi, Eli. Sub-intimal dissector and methods for performing endarterectomies therewith. 3,929,138, Cl. 128-304.000.

Curry, Carlton J.: *See—*
Kardon, Samuel; and Curry, Carlton J., 3,929,289.

Curtin, Denis J., to A. B. Dick Company. Electrophotographic element which includes a photoconductive polyvinyl carbazole layer containing an alicyclic anhydride. 3,929,478, Cl. 96-1.500.

Curtis, Omer E., Jr.; Tuller, Harold W.; O'Neill, Charles T.; and Nussbaum, Ralph W., to Allied Chemical Corporation. Production of low molecular weight polyanhydride compounds. 3,929,738, Cl. 260-78.50R.

Cuthbert, Arthur Robert. Filter unit. 3,929,648, Cl. 210-445.000.

Cutler, Morris; and Tamarin, Bernard J., to Vacuum Cleaner Corporation of America, The. Retractable cord reel. 3,929,210, Cl. 191-12.20R.

Czuba, Leonard J.: *See—*
Hess, Hans-Jurgen E.; Czuba, Leonard J.; and Schaaf, Thomas K., 3,929,818.

D & D Associates: *See—*
Hebert, Donald G., 3,929,214.

da Fonseca-Wollheim, Friedrich, to Boehringer Mannheim G.m.b.H. Quantitative determination of blood ammonia. 3,929,581, Cl. 195-103.50R.

Daido Metal Company, Ltd.: *See—*
Morisaki, Nobukazu, 3,928,918.

Daiichi Seiyaku Co., Ltd.: *See—*
Yamauchi, Toshio, 3,929,503.

Daikin Kogyo Co., Ltd.: *See—*
Komo, Tetsuya; Mizobata, Satoshi; Ukaji, Rokuo; and Kamihigoshi, Tutomu, 3,929,920.
Wada, Hiroyuki; Kawakami, Yasumasa; and Kamihigoshi, Tutomu, 3,929,415.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Yoshimura, Yoshio; Yokogawa, Kanae; and Kawata, Shigeo, 3,929,579.

Daisey, James R. Position index device and drafting apparatus combined therewith. 3,928,917, Cl. 33-76.00R.

Dale, James A.; and Leonard, William J., to Dynapol. Fat or oil composition stabilized with polystyrlphenol antioxidant. 3,930,047, Cl. 426-546.000.

D'Alelio, Gaetano F., to Du Pont de Nemours, E. I., and Company. Polymerizing bis-maleimides and polyimides therefrom. 3,929,713, Cl. 260-32.600.

Dalton, Harrison Lee. Tractor-trailer pulling and guiding device. 3,929,198, Cl. 180-14.00A.

Dalzell, Haldean Cloyce: *See—*
Winn, Martin; Razdan, Raj Kumar; Dalzell, Haldean Cloyce; and Krei, Joyce Ruth, 3,929,835.

D'Amico, John Joseph, to Monsanto Company. 1,1-Di(aminoalkylthio)-2,2-dicyanoethylenes. 3,929,857, Cl. 260-465.50R.

Danilewicz, John Christopher; Kemp, John Edward Glyn; Snarey, Michael; and Wright, James Robert, to Pfizer Inc. Method of using phenoxypropanolpiperazine compounds to lower blood pressure. 3,930,004, Cl. 424-250.000.

Danisch, Rudiger: *See—*
Schabert, Hans-Peter; Danisch, Rudiger; and Strickroth, Erich, 3,929,568.

Darsow, Gerhard; Bottenbruch, Ludwig; and Schnell, Hermann, to Bayer Aktiengesellschaft. Dihalophenyl-bis-(hydroxyarylethers). 3,929,901, Cl. 260-607.00A.

Dart Industries Inc.: *See—*
Castagna, Eugene G., 3,929,932.
Gaylord, Norman G., 3,929,550.
Huerta, James R.; Anderson, Amos R.; and Meyer, Jeffrey C., 3,929,745.
Van Dyck, Emil J.; Malina, Jerry L.; and Schiller, Raymond E., 3,929,545.

Datascope Corporation: *See—*
Laskey, Richard A., 3,929,741.

Daugherty, Carl Francis, Jr. Air conditioning system. 3,929,285, Cl. 236-13.000.

David, Reginald; and Estienne, Jean, to Rhone-Poulenc, S.A. Emulsifiers derived from hydroxycarboxylic acids. 3,929,870, Cl. 260-484.00A.

Davidson, Uryon S., deceased; by Ajamie, Amil J., administrator; and Price, James B., to Motorola, Inc. Fabrication of monocriptalline silicon on insulating substrates utilizing selective etching and deposition techniques. 3,929,528, Cl. 148-175.000.

Davies, Evan Ellis; and Pout, Christopher Ronald, to British Petroleum Company Limited, The. Reforming process using a uranium-containing catalyst. 3,929,624, Cl. 208-139.000.

Davies, Peter Wesley; and Dennison, John Philip, to International Nickel Company, Inc., The. Grain refining of metals and alloys. 3,929,467, Cl. 75-93.00G.

Davies, Thomas Ellis; and Hopkins, Hubert Brian, to Dow Chemical Company, The. Polystyrene. 3,929,936, Cl. 260-892.000.

Davis, James E.: *See—*
Seni, Leonard S.; Davis, James E.; and Harrison, Henry R., 3,929,652.

Davis, John M., to Du Pont de Nemours, E. I., and Company. Process for stabilizing polyamides. 3,929,725, Cl. 260-45.75C.

Day, Howard E.: *See—*
Cottam, Stephen M.; Day, Howard E.; and Griffith, William A., 3,929,597.

Day, John T.; and Hollick, John G., to USM Corporation. Process for forming microporous sheet. 3,929,949, Cl. 264-46.400.

Dayco Corporation: *See—*
Holden, Homer N.; Hunt, James P.; Browning, Vernon D.; Hoglen, Edward L.; and Kleykamp, Donald L., 3,929,957.

De Beers Industrial Diamond Division Limited: *See—*
Caveney, Robert John, 3,929,432.

De Staat der Nederlanden, te dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie: *See—*
Spanjersberg, Arie Adriaan, 3,930,228.

Debras, Maurice: *See—*
Leroy, Pierre; Debras, Maurice; Cadart, Michel; and Saleil, Jean, 3,929,458.

De Brou, Michel; and Den Tandt, Claude, to PB Gelatines. Gelatin compositions. 3,930,052, Cl. 426-576.000.

Dec International Inc.: *See—*
Schluckbier, Gary W., 3,929,103.

Deerfield, Alan J.: *See—*
Wallach, Steven J.; Deerfield, Alan J.; and Nissen, Stanley M., 3,930,232.

Deering Milliken Research Corporation: *See—*
Farmer, Larry B.; Hendrix, James E.; and Kuhn, Hans H., 3,929,406.
Gilpatrick, Michael W., 3,930,096.
Hendrix, James E.; and Kuhn, Hans H., 3,929,013.

Deets, Gary L.: *See—*
Bak, Bruce S.; Deets, Gary L.; and Pokigo, Francis J., 3,929,722.

Deguchi, Takashi: *See—*
Yamahara, Takeshi; Deguchi, Takashi; and Nakamura, Shinji, 3,929,773.

Degueldre, Louis; Gobillon, Yves; Clerbois, Lucien; and Bourgeois, Louis, to Solvay & Cie. Catalytic material for electrodes. 3,929,608, Cl. 204-290.00F.

Dell, Hans-Dieter: *See—*
Becker, Karl Heinz; Boltze, Karl-Heinz; Dell, Hans-Dieter; and Seidel, Peter-Rudolf, 3,930,003.

Dell'Amico, Daniela Belli; and Calderazzo, Fausto, to Snamprogetti S.p.A. Process for the preparation of carbonyl derivatives. 3,929,973, Cl. 423-417.000.

Delpla, Claude, to Societe Generale de Fonderie. Thermostatic mixing apparatus and a related method for regulating temperature. 3,929,283, Cl. 236-12.00R.

Delta F Corporation: *See—*
Gallagher, John P., 3,929,587.

Deltrol Corporation: *See—*
Harris, John L., 3,930,132.

Demole, Edouard P., to Firmenich S.A. Flavouring and perfuming ingredient. 3,929,839, Cl. 260-347.800.

Demozay, Daniel: *See—*
Pillon, Daniel; Ducret, Jacques; and Demozay, Daniel, 3,929,805.

Denevi, Pietro G.; DiDuca, Mark B.; Slane, Billy J.; and Vence, Thomas D., to Vista Chemical & Fiber Products Inc. Apparatus for reducing preconditioned garbage to a clinkerless combustible. 3,929,628, Cl. 209-36.000.

Denis, Albert P. Anchor studs and shear connectors used in welding. 3,930,136, Cl. 219-99.000.

Dennison, John Philip: *See—*
Davies, Peter Wesley; and Dennison, John Philip, 3,929,467.

Dennison Manufacturing Company: *See—*
Perlis, Barry R.; and Nelson, Michael E., 3,929,480.

Dent, Kenneth Henry; and Challender, Ronald Scott, to United Kingdom Atomic Energy Authority. Apparatus for carrying out ultrasonic inspection of pressure vessels. 3,929,007, Cl. 73-67.80S.

Den Tandt, Claude: *See—*
De Brou, Michel; and Den Tandt, Claude, 3,930,052.

Dentsply Research & Development Corporation: *See—*
Gonser, Donald I., 3,929,137.

Denunzio, Anthony, to Spector, George. Sanding cone. 3,928,948, Cl. 51-379.000.

Denzel, Theodor; and Hoehn, Hans, to E. R. Squibb & Sons, Inc. Derivatives of 1H-triazolo [4,5-c]pyridine-7-carboxylic acids and esters. 3,929,812, Cl. 260-295.50B.

Derleth, Helmut: *See—*
Kuhrt, Winfried; Derleth, Helmut; and Fischer, Hermann, 3,929,682.

Derrick Manufacturing Corporation: *See—*
Ennis, Robert E.; and Derrick, Robert G., 3,929,642.

Derrick, Robert G.: *See—*
Ennis, Robert E.; and Derrick, Robert G., 3,929,642.

De Simone, Robert S.; and Ramsden, Hugh E., to Rhodia, Inc. Process for the selective allylation of ortho alkoxy phenols. 3,929,904, Cl. 260-613.00D.

Deutsch Fastener Corporation: *See—*
Gulistan, Bulent, 3,929,360.

Deutsch, Ralph, to Nippon Gakki Seizo Kabushiki Kaisha. Production of glide and portamento in an electronic musical instrument. 3,929,053, Cl. 84-1.240.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Biberbach, Peter; Dietschmann, Werner; and Lubke, Hans-Joachim, 3,929,595.
Janzon, Karl Heinz; Weigert, Wolfgang; Hein, Hilmar; Mechler, Helmut; and Meyer-Simon, Eugen, 3,929,907.

Deutsche Texaco Aktiengesellschaft: *See—*
Flis, Klaus-Jurgen, 3,929,656.

Deutsche Vergaser GmbH & Co. Kommanditgesellschaft: *See—*
Chattopadhayay, Asoke; and Schmidt, Karl, 3,929,114.

Dever, John Alden, to Honeywell Inc. Function generator circuit. 3,930,202, Cl. 328-142.000.

Devers, Melvin W.; and Felske, William L., to General Motors Corporation. Cast in place gas turbine containment ring and method of manufacture. 3,928,963, Cl. 60-39.660.

Devillers, Julien Albert, to Intercontinental Trading Company - Intraco. Apparatus for machining the angles of a plate. 3,928,945, Cl. 51-80.00A.

DeVincent, Patsy; Falkowski, John A.; and Wiechart, John F., to General Motors Corporation. Tube to block mounting assembly. 3,929,356, Cl. 285-305.000.

DeVincent, Patsy; and Wiechart, John F., to General Motors Corporation. Quick connect coupling with tandem snap rings. 3,929,357, Cl. 285-319.000.

De Vore, Ellen G., to Pierce, Louis B. Head rest. 3,929,309, Cl. 248-118.000.

Diagnostic Instruments, Inc.: *See—*
Hindell, Sidney E., 3,930,156.

Diamond International Corporation: *See—*
Reifers, Richard F., 3,929,564.

Diamond, Martin J.: *See—*
Freedman, Bernard; and Diamond, Martin J., 3,929,723.

Diamond Shamrock Corporation: *See—*
Miller, Robert W.; and Howell, Samuel Garry, 3,929,702.

Dibley, Hugh P. K. Flight path calculator. 3,929,279, Cl. 235-88.00N.

Dick, George H.; and Madden, Thomas J., Jr., to A. B. Dick Company. Ink monitoring and automatic fluid replenishing apparatus for ink jet printer. 3,930,258, Cl. 346-75.000.

Dickinson, Peter D.: *See—*
Blejwas, Walter T., Jr.; and Dickinson, Peter D., 3,930,250.

DiDuca, Mark B.: *See—*
Denevi, Pietro G.; DiDuca, Mark B.; Slane, Billy J.; and Vence, Thomas D., 3,929,628.

Diebel, Leverne G., to Clow Corporation. Method of assembling a thermoplastic sleeve onto a pipe or the like. 3,929,538, Cl. 156-86.000.

Diebolt, Edwin J.; and Hendrickson, Roger A., to Ball Corporation. Tubular hinge assembly. 3,929,165, Cl. 138-121.000.

Diesel Kiki Kabushiki Kaisha: *See—*
Kawase, Koichi; and Suzuki, Yasuhide, 3,929,113.

Dieter Haubold Industrielle Nagelgerate: *See—*
Lange, Wilfried, 3,929,056.

Dietmann, Karl: *See—*
Fauland, Erich; Kampe, Wolfgang; Stach, Kurt; Stork, Harald; and Dietmann, Karl, 3,929,764.
Popelak, Alfred; Kampe, Wolfgang; Thiel, Max; Dietmann, Karl; and Sponer, Gisbert, 3,929,793.

Dietschmann, Werner: *See—*
Biberbach, Peter; Dietschmann, Werner; and Lubke, Hans-Joachim, 3,929,595.

Digital Systems, Inc.: *See—*
Marantette, William F., 3,930,150.

Di Grasso, Leonard: *See—*
Good, William E.; Di Grasso, Leonard; and Hoffman, James D., 3,928,906.

Dillon, Charles B.: *See—*
Burleson, Cuba L.; and Dillon, Charles B., 3,929,353.

DIM S.A.: *See—*
Giberstein, Bernard, 3,928,989.

Dimitri, Mitchell S.; and Falkehag, Sten I., to Westvaco Corporation. Composites of lignin and biologically active materials. 3,929,453, Cl. 71-101.000.

Dinbergs, Kornelius: *See—*
Schollenberger, Charles S.; Dinbergs, Kornelius; and Kelley, Philip C., 3,929,726.

Dinkler, Leonard R., to General Electric Company. Stand-by power system. 3,930,192, Cl. 320-15.000.

Dipl.-ing. Rudolf Konwitschny: *See—*
Stenz, Rudolf, 3,928,990.

Distillers Company, Limited, The: *See—*
Dunnet, William, 3,930,042.

DiVito, Ronald J.: *See—*
Steck, Howard A.; and DiVito, Ronald J., 3,930,249.

Dix, C. Hewitt: *See—*
Fort, J. Robert; Westphal, James A.; Dix, C. Hewitt; and Juiles, Donald R., 3,930,145.

Dixon, Babette, Trustee: *See—*
Dixon, Paul H., 3,929,176.

Dixon, Paul H., to Dixon, Babette, Trustee. Machine for automatically driving threaded fasteners. 3,929,176, Cl. 144-32.000.

Dixon, Rolland E., to Phillips Petroleum Company. Process for making synthetic fuel gas from crude oil. 3,929,430, Cl. 48-211.000.

Dobkin, Robert C., to National Semiconductor Corporation. Input supply independent circuit. 3,930,172, Cl. 307-297.000.

Dohgane, Iwao: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihito, 3,929,910.

Dohnert, Edward H., to Ecodyne Corporation. Water treating apparatus. 3,929,640, Cl. 210-195.000.

Doi, Hiroshi: *See—*
Kanomata, Ichiro; Doi, Hiroshi; and Tamura, Hifumi, 3,930,155.

Doig, Kingsley Ferguson: *See—*
Pittie, Willem Hubert; Overbeek, Gerhardus; and Doig, Kingsley Ferguson, 3,929,469.

Dolfini, Joseph E.: *See—*
Perrella, Donald J.; and Dolfini, Joseph E., 3,929,777.

Doll, Franz, to Grohe, Bernd. Thermostat for controlling a liquid mixer. 3,929,282, Cl. 236-12.00R.

Dombroski, John R.; and Caldwell, John R., to Eastman Kodak Company. Saturated polyester useful as low shrink additive for molding compositions containing unsaturated polyesters. 3,929,868, Cl. 260-475.00P.

Domtar Limited: *See—*
Akkerman, Allardus A., 3,929,274.

Donaldson, Desmond M.; and Millard, Gregory S. T., to Borg-Warner Corporation. Fluid diverter device with pressure relief valve. 3,929,643, Cl. 210-117.000.

Dorcfeev, Vyacheslav Semenovich: *See—*
Ioffe, Benyamin Alexandrovich; Kalnin, Robert Karlovich; Dorcfeev, Vyacheslav Semenovich; Sirotenko, Viktor Georgievich; Larin, Vladimir Borisovich; Sermons, Gunar Yanovich; and Shevchenko, Alexandr Alexandrovich, 3,930,212.

Dorleijn, Jan Willem Frederik: *See—*
Druyvesteyn, Willem Frederik; and Dorleijn, Jan Willem Frederik, 3,930,242.

Dornier System GmbH.: *See—*
Kreeb, Helmut; Hauser, Gerhard; and Kogler, Klaus, 3,929,136.

Dovman, Nathan. Jalousie louver bracket. 3,928,937, Cl. 49-403.000.

Dow Chemical Company, The: *See—*
Abdallah, Abdulmuniem H.; and Shea, Philip J., 3,930,019.
Davies, Thomas Ellis; and Hopkins, Hubert Brian, 3,929,936.
Leddy, James J.; and Gritzner, Gerhard, 3,929,506.
Niles, Earl Thomas, 3,929,530.
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Steward, David L.; and Tong, Wen-Hong, 3,929,991.

Dowell, Arthur M., Jr.: *See—*
Burke, Noel I.; Dowell, Arthur M., Jr.; Talty, Robert D.; and Kremer, Kenneth J., 3,930,035.

Dowty Mining Equipment Limited: *See—*
Parker, James Eric; and Hill, Nigel, 3,928,981.

Drabek, Jozef, to Ciba-Geigy Corporation. Dithiophosphoric acid esters. 3,929,817, Cl. 260-307.00C.

Drace, Lawrence V. Pants hanging apparatus. 3,929,233, Cl. 214-1.00R.

Drake, Charles A., to Phillips Petroleum Company. Sulfolane or aqueous sulfolane as diluent for preparation of unsaturated nitriles from lower unsaturated nitriles and olefins. 3,929,860, Cl. 260-465.900.

Dravo Corporation: *See—*
Malcolm, Donald B., 3,929,219.

Drelich, Arthur H.; and Lukacs, George J., to Johnson & Johnson. Migration control resin compositions and methods of using the same on porous materials. 3,930,073, Cl. 427-341.000.

Drelich, Arthur H.; and Lukacs, George J., to Johnson & Johnson. Synthetic resin compositions and methods of applying the same to porous materials to control migration thereon. 3,930,074, Cl. 427-341.000.

Dresser Industries, Inc.: *See—*
Sharki, Martin James, 3,929,014.
Shieh, Ming K., 3,930,174.

Druyvesteyn, Willem Frederik; and Dorleijn, Jan Willem Frederik, to U.S. Philips Corporation. Magnetic device having domains. 3,930,242, Cl. 340-174.0TF.

DSO "Textil": *See—*
Petrov, Georgi Mitov; Iliev, Iliya Marinov; and Ilov, Rangel Georgiev, 3,928,957.

Dubovitsky, Fedor Ivanovich: *See—*
Volkova, Leman Mustafa Kyzy; Korolev, Gennady Vladimirovich; Dubovitsky, Fedor Ivanovich; Trostyanskaya, Irina Ivanovna; Rappoport, Leonid Yakovlevich; Petrov, Gennady Nikolaevich; Shestakovsky, Mikhail Fedorovich; Yakubov, Renat Dovletovich; and Maximov, Sergei Mikhailovich, 3,929,731.

DuBrow, Paul L.; and Frisque, Alvin J., to Nalco Chemical Company. Use of water-in-oil emulsions of water soluble vinyl addition polymers to improve the efficiency of jet powered ships. 3,929,088, Cl. 115-14.000.

Ducret, Jacques: *See—*
Pillon, Daniel; Ducret, Jacques; and Demozay, Daniel, 3,929,805.

DuFaure, Pierre: *See—*
Bouillon, Claude; DuFaure, Pierre; and Rosenbaum, Georges, 3,929,986.

Duke, Roy B., to Marathon Oil Company. Recovery of organic matter from organic mineral-containing deposits. 3,929,193, Cl. 166-303.000.

Dukek, William G., to Exxon Research & Engineering Co. Electrostatic charge reduction in filter-separators. 3,929,641, Cl. 210-73.000.

Dunn, Wendell E., Jr., to Titanium Technology, N.V. Novel titanium dioxide composition. 3,929,501, Cl. 106-300.000.

Dunnet, William, to Distillers Company, Limited, The. Production of vodka. 3,930,042, Cl. 426-475.000.

Dunwood Development Corporation: *See—*
Wood, Ralph E., 3,929,606.

Du Pont de Nemours, E. I., and Company: *See—*
Beske, Grant A., 3,929,658.
Beyer, Elmo M., Jr.; and Quebedeaux, Bruno, Jr., 3,929,447.
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Cooper, Terence Alfred; and Khan, Ausat Ali, 3,929,752.
Cumbo, Charles C.; and Bhatia, Kamlesh K., 3,929,915.
D'Alelio, Gaetano F., 3,929,713.
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Graham, Boynton, 3,929,659.
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Higgins, James Francis, 3,929,500.
Hochberg, Seymore, 3,929,693.
Klimaszewski, Charles Stanley, Jr., 3,929,943.
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Moore, Albert Lloyd; and Tang, Walter Kwei-Yuan, 3,929,934.
Patterson, Frank Knowles, 3,929,674.
Short, Oliver Alton, 3,930,093.
Squire, Edward Noonan, 3,929,889.
Streicher, Michael A., 3,929,473.
Taub, Steven I., 3,929,968.
Weaver, Thomas Dean, 3,929,772.

Duranleau, Roger G.; and Larkin, John M., to Texaco Inc. Preparation of alkylamides. 3,929,845, Cl. 260-404.000.

Durden, John Apling, Jr. Carbamate pesticidal compositions. 3,930,002, Cl. 424-246.000.

Durling, Harold, to Midland-Ross Corporation. Pneumatic brake system for a tractor-trailer vehicle including an anti-lock control valve in the trailer brake system. 3,929,381, Cl. 303-21.00F.

Durr, Dieter; and Pissiotas, Georg, to Ciba-Geigy Corporation. Phenylformamidine derivatives. 3,929,883, Cl. 260-564.0RF.

Dursch, Walter: *See—*
Beermann, Claus; Knittel, Volker; and Dursch, Walter, 3,929,874.

Dynafoil, Inc.: *See—*
Cline, David J., 3,929,084.

Dynapol: *See—*
Dale, James A.; and Leonard, William J., 3,930,047.

E. R. Squibb & Sons, Inc.: *See—*
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Breuer, Hermann; and Treuner, Uwe D., 3,929,778.
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Perrella, Donald J.; and Dolfini, Joseph E., 3,929,777.
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Eagle-Picher Industries, Inc.: *See—*
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Eastman, Brian G.: *See—*
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Berntsson, Peder Bernhard; Brandstrom, Arne Elof; Carlsson, Enar Ingemar; Carlsson, Stig Ake Ingemar; Ek, Lars; Samuelsson, Benny Roger; Sjostrand, Sven Erik; Strandlund, Gert Christer; and Ablad, Bengt Arne Hjalmar, 3,930,016.

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Ellman, Irving A. Tooth anchoring means and method. 3,928,915, Cl. 32-15.000.

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Engelman, Elaine Green; and Neri, Dorothy. Very low carbohydrate baked product. 3,930,055, Cl. 426-644.000.

Ennis, Robert E.; and Derrick, Robert G., to Linatex Corporation of America; and Derrick Manufacturing Corporation. Dewatering system. 3,929,642, Cl. 210-113.000.

Epstein, Norman, to Norman Lock Co. Pickproof cylinder lock. 3,928,993, Cl. 70-419.000.

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Ferguson, Alisdair Cullen; McGregor, John; and MacPherson, Alastair George, to Burroughs Corporation. Small micro program data processing system employing multi-syllable micro instructions. 3,930,236, Cl. 340-172.500.
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Findlay, Donald Urquhart; McCaffrey, Francis Hamnet Garland; and Scuffell, Derek Edgar Alexander, to Canadian Industries Limited. Method for producing oriented plastic shotshells. 3,929,960, Cl. 264-292.000.
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Freedman, Bernard; and Diamond, Martin J., to United States of America, Agriculture. Photodegradable polyolefins containing sulfenyl halides. 3,929,723, Cl. 260-45.70S.

French, Park, to Sterndent Corporation. Variable intensity dental light. 3,930,149, Cl. 240-41.150.
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Fujita, Susumu, to Fuji Photo Film Co., Ltd. Shutter speed control means. 3,930,262, Cl. 354-267.000.
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Koyama, Masao; Akashi, Hiromitsu; Nishikawa, Yoichi; Fujiwara, Susumu; and Okada, Takao, 3,930,141.
Fujiwara, Tadahiro: *See—*
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Fukita, Tadazumi: *See—*
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Fyans Frank; and Biroczky, Steve I. Dye tube for compressive packaged dyeing. 3,929,301, Cl. 242-118.110.
G. D. Searle & Co.: *See—*
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G.D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Seragnoli: *See—*
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Galantay, Eugene E., to Sandoz, Inc. 1-Phenyl-2, 3-butadien-1-ols. 3,929,902, Cl. 260-612.00R.
Gallagher, John P., to Delta F Corporation. Apparatus and method for maintaining a stable electrolyte in oxygen analysis. 3,929,587, Cl. 204-1.00T.
Gallagher, Ruth E., to Stauffer Chemical Company. Rigid plastic admixed with crosslinked acrylate/vinyl chloride interpolymer. 3,929,933, Cl. 260-876.00R.
Gambopoulos, Theodor: *See—*
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Gammans, William J., to Eastman Kodak Company. Oxidation of polyethylene glycols to dicarboxylic acids. 3,929,873, Cl. 260-531.00R.
Gans, Charles C. Knock-down sofa. 3,929,375, Cl. 297-440.000.
Ganzinotti, Jean Victor, to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes. Inflatable water-retaining barrier. 3,928,980, Cl. 61-29.000.
Gara, Siva K.: *See—*
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Garcia, Paulina P.: *See—*
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Gattuso, Marion J., to Universal Oil Products Company. Additives for hydrocarbonaceous materials. 3,929,655, Cl. 252-51.50R.
Gaudry, Paul Emile, to Consolidated Foods Corporation. Seal for disposable dust bags for vacuum cleaners. 3,929,437, Cl. 55-367.000.
Gaugenmaier, Karl: *See—*
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Gawlinski, Louis S. Inclining sun chair. 3,929,373, Cl. 297-19.000.
Gay, Sylvester Parker, Jr. Method and means for producing stereoscopic contour maps. 3,928,925, Cl. 35-40.000.
Gaylord, Norman G., to Dart Industries Inc. Process for promoting polyolefin adhesion. 3,929,550, Cl. 156-306.000.
Gazzarrini, Franco; Aguzzi, Paolo; and Corsini-Mena, Adriana, to Montedison S.p.A. Process for preparing luminescent materials based on oxysulphides. 3,929,665, Cl. 252-301.40S.
Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H.: *See—*
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GeGa Gesellschaft fur Gasetechnik Lotz KG: *See—*
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Gehrig, Heinz; Linge, Hermann; and Wagner, Sepp, to BASF Farben and Fasern A.G. Non-woven webs of filaments of synthetic high molecular weight polymers and process for the manufacture thereof. 3,929,542, Cl. 156-167.000.
Geiger, Willard L., to Erico Rail Products Company. Railway signal system with speed determined movement detector. 3,929,307, Cl. 246-130.000.
Gejyo, Tetsuo: *See—*
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Gelbein, Abraham P.; Sze, Morgan C.; and Paustian, John E., to Lummus Company, The. Production of pyridine nitriles and carboxylic acids. 3,929,811, Cl. 260-295.50R.
Gendron, Walter P. Die counter plate or make-ready for forming box blanks. 3,929,059, Cl. 93-58.300.
General Electric Company: *See—*
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Gerecke, Max; Kaplan, Jean-Pierre; and Kyburz, Emilio, to Hoffmann-La Roche Inc. 2 Substituted-10[4-(2-oxazolidi none-lower alkyl)]-piperazine-dibenzo[b,f]thiepins. 3,929,791, Cl. 260-268.0TR.
Gerlach, Pierre; and Hoet, Roger, to Thomson-CSF. Grid-type electronic tube. 3,930,179, Cl. 313-296.000.
Gerlach, Robert L.; and Rossini, George, to Varian Associates. Ion beam apparatus with separately replaceable elements. 3,930,163, Cl. 250-398.000.
Gerrard Industries Limited: *See—*
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Gershberg, David Benedict, to American Cyanamid Company. High molecular weight acrylamide polymer production by high solids solution polymerization. 3,929,751, Cl. 260-89.70R.
Gesslein, Georg. By carriage. 3,929,372, Cl. 296-28.00B.
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Giberstein, Bernard, to DIM S.A. Method of manufacture of tubular knitted articles, and articles, particularly tights, obtained by the said method. 3,928,989, Cl. 66-177.000.
Gibson, Louis J. Support means for stacks of articles. 3,929,371, Cl. 296-24.00R.
Gilbert, John B.: *See—*
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Girling Limited: *See—*
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Gittos, Maurice Ward: *See—*
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Givler, John D.; Schlotman, Walter F.; and Sipos, David L., to Stanadyne, Inc. Portable shower head. 3,929,287, Cl. 239-102.000.
GKN Transmissions Limited: *See—*
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Gloriod, Pierre; Levresse, Bernard; and Machon, Jean-Pierre, to Ethylene Plastique. Process for the preparation of ethylene polymers by both free-radical and ionic polymerisation reactions. 3,929,754, Cl. 260-94.90E.
Gluecksmann, Alfred: *See—*
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Goff, Richard E., Jr.: *See—*
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Good, Philip C.: *See—*
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Good, William E.; Di Grasso, Leonard; and Hoffman, James D., to Kelsey-Hayes Company. Method of making a turbine regenerative seal. 3,928,906, Cl. 29-460.000.
Goodrum, John W., to United States of America, Air Force. Periodically and alternately accelerating and decelerating rotation rate of a feed crystal. 3,929,557, Cl. 156-617.000.
Goodwin, Frank E. Freeze protection apparatus. 3,929,154, Cl. 137-344.000.
Goodyear Tire & Rubber Company, The: *See—*
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Gorham, William F.: *See—*
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Goto, Kenji; and Mitsui, Ryozo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Flow control valve for exhaust gas recirculation system. 3,928,966, Cl. 60-278.000.
Gottlieb, Milton S.: *See—*
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Graefe, Peter U.; Gajewski, Vincent J.; and Jimenez, Ismael A., to Inter-Polymer Research Corporation. Process for preparing polyurethanes employing a mixture of butanediol and phenylene diethanolamine as a chain extender. 3,929,730, Cl. 260-77.5AN.
Graf, Carl R.: *See—*
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Graham, Boynton, to Du Pont de Nemours, E. I., and Company. Cross-linked rubber/resin binders for chromium dioxide recording members. 3,929,659, Cl. 252-62.540.
Graham, Gerald A. Fire hydrant cap and actuating tool therefor. 3,929,152, Cl. 137-296.000.
Graham, John Wayne; Muecke, Thomas Wayne; and Cooke, Claude Everett, Jr., to Exxon Production Research Company. Method for treating subterranean formations. 3,929,191, Cl. 166-276.000.
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Granquist, William T., to N.L. Industries, Inc. Hydrocarbon cracking utilizing laminar heavy metal aluminosilicates. 3,929,622, Cl. 208-120.000.
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Grass, Alfred. Drawer guide for heavy drawers. 3,929,387, Cl. 308-3.800.
Grasselli, Robert K.; and Friedrich, Maria S., to Standard Oil Company, The. Process for the oxidation of olefins to unsaturated aldehydes and catalysts therefore. 3,929,899, Cl. 260-604.00R.
Grasso, Charles Paul: *See—*
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Gray, Don N.; and Guilbault, George G., to Owens-Illinois, Inc. Method and apparatus using solid sensor electrode. 3,929,609, Cl. 204-1.00T.
Gray, Thomas H., to Allegheny Ludlum Industries, Inc. Glass-metal sealing alloy. 3,929,470, Cl. 75-122.000.
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., to Millmaster Onyx Corporation. Microbiocidal polymeric quaternary ammonium compounds. 3,929,990, Cl. 424-78.000.
Green, John Hugh, to International Telephone and Telegraph Corporation. Two relay line circuit. 3,930,126, Cl. 179-19.000.
Green, Raymond J.; and Stevenson, Paul D., to General Motors Corporation. Rotary engine oil tank vent. 3,929,117, Cl. 123-196.00R.
Greene, Michael L.; and Moss, George J., to United States of America, Navy. Line motion and water current disc sensor. 3,929,015, Cl. 73-170.00A.
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Gregson, Leslie, to Imperial Chemical Industries Limited. Pressure-sensitive transfer elements. 3,930,099, Cl. 428-315.000.
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Grier, John D., to Owens-Illinois, Inc. Printing method and apparatus with wire printing elements. 3,929,070, Cl. 101-298.000.

Griffith, Robert M.; and Parkinson, Christopher, to Allied Colloids Limited. Materials and processes for flotation of mineral substances. 3,929,629, Cl. 209-167.000.
Griffith, William A.: *See—*
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Grimmett, Earl S., to United States of America, Energy Research and Development Administration. Production of charcoal from sawdust in a fluidized bed. 3,929,585, Cl. 201-2.500.
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Gruffaz, Max; and Rollet, Bernard, to Rhone-Poulenc, S.A. Mullticellular polymers made from the reaction product of maleic anhydride with a polyimine. 3,929,687, Cl. 260-2.5EP.
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Guarnieri, C. Richard; Lee, Kenneth; and Onton, Aare, to International Business Machines Corporation. Tailored anisotropy magnetic bubble domain material. 3,930,241, Cl. 340-174.0TF.
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Guenst, William C., Jr.; and Litschi, Gerold, to W. R. Grace & Co. Plate conveying apparatus. 3,929,046, Cl. 83-409.000.
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Gunew, Dimiter Stefanoff; and Herniman, Ronald John, to ICI Australia Limited. Method and apparatus for monitoring materials dissolved or suspended in liquid. 3,929,004, Cl. 73-61.10C.
Gunzert, Willi: *See—*
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Guthrie, Larry E., to ACF Industries, Incorporated. Non-floating seat structure for expanding gate valves. 3,929,316, Cl. 251-196.000.
Gutshall, Charles E., to Elco Industries, Inc. Fastening element adapted for tightening to predetermined torque. 3,929,054, Cl. 85-61.000.
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Gutzwiller, Juerg Albert Walter; and Uskokovic, Milan Radoje, to Hoffman-La Roche Inc. Processes and intermediates for quinine, quinidine, isomers and derivatives thereof. 3,929,795, Cl. 260-284.000.
H. B. Zachry Co.: *See—*
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Haass, Adolf, to Siemens Aktiengesellschaft. Circuit arrangement for adjusting the phase state of a timing signal. 3,930,203, Cl. 328-155.000.
Habig, Kurt; and Baessler, Konrad, to Hoechst Aktiengesellschaft. Reduction of halonitroaromates using sulfited platinum on carbon catalysts. 3,929,891, Cl. 260-580.000.
Habu, Teiji; Nakajima, Tomio; Sakamoto, Eiichi; Kadokura, Kenzi; Yoshida, Kyusaku; and Machida, Katsutoshi, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic material containing a sensitizing and stabilizing combination of a polyalkylene oxide, a tetrazaindene and a resorcinol derivative. 3,929,486, Cl. 96-76.00R.
Hackett, David E.; and Keske, Frank E., to Caterpillar Tractor Co. Shaft journal bearing lubrication system. 3,929,394, Cl. 308-121.000.
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Hadni, Armand; and Thomas, Robert, to Agence Nationale de Valorisation de la Recherche (ANVAR). Ferroelectric memories and method of activating the same. 3,930,240, Cl. 340-173.200.
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Hajos, Zoltan George, to Hoffmann-La Roche Inc. Stereospecific total steroidal synthesis via substituted C/D-trans indanones. 3,929,876, Cl. 260-544.00L.
Haley, Claude T., to United States of America, General Counsel-Code GP. Clock setter. 3,929,364, Cl. 294-19.00R.
Hall, Claude E.; and Stalvey, Louis L., to Monsanto Company. Binders for printing inks. 3,929,701, Cl. 260-23.0ST.
Hall, Ernest M., Jr., to Walker-Hall-Sears, Inc. Method of making geophones having matched sensitivities. 3,930,216, Cl. 340-5.00C.
Hall, Ernest M., Jr., to Walker-Hall-Sears, Inc. Geophone casings. 3,930,218, Cl. 340-17.000.
Hall, John B.; and Sanders, James Milton, to International Flavors & Fragrances Inc. Perfume compositions and perfurme articles containing one isomer of an octahydrotetramethyl acetonaphthone. 3,929,677, Cl. 252-522.000.
Hall, John B., to International Flavors & Fragrances Inc. 4-Acetyl-2,3-dimethyl-6-isopropenylmethyl-cyclohexene. 3,929,895, Cl. 260-586.00R.
Haller, Walter, to Escher Wyss Limited. Foundry mixing machine. 3,929,320, Cl. 259-165.000.
Hallhagen, Sven Goran: *See—*
Carlsson, Per Arvid Emil; Corredi, Hans Rudolf; Hallhagen, Sven Goran; and Junggren, Ulf Krister, 3,929,871.
Hamblin, Peter Collen: *See—*
Brewster, Phillip William; Hamblin, Peter Collen; and Rutherford, James Pennycook, 3,929,654.
Hamilius, Albert, to Centre de Recherches Metallurgiques— Centrum voor Research in de Metallurgie. Removal of slag from a metallurgical vessel. 3,929,638, Cl. 210-65.000.
Hamilton, Brian K., to Allied Chemical Corporation. Pyrotechnic cool gas generation method for inflatable structure. 3,928,964, Cl. 60-219.000.
Hamm, Philip C.; and Schafer, David E., to Monsanto Company. Herbicidal compositions and methods. 3,929,450, Cl. 71-86.000.
Hammann, Ingeborg: *See—*
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Hancock Brick and Tile Company: *See—*
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Hancock, John Douglas; and Hepworth, Matthew A., to Magnesium Elektron Limited. Sintered zirconia bodies. 3,929,498, Cl. 106-57.000.
Hand, John W., to Mintech Corporation. Process for extracting water and energy from synthesis gas. 3,928,973, Cl. 60-648.000.
Hanna Mining Company, The: *See—*
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Hansch, Ferdinand: *See—*
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Hanslik, Wilhelm, to Krauss-Maffei Aktiengesellschaft. Multiscrew extruder. 3,929,322, Cl. 259-192.000.
Hansson, Tomas Wilhelm. Combination implement for dental use. 3,928,916, Cl. 32-69.000.
Hara, Isao: *See—*
Sugiyama, Noboru; Takahashi, Masahiro; Kanamori, Hirosuke; Sato, Ken; Hirayama, Yoshio; Mikamo, Masahiro; Takahashi, Toshiro; Nagano, Toshihiro; Kaneda, Kazuyoshi; and Hara, Isao, 3,929,593.

Hara, Satoshi; Akino, Morio; and Nakagawa, Keizo, to Tokyo Shibaura Electric Co., Ltd. Endless tape transporting device. 3,929,298, Cl. 242-55.19R.
Hardwick, Thomas L. Bandage and method of using same. 3,929,131, Cl. 128-254.000.
Hargest, Thomas S. Method for lymphocyte depletion. 3,929,130, Cl. 128-214.00R.
Harmon, Carlyle, to Johnson & Johnson. Apertured nonwoven fabrics. 3,930,086, Cl. 428-131.000.
Harnden, John D., Jr., to General Electric Company. Incandescent lamps having protection against voltage surges. 3,930,183, Cl. 315-71.000.
Harnden, John D., Jr.: *See—*
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Harper, Ernest A.; and Bailey, Dunn M., to Phillips Petroleum Company. Refrigeration process. 3,929,438, Cl. 62-9.000.
Harris, John L., to Deltrol Corporation. Program centralled, cam operated switch assembly. 3,930,132, Cl. 200-38.00R.
Harris, Norman E.; Umina, Anthony P.; and Westcott, Donald E., to United States of America, Army. Baking powder of improved stability and method of producing same. 3,930,032, Cl. 426-97.000.
Harris Press & Shear Corporation: *See—*
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Harrison, Henry R.: *See—*
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Harrison, Robert S.; Medrick, John D.; and Novroski, Alvin P., to Ford Motor Company. Carburetor cold engine air/fuel mixture enrichment apparatus. 3,929,942, Cl. 261-39.00B.
Hartdegen, Frank J.: *See—*
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Harte, James Richard. Mathematical balance. 3,928,923, Cl. 35-31.00R.
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Hashizume, Astuo; Tsuzuki, Ryuichiro; and Mizushima, Haruo, to Teijin Limited. Method for fire-proofing treatment of fabrics composed of polyester and cellulosic filaments or fibers. 3,930,079, Cl. 427-396.000.
Hastings, Donald R.; and Noss, Jeffrey S., to Nordson Corporation. Apparatus and method for electrostatically spraying highly electrically conductive water-based coating material. 3,929,286, Cl. 239-3.000.
Hasty, William E. Gravity hot water circulating system and flow regulator therefor. 3,929,153, Cl. 137-337.000.
Hattori, Hirotsugu; and Takayama, Yuichiro, to Matsushita Electronics Corporation. Method of manufacturing high breakdown voltage rectifiers. 3,929,531, Cl. 156-3.000.
Hatwell, Henri: *See—*
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Hauck, Frederic Peter; Cimarusti, Christopher M.; and Sundeen, Joseph E., to E. R. Squibb & Sons, Inc. Certain tetrahydronaphthalenes used in the treatment of cardiac arrhythmia. 3,930,022, Cl. 424-330.000.
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Hayakawa, Toshio, to Matsushita Electric Industrial Co., Ltd. Printing mechanism. 3,929,215, Cl. 197-1.00R.
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Hayazaki, Tamotsu: *See—*
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Hayes, Geoffrey, to Toy Development Limited. Board game apparatus. 3,929,337, Cl. 273-134.00C.
Heaphy, Clifford John. Oral hypoglycemic method. 3,929,999, Cl. 424-228.000.
Heatbath Corporation: *See—*
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Hedrich, Loren W., to Gulf Oil Corporation. Method of alleviating dermal toxicity of pesticide compositions. 3,929,449, Cl. 71-82.000.
Heidelberger Druckmaschinen AG: *See—*
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Heimbach, Paul: *See—*
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Heimdal, Ivar Dagfinn; and Skreosen, Ivar, to Norsk Hydro A.S. Apparatus for portioning liquid metal. 3,929,263, Cl. 222-373.000.
Hein, Hilmar: *See—*
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Heinsohn, Howard H., Jr.: *See—*
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Held, Gerhard; and Balle, Walter, to Rheinstahl Aktiengesellschaft. Method and drum for building and shaping blanks for radial-ply tires. 3,929,540, Cl. 156-123.000.
Hellmuth, Werner: *See—*
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Hellner, Lars Ivar; and Norstrom, Lars-Ake. Corrosion-resistant austenitic-ferritic stainless steel. 3,929,520, Cl. 148-37.000.
Henderson Manufacturing Co.: *See—*
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Hendrich, Richard G. Ladder bearing plate. 3,929,208, Cl. 182-108.000.
Hendrickson, Roger A.: *See—*
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Hendrix, James E.; and Kuhn, Hans H., to Deering Milliken Research Corporation. Defect-detecting method and apparatus. 3,929,013, Cl. 73-160.000.
Hendrix, James E.: *See—*
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Henry, Dale Vernon: *See—*
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Henry, H. Clarke; and Gilbert, John B., to Exxon Research & Engineering Co. Hydrocracking extraction process for lubes. 3,929,617, Cl. 208-96.000.
Hepworth, Matthew A.: *See—*
Hancock, John Douglas; and Hepworth, Matthew A., 3,929,498.
Herkes, Frank Edward, to Du Pont de Nemours, E. I., and Company. N,n',n'',n'''-tetrasubstituted malonamidines and salts. 3,929,882, Cl. 260-564.00R.
Herman, Elvin E.: *See—*
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Hervert, George L., to Universal Oil Products Company. Alkylation of hydroxy-substituted aromatic compounds. 3,929,912, Cl. 260-624.00C.
Hess, Hans-Jurgen E.; Czuba, Leonard J.; and Schaaf, Thomas K., to Pfizer Inc. Tetrazolyl derivatives of naturally occurring prostaglandins. 3,929,818, Cl. 260-308.00D.
Hess, Irving J., to Ametek, Inc. Electrodepositing of aluminum. 3,929,611, Cl. 204-14.00N.
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Case, Cecil L., 3,928,955.
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Heyes, Josef. Method of applying a firmly adherent coating of non-metallic substances to an electrically conductive substrate. 3,929,590, Cl. 204-16.000.
Hiasa, Toshihisa; and Ishimard, Hirohisa, to Iwao Engineering Co., Inc. Process of removing ammoniacal nitrogen from waste water. 3,929,600, Cl. 204-149.000.
Hibbel, Josef: *See—*
Schnur, Friedrich; Hibbel, Josef; and Cornils, Boy, 3,929,900.
Hickey, Christopher Daniel Dowling. Flexible containers. 3,929,178, Cl. 150-52.00K.
Hidohira, Yoshihumi, to Mitsui Mining & Smelting Co., Ltd. Electrolytic cell having means for supporting the electrodes on the cell wall and means for shorting out the electrodes. 3,929,614, Cl. 204-242.000.
Hienuki, Atsushi: *See—*
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Higgins, James Francis, to Du Pont de Nemours, E. I., and Company. Chrome yellow pigment with improved thermal stability. 3,929,500, Cl. 106-298.000.
Higuchi, Takeru, to Alza Corporation. Osmotic dispenser. 3,929,132, Cl. 128-260.000.
Higuchi, Takeru; Bodor, Nicolae S.; and Shek, Efraim, to Interx Research Corporation. Novel pro-drug derivatives of pyridinium aldoxime type cholinesterase reactivators and process for preparing same. 3,929,813, Cl. 260-296.00M.
Higuchi, Takeru, to Interx Research Corporation. Pharmaceutical compositions containing a digoxin complex. 3,929,996, Cl. 424-182.000.
Hill, Fredric Martin: *See—*
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Hino, Seiichi: *See—*
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Hiroshi, Miyazakai; Kazuo, Kato; and Michinori, Koyama, to Nippon Kayaku Co., Ltd. Method for the preparation of high purity kallikrein. 3,929,757, Cl. 260-112.50R.
Hirsch, Jean; and Buret, Jean Pierre, to Roussel-UCLAF. Anti-inflammatory glycoprotein compositions and method of use. 3,929,994, Cl. 424-177.000.
Hishinuma, Yukio: *See—*
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Hlavacek, Robert A.: *See—*
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Hobbensiefken, Dean W. Vehicle cab configuration effecting reduction of air drag and enhancing storage space capacity and convenience. 3,929,202, Cl. 180-68.00R.
Hochberg, Seymore, to Du Pont de Nemours, E. I., and Company. Film-forming compositions comprising dispersions of cellulose acetate butyrate or polymethylmethacrylate combined with rubbery particles of crosslinked polyacrylates in liquid carrer. 3,929,693, Cl. 260-17.00R.
Hodge, Robin H., to National Semiconductor Corporation. Integrated circuit package utilizing novel heat sink structure. 3,930,114, Cl. 174-52.0FP.
Hodgkin, Jonathan Howard; Hawthorne, David Geoffrey; Swift, Jean Drummond; and Solomon, David Henry, to Commonwealth Scientific & Industrial Research Organization. Titanium dioxide pigments and fillers. 3,929,502, Cl. 106-300.000.
Hodil, Elmer R., to Olin Corporation. Powder-actuated tool. 3,929,269, Cl. 227-10.000.
Hoechst Aktiengesellschaft: *See—*
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Hoffman, William C.: *See—*
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Hoffmann, Karl H.; Anderson, Donald R.; and Allain, Ronald J., to Nalco Chemical Company. Method of producing a raney copper catalyst and the catalyst so made. 3,929,673, Cl. 252-463.000.
Hoffmann-La Roche Inc.: *See—*
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Leimgruber, Willy; and Weigele, Manfred, 3,929,790.
Metlesics, Werner; and Sternbach, Leo Henryk, 3,929,766.
Hofmann, Dieter Albrecht. Foamed conveyor belt. 3,929,026, Cl. 74-237.000.
Hogan, Gerard T.; and Weik, Kirby B., to Universal Oil Products Company. Vehicle seat with headrest movement responsive to seat back tilting. 3,929,374, Cl. 297-61.000.
Hoglen, Edward L.: *See—*
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Holden, Homer N.; Hunt, James P.; Browning, Vernon D.; Hoglen, Edward L.; and Kleykamp, Donald L., to Dayco Corporation. Method for producing a continuous flexible reinforced tubular conduit. 3,929,957, Cl. 264-150.000.
Holder, Philippe. Automatically inflating and liberating a balloon. 3,929,091, Cl. 116-124.00B.
Holik, Herbert; and Mueller, Karl, to Escher Wyss G.m.b.H. Continuous process for forming webs from fiber suspensions. 3,929,560, Cl. 162-157.00R.
Holland, Gerald F., to Pfizer Inc. Aryl carboxylic acids. 3,929,803, Cl. 260-293.620.
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Honig, Milton L., to Stauffer Chemical Company. Bis(2,3-dibromopropyl)phosphate as a flame retardant for polymers. 3,929,688, Cl. 260-2.5AJ.
Honkanen, Reino Walter. Leak-resistent guage. 3,929,020, Cl. 73-420.000.
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Horn, George M., to United States of America, Navy. Method of assembling a glass spherical segment viewing port to a submarine vessel. 3,929,533, Cl. 156-71.000.
Horne, Frederick H., to Rice Barton Corporation. Humidifier. 3,929,941, Cl. 261-35.000.
Horning, Albert Emerson, to General Electric Company. Silicone pressure sensitive adhesives and tapes. 3,929,704, Cl. 260-29.1SB.

Horowitz, Carl, to Polymer Research Corporation of America. Polymer grafting onto hydrocarbon liquids. 3,929,800, Cl. 260-290.00R.

Hosaka, Hirokazu: *See—*
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Hoskins, David Orville, to Tektronix Inc. Sliding stylus holder for an x-y plotter. 3,930,259, Cl. 346-139.00R.

Hosler, Peter; and Gates, David S., to Sun Research and Development Co. Process for preparation of isomers of 1-cyclohexyl-1,3,3-trimethylhydrindane. 3,929,923, Cl. 260-667.000.

Houlihan, Rosemary, executrix: *See—*
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Houlihan, William F., deceased (by Houlihan, Rosemary, executrix); Newell, Isaac Laird; and La Cosse, Gerald E., to Heatbath Corporation. Composition and method for forming a protective coating on a zinc metal surface. 3,929,514, Cl. 148-6.140.

Howard, James A.; and Kelly, Robert R., to Byron Jackson Inc. System for handling and racking pipe in the hold of a vessel. 3,929,235, Cl. 214-2.500.

Howell, Samuel Garry: *See—*
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Howson-Algraphy Limited: *See—*
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Hsiao, Chih C., to Reagents of the University of Minnesota, The. Inline production control of polymeric film. 3,930,167, Cl. 250-572.000.

Hsu, Ta-Lin; and Hu, Hung Liang, to International Business Machines Corporation. Method and apparatus for stabilizing a bubble domain system. 3,930,243, Cl. 340-174.0TF.

Hsu, Wan-Jean: *See—*
Yokoyama, Henry; Hsu, Wan-Jean; and Poling, Stephen M., 3,930,037.
Yokoyama, Henry; Hsu, Wan-Jean; and Poling, Stephen M., 3,930,038.

Hu, Hung Liang: *See—*
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Huch, Albert: *See—*
Lubbers, Dietrich W.; and Huch, Albert, 3,929,605.

Hudson, Alan George; and Orpwood, John Leonard, to Coates Brothers & Company Limited. Polymerizable polymer compositions. 3,929,698, Cl. 260-22.0CB.

Huerta, James R.; Anderson, Amos R.; and Meyer, Jeffrey G., to Dart Industries Inc. Vanadium organophosphates. 3,929,745, Cl. 260-80.780.

Hughes Aircraft Company: *See—*
Keller, Bruce W.; Hoffman, William C.; and Herman, Elvin E., 3,930,120.

Hughes, John Lawrence; Seyler, Jay Kenneth; and Liu, Robert Chung-Huang, to Armour Pharmaceutical Company. Cyclization of cysteine-containing peptides. 3,929,758, Cl. 260-112.50R.

Hugin Kassaregister AB: *See—*
Lundstrom, Goran Ingemar; Hartmann, Friedrich; and Huijsers, Willem, 3,929,276.

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Hull, David C.: *See—*
McCollum, Anthony W.; and Hull, David C., 3,929,867.

Hulse, George E.; and Kersting, R. James, to ARCO Polymers, Inc. Poly(p-benzenesulfonamide). 3,929,742, Cl. 260-79.30R.

Hunt, James P.: *See—*
Holden, Homer N.; Hunt, James P.; Browning, Vernon D.; Hoglen, Edward L.; and Kleykamp, Donald L., 3,929,957.

Hunt, Joe B.; and Hunt, Nina E. Fluorescent tube changing device. 3,929,365, Cl. 294-21.000.

Hunt, Nina E.: *See—*
Hunt, Joe B.; and Hunt, Nina E., 3,929,365.

Hunter, Willard L.: *See—*
Tress, Jack E.; and Hunter, Willard L., 3,929,459.

Hurd, Gordon, to Avco Corporation. Open screen smoke detector and circuit. 3,930,247, Cl. 340-237.00S.

Hurley, Joseph John, to J & P Coats Limited. Pulley wheels. 3,929,302, Cl. 242-155.00R.

Hurner, Edwin E. Vibration resistant heat exchanger for internal combustion engines. 3,929,187, Cl. 165-52.000.

Hurtig, Gunnar, III: *See—*
Warren, George H.; and Hurtig, Gunnar, III, 3,930,127.

Hynes, John T.; and Vakaleris, Demetrius G., to Kraftco Corporation. Preparation of a low fat cream cheese product. 3,929,892, Cl. 426-582.000.

Ichiryu, Ken; Shigeta, Masayuki; Nakamura, Ichiro; and Kajiwara, Toshiyuki, to Hitachi, Ltd. Thickness control system for a rolling mill. 3,928,994, Cl. 72-8.000.

ICI Australia Limited: *See—*
Gunew, Dimiter Stefanoff; and Herniman, Ronald John, 3,929,004.
Serban, Alexander; and Engel, Phillip Knox, 3,929,837.

ICI United States Inc.: *See—*
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Kuehn, Erich, 3,929,929.

Ide, Yadenji: *See—*
Mihara, Hiromichi; Yajima, Yuzuru; and Ide, Yadenji, 3,930,106.

Idel, Vladimir Viktorovich. Band-saw sharpening machine. 3,929,040, Cl. 76-37.000.

Igenbergs, Eduard B.: *See—*
United States of America, National Aeronautics and Space Administration; Shriver, Edward L.; and Igenbergs, Eduard B., 3,929,119.

Iizuka, Shimpei; and Ishimoto, Katsumi, to Sumitomo Shipbuilding & Machinery Co., Ltd. Method and apparatus for fillett welding longitudinal members of framed structures. 3,930,137, Cl. 219-125.00R.

Ikeda, Hisao, to Matsushita Electric Industrial Co., Ltd. Channel indicating device for television receiving sets. 3,929,093, Cl. 116-124.20R.

Iliev, Iliya Marinov: *See—*
Petrov, Georgi Mitov; Iliev, Iliya Marinov; and Ilov, Rangel Georgiev, 3,928,957.

Illinois Tool Works Inc.: *See—*
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Ilov, Rangel Georgiev: *See—*
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Imada, Seiya: *See—*
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Imperial Chemical Industries Limited: *See—*
Aldridge, David Cecil; Borrow, Antony; and Gerring, Ernest Edward Lawrence, 3,930,014.
Atherton, John Heathcote; Plumb, John Beckett; and Stuart, Ronald Sangster, 3,929,851.
Austin, Peter William, 3,929,771.
Barlow, Charles Brian; and Tomlin, Clive Dudley Spencer, 3,930,007.
Gregson, Leslie, 3,930,099.
Krause, Janusz Josef Henryk, 3,929,607.
Morris, Cyril; and Topham, Arthur, 3,929,405.
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Inamoto, Yoshiaki: *See—*
Nakagawa, Yunosuke; Inamoto, Yoshiaki; and Aigami, Koji, 3,929,661.

Inazuka, Shinichi; and Ninagawa, Sadayoshi, to Ajinomoto Co., Inc. Urocanic acid amide derivatives. 3,929,819, Cl. 260-309.000.

Industrie Pirelli S.p.A.: *See—*
Pasini, Franco, 3,930,112.

Ingenieurburo fur Maschinebau Jakob Muller: *See—*
Muller, Jakob, 3,929,170.

Ingersoll, Clyde E., to Williams Gold Refining Company Incorporated. Tarnish resistant silver based dental casting alloy capable of bonding to porcelain. 3,929,474, Cl. 75-172.00G.

Ingersoll, Clyde E., to Williams Gold Refining Company Incorporated. Tarnish resistant silver based dental casting alloy having superior improved ductility and work hardening characteristics. 3,929,475, Cl. 75-173.00R.

Inomata, Jihei; Hino, Seiichi; and Tani, Tatsuo, to Mitsubishi Chemical Industries, Ltd. Process for preparing a polycarboxydiene polymer. 3,929,914, Cl. 260-635.00E.

Inoue, Kazuo, to Kabushiki Kaisha Komatsu Seisakusho. Device for setting the inclination of the bucket in a bulldozer. 3,929,245, Cl. 214-764.000.

Institut Fiziki Akademii Nauk Latviiskoi SSR: *See—*
Ioffe, Benyamin Alexandrovich; Kalnin, Robert Karlovich; Dorcfeev, Vyacheslav Semenovich; Sirotenko, Viktor Georgievich; Larin, Vladimir Borisovich; Sermons, Gunar Yanovich; and Shevchenko, Alexandr Alexandrovich, 3,930,212.

Institutes of Medical Sciences, The: *See—*
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Inter-Polymer Research Corporation: *See—*
Graefe, Peter U.; Gajewski, Vincent J.; and Jimenez, Ismael A., 3,929,730.

Intercontinental Trading Company - Intraco: *See—*
Devillers, Julien Albert, 3,928,945.

International Business Machines Corporation: *See—*
Cialone, David R.; Hieronymus, Gerald W.; Kruspe, Henry R.; McCornack, Richard W.; Perkins, Norwood K.; and West, Donald L., 3,929,071.
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International Pregnancy Advisory Services: *See—*
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International Shoe Machine Corporation: *See—*
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International Standard Electric Corporation: *See—*
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International Telephone and Telegraph Corporation: *See—*
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Interx Research Corporation: *See—*
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Intreprinderea "Bucuresti" Pentru Extragerea, Prelucrarea si Montarea Marmurei si Pietrei de Constructii: *See—*
Constantin, Gurgui N.; Luca, Vasile; Eckardt, Andras; and Ciulacu, Paraschiv I., 3,930,088.

Ioffe, Benyamin Alexandrovich; Kalnin, Robert Karlovich; Dorcfeev, Vyacheslav Semenovich; Sirotenko, Viktor Georgievich; Larin, Vladimir Borisovich; Sermons, Gunar Yanovich; and Shevchenko, Alexandr Alexandrovich, to Institut Fiziki Akademii Nauk Latviiskoi SSR. Method of orienting electrically conductive bodies, preferably non-magnetic ones, in a magnetic field and apparatus for performing same. 3,930,212, Cl. 335-284.000.

Ippolito, Madeline: *See—*
Montalbano, Anthony P., 3,929,295.

Isaacs, Thelma J.; Gottlieb, Milton S.; Feichtner, John D.; and Price, Andrea A., to Westinghouse Electric Corporation. $Tl_3 PSe_4$ compound, single crystals. 3,929,970, Cl. 423-299.000.

Isaacs, Thelma J.; Gottlieb, Milton S.; Feichtner, John D.; and Price, Andrea A., to Westinghouse Electric Corporation. Tl_3VS_4 and Tl_3NbS_4 crystals and acousto-optical devices. 3,929,976, Cl. 423-511.000.

Isard, Arsene; and Parvi, Ludovic, to Products Chimiques Ugine Kuhlmann. Quaternary ammonia salts of polyhalogenated aromatic compounds. 3,929,886, Cl. 260-567.60P.

Ishigami, Noriakira Chiryu, to Aisin Seiki Kabushiki Kaisha. Monitoring device for hydraulic brake system. 3,930,222, Cl. 340-52.00C.

Ishikawa, Masayuki; Kaneko, Chikara; Suda, Tatsuo; Yamada, Sachiko; Eguchi, Yukuo; Sugimoto, Akiko; and Sasaki, Satoshi, to Wisconsin Alumni Research Foundation. Process for preparation of steroid derivative. 3,929,770, Cl. 260-239.550.

Ishimard, Hirohisa: *See—*
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Ishimoto, Katsumi: *See—*
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Isnardi, Luis L., Jr. Means for rejuvenating tennis balls and the like. 3,929,174, Cl. 141-329.000.

Istituto Luso Farmaco d'Italia S.r.l.: *See—*
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Ito, Akihiko: *See—*
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Ito, Kazuo: *See—*
Chimura, Kazuya; Ito, Kazuo; Takashima, Shunichi; Shindo, Mizuo; and Shimoshinbara, Yoshihiro, 3,929,728.
Hiyama, Osamu; and Ito, Kazuo, 3,929,712.

Itoh, Iko; Sekihara, Takeshi; and Emura, Tomoyuki, to Sumitomo Chemical Company, Limited. Method for producing high bulk density polyvinyl chloride. 3,929,753, Cl. 260-92.80W.

Ivaschenko, Pavel Andreevich: *See—*
Raikov, Ivan Yakovlevich; Ivaschenko, Pavel Andreevich; Judin, Alexandr Nikolaevich; Pisarev, Georgy Lvovich; and Roslyakov, Vladimir Yakovlevich, 3,929,110.

Iwamoto, Hideo, to Mitsubishi Denki Kabushiki Kaisha. Electrical circuit having a pair of thyristors. 3,930,195, Cl. 321-45.00C.

Iwamoto, Takeji. Holding toy. 3,928,933, Cl. 46-119.000.

Iwao Engineering Co., Inc.: *See—*
Hiasa, Toshihisa; and Ishimard, Hirohisa, 3,929,600.

Iwatsu Electric Co., Ltd.: *See—*
Tanaka, Katsuaki, 3,930,144.

Izawa, Shinichi; Ozeki, Juro; Tanaka, Tsutomu; and Nakanishi, Atsuo, to Asahi-Dow Limited. Graft copolymerizing a styrene type compound and a polyphenylene ether. 3,929,930, Cl. 260-874.000.

Izawa, Shinichi; Tsuzimura, Katsuhiko; Mizushiro, Ken; Ozeki, Juro; Sugawara, Yoshiaki; Tanaka, Tsutomu; and Nakanishi, Astuo, to Asahi-Dow Limited. Graft copolymer of styrene type compound and a polyphenylene ether. 3,929,931, Cl. 260-874.000.

J. I. Case Company: *See—*
Shumaker, John Frederick, 3,929,239.

J. M. Ney Company, The: *See—*
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J. M. Voith GmbH: *See—*
Csordas, Elemer; Gaugenmaier, Karl; and Kotitschke, Gerhard, 3,929,065.

J & P Coats Limited: *See—*
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Jackson, Arthur Frederick: *See—*
Wookey, Norman; Jackson, Arthur Frederick; Collins, Michael Clive; and Francis, Brian, 3,930,048.

Jacobsson, Kurt Arne Gunnar, to Aktiebolaget IRO. Thread supply device for textile machines. 3,928,987, Cl. 66-132.00R.

Jade Controls, Inc.: *See—*
Solomon, Ralph E., 3,929,511.

Jaegtnes, Karl O.: *See—*
Braytenbah, Andrew S.; Jaegtnes, Karl O.; and Smith, Millard F., 3,928,976.
Braytenbah, Andrew S.; and Jaegtnes, Karl O., 3,928,977.

Jahn, Hans-Georg, to Heidelberger Druckmaschinen AG. Gripper control for sheet-fed rotary printing presses. 3,929,069, Cl. 101-232.000.

Jahngen, Edwin G., Jr.: *See—*
Bader, Henry; and Jahngen, Edwin G., Jr., 3,929,848.

Jakobsen, Karl Severin; and Nadeau, Victor Joseph, to United Technologies Corporation. Process for wet winding filaments. 3,929,956, Cl. 264-137.000.

Jalke, Hellmut Georg: *See—*
Engelhardt, Fritz; Gunzert, Willi; Jalke, Hellmut Georg; Ribka, Joachim; and Weckler, Gerhard, 3,929,740.

James, John William: *See—*
Wiggins, Leslie Frederick; James, John William; and Gittos, Maurice Ward, 3,930,006.

Jamshidi, Khosrow. Muscle biopsy needle. 3,929,123, Cl. 128-2.00B.

Jansen, Malcolm L.: *See—*
Stern, William R.; Jansen, Malcolm L.; and Vance, Bess L., 3,929,598.

Janssen, Paul Adriaan Jan; van Wijngaarden, Ineke; and Soudijn, Willem, to Janssen Pharmaceutica N.V. 2-Benzimidazolinones. 3,929,801, Cl. 260-293.600.

Janssen Pharmaceutica N.V.: *See—*
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Janssens, Juliaan Leo Gerard: *See—*
Kobus, Stanislas; Janssens, Juliaan Leo Gerard; and Zoile, Willy Charles Jacques, 3,930,235.

Janzon, Karl Heinz; Weigert, Wolfgang; Hein, Hilmar; Mechler, Helmut; and Meyer-Simon, Eugen, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Halogenation of phenolic compounds. 3,929,907, Cl. 260-619.00R.

Japan Atomic Energy Research Institute: *See—*
Araki, Kunio; Sasaki, Takashi; Kasahara, Yuko; Yamashita, Yoshisada; Yotumoto, Keiichi; Sunaga, Hiromi; Tabei, Kiyoshi; Goto, Kazuo; Tajiri, Kunio; and Kittaka, Hirokazu, 3,930,098.
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Japan Synthetic Rubber Company Limited: *See—*
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Japikse, Cornelis Hendrikus; Singh, Gyanendra; and Kennedy, Timothy J., to Procter & Gamble Company, The. Rapidly dissolving dry beverage mix. 3,930,053, Cl. 426-590.000.

Jarrett, Noel: *See—*
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Jayne, Gerald John Joseph: *See—*
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Jewett, Warren R.: *See—*
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Jimenez, Ismael A.: *See—*
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Johansen, Inge; and Tong, David W., to Massachusetts Institute of Technology. High voltage overhead transmission line conductor with reduced wet weather corona noise and corona losses. 3,930,113, Cl. 174-40.00R.

John Edwards & Associates, Inc.: *See—*
Edwards, John M.; and Wright, James D., 3,928,939.

John Kirkegaard Maskinfabrik A/S: *See—*
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John O. Butler Company: *See—*
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Johnson, Albert F. Leg support device for skiing. 3,928,872, Cl. 2-22.000.

Johnson & Johnson: *See—*
Campbell, Roger G., Sr.; Goff, Richard E., Jr.; and Staffier, Thomas L., 3,930,090.
Drelich, Arthur H.; and Lukacs, George J., 3,930,073.
Drelich, Arthur H.; and Lukacs, George J., 3,930,074.
Harmon, Carlyle, 3,930,086.

Johnson, Morris A.; and Yang, Kang, to Continental Oil Company. Process for removing iron from an aqueous acid solution containing iron and copper. 3,929,599, Cl. 204-108.000.

Johnsson, Erik Borje, to Aktiebolaget Atomenergt. Method of arranging a seal between a pressure vessel, preferably a reactor vessel, and its lid by means of a torrid ring provided with flanges. 3,929,253, Cl. 220-320.000.

Johren, Paul: *See—*
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Jokay, Louis, to G. D. Searle & Co. High calorie pudding. 3,930,057, Cl. 426-577.000.

Jones, Cecil R.; Yoli, Alfred H.; and Kirk, William F., to Transfer Systems Incorporated. Failed fuel detection for PWR. 3,929,570, Cl. 176-80.000.

Jones, Lewis O., to Xerox Corporation. Stoichiometric ferrite carriers. 3,929,657, Cl. 252-62.10P.

Jones, Stanley C., to Marathon Oil Company. Determination of oil saturation in an anisotropic reservoir. 3,929,011, Cl. 73-155.000.

Jones, Sterling B. Fastening device. 3,928,904, Cl. 29-436.000.

Jos. Schlitz Brewing Company: *See—*
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Jouhaneau, Monique: *See—*
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Jounen, Joseph C.: *See—*
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Joye, N. Mason, Jr.: *See—*
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Juhlin, Sven-Eric: *See—*
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Juiles, Donald R.: *See—*
Fort, J. Robert; Westphal, James A.; Dix, C. Hewitt; and Juiles, Donald R., 3,930,145.

Jung, Bruno. Process for producing casting molds suitable for use in the ceramic industry. 3,929,685, Cl. 260-2.5HB.

Junggren, Ulf Krister: *See—*
Carlsson, Per Arvid Emil; Corrodi, Hans Rudolf; Hallhagen, Sven Goran; and Junggren, Ulf Krister, 3,929,871.

Jurisch, Louis A., to Commercial Solvents Corporation. Emulsion polymerization process employing an oxazoline as chain transfer agent. 3,929,748, Cl. 260-88.10P.

Just, Franz-Peter, to Grafelmann, Hans. Method for manufacturing of a detachable joint for artificial teeth, and a structural member assembly therefor. 3,928,912, Cl. 32-5.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Inoue, Kazuo, 3,929,245.

Kabushiki Kaisha Ricoh: *See—*
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Kabushiki Kaisha Seikosha: *See—*
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Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
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Kabushikikaisha Kawaidenkiseisakusho: *See—*
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Kaetsu, Isao; Ito, Akihiko; and Hayashi, Koichiro, to Japan Atomic Energy Research Institute. Low temperature irradiation of vitrifiable mixtures of unsaturated monomers. 3,929,602, Cl. 204-159.220.

Kahan, Edward. Portable collector apparatus with resilient tongs. 3,929,363, Cl. 294-19.00R.

Kahn, Leonard R. Method for preparing a pudding. 3,930,051, Cl. 426-573.000.

Kaiser Aluminum & Chemical Corporation: *See—*
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Kaiser Glass Fiber Corporation: *See—*
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Kajiwara, Toshiyuki: *See—*
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Kakuta, Izumi: *See—*
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Kalnin, Robert Karlovich: *See—*
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Kalogeropoulos, Alexis: *See—*
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Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to Societe Anonyme dite: L'Oreal. Process for producing indoanilines and keratin fiber dye composition containing the same. 3,929,403, Cl. 8-10.100.

Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to Societe Anonyme dite: L'Oreal. Indoanilines in keratinic fiber dye compositions. 3,929,404, Cl. 8-10.100.

Kalust, Pierre M. Audio visual memorial. 3,928,928, Cl. 40-28.100.

Kalvoda, Jaroslav: *See—*
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Kamatics Corporation: *See—*
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Kanda, Masao; and Suefuji, Mineo, to Fuji Photo Film Co., Ltd. Apparatus for coating a web. 3,929,097, Cl. 118-62.000.

Kaneda, Kazuyoshi: *See—*
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Kardon, Samuel; and Curry, Carlton J., to United States of America, Navy. Plug for plug nozzles. 3,929,289, Cl. 239-265.110.

Karmin, Irving. Pattern training apparatus. 3,929,462, Cl. 35-37.000.

Kasahara, Yuko: *See—*
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Kates, Richard. Metal chair. 3,929,376, Cl. 297-445.000.

Kato, Yozo: *See—*
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Kaufmann, Heinz; and Wettstein, Albert, to Ciba-Geigy Corporation. Process for the manufacture of steroid epoxides. 3,929,769, Cl. 260-239.55R.

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Kawakami, Yasumasa: *See—*
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Kawase, Koichi; and Suzuki, Yasuhide, to Diesel Kiki Kabushiki Kaisha. Fuel injection pump. 3,929,113, Cl. 123-139.00R.

Kawase, Shoji; Maeda, Kenji; Kumakawa, Shiro; and Kuratsuji, Takatoshi, to Teijin Limited. Tyres. 3,929,180, Cl. 152-359.000.

Kawashima, Masao: *See—*
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Kawata, Shigeo: *See—*
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Kay, Charles. Method of making a unitary partition by fusing a connector plate panels. 3,929,534, Cl. 156-73.500.

Kazuo, Kato: *See—*
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Kealy, Richard D., to Ralston Purina Company. Synergistic flavor enhancing coatings for cat food compositions comprising citric and phosphoric acids. 3,930,031, Cl. 426-89.000.

Kedrinsky, Vasily Nikolaevich; and Zakharov, Ivan Dmitrievich. Straight bevel gear grinding machine. 3,928,944, Cl. 51-33.00W.

Keene, Derek K.; and Wahl, James A., to Eaton Corporation. Steering axle assembly providing improved lateral stability. 3,929,346, Cl. 280-87.00R.

Kehm, Paul H., to Teleflex Incorporated. Transmission assembly. 3,929,032, Cl. 74-501.00R.

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Keller, Bruce W.; Hoffman, William C.; and Herman, Elvin E., to Hughes Aircraft Company. Multi-beam cathode ray tube having equalized line brightness. 3,930,120, Cl. 178-7.700.

Keller, Michael I. Impact sensing detector. 3,930,248, Cl. 340-267.00R.

Kelley, Philip C.: *See—*
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Kelly, Vincent J.; Cloud, Larry L.; and Smalligan, Wayne J., to Gerber Products Company. Process for preparing a precooked dehydrated product. 3,930,027, Cl. 426-28.000.

Kelsey-Hayes Company: *See—*
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Ketterer, Stanley Joseph, to Singer Company, The. Electro mechanical adder mechanism. 3,929,081, Cl. 112-158.00D.

Keverline, John J. Cotton loader. 3,929,366, Cl. 294-88.000.

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Khalid, Joseph M., to Square D Company. Arc-extinguishing materials. 3,929,660, Cl. 252-63.200.

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Kidd, Donald A. Cards, magnetic mounting members and rotatable holder. 3,929,332, Cl. 273-1.00M.

Kiezebrink, Willem, to Wavin B.V. Device for manufacturing fibre reinforced plastic tubes. 3,929,554, Cl. 156-425.000.

Kikuya, Satoshi: *See—*
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Kilbourn, Edward E.; and Weiler, Ernest D., to Rohm & Haas Company. Pyridyl phenyl-carbamate rodenticide. 3,929,808, Cl. 260-294.80G.

Kim, Gwan; and Ernest, Michael Vance, to W. R. Grace & Co. Dual purpose auto exhaust catalysts. 3,929,965, Cl. 423-213.500.

Kim, Jung K. Key holding device. 3,929,266, Cl. 224-26.00R.

Kim, Kenneth; and Suzuki, Shigemutsu, to Lotte Co., Ltd. Rotary electrostatic precipitator. 3,929,436, Cl. 55-121.000.

Kimura, Ichiro; Sugiyama, Hironari; Takita, Kiyoshi; and Mizutani, Makoto, to Kumiai Chemical Industry. Herbicidal composition. 3,929,452, Cl. 71-100.000.

Kimura, Kazuo: *See—*
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King, Larry K.; and Jarrett, Noel, to Aluminum Company of America. Selective recycle production of aluminum chloride. 3,929,975, Cl. 423-496.000.

Kinoshi, Masao; and Furumura, Kyozarburo, to Nippon Steel Corporation. Steel suitable for use as rolling elements. 3,929,523, Cl. 148-143.000.

Kinstle, James F., to Ford Motor Company. Electron beam curable coating composition. 3,929,935, Cl. 260-885.000.

Kirby, Russell B., Jr.; and Wing, Stephen C., to Minnesota Mining and Manufacturing Company. Precision molded refractory articles and method of making. 3,929,476, Cl. 75-214.000.

Kirchlechner, Richard; Rogalski, Werner; and Seubert, Jurgen, to Merck Patent Gesellschaft mit beschrankter Haftung. Process for the preparation of oxocarboxylic acid amides and oxocarboxylic acids. 3,929,880, Cl. 260-559.00A.

Kirk, William F.: *See—*
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Kittl, Emil, to United States of America, Army. Solar radiation conversion system. 3,929,510, Cl. 136-206.000.

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Klebba, Horst, to Volkswagenwerk Aktiengesellschaft. Lock mechanism for a vehicle door. 3,929,361, Cl. 292-216.000.

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Klimaszewski, Charles Stanley, Jr., to Du Pont de Nemours, E. I., and Company. Process for sealing thermoplastic tube. 3,929,943, Cl. 264-25.000.

Kliment, Karel. Method for providing dentures with a soft hydrogel layer. 3,930,076, Cl. 427-353.000.

Klingenmaier, Otto J., to General Motors Corporation. Plating apparatus and method for rotary engine housings. 3,929,592, Cl. 204-26.000.

Klink, Wolf-Dieter, to Repa Feinstanzwerk GmbH. Adjustable strap fastener. 3,928,895, Cl. 24-196.000.

Kloot, Leslie John, to Cape Air Conditioning (Proprietary) Ltd. Terminal air outlet device. 3,929,280, Cl. 236-1.00B.

Klopping, Hein Louis, to Du Pont de Nemours, E. I., and Company. Fungicidal formulations of 2-benzimidazolecarbamic acid, alkyl esters. 3,930,010, Cl. 424-273.000.

Knappe, LaVerne Frank; Sapetta, Lee Philip; Stroebel, Gary John; and Wilke, Myron Arden, to International Business Machines Corporation. Document transport device. 3,929,328, Cl. 271-267.000.

Knipstrom, Karl-Erik; Uhlig, Heinz Oskar; and Boden, Knut Folke Ingemar, to Elektriska Svetsningsaktiebolaget. Apparatus for welding vertical joints. 3,930,138, Cl. 219-126.000.

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Koda, Akio: *See—*
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Koh, Kwang K.; Pennington, Robert E.; Vernon, Lonnie W.; and Nahas, Nicholas C., to Exxon Research and Engineering Co. Catalytic reforming process. 3,929,431, Cl. 48-214.000.

Kojimoto, Susumu: *See—*
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Komatsu, Noboru; Arai, Tohru; Sugimoto, Yoshihiko; and Mizutani, Masayoshi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method for forming a carbide layer of a V-a group element of the periodic table on the surface of an iron, ferrous alloy or cemented carbide article. 3,930,060, Cl. 427-12.000.

Komatsu, Yoshihiro; Kakuta, Izumi; and Yamaguchi, Kanemichi, to Toyo Seikan Kaisha Limited. Hermetic sealing process utilizing multiple heat-sealing steps. 3,930,041, Cl. 426-396.000.

Komo, Tetsuya; Mizobata, Satoshi; Ukaji, Rokuo; and Kamihigoshi, Tutomu, to Daikin Kogyo Co., Ltd. Process for continuous fluorination of carbon. 3,929,920, Cl. 260-653.900.

Komoto, Hiroshi; and Ohmura, Kaoru, to Asahi Kasei Kogyo Kabushiki Kaisha. Epoxy resin compositions. 3,929,716, Cl. 260-37.0EP.

Kondo Manufacturing Co. Ltd.: *See—*
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Kondo, Shigeji, to Kondo Manufacturing Co. Ltd. Hydraulic brake mechanism for an air cylinder. 3,929,057, Cl. 92-9.000.

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Kornfeld, Edmund C.; and Bach, Nicholas J., to Eli Lilly and Company. Synthesis of penniclavine and elymoclavine. 3,929,796, Cl. 260-285.500.

Kornrumpf, William P.; and Harnden, John D., Jr., to General Electric Company. SCR inverter systems. 3,930,193, Cl. 321-2.000.

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Kosinski, Frank J., to Unicord, Incorporated. Amplifier with overload protection. 3,930,207, Cl. 330-207.00P.

Kostelnicek, Richard J., to Exxon Production Research Company. System for transporting seismic energy detectors. 3,930,219, Cl. 340-17.000.

Kotitschke, Gerhard: *See—*
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Koturov, Daniel, to Gilson Brothers Co. Shredding machine. 3,929,236, Cl. 241-55.000.

Kotval, Peshotan S.; Hatwell, Henri; and Gortsema, Frank P., to Union Carbide Corporation. Wear-resistant surface composite materials and method for producing same. 3,929,427, Cl. 29-195.000.

Kowalski, William S., to Elan Engineering Corporation. Flow monitor and sample control device. 3,929,017, Cl. 73-198.000.

Koyama, Masao; Akashi, Hiromitsu; Nishikawa, Yoichi; Fujiwara, Susumu; and Okada, Takao, to Yokohama Rubber Company, Ltd., The. Automatic tire classifying apparatus. 3,930,141, Cl. 235-61.11E.

Kozlovsky, Isaac M. Endosseous implant for prosthetic teeth. 3,928,914, Cl. 32-10.00A.

Kraftco Corporation: *See—*
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Kraftwerke Union Aktiengesellschaft: *See—*
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Kralowetz, Bruno. High-speed short-stroke forging press. 3,929,000, Cl. 72-402.000.

Krambrock, Wolfgang, to Waeschle Maschinenfabrik GmbH. Method and apparatus for the pneumatic conveying of bulk material. 3,929,379, Cl. 302-24.000.

Krapcho, John; and Turk, Chester Frank, to E. R. Squibb & Sons, Inc. 1-Substituted-4-phenyl-4H-[1,2,4]triazolo[3,4-C][1,4] benzothiazines or benzoxazines. 3,929,783, Cl. 260-243.00R.

Kratel, Gunter; Patzke, Jorg; and Wegehaupt, Karl-Heinrich, to Wacker-Chemie GmbH. Organopolysiloxane elastomers admixed with fillers subjected to mechanical stress. 3,929,718, Cl. 260-37.0SB.

Krause, Janusz Josef Henryk, to Imperial Chemical Industries Limited. Anodes for electrochemical processes. 3,929,607, Cl. 204-286.000.

Krauss-Maffei Aktiengesellschaft: *See—*
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Kreidl, Ekkehard L.; and Shooter, Douglas, to Koehler Manufacturing Company. Means for recombining hydrogen and oxygen in a sealed battery and controlling recombination at catalyst surfaces. 3,929,422, Cl. 23-288.00R.

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Kremski, Jacob. Pool table and quick rack system. 3,929,333, Cl. 273-22.000.

Krieger, Manfred; and Suess, Rudolf, to Sandoz Ltd., (Sandoz AG). Organic compounds. 3,929,833, Cl. 260-332.20C.

Kristinsson, Haukur; and Rufenacht, Kurt, to Ciba-Geigy Corporation. Oxazolo-[4,5-b]-pyridine-2-ones and -2-thiones as intermediates. 3,929,809, Cl. 260-294.80C.

Krock, Friedrich Wilhelm; and Neeff, Rutger, to Bayer Aktiengesellschaft. Anthraquinone dyestuffs. 3,929,401, Cl. 8-39.000.

Krock, Richard H.; and Pickett, Jerome J., to P. R. Mallory & Co., Inc. Infiltration of refractory metal base materials. 3,929,424, Cl. 29-182.100.

Krueger, Ronald G.: *See—*
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Kubota, Koji; Yoshihara, Yasuhiko; and Hirose, Yoshio, to Ajinomoto Co., Inc. Process for preparing L-lysine. 3,929,571, Cl. 195-29.000.

Kubotera, Kikuo; Mizuki, Eiichi; Fujiwara, Tadahiro; and Tsuji, Nobuo, to Fuji Photo Film Co., Ltd. Etch bleaching processes for making lithographic printing plates using silver halide and/or diffusion transfer layers and a hydrophilic layer. 3,929,481, Cl. 96-29.00L.

Kudo, Ken-ichi; Kitagawa, Yoshihiko; and Kuribayashi, Hideyuki, to Sumitomo Chemical Company, Limited. Process for preparing petroleum resin copolymers of C_4 and C_5 aliphatic monoolefin fractions and styrene or its derivatives. 3,929,747, Cl. 260-80.780.

Kudo, Tetsuichi; Gejyo, Tetsuo; Yoshida, Kazuetsu; and Seki, Michiharu, to Hitachi, Ltd. Catalyst. 3,929,670, Cl. 252-455.00R.

Kuehn, Erich, to ICI United States Inc. Vinyl urethane resins. 3,929,929, Cl. 260-859.00R.

Kuhle, Engelbert: *See—*
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Kuhn, Harry A., Jr., to Motorola, Inc. Cmos odd multiple repetition rate divider circuit. 3,930,169, Cl. 307-225.00C.

Kuhrt, Winfried; Derleth, Helmut; and Fischer, Hermann, to Kali-Chemie Aktiengesellschaft. Catalyst for decomposing hydrazine and its derivatives and process of making same. 3,929,682, Cl. 252-466.0PT.

Kuipers, Arie, to Molkerei J. A. Meggle, Milchindustrie. Method of preparing a protein concentrate from whey. 3,930,039, Cl. 426-271.000.

Kumagai, Ryohei: *See—*
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Kumar, Surinder; and Ramachandran, Kolar S. Modified vegetable protein simulating casein. 3,930,058, Cl. 426-656.000.

Kumasa, Ikuzi; Yamamoto, Takeshi; Norose, Fumitaka; Acutagawa, Susumu; Yoshida, Toshio; and Komatsu, Akira, to Takasago Perfumery Co., Ltd. Process for preparing cyclohexadecenone-5. 3,929,893, Cl. 260-586.00R.

Kumiai Chemical Industry: *See—*
Kimura, Ichiro; Sugiyama, Hironari; Takita, Kiyoshi; and Mizutani, Makoto, 3,929,452.

Kummer, Horst; and Beckmann, Ruediger. Lowering blood cholesterol and lipid levels. 3,930,017, Cl. 424-309.000.

Kummer, Rudolf: *See—*
Nienburg, Hans-Juergen; Kummer, Rudolf; Hohenschutz, Heinz; Strohmeyer, Max; and Tavs, Peter, 3,929,898.

Kuppenheimer, John D., Jr.: *See—*
Chicklis, Evan P.; and Kuppenheimer, John D., Jr., 3,930,158.

Kurata, Takeo; Hayazaki, Tamotsu; and Murakami, Kyoko, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for producing spun yarn-like bulked yarns. 3,928,958, Cl. 57-157.0TS.

Kurata, Tokuzo; Okano, Takeshi; Tamaru, Akio; Kato, Yozo; and Nagashima, Saburo, to Mitsubishi Chemical Industries, Ltd. Process for hydrating a nitrile to the corresponding amide. 3,929,881, Cl. 260-561.00N.

Kurata, Tokuzo; Emi, Satoshi; Ofuchi, Kunihiko; Takeuchi, Tsutomu; and Sone, Isamu, to Mitsubishi Chemical Industries, Ltd. Process for preparing concentrated titanium mineral. 3,929,963, Cl. 423-86.000.

Kuratsuji, Takatoshi: *See—*
Kawase, Shoji; Maeda, Kenji; Kumakawa, Shiro; and Kuratsuji, Takatoshi, 3,929,180.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Nakamura, Tadashi; and Hagiwara, Hisami, 3,929,950.
Shibata, Hiroshi; Kokubu, Yoshikazu; and Okazaki, Isao, 3,930,151.

Kuribayashi, Hideyuki: *See—*
Kudo, Ken-ichi; Kitagawa, Yoshihiko; and Kuribayashi, Hideyuki, 3,929,747.

Kurilov, Georgy Vasilievich: *See—*
Ainbinder, Emmanuil Gershkovich; Kurilov, Georgy Vasilievich; and Neustroev, Leonid Sergeevich, 3,928,983.

Kurtz, Roman: *See—*
Wenzel, Werner; Speich, Peter; Kurtz, Roman; Gudenau, Heinrich; and Franke, Friedrich, 3,929,955.

Kuwana, Noriaki; Suzuki, Kouichi; and Sugitani, Tooru, to Eisai Co., Ltd. Method for the production of N-acylpentapeptides 3,929,572, Cl. 195-29.000.

Kuzminski, Henry William, to RCA Corporation. Method for etching apertured work piece. 3,929,532, Cl. 156-11.000.

Kyburz, Emilio: *See—*
Gerecke, Max; Kaplan, Jean-Pierre; and Kyburz, Emilio, 3,929,791.

Kydonieus, Nicholas; and Sandler, Stanley Robert, to Pennwalt Corporation. Process for preparing α,β-unsaturated thiolesters. 3,929,852, Cl. 260-455.00R.

La Cellophane: *See—*
Quang, Pham Kim; and Gasdoue, Rene, 3,930,257.

Labaz: *See—*
Benoit-Guyod, Martine Pierrette; Benoit-Guyod, Jean-Louis Alain; Boucherle, Andre Louis; and Eymard, Pierre Luc, 3,929,869.

La Cosse, Gerald E.: *See—*
Houlihan, William F., deceased; Newell, Isaac Laird; and La Cosse, Gerald E., 3,929,514.

La Croce, Leonard Thomas, to American Can Company. Child-resistant closure for metal container. 3,929,252, Cl. 220-269.000.

Lacroix, Roger, to Sea Tank Co. Method and device for a foundation by depression in an aquatic site. 3,928,982, Cl. 61-50.000.

Ladisch, Gerhard, to Pfrengle, Otto. Spray mixing nozzle. 3,929,291, Cl. 239-425.000.

L'Air Liguide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes: *See—*
Zumbrunn, Jean-Pierre, 3,929,636.

Lambrecht, Ralph E.; and Najimian, Harry, Jr., to Outboard Marine Corporation. Stern drive hydraulic trim control system including a tilt position indicator. 3,929,089, Cl. 115-41.0HT.

Lambrechtse, Cornelis Willem: *See—*
Salters, Roelof Herman Willem; Boonstra, Lieuwe; and Lambrechtse, Cornelis Willem, 3,930,239.

Landholm, Richard A.; Haase, Jan R.; and Krutak, James J., Sr., to Eastman Kodak Company. Cyan image-providing phenylazonaphthyl dyes. 3,929,760, Cl. 260-197.000.

Lange, Wilfried, to Dieter Haubold Industrielle Nagelgerate. Stapler release safety mechanism. 3,929,056, Cl. 91-461.000.

Langhoff, Boris: *See—*
Stiltz, Erwin; Langhoff, Boris; and Spieth, Manfred, 3,929,195.

Lapham Engineering, Inc.: *See—*
Lapham, Sidney D., 3,928,888.

Lapham, Sidney D., to Lapham Engineering, Inc. Interchangeable caster with inclined axle and lint protection means. 3,928,888, Cl. 16-35.00R.

Larin, Vladimir Borisovich: *See—*
Ioffe, Benyamin Alexandrovich; Kalnin, Robert Karlovich; Dorcfeev, Vyacheslav Semenovich; Sirotenko, Viktor Georgievich; Larin, Vladimir Borisovich; Sermons, Gunar Yanovich; and Shevchenko, Alexandr Alexandrovich, 3,930,212.

Larkin, John M.: *See—*
Duranleau, Roger G.; and Larkin, John M., 3,929,845.

Larsen, Glen D., to Southern Railway Company. Empty and load brake apparatus. 3,929,384, Cl. 303-22.00R.

Larsen, Ole Jeppe Fjord. Apparatus for producing and protecting deposits of sedimentary material on floors of bodies of water. 3,928,978, Cl. 61-3.000.

Lasag S.A.: *See—*
Leuenberger, Hans-Ulrich; and Stemme, Reiner, 3,929,443.

Laskey, Richard A., to Datascope Corporation. Hydrophilic acrylamido polymers. 3,929,741, Cl. 260-79.30M.

Lauck, Robert M.: *See—*
Feminella, Joseph V.; Melachouris, Nicholas; and Lauck, Robert M., 3,930,056.

Laughlin, Robert Gene; and Heuring, Vincent Paul, to Procter & Gamble Company, The. Detergent composition having enhanced particulate soil removal performance. 3,929,678, Cl. 252-526.000.

Laurent, Serge: *See—*
Cronenberger, Michel; Laurent, Serge; and Mallet, Maurice, 3,930,070.

Lavallee, Francois A.: *See—*
Orlando, Charles M.; and Lavallee, Francois A., 3,929,908.

Lawrence, Ray V.: *See—*
Severson, Ray F.; Schuller, Walter H.; Joye, N. Mason, Jr.; and Lawrence, Ray V., 3,929,755.

Laws, Harold H., to Olin Corporation. Method and apparatus for producing corrugated tubing. 3,928,997, Cl. 72-178.000.

Lawwill, Ronald C., to Allied Chemical Corporation. Tongue for inflataband. 3,929,348, Cl. 280-150.0AB.

Leach, Charles Willard: *See—*
Albright, Denton M.; and Leach, Charles Willard, 3,930,025.

Leanza, William J.: *See—*
Christensen, Burton G.; Leanza, William J.; and Albers-Schonberg, Georg, 3,929,840.

Lear Siegler, Inc.: *See—*
Masser, Lloyd D., 3,929,347.

Lecon, Andrew P., to Babcock & Wilcox Company, The. Heat exchanger structure. 3,929,189, Cl. 165-69.000.

Leddy, James J.; and Gritzner, Gerhard, to Dow Chemical Company, The. Zinc-bromide secondary cell. 3,929,506, Cl. 136-86.00A.

Ledoux, Claude: *See—*
Thomas, Jean-Claude; Raoul, Pierre; and Ledoux, Claude, 3,929,100.

Lee, Henry L.; Orlowski, Jan A.; and Butler, David V. Device for testing wear resistance of dental restorative materials. 3,929,001, Cl. 73-7.000.

Lee, Henry L., Jr.; and Orlowski, Jan A., to Lee Pharmaceuticals. Dental base material. 3,929,493, Cl. 106-35.000.

Lee, Kenneth: *See—*
Guarnieri, C. Richard; Lee, Kenneth; and Onton, Aare, 3,930,241.

Lee Pharmaceuticals: *See—*
Lee, Henry L., Jr.; and Orlowski, Jan A., 3,929,493.

Lee, S. Yen, to United States of America, Army. Alcohol sensitive repairable epoxy embedding material. 3,929,717, Cl. 260-37.0EP.

Leeman, Susan E.; and Carraway, Robert E., to Brandeis University. Synthetically produced tridecapeptide having the same activity as the hypothalamic substance, neurotensin. 3,929,756, Cl. 260-112.50R.

Legille, Edouard; and Mahr, Rene N., to S.A. des Anciens Etablissements Paul Wurth. Shaft furnace charging process. 3,929,240, Cl. 214-152.000.

Leiber, Heinz, to Teldix GmbH. Method and arrangement for applying oscillating braking pressures to vehicle wheels. 3,929,380, Cl. 303-21.00F.

Leimgruber, Willy; and Weigele, Manfred, to Hoffmann-La Roche Inc. Alkylation of iodinin. 3,929,790, Cl. 260-267.000.

Leine, Lars: *See—*
Fredin, Bo; and Leine, Lars, 3,929,565.

Leitereg, Theodore J.; Guadagni, Dante G.; and Teranishi, Roy, to United States of America, Agriculture. Process for the preparation of isopropenyl-bicyclo[4,4,0]dec-1-en-3-ones. 3,929,894, Cl. 260-586.00P.

Leitz, Wilfried, to Koninklijke Emballag Industrie Van Leer B.V. Plastic container cap unit with integral sealing ring. 3,929,246, Cl. 215-252.000.

Lemberg, Seymour, to International Flavors & Fragrances Inc. Novel products and processes. 3,929,675, Cl. 252-522.000.

Lenton, Robert Warren: *See—*
Russell, Donald Henry; and Lenton, Robert Warren, 3,929,727.

Leonard, Ronald J., to Baxter Laboratories, Inc. Blood oxygenator utilizing a removable membrane oxygenator unit. 3,929,414, Cl. 23-258.500.

Leonard, William J.: *See—*
Dale, James A.; and Leonard, William J., 3,930,047.

Leong, Chai Mun. I.C. engine improvements. 3,929,118, Cl. 123-198.00A.

Lepagnol, Guy Pierre: *See—*
Bellanger, Maurice Georges; and Lepagnol, Guy Pierre, 3,930,147.

Leroy, Pierre; Debras, Maurice; Cadart, Michel; and Saleil, Jean, to Creusot-Loire. Process for the elaboration of chrome steels. 3,929,458, Cl. 75-12.000.

Leuenberger, Hans-Ulrich; and Stemme, Reiner, to Lasag S.A. Method for curing fissures and the like of workpieces formed of metal oxide materials and processed under high material stress. 3,929,443, Cl. 65-117.000.

Leverett, Glenn Frederick, to Du Pont de Nemours, E. I., and Company. Process for reducing filler loss in tetrafluoroethylene polymer particles. 3,929,721, Cl. 260-42.150.

Levers, William E.; and Keith, Charles H., to Celanese Corporation. Filters. 3,930,077, Cl. 427-384.000.

Levin, Alfred A.: *See—*
Richter, Sidney B.; and Levin, Alfred A., 3,929,830.

Levresse, Bernard: *See—*
Gloriod, Pierre; Levresse, Bernard; and Machon, Jean-Pierre, 3,929,754.

Levy, Stephen David; and Rauch, Francis Clyde, to American Cyanamid Company. Process for the mononitration of ortho-xylene. 3,929,916, Cl. 260-645.000.

Lewis, Albert; and Krueger, Ronald G., to Kaiser Glass Fiber Corporation. Unidirectional webbing material. 3,930,091, Cl. 428-198.000.

Lewis, Charles A., to United States of America, Navy. Explosive charge pistol. 3,929,055, Cl. 89-1.00M.

Lewis, J. Stephen; and Sapkus, Jurgis, to Mattel, Inc. Controller for a figure toy. 3,928,934, Cl. 46-119.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Bretting, Jork, 3,930,182.
Stiltz, Erwin; Langhoff, Boris; and Spieth, Manfred, 3,929,195.

Liddle, Robert: *See—*
Pyne, Bernard; and Liddle, Robert, 3,929,265.

Liebman, Alan J., to Xerox Corporation. Toner loading for touchdown donor. 3,929,098, Cl. 118-637.000.

Liede, Dieter: *See—*
Buchner, Norbert; Liede, Dieter; Schmoer, Peter; and Vogele, Gunther, 3,929,409.

Lieske, Manfred: *See—*
Olsen, Willi; and Lieske, Manfred, 3,930,188.

Lilly Industries, Ltd.: *See—*
Cashin, Colin H.; Chakrabarti, Jiban K.; and Szinai, Stephen S., 3,929,888.

Linatex Corporation of America: *See—*
Ennis, Robert E.; and Derrick, Robert G., 3,929,642.

Lindberg, Ulf Engelbert: *See—*
Stromberg, Nils Erik; and Lindberg, Ulf Engelbert, 3,929,063.

Lindburg, Norman Lee: *See—*
Blust, Henry Leo; Lindburg, Norman Lee; and Henry, Dale Vernon, 3,929,426.

Linden, Henry R.; Tarman, Paul B.; and Feldkirchner, Harlan L., to American Gas Association, Inc. Production of hydrocarbon gases from oil shale. 3,929,615, Cl. 208-11.000.

Lindqvist, Karl. Locking device. 3,929,300, Cl. 242-107.400.

Linge, Hermann: *See—*
Gehrig, Heinz; Linge, Hermann; and Wagner, Sepp, 3,929,542.

Liot, Evelyne: *See—*
Liot, Roger; and Liot, Evelyne, 3,930,054.

Liot, Roger; and Liot, Evelyne. Method of making improved dried egg product. 3,930,054, Cl. 426-614.000.

Lipe Rollway Corporation: *See—*
Armstrong, Jack W., 3,929,221.

Lipha Lyonnaise Industrielle Pharmaceutique: *See—*
Boschetti, Eugene, 3,929,983.

Linka, Manfred, to Siemens Aktiengesellschaft. Brushless DC motor having multiple stator windings. 3,930,190, Cl. 318-254.000.

Litschi, Gerold: *See—*
Guenst, William C., Jr.; and Litschi, Gerold, 3,929,046.

Litton Systems, Inc.: *See—*
Pinkham, Philip C., 3,930,083.

Liu, Robert Chung-Huang: *See—*
Hughes, John Lawrence; Seyler, Jay Kenneth; and Liu, Robert Chung-Huang, 3,929,758.

LLewellyn, Peter M., to Varian Associates. Method and apparatus for detecing materials in a liquid. 3,929,003, Cl. 73-61.00R.

Llewellyn, Thomas Oscar: *See—*
Schwartz, Murray Arthur; and Llewellyn, Thomas Oscar, 3,929,947.

Locke, Frank W.; and Sorenson, John F., to Hoerner Waldorf Corporation. Short bicycle pack. 3,929,225, Cl. 206-335.000.

Loderer, Peter, to Siemens Aktiengesellschaft. Braking circuit for the mixed regenerative and resistance braking of a d-c series machine operated as a generator. 3,930,191, Cl. 318-376.000.

Logothetis, Anestis Leonidas: *See—*
Cooper, Terence Alfred; and Logothetis, Anestis Leonidas, 3,929,749.

Lopez, Manuel; and Bourassa, Joseph R., to Parker-Hannifin Corporation. Windshield wiper coupling structures. 3,928,887, Cl. 15-250.320.

Losee, Kathryn Alice: *See—*
Wojnar, Robert John; Brittain, Russell James; Bernstein, Jack; and Losee, Kathryn Alice, 3,930,005.

Lotte Co., Ltd.: *See—*
Kim, Kenneth; and Suzuki, Shigemutsu, 3,929,436.

Lotz, Horst K.; and Otto, Bernhard, to GeGa Gesellschaft fur Gasetechnik Lotz KG. Flame cutting machine. 3,929,324, Cl. 266-23.00K.

Lovell, James Byron, to American Cyanamid Company. Novel method of protecting cotton plants from insect attack. 3,929,998, Cl. 424-200.000.

Lovitz, David D.: *See—*
Suchowski, Bernard; Lovitz, David D.; and Kissin, Claud W., 3,929,102.

Lubbers, Dietrich W.; and Huch, Albert, to Esehweiler & Co. Apparatus for quickly evaluating gases dissolved in blood. 3,929,605, Cl. 204-195.00P.

Lubke, Hans-Joachim: *See—*
Biberbach, Peter; Dietschmann, Werner; and Lubke, Hans-Joachim, 3,929,595.

Luca, Vasile: *See—*
Constantin, Gurgui N.; Luca, Vasile; Eckardt, Andras; and Ciulacu, Paraschiv I., 3,930,088.

Lucas Aerospace Limited: *See—*
Maker, Paul Mainwaring, 3,928,962.

Lucas, Roy N., to Petrolite Corporation. Shale oil purification. 3,929,625, Cl. 208-188.000.

Lucero, Ronald Ray. Process and apparatus for removing ions from fluids. 3,929,433, Cl. 55-3.000.

Ludeke, Rudolf: *See—*
Chang, Leroy L.; Esaki, Leo; and Ludeke, Rudolf, 3,929,527.

Ludeman, Russell S. Self-contained survival device. 3,929,223, Cl. 206-234.000.

Luhman, Robert A.: *See—*
Bettenhausen, Larry A.; Casey, James H.; and Luhman, Robert A., 3,929,552.

Lukacs, George J.: *See—*
Drelich, Arthur H.; and Lukacs, George J., 3,930,073.
Drelich, Arthur H.; and Lukacs, George J., 3,930,074.

Lummus Company, The: *See—*
Gelbein, Abraham P.; Sze, Morgan C.; and Paustian, John E., 3,929,811.

Lundstrom, Goran Ingemar; Hartmann, Friedrich; and Huijsers, Willem, to Hugin Kassaregister AB. Device for setting type carrying means in a printing device having at least one printing position, especially for cash registers. 3,929,276, Cl. 235-61.0PK.

Lussier, Roger J.; Magee, John Storey, Jr.; and Albers, Edwin Wolf, to W. R. Grace & Co. Copper containing hydrocarbon cracking catalyst. 3,929,621, Cl. 208-120.000.

Luth, Claus-Peter. Magnetic control device for yarn guides. 3,928,988, Cl. 66-138.000.

Luthi, Hanspeter. Sets of units for constructing various types of stand. 3,929,230, Cl. 211-177.000.

Lutz, Jean; Traille, Andre; and Besnard, Francois, to Societe Nationale des Petroles d'Aquitaine. Measurement of drilling torque. 3,929,009, Cl. 73-136.00A.

Lutz, Karl-Anton, to Siemens Aktiengesellschaft. PCM time-division multiplex telecommunication network. 3,930,124, Cl. 179-15.0AT.

Luwa AG: *See—*
Ferri, Johann Walter, 3,928,892.
Sutter, Hanspeter, 3,928,884.

Lynes, Inc.: *See—*
Coone, Malcolm G., 3,929,175.

Macbeth, Albert W., to Thiokol Corporation. Rocket motor construction. 3,928,965, Cl. 60-255.000.

Mac Bride, William R.: *See—*
Parker, Frederick A.; and Mac Bride, William R., 3,929,588.

MacCurdy, William K., to Evans Products Company. End of car cushioning unit. 3,929,232, Cl. 213-43.000.

MacFarlane, Thomas R., to Whirlpool Corporation. Refuse compactor with receptacle controlled actuation. 3,929,064, Cl. 100-53.000.

Machida, Katsutoshi: *See—*
Habu, Teiji; Nakajima, Tomio; Sakamoto, Eiichi; Kadokura, Kenzi; Yoshida, Kyusaku; and Machida, Katsutoshi, 3,929,486.

Machon, Jean-Pierre: *See—*
Gloriod, Pierre; Levresse, Bernard; and Machon, Jean-Pierre, 3,929,754.

MacKenzie, Burton Thornley, Jr.; and Wilkus, Edward Vincent, to General Electric Company. Flame-resistant polyolefin used as insulator for electrical conductors. 3,930,104, Cl. 428-379.000.

MacMillan Bloedel Limited: *See—*
Procter, Alan R., 3,929,559.

MacPherson, Alastair George: *See—*
Ferguson, Alisdair Cullen; McGregor, John; and MacPherson, Alastair George, 3,930,236.

Madden, Thomas J., Jr.: *See—*
Dick, George H.; and Madden, Thomas J., Jr., 3,930,258.

Maddock, Don G., to General Motors Corporation. Power train including a torque-pressure transducer. 3,929,211, Cl. 192-54.000.

Maeda, Kenji: *See—*
Kawase, Shoji; Maeda, Kenji; Kumakawa, Shiro; and Kuratsuji, Takatoshi, 3,929,180.

Magazzu, Ronald A. Mechanical baseball umpire. 3,929,334, Cl. 273-26.00A.

Magee, John Storey, Jr.: *See—*
Lussier, Roger J.; Magee, John Storey, Jr.; and Albers, Edwin Wolf, 3,929,621.

Maggioni, Paolo, to Brichima S.p.A. Process for preparing diphenols. 3,929,913, Cl. 260-621.00G.

Magnesium Elektron Limited: *See—*
Hancock, John Douglas; and Hepworth, Matthew A., 3,929,498.

Mahr, Rene N.: *See—*
Legille, Edouard; and Mahr, Rene N., 3,929,240.

Maida, Osamu, to Nippon Kogaku K.K. Circuit for converting an analog input signal voltage into a digital representation. 3,930,253, Cl. 340-347.0AD.

Maiken, Francis H. Umbrella tent. 3,929,146, Cl. 135-2.000.

Maiworm, Gunter. Yarn cutting-off machine. 3,928,899, Cl. 28-19.000.

Maker, Paul Mainwaring, to Lucas Aerospace Limited. Fuel control systems for gas turbine engines. 3,928,962, Cl. 60-39.28R.

Malagari, Frank A.: *See—*
Salsgiver, James A.; and Malagari, Frank A., 3,929,522.

Malcolm, Donald B., to Dravo Corporation. Reciprocating variable speed material transfer conveyor system. 3,929,219, Cl. 198-111.000.

Malick, Franklin S. Electronic exercise aid. 3,929,335, Cl. 272-57.00R.

Malina, Jerry L.: *See—*
Van Dyck, Emil J.; Malina, Jerry L.; and Schiller, Raymond E., 3,929,545.

Mallet, Maurice: *See—*
Cronenberger, Michel; Laurent, Serge; and Mallet, Maurice, 3,930,070.

Malott, Corwin; and Erath, Robert William, to Alumax Mill Products, Inc. Lateral roll irrigation machine having remote end control. 3,929,197, Cl. 180-2.000.

Manghisi, Elso; and Cascio, Giuseppe, to Istituto Luso Farmaco d'Italia S.r.l. 4-Aryl-5-aminoalkyl-4-oxazolin-2-ones. 3,930,008, Cl. 260-268.0PH.

Mangold, Dietrich: *See—*
Fischer, Adolf; Hamprecht, Gerhard; Mangold, Dietrich; and Rohr, Wolfgang, 3,929,454.

Mansfield, Ernest Bryant, to Fisher Scientific Company. Automatic carbon dioxide incubator. 3,929,584, Cl. 195-127.000.

Mansfield Sanitary Inc.: *See—*
Flinner, Vaughn D.; and Sprang, Richard W., 3,929,150.

Mao, George W., to Gould Inc. Lead alloy products. 3,929,513, Cl. 148-3.000.

Marans, Nelson S.; and Gluecksmann, Alfred, to W. R. Grace & Co. Radiation polymerizable epoxy composition. 3,929,927, Cl. 260-837.00R.

Marantette, Ruth B.: *See—*
Marantette, William F.; and Marantette, Ruth B., 3,929,393.

Marantette, William F.; and Marantette, Ruth B. Water-rubber bearing high speed drill spindle. 3,929,393, Cl. 308-76.000.

Marantette, William F., to Digital Systems, Inc. Apparatus for determining the centroid of a lighted hole. 3,930,150, Cl. 250-203.00R.

Marathon Oil Company: *See—*
Duke, Roy B., 3,929,193.
Jones, Stanley C., 3,929,011.

Marchenko, Vladimir Zakharovich: *See—*
Filatov, Nikolai Grigorievich; Meshkov, Jury Yakovlevich; Chernenko, Nikolai Fedorovich; Nikonenko, Dmitry Iosifovich; Mashlenko, Felix Isaakovich; Belyaev, Albert Mikhailovich; Valeev, Artur Khadyevich; Savina, Valentina Alexandrovna; Marchenko, Vladimir Zakharovich; Fedorov, Valery Ionovich; Gridnev, Vitaly Nikiforovich; and Mikhailov, Konstantin Vasilievich, 3,929,524.

Marchione, Guido. Rotating system. 3,929,034, Cl. 74-575.000.

Margolin, Efraim; and Grunstein, Michael, to Grun Mar Industries, Inc. Adjustable bracket assembly. 3,929,228, Cl. 211-102.000.

Margraf, Harry W., to Washington University. Silver-zinc allantoinate compositions and method of killing bacteria and fungi therewith. 3,930,000, Cl. 424-245.000.

Marincic, Nikola: *See—*
Bro, Per; Kelsey, Robert H.; and Marincic, Nikola, 3,929,507.

Marino, Frank; and Hadnagy, Thomas D. Paint brush. 3,928,886, Cl. 15-144.00A.

Marquet, Freddy Antoine, to Centre de Recherches Metallurgiques - Centrum voor Research in de Metallurgie. Device for measuring the cooling time of welds. 3,930,159, Cl. 250-338.000.

Marsch, James E., to Allis-Chalmers Corporation. Six speed power shift transmission. 3,929,037, Cl. 74-759.000.

Martin, Jack, to Westinghouse Electric Corporation. Single-ended incandescent lamp having a simplified filament-mount. 3,930,177, Cl. 313-271.000.

Marvin Glass & Associates: *See—*
Breslow, Jeffrey D., 3,929,336.

Marx, Thomas O., to Atwood Vacuum Machine Company. Vehicle parking brake control. 3,929,033, Cl. 74-512.000.

Marze, Xavier: *See—*
Christen, Gilbert; Favre, Bernard; Marze, Xavier; Salmon, Michel; and Thuillier, Rene, 3,930,105.

Mashlenko, Felix Isaakovich: *See—*
Filatov, Nikolai Grigorievich; Meshkov, Jury Yakovlevich; Chernenko, Nikolai Fedorovich; Nikonenko, Dmitry Iosifovich; Mashlenko, Felix Isaakovich; Belyaev, Albert Mikhailovich; Valeev, Artur Khadyevich; Savina, Valentina Alexandrovna; Marchenko, Vladimir Zakharovich; Fedorov, Valery Ionovich; Gridnev, Vitaly Nikiforovich; and Mikhailov, Konstantin Vasilievich, 3,929,524.

Mask, E. Dale: *See—*
Beeding, Jack D., 3,929,331.

Mason, Scott M. Trimaran. 3,929,085, Cl. 114-123.000.

Mason, William H.: *See—*
Abbate, John; Jewett, Warren R.; and Mason, William H., 3,929,250.

Massachusetts Institute of Technology: *See—*
Johansen, Inge; and Tong, David W., 3,930,113.

Masser, Lloyd D., to Lear Siegler, Inc. Tandem wheel suspension system for closely adjacent wheels. 3,929,347, Cl. 280-104.50R.

Masson Scott Thrissell Engineering Limited: *See—*
Walkington, Colin, 3,929,299.

Masuda, Katsutada: *See—*
Oshiai, Michihiko; Ari, Osami; Morimoto, Akira; Okada, Taiiti; and Masuda, Katsutada, 3,929,775.

Materiel Electrique de Controle et Industriel: *See—*
Midy, Michel, 3,929,148.

Mathiesen, Odd, to International Standard Electric Corporation. Method for converting a binary coded data signal into a P-FSK coded signal. 3,930,121, Cl. 178-66.00R.

Matsubara, Hironaga: *See—*
Miyauchi, Hirokazu; and Matsubara, Hironaga, 3,929,724.

Matsuda, Hideya: *See—*
Murakami, Masuo; Koda, Akio; Takashima, Mutsuo; Takagi, Etuo; Sakoh, Ichiro; Matsuda, Hideya; and Suzuki, Tsutomu, 3,929,767.

Matsui, Hirofumi. Bath composition for human body. 3,929,997, Cl. 424-195.000.

Matsumoto, Ryoichiro: *See—*
Takeuchi, Kazuhiko; and Matsumoto, Ryoichiro, 3,929,016.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hayakawa, Toshio, 3,929,215.
Ikeda, Hisao, 3,929,093.
Nakamura, Harutoki; and Yagi, Jun, 3,929,671.
Tanigawa, Shizuhiko; Kikuya, Satoshi; Yamazoe, Yoshinori; and Nakamura, Chihiro, 3,930,270.

Matsushita Electronics Corporation: *See—*
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Matsuyama, Glen: *See—*
Smith, William Paul; and Matsuyama, Glen, 3,929,222.

Mattel, Inc.: *See—*
Lewis, J. Stephen; and Sapkus, Jurgis, 3,928,934.
Maurer, Donald John, 3,928,932.

Mattioli, Luciano, to S.I.T.A.V. S.p.A. - Societa Incremento Turistico Alberghiero Valdostano. Device for distribution of playing-cards. 3,929,339, Cl. 273-148.00A.

Mattox, Ernest M.: *See—*
Beeding, Jack D., 3,929,331.

Mattson, Peter H., to S & W Fine Foods, Inc. Process for preparing a shelf-stable, flexible tortilla. 3,930,049, Cl. 426-549.000.

Maughan, William G., to Westvaco Corporation. Moisture resistant corner post. 3,929,536, Cl. 156-85.000.

Maurer, Donald John, to Mattel, Inc. Animated figure toy. 3,928,932, Cl. 46-118.000.

Mauroner, Curtis. Materials dispensing apparatus. 3,929,173, Cl. 141-74.000.

Mavrovic, Ivo. Decomposition of ammonium carbamate. 3,929,878, Cl. 260-555.00A.

Maximov, Sergei Mikhailovich: *See—*
Volkova, Leman Mustafa Kyzy; Korolev, Gennady Vladimirovich; Dubovitsky, Fedor Ivanovich; Trostyanskaya, Irina Ivanovna; Rappoport, Leonid Yakovlevich; Petrov, Gennady Nikolaevich; Shestakovsky, Mikhail Fedorovich; Yakubov, Renat Dovletovich; and Maximov, Sergei Mikhailovich, 3,929,731.

May, Earl L.; and Fisher, Joseph J., to PPG Industries, Inc. Apparatus for making flat glass including an edge stretching apparatus. 3,929,444, Cl. 65-182.00R.

Mayer, Hans Johann: *See—*
Fischli, Albert Eduard; Klaus, Michael Josef; Mayer, Hans Johann; and Wick, Alexander Eduard, 3,929,853.

Mayerhoefer, Horst; Mueller, Wolfgang; Sollberger, Urs; and Wolf, Rainer, to Sandoz Ltd., (Sandoz AG). Halogen-containing phosphoric acid esters. 3,929,940, Cl. 260-930.000.

Mayers, Bernard J.: *See—*
Evers, William J.; Heinsohn, Howard H., Jr.; and Mayers, Bernard J., 3,929,919.

Maynard, David Payne: *See—*
Weaver, John; Maynard, David Payne; Taylor, Rayner Walter; and Bayliss, William Richards Gilbert, 3,929,377.

Maynard, Walter P., Jr. Double sealing pouring assembly. 3,929,264, Cl. 222-525.000.

Mazzoni, Renato J.; Bowser, George H.; and Stewart, John L., to PPG Industries, Inc. Packaged add-on multiple glazing units and method. 3,928,953, Cl. 52-172.000.

McAvoy, Dennis J., to Sperry Rand Corporation. Power transmission. 3,929,159, Cl. 137-596.180.

McCaffrey, Francis Hamnet Garland: *See—*
Findlay, Donald Urquhart; McCaffrey, Francis Hamnet Garland; and Scuffell, Derek Edgar Alexander, 3,929,960.

McCollum, Anthony W.; and Hull, David C., to Eastman Kodak Company. Mixed ester plastic additive. 3,929,867, Cl. 260-475.00P.

McCornack, Richard W.: *See—*
Cialone, David R.; Hieronymus, Gerald W.; Kruspe, Henry R.; McCornack, Richard W.; Perkins, Norwood K.; and West, Donald L., 3,929,071.

McCrae, James McGeachie, to Ciba-Geigy Corporation. Unsymmetrical bisazomethine metal complex pigments. 3,929,794, Cl. 260-270.000.

McCulloch Corporation: *See—*
Burkett, Wilford B.; and Orsino, Joseph A., 3,929,505.

McDonald, Charles H. Elastomeric cold patch for pavement repair. 3,930,100, Cl. 428-323.000.

McDonnell Douglas Corporation: *See—*
Eckhardt, Fred A., 3,929,358.

McGaffrey, Francis Hamnet Garland: *See—*
Findlay, Donald Urquhart; McGaffrey, Francis Hamnet Garland; and Scuffell, Derek Edgar Alexander, 3,929,959.

McGehee, John W. Reciprocating gang saw. 3,929,048, Cl. 83-751.000.

McGregor, John: *See—*
Ferguson, Alisdair Cullen; McGregor, John; and MacPherson, Alastair George, 3,930,236.

McLeod, Willard W., Jr.; and Heaton, John F., to Raytheon Company. Digital apparatus. 3,930,238, Cl. 340-173.00R.

McManus, Francis: *See—*
Banks, David Dugmore; and McManus, Francis, 3,929,061.

McNeil Corporation: *See—*
Pamer, Karl A., 3,929,229.

McNinch, Joseph H., Jr.; Urban, John A.; and Hopkins, Gary L., to Eaton Corporation. Skid control system. 3,929,382, Cl. 303-21.0BE.

McQueary, Hobert O.: *See—*
Shoemaker, Philip D.; and McQueary, Hobert O., 3,930,110.

McRae, William V., Jr.; and Stuart, John J., Jr., to Transyt Corporation. Means of high mass flow transportation. 3,929,076, Cl. 104-25.000.

Mead Corporation, The: *See—*
Spatz, Sidney M., 3,929,825.

Mead, Theodore C.; Ashton, William B.; and Shillinglaw, John P., Jr., to Texaco Inc. Manufacture of lubricating oils. 3,929,616, Cl. 208-87.000.

Means, Robert W., to United States of America, Navy. Analog to digital conversion by charge transfer device. 3,930,255, Cl. 340-347.0AD.

Mechler, Helmut: *See—*
Janzon, Karl Heinz; Weigert, Wolfgang; Hein, Hilmar; Mechler, Helmut; and Meyer-Simon, Eugen, 3,929,907.

Meckbach, Heinrich: *See—*
Schmidt, Adolf; Bartl, Herbert; and Meckbach, Heinrich, 3,929,706.

Medrano, Joseph, Jr. Method of producing continuous lengths of reinforced plastic pipe. 3,929,544, Cl. 156-189.000.

Medrick, John D.: *See—*
Harrison, Robert S.; Medrick, John D.; and Nowroski, Alvin P., 3,929,942.

Medvedev, Alexandr Yakovlevich: *See—*
Bykhovsky, David Grigorievich; Medvedev, Alexandr Yakovlevich; Rossomakho, Yakov Vulfovich; and Butova, Margarita Nikolaevna, 3,930,139.

Meier, Carl H., to Gulf & Western Industries, Inc. Digital timer and counter device with dual control. 3,930,142, Cl. 235-92.0EV.

Meinert, Norbert: *See—*
Broemer, Heinz; and Meinert, Norbert, 3,929,495.

Melachouris, Nicholas: *See—*
Feminella, Joseph V.; Melachouris, Nicholas; and Lauck, Robert M., 3,930,056.

Merck & Co., Inc.: *See—*
Christensen, Burton G.; Leanza, William J.; and Albers-Schonberg, Georg, 3,929,840.
Cragoe, Edward J., Jr.; Schultz, Everett M.; and Woltersdorf, Otto W., Jr., 3,929,872.
Reinhold, Donald F., 3,929,576.
Swigert, Roger D., 3,929,858.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Kirchlechner, Richard; Rogalski, Werner; and Seubert, Jurgen, 3,929,880.

Merianos, John J.: *See—*
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 3,929,990.

Merton, Harry; and Howlitt, Thomas Michael, to Winget Limited. Slurry pumps. 3,929,400, Cl. 417-516.000.

Merz, William Carl, to United States of America, Navy. Reserve battery. 3,929,508, Cl. 136-114.000.

Meshkov, Jury Yakovlevich: *See—*
Filatov, Nikolai Grigorievich; Meshkov, Jury Yakovlevich; Chernenko, Nikolai Fedorovich; Nikonenko, Dmitry Iosifovich; Mashlenko, Felix Isaakovich; Belyaev, Albert Mikhailovich; Valeev, Artur Khadyevich; Savina, Valentina Alexandrovna; Marchenko, Vladimir Zakharovich; Fedorov, Valery Ionovich; Gridnev, Vitaly Nikiforovich; and Mikhailov, Konstantin Vasilievich, 3,929,524.

Meshri, Dayal T.; White, Wayne E.; and Sowell, Charles L., to Ozark-Mahoning Company. Synthesis of fluorographite. 3,929,918, Cl. 260-653.900.

Metlesics, Werner; and Sternbach, Leo Henryk, to Hoffmann-La Roche Inc. Novel 2[2-(1,3-diazacycloalk-2-enyl)]benzophenone derivatives and novel 1,3-diazacycloalkenyl[2,1-A]isoindole derivatives. 3,929,766, Cl. 260-239.0BC.

Metz, Ferdinand E.; Boyce, Finis O.; and Segmiller, James L., to H. J. Heinz Company. Process for making a barbecue sauce with tenderizer. 3,930,030, Cl. 426-63.000.

Metzeler Kautschuk AG: *See—*
Britschinn, Horst; Federer, Fritz; and Neumann, Henning, 3,928,879.

Meuken, Hermann: *See—*
Morsbach, Martin; Johren, Paul; and Meuken, Hermann, 3,929,342.

Meyer, Gerhard: *See—*
Toth, Anton; Rupp, Hans-Dieter; and Meyer, Gerhard, 3,929,877.

Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. 2-Amino-1,4-dihydropyridine derivatives. 3,929,798, Cl. 260-287.00K.

Meyer, Jeffrey G.: *See—*
Huerta, James R.; Anderson, Amos R.; and Meyer, Jeffrey G., 3,929,745.

Meyer, Robert F.: *See—*
Holmes, Ann; and Meyer, Robert F., 3,929,856.

Meyer-Simon, Eugen: *See—*
Janzon, Karl Heinz; Weigert, Wolfgang; Hein, Hilmar; Mechler, Helmut; and Meyer-Simon, Eugen, 3,929,907.

Meyer, Urs: *See—*
Schmid, Wolfgang; Gutzwiller, Ernst; and Meyer, Urs, 3,929,806.

Meyers, George L., to American Can Company. Carton and blank therefor. 3,929,271, Cl. 229-4.500.

Michaud, Gregory L.: *See—*
Sharpe, Anthony N.; and Michaud, Gregory L., 3,929,583.

Michelet, Daniel, to Rhone-Poulenc, S.A. Preparation of glyoxylic acid. 3,929,613, Cl. 204-77.000.

Michinori, Koyama: *See—*
Hiroshi, Miyazakai; Kazuo, Kato; and Michinori, Koyama, 3,929,757.

Middelhoek, Servaas: *See—*
Peters, Franciscus J. W. M.; Middelhoek, Servaas; and Rijkeboer, Albert, 3,929,460.

Midland, Richard W.; Bayer, George S.; and Kreiger, Keith H., to General Time Corporation. Radar recorder system. 3,930,118, Cl. 178-6.70R.

Midland-Ross Corporation: *See—*
Durling, Harold, 3,929,381.

Midy, Michel, to Materiel Electrique de Controle et Industriel. Differential and proportional pneumatic amplifiers. 3,929,148, Cl. 137-84.000.

Miescher, Guido M., to Commercial Solvents Corporation. Method of producing glutamic acid by fermentation. 3,929,575, Cl. 195-30.000.

Mihara, Hiromichi; Yajima, Yuzuru; and Ide, Yadenji, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Animal hair-like synthetic fiber. 3,930,106, Cl. 428-399.000.

Mikamo, Masahiro: *See—*
Sugiyama, Noboru; Takahashi, Masahiro; Kanamori, Hirosuke; Sato, Ken; Hirayama, Yoshio; Mikamo, Masahiro; Takahashi, Toshiro; Nagano, Toshihiro; Kaneda, Kazuyoshi; and Hara, Isao, 3,929,593.

Mikhailov, Konstantin Vasilievich: *See—*
Filatov, Nikolai Grigorievich; Meshkov, Jury Yakovlevich; Chernenko, Nikolai Fedorovich; Nikonenko, Dmitry Iosifovich; Mashlenko, Felix Isaakovich; Belyaev, Albert Mikhailovich; Valeev, Artur Khadyevich; Savina, Valentina Alexandrovna; Marchenko, Vladimir Zakharovich; Fedorov, Valery Ionovich; Gridnev, Vitaly Nikiforovich; and Mikhailov, Konstantin Vasilievich, 3,929,524.

Miland, Marie. Portable ramp. 3,928,882, Cl. 14-72.000.

Miles Laboratories, Inc.: *See—*
Corliss, Glenn Arthur; and Furgal, Henry Paul, 3,930,033.

Millard, Gregory S. T.: *See—*
Donaldson, Desmond M.; and Millard, Gregory S. T., 3,929,643.

Miller, James E.: *See—*
Morrill, Elliott; and Miller, James E., 3,929,697.

Miller, Richard C., to Gates Rubber Company, The. Synthesis of 4,5-diaminouracil and its salts. 3,929,788, Cl. 260-256.40C.

Miller, Richard C.; and Payne, Charles C., to Nalco Chemical Company. Correcting for non-uniformity of a silica sol coating. 3,930,063, Cl. 427-54.000.

Miller, Robert W.; and Howell, Samuel Garry, to Diamond Shamrock Corporation. Platable polypropylene composition. 3,929,702, Cl. 260-27.00R.

Millett, Dennis A. Pressurized water powered sanding device. 3,928,947, Cl. 51-170.00T.

Millmaster Onyx Corporation: *See—*
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 3,929,990.

Mills, Edward: *See—*
Prewarski, Mike; and Mills, Edward, 3,929,284.

Mills, Kenneth R.: *See—*
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Milne, Robert M., III: *See—*
Popick, Mitchell A.; Milne, Robert M., III; and Aggarwal, Suresh K., 3,930,209.

Minami, Junichi; Takatsu, Mitsumune; Terada, Masaki; Takeuchi, Tsuneo; and Takagi, Yutaka, to Nissin Shokuhin Kaisha, Ltd. Method of manufacturing quick-soluble gelatinized powdered grain. 3,930,029, Cl. 426-44.000.

Minami, Toshihiro: *See—*
Nakamura, Yoshimi; Minami, Toshihiro; Niina, Eizi; and Mizutani, Katuzi, 3,929,517.

Minchak, Robert J.: *See—*
Tucker, Harold; and Minchak, Robert J., 3,929,746.

Minegishi, Yutaka: *See—*
Arai, Haruhiko; and Minegishi, Yutaka, 3,929,663.

Minieri, Pasquale P., to Tenneco Chemicals, Inc. Preservatives for surface-coating compositions. 3,929,705, Cl. 260-29.6MN.

Minnesota Mining and Manufacturing Company: *See—*
Bettenhausen, Larry A.; Casey, James H.; and Luhman, Robert A., 3,929,552.
Chapman, Harvey A., 3,929,419.
Keith, Roger H., 3,929,270.
Kirby, Russell B., Jr.; and Wing, Stephen C., 3,929,476.
Wood, Vernon E., 3,929,418.
Wood, William P., 3,929,420.

Mintech Corporation: *See—*
Hand, John W., 3,928,973.

Misencik, John J., to Westinghouse Electric Corporation. Ground fault interrupter with means protecting against a grounded neutral condition and with a test circuit for testing performance. 3,930,187, Cl. 317-18.00D.

Mitchell, Robert W.: *See—*
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Mitsubishi Chemical Industries, Ltd.: *See—*
Akasaki, Masato; Takashima, Hiroshi; and Shibata, Kazuhiro, 3,930,018.
Inomata, Jihei; Hino, Seiichi; and Tani, Tatsuo, 3,929,914.
Kurata, Tokuzo; Okano, Takeshi; Tamaru, Akio; Kato, Yozo; and Nagashima, Saburo, 3,929,881.
Kurata, Tokuzo; Emi, Satoshi; Ofuchi, Kunihiko; Takeuchi, Tsutomu; and Sone, Isamu, 3,929,963.

Mitsubishi Denki Kabushiki Kaisha: *See—*
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Mitsubishi Gas Chemical Co., Ltd.: *See—*
Urakami, Teizi, 3,929,578.

Mitsubishi Kinzoku Kabushiki Kaisha: *See—*
Okabe, Taijiro; Okuwaki, Akitsugu; and Nakabayashi, Shigetoshi, 3,929,966.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Abiko, Shiro; Yorihiro, Kazuo; Sugihara, Toshiyuki; and Hanawa, Masakazu, 3,929,618.

Mitsubishi Rayon Co., Ltd.: *See—*
Chimura, Kazuya; Ito, Kazuo; Takashima, Shunichi; Shindo, Mizuo; and Shimoshinbara, Yoshihiro, 3,929,728.
Chimura, Kazuya; Takashima, Shunichi; Nakazono, Ryuichi; Kawashima, Masao; Ota, Hiroyuki; Kaneko, Takashi; and Sakunaga, Kenichi, 3,930,103.
Orito, Zen-Ichi; Uchida, Minoru; and Mori, Noriaki, 3,929,946.

Mitsugi, Koji: *See—*
Sano: Konosuke; and Mitsugi, Koji, 3,929,573.

Mitsui Mining & Smelting Co., Ltd.: *See—*
Hidohira, Yoshihumi, 3,929,614.

Mitsui, Ryozo: *See—*
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Miyakawa, Masami; Yoneyama, Masakazu; and Yamamoto, Nobuo, to Fuji Photo Film Co., Ltd. Dispersion of silver halide developing agent with surface active polymers of maleic acid half esters. 3,929,485, Cl. 96-66.00R.

Miyasaka, Katsuhiko: *See—*
Suzuki, Yasushi; Hasegawa, Yukio; Tsukamoto, Kunio; Hiramatsu, Yoshio; and Miyasaka, Katsuhiko, 3,929,765.

Miyauchi, Hirokazu; and Matsubara, Hironaga, to Sumitomo Electric Industries, Ltd. Method of manufacturing a polyethylene composition containing an aging inhibitor. 3,929,724, Cl. 260-45.90R.

Miyoshi, T. Kenneth; Berthold, Cornelius E.; Stephens, Frank M., Jr.; and Schellinger, Alfred K., to Ferrovanadium Corporation N.I. Fusion-oxidation process for recovering vanadium and titanium from iron ores. 3,929,461, Cl. 75-30.000.

Mizobata, Satoshi: *See—*
Komo, Tetsuya; Mizobata, Satoshi; Ukaji, Rokuo; and Kamihigoshi, Tutomu, 3,929,920.

Mizuguchi, Shigeru: *See—*
Takita, Tomohisa; Fujii, Akio; Muraoka, Yasuhiko; Mizuguchi, Shigeru; and Umezawa, Hamao, 3,929,993.

Mizuki, Eiichi: *See—*
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Mizushima, Haruo: *See—*
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Mizushiro, Ken: *See—*
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Mizutani, Katuzi: *See—*
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Mizutani, Makoto: *See—*
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Mizutani, Masayoshi: *See—*
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Mobil Oil Corporation: *See—*
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Chang, Harry L.; Cook, Evin L.; and Burdyn, Ralph F., 3,929,190.
Nelson, Earnest E., 3,929,434.
Theissen, Robert J., 3,929,455.

Moersch, George W.; and Creger, Paul L., to Parke, Davis & Company. Tetramethylalkane derivatives. 3,929,897, Cl. 260-602.000.

Mohan, Manohar, to William F. Shepherd, Inc. Mechanical interlock device for a vending machine. 3,929,257, Cl. 221-152.000.

Molino, Angelo R. Duct joining means and apparatus for forming the same. 3,928,996, Cl. 72-129.000.

Molkerei J. A. Meggle, Milchindustrie: *See—*
Kuipers, Arie, 3,930,039.

Mollico, Roxie. Vehicle safety indicating apparatus. 3,930,225, Cl. 340-62.000.

Moni, Inc.: *See—*
Moser, Richard M., 3,929,038.

Monpetit, Louis A.; and Fournier, Daniel R. Electronic control systems for internal combustion engines. 3,929,108, Cl. 123-32.0EA.

Monsanto Company: *See—*
Anagnostopoulos, Constantine E.; and Wise, Raleigh W., 3,929,012.
Bak, Bruce S.; Deets, Gary L.; and Pokigo, Francis J., 3,929,722.
D'Amico, John Joseph, 3,929,857.
Hall, Claude E.; and Stalvey, Louis L., 3,929,701.
Hamm, Philip C.; and Schafer, David E., 3,929,450.
Rapko, John N.; and Crutchfield, Marvin M., 3,929,875.
Summers, Charles Gene, 3,929,855.

Monsanto Research Corporation: *See—*
Salyer, Ival O.; and North, Charles J., 3,929,939.

Montagne, Jean Bernard, to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. Elastomers associated with cords of radial tires at points close to and removed from beads. 3,929,539, Cl. 156-123.000.

Montalbano, Anthony P., to Ippolito, Madeline. Apparatus for destroying syringes and like articles. 3,929,295, Cl. 241-190.000.

Montecatini Edison S.p.A.: *See—*
Morero, Domenico; Montiglio, Ugo; Aspes, Pierfrancesco; and Basile, Giampiero, 3,929,978.
Venturello, Carlo, 3,929,827.

Montedison S.p.A.: *See—*
Gazzarrini, Franco; Aguzzi, Paolo; and Corsini-Mena, Adriana, 3,929,665.

Montgomery, Thomas M., to Ocean Drilling & Exploration Company. Method of retrieving anchors. 3,929,087, Cl. 114-206.00R.

Montiglio, Ugo: *See—*
Morero, Domenico; Montiglio, Ugo; Aspes, Pierfrancesco; and Basile, Giampiero, 3,929,978.

Moore, Albert Lloyd; and Tang, Walter Kwei-Yuan, to Du Pont de Nemours, E. I., and Company. Novel fluoroelastomers in powder form. 3,929,934, Cl. 260-884.000.

Moore Business Forms, Inc.: *See—*
Alsop, Derek J., 3,929,828.
Alsop, Derek J., 3,930,108.

Moore, Douglas R., to Chicago Musical Instrument Co. Multiplex harmony generator. 3,929,051, Cl. 84-1.170.

Moore, George L.: *See—*
Terrell, Ross C.; and Moore, George L., 3,930,013.

Morero, Domenico; Montiglio, Ugo; Aspes, Pierfrancesco; and Basile, Giampiero, to Montecatini Edison S.p.A. Process for preparing ferromagnetic chromium dioxide. 3,929,978, Cl. 423-607.000.

Mori Ironworks Company Limited: *See—*
Katagiri, Yoshiaki; Urayama, Takao; and Mori, Masaji, 3,929,546.

Mori, Masaji: *See—*
Katagiri, Yoshiaki; Urayama, Takao; and Mori, Masaji, 3,929,546.

Mori, Noriaki: *See—*
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Moriguchi, Isao: *See—*
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Morimoto, Akira: *See—*
Oshiai, Michihiko; Ari, Osami; Morimoto, Akira; Okada, Taiiti; and Masuda, Katsutada, 3,929,775.

Morisaki, Nobukazu, to Daido Metal Company, Ltd. Device for measuring the thicknesses of parts having an arcuate portion such as bearings and the like. 3,928,918, Cl. 33-172.00R.

Morita, Akiyoshi; and Enami, Tomotada, to Victor Company of Japan, Limited. Oscillator synchronization circuit in a television camera. 3,930,122, Cl. 178-69.5TV.

Moriya, Yoshio: *See—*
Shinomiya, Hiroshi; Muro, Kajuro; Sakata, Sumio; Saida, Shigeki; Umehara, Seichiro; Tsuchiya, Yutaka; Yashiro, Kunijo; and Moriya, Yoshio, 3,930,081.

Morley, Richard E.; and Schelberg, Charles C., Jr. Data transfer and manipulation apparatus for industrial computer controllers. 3,930,233, Cl. 340-172.500.

Morozowich, Walter, to Upjohn Company, The. Substituted tolylesters of PGF_2G2a. 3,929,862, Cl. 260-468.00D.

Morrill, Elliott; and Miller, James E., to CPC International Inc. Dye composition and method of dyeing. 3,929,697, Cl. 260-17.4ST.

Morris, Cyril; and Topham, Arthur, to Imperial Chemical Industries Limited. Colouration process. 3,929,405, Cl. 8-39.000.

Morrison, Jimmie H. Divider and partition device for wire. 3,929,248, Cl. 220-19.000.

Morsbach, Martin; Johren, Paul; and Meuken, Hermann, to Goetzewerke. Spreader spring for piston rings. 3,929,342, Cl. 277-141.000.

Moser, Richard M., to Moni, Inc. Grinding machine and drive assembly therefor. 3,929,038, Cl. 74-810.000.

Mosher, Arthur Joseph; and Yingst, Donald Eugene, to Societe d'Assistance Technique pour Produits Nestle S.A. In situ production of meat like flavor in extruded porous food product. 3,930,045, Cl. 426-533.000.

Moss, George J.: *See—*
Greene, Michael L.; and Moss, George J., 3,929,015.

Motorola, Inc.: *See—*
Ambruoso, Pasquale, Sr., 3,929,023.
Davidson, Uryon S., deceased; Ajamie, Amil J., administrator; and Price, James B., 3,929,528.
Kuhn, Harry A., Jr., 3,930,169.
Ocken, Alfred G., Jr.; and Skoda, William G., 3,929,022.

Moynahan, Edward B.; Brunner, August H., Jr.; and Skreckoski, Gerald R., to GAF Corporation. Recovery of silver from silver salts. 3,929,466, Cl. 75-83.000.

Muecke, Thomas Wayne: *See—*
Graham, John Wayne; Muecke, Thomas Wayne; and Cooke, Claude Everett, Jr., 3,929,191.

Mueller, Johannes: *See—*
Bickel, Hans; and Mueller, Johannes, 3,929,779.

Mueller, Karl: *See—*
Holik, Herbert; and Mueller, Karl, 3,929,560.

Mueller, Wolfgang: *See—*
Mayerhoefer, Horst; Mueller, Wolfgang; Sollberger, Urs; and Wolf, Rainer, 3,929,940.

Muller, Erwin: *See—*
Blahak, Johannes; Muller, Erwin; and Kleimann, Helmut, 3,929,863.

Muller, Hans Rudolf, to Sundstrand Data Control, Inc. Circuit for measuring the rate of synchro rotation. 3,930,143, Cl. 235-150.200.

Muller, Heinz; and Szonn, Bodo, to Beiersdorf Aktiengesellschaft. Adhesive sheets and webs and process for their manufacture. 3,930,102, Cl. 428-354.000.

Muller, Jakob, to Ingenieurburo fur Maschinebau Jakob Muller. Method and apparatus for moving a knitting needle or the like of a shuttleless loom. 3,929,170, Cl. 139-124.00A.

Murakami, Kyoko: *See—*
Kurata, Takeo; Hayazaki, Tamotsu; and Murakami, Kyoko, 3,928,958.

Murakami, Masuo; Koda, Akio; Takashima, Mutsuo; Takagi, Etuo; Sakoh, Ichiro; Matsuda, Hideya; and Suzuki, Tsutomu, to Yamanouchi Pharmaceutical Co., Ltd. Process of producing semi-synthetic penicillin. 3,929,767, Cl. 260-239.100.

Muraoka, Yasuhiko: *See—*
Takita, Tomohisa; Fujii, Akio; Muraoka, Yasuhiko; Mizuguchi, Shigeru; and Umezawa, Hamao, 3,929,993.

Murata, Moriyasu: *See—*
Arai, Haruhiko; Tachibana, Kyozaburo; Naganuma, Yoshinori; and Murata, Moriyasu, 3,929,680.

Murata, Takao; Nakamura, Nobutaka; and Saeki, Yukio, to Sumitomo Durez Company, Ltd. Phenolic resin adhesives containing resorcinol, formaldehyde and an alkali metal carbonate. 3,929,695, Cl. 260-17.500.

Muro, Kajuro: *See—*
Shinomiya, Hiroshi; Muro, Kajuro; Sakata, Sumio; Saida, Shigeki; Umehara, Seichiro; Tsuchiya, Yutaka; Yashiro, Kunijo; and Moriya, Yoshio, 3,930,081.

Murphy, Wesley T., to Vercon Products, Inc. Roof assemblies for building structures. 3,928,951, Cl. 52-92.000.

Murray, Donald W.; and Pattenden, Warren C., to Exxon Research & Engineering Co. Modified lithium soap grease. 3,929,651, Cl. 252-41.000.

Murty, Dasika R.: *See—*
Murty, Hari S.; Gara, Siva K.; and Murty, Dasika R., 3,929,981.

Murty, Hari S.; Gara, Siva K.; and Murty, Dasika R., to E. R. Squibb & Sons, Inc. Method for determining thyroid function. 3,929,981, Cl. 424-1.000.

Myers, George M.: *See—*
Sutko, Adolph A.; and Myers, George M., 3,929,388.

Myers, Henry F., to United States Steel Corporation. Method for controlling splashing resulting from the use of gas knives. 3,930,075, Cl. 427-349.000.

N.L. Industries, Inc.: *See—*
Granquist, William T., 3,929,622.

N. V. Bekaert S.A.: *See—*
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Nadeau, Victor Joseph: *See—*
Jakobsen, Karl Severin; and Nadeau, Victor Joseph, 3,929,956.

Nagano, Toshihiro: *See—*
Sugiyama, Noboru; Takahashi, Masahiro; Kanamori, Hirosuke; Sato, Ken; Hirayama, Yoshio; Mikamo, Masahiro; Takahashi, Toshiro; Nagano, Toshihiro; Kaneda, Kazuyoshi; and Hara, Isao, 3,929,593.

Naganuma, Yoshinori: *See—*
Arai, Haruhiko; Tachibana, Kyozaburo; Naganuma, Yoshinori; and Murata, Moriyasu, 3,929,680.

Nagashima, Saburo: *See—*
Kurata, Tokuzo; Okano, Takeshi; Tamaru, Akio; Kato, Yozo; and Nagashima, Saburo, 3,929,881.

Nagata, Wataru, to Shionogi & Co., Ltd. 3-Isochromanone derivatives. 3,929,834, Cl. 260-343.20R.

Nagazumi, Yasuo, to Nissan Motor Company Limited. Mounting device for shoulder harness type safety belt. 3,929,203, Cl. 180-82.00C.

Nagy, Edward John: *See—*
Orkin, Stanley S.; and Nagy, Edward John, 3,929,396.

Nahas, Nicholas C.: *See—*
Koh, Kwang K.; Pennington, Robert E.; Vernon, Lonnie W.; and Nahas, Nicholas C., 3,929,431.

Naito, Okito, to Kabushiki Kaisha Seikosha. Electronic timepiece. 3,928,959, Cl. 58-23.00R.

Najimian, Harry, Jr.: *See—*
Lambrecht, Ralph E.; and Najimian, Harry, Jr., 3,929,089.

Nakabayashi, Shigetoshi: *See—*
Okabe, Taijiro; Okuwaki, Akitsugu; and Nakabayashi, Shigetoshi, 3,929,966.

Nakagawa, Keizo: *See—*
Hara, Satoshi; Akino, Morio; and Nakagawa, Keizo, 3,929,298.

Nakagawa, Yunosuke; Inamoto, Yoshiaki; and Aigami, Koji, to Kao Soap Co., Ltd. Liquid detergent bleaching composition. 3,929,661, Cl. 252-103.000.

Nakajima, Tomio: *See—*
Habu, Teiji; Nakajima, Tomio; Sakamoto, Eiichi; Kadokura, Kenzi; Yoshida, Kyusaku; and Machida, Katsutoshi, 3,929,486.

Nakakobo, Isojiro: *See—*
Nishi, Takeshi; Kimura, Tsurugi; Moriguchi, Isao; Yokoi, Kiyoshi; Nakakobo, Isojiro; and Kumagai, Ryohei, 3,929,428.

Nakamura, Chihiro: *See—*
Tanigawa, Shizuhiko; Kikuya, Satoshi; Yamazoe, Yoshinori; and Nakamura, Chihiro, 3,930,270.

Nakamura, Harutoki; and Yagi, Jun, to Matsushita Electric Industrial Co., Ltd. Auto exhaust control catalyst on silica cloth support. 3,929,671, Cl. 252-455.00R.

Nakamura, Ichiro: *See—*
Ichiryu, Ken; Shigeta, Masayuki; Nakamura, Ichiro; and Kajiwara, Toshiyuki, 3,928,994.

Nakamura, Nobutaka: *See—*
Murata, Takao; Nakamura, Nobutaka; and Saeki, Yukio, 3,929,695.

Nakamura, Shinji: *See—*
Yamahara, Takeshi; Deguchi, Takashi; and Nakamura, Shinji, 3,929,773.

Nakamura, Tadashi; and Hagiwara, Hisami, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing porous synthetic resin film and sheet. 3,929,950, Cl. 264-49.000.

Nakamura, Yoshimi; Minami, Toshihiro; Niina, Eizi; and Mizutani, Katuzi, to Kobe Steel Ltd. Process for producing a steel having a superb combination of high strength and substantial toughness. 3,929,517, Cl. 148-12.00F.

Nakanishi, Astuo: *See—*
Izawa, Shinichi; Tsuzimura, Katsuhiko; Mizushiro, Ken; Ozeki, Juro; Sugawara, Yoshiaki; Tanaka, Tsutomu; and Nakanishi, Astuo, 3,929,931.

Nakanishi, Atsuo: *See—*
Izawa, Shinichi; Ozeki, Juro; Tanaka, Tsutomu; and Nakanishi, Atsuo, 3,929,930.

Nakao, Yukimichi: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,929,910.

Nakazono, Ryuichi: *See—*
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Nalco Chemical Company: *See—*
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Hoffmann, Karl H.; Anderson, Donald R.; and Allain, Ronald J., 3,929,673.
Miller, Richard C.; and Payne, Charles C., 3,930,063.
Werges, Darrell L., 3,929,421.

Narayanan, Venkatachala L.; and Haugwitz, Rudiger D., to E. R. Squibb & Sons, Inc. (Oxadiazolyl) alkyl) benzimidazoles. 3,929,814, Cl. 260-302.00H.

Nasby, Robert D.; and Corll, James A. Ski boot cleaner. 3,929,345, Cl. 280-11.37E.

National Research Development Corporation: *See—*
Baker, Ian Martin; Beynon, John David Emrys; and Roberts, Peter Christopher Tudor, 3,930,065.

National Semiconductor Corporation: *See—*
Dobkin, Robert C., 3,930,172.
Hodge, Robin H., 3,930,114.

National Steel Corporation: *See—*
Cook, Henry S., 3,929,231.

Naude, Alwyn Petrus. Louvre system. 3,928,954, Cl. 52-473.000.

Nedeljkovic, Arsenije I., to Eagle-Picher Industries, Inc. Composition and method for electrostatic deposition of dry porcelain enamel frit. 3,930,062, Cl. 427-27.000.

Neeff, Rutger: *See—*
Krock, Friedrich Wilhelm; and Neeff, Rutger, 3,929,401.

Neely, James E., Jr., to PPG Industries, Inc. Tempering glass sheets by heat of sublimation. 3,929,442, Cl. 65-114.000.

Neiman, William T.: *See—*
Cann, Everett Douglas, 3,929,967.

Nelson, Earnest E., to Mobil Oil Corporation. Corrosion reduction of tanker vessel cargo compartments. 3,929,434, Cl. 55-68.000.

Nelson, Gerald V.; Youngblood, Douglas J.; and Colvert, James H., to Texaco Inc. Zeolitic catalytic cracking catalysts. 3,929,668, Cl. 252-455.00Z.

Nelson, Michael E.: *See—*
Perlis, Barry R.; and Nelson, Michael E., 3,929,480.

Nelson, William T., to Phillips Petroleum Company. Lead/-chloride/alumina isomerization catalyst for gasoline. 3,929,623, Cl. 208-135.000.

Neri, Dorothy: *See—*
Engelman, Elaine Green; and Neri, Dorothy, 3,930,055.

Neumann, Henning: *See—*
Britschinn, Horst; Federer, Fritz; and Neumann, Henning, 3,928,879.

Neustroev, Leonid Sergeevich: *See—*
Ainbinder, Emmanuil Gershkovich; Kurilov, Georgy Vasilievich; and Neustroev, Leonid Sergeevich, 3,928,983.

Neuzil, Richard W.: *See—*
Rosback, Donald H.; and Neuzil, Richard W., 3,929,669.

New Process Industries, Inc.: *See—*
Benson, Glendon M., 3,928,974.

Newell, Isaac Laird: *See—*
Houlihan, William F., deceased; Newell, Isaac Laird; and La Cosse, Gerald E., 3,929,514.

Newell, Lawrence Hugh. Trailer crane with outrigger to crawler conversion. 3,929,204, Cl. 180-9.20C.

NGK Spark Plug Co., Ltd.: *See—*
Asano, Toshiyasu; and Sumi, Kazuyoshi, 3,929,496.

Nicholas, Keith Harlow; Ford, Ronald Alfred; and Beale, Julian Robert Anthony, to U.S. Philips Corporation. Semiconductor devices. 3,929,512, Cl. 148-1.500.

Nichparenko, John: *See—*
Yablonski, Michael E.; and Nichparenko, John, 3,929,124.

Nickell, Claude H. Compressor cycling unit. 3,928,984, Cl. 62-196.000.

Niederprum, Hans: *See—*
Rosendahl, Friedrich-Karl; Pelousek, Herbert; and Niederprum, Hans, 3,929,720.

Nield, Eric, to Imperial Chemical Industries Limited. Polymer compositions. 3,929,710, Cl. 260-30.80R.

Nienburg, Hans-Juergen; Kummer, Rudolf; Hohenschutz, Heinz; Strohmeyer, Max; and Tavs, Peter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of mainly linear aldehydes. 3,929,898, Cl. 260-604.0HF.

Niina, Eizi: *See—*
Nakamura, Yoshimi; Minami, Toshihiro; Niina, Eizi; and Mizutani, Katuzi, 3,929,517.

Nijs, Marc, to N. V. Bekaert S.A. Packing coils of wire netting. 3,929,226, Cl. 206-410.000.

Nikonenko, Dmitry Iosifovich: *See—*
Filatov, Nikolai Grigorievich; Meshkov, Jury Yakovlevich; Chernenko, Nikolai Fedorovich; Nikonenko, Dmitry Iosifovich; Mashlenko, Felix Isaakovich; Belyaev, Albert Mikhailovich; Valeev, Artur Khadyevich; Savina, Valentina Alexandrovna; Marchenko, Vladimir Zakharovich; Fedorov, Valery Ionovich; Gridnev, Vitaly Nikiforovich; and Mikhailov, Konstantin Vasilievich, 3,929,524.

Niles, Earl Thomas, to Dow Chemical Company, The. Pyrotechnic disseminating formulation. 3,929,530, Cl. 149-84.000.

Ninagawa, Sadayoshi: *See—*
Inazuka, Shinichi; and Ninagawa, Sadayoshi, 3,929,819.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Deutsch, Ralph, 3,929,053.

Nippon Hard Facing Co., Ltd.: *See—*
Nishi, Takeshi; Kimura, Tsurugi; Moriguchi, Isao; Yokoi, Kiyoshi; Nakakobo, Isojiro; and Kumagai, Ryohei, 3,929,428.

Nippon Kayaku Co., Ltd.: *See—*
Hiroshi, Miyazakai; Kazuo, Kato; and Michinori, Koyama, 3,929,757.

Nippon Kayaku Kabushiki Kaisha: *See—*
Takita, Tomohisa; Fujii, Akio; Muraoka, Yasuhiko; Mizuguchi, Shigeru; and Umezawa, Hamao, 3,929,993.

Nippon Kogaku K.K.: *See—*
Maida, Osamu, 3,930,253.

Nippon Light Metal Co., Ltd.: *See—*
Sugiyama, Noboru; Takahashi, Masahiro; Kanamori, Hirosuke; Sato, Ken; Hirayama, Yoshio; Mikamo, Masahiro; Takahashi, Toshiro; Nagano, Toshihiro; Kaneda, Kazuyoshi; and Hara, Isao, 3,929,593.

Nippon Oil Company Ltd.: *See—*
Sato, Hisatake, 3,929,736.

Nippon Soda Company, Ltd.: *See—*
Noguchi, Teruhisa; Hashimoto, Yoshinobu; Uchiyama, Yoshio; and Ueyama, Michio, 3,929,903.

Nippon Steel Corporation: *See—*
Kinoshi, Masao; and Furumura, Kyozarburo, 3,929,523.
Okada, Hideya; and Shimada, Haruo, 3,929,472.

Nishi, Takeshi; Kimura, Tsurugi; Moriguchi, Isao; Yokoi, Kiyoshi; Nakakobo, Isojiro; and Kumagai, Ryohei, to Yawata Iron & Steel Co., Ltd.; Yawata Welding Electrode Co., Ltd.; and Nippon Hard Facing Co., Ltd. Wearing member having a pad-welded surface layer high in wear-resistance and heat crack-resistance. 3,929,428, Cl. 29-196.100.

Nishikawa, Tatsuo; and Asakura, Osamu, to Canon Kabushiki Kaisha. Impact printer. 3,929,067, Cl. 101-93.300.

Nishikawa, Yoichi: *See—*
Koyama, Masao; Akashi, Hiromitsu; Nishikawa, Yoichi; Fujiwara, Susumu; and Okada, Takao, 3,930,141.

Nishikuri, Masao: *See—*
Yamada, Eiji; and Nishikuri, Masao, 3,929,842.

Nishimura, Seiichiro, to Bridgestone Tire Company Limited. Method and apparatus for finishing pneumatic tires. 3,929,043, Cl. 82-1.00C.

Nishina, Rintaro, to Tamura Electric Works, Ltd. Timer for controlling the operation of electrical devices. 3,930,131, Cl. 200-35.00R.

Nissan Motor Company Limited: *See—*
Nagazumi, Yasuo, 3,929,203.
Ogino, Michihiro, 3,929,392.
Ogura, Hisateru, 3,929,092.
Sukeshita, Kazumi, 3,929,030.

Nissen, Stanley M.: *See—*
Wallach, Steven J.; Deerfield, Alan J.; and Nissen, Stanley M., 3,930,232.

Nissin Shokuhin Kaisha, Ltd.: *See—*
Minami, Junichi; Takatsu, Mitsumune; Terada, Masaki; Takeuchi, Tsuneo; and Takagi, Yutaka, 3,930,029.

Nistri, Ugo; Parodi, Antonio; and Vargiu, Silvio, to Societa' Italiana Resine S.I.R. S.p.A. Continuous process for the production of aminoplast moulding compositions. 3,929,696, Cl. 260-17.300.

Nitto Boseki Co., Ltd.: *See—*
Araki, Kunio; Sasaki, Takashi; Kasahara, Yuko; Yamashita, Yoshisada; Yotumoto, Keiichi; Sunaga, Hiromi; Tabei, Kiyoshi; Goto, Kazuo; Tajiri, Kunio; and Kittaka, Hirokazu, 3,930,098.

Noah, Russell V., to Greer Hydraulics, Inc. Anti-bottoming fluid control system. 3,929,313, Cl. 251-28.000.

Noguchi, Teruhisa; Hashimoto, Yoshinobu; Uchiyama, Yoshio; and Ueyama, Michio, to Nippon Soda Company, Ltd. Germicidal and fungicidal diphenyl ethers. 3,929,903, Cl. 260-613.00R.

Noray Unlimited, Inc.: *See—*
Gurman, Norman R., 3,928,921.

Norddeutsche Schleifmittel-Industrie Christiansen & Co.: *See—*
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Nordon Industries, Inc.: *See—*
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Nordsiek, Karl-Heinz: *See—*
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Nordson Corporation: *See—*
Hastings, Donald R.; and Noss, Jeffrey S., 3,929,286.

Norman Lock Co.: *See—*
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Norose, Fumitaka: *See—*
Kumasa, Ikuzi; Yamamoto, Takeshi; Norose, Fumitaka; Acutagawa, Susumu; Yoshida, Toshio; and Komatsu, Akira, 3,929,893.

Norsk Hydro A.S.: *See—*
Heimdal, Ivar Dagfinn; and Skreosen, Ivar, 3,929,263.

Norstrom, Lars-Ake: *See—*
Hellner, Lars Ivar; and Norstrom, Lars-Ake, 3,929,520.

North, Charles J.: *See—*
Salyer, Ival O.; and North, Charles J., 3,929,939.

North Electric Company: *See—*
Burens, James H.; and Wallace, Kenneth A., 3,930,170.

Northern Electric Company Limited: *See—*
Winter, James Douglas; and Elder, Mark Alexander, 3,930,208.

Noss, Jeffrey S.: *See—*
Hastings, Donald R.; and Noss, Jeffrey S., 3,929,286.

Notari, Bruno: *See—*
Buonomo, Franco; Fattore, Vittorio; Zanoni, Gianfranco; and Notari, Bruno, 3,929,681.

Nowell, Roger; and Tate, Philip Edward Russell, to Burmah Oil Trading Limited. An oil-based EDPM polymer composition in the form of a castable jelly and method of using same. 3,929,715, Cl. 260-33.6AQ.

Nowroski, Alvin P.: *See—*
Harrison, Robert S.; Medrick, John D.; and Nowroski, Alvin P., 3,929,942.

Noyes, Richard Croissant, to Combustion Engineering, Inc. Volume displacing modules for liquid metal cooled nuclear reactors. 3,929,566, Cl. 176-37.000.

NSM Apparatebau GmbH Kommanditgesellschaft: *See—*
Busch, Juergen Peter, 3,929,338.

Nussbaum, Ralph W.: *See—*
Curtis, Omer E., Jr.; Tuller, Harold W.; O'Neill, Charles T.; and Nussbaum, Ralph W., 3,929,738.

Nuttall, Roy; and Rowbotham, Clifford, to Ferranti, Limited. Method of making semi-conductor devices utilizing a compensating prediffusion. 3,929,526, Cl. 148-175.000.

Oak Ridge Machines: *See—*
Picker, Franck, 3,928,969.

Oakley, Robert Lawford: *See—*
Ryden, Vernon John; and Oakley, Robert Lawford, 3,929,368.

Ocean Drilling & Exploration Company: *See—*
Montgomery, Thomas M., 3,929,087.

Ocken, Alfred G., Jr.; and Skoda, William G., to Motorola, Inc. Recessed meter in a housing and method of adjusting the same 3,929,022, Cl. 73-431.000.

Offerman, Sidney, to Grow Chemical Corporation Sprayable decorative coating composition for covering unfinished surfaces. 3,929,692, Cl. 260-7.500.

Ofuchi, Kunihiko: *See—*
Kurata, Tokuzo; Emi, Satoshi; Ofuchi, Kunihiko; Takeuchi, Tsutomu; and Sone, Isamu, 3,929,963.

Ogino, Michihiro, to Nissan Motor Company Limited. Resilient bearing structure. 3,929,392, Cl. 308-26.000.

Ogura, Hisateru, to Nissan Motor Company Limited. Selector lever position indicator for motor vehicle automatic transmission system. 3,929,092, Cl. 116-124.00M.

Ohmura, Kaoru: *See—*
Komoto, Hiroshi; and Ohmura, Kaoru, 3,929,716.

Ohr, Jack; and Clark, Kenneth G., to United States of America, Navy. Solubilization of chromate salts in organic media. 3,929,521, Cl. 148-6.200.

Okabayashi, Ikuo: *See—*
Terashima, Osamu, and Okabayashi, Ikuo, 3,928,979.

Okabe, Taijiro; Okuwaki, Akitsugu; and Nakabayashi, Shigetoshi, to Mitsubishi Kinzoku Kabushiki Kaisha Method for removing oxides of nitrogen from gaseous mixtures. 3,929,966, Cl. 423-239.000.

Okada, Hideya; and Shimada, Haruo, to Nippon Steel Corporation. Steel sheets having excellent rust resistance. 3,929,472, Cl 75-124.000

Okada, Taiiti: *See—*
Oshiai, Michihiko; Ari, Osami; Morimoto, Akira; Okada, Taiiti; and Masuda, Katsutada, 3,929,775.

Okada, Takao: *See—*
Koyama, Masao; Akashi, Hiromitsu; Nishikawa, Yoichi; Fujiwara, Susumu; and Okada, Takao, 3,930,141.

Okamoto, Hiroshi. Control system for a recording/reproducing apparatus. 3,930,266, Cl. 360-62.000

Okano, Takeshi: *See—*
Kurata, Tokuzo; Okano, Takeshi; Tamaru Akio; Kato, Yozo; and Nagashima, Saburo, 3,929,881.

Okazaki, Isao: *See—*
Shibata, Hiroshi; Kokubu, Yoshikazu; and Okazaki, Isao, 3,930,151.

Okuwaki, Akitsugu: *See—*
Okabe, Taijiro; Okuwaki, Akitsugu; and Nakabayashi, Shigetoshi, 3,929,966.

Oldfield, Lucy Florence, to General Electric Company Limited, The Manufacture of laser glass. 3,929,440, Cl. 65-32.000

Oldis, John Edward; and Venkatesan, Peruvemba Swaminatha, to Western Electric Company, Inc. Method of and apparatus for producing articles having high magnetic permeability from billets of temporarily magnetizable (i.e., soft magnetic) material. 3,928,995, Cl. 72-60.000.

Olin Corporation: *See—*
Cheskis, Harvey P.; Shapiro, Stanley; and Pryor, Michael J., 3,929,516.
Hodil, Elmer R., 3,929,269.
Laws, Harold H., 3,928,997.

Oliver, Steve. Method and apparatus for forming swimming pool gutters. 3,929,944, Cl. 264-34.000.

Olsen, Willi; and Lieske, Manfred, to Siemens Aktiengesellschaft. Completely insulated high-voltage switching system. 3,930,188, Cl. 317-103.000.

Olson, Lorin P., to Addressograph Multigraph Corporation. Document transport and registration apparatus. 3,929,327, Cl. 271-250.000.

Olstowski, Franciszek; and Parrish, Donald B., to Dow Chemical Company, The. Non-elastomeric polyurethane compositions containing cyclic ethers. 3,929,709, Cl. 260-30.40N.

Olympia Werke AG: *See—*
Sicking, Heinrich, 3,930,260.

Omark Industries, Inc.: *See—*
Graversen, Curtis L., 3,929,049.

O'Neill, Charles T.: *See—*
Curtis, Omer E., Jr.; Tuller, Harold W.; O'Neill, Charles T.; and Nussbaum, Ralph W., 3,929,738.

Ontario Paper Company Limited, The: *See—*
Shaw, Alan C., 3,929,558.

Onton, Aare: *See—*
Guarnieri, C. Richard; Lee, Kenneth; and Onton, Aare, 3,930,241.

Organic Chemicals Company, Inc.: *See—*
Slikkers, George, Jr., 3,929,586.

Orito, Zen-Ichi; Uchida, Minoru; and Mori, Noriaki, to Mitsubishi Rayon Co., Ltd. Process for producing hygroscopic acrylic fibers. 3,929,946, Cl. 264-41.000.

Orkin, Stanley S.; and Nagy, Edward John, to Kamatics Corporation. Molded plastic bearing assembly. 3,929,396, Cl. 308-241.000.

Orlando, Charles M.; and Lavallee, Francois A., to General Electric Company. Brominated biphenols. 3,929,908, Cl. 260-620.000.

Orlowski, Jan A.: *See—*
Lee, Henry L.; Orlowski, Jan A.; and Butler, David V., 3,929,001.
Lee, Henry L., Jr.; and Orlowski, Jan A., 3,929,493.

Orpwood, John Leonard: *See—*
Hudson, Alan George; and Orpwood, John Leonard, 3,929,698.

Orsino, Joseph A.: *See—*
Burkett, Wilford B.; and Orsino, Joseph A., 3,929,505.

Osbond, John Mervyn: *See—*
Fothergill, Graham Alwyn; Osbond, John Mervyn; and Wickens, James Charles, 3,929,836.

Osborne, Robert L., to Westinghouse Electric Corporation. System and method for improved steam turbine operation. 3,928,972, Cl. 60-646.000.

Oshiai, Michihiko; Ari, Osami; Morimoto, Akira; Okada, Taiiti; and Masuda, Katsutada, to Takeda Chemical Industries, Ltd. Process for producing cephalosporin derivatives. 3,929,775, Cl. 260-243.00C.

Oswald, Alexis A., to Exxon Research & Engineering Co. Tetraalkyl phosphonium aluminosilicates. 3,929,849, Cl. 260-448.00C.

Ota, Hiroyuki: *See—*
Chimura, Kazuya; Takashima, Shunichi; Nakazono, Ryuichi; Kawashima, Masao; Ota, Hiroyuki; Kaneko, Takashi; and Sakunaga, Kenichi, 3,930,103.

Ott, Joseph D. Mount for pair of ski boots on single snow ski. 3,929,344, Cl. 280-11.35C.

Otto, Bernhard: *See—*
Lotz, Horst K.; and Otto, Bernhard, 3,929,324.

Outboard Marine Corporation: *See—*
Lambrecht, Ralph E.; and Najimian, Harry, Jr., 3,929,089.
Turner, Robert K.; and Rose, Edgar, 3,929,111.

Overbeek, Gerhardus: *See—*
Pittie, Willem Hubert; Overbeek, Gerhardus; and Doig, Kingsley Ferguson, 3,929,469.

Owens-Illinois, Inc.: *See—*
Gray, Don N.; and Guilbault, George G., 3,929,609.
Grier, John D., 3,929,070.
Veres, Frank, 3,929,494.

Oxy Metal Industries Corporation: *See—*
Shinomiya, Hiroshi; Muro, Kajuro; Sakata, Sumio; Saida, Shigeki; Umehara, Seichiro; Tsuchiya, Yutaka; Yashiro, Kunijo; and Moriya, Yoshio, 3,930,081.

Oyama, Yoshishige: *See—*
Yamauti, Teruo; Oyama, Yoshishige; and Hohsho, Yukio, 3,929,115.

Ozark-Mahoning Company: *See—*
Meshri, Dayal T.; White, Wayne E.; and Sowell, Charles L., 3,929,918.

Ozeki, Juro: *See—*
Izawa, Shinichi; Ozeki, Juro; Tanaka, Tsutomu; and Nakanishi, Atsuo, 3,929,930.
Izawa, Shinichi; Tsuzimura, Katsuhiko; Mizushiro, Ken; Ozeki, Juro; Sugawara, Yoshiaki; Tanaka, Tsutomu; and Nakanishi, Astuo, 3,929,931.

P. R. Mallory & Co., Inc.: *See—*
Bro, Per; Kelsey, Robert H.; and Marincic, Nikola, 3,929,507.
Krock, Richard H.; and Pickett, Jerome J., 3,929,424.

Paccagnella, Danilo. Apparatus for folding and pressing an edge of pliant material. 3,929,547, Cl. 156-443.000.

Pachter, Irwin J.: *See—*
Fliedner, Leonard J., Jr.; and Pachter, Irwin J., 3,929,887.

Paddock, Paul F.; and Cramer, Jerry W., to Sunkist Growers, Inc. Means to guide a layer of objects into a box. 3,928,942, Cl. 53-247.000.

Pagdin, Brian Colin, to GKN Transmissions Limited. Fuel injection apparatus for internal combustion engines. 3,929,112, Cl. 123-139.0BC.

Pageau, Lucien: *See—*
Thayer, William; Pageau, Lucien; and Sourirajan, Srinivasa, 3,929,945.

Paine, Robert T., Jr.: *See—*
Asprey, Larned B.; and Paine, Robert T., Jr., 3,929,601.

Palmer, Richard Claxton: *See—*
Clemens, Jon Kaufmann; and Palmer, Richard Claxton, 3,930,117.

Palsson, Jan, to AB Ziristor. Arrangement for the feeding and cutting off of a packing material web. 3,929,045, Cl. 83-323.000.

Pamer, Karl A., to McNeil Corporation. Article storage facility. 3,929,229, Cl. 211-134.000.

Pandey, Raghvendra K., to Cincinnati Electronics Corporation. Nucleating growth of lead-tin-telluride single crystal with an oriented barium fluoride substrate. 3,929,556, Cl. 156-611.000.

Panico, C. Richard, to Xenon Corporation. Inner electrode-support seal for a gaseous discharge flashtube. 3,930,176, Cl. 313-220.000.

Papenfuss, Theodor, to Hoechst Aktiengesellschaft. Process for preparing 4-hydroxy-3-nitrobenzoic acid alkyl esters. 3,929,864, Cl. 260-471.00R.

Pariso, Pasquale P. Float valve. 3,929,156, Cl. 137-444.000.

Park, John N.; Steigerwald, Robert L.; and Walker, Loren H., to General Electric Company. Bridge rectifier circuits using transistors as rectifying elements. 3,930,196, Cl. 321-47.000.

Parke, Davis & Company: *See—*
Creger, Paul L., 3,930,024.
Holmes, Ann; and Meyer, Robert F., 3,929,856.
Moersch, George W.; and Creger, Paul L., 3,929,897.

Parker, Frederick A.; and Mac Bride, William R., to Biomarine Industries, Inc. Method of and apparatus for determining the oxygen content of blood. 3,929,588, Cl. 204-1.00T.

Parker-Hannifin Corporation: *See—*
Lopez, Manuel; and Bourassa, Joseph R., 3,928,887.

Parker, James Eric; and Hill, Nigel, to Dowty Mining Equipment Limited. Mine proof support. 3,928,981, Cl. 61-45.00D.

Parker, Roy B., to United States of America, Navy. Process for dyeing of novoloid fibers. 3,929,407, Cl. 8-168.000.

Parkinson, Christopher: *See—*
Griffith, Robert M.; and Parkinson, Christopher, 3,929,629.

Parkinson, John K.; and Ruhe, Anthony. Ultrasonic inspection recess in heat exchanger and nuclear steam generator tubesheets. 3,929,005, Cl. 73-67.800.

Parmann, Gunnar, to Rieber & Son Plastic-Industri A/S. Process for producing radially-expanded socket ends on thermoplastic pipe lengths. 3,929,958, Cl. 264-249.000.

Parodi, Antonio: *See—*
Nistri, Ugo; Parodi, Antonio; and Vargiu, Silvio, 3,929,696.

Parrish, Donald B.: *See—*
Olstowski, Franciszek; and Parrish, Donald B., 3,929,709.

Parry, David Rees, to Imperial Chemical Industries Limited. Pyrimidinyl acetic acid derivatives and processes for their production. 3,929,789, Cl. 260-256.40C.

Parsons, Gary L.: *See—*
Turner, James Keith; and Parsons, Gary L., 3,929,639.

Parsons, J. Hilton, Jr.: *See—*
Scott, Arthur Leslie; Parsons, J. Hilton, Jr.; and Hammond, John S., 3,929,543.

Parthasarathy, R.; and Scherzer, Julius, to W. R. Grace & Co. Hydrocracking catalyst and process. 3,929,620, Cl. 208-111.000.

Parvi, Ludovic: *See—*
Isard, Arsene; and Parvi, Ludovic, 3,929,886.

Pasini, Franco, to Industrie Pirelli S.p.A. Mixed fluid impregnant for oil filled electric cables. 3,930,112, Cl. 174-25.00C.

Pasiuk, Walter T., to United States of America, Army. Preparation of thermal barriers. 3,930,085, Cl. 428-116.000.

Paton, Charles R.: *See—*
Richards, Edward L.; Paton, Charles R.; and Rooney, Daniel G., 3,930,214.

Pattenden, Warren C.: *See—*
Murray, Donald W.; and Pattenden, Warren C., 3,929,651.

Patterson, Frank Knowles, to Du Pont de Nemours, E. I., and Company. Boride-containing metallizations. 3,929,674, Cl. 252-514.000.

Patzke, Jorg: *See—*
Kratel, Gunter; Patzke, Jorg; and Wegehaupt, Karl-Heinrich, 3,929,718.

Paul, Terence Barrington. Diver's breathing apparatus with gas purifying system. 3,929,127, Cl. 128-142.000.

Paustian, John E.: *See—*
Gelbein, Abraham P.; Sze, Morgan C.; and Paustian, John E., 3,929,811.

Pavey, George M., Jr., to Whitehall Corporation. Seismic streamer construction for minimizing hydrophone response to vibration produced pressure fields. 3,930,254, Cl. 340-7.00R.

Payne, Charles C.: *See—*
Miller, Richard C.; and Payne, Charles C., 3,930,063.

PB Gelatines: *See—*
De Brou, Michel; and Den Tandt, Claude, 3,930,052.

Pease, James F. Electrical heating element and fitting assembly. 3,930,140, Cl. 219-316.000.

Pech, Bernard M., to Societe Nationale des Poudres et Explosifs. Safety device with an inflatable cushion, especially for automobiles. 3,929,350, Cl. 280-150.0AB.

Peckham, Victor A., Jr. Bicycle power brake. 3,929,209, Cl. 188-24.000.

Pecorella, Saviour S., to Becton, Dickinson and Company. Disposable thermometer. 3,929,021, Cl. 73-356.000.

Pedersen, Nicholas F.: *See—*
Becker, Kenneth F.; and Pedersen, Nicholas F., 3,928,968.

Peham, Engelbert J. Bracket for supporting an ornament. 3,929,310, Cl. 248-226.00E.

Peisker, Glenn W., to Chicago Rawhide Manufacturing Company. Seal with pumping action. 3,929,340, Cl. 277-134.000.

Pekkarinen, Michael O., to Baxter Laboratories, Inc. Disposable humidifier. 3,929,128, Cl. 128-194.000.

Pelousek, Herbert: *See—*
Rosendahl, Friedrich-Karl; Pelousek, Herbert; and Niederprum, Hans, 3,929,720.

Pennington, Robert E.: *See—*
Koh, Kwang K.; Pennington, Robert E.; Vernon, Lonnie W.; and Nahas, Nicholas C., 3,929,431.

Pennsylvania Crusher Corporation: *See—*
Hahn, William F.; and Graf, Carl R., 3,929,293.

Pennwalt Corporation: *See—*
Kydonieus, Nicholas; and Sandler, Stanley Robert, 3,929,852.

Penoli, Raymond J., Jr.: *See—*
Gaul, Ray A.; and Penoli, Raymond J., Jr., 3,928,991.

Pepro, Societe pour le Developement et la Vent de Specialities: *See—*
Pillon, Daniel; Ducret, Jacques; and Demozay, Daniel, 3,929,805.

Perfection Manufacturing Company, The: *See—*
Boyer, Walter J., 3,928,956.

Perkins, Norwood K.: *See—*
Cialone, David R.; Hieronymus, Gerald W.; Kruspe, Henry R.; McCornack, Richard W.; Perkins, Norwood K.; and West, Donald L., 3,929,071.

Perl, Richard L., to Tappan Company, The. Gas igniter. 3,928,910, Cl. 29-628.000.

Perlis, Barry R.; and Nelson, Michael E., to Dennison Manufacturing Company. Continuous tone ZnO - acrylic polymer binder and additive. 3,929,480, Cl. 96-1.800.

Perrella, Donald J.; and Dolfini, Joseph E., to E. R. Squibb & Sons, Inc. Bis-cephalosporine. 3,929,777, Cl. 260-243.00C.

Perry, Ernest John: *See—*
Ponticello, Ignazio Salvatore; and Perry, Ernest John, 3,929,482.

Perry, Robert E. Automatic shift control for bicycles and the like. 3,929,025, Cl. 74-217.00B.

Persson, Sture Ivan. Throw-away receptacle for collection of urine of those confined to bed. 3,928,875, Cl. 4-110.000.

Peters, Franciscus J. W. M.; Middelhoek, Servaas; and Rijkeboer, Albert, to Billiton Research B. V. Process for the preparation of vanadium, vanadium alloys or vanadium compounds. 3,929,460, Cl. 75-24.000.

Petersen, Harro; Erhardt, Klaus; Ruemens, Wilhelm; Bille, Heinz; and Reuss, Guenter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Crease resistant cellulosic textile material. 3,930,087, Cl. 428-278.000.

Peterson, Brent L. Modulating compression release for an engine. 3,929,116, Cl. 123-182.000.

Peterson, Henry G.; and Grimes, Tom, to Roto Rooter Corporation. Pipe cleaning machine and cable retrieving mechanism therefor. 3,928,885, Cl. 15-104.3SN.

Petitpierre, Jean Claude: *See—*
Garner, Robert; and Petitpierre, Jean Claude, 3,929,831.

Petr, Vlastimil: *See—*
Rosa, Josef; and Petr, Vlastimil, 3,929,417.

Petrocci, Alfonso N.: *See—*
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 3,929,990.

Petroff, Guy, to Hinderstein, Philip M. Lock for sliding doors and windows. 3,929,362, Cl. 292-291.000.

Petrolite Corporation: *See—*
Buriks, Rudolf S.; and Fauke, Allen R., 3,929,632.
Buriks, Rudolf S.; and Fauke, Allen R., 3,929,635.
Lucas, Roy N., 3,929,625.

Petrov, Gennady Nikolaevich: *See—*
Volkova, Leman Mustafa Kyzy; Korolev, Gennady Vladimirovich; Dubovitsky, Fedor Ivanovich; Trostyanskaya, Irina Ivanovna; Rappoport, Leonid Yakovlevich; Petrov, Gennady Nikolaevich; Shestakovsky, Mikhail Fedorovich; Yakubov, Renat Dovletovich; and Maximov, Sergei Mikhailovich, 3,929,731.

Petrov, Georgi Mitov; Iliev, Iliya Marinov; and Ilov, Rangel Georgiev, to DSO "Textil". Method of and device for shaped effect yarns with or without ladders. 3,928,957, Cl. 57-18.000.

Petynia, William W.: *See—*
Faget, Maxime A.; Petynia, William W.; and Taub, Willard M., 3,929,306.

Pfarrwaller, Erwin, to Sulzer Brothers Limited. Thread brake. 3,929,169, Cl. 139-122.00H.

Pfefferle, William C., to Engelhard Minerals & Chemicals Corporation. Catalytically-supported thermal combustion. 3,928,961, Cl. 60-39.020.

Pfeiffer, Hans Christian, to International Business Machines Corporation. Lens and deflection unit arrangement for electron beam columns. 3,930,181, Cl. 313-421.000.

Pfister, Bernard, to Union Laitiere Vaudoise. Process for the preparation of a hydrolyzate of proteins for use as a foodstuff. 3,929,890, Cl. 426-580.000.

Pfizer Inc.: *See—*
Danilewicz, John Christopher; Kemp, John Edward Glyn; Snarey, Michael; and Wright, James Robert, 3,930,004.
Hess, Hans-Jurgen E.; Czuba, Leonard J.; and Schaaf, Thomas K., 3,929,818.
Holland, Gerald F., 3,929,803.
Koch, Richard C., 3,930,001.
Richards, Hugh Colin, 3,929,784.

Pfrengle, Otto: *See—*
Ladisch, Gerhard, 3,929,291.

Philadelphia Quartz Company: *See—*
Pierce, Richard H., 3,929,439.

Phillips, Lyle C., to Henderson Manufacturing Co. Apparatus for synchronizing the rotational speeds of a pair of independently driven reversely rotatable shafts. 3,929,292, Cl. 239-685.000.

Phillips Petroleum Company: *See—*
Brady, Donnie G.; and Bailey, Fay W., 3,929,708.
Chapman, Charles C., 3,929,924.
Chapman, Charles; C., 3,929,925.
Dixon, Rolland E., 3,929,430.
Drake, Charles A., 3,929,860.
Harper, Ernest A.; and Bailey, Dunn M., 3,929,438.
Nelson, William T., 3,929,623.
Short, James N., 3,930,078.
Spears, Johnnie E.; and Caldwell, Donald L., 3,929,541.
Walton, Roger J.; and Mills, Kenneth R., 3,929,689.
Wiley, Bruce F., 3,930,217.

Phillips, Wendell, to Robert Manufacturing Company. Backflow preventor for automatic dishwashers. 3,929,149, Cl. 137-216.000.

Picandet, Jean A., to Jeumont-Schneider. Connection network for a time switching automatic electronic exchange. 3,930,125, Cl. 179-15.0AQ.

Picker, Franck, to Oak Ridge Machines. Self-monitored fluid pressure booster system. 3,928,969, Cl. 60-428.000.

Pickett, Jerome J.: *See—*
Krock, Richard H.; and Pickett, Jerome J., 3,929,424.

Pico, Francisco A. Conveyor belt idler rollers. 3,929,391, Cl. 308-20.000.

Piepers, Gijsbrecht Gerhardus; and Vons, Leonard Hendrik, to Reactor Centrum Nederland. Plate spring or retaining grid for a bunch cylindrical elements engaged in a heat exchange process. 3,929,569, Cl. 176-78.000.

Pierce, Louis B.: *See—*
De Vore, Ellen G., 3,929,309.

Pierce, Richard H., to Philadelphia Quartz Company. Method for preparing a highly siliceous alkali metal silicate glass and hydrated powder. 3,929,439, Cl. 65-22.000.

Pike, John E.; and Schneider, William P., to Upjohn Company, The. 16- and 16,16-methyl and ethyl substituted PGF_1-type compounds. 3,929,861, Cl. 260-468.00D.

Pillon, Daniel; Ducret, Jacques; and Demozay, Daniel, to Pepro, Societe pour le Developement et la Vent de Specialities. Certain 4H-(2,3d)pyrido-1,3,2-dioxaphosphorinanes. 3,929,805, Cl. 260-294.80C.

Pillon, Marcel Octave, to Pont-A-Mousson S.A. Machine for printing stamps, in particular on bottle caps. 3,929,066, Cl. 101-35.000.

Pinkham, Philip C., to Litton Systems, Inc. Keyboard panel for an electric switch contact. 3,930,083, Cl. 428-67.000.

Piribauer, Herbert: *See—*
Fidi, Werner; and Piribauer, Herbert, 3,930,128.

Pisarev, Georgy Lvovich: *See—*
Raikov, Ivan Yakovlevich; Ivaschenko, Pavel Andreevich; Judin, Alexandr Nikolaevich; Pisarev, Georgy Lvovich; and Roslyakov, Vladimir Yakovlevich, 3,929,110.

Pissiotas, Georg: *See—*
Durr, Dieter; and Pissiotas, Georg, 3,929,883.

Pittie, Willem Hubert; Overbeek, Gerhardus; and Doig, Kingsley Ferguson, to Swarsab Mining, Exploration & Development Company (Proprietary) Limited. Separation and purification of gold. 3,929,469, Cl. 75-108.000.

Pittinger, Charles B., Jr. Hollow-shaft feed filament trimmer. 3,928,911, Cl. 30-276.000.

Pitts, Robert W., Jr., to Texaco Inc. System for measuring earth formation thermal neutron lifetime utilizing a harmonically intensity modulated fast neutron source. 3,930,152, Cl. 250-269.000.

Plener, Helmut, to Uher Werke Munich. Push button release control system for a tape recorder. 3,930,267, Cl. 360-69.000.

Plumb, John Beckett: *See—*
Atherton, John Heathcote; Plumb, John Beckett; and Stuart, Ronald Sangster, 3,929,851.

Plumberg, Leonard G., to Funck, Donald E. Automatic tamper alarm for motor vehicles. 3,930,226, Cl. 340-64.000.

Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See—*
Ganzinotti, Jean Victor, 3,928,980.

Poisson, Pierre: *See—*
Bernier, Cecile; Jouhaneau, Monique; and Poisson, Pierre, 3,929,734.

Pokigo, Francis J.: *See—*
Bak, Bruce S.; Deets, Gary L.; and Pokigo, Francis J., 3,929,722.

Polaroid Corporation: *See—*
Bader, Henry; and Jahngen, Edwin G., Jr., 3,929,848.
Biber, Conrad H.; and Shenk, Edwin K., 3,930,184.

Borror, Alan L.; and Garcia, Paulina P., 3,929,797.
Borror, Alan L., 3,929,829.
Rickter, Donald O., 3,929,786.
Williamson, Richard P., Jr., 3,930,198.

Poling, Stephen M.: *See—*
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Yokoyama, Henry; Hsu, Wan-Jean; and Poling, Stephen M., 3,930,038.

Polychrome Corporation: *See—*
Chu, Simon Long; and Shimazu, Ken-Ichi, 3,929,591.

Polymer Research Corporation of America: *See—*
Horowitz, Carl, 3,929,800.

Pont-A-Mousson S.A.: *See—*
Pillon, Marcel Octave, 3,929,066.

Ponticello, Ignazio Salvatore; and Perry, Ernest John, to Eastman Kodak Company. Hardenable vehicles for silver halide emulsions. 3,929,482, Cl. 96-114.000.

Popelak, Alfred; Kampe, Wolfgang; Thiel, Max; Dietmann, Karl; and Sponer, Gisbert, to Boehringer Mannheim G.m.b.H. Certain piperazine-containing indole compounds. 3,929,793, Cl. 260-268.0BC.

Popick, Mitchell A.; Milne, Robert M., III; and Aggarwal, Suresh K., to General Signal Corporation. Transmission line simulator. 3,930,209, Cl. 333-23.000.

Poponiak, Michael R., to International Business Machines Corporation. Method for gettering contaminants in monocrystalline silicon. 3,929,529, Cl. 148-191.000.

Porter, Joe A., to Uniloc, Inc. Electrolytic sensor with pressure compensating means. 3,929,603, Cl. 204-195.00P.

Potts, James E.: *See—*
Clendinning, Robert A.; Potts, James E.; and Gorham, William F., 3,929,937.

Pout, Christopher Ronald: *See—*
Davies, Evan Ellis; and Pout, Christopher Ronald, 3,929,624.

Powel International Limited: *See—*
Powel, William Roy, 3,929,220.

Powel, William Roy, to Powel International Limited. Pallet conveyor having relatively adjustable pusher heads. 3,929,220, Cl. 198-164.000.

PPG Industries, Inc.: *See—*
Frank, Robert G., 3,929,441.
May, Earl L.; and Fisher, Joseph J., 3,929,444.
Mazzoni, Renato J.; Bowser, George H.; and Stewart, John L., 3,928,953.
Neely, James E., Jr., 3,929,442.

Preston Metal and Roofing Products Limited: *See—*
Beynon, John O., 3,928,950.

Prewarski, Mike; and Mills, Edward. Programmable timer mechanism. 3,929,284, Cl. 236-46.000.

Price, Andrea A.: *See—*
Isaacs, Thelma J.; Gottlieb, Milton S.; Feichtner, John D.; and Price, Andrea A., 3,929,970.
Isaacs, Thelma J.; Gottlieb, Milton S.; Feichtner, John D.; and Price, Andrea A., 3,929,976.

Price, James B.: *See—*
Davidson, Uryon S., deceased; Ajamie, Amil J., administrator; and Price, James B., 3,929,528.

Procter, Alan R., to MacMillan Bloedel Limited. Stabilization of cellulosic material by treatment with ferricyanide ion. 3,929,559, Cl. 162-70.000.

Procter & Gamble Company, The: *See—*
Baugher, William Lewis, 3,930,046.
Japikse, Cornelis Hendrikus; Singh, Gyanendra; and Kennedy, Timothy J., 3,930,053.
Laughlin, Robert Gene; and Heuring, Vincent Paul, 3,929,678.
Thompson, Hugh Ansley, 3,929,135.

Products Chimiques Ugine Kuhlmann: *See—*
Isard, Arsene; and Parvi, Ludovic, 3,929,886.

Proler, Sam. Method employing barrier means to submerge particles in a molten metal stream. 3,929,465, Cl. 75-65.00R.

Prosdocimo, Giordano: *See—*
Brusadin, Giacomo; and Prosdocimo, Giordano, 3,929,288.

Pryor, Michael J.: *See—*
Cheskis, Harvey P.; Shapiro, Stanley; and Pryor, Michael J., 3,929,516.

Puckett, Brian C. Fastener. 3,928,896, Cl. 24-224.000.

Pugin, Andre; Burdeska, Kurt; and von der Crone, Jost, to Ciba-Geigy Corporation. Process for the bulk-dyeing of linear polyesters. 3,929,719, Cl. 260-40.00P.

Putnam, Alvin A., to H. B. Zachry Co. Transport rig. 3,929,241, Cl. 214-390.000.

PVO International Inc.: *See—*
Bernholz, William F., 3,929,699.

Pyne, Bernard; and Liddle, Robert, to Timex Corporation. Watch strap with plastic clip. 3,929,265, Cl. 224-4.00D.

Quaintance, Harold J.: *See—*
Wainer, Eugene; and Quaintance, Harold J., 3,929,483.

Quaker City Gear Works, Inc.: *See—*
Sulzer, Harry E., 3,930,133.

Quang, Pham Kim; and Gasdoue, Rene, to La Cellophane. Methods of and apparatus for electrostatic printing. 3,930,257, Cl. 346-74.0ES.

Quebedeaux, Bruno, Jr.: *See—*
Beyer, Elmo M., Jr.; and Quebedeaux, Bruno, Jr., 3,929,447.

Queisser, Rudolf; and Schlossbauer, Hubert, to Siemens Aktiengesellschaft. Method and apparatus for inserting additional data between data previously stored in a store. 3,930,234, Cl. 340-172.500.

R. P. Cargille Laboratories, Inc.: *See—*
Bautis, Arthur N., 3,929,667.

Ragab, Mohamed Ismail, to International Pregnancy Advisory Services. Apparatus for removing, washing and displaying fragmentary products of operative procedures. 3,929,133, Cl. 128-277.000.

Raikov, Ivan Yakovlevich; Ivaschenko, Pavel Andreevich; Judin, Alexandr Nikolaevich; Pisarev, Georgy Lvovich; and Roslyakov, Vladimir Yakovlevich. Lubrication system of a two-stroke internal combustion engine. 3,929,110, Cl. 123-73.0AD.

Ralston Purina Company: *See—*
Kealy, Richard D., 3,930,031.

Ramachandran, Kolar S.: *See—*
Kumar, Surinder; and Ramachandran, Kolar S., 3,930,058.

Ramanathan, Visvanathan, to Ciba-Geigy AG. Polycyclic N-hetero dyestuffs. 3,929,785, Cl. 260-248.0AS.

Ramsden, Hugh E.: *See—*
De Simone, Robert S.; and Ramsden, Hugh E., 3,929,904.

Randleman, Patrick L.: *See—*
Young, Robert R.; Randleman, Patrick L.; and Stolins, Arthur B., 3,929,413.

Randolph, Jack R.: *See—*
Gregory, Joseph J.; and Randolph, Jack R., 3,928,883.

Ranks Hovis McDougall Limited: *See—*
Wookey, Norman; Jackson, Arthur Frederick; Collins, Michael Clive; and Francis, Brian, 3,930,048.

Ransburg Corporation: *See—*
Scharfenberger, James A., 3,930,061.

Rantanen, Uuno. Ice auger. 3,929,196, Cl. 175-18.000.

Rao, V. Durga Nageswar; and Telang, Yeshwant P., to Ford Motor Company. Process for coating the rubbing surfaces of the seal of the gas turbine regenerator. 3,930,071, Cl. 427-203.000.

Raoul, Pierre: *See—*
Thomas, Jean-Claude; Raoul, Pierre; and Ledoux, Claude, 3,929,100.

Rapko, John N.; and Crutchfield, Marvin M., to Monsanto Company. Ethanetetracarboxylate perhydrates. 3,929,875, Cl. 260-537.00R.

Rappoport, Leonid Yakovlevich: *See—*
Volkova, Leman Mustafa Kyzy; Korolev, Gennady Vladimirovich; Dubovitsky, Fedor Ivanovich; Trostyanskaya, Irina Ivañovna; Rappoport, Leonid Yakovlevich; Petrov, Gennady Nikolaevich; Shestakovsky, Mikhail Fedorovich; Yakubov, Renat Dovletovich; and Maximov, Sergei Mikhailovich, 3,929,731.

Rathgeb, Paul; Vogel, Christian; and Weiss, Anton G., to Ciba-Geigy Corporation. Herbicidal thiadiazolyl-ureas. 3,929,816, Cl. 260-306.80D.

Rauch, Francis Clyde; Fanelli, Anthony Joseph; and Blank, Gerlinde Metzler, to American Cyanamid Company. Process for the mononitration of ortho-xylene. 3,929,917, Cl. 260-645.000.

Rauch, Francis Clyde: *See—*
Levy, Stephen David; and Rauch, Francis Clyde, 3,929,916.

Rauner, Frederick J.: *See—*
Arcesi, Joseph A.; and Rauner, Frederick J., 3,929,489.

Ravet, Georges; and Chaux, Jean-Bernard, to Soprosoie. Process for dyeing textile materials based on polyamide. 3,929,408, Cl. 8-169.000.

Raymond Lee Organization, Inc., The: *See—*
Coleman, Arthur, 3,929,143.

Raytheon Company: *See—*
McLeod, Willard W., Jr.; and Heaton, John F., 3,930,238.
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Razdan, Raj Kumar: *See—*
Winn, Martin; Razdan, Raj Kumar; Dalzell, Haldean Cloyce; and Krei, Joyce Ruth, 3,929,835.

RCA Corporation: *See—*
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Blust, Henry Leo; Lindburg, Norman Lee; and Henry, Dale Vernon, 3,929,426.
Clemens, Jon Kaufmann; and Palmer, Richard Claxton, 3,930,117.
Hawrylo, Frank Zygmunt, 3,929,525.
Kuzminski, Henry William, 3,929,532.
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Reactor Centrum Nederland: *See—*
Piepers, Gijsbrecht Gerhardus; and Vons, Leonard Hendrik, 3,929,569.

Read, George D., to Ajax Hardware Corporation. V-rail and drawer mounting system therewith. 3,929,386, Cl. 308-3.600.

Reagents of the University of Minnesota, The: *See—*
Hsiao, Chih C., 3,930,167.

Reese, Robert O., to Time Computer, Inc. Combination wristwatch and calculator. 3,928,960, Cl. 58-152.00R.

Reeves, Jerry H.: *See—*
Bolling, Robert W.; and Reeves, Jerry H., 3,929,275.

Reichhold Chemicals, Inc.: *See—*
Weymann, Henry P.; and Korose, John, 3,929,703.
White, Raymond Hadley; and Hill, Fredric Martin, 3,929,938.

Reifers, Richard F., to Diamond International Corporation. Method of molding free dried pulp display tray. 3,929,564, Cl. 162-224.000.

Reimuller, Christian J.: *See—*
Sheelor, Albert P., 3,930,111.

Reinhold, Donald F., to Merck & Co., Inc. Producing 3-fluoro-D-alanine. 3,929,576, Cl. 195-30.000.

Reis, John P., to Amity Leather Products Co. Pass case. 3,929,177, Cl. 150-35.000.

Reishauer AG.: *See—*
Wirz, Walter, 3,928,943.

Reiss, Karl-Hans, to Siemens Aktiengesellschaft. Matrix-form radiation image converter. 3,930,162, Cl. 250-385.000.

Reiter, Ralph H.; and Rosen, George, to Sun Chemical Corporation. Photopolymeriziable compositions with polymeric initiators. 3,929,490, Cl. 96-115.00P.

Renger, Udo, to Volkswagenwerk Aktiengesellschaft. Reciprocating piston internal combustion engine. 3,929,107, Cl. 123-32.00B.

Repa Feinstanzwerk GmbH: *See—*
Klink, Wolf-Dieter, 3,928,895.

Research Corporation: *See—*
Roy, Della M., 3,929,971.

Research Engineering Co.: *See—*
Sheesley, John M.; and Gulick, Ronald A., 3,929,024.

Reuss, Guenter: *See—*
Petersen, Harro; Erhardt, Klaus; Ruemens, Wilhelm; Bille, Heinz; and Reuss, Guenter, 3,930,087.

Reuter, Guido; and Robertz, Hans, to Rheinstahl Aktiengesellschaft. Apparatus for producing blank metal ingots of uniform cross section and in particular steel ingots. 3,929,184, Cl. 164-309.000.

Reynolds, James Francis: *See—*
Rosen, Arye; and Reynolds, James Francis, 3,930,206.

Reynolds Metals Company: *See—*
Kibby, Robert M., 3,929,456.

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Rheinische Braunkohlenwerke AG: *See—*
Wenzel, Werner; Speich, Peter; Kurtz, Roman; Gudenau, Heinrich; and Franke, Friedrich, 3,929,955.

Rheinstahl Aktiengesellschaft: *See—*
Held, Gerhard; and Balle, Walter, 3,929,540.
Reuter, Guido; and Robertz, Hans, 3,929,184.

Rhodia, Inc.: *See—*
De Simone, Robert S.; and Ramsden, Hugh E., 3,929,904.

Rhone-Poulenc, S.A.: *See—*
Christen, Gilbert; Favre, Bernard; Marze, Xavier; Salmon, Michel; and Thuillier, Rene, 3,930,105.
Cronenberger, Michel; Laurent, Serge; and Mallet, Maurice, 3,930,070.
David, Reginald; and Estienne, Jean, 3,929,870.
Gruffaz, Max; and Rollet, Bernard, 3,929,687.
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Rhone-Progil: *See—*
Thomas, Jean-Claude; Raoul, Pierre; and Ledoux, Claude, 3,929,100.

Ribka, Joachim: *See—*
Engelhardt, Fritz; Gunzert, Willi; Jalke, Hellmut Georg; Ribka, Joachim; and Weckler, Gerhard, 3,929,740.

Rice Barton Corporation: *See—*
Horne, Frederick H., 3,929,941.

Richards, Edward L., to Westinghouse Electric Corporation. Manually operable circuit interrupter with automatic current overload protection. 3,930,213, Cl. 337-70.000.

Richards, Edward L.; Paton, Charles R.; and Rooney, Daniel G., to Westinghouse Electric Corporation. Pushbutton electric switch with reset mechanism. 3,930,214, Cl. 337-72.000.

Richards, Hugh Colin, to Pfizer Inc. 2-Aminoalkyl tetrahydroquinolines. 3,929,784, Cl. 260-247.5GP.

Richards, Theodore W. Electric outlet face plates or covers. 3,930,116, Cl. 174-66.000.

Richardson, Bart D.; and Waggoner, Michael L., to Atlantic Richfield Company. Method of making a double-walled pipe assembly. 3,928,903, Cl. 29-407.000.

Richardson, Donald M.: *See—*
Bamberger, Carlos E.; Richardson, Donald M.; and Grimes, Warren R., 3,929,979.

Richardson-Merrell Inc.: *See—*
Albrecht, William L.; and Fleming, Robert W., 3,929,802.
Webb, Norval Ellsworth, Jr., 3,929,985.

Richter, Harold J. Fluid transfer umbilical assembly for use in zero gravity environment. 3,929,164, Cl. 138-120.000.

Richter, Sidney B.; and Levin, Alfred A., to Velsicol Chemical Corporation. N-(α-thiocyanoacetyl)indolines. 3,929,830, Cl. 260-326.100.

Rickter, Donald O., to Polaroid Corporation. S-substituted hydropyrimidine compounds. 3,929,786, Cl. 260-251.00A.

Rieber & Son Plastic-Industri A/S: *See—*
Parmann, Gunnar, 3,929,958.

Riegler, Ernst; and Schmidt, Manfred, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Expansion bearing assembly for a converter carrying trunnion. 3,929,389, Cl. 308-6.00R.

Rieth, Lawrence E., to Stewart-Warner Corporation. Solenoid valve assembly. 3,929,315, Cl. 251-129.000.

Rijkeboer, Albert: *See—*
Peters, Franciscus J. W. M.; Middelhoek, Servaas; and Rijkeboer, Albert, 3,929,460.

Riken Light Metal Industries Company, Ltd.: *See—*
Sugiyama, Noboru; Takahashi, Masahiro; Kanamori, Hirosuke; Sato, Ken; Hirayama, Yoshio; Mikamo, Masahiro; Takahashi, Toshiro; Nagano, Toshihiro; Kaneda, Kazuyoshi; and Hara, Isao, 3,929,593.

Risley, Robert F., to Jos. Schlitz Brewing Company. Modulated speed control for a conveying system. 3,929,218, Cl. 198-37.000.

Rivera, Richard L. Apparatus for testing ski boot fit. 3,929,329, Cl. 272-57.00D.

Robatel S.L.P.I.: *See—*
Bochard, Camille, 3,930,166.

Robbins, Howard M.: *See—*
Forgione, Peter Salvatore; and Robbins, Howard M., 3,929,580.

Robert Bosch G.m.b.H.: *See—*
Ackermann, Fritz; Honig, Gunter; and Schulz, Alfred, 3,930,201.
Wanner, Karl; Hahner, Reinhard; Schmid, Wolfgang; Hansel, Gernot; Bleicher, Manfred; and Falchle, Jorg, 3,929,343.

Robert Bosch Verpackungsmaschinen G.m.b.H.: *See—*
Buchner, Norbert; Liede, Dieter; Simmeer, Peter; and Vogele, Gunther, 3,929,409.

Robert Manufacturing Company: *See—*
Phillips, Wendell, 3,929,149.

Roberts, Peter Christopher Tudor: *See—*
Baker, Ian Martin; Beynon, John David Emrys; and Roberts, Peter Christopher Tudor, 3,930,065.

Robertshaw Controls Company: *See—*
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Robertz, Hans: *See—*
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Robinson, Alfred; Schatz, Joseph S.; and Katz, Leonhard, to U. S. Radium Corporation. Cassette. 3,930,165, Cl. 250-480.000.

Rockwell International Corporation: *See—*
Tosti, Umberto V.; and Childs, Richard L., 3,929,171.

Rodgers, Robert E., to Stant Manufacturing Company, Inc. Remote pressure-vacuum relief valve assembly. 3,929,158, Cl. 137-493.900.

Rogalski, Werner: *See—*
Kirchlechner, Richard; Rogalski, Werner; and Seubert, Jurgen, 3,929,880.

Rogers, Bruce C. Solar heat collector. 3,929,121, Cl. 126-271.000.

Rohm & Haas Company: *See—*
Kilbourn, Edward E.; and Weiler, Ernest D., 3,929,808.
Weiler, Ernest D., 3,929,810.

Rohr, Wolfgang: *See—*
Fischer, Adolf; Hamprecht, Gerhard; Mangold, Dietrich; and Rohr, Wolfgang, 3,929,454.

Rollet, Bernard: *See—*
Gruffaz, Max; and Rollet, Bernard, 3,929,687.

Rolls-Royce (1971) Limited: *See—*
Scott, William Murray, 3,929,106.

Romano, Elazar, legal representative: *See—*
Seragnoli, Ariosto, deceased; and Romano, Elazar, legal representative, 3,929,238.

Rombrecht, Hans-Malte: *See—*
Schmidt, Karl; Hansch, Ferdinand; Rombrecht, Hans-Malte, and Beck, Hans-Joachim, 3,929,714.

Rooney, Daniel G.: *See—*
Richards, Edward L.; Paton, Charles R.; and Rooney, Daniel G., 3,930,214

Rosa, Josef; and Petr, Vlastimil, to Vyskumny ustav stavebnich hmot. Apparatus for the manufacture of powdered lime. 3,929,417, Cl. 23-262.000.

Rosback, Donald H.; and Neuzil, Richard W., to Universal Oil Products Company. Method for manufacturing an adsorbent useful for olefin separation. 3,929,669, Cl. 252-455.00Z.

Roscoe, Edward J. Collapsible shelters. 3,929,147, Cl. 135-7.10A.

Rose, Edgar: *See—*
Turner, Robert K.; and Rose, Edgar, 3,929,111.

Rose, James S.: *See—*
Alberino, Louis M.; Farrissey, William J., Jr.; and Rose, James S., 3,930,097.

Rosen, Arye; and Reynolds, James Francis, to Troike, Robert L.; and RCA Corporation. Broad-band amplifier using cascaded class C amplifiers. 3,930,206, Cl. 330-53.000.

Rosen, George: *See—*
Reiter, Ralph H.; and Rosen, George, 3,929,490.

Rosenbaum, Georges: *See—*
Bouillon, Claude; DuFaure, Pierre; and Rosenbaum, Georges, 3,929,986.

Rosenbaum, Peter S. Instructional aid device. 3,928,922, Cl. 35-9.00R.

Rosendahl, Friedrich-Karl; Pelousek, Herbert; and Niederprum, Hans, to Bayer Aktiengesellschaft. Flame resistant composition of matter of high molecular weight linear polyesters. 3,929,720, Cl. 260-40.00P.

Rosenthal, Fritz, to SCM Corporation. Method for improving the photoconductive properties of dye sensitized zinc oxide. 3,929,479, Cl. 96-1.700.

Roslyakov, Vladimir Yakovlevich: *See—*
Raikov, Ivan Yakovlevich; Ivaschenko, Pavel Andreevich; Judin, Alexandr Nikolaevich; Pisarev, Georgy Lvovich; and Roslyakov, Vladimir Yakovlevich, 3,929,110.

Ross, Robert E., to Eastman Kodak Company. Color developer compositions containing improved yellow dye-forming coupler. 3,929,484, Cl. 96-55.000.

Rossini, George: *See—*
Gerlach, Robert L.; and Rossini, George, 3,930,163.

Rossmy, Gerd; and Koerner, Gotz, to Th. Goldschmidt AG. Fire extinguishing foam concentrate. 3,929,649, Cl. 252-3.000.

Rossomakho, Yakov Vulfovich: *See—*
Bykhovsky, David Grigorievich; Medvedev, Alexandr Yakovlevich; Rossomakho, Yakov Vulfovich; and Butova, Margarita Nikolaevna, 3,930,139.

Rostron, Joseph R.; Brunson, Lawrence A.; and Soles, Otto H., to Westinghouse Electric Corporation. Pneumatic power-unit having a driving piston and an exhaust valve. 3,930,134, Cl. 200-82.00B.

Roto Rooter Corporation: *See—*
Peterson, Henry G.; and Grimes, Tom, 3,928,885.

Roussel-UCLAF: *See—*
Hirsch, Jean; and Buret, Jean Pierre, 3,929,994.

Rowbotham, Clifford: *See—*
Nuttall, Roy; and Rowbotham, Clifford, 3,929,526.

Roy, Della M., to Research Corporation. Porous biomaterials and method of making same. 3,929,971, Cl. 423-308.000.

Royal Industries, Inc.: *See—*
Shields, Ronald F., 3,930,084.

Rubin, Harry S. Mixing apparatus. 3,929,151, Cl. 137-268.000.

Ruemens, Wilhelm: *See—*
Petersen, Harro; Erhardt, Klaus; Ruemens, Wilhelm; Bille, Heinz; and Reuss, Guenter, 3,930,087.

Rufenacht, Kurt: *See—*
Kristinsson, Haukur; and Rufenacht, Kurt, 3,929,809.

Ruhe, Anthony: *See—*
Parkinson, John K.; and Ruhe, Anthony, 3,929,005.

Ruhrchemie Aktiengesellschaft: *See—*
Schnur, Friedrich; Hibbel, Josef; and Cornils, Boy, 3,929,900.

Runions, Sinville, to International Shoe Machine Corporation. Lasting machine having flexible lasting strap. 3,928,880, Cl. 12-8.200.

Rupp, Hans-Dieter: *See—*
Toth, Anton; Rupp, Hans-Dieter; and Meyer, Gerhard, 3,929,877.

Russell, Donald Henry; and Lenton, Robert Warren, to Atlantic Richfield Company. Stabilized ethylene-carbon monoxide copolymers. 3,929,727, Cl. 260-45.95F.

Rutherford, James Pennycook: *See—*
Brewster, Phillip William; Hamblin, Peter Collen; and Rutherford, James Pennycook, 3,929,654.

Rutten, Hermann: *See—*
Zumfeld, Heinz; Rutten, Hermann; and Bhattacharya, Nishit, 3,929,297.

Ryan, Francis William; Schonhorn, Harold; Sessler, Gerhard Martin; and West, James Edward, to Bell Telephone Laboratories, Incorporated. Technique for fabrication of foil electret. 3,930,066, Cl. 427-79.000.

Ryden, Vernon John; and Oakley, Robert Lawford, to St. Clare Engineering Limited. Drum lifters. 3,929,368, Cl. 294-103.000.

S. C. Johnson & Son, Inc.: *See—*
Chapman, Francis E.; and Grant, Robert P., 3,929,492.
Sramek, John A., 3,929,743.

S.I.T.A.V. S.p.A. - Societa Incremento Turistico Alberghiero Valdostano: *See—*
Mattioli, Luciano, 3,929,339.

S & W Fine Foods, Inc.: *See—*
Mattson, Peter H., 3,930,049.

Sabol, Alexander P., to United States of America, General Counsel-Code GP. Heat exchanger system and method. 3,929,305, Cl. 244-117.00A.

Saeki, Yukio: *See—*
Murata, Takao; Nakamura, Nobutaka; and Saeki, Yukio, 3,929,695.

Saida, Shigeki: *See—*
Shinomiya, Hiroshi; Muro, Kajuro; Sakata, Sumio; Saida, Shigeki; Umehara, Seichiro; Tsuchiya, Yutaka; Yashiro, Kunijo; and Moriya, Yoshio, 3,930,081.

Saidla, Glen E. W., to Exxon Research & Engineering Co. Static mixers for viscous material. 3,929,318, Cl. 259-4.000.

St. Clare Engineering Limited: *See—*
Ryden, Vernon John; and Oakley, Robert Lawford, 3,929,368.

Sakai, Kaoru: *See—*
Takano, Nobuyoshi; Sakai, Kaoru; Aoki, Satoshi; and Yasuda, Kazuo, 3,929,411.

Sakamoto, Eiichi: *See—*
Habu, Teiji; Nakajima, Tomio; Sakamoto, Eiichi; Kadokura, Kenzi; Yoshida, Kyusaku; and Machida, Katsutoshi, 3,929,486.

Sakata, Sumio: *See—*
Shinomiya, Hiroshi; Muro, Kajuro; Sakata, Sumio; Saida, Shigeki; Umehara, Seichiro; Tsuchiya, Yutaka; Yashiro, Kunijo; and Moriya, Yoshio, 3,930,081.

Sakoh, Ichiro: *See—*
Murakami, Masuo; Koda, Akio; Takashima, Mutsuo; Takagi, Etuo; Sakoh, Ichiro; Matsuda, Hideya; and Suzuki, Tsutomu, 3,929,767.

Saku, Isamu, to Kabushikikaisha Kawaidenkiseisakusho. Method for producing cartridge heaters. 3,928,909, Cl. 29-611.000.

Sakunaga, Kenichi: *See—*
Chimura, Kazuya; Takashima, Shunichi; Nakazono, Ryuichi; Kawashima, Masao; Ota, Hiroyuki; Kaneko, Takashi; and Sakunaga, Kenichi, 3,930,103.

Salava, Roger F.; Eastman, Brian G.; and King, George W., to Compugraphic Corporation. Character image generation apparatus and CRT phototypesetting systems. 3,930,251, Cl. 340-324.0AD.

Saleil, Jean: *See—*
Leroy, Pierre; Debras, Maurice; Cadart, Michel; and Saleil, Jean, 3,929,458.

Salmon, Michel: *See—*
Christen, Gilbert; Favre, Bernard; Marze, Xavier; Salmon, Michel; and Thuillier, Rene, 3,930,105.

Salsgiver, James A.; and Malagari, Frank A., to Allegheny Ludlum Industries, Inc. Process involving cooling in a static atmosphere for high permeability silicon steel comprising copper. 3,929,522, Cl. 148-112.000.

Salter, Stephen Hugh. Apparatus and method for extracting wave energy. 3,928,967, Cl. 60-398.000.

Salters, Roelof Herman Willem; Boonstra, Lieuwe; and Lambreehtse, Cornelis Willem, to U.S. Philips Corporation. Integrated memory. 3,930,239, Cl. 340-173.00R.

Salukvadze, Larisa Viktorovna: *See—*
Salukvadze, Viktor Samsonovich; and Salukvadze, Larisa Viktorovna, 3,928,900.

Salukvadze, Viktor Samsonovich; and Salukvadze, Larisa Viktorovna. Rotating cutting tool. 3,928,900, Cl. 29-105.00R.

Salyer, Ival O.; and North, Charles J., to Monsanto Research Corporation. Large void-free polyethylene castings comprising high density polyethylene in a low density polyethylene matrix. 3,929,939, Cl. 260-897.00A.

Salzman, Nathan. Corrective shoe device. 3,929,139, Cl. 128-583.000.

Salzwedel, Arden L. Reversible hack saw blade. 3,929,050, Cl. 83-848.000.

Sampson, Ronald N.; and Chottiner, Jacob, to Westinghouse Electric Corporation. Hydrophobic mats for gas diffusion electrodes. 3,930,094, Cl. 428-240.000.

Samuel Jones & Company, Limited: *See—*
Budden, Brian Thomas, 3,929,068.

Samuelsson, Benny Roger: *See—*
Berntsson, Peder Bernhard; Brandstrom, Arne Elof; Carlsson, Enar Ingemar; Carlsson, Stig Ake Ingemar; Ek, Lars; Samuelsson, Benny Roger; Sjostrand, Sven Erik; Strandlund, Gert Christer; and Ablad, Bengt Arne Hjalmar, 3,930,016.

Sander, Conrad. Method for curing a coating on a base. 3,930,064, Cl. 427-54.000.

Sanders Associates, Inc.: *See—*
Chicklis, Evan P.; and Kuppenheimer, John D., Jr., 3,930,158.

Sanders, James Milton: *See—*
Hall, John B.; and Sanders, James Milton, 3,929,677.

Sanders, Lloyd E. Conveyor belt stripper. 3,929,555, Cl. 156-584.000.

Sandler, Stanley Robert: *See—*
Kydonieus, Nicholas; and Sandler, Stanley Robert, 3,929,852.

Sandoz, Inc.: *See—*
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Galantay, Eugene E., 3,929,902.
Simpson, William R. J., 3,929,884.

Sandoz Ltd., (Sandoz AG): *See—*
Krieger, Manfred; and Suess, Rudolf, 3,929,833.
Mayerhoefer, Horst; Mueller, Wolfgang; Sollberger, Urs; and Wolf, Rainer, 3,929,940.

Sandoz-Wander, Inc. (Sandoz, Inc.): *See—*
Timms, Alan R., 3,930,009.

San Miguel, Anthony, to United States of America, Navy. Means for the elimination of a cartridge rim. 3,929,074, Cl. 102-43.00P.

Sano: Konosuke; and Mitsugi, Koji, to Ajinomoto Co., Inc. Method of preparing L-tryptophan. 3,929,573, Cl. 195-29.000.

Sansum, Robert David, to Gerrard Industries Limited. Package strapping tool. 3,929,172, Cl. 140-93.200.

Sapetta, Lee Philip: *See—*
Knappe, LaVerne Frank; Sapetta, Lee Philip; Stroebel, Gary John; and Wilke, Myron Arden, 3,929,328.

Sapkus, Jurgis: *See—*
Lewis, J. Stephen; and Sapkus, Jurgis, 3,928,934.

Sapy, Jacques: *See—*
Balavoine, Loic; Cadot, Robert; and Sapy, Jacques, 3,929,278.

Sargent Industries, Inc.: *See—*
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Sasaki, Satoshi: *See—*
Ishikawa, Masayuki; Kaneko, Chikara; Suda, Tatsuo; Yamada, Sachiko; Eguchi, Yukuo; Sugimoto, Akiko; and Sasaki, Satoshi, 3,929,770.

Sasaki, Takashi: *See—*
Araki, Kunio; Sasaki, Takashi; Kasahara, Yuko; Yamashita, Yoshisada; Yotumoto, Keiichi; Sunaga, Hiromi; Tabei, Kiyoshi; Goto, Kazuo; Tajiri, Kunio; and Kittaka, Hirokazu, 3,930,098.

Sasame, Takao; Shigeta, Toshihiko; and Yamada, Toshio, to Toyo Kogyo Co., Ltd. Electrodeposition of wear resistant and oil retentive nickel coatings and article having such a coating. 3,929,596, Cl. 204-49.000.

Sato, Hisatake, to Nippon Oil Company Ltd. Process for preparing resin for printing ink use. 3,929,736, Cl. 260-78.40D.

Sato, Ken: *See—*
Sugiyama, Noboru; Takahashi, Masahiro; Kanamori, Hirosuke; Sato, Ken; Hirayama, Yoshio; Mikamo, Masahiro; Takahashi, Toshiro; Nagano, Toshihiro; Kaneda, Kazuyoshi; and Hara, Isao, 3,929,593.

Sato, Kozo. Method for cutting overlapping metal plates with gas heat. 3,929,515, Cl. 148-9.00R.

Sato, Takami: *See—*
Shibata, Osamu; Kojimoto, Susumu; Sato, Takami; and Tadokoro, Yoshio, 3,929,951.

Sato, Tomoari: *See—*
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Saylor, Frederick A. Voltage regulator system. 3,930,197, Cl. 322-28.000.

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Schabert, Hans-Peter; and Winkler, Franz, to Siemens Aktiengesellschaft. Nuclear reactor equipped with a flooding tank and a residual heat removal and emergency cooling system. 3,929,567, Cl. 176-38.000.

Schabert, Hans-Peter; Danisch, Rudiger; and Strickroth, Erich, to Siemens Aktiengesellschaft. Nuclear power plant containment construction. 3,929,568, Cl. 176-38.000.

Schaedler, Alvin C. Self-storing dolly. 3,929,237, Cl. 214-86.00A.

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Scharfenberger, James A., to Ransburg Corporation. Electrostatic method for forming structures and articles. 3,930,061, Cl. 427-27.000.

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Schlegel Manufacturing Company, The: *See—*
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Schmidt, Adolf; Bartl, Herbert; and Meckbach, Heinrich, to Bayer Aktiengesellschaft. Continuous process for the production of copolymer dispersions. 3,929,706, Cl. 260-29.6TA.

Schmidt, Felix Helmut: *See—*
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Schmidt, Karl; Hansch, Ferdinand; Rombrecht, Hans-Malte; and Beck, Hans-Joachim. Polyester resins. 3,929,714, Cl. 260-33.40P.

Schmidt, Karl: *See—*
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Schmoller, Robert L. Bag fastener. 3,928,893, Cl. 24-30.500.

Schmunk, John D.; Child, James L., Jr.; Shroy, Robert E.; and Wise, John, to Hancock Brick and Tile Company. Connecting joint structure for corrugated plastic tubing. 3,929,359, Cl. 285-401.000.

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Schnur, Friedrich; Hibbel, Josef; and Cornils, Boy, to Ruhrchemie Aktiengesellschaft. Continuous process for the production of oxygen containing compounds. 3,929,900, Cl. 260-604.0HF.

Schollenberger, Charles S.; Dinbergs, Kornelius; and Kelley, Philip C., to B. F. Goodrich Company, The. Color stabilized polyurethanes. 3,929,726, Cl. 260-45.85B.

Schon, Otmar, to Greer Hydraulics, Inc. Pressure vessel with sensing device. 3,929,163, Cl. 138-30.000.

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Schroeder, Allen J. Collapsible shelter. 3,929,145, Cl. 135-1.00R.

Schubert, Emil Georg. Protective device for vehicles. 3,929,349, Cl. 280-150.00B.

Schubert, Emil Georg. Multiple rotary engine. 3,929,402, Cl. 123-8.470.

Schuller, Walter H., to United States of America, Agriculture. Removal of mercury from aqueous solutions employing naval stores products. 3,929,634, Cl. 210-49.000.

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Scott, Arthur Leslie; Parsons, J. Hilton, Jr.; and Hammond, John S., to Shakespeare Company. Hank forming machine for a pole construction and method of forming a pole. 3,929,543, Cl. 156-169.000.

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Scott, Hubert D., to Texaco Inc. Measurement of subsurface formation lithology, including composition and fluids, using gamma spectroscopy and thermal neutron decay. 3,930,154, Cl. 250-270.000.

Scott, William Murray, to Rolls-Royce (1971) Limited. Combustion chamber arrangement for rotary compression-ignition I.C. engines. 3,929,106, Cl. 123-8.110.

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Sears, Richard J. Drop finger conveyor, hanger and method. 3,929,078, Cl. 104-111.000.

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Seims, Warren J.; and Farkas, Gabor, to Acme Air Appliance Co., Inc. Tool for tubeless tire valves. 3,928,902, Cl. 29-221.500.

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Seni, Leonard S.; Davis, James E.; and Harrison, Henry R., to Texaco Inc. Dual purpose cutting oil. 3,929,652, Cl. 252-46.700.

Senor, Ronald E., to Texas Instruments Incorporated. Nonresettable thermally actuated switch. 3,930,215, Cl. 337-407.000.

Seragnoli, Ariosto, deceased; and Romano, Elazar, legal representative, to G.D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Seragnoli. Equipment for supplying containers filled with cigarettes to the supply hopper charging mechanism of cigarette packeting machines. 3,929,238, Cl. 214-89.000.

Seragnoli, Enzo, to G. D. Societa per Azioni. Device for accumulating and supplying lengths of material in sheet form. 3,929,326, Cl. 271-3.100.

Serban, Alexander; and Engel, Phillip Knox, to ICI Australia Limited. 2,3-Dihydro-2,2-dimethyl-7-isopropyl benzofuran and 2-(2,3-dihydro-2,2-dimethyl-7-benzofuranyl)isopropyl hydroperoxide. 3,929,837, Cl. 260-346.20R.

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Sharki, Martin James, to Dresser Industries, Inc. Periodically actuated pneumatic ratemeter. 3,929,014, Cl. 73-168.000.
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Sharychenkov, Alexandr Alexeevich. Twisting mechanism drive for spinning and twisting frames. 3,929,027, Cl. 74-242.15R.
Shaw, Alan C., to Ontario Paper Company Limited, The. Method of adding a soluble aluminum salt to chemically softened wood chips followed by mechanical refining. 3,929,558, Cl. 162-28.000.
Shawhan, Elbert N., to Sun Oil Company of Pennsylvania. Borehole signalling by acoustic energy. 3,930,220, Cl. 340-18.0FM.
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Sheelor, Albert P., to Reimuller, Christian J. Electrical grounding device. 3,930,111, Cl. 174-6.000.
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Shema, Bernard F.; and Brink, Robert H., Jr., to Betz Laboratories, Inc. Synergistic compositions containing 2,2-dibromo-3-nitrilopropionamide and their use. 3,929,562, Cl. 162-161.000.
Shema, Bernard F.; and Brink, Robert H., Jr., to Betz Laboratories, Inc. Synergistic compositions containing N (2 nitrobutyl) morpholine and their use. 3,929,563, Cl. 162-161.000.
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Smith, Baynard R.; and Treptow, Arnold W., to Electro Oxide Corporation. Bonded silver article, composition, and method of bonding silver to a ceramic substrate. 3,929,491, Cl. 106-1.000.
Smith, Charles A., Jr. Clothes-carrying assembly. 3,929,224, Cl. 206-287.000.
Smith, David J., to Egan Machinery Company. Extruder feed section. 3,929,323, Cl. 259-192.000.
Smith, Fred T., to Sargent Industries, Inc. Refuse collection apparatus. 3,929,243, Cl. 214-518.000.
Smith, Joling P., to Keystone International, Inc. Valve actuator 3,929,058, Cl. 92-13.000.
Smith, Millard F.: *See—*
Braytenbah, Andrew S.; Jaegtnes, Karl O.; and Smith, Millard F., 3,928,976.
Smith, Pat E., to Gary Aircraft Corporation. Process for biochemical reactions. 3,929,630, Cl. 210-17.000.
Smith, Peter John, to Howson-Algraphy Limited. Light sensitive diazo composition with azo dye formed from a diazonium salt and a novolak resin. 3,929,488, Cl. 96-91.00R.
Smith, Robert L. Surfboard construction. 3,929,549, Cl. 156-245.000.
Smith, Russell M., to General Electric Company. Wheel slip correction system. 3,930,189, Cl. 318-52.000.
Smith, William Paul; and Matsuyama, Glen, to Graphic Arts Packaging Corporation. Pillow box blank. 3,929,222, Cl. 206-45.140.
Smoot, Edward H., to Schlegel Manufacturing Company, The. Upholstery attacher. 3,928,898, Cl. 24-259.0FS.
Snam Progetti S.p.A.: *See—*
Buonomo, Franco; Fattore, Vittorio; Zanoni, Gianfranco; and Notari, Bruno, 3,929,681.
Snamprogetti S.p.A.: *See—*
Dell'Amico, Daniela Belli; and Calderazzo, Fausto, 3,929,973.
Snapp, Thomas C., Jr.; and Blood, Alden E., to Eastman Kodak Company. Ether triester derivatives of p-dioxanone. 3,929,846, Cl. 260-410.600.
Snapp, Thomas C., Jr.; and Blood, Alden E., to Eastman Kodak Company. Ether diester derivatives of p-dioxanone. 3,929,847, Cl. 260-410.600.
Snarey, Michael: *See—*
Danilewicz, John Christopher; Kemp, John Edward Glyn; Snarey, Michael; and Wright, James Robert, 3,930,004.
Societa' Italiana Resine S.I.R. S.p.A.: *See—*
Nistri, Ugo; Parodi, Antonio; and Vargiu, Silvio, 3,929,696.
Societe Anonyme de Telecommunications: *See—*
Ameurlaine, Jacques Francois; and Sirieix, Michel Benoit, 3,930,161.
S.A. des Anciens Etablissements Paul Wurth: *See—*
Legille, Edouard; and Mahr, Rene N., 3,929,240.
Societe Anonyme dite: Boracier: *See—*
Fagniart, Gaston, 3,928,940
Societe Anonyme dite: L'Oreal: *See—*
Bouillon, Claude; DuFaure, Pierre; and Rosenbaum, Georges, 3,929,986
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,929,403
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,929,404.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Mosher, Arthur Joseph; and Yingst, Donald Eugene, 3,930,045.
van de Rovaart, Paul; and Wuhrmann, Jean-Jacques, 3,930,044.
Societe Generale de Fonderie: *See—*
Delpla, Claude, 3,929,283.
Societe Nationale des Petroles d'Aquitaine: *See—*
Lutz, Jean; Traille, Andre; and Besnard, Francois, 3,929,009.
Societe Nationale des Poudres et Explosifs: *See—*
Pech, Bernard M., 3,929,350.
Societe Nouvelle de Roulements: *See—*
Beauchet, Jean, 3,929,044
Societe Rhodiaceta: *See—*
Allard, Pierre, 3,929,691.
Soles, Otto H.: *See—*
Rostron, Joseph R.; Brunson, Lawrence A.; and Soles, Otto H., 3,930,134.
Solimar, Keith F., to Butler Manufacturing Company. Aeration device and method for assisting discharge of material from containers. 3,929,261, Cl. 222-195.000.
Sollberger, Urs: *See—*
Mayerhoefer, Horst; Mueller, Wolfgang; Sollberger, Urs; and Wolf, Rainer, 3,929,940.
Solo, Alan J., to Knock-N-Lok. Supporting fastener. 3,929,311, Cl. 248-217.000.
Solomon, Arieh, to Avraham Deshe. Dispenser for ice cubes and the like. 3,929,256, Cl. 221-81.000.
Solomon, David Henry: *See—*
Hodgkin, Jonathan Howard; Hawthorne, David Geoffrey; Swift, Jean Drummond; and Solomon, David Henry, 3,929,502.
Solomon, Ralph E., to Jade Controls, Inc. Thermocouple assembly. 3,929,511, Cl. 136-228.000.
Solvay & Cie: *See—*
Degueldre, Louis; Gobillon, Yves; Clerbois, Lucien; and Bourgeois, Louis, 3,929,608.
Sone, Isamu: *See—*
Kurata, Tokuzo; Emi, Satoshi; Ofuchi, Kunihiko; Takeuchi, Tsutomu; and Sone, Isamu, 3,929,963.
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Soudijn, Willem: *See—*
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Southwire Company: *See—*
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Sowell, Charles L.: *See—*
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Spanjersberg, Arie Adriaan, to De Staat der Nederlanden, te dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie. Method and device for reading characters, preferably digits. 3,930,228, Cl. 340-146.3SG.
Spath, Tommy W. Internal combustion engine. 3,928,971, Cl. 60-614.000.
Spatz, Sidney M., to Mead Corporation, The. Pyrazoloxanthene compounds and process for producing same. 3,929,825, Cl. 260-310.00C.

Spears, Johnnie E.; and Caldwell, Donald L., to Phillips Petroleum Company. Method for heating thermoplastic elements. 3,929,541, Cl. 156-157.000.

Spector, George: *See—*
Denunzio, Anthony, 3,928,948.

Speich, Peter: *See—*
Wenzel, Werner; Speich, Peter; Kurtz, Roman; Gudenau, Heinrich; and Franke, Friedrich, 3,929,955.

Sperry Rand Corporation: *See—*
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Spieth, Manfred: *See—*
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Sponer, Gisbert: *See—*
Popelak, Alfred; Kampe, Wolfgang; Thiel, Max; Dietmann, Karl; and Sponer, Gisbert, 3,929,793.

Sprang, Richard W.: *See—*
Flinner, Vaughn D.; and Sprang, Richard W., 3,929,150.

Square D Company: *See—*
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Squire, Edward Noonan, to Du Pont de Nemours, E. I., and Company. Synthesis of aromatic amines by reaction of aromatic compounds with ammonia. 3,929,889, Cl. 260-571.000.

Sramek, John A., to S. C. Johnson & Son, Inc. Polyampholytes. 3,929,743, Cl. 260-80.800.

Stach, Kurt: *See—*
Fauland, Erich; Kampe, Wolfgang; Stach, Kurt; Stork, Harald; and Dietmann, Karl, 3,929,764.

Staffier, Thomas L.: *See—*
Campbell, Roger G., Sr.; Goff, Richard E., Jr.; and Staffier, Thomas L., 3,930,090.

Stagi, Mauro, to Ciba-Geigy AG. Indazole derivatives as optical brighteners. 3,929,826, Cl. 260-310.00D.

Stalvey, Louis L.: *See—*
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Stamicarbon N.V.: *See—*
van Dierendonck, Laurentius L.; and Von den Hoff, Johan P. H., 3,929,909.
van Dierendonck, Laurentius L.; and Von den Hoff, Johan P. H., 3,929,911.

Stanadyne, Inc.: *See—*
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Standard Oil Company, The: *See—*
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Cerefice, Steven A.; and Fields, Ellis K., 3,929,711.
Grasselli, Robert K.; and Friedrich, Maria S., 3,929,899.

Stanford Research Institute: *See—*
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Stant Manufacturing Company, Inc.: *See—*
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Starr, Louis J. Bed with circulated air. 3,928,876, Cl. 5-284.000.

Stauffer Chemical Company: *See—*
Feminella, Joseph V.; Melachouris, Nicholas; and Lauck, Robert M., 3,930,056.
Gallagher, Ruth E., 3,929,933.
Honig, Milton L., 3,929,688.

Stauffer, Norman L., to Honeywell Inc. Automatic focus apparatus. 3,930,261, Cl. 354-25.000.

Steck, Howard A.; and DiVito, Ronald J. Self actuating wallet alarm. 3,930,249, Cl. 340-280.000.

Steigerwald, Robert L.: *See—*
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Stemme, Reiner: *See—*
Leuenberger, Hans-Ulrich; and Stemme, Reiner, 3,929,443.

Stenkvist, Sven Einar, to Allmanna Svenska Elektriska Aktiebolaget. Direct current electric arc furnace and method for melting metal scrap. 3,929,457, Cl. 75-10.00R.

Stenz, Rudolf, to Dipl.-ing. Rudolf Konwitschny. Ski lock. 3,928,990, Cl. 70-58.000.

Stephens, Charles Edward. Refinish painting method. 3,930,069, Cl. 427-142.000.

Stephens, Frank M., Jr.: *See—*
Miyoshi, T. Kenneth; Berthold, Cornelius E.; Stephens, Frank M., Jr.; and Schellinger, Alfred K., 3,929,461.

Stephens, James B., to Westates Space-Era Products, Inc. Fluid dispensing structures. 3,929,258, Cl. 222-1.000.

Stephens, Richard G. Pattern analysis method and apparatus. 3,930,230, Cl. 340-146.3AG.

Stern, Hansjoerg, to General Electric Company. Fluidic gauging sensor head. 3,929,002, Cl. 73-37.700.

Stern, William R.; Jansen, Malcolm L.; and Vance, Bess L., to Anaconda Company, The. Recovery of copper and zinc from low-grade non-ferrous materials. 3,929,598, Cl. 204-108.000.

Sternbach, Leo Henryk: *See—*
Metlesics, Werner; and Sternbach, Leo Henryk, 3,929,766.

Sterndent Corporation: *See—*
French, Park, 3,930,149.

Stevenson, John L., to Cosden Oil & Chemical Company. Polyisobutylene nucleating agents for expandable styrene polymer compositions. 3,929,686, Cl. 260-2.50B.

Stevenson, Paul D.: *See—*
Green, Raymond J.; and Stevenson, Paul D., 3,929,117.

Steward, David L.; and Tong, Wen-Hong, to Dow Chemical Company, The. Polycationic interferon induces. 3,929,991, Cl. 424-78.000.

Stewart, John L.: *See—*
Mazzoni, Renato J.; Bowser, George H.; and Stewart, John L., 3,928,953.

Stewart-Warner Corporation: *See—*
Rieth, Lawrence E., 3,929,315.

Stichting Revalidatie Instituut Muiderpoort: *See—*
Zevering, Willem, 3,928,873.

Stiltz, Erwin; Langhoff, Boris; and Spieth, Manfred, to Licentia Patent-Verwaltungs-G.m.b.H. Hammer drill. 3,929,195, Cl. 173-109.000.

Stoeber, Hans, to Stoeber, Hans. Striking tool. 3,929,296, Cl. 241-197.000.

Stoepel, Kurt: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,929,798.

Stojek, Dieter, to Ford Motor Company. Thrust bearing retainer. 3,929,395, Cl. 308-167.000.

Stolins, Arthur B.: *See—*
Young, Robert R.; Randleman, Patrick L.; and Stolins, Arthur B., 3,929,413.

Storar, Robert C., to United Systems Corporation. Bipolar dual-slope analog-to-digital converter. 3,930,252, Cl. 340-347.0NT.

Stork, Harald: *See—*
Fauland, Erich; Kampe, Wolfgang; Thiel, Max; Stork, Harald; and Schmidt, Felix Helmut, 3,929,763.
Fauland, Erich; Kampe, Wolfgang; Stach, Kurt; Stork, Harald; and Dietmann, Karl, 3,929,764.

Strandlund, Gert Christer: *See—*
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Stratynski, Eugene Edward, to Eaton Corporation. Actuating means for a butterfly valve. 3,929,314, Cl. 251-58.000.

Streck, Roland; and Weber, Heinrich, to Chemische Werke Huls Aktiengesellschaft. Process for the production of polymeric hydrocarbons having reactive silyl end groups. 3,929,850, Cl. 260-448.20E.

Streicher, Michael A., to Du Pont de Nemours, E. I., and Company. Chromium, molybdenum ferritic stainless steels. 3,929,473, Cl. 75-128.00W.

Strickroth, Erich: *See—*
Schabert, Hans-Peter; Danisch, Rudiger; and Strickroth, Erich, 3,929,568.

Stroebel, Gary John: *See—*
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Strohmeyer, Max: *See—*
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Stromberg, Nils Erik; and Lindberg, Ulf Engelbert, to Sunds Aktiebolag. Binding machine. 3,929,063, Cl. 100-26.000.

Strong, Robert Edmund, to United Kingdom Atomic Energy Authority. Treatment of irradiated nuclear fuel elements. 3,929,961, Cl. 423-4.000.

Stuart, John J., Jr.: *See—*
McRae, William V., Jr.; and Stuart, John J., Jr., 3,929,076.

Stuart, Ronald Sangster: *See—*
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Studiengesellschaft Kohle m.b.H.: *See—*
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Wilke, Gunther; and Heimbach, Paul, 3,929,922.

Su, Chiang-Shui. Leakage warning device for vehicle tire. 3,929,090, Cl. 116-34.00R.

Suchowski, Bernard; Lovitz, David D.; and Kissin, Claud W., to Hartz Mountain Corporation, The. Aquarium aerator and ornament holder. 3,929,102, Cl. 119-5.000.

Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, to Sumitomo Chemical Company, Limited. Process for separating resorcinol from hydroquinone. 3,929,910, Cl. 260-621.00B.

Suda, Tatsuo: *See—*
Ishikawa, Masayuki; Kaneko, Chikara; Suda, Tatsuo; Yamada, Sachiko; Eguchi, Yukuo; Sugimoto, Akiko: and Sasaki, Satoshi, 3,929,770.

Suefuji, Mineo: *See—*
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Sugawara, Yoshiaki: *See—*
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Sugihara, Toshiyuki: *See—*
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Sugimoto, Akiko: *See—*
Ishikawa, Masayuki; Kaneko, Chikara; Suda, Tatsuo; Yamada, Sachiko; Eguchi, Yukuo; Sugimoto, Akiko; and Sasaki, Satoshi, 3,929,770.

Sugimoto, Yoshihiko: *See—*
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Sugitani, Tooru: *See—*
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Sugiyama, Hironari: *See—*
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Sugiyama, Noboru; Takahashi, Masahiro; Kanamori, Hirosuke; Sato, Ken; Hirayama, Yoshio; Mikamo, Masahiro; Takahashi, Toshiro; Nagano, Toshihiro; Kaneda, Kazuyoshi; and Hara, Isao, to Riken Light Metal Industries Company, Ltd.; and Nippon Light Metal Co., Ltd. Method of forming colored oxide film on aluminum or aluminum alloy material. 3,929,593, Cl. 204-35.00N.

Sukeshita, Kazumi, to Nissan Motor Company Limited. Automotive steering system of rack and pinion type having means to prevent displacement of steering shaft in collision. 3,929,030, Cl. 74-492.000.

Sulzer Brothers Limited: *See—*
Pfarrwaller, Erwin, 3,929,169.

Sulzer, Harry E., to Quaker City Gear Works, Inc. Limit switch assembly. 3,930,133, Cl. 200-47.000.

Sumi, Kazuyoshi: *See—*
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Sumitomo Chemical Company, Limited: *See—*
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Kudo, Ken-ichi; Kitagawa, Yoshihiko; and Kuribayashi, Hideyuki, 3,929,747.
Shibata, Osamu; Kojimoto, Susumu; Sato, Takami; and Tadokoro, Yoshio, 3,929,951.
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,929,910.
Yamada, Eiji; and Nishikuri, Masao, 3,929,842.
Yamahara, Takeshi; Deguchi, Takashi; and Nakamura, Shinji, 3,929,773.
Yanagida, Kiyomi; Hirokane, Tadashi; Tsukiyasu, Tadashi; and Sato, Tomoari, 3,929,612.

Sumitomo Durez Company, Ltd.: *See—*
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Sumitomo Electric Industries, Ltd.: *See—*
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Sumitomo Shipbuilding & Machinery Co., Ltd.: *See—*
Iizuka, Shimpei; and Ishimoto, Katsumi, 3,930,137.

Summers, Charles Gene, to Monsanto Company. N-1,3-Dimethylbutyl-N'-1,4-dimethylpentyl-p-phenylenediamine antiozonants. 3,929,855, Cl. 260-45.9QB.

Sun Chemical Corporation: *See—*
Reiter, Ralph H.; and Rosen, George, 3,929,490.

Sun Oil Company of Pennsylvania: *See—*
Shawhan, Elbert N., 3,930,220.

Sun Research and Development Co.: *See—*
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Sunaga, Hiromi: *See—*
Araki, Kunio; Sasaki, Takashi; Kasahara, Yuko; Yamashita, Yoshisada; Yotumoto, Keiichi; Sunaga, Hiromi; Tabei, Kiyoshi; Goto, Kazuo; Tajiri, Kunio; and Kittaka, Hirokazu, 3,930,098.

Sundeen, Joseph E.: *See—*
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Sunds Aktiebolag: *See—*
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Sundstrand Data Control, Inc.: *See—*
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Sunkist Growers, Inc.: *See—*
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Surgical Design Corporation: *See—*
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Sutko, Adolph A.; and Myers, George M., to Continental Oil Company. Well pipe protector. 3,929,388, Cl. 308-4.00A.

Sutliff, Robert C. Film cartridge with retaining ring around a supply coil. 3,929,303, Cl. 242-194.000.

Sutter, Hanspeter, to Luwa AG. Apparatus for cleaning a rotating brush. 3,928,884, Cl. 15-21.00D.

Suzuki, Kouichi: *See—*
Kuwana, Noriaki; Suzuki, Kouichi; and Sugitani, Tooru, 3,929,572.

Suzuki, Masaaki: *See—*
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Suzuki, Shigemutsu: *See—*
Kim, Kenneth; and Suzuki, Shigemutsu, 3,929,436.

Suzuki, Shigeto, to Chevron Research Company. Single stage conversion of secondary halocarbons to ketones. 3,929,896, Cl. 260-593.00R.

Suzuki, Tsutomu: *See—*
Murakami, Masuo; Koda, Akio; Takashima, Mutsuo; Takagi, Etuo; Sakoh, Ichiro; Matsuda, Hideya; and Suzuki, Tsutomu, 3,929,767.

Suzuki, Yasuhide: *See—*
Kawase, Koichi; and Suzuki, Yasuhide, 3,929,113.

Suzuki, Yasushi; Hasegawa, Yukio; Tsukamoto, Kunio; Hiramatsu, Yoshio; and Miyasaka, Katsuhiko, to Teikoku Hormone Mfg. Co. Ltd. Novel 3-substituted-aminoazetidine derivatives and process for preparation thereof. 3,929,765, Cl. 260-239.00A.

Svensson, Karl Jonas Valter, to Granges Aktiebolag. Method of carrying out endothermic metallurgical reduction processes with the aid of a continuously operating mechanical kiln. 3,929,463, Cl. 75-37.000.

Swanson, Elmer G., to Hoerner Waldorf Corporation. Tray for strawberries and the like. 3,929,273, Cl. 229-34.00R.

Swarsab Mining, Exploration & Development Company (Proprietary) Limited: *See—*
Pittie, Willem Hubert; Overbeek, Gerhardus; and Doig, Kingsley Ferguson, 3,929,469.

Swered, Paul; and Girard, Mary Anne, to Betz Laboratories, Inc. Slimicidal compositions containing 2,2-dibromo-3-nitrilopropionamide and their use. 3,930,015, Cl. 424-298.000.

Swick, Edwin Grant: *See—*
Bury, George John; and Swick, Edwin Grant, 3,928,894.

Swift, Jean Drummond: *See—*
Hodgkin, Jonathan Howard; Hawthorne, David Geoffrey; Swift, Jean Drummond; and Solomon, David Henry, 3,929,502.

Swigert, Roger D., to Merck & Co., Inc. Method for preparing 2-bromo-2-bromomethyl-glutaronitrile. 3,929,858, Cl. 260-465.700.

Swinehart, Carl F., to Kewanee Oil Company. Grooved windows for scintillation crystals and light pipes of high refractive index. 3,930,160, Cl. 250-361.000.

Swiss Aluminum Ltd.: *See—*
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Syntex (U.S.A.) Inc.: *See—*
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Beard, Colin C.; Edwards, John A.; and Fried, John H., 3,929,822.
Beard, Colin C.; Edwards, John A.; and Fried, John H., 3,929,823.
Beard, Colin C.; Edwards, John A.; and Fried, John H., 3,929,824.

Szczesniak, Alina S.: *See—*
Shanbhag, Sudhakar P.; and Szczesniak, Alina S., 3,930,034.

Sze, Morgan C.: *See—*
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Szinai, Stephen S.: *See—*
Cashin, Colin H.; Chakrabarti, Jiban K.; and Szinai, Stephen S., 3,929,888.

Szonn, Bodo: *See—*
Muller, Heinz; and Szonn, Bodo, 3,930,102.

Szymber, Oleg; and Brushenko, Anatoli, to GAF Corporation. Toner apparatus for electrophotographic development. 3,929,099, Cl. 118-637.000.

Tabei, Kiyoshi: *See—*
Araki, Kunio; Sasaki, Takashi; Kasahara, Yuko; Yamashita, Yoshisada; Yotumoto, Keiichi; Sunaga, Hiromi; Tabei, Kiyoshi; Goto, Kazuo; Tajiri, Kunio; and Kittaka, Hirokazu, 3,930,098.

Taborsky, Robert G., to Ben Venue Laboratories, Inc. 3-Nitrohalosalicylanilides. 3,929,879, Cl. 260-559.00S.

Tachibana, Kyozaburo: *See—*
Arai, Haruhiko; Tachibana, Kyozaburo; Naganuma, Yoshinori; and Murata, Moriyasu, 3,929,680.

Tadokoro, Yoshio: *See—*
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Tajiri, Kunio: *See—*
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Takada, Juichiro, heir: *See—*
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Takada, Takezo, deceased; and by Takada, Juichiro, heir, to Takata Kojyo Co., Ltd. Three point safety belt system with inertia actuated inflatable belts. 3,929,205, Cl. 180-82.00C.

Takagi, Etuo: *See—*
Murakami, Masuo; Koda, Akio; Takashima, Mutsuo; Takagi, Etuo; Sakoh, Ichiro; Matsuda, Hideya; and Suzuki, Tsutomu, 3,929,767.

Takagi, Yutaka: *See—*
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Takahashi, Masahiro: *See—*
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Takahashi, Ricardo M., to Ampex Corporation. Low power, fast rise time current driver for inductive load. 3,930,171, Cl. 307-270.000.

Takahashi, Toshiro: *See—*
Sugiyama, Noboru; Takahashi, Masahiro; Kanamori, Hirosuke; Sato, Ken; Hirayama, Yoshio; Mikamo, Masahiro; Takahashi, Toshiro; Nagano, Toshihiro; Kaneda, Kazuyoshi; and Hara, Isao, 3,929,593.

Takano, Nobuyoshi; Sakai, Kaoru; Aoki, Satoshi; and Yasuda, Kazuo, to Hitachi, Ltd. Sample transfer device and method for analytical system. 3,929,411, Cl. 23-259.000.

Takasago Perfumery Co., Ltd.: *See—*
Kumasa, Ikuzi; Yamamoto, Takeshi; Norose, Fumitaka; Acutagawa, Susumu; Yoshida, Toshio; and Komatsu, Akira, 3,929,893.

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Takayama, Yuichiro: *See*—
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Takeda Chemical Industries, Ltd.: *See*—
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Oshiai, Michihiko; Ari, Osami; Morimoto, Akira; Okada, Taiiti; and Masuda, Katsutada, 3,929,775.

Takeuchi, Kazuhiko; and Matsumoto, Ryoichiro, to Yamatake-Honeywell Company, Ltd. Flowmeter for an open aqueduct. 3,929,016, Cl. 73-194.0EM.

Takeuchi, Tsuneo: *See*—
Minami, Junichi; Takatsu, Mitsumune; Terada, Masaki; Takeuchi, Tsuneo; and Takagi, Yutaka, 3,930,029.

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Taki Fertilizer Manufactury Co., Ltd.: *See*—
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Takita, Kiyoshi: *See*—
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Takita, Tomohisa; Fujii, Akio; Muraoka, Yasuhiko; Mizuguchi, Shigeru; and Umezawa, Hamao, to Nippon Kayaku Kabushiki Kaisha. Process for removing copper from copper-containing bleomycin group antibiotics. 3,929,993, Cl. 424-177.000.

Talbot, Donald Thomas, to Eaton Corporation. High security lock. 3,928,992, Cl. 70-366.000.

Tallarovic, James F., to Babcock & Wilcox Company, The. Fuel atomizer. 3,929,290, Cl. 239-417.300.

Talty, Robert D.: *See*—
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Tanaka, Hirobumi; Arashi, Norio; Hishinuma, Yukio; and Tamura, Zensuke, to Hitachi, Ltd. Process and apparatus for producing gypsum lumps. 3,929,416, Cl. 23-260.000.

Tanaka, Katsuaki, to Iwatsu Electric Co., Ltd. Digital function fitter. 3,930,144, Cl. 235-150.530.

Tanaka, Kunihiko: *See*—
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Tanigawa, Shizuhiko; Kikuya, Satoshi; Yamazoe, Yoshinori; and Nakamura, Chihiro, to Matsushita Electric Industrial Co., Ltd. Tape guiding drums of the magnetic recording and reproducing apparatus. 3,930,270, Cl. 360-130.000.

Tanimoto, Kenji: *See*—
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,929,910.

Tanimoto, Tadashi; and Shibata, Kazuo, to Kanzaki Paper Manufacturing Company, Ltd. Electrostatic recording materials. 3,930,080, Cl. 427-411.000

Tappan Company, The: *See*—
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Tarman, Paul B.: *See*—
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Tarrson, E. B.; and Young, R., to John O. Butler Company. Device for inserting dental floss through interproximal areas and method of using same. 3,929,144, Cl. 132-93.000.

Tasaki, Akira: *See*—
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Taska, Eileen R. Learning kit for children with learning disabilities. 3,928,924, Cl. 35-37.000.

Taskier, Henry T., to Celanese Corporation. Hydrophilic microporous film. 3,929,509, Cl. 136-146.000.

Tate, Philip Edward Russell: *See*—
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Taub, Steven I., to Du Pont de Nemours, E. I., and Company. Dry collection of waste materials. 3,929,968, Cl. 423-242.000.

Taub, Willard M.: *See*—
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Taylor, Eugene M. Remote monitor apparatus for meters. 3,930,245, Cl. 340-188.00R.

Taylor, George W.: *See*—
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Taylor, Rayner Walter: *See*—
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Tazuma, James J.; and Zadra, Mario D., to Goodyear Tire & Rubber Company, The. Maleic anhydride-modified resin backbone. 3,929,737, Cl. 260-78.40D.

Teac Corporation: *See*—
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Uemura, Yasuhiro, 3,930,269.

Teasley, Robert E., Jr.: *See*—
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Technicon Instruments Corporation: *See*—
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Tee-Pak, Inc.: *See*—
Burke, Noel I.; Dowell, Arthur M., Jr.; Talty, Robert D.; and Kremer, Kenneth J., 3,930,035.
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Teijin Limited: *See*—
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Kawase, Shoji; Maeda, Kenji; Kumakawa, Shiro; and Kuratsuji, Takatoshi, 3,929,180.

Teikoku Hormone Mfg. Co. Ltd.: *See*—
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Tektronix Inc.: *See*—
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Teldix GmbH: *See*—
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Telecommunications Radioelectriques et Telephoniques T.R.T.: *See*—
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Teleflex Incorporated: *See*—
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Webb, Grant A., 3,929,031.

Teller, Daniel M.; and Sellstedt, John H., to American Home Products Corporation. Certain cephalosporanic acid derivatives. 3,929,781, Cl. 260-243.00C.

Tenneco Chemicals, Inc.: *See*—
Minieri, Pasquale P., 3,929,705.

Terada, Masaki: *See*—
Minami, Junichi; Takatsu, Mitsumune; Terada, Masaki; Takeuchi, Tsuneo; and Takagi, Yutaka, 3,930,029.

Teranishi, Roy: *See*—
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Terashima, Osamu; and Okabayashi, Ikuo, to Chiyoda Chemical Engineering and Construction Co., Ltd. Flexible sand drain formed in a casing. 3,928,979, Cl. 61-11.000.

Terrell, Ross C.; and Moore, George L., to Airco, Inc. Fluorodioxolane anesthetic compound and method. 3,930,013, Cl. 424-278.000.

Texaco Inc.: *See*—
Crouch, William B., 3,929,429.
Duranleau, Roger G.; and Larkin, John M., 3,929,845.
Mead, Theodore C.; Ashton, William B.; and Shillinglaw, John P., Jr., 3,929,616.
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Thatcher, Russell S. Welding track positioning gauge. 3,928,919, Cl. 33-180.00R.

Thayer, William; Pageau, Lucien; and Sourirajan, Srinivasa, to Canadian Patents and Development Limited. Method for making tubular polymeric membranes for reverse osmosis. 3,929,945, Cl. 264-41.000.

Theissen, Robert J., to Mobil Oil Corporation. Herbicidal halophenoxy benzoic acid salts. 3,929,455, Cl. 71-115.000.

Thettu, Raghulinga R., to Xerox Corporation. Roll fuser. 3,929,094, Cl. 118-60.000.

Thettu, Raghulinga R., to Xerox Corporation. Roll fuser. 3,929,095, Cl. 118-60.000.

Thettu, Raghulinga R., to Xerox Corporation. Roll fuser. 3,929,096, Cl. 118-60.000.

Thiel, Max: *See*—
Fauland, Erich; Kampe, Wolfgang; Thiel, Max; Stork, Harald; and Schmidt, Felix Helmut, 3,929,763.
Popelak, Alfred; Kampe, Wolfgang; Thiel, Max; Dietmann, Karl; and Sponer, Gisbert, 3,929,793.

Thing, Frank. Exhaust backpressure warning system. 3,930,221, Cl. 340-52.00R.

Thiokol Corporation: *See*—
Macbeth, Albert W., 3,928,965.

Thoma, Matthias. Process for the conversion of sodium sulfite. 3,929,964, Cl. 423-183.000.

Thomas, Frederick L. High water-content water in oil emulsion. 3,929,499, Cl. 106-268.000.

Thomas, Jean-Claude; Raoul, Pierre; and Ledoux, Claude, to Rhone-Progil. Artificial underwater habitats. 3,929,100, Cl. 119-2.000.

Thomas, Robert: *See*—
Hadni, Armand; and Thomas, Robert, 3,930,240.

Thompson, Hugh Ansley, to Procter & Gamble Company, The. Absorptive structure having tapered capillaries. 3,929,135, Cl. 128-287.000.

Thompson, Wallace M., to Harris Press & Shear Corporation. Closed chamber baler. 3,929,062, Cl. 100-3.000.

Thomson-CSF: *See*—
Gerlach, Pierre; and Hoet, Roger, 3,930,179.

Thore, Thomas J., to Glenoit Mills, Inc. Adjustable doffer support for high pile fabric knitting machines. 3,928,986, Cl. 66-9.00B.

Thorn Electrical Industries Limited: *See*—
Coaton, James Richard, 3,930,178.

Thuillier, Rene: *See*—
Christen, Gilbert; Favre, Bernard; Marze, Xavier; Salmon, Michel; and Thuillier, Rene, 3,930,105.

Thurston, Franklin J.; Schendeler, Franciscus J.; and Jounen, Joseph C., to Fairchild Industries, Inc. Article transferring apparatus. 3,929,217, Cl. 198-23.000.

Thyret, Helmut Eugen, to Consortium fur Elecktrochemische Industrie GmbH. Process for producing vinyl pyridine compounds. 3,929,799, Cl. 260-290.00V.

Time Computer, Inc.: *See*—
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Timex Corporation: *See*—
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Timms, Alan R., to Sandoz-Wander, Inc. (Sandoz, Inc.). Imidazo(2,1-A)isoindoles as hypolipidemics. 3,930,009, Cl. 424-273.000.

Timofeev, Valentin Vyacheslavovich: *See*—
Zlotin, Boris Nikolaevich; Timofeev, Valentin Vyacheslavovich; and Chernenko, Sergei Vladimirovich, 3,929,008.

Titanium Technology, N.V.: *See*—
Dunn, Wendell E., Jr., 3,929,501.

Tjernstrom, Ove, to Allmanna Svenska Elektriska Aktiebolaget. Method and means for measuring the clamping force on transformer windings. 3,929,010, Cl. 73-141.00R.

Todd, Lamar S.; Fitzgibbon, Alan; Carosella, Michael C.; and Hilty, Donald C., to Union Carbide Corporation. Desulfurization of molten ferrous metals. 3,929,464, Cl. 75-58.000.

Tokyo Shibaura Electric Co., Ltd.: *See*—
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Tombu, Gerard J. Device for fastening wall covering fabrics. 3,928,897, Cl. 24-243.00K.

Tomey, Thomas C.: *See*—
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Tomlin, Clive Dudley Spencer: *See*—
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Tong, Wen-Hong: *See*—
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Topham, Arthur: *See*—
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Tornabene, Michael G. Wave-action power apparatus. 3,930,168, Cl. 290-53.000.

Torres, Hector Jose, to Aurelio, Leonardo Francisco, a part interest. Metal rod for reinforced concrete and process for producing said rod. 3,928,998, Cl. 72-185.000.

Tosti, Umberto V.; and Childs, Richard L., to Rockwell International Corporation. Fail safe stop motion for looms. 3,929,171, Cl. 139-336.000.

Toth, Anton; Rupp, Hans-Dieter; and Meyer, Gerhard, to Akzo N.V. of Arnhem, Holland. Process for the production of thiocarbohydrazide. 3,929,877, Cl. 260-552.0SC.

Toy Development Limited: *See*—
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Toyo Kogyo Co., Ltd.: *See*—
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Toyo Seikan Kaisha Limited: *See*—
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
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Traille, Andre: *See*—
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Transco Inc.: *See*—
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Transfer Systems Incorporated: *See*—
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TransFRESH Corporation: *See*—
Woodruff, Richard E., 3,930,040.

Transyt Corporation: *See*—
McRae, William V., Jr.; and Stuart, John J., Jr., 3,929,076.

Tregoning, Robert L. Lug nut wrench tool. 3,928,877, Cl. 7-1.00G.

Treptow, Arnold W.: *See*—
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Tress, Jack E.; and Hunter, Willard L., to United States of America, Interior. Charging an electric furnace. 3,929,459, Cl. 75-12.000.

Treuner, Uwe D.; and Breuer, Hermann, to E. R. Squibb & Sons, Inc 3-Heterothio derivatives of [(thioalkoxycarbonyl)thioacetyl]cephalosporins. 3,929,776, Cl. 260-243.00C.

Treuner, Uwe D.: *See*—
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Triax Company, The: *See*—
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Trimble, Robert A.: *See*—
Button, Harold O.; and Trimble, Robert A., 3,929,626.

Trocino, Frank S., to Bohemia Inc. Slow nitrogen releasing fertilizers and methods of making the same. 3,929,446, Cl. 71-23.000.

Troike, Robert L.: *See*—
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Becker, Karl Heinz; Boltze, Karl-Heinz; Dell, Hans-Dieter; and Seidel, Peter-Rudolf, 3,930,003.

Trostyanskaya, Irina Ivanovna: *See*—
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Tsagas, Nicolas Fotios, to Kalogeropoulos, Alexis, a part interest. Apparatus for indicating pneumatic tire pressure. 3,930,223, Cl. 340-58.000.

Tsuchiya, Osamu: *See*—
Umezawa, Hamao; Umezawa, Sumio; and Tsuchiya, Osamu, 3,929,762.

Tsuchiya, Tsutomu: *See*—
Umezawa, Sumio; Umezawa, Hamao; and Tsuchiya, Tsutomu, 3,929,761.

Tsuchiya, Yutaka: *See*—
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Tsuji, Nobuo: *See*—
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Tsukamoto, Kunio: *See*—
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Tsuzuki, Ryuichiro: *See*—
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Tucker, Harold; and Minchak, Robert J., to B. F. Goodrich Company, The. Sulphur vulcanizable elastomeric copolymers. 3,929,746, Cl. 260-80.780.

Tuller, Harold W.: *See*—
Curtis, Omer E., Jr.; Tuller, Harold W.; O'Neill, Charles T.; and Nussbaum, Ralph W., 3,929,738.

Tunick, Allen Abraham: *See*—
Fuhrmann, Robert; Sifniades, Stylianos; and Tunick, Allen Abraham, 3,929,885.

Turk, Chester Frank: *See*—
Krapcho, John; and Turk, Chester Frank, 3,929,783.

Turkiewicz, Richard R.; and Volino, Anthony J., to United States of America, Army. Vehicle track support. 3,929,385, Cl. 305-56.000.

Turner, James Keith; and Parsons, Gary L., to Gaston County Dyeing Machine Company. Filtering apparatus and process. 3,929,639, Cl. 210-71.000.

Turner, Larry G.: *See—*
Cohn, Lawrence P.; Crawford, Dennis W.; and Turner, Larry G., 3,929,317.
Turner, Robert Bruce, to American Medical Electronics Corporation. Probe system. 3,929,018, Cl. 73-343.00R.
Turner, Robert K.; and Rose, Edgar, to Outboard Marine Corporation. Fuel feed system for recycling fuel. 3,929,11[illegible], Cl. 123-73.00R.
Tybus, Axel W.; and Fabrizio, Leonard A., to Hooker Chemicals & Plastics Corporation. Polyvinyl chloride composition. 3,929,700, Cl. 260-23.0XA.
Uchida, Minoru: *See—*
Orito, Zen-Ichi; Uchida, Minoru; and Mori, Noriaki, 3,929,946.
Uchiyama, Yoshio: *See—*
Noguchi, Teruhisa; Hashimoto, Yoshinobu; Uchiyama, Yoshio; and Ueyama, Michio, 3,929,903.
Uden, Edward; and Gotze, Bengi, to U.S. Philips Corporation. Electric component assembly comprising insulating foil bearing conductor tracks. 3,930,115, Cl. 174-52.0FP.
Ueda, Yuji: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihito, 3,929,910.
Uemura, Yasuhiro, to Teac Corporation. Cassette tape deck with brake and tape tensioning means. 3,930,268, Cl. 360-96.000.
Uemura, Yasuhiro, to Teac Corporation. Cassette tape deck with tape tensioning. 3,930,269, Cl. 360-96.000.
Ueyama, Michio: *See—*
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Uke, Alan K. Diver's air tank protective cap. 3,929,312, Cl. 248-346.100.
Ullmann, Agnes; and Schwartz, Maxime, to Agence Nationale de Valorisation de la Recherche (ANVAR). Process for the microbiological purification of dairy effluents. 3,930,028, Cl. 426-41.000.
Umehara, Seichiro: *See—*
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Umezawa, Sumio; Umezawa, Hamao; and Tsuchiya, Tsutomu, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. 3-Deoxykanamycin. 3,929,761, Cl. 260-210.00K.
Umezawa, Sumio: *See—*
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Urano, Fumio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera having a shutter mechanism controlled to remain closed as a failure warning. 3,930,263, Cl. 354-268.000.
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Vallak, Hannes, to Vallak, Enn. Method for sealed system of hot tops, ingot moulds or a combination of ingot mould and hot top and an arrangement for said sealed system. 3,929,183, Cl. 164-123.000.
Valyi, Emery I. Method for the production of composite containers. 3,929,954, Cl. 264-97.000.
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van der Gaag, Gerrit; and Tomey, Thomas C., to Shell Oil Company. Method for forming noncircular thermoplastic cupped articles. 3,929,953, Cl. 264-94.000.
van de Rovaart, Paul; and Wuhrmann, Jean-Jacques, to Societe d'Assistance Technique pour Produits Nestle S.A. In situ production of meat like flavor in expanded porous food product. 3,930,044, Cl. 426-533.000.
van der Wal, Davis Josephus, to U.S. Philips Corporation. Electronic musical instrument with one tone generator controlling a second tone generator. 3,929,052, Cl. 84-1.220.
van Dierendonck, Laurentius L.; and Von den Hoff, Johan P. H., to Stamicarbon N.V. Process for the preparation of a phenol from a benzenemonocarboxylic acid. 3,929,909, Cl. 260-621.00R.
van Dierendonck, Laurentius L.; and Von den Hoff, Johan P. H., to Stamicarbon N.V. Preparation of a phenol from a benzenemonocarboxylic acid. 3,929,911, Cl. 260-621.00R.
Van Dyck, Emil J.; Malina, Jerry L.; and Schiller, Raymond E., to Dart Industries Inc. Pressure laminating method. 3,929,545, Cl. 156-220.000.
van Gils, Gerard E.; and Kalafus, Edward F., to General Tire & Rubber Company, The. Composite of rubber bonded to glass fibers. 3,930,095, Cl. 428-251.000.
VanHeuman, Frederick. Combination electrical cable cutters, strippers and pliers. 3,928,878, Cl. 7-5.500.
van Kempen, Charles, to Simplex Specialty Co., Inc. Film sleeving apparatus. 3,929,553, Cl. 156-391.000.
van Leeuwen, Johannes Aloysius, to U.S. Philips Corporation. Color cathode ray tube magnetic pole piece support structure. 3,930,180, Cl. 313-417.000.
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Wall, Albert. Barber's glove and method. 3,928,871, Cl. 2-161.00R.
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Wanner, Karl; Hahner, Reinhard; Schmid, Wolfgang; Hansel, Gernot; Bleicher, Manfred; and Falchle, Jorg, to Robert Bosch G.m.b.H. Quick-release tool chuck. 3,929,343, Cl. 279-1.00B.
Ward, John W., to Union Oil Company of California. Ammonia-stable Y zeolite compositions. 3,929,672, Cl. 252-455.00Z.
Ward, Truman L.; and Benerito, Ruth R., to United States of America, Agriculture. Color reversible, mirror surface glassy materials from plumbite-treated cellulosics. 3,929,535, Cl. 156-82.000.
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B 189,772	3,925,367	Dec. 9, 1975	B 292,126	3,914,465	Oct. 21, 1975
B 189,773	3,925,405	Dec. 9, 1975	B 292,140	3,914,340	Oct. 21, 1975
B 190,679	3,925,346	Dec. 9, 1975	B 292,300	3,927,167	Dec. 16, 1975
B 198,810	3,916,043	Oct. 28, 1975	B 292,563	3,923,653	Dec. 2, 1975
B 204,161	3,924,605	Dec. 9, 1975	B 293,378	3,923,725	Dec. 2, 1975
B 207,272	3,914,123	Oct. 21, 1975	B 293,437	3,913,414	Oct. 21, 1975
B 211,786	3,914,300	Oct. 21, 1975	B 294,103	3,924,396	Dec. 9, 1975
B 213,211	3,925,269	Dec. 9, 1975	B 294,579	3,916,737	Nov. 4, 1975
B 220,683	3,914,471	Oct. 21, 1975	B 294,673	3,916,023	Oct. 28, 1975
B 222,188	3,914,739	Oct. 21, 1975	B 295,481	3,921,593	Nov. 25, 1975
B 223,621	3,925,526	Dec. 9, 1975	B 295,674	3,916,107	Oct. 28, 1975
B 224,323	3,925,476	Dec. 9, 1975	B 295,860	3,923,880	Dec. 2, 1975
B 233,383	3,925,424	Dec. 9, 1975	B 299,267	3,917,106	Nov. 4, 1975
B 233,741	3,925,326	Dec. 9, 1975	B 300,353	3,921,734	Nov. 25, 1975
B 235,011	3,925,086	Dec. 9, 1975	B 302,271	3,929,130	Dec. 30, 1975
B 235,925	3,924,949	Dec. 9, 1975	B 302,692	3,924,598	Dec. 9, 1975
B 236,609	3,925,187	Dec. 9, 1975	B 302,836	3,923,573	Dec. 2, 1975
B 237,953	3,924,051	Dec. 2, 1975	B 302,998	3,928,233	Dec. 23, 1975
B 239,289	3,922,711	Nov. 25, 1975	B 303,011	3,930,188	Dec. 30, 1975
B 241,433	3,923,711	Dec. 2, 1975	B 303,655	3,924,642	Dec. 9, 1975
B 245,194	3,919,179	Nov. 11, 1975	B 303,702	3,914,131	Oct. 21, 1975
B 248,916	3,920,862	Nov. 18, 1975	B 304,687	3,924,783	Dec. 9, 1975
B 251,109	3,914,148	Oct. 21, 1975	B 305,417	3,915,882	Oct. 28, 1975
B 251,635	3,914,149	Oct. 21, 1975	B 305,868	3,921,463	Nov. 25, 1975
B 252,947	3,923,803	Dec. 2, 1975	B 305,881	3,923,478	Dec. 2, 1975
B 254,211	3,917,677	Nov. 4, 1975	B 306,829	3,925,411	Dec. 9, 1975
B 254,708	3,923,878	Dec. 2, 1975	B 306,938	3,916,050	Oct. 28, 1975
B 255,756	3,923,781	Dec. 2, 1975	B 307,677	3,915,276	Oct. 28, 1975
B 256,334	3,924,988	Dec. 9, 1975	B 308,661	3,924,349	Dec. 9, 1975
B 256,936	3,925,513	Dec. 9, 1975	B 308,892	3,919,624	Nov. 11, 1975
B 258,687	3,914,221	Oct. 21, 1975	B 309,207	3,914,743	Oct. 21, 1975
B 259,236	3,924,874	Dec. 9, 1975	B 309,499	3,922,002	Nov. 25, 1975
B 259,274	3,928,688	Dec. 23, 1975	B 309,681	3,927,374	Dec. 16, 1975
B 260,455	3,925,634	Dec. 9, 1975	B 309,755	3,919,468	Nov. 11, 1975
B 260,945	3,925,250	Dec. 9, 1975	B 309,756	3,914,136	Oct. 21, 1975
B 261,378	3,913,468	Oct. 21, 1975	B 309,860	3,922,485	Nov. 25, 1975
B 261,828	3,925,551	Dec. 9, 1975	B 310,149	3,924,705	Dec. 9, 1975
B 262,241	3,925,528	Dec. 9, 1975	B 310,271	3,923,689	Dec. 2, 1975
B 262,287	3,921,209	Nov. 18, 1975	B 311,313	3,925,142	Dec. 9, 1975
B 262,378	3,914,410	Oct. 21, 1975	B 311,317	3,918,975	Nov. 11, 1975
B 264,257	3,928,665	Dec. 23, 1975	B 311,413	3,925,515	Dec. 9, 1975
B 264,833	3,923,566	Dec. 2, 1975	B 311,910	3,924,357	Dec. 9, 1975
B 265,369	3,925,245	Dec. 9, 1975	B 311,911	3,925,233	Dec. 9, 1975
B 265,727	3,914,479	Oct. 21, 1975	B 312,139	3,925,530	Dec. 9, 1975
B 265,862	3,915,915	Oct. 28, 1975	B 312,477	3,923,714	Dec. 2, 1975
B 266,195	3,923,599	Dec. 2, 1975	B 313,098	3,925,045	Dec. 9, 1975
B 269,673	3,914,377	Oct. 21, 1975	B 313,531	3,925,548	Dec. 9, 1975
B 270,089	3,923,875	Dec. 2, 1975	B 313,594	3,924,626	Dec. 9, 1975
B 271,104	3,925,400	Dec. 9, 1975	B 313,900	3,915,932	Oct. 28, 1975
B 274,945	3,924,992	Dec. 9, 1975	B 314,049	3,920,588	Nov. 18, 1975
B 275,426	3,925,168	Dec. 9, 1975	B 314,255	3,923,764	Dec. 2, 1975
B 276,271	3,916,028	Oct. 28, 1975	B 314,271	3,921,845	Nov. 25, 1975
B 276,560	3,916,030	Oct. 28, 1975	B 314,489	3,925,016	Dec. 9, 1975
B 277,449	3,924,048	Dec. 2, 1975	B 314,800	3,930,087	Dec. 30, 1975
B 278,491	3,921,170	Nov. 18, 1975	B 314,977	3,923,459	Dec. 2, 1975
B 278,991	3,914,469	Oct. 21, 1975	B 315,363	3,920,673	Nov. 18, 1975
B 279,583	3,923,749	Dec. 2, 1975	B 315,397	3,923,963	Dec. 2, 1975
B 280,015	3,925,378	Dec. 9, 1975	B 315,731	3,914,108	Oct. 21, 1975
B 280,395	3,919,604	Nov. 11, 1975	B 316,014	3,920,861	Nov. 18, 1975
B 281,341	3,920,643	Nov. 18, 1975	B 316,239	3,913,546	Oct. 21, 1975
B 281,943	3,924,013	Dec. 2, 1975	B 316,917	3,925,494	Dec. 9, 1975
B 282,081	3,913,483	Oct. 21, 1975	B 317,080	3,925,324	Dec. 9, 1975
B 282,252	3,924,997	Dec. 9, 1975	B 317,347	3,923,552	Dec. 2, 1975
B 283,124	3,923,512	Dec. 2, 1975	B 317,624	3,925,167	Dec. 9, 1975
B 283,300	3,925,011	Dec. 9, 1975	B 318,195	3,915,699	Oct. 28, 1975
B 284,297	3,913,722	Oct. 21, 1975	B 318,618	3,915,365	Oct. 28, 1975
B 285,200	3,923,680	Dec. 2, 1975	B 318,640	3,925,186	Dec. 9, 1975
B 285,796	3,914,303	Oct. 21, 1975	B 318,745	3,916,571	Nov. 4, 1975
B 286,499	3,914,129	Oct. 21, 1975	B 319,226	3,925,082	Dec. 9, 1975
B 286,614	3,924,696	Dec. 9, 1975	B 319,339	3,916,056	Oct. 28, 1975
B 286,913	3,928,696	Dec. 23, 1975	B 319,402	3,919,568	Nov. 11, 1975
B 287,164	3,914,139	Oct. 21, 1975	B 319,414	3,928,666	Dec. 23, 1975
B 287,270	3,924,825	Dec. 9, 1975	B 320,261	3,924,033	Dec. 2, 1975
B 287,275	3,925,141	Dec. 9, 1975	B 320,452	3,925,083	Dec. 9, 1975
B 287,373	3,918,568	Nov. 11, 1975	B 320,603	3,915,571	Oct. 28, 1975
B 288,018	3,925,239	Dec. 9, 1975	B 321,018	3,921,623	Nov. 25, 1975
B 288,627	3,916,179	Oct. 28, 1975	B 321,101	3,917,163	Nov. 4, 1975
B 288,638	3,925,132	Dec. 9, 1975	B 321,938	3,923,889	Dec. 2, 1975
B 289,175	3,924,309	Dec. 9, 1975	B 322,182	3,925,390	Dec. 9, 1975

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER TRIAL VOLUNTARY PROTEST PROGRAM

JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 322,239	3,920,973	Nov. 18, 1975
B 322,564	3,914,373	Oct. 21, 1975
B 322,611	3,920,863	Nov. 18, 1975
B 322,777	3,924,382	Dec. 9, 1975
B 323,127	3,923,967	Dec. 2, 1975
B 323,191	3,914,566	Oct. 21, 1975
B 323,203	3,916,165	Oct. 28, 1975
B 323,568	3,920,536	Nov. 18, 1975
B 323,666	3,924,568	Dec. 9, 1975
B 324,495	3,928,664	Dec. 23, 1975
B 324,503	3,928,524	Dec. 23, 1975
B 324,505	3,925,294	Dec. 9, 1975
B 324,739	3,924,990	Dec. 9, 1975
B 324,879	3,923,538	Dec. 2, 1975
B 325,102	3,924,355	Dec. 9, 1975
B 325,262	3,921,304	Nov. 25, 1975
B 326,514	3,925,080	Dec. 9, 1975
B 327,109	3,925,350	Dec. 9, 1975
B 327,363	3,923,504	Dec. 2, 1975
B 327,612	3,925,620	Dec. 9, 1975
B 327,674	3,918,540	Nov. 11, 1975
B 327,899	3,925,674	Dec. 9, 1975
B 328,164	3,914,703	Oct. 21, 1975
B 328,200	3,916,031	Oct. 28, 1975
B 328,205	3,914,106	Oct. 21, 1975
B 328,210	3,914,275	Oct. 21, 1975
B 328,870	3,916,486	Nov. 4, 1975
B 329,115	3,924,727	Dec. 9, 1975
B 329,476	3,920,562	Nov. 18, 1975
B 329,612	3,925,128	Dec. 9, 1975
B 329,787	3,920,688	Nov. 18, 1975
B 329,816	3,923,947	Dec. 2, 1975
B 330,536	3,925,452	Dec. 9, 1975
B 330,828	3,913,589	Oct. 21, 1975
B 331,417	3,914,157	Oct. 21, 1975
B 331,557	3,916,577	Nov. 4, 1975
B 331,895	3,916,403	Oct. 28, 1975
B 332,527	3,924,017	Dec. 2, 1975
B 332,811	3,924,359	Dec. 9, 1975
B 333,876	3,921,208	Nov. 18, 1975
B 333,928	3,927,172	Dec. 16, 1975
B 334,251	3,924,719	Dec. 9, 1975
B 334,868	3,919,469	Nov. 11, 1975
B 334,985	3,923,912	Dec. 2, 1975
B 335,670	3,928,686	Dec. 23, 1975
B 335,741	3,925,615	Dec. 9, 1975
B 335,773	3,920,953	Nov. 18, 1975
B 336,129	3,923,606	Dec. 2, 1975
B 336,243	3,925,422	Dec. 9, 1975
B 336,345	3,925,179	Dec. 9, 1975
B 336,652	3,914,211	Oct. 21, 1975
B 336,902	3,918,897	Nov. 11, 1975
B 336,946	3,919,425	Nov. 11, 1975
B 336,978	3,923,968	Dec. 2, 1975
B 337,235	3,919,386	Nov. 11, 1975
B 337,409	3,925,258	Dec. 9, 1975
B 337,442	3,913,658	Oct. 21, 1975
B 337,703	3,914,690	Oct. 21, 1975
B 337,787	3,923,506	Dec. 2, 1975
B 339,057	3,924,822	Dec. 9, 1975
B 339,218	3,925,121	Dec. 9, 1975
B 339,838	3,930,221	Dec. 30, 1975
B 340,212	3,922,645	Nov. 25, 1975
B 340,833	3,925,208	Dec. 9, 1975
B 341,579	3,913,363	Oct. 21, 1975
B 342,084	3,928,694	Dec. 23, 1975
B 342,423	3,925,334	Dec. 9, 1975
B 342,886	3,923,507	Dec. 2, 1975
B 343,136	3,919,453	Nov. 11, 1975
B 343,240	3,925,693	Dec. 9, 1975
B 343,506	3,916,021	Oct. 28, 1975
B 343,577	3,921,165	Nov. 18, 1975
B 344,203	3,928,719	Dec. 23, 1975
B 344,479	3,924,042	Dec. 2, 1975
B 345,060	3,916,018	Oct. 28, 1975
B 345,384	3,916,146	Oct. 28, 1975
B 345,422	3,914,392	Oct. 21, 1975
B 345,527	3,927,365	Dec. 16, 1975
B 345,567	3,913,985	Oct. 21, 1975
B 346,165	3,913,293	Oct. 21, 1975
B 346,210	3,916,142	Oct. 28, 1975
B 346,350	3,915,824	Oct. 28, 1975
B 346,487	3,927,406	Dec. 16, 1975
B 346,585	3,913,820	Oct. 21, 1975
B 346,613	3,923,545	Dec. 2, 1975
B 346,901	3,915,583	Oct. 28, 1975
B 348,083	3,923,774	Dec. 2, 1975
B 348,383	3,923,452	Dec. 2, 1975
B 348,495	3,914,654	Oct. 21, 1975
B 348,558	3,914,109	Oct. 21, 1975
B 349,141	3,915,363	Oct. 28, 1975
B 349,177	3,914,033	Oct. 21, 1975
B 349,231	3,915,831	Oct. 28, 1975
B 349,321	3,916,103	Oct. 28, 1975
B 349,948	3,914,557	Oct. 21, 1975
B 350,025	3,927,415	Dec. 16, 1975
B 350,143	3,924,419	Dec. 9, 1975
B 350,219	3,917,802	Nov. 4, 1975
B 350,245	3,914,331	Oct. 21, 1975
B 350,523	3,924,726	Dec. 9, 1975
B 350,589	3,927,419	Dec. 16, 1975
B 350,708	3,923,871	Dec. 2, 1975
B 350,843	3,915,461	Oct. 28, 1975
B 351,055	3,914,074	Oct. 21, 1975
B 351,218	3,914,186	Oct. 21, 1975
B 351,222	3,921,179	Nov. 18, 1975
B 351,348	3,923,563	Dec. 2, 1975
B 351,421	3,914,733	Oct. 21, 1975
B 351,493	3,914,758	Oct. 21, 1975
B 351,535	3,915,239	Oct. 28, 1975
B 351,665	3,919,701	Nov. 11, 1975
B 351,672	3,914,000	Oct. 21, 1975
B 351,735	3,913,385	Oct. 21, 1975
B 351,863	3,914,700	Oct. 21, 1975
B 351,883	3,924,657	Dec. 9, 1975
B 351,926	3,914,133	Oct. 21, 1975
B 351,939	3,913,480	Oct. 21, 1975
B 352,445	3,928,746	Dec. 23, 1975
B 352,934	3,913,692	Oct. 21, 1975
B 352,950	3,922,590	Nov. 25, 1975
B 352,965	3,921,926	Nov. 25, 1975
B 353,317	3,916,446	Nov. 4, 1975
B 353,387	3,924,404	Dec. 9, 1975
B 353,546	3,913,273	Oct. 21, 1975
B 354,008	3,925,081	Dec. 9, 1975
B 354,098	3,925,547	Dec. 9, 1975
B 354,145	3,927,279	Dec. 16, 1975
B 354,296	3,914,580	Oct. 21, 1975
B 354,510	3,928,658	Dec. 23, 1975
B 354,889	3,913,204	Oct. 21, 1975
B 354,979	3,914,251	Oct. 21, 1975
B 355,095	3,925,656	Dec. 9, 1975
B 355,269	3,914,561	Oct. 21, 1975
B 355,510	3,913,704	Oct. 21, 1975
B 355,595	3,925,649	Dec. 9, 1975
B 355,876	3,925,685	Dec. 9, 1975
B 356,032	3,928,636	Dec. 23, 1975
B 356,253	3,925,025	Dec. 9, 1975
B 356,602	3,927,393	Dec. 16, 1975
B 356,724	3,924,586	Dec. 9, 1975
B 357,039	3,924,406	Dec. 9, 1975
B 357,057	3,913,738	Oct. 21, 1975
B 357,131	3,924,453	Dec. 9, 1975
B 357,402	3,914,180	Oct. 21, 1975
B 357,682	3,924,973	Dec. 9, 1975
B 357,803	3,919,470	Nov. 11, 1975
B 358,174	3,924,958	Dec. 9, 1975
B 358,244	3,913,411	Oct. 21, 1975
B 358,311	3,923,561	Dec. 2, 1975
B 358,939	3,924,713	Dec. 9, 1975
B 359,174	3,914,117	Oct. 21, 1975
B 359,187	3,924,525	Dec. 9, 1975
B 359,540	3,915,235	Oct. 28, 1975
B 359,791	3,929,430	Dec. 30, 1975
B 359,825	3,921,344	Nov. 25, 1975
B 359,946	3,914,132	Oct. 21, 1975
B 359,947	3,914,653	Oct. 21, 1975
B 360,208	3,923,750	Dec. 2, 1975
B 360,296	3,916,720	Nov. 4, 1975
B 360,719	3,915,715	Oct. 28, 1975
B 360,910	3,925,696	Dec. 9, 1975
B 361,265	3,923,569	Dec. 2, 1975
B 361,443	3,927,405	Dec. 16, 1975
B 361,569	3,914,554	Oct. 21, 1975
B 361,604	3,922,702	Nov. 25, 1975
B 361,734	3,915,764	Oct. 28, 1975
B 362,589	3,914,012	Oct. 21, 1975
B 363,205	3,923,744	Dec. 2, 1975
B 363,337	3,928,639	Dec. 23, 1975
B 363,457	3,922,595	Nov. 25, 1975
B 363,674	3,929,716	Dec. 30, 1975
B 363,892	3,913,395	Oct. 21, 1975

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JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 363,962	3,921,826	Nov. 25, 1975
B 364,022	3,913,499	Oct. 21, 1975
B 364,163	3,916,092	Oct. 28, 1975
B 364,241	3,916,668	Nov. 4, 1975
B 364,334	3,924,670	Dec. 9, 1975
B 364,528	3,919,510	Nov. 11, 1975
B 364,786	3,921,673	Nov. 25, 1975
B 364,910	3,925,335	Dec. 9, 1975
B 365,490	3,918,527	Nov. 11, 1975
B 365,834	3,914,702	Oct. 21, 1975
B 365,841	3,925,628	Dec. 9, 1975
B 365,855	3,917,258	Nov. 4, 1975
B 366,287	3,924,946	Dec. 9, 1975
B 366,402	3,928,053	Dec. 23, 1975
B 366,589	3,914,719	Oct. 21, 1975
B 367,021	3,914,752	Oct. 21, 1975
B 367,040	3,924,775	Dec. 9, 1975
B 367,661	3,914,158	Oct. 21, 1975
B 367,739	3,923,648	Dec. 2, 1975
B 367,812	3,924,789	Dec. 9, 1975
B 368,081	3,924,691	Dec. 9, 1975
B 368,387	3,924,923	Dec. 9, 1975
B 368,392	3,913,812	Oct. 21, 1975
B 368,397	3,914,677	Oct. 21, 1975
B 368,862	3,925,549	Dec. 9, 1975
B 369,563	3,924,449	Dec. 9, 1975
B 369,607	3,923,786	Dec. 2, 1975
B 369,997	3,913,533	Oct. 21, 1975
B 370,706	3,925,242	Dec. 9, 1975
B 371,073	3,930,135	Dec. 30, 1975
B 371,085	3,923,783	Dec. 2, 1975
B 371,787	3,921,217	Nov. 18, 1975
B 371,805	3,914,433	Oct. 21, 1975
B 371,836	3,923,541	Dec. 2, 1975
B 372,823	3,924,660	Dec. 9, 1975
B 373,297	3,924,436	Dec. 9, 1975
B 373,326	3,920,433	Nov. 18, 1975
B 373,428	3,915,511	Oct. 28, 1975
B 375,220	3,920,417	Nov. 18, 1975
B 375,652	3,921,303	Nov. 25, 1975
B 376,504	3,914,570	Oct. 21, 1975
B 376,654	3,922,513	Nov. 25, 1975
B 376,742	3,924,392	Dec. 9, 1975
B 376,799	3,913,955	Oct. 21, 1975
B 377,172	3,918,255	Nov. 11, 1975
B 377,683	3,924,433	Dec. 9, 1975
B 377,833	3,913,884	Oct. 21, 1975
B 377,869	3,917,002	Nov. 4, 1975
B 378,621	3,923,840	Dec. 2, 1975
B 379,038	3,923,994	Dec. 2, 1975
B 379,172	3,914,379	Oct. 21, 1975
B 379,282	3,913,462	Oct. 21, 1975
B 379,955	3,913,157	Oct. 21, 1975
B 380,014	3,921,915	Nov. 25, 1975
B 380,141	3,925,161	Dec. 9, 1975
B 380,310	3,921,048	Nov. 18, 1975
B 380,312	3,913,953	Oct. 21, 1975
B 380,338	3,924,873	Dec. 9, 1975
B 380,446	3,923,836	Dec. 2, 1975
B 380,900	3,913,307	Oct. 21, 1975
B 380,926	3,925,095	Dec. 9, 1975
B 381,074	3,919,583	Nov. 11, 1975
B 381,632	3,914,732	Oct. 21, 1975
B 381,847	3,921,152	Nov. 18, 1975
B 382,018	3,929,742	Dec. 30, 1975
B 382,021	3,913,212	Oct. 21, 1975
B 382,261	3,914,991	Oct. 28, 1975
B 382,290	3,924,717	Dec. 9, 1975
B 382,783	3,919,527	Nov. 11, 1975
B 382,798	3,924,435	Dec. 9, 1975
B 382,840	3,922,007	Nov. 25, 1975
B 383,465	3,927,412	Dec. 16, 1975
B 383,532	3,914,246	Oct. 21, 1975
B 383,581	3,925,318	Dec. 9, 1975
B 384,499	3,925,135	Dec. 9, 1975
B 384,658	3,913,452	Oct. 21, 1975
B 384,773	3,915,416	Oct. 28, 1975
B 385,210	3,913,406	Oct. 21, 1975
B 386,403	3,924,895	Dec. 9, 1975
B 386,592	3,925,305	Dec. 9, 1975
B 387,039	3,924,510	Dec. 9, 1975
B 387,331	3,913,701	Oct. 21, 1975
B 387,363	3,927,378	Dec. 16, 1975
B 387,687	3,918,151	Nov. 11, 1975
B 387,761	3,914,245	Oct. 21, 1975
B 387,790	3,925,380	Dec. 9, 1975
B 387,818	3,918,935	Nov. 11, 1975
B 388,580	3,923,712	Dec. 2, 1975
B 389,070	3,914,171	Oct. 21, 1975
B 389,285	3,914,631	Oct. 21, 1975
B 389,327	3,924,504	Dec. 9, 1975
B 389,639	3,914,626	Oct 21, 1975
B 389,726	3,921,010	Nov. 18, 1975
B 389,807	3,922,623	Nov. 25, 1975
B 389,932	3,913,268	Oct 21, 1975
B 389,933	3,913,267	Oct 21, 1975
B 390,679	3,913,668	Oct 21, 1975
B 390,732	3,913,878	Oct 21, 1975
B 391,184	3,914,214	Oct 21, 1975
B 391,210	3,914,220	Oct 21, 1975
B 391,437	3,915,416	Oct. 28, 1975
B 391,509	3,925,175	Dec 9, 1975
B 391,675	3,916,017	Oct. 28, 1975
B 392,154	3,923,809	Dec 2, 1975
B 392,242	3,926,636	Dec. 16, 1975
B 392,696	3,916,175	Oct 28, 1975
B 392,732	3,914,903	Oct 21, 1975
B 392,753	3,916,341	Oct 28, 1975
B 392,894	3,914,763	Oct. 21, 1975
B 393,163	3,914,535	Oct. 21, 1975
B 393,970	3,914,638	Oct. 21, 1975
B 394,088	3,914,740	Oct. 21, 1975
B 394,188	3,924,591	Dec. 9, 1975
B 394,300	3,914,159	Oct. 21, 1975
B 394,712	3,916,306	Oct. 28, 1975
B 395,478	3,922,577	Nov. 25, 1975
B 395,496	3,919,435	Nov. 11, 1975
B 395,671	3,920,418	Nov. 18, 1975
B 395,889	3,913,190	Oct 21, 1975
B 396,025	3,913,869	Oct. 21, 1975
B 396,551	3,921,929	Nov. 25, 1975
B 397,027	3,923,736	Dec. 2, 1975
B 397,527	3,913,488	Oct 21, 1975
B 397,990	3,914,848	Oct. 28, 1975
B 398,262	3,913,481	Oct. 21, 1975
B 398,551	3,924,924	Dec. 9, 1975
B 398,597	3,913,743	Oct. 21, 1975
B 398,625	3,920,996	Nov. 18, 1975
B 399,292	3,914,810	Oct. 28, 1975
B 399,304	3,919,567	Nov. 11, 1975
B 399,349	3,925,694	Dec. 9, 1975
B 399,766	3,915,667	Oct. 28, 1975
B 400,080	3,925,163	Dec. 9, 1975
B 400,293	3,923,719	Dec. 2, 1975
B 400,310	3,915,507	Oct. 28, 1975
B 401,133	3,924,443	Dec. 9, 1975
B 401,992	3,924,898	Dec. 9, 1975
B 402,065	3,925,413	Dec. 9, 1975
B 402,555	3,914,688	Oct 21, 1975
B 403,140	3,913,486	Oct. 21, 1975
B 403,355	3,913,352	Oct. 21, 1975
B 403,990	3,914,684	Oct. 21, 1975
B 403,996	3,916,016	Oct. 28, 1975
B 404,290	3,924,918	Dec. 9, 1975
B 404,437	3,915,200	Oct. 28, 1975
B 405,136	3,915,565	Oct. 28, 1975
B 405,137	3,915,566	Oct. 28, 1975
B 405,160	3,924,821	Dec. 9, 1975
B 405,248	3,926,294	Dec. 16, 1975
B 405,305	3,922,111	Nov 25, 1975
B 405,360	3,913,403	Oct. 21, 1975
B 405,495	3,924,577	Dec 9, 1975
B 405,938	3,920,109	Nov. 18, 1975
B 406,065	3,914,199	Oct. 21, 1975
B 406,357	3,924,529	Dec 9, 1975
B 407,736	3,924,463	Dec. 9, 1975
B 407,357	3,924,614	Dec. 9, 1975
B 407,728	3,925,240	Dec. 9, 1975
B 408,487	3,924,046	Dec 2, 1975
B 408,749	3,914,116	Oct 21, 1975
B 409,026	3,925,497	Dec 9, 1975
B 409,220	3,915,648	Oct. 28, 1975
B 409,251	3,922,620	Nov. 25, 1975
B 409,657	3,927,362	Dec. 16, 1975
B 409,816	3,921,317	Nov. 25, 1975
B 410,062	3,923,855	Dec. 2, 1975
B 410,168	3,914,717	Oct. 21, 1975
B 411,145	3,914,168	Oct. 21, 1975
B 411,356	3,919,649	Nov. 11, 1975
B 411,483	3,925,196	Dec 9, 1975
B 411,633	3,914,741	Oct. 21, 1975
B 412,516	3,927,417	Dec. 16, 1975

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER TRIAL VOLUNTARY PROTEST PROGRAM

JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 412,619	3,925,292	Dec. 9, 1975	B 425,572	3,923,822	Dec. 2, 1975
B 412,867	3,924,587	Dec. 9, 1975	B 427,631	3,921,433	Nov. 25, 1975
B 413,006	3,914,850	Oct. 28, 1975	B 428,177	3,914,624	Oct. 21, 1975
B 413,546	3,924,314	Dec. 9, 1975	B 428,795	3,921,056	Nov. 18, 1975
B 414,129	3,925,484	Dec. 9, 1975	B 429,442	3,923,485	Dec. 2, 1975
B 414,288	3,925,537	Dec. 9, 1975	B 430,106	3,918,941	Nov. 11, 1975
B 415,113	3,915,717	Oct. 28, 1975	B 430,140	3,922,084	Nov. 25, 1975
B 415,124	3,915,944	Oct. 28, 1975	B 430,798	3,918,204	Nov. 11, 1975
B 415,845	3,925,076	Dec. 9, 1975	B 430,944	3,922,096	Nov. 25, 1975
B 415,847	3,914,208	Oct. 21, 1975	B 432,373	3,919,670	Nov. 11, 1975
B 415,957	3,925,635	Dec. 9, 1975	B 433,587	3,914,567	Oct. 21, 1975
B 415,977	3,927,359	Dec. 16, 1975	B 435,343	3,919,244	Nov. 11, 1975
B 416,598	3,923,473	Dec. 2, 1975	B 435,844	3,925,170	Dec. 9, 1975
B 416,832	3,924,975	Dec. 9, 1975	B 437,173	3,924,627	Dec. 9, 1975
B 416,710	3,923,746	Dec. 2, 1975	B 437,172	3,913,251	Oct. 21, 1975
B 416,933	3,924,968	Dec. 9, 1975	B 437,195	3,914,618	Oct. 21, 1975
B 417,299	3,918,235	Nov. 11, 1975	B 437,450	3,922,479	Nov. 25, 1975
B 418,121	3,925,023	Dec. 9, 1975	B 438,053	3,916,013	Oct. 28, 1975
B 418,153	3,925,251	Dec. 9, 1975	B 438,706	3,925,050	Dec. 9, 1975
B 418,302	3,913,252	Oct. 21, 1975	B 439,168	3,919,676	Nov. 11, 1975
B 419,327	3,921,197	Nov. 18, 1975	B 439,669	3,921,499	Nov. 25, 1975
B 419,481	3,924,970	Dec. 9, 1975	B 440,898	3,921,789	Nov. 25, 1975
B 420,016	3,914,572	Oct. 21, 1975	B 441,024	3,913,629	Oct. 21, 1975
B 420,148	3,927,414	Dec. 16, 1975	B 441,416	3,913,851	Oct. 21, 1975
B 420,514	3,923,929	Dec. 2, 1975	B 442,280	3,914,054	Oct. 21, 1975
B 420,568	3,925,069	Dec. 9, 1975	B 442,859	3,918,570	Nov. 11, 1975
B 421,026	3,914,785	Oct. 21, 1975	B 442,919	3,925,483	Dec. 9, 1975
B 421,362	3,924,817	Dec. 9, 1975	B 444,614	3,927,996	Dec. 23, 1975
B 421,383	3,925,047	Dec. 9, 1975	B 445,471	3,914,711	Oct. 21, 1975
B 421,797	3,914,023	Oct. 21, 1975	B 445,740	3,923,612	Dec. 2, 1975
B 422,399	3,928,656	Dec. 23, 1975	B 448,571	3,924,760	Dec. 9, 1975
B 422,467	3,924,804	Dec. 9, 1975	B 449,647	3,916,797	Nov. 4, 1975
B 422,949	3,921,873	Nov. 25, 1975	B 450,499	3,920,526	Nov. 18, 1975
B 424,415	3,919,458	Nov. 11, 1975	B 450,546	3,924,417	Dec. 9, 1975
B 424,462	3,920,522	Nov. 18, 1975	B 450,927	3,913,844	Oct. 21, 1975
B 424,572	3,924,979	Dec. 9, 1975	B 455,520	3,922,543	Nov. 25, 1975
B 424,748	3,924,395	Dec. 9, 1975	B 455,775	3,914,356	Oct. 21, 1975
B 425,035	3,914,025	Oct. 21, 1975	B 456,346	3,914,531	Oct. 21, 1975
B 425,345	3,922,015	Nov. 25, 1975	B 459,425	3,928,773	Dec. 23, 1975
B 425,470	3,923,796	Dec. 2, 1975	B 461,872	3,919,586	Nov. 11, 1975
B 425,539	3,916,742	Nov. 4, 1975	B 467,684	3,915,119	Oct. 28, 1975
B 425,541	3,914,051	Oct. 21, 1975	B 468,198	3,925,340	Dec. 9, 1975

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF DECEMBER, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

American Cyanamid Company: *See—*
Panzer, Hans peter; and Dixon, Kenneth Wayne, Re. 28,670.

Dixon, Kenneth Wayne: *See—*
Panzer, Hans peter; and Dixon, Kenneth Wayne, Re. 28,670.

Dow Chemical Company, The: *See—*
Tomalia, Donald A.; and Sheetz, David P., Re. 28,669.

Eastman Kodak Company: *See—*
Herz, Arthur H.; and Westcott, Edwin R., Re. 28,668.

Gainesville Machine Company, Inc.: *See—*
Harben, Grover S., Jr., Re. 28,666.

Gores, Kenneth W., to Kirkman Laboratories, Inc. Double tray dental apparatus. Re. 28,667, Cl. 128-136.000.

Harben, Grover S., Jr., to Gainesville Machine Company, Inc. Poultry processing method and apparatus. Re. 28,666, Cl. 17-11.000.

Herz, Arthur H.; and Westcott, Edwin R., to Eastman Kodak Company. Silver halide emulsions containing alkyl selenols and thiols as antifoggants. Re. 28,668, Cl. 96-76.00R.

Kirkman Laboratories, Inc.: *See—*
Gores, Kenneth W., Re. 28,667.

Panzer, Hans peter; and Dixon, Kenneth Wayne, to American Cyanamid Company. Polyquaternary flocculants. Re. 28,670, Cl. 260-2.0BP.

Sheetz, David P.: *See—*
Tomalia, Donald A.; and Sheetz, David P., Re. 28,669.

Tomalia, Donald A.; and Sheetz, David P., to Dow Chemical Company, The. Bi-2-oxazoline and oxazine compounds derived from cyanoethylated poly(ethylene glycols) and poly(propylene glycols). Re. 28,669, Cl. 260-2.00N.

Westcott, Edwin R.: *See—*
Herz, Arthur H.; and Westcott, Edwin R., Re. 28,668.

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Hogh, Jorgen, and Bonne. 238,273.

Acushnet Co.: *See—*
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Addmaster Corp.: *See—*
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Alexander, Fred C., to Universal-Rundle Corp. Combined bathtub and shower stall. 238,276, 12–30–75, Cl. D23—49.

Alger, Andrew L., and K. Yamasaki, to Uarco Inc. Burster or similar article. 238,302, 12–30–75, Cl. D55—1.

American Carrier Equipment: *See—*
Sweet, Phillip J., Hamlet, and Sweet. 238,259.

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Ziskin, Manuel S., and Wagner. 238,241.

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Baker, James W. Car wash building. 238,270, 12–30–75, Cl. D13—1.

Baker, James W. Car wash building. 238,271, 12–30–75, Cl. D13—1.

Baker, Walter, Jr., to General Electric Co. Housing for window air conditioner. 238,278, 12–30–75, Cl. D23—144.

Balleis, Peter. Toy spinning top. 238,291, 12–30–75, Cl. D34—15.

Barrows, Howard E., and R. J. Berglund, to Tenneco Inc. Cocktail stir stick. 238,239, 12–30–75, Cl. D7—42.

Baumgarten, Carl B., to Gomco Surgical Mfg. Corp. Circumcision clamp. 238,309, 12–30–75, Cl. D83—12.

Beckwith, Edward K. Running sand tooth timer. 238,255, 12–30–75, Cl. D10—44.

Berglund, Richard J.: *See—*
Barrows, Howard E., and Berglund. 238,239.

Bobov, Vitislav Y., D. P. Rybakov, and A. L. Farberg. X-ray apparatus. 238,307, 12–30–75, Cl. D83—1.

Bonne, Adam: *See—*
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CBS Inc.: *See—*
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Thomas, John F., III. 238,247.

CITC Industries: *See—*
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Cali, John S. Dental examination mirror. 238,281, 12–30–75, Cl. D24—1.

Camp Scandinavia AB: *See—*
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Century Mold, Inc.: *See—*
McClain, Myron M. 238,232.

Clark Equipment Co.: *See—*
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Cohen, William J., to CITC Industries. Sport Shoe. 238,216, 12–30–75, Cl. D2—310.

Cohn, Lyle J., to International Seaway Trading Corp. Boot sole. 238,218, 12–30–75, Cl. D2—319.

Cohn, Lyle J., to International Seaway Trading Corp. Boot sole. 238,219, 12–30–75, Cl. D2—319.

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Cox, Paul L. Exercise shoe sole. 238,217, 12–30–75, Cl. D2—319.

Daenen, Robert: *See—*
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Dobbs, Justin V. Game board. 238,290, 12–30–75, Cl. D34—5.

Durante, Alfred J. Necklace. 238,292, 12–30–75, Cl. D45—16.

Durante, Alfred J. Bracelet. 238,293, 12–30–75, Cl. D45—4.

Durante, Alfred J. Bracelet. 238,294, 12–30–75, Cl. D45—4.

Duris, Rudolph M., to General Signal Corp. Audible vehicle back-up alarm. 238,258, 12–30–75, Cl. D10—116.

Dutchburn, Leslie G. Rotisserie frame. 238,240, 12–30–75, Cl. D7—129.

Dymo Industries, Inc.: *See—*
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Eberle, Gunter F., to The Vecta Group, Inc. Multiple seating unit or similar article. 238,222, 12–30–75, Cl. D6—59.

Elgebrandt, Carl H., to Camp Scandinavia AB. Seat cushion for a wheelchair. 238,235, 12–30–75, Cl. D6—201.

Elkins, Johnny C., and M. C. Hanz. End standard for a gun rack. 238,228, 12–30–75, Cl. D6—114.

Erickson, Gerald. Bottle carrier. 238,249, 12–30–75, Cl. D9—178.

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Finley, Arthur L., to The Goodyear Tire & Rubber Co. Tire. 238,263, 12–30–75, Cl. D12—143.

Folden, Clarence L., to Sears, Roebuck & Co. Combined bathtub and shower stall. 238,275, 12–30–75, Cl. D23—49.

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Klemm, Richard O. 238,299.
Klemm, Richard O. 238,300.

Franzen, Ingemar, and S. O. Wikholm. Pool cleaner. 238,297, 12–30–75, Cl. D49—11.

French, Jerome J. Dental floss holder. 238,279, 12–30–75, Cl. D24—1.

Garey, Iraida, to D. Lisner & Co., Inc. Jewelry display support or similar article. 238,251, 12–30–75, Cl. D9—191.

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Hanagan, Michael W., to Corbin Gentry, Inc. Motorcycle seat. 238,221, 12–30–75, Cl. D6—48.

Haney, Ralph D.: *See—*
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Hanz, Marvin C.: *See—*
Elkins, Johnny C., and Hanz. 238,228.

Hauser, Stephen G., to Addmaster Corp. Calculator. 238,283, 12–30–75, Cl. D26—5.

Hengst, Alfred, H. Janke, and E. Ruehl, to Ernst Leitz GmbH. Binocular. 238,304, 12–30–75, Cl. D57—1.

Herlow, Erik, and R. Daenen, to Dart Industries, Inc. Combined storage bowl and serving plate. 238,237, 12–30–75, Cl. D7—17.
Hogh, Jorgen, and A. Bonne, to A/S Teknova. Casing for a fluid conduit component. 238,273, 12–30–75, Cl. D23—19.
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Ogiso, Teruo. 238,264.
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Kingsford, Ted L., and J. H. Greene, to Plough, Inc. Combined lipstick and casing therefor. 238,311, 12–30–75, Cl. D86—10.
Klemm, Richard O., to Food Warming Equipment Co., Inc. Heated cabinet. 238,299, 12–30–75, Cl. D55—1.
Klemm, Richard O., to Food Warming Equipment Co., Inc. Banquet cabinet. 238,300, 12–30–75, Cl. D55—1.
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Lyons, Christine R. Clothing rack. 238,225, 12–30–75, Cl. D6—85.
Maki, Richard G., R. E. Riemer, and R. B. Potter, to Kelley Co., Inc. Support leg for a dockboard. 238,261, 12–30–75, Cl. D12—60.
Mannonen, Penttl K. Console for fault detector for paper webs. 238,256, 12–30–75, Cl. D10—46.
McClain, Myron M., to Century Mold, Inc. Leg for article of furniture. 238,232, 12–30–75, Cl. D6—195.
McClain, Myron M., to Miami Valley Plastic. Leg for article of furniture. 238,231, 12–30–75, Cl. D6—195.
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Ruehl, Ernst: *See*—
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Shell, Irving W. Support member for use with signs shelves, partitions and the like. 238,272, 12–30–75, Cl. D13—6.
Sherin, Michael H. Specimen collector. 238,308, 12–30–75, Cl. D83—1.
Sklaroff, William B., to Tiffany Industries, Inc. Desk. 238,230, 12–30–75, Cl. D6—158.
Slagel, Roger D. Valve base. 238,274, 12–30–75, Cl. D23—19.
Smith, Robert L. Multi-service module for a mobile camper park. 238,314, 12–30–75, Cl. D26—12.
Spath, William J., and H. S. Boutin; said H. S. Boutin assignor to W. J. Spath. Shower rack. 238,226, 12–30–75, Cl. D6—91.
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Stewart, Edward. Boat hull cover. 238,265, 12–30–75, Cl. D12—156.
Strada, Charles. Motorcycle exhaust pipe. 238,267, 12–30–75, Cl. D12—134.
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